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Naval Industrial Reserve Ordnance Plant (NIROP)
Fridley, Minnesota

Naval Facilities Engineering Command Midwest

Contract Number N624670-08-D-1001

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2011 ANNUAL MONITORING REPORT

NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT (NIROP)
FRIDLEY, MINNESOTA

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ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

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ACRONYMS

ACL	Alternate concentration limit
ACP	Anoka County Riverfront Park
AER	Air Emission Rate
amsl	above mean sea level
AMR	Annual Monitoring Report
ASU	Air stripping unit
bgs	Below ground surface
CAH	Chlorinated aliphatic hydrocarbon
cis-1,2-DCE	cis-1,2-dichloroethene
COC	Contaminant of concern
°C	Degree Celsius
1,1-DCA	1,1-Dichloroethane
1,1-DCE	1,1-Dichloroethene
DCE	1,2-Dichloroethene
DMR	Discharge Monitoring Report
DQI	Data quality indicator
DQO	Data quality objective
DQR	Data quality review
ERR	East River Road
FFA	Federal Facility Agreement
FOD	Frequency of detection
gpm	Gallon per minute
GWTF	Groundwater treatment facility
LUC	Land use control
MCES	Metropolitan Council Environment Services
MCL	Maximum Contaminant Level
MDL	Method detection limit
MDH	Minnesota Department of Health
MK	Morrison Knudsen
MPCA	Minnesota Pollution Control Agency
MWW	Minneapolis Water Works
Navy	United States Department of the Navy
ND	Not detected
NFRAP	No Further Remedial Action Planned
NIROP	Naval Industrial Reserve Ordnance Plant

NPDES	National Pollutant Discharge Elimination System
NS	Not Sampled
NTU	Nephlometric turbidity unit
O&M	Operation and maintenance
OM&M	Operation, maintenance and monitoring
OU	Operable Unit
PC	Prairie du Chien
PCB	Polychlorinated biphenyl
PCE	Tetrachloroethene
PLC	Programmable Logic Controller
ppb	Parts per billion
QAPP	Quality Assurance Project Plan
RAB	Restoration Advisory Board
RAWP	Remedial Action Work Plan
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
RI	Remedial Investigation
RL	Reporting limit
ROD	Record of Decision
SCADA	Supervisory Control and Data Acquisition
SDR	Special Discharge Report
SDS	State Disposal System
PCE	Tetrachloroethene
1,1,1-TCA	1,1,1-Trichloroethane
TBC	To Be Considered
TCE	Trichloroethene
trans-1,2-DCE	trans-1,2-dichloroethene
µg/L	Microgram per liter
UDLP	United Defense Limited Partnership
USACE	United States Army Corps of Engineers
U.S. EPA	United States Environmental Protection Agency
USGS	United States Geological Survey
VC	Vinyl chloride
VOC	Volatile organic compound

1.0 INTRODUCTION

1.1 INTRODUCTION TO THIS REPORT

The 1991 Federal Facility Agreement (FFA) among the United States Environmental Protection Agency (U.S. EPA), the Minnesota Pollution Control Agency (MPCA), and the United States Department of the Navy (Navy) requires that an Annual Monitoring Report (AMR) be submitted by the Navy to the U.S. EPA and the MPCA each year following commencement of groundwater remedial action at the Naval Industrial Reserve Ordnance Plant, Fridley, Minnesota (NIROP). This AMR has been developed to include operating, maintenance, and monitoring (OM&M) data for the groundwater extraction and treatment system collected in 2011. The Remedial Action Work Plan (RAWP) (Tetra Tech, 2005b) was developed to implement the Record of Decision (ROD) requirement (U.S. EPA, 1990) of an annual evaluation of the performance of the extraction well system in achieving hydraulic containment of contaminated groundwater. The evaluation of the groundwater extraction and treatment system for 2011 is included in this report.

1.2 PURPOSE AND SCOPE

The purpose of this report is to fulfill requirements specified in the FFA, ROD and the RAWP for annual submittal of data and information describing OM&M of the groundwater extraction/treatment system during 2011 and evaluation of system performance trends from 1992 to 2011. This AMR includes the following information:

- A general description of the current groundwater extraction and treatment facilities at the site.
- A summary of OM&M of the extraction and pretreatment system during calendar year 2011, with more detailed OM&M reports and data in the appendices.
- Hydraulic and chemical monitoring data from the aquifer system.
- A discussion of general groundwater quality observations based on the available monitoring data and an evaluation of long-term contaminant trends.
- Resolution of regulatory agency comments on the previous year's AMR.

1.3 SITE HISTORY

1.3.1 Record of Decision

The NIROP ROD for groundwater remediation (Operable Unit #1), was signed in September 1990 (U.S. EPA, 1990) by the Navy, the U.S. EPA Region 5, and the MPCA. Remedial action in the ROD specified hydraulic containment and recovery of contaminated groundwater from NIROP and recovery to the extent feasible, of contaminants downgradient of NIROP. The selected remedy included the installation and operation of groundwater extraction wells, with a two-phased plan for disposal of groundwater from the extraction well system.

The ROD specified that contaminated groundwater downgradient of NIROP in Anoka County Riverfront Park (ACP) would be allowed to dissipate naturally. Groundwater extraction and treatment systems were constructed based on a design agreed to by the Navy, U.S. EPA and the MPCA (RMT, Inc., 1997). Construction of the original groundwater extraction system and upgrades to the extraction system are discussed in Section 2.0.

1.3.2 Remedial Action Work Plan

The groundwater extraction system began operating in September 1992. Extraction system performance has been monitored via an extensive monitoring well network since start-up, according to the procedures described in the RAWP. The RAWP and/or sampling plan was updated between 2000 and 2007 (Tetra Tech, 2000a, 2001, 2003, 2004, 2005b, 2007b, and 2007a).

1.3.3 Evaluation of Groundwater Extraction Containment System

As required by the ROD, an evaluation of the effectiveness of the groundwater extraction system in achieving hydraulic containment of contaminated groundwater during the initial 90-day operating period was submitted to the U.S. EPA and the MPCA (RMT, Inc., 1992). The document concluded that additional extraction wells would be necessary to achieve effective hydraulic containment of contaminated groundwater. A work plan for upgrading the original groundwater extraction system was prepared (RMT, Inc., 1995a) and agreed to by all parties. A final document presenting the results, “Evaluation of Groundwater Containment System Effectiveness,” was issued in July 1996 (RMT, Inc., 1996).

1.3.4 1999 Annual Monitoring Report Containment System Upgrade Recommendations

The 1999 AMR (Tetra Tech, 2000b) recommended upgrades to the containment system, and all parties approved the recommended modifications. Specifically, modifications were conducted to continue the operation of wells AT-3A, AT-5A, and AT-5B; eliminate wells AT-1A, AT-2, and AT-4; and construct new extraction wells AT-7 through AT-10. These changes (discussed in Section 2.1.3) were completed by the end of 2001.

1.3.5 Pilot-Scale Study of Enhanced In-Situ Bioremediation - Anoka County Riverfront Park

An in-situ bioremediation pilot test using vegetable oil was initiated in December 2001 by the Navy to evaluate the potential of this technology to remediate chlorinated aliphatic hydrocarbons (CAHs) in groundwater in the ACP. Results were presented in the "Report for A Field Application to Enhance In-Situ Bioremediation of Chlorinated Solvents via Vegetable Oil Injection at Naval Industrial Ordinance Plant Fridley, Minnesota" (Parsons, 2006). Based on the report's conclusions, vegetable oil remediation is not currently recommended at NIROP.

1.3.6 2011 Containment System Upgrade

Approved upgrades to the groundwater remedial system commenced in 2011 to increase system performance due to system component aging of intermediate zone extraction well AT-3A. The recommended modifications to the extraction system included installation of three new intermediate zone extraction wells (AT-11, AT-12, and AT-13). The new wells have been tied into the existing treatment system. Upgrades to the system also included replacement of select piping, pumps, and upgrades of the Programmable Logic Controller (PLC) and Supervisory Control and Data Acquisition (SCADA) systems. AT-13, the newly installed extraction well closest to AT-3A, was pumping at a rate of approximately 150 gpm at year-end. AT-11 and AT-12 are awaiting pumps; proper pump size will be determined upon receipt of results from a consolidated pump test that was conducted in December 2011.

1.4 POTENTIAL SOURCE AREAS

This section summarizes potential source areas that may have contributed to the contamination currently being captured and treated in groundwater at the NIROP.

- Observed trichloroethene (TCE) concentrations are predominantly a result of solvent releases from the East Plating Shop areas, based on knowledge of NIROP operations and previous investigations.

It is possible that smaller magnitude TCE source areas exist under the NIROP building and may contribute to TCE contamination at MS-33I.

- One or more potential upgradient off-site sources north-northeast of the NIROP are suggested by tetrachloroethene (PCE) contamination detected in background wells 1-D (deep unconfined aquifer) and 5-PC (Prairie du Chien [PC] bedrock aquifer). PCE concentrations detected in 1-D were 46 micrograms per liter (µg/L) and concentrations detected in 5-PC were 240 µg/L, which was the maximum detection of PCE on site. The MPCA undertook a regional groundwater level measurement program in September 2004 to further evaluate groundwater flow patterns in the PC bedrock aquifer. The results of this program were inconclusive regarding the potential impact of the upgradient off-site source(s) on the NIROP. The Navy continues to believe that one or more upgradient sources exist.

Potential source areas (south of the NIROP building) may be present on former United Defense Limited Partnership (UDLP)-owned property. BAE Systems (formerly FMC Corporation – Naval Systems Division), which acquired the UDLP in 2005, is the current responsible party of the release. The Navy, BAE Systems, and the MPCA continue to exchange information on these source areas to develop the best strategy for addressing regional groundwater contamination. Documentation associated with the source areas that has been received by the Navy is summarized as follows:

- A separate groundwater extraction system has been in operation since December 1987 to address volatile organic compound (VOC) contamination associated with one confirmed BAE Systems source area. The extraction system was installed as part of a Response Action Plan and is governed by a Response Order by Consent (October 28, 1986). The monitoring report for the BAE Systems source area extraction system was not received for review prior to the preparation of this AMR.

- Further investigation of the vertical and lateral extent of VOC contamination within the unconfined and confined aquifers between one confirmed BAE Systems source area and the Mississippi River was completed by BAE Systems in 2004 (ARCADIS G&M, Inc., 2004). The investigation included an assessment of a storm sewer located in the area to determine if it was a preferential flow pathway for contaminant migration discharging to a seep on the East Bank of the Mississippi River. The results of the investigation and assessment were used to develop modifications to the BAE Systems groundwater extraction system to improve capture of VOCs.

- The Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) for UDLP (Tetra Tech, 2005a) found that the Former Paint Shop, which operated in the early 1970's, was a potentially

significant source area of groundwater contamination. Chlorinated VOCs were detected over several rounds of groundwater sampling. A temporary well sample had a TCE concentration of 12,000 µg/L at the Former Paint Shop

2.0 GROUNDWATER EXTRACTION AND TREATMENT FACILITIES

2.1 EXTRACTION WELL SYSTEM

2.1.1 Original System

The original groundwater extraction system included four extraction wells (AT-1A, AT-2, AT-3A, and AT-4) and related piping and equipment. AT-2 and AT-3A were placed to contain contaminated groundwater along the southwestern portion (downgradient) of the NIROP. AT-1A and AT-4 were placed to control sources of groundwater contamination on the eastern and northern sides of the NIROP, respectively.

Each extraction well discharge was routed via a separate pipeline to a control house on the western side of the NIROP building, and connected to a flow rate indicator and flow volume totalizer. The combined discharge was piped from the control house to a nearby pretreatment building. Piping was installed so the effluent could bypass the pretreatment facility and discharge to the sanitary sewer. Sampling valves were placed on/within the piping for each extraction well and for the combined discharge from the wells.

2.1.2 1995 Upgrade

Extraction wells AT-5A and AT-5B were installed in 1995 next to each other to enhance capture of groundwater at the plume's southern edge above and below a clay layer (found at approximately 71 feet below ground surface [bgs] at this location). AT-5A was screened from 36 to 66 feet bgs to capture groundwater above the clay layer, and AT-5B was screened from 101 to 136 feet bgs to capture groundwater below the clay layer. Buried pipelines from extraction wells AT-5A and AT-5B were connected to the piping manifold that served the four original extraction wells. Valves and controls were installed to monitor the flow rates from AT-5A and AT-5B.

2.1.3 2001 Upgrade

In June 2001, the extraction well system was upgraded to more effectively capture and contain contamination at the NIROP. These upgrades were implemented based on recommendations in the 1999 AMR (Tetra Tech, 2000b) and regulatory consensus during meetings in 2000. Four new extraction wells (AT-7, AT-8, AT-9, and AT-10) were installed, and AT-3A was modified in October 2000. A packer was installed in AT-3A to modify the screened interval from 69 to 130 feet to 69 to 105 feet bgs. The extraction wells were connected to the control house in a manner similar to AT-5A and AT-5B.

2.1.4 2008 Plan to Improve Operation and Maintenance (O&M) Functions

In 2008, the Navy developed a plan for improving O&M functions for the extraction system, and this plan is outlined in the bulleted list below.

- Expand inventory of spare parts
- Employ preventative maintenance practices
- Expand groundwater monitoring plan
- Operate system within newly specified operating ranges
- Update procurement of O&M contractor
- Evaluate system capture in June 2011, 2 years after implementation of improved O&M Program, to address potential bypass concerns
- Track extraction system downtime to verify improvement by system and by well
- More detailed reporting on system performance
- Continue the facilitation partnering process
- Annual review of adequacy of spare parts inventory

2.1.5 2011 Upgrade of the System

Three new extraction wells (AT-11, AT-12, and AT-13) were installed in September 2011 to capture intermediate-zone groundwater. Emplacement and design of these three extraction wells was agreed to by all parties prior to construction. The new extraction wells were placed near the southeast corner of the NIROP building (Figure 2-1), and were constructed to replace AT-3A, which was not performing to specifications. The extraction components have been removed from AT-3A, and it is scheduled to be abandoned in September 2012. Extraction wells AT-11, AT-12 and AT-13 are screened from 70 to 100 feet bgs. AT-11 and AT-12 were constructed using 12-inch diameter, 30 foot long stainless steel High Flow Johnson Screens with a 0.03” (#30) slot size. The filter packs for AT-11 and AT-12 consist of #30 Red Flint Gravel Pack type material. Extraction well AT-13 was constructed using a 12-inch diameter, 30 foot long stainless steel High Flow Johnson Screen with a 0.04” (#40) slot size. The filter pack consists of a #40 Red Flint Gravel Pack type material. Screen slot size was determined by sieve size analysis from core samples obtained from each borehole.

After well installation in September and October 2011, new piping and electrical lines were installed and the wells were linked to the existing treatment system. A temporary pump was then placed into extraction well AT-13 (closest new extraction well to AT-3A) and pumping resumed December 22 to replace extraction well AT-3A. As of December 2011, AT-13 was pumping at a rate of approximately 150 gallons

per minute (gpm), and AT-11 and AT-12 are not yet operational. The extraction system was offline from December 1 through 21, 2011, while pumping tests were conducted on extraction wells AT-11, AT-12, and AT-13. Eight-hour step rate tests were conducted for each new extraction well from December 6 through 8, 2011, followed by 36 hour constant rate tests at each of the three new extraction wells from December 12 through 20, 2011. Extraction wells AT-11, AT-12, and AT-13 will be brought online permanently after the pump test data has been analyzed and ideal pumping rates have been estimated. The pump test evaluation, being conducted by CH2M Hill, is currently in progress. Well placements and the site boundary are shown on Figure 2-1. Well construction details, modifications, and the status of each extraction well are presented in Table 2-1.

2.2 HISTORIC PRETREATMENT SYSTEM

Chemical analyses indicated that groundwater pretreatment would be required prior to discharge to the Metropolitan Council Environmental Services (MCES) sanitary sewer to meet discharge limits set by the MCES. Under Phase I of the groundwater remedy, groundwater from the extraction system was discharged to an existing sanitary sewer, and treatment was provided at a local wastewater treatment facility. Under the Phase II Plan, a groundwater treatment facility was constructed and operated at the NIROP to provide long-term groundwater treatment. Treated groundwater from the on-site groundwater treatment facility was discharged to the Mississippi River via a National Pollutant Discharge Elimination System (NPDES)/MCES State Disposal System (SDS) permitted storm sewer discharge. The concentrations of TCE and other VOCs in the combined discharge from the four original extraction wells decreased significantly from system start-up in 1992 until 1995. The concentrations eventually decreased to levels that remained less than the limits specified in the permit issued by the MCES (see Section 4.4.4 of the 1998 AMR) for discharge to the sanitary sewer. The Navy submitted a written request, approved by the MCES, to discontinue operation of the pretreatment system and to discharge the combined groundwater flow directly to the sanitary sewer in 1995. The pretreatment system was shut down March 27, 1995, and groundwater was discharged directly from the extraction wells to the MCES sanitary sewer until the end of Phase I on December 10, 1998.

2.3 EXISTING TREATMENT SYSTEM

Construction of the Phase II treatment system began in 1997 and was completed on September 21, 1998. Construction of the treatment system involved the adaptation of the existing pretreatment system and installation of additional process equipment to ensure that NPDES discharge permit requirements would be met.

The major components of the treatment system include a feed system, air stripping units (ASUs), and an effluent system. The feed system consists of an equalization tank to collect groundwater pumped from the extraction well system and feed pumps to move the groundwater from the equalization tank to the ASUs. Four low-profile, tray-type air strippers are operated in parallel. The effluent discharges via gravity to the effluent sump, and exhaust air is vented to the atmosphere. Effluent pumps remove the treated water from the effluent sump and discharge it to an existing 72-inch storm sewer. The treatment system is designed to handle a maximum flow rate of 1,000 gpm (250 gpm for each ASU), which is greater than the current maximum pumping rate for the extraction system.

Currently, all major components of the treatment system are operational. Effluent water from the treatment system is discharged to the Mississippi River via storm sewer Outfall 020 (NPDES/SDS Permit MN0000710). Treated effluent will continue to be discharged from the treatment plant as long as system performance meets the NPDES discharge requirements. Copies of the quarterly NPDES Discharge Monitoring Reports (DMRs) are included in Appendix A-1. All NPDES discharge limits were met in 2011. The 2011 annual MCES Special Discharge Report (SDR) is included in Appendix A-2. Approximately 172,000 gallons of liquid (including condensate, well development and purge water, treatment system discharge, and neutralized solution from well redevelopment) was discharged under Special Discharge Permit number 2154 in 2011. Some values reported in 2011 were not in compliance with the MCES Discharge Limitations; details are provided in Appendix A-2. All monitoring and reporting requirements for the NPDES and MCES (Permit Number 2154) permits were met in 2011. Additional information on the NPDES and MCES permits and sampling results is provided in monthly O&M reports (Appendix A-3). Sampling is performed to monitor this discharge to the storm sewer, as presented in the SDR for Permit 2154. Refer to the SDR for additional details on effluent discharge from the groundwater treatment facility (GWTF). More detailed information on treatment system design and monitoring and reporting requirements is provided in the Basis of Design Report (RMT, Inc., 1997).

TABLE 2-1

SUMMARY OF EXTRACTION WELL CONSTRUCTION DETAIL AND CURRENT STATUS
2011 ANNUAL MONITORING REPORT
NIROP FRIDLEY, MINNESOTA

Extraction Well	Aquifer Zone	Aquifer Classification	Installation Event	Screened Interval (ft bgs)	Design Pumping Rate (gpm)	Status
AT-1A	Intermediate	Lower Unconfined	Original System	45-65	75	Abandoned (September 2000)
AT-2	Shallow	Upper Unconfined	Original System	35-65	125	Abandoned (September 2000)
AT-3A	Intermediate/Deep	Lower Semi-Confined	Original System, Modified during 2001 Upgrade	Originally 69-130, modified to 69-105	245	Intermittent operation in 2011 due to fouling, screened interval modified during 2001 upgrade. Taken offline in September 2011.
AT-4	Shallow	Upper Unconfined	Original System	16-46	125	Abandoned (September 2000)
AT-5A	Shallow	Lower Unconfined	1995 Upgrade	36-66	175	Operational
AT-5B	Deep	Lower Semi-Confined	1995 Upgrade	101-136	70	Operational
AT-7	Shallow	Upper Unconfined	2001 Upgrade	29-39	45	Operational (enhanced containment/capture at compliance boundary)
AT-8	Shallow	Upper Unconfined	2001 Upgrade	27.5-37.5	31	Operational (enhanced containment/capture at compliance boundary)
AT-9	Shallow/Intermediate	Upper and Lower Unconfined	2001 Upgrade	34.5-51.5	78	Operational, replaced AT-2
AT-10	Intermediate	Lower Unconfined	2001 Upgrade	68-84	30	Operational, installed to address potential blowby between 12-IS and 13-IS

TABLE 2-1

SUMMARY OF EXTRACTION WELL CONSTRUCTION DETAIL AND CURRENT STATUS
2011 ANNUAL MONITORING REPORT
NIROP FRIDLEY, MINNESOTA

Extraction Well	Aquifer Zone	Aquifer Classification	Installation Event	Screened Interval (ft bgs)	Design Pumping Rate (gpm)	Status
AT-11	Intermediate	Lower Semi-Confined	2011 Upgrade	70-100	TBD	Not yet operational
AT-12	Intermediate	Lower Semi-Confined	2011 Upgrade	70-100	TBD	Not yet operational
AT-13	Intermediate	Lower Semi-Confined	2011 Upgrade	70-100	TBD	As of December 2011, pumping at approximately 150 gpm

Ft bgs = feet below ground surface
Gpm = Gallons per minute
TBD: To be determined

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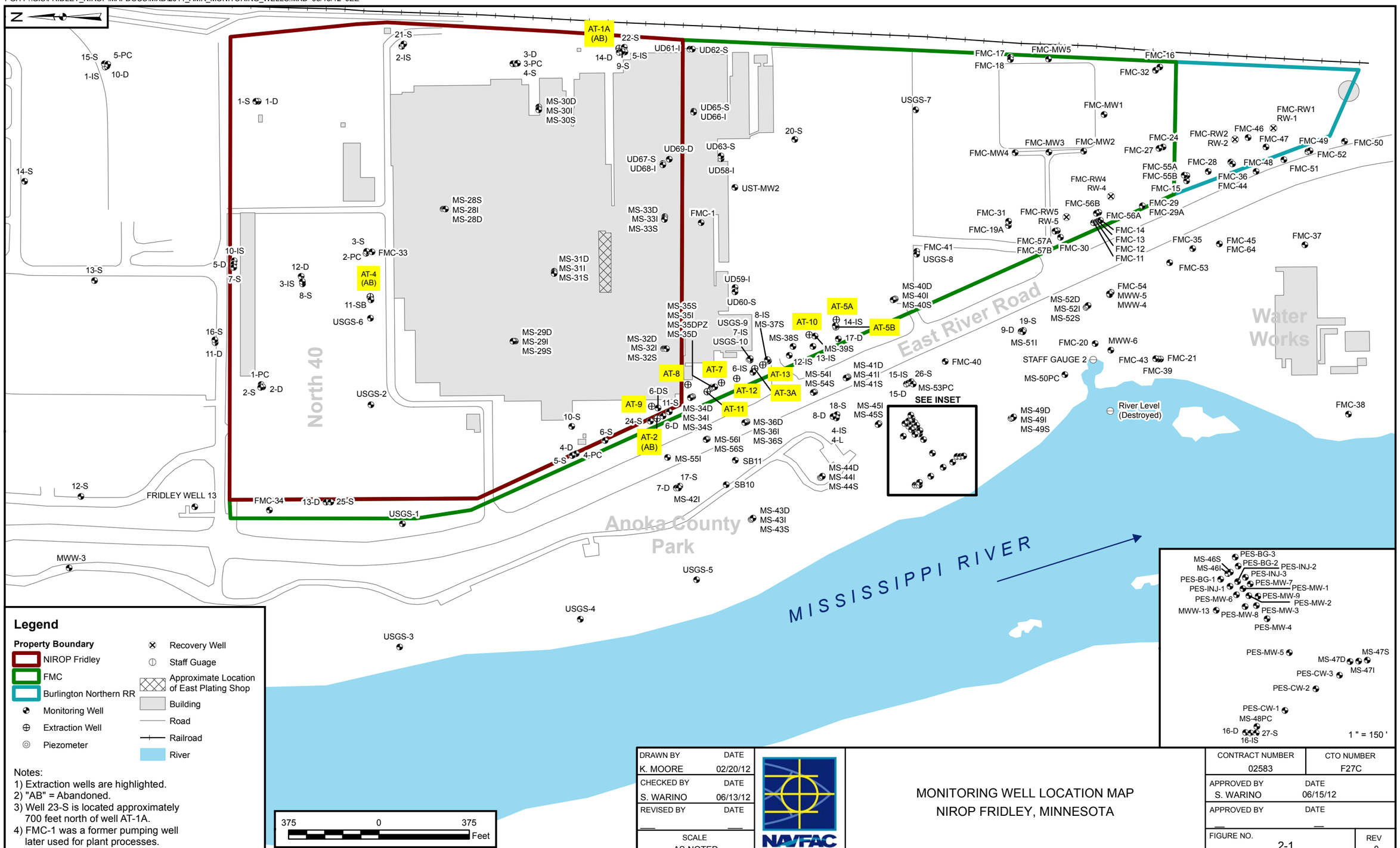

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K. MOORE	02/20/12
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S. WARINO	06/13/12
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SCALE	
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NAVFAC

MONITORING WELL LOCATION MAP
NIROP FRIDLEY, MINNESOTA

CONTRACT NUMBER	CTO NUMBER
02583	F27C
APPROVED BY	DATE
S. WARINO	06/15/12
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FIGURE NO.	REV
2-1	0

3.0 SITE GEOLOGY AND HYDROGEOLOGY

3.1 GEOLOGICAL AND HYDROGEOLOGICAL SETTING

This section provides a discussion of the site conceptual model of the geology and hydrogeology at the NIROP facility and ACP, much of which was taken from earlier AMRs and updated and refined based on findings from the United States Geological Survey (USGS) document "Evaluation of the Contributing Area for Recovery Wells at the Naval Industrial Reserve Ordnance Plant, Fridley, Minnesota" (Davis, 2007). The data presented in the USGS report and in this section were collected during completion of the 2001 upgrade to the extraction system (see Section 2.1.3). The data shown on the figures was generated based on well-planned, comprehensive, site-wide collection of water level data under both pumping and non-pumping conditions in 2001. This data is of value and is presented in this 2011 AMR because of its value in determining contaminant transport pathways and flow regimes.

The hydrogeology in the vicinity of the NIROP facility includes four aquifers or flow zones that govern groundwater movement through the shallow subsurface. These aquifers are, from shallow to deep, the Pleistocene Age unconsolidated drift aquifer/fluvial zone, Ordovician Age Prairie Du Chien bedrock aquifer, Silurian Age Franconia/Ironton/Galesville aquifer, and the Cambrian Age Mount Simon/Hinckley/Fond du Lac aquifer. Descriptions of the unconsolidated aquifer zone and PC aquifer are summarized below and shown on Figure 3-1. The Quaternary and late Ordovician sections of the generalized stratigraphic column was modified (see red text and red lines on Figure 3-1) based on NAVFAC interpretations of the Anoka County Geologic Atlas, Part A, Geology (in progress). Older aquifers are not part of the NIROP monitoring program and are not discussed further.

3.1.1 Unconsolidated Aquifer Zone and Aquitards

The Pleistocene Age unconsolidated drift/fluvial aquifer zone consists of glacial drift cut by ancestral Mississippi River channel deposits. It typically consists of three aquifers: 1) a shallow zone unconfined aquifer consisting of predominantly shallow drift/fluvial sands with intermittent silt and clay; an intermittent aquiclude (or a series of aquicludes controlled by channel deposition) that separates the shallow zone from the intermediate semi-confined zone; 2) intermediate zone semi-confined aquifer; consisting predominantly of sand, with defined areas of clay/silt controlling permeability; and 3) deep zone aquifer: head data confirms a deep confined or semi-confined aquifer (deep drift and/or fluvial material). In isolated areas of the ACP, where confining units are absent, the entire unconsolidated unit acts as a single unconfined aquifer. The zones of preferential groundwater flow within the drift/fluvial deposits

consist primarily of sand and gravel and vary significantly in thickness and hydraulic connection throughout the site.

Although monitoring wells at the site have been designated as shallow, intermediate, and deep, as described above, the hydraulic separation between these monitored intervals is variable and in some cases absent entirely. For this reason, some wells previously classified as shallow, intermediate, or deep were reclassified in the 2007 AMR (Tetra Tech, 2008) based on historical water level data, TCE concentrations, lithology, and pumping test results (Davis, 2007). The USGS classification of wells (Davis, 2007) at the NIROP is followed in this AMR.

Discontinuous low-permeability layers that vary significantly in thickness and horizontal/vertical extent across the site can locally separate the three aquifers. Figure 3-2 shows the locations of cross-section transects across the NIROP and ACP. Interpreted stratigraphy is shown on cross-sections A-A' (Figure 3-3), B-B' (Figure 3-4), C-C' and D-D' (Figure 3-5). Of note, aquitards are absent in the area south of SB-11 on cross-section E-E' (Figure 3-6).

Figure 11 from the USGS report (Davis, 2007) is presented in this report as Figure 3-7, and illustrates the significance of the low-permeability aquitards in influencing lateral and vertical groundwater flow at the site. Cross-section lines on this figure are from the USGS Report (Davis, 2007) and are not the same as those presented in this report. On this figure, vertical hydraulic connections are inferred using water level responses in well nests after the cessation of pumping during the 2001 evaluation of the updated extraction system. Well nests in which all the wells had a similar response indicate good vertical connections between all three shallow aquifer zones. Well nests where the water level responses were similar in only shallow and intermediate wells and different in deep wells indicate that a good vertical hydraulic connection exists between the shallow and intermediate zones, and that the deep well is in a different flow zone. Well nests where the water level responses in the intermediate and deep zone are similar and the water level response in the shallow well is different indicate a good vertical connection between the intermediate and deep zones and indicate that the shallow well is in a different flow zone. Well nests where shallow, intermediate, and deep wells all responded differently indicate that each well is in a different flow zone.

3.1.2 Bedrock Aquifer and Aquitards

The upper surface of bedrock is unconformable with the overlying deposits. The youngest bedrock formation is the lower portion of the Ordovician Age St. Peter Formation. The St. Peter Formation has

been completely eroded in the extreme southwestern portion of the NIROP and ACP (possibly a result of channel scouring). Since the St. Peter is of limited extent, it is not discussed further.

The underlying PC Formation consists of the Shakopee Dolomite and underlying Oneota Dolomite, which have a combined thickness ranging from 100 to 140 feet. Much of this bedrock aquifer is dolomitic limestone with cavities and joints lined with quartz and calcite. The upper part of the PC aquifer may be porous to cavernous (Theil, 1944).

3.2 HYDROGEOLOGY

The water levels for pumping and non-pumping conditions discussed in this section were originally reported in Table 3 of Davis (2007). Clay and silt layers are influential in redirecting groundwater flow, especially near the southwestern corner of the NIROP building. Under both non-pumping (Figures 3-8, 3-10, and 3-12) and pumping conditions (Figures 3-9, 3-11, and 3-13), groundwater flow across the site in the drift/fluvial aquifer zone varies from south-southwest to west. It should be noted that the hydraulic gradient along the river is in some cases parallel to the river, and may be away from the river in some reaches. The hydraulic features observed during natural (non-pumping) flow conditions (Figures 3-8, 3-10, and 3-12) are generally observable during pumping conditions (Figures 3-9, 3-11, and 3-13), although these features are modified by pumping.

3.2.1 Shallow Groundwater Flow Patterns

The shallow zone is present across the entire site (Figures 3-8 and 3-9). Intermediate and shallow clays (where present) form the base of the shallow flow zone, and where clays are absent, vertical connections likely exist between all flow zones (Davis, 2007). There are three major hydraulic features in the shallow flow zone: (1) an area of increased hydraulic gradient, (2) a groundwater high in ACP adjacent to East River Road (ERR), and (3) a local groundwater low in the southern portion of the site near wells 19-S and MS-52S (see Figure 3-8).

The area of increased hydraulic gradient is caused by a ridge feature in the shallow to intermediate zone that trends in an arc south-southeast across the site (Figures 3-8 and 3-9). The ridge feature, as referred to in previous documents, is likely an abandoned stream channel filled with fine-grained sediments. Groundwater flow is influenced by the clay ridge feature in the shallow flow zone near the southwest corner of the NIROP building. Groundwater is projected to flow west and around the clay ridge in the area of AT-7 and AT-8 (Figure 3-8 and 3-9). The horizontal and vertical extent of clay layers decrease from ERR towards the Mississippi River, resulting in a vertically extensive sand. Groundwater moves

upwards from the intermediate and deep zones and commingles with shallow groundwater in this area (Davis, 2007). The location of the ACP groundwater high is where clay layers begin to thin and vertically extensive sands dominate the lithology (Figure 3-5). The upgradient end of the groundwater high begins at the northern end of the clay ridge feature and fans out south, west, and east into the higher-permeability sediments in ACP (Figure 3-6). The higher-permeability sediments (i.e., vertically extensive sands) are present in ACP until just north of MS-45S and MS-41S, which is where the intermediate silt layer begins (Figure 3-6). The intermediate silt layer hydraulically separates the deep and shallow zones.

The third feature present in the shallow flow zone is a local groundwater low in the area of 19-S and MS-52S (Figures 3-7 and 3-8). The orientation of the groundwater low suggests that groundwater flow is being diverted around the clay ridge feature, with flow on the downgradient side of the ridge wrapping around the ridge and flowing south southwest along the south end of the site.

The cones of depression for AT-7, AT-8, AT-9, and AT-5A are evident under pumping conditions (Figure 3-9). When pumping, AT-5A appears to decrease the extent of the adjacent groundwater high in ACP. The comparatively large zone of depression is the result of the restricted groundwater flow associated with the ridge feature and clay/silt layers in this area.

3.2.2 Intermediate Groundwater Flow Patterns

Clay layers in the intermediate flow zone are not sufficiently permeable to transmit groundwater, and where intermediate clay is present, the intermediate flow zone is not present (Davis, 2007). Intermediate zone groundwater reaches the ACP area by passing through a high permeability channel between the intermediate clays and silt within and southwest of the NIROP Building (Figure 3-10) and also migrates vertically upward. This channel carries the bulk of contaminants from the NIROP source area(s) and is the critical controlling depositional feature at NIROP. The overall groundwater flow direction in the intermediate zone is to the southwest (Figures 3-10 and 3-11). The three new extraction wells are installed within this channel.

Figure 3-11 shows the groundwater contours under pumping conditions for intermediate zone wells. AT-3A is no longer operating. New extraction well AT-13 (not shown on figure) is in operation at a pumping rate of approximately 150 gpm, effectively replacing AT-3A until the pumping test analysis is complete. New extraction wells AT-11 and AT-12 (not shown on figure) will soon be in operation, and the zone of influence will be re-evaluated in the next AMR. However, the new extraction wells are shown on Figure 3-2 for reference.

A hydrogeologic feature in the intermediate zone in the vicinity of 12-IS, 13-IS, and AT-10, which appears to be associated with a gravelly sand deposit (Figure 3-3), is referred to as the "nose" because of its potentiometric surface profile. The “nose” is present under both non-pumping (Figure 3-10) and pumping conditions (Figure 3-11). Another feature in the intermediate zone, a local groundwater low in southern ACP, is similar to, but not as sharply defined as, a similar feature in the shallow zone under non-pumping conditions. As in the shallow zone, the low in the intermediate zone indicates that groundwater flows from the portion of the BAE Systems site east of MS-51I and MS-52I and is channeled toward the southern edge of ACP, then discharges to the Mississippi River.

The cone of depression for AT-10 is narrow and steep. Drawdowns due to extraction well pumping on both sides of the “nose” greatly enhance this feature under pumping conditions (Figure 3-11) compared to non-pumping conditions (Figure 3-10), which indicates that some large-scale hydraulic variability exists within the intermediate flow zone in this localized area. It could be a high-permeability zone of preferential flow that has a much smaller hydraulic response to extraction well pumping than nearby lower-permeability aquifer sediments, or it could be a discrete permeable zone that pinches out to some degree in the downgradient and lateral directions, allowing a buildup of hydraulic head that is not readily dissipated.

3.2.3 Deep Groundwater Flow Patterns

Groundwater flow in the deep portion of the unconsolidated aquifer is southwest across the study area. There is some undulation of potentiometric surface contours in the ACP area, and it appears that an area of decreased deep groundwater gradient is present near the southwestern corner of the NIROP building, similar to the characteristics of the intermediate flow zone under non-pumping conditions (Figure 3-10) in this area. The USGS report (Davis, 2007) outlines three possible reasons for the increased gradient and similarity to the overlying intermediate zone: (1) increased permeability in both zones independently causing the flattening, (2) increased permeability in both zones and a vertical connection between the zones, or (3) upward flow from the bedrock zone into the deep zone. Similar to the overlying intervals, a trough feature is also present in the deep zone in the southern end of ACP (Figures 3-12 and 3-13), which channels groundwater towards the river.

Figure 3-13 shows groundwater contours under pumping conditions for deep zone wells. The wide cone of depression for AT-5B is readily apparent on Figures 3-3 and 3-13. The USGS report (Davis, 2007) shows a cone of depression under AT-3A in the deep zone as a result of either water moving vertically upward at AT-3A from the deep zone, or the relatively long screen length, which may extend into the

deep zone. This will be re-evaluated in the next AMR, when the new extraction wells AT-11, AT-12, and AT-13 are pumping.

3.2.4 Bedrock Groundwater Flow Patterns

Schoenberg (1990) observed that, regionally, the PC bedrock aquifer is highly transmissive and has a hydraulic connection both with the overlying unconsolidated aquifers and the major river. At a site approximately one mile north of the NIROP along the Mississippi, Schoenberg (1994) observed groundwater flow conditions similar to those encountered at the NIROP site from 1989 through 1990. At distances greater than approximately 500 feet from the Mississippi River, a downward or horizontal flow component existed in unconsolidated aquifers, signifying recharge to the underlying bedrock aquifers. Closer to the Mississippi River (i.e., within 500 feet), an upward component of flow existed in all the aquifers, indicating that groundwater is discharging from the bedrock and unconsolidated aquifers into the alluvium and overlying Mississippi River. This is verified by NIROP data. Groundwater in the PC aquifer migrates to the south-southwest across the NIROP and ACP. Little change is noted between the potentiometric surface under non-pumping and pumping conditions because the hydraulic connection between the bedrock and drift/fluvial flow systems over most of the site is fairly restricted. The limited number of bedrock wells and associated water level data do not allow for a detailed determination of bedrock groundwater flow patterns across the study area. Therefore, representative maps of groundwater flow through these aquifers are not presented. However, Figure 3-14 shows bedrock wells and associated groundwater elevation data.

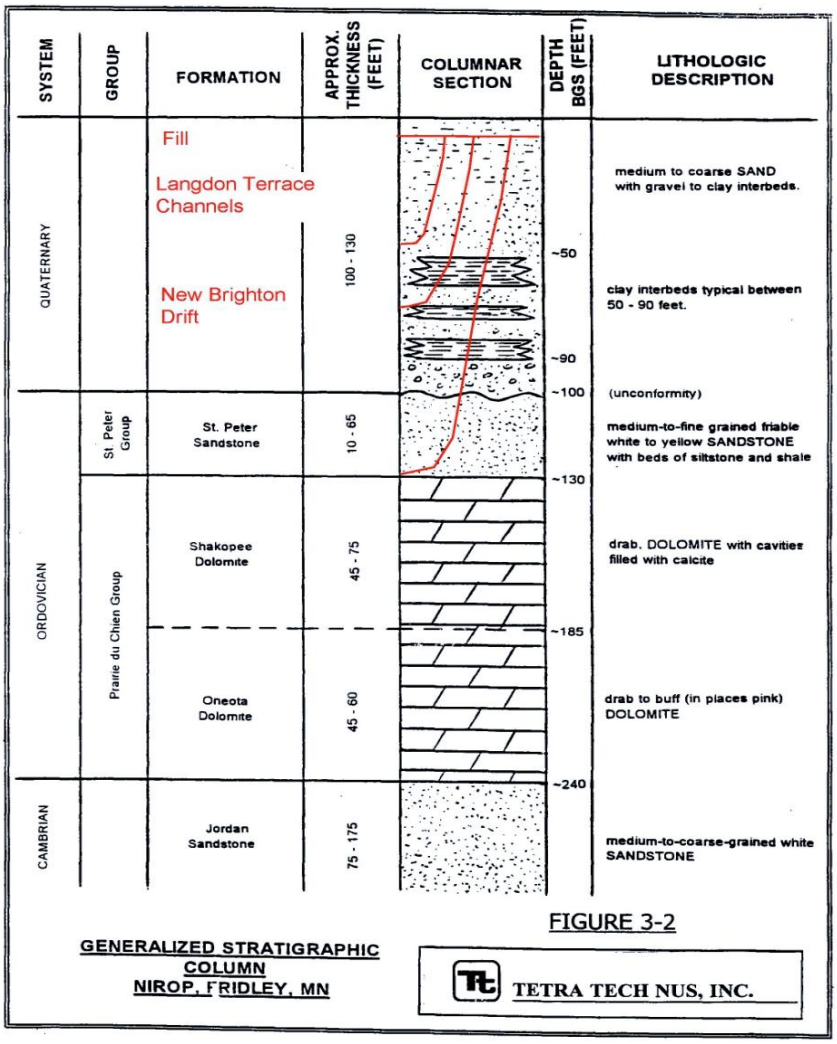
3.2.5 Vertical Groundwater Migration

Hydraulic Head Differentials

Pumping and non-pumping water levels from the USGS report (Davis, 2007) were used to evaluate hydraulic head differentials. Figure 3-15 [Figure 15 from Davis (2007)] shows hydraulic head differentials under non-pumping conditions. On Figure 3-15, a negative value indicates a downward gradient and a positive value an upward gradient. In summary, a downward gradient is noted around the southwest corner of the NIROP building (source area); and an upward gradient is noted in ACP south and west of the controlling clay ridge.

FIGURE 3-1

STRATIGRAPHIC INFORMATION
2011 ANNUAL MONITORING REPORT
NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT
FRIDLEY, MINNESOTA



Red text and lines are modifications to the Quaternary and late Ordovician portions of the stratigraphic column made by NAVFAC based on interpretation of data obtained from the Anoka County Geologic Atlas, Part A, Geology (in progress).

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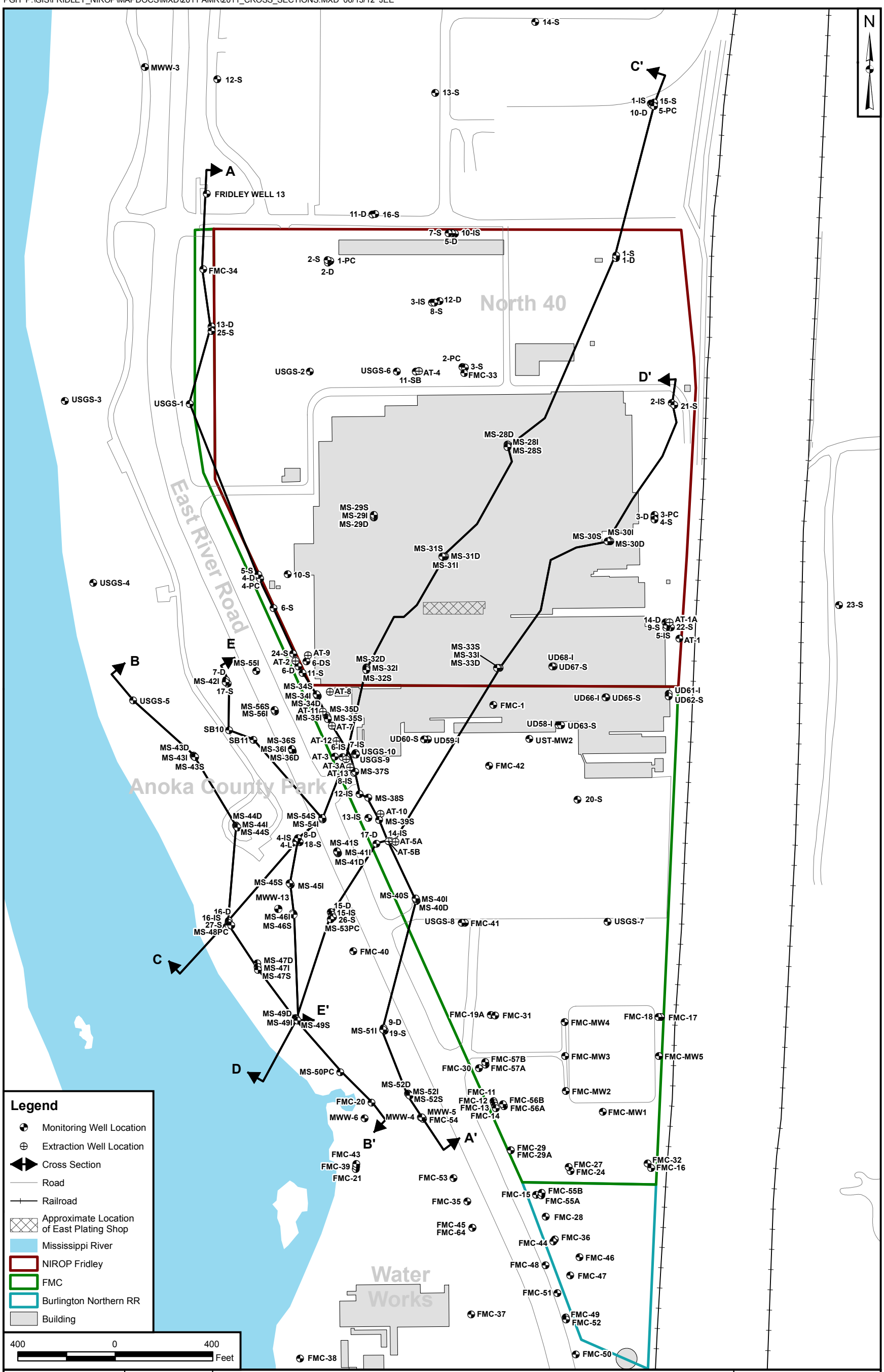

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S. STROZ	03/04/11
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S. WARINO	03/08/12
REVISED BY	DATE
J. ENGLISH	06/13/12
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NAVFAC

GEOLOGICAL CROSS-SECTION MAP

2011 ANNUAL MONITORING REPORT

NIROP FRIDLEY, MINNESOTA

CONTRACT NUMBER	
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S. WARINO	06/15/12
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FIGURE NO.	REV
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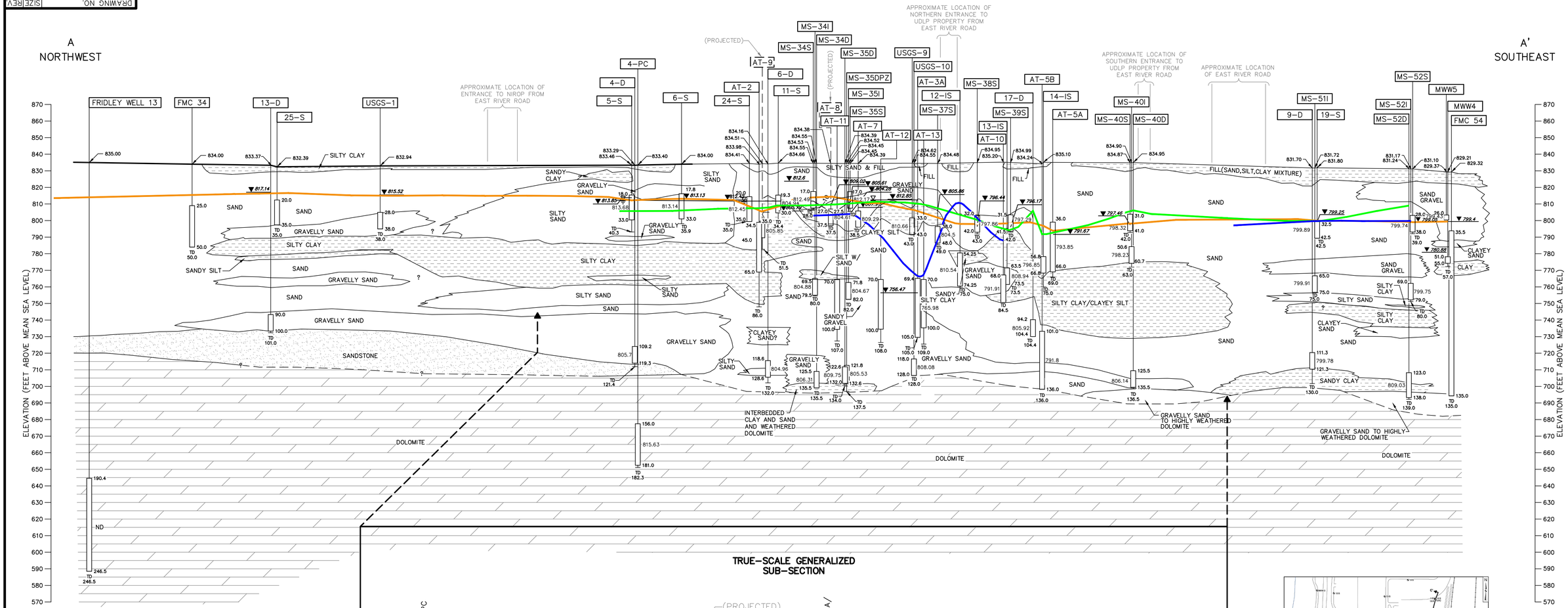

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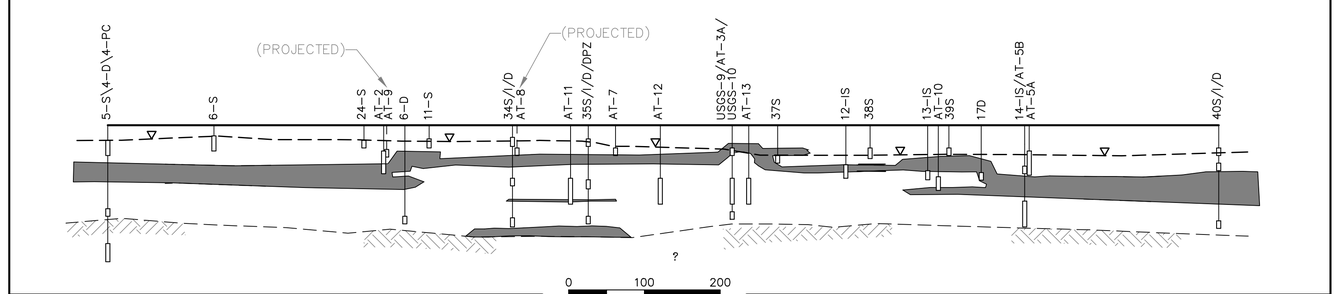

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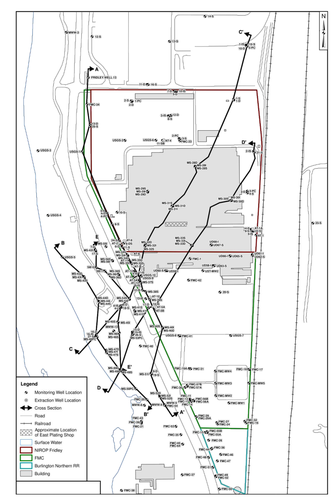
VERTICAL SCALE IN FEET



0 150 300
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0 30 60
VERTICAL SCALE IN FEET

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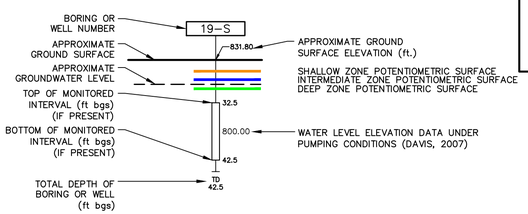

100 GROUNDWATER CONTOUR ELEVATION (DASHED WHERE INFERRED)

NOTE: ELEVATIONS IN FEET ABOVE MEAN SEA LEVEL (FT AMSL) ELEVATIONS FROM USGS REPORT (DAVIS 2007)

NOTES:

1. LITHOLOGY SHOWN BETWEEN BORINGS WAS INTERPOLATED BASED ON BORING LOGS.
2. SAND SHOWN IN CROSS-SECTION RANGES FROM FINE TO COARSE SAND.
3. VERIFIED CROSS-SECTION A-A' LITHOLOGY USING FIGURE 10 OF PUBLICATION "HIGH RESOLUTION SEISMIC REFLECTION SURVEY TO MAP BEDROCK AND GLACIAL/FLUVIAL LAYERS AT THE U.S. NAVY NORTHERN ORDNANCE PLANT (NIROP) IN FRIDLEY, MINNESOTA; FEBRUARY 6, 1997.
4. WELLS AT-2, 6-D, 12-IS, 17-D, MS-40D, AND 9-D WERE GAMMA LOGGED. THE DATA GENERATED FROM THE GAMMA LOGS IN CONJUNCTION WITH THE GEOLOGIST'S LOGS WERE USED TO GENERATE THIS CROSS-SECTION. THERE WERE NOTICABLE DIFFERENCES BETWEEN THE GAMMA LOG AND GEOLOGIST'S LOG FOR WELLS 6-D AND MS-40D. IN THESE CASES, THE GAMMA LOGS WERE USED PRIMARILY.
5. EXTRACTION WELLS AT-9 & AT-8 WERE PROJECTED ONTO A-A' TRANSECT.

UNCONSOLIDATED MATERIAL

CLAY, SILTY CLAY, SANDY CLAY, SILT CLAYEY SILT AND SANDY SILT AS SHOWN ON THE CROSS-SECTION (UNCONSOLIDATED MATERIAL HAVING A LOWER PERMEABILITY.)

SAND, CLAYEY SAND, GRAVELLY SAND, GRAVEL AND SANDY GRAVEL AS SHOWN ON CROSS-SECTION (UNCONSOLIDATED MATERIAL HAVING A HIGH PERMEABILITY)

BEDROCK

SANDSTONE BEDROCK (ST. PETER SANDSTONE)

DOLOMITE BEDROCK (PRAIRIE DU CHEIN GROUP)

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SCALE AS NOTED	

NAVFAC

GENERALIZED GEOLOGICAL CROSS-SECTION A-A'
2011 ANNUAL MONITORING REPORT NIROP FRIDLEY, MINNESOTA

CONTRACT NO. 2583	
OWNER NO. F27C	
APPROVED BY SW	DATE 2/17/12
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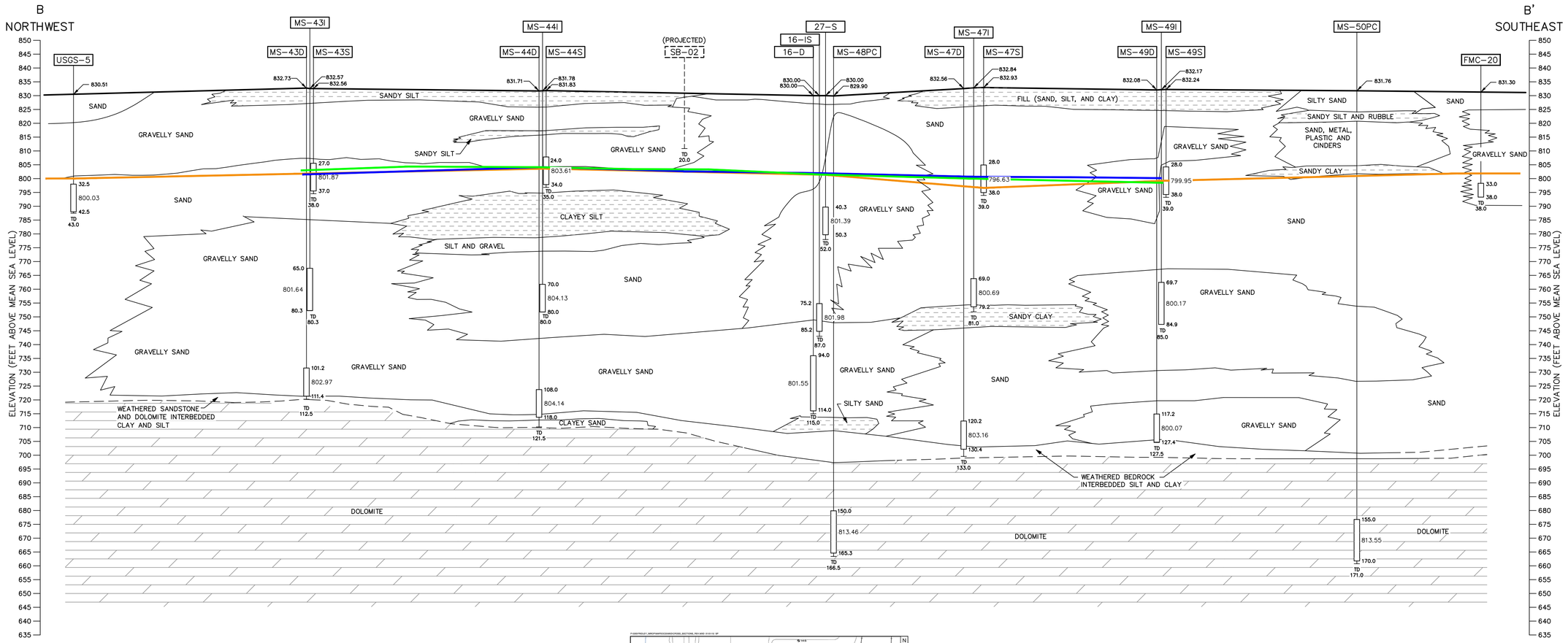

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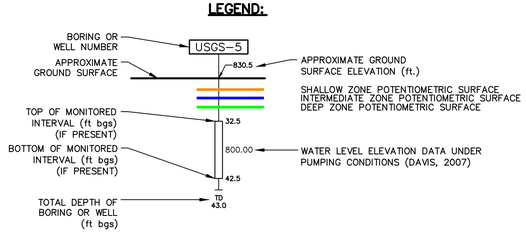


100 GROUNDWATER CONTOUR ELEVATION (DASHED WHERE INFERRED)

NOTE: ELEVATIONS IN FEET ABOVE MEAN SEA LEVEL (FT AMSL)
ELEVATIONS FROM USGS REPORT (DAVIS 2007)

NOTES:

1. SAND SHOWN IN CROSS-SECTION RANGES FROM FINE TO COARSE GRAINED SAND.
2. LITHOLOGY SHOWN BETWEEN BORINGS WAS INTERPOLATED BASED UPON THE BORING LOGS.
3. WELL MS-49D WAS GAMMA LOGGED. THE DATA WERE GENERATED FROM THE GAMMA LOG IN CONJUNCTION WITH THE GEOLOGISTS LOG WAS USED TO GENERATE THIS CROSS-SECTION.

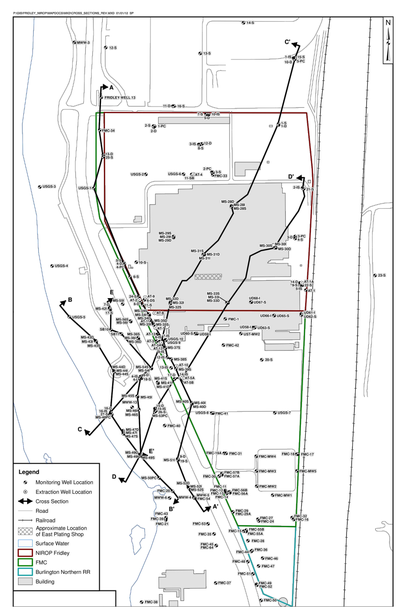
UNCONSOLIDATED MATERIAL

CLAY, SILTY CLAY, SANDY CLAY, SILT CLAYEY SILT AND SANDY SILT AS SHOWN ON THE CROSS-SECTION (UNCONSOLIDATED MATERIAL HAVING A LOWER PERMEABILITY.)

SAND, CLAYEY SAND, GRAVELLY SAND, GRAVEL AND SANDY GRAVEL AS SHOWN ON CROSS-SECTION (UNCONSOLIDATED MATERIAL HAVING A HIGH PERMEABILITY)

BEDROCK

DOLOMITE BEDROCK (PRAIRIE DU CHEIN GROUP)



0 80 160
HORIZONTAL SCALE IN FEET

0 20 40
VERTICAL SCALE IN FEET

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SCALE AS NOTED		

GENERALIZED GEOLOGICAL CROSS-SECTION B-B'
2011 ANNUAL MONITORING REPORT
NIROP FRIDLEY, MINNESOTA

CONTRACT NO. 2583	
OWNER NO. F27C	
APPROVED BY SW	DATE 2/17/12
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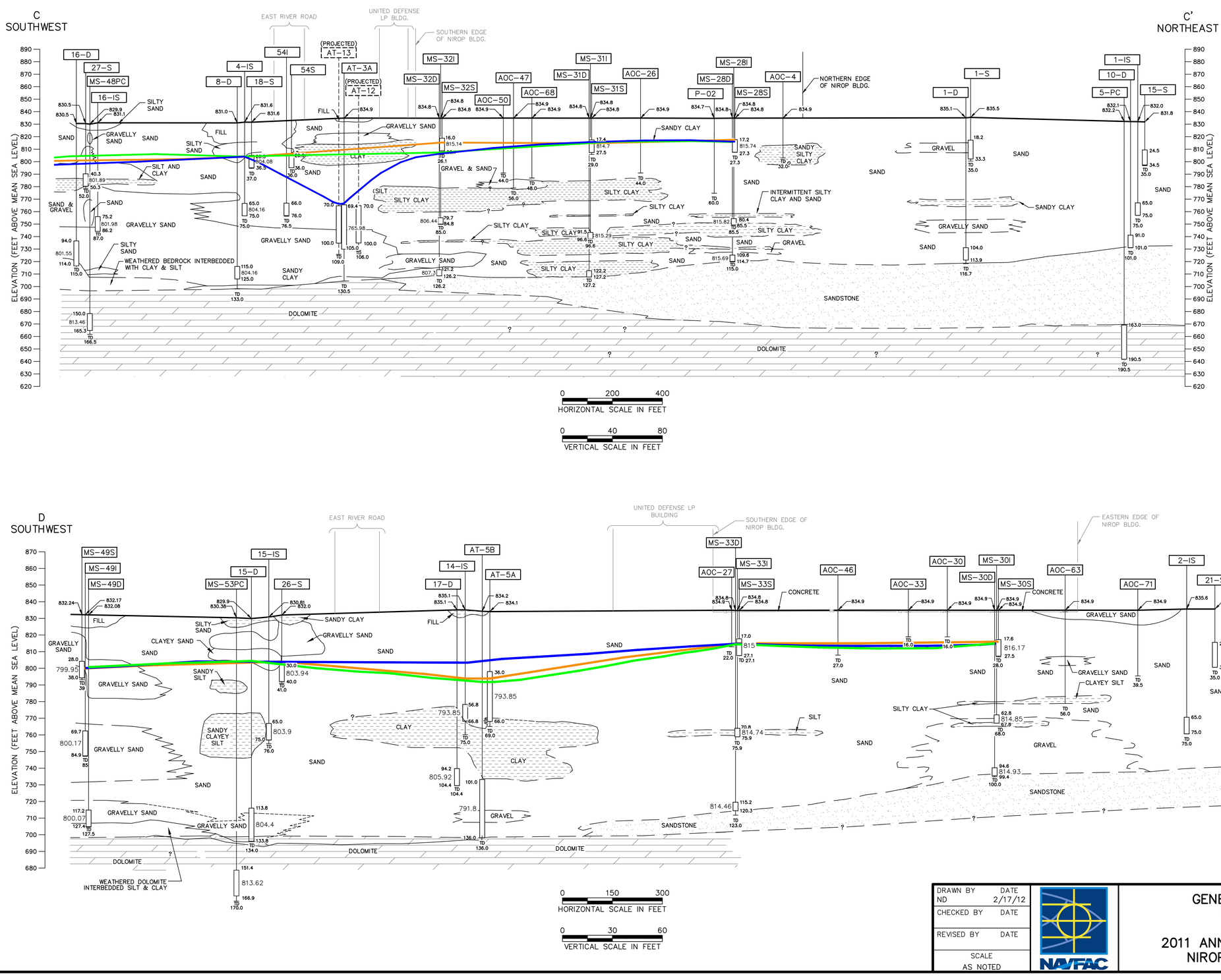

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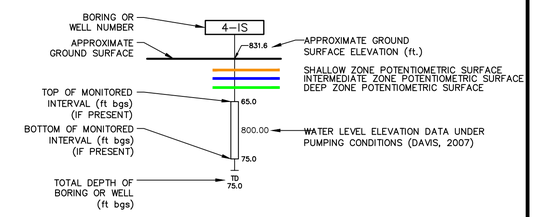


100 GROUNDWATER CONTOUR ELEVATION (DASHED WHERE INFERRED)

NOTE: ELEVATIONS IN FEET ABOVE MEAN SEA LEVEL (FT AMSL)
ELEVATIONS FROM USGS REPORT (DAVIS 2007)

NOTES:

1. SAND SHOWN IN CROSS-SECTION RANGES FROM SILTY SAND TO FINE AND COARSE GRAINED SAND.
2. LITHOLOGY SHOWN BETWEEN BORINGS WAS INTERPOLATED BASED ON BORING LOGS. WELLS MS-49D, 8-D, AND 15-D WERE GAMMA
3. LOGGED. THE DATA GENERATED FROM THE GAMMA LOGS IN CONJUNCTION WITH THE GEOLOGISTS LOGS WERE USED TO GENERATE THIS CROSS-SECTION. THERE WERE NOTICEABLE DIFFERENCES BETWEEN THE GAMMA LOG AND GEOLOGIST'S LOG FOR 15-D AND 8-D IN THESE CASES, THE GAMMA LOGS WERE USED PRIMARILY.

UNCONSOLIDATED MATERIAL

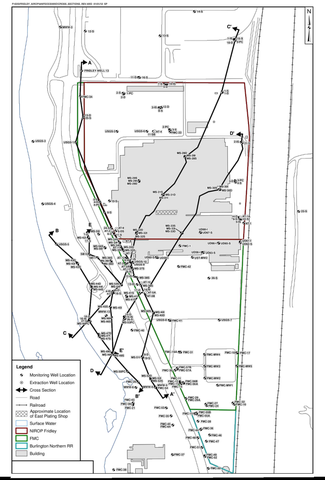
CLAY, SILTY CLAY, SANDY CLAY, SILT CLAYEY SILT AND SANDY SILT AS SHOWN ON THE CROSS-SECTION (UNCONSOLIDATED MATERIAL HAVING A LOWER PERMEABILITY.)

SAND, CLAYEY SAND, GRAVELLY SAND, GRAVEL AND SANDY GRAVEL AS SHOWN ON CROSS-SECTION (UNCONSOLIDATED MATERIAL HAVING A HIGH PERMEABILITY)

BEDROCK

SANDSTONE BEDROCK (ST. PETER SANDSTONE)

DOLOMITE BEDROCK (PRAIRIE DU CHEIN GROUP)



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CONTRACT NO. 2583	
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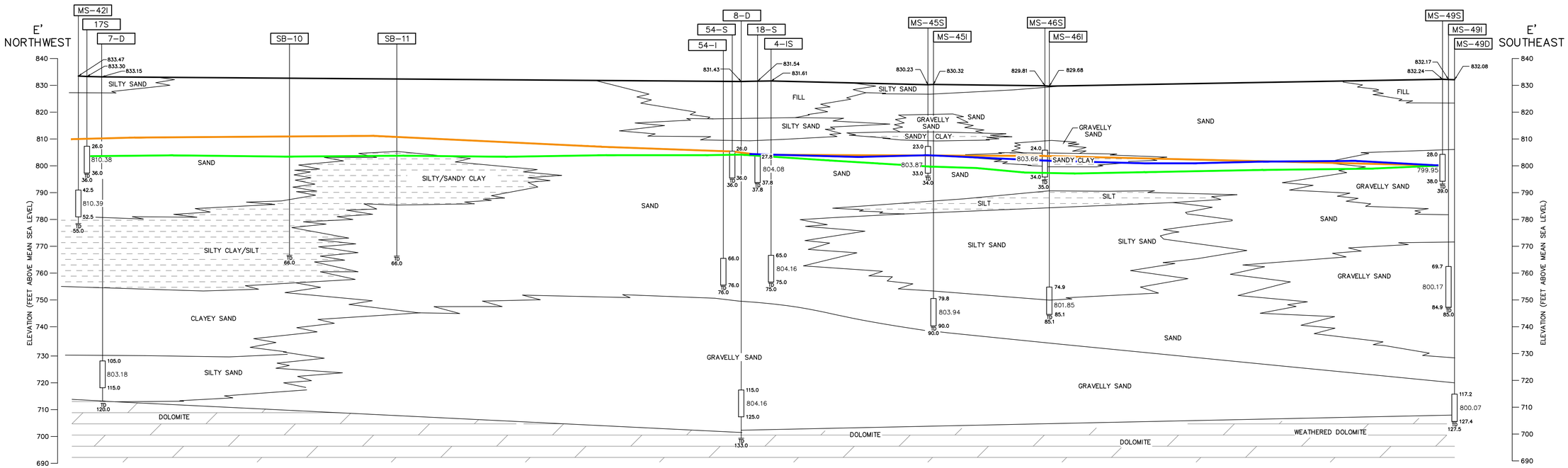

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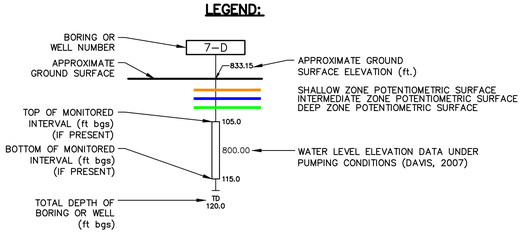


100 GROUNDWATER CONTOUR ELEVATION (DASHED WHERE INFERRED)

NOTE: ELEVATIONS IN FEET ABOVE MEAN SEA LEVEL (FT AMSL)
ELEVATIONS FROM USGS REPORT (DAVIS 2007)

NOTES:

1. LITHOLOGY SHOWN BETWEEN BORINGS WAS INTERPOLATED BASED ON THE BORING LOGS.
2. SAND SHOWN IN CROSS-SECTION RANGES FROM FINE TO COARSE SAND.

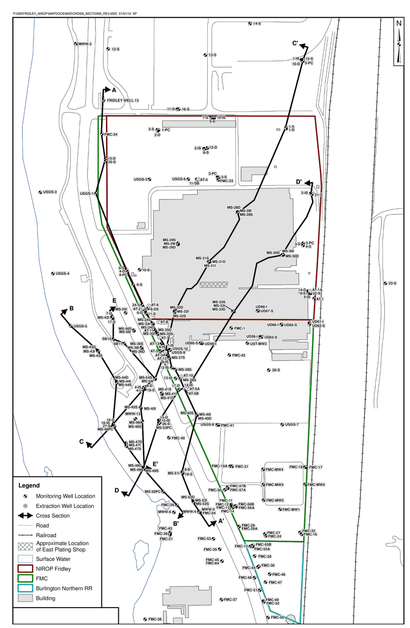
UNCONSOLIDATED MATERIAL

CLAY, SILTY CLAY, SANDY CLAY, SILT CLAYEY SILT AND SANDY SILT AS SHOWN ON THE CROSS-SECTION (UNCONSOLIDATED MATERIAL HAVING A LOWER PERMEABILITY.)

SAND, CLAYEY SAND, GRAVELLY SAND, GRAVEL AND SANDY GRAVEL AS SHOWN ON CROSS-SECTION (UNCONSOLIDATED MATERIAL HAVING A HIGH PERMEABILITY)

BEDROCK

DOLOMITE BEDROCK (PRAIRIE DU CHEIN GROUP)



0 60 120
HORIZONTAL SCALE IN FEET

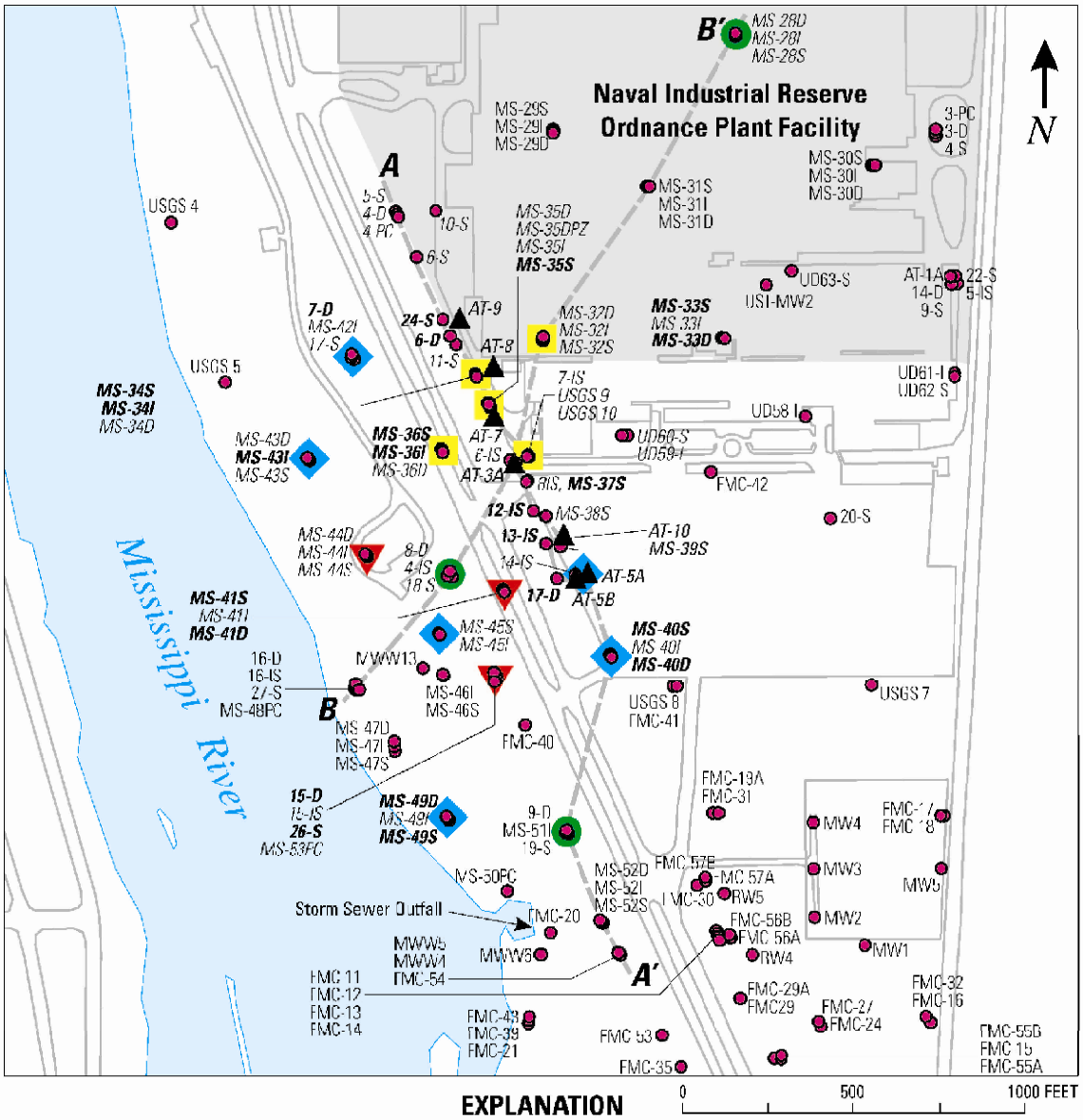
0 20 40
VERTICAL SCALE IN FEET

DRAWN BY ND	DATE 2/17/12	NAVFAC	GENERALIZED GEOLOGICAL CROSS-SECTION E-E' 2011 ANNUAL MONITORING REPORT NIROP FRIDLEY, MINNESOTA
CHECKED BY	DATE		
REVISED BY	DATE		
SCALE AS NOTED			

CONTRACT NO. 2583	
OWNER NO. F27C	
APPROVED BY SW	DATE 2/17/12
DRAWING NO. FIGURE 3-6	SIZE D / REV. 0

DRAWING NO. FIGURE 3-6 | SIZE D | REV. 0

R:\1978 - NIROP Fridley\Figures\1978FIG12.dwg PIT CARLY.KRAMER 6/13/2012 9:42:40 AM



EXPLANATION

A — — A' CROSS SECTION LOCATION

WELL NESTS WHERE THE WATER-LEVEL RESPONSES WERE SIMILAR IN ALL WELLS

WELL NESTS WHERE THE WATER-LEVEL RESPONSES WERE SIMILAR IN ONLY THE SHALLOW AND INTERMEDIATE WELLS

WELL NESTS WHERE THE WATER-LEVEL RESPONSES WERE SIMILAR IN ONLY THE INTERMEDIATE AND DEEP WELLS

WELL NESTS WHERE THE WATER-LEVELS IN THE SHALLOW, INTERMEDIATE, AND DEEP WELLS MOVED INDEPENDENTLY

AT-10 RECOVERY SYSTEM PUMPING WELL LOCATION AND NAME – All pumping wells had multiple hand water-level measurements taken before, during, and after pumping

MONITORING WELL LOCATION AND NAME

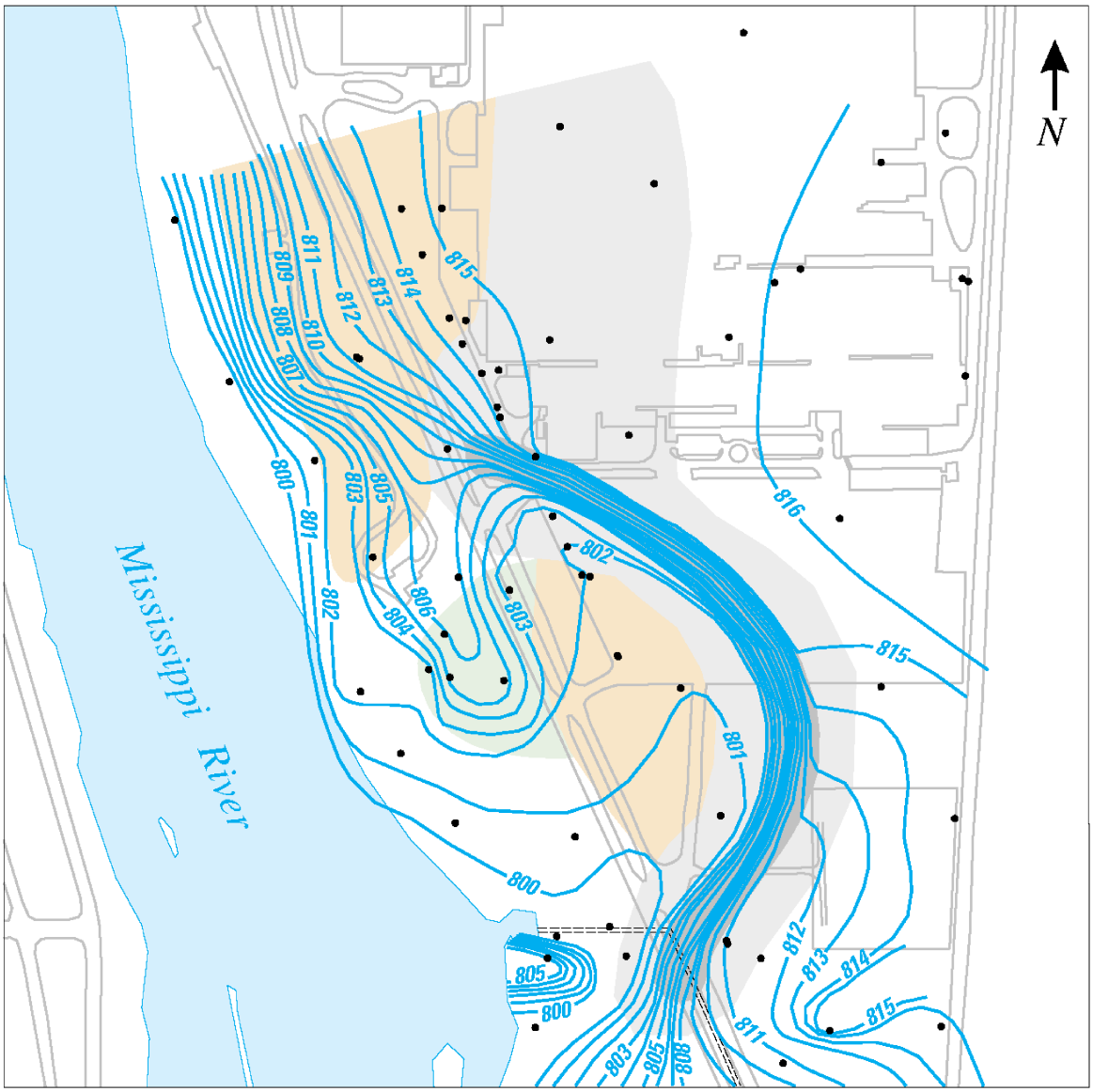
USGS 4 Regular font indicates that only 2 water level measurements were taken: one during pumping and one during non-pumping conditions

MS-33I *Italic font indicates that multiple hand water-level measurements were taken before, during, and after pumping*

MS-33S ***Bold italic font indicates that a pressure transducer was used to measure water levels before, during, and after pumping***

Note: From Davis (2007). Data collected in 2001.

DRAWN BY J. ENGLISH	DATE 11/18/09	WATER LEVEL RESPONSE IN WELL NESTS DURING RECOVERY 2011 ANNUAL MONITORING REPORT NIROP FRIDLEY, MINNESOTA	CONTRACT NUMBER F27C
CHECKED BY E. GLICK	DATE 06/13/12		APPROVED BY S. WARINO — DATE 06/13/12
REVISED BY —	DATE —		APPROVED BY — — DATE —
SCALE AS NOTED			FIGURE NO. 3-7 — REV 0

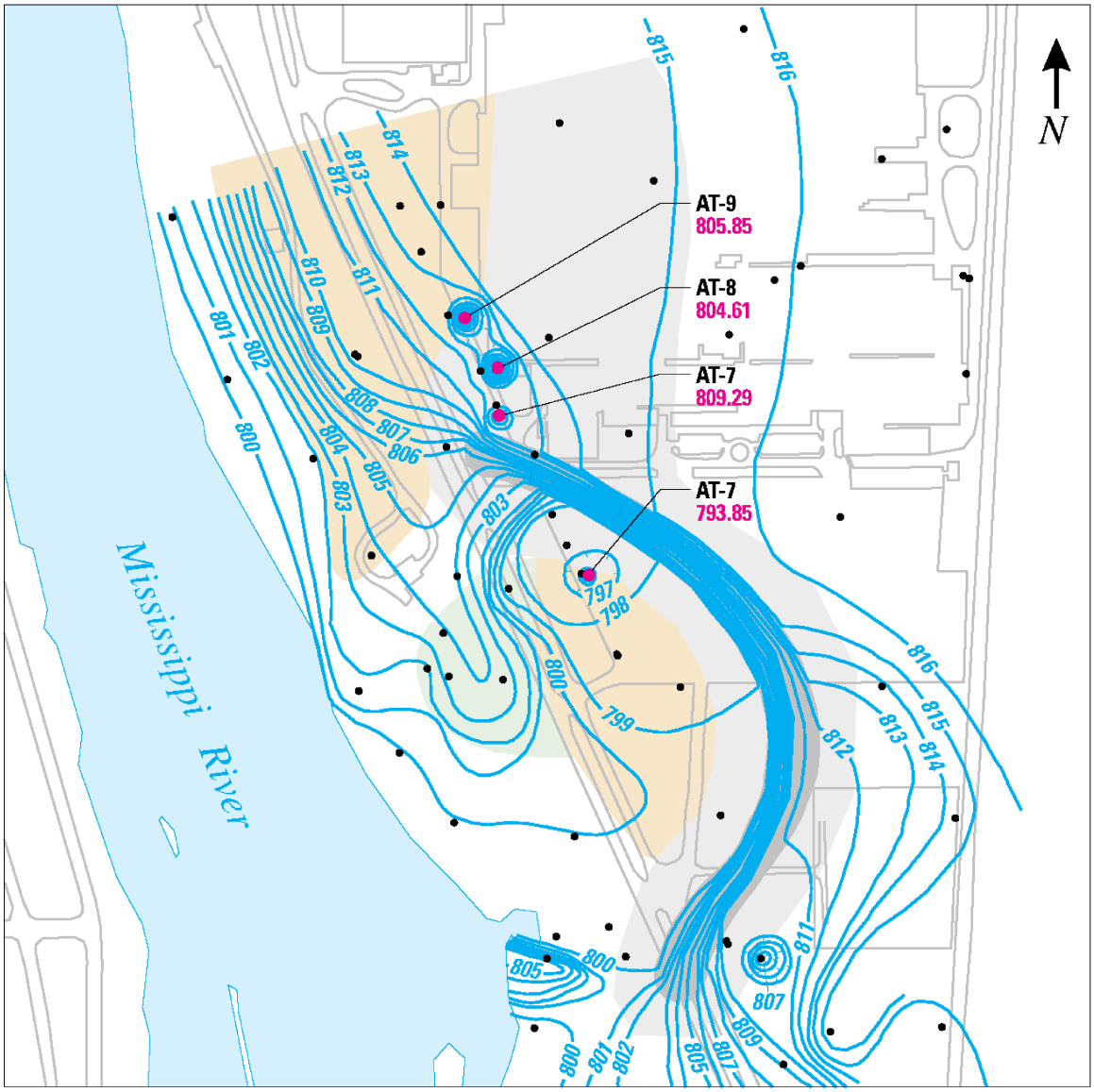


EXPLANATION

- RIDGE FEATURE
- SHALLOW CLAY
- INTERMEDIATE CLAY
- INTERMEDIATE SILT
- -800- GROUND-WATER ALTITUDE – Contour interval is 1 foot. Datum is NGVD 1929
- ===== STORM SEWER
- • WELL LOCATIONS

Note: From Davis (2007).

DRAWN BY	DATE			CONTRACT NUMBER	CTO NUMBER
J. ENGLISH	06/13/12		WATER TABLE SURFACE OF THE SHALLOW FLOW ZONE DURING NON-PUMPING CONDITIONS ON SEPTEMBER 26, 2001 2011 ANNUAL MONITORING REPORT NIROP FRIDLEY, MINNESOTA	2583	F27C
CHECKED BY	DATE			APPROVED BY	DATE
S. WARINO	06/14/12			—	—
REVISED BY	DATE			APPROVED BY	DATE
				—	—
SCALE AS NOTED		NAVFAC		FIGURE NO. 3-8	REV 0



EXPLANATION

- RIDGE FEATURE
- SHALLOW CLAY
- INTERMEDIATE CLAY
- INTERMEDIATE SILT
- –800– GROUND-WATER ALTITUDE – Contour interval is 1 foot. Datum is NGVD 1929
- AT-7 793.85 NIROP RECOVERY WELL – Black number is well number, red number is ground-water altitude, in feet above NGVD 1929
- WELL LOCATIONS

Note: From Davis (2007).

DRAWN BY	DATE			CONTRACT NUMBER	CTO NUMBER
J. ENGLISH	06/14/12	NAVFAC	WATER TABLE SURFACE OF THE SHALLOW FLOW ZONE DURING PUMPING CONDITIONS ON AUGUST 20, 2001 2011 ANNUAL MONITORING REPORT NIROP FRIDLEY, MINNESOTA	2583	F27C
CHECKED BY	DATE			APPROVED BY	DATE
S. WARINO	06/14/12			—	—
REVISED BY	DATE			APPROVED BY	DATE
				—	—
SCALE AS NOTED				FIGURE NO. 3-9	REV 0

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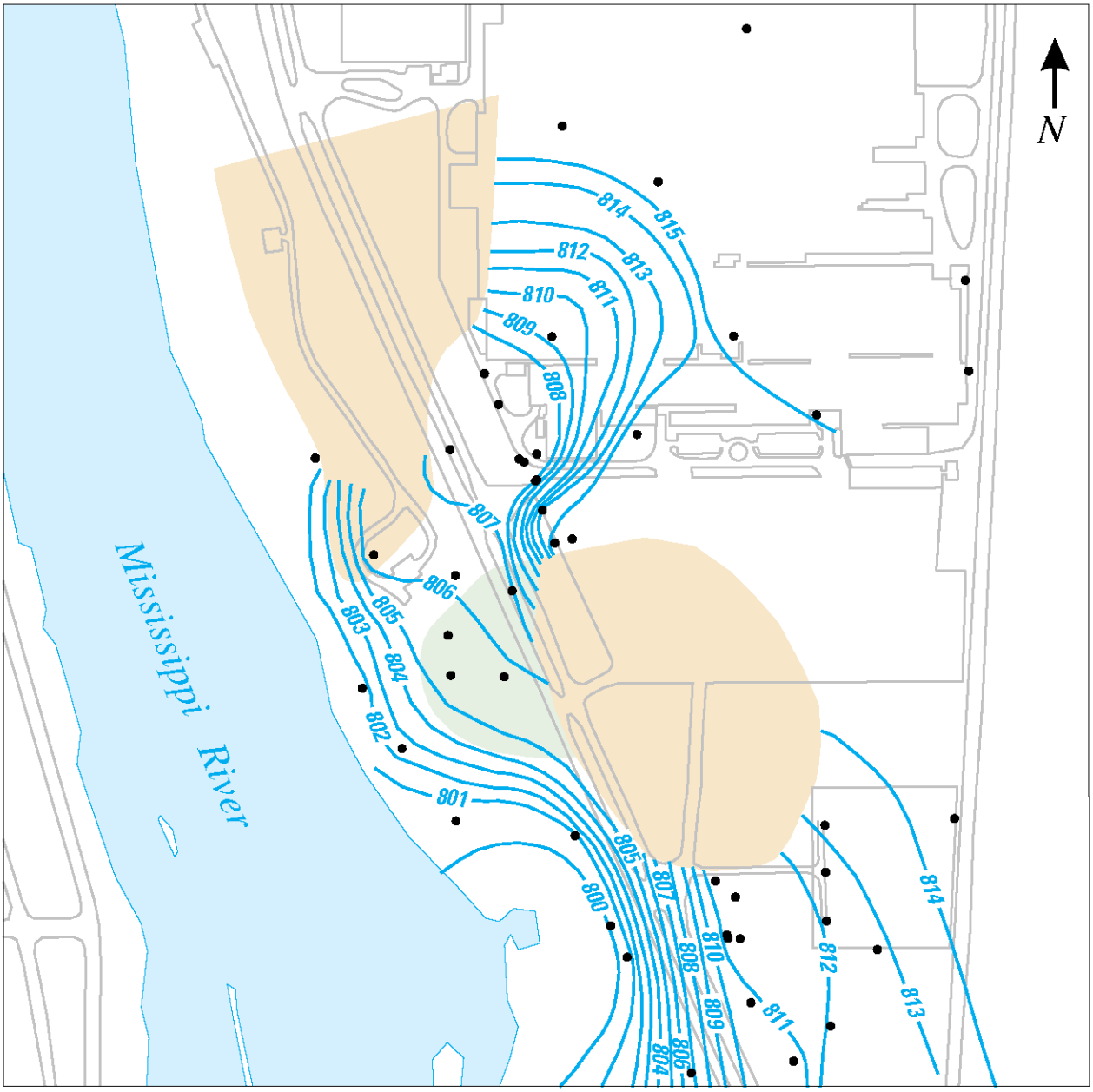


EXPLANATION

INTERMEDIATE CLAY

INTERMEDIATE SILT

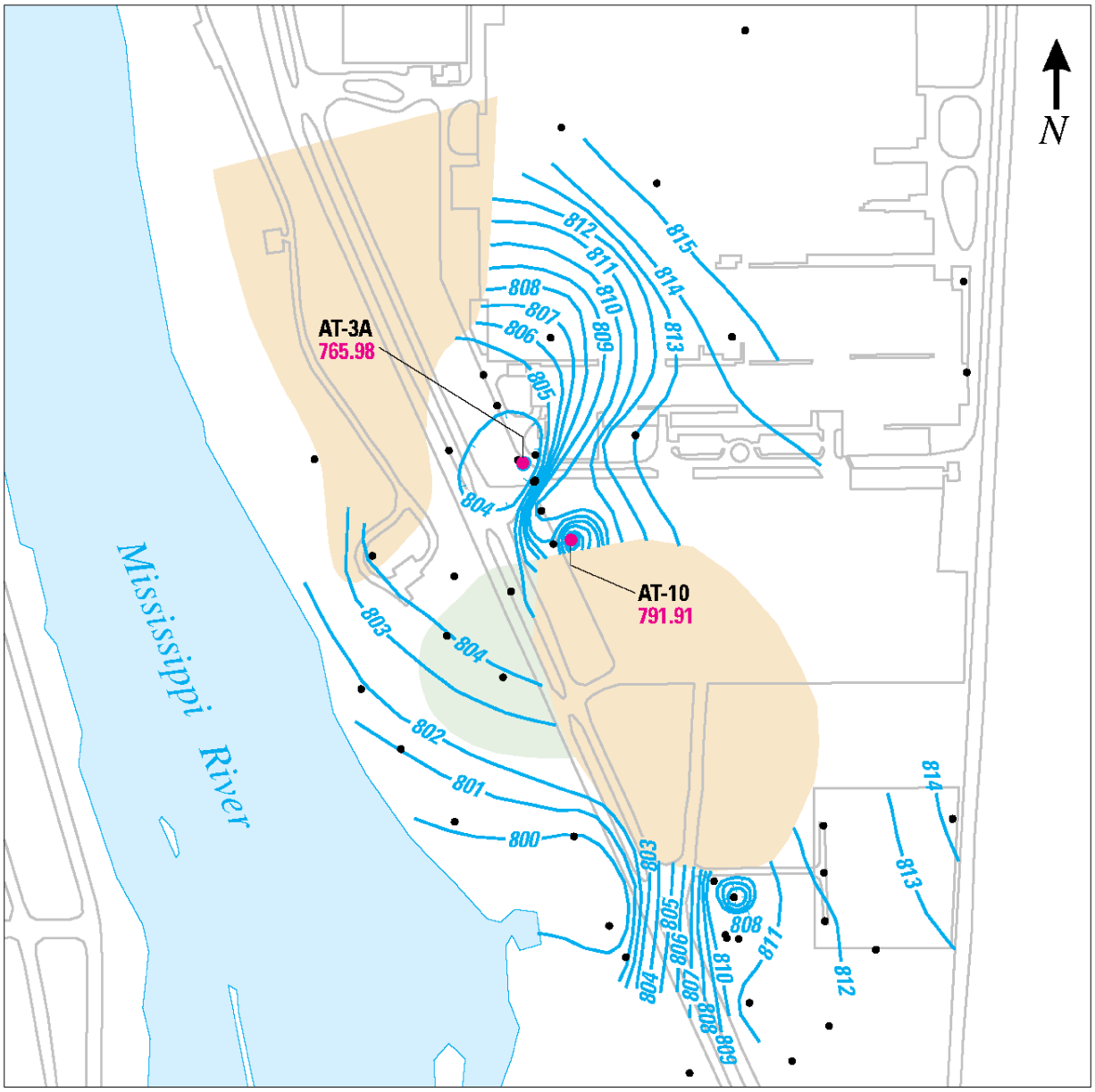
–804– GROUND-WATER ALTITUDE – Contour interval is 1 foot. Datum is NGVD 1929

• WELL LOCATIONS

Note: From Davis (2007).

DRAWN BY J. ENGLISH	DATE 06/14/12	NAVFAC	POTENTIOMETRIC SURFACE OF THE INTERMEDIATE FLOW ZONE DURING NON-PUMPING CONDITIONS ON SEPTEMBER 26, 2001 2011 ANNUAL MONITORING REPORT NIROP FRIDLEY, MINNESOTA	CONTRACT NUMBER 2583 / CTO NUMBER F27C
CHECKED BY S. WARINO	DATE 06/14/12			APPROVED BY ___ / DATE ___
REVISED BY	DATE			APPROVED BY ___ / DATE ___
SCALE AS NOTED				FIGURE NO. 3-10 / REV 0

PGH P:\GIS\FRIDLEY_NIROP\MAPDOCS\MXD\2011 AMR\2011_POT_SURF_INTERMEDIATE_20010820.MXD 06/14/2012 JEE



0 500 1000 FEET

EXPLANATION

INTERMEDIATE CLAY

INTERMEDIATE SILT

–800– GROUND-WATER ALTITUDE – Contour interval is 1 foot. Datum is NGVD 1929

AT-10 791.91 NIROP RECOVERY WELL – Black number is well number, red number is ground-water altitude, in feet above NGVD 1929

• WELL LOCATIONS

Note: From Davis (2007).

DRAWN BY	DATE			CONTRACT NUMBER	CTO NUMBER
J. ENGLISH	06/14/12		POTENTIOMETRIC SURFACE OF THE INTERMEDIATE FLOW ZONE DURING PUMPING CONDITIONS ON AUGUST 20, 2001 2011 ANNUAL MONITORING REPORT NIROP FRIDLEY, MINNESOTA	2583	F27C
CHECKED BY	DATE			APPROVED BY	DATE
S. WARINO	06/14/12			___	___
REVISED BY	DATE			APPROVED BY	DATE
___	___			___	___
SCALE AS NOTED		NAVFAC		FIGURE NO. 3-11	REV 0

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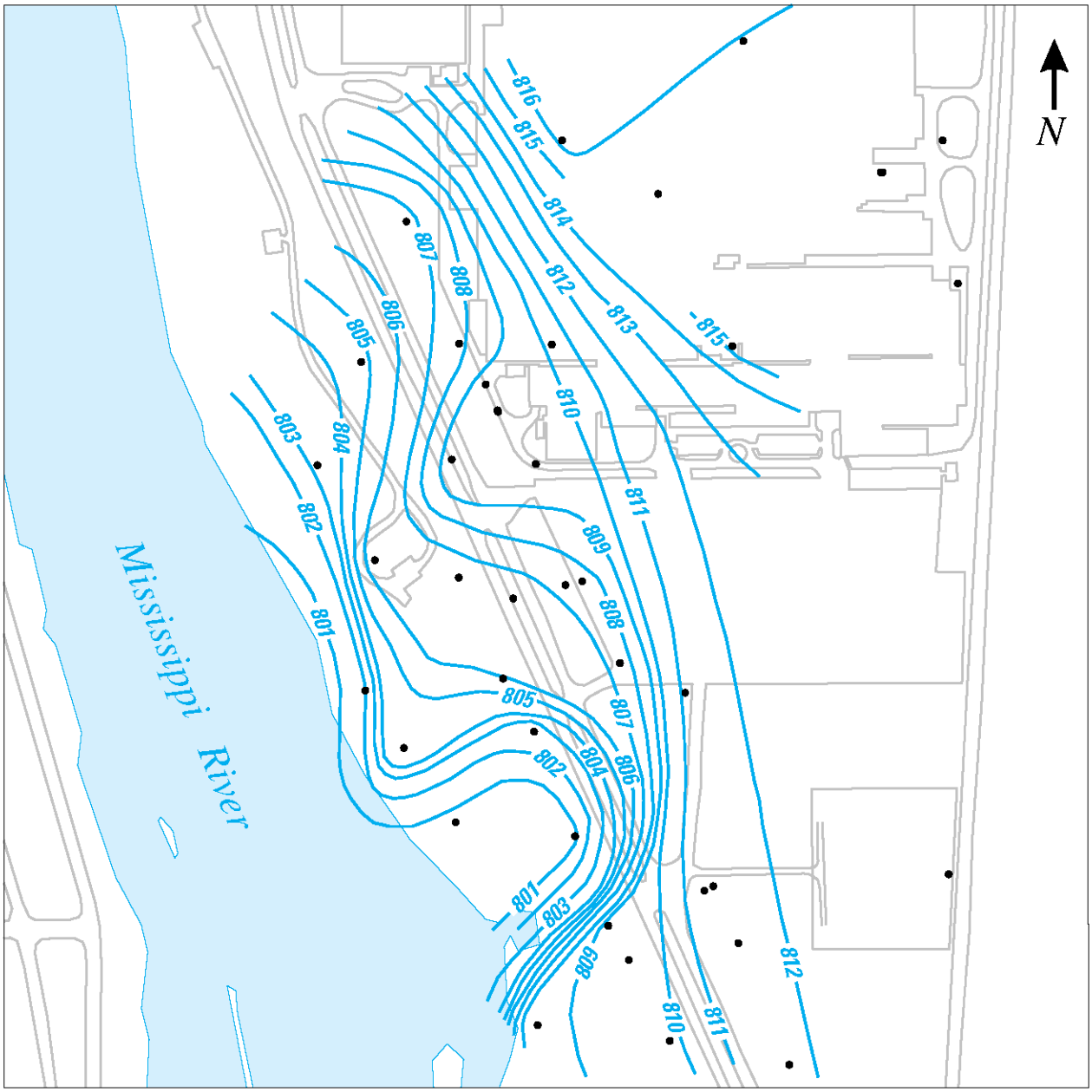

EXPLANATION

-816- GROUND-WATER ALTITUDE – Contour interval is 1 foot. Datum is NGVD 1929

• WELL LOCATIONS

Note: From Davis (2007).

DRAWN BY	DATE			CONTRACT NUMBER	CTO NUMBER
J. ENGLISH	06/14/12		POTENTIOMETRIC SURFACE OF THE DEEP FLOW ZONE DURING NON-PUMPING CONDITIONS ON SEPTEMBER 26, 2001 2011 ANNUAL MONITORING REPORT NIROP FRIDLEY, MINNESOTA	2583	F27C
CHECKED BY	DATE			APPROVED BY	DATE
S. WARINO	10/15/12			___	___
REVISED BY	DATE			APPROVED BY	DATE
___	___			___	___
SCALE AS NOTED		NAVFAC		FIGURE NO. 3-12	REV 0

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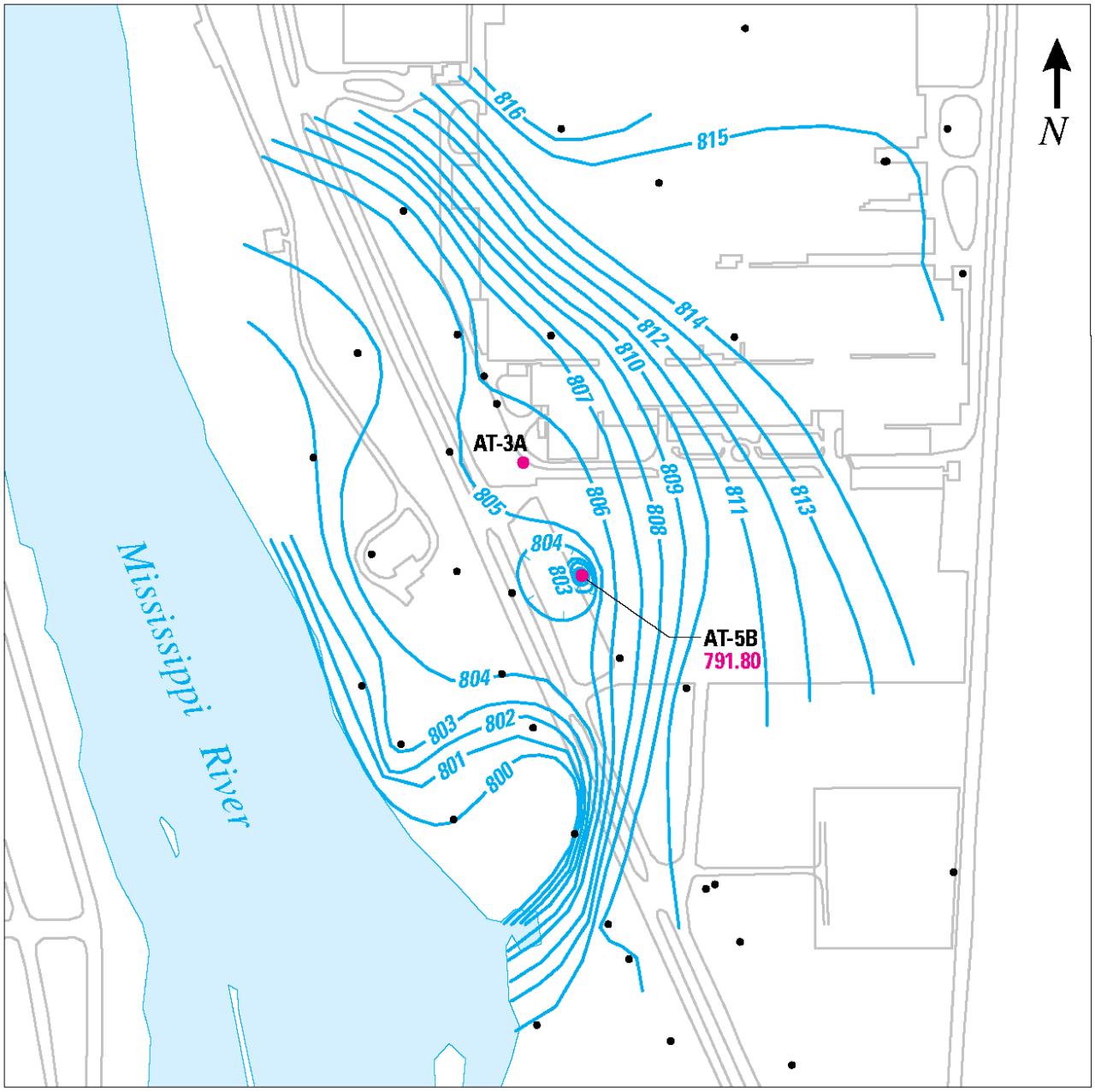

0 500 1000 FEET

EXPLANATION

–800– GROUND-WATER ALTITUDE – Contour interval is 1 foot. Datum is NGVD 1929

AT-5B 791.80 NIROP RECOVERY WELL – Black number is well number, red number is ground-water altitude, in feet above NGVD 1929

• WELL LOCATIONS

Note: From Davis (2007).

DRAWN BY J. ENGLISH	DATE 06/14/12	NAVFAC	POTENTIOMETRIC SURFACE OF THE DEEP FLOW ZONE DURING PUMPING CONDITIONS ON AUGUST 20, 2001 2011 ANNUAL MONITORING REPORT NIROP FRIDLEY, MINNESOTA	CONTRACT NUMBER 2583 / CTO NUMBER F27C
CHECKED BY S. WARINO	DATE 06/14/12			APPROVED BY ___ / DATE ___
REVISED BY ___	DATE ___			APPROVED BY ___ / DATE ___
SCALE AS NOTED				FIGURE NO. 3-13 / REV 0

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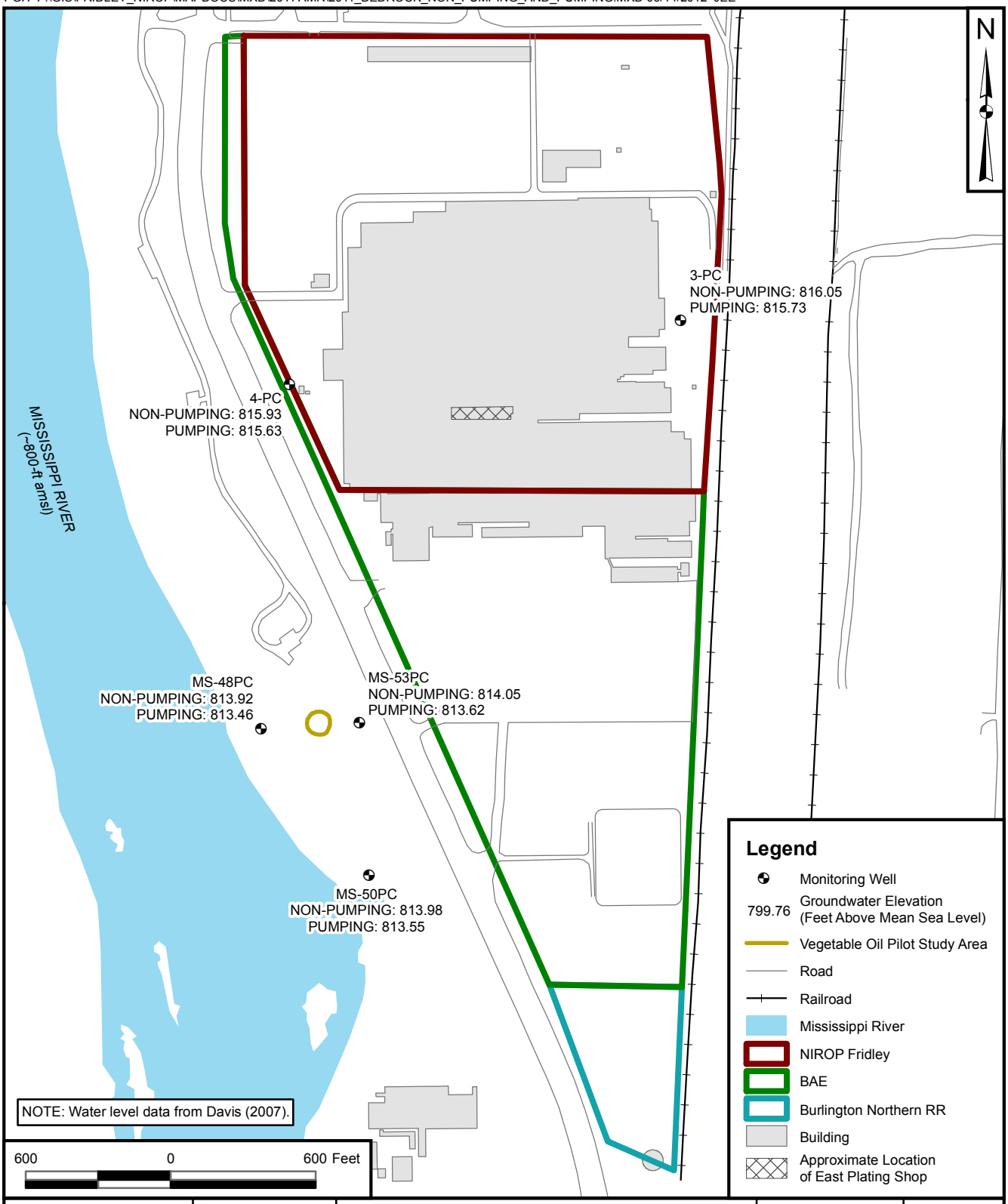


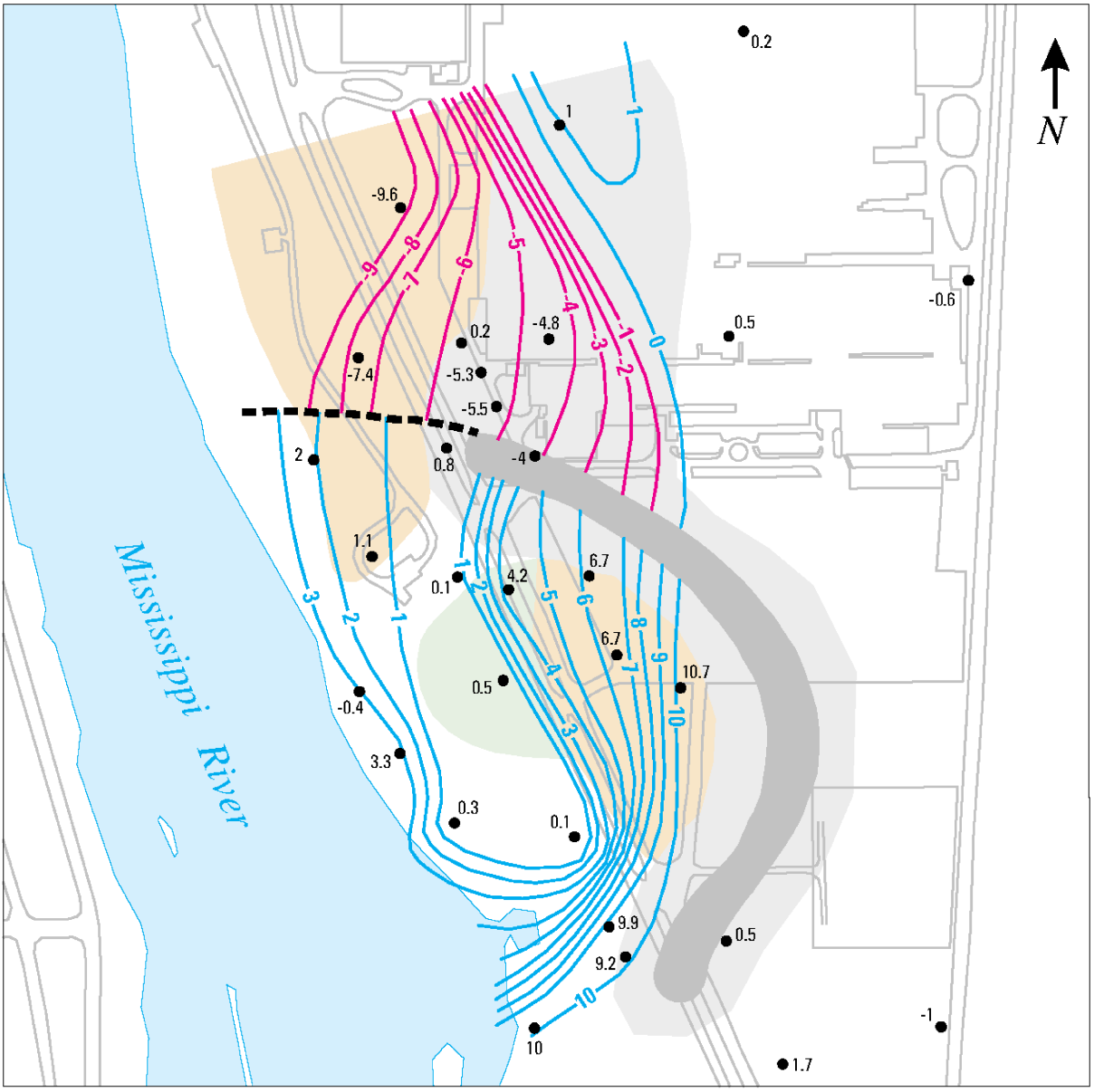
DRAWN BY	DATE
K. MOORE	02/04/09
CHECKED BY	DATE
S. WARINO	06/14/12
REVISED BY	DATE
SCALE AS NOTED	

NAVFAC

BEDROCK GROUNDWATER ELEVATIONS UNDER NON-PUMPING AND PUMPING CONDITIONS - SEPTEMBER 26, 2001
2011 ANNUAL MONITORING REPORT
NIROP FRIDLEY, MINNESOTA

CONTRACT NUMBER	CTO NUMBER
2583	F27C
APPROVED BY	DATE
S. WARINO	06/14/12
APPROVED BY	DATE
FIGURE NO. 3-14	REV 0

PGH P:\GIS\FRIDLEY_NIROP\MAPDOCS\MXD\2011 AMR\2011_WATER_LEVEL_DIFF_NONPUMPING.MXD 06/14/2012 JEE



EXPLANATION

- RIDGE FEATURE
- SHALLOW CLAY
- INTERMEDIATE CLAY
- INTERMEDIATE SILT
- POSSIBLE EXTENTION OF THE RIDGE FEATURE
- -7- DOWNWARD GRADIENT – Contour interval is 1 foot
- 10 ZERO OR UPWARD GRADIENT – Contour interval is 1 foot
- 1.7 ● WELL LOCATION – Value is the water-level difference between the shallow and deep zones. Positive numbers indicate an upward gradient, negative numbers indicate a downward gradient

Note: From Davis (2007).

DRAWN BY	DATE	WATER LEVEL DIFFERENCE BETWEEN SHALLOW AND DEEP WELLS DURING NON-PUMPING CONDITIONS 2011 ANNUAL MONITORING REPORT NIROP FRIDLEY, MINNESOTA	CONTRACT NUMBER	CTO NUMBER
J. ENGLISH	06/14/12		2583	F27C
CHECKED BY	DATE		APPROVED BY	DATE
S. WARINO	06/14/12			
REVISED BY	DATE		APPROVED BY	DATE
SCALE AS NOTED			FIGURE NO. 3-15	REV 0

NAVFAC

4.0 SUMMARY OF OPERATION AND MAINTENANCE - 2011

4.1 HISTORIC OPERATION AND MAINTENANCE RESPONSIBILITY

The United States Army Corps of Engineers (USACE) was responsible for O&M of the complete groundwater extraction and pretreatment system from start-up of the system in September 1992 through April 12, 1993. On April 13, 1993, BAE Systems assumed responsibility for O&M of the remediation system through mid-1999. During this time, BAE Systems arranged service contracts with other companies for monitoring and preventative and emergency maintenance of the system. From mid-1999 until April 13, 2000, Morrison Knudsen (MK) served as the general O&M contractor for the Navy. Since April 13, 2000, Bay West, Inc. has been the general O&M contractor for the NIROP Fridley treatment system. Data gathered to document O&M of the remediation system are summarized in the 2011 monthly System Reports (Appendix A-3).

4.2 EXTRACTION WELLS AND PUMPS

Groundwater extraction wells have operated nearly continuously since start-up in September 1992. Temporary shutdown of individual wells, or of the complete extraction well system, is necessary for regular maintenance or repair of the wells, piping, or pretreatment system. Procedures have been developed and implemented by the O&M contractors to clean the extraction wells, pumps, and piping system to control the buildup of scale and other materials in the system. O&M records indicate that the maintenance procedures have been moderately successful in maintaining the flow rates. Regular inspection and maintenance of the system components have proven necessary to maintain an optimum total flow rate for the extraction well system.

It is important to take into account, design basis and infrastructure condition of the remediation system as a whole. The extraction well that was performing the bulk of contaminant removal (AT-3A) essentially was rendered useless by a combination of aged well screen and silted-up aquifer materials around the well screen. It had essentially reached the end of its economic life. Because of this, the Navy installed three new extraction wells to replace one.

The 2011 operational effectiveness and pumping rate information for each extraction well is summarized in Table 4-1. Table 4-2 summarizes significant periods of interrupted pumping operations, the cause, and the corrective action taken for each well during 2011. To provide a historical perspective on extraction well pumping rate information, Figures 4-1 through 4-7 show daily pumping rates for extraction wells

AT-3A, AT-5A, AT-5B, AT-7, AT-8, AT-9, AT-10, and AT-13 (shown on the AT-3A graph) from June 1, 2001, through December 31, 2011. Pumping rates for calendar year 2011 are also shown on each figure.

Periods of decreased (as opposed to interrupted) pumping operations are not shown on Table 4-2 and are explained below. In 2011, extraction wells that operated outside their ideal operating range (for a significant period of time) included AT-3A, AT-5A, AT-5B, AT-7, and for shorter periods of time, AT-8, AT-9 and AT-10. AT-5A and AT-5B were unable to be brought back up to their ideal operating ranges in 2011 despite regularly scheduled maintenance efforts conducted by Bay West and subcontractors. Operational issues are explained in detail below. Although attempts were made to redevelop AT-3A, the flow rate remained below the minimum operating goal; therefore, AT-3A was taken out of service in September 2011. During September 2011, AT-11, AT-12, and AT-13 were installed as replacements. AT-13, closest to AT-3A, was brought online as its replacement on November 14, 2011, at a temporary rate of approximately 80 gpm. AT-13 was pumping at approximately 147 gpm during the last week of calendar year 2011. The new wells are in the final pre-operational testing evaluations and it is anticipated they will be brought online sometime during Spring 2012.

In October, the flow rate for AT-5A decreased to below the minimum operating goal of 138 gpm. Upon inspection, it was determined that the extraction pump was producing a flow rate less than that predicted by the manufacturers pump curve based on operation pressures. Further investigation into the cause of this has been scheduled.

The flow rate for AT-5B remained below the minimum operating goal of 70 gpm for all of 2011. Upon inspection, it was determined that the extraction pump was producing a flow rate less than that predicted by the manufacturers pump curve based on operation pressures. After several attempts to clean the extraction lines, the pumping rate remained below the minimum. BayWest continues to try to resolve the issue.

In January, the flow rate for AT-7 decreased to below the minimum operating goal. The pump end was replaced and the drop pipe was cleaned. These actions eventually brought the flow rate back within the minimum-ideal operating range. The flow meter for AT-7 was not functioning from October 22 through December 22, 2011; therefore, there is no daily pumping data from this interval. However, manual flow measurements during scheduled maintenance visits confirmed that the flow rate remained within the minimum-ideal operating range.

The flow rate for AT-8 decreased below the minimum operating goal of 10 gpm in early January. It was concluded that the drop in the pumping rate and sporadic electrical faults were due to a decline in the

wells specific capacity caused by accumulation of silt and scaling debris on the well screen and adjacent aquifer material. Redevelopment commenced January 25, 2011, and the well was brought back online February 17, 2011. Upon startup, the flow rate for AT-8 was within the minimum-ideal operating range.

In May, the flow rate for AT-9 decreased below the minimum operating goal. The well was redeveloped in July, and brought back online in August. The pump began to fault out sporadically after being brought back online. After further downtime in September and October, the pump/motor assembly was replaced and the pump was returned to service, and was pumping within the minimum-ideal operating range.

In January, the flow rate for AT-10 decreased to below the minimum operating goal. Upon inspection, a broken coupler was discovered and repaired, and the extraction line was cleared of debris in February. These actions brought the flow rate back up above the minimum. The flow rates for the remainder of the extraction wells were able to be brought back to within the minimum-ideal operating range.

The main interruptions to flow rates in 2011 were caused by fouling of wells and piping and AT-11, AT-12, and AT-13 installation activities, as well as pump testing. The most significant disruption in pumping was caused by the well installation activities in September and October, along with the pump testing in December. Due to the fouling of wells and piping reducing flow rates since the extraction system start-up, the Navy developed and has implemented a plan for improving operation and preventative maintenance functions (i.e., the modified redevelopment routine).

The modified redevelopment routine (Super Soak) consists of Unicid® acid and surge block redevelopment combined with an extended soak period (approximately 4 weeks) at a low pH. The acid treatment objective is to dissolve the iron-based encrustation buildup on the well screen and within the pore space of the screened interval's surrounding sand pack and/or the pore space of the surrounding aquifer material. The surge block redevelopment is done following the acid treatment product that is added to the well, which allows the acid treatment product to be forced into the material surrounding the screen. Some wells are constructed such that the aquifer material was used as a natural sand pack; other wells have engineered sand packs. It is unknown to what extent the acid treatment material is able to penetrate the material (sand pack or native aquifer material) surrounding the well screen.

Bay West subcontracted E.H. Renner to redevelop the wells and to pull and clean the pumps and groundwater extraction lines when necessary to maintain adequate flow. The effectiveness of this development technique involving extended acid treatment and surge block redevelopment continues to be under review by Bay West and the Navy. The most important criterion in this evaluation is the documented response after treatment.

The depth to groundwater in the extraction well that will be redeveloped is measured and is used to calculate the pre-redevelopment specific capacity. The drop pipe and pump are then removed and inspected to determine if cleaning or replacing is appropriate and the extraction pump is placed in an acid solution and the screen is wire brushed from approximately 5 feet above the static water level to the bottom of the well screen. Any debris is air lifted out and containerized. The Unicid Acid and catalyst are added and the well is then surged for a minimum of two hours. If the pH is above 3, 30% of the original amount of Unicid Acid is added, surged for a minimum of 2 hours and then pH is checked. If the pH is below 3, then redevelopment is complete for the day. Upon returning to the site on the following day, the pH is checked and if it is above 3, 30% of original amount of Unicid is added and the surging procedure is repeated. If pH is still below 3 after 20 – 30 minutes of surging, redevelopment is complete because the chemistry has stopped reacting with debris. The low pH water is then air lifted out of the well and the extraction well pump and drop pipe are reinstalled, and the static water level elevation is recorded. The well is then returned to service at the desired flow rate and the groundwater elevation is measured the next business day and weekly thereafter. If pH is greater than 3 then the redevelopment procedure is repeated. Specific capacity calculations are updated as data becomes available for comparison of pre-redevelopment values with post-redevelopment values.

During initial redevelopment efforts, each extraction well was typically treated between 2 and 4 times before pH remained at 3 after surging. After several redevelopment events, pH criterion were achieved on the first return trip (i.e., the second day of redevelopment), regardless of the number of treatments the well required previously. Upon returning the well to operation, the boost in specific capacity was not observed (i.e., little or no improvement in well performance was achieved). The working theory of why the boost in specific capacity was not observed is the material (i.e., debris) responsible for well fouling extends some distance beyond the well screen. By surging alone, the Unicid chemistry is not able to be distributed the full distance of the debris field. The Unicid reacts with debris it contacts. However, in the less than 24-hour time period between site visits with traditional redevelopment, not enough debris dissolves to result in a pH change and a debris wall beyond the distance the Unicid has treated results in continued poor well performance. By leaving the Unicid chemistry in the well longer (Super Soak), additional debris removal would be achieved as the chemistry was distributed by diffusion and dispersion.

The Super Soak is basically the same methodology as the traditional redevelopment, with a couple of exceptions. These exceptions are:

1. The target pH is 1.5 to 2, not 3. The amount of Unicid granular added is a field estimate of what it will take to achieve this objective.

2. The pH checks and surging events have been done on both a once a week basis and a twice a week basis.

3. The decision to add more Unicid during a follow-up visit is based on whether the pH is above 2, not 3.

The Super Soak is an evolving process. It has not been established that the additional cost and lengthier period of extraction well down time associated with the longer Super Soak is supported by a corresponding improvement in well performance. An increase in specific capacity is only one benchmark in evaluating the success. A more important benchmark may be the rate at which capacity declines after the redevelopment event is complete. For example, a result which shows a higher increase in specific capacity recovery, but also a rapid decline afterwards, may not be as effective as a redevelopment event that has a smaller increase in specific capacity, but a much more gradual decline thereafter. This is a longer term evaluation which isn't compressible in the time period associated with the 2011 AMR.

Field data sheets from redevelopment activities are included in Appendix A-4. As of publication of this AMR, NAVFAC has determined, based on decisions with our operating contractor that the Navy is switching over to phosphoric acid as the treatment base medium:

- Phosphoric acid was originally used at NIROP as an alternative to hydrochloric acid (HCl). Phosphoric acid is less aggressive on metal components than HCl.

- Bench testing was done to compare the dissolution rate of debris in phosphoric acid and in Unicid. Qualitative observations suggest phosphoric acid is more effective than Unicid at dissolving NIROP debris in a shorter period of time.

- Phosphoric acid was recently used to redevelop extraction wells at another site where Bay West provides O&M services. Specific capacities returned to their 2006 levels after redevelopment was complete. However, additional monitoring is necessary to determine the rate at which specific capacity declines over time.

The following is a summary of redevelopment activities for 2011:

AT-8 was redeveloped in January and February of 2011, and the extended soak treatment was terminated based on an assessment of field data collected and the conclusion that communication with the aquifer has been sufficiently restored. The pumping rate was returned to within the minimum-ideal operating range for the remainder of 2011.

AT-9 was redeveloped in July of 2011, and the extended soak treatment was terminated based on an assessment of field data collected and the conclusion that communication with the aquifer had been sufficiently restored. After being brought back online, the pump began to fault sporadically. After further downtime in September and October, the pumping rate was returned to within the minimum-ideal operating range.

4.3 GROUNDWATER EXTRACTION

Approximately 6.2 billion gallons of groundwater have been pumped from the extraction wells at NIROP Fridley from the start-up of the system in September 1992 through December 2010 (Appendix B-1, Column C). The 6.2 billion gallons is the sum of 3.2 billion gallons pumped and discharged to the sanitary sewer prior to November 1998, plus approximately 3.0 billion gallons treated by the system after November 1998. In 2011, approximately 147 million gallons of groundwater were extracted, a decrease of approximately 19 million gallons from 2010. Based on cumulative totals, the average flow rate for the seven wells currently in operation was 280 gpm in 2011 [147 million gallons/(365 days * 24 hours * 60 minutes)], which is lower than the average system flow rates for recent years.

The flow rates from 2000 to 2011 are reported for each well and the total flow rates for all wells are shown in Table 4-1. The flow rates in Table 4-1 have been recalculated to factor in periods of time that extraction wells were not operating. In AMRs prior to 2002, downtime was ignored in these calculations; however, the approach was changed to reflect the "effective" or normalized pumping rate. This is noted on Table 4-1 and is believed to be a more representative indicator of the system's overall impact on the groundwater flow field over the course of 2011. Flow rates for each extraction well, number of gallons removed each month from each extraction well, and total number of gallons pumped from each extraction well are included in the 2011 Annual Water Use Report (Appendix B-2).

A consensus was reached in the July 2008 Technical Subcommittee meeting between the Navy, MPCA, and U.S. EPA in determining the “ideal” and “minimum” operational goals for each extraction well. These two flow rates for each well are plotted on Figures 4-1 through 4-7 and are included in Table 4-1. Overall, the extraction system performed at approximately 57 percent of its ideal operational goal and at 70 percent of its minimum operational goal in 2011. These relatively low operational goal percentages are mainly due to the increased system downtime associated with system upgrades, such as the abandonment of AT-3A (planned for September 2012) and the installations of AT-11, AT-12, and AT-13, as well as the pumping tests at these new wells. Table 4-2 lists all of the periods of extended downtime in 2011, along with the causes for these periods, and the resolution to each issue.

TABLE 4-1

SUMMARY OF OPERATIONAL EFFICIENCIES AND PUMPING RATE INFORMATION FOR EXTRACTION WELLS
2011 ANNUAL MONITORING REPORT
NIROP FRIDLEY, MINNESOTA

Extraction Well	Operational Efficiency			Average Flow Rate[3] (gpm)												Range of Actual 2011 Flow Rates[4] (gpm)	Ideal Operational Goal[5] (gpm)	Minimum Operating Goal[5] (gpm)
	Days Pump was Operational in 2011[1]	Operational Percentage During 2011	Total Volume Pumped in 2011[2] (million gallons)	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011			
AT-1A*	NA	NA	NA	43.4	12.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AT-2*	NA	NA	NA	8.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AT-3A/AT-13	229	63	23.0	248.3	153.8	175.2	112.3	150.4	135.2	141.4	135.9	110.1	90.2	39.0	50.2	40-65	135	115
AT-4*	NA	NA	NA	32.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AT-5A	240	66	52.4	152.8	125.4	150.5	86.0	115.0	117.4	115.7	139.9	112.9	130.8	88.1	99.9	115-165	162	138
AT-5B	269	74	23.2	88.2	56.5	90.9	56.1	69.8	77.4	81.5	80.3	75.3	81.2	66.0	44.6	40-70	82	70
AT-7	236	65	12.9	NA	18.7	30.7	25.7	23.6	19.3	35.1	32.7	26.1	40.0	43.2	22.0	20-55	46	37
AT-8	237	65	4.6	NA	8.6	5.9	12.8	10.6	6.2	13.6	12.7	9.9	13.1	13.7	9.4	10-25	15	10
AT-9	216	59	36.4	NA	55.3	119.7	83.1	106.4	97.3	91.8	80.8	121.3	124.0	115.0	78.5	70-150	150	125
AT-10	260	71	7.6	NA	5.9	19.7	13.9	21.5	24.6	19.5	17.1	18.3	16.9	18.5	15.9	15-30	23	20
Total			160.1	574	437	593	390	497	477	499	499	474	496	384	321		613	515

gpm - Gallons per minute.
1 Total number of operational days was provided by Bay West correspondence.
2 Total volume for each extraction well can be found in the 2011 DNR Annual Report of Water Use (Appendix B-2).
3 Flow rates were calculated by factoring in downtime (i.e., periods when the system was not operational).
4 Range of flow rates are the typical (not comprehensive) range over which the well operated during 2011.
5 Ideal and Minimum Operating Goals were determined by Partnering Team consensus for each well in July 2008 (see Figures 4-1 thorugh 4-7).
NA - Not applicable or not available.
* Extraction wells removed from system and grouted closed.

TABLE 4-2

SUMMARY OF SIGNIFICANT PERIODS OF INTERRUPTED PUMPING OPERATIONS
2011 ANNUAL MONITORING REPORT
NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT
FRIDLEY, MINNESOTA

Extraction Well	Interrupted Period		Cause [1]	Corrective Action[1]
	Beginning Date	Ending Date		
AT-3A	4/12/2011	4/14/2011	Piping was found to be leaking.	Leaking pipe was replaced.
	5/2/2011	5/16/2011	Scheduled maintenance.	Pipe cleaning activities were completed, and the system was brought back online.
	9/5/2011	10/21/2011	System down during well installation.	Well AT-3A was taken out of service and wells AT-11, AT-12, and AT-13 were installed. System was then brought back online.
	11/10/2011	11/13/2011	System shut down due to high sump alarm.	System brought back online during next scheduled visit.
	11/23/2011	11/25/2011	System shut down due to high sump alarm.	System brought back online during next scheduled visit.
	12/1/2011	12/21/2011	System shut down during pump tests.	System brought back online following the completion of the pump tests.
AT-5A	5/2/2011	5/16/2011	Scheduled maintenance.	Pipe cleaning activities were completed, and the system was brought back online.
	9/5/2011	10/21/2011	System down during well installation.	Well AT-3A was taken out of service and wells AT-11, AT-12, and AT-13 were installed. System was then brought back online.
	11/10/2011	11/13/2011	System shut down due to high sump alarm.	System brought back online during next scheduled visit.
	11/23/2011	11/25/2011	System shut down due to high sump alarm.	System brought back online during next scheduled visit.
	12/1/2011	12/21/2011	System shut down during pump tests.	System brought back online following the completion of the pump tests.

TABLE 4-2

SUMMARY OF SIGNIFICANT PERIODS OF INTERRUPTED PUMPING OPERATIONS
2011 ANNUAL MONITORING REPORT
NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT
FRIDLEY, MINNESOTA

Extraction Well	Interrupted Period		Cause [1]	Corrective Action[1]
	Beginning Date	Ending Date		
AT-5B	5/2/2011	5/16/2011	Scheduled maintenance.	Pipe cleaning activities were completed, and the system was brought back online.
	9/5/2011	10/21/2011	System down during well installation.	Well AT-3A was taken out of service and wells AT-11, AT-12, and AT-13 were installed. System was then brought back online.
	11/10/2011	11/13/2011	System shut down due to high sump alarm.	System brought back online during next scheduled visit.
	11/23/2011	11/25/2011	System shut down due to high sump alarm.	System brought back online during next scheduled visit.
	12/1/2011	12/21/2011	System shut down during pump tests.	System brought back online following the completion of the pump tests.
AT-7	5/2/2011	5/16/2011	Scheduled maintenance.	Pipe cleaning activities were completed, and the system was brought back online.
	5/16/2011	5/30/2011	Pump will not restart.	The pump end and flow meter transducers were replaced, and the pump was brought back online.
	9/5/2011	10/21/2011	System down during well installation.	Well AT-3A was taken out of service and wells AT-11, AT-12, and AT-13 were installed. System was then brought back online.
	11/10/2011	11/13/2011	System shut down due to high sump alarm.	System brought back online during next scheduled visit.
	11/23/2011	11/25/2011	System shut down due to high sump alarm.	System brought back online during next scheduled visit.
	12/1/2011	12/21/2011	System shut down during pump tests.	System brought back online following the completion of the pump tests.

TABLE 4-2

SUMMARY OF SIGNIFICANT PERIODS OF INTERRUPTED PUMPING OPERATIONS
2011 ANNUAL MONITORING REPORT
NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT
FRIDLEY, MINNESOTA

Extraction Well	Interrupted Period		Cause [1]	Corrective Action[1]
	Beginning Date	Ending Date		
AT-8	1/1/2011	1/24/2011	Pumping below the minimum flow rate and faulting out sporadically.	An extended redevelopment procedure will be initiated.
	1/25/2011	2/17/2011	Pump shut off for redevelopment.	The extended redevelopment procedure initiated to remove build-up on the well screen.
	5/2/2011	5/16/2011	Scheduled maintenance.	Pipe cleaning activities were completed, and the system was brought back online.
	9/5/2011	10/21/2011	System down during well installation.	Well AT-3A was taken out of service and wells AT-11, AT-12, and AT-13 were installed. System was then brought back online.
	11/10/2011	11/13/2011	System shut down due to high sump alarm.	System brought back online during next scheduled visit.
	11/23/2011	11/25/2011	System shut down due to high sump alarm.	System brought back online during next scheduled visit.
	12/1/2011	12/21/2011	System shut down during pump tests.	System brought back online following the completion of the pump tests.
AT-9	5/2/2011	5/16/2011	Scheduled maintenance.	Pipe cleaning activities were completed, and the system was brought back online.
	5/31/2011	8/15/2011	Pump faulting out sporadically due to low recharge rate in well.	Well was redeveloped and brought back online.
	9/5/2011	10/21/2011	System down during well installation.	Well AT-3A was taken out of service and wells AT-11, AT-12, and AT-13 were installed. System was then brought back online.
	11/10/2011	11/13/2011	System shut down due to high sump alarm.	System brought back online during next scheduled visit.
	11/23/2011	11/25/2011	System shut down due to high sump alarm.	System brought back online during next scheduled visit.
	12/1/2011	12/21/2011	System shut down during pump tests.	System brought back online following the completion of the pump tests.

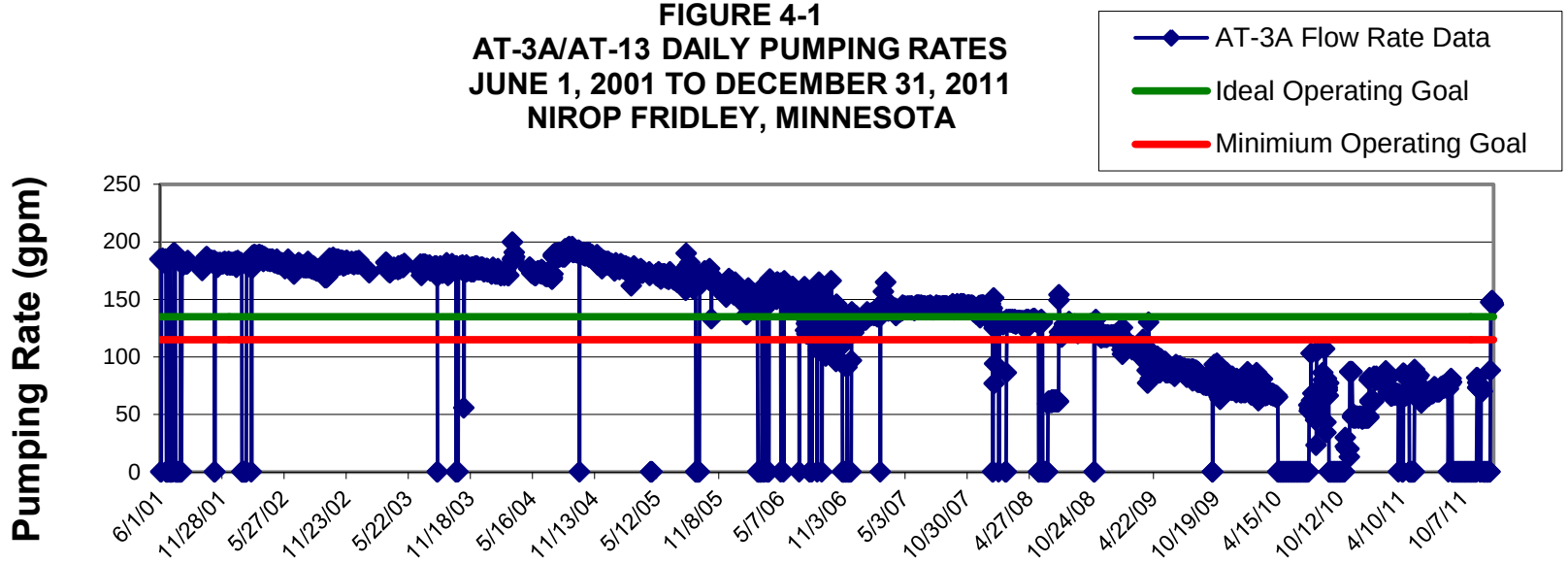
TABLE 4-2

SUMMARY OF SIGNIFICANT PERIODS OF INTERRUPTED PUMPING OPERATIONS
2011 ANNUAL MONITORING REPORT
NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT
FRIDLEY, MINNESOTA

Extraction Well	Interrupted Period		Cause [1]	Corrective Action[1]
	Beginning Date	Ending Date		
AT-10	5/2/2011	5/16/2011	Scheduled maintenance.	Pipe cleaning activities were completed, and the system was brought back online.
	5/24/2011	6/2/2011	Pump faulting out sporadically.	The motor was replaced and the pump was brought back online.
	9/5/2011	10/21/2011	System down during well installation.	Well AT-3A was taken out of service and Wells AT-11, AT-12, and AT-13 were installed. System was then brought back online.
	11/10/2011	11/13/2011	System shut down due to high sump alarm.	System brought back online during next scheduled visit.
	11/23/2011	11/25/2011	System shut down due to high sump alarm.	System brought back online during next scheduled visit.
	12/1/2011	12/21/2011	System shut down during pump tests.	System brought back online following the completion of the pump tests.

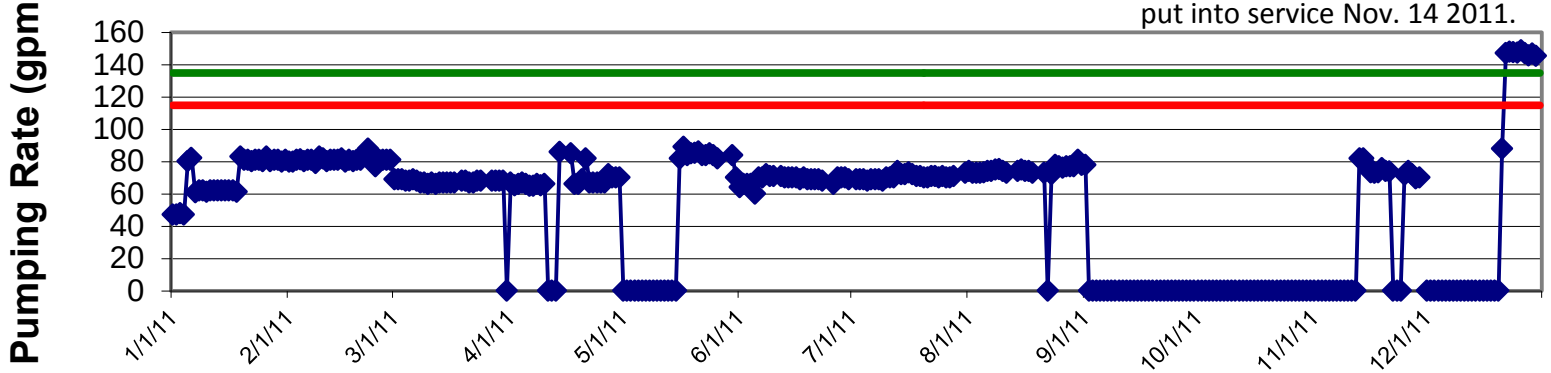
1 Information from Bay West Monthly Project Status Reports provided in Appendix A-3.

FIGURE 4-1
AT-3A/AT-13 DAILY PUMPING RATES
JUNE 1, 2001 TO DECEMBER 31, 2011
NIROP FRIDLEY, MINNESOTA



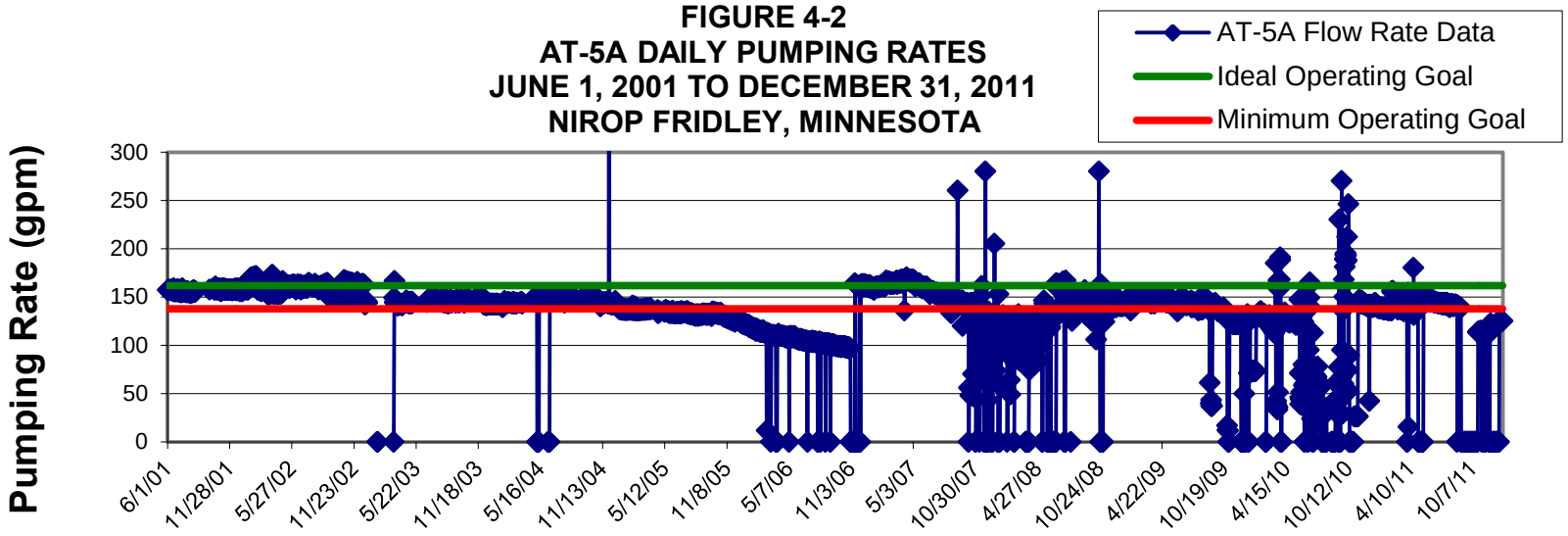
JANUARY 1 TO DECEMBER 31, 2011

AT-3A was taken out of service September 3, 2011, and AT-13 was put into service Nov. 14 2011.

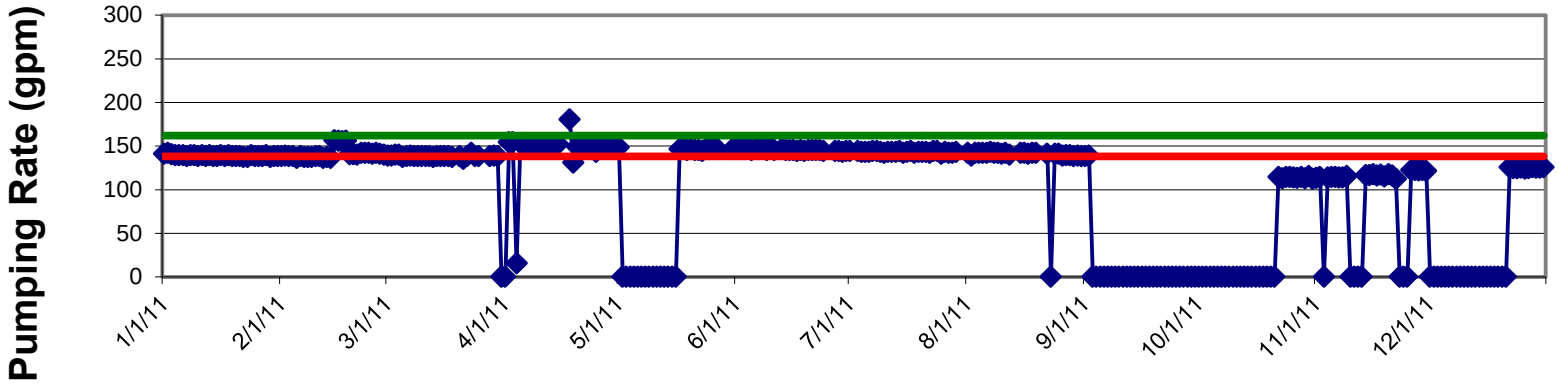


Data from Bay West 2001-2011 monthly treatment system reports.

FIGURE 4-2
AT-5A DAILY PUMPING RATES
JUNE 1, 2001 TO DECEMBER 31, 2011
NIROP FRIDLEY, MINNESOTA

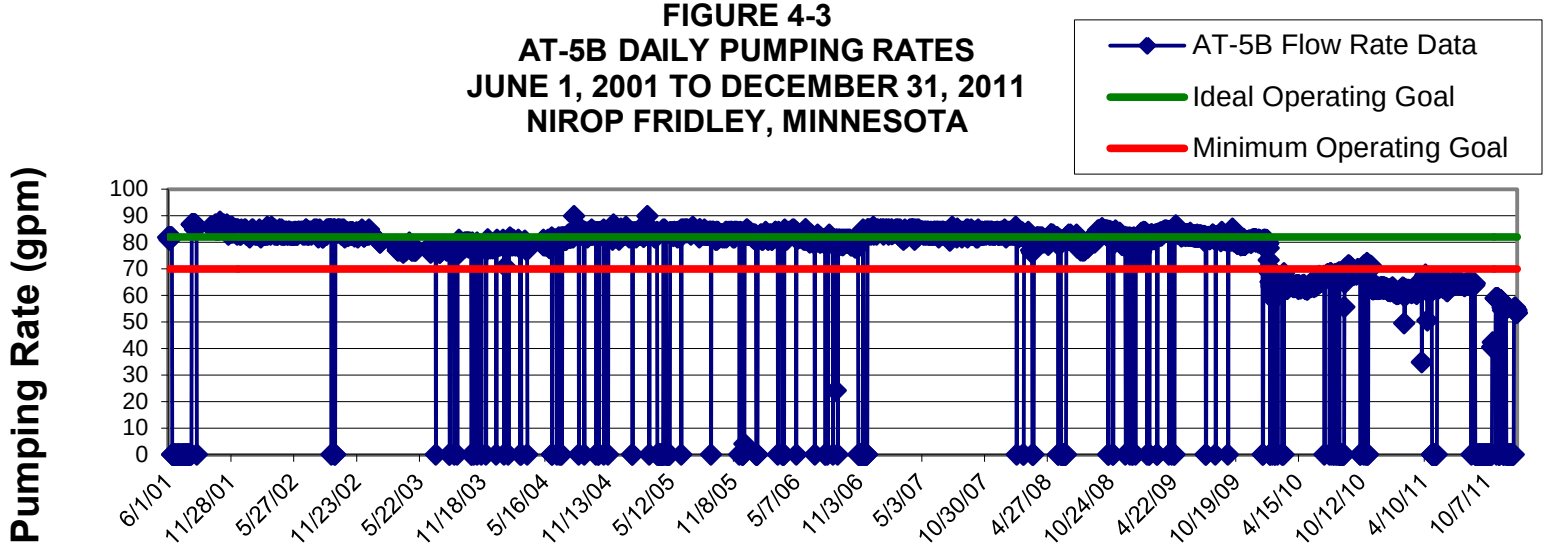


JANUARY 1 TO DECEMBER 31, 2011

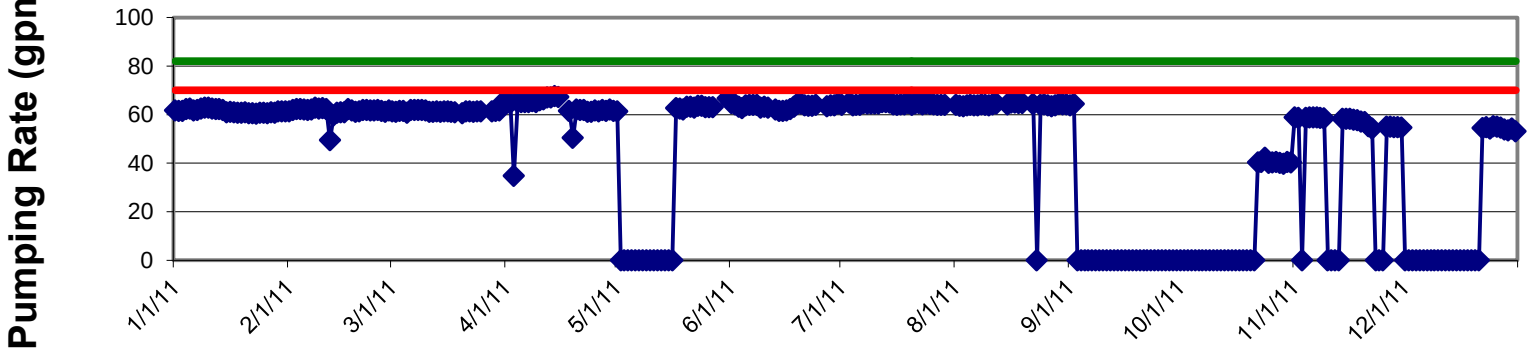


Data from Bay West 2001-2011 monthly treatment system reports.

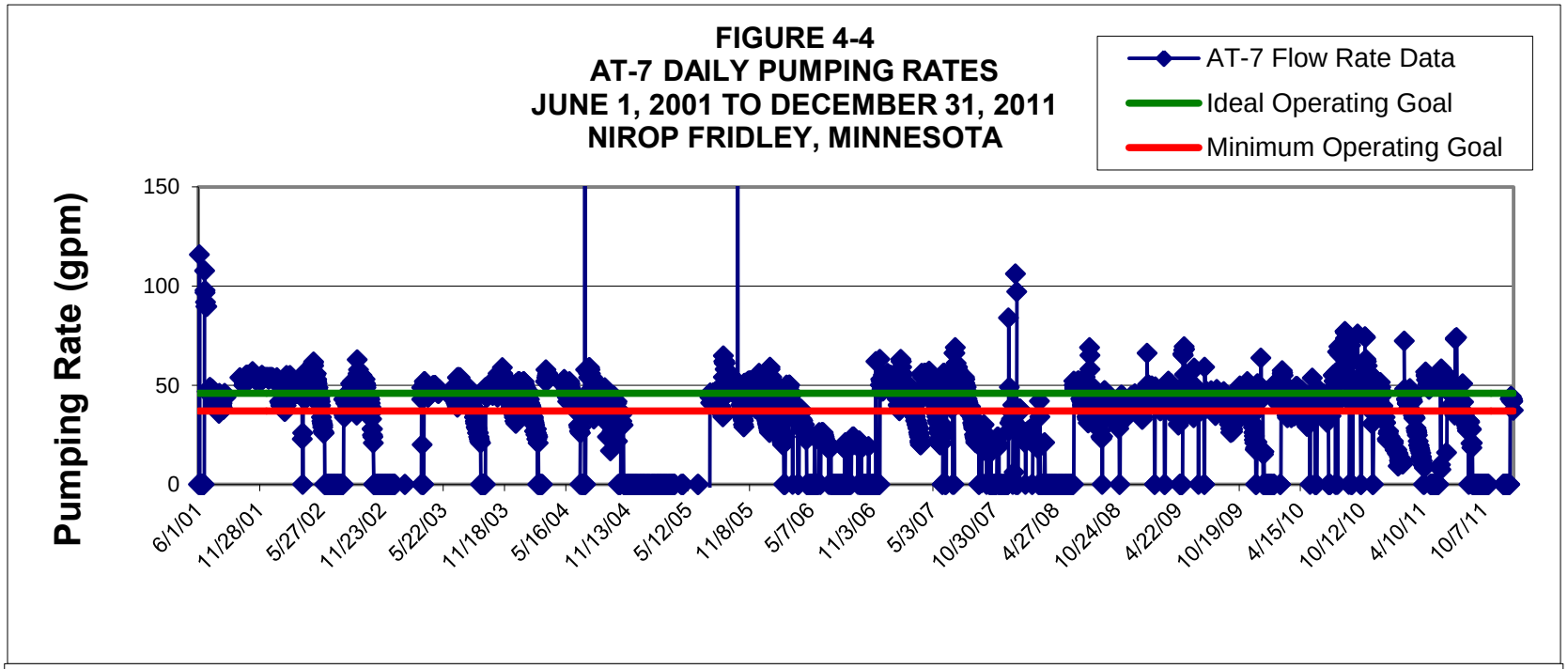
FIGURE 4-3
AT-5B DAILY PUMPING RATES
JUNE 1, 2001 TO DECEMBER 31, 2011
NIROP FRIDLEY, MINNESOTA

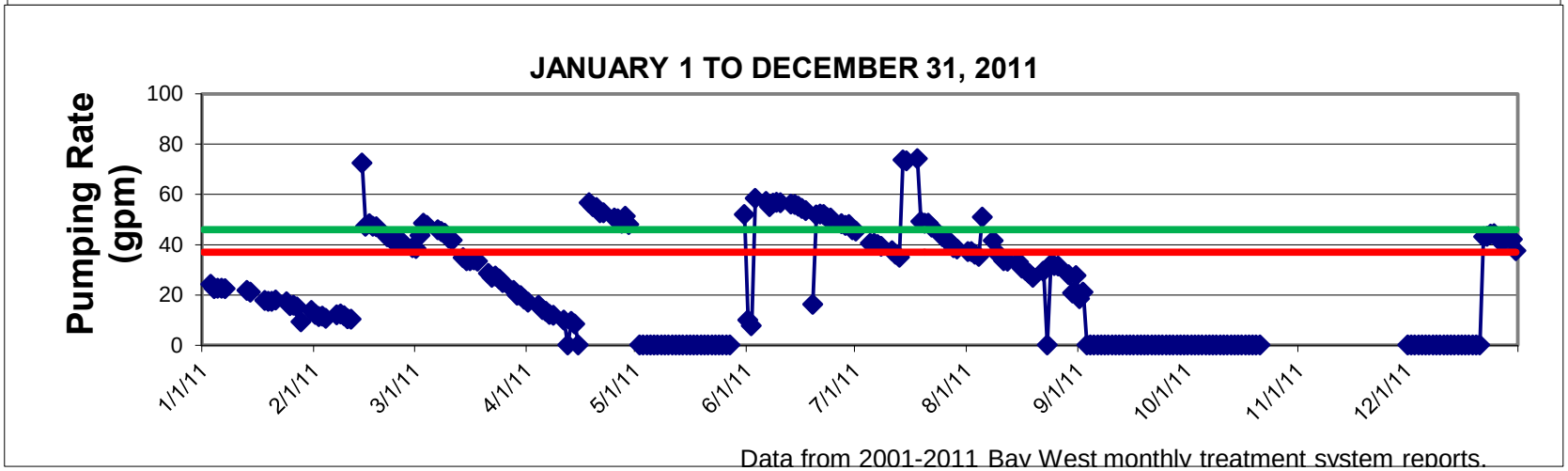


JANUARY 1 TO DECEMBER 31, 2011



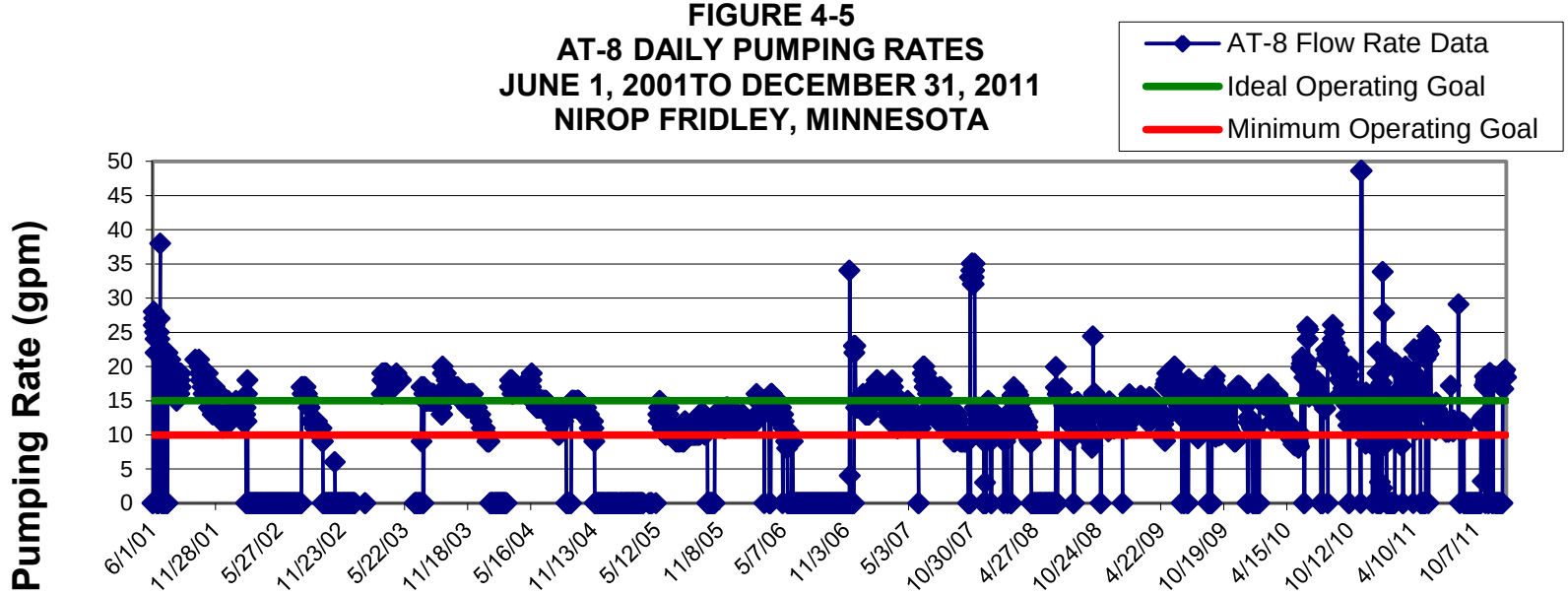
Data from Bay West 2001-2011 monthly treatment system reports.



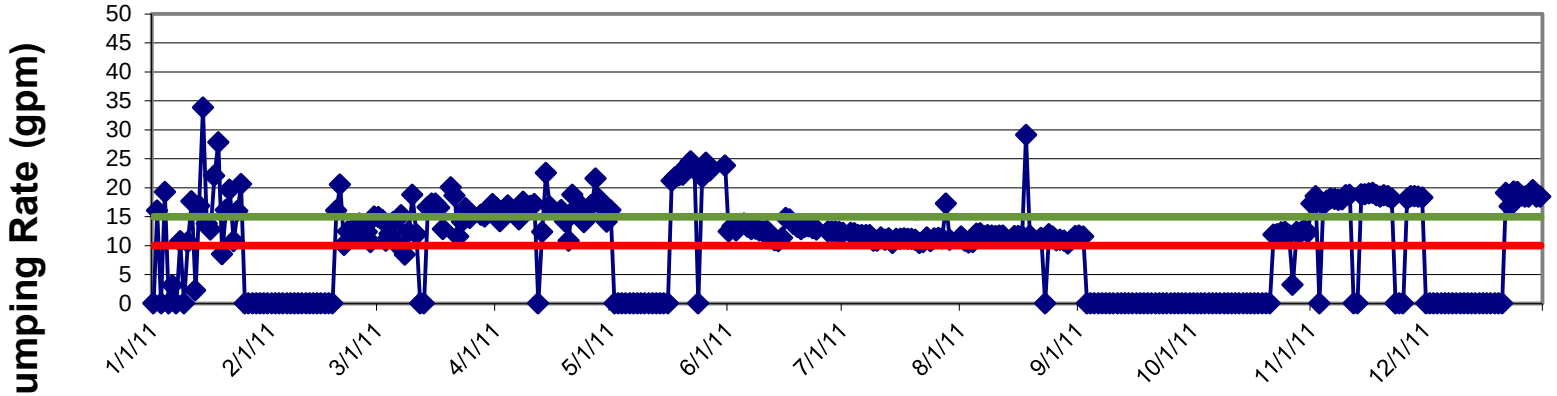


Data from 2001-2011 Bay West monthly treatment system reports.

FIGURE 4-5
AT-8 DAILY PUMPING RATES
JUNE 1, 2001TO DECEMBER 31, 2011
NIROP FRIDLEY, MINNESOTA

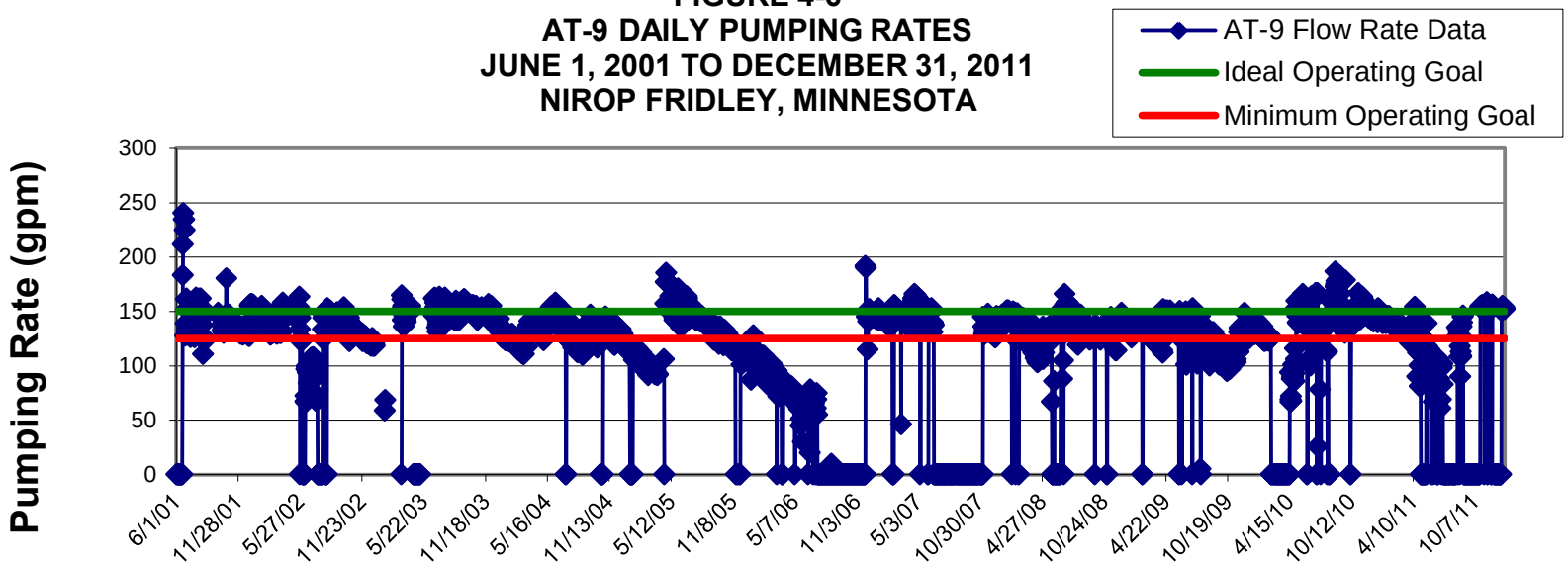


JANUARY 1 TO DECEMBER 31, 2011

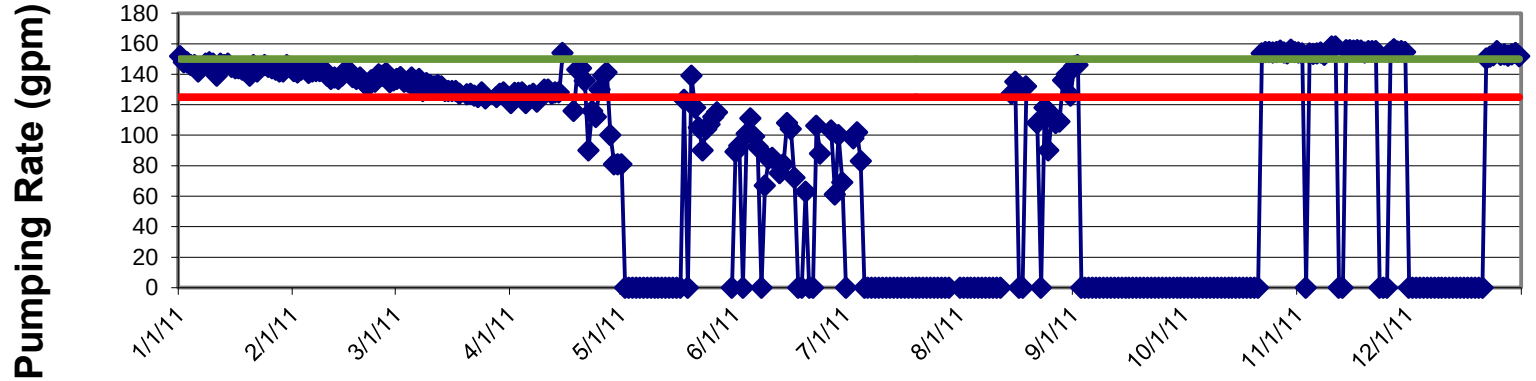


Data from Bay West 2001-2011 monthly treatment system reports.

FIGURE 4-6
AT-9 DAILY PUMPING RATES
JUNE 1, 2001 TO DECEMBER 31, 2011
NIROP FRIDLEY, MINNESOTA

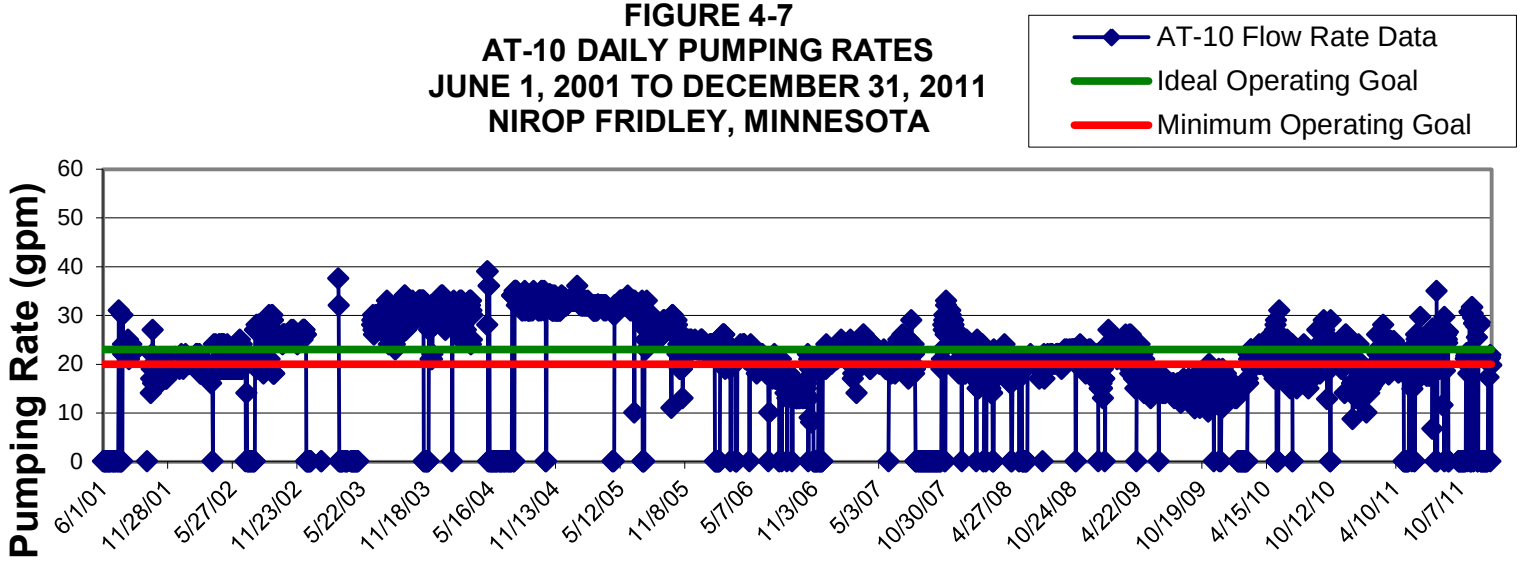


JANUARY 1 TO DECEMBER 31, 2011

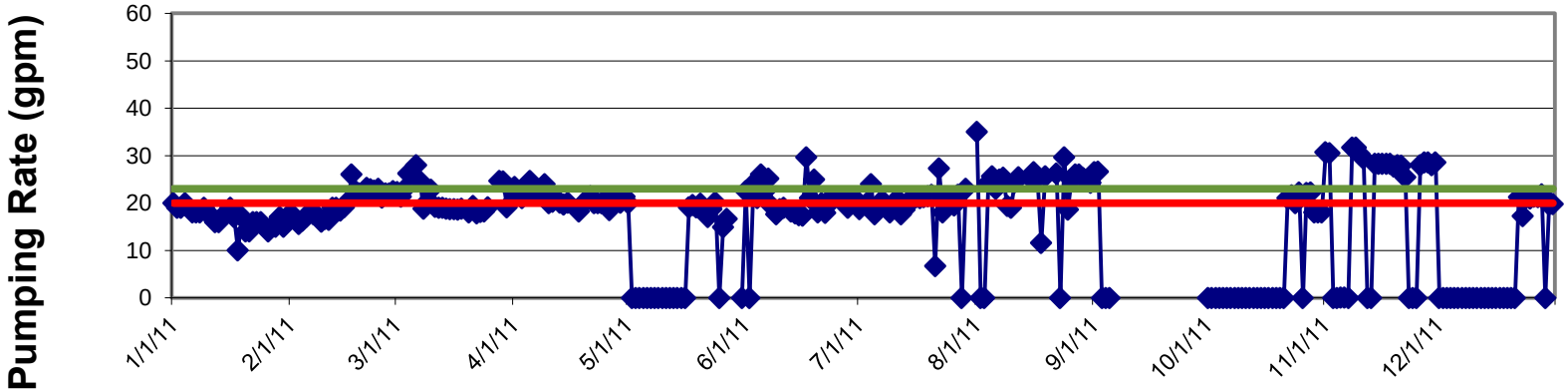


Data from Bay West 2001-2011 monthly treatment system reports.

FIGURE 4-7
AT-10 DAILY PUMPING RATES
JUNE 1, 2001 TO DECEMBER 31, 2011
NIROP FRIDLEY, MINNESOTA



JANUARY 1 TO DECEMBER 31, 2011



Data from Bay West 2001-2011 monthly treatment system reports.

5.0 MONITORING RESULTS

Section 5.1 summarizes the groundwater sampling events conducted at NIROP Fridley in calendar year 2011. Section 5.2 discusses sample analysis and data validation. Section 5.3 presents a summary and discussion of the 2011 groundwater analytical results at NIROP Fridley as well as groundwater sampling results at the adjacent BAE area from 2011, which were provide to the Navy by MPCA. Section 5.4 presents the quarterly air emission data from the ASU that are part of the GWTF at NIROP Fridley.

5.1 GROUNDWATER SAMPLING EVENTS CONDUCTED IN 2011

Quarterly groundwater sampling was conducted at NIROP Fridley by Bay West in February, May/June, August, and November 2011. Quarterly data was collected in 2011, rather than the typical annual sampling round, to evaluate the effects of the decreased/intermittent function of intermediate zone extraction well AT-3A. Quarterly sampling will be conducted for one year following startup of the newly installed wells at AT-11, AT-12, and AT-13 to evaluate their effectiveness at containing the plume. Table 5-1 presents the planned sampling program for each quarter in 2011, and any deviations. In summary, 24 wells were planned for the February, May/June, and August sampling events; including seven shallow monitoring wells, 13 intermediate monitoring wells, two intermediate extraction wells, one deep monitoring well, and one deep extraction well. For the November sampling event, 113 wells were proposed, including 39 shallow monitoring wells, four shallow extraction wells, 32 intermediate monitoring wells, two intermediate extraction wells, 27 deep monitoring wells, one deep extraction well, and eight bedrock wells. Deviations from the planned sampling list are discussed in sample summary paragraphs below. BAE data shown in figures was collected by Arcadis and was not evaluated by Tetra Tech for data quality.

Sample collection, handling, and analysis were performed according to the requirements of the RAWP (Tetra Tech, 2005b). All groundwater samples were analyzed for the following VOCs: 1,1-dichloroethane (1,1-DCA), 1,1-dichloroethene (1,1-DCE), cis-1,2-dichloroethene (cis-1,2-DCE), trans-1,2-dichloroethene (trans-1,2-DCE), tetrachloroethene (PCE), 1,1,1-trichloroethane (1,1,1-TCA), TCE, and vinyl chloride (VC). Columbia Analytical Services, Inc. performed analysis of groundwater samples.

5.1.1 <u>February 2011 Sampling Summary</u>

Twenty-one wells were sampled from February 14 through February 17, 2011. Shallow well MS-38S and intermediate well 13-IS were not sampled because they were buried under snow. Shallow well MS-56S was not sampled due to lack of recharge in the well during purging. Based on the field sampling log,

water from the well turned black and the well went dry. During the previous sampling event (November 2010), the well also went dry and sediments were observed in the purge water.

5.1.2 May/June 2011 Sampling Summary

Twenty-three wells were sampled from May 9 through June 9, 2011. Shallow well MS-56S could not be sampled due to lane closure permit issues.

5.1.3 August 2011 Sampling Summary

All 24 proposed wells were sampled from August 15 through August 18, 2011. There were no deviations from the sampling plan.

5.1.4 November 2011 Sampling Summary

From November 1 through November 18, 2011, 112 wells were sampled, including 106 monitoring wells and six extraction wells. Intermediate extraction well AT-3A was not sampled because it was disconnected on September 3, 2011. Due to an obstruction, intermediate monitoring well 6-IS was not sampled, but well 7-IS was sampled in place of 6-IS because of its proximity to 6-IS and it is assumed to be screened at a similar interval. The total depths of 6-IS and 7-IS measured in November 2011 were 80.89 and 79.92 feet, respectively.

A round of groundwater levels was also collected October 31, 2011. Potentiometric surface maps generated based on these data are presented on Figures 5-1 through 5-4. Professional judgment was exercised to generate contours around the clay ridge in the shallow and intermediate zones. In addition, potentiometric contours delineating the cones of depression around extraction wells AT-7, AT-9, AT-10, and AT-5B are a lighter shade of blue to indicate probable decreased well efficiency. Current and historical groundwater level data are provided in Appendices C-1 and C-2, respectively.

5.1.5 Groundwater Sampling Procedures

Monitoring wells were sampled in 2011 according to procedures outlined in the RAWP (Tetra Tech, 2005b). This section summarizes these procedures and provides an evaluation of the sampling results consistent with the criteria defined in the RAWP. Prior to sampling, monitoring wells were purged using submersible pumps. The pump intake was lowered to just below the top of the water column. Samples were collected after stable conditions (i.e., successive purge volumes within the acceptable ranges of ±0.1 degrees Celsius [°C], ±5 percent specific conductance, ±0.1 pH units, and less than 5 nephlometric

turbidity units [NTUs]) were achieved. The readings were measured within the accuracy limitations of a YSI water-quality meter using a flow-through cell. In most cases, samples were collected after a minimum of three standing well volumes were purged and field water-quality parameters had stabilized (as defined above). For wells at which parameters did not stabilize within three well volumes, five well volumes were purged, and the wells were sampled in accordance with the RAWP.

5.2 SAMPLE ANALYSIS AND DATA VALIDATION

All VOC analyses were performed using SW846 Method 8260. Certain data points reported concentrations greater than estimated quantitation limits and estimated concentrations greater than method detection limits (MDLs) but less than the quantitation limits approved in the RAWP (Tetra Tech, 2005a). Laboratory reports for all groundwater samples are maintained by Bay West and Tetra Tech. The analytical database and graphs of VOCs versus time from the system start-up through 2011 are included in Appendix D-1.

The Data Quality Review (DQR) was performed to measure progress against the data quality objectives (DQOs) and to determine whether 2011 analytical laboratory data were of acceptable technical quality for use in decision making. The DQR began with data validation, a comparison of data quality indicators (DQIs) to prescribed acceptance criteria. All of the results from analytical laboratory samples were validated according to several specifications. Assignment of data qualification flags conformed to U.S. EPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (1999) to the greatest extent practicable for non-Contract Laboratory Program data. Measures of data completeness, sensitivity, comparability, and representativeness were also evaluated. The DQR and data validation letters are included in Appendices D-2 and D-3, respectively. No data from 2011 were rejected or considered unusable.

5.3 GROUNDWATER ANALYTICAL DATA

The following sections present a summary of groundwater contamination at NIROP Fridley as well as a statistical analysis of concentration trends over time.

5.3.1 <u>Summary of Contaminants</u>

Based on the results of the November 2011 sampling event (Table 5-2), TCE continues to be the primary contaminant in terms of extent and magnitude of exceedances in the shallow, intermediate, and deep zones under the NIROP and ACP. In the bedrock zone, PCE is the primary contaminant in terms of the extent and magnitude of exceedances. The frequency of detection (FOD) table for November 2011

(Table 5-3) indicates that TCE continues to be the contaminant detected most often, followed closely by cis-1,2-DCE. As a result, TCE has been selected as the most appropriate indicator parameter for monitoring the progress of the remediation system; however, it should be noted that total DCE concentrations in some wells exceed TCE concentrations. All of the compounds listed in Table 5-3 were identified as COCs in the 2005 DQOs.

There is a general correlation between wells with high total 1,2-DCE levels and those with high TCE concentrations (Appendix D-4, Figures D-4-1 through D-4-4). This correlation is expected because 1,2-DCE is the direct breakdown product of TCE through reductive dechlorination. There are no concentrations of DCE greater than Maximum Contaminant Levels (MCLs) outside of the TCE footprints. Concentrations of cis-1,2-DCE are significantly greater than trans-1,2-DCE in the NIROP Fridley monitoring wells; typical of TCE reductive dechlorination relationships.

Due to ongoing operational issues with the extraction system (most notably the September 2011 replacement of AT-3A, which resulted in the entire system being shut down for a period of time) and variability of sampling data, including long- and short-term seasonal effects, discussions of contaminant trends in each portion of the aquifer include both short-term trends since November 2009, and long-term trends since the start of the monitoring program. The 2011 quarterly samples were collected to provide a more refined picture of how contaminant concentrations were affected by decreased efficiency of AT-3A. Figures 5-5 through 5-8 present TCE isoconcentration estimates in 2011. Fall 2009, Fall 2010, and Quarterly 2011 TCE data points are also presented on Figures 5-5 through 5-7.

5.3.1.1 Shallow Zone

Two areas where TCE concentrations have historically been greater than 100 µg/L include the North 40 (north of the NIROP building) and the area near the southwestern corner of the NIROP building (Figure 5-5). BAE data for UD-62S, US67-S, UD65-S, UD63-S, and UD60-S have been added to Figure 5-5. BAE data is included in Appendix D-5. Under the North 40 area, the November 2011 results indicate that TCE is present at concentrations above the MCL of 5 µg/L, but less than 100 µg/L. Based on the results of the November 2011 sampling event (Table 5-2 and Appendix D-4, Figure D4-1), TCE continues to be present at concentrations greater than 100 µg/L (significantly higher than the MCL of 5 µg/L) in 13 wells in shallow groundwater under the ERR/ACP and greater than 1,000 µg/L in two BAE wells. Monitoring well MS-54S had an average 2011 TCE concentration of approximately 1,200 µg/L.

Some shallow zone wells in the vicinity of and downgradient of former intermediate extraction well AT-3A had notable short-term TCE increases, from 2009 to 2010 (immediately after AT-3A began to fail),

including AT-5A, 18-S, MS-38S, MS-49S, and MS-54S. These wells still have 2011 TCE concentrations that remain significantly greater than 2009 TCE concentrations. The significant short-term increases in these wells, combined with intermittent operation and eventual shutdown of extraction well AT-3A, and lack of elevated concentrations upgradient of this area, suggest a hydraulic connection between the intermediate and shallow zones along the eastern edge of the groundwater high in ACP, which may then flow into the area of AT-5A. This may explain the short-term increases in AT-5A and MS-38S. MS-36S had a slight increase from 2010 to 2011 which could be attributed to a decrease in the efficiency of AT-3A. Wells with notable short-term TCE decreases from 2010 to 2011 include 14-IS, 26-S, MS-41S, and MS-46S, all located near/south/southwest of AT-5A. Elevated concentrations in monitoring wells could also be attributed to a prolonged system shutdown during the installation of the new extraction wells during the last quarter of 2011.

In southern ACP and south of the NIROP building, cis-1,2-DCE concentrations are generally less than the MCL of 70 µg/L, and decrease in ACP, closer to the river, except in 27-S (120 µg/L) and MS-45S (180 µg/L). Consistent with past sampling rounds, the maximum cis- and trans-1,2-DCE concentrations detected in shallow wells in November 2011 were along ERR and the adjacent eastern to central ACP area. Historically, the highest total 1,2-DCE concentration in shallow wells has been in 8-S, in the North 40 area (3,404 µg/L in October 2007). Total 1,2-DCE in 8-S increased in November 2011 (217.2 µg/L) compared with October 2010 (83 µg/L). The maximum total 1,2-DCE concentration detected for the shallow wells in 2011 was in MS-54S (610 µg/L) in November on ERR southwest of the NIROP building, which is the highest recorded concentration. Wells in ACP (including MS-34S, MS-36S, and MS-56S) also have elevated total 1,2-DCE concentrations. Overall, concentrations appear to be declining or stable for most shallow wells that have historically had elevated total 1,2-DCE levels, except along ERR where TCE concentrations have increased due to compromised pumping at AT-3A or to a prolonged system shutdown during the installation of the new extraction wells during the last quarter of 2011 (Appendix D-1).

Cis-1,2-DCE comprises the majority of total-1,2-DCE. Only one location, MS-54S, had a trans-1,2-DCE concentration greater than the MCL of 100 µg/L. PCE was detected in 9-S at 7 µg/L, exceeding the MCL of 5 µg/L. VC was detected in MS-36S at concentrations only slightly exceeding the MCL of 2 µg/L.

The reduced concentrations of chlorinated solvents in many of the ACP wells may be an indication of naturally occurring biodegradation; source areas depleting over time; and/or extraction wells limiting contaminant migration into ACP. Some decreases in concentrations within ACP have also been documented due to the enhanced in-situ bioremediation (vegetable oil injection) pilot test. Locations with contaminant concentrations that have remained the same or increased may be a result of a combination

of the following: (1) upwelling from the intermediate zone as groundwater approaches the river, resulting in comingling of intermediate and shallow groundwater, (2) contaminated groundwater bypassing the extraction system to the north of AT-8, flowing from the southwestern corner of the NIROP building in the area of MS-56S and flowing down the western side of the previously mentioned groundwater ridge in ACP, and (3) contaminated groundwater bypassing the extraction system in the intermediate zone when AT-3A's operation was intermittent and/or failed, and rising to mingle with shallow groundwater in the area of, or downgradient, of ERR. BAE groundwater data trends have not been evaluated here.

TCE has been detected in wells MS-52S and 19-S, which are located in the extreme southern portion of ACP. The shallow zone site conceptual model, specifically the location and position of the shallow clay ridge and its impact on groundwater flow direction (i.e., groundwater flow direction is generally oriented perpendicular to the clay ridge) and historic groundwater flow data (Figures 3-8 and 3-9), indicate that at least some groundwater in the MS-52S and 19-S area may originate from the FMC CERCLA site. This may mean that commingled TCE plumes may be present at least in the far southern end of the ACP. This issue remains unresolved at this time; however, it is anticipated that it will be addressed by the regulatory agencies, the Navy, and BAE Systems.

5.3.1.2 Intermediate Zone

TCE concentrations were greater than 100 µg/L under the NIROP building, with the exception of MS-29I (73 µg/L), near the western side of the main NIROP building, and in the southern portion of ACP (Figure 5-6). Elevated concentrations (greater than 1,000 µg/L) remain at MS-33I, although an overall decrease since 2009 has been observed, which may be due to subtle shifts in groundwater flow direction due to intermittent operation of AT-3A. Elevated concentrations in monitoring wells could also be attributed to a prolonged system shutdown during the installation of the new extraction wells during the last quarter of 2011. The main TCE plume in the intermediate zone extends from the East Plating Shop/MS-33I area in the south-central portion of the building complex southwest into the ERR/ACP area. Monitoring well 7-IS, sampled in place of 6-IS in November 2011, had a concentration of 15,000 µg/L, more than double that of the November 2011 TCE concentration in MS-33I. 7-IS is located just upgradient of the line of extraction wells, and the more elevated TCE concentration in 7-IS, compared to MS-33I, indicates that groundwater at 7-IS is likely in more direct communication with the TCE source(s) than groundwater at MS-33I. The elevated, but much lower, TCE concentrations consistently detected in the northern and central portions of the site suggest additional smaller release points for TCE in these areas. Wells with consistent decreases in TCE concentrations since 2009 include AT-10, MS-32I (southwest corner of NIROP building), MS-43I (central ACP), and MS-45I (southern ACP). Many wells in the vicinity of and downgradient of former extraction well AT-3A had notable short-term TCE increases,

from 2009 (immediately after AT-3A began to fail), such as 15-IS, MS-34I, MS-35I, and MS-54I, or more gradually between 2010 and 2011, as in MS-44I. The TCE concentrations in many wells that experienced short-term increases were the same or lower in November 2011 compared to September/October 2009. Again, the notable short-term TCE increases near and downgradient of the former extraction well AT-3A are likely a result of the intermittent operation and eventual shutdown of AT-3A. Elevated concentrations in monitoring wells could also be attributed to a prolonged system shutdown during the installation of the new extraction wells during the last quarter of 2011.

BAE data for wells UD58-I, UD66-I, UD61-I, and UD68-I have been added to Figure 5-6. No TCE concentrations in wells designated as intermediate had TCE concentrations greater than 131 µg/L.

TCE concentration data in the south portion of the overall building has been incorporated on the intermediate zone map, Figure 5-6. This data includes 2011 BAE monitoring data. NAVFAC MW believes incorporation of this data is necessary to provide an accurate picture of probable TCE groundwater concentrations beneath the NIROP slab and also provide real time control just south of the building. It is important to note that plating room and paint room releases have affected groundwater beneath the intermittent shallow clay unit; resulting in impacts to the intermediate semi-confined zone due to the documented downward vertical gradient (Davis, 2007) in this area of the site.

Consistent with past sampling rounds and shallow well results, maximum overall total 1,2-DCE concentrations detected in intermediate wells in November 2011 were found in MS-33I, as well as in other wells under the NIROP building, along ERR, and in the adjacent eastern ACP area. It should be noted that the concentration of total 1,2-DCE in 7-IS, which had the most elevated TCE results in November 2011, was fairly low (540 µg/L) compared to total 1,2-DCE in MS-3I (3,100 µg/L). Concentrations were lower than MCLs in southern ACP closer to the river, and outside of the NIROP building. Both cis- and trans-1,2-DCE concentrations greater than the MCL were confined to the area where TCE concentrations were greater than 100 µg/L. Although there are exceedances of 1,2-DCE, overall 1,2-DCE concentrations in most wells in the intermediate zone appear to be stable or decreasing over the long term. Concentration changes over time for 1,2-DCE likely are influenced by the biodegradation of TCE to 1,2-DCE.

Cis-1,2-DCE concentrations in intermediate BAE RCRA wells were not elevated. Cis-1,2-DCE concentrations in the BAE Paint Room Area wells UD62-S and UD67-S were also elevated. The UD62-S concentration for cis-1,2-DCE exceeded 5,000 µg/L and was approximately 1,000 µg/L at UD67-S. PCE was detected at UD62-S at concentrations of nearly 500 µg/L. The PCE concentration at UD66-I was slightly elevated at 13.3 µg/L.

The majority of total 1,2-DCE is generally cis-1,2-DCE in the intermediate zone. At two locations (MS-33I and MS-32I), the proportion of trans-1,2-DCE greater than the MCL of 100 µg/L to cis-1,2-DCE were greater or nearly equal. The only other location where trans-1,2-DCE exceeded the MCL of 100 µg/L was 7-IS, at 180 µg/L. VC was detected at concentrations greater than or equal to the MCL of 2 µg/L in MS-33I at 38 µg/L and in 7-IS at 2 µg/L. The only location where PCE was detected in excess of the MCL of 5 µg/L was in 3-IS at 15 µg/L.

5.3.1.3 Deep Zone

In general, contaminant levels are much lower in the deep zone than in the shallow and intermediate zones. Historical TCE concentration data for deep groundwater indicate the presence of two distinct TCE plumes in the deep zone, a northern plume (in the North 40 and northern portion of the NIROP) and a southwestern plume (in the ERR/ACP area). Based on the results of the November 2011 sampling event, TCE contamination continues to be present in the deep zone along ERR and in ACP, although concentrations are generally an order of magnitude less than in the shallow and intermediate zones in this area. As shown on Figure 5-7, TCE concentrations in approximately half of the deep wells decreased from 2010 to 2011. Notable short-term TCE decreases from 2010 to 2011 were observed in 8-D and in AT-5B. Wells with notable short-term increases from 2010 to 2011 included MS-44D, MS-36D, and MS-43D, all located in ACP.

The maximum detection of TCE in deep zone wells in the November 2011 sampling round was in AT-5B (210 µg/L). It is unlikely that TCE concentrations in AT-5B are a result of deep zone NIROP contamination, because TCE concentrations in AT-5B are significantly more elevated than any monitoring well in the deep zone. TCE was present at low levels (5.8 µg/L) in UD69-D.

Only low to trace levels of total 1,2-DCE were detected in deep wells in 2010, as has generally been the case in recent sampling at the site. Deep drift well MS-44D had a concentration of total 1,2-DCE (19.5 µg/L) slightly greater than AT-5B (17.8 µg/L). No cis-1,2-DCE or trans-1,2-DCE was detected in deep wells at concentrations exceeding MCLs, including UD69-D.

PCE was detected at concentrations greater than the MCL (5 µg/L) in five deep monitoring wells - one in the North 40 (12-D), one under the NIROP building (MS-28D), two along ERR (USGS-10 and MS-41D), and one in ACP (MS-47D). The highest PCE concentrations (35 µg/L at 12-D and 21.5 µg/L at MS-28D) were found north of the NIROP building and at the northern end of the NIROP building. Concentrations of PCE in USGS-10, MS-41D, and MS-47D near ERR/ACP were close to the MCL of 5 µg/L. Some

speculation of an off-site source of PCE having impact in the northeast portion of the site appears to be warranted, based on PCE concentrations in this area. No VC was detected in deep wells at concentrations exceeding MCL. No PCE or VC was detected in UD69-D.

5.3.1.4 Bedrock Prairie du Chien Wells

Eight PC wells were sampled in November 2011. Four of the wells sampled had not been sampled since 2008 or earlier (1-PC, 4-PC, 5-PC, and MS-48PC). PCE concentrations exceeded the MCL of 5 µg/L in two wells, 2-PC and 5-PC (13 µg/L and 42 µg/L, respectively). Historically, PCE has been detected in bedrock wells at an order of magnitude greater than PCE concentrations in the overlying zones. 2-PC is located north of the NIROP building in the North 40 area and 5-PC is located north of the NIROP Fridley property boundary line. PCE concentrations, although still elevated at certain locations across the site, steadily decrease toward the Mississippi River, indicating an off-site PCE source north of the NIROP building.

TCE was detected at levels slightly above the MCL of 5 µg/L in one well, MS-48PC (14 µg/L). The last time this well was sampled (in October 2006) the TCE concentration was 3.6 µg/L.

5.3.2 Statistical Evaluation of Contaminant Trend Data

In addition to the qualitative trend discussions presented in Section 5.3.1, Mann-Kendall trend evaluations were performed on TCE and total 1,2-DCE. The Mann-Kendall analyses apply to long-term trends only, as opposed to short-term trends. The Mann-Kendall analysis was confined to annual data (fall sampling rounds) from 2001 to the present. In some cases this includes as many as 10 values (the October 2002 data set is considered invalid by MPCA). Data reported at less than the detection limit (non-detect) were used by assigning these results a common value (0 µg/L) that is less than the smallest measured value (detection) in the data set. The results of the statistical trend analyses are presented in Tables 5-4 and 5-5 and are summarized in Table 5-6. The Mann-Kendall analysis compares all of the pairs of concentration values, counts the number of pairs where values are increasing, and subtracts the number of pairs that are decreasing. If more pairs are increasing, then an upward trend is apparent. If more pairs are decreasing, then a downward trend is observed. The results provide a “Critical Value” and “Trend” for alpha equals 0.20 (80-percent confidence), alpha equals 0.10 (90-percent confidence), and alpha equals 0.05 (95-percent confidence). The critical value is the value that the absolute value the test statistic must exceed for the null hypothesis (in this case, the null hypothesis is no trend) to be rejected. The magnitude of the critical value increases as alpha decreases. The effect of decreasing alpha is that fewer trends are able to be identified. Discussions in this AMR reference Mann-Kendall results at the

80-percent confidence interval, although results for the 90- and 95-percent confidence intervals are also provided in Tables 5-4 and 5-5. The BAE RCRA wells were not included in statistical analyses.

Overall, it appears that TCE concentrations are relatively stable or decreasing in the shallow and deep aquifer zones and in the bedrock zone. In the intermediate zone, TCE concentrations in most wells are stable to decreasing, except for wells with notable short term increases in the area just downgradient of former extraction well AT-3A. Concentration changes over time for total 1,2-DCE likely are influenced by the biodegradation of TCE to total 1,2-DCE. Similar to TCE, total 1,2-DCE concentrations appear to be stable or slightly decreasing in the shallow, intermediate, and deep drift zones and in the bedrock zone.

5.3.3 Monitoring Data – Riverside Wells

In July, August, and October 1999, MPCA collected surface water samples from the Mississippi River adjacent to the NIROP/ACP site and water samples from the intake at the Minneapolis Water Works (MWW). The MWW intake is approximately 0.85 mile downstream along the Mississippi River from the NIROP site. The Mississippi River and MWW intake samples were analyzed for VOCs using the U.S. EPA SW-846 Method 8260, with lower MDLs, by the Minnesota Department of Health (MDH) Chemical Laboratory and by Interpoll Laboratories. No VOCs (including TCE) were detected in any of the samples. As a result, no surface water standards or criteria were exceeded.

No additional sampling was conducted in the river by the Navy; however, in the CERCLA Five-Year Review for OU 1, dated October 31, 2003 (Tetra Tech, 2003c), the Navy agreed to continue sampling and reporting data from the riverside wells in lieu of future surface water sampling. The riverside wells are monitoring wells located along the downgradient edge of ACP. The data from these monitoring wells is compared to Minnesota Surface Water Criteria to determine whether surface water To Be Considered objectives (TBC) for the Mississippi River are met prior to plume discharge to the river. TCE is the COC detected most frequently in excess of surface water criteria in the riverside wells, which is consistent with results from 2010. A summary of the detections in these wells and comparisons to applicable regulatory criteria are provided in Table 5-7.

5.4 AIR EMISSION MONITORING DATA

Quarterly actual emissions estimates from the ASU, that are part of the GWTF at NIROP Fridley, were completed by Bay West in 2011. The estimates are provided in Appendix A with the monthly O&M reports and are required by MPCA operating guidelines. No quarterly emission rate estimates exceeded

the site-specific air emission rate; therefore, it can be concluded that the GWTF operated in accordance with regulatory requirements and no emission control measures are required.

TABLE 5-1

SUMMARY OF GROUNDWATER SAMPLING NETWORK[1][2]
2011 ANNUAL MONITORING REPORT
NIROP FRIDLEY, MINNESOTA

Well ID	2007		2008		2009		2010		5-YEAR REVIEW SAMPLING 2011				2012				2013		2014	
	Spring	Autumn	Spring	Autumn	Spring	Autumn	Spring	Autumn	Winter	Spring	Summer	Autumn	Winter	Spring	Summer	Autumn	Spring	Autumn	Spring	Autumn
Shallow Wells																				
1-S																				
2-S		1				1						1						1		
3-S		1				1						1						1		
4-S																				
5-S																				
6-S		1		1		1		1				1				1		1		1
7-S		1		1		1		1				1				1		1		1
8-S		1		1		1		1				1				1		1		1
9-S		1		1		1		1				1				1		1		1
10-S																				
11-SB																				
12-S																				
13-S																				
14-S																				
14-IS		1		1		1		1				1				1		1		1
15-S																				
16-S		1		1		1		1				1				1		1		1
17-S		1	1	1	1	1		1				1				1		1		1
18-S			1	1	1	1		1	1	1	1	1	1	1	1	1		1		1
19-S[1]		1		1		1		1				1				1		1		1
20-S[2]				1				1				1				1		1		1
21-S				1				1								1				1
22-S																				
23-S																				
24-S		1		1		1		1				1				1		1		1
25-S																				
26-S		1		1		1		1				1				1		1		1
27-S		1		1		1		1				1				1		1		1
MS-28S		1		1		1		1				1				1		1		1
MS-29S												1								
MS-30S																				
MS-31S		1		1		1		1				1				1		1		1
MS-32S		1		1		1		1				1				1		1		1
MS-33S		1		1		1		1				1				1		1		1
MS-34S		1		1		1		1				1				1		1		1
MS-35S		1		1		1		1				1				1		1		1
MS-36S			1	1	1	1		1	1	1	1	1	1	1	1	1		1		1
MS-38S		1	1	1	1	1		1	X[8]	1	1	1	1	1	1	1		1		1
MS-39S																				
MS-40S		1		1		1		1				1				1		1		1
MS-40I																				
MS-42I[3]			1	1	1	1		1				1				1		1		1

TABLE 5-1

SUMMARY OF GROUNDWATER SAMPLING NETWORK[1][2]
2011 ANNUAL MONITORING REPORT
NIROP FRIDLEY, MINNESOTA

Well ID	2007		2008		2009		2010		5-YEAR REVIEW SAMPLING 2011				2012				2013		2014	
	Spring	Autumn	Spring	Autumn	Spring	Autumn	Spring	Autumn	Winter	Spring	Summer	Autumn	Winter	Spring	Summer	Autumn	Spring	Autumn	Spring	Autumn
Shallow Wells (Continued)																				
MS-41S			1	1	1	1		1				1				1		1		1
MS-43S		1	1	1	1	1		1				1				1		1		1
MS-44S		1	1	1	1	1		1				1				1		1		1
MS-45S		1		1		1		1	1	1	1	1	1	1	1	1		1		1
MS-46S[6]								1	1	1	1	1	1	1	1	1		1		1
MS-47S		1		1		1		1				1				1		1		1
MS-49S		1		1		1		1				1				1		1		1
MS-52S(1)		1		1		1		1				1				1		1		1
MS-54S[4]	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1		1		1
MS-56S[4]	1	1	1	1	1	1		1	X[8]	X[8]	1	1	1	1	1	1		1		1
PES-CW-2[9]					1	1		1				1				1		1		1
USGS-1																				
USGS-2		1		1		1		1				1				1		1		1
USGS-3																				
USGS-4																				
USGS-5		1		1		1		1				1				1		1		1
USGS-6																				
USGS-7																				
USGS-8				1				1								1				1
USGS-9																				
AT-5A		1		1		1		1				1				1		1		1
AT-7		1		1		1		1				1				1		1		1
AT-8		1		1		1		1				1				1		1		1
AT-9		1		1		1		1				1				1		1		1
Intermediate Wells																				
1-IS																				
2-IS				1				1				1				1		1		1
3-IS		1		1		1		1				1				1		1		1
4-IS		1		1		1		1				1				1		1		1
5-IS		1		1		1		1				1				1		1		1
6-IS		1		1		1		1				X[8]				1		1		1
7-IS[7]												1								
8-IS		1	1	1	1	1		1				1				1		1		1
10-IS		1		1		1		1				1				1		1		1
11-S				1				1				1				1		1		1
12-IS		1		1		1		1				1				1		1		1
13-IS		1		1		1		1	X[8]	1	1	1	1	1	1	1		1		1
15-IS		1		1		1		1	1	1	1	1	1	1	1	1		1		1
16-IS		1		1		1		1				1				1		1		1
17-D		1		1		1		1				1				1		1		1
MS-28I		1		1		1		1				1				1		1		1
MS-29I		1		1		1		1				1				1		1		1
MS-31I				1				1								1				1

TABLE 5-1

SUMMARY OF GROUNDWATER SAMPLING NETWORK[1][2]
2011 ANNUAL MONITORING REPORT
NIROP FRIDLEY, MINNESOTA

Well ID	2007		2008		2009		2010		5-YEAR REVIEW SAMPLING 2011				2012				2013		2014	
	Spring	Autumn	Spring	Autumn	Spring	Autumn	Spring	Autumn	Winter	Spring	Summer	Autumn	Winter	Spring	Summer	Autumn	Spring	Autumn	Spring	Autumn
Intermediate Wells (Continjued)																				
MS-32I		1		1		1		1				1				1		1		1
MS-33I		1		1		1		1	1	1	1	1	1	1	1	1		1		1
MS-34I		1	1	1	1	1		1	1	1	1	1	1	1	1	1		1		1
MS-35I		1	1	1	1	1		1	1	1	1	1	1	1	1	1		1		1
MS-36I			1	1	1	1		1				1				1		1		1
MS-37S		1	1	1	1	1		1	1	1	1	1	1	1	1	1		1		1
MS-41I		1	1	1	1	1		1	1	1	1	1	1	1	1	1		1		1
MS-43I		1	1	1	1	1		1	1	1	1	1	1	1	1	1		1		1
MS-44I		1	1	1	1	1		1	1	1	1	1	1	1	1	1		1		1
MS-45I		1		1		1		1	1	1	1	1	1	1	1	1		1		1
MS-46I																				
MS-47I		1		1		1		1				1				1		1		1
MS-49I		1		1		1		1				1				1		1		1
MS-51I[1]		1		1		1		1				1				1		1		1
MS-52I[1]		1		1		1		1				1				1		1		1
MS-54I[4]	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1		1		1
MS-55I[4]	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1		1		1
MS-56I[4]	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1		1		1
AT-3A		1		1		1		1	1	1	1	X[8]	1	1	1	1		1		1
AT-10		1		1		1		1	1	1	1	1	1	1	1	1		1		1
Deep Wells																				
1-D																				
2-D		1		1		1		1				1				1		1		1
3-D																				
4-D				1		1		1				1				1		1		1
5-D		1		1		1		1				1				1		1		1
6-D		1		1		1		1				1				1		1		1
7-D		1		1		1		1				1				1		1		1
8-D		1		1		1		1				1				1		1		1
9-D[1]		1		1		1		1				1				1		1		1
10-D																				
11-D																				
12-D		1		1		1		1				1				1		1		1
13-D																				
14-D																				
15-D		1		1		1		1				1				1		1		1
16-D		1		1		1		1				1				1		1		1
MS-28D		1		1		1		1				1				1		1		1
MS-29D												1								
MS-30D												1								
MS-30I		1		1		1		1				1				1		1		1
MS-31D		1		1		1		1				1				1		1		1

TABLE 5-1

SUMMARY OF GROUNDWATER SAMPLING NETWORK[(1)(2)]
2011 ANNUAL MONITORING REPORT
NIROP FRIDLEY, MINNESOTA

Well ID	2007		2008		2009		2010		5-YEAR REVIEW SAMPLING 2011				2012				2013		2014	
	Spring	Autumn	Spring	Autumn	Spring	Autumn	Spring	Autumn	Winter	Spring	Summer	Autumn	Winter	Spring	Summer	Autumn	Spring	Autumn	Spring	Autumn
Deep Wells (Continued)																				
MS-32D		1		1		1		1				1				1		1		1
MS-33D		1		1		1		1				1				1		1		1
MS-34D																				
MS-35D		1		1		1		1	1	1	1	1	1	1	1	1		1		1
MS-36D		1		1		1		1				1				1		1		1
MS-40D		1		1		1		1				1				1		1		1
MS-41D				1		1		1				1				1		1		1
MS-43D		1		1		1		1				1				1		1		1
MS-44D		1		1		1		1				1				1		1		1
MS-47D		1		1		1		1				1				1		1		1
MS-49D		1		1		1		1				1				1		1		1
MS-52D[(1)]				1		1		1				1				1		1		1
USGS 10		1		1		1		1				1				1		1		1
AT-5B		1		1		1		1	1	1	1	1	1	1	1	1		1		1
Bedrock Wells																				
1-PC												1								
2-PC				1				1				1				1				1
3-PC				1		1		1				1				1		1		1
4-PC												1								
5-PC[(5)]				1								1								
MS-48PC												1								
MS-50PC																				
MS-53PC				1				1				1				1				1
Fridley Well 13		1		1		1		1				1				1		1		1
TOTAL WELLS PROPOSED	**NE**	**NE**	**NE**	**NE**	**21**	**100**	**0**	**105**	**24**	**24**	**24**	**113**	**24**	**24**	**24**	**107**	**0**	**104**	**0**	**107**
TOTAL WELLS SAMPLED	**5**	**90**	**21**	**106**	**22**	**100**	**0**	**107**	**21**	**23**	**24**	**112**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**

Notes:

1 Goundwater flow direction in the southern portion of the ACP indicates that the TCE detected in wells MS-52S, MS-52I, and MS-52D and possibly wells 19-S, MS-51I, and 9-D may originate from the BAE Systems site. This was noted in the 1999 AMR (TtNUS, 2000b) and in each subsequent AMR.

2 Data from UD-63S, included pending availablility from BAE Systems and may be collected at a different time period (within approximately 6 months of AMR data). If data are not available 20-S is sampled in its place. If this is the case, 20-S will represent the plume edge at this location (i.e., in place of UD-63S).

3 This well has been designated to the shallow zone per the tele-con on May 13, 2002.

4 Well was installed in 2005. An accelerated sampling program for this well is currently projected to establish a database.

5 Navy samples to track COC migration potentially originating off site. This is not required by regulatory agencies or the Partnering Team.

6 Navy is sampling MS-46S as a part of the Quarterly Monitoring Program; the well is not sampled as a part of the long term monitoring program.

7 Navy is sampling 7-IS in place of 6-IS in 2011, because 6-IS is obstructed and has not been able to be sampled. 7-IS is at a comparable depth interval and is near 6-IS.

8 An "X" indicates a well that was proposed for 2011 sampling, but a sample was unable to be collected. See Section 5.1 for explanation of deviations.

9 PES-CW-2 is an ACP Oil injection Study Monitoring Well. See Technical Memorandum (Parsons, November 2006) for well locations and sampling frequency.

NE indicates that the total number of proposed wells was not evaluated for that year.

TABLE 5-2

DETECTED CONCENTRATIONS OF VOCs
FEB, MAY, AUG, NOV 2011 SAMPLING RESULTS
2011 ANNUAL MONITORING REPORT
NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT
FRIDLEY, MINNESOTA

Well ID	SAMPLE ID	Sample Event	VOCs (ug/L)									
			1,1,1-TCA	1,1-DCA	1,1-DCE	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	TOTAL 1,2-DCE	VC	TOTAL VOCS
Shallow												
2-S	MS02S_20111108	November	**ND**	**ND**	**ND**	0.1 J	2.5	1.7	0.26 J	1.96	**ND**	4.56
3-S	MS03S_20111117	November	1.1	3.2	0.38 J	1.5	91	130	5.9	135.9	0.09 J	233.17
6-S	MS06S_20111103	November	**ND**	**ND**	**ND**	**ND**	2.7	3.8	0.11 J	3.91	**ND**	6.61
7-S	MS07S_20111110	November	**ND**	**ND**	**ND**	0.61	4.1	10	1.2	11.2	**ND**	15.91
8-S	MS08S_20111111	November	**ND**	0.48 J	0.2 J	1.7	68	210	7.2	217.2	**ND**	287.58
9-S	MS09S_20111115	November	0.55	0.09 J	**ND**	7	40	2	0.07 J	2.07	**ND**	49.71
14-IS	MS14IS_20111110	November	**ND**	2.6	1.1	0.28 J	440	90	38	128	0.11 J	572.09
16-S	MS16S_20111101	November	**ND**	**ND**	**ND**	0.24 J	2.8	1.6	0.17 J	1.77	**ND**	4.81
17-S	MS17S_20111101	November	**ND**	**ND**	**ND**	0.17 J	4	2.3	0.11 J	2.41	**ND**	6.58
18-S	MS18S	February	**ND**	1.2	1.6	**ND**	470	99	17	116	0.26 J	589.26
	MS18S_20110510	May	**ND**	0.94 J	1.3	**ND**	490	57	17	74	**ND**	566.24
	MS18S_20110816	August	**ND**	1.2	1.9	**ND**	640	58	18	76	**ND**	719.1
	MS18S_20111110	November	**ND**	1.2 J	1.8	**ND**	690	69	17	86	0.2 J	779.2
	MS18S_20111110-AVG	November	**ND**	1.2	1.7	**ND**	690	69	17	86	0.2	779.1
	MS18S_20111110-D	November	**ND**	1.2	1.6	**ND**	690	69	17	86	0.2 J	779
19-S	MS19S_20111107	November	0.24 J	0.74	0.19 J	0.93	38	3.8	0.42 J	4.22	**ND**	44.32
20-S	MS20S_20111115	November	**ND**	**ND**	**ND**	**ND**	0.37 J	**ND**	**ND**	**ND**	**ND**	0.37
24-S	MS24S_20111103	November	**ND**	**ND**	**ND**	0.23 J	17	34	1.4	35.4	**ND**	52.63
	MS24S_20111103-AVG	November	**ND**	**ND**	**ND**	0.24	16.5	34.5	1.35	35.85	**ND**	52.59
	MS24S_20111103-D	November	**ND**	**ND**	**ND**	0.25 J	16	35	1.3	36.3	**ND**	52.55
26-S	MS26S_20111110	November	**ND**	0.54	0.52	2.2	220	36	6	42	0.1 J	265.36
27-S	MS27S_20111108	November	**ND**	2.2	0.83	**ND**	54	120	5.7	125.7	0.14 J	182.87
MS-28S	MS28S_20111111	November	**ND**	0.42 J	1.4	**ND**	27	100	6.1	106.1	**ND**	134.92
	MS28S_20111111-AVG	November	**ND**	0.44	1.5	**ND**	28.5	110	6.45	116.45	**ND**	146.89
	MS28S_20111111-D	November	**ND**	0.46 J	1.6	**ND**	30	120	6.8	126.8	**ND**	158.86
MS-29S	MS29S_20111115	November	**ND**	0.25 J	0.14 J	0.44 J	22	79	3.1	82.1	**ND**	104.93
MS-31S	MS31S_20111111	November	**ND**	0.22 J	0.12 J	**ND**	18	25	5.8	30.8	**ND**	49.14
MS-32S	MS32S_20111115	November	**ND**	0.48 J	0.66	**ND**	19	83	24	107	0.11 J	127.25
MS-33S	MS33S_20111111	November	1.6	2.1	0.3 J	**ND**	40	21	0.65	21.65	**ND**	65.65
MS-34S	MS34S_20111103	November	**ND**	6.3	0.43 J	**ND**	16	240	23	263	0.12 J	285.85
MS-35S	MS35S_20111103	November	**ND**	**ND**	**ND**	**ND**	11	9.3	0.9	10.2	**ND**	21.2

TABLE 5-2

DETECTED CONCENTRATIONS OF VOCs
FEB, MAY, AUG, NOV 2011 SAMPLING RESULTS
2011 ANNUAL MONITORING REPORT
NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT
FRIDLEY, MINNESOTA

Well ID	SAMPLE ID	Sample Event	VOCs (ug/L)									
			1,1,1-TCA	1,1-DCA	1,1-DCE	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	TOTAL 1,2-DCE	VC	TOTAL VOCS
MS-36S	MS36S	February	**ND**	1.7	0.68	**ND**	190	220	78	298	2.3	492.68
	MS36S_20110510	May	**ND**	0.95	0.53	**ND**	72	160	48	208	3.6	285.08
	MS36S_20110817	August	**ND**	1.4	0.73	**ND**	120	200	73	273	2.5 J	397.63
	MS36S_20111117	November	**ND**	1.9	0.86	**ND**	180	220	79	299	2.6	484.36
MS-38S	MS38S_20110510	May	**ND**	3.4	2.9	**ND**	1400	120	91	211	**ND**	1617.3
	MS38S_20110817	August	**ND**	4.4	0.38 J	0.22 J	720	160	55	215	**ND**	940
	MS38S_20111110	November	**ND**	3.6	0.9 J	**ND**	760	130	64	194	**ND**	958.5
MS-40S	MS40S_20111114	November	**ND**	0.16 J	**ND**	0.43 J	11	0.68	**ND**	0.68	**ND**	12.27
MS-41S	MS41S_20111116	November	**ND**	**ND**	**ND**	**ND**	17	3.5	0.71	4.21	**ND**	21.21
MS-42I	MS42I_20111101	November	**ND**	**ND**	**ND**	0.11 J	2.6	2	**ND**	2	**ND**	4.71
MS-43S	MS43S_20111109	November	**ND**	1.3	0.43 J	**ND**	140	36	2.7	38.7	0.08 J	180.51
MS-44S	MS44S_20111107	November	**ND**	0.19 J	0.08 J	**ND**	17	9.3	0.85	10.15	**ND**	27.42
MS-45S	MS45S	February	**ND**	2.1	1.6	**ND**	250	180	30	210	0.35	464.05
	MS45S_20110509	May	**ND**	2.1	1.7	**ND**	280	140	27	167	0.28	451.08
	MS45S_20110815	August	**ND**	1.7	1.8	**ND**	280	120	24	144	**ND**	427.5
	MS45S_20110815-AVG	August	**ND**	1.7	1.75	**ND**	280	120	24	144	**ND**	427.45
	MS45S_20110815-D	August	**ND**	1.7	1.7	**ND**	280	120	24	144	**ND**	427.4
	MS45S_20111109	November	**ND**	1.5	1.6	**ND**	230	180	26	206	0.14 J	439.24
	MS45S_20111109-AVG	November	**ND**	1.5	1.65	**ND**	250	190	26	216	0.135	469.285
	MS45S_20111109-D	November	**ND**	1.5	1.7	**ND**	270	200	26	226	0.13 J	499.33
MS-46S	MS46S	February	**ND**	1.1	1.2	**ND**	480	44	22	66	0.24 J	548.34
	MS46S_20110510	May	**ND**	0.86 J	1.3	**ND**	430	40	21	61	0.18 J	493.34
	MS46S_20110816	August	**ND**	0.75	1.6	**ND**	380	31	20	51	**ND**	433.35
	MS46S_20111110	November	**ND**	0.52	1.2	**ND**	320	26	15	41	0.15 J	362.87
MS-47S	MS47S_20111108	November	**ND**	0.12 J	**ND**	0.28 J	18	7.3	0.69	7.99	**ND**	26.39
MS-49S	MS49S_20111108	November	**ND**	1.2	0.37 J	0.16 J	160	38	8.1	46.1	**ND**	207.83
	MS49S_20111108-AVG	November	**ND**	1.15	0.365	0.155	160	37.5	7.95	45.45	**ND**	207.12
	MS49S_20111108-D	November	**ND**	1.1	0.36 J	0.15 J	160	37	7.8	44.8	**ND**	206.41
MS-52S	MS52S_20111107	November	**ND**	**ND**	**ND**	0.76 J	8.4	0.29 J	0.06 J	0.35	**ND**	9.51
MS-54S	MS54S	February	**ND**	2.5	2.5 J	**ND**	1100	160	46	206	**ND**	1311.55
	MS54S_20110510	May	**ND**	1.7 J	2.6	**ND**	1000	150	35	185	**ND**	1189.3
	MS54S_20110817	August	**ND**	3.2	2.7	**ND**	850	160	58	218	0.43 J	1074.33
	MS54S_20111117	November	**ND**	7.9	4.5	0.55 J	1800	440	170	610	1.4	2424.35

TABLE 5-2

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NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT
FRIDLEY, MINNESOTA

Well ID	SAMPLE ID	Sample Event	VOCs (ug/L)									
			1,1,1-TCA	1,1-DCA	1,1-DCE	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	TOTAL 1,2-DCE	VC	TOTAL VOCS
MS-56S	MS56S_20110817	August	**ND**	9.6	1.4	**ND**	28	430	66	496	0.34 J	535.34
	MS56S_20111116	November	**ND**	7.5	1.4	**ND**	58	420	63	483	0.43	550.33
AT-5A	AT05A_20111102	November	**ND**	**ND**	0.55	0.54	220	54	21	75	**ND**	296.09
AT-7	AT07_20111102	November	**ND**	1.5	1.1	0.6	170	110	81	191	0.37	364.57
AT-8	AT08_20111102	November	**ND**	9.8	0.82	**ND**	82	290	45	335	0.33	427.95
AT-9	AT09_20111102	November	**ND**	0.59	0.22 J	**ND**	67	59	4.2	63.2	0.08 J	131.09
PES-CW-2	PESCW02_20111107	November	**ND**	**ND**	**ND**	0.29 J	17	3.8	0.32 J	4.12	**ND**	21.41
USGS-2	USGS02_20111110	November	**ND**	**ND**	**ND**	**ND**	7.3	2.7	0.25 J	2.95	**ND**	10.25
USGS-5	USGS05_20111101	November	**ND**	**ND**	**ND**	0.13 J	0.17 J	**ND**	**ND**	**ND**	**ND**	0.3
Intermediate												
2-IS	MS02IS_20111111	November	**ND**	**ND**	**ND**	**ND**	7.5	3.5	**ND**	3.5	**ND**	11
3-IS	MS03IS_20111114	November	**ND**	0.13 J	0.23 J	15	28	14	0.26 J	14.26	**ND**	57.62
4-IS	MS04IS_20111109	November	**ND**	0.38 J	0.73	**ND**	250	40	4.9	44.9	0.1 J	296.11
5-IS	MS05IS_20111109	November	**ND**	**ND**	**ND**	0.14 J	2.8	0.41 J	**ND**	0.41	**ND**	3.35
7-IS	MS07IS_20111117	November	**ND**	**ND**	9.3 J	**ND**	15000	360	180	540	2 J	15551.3
8-IS	MS08IS_20111117	November	**ND**	2.2	2.3	**ND**	83	58	98	156	1.5	245
10-IS	MS10IS_20111101	November	**ND**	**ND**	**ND**	0.61 J	0.63	0.59	**ND**	0.59	**ND**	1.83
11-S	MS11S_20111115	November	**ND**	0.64	0.28 J	**ND**	33	130	8.5	138.5	**ND**	172.42
12-IS	MS12IS_20111115	November	**ND**	1.3	1.1	**ND**	44	34	72	106	0.52	152.92
	MS12IS_20111115-AVG	November	**ND**	1.3	1.1	**ND**	44.5	34.5	77	111.5	0.515	158.915
	MS12IS_20111115-D	November	**ND**	1.3	1.1	**ND**	45	35	82	117	0.51	164.91
13-IS	MS131S_20110509	May	**ND**	0.14 J	0.20 J	**ND**	21	3.8	0.66	4.46	**ND**	25.8
	MS13IS_20110815	August	**ND**	0.12 J	0.2 J	**ND**	22	2.1	0.59	2.69	**ND**	25.01
	MS13IS_20111115	November	**ND**	**ND**	0.17 J	**ND**	19	1.8	0.53	2.33	**ND**	21.5
15-IS	MS15IS	February	**ND**	0.22 J	0.15 J	3.5	21	1.8	0.23 J	2.03	**ND**	26.9
	MS15IS-AVG	February	**ND**	0.22	0.15	3.5	21	1.9	0.245	2.145	**ND**	27.02
	MS15IS-D	February	**ND**	0.22 J	0.15 J	3.5	21	2	0.26 J	2.26	**ND**	27.13
	MS15IS_20110509	May	**ND**	0.24 J	0.19 J	3.7	23	1.6	0.30 J	1.9	**ND**	29.03
	MS15IS_20110815	August	**ND**	**ND**	**ND**	3.8	24	2	**ND**	2	**ND**	29.8
	MS15IS_20111109	November	**ND**	0.25 J	0.18 J	2.9 J	21	2.1	0.38 J	2.48	**ND**	26.81
16-IS	MS16IS_20111107	November	**ND**	0.18 J	0.21 J	1 J	26	15	0.59	15.59	**ND**	42.98
17-D	MS17D_20111104	November	**ND**	0.28 J	0.24 J	**ND**	36	12	1.4	13.4	**ND**	49.92
MS-28I	MS28I_20111118	November	**ND**	4.9	1.7	**ND**	240	76	5.2	81.2	0.38	328.18

TABLE 5-2

DETECTED CONCENTRATIONS OF VOCs
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NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT
FRIDLEY, MINNESOTA

Well ID	SAMPLE ID	Sample Event	VOCs (ug/L)									
			1,1,1-TCA	1,1-DCA	1,1-DCE	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	TOTAL 1,2-DCE	VC	TOTAL VOCS
MS-29I	MS29I_20111118	November	**ND**	0.92	0.84	0.57	73	260	2.8	262.8	0.09 J	338.22
MS-30I	MS30I_20111115	November	**ND**	0.82	0.54	1.7	91	4.5	0.93	5.43	**ND**	99.49
MS-32I	MS32I_20111118	November	**ND**	0.61	1.9	**ND**	130	180	240	420	0.67	553.18
MS-33I	MS33I	February	**ND**	3.6 J	10	**ND**	2600	2000	1900	3900	33	6547.8
	MS33I_20110511	May	**ND**	2.9 J	12	**ND**	1500	2600	2200	4800	34	6348.9
	MS33I_20110511-AVG	May	**ND**	3.1	12.5	**ND**	1450	2650	2100	4750	34.5	6250.1
	MS33I_20110511-D	May	**ND**	3.3 J	13	**ND**	1400	2700	2000	4700	35	6151.3
	MS33I_20110818	August	**ND**	5.7	7.5	**ND**	2100	1200	1600	2800	27 J	4940.2
	MS33I_20110818-AVG	August	**ND**	5.6	7.2	**ND**	2100	1200	1600	2800	27	4939.8
	MS33I_20110818-D	August	**ND**	5.5	6.9	**ND**	2100	1200	1600	2800	27 J	4939.4
	MS33I_20111118	November	**ND**	7.7	7.9	**ND**	7000	1400	1700	3100	38	10153.6
MS-34I	MS34I	February	**ND**	5.7	3.5	**ND**	1200	360	47	407	0.80 J	1617
	MS34I-AVG	February	**ND**	5.7	3.5	**ND**	1250	355	47	402	0.8	1662
	MS34I-D	February	**ND**	5.7	3.5	**ND**	1300	350	47	397	0.80 J	1702
	MS34I_20110511	May	**ND**	7.9	4.9	**ND**	1700	420	66	486	1.6	2200
	MS34I_20110817	August	**ND**	7.6	3.8	**ND**	1200	280	57	337	0.9 J	1549.3
	MS34I_20111118	November	**ND**	11	2.7	**ND**	840	390	51	441	0.43 J	1295.13
MS-35I	MS35I	February	**ND**	9.6	3.7	0.28 J	840	180	36	216	0.63	1070.49
	MS35I_20110509	May	**ND**	11	4.3	0.35 J	900	210	43	253	0.73	1169.38
	MS35I_20110816	August	**ND**	11	4.6	**ND**	850	230	58	288	0.6	1154.2
	MS35I_20111110	November	**ND**	6.4	4.1	0.22 J	830	270	66	336	0.58	1177.3
MS-36I	MS36I_20111116	November	**ND**	0.69	1.1	0.17 J	120	120	4.7	124.7	0.12 J	246.78
	MS36I_20111116-AVG	November	**ND**	0.675	1.1	0.165	120	120	4.65	124.65	0.115	246.705
	MS36I_20111116-D	November	**ND**	0.66	1.1	0.16 J	120	120	4.6	124.6	0.11 J	246.63
MS-37S	MS37S	February	**ND**	1.4	2.7	**ND**	23	46	93	139	0.67	166.77
	MS37S_20110509	May	**ND**	1.4	3.4	**ND**	15	45	85	130	0.42	150.22
	MS37S_20110509-AVG	May	**ND**	1.4	3.4	**ND**	15.5	45	86	131	0.43	151.73
	MS37S_20110509-D	May	**ND**	1.4	3.4	**ND**	16	45	87	132	0.44	153.24
	MS37S_20110815	August	**ND**	1.6	2.8	**ND**	20	46	83	129	0.52	153.92
	MS37S_20111114	November	**ND**	0.2 J	0.42 J	**ND**	18	21	24	45	**ND**	63.62
MS-41I	MS41I	February	**ND**	0.28 J	0.29 J	3.9	24	19	0.7	19.7	**ND**	48.17
	MS41I_20110510	May	**ND**	0.26 J	0.34 J	4.3	28	17	0.96	17.96	**ND**	50.86
	MS41I_20110817	August	**ND**	0.26 J	0.23 J	3.4	22	17	0.65	17.65	**ND**	43.54
	MS41I_20111116	November	**ND**	0.49 J	0.64	3.1	110	27	6.2	33.2	0.09 J	147.52

TABLE 5-2

DETECTED CONCENTRATIONS OF VOCs
FEB, MAY, AUG, NOV 2011 SAMPLING RESULTS
2011 ANNUAL MONITORING REPORT
NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT
FRIDLEY, MINNESOTA

Well ID	SAMPLE ID	Sample Event	VOCs (ug/L)									
			1,1,1-TCA	1,1-DCA	1,1-DCE	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	TOTAL 1,2-DCE	VC	TOTAL VOCS
MS-43I	MS43I	February	**ND**	1	0.37 J	**ND**	36	30	1	31	0.080 J	68.45
	MS43I_20110509	May	**ND**	0.79	0.33 J	**ND**	29	22	0.87	22.87	**ND**	52.99
	MS43I_20110815	August	**ND**	0.62	**ND**	**ND**	25	14	0.88	14.88	**ND**	40.5
	MS43I_20111107	November	**ND**	0.55	0.23 J	**ND**	22	15	0.77	15.77	**ND**	38.55
MS-44I	MS44I	February	**ND**	7.9	2.6	**ND**	380	300	22	322	0.63	713.13
	MS44I_20110510	May	**ND**	8.3	2.7	**ND**	500	350	24	374	0.86	885.86
	MS44I_20110816	August	**ND**	8.7	2.5	**ND**	430	260	24	284	0.68	725.88
	MS44I_20111110	November	**ND**	8.5	2.4	**ND**	530	340	23	363	0.48	904.38
MS-45I	MS45I	February	**ND**	0.12 J	0.26 J	3.5	68	16	0.91	16.91	**ND**	88.79
	MS45I-AVG	February	**ND**	0.12	0.265	3.55	67.5	16	0.92	16.92	**ND**	88.36
	MS45I-D	February	**ND**	0.12 J	0.27 J	3.6	67	16	0.93	16.93	**ND**	87.92
	MS45I_20110509	May	**ND**	**ND**	0.17 J	3.3	57	11	0.58	11.58	**ND**	72.05
	MS45I_20110815	August	**ND**	**ND**	**ND**	2.7	48	14	0.66	14.66	**ND**	65.36
	MS45I_20111109	November	**ND**	0.09 J	0.16 J	1.9 J	46	11	0.52	11.52	**ND**	59.67
MS-47I	MS47I_20111108	November	**ND**	0.32 J	0.3 J	1.9	51	16	1.3	17.3	**ND**	70.82
MS-49I	MS49I_20111104	November	**ND**	0.26 J	0.16 J	2.6	24	1.7	0.38 J	2.08	**ND**	29.1
	MS49I_20111104-AVG	November	**ND**	0.265	0.155	2.6	24.5	1.65	0.38	2.03	**ND**	29.55
	MS49I_20111104-D	November	**ND**	0.27 J	0.15 J	2.6	25	1.6	0.38 J	1.98	**ND**	30
MS-51I	MS51I_20111103	November	0.23 J	0.3 J	0.1 J	0.8	10	0.62	0.06 J	0.68	**ND**	12.11
MS-52I	MS52I_20111107	November	0.14 J	0.32 J	0.15 J	1.1	16	3.2	0.54	3.74	**ND**	21.45
MS-54I	MS54I	February	**ND**	1.4 J	3.4	**ND**	1100	310	23	333	**ND**	1438.35
	MS54I_20110510	May	**ND**	1.8 J	4.3	1.3 J	1600	300	31	331	**ND**	1938.4
	MS54I_20110817	August	**ND**	1.6 J	3.5	**ND**	1100	220	30	250	**ND**	1355.1
	MS54I_20111116	November	**ND**	2.6	3	0.19 J	780	150	20	170	0.7	956.49
MS-55I	MS55I	February	**ND**	0.98	0.39 J	**ND**	73	50	2.7	52.7	**ND**	127.07
	MS55I_20110510	May	**ND**	1	0.42 J	**ND**	75	41	3	44	**ND**	120.42
	MS55I_20110817	August	**ND**	0.67	0.31 J	**ND**	71	31	2.3	33.3	**ND**	105.28
	MS55I_20111116	November	**ND**	0.45 J	0.24 J	**ND**	59	22	1.7	23.7	**ND**	83.39
MS-56I	MS56I	February	**ND**	7.9	1.3	**ND**	290	300	27	327	0.14 J	626.34
	MS56I_20110510	May	**ND**	8.3	1.3	**ND**	330	300	28	328	0.16 J	667.76
	MS56I_20110817	August	**ND**	6.3	1	**ND**	240	250	23	273	0.13 J	520.43
	MS56I_20111116	November	**ND**	9.5	2.1	**ND**	280	260	33	293	0.32	584.92

TABLE 5-2

DETECTED CONCENTRATIONS OF VOCs
FEB, MAY, AUG, NOV 2011 SAMPLING RESULTS
2011 ANNUAL MONITORING REPORT
NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT
FRIDLEY, MINNESOTA

Well ID	SAMPLE ID	Sample Event	VOCs (ug/L)									
			1,1,1-TCA	1,1-DCA	1,1-DCE	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	TOTAL 1,2-DCE	VC	TOTAL VOCS
AT-3A	AT03A	February	**ND**	**ND**	1.6 J	5.6	1000	190	20	210	**ND**	1217.95
	AT03A_20110609	June	**ND**	0.43 J	1.3 J	5.4	1100	100	23	123	0.28 J	1230.41
	AT03A_20110815	August	**ND**	0.33 J	0.93 J	4.6	800	62	19	81	**ND**	886.86
AT-10	AT10	February	**ND**	0.57	0.57	**ND**	240	25	44	69	0.68	310.82
	AT10_20110609	June	**ND**	0.63	0.53	**ND**	220	25	43	68	0.58	289.74
	AT10_20110815	August	**ND**	0.71	0.56	**ND**	190	23	46	69	0.43	260.7
	AT10_20111102	November	**ND**	0.48 J	0.43 J	**ND**	170	17	33	50	0.3	221.21
Deep												
2-D	MS02D_20111115	November	**ND**	**ND**	**ND**	0.62	3.7	3.2	0.62	3.82	0.11 J	8.25
4-D	MS04D_20111107	November	**ND**	**ND**	**ND**	1.2	1.4	2.4	0.57	2.97	**ND**	5.57
5-D	MS05D_20111101	November	**ND**	**ND**	**ND**	1.4 J	0.15 J	0.34 J	**ND**	0.34	**ND**	1.89
6-D	MS06D_20111108	November	**ND**	**ND**	**ND**	0.51	5.9	2.4	0.52	2.92	0.08 J	9.41
7-D	MS07D_20111103	November	**ND**	0.4 J	0.09 J	**ND**	14	2.4	0.16 J	2.56	**ND**	17.05
8-D	MS08D_20111108	November	**ND**	**ND**	0.12 J	3.7 J	43	4.8	0.56	5.36	**ND**	52.18
9-D	MS09D_20111104	November	0.2 J	0.33 J	0.12 J	0.72	9.9	0.65	**ND**	0.65	**ND**	11.92
12-D	MS12D_20111114	November	**ND**	**ND**	0.2 J	35	27	4.1	0.18 J	4.28	0.12 J	66.6
15-D	MS15D_20111103	November	**ND**	0.23 J	0.15 J	1.9	20	1.3	0.42 J	1.72	**ND**	24
16-D	MS16D_20111107	November	**ND**	0.22 J	0.18 J	4 J	24	4.3	0.48 J	4.78	**ND**	33.18
MS-28D	MS28D_20111111	November	**ND**	0.21 J	0.14 J	21	22	3.8	0.19 J	3.99	**ND**	47.34
	MS28D_20111111-AVG	November	**ND**	0.225	0.155	21.5	22.5	3.85	0.17	4.02	**ND**	48.4
	MS28D_20111111-D	November	**ND**	0.24 J	0.17 J	22	23	3.9	0.15 J	4.05	**ND**	49.46
MS-29D	MS29D_20111109	November	**ND**	**ND**	**ND**	0.96 J	0.72	2.5	0.6	3.1	**ND**	4.78
MS-30D	MS30D_20111114	November	**ND**	**ND**	0.17 J	2.1	18	3.5	0.46 J	3.96	**ND**	24.23
MS-31D	MS31D_20111108	November	**ND**	**ND**	**ND**	1.7	1.1	1.6	0.26 J	1.86	**ND**	4.66
MS-32D	MS32D_20111108	November	**ND**	**ND**	**ND**	0.79	4.7	4.7	1.6	6.3	0.11 J	11.9
MS-33D	MS33D_20111110	November	**ND**	**ND**	**ND**	2.3	2.7	1.1	0.15 J	1.25	**ND**	6.25
MS-35D	MS35D	February	**ND**	**ND**	0.12 J	0.31 J	37	8.9	0.62	9.52	0.080 J	47.03
	MS35D_20110509	May	**ND**	**ND**	0.17 J	0.21 J	28	12	0.7	12.7	**ND**	41.08
	MS35D_20110816	August	**ND**	**ND**	**ND**	**ND**	77	13	0.99	13.99	**ND**	90.99
	MS35D_20111114	November	**ND**	**ND**	0.1 J	0.22 J	20	8.4	0.58	8.98	**ND**	29.3
MS-36D	MS36D_20111116	November	**ND**	**ND**	**ND**	0.91	37	11	0.6	11.6	**ND**	49.51
MS-40D	MS40D_20111111	November	**ND**	0.19 J	0.12 J	0.56	15	1.1	0.46 J	1.56	**ND**	17.43
MS-41D	MS41D_20111116	November	**ND**	0.26 J	0.2 J	6.2	22	2.2	0.57	2.77	**ND**	31.43
MS-43D	MS43D_20111103	November	**ND**	**ND**	**ND**	1.1	16	2.7	0.6	3.3	0.09 J	20.49

TABLE 5-2

DETECTED CONCENTRATIONS OF VOCs
FEB, MAY, AUG, NOV 2011 SAMPLING RESULTS
2011 ANNUAL MONITORING REPORT
NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT
FRIDLEY, MINNESOTA

Well ID	SAMPLE ID	Sample Event	VOCs (ug/L)									
			1,1,1-TCA	1,1-DCA	1,1-DCE	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	TOTAL 1,2-DCE	VC	TOTAL VOCS
MS-44D	MS44D_20111103	November	**ND**	0.3 J	0.16 J	0.33 J	61	18	1.5	19.5	0.09 J	81.38
MS-47D	MS47D_20111107	November	**ND**	0.25 J	0.16 J	6.6 J	29	2.3	0.52	2.82	**ND**	38.83
MS-49D	MS49D_20111102	November	0.23 J	0.42 J	0.15 J	0.49 J	10	1.1	**ND**	1.1	**ND**	12.39
MS-52D	MS52D_20111101	November	0.12 J	0.11 J	0.1 J	0.24 J	2.3	**ND**	**ND**	**ND**	**ND**	2.87
AT-5B	AT05B	February	**ND**	0.56 J	0.74 J	2	420	13	14	NA	0.28 J	NA
	AT05B_20110609	June	**ND**	0.6	0.69	2.1	330	12	13	NA	0.24	NA
	AT05B_20110609-AVG	June	**ND**	0.605	0.69	2.15	325	12	13	NA	0.24	NA
	AT05B_20110609-D	June	**ND**	0.61	0.69	2.2	320	12	13	NA	0.24	NA
	AT05B_20110815	August	**ND**	0.59	0.68	2	300	11	13	24	0.18 J	327.45
	AT05B_20110815-AVG	August	**ND**	0.595	0.7	2.05	315	11.5	13	24.5	0.17	343.015
	AT05B_20110815-D	August	**ND**	0.6	0.72	2.1	330	12	13	25	0.16 J	358.58
	AT05B_20111102	November	**ND**	0.64	0.55	2	210	8.9	8.9	17.8	0.17 J	231.16
USGS-10	USGS10_20111103	November	**ND**	**ND**	**ND**	5.6	7.4	0.8	0.17 J	0.97	**ND**	13.97
Bedrock												
1-PC	MS01PC_20111107	November	**ND**	**ND**	**ND**	**ND**	0.49 J	2.6	0.62	3.22	0.1 J	3.81
2-PC	MS02PC_20111109	November	**ND**	**ND**	**ND**	13 J	2.1	0.17 J	**ND**	0.17	**ND**	15.27
3-PC	MS03PC_20111102	November	**ND**	**ND**	**ND**	1.1	0.51	**ND**	**ND**	**ND**	**ND**	1.61
4-PC	MS04PC_20111107	November	**ND**	**ND**	**ND**	1.5	0.62	3.3	0.82	4.12	0.1 J	6.34
5-PC	MS05PC_20111102	November	**ND**	**ND**	**ND**	42	2	0.17 J	**ND**	0.17	**ND**	44.17
MS-48PC	MS48PC_20111102	November	**ND**	**ND**	**ND**	0.25 J	14	2.3	0.18 J	2.48	**ND**	16.73
MS-53PC	MS53PC_20111102	November	**ND**	**ND**	**ND**	0.66	3.7	0.37 J	**ND**	0.37	**ND**	4.73
	MS53PC_20111102-AVG	November	**ND**	**ND**	**ND**	0.64	3.75	0.36	**ND**	0.36	**ND**	4.75
	MS53PC_20111102-D	November	**ND**	**ND**	**ND**	0.62	3.8	0.35 J	**ND**	0.35	**ND**	4.77
FRIDLEY WELL 13	FW13_20111118	November	**ND**	**ND**	**ND**	**ND**	0.13 J	**ND**	**ND**	**ND**	**ND**	0.13
	FW13_20111118-AVG	November	**ND**	**ND**	**ND**	**ND**	0.09	**ND**	**ND**	**ND**	**ND**	0.065
	FW13_20111118-D	November	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**

TABLE 5-3

FREQUENCY OF DETECTION AND STATISTICAL SUMMARY
NOVEMBER 2011 SAMPLING EVENT
2011 ANNUAL MONITORING REPORT
NIROP FRIDLEY, MINNESOTA

Parameter	MN HRL (ug/L)	USEPA MCL (ug/L)	Shallow Wells			Intermediate Wells			Deep Wells			Bedrock Wells		
			Frequency of Detection	Range of Detections	Location of Maximum Detection	Frequency of Detection	Range of Detections	Location of Maximum Detection	Frequency of Detection	Range of Detections	Location of Maximum Detection	Frequency of Detection	Range of Detections	Location of Maximum Detection
1,1,1-TCA	600	200	4/38	0.24 - 1.6	MS-33S	2/30	0.14 - 0.23	MS-51I	3/27	0.12 - 0.23	MS-49D	0/6	ND	ND
1,1-DCA	70	NA	24/38	0.09 - 9.8	AT-8	25/30	0.09 - 11	MS-34I	12/27	0.11 - 0.82	MS-30I	0/6	ND	ND
1,1-DCE	6	7	22/38	0.08 - 4.5	MS-54S	27/30	0.1 - 9.3	7-IS	16/27	0.09 - 0.55	AT-5B	0/6	ND	ND
CIS-1,2-DCE	50	70	36/38	0.29 - 440	MS-54S	30/30	0.41 - 1400	MS-33I	26/27	0.34 - 18	MS-44D	5/6	0.17 - 3.3	4-PC
PCE	5	5	20/38	0.1 - 7	9-S	13/30	0.14 - 15	3-IS	26/27	0.22 - 35	12-D	5/6	0.25 - 42	5-PC
TOTAL 1,2-DCE	NA	NA	36/38	0.35 - 610	MS-54S	30/30	0.41 - 3100	MS-33I	26/27	0.34 - 19.5	MS-44D	5/6	0.17 - 4.12	4-PC
TOTAL VOCS	NA	NA	38/38	0.3 - 2424.35	MS-54S	30/30	1.83 - 15551.3	7-IS	27/27	1.89 - 231.16	AT-5B	6/6	0.13 - 44.17	5-PC
TRANS-1,2-DCE	100	100	34/38	0.06 - 170	MS-54S	27/30	0.06 - 1700	MS-33I	23/27	0.15 - 8.9	AT-5B	3/6	0.18 - 0.82	4-PC
TCE	5	5	38/38	0.17 - 1800	MS-54S	30/30	0.63 - 15000	7-IS	27/27	0.15 - 210	AT-5B	6/6	0.13 - 14	MS-48PC
VC	0.2	2	14/38	0.08 - 2.6	MS-36S	14/30	0.09 - 38	MS-33I	7/27	0.08 - 0.17	AT-5B	2/6	0.1 - 0.1	1-PC & 4-PC

Concentrations are expressed in micrograms per liter (ug/L).
DCA = Dichloroethane.
DCE = Dichloroethene.
NA = Not applicable.
MPCA = Minnesota Pollution Control Agency.
MCL = Maximum Contaminant Level.
ND = Not detected.
PCE = Tetrachloroethene.
TCA = Trichloroethane.
TCE = Trichloroethene.
USEPA = United States Environmental Protection Agency.
VC = Vinyl chloride.
VOC = Volatile organic compound.
MN HRL - Minnesota Health Risk Level

Shallow Wells:
14-IS, AT-5A, MS-41S
16-S, AT-7, MS-42I
17-S, AT-8, MS-43S
18-S, AT-9, MS-44S
19-S, MS-28S, MS-45S
2-S, MS-29S, MS-46S
20-S, MS-31S, MS-47S
24-S, MS-32S, MS-49S
26-S, MS-33S, MS-52S
27-S, MS-34S, MS-54S
3-S, MS-35S, MS-56S
6-S, MS-36S, PES-CW-2
7-S, MS-38S, USGS-2
8-S, MS-40S, USGS-5
9-S

Intermediate Wells:
10-IS, MS-28I, MS-51I
11-S, MS-29I, MS-52I
12-IS, MS-32I, MS-54I
13-IS, MS-33I, MS-55I
15-IS, MS-34I, MS-56I
16-IS, MS-35I
17-D, MS-36I
2-IS, MS-37S
3-IS, MS-41I
4-IS, MS-43I
5-IS, MS-44I
7-IS, MS-45I
8-IS, MS-47I
AT-10, MS-49I

Deep Wells:
12-D, MS-30I
15-D, MS-31D
16-D, MS-32D
2-D, MS-33D
4-D, MS-35D
5-D, MS-36D
6-D, MS-40D
7-D, MS-41D
8-D, MS-43D
9-D, MS-44D
AT-5B, MS-47D
MS-28D, MS-49D
MS-29D, MS-52D
MS-30D, USGS-10

Bedrock Wells:
1-PC
2-PC
3-PC
4-PC
5-PC
FRIDLEY WELL 13
MS-48PC
MS-53PC

TABLE 5-4

MANN-KENDALL TREND ANALYSIS
FOR TCE DATA
2011 ANNUAL MONITORING REPORT
NIROP FRIDLEY, MINNESOTA

Location	N	S	p-value	Test Statistic	Alpha = 0.2		Alpha = 0.1		Alpha = 0.05		Earliest Date Included
					Critical Value	Trend?	Critical Value	Trend?	Critical Value	Trend?	
Shallow Monitoring Wells											
1-S	--	--	--	--	--	--	--	--	--	--	9/21/2004
2-S	5	-2	0.408	-2	6	No Trend	8	No Trend	8	No Trend	9/22/2004
3-S	5	-6	0.117	-6	6	Significant Downward Trend	8	No Trend	8	No Trend	12/4/2001
6-S	9	-10	0.179	-10	10	Significant Downward Trend	14	No Trend	18	No Trend	10/8/2003
7-S	8	-5	0.317	-5	8	No Trend	12	No Trend	16	No Trend	11/29/2001
8-S	7	-9	0.119	-9	7	Significant Downward Trend	11	No Trend	13	No Trend	12/3/2001
9-S	7	-19	0.0014	-19	7	Significant Downward Trend	11	Significant Downward Trend	13	Significant Downward Trend	12/3/2001
14-IS	10	-21	0.036	-21	11	Significant Downward Trend	17	Significant Downward Trend	21	Significant Downward Trend	12/5/2001
15-S	--	--	--	--	--	--	--	--	--	--	11/29/2001
16-S	7	-14	0.025	-14	7	Significant Downward Trend	11	Significant Downward Trend	13	Significant Downward Trend	11/29/2001
17-S	10	-24	0.0185	-24	11	Significant Downward Trend	17	Significant Downward Trend	21	Significant Downward Trend	11/29/2001
18-S	9	-12	0.13	-12	10	Significant Downward Trend	14	No Trend	18	No Trend	12/5/2001
19-S	10	-39	0.000058	-39	11	Significant Downward Trend	17	Significant Downward Trend	21	Significant Downward Trend	12/5/2001
20-S	10	-11	0.19	-11	11	Significant Downward Trend	17	No Trend	21	No Trend	11/28/2001
21-S	6	3	0.36	3	7	No Trend	9	No Trend	11	No Trend	11/29/2001
23-S	--	--	--	--	--	--	--	--	--	--	9/27/2004
24-S	10	-5	0.364	-5	11	No Trend	17	No Trend	21	No Trend	12/3/2001
25-S	4	0	0.625	0	4	No Trend	6	No Trend	6	No Trend	10/7/2003
26-S	10	-18	0.066	-18	11	Significant Downward Trend	17	Significant Downward Trend	21	No Trend	12/6/2001
27-S	11	-3	0.438135	-0.156	0.841	No Trend	1.282	No Trend	1.645	No Trend	12/4/2001
AT-5A	10	-17	0.078	-17	11	Significant Downward Trend	17	Significant Downward Trend	21	No Trend	11/27/2001
AT-7	10	-33	0.0011	-33	11	Significant Downward Trend	17	Significant Downward Trend	21	Significant Downward Trend	11/27/2001
AT-8	10	-30	0.00345	-30	11	Significant Downward Trend	17	Significant Downward Trend	21	Significant Downward Trend	11/27/2001
AT-9	10	-35	0.00047	-35	11	Significant Downward Trend	17	Significant Downward Trend	21	Significant Downward Trend	11/27/2001
MS-28S	7	5	0.281	5	7	No Trend	11	No Trend	13	No Trend	12/7/2001
MS-29S	--	--	--	--	--	--	--	--	--	--	10/20/2006
MS-30S	--	--	--	--	--	--	--	--	--	--	10/27/2006
MS-31S	7	-3	0.386	-3	7	No Trend	11	No Trend	13	No Trend	12/7/2001
MS-32S	7	-17	0.0054	-17	7	Significant Downward Trend	11	Significant Downward Trend	13	Significant Downward Trend	12/6/2001
MS-33S	8	12	0.089	12	8	Significant Upward Trend	12	Significant Upward Trend	16	No Trend	12/6/2001
MS-34S	10	-23	0.023	-23	11	Significant Downward Trend	17	Significant Downward Trend	21	Significant Downward Trend	11/30/2001
MS-35S	10	-18	0.066	-18	11	Significant Downward Trend	17	Significant Downward Trend	21	No Trend	12/3/2001
MS-36S	9	-4	0.381	-4	10	No Trend	14	No Trend	18	No Trend	12/4/2001
MS-38S	9	8	0.238	8	10	No Trend	14	No Trend	18	No Trend	10/15/2003
MS-39S	4	2	0.375	2	4	No Trend	6	No Trend	6	No Trend	10/15/2003
MS-40I	--	--	--	--	--	--	--	--	--	--	11/30/2001
MS-40S	9	-22	0.012	-22	10	Significant Downward Trend	14	Significant Downward Trend	18	Significant Downward Trend	10/9/2003
MS-41S	9	-14	0.09	-14	10	Significant Downward Trend	14	Significant Downward Trend	18	No Trend	11/30/2001
MS-42I	8	-27	0.000108	-27	8	Significant Downward Trend	12	Significant Downward Trend	16	Significant Downward Trend	10/9/2003
MS-43S	10	-12	0.168	-12	11	Significant Downward Trend	17	No Trend	21	No Trend	12/4/2001
MS-44S	10	-41	0.000015	-41	11	Significant Downward Trend	17	Significant Downward Trend	21	Significant Downward Trend	11/30/2001
MS-45S	10	-21	0.036	-21	11	Significant Downward Trend	17	Significant Downward Trend	21	Significant Downward Trend	12/6/2001
MS-46S	7	-21	0.0002	-21	7	Significant Downward Trend	11	Significant Downward Trend	13	Significant Downward Trend	12/6/2001
MS-47S	10	-25	0.014	-25	11	Significant Downward Trend	17	Significant Downward Trend	21	Significant Downward Trend	11/30/2001
MS-49S	10	17	0.078	17	11	Significant Upward Trend	17	Significant Upward Trend	21	No Trend	11/30/2001
MS-52S	10	-17	0.078	-17	11	Significant Downward Trend	17	Significant Downward Trend	21	No Trend	12/3/2001
MS-54S	7	17	0.0054	17	7	Significant Upward Trend	11	Significant Upward Trend	13	Significant Upward Trend	11/17/2005
MS-56S	7	-13	0.035	-13	7	Significant Downward Trend	11	Significant Downward Trend	13	Significant Downward Trend	11/18/2005

TABLE 5-4

MANN-KENDALL TREND ANALYSIS
FOR TCE DATA
2011 ANNUAL MONITORING REPORT
NIROP FRIDLEY, MINNESOTA

Location	N	S	p-value	Test Statistic	Alpha = 0.2		Alpha = 0.1		Alpha = 0.05		Earliest Date Included
					Critical Value	Trend?	Critical Value	Trend?	Critical Value	Trend?	
Shallow Monitoring Wells (Continued)											
PES-CW-2	--	--	--	--	--	--	--	--	--	--	10/1/2009
USGS-2	8	-20	0.0071	-20	8	Significant Downward Trend	12	Significant Downward Trend	16	Significant Downward Trend	11/30/2001
USGS-5	10	-4	0.3975	-4	11	No Trend	17	No Trend	21	No Trend	11/30/2001
USGS-8	7	2	0.443	2	7	No Trend	11	No Trend	13	No Trend	11/28/2001
Intermediate Monitoring Wells											
1-IS	--	--	--	--	--	--	--	--	--	--	11/28/2001
2-IS	6	-12	0.01815	-12	7	Significant Downward Trend	9	Significant Downward Trend	11	Significant Downward Trend	11/29/2001
3-IS	10	-21	0.036	-21	11	Significant Downward Trend	17	Significant Downward Trend	21	Significant Downward Trend	11/29/2001
4-IS	10	-1	0.5	-1	11	No Trend	17	No Trend	21	No Trend	12/5/2001
5-IS	7	-12	0.0515	-12	7	Significant Downward Trend	11	Significant Downward Trend	13	No Trend	11/30/2001
6-IS	--	--	--	--	--	--	--	--	--	--	10/16/2003
8-IS	9	-24	0.0063	-24	10	Significant Downward Trend	14	Significant Downward Trend	18	Significant Downward Trend	10/15/2003
10-IS	7	13	0.035	13	7	Significant Upward Trend	11	Significant Upward Trend	13	Significant Upward Trend	9/21/2004
11-S	4	-4	0.167	-4	4	Significant Downward Trend	6	No Trend	6	No Trend	11/18/2005
12-IS	10	-37	0.00018	-37	11	Significant Downward Trend	17	Significant Downward Trend	21	Significant Downward Trend	12/4/2001
13-IS	9	2	0.46	2	10	No Trend	14	No Trend	18	No Trend	10/10/2003
15-IS	10	-22	0.0295	-22	11	Significant Downward Trend	17	Significant Downward Trend	21	Significant Downward Trend	12/3/2001
16-IS	10	-36	0.000325	-36	11	Significant Downward Trend	17	Significant Downward Trend	21	Significant Downward Trend	12/3/2001
17-D	10	-11	0.19	-11	11	Significant Downward Trend	17	No Trend	21	No Trend	12/5/2001
AT-10	10	-19	0.054	-19	11	Significant Downward Trend	17	Significant Downward Trend	21	No Trend	11/27/2001
AT-3A	8	-11	0.1135	-11	8	Significant Downward Trend	12	No Trend	16	No Trend	11/27/2001
MS-28I	7	1	0.5	1	7	No Trend	11	No Trend	13	No Trend	12/7/2001
MS-29I	10	-37	0.00018	-37	11	Significant Downward Trend	17	Significant Downward Trend	21	Significant Downward Trend	12/7/2001
MS-30I	7	-7	0.191	-7	7	Significant Downward Trend	11	No Trend	13	No Trend	12/5/2001
MS-31I	--	--	--	--	--	--	--	--	--	--	10/25/2006
MS-32I	8	-23	0.001835	-23	8	Significant Downward Trend	12	Significant Downward Trend	16	Significant Downward Trend	12/6/2001
MS-33I	8	-2	0.452	-2	8	No Trend	12	No Trend	16	No Trend	12/6/2001
MS-34I	9	-12	0.13	-12	10	Significant Downward Trend	14	No Trend	18	No Trend	10/15/2003
MS-35I	10	-31	0.0023	-31	11	Significant Downward Trend	17	Significant Downward Trend	21	Significant Downward Trend	12/4/2001
MS-36I	9	3	0.4205	3	10	No Trend	14	No Trend	18	No Trend	12/4/2001
MS-37S	10	-33	0.0011	-33	11	Significant Downward Trend	17	Significant Downward Trend	21	Significant Downward Trend	12/3/2001
MS-41I	10	-7	0.3	-7	11	No Trend	17	No Trend	21	No Trend	11/30/2001
MS-43I	10	26	0.01115	26	11	Significant Upward Trend	17	Significant Upward Trend	21	Significant Upward Trend	11/29/2001
MS-44I	10	2	0.4655	2	11	No Trend	17	No Trend	21	No Trend	12/5/2001
MS-45I	10	11	0.19	11	11	Significant Upward Trend	17	No Trend	21	No Trend	12/4/2001
MS-46I	4	-2	0.375	-2	4	No Trend	6	No Trend	6	No Trend	10/14/2003
MS-47I	10	-43	2.8E-06	-43	11	Significant Downward Trend	17	Significant Downward Trend	21	Significant Downward Trend	12/5/2001
MS-49I	10	-26	0.01115	-26	11	Significant Downward Trend	17	Significant Downward Trend	21	Significant Downward Trend	12/3/2001
MS-51I	10	-13	0.146	-13	11	Significant Downward Trend	17	No Trend	21	No Trend	11/30/2001
MS-52I	10	-23	0.023	-23	11	Significant Downward Trend	17	Significant Downward Trend	21	Significant Downward Trend	11/28/2001
MS-54I	7	13	0.035	13	7	Significant Upward Trend	11	Significant Upward Trend	13	Significant Upward Trend	11/17/2005
MS-55I	7	-19	0.0014	-19	7	Significant Downward Trend	11	Significant Downward Trend	13	Significant Downward Trend	11/18/2005
MS-56I	7	-19	0.0014	-19	7	Significant Downward Trend	11	Significant Downward Trend	13	Significant Downward Trend	11/18/2005
Deep Monitoring Wells											
1-D	--	--	--	--	--	--	--	--	--	--	11/28/2001
2-D	6	-7	0.136	-7	7	Significant Downward Trend	9	No Trend	11	No Trend	9/23/2004
4-D	6	-7	0.136	-7	7	Significant Downward Trend	9	No Trend	11	No Trend	9/21/2004
5-D	5	4	0.242	4	6	No Trend	8	No Trend	8	No Trend	10/17/2007
6-D	10	7	0.3	7	11	No Trend	17	No Trend	21	No Trend	11/28/2001

TABLE 5-4

MANN-KENDALL TREND ANALYSIS
FOR TCE DATA
2011 ANNUAL MONITORING REPORT
NIROP FRIDLEY, MINNESOTA

Location	N	S	p-value	Test Statistic	Alpha = 0.2		Alpha = 0.1		Alpha = 0.05		Earliest Date Included
					Critical Value	Trend?	Critical Value	Trend?	Critical Value	Trend?	
Deep Monitoring Wells (Continued)											
7-D	10	-1	0.5	-1	11	No Trend	17	No Trend	21	No Trend	11/29/2001
8-D	10	-6	0.332	-6	11	No Trend	17	No Trend	21	No Trend	12/4/2001
9-D	9	-28	0.0012	-28	10	Significant Downward Trend	14	Significant Downward Trend	18	Significant Downward Trend	12/3/2001
12-D	7	-2	0.443	-2	7	No Trend	11	No Trend	13	No Trend	11/29/2001
14-D	--	--	--	--	--	--	--	--	--	--	9/20/2004
15-D	10	-31	0.0023	-31	11	Significant Downward Trend	17	Significant Downward Trend	21	Significant Downward Trend	12/4/2001
16-D	10	-3	0.431	-3	11	No Trend	17	No Trend	21	No Trend	11/29/2001
AT-5B	10	14	0.127	14	11	Significant Upward Trend	17	No Trend	21	No Trend	11/27/2001
MS-28D	7	-21	0.0002	-21	7	Significant Downward Trend	11	Significant Downward Trend	13	Significant Downward Trend	12/7/2001
MS-29D	--	--	--	--	--	--	--	--	--	--	10/23/2006
MS-30D	--	--	--	--	--	--	--	--	--	--	10/27/2006
MS-31D	6	-3	0.36	-3	7	No Trend	9	No Trend	11	No Trend	10/25/2006
MS-32D	7	4	0.3335	4	7	No Trend	11	No Trend	13	No Trend	12/6/2001
MS-33D	7	-20	0.0008	-20	7	Significant Downward Trend	11	Significant Downward Trend	13	Significant Downward Trend	12/6/2001
MS-34D	4	-4	0.167	-4	4	Significant Downward Trend	6	No Trend	6	No Trend	10/8/2003
MS-35D	10	-11	0.19	-11	11	Significant Downward Trend	17	No Trend	21	No Trend	12/3/2001
MS-36D	10	-11	0.19	-11	11	Significant Downward Trend	17	No Trend	21	No Trend	12/4/2001
MS-40D	10	-41	0.000015	-41	11	Significant Downward Trend	17	Significant Downward Trend	21	Significant Downward Trend	12/3/2001
MS-41D	8	-7	0.2365	-7	8	No Trend	12	No Trend	16	No Trend	10/13/2003
MS-43D	9	0	0.54	0	10	No Trend	14	No Trend	18	No Trend	10/10/2003
MS-44D	10	-23	0.023	-23	11	Significant Downward Trend	17	Significant Downward Trend	21	Significant Downward Trend	12/4/2001
MS-47D	10	-24	0.0185	-24	11	Significant Downward Trend	17	Significant Downward Trend	21	Significant Downward Trend	12/3/2001
MS-49D	10	13	0.146	13	11	Significant Upward Trend	17	No Trend	21	No Trend	11/28/2001
MS-52D	5	3	0.325	3	6	No Trend	8	No Trend	8	No Trend	11/28/2001
USGS-10	6	-14	0.00485	-14	7	Significant Downward Trend	9	Significant Downward Trend	11	Significant Downward Trend	9/28/2004
Bedrock Monitoring Wells											
1-PC	--	--	--	--	--	--	--	--	--	--	10/13/2006
2-PC	5	-10	0.0083	-10	6	Significant Downward Trend	8	Significant Downward Trend	8	Significant Downward Trend	9/22/2004
3-PC	5	-2	0.408	-2	6	No Trend	8	No Trend	8	No Trend	10/16/2006
4-PC	--	--	--	--	--	--	--	--	--	--	10/10/2006
5-PC	7	-16	0.0102	-16	7	Significant Downward Trend	11	Significant Downward Trend	13	Significant Downward Trend	11/28/2001
FRIDLEY WELL 13	8	7	0.2365	7	8	No Trend	12	No Trend	16	No Trend	12/4/2001
MS-48PC	--	--	--	--	--	--	--	--	--	--	11/29/2001
MS-50PC	--	--	--	--	--	--	--	--	--	--	10/17/2006
MS-53PC	6	5	0.235	5	7	No Trend	9	No Trend	11	No Trend	11/29/2001

Notes:
-- Indicates that there were an insufficient number of samples to run the test.

Null Hypothesis: Ho: There is no trend.
Alternative Hypothesis: HA: There is an upward trend (indicated by a positive value of S).
HA: There is a downward trend (indicated by a negative value of S).

If p-value is less than alpha then reject null hypothesis of no trend.
If absolute value of the test statistic is greater than or equal to the critical value then reject null hypothesis of no trend.
Source: Data Quality Assessment: Statistical Methods for Practitioners EPA QA/G-9S, EPA/240/B-06/003. February 2006.
Gray cell color indicates the well is a river side well.

TABLE 5-5

MANN-KENDALL TREND ANALYSIS
FOR DCE DATA
2011 ANNUAL MONITORING REPORT
NIROP FRIDLEY, MINNESOTA

Location	N	S	p-value	Test Statistic	Alpha = 0.2		Alpha = 0.1		Alpha = 0.05		Earliest Date Included
					Critical Value	Trend?	Critical Value	Trend?	Critical Value	Trend?	
Shallow Monitoring Wells											
1-S	--	--	--	--	--	--	--	--	--	--	9/21/2004
2-S	5	2	0.408	2	6	No Trend	8	No Trend	8	No Trend	9/22/2004
3-S	5	-2	0.408	-2	6	No Trend	8	No Trend	8	No Trend	12/4/2001
6-S	9	13	0.11	13	10	Significant Upward Trend	14	No Trend	18	No Trend	10/8/2003
7-S	9	12	0.13	12	10	Significant Upward Trend	14	No Trend	18	No Trend	11/29/2001
8-S	7	-9	0.119	-9	7	Significant Downward Trend	11	No Trend	13	No Trend	12/3/2001
9-S	9	-30	0.00043	-30	10	Significant Downward Trend	14	Significant Downward Trend	18	Significant Downward Trend	12/3/2001
14-IS	10	12	0.168	12	11	Significant Upward Trend	17	No Trend	21	No Trend	12/5/2001
15-S	4	0	0.625	0	4	No Trend	6	No Trend	6	No Trend	11/29/2001
16-S	7	19	0.0014	19	7	Significant Upward Trend	11	Significant Upward Trend	13	Significant Upward Trend	11/29/2001
17-S	10	-17	0.078	-17	11	Significant Downward Trend	17	Significant Downward Trend	21	No Trend	11/29/2001
18-S	9	-18	0.038	-18	10	Significant Downward Trend	14	Significant Downward Trend	18	Significant Downward Trend	12/5/2001
19-S	10	-25	0.014	-25	11	Significant Downward Trend	17	Significant Downward Trend	21	Significant Downward Trend	12/5/2001
20-S	10	16	0.093	16	11	Significant Upward Trend	17	Significant Upward Trend	21	No Trend	11/28/2001
21-S	6	0	0	0	7	No Trend	9	No Trend	11	No Trend	11/29/2001
23-S	--	--	--	--	--	--	--	--	--	--	9/27/2004
24-S	10	-5	0.364	-5	11	No Trend	17	No Trend	21	No Trend	12/3/2001
25-S	4	0	0.625	0	4	No Trend	6	No Trend	6	No Trend	10/7/2003
26-S	10	-13	0.146	-13	11	Significant Downward Trend	17	No Trend	21	No Trend	12/6/2001
27-S	10	33	0.0011	33	11	Significant Upward Trend	17	Significant Upward Trend	21	Significant Upward Trend	12/4/2001
AT-5A	10	15	0.108	15	11	Significant Upward Trend	17	No Trend	21	No Trend	11/27/2001
AT-7	10	-40	3.7E-05	-40	11	Significant Downward Trend	17	Significant Downward Trend	21	Significant Downward Trend	11/27/2001
AT-8	10	-15	0.108	-15	11	Significant Downward Trend	17	No Trend	21	No Trend	11/27/2001
AT-9	10	-25	0.014	-25	11	Significant Downward Trend	17	Significant Downward Trend	21	Significant Downward Trend	11/27/2001
MS-28S	7	-3	0.386	-3	7	No Trend	11	No Trend	13	No Trend	12/7/2001
MS-29S	--	--	--	--	--	--	--	--	--	--	10/20/2006
MS-30S	--	--	--	--	--	--	--	--	--	--	10/27/2006
MS-31S	7	-11	0.068	-11	7	Significant Downward Trend	11	Significant Downward Trend	13	No Trend	12/7/2001
MS-32S	7	-17	0.0054	-17	7	Significant Downward Trend	11	Significant Downward Trend	13	Significant Downward Trend	12/6/2001
MS-33S	7	11	0.068	11	7	Significant Upward Trend	11	Significant Upward Trend	13	No Trend	12/6/2001
MS-34S	10	-17	0.078	-17	11	Significant Downward Trend	17	Significant Downward Trend	21	No Trend	11/30/2001
MS-35S	10	-27	0.0083	-27	11	Significant Downward Trend	17	Significant Downward Trend	21	Significant Downward Trend	12/3/2001
MS-36S	9	-16	0.06	-16	10	Significant Downward Trend	14	Significant Downward Trend	18	No Trend	12/4/2001
MS-38S	9	-2	0.46	-2	10	No Trend	14	No Trend	18	No Trend	10/15/2003
MS-39S	4	4	0.167	4	4	Significant Upward Trend	6	No Trend	6	No Trend	10/15/2003
MS-40I	--	--	--	--	--	--	--	--	--	--	11/30/2001
MS-40S	9	-4	0.381	-4	10	No Trend	14	No Trend	18	No Trend	10/9/2003
MS-41S	9	-2	0.46	-2	10	No Trend	14	No Trend	18	No Trend	11/30/2001
MS-42I	8	-9	0.1685	-9	8	Significant Downward Trend	12	No Trend	16	No Trend	10/9/2003
MS-43S	10	7	0.3	7	11	No Trend	17	No Trend	21	No Trend	12/4/2001
MS-44S	10	-37	0.00018	-37	11	Significant Downward Trend	17	Significant Downward Trend	21	Significant Downward Trend	11/30/2001
MS-45S	10	-27	0.0083	-27	11	Significant Downward Trend	17	Significant Downward Trend	21	Significant Downward Trend	12/6/2001
MS-46S	7	-17	0.0054	-17	7	Significant Downward Trend	11	Significant Downward Trend	13	Significant Downward Trend	12/6/2001
MS-47S	10	3	0.431	3	11	No Trend	17	No Trend	21	No Trend	11/30/2001
MS-49S	10	7	0.3	7	11	No Trend	17	No Trend	21	No Trend	11/30/2001
MS-52S	10	1	0.5	1	11	No Trend	17	No Trend	21	No Trend	12/3/2001
MS-54S	7	15	0.015	15	7	Significant Upward Trend	11	Significant Upward Trend	13	Significant Upward Trend	11/17/2005
MS-56S	7	-7	0.191	-7	7	Significant Downward Trend	11	No Trend	13	No Trend	11/18/2005

TABLE 5-5

MANN-KENDALL TREND ANALYSIS
FOR DCE DATA
2011 ANNUAL MONITORING REPORT
NIROP FRIDLEY, MINNESOTA

Location	N	S	p-value	Test Statistic	Alpha = 0.2		Alpha = 0.1		Alpha = 0.05		Earliest Date Included
					Critical Value	Trend?	Critical Value	Trend?	Critical Value	Trend?	
Shallow Monitoring Wells (Continued)											
PES-CW-2	--	--	--	--	--	--	--	--	--	--	10/1/2009
USGS-2	9	30	0.00043	30	10	Significant Upward Trend	14	Significant Upward Trend	18	Significant Upward Trend	11/30/2001
USGS-5	7	0	0	0	7	No Trend	11	No Trend	13	No Trend	11/30/2001
USGS-8	7	-2	0.443	-2	7	No Trend	11	No Trend	13	No Trend	11/28/2001
Intermediate Monitoring Wells											
1-IS	4	0	0.625	0	4	No Trend	6	No Trend	6	No Trend	11/28/2001
2-IS	6	7	0.136	7	7	Significant Upward Trend	9	No Trend	11	No Trend	11/29/2001
3-IS	10	27	0.0083	27	11	Significant Upward Trend	17	Significant Upward Trend	21	Significant Upward Trend	11/29/2001
4-IS	10	-25	0.014	-25	11	Significant Downward Trend	17	Significant Downward Trend	21	Significant Downward Trend	12/5/2001
5-IS	7	-11	0.068	-11	7	Significant Downward Trend	11	Significant Downward Trend	13	No Trend	11/30/2001
6-IS	--	--	--	--	--	--	--	--	--	--	10/16/2003
8-IS	9	-22	0.012	-22	10	Significant Downward Trend	14	Significant Downward Trend	18	Significant Downward Trend	10/15/2003
10-IS	7	-3	0.386	-3	7	No Trend	11	No Trend	13	No Trend	9/21/2004
11-S	4	0	0.625	0	4	No Trend	6	No Trend	6	No Trend	11/18/2005
12-IS	10	-15	0.108	-15	11	Significant Downward Trend	17	No Trend	21	No Trend	12/4/2001
13-IS	9	-10	0.179	-10	10	Significant Downward Trend	14	No Trend	18	No Trend	10/10/2003
15-IS	10	-21	0.036	-21	11	Significant Downward Trend	17	Significant Downward Trend	21	Significant Downward Trend	12/3/2001
16-IS	10	33	0.0011	33	11	Significant Upward Trend	17	Significant Upward Trend	21	Significant Upward Trend	12/3/2001
17-D	10	-7	0.3	-7	11	No Trend	17	No Trend	21	No Trend	12/5/2001
AT-10	10	-15	0.108	-15	11	Significant Downward Trend	17	No Trend	21	No Trend	11/27/2001
AT-3A	10	-2	0.4655	-2	11	No Trend	17	No Trend	21	No Trend	11/27/2001
MS-28I	7	-17	0.0054	-17	7	Significant Downward Trend	11	Significant Downward Trend	13	Significant Downward Trend	12/7/2001
MS-29I	10	-1	0.5	-1	11	No Trend	17	No Trend	21	No Trend	12/7/2001
MS-30I	6	-9	0.068	-9	7	Significant Downward Trend	9	Significant Downward Trend	11	No Trend	12/5/2001
MS-31I	--	--	--	--	--	--	--	--	--	--	10/25/2006
MS-32I	8	-6	0.274	-6	8	No Trend	12	No Trend	16	No Trend	12/6/2001
MS-33I	7	7	0.191	7	7	Significant Upward Trend	11	No Trend	13	No Trend	12/6/2001
MS-34I	9	-26	0.0029	-26	10	Significant Downward Trend	14	Significant Downward Trend	18	Significant Downward Trend	10/15/2003
MS-35I	10	-1	0.5	-1	11	No Trend	17	No Trend	21	No Trend	12/4/2001
MS-36I	9	8	0.238	8	10	No Trend	14	No Trend	18	No Trend	12/4/2001
MS-37S	9	-34	2.5E-05	-34	10	Significant Downward Trend	14	Significant Downward Trend	18	Significant Downward Trend	12/3/2001
MS-41I	10	35	0.00047	35	11	Significant Upward Trend	17	Significant Upward Trend	21	Significant Upward Trend	11/30/2001
MS-43I	10	29	0.0046	29	11	Significant Upward Trend	17	Significant Upward Trend	21	Significant Upward Trend	11/29/2001
MS-44I	10	33	0.0011	33	11	Significant Upward Trend	17	Significant Upward Trend	21	Significant Upward Trend	12/5/2001
MS-45I	10	17	0.078	17	11	Significant Upward Trend	17	Significant Upward Trend	21	No Trend	12/4/2001
MS-46I	4	4	0.167	4	4	Significant Upward Trend	6	No Trend	6	No Trend	10/14/2003
MS-47I	10	-37	0.00018	-37	11	Significant Downward Trend	17	Significant Downward Trend	21	Significant Downward Trend	12/5/2001
MS-49I	10	-24	0.0185	-24	11	Significant Downward Trend	17	Significant Downward Trend	21	Significant Downward Trend	12/3/2001
MS-51I	10	-2	0.4655	-2	11	No Trend	17	No Trend	21	No Trend	11/30/2001
MS-52I	10	5	0.364	5	11	No Trend	17	No Trend	21	No Trend	11/28/2001
MS-54I	7	7	0.191	7	7	Significant Upward Trend	11	No Trend	13	No Trend	11/17/2005
MS-55I	7	1	0.5	1	7	No Trend	11	No Trend	13	No Trend	11/18/2005
MS-56I	7	-17	0.0054	-17	7	Significant Downward Trend	11	Significant Downward Trend	13	Significant Downward Trend	11/18/2005
Deep Monitoring Wells											
1-D	4	1	0.5	1	4	No Trend	6	No Trend	6	No Trend	11/28/2001
2-D	6	-2	0.43	-2	7	No Trend	9	No Trend	11	No Trend	9/23/2004
4-D	6	-1	0.5	-1	7	No Trend	9	No Trend	11	No Trend	9/21/2004
5-D	5	6	0.117	6	6	Significant Upward Trend	8	No Trend	8	No Trend	10/17/2007

TABLE 5-5

MANN-KENDALL TREND ANALYSIS
FOR DCE DATA
2011 ANNUAL MONITORING REPORT
NIROP FRIDLEY, MINNESOTA

Location	N	S	p-value	Test Statistic	Alpha = 0.2		Alpha = 0.1		Alpha = 0.05		Earliest Date Included
					Critical Value	Trend?	Critical Value	Trend?	Critical Value	Trend?	
Deep Monitoring Wells (Continued)											
6-D	10	-9	0.242	-9	11	No Trend	17	No Trend	21	No Trend	11/28/2001
7-D	10	12	0.168	12	11	Significant Upward Trend	17	No Trend	21	No Trend	11/29/2001
8-D	11	-25	0.03085	-1.868	0.841	Significant Downward Trend	1.282	Significant Downward Trend	1.645	Significant Downward Trend	12/4/2001
9-D	10	-35	0.00047	-35	11	Significant Downward Trend	17	Significant Downward Trend	21	Significant Downward Trend	12/3/2001
12-D	7	-7	0.191	-7	7	Significant Downward Trend	11	No Trend	13	No Trend	11/29/2001
14-D	--	--	--	--	--	--	--	--	--	--	9/20/2004
15-D	10	-29	0.0046	-29	11	Significant Downward Trend	17	Significant Downward Trend	21	Significant Downward Trend	12/4/2001
16-D	10	7	0.3	7	11	No Trend	17	No Trend	21	No Trend	11/29/2001
AT-5B	10	34	0.00079	34	11	Significant Upward Trend	17	Significant Upward Trend	21	Significant Upward Trend	11/27/2001
MS-28D	6	-5	0.235	-5	7	No Trend	9	No Trend	11	No Trend	12/7/2001
MS-29D	--	--	--	--	--	--	--	--	--	--	10/23/2006
MS-30D	--	--	--	--	--	--	--	--	--	--	10/27/2006
MS-31D	6	-5	0.235	-5	7	No Trend	9	No Trend	11	No Trend	10/25/2006
MS-32D	7	9	0.119	9	7	Significant Upward Trend	11	No Trend	13	No Trend	12/6/2001
MS-33D	7	-17	0.0054	-17	7	Significant Downward Trend	11	Significant Downward Trend	13	Significant Downward Trend	12/6/2001
MS-34D	4	2	0.375	2	4	No Trend	6	No Trend	6	No Trend	10/8/2003
MS-35D	9	0	0.54	0	10	No Trend	14	No Trend	18	No Trend	12/3/2001
MS-36D	10	39	5.8E-05	39	11	Significant Upward Trend	17	Significant Upward Trend	21	Significant Upward Trend	12/4/2001
MS-40D	10	-25	0.014	-25	11	Significant Downward Trend	17	Significant Downward Trend	21	Significant Downward Trend	12/3/2001
MS-41D	8	0	0.548	0	8	No Trend	12	No Trend	16	No Trend	10/13/2003
MS-43D	9	2	0.46	2	10	No Trend	14	No Trend	18	No Trend	10/10/2003
MS-44D	10	11	0.19	11	11	Significant Upward Trend	17	No Trend	21	No Trend	12/4/2001
MS-47D	10	-21	0.036	-21	11	Significant Downward Trend	17	Significant Downward Trend	21	Significant Downward Trend	12/3/2001
MS-49D	10	24	0.0185	24	11	Significant Upward Trend	17	Significant Upward Trend	21	Significant Upward Trend	11/28/2001
MS-52D	5	0	0.592	0	6	No Trend	8	No Trend	8	No Trend	11/28/2001
USGS-10	6	-13	0.0083	-13	7	Significant Downward Trend	9	Significant Downward Trend	11	Significant Downward Trend	9/28/2004
Bedrock Monitoring Wells											
1-PC	--	--	--	--	--	--	--	--	--	--	10/13/2006
2-PC	5	-8	0.042	-8	6	Significant Downward Trend	8	Significant Downward Trend	8	Significant Downward Trend	9/22/2004
3-PC	5	-2	0.408	-2	6	No Trend	8	No Trend	8	No Trend	10/16/2006
4-PC	--	--	--	--	--	--	--	--	--	--	10/10/2006
5-PC	7	0	0	0	7	No Trend	11	No Trend	13	No Trend	11/28/2001
FRIDLEY WELL 13	9	0	0.54	0	10	No Trend	14	No Trend	18	No Trend	12/4/2001
MS-48PC	6	1	0.5	1	7	No Trend	9	No Trend	11	No Trend	11/29/2001
MS-50PC	--	--	--	--	--	--	--	--	--	--	10/17/2006
MS-53PC	6	1	0.5	1	7	No Trend	9	No Trend	11	No Trend	11/29/2001

Notes:
-- Indicates that there were an insufficient number of samples to run the test.

Null Hypothesis: Ho: There is no trend.
Alternative Hypothesis: HA: There is an upward trend (indicated by a positive value of S).
HA: There is a downward trend (indicated by a negative value of S).

If p-value is less than alpha then reject null hypothesis of no trend.
If absolute value of the test statistic is greater than or equal to the critical value then reject null hypothesis of no trend.
Source: Data Quality Assessment: Statistical Methods for Practitioners EPA QA/G-9S, EPA/240/B-06/003. February 2006.
Gray cell color indicates the well is a river side well.

TABLE 5-6

SUMMARY OF WELL TRENDS BY MANN-KENDALL TREND ANALYSIS
2011 ANNUAL MONITORING REPORT
NIROP FRIDLEY, MINNESOTA

Well	TCE Trend				DCE Trend			
	Down	Up	None	Insufficient	Down	Up	None	Insufficient
Shallow Wells	29	3	13	7	19	11	16	6
Intermediate Wells	23	4	8	3	14	10	12	2
Deep Wells	13	2	11	4	8	7	12	3
Bedrock Wells	2	0	3	4	1	0	5	3

The determination of the trend in monitoring wells is based on the Mann-Kendall results (alpha = .20) from Tables 5-4 and 5-5.

TABLE 5-7

DETECTED CONCENTRATIONS OF VOCs IN RIVERSIDE WELLS
NOVEMBER 2011 SAMPLING EVENT
2011 ANNUAL MONITORING REPORT
NIROP FRIDLEY, MINNESOTA

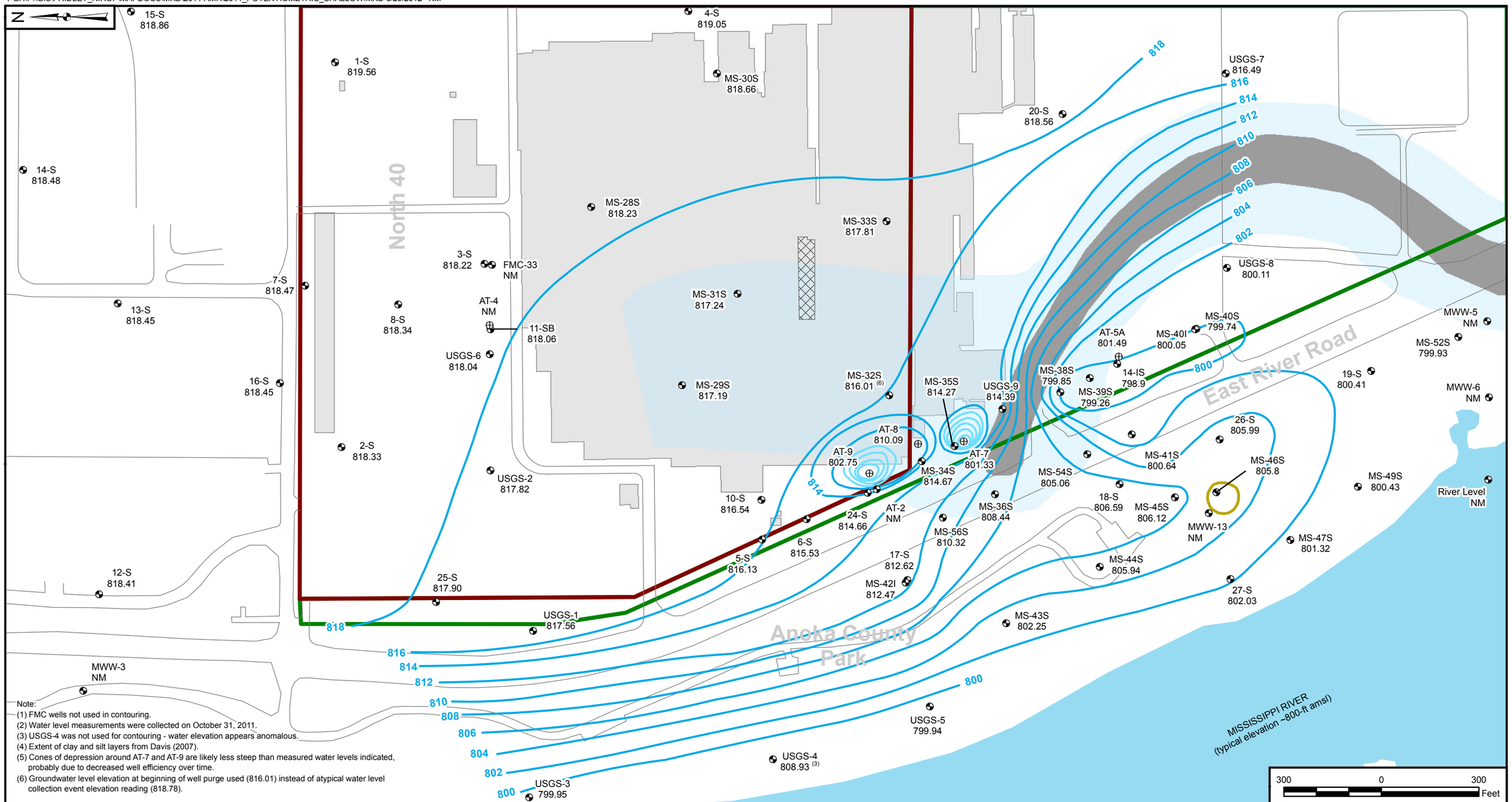
MN SW Criteria[1] (ug/L)	Volatile Organic Compounds (ug/L)					Summary of Mann-Kendall Trend Results for TCE[2]
	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride	
Chronic Standard	**3.8**	**25**	**70**	**100**	**0.17**	
Maximum Standard	**428**	**6,988**	**n/a**	**n/a**	**n/a**	
Final Acute Value	**857**	**13,976**	**n/a**	**n/a**	**n/a**	
Domestic Consumption	**5**	**5**	**n/a**	**n/a**	**2**	
Well Number	**Volatile Organic Compounds (ug/L)**					
	PCE	**TCE**	**cis-1,2-DCE**	**trans-1,2-DCE**	**Vinyl Chloride**	
Shallow						
27-S	ND	54	120	5.7	0.14 J	No Trend
MS-43S	ND	140	36	2.7	0.08 J	Significant Downward Trend
MS-44S	ND	17	9.3	0.85	ND	Significant Downward Trend
MS-47S	0.28 J	18	7.3	0.69	ND	Significant Downward Trend
MS-49S	0.16 J	160	38	8.1	ND	Significant Upward Trend
USGS-5	0.13 J	0.17 J	ND	ND	ND	No Trend
Intermediate						
16-IS	1 J	26	15	0.59	ND	Significant Downward Trend
MS-43I	ND	22	15	0.77	ND	Significant Upward Trend
MS-44I	ND	530	340	23	0.48	No Trend
MS-47I	1.9	51	16	1.3	ND	Significant Downward Trend
MS-49I	2.6	24	1.7	0.38 J	ND	Significant Downward Trend
Deep						
16-D	4 J	24	4.3	0.48 J	ND	No Trend
MS-43D	1.1	16	2.7	0.6	0.09 J	No Trend
MS-44D	0.33 J	61	18	1.5	0.09 J	Significant Downward Trend
MS-47D	6.6 J	29	2.3	0.52	ND	Significant Downward Trend
MS-49D	0.49 J	10	1.1	ND	ND	Significant Upward Trend
Bedrock						
MS-48PC	NS	NS	NS	NS	NS	Insufficient Data

1 Minnesota Surface Water Criteria: http://www.revisor.leg.state.mn.us/arule/7050/0220.html.
Minnesota Rule 7050.0220 Specific Standards of Quality and Purity By Association Use of Classes:

Chronic Standard - the highest water concentration of a toxicant to which organisms can be exposed indefinitely without causing chronic toxicity.
Maximum Standard - the highest concentration of a toxicant in water to which aquatic organisms can be exposed for a brief time with zero to slight mortality.
Final Acute Value - an estimate of the concentration of a pollutant corresponding to the cumulative probability of 0.05 in the distribution of all the acute toxicity values for the genera or species from the acceptable acute toxicity tests conducted on a pollutant.
Domestic Consumption - standard for domestic consumption of Class 1 drinking water.

2 The determination of the trend in compliance wells is based on the Mann-Kendall results in Table 5-4 for Alpha = 0.2.
ND - Non-detect.
NS - Not sampled.
Shaded result indicates an exceedance of Minnesota Surface Water Criterion.
J - estimated result

PGH:P:\GIS\FRIDLEY_NIROP\MAPDOCS\MXD\2011 AMR\2011_POTENTIOMETRIC_SHALLOW.MXD 6/29/2012 KM



Note:
(1) FMC wells not used in contouring.
(2) Water level measurements were collected on October 31, 2011.
(3) USGS-4 was not used for contouring - water elevation appears anomalous.
(4) Extent of clay and silt layers from Davis (2007).
(5) Cones of depression around AT-7 and AT-9 are likely less steep than measured water levels indicated, probably due to decreased well efficiency over time.
(6) Groundwater level elevation at beginning of well purge used (816.01) instead of atypical water level collection event elevation reading (818.78).

Legend

- Shallow Monitoring Well
- Extraction Well
- 12-S 818.41 Groundwater Elevation (feet above mean sea level)
- NM = Not Measured
- Road
- Railroad
- Water
- Building
- NIROP Fridley
- FMC
- Burlington Northern RR
- Vegetable Oil Pilot Study Area
- Clay Ridge
- Shallow Clay
- 800 Shallow Potentiometric Surface Contour (2-foot interval, feet above mean sea level, dashed where inferred)
- Approximate Location of East Plating Shop

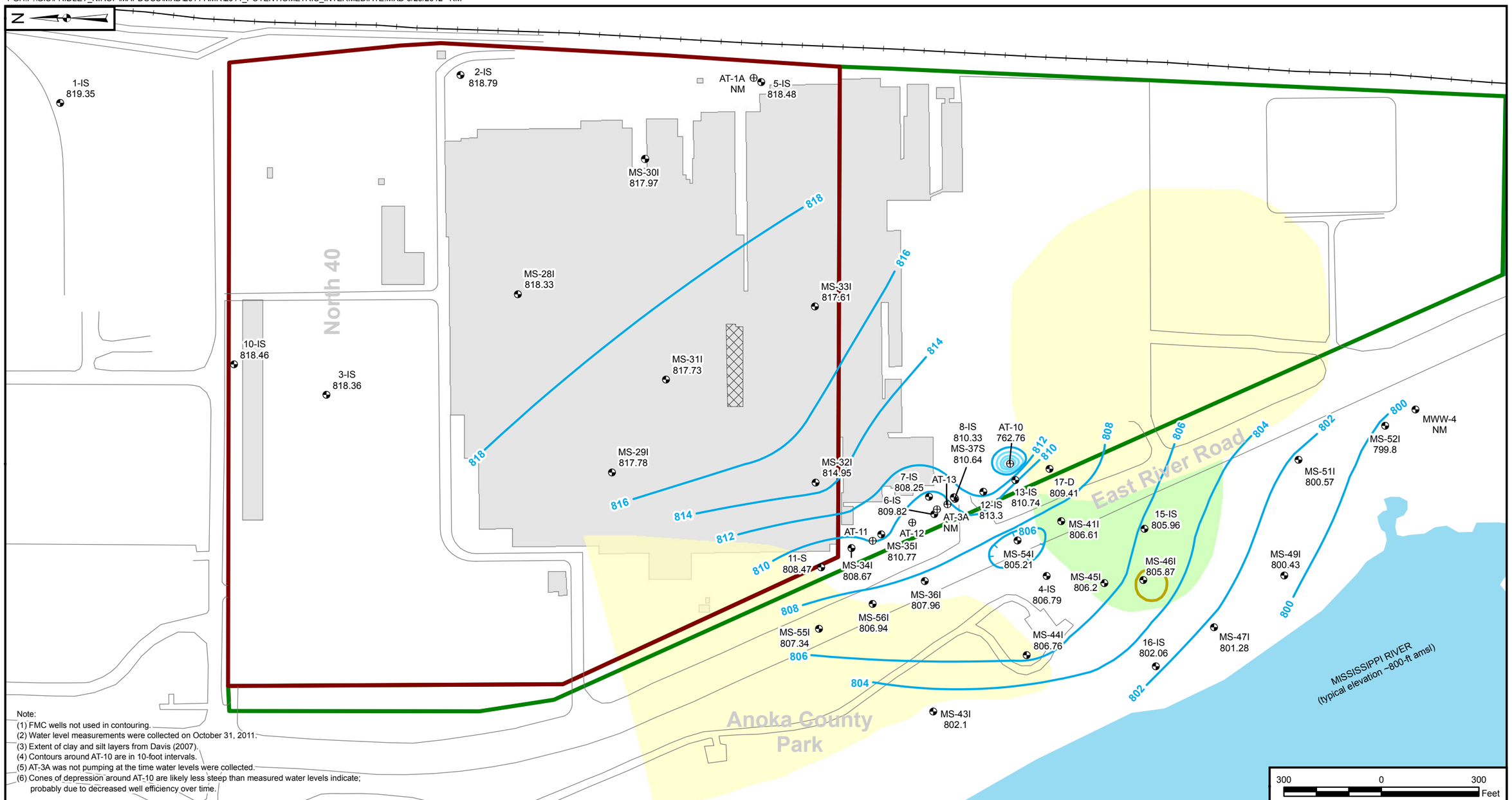
DRAWN BY	DATE
J. ENGLISH	11/15/11
CHECKED BY	DATE
S. WARINO	06/29/12
REVISED BY	DATE
K. MOORE	06/29/12
SCALE	
AS NOTED	

NAVFAC

SHALLOW ZONE GROUNDWATER ELEVATIONS UNDER PUMPING CONDITIONS ON OCTOBER 31, 2011
2011 ANNUAL MONITORING REPORT
NIROP FRIDLEY, MINNESOTA

CONTRACT NUMBER	CTO NUMBER
2583	F27C
APPROVED BY	DATE
S. WARINO	06/14/12
APPROVED BY	DATE
FIGURE NO.	REV
5-1	0

PGH:P:\GIS\FRIDLEY_NIROP\MAPDOCS\MXD\2011 AMR\2011_POTENTIOMETRIC_INTERMEDIATE.MXD 6/29/2012 KM



Note:
(1) FMC wells not used in contouring.
(2) Water level measurements were collected on October 31, 2011.
(3) Extent of clay and silt layers from Davis (2007).
(4) Contours around AT-10 are in 10-foot intervals.
(5) AT-3A was not pumping at the time water levels were collected.
(6) Cones of depression around AT-10 are likely less steep than measured water levels indicate; probably due to decreased well efficiency over time.

Legend

- Intermediate Monitoring Well
- Extraction Well
- 1-IS 819.35 — Groundwater Elevation (feet above mean sea level)
- NM = Not Measured
- Road
- Railroad
- Water
- Building
- NIROP Fridley
- FMC
- Burlington Northern RR
- Vegetable Oil Pilot Study Area
- Intermediate Clay
- Intermediate Silt
- Approximate Location of East Plating Shop
- 810 — Intermediate Potentiometric Surface Contour (2-foot interval, feet above mean sea level, dashed where inferred)

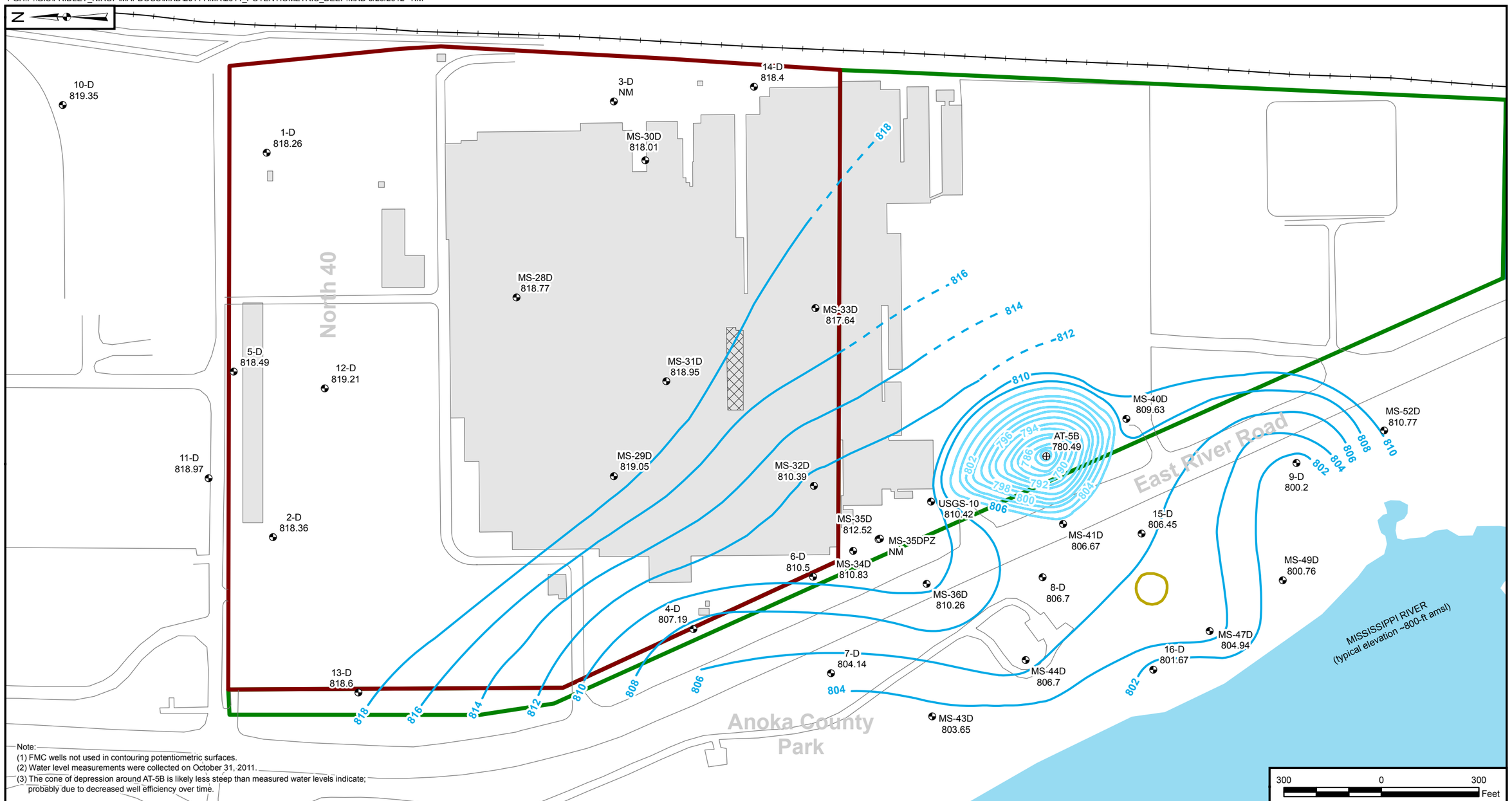
DRAWN BY J. ENGLISH	DATE 11/15/11
CHECKED BY S. WARINO	DATE 06/29/12
REVISED BY K. MOORE	DATE 06/29/12
SCALE AS NOTED	

NAVFAC

INTERMEDIATE ZONE GROUNDWATER ELEVATIONS
UNDER PUMPING CONDITIONS ON OCTOBER 31, 2011
2011 ANNUAL MONITORING REPORT
NIROP FRIDLEY, MINNESOTA

CONTRACT NUMBER 2583	CTO NUMBER F27C
APPROVED BY S. WARINO	DATE 06/14/12
APPROVED BY	DATE
FIGURE NO. 5-2	REV 0

PGH:P:\GIS\FRIDLEY_NIROP\MAPDOCS\MXD\2011 AMR\2011_POTENTIOMETRIC_DEEP.MXD 6/29/2012 KM



Note:
(1) FMC wells not used in contouring potentiometric surfaces.
(2) Water level measurements were collected on October 31, 2011.
(3) The cone of depression around AT-5B is likely less steep than measured water levels indicate; probably due to decreased well efficiency over time.

Legend

- Deep Monitoring Well
- Extraction Well
- 13-D 818.6 Groundwater Elevation (feet above mean sea level)
- NM = Not Measured
- Road
- Railroad
- Water
- Building
- NIROP Fridley
- FMC
- Burlington Northern RR
- Vegetable Oil Pilot Study Area
- Approximate Location of East Plating Shop
- 818 Deep Potentiometric Surface Contour (2-foot interval, feet above mean sea level, dashed where inferred)

DRAWN BY J. ENGLISH	DATE 11/15/11
CHECKED BY S. WARINO	DATE 06/29/12
REVISED BY K. MOORE	DATE 06/29/12
SCALE AS NOTED	

NAVFAC

DEEP ZONE GROUNDWATER ELEVATIONS UNDER PUMPING CONDITIONS ON OCTOBER 31, 2011
2011 ANNUAL MONITORING REPORT
NIROP FRIDLEY, MINNESOTA

CONTRACT NUMBER 2583	CTO NUMBER F27C
APPROVED BY S. WARINO	DATE 06/14/12
APPROVED BY	DATE
FIGURE NO. 5-3	REV 0

PGH:P:\GIS\FRIDLEY_NIROP\MAPDOCS\MXD\2011 AMR\2011_POTENTIOMETRIC_BEDROCK.MXD 6/29/2012 KM

Note:
(1) FMC wells not used in contouring potentiometric surfaces.
(2) Water level measurements were collected on October 31, 2011.

Legend

- Bedrock Monitoring Well
- 1-PC 819.09 — Groundwater Elevation (feet above mean sea level)
- Road
- Railroad
- River
- Building
- NIROP Fridley
- FMC
- Burlington Northern RR
- Vegetable Oil Pilot Study Area
- Approximate Location of East Plating Shop
- -818- Bedrock Potentiometric Surface Contour (1-foot interval, feet above mean sea level, dashed where inferred)

DRAWN BY	DATE
J. ENGLISH	11/15/11
CHECKED BY	DATE
S. WARINO	06/29/12
REVISED BY	DATE
J. ENGLISH	06/29/12
SCALE	
AS NOTED	

NAVFAC

BEDROCK GROUNDWATER ELEVATIONS UNDER PUMPING CONDITIONS ON OCTOBER 31, 2011
2011 ANNUAL MONITORING REPORT
NIROP FRIDLEY, MINNESOTA

CONTRACT NUMBER	CTO NUMBER
2583	F27C
APPROVED BY	DATE
S. WARINO	06/14/12
APPROVED BY	DATE
FIGURE NO.	REV
5-4	0

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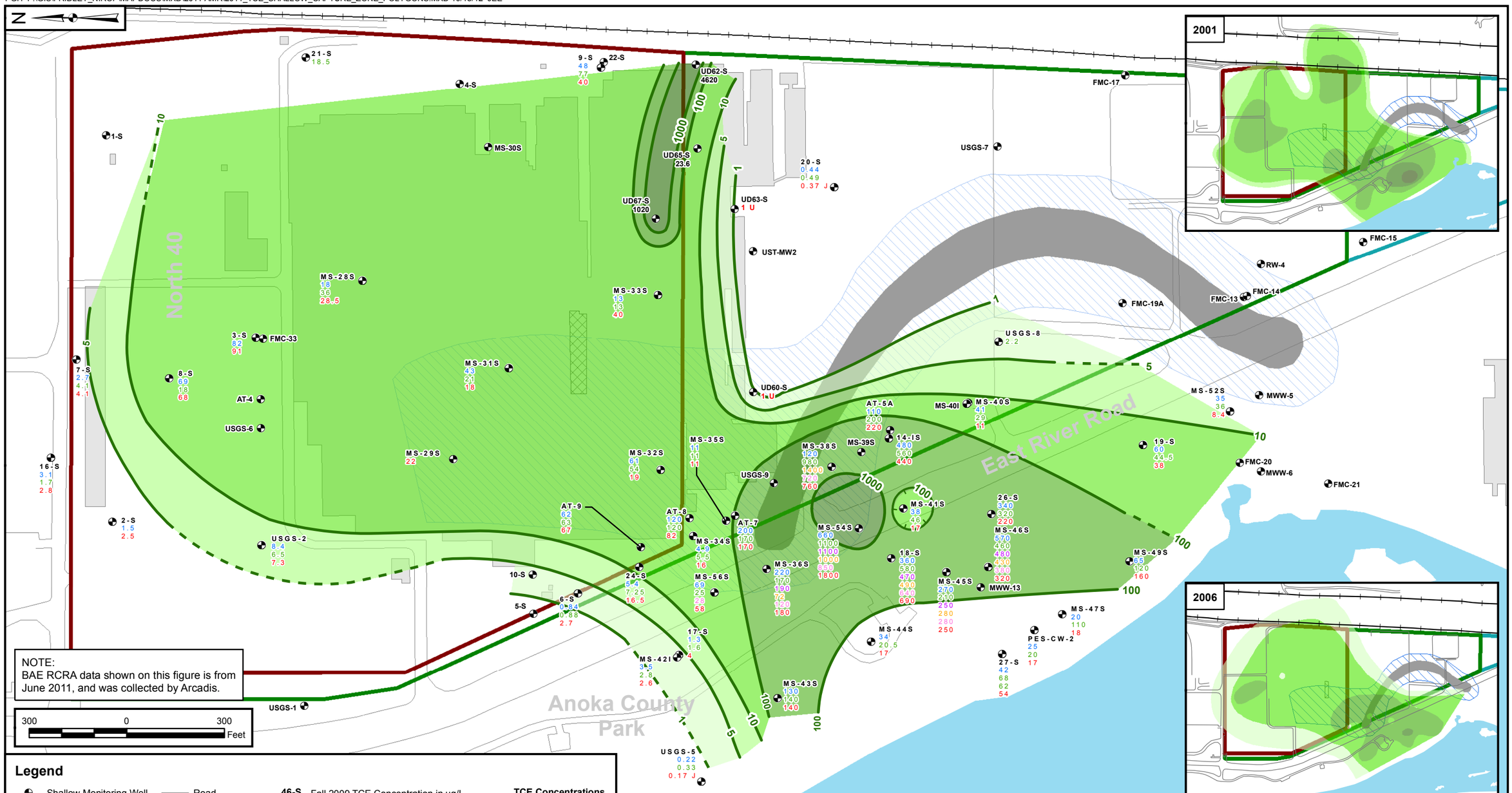

NOTE:
BAE RCRA data shown on this figure is from June 2011, and was collected by Arcadis.

Legend

- Shallow Monitoring Well
- Road
- Railroad
- River
- Clay Ridge
- Shallow Clay

Property Boundary

- NIROP Fridley
- FMC
- Burlington Northern RR
- Approximate Location of East Plating Shop
- Building

46-S Fall 2009 TCE Concentration in ug/L
1.1 Fall 2009 TCE Concentration in ug/L
1.1 Fall 2010 TCE Concentration in ug/L
1.1 February 2011 TCE Concentration in ug/L
1.1 May/June 2011 TCE Concentration in ug/L
1.1 August 2011 TCE Concentration in ug/L
1.1 November 2011 TCE Concentration in ug/L
5 2011 TCE Isocontour (dashed where inferred)

TCE Concentrations

- > 1 ug/L
- > 5 ug/L
- > 10 ug/L
- > 100 ug/L
- > 1000 ug/L
- > 10,000 ug/L

DRAWN BY	DATE
J. ENGLISH	10/12/12
CHECKED BY	DATE
S. WARINO	10/15/12
REVISED BY	DATE
SCALE AS NOTED	

NAVFAC

TCE CONCENTRATIONS FOR
2001, 2006 AND 2011 MONITORING ROUNDS
SHALLOW ZONE WELLS
2011 ANNUAL MONITORING REPORT
NIROP FRIDLEY, MINNESOTA

CONTRACT NUMBER	CTO NUMBER
2583	F27C
APPROVED BY	DATE
APPROVED BY	DATE
FIGURE NO. 5-5	REV 1

PGH P:\GIS\FRIDLEY_NIROP\MAPDOCS\MXD\2011 AMR\2011_TCE_INTERMEDIATE_CAPTURE_ZONE_POLYGONS.MXD 10/16/12 JEE

NOTES:
1) BAR RCRA data shown on this figure is from June 2011, and was collected by Arcadis.
2) Data for UD59-I is from October 2010.
3) Data for AT-11, AT-12, AT-13 from CH2M Hill Pump Test Report, June 2012.

Legend

- Intermediate Monitoring Well
- Road
- Railroad
- River
- Intermediate Clay
- Intermediate Silt

Property Boundary
- NIROP Fridley
- FMC
- Burlington Northern RR
- Approximate Location of East Plating Shop
- Building

46-S	Monitoring Well Location ID
1.1	Fall 2009 TCE Concentration in ug/L
1.1	Fall 2010 TCE Concentration in ug/L
1.1	February 2011 TCE Concentration in ug/L
1.1	May/June 2011 TCE Concentration in ug/L
1.1	August 2011 TCE Concentration in ug/L
1.1	November 2011 TCE Concentration in ug/L
5	2011 TCE Isocontour (dashed where inferred)

TCE Concentrations
- > 1 ug/L
- > 5 ug/L
- > 10 ug/L
- > 100 ug/L
- > 1000 ug/L
- > 10,000 ug/L

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J. ENGLISH	10/15/12
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S. WARINO	10/15/12
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SCALE	
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TCE CONCENTRATIONS FOR
2001, 2006 AND 2011 MONITORING ROUNDS
INTERMEDIATE / SEMI-CONFINED
AQUIFER ZONE WELLS
2011 ANNUAL MONITORING REPORT
NIROP FRIDLEY, MINNESOTA

CONTRACT NUMBER	CTO NUMBER
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FIGURE NO. 5-6	REV 0

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TCE CONCENTRATIONS FOR
2001, 2006 AND 2011 MONITORING ROUNDS
DEEP ZONE WELLS
2011 ANNUAL MONITORING REPORT
NIROP FRIDLEY, MINNESOTA

CONTRACT NUMBER	CTO NUMBER
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FIGURE NO. 5-7	REV 0

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TCE CONCENTRATIONS
BEDROCK WELLS
2011 ANNUAL MONITORING REPORT
NIROP FRIDLEY, MINNESOTA

CONTRACT NUMBER	CTO NUMBER
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FIGURE NO. 5-8	REV 0

6.0 EXTRACTION SYSTEM EVALUATION

This section discusses the effectiveness of the extraction system. This evaluation was performed using extraction well pumping rate data for 2011 and analytical data from November 2011. Table 6-1 shows TCE and total VOC mass removal estimates in 2011. Table 6-2 summarizes the calculated extraction well capture zones.

6.1 EXTRACTION SYSTEM

A summary of the estimated amount of TCE and total VOCs removed from extracted groundwater since the start of operations is shown in Table 6-1. The cumulative total amounts of TCE and total VOCs removed by the system from 1992 through 2011 were 33,506 pounds and 37,218 pounds, respectively, based on a cumulative pumping volume of approximately 4.335 billion gallons.

TCE mass removed in 2011 for each well in the extraction system is shown in Table 6-1, and calculated using November 2011 analytical data for samples collected from extraction wells AT-5A, AT-5B, AT-7, AT-8, AT-9, and AT-10, and August 2011 analytical data from the sample collected from extraction well AT-3A. Using November and August 2011 TCE concentrations from the extraction wells, approximately 343 pounds of TCE were estimated to have been removed in 2011 (Table 6-1), corresponding to a removal rate of 0.94 pounds per day. The daily removal rate decreased slightly from the 2010 removal rate of one pound per day, due primarily to decreased function of AT-3A.

Using the cumulative removed contaminant data in Appendix B-1 (calculated from quarterly influent concentrations provided by the O&M subcontractor), the estimated mass of TCE removed in 2011 was 471.2 pounds. Influent contaminant concentrations in January, April, June, and December 2011 were 260, 380, 390, and 610 µg/L, respectively, which averages to an influent concentration of 410 µg/L. The significantly elevated concentration in the last quarter of sampling, which was collected November 29, 2011, is reflective of the contribution of groundwater pumping from AT-13 (at approximately 80 gpm), which was in operation since November 14th. This total also includes approximately 50 lbs of TCE recovered during the extraction well pump test in December 2011.

6.2 EVALUATION OF EXTRACTION SYSTEM CAPTURE

An initial evaluation of the extraction well capture zones was performed for the 2001 AMR using a combination of approaches, including analytical equations, a flownet evaluation, and numerical groundwater flow/particle track model. In addition, as part of the RAWP (Tetra Tech, 2005b) various

approaches to determining extraction well capture zones were evaluated and ranked in terms of the NIROP Partnering Team confidence regarding their ability to accurately delineate capture zones. The methods included aquifer testing (performed specifically for capture zone delineation), modeling (only if the model accurately represents the complex aquifer system), potentiometric maps and flow lines (flownet approach), and analytical equations, in that order. The preference ranking for each method is presented in Attachment 2 of the DQO meeting notes, Appendix B of the RAWP (Tetra Tech, 2005b).

6.2.1 Capture Zone Evaluation

Figures 6-1, 6-2, and 6-3 show the approximate areal capture zone extents (based on a flownet approach using groundwater elevation data collected October 31, 2011) for shallow, intermediate, and deep zone groundwater, respectively, with groundwater flow contours and TCE isoconcentration contours. At the time groundwater levels were collected, extraction wells were pumping except AT-3A.

Steady-state extraction well capture zones were calculated using basic capture zone equations, transmissivity data from past aquifer testing activities, the median pumping rates for the extraction wells while operating during 2011, and hydraulic gradients calculated from the March 2003 groundwater potentiometric surface maps representative of ambient (non-pumping) conditions. Table 6-2 provides the mathematically estimated capture zone extents for each of the wells and the equations and input parameters used in the calculations. Consistent with the past 6 years, a lower transmissivity (12,000 square feet per day) was used in the capture zone calculation for AT-3A than was used for capture zone determinations prior to 2002. The technical basis for this lower transmissivity was provided to the NIROP Partnering Team in a March 2, 2004, letter from Tetra Tech addressing selected technical review comments related to the 2002 AMR. Note that the capture zone calculated for AT-3A only applies until September 3, 2011, when the extraction well was turned off. It should also be noted that groundwater flow gradients vary significantly over short distances across the site (especially in the intermediate drift near AT-3A), thus the average gradients selected for use in the calculations may or may not provide an accurate approximation of actual conditions. Calculated capture zone extents are inversely related to the gradient; increasing the gradient by a factor of two decreases the calculated capture zone extent by one-half.

6.2.1.1 Shallow Zone Groundwater Capture

Figure 6-1 shows the capture zones for AT-5A, AT-7, AT-8, and AT-9 and potentiometric contours for the shallow zone in 2011. The shallow capture zones shown on Figure 6-1 were determined using a standard flownet-type approach. The groundwater moving southwest from beneath the southern half of

the NIROP building appears to be captured in 2011. Under normal pumping conditions, capture zone evaluation approaches indicate capture of almost all of the contaminated shallow groundwater migrating from the facility to the ERR area.

Figure 6-1 also shows the interpreted capture zones with respect to the extents of the TCE plume. There may be some minimal bypass of contaminated shallow groundwater around and through the extraction well network, specifically near AT-7 and AT-8, and north of AT-9, based in the past on downgradient shallow zone TCE concentrations; however, capture, as depicted by the flownet method, does not reflect this, since the vertical flow component complicates groundwater flow evaluation, and is difficult to accurately represent when evaluating the flow zones separately. The bypass is exacerbated during lapses in extraction system operation. For the potential area of bypass north of extraction well AT-9, groundwater flow contours west and southwest of AT-9 indicate a preferential flow pathway that extends southwards in the ACP. In the ACP area, most groundwater is beyond the capture zone of the extraction wells, except for locations west of AT-5A and east of the center of the groundwater high in ACP. Residual contamination west of this area will not be captured by the extraction system.

One interpretation of the contamination extending southwest of the extraction well capture zones is that contamination in the shallow zone may be originating from the intermediate zone to the north, encountering the breach in the intermediate clay layers and migrating vertically into the shallow zone near the corner of the NIROP building. In the shallow zone, the areas of (1) localized elevated contaminant concentrations, (2) the location of the potentiometric high (i.e., the lobe of higher groundwater elevations in ACP), and (3) the pattern of well nest water level responses from the USGS Report Figure 11 (Davis, 2007) (presented as Figure 3-7 in this report) are comparable in size and shape, indicating that intermediate groundwater may rise and commingle with shallow zone groundwater in this area. A significant portion of this area is within the capture zone for AT-5A, as shown on Figure 6-1. This zone of increased concentrations of TCE is south of the shallow capture zone area. This interpretation of elevated TCE concentrations in ACP in the shallow zone is supported by recent increases in concentrations in shallow wells in ACP, following the decreased/intermittent operation of AT-3A.

A second interpretation of elevated TCE concentrations in this area is that wells downgradient of the extraction wells are within the stagnation zone created by the extraction system. This is a more applicable interpretation during times when the extraction system (primarily AT-3A) functioned more consistently and pumped groundwater at a higher rate. Contaminants in this area move very slowly (i.e., it is possible that in some areas, elevated TCE concentrations may not be due to lack of capture as described above, but an artifact of an older plume configuration, see Figure 5-5), and based on proximity to the river, capture is unlikely even at increased pumping rates. The calculated individual capture zones

for the shallow wells (Table 6-2) do not correlate well with the individual capture zones shown on Figure 6-1. Capture zone calculations, such as those used in Table 6-2, are most appropriate for groundwater flow systems with relatively uniform flow gradients and directions and consistent hydraulic properties, thus the inconsistencies in individual well capture zones between the flownet approach; the calculations are not unexpected considering the complexity of the groundwater flow regime and extreme variations in flow gradients consistently observed at the NIROP. Capture zones estimated using the various approaches employed in past AMRs and by the USGS (Davis, 2007) are in general agreement with the 2011 capture zone evaluation (especially the flownet results) regarding the extent of capture. This capture zone analysis differs from the USGS interpretation in the shallow zone for AT-5A in that the capture zone in this AMR extends east of the clay ridge depicted in the USGS report, rather than stopping at the boundary of the clay ridge.

6.2.1.2 Intermediate Zone Groundwater Capture

It should be noted that during the October 31, 2011, collection of groundwater elevations, intermediate extraction well AT-3A and newly installed extraction wells AT-11, AT-12, and AT-13 were not pumping. However, AT-3A was pumping approximately 57 percent of the year, and nearby well AT-13 was pumping approximately 7 percent of the year, and when both pumping rate datasets are considered, the combined efforts of AT-3A and AT-13 result in a median pumping rate of 68 gpm. Therefore, the calculated capture zone extent from Table 6-2 for AT-3A/AT-13 only was drawn on Figure 6-2 to represent this, and is dashed to reflect uncertainty. For intermediate groundwater, the 2011 flownet analysis (Figure 6-2) indicates capture of only a small portion of the intermediate-depth TCE plume as it migrates into the ERR area. Figure 6-2 shows the interpreted capture zones with respect to the extent of TCE. AT-3A was shut down September 3, 2011, and AT-13, located nearby, screened at a similar interval, and pumping at a similar rate to AT-3A, began pumping November 14, 2011. A capture zone representing dimensions for the median pumping rate for both AT-3A and AT-13 datasets combined was drawn, dashed to reflect uncertainty, onto Figure 6-2 and the capture dimensions were calculated in Table 6-2.

Intermediate extraction well AT-3A was operable for most of the period from January 1, 2011, to September 3, 2011. Additionally, when AT-3A operated, it ran at a lower rate than was considered ideal. Intermediate extraction well AT-10 was operable for most of 2011; however, it experienced extended periods of downtime, mainly when the replacement wells for AT-3A were being installed and tested. Therefore, bypass occurred during 2011 in the area north of the capture zone of AT-10, as evidenced by elevated concentrations of TCE in ACP following AT-3A's decreasing efficiency. To capture the contaminated groundwater north of AT-10, three new intermediate zone extraction wells were installed in late 2011 (AT-11, AT-12, and AT-13) and will be brought on-line in 2012 (AT-13 was brought online at a

temporary pumping rate of approximately 80 gpm). Once AT-11, AT-12, and AT-13 are all operational, their capture zones will likely capture most of the TCE contamination migrating off-site. In the ACP area, intermediate-depth groundwater will still be beyond the capture zone of the improved extraction system. As was the case for the shallow wells, the calculated capture zone for AT-10 (Table 6-2) does not correlate well with the capture zone shown on Figure 6-2. As mentioned previously, capture zone calculations, such as those used in Table 6-2, are limited in their ability to accurately represent the complex heterogeneous flow systems at the NIROP.

6.2.1.3 Deep Zone Groundwater Capture

For deep groundwater, the 2011 flownet analysis is shown on Figure 6-3. No elevated TCE concentrations (> 100 μg/L), except for AT-5B, are present in the deep zone. It is likely that AT-5B is pulling intermediate zone groundwater into the deep zone and that deep zone groundwater does not have elevated concentrations except what is being pulled into AT-5B. In the ACP area, most deep groundwater is beyond the capture zone of the extraction wells and concentrations here are generally quite low. Concentrations in the ACP area in 2011 are still low, although MW-44D did have an increase in TCE from 12 μg/L in October/November 2010 to 61 μg/L in November 2011. Residual contamination in this area will not be captured by the extraction system. The correlation between the calculated individual capture zones for the deep wells (Table 6-2) and the individual capture zones on Figure 6-3 appears to be slightly better than for the shallow and intermediate-depth extraction wells, possibly reflecting a less complicated flow regime at a depth somewhat more amenable to mathematical approximation.

6.2.2 Summary of Capture

Based on capture zone analysis, the lower than ideal pumping rate and eventual discontinued use of intermediate extraction well AT-3A in 2011 has limited the captured amount of groundwater migrating from the southwestern area of the NIROP. Until the new intermediate wells are operational, groundwater that is bypassing the extraction system include intermediate groundwater north of the former capture zone of AT-3A, a limited amount of deep groundwater between extraction wells AT-3A and AT-5B, and possibly some shallow groundwater north of AT-9 and near AT-7 and AT-8. Further to the southeast, some contaminated groundwater bypasses the extraction wells; however, this contamination may be related to non-NIROP source(s). The capture zone extents shown on Figures 6-1 to 6-3 reflect the capture zone at the wells themselves. Capture zone geometry is such that capture zone width expands with increasing distance upgradient from the extraction well, reaching the maximum lateral extent far upgradient of the extraction well location.

As discussed above, evaluations consistently indicate that almost all of the ACP is outside the capture zone of the extraction system. The ACP is downgradient of the extraction system; therefore, operation of the system is expected to minimize the migration of any additional contamination past ERR and into the ACP area. However, as AT-3A failed, contaminated groundwater migrated into ACP. Residual groundwater contamination currently within the ACP is expected to slowly flush out of the area and/or undergo biodegradation through natural processes (i.e., “naturally dissipate”, as noted in the ROD) as the residual source(s) is depleted over time. In the past, the expected rate of dissipation of contaminated groundwater in ACP did not occur despite operation of the extraction system for a number of years. An evaluation of the capture of the NIROP plume led to the addition of three additional pumping wells to replace extraction well AT-3A. The addition of the new wells will substantially reduce the mass of TCE entering the ACP from the NIROP property. Although there is evidence that natural attenuation is occurring in the ACP area, the rates are not adequate to prevent impacted groundwater in the ACP from exceeding surface water standards for the Mississippi River.

All capture zone analyses performed herein were based on simplified evaluations of a complex hydrogeologic regime. The site is a complex stratigraphic framework consisting of interbedded aquifers of varying porosities and permeabilites. As such, the groundwater flow patterns and gradients vary across the site, as does the physical makeup of the aquifer materials and their associated water-transmitting capabilities, both laterally and vertically. These observed variations are linked. For example, groundwater flow directions change as relatively low- or high-permeability deposits are encountered, and flow gradients increase or decrease with corresponding decreases or increases in the overall hydraulic conductivity of the aquifer. Estimations of aquifer properties and local flow gradients are also subject to interpretation, and there is typically some variation in these parameters when multiple assessments are independently performed. In addition, the USGS report results indicate that the hydraulic connections between shallow, intermediate, and deep flow zones are complex. Some extraction wells influence multiple depth zones, and others have less of an effect than anticipated within their depth intervals (especially shallow extraction wells). The capture zone estimations should be evaluated in light of these uncertainties and should be regarded as approximations, with minor differences viewed as expected rather than indicative of a flawed analysis.

The estimated capture zone extents are reflective of consistent operation of the wells at the indicated pumping rates. Intermittent operation and/or variations in pumping rates will affect the overall configuration of the capture zones and the effectiveness of the wells in containing and removing contamination from the aquifer. In addition, concurrent operation of new extraction wells will increase the capture zones of each of the wells (to some extent) beyond what is indicated because flow to each well from higher and/or lower flow zones will be minimized by pumping from all levels.

TABLE 6-1

ESTIMATED TCE AND TOTAL VOC MASS REMOVED FROM GROUNDWATER CALCULATIONS
2011 ANNUAL MONITORING REPORT
NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT
FRIDLEY, MINNESOTA

Well	CUMULATIVE IN 2011						CUMULATIVE SINCE SYSTEM STARTUP	
	TCE conc., mg/L[1] (Cw)	Gallons pumped[2]	Liters pumped (V)	Mass removed, Kg (Mc)	TCE removed, lbs	TCE Removed, lbs/million gallons	Groundwater Extracted, million gallons	TCE Removed (pounds)
AT-1A	---	---	---	---	---	---	175.2	65
AT-2	---	---	---	---	---	---	190	2252
AT-3A	0.800	23,045,000	87,225,325	69.78	153.84	6.68	1472.305	22325.55655
AT-4	---	---	---	---	---	---	160	1117
AT-5A	0.220	52,445,000	198,504,325	43.67	96.28	1.84	999.505	4394.584872
AT-5B	0.210	23,206,000	87,834,710	18.45	40.66	1.75	561.746	1802.358556
AT-7	0.170	12,992,100	49,175,099	8.36	18.43	1.42	152.4421	419.6129936
AT-8	0.082	4,584,000	17,350,440	1.42	3.14	0.68	54.114	85.5596503
AT-9	0.067	36,357,000	137,611,245	9.22	20.33	0.56	485.417	649.7052638
AT-10	0.170	7,614,000	28,818,990	4.90	10.80	1.42	84.414	394.9490406
TOTAL	0.246	160,243,100	606,520,134	155.80	343.47	2.14	0.00	22.68

Well	CUMULATIVE IN 2011						CUMULATIVE SINCE SYSTEM STARTUP	
	Total VOC conc., mg/L[1] (Cw)	Gallons pumped[2]	Liters pumped (V)	Mass removed, Kg (Mc)	Total VOCs removed, lbs	VOCs Removed, lbs/million gallons	Groundwater Extracted, million gallons	TCE Removed (pounds)
AT-1A	---	---	---	---	---	---	175.2	94
AT-2	---	---	---	---	---	---	190.0	2,692
AT-3A	0.887	23,045,000	87,225,325	77.37	170.57	7.40	1,472.31	23,350
AT-4	---	---	---	---	---	---	160.0	1,675
AT-5A	0.296	52,445,000	198,504,325	58.76	129.54	2.47	999.51	5,202
AT-5B	0.231	23,206,000	87,834,710	20.29	44.73	1.93	561.75	1,917
AT-7	0.365	12,992,100	49,175,099	17.95	39.57	3.05	152.44	795
AT-8	0.428	4,584,000	17,350,440	7.43	16.37	3.57	54.11	266
AT-9	0.131	36,357,000	137,611,245	18.03	39.74	1.09	485.42	1,053
AT-10	0.271	7,614,000	28,818,990	7.81	17.22	2.26	84.4	471
TOTAL	0.373	160,243,100	606,520,134	207.63	457.73	2.86	0.00	22.68

Equations

V = Gallons pumped x 3.785

Mc = Cw x V x (1 kg/1,000,000 mg)

Lbs removed = Mc / 0.4536

Notes

1. Contaminant concentrations from November 2011 analytical data set (contaminant concentrations at AT-3A from the August 2011 data set).
2. Total volume removed was taken from 2011 DNR Annual Report of Water Use.
3 AT-1A was shut down permanently on April 27, 2001.
4 AT-2 was shut down permanently on June 14, 2000.

TABLE 6-2

EXTRACTION WELL CAPTURE ZONE CALCULATIONS
2011 ANNUAL MONITORING REPORT
NIROP FRIDLEY, MINNESOTA

Well	Aquifer Zone	T (ft^2/day)	Q (gpm) [1]	Q (ft^3/day)	Gradient [2]	Capture Zone Width (ft)		Downgradient Capture Zone Limit (ft)	Screened Interval (ft bgs)
						Maximum	At Well		
AT-3A/AT-13[3]	Intermediate/Deep	12000	68.0	13091	0.004	273	136	43	69 - 105
AT-5A	Shallow	7210	138.0	26566	0.01	368	184	59	36 - 66
AT-5B	Deep	3400	61.3	11801	0.005	694	347	110	101 - 136
AT-7	Shallow	1020	17.6	3388	0.01	332	166	53	29 - 39
AT-8	Shallow	448	11.5	2214	0.01	494	247	79	27.5 - 37.5
AT-9	Shallow	2600	108.0	20791	0.01	800	400	127	34.5 -51.5
AT-10	Intermediate	721	19.0	3658	0.004	1268	634	202	68 - 84

1 Pumping rates used are the median pumping rates during operational periods in 2011.
2 Gradient was calculated from March 2003 potentiometric surface maps representing non-pumping conditions.
3 The pumping rate (Q) and calculated capture zone configurations are for the combined efforts of AT-3A and AT-13.

Capture Zone Equations:

Maximum capture zone width = Q/Ti
Capture zone width at well = Q/2Ti
Downgradient capture zone limit = $Q/2\pi Ti$

T = transmissivity
Q = discharge

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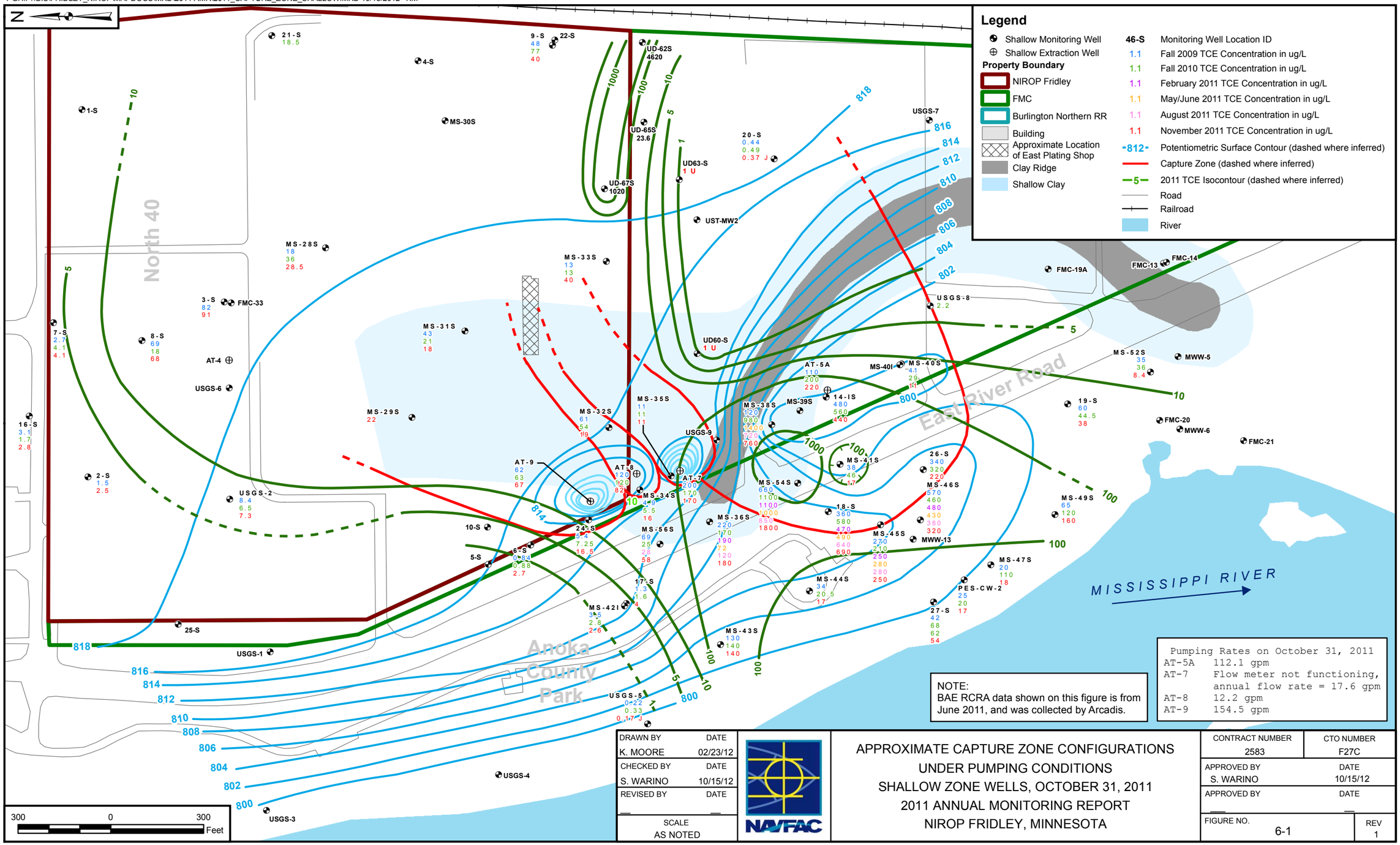

NOTE:
BAE RCRA data shown on this figure is from June 2011, and was collected by Arcadis.

Pumping Rates on October 31, 2011

AT-5A	112.1 gpm
AT-7	Flow meter not functioning, annual flow rate = 17.6 gpm
AT-8	12.2 gpm
AT-9	154.5 gpm

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APPROXIMATE CAPTURE ZONE CONFIGURATIONS
UNDER PUMPING CONDITIONS
SHALLOW ZONE WELLS, OCTOBER 31, 2011
2011 ANNUAL MONITORING REPORT
NIROP FRIDLEY, MINNESOTA

CONTRACT NUMBER	CTO NUMBER
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FIGURE NO. 6-1	REV 1

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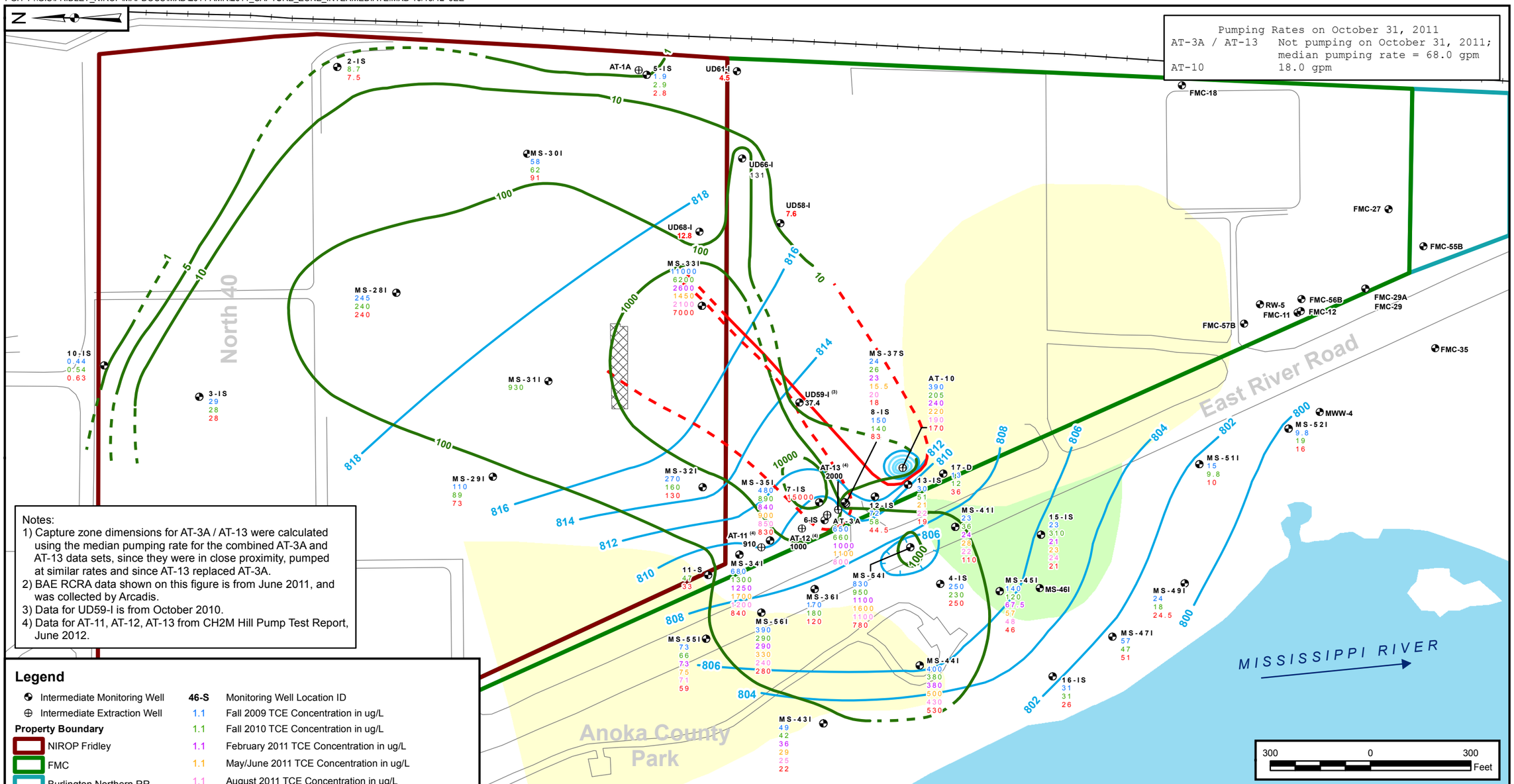

Notes:
1) Capture zone dimensions for AT-3A / AT-13 were calculated using the median pumping rate for the combined AT-3A and AT-13 data sets, since they were in close proximity, pumped at similar rates and since AT-13 replaced AT-3A.
2) BAE RCRA data shown on this figure is from June 2011, and was collected by Arcadis.
3) Data for UD59-I is from October 2010.
4) Data for AT-11, AT-12, AT-13 from CH2M Hill Pump Test Report, June 2012.

Legend

- Intermediate Monitoring Well
- Intermediate Extraction Well

Property Boundary

- NIROP Fridley
- FMC
- Burlington Northern RR
- Building
- Approximate Location of East Plating Shop
- Intermediate Clay
- Intermediate Silt
- River

46-S	Monitoring Well Location ID
1.1	Fall 2009 TCE Concentration in ug/L
1.1	Fall 2010 TCE Concentration in ug/L
1.1	February 2011 TCE Concentration in ug/L
1.1	May/June 2011 TCE Concentration in ug/L
1.1	August 2011 TCE Concentration in ug/L
1.1	November 2011 TCE Concentration in ug/L
-808-	Potentiometric Surface Contour (dashed where inferred)
	Capture Zone (dashed where inferred)
-5-	2011 TCE Isocontour (dashed where inferred)
	Road
	Railroad

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S. WARINO	10/16/12
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J. ENGLISH	10/16/12
SCALE AS NOTED	

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APPROXIMATE CAPTURE ZONE CONFIGURATIONS
UNDER PUMPING CONDITIONS
INTERMEDIATE / SEMI CONFINED ZONE WELLS,
OCTOBER 31, 2011
2011 ANNUAL MONITORING REPORT
NIROP FRIDLEY, MINNESOTA

CONTRACT NUMBER	CTO NUMBER
2583	F27C
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FIGURE NO. 6-2	REV 0

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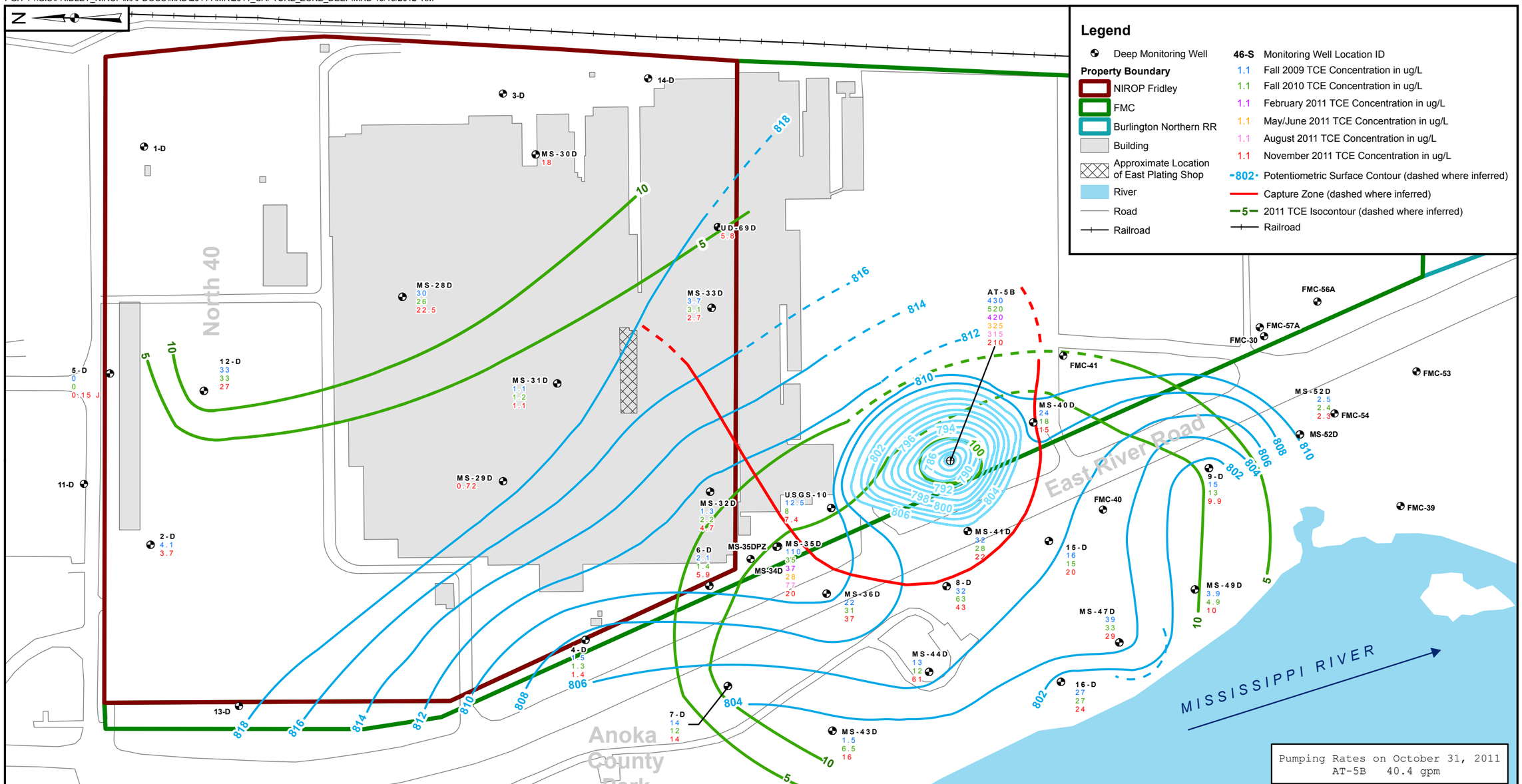

NOTES:
BAE RCRA data shown on this figure is from June 2011, and was collected by Arcadis.

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K. MOORE	6/29/12
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APPROXIMATE CAPTURE ZONE CONFIGURATIONS
UNDER PUMPING CONDITIONS
DEEP ZONE WELLS, OCTOBER 31, 2011
2011 ANNUAL MONITORING REPORT
NIROP FRIDLEY, MINNESOTA

CONTRACT NUMBER	CTO NUMBER
2583	F27C
APPROVED BY	DATE
S. WARINO	06/14/12
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FIGURE NO. 6-3	REV 0

7.0 CONCLUSIONS AND RECOMMENDATIONS

7.1 SUMMARY AND CONCLUSIONS

This report presents the results of 2011 groundwater remediation activities at the NIROP Fridley. During the year, the pump-and-treat system continued to operate for the purpose of containing and capturing VOC contaminants in groundwater. The following is a summary of observations made and conclusions drawn from evaluation of the 2011 monitoring results and extraction system operating data for the NIROP facility. This section also summarizes long term trends in monitoring well analyte results and extraction system operational trends.

General Observations

- TCE continues to be the most widespread contaminant in site groundwater with a maximum 2011 concentration of 15,000 µg/L in 7-IS in November 2011. The second most common VOC was cis-1,2-DCE, with a maximum concentration of 2,700 µg/L in MS-33I in May 2011.

- Of the 217 samples collected in 2011, 58 of those samples had 1,2-DCE (primarily cis-1,2-DCE) as the most elevated constituent. This occurred at a total of 34 locations, because some locations had duplicate samples or were sampled quarterly. PCE was the primary VOC in four wells (all bedrock wells).

- Exceedances of surface water TCE compliance criteria were noted in riverside wells (14 wells), PCE (one well), VC (two wells), and cis-1,2-DCE (two wells).

- A statistical evaluation using the Mann-Kendall test indicates long-term TCE trends as follows: 67 wells had downward trends, nine had upward trends, 35 had no statistically significant trends, and 18 wells had insufficient numbers of samples to determine trends.

- A statistical evaluation using the Mann-Kendall test indicates long-term total 1,2-DCE trends as follows: 42 wells had downward trends and 28 wells had upward trends. No statistically significant trends could be identified for the remaining 45 wells, and 14 wells had insufficient numbers of samples to determine trends.

- The Navy believes that groundwater flow and contaminant concentration data suggest that the adjacent BAE Systems site may be contributing at least some contamination to the southern portion of the study area (west of the FMC property in ACP). The MPCA has not endorsed this conclusion.

- The Navy believes that groundwater flow and contaminant concentration data suggest that the adjacent BAE Systems RCRA site ("Paint Room") may be contributing at least some contamination to the central portion of the study area (near southwest corner of the NIROP building and north portion of ACP).

- In 2011, the extraction system did not provide adequate containment of the main portion of contamination migrating from NIROP source areas, primarily located at intermediate depths under and in proximity to the NIROP building. Once the new extraction wells are operating at full capacity, it is anticipated that most contamination in the intermediate zone will be captured.

- The presence of and, in some cases, increases in total 1,2-DCE concentrations (coupled with TCE concentration reductions) indicates that biodegradation is occurring, especially in the shallow and intermediate zones in the ERR/ACP area. This is further supported by the Mann-Kendall trend analyses for TCE and DCE; overall, upward trends were far more prevalent for total 1,2-DCE (28) than TCE (9). However, natural attenuation processes alone are not adequate to address groundwater contamination at the site without the application of additional catalysts.

Shallow Monitored Interval

- TCE concentrations in the shallow zone in 2011 were greater than 100 µg/L in the ERR/ACP area. In the North 40, TCE concentrations are less than 100 µg/L. The maximum TCE detection in shallow wells in 2011 was 1,800 µg/L (MS-54S). Following decreased operation of AT-3A, TCE in shallow wells in ACP increased, indicating a hydraulic connection between the shallow and intermediate zone west of the "clay ridge" feature. Elevated concentrations in monitoring wells could also be attributed to a prolonged system shutdown during the installation of the new extraction wells during the last quarter of 2011.

- Some shallow zone wells in the vicinity of and downgradient of former intermediate extraction well AT-3A had notable short-term TCE increases, from 2009 to 2010 (immediately after AT-3A began to fail), including AT-5A, 18-S, MS-36S, MS-38S, MS-49S, and MS-54S. These wells still have 2011 TCE concentrations that remain significantly greater than 2009 TCE concentrations. This could be attributed to a decrease in the efficiency of AT-3A.

- Generally, maximum cis-1,2-DCE concentrations are detected in the ERR/ACP area. The maximum cis-1,2-DCE concentration in the shallow zone was 440 µg/L at MS-54S.

- A statistical evaluation of long-term TCE trends using the Mann-Kendall test indicated that there was a general tendency for long-term shallow groundwater trends to be downward for TCE (29 downward compared to 3 upward).

- A statistical evaluation of long-term total 1,2-DCE trends using the Mann-Kendall test indicated that there was a general tendency for long-term shallow groundwater trends to be downward for DCE (19 downward compared to 11 upward).

- Elevated cis-1,2-DCE levels were generally detected in wells with elevated TCE concentrations, suggesting a biodegradation link.

- The shallow extraction well network appears to be providing substantial containment of the shallow plume on NIROP property. However, there has historically been concern among the Partnering Team that contaminated groundwater may be bypassing the system north of AT-9 and between AT-7 and AT-8. The concern stemmed from the presence of elevated levels of TCE in the shallow zone in ACP. Based on the site conceptual model, it is more likely that the shallow zone elevated concentrations are a result of groundwater upwelling into the shallow zone from the intermediate zone, which may carry elevated concentrations of chlorinated solvents. However, it is not entirely clear from the data collected to date that this is the case, and it is anticipated that data collected following the extraction system upgrade will clarify this aspect of the site conceptual model.

- Groundwater TCE concentrations exceed regulatory criteria in five of six shallow zone riverside wells, with a maximum concentrations of 160 µg/L in monitoring well MS-49S.

Intermediate Monitored Interval

- Intermediate zone TCE concentrations have historically been greatest in the area between the East Plating Shop and ACP. A maximum TCE concentration of 15,000 µg/L was detected at 7-IS in 2011.

- Some intermediate zone wells in the vicinity of and downgradient of former intermediate extraction well AT-3A had notable short-term TCE increases, including 15-IS, MS-34I, MS-35I, and MS-54I, or more gradually between 2010 and 2011, as in MS-44I. This could be attributed to a decrease in the

efficiency of AT-3A. Elevated concentrations in monitoring wells could also be attributed to a prolonged system shutdown during the installation of the new extraction wells during the last quarter of 2011.

- A statistical evaluation of long-term TCE trends using the Mann-Kendall test indicated that there was a general tendency for intermediate groundwater trends to be downward for TCE (23 downward compared to 4 upward).

- A statistical evaluation of long-term total 1,2-DCE trends using the Mann-Kendall test indicated that DCE trends were 14 downward compared to 10 upward.

- The maximum cis-1,2-DCE concentration detected in intermediate wells was 2,700 µg/L at MS-33I.

- There is a general correlation between elevated TCE concentrations and elevated cis-1,2-DCE concentrations in individual wells, suggesting biodegradation of TCE to cis-1,2-DCE.

- Groundwater TCE concentrations exceed regulatory criteria in all intermediate-zone riverside wells, with a maximum concentration of 530 µg/L in monitoring well MS-44I.

- Contaminated groundwater is bypassing the system when AT-3A is not operating, probably north of AT-3A and in the “nose” area. This bypass appears to be responsible for increased levels of contamination in the shallow zone in ACP, following intermittent operation of AT-3A.

Deep Monitored Interval

- No monitoring wells in the deep zone exceeded 100 µg/L for TCE; however, the TCE concentration in AT-5B ranged from 420 µg/L to 210 µg/L during 2011, indicating that elevated TCE concentrations in AT-5B are coming from somewhere other than the deep zone, and that AT-5B is possibly pulling groundwater from the intermediate zone.

- Wells with notable short-term increases from 2010 to 2011 included MS-44D, MS-36D, and MS-43D, all located in ACP.

- A statistical evaluation of long-term TCE trends using the Mann-Kendall test indicated 13 downward trends and two upward trends in deep zone groundwater.

- PCE is present at concentrations above the MCL in the deep zone (maximum 35 µg/L in 12-D).

- A statistical evaluation of long-term total 1,2-DCE trends using the Mann-Kendall test indicated that deep groundwater trends tended to be evenly divided between downward and upward (eight downward compared to seven upward).

- Trace to low levels of cis-1,2-DCE are present (maximum 18 µg/L in MS-44D); all detections were significantly less than applicable criteria.

- TCE (in four of five wells, with a maximum concentration of 61 µg/L in MS-44D) and PCE (in one of five wells, with a maximum concentration of 6.6 µg/L in MS-47D) were detected at concentrations greater than applicable criteria in deep zone riverside wells.

Bedrock Wells

- TCE and cis-1,2-DCE were detected at trace levels in bedrock wells at concentrations less than applicable criteria.

- In the bedrock zone, downward TCE trends were identified at 2-PC and 5-PC. No upward trends were identified for TCE. One downward total 1,2-DCE trend was indentified at 2-PC.

- PCE was detected in well 5-PC at 42 µg/L and 2-PC at 13 µg/L in 2011. Historical sampling results indicate that the PCE contamination is not site related. The Navy believes the MPCA and U.S. EPA continue to be in agreement with this conclusion.

Extraction Wells

A limited analysis of the groundwater containment and extraction system was performed using available information. Capture zone evaluations were performed using both flownet analysis and analytical equations, as required by the DQOs in the 2005 RAWP (Tetra Tech, 2005b). A summary of the current system status and results of the 2011 analysis are as follows:

- The operational efficiency of the extraction system decreased significantly in 2011 due to intermittent operation of AT-3A and limited start-up operation of AT-13.

- Total extraction system average flow rates were lower in 2011 (321 gpm) than in 2010 (384 gpm), mainly due to wells being shutdown during the new extraction well installation activities. The ideal flow range for the entire extraction system had previously been set between 515 and 613 gpm by the Partnering Team.

- Wells AT-3A, AT-5A, and AT-5B extracted the most contaminant mass in 2011. Since their inclusion in the extraction well system, they have been important in containing and capturing groundwater contamination at the NIROP boundary.

- From highest to lowest pumping rates (averaged from daily instantaneous readings), extraction wells are ranked as follows for 2011:

  - AT-5A (99.9 gpm)
  - AT-9 (78.5 gpm)
  - AT-3A/AT-13 (50.2 gpm)
  - AT-5B (44.6 gpm)
  - AT-7 (22.0 gpm)
  - AT-10 (15.9 gpm)
  - AT-8 (9.4 gpm)

- From highest to lowest TCE/VOC mass removal rates (pounds per million gallons), extraction wells are ranked as follows for 2011:

Rank	Extraction Well	TCE Mass removal rate (pounds per million gallons)	Extraction Well	VOC Mass removal rate (pounds per million gallons)
1	AT-3A	6.68	AT-3A	7.40
2	AT-5A	1.84	AT-8	3.57
3	AT-5B	1.75	AT-7	3.05
4	AT-7	1.42	AT-5A	2.47
5	AT-10	1.42	AT-10	2.26
6	AT-8	0.68	AT-5B	1.93
7	AT-9	0.56	AT-9	1.09

- AT-10 is intended to provide containment of intermediate groundwater along the southern edge of the facility. AT-3A has not been fully operational; therefore, containment of most intermediate-depth groundwater emanating from the primary source area (East Plating Shop area) was not adequately achieved in 2011. When all new extraction wells are brought online, this should be remedied.

- There are no elevated TCE concentrations above 100 μg/L upgradient of the shallow extraction wells. However, the shallow extraction wells are still pumping, and capture shallow groundwater migrating from beneath the NIROP building and in ERR/ACP, based on flownet analysis and capture zone calculations.

- There are no elevated TCE concentrations above 100 μg/L in the deep zone. However, the deep extraction well is still pumping, and appears to capture deep groundwater migrating from the area south of the NIROP facility and the southern portion of the NIROP building.

7.2 ATTAINMENT OF DATA QUALITY OBJECTIVES

Periodic evaluation of the data reported in this AMR (or elsewhere) is necessary to confirm that the appropriate data are being collected and analyzed to support attainment of the DQOs.

This section addresses DQOs for two separate but related problems that are identified in the RAWP (Tetra Tech, 2005b):

- Problem B: Effectiveness of the Capture Well System
- Problem C: Groundwater Monitoring for Overall Contamination at NIROP Fridley

DQOs for NIROP were established using the seven-step DQO process developed by the U.S. EPA (2000). Some of the DQOs, especially laboratory measurement-related DQOs, were incorporated directly into the RAWP and are not repeated here; however, the following key items are highlighted:

- MDLs and laboratory reporting limits (RLs) for key compounds were decreased from previous years to ensure that concentrations could be measured at critical levels. Section 5.1.2 indicates that these limits were achieved.

- All groundwater monitoring data were subjected to validation in accordance with the Quality Assurance Project Plan (QAPP) requirements as described in Section 5.2. Data was validated for all 2011 samples. No sample data was rejected.

The derivation of DQOs for NIROP was an extensive process, discussed in detail in the RAWP (Tetra Tech, 2005b). Therefore, it is only necessary to identify the Decision Rules and to evaluate the results with respect to Decision Rules in this AMR. See the RAWP for discussions of Problem A and Problem D.

For both Problem B and Problem C, it was determined that Problem Statements, Inputs and Study Boundaries, and Decision Rules remain valid.

7.2.1 Problem B: Effectiveness of the Capture Well System

Evaluation of Problem B from the RAWP identifies a significant list of data to be collected or calculated (Decision Inputs/Study Boundaries). During this AMR evaluation of DQO attainment, it was confirmed that all required data were collected or calculated.

The DQO solution requires that the well network be adjustable to accommodate refinements to the site conceptual model and changing site conditions. This AMR evaluation of DQO attainment confirms that some minor modification to the sampling network has occurred. Therefore, this element is operating as designed to support the DQOs.

The MCL for TCE (the contaminant selected to represent the extent of contamination) is 5 µg/L. However, the DQOs specified that the 100 part per billion (ppb) TCE contour would represent the part of the plume to be evaluated for this problem (Tetra Tech, 2005b). Both contours were plotted on figures in this AMR.

All wells scheduled for operation and sampling, as identified in the DQOs, were included in the capture system evaluations.

Decision Rule for Problem B

The Decision Rule for Problem B, as contained in the RAWP (Tetra Tech, 2005b), is as follows:

"If the capture well system is effective at substantially preventing the flow of contaminated groundwater from NIROP beyond the capture well system, then optimize the system by selecting different pump rates, deselecting wells from the list of monitoring/pumping, etc., as appropriate based on best professional judgment using data analysis. If the capture well system is not effective at substantially preventing the flow of contaminated groundwater from NIROP beyond the capture well system, evaluate potential system enhancements, source control, etc., as appropriate."

Conclusions Regarding Attainment of Data Quality Objectives for Problem B

Because of AT-3A reduced/intermittent performance, the capture system was not effective at substantially preventing the flow of contaminated groundwater from NIROP, the Navy implemented an extraction system upgrade in 2011. Because these steps were taken, the DQOs are being met.

7.2.2 Problem C: Groundwater Monitoring for Overall Contamination at NIROP Fridley (Effectiveness of the Groundwater Monitoring Network)

Decision Rules for Problem C

The Decision Rules for Problem C, as contained in the RAWP, are as follows:

1. If contaminated groundwater (greater than 100 ppb TCE) is migrating beyond the northern and southern edges of the capture well line along the NIROP compliance line[1], evaluate potential system enhancements, source control, etc., as appropriate to improve the containment system. If not, optimize the groundwater monitoring system by selecting different pumping rates, deselecting wells from the list of monitoring/pumping, etc., as appropriate, based on best professional judgment using data analysis tools described in Attachment 2 of Problem B: Effectiveness of Capture Well System.

2. If groundwater with contaminants exceeding surface water criteria is entering the river, evaluate/implement a remedy to prevent this. If contaminated groundwater is not entering the river, optimize the groundwater monitoring program further.

3. If the change in shape, size, concentration, and location of the plume indicates that the remedy is deficient or groundwater monitoring is insufficient, then make adjustments to mitigate the deficiency (action depends on conditions). If no change in shape, size, and location of the plume that would indicate that a deficiency is observed, then optimize the groundwater monitoring program further. The 5 µg/L TCE concentration contour was originally designated to serve as the delineator of the plume. Based on recent data, this is still valid.

4. If groundwater COC concentrations are greater than their respective groundwater regulatory limits, then continue the remedy, evaluate remedial alternatives [e.g., land use controls (LUCs), etc.], and/or petition for using alternate concentration limits (ACLs). If not, recommend No Further Remedial Action Planned (NFRAP) and stop treatment.

5. If cleanup performance for the entire remedial system is unsatisfactory, then enhance system performance, evaluate the technical impracticability of the system, evaluate remedial alternatives

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1 The term “compliance” well and compliance line were utilized to identify a grouping of wells (along with such other groups as plume edge and source wells) in order to develop an overall sampling strategy. This does not indicate that these wells are agreed reference locations for attaining ROD goals.

(e.g., LUCs, etc.), and/or petition for ACLs. If the cleanup performance is satisfactory, further optimize the remedial system, if possible.

Conclusions Regarding Attainment of Data Quality Objectives for Problem C

Based on evaluations of the data in this AMR, TCE is still the best indicator of plume size. The data evaluations lead to the following conclusions:

- Contaminant concentrations downgradient of the capture system, up to 2009, have statistically decreased to show progress toward satisfying the Decision Rule #1. Downgradient quarterly monitoring was continued to assess the impact of the reduced performance of AT-3A and the effectiveness of the planned system upgrades, for a period of one year following startup of the new wells. The Partnering Team will then re-evaluate monitoring frequency at that time. Note that the term "compliance wells," as defined as a part of the DQO exercise, were applied to a particular group of wells to differentiate them from other groups, and these wells are referred to in previous sections of this AMR as "Riverside wells", to avoid the possible assumption that the "compliance wells" have any regulatory standing in documents to date.

- A groundwater treatment pilot study was evaluated as an active remedy that can potentially be used to decrease concentrations in accordance with Decision Rule #2. The capture system is also actively removing contamination from the aquifers.

- The groundwater monitoring program and cleanup performance of the remedial system are still being evaluated because of recent additions to the extraction system. Therefore, Decision Rule numbers 3, 4, and 5 are satisfied, although concentrations less than groundwater standards have not yet been achieved.

7.3 RECOMMENDATIONS

The following recommendations are proposed for incorporation into the groundwater monitoring and remedial operations at the NIROP site:

<u>Groundwater Monitoring Program</u>

- Continue quarterly monitoring for a period of 1 year following the new extraction wells being brought online. Consider the following quarterly sampling monitoring well changes:

- Extraction wells:
  - -- Remove AT-3A from the sampling plan because AT-13 is close by and can be sampled. AT-3A is scheduled to be abandoned and sealed in September 2012;
  - -- Add AT-11, AT-12, and AT-13 to the sampling plan to evaluate removal rates following being brought online

- Monitoring wells:
  - -- Add 7-IS to the sampling plan.

- The areas of potentially significant contaminant bypass in the intermediate flow zone through and around the northern portion of the extraction zone should continue to be monitored closely once extractions wells are brought online. If these areas of potential bypass have a significant impact on downgradient water quality in ACP, modification of the extraction system may be necessary.

- Following the new extraction wells being brought online, consideration of groundwater concentration data in ACP as a direct indication that the extraction wells are preventing migration of contaminants from beneath the NIROP building must be done with caution, because the potential exists that some monitoring wells in ACP may have elevated concentrations from groundwater being pulled from BAE sites; therefore, may not be 100 percent NIROP-related.

Containment and Extraction Remediation System

- The three new intermediate zone extraction wells should be brought online at a pumping rate sufficient to capture groundwater of concern emanating from under the NIROP building in the intermediate zone.

- Improvement of the overall run time for the extraction wells is of greater significance than incremental increases in pumping rate in terms of a containment strategy. Continued efforts at evaluating the optimal scope of preventative maintenance/evaluating new methods for well redevelopment may result in more improvement in extraction well performance.

- Implementation of remedial actions targeted at the probable primary source area (releases from the East Plating Shop) should continue to be considered. Any significant contaminant mass removal and/or destruction in the source area would be expected to significantly decrease downgradient groundwater contamination. The groundwater extraction and treatment activities, as well as any

bioremediation activities in the ERR/ACP area, are measures that limit the spread of contamination but do nothing to eliminate the source.

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APPENDIX A

OM & M DOCUMENTATION

A-1 NPDES DISCHARGE MONITORING REPORTS

A-2 MCES SPECIAL DISCHARGE REPORT

A-3 MONTHLY O&M REPORTS

A-4 REDEVELOPMENT FIELD LOG SHEETS

A-1 NPDES DISCHARGE MONITORING REPORTS

FACILITY NAME/ADDRESS:
Former Naval Industrial Reserve Ordinance I
4800 E River Rd
Fridley, MN 55421

APR 21 2011

WASTEWATER TREATMENT DISCHARGE MONITORING REPORT

PERMIT #	LIMIT STATUS	PCS #
MNG790159	FINAL	

PERMITTEE NAME/ADDRESS:
Naval Facilities Engineering Command Mid
201 Decatur Ave Bldg 1A
Great Lakes, IL 60088

STATION INFORMATION:
SD-001 (Groundwater Remediation Treatment System)
Surface Discharge, Effluent To Surface Water
Attention: Howard Hickey

MONITORING PERIOD	YEAR	MO.	DAY	YEAR	MO.	DAY
FROM	2011	01	01	TO 2011	03	31

☐ AMENDED
☐ NO DISCHARGE

MPCA: BN

PARAMETER		QUANTITY		UNITS	CONCENTRATION			UNITS	FREQUENCY OF ANALYSIS	SAMPLE TYPE
Flow	SAMPLE VALUE	******	51.577	MG	******	0.573	******	mgd	Continuous Flowmeter	
50050	PERMIT REQ	******	REPORT CalQtrTot		******	REPORT CalQtrAve	******		1 x Quarter	Measur
pH	SAMPLE VALUE	******	******	****	8.39	******	8.39	SU	X	X
00400	PERMIT REQ	******	******		6.0 CalQtrMin	******	9.0 CalQtrMax		1 x Quarter	Grab
1,1,1-Trichloro-ethane	SAMPLE VALUE	******	******	****	******	******	<5.0	ug/L	X	X
34506	PERMIT REQ	******	******		******	******	200 DailyMax		1 x Quarter	Grab
1,1-Dichloroethane	SAMPLE VALUE	******	******	****	******	******	<5.0	ug/L	X	X
34496	PERMIT REQ	******	******		******	******	70 DailyMax		1 x Quarter	Grab
1,1-Dichloroethylene Vinylidene chloride	SAMPLE VALUE	******	******	****	******	******	<5.0	ug/L	X	X
34501	PERMIT REQ	******	******		******	******	6 DailyMax		1 x Quarter	Grab
1,2-Dichloroethylene (trans-)	SAMPLE VALUE	******	******	****	******	******	<5.0	ug/L	X	X
34546	PERMIT REQ	******	******		******	******	100 DailyMax		1 x Quarter	Grab
1,2-Dichloroethylene (cis-)	SAMPLE VALUE	******	******	****	******	******	<5.0	ug/L	X	X
81686	PERMIT REQ	******	******		******	******	70 DailyMax		1 x Quarter	Grab

Send original with supplemental DMR (if applicable) by the 21st day of month following reporting period to:
MINNESOTA POLLUTION CONTROL AGENCY
520 LAFAYETTE RD
ST. PAUL, MN 55155-4194
ATTN: Discharge Monitoring Report

I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief the information is true, complete, and accurate.

NAVFAC Mid — 2/14/11
SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT — DATE

(651) 291-3491 — 4/20/11
SIGNATURE OF CHIEF OPERATOR — PHONE — DATE — CERTIFICATION#

COMMENTS:

FACILITY NAME/ADDRESS:
Former Naval Industrial Reserve Ordinance F
4800 E River Rd
Fridley, MN 55421

APR 21 2011

WASTEWATER TREATMENT DISCHARGE MONITORING REPORT

PERMIT #	LIMIT STATUS	PCS #
MNG790159	FINAL	

PERMITTEE NAME/ADDRESS:
Naval Facilities Engineering Command Mid
201 Decatur Ave Bldg 1A
Great Lakes, IL 60088

STATION INFORMATION:
SD-001 (Groundwater Remediation Treatment System)
Surface Discharge, Effluent To Surface Water
Attention: Howard Hickey

MONITORING PERIOD	YEAR	MO.	DAY	YEAR	MO.	DAY
FROM	2011	01	01	TO	03	31

☐ AMENDED
☐ NO DISCHARGE

MPCA: BN

PARAMETER		QUANTITY		UNITS	CONCENTRATION			UNITS	FREQUENCY OF ANALYSIS	SAMPLE TYPE
Methylene Chloride (Dichloromethane)	SAMPLE VALUE	******	******	****	******	******	<5.0	ug/L	X	X
34423	PERMIT REQ	******	******		******	******	5 DailyMax		1 x Quarter	Grab
Tetrachloroethylene (Perchloroethylene)	SAMPLE VALUE	******	******	****	******	******	<2.0	ug/L	X	X
34475	PERMIT REQ	******	******		******	******	3.8 CalQtrMax		1 x Quarter	Grab
Trichloroethylene TCE/Trichloroethene	SAMPLE VALUE	******	******	****	******	******	<5.0	ug/L	X	X
39180	PERMIT REQ	******	******		******	******	5 CalQtrMax		1 x Quarter	Grab

Send original with supplemental DMR (if applicable) by the 21st day of month following reporting period to:
MINNESOTA POLLUTION CONTROL AGENCY
520 LAFAYETTE RD
ST. PAUL, MN 55155-4194
ATTN: Discharge Monitoring Report

I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief the information is true, complete, and accurate.

NAVFAC MW — 2/14/11
SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT — DATE

SIGNATURE OF CHIEF OPERATOR — PHONE — DATE — CERTIFICATION#

COMMENTS:

FACILITY NAME/ADDRESS:
Former Naval Industrial Reserve Ordinance I
4800 E River Rd
Fridley, MN 55421

APR 21 2011

WASTEWATER TREATMENT DISCHARGE MONITORING REPORT

PERMIT #	LIMIT STATUS	PCS #
MNG790159	FINAL	

PERMITTEE NAME/ADDRESS:
Naval Facilities Engineering Command Mid
201 Decatur Ave Bldg 1A
Great Lakes, IL 60088

STATION INFORMATION:
SD-001 (Groundwater Remediation Treatment System)
Surface Discharge, Effluent To Surface Water
Attention: Howard Hickey

MONITORING PERIOD	YEAR	MO.	DAY	YEAR	MO.	DAY
FROM	2011	01	01	TO 2011	03	31

☐ AMENDED
☐ NO DISCHARGE

MPCA: BN

PARAMETER		QUANTITY		UNITS	CONCENTRATION			UNITS	FREQUENCY OF ANALYSIS	SAMPLE TYPE
Flow	SAMPLE VALUE	******	51.577	MG	******	0.573	******	mgd	Continuous Flowmeter	
50050	PERMIT REQ	******	REPORT CalQtrTot		******	REPORT CalQtrAve	******		1 x Quarter	Measur
pH	SAMPLE VALUE	******	******	****	8.39	******	8.39	SU	X	X
00400	PERMIT REQ	******	******		6.0 CalQtrMin	******	9.0 CalQtrMax		1 x Quarter	Grab
1,1,1-Trichloro-ethane	SAMPLE VALUE	******	******	****	******	******	<5.0	ug/L	X	X
34506	PERMIT REQ	******	******		******	******	200 DailyMax		1 x Quarter	Grab
1,1-Dichloroethane	SAMPLE VALUE	******	******	****	******	******	<5.0	ug/L	X	X
34496	PERMIT REQ	******	******		******	******	70 DailyMax		1 x Quarter	Grab
1,1-Dichloroethylene Vinylidene chloride	SAMPLE VALUE	******	******	****	******	******	<5.0	ug/L	X	X
34501	PERMIT REQ	******	******		******	******	6 DailyMax		1 x Quarter	Grab
1,2-Dichloroethylene (trans-)	SAMPLE VALUE	******	******	****	******	******	<5.0	ug/L	X	X
34546	PERMIT REQ	******	******		******	******	100 DailyMax		1 x Quarter	Grab
1,2-Dichloroethylene (cis-)	SAMPLE VALUE	******	******	****	******	******	<5.0	ug/L	X	X
81686	PERMIT REQ	******	******		******	******	70 DailyMax		1 x Quarter	Grab

Send original with supplemental DMR (if applicable) by the 21st day of month following reporting period to:
MINNESOTA POLLUTION CONTROL AGENCY
520 LAFAYETTE RD
ST. PAUL, MN 55155-4194
ATTN: Discharge Monitoring Report

I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief the information is true, complete, and accurate.

NAVFAC Mid — 2/14/11
SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT — DATE

(651) 291-3491 — 4/20/11
SIGNATURE OF CHIEF OPERATOR — PHONE — DATE — CERTIFICATION#

COMMENTS:

FACILITY NAME/ADDRESS:
Former Naval Industrial Reserve Ordinance F
4800 E River Rd
Fridley, MN 55421

APR 21 2011

WASTEWATER TREATMENT DISCHARGE MONITORING REPORT

PERMIT #	LIMIT STATUS	PCS #
MNG790159	FINAL	

PERMITTEE NAME/ADDRESS:
Naval Facilities Engineering Command Mid
201 Decatur Ave Bldg 1A
Great Lakes, IL 60088

STATION INFORMATION:
SD-001 (Groundwater Remediation Treatment System)
Surface Discharge, Effluent To Surface Water
Attention: Howard Hickey

MONITORING PERIOD	YEAR	MO.	DAY	YEAR	MO.	DAY
FROM	2011	01	01	TO	03	31

☐ AMENDED
☐ NO DISCHARGE

MPCA: BN

PARAMETER		QUANTITY		UNITS	CONCENTRATION			UNITS	FREQUENCY OF ANALYSIS	SAMPLE TYPE
Methylene Chloride (Dichloromethane)	SAMPLE VALUE	******	******	****	******	******	<5.0	ug/L	X	X
34423	PERMIT REQ	******	******		******	******	5 DailyMax		1 x Quarter	Grab
Tetrachloroethylene (Perchloroethylene)	SAMPLE VALUE	******	******	****	******	******	<2.0	ug/L	X	X
34475	PERMIT REQ	******	******		******	******	3.8 CalQtrMax		1 x Quarter	Grab
Trichloroethylene TCE/Trichloroethene	SAMPLE VALUE	******	******	****	******	******	<5.0	ug/L	X	X
39180	PERMIT REQ	******	******		******	******	5 CalQtrMax		1 x Quarter	Grab

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NAVFAC MW — 2/14/11
SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT — DATE

SIGNATURE OF CHIEF OPERATOR — PHONE — DATE — CERTIFICATION#

COMMENTS:

Columbia Analytical Services™ 1317 S. 13th Avenue, Kelso, WA 98626 360.577.7222 360.636.1068 (fax) www.caslab.com

January 24, 2011 Analytical Report for Service Request No: K1100284

Paul Walz
Bay West, Incorporated
5 Empire Dr.
St. Paul, MN 55103-1867

RE: NIROP/J070047

Dear Paul:

Enclosed are the results of the samples submitted to our laboratory on January 12, 2011. For your reference, these analyses have been assigned our service request number K1100284.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3281. You may also contact me via Email at MShelton@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.

Mike Shelton
Project Chemist

MS/dlm

Columbia Analytical Services™ 1317 S. 13th Avenue, Kelso, WA 98626 360.577.7222 360.636.1068 (fax) www.caslab.com

January 24, 2011 Analytical Report for Service Request No: K1100284

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St. Paul, MN 55103-1867

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Please call if you have any questions. My extension is 3281. You may also contact me via Email at MShelton@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.

Mike Shelton
Project Chemist

MS/dlm

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
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CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
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SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value that was detected outside the quantitation range.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value that was detected outside the quantitation range.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value that was detected outside the quantitation range.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value that was detected outside the quantitation range.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value that was detected outside the quantitation range.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
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A	A tentatively identified compound, a suspected aldol-condensation product.
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C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value that was detected outside the quantitation range.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

Columbia Analytical Services, Inc.
Kelso, WA
State Certifications, Accreditations, and Licenses

Program	Number
Alaska DEC UST	UST-040
Arizona DHS	AZ0339
Arkansas - DEQ	88-0637
California DHS	2286
Florida DOH	E87412
Hawaii DOH	-
Idaho DHW	-
Indiana DOH	C-WA-01
Louisiana DEQ	3016
Louisiana DHH	LA050010
Maine DHS	WA0035
Michigan DEQ	9949
Minnesota DOH	053-999-368
Montana DPHHS	CERT0047
Nevada DEP	WA35
New Jersey DEP	WA005
New Mexico ED	-
North Carolina DWQ	605
Oklahoma DEQ	9801
Oregon - DHS	WA200001
South Carolina DHEC	61002
Washington DOE	C1203
Wisconsin DNR	998386840
Wyoming (EPA Region 8)	-

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Kelso, WA
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Alaska DEC UST	UST-040
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Hawaii DOH	-
Idaho DHW	-
Indiana DOH	C-WA-01
Louisiana DEQ	3016
Louisiana DHH	LA050010
Maine DHS	WA0035
Michigan DEQ	9949
Minnesota DOH	053-999-368
Montana DPHHS	CERT0047
Nevada DEP	WA35
New Jersey DEP	WA005
New Mexico ED	-
North Carolina DWQ	605
Oklahoma DEQ	9801
Oregon - DHS	WA200001
South Carolina DHEC	61002
Washington DOE	C1203
Wisconsin DNR	998386840
Wyoming (EPA Region 8)	-

Case Narrative

Case Narrative

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	Bay West, Inc.	**Service Request No.:**	K1100284
Project:	NIROP	**Date Received:**	01/12/11
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier III deliverables including summary forms for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Four field samples and one trip blank were received for analysis at Columbia Analytical Services on 01/12/11. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

General Chemistry Parameters

pH by EPA Method 150.1:
In accordance with the 2007 EPA Methods Update Rule published in the Federal Register, the holding time for pH is 15 minutes from sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

No anomalies associated with the analysis of these samples were observed.

Volatile Organic Compounds by EPA Method 8260B

No anomalies associated with the analysis of these samples were observed.

Approved by_____ **Date** 01/25/11

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	Bay West, Inc.	**Service Request No.:**	K1100284
Project:	NIROP	**Date Received:**	01/12/11
Sample Matrix:	Water		

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No anomalies associated with the analysis of these samples were observed.

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Approved by_____ **Date** 01/25/11

Chain of Custody

Chain of Custody

Columbia Analytical Services

CHAIN OF CUSTODY

SR#: K1100284

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

PAGE 1 OF 1 COC # 01112011

PROJECT NAME: NIROP
PROJECT NUMBER: J070047
PROJECT MANAGER: Paul Walz
COMPANY/ADDRESS: Bay West, Inc. 5 Empire Drive
CITY/STATE/ZIP: Saint Paul MN 55103-1867
E-MAIL ADDRESS: paulw@baywest.com
PHONE #: (651) 291 3491 FAX #: (651) 291 0099
SAMPLER'S SIGNATURE: Daniel Musser

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐ 8270LL☐	Volatile Organics 624☐ 8260☐ 8021☐ BTEX☐	Hydrocarbons (*see below) Gas☐ Diesel☐ Oil☐ ☐ Fuel Fingerprint (FIQ) ☐ NW-HCID Screen	Oil & Grease/TRPH 1664 SGT☐ 1664 HEM☐	PCB's Aroclors☐ Congeners☐	Pesticides/Herbicides 608☐ 8081A☐ 8141A☐ 8151A☐	Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐	PAHS 8310☐ SIM☐	Metals, Total or Dissolved (See list below)	Cyanide☐ Hex-Chrom☐	pH, Cond., Cl, SO4, PO4, F, NO2, NO3, BOD, TSS, TDS (circle)	NH3-N, COD, Total-P, TKN, TOC, DOC (circle) NO2+NO3	TOX 9020☐ AOX 1650☐ 506☐					REMARKS
Fridout 171A	1/11/11	1607		Water	7		6										1								MS/MSD
Fridout 171B	↓	1610		↓	3		3																		
Fridin Air82A	↓	1549		↓	3		3																		
Frideff Air84A	↓	1543		↓	3		3																		
Trip Blank	↓	—		↓	2		2																		

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION
P.O. # 31080
Bill To: Accounts Payable

TURNAROUND REQUIREMENTS
___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:
VOCs by EPA 624 - 8 specific compounds
UPS# 1Z A19 8R9 15 9255 5564

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: Daniel Musser — Date/Time: 01-11-2011 1700	Signature: [illegible] — Date/Time: 1/12/11 0850	Signature — Date/Time	Signature — Date/Time
Printed Name: Daniel Musser — Firm: Bay West	Printed Name: SHOPKINS — Firm: CAS	Printed Name — Firm	Printed Name — Firm

RCOC #1 03/10

Columbia Analytical Services

CHAIN OF CUSTODY

SR#: K1100284

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

PAGE 1 OF 1 COC # 01112011

PROJECT NAME: NIROP
PROJECT NUMBER: J070047
PROJECT MANAGER: Paul Walz
COMPANY/ADDRESS: Bay West, Inc. 5 Empire Drive
CITY/STATE/ZIP: Saint Paul MN 55103-1867
E-MAIL ADDRESS: paulw@baywest.com
PHONE #: (651) 291 3491 FAX #: (651) 291 0099
SAMPLER'S SIGNATURE: Daniel Musser

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐ 8270LL☐	Volatile Organics 624☐ 8260☐ 8021☐ BTEX☐	Hydrocarbons (*see below) Gas☐ Diesel☐ Oil☐ ☐ Fuel Fingerprint (FIQ) ☐ NW-HCID Screen	Oil & Grease/TRPH 1664 SGT☐ 1664 HEM☐	PCB's Aroclors☐ Congeners☐	Pesticides/Herbicides 608☐ 8081A☐ 8141A☐ 8151A☐	Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐	PAHS 8310☐ SIM☐	Metals, Total or Dissolved (See list below)	Cyanide☐ Hex-Chrom☐	pH, Cond., Cl, SO4, PO4, F, NO2, NO3, BOD, TSS, TDS (circle)	NH3-N, COD, Total-P, TKN, TOC, DOC (circle) NO2+NO3	TOX 9020☐ AOX 1650☐ 506☐					REMARKS
Fridout 171A	1/11/11	1607		Water	7		6										1								MS/MSD
Fridout 171B	↓	1610		↓	3		3																		
Fridin Air82A	↓	1549		↓	3		3																		
Frideff Air84A	↓	1543		↓	3		3																		
Trip Blank	↓	—		↓	2		2																		

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION
P.O. # 31080
Bill To: Accounts Payable

TURNAROUND REQUIREMENTS
___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:
VOCs by EPA 624 - 8 specific compounds
UPS# 1Z A19 8R9 15 9255 5564

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: Daniel Musser — Date/Time: 01-11-2011 1700	Signature: [illegible] — Date/Time: 1/12/11 0850	Signature — Date/Time	Signature — Date/Time
Printed Name: Daniel Musser — Firm: Bay West	Printed Name: SHOPKINS — Firm: CAS	Printed Name — Firm	Printed Name — Firm

RCOC #1 03/10

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

PC Mike

Client / Project: Baywest Service Request *K11* 0284

Received: 1/12/11 Opened: 1/12/11 By: SaX Unloaded: 1/12/11 By: SaX

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? 2 front

   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Cooler Temp °C	Temp Blank °C	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
-0.1	2.7	265		1Z A19 8R9 15 9255 5564	

7. Packing material used: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Sleeves* *Other* _____
8. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
9. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
10. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
11. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
12. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
13. Were the pH-preserved bottles (*see SAIO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
14. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
15. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

SHORT HOLD TIME

Notes, Discrepancies, & Resolutions: _____

Page 1 *of* _____

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

PC Mike

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-0.1	2.7	265		1Z A19 8R9 15 9255 5564	

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9. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
10. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
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13. Were the pH-preserved bottles (*see SAIO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
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Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

SHORT HOLD TIME

Notes, Discrepancies, & Resolutions: _____

Page 1 *of* _____

General Chemistry Parameters

General Chemistry Parameters

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1100284
Date Collected: 1/11/11
Date Received: 1/12/11

Analysis Method: 150.1

Units: pH Units
Basis: NA

pH

Sample Name	Lab Code	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Note
Fridout 171A	K1100284-001	8.39		-	1	NA	1/12/11 10:38	*

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1100284
Date Collected: 1/11/11
Date Received: 1/12/11

Analysis Method: 150.1

Units: pH Units
Basis: NA

pH

Sample Name	Lab Code	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Note
Fridout 171A	K1100284-001	8.39		-	1	NA	1/12/11 10:38	*

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1100284
Project:	NIROP/J070047	**Date Collected:**	1/11/11
Sample Matrix:	Water	**Date Received:**	1/12/11
		Date Analyzed:	1/12/11

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	Fridout 171A	**Units:**	pH Units
Lab Code:	K1100284-001	**Basis:**	NA

Analyte Name	Method	MRL	Sample Result	Fridout 171ADUP Duplicate Sample K1100284-001DUP Result	Average	RPD	RPD Limit
pH	150.1		8.39	8.41	8.40	<1	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1100284
Project:	NIROP/J070047	**Date Collected:**	1/11/11
Sample Matrix:	Water	**Date Received:**	1/12/11
		Date Analyzed:	1/12/11

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	Fridout 171A	**Units:**	pH Units
Lab Code:	K1100284-001	**Basis:**	NA

Analyte Name	Method	MRL	Sample Result	Fridout 171ADUP Duplicate Sample K1100284-001DUP Result	Average	RPD	RPD Limit
pH	150.1		8.39	8.41	8.40	<1	20

Results flagged with an asterisk (*) indicate values outside control criteria.

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Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1100284
Date Analyzed: 1/12/11

Lab Control Sample Summary
General Chemistry Parameters

Units: pH Units
Basis: NA

Analyte Name	Method	Lab Control Sample K1100284-LCS Result	Spike Amount	% Rec	% Rec Limits
pH	150.1	6.39	6.46	99	85 - 115

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1100284
Date Analyzed: 1/12/11

Lab Control Sample Summary
General Chemistry Parameters

Units: pH Units
Basis: NA

Analyte Name	Method	Lab Control Sample K1100284-LCS Result	Spike Amount	% Rec	% Rec Limits
pH	150.1	6.39	6.46	99	85 - 115

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

232385

Work Request # Original (0274) 0287, 0319, 0320

Tier: V I V I

Date Analyzed: 1/12/11

Analyst: CV

Analysis: pH Water

DATA QUALITY REPORT
INORGANICS

Explain any "no" responses to questions below, and any corrective actions in the comments section below.

1. Is the method name and number correct and appropriate? yes/no/NA
2. Holding times met for all analyses and for all samples? yes/no/NA
3. Are calculations correct? yes/no/NA
4. Is the reporting basis correct? (Dry Weight) yes/no/NA
5. All quality control criteria met? yes/no/NA
   a. Is the calibration curve correlation coefficient ≥ 0.995? yes/no/NA
   b. MBs, CCVs, CCBs, LCSs, Dups, and Spikes, analyzed at proper frequency? yes/no/NA
   c. Are ICVs, CCVs, and CCBs all within acceptance limits? yes/no/NA
   d. Are results for methods blanks all ND? yes/no/NA
   e. Are all QC samples within acceptance criteria? (LCS % rec, MS/DMS % rec, DUP or MS/DMS RPDs, etc.) yes/no/NA
   f. Are all exceptions explained? yes/no/NA
6. Are all service requests that apply attached? yes/no/NA
7. Are all samples labelled correctly? yes/no/NA
8. Have all instructions on the service request been followed? (e.g. Special MRLs, QC on a specific sample) yes/no/NA
9. Are detection limits and units reported correctly? yes/no/NA
10. Are proper Analysis/Extraction stickers included on report? yes/no/NA
11. Is the unused space on the benchsheet crossed out? yes/no/NA
12. Was analysis turned in by the due date? (n-2) (If not record SR#) yes/no/NA

COMMENTS:

319 is Rush

Final Approved by: BDC Date: 1/13/11

DQREPORT

232385

Work Request # Original (0274) 0287, 0319, 0320

Tier: V I V I

Date Analyzed: 1/12/11

Analyst: CV

Analysis: pH Water

DATA QUALITY REPORT
INORGANICS

Explain any "no" responses to questions below, and any corrective actions in the comments section below.

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   a. Is the calibration curve correlation coefficient ≥ 0.995? yes/no/NA
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   d. Are results for methods blanks all ND? yes/no/NA
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6. Are all service requests that apply attached? yes/no/NA
7. Are all samples labelled correctly? yes/no/NA
8. Have all instructions on the service request been followed? (e.g. Special MRLs, QC on a specific sample) yes/no/NA
9. Are detection limits and units reported correctly? yes/no/NA
10. Are proper Analysis/Extraction stickers included on report? yes/no/NA
11. Is the unused space on the benchsheet crossed out? yes/no/NA
12. Was analysis turned in by the due date? (n-2) (If not record SR#) yes/no/NA

COMMENTS:

319 is Rush

Final Approved by: BDC Date: 1/13/11

DQREPORT

Analytical Results Summary

Instrument Name: K-pH-01 **Analyst:** CVECCHITTO **Analysis Lot:** 232385 **Method/Testcode:** 150.1/pH

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1100284-001	pH	N/A		Water	8.39 pH Units	50 mL	8.39 pH Units	1					1/12/11 10:38:00	Y	V
K1100287-001	pH	N/A		Water	6.55 pH Units	50 mL	6.55 pH Units	1					1/12/11 13:11:00	N	I
K1100319-001	pH	N/A		Water	5.31 pH Units	50 mL	5.31 pH Units	1					1/12/11 16:50:00	N	V
K1100319-003	pH	N/A		Water	7.26 pH Units	50 mL	7.26 pH Units	1					1/12/11 16:53:00	N	V
K1100320-001	pH	N/A		Water	8.08 pH Units	50 mL	8.08 pH Units	1					1/12/11 16:54:00	N	I
KQ1100377-01	pH	DUP	K1100284-001	Water	8.41 pH Units	50 mL	8.41 pH Units	1				<1	1/12/11 10:39:00	N	V
KQ1100377-02	pH	LCS		Water	6.39 pH Units	50 mL	6.39 pH Units	1			99		1/12/11 10:37:00	N	V
KQ1100377-02	pH	LCS		Water	6.39 pH Units	50 mL	6.39 pH Units	1			99		1/12/11 10:37:00	N	V
KQ1100377-03	pH	N/A		Water	8.39 pH Units	50 mL	8.39 pH Units	1					1/12/11 10:38:00	N	V
KQ1100377-03	pH	N/A		Water	8.39 pH Units	50 mL	8.39 pH Units	1					1/12/11 10:38:00	N	V
KQ1100377-04	pH	DUP	KQ1100377-03	Water	8.41 pH Units	50 mL	8.41 pH Units	1				<1	1/12/11 10:39:00	N	V
KQ1100377-04	pH	DUP	KQ1100377-03	Water	8.41 pH Units	50 mL	8.41 pH Units	1				<1	1/12/11 10:39:00	N	V

15

BDC

1/13/11

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-pH-01 **Analyst:** CVECCHITTO **Analysis Lot:** 232385 **Method/Testcode:** 150.1/pH

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1100284-001	pH	N/A		Water	8.39 pH Units	50 mL	8.39 pH Units	1					1/12/11 10:38:00	Y	V
K1100287-001	pH	N/A		Water	6.55 pH Units	50 mL	6.55 pH Units	1					1/12/11 13:11:00	N	I
K1100319-001	pH	N/A		Water	5.31 pH Units	50 mL	5.31 pH Units	1					1/12/11 16:50:00	N	V
K1100319-003	pH	N/A		Water	7.26 pH Units	50 mL	7.26 pH Units	1					1/12/11 16:53:00	N	V
K1100320-001	pH	N/A		Water	8.08 pH Units	50 mL	8.08 pH Units	1					1/12/11 16:54:00	N	I
KQ1100377-01	pH	DUP	K1100284-001	Water	8.41 pH Units	50 mL	8.41 pH Units	1				<1	1/12/11 10:39:00	N	V
KQ1100377-02	pH	LCS		Water	6.39 pH Units	50 mL	6.39 pH Units	1			99		1/12/11 10:37:00	N	V
KQ1100377-02	pH	LCS		Water	6.39 pH Units	50 mL	6.39 pH Units	1			99		1/12/11 10:37:00	N	V
KQ1100377-03	pH	N/A		Water	8.39 pH Units	50 mL	8.39 pH Units	1					1/12/11 10:38:00	N	V
KQ1100377-03	pH	N/A		Water	8.39 pH Units	50 mL	8.39 pH Units	1					1/12/11 10:38:00	N	V
KQ1100377-04	pH	DUP	KQ1100377-03	Water	8.41 pH Units	50 mL	8.41 pH Units	1				<1	1/12/11 10:39:00	N	V
KQ1100377-04	pH	DUP	KQ1100377-03	Water	8.41 pH Units	50 mL	8.41 pH Units	1				<1	1/12/11 10:39:00	N	V

15

BDC

1/13/11

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

COLUMBIA ANALYTICAL SERVICES, INC.

Method: SM 4500 H+B

Sample #	pH	Time Analyzed	Temp, C
pH 12.45 Buffer			
pH 10.00 Buffer	10.00	1036	25.1
pH 7.00 Buffer	7.00	1035	25.4
pH 4.00 Buffer	4.00	1034	25.2
pH 1.00 Buffer			
Buffer Check	4.02	1036	25.0
LCS	6.39	1037	24.8
284-1	8.39	1038	24.9
284-1d	8.41	1039	25.2
287-1	6.55	1311	25.9
319-1	5.31	1650	25.1
319-3	7.26	1653	24.8
320-1	8.08	1654	24.7
Buffer Check	4.00	1655	24.6
Buffer Check			

Sample #	pH	Time Analyzed	Temp, C
Buffer Check			
Buffer Check			

LCS = APG 4063 Lot# 129934 ID# = Cond/1-54-T T.V. = 6.46 % REC = _____

pH 4.00 buffer Cond/1-75- T pH 7.00 buffer Cond/1-77- P pH 10.00 buffer Cond/1-79- R

ph 1.00 buffer Cond/1-73-____ pH 12.45 buffer Cond/1-81-____

Analyzed by:	CV	Date:	1/12/11
Reviewed by:	BDK	Date:	1/13/11

PH

COLUMBIA ANALYTICAL SERVICES, INC.

Method: SM 4500 H+B

Sample #	pH	Time Analyzed	Temp, C
pH 12.45 Buffer			
pH 10.00 Buffer	10.00	1036	25.1
pH 7.00 Buffer	7.00	1035	25.4
pH 4.00 Buffer	4.00	1034	25.2
pH 1.00 Buffer			
Buffer Check	4.02	1036	25.0
LCS	6.39	1037	24.8
284-1	8.39	1038	24.9
284-1d	8.41	1039	25.2
287-1	6.55	1311	25.9
319-1	5.31	1650	25.1
319-3	7.26	1653	24.8
320-1	8.08	1654	24.7
Buffer Check	4.00	1655	24.6
Buffer Check			

Sample #	pH	Time Analyzed	Temp, C
Buffer Check			
Buffer Check			

LCS = APG 4063 Lot# 129934 ID# = Cond/1-54-T T.V. = 6.46 % REC = _____

pH 4.00 buffer Cond/1-75- T pH 7.00 buffer Cond/1-77- P pH 10.00 buffer Cond/1-79- R

ph 1.00 buffer Cond/1-73-____ pH 12.45 buffer Cond/1-81-____

Analyzed by:	CV	Date:	1/12/11
Reviewed by:	BDK	Date:	1/13/11

PH

Volatile Organic Compounds

Volatile Organic Compounds

Organic Analysis:
Volatile Organic Compounds

Summary Package

Sample and QC Results

Organic Analysis:
Volatile Organic Compounds

Summary Package

Sample and QC Results

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1100284

Cover Page - Organic Analysis Data Package
Volatile Organic Compounds

Sample Name	Lab Code	Date Collected	Date Received
Fridout 171A	K1100284-001	01/11/2011	01/12/2011
Fridout 171B	K1100284-002	01/11/2011	01/12/2011
Fridin Air82ADL	K1100284-003	01/11/2011	01/12/2011
Fridin Air82A	K1100284-003	01/11/2011	01/12/2011
Frideff Air84A	K1100284-004	01/11/2011	01/12/2011
Trip Blank	K1100284-005	01/11/2011	01/12/2011
Fridout 171AMS	KWG1100587-1	01/11/2011	01/12/2011
Fridout 171ADMS	KWG1100587-2	01/11/2011	01/12/2011

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Name:

Date: 1/24/11 Title:

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1100284

Cover Page - Organic Analysis Data Package
Volatile Organic Compounds

Sample Name	Lab Code	Date Collected	Date Received
Fridout 171A	K1100284-001	01/11/2011	01/12/2011
Fridout 171B	K1100284-002	01/11/2011	01/12/2011
Fridin Air82ADL	K1100284-003	01/11/2011	01/12/2011
Fridin Air82A	K1100284-003	01/11/2011	01/12/2011
Frideff Air84A	K1100284-004	01/11/2011	01/12/2011
Trip Blank	K1100284-005	01/11/2011	01/12/2011
Fridout 171AMS	KWG1100587-1	01/11/2011	01/12/2011
Fridout 171ADMS	KWG1100587-2	01/11/2011	01/12/2011

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Name:

Date: 1/24/11 Title:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1100284
Project:	NIROP/J070047	**Date Collected:**	01/11/2011
Sample Matrix:	Water	**Date Received:**	01/12/2011
		Date Extracted:	01/14/2011
		Date Analyzed:	01/14/2011

Volatile Organic Compounds

Sample Name:	Fridout 171A	**Units:**	ug/L
Lab Code:	K1100284-001	**Basis:**	NA
File ID:	J:\MS23\DATA\011411BAYW\0114F009.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1100587
Analysis Method:	624	**Calibration ID:**	CAL10231

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.19	U	0.20	0.19	
75-35-4	1,1-Dichloroethene	0.18	U	0.50	0.18	
156-60-5	trans-1,2-Dichloroethene	0.21	U	0.50	0.21	
75-34-3	1,1-Dichloroethane	0.15	U	0.50	0.15	
156-59-2	cis-1,2-Dichloroethene	0.19	U	0.50	0.19	
71-55-6	1,1,1-Trichloroethane (TCA)	0.16	U	0.50	0.16	
79-01-6	Trichloroethene (TCE)	0.17	U	0.50	0.17	
127-18-4	Tetrachloroethene (PCE)	0.19	U	0.50	0.19	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	100	71-115	01/14/11	Acceptable
Toluene-d8	101	84-115	01/14/11	Acceptable
4-Bromofluorobenzene	99	83-113	01/14/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1100284
Project:	NIROP/J070047	**Date Collected:**	01/11/2011
Sample Matrix:	Water	**Date Received:**	01/12/2011
		Date Extracted:	01/14/2011
		Date Analyzed:	01/14/2011

Volatile Organic Compounds

Sample Name:	Fridout 171A	**Units:**	ug/L
Lab Code:	K1100284-001	**Basis:**	NA
File ID:	J:\MS23\DATA\011411BAYW\0114F009.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1100587
Analysis Method:	624	**Calibration ID:**	CAL10231

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.19	U	0.20	0.19	
75-35-4	1,1-Dichloroethene	0.18	U	0.50	0.18	
156-60-5	trans-1,2-Dichloroethene	0.21	U	0.50	0.21	
75-34-3	1,1-Dichloroethane	0.15	U	0.50	0.15	
156-59-2	cis-1,2-Dichloroethene	0.19	U	0.50	0.19	
71-55-6	1,1,1-Trichloroethane (TCA)	0.16	U	0.50	0.16	
79-01-6	Trichloroethene (TCE)	0.17	U	0.50	0.17	
127-18-4	Tetrachloroethene (PCE)	0.19	U	0.50	0.19	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	100	71-115	01/14/11	Acceptable
Toluene-d8	101	84-115	01/14/11	Acceptable
4-Bromofluorobenzene	99	83-113	01/14/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1100284
Project:	NIROP/J070047	**Date Collected:**	01/11/2011
Sample Matrix:	Water	**Date Received:**	01/12/2011
		Date Extracted:	01/14/2011
		Date Analyzed:	01/14/2011

Volatile Organic Compounds

Sample Name:	Fridout 171B	**Units:**	ug/L
Lab Code:	K1100284-002	**Basis:**	NA
File ID:	J:\MS23\DATA\011411BAYW\0114F010.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1100587
Analysis Method:	624	**Calibration ID:**	CAL10231

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.19	U	0.20	0.19	
75-35-4	1,1-Dichloroethene	0.18	U	0.50	0.18	
156-60-5	trans-1,2-Dichloroethene	0.21	U	0.50	0.21	
75-34-3	1,1-Dichloroethane	0.15	U	0.50	0.15	
156-59-2	cis-1,2-Dichloroethene	0.19	U	0.50	0.19	
71-55-6	1,1,1-Trichloroethane (TCA)	0.16	U	0.50	0.16	
79-01-6	Trichloroethene (TCE)	0.17	U	0.50	0.17	
127-18-4	Tetrachloroethene (PCE)	0.19	U	0.50	0.19	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	99	71-115	01/14/11	Acceptable
Toluene-d8	102	84-115	01/14/11	Acceptable
4-Bromofluorobenzene	100	83-113	01/14/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1100284
Project:	NIROP/J070047	**Date Collected:**	01/11/2011
Sample Matrix:	Water	**Date Received:**	01/12/2011
		Date Extracted:	01/14/2011
		Date Analyzed:	01/14/2011

Volatile Organic Compounds

Sample Name:	Fridout 171B	**Units:**	ug/L
Lab Code:	K1100284-002	**Basis:**	NA
File ID:	J:\MS23\DATA\011411BAYW\0114F010.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1100587
Analysis Method:	624	**Calibration ID:**	CAL10231

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.19	U	0.20	0.19	
75-35-4	1,1-Dichloroethene	0.18	U	0.50	0.18	
156-60-5	trans-1,2-Dichloroethene	0.21	U	0.50	0.21	
75-34-3	1,1-Dichloroethane	0.15	U	0.50	0.15	
156-59-2	cis-1,2-Dichloroethene	0.19	U	0.50	0.19	
71-55-6	1,1,1-Trichloroethane (TCA)	0.16	U	0.50	0.16	
79-01-6	Trichloroethene (TCE)	0.17	U	0.50	0.17	
127-18-4	Tetrachloroethene (PCE)	0.19	U	0.50	0.19	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	99	71-115	01/14/11	Acceptable
Toluene-d8	102	84-115	01/14/11	Acceptable
4-Bromofluorobenzene	100	83-113	01/14/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1100284
Project:	NIROP/J070047	**Date Collected:**	01/11/2011
Sample Matrix:	Water	**Date Received:**	01/12/2011
		Date Extracted:	01/14/2011
		Date Analyzed:	01/14/2011

Volatile Organic Compounds

Sample Name:	Fridin Air82A	**Units:**	ug/L
Lab Code:	K1100284-003	**Basis:**	NA
File ID:	J:\MS23\DATA\011411BAYW\0114F011.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1100587
Analysis Method:	624	**Calibration ID:**	CAL10231

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.19**	J	0.20	0.19	
75-35-4	1,1-Dichloroethene	**0.67**		0.50	0.18	
156-60-5	trans-1,2-Dichloroethene	**20**		0.50	0.21	
75-34-3	1,1-Dichloroethane	**1.5**		0.50	0.15	
156-59-2	cis-1,2-Dichloroethene	**91**		0.50	0.19	
71-55-6	1,1,1-Trichloroethane (TCA)	0.16	U	0.50	0.16	
79-01-6	Trichloroethene (TCE)	**300**	E	0.50	0.17	
127-18-4	Tetrachloroethene (PCE)	**1.5**		0.50	0.19	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	99	71-115	01/14/11	Acceptable
Toluene-d8	102	84-115	01/14/11	Acceptable
4-Bromofluorobenzene	98	83-113	01/14/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1100284
Project:	NIROP/J070047	**Date Collected:**	01/11/2011
Sample Matrix:	Water	**Date Received:**	01/12/2011
		Date Extracted:	01/14/2011
		Date Analyzed:	01/14/2011

Volatile Organic Compounds

Sample Name:	Fridin Air82A	**Units:**	ug/L
Lab Code:	K1100284-003	**Basis:**	NA
File ID:	J:\MS23\DATA\011411BAYW\0114F011.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1100587
Analysis Method:	624	**Calibration ID:**	CAL10231

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.19**	J	0.20	0.19	
75-35-4	1,1-Dichloroethene	**0.67**		0.50	0.18	
156-60-5	trans-1,2-Dichloroethene	**20**		0.50	0.21	
75-34-3	1,1-Dichloroethane	**1.5**		0.50	0.15	
156-59-2	cis-1,2-Dichloroethene	**91**		0.50	0.19	
71-55-6	1,1,1-Trichloroethane (TCA)	0.16	U	0.50	0.16	
79-01-6	Trichloroethene (TCE)	**300**	E	0.50	0.17	
127-18-4	Tetrachloroethene (PCE)	**1.5**		0.50	0.19	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	99	71-115	01/14/11	Acceptable
Toluene-d8	102	84-115	01/14/11	Acceptable
4-Bromofluorobenzene	98	83-113	01/14/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1100284
Project:	NIROP/J070047	**Date Collected:**	01/11/2011
Sample Matrix:	Water	**Date Received:**	01/12/2011
		Date Extracted:	01/18/2011
		Date Analyzed:	01/18/2011

Volatile Organic Compounds

Sample Name:	Fridin Air82ADL	**Units:**	ug/L
Lab Code:	K1100284-003	**Basis:**	NA
File ID:	J:\MS23\DATA\011811BAYW\0118F017.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1100709
Analysis Method:	624	**Calibration ID:**	CAL10231

Sample Amount:	10 ml
% Solids:	NA
Dilution Factor:	10

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	1.9	U	2.0	1.9	
75-35-4	1,1-Dichloroethene	1.8	U	5.0	1.8	
156-60-5	trans-1,2-Dichloroethene	**18**	D	5.0	2.1	
75-34-3	1,1-Dichloroethane	1.5	U	5.0	1.5	
156-59-2	cis-1,2-Dichloroethene	**82**	D	5.0	1.9	
71-55-6	1,1,1-Trichloroethane (TCA)	1.6	U	5.0	1.6	
79-01-6	Trichloroethene (TCE)	**260**	D	5.0	1.7	
127-18-4	Tetrachloroethene (PCE)	1.9	U	5.0	1.9	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	104	71-115	01/18/11	Acceptable
Toluene-d8	106	84-115	01/18/11	Acceptable
4-Bromofluorobenzene	100	83-113	01/18/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1100284
Project:	NIROP/J070047	**Date Collected:**	01/11/2011
Sample Matrix:	Water	**Date Received:**	01/12/2011
		Date Extracted:	01/18/2011
		Date Analyzed:	01/18/2011

Volatile Organic Compounds

Sample Name:	Fridin Air82ADL	**Units:**	ug/L
Lab Code:	K1100284-003	**Basis:**	NA
File ID:	J:\MS23\DATA\011811BAYW\0118F017.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1100709
Analysis Method:	624	**Calibration ID:**	CAL10231

Sample Amount:	10 ml
% Solids:	NA
Dilution Factor:	10

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	1.9	U	2.0	1.9	
75-35-4	1,1-Dichloroethene	1.8	U	5.0	1.8	
156-60-5	trans-1,2-Dichloroethene	**18**	D	5.0	2.1	
75-34-3	1,1-Dichloroethane	1.5	U	5.0	1.5	
156-59-2	cis-1,2-Dichloroethene	**82**	D	5.0	1.9	
71-55-6	1,1,1-Trichloroethane (TCA)	1.6	U	5.0	1.6	
79-01-6	Trichloroethene (TCE)	**260**	D	5.0	1.7	
127-18-4	Tetrachloroethene (PCE)	1.9	U	5.0	1.9	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	104	71-115	01/18/11	Acceptable
Toluene-d8	106	84-115	01/18/11	Acceptable
4-Bromofluorobenzene	100	83-113	01/18/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1100284
Project:	NIROP/J070047	**Date Collected:**	01/11/2011
Sample Matrix:	Water	**Date Received:**	01/12/2011
		Date Extracted:	01/14/2011
		Date Analyzed:	01/14/2011

Volatile Organic Compounds

Sample Name:	Frideff Air84A	**Units:**	ug/L
Lab Code:	K1100284-004	**Basis:**	NA
File ID:	J:\MS23\DATA\011411BAYW\0114F012.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1100587
Analysis Method:	624	**Calibration ID:**	CAL10231

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.19	U	0.20	0.19	
75-35-4	1,1-Dichloroethene	0.18	U	0.50	0.18	
156-60-5	trans-1,2-Dichloroethene	0.21	U	0.50	0.21	
75-34-3	1,1-Dichloroethane	0.15	U	0.50	0.15	
156-59-2	cis-1,2-Dichloroethene	0.19	U	0.50	0.19	
71-55-6	1,1,1-Trichloroethane (TCA)	0.16	U	0.50	0.16	
79-01-6	Trichloroethene (TCE)	0.17	U	0.50	0.17	
127-18-4	Tetrachloroethene (PCE)	0.19	U	0.50	0.19	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	98	71-115	01/14/11	Acceptable
Toluene-d8	102	84-115	01/14/11	Acceptable
4-Bromofluorobenzene	99	83-113	01/14/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1100284
Project:	NIROP/J070047	**Date Collected:**	01/11/2011
Sample Matrix:	Water	**Date Received:**	01/12/2011
		Date Extracted:	01/14/2011
		Date Analyzed:	01/14/2011

Volatile Organic Compounds

Sample Name:	Frideff Air84A	**Units:**	ug/L
Lab Code:	K1100284-004	**Basis:**	NA
File ID:	J:\MS23\DATA\011411BAYW\0114F012.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1100587
Analysis Method:	624	**Calibration ID:**	CAL10231

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.19	U	0.20	0.19	
75-35-4	1,1-Dichloroethene	0.18	U	0.50	0.18	
156-60-5	trans-1,2-Dichloroethene	0.21	U	0.50	0.21	
75-34-3	1,1-Dichloroethane	0.15	U	0.50	0.15	
156-59-2	cis-1,2-Dichloroethene	0.19	U	0.50	0.19	
71-55-6	1,1,1-Trichloroethane (TCA)	0.16	U	0.50	0.16	
79-01-6	Trichloroethene (TCE)	0.17	U	0.50	0.17	
127-18-4	Tetrachloroethene (PCE)	0.19	U	0.50	0.19	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	98	71-115	01/14/11	Acceptable
Toluene-d8	102	84-115	01/14/11	Acceptable
4-Bromofluorobenzene	99	83-113	01/14/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1100284
Project:	N1ROP/J070047	**Date Collected:**	01/11/2011
Sample Matrix:	Water	**Date Received:**	01/12/2011
		Date Extracted:	01/14/2011
		Date Analyzed:	01/14/2011

Volatile Organic Compounds

Sample Name:	Trip Blank	**Units:**	ug/L
Lab Code:	K1100284-005	**Basis:**	NA
File ID:	J:\MS23\DATA\011411BAYW\0114F013.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1100587
Analysis Method:	624	**Calibration ID:**	CAL10231

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.19	U	0.20	0.19	
75-35-4	1,1-Dichloroethene	0.18	U	0.50	0.18	
156-60-5	trans-1,2-Dichloroethene	0.21	U	0.50	0.21	
75-34-3	1,1-Dichloroethane	0.15	U	0.50	0.15	
156-59-2	cis-1,2-Dichloroethene	0.19	U	0.50	0.19	
71-55-6	1,1,1-Trichloroethane (TCA)	0.16	U	0.50	0.16	
79-01-6	Trichloroethene (TCE)	0.17	U	0.50	0.17	
127-18-4	Tetrachloroethene (PCE)	0.19	U	0.50	0.19	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	101	71-115	01/14/11	Acceptable
Toluene-d8	102	84-115	01/14/11	Acceptable
4-Bromofluorobenzene	99	83-113	01/14/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1100284
Project:	N1ROP/J070047	**Date Collected:**	01/11/2011
Sample Matrix:	Water	**Date Received:**	01/12/2011
		Date Extracted:	01/14/2011
		Date Analyzed:	01/14/2011

Volatile Organic Compounds

Sample Name:	Trip Blank	**Units:**	ug/L
Lab Code:	K1100284-005	**Basis:**	NA
File ID:	J:\MS23\DATA\011411BAYW\0114F013.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1100587
Analysis Method:	624	**Calibration ID:**	CAL10231

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.19	U	0.20	0.19	
75-35-4	1,1-Dichloroethene	0.18	U	0.50	0.18	
156-60-5	trans-1,2-Dichloroethene	0.21	U	0.50	0.21	
75-34-3	1,1-Dichloroethane	0.15	U	0.50	0.15	
156-59-2	cis-1,2-Dichloroethene	0.19	U	0.50	0.19	
71-55-6	1,1,1-Trichloroethane (TCA)	0.16	U	0.50	0.16	
79-01-6	Trichloroethene (TCE)	0.17	U	0.50	0.17	
127-18-4	Tetrachloroethene (PCE)	0.19	U	0.50	0.19	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	101	71-115	01/14/11	Acceptable
Toluene-d8	102	84-115	01/14/11	Acceptable
4-Bromofluorobenzene	99	83-113	01/14/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1100284
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	01/14/2011
		Date Analyzed:	01/14/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1100587-4	**Basis:**	NA
File ID:	J:\MS23\DATA\011411BAYW\0114F008.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1100587
Analysis Method:	624	**Calibration ID:**	CAL10231

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.19	U	0.20	0.19	
75-35-4	1,1-Dichloroethene	0.18	U	0.50	0.18	
156-60-5	trans-1,2-Dichloroethene	0.21	U	0.50	0.21	
75-34-3	1,1-Dichloroethane	0.15	U	0.50	0.15	
156-59-2	cis-1,2-Dichloroethene	0.19	U	0.50	0.19	
71-55-6	1,1,1-Trichloroethane (TCA)	0.16	U	0.50	0.16	
79-01-6	Trichloroethene (TCE)	0.17	U	0.50	0.17	
127-18-4	Tetrachloroethene (PCE)	0.19	U	0.50	0.19	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	100	71-115	01/14/11	Acceptable
Toluene-d8	101	84-115	01/14/11	Acceptable
4-Bromofluorobenzene	98	83-113	01/14/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1100284
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	01/14/2011
		Date Analyzed:	01/14/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1100587-4	**Basis:**	NA
File ID:	J:\MS23\DATA\011411BAYW\0114F008.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1100587
Analysis Method:	624	**Calibration ID:**	CAL10231

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.19	U	0.20	0.19	
75-35-4	1,1-Dichloroethene	0.18	U	0.50	0.18	
156-60-5	trans-1,2-Dichloroethene	0.21	U	0.50	0.21	
75-34-3	1,1-Dichloroethane	0.15	U	0.50	0.15	
156-59-2	cis-1,2-Dichloroethene	0.19	U	0.50	0.19	
71-55-6	1,1,1-Trichloroethane (TCA)	0.16	U	0.50	0.16	
79-01-6	Trichloroethene (TCE)	0.17	U	0.50	0.17	
127-18-4	Tetrachloroethene (PCE)	0.19	U	0.50	0.19	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	100	71-115	01/14/11	Acceptable
Toluene-d8	101	84-115	01/14/11	Acceptable
4-Bromofluorobenzene	98	83-113	01/14/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1100284
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	01/18/2011
		Date Analyzed:	01/18/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1100709-4	**Basis:**	NA
File ID:	J:\MS23\DATA\011811BAYW\0118F009.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1100709
Analysis Method:	624	**Calibration ID:**	CAL10231

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.19	U	0.20	0.19	
75-35-4	1,1-Dichloroethene	0.18	U	0.50	0.18	
156-60-5	trans-1,2-Dichloroethene	0.21	U	0.50	0.21	
75-34-3	1,1-Dichloroethane	0.15	U	0.50	0.15	
156-59-2	cis-1,2-Dichloroethene	0.19	U	0.50	0.19	
71-55-6	1,1,1-Trichloroethane (TCA)	0.16	U	0.50	0.16	
79-01-6	Trichloroethene (TCE)	0.17	U	0.50	0.17	
127-18-4	Tetrachloroethene (PCE)	0.19	U	0.50	0.19	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	100	71-115	01/18/11	Acceptable
Toluene-d8	103	84-115	01/18/11	Acceptable
4-Bromofluorobenzene	100	83-113	01/18/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1100284
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	01/18/2011
		Date Analyzed:	01/18/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1100709-4	**Basis:**	NA
File ID:	J:\MS23\DATA\011811BAYW\0118F009.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1100709
Analysis Method:	624	**Calibration ID:**	CAL10231

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.19	U	0.20	0.19	
75-35-4	1,1-Dichloroethene	0.18	U	0.50	0.18	
156-60-5	trans-1,2-Dichloroethene	0.21	U	0.50	0.21	
75-34-3	1,1-Dichloroethane	0.15	U	0.50	0.15	
156-59-2	cis-1,2-Dichloroethene	0.19	U	0.50	0.19	
71-55-6	1,1,1-Trichloroethane (TCA)	0.16	U	0.50	0.16	
79-01-6	Trichloroethene (TCE)	0.17	U	0.50	0.17	
127-18-4	Tetrachloroethene (PCE)	0.19	U	0.50	0.19	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	100	71-115	01/18/11	Acceptable
Toluene-d8	103	84-115	01/18/11	Acceptable
4-Bromofluorobenzene	100	83-113	01/18/11	Acceptable

Comments:

Columbia Analytical Services™ 1317 S. 13th Avenue, Kelso, WA 98626 | 360.577.7222 | 360.636.1068 (fax) | www.caslab.com

February 18, 2011 Analytical Report for Service Request No: K1100284

Paul Walz
Bay West, Incorporated
5 Empire Dr.
St. Paul, MN 55103-1867

RE: NIROP/J070047

Dear Paul:

Enclosed is the revised report for the samples submitted to our laboratory on January 12, 2011. For your reference, these analyses have been assigned our service request number K1100284.

Added Methylene Chloride at request of client.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3266. You may also contact me via Email at MShelton@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.

Mike Shelton

Mike Shelton
Project Chemist

MS/lb

REVISED
12:41 pm, Feb 22, 2011

100% Recycled Paper

Columbia Analytical Services™ 1317 S. 13th Avenue, Kelso, WA 98626 | 360.577.7222 | 360.636.1068 (fax) | www.caslab.com

February 18, 2011 Analytical Report for Service Request No: K1100284

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5 Empire Dr.
St. Paul, MN 55103-1867

RE: NIROP/J070047

Dear Paul:

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Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3266. You may also contact me via Email at MShelton@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.

Mike Shelton

Mike Shelton
Project Chemist

MS/lb

REVISED
12:41 pm, Feb 22, 2011

100% Recycled Paper

Organic Analysis:
Volatile Organic Compounds

Summary Package

Sample and QC Results

Organic Analysis:
Volatile Organic Compounds

Summary Package

Sample and QC Results

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1100284

Cover Page - Organic Analysis Data Package
Volatile Organic Compounds

Sample Name	Lab Code	Date Collected	Date Received
Fridout 171A	K1100284-001	01/11/2011	01/12/2011
Fridout 171B	K1100284-002	01/11/2011	01/12/2011
Fridin Air82ADL	K1100284-003	01/11/2011	01/12/2011
Fridin Air82A	K1100284-003	01/11/2011	01/12/2011
Frideff Air84A	K1100284-004	01/11/2011	01/12/2011
Trip Blank	K1100284-005	01/11/2011	01/12/2011
Fridout 171AMS	KWG1100587-1	01/11/2011	01/12/2011
Fridout 171ADMS	KWG1100587-2	01/11/2011	01/12/2011

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Kleeson

Name: Kleeson

Date: 2/10/11

Title: Supervisor

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1100284

Cover Page - Organic Analysis Data Package
Volatile Organic Compounds

Sample Name	Lab Code	Date Collected	Date Received
Fridout 171A	K1100284-001	01/11/2011	01/12/2011
Fridout 171B	K1100284-002	01/11/2011	01/12/2011
Fridin Air82ADL	K1100284-003	01/11/2011	01/12/2011
Fridin Air82A	K1100284-003	01/11/2011	01/12/2011
Frideff Air84A	K1100284-004	01/11/2011	01/12/2011
Trip Blank	K1100284-005	01/11/2011	01/12/2011
Fridout 171AMS	KWG1100587-1	01/11/2011	01/12/2011
Fridout 171ADMS	KWG1100587-2	01/11/2011	01/12/2011

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Kleeson

Name: Kleeson

Date: 2/10/11

Title: Supervisor

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1100284
Project:	NIROP/J070047	**Date Collected:**	01/11/2011
Sample Matrix:	Water	**Date Received:**	01/12/2011
		Date Extracted:	01/14/2011
		Date Analyzed:	01/14/2011

Volatile Organic Compounds

Sample Name:	Fridout 171A	**Units:**	ug/L
Lab Code:	K1100284-001	**Basis:**	NA
File ID:	J:\MS23\DATA\011411BAYW\0114F009.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1100587
Analysis Method:	624	**Calibration ID:**	CAL10231

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.19	U	0.20	0.19	
75-35-4	1,1-Dichloroethene	0.18	U	0.50	0.18	
75-09-2	Methylene Chloride	0.15	U	5.0	0.15	
156-60-5	trans-1,2-Dichloroethene	0.21	U	0.50	0.21	
75-34-3	1,1-Dichloroethane	0.15	U	0.50	0.15	
156-59-2	cis-1,2-Dichloroethene	0.19	U	0.50	0.19	
71-55-6	1,1,1-Trichloroethane (TCA)	0.16	U	0.50	0.16	
79-01-6	Trichloroethene (TCE)	0.17	U	0.50	0.17	
127-18-4	Tetrachloroethene (PCE)	0.19	U	0.50	0.19	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	100	61-121	01/14/11	Acceptable
Toluene-d8	101	72-122	01/14/11	Acceptable
4-Bromofluorobenzene	99	70-120	01/14/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1100284
Project:	NIROP/J070047	**Date Collected:**	01/11/2011
Sample Matrix:	Water	**Date Received:**	01/12/2011
		Date Extracted:	01/14/2011
		Date Analyzed:	01/14/2011

Volatile Organic Compounds

Sample Name:	Fridout 171A	**Units:**	ug/L
Lab Code:	K1100284-001	**Basis:**	NA
File ID:	J:\MS23\DATA\011411BAYW\0114F009.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1100587
Analysis Method:	624	**Calibration ID:**	CAL10231

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.19	U	0.20	0.19	
75-35-4	1,1-Dichloroethene	0.18	U	0.50	0.18	
75-09-2	Methylene Chloride	0.15	U	5.0	0.15	
156-60-5	trans-1,2-Dichloroethene	0.21	U	0.50	0.21	
75-34-3	1,1-Dichloroethane	0.15	U	0.50	0.15	
156-59-2	cis-1,2-Dichloroethene	0.19	U	0.50	0.19	
71-55-6	1,1,1-Trichloroethane (TCA)	0.16	U	0.50	0.16	
79-01-6	Trichloroethene (TCE)	0.17	U	0.50	0.17	
127-18-4	Tetrachloroethene (PCE)	0.19	U	0.50	0.19	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	100	61-121	01/14/11	Acceptable
Toluene-d8	101	72-122	01/14/11	Acceptable
4-Bromofluorobenzene	99	70-120	01/14/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1100284
Project:	NIROP/J070047	**Date Collected:**	01/11/2011
Sample Matrix:	Water	**Date Received:**	01/12/2011
		Date Extracted:	01/14/2011
		Date Analyzed:	01/14/2011

Volatile Organic Compounds

Sample Name:	Fridout 171B	**Units:**	ug/L
Lab Code:	K1100284-002	**Basis:**	NA
File ID:	J:\MS23\DATA\011411BAYW\0114F010.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1100587
Analysis Method:	624	**Calibration ID:**	CAL10231

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.19	U	0.20	0.19	
75-35-4	1,1-Dichloroethene	0.18	U	0.50	0.18	
75-09-2	Methylene Chloride	0.15	U	5.0	0.15	
156-60-5	trans-1,2-Dichloroethene	0.21	U	0.50	0.21	
75-34-3	1,1-Dichloroethane	0.15	U	0.50	0.15	
156-59-2	cis-1,2-Dichloroethene	0.19	U	0.50	0.19	
71-55-6	1,1,1-Trichloroethane (TCA)	0.16	U	0.50	0.16	
79-01-6	Trichloroethene (TCE)	0.17	U	0.50	0.17	
127-18-4	Tetrachloroethene (PCE)	0.19	U	0.50	0.19	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	99	61-121	01/14/11	Acceptable
Toluene-d8	102	72-122	01/14/11	Acceptable
4-Bromofluorobenzene	100	70-120	01/14/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1100284
Project:	NIROP/J070047	**Date Collected:**	01/11/2011
Sample Matrix:	Water	**Date Received:**	01/12/2011
		Date Extracted:	01/14/2011
		Date Analyzed:	01/14/2011

Volatile Organic Compounds

Sample Name:	Fridout 171B	**Units:**	ug/L
Lab Code:	K1100284-002	**Basis:**	NA
File ID:	J:\MS23\DATA\011411BAYW\0114F010.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1100587
Analysis Method:	624	**Calibration ID:**	CAL10231

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.19	U	0.20	0.19	
75-35-4	1,1-Dichloroethene	0.18	U	0.50	0.18	
75-09-2	Methylene Chloride	0.15	U	5.0	0.15	
156-60-5	trans-1,2-Dichloroethene	0.21	U	0.50	0.21	
75-34-3	1,1-Dichloroethane	0.15	U	0.50	0.15	
156-59-2	cis-1,2-Dichloroethene	0.19	U	0.50	0.19	
71-55-6	1,1,1-Trichloroethane (TCA)	0.16	U	0.50	0.16	
79-01-6	Trichloroethene (TCE)	0.17	U	0.50	0.17	
127-18-4	Tetrachloroethene (PCE)	0.19	U	0.50	0.19	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	99	61-121	01/14/11	Acceptable
Toluene-d8	102	72-122	01/14/11	Acceptable
4-Bromofluorobenzene	100	70-120	01/14/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1100284
Project:	NIROP/J070047	**Date Collected:**	01/11/2011
Sample Matrix:	Water	**Date Received:**	01/12/2011
		Date Extracted:	01/14/2011
		Date Analyzed:	01/14/2011

Volatile Organic Compounds

Sample Name:	Fridin Air82A	**Units:**	ug/L
Lab Code:	K1100284-003	**Basis:**	NA
File ID:	J:\MS23\DATA\011411BAYW\0114F011.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1100587
Analysis Method:	624	**Calibration ID:**	CAL10231

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.19**	J	0.20	0.19	
75-35-4	1,1-Dichloroethene	**0.67**		0.50	0.18	
75-09-2	Methylene Chloride	0.15	U	5.0	0.15	
156-60-5	trans-1,2-Dichloroethene	**20**		0.50	0.21	
75-34-3	1,1-Dichloroethane	**1.5**		0.50	0.15	
156-59-2	cis-1,2-Dichloroethene	**91**		0.50	0.19	
71-55-6	1,1,1-Trichloroethane (TCA)	0.16	U	0.50	0.16	
79-01-6	Trichloroethene (TCE)	**300**	E	0.50	0.17	
127-18-4	Tetrachloroethene (PCE)	**1.5**		0.50	0.19	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	99	61-121	01/14/11	Acceptable
Toluene-d8	102	72-122	01/14/11	Acceptable
4-Bromofluorobenzene	98	70-120	01/14/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1100284
Project:	NIROP/J070047	**Date Collected:**	01/11/2011
Sample Matrix:	Water	**Date Received:**	01/12/2011
		Date Extracted:	01/14/2011
		Date Analyzed:	01/14/2011

Volatile Organic Compounds

Sample Name:	Fridin Air82A	**Units:**	ug/L
Lab Code:	K1100284-003	**Basis:**	NA
File ID:	J:\MS23\DATA\011411BAYW\0114F011.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1100587
Analysis Method:	624	**Calibration ID:**	CAL10231

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.19**	J	0.20	0.19	
75-35-4	1,1-Dichloroethene	**0.67**		0.50	0.18	
75-09-2	Methylene Chloride	0.15	U	5.0	0.15	
156-60-5	trans-1,2-Dichloroethene	**20**		0.50	0.21	
75-34-3	1,1-Dichloroethane	**1.5**		0.50	0.15	
156-59-2	cis-1,2-Dichloroethene	**91**		0.50	0.19	
71-55-6	1,1,1-Trichloroethane (TCA)	0.16	U	0.50	0.16	
79-01-6	Trichloroethene (TCE)	**300**	E	0.50	0.17	
127-18-4	Tetrachloroethene (PCE)	**1.5**		0.50	0.19	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	99	61-121	01/14/11	Acceptable
Toluene-d8	102	72-122	01/14/11	Acceptable
4-Bromofluorobenzene	98	70-120	01/14/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1100284
Project:	NIROP/J070047	**Date Collected:**	01/11/2011
Sample Matrix:	Water	**Date Received:**	01/12/2011
		Date Extracted:	01/18/2011
		Date Analyzed:	01/18/2011

Volatile Organic Compounds

Sample Name:	Fridin Air82ADL	**Units:**	ug/L
Lab Code:	K1100284-003	**Basis:**	NA
File ID:	J:\MS23\DATA\011811BAYW\0118F017.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1100709
Analysis Method:	624	**Calibration ID:**	CAL10231

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 10

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	1.9	U	2.0	1.9	
75-35-4	1,1-Dichloroethene	1.8	U	5.0	1.8	
75-09-2	Methylene Chloride	**4.0**	JD	50	1.5	
156-60-5	trans-1,2-Dichloroethene	**18**	D	5.0	2.1	
75-34-3	1,1-Dichloroethane	1.5	U	5.0	1.5	
156-59-2	cis-1,2-Dichloroethene	**82**	D	5.0	1.9	
71-55-6	1,1,1-Trichloroethane (TCA)	1.6	U	5.0	1.6	
79-01-6	Trichloroethene (TCE)	**260**	D	5.0	1.7	
127-18-4	Tetrachloroethene (PCE)	1.9	U	5.0	1.9	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	104	61-121	01/18/11	Acceptable
Toluene-d8	106	72-122	01/18/11	Acceptable
4-Bromofluorobenzene	100	70-120	01/18/11	Acceptable

Comments

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1100284
Project:	NIROP/J070047	**Date Collected:**	01/11/2011
Sample Matrix:	Water	**Date Received:**	01/12/2011
		Date Extracted:	01/18/2011
		Date Analyzed:	01/18/2011

Volatile Organic Compounds

Sample Name:	Fridin Air82ADL	**Units:**	ug/L
Lab Code:	K1100284-003	**Basis:**	NA
File ID:	J:\MS23\DATA\011811BAYW\0118F017.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1100709
Analysis Method:	624	**Calibration ID:**	CAL10231

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 10

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	1.9	U	2.0	1.9	
75-35-4	1,1-Dichloroethene	1.8	U	5.0	1.8	
75-09-2	Methylene Chloride	**4.0**	JD	50	1.5	
156-60-5	trans-1,2-Dichloroethene	**18**	D	5.0	2.1	
75-34-3	1,1-Dichloroethane	1.5	U	5.0	1.5	
156-59-2	cis-1,2-Dichloroethene	**82**	D	5.0	1.9	
71-55-6	1,1,1-Trichloroethane (TCA)	1.6	U	5.0	1.6	
79-01-6	Trichloroethene (TCE)	**260**	D	5.0	1.7	
127-18-4	Tetrachloroethene (PCE)	1.9	U	5.0	1.9	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	104	61-121	01/18/11	Acceptable
Toluene-d8	106	72-122	01/18/11	Acceptable
4-Bromofluorobenzene	100	70-120	01/18/11	Acceptable

Comments

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1100284
Project:	NIROP/J070047	**Date Collected:**	01/11/2011
Sample Matrix:	Water	**Date Received:**	01/12/2011
		Date Extracted:	01/14/2011
		Date Analyzed:	01/14/2011

Volatile Organic Compounds

Sample Name:	Frideff Air84A	**Units:**	ug/L
Lab Code:	K1100284-004	**Basis:**	NA
File ID:	J:\MS23\DATA\011411BAYW\0114F012.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1100587
Analysis Method:	624	**Calibration ID:**	CAL10231

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.19	U	0.20	0.19	
75-35-4	1,1-Dichloroethene	0.18	U	0.50	0.18	
75-09-2	Methylene Chloride	0.15	U	5.0	0.15	
156-60-5	trans-1,2-Dichloroethene	0.21	U	0.50	0.21	
75-34-3	1,1-Dichloroethane	0.15	U	0.50	0.15	
156-59-2	cis-1,2-Dichloroethene	0.19	U	0.50	0.19	
71-55-6	1,1,1-Trichloroethane (TCA)	0.16	U	0.50	0.16	
79-01-6	Trichloroethene (TCE)	0.17	U	0.50	0.17	
127-18-4	Tetrachloroethene (PCE)	0.19	U	0.50	0.19	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	98	61-121	01/14/11	Acceptable
Toluene-d8	102	72-122	01/14/11	Acceptable
4-Bromofluorobenzene	99	70-120	01/14/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1100284
Project:	NIROP/J070047	**Date Collected:**	01/11/2011
Sample Matrix:	Water	**Date Received:**	01/12/2011
		Date Extracted:	01/14/2011
		Date Analyzed:	01/14/2011

Volatile Organic Compounds

Sample Name:	Frideff Air84A	**Units:**	ug/L
Lab Code:	K1100284-004	**Basis:**	NA
File ID:	J:\MS23\DATA\011411BAYW\0114F012.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1100587
Analysis Method:	624	**Calibration ID:**	CAL10231

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.19	U	0.20	0.19	
75-35-4	1,1-Dichloroethene	0.18	U	0.50	0.18	
75-09-2	Methylene Chloride	0.15	U	5.0	0.15	
156-60-5	trans-1,2-Dichloroethene	0.21	U	0.50	0.21	
75-34-3	1,1-Dichloroethane	0.15	U	0.50	0.15	
156-59-2	cis-1,2-Dichloroethene	0.19	U	0.50	0.19	
71-55-6	1,1,1-Trichloroethane (TCA)	0.16	U	0.50	0.16	
79-01-6	Trichloroethene (TCE)	0.17	U	0.50	0.17	
127-18-4	Tetrachloroethene (PCE)	0.19	U	0.50	0.19	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	98	61-121	01/14/11	Acceptable
Toluene-d8	102	72-122	01/14/11	Acceptable
4-Bromofluorobenzene	99	70-120	01/14/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1100284
Project:	NIROP/J070047	**Date Collected:**	01/11/2011
Sample Matrix:	Water	**Date Received:**	01/12/2011
		Date Extracted:	01/14/2011
		Date Analyzed:	01/14/2011

Volatile Organic Compounds

Sample Name:	Trip Blank	**Units:**	ug/L
Lab Code:	K1100284-005	**Basis:**	NA
File ID:	J:\MS23\DATA\011411BAYW\0114F013.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1100587
Analysis Method:	624	**Calibration ID:**	CAL10231

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.19	U	0.20	0.19	
75-35-4	1,1-Dichloroethene	0.18	U	0.50	0.18	
75-09-2	Methylene Chloride	**0.26**	J	5.0	0.15	
156-60-5	trans-1,2-Dichloroethene	0.21	U	0.50	0.21	
75-34-3	1,1-Dichloroethane	0.15	U	0.50	0.15	
156-59-2	cis-1,2-Dichloroethene	0.19	U	0.50	0.19	
71-55-6	1,1,1-Trichloroethane (TCA)	0.16	U	0.50	0.16	
79-01-6	Trichloroethene (TCE)	0.17	U	0.50	0.17	
127-18-4	Tetrachloroethene (PCE)	0.19	U	0.50	0.19	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	101	61-121	01/14/11	Acceptable
Toluene-d8	102	72-122	01/14/11	Acceptable
4-Bromofluorobenzene	99	70-120	01/14/11	Acceptable

Comments

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1100284
Project:	NIROP/J070047	**Date Collected:**	01/11/2011
Sample Matrix:	Water	**Date Received:**	01/12/2011
		Date Extracted:	01/14/2011
		Date Analyzed:	01/14/2011

Volatile Organic Compounds

Sample Name:	Trip Blank	**Units:**	ug/L
Lab Code:	K1100284-005	**Basis:**	NA
File ID:	J:\MS23\DATA\011411BAYW\0114F013.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1100587
Analysis Method:	624	**Calibration ID:**	CAL10231

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.19	U	0.20	0.19	
75-35-4	1,1-Dichloroethene	0.18	U	0.50	0.18	
75-09-2	Methylene Chloride	**0.26**	J	5.0	0.15	
156-60-5	trans-1,2-Dichloroethene	0.21	U	0.50	0.21	
75-34-3	1,1-Dichloroethane	0.15	U	0.50	0.15	
156-59-2	cis-1,2-Dichloroethene	0.19	U	0.50	0.19	
71-55-6	1,1,1-Trichloroethane (TCA)	0.16	U	0.50	0.16	
79-01-6	Trichloroethene (TCE)	0.17	U	0.50	0.17	
127-18-4	Tetrachloroethene (PCE)	0.19	U	0.50	0.19	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	101	61-121	01/14/11	Acceptable
Toluene-d8	102	72-122	01/14/11	Acceptable
4-Bromofluorobenzene	99	70-120	01/14/11	Acceptable

Comments

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1100284
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	01/14/2011
		Date Analyzed:	01/14/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1100587-4	**Basis:**	NA
File ID:	J:\MS23\DATA\011411BAYW\0114F008.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1100587
Analysis Method:	624	**Calibration ID:**	CAL10231

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.19	U	0.20	0.19	
75-35-4	1,1-Dichloroethene	0.18	U	0.50	0.18	
75-09-2	Methylene Chloride	**0.15**	J	5.0	0.15	
156-60-5	trans-1,2-Dichloroethene	0.21	U	0.50	0.21	
75-34-3	1,1-Dichloroethane	0.15	U	0.50	0.15	
156-59-2	cis-1,2-Dichloroethene	0.19	U	0.50	0.19	
71-55-6	1,1,1-Trichloroethane (TCA)	0.16	U	0.50	0.16	
79-01-6	Trichloroethene (TCE)	0.17	U	0.50	0.17	
127-18-4	Tetrachloroethene (PCE)	0.19	U	0.50	0.19	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	100	61-121	01/14/11	Acceptable
Toluene-d8	101	72-122	01/14/11	Acceptable
4-Bromofluorobenzene	98	70-120	01/14/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1100284
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	01/14/2011
		Date Analyzed:	01/14/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1100587-4	**Basis:**	NA
File ID:	J:\MS23\DATA\011411BAYW\0114F008.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1100587
Analysis Method:	624	**Calibration ID:**	CAL10231

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.19	U	0.20	0.19	
75-35-4	1,1-Dichloroethene	0.18	U	0.50	0.18	
75-09-2	Methylene Chloride	**0.15**	J	5.0	0.15	
156-60-5	trans-1,2-Dichloroethene	0.21	U	0.50	0.21	
75-34-3	1,1-Dichloroethane	0.15	U	0.50	0.15	
156-59-2	cis-1,2-Dichloroethene	0.19	U	0.50	0.19	
71-55-6	1,1,1-Trichloroethane (TCA)	0.16	U	0.50	0.16	
79-01-6	Trichloroethene (TCE)	0.17	U	0.50	0.17	
127-18-4	Tetrachloroethene (PCE)	0.19	U	0.50	0.19	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	100	61-121	01/14/11	Acceptable
Toluene-d8	101	72-122	01/14/11	Acceptable
4-Bromofluorobenzene	98	70-120	01/14/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1100284
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	01/18/2011
		Date Analyzed:	01/18/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1100709-4	**Basis:**	NA
File ID:	J:\MS23\DATA\011811BAYW\0118F009.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1100709
Analysis Method:	624	**Calibration ID:**	CAL10231

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.19	U	0.20	0.19	
75-35-4	1,1-Dichloroethene	0.18	U	0.50	0.18	
75-09-2	Methylene Chloride	**0.15**	J	5.0	0.15	
156-60-5	trans-1,2-Dichloroethene	0.21	U	0.50	0.21	
75-34-3	1,1-Dichloroethane	0.15	U	0.50	0.15	
156-59-2	cis-1,2-Dichloroethene	0.19	U	0.50	0.19	
71-55-6	1,1,1-Trichloroethane (TCA)	0.16	U	0.50	0.16	
79-01-6	Trichloroethene (TCE)	0.17	U	0.50	0.17	
127-18-4	Tetrachloroethene (PCE)	0.19	U	0.50	0.19	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	100	61-121	01/18/11	Acceptable
Toluene-d8	103	72-122	01/18/11	Acceptable
4-Bromofluorobenzene	100	70-120	01/18/11	Acceptable

Comments

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1100284
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	01/18/2011
		Date Analyzed:	01/18/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1100709-4	**Basis:**	NA
File ID:	J:\MS23\DATA\011811BAYW\0118F009.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1100709
Analysis Method:	624	**Calibration ID:**	CAL10231

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.19	U	0.20	0.19	
75-35-4	1,1-Dichloroethene	0.18	U	0.50	0.18	
75-09-2	Methylene Chloride	**0.15**	J	5.0	0.15	
156-60-5	trans-1,2-Dichloroethene	0.21	U	0.50	0.21	
75-34-3	1,1-Dichloroethane	0.15	U	0.50	0.15	
156-59-2	cis-1,2-Dichloroethene	0.19	U	0.50	0.19	
71-55-6	1,1,1-Trichloroethane (TCA)	0.16	U	0.50	0.16	
79-01-6	Trichloroethene (TCE)	0.17	U	0.50	0.17	
127-18-4	Tetrachloroethene (PCE)	0.19	U	0.50	0.19	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	100	61-121	01/18/11	Acceptable
Toluene-d8	103	72-122	01/18/11	Acceptable
4-Bromofluorobenzene	100	70-120	01/18/11	Acceptable

Comments

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1100284

Surrogate Recovery Summary
Volatile Organic Compounds

Extraction Method: METHOD
Analysis Method: 624

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
Fridout 171A	K1100284-001	100	101	99
Fridout 171B	K1100284-002	99	102	100
Fridin Air82ADL	K1100284-003	104	106	100
Fridin Air82A	K1100284-003	99	102	98
Frideff Air84A	K1100284-004	98	102	99
Trip Blank	K1100284-005	101	102	99
Method Blank	KWG1100587-4	100	101	98
Method Blank	KWG1100709-4	100	103	100
Fridout 171AMS	KWG1100587-1	103	105	99
Fridout 171ADMS	KWG1100587-2	102	104	102
Lab Control Sample	KWG1100587-3	100	103	100
Lab Control Sample	KWG1100709-3	105	107	104

Surrogate Recovery Control Limits (%)

Sur1 =	Dibromofluoromethane	61-121
Sur2 =	Toluene-d8	72-122
Sur3 =	4-Bromofluorobenzene	70-120

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1100284

Surrogate Recovery Summary
Volatile Organic Compounds

Extraction Method: METHOD
Analysis Method: 624

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
Fridout 171A	K1100284-001	100	101	99
Fridout 171B	K1100284-002	99	102	100
Fridin Air82ADL	K1100284-003	104	106	100
Fridin Air82A	K1100284-003	99	102	98
Frideff Air84A	K1100284-004	98	102	99
Trip Blank	K1100284-005	101	102	99
Method Blank	KWG1100587-4	100	101	98
Method Blank	KWG1100709-4	100	103	100
Fridout 171AMS	KWG1100587-1	103	105	99
Fridout 171ADMS	KWG1100587-2	102	104	102
Lab Control Sample	KWG1100587-3	100	103	100
Lab Control Sample	KWG1100709-3	105	107	104

Surrogate Recovery Control Limits (%)

Sur1 =	Dibromofluoromethane	61-121
Sur2 =	Toluene-d8	72-122
Sur3 =	4-Bromofluorobenzene	70-120

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1100284
Date Analyzed: 01/14/2011
Time Analyzed: 10:53

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID: J:\MS23\DATA\011411BAYW\0114F003.D
Instrument ID: MS23
Analysis Method: 624

Lab Code: KWG1100585-2
Analysis Lot: KWG1100585

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	494,788	5.76	205,211	9.20	169,994	11.61
	Upper Limit ==>	989,576	6.26	410,422	9.70	339,988	12.11
	Lower Limit ==>	247,394	5.26	102,606	8.70	84,997	11.11
	ICAL Result ==>	486,875	5.77	202,840	9.20	169,109	11.61
Associated Analyses							
Lab Control Sample	KWG1100587-3	491,896	5.76	205,713	9.20	172,159	11.61
Fridout 171AMS	KWG1100587-1	493,832	5.76	207,488	9.20	172,043	11.61
Fridout 171ADMS	KWG1100587-2	499,764	5.76	209,727	9.20	175,046	11.61
Method Blank	KWG1100587-4	489,610	5.76	204,525	9.20	164,906	11.61
Fridout 171A	K1100284-001	485,795	5.76	202,399	9.20	162,647	11.61
Fridout 171B	K1100284-002	472,449	5.76	197,691	9.20	158,072	11.61
Fridin Air82A	K1100284-003	479,758	5.76	196,863	9.20	161,248	11.61
Frideff Air84A	K1100284-004	473,346	5.76	198,378	9.20	156,768	11.61
Trip Blank	K1100284-005	442,707	5.77	189,742	9.21	155,764	11.61

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1100284
Date Analyzed: 01/14/2011
Time Analyzed: 10:53

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID: J:\MS23\DATA\011411BAYW\0114F003.D
Instrument ID: MS23
Analysis Method: 624

Lab Code: KWG1100585-2
Analysis Lot: KWG1100585

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	494,788	5.76	205,211	9.20	169,994	11.61
	Upper Limit ==>	989,576	6.26	410,422	9.70	339,988	12.11
	Lower Limit ==>	247,394	5.26	102,606	8.70	84,997	11.11
	ICAL Result ==>	486,875	5.77	202,840	9.20	169,109	11.61
Associated Analyses							
Lab Control Sample	KWG1100587-3	491,896	5.76	205,713	9.20	172,159	11.61
Fridout 171AMS	KWG1100587-1	493,832	5.76	207,488	9.20	172,043	11.61
Fridout 171ADMS	KWG1100587-2	499,764	5.76	209,727	9.20	175,046	11.61
Method Blank	KWG1100587-4	489,610	5.76	204,525	9.20	164,906	11.61
Fridout 171A	K1100284-001	485,795	5.76	202,399	9.20	162,647	11.61
Fridout 171B	K1100284-002	472,449	5.76	197,691	9.20	158,072	11.61
Fridin Air82A	K1100284-003	479,758	5.76	196,863	9.20	161,248	11.61
Frideff Air84A	K1100284-004	473,346	5.76	198,378	9.20	156,768	11.61
Trip Blank	K1100284-005	442,707	5.77	189,742	9.21	155,764	11.61

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1100284
Date Analyzed: 01/18/2011
Time Analyzed: 08:12

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID: J:\MS23\DATA\011811BAYW\0118F002.D
Instrument ID: MS23
Analysis Method: 624

Lab Code: KWG1100708-2
Analysis Lot: KWG1100708

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	484,566	5.76	210,896	9.20	172,314	11.61
	Upper Limit ==>	969,132	6.26	421,792	9.70	344,628	12.11
	Lower Limit ==>	242,283	5.26	105,448	8.70	86,157	11.11
	ICAL Result ==>	486,875	5.77	202,840	9.20	169,109	11.61
Associated Analyses							
Lab Control Sample	KWG1100709-3	458,562	5.77	204,788	9.20	175,784	11.61
Method Blank	KWG1100709-4	464,651	5.76	202,255	9.20	158,394	11.61
Fridin Air82ADL	K1100284-003	445,244	5.77	199,279	9.20	162,083	11.61

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1100284
Date Analyzed: 01/18/2011
Time Analyzed: 08:12

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID: J:\MS23\DATA\011811BAYW\0118F002.D
Instrument ID: MS23
Analysis Method: 624

Lab Code: KWG1100708-2
Analysis Lot: KWG1100708

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	484,566	5.76	210,896	9.20	172,314	11.61
	Upper Limit ==>	969,132	6.26	421,792	9.70	344,628	12.11
	Lower Limit ==>	242,283	5.26	105,448	8.70	86,157	11.11
	ICAL Result ==>	486,875	5.77	202,840	9.20	169,109	11.61
Associated Analyses							
Lab Control Sample	KWG1100709-3	458,562	5.77	204,788	9.20	175,784	11.61
Method Blank	KWG1100709-4	464,651	5.76	202,255	9.20	158,394	11.61
Fridin Air82ADL	K1100284-003	445,244	5.77	199,279	9.20	162,083	11.61

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1100284
Date Extracted: 01/14/2011
Date Analyzed: 01/14/2011

Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organic Compounds

Sample Name: Fridout 171A
Lab Code: K1100284-001

Units: ug/L
Basis: NA

Extraction Method: METHOD
Analysis Method: 624

Level: Low
Extraction Lot: KWG1100587

Analyte Name	Sample Result	Fridout 171AMS KWG1100587-1 Matrix Spike			Fridout 171ADMS KWG1100587-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
Vinyl Chloride	ND	10.1	10.0	101	9.36	10.0	94	62-134	8	30
1,1-Dichloroethene	ND	11.6	10.0	116	10.8	10.0	108	64-151	7	30
Methylene Chloride	ND	10.9	10.0	109	10.4	10.0	104	69-132	5	30
trans-1,2-Dichloroethene	ND	11.8	10.0	118	11.0	10.0	110	58-146	7	30
1,1-Dichloroethane	ND	11.4	10.0	114	10.6	10.0	106	61-141	7	30
cis-1,2-Dichloroethene	ND	11.4	10.0	114	10.6	10.0	106	73-130	7	30
1,1,1-Trichloroethane (TCA)	ND	11.6	10.0	116	11.1	10.0	111	67-139	4	30
Trichloroethene (TCE)	ND	11.1	10.0	111	10.7	10.0	107	23-193	3	30
Tetrachloroethene (PCE)	ND	11.5	10.0	115	11.0	10.0	110	70-132	4	30

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.
Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1100284
Date Extracted: 01/14/2011
Date Analyzed: 01/14/2011

Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organic Compounds

Sample Name: Fridout 171A
Lab Code: K1100284-001

Units: ug/L
Basis: NA

Extraction Method: METHOD
Analysis Method: 624

Level: Low
Extraction Lot: KWG1100587

Analyte Name	Sample Result	Fridout 171AMS KWG1100587-1 Matrix Spike			Fridout 171ADMS KWG1100587-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
Vinyl Chloride	ND	10.1	10.0	101	9.36	10.0	94	62-134	8	30
1,1-Dichloroethene	ND	11.6	10.0	116	10.8	10.0	108	64-151	7	30
Methylene Chloride	ND	10.9	10.0	109	10.4	10.0	104	69-132	5	30
trans-1,2-Dichloroethene	ND	11.8	10.0	118	11.0	10.0	110	58-146	7	30
1,1-Dichloroethane	ND	11.4	10.0	114	10.6	10.0	106	61-141	7	30
cis-1,2-Dichloroethene	ND	11.4	10.0	114	10.6	10.0	106	73-130	7	30
1,1,1-Trichloroethane (TCA)	ND	11.6	10.0	116	11.1	10.0	111	67-139	4	30
Trichloroethene (TCE)	ND	11.1	10.0	111	10.7	10.0	107	23-193	3	30
Tetrachloroethene (PCE)	ND	11.5	10.0	115	11.0	10.0	110	70-132	4	30

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1100284
Project:	NIROP/J070047	**Date Extracted:**	01/14/2011
Sample Matrix:	Water	**Date Analyzed:**	01/14/2011

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	METHOD	**Units:**	ug/L
Analysis Method:	624	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1100587

	Lab Control Sample KWG1100587-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Vinyl Chloride	10.1	10.0	101	71-136
1,1-Dichloroethene	11.4	10.0	114	79-147
Methylene Chloride	11.0	10.0	110	67-144
trans-1,2-Dichloroethene	11.7	10.0	117	78-140
1,1-Dichloroethane	11.3	10.0	113	79-135
cis-1,2-Dichloroethene	11.0	10.0	110	80-134
1,1,1-Trichloroethane (TCA)	11.5	10.0	115	77-139
Trichloroethene (TCE)	11.1	10.0	111	81-133
Tetrachloroethene (PCE)	11.5	10.0	115	82-129

Results flagged with an asterisk (*) indicate values outside control criteria.

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1100284
Project:	NIROP/J070047	**Date Extracted:**	01/14/2011
Sample Matrix:	Water	**Date Analyzed:**	01/14/2011

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	METHOD	**Units:**	ug/L
Analysis Method:	624	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1100587

	Lab Control Sample KWG1100587-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Vinyl Chloride	10.1	10.0	101	71-136
1,1-Dichloroethene	11.4	10.0	114	79-147
Methylene Chloride	11.0	10.0	110	67-144
trans-1,2-Dichloroethene	11.7	10.0	117	78-140
1,1-Dichloroethane	11.3	10.0	113	79-135
cis-1,2-Dichloroethene	11.0	10.0	110	80-134
1,1,1-Trichloroethane (TCA)	11.5	10.0	115	77-139
Trichloroethene (TCE)	11.1	10.0	111	81-133
Tetrachloroethene (PCE)	11.5	10.0	115	82-129

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1100284
Project:	NIROP/J070047	**Date Extracted:**	01/18/2011
Sample Matrix:	Water	**Date Analyzed:**	01/18/2011

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	METHOD	**Units:**	ug/L
Analysis Method:	624	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1100709

	Lab Control Sample KWG1100709-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Vinyl Chloride	9.78	10.0	98	71-136
1,1-Dichloroethene	11.1	10.0	111	79-147
Methylene Chloride	10.9	10.0	109	67-144
trans-1,2-Dichloroethene	10.9	10.0	109	78-140
1,1-Dichloroethane	11.2	10.0	112	79-135
cis-1,2-Dichloroethene	10.8	10.0	108	80-134
1,1,1-Trichloroethane (TCA)	10.9	10.0	109	77-139
Trichloroethene (TCE)	10.5	10.0	105	81-133
Tetrachloroethene (PCE)	9.87	10.0	99	82-129

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1100284
Project:	NIROP/J070047	**Date Extracted:**	01/18/2011
Sample Matrix:	Water	**Date Analyzed:**	01/18/2011

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	METHOD	**Units:**	ug/L
Analysis Method:	624	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1100709

	Lab Control Sample KWG1100709-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Vinyl Chloride	9.78	10.0	98	71-136
1,1-Dichloroethene	11.1	10.0	111	79-147
Methylene Chloride	10.9	10.0	109	67-144
trans-1,2-Dichloroethene	10.9	10.0	109	78-140
1,1-Dichloroethane	11.2	10.0	112	79-135
cis-1,2-Dichloroethene	10.8	10.0	108	80-134
1,1,1-Trichloroethane (TCA)	10.9	10.0	109	77-139
Trichloroethene (TCE)	10.5	10.0	105	81-133
Tetrachloroethene (PCE)	9.87	10.0	99	82-129

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1100284
Project:	NIROP/J070047	**Date Extracted:**	01/14/2011
Sample Matrix:	Water	**Date Analyzed:**	01/14/2011
		Time Analyzed:	14:16

Method Blank Summary
Volatile Organic Compounds

Sample Name:	Method Blank	**File ID:**	J:\MS23\DATA\011411BAYW\0114F008.D
Lab Code:	KWG1100587-4	**Instrument ID:**	MS23
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	624	**Extraction Lot:**	KWG1100587

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1100587-3	J:\MS23\DATA\011411BAYW\0114F005.D	01/14/11	12:07
Fridout 171AMS	KWG1100587-1	J:\MS23\DATA\011411BAYW\0114F006.D	01/14/11	13:19
Fridout 171ADMS	KWG1100587-2	J:\MS23\DATA\011411BAYW\0114F007.D	01/14/11	13:48
Fridout 171A	K1100284-001	J:\MS23\DATA\011411BAYW\0114F009.D	01/14/11	14:45
Fridout 171B	K1100284-002	J:\MS23\DATA\011411BAYW\0114F010.D	01/14/11	15:14
Fridin Air82A	K1100284-003	J:\MS23\DATA\011411BAYW\0114F011.D	01/14/11	15:42
Frideff Air84A	K1100284-004	J:\MS23\DATA\011411BAYW\0114F012.D	01/14/11	16:11
Trip Blank	K1100284-005	J:\MS23\DATA\011411BAYW\0114F013.D	01/14/11	16:40

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1100284
Project:	NIROP/J070047	**Date Extracted:**	01/14/2011
Sample Matrix:	Water	**Date Analyzed:**	01/14/2011
		Time Analyzed:	14:16

Method Blank Summary
Volatile Organic Compounds

Sample Name:	Method Blank	**File ID:**	J:\MS23\DATA\011411BAYW\0114F008.D
Lab Code:	KWG1100587-4	**Instrument ID:**	MS23
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	624	**Extraction Lot:**	KWG1100587

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1100587-3	J:\MS23\DATA\011411BAYW\0114F005.D	01/14/11	12:07
Fridout 171AMS	KWG1100587-1	J:\MS23\DATA\011411BAYW\0114F006.D	01/14/11	13:19
Fridout 171ADMS	KWG1100587-2	J:\MS23\DATA\011411BAYW\0114F007.D	01/14/11	13:48
Fridout 171A	K1100284-001	J:\MS23\DATA\011411BAYW\0114F009.D	01/14/11	14:45
Fridout 171B	K1100284-002	J:\MS23\DATA\011411BAYW\0114F010.D	01/14/11	15:14
Fridin Air82A	K1100284-003	J:\MS23\DATA\011411BAYW\0114F011.D	01/14/11	15:42
Frideff Air84A	K1100284-004	J:\MS23\DATA\011411BAYW\0114F012.D	01/14/11	16:11
Trip Blank	K1100284-005	J:\MS23\DATA\011411BAYW\0114F013.D	01/14/11	16:40

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1100284
Project:	NIROP/J070047	**Date Extracted:**	01/18/2011
Sample Matrix:	Water	**Date Analyzed:**	01/18/2011
		Time Analyzed:	11:38

Method Blank Summary
Volatile Organic Compounds

Sample Name:	Method Blank	**File ID:**	J:\MS23\DATA\011811BAYW\0118F009.D
Lab Code:	KWG1100709-4	**Instrument ID:**	MS23
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	624	**Extraction Lot:**	KWG1100709

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1100709-3	J:\MS23\DATA\011811BAYW\0118F003.D	01/18/11	08:40
Fridin Air82ADL	K1100284-003	J:\MS23\DATA\011811BAYW\0118F017.D	01/18/11	15:27

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1100284
Project:	NIROP/J070047	**Date Extracted:**	01/18/2011
Sample Matrix:	Water	**Date Analyzed:**	01/18/2011
		Time Analyzed:	11:38

Method Blank Summary
Volatile Organic Compounds

Sample Name:	Method Blank	**File ID:**	J:\MS23\DATA\011811BAYW\0118F009.D
Lab Code:	KWG1100709-4	**Instrument ID:**	MS23
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	624	**Extraction Lot:**	KWG1100709

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1100709-3	J:\MS23\DATA\011811BAYW\0118F003.D	01/18/11	08:40
Fridin Air82ADL	K1100284-003	J:\MS23\DATA\011811BAYW\0118F017.D	01/18/11	15:27

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1100284
Project:	NIROP/J070047	**Date Extracted:**	01/14/2011
Sample Matrix:	Water	**Date Analyzed:**	01/14/2011
		Time Analyzed:	12:07

Lab Control Sample Summary
Volatile Organic Compounds

Sample Name:	Lab Control Sample	**File ID:**	J:\MS23\DATA\011411BAYW\0114F005.D
Lab Code:	KWG1100587-3	**Instrument ID:**	MS23
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	624	**Extraction Lot:**	KWG1100587

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Fridout 171AMS	KWG1100587-1	J:\MS23\DATA\011411BAYW\0114F006.D	01/14/11	13:19
Fridout 171ADMS	KWG1100587-2	J:\MS23\DATA\011411BAYW\0114F007.D	01/14/11	13:48
Method Blank	KWG1100587-4	J:\MS23\DATA\011411BAYW\0114F008.D	01/14/11	14:16
Fridout 171A	K1100284-001	J:\MS23\DATA\011411BAYW\0114F009.D	01/14/11	14:45
Fridout 171B	K1100284-002	J:\MS23\DATA\011411BAYW\0114F010.D	01/14/11	15:14
Fridin Air82A	K1100284-003	J:\MS23\DATA\011411BAYW\0114F011.D	01/14/11	15:42
Frideff Air84A	K1100284-004	J:\MS23\DATA\011411BAYW\0114F012.D	01/14/11	16:11
Trip Blank	K1100284-005	J:\MS23\DATA\011411BAYW\0114F013.D	01/14/11	16:40

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1100284
Project:	NIROP/J070047	**Date Extracted:**	01/14/2011
Sample Matrix:	Water	**Date Analyzed:**	01/14/2011
		Time Analyzed:	12:07

Lab Control Sample Summary
Volatile Organic Compounds

Sample Name:	Lab Control Sample	**File ID:**	J:\MS23\DATA\011411BAYW\0114F005.D
Lab Code:	KWG1100587-3	**Instrument ID:**	MS23
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	624	**Extraction Lot:**	KWG1100587

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Fridout 171AMS	KWG1100587-1	J:\MS23\DATA\011411BAYW\0114F006.D	01/14/11	13:19
Fridout 171ADMS	KWG1100587-2	J:\MS23\DATA\011411BAYW\0114F007.D	01/14/11	13:48
Method Blank	KWG1100587-4	J:\MS23\DATA\011411BAYW\0114F008.D	01/14/11	14:16
Fridout 171A	K1100284-001	J:\MS23\DATA\011411BAYW\0114F009.D	01/14/11	14:45
Fridout 171B	K1100284-002	J:\MS23\DATA\011411BAYW\0114F010.D	01/14/11	15:14
Fridin Air82A	K1100284-003	J:\MS23\DATA\011411BAYW\0114F011.D	01/14/11	15:42
Frideff Air84A	K1100284-004	J:\MS23\DATA\011411BAYW\0114F012.D	01/14/11	16:11
Trip Blank	K1100284-005	J:\MS23\DATA\011411BAYW\0114F013.D	01/14/11	16:40

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1100284
Project:	NIROP/J070047	**Date Extracted:**	01/18/2011
Sample Matrix:	Water	**Date Analyzed:**	01/18/2011
		Time Analyzed:	08:40

Lab Control Sample Summary
Volatile Organic Compounds

Sample Name:	Lab Control Sample	**File ID:**	J:\MS23\DATA\011811BAYW\0118F003.D
Lab Code:	KWG1100709-3	**Instrument ID:**	MS23
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	624	**Extraction Lot:**	KWG1100709

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1100709-4	J:\MS23\DATA\011811BAYW\0118F009.D	01/18/11	11:38
Fridin Air82ADL	K1100284-003	J:\MS23\DATA\011811BAYW\0118F017.D	01/18/11	15:27

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1100284
Project:	NIROP/J070047	**Date Extracted:**	01/18/2011
Sample Matrix:	Water	**Date Analyzed:**	01/18/2011
		Time Analyzed:	08:40

Lab Control Sample Summary
Volatile Organic Compounds

Sample Name:	Lab Control Sample	**File ID:**	J:\MS23\DATA\011811BAYW\0118F003.D
Lab Code:	KWG1100709-3	**Instrument ID:**	MS23
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	624	**Extraction Lot:**	KWG1100709

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1100709-4	J:\MS23\DATA\011811BAYW\0118F009.D	01/18/11	11:38
Fridin Air82ADL	K1100284-003	J:\MS23\DATA\011811BAYW\0118F017.D	01/18/11	15:27

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1100284
Date Analyzed: 01/12/2011
Time Analyzed: 08:15

Tune Summary
Volatile Organic Compounds

File ID: J:\MS23\DATA\011211\0112F002.D
Instrument ID: MS23
Column:

Analysis Method: 624
Analysis Lot: KWG1100722

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	23.4	11758	PASS
75	95	30	60	53.6	26960	PASS
95	95	100	100	100.0	50320	PASS
96	95	5	9	6.9	3467	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	70.7	35576	PASS
175	174	5	9	7.8	2784	PASS
176	174	95	101	99.2	35280	PASS
177	176	5	9	7.4	2626	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Initial Calibration	KWG1100722-2	J:\MS23\DATA\011211BAYW\0112F	01/12/2011	09:51	
Initial Calibration	KWG1100722-3	J:\MS23\DATA\011211BAYW\0112F	01/12/2011	10:20	
Initial Calibration	KWG1100722-4	J:\MS23\DATA\011211BAYW\0112F	01/12/2011	10:49	
Initial Calibration	KWG1100722-5	J:\MS23\DATA\011211BAYW\0112F	01/12/2011	11:17	
Initial Calibration	KWG1100722-6	J:\MS23\DATA\011211BAYW\0112F	01/12/2011	11:46	
Initial Calibration	KWG1100722-7	J:\MS23\DATA\011211BAYW\0112F	01/12/2011	12:14	
Initial Calibration	KWG1100722-8	J:\MS23\DATA\011211BAYW\0112F	01/12/2011	12:43	
Initial Calibration	KWG1100722-9	J:\MS23\DATA\011211BAYW\0112F	01/12/2011	13:12	
Initial Calibration Verification	KWG1100722-10	J:\MS23\DATA\011211BAYW\0112F	01/12/2011	14:42	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1100284
Date Analyzed: 01/12/2011
Time Analyzed: 08:15

Tune Summary
Volatile Organic Compounds

File ID: J:\MS23\DATA\011211\0112F002.D
Instrument ID: MS23
Column:

Analysis Method: 624
Analysis Lot: KWG1100722

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	23.4	11758	PASS
75	95	30	60	53.6	26960	PASS
95	95	100	100	100.0	50320	PASS
96	95	5	9	6.9	3467	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	70.7	35576	PASS
175	174	5	9	7.8	2784	PASS
176	174	95	101	99.2	35280	PASS
177	176	5	9	7.4	2626	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Initial Calibration	KWG1100722-2	J:\MS23\DATA\011211BAYW\0112F	01/12/2011	09:51	
Initial Calibration	KWG1100722-3	J:\MS23\DATA\011211BAYW\0112F	01/12/2011	10:20	
Initial Calibration	KWG1100722-4	J:\MS23\DATA\011211BAYW\0112F	01/12/2011	10:49	
Initial Calibration	KWG1100722-5	J:\MS23\DATA\011211BAYW\0112F	01/12/2011	11:17	
Initial Calibration	KWG1100722-6	J:\MS23\DATA\011211BAYW\0112F	01/12/2011	11:46	
Initial Calibration	KWG1100722-7	J:\MS23\DATA\011211BAYW\0112F	01/12/2011	12:14	
Initial Calibration	KWG1100722-8	J:\MS23\DATA\011211BAYW\0112F	01/12/2011	12:43	
Initial Calibration	KWG1100722-9	J:\MS23\DATA\011211BAYW\0112F	01/12/2011	13:12	
Initial Calibration Verification	KWG1100722-10	J:\MS23\DATA\011211BAYW\0112F	01/12/2011	14:42	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1100284
Date Analyzed: 01/14/2011
Time Analyzed: 10:25

Tune Summary
Volatile Organic Compounds

File ID: J:\MS23\DATA\011411BAYW\0114F002.D
Instrument ID: MS23
Column:

Analysis Method: 624
Analysis Lot: KWG1100585

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	24.0	12247	PASS
75	95	30	60	55.4	28298	PASS
95	95	100	100	100.0	51104	PASS
96	95	5	9	7.0	3579	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	74.4	38032	PASS
175	174	5	9	8.8	3333	PASS
176	174	95	101	96.2	36589	PASS
177	176	5	9	7.1	2586	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1100585-2	J:\MS23\DATA\011411BAYW\0114F	01/14/2011	10:53	
Lab Control Sample	KWG1100587-3	J:\MS23\DATA\011411BAYW\0114F	01/14/2011	12:07	
Fridout 171AMS	KWG1100587-1	J:\MS23\DATA\011411BAYW\0114F	01/14/2011	13:19	
Fridout 171ADMS	KWG1100587-2	J:\MS23\DATA\011411BAYW\0114F	01/14/2011	13:48	
Method Blank	KWG1100587-4	J:\MS23\DATA\011411BAYW\0114F	01/14/2011	14:16	
Fridout 171A	K1100284-001	J:\MS23\DATA\011411BAYW\0114F	01/14/2011	14:45	
Fridout 171B	K1100284-002	J:\MS23\DATA\011411BAYW\0114F	01/14/2011	15:14	
Fridin Air82A	K1100284-003	J:\MS23\DATA\011411BAYW\0114F	01/14/2011	15:42	
Frideff Air84A	K1100284-004	J:\MS23\DATA\011411BAYW\0114F	01/14/2011	16:11	
Trip Blank	K1100284-005	J:\MS23\DATA\011411BAYW\0114F	01/14/2011	16:40	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1100284
Date Analyzed: 01/14/2011
Time Analyzed: 10:25

Tune Summary
Volatile Organic Compounds

File ID: J:\MS23\DATA\011411BAYW\0114F002.D
Instrument ID: MS23
Column:

Analysis Method: 624
Analysis Lot: KWG1100585

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	24.0	12247	PASS
75	95	30	60	55.4	28298	PASS
95	95	100	100	100.0	51104	PASS
96	95	5	9	7.0	3579	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	74.4	38032	PASS
175	174	5	9	8.8	3333	PASS
176	174	95	101	96.2	36589	PASS
177	176	5	9	7.1	2586	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1100585-2	J:\MS23\DATA\011411BAYW\0114F	01/14/2011	10:53	
Lab Control Sample	KWG1100587-3	J:\MS23\DATA\011411BAYW\0114F	01/14/2011	12:07	
Fridout 171AMS	KWG1100587-1	J:\MS23\DATA\011411BAYW\0114F	01/14/2011	13:19	
Fridout 171ADMS	KWG1100587-2	J:\MS23\DATA\011411BAYW\0114F	01/14/2011	13:48	
Method Blank	KWG1100587-4	J:\MS23\DATA\011411BAYW\0114F	01/14/2011	14:16	
Fridout 171A	K1100284-001	J:\MS23\DATA\011411BAYW\0114F	01/14/2011	14:45	
Fridout 171B	K1100284-002	J:\MS23\DATA\011411BAYW\0114F	01/14/2011	15:14	
Fridin Air82A	K1100284-003	J:\MS23\DATA\011411BAYW\0114F	01/14/2011	15:42	
Frideff Air84A	K1100284-004	J:\MS23\DATA\011411BAYW\0114F	01/14/2011	16:11	
Trip Blank	K1100284-005	J:\MS23\DATA\011411BAYW\0114F	01/14/2011	16:40	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1100284
Date Analyzed: 01/18/2011
Time Analyzed: 07:34

Tune Summary
Volatile Organic Compounds

File ID: J:\MS23\DATA\011811BAYW\0118F001.D
Instrument ID: MS23
Column:

Analysis Method: 624
Analysis Lot: KWG1100708

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	21.5	13002	PASS
75	95	30	60	52.7	31896	PASS
95	95	100	100	100.0	60493	PASS
96	95	5	9	6.5	3930	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	70.9	42914	PASS
175	174	5	9	7.9	3399	PASS
176	174	95	101	95.4	40944	PASS
177	176	5	9	6.3	2586	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1100708-2	J:\MS23\DATA\011811BAYW\0118F	01/18/2011	08:12	
Lab Control Sample	KWG1100709-3	J:\MS23\DATA\011811BAYW\0118F	01/18/2011	08:40	
Method Blank	KWG1100709-4	J:\MS23\DATA\011811BAYW\0118F	01/18/2011	11:38	
Fridin Air82ADL	K1100284-003	J:\MS23\DATA\011811BAYW\0118F	01/18/2011	15:27	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1100284
Date Analyzed: 01/18/2011
Time Analyzed: 07:34

Tune Summary
Volatile Organic Compounds

File ID: J:\MS23\DATA\011811BAYW\0118F001.D
Instrument ID: MS23
Column:

Analysis Method: 624
Analysis Lot: KWG1100708

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	21.5	13002	PASS
75	95	30	60	52.7	31896	PASS
95	95	100	100	100.0	60493	PASS
96	95	5	9	6.5	3930	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	70.9	42914	PASS
175	174	5	9	7.9	3399	PASS
176	174	95	101	95.4	40944	PASS
177	176	5	9	6.3	2586	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1100708-2	J:\MS23\DATA\011811BAYW\0118F	01/18/2011	08:12	
Lab Control Sample	KWG1100709-3	J:\MS23\DATA\011811BAYW\0118F	01/18/2011	08:40	
Method Blank	KWG1100709-4	J:\MS23\DATA\011811BAYW\0118F	01/18/2011	11:38	
Fridin Air82ADL	K1100284-003	J:\MS23\DATA\011811BAYW\0118F	01/18/2011	15:27	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1100284
Calibration Date: 01/12/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10231
Instrument ID: MS23

Column: MS

Level ID	File ID
A	J:\MS23\DATA\011211\0112F005.D
B	J:\MS23\DATA\011211\0112F006.D
C	J:\MS23\DATA\011211\0112F007.D
D	J:\MS23\DATA\011211\0112F008.D
E	J:\MS23\DATA\011211\0112F009.D
F	J:\MS23\DATA\011211\0112F010.D
G	J:\MS23\DATA\011211\0112F011.D
H	J:\MS23\DATA\011211BAYW\0112F004.D

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Vinyl Chloride	A	0.50	0.359	B	1.0	0.373	C	5.0	0.416	D	10	0.437	E	40	0.434
	F	80	0.434	G	120	0.428	H	0.20	0.501						
1,1-Dichloroethene	A	0.50	0.198	B	1.0	0.186	C	5.0	0.213	D	10	0.206	E	40	0.219
	F	80	0.215	G	120	0.210									
Methylene Chloride	A	0.50	0.323	B	1.0	0.274	C	5.0	0.250	D	10	0.259	E	40	0.246
	F	80	0.248	G	120	0.249									
trans-1,2-Dichloroethene	A	0.50	0.235	B	1.0	0.228	C	5.0	0.253	D	10	0.255	E	40	0.264
	F	80	0.263	G	120	0.260									
1,1-Dichloroethane	A	0.50	0.445	B	1.0	0.463	C	5.0	0.515	D	10	0.525	E	40	0.527
	F	80	0.525	G	120	0.524									
cis-1,2-Dichloroethene	A	0.50	0.266	B	1.0	0.252	C	5.0	0.266	D	10	0.276	E	40	0.284
	F	80	0.282	G	120	0.282									
1,1,1-Trichloroethane (TCA)	A	0.50	0.312	B	1.0	0.300	C	5.0	0.359	D	10	0.371	E	40	0.397
	F	80	0.410	G	120	0.412									
Trichloroethene (TCE)	A	0.50	0.245	B	1.0	0.243	C	5.0	0.262	D	10	0.264	E	40	0.269
	F	80	0.271	G	120	0.274									
Tetrachloroethene (PCE)	A	0.50	0.364	B	1.0	0.383	C	5.0	0.457	D	10	0.432	E	40	0.470
	F	80	0.474	G	120	0.468									
Dibromofluoromethane	A	4.0	0.208	B	6.0	0.214	C	8.0	0.223	D	10	0.224	E	20	0.226
	F	40	0.229	G	60	0.233									
Toluene-d8	A	4.0	0.840	B	6.0	0.885	C	8.0	0.905	D	10	0.919	E	20	0.916
	F	40	0.912	G	60	0.951									
4-Bromofluorobenzene	A	4.0	0.719	B	6.0	0.755	C	8.0	0.783	D	10	0.795	E	20	0.794
	F	40	0.797	G	60	0.770									

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1100284
Calibration Date: 01/12/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10231
Instrument ID: MS23

Column: MS

Level ID	File ID
A	J:\MS23\DATA\011211\0112F005.D
B	J:\MS23\DATA\011211\0112F006.D
C	J:\MS23\DATA\011211\0112F007.D
D	J:\MS23\DATA\011211\0112F008.D
E	J:\MS23\DATA\011211\0112F009.D
F	J:\MS23\DATA\011211\0112F010.D
G	J:\MS23\DATA\011211\0112F011.D
H	J:\MS23\DATA\011211BAYW\0112F004.D

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Vinyl Chloride	A	0.50	0.359	B	1.0	0.373	C	5.0	0.416	D	10	0.437	E	40	0.434
	F	80	0.434	G	120	0.428	H	0.20	0.501						
1,1-Dichloroethene	A	0.50	0.198	B	1.0	0.186	C	5.0	0.213	D	10	0.206	E	40	0.219
	F	80	0.215	G	120	0.210									
Methylene Chloride	A	0.50	0.323	B	1.0	0.274	C	5.0	0.250	D	10	0.259	E	40	0.246
	F	80	0.248	G	120	0.249									
trans-1,2-Dichloroethene	A	0.50	0.235	B	1.0	0.228	C	5.0	0.253	D	10	0.255	E	40	0.264
	F	80	0.263	G	120	0.260									
1,1-Dichloroethane	A	0.50	0.445	B	1.0	0.463	C	5.0	0.515	D	10	0.525	E	40	0.527
	F	80	0.525	G	120	0.524									
cis-1,2-Dichloroethene	A	0.50	0.266	B	1.0	0.252	C	5.0	0.266	D	10	0.276	E	40	0.284
	F	80	0.282	G	120	0.282									
1,1,1-Trichloroethane (TCA)	A	0.50	0.312	B	1.0	0.300	C	5.0	0.359	D	10	0.371	E	40	0.397
	F	80	0.410	G	120	0.412									
Trichloroethene (TCE)	A	0.50	0.245	B	1.0	0.243	C	5.0	0.262	D	10	0.264	E	40	0.269
	F	80	0.271	G	120	0.274									
Tetrachloroethene (PCE)	A	0.50	0.364	B	1.0	0.383	C	5.0	0.457	D	10	0.432	E	40	0.470
	F	80	0.474	G	120	0.468									
Dibromofluoromethane	A	4.0	0.208	B	6.0	0.214	C	8.0	0.223	D	10	0.224	E	20	0.226
	F	40	0.229	G	60	0.233									
Toluene-d8	A	4.0	0.840	B	6.0	0.885	C	8.0	0.905	D	10	0.919	E	20	0.916
	F	40	0.912	G	60	0.951									
4-Bromofluorobenzene	A	4.0	0.719	B	6.0	0.755	C	8.0	0.783	D	10	0.795	E	20	0.794
	F	40	0.797	G	60	0.770									

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1100284
Calibration Date: 01/12/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10231
Instrument ID: MS23

Column: MS

		Calibration Evaluation					RRF Evaluation		
Analyte Name	Compound Type	Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Vinyl Chloride	MS	AverageRF	% RSD	10.3		≤ 35	0.423		0.01
1,1-Dichloroethene	MS	AverageRF	% RSD	5.5		≤ 35	0.207		0.01
Methylene Chloride	MS	AverageRF	% RSD	10.5		≤ 35	0.264		0.01
trans-1,2-Dichloroethene	MS	AverageRF	% RSD	5.6		≤ 35	0.251		0.01
1,1-Dichloroethane	MS	AverageRF	% RSD	6.8		≤ 35	0.503		0.01
cis-1,2-Dichloroethene	MS	AverageRF	% RSD	4.3		≤ 35	0.273		0.01
1,1,1-Trichloroethane (TCA)	MS	AverageRF	% RSD	12.4		≤ 35	0.366		0.01
Trichloroethene (TCE)	MS	AverageRF	% RSD	4.8		≤ 35	0.261		0.01
Tetrachloroethene (PCE)	MS	AverageRF	% RSD	10.4		≤ 35	0.435		0.01
Dibromofluoromethane	SURR	AverageRF	% RSD	3.9		≤ 35	0.223		0.01
Toluene-d8	SURR	AverageRF	% RSD	3.8		≤ 35	0.904		0.01
4-Bromofluorobenzene	SURR	AverageRF	% RSD	3.7		≤ 35	0.773		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1100284
Calibration Date: 01/12/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10231
Instrument ID: MS23

Column: MS

		Calibration Evaluation					RRF Evaluation		
Analyte Name	Compound Type	Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Vinyl Chloride	MS	AverageRF	% RSD	10.3		≤ 35	0.423		0.01
1,1-Dichloroethene	MS	AverageRF	% RSD	5.5		≤ 35	0.207		0.01
Methylene Chloride	MS	AverageRF	% RSD	10.5		≤ 35	0.264		0.01
trans-1,2-Dichloroethene	MS	AverageRF	% RSD	5.6		≤ 35	0.251		0.01
1,1-Dichloroethane	MS	AverageRF	% RSD	6.8		≤ 35	0.503		0.01
cis-1,2-Dichloroethene	MS	AverageRF	% RSD	4.3		≤ 35	0.273		0.01
1,1,1-Trichloroethane (TCA)	MS	AverageRF	% RSD	12.4		≤ 35	0.366		0.01
Trichloroethene (TCE)	MS	AverageRF	% RSD	4.8		≤ 35	0.261		0.01
Tetrachloroethene (PCE)	MS	AverageRF	% RSD	10.4		≤ 35	0.435		0.01
Dibromofluoromethane	SURR	AverageRF	% RSD	3.9		≤ 35	0.223		0.01
Toluene-d8	SURR	AverageRF	% RSD	3.8		≤ 35	0.904		0.01
4-Bromofluorobenzene	SURR	AverageRF	% RSD	3.7		≤ 35	0.773		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1100284
Calibration Date: 01/12/2011
Date Analyzed: 01/12/2011

Second Source Calibration Verification
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 624

Calibration ID: CAL10231
Units: PPB

File ID: J:\MS23\DATA\011211BAYW\0112F014.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	10	0.423	0.437	3	NA	± 96 %	AverageRF
1,1-Dichloroethene	10	12	0.207	0.241	17	NA	± 49 %	AverageRF
Methylene Chloride	10	11	0.264	0.281	6	NA	± 39 %	AverageRF
trans-1,2-Dichloroethene	10	11	0.251	0.288	15	NA	± 30 %	AverageRF
1,1-Dichloroethane	10	11	0.503	0.565	12	NA	± 27 %	AverageRF
cis-1,2-Dichloroethene	10	11	0.273	0.307	13	NA	± 30 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	11	0.366	0.419	15	NA	± 25 %	AverageRF
Trichloroethene (TCE)	10	11	0.261	0.289	11	NA	± 33 %	AverageRF
Tetrachloroethene (PCE)	10	12	0.435	0.502	15	NA	± 26 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1100284
Calibration Date: 01/12/2011
Date Analyzed: 01/12/2011

Second Source Calibration Verification
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 624

Calibration ID: CAL10231
Units: PPB

File ID: J:\MS23\DATA\011211BAYW\0112F014.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	10	0.423	0.437	3	NA	± 96 %	AverageRF
1,1-Dichloroethene	10	12	0.207	0.241	17	NA	± 49 %	AverageRF
Methylene Chloride	10	11	0.264	0.281	6	NA	± 39 %	AverageRF
trans-1,2-Dichloroethene	10	11	0.251	0.288	15	NA	± 30 %	AverageRF
1,1-Dichloroethane	10	11	0.503	0.565	12	NA	± 27 %	AverageRF
cis-1,2-Dichloroethene	10	11	0.273	0.307	13	NA	± 30 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	11	0.366	0.419	15	NA	± 25 %	AverageRF
Trichloroethene (TCE)	10	11	0.261	0.289	11	NA	± 33 %	AverageRF
Tetrachloroethene (PCE)	10	12	0.435	0.502	15	NA	± 26 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1100284
Date Analyzed: 01/14/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 624

Calibration Date: 01/12/2011
Calibration ID: CAL10231
Analysis Lot: KWG1100585
Units: PPB

File ID: J:\MS23\DATA\011411BAYW\0114F003.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	11	0.01	0.423	0.472	12	NA	± 96 %	AverageRF
1,1-Dichloroethene	10	10	0.01	0.207	0.217	5	NA	± 49 %	AverageRF
Methylene Chloride	10	10	0.01	0.264	0.273	3	NA	± 39 %	AverageRF
trans-1,2-Dichloroethene	10	11	0.01	0.251	0.269	7	NA	± 30 %	AverageRF
1,1-Dichloroethane	10	11	0.01	0.503	0.532	6	NA	± 27 %	AverageRF
cis-1,2-Dichloroethene	10	10	0.01	0.273	0.285	4	NA	± 30 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	10	0.01	0.366	0.378	3	NA	± 25 %	AverageRF
Trichloroethene (TCE)	10	10	0.01	0.261	0.266	2	NA	± 33 %	AverageRF
Tetrachloroethene (PCE)	10	11	0.01	0.435	0.460	6	NA	± 26 %	AverageRF
Dibromofluoromethane	10	10	0.01	0.223	0.223	0	NA	± 30 %	AverageRF
Toluene-d8	10	10	0.01	0.904	0.940	4	NA	± 30 %	AverageRF
4-Bromofluorobenzene	10	10	0.01	0.773	0.805	4	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1100284
Date Analyzed: 01/14/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 624

Calibration Date: 01/12/2011
Calibration ID: CAL10231
Analysis Lot: KWG1100585
Units: PPB

File ID: J:\MS23\DATA\011411BAYW\0114F003.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	11	0.01	0.423	0.472	12	NA	± 96 %	AverageRF
1,1-Dichloroethene	10	10	0.01	0.207	0.217	5	NA	± 49 %	AverageRF
Methylene Chloride	10	10	0.01	0.264	0.273	3	NA	± 39 %	AverageRF
trans-1,2-Dichloroethene	10	11	0.01	0.251	0.269	7	NA	± 30 %	AverageRF
1,1-Dichloroethane	10	11	0.01	0.503	0.532	6	NA	± 27 %	AverageRF
cis-1,2-Dichloroethene	10	10	0.01	0.273	0.285	4	NA	± 30 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	10	0.01	0.366	0.378	3	NA	± 25 %	AverageRF
Trichloroethene (TCE)	10	10	0.01	0.261	0.266	2	NA	± 33 %	AverageRF
Tetrachloroethene (PCE)	10	11	0.01	0.435	0.460	6	NA	± 26 %	AverageRF
Dibromofluoromethane	10	10	0.01	0.223	0.223	0	NA	± 30 %	AverageRF
Toluene-d8	10	10	0.01	0.904	0.940	4	NA	± 30 %	AverageRF
4-Bromofluorobenzene	10	10	0.01	0.773	0.805	4	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1100284
Date Analyzed: 01/18/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 624

Calibration Date: 01/12/2011
Calibration ID: CAL10231
Analysis Lot: KWG1100708
Units: PPB

File ID: J:\MS23\DATA\011811BAYW\0118F002.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	11	0.01	0.423	0.452	7	NA	± 96 %	AverageRF
1,1-Dichloroethene	10	11	0.01	0.207	0.219	6	NA	± 49 %	AverageRF
Methylene Chloride	10	10	0.01	0.264	0.268	1	NA	± 39 %	AverageRF
trans-1,2-Dichloroethene	10	11	0.01	0.251	0.268	7	NA	± 30 %	AverageRF
1,1-Dichloroethane	10	11	0.01	0.503	0.540	7	NA	± 27 %	AverageRF
cis-1,2-Dichloroethene	10	10	0.01	0.273	0.284	4	NA	± 30 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	11	0.01	0.366	0.385	5	NA	± 25 %	AverageRF
Trichloroethene (TCE)	10	10	0.01	0.261	0.270	3	NA	± 33 %	AverageRF
Tetrachloroethene (PCE)	10	9.9	0.01	0.435	0.430	-1	NA	± 26 %	AverageRF
Dibromofluoromethane	10	10	0.01	0.223	0.225	1	NA	± 30 %	AverageRF
Toluene-d8	10	11	0.01	0.904	0.967	7	NA	± 30 %	AverageRF
4-Bromofluorobenzene	10	11	0.01	0.773	0.814	5	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1100284
Date Analyzed: 01/18/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 624

Calibration Date: 01/12/2011
Calibration ID: CAL10231
Analysis Lot: KWG1100708
Units: PPB

File ID: J:\MS23\DATA\011811BAYW\0118F002.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	11	0.01	0.423	0.452	7	NA	± 96 %	AverageRF
1,1-Dichloroethene	10	11	0.01	0.207	0.219	6	NA	± 49 %	AverageRF
Methylene Chloride	10	10	0.01	0.264	0.268	1	NA	± 39 %	AverageRF
trans-1,2-Dichloroethene	10	11	0.01	0.251	0.268	7	NA	± 30 %	AverageRF
1,1-Dichloroethane	10	11	0.01	0.503	0.540	7	NA	± 27 %	AverageRF
cis-1,2-Dichloroethene	10	10	0.01	0.273	0.284	4	NA	± 30 %	AverageRF
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Tetrachloroethene (PCE)	10	9.9	0.01	0.435	0.430	-1	NA	± 26 %	AverageRF
Dibromofluoromethane	10	10	0.01	0.223	0.225	1	NA	± 30 %	AverageRF
Toluene-d8	10	11	0.01	0.904	0.967	7	NA	± 30 %	AverageRF
4-Bromofluorobenzene	10	11	0.01	0.773	0.814	5	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1100284

Analysis Run Log
Volatile Organic Compounds

Analysis Method: 624

Analysis Lot: KWG1100585
Instrument ID: MS23

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0114F002.D	GC/MS Tuning - Bromofluorobenzene	KWG1100585-1	1/14/2011	10:25		1/14/2011	10:40
0114F003.D	Continuing Calibration Verification	KWG1100585-2	1/14/2011	10:53		1/14/2011	11:08
0114F005.D	Lab Control Sample	KWG1100587-3	1/14/2011	12:07		1/14/2011	12:22
0114F006.D	Fridout 171AMS	KWG1100587-1	1/14/2011	13:19		1/14/2011	13:34
0114F007.D	Fridout 171ADMS	KWG1100587-2	1/14/2011	13:48		1/14/2011	14:03
0114F008.D	Method Blank	KWG1100587-4	1/14/2011	14:16		1/14/2011	14:31
0114F009.D	Fridout 171A	K1100284-001	1/14/2011	14:45		1/14/2011	15:00
0114F010.D	Fridout 171B	K1100284-002	1/14/2011	15:14		1/14/2011	15:29
0114F011.D	Fridin Air82A	K1100284-003	1/14/2011	15:42		1/14/2011	15:57
0114F012.D	Frideff Air84A	K1100284-004	1/14/2011	16:11		1/14/2011	16:26
0114F013.D	Trip Blank	K1100284-005	1/14/2011	16:40		1/14/2011	16:55

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1100284

Analysis Run Log
Volatile Organic Compounds

Analysis Method: 624

Analysis Lot: KWG1100585
Instrument ID: MS23

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0114F002.D	GC/MS Tuning - Bromofluorobenzene	KWG1100585-1	1/14/2011	10:25		1/14/2011	10:40
0114F003.D	Continuing Calibration Verification	KWG1100585-2	1/14/2011	10:53		1/14/2011	11:08
0114F005.D	Lab Control Sample	KWG1100587-3	1/14/2011	12:07		1/14/2011	12:22
0114F006.D	Fridout 171AMS	KWG1100587-1	1/14/2011	13:19		1/14/2011	13:34
0114F007.D	Fridout 171ADMS	KWG1100587-2	1/14/2011	13:48		1/14/2011	14:03
0114F008.D	Method Blank	KWG1100587-4	1/14/2011	14:16		1/14/2011	14:31
0114F009.D	Fridout 171A	K1100284-001	1/14/2011	14:45		1/14/2011	15:00
0114F010.D	Fridout 171B	K1100284-002	1/14/2011	15:14		1/14/2011	15:29
0114F011.D	Fridin Air82A	K1100284-003	1/14/2011	15:42		1/14/2011	15:57
0114F012.D	Frideff Air84A	K1100284-004	1/14/2011	16:11		1/14/2011	16:26
0114F013.D	Trip Blank	K1100284-005	1/14/2011	16:40		1/14/2011	16:55

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1100284

Analysis Run Log
Volatile Organic Compounds

Analysis Method: 624

Analysis Lot: KWG1100708
Instrument ID: MS23

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0118F001.D	GC/MS Tuning - Bromofluorobenzene	KWG1100708-1	1/18/2011	07:34		1/18/2011	07:49
0118F002.D	Continuing Calibration Verification	KWG1100708-2	1/18/2011	08:12		1/18/2011	08:27
0118F003.D	Lab Control Sample	KWG1100709-3	1/18/2011	08:40		1/18/2011	08:55
0118F004.D	ZZZZZZ	ZZZZZZ	1/18/2011	09:08		1/18/2011	09:23
0118F005.D	ZZZZZZ	ZZZZZZ	1/18/2011	09:42		1/18/2011	09:57
0118F007.D	ZZZZZZ	ZZZZZZ	1/18/2011	10:40		1/18/2011	10:55
0118F009.D	Method Blank	KWG1100709-4	1/18/2011	11:38		1/18/2011	11:53
0118F017.D	Fridin Air82ADL	K1100284-003	1/18/2011	15:27		1/18/2011	15:42

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1100284

Analysis Run Log
Volatile Organic Compounds

Analysis Method: 624

Analysis Lot: KWG1100708
Instrument ID: MS23

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0118F001.D	GC/MS Tuning - Bromofluorobenzene	KWG1100708-1	1/18/2011	07:34		1/18/2011	07:49
0118F002.D	Continuing Calibration Verification	KWG1100708-2	1/18/2011	08:12		1/18/2011	08:27
0118F003.D	Lab Control Sample	KWG1100709-3	1/18/2011	08:40		1/18/2011	08:55
0118F004.D	ZZZZZZ	ZZZZZZ	1/18/2011	09:08		1/18/2011	09:23
0118F005.D	ZZZZZZ	ZZZZZZ	1/18/2011	09:42		1/18/2011	09:57
0118F007.D	ZZZZZZ	ZZZZZZ	1/18/2011	10:40		1/18/2011	10:55
0118F009.D	Method Blank	KWG1100709-4	1/18/2011	11:38		1/18/2011	11:53
0118F017.D	Fridin Air82ADL	K1100284-003	1/18/2011	15:27		1/18/2011	15:42

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1100284
Date Extracted: 01/14/2011

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: METHOD
Analysis Method: 624

Extraction Lot: KWG1100587
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
Fridout 171A	K1100284-001	01/11/11	01/12/11	10ml	10ml	NA	
Fridout 171B	K1100284-002	01/11/11	01/12/11	10ml	10ml	NA	
Fridin Air82A	K1100284-003	01/11/11	01/12/11	10ml	10ml	NA	
Frideff Air84A	K1100284-004	01/11/11	01/12/11	10ml	10ml	NA	
Trip Blank	K1100284-005	01/11/11	01/12/11	10ml	10ml	NA	
Method Blank	KWG1100587-4	NA	NA	10ml	10ml	NA	
Fridout 171AMS	KWG1100587-1	01/11/11	01/12/11	10ml	10ml	NA	
Fridout 171ADMS	KWG1100587-2	01/11/11	01/12/11	10ml	10ml	NA	
Lab Control Sample	KWG1100587-3	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1100284
Date Extracted: 01/14/2011

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: METHOD
Analysis Method: 624

Extraction Lot: KWG1100587
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
Fridout 171A	K1100284-001	01/11/11	01/12/11	10ml	10ml	NA	
Fridout 171B	K1100284-002	01/11/11	01/12/11	10ml	10ml	NA	
Fridin Air82A	K1100284-003	01/11/11	01/12/11	10ml	10ml	NA	
Frideff Air84A	K1100284-004	01/11/11	01/12/11	10ml	10ml	NA	
Trip Blank	K1100284-005	01/11/11	01/12/11	10ml	10ml	NA	
Method Blank	KWG1100587-4	NA	NA	10ml	10ml	NA	
Fridout 171AMS	KWG1100587-1	01/11/11	01/12/11	10ml	10ml	NA	
Fridout 171ADMS	KWG1100587-2	01/11/11	01/12/11	10ml	10ml	NA	
Lab Control Sample	KWG1100587-3	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1100284
Date Extracted: 01/18/2011

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: METHOD
Analysis Method: 624

Extraction Lot: KWG1100709
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
Fridin Air82ADL	K1100284-003	01/11/11	01/12/11	10ml	10ml	NA	
Method Blank	KWG1100709-4	NA	NA	10ml	10ml	NA	
Lab Control Sample	KWG1100709-3	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1100284
Date Extracted: 01/18/2011

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: METHOD
Analysis Method: 624

Extraction Lot: KWG1100709
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
Fridin Air82ADL	K1100284-003	01/11/11	01/12/11	10ml	10ml	NA	
Method Blank	KWG1100709-4	NA	NA	10ml	10ml	NA	
Lab Control Sample	KWG1100709-3	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Bay West
Customer-Focused Environmental & Industrial Solutions

Bay West Inc.
5 Empire Drive, St. Paul, MN 55103
651-291-0456 * FAX 651-291-0099
www.baywest.com * info@baywest.com

April 19, 2011

Minnesota Pollution Control Agency
ATTN: Belinda Nicholas, Discharge Monitoring Report
520 Lafayette Road
Saint Paul, MN 55155-4194

RE: **Discharge Monitoring Report**
January 1 through March 31, 2011 Reporting Period
NPDES Permit No. MN G790159
Former NIROP Groundwater Remediation System
4800 East River Road, Fridley, MN

Dear Ms. Nicholas:

In accordance with the requirements of the subject National Pollutant Discharge Elimination System (NPDES) permit, Bay West, Inc. (Bay West) has prepared the enclosed Discharge Monitoring Report (DMR) for the above-referenced site and time period. The analytical results reported in the DMR consist of the eight volatile organic compounds (VOCs) included in the permit.

Should you have any questions on this matter, please contact the undersigned at (651) 291-3491.

Regards,

Paul Walz, PE
Project Manager
(651) 291-3491
PaulW@BayWest.com

Enclosure:
(1) Discharge Monitoring Report – 2011/01/11 to 2011/03/31
(2) Columbia Analytical Services, Inc. Lab Report K1006822

cc: Howard Hickey, NAVFAC Midwest
Jeff Tinney, Toltest, Inc.
Daniel Musser, Bay West
Steve Head, Bay West
Mark Sladic, Tech Tech NUS, Inc.

Docs #127941 v1

Bay West
Customer-Focused Environmental & Industrial Solutions

Bay West Inc.
5 Empire Drive, St. Paul, MN 55103
651-291-0456 * FAX 651-291-0099
www.baywest.com * info@baywest.com

April 19, 2011

Minnesota Pollution Control Agency
ATTN: Belinda Nicholas, Discharge Monitoring Report
520 Lafayette Road
Saint Paul, MN 55155-4194

RE: **Discharge Monitoring Report**
January 1 through March 31, 2011 Reporting Period
NPDES Permit No. MN G790159
Former NIROP Groundwater Remediation System
4800 East River Road, Fridley, MN

Dear Ms. Nicholas:

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Regards,

Paul Walz, PE
Project Manager
(651) 291-3491
PaulW@BayWest.com

Enclosure:
(1) Discharge Monitoring Report – 2011/01/11 to 2011/03/31
(2) Columbia Analytical Services, Inc. Lab Report K1006822

cc: Howard Hickey, NAVFAC Midwest
Jeff Tinney, Toltest, Inc.
Daniel Musser, Bay West
Steve Head, Bay West
Mark Sladic, Tech Tech NUS, Inc.

Docs #127941 v1

Bay West
Customer-Focused Environmental & Industrial Solutions

Bay West Inc.
5 Empire Drive, St. Paul, MN 55103
651-291-0456 * FAX 651-291-0099
www.baywest.com * info@baywest.com

July 19, 2011

Minnesota Pollution Control Agency
ATTN: Belinda Nicholas, Discharge Monitoring Report
520 Lafayette Road
Saint Paul, MN 55155-4194

RE: **Discharge Monitoring Report**
April 1 through June 31, 2011 Reporting Period
NPDES Permit No. MN G790159
Former NIROP Groundwater Remediation System
4800 East River Road, Fridley, MN

Dear Ms. Nicholas:

In accordance with the requirements of the subject National Pollutant Discharge Elimination System (NPDES) permit, Bay West, Inc. (Bay West) has prepared the enclosed Discharge Monitoring Report (DMR) for the above-referenced site and time period. The analytical results reported in the DMR consist of the eight volatile organic compounds (VOCs) included in the permit.

Should you have any questions on this matter, please contact the undersigned at (651) 291-3491.

Regards,

Paul Walz, PE
Project Manager
(651) 291-3491
PaulW@BayWest.com

Enclosure:
(1) Discharge Monitoring Report – 2011/04/01 to 2011/06/30
(2) Columbia Analytical Services, Inc. Lab Report K1103044

cc: Howard Hickey, NAVFAC Midwest
Jeff Tinney, Toltest, Inc.
Steve Head, Bay West
Mark Sladic, Tetra Tech NUS, Inc.

Docs #127941 v1

FACILITY NAME/ADDRESS:
Former Naval Industrial Reserve Ordinance f
4800 E River Rd
Fridley, MN 55421

WASTEWATER TREATMENT DISCHARGE MONITORING REPORT

PERMITTEE NAME/ADDRESS:
Naval Facilities Engineering Command Mid
201 Decatur Ave Bldg 1A
Great Lakes, IL 60088

PERMIT #	LIMIT STATUS	PCS #
MNG790159	FINAL	

STATION INFORMATION:
SD-001 (Groundwater Remediation Treatment System)
Surface Discharge, Effluent To Surface Water
Attention: Howard Hickey

MONITORING PERIOD	YEAR	MO.	DAY	YEAR	MO.	DAY
FROM	2011/04/01			TO	2011/06/30	

☐ AMENDED
☐ NO DISCHARGE

MPCA: BN

PARAMETER		QUANTITY		UNITS	CONCENTRATION			UNITS	FREQUENCY OF ANALYSIS	SAMPLE TYPE
Flow	SAMPLE VALUE	******	36.321	MG	******	0.399	******	mgd	continuous flow meter	
50050	PERMIT REQ	******	REPORT CalQtrTot		******	REPORT CalQtrAve	******		1 x Quarter	Measur
pH	SAMPLE VALUE	******	******	****	8.30	******	8.30	SU	X	X
00400	PERMIT REQ	******	******		6.0 CalQtrMin	******	9.0 CalQtrMax		1 x Quarter	Grab
1,1,1-Trichloro-ethane	SAMPLE VALUE	******	******	****	******	******	<0.50	ug/L	X	X
34506	PERMIT REQ	******	******		******	******	200 DailyMax		1 x Quarter	Grab
1,1-Dichloroethane	SAMPLE VALUE	******	******	****	******	******	<0.50	ug/L	X	X
34496	PERMIT REQ	******	******		******	******	70 DailyMax		1 x Quarter	Grab
1,1-Dichloroethylene Vinylidene chloride	SAMPLE VALUE	******	******	****	******	******	<0.50	ug/L	X	X
34501	PERMIT REQ	******	******		******	******	6 DailyMax		1 x Quarter	Grab
1,2-Dichloroethylene (trans-)	SAMPLE VALUE	******	******	****	******	******	<0.50	ug/L	X	X
34546	PERMIT REQ	******	******		******	******	100 DailyMax		1 x Quarter	Grab
1,2-Dichloroethylene (cis-)	SAMPLE VALUE	******	******	****	******	******	<0.50	ug/L	X	X
81686	PERMIT REQ	******	******		******	******	70 DailyMax		1 x Quarter	Grab

Send original with supplemental DMR (if applicable) by the 21st day of month following reporting period to:
MINNESOTA POLLUTION CONTROL AGENCY
520 LAFAYETTE RD
ST. PAUL, MN 55155-4194
ATTN: Discharge Monitoring Report

I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief the information is true, complete, and accurate.

NAVFAC MW — 8/19/11
SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT — DATE

SIGNATURE OF CHIEF OPERATOR — PHONE — DATE — CERTIFICATION#

COMMENTS:

FACILITY NAME/ADDRESS:
Former Naval Industrial Reserve Ordinance I
4800 E River Rd
Fridley, MN 55421

WASTEWATER TREATMENT DISCHARGE MONITORING REPORT

PERMIT #	LIMIT STATUS	PCS #
MNG790159	FINAL	

PERMITTEE NAME/ADDRESS:
Naval Facilities Engineering Command Mid
201 Decatur Ave Bldg 1A
Great Lakes, IL 60088

STATION INFORMATION:
SD-001 (Groundwater Remediation Treatment System)
Surface Discharge, Effluent To Surface Water
Attention: Howard Hickey

MONITORING PERIOD	YEAR	MO.	DAY	YEAR	MO.	DAY
FROM	2011/04/01			TO	2011/06/30	

☐ AMENDED
☐ NO DISCHARGE

MPCA: BN

PARAMETER		QUANTITY		UNITS	CONCENTRATION			UNITS	FREQUENCY OF ANALYSIS		SAMPLE TYPE
Methylene Chloride (Dichloromethane) 34423	SAMPLE VALUE	******	******	****	******	******	<0.50	ug/L	X		X
	PERMIT REQ	******	******		******	******	5 DailyMax		1 x	Quarter	Grab
Tetrachloroethylene (Perchloroethylene) 34475	SAMPLE VALUE	******	******	****	******	******	<0.50	ug/L	X		X
	PERMIT REQ	******	******		******	******	3.8 CalQtrMax		1 x	Quarter	Grab
Trichloroethylene TCE/Trichloroethene 39180	SAMPLE VALUE	******	******	****	******	******	<0.50	ug/L	X		X
	PERMIT REQ	******	******		******	******	5 CalQtrMax		1 x	Quarter	Grab

Send original with supplemental DMR (if applicable) by the 21st day of month following reporting period to:
MINNESOTA POLLUTION CONTROL AGENCY
520 LAFAYETTE RD
ST. PAUL, MN 55155-4194
ATTN: Discharge Monitoring Report

I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief the information is true, complete, and accurate.

NAVFAC MW — SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT — DATE: 2/14/11

SIGNATURE OF CHIEF OPERATOR — PHONE — DATE — CERTIFICATION#

COMMENTS:

Columbia Analytical Services™ 1317 S. 13th Avenue, Kelso, WA 98626 360.577.7222 360.636.1068 (fax) www.caslab.com

April 26, 2011 Analytical Report for Service Request No: K1103044

Paul Walz
Bay West, Incorporated
5 Empire Dr.
St. Paul, MN 55103-1867

RE: NIROP/J070047

Dear Paul:

Enclosed are the results of the samples submitted to our laboratory on April 08, 2011. For your reference, these analyses have been assigned our service request number K1103044.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3281. You may also contact me via Email at MShelton@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.

Mike Shelton
Project Chemist

MS/jw

100% Recycled Paper

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value that was detected outside the quantitation range.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
  DOD-QSM 4.1 definition: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.
- H In accordance with the 2007 EPA Methods Update Rule published in the Federal Register, the holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- J The result is an estimated value that was detected outside the quantitation range.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
  DOD-QSM 4.1 definition: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value that was detected outside the quantitation range.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
  DOD-QSM 4.1 definition: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

Columbia Analytical Services, Inc.
Kelso, WA
State Certifications, Accreditations, and Licenses

Agency	Number
Alaska DEC UST	UST-040
Arizona DHS	AZ0339
Arkansas - DEQ	88-0637
California DHS	2286
Florida DOH	E87412
Hawaii DOH	-
Idaho DHW	-
Indiana DOH	C-WA-01
Louisiana DEQ	3016
Louisiana DHH	LA050010
Maine DHS	WA0035
Michigan DEQ	9949
Minnesota DOH	053-999-368
Montana DPHHS	CERT0047
Nevada DEP	WA35
New Jersey DEP	WA005
New Mexico ED	-
North Carolina DWQ	605
Oklahoma DEQ	9801
Oregon - DEQ	WA100010
South Carolina DHEC	61002
Washington DOE	C1203
Wisconsin DNR	998386840
Wyoming (EPA Region 8)	-

Case Narrative

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	Bay West	**Service Request No.:**	K1103044
Project:	NIROP	**Date Received:**	4/8/11
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Four water samples and a trip blank were received for analysis at Columbia Analytical Services on 4/8/11. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Volatile Organic Compounds by EPA Method 624

Calibration Verification Exceptions:
The CAS minimum relative response factor criterion for 2-Butanone (MEK) was not met in Continuing Calibration Verification (CCV) J:\MS23\0420F002.D. In accordance with CAS standard operating procedures, a Method Reporting Limit (MRL) check standard containing the analyte of concern was analyzed each day of analysis. The MRL check standard verified instrument sensitivity was adequate to detect the analyte at the MRL on the day of analysis. Because the sensitivity was shown to be adequate to detect the compound in question the data quality was not significantly affected. No further corrective action was appropriate.

No other anomalies associated with the analysis of these samples were observed.

Approved by Mike Rich **Date** 4/29/11

Chain of Custody

Columbia Analytical Services™

CHAIN OF CUSTODY

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

SR#: K110 3044

PAGE 1 OF 1 COC # 04072011

PROJECT NAME: NIROP
PROJECT NUMBER: J070047
PROJECT MANAGER: Paul Walz
COMPANY/ADDRESS: 5 Empire Drive
CITY/STATE/ZIP: Saint Paul, MN 55103-1867
E MAIL ADDRESS: paulw@baywest.com
PHONE #: 651-291-3491 FAX #: 651-291-0099
SAMPLER'S SIGNATURE:

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625 ☐ 8270 ☐ 8270LL ☐	Volatile Organics 624 ☒ 8260 ☐ 8021 ☐ BTEX ☐	Hydrocarbons (*see below) Gas ☐ Diesel ☐ Oil ☐ ☐ Fuel Fingerprint (FIQ) ☐ NW-HCID Screen	Oil & Grease/TRPH 1664 HEM ☐ 1664 SGT ☐	PCB's Aroclors ☐ Congeners ☐	Pesticides/Herbicides 608 ☐ 8081A ☐ 8141A ☐ 8151A ☐	Chlorophenolics - 8151M Tri ☐ Tetra ☐ PCP ☐	PAHS 8310 ☐ SIM ☐	Metals, Total or Dissolved (See list below)	Cyanide ☐ Hex-Chrom ☐	(CP) Cond., Cl, SO4, PO4, F, NO2, NO3, BOD, TSS, TDS (circle) NH3-N, COD, Total-P, TKN, TOC, DOC (circle) NO2+NO3	TOX 9020 ☐ AOX 1650 ☐ 506 ☐	REMARKS
Fridout 172A	4/7/11	1030		Water	3		3												
Fridout 172B		1035			7		6									1			MS/MSD
Frid in Air 83A		1001			3		3												
Frid off Air 88A		1003			3		3												
Trip Blank		—			2		2												

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. # 31080
Bill To: Accounts payable

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:

VOCs by EPA 624 - Full List

UPS# 1Z A19 8R9 1597 60 6026

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature] Date/Time: 4/7/11 1100	Signature: [signature] Date/Time: 4/8/11 0815	Signature / Date/Time	Signature / Date/Time
Printed Name: Steven Head Firm: Bay West, Inc	Printed Name / Firm: CAS	Printed Name / Firm	Printed Name / Firm

RCOC #1 03/10

8

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

PC MS

Client / Project: Baywest SHORT HOLD TIME Service Request K11 0-3044

Received: 4/8/11 Opened: 4/8/11 By: AJ Unloaded: 4/8/11 By: AJ

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? 17, 18
   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Cooler Temp °C	Temp Blank °C	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
1.4	1.6	284		1ZA198R41597606026	

7. Packing material used. *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Sleeves* *Other* _____
8. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
9. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
10. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
11. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
12. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
13. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
14. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
15. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

Page 1 *of* _____

General Chemistry Parameters

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	4/ 7/11
Sample Matrix:	Water	**Date Received:**	4/ 8/11
		Units:	pH Units
Analysis Method:	SM 4500-H+ B	**Basis:**	NA

pH

Sample Name	Lab Code	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Note
Fridout 172B	K1103044-002	8.30		-	1	NA	4/8/11 11:49	H

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	4/7/11
Sample Matrix:	Water	**Date Received:**	4/8/11
		Date Analyzed:	4/ 8/11

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	Fridout 172B	**Units:**	pH Units
Lab Code:	K1103044-002	**Basis:**	NA

Analyte Name	Method	MRL	Sample Result	Fridout 172BDUP Duplicate Sample K1103044-002DUP Result	Average	RPD	RPD Limit
pH	SM 4500-H+ B		8.30	8.30	8.30	<1	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1103044
Date Analyzed: 4/ 8/11

Lab Control Sample Summary
General Chemistry Parameters

Units: pH Units
Basis: NA

Analyte Name	Method	Lab Control Sample K1103044-LCS Result	Spike Amount	% Rec	% Rec Limits
pH	SM 4500-H+ B	8.95	9.06	99	85 - 115

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

211888

Work Request # Original [redacted] 3053 3085

Tier: ✓ II II

Date Analyzed: 4/8/11

Analyst: CV

Analysis: pH water

DATA QUALITY REPORT
INORGANICS

Explain any "no" responses to questions below, and any corrective actions in the comments section below.

1. Is the method name and number correct and appropriate? yes/no/NA
2. Holding times met for all analyses and for all samples? yes/no/NA
3. Are calculations correct? yes/no/NA
4. Is the reporting basis correct? (Dry Weight) yes/no/NA
5. All quality control criteria met? yes/no/NA
   a. Is the calibration curve correlation coefficient ≥ 0.995? yes/no/NA
   b. MBs, CCVs, CCBs, LCSs, Dups, and Spikes, analyzed at proper frequency? yes/no/NA
   c. Are ICVs, CCVs, and CCBs all within acceptance limits? yes/no/NA
   d. Are results for methods blanks all ND? yes/no/NA
   e. Are all QC samples within acceptance criteria? (LCS % rec, MS/DMS % rec, DUP or MS/DMS RPDs, etc.) yes/no/NA
   f. Are all exceptions explained? yes/no/NA
6. Are all service requests that apply attached? yes/no/NA
7. Are all samples labelled correctly? yes/no/NA
8. Have all instructions on the service request been followed? (e.g. Special MRLs, QC on a specific sample) yes/no/NA
9. Are detection limits and units reported correctly? yes/no/NA
10. Are proper Analysis/Extraction stickers included on report? yes/no/NA
11. Is the unused space on the benchsheet crossed out? yes/no/NA
12. Was analysis turned in by the due date? (n-2) (If not record SR#) yes/no/NA

COMMENTS:

3044 Received passed hold

3053 = Rush

Final Approved by: MK Date: 4-11-11

DQREPORT

Analytical Results Summary

Instrument Name: K-pH-01 **Analyst:** CVECCHITTO **Analysis Lot:** 241888 **Method/Testcode:** SM 4500-H+ B/pH

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
[redacted]	pH	N/A		Water	8.30 pH Units	50 mL	[redacted]	1					4/8/11 11:49:00	Y	V
K1103053-003	pH	N/A		Water	7.88 pH Units	50 mL	7.88 pH Units	1					4/8/11 14:56:00	N	II
K1103085-001	pH	N/A		Water	6.56 pH Units	50 mL	6.56 pH Units	1					4/8/11 16:47:00	N	II
K1103085-002	pH	N/A		Water	6.85 pH Units	50 mL	6.85 pH Units	1					4/8/11 16:50:00	N	II
KQ1103096-01	pH	DUP	K1103044-002	Water	8.30 pH Units	50 mL	8.30 pH Units	1				<1	4/8/11 11:50:00	N	V
KQ1103096-02	pH	LCS		Water	8.95 pH Units	50 mL	8.95 pH Units	1			99		4/8/11 10:18:00	N	V

15

MK 4/11/11

¥ indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

241888

3044, 3053, 3085

Method: SM 4500 H+B

Sample #	pH	Time Analyzed	Temp. C
pH 12.45 Buffer			
pH 10.00 Buffer	10.00	1016	25.1
pH 7.00 Buffer	7.00	1015	25.3
pH 4.00 Buffer	4.00	1015	25.3
pH 1.00 Buffer			
Buffer Check	3.99	1017	24.6
LCS	8.95	1018	25.1
K1103044-2	8.30	1149	25.5
↓ -2	8.30	1150	25.1
3053-3	7.88	1456	26.2
3085-1	6.56	1647	25.4
↓ -2	6.85	1650	25.7
Bufferchek	4.01	1651	25.6
Buffer Check			

Sample #	pH	Time Analyzed	Temp. C
Buffer Check			
Buffer Check			

LCS = ERA Lot# 5166-779 ID# = Cond/1-55-A T.V. = 9.06 % REC = 99

pH 4.00 buffer Cond/1-75- O pH 7.00 buffer Cond/1-77- Q pH 10.00 buffer Cond/1-79- N

ph 1.00 buffer Cond/1-73- pH 12.45 buffer Cond/1-81- Probe ID#: RCI/1-79-6

Meter ID# K-PH-01

K1103044-2 $\bar{x}$ = 8.30 RPD = <1

Analyzed by:	CV	Date:	4/8/11
Reviewed by:	MK	Date:	4/11/11

PH

Volatile Organic Compounds

Organic Analysis:
Volatile Organic Compounds

Summary Package

Sample and QC Results

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1103044

Cover Page - Organic Analysis Data Package
Volatile Organic Compounds

Sample Name	Lab Code	Date Collected	Date Received
Fridout 172A	K1103044-001	04/07/2011	04/08/2011
Fridout 172B	K1103044-002	04/07/2011	04/08/2011
Fridin Air 83ADL	K1103044-003	04/07/2011	04/08/2011
Fridin Air 83A	K1103044-003	04/07/2011	04/08/2011
Frideff Air 85A	K1103044-004	04/07/2011	04/08/2011
Trip Blank	K1103044-005	04/07/2011	04/08/2011
Fridout 172BMS	KWG1103524-1	04/07/2011	04/08/2011
Fridout 172BDMS	KWG1103524-2	04/07/2011	04/08/2011

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Kharam

Name: Kharam

Date: 4/14/11

Title: Chemist

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	04/07/2011
Sample Matrix:	Water	**Date Received:**	04/08/2011
		Date Extracted:	04/19/2011
		Date Analyzed:	04/19/2011

Volatile Organic Compounds

Sample Name:	Fridout 172A	**Units:**	ug/L
Lab Code:	K1103044-001	**Basis:**	NA
File ID:	J:\MS23\DATA\041911BAYW\0419F017.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103524
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-71-8	Dichlorodifluoromethane	0.40	U	0.50	0.40	
74-87-3	Chloromethane	0.035	U	0.50	0.035	
75-01-4	Vinyl Chloride	0.053	U	0.25	0.053	
74-83-9	Bromomethane	0.32	U	0.50	0.32	
75-00-3	Chloroethane	0.32	U	0.50	0.32	
75-69-4	Trichlorofluoromethane	0.048	U	0.50	0.048	
76-13-1	Trichlorotrifluoroethane	0.077	U	0.50	0.077	
75-35-4	1,1-Dichloroethene	0.37	U	0.50	0.37	
75-15-0	Carbon Disulfide	0.048	U	0.50	0.048	
75-09-2	Methylene Chloride	0.093	U	0.50	0.093	
156-60-5	trans-1,2-Dichloroethene	0.039	U	0.50	0.039	
156-59-2	cis-1,2-Dichloroethene	0.042	U	0.50	0.042	
78-93-3	2-Butanone (MEK)	3.4	U	20	3.4	
75-34-3	1,1-Dichloroethane	0.041	U	0.50	0.041	
67-66-3	Chloroform	0.038	U	0.50	0.038	
71-55-6	1,1,1-Trichloroethane (TCA)	0.044	U	0.50	0.044	
56-23-5	Carbon Tetrachloride	0.26	U	0.50	0.26	
71-43-2	Benzene	0.040	U	0.50	0.040	
107-06-2	1,2-Dichloroethane (EDC)	0.038	U	0.50	0.038	
108-05-4	Vinyl Acetate	0.21	U	10	0.21	
79-01-6	Trichloroethene (TCE)	0.044	U	0.50	0.044	
78-87-5	1,2-Dichloropropane	0.044	U	0.50	0.044	
75-27-4	Bromodichloromethane	0.047	U	0.50	0.047	
110-75-8	2-Chloroethyl Vinyl Ether	0.12	U	5.0	0.12	
10061-02-6	trans-1,3-Dichloropropene	0.045	U	0.50	0.045	
108-10-1	4-Methyl-2-pentanone (MIBK)	2.8	U	20	2.8	
591-78-6	2-Hexanone	1.8	U	20	1.8	
108-88-3	Toluene	**0.21**	J	0.50	0.039	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	04/07/2011
Sample Matrix:	Water	**Date Received:**	04/08/2011
		Date Extracted:	04/19/2011
		Date Analyzed:	04/19/2011

Volatile Organic Compounds

Sample Name:	Fridout 172A	**Units:**	ug/L
Lab Code:	K1103044-001	**Basis:**	NA
File ID:	J:\MS23\DATA\041911BAYW\0419F017.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103524
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
10061-01-5	cis-1,3-Dichloropropene	0.035	U	0.50	0.035	
79-00-5	1,1,2-Trichloroethane	0.072	U	0.50	0.072	
127-18-4	Tetrachloroethene (PCE)	0.043	U	0.50	0.043	
124-48-1	Dibromochloromethane	0.081	U	0.50	0.081	
108-90-7	Chlorobenzene	0.031	U	0.50	0.031	
100-41-4	Ethylbenzene	0.040	U	0.50	0.040	
100-42-5	Styrene	0.025	U	0.50	0.025	
136777-61-2	m,p-Xylenes	0.14	U	1.0	0.14	
95-47-6	o-Xylene	0.035	U	0.50	0.035	
75-25-2	Bromoform	0.11	U	0.50	0.11	
67-64-1	Acetone	4.3	U	20	4.3	
79-34-5	1,1,2,2-Tetrachloroethane	0.086	U	0.50	0.086	
541-73-1	1,3-Dichlorobenzene	0.071	U	0.50	0.071	
106-46-7	1,4-Dichlorobenzene	0.073	U	0.50	0.073	
95-50-1	1,2-Dichlorobenzene	0.086	U	0.50	0.086	
107-02-8	Acrolein†	2.1	U	10	2.1	
107-13-1	Acrylonitrile†	0.28	U	5.0	0.28	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Toluene-d8	100	72-122	04/19/11	Acceptable
4-Bromofluorobenzene	92	70-120	04/19/11	Acceptable
Dibromofluoromethane	104	61-121	04/19/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	04/07/2011
Sample Matrix:	Water	**Date Received:**	04/08/2011
		Date Extracted:	04/19/2011
		Date Analyzed:	04/19/2011

Volatile Organic Compounds

Sample Name:	Fridout 172A	**Units:**	ug/L
Lab Code:	K1103044-001	**Basis:**	NA
File ID:	J:\MS23\DATA\041911BAYW\0419F017.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103524
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount:	10 ml
% Solids:	NA
Dilution Factor:	1

† Analyte Comments

Acrolein	This compound is unstable under normal conditions. As per EPA Method 624 guidelines, the reported value was an estimate.
Acrylonitrile	This compound is unstable under normal conditions. As per EPA Method 624 guidelines, the reported value was an estimate.

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	04/07/2011
Sample Matrix:	Water	**Date Received:**	04/08/2011
		Date Extracted:	04/19/2011
		Date Analyzed:	04/19/2011

Volatile Organic Compounds

Sample Name:	Fridout 172B	**Units:**	ug/L
Lab Code:	K1103044-002	**Basis:**	NA
File ID:	J:\MS23\DATA\041911BAYW\0419F015.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103524
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-71-8	Dichlorodifluoromethane	0.40	U	0.50	0.40	
74-87-3	Chloromethane	**0.070**	J	0.50	0.035	
75-01-4	Vinyl Chloride	0.053	U	0.25	0.053	
74-83-9	Bromomethane	0.32	U	0.50	0.32	
75-00-3	Chloroethane	0.32	U	0.50	0.32	
75-69-4	Trichlorofluoromethane	0.048	U	0.50	0.048	
76-13-1	Trichlorotrifluoroethane	0.077	U	0.50	0.077	
75-35-4	1,1-Dichloroethene	0.37	U	0.50	0.37	
75-15-0	Carbon Disulfide	0.048	U	0.50	0.048	
75-09-2	Methylene Chloride	0.093	U	0.50	0.093	
156-60-5	trans-1,2-Dichloroethene	0.039	U	0.50	0.039	
156-59-2	cis-1,2-Dichloroethene	0.042	U	0.50	0.042	
78-93-3	2-Butanone (MEK)	3.4	U	20	3.4	
75-34-3	1,1-Dichloroethane	0.041	U	0.50	0.041	
67-66-3	Chloroform	0.038	U	0.50	0.038	
71-55-6	1,1,1-Trichloroethane (TCA)	0.044	U	0.50	0.044	
56-23-5	Carbon Tetrachloride	0.26	U	0.50	0.26	
71-43-2	Benzene	0.040	U	0.50	0.040	
107-06-2	1,2-Dichloroethane (EDC)	0.038	U	0.50	0.038	
108-05-4	Vinyl Acetate	0.21	U	10	0.21	
79-01-6	Trichloroethene (TCE)	0.044	U	0.50	0.044	
78-87-5	1,2-Dichloropropane	0.044	U	0.50	0.044	
75-27-4	Bromodichloromethane	0.047	U	0.50	0.047	
110-75-8	2-Chloroethyl Vinyl Ether	0.12	U	5.0	0.12	
10061-02-6	trans-1,3-Dichloropropene	0.045	U	0.50	0.045	
108-10-1	4-Methyl-2-pentanone (MIBK)	2.8	U	20	2.8	
591-78-6	2-Hexanone	1.8	U	20	1.8	
108-88-3	Toluene	**0.18**	J	0.50	0.039	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	04/07/2011
Sample Matrix:	Water	**Date Received:**	04/08/2011
		Date Extracted:	04/19/2011
		Date Analyzed:	04/19/2011

Volatile Organic Compounds

Sample Name:	Fridout 172B	**Units:**	ug/L
Lab Code:	K1103044-002	**Basis:**	NA
File ID:	J:\MS23\DATA\041911BAYW\0419F015.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103524
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
10061-01-5	cis-1,3-Dichloropropene	0.035	U	0.50	0.035	
79-00-5	1,1,2-Trichloroethane	0.072	U	0.50	0.072	
127-18-4	Tetrachloroethene (PCE)	0.043	U	0.50	0.043	
124-48-1	Dibromochloromethane	0.081	U	0.50	0.081	
108-90-7	Chlorobenzene	0.031	U	0.50	0.031	
100-41-4	Ethylbenzene	0.040	U	0.50	0.040	
100-42-5	Styrene	0.025	U	0.50	0.025	
136777-61-2	m,p-Xylenes	0.14	U	1.0	0.14	
95-47-6	o-Xylene	0.035	U	0.50	0.035	
75-25-2	Bromoform	0.11	U	0.50	0.11	
67-64-1	Acetone	4.3	U	20	4.3	
79-34-5	1,1,2,2-Tetrachloroethane	0.086	U	0.50	0.086	
541-73-1	1,3-Dichlorobenzene	0.071	U	0.50	0.071	
106-46-7	1,4-Dichlorobenzene	0.073	U	0.50	0.073	
95-50-1	1,2-Dichlorobenzene	0.086	U	0.50	0.086	
107-02-8	Acrolein†	2.1	U	10	2.1	
107-13-1	Acrylonitrile†	0.28	U	5.0	0.28	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Toluene-d8	100	72-122	04/19/11	Acceptable
4-Bromofluorobenzene	94	70-120	04/19/11	Acceptable
Dibromofluoromethane	100	61-121	04/19/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	04/07/2011
Sample Matrix:	Water	**Date Received:**	04/08/2011
		Date Extracted:	04/19/2011
		Date Analyzed:	04/19/2011

Volatile Organic Compounds

Sample Name:	Fridout 172B	**Units:**	ug/L
Lab Code:	K1103044-002	**Basis:**	NA
File ID:	J:\MS23\DATA\041911BAYW\0419F015.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103524
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount:	10 ml
% Solids:	NA
Dilution Factor:	1

†Analyte Comments

Acrolein	This compound is unstable under normal conditions. As per EPA Method 624 guidelines, the reported value was an estimate.
Acrylonitrile	This compound is unstable under normal conditions. As per EPA Method 624 guidelines, the reported value was an estimate.

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	04/07/2011
Sample Matrix:	Water	**Date Received:**	04/08/2011
		Date Extracted:	04/19/2011
		Date Analyzed:	04/19/2011

Volatile Organic Compounds

Sample Name:	Fridin Air 83A	**Units:**	ug/L
Lab Code:	K1103044-003	**Basis:**	NA
File ID:	J:\MS23\DATA\041911BAYW\0419F018.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103524
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-71-8	Dichlorodifluoromethane	0.40	U	0.50	0.40	
74-87-3	Chloromethane	0.035	U	0.50	0.035	
75-01-4	Vinyl Chloride	**0.21**	J	0.25	0.053	
74-83-9	Bromomethane	0.32	U	0.50	0.32	
75-00-3	Chloroethane	0.32	U	0.50	0.32	
75-69-4	Trichlorofluoromethane	0.048	U	0.50	0.048	
76-13-1	Trichlorotrifluoroethane	0.077	U	0.50	0.077	
75-35-4	1,1-Dichloroethene	**0.67**		0.50	0.37	
75-15-0	Carbon Disulfide	0.048	U	0.50	0.048	
75-09-2	Methylene Chloride	0.093	U	0.50	0.093	
156-60-5	trans-1,2-Dichloroethene	**16**		0.50	0.039	
156-59-2	cis-1,2-Dichloroethene	**65**		0.50	0.042	
78-93-3	2-Butanone (MEK)	3.4	U	20	3.4	
75-34-3	1,1-Dichloroethane	**1.1**		0.50	0.041	
67-66-3	Chloroform	0.038	U	0.50	0.038	
71-55-6	1,1,1-Trichloroethane (TCA)	0.044	U	0.50	0.044	
56-23-5	Carbon Tetrachloride	0.26	U	0.50	0.26	
71-43-2	Benzene	0.040	U	0.50	0.040	
107-06-2	1,2-Dichloroethane (EDC)	**0.13**	J	0.50	0.038	
108-05-4	Vinyl Acetate	0.21	U	10	0.21	
79-01-6	Trichloroethene (TCE)	**380**	E	0.50	0.044	
78-87-5	1,2-Dichloropropane	0.044	U	0.50	0.044	
75-27-4	Bromodichloromethane	0.047	U	0.50	0.047	
110-75-8	2-Chloroethyl Vinyl Ether	0.12	U	5.0	0.12	
10061-02-6	trans-1,3-Dichloropropene	0.045	U	0.50	0.045	
108-10-1	4-Methyl-2-pentanone (MIBK)	2.8	U	20	2.8	
591-78-6	2-Hexanone	1.8	U	20	1.8	
108-88-3	Toluene	**0.090**	J	0.50	0.039	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	04/07/2011
Sample Matrix:	Water	**Date Received:**	04/08/2011
		Date Extracted:	04/19/2011
		Date Analyzed:	04/19/2011

Volatile Organic Compounds

Sample Name:	Fridin Air 83A	**Units:**	ug/L
Lab Code:	K1103044-003	**Basis:**	NA
File ID:	J:\MS23\DATA\041911BAYW\0419F018.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103524
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
10061-01-5	cis-1,3-Dichloropropene	0.035	U	0.50	0.035	
79-00-5	1,1,2-Trichloroethane	0.072	U	0.50	0.072	
127-18-4	Tetrachloroethene (PCE)	1.5		0.50	0.043	
124-48-1	Dibromochloromethane	0.081	U	0.50	0.081	
108-90-7	Chlorobenzene	0.031	U	0.50	0.031	
100-41-4	Ethylbenzene	0.040	U	0.50	0.040	
100-42-5	Styrene	0.025	U	0.50	0.025	
136777-61-2	m,p-Xylenes	0.14	U	1.0	0.14	
95-47-6	o-Xylene	0.035	U	0.50	0.035	
75-25-2	Bromoform	0.11	U	0.50	0.11	
67-64-1	Acetone	4.3	U	20	4.3	
79-34-5	1,1,2,2-Tetrachloroethane	0.086	U	0.50	0.086	
541-73-1	1,3-Dichlorobenzene	0.071	U	0.50	0.071	
106-46-7	1,4-Dichlorobenzene	0.073	U	0.50	0.073	
95-50-1	1,2-Dichlorobenzene	0.086	U	0.50	0.086	
107-02-8	Acrolein†	2.1	U	10	2.1	
107-13-1	Acrylonitrile†	0.28	U	5.0	0.28	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Toluene-d8	100	72-122	04/19/11	Acceptable
4-Bromofluorobenzene	93	70-120	04/19/11	Acceptable
Dibromofluoromethane	102	61-121	04/19/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	04/07/2011
Sample Matrix:	Water	**Date Received:**	04/08/2011
		Date Extracted:	04/19/2011
		Date Analyzed:	04/19/2011

Volatile Organic Compounds

Sample Name:	Fridin Air 83A	**Units:**	ug/L
Lab Code:	K1103044-003	**Basis:**	NA
File ID:	J:\MS23\DATA\041911BAYW\0419F018.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103524
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount:	10 ml
% Solids:	NA
Dilution Factor:	1

† **Analyte Comments**

Acrolein	This compound is unstable under normal conditions. As per EPA Method 624 guidelines, the reported value was an estimate.
Acrylonitrile	This compound is unstable under normal conditions. As per EPA Method 624 guidelines, the reported value was an estimate.

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	04/07/2011
Sample Matrix:	Water	**Date Received:**	04/08/2011
		Date Extracted:	04/20/2011
		Date Analyzed:	04/20/2011

Volatile Organic Compounds

Sample Name:	Fridin Air 83ADL	**Units:**	ug/L
Lab Code:	K1103044-003	**Basis:**	NA
File ID:	J:\MS23\DATA\042011BAYW\0420F008.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103584
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 10

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-71-8	Dichlorodifluoromethane	4.0	U	5.0	4.0	
74-87-3	Chloromethane	0.35	U	5.0	0.35	
75-01-4	Vinyl Chloride	0.53	U	2.5	0.53	
74-83-9	Bromomethane	3.2	U	5.0	3.2	
75-00-3	Chloroethane	3.2	U	5.0	3.2	
75-69-4	Trichlorofluoromethane	0.48	U	5.0	0.48	
76-13-1	Trichlorotrifluoroethane	0.77	U	5.0	0.77	
75-35-4	1,1-Dichloroethene	3.7	U	5.0	3.7	
75-15-0	Carbon Disulfide	0.48	U	5.0	0.48	
75-09-2	Methylene Chloride	**1.2**	JD	5.0	0.93	
156-60-5	trans-1,2-Dichloroethene	**15**	D	5.0	0.39	
156-59-2	cis-1,2-Dichloroethene	**57**	D	5.0	0.42	
78-93-3	2-Butanone (MEK)	**45**	JD	200	34	
75-34-3	1,1-Dichloroethane	**1.1**	JD	5.0	0.41	
67-66-3	Chloroform	0.38	U	5.0	0.38	
71-55-6	1,1,1-Trichloroethane (TCA)	0.44	U	5.0	0.44	
56-23-5	Carbon Tetrachloride	2.6	U	5.0	2.6	
71-43-2	Benzene	0.40	U	5.0	0.40	
107-06-2	1,2-Dichloroethane (EDC)	0.38	U	5.0	0.38	
108-05-4	Vinyl Acetate	2.1	U	100	2.1	
79-01-6	Trichloroethene (TCE)	**300**	D	5.0	0.44	
78-87-5	1,2-Dichloropropane	0.44	U	5.0	0.44	
75-27-4	Bromodichloromethane	0.47	U	5.0	0.47	
110-75-8	2-Chloroethyl Vinyl Ether	1.2	U	50	1.2	
10061-02-6	trans-1,3-Dichloropropene	0.45	U	5.0	0.45	
108-10-1	4-Methyl-2-pentanone (MIBK)	28	U	200	28	
591-78-6	2-Hexanone	18	U	200	18	
108-88-3	Toluene	0.39	U	5.0	0.39	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	04/07/2011
Sample Matrix:	Water	**Date Received:**	04/08/2011
		Date Extracted:	04/20/2011
		Date Analyzed:	04/20/2011

Volatile Organic Compounds

Sample Name:	Fridin Air 83ADL	**Units:**	ug/L
Lab Code:	K1103044-003	**Basis:**	NA
File ID:	J:\MS23\DATA\042011BAYW\0420F008.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103584
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 10

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
10061-01-5	cis-1,3-Dichloropropene	0.35	U	5.0	0.35	
79-00-5	1,1,2-Trichloroethane	0.72	U	5.0	0.72	
127-18-4	Tetrachloroethene (PCE)	**1.4**	JD	5.0	0.43	
124-48-1	Dibromochloromethane	0.81	U	5.0	0.81	
108-90-7	Chlorobenzene	0.31	U	5.0	0.31	
100-41-4	Ethylbenzene	0.40	U	5.0	0.40	
100-42-5	Styrene	0.25	U	5.0	0.25	
136777-61-2	m,p-Xylenes	1.4	U	10	1.4	
95-47-6	o-Xylene	0.35	U	5.0	0.35	
75-25-2	Bromoform	1.1	U	5.0	1.1	
67-64-1	Acetone	**46**	JD	200	43	
79-34-5	1,1,2,2-Tetrachloroethane	0.86	U	5.0	0.86	
541-73-1	1,3-Dichlorobenzene	0.71	U	5.0	0.71	
106-46-7	1,4-Dichlorobenzene	0.73	U	5.0	0.73	
95-50-1	1,2-Dichlorobenzene	0.86	U	5.0	0.86	
107-02-8	Acrolein†	21	U	100	21	
107-13-1	Acrylonitrile†	2.8	U	50	2.8	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Toluene-d8	100	72-122	04/20/11	Acceptable
4-Bromofluorobenzene	95	70-120	04/20/11	Acceptable
Dibromofluoromethane	104	61-121	04/20/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	04/07/2011
Sample Matrix:	Water	**Date Received:**	04/08/2011
		Date Extracted:	04/20/2011
		Date Analyzed:	04/20/2011

Volatile Organic Compounds

Sample Name:	Fridin Air 83ADL	**Units:**	ug/L
Lab Code:	K1103044-003	**Basis:**	NA
File ID:	J:\MS23\DATA\042011BAYW\0420F008.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103584
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount:	10 ml
% Solids:	NA
Dilution Factor:	10

† **Analyte Comments**

Acrolein	This compound is unstable under normal conditions. As per EPA Method 624 guidelines, the reported value was an estimate.
Acrylonitrile	This compound is unstable under normal conditions. As per EPA Method 624 guidelines, the reported value was an estimate.

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	04/07/2011
Sample Matrix:	Water	**Date Received:**	04/08/2011
		Date Extracted:	04/19/2011
		Date Analyzed:	04/19/2011

Volatile Organic Compounds

Sample Name:	Frideff Air 85A	**Units:**	ug/L
Lab Code:	K1103044-004	**Basis:**	NA
File ID:	J:\MS23\DATA\041911BAYW\0419F019.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103524
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-71-8	Dichlorodifluoromethane	0.40	U	0.50	0.40	
74-87-3	Chloromethane	**0.070**	J	0.50	0.035	
75-01-4	Vinyl Chloride	0.053	U	0.25	0.053	
74-83-9	Bromomethane	0.32	U	0.50	0.32	
75-00-3	Chloroethane	0.32	U	0.50	0.32	
75-69-4	Trichlorofluoromethane	0.048	U	0.50	0.048	
76-13-1	Trichlorotrifluoroethane	0.077	U	0.50	0.077	
75-35-4	1,1-Dichloroethene	0.37	U	0.50	0.37	
75-15-0	Carbon Disulfide	0.048	U	0.50	0.048	
75-09-2	Methylene Chloride	0.093	U	0.50	0.093	
156-60-5	trans-1,2-Dichloroethene	0.039	U	0.50	0.039	
156-59-2	cis-1,2-Dichloroethene	0.042	U	0.50	0.042	
78-93-3	2-Butanone (MEK)	3.4	U	20	3.4	
75-34-3	1,1-Dichloroethane	0.041	U	0.50	0.041	
67-66-3	Chloroform	0.038	U	0.50	0.038	
71-55-6	1,1,1-Trichloroethane (TCA)	0.044	U	0.50	0.044	
56-23-5	Carbon Tetrachloride	0.26	U	0.50	0.26	
71-43-2	Benzene	0.040	U	0.50	0.040	
107-06-2	1,2-Dichloroethane (EDC)	0.038	U	0.50	0.038	
108-05-4	Vinyl Acetate	0.21	U	10	0.21	
79-01-6	Trichloroethene (TCE)	**0.23**	J	0.50	0.044	
78-87-5	1,2-Dichloropropane	0.044	U	0.50	0.044	
75-27-4	Bromodichloromethane	0.047	U	0.50	0.047	
110-75-8	2-Chloroethyl Vinyl Ether	0.12	U	5.0	0.12	
10061-02-6	trans-1,3-Dichloropropene	0.045	U	0.50	0.045	
108-10-1	4-Methyl-2-pentanone (MIBK)	2.8	U	20	2.8	
591-78-6	2-Hexanone	1.8	U	20	1.8	
108-88-3	Toluene	**0.070**	J	0.50	0.039	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	04/07/2011
Sample Matrix:	Water	**Date Received:**	04/08/2011
		Date Extracted:	04/19/2011
		Date Analyzed:	04/19/2011

Volatile Organic Compounds

Sample Name:	Frideff Air 85A	**Units:**	ug/L
Lab Code:	K1103044-004	**Basis:**	NA
File ID:	J:\MS23\DATA\041911BAYW\0419F019.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103524
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
10061-01-5	cis-1,3-Dichloropropene	0.035	U	0.50	0.035	
79-00-5	1,1,2-Trichloroethane	0.072	U	0.50	0.072	
127-18-4	Tetrachloroethene (PCE)	0.043	U	0.50	0.043	
124-48-1	Dibromochloromethane	0.081	U	0.50	0.081	
108-90-7	Chlorobenzene	0.031	U	0.50	0.031	
100-41-4	Ethylbenzene	0.040	U	0.50	0.040	
100-42-5	Styrene	0.025	U	0.50	0.025	
136777-61-2	m,p-Xylenes	0.14	U	1.0	0.14	
95-47-6	o-Xylene	0.035	U	0.50	0.035	
75-25-2	Bromoform	0.11	U	0.50	0.11	
67-64-1	Acetone	4.3	U	20	4.3	
79-34-5	1,1,2,2-Tetrachloroethane	0.086	U	0.50	0.086	
541-73-1	1,3-Dichlorobenzene	0.071	U	0.50	0.071	
106-46-7	1,4-Dichlorobenzene	0.073	U	0.50	0.073	
95-50-1	1,2-Dichlorobenzene	0.086	U	0.50	0.086	
107-02-8	Acrolein†	2.1	U	10	2.1	
107-13-1	Acrylonitrile†	0.28	U	5.0	0.28	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Toluene-d8	100	72-122	04/19/11	Acceptable
4-Bromofluorobenzene	91	70-120	04/19/11	Acceptable
Dibromofluoromethane	102	61-121	04/19/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	04/07/2011
Sample Matrix:	Water	**Date Received:**	04/08/2011
		Date Extracted:	04/19/2011
		Date Analyzed:	04/19/2011

Volatile Organic Compounds

Sample Name:	Frideff Air 85A	**Units:**	ug/L
Lab Code:	K1103044-004	**Basis:**	NA
File ID:	J:\MS23\DATA\041911BAYW\0419F019.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103524
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount:	10 ml
% Solids:	NA
Dilution Factor:	1

† Analyte Comments

Acrolein	This compound is unstable under normal conditions. As per EPA Method 624 guidelines, the reported value was an estimate.
Acrylonitrile	This compound is unstable under normal conditions. As per EPA Method 624 guidelines, the reported value was an estimate.

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	04/07/2011
Sample Matrix:	Water	**Date Received:**	04/08/2011
		Date Extracted:	04/19/2011
		Date Analyzed:	04/19/2011

Volatile Organic Compounds

Sample Name:	Trip Blank	**Units:**	ug/L
Lab Code:	K1103044-005	**Basis:**	NA
File ID:	J:\MS23\DATA\041911BAYW\0419F020.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103524
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-71-8	Dichlorodifluoromethane	0.40	U	0.50	0.40	
74-87-3	Chloromethane	0.035	U	0.50	0.035	
75-01-4	Vinyl Chloride	0.053	U	0.25	0.053	
74-83-9	Bromomethane	0.32	U	0.50	0.32	
75-00-3	Chloroethane	0.32	U	0.50	0.32	
75-69-4	Trichlorofluoromethane	0.048	U	0.50	0.048	
76-13-1	Trichlorotrifluoroethane	0.077	U	0.50	0.077	
75-35-4	1,1-Dichloroethene	0.37	U	0.50	0.37	
75-15-0	Carbon Disulfide	0.048	U	0.50	0.048	
75-09-2	Methylene Chloride	**0.10**	J	0.50	0.093	
156-60-5	trans-1,2-Dichloroethene	0.039	U	0.50	0.039	
156-59-2	cis-1,2-Dichloroethene	0.042	U	0.50	0.042	
78-93-3	2-Butanone (MEK)	3.4	U	20	3.4	
75-34-3	1,1-Dichloroethane	0.041	U	0.50	0.041	
67-66-3	Chloroform	0.038	U	0.50	0.038	
71-55-6	1,1,1-Trichloroethane (TCA)	0.044	U	0.50	0.044	
56-23-5	Carbon Tetrachloride	0.26	U	0.50	0.26	
71-43-2	Benzene	0.040	U	0.50	0.040	
107-06-2	1,2-Dichloroethane (EDC)	0.038	U	0.50	0.038	
108-05-4	Vinyl Acetate	0.21	U	10	0.21	
79-01-6	Trichloroethene (TCE)	**0.060**	J	0.50	0.044	
78-87-5	1,2-Dichloropropane	0.044	U	0.50	0.044	
75-27-4	Bromodichloromethane	0.047	U	0.50	0.047	
110-75-8	2-Chloroethyl Vinyl Ether	0.12	U	5.0	0.12	
10061-02-6	trans-1,3-Dichloropropene	0.045	U	0.50	0.045	
108-10-1	4-Methyl-2-pentanone (MIBK)	2.8	U	20	2.8	
591-78-6	2-Hexanone	1.8	U	20	1.8	
108-88-3	Toluene	0.039	U	0.50	0.039	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	04/07/2011
Sample Matrix:	Water	**Date Received:**	04/08/2011
		Date Extracted:	04/19/2011
		Date Analyzed:	04/19/2011

Volatile Organic Compounds

Sample Name:	Trip Blank	**Units:**	ug/L
Lab Code:	K1103044-005	**Basis:**	NA
File ID:	J:\MS23\DATA\041911BAYW\0419F020.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103524
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
10061-01-5	cis-1,3-Dichloropropene	0.035	U	0.50	0.035	
79-00-5	1,1,2-Trichloroethane	0.072	U	0.50	0.072	
127-18-4	Tetrachloroethene (PCE)	0.043	U	0.50	0.043	
124-48-1	Dibromochloromethane	0.081	U	0.50	0.081	
108-90-7	Chlorobenzene	0.031	U	0.50	0.031	
100-41-4	Ethylbenzene	0.040	U	0.50	0.040	
100-42-5	Styrene	0.025	U	0.50	0.025	
136777-61-2	m,p-Xylenes	0.14	U	1.0	0.14	
95-47-6	o-Xylene	0.035	U	0.50	0.035	
75-25-2	Bromoform	0.11	U	0.50	0.11	
67-64-1	Acetone	4.3	U	20	4.3	
79-34-5	1,1,2,2-Tetrachloroethane	0.086	U	0.50	0.086	
541-73-1	1,3-Dichlorobenzene	0.071	U	0.50	0.071	
106-46-7	1,4-Dichlorobenzene	0.073	U	0.50	0.073	
95-50-1	1,2-Dichlorobenzene	0.086	U	0.50	0.086	
107-02-8	Acrolein†	2.1	U	10	2.1	
107-13-1	Acrylonitrile†	0.28	U	5.0	0.28	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Toluene-d8	100	72-122	04/19/11	Acceptable
4-Bromofluorobenzene	91	70-120	04/19/11	Acceptable
Dibromofluoromethane	103	61-121	04/19/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	04/07/2011
Sample Matrix:	Water	**Date Received:**	04/08/2011
		Date Extracted:	04/19/2011
		Date Analyzed:	04/19/2011

Volatile Organic Compounds

Sample Name:	Trip Blank	**Units:**	ug/L
Lab Code:	K1103044-005	**Basis:**	NA
File ID:	J:\MS23\DATA\041911BAYW\0419F020.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103524
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount:	10 ml
% Solids:	NA
Dilution Factor:	1

† **Analyte Comments**

Acrolein	This compound is unstable under normal conditions. As per EPA Method 624 guidelines, the reported value was an estimate.
Acrylonitrile	This compound is unstable under normal conditions. As per EPA Method 624 guidelines, the reported value was an estimate.

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	04/19/2011
		Date Analyzed:	04/19/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1103524-4	**Basis:**	NA
File ID:	J:\MS23\DATA\041911BAYW\0419F014.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103524
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-71-8	Dichlorodifluoromethane	0.40	U	0.50	0.40	
74-87-3	Chloromethane	0.035	U	0.50	0.035	
75-01-4	Vinyl Chloride	0.053	U	0.25	0.053	
74-83-9	Bromomethane	0.32	U	0.50	0.32	
75-00-3	Chloroethane	0.32	U	0.50	0.32	
75-69-4	Trichlorofluoromethane	0.048	U	0.50	0.048	
76-13-1	Trichlorotrifluoroethane	0.077	U	0.50	0.077	
75-35-4	1,1-Dichloroethene	0.37	U	0.50	0.37	
75-15-0	Carbon Disulfide	0.048	U	0.50	0.048	
75-09-2	Methylene Chloride	0.093	U	0.50	0.093	
156-60-5	trans-1,2-Dichloroethene	0.039	U	0.50	0.039	
156-59-2	cis-1,2-Dichloroethene	0.042	U	0.50	0.042	
78-93-3	2-Butanone (MEK)	4.5	J	20	3.4	
75-34-3	1,1-Dichloroethane	0.041	U	0.50	0.041	
67-66-3	Chloroform	0.038	U	0.50	0.038	
71-55-6	1,1,1-Trichloroethane (TCA)	0.044	U	0.50	0.044	
56-23-5	Carbon Tetrachloride	0.26	U	0.50	0.26	
71-43-2	Benzene	0.040	U	0.50	0.040	
107-06-2	1,2-Dichloroethane (EDC)	0.038	U	0.50	0.038	
108-05-4	Vinyl Acetate	0.21	U	10	0.21	
79-01-6	Trichloroethene (TCE)	0.044	U	0.50	0.044	
78-87-5	1,2-Dichloropropane	0.044	U	0.50	0.044	
75-27-4	Bromodichloromethane	0.047	U	0.50	0.047	
110-75-8	2-Chloroethyl Vinyl Ether	0.12	U	5.0	0.12	
10061-02-6	trans-1,3-Dichloropropene	0.045	U	0.50	0.045	
108-10-1	4-Methyl-2-pentanone (MIBK)	2.8	U	20	2.8	
591-78-6	2-Hexanone	1.8	U	20	1.8	
108-88-3	Toluene	0.039	U	0.50	0.039	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	04/19/2011
		Date Analyzed:	04/19/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1103524-4	**Basis:**	NA
File ID:	J:\MS23\DATA\041911BAYW\0419F014.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103524
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
10061-01-5	cis-1,3-Dichloropropene	0.035	U	0.50	0.035	
79-00-5	1,1,2-Trichloroethane	0.072	U	0.50	0.072	
127-18-4	Tetrachloroethene (PCE)	0.043	U	0.50	0.043	
124-48-1	Dibromochloromethane	0.081	U	0.50	0.081	
108-90-7	Chlorobenzene	0.031	U	0.50	0.031	
100-41-4	Ethylbenzene	0.040	U	0.50	0.040	
100-42-5	Styrene	0.025	U	0.50	0.025	
136777-61-2	m,p-Xylenes	0.14	U	1.0	0.14	
95-47-6	o-Xylene	0.035	U	0.50	0.035	
75-25-2	Bromoform	0.11	U	0.50	0.11	
67-64-1	Acetone	5.1	J	20	4.3	
79-34-5	1,1,2,2-Tetrachloroethane	0.086	U	0.50	0.086	
541-73-1	1,3-Dichlorobenzene	0.071	U	0.50	0.071	
106-46-7	1,4-Dichlorobenzene	0.073	U	0.50	0.073	
95-50-1	1,2-Dichlorobenzene	0.086	U	0.50	0.086	
107-02-8	Acrolein†	2.1	U	10	2.1	
107-13-1	Acrylonitrile†	0.28	U	5.0	0.28	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Toluene-d8	98	72-122	04/19/11	Acceptable
4-Bromofluorobenzene	92	70-120	04/19/11	Acceptable
Dibromofluoromethane	100	61-121	04/19/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	04/19/2011
		Date Analyzed:	04/19/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1103524-4	**Basis:**	NA
File ID:	J:\MS23\DATA\041911BAYW\0419F014.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103524
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount:	10 ml
% Solids:	NA
Dilution Factor:	1

† **Analyte Comments**

Acrolein	This compound is unstable under normal conditions. As per EPA Method 624 guidelines, the reported value was an estimate.
Acrylonitrile	This compound is unstable under normal conditions. As per EPA Method 624 guidelines, the reported value was an estimate.

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	04/20/2011
		Date Analyzed:	04/20/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1103584-4	**Basis:**	NA
File ID:	J:\MS23\DATA\042011BAYW\0420F007.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103584
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-71-8	Dichlorodifluoromethane	0.40	U	0.50	0.40	
74-87-3	Chloromethane	0.035	U	0.50	0.035	
75-01-4	Vinyl Chloride	0.053	U	0.25	0.053	
74-83-9	Bromomethane	0.32	U	0.50	0.32	
75-00-3	Chloroethane	0.32	U	0.50	0.32	
75-69-4	Trichlorofluoromethane	0.048	U	0.50	0.048	
76-13-1	Trichlorotrifluoroethane	0.077	U	0.50	0.077	
75-35-4	1,1-Dichloroethene	0.37	U	0.50	0.37	
75-15-0	Carbon Disulfide	0.048	U	0.50	0.048	
75-09-2	Methylene Chloride	0.093	U	0.50	0.093	
156-60-5	trans-1,2-Dichloroethene	0.039	U	0.50	0.039	
156-59-2	cis-1,2-Dichloroethene	0.042	U	0.50	0.042	
78-93-3	2-Butanone (MEK)	4.9	J	20	3.4	
75-34-3	1,1-Dichloroethane	0.041	U	0.50	0.041	
67-66-3	Chloroform	0.038	U	0.50	0.038	
71-55-6	1,1,1-Trichloroethane (TCA)	0.044	U	0.50	0.044	
56-23-5	Carbon Tetrachloride	0.26	U	0.50	0.26	
71-43-2	Benzene	0.040	U	0.50	0.040	
107-06-2	1,2-Dichloroethane (EDC)	0.038	U	0.50	0.038	
108-05-4	Vinyl Acetate	0.21	U	10	0.21	
79-01-6	Trichloroethene (TCE)	0.044	U	0.50	0.044	
78-87-5	1,2-Dichloropropane	0.044	U	0.50	0.044	
75-27-4	Bromodichloromethane	0.047	U	0.50	0.047	
110-75-8	2-Chloroethyl Vinyl Ether	0.12	U	5.0	0.12	
10061-02-6	trans-1,3-Dichloropropene	0.045	U	0.50	0.045	
108-10-1	4-Methyl-2-pentanone (MIBK)	2.8	U	20	2.8	
591-78-6	2-Hexanone	1.8	U	20	1.8	
108-88-3	Toluene	0.039	U	0.50	0.039	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	04/20/2011
		Date Analyzed:	04/20/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1103584-4	**Basis:**	NA
File ID:	J:\MS23\DATA\042011BAYW\0420F007.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103584
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
10061-01-5	cis-1,3-Dichloropropene	0.035	U	0.50	0.035	
79-00-5	1,1,2-Trichloroethane	0.072	U	0.50	0.072	
127-18-4	Tetrachloroethene (PCE)	0.043	U	0.50	0.043	
124-48-1	Dibromochloromethane	0.081	U	0.50	0.081	
108-90-7	Chlorobenzene	0.031	U	0.50	0.031	
100-41-4	Ethylbenzene	0.040	U	0.50	0.040	
100-42-5	Styrene	0.025	U	0.50	0.025	
136777-61-2	m,p-Xylenes	0.14	U	1.0	0.14	
95-47-6	o-Xylene	0.035	U	0.50	0.035	
75-25-2	Bromoform	0.11	U	0.50	0.11	
67-64-1	Acetone	5.2	J	20	4.3	
79-34-5	1,1,2,2-Tetrachloroethane	0.086	U	0.50	0.086	
541-73-1	1,3-Dichlorobenzene	0.071	U	0.50	0.071	
106-46-7	1,4-Dichlorobenzene	0.073	U	0.50	0.073	
95-50-1	1,2-Dichlorobenzene	0.086	U	0.50	0.086	
107-02-8	Acrolein†	2.1	U	10	2.1	
107-13-1	Acrylonitrile†	0.28	U	5.0	0.28	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Toluene-d8	100	72-122	04/20/11	Acceptable
4-Bromofluorobenzene	97	70-120	04/20/11	Acceptable
Dibromofluoromethane	103	61-121	04/20/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	04/20/2011
		Date Analyzed:	04/20/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1103584-4	**Basis:**	NA
File ID:	J:\MS23\DATA\042011BAYW\0420F007.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103584
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount:	10 ml
% Solids:	NA
Dilution Factor:	1

† Analyte Comments

Acrolein	This compound is unstable under normal conditions. As per EPA Method 624 guidelines, the reported value was an estimate.
Acrylonitrile	This compound is unstable under normal conditions. As per EPA Method 624 guidelines, the reported value was an estimate.

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1103044

Surrogate Recovery Summary
Volatile Organic Compounds

Extraction Method: METHOD
Analysis Method: 624

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
Fridout 172A	K1103044-001	100	92	104
Fridout 172B	K1103044-002	100	94	100
Fridin Air 83ADL	K1103044-003	100	95	104
Fridin Air 83A	K1103044-003	100	93	102
Frideff Air 85A	K1103044-004	100	91	102
Trip Blank	K1103044-005	100	91	103
Method Blank	KWG1103524-4	98	92	100
Method Blank	KWG1103584-4	100	97	103
Fridout 172BMS	KWG1103524-1	105	94	105
Fridout 172BDMS	KWG1103524-2	104	96	103
Lab Control Sample	KWG1103524-3	105	98	105
Lab Control Sample	KWG1103584-3	105	100	106

Surrogate Recovery Control Limits (%)

Sur1 =	Toluene-d8	72-122
Sur2 =	4-Bromofluorobenzene	70-120
Sur3 =	Dibromofluoromethane	61-121

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1103044
Date Analyzed: 04/19/2011
Time Analyzed: 11:04

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID: J:\MS23\DATA\041911BAYW\0419F006.D
Instrument ID: MS23
Analysis Method: 624

Lab Code: KWG1103523-2
Analysis Lot: KWG1103523

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	554,553	5.94	216,893	9.34	205,263	11.75
	Upper Limit ==>	1,109,106	6.44	433,786	9.84	410,526	12.25
	Lower Limit ==>	277,277	5.44	108,447	8.84	102,632	11.25
	ICAL Result ==>	558,021	5.94	229,491	9.35	189,592	11.75
Associated Analyses							
Lab Control Sample	KWG1103524-3	542,881	5.94	224,691	9.34	204,337	11.75
Fridout 172BMS	KWG1103524-1	545,375	5.94	227,021	9.34	201,105	11.75
Fridout 172BDMS	KWG1103524-2	553,595	5.94	226,047	9.34	202,347	11.75
Method Blank	KWG1103524-4	605,032	5.94	240,142	9.34	194,577	11.75
Fridout 172B	K1103044-002	591,443	5.94	233,521	9.35	196,914	11.75
Fridout 172A	K1103044-001	570,832	5.94	226,237	9.34	188,328	11.75
Fridin Air 83A	K1103044-003	573,139	5.94	226,857	9.34	189,938	11.75
Frideff Air 85A	K1103044-004	557,844	5.94	221,851	9.35	182,613	11.75
Trip Blank	K1103044-005	551,383	5.94	219,310	9.34	181,356	11.75

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1103044
Date Analyzed: 04/20/2011
Time Analyzed: 14:50

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID: J:\MS23\DATA\042011BAYW\0420F002.D
Instrument ID: MS23
Analysis Method: 624

Lab Code: KWG1103583-2
Analysis Lot: KWG1103583

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	582,018	5.94	232,338	9.34	220,440	11.75
	Upper Limit ==>	1,164,036	6.44	464,676	9.84	440,880	12.25
	Lower Limit ==>	291,009	5.44	116,169	8.84	110,220	11.25
	ICAL Result ==>	558,021	5.94	229,491	9.35	189,592	11.75
Associated Analyses							
Lab Control Sample	KWG1103584-3	586,441	5.94	243,010	9.34	221,159	11.75
Method Blank	KWG1103584-4	565,381	5.94	224,035	9.34	191,866	11.75
Fridin Air 83ADL	K1103044-003	546,761	5.94	219,052	9.34	185,235	11.75

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Extracted:**	04/19/2011
Sample Matrix:	Water	**Date Analyzed:**	04/19/2011

Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organic Compounds

Sample Name:	Fridout 172B	**Units:**	ug/L
Lab Code:	K1103044-002	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	624	**Extraction Lot:**	KWG1103524

		Fridout 172BMS KWG1103524-1 Matrix Spike			Fridout 172BDMS KWG1103524-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
1,1-Dichloroethene	ND	11.8	10.0	118	10.2	10.0	102	64-151	14	30
Benzene	ND	10.1	10.0	101	9.04	10.0	90	61-145	11	30
Trichloroethene (TCE)	ND	9.85	10.0	99	8.67	10.0	87	23-193	13	30
Toluene	0.18	10.3	10.0	101	9.16	10.0	90	69-137	12	30
Chlorobenzene	ND	10.2	10.0	102	9.67	10.0	97	76-128	6	30
1,2-Dichlorobenzene	ND	10.2	10.0	102	9.80	10.0	98	71-135	4	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Extracted:**	04/19/2011
Sample Matrix:	Water	**Date Analyzed:**	04/19/2011

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	METHOD	**Units:**	ug/L
Analysis Method:	624	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1103524

	Lab Control Sample KWG1103524-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Dichlorodifluoromethane	10.5	10.0	105	37-147
Chloromethane	11.7	10.0	117	66-139
Vinyl Chloride	12.6	10.0	126	71-136
Bromomethane	12.2	10.0	122	61-154
Chloroethane	12.7	10.0	127	69-130
Trichlorofluoromethane	10.8	10.0	108	65-127
Trichlorotrifluoroethane	10.7	10.0	107	72-134
1,1-Dichloroethene	12.2	10.0	122	79-147
Carbon Disulfide	20.5	20.0	103	41-174
Methylene Chloride	10.7	10.0	107	67-144
trans-1,2-Dichloroethene	10.9	10.0	109	78-140
cis-1,2-Dichloroethene	10.3	10.0	103	80-134
2-Butanone (MEK)	53.2	50.0	106	82-140
1,1-Dichloroethane	10.5	10.0	105	79-135
Chloroform	10.8	10.0	108	81-136
1,1,1-Trichloroethane (TCA)	9.71	10.0	97	77-139
Carbon Tetrachloride	10.8	10.0	108	69-144
Benzene	10.7	10.0	107	81-140
1,2-Dichloroethane (EDC)	10.4	10.0	104	74-140
Vinyl Acetate	17.1	20.0	86	60-157
Trichloroethene (TCE)	10.4	10.0	104	81-133
1,2-Dichloropropane	10.1	10.0	101	80-134
Bromodichloromethane	10.7	10.0	107	80-136
2-Chloroethyl Vinyl Ether	10.0	10.0	100	61-141
trans-1,3-Dichloropropene	8.13	10.0	81	73-122
4-Methyl-2-pentanone (MIBK)	42.1	50.0	84	81-127
2-Hexanone	44.5	50.0	89	80-123
Toluene	10.7	10.0	107	80-139
cis-1,3-Dichloropropene	9.48	10.0	95	77-137
1,1,2-Trichloroethane	10.6	10.0	106	87-129
Tetrachloroethene (PCE)	11.3	10.0	113	82-129
Dibromochloromethane	10.7	10.0	107	82-128
Chlorobenzene	11.2	10.0	112	87-126
Ethylbenzene	10.8	10.0	108	86-128
Styrene	10.5	10.0	105	84-129

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1103044
Date Extracted: 04/19/2011
Date Analyzed: 04/19/2011

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method: METHOD
Analysis Method: 624

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1103524

Analyte Name	Lab Control Sample KWG1103524-3 Lab Control Spike Result	Expected	%Rec	%Rec Limits
m,p-Xylenes	21.6	20.0	108	85-129
o-Xylene	10.3	10.0	103	89-125
Bromoform	11.0	10.0	110	61-144
Acetone	69.5	50.0	139	79-146
1,1,2,2-Tetrachloroethane	9.50	10.0	95	78-144
1,3-Dichlorobenzene	11.0	10.0	110	78-142
1,4-Dichlorobenzene	11.0	10.0	110	77-144
1,2-Dichlorobenzene	10.8	10.0	108	77-143
Acrolein	97.3	100	97	27-200
Acrylonitrile	11.0	10.0	110	82-138

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1103044
Date Extracted: 04/20/2011
Date Analyzed: 04/20/2011

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method: METHOD
Analysis Method: 624

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1103584

	Lab Control Sample KWG1103584-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Dichlorodifluoromethane	11.1	10.0	111	37-147
Chloromethane	11.1	10.0	111	66-139
Vinyl Chloride	12.3	10.0	123	71-136
Bromomethane	13.8	10.0	138	61-154
Chloroethane	12.2	10.0	122	69-130
Trichlorofluoromethane	10.5	10.0	105	65-127
Trichlorotrifluoroethane	11.3	10.0	113	72-134
1,1-Dichloroethene	12.3	10.0	123	79-147
Carbon Disulfide	22.0	20.0	110	41-174
Methylene Chloride	10.6	10.0	106	67-144
trans-1,2-Dichloroethene	10.8	10.0	108	78-140
cis-1,2-Dichloroethene	10.3	10.0	103	80-134
2-Butanone (MEK)	60.6	50.0	121	82-140
1,1-Dichloroethane	10.4	10.0	104	79-135
Chloroform	10.7	10.0	107	81-136
1,1,1-Trichloroethane (TCA)	9.67	10.0	97	77-139
Carbon Tetrachloride	10.4	10.0	104	69-144
Benzene	10.8	10.0	108	81-140
1,2-Dichloroethane (EDC)	10.7	10.0	107	74-140
Vinyl Acetate	19.6	20.0	98	60-157
Trichloroethene (TCE)	10.5	10.0	105	81-133
1,2-Dichloropropane	10.1	10.0	101	80-134
Bromodichloromethane	10.4	10.0	104	80-136
2-Chloroethyl Vinyl Ether	9.70	10.0	97	61-141
trans-1,3-Dichloropropene	7.74	10.0	77	73-122
4-Methyl-2-pentanone (MIBK)	42.7	50.0	85	81-127
2-Hexanone	44.5	50.0	89	80-123
Toluene	10.7	10.0	107	80-139
cis-1,3-Dichloropropene	9.22	10.0	92	77-137
1,1,2-Trichloroethane	10.9	10.0	109	87-129
Tetrachloroethene (PCE)	11.5	10.0	115	82-129
Dibromochloromethane	10.3	10.0	103	82-128
Chlorobenzene	11.1	10.0	111	87-126
Ethylbenzene	10.7	10.0	107	86-128
Styrene	10.2	10.0	102	84-129

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1103044
Date Extracted: 04/20/2011
Date Analyzed: 04/20/2011

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method: METHOD
Analysis Method: 624

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1103584

Analyte Name	Lab Control Sample KWG1103584-3 Lab Control Spike Result	Expected	%Rec	%Rec Limits
m,p-Xylenes	21.5	20.0	108	85-129
o-Xylene	10.4	10.0	104	89-125
Bromoform	10.1	10.0	101	61-144
Acetone	68.0	50.0	136	79-146
1,1,2,2-Tetrachloroethane	9.49	10.0	95	78-144
1,3-Dichlorobenzene	11.0	10.0	110	78-142
1,4-Dichlorobenzene	11.0	10.0	110	77-144
1,2-Dichlorobenzene	10.9	10.0	109	77-143
Acrolein	93.6	100	94	27-200
Acrylonitrile	11.1	10.0	111	82-138

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1103044
Date Extracted: 04/19/2011
Date Analyzed: 04/19/2011
Time Analyzed: 15:43

Method Blank Summary
Volatile Organic Compounds

Sample Name: Method Blank
Lab Code: KWG1103524-4
Extraction Method: METHOD
Analysis Method: 624

File ID: J:\MS23\DATA\041911BAYW\0419F014.D
Instrument ID: MS23
Level: Low
Extraction Lot: KWG1103524

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1103524-3	J:\MS23\DATA\041911BAYW\0419F007.D	04/19/11	11:47
Fridout 172BMS	KWG1103524-1	J:\MS23\DATA\041911BAYW\0419F008.D	04/19/11	12:41
Fridout 172BDMS	KWG1103524-2	J:\MS23\DATA\041911BAYW\0419F010.D	04/19/11	13:41
Fridout 172B	K1103044-002	J:\MS23\DATA\041911BAYW\0419F015.D	04/19/11	16:13
Fridout 172A	K1103044-001	J:\MS23\DATA\041911BAYW\0419F017.D	04/19/11	17:13
Fridin Air 83A	K1103044-003	J:\MS23\DATA\041911BAYW\0419F018.D	04/19/11	17:44
Frideff Air 85A	K1103044-004	J:\MS23\DATA\041911BAYW\0419F019.D	04/19/11	18:14
Trip Blank	K1103044-005	J:\MS23\DATA\041911BAYW\0419F020.D	04/19/11	18:44

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Extracted:**	04/20/2011
Sample Matrix:	Water	**Date Analyzed:**	04/20/2011
		Time Analyzed:	17:23

Method Blank Summary
Volatile Organic Compounds

Sample Name:	Method Blank	**File ID:**	J:\MS23\DATA\042011BAYW\0420F007.D
Lab Code:	KWG1103584-4	**Instrument ID:**	MS23
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	624	**Extraction Lot:**	KWG1103584

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1103584-3	J:\MS23\DATA\042011BAYW\0420F003.D	04/20/11	15:20
Fridin Air 83ADL	K1103044-003	J:\MS23\DATA\042011BAYW\0420F008.D	04/20/11	17:53

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Extracted:**	04/19/2011
Sample Matrix:	Water	**Date Analyzed:**	04/19/2011
		Time Analyzed:	11:47

Lab Control Sample Summary
Volatile Organic Compounds

Sample Name:	Lab Control Sample	**File ID:**	J:\MS23\DATA\041911BAYW\0419F007.D
Lab Code:	KWG1103524-3	**Instrument ID:**	MS23
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	624	**Extraction Lot:**	KWG1103524

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Fridout 172BMS	KWG1103524-1	J:\MS23\DATA\041911BAYW\0419F008.D	04/19/11	12:41
Fridout 172BDMS	KWG1103524-2	J:\MS23\DATA\041911BAYW\0419F010.D	04/19/11	13:41
Method Blank	KWG1103524-4	J:\MS23\DATA\041911BAYW\0419F014.D	04/19/11	15:43
Fridout 172B	K1103044-002	J:\MS23\DATA\041911BAYW\0419F015.D	04/19/11	16:13
Fridout 172A	K1103044-001	J:\MS23\DATA\041911BAYW\0419F017.D	04/19/11	17:13
Fridin Air 83A	K1103044-003	J:\MS23\DATA\041911BAYW\0419F018.D	04/19/11	17:44
Frideff Air 85A	K1103044-004	J:\MS23\DATA\041911BAYW\0419F019.D	04/19/11	18:14
Trip Blank	K1103044-005	J:\MS23\DATA\041911BAYW\0419F020.D	04/19/11	18:44

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Extracted:**	04/20/2011
Sample Matrix:	Water	**Date Analyzed:**	04/20/2011
		Time Analyzed:	15:20

Lab Control Sample Summary
Volatile Organic Compounds

Sample Name:	Lab Control Sample	**File ID:**	J:\MS23\DATA\042011BAYW\0420F003.D
Lab Code:	KWG1103584-3	**Instrument ID:**	MS23
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	624	**Extraction Lot:**	KWG1103584

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1103584-4	J:\MS23\DATA\042011BAYW\0420F007.D	04/20/11	17:23
Fridin Air 83ADL	K1103044-003	J:\MS23\DATA\042011BAYW\0420F008.D	04/20/11	17:53

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1103044
Date Analyzed: 03/29/2011
Time Analyzed: 13:21

Tune Summary
Volatile Organic Compounds

File ID: J:\MS23\DATA\032911\0329F013.D
Instrument ID: MS23
Column:

Analysis Method: 624
Analysis Lot: KWG1103676

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	24.6	16321	PASS
75	95	30	60	53.6	35557	PASS
95	95	100	100	100.0	66330	PASS
96	95	5	9	6.9	4574	PASS
173	174	0	2	0.7	334	PASS
174	95	50	120	68.8	45626	PASS
175	174	5	9	7.6	3488	PASS
176	174	95	101	98.5	44920	PASS
177	176	5	9	6.8	3050	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Initial Calibration	KWG1103676-2	J:\MS23\DATA\032911BAYW\0329F	03/29/2011	14:27	
Initial Calibration	KWG1103676-3	J:\MS23\DATA\032911BAYW\0329F	03/29/2011	16:02	
Initial Calibration	KWG1103676-4	J:\MS23\DATA\032911BAYW\0329F	03/29/2011	16:32	
Initial Calibration	KWG1103676-5	J:\MS23\DATA\032911BAYW\0329F	03/29/2011	17:02	
Initial Calibration	KWG1103676-6	J:\MS23\DATA\032911BAYW\0329F	03/29/2011	17:31	
Initial Calibration	KWG1103676-7	J:\MS23\DATA\032911BAYW\0329F	03/29/2011	18:01	
Initial Calibration	KWG1103676-8	J:\MS23\DATA\032911BAYW\0329F	03/29/2011	19:31	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1103044
Date Analyzed: 03/30/2011
Time Analyzed: 08:48

Tune Summary
Volatile Organic Compounds

File ID: J:\MS23\DATA\032911BAYW\0329F027.D
Instrument ID: MS23
Column:

Analysis Method: 624
Analysis Lot: KWG1103677

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	26.3	15893	PASS
75	95	30	60	59.3	35786	PASS
95	95	100	100	100.0	60389	PASS
96	95	5	9	7.4	4443	PASS
173	174	0	2	0.6	265	PASS
174	95	50	120	68.3	41240	PASS
175	174	5	9	7.7	3196	PASS
176	174	95	101	97.0	39994	PASS
177	176	5	9	6.8	2712	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Initial Calibration	KWG1103677-2	J:\MS23\DATA\032911BAYW\0329F	03/30/2011	09:48	
Initial Calibration Verification	KWG1103677-3	J:\MS23\DATA\032911BAYW\0329F	03/30/2011	12:58	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1103044
Date Analyzed: 04/19/2011
Time Analyzed: 10:05

Tune Summary
Volatile Organic Compounds

File ID: J:\MS23\DATA\041911BAYW\0419F005.D
Instrument ID: MS23
Column:

Analysis Method: 624
Analysis Lot: KWG1103523

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	25.8	13905	PASS
75	95	30	60	58.0	31338	PASS
95	95	100	100	100.0	53992	PASS
96	95	5	9	7.3	3924	PASS
173	174	0	2	0.4	181	PASS
174	95	50	120	76.7	41413	PASS
175	174	5	9	7.6	3137	PASS
176	174	95	101	98.8	40898	PASS
177	176	5	9	6.1	2475	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1103523-2	J:\MS23\DATA\041911BAYW\0419F	04/19/2011	11:04	
Lab Control Sample	KWG1103524-3	J:\MS23\DATA\041911BAYW\0419F	04/19/2011	11:47	
Fridout 172BMS	KWG1103524-1	J:\MS23\DATA\041911BAYW\0419F	04/19/2011	12:41	
Fridout 172BDMS	KWG1103524-2	J:\MS23\DATA\041911BAYW\0419F	04/19/2011	13:41	
Method Blank	KWG1103524-4	J:\MS23\DATA\041911BAYW\0419F	04/19/2011	15:43	
Fridout 172B	K1103044-002	J:\MS23\DATA\041911BAYW\0419F	04/19/2011	16:13	
Fridout 172A	K1103044-001	J:\MS23\DATA\041911BAYW\0419F	04/19/2011	17:13	
Fridin Air 83A	K1103044-003	J:\MS23\DATA\041911BAYW\0419F	04/19/2011	17:44	
Frideff Air 85A	K1103044-004	J:\MS23\DATA\041911BAYW\0419F	04/19/2011	18:14	
Trip Blank	K1103044-005	J:\MS23\DATA\041911BAYW\0419F	04/19/2011	18:44	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1103044
Date Analyzed: 04/20/2011
Time Analyzed: 14:19

Tune Summary
Volatile Organic Compounds

File ID: J:\MS23\DATA\042011BAYW\0420F001.D
Instrument ID: MS23
Column:

Analysis Method: 624
Analysis Lot: KWG1103583

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	25.8	13369	PASS
75	95	30	60	56.4	29245	PASS
95	95	100	100	100.0	51893	PASS
96	95	5	9	7.0	3613	PASS
173	174	0	2	0.2	74	PASS
174	95	50	120	74.2	38482	PASS
175	174	5	9	7.1	2743	PASS
176	174	95	101	97.0	37317	PASS
177	176	5	9	6.9	2572	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1103583-2	J:\MS23\DATA\042011BAYW\0420F	04/20/2011	14:50	
Lab Control Sample	KWG1103584-3	J:\MS23\DATA\042011BAYW\0420F	04/20/2011	15:20	
Method Blank	KWG1103584-4	J:\MS23\DATA\042011BAYW\0420F	04/20/2011	17:23	
Fridin Air 83ADL	K1103044-003	J:\MS23\DATA\042011BAYW\0420F	04/20/2011	17:53	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1103044
Calibration Date: 03/29/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10443
Instrument ID: MS23

Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS23\DATA\032911BAYW\0329F016.D	F	J:\MS23\DATA\032911\0329F023.D
B	J:\MS23\DATA\032911\0329F019.D	G	J:\MS23\DATA\032911\0329F026.D
C	J:\MS23\DATA\032911\0329F020.D	H	J:\MS23\DATA\032911\0329F029.D
D	J:\MS23\DATA\032911\0329F021.D		
E	J:\MS23\DATA\032911\0329F022.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Dichlorodifluoromethane				B	5.0	0.386	C	10	0.373	D	40	0.375	E	80	0.364
	F	120	0.360	G	0.50	0.333	H	1.0	0.267						
Chloromethane				B	5.0	0.498	C	10	0.495	D	40	0.482	E	80	0.483
	F	120	0.489	G	0.50	0.656	H	1.0	0.462						
Vinyl Chloride	A	0.25	0.279	B	5.0	0.453	C	10	0.427	D	40	0.439	E	80	0.432
	F	120	0.431	G	0.50	0.446	H	1.0	0.330						
Bromomethane				B	5.0	0.0770	C	10	0.103	D	40	0.161	E	80	0.176
	F	120	0.176	G	0.50	0.220	H	1.0	0.125						
Chloroethane				B	5.0	0.0711	C	10	0.0688	D	40	0.0677	E	80	0.0664
	F	120	0.0652	G	0.50	0.0930	H	1.0	0.0621						
Trichlorofluoromethane				B	5.0	0.550	C	10	0.525	D	40	0.528	E	80	0.516
	F	120	0.515	G	0.50	0.496	H	1.0	0.371						
Trichlorotrifluoroethane				B	5.0	0.236	C	10	0.232	D	40	0.233	E	80	0.230
	F	120	0.234	G	0.50	0.221	H	1.0	0.158						
1,1-Dichloroethene				B	5.0	0.247	C	10	0.247	D	40	0.250	E	80	0.250
	F	120	0.250	G	0.50	0.257	H	1.0	0.190						
Carbon Disulfide				B	5.0	1.04	C	10	1.03	D	40	1.04	E	80	1.02
	F	120	1.02	G	0.50	1.09	H	1.0	0.783						
Methylene Chloride				B	5.0	0.242	C	10	0.233	D	40	0.229	E	80	0.235
	F	120	0.233	G	0.50	0.336	H	1.0	0.214						
trans-1,2-Dichloroethene				B	5.0	0.253	C	10	0.244	D	40	0.253	E	80	0.257
	F	120	0.257	G	0.50	0.292	H	1.0	0.194						
cis-1,2-Dichloroethene				B	5.0	0.266	C	10	0.262	D	40	0.269	E	80	0.274
	F	120	0.273	G	0.50	0.326	H	1.0	0.208						
2-Butanone (MEK)				B	200	0.0111	C	400	0.0119	D	800	0.0114	E	1600	0.0121
	F	2400	0.0124	G	20	0.00724	H	80	0.0117						
1,1-Dichloroethane				B	5.0	0.511	C	10	0.494	D	40	0.511	E	80	0.516
	F	120	0.512	G	0.50	0.535	H	1.0	0.384						

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1103044
Calibration Date: 03/29/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10443
Instrument ID: MS23

Column: MS

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Chloroform				B	5.0	0.454	C	10	0.442	D	40	0.453	E	80	0.459
	F	120	0.453	G	0.50	0.503	H	1.0	0.362						
1,1,1-Trichloroethane (TCA)				B	5.0	0.431	C	10	0.416	D	40	0.433	E	80	0.433
	F	120	0.436	G	0.50	0.430	H	1.0	0.310						
Carbon Tetrachloride				B	5.0	0.333	C	10	0.329	D	40	0.347	E	80	0.352
	F	120	0.356	G	0.50	0.287	H	1.0	0.220						
Benzene				B	5.0	1.09	C	10	1.06	D	40	1.08	E	80	1.09
	F	120	1.07	G	0.50	1.13	H	1.0	0.833						
1,2-Dichloroethane (EDC)				B	5.0	0.333	C	10	0.319	D	40	0.321	E	80	0.325
	F	120	0.317	G	0.50	0.365	H	1.0	0.258						
Vinyl Acetate				B	10	0.0291	C	20	0.0285	D	80	0.0273	E	160	0.0288
	F	240	0.0284												
Trichloroethene (TCE)				B	5.0	0.268	C	10	0.259	D	40	0.267	E	80	0.272
	F	120	0.272	G	0.50	0.303	H	1.0	0.218						
1,2-Dichloropropane				B	5.0	0.274	C	10	0.262	D	40	0.272	E	80	0.277
	F	120	0.273	G	0.50	0.302	H	1.0	0.214						
Bromodichloromethane				B	5.0	0.308	C	10	0.301	D	40	0.312	E	80	0.321
	F	120	0.317	G	0.50	0.325	H	1.0	0.228						
2-Chloroethyl Vinyl Ether				B	5.0	0.0913	C	10	0.0877	D	40	0.0948	E	80	0.0993
	F	120	0.0983	G	0.50	0.104	H	1.0	0.0640						
trans-1,3-Dichloropropene				B	5.0	0.760	C	10	0.725	D	40	0.758	E	80	0.796
	F	120	0.782	G	0.50	0.795	H	1.0	0.490						
4-Methyl-2-pentanone (MIBK)				B	200	0.0397	C	400	0.0419	D	800	0.0404	E	1600	0.0435
	F	2400	0.0445	G	20	0.0245	H	80	0.0395						
2-Hexanone				B	200	0.207	C	400	0.219	D	800	0.206	E	1600	0.215
	F	2400	0.210	G	20	0.129	H	80	0.209						
Toluene				B	5.0	0.667	C	10	0.650	D	40	0.677	E	80	0.693
	F	120	0.696	G	0.50	0.697	H	1.0	0.507						
cis-1,3-Dichloropropene				B	5.0	0.376	C	10	0.369	D	40	0.390	E	80	0.401
	F	120	0.395	G	0.50	0.379	H	1.0	0.257						
1,1,2-Trichloroethane				B	5.0	0.325	C	10	0.317	D	40	0.321	E	80	0.331
	F	120	0.328	G	0.50	0.363	H	1.0	0.241						
Tetrachloroethene (PCE)				B	5.0	0.489	C	10	0.472	D	40	0.484	E	80	0.505
	F	120	0.516	G	0.50	0.493	H	1.0	0.358						
Dibromochloromethane				B	5.0	0.421	C	10	0.409	D	40	0.419	E	80	0.452
	F	120	0.447	G	0.50	0.414	H	1.0	0.288						

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† SPCC Compound

‡ CCC Compound

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1103044
Calibration Date: 03/29/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10443
Instrument ID: MS23

Column: MS

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Chlorobenzene				B	5.0	1.69	C	10	1.60	D	40	1.63	E	80	1.68
	F	120	1.67	G	0.50	1.82	H	1.0	1.24						
Ethylbenzene				B	5.0	0.940	C	10	0.914	D	40	0.946	E	80	0.992
	F	120	1.00	G	0.50	0.947	H	1.0	0.693						
Styrene				B	5.0	0.840	C	10	0.810	D	40	0.861	E	80	0.934
	F	120	0.928	G	0.50	0.855	H	1.0	0.562						
m,p-Xylenes				B	10	1.17	C	20	1.14	D	80	1.19	E	160	1.25
	F	240	1.26	G	1.0	1.18	H	2.0	0.826						
o-Xylene				B	5.0	1.10	C	10	1.08	D	40	1.12	E	80	1.16
	F	120	1.17	G	0.50	1.18	H	1.0	0.788						
Bromoform				B	5.0	0.193	C	10	0.193	D	40	0.208	E	80	0.226
	F	120	0.226	G	0.50	0.193	H	1.0	0.130						
Acetone				B	200	0.0384	C	400	0.0394	D	800	0.0374	E	1600	0.0387
	F	2400	0.0390	G	20	0.0311	H	80	0.0417						
1,1,2,2-Tetrachloroethane				B	5.0	0.471	C	10	0.451	D	40	0.426	E	80	0.449
	F	120	0.434	G	0.50	0.568	H	1.0	0.310						
1,3-Dichlorobenzene				B	5.0	1.46	C	10	1.39	D	40	1.44	E	80	1.49
	F	120	1.49	G	0.50	1.60	H	1.0	1.02						
1,4-Dichlorobenzene				B	5.0	1.48	C	10	1.40	D	40	1.40	E	80	1.45
	F	120	1.42	G	0.50	1.69	H	1.0	1.09						
1,2-Dichlorobenzene				B	5.0	1.29	C	10	1.22	D	40	1.23	E	80	1.25
	F	120	1.23	G	0.50	1.45	H	1.0	0.937						
Acrolein	A	5.0	0.0275	B	100	0.0293	C	200	0.0283	D	800	0.0272	E	1600	0.0266
	F	2400	0.0252	G	10	0.0325	H	20	0.0210						
Acrylonitrile				B	10	0.0472	C	20	0.0452	D	80	0.0440	E	160	0.0452
	F	240	0.0441	G	1.0	0.0407	H	2.0	0.0429						
Toluene-d8				B	8.0	0.934	C	10	0.959	D	20	1.01	E	40	0.876
	F	60	1.00				H	6.0	0.888						
4-Bromofluorobenzene				B	8.0	0.813	C	10	0.829	D	20	0.859	E	40	0.791
	F	60	0.870				H	6.0	0.776						
Dibromofluoromethane				B	8.0	0.216	C	10	0.222	D	20	0.228	E	40	0.204
	F	60	0.227				H	6.0	0.201						

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† SPCC Compound

‡ CCC Compound

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1103044
Calibration Date: 03/29/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10443
Instrument ID: MS23

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation	
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Dichlorodifluoromethane	TRG	AverageRF	% RSD	11.6		≤35	0.351		0.01
Chloromethane	TRG	AverageRF	% RSD	12.9		≤35	0.509		0.01
Vinyl Chloride	TRG	AverageRF	% RSD	15.8		≤35	0.405		0.01
Bromomethane	TRG	AverageRF	% RSD	33.2		≤35	0.148		0.01
Chloroethane	TRG	AverageRF	% RSD	14.5		≤35	0.0706		0.01
Trichlorofluoromethane	TRG	AverageRF	% RSD	11.8		≤35	0.500		0.01
Trichlorotrifluoroethane	TRG	AverageRF	% RSD	12.7		≤35	0.221		0.01
1,1-Dichloroethene	MS	AverageRF	% RSD	9.5		≤35	0.241		0.01
Carbon Disulfide	TRG	AverageRF	% RSD	9.9		≤35	1.00		0.01
Methylene Chloride	TRG	AverageRF	% RSD	16.6		≤35	0.246		0.01
trans-1,2-Dichloroethene	TRG	AverageRF	% RSD	11.6		≤35	0.250		0.01
cis-1,2-Dichloroethene	TRG	AverageRF	% RSD	12.8		≤35	0.268		0.01
2-Butanone (MEK)	TRG	AverageRF	% RSD	15.8		≤35	0.0111		0.01
1,1-Dichloroethane	TRG	AverageRF	% RSD	10.1		≤35	0.495		0.01
Chloroform	TRG	AverageRF	% RSD	9.4		≤35	0.447		0.01
1,1,1-Trichloroethane (TCA)	TRG	AverageRF	% RSD	11.1		≤35	0.413		0.01
Carbon Tetrachloride	TRG	AverageRF	% RSD	15.4		≤35	0.318		0.01
Benzene	MS	AverageRF	% RSD	9.4		≤35	1.05		0.01
1,2-Dichloroethane (EDC)	TRG	AverageRF	% RSD	10.0		≤35	0.320		0.01
Vinyl Acetate	TRG	AverageRF	% RSD	2.4		≤35	0.0284		0.01
Trichloroethene (TCE)	MS	AverageRF	% RSD	9.4		≤35	0.266		0.01
1,2-Dichloropropane	TRG	AverageRF	% RSD	9.9		≤35	0.268		0.01
Bromodichloromethane	TRG	AverageRF	% RSD	11.1		≤35	0.302		0.01
2-Chloroethyl Vinyl Ether	TRG	AverageRF	% RSD	14.4		≤35	0.0913		0.01
trans-1,3-Dichloropropene	TRG	AverageRF	% RSD	14.9		≤35	0.729		0.01
4-Methyl-2-pentanone (MIBK)	TRG	AverageRF	% RSD	17.2		≤35	0.0391		0.01
2-Hexanone	TRG	AverageRF	% RSD	15.7		≤35	0.199		0.01
Toluene	MS	AverageRF	% RSD	10.3		≤35	0.655		0.01
cis-1,3-Dichloropropene	TRG	AverageRF	% RSD	13.6		≤35	0.367		0.01
1,1,2-Trichloroethane	TRG	AverageRF	% RSD	11.7		≤35	0.318		0.01
Tetrachloroethene (PCE)	TRG	AverageRF	% RSD	11.2		≤35	0.474		0.01
Dibromochloromethane	TRG	AverageRF	% RSD	13.5		≤35	0.407		0.01
Chlorobenzene	MS	AverageRF	% RSD	11.2		≤35	1.62		0.01
Ethylbenzene	TRG	AverageRF	% RSD	11.3		≤35	0.919		0.01
Styrene	TRG	AverageRF	% RSD	15.2		≤35	0.827		0.01
m,p-Xylenes	TRG	AverageRF	% RSD	12.8		≤35	1.14		0.01
o-Xylene	TRG	AverageRF	% RSD	12.5		≤35	1.08		0.01
Bromoform	TRG	AverageRF	% RSD	16.7		≤35	0.195		0.01
Acetone	TRG	AverageRF	% RSD	8.7		≤35	0.0380		0.01
1,1,2,2-Tetrachloroethane	TRG	AverageRF	% RSD	17.1		≤35	0.444		0.01
1,3-Dichlorobenzene	TRG	AverageRF	% RSD	13.0		≤35	1.41		0.01
1,4-Dichlorobenzene	TRG	AverageRF	% RSD	12.6		≤35	1.42		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound

‡ CCC Compound

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1103044
Calibration Date: 03/29/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10443
Instrument ID: MS23

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
1,2-Dichlorobenzene	MS	AverageRF	% RSD	12.4		≤35	1.23		0.01
Acrolein	TRG	AverageRF	% RSD	12.2		≤35	0.0272		0.01
Acrylonitrile	TRG	AverageRF	% RSD	4.6		≤35	0.0442		0.01
Toluene-d8	SURR	AverageRF	% RSD	6.0		≤35	0.945		0.01
4-Bromofluorobenzene	SURR	AverageRF	% RSD	4.5		≤35	0.823		0.01
Dibromofluoromethane	SURR	AverageRF	% RSD	5.3		≤35	0.216		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound

‡ CCC Compound

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1103044
Calibration Date: 03/29/2011
Date Analyzed: 03/30/2011

Second Source Calibration Verification
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 624

Calibration ID: CAL10443
Units: PPB

File ID: J:\MS23\DATA\032911\0329F032.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Dichlorodifluoromethane	10	9.7	0.351	0.341	-3	NA	± 40 %	AverageRF
Chloromethane	10	10	0.509	0.521	2	NA	± 104 %	AverageRF
Vinyl Chloride	10	11	0.405	0.448	11	NA	± 96 %	AverageRF
Bromomethane	10	10	0.148	0.154	4	NA	± 86 %	AverageRF
Chloroethane	10	11	0.0706	0.0772	9	NA	± 62 %	AverageRF
Trichlorofluoromethane	10	9.6	0.500	0.479	-4	NA	± 52 %	AverageRF
Trichlorotrifluoroethane	10	10	0.221	0.230	4	NA	± 40 %	AverageRF
1,1-Dichloroethene	10	12	0.241	0.292	21	NA	± 49 %	AverageRF
Carbon Disulfide	20	22	1.00	1.08	8	NA	± 40 %	AverageRF
Methylene Chloride	10	11	0.246	0.275	12	NA	± 39 %	AverageRF
trans-1,2-Dichloroethene	10	12	0.250	0.290	16	NA	± 30 %	AverageRF
cis-1,2-Dichloroethene	10	11	0.268	0.292	9	NA	± 30 %	AverageRF
2-Butanone (MEK)	50	57	0.0111	0.0128	15	NA	± 40 %	AverageRF
1,1-Dichloroethane	10	12	0.495	0.571	15	NA	± 27 %	AverageRF
Chloroform	10	12	0.447	0.514	15	NA	± 32 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	11	0.413	0.463	12	NA	± 25 %	AverageRF
Carbon Tetrachloride	10	12	0.318	0.369	16	NA	± 27 %	AverageRF
Benzene	10	12	1.05	1.21	15	NA	± 36 %	AverageRF
1,2-Dichloroethane (EDC)	10	12	0.320	0.368	15	NA	± 32 %	AverageRF
Vinyl Acetate	20	24	0.0284	0.0348	22	NA	± 80 %	AverageRF
Trichloroethene (TCE)	10	11	0.266	0.298	12	NA	± 33 %	AverageRF
1,2-Dichloropropane	10	11	0.268	0.299	12	NA	± 66 %	AverageRF
Bromodichloromethane	10	11	0.302	0.341	13	NA	± 34 %	AverageRF
2-Chloroethyl Vinyl Ether	10	10	0.0913	0.0929	2	NA	± 124 %	AverageRF
trans-1,3-Dichloropropene	10	10	0.729	0.757	4	NA	± 50 %	AverageRF
4-Methyl-2-pentanone (MIBK)	50	54	0.0391	0.0419	7	NA	± 40 %	AverageRF
2-Hexanone	50	55	0.199	0.218	10	NA	± 40 %	AverageRF
Toluene	10	11	0.655	0.742	13	NA	± 25 %	AverageRF
cis-1,3-Dichloropropene	10	11	0.367	0.420	15	NA	± 76 %	AverageRF
1,1,2-Trichloroethane	10	11	0.318	0.355	11	NA	± 29 %	AverageRF
Tetrachloroethene (PCE)	10	11	0.474	0.533	12	NA	± 26 %	AverageRF
Dibromochloromethane	10	11	0.407	0.449	10	NA	± 32 %	AverageRF
Chlorobenzene	10	11	1.62	1.82	12	NA	± 34 %	AverageRF
Ethylbenzene	10	11	0.919	1.04	13	NA	± 41 %	AverageRF
Styrene	10	11	0.827	0.897	8	NA	± 40 %	AverageRF
m,p-Xylenes	20	22	1.14	1.27	11	NA	± 40 %	AverageRF
o-Xylene	10	11	1.08	1.19	9	NA	± 40 %	AverageRF
Bromoform	10	11	0.195	0.207	6	NA	± 29 %	AverageRF
Acetone	50	64	0.0380	0.0482	27	NA	± 40 %	AverageRF
1,1,2,2-Tetrachloroethane	10	11	0.444	0.479	8	NA	± 39 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound

‡ CCC Compound

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1103044
Calibration Date: 03/29/2011
Date Analyzed: 03/30/2011

Second Source Calibration Verification
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 624

Calibration ID: CAL10443
Units: PPB

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
1,3-Dichlorobenzene	10	11	1.41	1.61	14	NA	± 27 %	AverageRF
1,4-Dichlorobenzene	10	11	1.42	1.60	13	NA	± 37 %	AverageRF
1,2-Dichlorobenzene	10	11	1.23	1.37	11	NA	± 37 %	AverageRF
Acrolein	100	110	0.0272	0.0288	6	NA	± 80 %	AverageRF
Acrylonitrile	10	12	0.0442	0.0515	17	NA	± 40 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1103044
Date Analyzed: 04/19/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 624

Calibration Date: 03/29/2011
Calibration ID: CAL10443
Analysis Lot: KWG1103523
Units: PPB

File ID: J:\MS23\DATA\041911BAYW\0419F006.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Dichlorodifluoromethane	10	11	0.01	0.351	0.374	6	NA	± 40 %	AverageRF
Chloromethane	10	11	0.01	0.509	0.572	12	NA	± 104 %	AverageRF
Vinyl Chloride	10	15	0.01	0.405	0.593	46	NA	± 96 %	AverageRF
Bromomethane	10	12	0.01	0.148	0.171	15	NA	± 86 %	AverageRF
Chloroethane	10	13	0.01	0.0706	0.0899	27	NA	± 62 %	AverageRF
Trichlorofluoromethane	10	13	0.01	0.500	0.638	28	NA	± 52 %	AverageRF
Trichlorotrifluoroethane	10	12	0.01	0.221	0.262	19	NA	± 40 %	AverageRF
1,1-Dichloroethene	10	10	0.01	0.241	0.251	4	NA	± 49 %	AverageRF
Carbon Disulfide	10	11	0.01	1.00	1.09	9	NA	± 40 %	AverageRF
Methylene Chloride	10	9.4	0.01	0.246	0.230	-6	NA	± 39 %	AverageRF
trans-1,2-Dichloroethene	10	9.6	0.01	0.250	0.240	-4	NA	± 30 %	AverageRF
cis-1,2-Dichloroethene	10	9.5	0.01	0.268	0.256	-5	NA	± 30 %	AverageRF
2-Butanone (MEK)	200	180	0.01	0.0111	0.0101	-9	NA	± 40 %	AverageRF
1,1-Dichloroethane	10	9.6	0.01	0.495	0.472	-5	NA	± 27 %	AverageRF
Chloroform	10	9.9	0.01	0.447	0.443	-1	NA	± 32 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	9.4	0.01	0.413	0.389	-6	NA	± 25 %	AverageRF
Carbon Tetrachloride	10	10	0.01	0.318	0.327	3	NA	± 27 %	AverageRF
Benzene	10	9.8	0.01	1.05	1.03	-2	NA	± 36 %	AverageRF
1,2-Dichloroethane (EDC)	10	9.6	0.01	0.320	0.306	-4	NA	± 32 %	AverageRF
Vinyl Acetate	20	18	0.01	0.0284	0.0259	-9	NA	± 80 %	AverageRF
Trichloroethene (TCE)	10	9.6	0.01	0.266	0.255	-4	NA	± 33 %	AverageRF
1,2-Dichloropropane	10	9.5	0.01	0.268	0.253	-5	NA	± 66 %	AverageRF
Bromodichloromethane	10	10	0.01	0.302	0.301	0	NA	± 34 %	AverageRF
2-Chloroethyl Vinyl Ether	10	8.8	0.01	0.0913	0.0801	-12	NA	± 124 %	AverageRF
trans-1,3-Dichloropropene	10	8.7	0.01	0.729	0.637	-13	NA	± 50 %	AverageRF
4-Methyl-2-pentanone (MIBK)	200	170	0.01	0.0391	0.0342	-13	NA	± 40 %	AverageRF
2-Hexanone	200	190	0.01	0.199	0.185	-7	NA	± 40 %	AverageRF
Toluene	10	10	0.01	0.655	0.667	2	NA	± 25 %	AverageRF
cis-1,3-Dichloropropene	10	8.8	0.01	0.367	0.323	-12	NA	± 76 %	AverageRF
1,1,2-Trichloroethane	10	11	0.01	0.318	0.340	7	NA	± 29 %	AverageRF
Tetrachloroethene (PCE)	10	11	0.01	0.474	0.544	15	NA	± 26 %	AverageRF
Dibromochloromethane	10	11	0.01	0.407	0.447	10	NA	± 32 %	AverageRF
Chlorobenzene	10	11	0.01	1.62	1.77	9	NA	± 34 %	AverageRF
Ethylbenzene	10	11	0.01	0.919	0.999	9	NA	± 41 %	AverageRF
Styrene	10	11	0.01	0.827	0.887	7	NA	± 40 %	AverageRF
m,p-Xylenes	20	22	0.01	1.14	1.27	11	NA	± 40 %	AverageRF
o-Xylene	10	11	0.01	1.08	1.15	6	NA	± 40 %	AverageRF
Bromoform	10	11	0.01	0.195	0.208	7	NA	± 29 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1103044
Date Analyzed: 04/19/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 624

Calibration Date: 03/29/2011
Calibration ID: CAL10443
Analysis Lot: KWG1103523
Units: PPB

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Acetone	200	220	0.01	0.0380	0.0412	9	NA	± 40 %	AverageRF
1,1,2,2-Tetrachloroethane	10	9.6	0.01	0.444	0.427	-4	NA	± 39 %	AverageRF
1,3-Dichlorobenzene	10	11	0.01	1.41	1.50	6	NA	± 27 %	AverageRF
1,4-Dichlorobenzene	10	10	0.01	1.42	1.48	4	NA	± 37 %	AverageRF
1,2-Dichlorobenzene	10	10	0.01	1.23	1.28	4	NA	± 37 %	AverageRF
Acrolein	200	110	0.01	0.0272	0.0149	-45	NA	± 80 %	AverageRF
Acrylonitrile	20	18	0.01	0.0442	0.0399	-10	NA	± 40 %	AverageRF
Toluene-d8	10	11	0.01	0.945	1.00	6	NA	± 30 %	AverageRF
4-Bromofluorobenzene	10	10	0.01	0.823	0.843	2	NA	± 30 %	AverageRF
Dibromofluoromethane	10	10	0.01	0.216	0.219	1	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1103044
Date Analyzed: 04/20/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 624

Calibration Date: 03/29/2011
Calibration ID: CAL10443
Analysis Lot: KWG1103583
Units: PPB

File ID: J:\MS23\DATA\042011BAYW\0420F002.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Dichlorodifluoromethane	10	11	0.01	0.351	0.385	10	NA	± 40 %	AverageRF
Chloromethane	10	11	0.01	0.509	0.561	10	NA	± 104 %	AverageRF
Vinyl Chloride	10	15	0.01	0.405	0.589	46	NA	± 96 %	AverageRF
Bromomethane	10	11	0.01	0.148	0.163	10	NA	± 86 %	AverageRF
Chloroethane	10	12	0.01	0.0706	0.0851	20	NA	± 62 %	AverageRF
Trichlorofluoromethane	10	13	0.01	0.500	0.630	26	NA	± 52 %	AverageRF
Trichlorotrifluoroethane	10	12	0.01	0.221	0.264	20	NA	± 40 %	AverageRF
1,1-Dichloroethene	10	11	0.01	0.241	0.255	5	NA	± 49 %	AverageRF
Carbon Disulfide	10	11	0.01	1.00	1.07	7	NA	± 40 %	AverageRF
Methylene Chloride	10	9.5	0.01	0.246	0.233	-5	NA	± 39 %	AverageRF
trans-1,2-Dichloroethene	10	9.9	0.01	0.250	0.247	-1	NA	± 30 %	AverageRF
cis-1,2-Dichloroethene	10	9.8	0.01	0.268	0.263	-2	NA	± 30 %	AverageRF
2-Butanone (MEK)	200	180	0.01	0.0111	0.00979 *	-12	NA	± 40 %	AverageRF
1,1-Dichloroethane	10	9.6	0.01	0.495	0.475	-4	NA	± 27 %	AverageRF
Chloroform	10	9.9	0.01	0.447	0.443	-1	NA	± 32 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	9.3	0.01	0.413	0.385	-7	NA	± 25 %	AverageRF
Carbon Tetrachloride	10	10	0.01	0.318	0.317	0	NA	± 27 %	AverageRF
Benzene	10	10	0.01	1.05	1.05	0	NA	± 36 %	AverageRF
1,2-Dichloroethane (EDC)	10	9.8	0.01	0.320	0.313	-2	NA	± 32 %	AverageRF
Vinyl Acetate	20	18	0.01	0.0284	0.0262	-8	NA	± 80 %	AverageRF
Trichloroethene (TCE)	10	9.9	0.01	0.266	0.264	-1	NA	± 33 %	AverageRF
1,2-Dichloropropane	10	9.6	0.01	0.268	0.256	-4	NA	± 66 %	AverageRF
Bromodichloromethane	10	9.7	0.01	0.302	0.294	-3	NA	± 34 %	AverageRF
2-Chloroethyl Vinyl Ether	10	8.8	0.01	0.0913	0.0805	-12	NA	± 124 %	AverageRF
trans-1,3-Dichloropropene	10	8.0	0.01	0.729	0.586	-20	NA	± 50 %	AverageRF
4-Methyl-2-pentanone (MIBK)	200	170	0.01	0.0391	0.0332	-15	NA	± 40 %	AverageRF
2-Hexanone	200	180	0.01	0.199	0.179	-10	NA	± 40 %	AverageRF
Toluene	10	10	0.01	0.655	0.688	5	NA	± 25 %	AverageRF
cis-1,3-Dichloropropene	10	8.7	0.01	0.367	0.317	-14	NA	± 76 %	AverageRF
1,1,2-Trichloroethane	10	11	0.01	0.318	0.337	6	NA	± 29 %	AverageRF
Tetrachloroethene (PCE)	10	12	0.01	0.474	0.560	18	NA	± 26 %	AverageRF
Dibromochloromethane	10	10	0.01	0.407	0.420	3	NA	± 32 %	AverageRF
Chlorobenzene	10	11	0.01	1.62	1.78	10	NA	± 34 %	AverageRF
Ethylbenzene	10	11	0.01	0.919	1.00	9	NA	± 41 %	AverageRF
Styrene	10	11	0.01	0.827	0.876	6	NA	± 40 %	AverageRF
m,p-Xylenes	20	23	0.01	1.14	1.29	13	NA	± 40 %	AverageRF
o-Xylene	10	11	0.01	1.08	1.16	7	NA	± 40 %	AverageRF
Bromoform	10	9.8	0.01	0.195	0.191	-3	NA	± 29 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound

‡ CCC Compound

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1103044
Date Analyzed: 04/20/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 624

Calibration Date: 03/29/2011
Calibration ID: CAL10443
Analysis Lot: KWG1103583
Units: PPB

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Acetone	200	210	0.01	0.0380	0.0390	3	NA	± 40 %	AverageRF
1,1,2,2-Tetrachloroethane	10	9.1	0.01	0.444	0.402	-9	NA	± 39 %	AverageRF
1,3-Dichlorobenzene	10	11	0.01	1.41	1.52	7	NA	± 27 %	AverageRF
1,4-Dichlorobenzene	10	11	0.01	1.42	1.49	5	NA	± 37 %	AverageRF
1,2-Dichlorobenzene	10	11	0.01	1.23	1.34	8	NA	± 37 %	AverageRF
Acrolein	200	130	0.01	0.0272	0.0181	-33	NA	± 80 %	AverageRF
Acrylonitrile	20	17	0.01	0.0442	0.0385	-13	NA	± 40 %	AverageRF
Toluene-d8	10	11	0.01	0.945	1.00	6	NA	± 30 %	AverageRF
4-Bromofluorobenzene	10	10	0.01	0.823	0.852	4	NA	± 30 %	AverageRF
Dibromofluoromethane	10	10	0.01	0.216	0.223	3	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1103044

Analysis Run Log
Volatile Organic Compounds

Analysis Method: 624

Analysis Lot: KWG1103523
Instrument ID: MS23

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0419F005.D	GC/MS Tuning - Bromofluorobenzene	KWG1103523-1	4/19/2011	10:05		4/19/2011	10:20
0419F006.D	Continuing Calibration Verification	KWG1103523-2	4/19/2011	11:04		4/19/2011	11:19
0419F007.D	Lab Control Sample	KWG1103524-3	4/19/2011	11:47		4/19/2011	12:02
0419F008.D	Fridout 172BMS	KWG1103524-1	4/19/2011	12:41		4/19/2011	12:56
0419F010.D	Fridout 172BDMS	KWG1103524-2	4/19/2011	13:41		4/19/2011	13:56
0419F014.D	Method Blank	KWG1103524-4	4/19/2011	15:43		4/19/2011	15:58
0419F015.D	Fridout 172B	K1103044-002	4/19/2011	16:13		4/19/2011	16:28
0419F017.D	Fridout 172A	K1103044-001	4/19/2011	17:13		4/19/2011	17:28
0419F018.D	Fridin Air 83A	K1103044-003	4/19/2011	17:44		4/19/2011	17:59
0419F019.D	Frideff Air 85A	K1103044-004	4/19/2011	18:14		4/19/2011	18:29
0419F020.D	Trip Blank	K1103044-005	4/19/2011	18:44		4/19/2011	18:59

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1103044

Analysis Run Log
Volatile Organic Compounds

Analysis Method: 624

Analysis Lot: KWG1103583
Instrument ID: MS23

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0420F001.D	GC/MS Tuning - Bromofluorobenzene	KWG1103583-1	4/20/2011	14:19		4/20/2011	14:34
0420F002.D	Continuing Calibration Verification	KWG1103583-2	4/20/2011	14:50		4/20/2011	15:05
0420F003.D	Lab Control Sample	KWG1103584-3	4/20/2011	15:20		4/20/2011	15:35
0420F004.D	ZZZZZZ	ZZZZZZ	4/20/2011	15:51		4/20/2011	16:06
0420F005.D	ZZZZZZ	ZZZZZZ	4/20/2011	16:22		4/20/2011	16:37
0420F007.D	Method Blank	KWG1103584-4	4/20/2011	17:23		4/20/2011	17:38
0420F008.D	Fridin Air 83ADL	K1103044-003	4/20/2011	17:53		4/20/2011	18:08
0420F009.D	ZZZZZZ	ZZZZZZ	4/20/2011	18:24		4/20/2011	18:39

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1103044
Date Extracted: 04/19/2011

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: METHOD
Analysis Method: 624

Extraction Lot: KWG1103524
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
Fridout 172A	K1103044-001	04/07/11	04/08/11	10ml	10ml	NA	
Fridout 172B	K1103044-002	04/07/11	04/08/11	10ml	10ml	NA	
Fridin Air 83A	K1103044-003	04/07/11	04/08/11	10ml	10ml	NA	
Frideff Air 85A	K1103044-004	04/07/11	04/08/11	10ml	10ml	NA	
Trip Blank	K1103044-005	04/07/11	04/08/11	10ml	10ml	NA	
Method Blank	KWG1103524-4	NA	NA	10ml	10ml	NA	
Fridout 172BMS	KWG1103524-1	04/07/11	04/08/11	10ml	10ml	NA	
Fridout 172BDMS	KWG1103524-2	04/07/11	04/08/11	10ml	10ml	NA	
Lab Control Sample	KWG1103524-3	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1103044
Date Extracted: 04/20/2011

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: METHOD
Analysis Method: 624

Extraction Lot: KWG1103584
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
Fridin Air 83ADL	K1103044-003	04/07/11	04/08/11	10ml	10ml	NA	
Method Blank	KWG1103584-4	NA	NA	10ml	10ml	NA	
Lab Control Sample	KWG1103584-3	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Organic Analysis:
Volatile Organic Compounds

Validation Package

Organic Analysis:
Volatile Organic Compounds

Validation Package

QC Reports

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1103044

Surrogate Recovery Summary
Volatile Organic Compounds

Extraction Method: METHOD
Analysis Method: 624

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
Fridout 172A	K1103044-001	100	92	104
Fridout 172B	K1103044-002	100	94	100
Fridin Air 83ADL	K1103044-003	100	95	104
Fridin Air 83A	K1103044-003	100	93	102
Frideff Air 85A	K1103044-004	100	91	102
Trip Blank	K1103044-005	100	91	103
Method Blank	KWG1103524-4	98	92	100
Method Blank	KWG1103584-4	100	97	103
Fridout 172BMS	KWG1103524-1	105	94	105
Fridout 172BDMS	KWG1103524-2	104	96	103
Lab Control Sample	KWG1103524-3	105	98	105
Lab Control Sample	KWG1103584-3	105	100	106

Surrogate Recovery Control Limits (%)

Sur1 =	Toluene-d8	72-122
Sur2 =	4-Bromofluorobenzene	70-120
Sur3 =	Dibromofluoromethane	61-121

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1103044
Date Analyzed: 04/19/2011
Time Analyzed: 11:04

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID: J:\MS23\DATA\041911BAYW\0419F006.D
Instrument ID: MS23
Analysis Method: 624

Lab Code: KWG1103523-2
Analysis Lot: KWG1103523

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	554,553	5.94	216,893	9.34	205,263	11.75
	Upper Limit ==>	1,109,106	6.44	433,786	9.84	410,526	12.25
	Lower Limit ==>	277,277	5.44	108,447	8.84	102,632	11.25
	ICAL Result ==>	558,021	5.94	229,491	9.35	189,592	11.75
Associated Analyses							
Lab Control Sample	KWG1103524-3	542,881	5.94	224,691	9.34	204,337	11.75
Fridout 172BMS	KWG1103524-1	545,375	5.94	227,021	9.34	201,105	11.75
Fridout 172BDMS	KWG1103524-2	553,595	5.94	226,047	9.34	202,347	11.75
Method Blank	KWG1103524-4	605,032	5.94	240,142	9.34	194,577	11.75
Fridout 172B	K1103044-002	591,443	5.94	233,521	9.35	196,914	11.75
Fridout 172A	K1103044-001	570,832	5.94	226,237	9.34	188,328	11.75
Fridin Air 83A	K1103044-003	573,139	5.94	226,857	9.34	189,938	11.75
Frideff Air 85A	K1103044-004	557,844	5.94	221,851	9.35	182,613	11.75
Trip Blank	K1103044-005	551,383	5.94	219,310	9.34	181,356	11.75

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Analyzed:**	04/20/2011
		Time Analyzed:	14:50

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID:	J:\MS23\DATA\042011BAYW\0420F002.D	**Lab Code:**	KWG1103583-2
Instrument ID:	MS23	**Analysis Lot:**	KWG1103583
Analysis Method:	624		

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	582,018	5.94	232,338	9.34	220,440	11.75
	Upper Limit ==>	1,164,036	6.44	464,676	9.84	440,880	12.25
	Lower Limit ==>	291,009	5.44	116,169	8.84	110,220	11.25
	ICAL Result ==>	558,021	5.94	229,491	9.35	189,592	11.75
Associated Analyses							
Lab Control Sample	KWG1103584-3	586,441	5.94	243,010	9.34	221,159	11.75
Method Blank	KWG1103584-4	565,381	5.94	224,035	9.34	191,866	11.75
Fridin Air 83ADL	K1103044-003	546,761	5.94	219,052	9.34	185,235	11.75

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Extracted:**	04/19/2011
Sample Matrix:	Water	**Date Analyzed:**	04/19/2011

Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organic Compounds

Sample Name:	Fridout 172B	**Units:**	ug/L
Lab Code:	K1103044-002	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	624	**Extraction Lot:**	KWG1103524

		Fridout 172BMS KWG1103524-1 Matrix Spike			Fridout 172BDMS KWG1103524-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
1,1-Dichloroethene	ND	11.8	10.0	118	10.2	10.0	102	64-151	14	30
Benzene	ND	10.1	10.0	101	9.04	10.0	90	61-145	11	30
Trichloroethene (TCE)	ND	9.85	10.0	99	8.67	10.0	87	23-193	13	30
Toluene	0.18	10.3	10.0	101	9.16	10.0	90	69-137	12	30
Chlorobenzene	ND	10.2	10.0	102	9.67	10.0	97	76-128	6	30
1,2-Dichlorobenzene	ND	10.2	10.0	102	9.80	10.0	98	71-135	4	30

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Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Extracted:**	04/19/2011
Sample Matrix:	Water	**Date Analyzed:**	04/19/2011

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	METHOD	**Units:**	ug/L
Analysis Method:	624	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1103524

	Lab Control Sample KWG1103524-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Dichlorodifluoromethane	10.5	10.0	105	37-147
Chloromethane	11.7	10.0	117	66-139
Vinyl Chloride	12.6	10.0	126	71-136
Bromomethane	12.2	10.0	122	61-154
Chloroethane	12.7	10.0	127	69-130
Trichlorofluoromethane	10.8	10.0	108	65-127
Trichlorotrifluoroethane	10.7	10.0	107	72-134
1,1-Dichloroethene	12.2	10.0	122	79-147
Carbon Disulfide	20.5	20.0	103	41-174
Methylene Chloride	10.7	10.0	107	67-144
trans-1,2-Dichloroethene	10.9	10.0	109	78-140
cis-1,2-Dichloroethene	10.3	10.0	103	80-134
2-Butanone (MEK)	53.2	50.0	106	82-140
1,1-Dichloroethane	10.5	10.0	105	79-135
Chloroform	10.8	10.0	108	81-136
1,1,1-Trichloroethane (TCA)	9.71	10.0	97	77-139
Carbon Tetrachloride	10.8	10.0	108	69-144
Benzene	10.7	10.0	107	81-140
1,2-Dichloroethane (EDC)	10.4	10.0	104	74-140
Vinyl Acetate	17.1	20.0	86	60-157
Trichloroethene (TCE)	10.4	10.0	104	81-133
1,2-Dichloropropane	10.1	10.0	101	80-134
Bromodichloromethane	10.7	10.0	107	80-136
2-Chloroethyl Vinyl Ether	10.0	10.0	100	61-141
trans-1,3-Dichloropropene	8.13	10.0	81	73-122
4-Methyl-2-pentanone (MIBK)	42.1	50.0	84	81-127
2-Hexanone	44.5	50.0	89	80-123
Toluene	10.7	10.0	107	80-139
cis-1,3-Dichloropropene	9.48	10.0	95	77-137
1,1,2-Trichloroethane	10.6	10.0	106	87-129
Tetrachloroethene (PCE)	11.3	10.0	113	82-129
Dibromochloromethane	10.7	10.0	107	82-128
Chlorobenzene	11.2	10.0	112	87-126
Ethylbenzene	10.8	10.0	108	86-128
Styrene	10.5	10.0	105	84-129

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1103044
Date Extracted: 04/19/2011
Date Analyzed: 04/19/2011

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method: METHOD
Analysis Method: 624

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1103524

	Lab Control Sample KWG1103524-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
m,p-Xylenes	21.6	20.0	108	85-129
o-Xylene	10.3	10.0	103	89-125
Bromoform	11.0	10.0	110	61-144
Acetone	69.5	50.0	139	79-146
1,1,2,2-Tetrachloroethane	9.50	10.0	95	78-144
1,3-Dichlorobenzene	11.0	10.0	110	78-142
1,4-Dichlorobenzene	11.0	10.0	110	77-144
1,2-Dichlorobenzene	10.8	10.0	108	77-143
Acrolein	97.3	100	97	27-200
Acrylonitrile	11.0	10.0	110	82-138

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Extracted:**	04/20/2011
Sample Matrix:	Water	**Date Analyzed:**	04/20/2011

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	METHOD	**Units:**	ug/L
Analysis Method:	624	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1103584

	Lab Control Sample KWG1103584-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Dichlorodifluoromethane	11.1	10.0	111	37-147
Chloromethane	11.1	10.0	111	66-139
Vinyl Chloride	12.3	10.0	123	71-136
Bromomethane	13.8	10.0	138	61-154
Chloroethane	12.2	10.0	122	69-130
Trichlorofluoromethane	10.5	10.0	105	65-127
Trichlorotrifluoroethane	11.3	10.0	113	72-134
1,1-Dichloroethene	12.3	10.0	123	79-147
Carbon Disulfide	22.0	20.0	110	41-174
Methylene Chloride	10.6	10.0	106	67-144
trans-1,2-Dichloroethene	10.8	10.0	108	78-140
cis-1,2-Dichloroethene	10.3	10.0	103	80-134
2-Butanone (MEK)	60.6	50.0	121	82-140
1,1-Dichloroethane	10.4	10.0	104	79-135
Chloroform	10.7	10.0	107	81-136
1,1,1-Trichloroethane (TCA)	9.67	10.0	97	77-139
Carbon Tetrachloride	10.4	10.0	104	69-144
Benzene	10.8	10.0	108	81-140
1,2-Dichloroethane (EDC)	10.7	10.0	107	74-140
Vinyl Acetate	19.6	20.0	98	60-157
Trichloroethene (TCE)	10.5	10.0	105	81-133
1,2-Dichloropropane	10.1	10.0	101	80-134
Bromodichloromethane	10.4	10.0	104	80-136
2-Chloroethyl Vinyl Ether	9.70	10.0	97	61-141
trans-1,3-Dichloropropene	7.74	10.0	77	73-122
4-Methyl-2-pentanone (MIBK)	42.7	50.0	85	81-127
2-Hexanone	44.5	50.0	89	80-123
Toluene	10.7	10.0	107	80-139
cis-1,3-Dichloropropene	9.22	10.0	92	77-137
1,1,2-Trichloroethane	10.9	10.0	109	87-129
Tetrachloroethene (PCE)	11.5	10.0	115	82-129
Dibromochloromethane	10.3	10.0	103	82-128
Chlorobenzene	11.1	10.0	111	87-126
Ethylbenzene	10.7	10.0	107	86-128
Styrene	10.2	10.0	102	84-129

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1103044
Date Extracted: 04/20/2011
Date Analyzed: 04/20/2011

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method: METHOD
Analysis Method: 624

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1103584

Analyte Name	Lab Control Sample KWG1103584-3 Lab Control Spike Result	Expected	%Rec	%Rec Limits
m,p-Xylenes	21.5	20.0	108	85-129
o-Xylene	10.4	10.0	104	89-125
Bromoform	10.1	10.0	101	61-144
Acetone	68.0	50.0	136	79-146
1,1,2,2-Tetrachloroethane	9.49	10.0	95	78-144
1,3-Dichlorobenzene	11.0	10.0	110	78-142
1,4-Dichlorobenzene	11.0	10.0	110	77-144
1,2-Dichlorobenzene	10.9	10.0	109	77-143
Acrolein	93.6	100	94	27-200
Acrylonitrile	11.1	10.0	111	82-138

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Extracted:**	04/19/2011
Sample Matrix:	Water	**Date Analyzed:**	04/19/2011
		Time Analyzed:	15:43

Method Blank Summary
Volatile Organic Compounds

Sample Name:	Method Blank	**File ID:**	J:\MS23\DATA\041911BAYW\0419F014.D
Lab Code:	KWG1103524-4	**Instrument ID:**	MS23
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	624	**Extraction Lot:**	KWG1103524

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1103524-3	J:\MS23\DATA\041911BAYW\0419F007.D	04/19/11	11:47
Fridout 172BMS	KWG1103524-1	J:\MS23\DATA\041911BAYW\0419F008.D	04/19/11	12:41
Fridout 172BDMS	KWG1103524-2	J:\MS23\DATA\041911BAYW\0419F010.D	04/19/11	13:41
Fridout 172B	K1103044-002	J:\MS23\DATA\041911BAYW\0419F015.D	04/19/11	16:13
Fridout 172A	K1103044-001	J:\MS23\DATA\041911BAYW\0419F017.D	04/19/11	17:13
Fridin Air 83A	K1103044-003	J:\MS23\DATA\041911BAYW\0419F018.D	04/19/11	17:44
Frideff Air 85A	K1103044-004	J:\MS23\DATA\041911BAYW\0419F019.D	04/19/11	18:14
Trip Blank	K1103044-005	J:\MS23\DATA\041911BAYW\0419F020.D	04/19/11	18:44

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Extracted:**	04/20/2011
Sample Matrix:	Water	**Date Analyzed:**	04/20/2011
		Time Analyzed:	17:23

Method Blank Summary
Volatile Organic Compounds

Sample Name:	Method Blank	**File ID:**	J:\MS23\DATA\042011BAYW\0420F007.D
Lab Code:	KWG1103584-4	**Instrument ID:**	MS23
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	624	**Extraction Lot:**	KWG1103584

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1103584-3	J:\MS23\DATA\042011BAYW\0420F003.D	04/20/11	15:20
Fridin Air 83ADL	K1103044-003	J:\MS23\DATA\042011BAYW\0420F008.D	04/20/11	17:53

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Extracted:**	04/19/2011
Sample Matrix:	Water	**Date Analyzed:**	04/19/2011
		Time Analyzed:	11:47

Lab Control Sample Summary
Volatile Organic Compounds

Sample Name:	Lab Control Sample	**File ID:**	J:\MS23\DATA\041911BAYW\0419F007.D
Lab Code:	KWG1103524-3	**Instrument ID:**	MS23
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	624	**Extraction Lot:**	KWG1103524

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Fridout 172BMS	KWG1103524-1	J:\MS23\DATA\041911BAYW\0419F008.D	04/19/11	12:41
Fridout 172BDMS	KWG1103524-2	J:\MS23\DATA\041911BAYW\0419F010.D	04/19/11	13:41
Method Blank	KWG1103524-4	J:\MS23\DATA\041911BAYW\0419F014.D	04/19/11	15:43
Fridout 172B	K1103044-002	J:\MS23\DATA\041911BAYW\0419F015.D	04/19/11	16:13
Fridout 172A	K1103044-001	J:\MS23\DATA\041911BAYW\0419F017.D	04/19/11	17:13
Fridin Air 83A	K1103044-003	J:\MS23\DATA\041911BAYW\0419F018.D	04/19/11	17:44
Frideff Air 85A	K1103044-004	J:\MS23\DATA\041911BAYW\0419F019.D	04/19/11	18:14
Trip Blank	K1103044-005	J:\MS23\DATA\041911BAYW\0419F020.D	04/19/11	18:44

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Extracted:**	04/20/2011
Sample Matrix:	Water	**Date Analyzed:**	04/20/2011
		Time Analyzed:	15:20

Lab Control Sample Summary
Volatile Organic Compounds

Sample Name:	Lab Control Sample	**File ID:**	J:\MS23\DATA\042011BAYW\0420F003.D
Lab Code:	KWG1103584-3	**Instrument ID:**	MS23
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	624	**Extraction Lot:**	KWG1103584

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1103584-4	J:\MS23\DATA\042011BAYW\0420F007.D	04/20/11	17:23
Fridin Air 83ADL	K1103044-003	J:\MS23\DATA\042011BAYW\0420F008.D	04/20/11	17:53

Organic Analysis:
Volatile Organic Compounds

Validation Package

Raw Data

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1103044
Date Collected: 04/07/2011
Date Received: 04/08/2011
Date Extracted: 04/19/2011
Date Analyzed: 04/19/2011

Volatile Organic Compounds

Sample Name: Fridout 172A
Lab Code: K1103044-001
File ID: J:\MS23\DATA\041911BAYW\0419F017.D
Instrument ID: MS23

Units: ug/L
Basis: NA
Level: Low

Extraction Method: METHOD
Analysis Method: 624

Extraction Lot: KWG1103524
Calibration ID: CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-71-8	Dichlorodifluoromethane	0.40	U	0.50	0.40	
74-87-3	Chloromethane	0.035	U	0.50	0.035	
75-01-4	Vinyl Chloride	0.053	U	0.25	0.053	
74-83-9	Bromomethane	0.32	U	0.50	0.32	
75-00-3	Chloroethane	0.32	U	0.50	0.32	
75-69-4	Trichlorofluoromethane	0.048	U	0.50	0.048	
76-13-1	Trichlorotrifluoroethane	0.077	U	0.50	0.077	
75-35-4	1,1-Dichloroethene	0.37	U	0.50	0.37	
75-15-0	Carbon Disulfide	0.048	U	0.50	0.048	
75-09-2	Methylene Chloride	0.093	U	0.50	0.093	
156-60-5	trans-1,2-Dichloroethene	0.039	U	0.50	0.039	
156-59-2	cis-1,2-Dichloroethene	0.042	U	0.50	0.042	
78-93-3	2-Butanone (MEK)	3.4	U	20	3.4	
75-34-3	1,1-Dichloroethane	0.041	U	0.50	0.041	
67-66-3	Chloroform	0.038	U	0.50	0.038	
71-55-6	1,1,1-Trichloroethane (TCA)	0.044	U	0.50	0.044	
56-23-5	Carbon Tetrachloride	0.26	U	0.50	0.26	
71-43-2	Benzene	0.040	U	0.50	0.040	
107-06-2	1,2-Dichloroethane (EDC)	0.038	U	0.50	0.038	
108-05-4	Vinyl Acetate	0.21	U	10	0.21	
79-01-6	Trichloroethene (TCE)	0.044	U	0.50	0.044	
78-87-5	1,2-Dichloropropane	0.044	U	0.50	0.044	
75-27-4	Bromodichloromethane	0.047	U	0.50	0.047	
110-75-8	2-Chloroethyl Vinyl Ether	0.12	U	5.0	0.12	
10061-02-6	trans-1,3-Dichloropropene	0.045	U	0.50	0.045	
108-10-1	4-Methyl-2-pentanone (MIBK)	2.8	U	20	2.8	
591-78-6	2-Hexanone	1.8	U	20	1.8	
108-88-3	Toluene	**0.21**	J	0.50	0.039	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	04/07/2011
Sample Matrix:	Water	**Date Received:**	04/08/2011
		Date Extracted:	04/19/2011
		Date Analyzed:	04/19/2011

Volatile Organic Compounds

Sample Name:	Fridout 172A	**Units:**	ug/L
Lab Code:	K1103044-001	**Basis:**	NA
File ID:	J:\MS23\DATA\041911BAYW\0419F017.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103524
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
10061-01-5	cis-1,3-Dichloropropene	0.035	U	0.50	0.035	
79-00-5	1,1,2-Trichloroethane	0.072	U	0.50	0.072	
127-18-4	Tetrachloroethene (PCE)	0.043	U	0.50	0.043	
124-48-1	Dibromochloromethane	0.081	U	0.50	0.081	
108-90-7	Chlorobenzene	0.031	U	0.50	0.031	
100-41-4	Ethylbenzene	0.040	U	0.50	0.040	
100-42-5	Styrene	0.025	U	0.50	0.025	
136777-61-2	m,p-Xylenes	0.14	U	1.0	0.14	
95-47-6	o-Xylene	0.035	U	0.50	0.035	
75-25-2	Bromoform	0.11	U	0.50	0.11	
67-64-1	Acetone	4.3	U	20	4.3	
79-34-5	1,1,2,2-Tetrachloroethane	0.086	U	0.50	0.086	
541-73-1	1,3-Dichlorobenzene	0.071	U	0.50	0.071	
106-46-7	1,4-Dichlorobenzene	0.073	U	0.50	0.073	
95-50-1	1,2-Dichlorobenzene	0.086	U	0.50	0.086	
107-02-8	Acrolein†	2.1	U	10	2.1	
107-13-1	Acrylonitrile†	0.28	U	5.0	0.28	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Toluene-d8	100	72-122	04/19/11	Acceptable
4-Bromofluorobenzene	92	70-120	04/19/11	Acceptable
Dibromofluoromethane	104	61-121	04/19/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	04/07/2011
Sample Matrix:	Water	**Date Received:**	04/08/2011
		Date Extracted:	04/19/2011
		Date Analyzed:	04/19/2011

Volatile Organic Compounds

Sample Name:	Fridout 172A	**Units:**	ug/L
Lab Code:	K1103044-001	**Basis:**	NA
File ID:	J:\MS23\DATA\041911BAYW\0419F017.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103524
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount:	10 ml
% Solids:	NA
Dilution Factor:	1

† Analyte Comments

Acrolein	This compound is unstable under normal conditions. As per EPA Method 624 guidelines, the reported value was an estimate.
Acrylonitrile	This compound is unstable under normal conditions. As per EPA Method 624 guidelines, the reported value was an estimate.

Comments:

Exception Report

Data File:	J:\MS23\DATA\041911BAYW\0419F017.D	**Date Acquired:**	04/19/2011 17:13
Lab ID:	K1103044-001	**Date Quantitated:**	04/20/2011 13:09
RunType:	SMPL	**Batch ID:**	KWG1103523
Matrix:	WATER	**Analysis Method:**	624
		ListJoinID:	~~LJ12349~~ LJ1MGL

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Time Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
Preparation Holding Time	NA	NA	NA	x	
Pre-Preparation Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Method Blank	NA	NA	NA	x	
MB Surrogate Recovery	NA	NA	NA	x	
Lab Control Spike	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA		x
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Analyte Exceptions

Exception Categories	Analyte Name	Result	Low Limit	High Limit	Corrective Action
Std MRL Unsupported by ICAL	Vinyl Chloride	0.25	0.20	NA	TMN

Primary Review: KN 7/20/11

Secondary Review: HB 4-20-11

Quantitation Report

Bottle ID:		Tier:	V	Matrix:	WATER
Prod Code:	624 VOC_FP	Collect Date:	04/07/2011	Receive Date:	04/08/2011

Analysis Lot:	KWG1103523	Prep Lot:	KWG1103524	Report Group:	K1103044
Analysis Method:	624	Prep Method:	METHOD		
Prep Ref:	1012857	Prep Date:	04/19/2011		

Quant Method:	J:\MS23\METHODS\032911624BAY	Calibration ID:	CAL10443
Title:	Volatile Organic Compounds	Report List ID:	LJ12496
Tune Ref:	J:\MS23\DATA\041911BAYW\0419F005.D	Method ID:	MJ158
MB Ref:	J:\MS23\DATA\041911BAYW\0419F014.D	Quant based on Report List	

Data File:	J:\MS23\DATA\041911BAYW\0419F017.D			Instrument:	MS23
Acqu Date:	04/19/2011 17:13	Quant Date:	04/20/2011 13:09	Vial:	11
Run Type:	SMPL			Dilution:	1.0
Lab ID:	K1103044-001			Soln Conc. Units:	PPB

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	Fluorobenzene	5.94	0.00	96	570832	10.00	OK
2	Chlorobenzene-d5	9.34	0.00	82	226237	10.00	OK
3	1,4-Dichlorobenzene-d4	11.75	0.00	152	188328	10.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	Dibromofluoromethane	5.12	0.01	0.00	113	128039	10.37	104	61-121 OK	
1	Toluene-d8	7.77	0.00	0.00	98	538003	9.98	100	72-122 OK	
2	4-Bromofluorobenzene	10.58	0.00	0.00	95	170781	9.17	92	70-120 OK	

Final Conc. Units: ug/L

Target Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	Final Conc	Q	Rpt?
1	Dichlorodifluoromethane				85	0		0.40	U	
1	Chloromethane				50	0d		0.035	U	
1	Vinyl Chloride				62	0		0.053	U	
1	Bromomethane	1.71	0.01	0.00	96	1258	0.1500	0.32	U	
1	Chloroethane				49	0d		0.32	U	
1	Trichlorofluoromethane				101	0		0.048	U	
1	Acrolein				56	0d		2.1	U	
1	Trichlorotrifluoroethane				151	0		0.077	U	
1	1,1-Dichloroethene				96	0d		0.37	U	
1	Acetone	2.56		0.00	43	3191	1.47	4.3	U	
1	Carbon Disulfide				76	0d		0.048	U	
1	Methylene Chloride				84	0		0.093	U	
1	Acrylonitrile				53	0		0.28	U	
1	trans-1,2-Dichloroethene				96	0		0.039	U	
1	1,1-Dichloroethane				63	0		0.041	U	

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Data File:	J:\MS23\DATA\041911BAYW\0419F017.D			**Instrument:**	MS23
Acqu Date:	04/19/2011 17:13	**Quant Date:**	04/20/2011 13:09	**Vial:**	11
Run Type:	SMPL			**Dilution:**	1.0
Lab ID:	K1103044-001			**Soln Conc. Units:**	PPB

Target Compounds **Final Conc. Units:** ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	Final Conc	Q	Rpt?
1	Vinyl Acetate				86	0		0.21	U	
1	cis-1,2-Dichloroethene				96	0		0.042	U	
1	2-Butanone (MEK)				72	0		3.4	U	
1	Chloroform				83	0		0.038	U	
1	1,1,1-Trichloroethane (TCA)				97	0		0.044	U	
1	Carbon Tetrachloride				117	0		0.26	U	
1	Benzene				78	0d		0.040	U	
1	1,2-Dichloroethane (EDC)				62	0		0.038	U	
1	Trichloroethene (TCE)				95	0		0.044	U	
1	1,2-Dichloropropane				63	0		0.044	U	
1	Bromodichloromethane				83	0		0.047	U	
1	2-Chloroethyl Vinyl Ether				63	0		0.12	U	
1	cis-1,3-Dichloropropene				75	0		0.035	U	
1	4-Methyl-2-pentanone (MIBK)				58	0		2.8	U	
1	Toluene	7.84		0.00	92	7974	0.2100	0.21	J	
2	trans-1,3-Dichloropropene				75	0		0.045	U	
2	1,1,2-Trichloroethane				83	0		0.072	U	
2	Tetrachloroethene (PCE)				164	0		0.043	U	
2	2-Hexanone				43	0d		1.8	U	
2	Dibromochloromethane				129	0		0.081	U	
2	Chlorobenzene				112	0		0.031	U	
2	Ethylbenzene				106	0		0.040	U	
2	m,p-Xylenes	9.59		0.00	106	1055	0.0400	0.14	U	
2	o-Xylene				106	0		0.035	U	
2	Styrene				103	0		0.025	U	
2	Bromoform				173	0		0.11	U	
3	1,1,2,2-Tetrachloroethane				83	0		0.086	U	
3	1,3-Dichlorobenzene				146	0		0.071	U	
3	1,4-Dichlorobenzene				146	0		0.073	U	
3	1,2-Dichlorobenzene				146	0		0.086	U	

Prep Amount:	10 ml	**Dilution:**	1.0
Prep Final Vol:	10 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\041911BAYW\0419F017.D
Acq On : 19 Apr 2011 5:13 pm
Sample : K3044-001
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 20 13:08:52 2011

Vial: 11
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624BAYW.R

Quant Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 12:44:23 2011
Response via : Initial Calibration
DataAcq Meth : 8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	5.94	96	570832	10.00	PPB	0.00
35) Chlorobenzene-d5	9.34	82	226237	10.00	PPB	0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	188328	10.00	PPB	0.00
System Monitoring Compounds						
22) Dibromofluoromethane	5.12	113	128039	10.37	PPB	0.00
Spiked Amount 10.000			Recovery	=	103.70%	
24) 1,2-Dichloroethane-d4	5.59	65	148153	9.55	PPB	0.00
Spiked Amount 10.000			Recovery	=	95.50%	
33) Toluene-d8	7.77	98	538003	9.98	PPB	0.00
Spiked Amount 10.000			Recovery	=	99.80%	
47) 4-Bromofluorobenzene	10.58	95	170781	9.17	PPB	0.00
Spiked Amount 10.000			Recovery	=	91.70%	
Target Compounds						Qvalue
5) Bromomethane	1.71	96	1258	0.15	PPB #	49
11) Acetone	2.56	43	3191	1.47	PPB	92
34) Toluene	7.84	92	7974	0.21	PPB	84
43) m,p-Xylenes	9.59	106	1055	0.04	PPB #	41

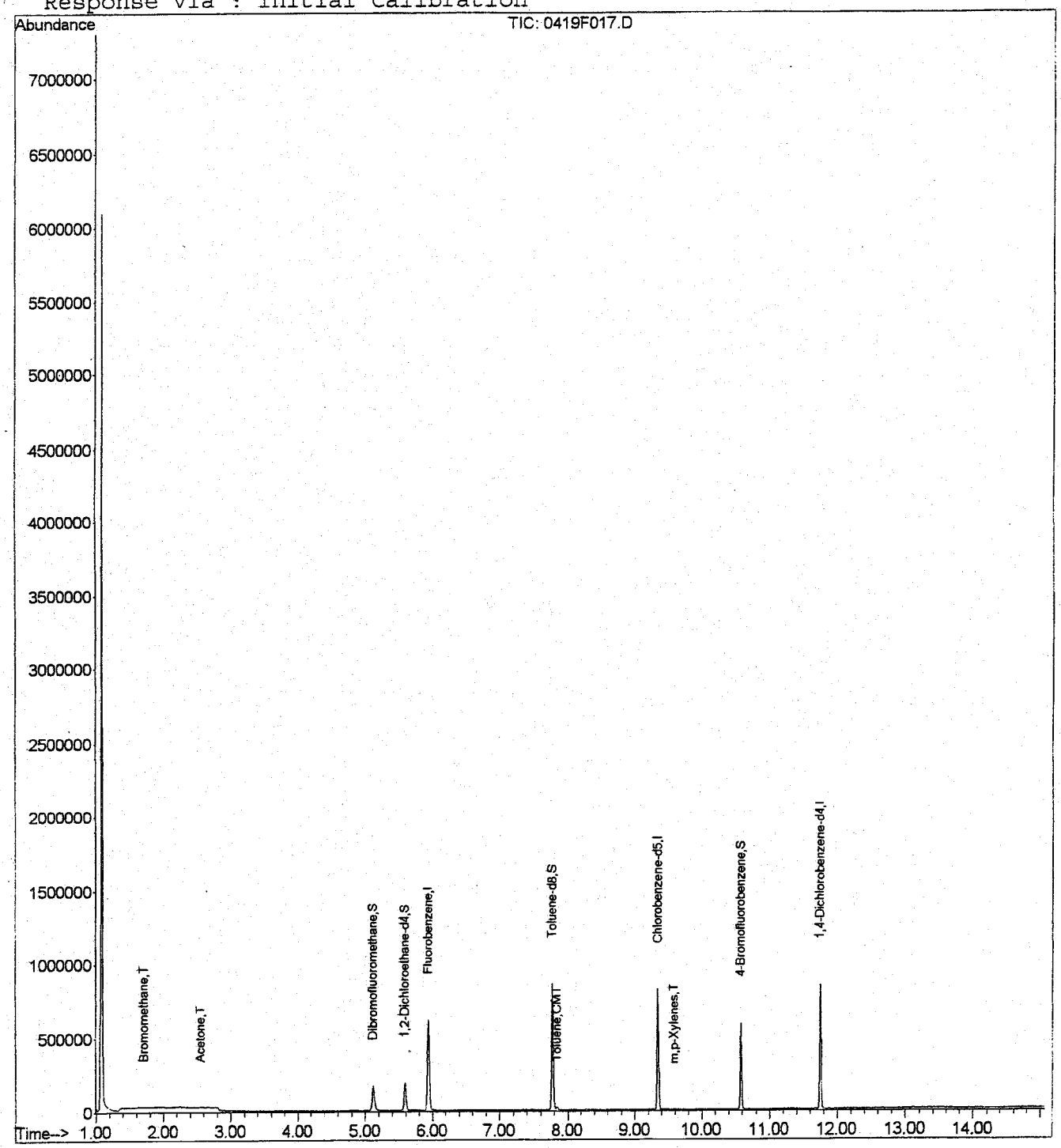
(#) = qualifier out of range (m) = manual integration

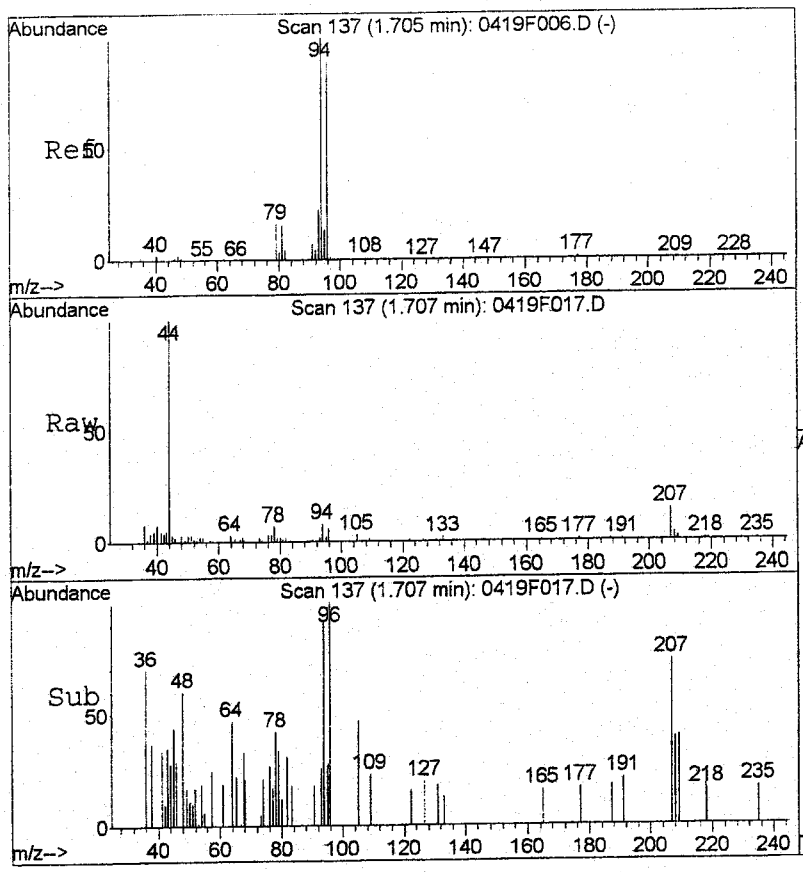
Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\041911BAYW\0419F017.D
Acq On : 19 Apr 2011 5:13 pm
Sample : K3044-001
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 20 13:09 2011

Vial: 11
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624BAY

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 12:44:23 2011
Response via : Initial Calibration

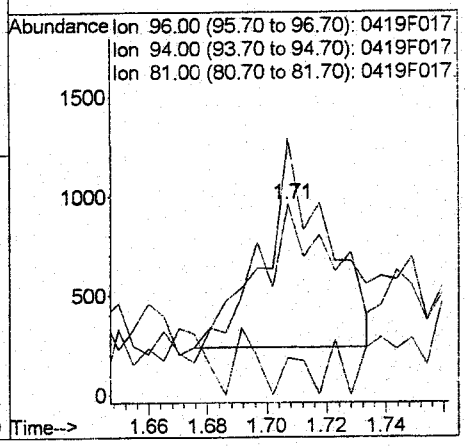


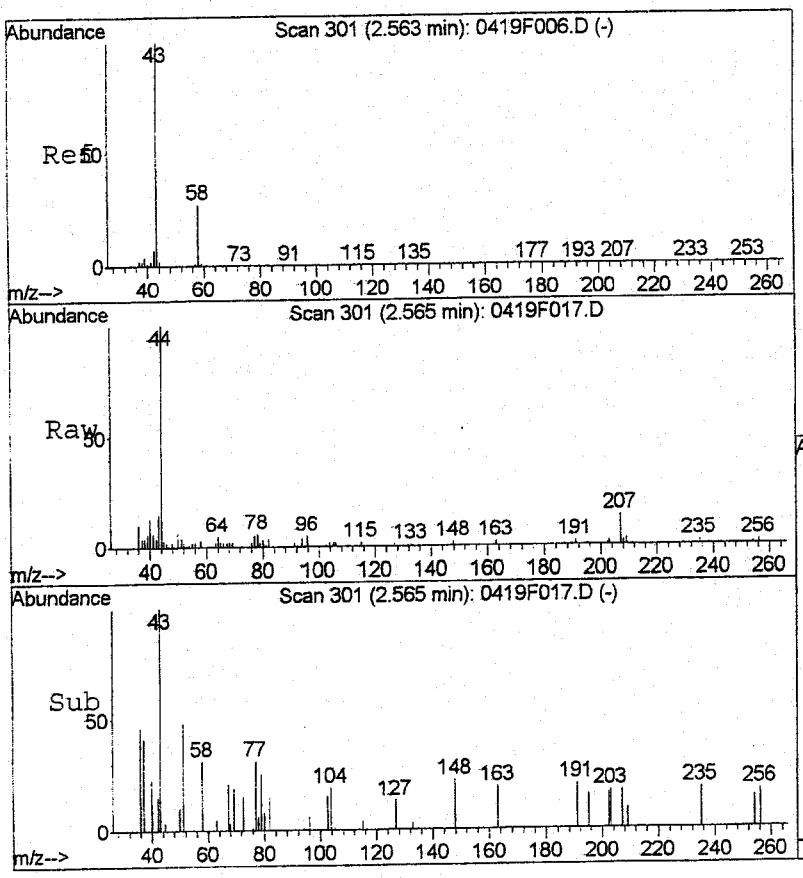


#5
Bromomethane
Concen: 0.15 PPB
RT: 1.71 min Scan# 137
Delta R.T. 0.00 min
Lab File: 0419F017.D
Acq: 19 Apr 2011 5:13 pm

Tgt Ion: 96 Resp: 1258

Ion	Ratio	Lower	Upper
96	100		
94	155.3	69.2	129.2#
81	24.8	0.0	47.0

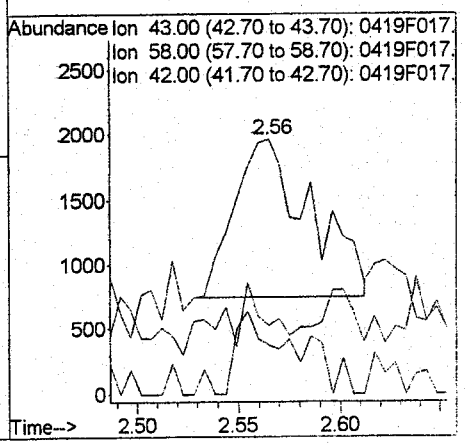


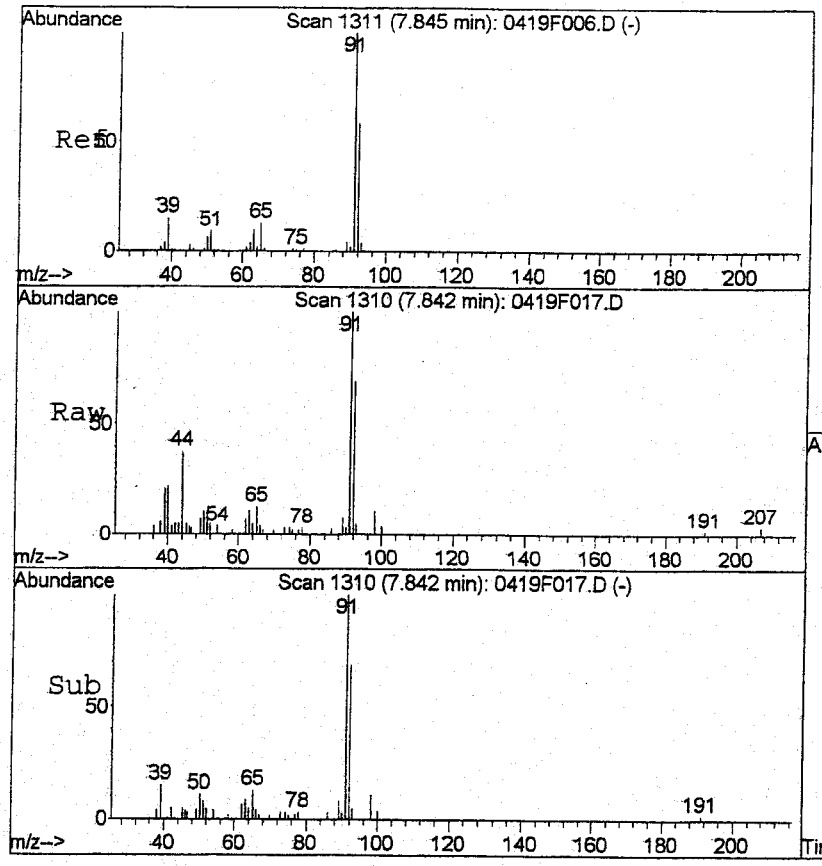


#11
Acetone
Concen: 1.47 PPB
RT: 2.56 min Scan# 301
Delta R.T. 0.00 min
Lab File: 0419F017.D
Acq: 19 Apr 2011 5:13 pm

Tgt Ion: 43 Resp: 3191

Ion	Ratio	Lower	Upper
43	100		
58	30.8	0.0	56.9
42	10.4	0.0	37.5

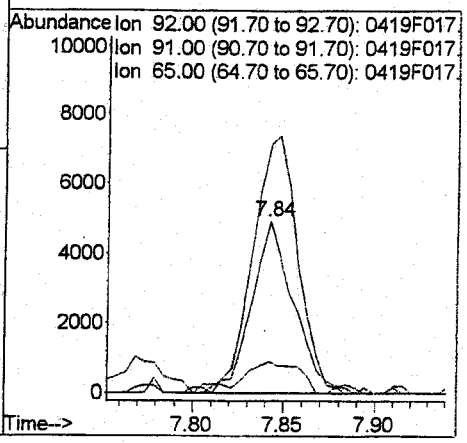


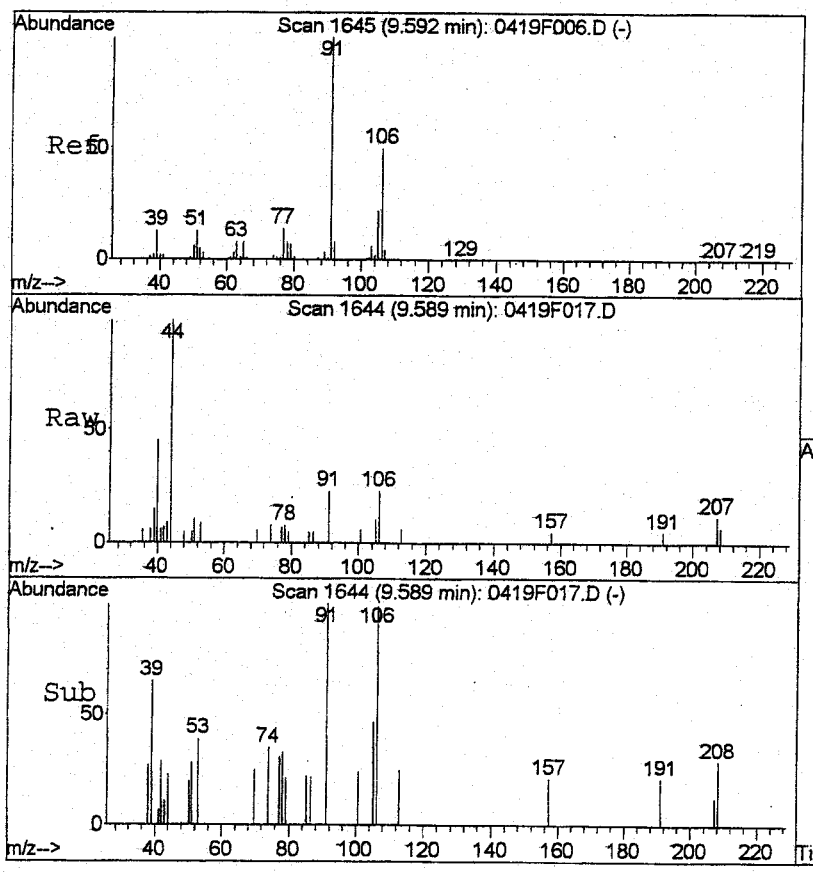


#34
Toluene
Concen: 0.21 PPB
RT: 7.84 min Scan# 1310
Delta R.T. -0.00 min
Lab File: 0419F017.D
Acq: 19 Apr 2011 5:13 pm

Tgt Ion: 92 Resp: 7974

Ion	Ratio	Lower	Upper
92	100		
91	144.1	138.1	198.1
65	18.6	0.0	51.7

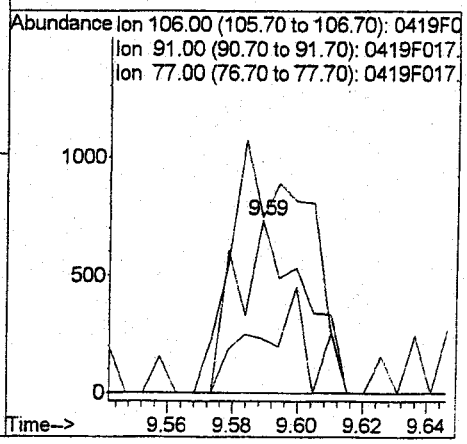




#43
m,p-Xylenes
Concen: 0.04 PPB
RT: 9.59 min Scan# 1644
Delta R.T. -0.00 min
Lab File: 0419F017.D
Acq: 19 Apr 2011 5:13 pm

Tgt Ion:106 Resp: 1055

Ion	Ratio	Lower	Upper
106	100		
91	101.5	175.3	235.3#
77	31.7	0.3	60.3



COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1103044
Date Collected: 04/07/2011
Date Received: 04/08/2011
Date Extracted: 04/19/2011
Date Analyzed: 04/19/2011

Volatile Organic Compounds

Sample Name: Fridout 172B
Lab Code: K1103044-002
File ID: J:\MS23\DATA\041911BAYW\0419F015.D
Instrument ID: MS23

Units: ug/L
Basis: NA
Level: Low

Extraction Method: METHOD
Analysis Method: 624

Extraction Lot: KWG1103524
Calibration ID: CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-71-8	Dichlorodifluoromethane	0.40	U	0.50	0.40	
74-87-3	Chloromethane	**0.070**	J	0.50	0.035	
75-01-4	Vinyl Chloride	0.053	U	0.25	0.053	
74-83-9	Bromomethane	0.32	U	0.50	0.32	
75-00-3	Chloroethane	0.32	U	0.50	0.32	
75-69-4	Trichlorofluoromethane	0.048	U	0.50	0.048	
76-13-1	Trichlorotrifluoroethane	0.077	U	0.50	0.077	
75-35-4	1,1-Dichloroethene	0.37	U	0.50	0.37	
75-15-0	Carbon Disulfide	0.048	U	0.50	0.048	
75-09-2	Methylene Chloride	0.093	U	0.50	0.093	
156-60-5	trans-1,2-Dichloroethene	0.039	U	0.50	0.039	
156-59-2	cis-1,2-Dichloroethene	0.042	U	0.50	0.042	
78-93-3	2-Butanone (MEK)	3.4	U	20	3.4	
75-34-3	1,1-Dichloroethane	0.041	U	0.50	0.041	
67-66-3	Chloroform	0.038	U	0.50	0.038	
71-55-6	1,1,1-Trichloroethane (TCA)	0.044	U	0.50	0.044	
56-23-5	Carbon Tetrachloride	0.26	U	0.50	0.26	
71-43-2	Benzene	0.040	U	0.50	0.040	
107-06-2	1,2-Dichloroethane (EDC)	0.038	U	0.50	0.038	
108-05-4	Vinyl Acetate	0.21	U	10	0.21	
79-01-6	Trichloroethene (TCE)	0.044	U	0.50	0.044	
78-87-5	1,2-Dichloropropane	0.044	U	0.50	0.044	
75-27-4	Bromodichloromethane	0.047	U	0.50	0.047	
110-75-8	2-Chloroethyl Vinyl Ether	0.12	U	5.0	0.12	
10061-02-6	trans-1,3-Dichloropropene	0.045	U	0.50	0.045	
108-10-1	4-Methyl-2-pentanone (MIBK)	2.8	U	20	2.8	
591-78-6	2-Hexanone	1.8	U	20	1.8	
108-88-3	Toluene	**0.18**	J	0.50	0.039	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	04/07/2011
Sample Matrix:	Water	**Date Received:**	04/08/2011
		Date Extracted:	04/19/2011
		Date Analyzed:	04/19/2011

Volatile Organic Compounds

Sample Name:	Fridout 172B	**Units:**	ug/L
Lab Code:	K1103044-002	**Basis:**	NA
File ID:	J:\MS23\DATA\041911BAYW\0419F015.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103524
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
10061-01-5	cis-1,3-Dichloropropene	0.035	U	0.50	0.035	
79-00-5	1,1,2-Trichloroethane	0.072	U	0.50	0.072	
127-18-4	Tetrachloroethene (PCE)	0.043	U	0.50	0.043	
124-48-1	Dibromochloromethane	0.081	U	0.50	0.081	
108-90-7	Chlorobenzene	0.031	U	0.50	0.031	
100-41-4	Ethylbenzene	0.040	U	0.50	0.040	
100-42-5	Styrene	0.025	U	0.50	0.025	
136777-61-2	m,p-Xylenes	0.14	U	1.0	0.14	
95-47-6	o-Xylene	0.035	U	0.50	0.035	
75-25-2	Bromoform	0.11	U	0.50	0.11	
67-64-1	Acetone	4.3	U	20	4.3	
79-34-5	1,1,2,2-Tetrachloroethane	0.086	U	0.50	0.086	
541-73-1	1,3-Dichlorobenzene	0.071	U	0.50	0.071	
106-46-7	1,4-Dichlorobenzene	0.073	U	0.50	0.073	
95-50-1	1,2-Dichlorobenzene	0.086	U	0.50	0.086	
107-02-8	Acrolein†	2.1	U	10	2.1	
107-13-1	Acrylonitrile†	0.28	U	5.0	0.28	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Toluene-d8	100	72-122	04/19/11	Acceptable
4-Bromofluorobenzene	94	70-120	04/19/11	Acceptable
Dibromofluoromethane	100	61-121	04/19/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	04/07/2011
Sample Matrix:	Water	**Date Received:**	04/08/2011
		Date Extracted:	04/19/2011
		Date Analyzed:	04/19/2011

Volatile Organic Compounds

Sample Name:	Fridout 172B	**Units:**	ug/L
Lab Code:	K1103044-002	**Basis:**	NA
File ID:	J:\MS23\DATA\041911BAYW\0419F015.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103524
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount:	10 ml
% Solids:	NA
Dilution Factor:	1

† Analyte Comments

Acrolein	This compound is unstable under normal conditions. As per EPA Method 624 guidelines, the reported value was an estimate.
Acrylonitrile	This compound is unstable under normal conditions. As per EPA Method 624 guidelines, the reported value was an estimate.

Comments:

Exception Report

Data File:	J:\MS23\DATA\041911BAYW\0419F015.D	**Date Acquired:**	04/19/2011 16:13
Lab ID:	K1103044-002	**Date Quantitated:**	04/20/2011 13:08
RunType:	SMPL	**Batch ID:**	KWG1103523
Matrix:	WATER	**Analysis Method:**	624
		ListJoinID:	~~LJ12349~~ LJ12449 KM

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
Preparation Holding Time	NA	NA	NA	x	
Pre-Preparation Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Method Blank	NA	NA	NA	x	
MB Surrogate Recovery	NA	NA	NA	x	
Lab Control Spike	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA		x
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Analyte Exceptions

Exception Categories	Analyte Name	Result	Low Limit	High Limit	Corrective Action
Std MRL Unsupported by ICAL	Vinyl Chloride	0.25	0.20	NA	TMR

Primary Review: [illegible]

Secondary Review: HB 4-20-11

Printed: 04/20/2011 13:35:28

u:\Stealth\Crystal.rpt\except2.rpt

Quantitation Report

Bottle ID:		Tier:	V	Matrix:	WATER
Prod Code:	624 VOC_FP	Collect Date:	04/07/2011	Receive Date:	04/08/2011

Analysis Lot:	KWG1103523	Prep Lot:	KWG1103524	Report Group:	K1103044
Analysis Method:	624	Prep Method:	METHOD		
Prep Ref:	1012858	Prep Date:	04/19/2011		

Quant Method:	J:\MS23\METHODS\032911624BAY	Calibration ID:	CAL10443
Title:	Volatile Organic Compounds	Report List ID:	LJ12496
Tune Ref:	J:\MS23\DATA\041911BAYW\0419F005.D	Method ID:	MJ158
MB Ref:	J:\MS23\DATA\041911BAYW\0419F014.D	Quant based on Report List	

Data File:	J:\MS23\DATA\041911BAYW\0419F015.D			Instrument:	MS23
Acqu Date:	04/19/2011 16:13	Quant Date:	04/20/2011 13:08	Vial:	9
Run Type:	SMPL			Dilution:	1.0
Lab ID:	K1103044-002			Soln Conc. Units:	PPB

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	Fluorobenzene	5.94	0.00	96	591443	10.00	OK
2	Chlorobenzene-d5	9.35	0.01	82	233521	10.00	OK
3	1,4-Dichlorobenzene-d4	11.75	0.00	152	196914	10.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	Dibromofluoromethane	5.12	0.01	0.00	113	128043	10.01	100	61-121	OK
1	Toluene-d8	7.77	0.00	0.00	98	558877	10.00	100	72-122	OK
2	4-Bromofluorobenzene	10.58	0.00	0.00	95	180716	9.40	94	70-120	OK

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	Final Conc	Q	Rpt?
1	Dichlorodifluoromethane				85	0		0.40	U	
1	Chloromethane	1.35	-0.01	0.00	50	2025	0.0700	0.070	J	
1	Vinyl Chloride				62	0		0.053	U	
1	Bromomethane	1.71	0.01	0.00	96	2105	0.2400	0.32	U	
1	Chloroethane				49	0d		0.32	U	
1	Trichlorofluoromethane				101	0		0.048	U	
1	Acrolein				56	0d		2.1	U	
1	Trichlorotrifluoroethane				151	0		0.077	U	
1	1,1-Dichloroethene				96	0		0.37	U	
1	Acetone	2.56		0.00	43	4647	2.07	4.3	U	
1	Carbon Disulfide				76	0d		0.048	U	
1	Methylene Chloride				84	0		0.093	U	
1	Acrylonitrile				53	0d		0.28	U	
1	trans-1,2-Dichloroethene				96	0		0.039	U	
1	1,1-Dichloroethane				63	0		0.041	U	

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Data File:	J:\MS23\DATA\041911BAYW\0419F015.D			Instrument:	MS23
Acqu Date:	04/19/2011 16:13	Quant Date:	04/20/2011 13:08	Vial:	9
Run Type:	SMPL			Dilution:	1.0
Lab ID:	K1103044-002			Soln Conc. Units:	PPB

Target Compounds — Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	Final Conc	Q	Rpt?
1	Vinyl Acetate				86	0		0.21	U	
1	cis-1,2-Dichloroethene				96	0		0.042	U	
1	2-Butanone (MEK)				72	0		3.4	U	
1	Chloroform				83	0		0.038	U	
1	1,1,1-Trichloroethane (TCA)				97	0		0.044	U	
1	Carbon Tetrachloride				117	0		0.26	U	
1	Benzene				78	0d		0.040	U	
1	1,2-Dichloroethane (EDC)				62	0		0.038	U	
1	Trichloroethene (TCE)				95	0		0.044	U	
1	1,2-Dichloropropane				63	0		0.044	U	
1	Bromodichloromethane				83	0		0.047	U	
1	2-Chloroethyl Vinyl Ether				63	0		0.12	U	
1	cis-1,3-Dichloropropene				75	0		0.035	U	
1	4-Methyl-2-pentanone (MIBK)				58	0		2.8	U	
1	Toluene	7.85	0.01	0.00	92	6827	0.1800	0.18	J	
2	trans-1,3-Dichloropropene				75	0		0.045	U	
2	1,1,2-Trichloroethane				83	0		0.072	U	
2	Tetrachloroethene (PCE)				164	0		0.043	U	
2	2-Hexanone				43	0d		1.8	U	
2	Dibromochloromethane				129	0		0.081	U	
2	Chlorobenzene				112	0		0.031	U	
2	Ethylbenzene	9.48	0.01	0.00	106	506	0.0200	0.040	U	
2	m,p-Xylenes	9.59		0.00	106	1012	0.0400	0.14	U	
2	o-Xylene				106	0		0.035	U	
2	Styrene				103	0		0.025	U	
2	Bromoform				173	0		0.11	U	
3	1,1,2,2-Tetrachloroethane				83	0		0.086	U	
3	1,3-Dichlorobenzene				146	0		0.071	U	
3	1,4-Dichlorobenzene				146	0		0.073	U	
3	1,2-Dichlorobenzene				146	0		0.086	U	

Prep Amount:	10 ml	**Dilution:**	1.0
Prep Final Vol:	10 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\041911BAYW\0419F015.D
Acq On : 19 Apr 2011 4:13 pm
Sample : K3044-002
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 20 13:08:06 2011

Vial: 9
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: 032911624BAYW.R

Quant Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 12:44:23 2011
Response via : Initial Calibration
DataAcq Meth : 8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	5.94	96	591443	10.00	PPB	0.00
35) Chlorobenzene-d5	9.35	82	233521	10.00	PPB	0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	196914	10.00	PPB	0.00
System Monitoring Compounds						
22) Dibromofluoromethane	5.12	113	128043	10.01	PPB	0.00
Spiked Amount 10.000			Recovery	=	100.10%	
24) 1,2-Dichloroethane-d4	5.59	65	157385	9.79	PPB	0.00
Spiked Amount 10.000			Recovery	=	97.90%	
33) Toluene-d8	7.77	98	558877	10.00	PPB	0.00
Spiked Amount 10.000			Recovery	=	100.00%	
47) 4-Bromofluorobenzene	10.58	95	180716	9.40	PPB	0.00
Spiked Amount 10.000			Recovery	=	94.00%	

Target Compounds							Qvalue
3) Chloromethane	1.35	50	2025	0.07	PPB		69
5) Bromomethane	1.71	96	2105	0.24	PPB	#	59
11) Acetone	2.56	43	4647	2.07	PPB		89
34) Toluene	7.85	92	6827	0.18	PPB		85
42) Ethylbenzene	9.48	106	506	0.02	PPB	#	1
43) m,p-Xylenes	9.59	106	1012	0.04	PPB	#	53

(#) = qualifier out of range (m) = manual integration
0419F015.D 032911624BAYW.M Wed Apr 20 13:08:44 2011

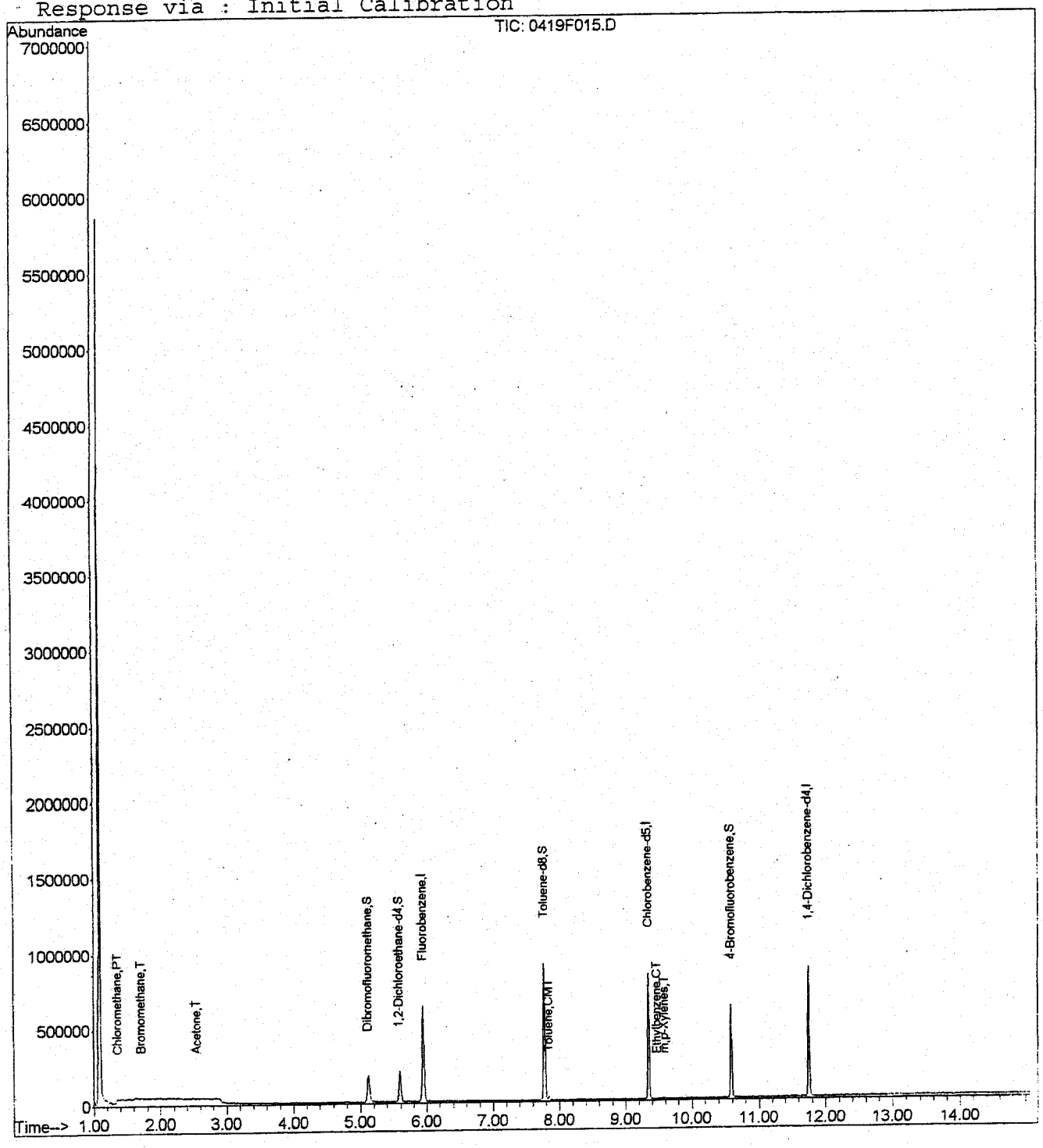
Quantitation Report (QT Reviewed)

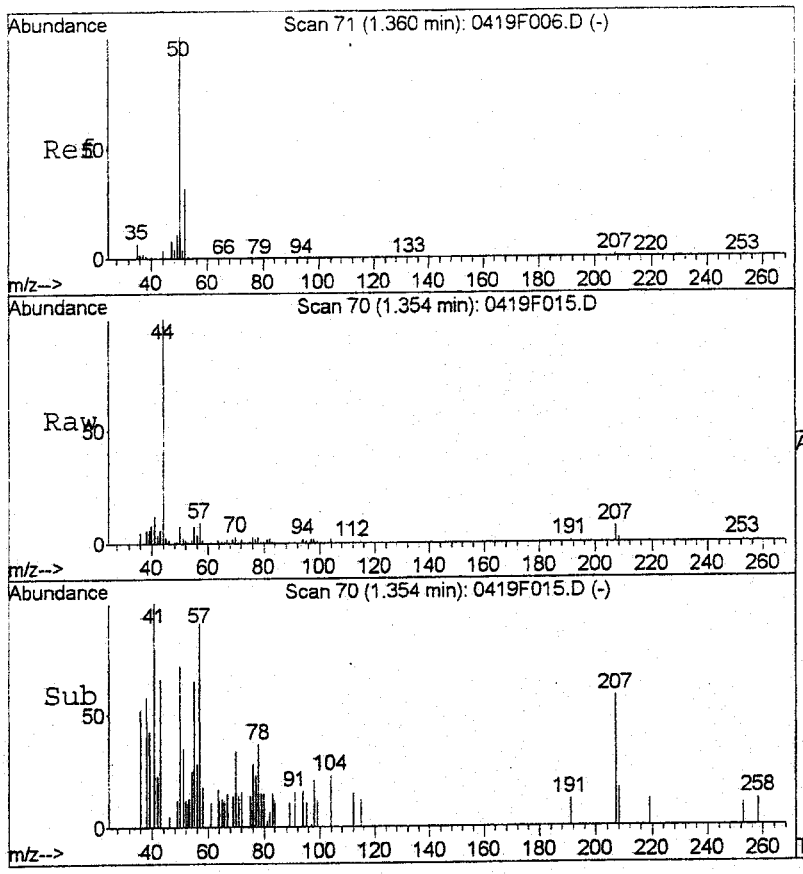
Data File : J:\MS23\DATA\041911BAYW\0419F015.D
Acq On : 19 Apr 2011 4:13 pm
Sample : K3044-002
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 20 13:08 2011

Vial: 9
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: 032911624BAY

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 12:44:23 2011
Response via : Initial Calibration

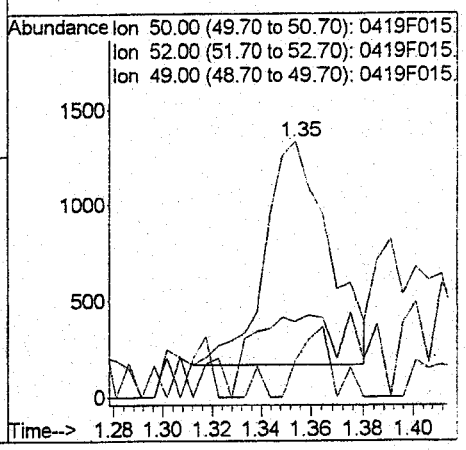


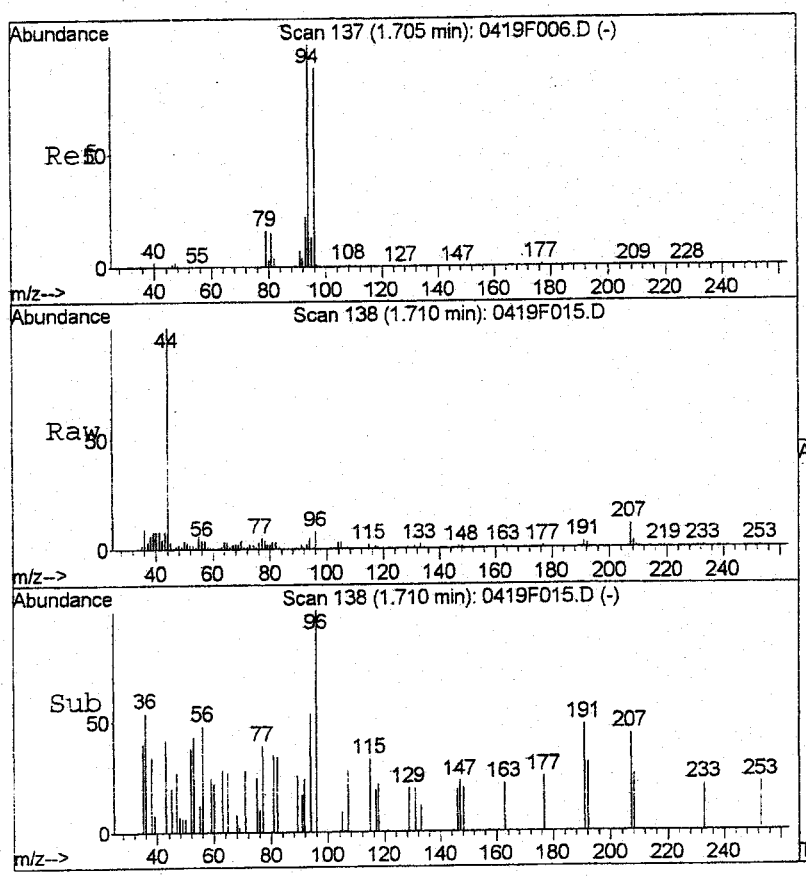


#3
Chloromethane
Concen: 0.07 PPB
RT: 1.35 min Scan# 70
Delta R.T. -0.01 min
Lab File: 0419F015.D
Acq: 19 Apr 2011 4:13 pm

Tgt Ion: 50 Resp: 2025

Ion	Ratio	Lower	Upper
50	100		
52	49.4	1.3	61.3
49	0.7	0.0	40.2

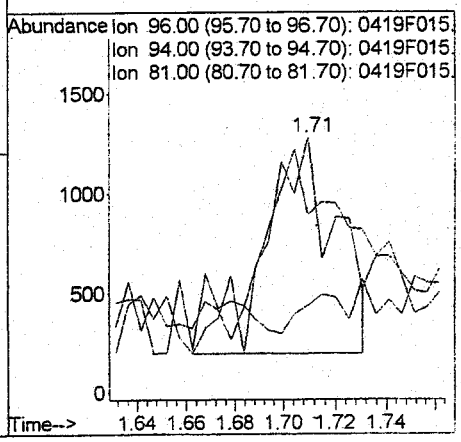


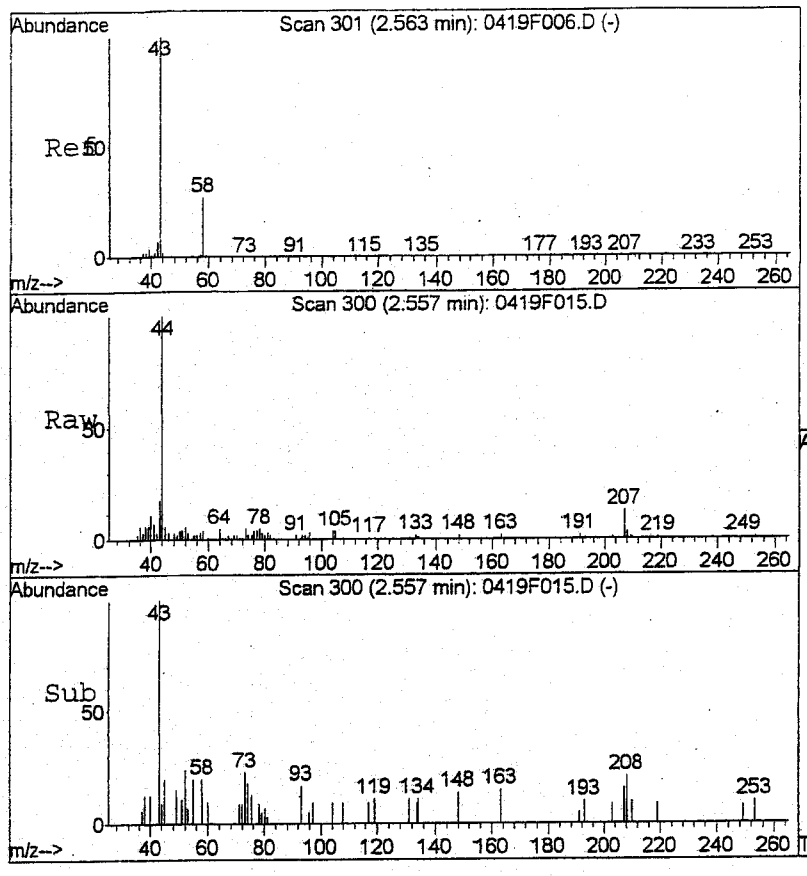


#5
Bromomethane
Concen: 0.24 PPB
RT: 1.71 min Scan# 138
Delta R.T. 0.00 min
Lab File: 0419F015.D
Acq: 19 Apr 2011 4:13 pm

Tgt Ion: 96 Resp: 2105

Ion	Ratio	Lower	Upper
96	100		
94	52.8	69.2	129.2#
81	20.4	0.0	47.0

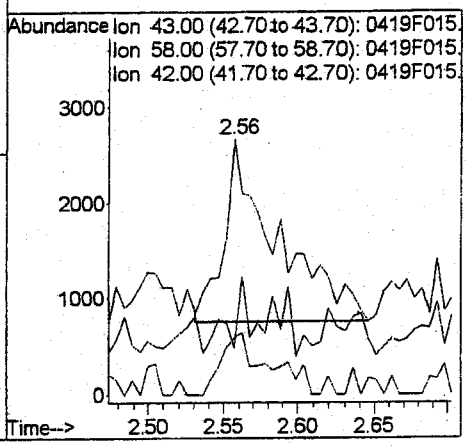


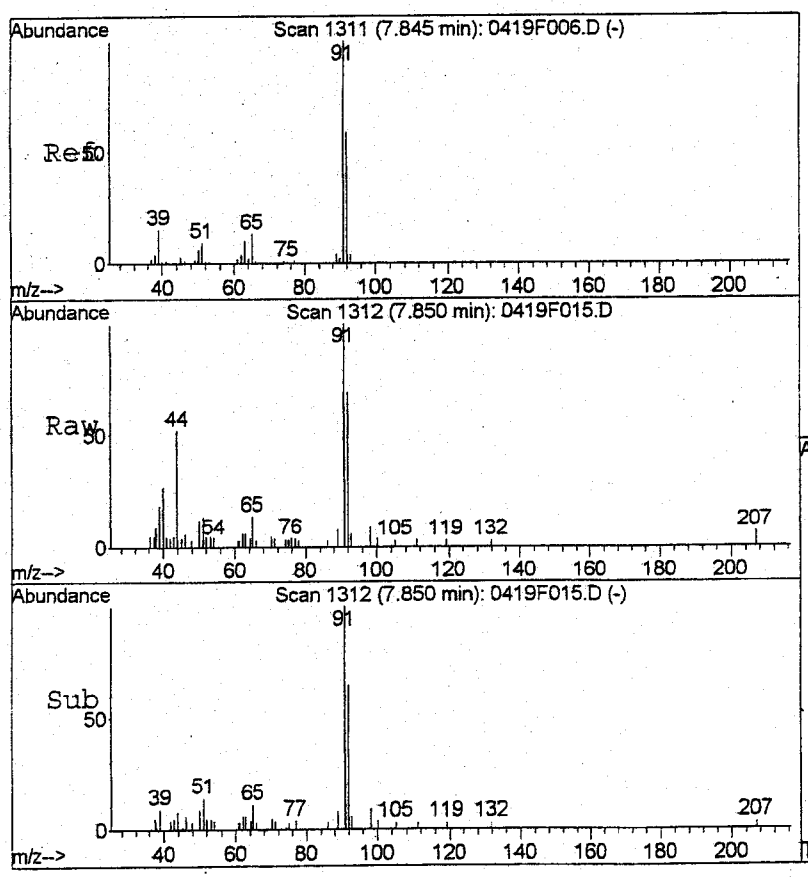


#11
Acetone
Concen: 2.07 PPB
RT: 2.56 min Scan# 300
Delta R.T. -0.01 min
Lab File: 0419F015.D
Acq: 19 Apr 2011 4:13 pm

Tgt Ion: 43 Resp: 4647

Ion	Ratio	Lower	Upper
43	100		
58	31.4	0.0	56.9
42	0.0	0.0	37.5

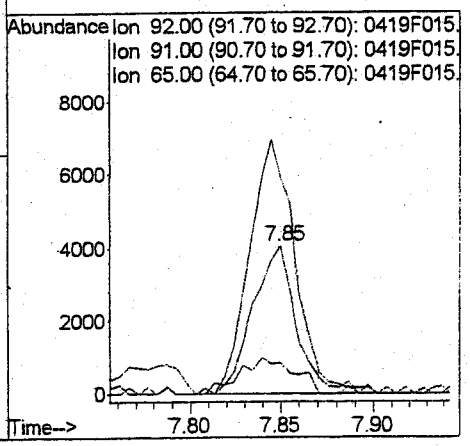


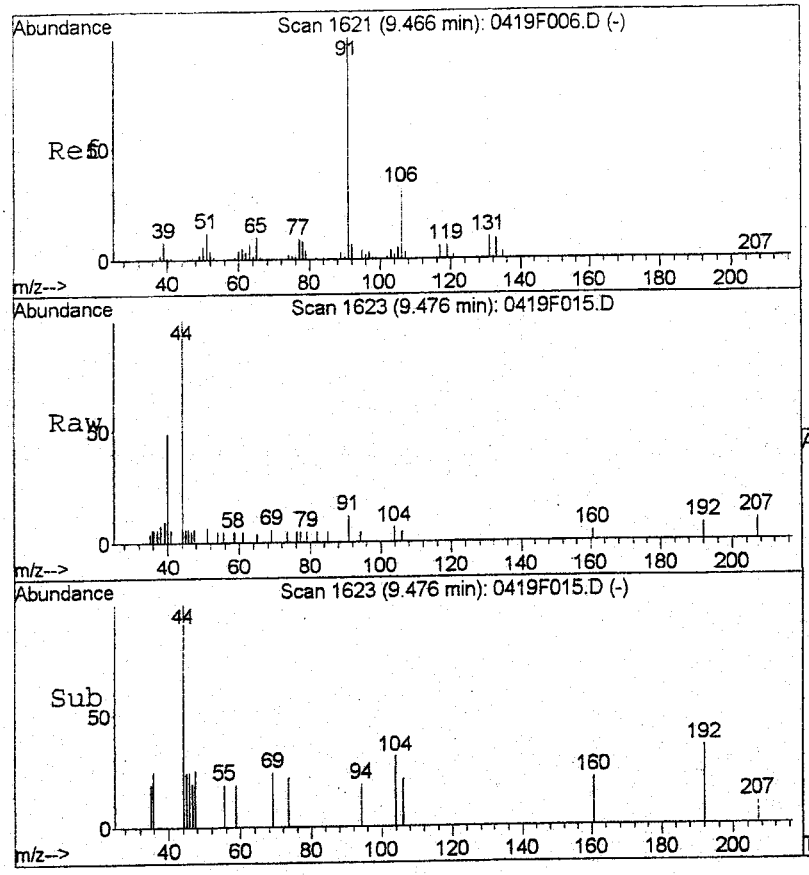


#34
Toluene
Concen: 0.18 PPB
RT: 7.85 min Scan# 1312
Delta R.T. 0.00 min
Lab File: 0419F015.D
Acq: 19 Apr 2011 4:13 pm

Tgt Ion: 92 Resp: 6827

Ion	Ratio	Lower	Upper
92	100		
91	145.7	138.1	198.1
65	20.2	0.0	51.7

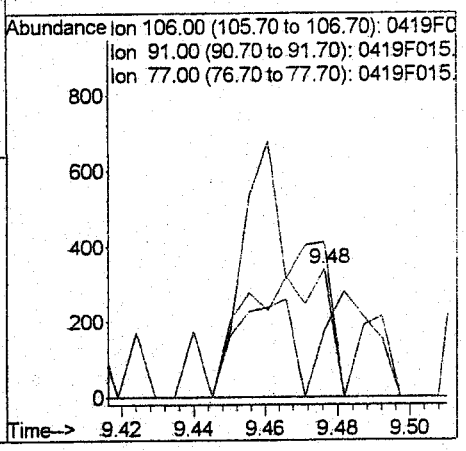


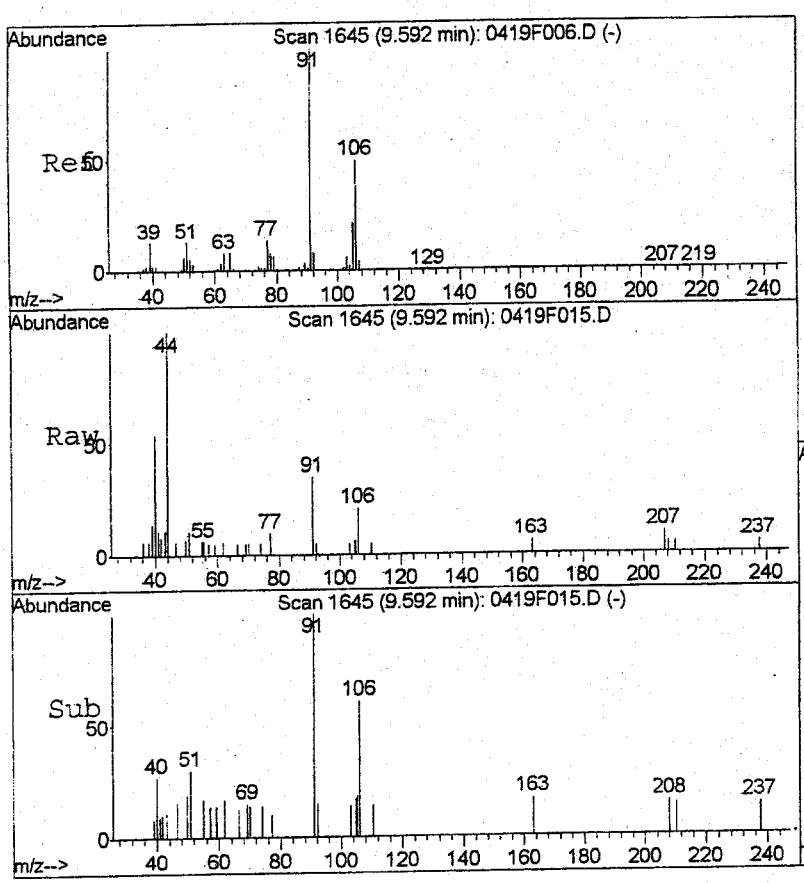


#42
Ethylbenzene
Concen: 0.02 PPB
RT: 9.48 min Scan# 1623
Delta R.T. 0.01 min
Lab File: 0419F015.D
Acq: 19 Apr 2011 4:13 pm

Tgt Ion:106 Resp: 506

Ion	Ratio	Lower	Upper
106	100		
91	69.7	294.7	354.7#
77	51.2	0.0	58.9

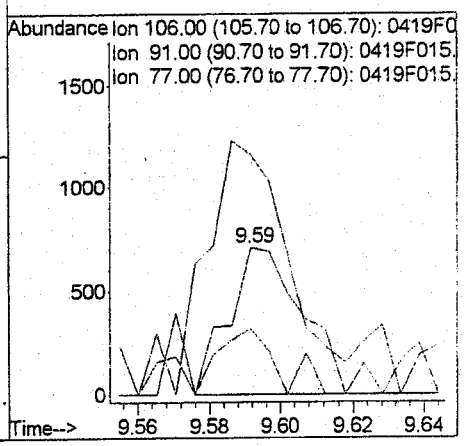




#43
m,p-Xylenes
Concen: 0.04 PPB
RT: 9.59 min Scan# 1645
Delta R.T. -0.00 min
Lab File: 0419F015.D
Acq: 19 Apr 2011 4:13 pm

Tgt Ion:106 Resp: 1012

Ion	Ratio	Lower	Upper
106	100		
91	127.7	175.3	235.3#
77	44.8	0.3	60.3



COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	04/07/2011
Sample Matrix:	Water	**Date Received:**	04/08/2011
		Date Extracted:	04/19/2011
		Date Analyzed:	04/19/2011

Volatile Organic Compounds

Sample Name:	Fridin Air 83A	**Units:**	ug/L
Lab Code:	K1103044-003	**Basis:**	NA
File ID:	J:\MS23\DATA\041911BAYW\0419F018.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103524
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-71-8	Dichlorodifluoromethane	0.40	U	0.50	0.40	
74-87-3	Chloromethane	0.035	U	0.50	0.035	
75-01-4	Vinyl Chloride	**0.21**	J	0.25	0.053	
74-83-9	Bromomethane	0.32	U	0.50	0.32	
75-00-3	Chloroethane	0.32	U	0.50	0.32	
75-69-4	Trichlorofluoromethane	0.048	U	0.50	0.048	
76-13-1	Trichlorotrifluoroethane	0.077	U	0.50	0.077	
75-35-4	1,1-Dichloroethene	**0.67**		0.50	0.37	
75-15-0	Carbon Disulfide	0.048	U	0.50	0.048	
75-09-2	Methylene Chloride	0.093	U	0.50	0.093	
156-60-5	trans-1,2-Dichloroethene	**16**		0.50	0.039	
156-59-2	cis-1,2-Dichloroethene	**65**		0.50	0.042	
78-93-3	2-Butanone (MEK)	3.4	U	20	3.4	
75-34-3	1,1-Dichloroethane	**1.1**		0.50	0.041	
67-66-3	Chloroform	0.038	U	0.50	0.038	
71-55-6	1,1,1-Trichloroethane (TCA)	0.044	U	0.50	0.044	
56-23-5	Carbon Tetrachloride	0.26	U	0.50	0.26	
71-43-2	Benzene	0.040	U	0.50	0.040	
107-06-2	1,2-Dichloroethane (EDC)	**0.13**	J	0.50	0.038	
108-05-4	Vinyl Acetate	0.21	U	10	0.21	
79-01-6	Trichloroethene (TCE)	**380**	E	0.50	0.044	
78-87-5	1,2-Dichloropropane	0.044	U	0.50	0.044	
75-27-4	Bromodichloromethane	0.047	U	0.50	0.047	
110-75-8	2-Chloroethyl Vinyl Ether	0.12	U	5.0	0.12	
10061-02-6	trans-1,3-Dichloropropene	0.045	U	0.50	0.045	
108-10-1	4-Methyl-2-pentanone (MIBK)	2.8	U	20	2.8	
591-78-6	2-Hexanone	1.8	U	20	1.8	
108-88-3	Toluene	**0.090**	J	0.50	0.039	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	04/07/2011
Sample Matrix:	Water	**Date Received:**	04/08/2011
		Date Extracted:	04/19/2011
		Date Analyzed:	04/19/2011

Volatile Organic Compounds

Sample Name:	Fridin Air 83A	**Units:**	ug/L
Lab Code:	K1103044-003	**Basis:**	NA
File ID:	J:\MS23\DATA\041911BAYW\0419F018.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103524
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
10061-01-5	cis-1,3-Dichloropropene	0.035	U	0.50	0.035	
79-00-5	1,1,2-Trichloroethane	0.072	U	0.50	0.072	
127-18-4	Tetrachloroethene (PCE)	1.5		0.50	0.043	
124-48-1	Dibromochloromethane	0.081	U	0.50	0.081	
108-90-7	Chlorobenzene	0.031	U	0.50	0.031	
100-41-4	Ethylbenzene	0.040	U	0.50	0.040	
100-42-5	Styrene	0.025	U	0.50	0.025	
136777-61-2	m,p-Xylenes	0.14	U	1.0	0.14	
95-47-6	o-Xylene	0.035	U	0.50	0.035	
75-25-2	Bromoform	0.11	U	0.50	0.11	
67-64-1	Acetone	4.3	U	20	4.3	
79-34-5	1,1,2,2-Tetrachloroethane	0.086	U	0.50	0.086	
541-73-1	1,3-Dichlorobenzene	0.071	U	0.50	0.071	
106-46-7	1,4-Dichlorobenzene	0.073	U	0.50	0.073	
95-50-1	1,2-Dichlorobenzene	0.086	U	0.50	0.086	
107-02-8	Acrolein†	2.1	U	10	2.1	
107-13-1	Acrylonitrile†	0.28	U	5.0	0.28	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Toluene-d8	100	72-122	04/19/11	Acceptable
4-Bromofluorobenzene	93	70-120	04/19/11	Acceptable
Dibromofluoromethane	102	61-121	04/19/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	04/07/2011
Sample Matrix:	Water	**Date Received:**	04/08/2011
		Date Extracted:	04/19/2011
		Date Analyzed:	04/19/2011

Volatile Organic Compounds

Sample Name:	Fridin Air 83A	**Units:**	ug/L
Lab Code:	K1103044-003	**Basis:**	NA
File ID:	J:\MS23\DATA\041911BAYW\0419F018.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103524
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount:	10 ml
% Solids:	NA
Dilution Factor:	1

† Analyte Comments

Acrolein	This compound is unstable under normal conditions. As per EPA Method 624 guidelines, the reported value was an estimate.
Acrylonitrile	This compound is unstable under normal conditions. As per EPA Method 624 guidelines, the reported value was an estimate.

Comments:

Exception Report

Data File: J:\MS23\DATA\041911BAYW\0419F018.D
Lab ID: K1103044-003
RunType: SMPL
Matrix: WATER

Date Acquired: 04/19/2011 17:44
Date Quantitated: 04/20/2011 13:10
Batch ID: KWG1103523
Analysis Method: 624
ListJoinID: ~~LJ12349~~ LJ12496

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
Preparation Holding Time	NA	NA	NA	x	
Pre-Preparation Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Method Blank	NA	NA	NA	x	
MB Surrogate Recovery	NA	NA	NA	x	
Lab Control Spike	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA		x
Above Highest ICAL Level	NA	NA	NA		x
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Analyte Exceptions

Exception Categories	Analyte Name	Result	Low Limit	High Limit	Corrective Action
Std MRL Unsupported by ICAL	Vinyl Chloride	0.25	0.20	NA	PMR
Above Highest ICAL Level	Trichloroethene (TCE)	382.82	NA	120	see 10x dil

Primary Review: KR 4/20/11

Secondary Review: HB 4 20 11

Quantitation Report

Bottle ID:		Tier:	V	Matrix:	WATER
Prod Code:	624 VOC_FP	Collect Date:	04/07/2011	Receive Date:	04/08/2011

Analysis Lot:	KWG1103523	Prep Lot:	KWG1103524	Report Group:	K1103044
Analysis Method:	624	Prep Method:	METHOD		
Prep Ref:	1012859	Prep Date:	04/19/2011		

Quant Method:	J:\MS23\METHODS\032911624BAY	Calibration ID:	CAL10443
Title:	Volatile Organic Compounds	Report List ID:	LJ12496
Tune Ref:	J:\MS23\DATA\041911BAYW\0419F005.D	Method ID:	MJ158
MB Ref:	J:\MS23\DATA\041911BAYW\0419F014.D	Quant based on Report List	

Data File:	J:\MS23\DATA\041911BAYW\0419F018.D			Instrument:	MS23
Acqu Date:	04/19/2011 17:44	Quant Date:	04/20/2011 16:17	Vial:	12
Run Type:	SMPL			Dilution:	1.0
Lab ID:	K1103044-003			Soln Conc. Units:	PPB

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	Fluorobenzene	5.94	0.00	96	573139	10.00	OK
2	Chlorobenzene-d5	9.34	0.00	82	226857	10.00	OK
3	1,4-Dichlorobenzene-d4	11.75	0.00	152	189938	10.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	Dibromofluoromethane	5.12	0.01	0.00	113	126739	10.22	102	61-121	OK
1	Toluene-d8	7.77	0.00	0.00	98	542281	10.01	100	72-122	OK
2	4-Bromofluorobenzene	10.58	0.00	0.00	95	173499	9.29	93	70-120	OK

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	Final Conc	Q	Rpt?
1	Dichlorodifluoromethane				85	0		0.40	U	
1	Chloromethane				50	0d		0.035	U	
1	Vinyl Chloride	1.44	0.01	0.00	62	4952	0.2100	0.21	J	
1	Bromomethane				96	0d		0.32	U	
1	Chloroethane				49	0		0.32	U	
1	Trichlorofluoromethane				101	0		0.048	U	
1	Acrolein				56	0d		2.1	U	
1	Trichlorotrifluoroethane				151	0		0.077	U	
1	1,1-Dichloroethene	2.44	-0.01	0.00	96	9238	0.6700	0.67		
1	Acetone				43	0		4.3	U	
1	Carbon Disulfide				76	0d		0.048	U	
1	Methylene Chloride				84	0		0.093	U	
1	Acrylonitrile				53	0		0.28	U	
1	trans-1,2-Dichloroethene	3.21		0.00	96	235660	16.46	16		
1	1,1-Dichloroethane	3.73		0.00	63	31631	1.12	1.1		

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Data File:	J:\MS23\DATA\041911BAYW\0419F018.D			Instrument:	MS23
Acqu Date:	04/19/2011 17:44	Quant Date:	04/20/2011 16:17	Vial:	12
Run Type:	SMPL			Dilution:	1.0
Lab ID:	K1103044-003			Soln Conc. Units:	PPB

Target Compounds — Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	Final Conc	Q	Rpt?
1	Vinyl Acetate				86	0		0.21	U	
1	cis-1,2-Dichloroethene	4.46		0.00	96	995291	64.68	65		
1	2-Butanone (MEK)				72	0d		3.4	U	
1	Chloroform				83	0		0.038	U	
1	1,1,1-Trichloroethane (TCA)	5.05		0.00	97	926m	0.0400	0.044	U	
1	Carbon Tetrachloride				117	0		0.26	U	
1	Benzene	5.54		0.00	78	1429	0.0200	0.040	U	
1	1,2-Dichloroethane (EDC)	5.69		0.00	62	2417	0.1300	0.13	J	
1	Trichloroethene (TCE)	6.37		0.00	95	5829742	382.82	380	E	NR
1	1,2-Dichloropropane	6.72	0.02	0.00	63	570	0.0400	0.044	U	
1	Bromodichloromethane				83	0		0.047	U	
1	2-Chloroethyl Vinyl Ether				63	0		0.12	U	
1	cis-1,3-Dichloropropene				75	0		0.035	U	
1	4-Methyl-2-pentanone (MIBK)				58	0		2.8	U	
1	Toluene	7.84		0.00	92	3250	0.0900	0.090	J	
2	trans-1,3-Dichloropropene				75	0		0.045	U	
2	1,1,2-Trichloroethane				83	0d		0.072	U	
2	Tetrachloroethene (PCE)	8.40		0.00	164	16243	1.51	1.5		
2	2-Hexanone				43	0d		1.8	U	
2	Dibromochloromethane				129	0		0.081	U	
2	Chlorobenzene				112	0		0.031	U	
2	Ethylbenzene				106	0		0.040	U	
2	m,p-Xylenes				106	0		0.14	U	
2	o-Xylene				106	0		0.035	U	
2	Styrene				103	0		0.025	U	
2	Bromoform				173	0		0.11	U	
3	1,1,2,2-Tetrachloroethane				83	0		0.086	U	
3	1,3-Dichlorobenzene				146	0		0.071	U	
3	1,4-Dichlorobenzene				146	0		0.073	U	
3	1,2-Dichlorobenzene				146	0		0.086	U	

Prep Amount:	10 ml	Dilution:	1.0
Prep Final Vol:	10 ml	Unit Factor:	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
c: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\041911BAYW\0419F018.D Vial: 12
Acq On : 19 Apr 2011 5:44 pm Operator: KR
Sample : K3044-003 Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Apr 20 13:09:39 2011 Quant Results File: 032911624BAYW.R

Quant Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 12:44:23 2011
Response via : Initial Calibration
DataAcq Meth : 8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	5.94	96	573139	10.00	PPB	0.00
35) Chlorobenzene-d5	9.34	82	226857	10.00	PPB	0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	189938	10.00	PPB	0.00
System Monitoring Compounds						
22) Dibromofluoromethane	5.12	113	126739	10.22	PPB	0.00
Spiked Amount 10.000			Recovery = 102.20%			
24) 1,2-Dichloroethane-d4	5.59	65	152909	9.81	PPB	0.00
Spiked Amount 10.000			Recovery = 98.10%			
33) Toluene-d8	7.77	98	542281	10.01	PPB	0.00
Spiked Amount 10.000			Recovery = 100.10%			
47) 4-Bromofluorobenzene	10.58	95	173499	9.29	PPB	0.00
Spiked Amount 10.000			Recovery = 92.90%			
Target Compounds						Qvalue
4) Vinyl Chloride	1.44	62	4952	0.21	PPB	70
10) 1,1-Dichloroethene	2.44	96	9238	0.67	PPB #	77
15) trans-1,2-Dichloroethene	3.21	96	235660	16.46	PPB	98
16) 1,1-Dichloroethane	3.73	63	31631	1.12	PPB	91
18) cis-1,2-Dichloroethene	4.46	96	995291	64.68	PPB	97
21) 1,1,1-Trichloroethane	5.05	97	926m	0.04	PPB	
25) Benzene	5.54	78	1429	0.02	PPB	66
26) 1,2-Dichloroethane	5.69	62	2417	0.13	PPB	73
27) Trichloroethene	6.37	95	5829742	382.82	PPB	98
28) 1,2-Dichloropropane	6.72	63	570	0.04	PPB #	38
34) Toluene	7.84	92	3250	0.09	PPB	81
38) Tetrachloroethene	8.40	164	16243	1.51	PPB	94

(#) = qualifier out of range (m) = manual integration

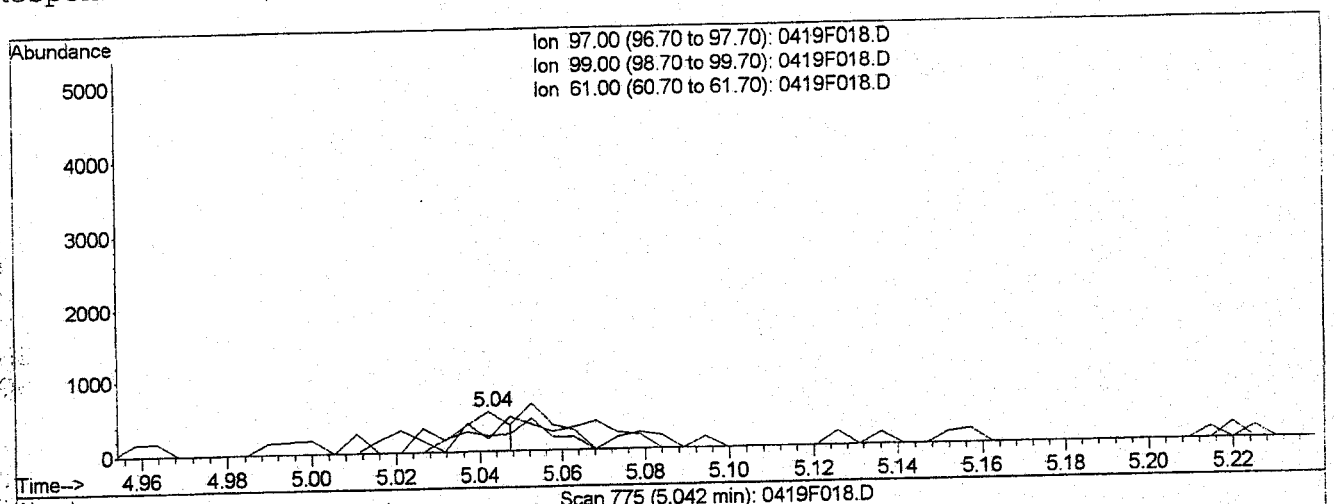
Quantitation Report (Qedit)

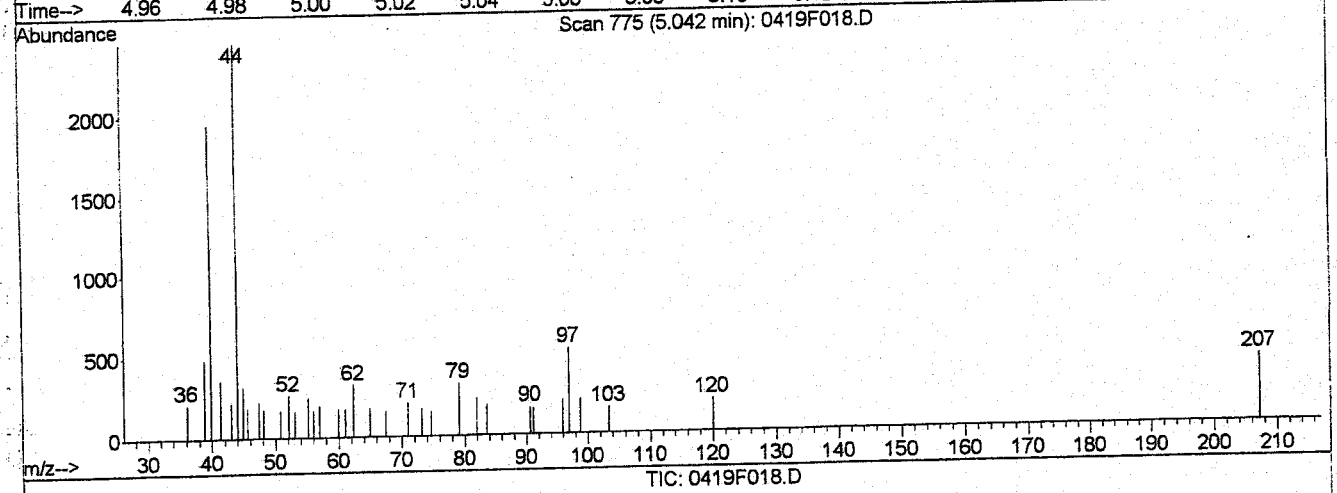
Data File : J:\MS23\DATA\041911BAYW\0419F018.D
Acq On : 19 Apr 2011 5:44 pm
Sample : K3044-003
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 20 13:10 2011

Vial: 12
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Multiple Level Calibration





(21) 1,1,1-Trichloroethane (T)

5.04min 0.02PPB

response 539

Ion	Exp%	Act%
97.00	100	100
99.00	65.00	39.92
61.00	50.10	0.00#
0.00	0.00	0.00

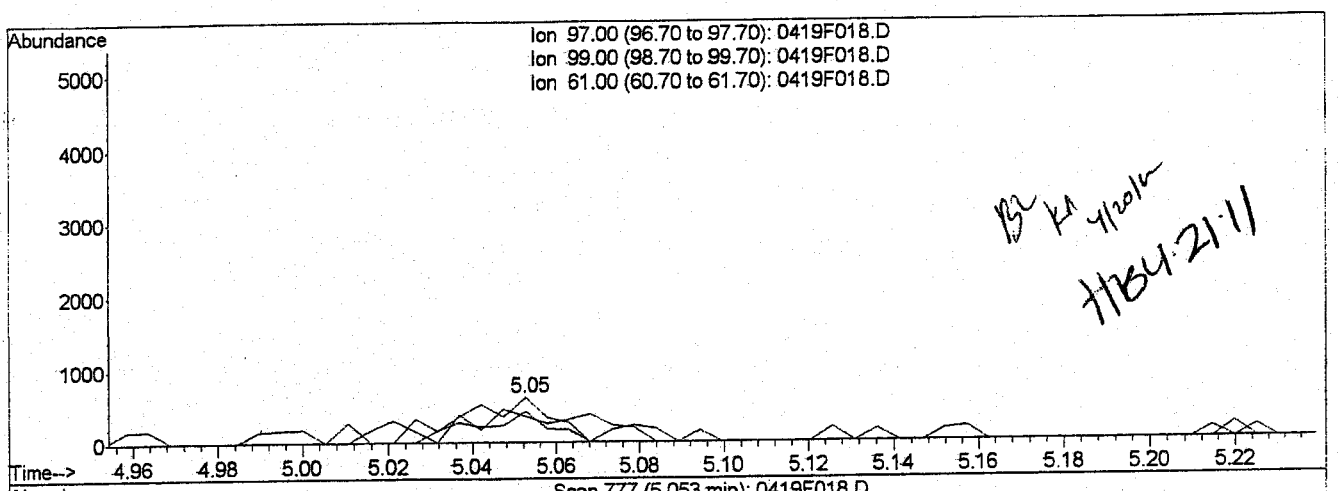
Quantitation Report (Qedit)

Data File : J:\MS23\DATA\041911BAYW\0419F018.D
Acq On : 19 Apr 2011 5:44 pm
Sample : K3044-003
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 20 16:17 2011

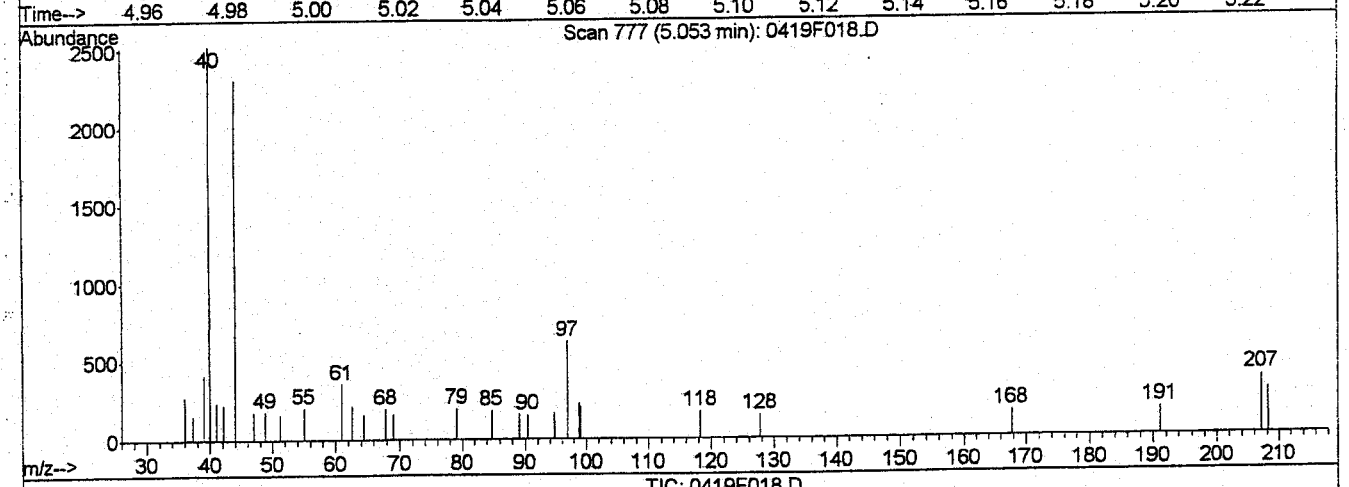
Vial: 12
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Multiple Level Calibration



BS KA 4/20/11
7/1B4.21.1



TIC: 0419F018.D

(21) 1,1,1-Trichloroethane (T)

5.05min 0.04PPB m

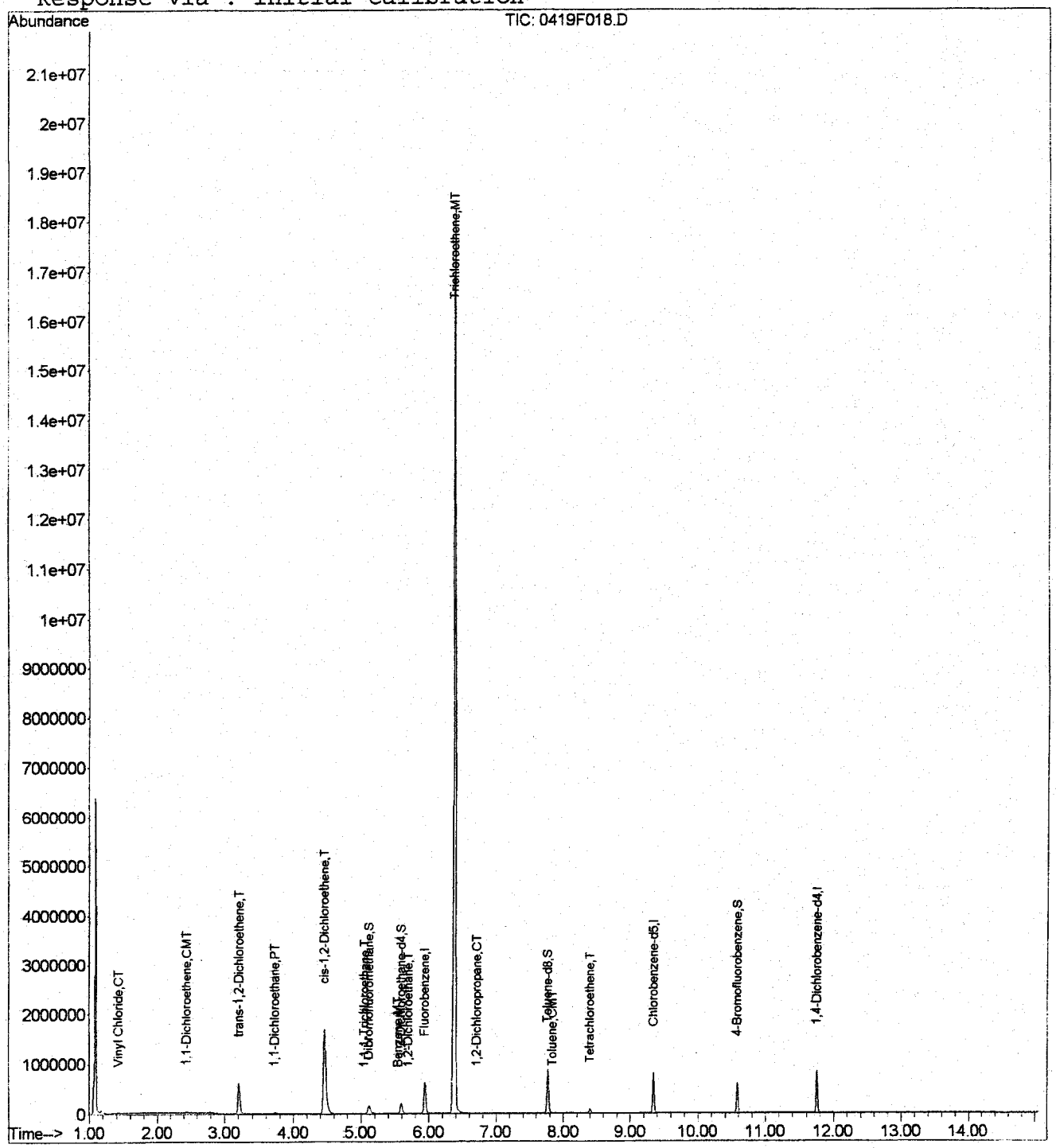
response 926

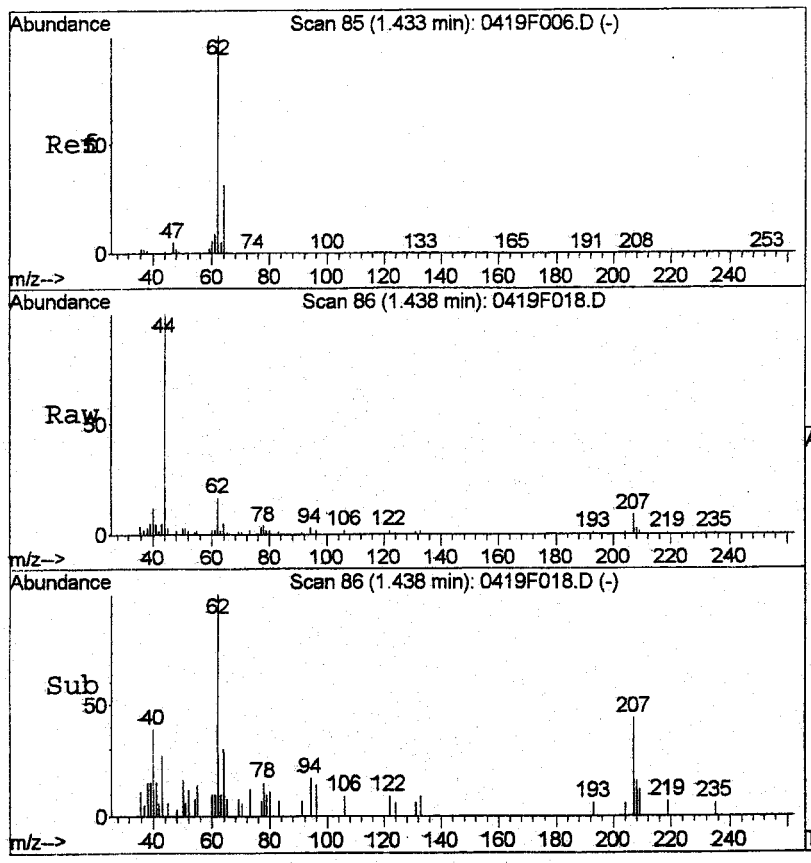
Ion	Exp%	Act%
97.00	100	100
99.00	65.00	36.12
61.00	50.10	57.14
0.00	0.00	0.00

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\041911BAYW\0419F018.D Vial: 12
Acq On : 19 Apr 2011 5:44 pm Operator: KR
Sample : K3044-003 Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Apr 20 16:17 2011 Quant Results File: 032911624BAY

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Initial Calibration

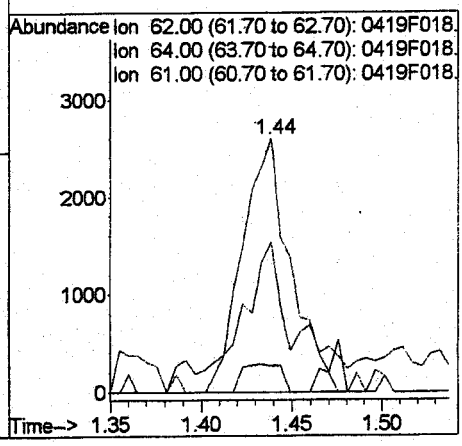


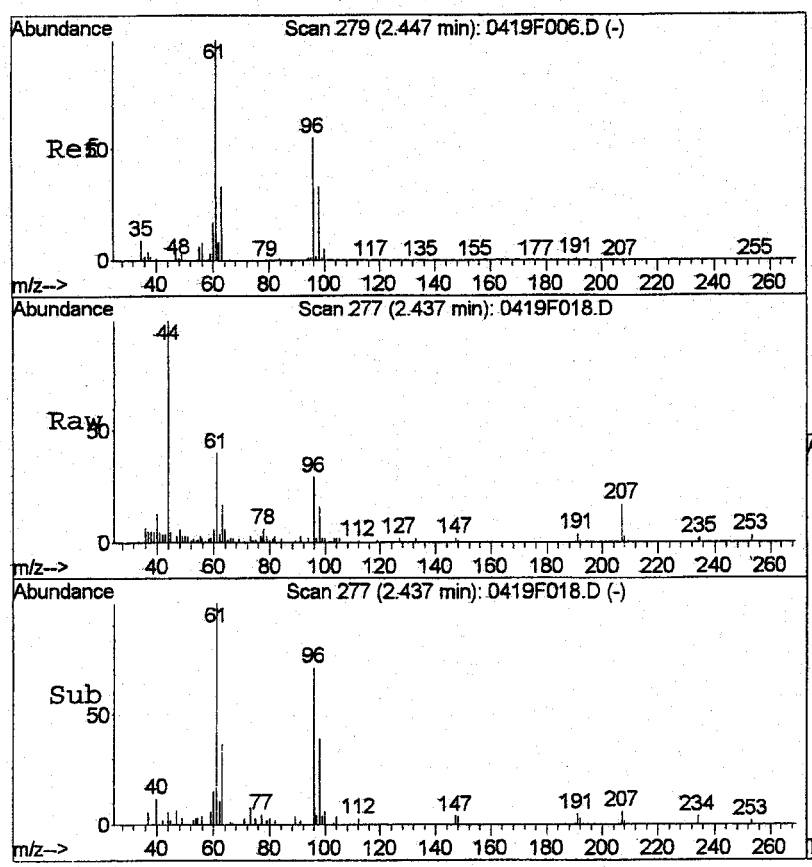


#4
Vinyl Chloride
Concen: 0.21 PPB
RT: 1.44 min Scan# 86
Delta R.T. 0.01 min
Lab File: 0419F018.D
Acq: 19 Apr 2011 5:44 pm

Tgt Ion: 62 Resp: 4952

Ion	Ratio	Lower	Upper
62	100		
64	51.9	1.7	61.7
61	10.2	0.0	38.3

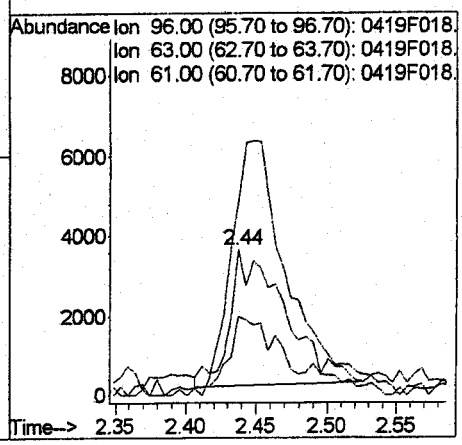


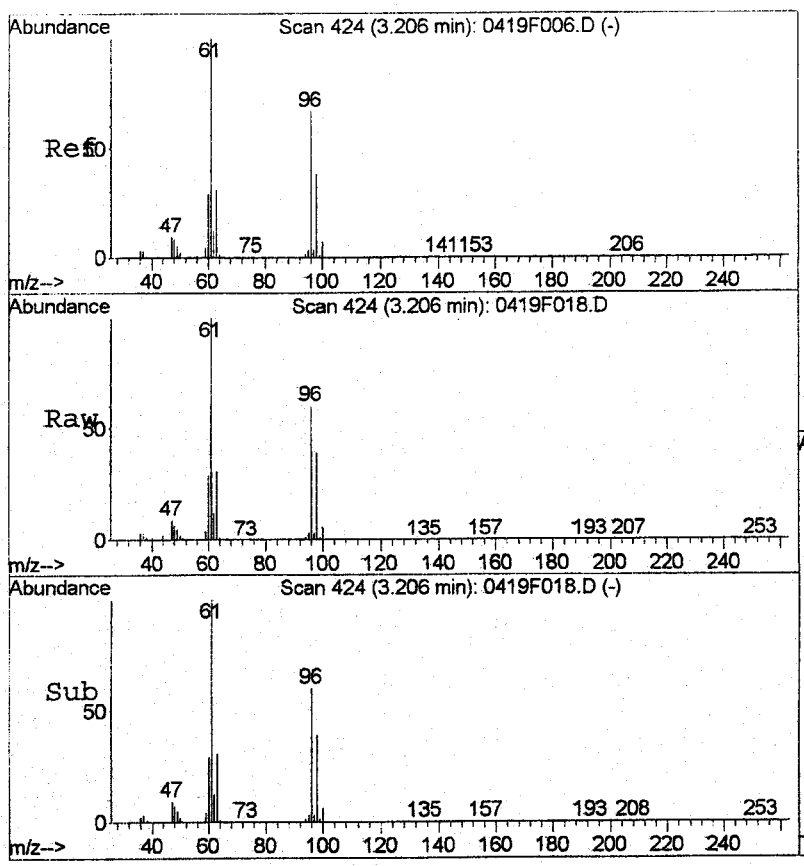


#10
1,1-Dichloroethene
Concen: 0.67 PPB
RT: 2.44 min Scan# 277
Delta R.T. -0.01 min
Lab File: 0419F018.D
Acq: 19 Apr 2011 5:44 pm

Tgt Ion: 96 Resp: 9238

Ion	Ratio	Lower	Upper
96	100		
63	54.5	28.6	88.6
61	141.8	152.7	212.7#

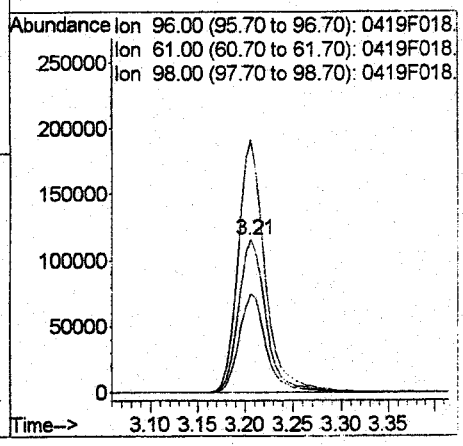


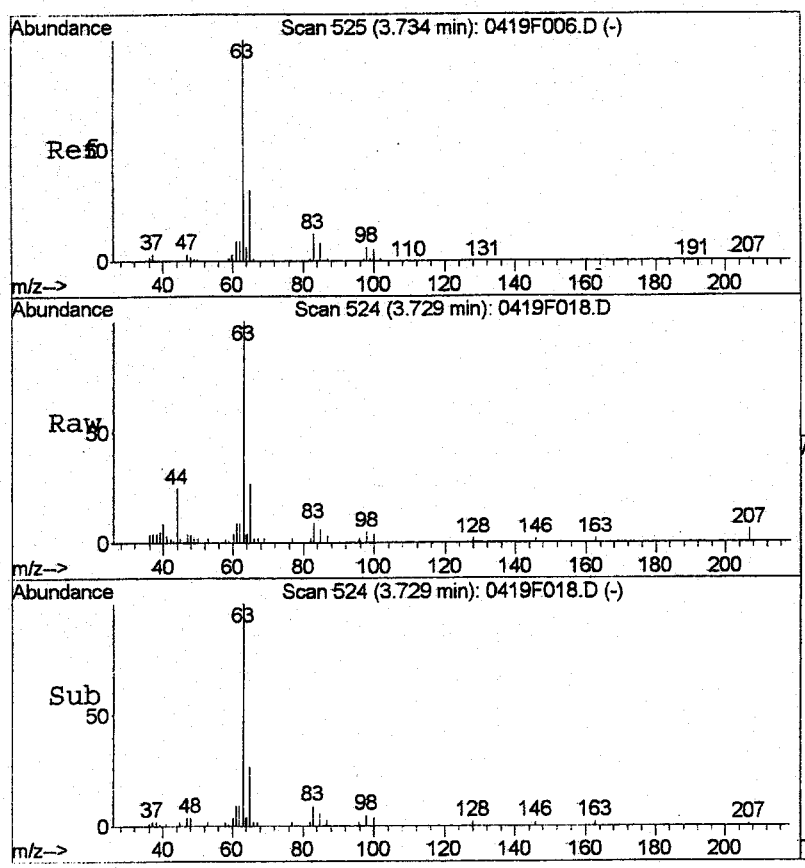


#15
trans-1,2-Dichloroethene
Concen: 16.46 PPB
RT: 3.21 min Scan# 424
Delta R.T. 0.00 min
Lab File: 0419F018.D
Acq: 19 Apr 2011 5:44 pm

Tgt Ion: 96 Resp: 235660

Ion	Ratio	Lower	Upper
96	100		
61	165.3	135.0	195.0
98	64.4	30.1	90.1

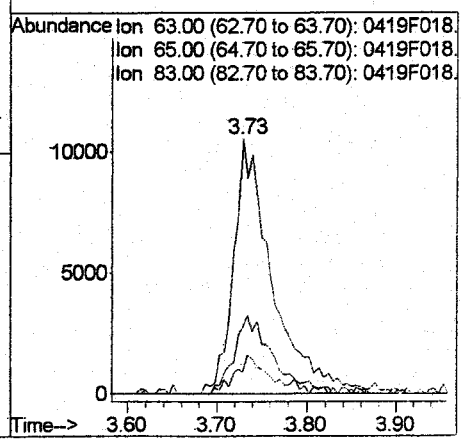


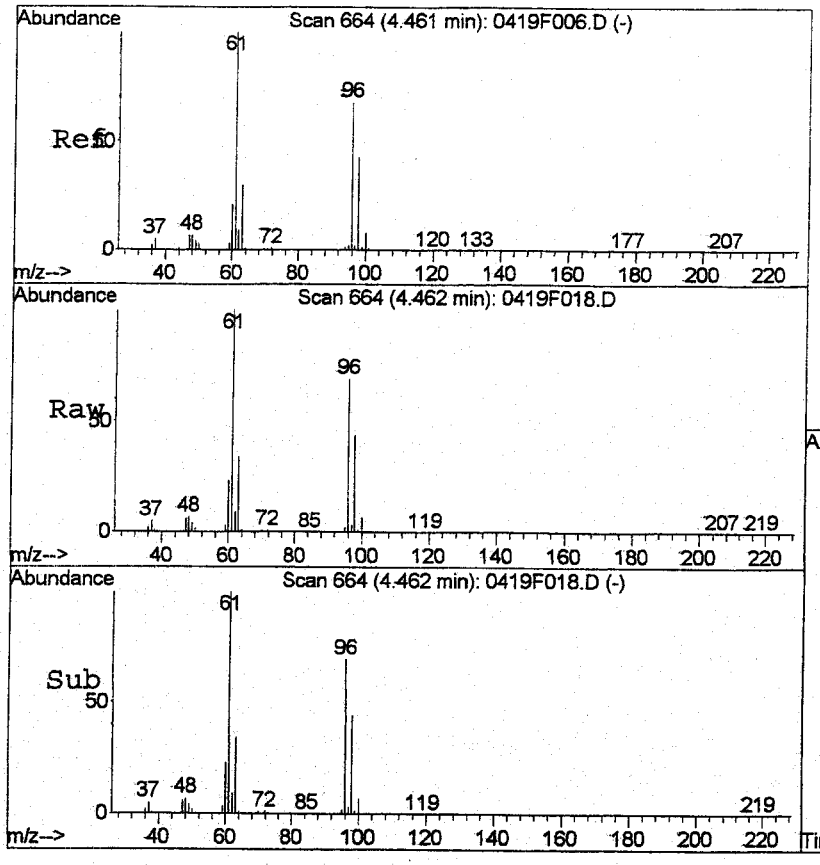


#16
1,1-Dichloroethane
Concen: 1.12 PPB
RT: 3.73 min Scan# 524
Delta R.T. -0.00 min
Lab File: 0419F018.D
Acq: 19 Apr 2011 5:44 pm

Tgt Ion: 63 Resp: 31631

Ion	Ratio	Lower	Upper
63	100		
65	26.6	0.8	60.8
83	8.5	0.0	42.7

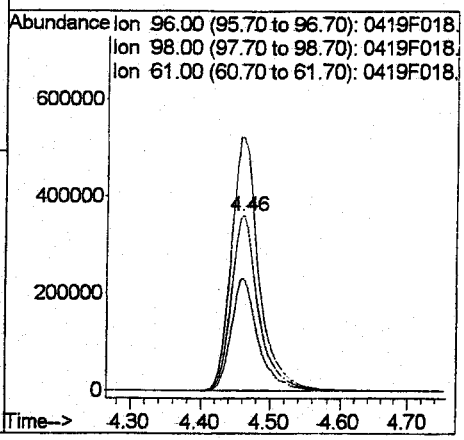


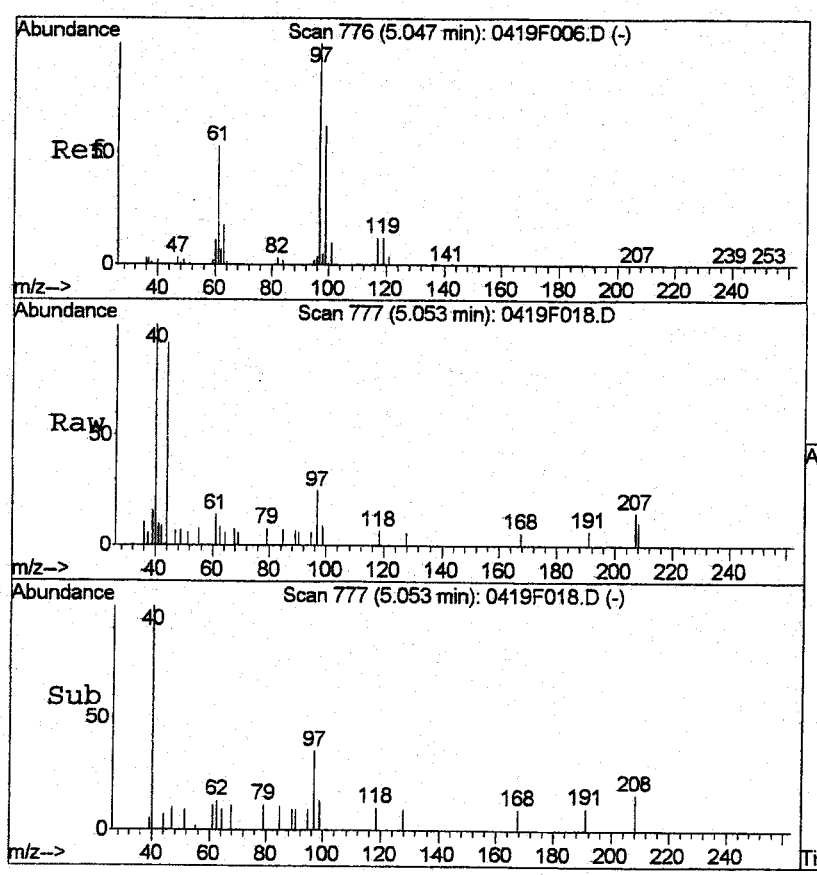


#18
cis-1,2-Dichloroethene
Concen: 64.68 PPB
RT: 4.46 min Scan# 664
Delta R.T. 0.00 min
Lab File: 0419F018.D
Acq: 19 Apr 2011 5:44 pm

Tgt Ion: 96 Resp: 995291

Ion	Ratio	Lower	Upper
96	100		
98	64.0	33.6	93.6
61	145.1	119.9	179.9

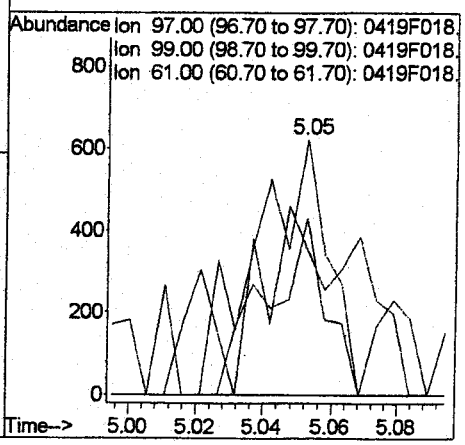


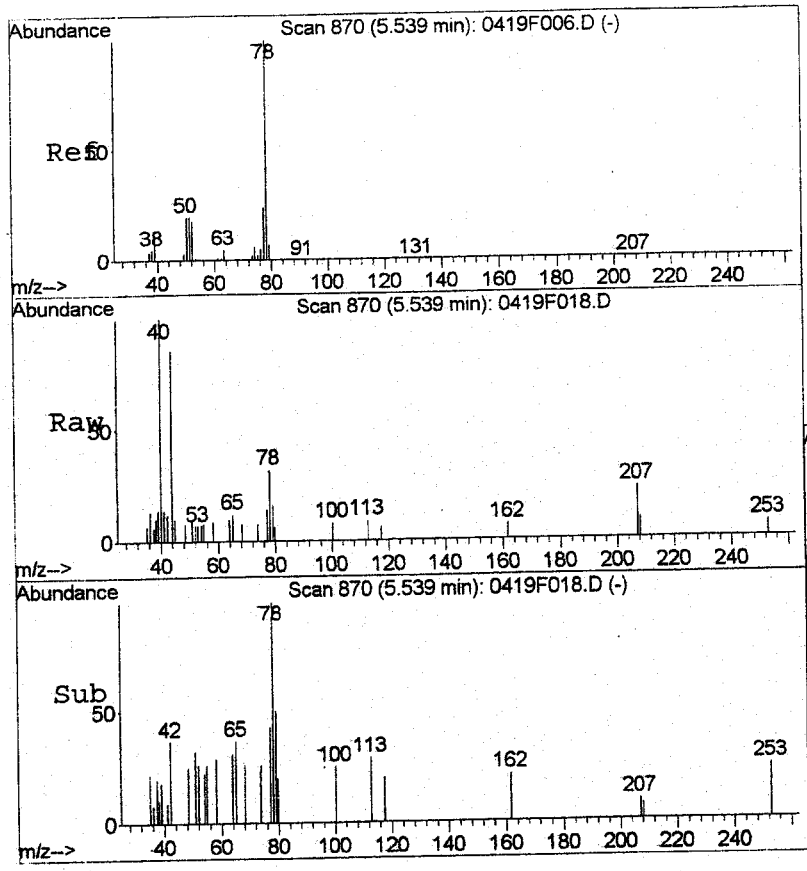


#21
1,1,1-Trichloroethane
Concen: 0.04 PPB m
RT: 5.05 min Scan# 777
Delta R.T. 0.01 min
Lab File: 0419F018.D
Acq: 19 Apr 2011 5:44 pm

Tgt Ion: 97 Resp: 926

Ion	Ratio	Lower	Upper
97	100		
99	36.1	35.0	95.0
61	57.1	20.1	80.1

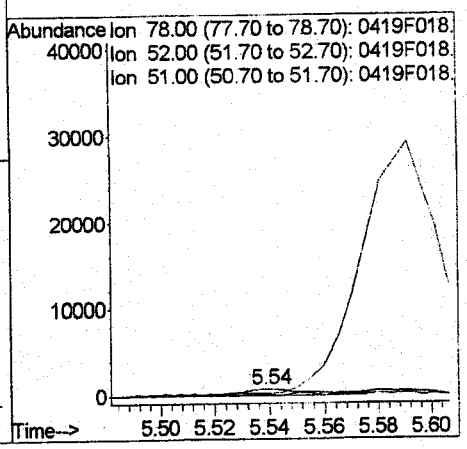


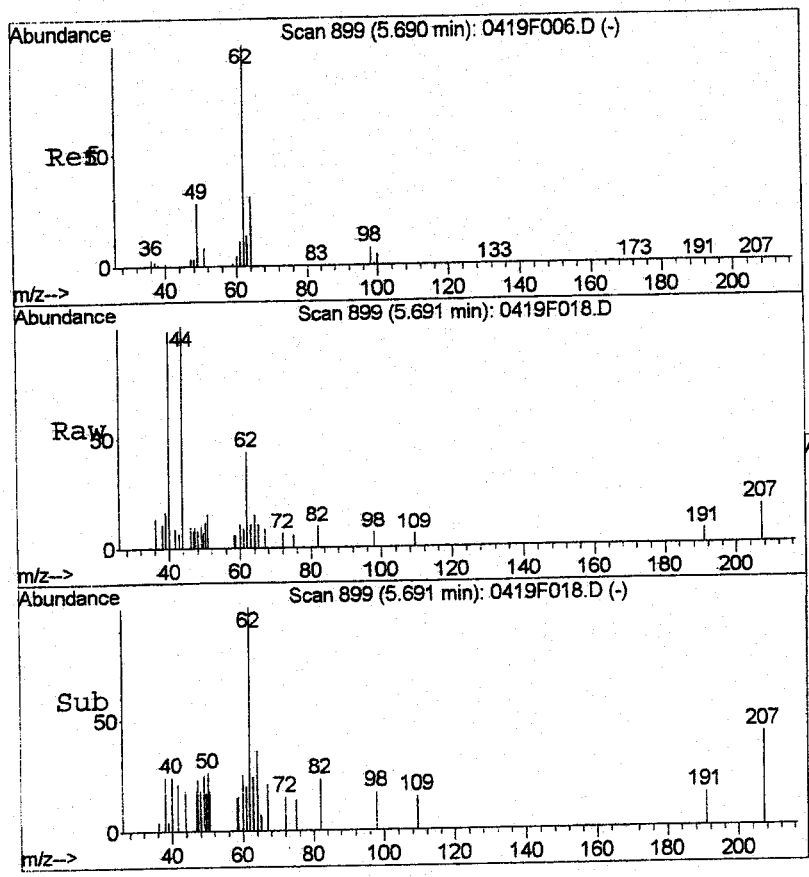


#25
Benzene
Concen: 0.02 PPB
RT: 5.54 min Scan# 870
Delta R.T. 0.00 min
Lab File: 0419F018.D
Acq: 19 Apr 2011 5:44 pm

Tgt Ion: 78 Resp: 1429

Ion	Ratio	Lower	Upper
78	100		
52	32.9	0.0	49.0
51	3.7	0.0	51.0

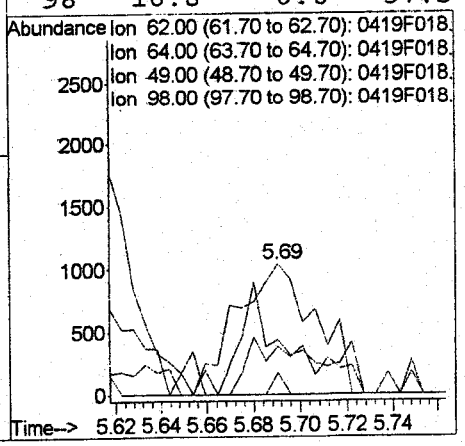


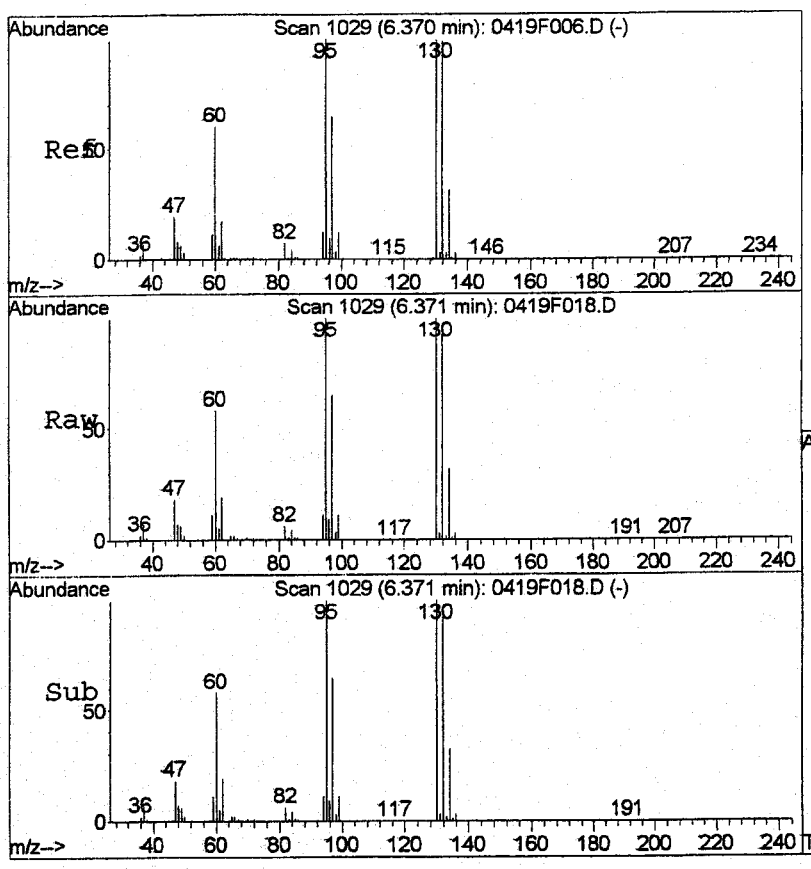


#26
1,2-Dichloroethane
Concen: 0.13 PPB
RT: 5.69 min Scan# 899
Delta R.T. 0.00 min
Lab File: 0419F018.D
Acq: 19 Apr 2011 5:44 pm

Tgt Ion: 62 Resp: 2417

Ion	Ratio	Lower	Upper
62	100		
64	36.3	3.7	63.7
49	58.7	0.2	60.2
98	16.8	0.0	37.5

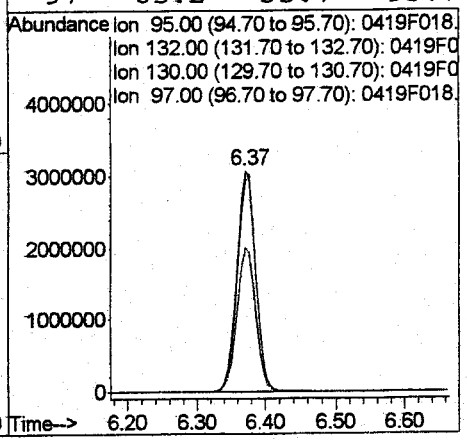


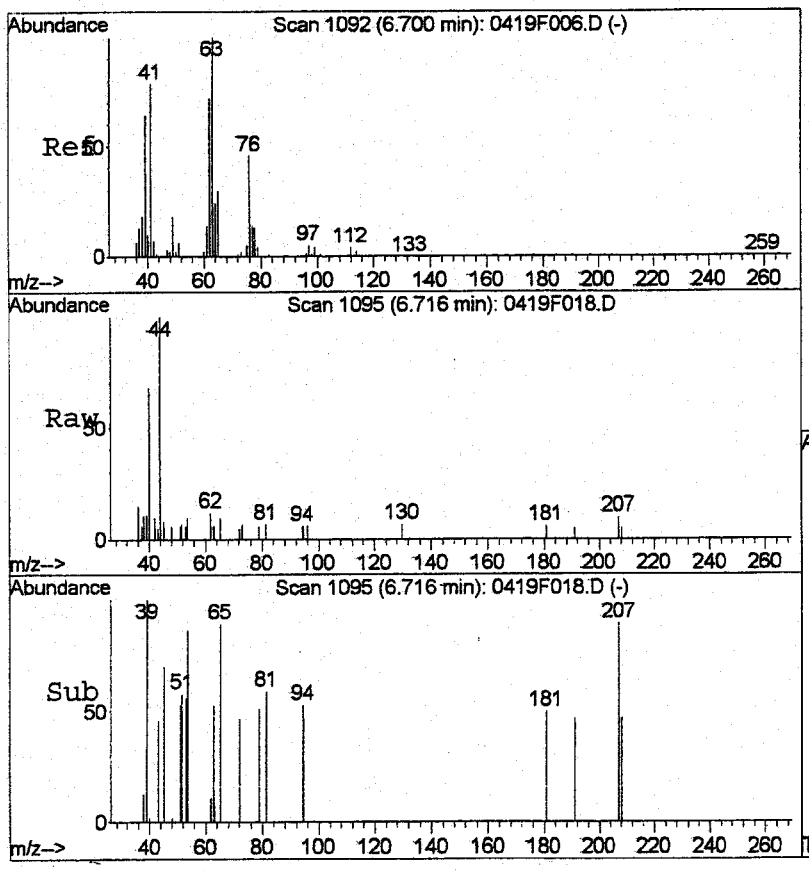


#27
Trichloroethene
Concen: 382.82 PPB
RT: 6.37 min Scan# 1029
Delta R.T. 0.00 min
Lab File: 0419F018.D
Acq: 19 Apr 2011 5:44 pm

Tgt Ion: 95 Resp: 5829742

Ion	Ratio	Lower	Upper
95	100		
132	95.8	64.3	124.3
130	99.6	65.2	125.2
97	65.2	35.7	95.7

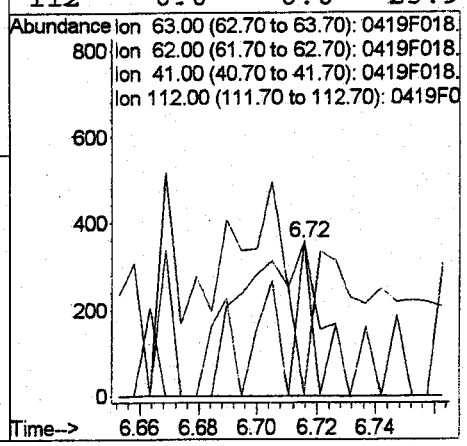


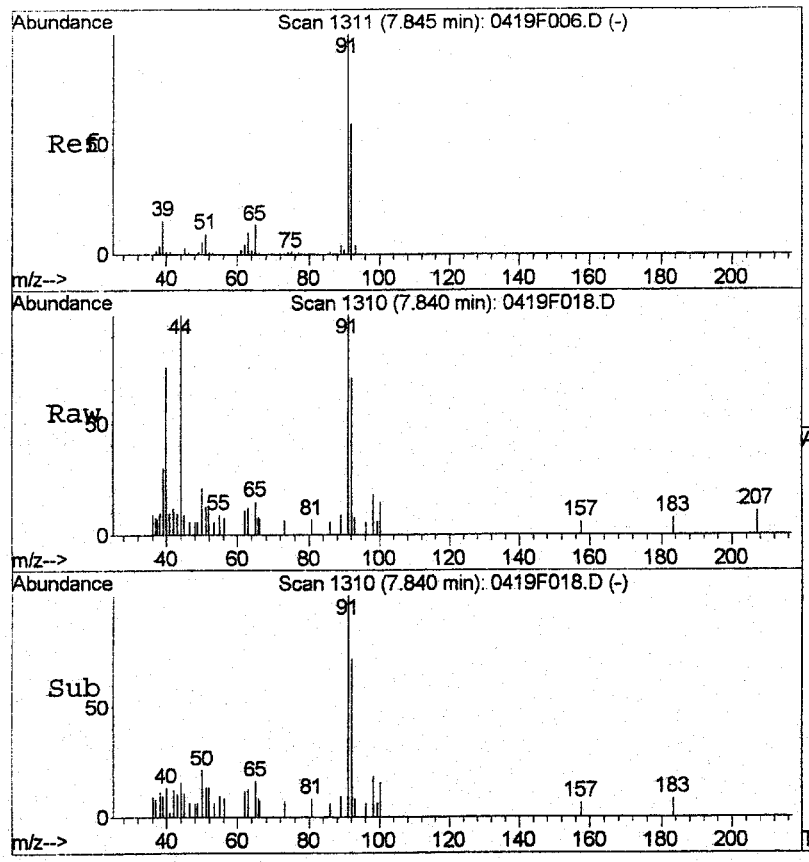


#28
1,2-Dichloropropane
Concen: 0.04 PPB
RT: 6.72 min Scan# 1095
Delta R.T. 0.02 min
Lab File: 0419F018.D
Acq: 19 Apr 2011 5:44 pm

Tgt Ion: 63 Resp: 570

Ion	Ratio	Lower	Upper
63	100		
62	101.1	42.7	102.7
41	0.0	48.2	108.2#
112	0.0	0.0	23.9

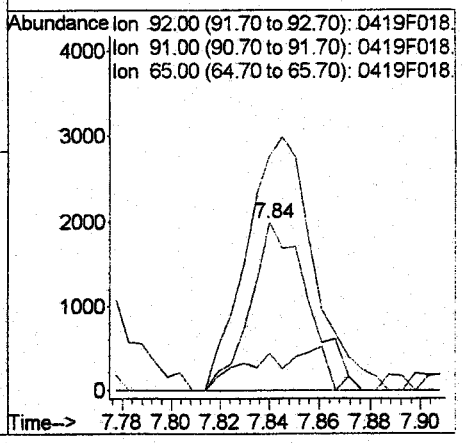


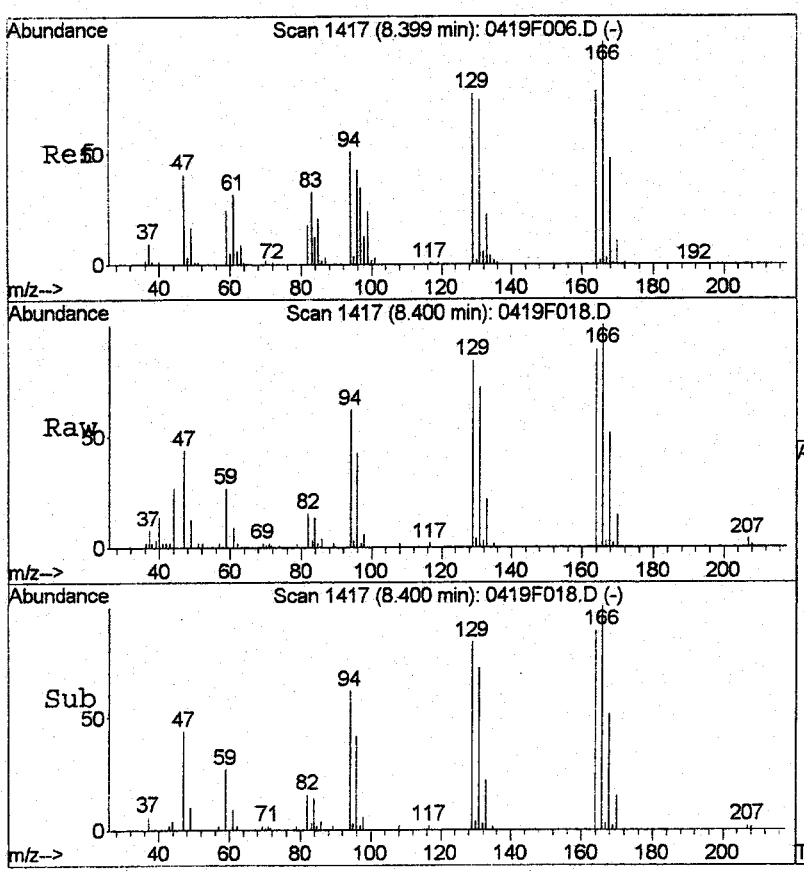


#34
Toluene
Concen: 0.09 PPB
RT: 7.84 min Scan# 1310
Delta R.T. -0.00 min
Lab File: 0419F018.D
Acq: 19 Apr 2011 5:44 pm

Tgt Ion: 92 Resp: 3250

Ion	Ratio	Lower	Upper
92	100		
91	139.4	138.1	198.1
65	21.6	0.0	51.7

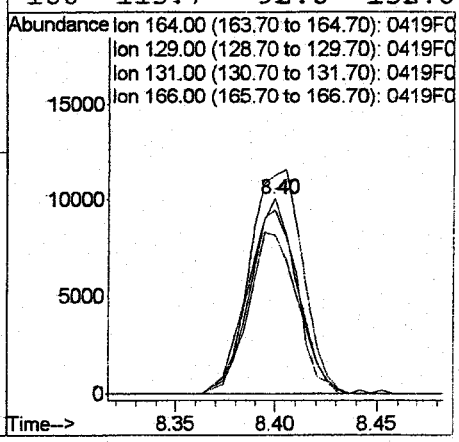




#38
Tetrachloroethene
Concen: 1.51 PPB
RT: 8.40 min Scan# 1417
Delta R.T. 0.00 min
Lab File: 0419F018.D
Acq: 19 Apr 2011 5:44 pm

Tgt Ion:164 Resp: 16243

Ion	Ratio	Lower	Upper
164	100		
129	93.9	66.2	126.2
131	81.0	61.3	121.3
166	115.7	92.8	152.8



COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	04/07/2011
Sample Matrix:	Water	**Date Received:**	04/08/2011
		Date Extracted:	04/20/2011
		Date Analyzed:	04/20/2011

Volatile Organic Compounds

Sample Name:	Fridin Air 83ADL	**Units:**	ug/L
Lab Code:	K1103044-003	**Basis:**	NA
File ID:	J:\MS23\DATA\042011BAYW\0420F008.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103584
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 10

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-71-8	Dichlorodifluoromethane	4.0	U	5.0	4.0	
74-87-3	Chloromethane	0.35	U	5.0	0.35	
75-01-4	Vinyl Chloride	0.53	U	2.5	0.53	
74-83-9	Bromomethane	3.2	U	5.0	3.2	
75-00-3	Chloroethane	3.2	U	5.0	3.2	
75-69-4	Trichlorofluoromethane	0.48	U	5.0	0.48	
76-13-1	Trichlorotrifluoroethane	0.77	U	5.0	0.77	
75-35-4	1,1-Dichloroethene	3.7	U	5.0	3.7	
75-15-0	Carbon Disulfide	0.48	U	5.0	0.48	
75-09-2	Methylene Chloride	**1.2**	JD	5.0	0.93	
156-60-5	trans-1,2-Dichloroethene	**15**	D	5.0	0.39	
156-59-2	cis-1,2-Dichloroethene	**57**	D	5.0	0.42	
78-93-3	2-Butanone (MEK)	**45**	JD	200	34	
75-34-3	1,1-Dichloroethane	**1.1**	JD	5.0	0.41	
67-66-3	Chloroform	0.38	U	5.0	0.38	
71-55-6	1,1,1-Trichloroethane (TCA)	0.44	U	5.0	0.44	
56-23-5	Carbon Tetrachloride	2.6	U	5.0	2.6	
71-43-2	Benzene	0.40	U	5.0	0.40	
107-06-2	1,2-Dichloroethane (EDC)	0.38	U	5.0	0.38	
108-05-4	Vinyl Acetate	2.1	U	100	2.1	
79-01-6	Trichloroethene (TCE)	**300**	D	5.0	0.44	
78-87-5	1,2-Dichloropropane	0.44	U	5.0	0.44	
75-27-4	Bromodichloromethane	0.47	U	5.0	0.47	
110-75-8	2-Chloroethyl Vinyl Ether	1.2	U	50	1.2	
10061-02-6	trans-1,3-Dichloropropene	0.45	U	5.0	0.45	
108-10-1	4-Methyl-2-pentanone (MIBK)	28	U	200	28	
591-78-6	2-Hexanone	18	U	200	18	
108-88-3	Toluene	0.39	U	5.0	0.39	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	04/07/2011
Sample Matrix:	Water	**Date Received:**	04/08/2011
		Date Extracted:	04/20/2011
		Date Analyzed:	04/20/2011

Volatile Organic Compounds

Sample Name:	Fridin Air 83ADL	**Units:**	ug/L
Lab Code:	K1103044-003	**Basis:**	NA
File ID:	J:\MS23\DATA\042011BAYW\0420F008.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103584
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 10

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
10061-01-5	cis-1,3-Dichloropropene	0.35	U	5.0	0.35	
79-00-5	1,1,2-Trichloroethane	0.72	U	5.0	0.72	
127-18-4	Tetrachloroethene (PCE)	1.4	JD	5.0	0.43	
124-48-1	Dibromochloromethane	0.81	U	5.0	0.81	
108-90-7	Chlorobenzene	0.31	U	5.0	0.31	
100-41-4	Ethylbenzene	0.40	U	5.0	0.40	
100-42-5	Styrene	0.25	U	5.0	0.25	
136777-61-2	m,p-Xylenes	1.4	U	10	1.4	
95-47-6	o-Xylene	0.35	U	5.0	0.35	
75-25-2	Bromoform	1.1	U	5.0	1.1	
67-64-1	Acetone	46	JD	200	43	
79-34-5	1,1,2,2-Tetrachloroethane	0.86	U	5.0	0.86	
541-73-1	1,3-Dichlorobenzene	0.71	U	5.0	0.71	
106-46-7	1,4-Dichlorobenzene	0.73	U	5.0	0.73	
95-50-1	1,2-Dichlorobenzene	0.86	U	5.0	0.86	
107-02-8	Acrolein†	21	U	100	21	
107-13-1	Acrylonitrile†	2.8	U	50	2.8	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Toluene-d8	100	72-122	04/20/11	Acceptable
4-Bromofluorobenzene	95	70-120	04/20/11	Acceptable
Dibromofluoromethane	104	61-121	04/20/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	04/07/2011
Sample Matrix:	Water	**Date Received:**	04/08/2011
		Date Extracted:	04/20/2011
		Date Analyzed:	04/20/2011

Volatile Organic Compounds

Sample Name:	Fridin Air 83ADL	**Units:**	ug/L
Lab Code:	K1103044-003	**Basis:**	NA
File ID:	J:\MS23\DATA\042011BAYW\0420F008.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103584
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount:	10 ml
% Solids:	NA
Dilution Factor:	10

† Analyte Comments

Acrolein	This compound is unstable under normal conditions. As per EPA Method 624 guidelines, the reported value was an estimate.
Acrylonitrile	This compound is unstable under normal conditions. As per EPA Method 624 guidelines, the reported value was an estimate.

Comments:

Exception Report

Data File:	J:\MS23\DATA\042011BAYW\0420F008.D	**Date Acquired:**	04/20/2011 17:53
Lab ID:	K1103044-003	**Date Quantitated:**	04/21/2011 16:07
RunType:	DL	**Batch ID:**	KWG1103583
Matrix:	WATER	**Analysis Method:**	624
		ListJoinID:	LJ12496

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
Preparation Holding Time	NA	NA	NA	x	
Pre-Preparation Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA		x
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Method Blank	NA	NA	NA	x	
MB Surrogate Recovery	NA	NA	NA	x	
Lab Control Spike	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA		x
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Analyte Exceptions

Exception Categories	Analyte Name	Result	Low Limit	High Limit	Corrective Action
Continuing Calibration Minimum RF	2-Butanone (MEK)	0.0098	0.01	NA	MRL
Std MRL Unsupported by ICAL	Vinyl Chloride	2.5	2.0	NA	↑ MRL

Primary Review: WL 4/21/11

Secondary Review: HB 4-22-11

Printed: 04/21/2011 16:38:07

J:\Stealth\Crystal.rpt\except2.rpt

Quantitation Report

Bottle ID:		Tier:	V	Matrix:	WATER
Prod Code:	624 VOC_FP	Collect Date:	04/07/2011	Receive Date:	04/08/2011

Analysis Lot:	KWG1103583	Prep Lot:	KWG1103584	Report Group:	K1103044
Analysis Method:	624	Prep Method:	METHOD		
Prep Ref:	1013232	Prep Date:	04/20/2011		

Quant Method:	J:\MS23\METHODS\032911624BAY	Calibration ID:	CAL10443
Title:	Volatile Organic Compounds	Report List ID:	LJ12496
Tune Ref:	J:\MS23\DATA\042011BAYW\0420F001.D	Method ID:	MJ158
MB Ref:	J:\MS23\DATA\042011BAYW\0420F007.D	Quant based on Report List	

Data File:	J:\MS23\DATA\042011BAYW\0420F008.D			Instrument:	MS23
Acqu Date:	04/20/2011 17:53	Quant Date:	04/21/2011 16:07	Vial:	8
Run Type:	DL			Dilution:	10.0
Lab ID:	K1103044-003			Soln Conc. Units:	PPB

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	Fluorobenzene	5.94	0.00	96	546761	10.00	OK
2	Chlorobenzene-d5	9.34	0.00	82	219052	10.00	OK
3	1,4-Dichlorobenzene-d4	11.75	0.00	152	185235	10.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	Dibromofluoromethane	5.11	-0.01	0.00	113	122600	10.37	104	61-121	OK	NR
1	Toluene-d8	7.77	0.00	0.00	98	516610	10.00	100	72-122	OK	NR
2	4-Bromofluorobenzene	10.58	0.00	0.00	95	170868	9.47	95	70-120	OK	NR

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	Final Conc	Q	Rpt?
1	Dichlorodifluoromethane				85	0		4.0	U	NR
1	Chloromethane				50	0d		0.35	U	NR
1	Vinyl Chloride				62	0d		0.53	U	NR
1	Bromomethane				96	0d		3.2	U	NR
1	Chloroethane				49	0d		3.2	U	NR
1	Trichlorofluoromethane				101	0		0.48	U	NR
1	Acrolein				56	0d		21	U	NR
1	Trichlorotrifluoroethane				151	0		0.77	U	NR
1	1,1-Dichloroethene				96	0d		3.7	U	NR
1	Acetone	2.56		0.00	43	9561	4.61	46	JD	NR
1	Carbon Disulfide				76	0d		0.48	U	NR
1	Methylene Chloride	2.99	0.01	0.00	84	1621	0.1200	1.2	JD	NR
1	Acrylonitrile				53	0d		2.8	U	NR
1	trans-1,2-Dichloroethene	3.21	0.01	0.00	96	19771	1.45	15	D	NR
1	1,1-Dichloroethane	3.72	-0.01	0.00	63	3019	0.1100	1.1	JD	NR

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Data File:	J:\MS23\DATA\042011BAYW\0420F008.D			Instrument:	MS23
Acqu Date:	04/20/2011 17:53	Quant Date:	04/21/2011 16:07	Vial:	8
Run Type:	DL			Dilution:	10.0
Lab ID:	K1103044-003			Soln Conc. Units:	PPB

Target Compounds — Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	Final Conc	Q	Rpt?
1	Vinyl Acetate				86	0		2.1	U	NR
1	cis-1,2-Dichloroethene	4.46		0.00	96	84332	5.74	57	D	NR
1	2-Butanone (MEK)	4.52	0.01	0.00	72	2735	4.50	45	JD	NR
1	Chloroform				83	0		0.38	U	NR
1	1,1,1-Trichloroethane (TCA)				97	0		0.44	U	NR
1	Carbon Tetrachloride				117	0		2.6	U	NR
1	Benzene				78	0		0.40	U	NR
1	1,2-Dichloroethane (EDC)				62	0		0.38	U	NR
1	Trichloroethene (TCE)	6.37		0.00	95	436214	30.03	300	D	
1	1,2-Dichloropropane				63	0		0.44	U	NR
1	Bromodichloromethane				83	0		0.47	U	NR
1	2-Chloroethyl Vinyl Ether				63	0		1.2	U	NR
1	cis-1,3-Dichloropropene				75	0		0.35	U	NR
1	4-Methyl-2-pentanone (MIBK)				58	0		28	U	NR
1	Toluene				92	0		0.39	U	NR
2	trans-1,3-Dichloropropene				75	0		0.45	U	NR
2	1,1,2-Trichloroethane				83	0		0.72	U	NR
2	Tetrachloroethene (PCE)	8.41	0.01	0.00	164	1470	0.1400	1.4	JD	NR
2	2-Hexanone				43	0d		18	U	NR
2	Dibromochloromethane				129	0		0.81	U	NR
2	Chlorobenzene				112	0		0.31	U	NR
2	Ethylbenzene				106	0		0.40	U	NR
2	m,p-Xylenes				106	0		1.4	U	NR
2	o-Xylene				106	0		0.35	U	NR
2	Styrene				103	0		0.25	U	NR
2	Bromoform				173	0		1.1	U	NR
3	1,1,2,2-Tetrachloroethane				83	0		0.86	U	NR
3	1,3-Dichlorobenzene				146	0		0.71	U	NR
3	1,4-Dichlorobenzene				146	0		0.73	U	NR
3	1,2-Dichlorobenzene				146	0		0.86	U	NR

Prep Amount:	10 ml	Dilution:	10.0
Prep Final Vol:	10 ml	Unit Factor:	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\042011BAYW\0420F008.D
Acq On : 20 Apr 2011 5:53 pm
Sample : K3044-003 10X DIL
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 21 16:06:56 2011

Vial: 8
Operator: KR
Inst : MS23
Multiplr: 10.00
Quant Results File: 032911624BAYW.R

Quant Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Initial Calibration
DataAcq Meth : 8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	5.94	96	546761	10.00	PPB	0.00
35) Chlorobenzene-d5	9.34	82	219052	10.00	PPB	0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	185235	10.00	PPB	0.00
System Monitoring Compounds						
22) Dibromofluoromethane	5.11	113	122600	10.37	PPB	0.00
Spiked Amount 10.000			Recovery	=	103.70%	
24) 1,2-Dichloroethane-d4	5.59	65	149492	10.06	PPB	0.00
Spiked Amount 10.000			Recovery	=	100.60%	
33) Toluene-d8	7.77	98	516610	10.00	PPB	0.00
Spiked Amount 10.000			Recovery	=	100.00%	
47) 4-Bromofluorobenzene	10.58	95	170868	9.47	PPB	0.00
Spiked Amount 10.000			Recovery	=	94.70%	

Target Compounds							Qvalue
11) Acetone	2.56	43	9561	4.61	PPB		96
13) Methylene Chloride	2.99	84	1621	0.12	PPB	#	63
15) trans-1,2-Dichloroethene	3.21	96	19771	1.45	PPB		88
16) 1,1-Dichloroethane	3.72	63	3019	0.11	PPB		75
18) cis-1,2-Dichloroethene	4.46	96	84332	5.74	PPB		95
19) 2-Butanone	4.52	72	2735	4.50	PPB	#	61
27) Trichloroethene	6.37	95	436214	30.03	PPB		98
38) Tetrachloroethene	8.41	164	1470	0.14	PPB	#	72

(#) = qualifier out of range (m) = manual integration

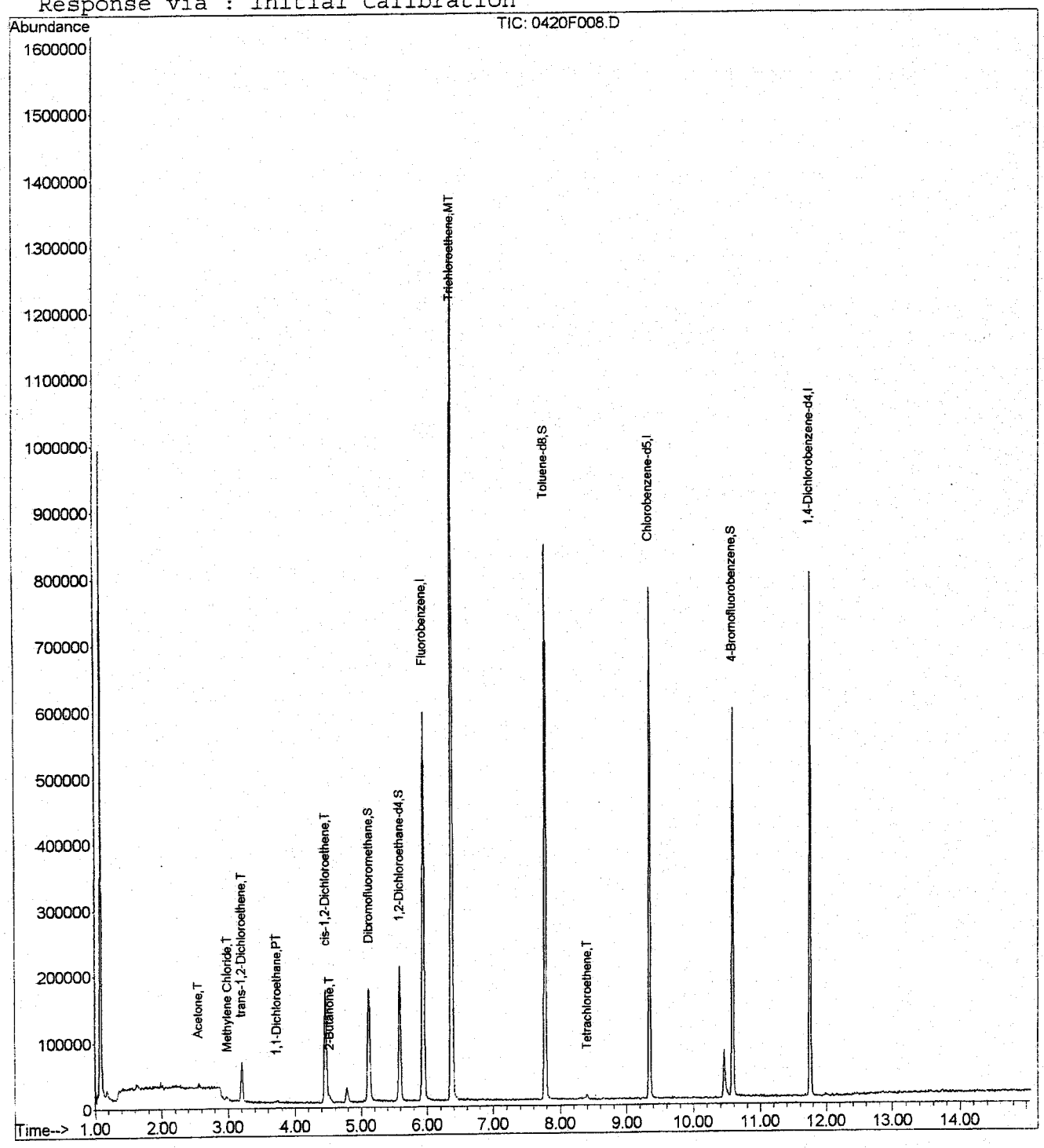
Quantitation Report (QT Reviewed)

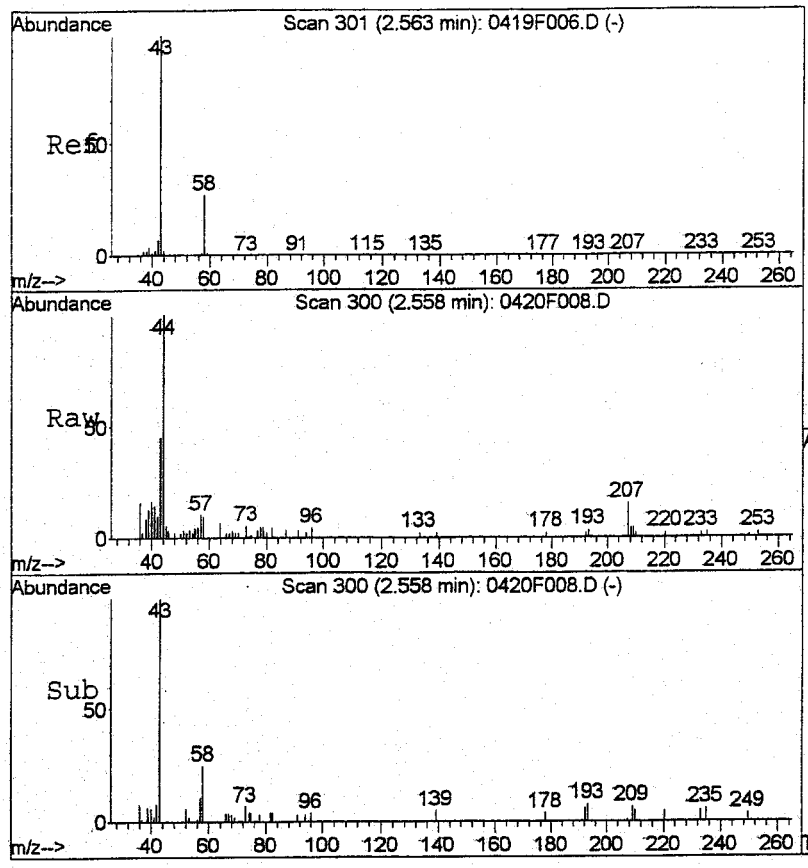
Data File : J:\MS23\DATA\042011BAYW\0420F008.D
Acq On : 20 Apr 2011 5:53 pm
Sample : K3044-003 10X DIL
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 21 16:07 2011

Vial: 8
Operator: KR
Inst : MS23
Multiplr: 10.00

Quant Results File: 032911624BAY

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Initial Calibration

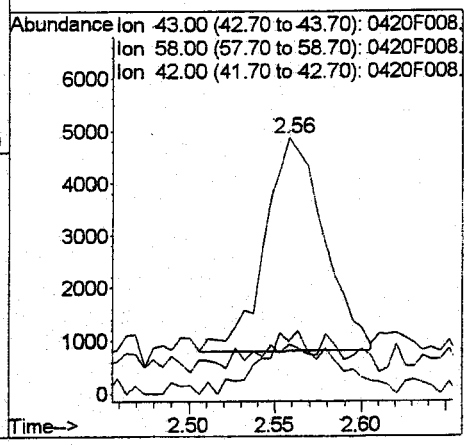


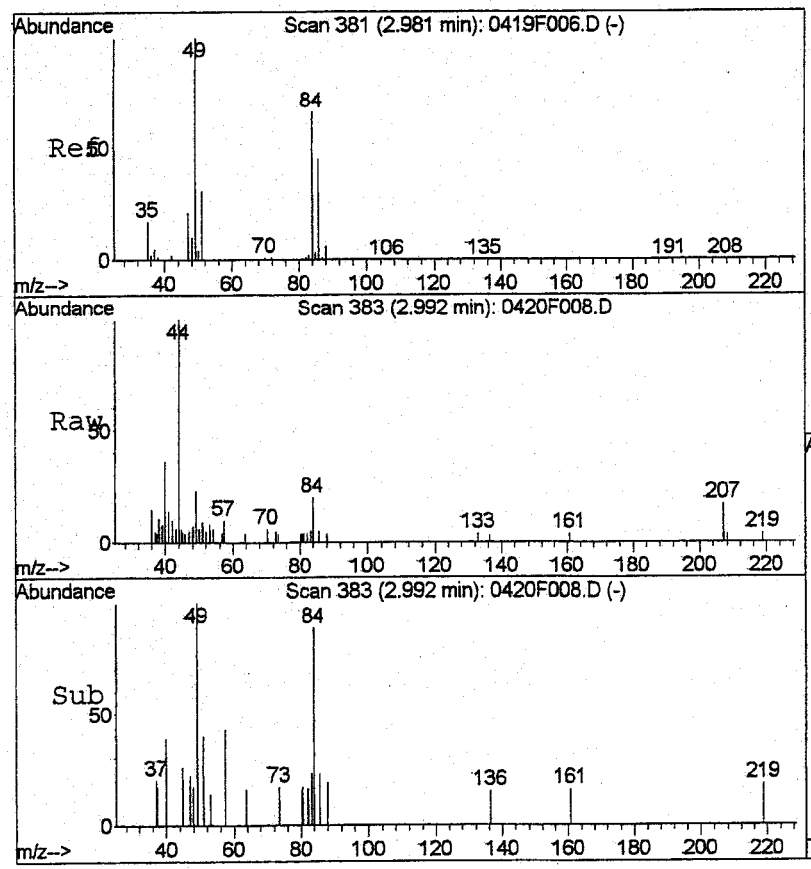


#11
Acetone
Concen: 4.61 PPB
RT: 2.56 min Scan# 300
Delta R.T. -0.00 min
Lab File: 0420F008.D
Acq: 20 Apr 2011 5:53 pm

Tgt Ion: 43 Resp: 9561

Ion	Ratio	Lower	Upper
43	100		
58	24.4	0.0	56.9
42	7.2	0.0	37.5

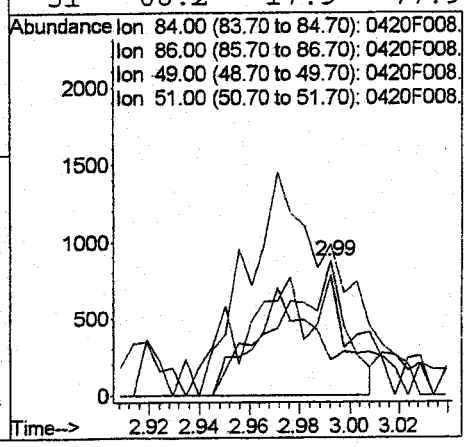


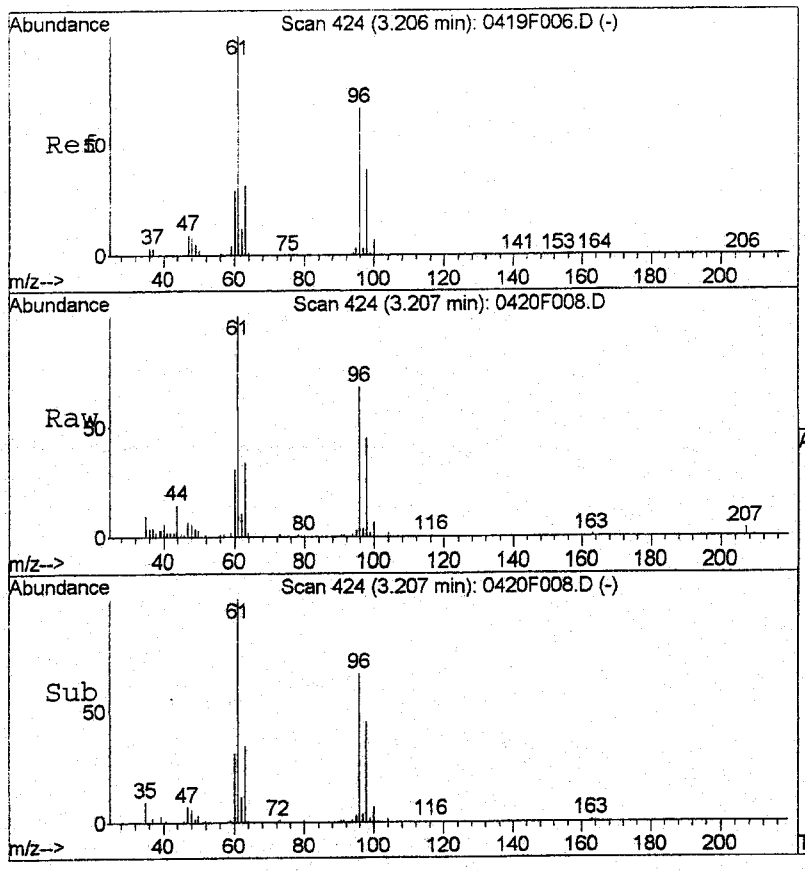


#13
Methylene Chloride
Concen: 0.12 PPB
RT: 2.99 min Scan# 383
Delta R.T. 0.01 min
Lab File: 0420F008.D
Acq: 20 Apr 2011 5:53 pm

Tgt Ion: 84 Resp: 1621

Ion	Ratio	Lower	Upper
84	100		
86	25.6	31.9	91.9#
49	112.3	127.1	187.1#
51	68.2	17.9	77.9

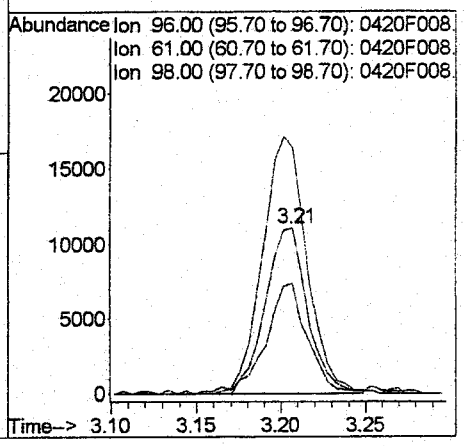


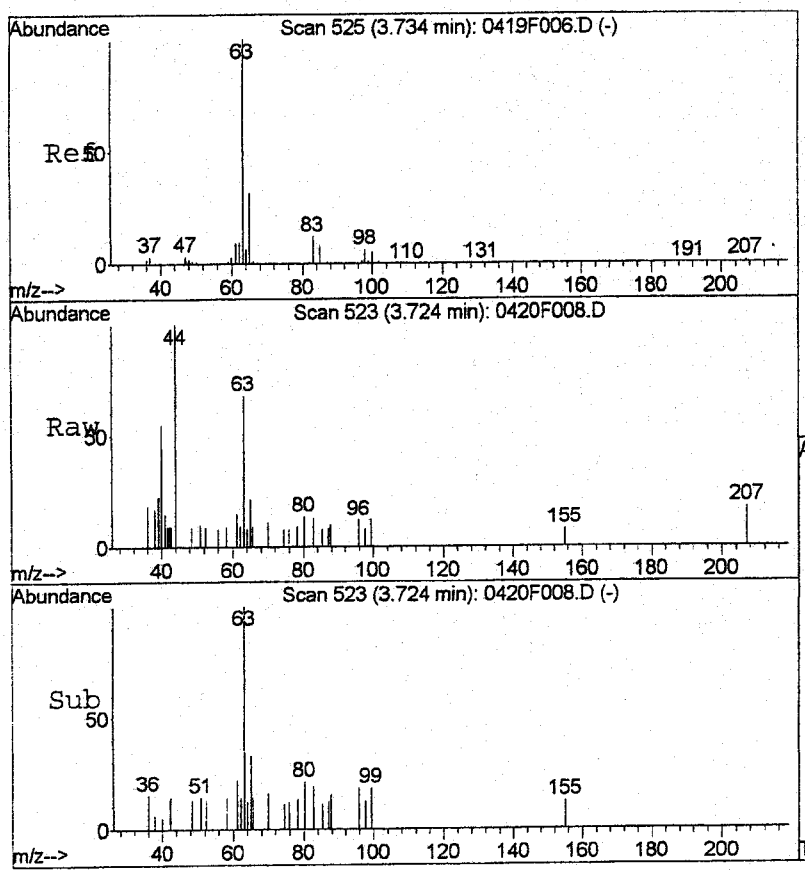


#15
trans-1,2-Dichloroethene
Concen: 1.45 PPB
RT: 3.21 min Scan# 424
Delta R.T. 0.00 min
Lab File: 0420F008.D
Acq: 20 Apr 2011 5:53 pm

Tgt Ion: 96 Resp: 19771

Ion	Ratio	Lower	Upper
96	100		
61	147.6	135.0	195.0
98	66.3	30.1	90.1

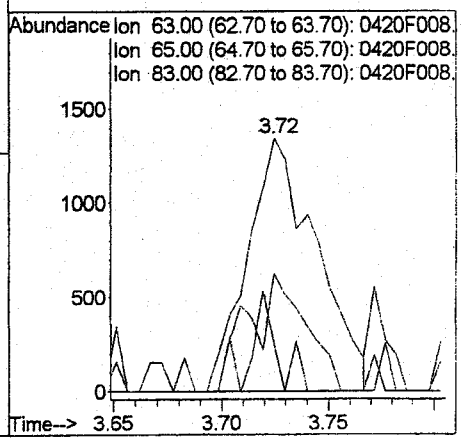


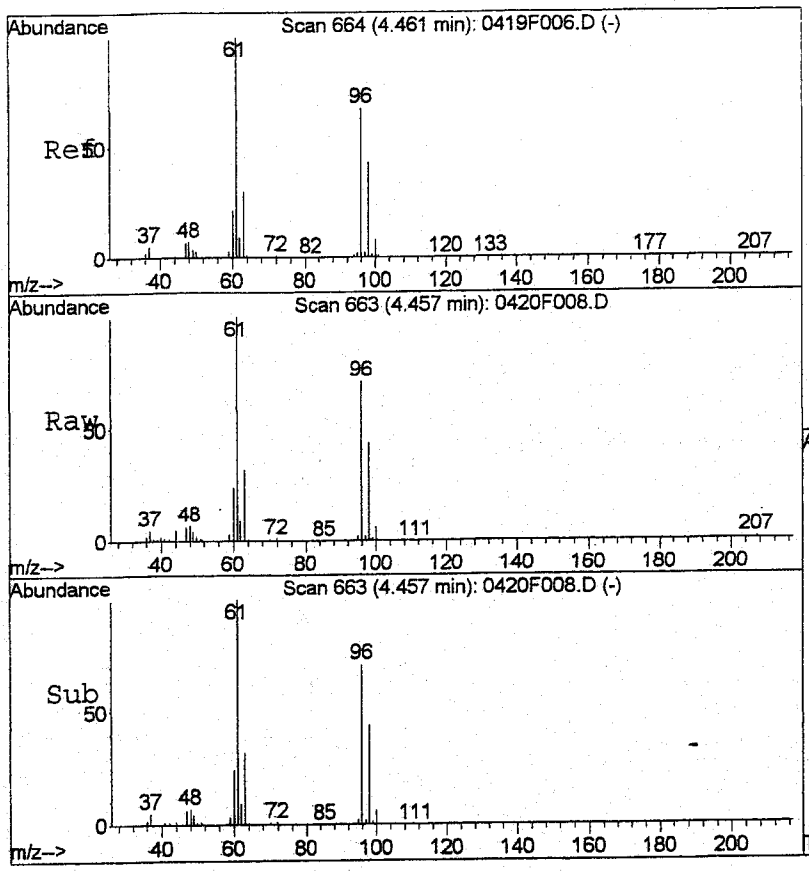


#16
1,1-Dichloroethane
Concen: 0.11 PPB
RT: 3.72 min Scan# 523
Delta R.T. -0.01 min
Lab File: 0420F008.D
Acq: 20 Apr 2011 5:53 pm

Tgt Ion: 63 Resp: 3019

Ion	Ratio	Lower	Upper
63	100		
65	46.6	0.8	60.8
83	18.6	0.0	42.7

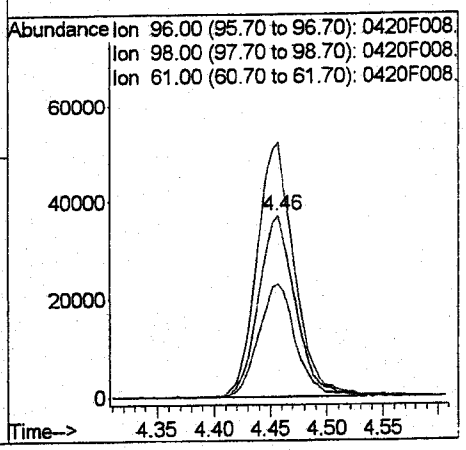


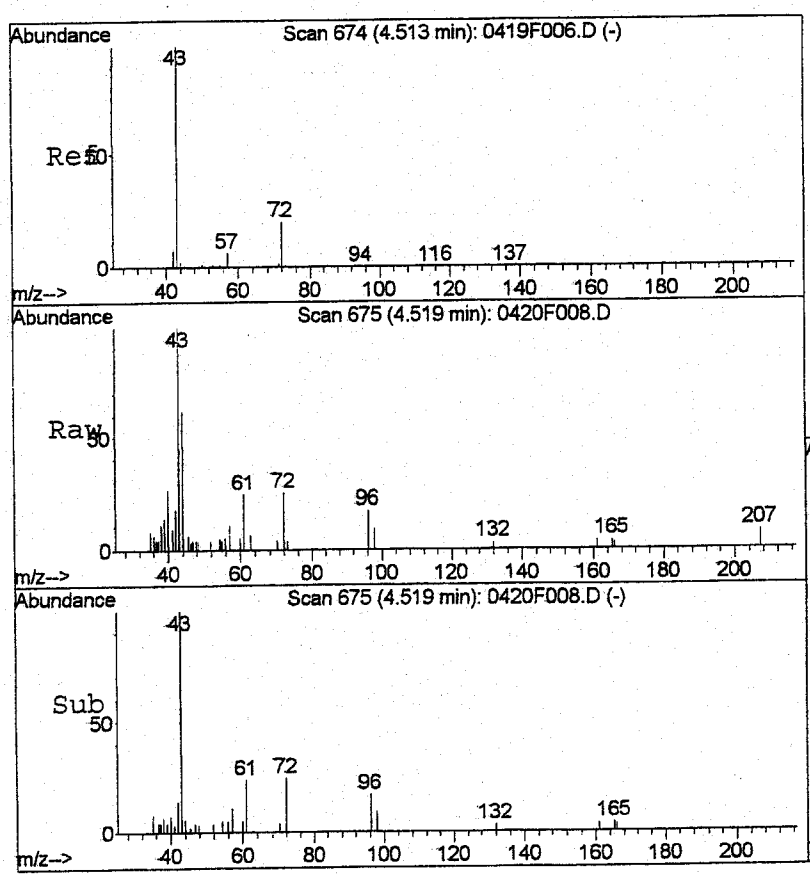


#18
cis-1,2-Dichloroethene
Concen: 5.74 PPB
RT: 4.46 min Scan# 663
Delta R.T. -0.00 min
Lab File: 0420F008.D
Acq: 20 Apr 2011 5:53 pm

Tgt Ion: 96 Resp: 84332

Ion	Ratio	Lower	Upper
96	100		
98	62.1	33.6	93.6
61	141.2	119.9	179.9

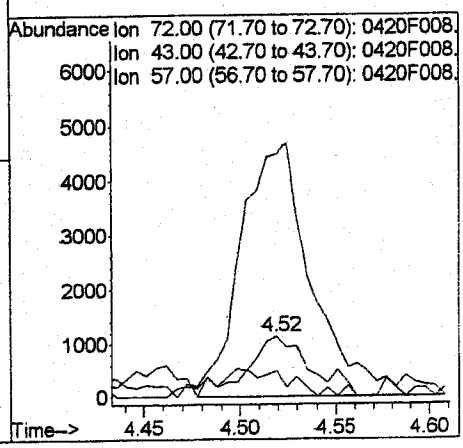


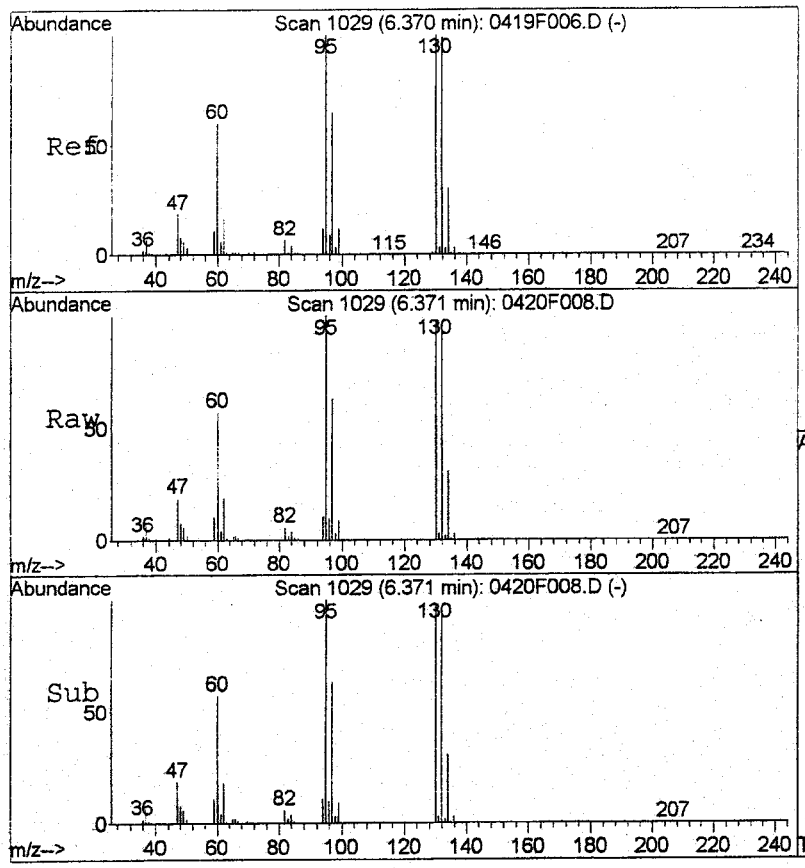


#19
2-Butanone
Concen: 4.50 PPB
RT: 4.52 min Scan# 675
Delta R.T. 0.01 min
Lab File: 0420F008.D
Acq: 20 Apr 2011 5:53 pm

Tgt Ion: 72 Resp: 2735

Ion	Ratio	Lower	Upper
72	100		
43	380.2	461.9	521.9#
57	42.9	5.8	65.8

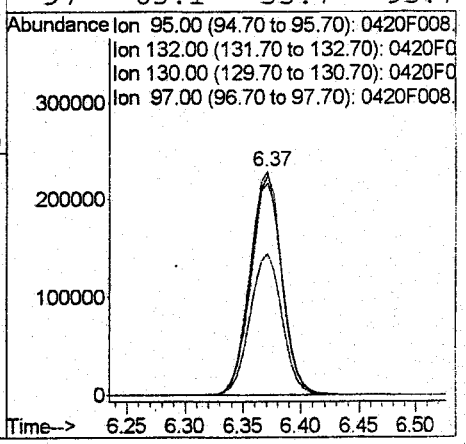


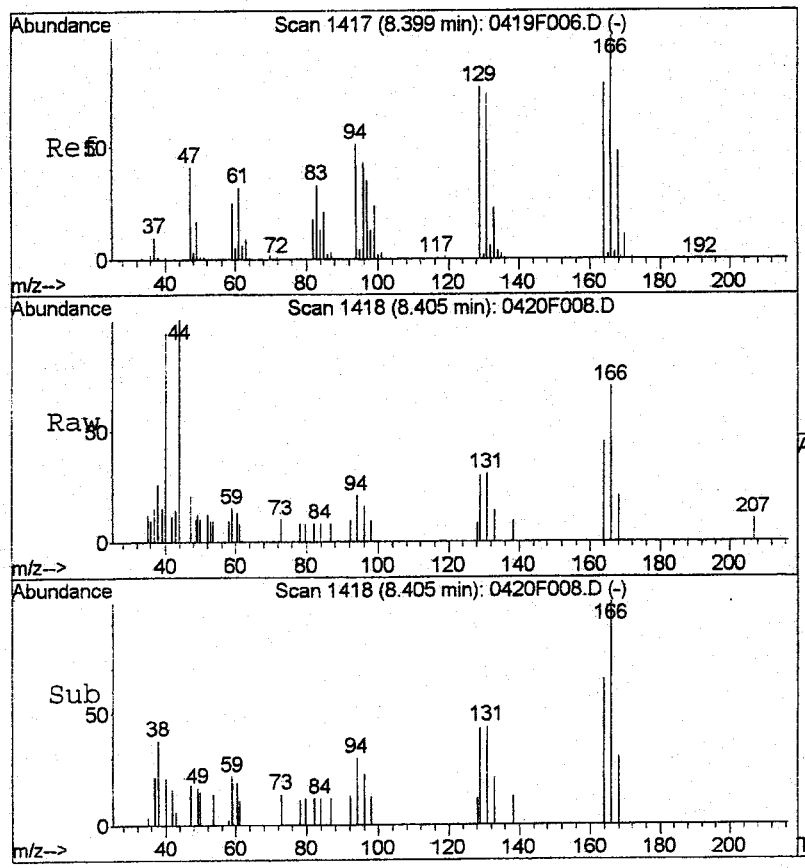


#27
Trichloroethene
Concen: 30.03 PPB
RT: 6.37 min Scan# 1029
Delta R.T. 0.00 min
Lab File: 0420F008.D
Acq: 20 Apr 2011 5:53 pm

Tgt Ion: 95 Resp: 436214

Ion	Ratio	Lower	Upper
95	100		
132	94.7	64.3	124.3
130	98.2	65.2	125.2
97	63.1	35.7	95.7

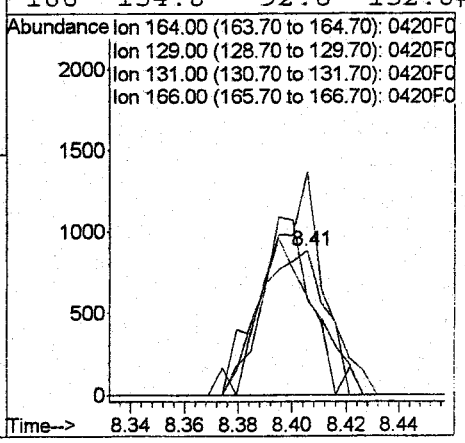




#38
Tetrachloroethene
Concen: 0.14 PPB
RT: 8.41 min Scan# 1418
Delta R.T. 0.01 min
Lab File: 0420F008.D
Acq: 20 Apr 2011 5:53 pm

Tgt Ion:164 Resp: 1470

Ion	Ratio	Lower	Upper
164	100		
129	66.1	66.2	126.2#
131	68.1	61.3	121.3
166	154.8	92.8	152.8#



COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	04/07/2011
Sample Matrix:	Water	**Date Received:**	04/08/2011
		Date Extracted:	04/19/2011
		Date Analyzed:	04/19/2011

Volatile Organic Compounds

Sample Name:	Frideff Air 85A	**Units:**	ug/L
Lab Code:	K1103044-004	**Basis:**	NA
File ID:	J:\MS23\DATA\041911BAYW\0419F019.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103524
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-71-8	Dichlorodifluoromethane	0.40	U	0.50	0.40	
74-87-3	Chloromethane	**0.070**	J	0.50	0.035	
75-01-4	Vinyl Chloride	0.053	U	0.25	0.053	
74-83-9	Bromomethane	0.32	U	0.50	0.32	
75-00-3	Chloroethane	0.32	U	0.50	0.32	
75-69-4	Trichlorofluoromethane	0.048	U	0.50	0.048	
76-13-1	Trichlorotrifluoroethane	0.077	U	0.50	0.077	
75-35-4	1,1-Dichloroethene	0.37	U	0.50	0.37	
75-15-0	Carbon Disulfide	0.048	U	0.50	0.048	
75-09-2	Methylene Chloride	0.093	U	0.50	0.093	
156-60-5	trans-1,2-Dichloroethene	0.039	U	0.50	0.039	
156-59-2	cis-1,2-Dichloroethene	0.042	U	0.50	0.042	
78-93-3	2-Butanone (MEK)	3.4	U	20	3.4	
75-34-3	1,1-Dichloroethane	0.041	U	0.50	0.041	
67-66-3	Chloroform	0.038	U	0.50	0.038	
71-55-6	1,1,1-Trichloroethane (TCA)	0.044	U	0.50	0.044	
56-23-5	Carbon Tetrachloride	0.26	U	0.50	0.26	
71-43-2	Benzene	0.040	U	0.50	0.040	
107-06-2	1,2-Dichloroethane (EDC)	0.038	U	0.50	0.038	
108-05-4	Vinyl Acetate	0.21	U	10	0.21	
79-01-6	Trichloroethene (TCE)	**0.23**	J	0.50	0.044	
78-87-5	1,2-Dichloropropane	0.044	U	0.50	0.044	
75-27-4	Bromodichloromethane	0.047	U	0.50	0.047	
110-75-8	2-Chloroethyl Vinyl Ether	0.12	U	5.0	0.12	
10061-02-6	trans-1,3-Dichloropropene	0.045	U	0.50	0.045	
108-10-1	4-Methyl-2-pentanone (MIBK)	2.8	U	20	2.8	
591-78-6	2-Hexanone	1.8	U	20	1.8	
108-88-3	Toluene	**0.070**	J	0.50	0.039	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	04/07/2011
Sample Matrix:	Water	**Date Received:**	04/08/2011
		Date Extracted:	04/19/2011
		Date Analyzed:	04/19/2011

Volatile Organic Compounds

Sample Name:	Frideff Air 85A	**Units:**	ug/L
Lab Code:	K1103044-004	**Basis:**	NA
File ID:	J:\MS23\DATA\041911BAYW\0419F019.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103524
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
10061-01-5	cis-1,3-Dichloropropene	0.035	U	0.50	0.035	
79-00-5	1,1,2-Trichloroethane	0.072	U	0.50	0.072	
127-18-4	Tetrachloroethene (PCE)	0.043	U	0.50	0.043	
124-48-1	Dibromochloromethane	0.081	U	0.50	0.081	
108-90-7	Chlorobenzene	0.031	U	0.50	0.031	
100-41-4	Ethylbenzene	0.040	U	0.50	0.040	
100-42-5	Styrene	0.025	U	0.50	0.025	
136777-61-2	m,p-Xylenes	0.14	U	1.0	0.14	
95-47-6	o-Xylene	0.035	U	0.50	0.035	
75-25-2	Bromoform	0.11	U	0.50	0.11	
67-64-1	Acetone	4.3	U	20	4.3	
79-34-5	1,1,2,2-Tetrachloroethane	0.086	U	0.50	0.086	
541-73-1	1,3-Dichlorobenzene	0.071	U	0.50	0.071	
106-46-7	1,4-Dichlorobenzene	0.073	U	0.50	0.073	
95-50-1	1,2-Dichlorobenzene	0.086	U	0.50	0.086	
107-02-8	Acrolein†	2.1	U	10	2.1	
107-13-1	Acrylonitrile†	0.28	U	5.0	0.28	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Toluene-d8	100	72-122	04/19/11	Acceptable
4-Bromofluorobenzene	91	70-120	04/19/11	Acceptable
Dibromofluoromethane	102	61-121	04/19/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	04/07/2011
Sample Matrix:	Water	**Date Received:**	04/08/2011
		Date Extracted:	04/19/2011
		Date Analyzed:	04/19/2011

Volatile Organic Compounds

Sample Name:	Frideff Air 85A	**Units:**	ug/L
Lab Code:	K1103044-004	**Basis:**	NA
File ID:	J:\MS23\DATA\041911BAYW\0419F019.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103524
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount:	10 ml
% Solids:	NA
Dilution Factor:	1

† Analyte Comments

Acrolein	This compound is unstable under normal conditions. As per EPA Method 624 guidelines, the reported value was an estimate.
Acrylonitrile	This compound is unstable under normal conditions. As per EPA Method 624 guidelines, the reported value was an estimate.

Comments:

Exception Report

Data File:	J:\MS23\DATA\041911BAYW\0419F019.D	**Date Acquired:**	04/19/2011 18:14
Lab ID:	K1103044-004	**Date Quantitated:**	04/20/2011 13:11
RunType:	SMPL	**Batch ID:**	KWG1103523
Matrix:	WATER	**Analysis Method:**	624
		ListJoinID:	~~LJ12349~~ LJ12446

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
Preparation Holding Time	NA	NA	NA	x	
Pre-Preparation Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Method Blank	NA	NA	NA	x	
MB Surrogate Recovery	NA	NA	NA	x	
Lab Control Spike	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA		x
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Analyte Exceptions

Exception Categories	Analyte Name	Result	Low Limit	High Limit	Corrective Action
Std MRL Unsupported by ICAL	Vinyl Chloride	0.25	0.20	NA	↑ MRL

Primary Review: KL 4/20/11

Secondary Review: HTB 4-20-11

Quantitation Report

Bottle ID:		Tier:	V	Matrix:	WATER
Prod Code:	624 VOC_FP	Collect Date:	04/07/2011	Receive Date:	04/08/2011

Analysis Lot:	KWG1103523	Prep Lot:	KWG1103524	Report Group:	K1103044
Analysis Method:	624	Prep Method:	METHOD		
Prep Ref:	1012860	Prep Date:	04/19/2011		

Quant Method:	J:\MS23\METHODS\032911624BAY	Calibration ID:	CAL10443
Title:	Volatile Organic Compounds	Report List ID:	LJ12496
Tune Ref:	J:\MS23\DATA\041911BAYW\0419F005.D	Method ID:	MJ158
MB Ref:	J:\MS23\DATA\041911BAYW\0419F014.D	Quant based on Report List	

Data File:	J:\MS23\DATA\041911BAYW\0419F019.D			Instrument:	MS23
Acqu Date:	04/19/2011 18:14	Quant Date:	04/20/2011 13:11	Vial:	13
Run Type:	SMPL			Dilution:	1.0
Lab ID:	K1103044-004			Soln Conc. Units:	PPB

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	Fluorobenzene	5.94	0.00	96	557844	10.00	OK
2	Chlorobenzene-d5	9.35	0.01	82	221851	10.00	OK
3	1,4-Dichlorobenzene-d4	11.75	0.00	152	182613	10.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	Dibromofluoromethane	5.11	0.00	0.00	113	122681	10.17	102	61-121	OK
1	Toluene-d8	7.77	0.00	0.00	98	525426	9.97	100	72-122	OK
2	4-Bromofluorobenzene	10.58	0.00	0.00	95	166441	9.11	91	70-120	OK

Final Conc. Units: ug/L

Target Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	Final Conc	Q	Rpt?
1	Dichlorodifluoromethane				85	0		0.40	U	
1	Chloromethane	1.35	-0.01	0.00	50	1921	0.0700	0.070	J	
1	Vinyl Chloride				62	0		0.053	U	
1	Bromomethane				96	0d		0.32	U	
1	Chloroethane				49	0d		0.32	U	
1	Trichlorofluoromethane				101	0		0.048	U	
1	Acrolein				56	0d		2.1	U	
1	Trichlorotrifluoroethane				151	0		0.077	U	
1	1,1-Dichloroethene				96	0d		0.37	U	
1	Acetone	2.56		0.00	43	2219	1.05	4.3	U	
1	Carbon Disulfide				76	0d		0.048	U	
1	Methylene Chloride	2.97	-0.01	0.00	84	535	0.0400	0.093	U	
1	Acrylonitrile				53	0		0.28	U	
1	trans-1,2-Dichloroethene				96	0		0.039	U	
1	1,1-Dichloroethane				63	0		0.041	U	

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Data File:	J:\MS23\DATA\041911BAYW\0419F019.D			Instrument:	MS23
Acqu Date:	04/19/2011 18:14	Quant Date:	04/20/2011 13:11	Vial:	13
Run Type:	SMPL			Dilution:	1.0
Lab ID:	K1103044-004			Soln Conc. Units:	PPB

Target Compounds — Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	Final Conc	Q	Rpt?
1	Vinyl Acetate				86	0		0.21	U	
1	cis-1,2-Dichloroethene				96	0		0.042	U	
1	2-Butanone (MEK)				72	0		3.4	U	
1	Chloroform				83	0		0.038	U	
1	1,1,1-Trichloroethane (TCA)				97	0		0.044	U	
1	Carbon Tetrachloride				117	0		0.26	U	
1	Benzene				78	0d		0.040	U	
1	1,2-Dichloroethane (EDC)				62	0		0.038	U	
1	Trichloroethene (TCE)	6.36	-0.01	0.00	95	3387	0.2300	0.23	J	
1	1,2-Dichloropropane				63	0		0.044	U	
1	Bromodichloromethane				83	0		0.047	U	
1	2-Chloroethyl Vinyl Ether				63	0		0.12	U	
1	cis-1,3-Dichloropropene				75	0		0.035	U	
1	4-Methyl-2-pentanone (MIBK)				58	0		2.8	U	
1	Toluene	7.84		0.00	92	2657	0.0700	0.070	J	
2	trans-1,3-Dichloropropene				75	0		0.045	U	
2	1,1,2-Trichloroethane				83	0		0.072	U	
2	Tetrachloroethene (PCE)				164	0		0.043	U	
2	2-Hexanone				43	0		1.8	U	
2	Dibromochloromethane				129	0		0.081	U	
2	Chlorobenzene				112	0		0.031	U	
2	Ethylbenzene				106	0		0.040	U	
2	m,p-Xylenes	9.59		0.00	106	938	0.0400	0.14	U	
2	o-Xylene				106	0		0.035	U	
2	Styrene				103	0		0.025	U	
2	Bromoform				173	0		0.11	U	
3	1,1,2,2-Tetrachloroethane				83	0		0.086	U	
3	1,3-Dichlorobenzene				146	0		0.071	U	
3	1,4-Dichlorobenzene				146	0		0.073	U	
3	1,2-Dichlorobenzene				146	0		0.086	U	

Prep Amount:	10 ml	Dilution:	1.0
Prep Final Vol:	10 ml	Unit Factor:	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\041911BAYW\0419F019.D
Acq On : 19 Apr 2011 6:14 pm
Sample : K3044-004
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 20 13:10:39 2011

Vial: 13
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624BAYW.R

Quant Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 12:44:23 2011
Response via : Initial Calibration
DataAcq Meth : 8260

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Fluorobenzene	5.94	96	557844	10.00	PPB		0.00
35) Chlorobenzene-d5	9.35	82	221851	10.00	PPB		0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	182613	10.00	PPB		0.00
System Monitoring Compounds							
22) Dibromofluoromethane	5.11	113	122681	10.17	PPB		0.00
Spiked Amount 10.000			Recovery	=	101.70%		
24) 1,2-Dichloroethane-d4	5.59	65	148759	9.81	PPB		0.00
Spiked Amount 10.000			Recovery	=	98.10%		
33) Toluene-d8	7.77	98	525426	9.97	PPB		0.00
Spiked Amount 10.000			Recovery	=	99.70%		
47) 4-Bromofluorobenzene	10.58	95	166441	9.11	PPB		0.00
Spiked Amount 10.000			Recovery	=	91.10%		
Target Compounds							Qvalue
3) Chloromethane	1.35	50	1921	0.07	PPB		71
11) Acetone	2.56	43	2219	1.05	PPB		83
13) Methylene Chloride	2.97	84	535	0.04	PPB	#	45
27) Trichloroethene	6.36	95	3387	0.23	PPB		81
34) Toluene	7.84	92	2657	0.07	PPB	#	60
43) m,p-Xylenes	9.59	106	938	0.04	PPB		83

(#) = qualifier out of range (m) = manual integration

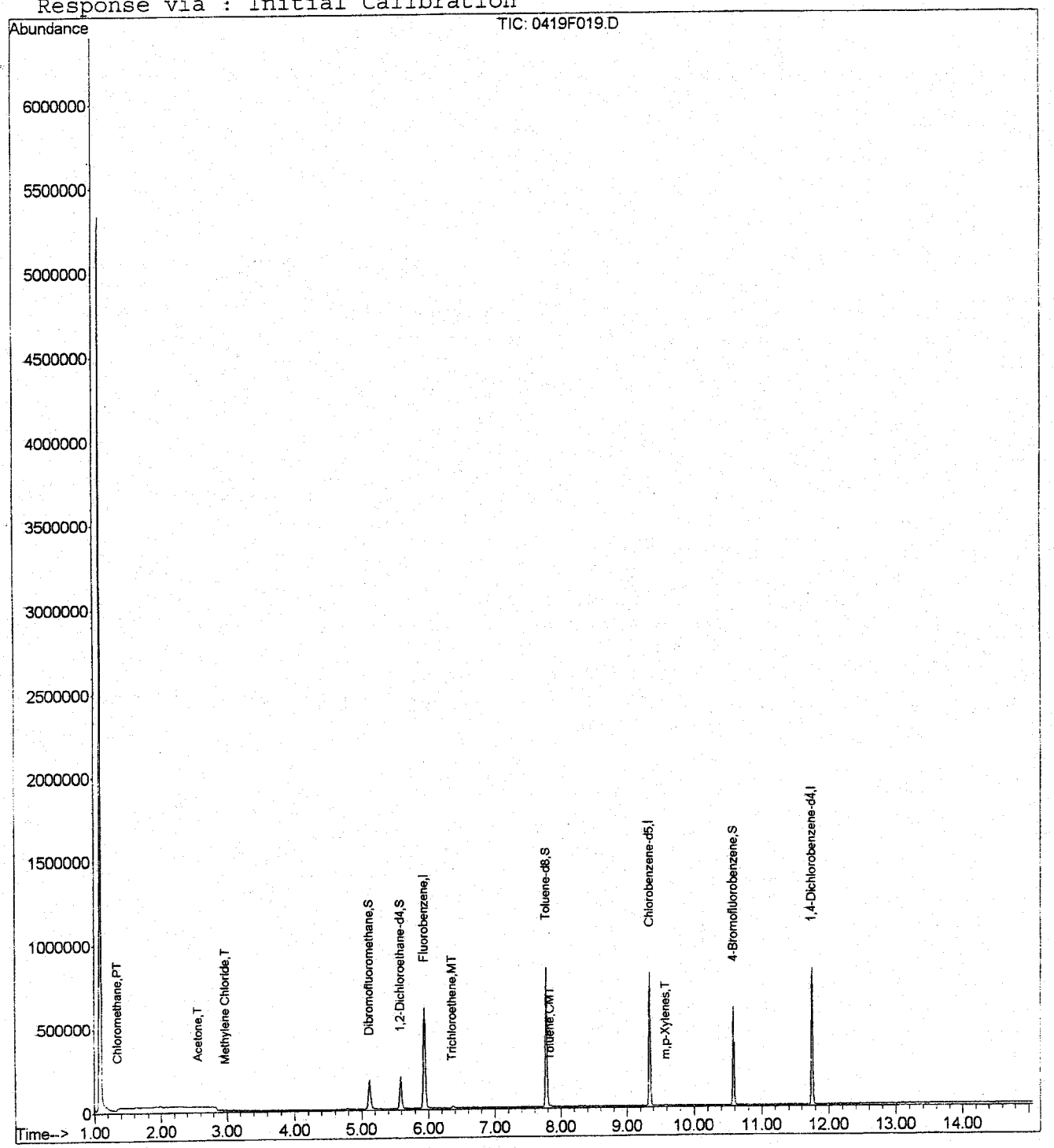
Quantitation Report (QT Reviewed)

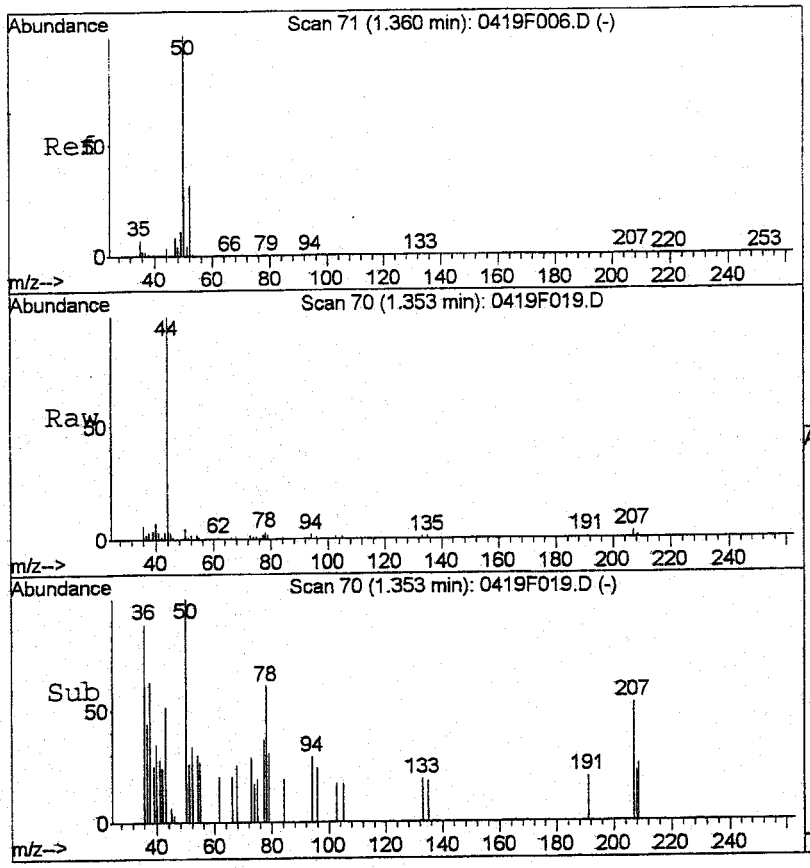
Data File : J:\MS23\DATA\041911BAYW\0419F019.D
Acq On : 19 Apr 2011 6:14 pm
Sample : K3044-004
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 20 13:11 2011

Vial: 13
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: 032911624BAY

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 12:44:23 2011
Response via : Initial Calibration

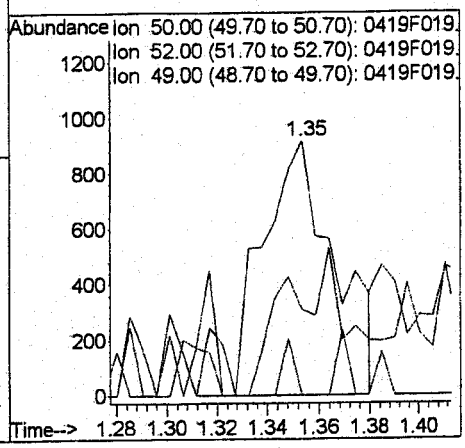


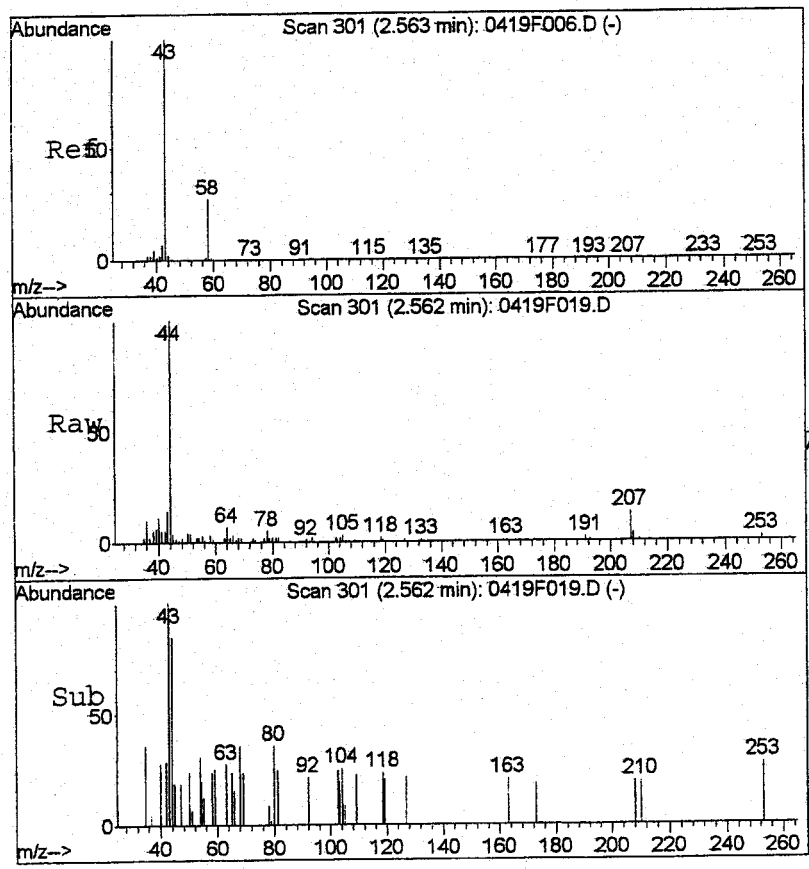


#3
Chloromethane
Concen: 0.07 PPB
RT: 1.35 min Scan# 70
Delta R.T. -0.01 min
Lab File: 0419F019.D
Acq: 19 Apr 2011 6:14 pm

Tgt Ion: 50 Resp: 1921

Ion	Ratio	Lower	Upper
50	100		
52	14.8	1.3	61.3
49	0.0	0.0	40.2

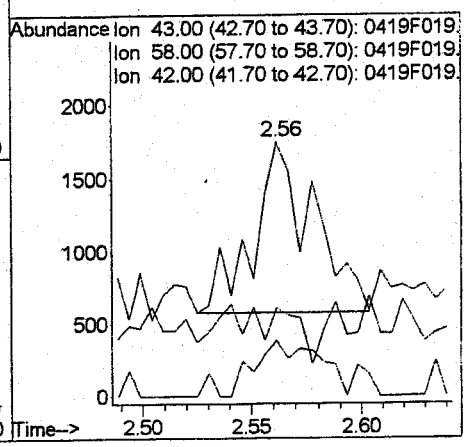


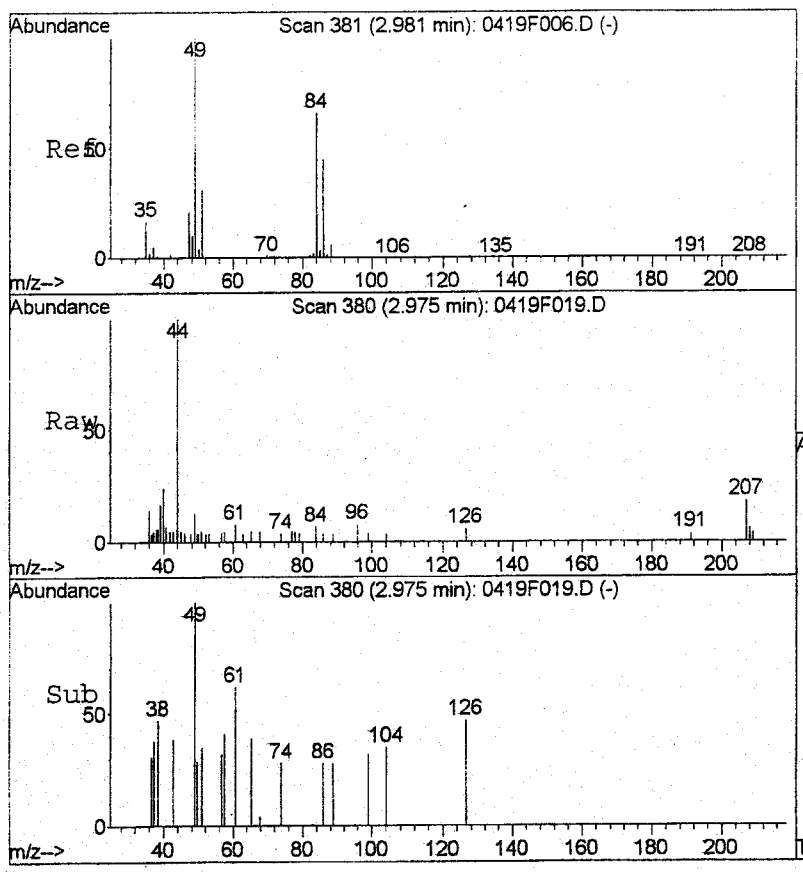


#11
Acetone
Concen: 1.05 PPB
RT: 2.56 min Scan# 301
Delta R.T. -0.00 min
Lab File: 0419F019.D
Acq: 19 Apr 2011 6:14 pm

Tgt Ion: 43 Resp: 2219

Ion	Ratio	Lower	Upper
43	100		
58	33.1	0.0	56.9
42	19.9	0.0	37.5

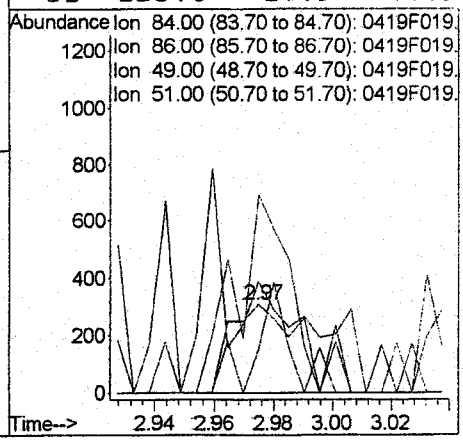


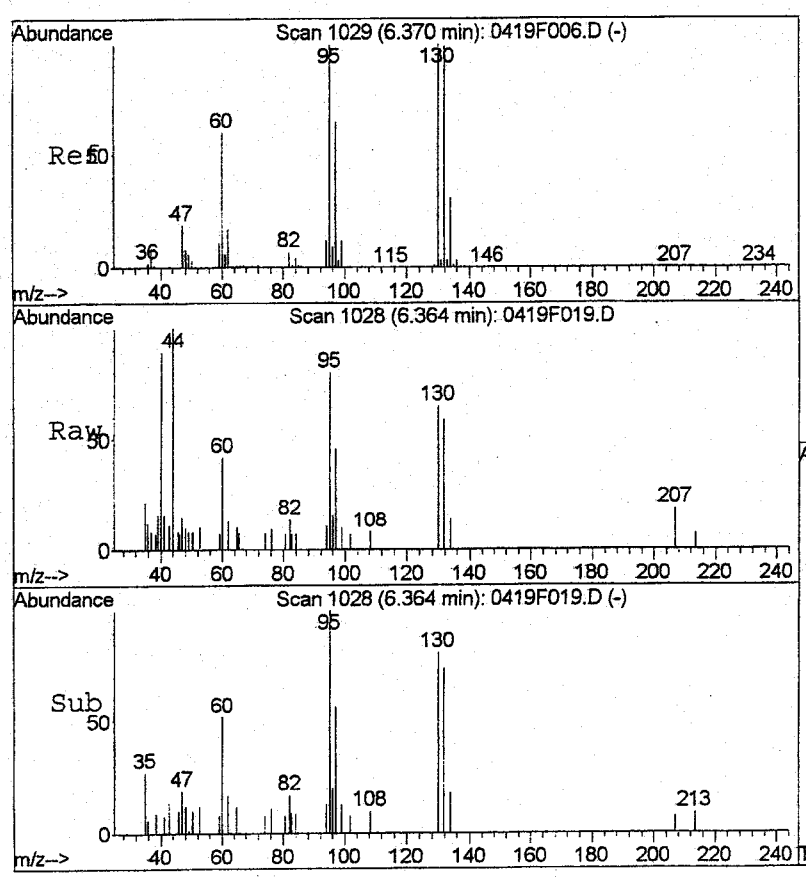


#13
Methylene Chloride
Concen: 0.04 PPB
RT: 2.97 min Scan# 380
Delta R.T. -0.01 min
Lab File: 0419F019.D
Acq: 19 Apr 2011 6:14 pm

Tgt Ion: 84 Resp: 535

Ion	Ratio	Lower	Upper
84	100		
86	48.5	31.9	91.9
49	224.3	127.1	187.1#
51	125.6	17.9	77.9#

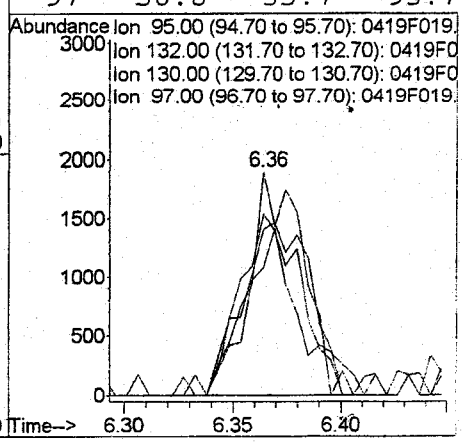


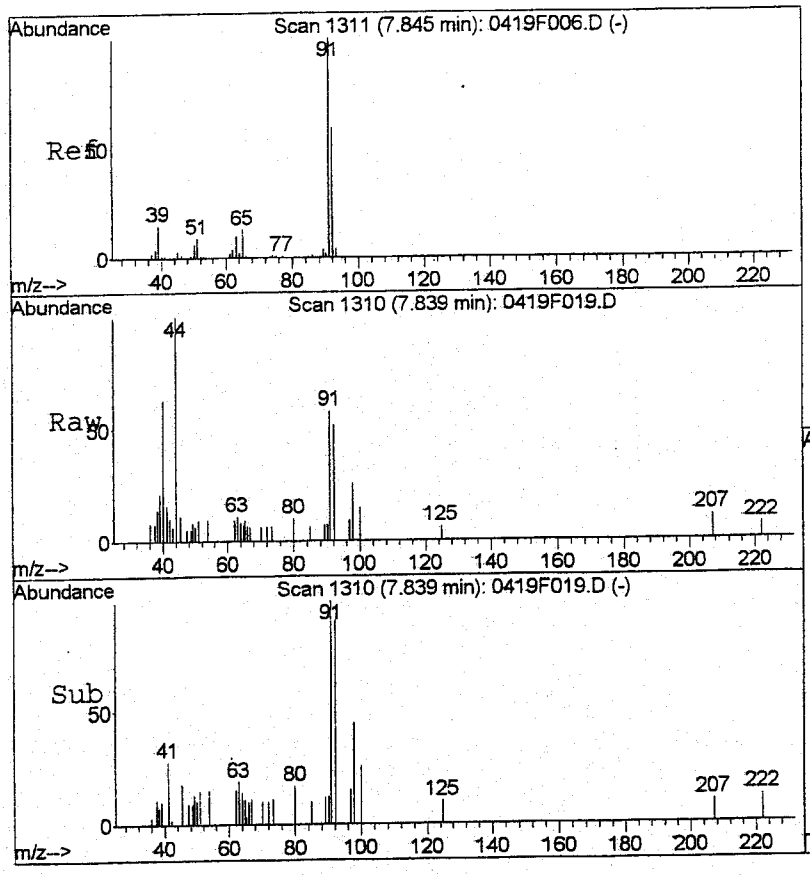


#27
Trichloroethene
Concen: 0.23 PPB
RT: 6.36 min Scan# 1028
Delta R.T. -0.01 min
Lab File: 0419F019.D
Acq: 19 Apr 2011 6:14 pm

Tgt Ion: 95 Resp: 3387

Ion	Ratio	Lower	Upper
95	100		
132	66.0	64.3	124.3
130	81.0	65.2	125.2
97	56.8	35.7	95.7

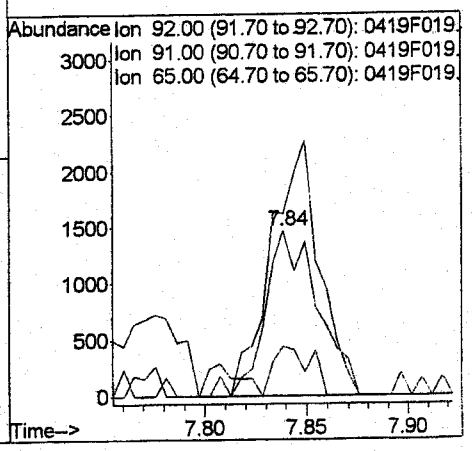


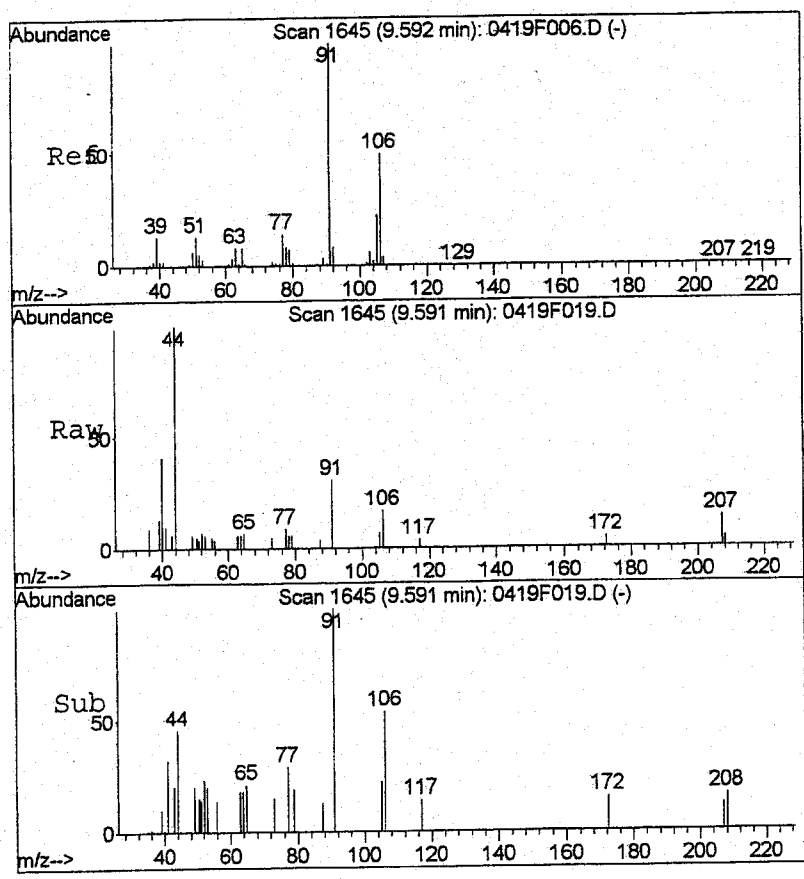


#34
Toluene
Concen: 0.07 PPB
RT: 7.84 min Scan# 1310
Delta R.T. -0.01 min
Lab File: 0419F019.D
Acq: 19 Apr 2011 6:14 pm

Tgt Ion: 92 Resp: 2657

Ion	Ratio	Lower	Upper
92	100		
91	110.1	138.1	198.1#
65	29.8	0.0	51.7

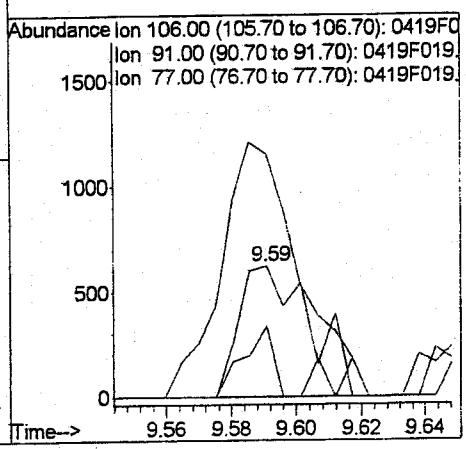




#43
m,p-Xylenes
Concen: 0.04 PPB
RT: 9.59 min Scan# 1645
Delta R.T. -0.00 min
Lab File: 0419F019.D
Acq: 19 Apr 2011 6:14 pm

Tgt Ion:106 Resp: 938

Ion	Ratio	Lower	Upper
106	100		
91	185.0	175.3	235.3
77	53.7	0.3	60.3



COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	04/07/2011
Sample Matrix:	Water	**Date Received:**	04/08/2011
		Date Extracted:	04/19/2011
		Date Analyzed:	04/19/2011

Volatile Organic Compounds

Sample Name:	Trip Blank	**Units:**	ug/L
Lab Code:	K1103044-005	**Basis:**	NA
File ID:	J:\MS23\DATA\041911BAYW\0419F020.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103524
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-71-8	Dichlorodifluoromethane	0.40	U	0.50	0.40	
74-87-3	Chloromethane	0.035	U	0.50	0.035	
75-01-4	Vinyl Chloride	0.053	U	0.25	0.053	
74-83-9	Bromomethane	0.32	U	0.50	0.32	
75-00-3	Chloroethane	0.32	U	0.50	0.32	
75-69-4	Trichlorofluoromethane	0.048	U	0.50	0.048	
76-13-1	Trichlorotrifluoroethane	0.077	U	0.50	0.077	
75-35-4	1,1-Dichloroethene	0.37	U	0.50	0.37	
75-15-0	Carbon Disulfide	0.048	U	0.50	0.048	
75-09-2	Methylene Chloride	**0.10**	J	0.50	0.093	
156-60-5	trans-1,2-Dichloroethene	0.039	U	0.50	0.039	
156-59-2	cis-1,2-Dichloroethene	0.042	U	0.50	0.042	
78-93-3	2-Butanone (MEK)	3.4	U	20	3.4	
75-34-3	1,1-Dichloroethane	0.041	U	0.50	0.041	
67-66-3	Chloroform	0.038	U	0.50	0.038	
71-55-6	1,1,1-Trichloroethane (TCA)	0.044	U	0.50	0.044	
56-23-5	Carbon Tetrachloride	0.26	U	0.50	0.26	
71-43-2	Benzene	0.040	U	0.50	0.040	
107-06-2	1,2-Dichloroethane (EDC)	0.038	U	0.50	0.038	
108-05-4	Vinyl Acetate	0.21	U	10	0.21	
79-01-6	Trichloroethene (TCE)	**0.060**	J	0.50	0.044	
78-87-5	1,2-Dichloropropane	0.044	U	0.50	0.044	
75-27-4	Bromodichloromethane	0.047	U	0.50	0.047	
110-75-8	2-Chloroethyl Vinyl Ether	0.12	U	5.0	0.12	
10061-02-6	trans-1,3-Dichloropropene	0.045	U	0.50	0.045	
108-10-1	4-Methyl-2-pentanone (MIBK)	2.8	U	20	2.8	
591-78-6	2-Hexanone	1.8	U	20	1.8	
108-88-3	Toluene	0.039	U	0.50	0.039	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	04/07/2011
Sample Matrix:	Water	**Date Received:**	04/08/2011
		Date Extracted:	04/19/2011
		Date Analyzed:	04/19/2011

Volatile Organic Compounds

Sample Name:	Trip Blank	**Units:**	ug/L
Lab Code:	K1103044-005	**Basis:**	NA
File ID:	J:\MS23\DATA\041911BAYW\0419F020.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103524
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
10061-01-5	cis-1,3-Dichloropropene	0.035	U	0.50	0.035	
79-00-5	1,1,2-Trichloroethane	0.072	U	0.50	0.072	
127-18-4	Tetrachloroethene (PCE)	0.043	U	0.50	0.043	
124-48-1	Dibromochloromethane	0.081	U	0.50	0.081	
108-90-7	Chlorobenzene	0.031	U	0.50	0.031	
100-41-4	Ethylbenzene	0.040	U	0.50	0.040	
100-42-5	Styrene	0.025	U	0.50	0.025	
136777-61-2	m,p-Xylenes	0.14	U	1.0	0.14	
95-47-6	o-Xylene	0.035	U	0.50	0.035	
75-25-2	Bromoform	0.11	U	0.50	0.11	
67-64-1	Acetone	4.3	U	20	4.3	
79-34-5	1,1,2,2-Tetrachloroethane	0.086	U	0.50	0.086	
541-73-1	1,3-Dichlorobenzene	0.071	U	0.50	0.071	
106-46-7	1,4-Dichlorobenzene	0.073	U	0.50	0.073	
95-50-1	1,2-Dichlorobenzene	0.086	U	0.50	0.086	
107-02-8	Acrolein†	2.1	U	10	2.1	
107-13-1	Acrylonitrile†	0.28	U	5.0	0.28	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Toluene-d8	100	72-122	04/19/11	Acceptable
4-Bromofluorobenzene	91	70-120	04/19/11	Acceptable
Dibromofluoromethane	103	61-121	04/19/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	04/07/2011
Sample Matrix:	Water	**Date Received:**	04/08/2011
		Date Extracted:	04/19/2011
		Date Analyzed:	04/19/2011

Volatile Organic Compounds

Sample Name:	Trip Blank	**Units:**	ug/L
Lab Code:	K1103044-005	**Basis:**	NA
File ID:	J:\MS23\DATA\041911BAYW\0419F020.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103524
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount:	10 ml
% Solids:	NA
Dilution Factor:	1

† Analyte Comments

Acrolein	This compound is unstable under normal conditions. As per EPA Method 624 guidelines, the reported value was an estimate.
Acrylonitrile	This compound is unstable under normal conditions. As per EPA Method 624 guidelines, the reported value was an estimate.

Comments:

Exception Report

Data File:	J:\MS23\DATA\041911BAYW\0419F020.D	**Date Acquired:**	04/19/2011 18:44
Lab ID:	K1103044-005	**Date Quantitated:**	04/20/2011 13:11
RunType:	SMPL	**Batch ID:**	KWG1103523
Matrix:	WATER	**Analysis Method:**	624
		ListJoinID:	~~LJ12349~~

LJ12496

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
Preparation Holding Time	NA	NA	NA	x	
Pre-Preparation Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Method Blank	NA	NA	NA	x	
MB Surrogate Recovery	NA	NA	NA	x	
Lab Control Spike	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA		x
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Analyte Exceptions

Exception Categories	Analyte Name	Result	Low Limit	High Limit	Corrective Action
Std MRL Unsupported by ICAL	Vinyl Chloride	0.25	0.20	NA	1mrl

Primary Review: KA 7/20/11

Secondary Review: HBH 4.2011

Printed: 04/20/2011 13:35:40

u:\Stealth\Crystal.rpt\except2.rpt

Quantitation Report

Bottle ID:		Tier:	V	Matrix:	WATER
Prod Code:	624 VOC_FP	Collect Date:	04/07/2011	Receive Date:	04/08/2011

Analysis Lot:	KWG1103523	Prep Lot:	KWG1103524	Report Group:	K1103044
Analysis Method:	624	Prep Method:	METHOD		
Prep Ref:	1012856	Prep Date:	04/19/2011		

Quant Method:	J:\MS23\METHODS\032911624BAY	Calibration ID:	CAL10443
Title:	Volatile Organic Compounds	Report List ID:	LJ12496
Tune Ref:	J:\MS23\DATA\041911BAYW\0419F005.D	Method ID:	MJ158
MB Ref:	J:\MS23\DATA\041911BAYW\0419F014.D	Quant based on Report List	

Data File:	J:\MS23\DATA\041911BAYW\0419F020.D			Instrument:	MS23
Acqu Date:	04/19/2011 18:44	Quant Date:	04/20/2011 13:11	Vial:	14
Run Type:	SMPL			Dilution:	1.0
Lab ID:	K1103044-005			Soln Conc. Units:	PPB

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	Fluorobenzene	5.94	0.00	96	551383	10.00	OK
2	Chlorobenzene-d5	9.34	0.00	82	219310	10.00	OK
3	1,4-Dichlorobenzene-d4	11.75	0.00	152	181356	10.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	Dibromofluoromethane	5.12	0.01	0.00	113	123078	10.32	103	61-121	OK
1	Toluene-d8	7.77	0.00	0.00	98	521162	10.00	100	72-122	OK
2	4-Bromofluorobenzene	10.58	0.00	0.00	95	164802	9.13	91	70-120	OK

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	Final Conc	Q	Rpt?
1	Dichlorodifluoromethane				85	0		0.40	U	
1	Chloromethane				50	0d		0.035	U	
1	Vinyl Chloride				62	0		0.053	U	
1	Bromomethane				96	0d		0.32	U	
1	Chloroethane				49	0		0.32	U	
1	Trichlorofluoromethane				101	0		0.048	U	
1	Acrolein				56	0d		2.1	U	
1	Trichlorotrifluoroethane				151	0		0.077	U	
1	1,1-Dichloroethene				96	0d		0.37	U	
1	Acetone	2.57	0.01	0.00	43	2580	1.23	4.3	U	
1	Carbon Disulfide				76	0		0.048	U	
1	Methylene Chloride	2.99	0.01	0.00	84	1368	0.1000	0.10	J	
1	Acrylonitrile				53	0		0.28	U	
1	trans-1,2-Dichloroethene				96	0		0.039	U	
1	1,1-Dichloroethane				63	0		0.041	U	

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Data File:	J:\MS23\DATA\041911BAYW\0419F020.D			**Instrument:**	MS23
Acqu Date:	04/19/2011 18:44	**Quant Date:**	04/20/2011 13:11	**Vial:**	14
Run Type:	SMPL			**Dilution:**	1.0
Lab ID:	K1103044-005			**Soln Conc. Units:**	PPB

Target Compounds **Final Conc. Units:** ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	Final Conc	Q	Rpt?
1	Vinyl Acetate				86	0		0.21	U	
1	cis-1,2-Dichloroethene				96	0		0.042	U	
1	2-Butanone (MEK)				72	0		3.4	U	
1	Chloroform				83	0		0.038	U	
1	1,1,1-Trichloroethane (TCA)				97	0		0.044	U	
1	Carbon Tetrachloride				117	0		0.26	U	
1	Benzene				78	0		0.040	U	
1	1,2-Dichloroethane (EDC)				62	0		0.038	U	
1	Trichloroethene (TCE)	6.37		0.00	95	831	0.0600	0.060	J	
1	1,2-Dichloropropane				63	0		0.044	U	
1	Bromodichloromethane				83	0		0.047	U	
1	2-Chloroethyl Vinyl Ether				63	0		0.12	U	
1	cis-1,3-Dichloropropene				75	0		0.035	U	
1	4-Methyl-2-pentanone (MIBK)				58	0		2.8	U	
1	Toluene				92	0		0.039	U	
2	trans-1,3-Dichloropropene				75	0		0.045	U	
2	1,1,2-Trichloroethane				83	0		0.072	U	
2	Tetrachloroethene (PCE)				164	0		0.043	U	
2	2-Hexanone				43	0d		1.8	U	
2	Dibromochloromethane				129	0		0.081	U	
2	Chlorobenzene				112	0		0.031	U	
2	Ethylbenzene				106	0		0.040	U	
2	m,p-Xylenes				106	0		0.14	U	
2	o-Xylene				106	0		0.035	U	
2	Styrene				103	0		0.025	U	
2	Bromoform				173	0		0.11	U	
3	1,1,2,2-Tetrachloroethane				83	0		0.086	U	
3	1,3-Dichlorobenzene				146	0		0.071	U	
3	1,4-Dichlorobenzene				146	0		0.073	U	
3	1,2-Dichlorobenzene				146	0		0.086	U	

Prep Amount:	10 ml	**Dilution:**	1.0
Prep Final Vol:	10 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\041911BAYW\0419F020.D
Acq On : 19 Apr 2011 6:44 pm
Sample : K3044-005 TB44872
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 20 13:11:28 2011

Vial: 14
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624BAYW.R

Quant Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 12:44:23 2011
Response via : Initial Calibration
DataAcq Meth : 8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	5.94	96	551383	10.00	PPB	0.00
35) Chlorobenzene-d5	9.34	82	219310	10.00	PPB	0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	181356	10.00	PPB	0.00
System Monitoring Compounds						
22) Dibromofluoromethane	5.12	113	123078	10.32	PPB	0.00
Spiked Amount 10.000			Recovery	=	103.20%	
24) 1,2-Dichloroethane-d4	5.59	65	147206	9.82	PPB	0.00
Spiked Amount 10.000			Recovery	=	98.20%	
33) Toluene-d8	7.77	98	521162	10.00	PPB	0.00
Spiked Amount 10.000			Recovery	=	100.00%	
47) 4-Bromofluorobenzene	10.58	95	164802	9.13	PPB	0.00
Spiked Amount 10.000			Recovery	=	91.30%	
Target Compounds						Qvalue
11) Acetone	2.57	43	2580	1.23	PPB	90
13) Methylene Chloride	2.99	84	1368	0.10	PPB #	58
27) Trichloroethene	6.37	95	831	0.06	PPB #	79

(#) = qualifier out of range (m) = manual integration

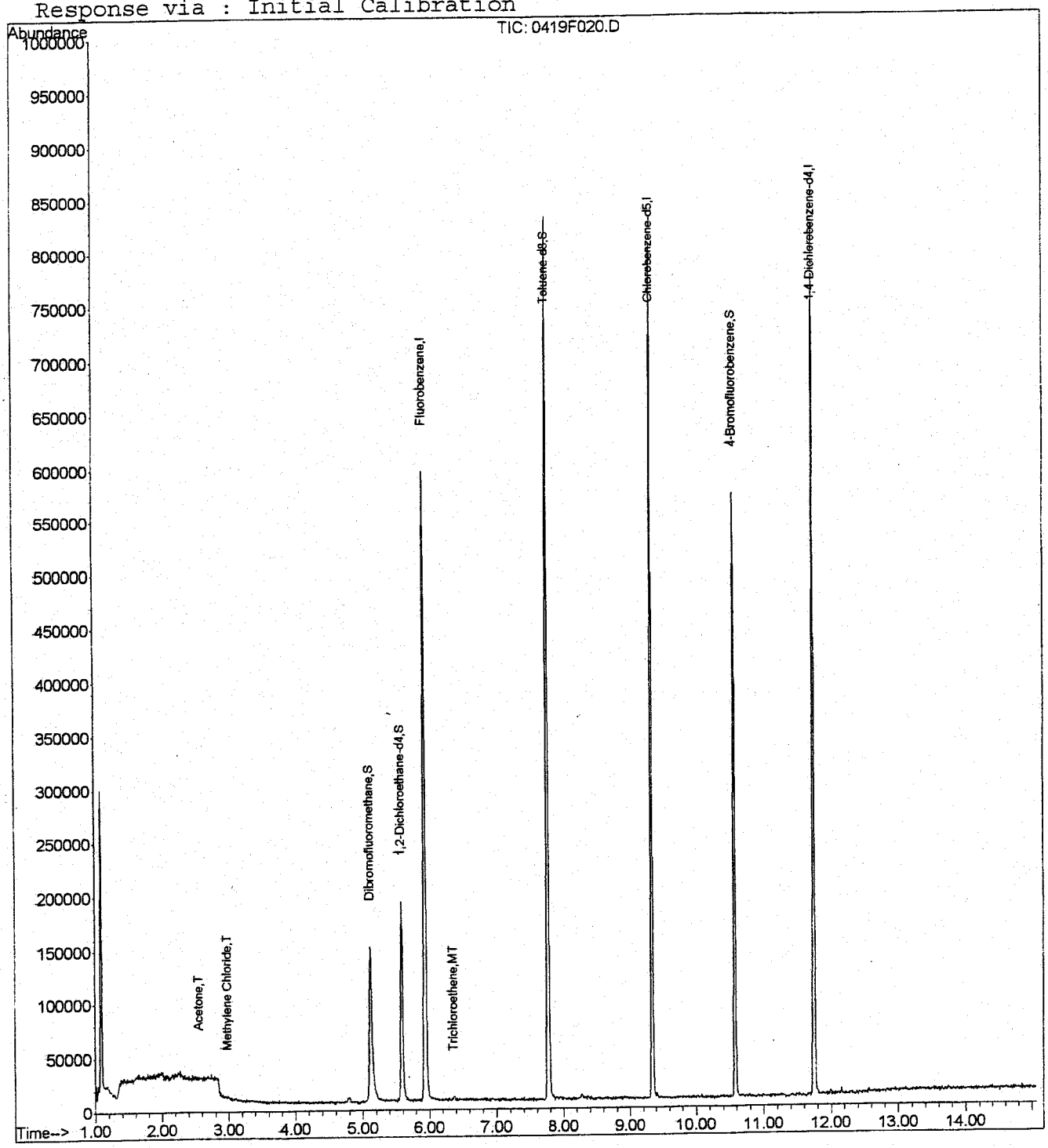
Quantitation Report (QT Reviewed)

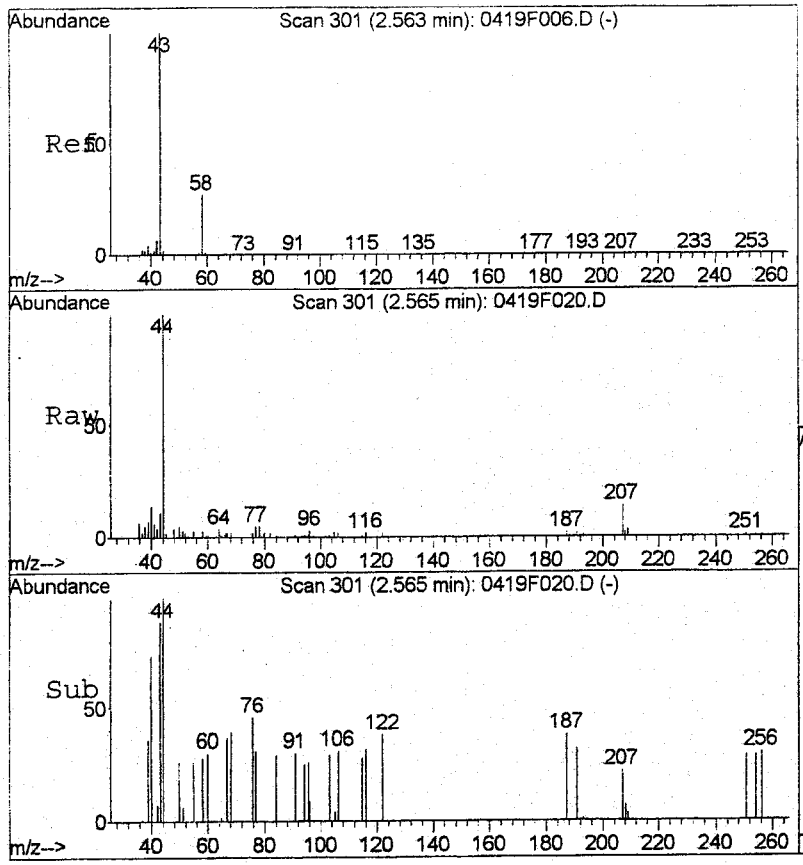
Data File : J:\MS23\DATA\041911BAYW\0419F020.D
Acq On : 19 Apr 2011 6:44 pm
Sample : K3044-005 TB44872
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 20 13:11 2011

Vial: 14
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: 032911624BAY

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 12:44:23 2011
Response via : Initial Calibration

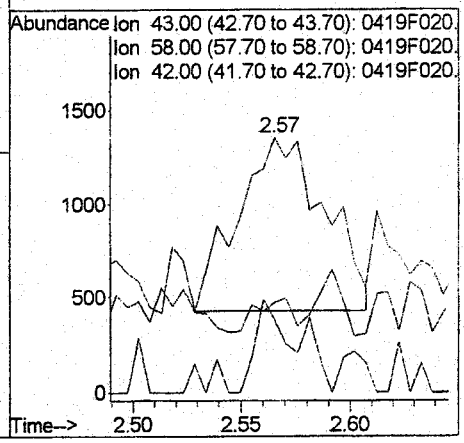


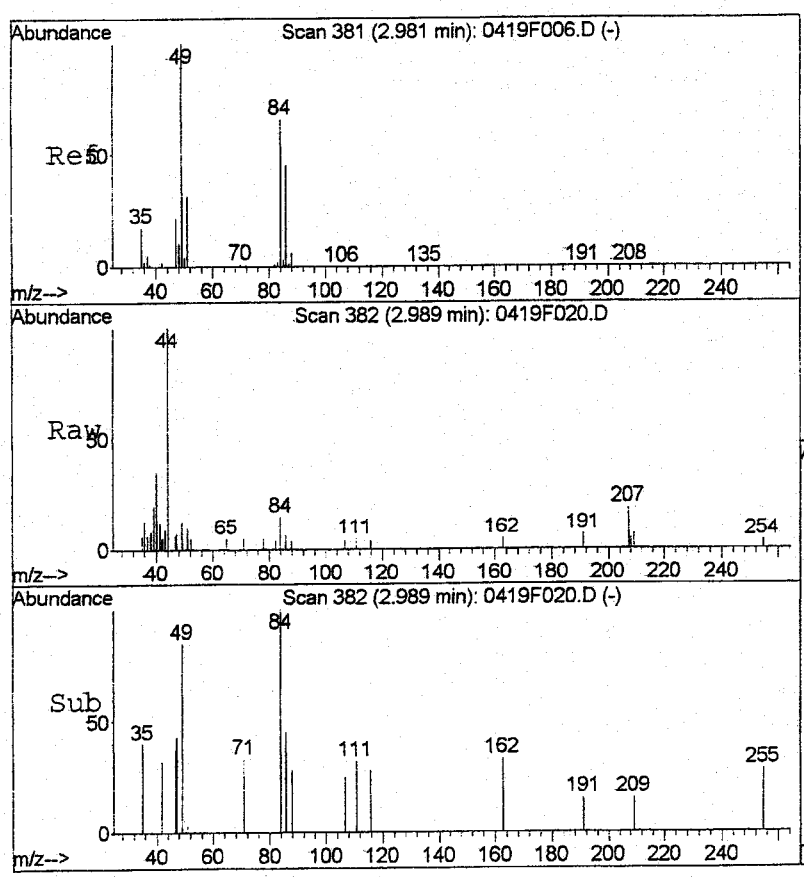


#11
Acetone
Concen: 1.23 PPB
RT: 2.57 min Scan# 301
Delta R.T. 0.00 min
Lab File: 0419F020.D
Acq: 19 Apr 2011 6:44 pm

Tgt Ion: 43 Resp: 2580

Ion	Ratio	Lower	Upper
43	100		
58	24.5	0.0	56.9
42	17.2	0.0	37.5

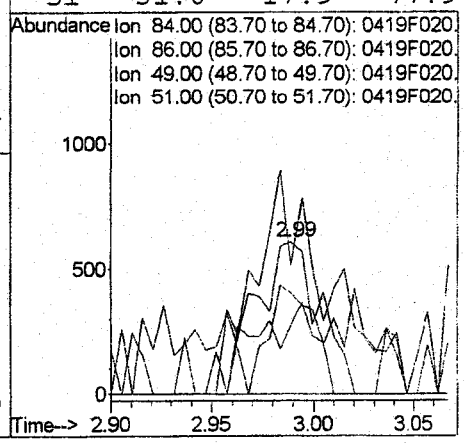


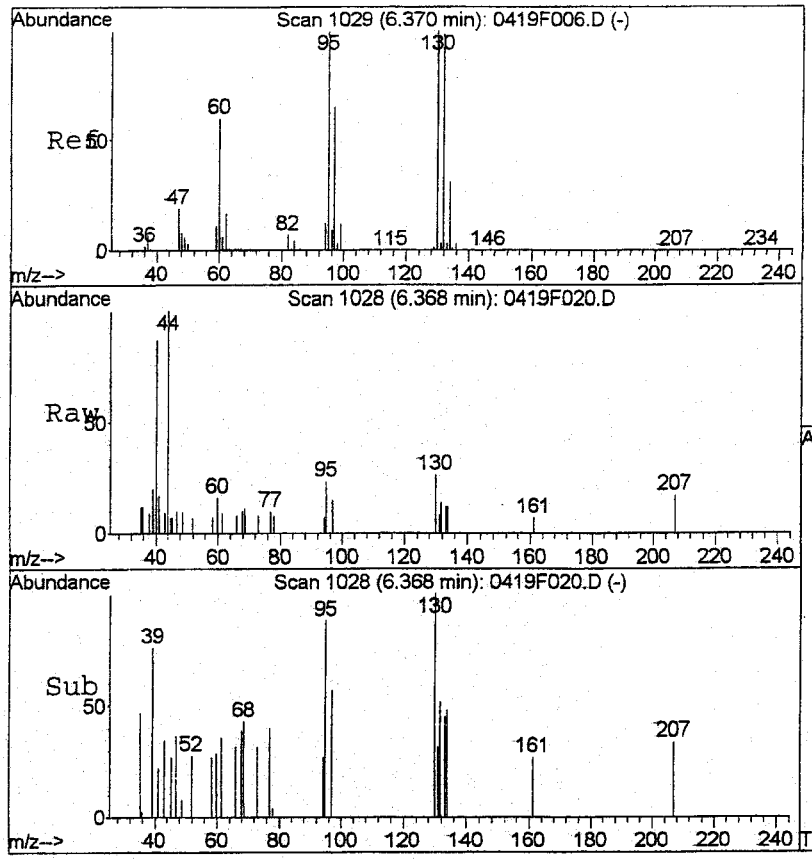


#13
Methylene Chloride
Concen: 0.10 PPB
RT: 2.99 min Scan# 382
Delta R.T. 0.01 min
Lab File: 0419F020.D
Acq: 19 Apr 2011 6:44 pm

Tgt Ion: 84 Resp: 1368

Ion	Ratio	Lower	Upper
84	100		
86	45.3	31.9	91.9
49	84.7	127.1	187.1#
51	31.0	17.9	77.9

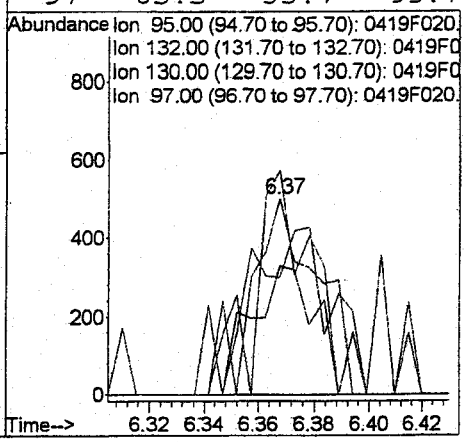




#27
Trichloroethene
Concen: 0.06 PPB
RT: 6.37 min Scan# 1028
Delta R.T. -0.00 min
Lab File: 0419F020.D
Acq: 19 Apr 2011 6:44 pm

Tgt Ion: 95 Resp: 831

Ion	Ratio	Lower	Upper
95	100		
132	59.6	64.3	124.3#
130	114.1	65.2	125.2
97	65.5	35.7	95.7



COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	04/19/2011
		Date Analyzed:	04/19/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1103524-4	**Basis:**	NA
File ID:	J:\MS23\DATA\041911BAYW\0419F014.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103524
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-71-8	Dichlorodifluoromethane	0.40	U	0.50	0.40	
74-87-3	Chloromethane	0.035	U	0.50	0.035	
75-01-4	Vinyl Chloride	0.053	U	0.25	0.053	
74-83-9	Bromomethane	0.32	U	0.50	0.32	
75-00-3	Chloroethane	0.32	U	0.50	0.32	
75-69-4	Trichlorofluoromethane	0.048	U	0.50	0.048	
76-13-1	Trichlorotrifluoroethane	0.077	U	0.50	0.077	
75-35-4	1,1-Dichloroethene	0.37	U	0.50	0.37	
75-15-0	Carbon Disulfide	0.048	U	0.50	0.048	
75-09-2	Methylene Chloride	0.093	U	0.50	0.093	
156-60-5	trans-1,2-Dichloroethene	0.039	U	0.50	0.039	
156-59-2	cis-1,2-Dichloroethene	0.042	U	0.50	0.042	
78-93-3	2-Butanone (MEK)	4.5	J	20	3.4	
75-34-3	1,1-Dichloroethane	0.041	U	0.50	0.041	
67-66-3	Chloroform	0.038	U	0.50	0.038	
71-55-6	1,1,1-Trichloroethane (TCA)	0.044	U	0.50	0.044	
56-23-5	Carbon Tetrachloride	0.26	U	0.50	0.26	
71-43-2	Benzene	0.040	U	0.50	0.040	
107-06-2	1,2-Dichloroethane (EDC)	0.038	U	0.50	0.038	
108-05-4	Vinyl Acetate	0.21	U	10	0.21	
79-01-6	Trichloroethene (TCE)	0.044	U	0.50	0.044	
78-87-5	1,2-Dichloropropane	0.044	U	0.50	0.044	
75-27-4	Bromodichloromethane	0.047	U	0.50	0.047	
110-75-8	2-Chloroethyl Vinyl Ether	0.12	U	5.0	0.12	
10061-02-6	trans-1,3-Dichloropropene	0.045	U	0.50	0.045	
108-10-1	4-Methyl-2-pentanone (MIBK)	2.8	U	20	2.8	
591-78-6	2-Hexanone	1.8	U	20	1.8	
108-88-3	Toluene	0.039	U	0.50	0.039	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1103044
Date Collected: NA
Date Received: NA
Date Extracted: 04/19/2011
Date Analyzed: 04/19/2011

Volatile Organic Compounds

Sample Name: Method Blank
Lab Code: KWG1103524-4
File ID: J:\MS23\DATA\041911BAYW\0419F014.D
Instrument ID: MS23

Units: ug/L
Basis: NA
Level: Low

Extraction Method: METHOD
Analysis Method: 624

Extraction Lot: KWG1103524
Calibration ID: CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
10061-01-5	cis-1,3-Dichloropropene	0.035	U	0.50	0.035	
79-00-5	1,1,2-Trichloroethane	0.072	U	0.50	0.072	
127-18-4	Tetrachloroethene (PCE)	0.043	U	0.50	0.043	
124-48-1	Dibromochloromethane	0.081	U	0.50	0.081	
108-90-7	Chlorobenzene	0.031	U	0.50	0.031	
100-41-4	Ethylbenzene	0.040	U	0.50	0.040	
100-42-5	Styrene	0.025	U	0.50	0.025	
136777-61-2	m,p-Xylenes	0.14	U	1.0	0.14	
95-47-6	o-Xylene	0.035	U	0.50	0.035	
75-25-2	Bromoform	0.11	U	0.50	0.11	
67-64-1	Acetone	5.1	J	20	4.3	
79-34-5	1,1,2,2-Tetrachloroethane	0.086	U	0.50	0.086	
541-73-1	1,3-Dichlorobenzene	0.071	U	0.50	0.071	
106-46-7	1,4-Dichlorobenzene	0.073	U	0.50	0.073	
95-50-1	1,2-Dichlorobenzene	0.086	U	0.50	0.086	
107-02-8	Acrolein†	2.1	U	10	2.1	
107-13-1	Acrylonitrile†	0.28	U	5.0	0.28	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Toluene-d8	98	72-122	04/19/11	Acceptable
4-Bromofluorobenzene	92	70-120	04/19/11	Acceptable
Dibromofluoromethane	100	61-121	04/19/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	04/19/2011
		Date Analyzed:	04/19/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1103524-4	**Basis:**	NA
File ID:	J:\MS23\DATA\041911BAYW\0419F014.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103524
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount:	10 ml
% Solids:	NA
Dilution Factor:	1

† Analyte Comments

Acrolein	This compound is unstable under normal conditions. As per EPA Method 624 guidelines, the reported value was an estimate.
Acrylonitrile	This compound is unstable under normal conditions. As per EPA Method 624 guidelines, the reported value was an estimate.

Comments:

Exception Report

Data File: J:\MS23\DATA\041911BAYW\0419F014.D
Lab ID: KWG1103524-4
RunType: MB
Matrix: WATER

Date Acquired: 04/19/2011 15:43
Date Quantitated: 04/20/2011 13:07
Batch ID: KWG1103523
Analysis Method: 624
MethodJoinID: MJ158

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Time Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Primary Review: KA 4/20/11

Secondary Review: HB 4/20/11

Printed: 04/20/2011 13:35:25
D:\Stealth\Crystal.rpt\except2.rpt

Quantitation Report

Bottle ID:		Tier:		Matrix:	WATER
Prod Code:	624 VOC_FP	Collect Date:		Receive Date:	04/20/2011

Analysis Lot:	KWG1103523	Prep Lot:	KWG1103524	Report Group:	
Analysis Method:	624	Prep Method:	METHOD		
Prep Ref:	1012864	Prep Date:	04/19/2011		

Quant Method:	J:\MS23\METHODS\032911624BAY	Calibration ID:	CAL10443
Title:			
Tune Ref:	J:\MS23\DATA\041911BAYW\0419F005.D	Method ID:	MJ158
MB Ref:		Quant based on Method	

Data File:	J:\MS23\DATA\041911BAYW\0419F014.D			Instrument:	MS23
Acqu Date:	04/19/2011 15:43	Quant Date:	04/20/2011 13:07	Vial:	8
Run Type:	MB			Dilution:	1.0
Lab ID:	KWG1103524-4			Soln Conc. Units:	PPB

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	Fluorobenzene	5.94	0.00	96	605032	10.00	OK
2	Chlorobenzene-d5	9.34	0.00	82	240142	10.00	OK
3	1,4-Dichlorobenzene-d4	11.75	0.00	152	194577	10.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	Dibromofluoromethane	5.12	0.01	0.00	113	131340	10.03	100	61-121	OK
1	1,2-Dichloroethane-d4	5.59	0.00	0.00	65	157849	9.60	96	54-125	OK
1	Toluene-d8	7.77	0.00	0.00	98	561368	9.82	98	72-122	OK
2	4-Bromofluorobenzene	10.58	0.00	0.00	95	182407	9.23	92	70-120	OK

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	Final Conc	Q	Rpt?
1	Dichlorodifluoromethane				85	0		0.40	U	
1	Chloromethane				50	0d		0.035	U	
1	Vinyl Chloride				62	0		0.053	U	
1	Bromomethane	1.72	0.02	0.00	96	2326	0.2600	0.32	U	
1	Chloroethane				49	0d		0.32	U	
1	Trichlorofluoromethane				101	0		0.048	U	
1	Acrolein				56	0d		2.1	U	
1	Trichlorotrifluoroethane				151	0		0.077	U	
1	1,1-Dichloroethene				96	0d		0.37	U	
1	Acetone	2.57	0.01	0.00	43	11769	5.13	5.13	J	
1	Carbon Disulfide				76	0d		0.048	U	
1	Methylene Chloride				84	0d		0.093	U	
1	Acrylonitrile				53	0d		0.28	U	
1	trans-1,2-Dichloroethene				96	0d		0.039	U	

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Data File:	J:\MS23\DATA\041911BAYW\0419F014.D			Instrument:	MS23
Acqu Date:	04/19/2011 15:43	Quant Date:	04/20/2011 13:07	Vial:	8
Run Type:	MB			Dilution:	1.0
Lab ID:	KWG1103524-4			Soln Conc. Units:	PPB

Final Conc. Units: ug/L

Target Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,1-Dichloroethane				63	0		0.041	U	
1	Vinyl Acetate				86	0		0.21	U	
1	cis-1,2-Dichloroethene				96	0		0.042	U	
1	2-Butanone (MEK)	4.52	0.01	0.00	72	3050	4.53	4.53	J	
1	Chloroform				83	0		0.038	U	
1	1,1,1-Trichloroethane (TCA)				97	0		0.044	U	
1	Carbon Tetrachloride				117	0		0.26	U	
1	Benzene				78	0		0.040	U	
1	1,2-Dichloroethane (EDC)				62	0		0.038	U	
1	Trichloroethene (TCE)				95	0		0.044	U	
1	1,2-Dichloropropane				63	0		0.044	U	
1	Bromodichloromethane				83	0		0.047	U	
1	2-Chloroethyl Vinyl Ether				63	0		0.12	U	
1	cis-1,3-Dichloropropene				75	0		0.035	U	
1	4-Methyl-2-pentanone (MIBK)				58	0		2.8	U	
1	Toluene				92	0d		0.039	U	
2	trans-1,3-Dichloropropene				75	0		0.045	U	
2	1,1,2-Trichloroethane				83	0		0.072	U	
2	Tetrachloroethene (PCE)				164	0		0.043	U	
2	2-Hexanone				43	0d		1.8	U	
2	Dibromochloromethane				129	0		0.081	U	
2	Chlorobenzene				112	0		0.031	U	
2	Ethylbenzene				106	0		0.040	U	
2	m,p-Xylenes				106	0		0.14	U	
2	o-Xylene				106	0		0.035	U	
2	Styrene				103	0		0.025	U	
2	Bromoform				173	0		0.11	U	
3	1,1,2,2-Tetrachloroethane				83	0		0.086	U	
3	1,3-Dichlorobenzene	11.68	0.01	0.00	146	486m	0.0200	0.071	U	
3	1,4-Dichlorobenzene	11.78	0.01	0.00	146	568	0.0200	0.073	U	
3	1,2-Dichlorobenzene	12.15	0.01	0.00	146	621	0.0300	0.086	U	
	Isopropyl Acetate				0	0		10	U	NR
	Ethyl Acetate				0	0		10	U	NR
	Bis(chloromethyl) Ether				0	0		10	U	NR
	Amyl Acetate				0	0		10	U	NR

Prep Amount:	10 ml	**Dilution:**	1.0
Prep Final Vol:	10 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
I: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\041911BAYW\0419F014.D Vial: 8
Acq On : 19 Apr 2011 3:43 pm Operator: KR
Sample : MB Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Apr 20 13:06:51 2011 Quant Results File: 032911624BAYW.R

Quant Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 12:44:23 2011
Response via : Initial Calibration
DataAcq Meth : 8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	5.94	96	605032	10.00	PPB	0.00
35) Chlorobenzene-d5	9.34	82	240142	10.00	PPB	0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	194577	10.00	PPB	0.00
System Monitoring Compounds						
22) Dibromofluoromethane	5.12	113	131340	10.03	PPB	0.00
Spiked Amount 10.000			Recovery	=	100.30%	
24) 1,2-Dichloroethane-d4	5.59	65	157849	9.60	PPB	0.00
Spiked Amount 10.000			Recovery	=	96.00%	
33) Toluene-d8	7.77	98	561368	9.82	PPB	0.00
Spiked Amount 10.000			Recovery	=	98.20%	
47) 4-Bromofluorobenzene	10.58	95	182407	9.23	PPB	0.00
Spiked Amount 10.000			Recovery	=	92.30%	

Target Compounds							Qvalue
5) Bromomethane	1.72	96	2326	0.26	PPB	#	45
11) Acetone	2.57	43	11769	5.13	PPB		83
19) 2-Butanone	4.52	72	3050	4.53	PPB	#	81
51) 1,3-Dichlorobenzene	11.68	146	486m	0.02	PPB		
52) 1,4-Dichlorobenzene	11.78	146	568	0.02	PPB		66
53) 1,2-Dichlorobenzene	12.15	146	621	0.03	PPB	#	57

(#) = qualifier out of range (m) = manual integration

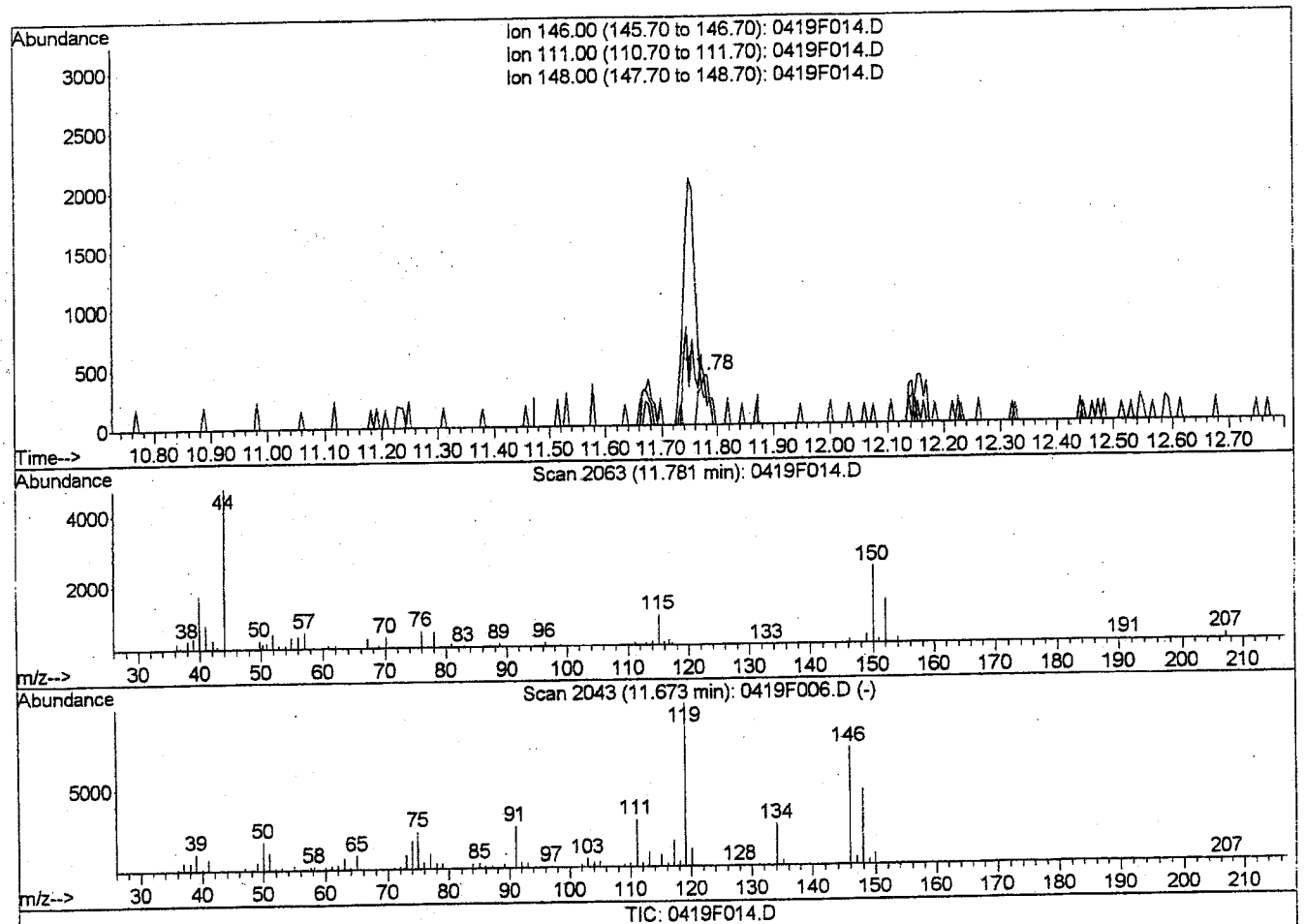
Quantitation Report (Qedit)

Data File : J:\MS23\DATA\041911BAYW\0419F014.D
Acq On : 19 Apr 2011 3:43 pm
Sample : MB
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 20 13:07 2011

Vial: 8
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 12:44:23 2011
Response via : Multiple Level Calibration



(51) 1,3-Dichlorobenzene (T)

11.78min 0.02PPB

response 568

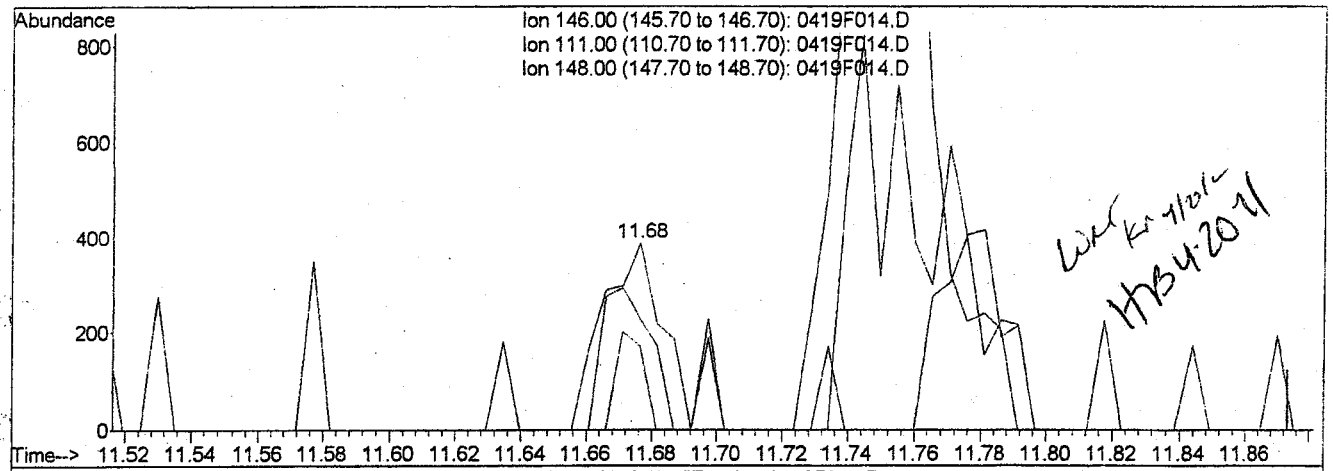
Ion	Exp%	Act%
146.00	100	100
111.00	41.60	57.55
148.00	62.40	36.93
0.00	0.00	0.00

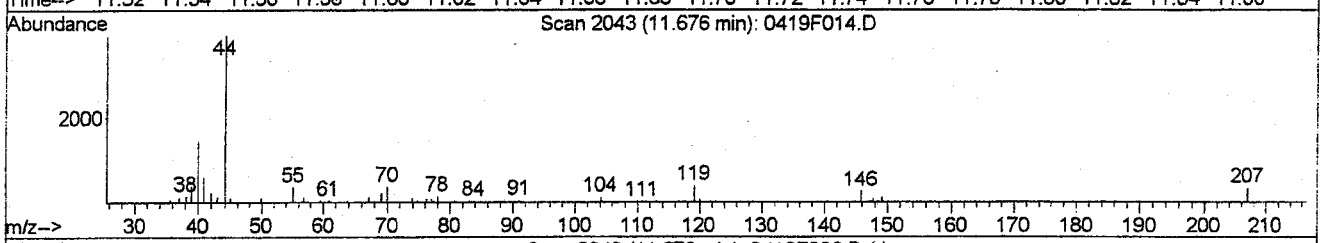
0419F014.D 032911624BAYW.M Wed Apr 20 13:07:32 2011

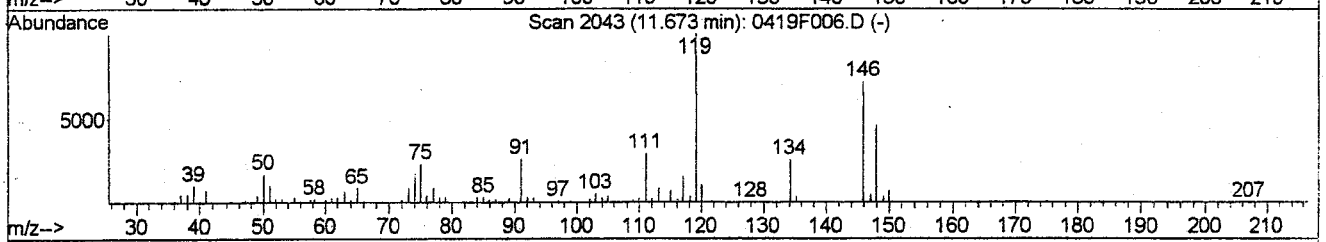
Quantitation Report (Qedit)

Data File : J:\MS23\DATA\041911BAYW\0419F014.D Vial: 8
Acq On : 19 Apr 2011 3:43 pm Operator: KR
Sample : MB Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Apr 20 13:07 2011 Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 12:44:23 2011
Response via : Multiple Level Calibration







TIC: 0419F014.D

(51) 1,3-Dichlorobenzene (T)

11.68min 0.02PPB m

response 486

Ion	Exp%	Act%
146.00	100	100
111.00	41.60	43.96
148.00	62.40	58.61
0.00	0.00	0.00

0419F014.D 032911624BAYW.M Wed Apr 20 13:07:37 2011

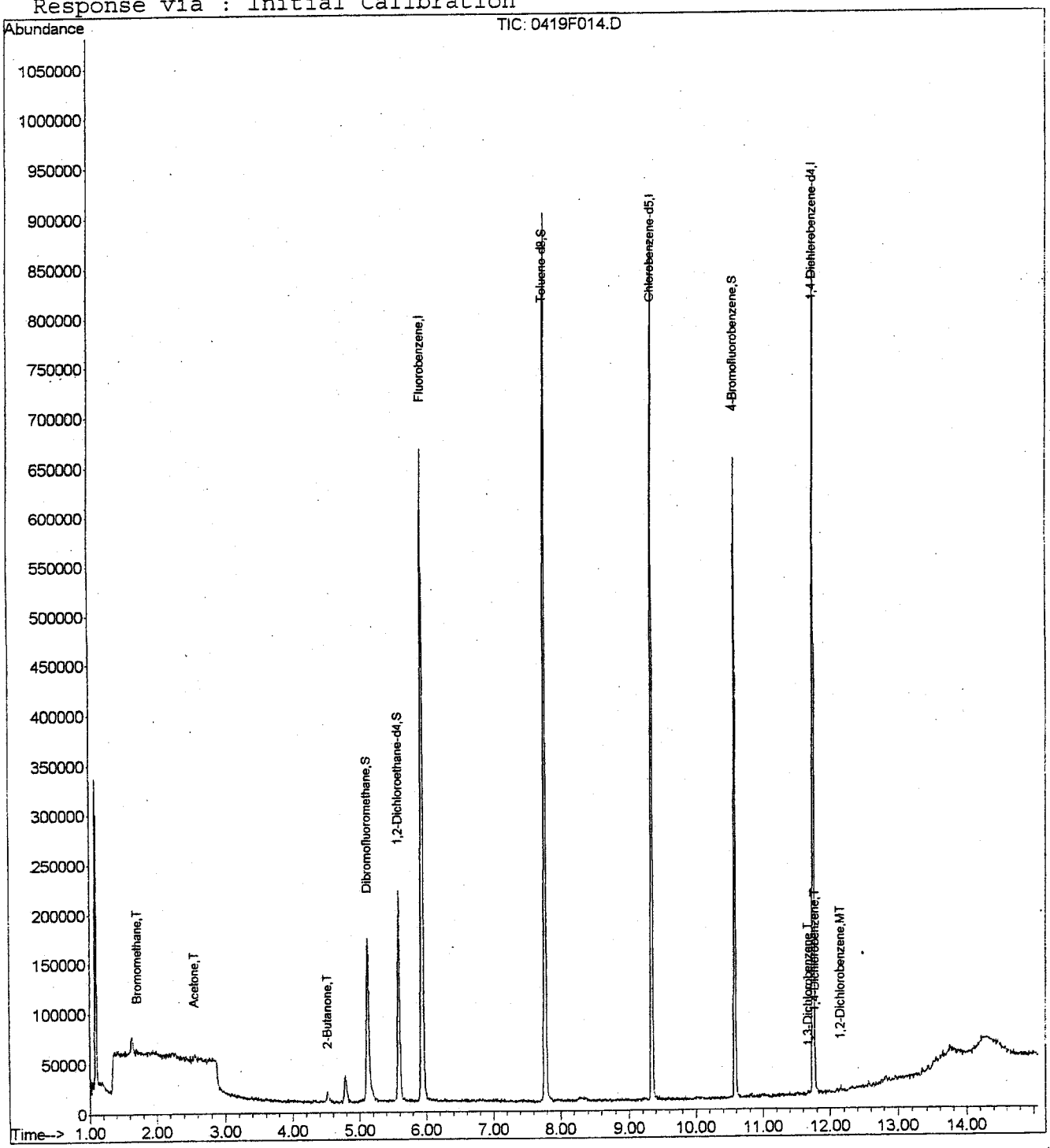
Quantitation Report (QT Reviewed)

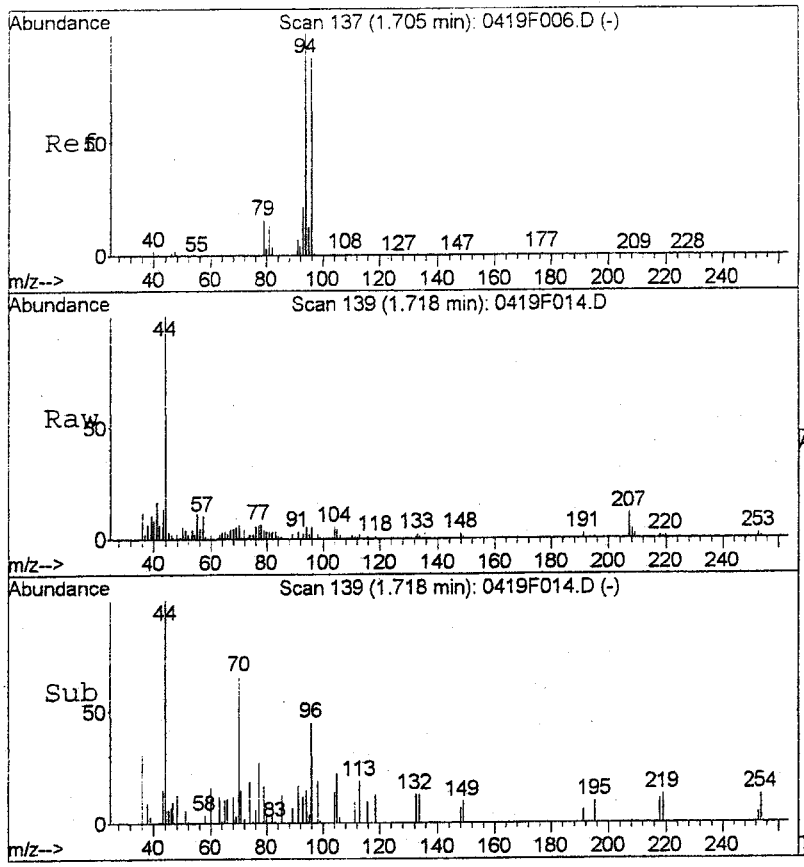
Data File : J:\MS23\DATA\041911BAYW\0419F014.D
Acq On : 19 Apr 2011 3:43 pm
Sample : MB
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 20 13:07 2011

Vial: 8
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: 032911624BAY

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 12:44:23 2011
Response via : Initial Calibration

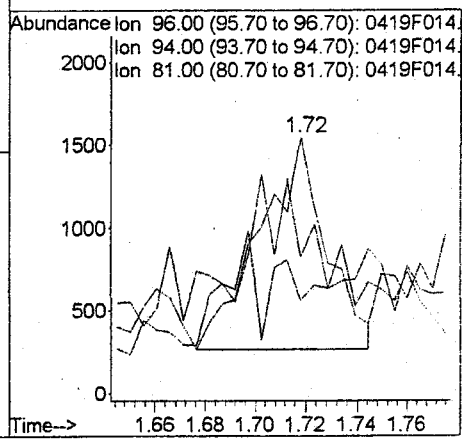


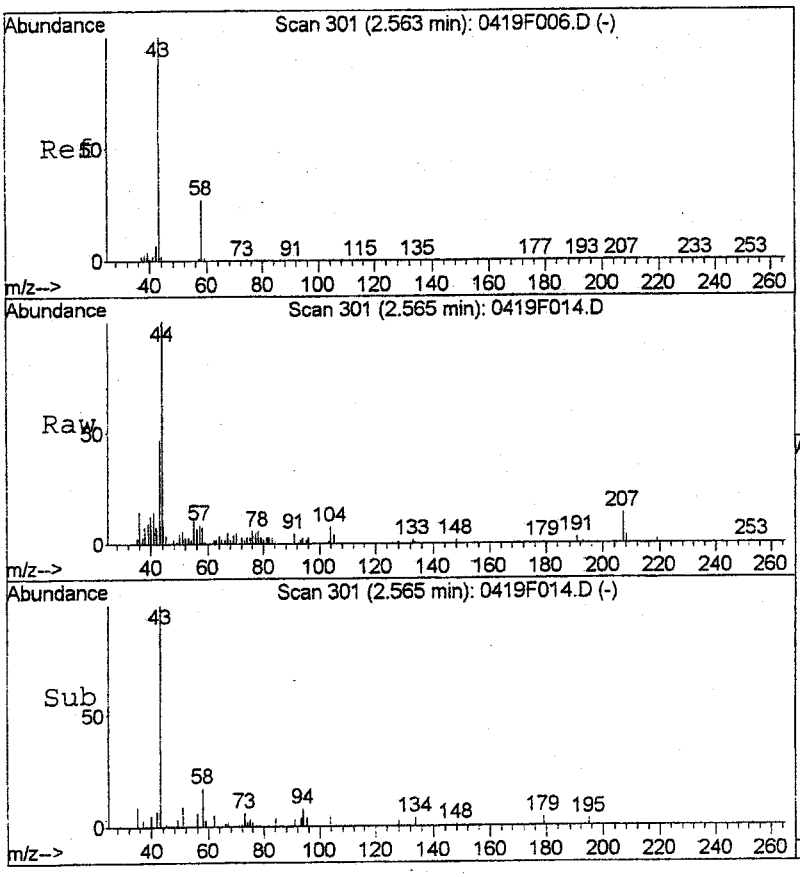


#5
Bromomethane
Concen: 0.26 PPB
RT: 1.72 min Scan# 139
Delta R.T. 0.01 min
Lab File: 0419F014.D
Acq: 19 Apr 2011 3:43 pm

Tgt Ion: 96 Resp: 2326

Ion	Ratio	Lower	Upper
96	100		
94	41.7	69.2	129.2#
81	0.0	0.0	47.0

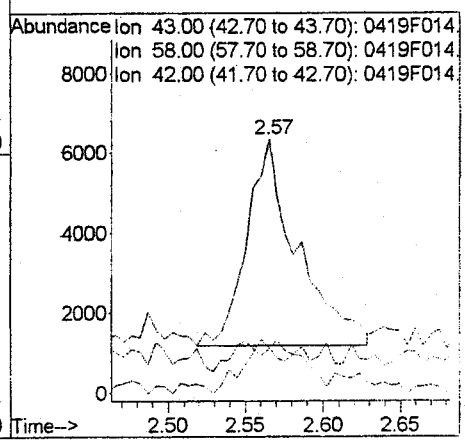


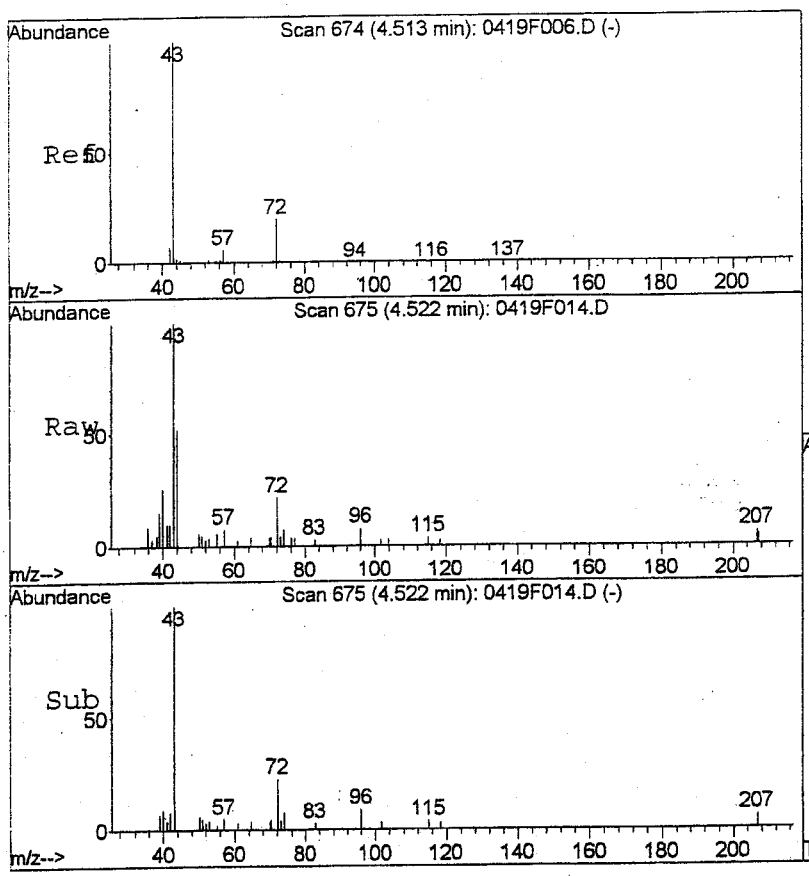


#11
Acetone
Concen: 5.13 PPB
RT: 2.57 min Scan# 301
Delta R.T. 0.00 min
Lab File: 0419F014.D
Acq: 19 Apr 2011 3:43 pm

Tgt Ion: 43 Resp: 11769

Ion	Ratio	Lower	Upper
43	100		
58	16.9	0.0	56.9
42	5.1	0.0	37.5

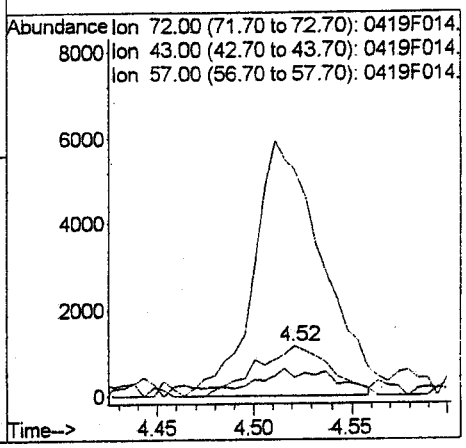


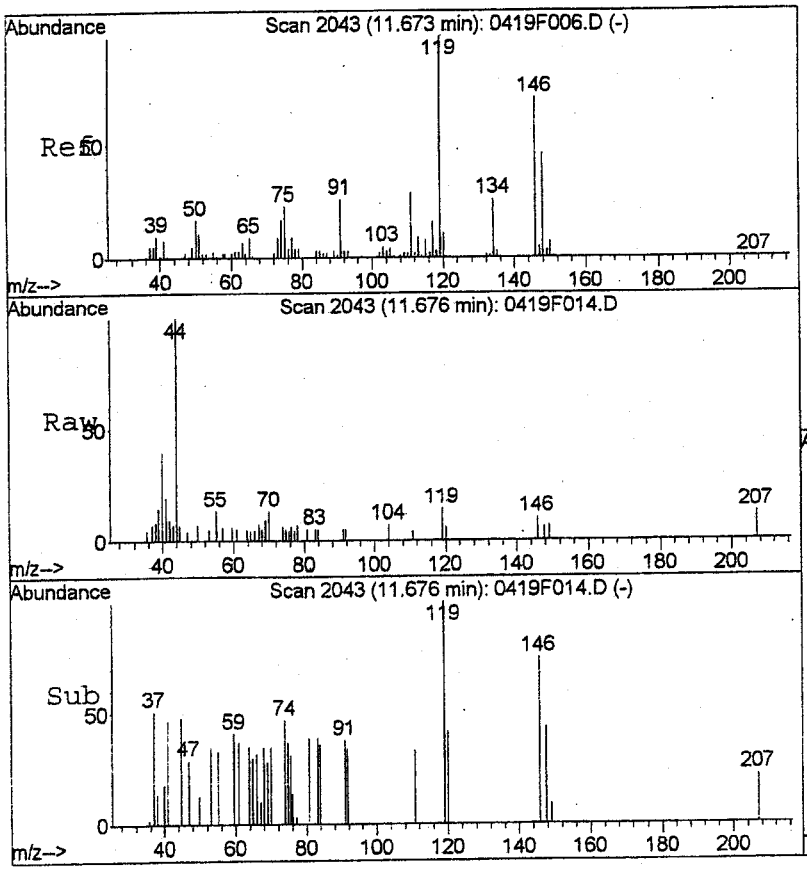


#19
2-Butanone
Concen: 4.53 PPB
RT: 4.52 min Scan# 675
Delta R.T. 0.01 min
Lab File: 0419F014.D
Acq: 19 Apr 2011 3:43 pm

Tgt Ion: 72 Resp: 3050

Ion	Ratio	Lower	Upper
72	100		
43	440.7	461.9	521.9#
57	21.0	5.8	65.8

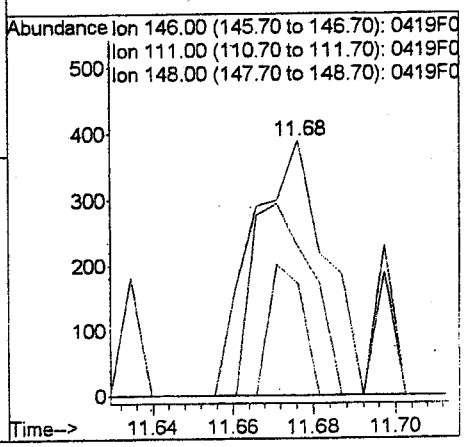


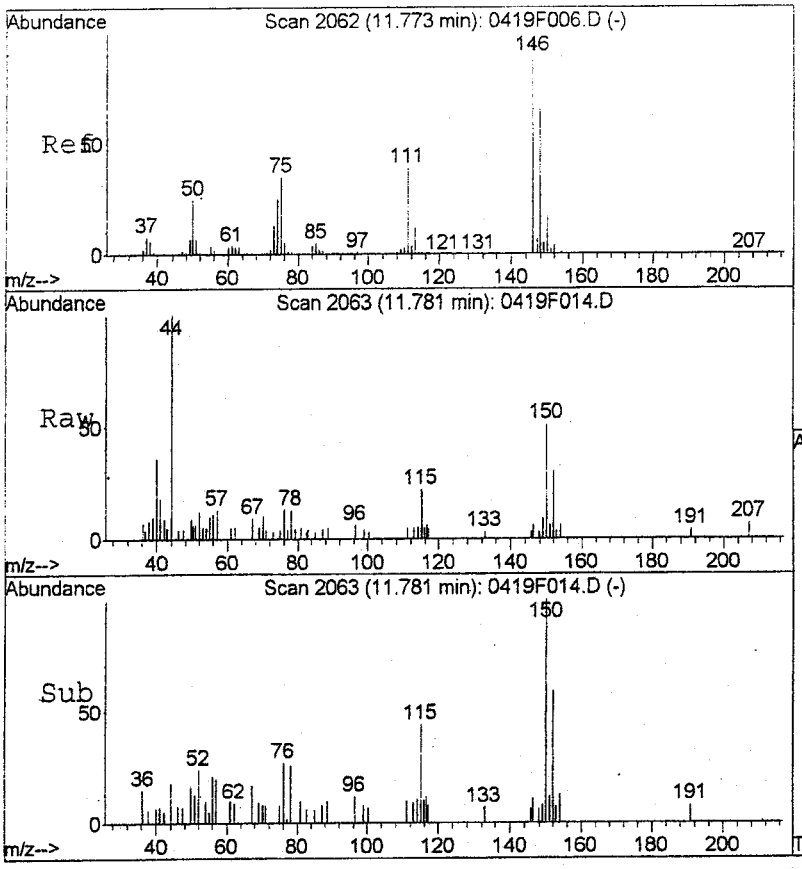


#51
1,3-Dichlorobenzene
Concen: 0.02 PPB m
RT: 11.68 min Scan# 2043
Delta R.T. 0.00 min
Lab File: 0419F014.D
Acq: 19 Apr 2011 3:43 pm

Tgt Ion:146 Resp: 486

Ion	Ratio	Lower	Upper
146	100		
111	44.0	11.6	71.6
148	58.6	32.4	92.4

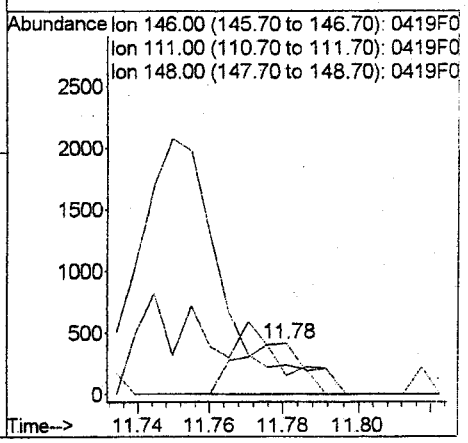


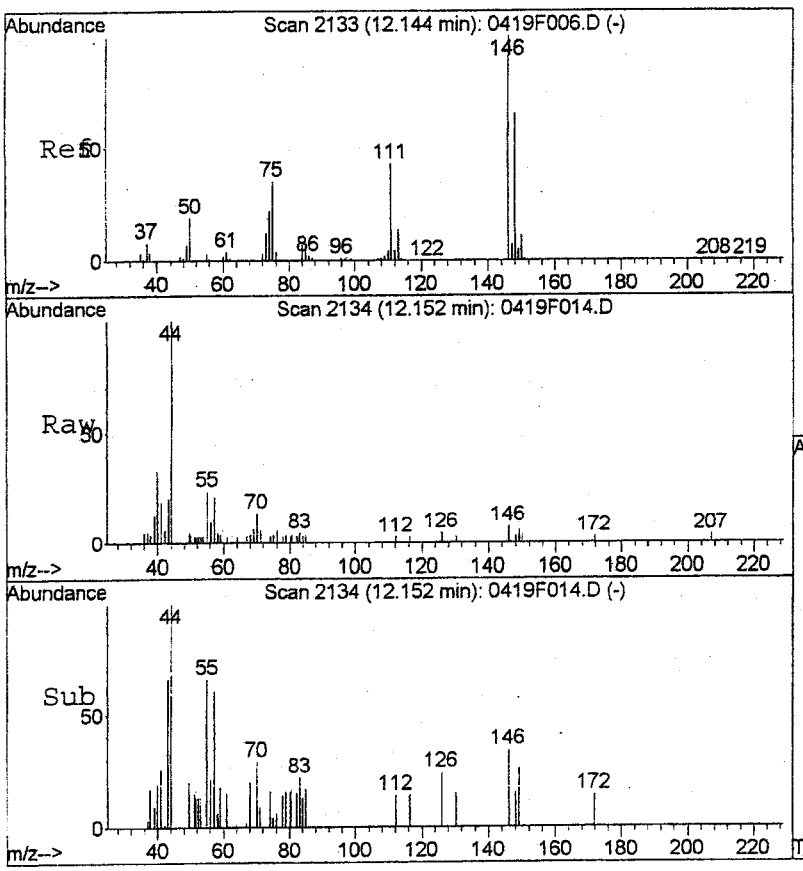


#52
1,4-Dichlorobenzene
Concen: 0.02 PPB
RT: 11.78 min Scan# 2063
Delta R.T. 0.01 min
Lab File: 0419F014.D
Acq: 19 Apr 2011 3:43 pm

Tgt Ion:146 Resp: 568

Ion	Ratio	Lower	Upper
146	100		
111	57.6	8.2	68.2
148	36.9	34.4	94.4

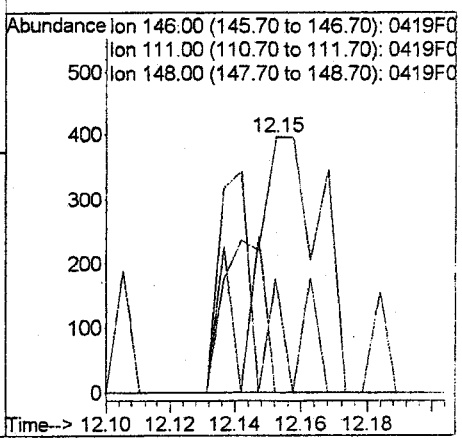




#53
1,2-Dichlorobenzene
Concen: 0.03 PPB
RT: 12.15 min Scan# 2134
Delta R.T. 0.01 min
Lab File: 0419F014.D
Acq: 19 Apr 2011 3:43 pm

Tgt Ion:146 Resp: 621

Ion	Ratio	Lower	Upper
146	100		
111	0.0	14.3	74.3#
148	44.7	34.6	94.6



COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1103044
Date Collected: NA
Date Received: NA
Date Extracted: 04/20/2011
Date Analyzed: 04/20/2011

Volatile Organic Compounds

Sample Name: Method Blank
Lab Code: KWG1103584-4
File ID: J:\MS23\DATA\042011BAYW\0420F007.D
Instrument ID: MS23

Units: ug/L
Basis: NA
Level: Low

Extraction Method: METHOD
Analysis Method: 624

Extraction Lot: KWG1103584
Calibration ID: CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-71-8	Dichlorodifluoromethane	0.40	U	0.50	0.40	
74-87-3	Chloromethane	0.035	U	0.50	0.035	
75-01-4	Vinyl Chloride	0.053	U	0.25	0.053	
74-83-9	Bromomethane	0.32	U	0.50	0.32	
75-00-3	Chloroethane	0.32	U	0.50	0.32	
75-69-4	Trichlorofluoromethane	0.048	U	0.50	0.048	
76-13-1	Trichlorotrifluoroethane	0.077	U	0.50	0.077	
75-35-4	1,1-Dichloroethene	0.37	U	0.50	0.37	
75-15-0	Carbon Disulfide	0.048	U	0.50	0.048	
75-09-2	Methylene Chloride	0.093	U	0.50	0.093	
156-60-5	trans-1,2-Dichloroethene	0.039	U	0.50	0.039	
156-59-2	cis-1,2-Dichloroethene	0.042	U	0.50	0.042	
78-93-3	2-Butanone (MEK)	**4.9**	J	20	3.4	
75-34-3	1,1-Dichloroethane	0.041	U	0.50	0.041	
67-66-3	Chloroform	0.038	U	0.50	0.038	
71-55-6	1,1,1-Trichloroethane (TCA)	0.044	U	0.50	0.044	
56-23-5	Carbon Tetrachloride	0.26	U	0.50	0.26	
71-43-2	Benzene	0.040	U	0.50	0.040	
107-06-2	1,2-Dichloroethane (EDC)	0.038	U	0.50	0.038	
108-05-4	Vinyl Acetate	0.21	U	10	0.21	
79-01-6	Trichloroethene (TCE)	0.044	U	0.50	0.044	
78-87-5	1,2-Dichloropropane	0.044	U	0.50	0.044	
75-27-4	Bromodichloromethane	0.047	U	0.50	0.047	
110-75-8	2-Chloroethyl Vinyl Ether	0.12	U	5.0	0.12	
10061-02-6	trans-1,3-Dichloropropene	0.045	U	0.50	0.045	
108-10-1	4-Methyl-2-pentanone (MIBK)	2.8	U	20	2.8	
591-78-6	2-Hexanone	1.8	U	20	1.8	
108-88-3	Toluene	0.039	U	0.50	0.039	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	04/20/2011
		Date Analyzed:	04/20/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1103584-4	**Basis:**	NA
File ID:	J:\MS23\DATA\042011BAYW\0420F007.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103584
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
10061-01-5	cis-1,3-Dichloropropene	0.035	U	0.50	0.035	
79-00-5	1,1,2-Trichloroethane	0.072	U	0.50	0.072	
127-18-4	Tetrachloroethene (PCE)	0.043	U	0.50	0.043	
124-48-1	Dibromochloromethane	0.081	U	0.50	0.081	
108-90-7	Chlorobenzene	0.031	U	0.50	0.031	
100-41-4	Ethylbenzene	0.040	U	0.50	0.040	
100-42-5	Styrene	0.025	U	0.50	0.025	
136777-61-2	m,p-Xylenes	0.14	U	1.0	0.14	
95-47-6	o-Xylene	0.035	U	0.50	0.035	
75-25-2	Bromoform	0.11	U	0.50	0.11	
67-64-1	Acetone	5.2	J	20	4.3	
79-34-5	1,1,2,2-Tetrachloroethane	0.086	U	0.50	0.086	
541-73-1	1,3-Dichlorobenzene	0.071	U	0.50	0.071	
106-46-7	1,4-Dichlorobenzene	0.073	U	0.50	0.073	
95-50-1	1,2-Dichlorobenzene	0.086	U	0.50	0.086	
107-02-8	Acrolein†	2.1	U	10	2.1	
107-13-1	Acrylonitrile†	0.28	U	5.0	0.28	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Toluene-d8	100	72-122	04/20/11	Acceptable
4-Bromofluorobenzene	97	70-120	04/20/11	Acceptable
Dibromofluoromethane	103	61-121	04/20/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	04/20/2011
		Date Analyzed:	04/20/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1103584-4	**Basis:**	NA
File ID:	J:\MS23\DATA\042011BAYW\0420F007.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103584
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount:	10 ml
% Solids:	NA
Dilution Factor:	1

† Analyte Comments

Acrolein	This compound is unstable under normal conditions. As per EPA Method 624 guidelines, the reported value was an estimate.
Acrylonitrile	This compound is unstable under normal conditions. As per EPA Method 624 guidelines, the reported value was an estimate.

Comments:

Exception Report

Data File:	J:\MS23\DATA\042011BAYW\0420F007.D	**Date Acquired:**	04/20/2011 17:23
Lab ID:	KWG1103584-4	**Date Quantitated:**	04/21/2011 16:06
RunType:	MB	**Batch ID:**	KWG1103583
Matrix:	WATER	**Analysis Method:**	624
		MethodJoinID:	MJ158

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA		x
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Analyte Exceptions

Exception Categories	Analyte Name	Result	Low Limit	High Limit	Corrective Action
Continuing Calibration Minimum RF	2-Butanone (MEK)	0.0098	0.01	NA	Mer /

Primary Review: KR 4/4/11

Secondary Review: HB 4-22-11

Printed: 04/21/2011 16:38:04

U:\Stealth\Crystal.rpt\except2.rpt

Quantitation Report

Bottle ID:		Tier:		Matrix:	WATER
Prod Code:	624 VOC_FP	Collect Date:		Receive Date:	04/21/2011

Analysis Lot:	KWG1103583	Prep Lot:	KWG1103584	Report Group:	
Analysis Method:	624	Prep Method:	METHOD		
Prep Ref:	1013237	Prep Date:	04/20/2011		

Quant Method:	J:\MS23\METHODS\032911624BAY	Calibration ID:	CAL10443
Title:			
Tune Ref:	J:\MS23\DATA\042011BAYW\0420F001.D	Method ID:	MJ158
MB Ref:		Quant based on Method	

Data File:	J:\MS23\DATA\042011BAYW\0420F007.D			Instrument:	MS23
Acqu Date:	04/20/2011 17:23	Quant Date:	04/21/2011 16:06	Vial:	7
Run Type:	MB			Dilution:	1.0
Lab ID:	KWG1103584-4			Soln Conc. Units:	PPB

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	Fluorobenzene	5.94	0.00	96	565381	10.00	OK
2	Chlorobenzene-d5	9.34	0.00	82	224035	10.00	OK
3	1,4-Dichlorobenzene-d4	11.75	0.00	152	191866	10.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	Dibromofluoromethane	5.12	0.00	0.00	113	126172	10.32	103	61-121	OK
1	1,2-Dichloroethane-d4	5.59	0.00	0.00	65	155036	10.09	101	54-125	OK
1	Toluene-d8	7.77	0.00	0.00	98	531712	9.95	100	72-122	OK
2	4-Bromofluorobenzene	10.58	0.00	0.00	95	178214	9.66	97	70-120	OK

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	Final Conc	Q	Rpt?
1	Dichlorodifluoromethane				85	0		0.40	U	
1	Chloromethane				50	0d		0.035	U	
1	Vinyl Chloride				62	0		0.053	U	
1	Bromomethane				96	0d		0.32	U	
1	Chloroethane				49	0d		0.32	U	
1	Trichlorofluoromethane				101	0		0.048	U	
1	Acrolein				56	0d		2.1	U	
1	Trichlorotrifluoroethane				151	0		0.077	U	
1	1,1-Dichloroethene				96	0d		0.37	U	
1	Acetone	2.56		0.00	43	11126	5.19	5.19	J	
1	Carbon Disulfide				76	0d		0.048	U	
1	Methylene Chloride				84	0d		0.093	U	
1	Acrylonitrile				53	0		0.28	U	
1	trans-1,2-Dichloroethene				96	0		0.039	U	

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Data File:	J:\MS23\DATA\042011BAYW\0420F007.D			Instrument:	MS23
Acqu Date:	04/20/2011 17:23	Quant Date:	04/21/2011 16:06	Vial:	7
Run Type:	MB			Dilution:	1.0
Lab ID:	KWG1103584-4			Soln Conc. Units:	PPB

Target Compounds — Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,1-Dichloroethane				63	0		0.041	U	
1	Vinyl Acetate				86	0		0.21	U	
1	cis-1,2-Dichloroethene				96	0		0.042	U	
1	2-Butanone (MEK)	4.51		0.00	72	3085	4.91	4.91	J	
1	Chloroform				83	0		0.038	U	
1	1,1,1-Trichloroethane (TCA)				97	0		0.044	U	
1	Carbon Tetrachloride				117	0		0.26	U	
1	Benzene				78	0		0.040	U	
1	1,2-Dichloroethane (EDC)				62	0		0.038	U	
1	Trichloroethene (TCE)				95	0		0.044	U	
1	1,2-Dichloropropane				63	0		0.044	U	
1	Bromodichloromethane				83	0		0.047	U	
1	2-Chloroethyl Vinyl Ether				63	0		0.12	U	
1	cis-1,3-Dichloropropene				75	0		0.035	U	
1	4-Methyl-2-pentanone (MIBK)				58	0		2.8	U	
1	Toluene				92	0		0.039	U	
2	trans-1,3-Dichloropropene				75	0		0.045	U	
2	1,1,2-Trichloroethane				83	0		0.072	U	
2	Tetrachloroethene (PCE)				164	0		0.043	U	
2	2-Hexanone				43	0		1.8	U	
2	Dibromochloromethane				129	0		0.081	U	
2	Chlorobenzene				112	0		0.031	U	
2	Ethylbenzene				106	0		0.040	U	
2	m,p-Xylenes				106	0		0.14	U	
2	o-Xylene				106	0		0.035	U	
2	Styrene				103	0		0.025	U	
2	Bromoform				173	0		0.11	U	
3	1,1,2,2-Tetrachloroethane				83	0		0.086	U	
3	1,3-Dichlorobenzene				146	0d		0.071	U	
3	1,4-Dichlorobenzene	11.77		0.00	146	513	0.0200	0.073	U	
3	1,2-Dichlorobenzene				146	0		0.086	U	
	Isopropyl Acetate				0	0		10	U	NR
	Ethyl Acetate				0	0		10	U	NR
	Bis(chloromethyl) Ether				0	0		10	U	NR
	Amyl Acetate				0	0		10	U	NR

Prep Amount:	10 ml	**Dilution:**	1.0
Prep Final Vol:	10 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\042011BAYW\0420F007.D
Acq On : 20 Apr 2011 5:23 pm
Sample : MB
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 21 16:06:12 2011

Vial: 7
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624BAYW.R

Quant Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Initial Calibration
DataAcq Meth : 8260

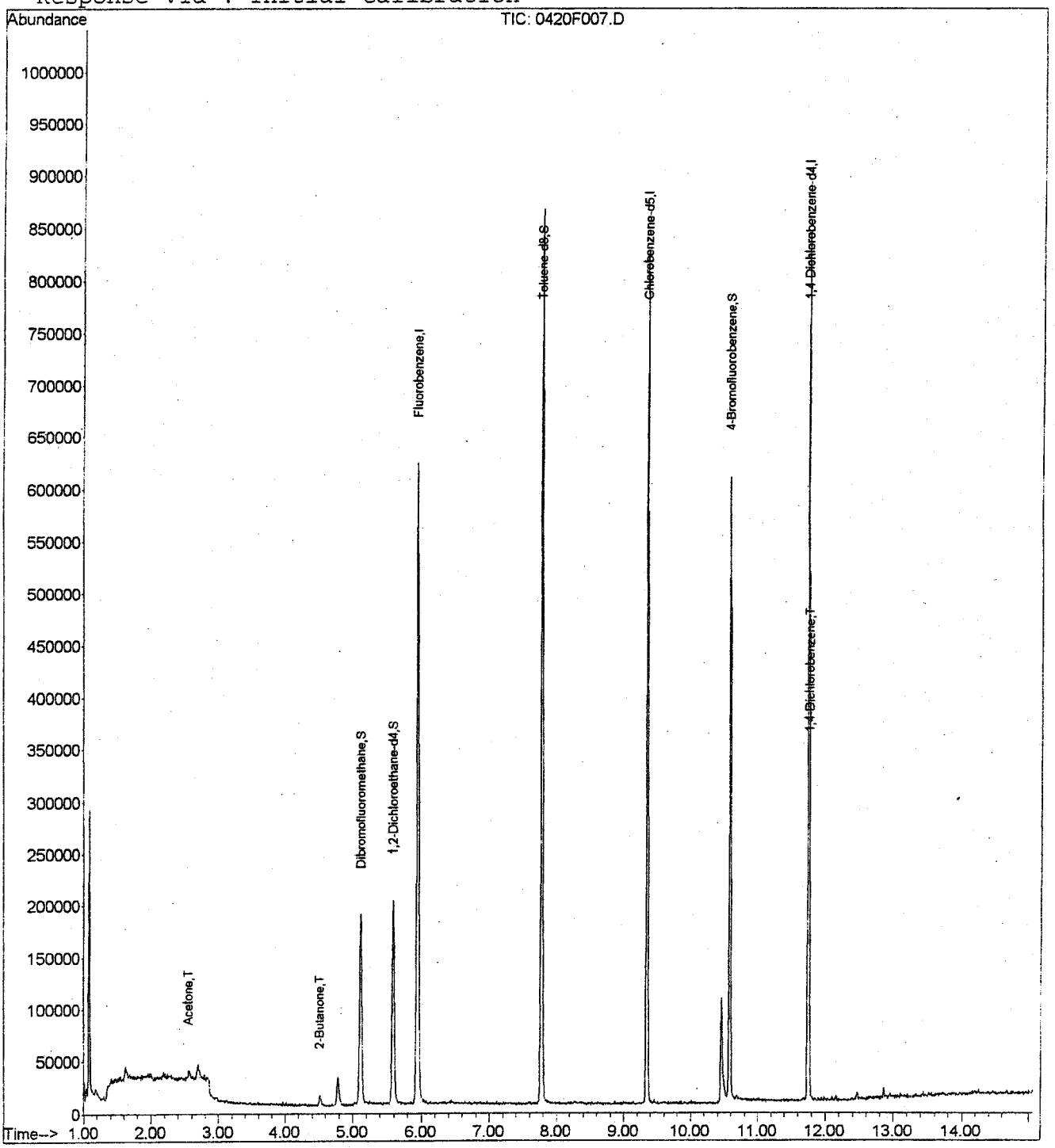
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	5.94	96	565381	10.00	PPB	0.00
35) Chlorobenzene-d5	9.34	82	224035	10.00	PPB	0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	191866	10.00	PPB	0.00
System Monitoring Compounds						
22) Dibromofluoromethane	5.12	113	126172	10.32	PPB	0.00
Spiked Amount 10.000			Recovery	=	103.20%	
24) 1,2-Dichloroethane-d4	5.59	65	155036	10.09	PPB	0.00
Spiked Amount 10.000			Recovery	=	100.90%	
33) Toluene-d8	7.77	98	531712	9.95	PPB	0.00
Spiked Amount 10.000			Recovery	=	99.50%	
47) 4-Bromofluorobenzene	10.58	95	178214	9.66	PPB	0.00
Spiked Amount 10.000			Recovery	=	96.60%	
Target Compounds						Qvalue
11) Acetone	2.56	43	11126	5.19	PPB	93
19) 2-Butanone	4.51	72	3085	4.91	PPB #	33
52) 1,4-Dichlorobenzene	11.77	146	513	0.02	PPB #	51

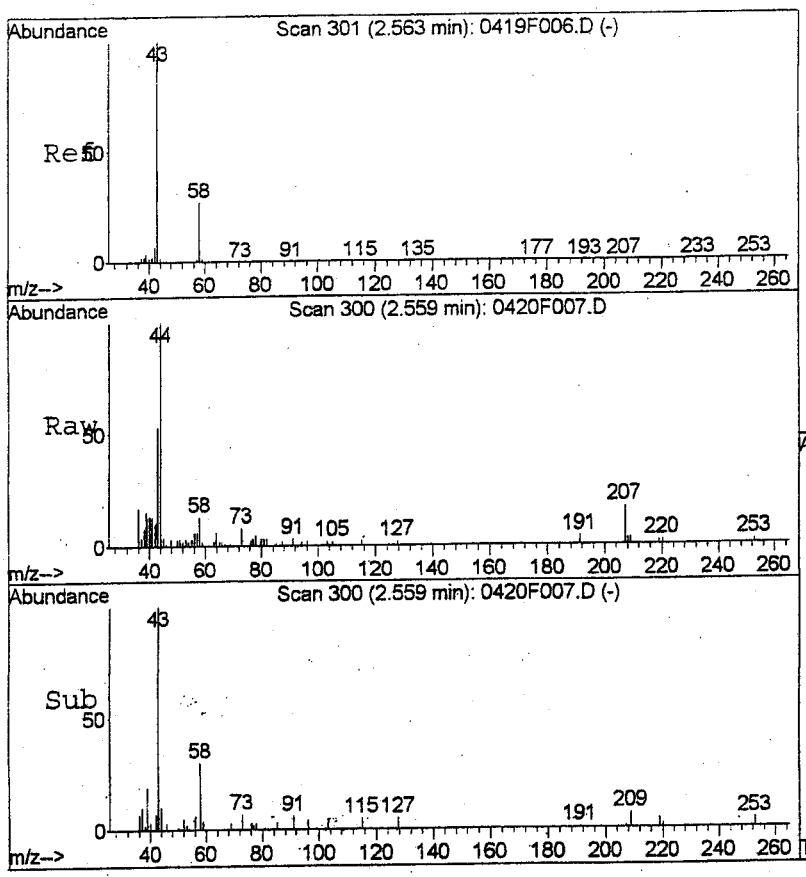
(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\042011BAYW\0420F007.D Vial: 7
Acq On : 20 Apr 2011 5:23 pm Operator: KR
Sample : MB Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Apr 21 16:06 2011 Quant Results File: 032911624BAY

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Initial Calibration

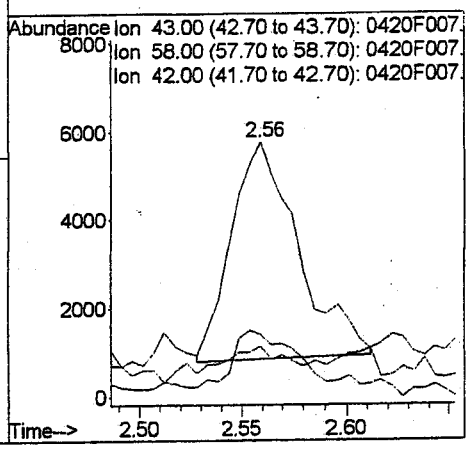


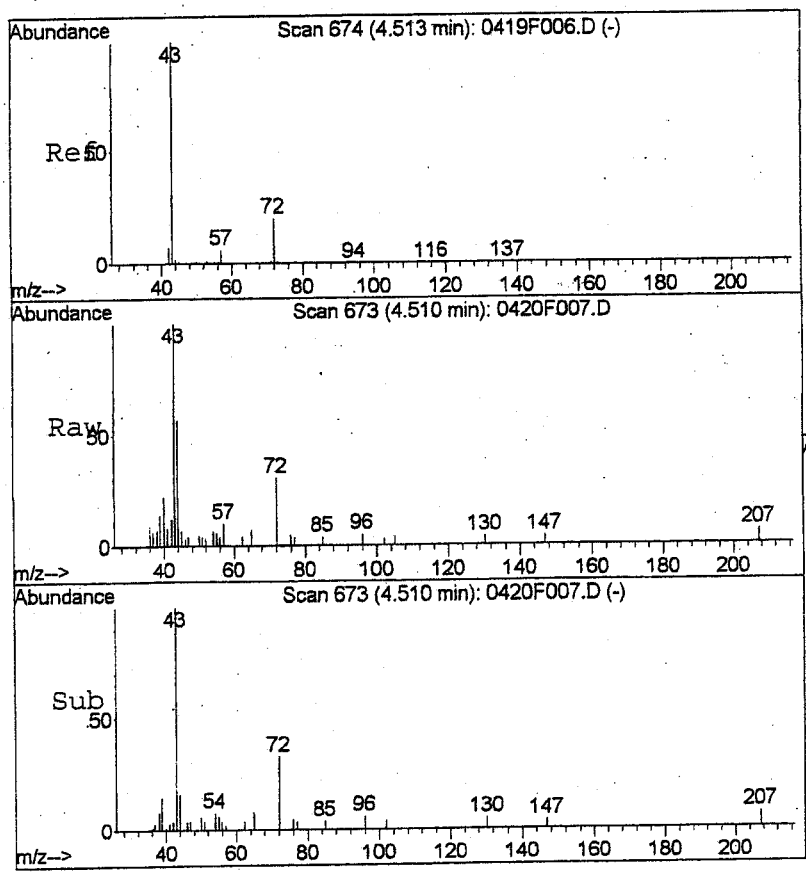


#11
Acetone
Concen: 5.19 PPB
RT: 2.56 min Scan# 300
Delta R.T. -0.00 min
Lab File: 0420F007.D
Acq: 20 Apr 2011 5:23 pm

Tgt Ion: 43 Resp: 11126

Ion	Ratio	Lower	Upper
43	100		
58	24.3	0.0	56.9
42	12.3	0.0	37.5

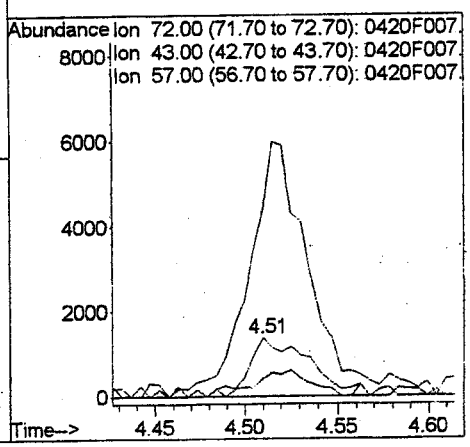


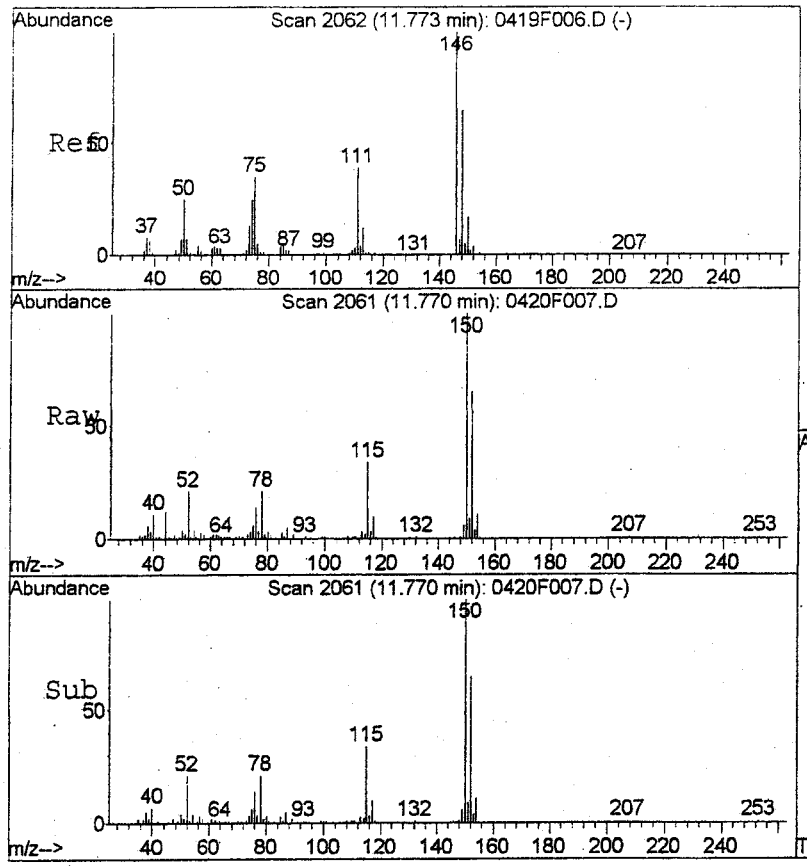


#19
2-Butanone
Concen: 4.91 PPB
RT: 4.51 min Scan# 673
Delta R.T. -0.00 min
Lab File: 0420F007.D
Acq: 20 Apr 2011 5:23 pm

Tgt Ion: 72 Resp: 3085

Ion	Ratio	Lower	Upper
72	100		
43	296.9	461.9	521.9#
57	31.3	5.8	65.8

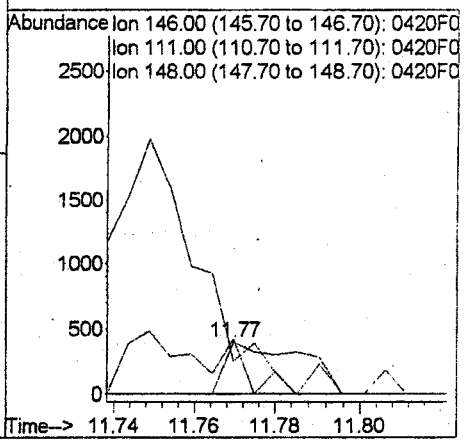




#52
1,4-Dichlorobenzene
Concen: 0.02 PPB
RT: 11.77 min Scan# 2061
Delta R.T. -0.00 min
Lab File: 0420F007.D
Acq: 20 Apr 2011 5:23 pm

Tgt Ion:146 Resp: 513

Ion	Ratio	Lower	Upper
146	100		
111	63.5	8.2	68.2
148	105.7	34.4	94.4#



COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	04/07/2011
Sample Matrix:	Water	**Date Received:**	04/08/2011
		Date Extracted:	04/19/2011
		Date Analyzed:	04/19/2011

Volatile Organic Compounds

Sample Name:	Fridout 172BMS	**Units:**	ug/L
Lab Code:	KWG1103524-1	**Basis:**	NA
File ID:	J:\MS23\DATA\041911BAYW\0419F008.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103524
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-71-8	Dichlorodifluoromethane	10.9		0.50	0.40	
74-87-3	Chloromethane	11.0		0.50	0.035	
75-01-4	Vinyl Chloride	12.2		0.25	0.053	
74-83-9	Bromomethane	12.5		0.50	0.32	
75-00-3	Chloroethane	12.2		0.50	0.32	
75-69-4	Trichlorofluoromethane	10.7		0.50	0.048	
76-13-1	Trichlorotrifluoroethane	10.5		0.50	0.077	
75-35-4	1,1-Dichloroethene	11.8		0.50	0.37	
75-15-0	Carbon Disulfide	19.7		0.50	0.048	
75-09-2	Methylene Chloride	10.1		0.50	0.093	
156-60-5	trans-1,2-Dichloroethene	10.3		0.50	0.039	
156-59-2	cis-1,2-Dichloroethene	9.18		0.50	0.042	
78-93-3	2-Butanone (MEK)	45.5		20	3.4	
75-34-3	1,1-Dichloroethane	9.84		0.50	0.041	
67-66-3	Chloroform	10.2		0.50	0.038	
71-55-6	1,1,1-Trichloroethane (TCA)	9.39		0.50	0.044	
56-23-5	Carbon Tetrachloride	10.4		0.50	0.26	
71-43-2	Benzene	10.1		0.50	0.040	
107-06-2	1,2-Dichloroethane (EDC)	9.43		0.50	0.038	
108-05-4	Vinyl Acetate	19.0		10	0.21	
79-01-6	Trichloroethene (TCE)	9.85		0.50	0.044	
78-87-5	1,2-Dichloropropane	9.47		0.50	0.044	
75-27-4	Bromodichloromethane	9.80		0.50	0.047	
110-75-8	2-Chloroethyl Vinyl Ether	0.810	J	5.0	0.12	
10061-02-6	trans-1,3-Dichloropropene	7.44		0.50	0.045	
108-10-1	4-Methyl-2-pentanone (MIBK)	36.7		20	2.8	
591-78-6	2-Hexanone	38.1		20	1.8	
108-88-3	Toluene	10.3		0.50	0.039	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	04/07/2011
Sample Matrix:	Water	**Date Received:**	04/08/2011
		Date Extracted:	04/19/2011
		Date Analyzed:	04/19/2011

Volatile Organic Compounds

Sample Name:	Fridout 172BMS	**Units:**	ug/L
Lab Code:	KWG1103524-1	**Basis:**	NA
File ID:	J:\MS23\DATA\041911BAYW\0419F008.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103524
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
10061-01-5	cis-1,3-Dichloropropene	8.58		0.50	0.035	
79-00-5	1,1,2-Trichloroethane	9.78		0.50	0.072	
127-18-4	Tetrachloroethene (PCE)	10.8		0.50	0.043	
124-48-1	Dibromochloromethane	9.77		0.50	0.081	
108-90-7	Chlorobenzene	10.2		0.50	0.031	
100-41-4	Ethylbenzene	10.1		0.50	0.040	
100-42-5	Styrene	9.70		0.50	0.025	
136777-61-2	m,p-Xylenes	20.2		1.0	0.14	
95-47-6	o-Xylene	9.43		0.50	0.035	
75-25-2	Bromoform	9.53		0.50	0.11	
67-64-1	Acetone	54.9		20	4.3	
79-34-5	1,1,2,2-Tetrachloroethane	8.71		0.50	0.086	
541-73-1	1,3-Dichlorobenzene	10.4		0.50	0.071	
106-46-7	1,4-Dichlorobenzene	10.2		0.50	0.073	
95-50-1	1,2-Dichlorobenzene	10.2		0.50	0.086	
107-02-8	Acrolein†	102		10	2.1	
107-13-1	Acrylonitrile†	9.71		5.0	0.28	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Toluene-d8	105	72-122	04/19/11	Acceptable
4-Bromofluorobenzene	94	70-120	04/19/11	Acceptable
Dibromofluoromethane	105	61-121	04/19/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	04/07/2011
Sample Matrix:	Water	**Date Received:**	04/08/2011
		Date Extracted:	04/19/2011
		Date Analyzed:	04/19/2011

Volatile Organic Compounds

Sample Name:	Fridout 172BMS	**Units:**	ug/L
Lab Code:	KWG1103524-1	**Basis:**	NA
File ID:	J:\MS23\DATA\041911BAYW\0419F008.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103524
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

† Analyte Comments

Acrolein	This compound is unstable under normal conditions. As per EPA Method 624 guidelines, the reported value was an estimate.
Acrylonitrile	This compound is unstable under normal conditions. As per EPA Method 624 guidelines, the reported value was an estimate.

Comments:

Exception Report

Data File:	J:\MS23\DATA\041911BAYW\0419F008.D	**Date Acquired:**	04/19/2011 12:41
Lab ID:	KWG1103524-1 -- K1103044-002MS	**Date Quantitated:**	04/20/2011 13:06
RunType:	MS	**Batch ID:**	KWG1103523
Matrix:	WATER	**Analysis Method:**	624
		MethodJoinID:	MJ158

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Primary Review: [illegible] 4/22/11

Secondary Review: HBU 4-20-11

Quantitation Report

Bottle ID:		Tier:		Matrix:	WATER
Prod Code:	624 VOC_FP	Collect Date:		Receive Date:	04/20/2011

Analysis Lot:	KWG1103523	Prep Lot:	KWG1103524	Report Group:	
Analysis Method:	624	Prep Method:	METHOD		
Prep Ref:	1012861	Prep Date:	04/19/2011		

Quant Method:	J:\MS23\METHODS\032911624BAY	Calibration ID:	CAL10443
Title:			
Tune Ref:	J:\MS23\DATA\041911BAYW\0419F005.D	Method ID:	MJ158
MB Ref:	J:\MS23\DATA\041911BAYW\0419F014.D	Quant based on Method	

Data File:	J:\MS23\DATA\041911BAYW\0419F008.D			Instrument:	MS23
Acqu Date:	04/19/2011 12:41	Quant Date:	04/20/2011 13:06	Vial:	3
Run Type:	MS			Dilution:	1.0
Lab ID:	KWG1103524-1 -- K1103044-002MS			Soln Conc. Units:	PPB

Internal Standard Compounds

IS-Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	Fluorobenzene	5.94	0.00	96	545375	10.00	OK
2 1	Chlorobenzene-d5	9.34	0.00	82	227021	10.00	OK
3	1,4-Dichlorobenzene-d4	11.75	0.00	152	201105	10.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	Dibromofluoromethane	5.12	0.01	0.00	113	123640	10.48	105	61-121	OK
1	1,2-Dichloroethane-d4	5.59	0.00	0.00	65	142003	9.58	96	54-125	OK
1	Toluene-d8	7.77	0.00	0.00	98	540395	10.49	105	72-122	OK
2	4-Bromofluorobenzene	10.58	0.00	0.00	95	176113	9.42	94	70-120	OK

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	Final Conc	Q	Rpt?
1	Dichlorodifluoromethane	1.20		0.00	85	209124	10.92	10.9		
1	Chloromethane	1.35	-0.01	0.00	50	305350	10.99	11.0		
1	Vinyl Chloride	1.43		0.00	62	268333	12.16	12.2		
1	Bromomethane	1.71	0.01	0.00	96	100754	12.47	12.5		
1	Chloroethane	1.78		0.00	49	46963	12.19	12.2		
1	Trichlorofluoromethane	1.97		0.00	101	290675	10.66	10.7		
1	Acrolein	2.42	0.01	0.00	56	152049	102.46	102		
1	Trichlorotrifluoroethane	2.41		0.00	151	125682	10.45	10.5		
1	1,1-Dichloroethene	2.45		0.00	96	155182	11.79	11.8		
1	Acetone	2.56		0.00	43	113646	54.91	54.9		
1	Carbon Disulfide	2.64		0.00	76	1077596	19.72	19.7		
1	Methylene Chloride	2.98		0.00	84	135183	10.08	10.1		
1	Acrylonitrile	3.32	-0.01	0.00	53	23387	9.71	9.71	J	
1	trans-1,2-Dichloroethene	3.21		0.00	96	140896	10.34	10.3		

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Data File:	J:\MS23\DATA\041911BAYW\0419F008.D			Instrument:	MS23
Acqu Date:	04/19/2011 12:41	Quant Date:	04/20/2011 13:06	Vial:	3
Run Type:	MS			Dilution:	1.0
Lab ID:	KWG1103524-1 – K1103044-002MS			Soln Conc. Units:	PPB

Target Compounds — Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,1-Dichloroethane	3.73		0.00	63	265356	9.84	9.84		
1	Vinyl Acetate	3.79		0.00	86	29445	19.00	19.0		
1	cis-1,2-Dichloroethene	4.46		0.00	96	134413	9.18	9.18		
1	2-Butanone (MEK)	4.51		0.00	72	27617	45.53	45.5		
1	Chloroform	4.89		0.00	83	247383	10.15	10.2		
1	1,1,1-Trichloroethane (TCA)	5.05		0.00	97	211312	9.39	9.39		
1	Carbon Tetrachloride	5.20	-0.01	0.00	117	180883	10.44	10.4		
1	Benzene	5.54		0.00	78	581214	10.14	10.1		
1	1,2-Dichloroethane (EDC)	5.69		0.00	62	164387	9.43	9.43		
1	Trichloroethene (TCE)	6.37		0.00	95	142777	9.85	9.85		
1	1,2-Dichloropropane	6.70		0.00	63	138170	9.47	9.47		
1	Bromodichloromethane	7.03		0.00	83	161331	9.80	9.80		
1	2-Chloroethyl Vinyl Ether	7.42		0.00	63	4059	0.8100	0.810	J	
1	cis-1,3-Dichloropropene	7.55		0.00	75	171652	8.58	8.58		
1	4-Methyl-2-pentanone (MIBK)	8.65		0.00	58	78252	36.66	36.7		
1	Toluene	7.85	0.01	0.00	92	367566	10.29	10.3		
2	trans-1,3-Dichloropropene	8.20		0.00	75	123201	7.44	7.44		
2	1,1,2-Trichloroethane	8.39		0.00	83	70634	9.78	9.78		
2	Tetrachloroethene (PCE)	8.40		0.00	164	116450	10.82	10.8		
2	2-Hexanone	8.65		0.00	43	172194	38.07	38.1		
2	Dibromochloromethane	8.76	-0.01	0.00	129	90384	9.77	9.77		
2	Chlorobenzene	9.37		0.00	112	375521	10.23	10.2		
2	Ethylbenzene	9.46	-0.01	0.00	106	210019	10.07	10.1		
2	m,p-Xylenes	9.59		0.00	106	525901	20.24	20.2		
2	o-Xylene	10.01		0.00	106	232057	9.43	9.43		
2	Styrene	10.04		0.00	103	182227m	9.70	9.70		
2	Bromoform	10.25		0.00	173	42300	9.53	9.53		
3	1,1,2,2-Tetrachloroethane	10.78		0.00	83	77814	8.71	8.71		
3	1,3-Dichlorobenzene	11.67		0.00	146	295403	10.39	10.4		
3	1,4-Dichlorobenzene	11.77		0.00	146	291492	10.22	10.2		
3	1,2-Dichlorobenzene	12.14		0.00	146	251289	10.15	10.2		
	Isopropyl Acetate				0	0		10	U	NR
	Ethyl Acetate				0	0		10	U	NR
	Bis(chloromethyl) Ether				0	0		10	U	NR
	Amyl Acetate				0	0		10	U	NR

Prep Amount: 10 ml **Dilution:** 1.0
Prep Final Vol: 10 ml **Unit Factor:** 1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\041911BAYW\0419F008.D
Acq On : 19 Apr 2011 12:41 pm
Sample : K3044-002MS
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 20 13:04:37 2011

Vial: 3
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624BAYW.R

Quant Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 12:44:23 2011
Response via : Initial Calibration
DataAcq Meth : 8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	5.94	96	545375	10.00	PPB	0.00
35) Chlorobenzene-d5	9.34	82	227021	10.00	PPB	0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	201105	10.00	PPB	0.00
System Monitoring Compounds						
22) Dibromofluoromethane	5.12	113	123640	10.48	PPB	0.00
Spiked Amount 10.000			Recovery	=	104.80%	
24) 1,2-Dichloroethane-d4	5.59	65	142003	9.58	PPB	0.00
Spiked Amount 10.000			Recovery	=	95.80%	
33) Toluene-d8	7.77	98	540395	10.49	PPB	0.00
Spiked Amount 10.000			Recovery	=	104.90%	
47) 4-Bromofluorobenzene	10.58	95	176113	9.42	PPB	0.00
Spiked Amount 10.000			Recovery	=	94.20%	

Target Compounds							Qvalue
2) Dichlorodifluoromethane	1.20	85	209124	10.92	PPB		98
3) Chloromethane	1.35	50	305350	10.99	PPB		98
4) Vinyl Chloride	1.43	62	268333	12.16	PPB		99
5) Bromomethane	1.71	96	100754	12.47	PPB		90
6) Chloroethane	1.78	49	46963	12.19	PPB		98
7) Trichlorofluoromethane	1.97	101	290675	10.66	PPB		94
8) Acrolein	2.42	56	152049	102.46	PPB		97
9) Trichlorotrifluoroethane	2.41	151	125682	10.45	PPB		96
10) 1,1-Dichloroethene	2.45	96	155182	11.79	PPB		96
11) Acetone	2.56	43	113646	54.91	PPB		98
12) Carbon Disulfide	2.64	76	1077596	19.72	PPB		100
13) Methylene Chloride	2.98	84	135183	10.08	PPB		97
14) Acrylonitrile	3.32	53	23387	9.71	PPB		90
15) trans-1,2-Dichloroethene	3.21	96	140896	10.34	PPB		97
16) 1,1-Dichloroethane	3.73	63	265356	9.84	PPB		98
17) Vinyl Acetate	3.79	86	29445	19.00	PPB	#	87
18) cis-1,2-Dichloroethene	4.46	96	134413	9.18	PPB		96
19) 2-Butanone	4.51	72	27617	45.53	PPB		96
20) Chloroform	4.89	83	247383	10.15	PPB		99
21) 1,1,1-Trichloroethane	5.05	97	211312	9.39	PPB		97
23) Carbon Tetrachloride	5.20	117	180883	10.44	PPB		99
25) Benzene	5.54	78	581214	10.14	PPB		98
26) 1,2-Dichloroethane	5.69	62	164387	9.43	PPB		97
27) Trichloroethene	6.37	95	142777	9.85	PPB		98
28) 1,2-Dichloropropane	6.70	63	138170	9.47	PPB		96
29) Bromodichloromethane	7.03	83	161331	9.80	PPB		99
30) 2-Chloroethyl Vinyl Ether	7.42	63	4059	0.81	PPB		89

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\041911BAYW\0419F008.D Vial: 3
Acq On : 19 Apr 2011 12:41 pm Operator: KR
Sample : K3044-002MS Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Apr 20 13:04:37 2011 Quant Results File: 032911624BAYW.R

Quant Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 12:44:23 2011
Response via : Initial Calibration
DataAcq Meth : 8260

	Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
31)	cis-1,3-Dichloropropene	7.55	75	171652	8.58	PPB	98
32)	4-Methyl-2-pentanone (MIBK	8.65	58	78252	36.66	PPB	96
34)	Toluene	7.85	92	367566	10.29	PPB	95
36)	trans-1,3-Dichloropropene	8.20	75	123201	7.44	PPB	98
37)	1,1,2-Trichloroethane	8.39	83	70634	9.78	PPB	97
38)	Tetrachloroethene	8.40	164	116450	10.82	PPB	94
39)	2-Hexanone	8.65	43	172194	38.07	PPB	98
40)	Dibromochloromethane	8.76	129	90384	9.77	PPB	96
41)	Chlorobenzene	9.37	112	375521	10.23	PPB	98
42)	Ethylbenzene	9.46	106	210019	10.07	PPB	92
43)	m,p-Xylenes	9.59	106	525901	20.24	PPB	99
44)	o-Xylene	10.01	106	232057	9.43	PPB	94
45)	Styrene	10.04	103	182227m	9.70	PPB	
46)	Bromoform	10.25	173	42300	9.53	PPB	96
49)	1,1,2,2-Tetrachloroethane	10.78	83	77814	8.71	PPB	97
51)	1,3-Dichlorobenzene	11.67	146	295403	10.39	PPB	97
52)	1,4-Dichlorobenzene	11.77	146	291492	10.22	PPB	98
53)	1,2-Dichlorobenzene	12.14	146	251289	10.15	PPB	95

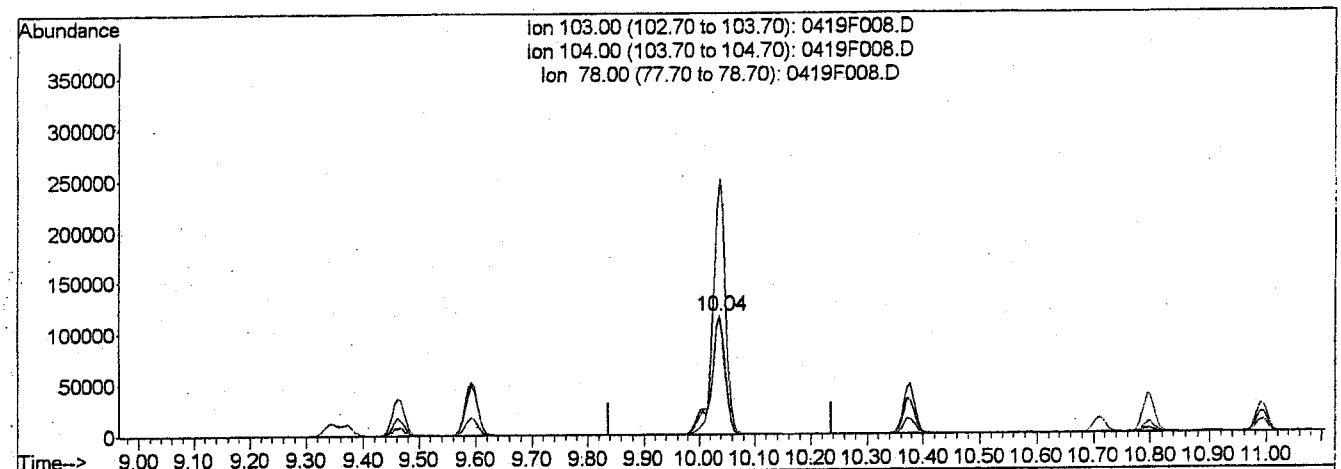
(#) = qualifier out of range (m) = manual integration
0419F008.D 032911624BAYW.M Wed Apr 20 13:06:13 2011 Page 2

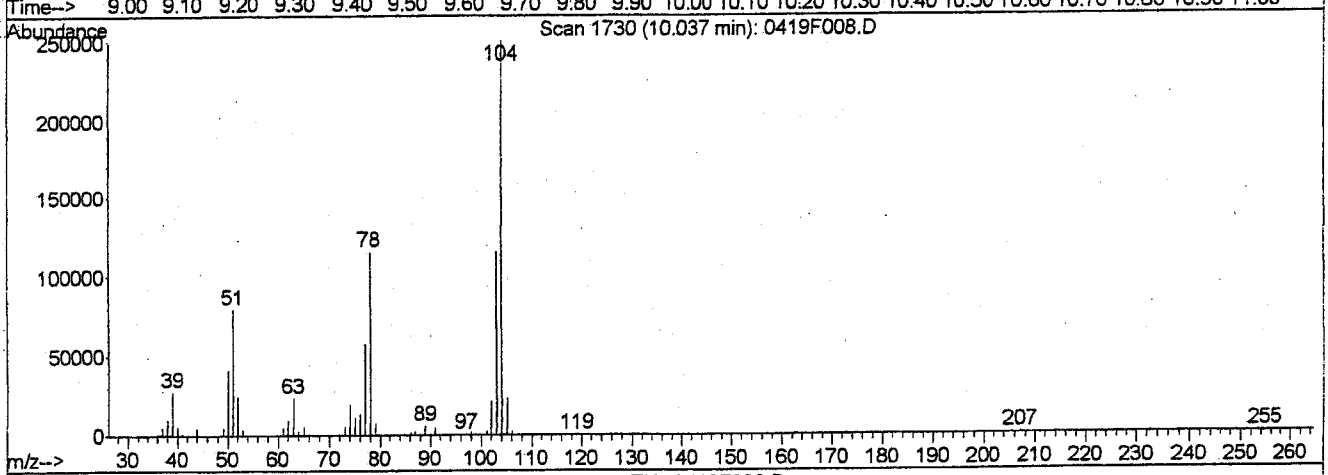
Quantitation Report (Qedit)

Data File : J:\MS23\DATA\041911BAYW\0419F008.D
Acq On : 19 Apr 2011 12:41 pm
Sample : K3044-002MS
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 20 13:04 2011

Vial: 3
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 12:44:23 2011
Response via : Multiple Level Calibration





TIC: 0419F008.D

(45) Styrene (T)

10.04min 11.14PPB

response 209163

Ion	Exp%	Act%
103.00	100	100
104.00	217.10	216.45
78.00	101.20	99.99
0.00	0.00	0.00

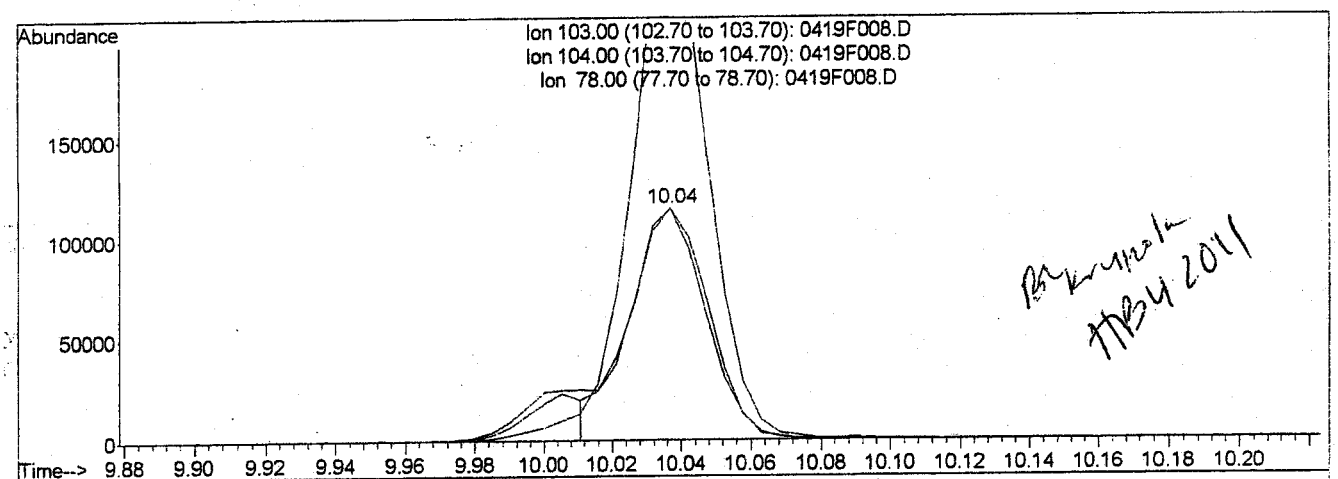
0419F008.D 032911624BAYW.M . Wed Apr 20 13:06:03 2011

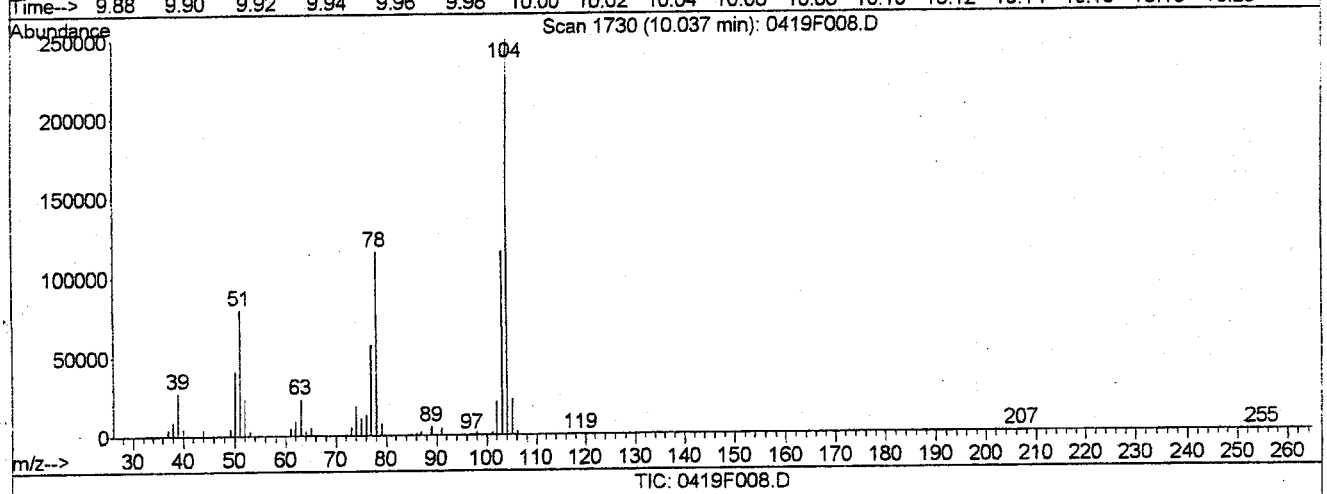
Quantitation Report (Qedit)

Data File : J:\MS23\DATA\041911BAYW\0419F008.D
Acq On : 19 Apr 2011 12:41 pm
Sample : K3044-002MS
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 20 13:06 2011

Vial: 3
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 12:44:23 2011
Response via : Multiple Level Calibration





TIC: 0419F008.D

(45) Styrene (T)

10.04min 9.70PPB m

response 182227

Ion	Exp%	Act%
103.00	100	100
104.00	217.10	216.45
78.00	101.20	99.99
0.00	0.00	0.00

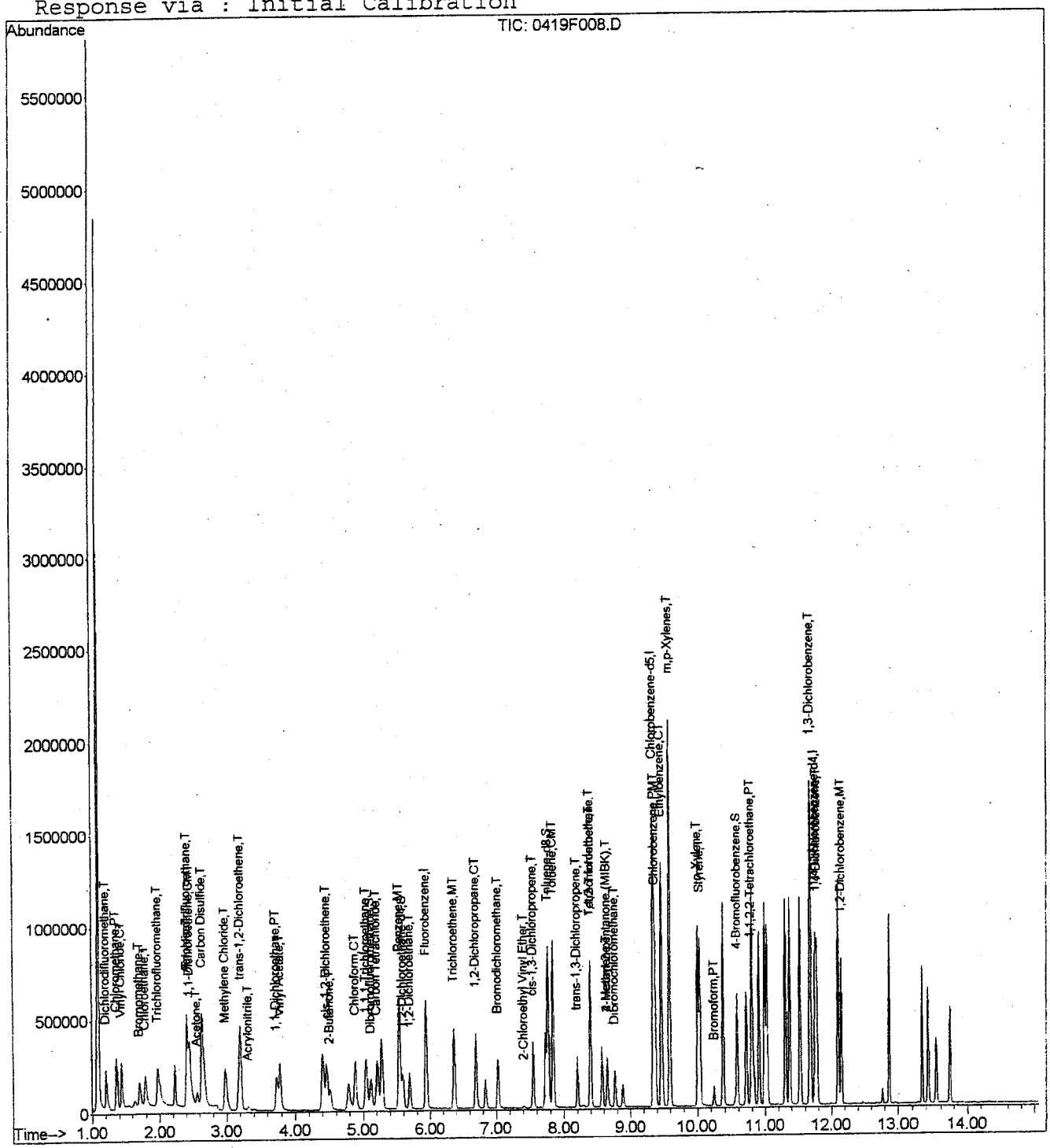
0419F008.D 032911624BAYW.M Wed Apr 20 13:06:08 2011

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\041911BAYW\0419F008.D
Acq On : 19 Apr 2011 12:41 pm
Sample : K3044-002MS
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 20 13:06 2011

Vial: 3
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624BAY

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 12:44:23 2011
Response via : Initial Calibration



COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	04/07/2011
Sample Matrix:	Water	**Date Received:**	04/08/2011
		Date Extracted:	04/19/2011
		Date Analyzed:	04/19/2011

Volatile Organic Compounds

Sample Name:	Fridout 172BDMS	**Units:**	ug/L
Lab Code:	KWG1103524-2	**Basis:**	NA
File ID:	J:\MS23\DATA\041911BAYW\0419F010.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103524
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-71-8	Dichlorodifluoromethane	9.01		0.50	0.40	
74-87-3	Chloromethane	9.51		0.50	0.035	
75-01-4	Vinyl Chloride	10.2		0.25	0.053	
74-83-9	Bromomethane	11.2		0.50	0.32	
75-00-3	Chloroethane	10.7		0.50	0.32	
75-69-4	Trichlorofluoromethane	8.93		0.50	0.048	
76-13-1	Trichlorotrifluoroethane	8.94		0.50	0.077	
75-35-4	1,1-Dichloroethene	10.2		0.50	0.37	
75-15-0	Carbon Disulfide	16.7		0.50	0.048	
75-09-2	Methylene Chloride	9.26		0.50	0.093	
156-60-5	trans-1,2-Dichloroethene	9.08		0.50	0.039	
156-59-2	cis-1,2-Dichloroethene	8.78		0.50	0.042	
78-93-3	2-Butanone (MEK)	47.1		20	3.4	
75-34-3	1,1-Dichloroethane	8.83		0.50	0.041	
67-66-3	Chloroform	9.15		0.50	0.038	
71-55-6	1,1,1-Trichloroethane (TCA)	7.95		0.50	0.044	
56-23-5	Carbon Tetrachloride	8.82		0.50	0.26	
71-43-2	Benzene	9.04		0.50	0.040	
107-06-2	1,2-Dichloroethane (EDC)	9.24		0.50	0.038	
108-05-4	Vinyl Acetate	18.7		10	0.21	
79-01-6	Trichloroethene (TCE)	8.67		0.50	0.044	
78-87-5	1,2-Dichloropropane	8.62		0.50	0.044	
75-27-4	Bromodichloromethane	8.98		0.50	0.047	
110-75-8	2-Chloroethyl Vinyl Ether	0.250	J	5.0	0.12	
10061-02-6	trans-1,3-Dichloropropene	7.04		0.50	0.045	
108-10-1	4-Methyl-2-pentanone (MIBK)	37.2		20	2.8	
591-78-6	2-Hexanone	39.4		20	1.8	
108-88-3	Toluene	9.16		0.50	0.039	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	04/07/2011
Sample Matrix:	Water	**Date Received:**	04/08/2011
		Date Extracted:	04/19/2011
		Date Analyzed:	04/19/2011

Volatile Organic Compounds

Sample Name:	Fridout 172BDMS	**Units:**	ug/L
Lab Code:	KWG1103524-2	**Basis:**	NA
File ID:	J:\MS23\DATA\041911BAYW\0419F010.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103524
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
10061-01-5	cis-1,3-Dichloropropene	**7.96**		0.50	0.035	
79-00-5	1,1,2-Trichloroethane	**9.80**		0.50	0.072	
127-18-4	Tetrachloroethene (PCE)	**9.55**		0.50	0.043	
124-48-1	Dibromochloromethane	**9.09**		0.50	0.081	
108-90-7	Chlorobenzene	**9.67**		0.50	0.031	
100-41-4	Ethylbenzene	**9.26**		0.50	0.040	
100-42-5	Styrene	**8.90**		0.50	0.025	
136777-61-2	m,p-Xylenes	**18.6**		1.0	0.14	
95-47-6	o-Xylene	**8.88**		0.50	0.035	
75-25-2	Bromoform	**9.12**		0.50	0.11	
67-64-1	Acetone	**58.2**		20	4.3	
79-34-5	1,1,2,2-Tetrachloroethane	**8.98**		0.50	0.086	
541-73-1	1,3-Dichlorobenzene	**9.65**		0.50	0.071	
106-46-7	1,4-Dichlorobenzene	**9.68**		0.50	0.073	
95-50-1	1,2-Dichlorobenzene	**9.80**		0.50	0.086	
107-02-8	Acrolein†	**98.1**		10	2.1	
107-13-1	Acrylonitrile†	**10.1**		5.0	0.28	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Toluene-d8	104	72-122	04/19/11	Acceptable
4-Bromofluorobenzene	96	70-120	04/19/11	Acceptable
Dibromofluoromethane	103	61-121	04/19/11	Acceptable

Comments:

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	04/07/2011
Sample Matrix:	Water	**Date Received:**	04/08/2011
		Date Extracted:	04/19/2011
		Date Analyzed:	04/19/2011

Volatile Organic Compounds

Sample Name:	Fridout 172BDMS	**Units:**	ug/L
Lab Code:	KWG1103524-2	**Basis:**	NA
File ID:	J:\MS23\DATA\041911BAYW\0419F010.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103524
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount:	10 ml
% Solids:	NA
Dilution Factor:	1

† **Analyte Comments**

Acrolein	This compound is unstable under normal conditions. As per EPA Method 624 guidelines, the reported value was an estimate.
Acrylonitrile	This compound is unstable under normal conditions. As per EPA Method 624 guidelines, the reported value was an estimate.

Comments:

Exception Report

Data File:	J:\MS23\DATA\041911BAYW\0419F010.D	**Date Acquired:**	04/19/2011 13:41
Lab ID:	KWG1103524-2 -- K1103044-002DMS	**Date Quantitated:**	04/20/2011 13:06
RunType:	DMS	**Batch ID:**	KWG1103523
Matrix:	WATER	**Analysis Method:**	624
		MethodJoinID:	MJ158

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Primary Review: KM 4/22/11

Secondary Review: HB 4/20/11

Quantitation Report

Bottle ID:		Tier:		Matrix:	WATER
Prod Code:	624 VOC_FP	Collect Date:		Receive Date:	04/20/2011

Analysis Lot:	KWG1103523	Prep Lot:	KWG1103524	Report Group:	
Analysis Method:	624	Prep Method:	METHOD		
Prep Ref:	1012862	Prep Date:	04/19/2011		

Quant Method:	J:\MS23\METHODS\032911624BAY	Calibration ID:	CAL10443
Title:			
Tune Ref:	J:\MS23\DATA\041911BAYW\0419F005.D	Method ID:	MJ158
MB Ref:	J:\MS23\DATA\041911BAYW\0419F014.D	Quant based on Method	

Data File:	J:\MS23\DATA\041911BAYW\0419F010.D			Instrument:	MS23
Acqu Date:	04/19/2011 13:41	Quant Date:	04/20/2011 13:06	Vial:	6
Run Type:	DMS			Dilution:	1.0
Lab ID:	KWG1103524-2 – K1103044-002DMS			Soln Conc. Units:	PPB

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	Fluorobenzene	5.94	0.00	96	553595	10.00	OK
2	Chlorobenzene-d5	9.34	0.00	82	226047	10.00	OK
3	1,4-Dichlorobenzene-d4	11.75	0.00	152	202347	10.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	Dibromofluoromethane	5.12	0.01	0.00	113	123327	10.30	103	61-121	OK
1	1,2-Dichloroethane-d4	5.59	0.00	0.00	65	142059	9.44	94	54-125	OK
1	Toluene-d8	7.77	0.00	0.00	98	542232	10.37	104	72-122	OK
2	4-Bromofluorobenzene	10.58	0.00	0.00	95	178655	9.60	96	70-120	OK

Final Conc. Units: ug/L

Target Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	Final Conc	Q	Rpt?
1	Dichlorodifluoromethane	1.20		0.00	85	175019	9.01	9.01		
1	Chloromethane	1.36		0.00	50	268269	9.51	9.51		
1	Vinyl Chloride	1.43		0.00	62	227943	10.17	10.2		
1	Bromomethane	1.70		0.00	96	91691	11.18	11.2		
1	Chloroethane	1.78		0.00	49	41756	10.68	10.7		
1	Trichlorofluoromethane	1.97		0.00	101	247373	8.93	8.93		
1	Acrolein	2.42	0.01	0.00	56	147812	98.12	98.1		
1	Trichlorotrifluoroethane	2.41		0.00	151	109084	8.94	8.94		
1	1,1-Dichloroethene	2.45		0.00	96	136651	10.22	10.2		
1	Acetone	2.57	0.01	0.00	43	122178	58.15	58.2		
1	Carbon Disulfide	2.64		0.00	76	923662	16.65	16.7		
1	Methylene Chloride	2.98		0.00	84	126002	9.26	9.26		
1	Acrylonitrile	3.33		0.00	53	24594	10.06	10.1		
1	trans-1,2-Dichloroethene	3.21		0.00	96	125640	9.08	9.08		

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Data File:	J:\MS23\DATA\041911BAYW\0419F010.D			Instrument:	MS23
Acqu Date:	04/19/2011 13:41	Quant Date:	04/20/2011 13:06	Vial:	6
Run Type:	DMS			Dilution:	1.0
Lab ID:	KWG1103524-2 – K1103044-002DMS			Soln Conc. Units:	PPB

Target Compounds — Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,1-Dichloroethane	3.74	0.01	0.00	63	241890	8.83	8.83		
1	Vinyl Acetate	3.79		0.00	86	29480	18.74	18.7		
1	cis-1,2-Dichloroethene	4.46		0.00	96	130452	8.78	8.78		
1	2-Butanone (MEK)	4.51		0.00	72	29025	47.14	47.1		
1	Chloroform	4.88	-0.01	0.00	83	226162	9.15	9.15		
1	1,1,1-Trichloroethane (TCA)	5.05		0.00	97	181683	7.95	7.95		
1	Carbon Tetrachloride	5.21		0.00	117	155243	8.82	8.82		
1	Benzene	5.54		0.00	78	525980	9.04	9.04		
1	1,2-Dichloroethane (EDC)	5.69		0.00	62	163561	9.24	9.24		
1	Trichloroethene (TCE)	6.37		0.00	95	127478	8.67	8.67		
1	1,2-Dichloropropane	6.70		0.00	63	127746	8.62	8.62		
1	Bromodichloromethane	7.03		0.00	83	149969	8.98	8.98		
1	2-Chloroethyl Vinyl Ether	7.55	0.13	0.02	63	1273	0.2500	0.250	J	
1	cis-1,3-Dichloropropene	7.55		0.00	75	161596	7.96	7.96		
1	4-Methyl-2-pentanone (MIBK)	8.65		0.00	58	80570	37.19	37.2		
1	Toluene	7.84		0.00	92	332298	9.16	9.16		
2	trans-1,3-Dichloropropene	8.20		0.00	75	116075	7.04	7.04		
2	1,1,2-Trichloroethane	8.39		0.00	83	70525	9.80	9.80		
2	Tetrachloroethene (PCE)	8.40		0.00	164	102304	9.55	9.55		
2	2-Hexanone	8.65		0.00	43	177346	39.38	39.4		
2	Dibromochloromethane	8.77		0.00	129	83729	9.09	9.09		
2	Chlorobenzene	9.37		0.00	112	353695	9.67	9.67		
2	Ethylbenzene	9.47		0.00	106	192460	9.26	9.26		
2	m,p-Xylenes	9.59		0.00	106	480295	18.57	18.6		
2	o-Xylene	10.00	-0.01	0.00	106	217554	8.88	8.88		
2	Styrene	10.04		0.00	103	166430m	8.90	8.90		
2	Bromoform	10.25		0.00	173	40303	9.12	9.12		
3	1,1,2,2-Tetrachloroethane	10.78		0.00	83	80695	8.98	8.98		
3	1,3-Dichlorobenzene	11.67		0.00	146	276239	9.65	9.65		
3	1,4-Dichlorobenzene	11.77		0.00	146	277676	9.68	9.68		
3	1,2-Dichlorobenzene	12.14		0.00	146	244105	9.80	9.80		
	Isopropyl Acetate				0	0		10	U	NR
	Ethyl Acetate				0	0		10	U	NR
	Bis(chloromethyl) Ether				0	0		10	U	NR
	Amyl Acetate				0	0		10	U	NR

Prep Amount:	10 ml	Dilution:	1.0
Prep Final Vol:	10 ml	Unit Factor:	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
I: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\041911BAYW\0419F010.D Vial: 6
Acq On : 19 Apr 2011 1:41 pm Operator: KR
Sample : K3044-002DMS Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Apr 20 13:06:22 2011 Quant Results File: 032911624BAYW.R

Quant Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 12:44:23 2011
Response via : Initial Calibration
DataAcq Meth : 8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	5.94	96	553595	10.00	PPB	0.00
35) Chlorobenzene-d5	9.34	82	226047	10.00	PPB	0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	202347	10.00	PPB	0.00
System Monitoring Compounds						
22) Dibromofluoromethane	5.12	113	123327	10.30	PPB	0.00
Spiked Amount 10.000			Recovery	=	103.00%	
24) 1,2-Dichloroethane-d4	5.59	65	142059	9.44	PPB	0.00
Spiked Amount 10.000			Recovery	=	94.40%	
33) Toluene-d8	7.77	98	542232	10.37	PPB	0.00
Spiked Amount 10.000			Recovery	=	103.70%	
47) 4-Bromofluorobenzene	10.58	95	178655	9.60	PPB	0.00
Spiked Amount 10.000			Recovery	=	96.00%	
Target Compounds						Qvalue
2) Dichlorodifluoromethane	1.20	85	175019	9.01	PPB	100
3) Chloromethane	1.36	50	268269	9.51	PPB	99
4) Vinyl Chloride	1.43	62	227943	10.17	PPB	99
5) Bromomethane	1.70	96	91691	11.18	PPB	94
6) Chloroethane	1.78	49	41756	10.68	PPB	95
7) Trichlorofluoromethane	1.97	101	247373	8.93	PPB	97
8) Acrolein	2.42	56	147812	98.12	PPB	100
9) Trichlorotrifluoroethane	2.41	151	109084	8.94	PPB	97
10) 1,1-Dichloroethene	2.45	96	136651	10.22	PPB	98
11) Acetone	2.57	43	122178	58.15	PPB	97
12) Carbon Disulfide	2.64	76	923662	16.65	PPB	99
13) Methylene Chloride	2.98	84	126002	9.26	PPB	98
14) Acrylonitrile	3.33	53	24594	10.06	PPB	95
15) trans-1,2-Dichloroethene	3.21	96	125640	9.08	PPB	94
16) 1,1-Dichloroethane	3.74	63	241890	8.83	PPB	99
17) Vinyl Acetate	3.79	86	29480	18.74	PPB #	86
18) cis-1,2-Dichloroethene	4.46	96	130452	8.78	PPB	97
19) 2-Butanone	4.51	72	29025	47.14	PPB #	89
20) Chloroform	4.88	83	226162	9.15	PPB	99
21) 1,1,1-Trichloroethane	5.05	97	181683	7.95	PPB	97
23) Carbon Tetrachloride	5.21	117	155243	8.82	PPB	97
25) Benzene	5.54	78	525980	9.04	PPB	99
26) 1,2-Dichloroethane	5.69	62	163561	9.24	PPB	98
27) Trichloroethene	6.37	95	127478	8.67	PPB	97
28) 1,2-Dichloropropane	6.70	63	127746	8.62	PPB	98
29) Bromodichloromethane	7.03	83	149969	8.98	PPB	99
30) 2-Chloroethyl Vinyl Ether	7.55	63	1273	0.25	PPB #	44

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\041911BAYW\0419F010.D
Acq On : 19 Apr 2011 1:41 pm
Sample : K3044-002DMS
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 20 13:06:22 2011

Vial: 6
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624BAYW.R

Quant Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 12:44:23 2011
Response via : Initial Calibration
DataAcq Meth : 8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
31) cis-1,3-Dichloropropene	7.55	75	161596	7.96	PPB	98
32) 4-Methyl-2-pentanone (MIBK	8.65	58	80570	37.19	PPB	99
34) Toluene	7.84	92	332298	9.16	PPB	95
36) trans-1,3-Dichloropropene	8.20	75	116075	7.04	PPB	99
37) 1,1,2-Trichloroethane	8.39	83	70525	9.80	PPB	99
38) Tetrachloroethene	8.40	164	102304	9.55	PPB	94
39) 2-Hexanone	8.65	43	177346	39.38	PPB	99
40) Dibromochloromethane	8.77	129	83729	9.09	PPB	96
41) Chlorobenzene	9.37	112	353695	9.67	PPB	99
42) Ethylbenzene	9.47	106	192460	9.26	PPB	99
43) m,p-Xylenes	9.59	106	480295	18.57	PPB	99
44) o-Xylene	10.00	106	217554	8.88	PPB	97
45) Styrene	10.04	103	166430m	8.90	PPB	
46) Bromoform	10.25	173	40303	9.12	PPB	96
49) 1,1,2,2-Tetrachloroethane	10.78	83	80695	8.98	PPB	92
51) 1,3-Dichlorobenzene	11.67	146	276239	9.65	PPB	98
52) 1,4-Dichlorobenzene	11.77	146	277676	9.68	PPB	99
53) 1,2-Dichlorobenzene	12.14	146	244105	9.80	PPB	97

(#) = qualifier out of range (m) = manual integration

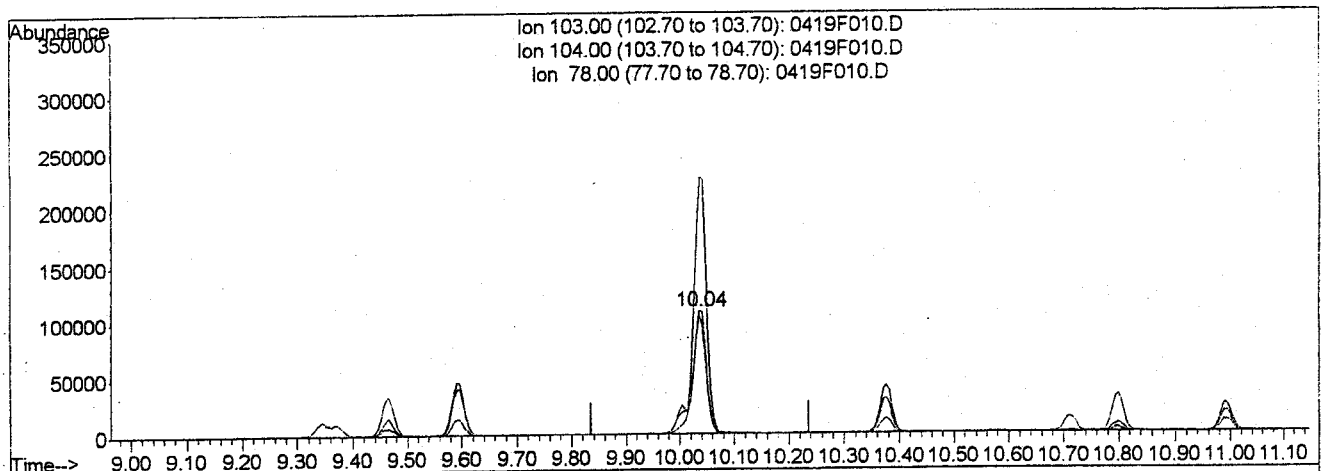
Quantitation Report (Qedit)

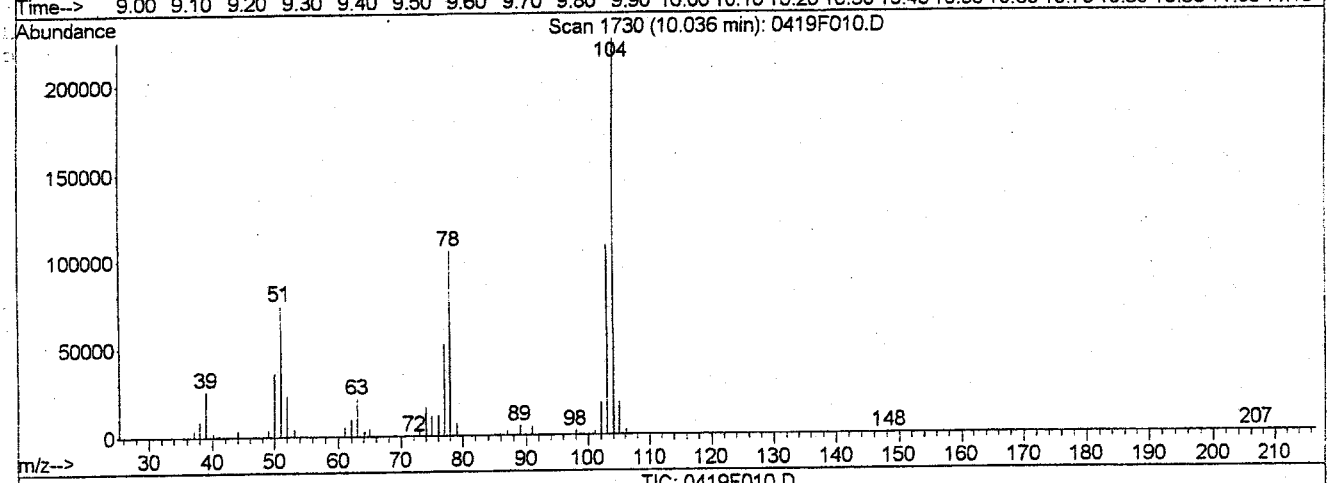
Data File : J:\MS23\DATA\041911BAYW\0419F010.D
Acq On : 19 Apr 2011 1:41 pm
Sample : K3044-002DMS
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 20 13:06 2011

Vial: 6
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 12:44:23 2011
Response via : Multiple Level Calibration





TIC: 0419F010.D

(45) Styrene (T)

10.04min 10.54PPB

response 197135

Ion	Exp%	Act%
103.00	100	100
104.00	217.10	208.41
78.00	101.20	97.12
0.00	0.00	0.00

0419F010.D 032911624BAYW.M Wed Apr 20 13:06:29 2011

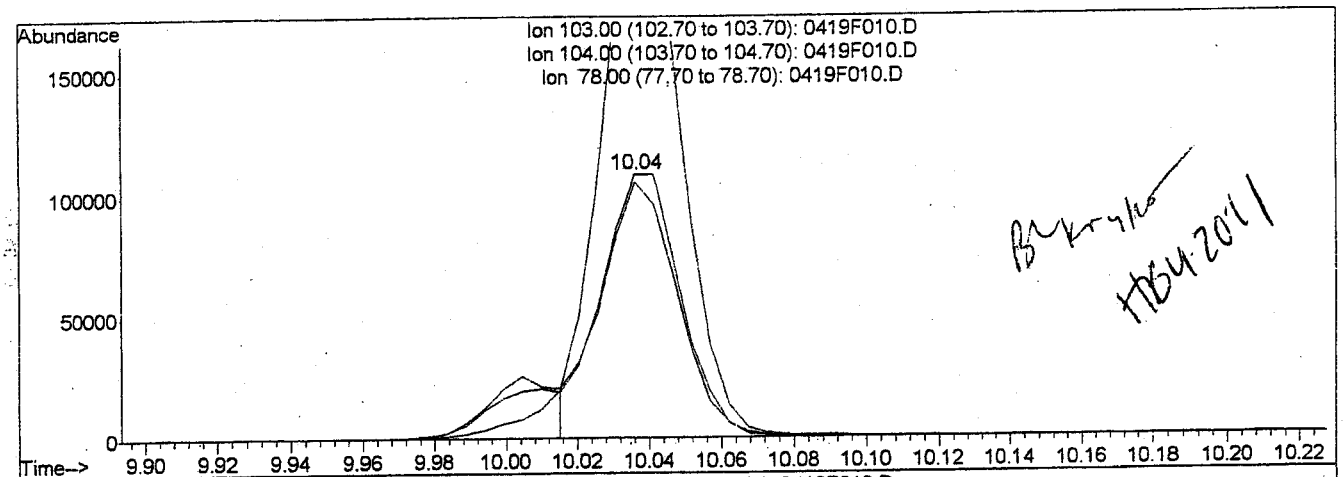
Quantitation Report (Qedit)

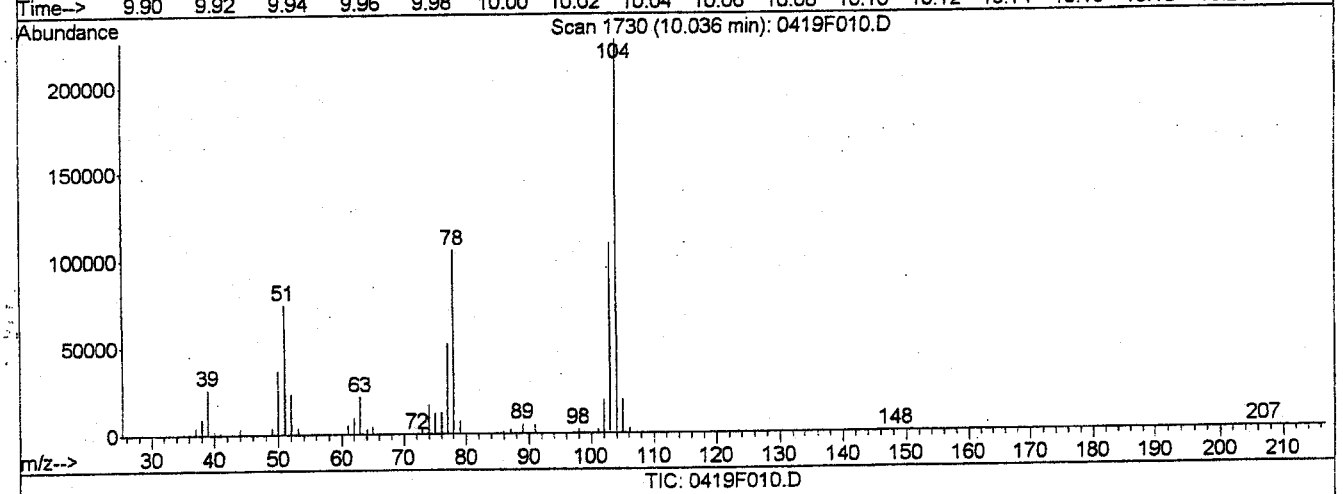
Data File : J:\MS23\DATA\041911BAYW\0419F010.D
Acq On : 19 Apr 2011 1:41 pm
Sample : K3044-002DMS
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 20 13:06 2011

Vial: 6
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 12:44:23 2011
Response via : Multiple Level Calibration





(45) Styrene (T)

10.04min 8.90PPB m

response 166430

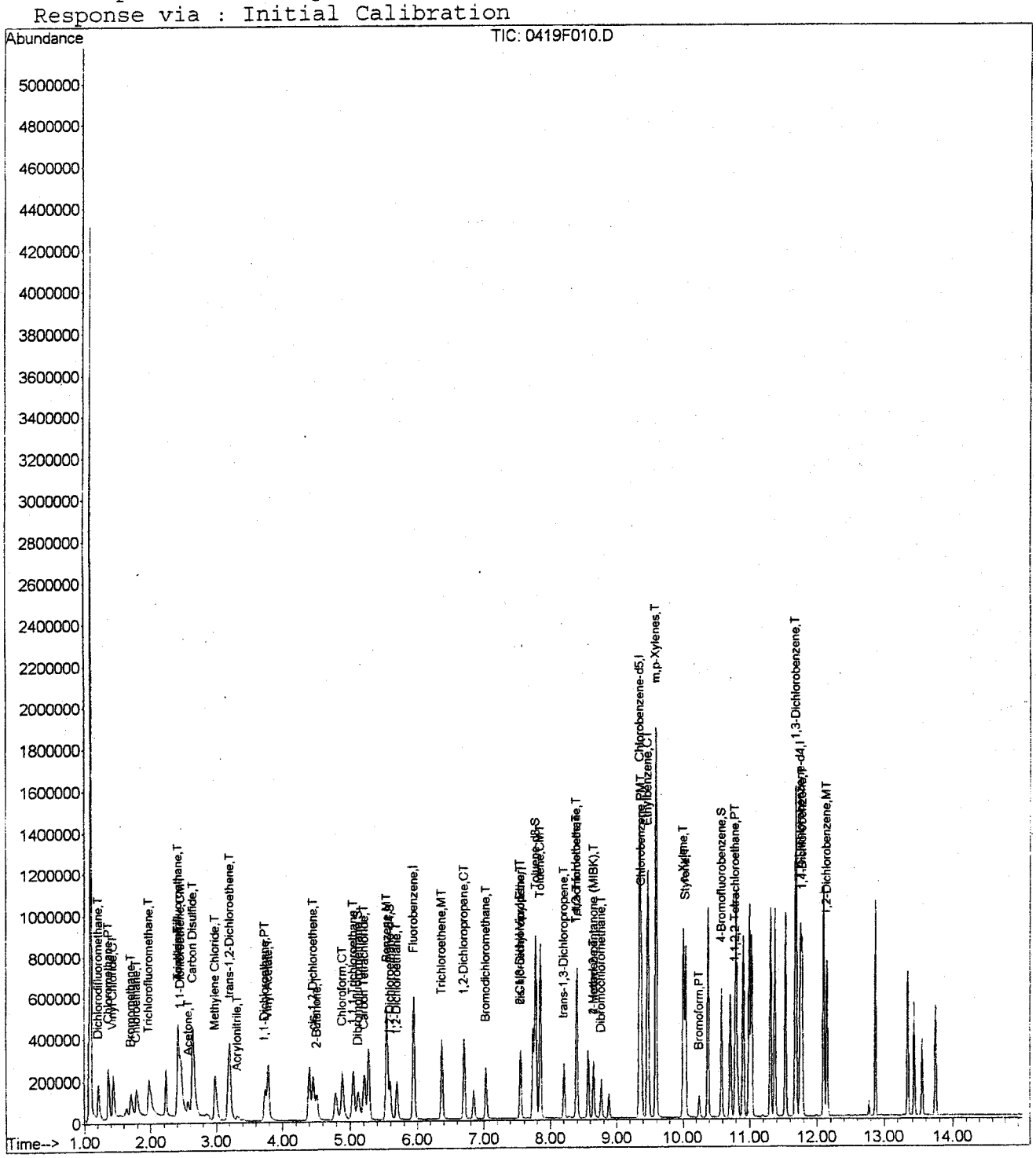
Ion	Exp%	Act%
103.00	100	100
104.00	217.10	208.59
78.00	101.20	97.12
0.00	0.00	0.00

0419F010.D 032911624BAYW.M Wed Apr 20 13:06:34 2011

Data File : J:\MS23\DATA\041911BAYW\0419F010.D
Acq On : 19 Apr 2011 1:41 pm
Sample : K3044-002DMS
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 20 13:06 2011

Vial: 6
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624BAY

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 12:44:23 2011
Response via : Initial Calibration



COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	04/19/2011
		Date Analyzed:	04/19/2011

Volatile Organic Compounds

Sample Name:	Lab Control Sample	**Units:**	ug/L
Lab Code:	KWG1103524-3	**Basis:**	NA
File ID:	J:\MS23\DATA\041911BAYW\0419F007.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103524
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-71-8	Dichlorodifluoromethane	10.5		0.50	0.40	
74-87-3	Chloromethane	11.7		0.50	0.035	
75-01-4	Vinyl Chloride	12.6		0.25	0.053	
74-83-9	Bromomethane	12.2		0.50	0.32	
75-00-3	Chloroethane	12.7		0.50	0.32	
75-69-4	Trichlorofluoromethane	10.8		0.50	0.048	
76-13-1	Trichlorotrifluoroethane	10.7		0.50	0.077	
75-35-4	1,1-Dichloroethene	12.2		0.50	0.37	
75-15-0	Carbon Disulfide	20.5		0.50	0.048	
75-09-2	Methylene Chloride	10.7		0.50	0.093	
156-60-5	trans-1,2-Dichloroethene	10.9		0.50	0.039	
156-59-2	cis-1,2-Dichloroethene	10.3		0.50	0.042	
78-93-3	2-Butanone (MEK)	53.2		20	3.4	
75-34-3	1,1-Dichloroethane	10.5		0.50	0.041	
67-66-3	Chloroform	10.8		0.50	0.038	
71-55-6	1,1,1-Trichloroethane (TCA)	9.71		0.50	0.044	
56-23-5	Carbon Tetrachloride	10.8		0.50	0.26	
71-43-2	Benzene	10.7		0.50	0.040	
107-06-2	1,2-Dichloroethane (EDC)	10.4		0.50	0.038	
108-05-4	Vinyl Acetate	17.1		10	0.21	
79-01-6	Trichloroethene (TCE)	10.4		0.50	0.044	
78-87-5	1,2-Dichloropropane	10.1		0.50	0.044	
75-27-4	Bromodichloromethane	10.7		0.50	0.047	
110-75-8	2-Chloroethyl Vinyl Ether	10.0		5.0	0.12	
10061-02-6	trans-1,3-Dichloropropene	8.13		0.50	0.045	
108-10-1	4-Methyl-2-pentanone (MIBK)	42.1		20	2.8	
591-78-6	2-Hexanone	44.5		20	1.8	
108-88-3	Toluene	10.7		0.50	0.039	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	04/19/2011
		Date Analyzed:	04/19/2011

Volatile Organic Compounds

Sample Name:	Lab Control Sample	**Units:**	ug/L
Lab Code:	KWG1103524-3	**Basis:**	NA
File ID:	J:\MS23\DATA\041911BAYW\0419F007.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103524
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
10061-01-5	cis-1,3-Dichloropropene	**9.48**		0.50	0.035	
79-00-5	1,1,2-Trichloroethane	**10.6**		0.50	0.072	
127-18-4	Tetrachloroethene (PCE)	**11.3**		0.50	0.043	
124-48-1	Dibromochloromethane	**10.7**		0.50	0.081	
108-90-7	Chlorobenzene	**11.2**		0.50	0.031	
100-41-4	Ethylbenzene	**10.8**		0.50	0.040	
100-42-5	Styrene	**10.5**		0.50	0.025	
136777-61-2	m,p-Xylenes	**21.6**		1.0	0.14	
95-47-6	o-Xylene	**10.3**		0.50	0.035	
75-25-2	Bromoform	**11.0**		0.50	0.11	
67-64-1	Acetone	**69.5**		20	4.3	
79-34-5	1,1,2,2-Tetrachloroethane	**9.50**		0.50	0.086	
541-73-1	1,3-Dichlorobenzene	**11.0**		0.50	0.071	
106-46-7	1,4-Dichlorobenzene	**11.0**		0.50	0.073	
95-50-1	1,2-Dichlorobenzene	**10.8**		0.50	0.086	
107-02-8	Acrolein†	**97.3**		10	2.1	
107-13-1	Acrylonitrile†	**11.0**		5.0	0.28	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Toluene-d8	105	72-122	04/19/11	Acceptable
4-Bromofluorobenzene	98	70-120	04/19/11	Acceptable
Dibromofluoromethane	105	61-121	04/19/11	Acceptable

Comments:

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	04/19/2011
		Date Analyzed:	04/19/2011

Volatile Organic Compounds

Sample Name:	Lab Control Sample	**Units:**	ug/L
Lab Code:	KWG1103524-3	**Basis:**	NA
File ID:	J:\MS23\DATA\041911BAYW\0419F007.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103524
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount:	10 ml
% Solids:	NA
Dilution Factor:	1

† Analyte Comments

Acrolein	This compound is unstable under normal conditions. As per EPA Method 624 guidelines, the reported value was an estimate.
Acrylonitrile	This compound is unstable under normal conditions. As per EPA Method 624 guidelines, the reported value was an estimate.

Comments:

Exception Report

Data File:	J:\MS23\DATA\041911BAYW\0419F007.D	**Date Acquired:**	04/19/2011 11:47
Lab ID:	KWG1103524-3	**Date Quantitated:**	04/20/2011 13:04
RunType:	LCS	**Batch ID:**	KWG1103523
Matrix:	WATER	**Analysis Method:**	624
		MethodJoinID:	MJ158

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Primary Review: KA 4/20/11

Secondary Review: HB 4-~~20~~ 21-11

HB 4-21-11

Printed: 04/20/2011 13:35:16

u:\Stealth\Crystal.rpt\except2.rpt

Quantitation Report

Bottle ID:		Tier:		Matrix:	WATER
Prod Code:	624 VOC_FP	Collect Date:		Receive Date:	04/20/2011

Analysis Lot:	KWG1103523	Prep Lot:	KWG1103524	Report Group:	
Analysis Method:	624	Prep Method:	METHOD		
Prep Ref:	1012863	Prep Date:	04/19/2011		

Quant Method:	J:\MS23\METHODS\032911624BAY	Calibration ID:	CAL10443
Title:			
Tune Ref:	J:\MS23\DATA\041911BAYW\0419F005.D	Method ID:	MJ158
MB Ref:	J:\MS23\DATA\041911BAYW\0419F014.D	Quant based on Method	

Data File:	J:\MS23\DATA\041911BAYW\0419F007.D			Instrument:	MS23
Acqu Date:	04/19/2011 11:47	Quant Date:	04/20/2011 13:04	Vial:	4
Run Type:	LCS			Dilution:	1.0
Lab ID:	KWG1103524-3			Soln Conc. Units:	PPB

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	Fluorobenzene	5.94	0.00	96	542881	10.00	OK
2	Chlorobenzene-d5	9.34	0.00	82	224691	10.00	OK
3	1,4-Dichlorobenzene-d4	11.75	0.00	152	204337	10.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	Dibromofluoromethane	5.12	0.01	0.00	113	123646	10.53	105	61-121	OK
1	1,2-Dichloroethane-d4	5.59	0.00	0.00	65	143478	9.72	97	54-125	OK
1	Toluene-d8	7.77	0.00	0.00	98	540426	10.54	105	72-122	OK
2	4-Bromofluorobenzene	10.58	0.00	0.00	95	180335	9.75	98	70-120	OK

Final Conc. Units: ug/L

Target Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	Final Conc	Q	Rpt?
1	Dichlorodifluoromethane	1.20		0.00	85	199506	10.47	10.5		
1	Chloromethane	1.36		0.00	50	322110	11.65	11.7		
1	Vinyl Chloride	1.43		0.00	62	276983	12.61	12.6		
1	Bromomethane	1.70		0.00	96	97983	12.19	12.2		
1	Chloroethane	1.78		0.00	49	48668	12.69	12.7		
1	Trichlorofluoromethane	1.98	0.01	0.00	101	293264	10.80	10.8		
1	Acrolein	2.42	0.01	0.00	56	143749	97.31	97.3		
1	Trichlorotrifluoroethane	2.41		0.00	151	128128	10.70	10.7		
1	1,1-Dichloroethene	2.45		0.00	96	159600	12.18	12.2		
1	Acetone	2.56		0.00	43	143253	69.53	69.5		
1	Carbon Disulfide	2.64		0.00	76	1116269	20.52	20.5		
1	Methylene Chloride	2.98		0.00	84	142691	10.69	10.7		
1	Acrylonitrile	3.33		0.00	53	26363	10.99	11.0		
1	trans-1,2-Dichloroethene	3.21		0.00	96	148063	10.92	10.9		

U: Undetected at or above MDL
I: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Data File:	J:\MS23\DATA\041911BAYW\0419F007.D			Instrument:	MS23
Acqu Date:	04/19/2011 11:47	Quant Date:	04/20/2011 13:04	Vial:	4
Run Type:	LCS			Dilution:	1.0
Lab ID:	KWG1103524-3			Soln Conc. Units:	PPB

Target Compounds — Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,1-Dichloroethane	3.73		0.00	63	281553	10.49	10.5		
1	Vinyl Acetate	3.79		0.00	86	26403	17.12	17.1		
1	cis-1,2-Dichloroethene	4.46		0.00	96	150610	10.33	10.3		
1	2-Butanone (MEK)	4.52	0.01	0.00	72	32146	53.23	53.2		
1	Chloroform	4.88	-0.01	0.00	83	262068	10.81	10.8		
1	1,1,1-Trichloroethane (TCA)	5.05		0.00	97	217606	9.71	9.71		
1	Carbon Tetrachloride	5.21		0.00	117	186041	10.78	10.8		
1	Benzene	5.54		0.00	78	608150	10.66	10.7		
1	1,2-Dichloroethane (EDC)	5.69		0.00	62	179830	10.36	10.4		
1	Trichloroethene (TCE)	6.37		0.00	95	149989	10.40	10.4		
1	1,2-Dichloropropane	6.70		0.00	63	146375	10.08	10.1		
1	Bromodichloromethane	7.03		0.00	83	174644	10.66	10.7		
1	2-Chloroethyl Vinyl Ether	7.42		0.00	63	49611	10.01	10.0		
1	cis-1,3-Dichloropropene	7.55		0.00	75	188659	9.48	9.48		
1	4-Methyl-2-pentanone (MIBK)	8.65		0.00	58	89353	42.05	42.1		
1	Toluene	7.84		0.00	92	379276	10.66	10.7		
2	trans-1,3-Dichloropropene	8.20		0.00	75	133234	8.13	8.13		
2	1,1,2-Trichloroethane	8.39		0.00	83	75961	10.62	10.6		
2	Tetrachloroethene (PCE)	8.40		0.00	164	120468	11.31	11.3		
2	2-Hexanone	8.65		0.00	43	199167	44.49	44.5		
2	Dibromochloromethane	8.77		0.00	129	98228	10.73	10.7		
2	Chlorobenzene	9.37		0.00	112	407716	11.22	11.2		
2	Ethylbenzene	9.47		0.00	106	222318	10.77	10.8		
2	m,p-Xylenes	9.59		0.00	106	554747	21.57	21.6		
2	o-Xylene	10.00	-0.01	0.00	106	250529	10.28	10.3		
2	Styrene	10.04		0.00	103	195925m	10.54	10.5		
2	Bromoform	10.25		0.00	173	48182	10.97	11.0		
3	1,1,2,2-Tetrachloroethane	10.78		0.00	83	86230	9.50	9.50		
3	1,3-Dichlorobenzene	11.67		0.00	146	317735	10.99	11.0		
3	1,4-Dichlorobenzene	11.77		0.00	146	318642	11.00	11.0		
3	1,2-Dichlorobenzene	12.14		0.00	146	272606	10.83	10.8		
	Isopropyl Acetate				0	0		10	U	NR
	Ethyl Acetate				0	0		10	U	NR
	Bis(chloromethyl) Ether				0	0		10	U	NR
	Amyl Acetate				0	0		10	U	NR

Prep Amount: 10 ml **Dilution:** 1.0
Prep Final Vol: 10 ml **Unit Factor:** 1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\041911BAYW\0419F007.D
Acq On : 19 Apr 2011 11:47 am
Sample : 624 LCS
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 20 13:04:06 2011

Vial: 4
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: 032911624BAYW.R

Quant Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 12:44:23 2011
Response via : Initial Calibration
DataAcq Meth : 8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	5.94	96	542881	10.00	PPB	0.00
35) Chlorobenzene-d5	9.34	82	224691	10.00	PPB	0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	204337	10.00	PPB	0.00
System Monitoring Compounds						
22) Dibromofluoromethane	5.12	113	123646	10.53	PPB	0.00
Spiked Amount 10.000			Recovery	=	105.30%	
24) 1,2-Dichloroethane-d4	5.59	65	143478	9.72	PPB	0.00
Spiked Amount 10.000			Recovery	=	97.20%	
33) Toluene-d8	7.77	98	540426	10.54	PPB	0.00
Spiked Amount 10.000			Recovery	=	105.40%	
47) 4-Bromofluorobenzene	10.58	95	180335	9.75	PPB	0.00
Spiked Amount 10.000			Recovery	=	97.50%	

Target Compounds							Qvalue
2) Dichlorodifluoromethane	1.20	85	199506	10.47	PPB		97
3) Chloromethane	1.36	50	322110	11.65	PPB		99
4) Vinyl Chloride	1.43	62	276983	12.61	PPB		100
5) Bromomethane	1.70	96	97983	12.19	PPB		92
6) Chloroethane	1.78	49	48668	12.69	PPB		90
7) Trichlorofluoromethane	1.98	101	293264	10.80	PPB		98
8) Acrolein	2.42	56	143749	97.31	PPB		98
9) Trichlorotrifluoroethane	2.41	151	128128	10.70	PPB		95
10) 1,1-Dichloroethene	2.45	96	159600	12.18	PPB		89
11) Acetone	2.56	43	143253	69.53	PPB		98
12) Carbon Disulfide	2.64	76	1116269	20.52	PPB		100
13) Methylene Chloride	2.98	84	142691	10.69	PPB		99
14) Acrylonitrile	3.33	53	26363	10.99	PPB		98
15) trans-1,2-Dichloroethene	3.21	96	148063	10.92	PPB		97
16) 1,1-Dichloroethane	3.73	63	281553	10.49	PPB		98
17) Vinyl Acetate	3.79	86	26403	17.12	PPB	#	86
18) cis-1,2-Dichloroethene	4.46	96	150610	10.33	PPB		97
19) 2-Butanone	4.52	72	32146	53.23	PPB		99
20) Chloroform	4.88	83	262068	10.81	PPB		97
21) 1,1,1-Trichloroethane	5.05	97	217606	9.71	PPB		96
23) Carbon Tetrachloride	5.21	117	186041	10.78	PPB		99
25) Benzene	5.54	78	608150	10.66	PPB		99
26) 1,2-Dichloroethane	5.69	62	179830	10.36	PPB		97
27) Trichloroethene	6.37	95	149989	10.40	PPB		97
28) 1,2-Dichloropropane	6.70	63	146375	10.08	PPB		98
29) Bromodichloromethane	7.03	83	174644	10.66	PPB		99
30) 2-Chloroethyl Vinyl Ether	7.42	63	49611	10.01	PPB		96

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\041911BAYW\0419F007.D Vial: 4
Acq On : 19 Apr 2011 11:47 am Operator: KR
Sample : 624 LCS Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Apr 20 13:04:06 2011 Quant Results File: 032911624BAYW.R

Quant Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 12:44:23 2011
Response via : Initial Calibration
DataAcq Meth : 8260

	Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
31)	cis-1,3-Dichloropropene	7.55	75	188659	9.48	PPB	96
32)	4-Methyl-2-pentanone (MIBK	8.65	58	89353	42.05	PPB	96
34)	Toluene	7.84	92	379276	10.66	PPB	99
36)	trans-1,3-Dichloropropene	8.20	75	133234	8.13	PPB	97
37)	1,1,2-Trichloroethane	8.39	83	75961	10.62	PPB	98
38)	Tetrachloroethene	8.40	164	120468	11.31	PPB	96
39)	2-Hexanone	8.65	43	199167	44.49	PPB	97
40)	Dibromochloromethane	8.77	129	98228	10.73	PPB	99
41)	Chlorobenzene	9.37	112	407716	11.22	PPB	97
42)	Ethylbenzene	9.47	106	222318	10.77	PPB	99
43)	m,p-Xylenes	9.59	106	554747	21.57	PPB	99
44)	o-Xylene	10.00	106	250529	10.28	PPB	95
45)	Styrene	10.04	103	195925m	10.54	PPB	
46)	Bromoform	10.25	173	48182	10.97	PPB	96
49)	1,1,2,2-Tetrachloroethane	10.78	83	86230	9.50	PPB	99
51)	1,3-Dichlorobenzene	11.67	146	317735	10.99	PPB	98
52)	1,4-Dichlorobenzene	11.77	146	318642	11.00	PPB	99
53)	1,2-Dichlorobenzene	12.14	146	272606	10.83	PPB	95

(#) = qualifier out of range (m) = manual integration

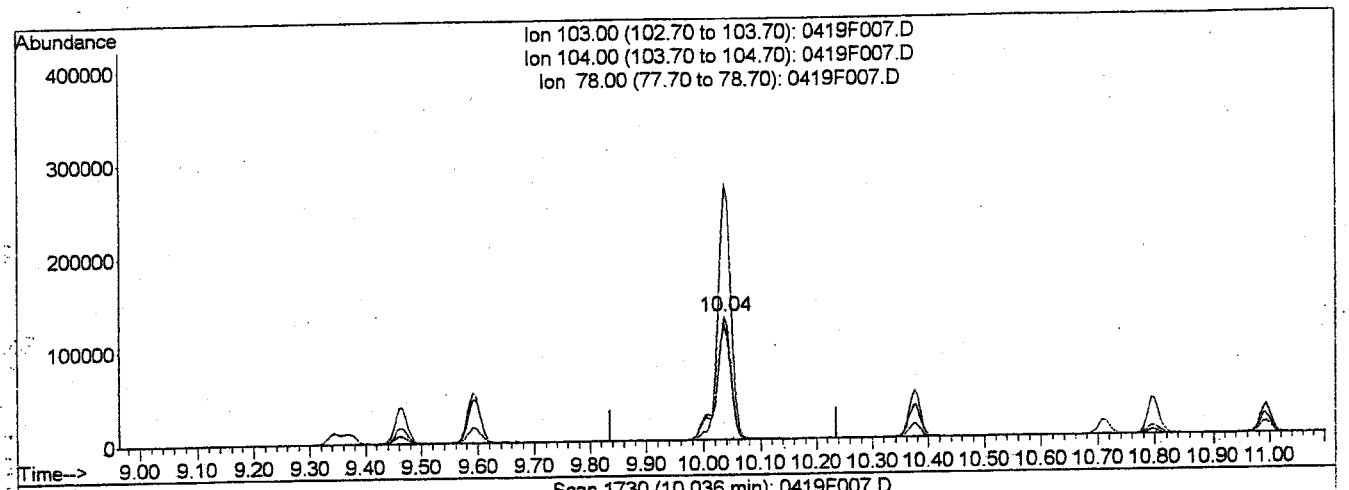
Quantitation Report (Qedit)

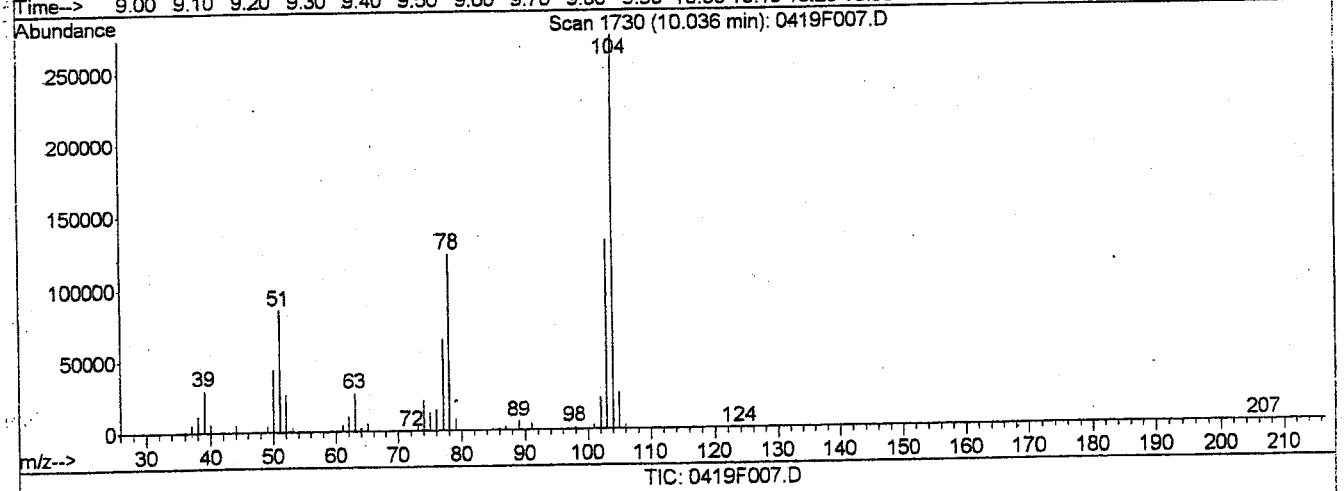
Data File : J:\MS23\DATA\041911BAYW\0419F007.D
Acq On : 19 Apr 2011 11:47 am
Sample : 624 LCS
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 20 13:04 2011

Vial: 4
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 12:44:23 2011
Response via : Multiple Level Calibration





(45) Styrene (T)

10.04min 12.49PPB

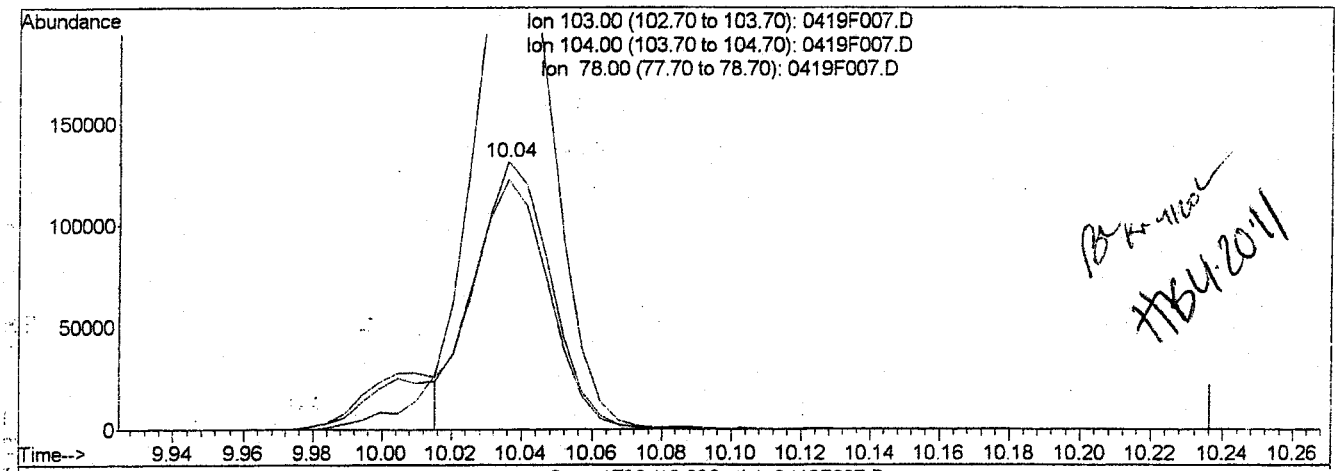
response 232049

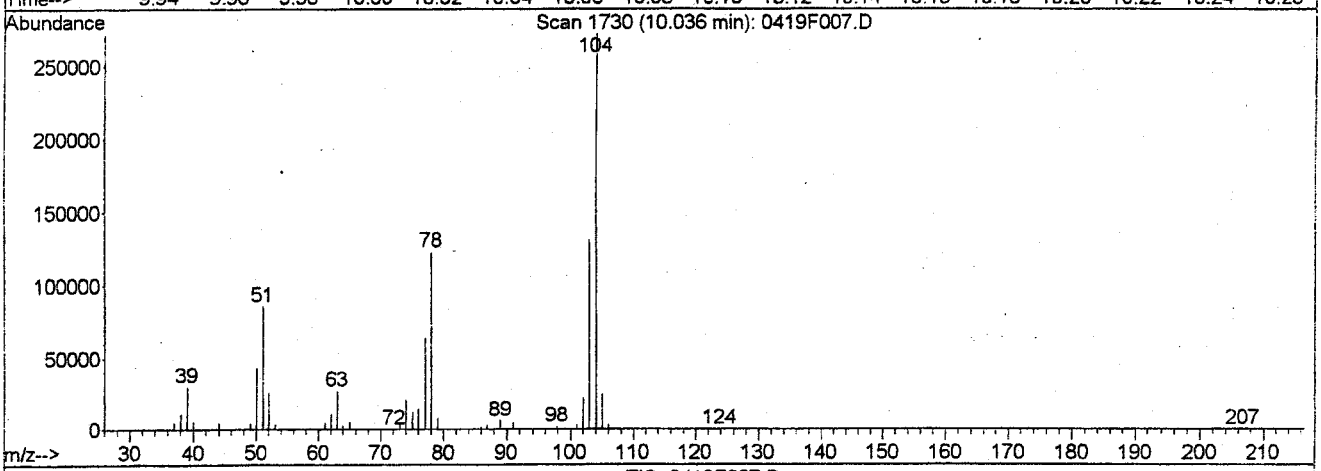
Ion	Exp%	Act%
103.00	100	100
104.00	217.10	208.06
78.00	101.20	93.62
0.00	0.00	0.00

Quantitation Report (Qedit)

Data File : J:\MS23\DATA\041911BAYW\0419F007.D Vial: 4
Acq On : 19 Apr 2011 11:47 am Operator: KR
Sample : 624 LCS Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Apr 20 13:04 2011 Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 12:44:23 2011
Response via : Multiple Level Calibration





(45) Styrene (T)

10.04min 10.54PPB m

response 195925

Ion	Exp%	Act%
103.00	100	100
104.00	217.10	208.26
78.00	101.20	93.62
0.00	0.00	0.00

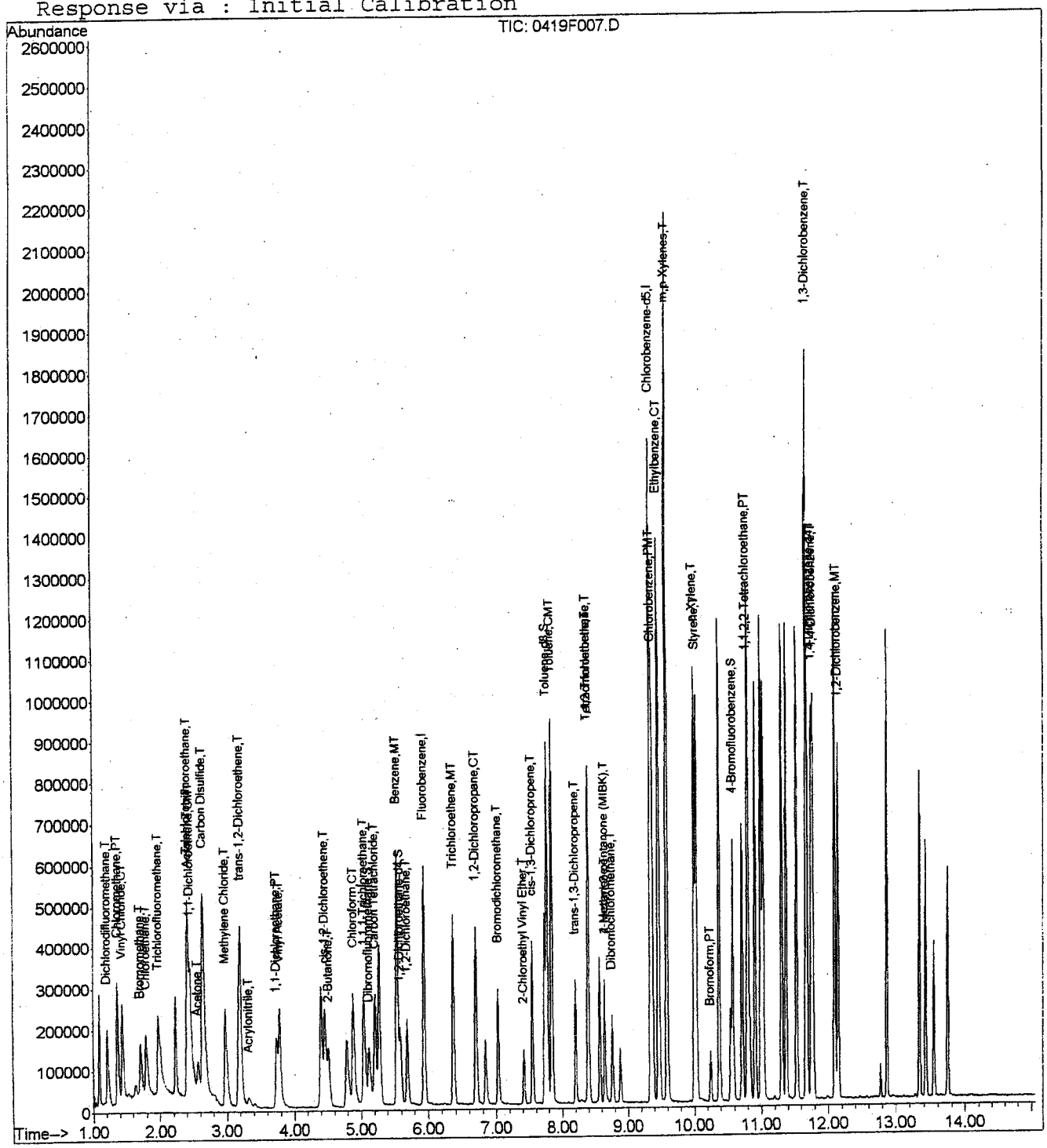
0419F007.D 032911624BAYW.M Wed Apr 20 13:04:19 2011

Data File : J:\MS23\DATA\041911BAYW\0419F007.D
Acq On : 19 Apr 2011 11:47 am
Sample : 624 LCS
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 20 13:04 2011

Vial: 4
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: 032911624BAY

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 12:44:23 2011
Response via : Initial Calibration



COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	04/20/2011
		Date Analyzed:	04/20/2011

Volatile Organic Compounds

Sample Name:	Lab Control Sample	**Units:**	ug/L
Lab Code:	KWG1103584-3	**Basis:**	NA
File ID:	J:\MS23\DATA\042011BAYW\0420F003.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103584
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-71-8	Dichlorodifluoromethane	11.1		0.50	0.40	
74-87-3	Chloromethane	11.1		0.50	0.035	
75-01-4	Vinyl Chloride	12.3		0.25	0.053	
74-83-9	Bromomethane	13.8		0.50	0.32	
75-00-3	Chloroethane	12.2		0.50	0.32	
75-69-4	Trichlorofluoromethane	10.5		0.50	0.048	
76-13-1	Trichlorotrifluoroethane	11.3		0.50	0.077	
75-35-4	1,1-Dichloroethene	12.3		0.50	0.37	
75-15-0	Carbon Disulfide	22.0		0.50	0.048	
75-09-2	Methylene Chloride	10.6		0.50	0.093	
156-60-5	trans-1,2-Dichloroethene	10.8		0.50	0.039	
156-59-2	cis-1,2-Dichloroethene	10.3		0.50	0.042	
78-93-3	2-Butanone (MEK)	60.6		20	3.4	
75-34-3	1,1-Dichloroethane	10.4		0.50	0.041	
67-66-3	Chloroform	10.7		0.50	0.038	
71-55-6	1,1,1-Trichloroethane (TCA)	9.67		0.50	0.044	
56-23-5	Carbon Tetrachloride	10.4		0.50	0.26	
71-43-2	Benzene	10.8		0.50	0.040	
107-06-2	1,2-Dichloroethane (EDC)	10.7		0.50	0.038	
108-05-4	Vinyl Acetate	19.6		10	0.21	
79-01-6	Trichloroethene (TCE)	10.5		0.50	0.044	
78-87-5	1,2-Dichloropropane	10.1		0.50	0.044	
75-27-4	Bromodichloromethane	10.4		0.50	0.047	
110-75-8	2-Chloroethyl Vinyl Ether	9.70		5.0	0.12	
10061-02-6	trans-1,3-Dichloropropene	7.74		0.50	0.045	
108-10-1	4-Methyl-2-pentanone (MIBK)	42.7		20	2.8	
591-78-6	2-Hexanone	44.5		20	1.8	
108-88-3	Toluene	10.7		0.50	0.039	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	04/20/2011
		Date Analyzed:	04/20/2011

Volatile Organic Compounds

Sample Name:	Lab Control Sample	**Units:**	ug/L
Lab Code:	KWG1103584-3	**Basis:**	NA
File ID:	J:\MS23\DATA\042011BAYW\0420F003.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103584
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
10061-01-5	cis-1,3-Dichloropropene	**9.22**		0.50	0.035	
79-00-5	1,1,2-Trichloroethane	**10.9**		0.50	0.072	
127-18-4	Tetrachloroethene (PCE)	**11.5**		0.50	0.043	
124-48-1	Dibromochloromethane	**10.3**		0.50	0.081	
108-90-7	Chlorobenzene	**11.1**		0.50	0.031	
100-41-4	Ethylbenzene	**10.7**		0.50	0.040	
100-42-5	Styrene	**10.2**		0.50	0.025	
136777-61-2	m,p-Xylenes	**21.5**		1.0	0.14	
95-47-6	o-Xylene	**10.4**		0.50	0.035	
75-25-2	Bromoform	**10.1**		0.50	0.11	
67-64-1	Acetone	**68.0**		20	4.3	
79-34-5	1,1,2,2-Tetrachloroethane	**9.49**		0.50	0.086	
541-73-1	1,3-Dichlorobenzene	**11.0**		0.50	0.071	
106-46-7	1,4-Dichlorobenzene	**11.0**		0.50	0.073	
95-50-1	1,2-Dichlorobenzene	**10.9**		0.50	0.086	
107-02-8	Acrolein†	**93.6**		10	2.1	
107-13-1	Acrylonitrile†	**11.1**		5.0	0.28	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Toluene-d8	105	72-122	04/20/11	Acceptable
4-Bromofluorobenzene	100	70-120	04/20/11	Acceptable
Dibromofluoromethane	106	61-121	04/20/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1103044
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	04/20/2011
		Date Analyzed:	04/20/2011

Volatile Organic Compounds

Sample Name:	Lab Control Sample	**Units:**	ug/L
Lab Code:	KWG1103584-3	**Basis:**	NA
File ID:	J:\MS23\DATA\042011BAYW\0420F003.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1103584
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount:	10 ml
% Solids:	NA
Dilution Factor:	1

† Analyte Comments

Acrolein	This compound is unstable under normal conditions. As per EPA Method 624 guidelines, the reported value was an estimate.
Acrylonitrile	This compound is unstable under normal conditions. As per EPA Method 624 guidelines, the reported value was an estimate.

Comments:

Exception Report

Data File:	J:\MS23\DATA\042011BAYW\0420F003.D	**Date Acquired:**	04/20/2011 15:20
Lab ID:	KWG1103584-3	**Date Quantitated:**	04/21/2011 16:05
RunType:	LCS	**Batch ID:**	KWG1103583
Matrix:	WATER	**Analysis Method:**	624
		MethodJoinID:	MJ158

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA		x
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Analyte Exceptions

Exception Categories	Analyte Name	Result	Low Limit	High Limit	Corrective Action
Continuing Calibration Minimum RF	2-Butanone (MEK)	0.0098	0.01	NA	Mew

Primary Review: [illegible]

Secondary Review: HBY 4-22-11

Quantitation Report

Bottle ID:		Tier:		Matrix:	WATER
Prod Code:	624 VOC_FP	Collect Date:		Receive Date:	04/21/2011

Analysis Lot:	KWG1103583	Prep Lot:	KWG1103584	Report Group:	
Analysis Method:	624	Prep Method:	METHOD		
Prep Ref:	1013236	Prep Date:	04/20/2011		

Quant Method:	J:\MS23\METHODS\032911624BAY	Calibration ID:	CAL10443
Title:			
Tune Ref:	J:\MS23\DATA\042011BAYW\0420F001.D	Method ID:	MJ158
MB Ref:	J:\MS23\DATA\042011BAYW\0420F007.D	Quant based on Method	

Data File:	J:\MS23\DATA\042011BAYW\0420F003.D			Instrument:	MS23
Acqu Date:	04/20/2011 15:20	Quant Date:	04/21/2011 16:05	Vial:	4
Run Type:	LCS			Dilution:	1.0
Lab ID:	KWG1103584-3			Soln Conc. Units:	PPB

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	Fluorobenzene	5.94	0.00	96	586441	10.00	OK
2	Chlorobenzene-d5	9.34	0.00	82	243010	10.00	OK
3	1,4-Dichlorobenzene-d4	11.75	0.00	152	221159	10.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	Dibromofluoromethane	5.12	0.00	0.00	113	134431	10.60	106	61-121	OK
1	1,2-Dichloroethane-d4	5.59	0.00	0.00	65	157741	9.89	99	54-125	OK
1	Toluene-d8	7.77	0.00	0.00	98	580026	10.47	105	72-122	OK
2	4-Bromofluorobenzene	10.58	0.00	0.00	95	199261	9.96	100	70-120	OK

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	Final Conc	Q	Rpt?
1	Dichlorodifluoromethane	1.20		0.00	85	227693	11.06	11.1		
1	Chloromethane	1.35		0.00	50	330791	11.08	11.1		
1	Vinyl Chloride	1.43		0.00	62	290968	12.26	12.3		
1	Bromomethane	1.70		0.00	96	119900	13.81	13.8		
1	Chloroethane	1.78		0.00	49	50584	12.21	12.2		
1	Trichlorofluoromethane	1.96	-0.01	0.00	101	307718	10.49	10.5		
1	Acrolein	2.41		0.00	56	149352	93.59	93.6		
1	Trichlorotrifluoroethane	2.40		0.00	151	146565	11.33	11.3		
1	1,1-Dichloroethene	2.44		0.00	96	173734	12.27	12.3		
1	Acetone	2.56		0.00	43	151310	67.98	68.0		
1	Carbon Disulfide	2.63	-0.01	0.00	76	1294925	22.04	22.0		
1	Methylene Chloride	2.98		0.00	84	152078	10.55	10.6		
1	Acrylonitrile	3.32		0.00	53	28657	11.06	11.1		
1	trans-1,2-Dichloroethene	3.20		0.00	96	158368	10.81	10.8		

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Data File:	J:\MS23\DATA\042011BAYW\0420F003.D			Instrument:	MS23
Acqu Date:	04/20/2011 15:20	Quant Date:	04/21/2011 16:05	Vial:	4
Run Type:	LCS			Dilution:	1.0
Lab ID:	KWG1103584-3			Soln Conc. Units:	PPB

Target Compounds — Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,1-Dichloroethane	3.72	-0.01	0.00	63	300150	10.35	10.4		
1	Vinyl Acetate	3.78	-0.01	0.00	86	32685	19.62	19.6		
1	cis-1,2-Dichloroethene	4.45	-0.01	0.00	96	162337	10.31	10.3		
1	2-Butanone (MEK)	4.51		0.00	72	39510	60.57	60.6		
1	Chloroform	4.88	-0.01	0.00	83	280062	10.69	10.7		
1	1,1,1-Trichloroethane (TCA)	5.04	-0.01	0.00	97	234120	9.67	9.67		
1	Carbon Tetrachloride	5.21	0.01	0.00	117	194224	10.42	10.4		
1	Benzene	5.54		0.00	78	664573	10.79	10.8		
1	1,2-Dichloroethane (EDC)	5.69		0.00	62	200772	10.71	10.7		
1	Trichloroethene (TCE)	6.37		0.00	95	162977	10.46	10.5		
1	1,2-Dichloropropane	6.70		0.00	63	157811	10.06	10.1		
1	Bromodichloromethane	7.03		0.00	83	184050	10.40	10.4		
1	2-Chloroethyl Vinyl Ether	7.42		0.00	63	51975	9.70	9.70	J	
1	cis-1,3-Dichloropropene	7.55		0.00	75	198351	9.22	9.22		
1	4-Methyl-2-pentanone (MIBK)	8.65		0.00	58	97922	42.66	42.7		
1	Toluene	7.85		0.00	92	411087	10.70	10.7		
2	trans-1,3-Dichloropropene	8.20		0.00	75	137135	7.74	7.74		
2	1,1,2-Trichloroethane	8.39		0.00	83	83875	10.85	10.9		
2	Tetrachloroethene (PCE)	8.40		0.00	164	132692	11.52	11.5		
2	2-Hexanone	8.65		0.00	43	215220	44.45	44.5		
2	Dibromochloromethane	8.77		0.00	129	101874	10.29	10.3		
2	Chlorobenzene	9.37		0.00	112	437933	11.14	11.1		
2	Ethylbenzene	9.46	-0.01	0.00	106	239429	10.72	10.7		
2	m,p-Xylenes	9.59		0.00	106	598574	21.52	21.5		
2	o-Xylene	10.01		0.00	106	273760	10.39	10.4		
2	Styrene	10.04		0.00	103	205640m	10.23	10.2		
2	Bromoform	10.25		0.00	173	48034	10.11	10.1		
3	1,1,2,2-Tetrachloroethane	10.78		0.00	83	93231	9.49	9.49		
3	1,3-Dichlorobenzene	11.67		0.00	146	344743	11.02	11.0		
3	1,4-Dichlorobenzene	11.77		0.00	146	343446	10.95	11.0		
3	1,2-Dichlorobenzene	12.15	0.01	0.00	146	297923	10.94	10.9		
	Isopropyl Acetate				0	0		10	U	NR
	Ethyl Acetate				0	0		10	U	NR
	Bis(chloromethyl) Ether				0	0		10	U	NR
	Amyl Acetate				0	0		10	U	NR

Prep Amount: 10 ml **Dilution:** 1.0
Prep Final Vol: 10 ml **Unit Factor:** 1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\042011BAYW\0420F003.D
Acq On : 20 Apr 2011 3:20 pm
Sample : 624 ~~ccv~~ kr 4/21
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 21 16:04:39 2011

Vial: 4
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624BAYW.R

Quant Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Initial Calibration
DataAcq Meth : 8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	5.94	96	586441	10.00	PPB	0.00
35) Chlorobenzene-d5	9.34	82	243010	10.00	PPB	0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	221159	10.00	PPB	0.00
System Monitoring Compounds						
22) Dibromofluoromethane	5.12	113	134431	10.60	PPB	0.00
Spiked Amount 10.000			Recovery	=	106.00%	
24) 1,2-Dichloroethane-d4	5.59	65	157741	9.89	PPB	0.00
Spiked Amount 10.000			Recovery	=	98.90%	
33) Toluene-d8	7.77	98	580026	10.47	PPB	0.00
Spiked Amount 10.000			Recovery	=	104.70%	
47) 4-Bromofluorobenzene	10.58	95	199261	9.96	PPB	0.00
Spiked Amount 10.000			Recovery	=	99.60%	

Target Compounds							Qvalue
2) Dichlorodifluoromethane	1.20	85	227693	11.06	PPB		99
3) Chloromethane	1.35	50	330791	11.08	PPB		99
4) Vinyl Chloride	1.43	62	290968	12.26	PPB		99
5) Bromomethane	1.70	96	119900	13.81	PPB		94
6) Chloroethane	1.78	49	50584	12.21	PPB		98
7) Trichlorofluoromethane	1.96	101	307718	10.49	PPB		95
8) Acrolein	2.41	56	149352	93.59	PPB		99
9) Trichlorotrifluoroethane	2.40	151	146565	11.33	PPB		98
10) 1,1-Dichloroethene	2.44	96	173734	12.27	PPB		98
11) Acetone	2.56	43	151310	67.98	PPB		98
12) Carbon Disulfide	2.63	76	1294925	22.04	PPB		99
13) Methylene Chloride	2.98	84	152078	10.55	PPB		96
14) Acrylonitrile	3.32	53	28657	11.06	PPB		94
15) trans-1,2-Dichloroethene	3.20	96	158368	10.81	PPB		95
16) 1,1-Dichloroethane	3.72	63	300150	10.35	PPB		99
17) Vinyl Acetate	3.78	86	32685	19.62	PPB	#	91
18) cis-1,2-Dichloroethene	4.45	96	162337	10.31	PPB		95
19) 2-Butanone	4.51	72	39510	60.57	PPB	#	86
20) Chloroform	4.88	83	280062	10.69	PPB		98
21) 1,1,1-Trichloroethane	5.04	97	234120	9.67	PPB		95
23) Carbon Tetrachloride	5.21	117	194224	10.42	PPB		96
25) Benzene	5.54	78	664573	10.79	PPB		98
26) 1,2-Dichloroethane	5.69	62	200772	10.71	PPB		98
27) Trichloroethene	6.37	95	162977	10.46	PPB		98
28) 1,2-Dichloropropane	6.70	63	157811	10.06	PPB		98
29) Bromodichloromethane	7.03	83	184050	10.40	PPB		98
30) 2-Chloroethyl Vinyl Ether	7.42	63	51975	9.70	PPB		94

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\042011BAYW\0420F003.D
Acq On : 20 Apr 2011 3:20 pm
Sample : 624 ~~ccv~~ LCS
Misc : KR 4/21/11
MS Integration Params: rteint.p
Quant Time: Apr 21 16:04:39 2011

Vial: 4
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624BAYW.R

Quant Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Initial Calibration
DataAcq Meth : 8260

	Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
31)	cis-1,3-Dichloropropene	7.55	75	198351	9.22	PPB	98
32)	4-Methyl-2-pentanone (MIBK	8.65	58	97922	42.66	PPB	97
34)	Toluene	7.85	92	411087	10.70	PPB	100
36)	trans-1,3-Dichloropropene	8.20	75	137135	7.74	PPB	97
37)	1,1,2-Trichloroethane	8.39	83	83875	10.85	PPB	97
38)	Tetrachloroethene	8.40	164	132692	11.52	PPB	95
39)	2-Hexanone	8.65	43	215220	44.45	PPB	98
40)	Dibromochloromethane	8.77	129	101874	10.29	PPB	99
41)	Chlorobenzene	9.37	112	437933	11.14	PPB	98
42)	Ethylbenzene	9.46	106	239429	10.72	PPB	99
43)	m,p-Xylenes	9.59	106	598574	21.52	PPB	97
44)	o-Xylene	10.01	106	273760	10.39	PPB	95
45)	Styrene	10.04	103	205640m	10.23	PPB	
46)	Bromoform	10.25	173	48034	10.11	PPB	97
49)	1,1,2,2-Tetrachloroethane	10.78	83	93231	9.49	PPB	99
51)	1,3-Dichlorobenzene	11.67	146	344743	11.02	PPB	98
52)	1,4-Dichlorobenzene	11.77	146	343446	10.95	PPB	99
53)	1,2-Dichlorobenzene	12.15	146	297923	10.94	PPB	97

(#) = qualifier out of range (m) = manual integration

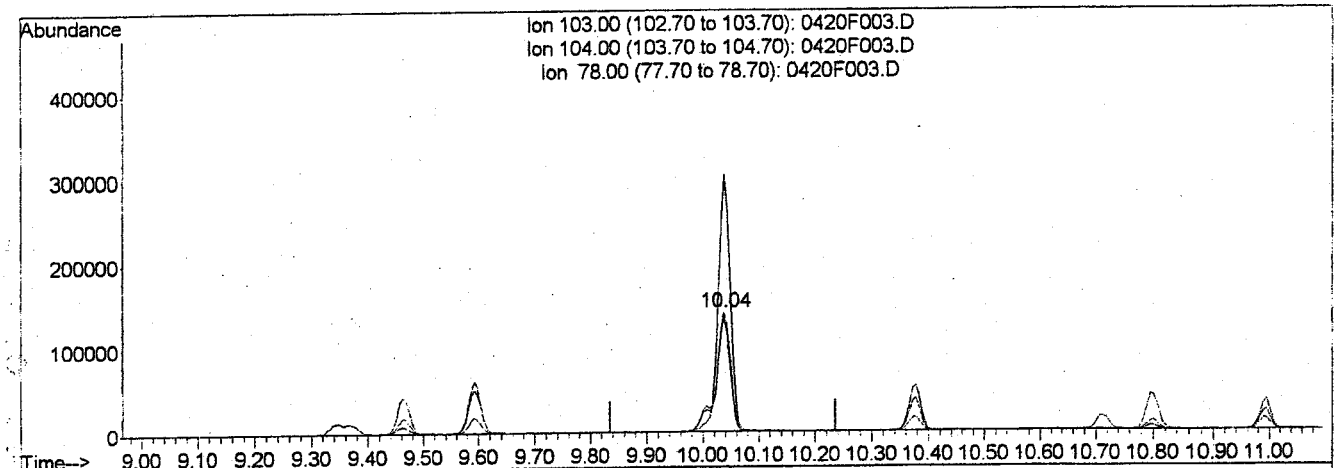
Quantitation Report (Qedit)

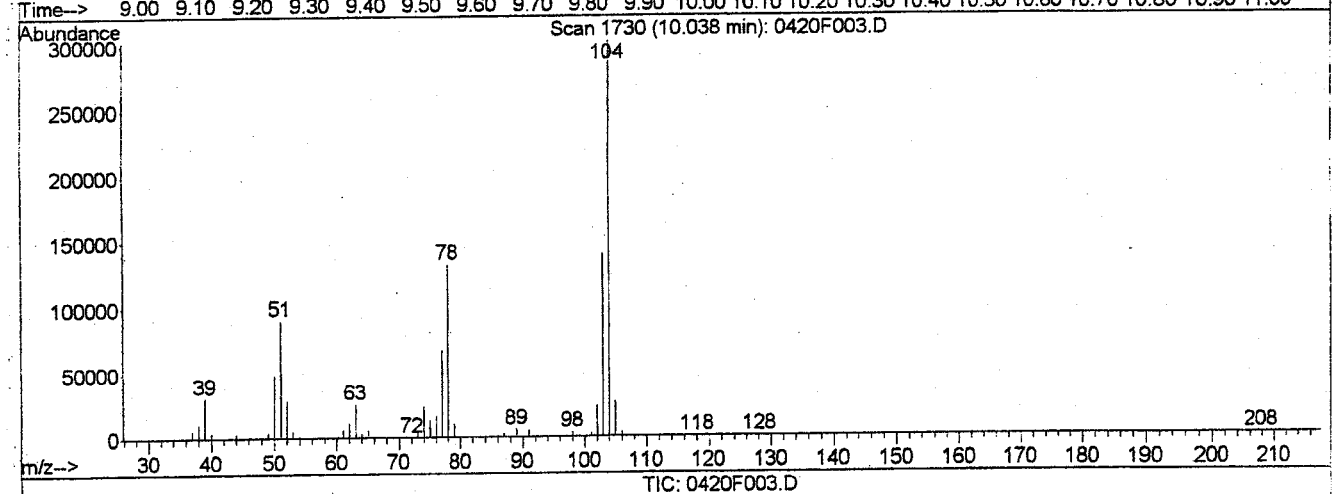
Data File : J:\MS23\DATA\042011BAYW\0420F003.D
Acq On : 20 Apr 2011 3:20 pm
Sample : 624 ~~CCV~~ LCS
Misc : kr 4/26/11
MS Integration Params: rteint.p
Quant Time: Apr 21 16:04 2011

Vial: 4
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Multiple Level Calibration





(45) Styrene (T)

10.04min 12.20PPB

response 245177

Ion	Exp%	Act%
103.00	100	100
104.00	217.10	215.48
78.00	101.20	94.40
0.00	0.00	0.00

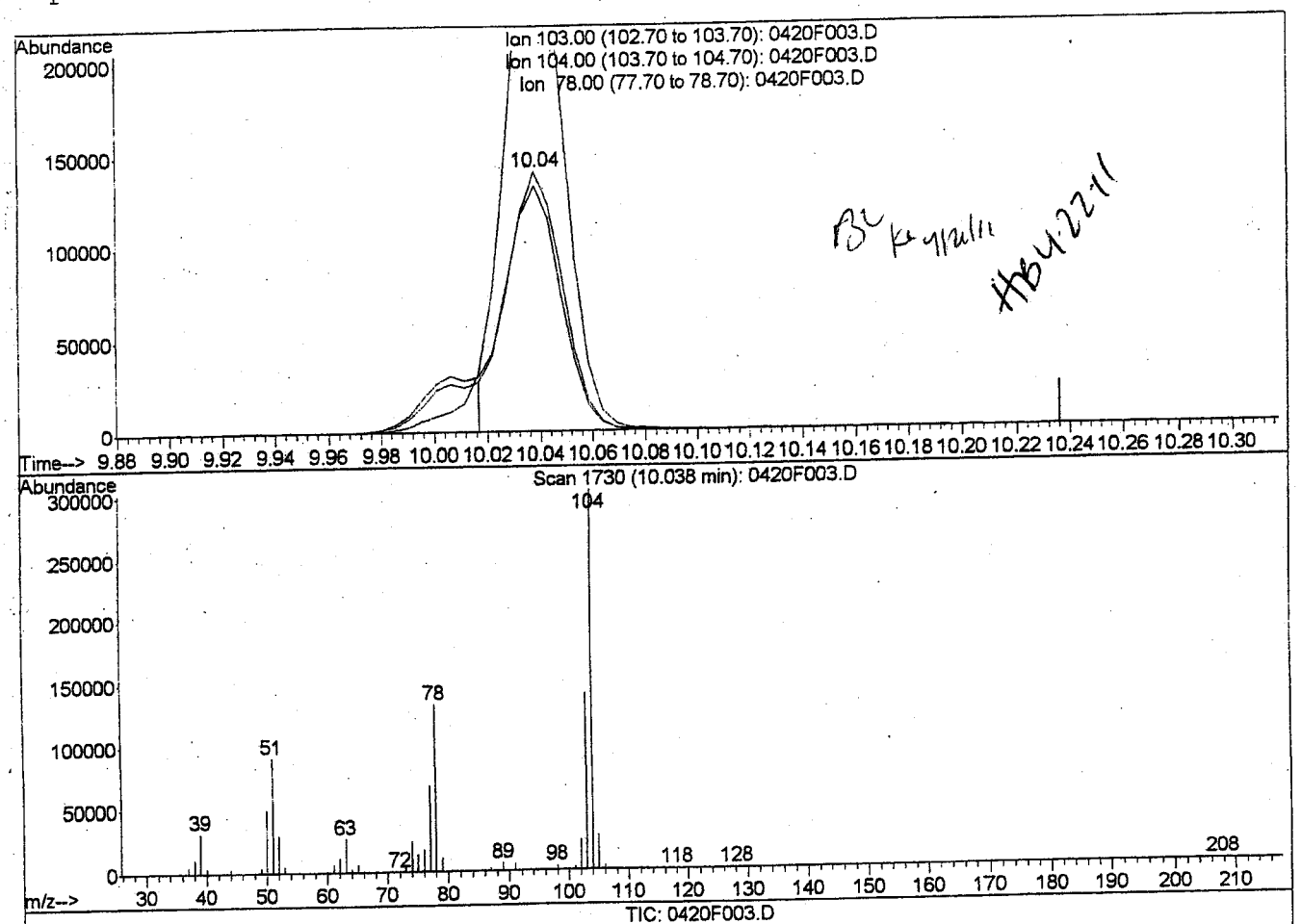
Quantitation Report (Qedit)

Data File : J:\MS23\DATA\042011BAYW\0420F003.D
Acq On : 20 Apr 2011 3:20 pm
Sample : 624 ~~CCV~~ LCS
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 21 16:05 2011

Vial: 4
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Multiple Level Calibration



(45) Styrene (T)

10.04min 10.23PPB m

response 205640

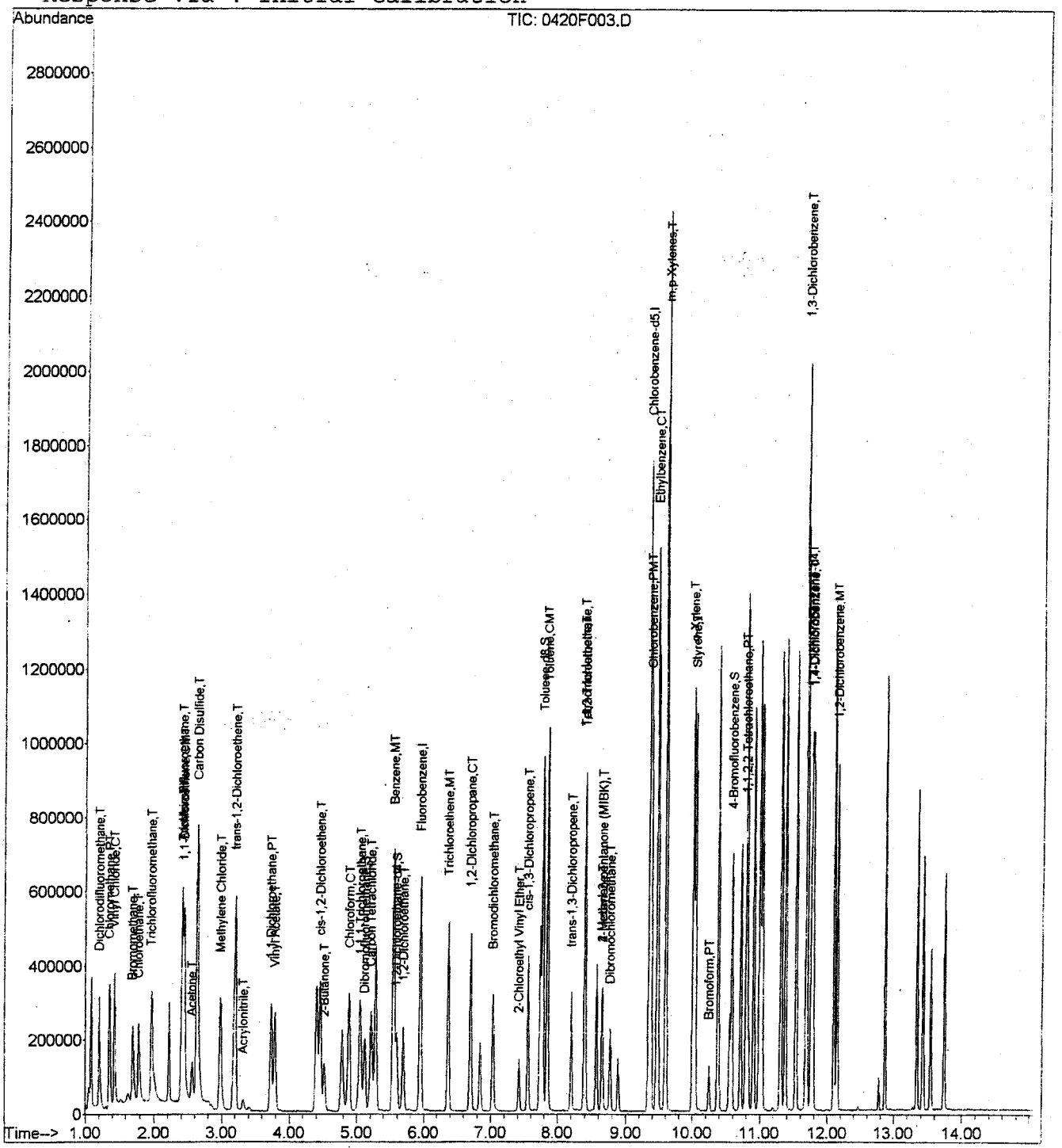
Ion	Exp%	Act%
103.00	100	100
104.00	217.10	215.48
78.00	101.20	94.40
0.00	0.00	0.00

0420F003.D 032911624BAYW.M Thu Apr 21 16:05:05 2011

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\042011BAYW\0420F003.D Vial: 4
Acq On : 20 Apr 2011 3:20 pm Operator: KR
Sample : 624 ~~CCV~~ LCS KR 4/21/11 Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Apr 21 16:05 2011 Quant Results File: 032911624BAY

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Initial Calibration



Organic Analysis:
Volatile Organic Compounds

Validation Package

Standards Data

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1103044
Date Analyzed: 03/29/2011
Time Analyzed: 13:21

Tune Summary
Volatile Organic Compounds

File ID: J:\MS23\DATA\032911\0329F013.D
Instrument ID: MS23
Column:

Analysis Method: 624
Analysis Lot: KWG1103676

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	24.6	16321	PASS
75	95	30	60	53.6	35557	PASS
95	95	100	100	100.0	66330	PASS
96	95	5	9	6.9	4574	PASS
173	174	0	2	0.7	334	PASS
174	95	50	120	68.8	45626	PASS
175	174	5	9	7.6	3488	PASS
176	174	95	101	98.5	44920	PASS
177	176	5	9	6.8	3050	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Initial Calibration	KWG1103676-2	J:\MS23\DATA\032911BAYW\0329F	03/29/2011	14:27	
Initial Calibration	KWG1103676-3	J:\MS23\DATA\032911BAYW\0329F	03/29/2011	16:02	
Initial Calibration	KWG1103676-4	J:\MS23\DATA\032911BAYW\0329F	03/29/2011	16:32	
Initial Calibration	KWG1103676-5	J:\MS23\DATA\032911BAYW\0329F	03/29/2011	17:02	
Initial Calibration	KWG1103676-6	J:\MS23\DATA\032911BAYW\0329F	03/29/2011	17:31	
Initial Calibration	KWG1103676-7	J:\MS23\DATA\032911BAYW\0329F	03/29/2011	18:01	
Initial Calibration	KWG1103676-8	J:\MS23\DATA\032911BAYW\0329F	03/29/2011	19:31	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1103044
Date Analyzed: 03/30/2011
Time Analyzed: 08:48

Tune Summary
Volatile Organic Compounds

File ID: J:\MS23\DATA\032911BAYW\0329F027.D
Instrument ID: MS23
Column:

Analysis Method: 624
Analysis Lot: KWG1103677

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	26.3	15893	PASS
75	95	30	60	59.3	35786	PASS
95	95	100	100	100.0	60389	PASS
96	95	5	9	7.4	4443	PASS
173	174	0	2	0.6	265	PASS
174	95	50	120	68.3	41240	PASS
175	174	5	9	7.7	3196	PASS
176	174	95	101	97.0	39994	PASS
177	176	5	9	6.8	2712	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Initial Calibration	KWG1103677-2	J:\MS23\DATA\032911BAYW\0329F	03/30/2011	09:48	
Initial Calibration Verification	KWG1103677-3	J:\MS23\DATA\032911BAYW\0329F	03/30/2011	12:58	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1103044
Date Analyzed: 04/19/2011
Time Analyzed: 10:05

Tune Summary
Volatile Organic Compounds

File ID: J:\MS23\DATA\041911BAYW\0419F005.D
Instrument ID: MS23
Column:

Analysis Method: 624
Analysis Lot: KWG1103523

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	25.8	13905	PASS
75	95	30	60	58.0	31338	PASS
95	95	100	100	100.0	53992	PASS
96	95	5	9	7.3	3924	PASS
173	174	0	2	0.4	181	PASS
174	95	50	120	76.7	41413	PASS
175	174	5	9	7.6	3137	PASS
176	174	95	101	98.8	40898	PASS
177	176	5	9	6.1	2475	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1103523-2	J:\MS23\DATA\041911BAYW\0419F	04/19/2011	11:04	
Lab Control Sample	KWG1103524-3	J:\MS23\DATA\041911BAYW\0419F	04/19/2011	11:47	
Fridout 172BMS	KWG1103524-1	J:\MS23\DATA\041911BAYW\0419F	04/19/2011	12:41	
Fridout 172BDMS	KWG1103524-2	J:\MS23\DATA\041911BAYW\0419F	04/19/2011	13:41	
Method Blank	KWG1103524-4	J:\MS23\DATA\041911BAYW\0419F	04/19/2011	15:43	
Fridout 172B	K1103044-002	J:\MS23\DATA\041911BAYW\0419F	04/19/2011	16:13	
Fridout 172A	K1103044-001	J:\MS23\DATA\041911BAYW\0419F	04/19/2011	17:13	
Fridin Air 83A	K1103044-003	J:\MS23\DATA\041911BAYW\0419F	04/19/2011	17:44	
Frideff Air 85A	K1103044-004	J:\MS23\DATA\041911BAYW\0419F	04/19/2011	18:14	
Trip Blank	K1103044-005	J:\MS23\DATA\041911BAYW\0419F	04/19/2011	18:44	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Exception Report

Data File:	J:\MS23\DATA\041911BAYW\0419F005.D	**Date Acquired:**	04/19/2011 10:05
Lab ID:	KWG1103523-1	**Date Quantitated:**	
RunType:	BFB	**Batch ID:**	KWG1103523
Matrix:	WATER	**Analysis Method:**	BFB
		ListJoinID:	LJ774

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Ion Ratio	NA	NA	NA	x	

Primary Review: Ka 4/20/11

Secondary Review: HB 4-20-11

Quantitation Report

Bottle ID:		Tier:		Matrix:	WATER
Prod Code:	624	Collect Date:		Receive Date:	04/20/2011

Analysis Lot:	KWG1103523	Prep Lot:		Report Group:	
Analysis Method:	BFB	Prep Method:			
Prep Ref:		Prep Date:			

Quant Method:	J:\MS23\METHODS\032911624BAY	Calibration ID:	CAL10443
Title:	GC/MS Tuning Evaluation	Report List ID:	LJ774
Tune Ref:		Method ID:	MJ159
MB Ref:		Quant based on Report List	

Data File:	J:\MS23\DATA\041911BAYW\0419F005.D			Instrument:	MS23
Acqu Date:	04/19/2011 10:05	Quant Date:		Vial:	2
Run Type:	BFB			Dilution:	1.0
Lab ID:	KWG1103523-1			Soln Conc. Units:	

Tune Results

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	25.8	13905	Pass
75	95	30	60	58.0	31338	Pass
95	95	100	100	100.0	53992	Pass
96	95	5	9	7.3	3924	Pass
173	174	0	2	0.4	181	Pass
174	95	50	120	76.7	41413	Pass
175	174	5	9	7.6	3137	Pass
176	174	95	101	98.8	40898	Pass
177	176	5	9	6.1	2475	Pass

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

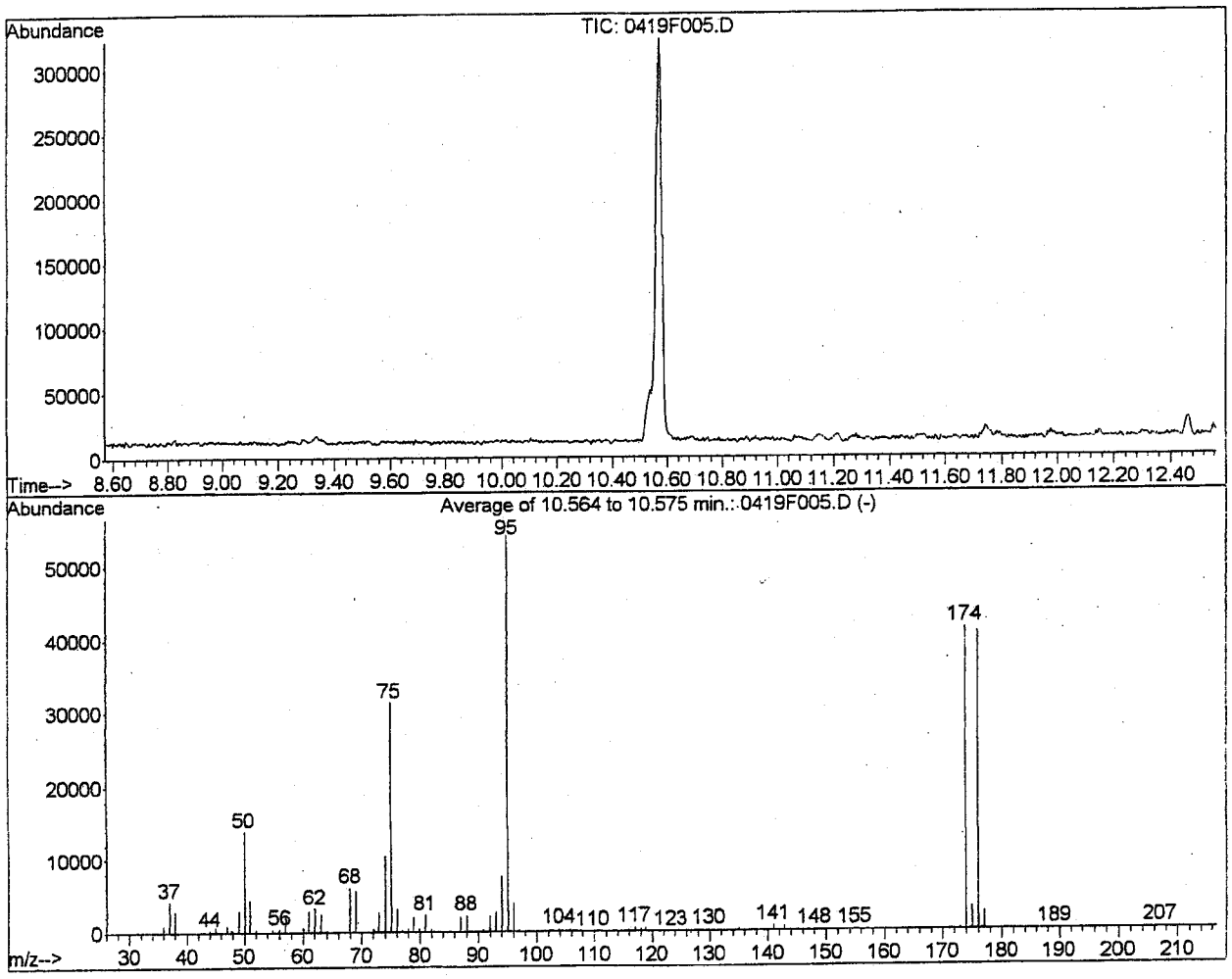
D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

BFB

Data File : J:\MS23\DATA\041911BAYW\0419F005.D
Acq On : 19 Apr 2011 10:05 am
Sample : BFB
Misc :
MS Integration Params: rteint.p
Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624

Vial: 2
Operator: KR
Inst : MS23
Multiplr: 1.00



AutoFind: Scans 1831, 1832, 1833; Background Corrected with Scan 1823

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	25.8	13905	PASS
75	95	30	60	58.0	31338	PASS
95	95	100	100	100.0	53992	PASS
96	95	5	9	7.3	3924	PASS
173	174	0.00	2	0.4	181	PASS
174	95	50	120	76.7	41413	PASS
175	174	5	9	7.6	3137	PASS
176	174	95	101	98.8	40898	PASS
177	176	5	9	6.1	2475	PASS

0419F005.D 032911624BAYW.M Wed Apr 20 13:03:26 2011

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1103044
Date Analyzed: 04/20/2011
Time Analyzed: 14:19

Tune Summary
Volatile Organic Compounds

File ID: J:\MS23\DATA\042011BAYW\0420F001.D
Instrument ID: MS23
Column:

Analysis Method: 624
Analysis Lot: KWG1103583

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	25.8	13369	PASS
75	95	30	60	56.4	29245	PASS
95	95	100	100	100.0	51893	PASS
96	95	5	9	7.0	3613	PASS
173	174	0	2	0.2	74	PASS
174	95	50	120	74.2	38482	PASS
175	174	5	9	7.1	2743	PASS
176	174	95	101	97.0	37317	PASS
177	176	5	9	6.9	2572	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1103583-2	J:\MS23\DATA\042011BAYW\0420F	04/20/2011	14:50	
Lab Control Sample	KWG1103584-3	J:\MS23\DATA\042011BAYW\0420F	04/20/2011	15:20	
Method Blank	KWG1103584-4	J:\MS23\DATA\042011BAYW\0420F	04/20/2011	17:23	
Fridin Air 83ADL	K1103044-003	J:\MS23\DATA\042011BAYW\0420F	04/20/2011	17:53	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Exception Report

Data File:	J:\MS23\DATA\042011BAYW\0420F001.D	**Date Acquired:**	04/20/2011 14:19
Lab ID:	KWG1103583-1	**Date Quantitated:**	
RunType:	BFB	**Batch ID:**	KWG1103583
Matrix:	WATER	**Analysis Method:**	BFB
		ListJoinID:	LJ774

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Ion Ratio	NA	NA	NA	x	

Primary Review: K. 4/21/11

Secondary Review: HB 4 22 11

Quantitation Report

Bottle ID:		Tier:		Matrix:	WATER
Prod Code:	624	Collect Date:		Receive Date:	04/21/2011

Analysis Lot:	KWG1103583	Prep Lot:		Report Group:	
Analysis Method:	BFB	Prep Method:			
Prep Ref:		Prep Date:			

Quant Method:	J:\MS23\METHODS\032911624BAY	Calibration ID:	CAL10443
Title:	GC/MS Tuning Evaluation	Report List ID:	LJ774
Tune Ref:		Method ID:	MJ159
MB Ref:		Quant based on Report List	

Data File:	J:\MS23\DATA\042011BAYW\0420F001.D			Instrument:	MS23
Acqu Date:	04/20/2011 14:19	Quant Date:		Vial:	2
Run Type:	BFB			Dilution:	1.0
Lab ID:	KWG1103583-1			Soln Conc. Units:	

Tune Results

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	25.8	13369	Pass
75	95	30	60	56.4	29245	Pass
95	95	100	100	100.0	51893	Pass
96	95	5	9	7.0	3613	Pass
173	174	0	2	0.2	74	Pass
174	95	50	120	74.2	38482	Pass
175	174	5	9	7.1	2743	Pass
176	174	95	101	97.0	37317	Pass
177	176	5	9	6.9	2572	Pass

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

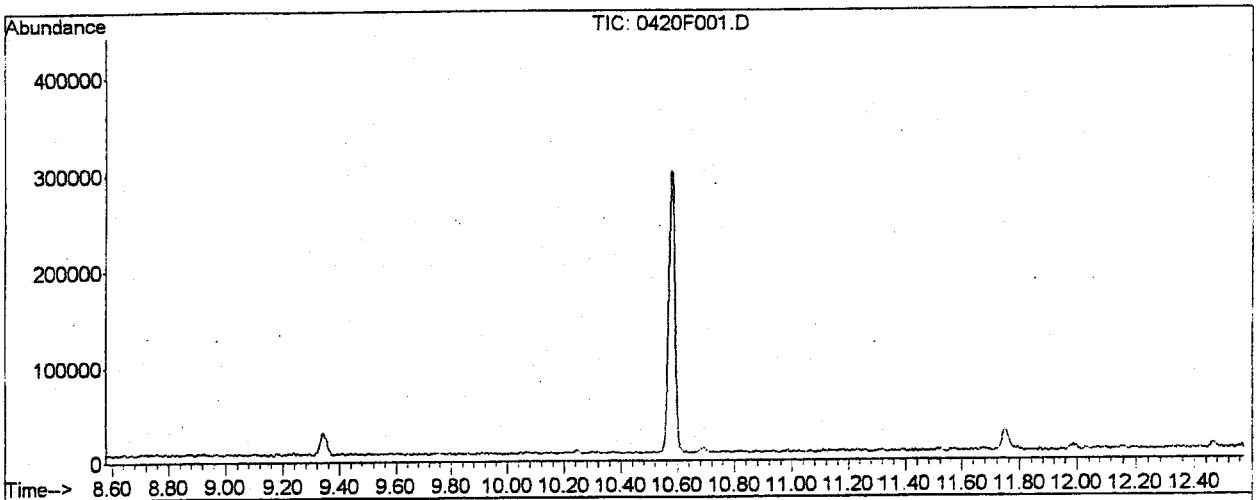
D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

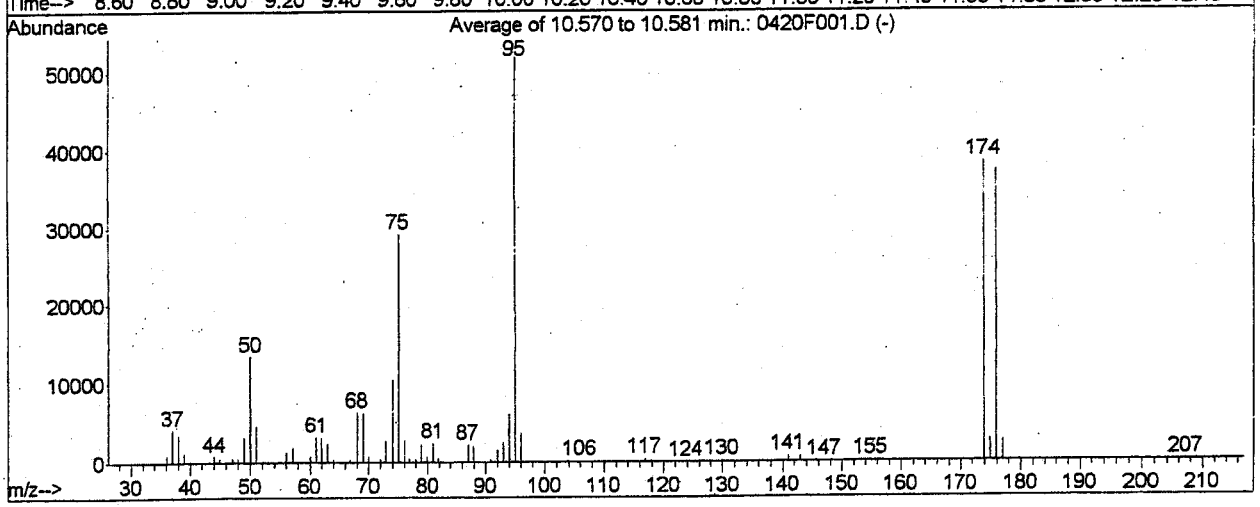
*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

BFB

Data File : J:\MS23\DATA\042011BAYW\0420F001.D
Acq On : 20 Apr 2011 2:19 pm
Sample : ~~IB~~ BFB
Misc : kr 4/21/11
MS Integration Params: rteint.p
Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624

Vial: 2
Operator: KR
Inst : MS23
Multiplr: 1.00





AutoFind: Scans 1832, 1833, 1834; Background Corrected with Scan 1825

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	25.8	13369	PASS
75	95	30	60	56.4	29245	PASS
95	95	100	100	100.0	51893	PASS
96	95	5	9	7.0	3613	PASS
173	174	0.00	2	0.2	74	PASS
174	95	50	120	74.2	38482	PASS
175	174	5	9	7.1	2743	PASS
176	174	95	101	97.0	37317	PASS
177	176	5	9	6.9	2572	PASS

0420F001.D 032911624BAYW.M Thu Apr 21 16:03:45 2011

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1103044
Calibration Date: 03/29/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10443
Instrument ID: MS23

Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS23\DATA\032911BAYW\0329F016.D	F	J:\MS23\DATA\032911\0329F023.D
B	J:\MS23\DATA\032911\0329F019.D	G	J:\MS23\DATA\032911\0329F026.D
C	J:\MS23\DATA\032911\0329F020.D	H	J:\MS23\DATA\032911\0329F029.D
D	J:\MS23\DATA\032911\0329F021.D		
E	J:\MS23\DATA\032911\0329F022.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Dichlorodifluoromethane				B	5.0	0.386	C	10	0.373	D	40	0.375	E	80	0.364
	F	120	0.360	G	0.50	0.333	H	1.0	0.267						
Chloromethane				B	5.0	0.498	C	10	0.495	D	40	0.482	E	80	0.483
	F	120	0.489	G	0.50	0.656	H	1.0	0.462						
Vinyl Chloride	A	0.25	0.279	B	5.0	0.453	C	10	0.427	D	40	0.439	E	80	0.432
	F	120	0.431	G	0.50	0.446	H	1.0	0.330						
Bromomethane				B	5.0	0.0770	C	10	0.103	D	40	0.161	E	80	0.176
	F	120	0.176	G	0.50	0.220	H	1.0	0.125						
Chloroethane				B	5.0	0.0711	C	10	0.0688	D	40	0.0677	E	80	0.0664
	F	120	0.0652	G	0.50	0.0930	H	1.0	0.0621						
Trichlorofluoromethane				B	5.0	0.550	C	10	0.525	D	40	0.528	E	80	0.516
	F	120	0.515	G	0.50	0.496	H	1.0	0.371						
Trichlorotrifluoroethane				B	5.0	0.236	C	10	0.232	D	40	0.233	E	80	0.230
	F	120	0.234	G	0.50	0.221	H	1.0	0.158						
1,1-Dichloroethene				B	5.0	0.247	C	10	0.247	D	40	0.250	E	80	0.250
	F	120	0.250	G	0.50	0.257	H	1.0	0.190						
Carbon Disulfide				B	5.0	1.04	C	10	1.03	D	40	1.04	E	80	1.02
	F	120	1.02	G	0.50	1.09	H	1.0	0.783						
Methylene Chloride				B	5.0	0.242	C	10	0.233	D	40	0.229	E	80	0.235
	F	120	0.233	G	0.50	0.336	H	1.0	0.214						
trans-1,2-Dichloroethene				B	5.0	0.253	C	10	0.244	D	40	0.253	E	80	0.257
	F	120	0.257	G	0.50	0.292	H	1.0	0.194						
cis-1,2-Dichloroethene				B	5.0	0.266	C	10	0.262	D	40	0.269	E	80	0.274
	F	120	0.273	G	0.50	0.326	H	1.0	0.208						
2-Butanone (MEK)				B	200	0.0111	C	400	0.0119	D	800	0.0114	E	1600	0.0121
	F	2400	0.0124	G	20	0.00724	H	80	0.0117						
1,1-Dichloroethane				B	5.0	0.511	C	10	0.494	D	40	0.511	E	80	0.516
	F	120	0.512	G	0.50	0.535	H	1.0	0.384						

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† SPCC Compound ‡ CCC Compound

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1103044
Calibration Date: 03/29/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10443
Instrument ID: MS23

Column: MS

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Chloroform				B	5.0	0.454	C	10	0.442	D	40	0.453	E	80	0.459
	F	120	0.453	G	0.50	0.503	H	1.0	0.362						
1,1,1-Trichloroethane (TCA)				B	5.0	0.431	C	10	0.416	D	40	0.433	E	80	0.433
	F	120	0.436	G	0.50	0.430	H	1.0	0.310						
Carbon Tetrachloride				B	5.0	0.333	C	10	0.329	D	40	0.347	E	80	0.352
	F	120	0.356	G	0.50	0.287	H	1.0	0.220						
Benzene				B	5.0	1.09	C	10	1.06	D	40	1.08	E	80	1.09
	F	120	1.07	G	0.50	1.13	H	1.0	0.833						
1,2-Dichloroethane (EDC)				B	5.0	0.333	C	10	0.319	D	40	0.321	E	80	0.325
	F	120	0.317	G	0.50	0.365	H	1.0	0.258						
Vinyl Acetate				B	10	0.0291	C	20	0.0285	D	80	0.0273	E	160	0.0288
	F	240	0.0284												
Trichloroethene (TCE)				B	5.0	0.268	C	10	0.259	D	40	0.267	E	80	0.272
	F	120	0.272	G	0.50	0.303	H	1.0	0.218						
1,2-Dichloropropane				B	5.0	0.274	C	10	0.262	D	40	0.272	E	80	0.277
	F	120	0.273	G	0.50	0.302	H	1.0	0.214						
Bromodichloromethane				B	5.0	0.308	C	10	0.301	D	40	0.312	E	80	0.321
	F	120	0.317	G	0.50	0.325	H	1.0	0.228						
2-Chloroethyl Vinyl Ether				B	5.0	0.0913	C	10	0.0877	D	40	0.0948	E	80	0.0993
	F	120	0.0983	G	0.50	0.104	H	1.0	0.0640						
trans-1,3-Dichloropropene				B	5.0	0.760	C	10	0.725	D	40	0.758	E	80	0.796
	F	120	0.782	G	0.50	0.795	H	1.0	0.490						
4-Methyl-2-pentanone (MIBK)				B	200	0.0397	C	400	0.0419	D	800	0.0404	E	1600	0.0435
	F	2400	0.0445	G	20	0.0245	H	80	0.0395						
2-Hexanone				B	200	0.207	C	400	0.219	D	800	0.206	E	1600	0.215
	F	2400	0.210	G	20	0.129	H	80	0.209						
Toluene				B	5.0	0.667	C	10	0.650	D	40	0.677	E	80	0.693
	F	120	0.696	G	0.50	0.697	H	1.0	0.507						
cis-1,3-Dichloropropene				B	5.0	0.376	C	10	0.369	D	40	0.390	E	80	0.401
	F	120	0.395	G	0.50	0.379	H	1.0	0.257						
1,1,2-Trichloroethane				B	5.0	0.325	C	10	0.317	D	40	0.321	E	80	0.331
	F	120	0.328	G	0.50	0.363	H	1.0	0.241						
Tetrachloroethene (PCE)				B	5.0	0.489	C	10	0.472	D	40	0.484	E	80	0.505
	F	120	0.516	G	0.50	0.493	H	1.0	0.358						
Dibromochloromethane				B	5.0	0.421	C	10	0.409	D	40	0.419	E	80	0.452
	F	120	0.447	G	0.50	0.414	H	1.0	0.288						

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† SPCC Compound ‡ CCC Compound

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1103044
Calibration Date: 03/29/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10443
Instrument ID: MS23

Column: MS

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Chlorobenzene				B	5.0	1.69	C	10	1.60	D	40	1.63	E	80	1.68
	F	120	1.67	G	0.50	1.82	H	1.0	1.24						
Ethylbenzene				B	5.0	0.940	C	10	0.914	D	40	0.946	E	80	0.992
	F	120	1.00	G	0.50	0.947	H	1.0	0.693						
Styrene				B	5.0	0.840	C	10	0.810	D	40	0.861	E	80	0.934
	F	120	0.928	G	0.50	0.855	H	1.0	0.562						
m,p-Xylenes				B	10	1.17	C	20	1.14	D	80	1.19	E	160	1.25
	F	240	1.26	G	1.0	1.18	H	2.0	0.826						
o-Xylene				B	5.0	1.10	C	10	1.08	D	40	1.12	E	80	1.16
	F	120	1.17	G	0.50	1.18	H	1.0	0.788						
Bromoform				B	5.0	0.193	C	10	0.193	D	40	0.208	E	80	0.226
	F	120	0.226	G	0.50	0.193	H	1.0	0.130						
Acetone				B	200	0.0384	C	400	0.0394	D	800	0.0374	E	1600	0.0387
	F	2400	0.0390	G	20	0.0311	H	80	0.0417						
1,1,2,2-Tetrachloroethane				B	5.0	0.471	C	10	0.451	D	40	0.426	E	80	0.449
	F	120	0.434	G	0.50	0.568	H	1.0	0.310						
1,3-Dichlorobenzene				B	5.0	1.46	C	10	1.39	D	40	1.44	E	80	1.49
	F	120	1.49	G	0.50	1.60	H	1.0	1.02						
1,4-Dichlorobenzene				B	5.0	1.48	C	10	1.40	D	40	1.40	E	80	1.45
	F	120	1.42	G	0.50	1.69	H	1.0	1.09						
1,2-Dichlorobenzene				B	5.0	1.29	C	10	1.22	D	40	1.23	E	80	1.25
	F	120	1.23	G	0.50	1.45	H	1.0	0.937						
Acrolein	A	5.0	0.0275	B	100	0.0293	C	200	0.0283	D	800	0.0272	E	1600	0.0266
	F	2400	0.0252	G	10	0.0325	H	20	0.0210						
Acrylonitrile				B	10	0.0472	C	20	0.0452	D	80	0.0440	E	160	0.0452
	F	240	0.0441	G	1.0	0.0407	H	2.0	0.0429						
Toluene-d8				B	8.0	0.934	C	10	0.959	D	20	1.01	E	40	0.876
	F	60	1.00				H	6.0	0.888						
4-Bromofluorobenzene				B	8.0	0.813	C	10	0.829	D	20	0.859	E	40	0.791
	F	60	0.870				H	6.0	0.776						
Dibromofluoromethane				B	8.0	0.216	C	10	0.222	D	20	0.228	E	40	0.204
	F	60	0.227				H	6.0	0.201						

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† SPCC Compound ‡ CCC Compound

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1103044
Calibration Date: 03/29/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10443
Instrument ID: MS23

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Dichlorodifluoromethane	TRG	AverageRF	% RSD	11.6		≤35	0.351		0.01
Chloromethane	TRG	AverageRF	% RSD	12.9		≤35	0.509		0.01
Vinyl Chloride	TRG	AverageRF	% RSD	15.8		≤35	0.405		0.01
Bromomethane	TRG	AverageRF	% RSD	33.2		≤35	0.148		0.01
Chloroethane	TRG	AverageRF	% RSD	14.5		≤35	0.0706		0.01
Trichlorofluoromethane	TRG	AverageRF	% RSD	11.8		≤35	0.500		0.01
Trichlorotrifluoroethane	TRG	AverageRF	% RSD	12.7		≤35	0.221		0.01
1,1-Dichloroethene	MS	AverageRF	% RSD	9.5		≤35	0.241		0.01
Carbon Disulfide	TRG	AverageRF	% RSD	9.9		≤35	1.00		0.01
Methylene Chloride	TRG	AverageRF	% RSD	16.6		≤35	0.246		0.01
trans-1,2-Dichloroethene	TRG	AverageRF	% RSD	11.6		≤35	0.250		0.01
cis-1,2-Dichloroethene	TRG	AverageRF	% RSD	12.8		≤35	0.268		0.01
2-Butanone (MEK)	TRG	AverageRF	% RSD	15.8		≤35	0.0111		0.01
1,1-Dichloroethane	TRG	AverageRF	% RSD	10.1		≤35	0.495		0.01
Chloroform	TRG	AverageRF	% RSD	9.4		≤35	0.447		0.01
1,1,1-Trichloroethane (TCA)	TRG	AverageRF	% RSD	11.1		≤35	0.413		0.01
Carbon Tetrachloride	TRG	AverageRF	% RSD	15.4		≤35	0.318		0.01
Benzene	MS	AverageRF	% RSD	9.4		≤35	1.05		0.01
1,2-Dichloroethane (EDC)	TRG	AverageRF	% RSD	10.0		≤35	0.320		0.01
Vinyl Acetate	TRG	AverageRF	% RSD	2.4		≤35	0.0284		0.01
Trichloroethene (TCE)	MS	AverageRF	% RSD	9.4		≤35	0.266		0.01
1,2-Dichloropropane	TRG	AverageRF	% RSD	9.9		≤35	0.268		0.01
Bromodichloromethane	TRG	AverageRF	% RSD	11.1		≤35	0.302		0.01
2-Chloroethyl Vinyl Ether	TRG	AverageRF	% RSD	14.4		≤35	0.0913		0.01
trans-1,3-Dichloropropene	TRG	AverageRF	% RSD	14.9		≤35	0.729		0.01
4-Methyl-2-pentanone (MIBK)	TRG	AverageRF	% RSD	17.2		≤35	0.0391		0.01
2-Hexanone	TRG	AverageRF	% RSD	15.7		≤35	0.199		0.01
Toluene	MS	AverageRF	% RSD	10.3		≤35	0.655		0.01
cis-1,3-Dichloropropene	TRG	AverageRF	% RSD	13.6		≤35	0.367		0.01
1,1,2-Trichloroethane	TRG	AverageRF	% RSD	11.7		≤35	0.318		0.01
Tetrachloroethene (PCE)	TRG	AverageRF	% RSD	11.2		≤35	0.474		0.01
Dibromochloromethane	TRG	AverageRF	% RSD	13.5		≤35	0.407		0.01
Chlorobenzene	MS	AverageRF	% RSD	11.2		≤35	1.62		0.01
Ethylbenzene	TRG	AverageRF	% RSD	11.3		≤35	0.919		0.01
Styrene	TRG	AverageRF	% RSD	15.2		≤35	0.827		0.01
m,p-Xylenes	TRG	AverageRF	% RSD	12.8		≤35	1.14		0.01
o-Xylene	TRG	AverageRF	% RSD	12.5		≤35	1.08		0.01
Bromoform	TRG	AverageRF	% RSD	16.7		≤35	0.195		0.01
Acetone	TRG	AverageRF	% RSD	8.7		≤35	0.0380		0.01
1,1,2,2-Tetrachloroethane	TRG	AverageRF	% RSD	17.1		≤35	0.444		0.01
1,3-Dichlorobenzene	TRG	AverageRF	% RSD	13.0		≤35	1.41		0.01
1,4-Dichlorobenzene	TRG	AverageRF	% RSD	12.6		≤35	1.42		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound

‡ CCC Compound

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1103044
Calibration Date: 03/29/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10443
Instrument ID: MS23

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
1,2-Dichlorobenzene	MS	AverageRF	% RSD	12.4		≤35	1.23		0.01
Acrolein	TRG	AverageRF	% RSD	12.2		≤35	0.0272		0.01
Acrylonitrile	TRG	AverageRF	% RSD	4.6		≤35	0.0442		0.01
Toluene-d8	SURR	AverageRF	% RSD	6.0		≤35	0.945		0.01
4-Bromofluorobenzene	SURR	AverageRF	% RSD	4.5		≤35	0.823		0.01
Dibromofluoromethane	SURR	AverageRF	% RSD	5.3		≤35	0.216		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1103044
Calibration Date: 03/29/2011
Date Analyzed: 03/30/2011

Second Source Calibration Verification
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 624

Calibration ID: CAL10443
Units: PPB

File ID: J:\MS23\DATA\032911\0329F032.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Dichlorodifluoromethane	10	9.7	0.351	0.341	-3	NA	± 40 %	AverageRF
Chloromethane	10	10	0.509	0.521	2	NA	± 104 %	AverageRF
Vinyl Chloride	10	11	0.405	0.448	11	NA	± 96 %	AverageRF
Bromomethane	10	10	0.148	0.154	4	NA	± 86 %	AverageRF
Chloroethane	10	11	0.0706	0.0772	9	NA	± 62 %	AverageRF
Trichlorofluoromethane	10	9.6	0.500	0.479	-4	NA	± 52 %	AverageRF
Trichlorotrifluoroethane	10	10	0.221	0.230	4	NA	± 40 %	AverageRF
1,1-Dichloroethene	10	12	0.241	0.292	21	NA	± 49 %	AverageRF
Carbon Disulfide	20	22	1.00	1.08	8	NA	± 40 %	AverageRF
Methylene Chloride	10	11	0.246	0.275	12	NA	± 39 %	AverageRF
trans-1,2-Dichloroethene	10	12	0.250	0.290	16	NA	± 30 %	AverageRF
cis-1,2-Dichloroethene	10	11	0.268	0.292	9	NA	± 30 %	AverageRF
2-Butanone (MEK)	50	57	0.0111	0.0128	15	NA	± 40 %	AverageRF
1,1-Dichloroethane	10	12	0.495	0.571	15	NA	± 27 %	AverageRF
Chloroform	10	12	0.447	0.514	15	NA	± 32 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	11	0.413	0.463	12	NA	± 25 %	AverageRF
Carbon Tetrachloride	10	12	0.318	0.369	16	NA	± 27 %	AverageRF
Benzene	10	12	1.05	1.21	15	NA	± 36 %	AverageRF
1,2-Dichloroethane (EDC)	10	12	0.320	0.368	15	NA	± 32 %	AverageRF
Vinyl Acetate	20	24	0.0284	0.0348	22	NA	± 80 %	AverageRF
Trichloroethene (TCE)	10	11	0.266	0.298	12	NA	± 33 %	AverageRF
1,2-Dichloropropane	10	11	0.268	0.299	12	NA	± 66 %	AverageRF
Bromodichloromethane	10	11	0.302	0.341	13	NA	± 34 %	AverageRF
2-Chloroethyl Vinyl Ether	10	10	0.0913	0.0929	2	NA	± 124 %	AverageRF
trans-1,3-Dichloropropene	10	10	0.729	0.757	4	NA	± 50 %	AverageRF
4-Methyl-2-pentanone (MIBK)	50	54	0.0391	0.0419	7	NA	± 40 %	AverageRF
2-Hexanone	50	55	0.199	0.218	10	NA	± 40 %	AverageRF
Toluene	10	11	0.655	0.742	13	NA	± 25 %	AverageRF
cis-1,3-Dichloropropene	10	11	0.367	0.420	15	NA	± 76 %	AverageRF
1,1,2-Trichloroethane	10	11	0.318	0.355	11	NA	± 29 %	AverageRF
Tetrachloroethene (PCE)	10	11	0.474	0.533	12	NA	± 26 %	AverageRF
Dibromochloromethane	10	11	0.407	0.449	10	NA	± 32 %	AverageRF
Chlorobenzene	10	11	1.62	1.82	12	NA	± 34 %	AverageRF
Ethylbenzene	10	11	0.919	1.04	13	NA	± 41 %	AverageRF
Styrene	10	11	0.827	0.897	8	NA	± 40 %	AverageRF
m,p-Xylenes	20	22	1.14	1.27	11	NA	± 40 %	AverageRF
o-Xylene	10	11	1.08	1.19	9	NA	± 40 %	AverageRF
Bromoform	10	11	0.195	0.207	6	NA	± 29 %	AverageRF
Acetone	50	64	0.0380	0.0482	27	NA	± 40 %	AverageRF
1,1,2,2-Tetrachloroethane	10	11	0.444	0.479	8	NA	± 39 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1103044
Calibration Date: 03/29/2011
Date Analyzed: 03/30/2011

Second Source Calibration Verification
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 624

Calibration ID: CAL10443
Units: PPB

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
1,3-Dichlorobenzene	10	11	1.41	1.61	14	NA	± 27 %	AverageRF
1,4-Dichlorobenzene	10	11	1.42	1.60	13	NA	± 37 %	AverageRF
1,2-Dichlorobenzene	10	11	1.23	1.37	11	NA	± 37 %	AverageRF
Acrolein	100	110	0.0272	0.0288	6	NA	± 80 %	AverageRF
Acrylonitrile	10	12	0.0442	0.0515	17	NA	± 40 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

BayWest ICAL

Date: 3/29/11

Columbia Analytical Services, Inc.

Injection Log

MS23 - Agilent 5973

By: KR

IS/SS Std. ID: LOW4-14E (4/11)

CCV Std ID: Se[illegible]

MS/DMS/LCS/ICV Std ID:

BFB Std. ID: LOW4-1A 4/15

Tune File: BFB4

New Tune: Yes

RUN #: — 10443

ICAL Date: 3/29/11 Cal ~~10403~~

Second RV: HB 3-31-11 HB

LIMS ID: — HB 4-20-11 4-20-11

	Sample Name	File Name	Method	Dilution	HB	R	Comments
1	BFB	0329F0013	8260.m	4.4µl+44ml			
2	IB	14 15					
3	624 Ical 0.25	16 15					
4	0.5	17 16					NR
5	1	18 17					NR
6	5	19 18					
7	10	20 19					
8	40	21 20					
9	80	22 21					
10	120	23 23					
11	IB	24 24					
12	IB	25 25					
13	624 Ical 0.5	26 26					
14	BFB	27 27		4.4µl+44ml			
15	IB	28 28					
16	624 Ical 1	29 29					
17	IB	30 30					
18	ICV	31					Mis-spiked 0.20ppb
19	ICV	32					
20							
21							
22							
23							
24							
25							
26							
27							

R:\VOA\Injection Logs\INJLOG_MS23_Rev1

Date 3/29/11
Prepared By KL

Analysis: 624
Instrument: M523
Matrix: Water

Stock Solution #1 60w9A-14D 4/5
Stock Solution #2 60w9A-13C 4/5
Stock Solution #3 60w9A-17A 5/29

Analytes: Surrogates 100ppm
Analytes: 624 50ppm
Analytes: Ketones 2000ppm

Aliquot of Stock Solution #1 (µL)	Final Conc. of #1 (µg/L)	Aliquot of Stock Solution #2 (µL)	Final Conc. of #2 (µg/L)	Aliquot of Stock Solution #3 (µL)	Final Conc. of #3 (µg/L)	Final Volume (mL)
		0.25	0.25			50
2.0	4.0	0.5	0.5	0.5	20	50
3.0	6.0	1	1	2	80	50
4.0	8.0	5.0	5	5	200	50
5.0	10.0	10	10	10	400	50
10.0	20	40	40	20	800	50
20	40	80	80	40	1600	50
30	60	120	120	60	2400	50

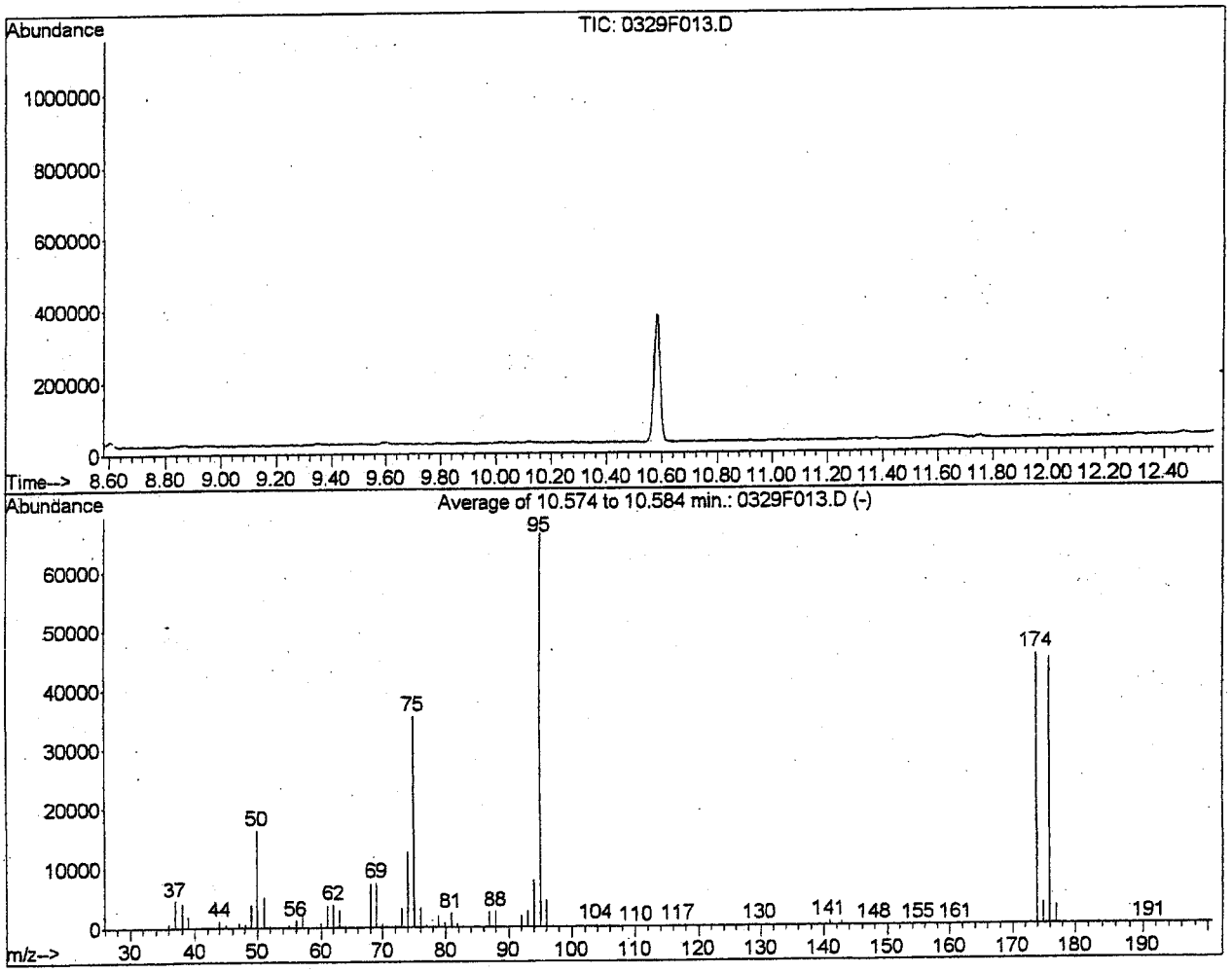
624 ICV: 20uL of 50/250ppm Accustd ICV (60w9A-12C 4/5) + 50uL of 100ppm Acrolein ICV (60w9A-12D 4/5

10µL → 50mL 60w9A-12C 4/5 + 50µL 60w9A-12D 4/5 → 50mL

BFB

Data File : J:\MS23\DATA\032911\0329F013.D
Acq On : 29 Mar 2011 1:21 pm
Sample : BFB
Misc :
MS Integration Params: rteint.p
Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624

Vial: 2
Operator: KR
Inst : MS23
Multiplr: 1.00



AutoFind: Scans 1861, 1862, 1863; Background Corrected with Scan 1852

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	24.6	16321	PASS
75	95	30	60	53.6	35557	PASS
95	95	100	100	100.0	66330	PASS
96	95	5	9	6.9	4574	PASS
173	174	0.00	2	0.7	334	PASS
174	95	50	120	68.8	45626	PASS
175	174	5	9	7.6	3488	PASS
176	174	95	101	98.5	44920	PASS
177	176	5	9	6.8	3050	PASS

KR 3/30/11 TB 3/31/11

0329F013.D 032911624.M Tue Mar 29 14:40:42 2011

Data File : J:\MS23\DATA\032911\0329F014.D
Acq On : 29 Mar 2011 1:51 pm
Sample : IB
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 29 14:42:13 2011

Vial: 3
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624.RES

Quant Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration
DataAcq Meth : 8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	5.94	96	564765	10.00	PPB	0.00
35) Chlorobenzene-d5	9.34	82	230878	10.00	PPB	0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	187002	10.00	PPB	0.00
System Monitoring Compounds						
22) Dibromofluoromethane	0.00	113	0	0.00	PPB	
Spiked Amount 10.000			Recovery	=	0.00%	
24) 1,2-Dichloroethane-d4	0.00	65	0	0.00	PPB	
Spiked Amount 10.000			Recovery	=	0.00%	
33) Toluene-d8	0.00	98	0d	0.00	PPB	
Spiked Amount 10.000			Recovery	=	0.00%	
47) 4-Bromofluorobenzene	10.58	95	639	0.04	PPB	0.00
Spiked Amount 10.000			Recovery	=	0.40%	
Target Compounds						Qvalue
13) Methylene Chloride	2.98	84	1327	0.09	PPB	# 40

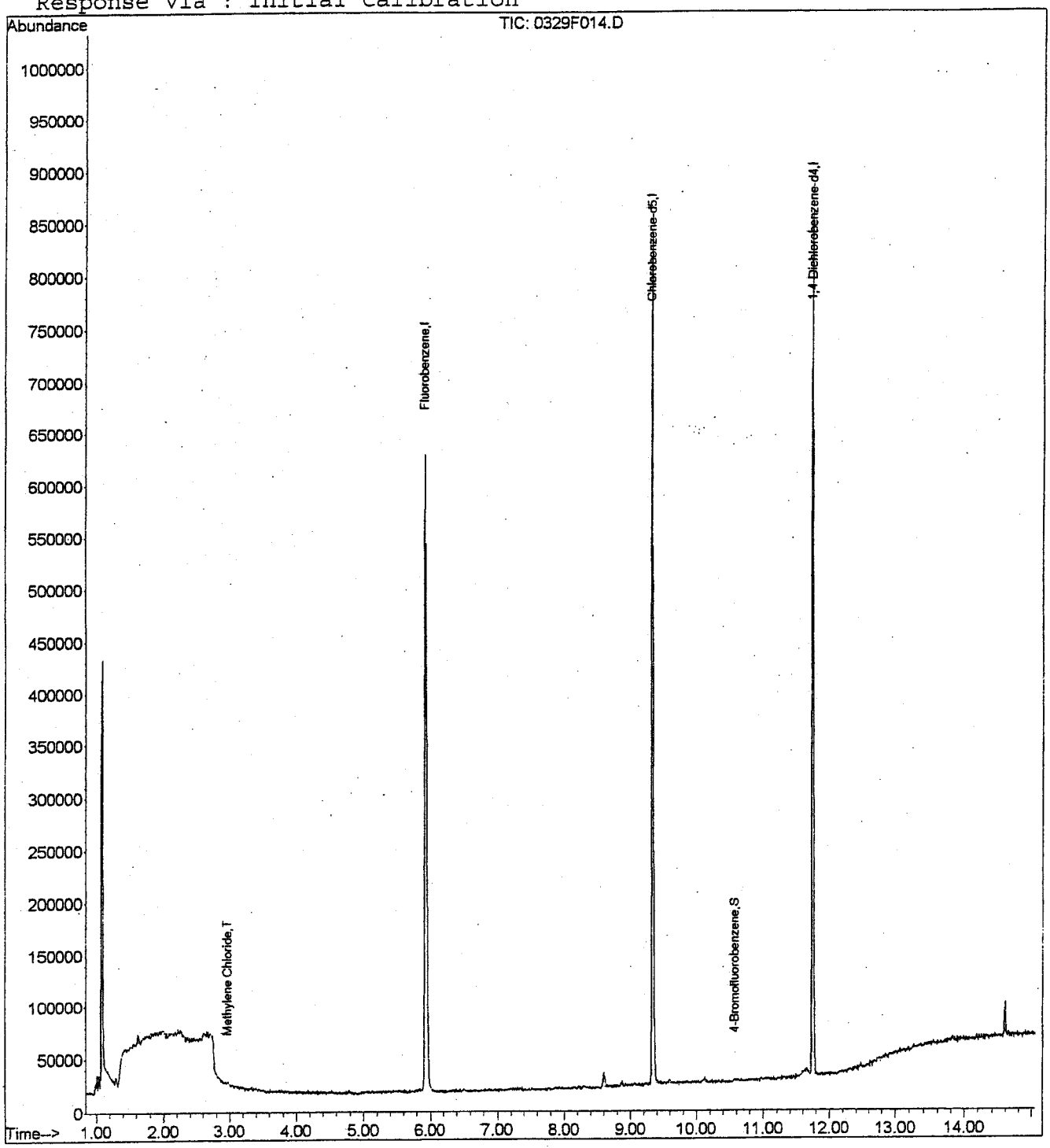
KT 3/30/11
HB 3/31/11

(#) = qualifier out of range (m) = manual integration
0329F014.D 032911624.M Tue Mar 29 14:57:08 2011 Page 1

Data File : J:\MS23\DATA\032911\0329F014.D
Acq On : 29 Mar 2011 1:51 pm
Sample : IB
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 29 14:57 2011

Vial: 3
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624.RE

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\032911BAYW\0329F016.D
Acq On : 29 Mar 2011 2:27 pm
Sample : 624 ICAL 0.25
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 29 14:57:34 2011

Vial: 4
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624.RES

Quant Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration
DataAcq Meth : 8260

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorobenzene	5.94	96	559261	10.00 PPB	0.00
35) Chlorobenzene-d5	9.35	82	226331	10.00 PPB	0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	183961	10.00 PPB	0.00
System Monitoring Compounds					
22) Dibromofluoromethane	0.00	113	0	0.00 PPB	
Spiked Amount 10.000			Recovery	= 0.00%	
24) 1,2-Dichloroethane-d4	0.00	65	0	0.00 PPB	
Spiked Amount 10.000			Recovery	= 0.00%	
33) Toluene-d8	0.00	98	0d	0.00 PPB	
Spiked Amount 10.000			Recovery	= 0.00%	
47) 4-Bromofluorobenzene	0.00	95	0d	0.00 PPB	
Spiked Amount 10.000			Recovery	= 0.00%	
Target Compounds					Qvalue
4) Vinyl Chloride	1.43	62	3895m	0.17 PPB	
8) Acrolein	2.41	56	7691	5.16 PPB	100

KR 4/20/11
4/20/2011

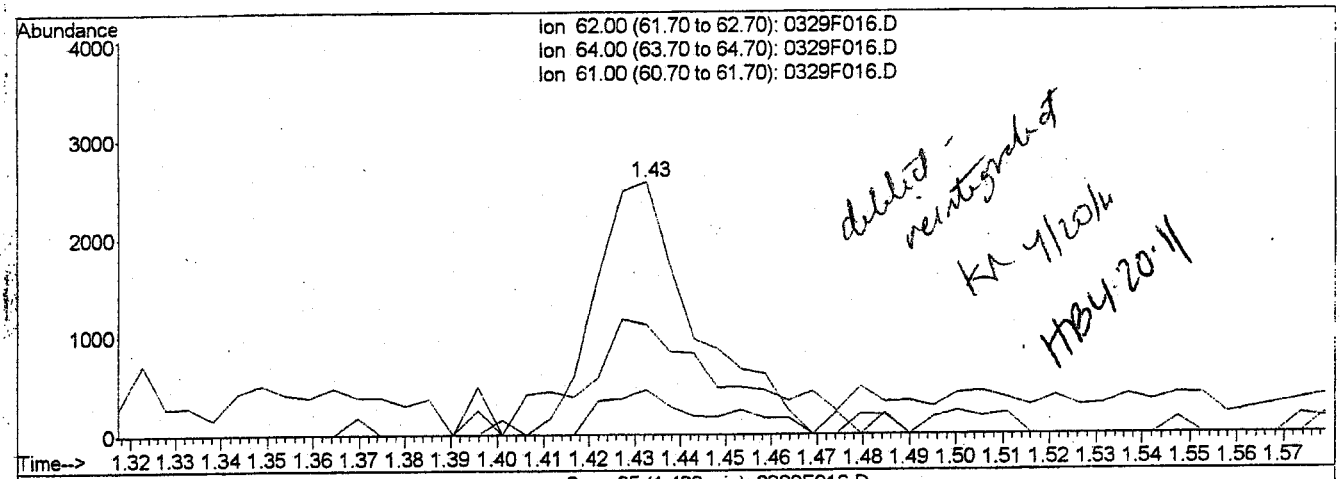
(#) = qualifier out of range (m) = manual integration
0329F016.D 032911624.M Wed Apr 20 12:43:16 2011

Quantitation Report (Qedit)

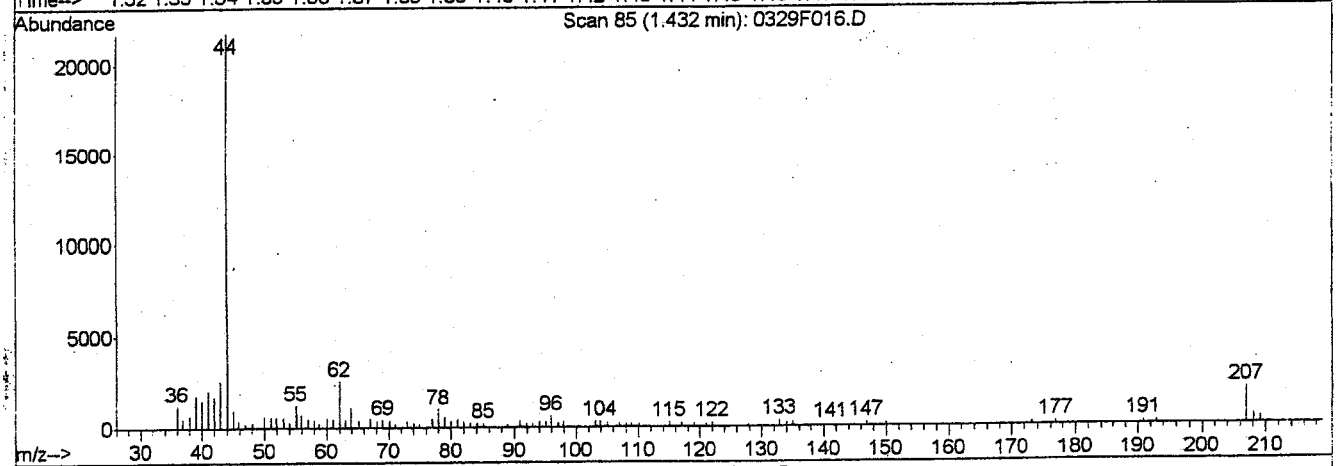
Data File : J:\MS23\DATA\032911BAYW\0329F016.D
Acq On : 29 Mar 2011 2:27 pm
Sample : 624 ICAL 0.25
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 20 12:43 2011

Vial: 4
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 09:07:41 2011
Response via : Multiple Level Calibration



deleted - reintegrated KR 4/20/11 HB 4/20/11



(4) Vinyl Chloride (CT)

1.43min 0.17PPB m

response 3895

Ion	Exp%	Act%
62.00	100	100
64.00	31.20	42.83
61.00	8.80	17.52
0.00	0.00	0.00

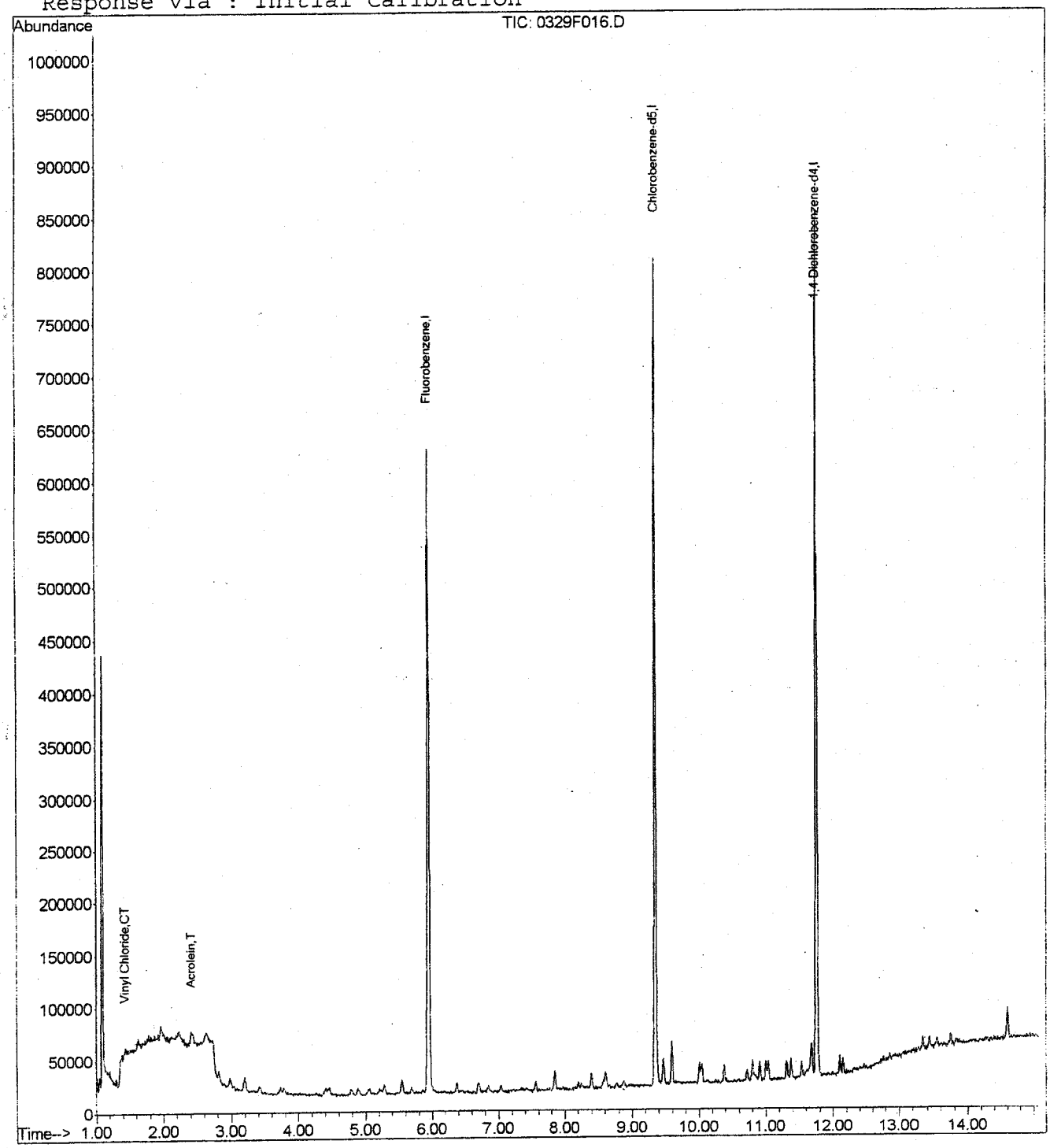
0329F016.D 032911624.M Wed Apr 20 12:43:11 2011

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\032911BAYW\0329F016.D
Acq On : 29 Mar 2011 2:27 pm
Sample : 624 ICAL 0.25
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 20 12:43 2011

Vial: 4
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624.RE

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 09:07:41 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\032911\0329F017.D
Acq On : 29 Mar 2011 3:02 pm
Sample : 624 ICAL 0.5
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 29 15:34:41 2011

Vial: 5
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624.RES

Quant Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration
DataAcq Meth : 8260

KB 3/29/11 NA

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorobenzene	5.94	96	561305	10.00 PPB	0.00
35) Chlorobenzene-d5	9.35	82	228570	10.00 PPB	0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	186176	10.00 PPB	0.00
System Monitoring Compounds					
22) Dibromofluoromethane	5.12	113	47747	3.82 PPB	0.00
Spiked Amount 10.000			Recovery	= 38.20%	
24) 1,2-Dichloroethane-d4	5.59	65	61526	3.67 PPB	0.00
Spiked Amount 10.000			Recovery	= 36.70%	
33) Toluene-d8	7.77	98	198805	3.92 PPB	0.00
Spiked Amount 10.000			Recovery	= 39.20%	
47) 4-Bromofluorobenzene	10.58	95	71083	4.02 PPB	0.00
Spiked Amount 10.000			Recovery	= 40.20%	

Target Compounds						Qvalue
2) Dichlorodifluoromethane	1.20	85	7348	0.33 PPB		92
3) Chloromethane	1.35	50	10831	0.46 PPB		90
4) Vinyl Chloride	1.43	62	8311	0.36 PPB		96
6) Chloroethane	1.79	49	1870	0.49 PPB	#	63
7) Trichlorofluoromethane	1.96	101	9122	0.33 PPB		95
8) Acrolein	2.41	56	11853	7.92 PPB		93
9) Trichlorotrifluoroethane	2.41	151	4024	0.40 PPB		94
10) 1,1-Dichloroethene	2.44	96	5802	0.50 PPB	#	81
11) Acetone	2.56	43	53020	20.07 PPB		99
12) Carbon Disulfide	2.63	76	21153	0.46 PPB		98
13) Methylene Chloride	2.98	84	7530	0.51 PPB		86
14) Acrylonitrile	3.32	53	1947	0.55 PPB	#	70
15) trans-1,2-Dichloroethene	3.20	96	5840	0.41 PPB		79
16) 1,1-Dichloroethane	3.72	63	10513	0.37 PPB		92
17) Vinyl Acetate	3.79	86	1361	0.82 PPB	#	20
18) cis-1,2-Dichloroethene	4.46	96	5013	0.33 PPB		99
19) 2-Butanone	4.52	72	14005	15.87 PPB		94
20) Chloroform	4.88	83	9382	0.37 PPB		95
21) 1,1,1-Trichloroethane	5.05	97	8206	0.40 PPB		96
23) Carbon Tetrachloride	5.21	117	6302	0.43 PPB		87
25) Benzene	5.54	78	21429	0.36 PPB		96
26) 1,2-Dichloroethane	5.69	62	6506	0.33 PPB		87
27) Trichloroethene	6.37	95	5304	0.36 PPB		91
28) 1,2-Dichloropropane	6.71	63	5747	0.37 PPB		93
29) Bromodichloromethane	7.03	83	6139	0.37 PPB		88
30) 2-Chloroethyl Vinyl Ether	7.42	63	1705	0.27 PPB		88
31) cis-1,3-Dichloropropene	7.55	75	7064	0.34 PPB		94

(#) = qualifier out of range (m) = manual integration

HB 3-31-11

Data File : J:\MS23\DATA\032911\0329F017.D
Acq On : 29 Mar 2011 3:02 pm
Sample : 624 ICAL 0.5
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 29 15:34:41 2011

Vial: 5
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: 032911624.RES

Quant Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration
DataAcq Meth : 8260

Compound	R.T.	QIon	Response	Conc Unit	Qvalue
32) 4-Methyl-2-pentanone (MIBK	8.65	58	45365	16.08 PPB	96
34) Toluene	7.84	92	12727	0.36 PPB	93
36) trans-1,3-Dichloropropene	8.21	75	5837	0.36 PPB	90
37) 1,1,2-Trichloroethane	8.39	83	2875	0.36 PPB	91
38) Tetrachloroethene	8.40	164	3799	0.38 PPB	90
39) 2-Hexanone	8.65	43	100804	17.64 PPB	99
40) Dibromochloromethane	8.77	129	3001	0.36 PPB	94
41) Chlorobenzene	9.38	112	12660	0.36 PPB	88
42) Ethylbenzene	9.47	106	6537	0.34 PPB	93
43) m,p-Xylenes	9.60	106	16867	0.71 PPB	87
44) o-Xylene	10.01	106	8641	0.39 PPB	89
45) Styrene	10.04	103	6668m	0.39 PPB	
46) Bromoform	10.25	173	1503	0.41 PPB	91
49) 1,1,2,2-Tetrachloroethane	10.78	83	3221	0.36 PPB	91
51) 1,3-Dichlorobenzene	11.67	146	8500	0.35 PPB	97
52) 1,4-Dichlorobenzene	11.78	146	9150	0.37 PPB	95
53) 1,2-Dichlorobenzene	12.14	146	7351	0.33 PPB	97

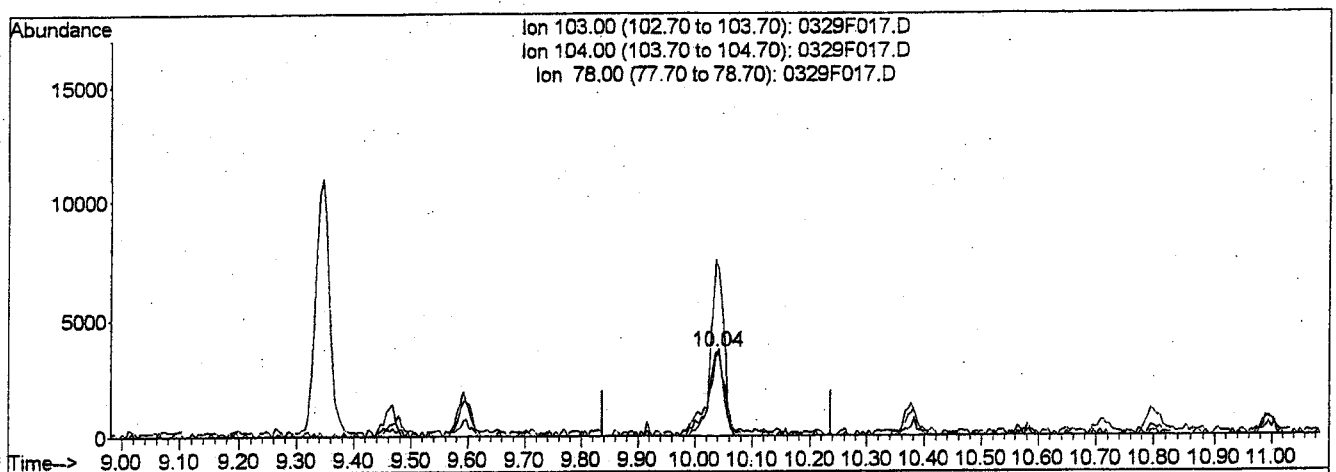
(#) = qualifier out of range (m) = manual integration

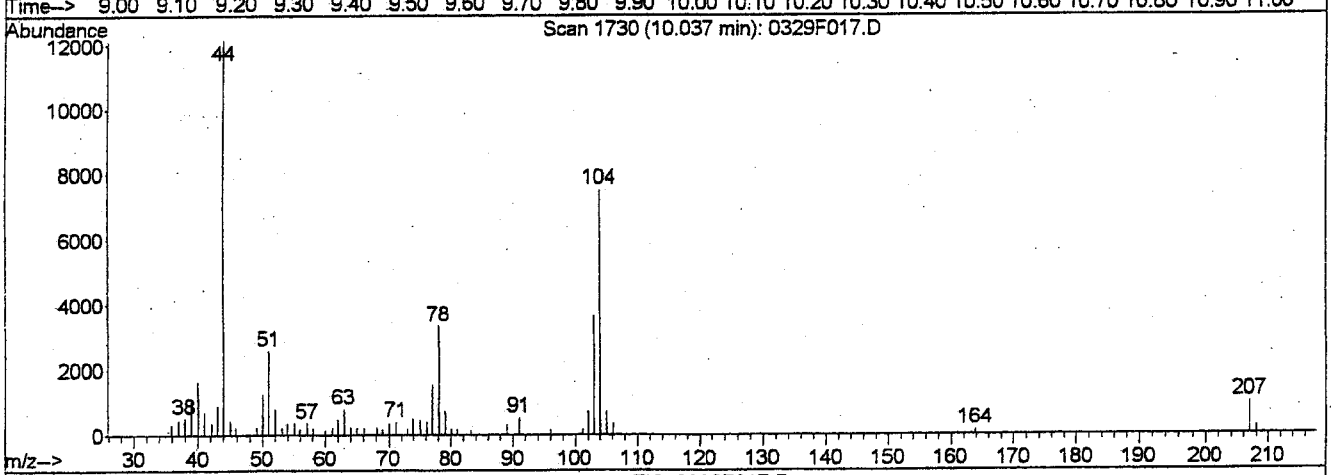
Quantitation Report (Quant)

Data File : J:\MS23\DATA\032911\0329F017.D
Acq On : 29 Mar 2011 3:02 pm
Sample : 624 ICAL 0.5
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 29 15:34 2011

Vial: 5
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Multiple Level Calibration





TIC: 0329F017.D

(45) Styrene (T)

10.04min 0.42PPB

response 7261

Ion	Exp%	Act%
103.00	100	100
104.00	214.60	207.96
78.00	96.70	85.81
0.00	0.00	0.00

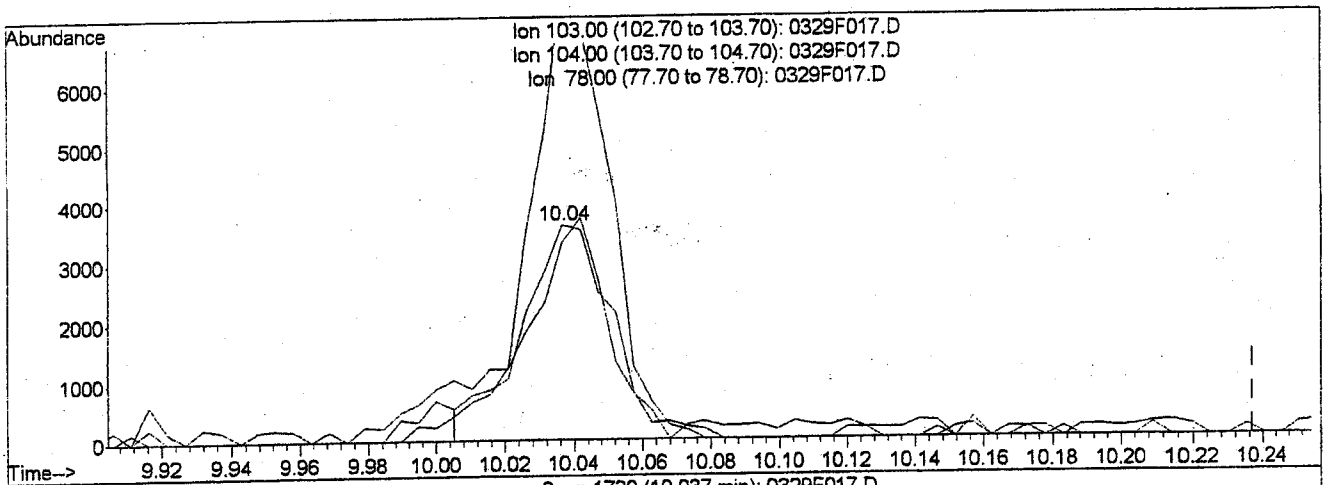
0329F017.D 032911624.M Tue Mar 29 15:35:25 2011

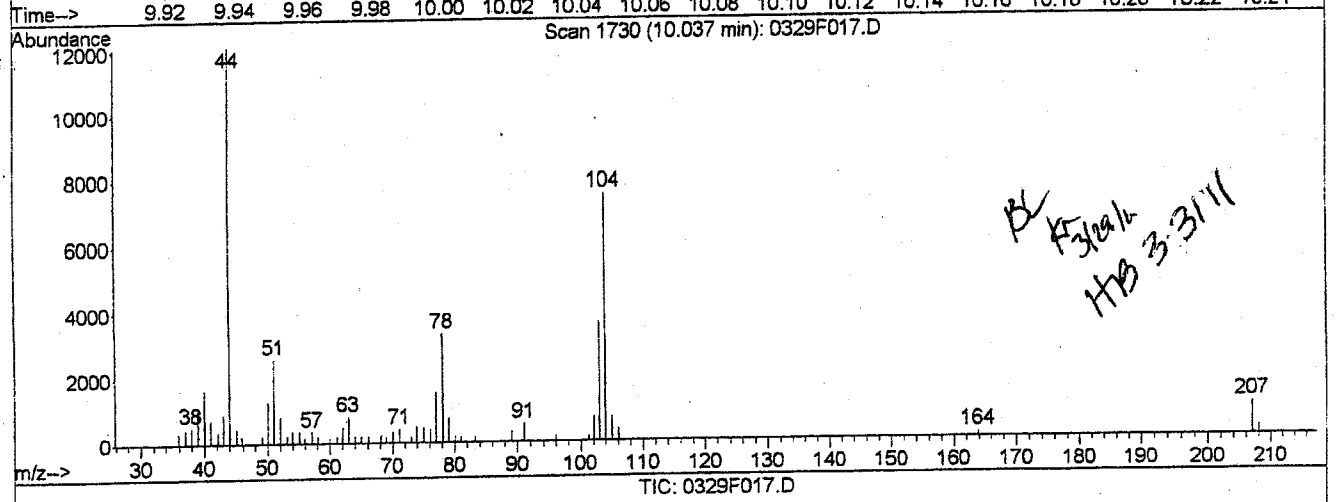
Quantitation Report (Qedit)

Data File : J:\MS23\DATA\032911\0329F017.D
Acq On : 29 Mar 2011 3:02 pm
Sample : 624 ICAL 0.5
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 29 15:35 2011

Vial: 5
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Multiple Level Calibration





TIC: 0329F017.D

(45) Styrene (T)

10.04min 0.39PPB m

response 6668

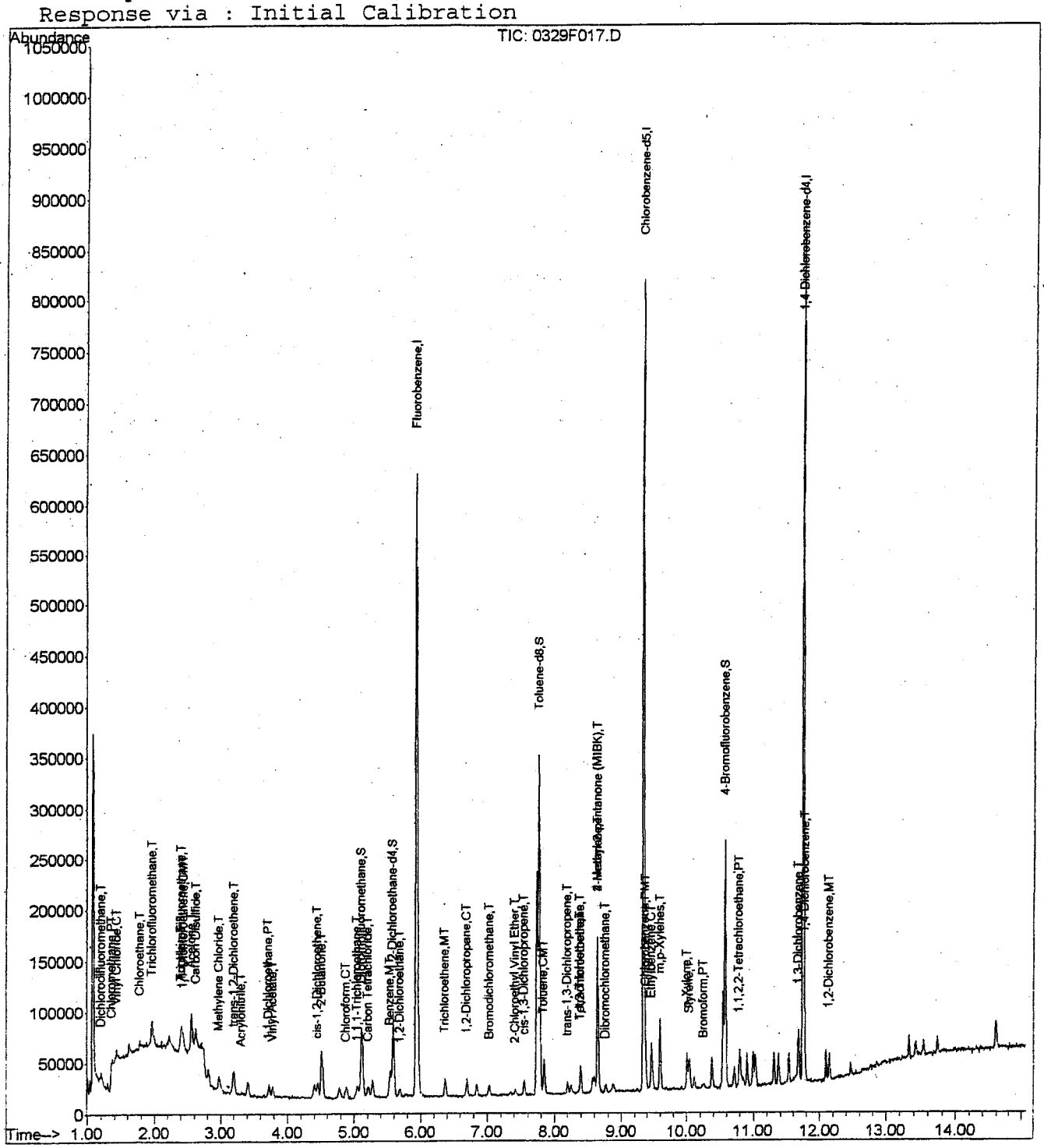
Ion	Exp%	Act%
103.00	100	100
104.00	214.60	207.96
78.00	96.70	91.95
0.00	0.00	0.00

0329F017.D 032911624.M Tue Mar 29 15:35:31 2011

Data File : J:\MS23\DATA\032911\0329F017.D
Acq On : 29 Mar 2011 3:02 pm
Sample : 624 ICAL 0.5
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 29 15:35 2011

Vial: 5
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624.RE

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration



Quantification Report (QT Reviewed)

Data File : J:\MS23\DATA\032911\0329F018.D
Acq On : 29 Mar 2011 3:32 pm
Sample : 624 ICAL 1
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 29 16:32:20 2011

Vial: 6
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: 032911624.RES

Quant Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration
DataAcq Meth : 8260

KR 3/29/11 NN

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorobenzene	5.94	96	558859	10.00 PPB	0.00
35) Chlorobenzene-d5	9.35	82	226918	10.00 PPB	0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	186274	10.00 PPB	0.00
System Monitoring Compounds					
22) Dibromofluoromethane	5.11	113	69055	5.55 PPB	0.00
Spiked Amount 10.000			Recovery	= 55.50%	
24) 1,2-Dichloroethane-d4	5.59	65	92548	5.55 PPB	0.01
Spiked Amount 10.000			Recovery	= 55.50%	
33) Toluene-d8	7.77	98	283019	5.60 PPB	0.00
Spiked Amount 10.000			Recovery	= 56.00%	
47) 4-Bromofluorobenzene	10.58	95	107414	6.12 PPB	0.00
Spiked Amount 10.000			Recovery	= 61.20%	

Target Compounds						Qvalue
2) Dichlorodifluoromethane	1.20	85	20449	0.93 PPB		94
3) Chloromethane	1.35	50	29515	1.26 PPB		94
4) Vinyl Chloride	1.43	62	23758	1.03 PPB		96
5) Bromomethane	1.71	96	3050m	0.38 PPB		
6) Chloroethane	1.79	49	4120	1.08 PPB		94
7) Trichlorofluoromethane	1.96	101	27367	1.01 PPB		99
8) Acrolein	2.41	56	37021	24.86 PPB		94
9) Trichlorotrifluoroethane	2.40	151	12188	1.23 PPB		96
10) 1,1-Dichloroethene	2.44	96	13032	1.13 PPB		95
11) Acetone	2.56	43	170734	64.93 PPB		93
12) Carbon Disulfide	2.63	76	55746	1.21 PPB		97
13) Methylene Chloride	2.97	84	15517	1.05 PPB		90
14) Acrylonitrile	3.33	53	5255	1.49 PPB		92
15) trans-1,2-Dichloroethene	3.20	96	14035	1.00 PPB		96
16) 1,1-Dichloroethane	3.73	63	28351	1.01 PPB		98
17) Vinyl Acetate	3.79	86	3479	2.11 PPB	#	60
18) cis-1,2-Dichloroethene	4.46	96	16483	1.08 PPB		84
19) 2-Butanone	4.51	72	49673	56.55 PPB		93
20) Chloroform	4.88	83	26624	1.04 PPB		99
21) 1,1,1-Trichloroethane	5.06	97	23726	1.16 PPB		88
23) Carbon Tetrachloride	5.21	117	17434	1.20 PPB		95
25) Benzene	5.54	78	61892	1.04 PPB		98
26) 1,2-Dichloroethane	5.69	62	19511	1.00 PPB		97
27) Trichloroethene	6.37	95	15363	1.05 PPB		90
28) 1,2-Dichloropropane	6.70	63	16986	1.09 PPB		94
29) Bromodichloromethane	7.03	83	20396	1.24 PPB		92
30) 2-Chloroethyl Vinyl Ether	7.42	63	6234	1.01 PPB		93

HB 3-31-11

(#) = qualifier out of range (m) = manual integration

Data File : J:\MS23\DATA\032911\0329F018.D
Acq On : 29 Mar 2011 3:32 pm
Sample : 624 ICAL 1
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 29 16:32:20 2011

Vial: 6
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624.RES

Quant Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration
DataAcq Meth : 8260

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
31)	cis-1,3-Dichloropropene	7.55	75	24101	1.18 PPB	92
32)	4-Methyl-2-pentanone (MIBK	8.65	58	171771	61.17 PPB	99
34)	Toluene	7.84	92	38877	1.11 PPB	97
36)	trans-1,3-Dichloropropene	8.21	75	20827	1.28 PPB	89
37)	1,1,2-Trichloroethane	8.39	83	9680	1.21 PPB	90
38)	Tetrachloroethene	8.40	164	10967	1.11 PPB	96
39)	2-Hexanone	8.65	43	368490	64.94 PPB	98
40)	Dibromochloromethane	8.76	129	12180	1.47 PPB	99
41)	Chlorobenzene	9.38	112	44466	1.28 PPB	97
42)	Ethylbenzene	9.47	106	22785	1.19 PPB	95
43)	m,p-Xylenes	9.60	106	57047	2.42 PPB	94
44)	o-Xylene	10.01	106	28039	1.26 PPB	97
45)	Styrene	10.04	103	20711m	1.22 PPB	
46)	Bromoform	10.24	173	6042	1.64 PPB	97
49)	1,1,2,2-Tetrachloroethane	10.78	83	12400	1.38 PPB	95
51)	1,3-Dichlorobenzene	11.67	146	34744	1.42 PPB	99
52)	1,4-Dichlorobenzene	11.78	146	33563	1.35 PPB	93
53)	1,2-Dichlorobenzene	12.15	146	29965	1.35 PPB	94

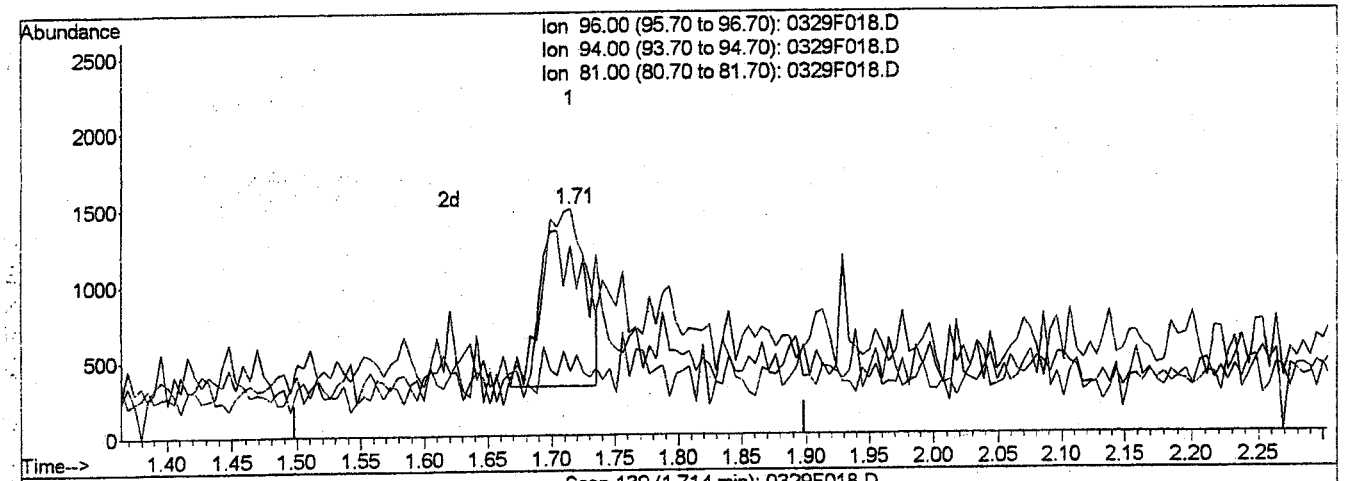
(#) = qualifier out of range (m) = manual integration

Data File : J:\MS23\DATA\032911\0329F018.D
Acq On : 29 Mar 2011 3:32 pm
Sample : 624 ICAL 1
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 29 16:32 2011

Vial: 6
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Multiple Level Calibration



(5) Bromomethane (T)

1.71min 0.35PPB

response 2805

Ion	Exp%	Act%
96.00	100	100
94.00	101.70	72.08
81.00	14.70	2.58
0.00	0.00	0.00

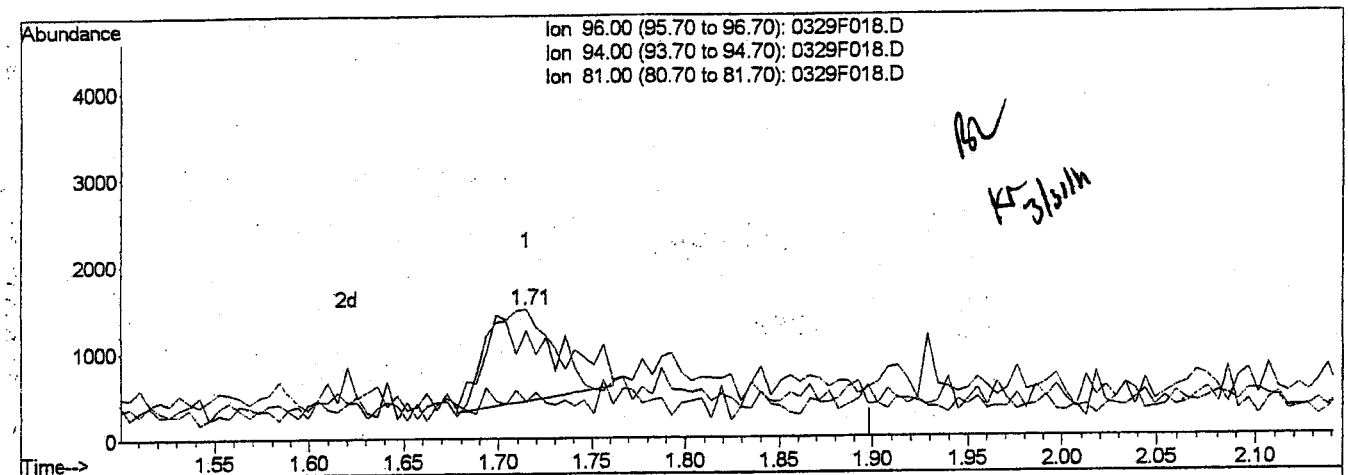
0329F018.D 032911624.M Tue Mar 29 16:32:42 2011

Quantitation Report (Qedit)

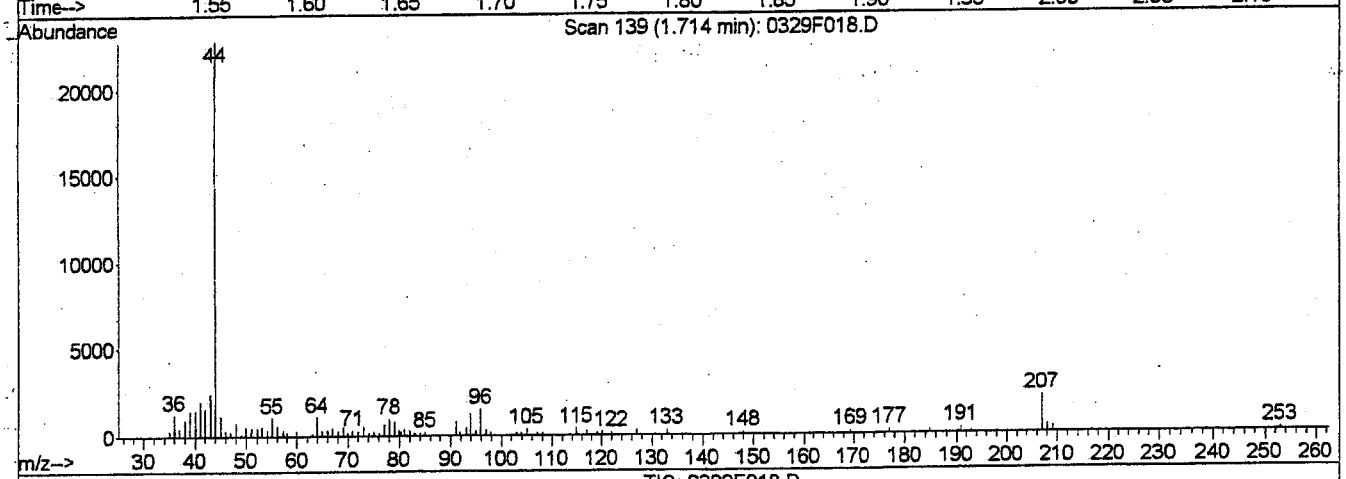
Data File : J:\MS23\DATA\032911\0329F018.D
Acq On : 29 Mar 2011 3:32 pm
Sample : 624 ICAL 1
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 29 16:32 2011

Vial: 6
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Multiple Level Calibration



KR 3/31/11



(5) Bromomethane (T)

1.71min 0.38PPB m

response 3050

Ion	Exp%	Act%
96.00	100	100
94.00	101.70	83.90
81.00	14.70	28.03
0.00	0.00	0.00

HB 3.31.11

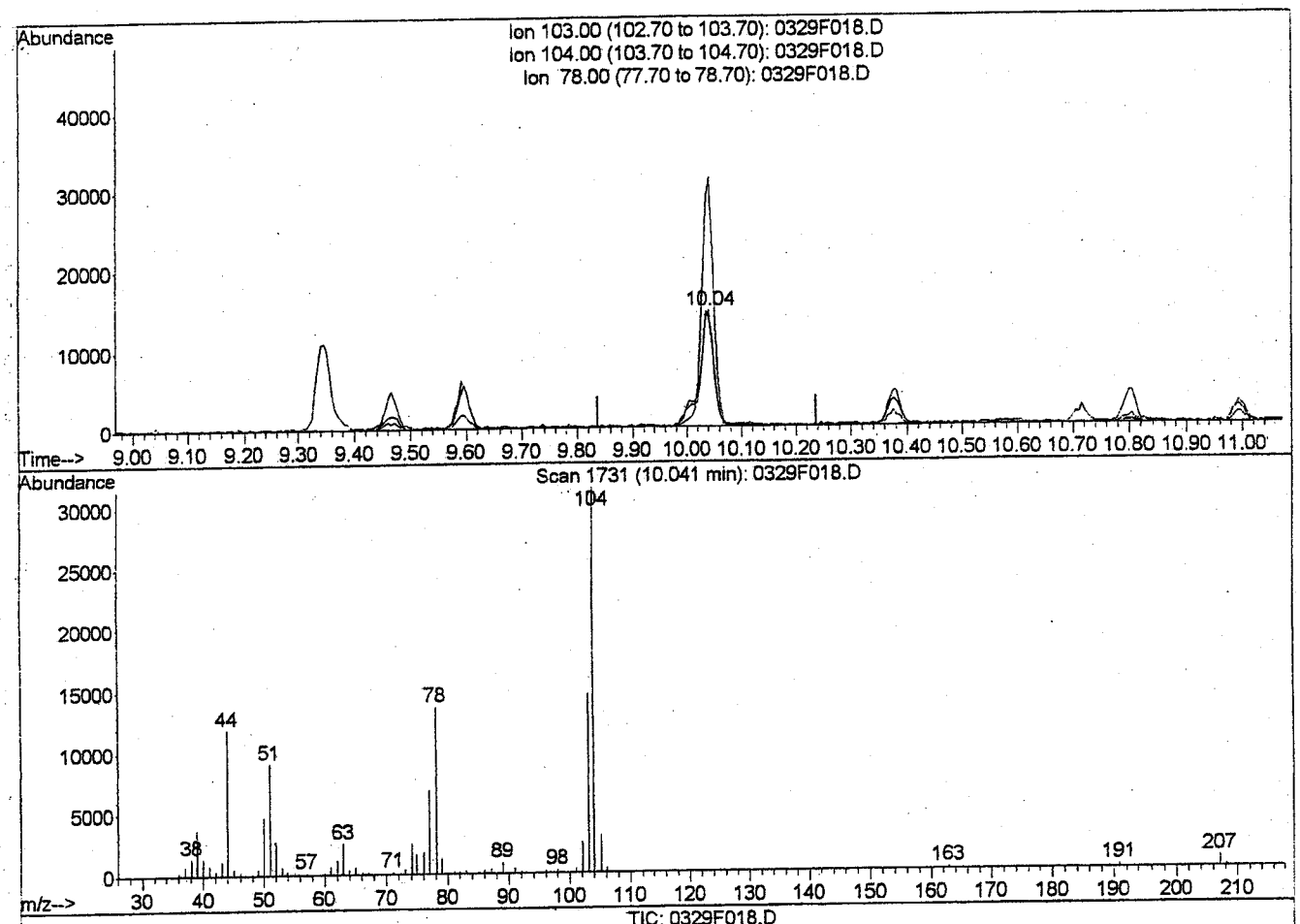
0329F018.D 032911624.M Tue Mar 29 16:32:58 2011

Data File : J:\MS23\DATA\032911\0329F018.D
Acq On : 29 Mar 2011 3:32 pm
Sample : 624 ICAL 1
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 29 16:32 2011

Vial: 6
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Multiple Level Calibration



(45) Styrene (T)

10.04min 1.50PPB

response 25546

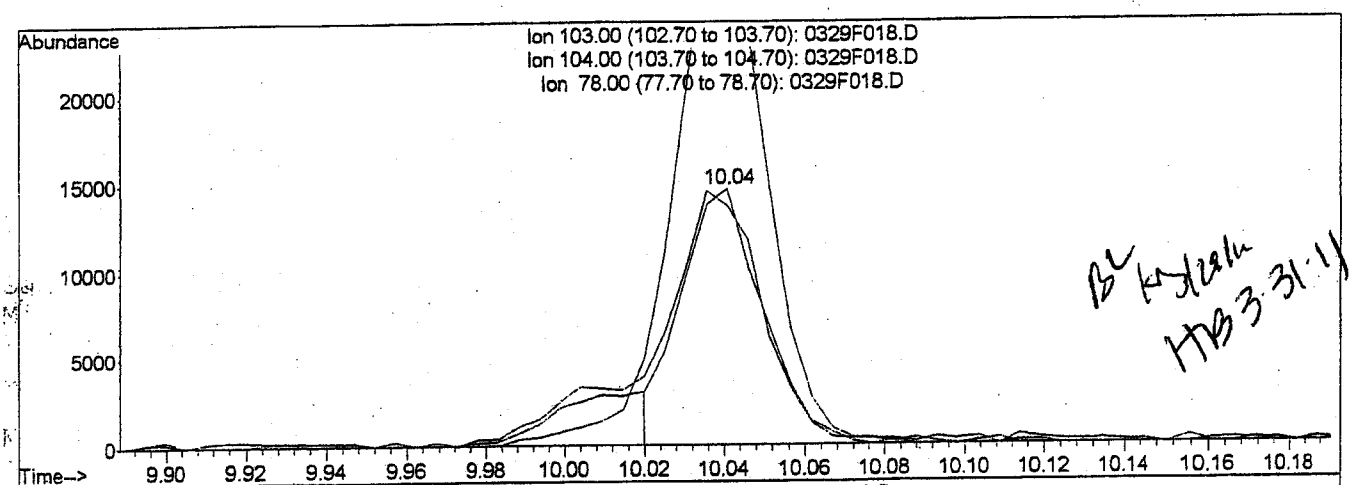
Ion	Exp%	Act%
103.00	100	100
104.00	214.60	214.10
78.00	96.70	93.43
0.00	0.00	0.00

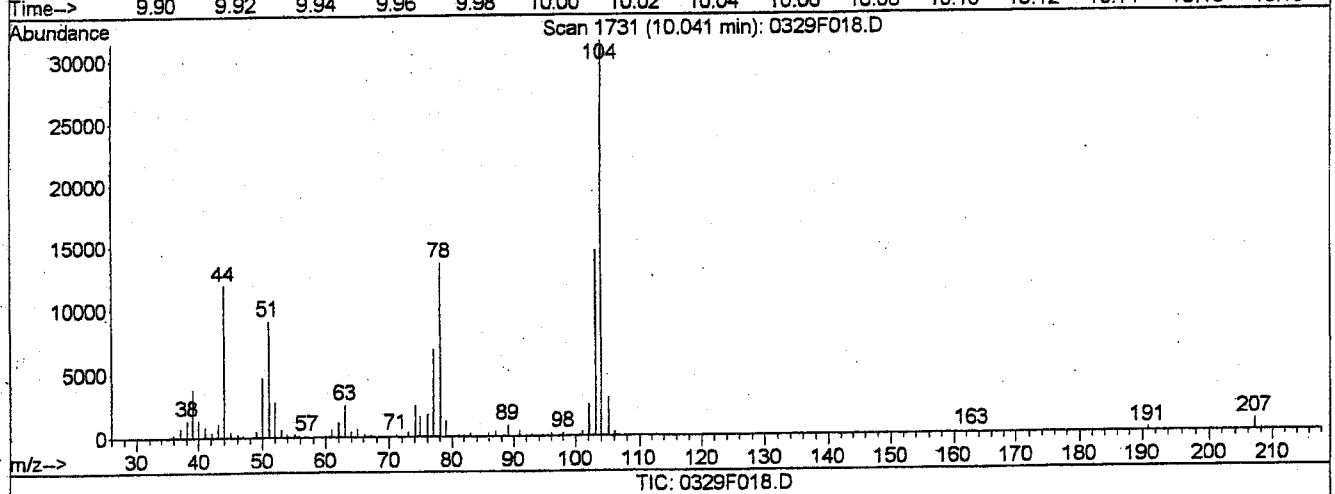
0329F018.D 032911624.M Tue Mar 29 16:33:29 2011

Data File : J:\MS23\DATA\032911\0329F018.D
Acq On : 29 Mar 2011 3:32 pm
Sample : 624 ICAL 1
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 29 16:33 2011

Vial: 6
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Multiple Level Calibration





(45) Styrene (T)

10.04min 1.22PPB m

response 20711

Ion	Exp%	Act%
103.00	100	100
104.00	214.60	215.24
78.00	96.70	93.43
0.00	0.00	0.00

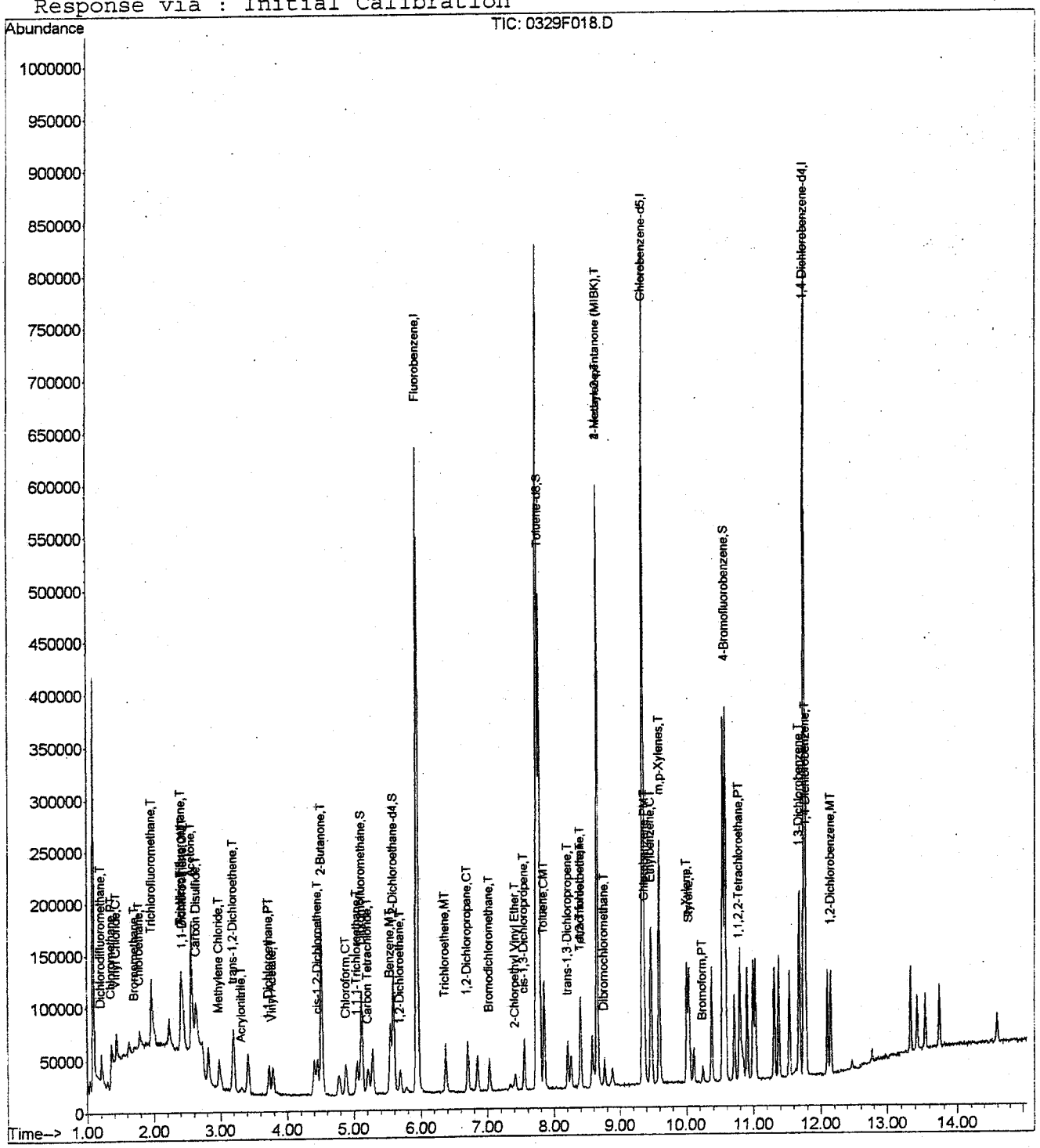
0329F018.D 032911624.M Tue Mar 29 16:33:34 2011

Data File : J:\MS23\DATA\032911\0329F018.D
Acq On : 29 Mar 2011 3:32 pm
Sample : 624 ICAL 1
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 29 16:33 2011

Vial: 6
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: 032911624.RE

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration



0329F018.D 032911624.M Tue Mar 29 16:33:44 2011 Page 3

Data File : J:\MS23\DATA\032911\0329F019.D
Acq On : 29 Mar 2011 4:02 pm
Sample : 624 ICAL 5
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 29 16:33:48 2011

Vial: 7
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624.RES

Quant Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration
DataAcq Meth : 8260

KR 3/29/11

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	5.94	96	558021	10.00	PPB	0.00
35) Chlorobenzene-d5	9.35	82	229491	10.00	PPB	0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	189592	10.00	PPB	0.00
System Monitoring Compounds						
22) Dibromofluoromethane	5.11	113	96533	7.77	PPB	0.00
Spiked Amount 10.000			Recovery	=	77.70%	
24) 1,2-Dichloroethane-d4	5.59	65	123618	7.43	PPB	0.01
Spiked Amount 10.000			Recovery	=	74.30%	
33) Toluene-d8	7.77	98	416902	8.26	PPB	0.00
Spiked Amount 10.000			Recovery	=	82.60%	
47) 4-Bromofluorobenzene	10.58	95	149309	8.41	PPB	0.00
Spiked Amount 10.000			Recovery	=	84.10%	

Target Compounds						Qvalue
2) Dichlorodifluoromethane	1.20	85	107705	4.90	PPB	100
3) Chloromethane	1.35	50	138882	5.92	PPB	99
4) Vinyl Chloride	1.43	62	126496	5.51	PPB	99
5) Bromomethane	1.70	96	21492	2.72	PPB	95
6) Chloroethane	1.78	49	19828	5.22	PPB	91
7) Trichlorofluoromethane	1.96	101	153468	5.65	PPB	98
8) Acrolein	2.41	56	163665	110.07	PPB	99
9) Trichlorotrifluoroethane	2.40	151	65783	6.62	PPB	100
10) 1,1-Dichloroethene	2.44	96	68781	5.96	PPB	97
11) Acetone	2.56	43	428981	163.38	PPB	93
12) Carbon Disulfide	2.63	76	291234	6.33	PPB	96
13) Methylene Chloride	2.97	84	67442	4.57	PPB	98
14) Acrylonitrile	3.31	53	26312	7.45	PPB	94
15) trans-1,2-Dichloroethene	3.21	96	70474	5.03	PPB	97
16) 1,1-Dichloroethane	3.73	63	142443	5.07	PPB	98
17) Vinyl Acetate	3.79	86	16233	9.86	PPB	100
18) cis-1,2-Dichloroethene	4.45	96	74312	4.88	PPB	94
19) 2-Butanone	4.51	72	124146	141.54	PPB	98
20) Chloroform	4.88	83	126708	4.97	PPB	95
21) 1,1,1-Trichloroethane	5.05	97	120304	5.89	PPB	99
23) Carbon Tetrachloride	5.21	117	93027	6.44	PPB	95
25) Benzene	5.54	78	303174	5.11	PPB	100
26) 1,2-Dichloroethane	5.68	62	93030	4.78	PPB	98
27) Trichloroethene	6.37	95	74879	5.14	PPB	97
28) 1,2-Dichloropropane	6.70	63	76450	4.93	PPB	94
29) Bromodichloromethane	7.03	83	85824	5.24	PPB	99
30) 2-Chloroethyl Vinyl Ether	7.42	63	25479	4.12	PPB	91

(#) = qualifier out of range (m) = manual integration

HB 3/31/11

Data File : J:\MS23\DATA\032911\0329F019.D
Acq On : 29 Mar 2011 4:02 pm
Sample : 624 ICAL 5
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 29 16:33:48 2011

Vial: 7
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: 032911624.RES

Quant Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration
DataAcq Meth : 8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
31) cis-1,3-Dichloropropene	7.55	75	104802	5.12	PPB	94
32) 4-Methyl-2-pentanone (MIBK	8.65	58	443306	158.10	PPB	99
34) Toluene	7.84	92	186044	5.31	PPB	100
36) trans-1,3-Dichloropropene	8.21	75	87192	5.30	PPB	98
37) 1,1,2-Trichloroethane	8.39	83	37298	4.63	PPB	85
38) Tetrachloroethene	8.40	164	56141	5.62	PPB	99
39) 2-Hexanone	8.65	43	947872	165.17	PPB	100
40) Dibromochloromethane	8.76	129	48292	5.75	PPB	99
41) Chlorobenzene	9.38	112	193696	5.52	PPB	98
42) Ethylbenzene	9.47	106	107827	5.58	PPB	94
43) m,p-Xylenes	9.60	106	267562	11.23	PPB	98
44) o-Xylene	10.01	106	126709	5.62	PPB	98
45) Styrene	10.04	103	96407m	5.60	PPB	
46) Bromoform	10.25	173	22120	5.95	PPB	99
49) 1,1,2,2-Tetrachloroethane	10.78	83	44690	4.89	PPB	98
51) 1,3-Dichlorobenzene	11.67	146	138110	5.56	PPB	99
52) 1,4-Dichlorobenzene	11.78	146	140514	5.53	PPB	99
53) 1,2-Dichlorobenzene	12.15	146	122422	5.40	PPB	98

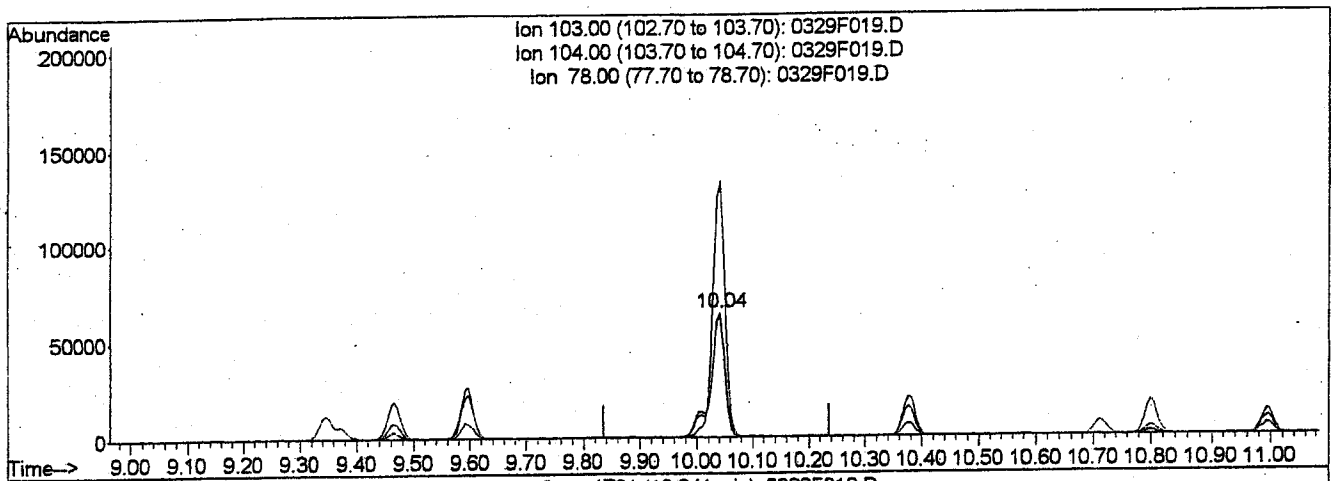
(#) = qualifier out of range (m) = manual integration
0329F019.D 032911624.M Tue Mar 29 16:34:38 2011

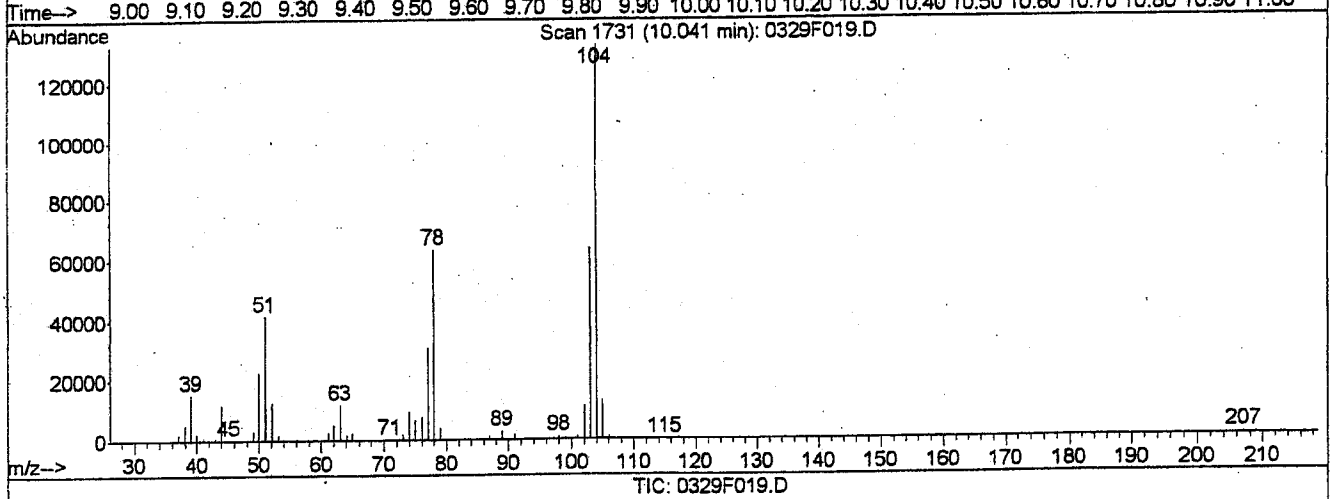
Data File : J:\MS23\DATA\032911\0329F019.D
Acq On : 29 Mar 2011 4:02 pm
Sample : 624 ICAL 5
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 29 16:33 2011

Vial: 7
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Multiple Level Calibration





TIC: 0329F019.D

(45) Styrene (T)

10.04min 6.53PPB

response 112426

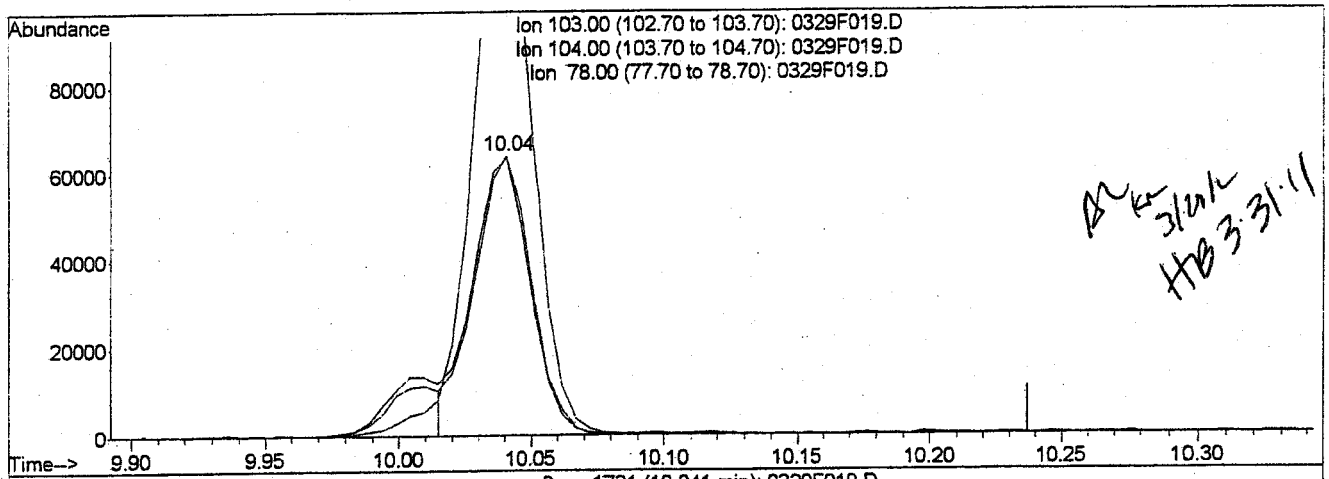
Ion	Exp%	Act%
103.00	100	100
104.00	214.60	206.76
78.00	96.70	99.20
0.00	0.00	0.00

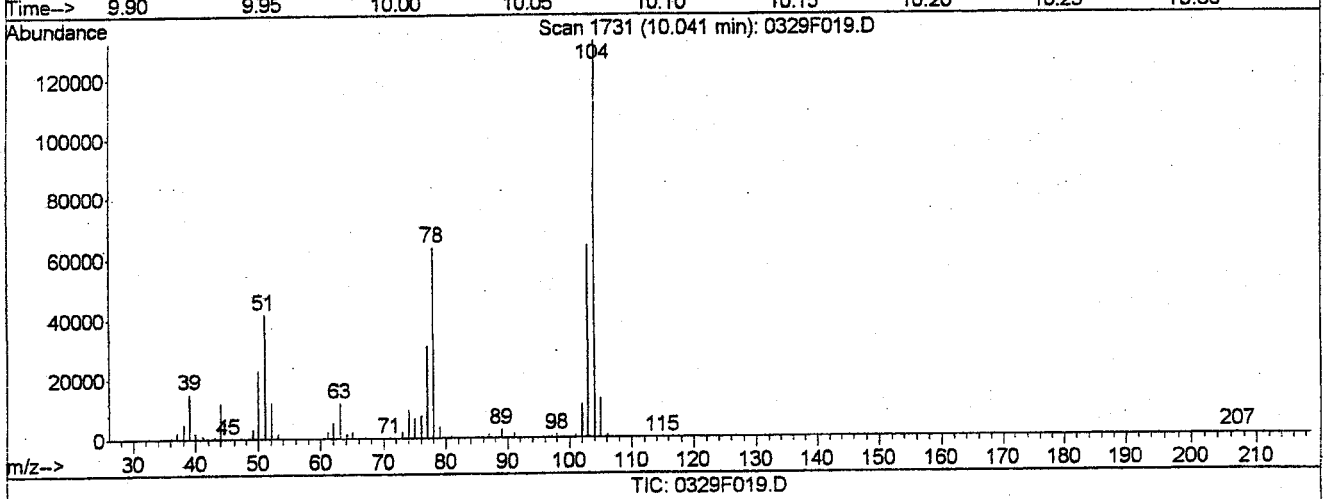
0329F019.D 032911624.M Tue Mar 29 16:34:24 2011

Data File : J:\MS23\DATA\032911\0329F019.D
Acq On : 29 Mar 2011 4:02 pm
Sample : 624 ICAL 5
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 29 16:34 2011

Vial: 7
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Multiple Level Calibration





TIC: 0329F019.D

(45) Styrene (T)

10.04min 5.60PPB m

response 96407

Ion	Exp%	Act%
103.00	100	100
104.00	214.60	206.76
78.00	96.70	99.20
0.00	0.00	0.00

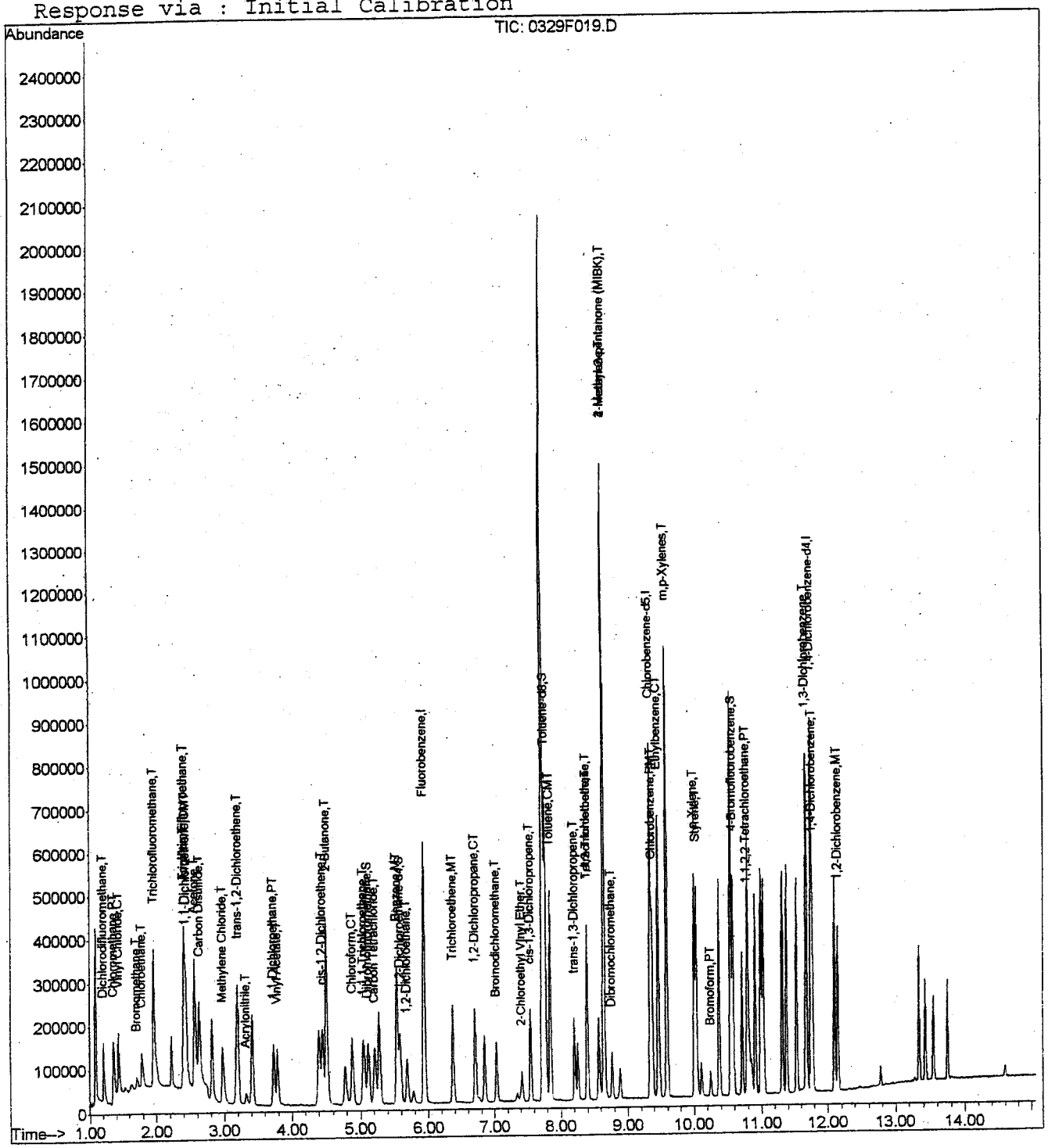
0329F019.D 032911624.M Tue Mar 29 16:34:28 2011

Data File : J:\MS23\DATA\032911\0329F019.D
Acq On : 29 Mar 2011 4:02 pm
Sample : 624 ICAL 5
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 29 16:34 2011

Vial: 7
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: 032911624.RE

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\032911\0329F020.D
Acq On : 29 Mar 2011 4:32 pm
Sample : 624 ICAL 10
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 08:58:49 2011

Vial: 8
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624.RES

Quant Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration
DataAcq Meth : 8260

KR 3/30/11

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	5.94	96	555419	10.00	PPB	0.00
35) Chlorobenzene-d5	9.34	82	228350	10.00	PPB	0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	192069	10.00	PPB	0.00
System Monitoring Compounds						
22) Dibromofluoromethane	5.12	113	123128	9.96	PPB	0.00
Spiked Amount 10.000			Recovery =	99.60%		
24) 1,2-Dichloroethane-d4	5.59	65	155087	9.36	PPB	0.00
Spiked Amount 10.000			Recovery =	93.60%		
33) Toluene-d8	7.77	98	532754	10.61	PPB	0.00
Spiked Amount 10.000			Recovery =	106.10%		
47) 4-Bromofluorobenzene	10.58	95	189409	10.73	PPB	0.00
Spiked Amount 10.000			Recovery =	107.30%		

Target Compounds						Qvalue
2) Dichlorodifluoromethane	1.20	85	207079	9.47	PPB	98
3) Chloromethane	1.36	50	274921	11.78	PPB	97
4) Vinyl Chloride	1.43	62	237382	10.39	PPB	99
5) Bromomethane	1.71	96	56963	7.23	PPB	97
6) Chloroethane	1.79	49	38232	10.11	PPB	97
7) Trichlorofluoromethane	1.96	101	291358	10.77	PPB	96
8) Acrolein	2.41	56	314337	212.39	PPB	100
9) Trichlorotrifluoroethane	2.41	151	128820	13.03	PPB	98
10) 1,1-Dichloroethene	2.44	96	137268	11.96	PPB	97
11) Acetone	2.56	43	874976	334.80	PPB	94
12) Carbon Disulfide	2.63	76	570093	12.44	PPB	95
13) Methylene Chloride	2.98	84	129598	8.83	PPB	98
14) Acrylonitrile	3.32	53	50208	14.29	PPB	99
15) trans-1,2-Dichloroethene	3.20	96	135486	9.72	PPB	99
16) 1,1-Dichloroethane	3.73	63	274582	9.82	PPB	98
17) Vinyl Acetate	3.79	86	31661	19.32	PPB #	87
18) cis-1,2-Dichloroethene	4.46	96	145751	9.62	PPB	98
19) 2-Butanone	4.51	72	264486	302.96	PPB	97
20) Chloroform	4.89	83	245454	9.68	PPB	99
21) 1,1,1-Trichloroethane	5.05	97	231234	11.38	PPB	97
23) Carbon Tetrachloride	5.22	117	182601	12.70	PPB	94
25) Benzene	5.54	78	587325	9.95	PPB	99
26) 1,2-Dichloroethane	5.69	62	177288	9.15	PPB	97
27) Trichloroethene	6.37	95	144093	9.93	PPB	99
28) 1,2-Dichloropropane	6.70	63	145520	9.44	PPB	93
29) Bromodichloromethane	7.03	83	167416	10.27	PPB	97
30) 2-Chloroethyl Vinyl Ether	7.42	63	48728	7.92	PPB	95

(#) = qualifier out of range (m) = manual integration

HB 33111

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\032911\0329F020.D
Acq On : 29 Mar 2011 4:32 pm
Sample : 624 ICAL 10
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 08:58:49 2011

Vial: 8
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624.RES

Quant Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration
DataAcq Meth : 8260

Compound	R.T.	QIon	Response	Conc Unit	Qvalue
31) cis-1,3-Dichloropropene	7.55	75	204950	10.06 PPB	94
32) 4-Methyl-2-pentanone (MIBK	8.65	58	930340	333.36 PPB	99
34) Toluene	7.85	92	360772	10.34 PPB	99
36) trans-1,3-Dichloropropene	8.20	75	165629	10.12 PPB	95
37) 1,1,2-Trichloroethane	8.39	83	72448	9.03 PPB	96
38) Tetrachloroethene	8.40	164	107728	10.84 PPB	98
39) 2-Hexanone	8.65	43	1996185	349.57 PPB	100
40) Dibromochloromethane	8.77	129	93403	11.18 PPB	99
41) Chlorobenzene	9.37	112	365346	10.47 PPB	98
42) Ethylbenzene	9.47	106	208764	10.87 PPB	95
43) m,p-Xylenes	9.59	106	520051	21.93 PPB	98
44) o-Xylene	10.01	106	245832	10.97 PPB	97
45) Styrene	10.04	103	185069m	10.80 PPB	
46) Bromoform	10.25	173	44005	11.89 PPB	99
49) 1,1,2,2-Tetrachloroethane	10.79	83	86712	9.37 PPB	96
51) 1,3-Dichlorobenzene	11.68	146	267699	10.63 PPB	99
52) 1,4-Dichlorobenzene	11.78	146	268169	10.43 PPB	98
53) 1,2-Dichlorobenzene	12.15	146	235094	10.24 PPB	99

(#) = qualifier out of range (m) = manual integration

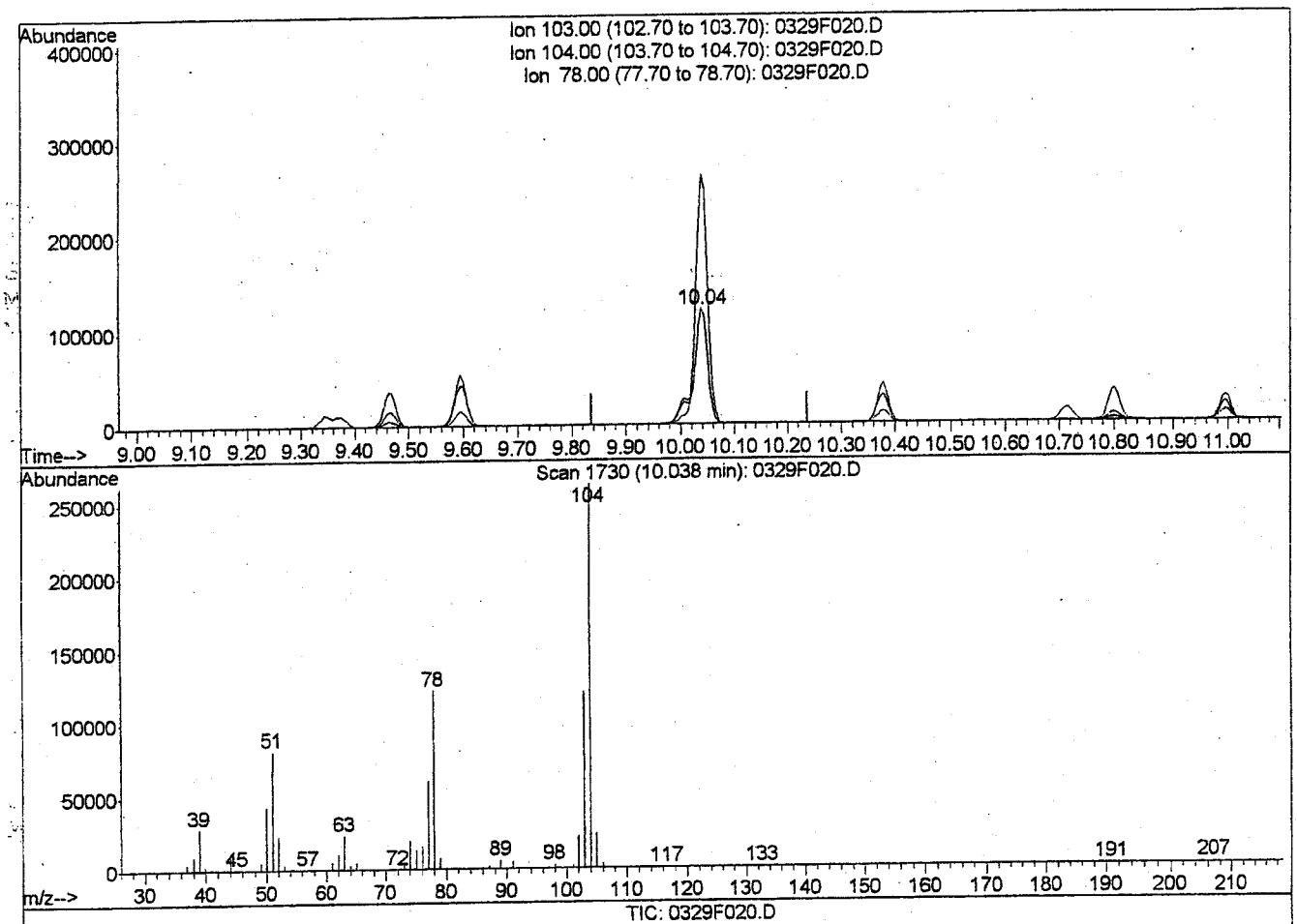
Quantitation Report (Qedit)

Data File : J:\MS23\DATA\032911\0329F020.D
Acq On : 29 Mar 2011 4:32 pm
Sample : 624 ICAL 10
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 8:58 2011

Vial: 8
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Multiple Level Calibration



(45) Styrene (T)

10.04min 12.81PPB

response 219489

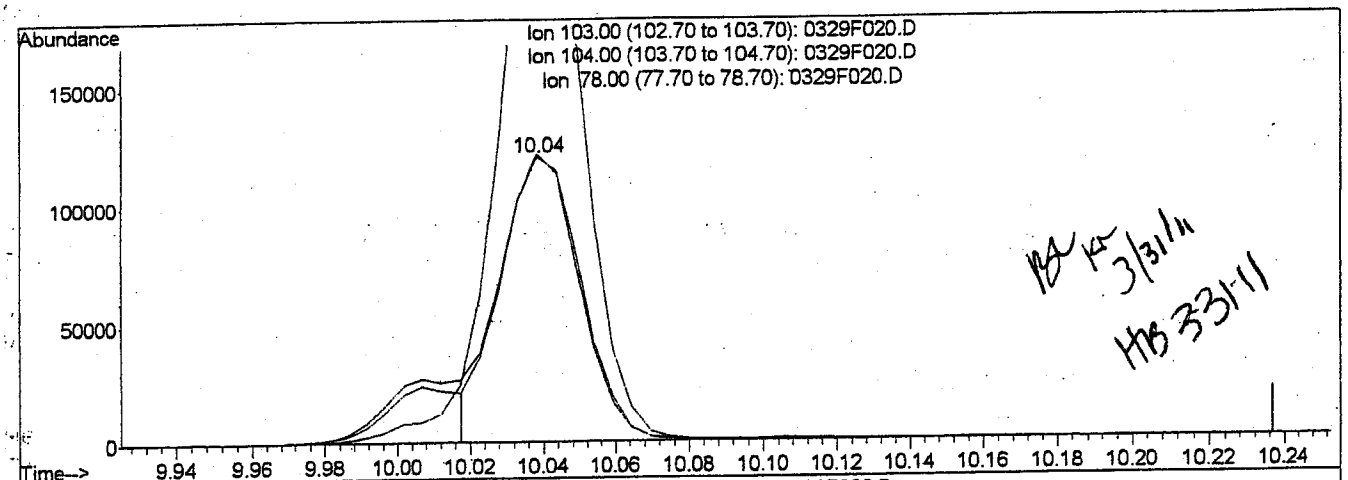
Ion	Exp%	Act%
103.00	100	100
104.00	214.60	217.11
78.00	96.70	101.16
0.00	0.00	0.00

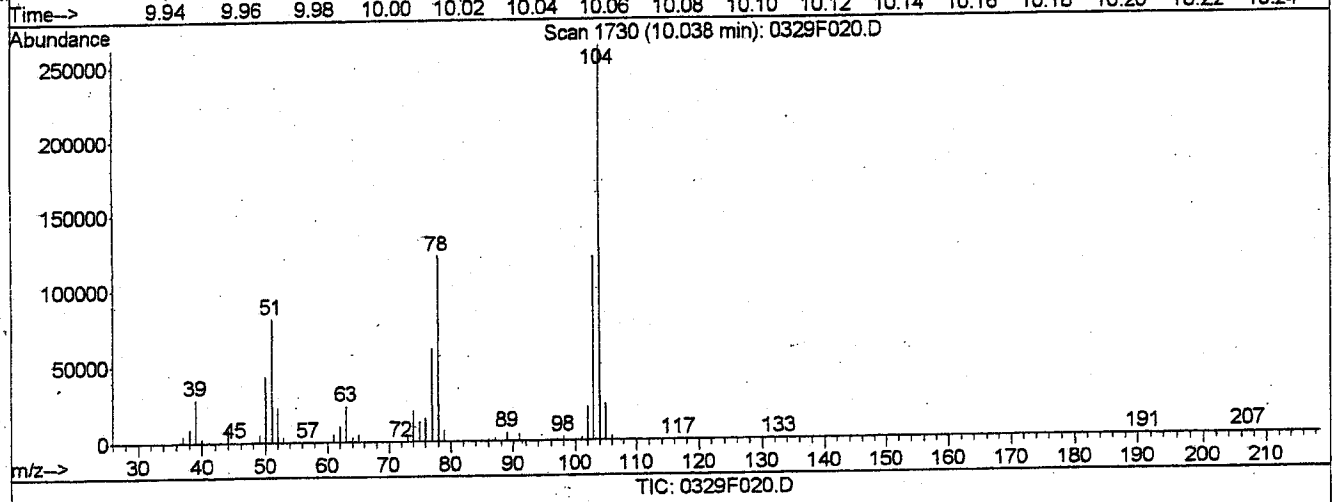
0329F020.D 032911624.M Wed Mar 30 08:59:18 2011

Data File : J:\MS23\DATA\032911\0329F020.D
Acq On : 29 Mar 2011 4:32 pm
Sample : 624 ICAL 10
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 8:59 2011

Vial: 8
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Multiple Level Calibration





(45) Styrene (T)

10.04min 10.80PPB m

response 185069

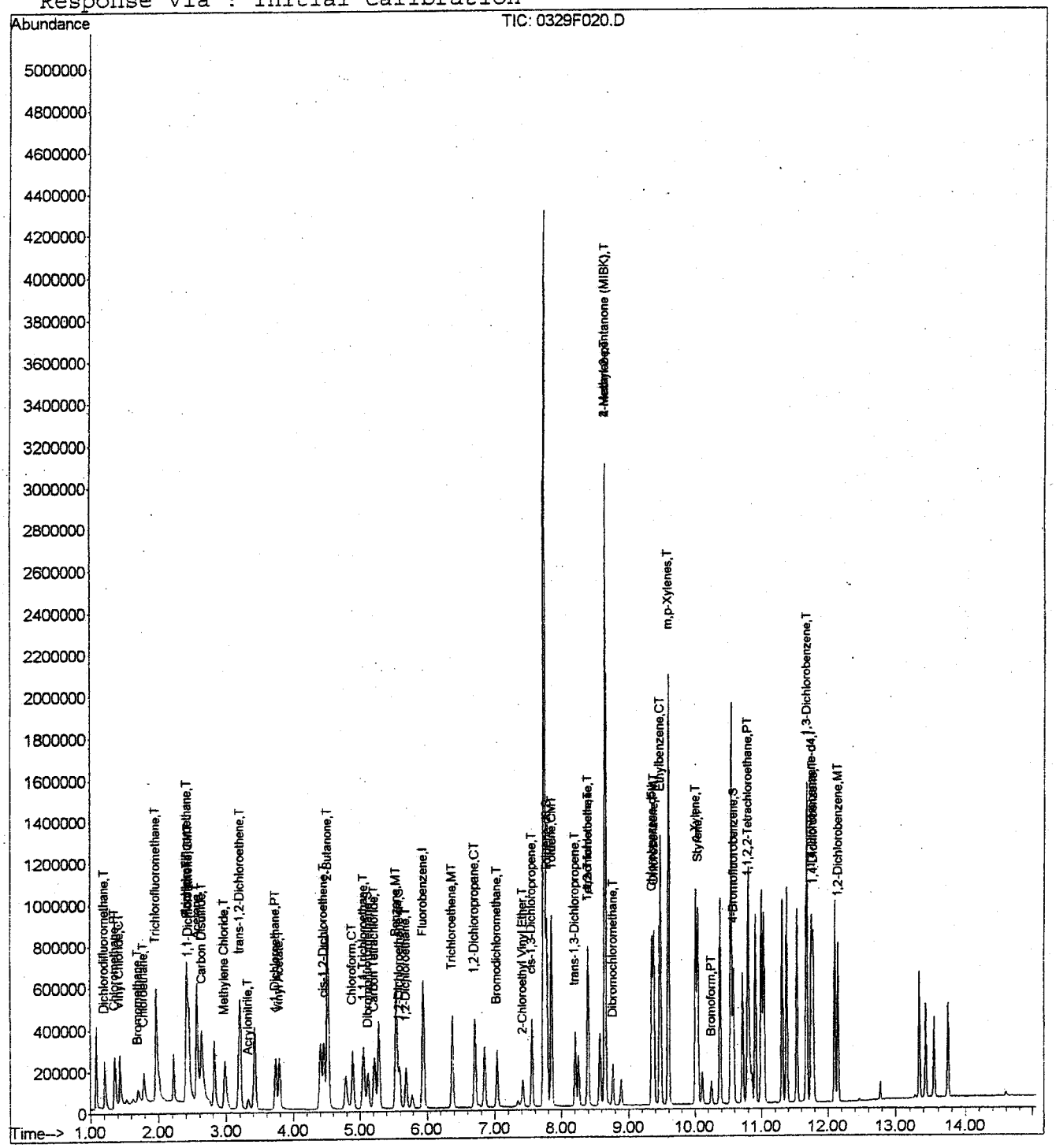
Ion	Exp%	Act%
103.00	100	100
104.00	214.60	217.11
78.00	96.70	101.16
0.00	0.00	0.00

0329F020.D 032911624.M Wed Mar 30 08:59:23 2011

Data File : J:\MS23\DATA\032911\0329F020.D
Acq On : 29 Mar 2011 4:32 pm
Sample : 624 ICAL 10
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 8:59 2011

Vial: 8
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624.RE

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration



Data File : J:\MS23\DATA\032911\0329F021.D
Acq On : 29 Mar 2011 5:02 pm
Sample : 624 ICAL 40
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 08:59:41 2011

Vial: 9
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624.RES

Quant Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration
DataAcq Meth : 8260

KR 3/30/11

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	5.94	96	562445	10.00	PPB	0.00
35) Chlorobenzene-d5	9.34	82	234604	10.00	PPB	0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	200624	10.00	PPB	0.00
System Monitoring Compounds						
22) Dibromofluoromethane	5.11	113	256063	20.46	PPB	0.00
Spiked Amount 10.000			Recovery	=	204.60%	
24) 1,2-Dichloroethane-d4	5.59	65	313592	18.69	PPB	0.01
Spiked Amount 10.000			Recovery	=	186.90%	
33) Toluene-d8	7.77	98	1133829	22.30	PPB	0.00
Spiked Amount 10.000			Recovery	=	223.00%	
47) 4-Bromofluorobenzene	10.58	95	402922	22.21	PPB	0.00
Spiked Amount 10.000			Recovery	=	222.10%	

Target Compounds						Qvalue
2) Dichlorodifluoromethane	1.20	85	843570	38.09	PPB	98
3) Chloromethane	1.35	50	1084312	45.88	PPB	98
4) Vinyl Chloride	1.43	62	988050	42.69	PPB	99
5) Bromomethane	1.70	96	361484	45.31	PPB	97
6) Chloroethane	1.78	49	152360	39.79	PPB	96
7) Trichlorofluoromethane	1.96	101	1188063	43.38	PPB	100
8) Acrolein	2.41	56	1223416	816.30	PPB	99
9) Trichlorotrifluoroethane	2.40	151	523885	52.32	PPB	98
10) 1,1-Dichloroethene	2.43	96	561849	48.33	PPB	98
11) Acetone	2.55	43	1681576	635.41	PPB	93
12) Carbon Disulfide	2.63	76	2329548	50.20	PPB	95
13) Methylene Chloride	2.98	84	514215	34.58	PPB	98
14) Acrylonitrile	3.32	53	197868	55.60	PPB	98
15) trans-1,2-Dichloroethene	3.20	96	569581	40.35	PPB	98
16) 1,1-Dichloroethane	3.73	63	1148516	40.56	PPB	99
17) Vinyl Acetate	3.78	86	122855	74.03	PPB	95
18) cis-1,2-Dichloroethene	4.45	96	605142	39.45	PPB	99
19) 2-Butanone	4.51	72	513868	581.26	PPB	95
20) Chloroform	4.88	83	1019689	39.69	PPB	99
21) 1,1,1-Trichloroethane	5.04	97	973238	47.29	PPB	99
23) Carbon Tetrachloride	5.21	117	781470	53.66	PPB	98
25) Benzene	5.54	78	2429816	40.67	PPB	99
26) 1,2-Dichloroethane	5.69	62	722485	36.82	PPB	98
27) Trichloroethene	6.37	95	600903	40.90	PPB	99
28) 1,2-Dichloropropane	6.70	63	611429	39.15	PPB	95
29) Bromodichloromethane	7.03	83	702585	42.54	PPB	97
30) 2-Chloroethyl Vinyl Ether	7.42	63	213175	34.23	PPB	93

(#) = qualifier out of range (m) = manual integration
0329F021.D 032911624.M Wed Mar 30 09:00:23 2011

HB 3/31/11

Data File : J:\MS23\DATA\032911\0329F021.D
Acq On : 29 Mar 2011 5:02 pm
Sample : 624 ICAL 40
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 08:59:41 2011

Vial: 9
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: 032911624.RES

Quant Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration
DataAcq Meth : 8260

Compound	R.T.	QIon	Response	Conc Unit	Qvalue
31) cis-1,3-Dichloropropene	7.55	75	877877	42.54 PPB	96
32) 4-Methyl-2-pentanone (MIBK	8.65	58	1819036	643.65 PPB	99
34) Toluene	7.85	92	1523794	43.14 PPB	100
36) trans-1,3-Dichloropropene	8.20	75	711126	42.29 PPB	96
37) 1,1,2-Trichloroethane	8.39	83	301211	36.54 PPB	96
38) Tetrachloroethene	8.40	164	454631	44.52 PPB	98
39) 2-Hexanone	8.65	43	3858983	657.77 PPB	99
40) Dibromochloromethane	8.77	129	393621	45.88 PPB	99
41) Chlorobenzene	9.37	112	1528875	42.66 PPB	98
42) Ethylbenzene	9.47	106	887659	44.97 PPB	93
43) m,p-Xylenes	9.59	106	2240209	91.97 PPB	98
44) o-Xylene	10.01	106	1047486	45.48 PPB	100
45) Styrene	10.04	103	808116m	45.90 PPB	
46) Bromoform	10.25	173	195010	51.28 PPB	96
49) 1,1,2,2-Tetrachloroethane	10.79	83	341669	35.35 PPB	96
51) 1,3-Dichlorobenzene	11.68	146	1154814	43.90 PPB	99
52) 1,4-Dichlorobenzene	11.77	146	1121339	41.74 PPB	99
53) 1,2-Dichlorobenzene	12.15	146	984951	41.06 PPB	100

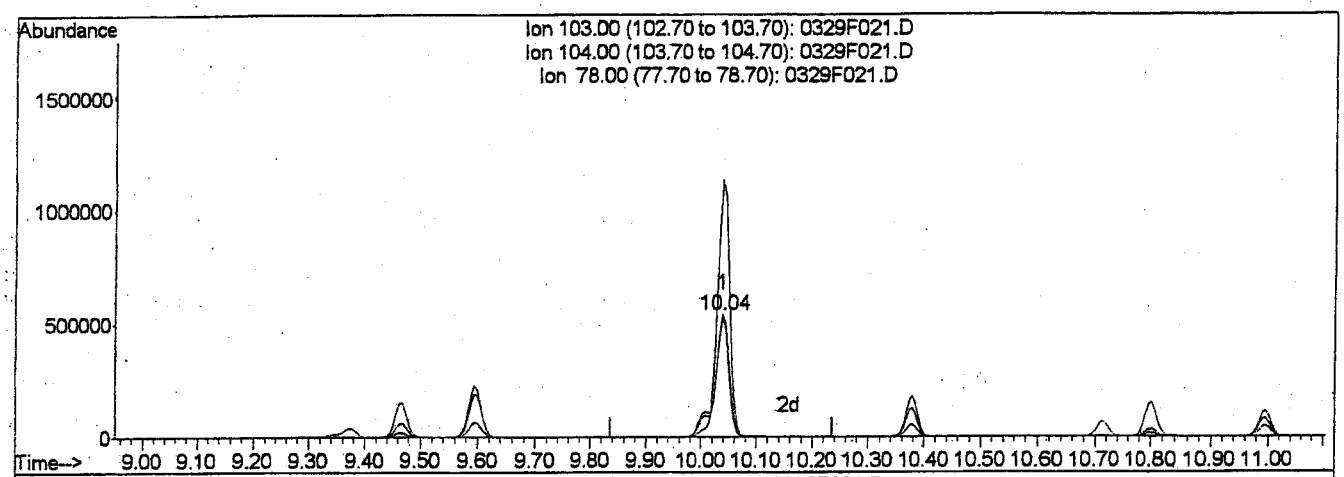
(#) = qualifier out of range (m) = manual integration

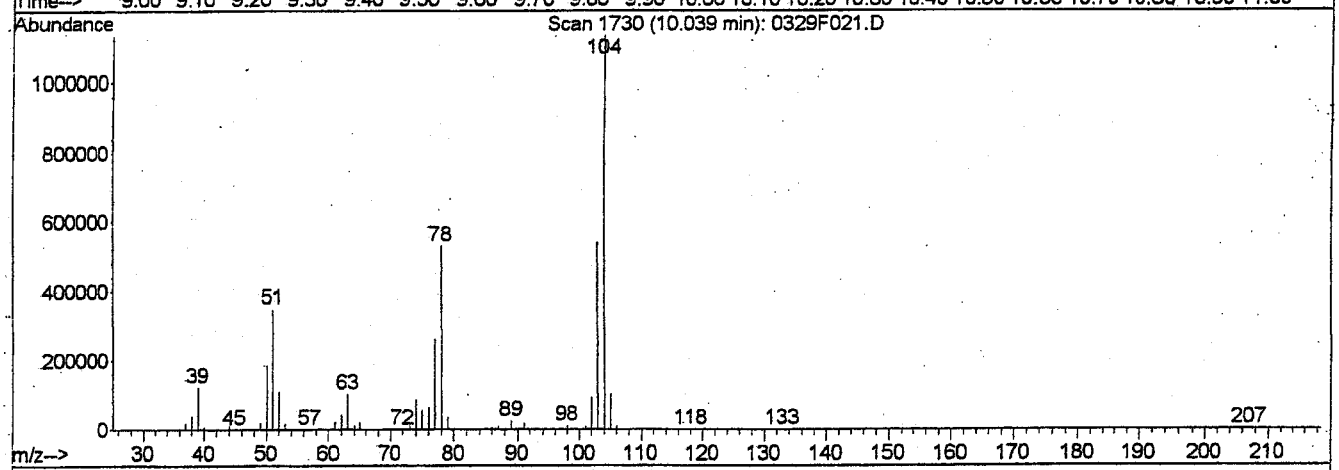
Quantitation Report (Qedit)

Data File : J:\MS23\DATA\032911\0329F021.D
Acq On : 29 Mar 2011 5:02 pm
Sample : 624 ICAL 40
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 8:59 2011

Vial: 9
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Multiple Level Calibration





(45) Styrene (T)

10.04min 54.42PPB

response 958180

Ion	Exp%	Act%
103.00	100	100
104.00	214.60	209.77
78.00	96.70	97.93
0.00	0.00	0.00

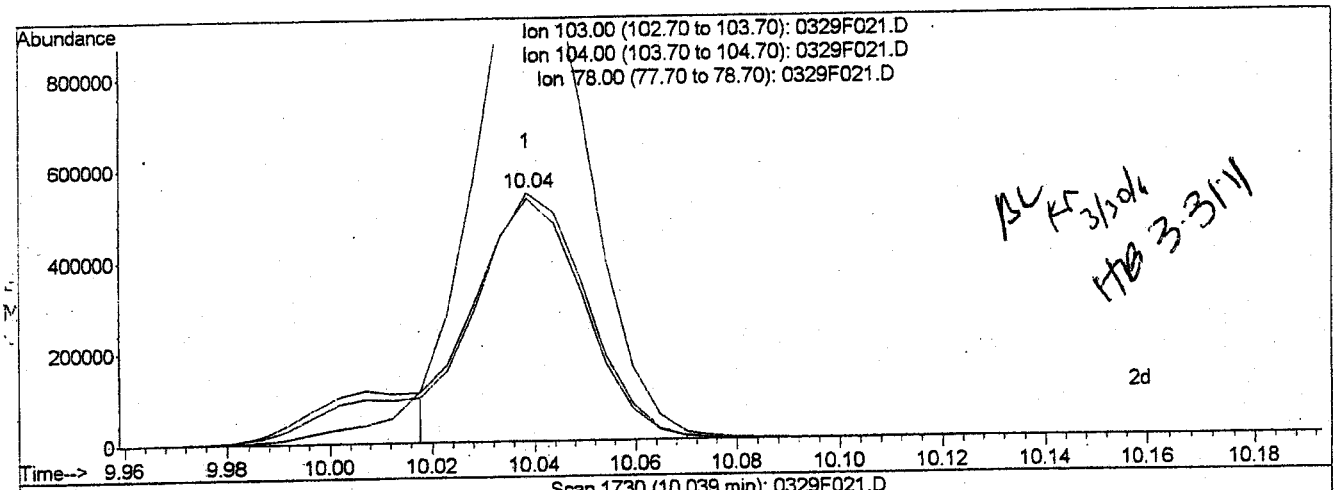
0329F021.D 032911624.M Wed Mar 30 09:00:06 2011

Data File : J:\MS23\DATA\032911\0329F021.D
Acq On : 29 Mar 2011 5:02 pm
Sample : 624 ICAL 40
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 9:00 2011

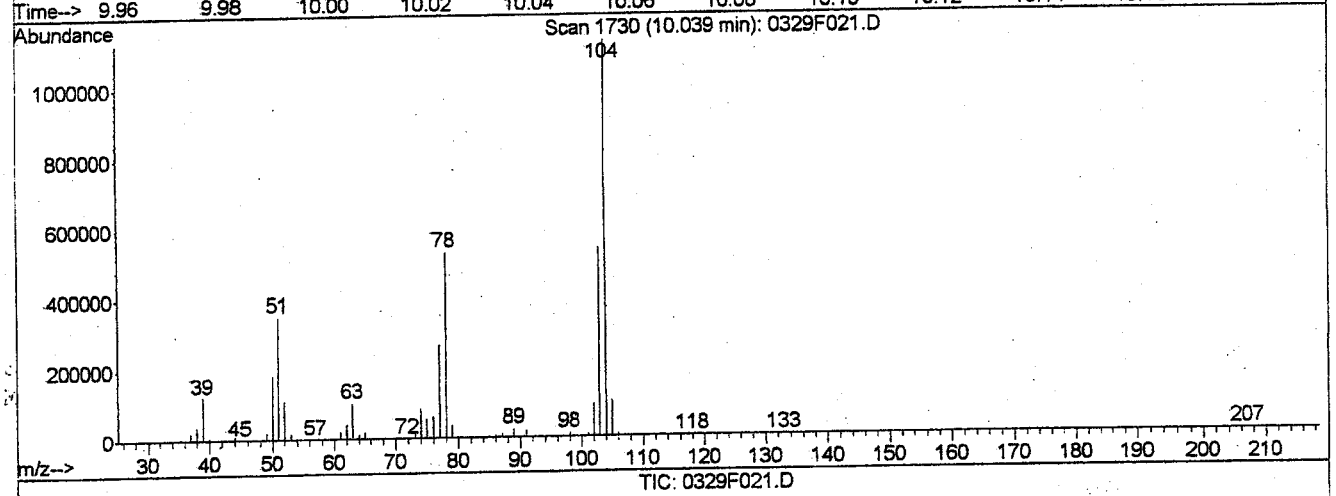
Vial: 9
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Multiple Level Calibration



BL KF 3/30/11
HB 3/31/11



(45) Styrene (T)

10.04min 45.90PPB m

response 808116

Ion	Exp%	Act%
103.00	100	100
104.00	214.60	209.77
78.00	96.70	97.96
0.00	0.00	0.00

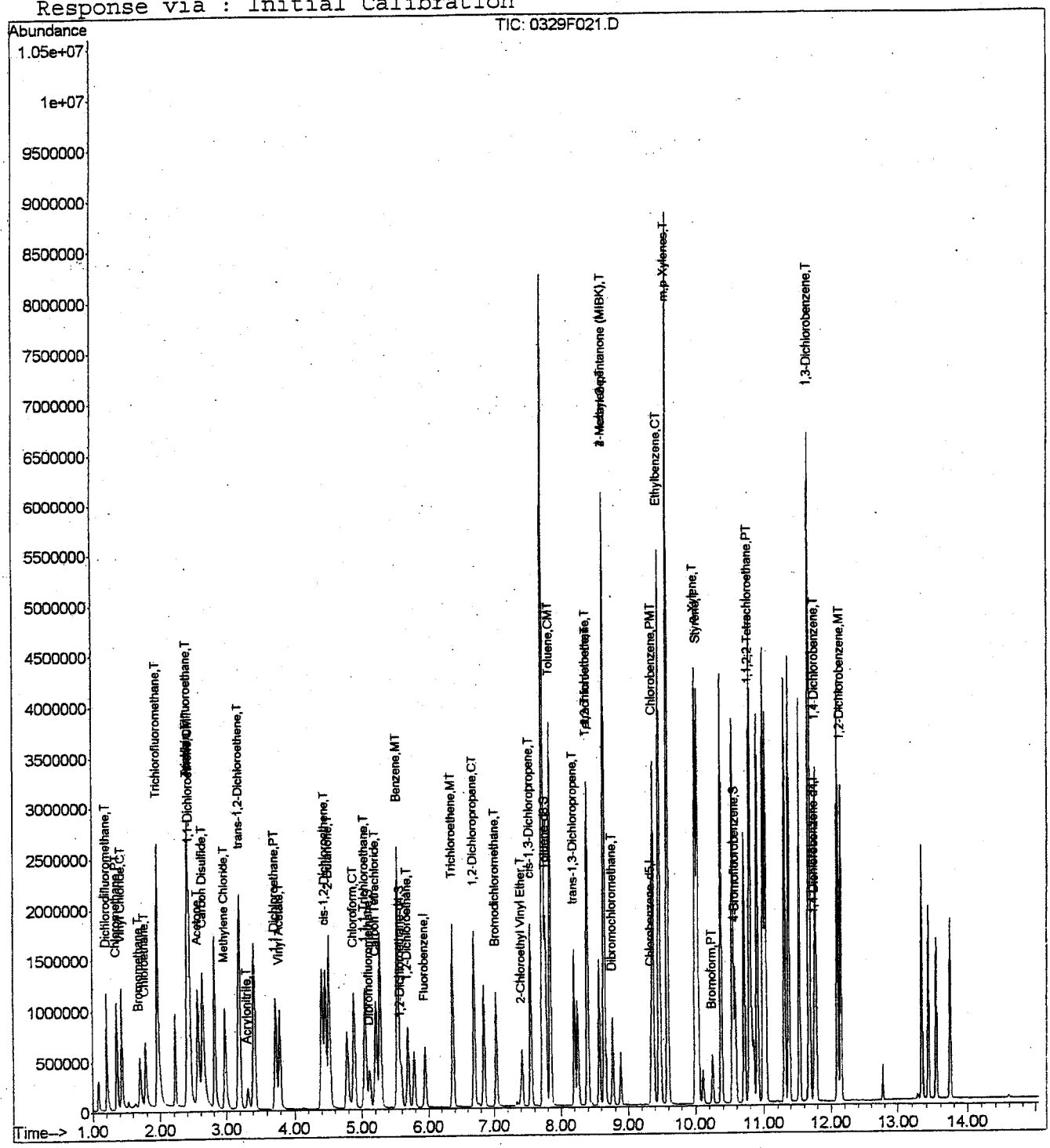
0329F021.D 032911624.M Wed Mar 30 09:00:11 2011

Data File : J:\MS23\DATA\032911\0329F021.D
Acq On : 29 Mar 2011 5:02 pm
Sample : 624 ICAL 40
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 9:00 2011

Vial: 9
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: 032911624.RE

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration



Data File : J:\MS23\DATA\032911\0329F022.D
Acq On : 29 Mar 2011 5:31 pm
Sample : 624 ICAL 80
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 09:00:30 2011

Vial: 10
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624.RES

Quant Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration
DataAcq Meth : 8260

KT 3/30/11

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	5.94	96	577607	10.00	PPB	0.00
35) Chlorobenzene-d5	9.35	82	239719	10.00	PPB	0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	209209	10.00	PPB	0.00
System Monitoring Compounds						
S 22) Dibromofluoromethane	5.11	113	472094	36.73	PPB	0.00
M Spiked Amount 10.000			Recovery	=	367.30%	
24) 1,2-Dichloroethane-d4	5.59	65	594434	34.50	PPB	0.00
Spiked Amount 10.000			Recovery	=	345.00%	
33) Toluene-d8	7.78	98	2023597	38.75	PPB	0.00
Spiked Amount 10.000			Recovery	=	387.50%	
47) 4-Bromofluorobenzene	10.58	95	758883	40.94	PPB	0.00
Spiked Amount 10.000			Recovery	=	409.40%	

Target Compounds							Qvalue
2) Dichlorodifluoromethane	1.20	85	1683333	74.01	PPB		98
3) Chloromethane	1.35	50	2230676	91.91	PPB		98
4) Vinyl Chloride	1.43	62	1998171	84.07	PPB		99
5) Bromomethane	1.69	96	813151	99.26	PPB		94
6) Chloroethane	1.78	49	307042	78.07	PPB		88
7) Trichlorofluoromethane	1.97	101	2383766	84.76	PPB		99
8) Acrolein	2.41	56	2462373	1599.84	PPB		99
9) Trichlorotrifluoroethane	2.41	151	1064962	103.57	PPB		99
10) 1,1-Dichloroethene	2.44	96	1153376	96.61	PPB		98
11) Acetone	2.56	43	3577135	1316.19	PPB		92
12) Carbon Disulfide	2.64	76	4707717	98.78	PPB		96
13) Methylene Chloride	2.98	84	1083604	70.97	PPB		99
14) Acrylonitrile	3.32	53	418047	114.39	PPB		100
15) trans-1,2-Dichloroethene	3.20	96	1185853	81.81	PPB		99
16) 1,1-Dichloroethane	3.73	63	2383789	81.97	PPB		99
17) Vinyl Acetate	3.79	86	265969	156.07	PPB	#	93
18) cis-1,2-Dichloroethene	4.46	96	1264133	80.25	PPB		99
19) 2-Butanone	4.51	72	1115416	1228.59	PPB		93
20) Chloroform	4.88	83	2121902	80.43	PPB		100
21) 1,1,1-Trichloroethane	5.05	97	1999397	94.60	PPB		98
23) Carbon Tetrachloride	5.21	117	1627143	108.79	PPB		97
25) Benzene	5.54	78	5029219	81.96	PPB		99
26) 1,2-Dichloroethane	5.69	62	1501143	74.49	PPB		98
27) Trichloroethene	6.37	95	1255854	83.24	PPB		98
28) 1,2-Dichloropropane	6.70	63	1279476	79.78	PPB		96
29) Bromodichloromethane	7.03	83	1482880	87.44	PPB		98
30) 2-Chloroethyl Vinyl Ether	7.42	63	458702	71.72	PPB		93

(#) = qualifier out of range (m) = manual integration

HB 3-31-11

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\032911\0329F022.D
Acq On : 29 Mar 2011 5:31 pm
Sample : 624 ICAL 80
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 09:00:30 2011

Vial: 10
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: 032911624.RES

Quant Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration
DataAcq Meth : 8260

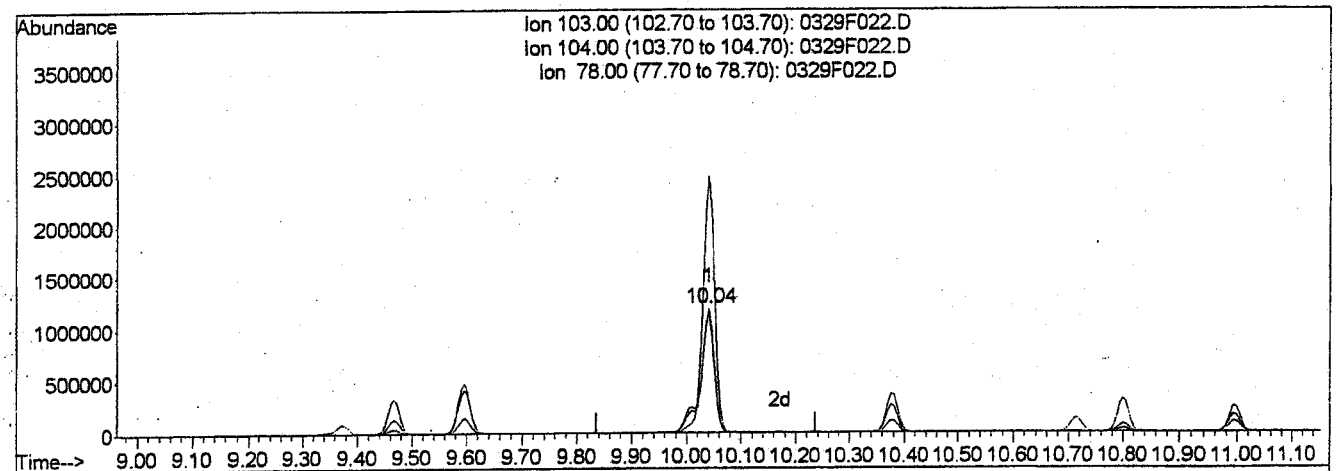
Compound	R.T.	QIon	Response	Conc Unit	Qvalue
31) cis-1,3-Dichloropropene	7.55	75	1852797	87.42 PPB	97
32) 4-Methyl-2-pentanone (MIBK	8.65	58	4018124	1384.46 PPB	94
34) Toluene	7.84	92	3201878	88.27 PPB	97
36) trans-1,3-Dichloropropene	8.21	75	1525901	88.80 PPB	99
37) 1,1,2-Trichloroethane	8.39	83	635172	75.41 PPB	96
38) Tetrachloroethene	8.40	164	968109	92.78 PPB	98
39) 2-Hexanone	8.65	43	8255553	1377.14 PPB	97
40) Dibromochloromethane	8.77	129	866869	98.87 PPB	99
41) Chlorobenzene	9.38	112	3225296	88.07 PPB	99
42) Ethylbenzene	9.47	106	1902686	94.33 PPB	92
43) m,p-Xylenes	9.60	106	4797084	192.74 PPB	91
44) o-Xylene	10.01	106	2221497	94.40 PPB	98
45) Styrene	10.04	103	1790533m	99.53 PPB	
46) Bromoform	10.25	173	432533	111.31 PPB	96
49) 1,1,2,2-Tetrachloroethane	10.78	83	751595	74.57 PPB	95
51) 1,3-Dichlorobenzene	11.68	146	2496646	91.02 PPB	99
52) 1,4-Dichlorobenzene	11.78	146	2421404	86.43 PPB	98
53) 1,2-Dichlorobenzene	12.15	146	2094168	83.72 PPB	100

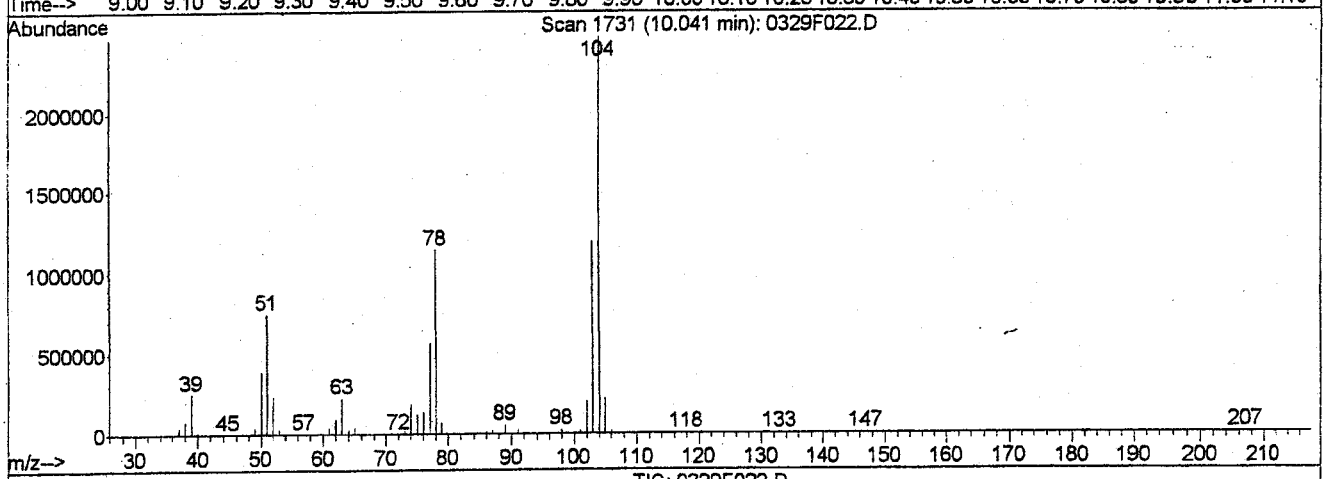
(#) = qualifier out of range (m) = manual integration

Data File : J:\MS23\DATA\032911\0329F022.D
Acq On : 29 Mar 2011 5:31 pm
Sample : 624 ICAL 80
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 9:00 2011

Vial: 10
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Multiple Level Calibration





TIC: 0329F022.D

(45) Styrene (T)

10.04min 114.96PPB

response 2068041

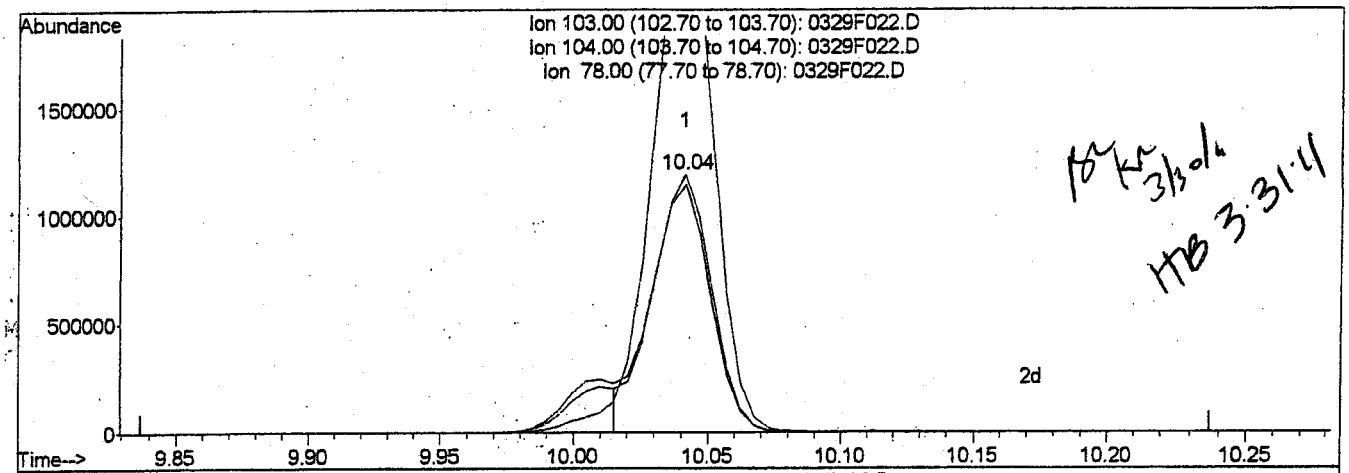
Ion	Exp%	Act%
103.00	100	100
104.00	214.60	208.00
78.00	96.70	95.93
0.00	0.00	0.00

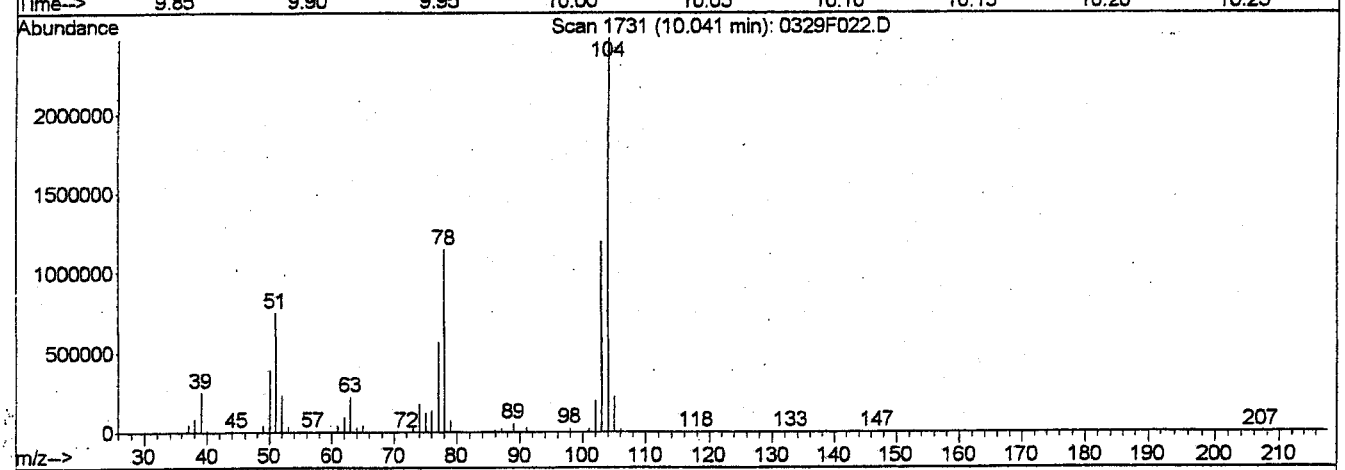
0329F022.D 032911624.M Wed Mar 30 09:00:59 2011

Data File : J:\MS23\DATA\032911\0329F022.D
Acq On : 29 Mar 2011 5:31 pm
Sample : 624 ICAL 80
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 9:01 2011

Vial: 10
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Multiple Level Calibration





TIC: 0329F022.D

(45) Styrene (T)

10.04min 99.53PPB m

response 1790533

Ion	Exp%	Act%
103.00	100	100
104.00	214.60	208.00
78.00	96.70	95.96
0.00	0.00	0.00

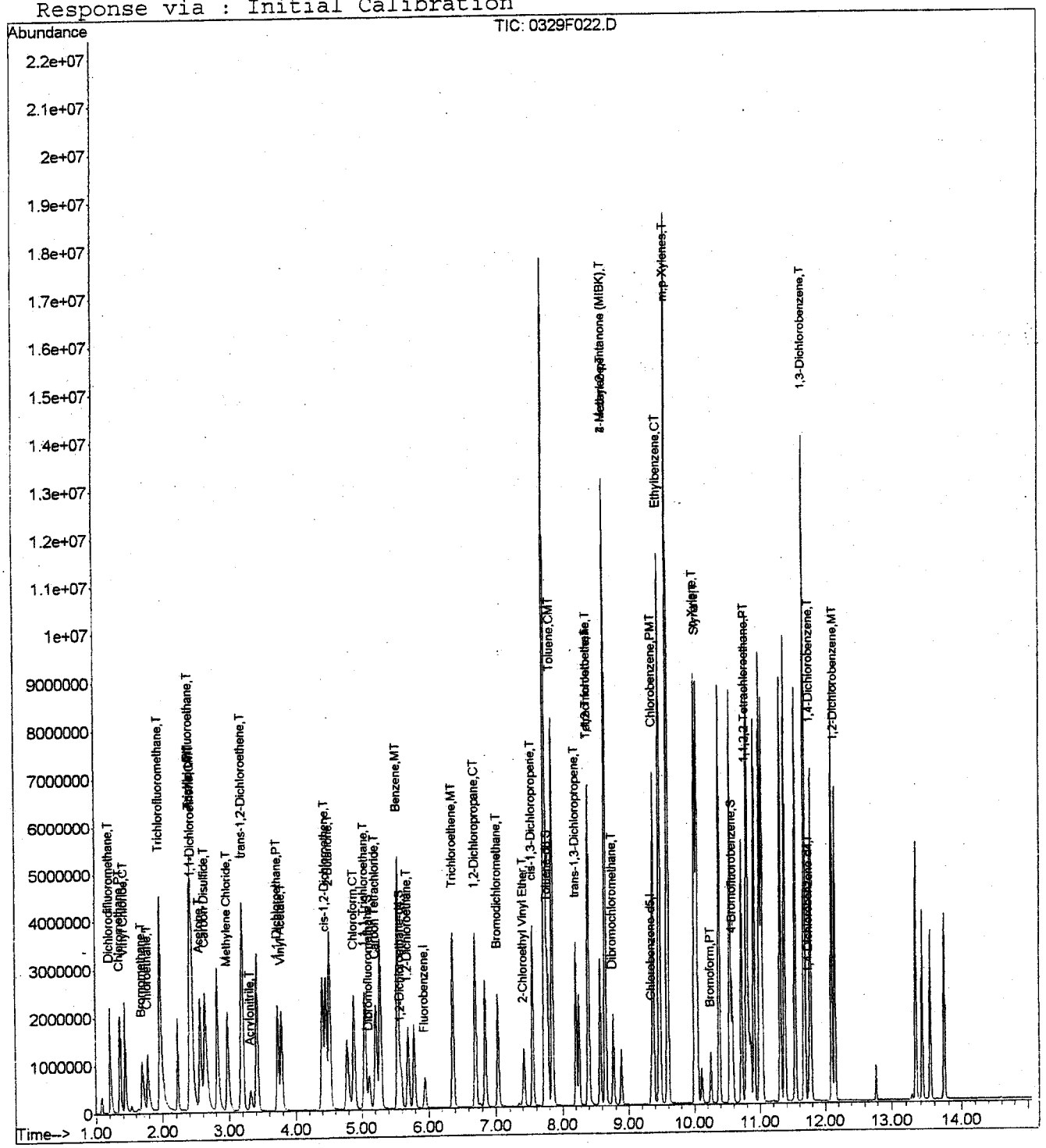
0329F022.D 032911624.M Wed Mar 30 09:01:04 2011

Data File : J:\MS23\DATA\032911\0329F022.D
Acq On : 29 Mar 2011 5:31 pm
Sample : 624 ICAL 80
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 9:01 2011

Vial: 10
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: 032911624.RE

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration



Data File : J:\MS23\DATA\032911\0329F023.D
Acq On : 29 Mar 2011 6:01 pm
Sample : 624 ICAL 120
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 09:01:20 2011

Vial: 11
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624.RES

Quant Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration
DataAcq Meth : 8260

KR 3/30/11

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	5.94	96	584662	10.00	PPB	0.00
35) Chlorobenzene-d5	9.34	82	243147	10.00	PPB	0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	214669	10.00	PPB	0.00
System Monitoring Compounds						
22) Dibromofluoromethane	5.12	113	796500	61.22	PPB	0.00
Spiked Amount 10.000			Recovery	=	612.20%	
M 24) 1,2-Dichloroethane-d4	5.59	65	957737	54.92	PPB	0.00
Spiked Amount 10.000			Recovery	=	549.20%	
33) Toluene-d8	7.77	98	3523152	66.65	PPB	0.00
Spiked Amount 10.000			Recovery	=	666.50%	
47) 4-Bromofluorobenzene	10.58	95	1269631	67.53	PPB	0.00
Spiked Amount 10.000			Recovery	=	675.30%	

Target Compounds							Qvalue
2) Dichlorodifluoromethane	1.20	85	2522236	109.56	PPB		98
3) Chloromethane	1.36	50	3431495	139.69	PPB		98
4) Vinyl Chloride	1.43	62	3021684	125.60	PPB		99
5) Bromomethane	1.69	96	1232249	148.60	PPB		94
6) Chloroethane	1.78	49	457439	114.91	PPB		88
7) Trichlorofluoromethane	1.97	101	3614261	126.96	PPB		99
8) Acrolein	2.41	56	3541474	2273.19	PPB		99
9) Trichlorotrifluoroethane	2.41	151	1640834	157.65	PPB		98
10) 1,1-Dichloroethene	2.44	96	1751963	144.98	PPB		97
11) Acetone	2.56	43	5468101	1987.68	PPB		92
12) Carbon Disulfide	2.64	76	7151242	148.25	PPB		96
13) Methylene Chloride	2.98	84	1632866	105.65	PPB		98
14) Acrylonitrile	3.32	53	618836	167.29	PPB		98
15) trans-1,2-Dichloroethene	3.20	96	1802697	122.86	PPB		100
16) 1,1-Dichloroethane	3.73	63	3593375	122.07	PPB		98
17) Vinyl Acetate	3.79	86	398324	230.91	PPB	#	90
18) cis-1,2-Dichloroethene	4.46	96	1916083	120.16	PPB		99
19) 2-Butanone	4.52	72	1736661	1889.78	PPB	#	88
20) Chloroform	4.89	83	3180460	119.10	PPB		98
21) 1,1,1-Trichloroethane	5.05	97	3061936	143.13	PPB		98
23) Carbon Tetrachloride	5.21	117	2496871	164.92	PPB		97
25) Benzene	5.54	78	7540717	121.41	PPB		98
26) 1,2-Dichloroethane	5.69	62	2223407	109.00	PPB		98
27) Trichloroethene	6.37	95	1906972	124.87	PPB		98
28) 1,2-Dichloropropane	6.70	63	1915964	118.02	PPB		96
29) Bromodichloromethane	7.03	83	2226069	129.68	PPB		98
30) 2-Chloroethyl Vinyl Ether	7.42	63	689594	106.53	PPB		93

(#) = qualifier out of range (m) = manual integration

HB 3/31/11

Data File : J:\MS23\DATA\032911\0329F023.D
Acq On : 29 Mar 2011 6:01 pm
Sample : 624 ICAL 120
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 09:01:20 2011

Vial: 11
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624.RES

Quant Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration
DataAcq Meth : 8260

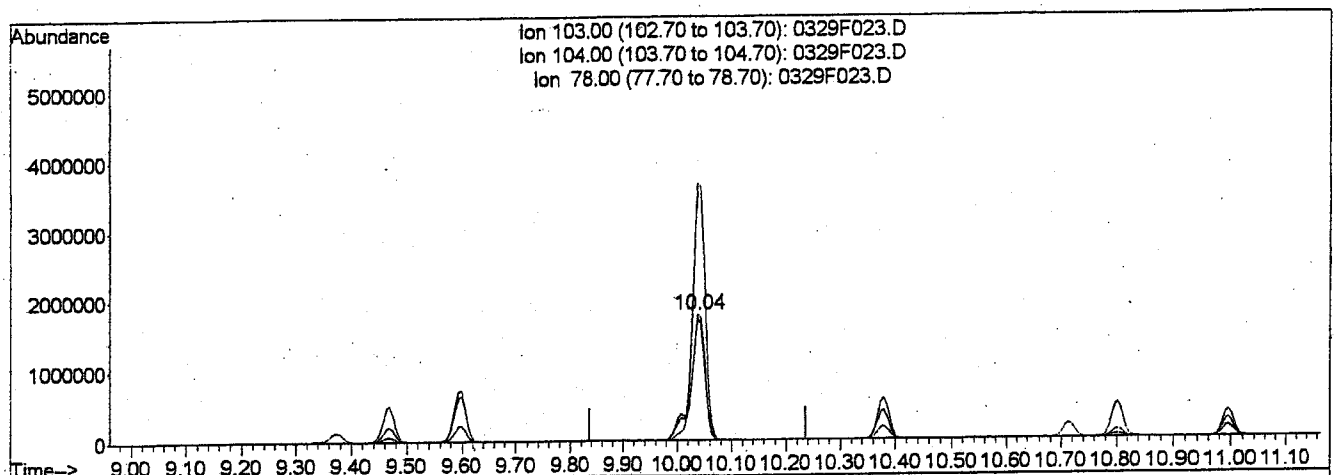
	Compound	R.T.	QIon	Response	Conc Unit		Qvalue
31)	cis-1,3-Dichloropropene	7.55	75	2774046	129.31 PPB		95
32)	4-Methyl-2-pentanone (MIBK	8.65	58	6242156	2124.81 PPB		86
34)	Toluene	7.85	92	4880661	132.92 PPB		96
36)	trans-1,3-Dichloropropene	8.20	75	2281422	130.89 PPB		96
37)	1,1,2-Trichloroethane	8.39	83	957375	112.06 PPB		96
38)	Tetrachloroethene	8.40	164	1504810	142.18 PPB		98
39)	2-Hexanone	8.65	43	12275723	2018.89 PPB		94
40)	Dibromochloromethane	8.77	129	1304139	146.65 PPB		99
41)	Chlorobenzene	9.37	112	4858713	130.80 PPB		97
42)	Ethylbenzene	9.47	106	2919997	142.72 PPB	#	86
43)	m,p-Xylenes	9.60	106	7343971	290.90 PPB	#	82
44)	o-Xylene	10.01	106	3412888	142.98 PPB		96
45)	Styrene	10.04	103	2706498m	148.33 PPB		
46)	Bromoform	10.25	173	660841	167.66 PPB		97
49)	1,1,2,2-Tetrachloroethane	10.79	83	1118452	108.15 PPB		94
51)	1,3-Dichlorobenzene	11.68	146	3841702	136.49 PPB		99
52)	1,4-Dichlorobenzene	11.77	146	3657824	127.25 PPB		100
53)	1,2-Dichlorobenzene	12.15	146	3175968	123.75 PPB		100

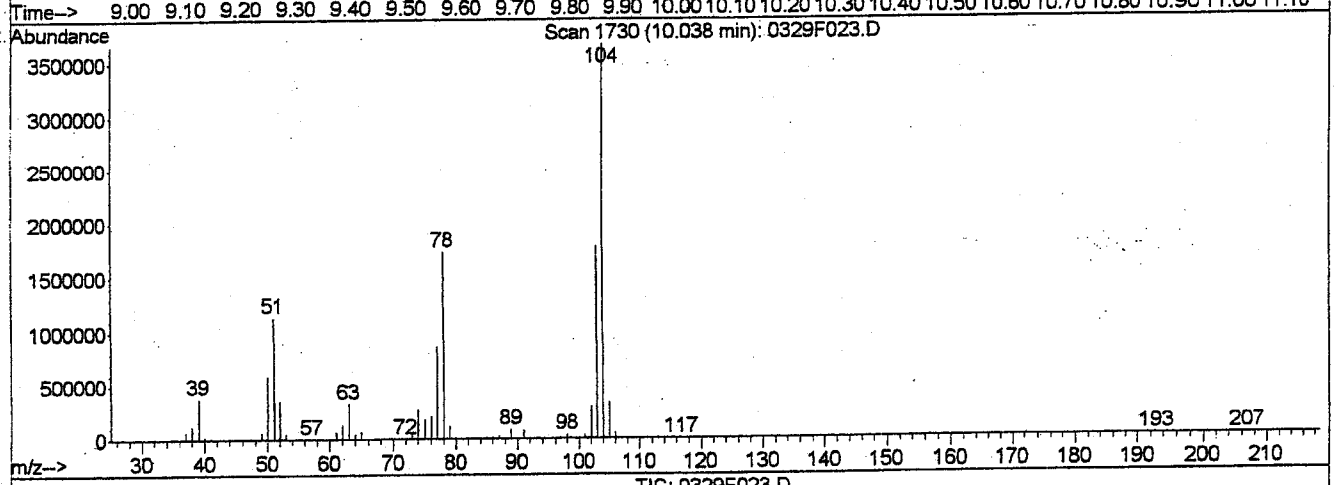
(#) = qualifier out of range (m) = manual integration

Data File : J:\MS23\DATA\032911\0329F023.D
Acq On : 29 Mar 2011 6:01 pm
Sample : 624 ICAL 120
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 9:01 2011

Vial: 11
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Multiple Level Calibration





TIC: 0329F023.D

(45) Styrene (T)

10.04min 173.53PPB

response 3166474

Ion	Exp%	Act%
103.00	100	100
104.00	214.60	206.41
78.00	96.70	97.17
0.00	0.00	0.00

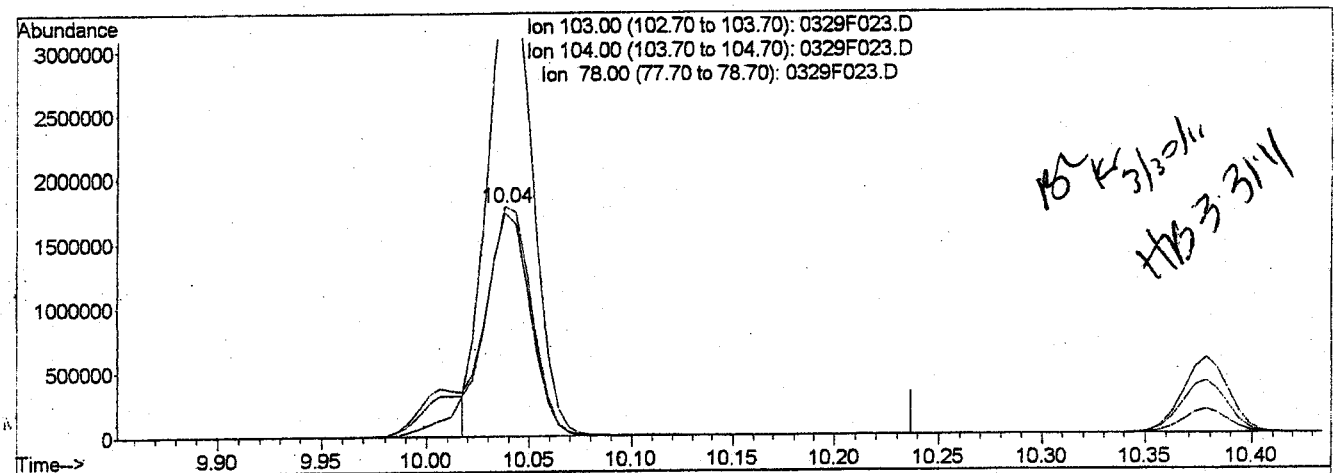
0329F023.D 032911624.M Wed Mar 30 09:01:47 2011

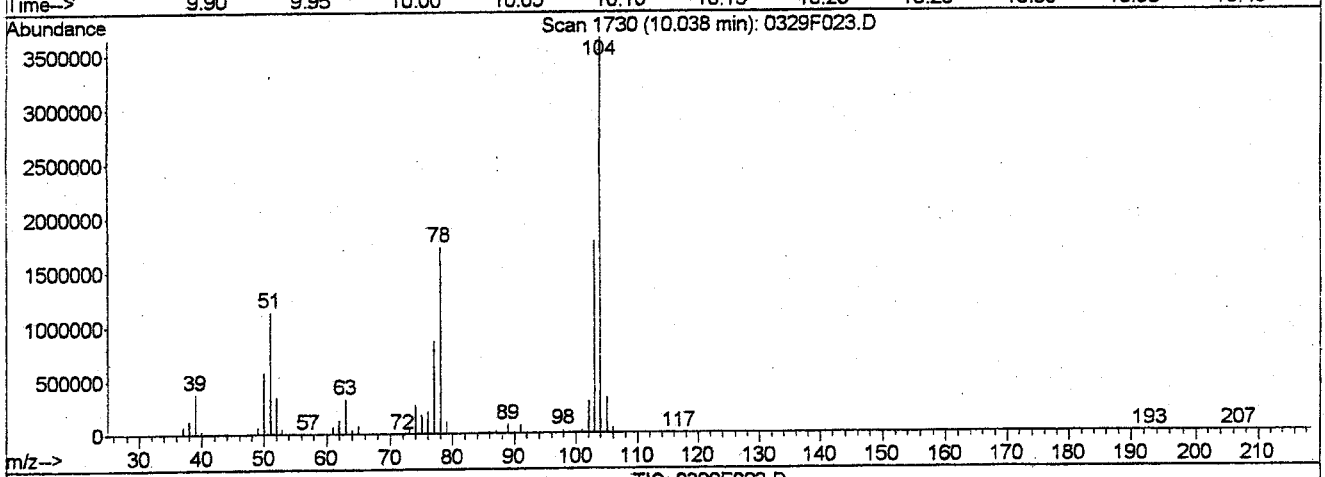
Quantitation Report (Qedit)

Data File : J:\MS23\DATA\032911\0329F023.D
Acq On : 29 Mar 2011 6:01 pm
Sample : 624 ICAL 120
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 9:01 2011

Vial: 11
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Multiple Level Calibration





TIC: 0329F023.D

(45) Styrene (T)

10.04min 148.33PPB m

response 2706498

Ion	Exp%	Act%
103.00	100	100
104.00	214.60	206.39
78.00	96.70	97.18
0.00	0.00	0.00

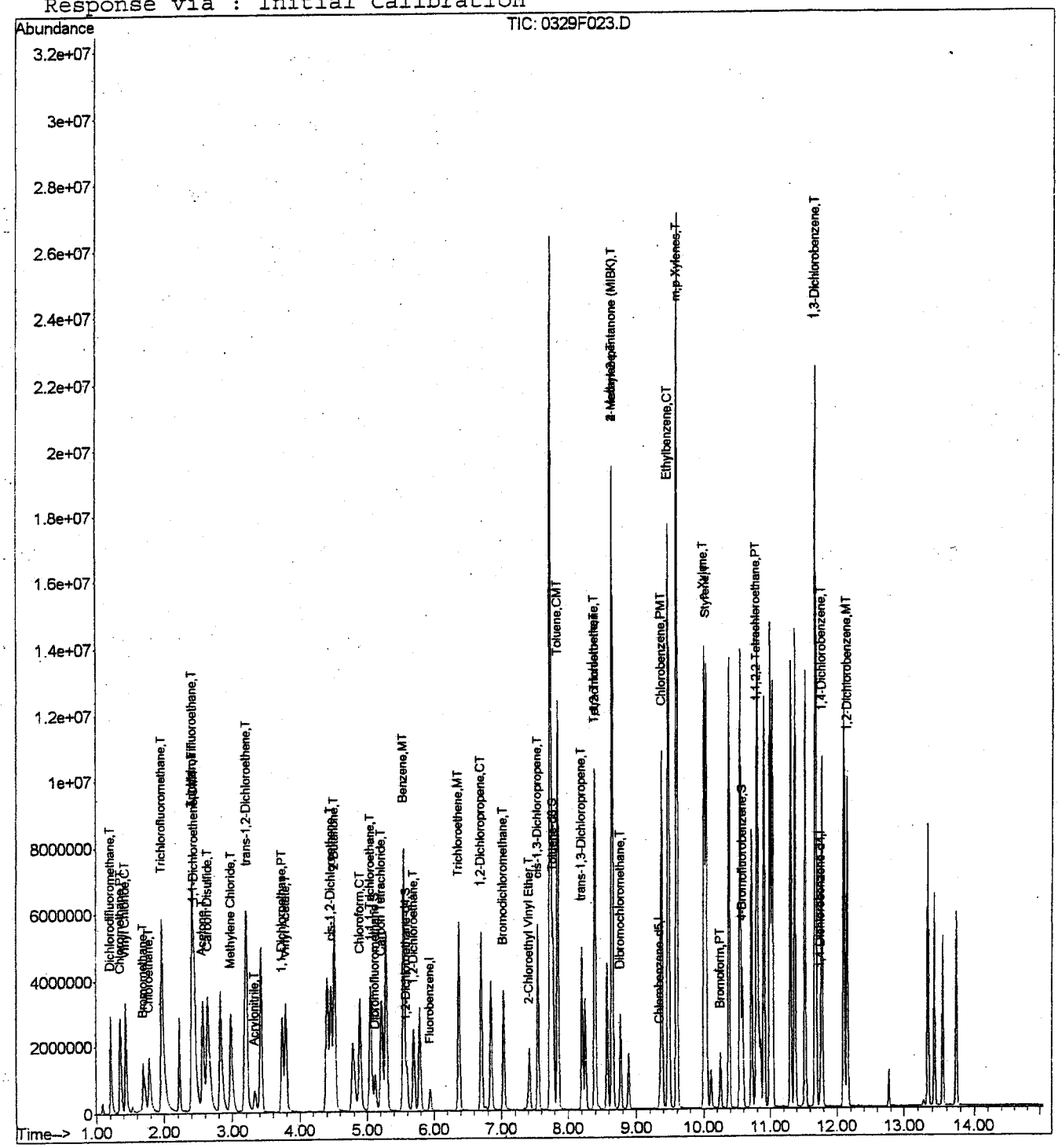
0329F023.D 032911624.M Wed Mar 30 09:01:52 2011

Data File : J:\MS23\DATA\032911\0329F023.D
Acq On : 29 Mar 2011 6:01 pm
Sample : 624 ICAL 120
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 9:01 2011

Vial: 11
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: 032911624.RE

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\032911\0329F025.D
Acq On : 29 Mar 2011 7:01 pm
Sample : IB
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 09:02:14 2011

Vial: 13
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624.RES

Quant Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration
DataAcq Meth : 8260

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Fluorobenzene	5.94	96	554877	10.00	PPB		0.00
35) Chlorobenzene-d5	9.34	82	228738	10.00	PPB		0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	185033	10.00	PPB		0.00
System Monitoring Compounds							
22) Dibromofluoromethane	0.00	113	0	0.00	PPB		
Spiked Amount 10.000			Recovery	=	0.00%		
24) 1,2-Dichloroethane-d4	0.00	65	0	0.00	PPB		
Spiked Amount 10.000			Recovery	=	0.00%		
33) Toluene-d8	7.78	98	688	0.01	PPB		0.01
Spiked Amount 10.000			Recovery	=	0.10%		
47) 4-Bromofluorobenzene	10.62	95	538	0.03	PPB		0.03
Spiked Amount 10.000			Recovery	=	0.30%		
Target Compounds							Qvalue
3) Chloromethane	1.35	50	2420	0.10	PPB		81
43) m,p-Xylenes	9.60	106	1619	0.07	PPB	#	56
44) o-Xylene	10.00	106	652	0.03	PPB	#	50
51) 1,3-Dichlorobenzene	11.68	146	2262	0.09	PPB		74
52) 1,4-Dichlorobenzene	11.78	146	2317	0.09	PPB		76
53) 1,2-Dichlorobenzene	12.15	146	2044	0.09	PPB		82

KR 3/30/11
DB 3/31/11

(#) = qualifier out of range (m) = manual integration
0329F025.D 032911624.M Wed Mar 30 09:03:27 2011

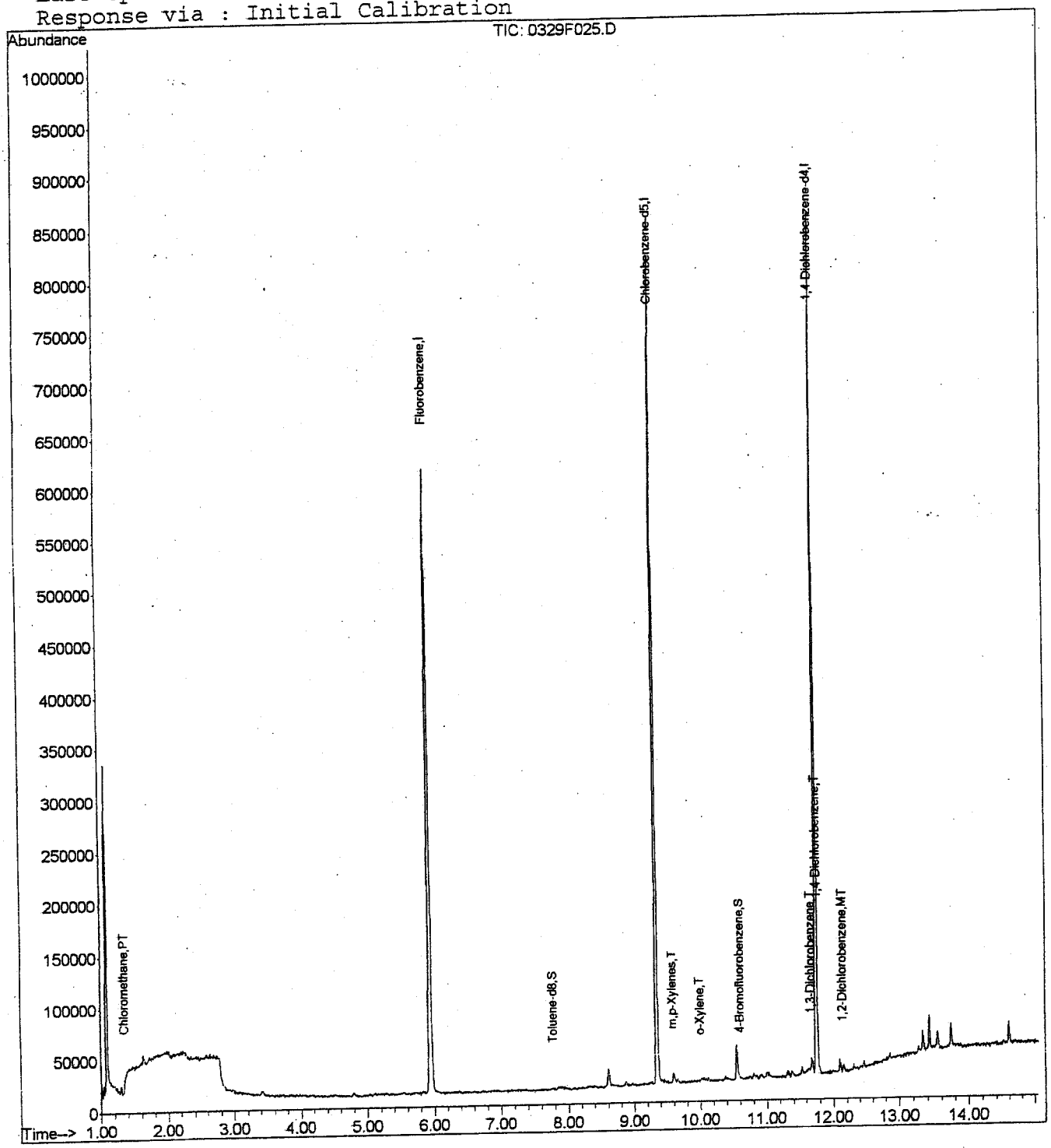
Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\032911\0329F025.D
Acq On : 29 Mar 2011 7:01 pm
Sample : IB
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 9:03 2011

Vial: 13
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: 032911624.RE

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\032911\0329F026.D
Acq On : 29 Mar 2011 7:31 pm
Sample : 624 ICAL 0.5
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 07:37:59 2011

Vial: 14
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624.RES

Quant Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration
DataAcq Meth : 8260

KR 3/30/11

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	5.94	96	541888	10.00	PPB	0.00
35) Chlorobenzene-d5	9.35	82	219261	10.00	PPB	0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	177259	10.00	PPB	0.00
System Monitoring Compounds						
22) Dibromofluoromethane	5.12	113	98900	8.20	PPB	0.01
Spiked Amount 10.000			Recovery	=	82.00%	
24) 1,2-Dichloroethane-d4	5.59	65	125121	7.74	PPB	0.00
Spiked Amount 10.000			Recovery	=	77.40%	
33) Toluene-d8	7.77	98	421079	8.60	PPB	0.00
Spiked Amount 10.000			Recovery	=	86.00%	
47) 4-Bromofluorobenzene	10.58	95	145920	8.61	PPB	0.00
Spiked Amount 10.000			Recovery	=	86.10%	

Target Compounds							Qvalue
2) Dichlorodifluoromethane	1.20	85	9013	0.42	PPB		94
3) Chloromethane	1.35	50	17787	0.78	PPB		95
4) Vinyl Chloride	1.43	62	12094	0.54	PPB		98
5) Bromomethane	1.70	96	5959	0.78	PPB		89
6) Chloroethane	1.78	49	2520	0.68	PPB		83
7) Trichlorofluoromethane	1.96	101	13441	0.51	PPB		93
8) Acrolein	2.41	56	17619	12.20	PPB		94
9) Trichlorotrifluoroethane	2.41	151	5977	0.62	PPB		99
10) 1,1-Dichloroethene	2.44	96	6966	0.62	PPB		93
11) Acetone	2.56	43	33722	13.23	PPB		92
12) Carbon Disulfide	2.63	76	29430	0.66	PPB		97
13) Methylene Chloride	2.97	84	9108	0.64	PPB		90
14) Acrylonitrile	3.32	53	2203	0.64	PPB		82
15) trans-1,2-Dichloroethene	3.20	96	7904	0.58	PPB		92
16) 1,1-Dichloroethane	3.73	63	14482	0.53	PPB		91
17) Vinyl Acetate	3.79	86	1399	0.88	PPB	#	56
18) cis-1,2-Dichloroethene	4.45	96	8846	0.60	PPB		88
19) 2-Butanone	4.52	72	7850	9.22	PPB		99
20) Chloroform	4.89	83	13618	0.55	PPB		87
21) 1,1,1-Trichloroethane	5.05	97	11649	0.59	PPB		93
23) Carbon Tetrachloride	5.21	117	7778	0.55	PPB		84
25) Benzene	5.54	78	30699	0.53	PPB		94
26) 1,2-Dichloroethane	5.68	62	9879	0.52	PPB		95
27) Trichloroethene	6.37	95	8210	0.58	PPB		89
28) 1,2-Dichloropropane	6.71	63	8172	0.54	PPB		95
29) Bromodichloromethane	7.03	83	8815	0.55	PPB		97
30) 2-Chloroethyl Vinyl Ether	7.42	63	2817	0.47	PPB		89

(#) = qualifier out of range (m) = manual integration

HB 3-31-11

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\032911\0329F026.D
Acq On : 29 Mar 2011 7:31 pm
Sample : 624 ICAL 0.5
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 07:37:59 2011

Vial: 14
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: 032911624.RES

Quant Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration
DataAcq Meth : 8260

Compound	R.T.	QIon	Response	Conc Unit	Qvalue
31) cis-1,3-Dichloropropene	7.55	75	10264	0.52 PPB	94
32) 4-Methyl-2-pentanone (MIBK	8.65	58	26525	9.74 PPB	96
34) Toluene	7.84	92	18892	0.56 PPB	94
36) trans-1,3-Dichloropropene	8.21	75	8718	0.55 PPB	90
37) 1,1,2-Trichloroethane	8.39	83	3984	0.52 PPB	92
38) Tetrachloroethene	8.40	164	5408	0.57 PPB	98
39) 2-Hexanone	8.65	43	56538	10.31 PPB	99
40) Dibromochloromethane	8.77	129	4542	0.57 PPB	91
41) Chlorobenzene	9.37	112	19966	0.60 PPB	97
42) Ethylbenzene	9.47	106	10384	0.56 PPB	94
43) m,p-Xylenes	9.59	106	25827	1.13 PPB	92
44) o-Xylene	10.00	106	12911	0.60 PPB	90
45) Styrene	10.04	103	9376m	0.57 PPB	
46) Bromoform	10.25	173	2120	0.60 PPB	80
49) 1,1,2,2-Tetrachloroethane	10.78	83	5034	0.59 PPB	91
51) 1,3-Dichlorobenzene	11.67	146	14218	0.61 PPB	99
52) 1,4-Dichlorobenzene	11.78	146	15012	0.63 PPB	95
53) 1,2-Dichlorobenzene	12.15	146	12894	0.61 PPB	95

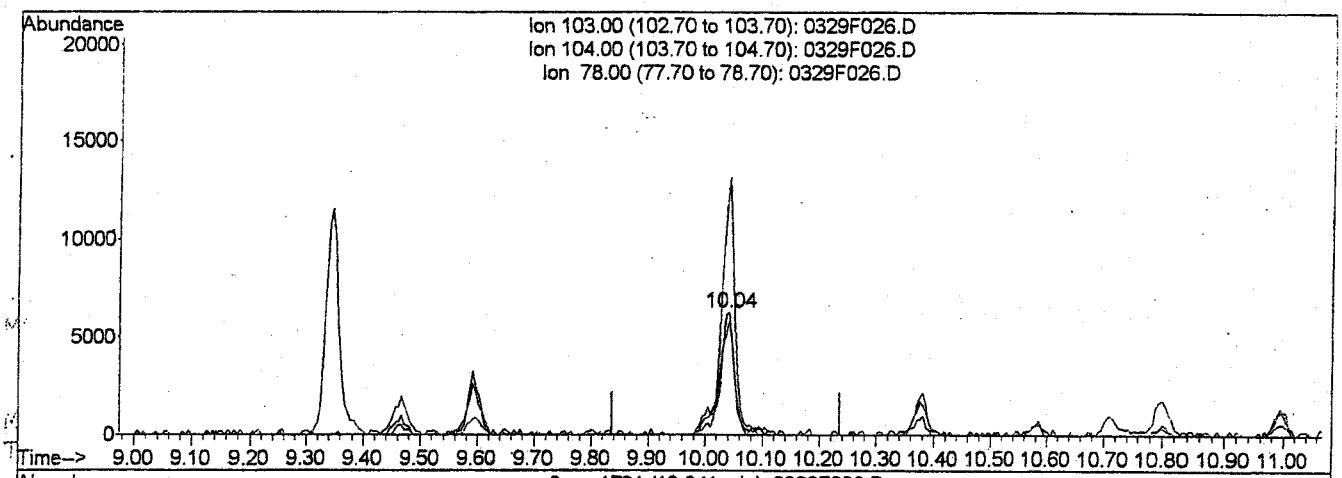
(#) = qualifier out of range (m) = manual integration
0329F026.D 032911624.M Wed Mar 30 09:04:28 2011

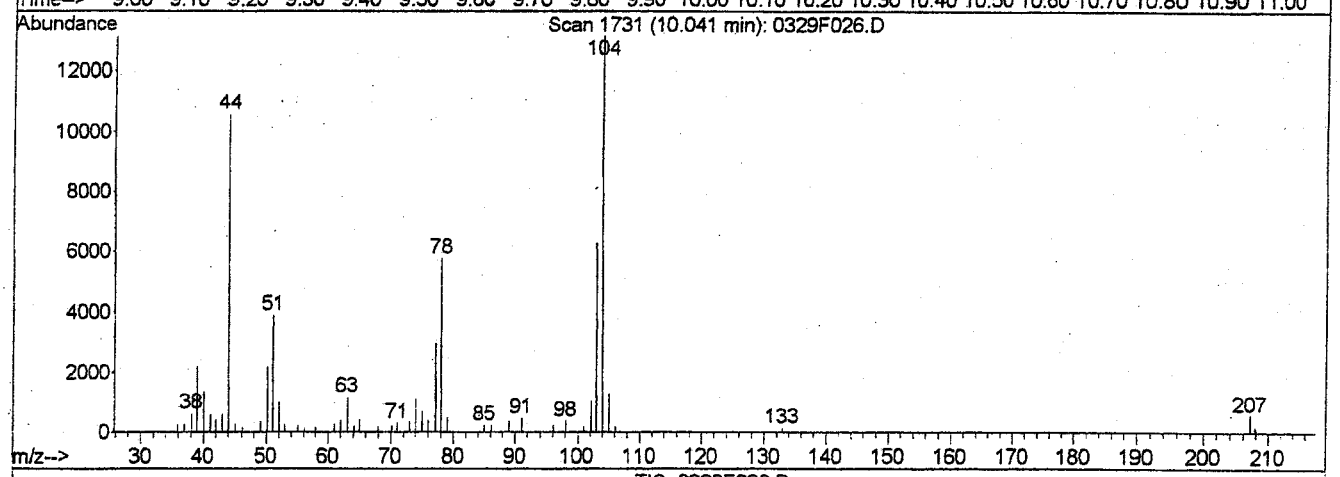
Quantitation Report (Qedit)

Data File : J:\MS23\DATA\032911\0329F026.D
Acq On : 29 Mar 2011 7:31 pm
Sample : 624 ICAL 0.5
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 7:38 2011

Vial: 14
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Multiple Level Calibration





TIC: 0329F026.D

(45) Styrene (T)

10.04min 0.66PPB

response 10896

Ion	Exp%	Act%
103.00	100	100
104.00	214.60	209.20
78.00	96.70	91.81
0.00	0.00	0.00

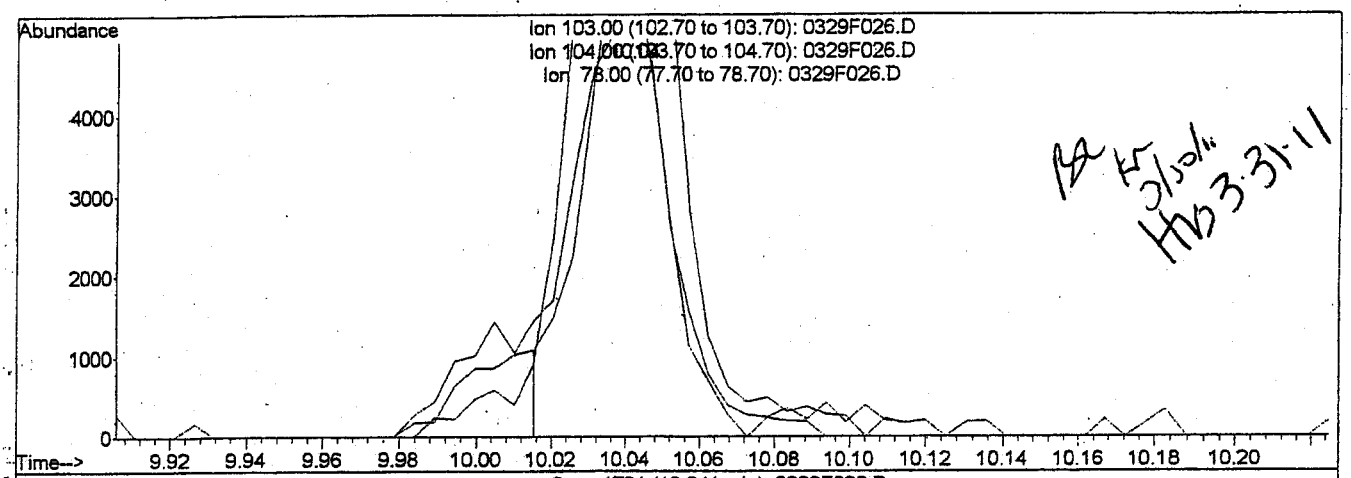
0329F026.D 032911624.M Wed Mar 30 09:04:08 2011

Quantitation Report (Quant)

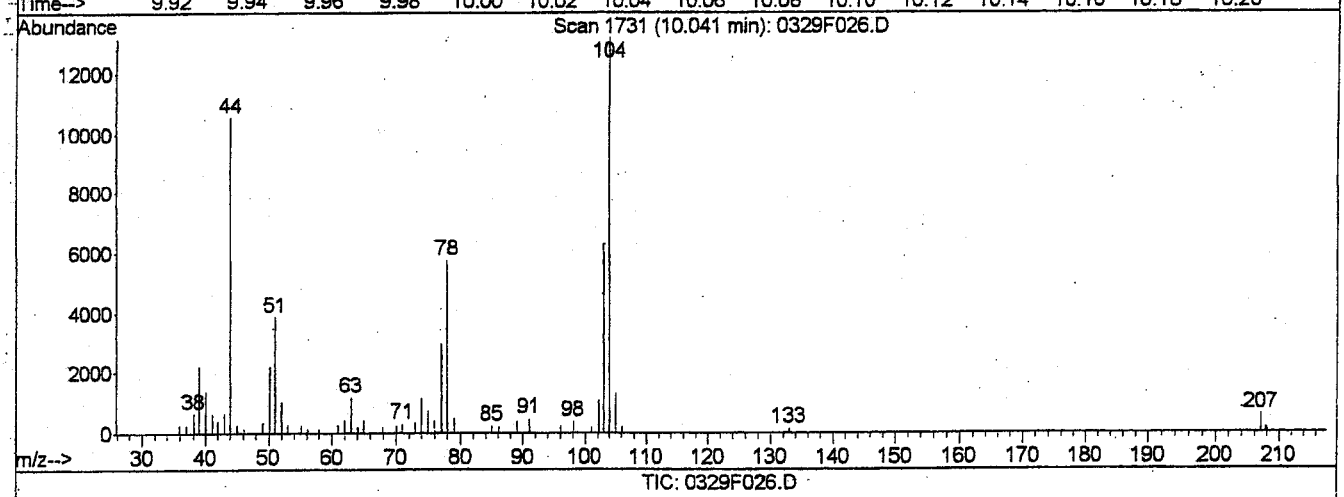
Data File : J:\MS23\DATA\032911\0329F026.D
Acq On : 29 Mar 2011 7:31 pm
Sample : 624 ICAL 0.5
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 9:04 2011

Vial: 14
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Multiple Level Calibration



KR 3/30/11 HD 3-31-11



(45) Styrene (T)

10.04min 0.57PPB m

response 9376

Ion	Exp%	Act%
103.00	100	100
104.00	214.60	209.20
78.00	96.70	91.81
0.00	0.00	0.00

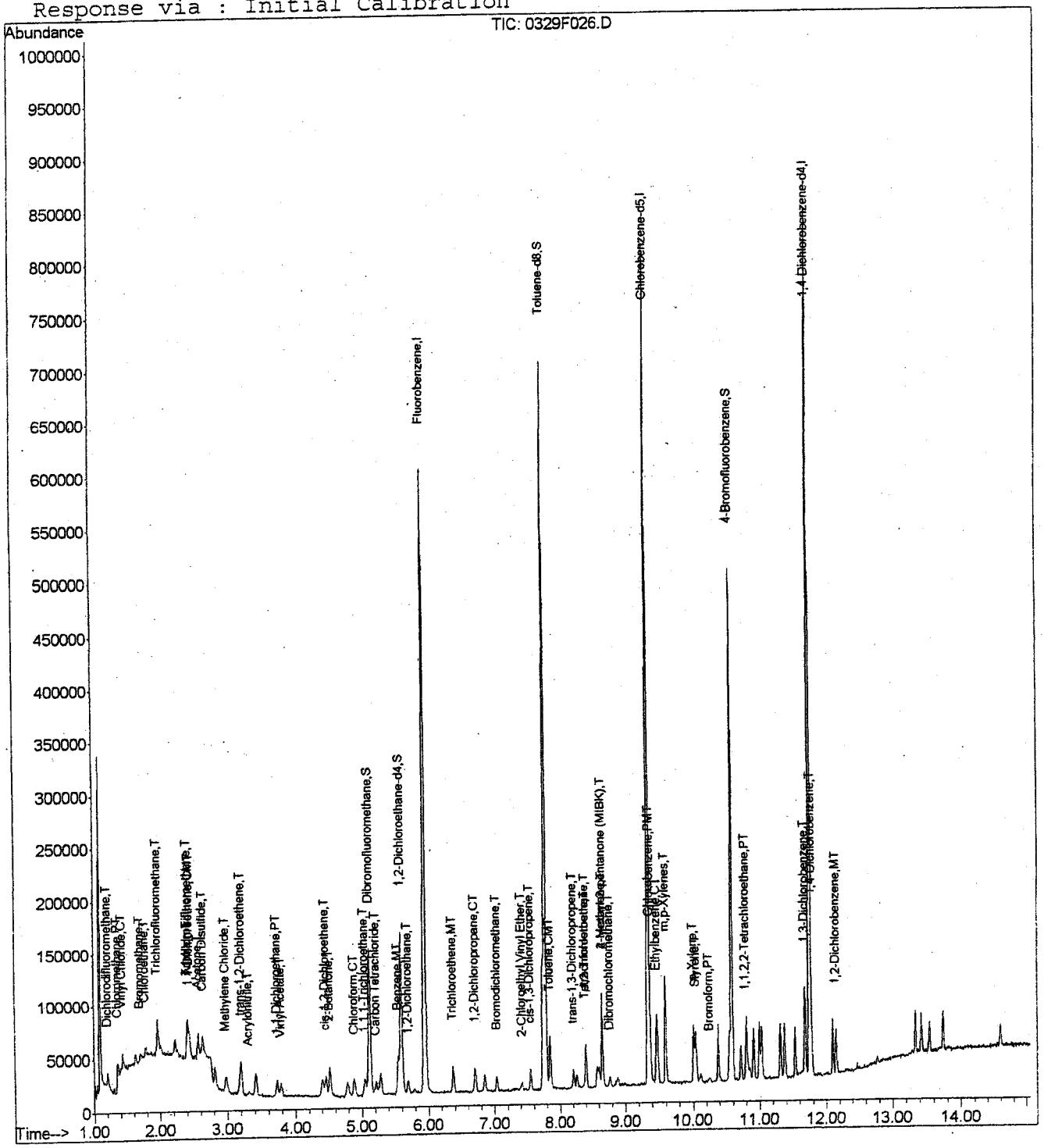
0329F026.D 032911624.M Wed Mar 30 09:04:17 2011

Data File : J:\MS23\DATA\032911\0329F026.D
Acq On : 29 Mar 2011 7:31 pm
Sample : 624 ICAL 0.5
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 9:04 2011

Vial: 14
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: 032911624.RE

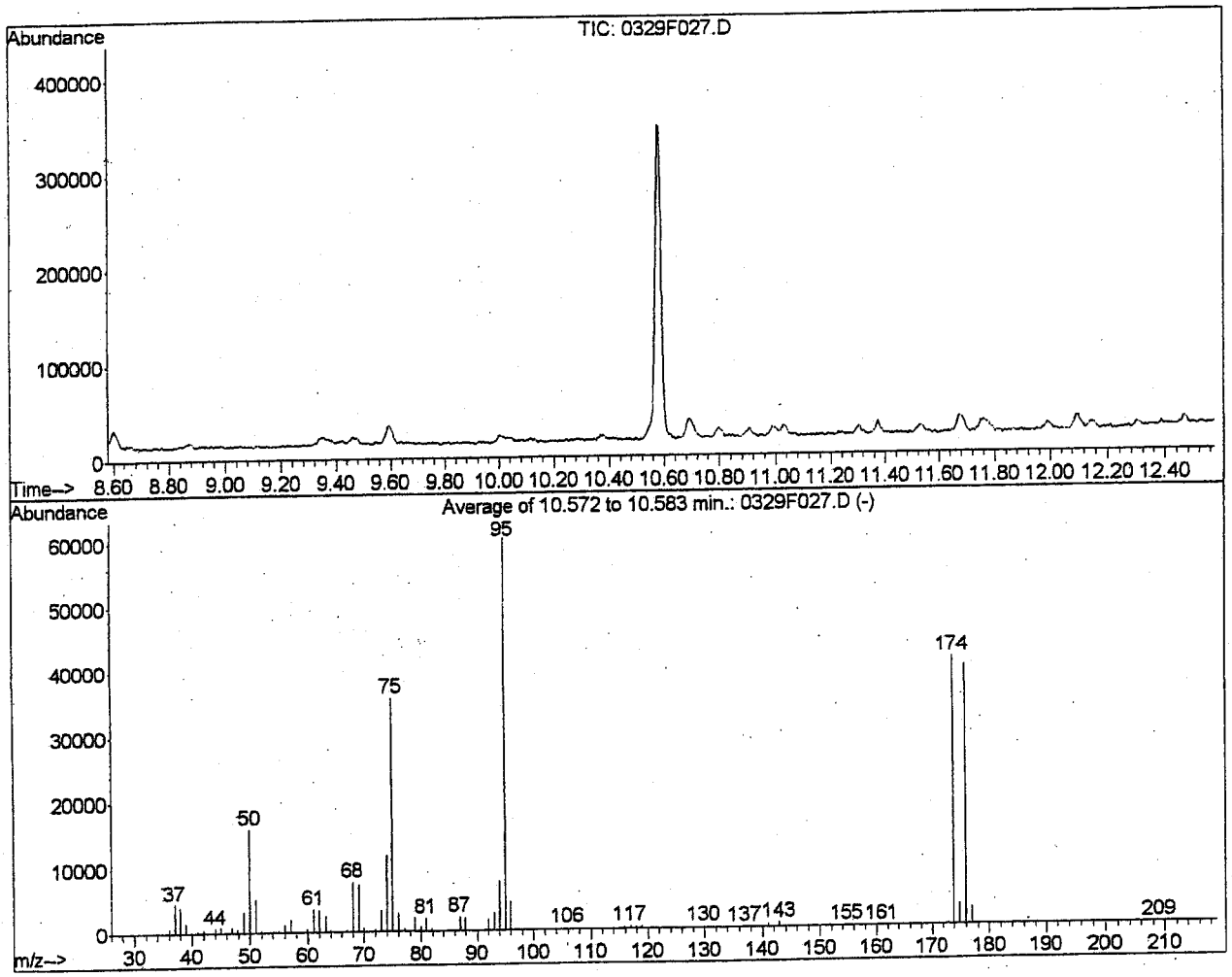
Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration



BFB

Data File : J:\MS23\DATA\032911\0329F027.D
Acq On : 30 Mar 2011 8:48 am
Sample : 624 ICAL 1
Misc :
MS Integration Params: rteint.p
Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624

Vial: 15
Operator: KR
Inst : MS23
Multiplr: 1.00



AutoFind: Scans 1832, 1833, 1834; Background Corrected with Scan 1822

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	26.3	15893	PASS
75	95	30	60	59.3	35786	PASS
95	95	100	100	100.0	60389	PASS
96	95	5	9	7.4	4443	PASS
173	174	0.00	2	0.6	265	PASS
174	95	50	120	68.3	41240	PASS
175	174	5	9	7.7	3196	PASS
176	174	95	101	97.0	39994	PASS
177	176	5	9	6.8	2712	PASS

KR 3/30/11
MB 3.31.11

0329F027.D 032911624.M Wed Mar 30 09:04:46 2011

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\032911\0329F028.D
Acq On : 30 Mar 2011 9:18 am
Sample : IB
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 09:49:10 2011

Vial: 16
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624.RES

Quant Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration
DataAcq Meth : 8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	5.94	96	555020	10.00	PPB	0.00
35) Chlorobenzene-d5	9.34	82	224145	10.00	PPB	0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	181142	10.00	PPB	0.00
System Monitoring Compounds						
22) Dibromofluoromethane	0.00	113	0	0.00	PPB	
Spiked Amount 10.000			Recovery	=	0.00%	
24) 1,2-Dichloroethane-d4	0.00	65	0	0.00	PPB	
Spiked Amount 10.000			Recovery	=	0.00%	
33) Toluene-d8	0.00	98	0	0.00	PPB	
Spiked Amount 10.000			Recovery	=	0.00%	
47) 4-Bromofluorobenzene	0.00	95	0d	0.00	PPB	
Spiked Amount 10.000			Recovery	=	0.00%	
Target Compounds						Qvalue
3) Chloromethane	1.34	50	1672	0.07	PPB	93
5) Bromomethane	1.70	96	2106	0.27	PPB	86
52) 1,4-Dichlorobenzene	11.77	146	538	0.02	PPB	68

KR 3/30/11
HB 3.31.11

(#) = qualifier out of range (m) = manual integration
0329F028.D 032911624.M Wed Mar 30 09:49:48 2011 Page 1

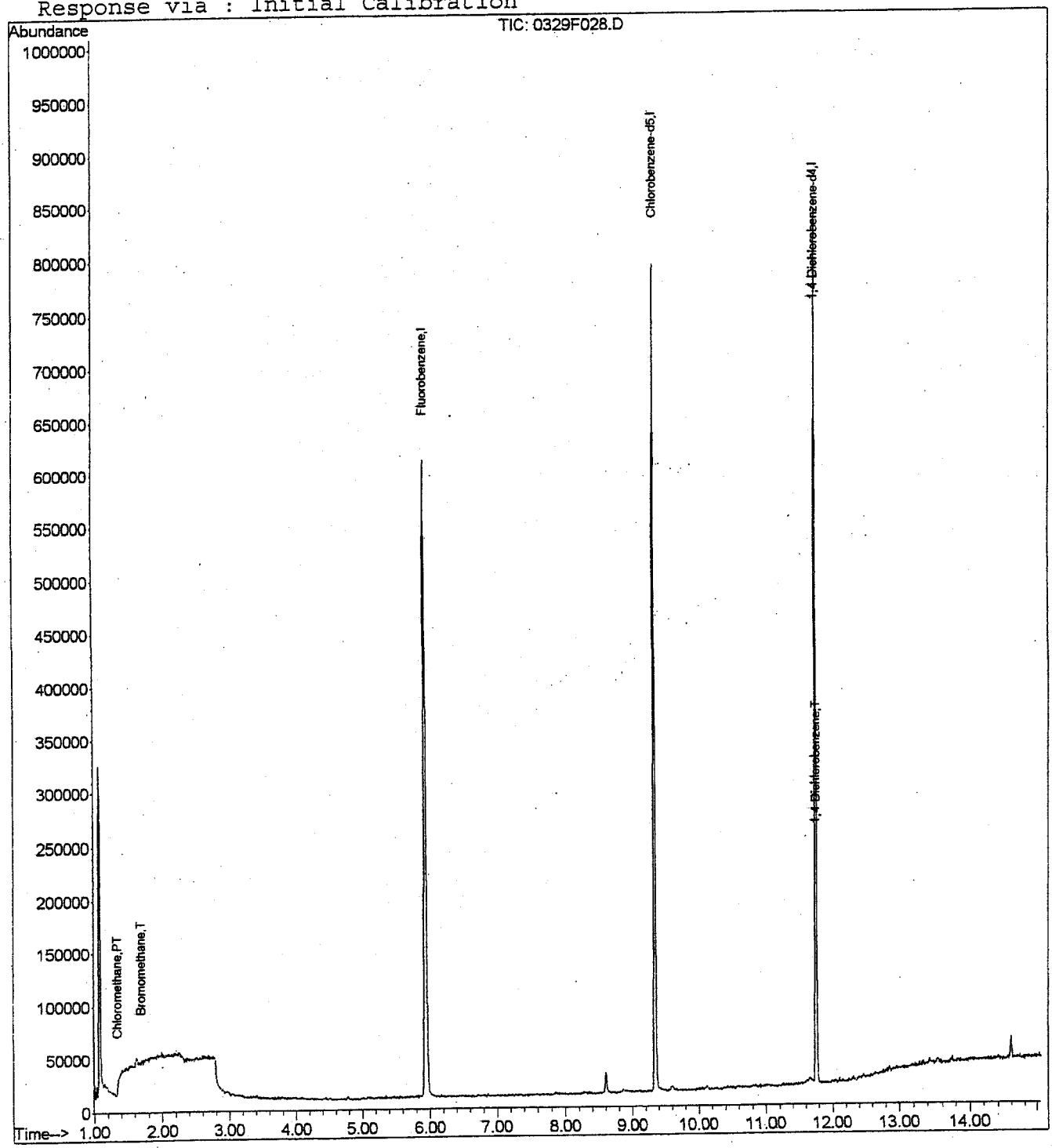
Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\032911\0329F028.D
Acq On : 30 Mar 2011 9:18 am
Sample : IB
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 9:49 2011

Vial: 16
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: 032911624.RE

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\032911\0329F029.D
Acq On : 30 Mar 2011 9:48 am
Sample : 624 ICAL 1
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 10:18:12 2011

Vial: 17
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624.RES

Quant Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Mar 30 09:58:04 2011
Response via : Initial Calibration
DataAcq Meth : 8260

KT 3/30/11

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Fluorobenzene	5.94	96	543159	10.00	PPB		0.00
35) Chlorobenzene-d5	9.34	82	222678	10.00	PPB		0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	181934	10.00	PPB		0.00
System Monitoring Compounds							
22) Dibromofluoromethane	5.11	113	65512	5.50	PPB		0.00
Spiked Amount 10.000			Recovery	=	55.00%		
24) 1,2-Dichloroethane-d4	5.59	65	86728	5.85	PPB		0.00
Spiked Amount 10.000			Recovery	=	58.50%		
33) Toluene-d8	7.77	98	289350	5.57	PPB		0.00
Spiked Amount 10.000			Recovery	=	55.70%		
47) 4-Bromofluorobenzene	10.58	95	103735	5.59	PPB		0.00
Spiked Amount 10.000			Recovery	=	55.90%		
Target Compounds							Qvalue
2) Dichlorodifluoromethane	1.20	85	14515	0.73	PPB		98
3) Chloromethane	1.35	50	25099	0.89	PPB		99
4) Vinyl Chloride	1.42	62	17929	0.75	PPB		97
5) Bromomethane	1.70	96	6782	0.82	PPB		91
6) Chloroethane	1.78	49	3373	0.86	PPB		88
7) Trichlorofluoromethane	1.96	101	20178	0.71	PPB		95
8) Acrolein	2.41	56	22783	14.93	PPB		98
9) Trichlorotrifluoroethane	2.41	151	8593	0.69	PPB		92
10) 1,1-Dichloroethene	2.44	96	10327	0.76	PPB	#	80
11) Acetone	2.55	43	181134	89.33	PPB		98
12) Carbon Disulfide	2.63	76	42514	0.75	PPB		98
13) Methylene Chloride	2.98	84	11621	0.85	PPB		90
14) Acrylonitrile	3.32	53	4661	1.93	PPB		87
15) trans-1,2-Dichloroethene	3.20	96	10531	0.75	PPB		96
16) 1,1-Dichloroethane	3.73	63	20873	0.75	PPB		95
17) Vinyl Acetate	3.79	86	849	0.56	PPB	#	55
18) cis-1,2-Dichloroethene	4.45	96	11322	0.75	PPB		98
19) 2-Butanone	4.52	72	50945	85.09	PPB		96
20) Chloroform	4.89	83	19686	0.79	PPB		89
21) 1,1,1-Trichloroethane	5.05	97	16824	0.72	PPB		98
23) Carbon Tetrachloride	5.21	117	11964	0.66	PPB		95
25) Benzene	5.54	78	45256	0.77	PPB		98
26) 1,2-Dichloroethane	5.69	62	13990	0.78	PPB		96
27) Trichloroethene	6.37	95	11864	0.80	PPB		94
28) 1,2-Dichloropropane	6.70	63	11618	0.77	PPB		95
29) Bromodichloromethane	7.03	83	12378	0.73	PPB		89
30) 2-Chloroethyl Vinyl Ether	7.42	63	3476	0.67	PPB		83

(#) = qualifier out of range (m) = manual integration

HB 3-31-11

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\032911\0329F029.D
Acq On : 30 Mar 2011 9:48 am
Sample : 624 ICAL 1
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 10:18:12 2011

Vial: 17
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624.RES

Quant Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Mar 30 09:58:04 2011
Response via : Initial Calibration
DataAcq Meth : 8260

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
31)	cis-1,3-Dichloropropene	7.55	75	13951	0.67 PPB	97
32)	4-Methyl-2-pentanone (MIBK	8.65	58	171653	80.87 PPB	99
34)	Toluene	7.84	92	27557	0.75 PPB	90
36)	trans-1,3-Dichloropropene	8.20	75	10907	0.64 PPB	95
37)	1,1,2-Trichloroethane	8.39	83	5376	0.73 PPB	97
38)	Tetrachloroethene	8.40	164	7969	0.73 PPB	95
39)	2-Hexanone	8.65	43	373052	84.81 PPB	100
40)	Dibromochloromethane	8.77	129	6423	0.68 PPB	98
41)	Chlorobenzene	9.37	112	27578	0.74 PPB	95
42)	Ethylbenzene	9.47	106	15442	0.72 PPB	98
43)	m,p-Xylenes	9.59	106	36786	1.38 PPB	99
44)	o-Xylene	10.01	106	17550	0.70 PPB	95
45)	Styrene	10.04	103	12505m	0.64 PPB	
46)	Bromoform	10.24	173	2884	0.63 PPB	96
49)	1,1,2,2-Tetrachloroethane	10.79	83	5644	0.66 PPB	96
51)	1,3-Dichlorobenzene	11.68	146	18607	0.69 PPB	96
52)	1,4-Dichlorobenzene	11.78	146	19787	0.74 PPB	97
53)	1,2-Dichlorobenzene	12.15	146	17054	0.73 PPB	99

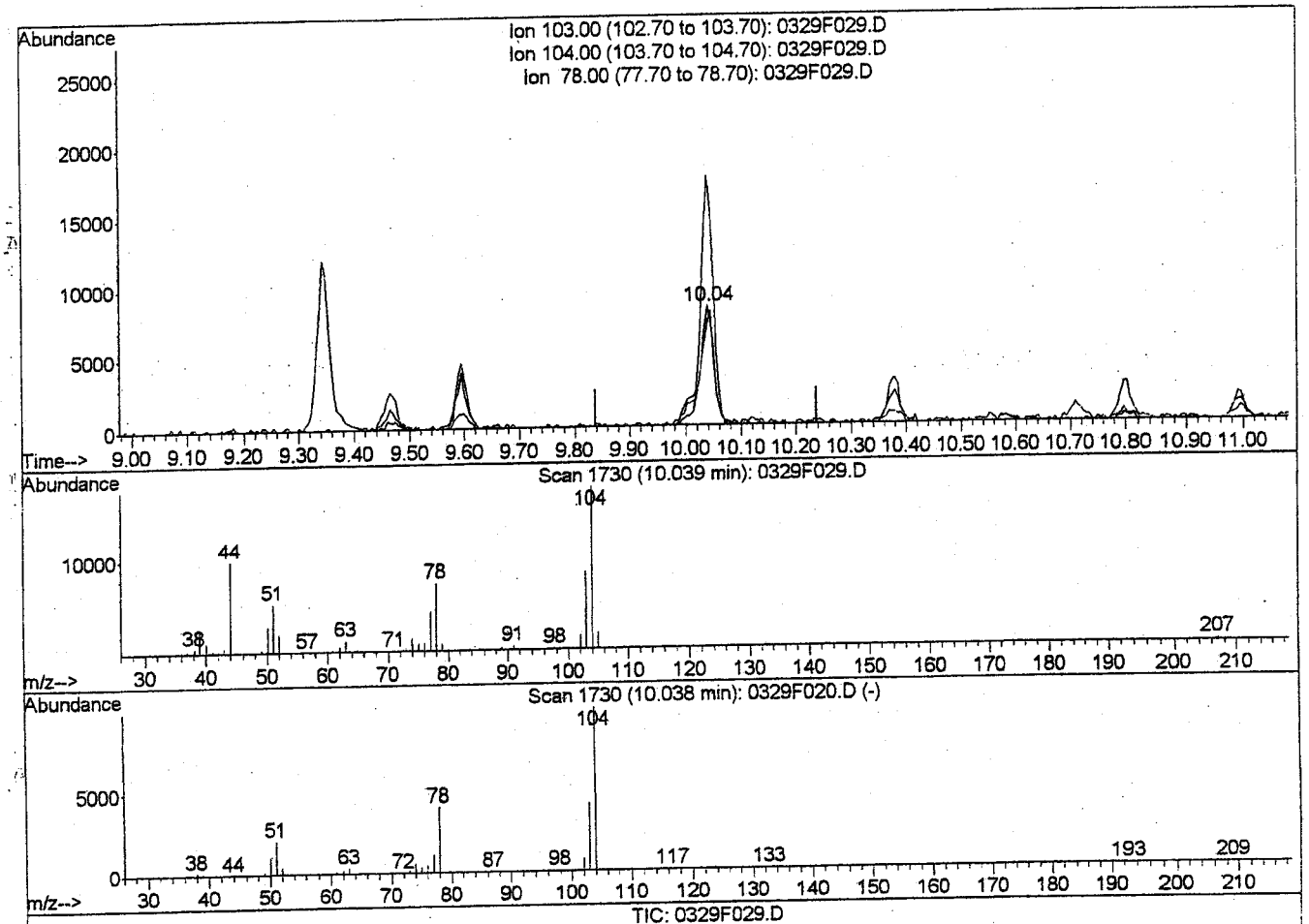
(#) = qualifier out of range (m) = manual integration

Data File : J:\MS23\DATA\032911\0329F029.D
Acq On : 30 Mar 2011 9:48 am
Sample : 624 ICAL 1
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 10:18 2011

Vial: 17
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Mar 30 09:58:04 2011
Response via : Multiple Level Calibration



(45) Styrene (T)

10.04min 0.78PPB

response 15138

Ion	Exp%	Act%
103.00	100	100
104.00	217.10	209.99
78.00	101.20	87.83
0.00	0.00	0.00

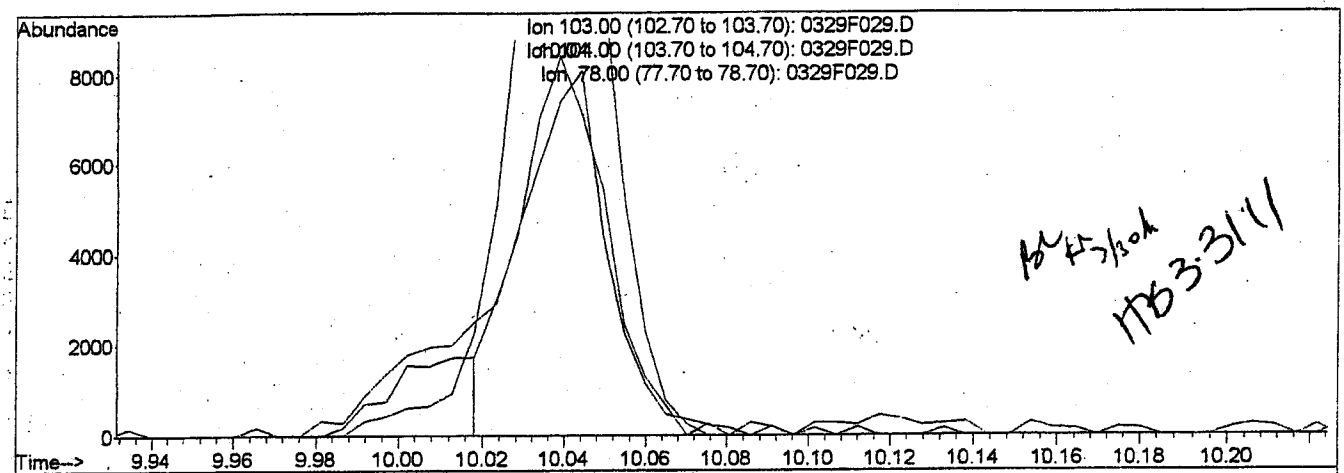
0329F029.D 032911624.M Wed Mar 30 10:19:01 2011

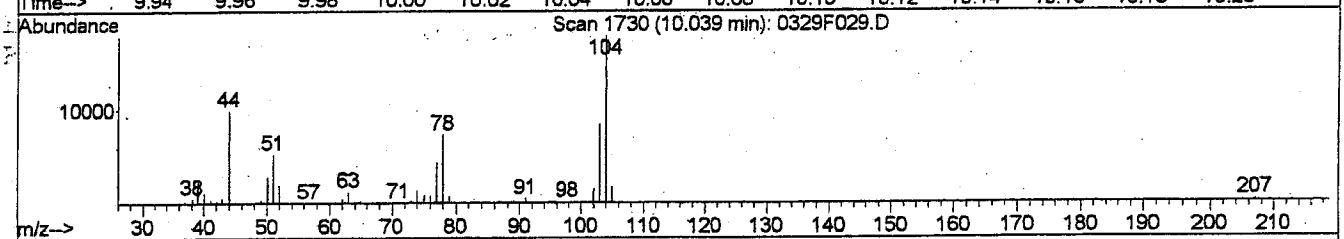
Quantitation Report (Qedit)

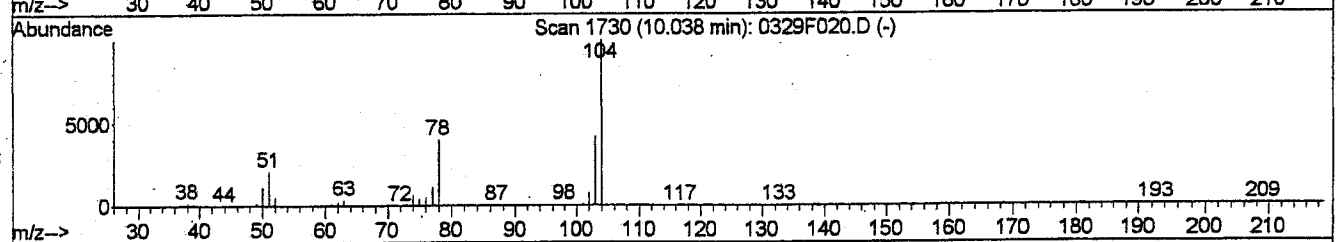
Data File : J:\MS23\DATA\032911\0329F029.D
Acq On : 30 Mar 2011 9:48 am
Sample : 624 ICAL 1
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 10:19 2011

Vial: 17
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Mar 30 09:58:04 2011
Response via : Multiple Level Calibration







TIC: 0329F029.D

(45) Styrene (T)

10.04min 0.64PPB m

response 12505

Ion	Exp%	Act%
103.00	100	100
104.00	217.10	209.99
78.00	101.20	87.83
0.00	0.00	0.00

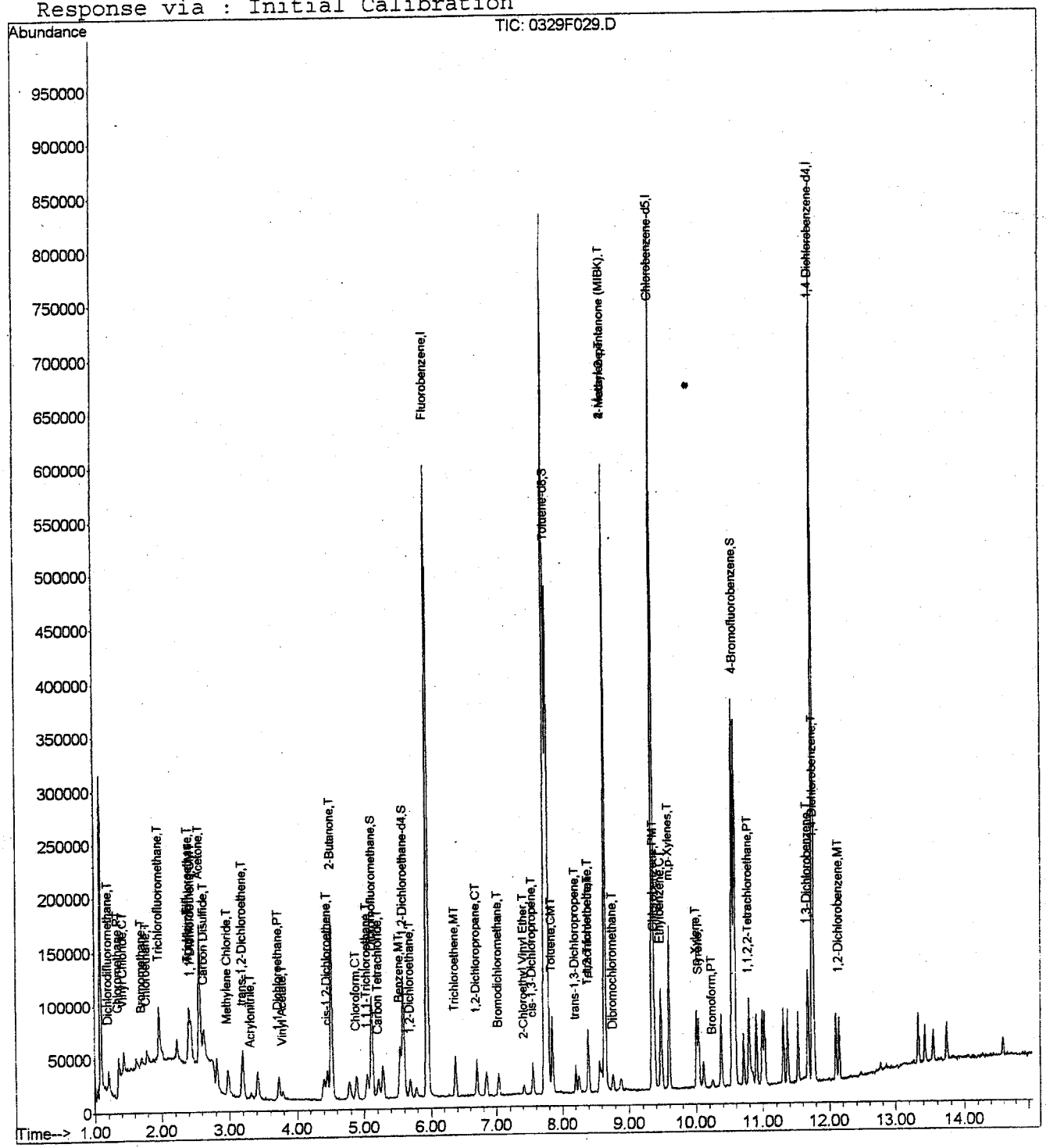
0329F029.D 032911624.M Wed Mar 30 10:19:07 2011

Data File : J:\MS23\DATA\032911\0329F029.D
Acq On : 30 Mar 2011 9:48 am
Sample : 624 ICAL 1
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 10:19 2011

Vial: 17
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: 032911624.RE

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Mar 30 09:58:04 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\032911BAYW\0329F032.D
Acq On : 30 Mar 2011 12:58 pm
Sample : ICV
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 20 12:44:40 2011

Vial: 20
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624BAYW.R

Quant Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 12:44:23 2011
Response via : Initial Calibration
DataAcq Meth : 8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	5.94	96	537544	10.00	PPB	0.00
35) Chlorobenzene-d5	9.34	82	220891	10.00	PPB	0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	183680	10.00	PPB	0.00
System Monitoring Compounds						
22) Dibromofluoromethane	5.11	113	118079	10.15	PPB	0.00
Spiked Amount 10.000			Recovery	=	101.50%	
24) 1,2-Dichloroethane-d4	5.59	65	145583	9.96	PPB	0.00
Spiked Amount 10.000			Recovery	=	99.60%	
33) Toluene-d8	7.77	98	522895	10.30	PPB	0.00
Spiked Amount 10.000			Recovery	=	103.00%	
47) 4-Bromofluorobenzene	10.58	95	182144	10.02	PPB	0.00
Spiked Amount 10.000			Recovery	=	100.20%	

Target Compounds							Qvalue
2) Dichlorodifluoromethane	1.20	85	183132	9.70	PPB		96
3) Chloromethane	1.35	50	280051	10.23	PPB		97
4) Vinyl Chloride	1.43	62	240563	11.06	PPB		99
5) Bromomethane	1.70	96	82542	10.37	PPB		93
6) Chloroethane	1.78	49	41490	10.93	PPB		95
7) Trichlorofluoromethane	1.96	101	257664	9.58	PPB		96
8) Acrolein	2.41	56	154969	105.95	PPB		98
9) Trichlorotrifluoroethane	2.40	151	123554	10.42	PPB		95
10) 1,1-Dichloroethene	2.43	96	157071	12.10	PPB		99
11) Acetone	2.55	43	129610	63.53	PPB		99
12) Carbon Disulfide	2.63	76	1164040	21.62	PPB		99
13) Methylene Chloride	2.98	84	147710	11.18	PPB		96
14) Acrylonitrile	3.32	53	27694	11.66	PPB		99
15) trans-1,2-Dichloroethene	3.20	96	155986	11.61	PPB		98
16) 1,1-Dichloroethane	3.72	63	306859	11.54	PPB		99
17) Vinyl Acetate	3.78	86	37417	24.50	PPB	#	94
18) cis-1,2-Dichloroethene	4.45	96	156763	10.86	PPB		96
19) 2-Butanone	4.51	72	34315	57.39	PPB		93
20) Chloroform	4.88	83	276312	11.51	PPB		98
21) 1,1,1-Trichloroethane	5.05	97	249072	11.23	PPB		98
23) Carbon Tetrachloride	5.21	117	198392	11.61	PPB		98
25) Benzene	5.54	78	650447	11.52	PPB		99
26) 1,2-Dichloroethane	5.69	62	197645	11.50	PPB		97
27) Trichloroethene	6.37	95	160455	11.23	PPB		97
28) 1,2-Dichloropropane	6.70	63	160559	11.16	PPB		96
29) Bromodichloromethane	7.03	83	183230	11.29	PPB		100
30) 2-Chloroethyl Vinyl Ether	7.42	63	49948	10.17	PPB		96

(#) = qualifier out of range (m) = manual integration

HB 4.20.11

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\032911BAYW\0329F032.D
Acq On : 30 Mar 2011 12:58 pm
Sample : ICV
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 20 12:44:40 2011

Vial: 20
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624BAYW.R

Quant Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 12:44:23 2011
Response via : Initial Calibration
DataAcq Meth : 8260

Compound	R.T.	QIon	Response	Conc Unit	Qvalue
31) cis-1,3-Dichloropropene	7.55	75	225898	11.46 PPB	99
32) 4-Methyl-2-pentanone (MIBK	8.65	58	112596	53.52 PPB	97
34) Toluene	7.85	92	398621	11.32 PPB	99
36) trans-1,3-Dichloropropene	8.20	75	167153	10.37 PPB	98
37) 1,1,2-Trichloroethane	8.39	83	78308	11.14 PPB	96
38) Tetrachloroethene	8.40	164	117720	11.25 PPB	97
39) 2-Hexanone	8.65	43	241059	54.78 PPB	99
40) Dibromochloromethane	8.77	129	99175	11.02 PPB	100
41) Chlorobenzene	9.37	112	401479	11.24 PPB	98
42) Ethylbenzene	9.46	106	229041	11.28 PPB	95
43) m,p-Xylenes	9.59	106	562047	22.23 PPB	96
44) o-Xylene	10.01	106	262114	10.94 PPB	97
45) Styrene	10.04	103	205714m	11.26 PPB	
46) Bromoform	10.25	173	45831	10.62 PPB	96
49) 1,1,2,2-Tetrachloroethane	10.79	83	87919	10.77 PPB	99
51) 1,3-Dichlorobenzene	11.67	146	295667	11.38 PPB	98
52) 1,4-Dichlorobenzene	11.77	146	294570	11.31 PPB	98
53) 1,2-Dichlorobenzene	12.14	146	251216	11.11 PPB	99

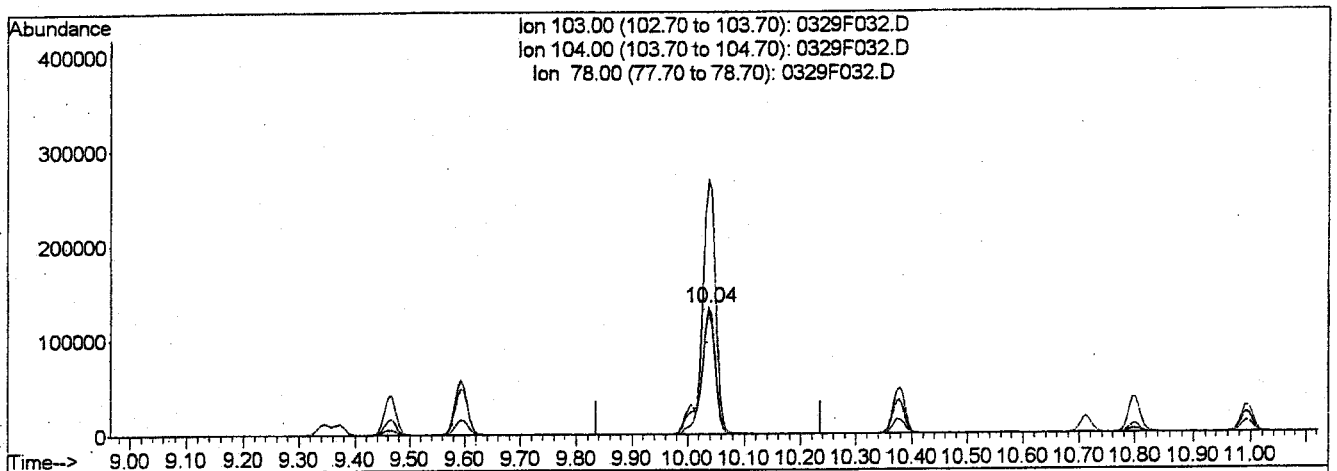
(#) = qualifier out of range (m) = manual integration

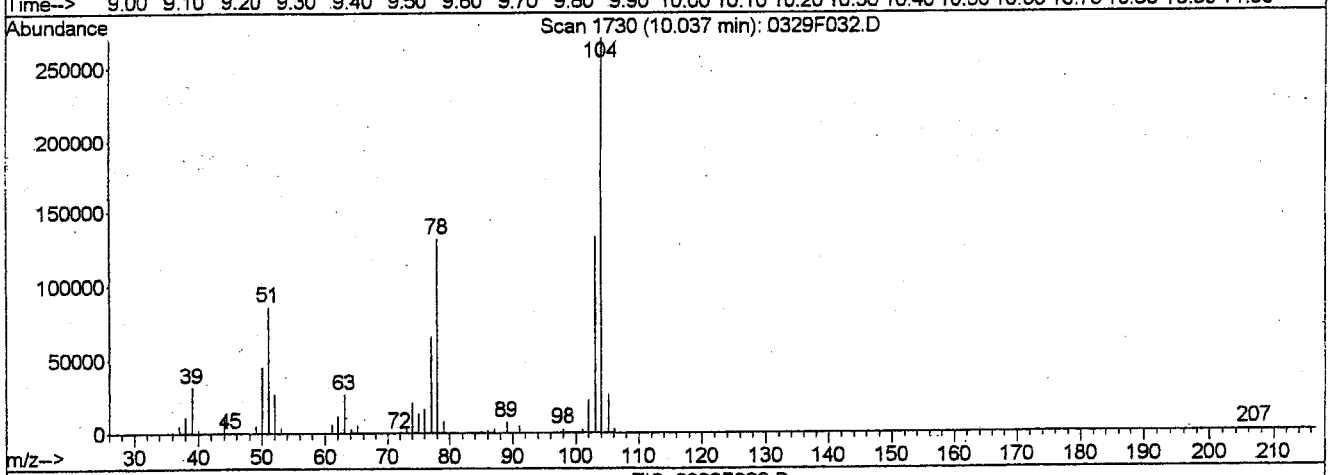
Quantitation Report (Qedit)

Data File : J:\MS23\DATA\032911BAYW\0329F032.D
Acq On : 30 Mar 2011 12:58 pm
Sample : ICV
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 20 12:44 2011

Vial: 20
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 12:44:23 2011
Response via : Multiple Level Calibration





TIC: 0329F032.D

(45) Styrene (T)

10.04min 12.88PPB

response 235372

Ion	Exp%	Act%
103.00	100	100
104.00	217.10	202.84
78.00	101.20	98.63
0.00	0.00	0.00

0329F032.D 032911624BAYW.M Wed Apr 20 12:44:52 2011

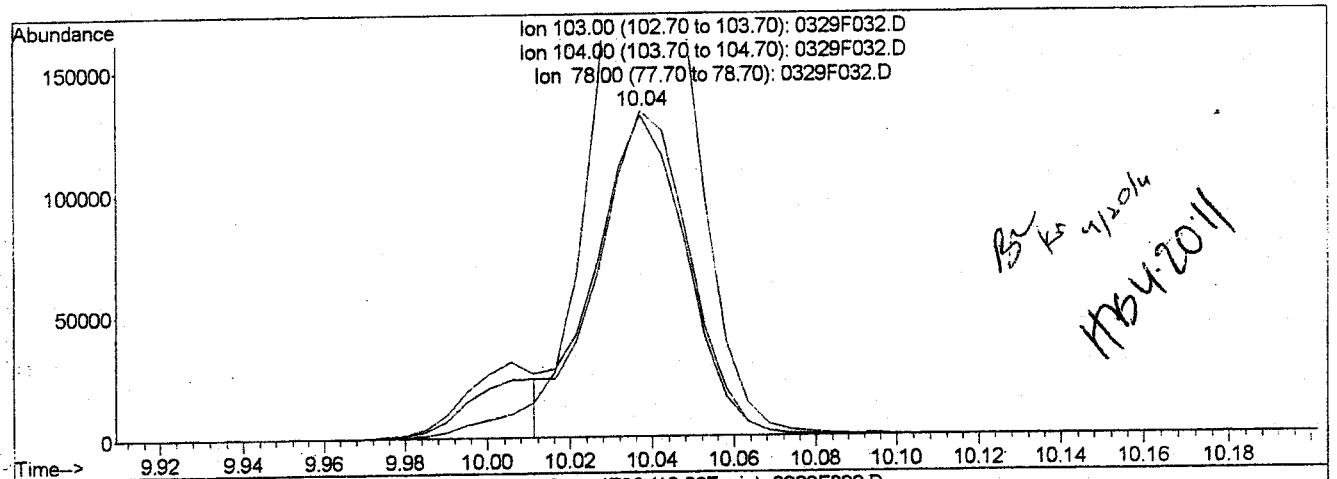
Quantitation Report (Qedit)

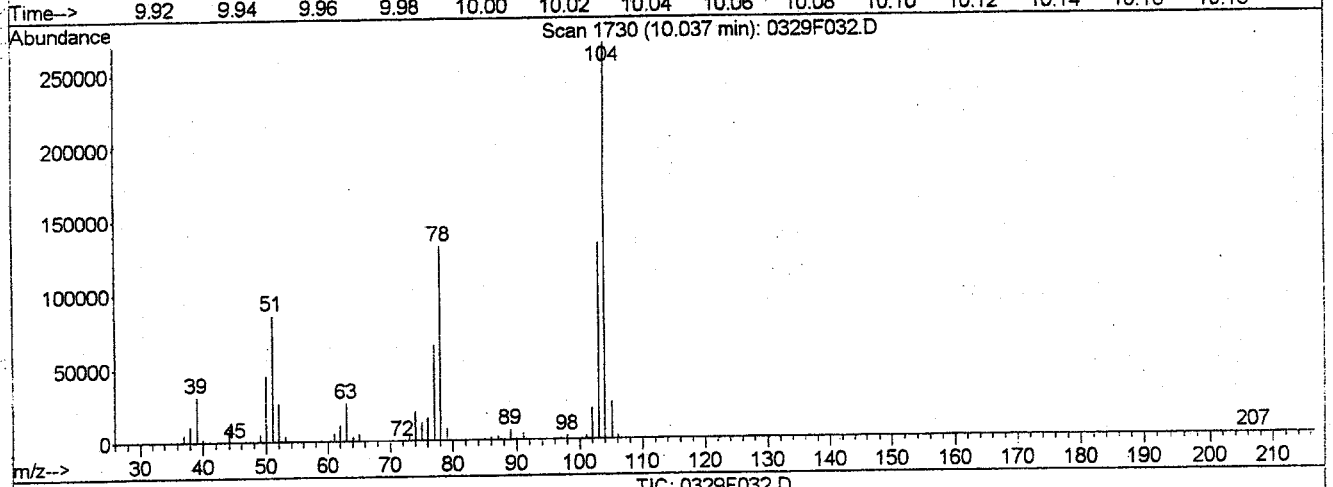
Data File : J:\MS23\DATA\032911BAYW\0329F032.D
Acq On : 30 Mar 2011 12:58 pm
Sample : ICV
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 20 12:44 2011

Vial: 20
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 12:44:23 2011
Response via : Multiple Level Calibration





TIC: 0329F032.D

(45) Styrene (T)

10.04min 11.26PPB m

response 205714

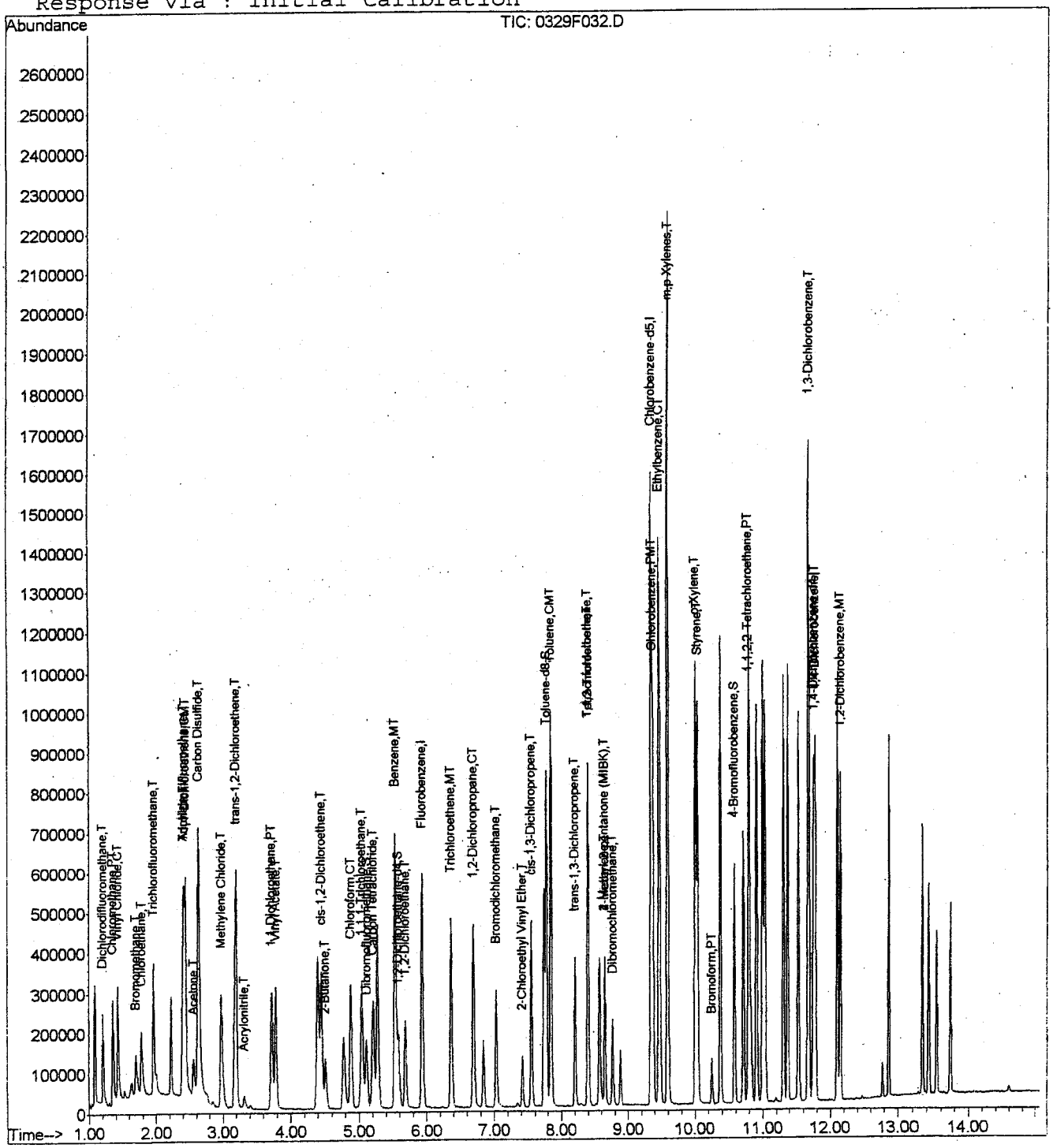
Ion	Exp%	Act%
103.00	100	100
104.00	217.10	202.84
78.00	101.20	98.75
0.00	0.00	0.00

0329F032.D 032911624BAYW.M Wed Apr 20 12:44:58 2011

Data File : J:\MS23\DATA\032911BAYW\0329F032.D
Acq On : 30 Mar 2011 12:58 pm
Sample : ICV
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 20 12:44 2011

Vial: 20
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624BAY

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 12:44:23 2011
Response via : Initial Calibration



Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1103044
Date Analyzed: 04/19/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 624

Calibration Date: 03/29/2011
Calibration ID: CAL10443
Analysis Lot: KWG1103523
Units: PPB

File ID: J:\MS23\DATA\041911BAYW\0419F006.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Dichlorodifluoromethane	10	11	0.01	0.351	0.374	6	NA	± 40 %	AverageRF
Chloromethane	10	11	0.01	0.509	0.572	12	NA	± 104 %	AverageRF
Vinyl Chloride	10	15	0.01	0.405	0.593	46	NA	± 96 %	AverageRF
Bromomethane	10	12	0.01	0.148	0.171	15	NA	± 86 %	AverageRF
Chloroethane	10	13	0.01	0.0706	0.0899	27	NA	± 62 %	AverageRF
Trichlorofluoromethane	10	13	0.01	0.500	0.638	28	NA	± 52 %	AverageRF
Trichlorotrifluoroethane	10	12	0.01	0.221	0.262	19	NA	± 40 %	AverageRF
1,1-Dichloroethene	10	10	0.01	0.241	0.251	4	NA	± 49 %	AverageRF
Carbon Disulfide	10	11	0.01	1.00	1.09	9	NA	± 40 %	AverageRF
Methylene Chloride	10	9.4	0.01	0.246	0.230	-6	NA	± 39 %	AverageRF
trans-1,2-Dichloroethene	10	9.6	0.01	0.250	0.240	-4	NA	± 30 %	AverageRF
cis-1,2-Dichloroethene	10	9.5	0.01	0.268	0.256	-5	NA	± 30 %	AverageRF
2-Butanone (MEK)	200	180	0.01	0.0111	0.0101	-9	NA	± 40 %	AverageRF
1,1-Dichloroethane	10	9.6	0.01	0.495	0.472	-5	NA	± 27 %	AverageRF
Chloroform	10	9.9	0.01	0.447	0.443	-1	NA	± 32 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	9.4	0.01	0.413	0.389	-6	NA	± 25 %	AverageRF
Carbon Tetrachloride	10	10	0.01	0.318	0.327	3	NA	± 27 %	AverageRF
Benzene	10	9.8	0.01	1.05	1.03	-2	NA	± 36 %	AverageRF
1,2-Dichloroethane (EDC)	10	9.6	0.01	0.320	0.306	-4	NA	± 32 %	AverageRF
Vinyl Acetate	20	18	0.01	0.0284	0.0259	-9	NA	± 80 %	AverageRF
Trichloroethene (TCE)	10	9.6	0.01	0.266	0.255	-4	NA	± 33 %	AverageRF
1,2-Dichloropropane	10	9.5	0.01	0.268	0.253	-5	NA	± 66 %	AverageRF
Bromodichloromethane	10	10	0.01	0.302	0.301	0	NA	± 34 %	AverageRF
2-Chloroethyl Vinyl Ether	10	8.8	0.01	0.0913	0.0801	-12	NA	± 124 %	AverageRF
trans-1,3-Dichloropropene	10	8.7	0.01	0.729	0.637	-13	NA	± 50 %	AverageRF
4-Methyl-2-pentanone (MIBK)	200	170	0.01	0.0391	0.0342	-13	NA	± 40 %	AverageRF
2-Hexanone	200	190	0.01	0.199	0.185	-7	NA	± 40 %	AverageRF
Toluene	10	10	0.01	0.655	0.667	2	NA	± 25 %	AverageRF
cis-1,3-Dichloropropene	10	8.8	0.01	0.367	0.323	-12	NA	± 76 %	AverageRF
1,1,2-Trichloroethane	10	11	0.01	0.318	0.340	7	NA	± 29 %	AverageRF
Tetrachloroethene (PCE)	10	11	0.01	0.474	0.544	15	NA	± 26 %	AverageRF
Dibromochloromethane	10	11	0.01	0.407	0.447	10	NA	± 32 %	AverageRF
Chlorobenzene	10	11	0.01	1.62	1.77	9	NA	± 34 %	AverageRF
Ethylbenzene	10	11	0.01	0.919	0.999	9	NA	± 41 %	AverageRF
Styrene	10	11	0.01	0.827	0.887	7	NA	± 40 %	AverageRF
m,p-Xylenes	20	22	0.01	1.14	1.27	11	NA	± 40 %	AverageRF
o-Xylene	10	11	0.01	1.08	1.15	6	NA	± 40 %	AverageRF
Bromoform	10	11	0.01	0.195	0.208	7	NA	± 29 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1103044
Date Analyzed: 04/19/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 624

Calibration Date: 03/29/2011
Calibration ID: CAL10443
Analysis Lot: KWG1103523
Units: PPB

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Acetone	200	220	0.01	0.0380	0.0412	9	NA	± 40 %	AverageRF
1,1,2,2-Tetrachloroethane	10	9.6	0.01	0.444	0.427	-4	NA	± 39 %	AverageRF
1,3-Dichlorobenzene	10	11	0.01	1.41	1.50	6	NA	± 27 %	AverageRF
1,4-Dichlorobenzene	10	10	0.01	1.42	1.48	4	NA	± 37 %	AverageRF
1,2-Dichlorobenzene	10	10	0.01	1.23	1.28	4	NA	± 37 %	AverageRF
Acrolein	200	110	0.01	0.0272	0.0149	-45	NA	± 80 %	AverageRF
Acrylonitrile	20	18	0.01	0.0442	0.0399	-10	NA	± 40 %	AverageRF
Toluene-d8	10	11	0.01	0.945	1.00	6	NA	± 30 %	AverageRF
4-Bromofluorobenzene	10	10	0.01	0.823	0.843	2	NA	± 30 %	AverageRF
Dibromofluoromethane	10	10	0.01	0.216	0.219	1	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound

‡ CCC Compound

Exception Report

Data File: J:\MS23\DATA\041911BAYW\0419F006.D
Lab ID: KWG1103523-2
RunType: CCV
Matrix: WATER

Date Acquired: 04/19/2011 11:04
Date Quantitated: 04/20/2011 13:03
Batch ID: KWG1103523
Analysis Method: 624
MethodJoinID: MJ158

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	

Primary Review: Kn 4/20/11

Secondary Review: HBU 2011

Printed: 04/20/2011 13:35:13
u:\Stealth\Crystal.rpt\except2.rpt

Quantitation Report

Bottle ID:		Tier:		Matrix:	WATER
Prod Code:	624	Collect Date:		Receive Date:	04/20/2011

Analysis Lot:	KWG1103523	Prep Lot:		Report Group:	
Analysis Method:	624	Prep Method:			
Prep Ref:		Prep Date:			

Quant Method:	J:\MS23\METHODS\032911624BAY	Calibration ID:	CAL10443
Title:			
Tune Ref:	J:\MS23\DATA\041911BAYW\0419F005.D	Method ID:	MJ158
MB Ref:		Quant based on Method	

Data File:	J:\MS23\DATA\041911BAYW\0419F006.D			Instrument:	MS23
Acqu Date:	04/19/2011 11:04	Quant Date:	04/20/2011 13:03	Vial:	3
Run Type:	CCV			Dilution:	1.0
Lab ID:	KWG1103523-2			Soln Conc. Units:	PPB

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	Fluorobenzene	5.94	0.00	96	554553	10.00	OK
2	Chlorobenzene-d5	9.34	-0.01	82	216893	10.00	OK
3	1,4-Dichlorobenzene-d4	11.75	0.00	152	205263	10.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	Dibromofluoromethane	5.11			113	121493	10.13		61-121	NA
1	1,2-Dichloroethane-d4	5.59			65	144989	9.62		54-125	NA
2	Toluene-d8	7.77			98	554356	10.58		72-122	NA
3	4-Bromofluorobenzene	10.58			95	182793	10.24		70-120	NA

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	Final Conc	Q	Rpt?
1	Dichlorodifluoromethane	1.20			85	207228	10.64			
1	Chloromethane	1.36			50	317157	11.23			
1	Vinyl Chloride	1.43			62	328648	14.64			
1	Bromomethane	1.70			96	94726	11.53			
1	Chloroethane	1.78			49	49862	12.73			
1	Trichlorofluoromethane	1.97			101	353843	12.76			
1	Acrolein	2.41			56	164762	109.19			
1	Trichlorotrifluoroethane	2.41			151	145187	11.87			
1	1,1-Dichloroethene	2.45			96	139344	10.41			
1	Acetone	2.56			43	457277	217.27			
1	Carbon Disulfide	2.64			76	603167	10.86			
1	Methylene Chloride	2.98			84	127796	9.37			
1	Acrylonitrile	3.33			53	44198	18.04			
1	trans-1,2-Dichloroethene	3.21			96	133279	9.62			

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Data File:	J:\MS23\DATA\041911BAYW\0419F006.D			Instrument:	MS23
Acqu Date:	04/19/2011 11:04	Quant Date:	04/20/2011 13:03	Vial:	3
Run Type:	CCV			Dilution:	1.0
Lab ID:	KWG1103523-2			Soln Conc. Units:	PPB

Final Conc. Units: ug/L

Target Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,1-Dichloroethane	3.73			63	261851	9.55			
1	Vinyl Acetate	3.79			86	28758	18.25			
1	cis-1,2-Dichloroethene	4.46			96	141785	9.52			
1	2-Butanone (MEK)	4.51			72	112115	181.76			
1	Chloroform	4.89			83	245585	9.91			
1	1,1,1-Trichloroethane (TCA)	5.05			97	215582	9.42			
1	Carbon Tetrachloride	5.21			117	181355	10.29			
1	Benzene	5.54			78	571217	9.81			
1	1,2-Dichloroethane (EDC)	5.69			62	169490	9.56			
1	Trichloroethene (TCE)	6.37			95	141579	9.61			
1	1,2-Dichloropropane	6.70			63	140254	9.45			
1	Bromodichloromethane	7.03			83	167143	9.99			
1	2-Chloroethyl Vinyl Ether	7.42			63	44425	8.77			
1	cis-1,3-Dichloropropene	7.55			75	179319	8.82			
1	4-Methyl-2-pentanone (MIBK)	8.65			58	379516	174.86			
1	Toluene	7.84			92	369722	10.17			
2	trans-1,3-Dichloropropene	8.20			75	138111	8.73			
2	1,1,2-Trichloroethane	8.39			83	73718	10.68			
2	Tetrachloroethene (PCE)	8.40			164	117909	11.47			
2	2-Hexanone	8.65			43	804667	186.21			
2	Dibromochloromethane	8.77			129	96936	10.97			
2	Chlorobenzene	9.37			112	383636	10.93			
2	Ethylbenzene	9.47			106	216647	10.87			
2	m,p-Xylenes	9.59			106	551588	22.22			
2	o-Xylene	10.01			106	248589	10.57			
2	Styrene	10.04			103	192455m	10.73			
2	Bromoform	10.25			173	45168	10.65			
3	1,1,2,2-Tetrachloroethane	10.78			83	87623	9.61			
3	1,3-Dichlorobenzene	11.67			146	308085	10.61			
3	1,4-Dichlorobenzene	11.77			146	303967	10.45			
3	1,2-Dichlorobenzene	12.14			146	263736	10.44			

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\041911BAYW\0419F006.D
Acq On : 19 Apr 2011 11:04 am
Sample : 624 CCV
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 20 13:36:47 2011

Vial: 3
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624BAYW.R

Quant Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Initial Calibration
DataAcq Meth : 8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	5.94	96	554553	10.00	PPB	0.00
35) Chlorobenzene-d5	9.34	82	216893	10.00	PPB	0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	205263	10.00	PPB	0.00
System Monitoring Compounds						
22) Dibromofluoromethane	5.11	113	121493	10.13	PPB	0.00
Spiked Amount 10.000			Recovery	=	101.30%	
24) 1,2-Dichloroethane-d4	5.59	65	144989	9.62	PPB	0.00
Spiked Amount 10.000			Recovery	=	96.20%	
33) Toluene-d8	7.77	98	554356	10.58	PPB	0.00
Spiked Amount 10.000			Recovery	=	105.80%	
47) 4-Bromofluorobenzene	10.58	95	182793	10.24	PPB	0.00
Spiked Amount 10.000			Recovery	=	102.40%	

Target Compounds							Qvalue
2) Dichlorodifluoromethane	1.20	85	207228	10.64	PPB		97
3) Chloromethane	1.36	50	317157	11.23	PPB		99
4) Vinyl Chloride	1.43	62	328648	14.64	PPB		98
5) Bromomethane	1.70	96	94726	11.53	PPB		89
6) Chloroethane	1.78	49	49862	12.73	PPB		91
7) Trichlorofluoromethane	1.97	101	353843	12.76	PPB		97
8) Acrolein	2.41	56	164762	109.19	PPB		97
9) Trichlorotrifluoroethane	2.41	151	145187	11.87	PPB		98
10) 1,1-Dichloroethene	2.45	96	139344	10.41	PPB		99
11) Acetone	2.56	43	457277	217.27	PPB		100
12) Carbon Disulfide	2.64	76	603167	10.86	PPB		100
13) Methylene Chloride	2.98	84	127796	9.37	PPB		95
14) Acrylonitrile	3.33	53	44198	18.04	PPB		100
15) trans-1,2-Dichloroethene	3.21	96	133279	9.62	PPB		91
16) 1,1-Dichloroethane	3.73	63	261851	9.55	PPB		98
17) Vinyl Acetate	3.79	86	28758	18.25	PPB	#	87
18) cis-1,2-Dichloroethene	4.46	96	141785	9.52	PPB		98
19) 2-Butanone	4.51	72	112115	181.76	PPB		99
20) Chloroform	4.89	83	245585	9.91	PPB		98
21) 1,1,1-Trichloroethane	5.05	97	215582	9.42	PPB		96
23) Carbon Tetrachloride	5.21	117	181355	10.29	PPB		95
25) Benzene	5.54	78	571217	9.81	PPB		98
26) 1,2-Dichloroethane	5.69	62	169490	9.56	PPB		97
27) Trichloroethene	6.37	95	141579	9.61	PPB		96
28) 1,2-Dichloropropane	6.70	63	140254	9.45	PPB		99
29) Bromodichloromethane	7.03	83	167143	9.99	PPB		99
30) 2-Chloroethyl Vinyl Ether	7.42	63	44425	8.77	PPB		91

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\041911BAYW\0419F006.D
Acq On : 19 Apr 2011 11:04 am
Sample : 624 CCV
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 20 13:36:47 2011

Vial: 3
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: 032911624BAYW.R

Quant Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Initial Calibration
DataAcq Meth : 8260

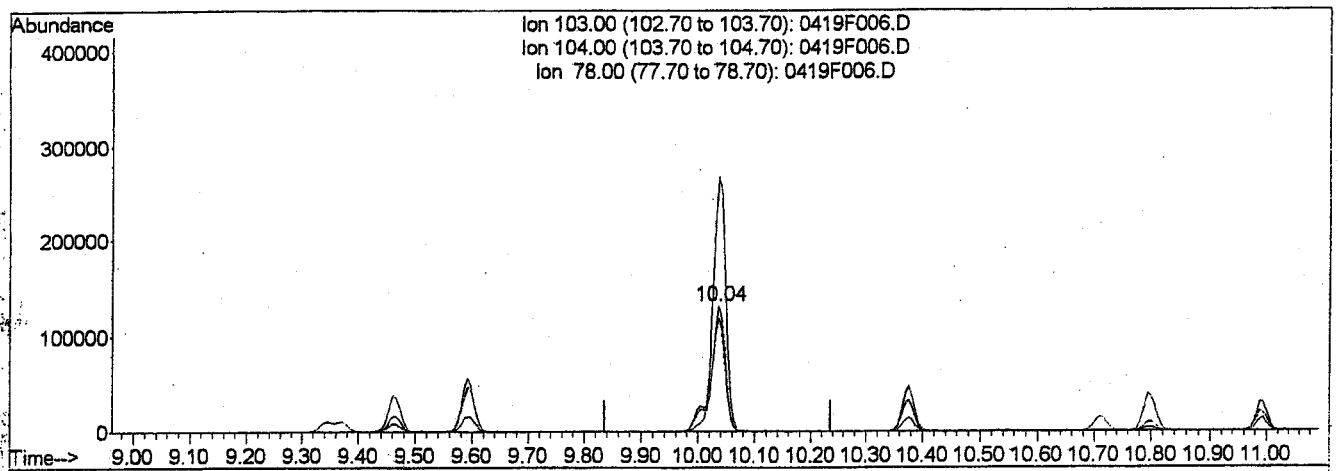
	Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
31)	cis-1,3-Dichloropropene	7.55	75	179319	8.82	PPB	93
32)	4-Methyl-2-pentanone (MIBK	8.65	58	379516	174.86	PPB	96
34)	Toluene	7.84	92	369722	10.17	PPB	98
36)	trans-1,3-Dichloropropene	8.20	75	138111	8.73	PPB	98
37)	1,1,2-Trichloroethane	8.39	83	73718	10.68	PPB	98
38)	Tetrachloroethene	8.40	164	117909	11.47	PPB	97
39)	2-Hexanone	8.65	43	804667	186.21	PPB	99
40)	Dibromochloromethane	8.77	129	96936	10.97	PPB	100
41)	Chlorobenzene	9.37	112	383636	10.93	PPB	96
42)	Ethylbenzene	9.47	106	216647	10.87	PPB	97
43)	m,p-Xylenes	9.59	106	551588	22.22	PPB	97
44)	o-Xylene	10.01	106	248589	10.57	PPB	98
45)	Styrene	10.04	103	192455m	10.73	PPB	
46)	Bromoform	10.25	173	45168	10.65	PPB	96
49)	1,1,2,2-Tetrachloroethane	10.78	83	87623	9.61	PPB	97
51)	1,3-Dichlorobenzene	11.67	146	308085	10.61	PPB	98
52)	1,4-Dichlorobenzene	11.77	146	303967	10.45	PPB	99
53)	1,2-Dichlorobenzene	12.14	146	263736	10.44	PPB	98

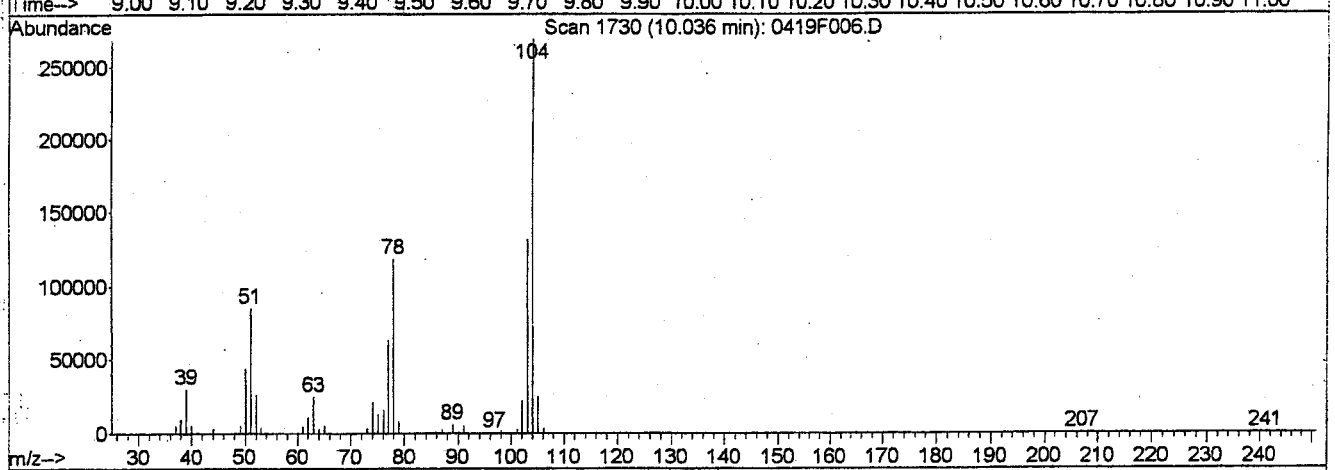
(#) = qualifier out of range (m) = manual integration

Quantitation Report (Qedit)

Data File : J:\MS23\DATA\041911BAYW\0419F006.D Vial: 3
Acq On : 19 Apr 2011 11:04 am Operator: KR
Sample : 624 CCV Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Apr 20 13:36 2011 Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Multiple Level Calibration





TIC: 0419F006.D

(45) Styrene (T)

10.04min 12.73PPB

response 228303

Ion	Exp%	Act%
103.00	100	100
104.00	217.10	203.89
78.00	101.20	90.20
0.00	0.00	0.00

0419F006.D 032911624BAYW.M Wed Apr 20 13:36:52 2011

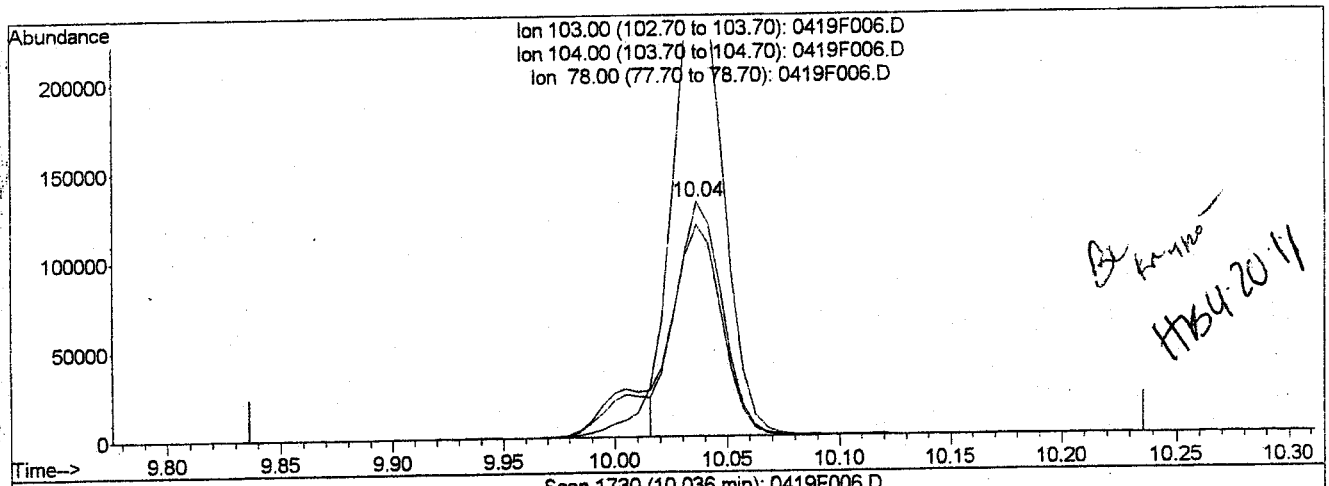
Quantitation Report (Qedit)

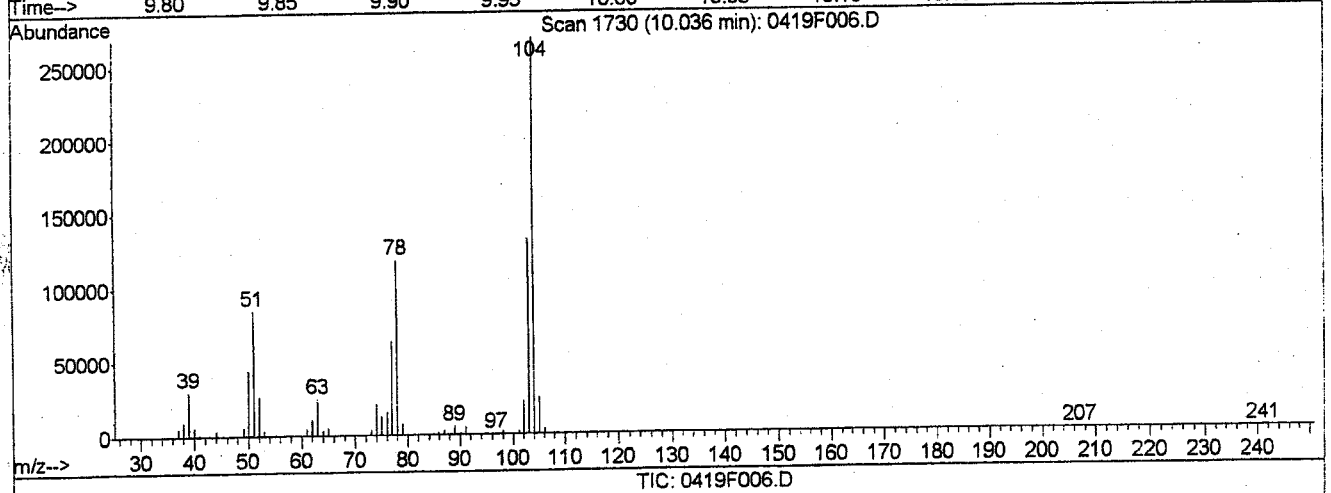
Data File : J:\MS23\DATA\041911BAYW\0419F006.D
Acq On : 19 Apr 2011 11:04 am
Sample : 624 CCV
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 20 13:36 2011

Vial: 3
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Multiple Level Calibration





TIC: 0419F006.D

(45) Styrene (T)

10.04min 10.73PPB m

response 192455

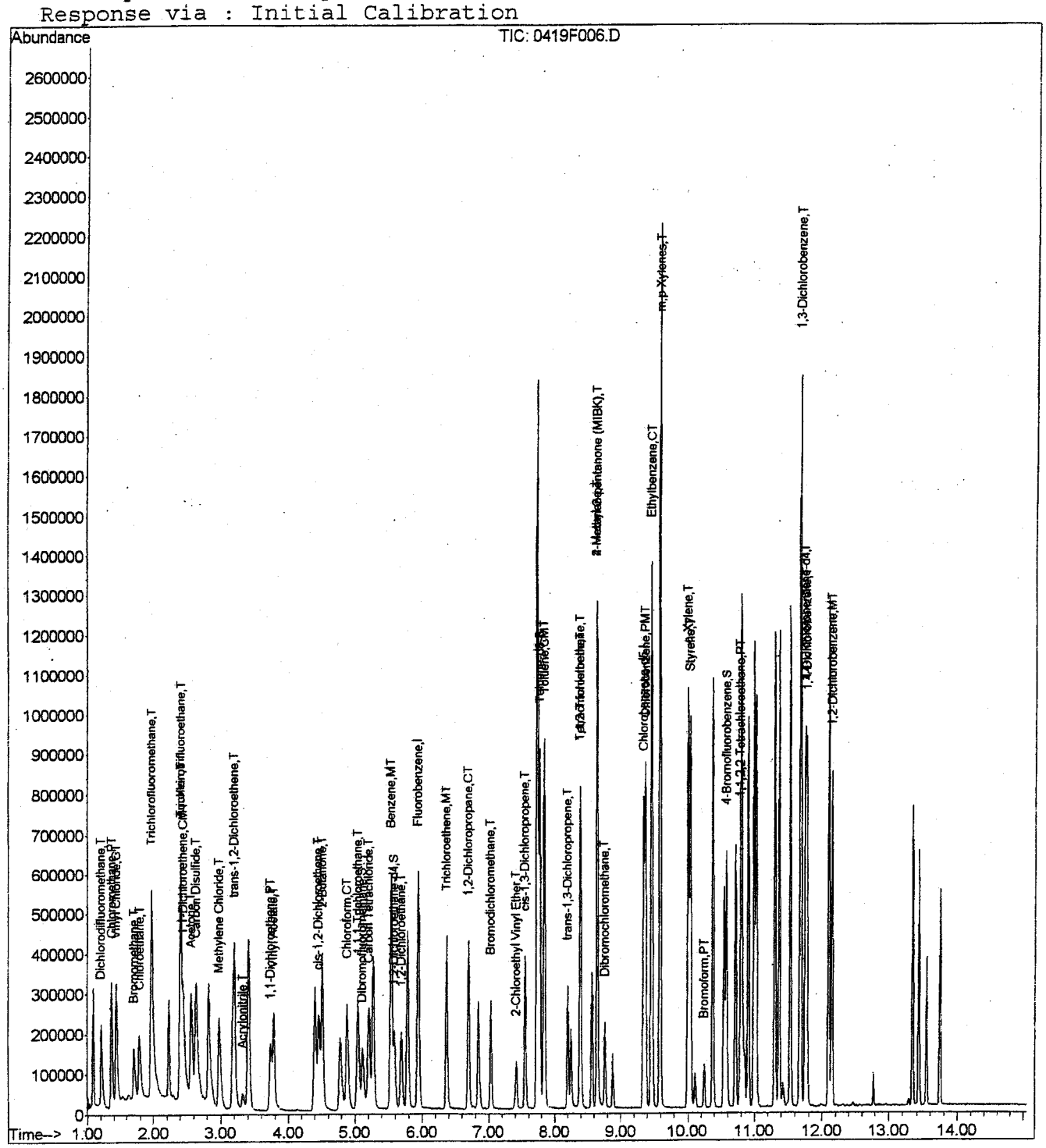
Ion	Exp%	Act%
103.00	100	100
104.00	217.10	203.89
78.00	101.20	90.20
0.00	0.00	0.00

0419F006.D 032911624BAYW.M Wed Apr 20 13:36:56 2011

Data File : J:\MS23\DATA\041911BAYW\0419F006.D
Acq On : 19 Apr 2011 11:04 am
Sample : 624 CCV
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 20 13:36 2011

Vial: 3
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624BAY

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Initial Calibration



COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1103044
Date Analyzed: 04/20/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 624

Calibration Date: 03/29/2011
Calibration ID: CAL10443
Analysis Lot: KWG1103583
Units: PPB

File ID: J:\MS23\DATA\042011BAYW\0420F002.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Dichlorodifluoromethane	10	11	0.01	0.351	0.385	10	NA	± 40 %	AverageRF
Chloromethane	10	11	0.01	0.509	0.561	10	NA	± 104 %	AverageRF
Vinyl Chloride	10	15	0.01	0.405	0.589	46	NA	± 96 %	AverageRF
Bromomethane	10	11	0.01	0.148	0.163	10	NA	± 86 %	AverageRF
Chloroethane	10	12	0.01	0.0706	0.0851	20	NA	± 62 %	AverageRF
Trichlorofluoromethane	10	13	0.01	0.500	0.630	26	NA	± 52 %	AverageRF
Trichlorotrifluoroethane	10	12	0.01	0.221	0.264	20	NA	± 40 %	AverageRF
1,1-Dichloroethene	10	11	0.01	0.241	0.255	5	NA	± 49 %	AverageRF
Carbon Disulfide	10	11	0.01	1.00	1.07	7	NA	± 40 %	AverageRF
Methylene Chloride	10	9.5	0.01	0.246	0.233	-5	NA	± 39 %	AverageRF
trans-1,2-Dichloroethene	10	9.9	0.01	0.250	0.247	-1	NA	± 30 %	AverageRF
cis-1,2-Dichloroethene	10	9.8	0.01	0.268	0.263	-2	NA	± 30 %	AverageRF
2-Butanone (MEK)	200	180	0.01	0.0111	0.00979 *	-12	NA	± 40 %	AverageRF
1,1-Dichloroethane	10	9.6	0.01	0.495	0.475	-4	NA	± 27 %	AverageRF
Chloroform	10	9.9	0.01	0.447	0.443	-1	NA	± 32 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	9.3	0.01	0.413	0.385	-7	NA	± 25 %	AverageRF
Carbon Tetrachloride	10	10	0.01	0.318	0.317	0	NA	± 27 %	AverageRF
Benzene	10	10	0.01	1.05	1.05	0	NA	± 36 %	AverageRF
1,2-Dichloroethane (EDC)	10	9.8	0.01	0.320	0.313	-2	NA	± 32 %	AverageRF
Vinyl Acetate	20	18	0.01	0.0284	0.0262	-8	NA	± 80 %	AverageRF
Trichloroethene (TCE)	10	9.9	0.01	0.266	0.264	-1	NA	± 33 %	AverageRF
1,2-Dichloropropane	10	9.6	0.01	0.268	0.256	-4	NA	± 66 %	AverageRF
Bromodichloromethane	10	9.7	0.01	0.302	0.294	-3	NA	± 34 %	AverageRF
2-Chloroethyl Vinyl Ether	10	8.8	0.01	0.0913	0.0805	-12	NA	± 124 %	AverageRF
trans-1,3-Dichloropropene	10	8.0	0.01	0.729	0.586	-20	NA	± 50 %	AverageRF
4-Methyl-2-pentanone (MIBK)	200	170	0.01	0.0391	0.0332	-15	NA	± 40 %	AverageRF
2-Hexanone	200	180	0.01	0.199	0.179	-10	NA	± 40 %	AverageRF
Toluene	10	10	0.01	0.655	0.688	5	NA	± 25 %	AverageRF
cis-1,3-Dichloropropene	10	8.7	0.01	0.367	0.317	-14	NA	± 76 %	AverageRF
1,1,2-Trichloroethane	10	11	0.01	0.318	0.337	6	NA	± 29 %	AverageRF
Tetrachloroethene (PCE)	10	12	0.01	0.474	0.560	18	NA	± 26 %	AverageRF
Dibromochloromethane	10	10	0.01	0.407	0.420	3	NA	± 32 %	AverageRF
Chlorobenzene	10	11	0.01	1.62	1.78	10	NA	± 34 %	AverageRF
Ethylbenzene	10	11	0.01	0.919	1.00	9	NA	± 41 %	AverageRF
Styrene	10	11	0.01	0.827	0.876	6	NA	± 40 %	AverageRF
m,p-Xylenes	20	23	0.01	1.14	1.29	13	NA	± 40 %	AverageRF
o-Xylene	10	11	0.01	1.08	1.16	7	NA	± 40 %	AverageRF
Bromoform	10	9.8	0.01	0.195	0.191	-3	NA	± 29 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1103044
Date Analyzed: 04/20/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 624

Calibration Date: 03/29/2011
Calibration ID: CAL10443
Analysis Lot: KWG1103583
Units: PPB

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Acetone	200	210	0.01	0.0380	0.0390	3	NA	± 40 %	AverageRF
1,1,2,2-Tetrachloroethane	10	9.1	0.01	0.444	0.402	-9	NA	± 39 %	AverageRF
1,3-Dichlorobenzene	10	11	0.01	1.41	1.52	7	NA	± 27 %	AverageRF
1,4-Dichlorobenzene	10	11	0.01	1.42	1.49	5	NA	± 37 %	AverageRF
1,2-Dichlorobenzene	10	11	0.01	1.23	1.34	8	NA	± 37 %	AverageRF
Acrolein	200	130	0.01	0.0272	0.0181	-33	NA	± 80 %	AverageRF
Acrylonitrile	20	17	0.01	0.0442	0.0385	-13	NA	± 40 %	AverageRF
Toluene-d8	10	11	0.01	0.945	1.00	6	NA	± 30 %	AverageRF
4-Bromofluorobenzene	10	10	0.01	0.823	0.852	4	NA	± 30 %	AverageRF
Dibromofluoromethane	10	10	0.01	0.216	0.223	3	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Exception Report

Data File:	J:\MS23\DATA\042011BAYW\0420F002.D	**Date Acquired:**	04/20/2011 14:50
Lab ID:	KWG1103583-2	**Date Quantitated:**	04/21/2011 16:04
RunType:	CCV	**Batch ID:**	KWG1103583
Matrix:	WATER	**Analysis Method:**	624
		MethodJoinID:	MJ158

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	

Primary Review: KA 4/22/11

Secondary Review: HB 4-22-11

Quantitation Report

Bottle ID:		Tier:		Matrix:	WATER
Prod Code:	624	Collect Date:		Receive Date:	04/21/2011

Analysis Lot:	KWG1103583	Prep Lot:		Report Group:	
Analysis Method:	624	Prep Method:			
Prep Ref:		Prep Date:			

Quant Method:	J:\MS23\METHODS\032911624BAY	Calibration ID:	CAL10443
Title:			
Tune Ref:	J:\MS23\DATA\042011BAYW\0420F001.D	Method ID:	MJ158
MB Ref:		Quant based on Method	

Data File:	J:\MS23\DATA\042011BAYW\0420F002.D			Instrument:	MS23
Acqu Date:	04/20/2011 14:50	Quant Date:	04/21/2011 16:04	Vial:	3
Run Type:	CCV			Dilution:	1.0
Lab ID:	KWG1103583-2			Soln Conc. Units:	PPB

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	Fluorobenzene	5.94	0.00	96	582018	10.00	OK
2	Chlorobenzene-d5	9.34	-0.01	82	232338	10.00	OK
3	1,4-Dichlorobenzene-d4	11.75	0.00	152	220440	10.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	Dibromofluoromethane	5.12			113	129698	10.30		61-121	NA
1	1,2-Dichloroethane-d4	5.59			65	151249	9.56		54-125	NA
1	Toluene-d8	7.77			98	582980	10.60		72-122	NA
2	4-Bromofluorobenzene	10.58			95	197999	10.35		70-120	NA

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	Final Conc	Q	Rpt?
1	Dichlorodifluoromethane	1.20			85	224317	10.98			
1	Chloromethane	1.35			50	326334	11.01			
1	Vinyl Chloride	1.43			62	342852	14.55			
1	Bromomethane	1.70			96	95115	11.03			
1	Chloroethane	1.78			49	49531	12.05			
1	Trichlorofluoromethane	1.97			101	366731	12.60			
1	Acrolein	2.41			56	210697	133.04			
1	Trichlorotrifluoroethane	2.40			151	153739	11.98			
1	1,1-Dichloroethene	2.44			96	148216	10.55			
1	Acetone	2.56			43	453473	205.29			
1	Carbon Disulfide	2.64			76	621814	10.66			
1	Methylene Chloride	2.98			84	135625	9.48			
1	Acrylonitrile	3.32			53	44827	17.44			
1	trans-1,2-Dichloroethene	3.20			96	143578	9.87			

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Data File:	J:\MS23\DATA\042011BAYW\0420F002.D			Instrument:	MS23
Acqu Date:	04/20/2011 14:50	Quant Date:	04/21/2011 16:04	Vial:	3
Run Type:	CCV			Dilution:	1.0
Lab ID:	KWG1103583-2			Soln Conc. Units:	PPB

Target Compounds — Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,1-Dichloroethane	3.73			63	276215	9.60			
1	Vinyl Acetate	3.79			86	30493	18.44			
1	cis-1,2-Dichloroethene	4.46			96	153353	9.81			
1	2-Butanone (MEK)	4.51			72	113997	176.09			
1	Chloroform	4.89			83	258081	9.93			
1	1,1,1-Trichloroethane (TCA)	5.05			97	223835	9.32			
1	Carbon Tetrachloride	5.20			117	184435	9.97			
1	Benzene	5.54			78	612676	10.02			
1	1,2-Dichloroethane (EDC)	5.69			62	182399	9.80			
1	Trichloroethene (TCE)	6.37			95	153427	9.92			
1	1,2-Dichloropropane	6.70			63	149217	9.58			
1	Bromodichloromethane	7.03			83	170952	9.73			
1	2-Chloroethyl Vinyl Ether	7.42			63	46837	8.81			
1	cis-1,3-Dichloropropene	7.55			75	184556	8.65			
1	4-Methyl-2-pentanone (MIBK)	8.65			58	386317	169.59			
1	Toluene	7.85			92	400191	10.49			
2	trans-1,3-Dichloropropene	8.20			75	136262	8.04			
2	1,1,2-Trichloroethane	8.39			83	78353	10.60			
2	Tetrachloroethene (PCE)	8.40			164	130116	11.82			
2	2-Hexanone	8.65			43	832927	179.94			
2	Dibromochloromethane	8.77			129	97490	10.30			
2	Chlorobenzene	9.37			112	413471	11.00			
2	Ethylbenzene	9.47			106	233438	10.93			
2	m,p-Xylenes	9.59			106	600193	22.57			
2	o-Xylene	10.01			106	270486	10.74			
2	Styrene	10.04			103	203545m	10.59			
2	Bromoform	10.25			173	44267	9.75			
3	1,1,2,2-Tetrachloroethane	10.78			83	88678	9.05			
3	1,3-Dichlorobenzene	11.67			146	334750	10.74			
3	1,4-Dichlorobenzene	11.77			146	328845	10.52			
3	1,2-Dichlorobenzene	12.14			146	294442	10.85			

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\042011BAYW\0420F002.D
Acq On : 20 Apr 2011 2:50 pm
Sample : ~~BFB~~ CCV KMW/K
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 21 16:03:52 2011

Vial: 3
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: 032911624BAYW.R

Quant Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Initial Calibration
DataAcq Meth : 8260

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorobenzene	5.94	96	582018	10.00 PPB	0.00
35) Chlorobenzene-d5	9.34	82	232338	10.00 PPB	0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	220440	10.00 PPB	0.00
System Monitoring Compounds					
22) Dibromofluoromethane	5.12	113	129698	10.30 PPB	0.00
Spiked Amount 10.000			Recovery = 103.00%		
24) 1,2-Dichloroethane-d4	5.59	65	151249	9.56 PPB	0.00
Spiked Amount 10.000			Recovery = 95.60%		
33) Toluene-d8	7.77	98	582980	10.60 PPB	0.00
Spiked Amount 10.000			Recovery = 106.00%		
47) 4-Bromofluorobenzene	10.58	95	197999	10.35 PPB	0.00
Spiked Amount 10.000			Recovery = 103.50%		
Target Compounds					Qvalue
2) Dichlorodifluoromethane	1.20	85	224317	10.98 PPB	99
3) Chloromethane	1.35	50	326334	11.01 PPB	97
4) Vinyl Chloride	1.43	62	342852	14.55 PPB	100
5) Bromomethane	1.70	96	95115	11.03 PPB	92
6) Chloroethane	1.78	49	49531	12.05 PPB	98
7) Trichlorofluoromethane	1.97	101	366731	12.60 PPB	96
8) Acrolein	2.41	56	210697	133.04 PPB	99
9) Trichlorotrifluoroethane	2.40	151	153739	11.98 PPB	96
10) 1,1-Dichloroethene	2.44	96	148216	10.55 PPB	99
11) Acetone	2.56	43	453473	205.29 PPB	100
12) Carbon Disulfide	2.64	76	621814	10.66 PPB	100
13) Methylene Chloride	2.98	84	135625	9.48 PPB	99
14) Acrylonitrile	3.32	53	44827	17.44 PPB	91
15) trans-1,2-Dichloroethene	3.20	96	143578	9.87 PPB	97
16) 1,1-Dichloroethane	3.73	63	276215	9.60 PPB	99
17) Vinyl Acetate	3.79	86	30493	18.44 PPB	96
18) cis-1,2-Dichloroethene	4.46	96	153353	9.81 PPB	97
19) 2-Butanone	4.51	72	113997	176.09 PPB	95
20) Chloroform	4.89	83	258081	9.93 PPB	98
21) 1,1,1-Trichloroethane	5.05	97	223835	9.32 PPB	97
23) Carbon Tetrachloride	5.20	117	184435	9.97 PPB	99
25) Benzene	5.54	78	612676	10.02 PPB	97
26) 1,2-Dichloroethane	5.69	62	182399	9.80 PPB	98
27) Trichloroethene	6.37	95	153427	9.92 PPB	98
28) 1,2-Dichloropropane	6.70	63	149217	9.58 PPB	95
29) Bromodichloromethane	7.03	83	170952	9.73 PPB	97
30) 2-Chloroethyl Vinyl Ether	7.42	63	46837	8.81 PPB	94

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\042011BAYW\0420F002.D
Acq On : 20 Apr 2011 2:50 pm
Sample : ~~BFB~~ CCV
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 21 16:03:52 2011

Vial: 3
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: 032911624BAYW.R

Quant Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Initial Calibration
DataAcq Meth : 8260

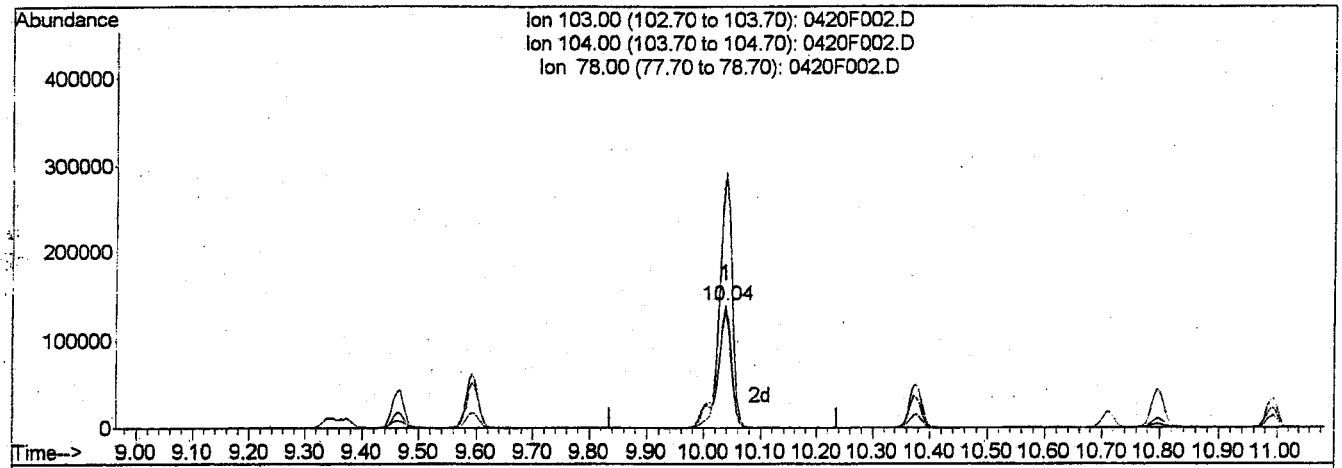
Compound	R.T.	QIon	Response	Conc Unit	Qvalue
31) cis-1,3-Dichloropropene	7.55	75	184556	8.65 PPB	99
32) 4-Methyl-2-pentanone (MIBK	8.65	58	386317	169.59 PPB	97
34) Toluene	7.85	92	400191	10.49 PPB	98
36) trans-1,3-Dichloropropene	8.20	75	136262	8.04 PPB	99
37) 1,1,2-Trichloroethane	8.39	83	78353	10.60 PPB	97
38) Tetrachloroethene	8.40	164	130116	11.82 PPB	96
39) 2-Hexanone	8.65	43	832927	179.94 PPB	100
40) Dibromochloromethane	8.77	129	97490	10.30 PPB	97
41) Chlorobenzene	9.37	112	413471	11.00 PPB	98
42) Ethylbenzene	9.47	106	233438	10.93 PPB	97
43) m,p-Xylenes	9.59	106	600193	22.57 PPB	98
44) o-Xylene	10.01	106	270486	10.74 PPB	99
45) Styrene	10.04	103	203545m	10.59 PPB	
46) Bromoform	10.25	173	44267	9.75 PPB	97
49) 1,1,2,2-Tetrachloroethane	10.78	83	88678	9.05 PPB	100
51) 1,3-Dichlorobenzene	11.67	146	334750	10.74 PPB	96
52) 1,4-Dichlorobenzene	11.77	146	328845	10.52 PPB	99
53) 1,2-Dichlorobenzene	12.14	146	294442	10.85 PPB	98

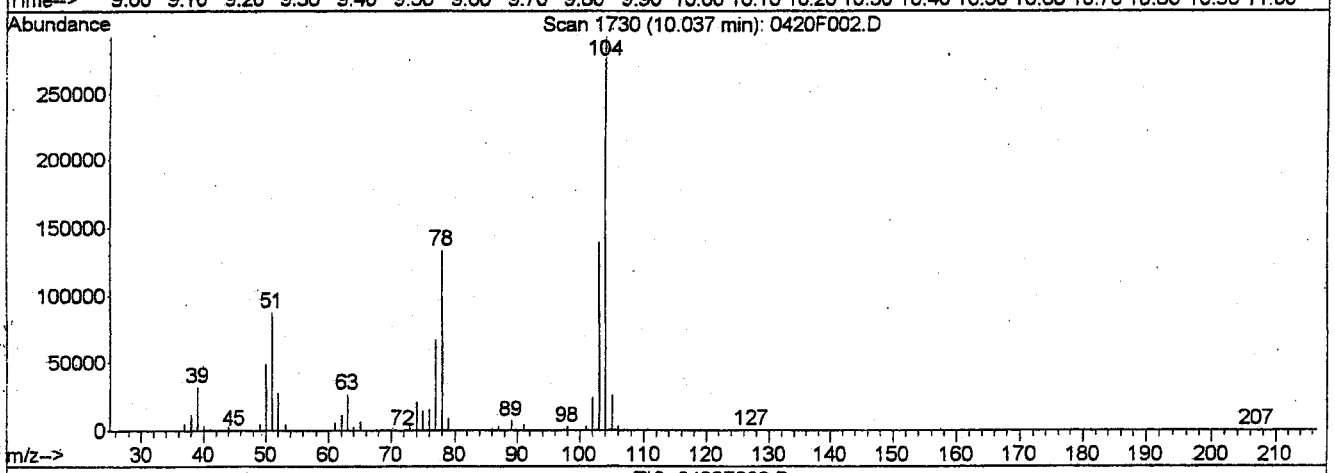
(#) = qualifier out of range (m) = manual integration
0420F002.D 032911624BAYW.M Thu Apr 21 16:04:31 2011

Quantitation Report (Qedit)

Data File : J:\MS23\DATA\042011BAYW\0420F002.D Vial: 3
Acq On : 20 Apr 2011 2:50 pm Operator: KR
Sample : ~~BFB~~ CCV Inst : MS23
Misc : KR 4/21/11 Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Apr 21 16:03 2011 Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Multiple Level Calibration





TIC: 0420F002.D

(45) Styrene (T)

10.04min 12.63PPB

response 242669

Ion	Exp%	Act%
103.00	100	100
104.00	217.10	209.31
78.00	101.20	95.39
0.00	0.00	0.00

0420F002.D 032911624BAYW.M Thu Apr 21 16:04:17 2011

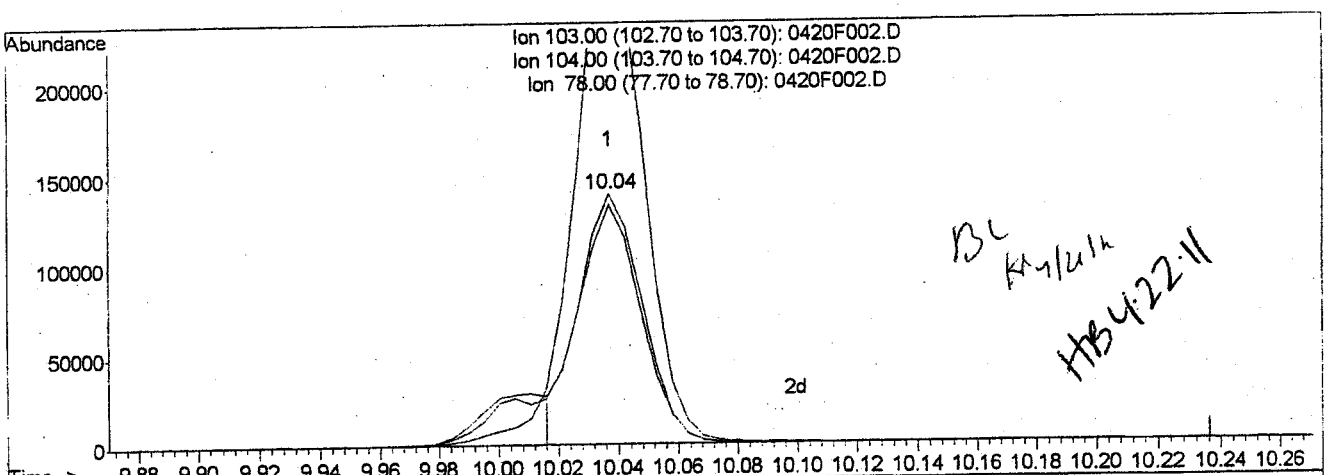
Quantitation Report (Qedit)

Data File : J:\MS23\DATA\042011BAYW\0420F002.D
Acq On : 20 Apr 2011 2:50 pm
Sample : BFB ccw kr 4/21/11
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 21 16:04 2011

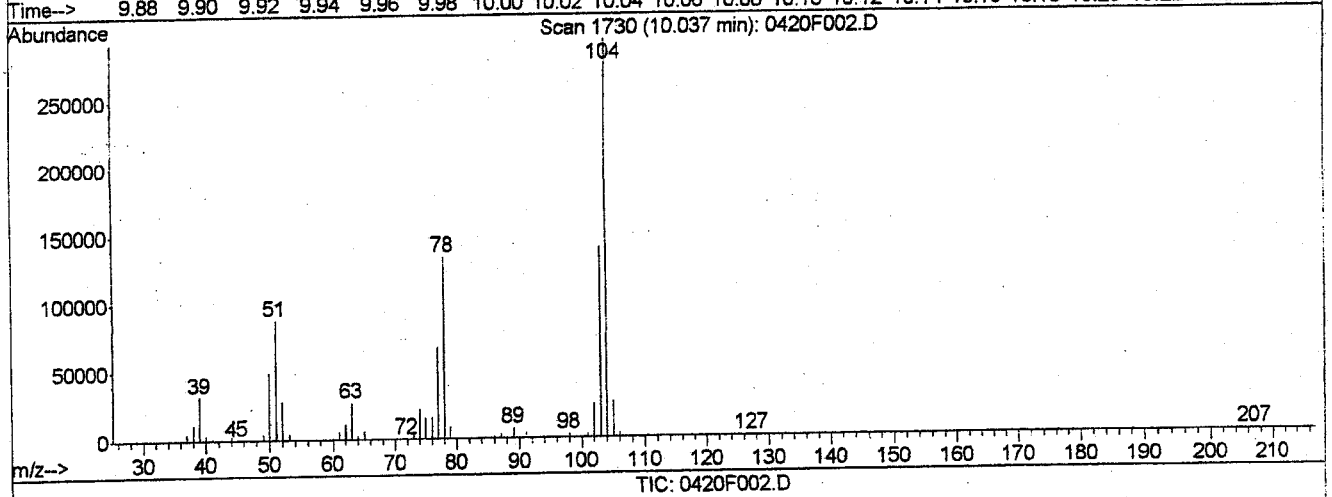
Vial: 3
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Multiple Level Calibration



BL kr 4/21/11 HB 4.22.11



(45) Styrene (T)

10.04min 10.59PPB m

response 203545

Ion	Exp%	Act%
103.00	100	100
104.00	217.10	209.44
78.00	101.20	95.56
0.00	0.00	0.00

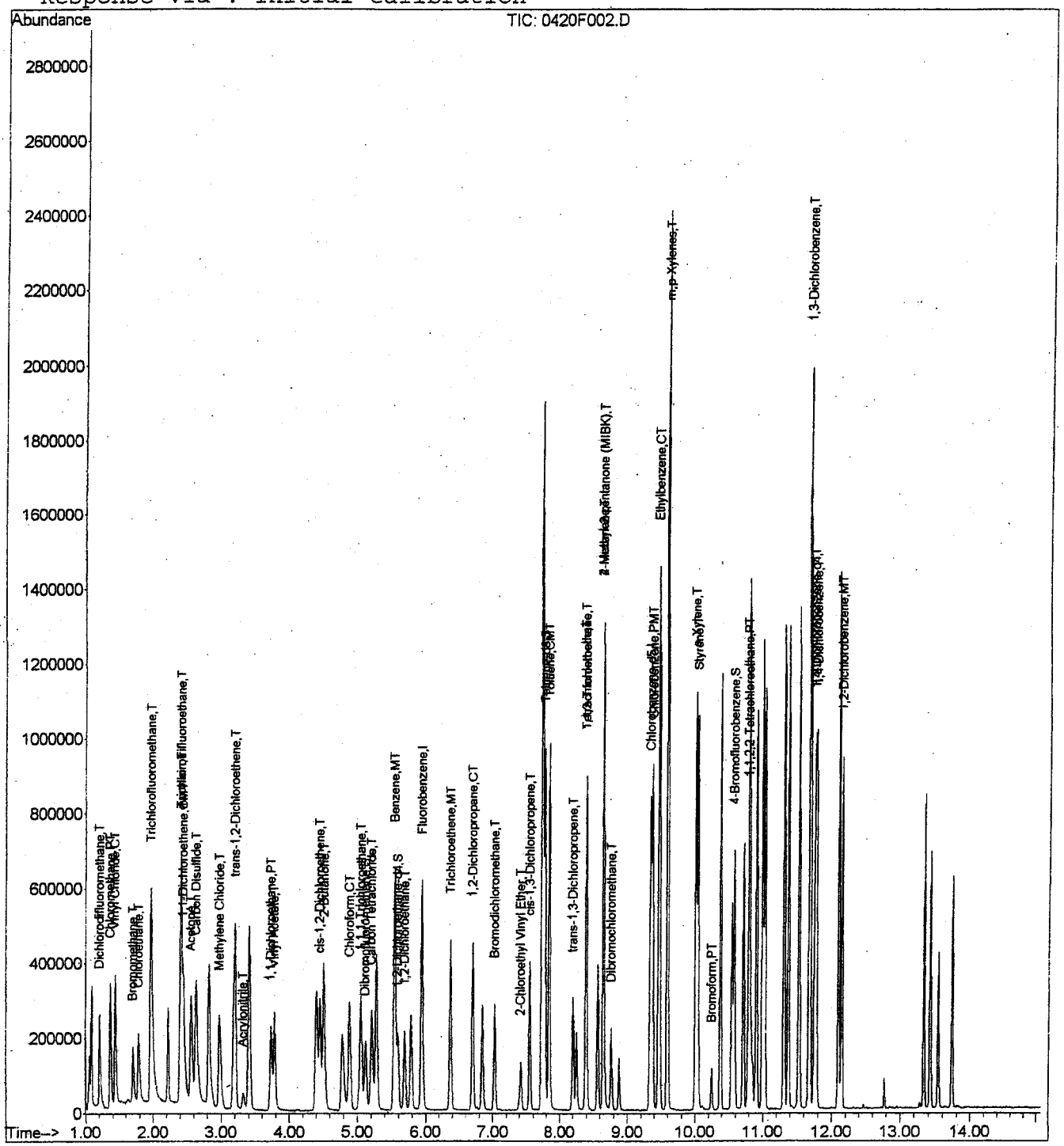
0420F002.D 032911624BAYW.M Thu Apr 21 16:04:22 2011

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\042011BAYW\0420F002.D
Acq On : 20 Apr 2011 2:50 pm
Sample : ~~BFB~~ CCV KM 4/21/11
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 21 16:04 2011

Vial: 3
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624BAY

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Initial Calibration



Organic Analysis:
Volatile Organic Compounds

Validation Package

Sample Prep and Screen Data

Date: 4/19/11

Columbia Analytical Services, Inc.
Injection Log
MS23 - Agilent 5973

Tune File: BFB4

New Tune: yes

By: KA

IS/SS Std. ID: 60VOA - 300 5/4

RUN #: 2428760

CCV Std ID: 60VOA - 27D 4/2 / 14A 5/4

ICAL Date: 3/29/11 Cal 10403

MS/DMS/LCS/ICV Std ID: 60VOA - 28B 4/19 / 30A 4/25

Second RV: HB4-21-11

BFB Std. ID: 60VOA - 28C 5/4

LIMS ID: KW1103487/3512 3523/3524 BW

	Sample Name	File Name	Method	Dilution	pH	R	Comments
1	BFB	0419F005	8260.M	4.4ml + 44ml			
2	G24 CCV	6		5/10ml + 50ml			
3	LCS	7		10/50ml + 50ml			
4	K3044-2MS	8		8/40ml + 40ml			
5		9					(ND) purged with gas
6	DMS	10					
7	K3130-1 MS	11					
8	1 DMS	12					
9	IB	13					
10	MB	14					
11	K3044-2	15			<2		
12	K3130-1	16			7		
13	K3044-1	17			<2		
14	3	18					
15	4	19					
16	5	20					TB44572
17	~~K3154~~ K3145-4	21					
18	K3130-2	22			7		
19	K3279-1	23			<2		
20	K3324-1	24					
21	K3202-1	25					
22	K3046-1	26					
23	IB	27					
24	LOQ 1	28		1ml + 50ml			Column - 27D
25	LOQ 5	29		5ml + 50ml			
26							
27							

Neg was in Column

R:\VOA\Injection Logs\INJLOG_MS23_Rev1

Date: 4/20/11

Columbia Analytical Services, Inc.

Injection Log

MS23 - Agilent 5973

Tune File: 6164

New Tune: no

By: KR

IS/SS Std. ID: 60V0A - 306 5/8

RUN #: 243095

CCV Std ID: 60V0A - 270 4/21 / 14A 5/29

ICAL Date: 3/29/11 Cal 1040 7

MS/DMS/LCS/ICV Std ID: 60V0A - 31E 4/20 / 30A 4/28

Second RV: HB4-22-11

BFB Std. ID: 60V0A - 28C (5-14-11)

LIMS ID: 1004103531 / 3538 3533/3534 (B.N.)

	Sample Name	File Name	Method	Dilution	pH	R	Comments
1	BFB	0420F001	8260.M	4.4 µl + 44 ml			
2	LCS CCV	2		10/5 µl + 50 ml			
3	1 LCS	3		10/50 µl + 50 ml			
4	L3351-20MS	4		2x 25 neat + 50 ml			
5	1 20MS	5		10/50 µl + 50 ml 4/21/11			
6	MB	6					
7	MB	7					
8	K3044-3 0.1	8		10x 5 ml + 50 ml	6		
9	K3351-2 Base	9		2x 25 ml + 50 ml	7		- milky + cloudy sample - dilute & unpreserved bottles
10	1 1 Base	10		2.5x 25 ml + 50 ml	7		- cloudy and sample. - dilute
11	MB	11					
12	20 ppb Katrine	12		0.5 µl + 50 ml			60V0A 4A 6/29 (200 ppb)
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							

Neg. rinsed Chlorine

R:\VOA\Injection Logs\INJLOG_MS23_Rev1

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\042011BAYW\0420F012.D Vial: 12
Acq On : 20 Apr 2011 7:55 pm Operator: KR
Sample : 20PPB KETONES Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Apr 21 16:49:33 2011 Quant Results File: 032911624BAYW.R

Quant Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Initial Calibration
DataAcq Meth : 8260

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Fluorobenzene	5.94	96	538949	10.00	PPB		0.00
35) Chlorobenzene-d5	9.35	82	216336	10.00	PPB		0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	179724	10.00	PPB		0.00
System Monitoring Compounds							
22) Dibromofluoromethane	5.11	113	120647	10.35	PPB		0.00
Spiked Amount 10.000			Recovery	=	103.50%		
24) 1,2-Dichloroethane-d4	5.59	65	145549	9.93	PPB		0.00
Spiked Amount 10.000			Recovery	=	99.30%		
33) Toluene-d8	7.77	98	513249	10.08	PPB		0.00
Spiked Amount 10.000			Recovery	=	100.80%		
47) 4-Bromofluorobenzene	10.58	95	168012	9.43	PPB		0.00
Spiked Amount 10.000			Recovery	=	94.30%		
Target Compounds							Qvalue
11) Acetone	2.56	43	33725	16.49	PPB		96
13) Methylene Chloride	2.97	84	2629	0.20	PPB	#	84
19) 2-Butanone	4.52	72	8061	13.45	PPB	#	86
20) Chloroform	4.88	83	1010	0.04	PPB		76
32) 4-Methyl-2-pentanone (MIBK	8.65	58	19023	9.02	PPB		92
39) 2-Hexanone	8.65	43	42661	9.90	PPB		97

TV=

20

KA 7/21/11

HB 4-22-11

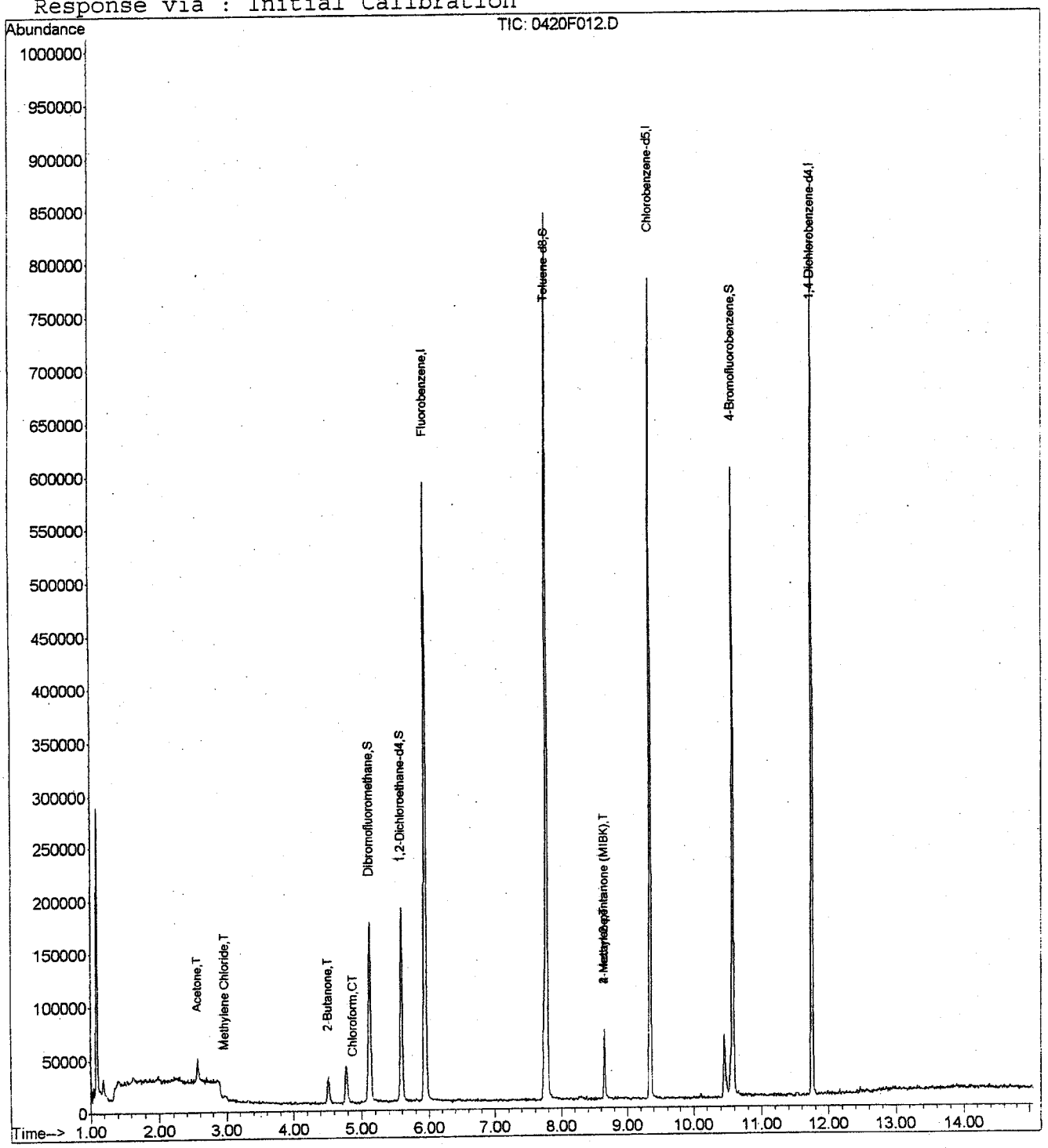
(#) = qualifier out of range (m) = manual integration
0420F012.D 032911624BAYW.M Thu Apr 21 16:49:52 2011 Page 1

Data File : J:\MS23\DATA\042011BAYW\0420F012.D
Acq On : 20 Apr 2011 7:55 pm
Sample : 20PPB KETONES
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 21 16:49 2011

Vial: 12
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: 032911624BAY

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Initial Calibration



Bay West
Customer-Focused Environmental & Industrial Solutions

Bay West Inc.
5 Empire Drive, St. Paul, MN 55103
651-291-0456 * FAX 651-291-0099
www.baywest.com * info@baywest.com

October 21, 2011

Minnesota Pollution Control Agency
ATTN: Belinda Nicholas
Discharge Monitoring Report
520 Lafayette Road
Saint Paul, MN 55155-4194

RE: **Discharge Monitoring Report**
July 1 through September 30, 2011 Reporting Period
NPDES Permit No. MN G790159
Former NIROP Groundwater Remediation System
4800 East River Road, Fridley, MN

Dear Ms. Nicholas:

In accordance with the requirements of the subject National Pollutant Discharge Elimination System (NPDES) permit, Bay West, Inc. (Bay West) has prepared the enclosed Discharge Monitoring Report (DMR) for the above-referenced site and time period. The analytical results reported in the DMR consist of the eight volatile organic compounds (VOCs) included in the permit.

Should you have any questions on this matter, please contact the undersigned at (651) 291-3491.

Regards,

Paul Walz

Paul Walz, PE
Project Manager
(651) 291-3491
PaulW@BayWest.com

Enclosure:
(1) Discharge Monitoring Report – 2011/07/01 to 2011/09/30
(2) Columbia Analytical Services, Inc. Lab Report K1103044

cc: Howard Hickey, NAVFAC Midwest
Jeff Tinney, Toltest, Inc.
Steve Head, Bay West
Stephanie Warino, Tetra Tech NUS, Inc.

Docs #127941 v1

FACILITY NAME/ADDRESS:
Former Naval Industrial Reserve Ordinance Plant
4800 E River Rd
Fridley,MN 55421

STATION INFORMATION:
SO-001 (Groundwater Remediation Treatment System)
Surface Discharge, Effluent To Surface Water

No Discharge ('Yes' or 'No'): No

WASTEWATER TREATMENT
DISCHARGE MONITORING REPORT

PERMIT#	LIMIT STATUS	FORMER #
MNG790159	FINAL	

MONITORING PERIOD			
	YEAR|MO|DAY		YEAR|MO|DAY
FROM:	2011-07-01	TO:	2011-09-30

PERMITEE NAME/ADDRESS:
Former Naval Industrial Reserve Ordinance Plant
201 Decatur Ave Bldg 1A
Great Lakes,IL 60088

PARAMETER		QUANTITY		UNITS	CONCENTRATION			UNITS	FREQUENCY OF ANALYSIS		SAMPLE TYPE
Flow	SAMPLE VALUE	******	30.016	MG	******	0.326	******	mgd	1	Quarter	Continuous Flowmeter
50050	PERMIT REQ	******	REPORT CalQtrTot		******	REPORT CalQtrAve	******		1x	Quarter	Measur
1,1,1-Trichloroethane	SAMPLE VALUE	******	******	****	******	******	<0.5	ug/L	1	Quarter	Grab
34506	PERMIT REQ	******	******		******	******	200 CalQtrMax		1x	Quarter	Grab
1,1-Dichloroethane	SAMPLE VALUE	******	******	****	******	<0.5	******	ug/L	1	Quarter	Grab
34496	PERMIT REQ	******	******		******	5 CalQtrAve	******		1x	Quarter	Grab
1,1-Dichloroethylene (Vinylidene chloride)	SAMPLE VALUE	******	******	****	******	<0.25	******	ug/L	1	Quarter	Grab
34501	PERMIT REQ	******	******		******	3.2 CalQtrAve	******		1x	Quarter	Grab
1,2-Dichloroethylene (trans-)	SAMPLE VALUE	******	******	****	******	<0.5	******	ug/L	1	Quarter	Grab
34546	PERMIT REQ	******	******		******	50 CalQtrAve	******		1x	Quarter	Grab
1,2-Dichloroethylene (cis-)	SAMPLE VALUE	******	******	****	******	<0.5	<0.5	ug/L	1	Quarter	Grab
81686	PERMIT REQ	******	******		******	70 CalQtrAve	140 CalQtrMax		1x	Quarter	Grab
Methylene Chloride (Dichloromethane)	SAMPLE VALUE	******	******	****	******	<0.5	******	ug/L	1	Quarter	Grab
34423	PERMIT REQ	******	******		******	4.6 CalQtrAve	******		1x	Quarter	Grab
Tetrachloroethylene (Perchloroethylene)	SAMPLE VALUE	******	******	****	******	<0.5	******	ug/L	1	Quarter	Grab
34475	PERMIT REQ	******	******		******	5.0 CalQtrAve	******		1x	Quarter	Grab
Trichloroethylene (TCE or Trichloroethene)	SAMPLE VALUE	******	******	****	******	1.4	******	ug/L	1	Quarter	Grab
39180	PERMIT REQ	******	******		******	5.0 CalQtrAve	******		1x	Quarter	Grab

COMMENTS:

Principal Executive Officer or Authorized Agent

MW-AC MW, GW3 Date 10/21/11

Chief Operating Officer

Date

Columbia Analytical Services™ 1317 S. 13th Avenue, Kelso, WA 98626 360.577.7222 360.636.1068 (fax) www.caslab.com

August 12, 2011 Analytical Report for Service Request No: K1106869

Paul Walz
Bay West, Incorporated
5 Empire Dr.
St. Paul, MN 55103-1867

RE: NIROP/J070047

Dear Paul:

Enclosed are the results of the samples submitted to our laboratory on July 28, 2011. For your reference, these analyses have been assigned our service request number K1106869.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3363. You may also contact me via Email at LDomenighini@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.

Lisa A Domenighini

Lisa Domenighini
Project Chemist

LD/lg

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

Columbia Analytical Services, Inc.
Kelso, WA
State Certifications, Accreditations, and Licenses

Agency	Number
Alaska DEC UST	UST-040
Arizona DHS	AZ0339
Arkansas - DEQ	88-0637
California DHS	2286
Florida DOH	E87412
Hawaii DOH	-
Idaho DHW	-
Indiana DOH	C-WA-01
Louisiana DEQ	3016
Louisiana DHH	LA050010
Maine DHS	WA0035
Michigan DEQ	9949
Minnesota DOH	053-999-368
Montana DPHHS	CERT0047
Nevada DEP	WA35
New Jersey DEP	WA005
New Mexico ED	-
North Carolina DWQ	605
Oklahoma DEQ	9801
Oregon - DEQ	WA100010
South Carolina DHEC	61002
Washington DOE	C1203
Wisconsin DNR	998386840
Wyoming (EPA Region 8)	-

Case Narrative

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	Bay West, Incorporated	**Service Request No.:**	K1106869
Project:	NIROP/J070047	**Date Received:**	07/28/11
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Four water samples and a trip blank were received for analysis at Columbia Analytical Services on 07/28/11. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

General Chemistry Parameters

No anomalies associated with the analysis of these samples were observed.

Volatiles by EPA Method 624

Elevated Detection Limits:
The client specified Method Reporting Limit (MRL) of 0.20ug/L could not be achieved. The MRL was raised to the lowest level of the calibration at 0.25ug/L.

No other anomalies associated with the analysis of these samples were observed.

Approved by Lesa A Dymenighin **Date** 8/12/11

Chain of Custody

Columbia Analytical Services™

CHAIN OF CUSTODY

SR#: K1106869

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

PAGE 1 OF 1 COC # 072711-01

PROJECT NAME: NIROP
PROJECT NUMBER: J070047
PROJECT MANAGER: Paul Walz
COMPANY/ADDRESS: 5 Empire Dr
CITY/STATE/ZIP: St. Paul MN 55103-1867
E-MAIL ADDRESS: paulw@baywest.com
PHONE #: 651 291 3490 FAX #: 651 291 0099
SAMPLER'S SIGNATURE:

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐ 8270LL☐	Volatile Organics 624☐ 8260☐ 8021☐ BTEX☐	Hydrocarbons (*see below) Gas☐ Diesel☐ Oil☐ ☐ Fuel Fingerprint (FIQ) ☐ NW-HCID Screen	Oil & Grease/TRPH 1664 HEM☐ 1664 SGT☐	PCB's Aroclors☐ Congeners☐	Pesticides/Herbicides 608☐ 8081A☐ 8141A☐ 8151A☐	Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐	PAHS 8310☐ SIM☐	Metals, Total or Dissolved (See list below)	Cyanide☐ Hex-Chrom☐	pH, Cond., Cl, SO4, PO4, F, NO2, NO3, BOD, TSS, TDS (circle)	NH3-N, COD, Total-P, TKN, TOC, DOC (circle) NO2+NO3	TOX 9020☐ AOX 1650☐ 506☐					REMARKS
Fridout 173A	7/27/11	1000		water	7		6										1								MS/MSD
Fridout 173B	↓	1000		↓	3		3																		
Fridin Air 84A		0945			3		3																		
Frideff Air 86A		0950			3		3																		
Trip Blank	↓			↓	2		2																		

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
___ IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. # ___
Bill To: ___

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
___ Standard (10-15 working days)
___ Provide FAX Results

___ Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:___ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:

VOC by EPA 624 - 8 specific compounds

UPS # 1Z A198 R901 9952 8464

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature] Date/Time: 7/27/11	Signature: [signature] Date/Time: 7/28/11 1000	Signature: Date/Time:	Signature: Date/Time:
Printed Name: Steven Head Firm: Bay West, Inc	Printed Name: Brad Tebin Firm: CAS	Printed Name: Firm:	Printed Name: Firm:

RCOC #1 03/10

PC Lisa

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

Client / Project: BayWest Service Request *K11* 10869

Received: 7/28/11 Opened: 7/28/11 By: BT Unloaded: 7/28/11 By: BT

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? 1 front 1 Back
   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Cooler Temp °C	Temp Blank °C BT 7/28/11	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
Ice	NA 2.1	246			X

7. Packing material used. *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Sleeves* *Other* _____
8. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
9. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
10. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
11. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
12. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
13. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
14. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
15. Was C12/Res negative? NA Y N

SHORT HOLD TIME

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

Page 1 *of* _____

General Chemistry Parameters

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Bay West, Incorporated	**Service Request:**	K1106869
Project:	NIROP/J070047	**Date Collected:**	7/27/11
Sample Matrix:	Water	**Date Received:**	7/28/11
		Units:	pH Units
Analysis Method:	150.1	**Basis:**	NA

pH

Sample Name	Lab Code	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Note
Fridout 173A	K1106869-001	7.93		-	1	NA	7/28/11 12:39	H

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1106869
Date Collected: NA
Date Received: NA
Date Analyzed: 7/28/11

Replicate Sample Summary
General Chemistry Parameters

Sample Name: Batch QC
Lab Code: KQ1107709-04

Units: pH Units
Basis: NA

Analyte Name	Method	MRL	Sample Result	Batch QCDUP Duplicate Sample KQ1107709-04DUP Result	Average	RPD	RPD Limit
pH	150.1	-	7.80	7.80	7.80	<1	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1106869
Date Analyzed: 7/28/11

Lab Control Sample Summary
General Chemistry Parameters

Units: pH Units
Basis: NA

Analyte Name	Method	Lab Control Sample K1106869-LCS Result	Spike Amount	% Rec	% Rec Limits
pH	150.1	8.88	9.06	98	85 - 115

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

255227

Original

Work Request # (KIC) C852[redacted]

Tier: I V

Date Analyzed: 7/28/11

Analyst: CV

Analysis: pH water

DATA QUALITY REPORT
INORGANICS

Explain any "no" responses to questions below, and any corrective actions in the comments section below.

1.		Is the method name and number correct and appropriate?	yes/no/NA
2.		Holding times met for all analyses and for all samples?	yes/no/NA
3.		Are calculations correct?	yes/no/NA
4.		Is the reporting basis correct? (Dry Weight)	yes/no/NA
5.		All quality control criteria met?	yes/no/NA
	a.	Is the calibration curve correlation coefficient ≥ 0.995?	yes/no/NA
	b.	MBs, CCVs, CCBs, LCSs, Dups, and Spikes, analyzed at proper frequency?	yes/no/NA
	c.	Are ICVs, CCVs, and CCBs all within acceptance limits?	yes/no/NA
	d.	Are results for methods blanks all ND?	yes/no/NA
	e.	Are all QC samples within acceptance criteria? (LCS % rec, MS/DMS % rec, DUP or MS/DMS RPDs, etc.)	yes/no/NA
	f.	Are all exceptions explained?	yes/no/NA
6.		Are all service requests that apply attached?	yes/no/NA
7.		Are all samples labelled correctly?	yes/no/NA
8.		Have all instructions on the service request been followed? (e.g. Special MRLs, QC on a specific sample)	yes/no/NA
9.		Are detection limits and units reported correctly?	yes/no/NA
10.		Are proper Analysis/Extraction stickers included on report?	yes/no/NA
11.		Is the unused space on the benchsheet crossed out?	yes/no/NA
12.		Was analysis turned in by the due date? (n-2) (If not record SR#)	yes/no/NA

COMMENTS:

Received passed hold

Final Approved by: BNK Date: 7/29/11

DQREPORT

Analytical Results Summary

Instrument Name: K-pH-01 **Analyst:** CVECCHITTO **Analysis Lot:** 255227 **Method/Testcode:** SM 4500-H+ B/pH

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1106859-001	pH	N/A		Water	7.83 pH Units	50 mL	7.83 pH Units	1					7/28/11 12:38:00	N	I
[redacted]	pH	N/A		Water	7.93 pH Units	50 mL	[redacted]	1					7/28/11 12:39:00	Y	V
KQ1107709-01	pH	DUP	K1106859-001	Water	7.80 pH Units	50 mL	7.80 pH Units	1				<1	7/28/11 12:39:00	N	I
KQ1107709-02	pH	LCS		Water	8.88 pH Units	50 mL	8.88 pH Units	1			98		7/28/11 10:16:00	N	I
KQ1107709-02	pH	LCS		Water	8.88 pH Units	50 mL	8.88 pH Units	1			98		7/28/11 10:16:00	N	I

BDIC
7/29/11

15

indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

COLUMBIA ANALYTICAL SERVICES, INC.

255227

6859, 6869

Method: SM 4500 H+B

Sample #	pH	Time Analyzed	Temp, C
pH 12.45 Buffer			
pH 10.00 Buffer	10.00	1007	24.6
pH 7.00 Buffer	7.00	1006	24.5
pH 4.00 Buffer	4.00	1005	24.5
pH 1.00 Buffer			
Buffer Check	4.02	1012	24.7
LCS	8.88	1011	24.8
116859-1	7.83	1238	25.0
1d	7.80	1239	25.5
6869-1	7.93	1239	24.0
Buffercheck	3.98	1733	24.8
Buffer Check			

Sample #	pH	Time Analyzed	Temp, C
Buffer Check			
Buffer Check			

CS = ERA Lot# SK06774 ID# = Cond/1-55-A T.V. = 9.06 % REC = 98

4.00 buffer Cond/1-75- Q pH 7.00 buffer Cond/1-77- S pH 10.00 buffer Cond/1-79- O

1.00 buffer Cond/1-73- pH 12.45 buffer Cond/1-81- Probe ID#: K-pH-01 meter:

Cd/1-79-5

6859-1 x=7.82 RPD<1

Analyzed by:	[illegible]	Date:	7/28/11
Reviewed by:	[illegible]	Date:	7/29/11

PH1

Volatile Organic Compounds

Organic Analysis:
Volatile Organic Compounds

Summary Package

Sample and QC Results

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1106869

Cover Page - Organic Analysis Data Package
Volatile Organic Compounds

Sample Name	Lab Code	Date Collected	Date Received
Fridout 173A	K1106869-001	07/27/2011	07/28/2011
Fridout 173B	K1106869-002	07/27/2011	07/28/2011
Fridin Air 84ADL	K1106869-003	07/27/2011	07/28/2011
Fridin Air 84A	K1106869-003	07/27/2011	07/28/2011
Frideff Air 86A	K1106869-004	07/27/2011	07/28/2011
Trip Blank	K1106869-005	07/27/2011	07/28/2011
Fridout 173AMS	KWG1107316-1	07/27/2011	07/28/2011
Fridout 173ADMS	KWG1107316-2	07/27/2011	07/28/2011

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Holly Butcher
Date: 08-12-2011

Name: Holly Butcher
Title: Scientist

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1106869
Project:	NIROP/J070047	**Date Collected:**	07/27/2011
Sample Matrix:	Water	**Date Received:**	07/28/2011
		Date Extracted:	08/01/2011
		Date Analyzed:	08/01/2011

Volatile Organic Compounds

Sample Name:	Fridout 173A	**Units:**	ug/L
Lab Code:	K1106869-001	**Basis:**	NA
File ID:	J:\MS23\DATA\080111BAYW\0801F011.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1107316
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.053	U	0.25	0.053	
75-35-4	1,1-Dichloroethene	0.37	U	0.50	0.37	
156-60-5	trans-1,2-Dichloroethene	**0.090**	J	0.50	0.039	
75-34-3	1,1-Dichloroethane	0.041	U	0.50	0.041	
156-59-2	cis-1,2-Dichloroethene	**0.50**		0.50	0.042	
71-55-6	1,1,1-Trichloroethane (TCA)	0.044	U	0.50	0.044	
79-01-6	Trichloroethene (TCE)	**1.4**		0.50	0.044	
127-18-4	Tetrachloroethene (PCE)	0.043	U	0.50	0.043	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	108	61-121	08/01/11	Acceptable
Toluene-d8	99	72-122	08/01/11	Acceptable
4-Bromofluorobenzene	90	70-120	08/01/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1106869
Project:	NIROP/J070047	**Date Collected:**	07/27/2011
Sample Matrix:	Water	**Date Received:**	07/28/2011
		Date Extracted:	08/01/2011
		Date Analyzed:	08/01/2011

Volatile Organic Compounds

Sample Name:	Fridout 173B	**Units:**	ug/L
Lab Code:	K1106869-002	**Basis:**	NA
File ID:	J:\MS23\DATA\080111BAYW\0801F014.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1107316
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.053	U	0.25	0.053	
75-35-4	1,1-Dichloroethene	0.37	U	0.50	0.37	
156-60-5	trans-1,2-Dichloroethene	**0.10**	J	0.50	0.039	
75-34-3	1,1-Dichloroethane	0.041	U	0.50	0.041	
156-59-2	cis-1,2-Dichloroethene	**0.55**		0.50	0.042	
71-55-6	1,1,1-Trichloroethane (TCA)	0.044	U	0.50	0.044	
79-01-6	Trichloroethene (TCE)	**1.4**		0.50	0.044	
127-18-4	Tetrachloroethene (PCE)	0.043	U	0.50	0.043	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	111	61-121	08/01/11	Acceptable
Toluene-d8	99	72-122	08/01/11	Acceptable
4-Bromofluorobenzene	91	70-120	08/01/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1106869
Project:	NIROP/J070047	**Date Collected:**	07/27/2011
Sample Matrix:	Water	**Date Received:**	07/28/2011
		Date Extracted:	08/01/2011
		Date Analyzed:	08/01/2011

Volatile Organic Compounds

Sample Name:	Fridin Air 84A	**Units:**	ug/L
Lab Code:	K1106869-003	**Basis:**	NA
File ID:	J:\MS23\DATA\080111BAYW\0801F015.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1107316
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.21**	J	0.25	0.053	
75-35-4	1,1-Dichloroethene	**0.68**		0.50	0.37	
156-60-5	trans-1,2-Dichloroethene	**27**		0.50	0.039	
75-34-3	1,1-Dichloroethane	**1.2**		0.50	0.041	
156-59-2	cis-1,2-Dichloroethene	**60**		0.50	0.042	
71-55-6	1,1,1-Trichloroethane (TCA)	0.044	U	0.50	0.044	
79-01-6	Trichloroethene (TCE)	**450**	E	0.50	0.044	
127-18-4	Tetrachloroethene (PCE)	**2.1**		0.50	0.043	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	110	61-121	08/01/11	Acceptable
Toluene-d8	101	72-122	08/01/11	Acceptable
4-Bromofluorobenzene	91	70-120	08/01/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1106869
Project:	NIROP/J070047	**Date Collected:**	07/27/2011
Sample Matrix:	Water	**Date Received:**	07/28/2011
		Date Extracted:	08/05/2011
		Date Analyzed:	08/05/2011

Volatile Organic Compounds

Sample Name:	Fridin Air 84ADL	**Units:**	ug/L
Lab Code:	K1106869-003	**Basis:**	NA
File ID:	J:\MS23\DATA\080511BAYW\0805F017.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1107578
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 10

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.53	U	2.5	0.53	
75-35-4	1,1-Dichloroethene	3.7	U	5.0	3.7	
156-60-5	trans-1,2-Dichloroethene	**24**	D	5.0	0.39	
75-34-3	1,1-Dichloroethane	**1.0**	JD	5.0	0.41	
156-59-2	cis-1,2-Dichloroethene	**52**	D	5.0	0.42	
71-55-6	1,1,1-Trichloroethane (TCA)	0.44	U	5.0	0.44	
79-01-6	Trichloroethene (TCE)	**390**	D	5.0	0.44	
127-18-4	Tetrachloroethene (PCE)	**1.7**	JD	5.0	0.43	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	109	61-121	08/05/11	Acceptable
Toluene-d8	100	72-122	08/05/11	Acceptable
4-Bromofluorobenzene	91	70-120	08/05/11	Acceptable

Comments

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1106869
Project:	NIROP/J070047	**Date Collected:**	07/27/2011
Sample Matrix:	Water	**Date Received:**	07/28/2011
		Date Extracted:	08/01/2011
		Date Analyzed:	08/01/2011

Volatile Organic Compounds

Sample Name:	Frideff Air 86A	**Units:**	ug/L
Lab Code:	K1106869-004	**Basis:**	NA
File ID:	J:\MS23\DATA\080111BAYW\0801F016.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1107316
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.053	U	0.25	0.053	
75-35-4	1,1-Dichloroethene	0.37	U	0.50	0.37	
156-60-5	trans-1,2-Dichloroethene	**1.6**		0.50	0.039	
75-34-3	1,1-Dichloroethane	**0.12**	J	0.50	0.041	
156-59-2	cis-1,2-Dichloroethene	**8.9**		0.50	0.042	
71-55-6	1,1,1-Trichloroethane (TCA)	0.044	U	0.50	0.044	
79-01-6	Trichloroethene (TCE)	**29**		0.50	0.044	
127-18-4	Tetrachloroethene (PCE)	**0.090**	J	0.50	0.043	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	111	61-121	08/01/11	Acceptable
Toluene-d8	101	72-122	08/01/11	Acceptable
4-Bromofluorobenzene	89	70-120	08/01/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1106869
Project:	NIROP/J070047	**Date Collected:**	07/27/2011
Sample Matrix:	Water	**Date Received:**	07/28/2011
		Date Extracted:	08/01/2011
		Date Analyzed:	08/01/2011

Volatile Organic Compounds

Sample Name:	Trip Blank	**Units:**	ug/L
Lab Code:	K1106869-005	**Basis:**	NA
File ID:	J:\MS23\DATA\080111BAYW\0801F017.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1107316
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.053	U	0.25	0.053	
75-35-4	1,1-Dichloroethene	0.37	U	0.50	0.37	
156-60-5	trans-1,2-Dichloroethene	0.039	U	0.50	0.039	
75-34-3	1,1-Dichloroethane	0.041	U	0.50	0.041	
156-59-2	cis-1,2-Dichloroethene	0.042	U	0.50	0.042	
71-55-6	1,1,1-Trichloroethane (TCA)	0.044	U	0.50	0.044	
79-01-6	Trichloroethene (TCE)	**0.12**	J	0.50	0.044	
127-18-4	Tetrachloroethene (PCE)	0.043	U	0.50	0.043	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	111	61-121	08/01/11	Acceptable
Toluene-d8	98	72-122	08/01/11	Acceptable
4-Bromofluorobenzene	90	70-120	08/01/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1106869
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	08/01/2011
		Date Analyzed:	08/01/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1107316-4	**Basis:**	NA
File ID:	J:\MS23\DATA\080111BAYW\0801F010.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1107316
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.053	U	0.25	0.053	
75-35-4	1,1-Dichloroethene	0.37	U	0.50	0.37	
156-60-5	trans-1,2-Dichloroethene	0.039	U	0.50	0.039	
75-34-3	1,1-Dichloroethane	0.041	U	0.50	0.041	
156-59-2	cis-1,2-Dichloroethene	0.042	U	0.50	0.042	
71-55-6	1,1,1-Trichloroethane (TCA)	0.044	U	0.50	0.044	
79-01-6	Trichloroethene (TCE)	0.044	U	0.50	0.044	
127-18-4	Tetrachloroethene (PCE)	0.043	U	0.50	0.043	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	108	61-121	08/01/11	Acceptable
Toluene-d8	99	72-122	08/01/11	Acceptable
4-Bromofluorobenzene	91	70-120	08/01/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1106869
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	08/05/2011
		Date Analyzed:	08/05/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1107578-4	**Basis:**	NA
File ID:	J:\MS23\DATA\080511BAYW\0805F009.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1107578
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.053	U	0.25	0.053	
75-35-4	1,1-Dichloroethene	0.37	U	0.50	0.37	
156-60-5	trans-1,2-Dichloroethene	0.039	U	0.50	0.039	
75-34-3	1,1-Dichloroethane	0.041	U	0.50	0.041	
156-59-2	cis-1,2-Dichloroethene	0.042	U	0.50	0.042	
71-55-6	1,1,1-Trichloroethane (TCA)	0.044	U	0.50	0.044	
79-01-6	Trichloroethene (TCE)	0.044	U	0.50	0.044	
127-18-4	Tetrachloroethene (PCE)	0.043	U	0.50	0.043	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	106	61-121	08/05/11	Acceptable
Toluene-d8	99	72-122	08/05/11	Acceptable
4-Bromofluorobenzene	92	70-120	08/05/11	Acceptable

Comments:

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1106869

Surrogate Recovery Summary
Volatile Organic Compounds

Extraction Method: METHOD
Analysis Method: 624

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
Fridout 173A	K1106869-001	108	99	90
Fridout 173B	K1106869-002	111	99	91
Fridin Air 84ADL	K1106869-003	109	100	91
Fridin Air 84A	K1106869-003	110	101	91
Frideff Air 86A	K1106869-004	111	101	89
Trip Blank	K1106869-005	111	98	90
Method Blank	KWG1107316-4	108	99	91
Method Blank	KWG1107578-4	106	99	92
Fridout 173AMS	KWG1107316-1	105	105	97
Fridout 173ADMS	KWG1107316-2	107	105	96
Lab Control Sample	KWG1107316-3	107	107	100
Lab Control Sample	KWG1107578-3	106	107	98

Surrogate Recovery Control Limits (%)

Sur1 =	Dibromofluoromethane	61-121
Sur2 =	Toluene-d8	72-122
Sur3 =	4-Bromofluorobenzene	70-120

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1106869
Date Analyzed: 08/01/2011
Time Analyzed: 11:57

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID: J:\MS23\DATA\080111BAYW\0801F004.D
Instrument ID: MS23
Analysis Method: 624

Lab Code: KWG1107315-2
Analysis Lot: KWG1107315

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	702,745	5.94	284,052	9.34	274,192	11.75
	Upper Limit ==>	1,405,490	6.44	568,104	9.84	548,384	12.25
	Lower Limit ==>	351,373	5.44	142,026	8.84	137,096	11.25
	ICAL Result ==>	555,419	5.94	228,350	9.34	192,069	11.75
Associated Analyses							
Lab Control Sample	KWG1107316-3	719,288	5.94	307,110	9.34	290,861	11.75
Fridout 173AMS	KWG1107316-1	715,670	5.94	304,844	9.35	282,913	11.75
Fridout 173ADMS	KWG1107316-2	709,349	5.94	304,313	9.35	283,207	11.75
Method Blank	KWG1107316-4	664,643	5.95	275,953	9.35	235,068	11.76
Fridout 173A	K1106869-001	657,022	5.94	269,874	9.35	228,131	11.75
Fridout 173B	K1106869-002	656,106	5.94	273,687	9.34	239,722	11.75
Fridin Air 84A	K1106869-003	658,228	5.94	271,427	9.35	233,266	11.75
Frideff Air 86A	K1106869-004	649,968	5.94	272,689	9.35	233,553	11.76
Trip Blank	K1106869-005	653,221	5.94	266,386	9.35	226,381	11.75

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1106869
Date Analyzed: 08/05/2011
Time Analyzed: 10:09

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID: J:\MS23\DATA\080511BAYW\0805F004.D
Instrument ID: MS23
Analysis Method: 624

Lab Code: KWG1107577-2
Analysis Lot: KWG1107577

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	687,014	5.94	282,036	9.35	273,289	11.75
	Upper Limit ==>	1,374,028	6.44	564,072	9.85	546,578	12.25
	Lower Limit ==>	343,507	5.44	141,018	8.85	136,645	11.25
	ICAL Result ==>	555,419	5.94	228,350	9.34	192,069	11.75
Associated Analyses							
Lab Control Sample	KWG1107578-3	692,443	5.94	298,386	9.34	279,748	11.75
Method Blank	KWG1107578-4	678,122	5.94	279,311	9.34	244,046	11.76
Fridin Air 84ADL	K1106869-003	648,802	5.94	271,896	9.35	232,005	11.75

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1106869
Project:	NIROP/J070047	**Date Extracted:**	08/01/2011
Sample Matrix:	Water	**Date Analyzed:**	08/01/2011

Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organic Compounds

Sample Name:	Fridout 173A	**Units:**	ug/L
Lab Code:	K1106869-001	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	624	**Extraction Lot:**	KWG1107316

Analyte Name	Sample Result	Fridout 173AMS KWG1107316-1 Matrix Spike			Fridout 173ADMS KWG1107316-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
Vinyl Chloride	ND	8.79	10.0	88	7.98	10.0	80	62-134	10	30
1,1-Dichloroethene	ND	9.28	10.0	93	8.72	10.0	87	64-151	6	30
trans-1,2-Dichloroethene	0.090	11.0	10.0	109	10.3	10.0	102	58-146	7	30
1,1-Dichloroethane	ND	10.3	10.0	103	9.68	10.0	97	61-141	6	30
cis-1,2-Dichloroethene	0.50	10.6	10.0	101	9.87	10.0	94	73-130	7	30
1,1,1-Trichloroethane (TCA)	ND	9.61	10.0	96	8.87	10.0	89	67-139	8	30
Trichloroethene (TCE)	1.4	11.4	10.0	101	10.6	10.0	92	23-193	8	30
Tetrachloroethene (PCE)	ND	11.4	10.0	114	10.3	10.0	103	70-132	10	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1106869
Project:	NIROP/J070047	**Date Extracted:**	08/01/2011
Sample Matrix:	Water	**Date Analyzed:**	08/01/2011

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	METHOD	**Units:**	ug/L
Analysis Method:	624	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1107316

	Lab Control Sample KWG1107316-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Vinyl Chloride	9.09	10.0	91	71-136
1,1-Dichloroethene	10.0	10.0	100	79-147
trans-1,2-Dichloroethene	11.4	10.0	114	78-140
1,1-Dichloroethane	10.7	10.0	107	79-135
cis-1,2-Dichloroethene	10.6	10.0	106	80-134
1,1,1-Trichloroethane (TCA)	9.83	10.0	98	77-139
Trichloroethene (TCE)	10.6	10.0	106	81-133
Tetrachloroethene (PCE)	11.9	10.0	119	82-129

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1106869
Project:	NIROP/J070047	**Date Extracted:**	08/05/2011
Sample Matrix:	Water	**Date Analyzed:**	08/05/2011

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	METHOD	**Units:**	ug/L
Analysis Method:	624	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1107578

	Lab Control Sample KWG1107578-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Vinyl Chloride	7.85	10.0	79	71-136
1,1-Dichloroethene	9.71	10.0	97	79-147
trans-1,2-Dichloroethene	11.4	10.0	114	78-140
1,1-Dichloroethane	10.8	10.0	108	79-135
cis-1,2-Dichloroethene	10.5	10.0	105	80-134
1,1,1-Trichloroethane (TCA)	9.93	10.0	99	77-139
Trichloroethene (TCE)	10.8	10.0	108	81-133
Tetrachloroethene (PCE)	11.7	10.0	117	82-129

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1106869
Project:	NIROP/J070047	**Date Extracted:**	08/01/2011
Sample Matrix:	Water	**Date Analyzed:**	08/01/2011
		Time Analyzed:	15:34

Method Blank Summary
Volatile Organic Compounds

Sample Name:	Method Blank	**Instrument ID:**	MS23
Lab Code:	KWG1107316-4	**File ID:**	J:\MS23\DATA\080111BAYW\0801F010.D
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	624	**Extraction Lot:**	KWG1107316

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1107316-3	J:\MS23\DATA\080111BAYW\0801F006.D	08/01/11	13:28
Fridout 173AMS	KWG1107316-1	J:\MS23\DATA\080111BAYW\0801F007.D	08/01/11	14:02
Fridout 173ADMS	KWG1107316-2	J:\MS23\DATA\080111BAYW\0801F008.D	08/01/11	14:33
Fridout 173A	K1106869-001	J:\MS23\DATA\080111BAYW\0801F011.D	08/01/11	16:05
Fridout 173B	K1106869-002	J:\MS23\DATA\080111BAYW\0801F014.D	08/01/11	17:37
Fridin Air 84A	K1106869-003	J:\MS23\DATA\080111BAYW\0801F015.D	08/01/11	18:08
Frideff Air 86A	K1106869-004	J:\MS23\DATA\080111BAYW\0801F016.D	08/01/11	18:38
Trip Blank	K1106869-005	J:\MS23\DATA\080111BAYW\0801F017.D	08/01/11	19:09

Client:	Bay West, Incorporated	**Service Request:**	K1106869
Project:	NIROP/J070047	**Date Extracted:**	08/05/2011
Sample Matrix:	Water	**Date Analyzed:**	08/05/2011
		Time Analyzed:	13:03

Method Blank Summary
Volatile Organic Compounds

Sample Name:	Method Blank	**Instrument ID:**	MS23
Lab Code:	KWG1107578-4	**File ID:**	J:\MS23\DATA\080511BAYW\0805F009.D
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	624	**Extraction Lot:**	KWG1107578

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1107578-3	J:\MS23\DATA\080511BAYW\0805F005.D	08/05/11	10:40
Fridin Air 84ADL	K1106869-003	J:\MS23\DATA\080511BAYW\0805F017.D	08/05/11	17:10

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1106869
Project:	NIROP/J070047	**Date Extracted:**	08/01/2011
Sample Matrix:	Water	**Date Analyzed:**	08/01/2011
		Time Analyzed:	13:28

Lab Control Sample Summary
Volatile Organic Compounds

Sample Name:	Lab Control Sample	**Instrument ID:**	MS23
Lab Code:	KWG1107316-3	**File ID:**	J:\MS23\DATA\080111BAYW\0801F006.D
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	624	**Extraction Lot:**	KWG1107316

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Fridout 173AMS	KWG1107316-1	J:\MS23\DATA\080111BAYW\0801F007.D	08/01/11	14:02
Fridout 173ADMS	KWG1107316-2	J:\MS23\DATA\080111BAYW\0801F008.D	08/01/11	14:33
Method Blank	KWG1107316-4	J:\MS23\DATA\080111BAYW\0801F010.D	08/01/11	15:34
Fridout 173A	K1106869-001	J:\MS23\DATA\080111BAYW\0801F011.D	08/01/11	16:05
Fridout 173B	K1106869-002	J:\MS23\DATA\080111BAYW\0801F014.D	08/01/11	17:37
Fridin Air 84A	K1106869-003	J:\MS23\DATA\080111BAYW\0801F015.D	08/01/11	18:08
Frideff Air 86A	K1106869-004	J:\MS23\DATA\080111BAYW\0801F016.D	08/01/11	18:38
Trip Blank	K1106869-005	J:\MS23\DATA\080111BAYW\0801F017.D	08/01/11	19:09

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1106869
Project:	NIROP/J070047	**Date Extracted:**	08/05/2011
Sample Matrix:	Water	**Date Analyzed:**	08/05/2011
		Time Analyzed:	10:40

Lab Control Sample Summary
Volatile Organic Compounds

Sample Name:	Lab Control Sample	**Instrument ID:**	MS23
Lab Code:	KWG1107578-3	**File ID:**	J:\MS23\DATA\080511BAYW\0805F005.D
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	624	**Extraction Lot:**	KWG1107578

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1107578-4	J:\MS23\DATA\080511BAYW\0805F009.D	08/05/11	13:03
Fridin Air 84ADL	K1106869-003	J:\MS23\DATA\080511BAYW\0805F017.D	08/05/11	17:10

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1106869
Date Analyzed: 03/29/2011
Time Analyzed: 13:21

Tune Summary
Volatile Organic Compounds

File ID: J:\MS23\DATA\032911\0329F013.D
Instrument ID: MS23
Column:

Analysis Method: 624
Analysis Lot: KWG1103676

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	24.6	16321	PASS
75	95	30	60	53.6	35557	PASS
95	95	100	100	100.0	66330	PASS
96	95	5	9	6.9	4574	PASS
173	174	0	2	0.7	334	PASS
174	95	50	120	68.8	45626	PASS
175	174	5	9	7.6	3488	PASS
176	174	95	101	98.5	44920	PASS
177	176	5	9	6.8	3050	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Initial Calibration	KWG1103676-2	J:\MS23\DATA\032911BAYW\0329F016.D	03/29/2011	14:27	
Initial Calibration	KWG1103676-3	J:\MS23\DATA\032911BAYW\0329F019.D	03/29/2011	16:02	
Initial Calibration	KWG1103676-4	J:\MS23\DATA\032911BAYW\0329F020.D	03/29/2011	16:32	
Initial Calibration	KWG1103676-5	J:\MS23\DATA\032911BAYW\0329F021.D	03/29/2011	17:02	
Initial Calibration	KWG1103676-6	J:\MS23\DATA\032911BAYW\0329F022.D	03/29/2011	17:31	
Initial Calibration	KWG1103676-7	J:\MS23\DATA\032911BAYW\0329F023.D	03/29/2011	18:01	
Initial Calibration	KWG1103676-8	J:\MS23\DATA\032911BAYW\0329F026.D	03/29/2011	19:31	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1106869
Date Analyzed: 03/30/2011
Time Analyzed: 08:48

Tune Summary
Volatile Organic Compounds

File ID: J:\MS23\DATA\032911BAYW\0329F027.D
Instrument ID: MS23
Column:

Analysis Method: 624
Analysis Lot: KWG1103677

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	26.3	15893	PASS
75	95	30	60	59.3	35786	PASS
95	95	100	100	100.0	60389	PASS
96	95	5	9	7.4	4443	PASS
173	174	0	2	0.6	265	PASS
174	95	50	120	68.3	41240	PASS
175	174	5	9	7.7	3196	PASS
176	174	95	101	97.0	39994	PASS
177	176	5	9	6.8	2712	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Initial Calibration	KWG1103677-2	J:\MS23\DATA\032911BAYW\0329F029.D	03/30/2011	09:48	
Initial Calibration Verification	KWG1103677-3	J:\MS23\DATA\032911BAYW\0329F032.D	03/30/2011	12:58	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1106869
Date Analyzed: 08/01/2011
Time Analyzed: 11:27

Tune Summary
Volatile Organic Compounds

File ID: J:\MS23\DATA\080111BAYW\0801F003.D
Instrument ID: MS23
Column:

Analysis Method: 624
Analysis Lot: KWG1107315

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	21.3	10172	PASS
75	95	30	60	49.7	23711	PASS
95	95	100	100	100.0	47737	PASS
96	95	5	9	6.6	3127	PASS
173	174	0	2	0.5	202	PASS
174	95	50	120	76.9	36732	PASS
175	174	5	9	7.1	2608	PASS
176	174	95	101	95.1	34926	PASS
177	176	5	9	7.1	2496	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1107315-2	J:\MS23\DATA\080111BAYW\0801F004.D	08/01/2011	11:57	
Lab Control Sample	KWG1107316-3	J:\MS23\DATA\080111BAYW\0801F006.D	08/01/2011	13:28	
Fridout 173AMS	KWG1107316-1	J:\MS23\DATA\080111BAYW\0801F007.D	08/01/2011	14:02	
Fridout 173ADMS	KWG1107316-2	J:\MS23\DATA\080111BAYW\0801F008.D	08/01/2011	14:33	
Method Blank	KWG1107316-4	J:\MS23\DATA\080111BAYW\0801F010.D	08/01/2011	15:34	
Fridout 173A	K1106869-001	J:\MS23\DATA\080111BAYW\0801F011.D	08/01/2011	16:05	
Fridout 173B	K1106869-002	J:\MS23\DATA\080111BAYW\0801F014.D	08/01/2011	17:37	
Fridin Air 84A	K1106869-003	J:\MS23\DATA\080111BAYW\0801F015.D	08/01/2011	18:08	
Frideff Air 86A	K1106869-004	J:\MS23\DATA\080111BAYW\0801F016.D	08/01/2011	18:38	
Trip Blank	K1106869-005	J:\MS23\DATA\080111BAYW\0801F017.D	08/01/2011	19:09	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1106869
Date Analyzed: 08/05/2011
Time Analyzed: 09:39

Tune Summary
Volatile Organic Compounds

File ID: J:\MS23\DATA\080511BAYW\0805F003.D
Instrument ID: MS23
Column:

Analysis Method: 624
Analysis Lot: KWG1107577

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	22.9	3605	PASS
75	95	30	60	52.6	8281	PASS
95	95	100	100	100.0	15745	PASS
96	95	5	9	6.9	1086	PASS
173	174	0	2	0.4	55	PASS
174	95	50	120	81.5	12835	PASS
175	174	5	9	7.4	953	PASS
176	174	95	101	95.5	12256	PASS
177	176	5	9	6.3	773	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1107577-2	J:\MS23\DATA\080511BAYW\0805F004.D	08/05/2011	10:09	
Lab Control Sample	KWG1107578-3	J:\MS23\DATA\080511BAYW\0805F005.D	08/05/2011	10:40	
Method Blank	KWG1107578-4	J:\MS23\DATA\080511BAYW\0805F009.D	08/05/2011	13:03	
Fridin Air 84ADL	K1106869-003	J:\MS23\DATA\080511BAYW\0805F017.D	08/05/2011	17:10	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1106869
Calibration Date: 03/29/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10443
Instrument ID: MS23

Column: MS

Level ID	File ID
A	J:\MS23\DATA\032911\0329F019.D
B	J:\MS23\DATA\032911\0329F020.D
C	J:\MS23\DATA\032911\0329F021.D
D	J:\MS23\DATA\032911\0329F022.D
E	J:\MS23\DATA\032911\0329F023.D
F	J:\MS23\DATA\032911\0329F026.D
G	J:\MS23\DATA\032911\0329F029.D
H	J:\MS23\DATA\032911BAYW\0329F016.D

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Vinyl Chloride	A	5.0	0.453	B	10	0.427	C	40	0.439	D	80	0.432	E	120	0.431
	F	0.50	0.446	G	1.0	0.330	H	0.25	0.279						
1,1-Dichloroethene	A	5.0	0.247	B	10	0.247	C	40	0.250	D	80	0.250	E	120	0.250
	F	0.50	0.257	G	1.0	0.190									
trans-1,2-Dichloroethene	A	5.0	0.253	B	10	0.244	C	40	0.253	D	80	0.257	E	120	0.257
	F	0.50	0.292	G	1.0	0.194									
1,1-Dichloroethane	A	5.0	0.511	B	10	0.494	C	40	0.511	D	80	0.516	E	120	0.512
	F	0.50	0.535	G	1.0	0.384									
cis-1,2-Dichloroethene	A	5.0	0.266	B	10	0.262	C	40	0.269	D	80	0.274	E	120	0.273
	F	0.50	0.326	G	1.0	0.208									
1,1,1-Trichloroethane (TCA)	A	5.0	0.431	B	10	0.416	C	40	0.433	D	80	0.433	E	120	0.436
	F	0.50	0.430	G	1.0	0.310									
Trichloroethene (TCE)	A	5.0	0.268	B	10	0.259	C	40	0.267	D	80	0.272	E	120	0.272
	F	0.50	0.303	G	1.0	0.218									
Tetrachloroethene (PCE)	A	5.0	0.489	B	10	0.472	C	40	0.484	D	80	0.505	E	120	0.516
	F	0.50	0.493	G	1.0	0.358									
Dibromofluoromethane	A	8.0	0.216	B	10	0.222	C	20	0.228	D	40	0.204	E	60	0.227
				G	6.0	0.201									
Toluene-d8	A	8.0	0.934	B	10	0.959	C	20	1.01	D	40	0.876	E	60	1.00
				G	6.0	0.888									
4-Bromofluorobenzene	A	8.0	0.813	B	10	0.829	C	20	0.859	D	40	0.791	E	60	0.870
				G	6.0	0.776									

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1106869
Calibration Date: 03/29/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10443
Instrument ID: MS23

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Vinyl Chloride	MS	AverageRF	% RSD	15.8		≤35	0.405		0.01
1,1-Dichloroethene	MS	AverageRF	% RSD	9.5		≤35	0.241		0.01
trans-1,2-Dichloroethene	MS	AverageRF	% RSD	11.6		≤35	0.250		0.01
1,1-Dichloroethane	MS	AverageRF	% RSD	10.1		≤35	0.495		0.01
cis-1,2-Dichloroethene	MS	AverageRF	% RSD	12.8		≤35	0.268		0.01
1,1,1-Trichloroethane (TCA)	MS	AverageRF	% RSD	11.1		≤35	0.413		0.01
Trichloroethene (TCE)	MS	AverageRF	% RSD	9.4		≤35	0.266		0.01
Tetrachloroethene (PCE)	MS	AverageRF	% RSD	11.2		≤35	0.474		0.01
Dibromofluoromethane	SURR	AverageRF	% RSD	5.3		≤35	0.216		0.01
Toluene-d8	SURR	AverageRF	% RSD	6.0		≤35	0.945		0.01
4-Bromofluorobenzene	SURR	AverageRF	% RSD	4.5		≤35	0.823		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1106869
Calibration Date: 03/29/2011
Date Analyzed: 03/30/2011

Second Source Calibration Verification
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 624

Calibration ID: CAL10443
Units: PPB

File ID: J:\MS23\DATA\032911\0329F032.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	11	0.405	0.448	11	NA	± 96 %	AverageRF
1,1-Dichloroethene	10	12	0.241	0.292	21	NA	± 49 %	AverageRF
trans-1,2-Dichloroethene	10	12	0.250	0.290	16	NA	± 30 %	AverageRF
1,1-Dichloroethane	10	12	0.495	0.571	15	NA	± 27 %	AverageRF
cis-1,2-Dichloroethene	10	11	0.268	0.292	9	NA	± 30 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	11	0.413	0.463	12	NA	± 25 %	AverageRF
Trichloroethene (TCE)	10	11	0.266	0.298	12	NA	± 33 %	AverageRF
Tetrachloroethene (PCE)	10	11	0.474	0.533	12	NA	± 26 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1106869
Date Analyzed: 08/01/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 624

Calibration Date: 03/29/2011
Calibration ID: CAL10443
Analysis Lot: KWG1107315
Units: PPB

File ID: J:\MS23\DATA\080111BAYW\0801F004.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	10	0.01	0.405	0.403	0	NA	± 96 %	AverageRF
1,1-Dichloroethene	10	8.5	0.01	0.241	0.206	-15	NA	± 49 %	AverageRF
trans-1,2-Dichloroethene	10	10	0.01	0.250	0.250	0	NA	± 30 %	AverageRF
1,1-Dichloroethane	10	9.5	0.01	0.495	0.469	-5	NA	± 27 %	AverageRF
cis-1,2-Dichloroethene	10	9.8	0.01	0.268	0.263	-2	NA	± 30 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	9.2	0.01	0.413	0.380	-8	NA	± 25 %	AverageRF
Trichloroethene (TCE)	10	10	0.01	0.266	0.268	1	NA	± 33 %	AverageRF
Tetrachloroethene (PCE)	10	12	0.01	0.474	0.574	21	NA	± 26 %	AverageRF
Dibromofluoromethane	10	10	0.01	0.216	0.226	4	NA	± 30 %	AverageRF
Toluene-d8	10	11	0.01	0.945	1.03	9	NA	± 30 %	AverageRF
4-Bromofluorobenzene	10	11	0.01	0.823	0.886	8	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1106869
Date Analyzed: 08/05/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 624

Calibration Date: 03/29/2011
Calibration ID: CAL10443
Analysis Lot: KWG1107577
Units: PPB

File ID: J:\MS23\DATA\080511BAYW\0805F004.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	8.2	0.01	0.405	0.332	-18	NA	± 96 %	AverageRF
1,1-Dichloroethene	10	7.4	0.01	0.241	0.179	-26	NA	± 49 %	AverageRF
trans-1,2-Dichloroethene	10	9.0	0.01	0.250	0.224	-10	NA	± 30 %	AverageRF
1,1-Dichloroethane	10	9.1	0.01	0.495	0.449	-9	NA	± 27 %	AverageRF
cis-1,2-Dichloroethene	10	9.5	0.01	0.268	0.255	-5	NA	± 30 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	8.9	0.01	0.413	0.368	-11	NA	± 25 %	AverageRF
Trichloroethene (TCE)	10	9.9	0.01	0.266	0.264	-1	NA	± 33 %	AverageRF
Tetrachloroethene (PCE)	10	12	0.01	0.474	0.580	22	NA	± 26 %	AverageRF
Dibromofluoromethane	10	10	0.01	0.216	0.224	4	NA	± 30 %	AverageRF
Toluene-d8	10	11	0.01	0.945	1.03	9	NA	± 30 %	AverageRF
4-Bromofluorobenzene	10	11	0.01	0.823	0.871	6	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1106869

Analysis Run Log
Volatile Organic Compounds

Analysis Method: 624

Analysis Lot: KWG1107315
Instrument ID: MS23

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0801F003.D	GC/MS Tuning - Bromofluorobenzene	KWG1107315-1	8/1/2011	11:27		8/1/2011	11:42
0801F004.D	Continuing Calibration Verification	KWG1107315-2	8/1/2011	11:57		8/1/2011	12:12
0801F006.D	Lab Control Sample	KWG1107316-3	8/1/2011	13:28		8/1/2011	13:43
0801F007.D	Fridout 173AMS	KWG1107316-1	8/1/2011	14:02		8/1/2011	14:17
0801F008.D	Fridout 173ADMS	KWG1107316-2	8/1/2011	14:33		8/1/2011	14:48
0801F010.D	Method Blank	KWG1107316-4	8/1/2011	15:34		8/1/2011	15:49
0801F011.D	Fridout 173A	K1106869-001	8/1/2011	16:05		8/1/2011	16:20
0801F014.D	Fridout 173B	K1106869-002	8/1/2011	17:37		8/1/2011	17:52
0801F015.D	Fridin Air 84A	K1106869-003	8/1/2011	18:08		8/1/2011	18:23
0801F016.D	Frideff Air 86A	K1106869-004	8/1/2011	18:38		8/1/2011	18:53
0801F017.D	Trip Blank	K1106869-005	8/1/2011	19:09		8/1/2011	19:24

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1106869

Analysis Run Log
Volatile Organic Compounds

Analysis Method: 624

Analysis Lot: KWG1107577
Instrument ID: MS23

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0805F003.D	GC/MS Tuning - Bromofluorobenzene	KWG1107577-1	8/5/2011	09:39		8/5/2011	09:54
0805F004.D	Continuing Calibration Verification	KWG1107577-2	8/5/2011	10:09		8/5/2011	10:24
0805F005.D	Lab Control Sample	KWG1107578-3	8/5/2011	10:40		8/5/2011	10:55
0805F006.D	ZZZZZZ	ZZZZZZ	8/5/2011	11:31		8/5/2011	11:46
0805F007.D	ZZZZZZ	ZZZZZZ	8/5/2011	12:02		8/5/2011	12:17
0805F009.D	Method Blank	KWG1107578-4	8/5/2011	13:03		8/5/2011	13:18
0805F011.D	ZZZZZZ	ZZZZZZ	8/5/2011	14:03		8/5/2011	14:18
0805F017.D	Fridin Air 84ADL	K1106869-003	8/5/2011	17:10		8/5/2011	17:25

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1106869
Date Extracted: 08/01/2011

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: METHOD
Analysis Method: 624

Extraction Lot: KWG1107316
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
Fridout 173A	K1106869-001	07/27/11	07/28/11	10ml	10ml	NA	
Fridout 173B	K1106869-002	07/27/11	07/28/11	10ml	10ml	NA	
Fridin Air 84A	K1106869-003	07/27/11	07/28/11	10ml	10ml	NA	
Frideff Air 86A	K1106869-004	07/27/11	07/28/11	10ml	10ml	NA	
Trip Blank	K1106869-005	07/27/11	07/28/11	10ml	10ml	NA	
Method Blank	KWG1107316-4	NA	NA	10ml	10ml	NA	
Fridout 173AMS	KWG1107316-1	07/27/11	07/28/11	10ml	10ml	NA	
Fridout 173ADMS	KWG1107316-2	07/27/11	07/28/11	10ml	10ml	NA	
Lab Control Sample	KWG1107316-3	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1106869
Date Extracted: 08/05/2011

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: METHOD
Analysis Method: 624

Extraction Lot: KWG1107578
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
Fridin Air 84ADL	K1106869-003	07/27/11	07/28/11	10ml	10ml	NA	
Method Blank	KWG1107578-4	NA	NA	10ml	10ml	NA	
Lab Control Sample	KWG1107578-3	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Organic Analysis:
Volatile Organic Compounds

Validation Package

Organic Analysis:
Volatile Organic Compounds

Validation Package

QC Reports

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1106869

Surrogate Recovery Summary
Volatile Organic Compounds

Extraction Method: METHOD
Analysis Method: 624

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
Fridout 173A	K1106869-001	108	99	90
Fridout 173B	K1106869-002	111	99	91
Fridin Air 84ADL	K1106869-003	109	100	91
Fridin Air 84A	K1106869-003	110	101	91
Frideff Air 86A	K1106869-004	111	101	89
Trip Blank	K1106869-005	111	98	90
Method Blank	KWG1107316-4	108	99	91
Method Blank	KWG1107578-4	106	99	92
Fridout 173AMS	KWG1107316-1	105	105	97
Fridout 173ADMS	KWG1107316-2	107	105	96
Lab Control Sample	KWG1107316-3	107	107	100
Lab Control Sample	KWG1107578-3	106	107	98

Surrogate Recovery Control Limits (%)

Sur1 =	Dibromofluoromethane	61-121
Sur2 =	Toluene-d8	72-122
Sur3 =	4-Bromofluorobenzene	70-120

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1106869
Date Analyzed: 08/01/2011
Time Analyzed: 11:57

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID: J:\MS23\DATA\080111BAYW\0801F004.D
Instrument ID: MS23
Analysis Method: 624

Lab Code: KWG1107315-2
Analysis Lot: KWG1107315

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	702,745	5.94	284,052	9.34	274,192	11.75
	Upper Limit ==>	1,405,490	6.44	568,104	9.84	548,384	12.25
	Lower Limit ==>	351,373	5.44	142,026	8.84	137,096	11.25
	ICAL Result ==>	555,419	5.94	228,350	9.34	192,069	11.75
Associated Analyses							
Lab Control Sample	KWG1107316-3	719,288	5.94	307,110	9.34	290,861	11.75
Fridout 173AMS	KWG1107316-1	715,670	5.94	304,844	9.35	282,913	11.75
Fridout 173ADMS	KWG1107316-2	709,349	5.94	304,313	9.35	283,207	11.75
Method Blank	KWG1107316-4	664,643	5.95	275,953	9.35	235,068	11.76
Fridout 173A	K1106869-001	657,022	5.94	269,874	9.35	228,131	11.75
Fridout 173B	K1106869-002	656,106	5.94	273,687	9.34	239,722	11.75
Fridin Air 84A	K1106869-003	658,228	5.94	271,427	9.35	233,266	11.75
Frideff Air 86A	K1106869-004	649,968	5.94	272,689	9.35	233,553	11.76
Trip Blank	K1106869-005	653,221	5.94	266,386	9.35	226,381	11.75

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1106869
Date Analyzed: 08/05/2011
Time Analyzed: 10:09

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID: J:\MS23\DATA\080511BAYW\0805F004.D
Instrument ID: MS23
Analysis Method: 624

Lab Code: KWG1107577-2
Analysis Lot: KWG1107577

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	687,014	5.94	282,036	9.35	273,289	11.75
	Upper Limit ==>	1,374,028	6.44	564,072	9.85	546,578	12.25
	Lower Limit ==>	343,507	5.44	141,018	8.85	136,645	11.25
	ICAL Result ==>	555,419	5.94	228,350	9.34	192,069	11.75
Associated Analyses							
Lab Control Sample	KWG1107578-3	692,443	5.94	298,386	9.34	279,748	11.75
Method Blank	KWG1107578-4	678,122	5.94	279,311	9.34	244,046	11.76
Fridin Air 84ADL	K1106869-003	648,802	5.94	271,896	9.35	232,005	11.75

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1106869
Date Extracted: 08/01/2011
Date Analyzed: 08/01/2011

Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organic Compounds

Sample Name: Fridout 173A
Lab Code: K1106869-001

Units: ug/L
Basis: NA

Extraction Method: METHOD
Analysis Method: 624

Level: Low
Extraction Lot: KWG1107316

Analyte Name	Sample Result	Fridout 173AMS KWG1107316-1 Matrix Spike			Fridout 173ADMS KWG1107316-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
Vinyl Chloride	ND	8.79	10.0	88	7.98	10.0	80	62-134	10	30
1,1-Dichloroethene	ND	9.28	10.0	93	8.72	10.0	87	64-151	6	30
trans-1,2-Dichloroethene	0.090	11.0	10.0	109	10.3	10.0	102	58-146	7	30
1,1-Dichloroethane	ND	10.3	10.0	103	9.68	10.0	97	61-141	6	30
cis-1,2-Dichloroethene	0.50	10.6	10.0	101	9.87	10.0	94	73-130	7	30
1,1,1-Trichloroethane (TCA)	ND	9.61	10.0	96	8.87	10.0	89	67-139	8	30
Trichloroethene (TCE)	1.4	11.4	10.0	101	10.6	10.0	92	23-193	8	30
Tetrachloroethene (PCE)	ND	11.4	10.0	114	10.3	10.0	103	70-132	10	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1106869
Date Extracted: 08/01/2011
Date Analyzed: 08/01/2011

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method: METHOD
Analysis Method: 624

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1107316

	Lab Control Sample KWG1107316-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Vinyl Chloride	9.09	10.0	91	71-136
1,1-Dichloroethene	10.0	10.0	100	79-147
trans-1,2-Dichloroethene	11.4	10.0	114	78-140
1,1-Dichloroethane	10.7	10.0	107	79-135
cis-1,2-Dichloroethene	10.6	10.0	106	80-134
1,1,1-Trichloroethane (TCA)	9.83	10.0	98	77-139
Trichloroethene (TCE)	10.6	10.0	106	81-133
Tetrachloroethene (PCE)	11.9	10.0	119	82-129

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1106869
Date Extracted: 08/05/2011
Date Analyzed: 08/05/2011

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method: METHOD
Analysis Method: 624

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1107578

Analyte Name	Lab Control Sample KWG1107578-3 Lab Control Spike Result	Expected	%Rec	%Rec Limits
Vinyl Chloride	7.85	10.0	79	71-136
1,1-Dichloroethene	9.71	10.0	97	79-147
trans-1,2-Dichloroethene	11.4	10.0	114	78-140
1,1-Dichloroethane	10.8	10.0	108	79-135
cis-1,2-Dichloroethene	10.5	10.0	105	80-134
1,1,1-Trichloroethane (TCA)	9.93	10.0	99	77-139
Trichloroethene (TCE)	10.8	10.0	108	81-133
Tetrachloroethene (PCE)	11.7	10.0	117	82-129

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1106869
Date Extracted: 08/01/2011
Date Analyzed: 08/01/2011
Time Analyzed: 15:34

Method Blank Summary
Volatile Organic Compounds

Sample Name: Method Blank
Lab Code: KWG1107316-4

Instrument ID: MS23
File ID: J:\MS23\DATA\080111BAYW\0801F010.D

Extraction Method: METHOD
Analysis Method: 624

Level: Low
Extraction Lot: KWG1107316

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1107316-3	J:\MS23\DATA\080111BAYW\0801F006.D	08/01/11	13:28
Fridout 173AMS	KWG1107316-1	J:\MS23\DATA\080111BAYW\0801F007.D	08/01/11	14:02
Fridout 173ADMS	KWG1107316-2	J:\MS23\DATA\080111BAYW\0801F008.D	08/01/11	14:33
Fridout 173A	K1106869-001	J:\MS23\DATA\080111BAYW\0801F011.D	08/01/11	16:05
Fridout 173B	K1106869-002	J:\MS23\DATA\080111BAYW\0801F014.D	08/01/11	17:37
Fridin Air 84A	K1106869-003	J:\MS23\DATA\080111BAYW\0801F015.D	08/01/11	18:08
Frideff Air 86A	K1106869-004	J:\MS23\DATA\080111BAYW\0801F016.D	08/01/11	18:38
Trip Blank	K1106869-005	J:\MS23\DATA\080111BAYW\0801F017.D	08/01/11	19:09

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1106869
Date Extracted: 08/05/2011
Date Analyzed: 08/05/2011
Time Analyzed: 13:03

Method Blank Summary
Volatile Organic Compounds

Sample Name: Method Blank
Lab Code: KWG1107578-4

Instrument ID: MS23
File ID: J:\MS23\DATA\080511BAYW\0805F009.D

Extraction Method: METHOD
Analysis Method: 624

Level: Low
Extraction Lot: KWG1107578

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1107578-3	J:\MS23\DATA\080511BAYW\0805F005.D	08/05/11	10:40
Fridin Air 84ADL	K1106869-003	J:\MS23\DATA\080511BAYW\0805F017.D	08/05/11	17:10

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1106869
Project:	NIROP/J070047	**Date Extracted:**	08/01/2011
Sample Matrix:	Water	**Date Analyzed:**	08/01/2011
		Time Analyzed:	13:28

Lab Control Sample Summary
Volatile Organic Compounds

Sample Name:	Lab Control Sample	**Instrument ID:**	MS23
Lab Code:	KWG1107316-3	**File ID:**	J:\MS23\DATA\080111BAYW\0801F006.D
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	624	**Extraction Lot:**	KWG1107316

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Fridout 173AMS	KWG1107316-1	J:\MS23\DATA\080111BAYW\0801F007.D	08/01/11	14:02
Fridout 173ADMS	KWG1107316-2	J:\MS23\DATA\080111BAYW\0801F008.D	08/01/11	14:33
Method Blank	KWG1107316-4	J:\MS23\DATA\080111BAYW\0801F010.D	08/01/11	15:34
Fridout 173A	K1106869-001	J:\MS23\DATA\080111BAYW\0801F011.D	08/01/11	16:05
Fridout 173B	K1106869-002	J:\MS23\DATA\080111BAYW\0801F014.D	08/01/11	17:37
Fridin Air 84A	K1106869-003	J:\MS23\DATA\080111BAYW\0801F015.D	08/01/11	18:08
Frideff Air 86A	K1106869-004	J:\MS23\DATA\080111BAYW\0801F016.D	08/01/11	18:38
Trip Blank	K1106869-005	J:\MS23\DATA\080111BAYW\0801F017.D	08/01/11	19:09

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1106869
Project:	NIROP/J070047	**Date Extracted:**	08/05/2011
Sample Matrix:	Water	**Date Analyzed:**	08/05/2011
		Time Analyzed:	10:40

Lab Control Sample Summary
Volatile Organic Compounds

Sample Name:	Lab Control Sample	**Instrument ID:**	MS23
Lab Code:	KWG1107578-3	**File ID:**	J:\MS23\DATA\080511BAYW\0805F005.D
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	624	**Extraction Lot:**	KWG1107578

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1107578-4	J:\MS23\DATA\080511BAYW\0805F009.D	08/05/11	13:03
Fridin Air 84ADL	K1106869-003	J:\MS23\DATA\080511BAYW\0805F017.D	08/05/11	17:10

Organic Analysis:
Volatile Organic Compounds

Validation Package

Raw Data

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1106869
Project:	NIROP/J070047	**Date Collected:**	07/27/2011
Sample Matrix:	Water	**Date Received:**	07/28/2011
		Date Extracted:	08/01/2011
		Date Analyzed:	08/01/2011

Volatile Organic Compounds

Sample Name:	Fridout 173A	**Units:**	ug/L
Lab Code:	K1106869-001	**Basis:**	NA
File ID:	J:\MS23\DATA\080111BAYW\0801F011.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1107316
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.053	U	0.25	0.053	
75-35-4	1,1-Dichloroethene	0.37	U	0.50	0.37	
156-60-5	trans-1,2-Dichloroethene	**0.090**	J	0.50	0.039	
75-34-3	1,1-Dichloroethane	0.041	U	0.50	0.041	
156-59-2	cis-1,2-Dichloroethene	**0.50**		0.50	0.042	
71-55-6	1,1,1-Trichloroethane (TCA)	0.044	U	0.50	0.044	
79-01-6	Trichloroethene (TCE)	**1.4**		0.50	0.044	
127-18-4	Tetrachloroethene (PCE)	0.043	U	0.50	0.043	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	108	61-121	08/01/11	Acceptable
Toluene-d8	99	72-122	08/01/11	Acceptable
4-Bromofluorobenzene	90	70-120	08/01/11	Acceptable

Comments:

Exception Report

Data File: J:\MS23\DATA\080111BAYW\0801F011.D
Lab ID: K1106869-001
RunType: SMPL
Matrix: WATER

Date Acquired: 08/01/2011 16:05
Date Quantitated: 08/02/2011 10:18
Batch ID: KWG1107315
Analysis Method: 624
ListJoinID: LJ12964

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
Preparation Holding Time	NA	NA	NA	x	
Pre-Preparation Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Method Blank	NA	NA	NA	x	
MB Surrogate Recovery	NA	NA	NA	x	
Lab Control Spike	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA		x
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Analyte Exceptions

Exception Categories	Analyte Name	Result	Low Limit	High Limit	Corrective Action
Std MRL Unsupported by ICAL	Vinyl Chloride	0.25	0.20	NA	T mu

Primary Review: KR 8/4/11

Secondary Review: HB 8-2-11

Printed: 08/02/2011 11:09:47
u:\Stealth\Crystal.rpt\except2.rpt

Quantitation Report

Data File:	J:\MS23\DATA\080111BAYW\0801F011.D			**Instrument:**	MS23
Acqu Date:	08/01/2011 16:05	**Quant Date:**	08/02/2011 10:18	**Vial:**	8
Run Type:	SMPL			**Dilution:**	1.0
Lab ID:	K1106869-001			**Soln Conc. Units:**	PPB

Bottle ID:		**Tier:**	V	**Matrix:**	WATER
Prod Code:	624 Modified VO	**Collect Date:**	07/27/2011	**Receive Date:**	07/28/2011

Analysis Lot:	KWG1107315	**Prep Lot:**	KWG1107316	**Report Group:**	K1106869
Analysis Method:	624	**Prep Method:**	METHOD		
		Prep Date:	08/01/2011		
Prep Ref:	1041363				

Quant Method:	J:\MS23\METHODS\032911624BAY	**Calibration ID:**	CAL10443
Title:	Volatile Organic Compounds	**Report List ID:**	LJ12964
Tune Ref:	J:\MS23\DATA\080111BAYW\0801F003.D	**Method ID:**	MJ158
MB Ref:	J:\MS23\DATA\080111BAYW\0801F010.D	**Quant based on Report List**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	Fluorobenzene	5.94	0.00	96	657022	10.00	OK
2	Chlorobenzene-d5	9.35	0.01	82	269874	10.00	OK
3	1,4-Dichlorobenzene-d4	11.75	0.00	152	228131	10.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	Dibromofluoromethane	5.12	0.00	0.00	113	153576	10.81	108	61-121 OK	
1	Toluene-d8	7.77	0.00	0.00	98	614172	9.89	99	72-122 OK	
2	4-Bromofluorobenzene	10.58	0.00	0.00	95	200709	9.03	90	70-120 OK	

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	Vinyl Chloride				62	0		0.053	U	
1	1,1-Dichloroethene				96	0d		0.37	U	
1	trans-1,2-Dichloroethene	3.20		0.00	96	1491	0.0900	0.090	J	
1	1,1-Dichloroethane				63	0		0.041	U	
1	cis-1,2-Dichloroethene	4.45		0.00	96	8877	0.5000	0.50		
1	1,1,1-Trichloroethane (TCA)				97	0		0.044	U	
1	Trichloroethene (TCE)	6.37		0.00	95	24021	1.38	1.4		
2	Tetrachloroethene (PCE)				164	0		0.043	U	

Prep Amount:	10 ml	**Dilution:**	1.0
Prep Final Vol:	10 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\080111BAYW\0801F011.D
Acq On : 1 Aug 2011 4:05 pm
Sample : K6869-001
Misc :
MS Integration Params: rteint.p
Quant Time: Aug 02 10:17:13 2011

Vial: 8
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624BAYW.R

Quant Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Aug 02 10:17:07 2011
Response via : Initial Calibration
DataAcq Meth : 8260

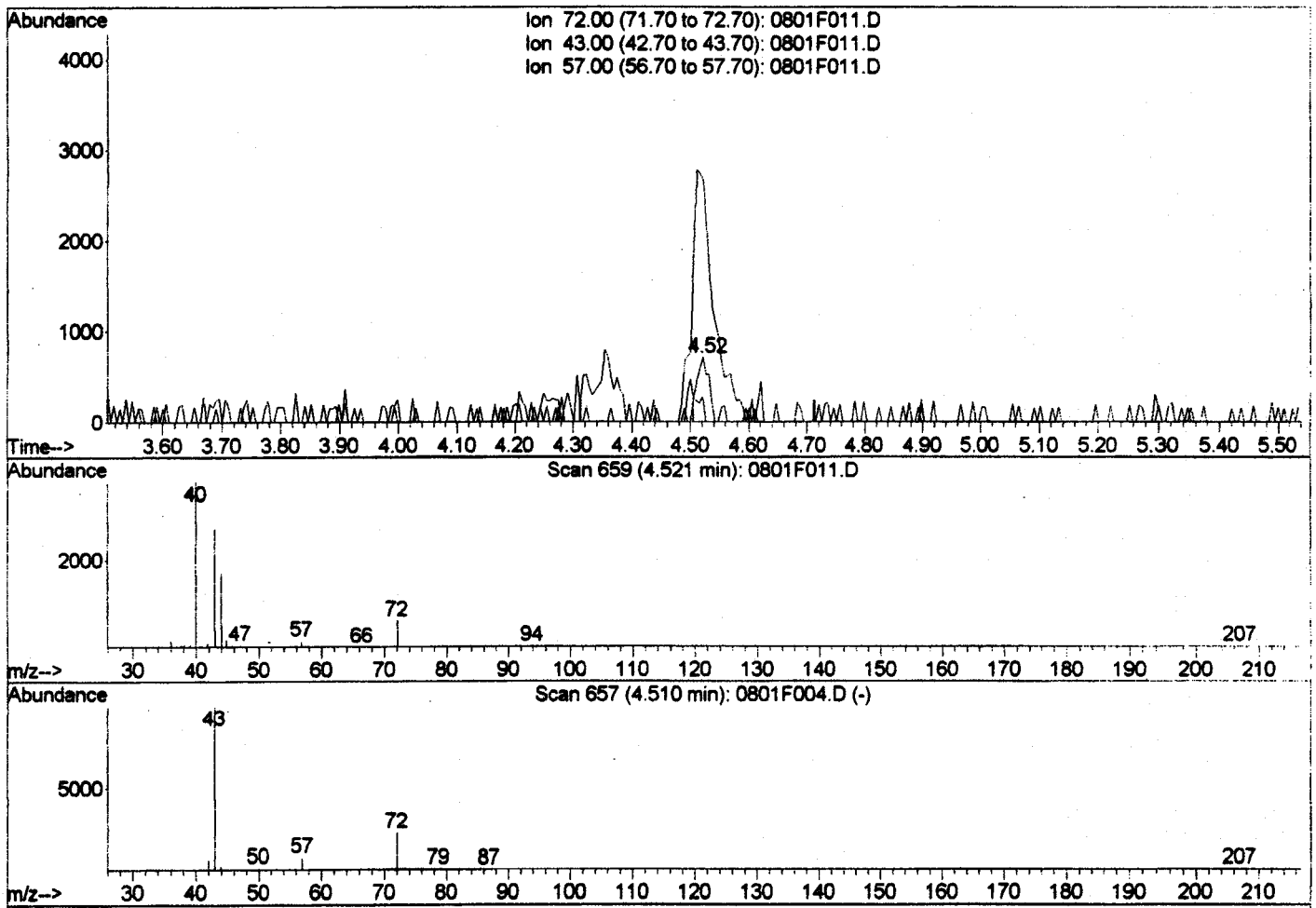
Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Fluorobenzene	5.94	96	657022	10.00	PPB		0.00
35) Chlorobenzene-d5	9.35	82	269874	10.00	PPB		0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	228131	10.00	PPB		0.00
System Monitoring Compounds							
22) Dibromofluoromethane	5.12	113	153576	10.81	PPB		0.00
Spiked Amount 10.000			Recovery	=	108.10%		
24) 1,2-Dichloroethane-d4	5.59	65	182379	10.21	PPB		0.00
Spiked Amount 10.000			Recovery	=	102.10%		
33) Toluene-d8	7.77	98	614172	9.89	PPB		0.00
Spiked Amount 10.000			Recovery	=	98.90%		
47) 4-Bromofluorobenzene	10.58	95	200709	9.03	PPB		0.00
Spiked Amount 10.000			Recovery	=	90.30%		
Target Compounds							Qvalue
3) Chloromethane	1.36	50	1047	0.03	PPB		89
11) Acetone	2.55	43	27662	11.09	PPB		97
13) Methylene Chloride	2.97	84	887	0.05	PPB	#	58
15) trans-1,2-Dichloroethene	3.20	96	1491	0.09	PPB	#	50
18) cis-1,2-Dichloroethene	4.45	96	8877	0.50	PPB		84
19) 2-Butanone	4.52	72	1278m	1.75	PPB		
25) Benzene	5.55	78	768	0.01	PPB	#	1
27) Trichloroethene	6.37	95	24021	1.38	PPB		94
34) Toluene	7.85	92	36645	0.85	PPB		85
41) Chlorobenzene	9.37	112	622	0.01	PPB		70
43) m,p-Xylenes	9.59	106	1314	0.04	PPB	#	52
51) 1,3-Dichlorobenzene	11.69	146	474m	0.01	PPB		
52) 1,4-Dichlorobenzene	11.78	146	652	0.02	PPB		81

(#) = qualifier out of range (m) = manual integration

Quantitation Report (Qedit)

Data File : J:\MS23\DATA\080111BAYW\0801F011.D Vial: 8
Acq On : 1 Aug 2011 4:05 pm Operator: KR
Sample : K6869-001 Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Aug 2 10:17 2011 Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Aug 02 10:17:07 2011
Response via : Multiple Level Calibration



TIC: 0801F011.D

(19) 2-Butanone (T)

4.52min 1.30PPB

response 947

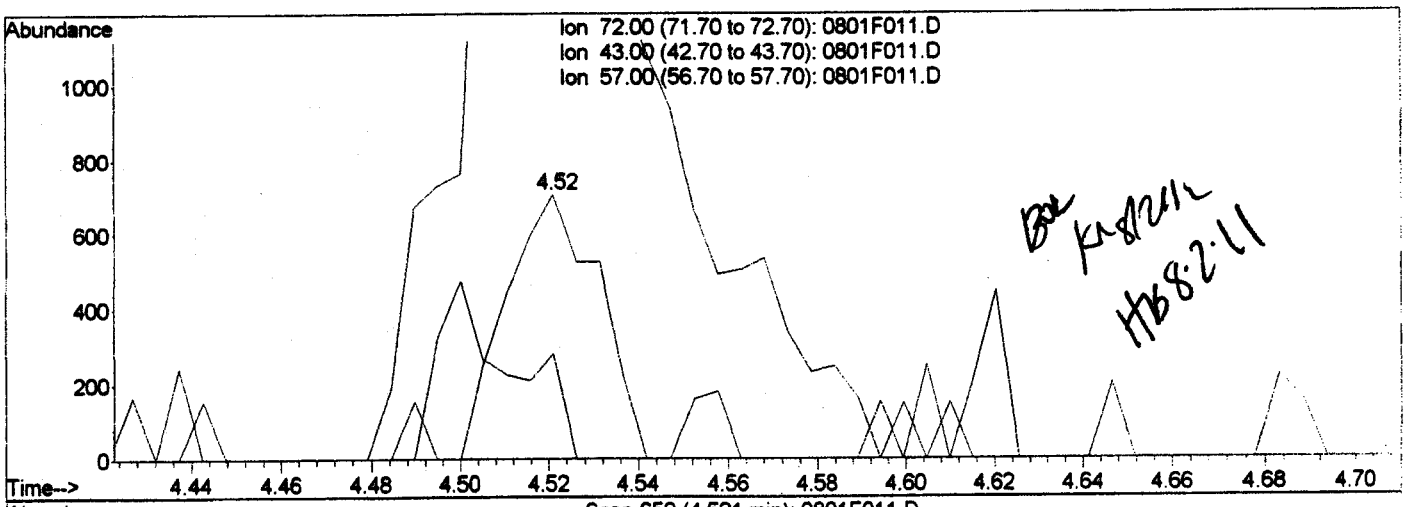
Ion	Exp%	Act%
72.00	100	100
43.00	491.90	223.48#
57.00	35.80	39.75
0.00	0.00	0.00

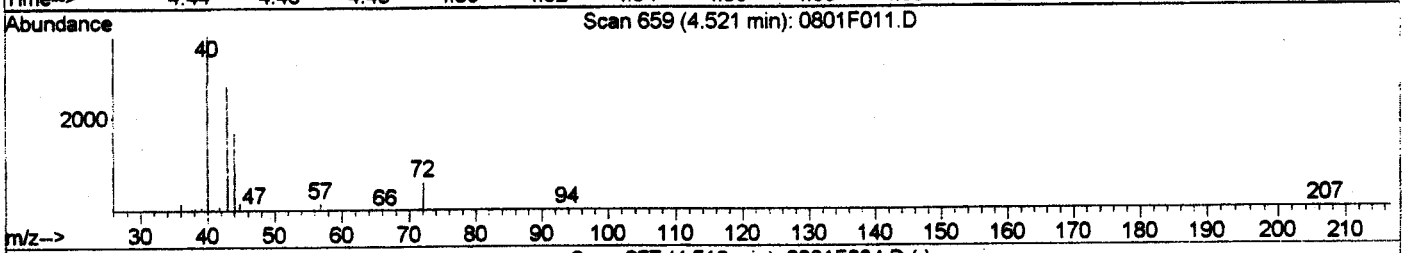
Quantitation Report (Qedit)

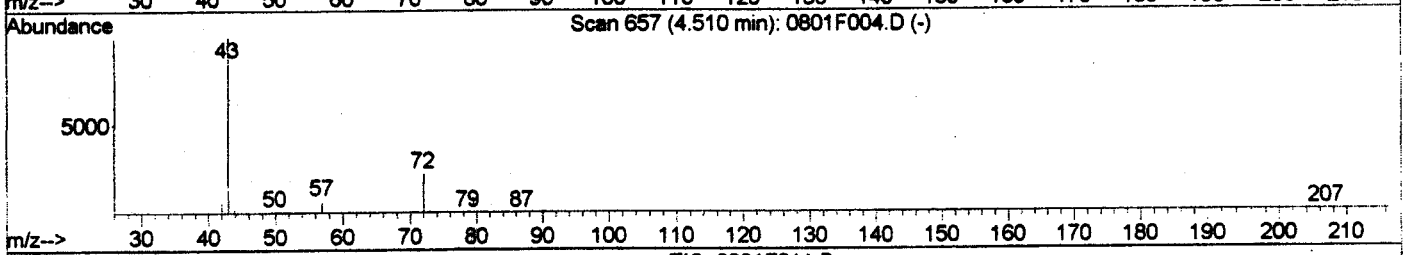
Data File : J:\MS23\DATA\080111BAYW\0801F011.D
Acq On : 1 Aug 2011 4:05 pm
Sample : K6869-001
Misc :
MS Integration Params: rteint.p
Quant Time: Aug 2 10:17 2011

Vial: 8
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Aug 02 10:17:07 2011
Response via : Multiple Level Calibration







TIC: 0801F011.D

(19) 2-Butanone (T)

4.52min 1.75PPB m

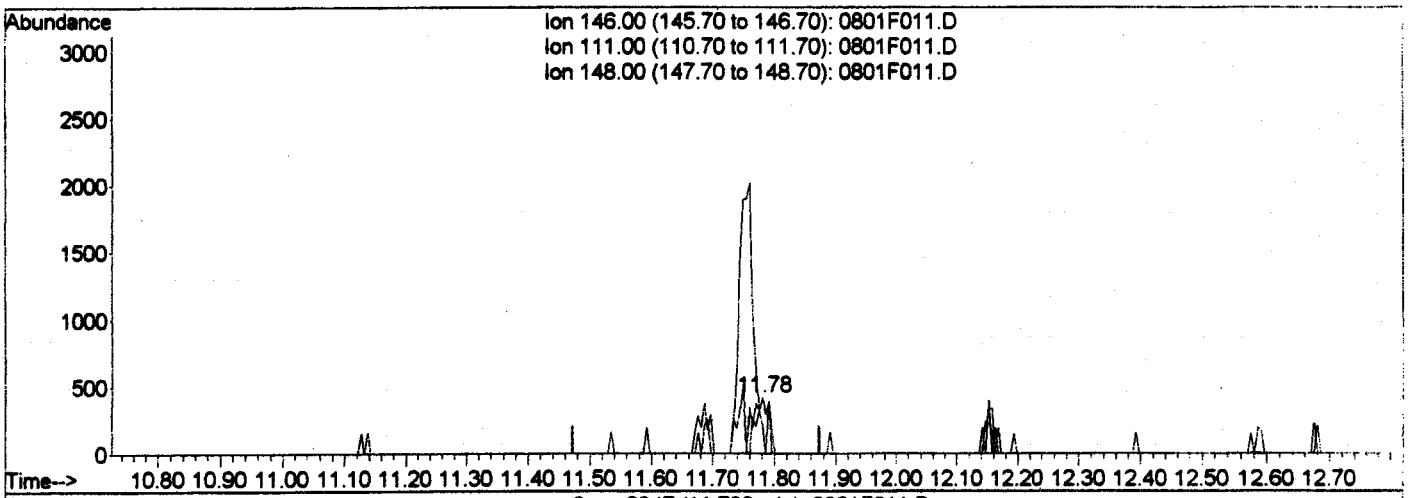
response 1278

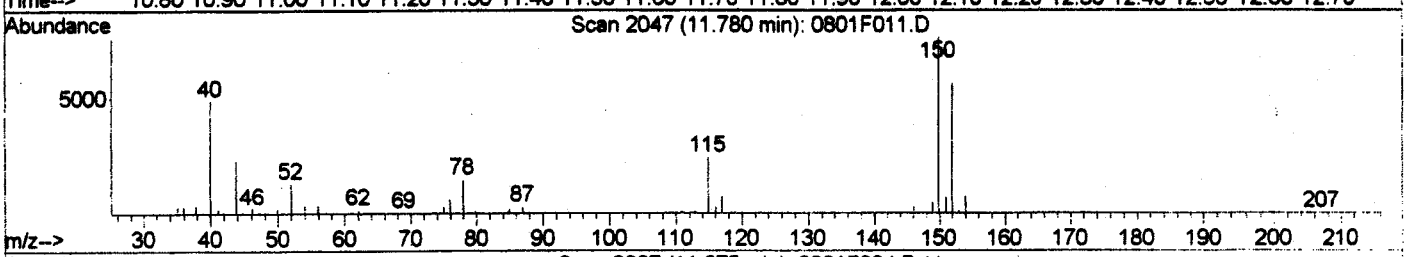
Ion	Exp%	Act%
72.00	100	100
43.00	491.90	377.93#
57.00	35.80	39.75
0.00	0.00	0.00

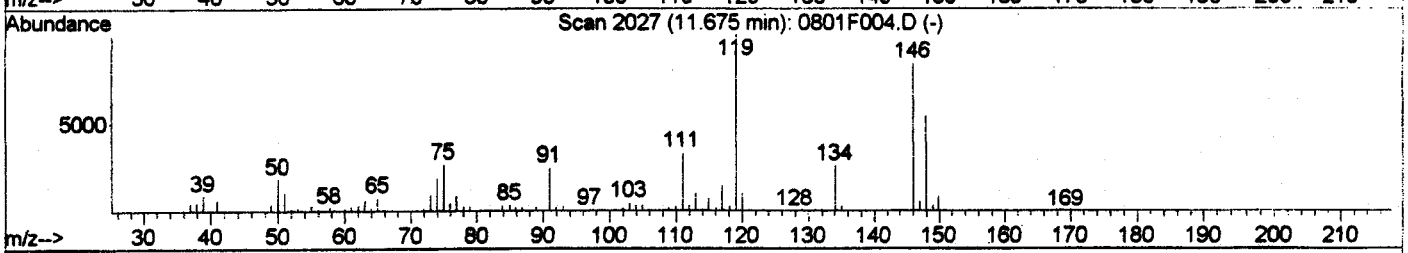
Quantitation Report (Qedit)

Data File : J:\MS23\DATA\080111BAYW\0801F011.D Vial: 8
Acq On : 1 Aug 2011 4:05 pm Operator: KR
Sample : K6869-001 Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Aug 2 10:17 2011 Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Aug 02 10:17:07 2011
Response via : Multiple Level Calibration







TIC: 0801F011.D

(51) 1,3-Dichlorobenzene (T)

11.78min 0.02PPB

response 652

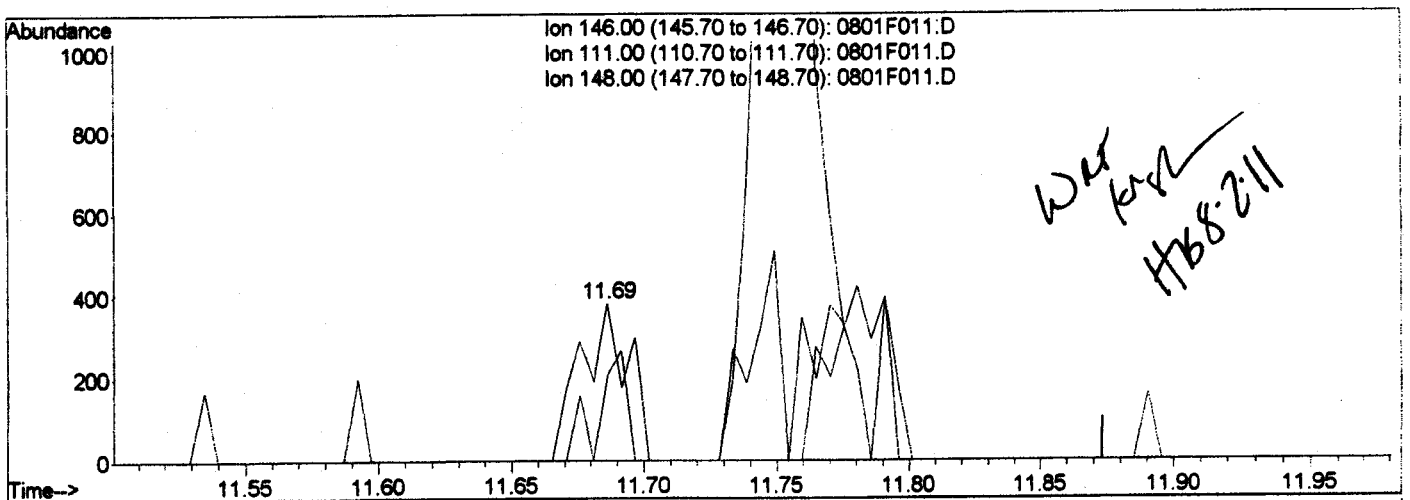
Ion	Exp%	Act%
146.00	100	100
111.00	41.60	51.42
148.00	62.40	51.18
0.00	0.00	0.00

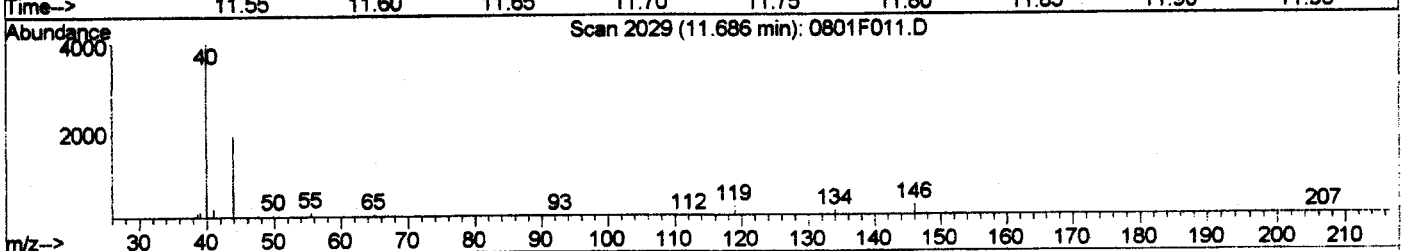
Quantitation Report (Qedit)

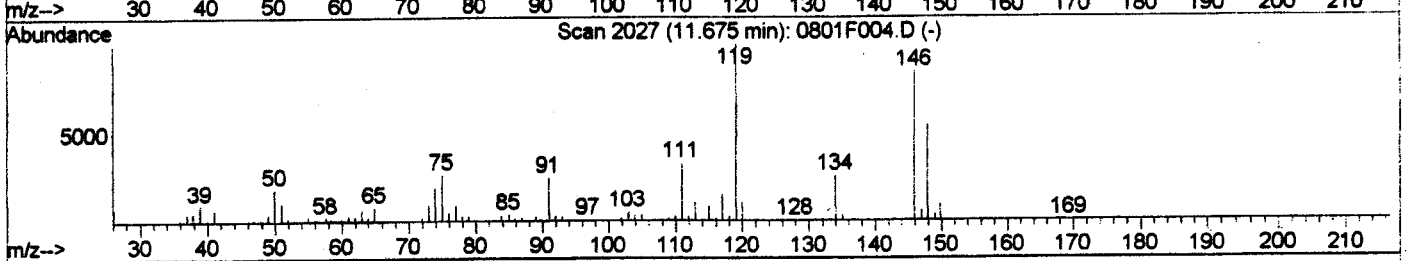
Data File : J:\MS23\DATA\080111BAYW\0801F011.D
Acq On : 1 Aug 2011 4:05 pm
Sample : K6869-001
Misc :
MS Integration Params: rteint.p
Quant Time: Aug 2 10:18 2011

Vial: 8
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Aug 02 10:17:07 2011
Response via : Multiple Level Calibration







TIC: 0801F011.D

(51) 1,3-Dichlorobenzene (T)

11.69min 0.01PPB m

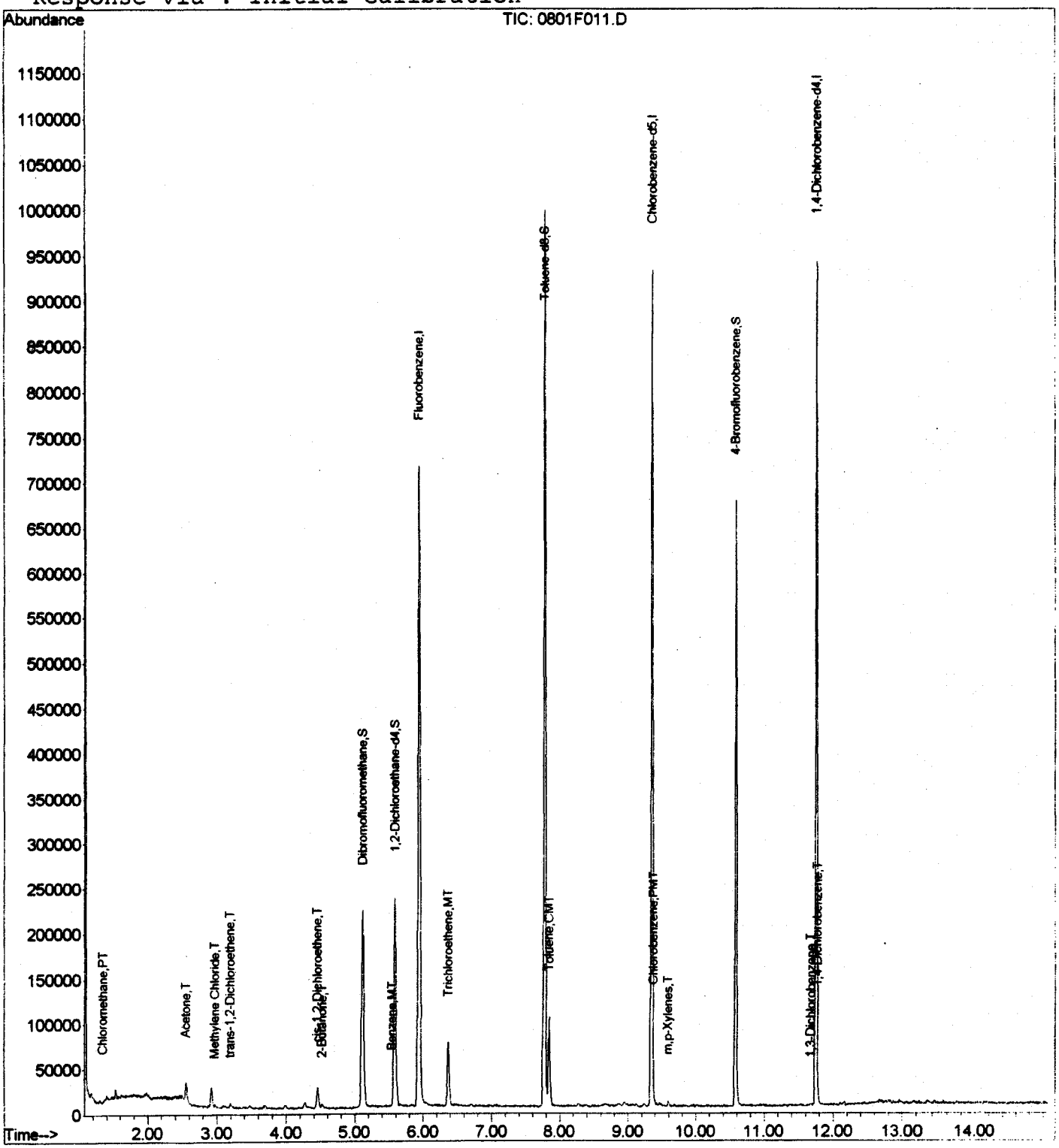
response 474

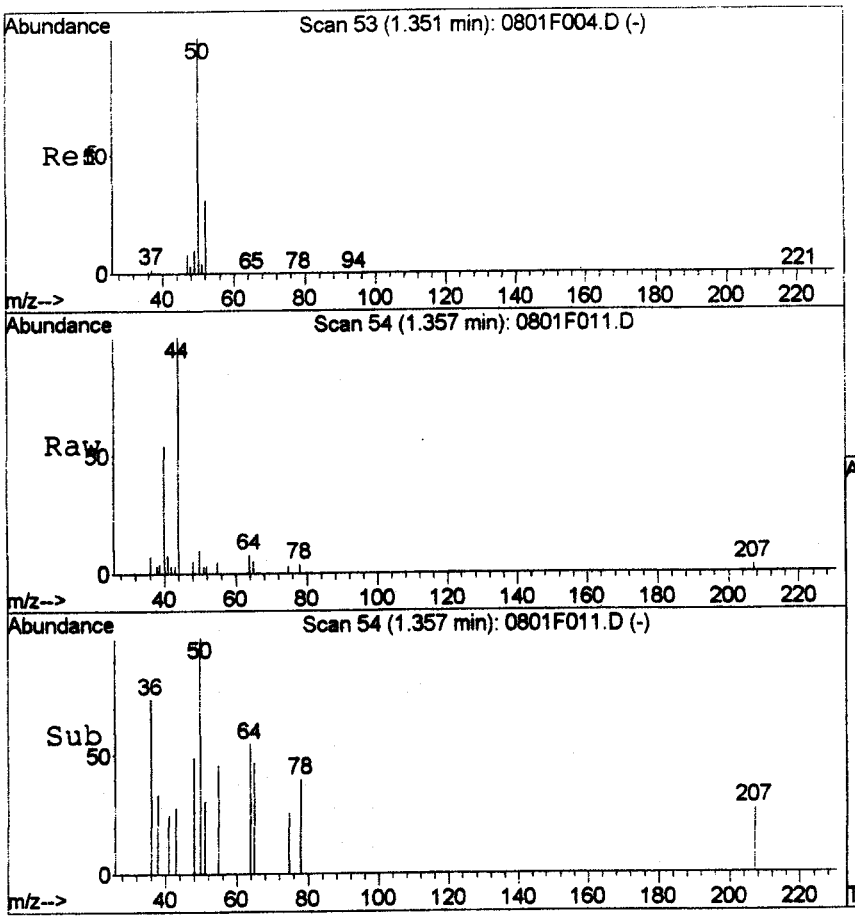
Ion	Exp%	Act%
146.00	100	100
111.00	41.60	0.00#
148.00	62.40	53.79
0.00	0.00	0.00

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\080111BAYW\0801F011.D Vial: 8
Acq On : 1 Aug 2011 4:05 pm Operator: KR
Sample : K6869-001 Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Aug 2 10:18 2011 Quant Results File: 032911624BAY

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Aug 02 10:17:07 2011
Response via : Initial Calibration

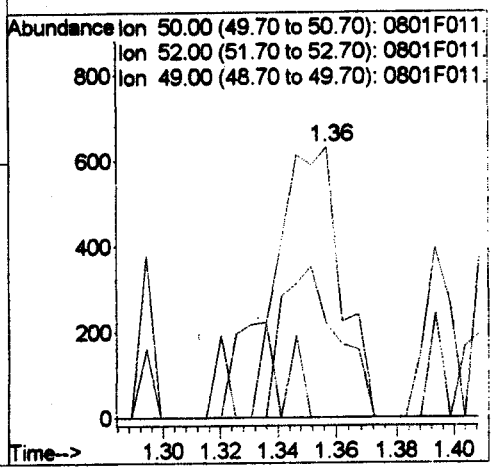


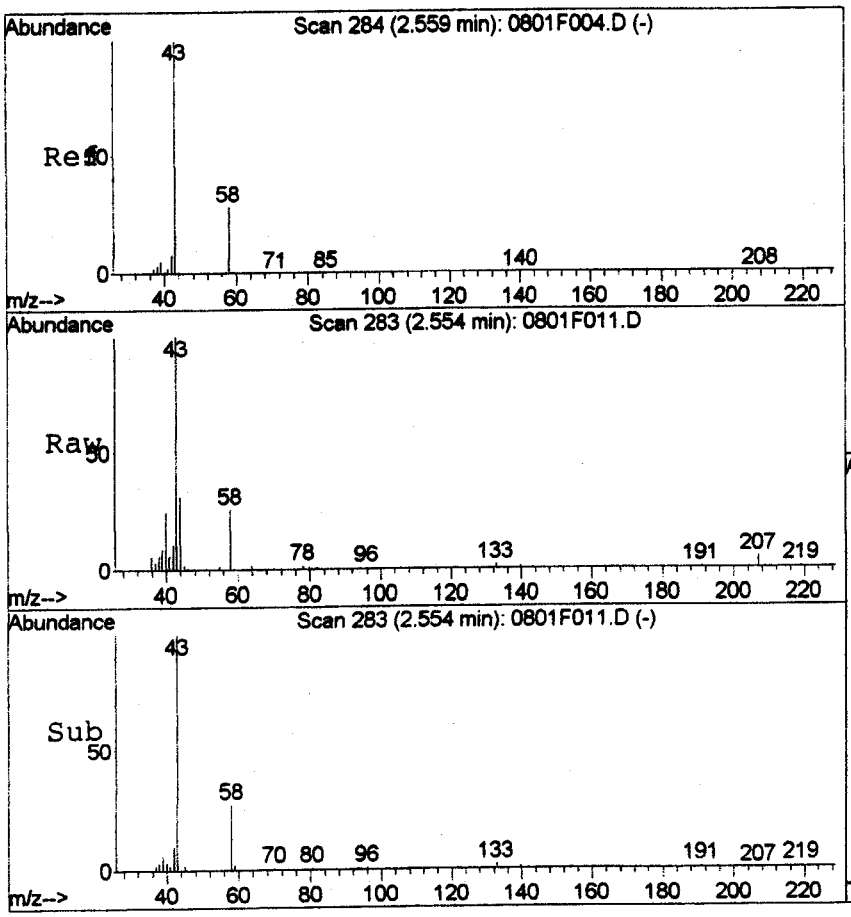


#3
Chloromethane
Concen: 0.03 PPB
RT: 1.36 min Scan# 54
Delta R.T. -0.00 min
Lab File: 0801F011.D
Acq: 1 Aug 2011 4:05 pm

Tgt Ion: 50 Resp: 1047

Ion	Ratio	Lower	Upper
50	100		
52	34.3	1.3	61.3
49	0.0	0.0	40.2

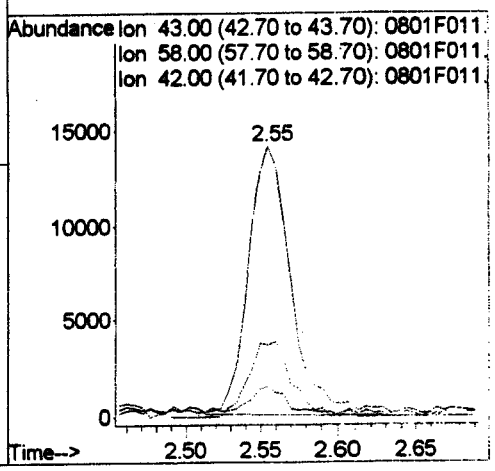


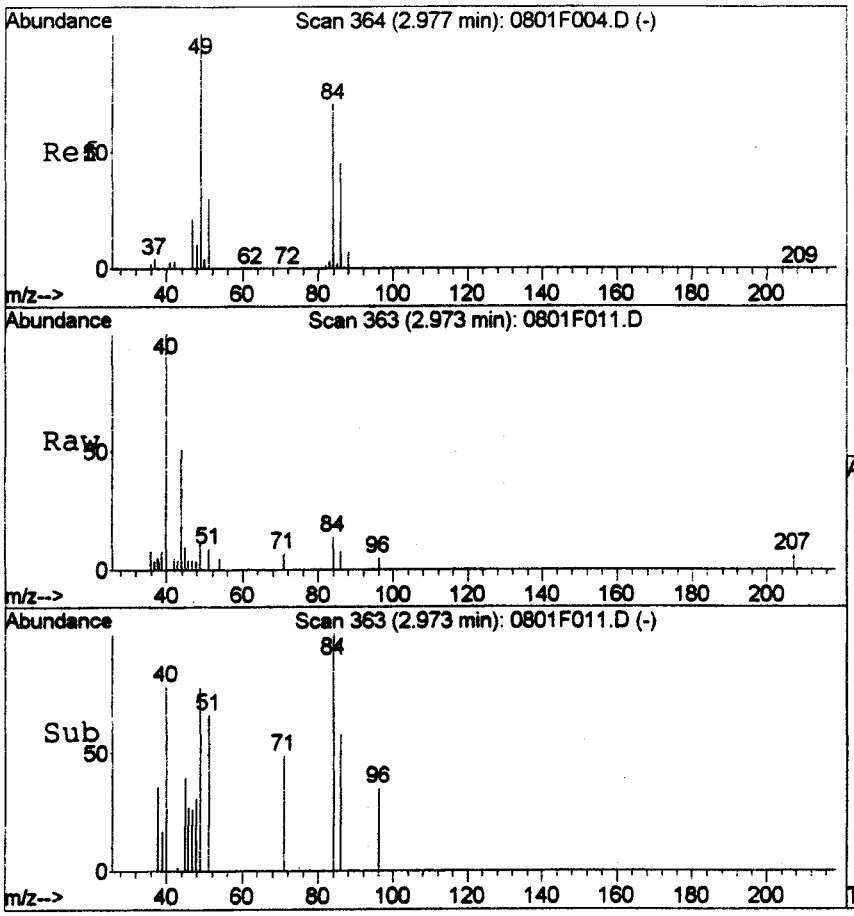


#11
Acetone
Concen: 11.09 PPB
RT: 2.55 min Scan# 283
Delta R.T. -0.01 min
Lab File: 0801F011.D
Acq: 1 Aug 2011 4:05 pm

Tgt Ion: 43 Resp: 27662

Ion	Ratio	Lower	Upper
43	100		
58	26.5	0.0	56.9
42	10.9	0.0	37.5

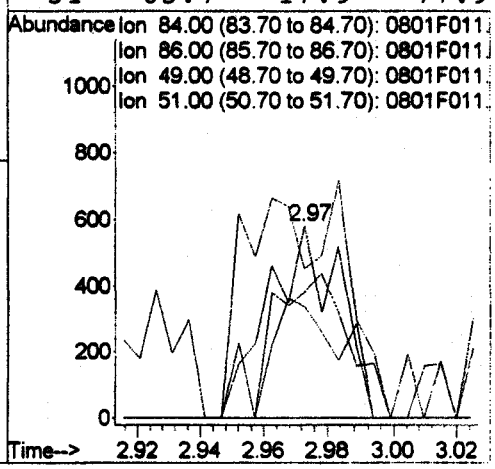


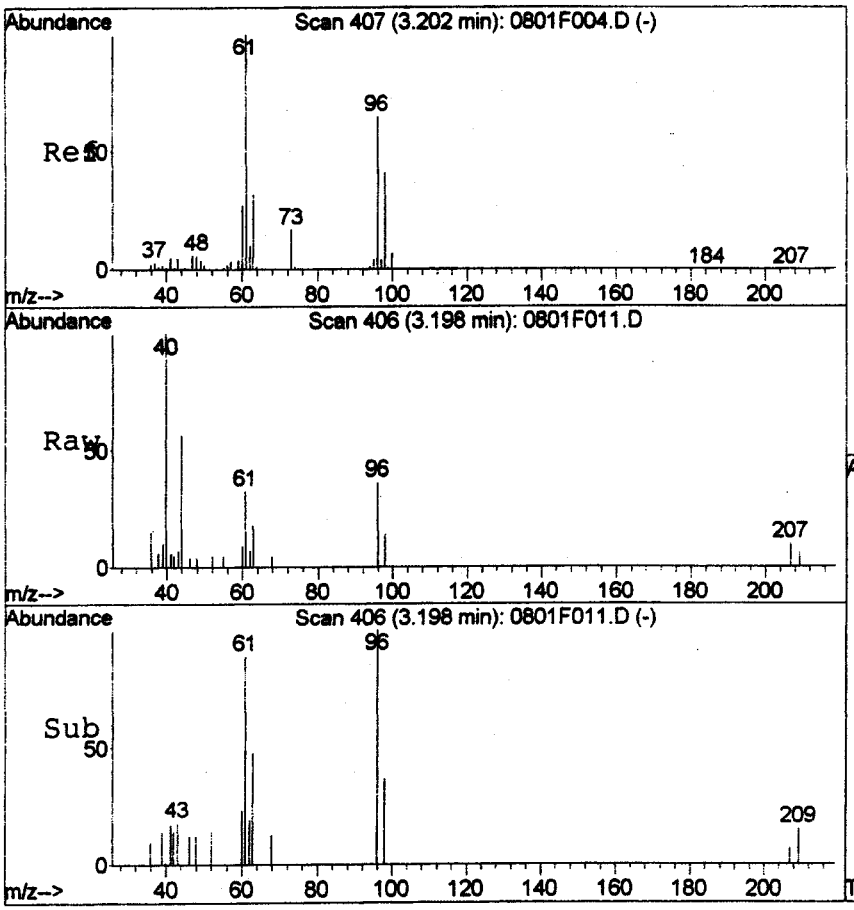


#13
Methylene Chloride
Concen: 0.05 PPB
RT: 2.97 min Scan# 363
Delta R.T. -0.01 min
Lab File: 0801F011.D
Acq: 1 Aug 2011 4:05 pm

Tgt Ion: 84 Resp: 887

Ion	Ratio	Lower	Upper
84	100		
86	57.8	31.9	91.9
49	77.6	127.1	187.1#
51	65.7	17.9	77.9

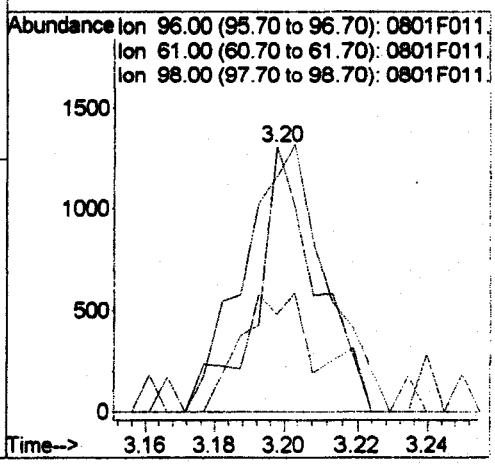


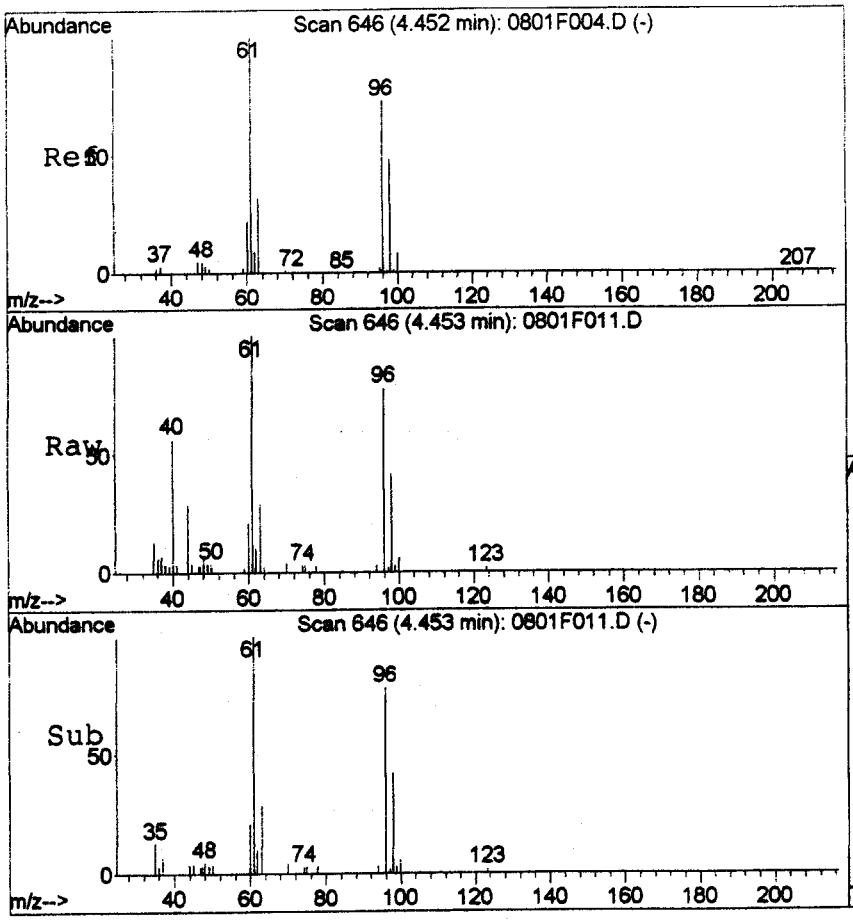


#15
trans-1,2-Dichloroethene
Concen: 0.09 PPB
RT: 3.20 min Scan# 406
Delta R.T. -0.01 min
Lab File: 0801F011.D
Acq: 1 Aug 2011 4:05 pm

Tgt Ion: 96 Resp: 1491

Ion	Ratio	Lower	Upper
96	100		
61	88.6	135.0	195.0#
98	36.9	30.1	90.1

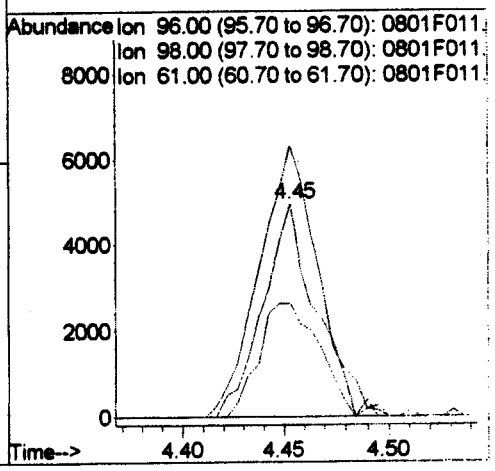


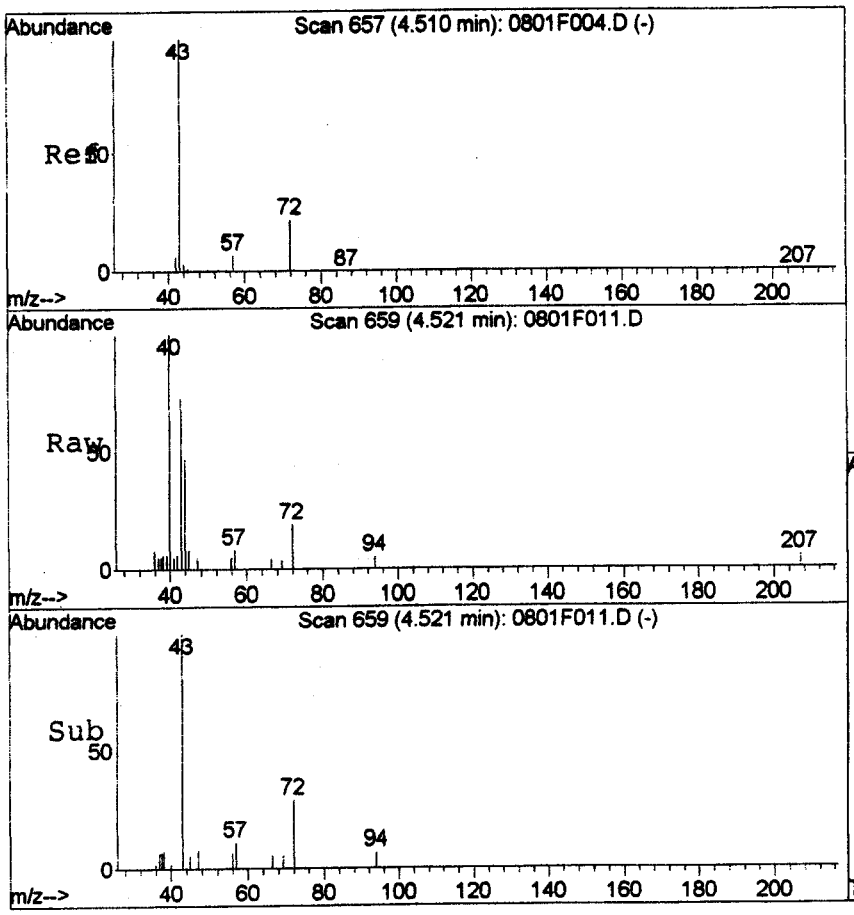


#18
cis-1,2-Dichloroethene
Concen: 0.50 PPB
RT: 4.45 min Scan# 646
Delta R.T. -0.01 min
Lab File: 0801F011.D
Acq: 1 Aug 2011 4:05 pm

Tgt Ion: 96 Resp: 8877

Ion	Ratio	Lower	Upper
96	100		
98	53.1	33.6	93.6
61	127.4	119.9	179.9

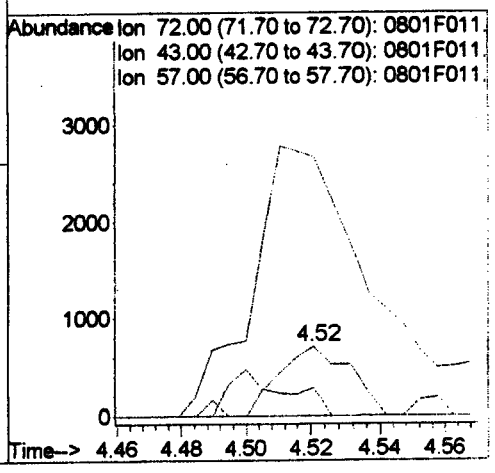


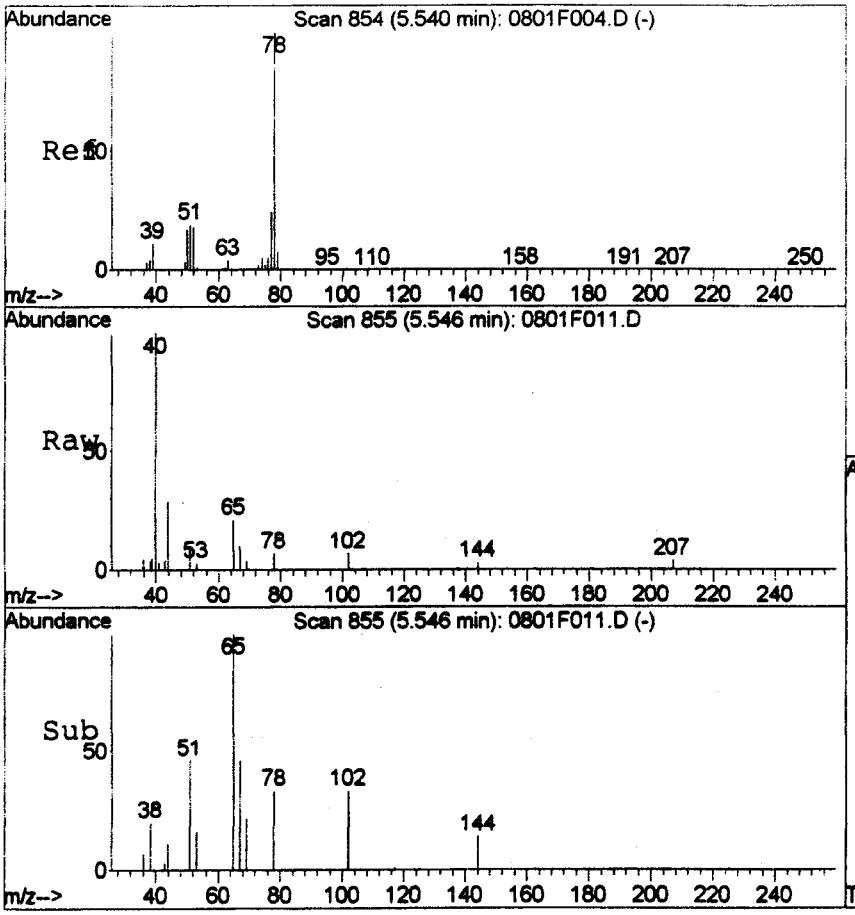


#19
2-Butanone
Concen: 1.75 PPB m
RT: 4.52 min Scan# 659
Delta R.T. 0.01 min
Lab File: 0801F011.D
Acq: 1 Aug 2011 4:05 pm

Tgt Ion: 72 Resp: 1278

Ion	Ratio	Lower	Upper
72	100		
43	377.9	461.9	521.9#
57	39.7	5.8	65.8

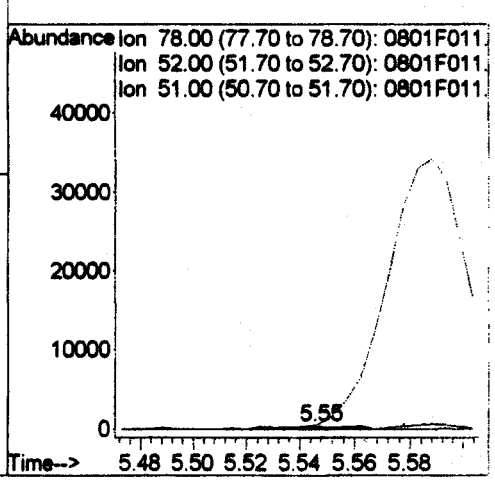


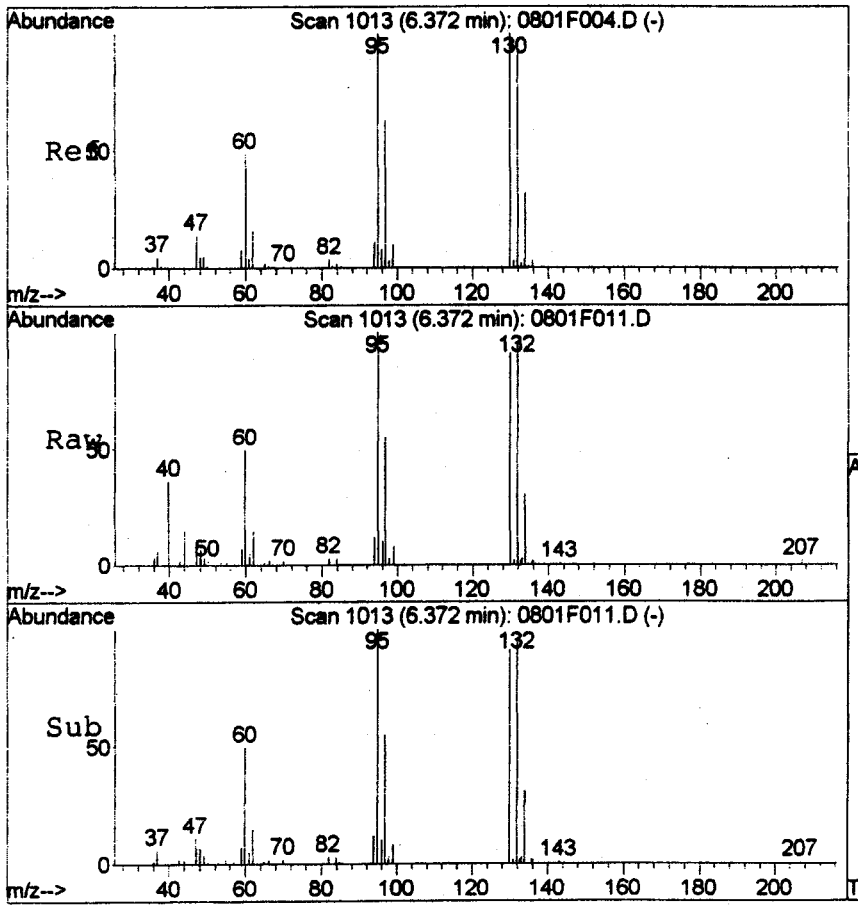


#25
Benzene
Concen: 0.01 PPB
RT: 5.55 min Scan# 855
Delta R.T. 0.01 min
Lab File: 0801F011.D
Acq: 1 Aug 2011 4:05 pm

Tgt Ion: 78 Resp: 768

Ion	Ratio	Lower	Upper
78	100		
52	0.0	0.0	49.0
51	139.2	0.0	51.0#

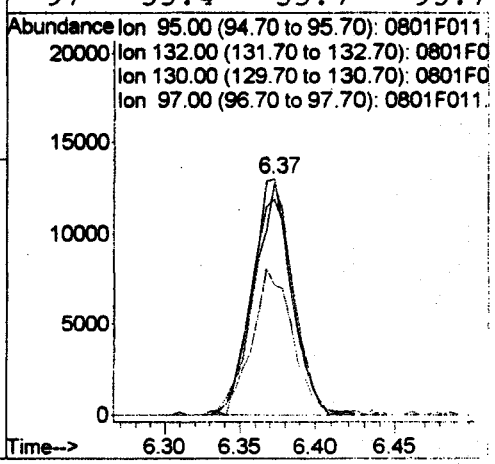


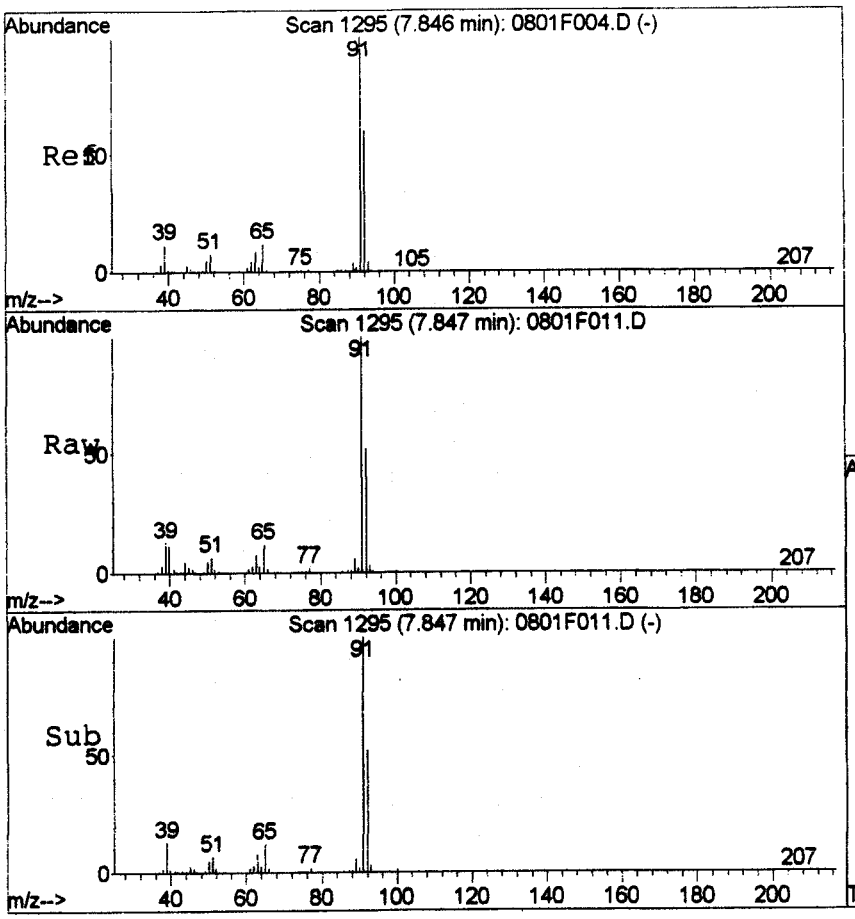


#27
Trichloroethene
Concen: 1.38 PPB
RT: 6.37 min Scan# 1013
Delta R.T. 0.00 min
Lab File: 0801F011.D
Acq: 1 Aug 2011 4:05 pm

Tgt Ion: 95 Resp: 24021

Ion	Ratio	Lower	Upper
95	100		
132	98.0	64.3	124.3
130	91.2	65.2	125.2
97	55.4	35.7	95.7

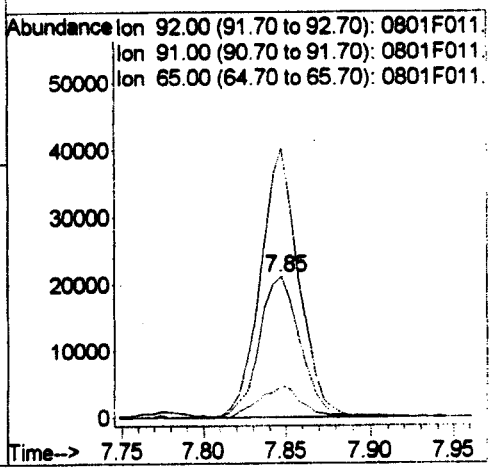


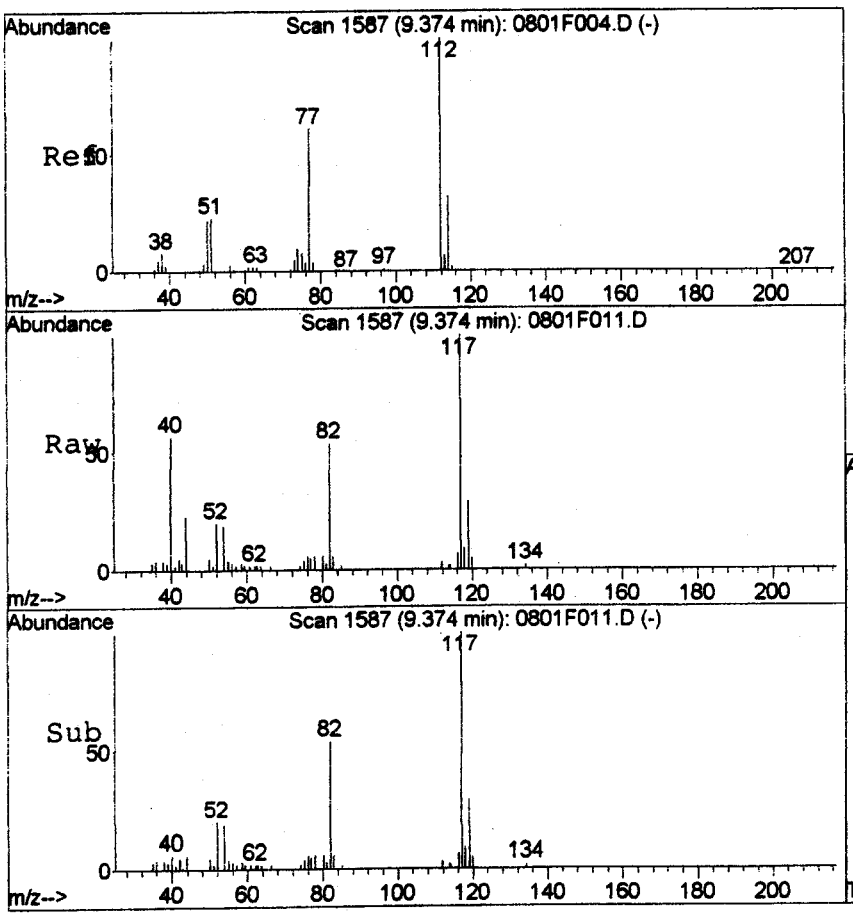


#34
Toluene
Concen: 0.85 PPB
RT: 7.85 min Scan# 1295
Delta R.T. 0.00 min
Lab File: 0801F011.D
Acq: 1 Aug 2011 4:05 pm

Tgt Ion: 92 Resp: 36645

Ion	Ratio	Lower	Upper
92	100		
91	190.5	138.1	198.1
65	22.1	0.0	51.7

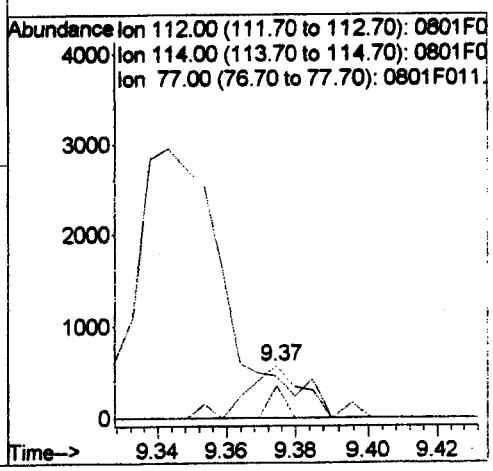


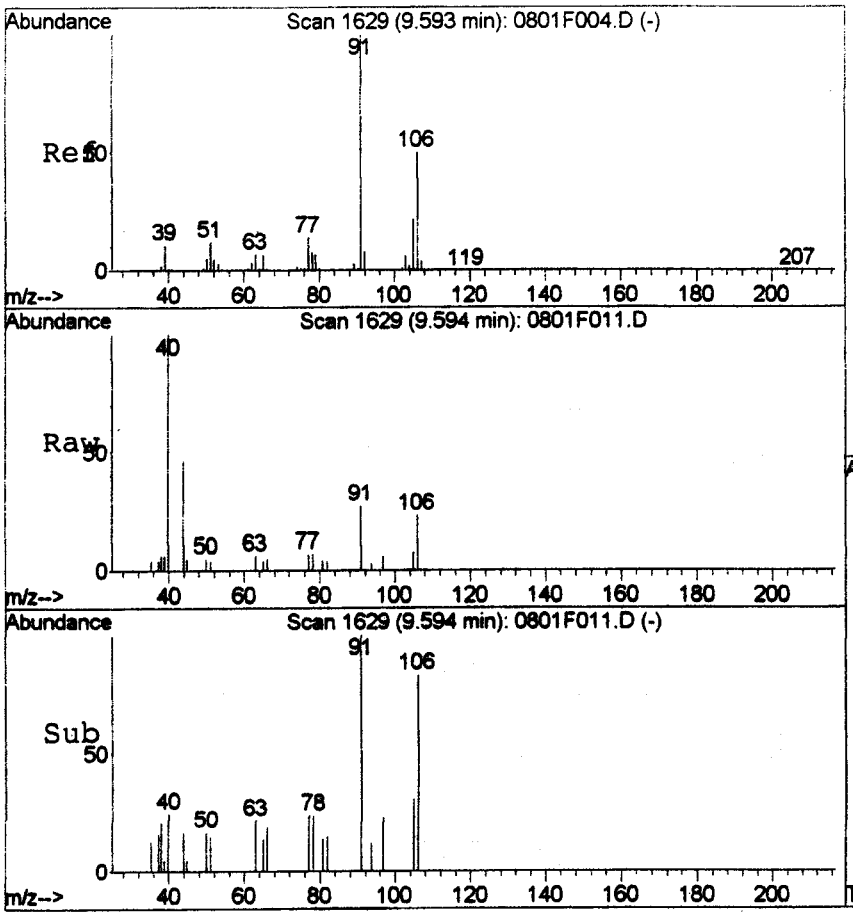


#41
Chlorobenzene
Concen: 0.01 PPB
RT: 9.37 min Scan# 1587
Delta R.T. 0.00 min
Lab File: 0801F011.D
Acq: 1 Aug 2011 4:05 pm

Tgt Ion:112 Resp: 622

Ion	Ratio	Lower	Upper
112	100		
114	59.9	2.1	62.1
77	79.7	34.3	94.3

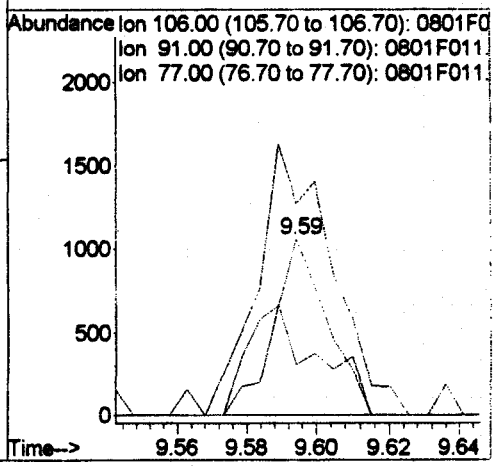


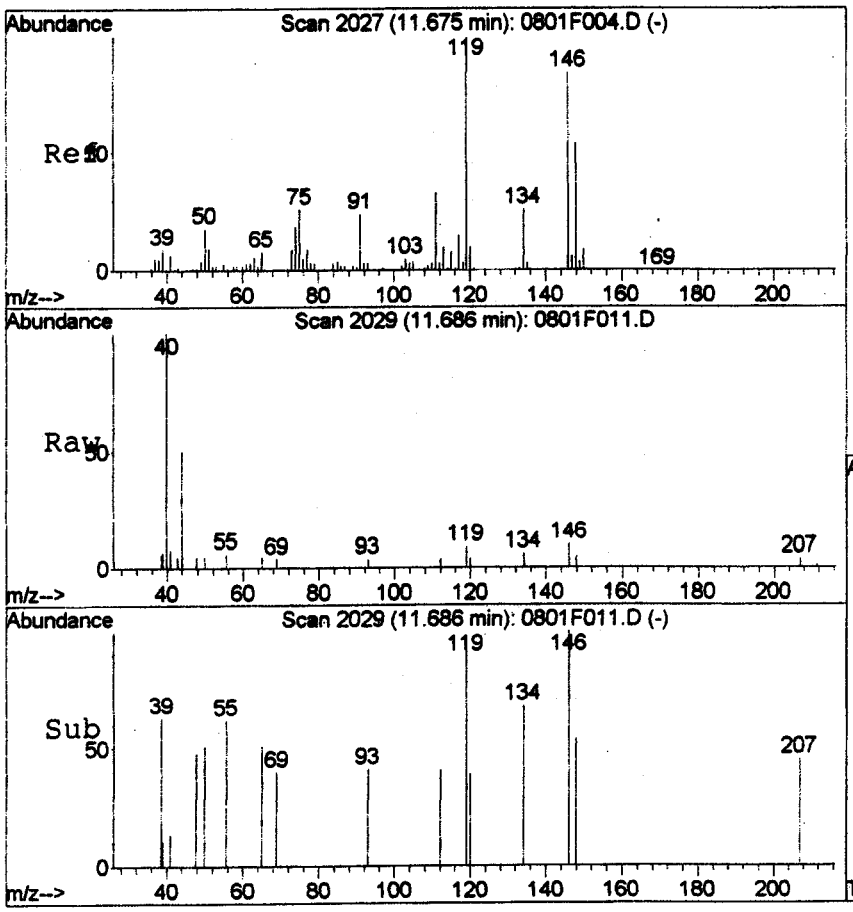


#43
m,p-Xylenes
Concen: 0.04 PPB
RT: 9.59 min Scan# 1629
Delta R.T. 0.00 min
Lab File: 0801F011.D
Acq: 1 Aug 2011 4:05 pm

Tgt Ion:106 Resp: 1314

Ion	Ratio	Lower	Upper
106	100		
91	120.4	175.3	235.3#
77	29.4	0.3	60.3

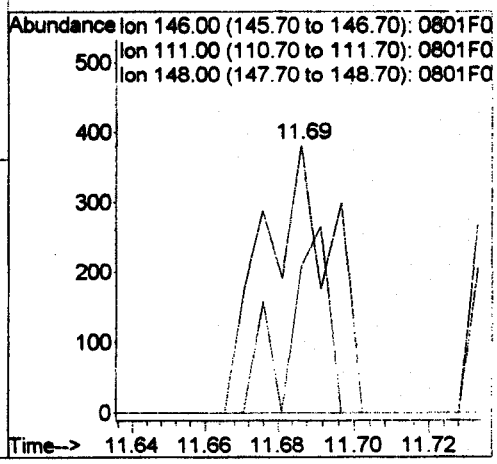


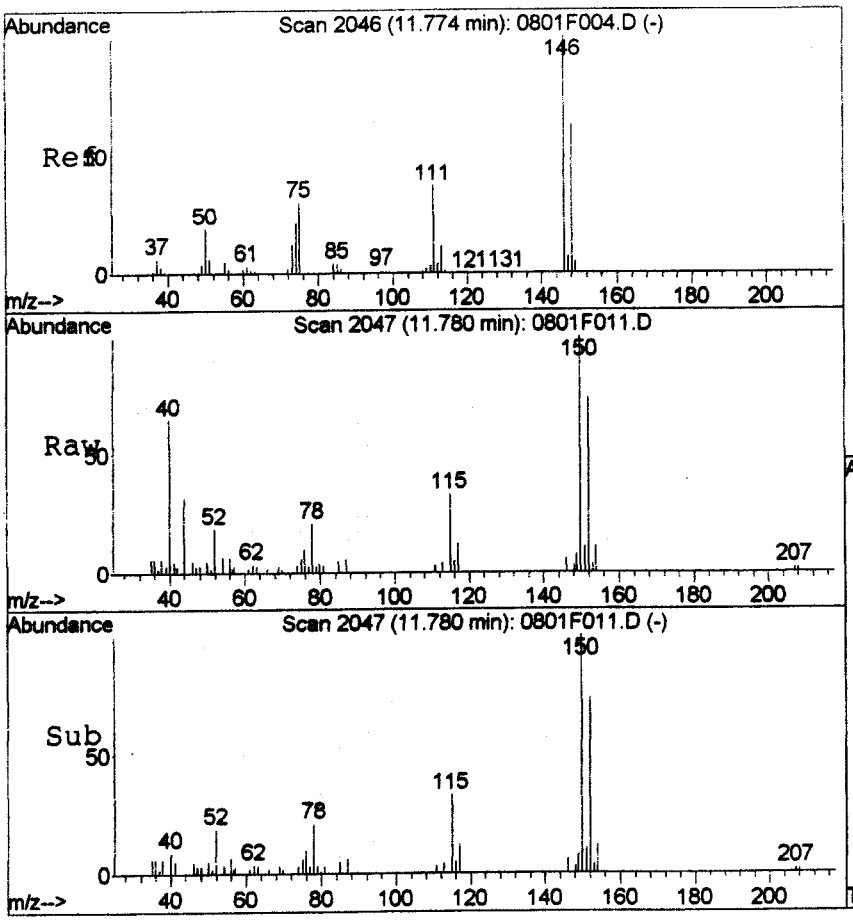


#51
1,3-Dichlorobenzene
Concen: 0.01 PPB m
RT: 11.69 min Scan# 2029
Delta R.T. 0.01 min
Lab File: 0801F011.D
Acq: 1 Aug 2011 4:05 pm

Tgt Ion:146 Resp: 474

Ion	Ratio	Lower	Upper
146	100		
111	0.0	11.6	71.6#
148	53.8	32.4	92.4

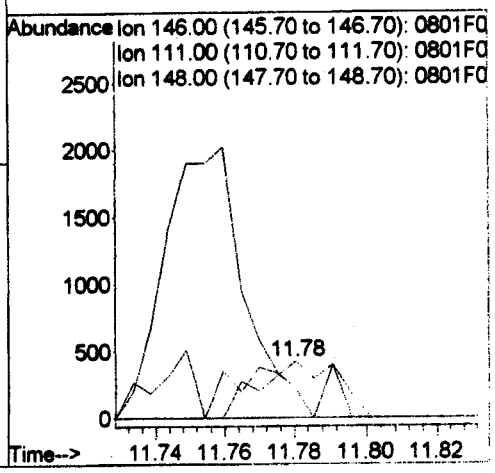




#52
1,4-Dichlorobenzene
Concen: 0.02 PPB
RT: 11.78 min Scan# 2047
Delta R.T. 0.01 min
Lab File: 0801F011.D
Acq: 1 Aug 2011 4:05 pm

Tgt Ion:146 Resp: 652

Ion	Ratio	Lower	Upper
146	100		
111	51.4	8.2	68.2
148	51.2	34.4	94.4



COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1106869
Project:	NIROP/J070047	**Date Collected:**	07/27/2011
Sample Matrix:	Water	**Date Received:**	07/28/2011
		Date Extracted:	08/01/2011
		Date Analyzed:	08/01/2011

Volatile Organic Compounds

Sample Name:	Fridout 173B	**Units:**	ug/L
Lab Code:	K1106869-002	**Basis:**	NA
File ID:	J:\MS23\DATA\080111BAYW\0801F014.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1107316
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.053	U	0.25	0.053	
75-35-4	1,1-Dichloroethene	0.37	U	0.50	0.37	
156-60-5	trans-1,2-Dichloroethene	**0.10**	J	0.50	0.039	
75-34-3	1,1-Dichloroethane	0.041	U	0.50	0.041	
156-59-2	cis-1,2-Dichloroethene	**0.55**		0.50	0.042	
71-55-6	1,1,1-Trichloroethane (TCA)	0.044	U	0.50	0.044	
79-01-6	Trichloroethene (TCE)	**1.4**		0.50	0.044	
127-18-4	Tetrachloroethene (PCE)	0.043	U	0.50	0.043	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	111	61-121	08/01/11	Acceptable
Toluene-d8	99	72-122	08/01/11	Acceptable
4-Bromofluorobenzene	91	70-120	08/01/11	Acceptable

Comments:

Exception Report

Data File: J:\MS23\DATA\080111BAYW\0801F014.D
Lab ID: K1106869-002
RunType: SMPL
Matrix: WATER

Date Acquired: 08/01/2011 17:37
Date Quantitated: 08/02/2011 10:19
Batch ID: KWG1107315
Analysis Method: 624
ListJoinID: LJ12964

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
Preparation Holding Time	NA	NA	NA	x	
Pre-Preparation Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Method Blank	NA	NA	NA	x	
MB Surrogate Recovery	NA	NA	NA	x	
Lab Control Spike	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA		x
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Analyte Exceptions

Exception Categories	Analyte Name	Result	Low Limit	High Limit	Corrective Action
Std MRL Unsupported by ICAL	Vinyl Chloride	0.25	0.20	NA	↑ max

Primary Review: KT 8/11/11

Secondary Review: HB 8/11

Printed: 08/02/2011 11:09:50
u:\Stealth\Crystal.rpt\except2.rpt

Quantitation Report

Data File:	J:\MS23\DATA\080111BAYW\0801F014.D			**Instrument:**	MS23
Acqu Date:	08/01/2011 17:37	**Quant Date:**	08/02/2011 10:19	**Vial:**	11
Run Type:	SMPL			**Dilution:**	1.0
Lab ID:	K1106869-002			**Soln Conc. Units:**	PPB

Bottle ID:		**Tier:**	V	**Matrix:**	WATER
Prod Code:	624 Modified VO	**Collect Date:**	07/27/2011	**Receive Date:**	07/28/2011

Analysis Lot:	KWG1107315	**Prep Lot:**	KWG1107316	**Report Group:**	K1106869
Analysis Method:	624	**Prep Method:**	METHOD		
Prep Ref:	1041364	**Prep Date:**	08/01/2011		

Quant Method:	J:\MS23\METHODS\032911624BAY	**Calibration ID:**	CAL10443
Title:	Volatile Organic Compounds	**Report List ID:**	LJ12964
Tune Ref:	J:\MS23\DATA\080111BAYW\0801F003.D	**Method ID:**	MJ158
MB Ref:	J:\MS23\DATA\080111BAYW\0801F010.D	**Quant based on Report List**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	Fluorobenzene	5.94	0.00	96	656106	10.00	OK
2	Chlorobenzene-d5	9.34	0.00	82	273687	10.00	OK
3	1,4-Dichlorobenzene-d4	11.75	0.00	152	239722	10.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	Dibromofluoromethane	5.12	0.00	0.00	113	156887	11.05	111	61-121	OK
1	Toluene-d8	7.77	0.00	0.00	98	616317	9.94	99	72-122	OK
2	4-Bromofluorobenzene	10.58	0.00	0.00	95	205848	9.14	91	70-120	OK

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	Vinyl Chloride				62	0		0.053	U	
1	1,1-Dichloroethene				96	0d		0.37	U	
1	trans-1,2-Dichloroethene	3.19	-0.01	0.00	96	1645	0.1000	0.10	J	
1	1,1-Dichloroethane				63	0		0.041	U	
1	cis-1,2-Dichloroethene	4.46	0.01	0.00	96	9609	0.5500	0.55		
1	1,1,1-Trichloroethane (TCA)				97	0		0.044	U	
1	Trichloroethene (TCE)	6.37		0.00	95	24005	1.38	1.4		
2	Tetrachloroethene (PCE)				164	0		0.043	U	

Prep Amount:	10 ml	**Dilution:**	1.0
Prep Final Vol:	10 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\080111BAYW\0801F014.D
Acq On : 1 Aug 2011 5:37 pm
Sample : K6869-002
Misc :
MS Integration Params: rteint.p
Quant Time: Aug 02 10:18:33 2011

Vial: 11
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624BAYW.R

Quant Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Aug 02 10:17:07 2011
Response via : Initial Calibration
DataAcq Meth : 8260

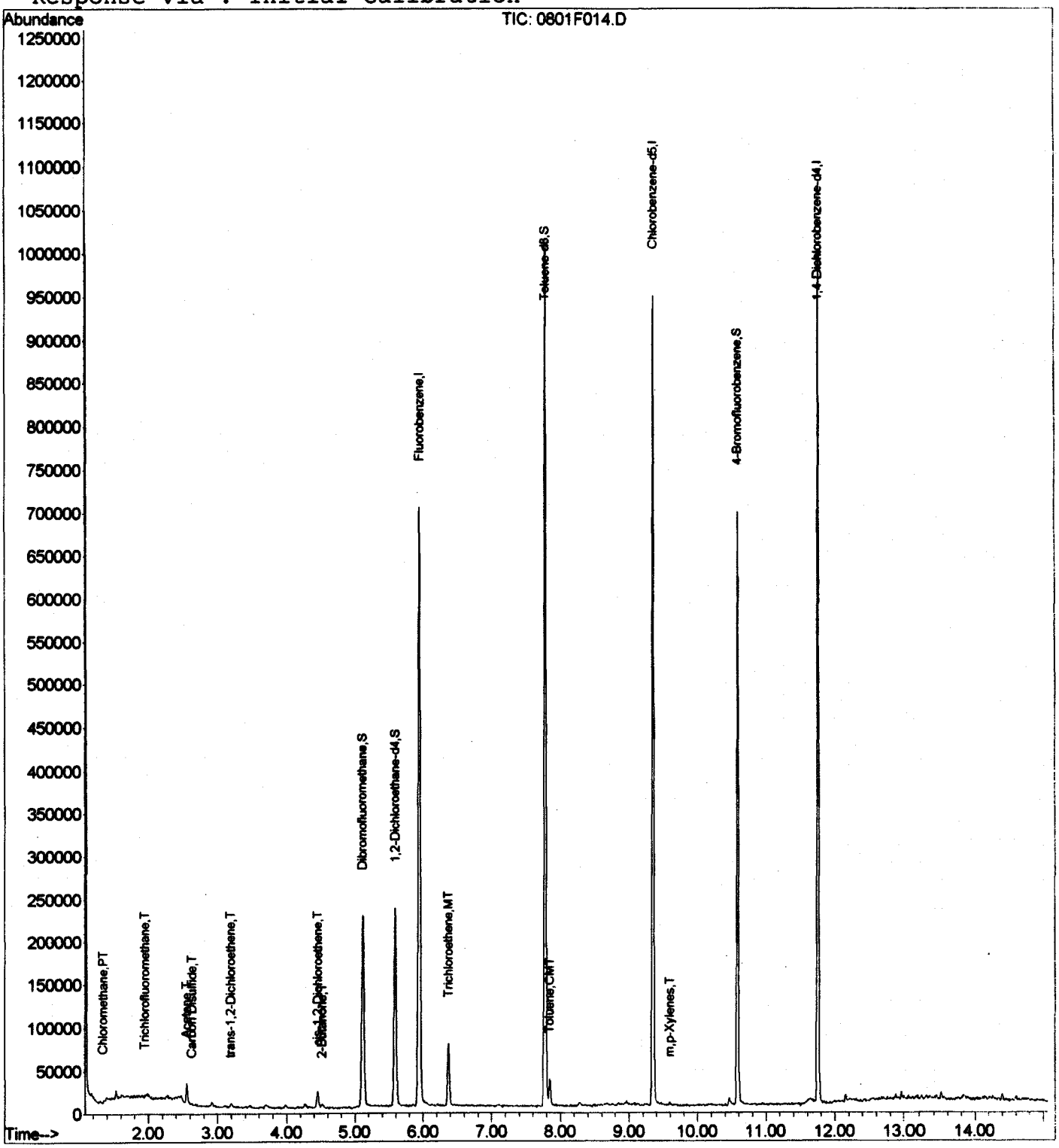
Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Fluorobenzene	5.94	96	656106	10.00	PPB		0.00
35) Chlorobenzene-d5	9.34	82	273687	10.00	PPB		0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	239722	10.00	PPB		0.00
System Monitoring Compounds							
22) Dibromofluoromethane	5.12	113	156887	11.05	PPB		0.00
Spiked Amount 10.000			Recovery	=	110.50%		
24) 1,2-Dichloroethane-d4	5.59	65	179273	10.05	PPB		0.00
Spiked Amount 10.000			Recovery	=	100.50%		
33) Toluene-d8	7.77	98	616317	9.94	PPB		0.00
Spiked Amount 10.000			Recovery	=	99.40%		
47) 4-Bromofluorobenzene	10.58	95	205848	9.14	PPB		0.00
Spiked Amount 10.000			Recovery	=	91.40%		
Target Compounds							Qvalue
3) Chloromethane	1.35	50	1427	0.04	PPB		69
7) Trichlorofluoromethane	1.95	101	678	0.02	PPB		62
11) Acetone	2.55	43	27429	11.02	PPB		94
12) Carbon Disulfide	2.63	76	1188	0.02	PPB	#	21
15) trans-1,2-Dichloroethene	3.19	96	1645	0.10	PPB	#	46
18) cis-1,2-Dichloroethene	4.46	96	9609	0.55	PPB		92
19) 2-Butanone	4.52	72	1428	1.96	PPB	#	20
27) Trichloroethene	6.37	95	24005	1.38	PPB		94
34) Toluene	7.85	92	11452	0.27	PPB		94
43) m,p-Xylenes	9.60	106	755	0.02	PPB	#	37

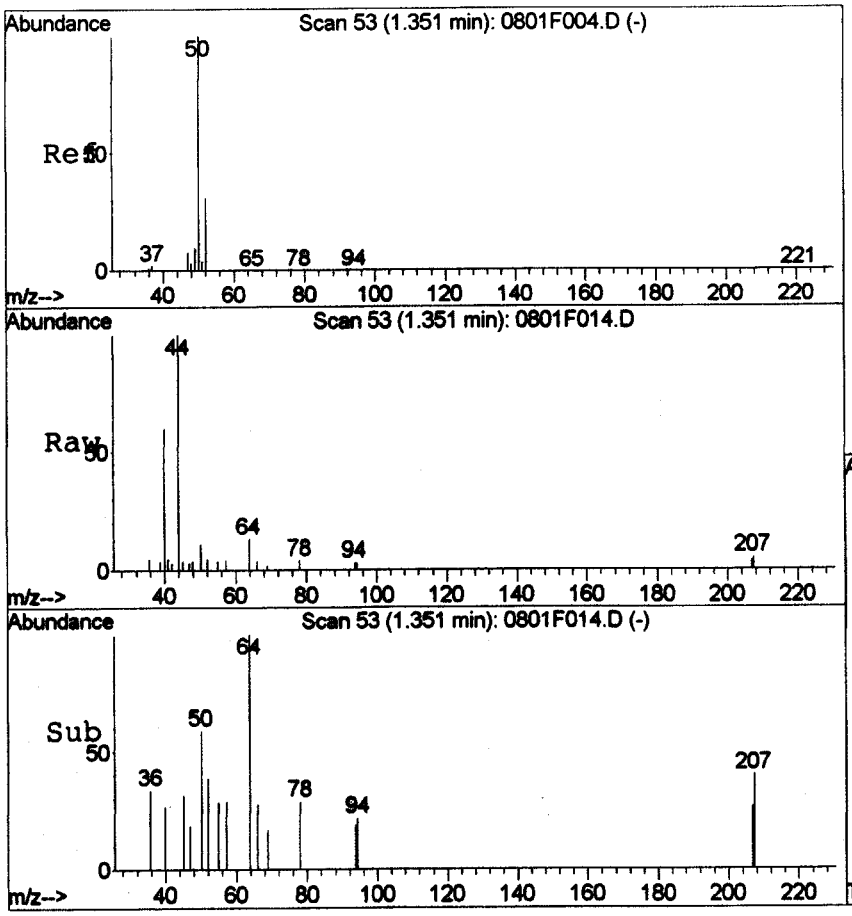
(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\080111BAYW\0801F014.D Vial: 11
Acq On : 1 Aug 2011 5:37 pm Operator: KR
Sample : K6869-002 Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Aug 2 10:19 2011 Quant Results File: 032911624BAY

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Aug 02 10:17:07 2011
Response via : Initial Calibration

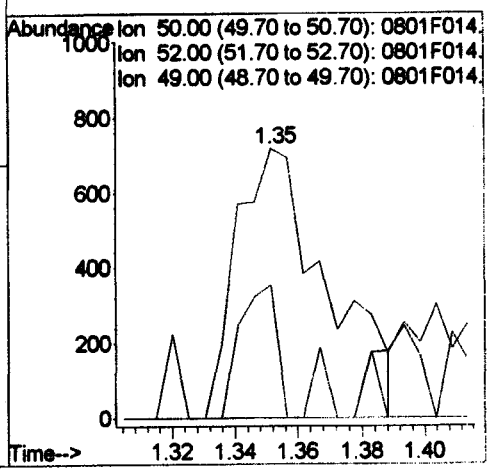


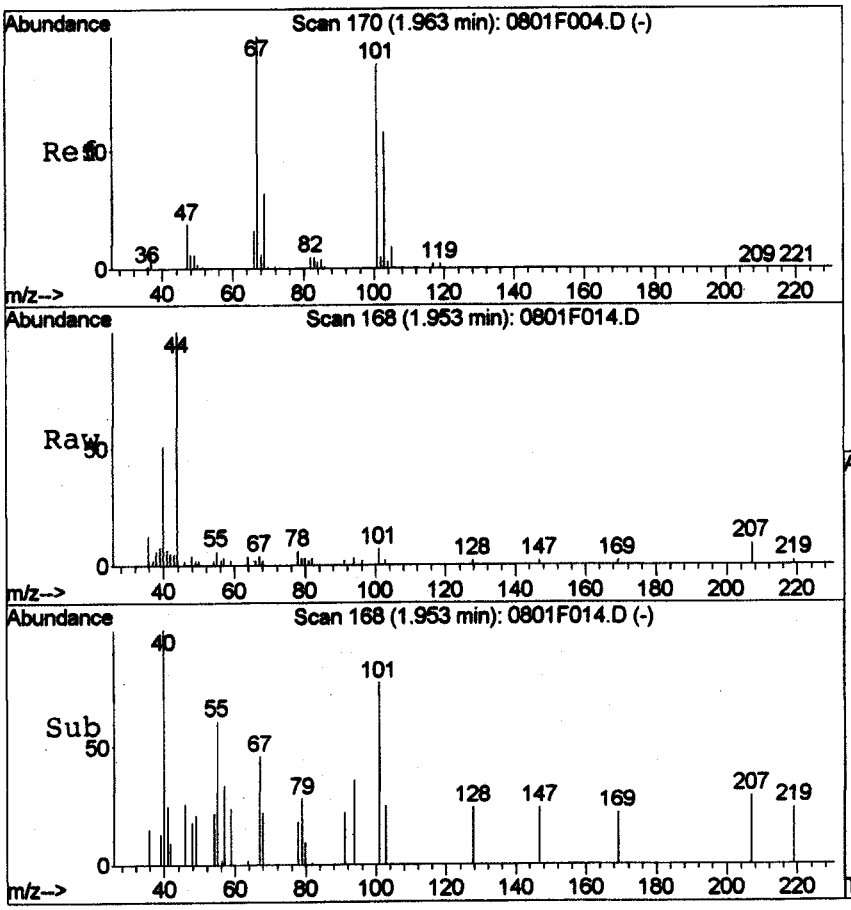


#3
Chloromethane
Concen: 0.04 PPB
RT: 1.35 min Scan# 53
Delta R.T. -0.01 min
Lab File: 0801F014.D
Acq: 1 Aug 2011 5:37 pm

Tgt Ion: 50 Resp: 1427

Ion	Ratio	Lower	Upper
50	100		
52	49.3	1.3	61.3
49	0.0	0.0	40.2

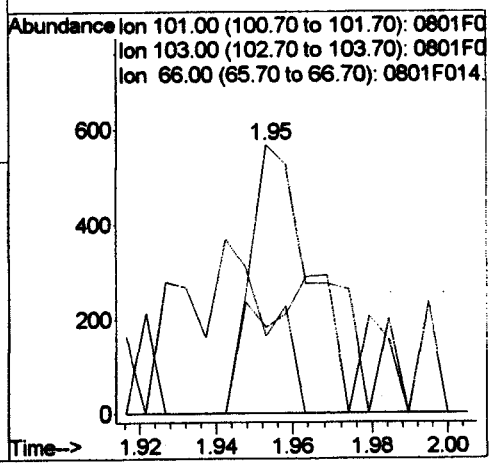


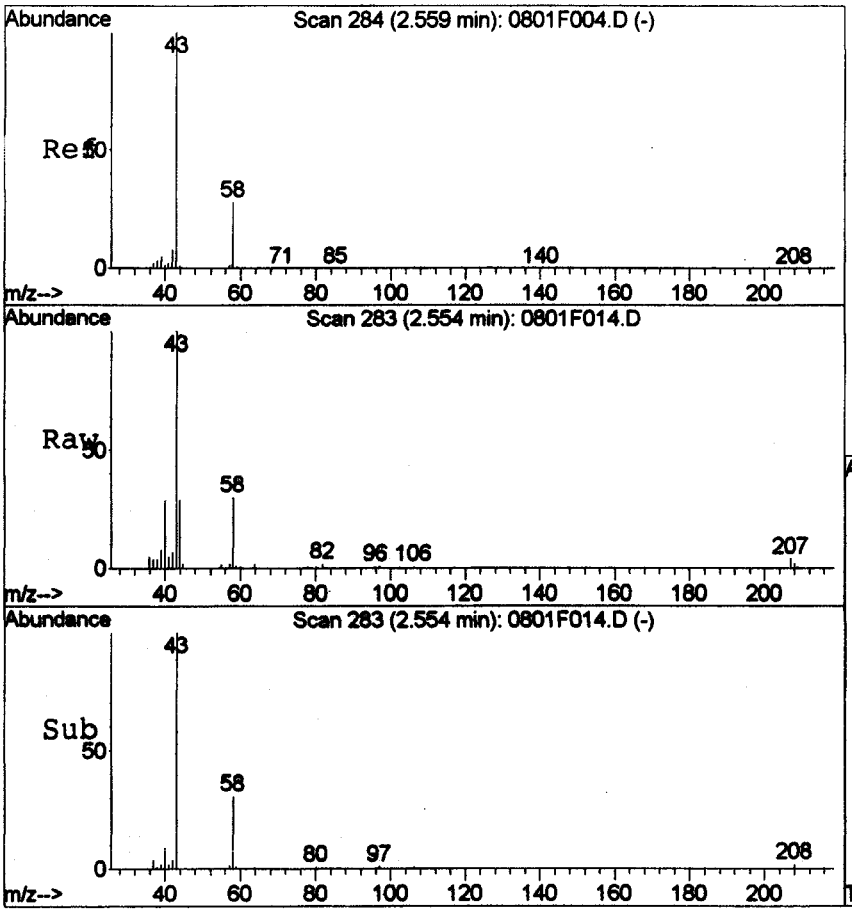


#7
Trichlorofluoromethane
Concen: 0.02 PPB
RT: 1.95 min Scan# 168
Delta R.T. -0.02 min
Lab File: 0801F014.D
Acq: 1 Aug 2011 5:37 pm

Tgt Ion:101 Resp: 678

Ion	Ratio	Lower	Upper
101	100		
103	32.2	31.6	91.6
66	1.4	0.0	47.4

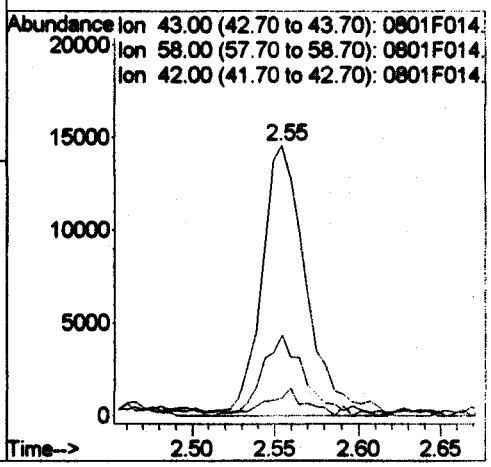


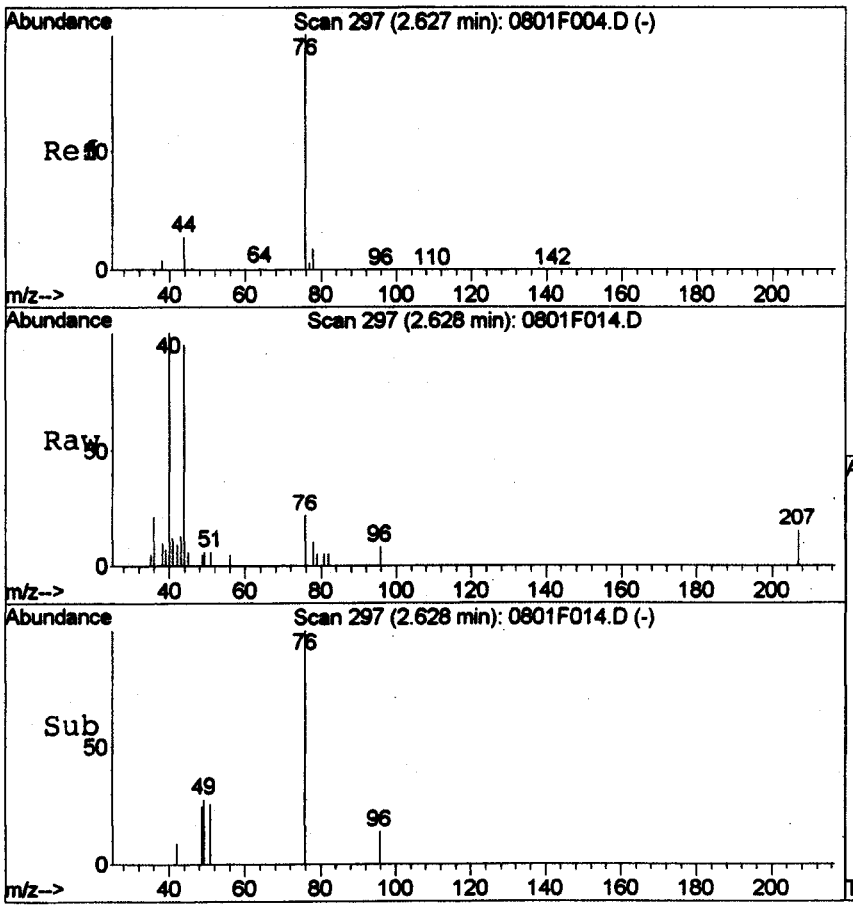


#11
Acetone
Concen: 11.02 PPB
RT: 2.55 min Scan# 283
Delta R.T. -0.01 min
Lab File: 0801F014.D
Acq: 1 Aug 2011 5:37 pm

Tgt Ion: 43 Resp: 27429

Ion	Ratio	Lower	Upper
43	100		
58	30.0	0.0	56.9
42	5.5	0.0	37.5

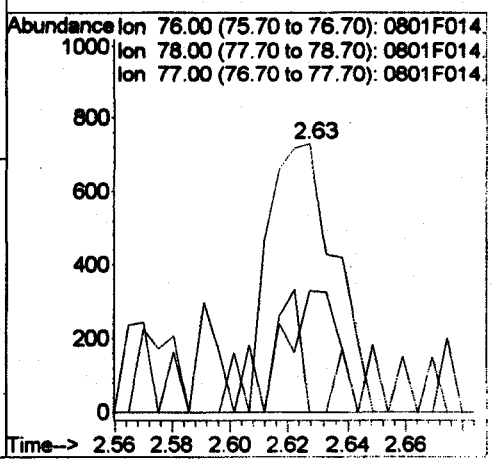


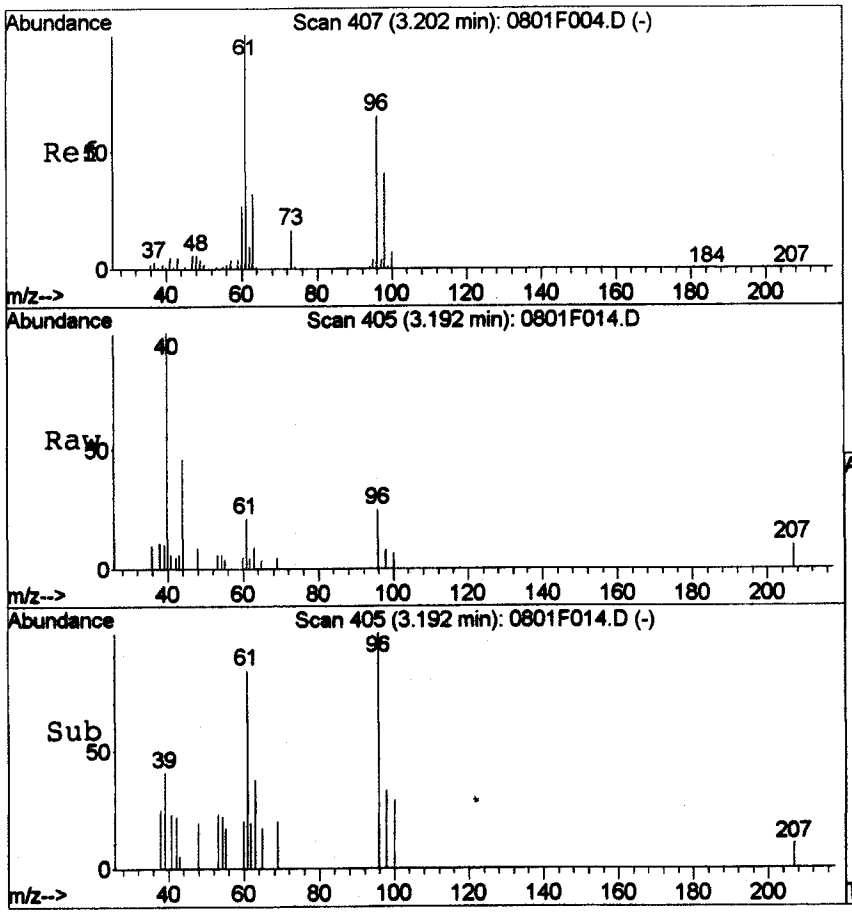


#12
Carbon Disulfide
Concen: 0.02 PPB
RT: 2.63 min Scan# 297
Delta R.T. -0.01 min
Lab File: 0801F014.D
Acq: 1 Aug 2011 5:37 pm

Tgt Ion: 76 Resp: 1188

Ion	Ratio	Lower	Upper
76	100		
78	45.1	0.0	39.0#
77	0.0	0.0	32.7

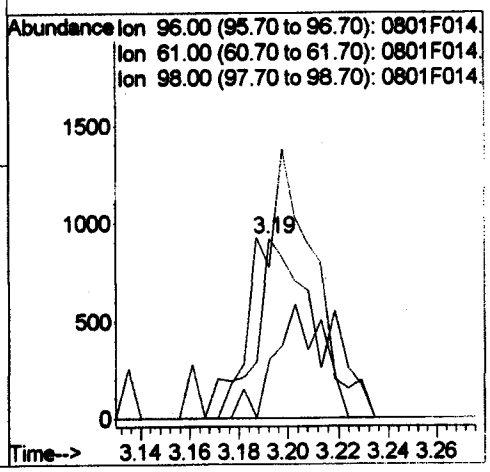


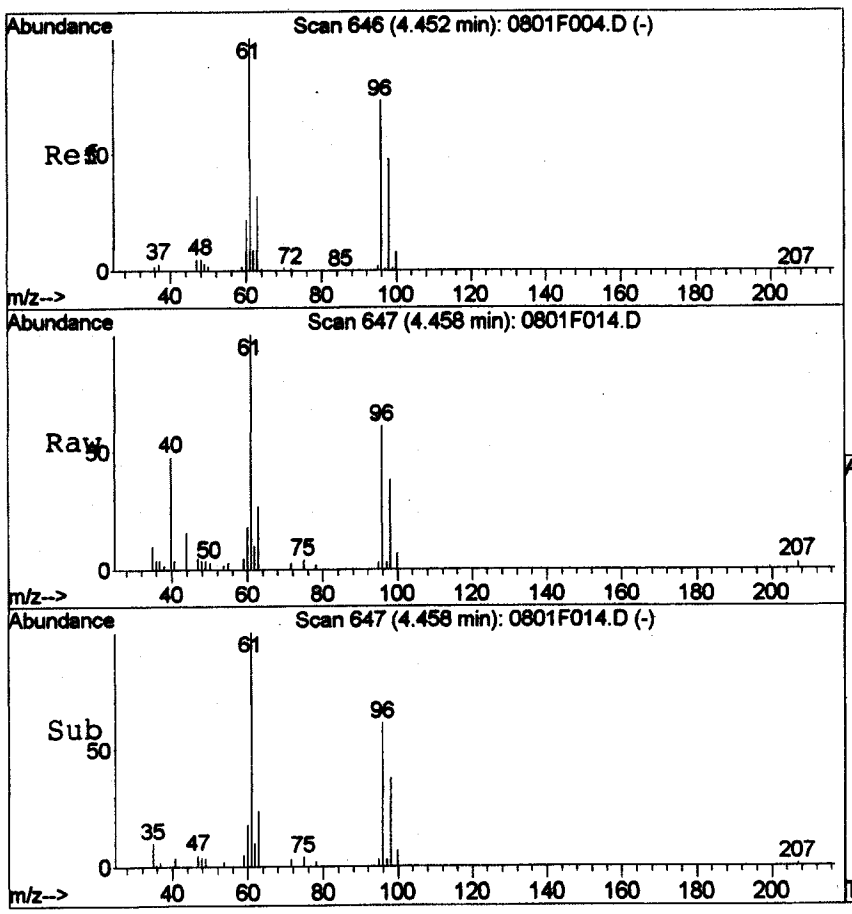


#15
trans-1,2-Dichloroethene
Concen: 0.10 PPB
RT: 3.19 min Scan# 405
Delta R.T. -0.01 min
Lab File: 0801F014.D
Acq: 1 Aug 2011 5:37 pm

Tgt Ion: 96 Resp: 1645

Ion	Ratio	Lower	Upper
96	100		
61	84.1	135.0	195.0#
98	33.0	30.1	90.1

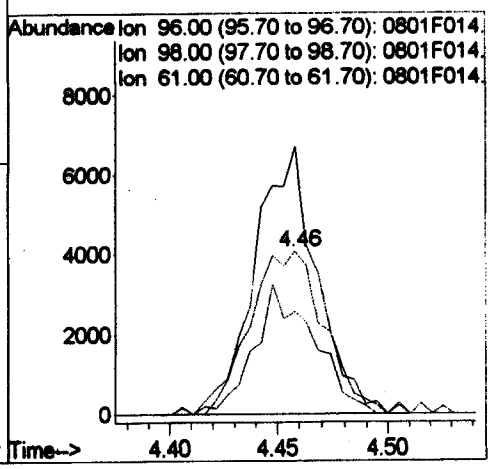


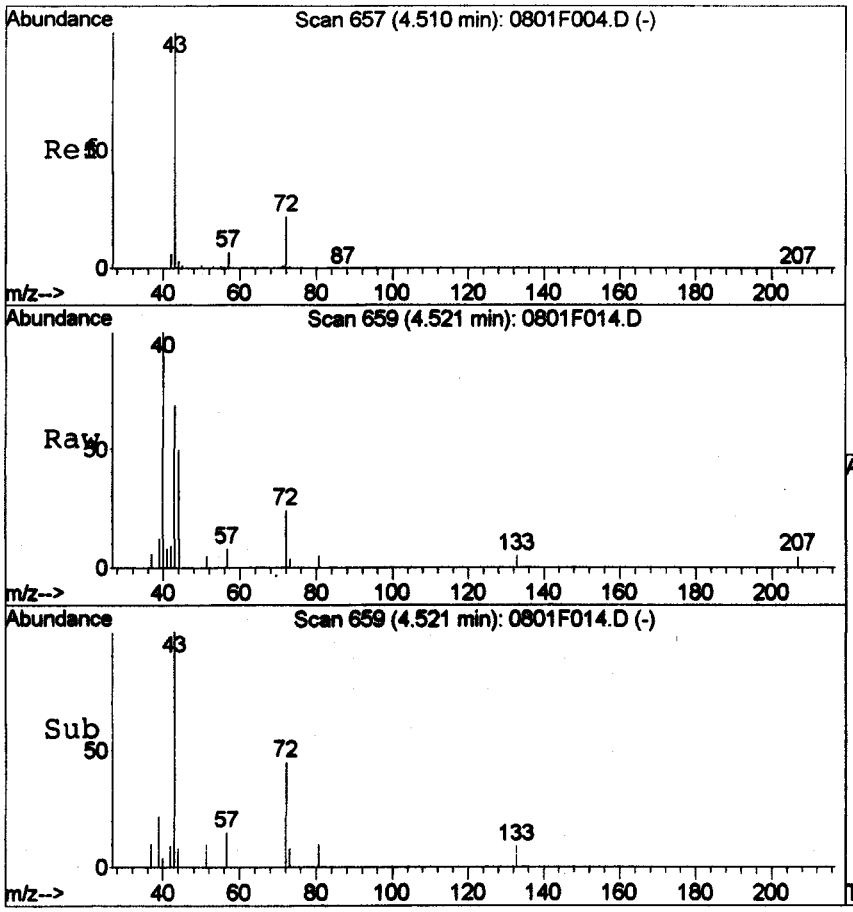


#18
cis-1,2-Dichloroethene
Concen: 0.55 PPB
RT: 4.46 min Scan# 647
Delta R.T. -0.00 min
Lab File: 0801F014.D
Acq: 1 Aug 2011 5:37 pm

Tgt Ion: 96 Resp: 9609

Ion	Ratio	Lower	Upper
96	100		
98	63.3	33.6	93.6
61	165.0	119.9	179.9

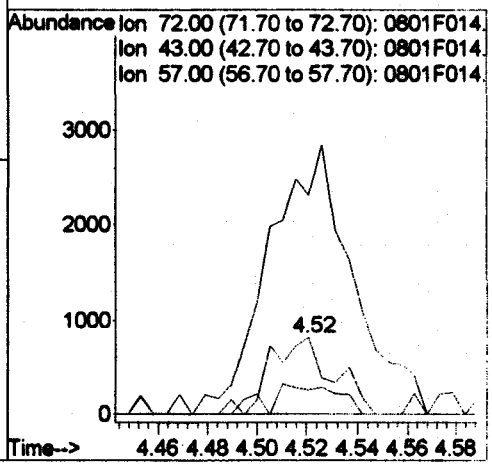


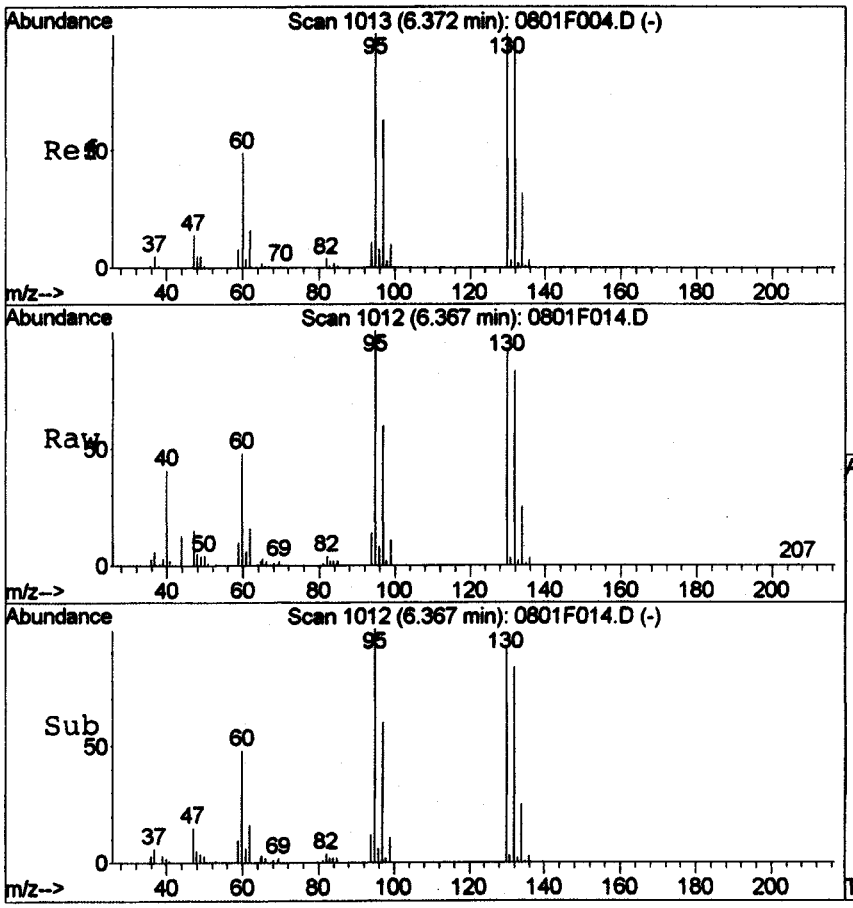


#19
2-Butanone
Concen: 1.96 PPB
RT: 4.52 min Scan# 659
Delta R.T. 0.01 min
Lab File: 0801F014.D
Acq: 1 Aug 2011 5:37 pm

Tgt Ion: 72 Resp: 1428

Ion	Ratio	Lower	Upper
72	100		
43	258.1	461.9	521.9#
57	32.0	5.8	65.8

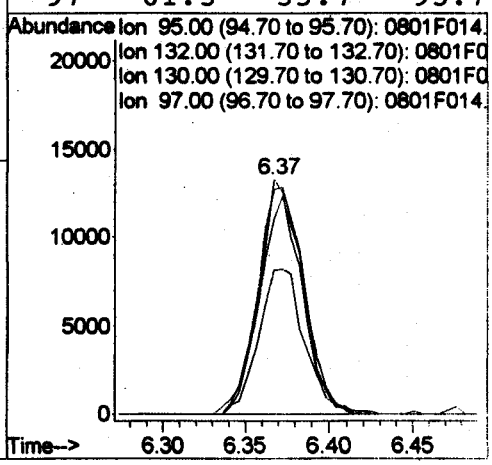


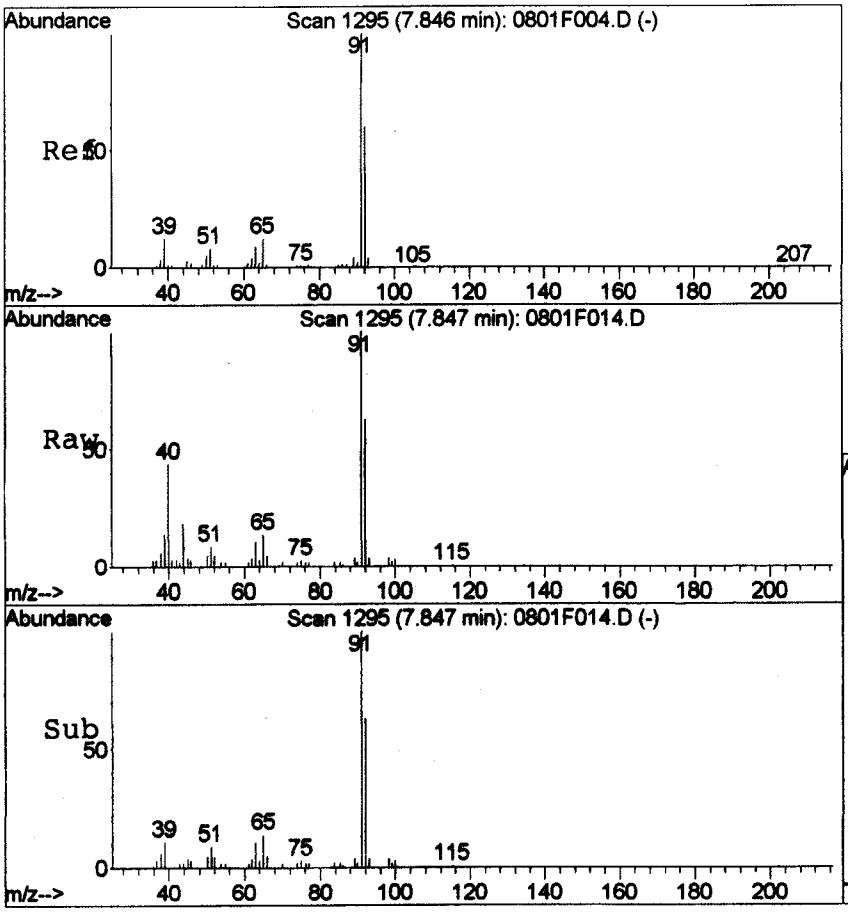


#27
Trichloroethene
Concen: 1.38 PPB
RT: 6.37 min Scan# 1012
Delta R.T. -0.00 min
Lab File: 0801F014.D
Acq: 1 Aug 2011 5:37 pm

Tgt Ion: 95 Resp: 24005

Ion	Ratio	Lower	Upper
95	100		
132	83.0	64.3	124.3
130	95.7	65.2	125.2
97	61.3	35.7	95.7

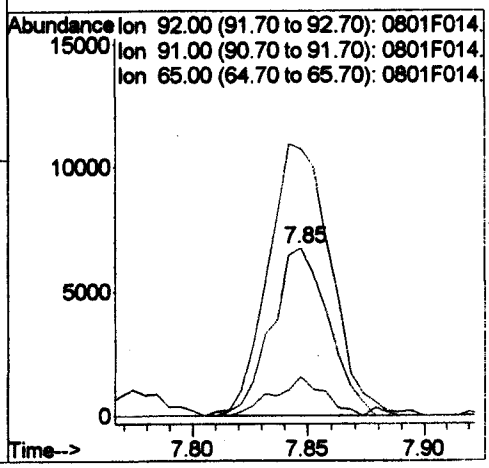


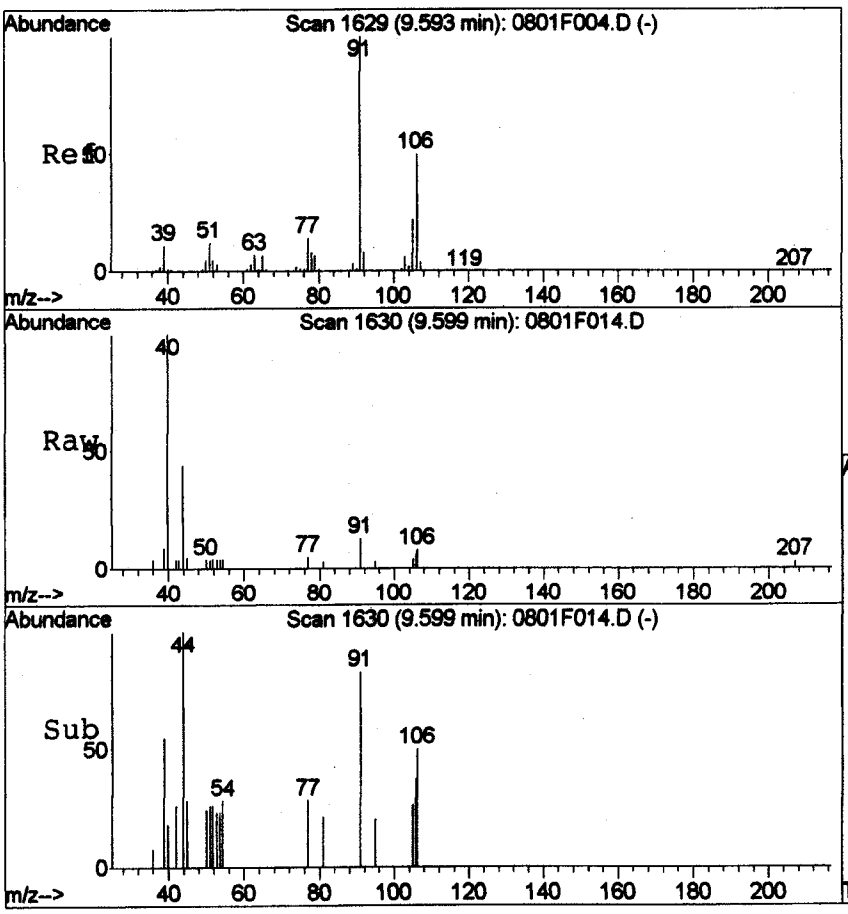


#34
Toluene
Concen: 0.27 PPB
RT: 7.85 min Scan# 1295
Delta R.T. 0.00 min
Lab File: 0801F014.D
Acq: 1 Aug 2011 5:37 pm

Tgt Ion: 92 Resp: 11452

Ion	Ratio	Lower	Upper
92	100		
91	158.6	138.1	198.1
65	23.0	0.0	51.7

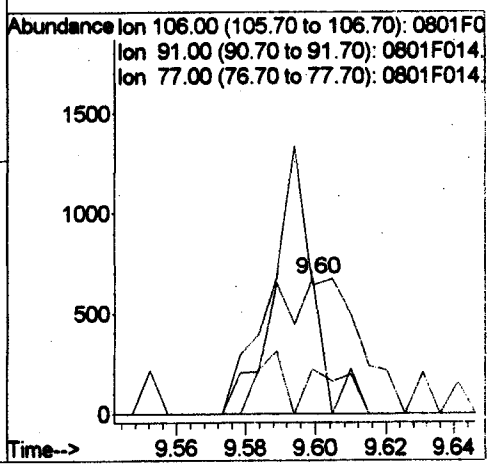




#43
m,p-Xylenes
Concen: 0.02 PPB
RT: 9.60 min Scan# 1630
Delta R.T. 0.01 min
Lab File: 0801F014.D
Acq: 1 Aug 2011 5:37 pm

Tgt Ion:106 Resp: 755

Ion	Ratio	Lower	Upper
106	100		
91	94.8	175.3	235.3#
77	32.3	0.3	60.3



COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1106869
Project:	NIROP/J070047	**Date Collected:**	07/27/2011
Sample Matrix:	Water	**Date Received:**	07/28/2011
		Date Extracted:	08/01/2011
		Date Analyzed:	08/01/2011

Volatile Organic Compounds

Sample Name:	Fridin Air 84A	**Units:**	ug/L
Lab Code:	K1106869-003	**Basis:**	NA
File ID:	J:\MS23\DATA\080111BAYW\0801F015.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1107316
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.21**	J	0.25	0.053	
75-35-4	1,1-Dichloroethene	**0.68**		0.50	0.37	
156-60-5	trans-1,2-Dichloroethene	**27**		0.50	0.039	
75-34-3	1,1-Dichloroethane	**1.2**		0.50	0.041	
156-59-2	cis-1,2-Dichloroethene	**60**		0.50	0.042	
71-55-6	1,1,1-Trichloroethane (TCA)	0.044	U	0.50	0.044	
79-01-6	Trichloroethene (TCE)	**450**	E	0.50	0.044	
127-18-4	Tetrachloroethene (PCE)	**2.1**		0.50	0.043	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	110	61-121	08/01/11	Acceptable
Toluene-d8	101	72-122	08/01/11	Acceptable
4-Bromofluorobenzene	91	70-120	08/01/11	Acceptable

Comments:

Exception Report

Data File: J:\MS23\DATA\080111BAYW\0801F015.D
Lab ID: K1106869-003
RunType: SMPL
Matrix: WATER

Date Acquired: 08/01/2011 18:08
Date Quantitated: 08/02/2011 10:21
Batch ID: KWG1107315
Analysis Method: 624
ListJoinID: LJ12964

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
Preparation Holding Time	NA	NA	NA	x	
Pre-Preparation Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Method Blank	NA	NA	NA	x	
MB Surrogate Recovery	NA	NA	NA	x	
Lab Control Spike	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA		x
Above Highest ICAL Level	NA	NA	NA		x
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Analyte Exceptions

Exception Categories	Analyte Name	Result	Low Limit	High Limit	Corrective Action
Std MRL Unsupported by ICAL	Vinyl Chloride	0.25	0.20	NA	TNPU
Above Highest ICAL Level	Trichloroethene (TCE)	453.40	NA	120	Dil @ 10X

Primary Review: KR 8/2/11

Secondary Review: HDB 8.2.11

Quantitation Report

Data File:	J:\MS23\DATA\080111BAYW\0801F015.D			**Instrument:**	MS23
Acqu Date:	08/01/2011 18:08	**Quant Date:**	08/02/2011 10:21	**Vial:**	12
Run Type:	SMPL			**Dilution:**	1.0
Lab ID:	K1106869-003			**Soln Conc. Units:**	PPB

Bottle ID:		**Tier:**	V	**Matrix:**	WATER
Prod Code:	624 Modified VO	**Collect Date:**	07/27/2011	**Receive Date:**	07/28/2011

Analysis Lot:	KWG1107315	**Prep Lot:**	KWG1107316	**Report Group:**	K1106869
Analysis Method:	624	**Prep Method:**	METHOD		
Prep Ref:	1041365	**Prep Date:**	08/01/2011		

Quant Method:	J:\MS23\METHODS\032911624BAY	**Calibration ID:**	CAL10443
Title:	Volatile Organic Compounds	**Report List ID:**	LJ12964
Tune Ref:	J:\MS23\DATA\080111BAYW\0801F003.D	**Method ID:**	MJ158
MB Ref:	J:\MS23\DATA\080111BAYW\0801F010.D	**Quant based on Report List**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	Fluorobenzene	5.94	0.00	96	658228	10.00	OK
2	Chlorobenzene-d5	9.35	0.01	82	271427	10.00	OK
3	1,4-Dichlorobenzene-d4	11.75	0.00	152	233266	10.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	Dibromofluoromethane	5.12	0.00	0.00	113	156129	10.96	110	61-121	OK
1	Toluene-d8	7.77	0.00	0.00	98	630577	10.14	101	72-122	OK
2	4-Bromofluorobenzene	10.58	0.00	0.00	95	203599	9.11	91	70-120	OK

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	Vinyl Chloride	1.43		0.00	62	5514	0.2100	0.21	J	
1	1,1-Dichloroethene	2.43	-0.01	0.00	96	10739	0.6800	0.68		
1	trans-1,2-Dichloroethene	3.20		0.00	96	439327	26.71	27		
1	1,1-Dichloroethane	3.72	-0.01	0.00	63	39416	1.21	1.2		
1	cis-1,2-Dichloroethene	4.45		0.00	96	1060290	60.00	60		
1	1,1,1-Trichloroethane (TCA)				97	0		0.044	U	
1	Trichloroethene (TCE)	6.37		0.00	95	7929671	453.40	450	E	
2	Tetrachloroethene (PCE)	8.40		0.00	164	26833	2.09	2.1		

Prep Amount:	10 ml	**Dilution:**	1.0
Prep Final Vol:	10 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\080111BAYW\0801F015.D Vial: 12
Acq On : 1 Aug 2011 6:08 pm Operator: KR
Sample : K6869-003 Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Aug 02 10:19:45 2011 Quant Results File: 032911624BAYW.R

Quant Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Aug 02 10:17:07 2011
Response via : Initial Calibration
DataAcq Meth : 8260

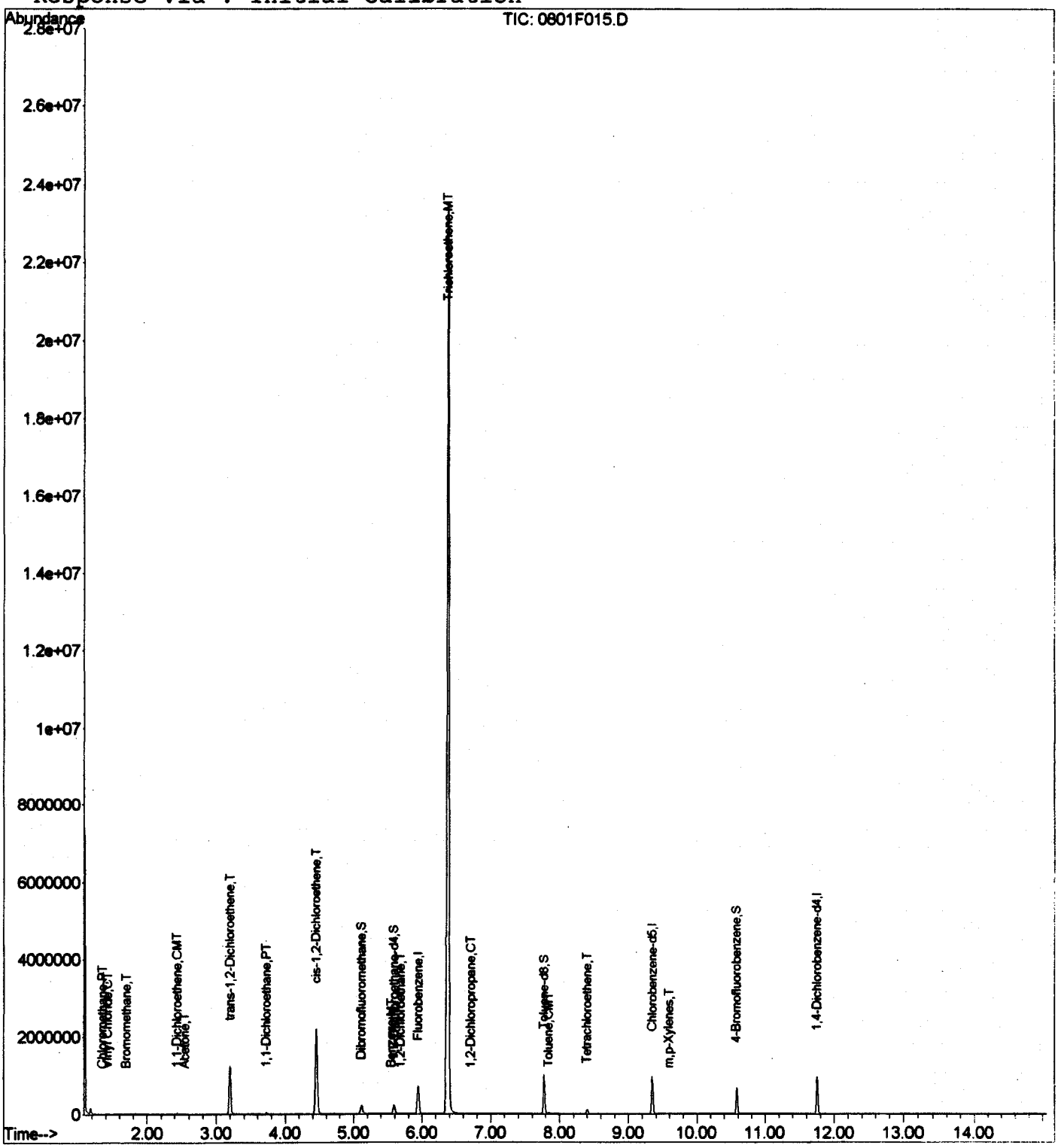
Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Fluorobenzene	5.94	96	658228	10.00	PPB		0.00
35) Chlorobenzene-d5	9.35	82	271427	10.00	PPB		0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	233266	10.00	PPB		0.00
System Monitoring Compounds							
22) Dibromofluoromethane	5.12	113	156129	10.96	PPB		0.00
Spiked Amount 10.000			Recovery	=	109.60%		
24) 1,2-Dichloroethane-d4	5.59	65	182025	10.17	PPB		0.00
Spiked Amount 10.000			Recovery	=	101.70%		
33) Toluene-d8	7.77	98	630577	10.14	PPB		0.00
Spiked Amount 10.000			Recovery	=	101.40%		
47) 4-Bromofluorobenzene	10.58	95	203599	9.11	PPB		0.00
Spiked Amount 10.000			Recovery	=	91.10%		
Target Compounds							Qvalue
3) Chloromethane	1.36	50	1399	0.04	PPB		83
4) Vinyl Chloride	1.43	62	5514	0.21	PPB		86
5) Bromomethane	1.70	96	534	0.05	PPB	#	3
10) 1,1-Dichloroethene	2.43	96	10739	0.68	PPB		90
11) Acetone	2.55	43	3151	1.26	PPB		89
15) trans-1,2-Dichloroethene	3.20	96	439327	26.71	PPB		94
16) 1,1-Dichloroethane	3.72	63	39416	1.21	PPB		94
18) cis-1,2-Dichloroethene	4.45	96	1060290	60.00	PPB		96
25) Benzene	5.55	78	1883	0.03	PPB	#	6
26) 1,2-Dichloroethane	5.69	62	3007	0.14	PPB		96
27) Trichloroethene	6.37	95	7929671	453.40	PPB		96
28) 1,2-Dichloropropane	6.71	63	843	0.05	PPB	#	66
34) Toluene	7.85	92	11829	0.27	PPB		93
38) Tetrachloroethene	8.40	164	26833	2.09	PPB		94
43) m,p-Xylenes	9.59	106	1255	0.04	PPB	#	56

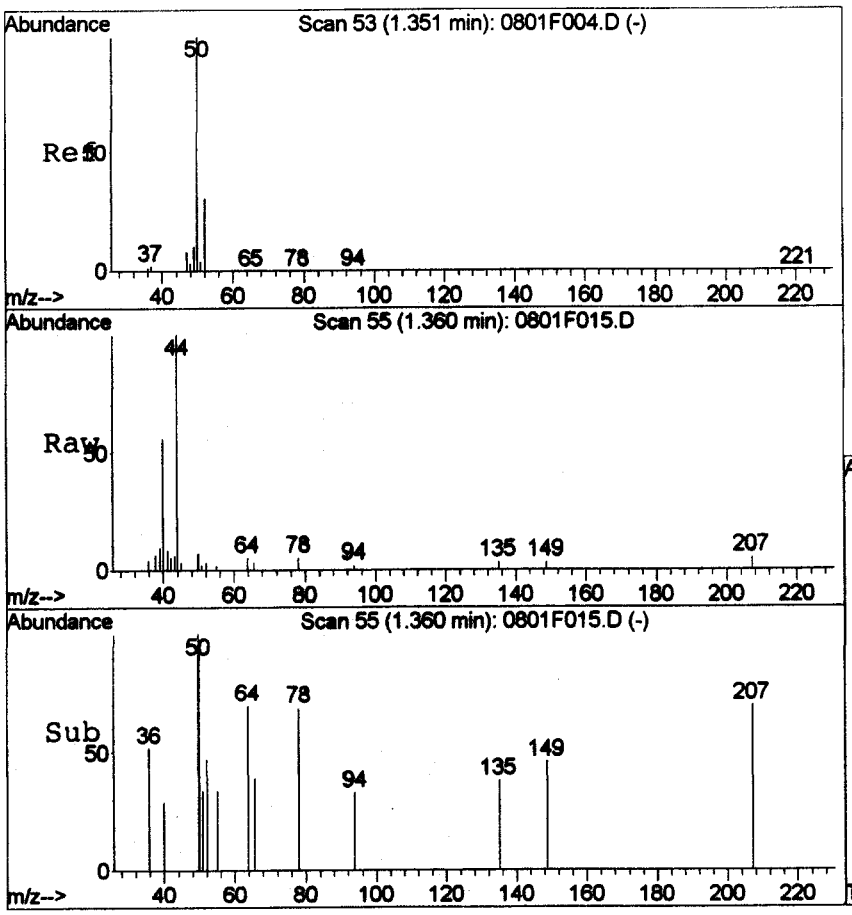
(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\080111BAYW\0801F015.D Vial: 12
Acq On : 1 Aug 2011 6:08 pm Operator: KR
Sample : K6869-003 Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Aug 2 10:21 2011 Quant Results File: 032911624BAY

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Aug 02 10:17:07 2011
Response via : Initial Calibration

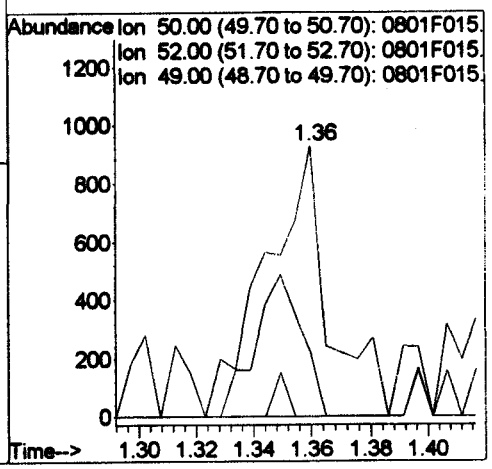


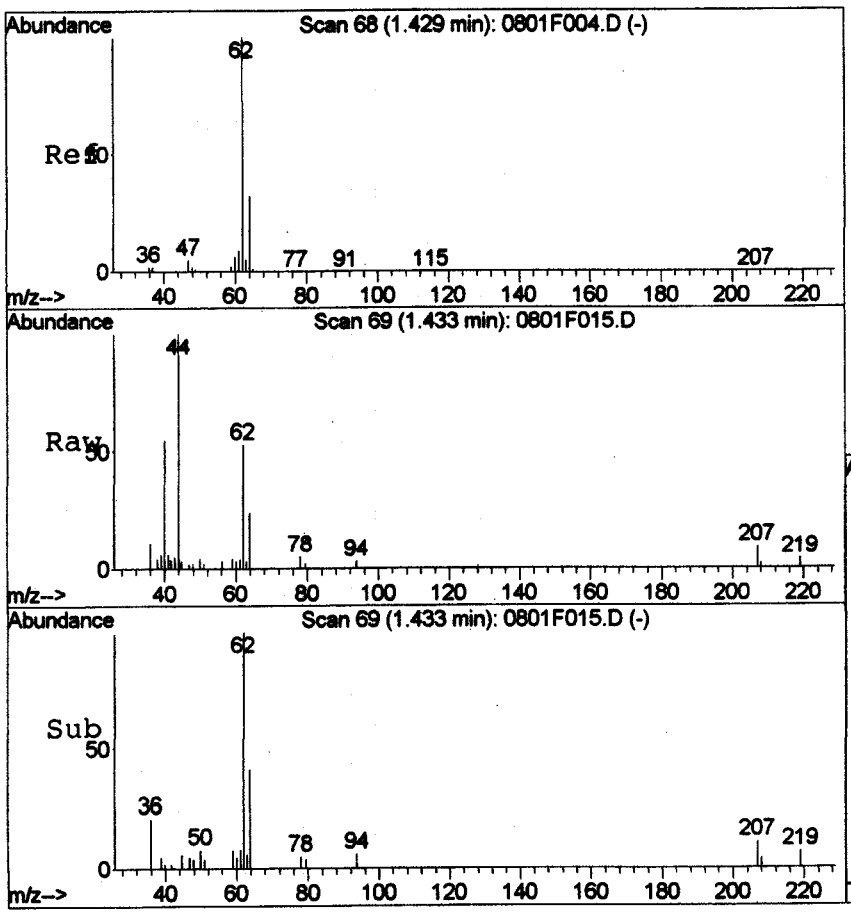


#3
Chloromethane
Concen: 0.04 PPB
RT: 1.36 min Scan# 55
Delta R.T. 0.00 min
Lab File: 0801F015.D
Acq: 1 Aug 2011 6:08 pm

Tgt Ion: 50 Resp: 1399

Ion	Ratio	Lower	Upper
50	100		
52	23.6	1.3	61.3
49	0.0	0.0	40.2

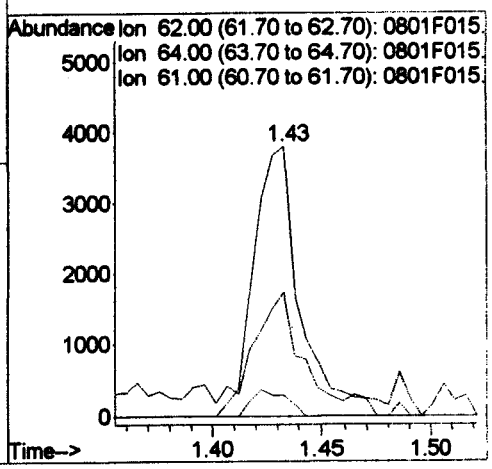


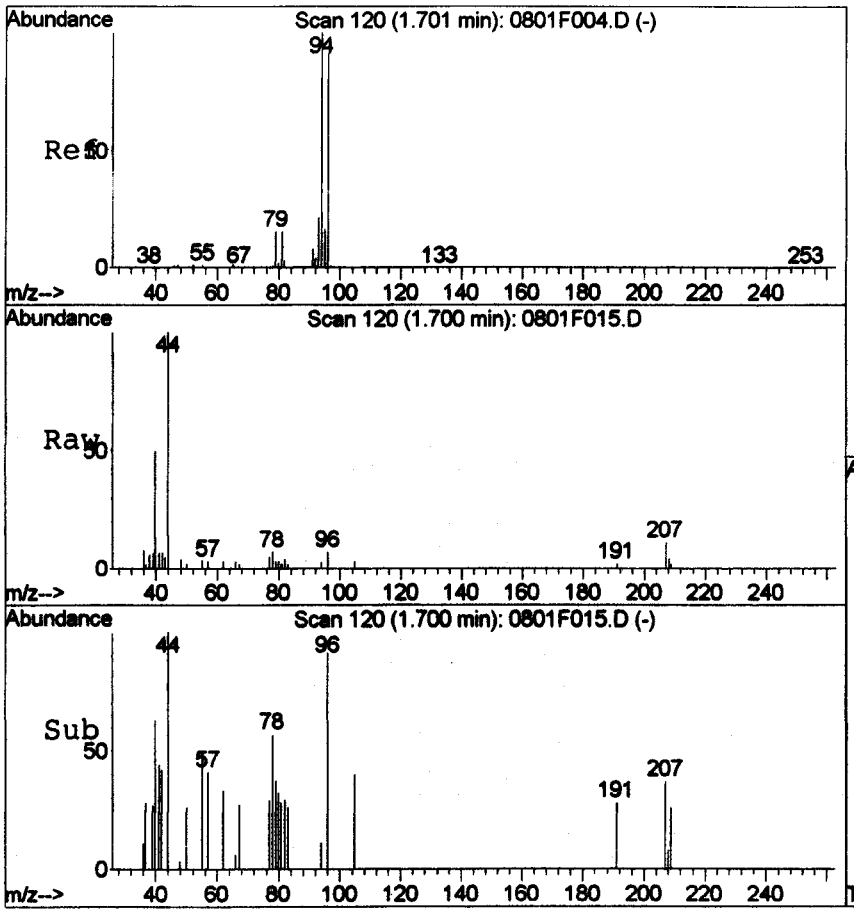


#4
Vinyl Chloride
Concen: 0.21 PPB
RT: 1.43 min Scan# 69
Delta R.T. 0.00 min
Lab File: 0801F015.D
Acq: 1 Aug 2011 6:08 pm

Tgt Ion: 62 Resp: 5514

Ion	Ratio	Lower	Upper
62	100		
64	41.2	1.7	61.7
61	7.6	0.0	38.3

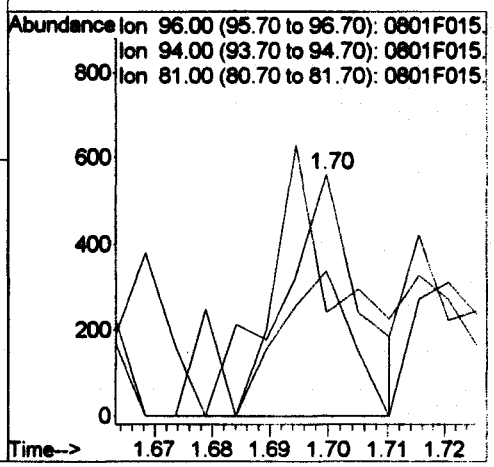




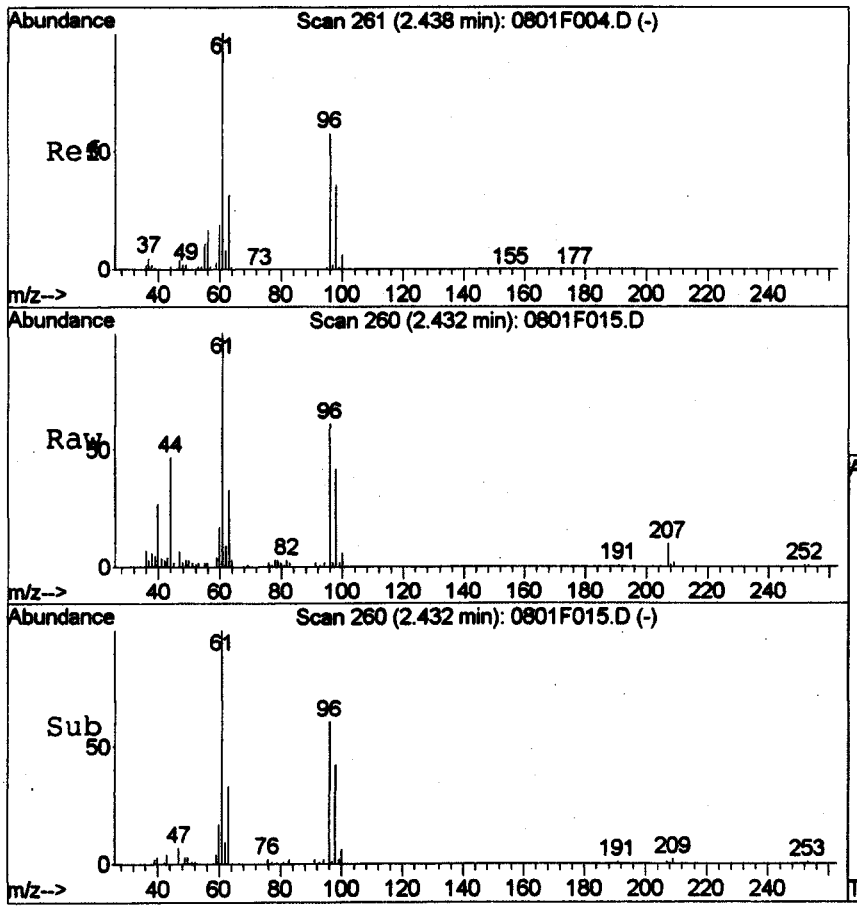
#5
Bromomethane
Concen: 0.05 PPB
RT: 1.70 min Scan# 120
Delta R.T. -0.01 min
Lab File: 0801F015.D
Acq: 1 Aug 2011 6:08 pm

Tgt Ion: 96 Resp: 534

Ion	Ratio	Lower	Upper
96	100		
94	2.8	69.2	129.2#
81	60.1	0.0	47.0#



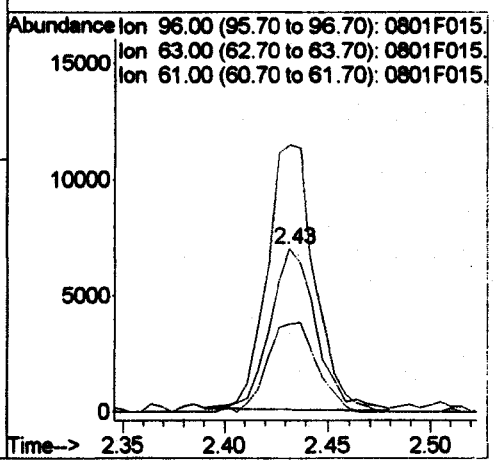
NT

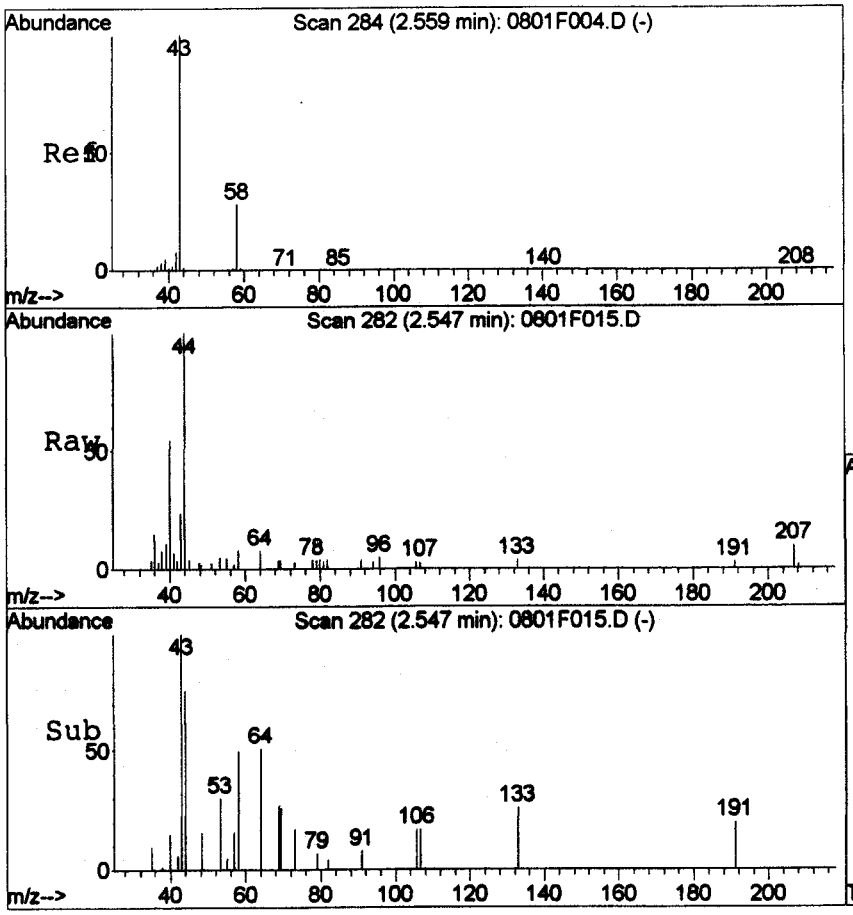


#10
1,1-Dichloroethene
Concen: 0.68 PPB
RT: 2.43 min Scan# 260
Delta R.T. -0.02 min
Lab File: 0801F015.D
Acq: 1 Aug 2011 6:08 pm

Tgt Ion: 96 Resp: 10739

Ion	Ratio	Lower	Upper
96	100		
63	54.7	28.6	88.6
61	166.9	152.7	212.7

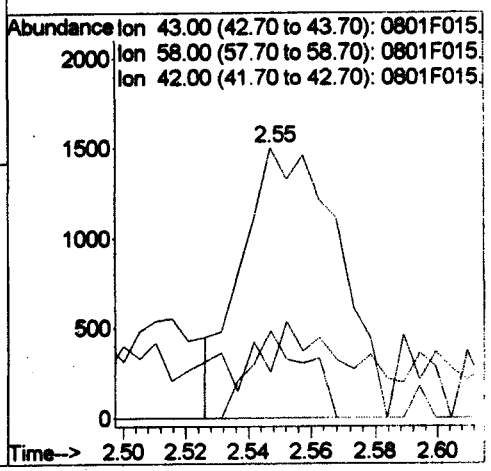


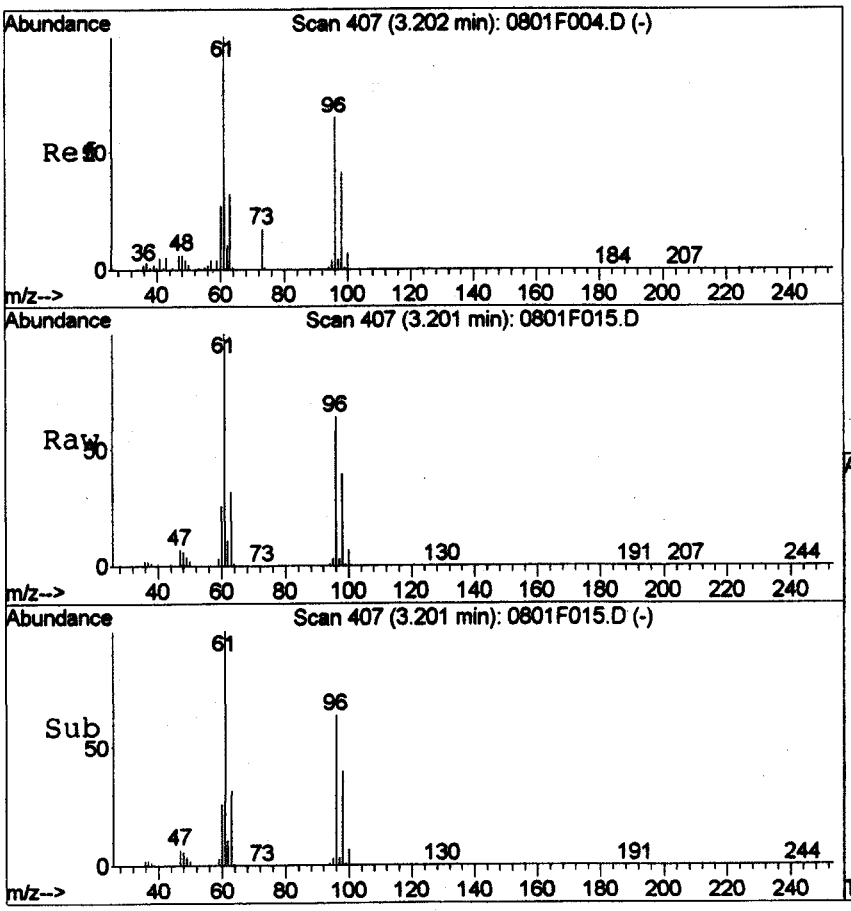


#11
Acetone
Concen: 1.26 PPB
RT: 2.55 min Scan# 282
Delta R.T. -0.01 min
Lab File: 0801F015.D
Acq: 1 Aug 2011 6:08 pm

Tgt Ion: 43 Resp: 3151

Ion	Ratio	Lower	Upper
43	100		
58	32.0	0.0	56.9
42	2.4	0.0	37.5

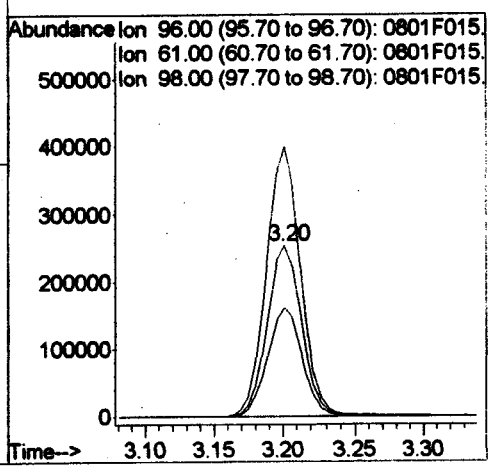


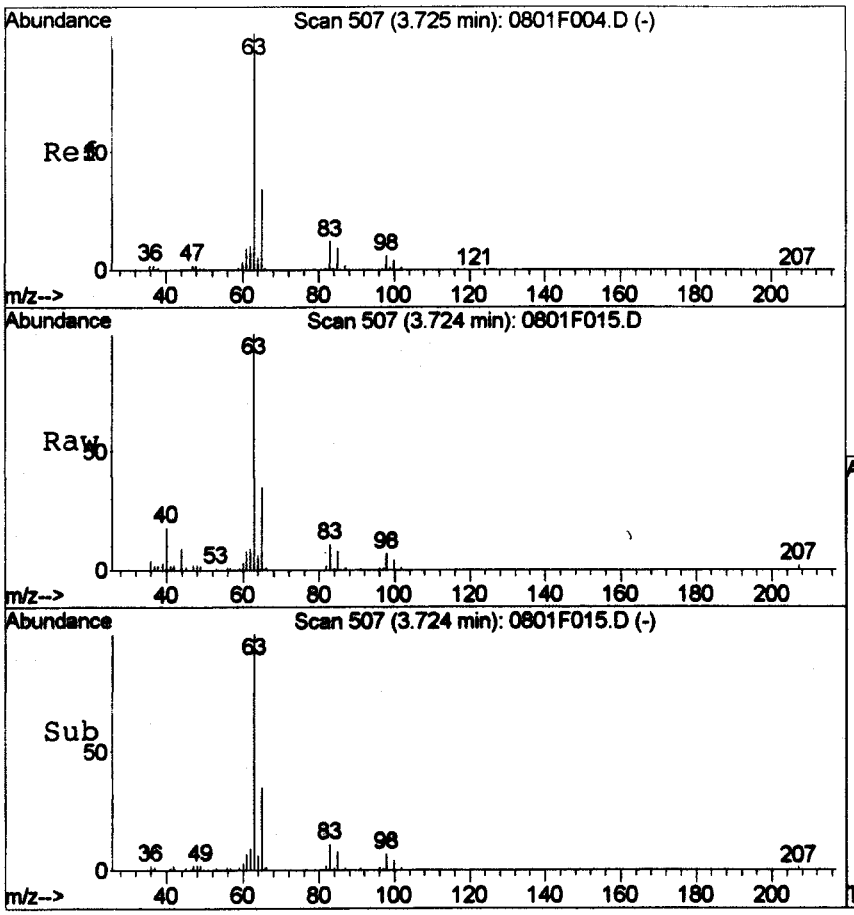


#15
trans-1,2-Dichloroethene
Concen: 26.71 PPB
RT: 3.20 min Scan# 407
Delta R.T. -0.01 min
Lab File: 0801F015.D
Acq: 1 Aug 2011 6:08 pm

Tgt Ion: 96 Resp: 439327

Ion	Ratio	Lower	Upper
96	100		
61	157.0	135.0	195.0
98	63.3	30.1	90.1

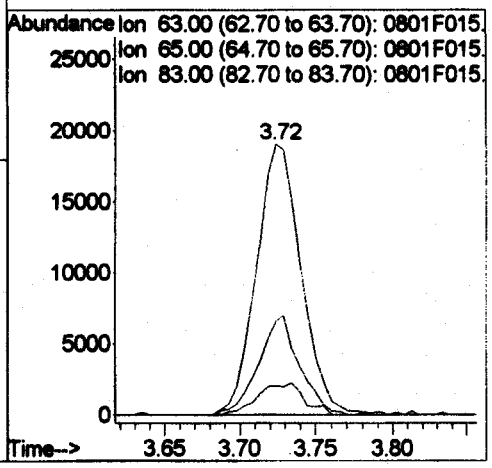


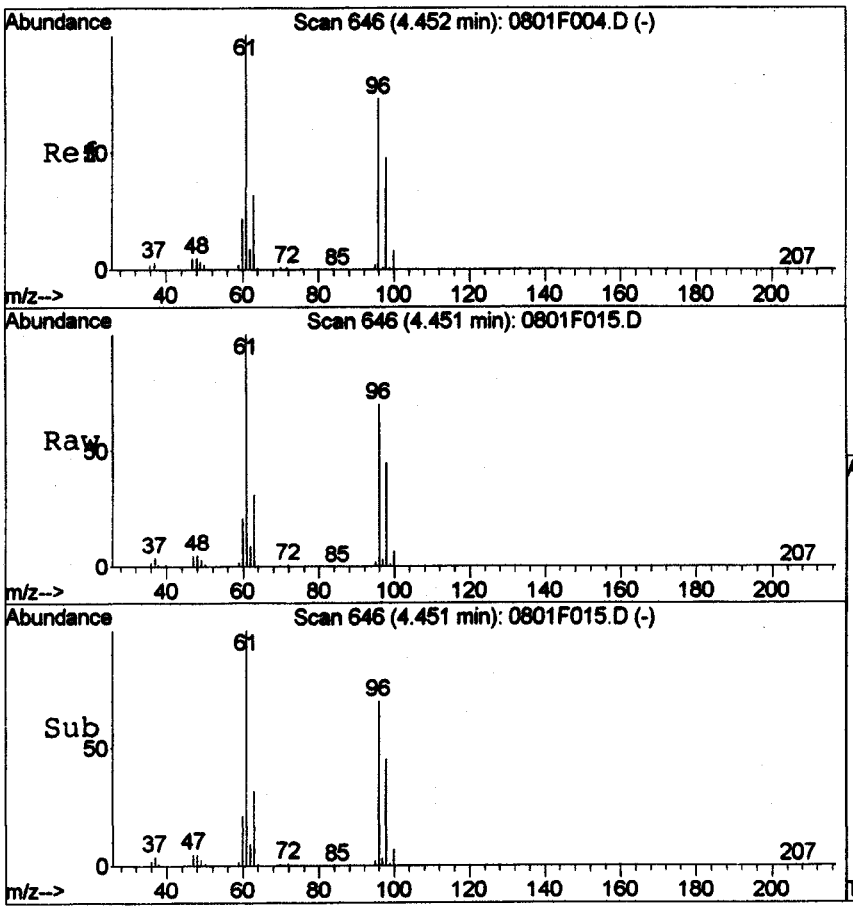


#16
1,1-Dichloroethane
Concen: 1.21 PPB
RT: 3.72 min Scan# 507
Delta R.T. -0.01 min
Lab File: 0801F015.D
Acq: 1 Aug 2011 6:08 pm

Tgt Ion: 63 Resp: 39416

Ion	Ratio	Lower	Upper
63	100		
65	34.5	0.8	60.8
83	10.7	0.0	42.7

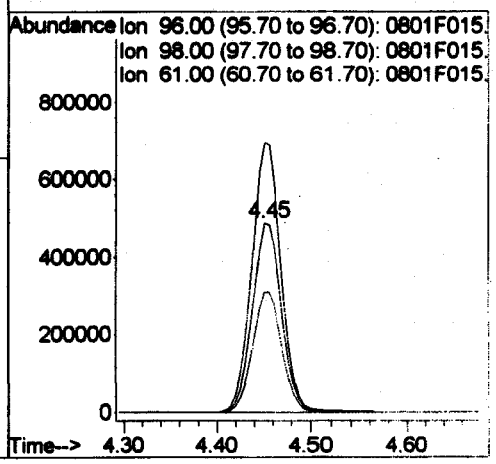


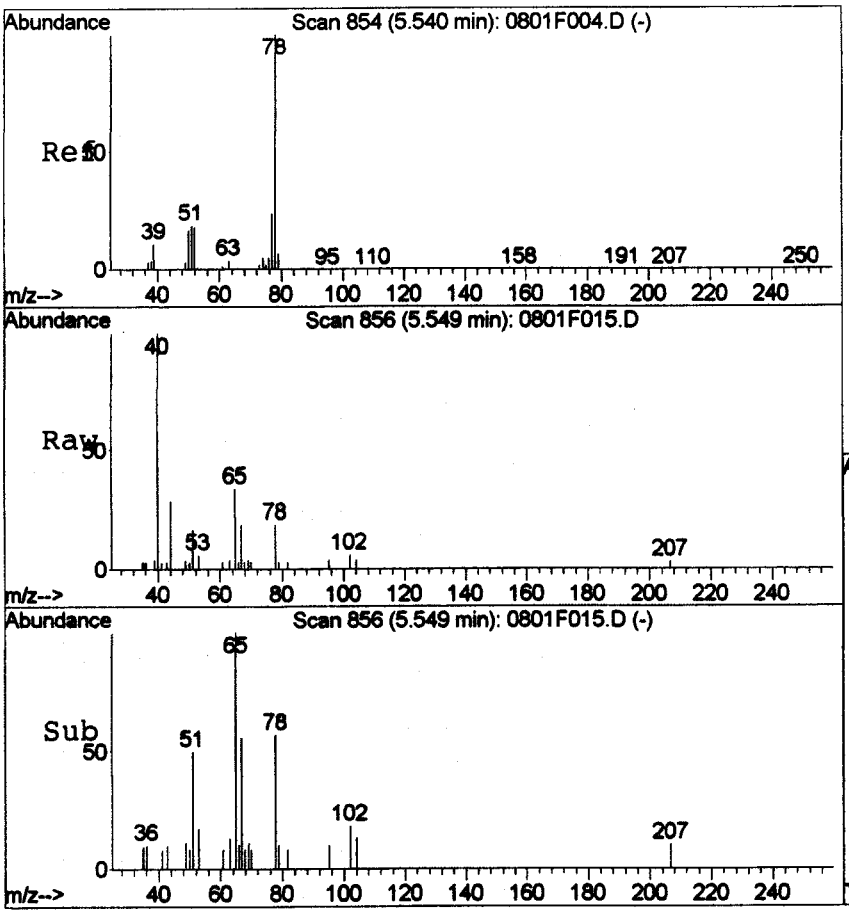


#18
cis-1,2-Dichloroethene
Concen: 60.00 PPB
RT: 4.45 min Scan# 646
Delta R.T. -0.01 min
Lab File: 0801F015.D
Acq: 1 Aug 2011 6:08 pm

Tgt Ion: 96 Resp: 1060290

Ion	Ratio	Lower	Upper
96	100		
98	63.6	33.6	93.6
61	141.9	119.9	179.9

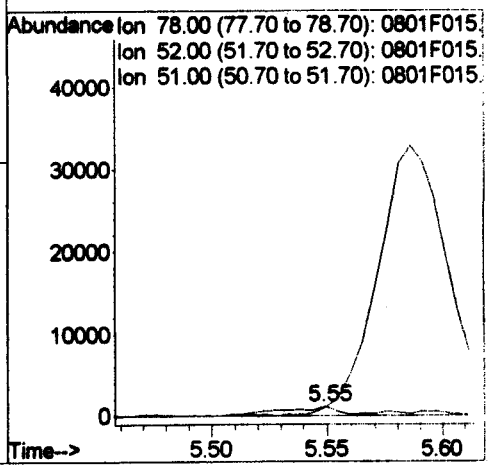


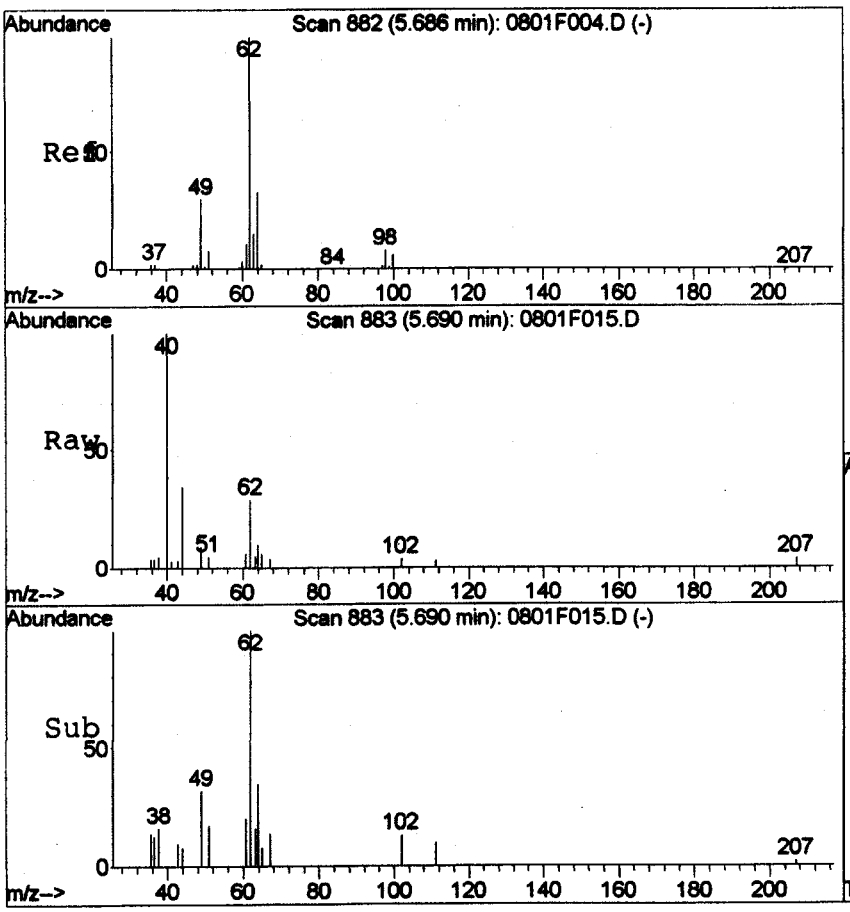


#25
Benzene
Concen: 0.03 PPB
RT: 5.55 min Scan# 856
Delta R.T. 0.01 min
Lab File: 0801F015.D
Acq: 1 Aug 2011 6:08 pm

Tgt Ion: 78 Resp: 1883

Ion	Ratio	Lower	Upper
78	100		
52	0.0	0.0	49.0
51	87.3	0.0	51.0#

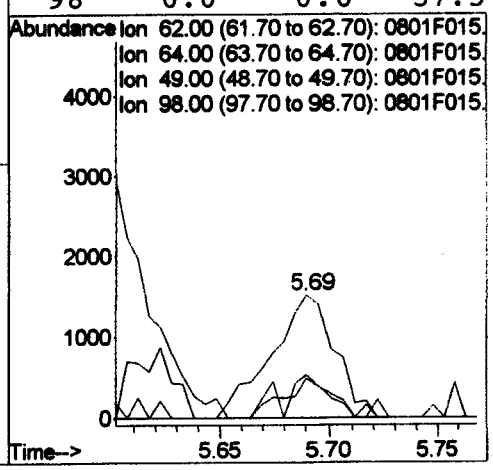


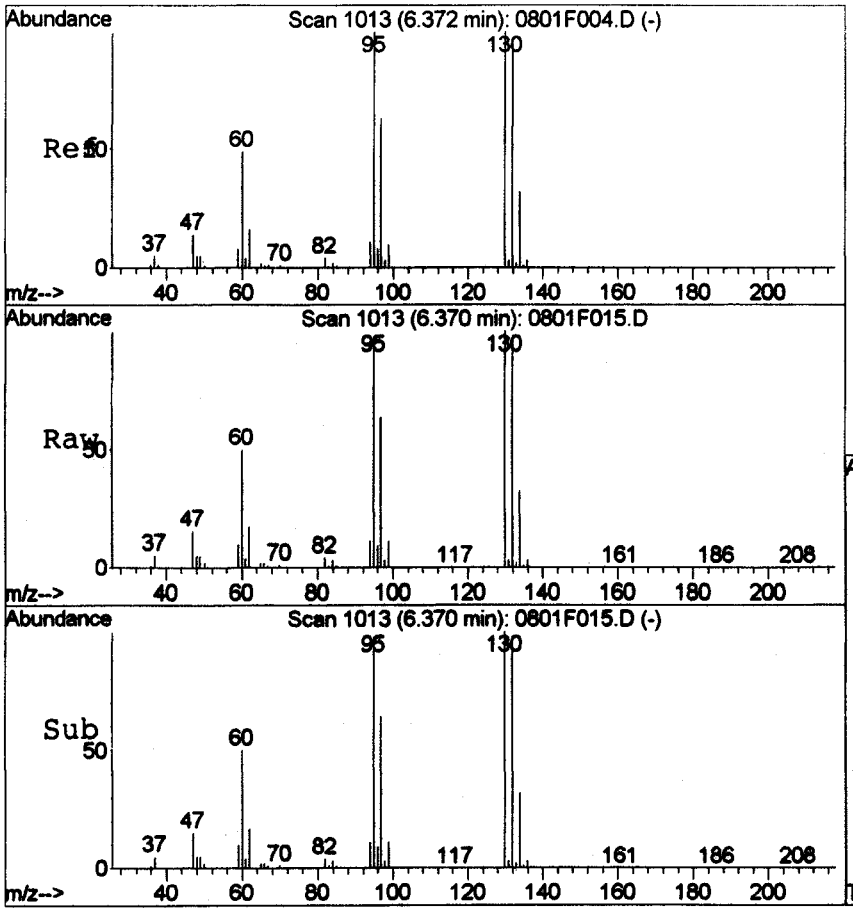


#26
1,2-Dichloroethane
Concen: 0.14 PPB
RT: 5.69 min Scan# 883
Delta R.T. 0.00 min
Lab File: 0801F015.D
Acq: 1 Aug 2011 6:08 pm

Tgt Ion: 62 Resp: 3007

Ion	Ratio	Lower	Upper
62	100		
64	34.5	3.7	63.7
49	31.7	0.2	60.2
98	0.0	0.0	37.5

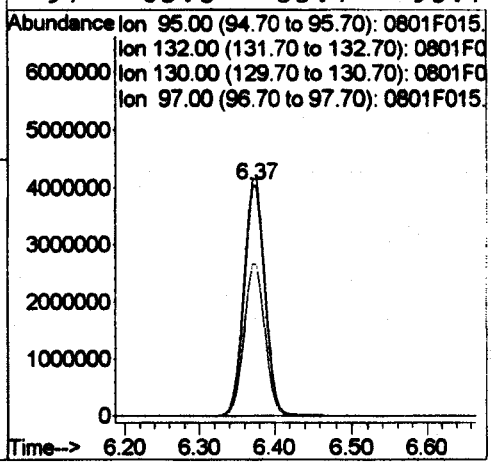


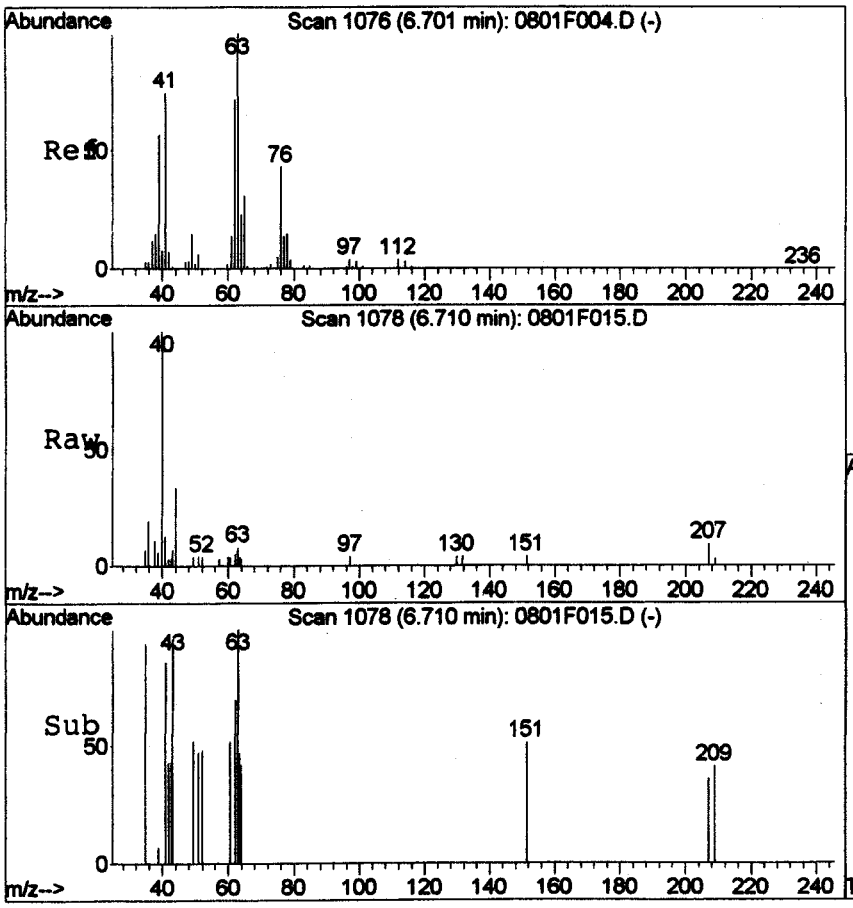


#27
Trichloroethene
Concen: 453.40 PPB
RT: 6.37 min Scan# 1013
Delta R.T. 0.00 min
Lab File: 0801F015.D
Acq: 1 Aug 2011 6:08 pm

Tgt Ion: 95 Resp: 7929671

Ion	Ratio	Lower	Upper
95	100		
132	98.6	64.3	124.3
130	102.2	65.2	125.2
97	65.3	35.7	95.7

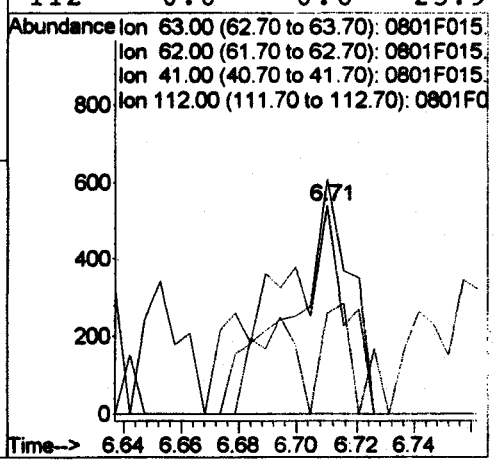


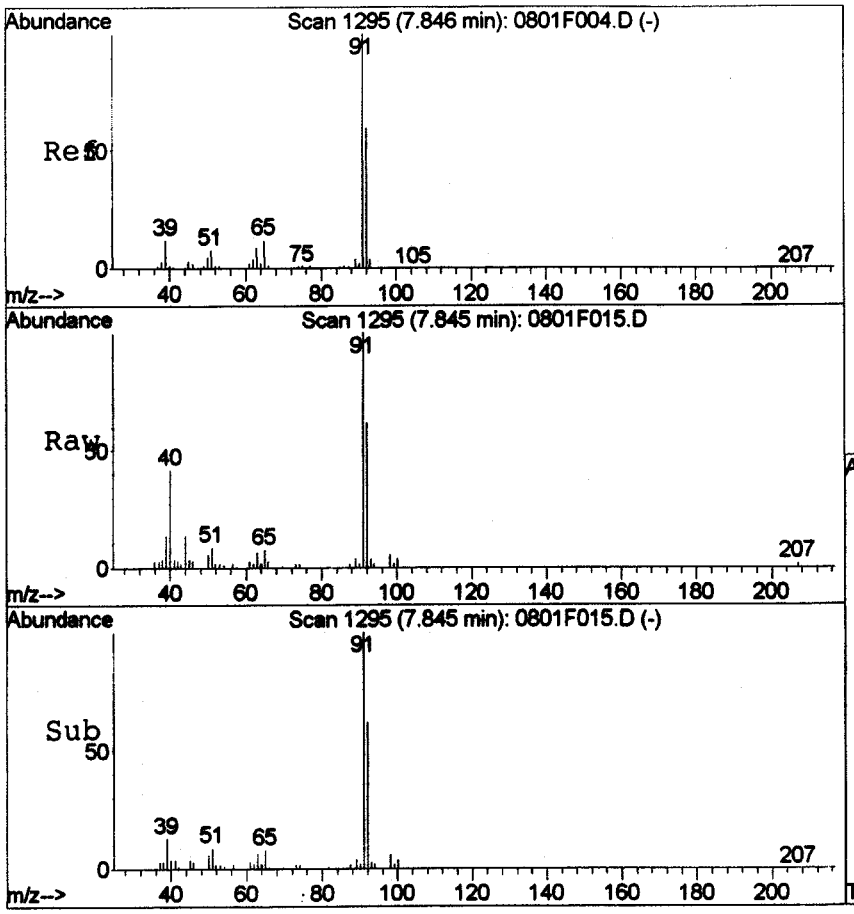


#28
1,2-Dichloropropane
Concen: 0.05 PPB
RT: 6.71 min Scan# 1078
Delta R.T. 0.01 min
Lab File: 0801F015.D
Acq: 1 Aug 2011 6:08 pm

Tgt Ion: 63 Resp: 843

Ion	Ratio	Lower	Upper
63	100		
62	48.0	42.7	102.7
41	112.8	48.2	108.2#
112	0.0	0.0	23.9

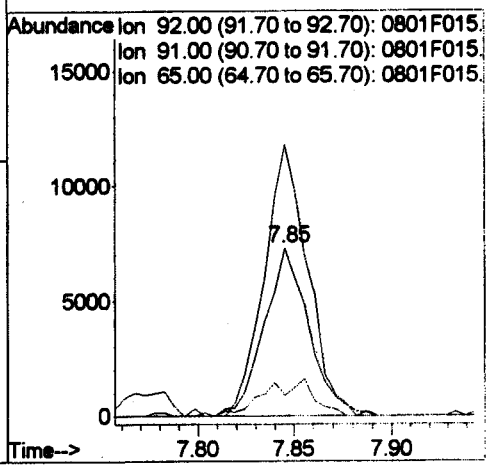


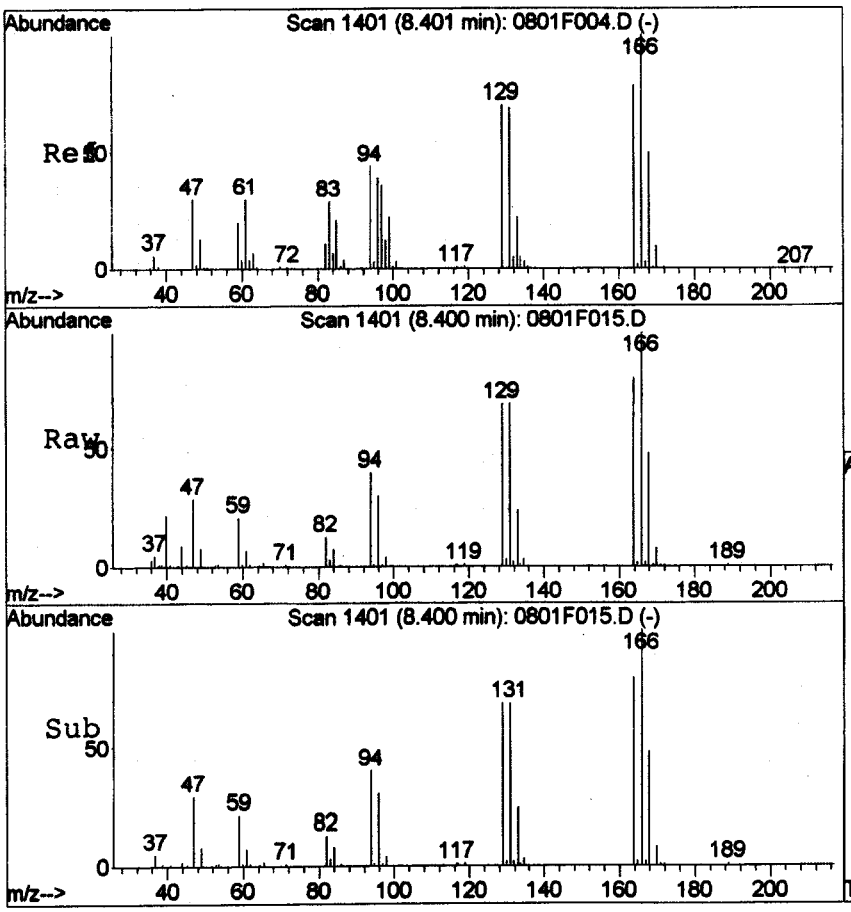


#34
Toluene
Concen: 0.27 PPB
RT: 7.85 min Scan# 1295
Delta R.T. 0.00 min
Lab File: 0801F015.D
Acq: 1 Aug 2011 6:08 pm

Tgt Ion: 92 Resp: 11829

Ion	Ratio	Lower	Upper
92	100		
91	160.8	138.1	198.1
65	12.1	0.0	51.7

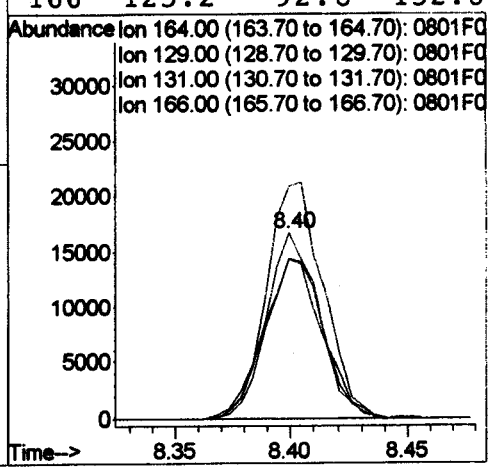


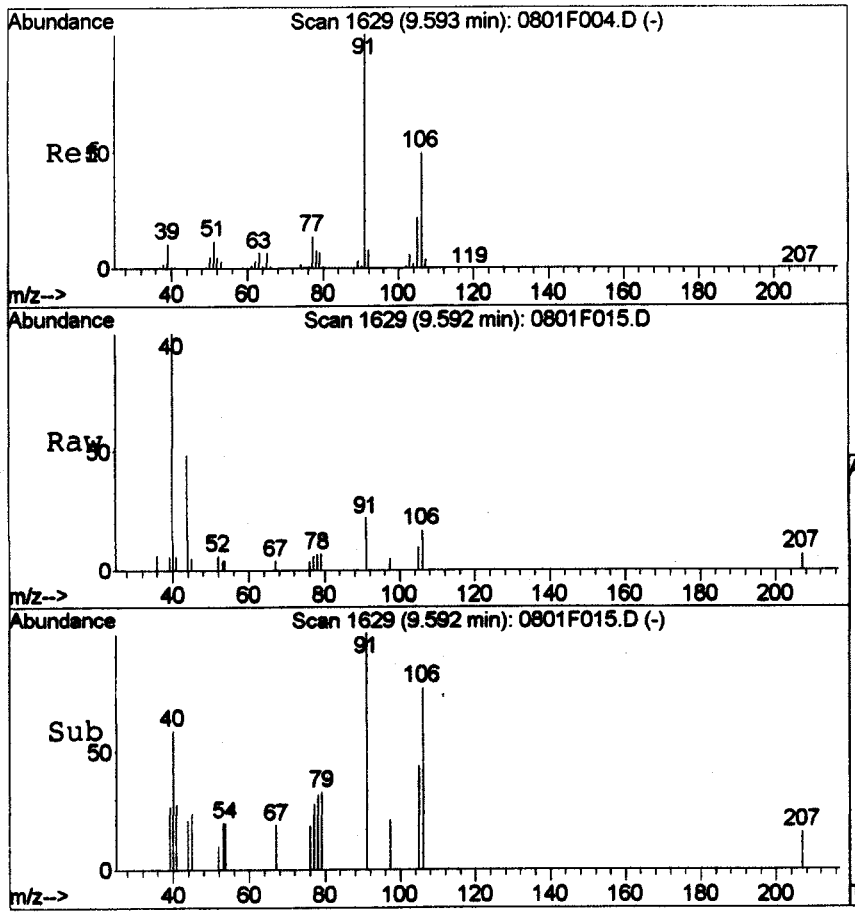


#38
Tetrachloroethene
Concen: 2.09 PPB
RT: 8.40 min Scan# 1401
Delta R.T. 0.00 min
Lab File: 0801F015.D
Acq: 1 Aug 2011 6:08 pm

Tgt Ion:164 Resp: 26833

Ion	Ratio	Lower	Upper
164	100		
129	86.5	66.2	126.2
131	85.9	61.3	121.3
166	125.2	92.8	152.8

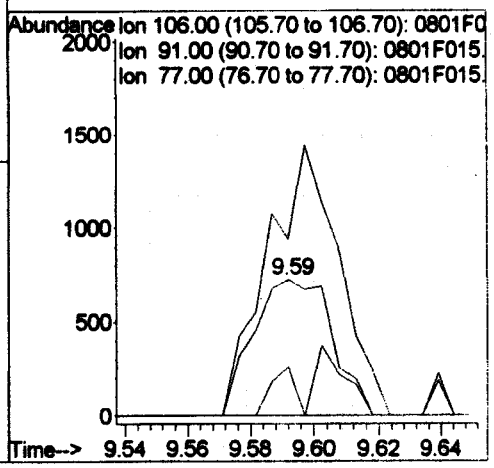




#43
m,p-Xylenes
Concen: 0.04 PPB
RT: 9.59 min Scan# 1629
Delta R.T. 0.00 min
Lab File: 0801F015.D
Acq: 1 Aug 2011 6:08 pm

Tgt Ion:106 Resp: 1255

Ion	Ratio	Lower	Upper
106	100		
91	129.8	175.3	235.3#
77	36.0	0.3	60.3



COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1106869
Project:	NIROP/J070047	**Date Collected:**	07/27/2011
Sample Matrix:	Water	**Date Received:**	07/28/2011
		Date Extracted:	08/05/2011
		Date Analyzed:	08/05/2011

Volatile Organic Compounds

Sample Name:	Fridin Air 84ADL	**Units:**	ug/L
Lab Code:	K1106869-003	**Basis:**	NA
File ID:	J:\MS23\DATA\080511BAYW\0805F017.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1107578
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 10

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.53	U	2.5	0.53	
75-35-4	1,1-Dichloroethene	3.7	U	5.0	3.7	
156-60-5	trans-1,2-Dichloroethene	**24**	D	5.0	0.39	
75-34-3	1,1-Dichloroethane	**1.0**	JD	5.0	0.41	
156-59-2	cis-1,2-Dichloroethene	**52**	D	5.0	0.42	
71-55-6	1,1,1-Trichloroethane (TCA)	0.44	U	5.0	0.44	
79-01-6	Trichloroethene (TCE)	**390**	D	5.0	0.44	
127-18-4	Tetrachloroethene (PCE)	**1.7**	JD	5.0	0.43	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	109	61-121	08/05/11	Acceptable
Toluene-d8	100	72-122	08/05/11	Acceptable
4-Bromofluorobenzene	91	70-120	08/05/11	Acceptable

Comments:

Exception Report

Data File: J:\MS23\DATA\080511BAYW\0805F017.D
Lab ID: K1106869-003
RunType: DL
Matrix: WATER

Date Acquired: 08/05/2011 17:10
Date Quantitated: 08/08/2011 15:26
Batch ID: KWG1107577
Analysis Method: 624
ListJoinID: LJ12964

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
Preparation Holding Time	NA	NA	NA	x	
Pre-Preparation Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Method Blank	NA	NA	NA	x	
MB Surrogate Recovery	NA	NA	NA	x	
Lab Control Spike	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA		x
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Analyte Exceptions

Exception Categories	Analyte Name	Result	Low Limit	High Limit	Corrective Action
Std MRL Unsupported by ICAL	Vinyl Chloride	2.5	2.0	NA	Tmr

Primary Review: KW

Secondary Review: HB 8-9-11

Quantitation Report

Data File:	J:\MS23\DATA\080511BAYW\0805F017.D			**Instrument:**	MS23
Acqu Date:	08/05/2011 17:10	**Quant Date:**	08/08/2011 15:26	**Vial:**	14
Run Type:	DL			**Dilution:**	10.0
Lab ID:	K1106869-003			**Soln Conc. Units:**	PPB

Bottle ID:		**Tier:**	V	**Matrix:**	WATER
Prod Code:	624 Modified VO	**Collect Date:**	07/27/2011	**Receive Date:**	07/28/2011

Analysis Lot:	KWG1107577	**Prep Lot:**	KWG1107578	**Report Group:**	K1106869
Analysis Method:	624	**Prep Method:**	METHOD		
Prep Ref:	1043649	**Prep Date:**	08/05/2011		

Quant Method:	J:\MS23\METHODS\032911624.M	**Calibration ID:**	CAL10443
Title:	Volatile Organic Compounds	**Report List ID:**	LJ12964
Tune Ref:	J:\MS23\DATA\080511BAYW\0805F003.D	**Method ID:**	MJ158
MB Ref:	J:\MS23\DATA\080511BAYW\0805F009.D	**Quant based on Report List**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	Fluorobenzene	5.94	0.00	96	648802	10.00	OK
2	Chlorobenzene-d5	9.35	0.00	82	271896	10.00	OK
3	1,4-Dichlorobenzene-d4	11.75	0.00	152	232005	10.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	Dibromofluoromethane	5.12	0.00	0.00	113	152666	10.88	109	61-121	OK	NR
1	Toluene-d8	7.77	0.00	0.00	98	614124	10.02	100	72-122	OK	NR
2	4-Bromofluorobenzene	10.58	0.00	0.00	95	204608	9.14	91	70-120	OK	NR

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	Vinyl Chloride				62	0		0.53	U	NR
1	1,1-Dichloroethene	2.44		0.00	96	1735	0.1100	3.7	U	NR
1	trans-1,2-Dichloroethene	3.20		0.00	96	38529	2.38	24	D	NR
1	1,1-Dichloroethane	3.73		0.00	63	3162	0.1000	1.0	JD	NR
1	cis-1,2-Dichloroethene	4.46		0.00	96	90713	5.21	52	D	NR
1	1,1,1-Trichloroethane (TCA)				97	0		0.44	U	NR
1	Trichloroethene (TCE)	6.37		0.00	95	676898	39.27	390	D	
2	Tetrachloroethene (PCE)	8.40		0.00	164	2185	0.1700	1.7	JD	NR

Prep Amount:	10 ml	**Dilution:**	10.0
Prep Final Vol:	10 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\080511BAYW\0805F017.D Vial: 14
Acq On : 5 Aug 2011 5:10 pm Operator: KR
Sample : K6869-003 10X DIL Inst : MS23
Misc : Multiplr: 10.00
MS Integration Params: rteint.p
Quant Time: Aug 08 15:26:41 2011 Quant Results File: 032911624BAYW.R

Quant Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Initial Calibration
DataAcq Meth : 8260

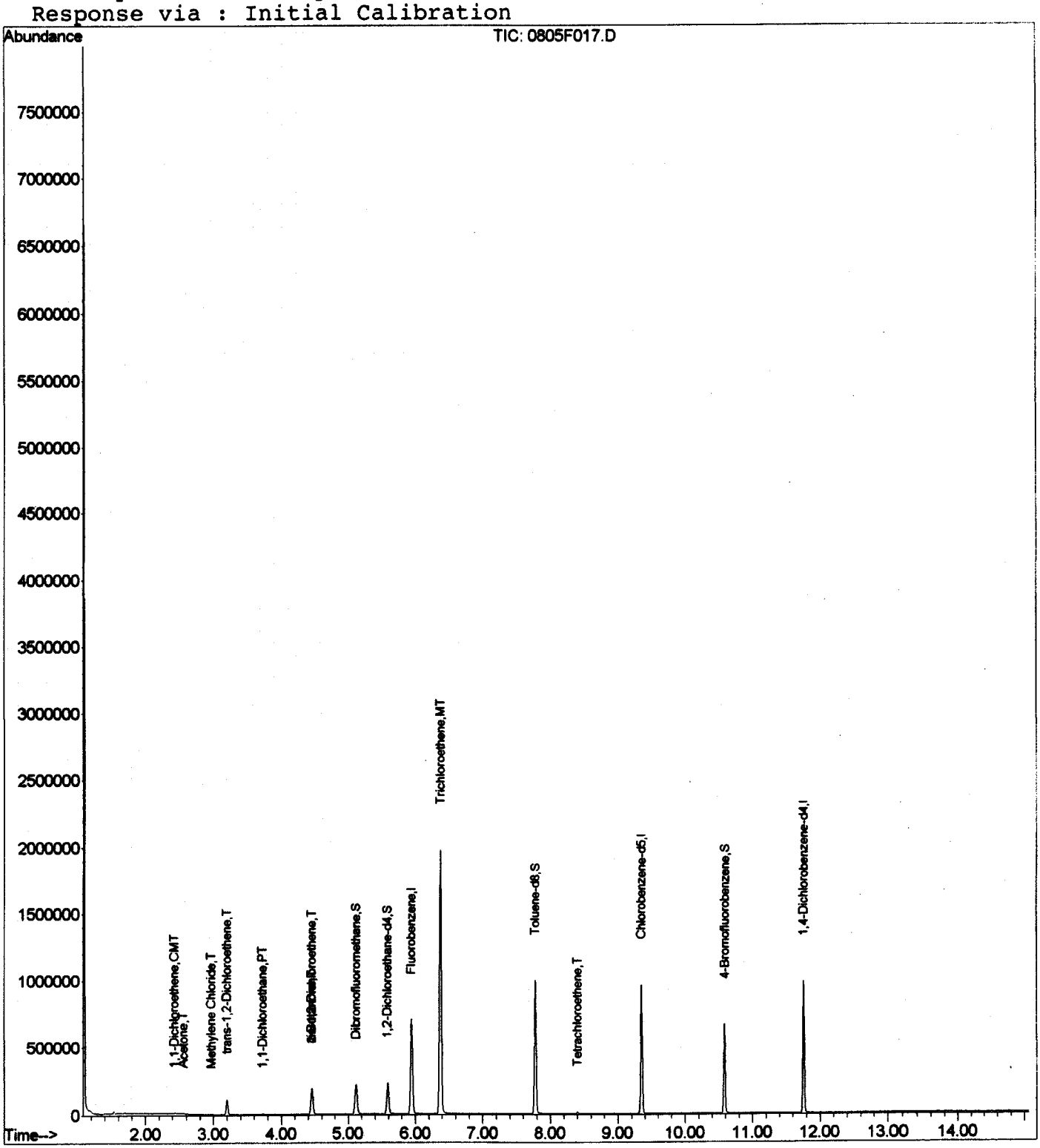
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	5.94	96	648802	10.00	PPB	0.00
35) Chlorobenzene-d5	9.35	82	271896	10.00	PPB	0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	232005	10.00	PPB	0.00
System Monitoring Compounds						
22) Dibromofluoromethane	5.12	113	152666	10.88	PPB	0.00
Spiked Amount 10.000			Recovery	=	108.80%	
24) 1,2-Dichloroethane-d4	5.59	65	178979	10.15	PPB	0.00
Spiked Amount 10.000			Recovery	=	101.50%	
33) Toluene-d8	7.77	98	614124	10.02	PPB	0.00
Spiked Amount 10.000			Recovery	=	100.20%	
47) 4-Bromofluorobenzene	10.58	95	204608	9.14	PPB	0.00
Spiked Amount 10.000			Recovery	=	91.40%	
Target Compounds						Qvalue
10) 1,1-Dichloroethene	2.44	96	1735	0.11	PPB	# 44
11) Acetone	2.56	43	1448	0.59	PPB	69
13) Methylene Chloride	2.98	84	1372	0.09	PPB	95
15) trans-1,2-Dichloroethene	3.20	96	38529	2.38	PPB	87
16) 1,1-Dichloroethane	3.73	63	3162	0.10	PPB	95
18) cis-1,2-Dichloroethene	4.46	96	90713	5.21	PPB	91
19) 2-Butanone	4.45	72	742	1.03	PPB	# 1
27) Trichloroethene	6.37	95	676898	39.27	PPB	97
38) Tetrachloroethene	8.40	164	2185	0.17	PPB	85

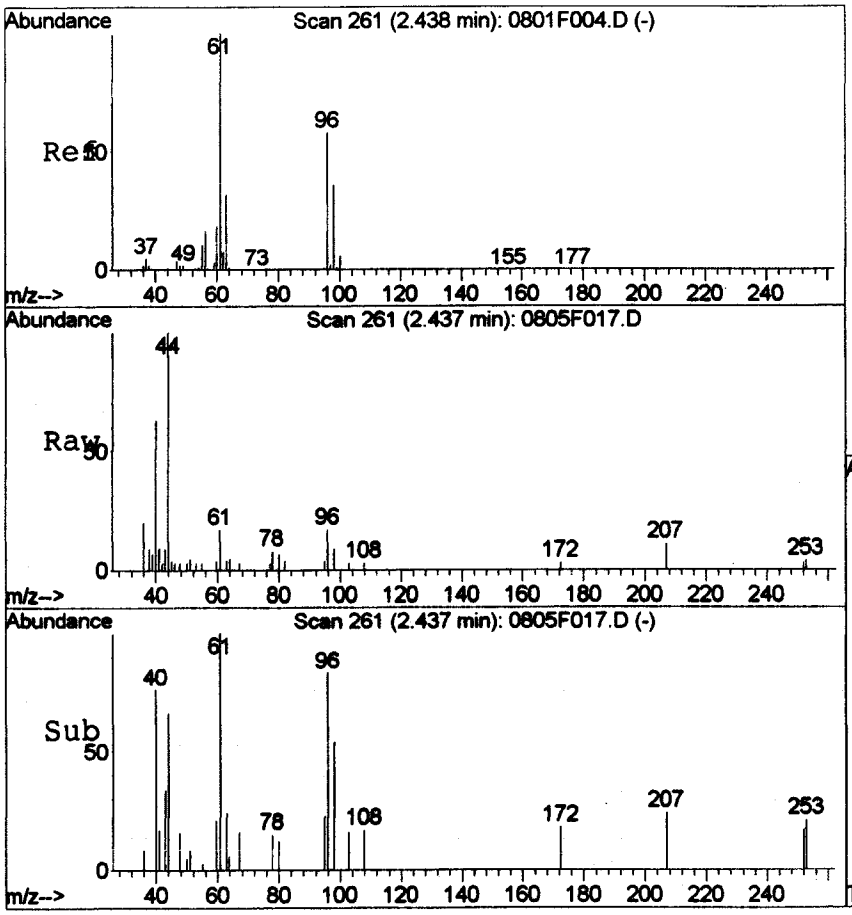
(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\080511BAYW\0805F017.D Vial: 14
Acq On : 5 Aug 2011 5:10 pm Operator: KR
Sample : K6869-003 10X DIL Inst : MS23
Misc : Multiplr: 10.00
MS Integration Params: rteint.p
Quant Time: Aug 8 15:26 2011 Quant Results File: 032911624BAY

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Initial Calibration

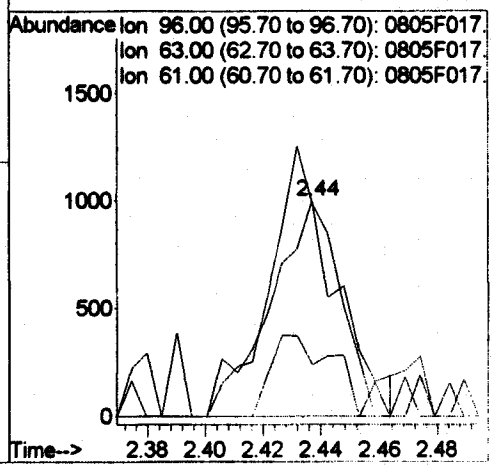


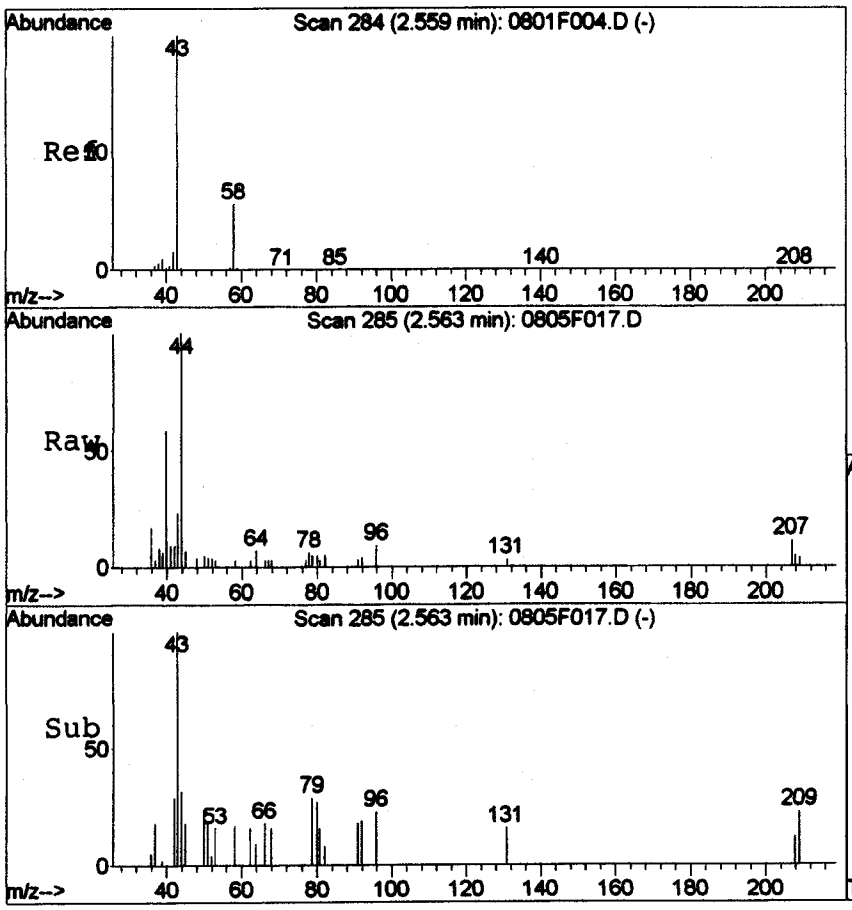


#10
1,1-Dichloroethene
Concen: 0.11 PPB
RT: 2.44 min Scan# 261
Delta R.T. -0.01 min
Lab File: 0805F017.D
Acq: 5 Aug 2011 5:10 pm

Tgt Ion: 96 Resp: 1735

Ion	Ratio	Lower	Upper
96	100		
63	23.9	28.6	88.6#
61	99.0	152.7	212.7#

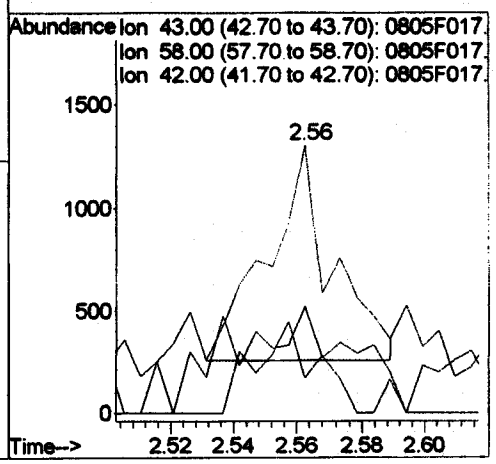


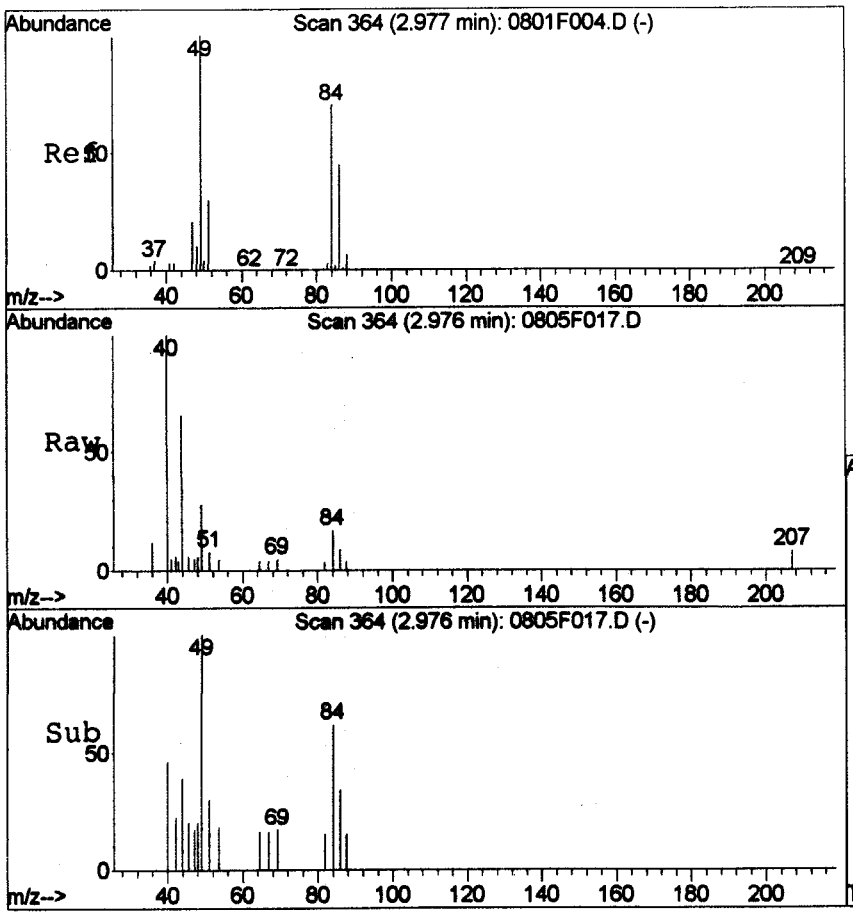


#11
Acetone
Concen: 0.59 PPB
RT: 2.56 min Scan# 285
Delta R.T. 0.00 min
Lab File: 0805F017.D
Acq: 5 Aug 2011 5:10 pm

Tgt Ion: 43 Resp: 1448

Ion	Ratio	Lower	Upper
43	100		
58	16.7	0.0	56.9
42	33.0	0.0	37.5

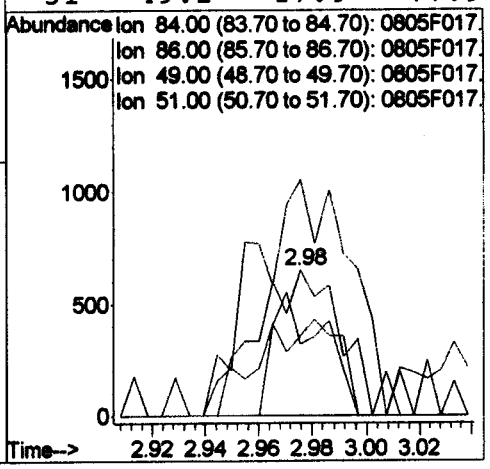


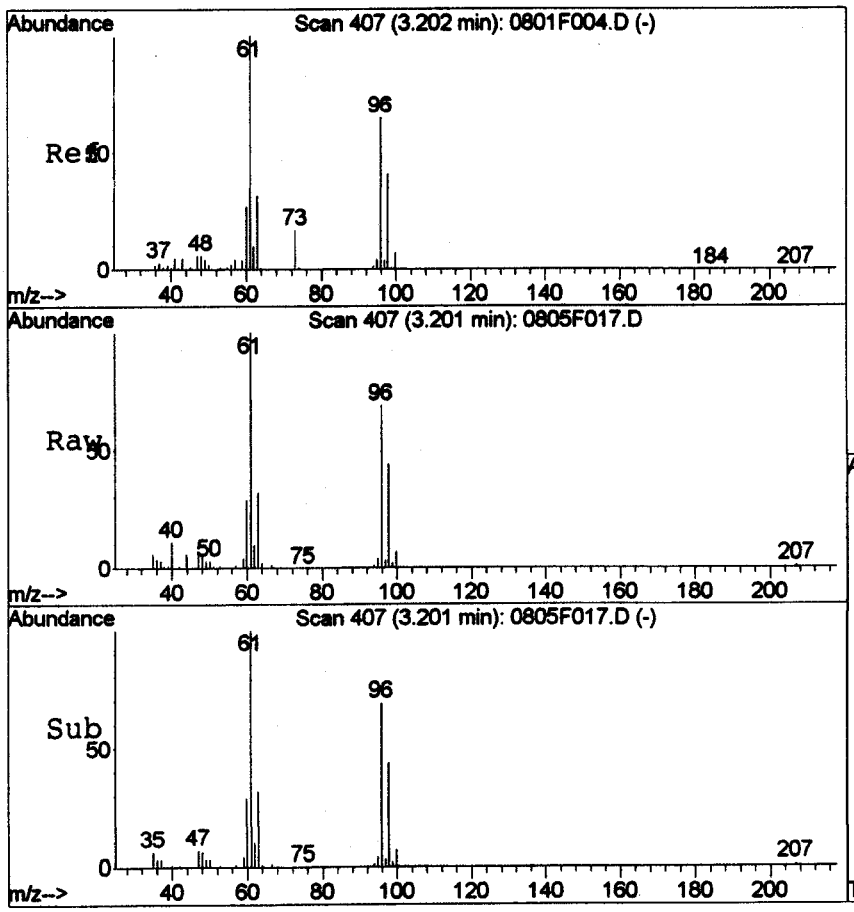


#13
Methylene Chloride
Concen: 0.09 PPB
RT: 2.98 min Scan# 364
Delta R.T. -0.01 min
Lab File: 0805F017.D
Acq: 5 Aug 2011 5:10 pm

Tgt Ion: 84 Resp: 1372

Ion	Ratio	Lower	Upper
84	100		
86	54.9	31.9	91.9
49	161.7	127.1	187.1
51	49.2	17.9	77.9

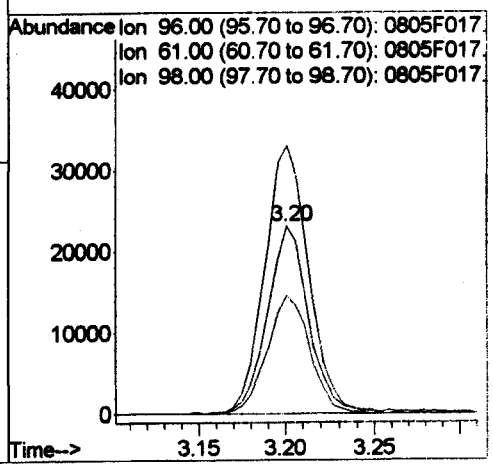


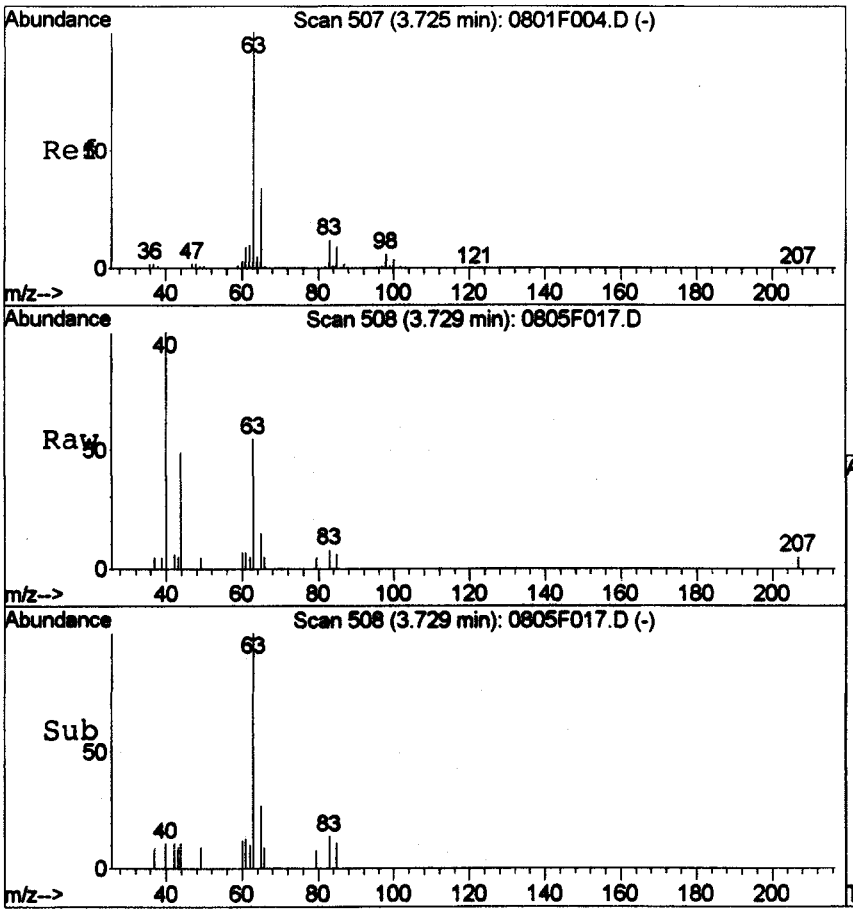


#15
trans-1,2-Dichloroethene
Concen: 2.38 PPB
RT: 3.20 min Scan# 407
Delta R.T. -0.01 min
Lab File: 0805F017.D
Acq: 5 Aug 2011 5:10 pm

Tgt Ion: 96 Resp: 38529

Ion	Ratio	Lower	Upper
96	100		
61	143.9	135.0	195.0
98	63.6	30.1	90.1

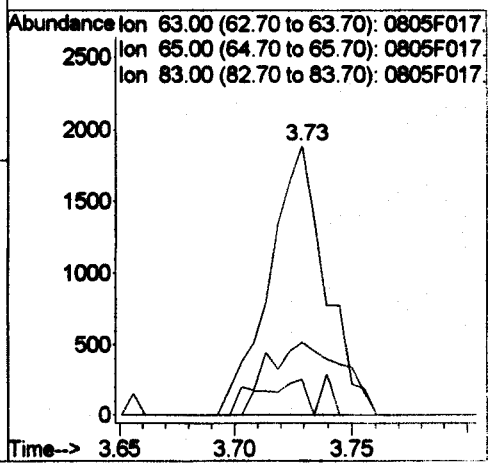


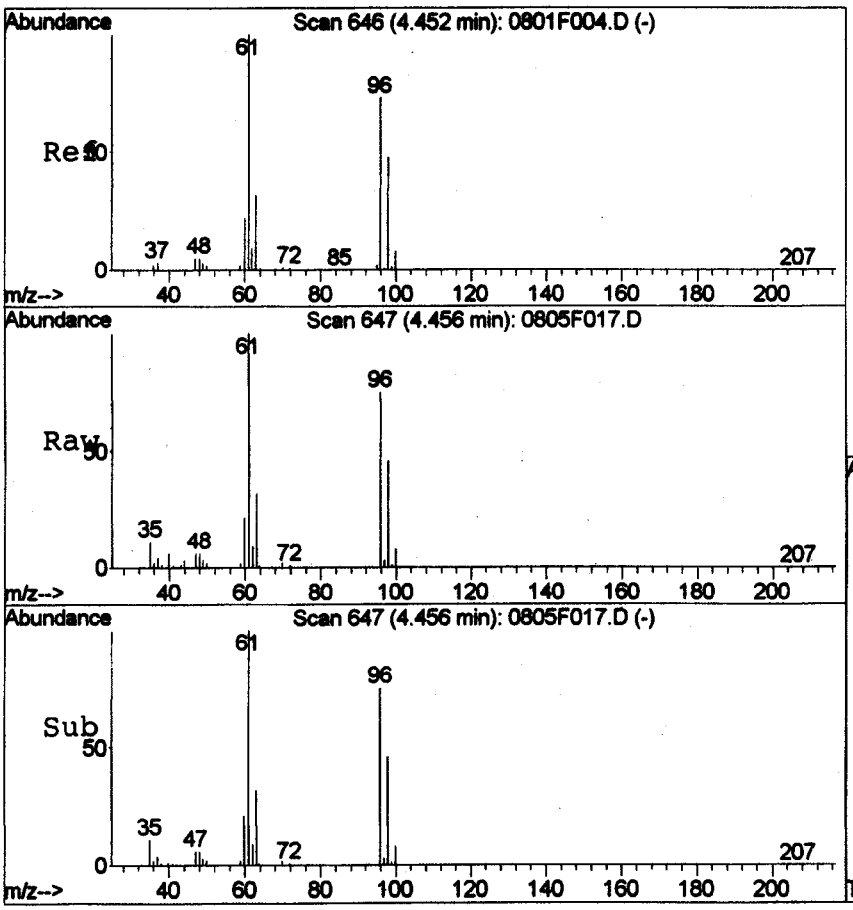


#16
1,1-Dichloroethane
Concen: 0.10 PPB
RT: 3.73 min Scan# 508
Delta R.T. -0.01 min
Lab File: 0805F017.D
Acq: 5 Aug 2011 5:10 pm

Tgt Ion: 63 Resp: 3162

Ion	Ratio	Lower	Upper
63	100		
65	27.3	0.8	60.8
83	13.6	0.0	42.7

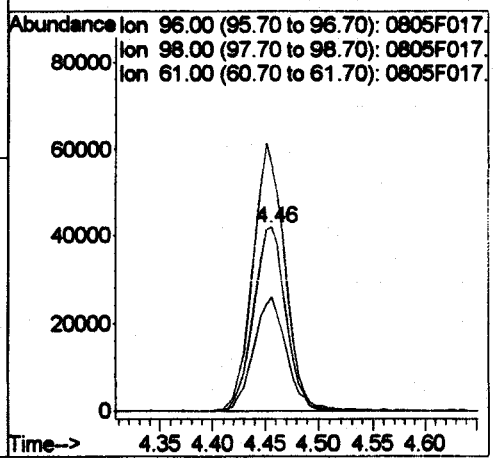


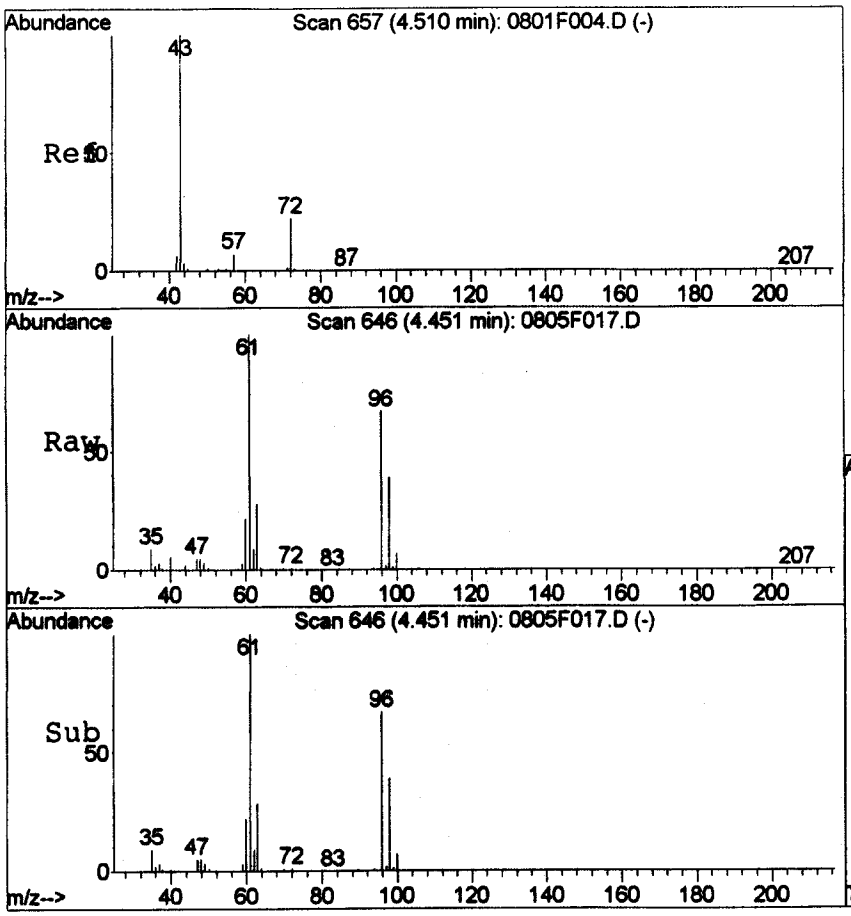


#18
cis-1,2-Dichloroethene
Concen: 5.21 PPB
RT: 4.46 min Scan# 647
Delta R.T. -0.01 min
Lab File: 0805F017.D
Acq: 5 Aug 2011 5:10 pm

Tgt Ion: 96 Resp: 90713

Ion	Ratio	Lower	Upper
96	100		
98	62.0	33.6	93.6
61	134.2	119.9	179.9



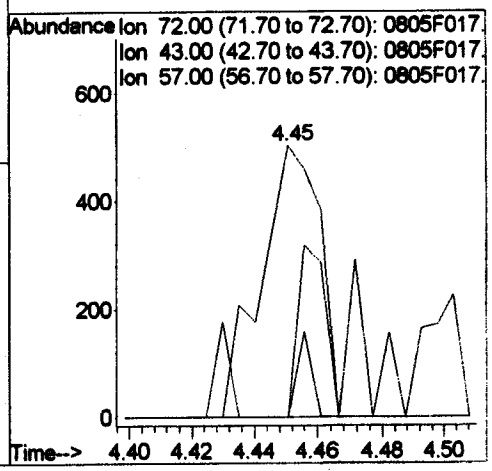


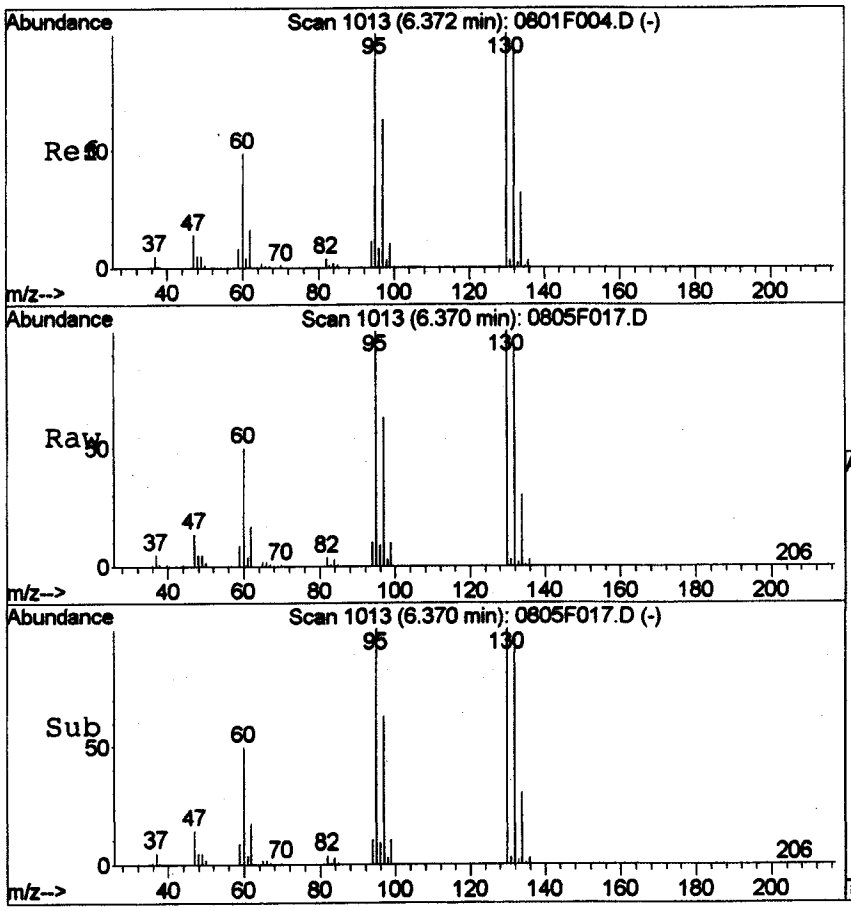
#19
2-Butanone
Concen: 1.03 PPB
RT: 4.45 min Scan# 646
Delta R.T. -0.06 min
Lab File: 0805F017.D
Acq: 5 Aug 2011 5:10 pm

Tgt Ion: 72 Resp: 742

Ion	Ratio	Lower	Upper
72	100		
43	0.0	461.9	521.9#
57	0.0	5.8	65.8#

NT

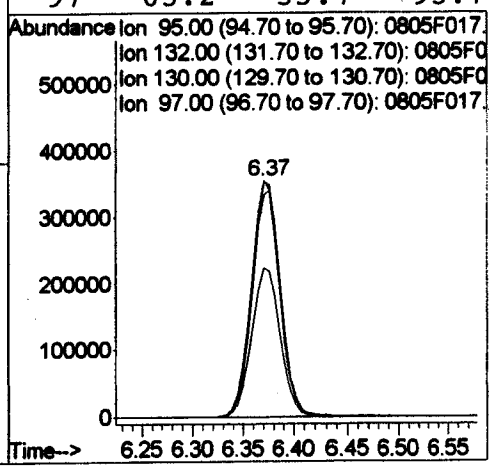


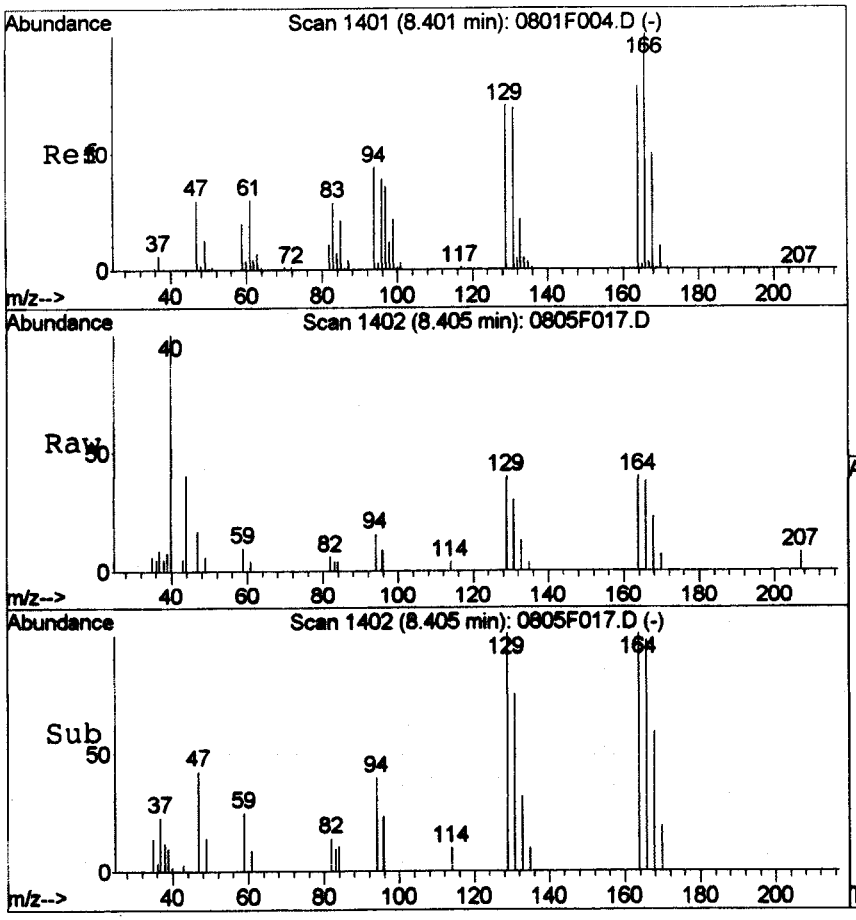


#27
Trichloroethene
Concen: 39.27 PPB
RT: 6.37 min Scan# 1013
Delta R.T. 0.00 min
Lab File: 0805F017.D
Acq: 5 Aug 2011 5:10 pm

Tgt Ion: 95 Resp: 676898

Ion	Ratio	Lower	Upper
95	100		
132	94.0	64.3	124.3
130	99.6	65.2	125.2
97	63.2	35.7	95.7

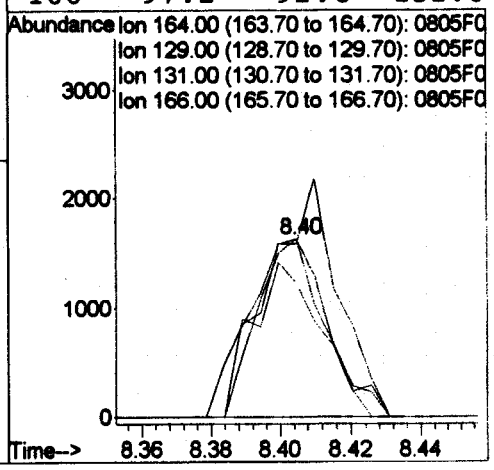




#38
Tetrachloroethene
Concen: 0.17 PPB
RT: 8.40 min Scan# 1402
Delta R.T. 0.01 min
Lab File: 0805F017.D
Acq: 5 Aug 2011 5:10 pm

Tgt Ion:164 Resp: 2185

Ion	Ratio	Lower	Upper
164	100		
129	100.0	66.2	126.2
131	75.0	61.3	121.3
166	97.2	92.8	152.8



Exception Report

Data File: J:\MS23\DATA\080211BAYW\0802F010.D
Lab ID: K1106869-003
RunType: SMPL
Matrix: WATER

Date Acquired: 08/02/2011 15:01
Date Quantitated: 08/03/2011 16:21
Batch ID: KWG1107328
Analysis Method: 624
ListJoinID: LJ12964

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
Preparation Holding Time	NA	NA	NA	x	
Pre-Preparation Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Method Blank	NA	NA	NA	x	
MB Surrogate Recovery	NA	NA	NA	x	
Lab Control Spike	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

NR

Renu doesn't matter
orig.

Primary Review: KN 8/3/11

Secondary Review: MB 8.4.11

Printed: 08/03/2011 16:28:21
u:\Stealth\Crystal.rpt\except2.rpt

Quantitation Report

Data File:	J:\MS23\DATA\080211BAYW\0802F010.D			**Instrument:**	MS23
Acqu Date:	08/02/2011 15:01	**Quant Date:**	08/03/2011 16:21	**Vial:**	9
Run Type:	SMPL			**Dilution:**	10.0
Lab ID:	K1106869-003			**Soln Conc. Units:**	PPB

Bottle ID:		**Tier:**	V	**Matrix:**	WATER
Prod Code:	624 Modified VO	**Collect Date:**	07/27/2011	**Receive Date:**	07/28/2011

Analysis Lot:	KWG1107328	**Prep Lot:**	KWG1107326	**Report Group:**	K1106869
Analysis Method:	624	**Prep Method:**	METHOD		
Prep Ref:	1041427	**Prep Date:**	08/02/2011		

Quant Method:	J:\MS23\METHODS\032911624BAY	**Calibration ID:**	CAL10443
Title:	Volatile Organic Compounds	**Report List ID:**	LJ12964
Tune Ref:	J:\MS23\DATA\080211BAYW\0802F002.D	**Method ID:**	MJ158
MB Ref:	J:\MS23\DATA\080211BAYW\0802F008.D	**Quant based on Report List**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	Fluorobenzene	5.94	0.00	96	644225	10.00	OK
2	Chlorobenzene-d5	9.35	0.01	82	268631	10.00	OK
3	1,4-Dichlorobenzene-d4	11.75	0.00	152	224625	10.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	Dibromofluoromethane	5.11	-0.01	0.00	113	156795	11.25	113	61-121	OK	NR
1	Toluene-d8	7.77	0.00	0.00	98	608491	10.00	100	72-122	OK	NR
2	4-Bromofluorobenzene	10.58	0.00	0.00	95	195479	8.84	88	70-120	OK	NR

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	Vinyl Chloride				62	0		0.53	U	NR
1	1,1-Dichloroethene				96	0d		3.7	U	NR
1	trans-1,2-Dichloroethene	3.20		0.00	96	24365	1.51	15	JD	NR
1	1,1-Dichloroethane	3.73	0.01	0.00	63	4431	0.1400	1.4	JD	NR
1	cis-1,2-Dichloroethene	4.45		0.00	96	154142	8.91	89	D	NR
1	1,1,1-Trichloroethane (TCA)				97	0		0.44	U	NR
1	Trichloroethene (TCE)	6.37		0.00	95	483094	28.22	280	D	
2	Tetrachloroethene (PCE)	8.40		0.00	164	1387	0.1100	1.1	JD	NR

Prep Amount:	10 ml	**Dilution:**	10.0
Prep Final Vol:	10 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\080211BAYW\0802F010.D
Acq On : 2 Aug 2011 3:01 pm
Sample : K6869-003 10X DIL
Misc :
MS Integration Params: rteint.p
Quant Time: Aug 03 16:20:43 2011

Vial: 9
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624BAYW.R

Quant Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Initial Calibration
DataAcq Meth : 8260

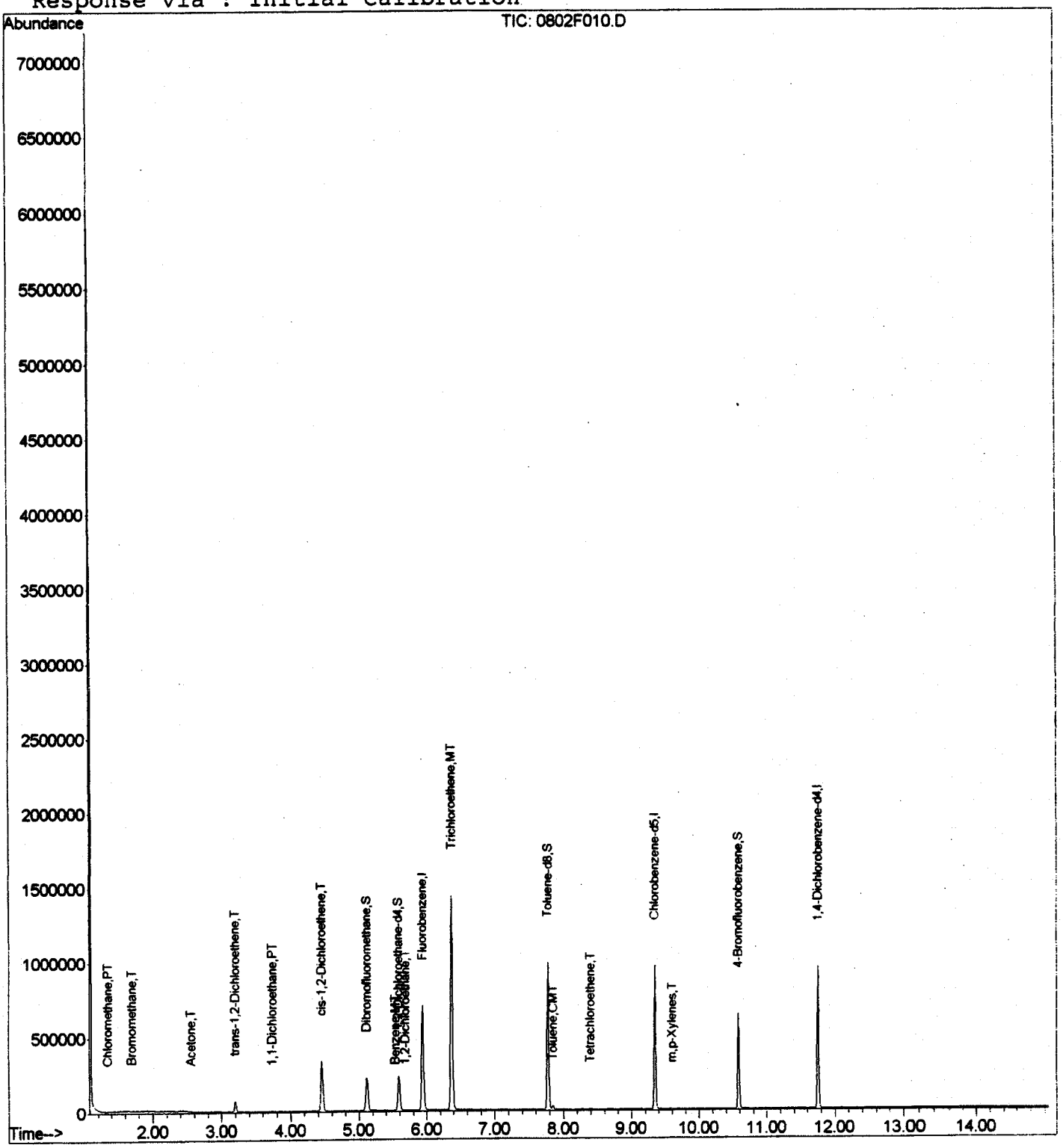
Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Fluorobenzene	5.94	96	644225	10.00	PPB		0.00
35) Chlorobenzene-d5	9.35	82	268631	10.00	PPB		0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	224625	10.00	PPB		0.00
System Monitoring Compounds							
22) Dibromofluoromethane	5.11	113	156795	11.25	PPB		0.00
Spiked Amount 10.000			Recovery	=	112.50%		
24) 1,2-Dichloroethane-d4	5.59	65	179167	10.23	PPB		0.00
Spiked Amount 10.000			Recovery	=	102.30%		
33) Toluene-d8	7.77	98	608491	10.00	PPB		0.00
Spiked Amount 10.000			Recovery	=	100.00%		
47) 4-Bromofluorobenzene	10.58	95	195479	8.84	PPB		0.00
Spiked Amount 10.000			Recovery	=	88.40%		
Target Compounds							Qvalue
3) Chloromethane	1.35	50	1360	0.04	PPB		81
5) Bromomethane	1.70	96	737	0.08	PPB	#	43
11) Acetone	2.56	43	2970	1.21	PPB		85
15) trans-1,2-Dichloroethene	3.20	96	24365	1.51	PPB		98
16) 1,1-Dichloroethane	3.73	63	4431	0.14	PPB		96
18) cis-1,2-Dichloroethene	4.45	96	154142	8.91	PPB		98
25) Benzene	5.53	78	1027	0.02	PPB		55
26) 1,2-Dichloroethane	5.69	62	1284	0.06	PPB	#	42
27) Trichloroethene	6.37	95	483094	28.22	PPB		93
34) Toluene	7.85	92	9360	0.22	PPB		80
38) Tetrachloroethene	8.40	164	1387	0.11	PPB	#	55
43) m,p-Xylenes	9.60	106	1078	0.04	PPB	#	80

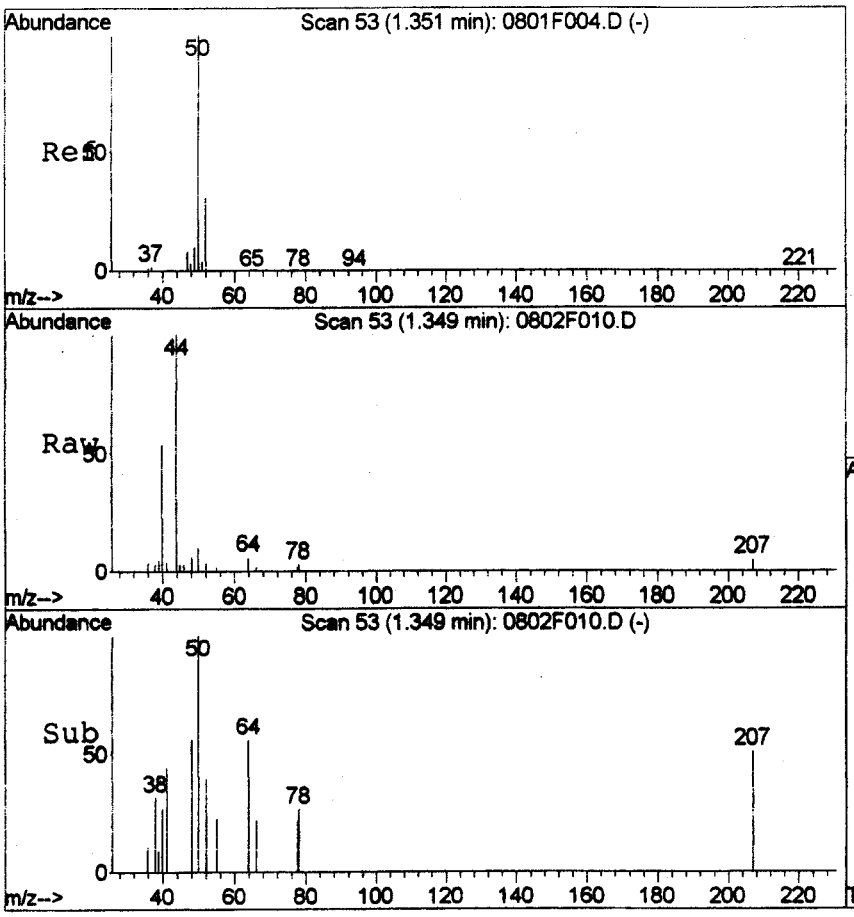
(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\080211BAYW\0802F010.D Vial: 9
Acq On : 2 Aug 2011 3:01 pm Operator: KR
Sample : K6869-003 10X DIL Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Aug 3 16:21 2011 Quant Results File: 032911624BAY

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Initial Calibration

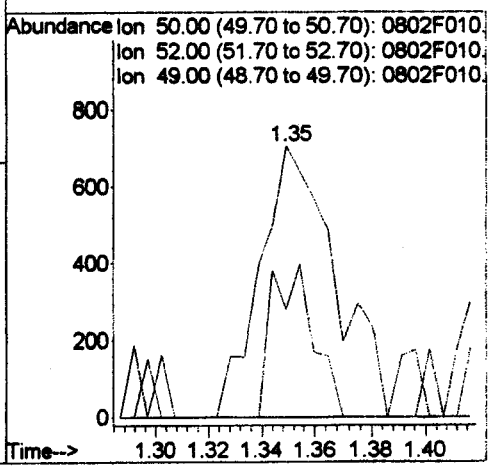


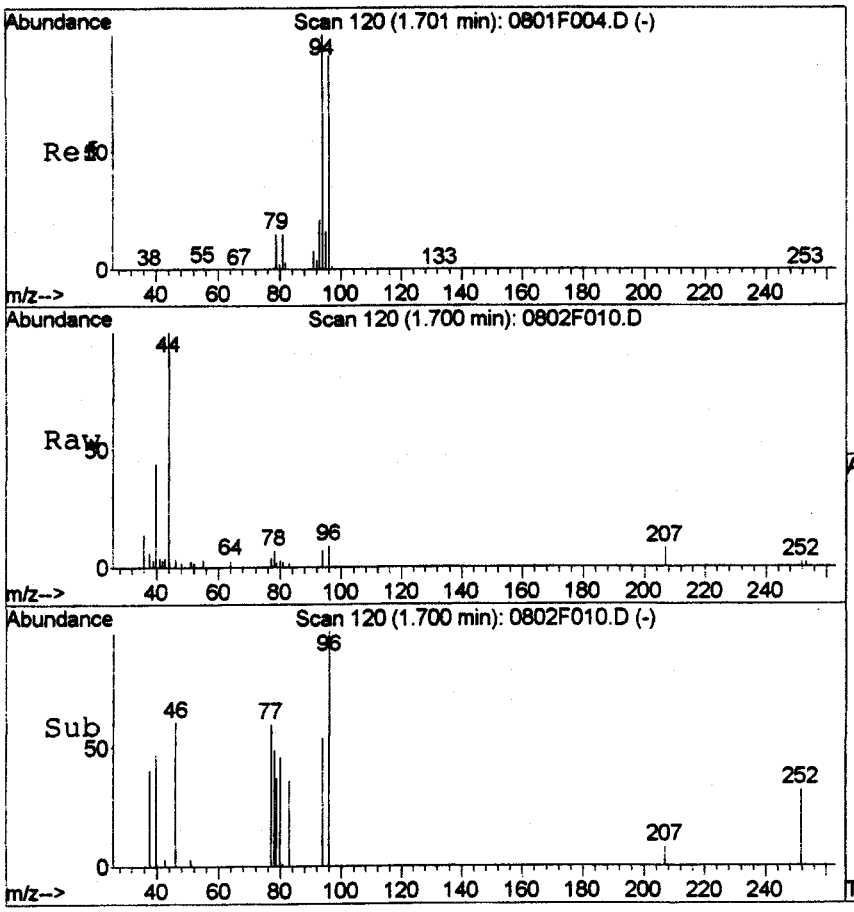


#3
Chloromethane
Concen: 0.04 PPB
RT: 1.35 min Scan# 53
Delta R.T. -0.01 min
Lab File: 0802F010.D
Acq: 2 Aug 2011 3:01 pm

Tgt Ion: 50 Resp: 1360

Ion	Ratio	Lower	Upper
50	100		
52	39.9	1.3	61.3
49	0.0	0.0	40.2

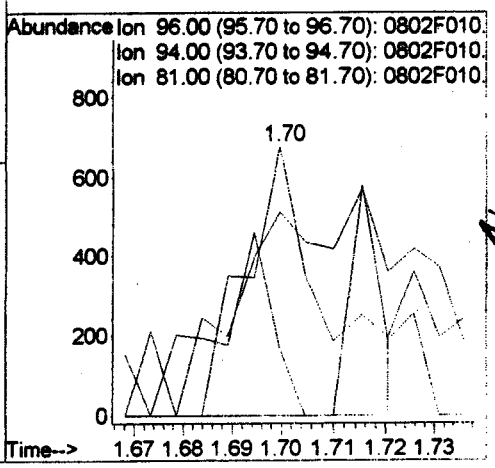




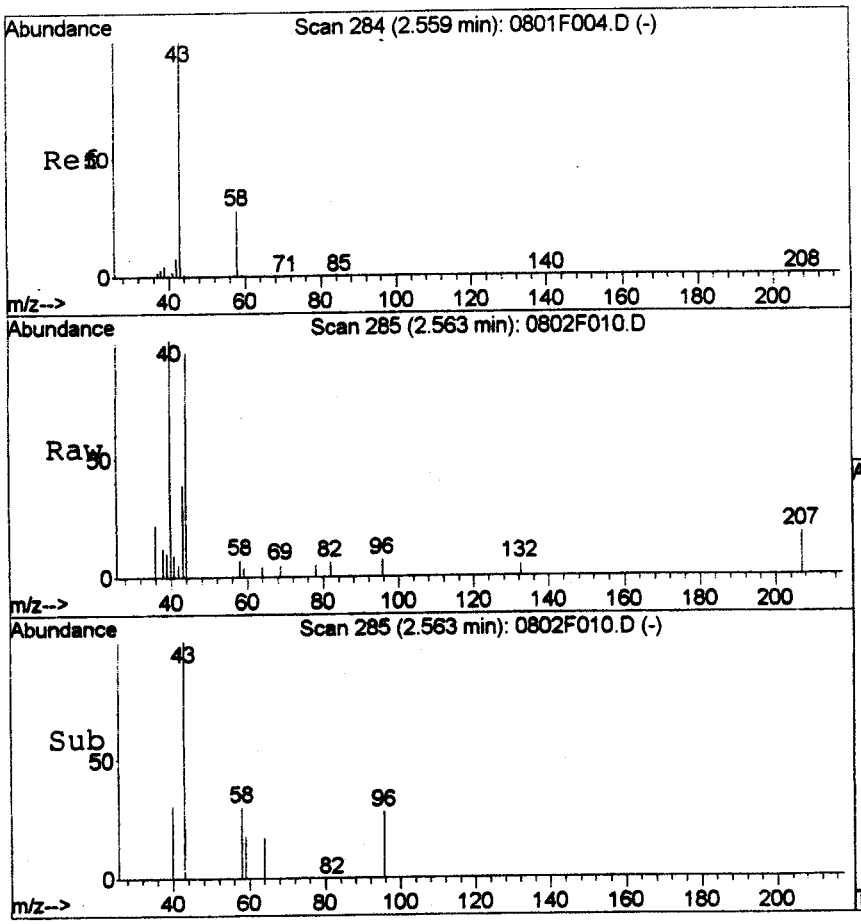
#5
Bromomethane
Concen: 0.08 PPB
RT: 1.70 min Scan# 120
Delta R.T. -0.01 min
Lab File: 0802F010.D
Acq: 2 Aug 2011 3:01 pm

Tgt Ion: 96 Resp: 737

Ion	Ratio	Lower	Upper
96	100		
94	39.4	69.2	129.2#
81	0.0	0.0	47.0



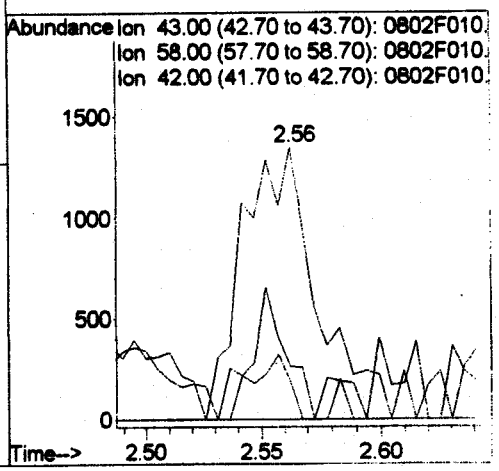
NT

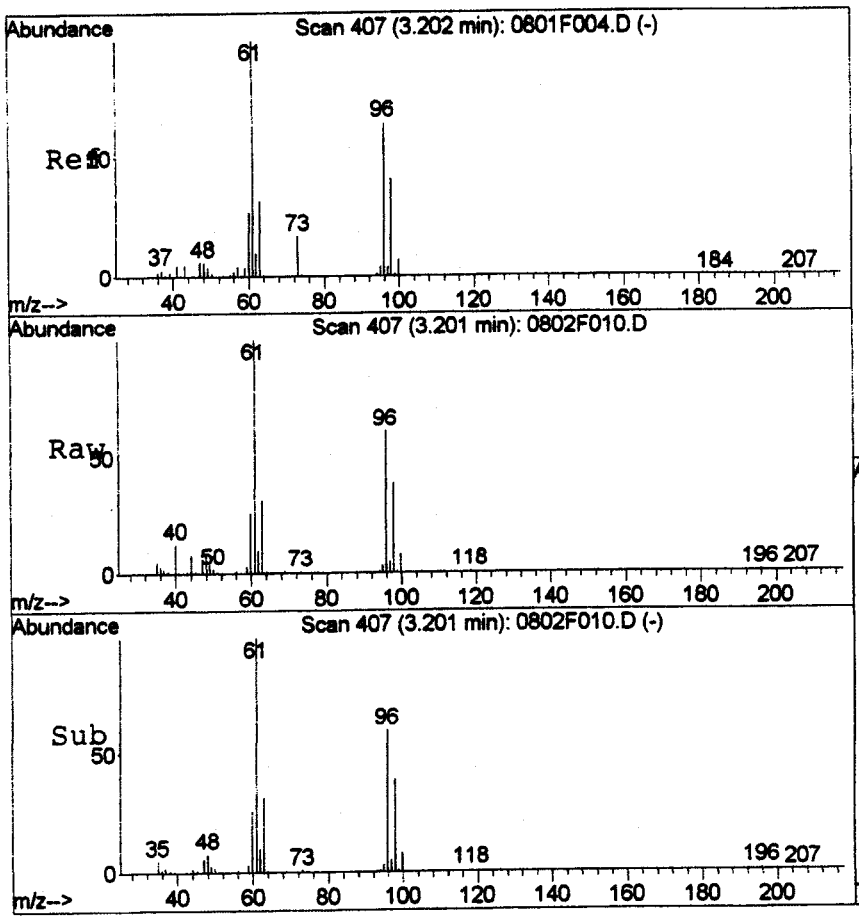


#11
Acetone
Concen: 1.21 PPB
RT: 2.56 min Scan# 285
Delta R.T. 0.00 min
Lab File: 0802F010.D
Acq: 2 Aug 2011 3:01 pm

Tgt Ion: 43 Resp: 2970

Ion	Ratio	Lower	Upper
43	100		
58	19.3	0.0	56.9
42	1.8	0.0	37.5

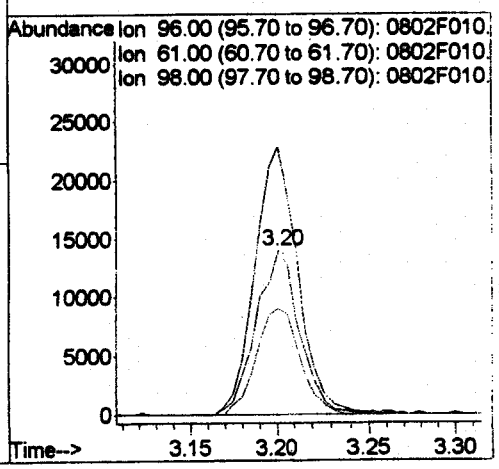


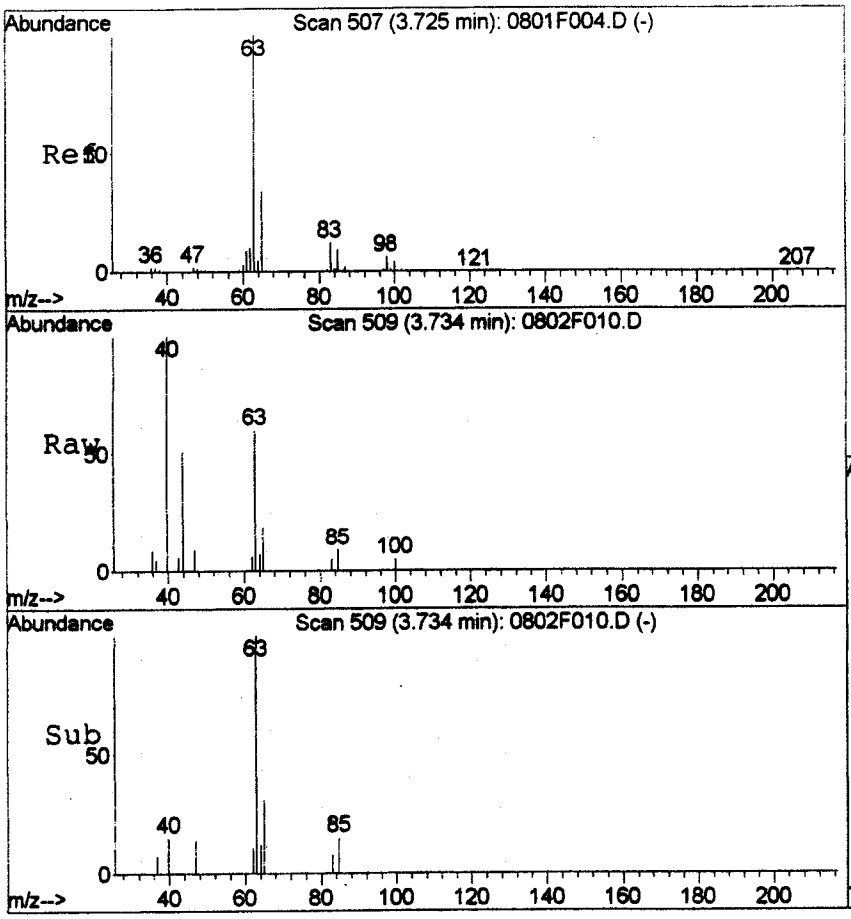


#15
trans-1,2-Dichloroethene
Concen: 1.51 PPB
RT: 3.20 min Scan# 407
Delta R.T. -0.01 min
Lab File: 0802F010.D
Acq: 2 Aug 2011 3:01 pm

Tgt Ion: 96 Resp: 24365

Ion	Ratio	Lower	Upper
96	100		
61	163.5	135.0	195.0
98	64.2	30.1	90.1

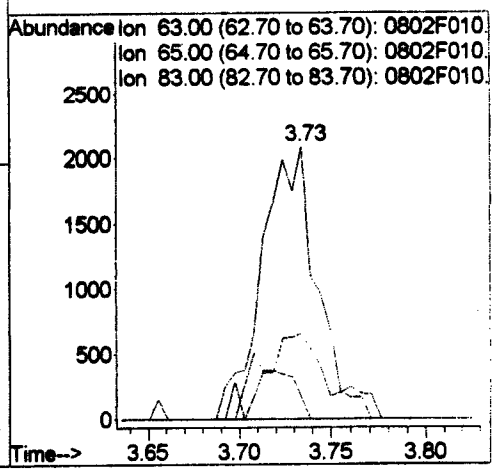


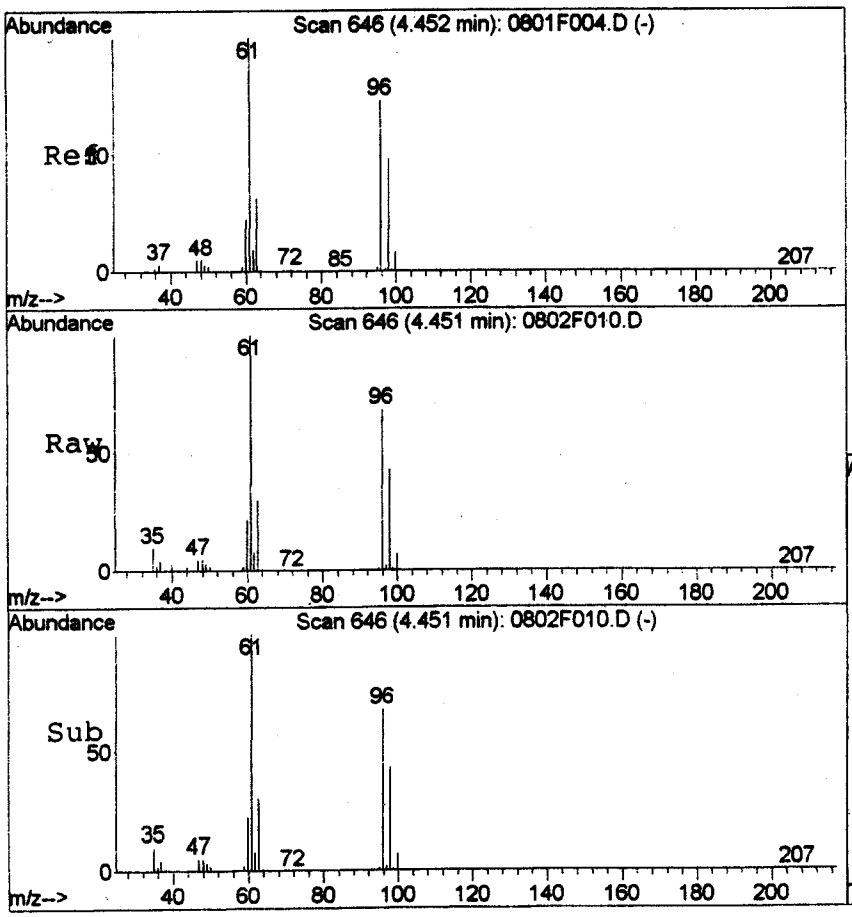


#16
1,1-Dichloroethane
Concen: 0.14 PPB
RT: 3.73 min Scan# 509
Delta R.T. -0.00 min
Lab File: 0802F010.D
Acq: 2 Aug 2011 3:01 pm

Tgt Ion: 63 Resp: 4431

Ion	Ratio	Lower	Upper
63	100		
65	31.3	0.8	60.8
83	7.9	0.0	42.7

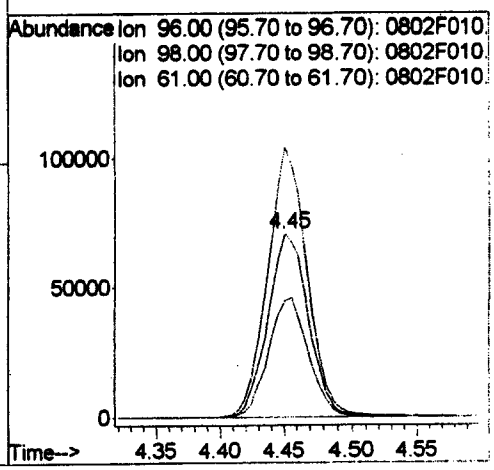


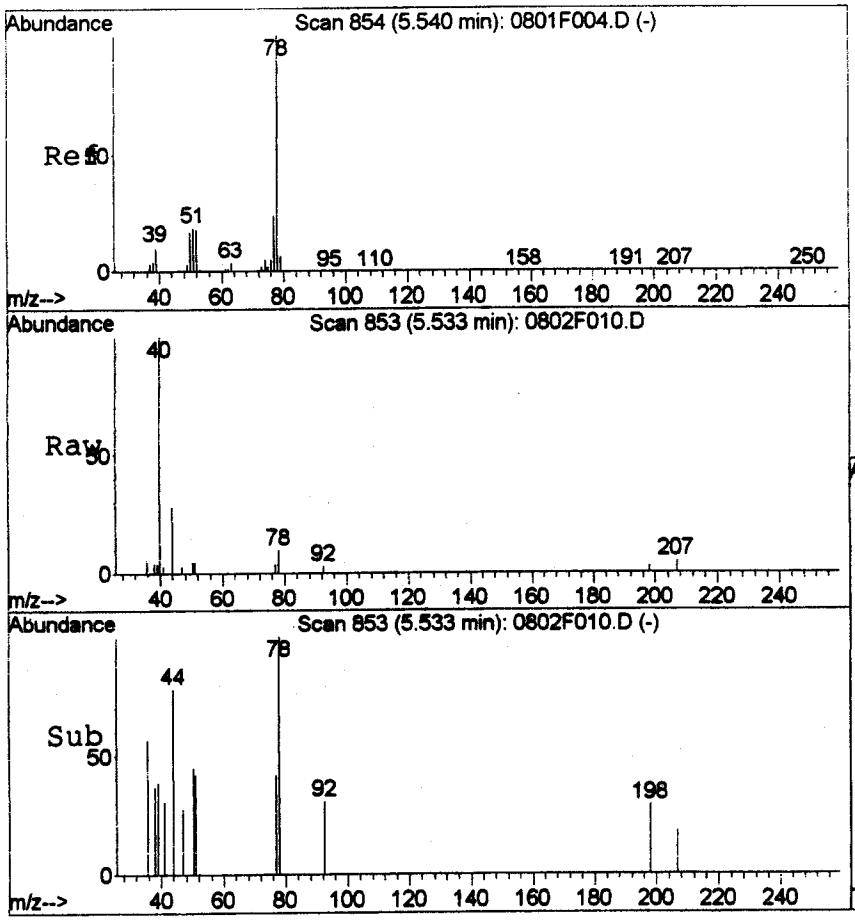


#18
cis-1,2-Dichloroethene
Concen: 8.91 PPB
RT: 4.45 min Scan# 646
Delta R.T. -0.01 min
Lab File: 0802F010.D
Acq: 2 Aug 2011 3:01 pm

Tgt Ion: 96 Resp: 154142

Ion	Ratio	Lower	Upper
96	100		
98	62.6	33.6	93.6
61	146.8	119.9	179.9

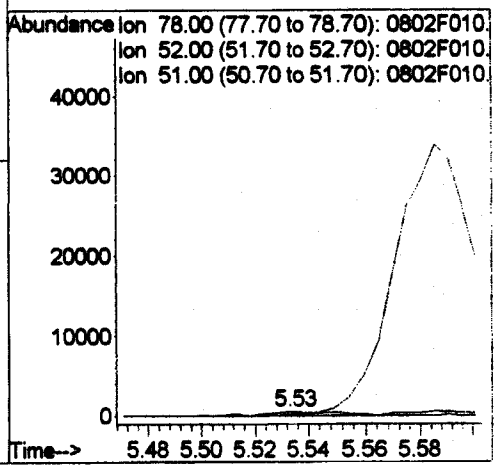


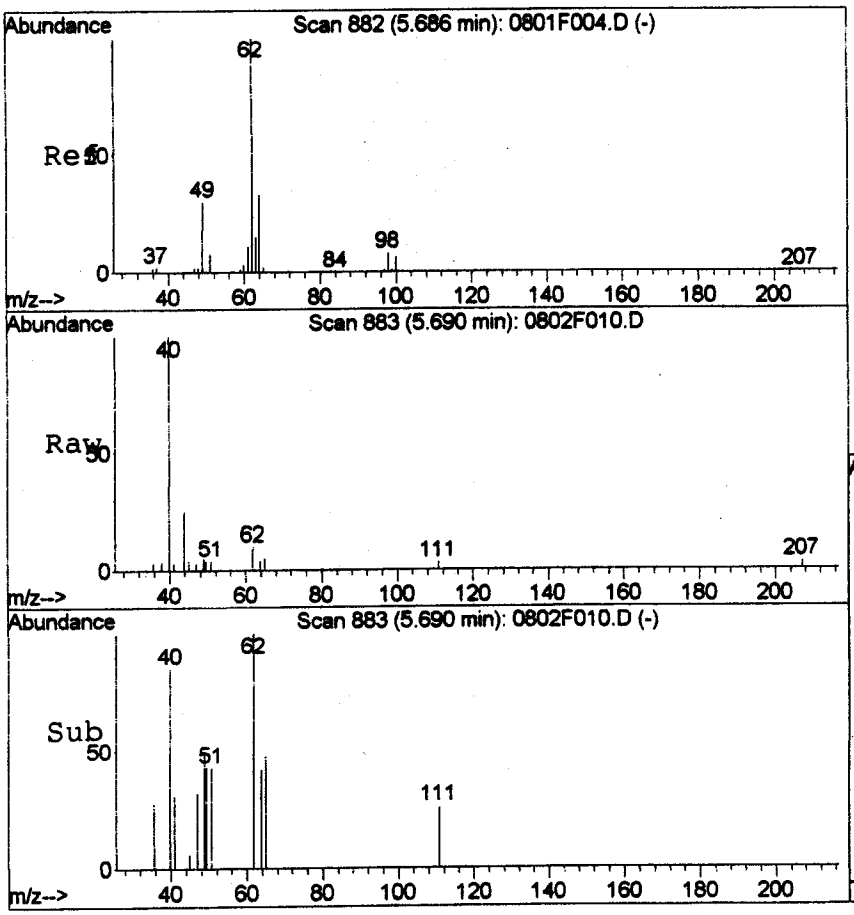


#25
Benzene
Concen: 0.02 PPB
RT: 5.53 min Scan# 853
Delta R.T. -0.01 min
Lab File: 0802F010.D
Acq: 2 Aug 2011 3:01 pm

Tgt Ion: 78 Resp: 1027

Ion	Ratio	Lower	Upper
78	100		
52	0.0	0.0	49.0
51	43.4	0.0	51.0

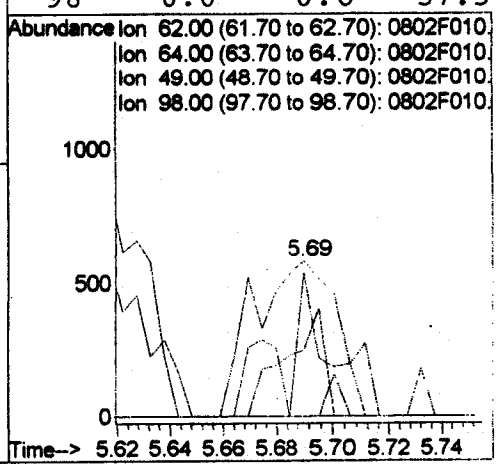


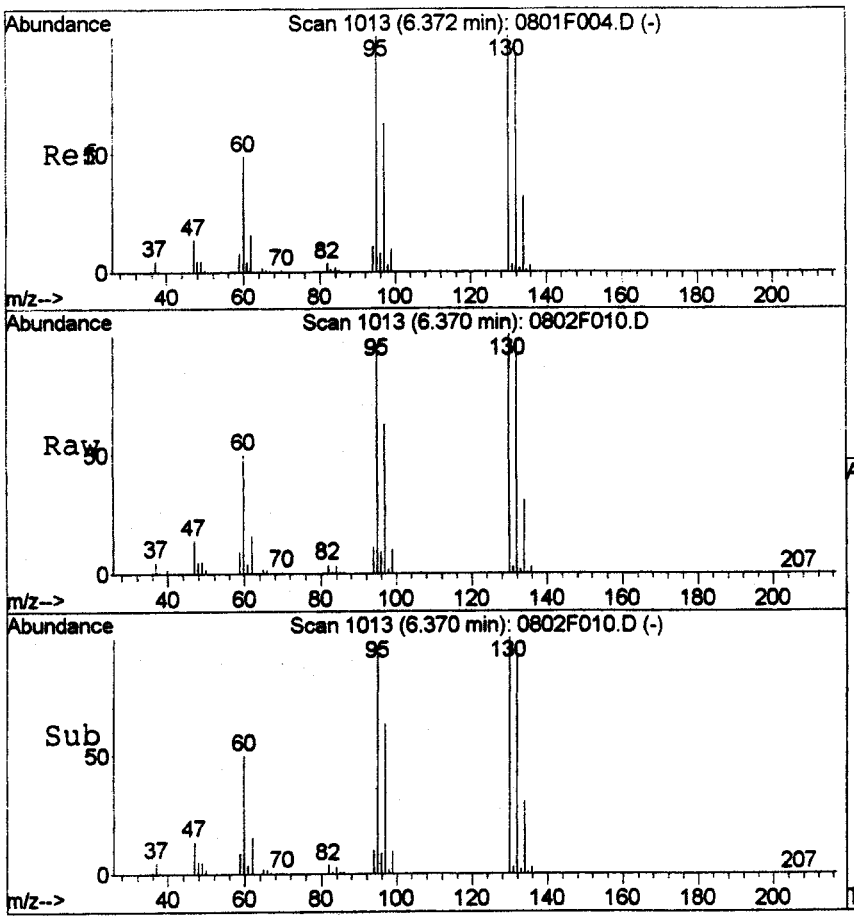


#26
1,2-Dichloroethane
Concen: 0.06 PPB
RT: 5.69 min Scan# 883
Delta R.T. -0.00 min
Lab File: 0802F010.D
Acq: 2 Aug 2011 3:01 pm

Tgt Ion: 62 Resp: 1284

Ion	Ratio	Lower	Upper
62	100		
64	42.5	3.7	63.7
49	92.7	0.2	60.2#
98	0.0	0.0	37.5

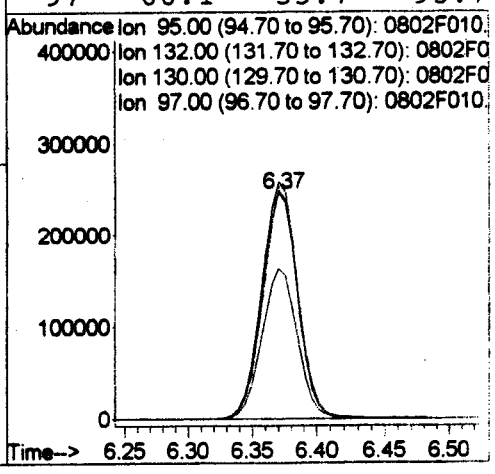


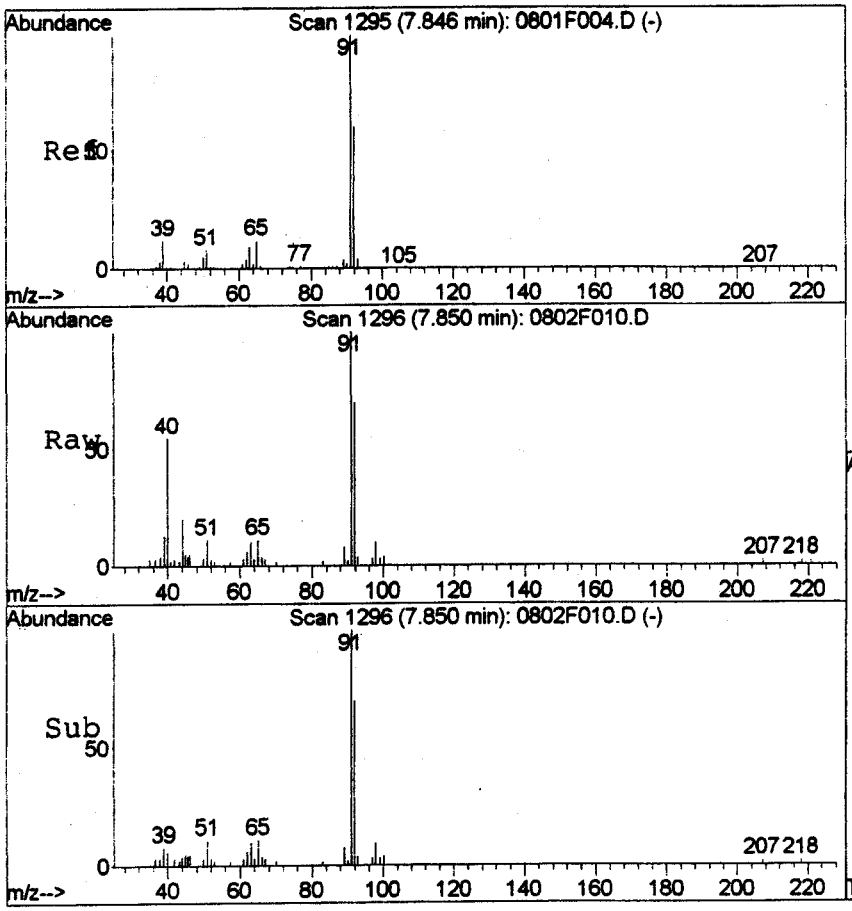


#27
Trichloroethene
Concen: 28.22 PPB
RT: 6.37 min Scan# 1013
Delta R.T. -0.00 min
Lab File: 0802F010.D
Acq: 2 Aug 2011 3:01 pm

Tgt Ion: 95 Resp: 483094

Ion	Ratio	Lower	Upper
95	100		
132	101.4	64.3	124.3
130	105.3	65.2	125.2
97	66.1	35.7	95.7

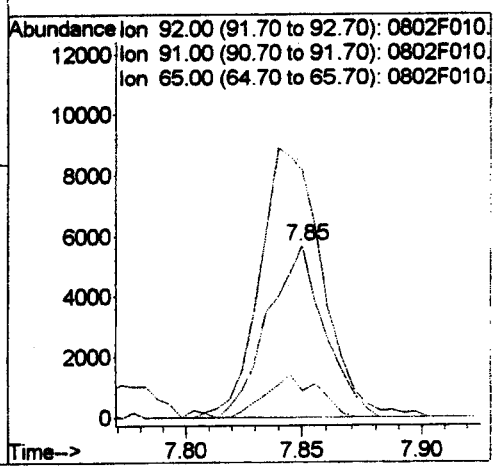


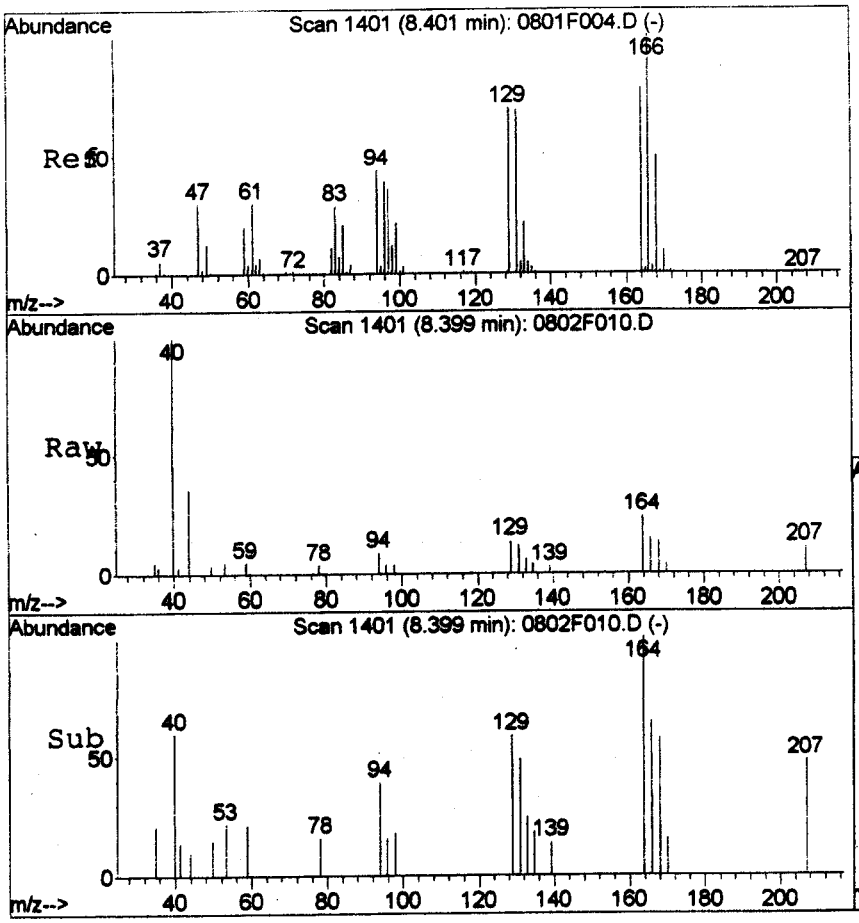


#34
Toluene
Concen: 0.22 PPB
RT: 7.85 min Scan# 1296
Delta R.T. 0.01 min
Lab File: 0802F010.D
Acq: 2 Aug 2011 3:01 pm

Tgt Ion: 92 Resp: 9360

Ion	Ratio	Lower	Upper
92	100		
91	140.4	138.1	198.1
65	15.3	0.0	51.7

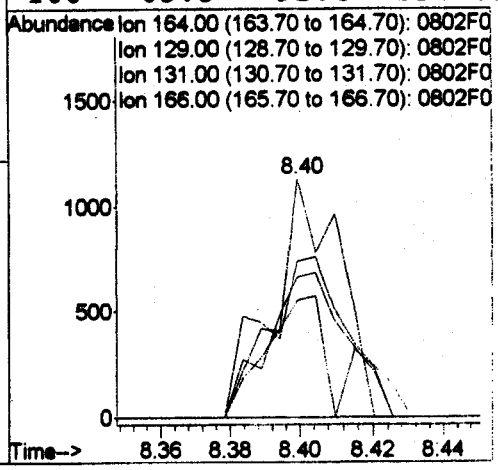


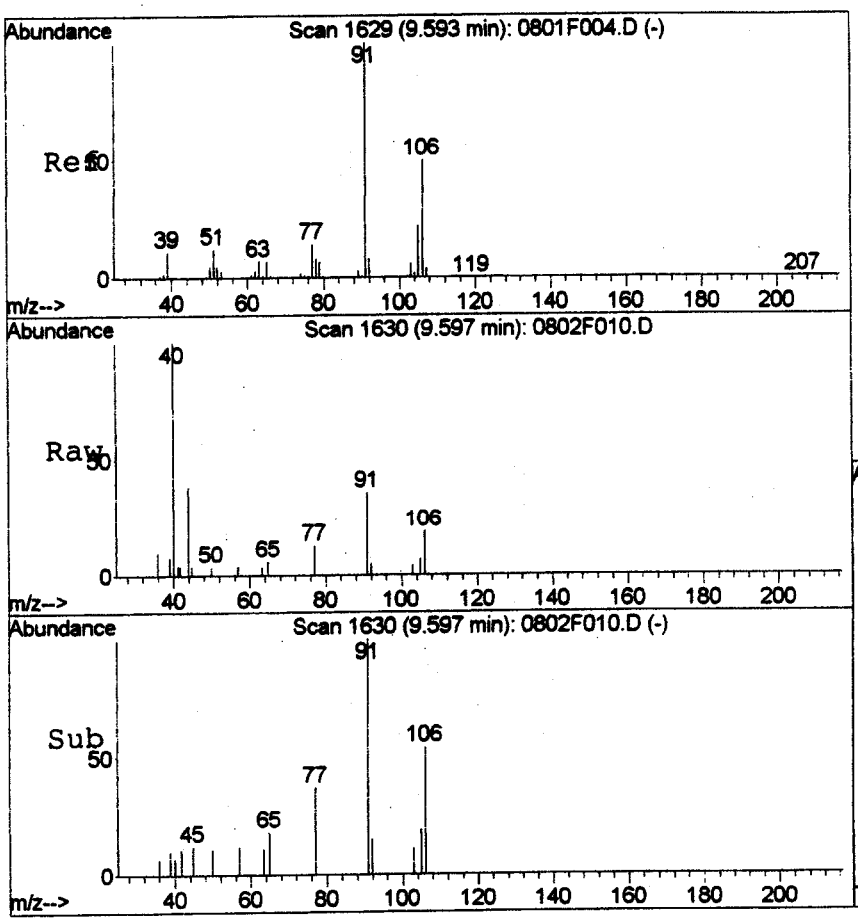


#38
Tetrachloroethene
Concen: 0.11 PPB
RT: 8.40 min Scan# 1401
Delta R.T. 0.00 min
Lab File: 0802F010.D
Acq: 2 Aug 2011 3:01 pm

Tgt Ion:164 Resp: 1387

Ion	Ratio	Lower	Upper
164	100		
129	58.9	66.2	126.2#
131	48.9	61.3	121.3#
166	65.5	92.8	152.8#

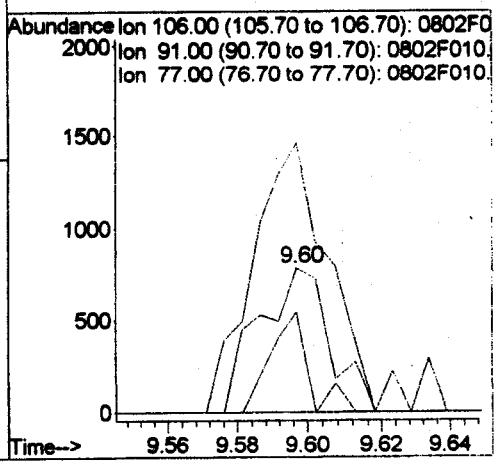




#43
m,p-Xylenes
Concen: 0.04 PPB
RT: 9.60 min Scan# 1630
Delta R.T. 0.01 min
Lab File: 0802F010.D
Acq: 2 Aug 2011 3:01 pm

Tgt Ion:106 Resp: 1078

Ion	Ratio	Lower	Upper
106	100		
91	186.0	175.3	235.3
77	69.6	0.3	60.3#



COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1106869
Project:	NIROP/J070047	**Date Collected:**	07/27/2011
Sample Matrix:	Water	**Date Received:**	07/28/2011
		Date Extracted:	08/01/2011
		Date Analyzed:	08/01/2011

Volatile Organic Compounds

Sample Name:	Frideff Air 86A	**Units:**	ug/L
Lab Code:	K1106869-004	**Basis:**	NA
File ID:	J:\MS23\DATA\080111BAYW\0801F016.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1107316
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.053	U	0.25	0.053	
75-35-4	1,1-Dichloroethene	0.37	U	0.50	0.37	
156-60-5	trans-1,2-Dichloroethene	**1.6**		0.50	0.039	
75-34-3	1,1-Dichloroethane	**0.12**	J	0.50	0.041	
156-59-2	cis-1,2-Dichloroethene	**8.9**		0.50	0.042	
71-55-6	1,1,1-Trichloroethane (TCA)	0.044	U	0.50	0.044	
79-01-6	Trichloroethene (TCE)	**29**		0.50	0.044	
127-18-4	Tetrachloroethene (PCE)	**0.090**	J	0.50	0.043	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	111	61-121	08/01/11	Acceptable
Toluene-d8	101	72-122	08/01/11	Acceptable
4-Bromofluorobenzene	89	70-120	08/01/11	Acceptable

Comments:

Exception Report

Data File: J:\MS23\DATA\080111BAYW\0801F016.D
Lab ID: K1106869-004
RunType: SMPL
Matrix: WATER

Date Acquired: 08/01/2011 18:38
Date Quantitated: 08/02/2011 10:22
Batch ID: KWG1107315
Analysis Method: 624
ListJoinID: LJ12964

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
Preparation Holding Time	NA	NA	NA	x	
Pre-Preparation Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Method Blank	NA	NA	NA	x	
MB Surrogate Recovery	NA	NA	NA	x	
Lab Control Spike	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA		x
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Remark
4/0

Analyte Exceptions

Exception Categories	Analyte Name	Result	Low Limit	High Limit	Corrective Action
Std MRL Unsupported by ICAL	Vinyl Chloride	0.25	0.20	NA	J mk

Primary Review: pa 8/11
Secondary Review: HDS 8.2.11

Quantitation Report

Data File:	J:\MS23\DATA\080111BAYW\0801F016.D			**Instrument:**	MS23
Acqu Date:	08/01/2011 18:38	**Quant Date:**	08/02/2011 10:22	**Vial:**	13
Run Type:	SMPL			**Dilution:**	1.0
Lab ID:	K1106869-004			**Soln Conc. Units:**	PPB

Bottle ID:		**Tier:**	V	**Matrix:**	WATER
Prod Code:	624 Modified VO	**Collect Date:**	07/27/2011	**Receive Date:**	07/28/2011

Analysis Lot:	KWG1107315	**Prep Lot:**	KWG1107316	**Report Group:**	K1106869
Analysis Method:	624	**Prep Method:**	METHOD		
Prep Ref:	1041366	**Prep Date:**	08/01/2011		

Quant Method:	J:\MS23\METHODS\032911624BAY	**Calibration ID:**	CAL10443
Title:	Volatile Organic Compounds	**Report List ID:**	LJ12964
Tune Ref:	J:\MS23\DATA\080111BAYW\0801F003.D	**Method ID:**	MJ158
MB Ref:	J:\MS23\DATA\080111BAYW\0801F010.D	**Quant based on Report List**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	Fluorobenzene	5.94	0.00	96	649968	10.00	OK
2	Chlorobenzene-d5	9.35	0.01	82	272689	10.00	OK
3	1,4-Dichlorobenzene-d4	11.76	0.01	152	233553	10.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	Dibromofluoromethane	5.11	-0.01	0.00	113	156312	11.12	111	61-121	OK
1	Toluene-d8	7.78	0.01	0.00	98	619095	10.08	101	72-122	OK
2	4-Bromofluorobenzene	10.58	0.00	0.00	95	198774	8.85	89	70-120	OK

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	Vinyl Chloride				62	0		0.053	U	
1	1,1-Dichloroethene	2.43	-0.01	0.00	96	517	0.0300	0.37	U	
1	trans-1,2-Dichloroethene	3.20		0.00	96	25387	1.56	1.6		
1	1,1-Dichloroethane	3.72	-0.01	0.00	63	3912	0.1200	0.12	J	
1	cis-1,2-Dichloroethene	4.46	0.01	0.00	96	155864	8.93	8.9		
1	1,1,1-Trichloroethane (TCA)				97	0		0.044	U	
1	Trichloroethene (TCE)	6.37		0.00	95	497074	28.78	29		
2	Tetrachloroethene (PCE)	8.41	0.01	0.00	164	1197	0.0900	0.090	J	

Prep Amount:	10 ml	**Dilution:**	1.0
Prep Final Vol:	10 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\080111BAYW\0801F016.D Vial: 13
Acq On : 1 Aug 2011 6:38 pm Operator: KR
Sample : K6869-004 Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Aug 02 10:21:53 2011 Quant Results File: 032911624BAYW.R

Quant Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Aug 02 10:17:07 2011
Response via : Initial Calibration
DataAcq Meth : 8260

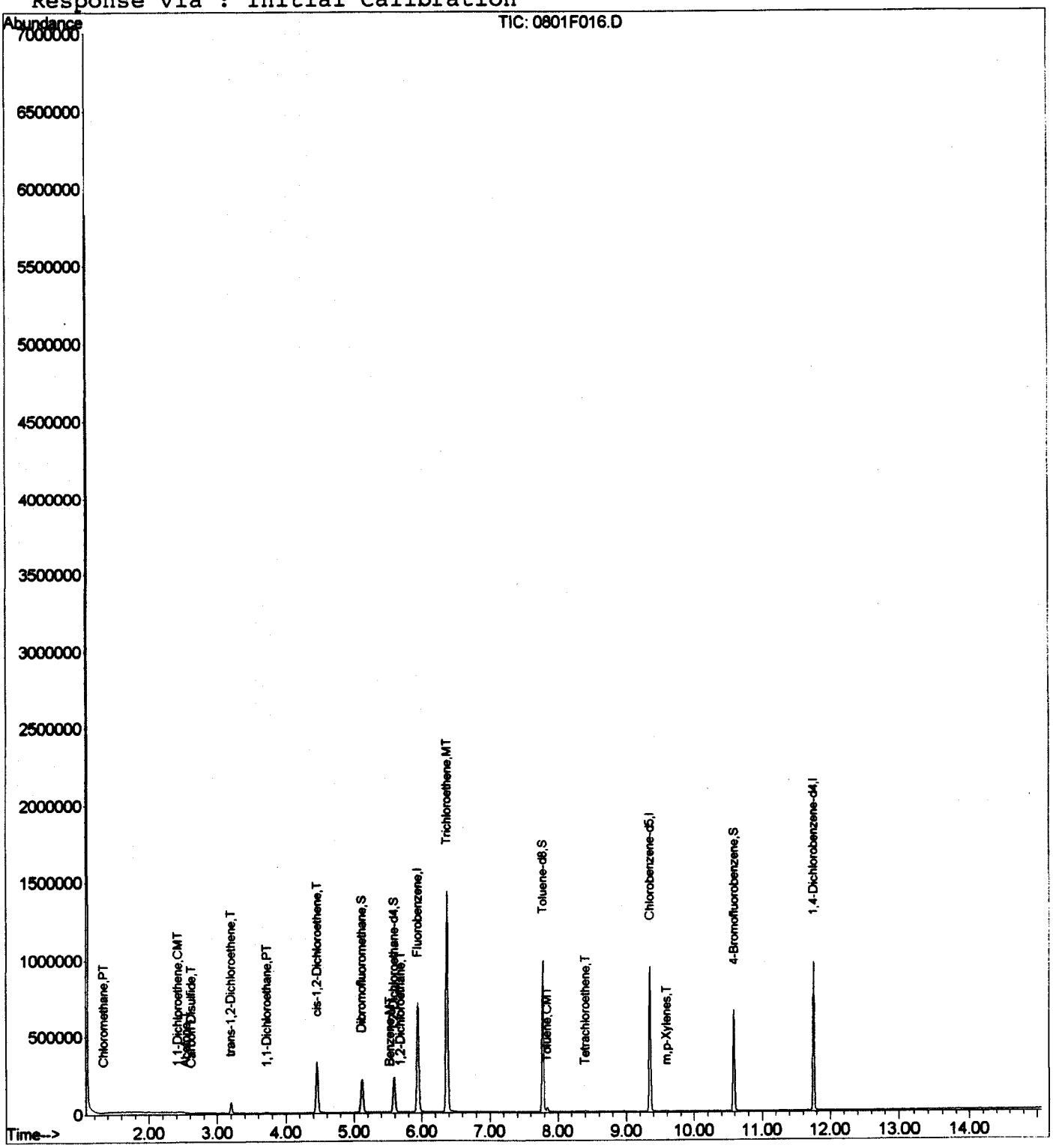
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	5.94	96	649968	10.00	PPB	0.00
35) Chlorobenzene-d5	9.35	82	272689	10.00	PPB	0.00
48) 1,4-Dichlorobenzene-d4	11.76	152	233553	10.00	PPB	0.00
System Monitoring Compounds						
22) Dibromofluoromethane	5.11	113	156312	11.12	PPB	0.00
Spiked Amount 10.000			Recovery	=	111.20%	
24) 1,2-Dichloroethane-d4	5.58	65	180241	10.20	PPB	0.00
Spiked Amount 10.000			Recovery	=	102.00%	
33) Toluene-d8	7.78	98	619095	10.08	PPB	0.00
Spiked Amount 10.000			Recovery	=	100.80%	
47) 4-Bromofluorobenzene	10.58	95	198774	8.85	PPB	0.00
Spiked Amount 10.000			Recovery	=	88.50%	
Target Compounds						Qvalue
3) Chloromethane	1.35	50	1460	0.04	PPB	79
10) 1,1-Dichloroethene	2.43	96	517	0.03	PPB #	59
11) Acetone	2.55	43	3408	1.38	PPB	95
12) Carbon Disulfide	2.62	76	554	0.01	PPB	79
15) trans-1,2-Dichloroethene	3.20	96	25387	1.56	PPB	92
16) 1,1-Dichloroethane	3.72	63	3912	0.12	PPB	84
18) cis-1,2-Dichloroethene	4.46	96	155864	8.93	PPB	94
25) Benzene	5.53	78	883	0.01	PPB	75
26) 1,2-Dichloroethane	5.69	62	1431	0.07	PPB	87
27) Trichloroethene	6.37	95	497074	28.78	PPB	98
34) Toluene	7.84	92	10822	0.25	PPB #	72
38) Tetrachloroethene	8.41	164	1197	0.09	PPB #	43
43) m,p-Xylenes	9.59	106	1295	0.04	PPB #	42

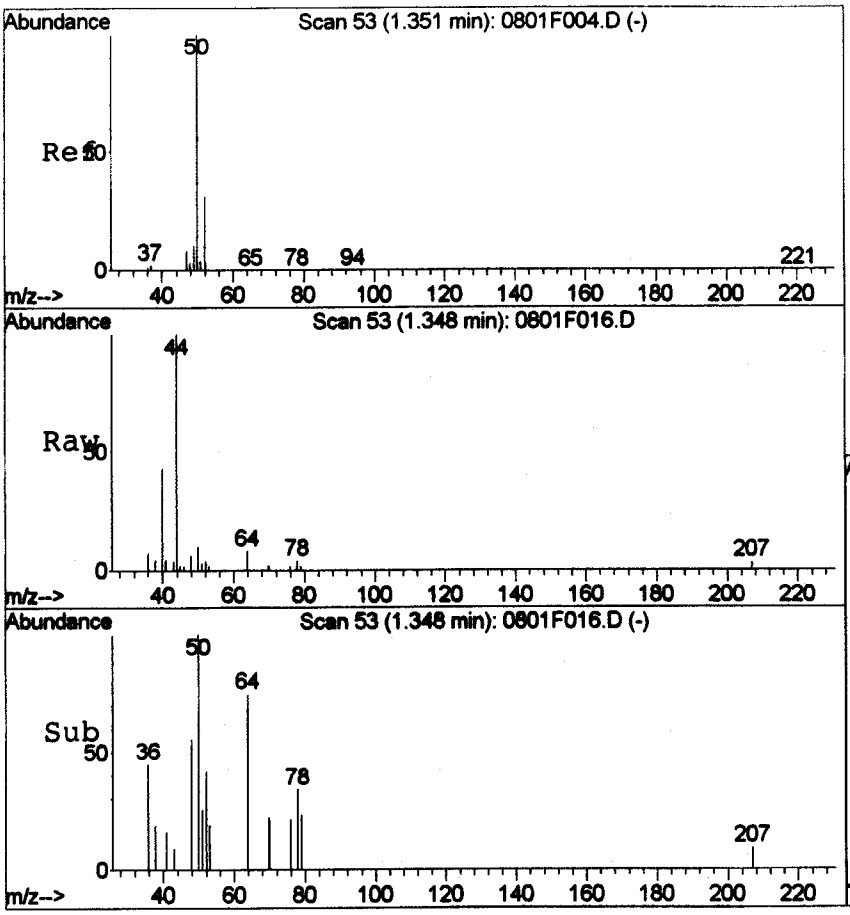
(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\080111BAYW\0801F016.D Vial: 13
Acq On : 1 Aug 2011 6:38 pm Operator: KR
Sample : K6869-004 Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Aug 2 10:22 2011 Quant Results File: 032911624BAY

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Aug 02 10:17:07 2011
Response via : Initial Calibration

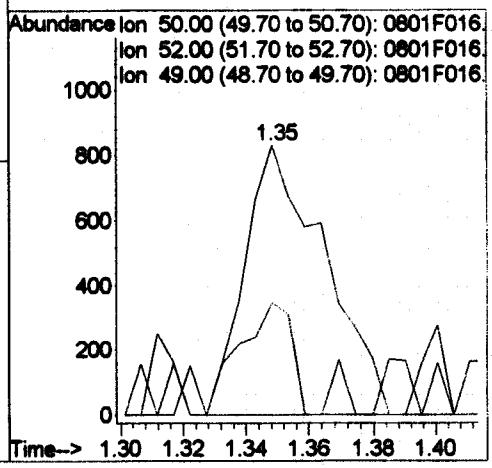


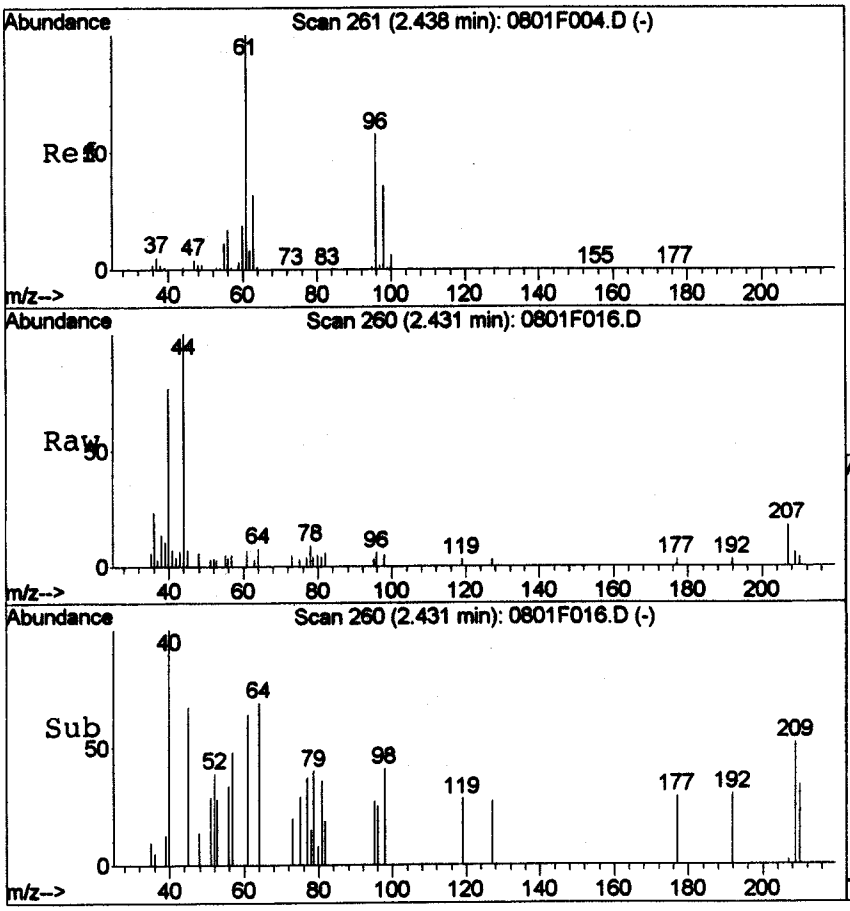


#3
Chloromethane
Concen: 0.04 PPB
RT: 1.35 min Scan# 53
Delta R.T. -0.01 min
Lab File: 0801F016.D
Acq: 1 Aug 2011 6:38 pm

Tgt Ion: 50 Resp: 1460

Ion	Ratio	Lower	Upper
50	100		
52	41.9	1.3	61.3
49	0.0	0.0	40.2

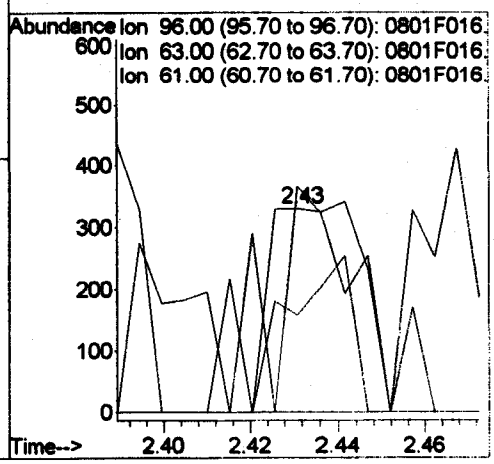


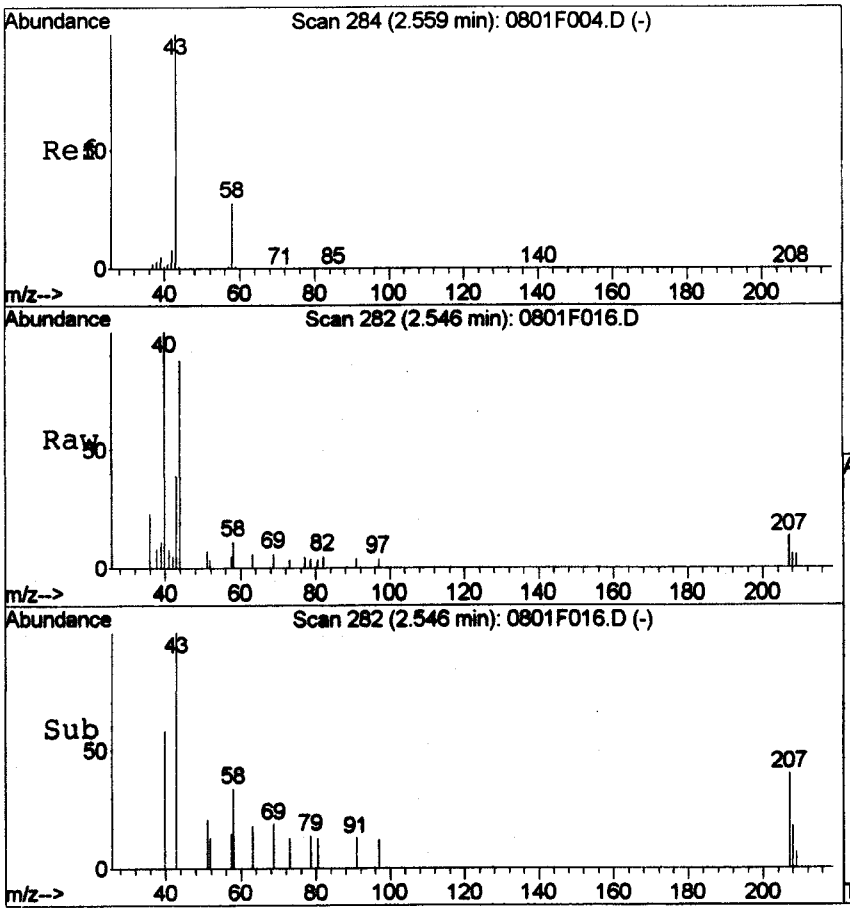


#10
1,1-Dichloroethene
Concen: 0.03 PPB
RT: 2.43 min Scan# 260
Delta R.T. -0.02 min
Lab File: 0801F016.D
Acq: 1 Aug 2011 6:38 pm

Tgt Ion: 96 Resp: 517

Ion	Ratio	Lower	Upper
96	100		
63	47.9	28.6	88.6
61	110.9	152.7	212.7#

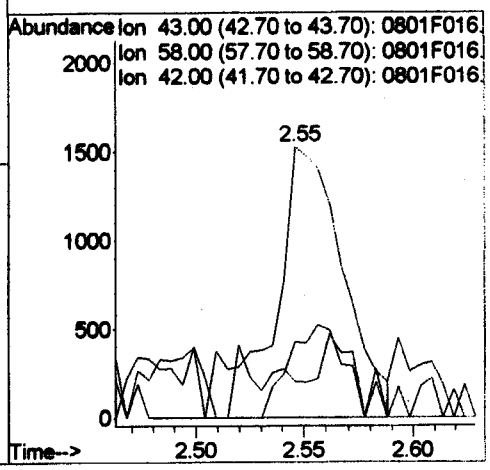


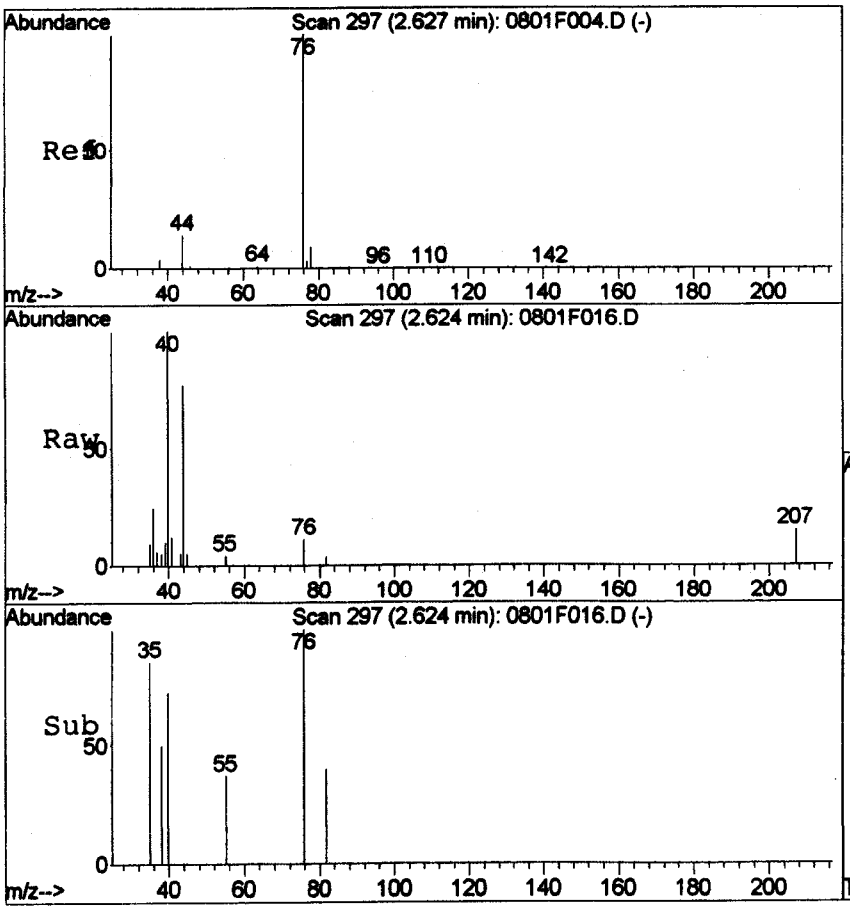


#11
Acetone
Concen: 1.38 PPB
RT: 2.55 min Scan# 282
Delta R.T. -0.02 min
Lab File: 0801F016.D
Acq: 1 Aug 2011 6:38 pm

Tgt Ion: 43 Resp: 3408

Ion	Ratio	Lower	Upper
43	100		
58	28.0	0.0	56.9
42	13.5	0.0	37.5

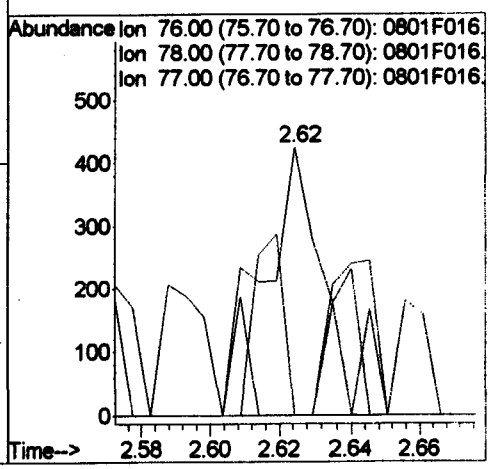


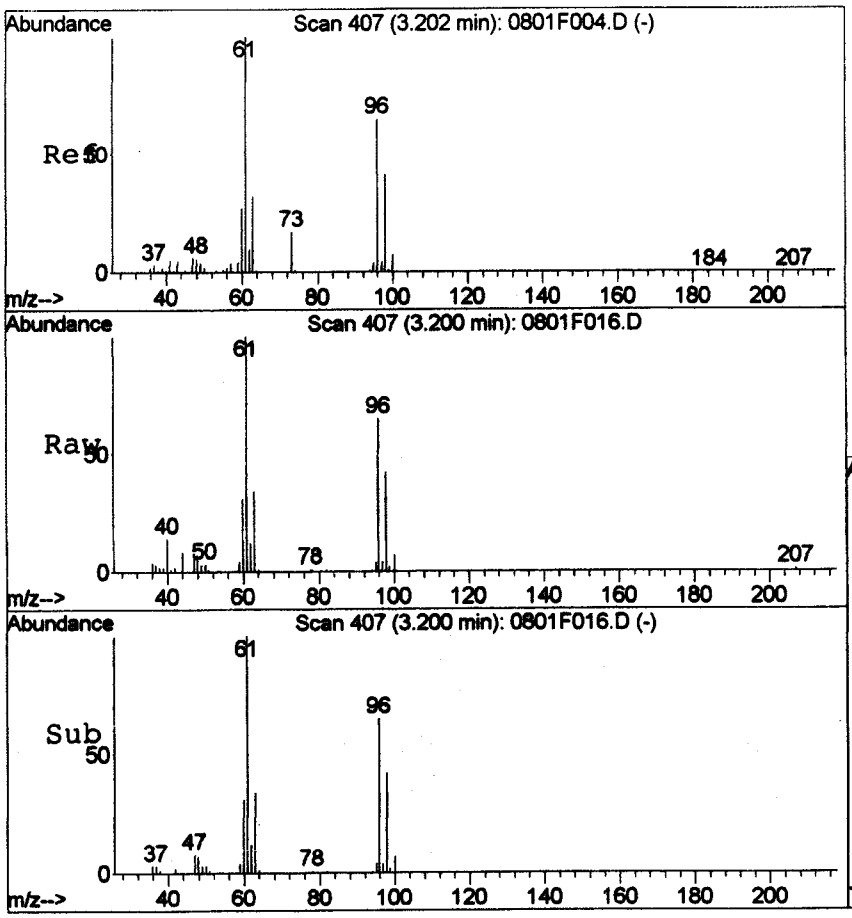


#12
Carbon Disulfide
Concen: 0.01 PPB
RT: 2.62 min Scan# 297
Delta R.T. -0.01 min
Lab File: 0801F016.D
Acq: 1 Aug 2011 6:38 pm

Tgt Ion: 76 Resp: 554

Ion	Ratio	Lower	Upper
76	100		
78	0.0	0.0	39.0
77	0.0	0.0	32.7

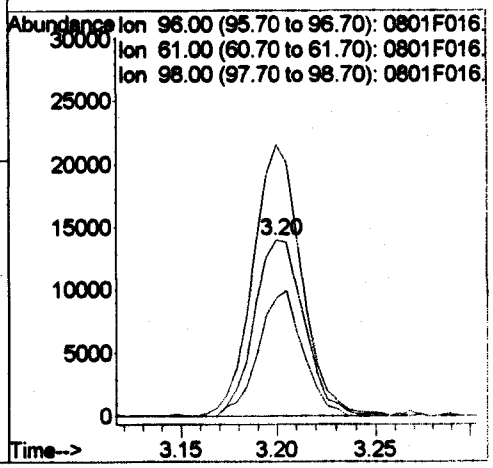


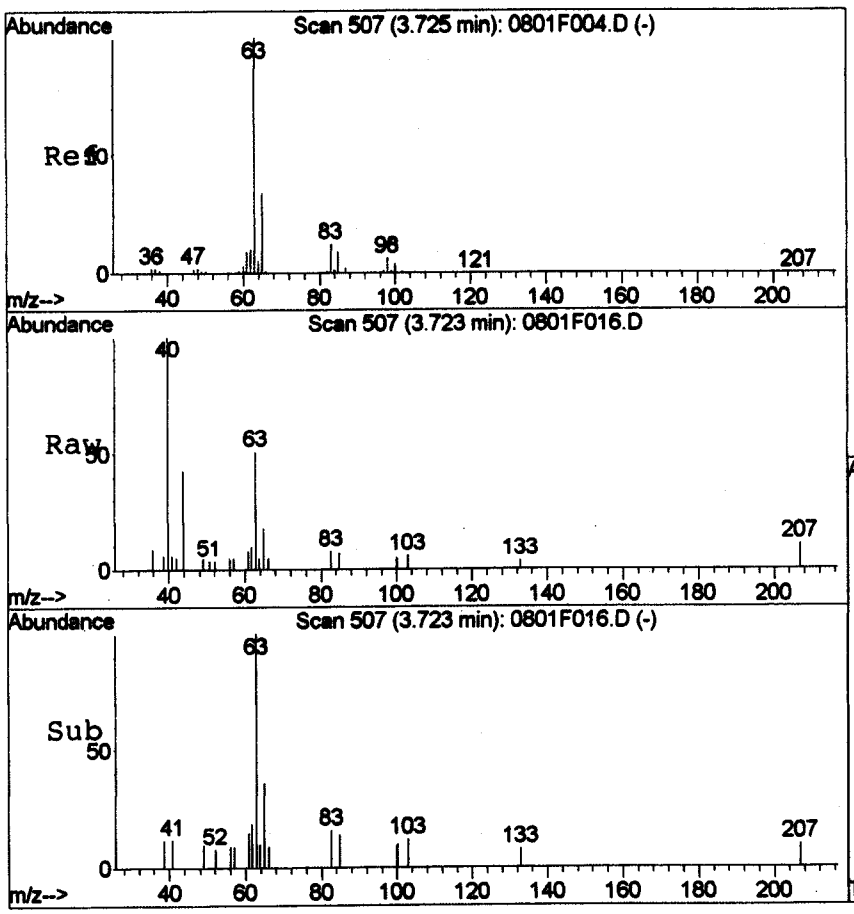


#15
trans-1,2-Dichloroethene
Concen: 1.56 PPB
RT: 3.20 min Scan# 407
Delta R.T. -0.01 min
Lab File: 0801F016.D
Acq: 1 Aug 2011 6:38 pm

Tgt Ion: 96 Resp: 25387

Ion	Ratio	Lower	Upper
96	100		
61	153.9	135.0	195.0
98	66.8	30.1	90.1

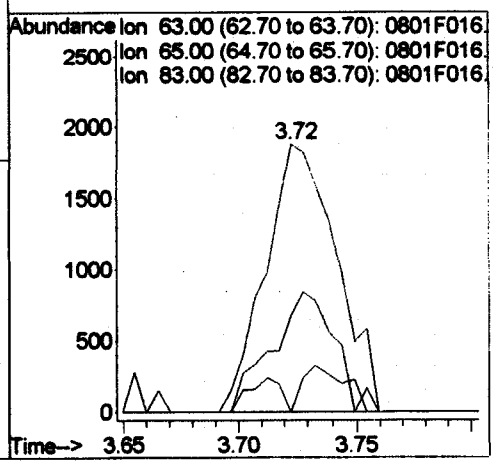


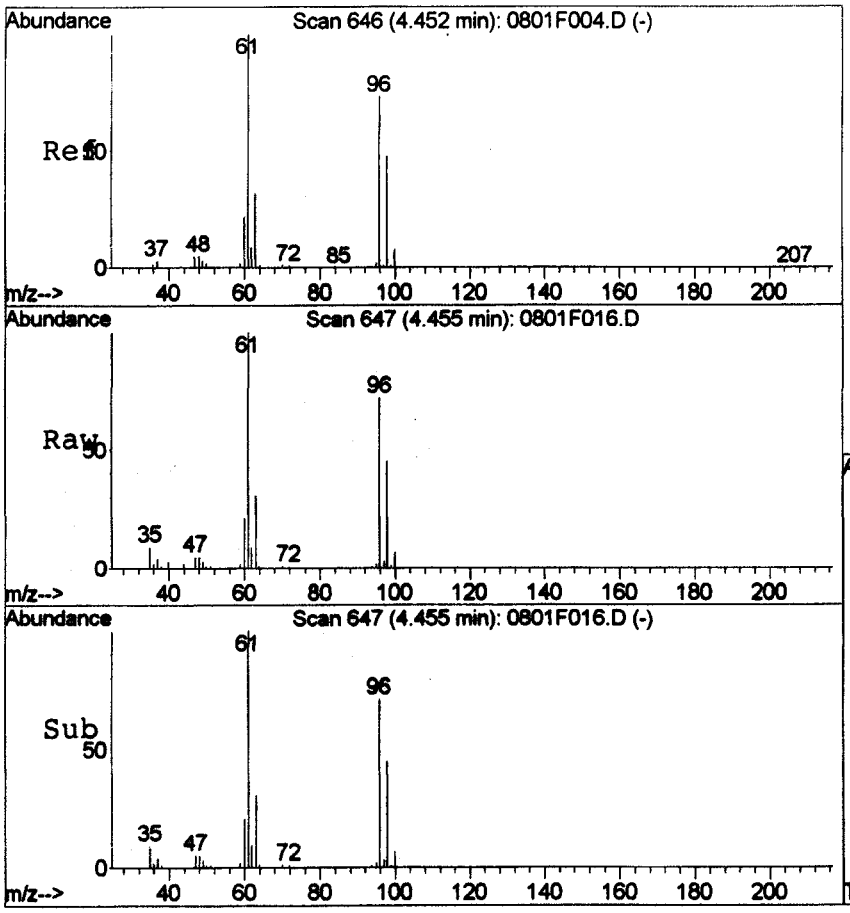


#16
1,1-Dichloroethane
Concen: 0.12 PPB
RT: 3.72 min Scan# 507
Delta R.T. -0.01 min
Lab File: 0801F016.D
Acq: 1 Aug 2011 6:38 pm

Tgt Ion: 63 Resp: 3912

Ion	Ratio	Lower	Upper
63	100		
65	35.8	0.8	60.8
83	0.0	0.0	42.7

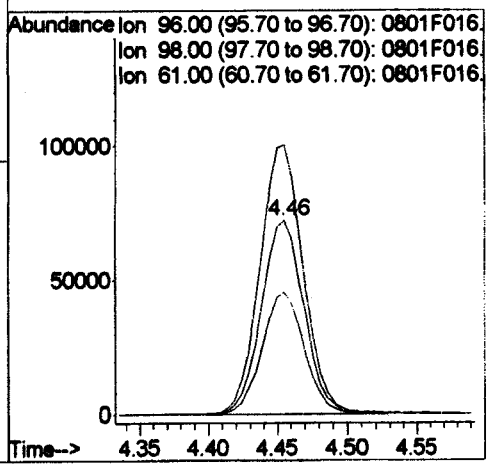


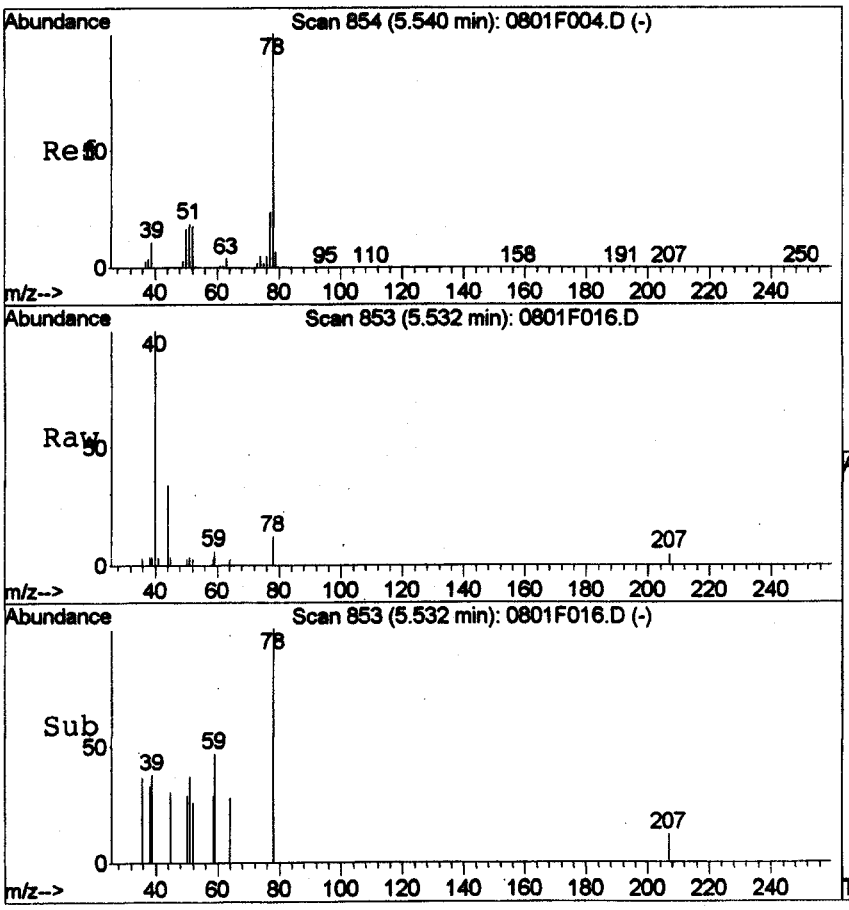


#18
cis-1,2-Dichloroethene
Concen: 8.93 PPB
RT: 4.46 min Scan# 647
Delta R.T. -0.01 min
Lab File: 0801F016.D
Acq: 1 Aug 2011 6:38 pm

Tgt Ion: 96 Resp: 155864

Ion	Ratio	Lower	Upper
96	100		
98	63.2	33.6	93.6
61	139.2	119.9	179.9

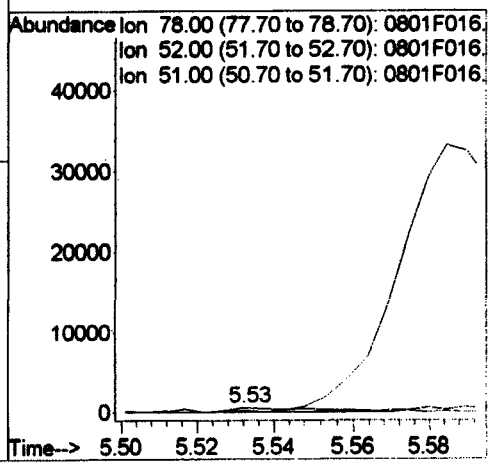




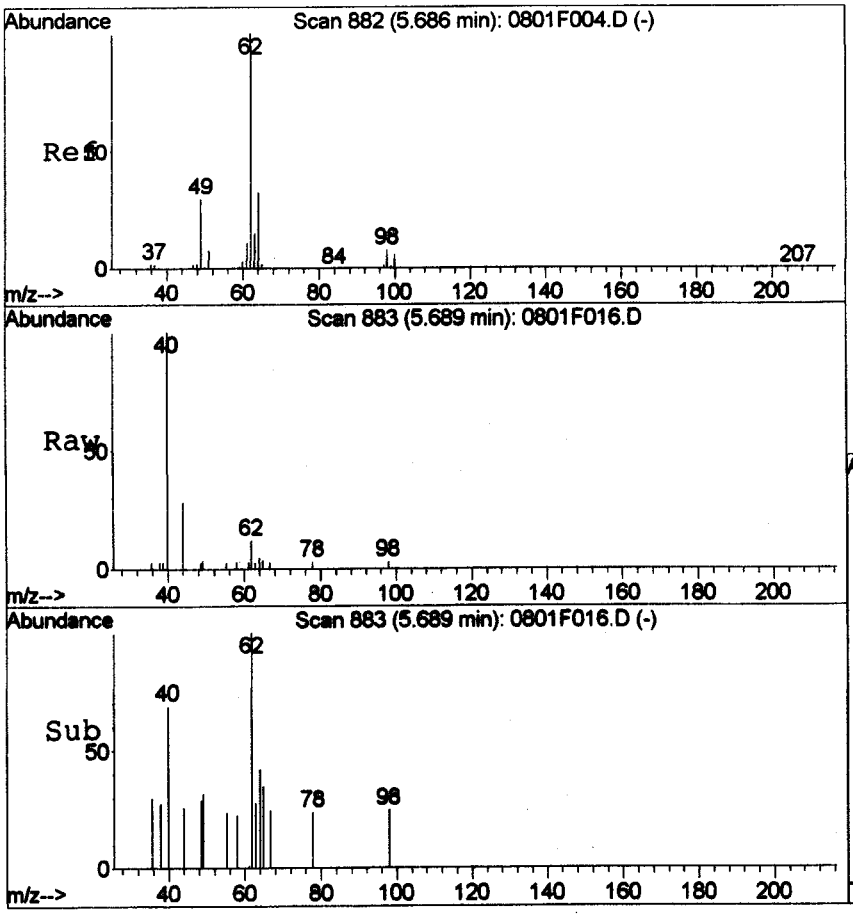
#25
Benzene
Concen: 0.01 PPB
RT: 5.53 min Scan# 853
Delta R.T. -0.01 min
Lab File: 0801F016.D
Acq: 1 Aug 2011 6:38 pm

Tgt Ion: 78 Resp: 883

Ion	Ratio	Lower	Upper
78	100		
52	25.8	0.0	49.0
51	36.6	0.0	51.0



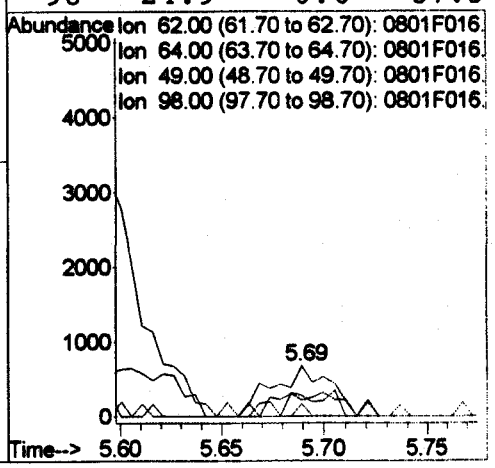
NJ

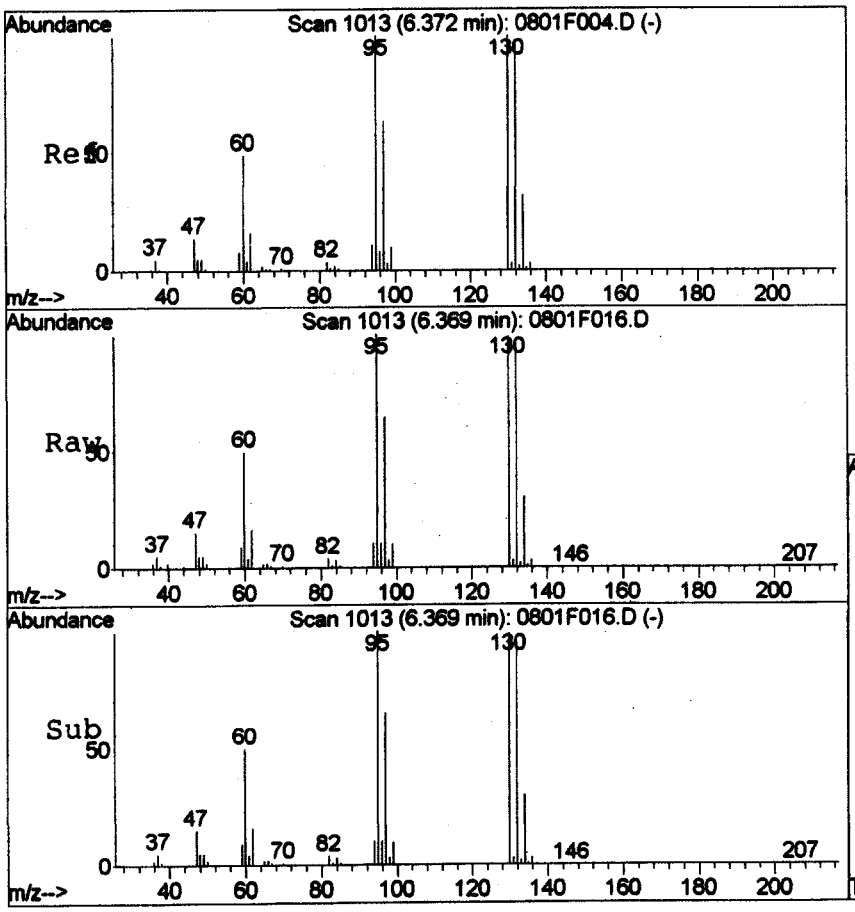


#26
1,2-Dichloroethane
Concen: 0.07 PPB
RT: 5.69 min Scan# 883
Delta R.T. -0.00 min
Lab File: 0801F016.D
Acq: 1 Aug 2011 6:38 pm

Tgt Ion: 62 Resp: 1431

Ion	Ratio	Lower	Upper
62	100		
64	41.5	3.7	63.7
49	32.3	0.2	60.2
98	24.9	0.0	37.5

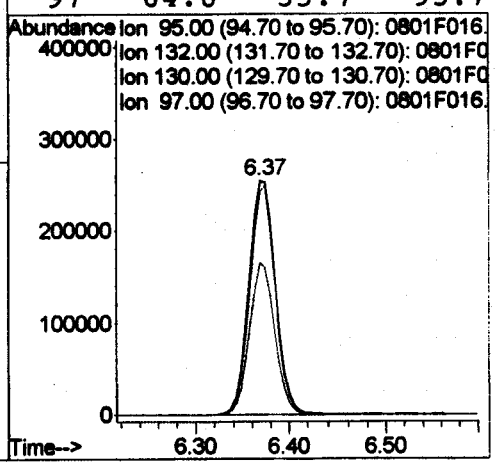


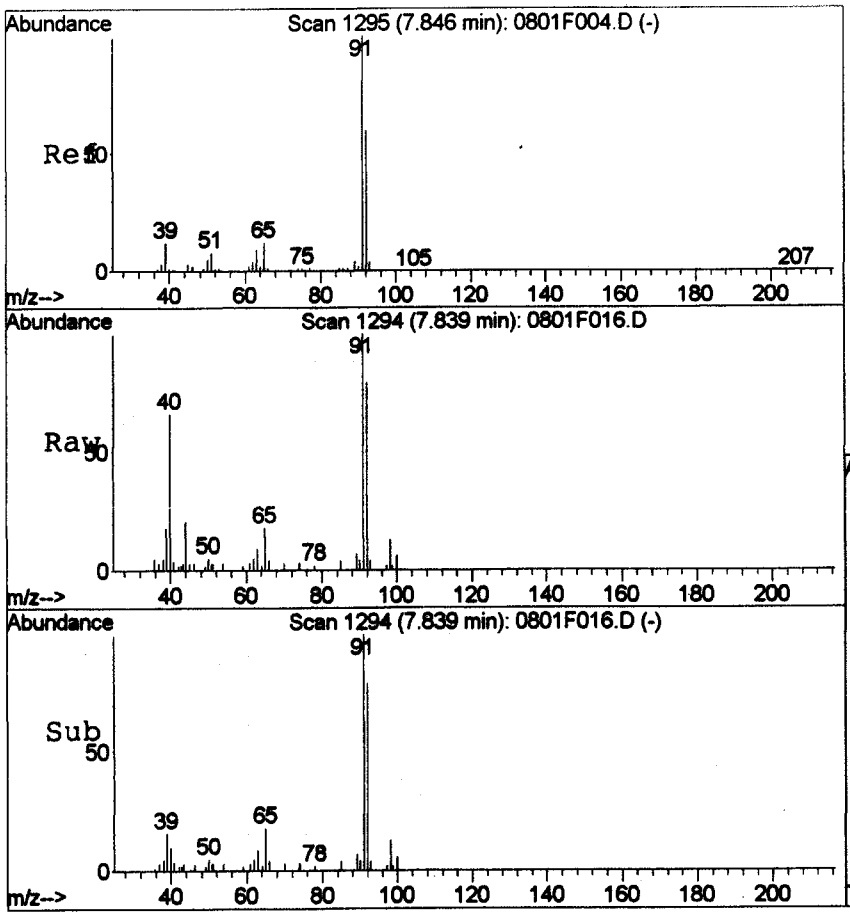


#27
Trichloroethene
Concen: 28.78 PPB
RT: 6.37 min Scan# 1013
Delta R.T. -0.00 min
Lab File: 0801F016.D
Acq: 1 Aug 2011 6:38 pm

Tgt Ion: 95 Resp: 497074

Ion	Ratio	Lower	Upper
95	100		
132	95.4	64.3	124.3
130	98.8	65.2	125.2
97	64.8	35.7	95.7

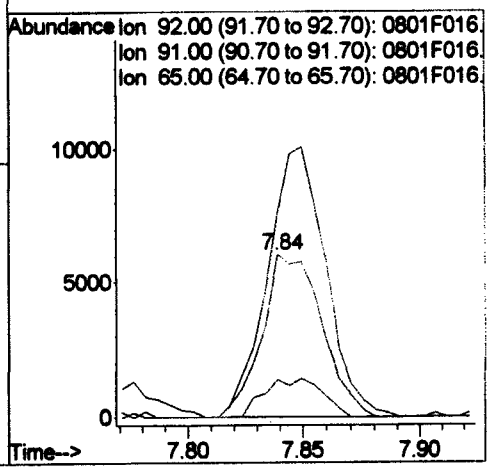


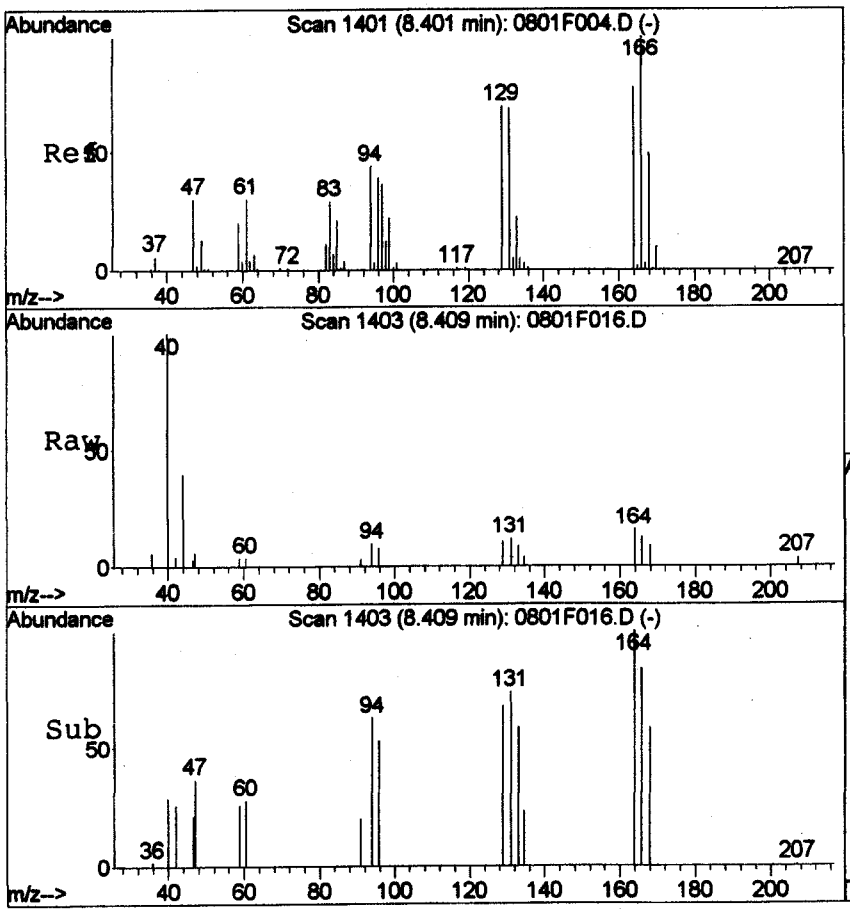


#34
Toluene
Concen: 0.25 PPB
RT: 7.84 min Scan# 1294
Delta R.T. -0.01 min
Lab File: 0801F016.D
Acq: 1 Aug 2011 6:38 pm

Tgt Ion: 92 Resp: 10822

Ion	Ratio	Lower	Upper
92	100		
91	126.3	138.1	198.1#
65	23.1	0.0	51.7

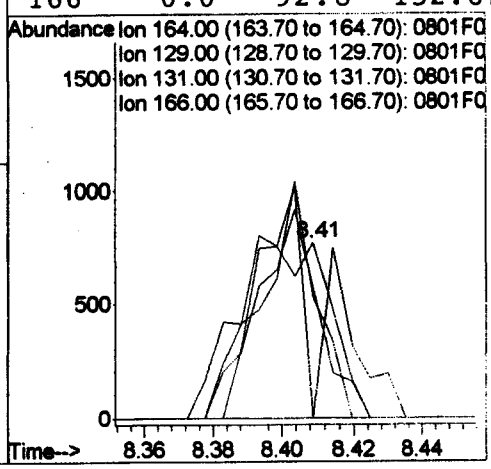


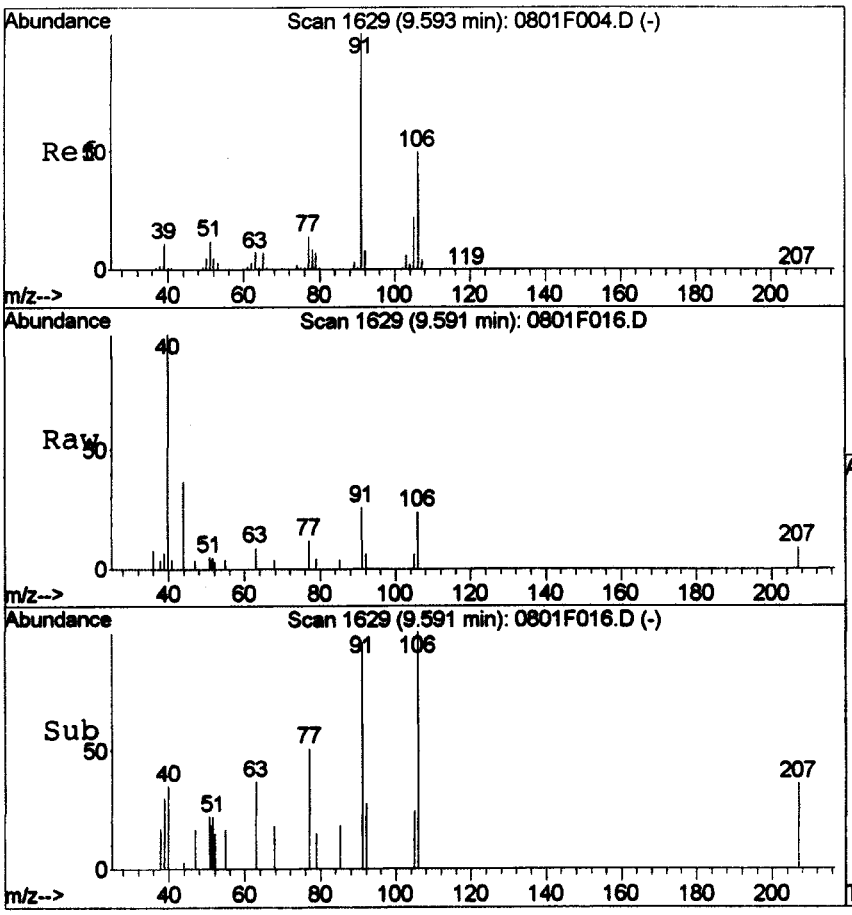


#38
Tetrachloroethene
Concen: 0.09 PPB
RT: 8.41 min Scan# 1403
Delta R.T. 0.01 min
Lab File: 0801F016.D
Acq: 1 Aug 2011 6:38 pm

Tgt Ion:164 Resp: 1197

Ion	Ratio	Lower	Upper
164	100		
129	68.3	66.2	126.2
131	73.5	61.3	121.3
166	0.0	92.8	152.8#

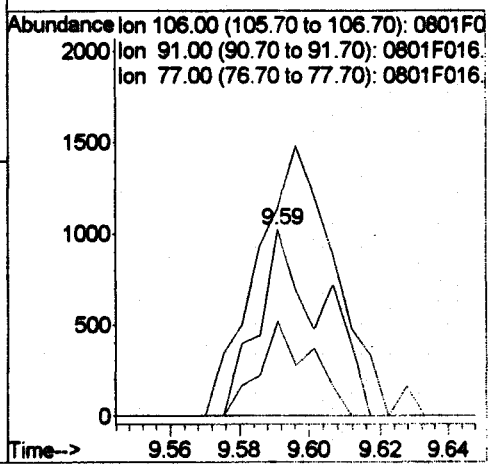




#43
m,p-Xylenes
Concen: 0.04 PPB
RT: 9.59 min Scan# 1629
Delta R.T. -0.00 min
Lab File: 0801F016.D
Acq: 1 Aug 2011 6:38 pm

Tgt Ion:106 Resp: 1295

Ion	Ratio	Lower	Upper
106	100		
91	111.4	175.3	235.3#
77	51.0	0.3	60.3



Exception Report

Data File: J:\MS23\DATA\080211BAYW\0802F009.D
Lab ID: K1106869-004
RunType: RE
Matrix: WATER

Date Acquired: 08/02/2011 14:31
Date Quantitated: 08/03/2011 14:08
Batch ID: KWG1107328
Analysis Method: 624
ListJoinID: LJ12964

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
Preparation Holding Time	NA	NA	NA	x	
Pre-Preparation Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Method Blank	NA	NA	NA	x	
MB Surrogate Recovery	NA	NA	NA	x	
Lab Control Spike	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA		x
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

NR

Analyte Exceptions

Exception Categories	Analyte Name	Result	Low Limit	High Limit	Corrective Action
Std MRL Unsupported by ICAL	Vinyl Chloride	0.25	0.20	NA	[illegible]

NR
TCE not c/o in orig.

Primary Review: KA 8/3/11

Secondary Review: HB 8-4-11

Quantitation Report

Data File:	J:\MS23\DATA\080211BAYW\0802F009.D			**Instrument:**	MS23
Acqu Date:	08/02/2011 14:31	**Quant Date:**	08/03/2011 14:08	**Vial:**	8
Run Type:	RE			**Dilution:**	1.0
Lab ID:	K1106869-004			**Soln Conc. Units:**	PPB

Bottle ID:		**Tier:**	V	**Matrix:**	WATER
Prod Code:	624 Modified VO	**Collect Date:**	07/27/2011	**Receive Date:**	07/28/2011

Analysis Lot:	KWG1107328	**Prep Lot:**	KWG1107326	**Report Group:**	K1106869
Analysis Method:	624	**Prep Method:**	METHOD		
		Prep Date:	08/02/2011		
Prep Ref:	1041428				

Quant Method:	J:\MS23\METHODS\032911624BAY	**Calibration ID:**	CAL10443
Title:	Volatile Organic Compounds	**Report List ID:**	LJ12964
Tune Ref:	J:\MS23\DATA\080211BAYW\0802F002.D	**Method ID:**	MJ158
MB Ref:	J:\MS23\DATA\080211BAYW\0802F008.D	**Quant based on Report List**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	Fluorobenzene	5.94	0.00	96	649967	10.00	OK
2	Chlorobenzene-d5	9.35	0.01	82	272876	10.00	OK
3	1,4-Dichlorobenzene-d4	11.75	0.00	152	230538	10.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	Dibromofluoromethane	5.11	-0.01	0.00	113	155875	11.09	111	61-121	OK	NR
1	Toluene-d8	7.77	0.00	0.00	98	614290	10.00	100	72-122	OK	NR
2	4-Bromofluorobenzene	10.58	0.00	0.00	95	200287	8.92	89	70-120	OK	NR

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	Vinyl Chloride	1.43		0.00	62	565	0.0200	0.053	U	NR
1	1,1-Dichloroethene	2.43		0.00	96	1637	0.1000	0.37	U	NR
1	trans-1,2-Dichloroethene	3.20		0.00	96	39288	2.42	2.4		NR
1	1,1-Dichloroethane	3.73	0.01	0.00	63	3972	0.1200	0.12	J	NR
1	cis-1,2-Dichloroethene	4.45		0.00	96	88961	5.10	5.1		NR
1	1,1,1-Trichloroethane (TCA)				97	0		0.044	U	NR
1	Trichloroethene (TCE)	6.37		0.00	95	687400	39.80	40		NR
2	Tetrachloroethene (PCE)	8.40		0.00	164	2349	0.1800	0.18	J	NR

Prep Amount:	10 ml	**Dilution:**	1.0
Prep Final Vol:	10 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\080211BAYW\0802F009.D Vial: 8
Acq On : 2 Aug 2011 2:31 pm Operator: KR
Sample : K6869-004 Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Aug 03 14:08:36 2011 Quant Results File: 032911624BAYW.R

Quant Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Initial Calibration
DataAcq Meth : 8260

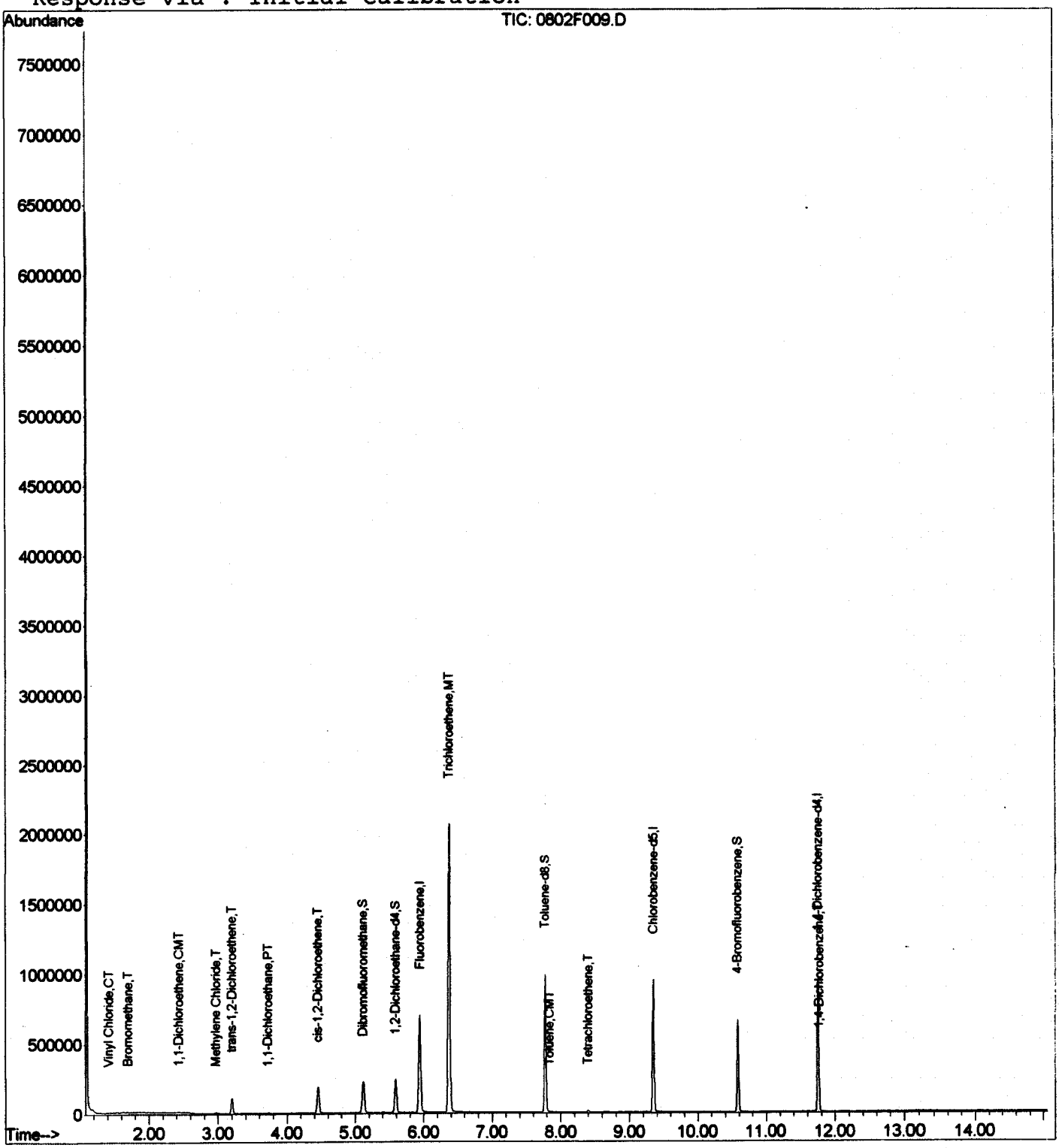
Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Fluorobenzene	5.94	96	649967	10.00	PPB		0.00
35) Chlorobenzene-d5	9.35	82	272876	10.00	PPB		0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	230538	10.00	PPB		0.00
System Monitoring Compounds							
22) Dibromofluoromethane	5.11	113	155875	11.09	PPB		0.00
Spiked Amount 10.000			Recovery	=	110.90%		
24) 1,2-Dichloroethane-d4	5.59	65	178487	10.10	PPB		0.00
Spiked Amount 10.000			Recovery	=	101.00%		
33) Toluene-d8	7.77	98	614290	10.00	PPB		0.00
Spiked Amount 10.000			Recovery	=	100.00%		
47) 4-Bromofluorobenzene	10.58	95	200287	8.92	PPB		0.00
Spiked Amount 10.000			Recovery	=	89.20%		
Target Compounds							Qvalue
4) Vinyl Chloride	1.43	62	565	0.02	PPB		88
5) Bromomethane	1.71	96	870	0.09	PPB	#	13
10) 1,1-Dichloroethene	2.43	96	1637	0.10	PPB	#	58
13) Methylene Chloride	2.98	84	3384	0.21	PPB	#	74
15) trans-1,2-Dichloroethene	3.20	96	39288	2.42	PPB		88
16) 1,1-Dichloroethane	3.73	63	3972	0.12	PPB		97
18) cis-1,2-Dichloroethene	4.45	96	88961	5.10	PPB		95
27) Trichloroethene	6.37	95	687400	39.80	PPB		96
34) Toluene	7.85	92	736	0.02	PPB	#	67
38) Tetrachloroethene	8.40	164	2349	0.18	PPB		93
52) 1,4-Dichlorobenzene	11.77	146	543	0.02	PPB	#	54

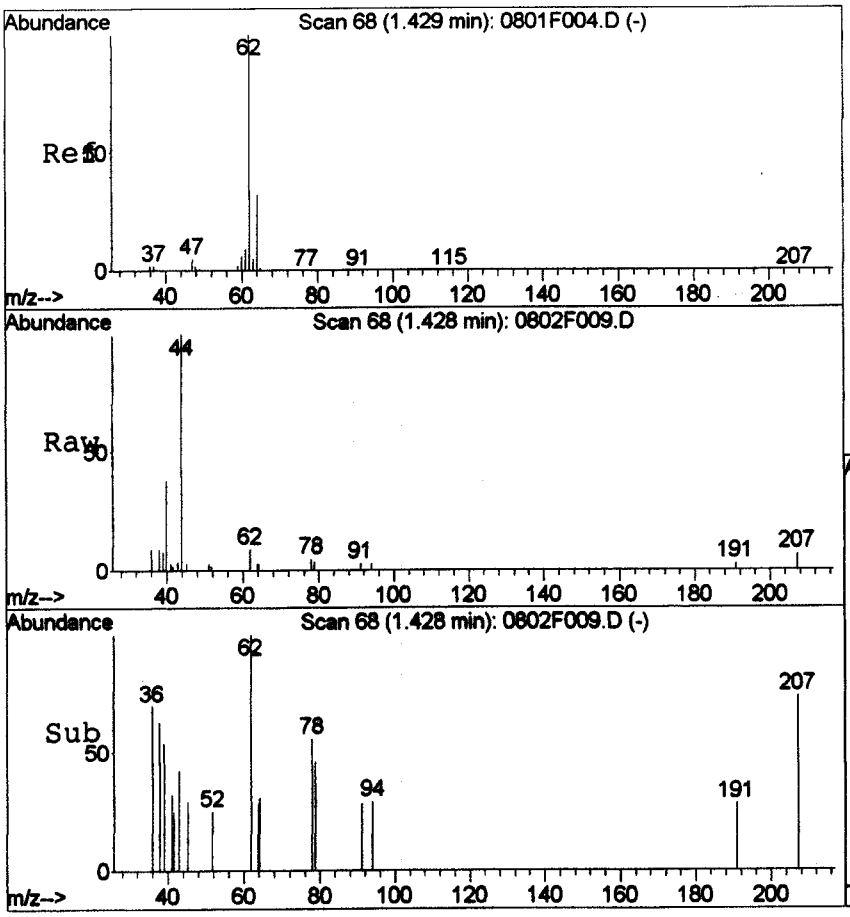
(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\080211BAYW\0802F009.D Vial: 8
Acq On : 2 Aug 2011 2:31 pm Operator: KR
Sample : K6869-004 Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Aug 3 16:32 2011 Quant Results File: 032911624BAY

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Initial Calibration

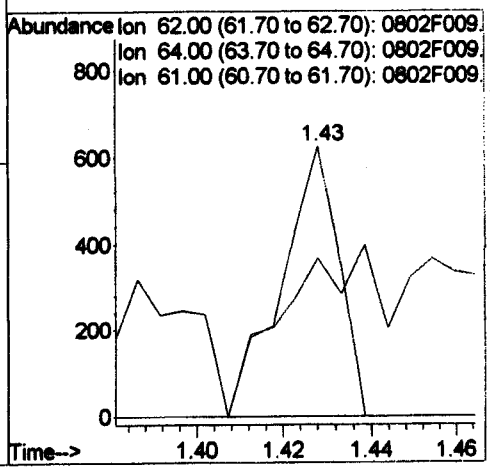


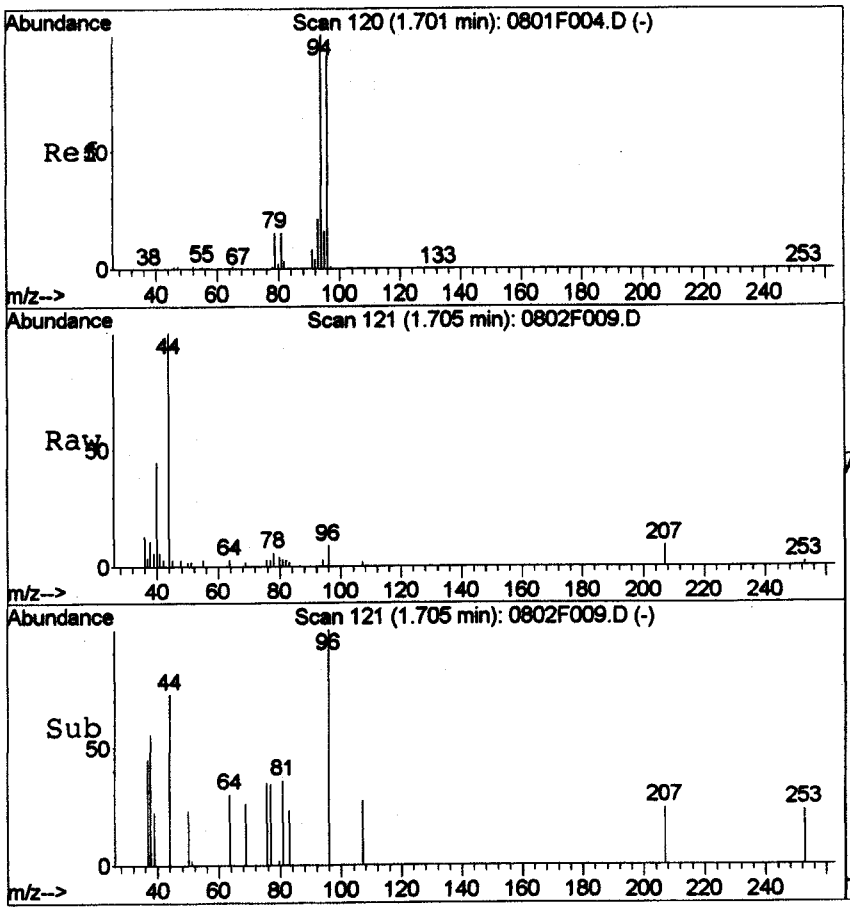


#4
Vinyl Chloride
Concen: 0.02 PPB
RT: 1.43 min Scan# 68
Delta R.T. -0.00 min
Lab File: 0802F009.D
Acq: 2 Aug 2011 2:31 pm

Tgt Ion: 62 Resp: 565

Ion	Ratio	Lower	Upper
62	100		
64	26.4	1.7	61.7
61	0.0	0.0	38.3

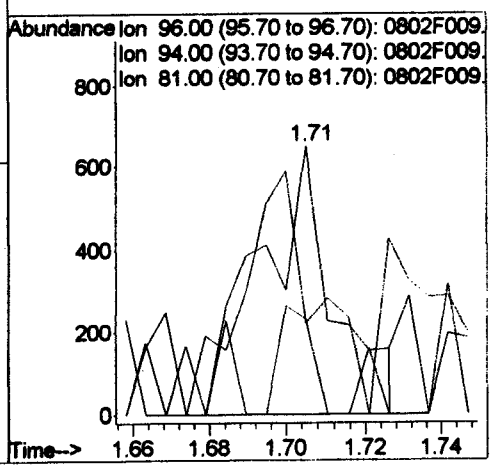


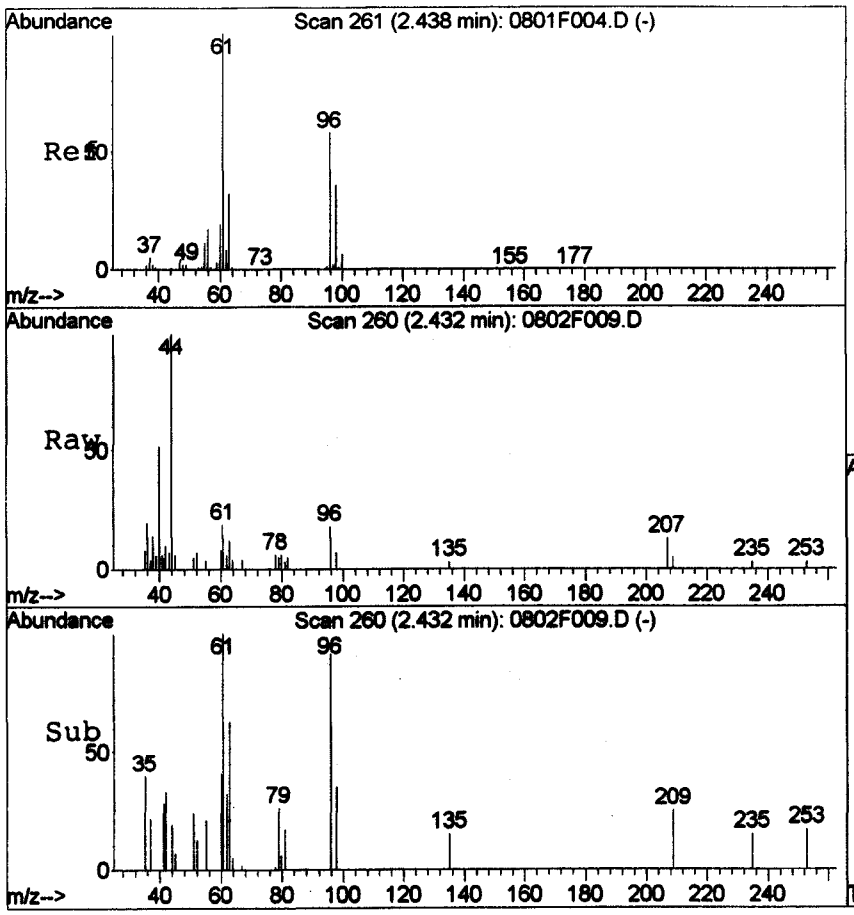


#5
Bromomethane
Concen: 0.09 PPB
RT: 1.71 min Scan# 121
Delta R.T. 0.00 min
Lab File: 0802F009.D
Acq: 2 Aug 2011 2:31 pm

Tgt Ion: 96 Resp: 870

Ion	Ratio	Lower	Upper
96	100		
94	4.8	69.2	129.2#
81	35.6	0.0	47.0

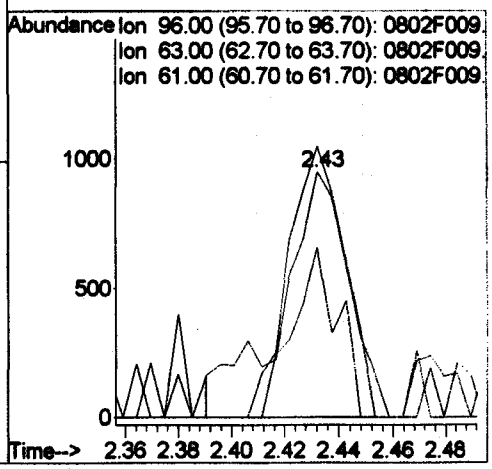


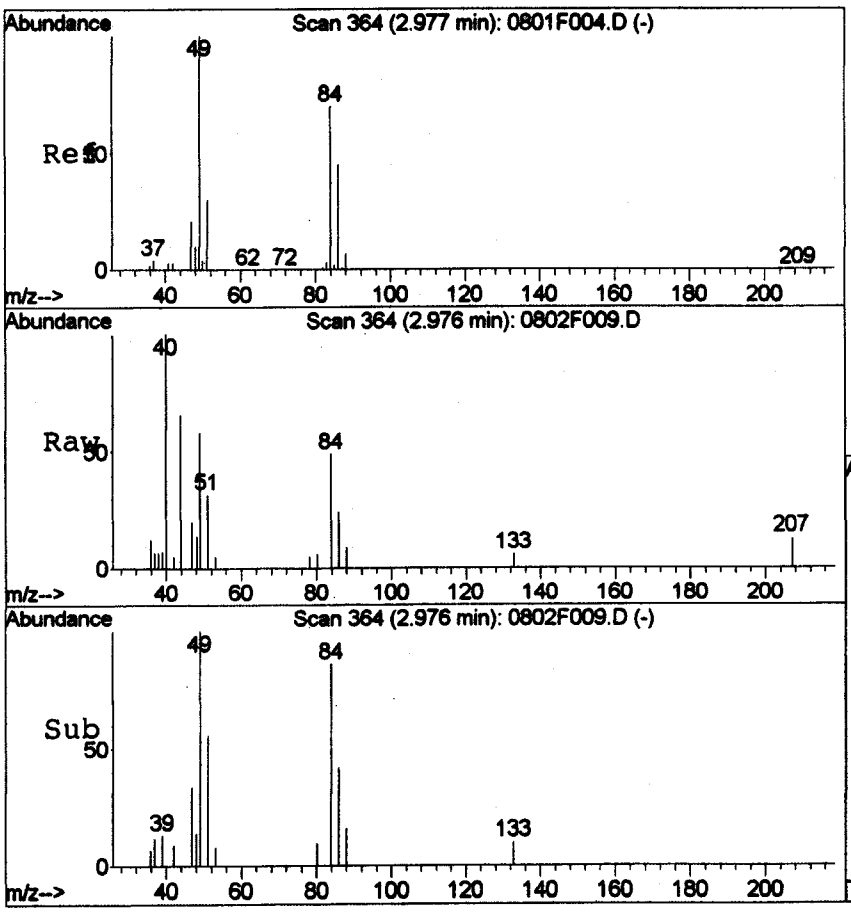


#10
1,1-Dichloroethene
Concen: 0.10 PPB
RT: 2.43 min Scan# 260
Delta R.T. -0.02 min
Lab File: 0802F009.D
Acq: 2 Aug 2011 2:31 pm

Tgt Ion: 96 Resp: 1637

Ion	Ratio	Lower	Upper
96	100		
63	69.4	28.6	88.6
61	110.4	152.7	212.7#

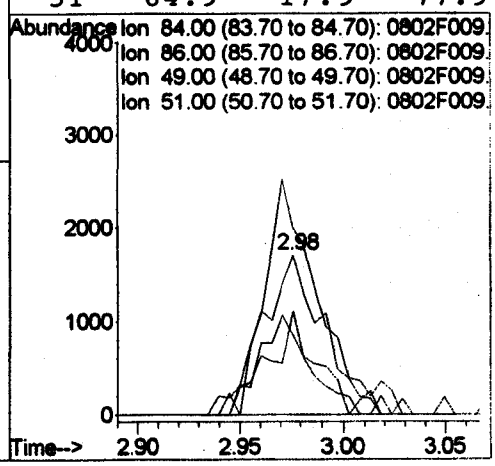


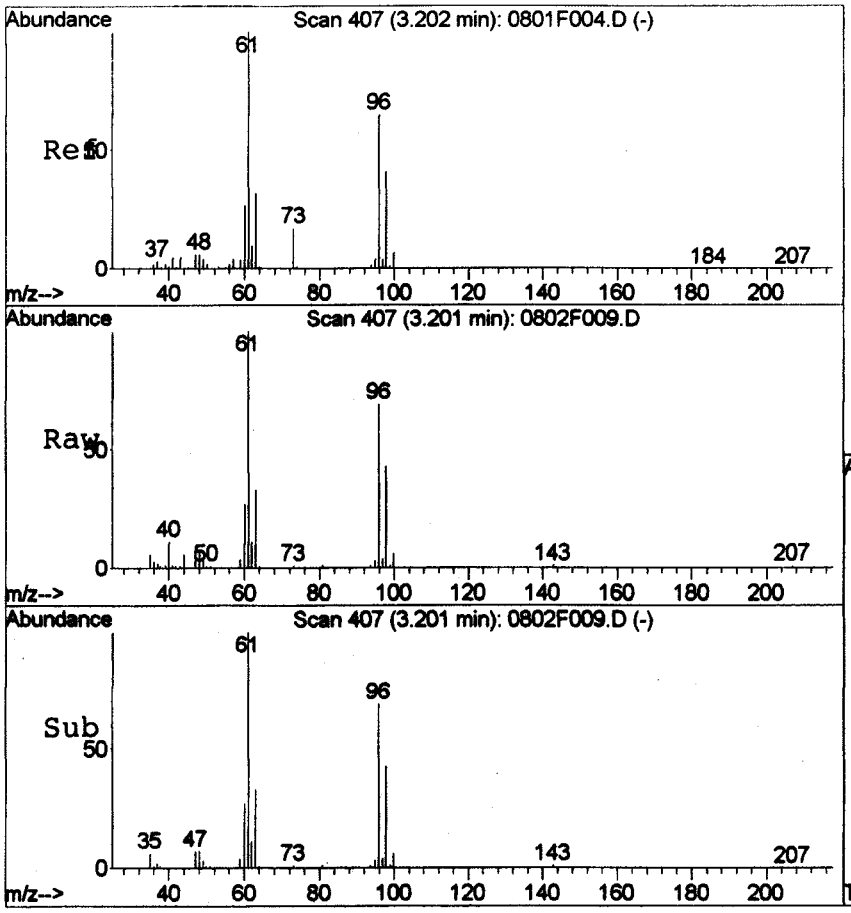


#13
Methylene Chloride
Concen: 0.21 PPB
RT: 2.98 min Scan# 364
Delta R.T. -0.00 min
Lab File: 0802F009.D
Acq: 2 Aug 2011 2:31 pm

Tgt Ion: 84 Resp: 3384

Ion	Ratio	Lower	Upper
84	100		
86	49.3	31.9	91.9
49	116.8	127.1	187.1#
51	64.9	17.9	77.9

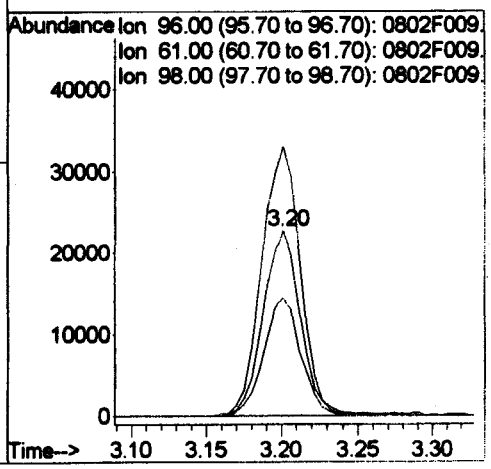


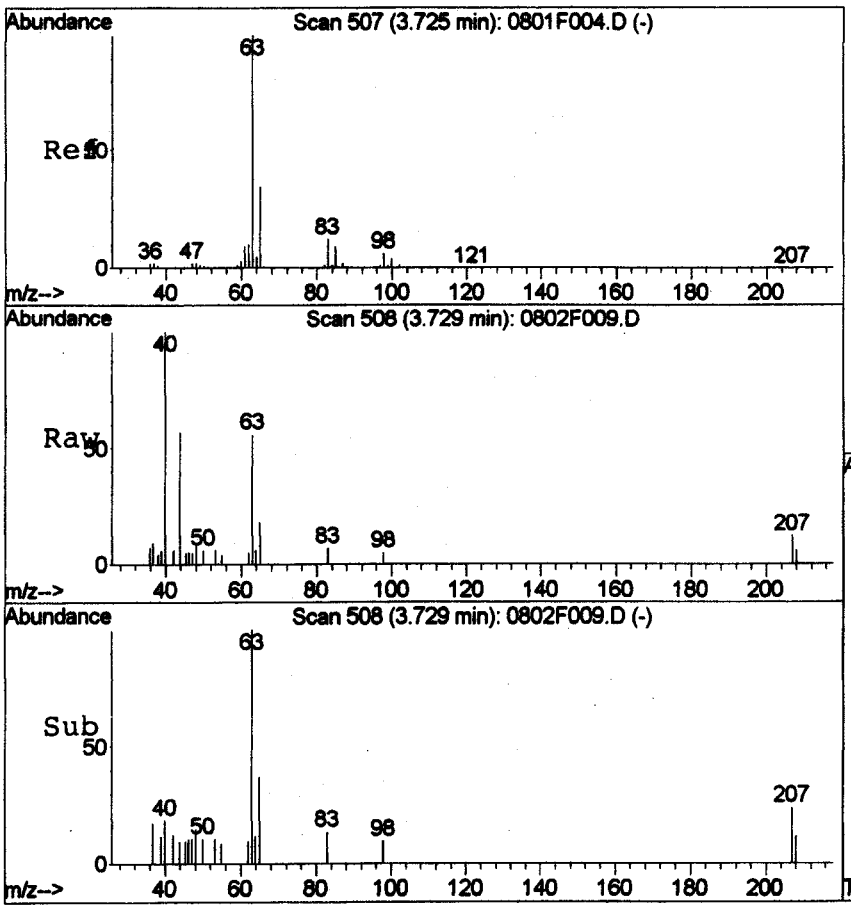


#15
trans-1,2-Dichloroethene
Concen: 2.42 PPB
RT: 3.20 min Scan# 407
Delta R.T. -0.00 min
Lab File: 0802F009.D
Acq: 2 Aug 2011 2:31 pm

Tgt Ion: 96 Resp: 39288

Ion	Ratio	Lower	Upper
96	100		
61	145.6	135.0	195.0
98	63.1	30.1	90.1

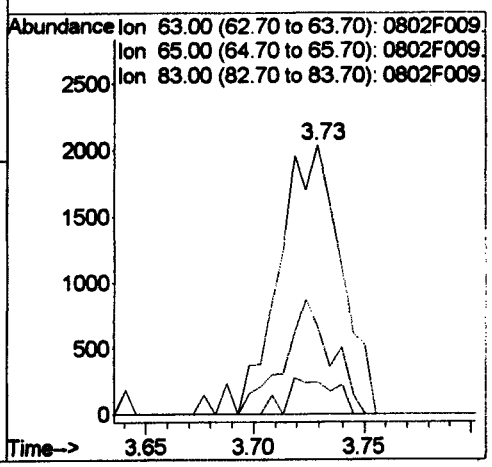


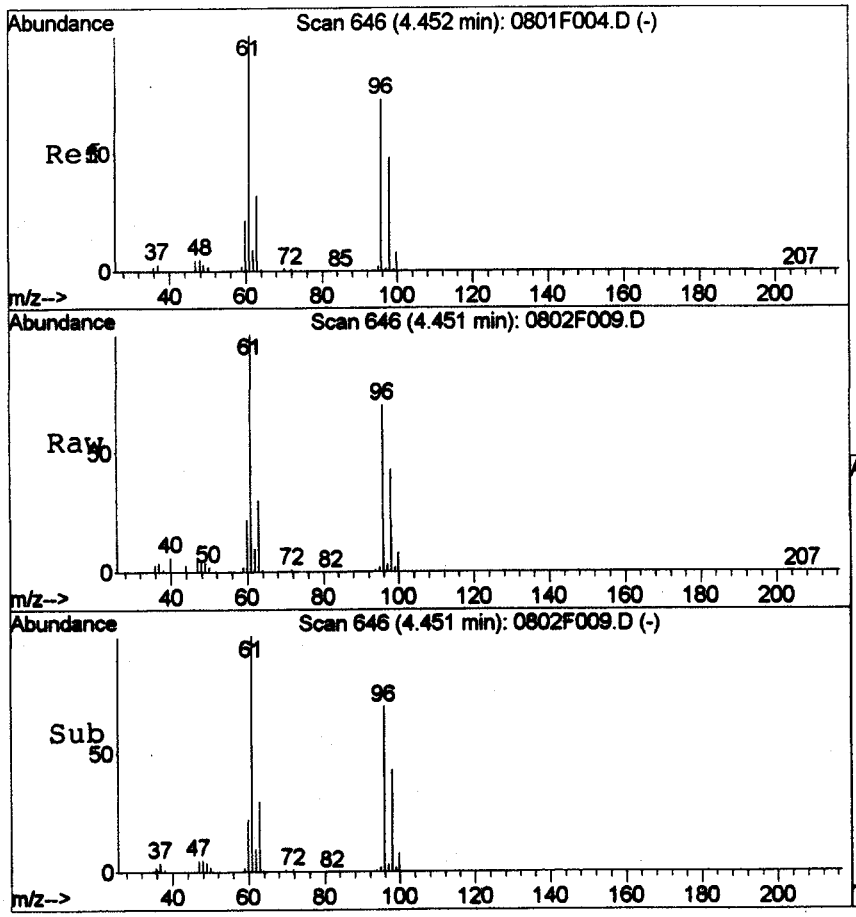


#16
1,1-Dichloroethane
Concen: 0.12 PPB
RT: 3.73 min Scan# 508
Delta R.T. -0.00 min
Lab File: 0802F009.D
Acq: 2 Aug 2011 2:31 pm

Tgt Ion: 63 Resp: 3972

Ion	Ratio	Lower	Upper
63	100		
65	33.2	0.8	60.8
83	12.3	0.0	42.7

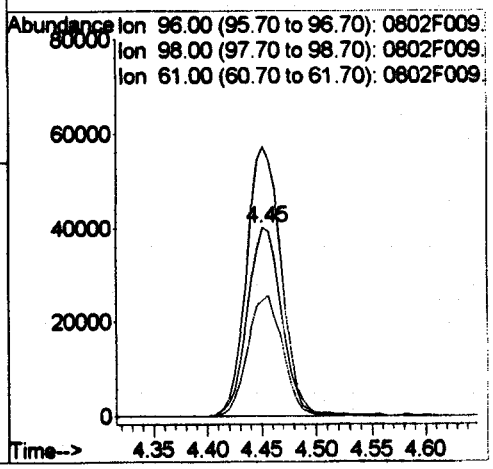


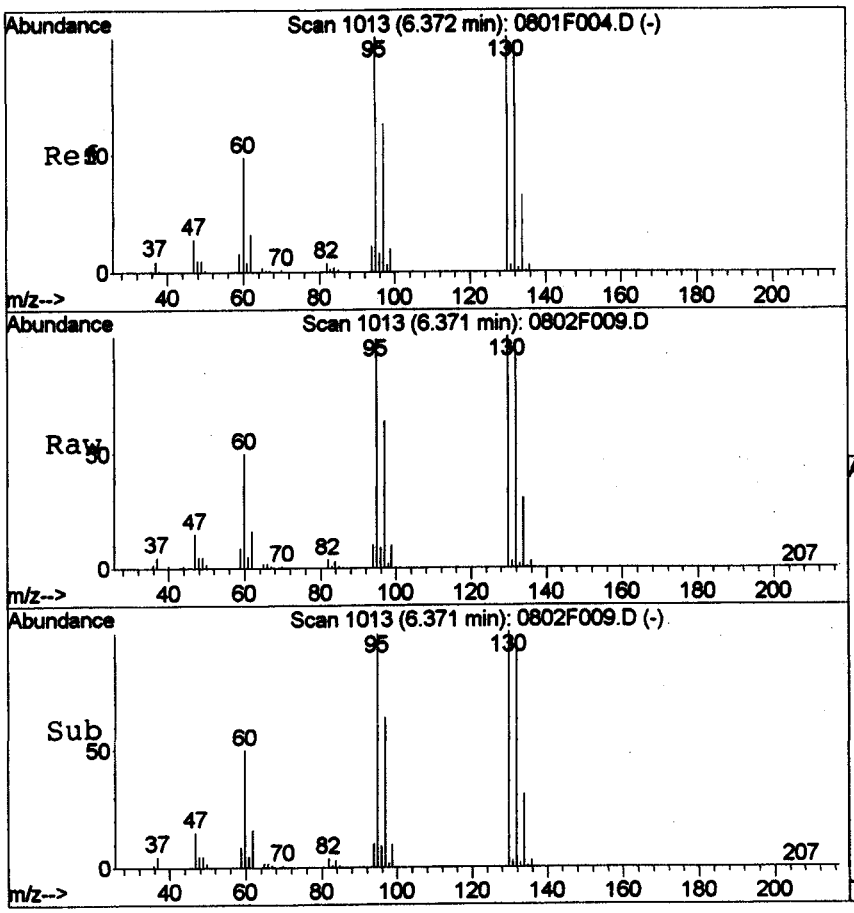


#18
cis-1,2-Dichloroethene
Concen: 5.10 PPB
RT: 4.45 min Scan# 646
Delta R.T. -0.01 min
Lab File: 0802F009.D
Acq: 2 Aug 2011 2:31 pm

Tgt Ion: 96 Resp: 88961

Ion	Ratio	Lower	Upper
96	100		
98	60.9	33.6	93.6
61	142.4	119.9	179.9

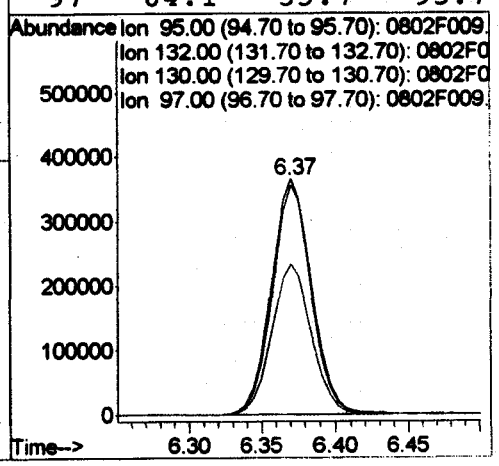


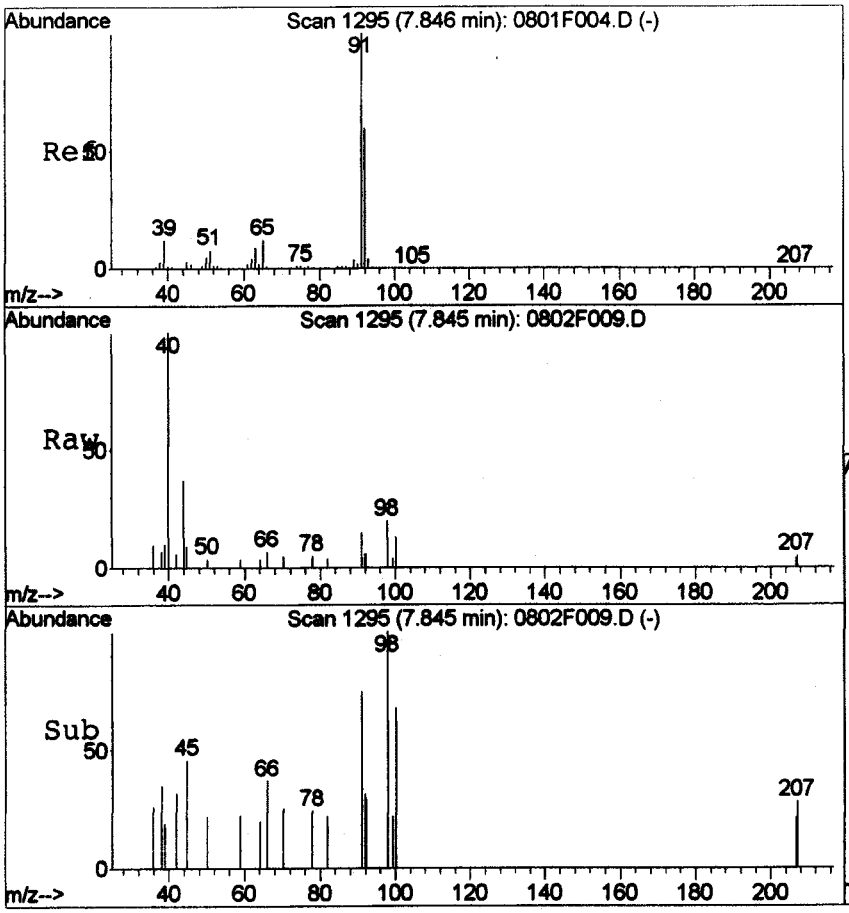


#27
Trichloroethene
Concen: 39.80 PPB
RT: 6.37 min Scan# 1013
Delta R.T. 0.00 min
Lab File: 0802F009.D
Acq: 2 Aug 2011 2:31 pm

Tgt Ion: 95 Resp: 687400

Ion	Ratio	Lower	Upper
95	100		
132	97.7	64.3	124.3
130	100.6	65.2	125.2
97	64.1	35.7	95.7

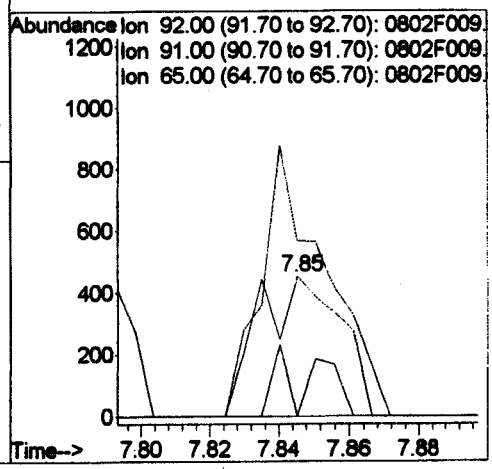


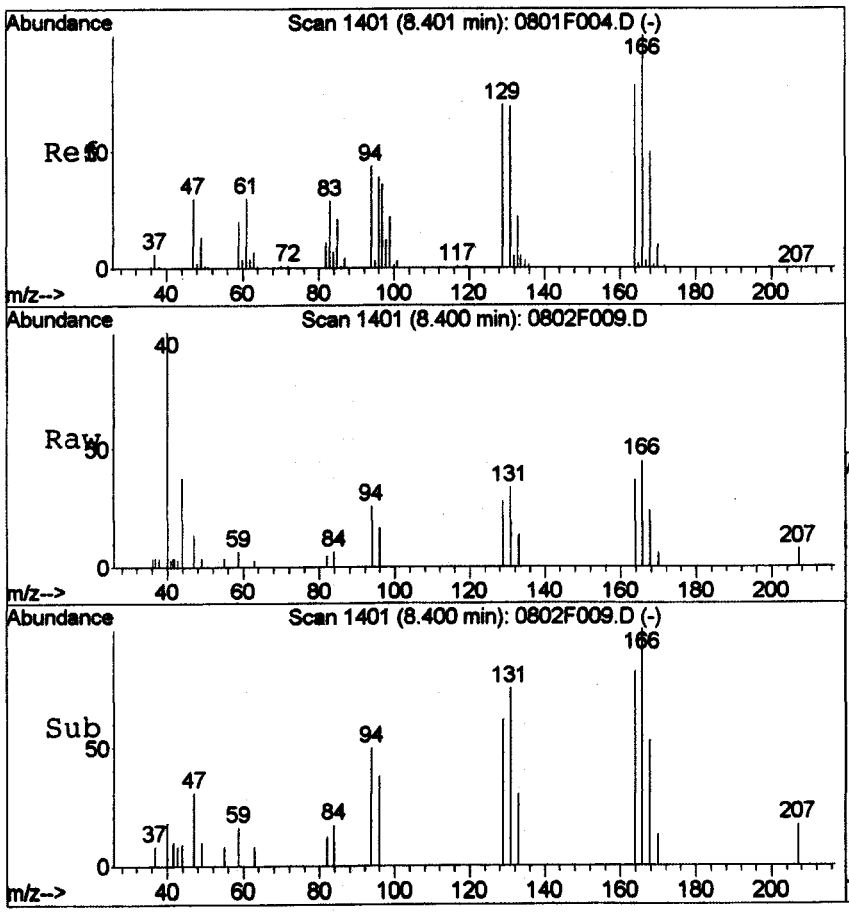


#34
Toluene
Concen: 0.02 PPB
RT: 7.85 min Scan# 1295
Delta R.T. 0.00 min
Lab File: 0802F009.D
Acq: 2 Aug 2011 2:31 pm

Tgt Ion: 92 Resp: 736

Ion	Ratio	Lower	Upper
92	100		
91	124.9	138.1	198.1#
65	0.0	0.0	51.7

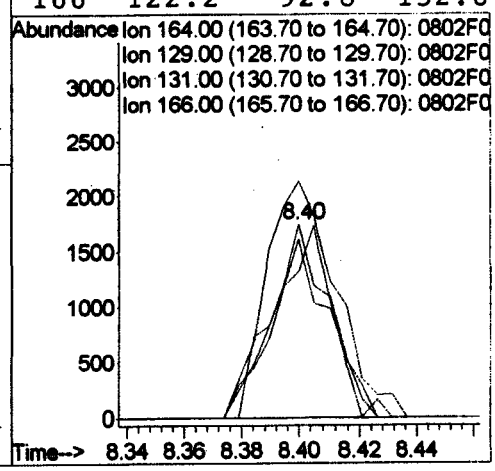


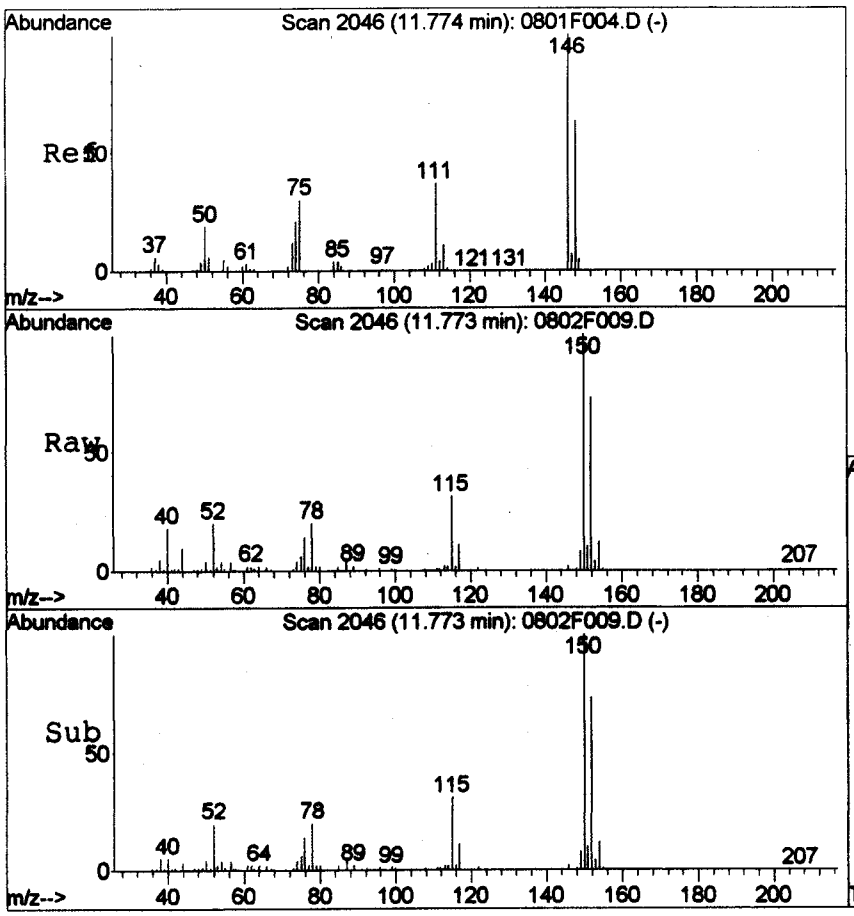


#38
Tetrachloroethene
Concen: 0.18 PPB
RT: 8.40 min Scan# 1401
Delta R.T. 0.00 min
Lab File: 0802F009.D
Acq: 2 Aug 2011 2:31 pm

Tgt Ion:164 Resp: 2349

Ion	Ratio	Lower	Upper
164	100		
129	75.9	66.2	126.2
131	92.1	61.3	121.3
166	122.2	92.8	152.8

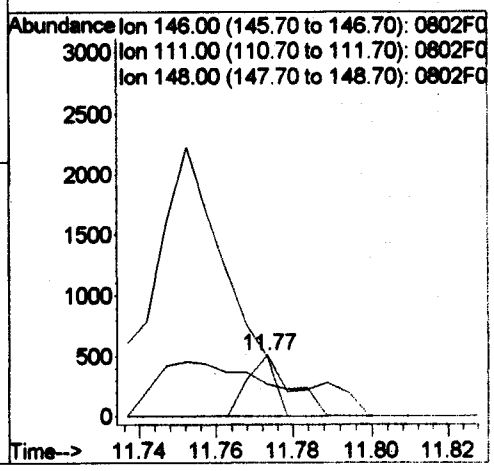




#52
1,4-Dichlorobenzene
Concen: 0.02 PPB
RT: 11.77 min Scan# 2046
Delta R.T. 0.00 min
Lab File: 0802F009.D
Acq: 2 Aug 2011 2:31 pm

Tgt Ion:146 Resp: 543

Ion	Ratio	Lower	Upper
146	100		
111	97.3	8.2	68.2#
148	52.5	34.4	94.4



COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1106869
Project:	NIROP/J070047	**Date Collected:**	07/27/2011
Sample Matrix:	Water	**Date Received:**	07/28/2011
		Date Extracted:	08/01/2011
		Date Analyzed:	08/01/2011

Volatile Organic Compounds

Sample Name:	Trip Blank	**Units:**	ug/L
Lab Code:	K1106869-005	**Basis:**	NA
File ID:	J:\MS23\DATA\080111BAYW\0801F017.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1107316
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.053	U	0.25	0.053	
75-35-4	1,1-Dichloroethene	0.37	U	0.50	0.37	
156-60-5	trans-1,2-Dichloroethene	0.039	U	0.50	0.039	
75-34-3	1,1-Dichloroethane	0.041	U	0.50	0.041	
156-59-2	cis-1,2-Dichloroethene	0.042	U	0.50	0.042	
71-55-6	1,1,1-Trichloroethane (TCA)	0.044	U	0.50	0.044	
79-01-6	Trichloroethene (TCE)	**0.12**	J	0.50	0.044	
127-18-4	Tetrachloroethene (PCE)	0.043	U	0.50	0.043	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	111	61-121	08/01/11	Acceptable
Toluene-d8	98	72-122	08/01/11	Acceptable
4-Bromofluorobenzene	90	70-120	08/01/11	Acceptable

Comments:

Exception Report

Data File: J:\MS23\DATA\080111BAYW\0801F017.D
Lab ID: K1106869-005
RunType: SMPL
Matrix: WATER

Date Acquired: 08/01/2011 19:09
Date Quantitated: 08/02/2011 10:23
Batch ID: KWG1107315
Analysis Method: 624
ListJoinID: LJ12964

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
Preparation Holding Time	NA	NA	NA	x	
Pre-Preparation Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Method Blank	NA	NA	NA	x	
MB Surrogate Recovery	NA	NA	NA	x	
Lab Control Spike	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA		x
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Analyte Exceptions

Exception Categories	Analyte Name	Result	Low Limit	High Limit	Corrective Action
Std MRL Unsupported by ICAL	Vinyl Chloride	0.25	0.20	NA	Tmar

Primary Review: KAR

Secondary Review: HDS 8.2.11

Quantitation Report

Data File:	J:\MS23\DATA\080111BAYW\0801F017.D			**Instrument:**	MS23
Acqu Date:	08/01/2011 19:09	**Quant Date:**	08/02/2011 10:23	**Vial:**	14
Run Type:	SMPL			**Dilution:**	1.0
Lab ID:	K1106869-005			**Soln Conc. Units:**	PPB

Bottle ID:		**Tier:**	V	**Matrix:**	WATER
Prod Code:	624 Modified VO	**Collect Date:**	07/27/2011	**Receive Date:**	07/28/2011

Analysis Lot:	KWG1107315	**Prep Lot:**	KWG1107316	**Report Group:**	K1106869
Analysis Method:	624	**Prep Method:**	METHOD		
Prep Ref:	1041362	**Prep Date:**	08/01/2011		

Quant Method:	J:\MS23\METHODS\032911624BAY	**Calibration ID:**	CAL10443
Title:	Volatile Organic Compounds	**Report List ID:**	LJ12964
Tune Ref:	J:\MS23\DATA\080111BAYW\0801F003.D	**Method ID:**	MJ158
MB Ref:	J:\MS23\DATA\080111BAYW\0801F010.D	**Quant based on Report List**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	Fluorobenzene	5.94	0.00	96	653221	10.00	OK
2	Chlorobenzene-d5	9.35	0.01	82	266386	10.00	OK
3	1,4-Dichlorobenzene-d4	11.75	0.00	152	226381	10.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	Dibromofluoromethane	5.11	-0.01	0.00	113	156826	11.10	111	61-121	OK
1	Toluene-d8	7.78	0.01	0.00	98	603952	9.79	98	72-122	OK
2	4-Bromofluorobenzene	10.58	0.00	0.00	95	196181	8.95	90	70-120	OK

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	Vinyl Chloride				62	0		0.053	U	
1	1,1-Dichloroethene				96	0		0.37	U	
1	trans-1,2-Dichloroethene				96	0		0.039	U	
1	1,1-Dichloroethane				63	0		0.041	U	
1	cis-1,2-Dichloroethene				96	0		0.042	U	
1	1,1,1-Trichloroethane (TCA)				97	0		0.044	U	
1	Trichloroethene (TCE)	6.38	0.01	0.00	95	2021	0.1200	0.12	J	
2	Tetrachloroethene (PCE)				164	0		0.043	U	

Prep Amount:	10 ml	**Dilution:**	1.0
Prep Final Vol:	10 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\080111BAYW\0801F017.D Vial: 14
Acq On : 1 Aug 2011 7:09 pm Operator: KR
Sample : K6869-005 TB45355 Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Aug 02 10:22:48 2011 Quant Results File: 032911624BAYW.R

Quant Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Aug 02 10:17:07 2011
Response via : Initial Calibration
DataAcq Meth : 8260

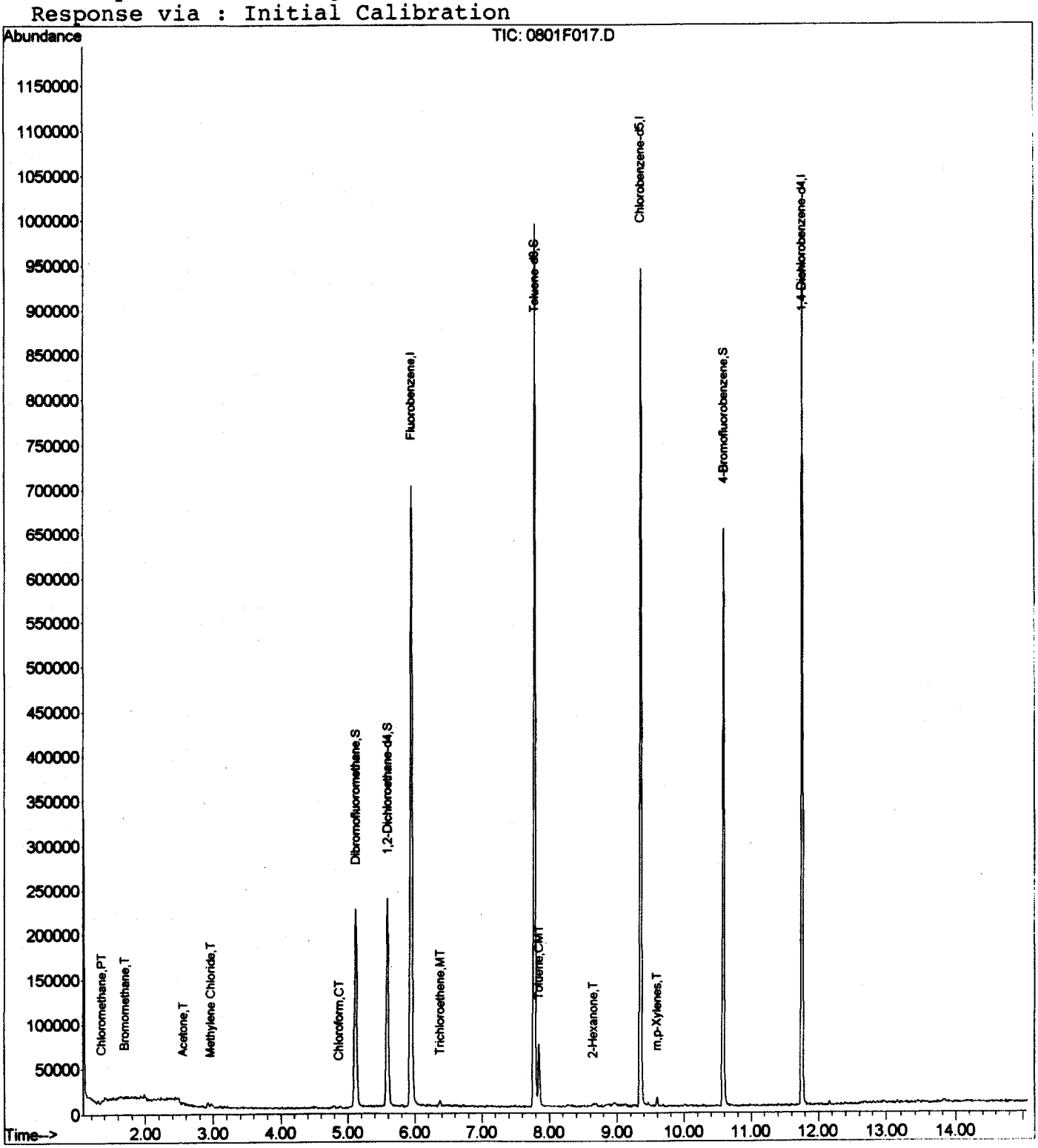
Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Fluorobenzene	5.94	96	653221	10.00	PPB		0.00
35) Chlorobenzene-d5	9.35	82	266386	10.00	PPB		0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	226381	10.00	PPB		0.00
System Monitoring Compounds							
22) Dibromofluoromethane	5.11	113	156826	11.10	PPB		0.00
Spiked Amount 10.000			Recovery	=	111.00%		
24) 1,2-Dichloroethane-d4	5.59	65	180001	10.13	PPB		0.00
Spiked Amount 10.000			Recovery	=	101.30%		
33) Toluene-d8	7.78	98	603952	9.79	PPB		0.00
Spiked Amount 10.000			Recovery	=	97.90%		
47) 4-Bromofluorobenzene	10.58	95	196181	8.95	PPB		0.00
Spiked Amount 10.000			Recovery	=	89.50%		
Target Compounds							Qvalue
3) Chloromethane	1.35	50	1116	0.03	PPB		85
5) Bromomethane	1.70	96	789	0.08	PPB	#	56
11) Acetone	2.56	43	2799	1.13	PPB		91
13) Methylene Chloride	2.97	84	1603	0.10	PPB	#	73
20) Chloroform	4.87	83	1645	0.06	PPB	#	52
27) Trichloroethene	6.38	95	2021	0.12	PPB	#	59
34) Toluene	7.84	92	26625	0.62	PPB		92
39) 2-Hexanone	8.64	43	751	0.14	PPB		67
43) m,p-Xylenes	9.60	106	2544	0.08	PPB	#	77

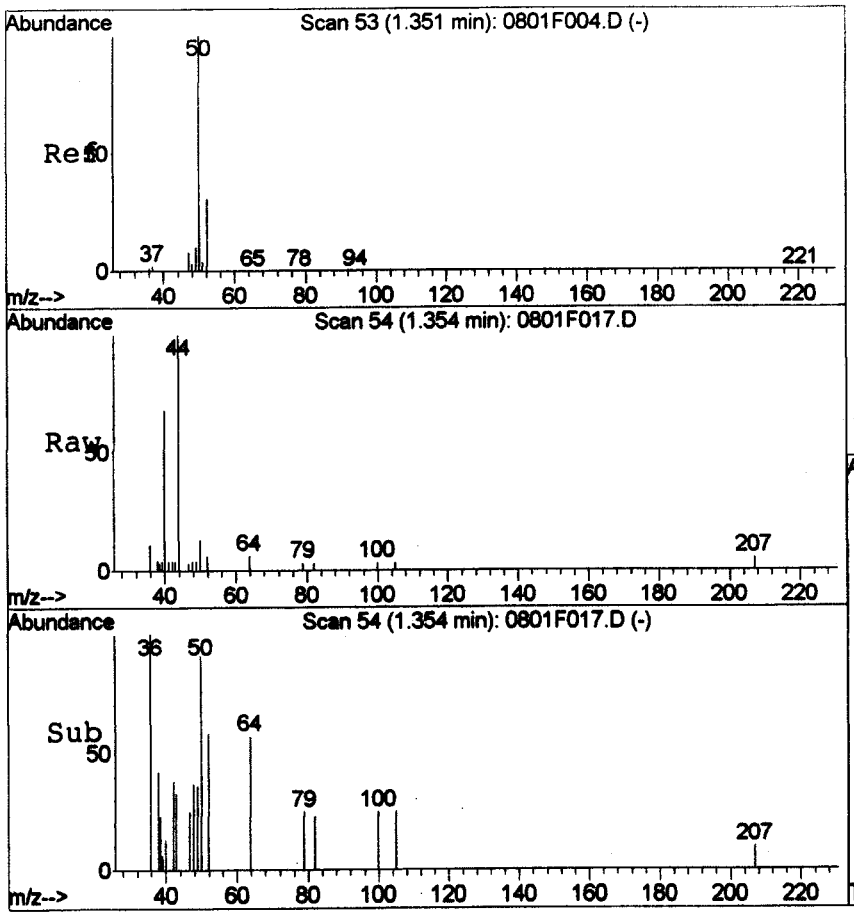
(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\080111BAYW\0801F017.D Vial: 14
Acq On : 1 Aug 2011 7:09 pm Operator: KR
Sample : K6869-005 TB45355 Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Aug 2 10:23 2011 Quant Results File: 032911624BAY

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Aug 02 10:17:07 2011
Response via : Initial Calibration

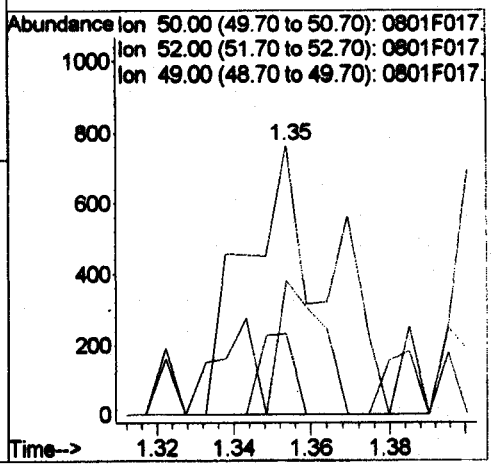


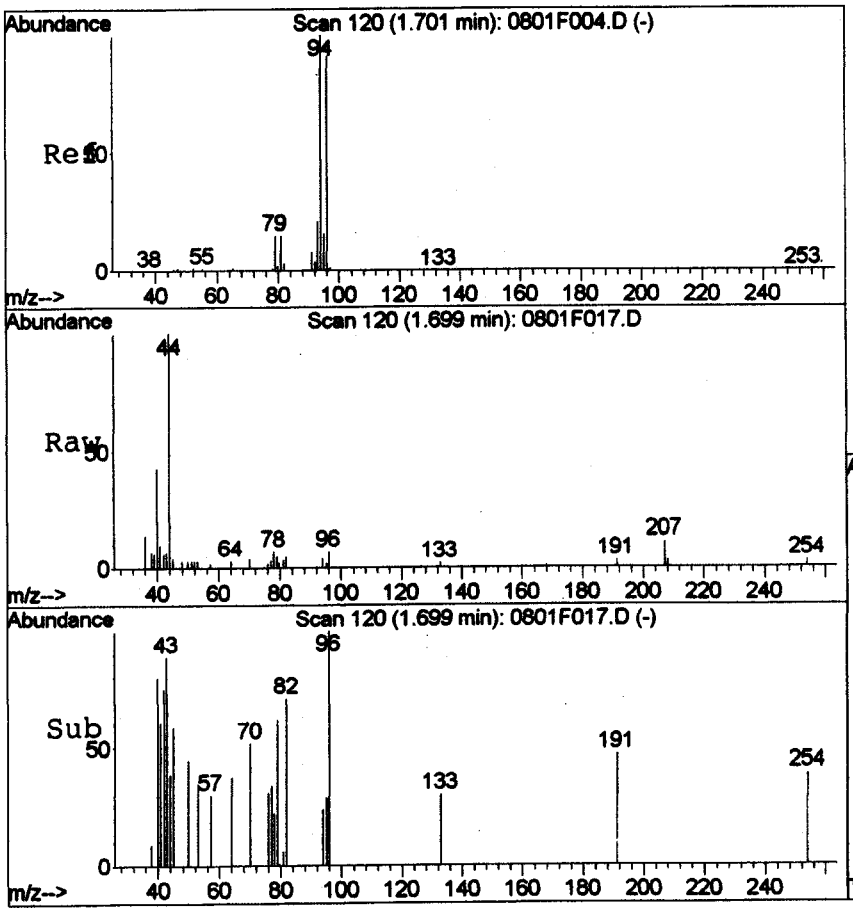


#3
Chloromethane
Concen: 0.03 PPB
RT: 1.35 min Scan# 54
Delta R.T. -0.01 min
Lab File: 0801F017.D
Acq: 1 Aug 2011 7:09 pm

Tgt Ion: 50 Resp: 1116

Ion	Ratio	Lower	Upper
50	100		
52	30.1	1.3	61.3
49	30.3	0.0	40.2

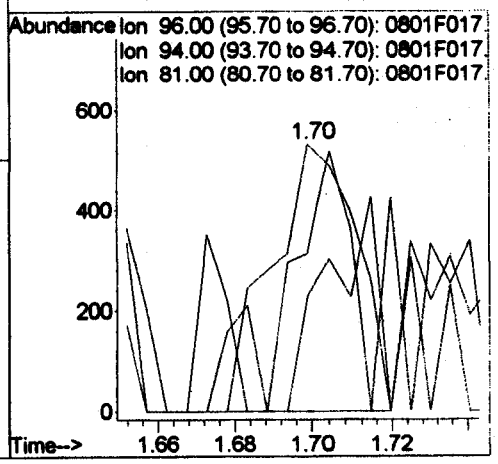


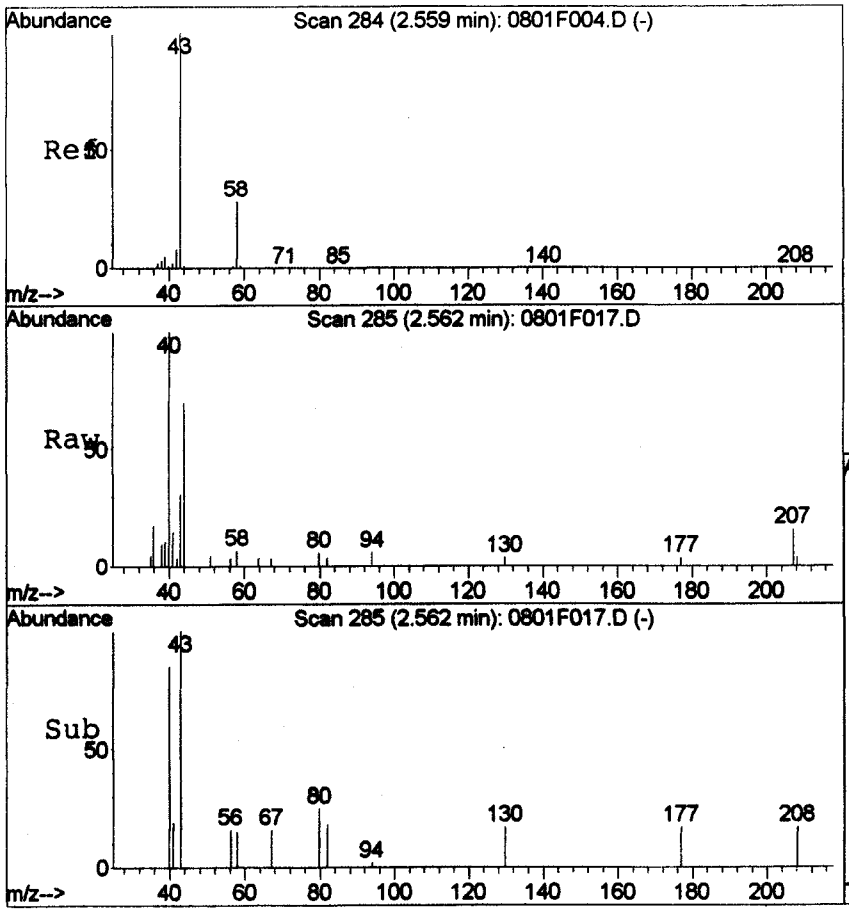


#5
Bromomethane
Concen: 0.08 PPB
RT: 1.70 min Scan# 120
Delta R.T. -0.01 min
Lab File: 0801F017.D
Acq: 1 Aug 2011 7:09 pm

Tgt Ion: 96 Resp: 789

Ion	Ratio	Lower	Upper
96	100		
94	58.5	69.2	129.2#
81	42.8	0.0	47.0

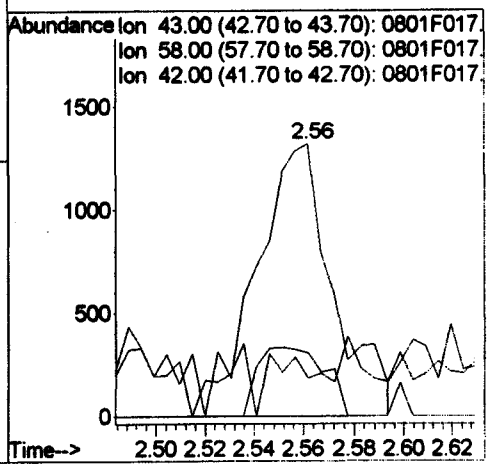


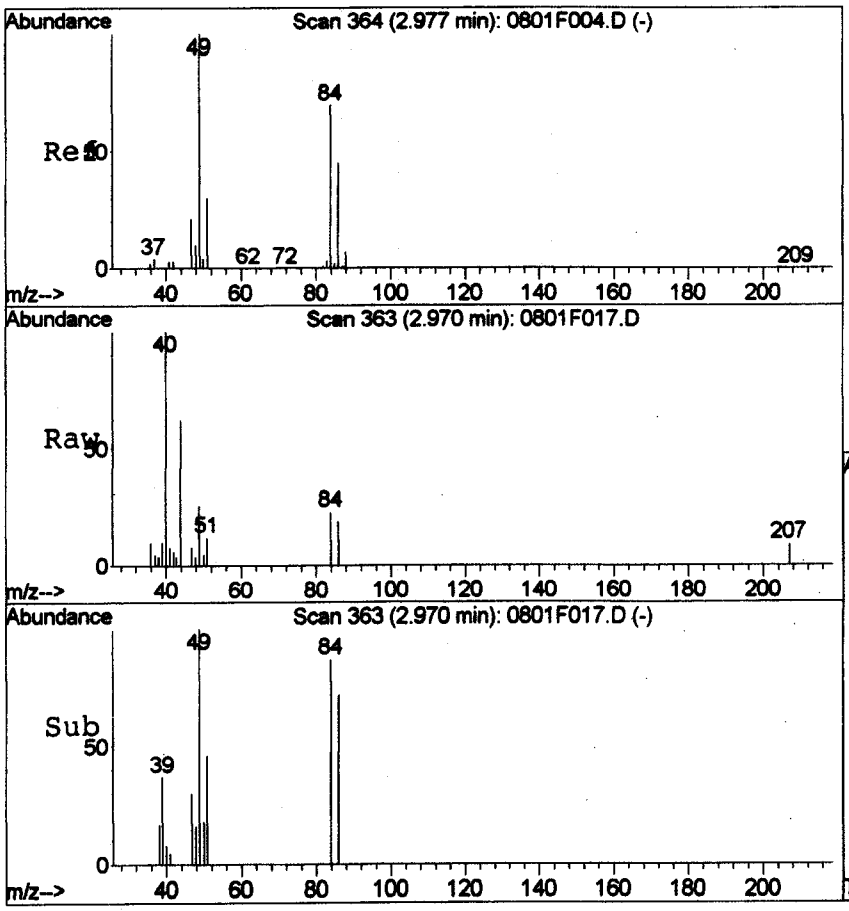


#11
Acetone
Concen: 1.13 PPB
RT: 2.56 min Scan# 285
Delta R.T. -0.00 min
Lab File: 0801F017.D
Acq: 1 Aug 2011 7:09 pm

Tgt Ion: 43 Resp: 2799

Ion	Ratio	Lower	Upper
43	100		
58	23.3	0.0	56.9
42	1.4	0.0	37.5

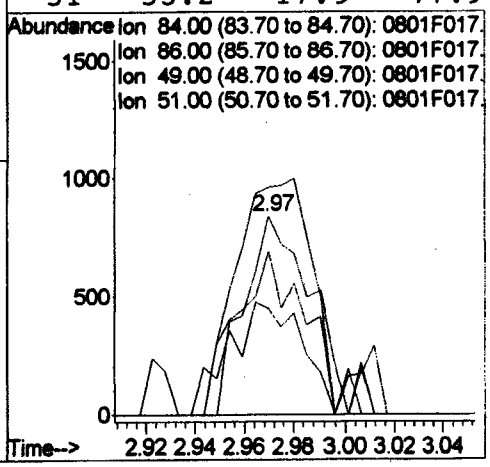


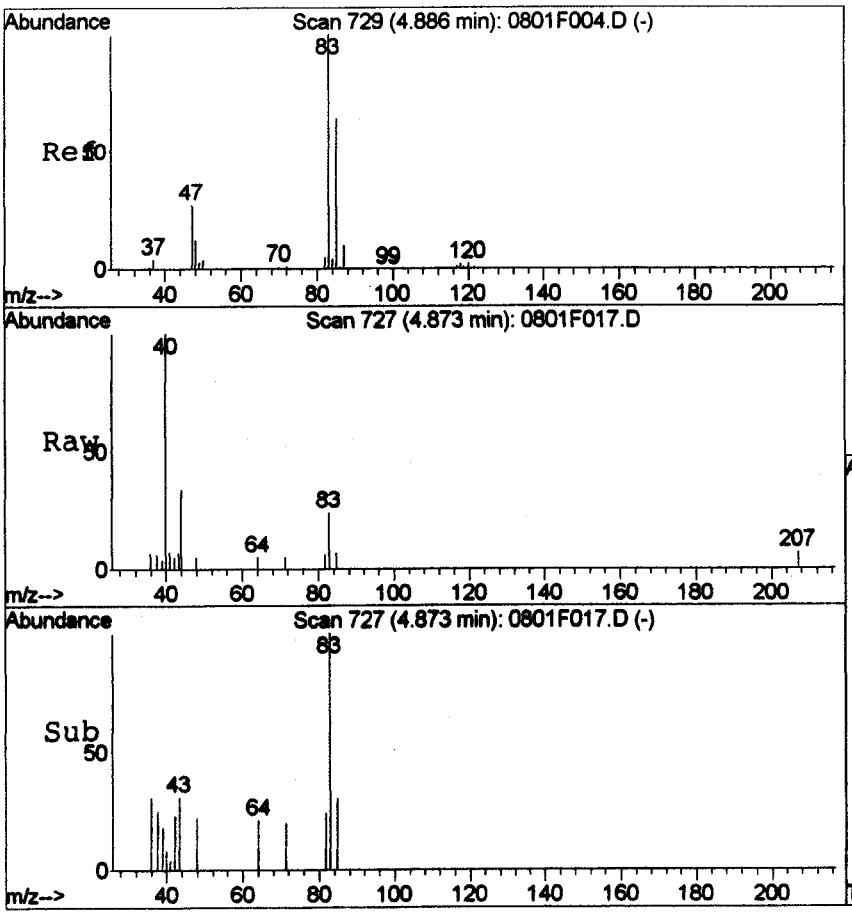


#13
Methylene Chloride
Concen: 0.10 PPB
RT: 2.97 min Scan# 363
Delta R.T. -0.01 min
Lab File: 0801F017.D
Acq: 1 Aug 2011 7:09 pm

Tgt Ion: 84 Resp: 1603

Ion	Ratio	Lower	Upper
84	100		
86	82.5	31.9	91.9
49	114.5	127.1	187.1#
51	53.2	17.9	77.9

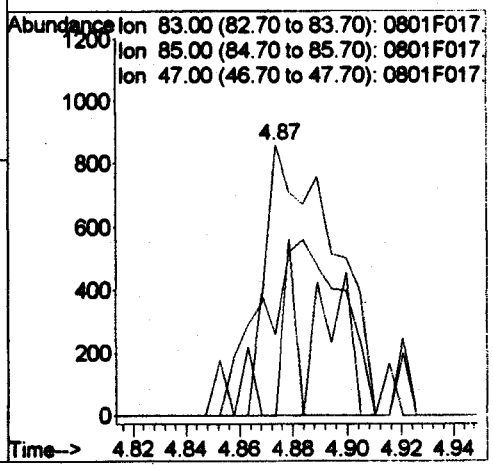


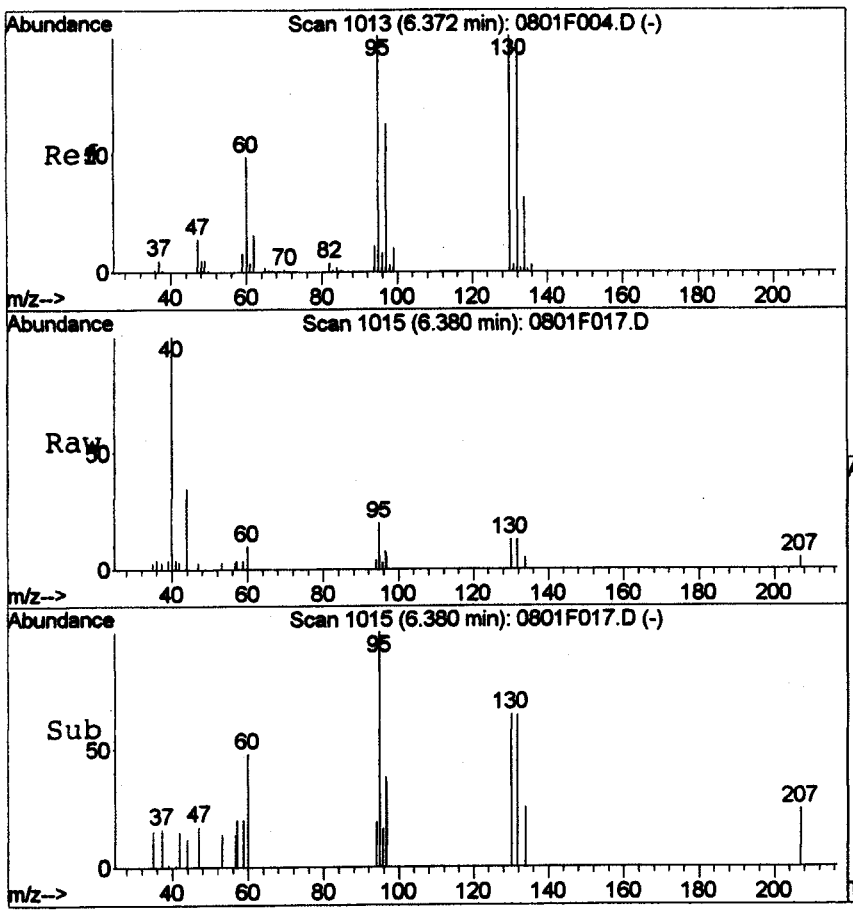


#20
Chloroform
Concen: 0.06 PPB
RT: 4.87 min Scan# 727
Delta R.T. -0.02 min
Lab File: 0801F017.D
Acq: 1 Aug 2011 7:09 pm

Tgt Ion: 83 Resp: 1645

Ion	Ratio	Lower	Upper
83	100		
85	30.1	34.3	94.3#
47	0.0	0.5	60.5#

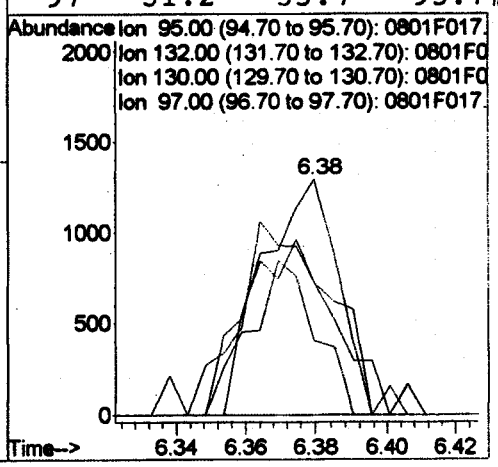


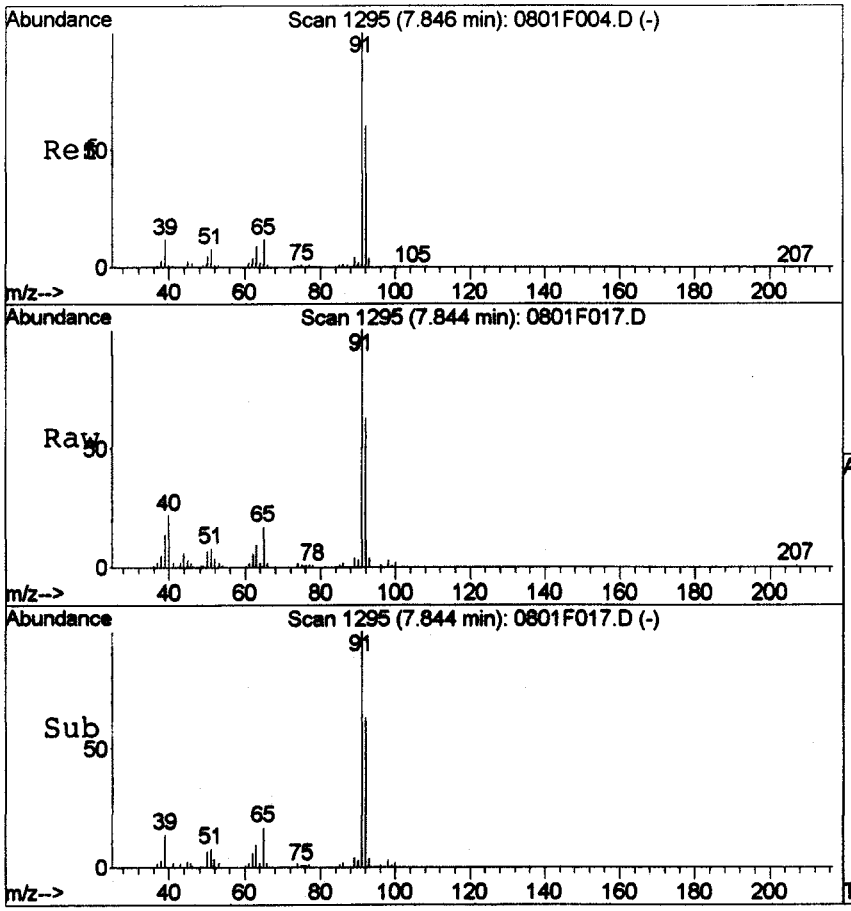


#27
Trichloroethene
Concen: 0.12 PPB
RT: 6.38 min Scan# 1015
Delta R.T. 0.01 min
Lab File: 0801F017.D
Acq: 1 Aug 2011 7:09 pm

Tgt Ion: 95 Resp: 2021

Ion	Ratio	Lower	Upper
95	100		
132	56.0	64.3	124.3#
130	56.0	65.2	125.2#
97	31.2	35.7	95.7#

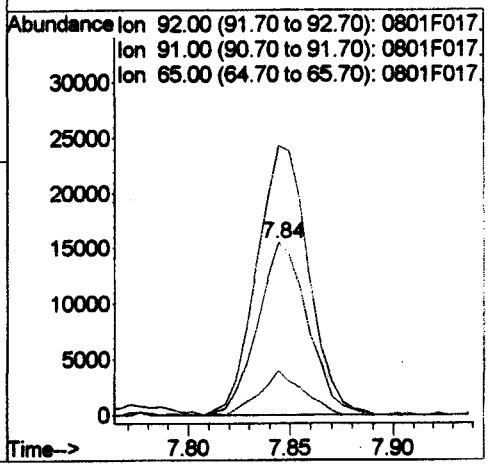


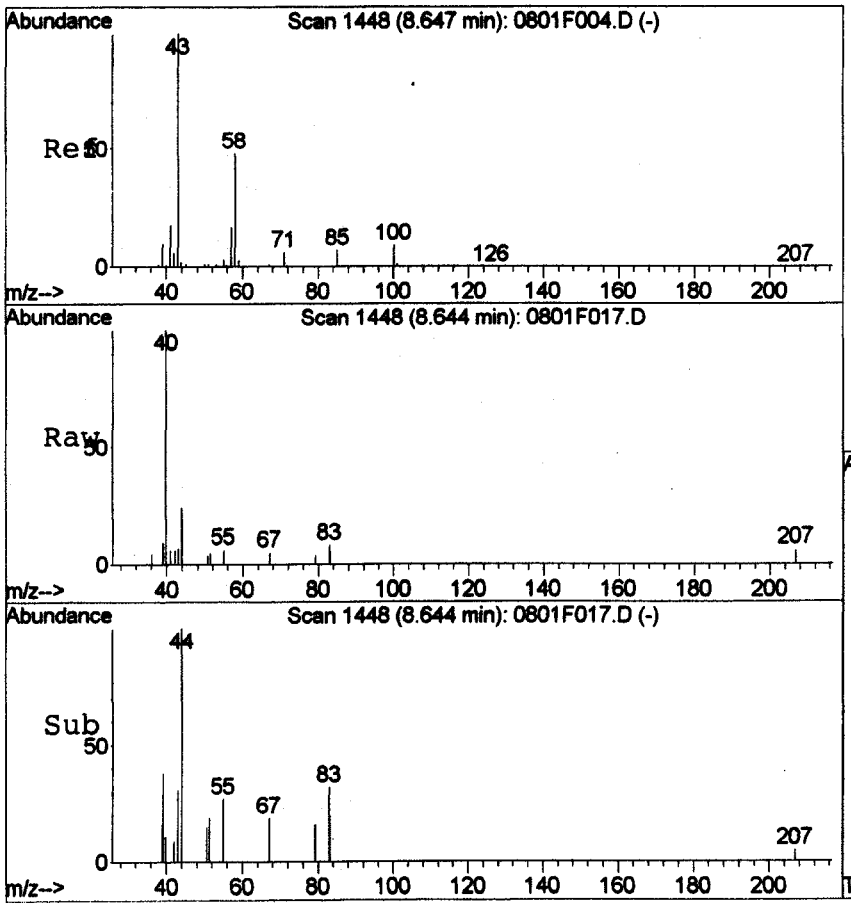


#34
Toluene
Concen: 0.62 PPB
RT: 7.84 min Scan# 1295
Delta R.T. -0.00 min
Lab File: 0801F017.D
Acq: 1 Aug 2011 7:09 pm

Tgt Ion: 92 Resp: 26625

Ion	Ratio	Lower	Upper
92	100		
91	157.5	138.1	198.1
65	26.0	0.0	51.7

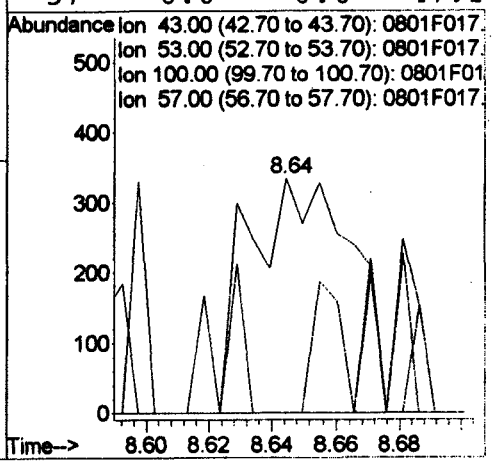


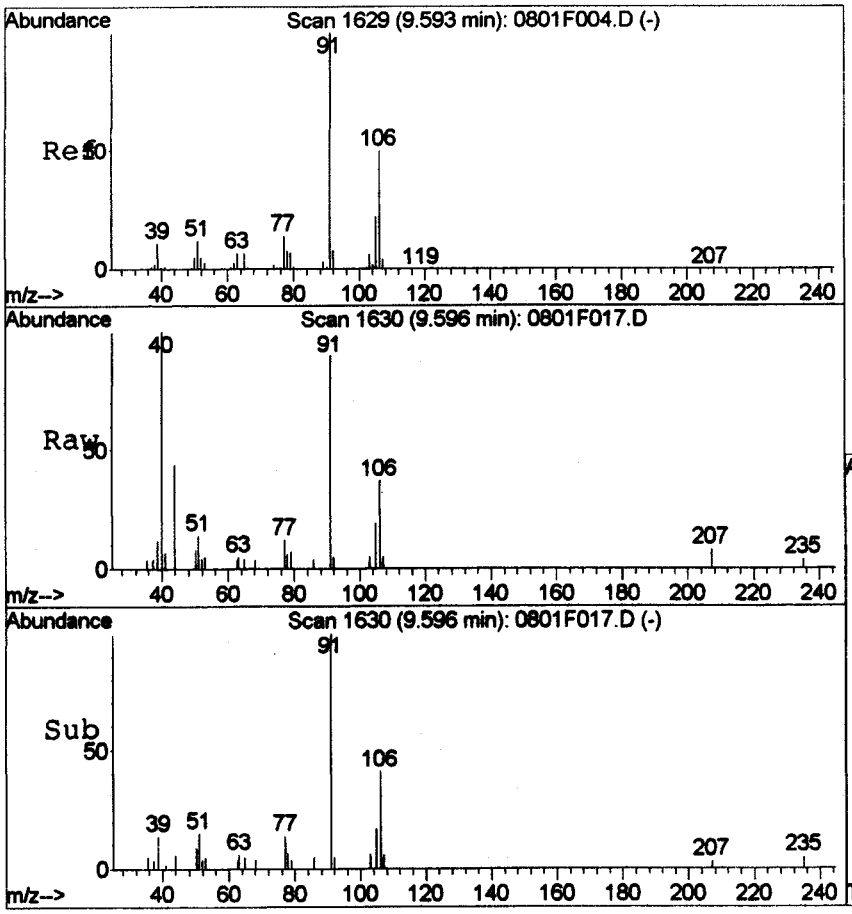


#39
2-Hexanone
Concen: 0.14 PPB
RT: 8.64 min Scan# 1448
Delta R.T. -0.00 min
Lab File: 0801F017.D
Acq: 1 Aug 2011 7:09 pm

Tgt Ion: 43 Resp: 751

Ion	Ratio	Lower	Upper
43	100		
53	0.0	0.0	31.3
100	0.0	0.0	39.5
57	0.0	0.0	47.1

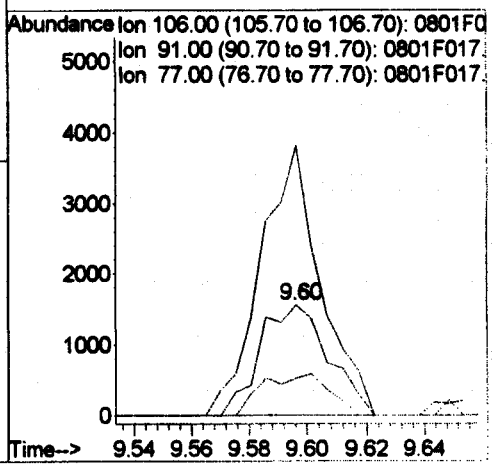




#43
m,p-Xylenes
Concen: 0.08 PPB
RT: 9.60 min Scan# 1630
Delta R.T. 0.00 min
Lab File: 0801F017.D
Acq: 1 Aug 2011 7:09 pm

Tgt Ion:106 Resp: 2544

Ion	Ratio	Lower	Upper
106	100		
91	245.0	175.3	235.3#
77	33.8	0.3	60.3



COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1106869
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	08/01/2011
		Date Analyzed:	08/01/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1107316-4	**Basis:**	NA
File ID:	J:\MS23\DATA\080111BAYW\0801F010.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1107316
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.053	U	0.25	0.053	
75-35-4	1,1-Dichloroethene	0.37	U	0.50	0.37	
156-60-5	trans-1,2-Dichloroethene	0.039	U	0.50	0.039	
75-34-3	1,1-Dichloroethane	0.041	U	0.50	0.041	
156-59-2	cis-1,2-Dichloroethene	0.042	U	0.50	0.042	
71-55-6	1,1,1-Trichloroethane (TCA)	0.044	U	0.50	0.044	
79-01-6	Trichloroethene (TCE)	0.044	U	0.50	0.044	
127-18-4	Tetrachloroethene (PCE)	0.043	U	0.50	0.043	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	108	61-121	08/01/11	Acceptable
Toluene-d8	99	72-122	08/01/11	Acceptable
4-Bromofluorobenzene	91	70-120	08/01/11	Acceptable

Comments:

Exception Report

Data File: J:\MS23\DATA\080111BAYW\0801F010.D
Lab ID: KWG1107316-4
RunType: MB
Matrix: WATER

Date Acquired: 08/01/2011 15:34
Date Quantitated: 08/02/2011 10:16
Batch ID: KWG1107315
Analysis Method: 624
MethodJoinID: MJ158

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Primary Review: KA 8/2/11

Secondary Review: HD 8.2.11

Printed: 08/02/2011 11:09:44
u:\Stealth\Crystal.rpt\except2.rpt

Quantitation Report

Data File:	J:\MS23\DATA\080111BAYW\0801F010.D			**Instrument:**	MS23
Acqu Date:	08/01/2011 15:34	**Quant Date:**	08/02/2011 10:16	**Vial:**	7
Run Type:	MB			**Dilution:**	1.0
Lab ID:	KWG1107316-4			**Soln Conc. Units:**	PPB

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	624 Modified VO	**Collect Date:**		**Receive Date:**	08/02/2011

Analysis Lot:	KWG1107315	**Prep Lot:**	KWG1107316	**Report Group:**	
Analysis Method:	624	**Prep Method:**	METHOD		
		Prep Date:	08/01/2011		
Prep Ref:	1041370				

Quant Method:	J:\MS23\METHODS\032911624BAY	**Calibration ID:**	CAL10443
Title:			
Tune Ref:	J:\MS23\DATA\080111BAYW\0801F003.D	**Method ID:**	MJ158
MB Ref:		**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	Fluorobenzene	5.95	0.01	96	664643	10.00	OK
2	Chlorobenzene-d5	9.35	0.01	82	275953	10.00	OK
3	1,4-Dichlorobenzene-d4	11.76	0.01	152	235068	10.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	Dibromofluoromethane	5.12	0.00	0.00	113	155316	10.80	108	61-121 OK	
1	1,2-Dichloroethane-d4	5.59	0.00	0.00	65	177638	9.83	98	54-125 OK	
1	Toluene-d8	7.78	0.01	0.00	98	622024	9.91	99	72-122 OK	
2	4-Bromofluorobenzene	10.58	0.00	0.00	95	207047	9.11	91	70-120 OK	

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	Dichlorodifluoromethane				85	0		0.40	U	
1	Chloromethane				50	0		0.035	U	
1	Vinyl Chloride				62	0		0.053	U	
1	Bromomethane				96	0d		0.32	U	
1	Chloroethane				49	0		0.32	U	
1	Trichlorofluoromethane				101	0		0.048	U	
1	Acrolein				56	0		2.1	U	
1	Trichlorotrifluoroethane				151	0		0.077	U	
1	1,1-Dichloroethene				96	0d		0.37	U	
1	Acetone				43	0d		4.3	U	
1	Carbon Disulfide	2.62	-0.01	0.00	76	912	0.0100	0.048	U	
1	Methylene Chloride	2.97	-0.01	0.00	84	503	0.0300	0.093	U	
1	Acrylonitrile				53	0		0.28	U	
1	trans-1,2-Dichloroethene				96	0		0.039	U	

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Data File:	J:\MS23\DATA\080111BAYW\0801F010.D			**Instrument:**	MS23
Acqu Date:	08/01/2011 15:34	**Quant Date:**	08/02/2011 10:16	**Vial:**	7
Run Type:	MB			**Dilution:**	1.0
Lab ID:	KWG1107316-4			**Soln Conc. Units:**	PPB

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,1-Dichloroethane				63	0		0.041	U	
1	Vinyl Acetate				86	0		0.21	U	
1	cis-1,2-Dichloroethene				96	0		0.042	U	
1	2-Butanone (MEK)				72	0d		3.4	U	
1	Chloroform				83	0		0.038	U	
1	1,1,1-Trichloroethane (TCA)				97	0		0.044	U	
1	Carbon Tetrachloride				117	0		0.26	U	
1	Benzene				78	0		0.040	U	
1	1,2-Dichloroethane (EDC)				62	0		0.038	U	
1	Trichloroethene (TCE)				95	0		0.044	U	
1	1,2-Dichloropropane				63	0		0.044	U	
1	Bromodichloromethane				83	0		0.047	U	
1	2-Chloroethyl Vinyl Ether				63	0		0.12	U	
1	cis-1,3-Dichloropropene				75	0		0.035	U	
1	4-Methyl-2-pentanone (MIBK)				58	0		2.8	U	
1	Toluene				92	0		0.039	U	
2	trans-1,3-Dichloropropene				75	0		0.045	U	
2	1,1,2-Trichloroethane				83	0		0.072	U	
2	Tetrachloroethene (PCE)				164	0		0.043	U	
2	2-Hexanone				43	0d		1.8	U	
2	Dibromochloromethane				129	0		0.081	U	
2	Chlorobenzene				112	0		0.031	U	
2	Ethylbenzene				106	0		0.040	U	
2	m,p-Xylenes				106	0		0.14	U	
2	o-Xylene				106	0		0.035	U	
2	Styrene				103	0		0.025	U	
2	Bromoform				173	0		0.11	U	
3	1,1,2,2-Tetrachloroethane				83	0		0.086	U	
3	Pentachloroethane				167	0				
3	1,3-Dichlorobenzene				146	0d		0.071	U	
3	1,4-Dichlorobenzene	11.79	0.02	0.00	146	541	0.0200	0.073	U	
3	1,2-Dichlorobenzene				146	0		0.086	U	
	Isopropyl Acetate				0	0		10	U	NR
	Ethyl Acetate				0	0		10	U	NR
	Bis(chloromethyl) Ether				0	0		10	U	NR
	Amyl Acetate				0	0		10	U	NR

Prep Amount:	10 ml	**Dilution:**	1.0
Prep Final Vol:	10 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\080111BAYW\0801F010.D Vial: 7
Acq On : 1 Aug 2011 3:34 pm Operator: KR
Sample : MB Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Aug 02 10:15:48 2011 Quant Results File: 032911624BAYW.R

Quant Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Initial Calibration
DataAcq Meth : 8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	5.95	96	664643	10.00	PPB	0.00
35) Chlorobenzene-d5	9.35	82	275953	10.00	PPB	0.00
48) 1,4-Dichlorobenzene-d4	11.76	152	235068	10.00	PPB	0.00
System Monitoring Compounds						
22) Dibromofluoromethane	5.12	113	155316	10.80	PPB	0.00
Spiked Amount 10.000			Recovery	=	108.00%	
24) 1,2-Dichloroethane-d4	5.59	65	177638	9.83	PPB	0.00
Spiked Amount 10.000			Recovery	=	98.30%	
33) Toluene-d8	7.78	98	622024	9.91	PPB	0.00
Spiked Amount 10.000			Recovery	=	99.10%	
47) 4-Bromofluorobenzene	10.58	95	207047	9.11	PPB	0.00
Spiked Amount 10.000			Recovery	=	91.10%	
Target Compounds						Qvalue
12) Carbon Disulfide	2.62	76	912	0.01	PPB	43
13) Methylene Chloride	2.97	84	503	0.03	PPB #	18
52) 1,4-Dichlorobenzene	11.79	146	541	0.02	PPB	87

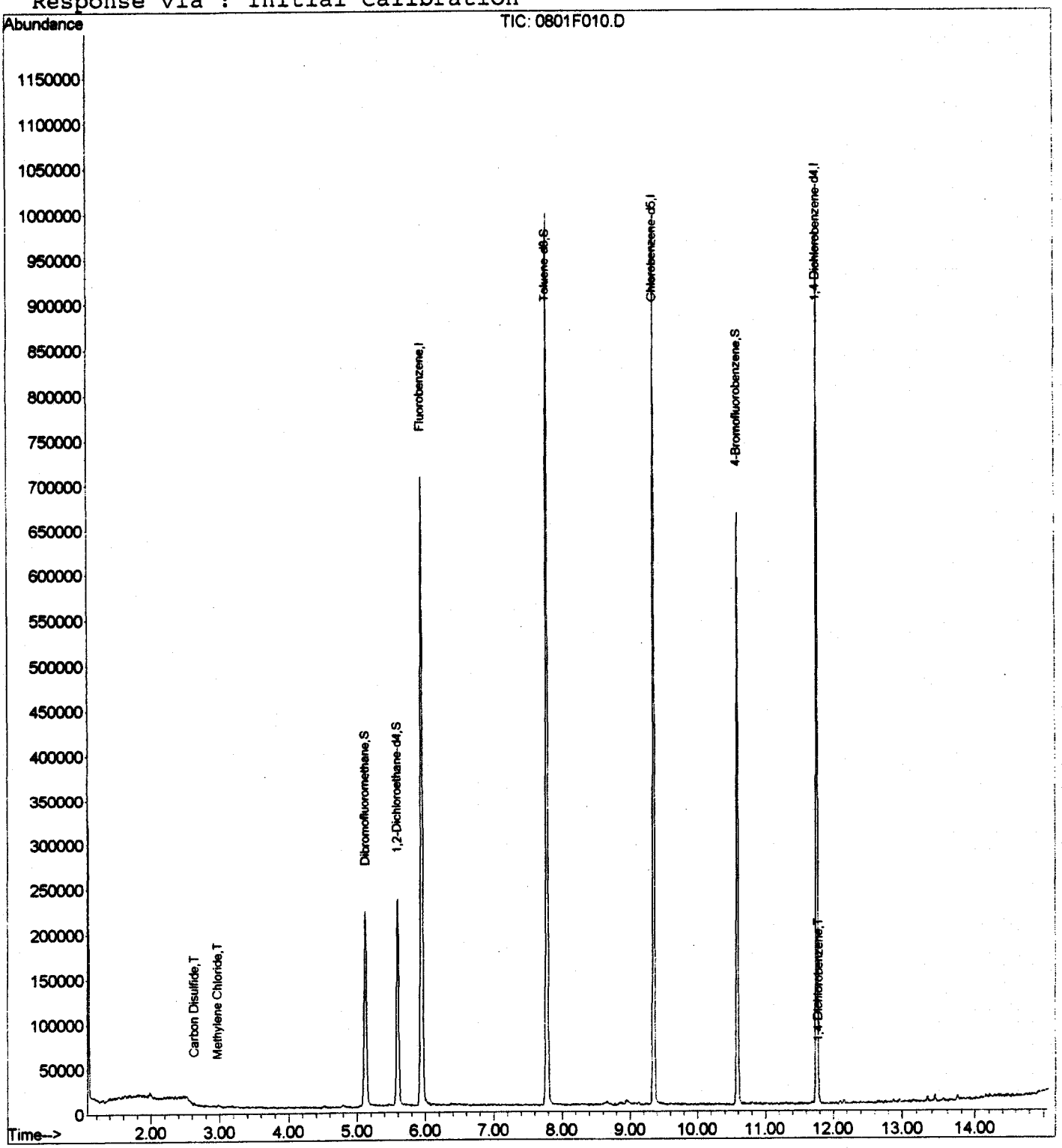
(#) = qualifier out of range (m) = manual integration
0801F010.D 032911624BAYW.M Tue Aug 02 10:16:36 2011 Page 1

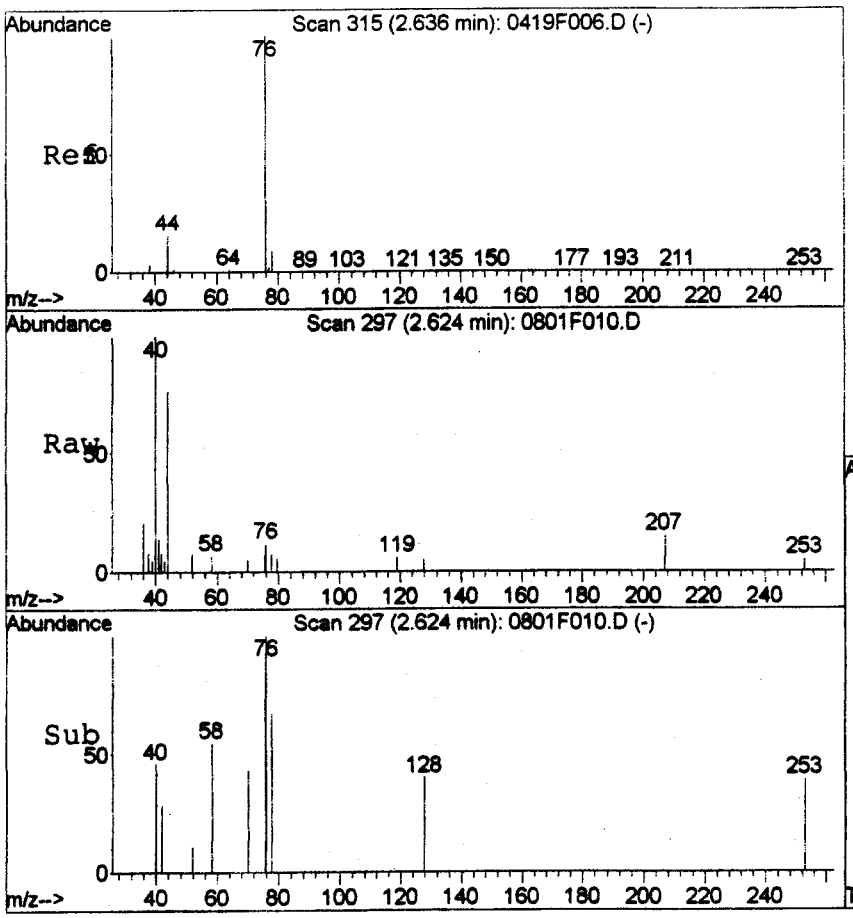
Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\080111BAYW\0801F010.D
Acq On : 1 Aug 2011 3:34 pm
Sample : MB
Misc :
MS Integration Params: rteint.p
Quant Time: Aug 2 10:16 2011

Vial: 7
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624BAY

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Initial Calibration

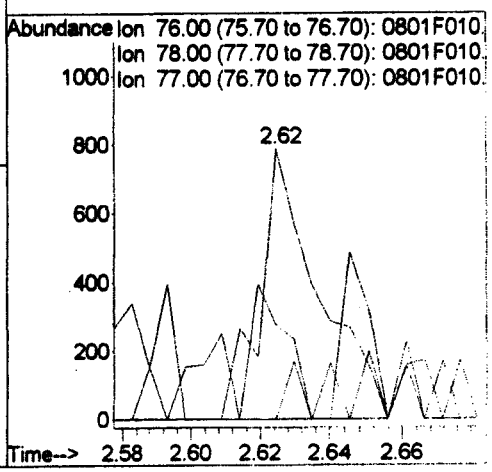


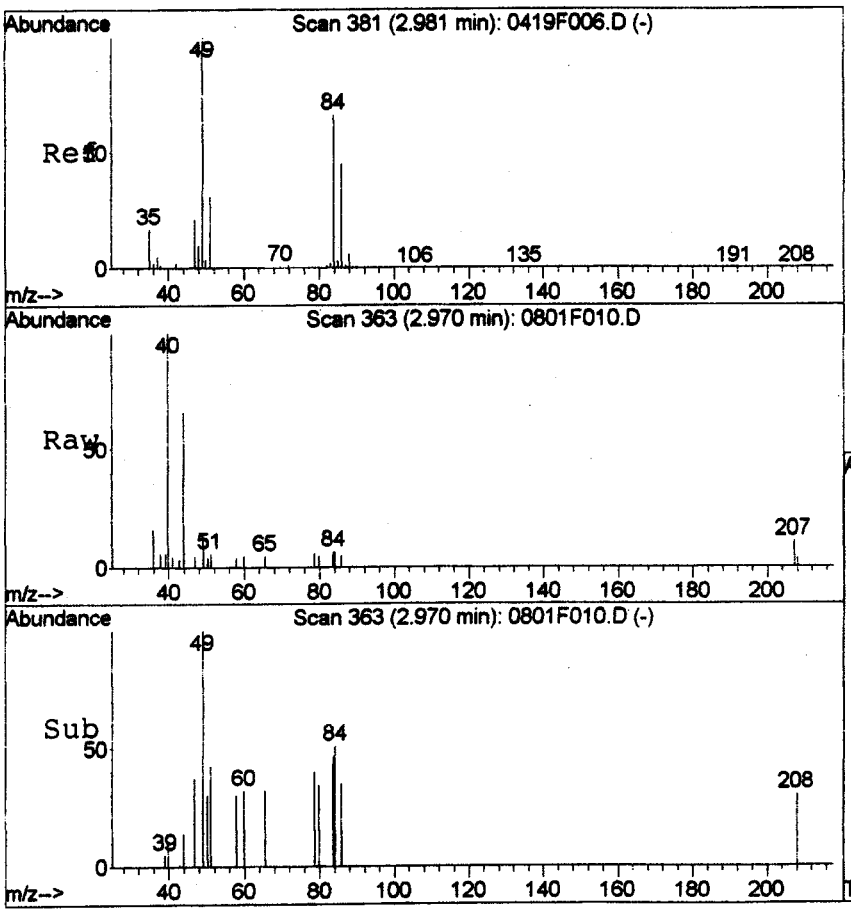


#12
Carbon Disulfide
Concen: 0.01 PPB
RT: 2.62 min Scan# 297
Delta R.T. -0.01 min
Lab File: 0801F010.D
Acq: 1 Aug 2011 3:34 pm

Tgt Ion: 76 Resp: 912

Ion	Ratio	Lower	Upper
76	100		
78	34.9	0.0	39.0
77	0.0	0.0	32.7

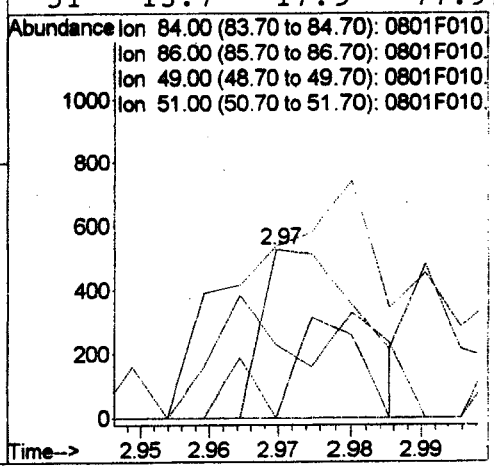




#13
Methylene Chloride
Concen: 0.03 PPB
RT: 2.97 min Scan# 363
Delta R.T. -0.01 min
Lab File: 0801F010.D
Acq: 1 Aug 2011 3:34 pm

Tgt Ion: 84 Resp: 503

Ion	Ratio	Lower	Upper
84	100		
86	0.0	31.9	91.9#
49	36.7	127.1	187.1#
51	13.7	17.9	77.9#



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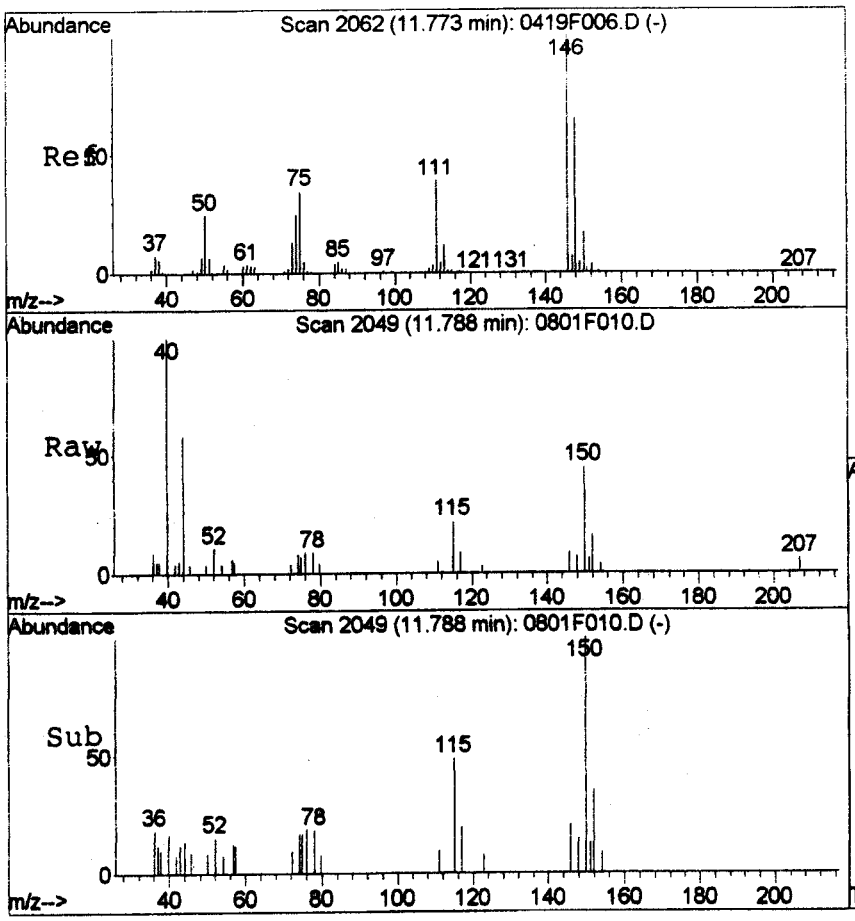
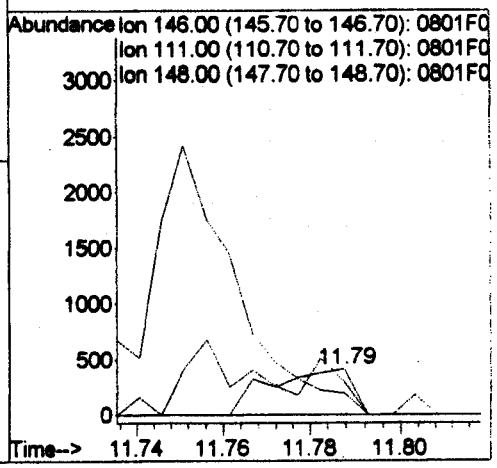


#52
1,4-Dichlorobenzene
Concen: 0.02 PPB
RT: 11.79 min Scan# 2049
Delta R.T. 0.01 min
Lab File: 0801F010.D
Acq: 1 Aug 2011 3:34 pm

Tgt Ion:146 Resp: 541

Ion	Ratio	Lower	Upper
146	100		
111	48.4	8.2	68.2
148	72.5	34.4	94.4



COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1106869
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	08/05/2011
		Date Analyzed:	08/05/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1107578-4	**Basis:**	NA
File ID:	J:\MS23\DATA\080511BAYW\0805F009.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1107578
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.053	U	0.25	0.053	
75-35-4	1,1-Dichloroethene	0.37	U	0.50	0.37	
156-60-5	trans-1,2-Dichloroethene	0.039	U	0.50	0.039	
75-34-3	1,1-Dichloroethane	0.041	U	0.50	0.041	
156-59-2	cis-1,2-Dichloroethene	0.042	U	0.50	0.042	
71-55-6	1,1,1-Trichloroethane (TCA)	0.044	U	0.50	0.044	
79-01-6	Trichloroethene (TCE)	0.044	U	0.50	0.044	
127-18-4	Tetrachloroethene (PCE)	0.043	U	0.50	0.043	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	106	61-121	08/05/11	Acceptable
Toluene-d8	99	72-122	08/05/11	Acceptable
4-Bromofluorobenzene	92	70-120	08/05/11	Acceptable

Comments:

Exception Report

Data File: J:\MS23\DATA\080511BAYW\0805F009.D
Lab ID: KWG1107578-4
RunType: MB
Matrix: WATER

Date Acquired: 08/05/2011 13:03
Date Quantitated: 08/08/2011 15:26
Batch ID: KWG1107577
Analysis Method: 624
MethodJoinID: MJ158

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Primary Review: [illegible]

Secondary Review: HB 8911

Quantitation Report

Data File:	J:\MS23\DATA\080511BAYW\0805F009.D			**Instrument:**	MS23
Acqu Date:	08/05/2011 13:03	**Quant Date:**	08/08/2011 15:26	**Vial:**	7
Run Type:	MB			**Dilution:**	1.0
Lab ID:	KWG1107578-4			**Soln Conc. Units:**	PPB

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	624 VOC_FP	**Collect Date:**		**Receive Date:**	08/12/2011

Analysis Lot:	KWG1107577	**Prep Lot:**	KWG1107578	**Report Group:**	
Analysis Method:	624	**Prep Method:**	METHOD		
		Prep Date:	08/05/2011		
Prep Ref:	1043654				

Quant Method:	J:\MS23\METHODS\032911624.M	**Calibration ID:**	CAL10443
Title:			
Tune Ref:	J:\MS23\DATA\080511BAYW\0805F003.D	**Method ID:**	MJ158
MB Ref:		**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	Fluorobenzene	5.94	0.00	96	678122	10.00	OK
2	Chlorobenzene-d5	9.34	-0.01	82	279311	10.00	OK
3	1,4-Dichlorobenzene-d4	11.76	0.01	152	244046	10.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	Dibromofluoromethane	5.11	-0.01	0.00	113	156038	10.64	106	61-121 OK	
1	1,2-Dichloroethane-d4	5.58	-0.01	0.00	65	180064	9.77	98	54-125 OK	
1	Toluene-d8	7.78	0.01	0.00	98	633734	9.89	99	72-122 OK	
2	4-Bromofluorobenzene	10.58	0.00	0.00	95	211527	9.20	92	70-120 OK	

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	Dichlorodifluoromethane				85	0		0.40	U	
1	Chloromethane				50	0d		0.035	U	
1	Vinyl Chloride				62	0		0.053	U	
1	Bromomethane				96	0d		0.32	U	
1	Chloroethane				49	0		0.32	U	
1	Trichlorofluoromethane				101	0		0.048	U	
1	Acrolein				56	0		2.1	U	
1	Trichlorotrifluoroethane				151	0		0.077	U	
1	1,1-Dichloroethene				96	0		0.37	U	
1	Acetone	2.56		0.00	43	538	0.2100	4.3	U	
1	Carbon Disulfide				76	0d		0.048	U	
1	Methylene Chloride				84	0		0.093	U	
1	Acrylonitrile				53	0		0.28	U	
1	trans-1,2-Dichloroethene				96	0		0.039	U	

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Data File:	J:\MS23\DATA\080511BAYW\0805F009.D			**Instrument:**	MS23
Acqu Date:	08/05/2011 13:03	**Quant Date:**	08/08/2011 15:26	**Vial:**	7
Run Type:	MB			**Dilution:**	1.0
Lab ID:	KWG1107578-4			**Soln Conc. Units:**	PPB

Target Compounds **Final Conc. Units:** ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,1-Dichloroethane				63	0		0.041	U	
1	Vinyl Acetate				86	0		0.21	U	
1	cis-1,2-Dichloroethene				96	0		0.042	U	
1	2-Butanone (MEK)				72	0		3.4	U	
1	Chloroform	4.88	-0.01	0.00	83	600	0.0200	0.038	U	
1	1,1,1-Trichloroethane (TCA)				97	0		0.044	U	
1	Carbon Tetrachloride				117	0		0.26	U	
1	Benzene				78	0		0.040	U	
1	1,2-Dichloroethane (EDC)				62	0		0.038	U	
1	Trichloroethene (TCE)				95	0		0.044	U	
1	1,2-Dichloropropane				63	0		0.044	U	
1	Bromodichloromethane				83	0		0.047	U	
1	2-Chloroethyl Vinyl Ether				63	0		0.12	U	
1	cis-1,3-Dichloropropene				75	0		0.035	U	
1	4-Methyl-2-pentanone (MIBK)				58	0		2.8	U	
1	Toluene				92	0		0.039	U	
2	trans-1,3-Dichloropropene				75	0		0.045	U	
2	1,1,2-Trichloroethane				83	0		0.072	U	
2	Tetrachloroethene (PCE)				164	0		0.043	U	
2	2-Hexanone				43	0		1.8	U	
2	Dibromochloromethane				129	0		0.081	U	
2	Chlorobenzene				112	0		0.031	U	
2	Ethylbenzene				106	0		0.040	U	
2	m,p-Xylenes				106	0		0.14	U	
2	o-Xylene				106	0		0.035	U	
2	Styrene				103	0		0.025	U	
2	Bromoform				173	0		0.11	U	
3	1,1,2,2-Tetrachloroethane				83	0		0.086	U	
3	Pentachloroethane				167	0				
3	1,3-Dichlorobenzene	11.69	0.02	0.00	146	561	0.0200	0.071	U	
3	1,4-Dichlorobenzene	11.78	0.01	0.00	146	639	0.0200	0.073	U	
3	1,2-Dichlorobenzene	12.15	0.01	0.00	146	608	0.0200	0.086	U	
	Isopropyl Acetate				0	0		10	U	NR
	Ethyl Acetate				0	0		10	U	NR
	Bis(chloromethyl) Ether				0	0		10	U	NR
	Amyl Acetate				0	0		10	U	NR

Prep Amount:	10 ml	**Dilution:**	1.0
Prep Final Vol:	10 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\080511BAYW\0805F009.D Vial: 7
Acq On : 5 Aug 2011 1:03 pm Operator: KR
Sample : MB Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Aug 08 15:26:05 2011 Quant Results File: 032911624BAYW.R

Quant Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Initial Calibration
DataAcq Meth : 8260

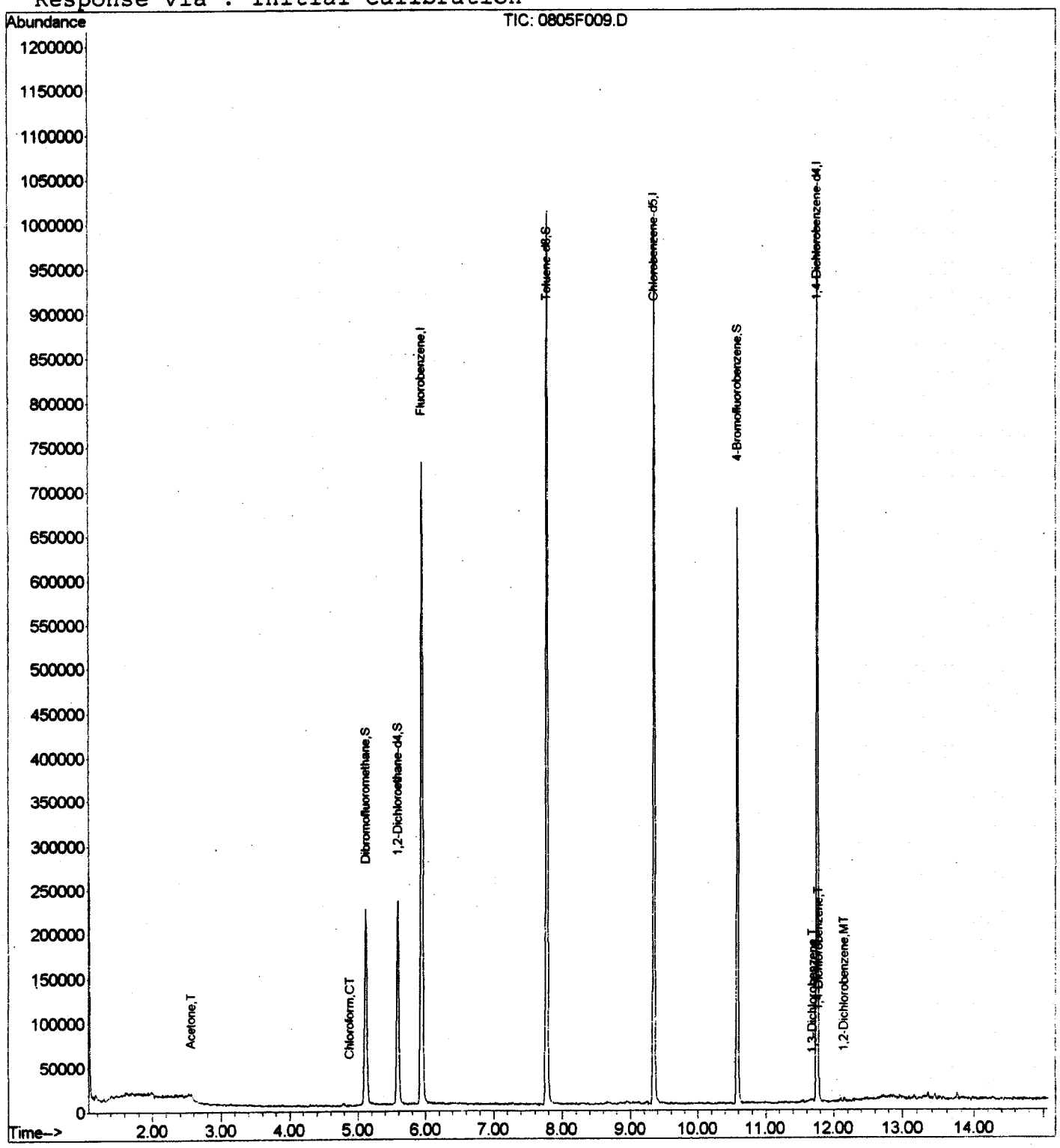
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	5.94	96	678122	10.00	PPB	0.00
35) Chlorobenzene-d5	9.34	82	279311	10.00	PPB	0.00
48) 1,4-Dichlorobenzene-d4	11.76	152	244046	10.00	PPB	0.00
System Monitoring Compounds						
22) Dibromofluoromethane	5.11	113	156038	10.64	PPB	0.00
Spiked Amount 10.000			Recovery	=	106.40%	
24) 1,2-Dichloroethane-d4	5.58	65	180064	9.77	PPB	0.00
Spiked Amount 10.000			Recovery	=	97.70%	
33) Toluene-d8	7.78	98	633734	9.89	PPB	0.00
Spiked Amount 10.000			Recovery	=	98.90%	
47) 4-Bromofluorobenzene	10.58	95	211527	9.20	PPB	0.00
Spiked Amount 10.000			Recovery	=	92.00%	
Target Compounds						Qvalue
11) Acetone	2.56	43	538	0.21	PPB	48
20) Chloroform	4.88	83	600	0.02	PPB #	82
51) 1,3-Dichlorobenzene	11.69	146	561	0.02	PPB	75
52) 1,4-Dichlorobenzene	11.78	146	639	0.02	PPB	90
53) 1,2-Dichlorobenzene	12.15	146	608	0.02	PPB #	69

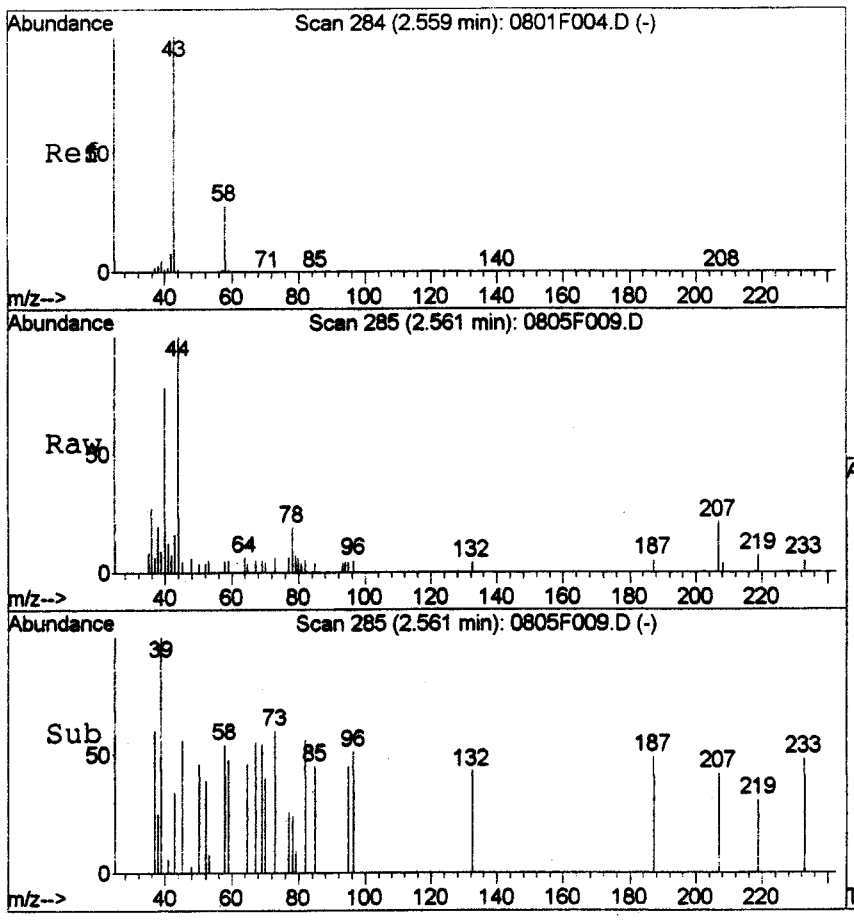
(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\080511BAYW\0805F009.D Vial: 7
Acq On : 5 Aug 2011 1:03 pm Operator: KR
Sample : MB Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Aug 8 15:26 2011 Quant Results File: 032911624BAY

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Initial Calibration

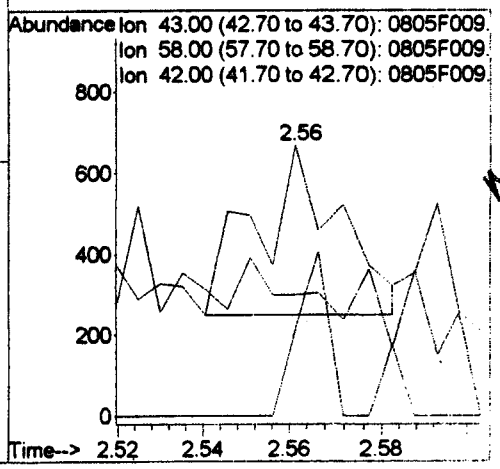




#11
Acetone
Concen: 0.21 PPB
RT: 2.56 min Scan# 285
Delta R.T. -0.00 min
Lab File: 0805F009.D
Acq: 5 Aug 2011 1:03 pm

Tgt Ion: 43 Resp: 538

Ion	Ratio	Lower	Upper
43	100		
58	51.3	0.0	56.9
42	31.3	0.0	37.5



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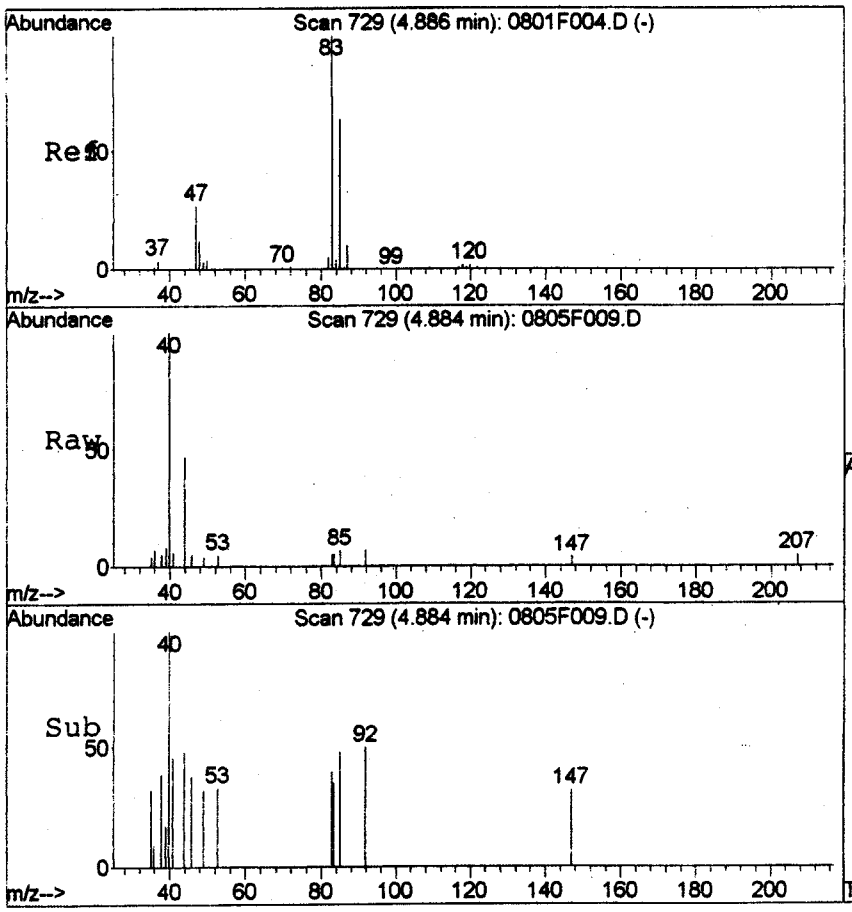
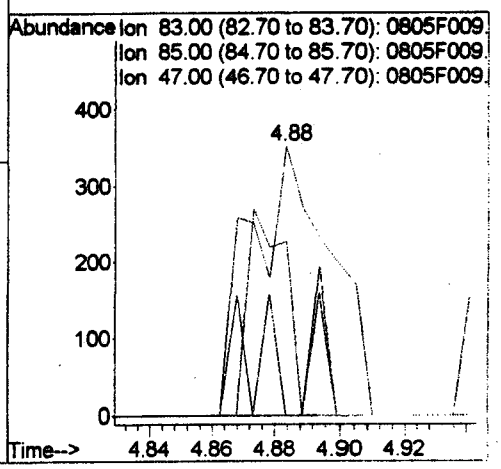
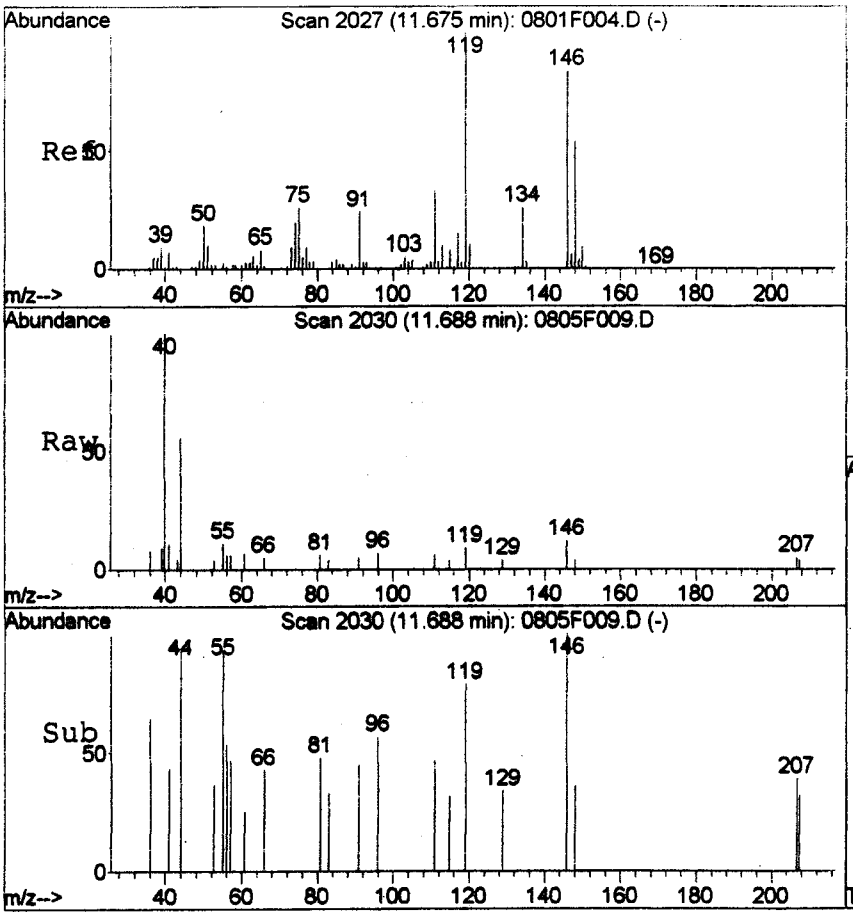


#20
Chloroform
Concen: 0.02 PPB
RT: 4.88 min Scan# 729
Delta R.T. -0.01 min
Lab File: 0805F009.D
Acq: 5 Aug 2011 1:03 pm

Tgt Ion: 83 Resp: 600

Ion	Ratio	Lower	Upper
83	100		
85	64.5	34.3	94.3
47	0.0	0.5	60.5#

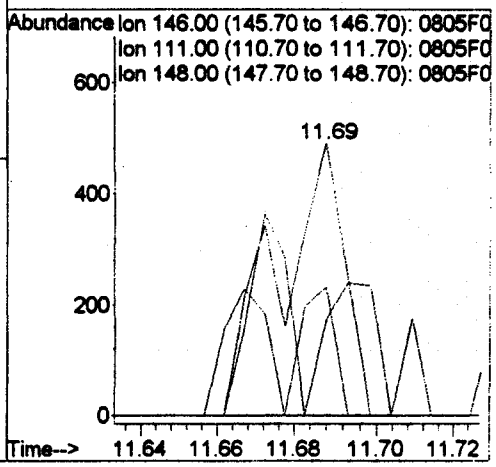


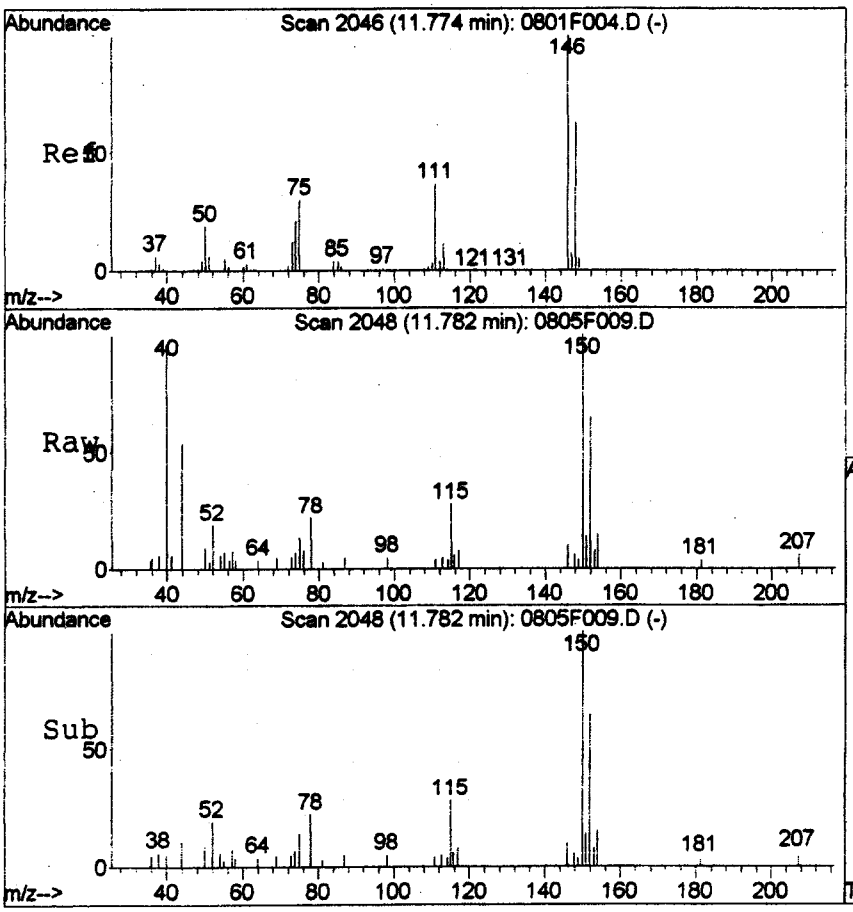


#51
1,3-Dichlorobenzene
Concen: 0.02 PPB
RT: 11.69 min Scan# 2030
Delta R.T. 0.01 min
Lab File: 0805F009.D
Acq: 5 Aug 2011 1:03 pm

Tgt Ion:146 Resp: 561

Ion	Ratio	Lower	Upper
146	100		
111	47.4	11.6	71.6
148	35.6	32.4	92.4

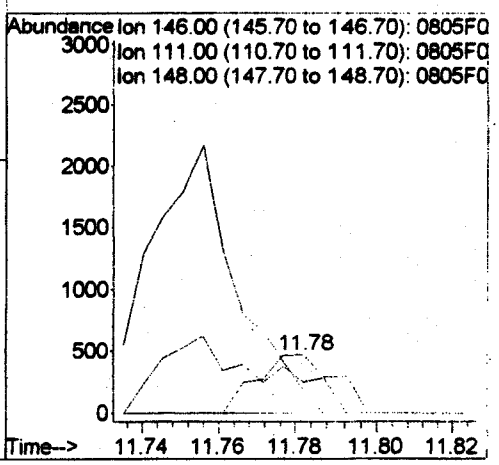


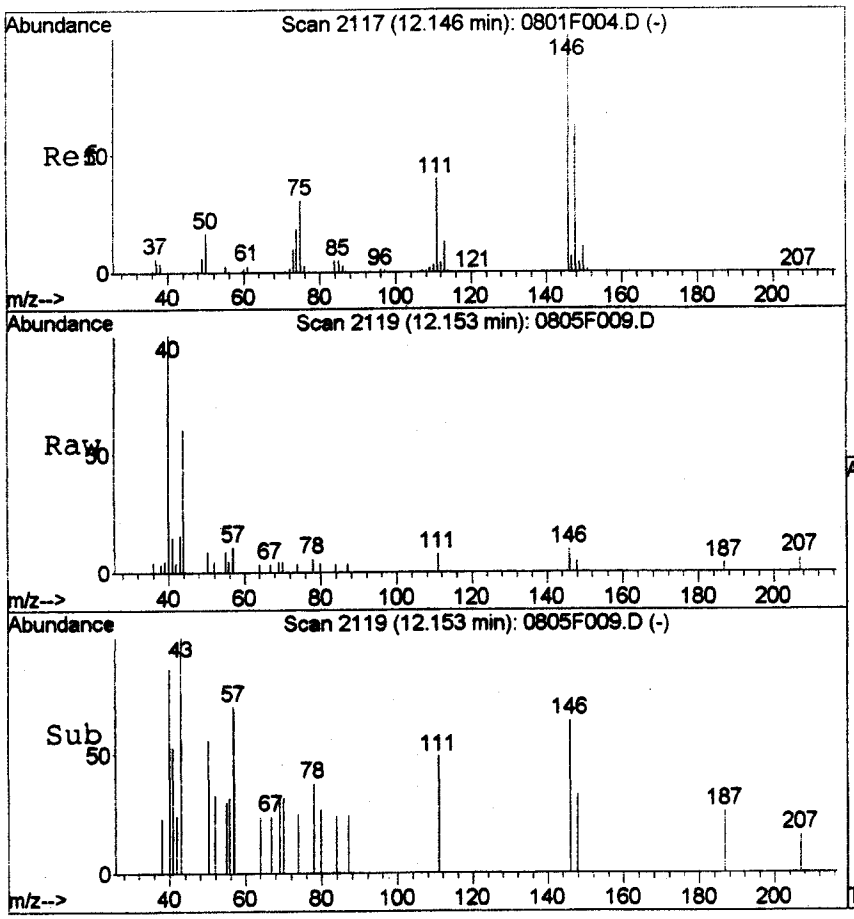


#52
1,4-Dichlorobenzene
Concen: 0.02 PPB
RT: 11.78 min Scan# 2048
Delta R.T. 0.01 min
Lab File: 0805F009.D
Acq: 5 Aug 2011 1:03 pm

Tgt Ion:146 Resp: 639

Ion	Ratio	Lower	Upper
146	100		
111	39.6	8.2	68.2
148	53.5	34.4	94.4

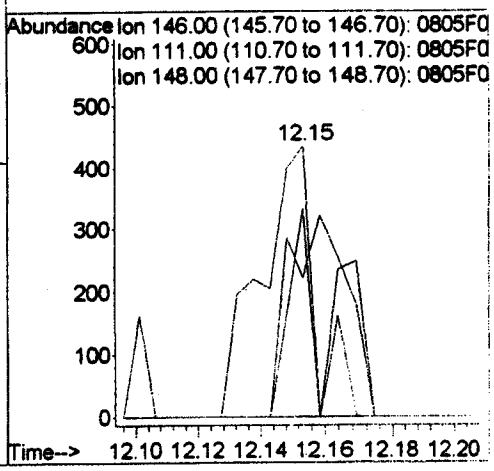




#53
1,2-Dichlorobenzene
Concen: 0.02 PPB
RT: 12.15 min Scan# 2119
Delta R.T. 0.01 min
Lab File: 0805F009.D
Acq: 5 Aug 2011 1:03 pm

Tgt Ion:146 Resp: 608

Ion	Ratio	Lower	Upper
146	100		
111	76.8	14.3	74.3#
148	50.8	34.6	94.6



COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1106869
Project:	NIROP/J070047	**Date Collected:**	07/27/2011
Sample Matrix:	Water	**Date Received:**	07/28/2011
		Date Extracted:	08/01/2011
		Date Analyzed:	08/01/2011

Volatile Organic Compounds

Sample Name:	Fridout 173AMS	**Units:**	ug/L
Lab Code:	KWG1107316-1	**Basis:**	NA
File ID:	J:\MS23\DATA\080111BAYW\0801F007.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1107316
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**8.79**		0.25	0.053	
75-35-4	1,1-Dichloroethene	**9.28**		0.50	0.37	
156-60-5	trans-1,2-Dichloroethene	**11.0**		0.50	0.039	
75-34-3	1,1-Dichloroethane	**10.3**		0.50	0.041	
156-59-2	cis-1,2-Dichloroethene	**10.6**		0.50	0.042	
71-55-6	1,1,1-Trichloroethane (TCA)	**9.61**		0.50	0.044	
79-01-6	Trichloroethene (TCE)	**11.4**		0.50	0.044	
127-18-4	Tetrachloroethene (PCE)	**11.4**		0.50	0.043	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	105	61-121	08/01/11	Acceptable
Toluene-d8	105	72-122	08/01/11	Acceptable
4-Bromofluorobenzene	97	70-120	08/01/11	Acceptable

Comments:

Exception Report

Data File: J:\MS23\DATA\080111BAYW\0801F007.D
Lab ID: KWG1107316-1 -- K1106869-001MS
RunType: MS
Matrix: WATER

Date Acquired: 08/01/2011 14:02
Date Quantitated: 08/02/2011 10:15
Batch ID: KWG1107315
Analysis Method: 624
MethodJoinID: MJ158

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Primary Review: Kn 8/2/11

Secondary Review: HB 8·2·11

Printed: 08/02/2011 11:09:38
u:\Stealth\Crystal.rpt\except2.rpt

Quantitation Report

Data File:	J:\MS23\DATA\080111BAYW\0801F007.D			**Instrument:**	MS23
Acqu Date:	08/01/2011 14:02	**Quant Date:**	08/02/2011 10:15	**Vial:**	7
Run Type:	MS			**Dilution:**	1.0
Lab ID:	KWG1107316-1 -- K1106869-001MS			**Soln Conc. Units:**	PPB

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	624 Modified VO	**Collect Date:**		**Receive Date:**	08/02/2011

Analysis Lot:	KWG1107315	**Prep Lot:**	KWG1107316	**Report Group:**	
Analysis Method:	624	**Prep Method:**	METHOD		
		Prep Date:	08/01/2011		
Prep Ref:	1041367				

Quant Method:	J:\MS23\METHODS\032911624BAY	**Calibration ID:**	CAL10443
Title:			
Tune Ref:	J:\MS23\DATA\080111BAYW\0801F003.D	**Method ID:**	MJ158
MB Ref:	J:\MS23\DATA\080111BAYW\0801F010.D	**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	Fluorobenzene	5.94	0.00	96	715670	10.00	OK
2	Chlorobenzene-d5	9.35	0.01	82	304844	10.00	OK
3	1,4-Dichlorobenzene-d4	11.75	0.00	152	282913	10.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	Dibromofluoromethane	5.12	0.00	0.00	113	163098	10.53	105	61-121	OK
1	1,2-Dichloroethane-d4	5.59	0.00	0.00	65	184440	9.48	95	54-125	OK
1	Toluene-d8	7.77	0.00	0.00	98	711009	10.51	105	72-122	OK
2	4-Bromofluorobenzene	10.58	0.00	0.00	95	242967	9.68	97	70-120	OK

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	Dichlorodifluoromethane	1.20		0.00	85	210172	8.37	8.37		
1	Chloromethane	1.35		0.00	50	311728	8.55	8.55		
1	Vinyl Chloride	1.43		0.00	62	254556	8.79	8.79		
1	Bromomethane	1.70		0.00	96	109471	10.33	10.3		
1	Chloroethane	1.78		0.00	49	41762	8.26	8.26		
1	Trichlorofluoromethane	1.96		0.00	101	301728	8.43	8.43		
1	Acrolein	2.41		0.00	56	155656	79.93	79.9		
1	Trichlorotrifluoroethane	2.40		0.00	151	144374	9.15	9.15		
1	1,1-Dichloroethene	2.43	-0.01	0.00	96	160357	9.28	9.28		
1	Acetone	2.56		0.00	43	160411	59.06	59.1		
1	Carbon Disulfide	2.63		0.00	76	1227381	17.12	17.1		
1	Methylene Chloride	2.98		0.00	84	189859	10.79	10.8		
1	Acrylonitrile	3.32		0.00	53	35640	11.27	11.3		
1	trans-1,2-Dichloroethene	3.20		0.00	96	196949	11.01	11.0		

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Data File:	J:\MS23\DATA\080111BAYW\0801F007.D			**Instrument:**	MS23
Acqu Date:	08/01/2011 14:02	**Quant Date:**	08/02/2011 10:15	**Vial:**	7
Run Type:	MS			**Dilution:**	1.0
Lab ID:	KWG1107316-1 -- K1106869-001MS			**Soln Conc. Units:**	PPB

Target Compounds **Final Conc. Units:** ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,1-Dichloroethane	3.73		0.00	63	364838	10.31	10.3		
1	Vinyl Acetate	3.78		0.00	86	7502	3.69	3.69	J	
1	cis-1,2-Dichloroethene	4.46	0.01	0.00	96	202938	10.56	10.6		
1	2-Butanone (MEK)	4.51		0.00	72	47214	59.31	59.3		
1	Chloroform	4.89		0.00	83	335382	10.49	10.5		
1	1,1,1-Trichloroethane (TCA)	5.05	0.01	0.00	97	283838	9.61	9.61		
1	Carbon Tetrachloride	5.21		0.00	117	242450	10.66	10.7		
1	Benzene	5.54		0.00	78	810791	10.78	10.8		
1	1,2-Dichloroethane (EDC)	5.69		0.00	62	222907	9.74	9.74		
1	Trichloroethene (TCE)	6.37		0.00	95	217470	11.44	11.4		
1	1,2-Dichloropropane	6.70		0.00	63	190789	9.96	9.96		
1	Bromodichloromethane	7.03		0.00	83	217994	10.09	10.1		
1	2-Chloroethyl Vinyl Ether	7.40	-0.02	0.00	63	560	0.0900	0.0900	J	
1	cis-1,3-Dichloropropene	7.55		0.00	75	237069	9.03	9.03		
1	4-Methyl-2-pentanone (MIBK)	8.65		0.00	58	128000	45.70	45.7		
1	Toluene	7.85		0.00	92	550125	11.73	11.7		
2	trans-1,3-Dichloropropene	8.21	0.01	0.00	75	175376	7.89	7.89		
2	1,1,2-Trichloroethane	8.39		0.00	83	102662	10.58	10.6		
2	Tetrachloroethene (PCE)	8.40		0.00	164	164518	11.39	11.4		
2	2-Hexanone	8.65		0.00	43	272178	44.81	44.8		
2	Dibromochloromethane	8.77		0.00	129	127318	10.25	10.3		
2	Chlorobenzene	9.37		0.00	112	530143	10.75	10.8		
2	Ethylbenzene	9.47		0.00	106	287130	10.25	10.3		
2	m,p-Xylenes	9.60	0.01	0.00	106	717111	20.55	20.6		
2	o-Xylene	10.01		0.00	106	318931	9.65	9.65		
2	Styrene	10.04		0.00	103	250194m	9.92	9.92		
2	Bromoform	10.25		0.00	173	61443	10.31	10.3		
3	1,1,2,2-Tetrachloroethane	10.78		0.00	83	120960	9.62	9.62		
3	Pentachloroethane	11.37	11.37	0.97	167	979				
3	1,3-Dichlorobenzene	11.67		0.00	146	407974	10.20	10.2		
3	1,4-Dichlorobenzene	11.78	0.01	0.00	146	412468	10.28	10.3		
3	1,2-Dichlorobenzene	12.15		0.00	146	354684	10.18	10.2		
	Isopropyl Acetate				0	0		10	U	NR
	Ethyl Acetate				0	0		10	U	NR
	Bis(chloromethyl) Ether				0	0		10	U	NR
	Amyl Acetate				0	0		10	U	NR

Prep Amount:	10 ml	**Dilution:**	1.0
Prep Final Vol:	10 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\080111BAYW\0801F007.D Vial: 7
Acq On : 1 Aug 2011 2:02 pm Operator: KR
Sample : k6869-001MS Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Aug 02 10:15:03 2011 Quant Results File: 032911624BAYW.R

Quant Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Initial Calibration
DataAcq Meth : 8260

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Fluorobenzene	5.94	96	715670	10.00	PPB		0.00
35) Chlorobenzene-d5	9.35	82	304844	10.00	PPB		0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	282913	10.00	PPB		0.00
System Monitoring Compounds							
22) Dibromofluoromethane	5.12	113	163098	10.53	PPB		0.00
Spiked Amount 10.000			Recovery	=	105.30%		
24) 1,2-Dichloroethane-d4	5.59	65	184440	9.48	PPB		0.00
Spiked Amount 10.000			Recovery	=	94.80%		
33) Toluene-d8	7.77	98	711009	10.51	PPB		0.00
Spiked Amount 10.000			Recovery	=	105.10%		
47) 4-Bromofluorobenzene	10.58	95	242967	9.68	PPB		0.00
Spiked Amount 10.000			Recovery	=	96.80%		
Target Compounds							Qvalue
2) Dichlorodifluoromethane	1.20	85	210172	8.37	PPB		98
3) Chloromethane	1.35	50	311728	8.55	PPB		99
4) Vinyl Chloride	1.43	62	254556	8.79	PPB		99
5) Bromomethane	1.70	96	109471	10.33	PPB		95
6) Chloroethane	1.78	49	41762	8.26	PPB		97
7) Trichlorofluoromethane	1.96	101	301728	8.43	PPB		96
8) Acrolein	2.41	56	155656	79.93	PPB		98
9) Trichlorotrifluoroethane	2.40	151	144374	9.15	PPB		92
10) 1,1-Dichloroethene	2.43	96	160357	9.28	PPB		98
11) Acetone	2.56	43	160411	59.06	PPB		97
12) Carbon Disulfide	2.63	76	1227381	17.12	PPB		100
13) Methylene Chloride	2.98	84	189859	10.79	PPB		92
14) Acrylonitrile	3.32	53	35640	11.27	PPB		98
15) trans-1,2-Dichloroethene	3.20	96	196949	11.01	PPB		92
16) 1,1-Dichloroethane	3.73	63	364838	10.31	PPB		98
17) Vinyl Acetate	3.78	86	7502	3.69	PPB	#	64
18) cis-1,2-Dichloroethene	4.46	96	202938	10.56	PPB		93
19) 2-Butanone	4.51	72	47214	59.31	PPB		94
20) Chloroform	4.89	83	335382	10.49	PPB		99
21) 1,1,1-Trichloroethane	5.05	97	283838	9.61	PPB		97
23) Carbon Tetrachloride	5.21	117	242450	10.66	PPB		99
25) Benzene	5.54	78	810791	10.78	PPB		96
26) 1,2-Dichloroethane	5.69	62	222907	9.74	PPB		95
27) Trichloroethene	6.37	95	217470	11.44	PPB		97
28) 1,2-Dichloropropane	6.70	63	190789	9.96	PPB		98
29) Bromodichloromethane	7.03	83	217994	10.09	PPB		98
30) 2-Chloroethyl Vinyl Ether	7.40	63	560	0.09	PPB	#	44

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\080111BAYW\0801F007.D
Acq On : 1 Aug 2011 2:02 pm
Sample : k6869-001MS
Misc :
MS Integration Params: rteint.p
Quant Time: Aug 02 10:15:03 2011

Vial: 7
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624BAYW.R

Quant Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Initial Calibration
DataAcq Meth : 8260

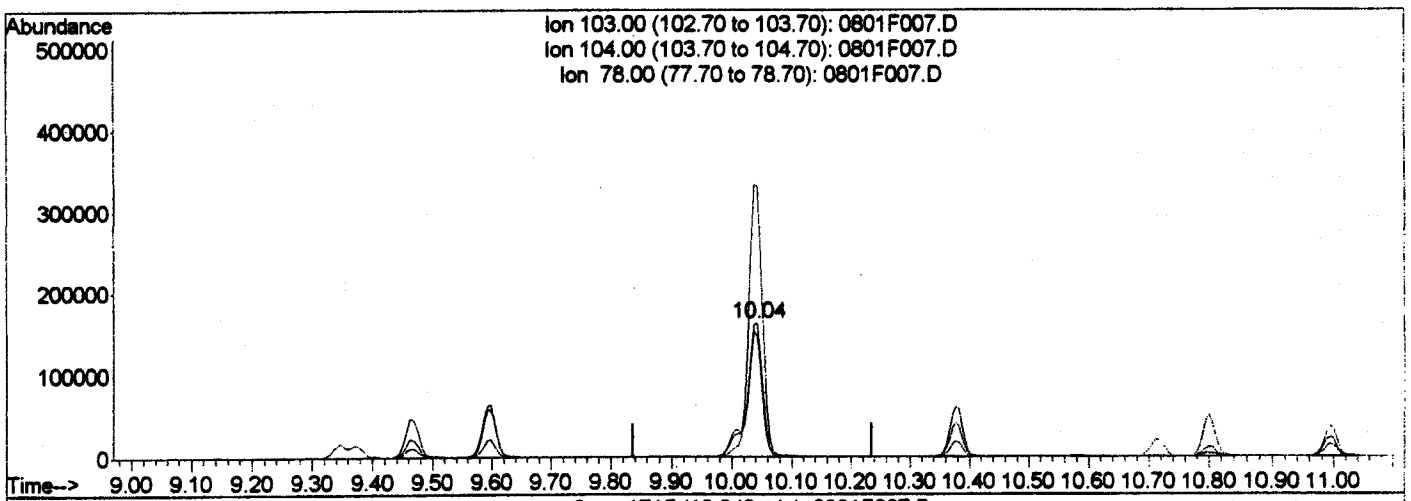
Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
31) cis-1,3-Dichloropropene	7.55	75	237069	9.03	PPB	89
32) 4-Methyl-2-pentanone (MIBK	8.65	58	128000	45.70	PPB	100
34) Toluene	7.85	92	550125	11.73	PPB	99
36) trans-1,3-Dichloropropene	8.21	75	175376	7.89	PPB	91
37) 1,1,2-Trichloroethane	8.39	83	102662	10.58	PPB	98
38) Tetrachloroethene	8.40	164	164518	11.39	PPB	96
39) 2-Hexanone	8.65	43	272178	44.81	PPB	98
40) Dibromochloromethane	8.77	129	127318	10.25	PPB	98
41) Chlorobenzene	9.37	112	530143	10.75	PPB	98
42) Ethylbenzene	9.47	106	287130	10.25	PPB	99
43) m,p-Xylenes	9.60	106	717111	20.55	PPB	98
44) o-Xylene	10.01	106	318931	9.65	PPB	96
45) Styrene	10.04	103	250194m	9.92	PPB	
46) Bromoform	10.25	173	61443	10.31	PPB	92
49) 1,1,2,2-Tetrachloroethane	10.78	83	120960	9.62	PPB	98
51) 1,3-Dichlorobenzene	11.67	146	407974	10.20	PPB	98
52) 1,4-Dichlorobenzene	11.78	146	412468	10.28	PPB	98
53) 1,2-Dichlorobenzene	12.15	146	354684	10.18	PPB	96

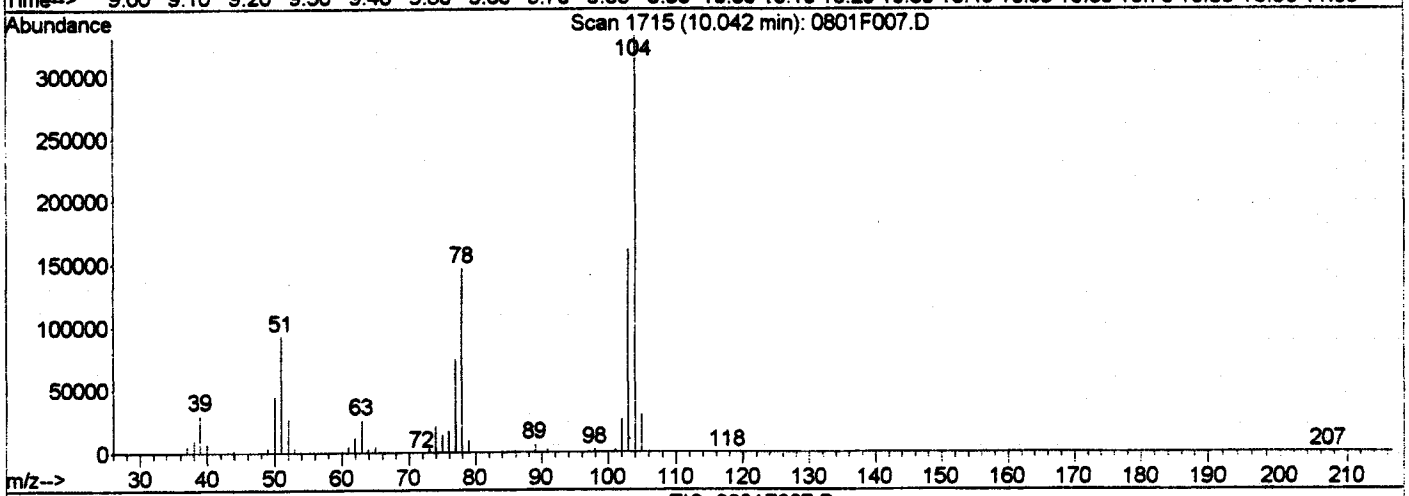
(#) = qualifier out of range (m) = manual integration

Quantitation Report (Qedit)

Data File : J:\MS23\DATA\080111BAYW\0801F007.D Vial: 7
Acq On : 1 Aug 2011 2:02 pm Operator: KR
Sample : k6869-001MS Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Aug 2 10:15 2011 Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Multiple Level Calibration





TIC: 0801F007.D

(45) Styrene (T)

10.04min 11.51PPB

response 290317

Ion	Exp%	Act%
103.00	100	100
104.00	217.10	205.31
78.00	101.20	90.79
0.00	0.00	0.00

0801F007.D 032911624BAYW.M Tue Aug 02 10:15:09 2011

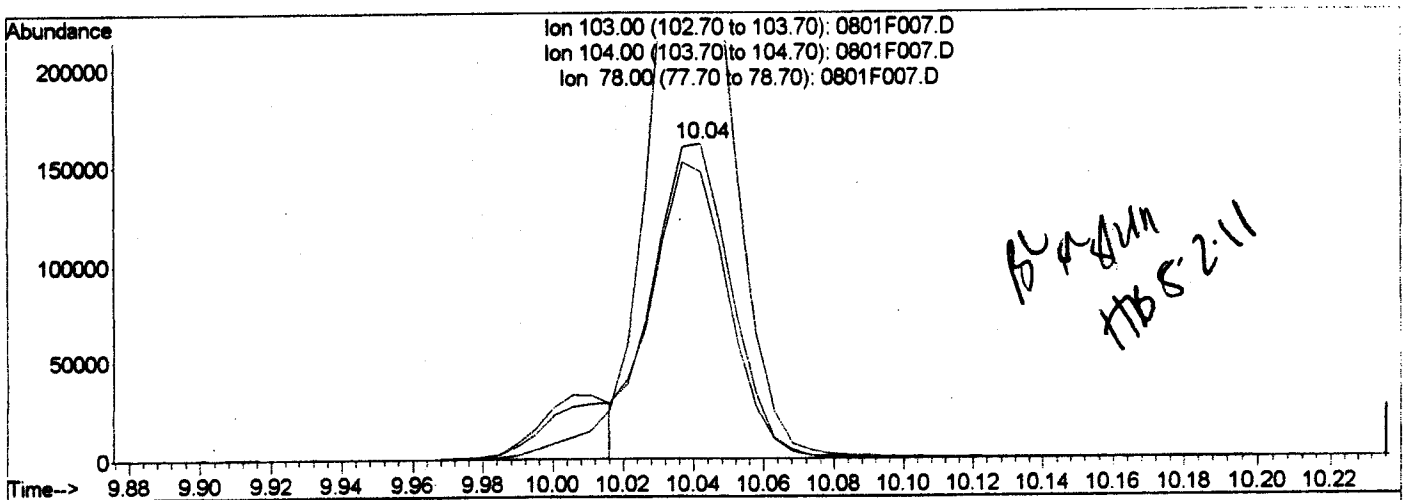
Quantitation Report (Qedit)

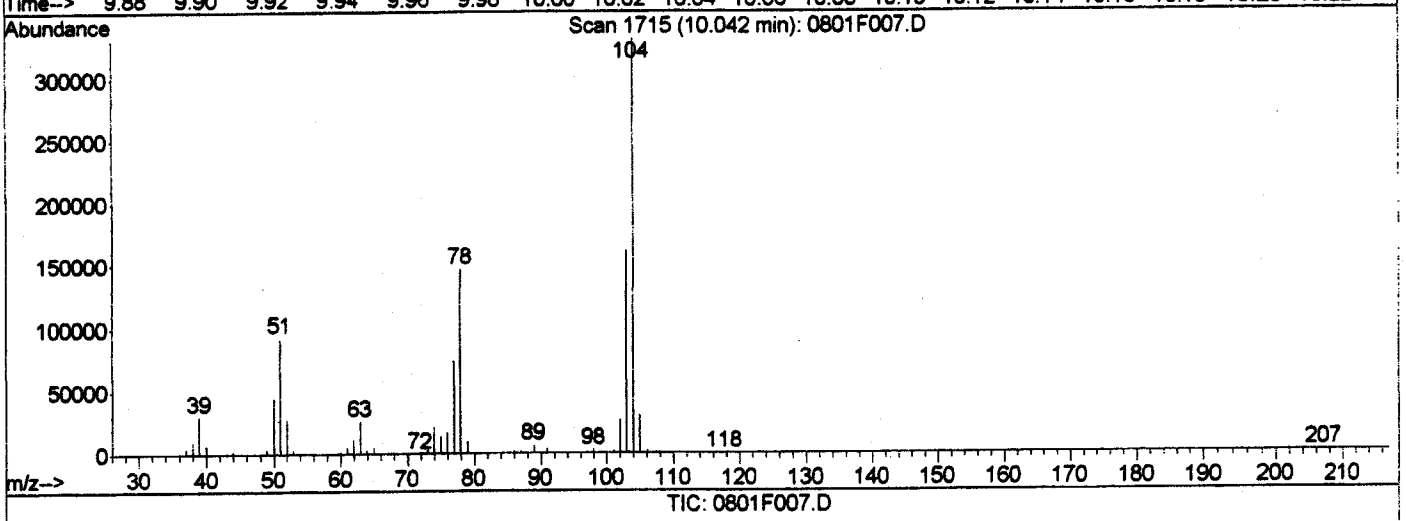
Data File : J:\MS23\DATA\080111BAYW\0801F007.D
Acq On : 1 Aug 2011 2:02 pm
Sample : k6869-001MS
Misc :
MS Integration Params: rteint.p
Quant Time: Aug 2 10:15 2011

Vial: 7
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Multiple Level Calibration





(45) Styrene (T)

10.04min 9.92PPB m

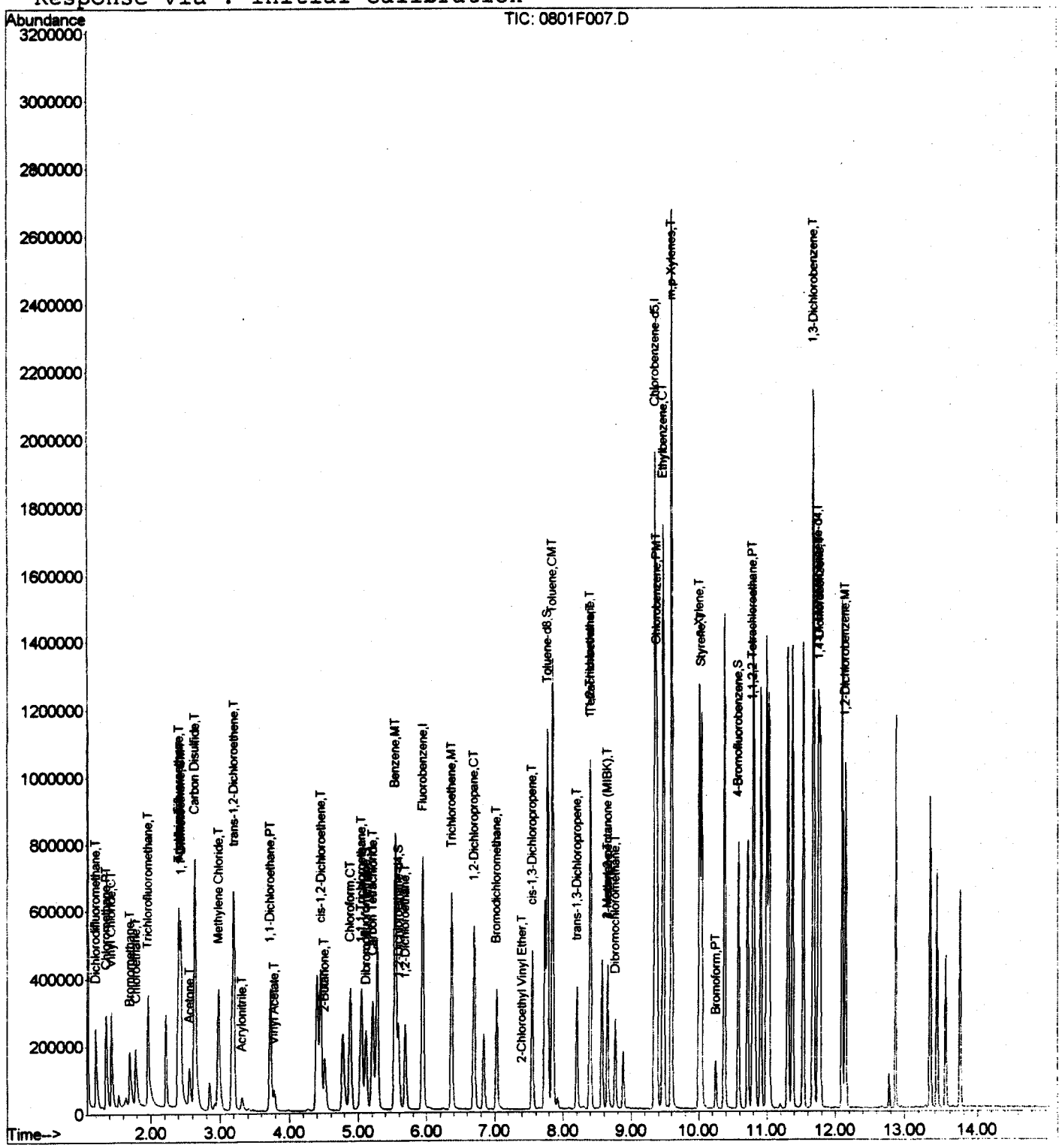
response 250194

Ion	Exp%	Act%
103.00	100	100
104.00	217.10	205.31
78.00	101.20	90.92
0.00	0.00	0.00

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\080111BAYW\0801F007.D Vial: 7
Acq On : 1 Aug 2011 2:02 pm Operator: KR
Sample : k6869-001MS Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Aug 2 10:15 2011 Quant Results File: 032911624BAY

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Initial Calibration



COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1106869
Project:	NIROP/J070047	**Date Collected:**	07/27/2011
Sample Matrix:	Water	**Date Received:**	07/28/2011
		Date Extracted:	08/01/2011
		Date Analyzed:	08/01/2011

Volatile Organic Compounds

Sample Name:	Fridout 173ADMS	**Units:**	ug/L
Lab Code:	KWG1107316-2	**Basis:**	NA
File ID:	J:\MS23\DATA\080111BAYW\0801F008.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1107316
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**7.98**		0.25	0.053	
75-35-4	1,1-Dichloroethene	**8.72**		0.50	0.37	
156-60-5	trans-1,2-Dichloroethene	**10.3**		0.50	0.039	
75-34-3	1,1-Dichloroethane	**9.68**		0.50	0.041	
156-59-2	cis-1,2-Dichloroethene	**9.87**		0.50	0.042	
71-55-6	1,1,1-Trichloroethane (TCA)	**8.87**		0.50	0.044	
79-01-6	Trichloroethene (TCE)	**10.6**		0.50	0.044	
127-18-4	Tetrachloroethene (PCE)	**10.3**		0.50	0.043	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	107	61-121	08/01/11	Acceptable
Toluene-d8	105	72-122	08/01/11	Acceptable
4-Bromofluorobenzene	96	70-120	08/01/11	Acceptable

Comments:

Exception Report

Data File: J:\MS23\DATA\080111BAYW\0801F008.D
Lab ID: KWG1107316-2 -- K1106869-001DMS
RunType: DMS
Matrix: WATER

Date Acquired: 08/01/2011 14:33
Date Quantitated: 08/02/2011 10:15
Batch ID: KWG1107315
Analysis Method: 624
MethodJoinID: MJ158

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Primary Review: KA 8/2/11

Secondary Review: HB 8·2·11

Quantitation Report

Data File:	J:\MS23\DATA\080111BAYW\0801F008.D			**Instrument:**	MS23
Acqu Date:	08/01/2011 14:33	**Quant Date:**	08/02/2011 10:15	**Vial:**	5
Run Type:	DMS			**Dilution:**	1.0
Lab ID:	KWG1107316-2 -- K1106869-001DMS			**Soln Conc. Units:**	PPB

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	624 Modified VO	**Collect Date:**		**Receive Date:**	08/02/2011

Analysis Lot:	KWG1107315	**Prep Lot:**	KWG1107316	**Report Group:**	
Analysis Method:	624	**Prep Method:**	METHOD		
Prep Ref:	1041368	**Prep Date:**	08/01/2011		

Quant Method:	J:\MS23\METHODS\032911624BAY	**Calibration ID:**	CAL10443
Title:			
Tune Ref:	J:\MS23\DATA\080111BAYW\0801F003.D	**Method ID:**	MJ158
MB Ref:	J:\MS23\DATA\080111BAYW\0801F010.D	**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	Fluorobenzene	5.94	0.00	96	709349	10.00	OK
2	Chlorobenzene-d5	9.35	0.01	82	304313	10.00	OK
3	1,4-Dichlorobenzene-d4	11.75	0.00	152	283207	10.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	Dibromofluoromethane	5.12	0.00	0.00	113	164154	10.70	107	61-121 OK	
1	1,2-Dichloroethane-d4	5.59	0.00	0.00	65	185004	9.59	96	54-125 OK	
1	Toluene-d8	7.78	0.01	0.00	98	704491	10.51	105	72-122 OK	
2	4-Bromofluorobenzene	10.58	0.00	0.00	95	240915	9.62	96	70-120 OK	

Final Conc. Units: ug/L

Target Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	Dichlorodifluoromethane	1.20		0.00	85	188203	7.56	7.56		
1	Chloromethane	1.36	0.01	0.00	50	277906	7.69	7.69		
1	Vinyl Chloride	1.43		0.00	62	228978	7.98	7.98		
1	Bromomethane	1.70		0.00	96	94859	9.03	9.03		
1	Chloroethane	1.78		0.00	49	38700	7.72	7.72		
1	Trichlorofluoromethane	1.97	0.01	0.00	101	279266	7.87	7.87		
1	Acrolein	2.42	0.01	0.00	56	151635	78.56	78.6		
1	Trichlorotrifluoroethane	2.41	0.01	0.00	151	134869	8.62	8.62		
1	1,1-Dichloroethene	2.44		0.00	96	149304	8.72	8.72		
1	Acetone	2.56		0.00	43	162935	60.52	60.5		
1	Carbon Disulfide	2.64	0.01	0.00	76	1104469	15.54	15.5		
1	Methylene Chloride	2.98		0.00	84	182469	10.46	10.5		
1	Acrylonitrile	3.32		0.00	53	34278	10.94	10.9		
1	trans-1,2-Dichloroethene	3.21	0.01	0.00	96	181867	10.26	10.3		

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Data File:	J:\MS23\DATA\080111BAYW\0801F008.D			**Instrument:**	MS23
Acqu Date:	08/01/2011 14:33	**Quant Date:**	08/02/2011 10:15	**Vial:**	5
Run Type:	DMS			**Dilution:**	1.0
Lab ID:	KWG1107316-2 -- K1106869-001DMS			**Soln Conc. Units:**	PPB

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,1-Dichloroethane	3.73		0.00	63	339775	9.68	9.68		
1	Vinyl Acetate	3.78		0.00	86	7484	3.71	3.71	J	
1	cis-1,2-Dichloroethene	4.46	0.01	0.00	96	187912	9.87	9.87		
1	2-Butanone (MEK)	4.51		0.00	72	46950	59.50	59.5		
1	Chloroform	4.89		0.00	83	313341	9.89	9.89		
1	1,1,1-Trichloroethane (TCA)	5.05	0.01	0.00	97	259606	8.87	8.87		
1	Carbon Tetrachloride	5.21		0.00	117	217698	9.66	9.66		
1	Benzene	5.54		0.00	78	742668	9.97	9.97		
1	1,2-Dichloroethane (EDC)	5.69		0.00	62	216986	9.57	9.57		
1	Trichloroethene (TCE)	6.37		0.00	95	198749	10.55	10.6		
1	1,2-Dichloropropane	6.70		0.00	63	180756	9.52	9.52		
1	Bromodichloromethane	7.03		0.00	83	210288	9.82	9.82		
1	2-Chloroethyl Vinyl Ether	7.56	0.14	0.02	63	1714	0.2600	0.260	J	
1	cis-1,3-Dichloropropene	7.55		0.00	75	221684	8.52	8.52		
1	4-Methyl-2-pentanone (MIBK)	8.65		0.00	58	131933	47.52	47.5		
1	Toluene	7.84	-0.01	0.00	92	503230	10.83	10.8		
2	trans-1,3-Dichloropropene	8.21	0.01	0.00	75	167905	7.56	7.56		
2	1,1,2-Trichloroethane	8.39		0.00	83	99379	10.26	10.3		
2	Tetrachloroethene (PCE)	8.40		0.00	164	149173	10.34	10.3		
2	2-Hexanone	8.65		0.00	43	275392	45.42	45.4		
2	Dibromochloromethane	8.77		0.00	129	120916	9.76	9.76		
2	Chlorobenzene	9.38	0.01	0.00	112	495933	10.07	10.1		
2	Ethylbenzene	9.47		0.00	106	268415	9.60	9.60		
2	m,p-Xylenes	9.60	0.01	0.00	106	659828	18.95	19.0		
2	o-Xylene	10.01		0.00	106	293514	8.89	8.89		
2	Styrene	10.04		0.00	103	222479m	8.84	8.84		
2	Bromoform	10.25		0.00	173	59794	10.05	10.1		
3	1,1,2,2-Tetrachloroethane	10.78		0.00	83	115902	9.21	9.21		
3	Pentachloroethane	11.36	11.36	0.97	167	1140				
3	1,3-Dichlorobenzene	11.67		0.00	146	383887	9.58	9.58		
3	1,4-Dichlorobenzene	11.78	0.01	0.00	146	388033	9.66	9.66		
3	1,2-Dichlorobenzene	12.15		0.00	146	332782	9.54	9.54		
	Isopropyl Acetate				0	0		10	U	NR
	Ethyl Acetate				0	0		10	U	NR
	Bis(chloromethyl) Ether				0	0		10	U	NR
	Amyl Acetate				0	0		10	U	NR

Prep Amount:	10 ml	**Dilution:**	1.0
Prep Final Vol:	10 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\080111BAYW\0801F008.D
Acq On : 1 Aug 2011 2:33 pm
Sample : k6869-001DMS
Misc :
MS Integration Params: rteint.p
Quant Time: Aug 02 10:15:25 2011

Vial: 5
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624BAYW.R

Quant Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Initial Calibration
DataAcq Meth : 8260

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorobenzene	5.94	96	709349	10.00 PPB	0.00
35) Chlorobenzene-d5	9.35	82	304313	10.00 PPB	0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	283207	10.00 PPB	0.00
System Monitoring Compounds					
22) Dibromofluoromethane	5.12	113	164154	10.70 PPB	0.00
Spiked Amount 10.000			Recovery	= 107.00%	
24) 1,2-Dichloroethane-d4	5.59	65	185004	9.59 PPB	0.00
Spiked Amount 10.000			Recovery	= 95.90%	
33) Toluene-d8	7.78	98	704491	10.51 PPB	0.00
Spiked Amount 10.000			Recovery	= 105.10%	
47) 4-Bromofluorobenzene	10.58	95	240915	9.62 PPB	0.00
Spiked Amount 10.000			Recovery	= 96.20%	

Target Compounds						Qvalue
2) Dichlorodifluoromethane	1.20	85	188203	7.56 PPB		99
3) Chloromethane	1.36	50	277906	7.69 PPB		97
4) Vinyl Chloride	1.43	62	228978	7.98 PPB		98
5) Bromomethane	1.70	96	94859	9.03 PPB		96
6) Chloroethane	1.78	49	38700	7.72 PPB		94
7) Trichlorofluoromethane	1.97	101	279266	7.87 PPB		96
8) Acrolein	2.42	56	151635	78.56 PPB		97
9) Trichlorotrifluoroethane	2.41	151	134869	8.62 PPB		97
10) 1,1-Dichloroethene	2.44	96	149304	8.72 PPB		95
11) Acetone	2.56	43	162935	60.52 PPB		95
12) Carbon Disulfide	2.64	76	1104469	15.54 PPB		99
13) Methylene Chloride	2.98	84	182469	10.46 PPB		95
14) Acrylonitrile	3.32	53	34278	10.94 PPB		97
15) trans-1,2-Dichloroethene	3.21	96	181867	10.26 PPB		94
16) 1,1-Dichloroethane	3.73	63	339775	9.68 PPB		100
17) Vinyl Acetate	3.78	86	7484	3.71 PPB	#	91
18) cis-1,2-Dichloroethene	4.46	96	187912	9.87 PPB		93
19) 2-Butanone	4.51	72	46950	59.50 PPB	#	80
20) Chloroform	4.89	83	313341	9.89 PPB		97
21) 1,1,1-Trichloroethane	5.05	97	259606	8.87 PPB		97
23) Carbon Tetrachloride	5.21	117	217698	9.66 PPB		97
25) Benzene	5.54	78	742668	9.97 PPB		97
26) 1,2-Dichloroethane	5.69	62	216986	9.57 PPB		97
27) Trichloroethene	6.37	95	198749	10.55 PPB		96
28) 1,2-Dichloropropane	6.70	63	180756	9.52 PPB		96
29) Bromodichloromethane	7.03	83	210288	9.82 PPB		99
30) 2-Chloroethyl Vinyl Ether	7.56	63	1714	0.26 PPB		61

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\080111BAYW\0801F008.D Vial: 5
Acq On : 1 Aug 2011 2:33 pm Operator: KR
Sample : k6869-001DMS Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Aug 02 10:15:25 2011 Quant Results File: 032911624BAYW.R

Quant Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Initial Calibration
DataAcq Meth : 8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
31) cis-1,3-Dichloropropene	7.55	75	221684	8.52	PPB	89
32) 4-Methyl-2-pentanone (MIBK	8.65	58	131933	47.52	PPB	95
34) Toluene	7.84	92	503230	10.83	PPB	98
36) trans-1,3-Dichloropropene	8.21	75	167905	7.56	PPB	92
37) 1,1,2-Trichloroethane	8.39	83	99379	10.26	PPB	96
38) Tetrachloroethene	8.40	164	149173	10.34	PPB	95
39) 2-Hexanone	8.65	43	275392	45.42	PPB	99
40) Dibromochloromethane	8.77	129	120916	9.76	PPB	97
41) Chlorobenzene	9.38	112	495933	10.07	PPB	95
42) Ethylbenzene	9.47	106	268415	9.60	PPB	95
43) m,p-Xylenes	9.60	106	659828	18.95	PPB	98
44) o-Xylene	10.01	106	293514	8.89	PPB	93
45) Styrene	10.04	103	222479m	8.84	PPB	
46) Bromoform	10.25	173	59794	10.05	PPB	93
49) 1,1,2,2-Tetrachloroethane	10.78	83	115902	9.21	PPB	96
51) 1,3-Dichlorobenzene	11.67	146	383887	9.58	PPB	97
52) 1,4-Dichlorobenzene	11.78	146	388033	9.66	PPB	98
53) 1,2-Dichlorobenzene	12.15	146	332782	9.54	PPB	97

(#) = qualifier out of range (m) = manual integration

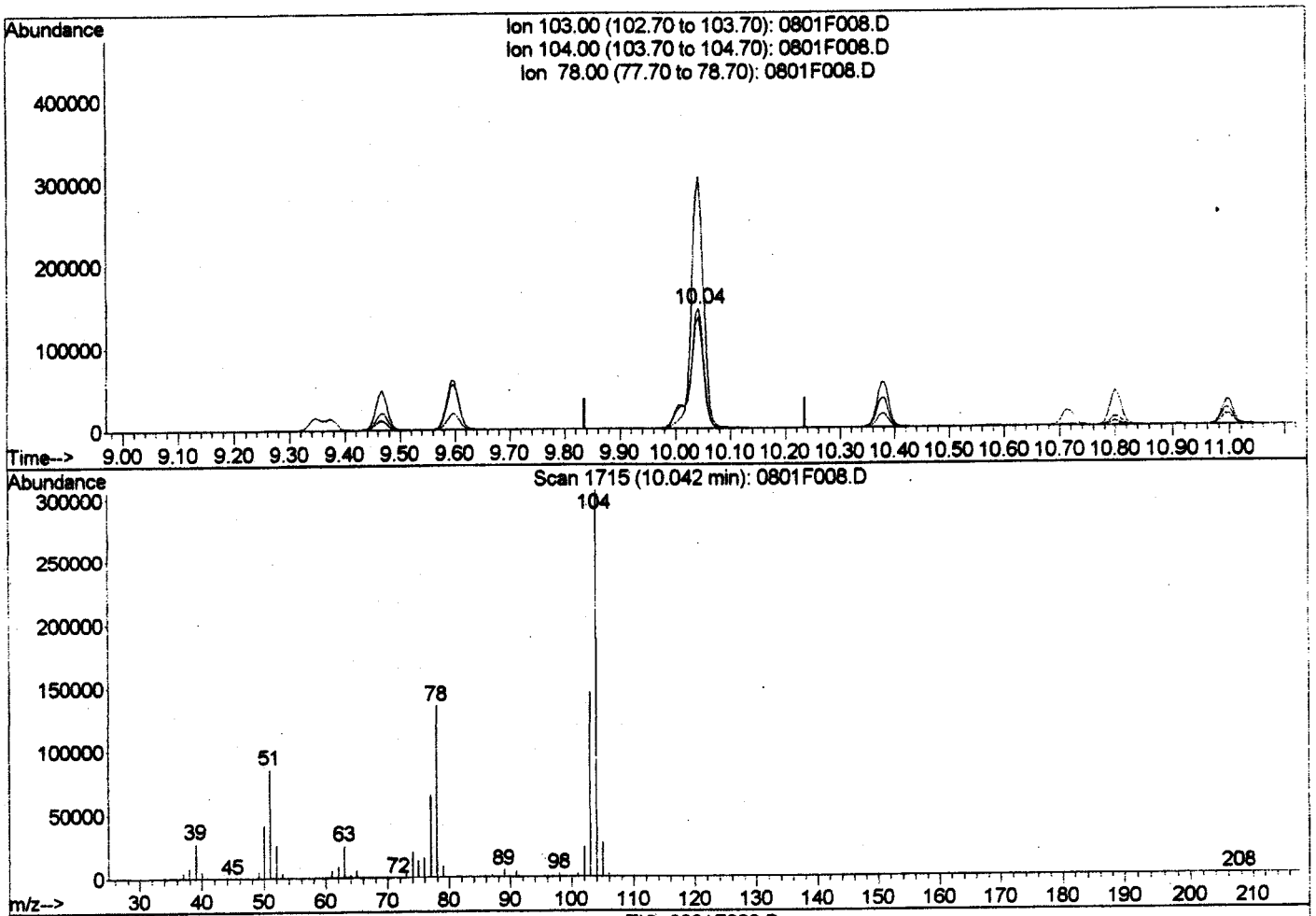
Quantitation Report (Qedit)

Data File : J:\MS23\DATA\080111BAYW\0801F008.D
Acq On : 1 Aug 2011 2:33 pm
Sample : k6869-001DMS
Misc :
MS Integration Params: rteint.p
Quant Time: Aug 2 10:15 2011

Vial: 5
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Multiple Level Calibration



(45) Styrene (T)

10.04min 10.29PPB

response 259059

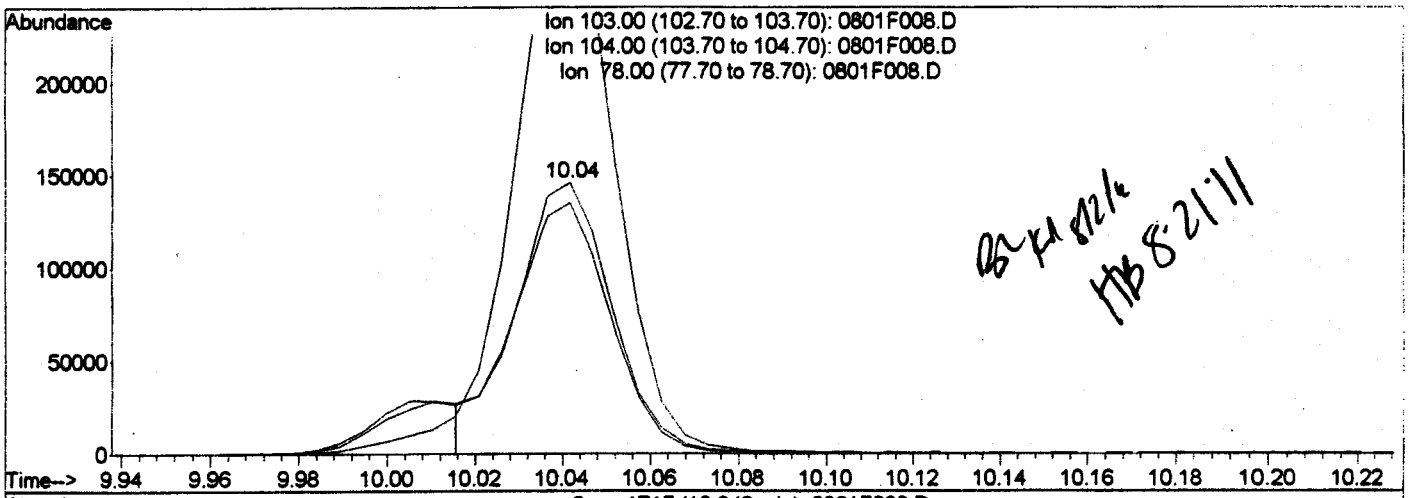
Ion	Exp%	Act%
103.00	100	100
104.00	217.10	209.70
78.00	101.20	92.51
0.00	0.00	0.00

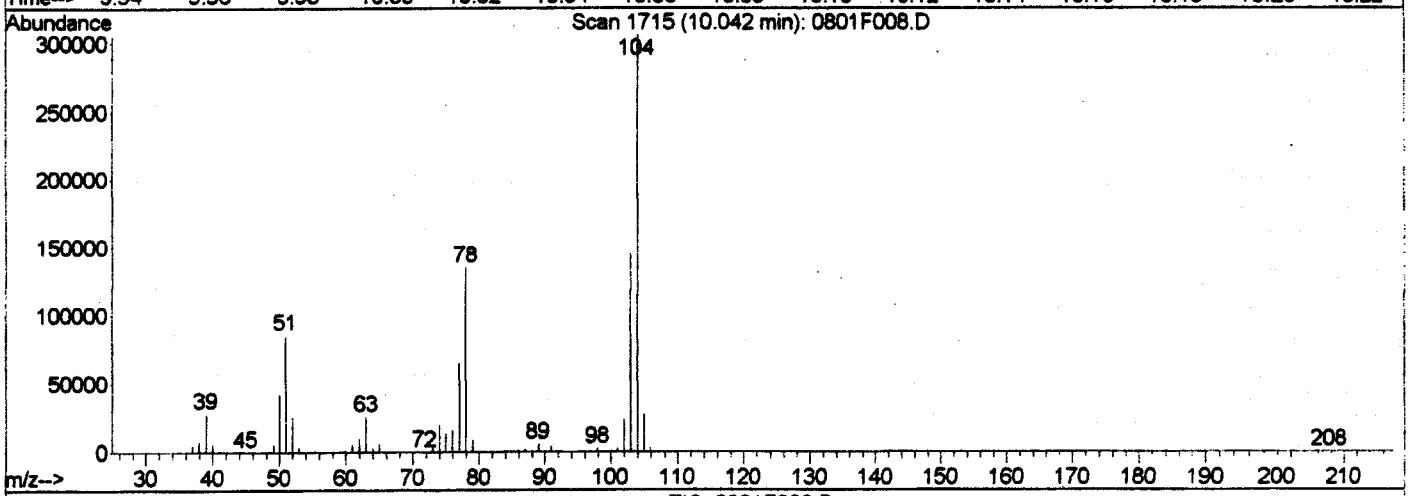
0801F008.D 032911624BAYW.M Tue Aug 02 10:15:31 2011

Quantitation Report (Qedit)

Data File : J:\MS23\DATA\080111BAYW\0801F008.D Vial: 5
Acq On : 1 Aug 2011 2:33 pm Operator: KR
Sample : k6869-001DMS Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Aug 2 10:15 2011 Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Multiple Level Calibration





TIC: 0801F008.D

(45) Styrene (T)

10.04min 8.84PPB m

response 222479

Ion	Exp%	Act%
103.00	100	100
104.00	217.10	209.70
78.00	101.20	92.63
0.00	0.00	0.00

0801F008.D 032911624BAYW.M Tue Aug 02 10:15:36 2011

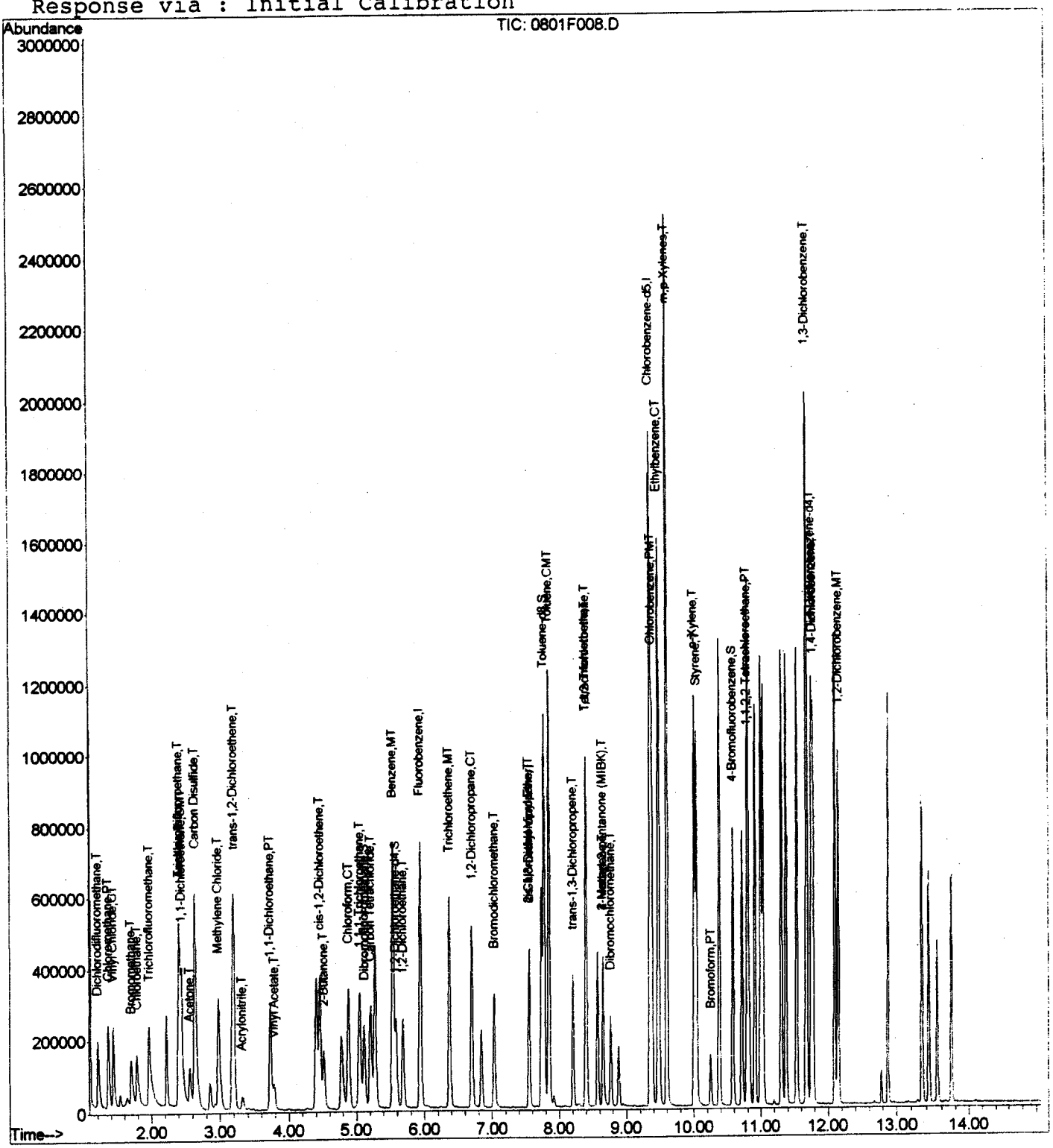
Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\080111BAYW\0801F008.D
Acq On : 1 Aug 2011 2:33 pm
Sample : k6869-001DMS
Misc :
MS Integration Params: rteint.p
Quant Time: Aug 2 10:15 2011

Vial: 5
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: 032911624BAY

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Initial Calibration



COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1106869
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	08/01/2011
		Date Analyzed:	08/01/2011

Volatile Organic Compounds

Sample Name:	Lab Control Sample	**Units:**	ug/L
Lab Code:	KWG1107316-3	**Basis:**	NA
File ID:	J:\MS23\DATA\080111BAYW\0801F006.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1107316
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**9.09**		0.25	0.053	
75-35-4	1,1-Dichloroethene	**10.0**		0.50	0.37	
156-60-5	trans-1,2-Dichloroethene	**11.4**		0.50	0.039	
75-34-3	1,1-Dichloroethane	**10.7**		0.50	0.041	
156-59-2	cis-1,2-Dichloroethene	**10.6**		0.50	0.042	
71-55-6	1,1,1-Trichloroethane (TCA)	**9.83**		0.50	0.044	
79-01-6	Trichloroethene (TCE)	**10.6**		0.50	0.044	
127-18-4	Tetrachloroethene (PCE)	**11.9**		0.50	0.043	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	107	61-121	08/01/11	Acceptable
Toluene-d8	107	72-122	08/01/11	Acceptable
4-Bromofluorobenzene	100	70-120	08/01/11	Acceptable

Comments:

Exception Report

Data File: J:\MS23\DATA\080111BAYW\0801F006.D
Lab ID: KWG1107316-3
RunType: LCS
Matrix: WATER

Date Acquired: 08/01/2011 13:28
Date Quantitated: 08/02/2011 10:14
Batch ID: KWG1107315
Analysis Method: 624
MethodJoinID: MJ158

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Primary Review: [illegible]

Secondary Review: HB 8.2.11

Printed: 08/02/2011 11:07:08
u:\Stealth\Crystal.rpt\except2.rpt

Quantitation Report

Data File:	J:\MS23\DATA\080111BAYW\0801F006.D			**Instrument:**	MS23
Acqu Date:	08/01/2011 13:28	**Quant Date:**	08/02/2011 10:14	**Vial:**	6
Run Type:	LCS			**Dilution:**	1.0
Lab ID:	KWG1107316-3			**Soln Conc. Units:**	PPB

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	624 Modified VO	**Collect Date:**		**Receive Date:**	08/02/2011

Analysis Lot:	KWG1107315	**Prep Lot:**	KWG1107316	**Report Group:**	
Analysis Method:	624	**Prep Method:**	METHOD		
		Prep Date:	08/01/2011		
Prep Ref:	1041369				

Quant Method:	J:\MS23\METHODS\032911624BAY	**Calibration ID:**	CAL10443
Title:			
Tune Ref:	J:\MS23\DATA\080111BAYW\0801F003.D	**Method ID:**	MJ158
MB Ref:	J:\MS23\DATA\080111BAYW\0801F010.D	**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	Fluorobenzene	5.94	0.00	96	719288	10.00	OK
2	Chlorobenzene-d5	9.34	0.00	82	307110	10.00	OK
3	1,4-Dichlorobenzene-d4	11.75	0.00	152	290861	10.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	Dibromofluoromethane	5.12	0.00	0.00	113	166801	10.72	107	61-121	OK
1	1,2-Dichloroethane-d4	5.59	0.00	0.00	65	187007	9.56	96	54-125	OK
1	Toluene-d8	7.77	0.00	0.00	98	725843	10.68	107	72-122	OK
2	4-Bromofluorobenzene	10.58	0.00	0.00	95	251602	9.95	100	70-120	OK

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	Dichlorodifluoromethane	1.20		0.00	85	218240	8.64	8.64		
1	Chloromethane	1.36	0.01	0.00	50	330587	9.02	9.02		
1	Vinyl Chloride	1.43		0.00	62	264712	9.09	9.09		
1	Bromomethane	1.70		0.00	96	102132	9.59	9.59		
1	Chloroethane	1.79	0.01	0.00	49	43329	8.53	8.53		
1	Trichlorofluoromethane	1.97	0.01	0.00	101	313859	8.72	8.72		
1	Acrolein	2.41		0.00	56	158839	81.15	81.2		
1	Trichlorotrifluoroethane	2.41	0.01	0.00	151	154825	9.76	9.76		
1	1,1-Dichloroethene	2.44		0.00	96	173715	10.00	10.0		
1	Acetone	2.56		0.00	43	149615	54.81	54.8		
1	Carbon Disulfide	2.63		0.00	76	1287848	17.87	17.9		
1	Methylene Chloride	2.98		0.00	84	201747	11.41	11.4		
1	Acrylonitrile	3.32		0.00	53	38082	11.99	12.0		
1	trans-1,2-Dichloroethene	3.20		0.00	96	204588	11.38	11.4		

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Data File:	J:\MS23\DATA\080111BAYW\0801F006.D			**Instrument:**	MS23
Acqu Date:	08/01/2011 13:28	**Quant Date:**	08/02/2011 10:14	**Vial:**	6
Run Type:	LCS			**Dilution:**	1.0
Lab ID:	KWG1107316-3			**Soln Conc. Units:**	PPB

Target Compounds **Final Conc. Units:** ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,1-Dichloroethane	3.73		0.00	63	379520	10.67	10.7		
1	Vinyl Acetate	3.78		0.00	86	8310	4.07	4.07	J	
1	cis-1,2-Dichloroethene	4.46	0.01	0.00	96	204713	10.60	10.6		
1	2-Butanone (MEK)	4.51		0.00	72	53534	66.91	66.9		
1	Chloroform	4.89		0.00	83	350663	10.91	10.9		
1	1,1,1-Trichloroethane (TCA)	5.05	0.01	0.00	97	291706	9.83	9.83		
1	Carbon Tetrachloride	5.21		0.00	117	252255	11.03	11.0		
1	Benzene	5.54		0.00	78	848144	11.22	11.2		
1	1,2-Dichloroethane (EDC)	5.69		0.00	62	238287	10.36	10.4		
1	Trichloroethene (TCE)	6.37		0.00	95	202735	10.61	10.6		
1	1,2-Dichloropropane	6.70		0.00	63	200922	10.44	10.4		
1	Bromodichloromethane	7.03		0.00	83	237929	10.96	11.0		
1	2-Chloroethyl Vinyl Ether	7.42		0.00	63	67846	10.33	10.3		
1	cis-1,3-Dichloropropene	7.55		0.00	75	264514	10.03	10.0		
1	4-Methyl-2-pentanone (MIBK)	8.65		0.00	58	145729	51.77	51.8		
1	Toluene	7.85		0.00	92	532896	11.31	11.3		
2	trans-1,3-Dichloropropene	8.20		0.00	75	191974	8.57	8.57		
2	1,1,2-Trichloroethane	8.39		0.00	83	112426	11.50	11.5		
2	Tetrachloroethene (PCE)	8.40		0.00	164	173350	11.91	11.9		
2	2-Hexanone	8.65		0.00	43	307876	50.32	50.3		
2	Dibromochloromethane	8.77		0.00	129	139926	11.19	11.2		
2	Chlorobenzene	9.37		0.00	112	573706	11.55	11.6		
2	Ethylbenzene	9.46	-0.01	0.00	106	307471	10.89	10.9		
2	m,p-Xylenes	9.59		0.00	106	766356	21.80	21.8		
2	o-Xylene	10.01		0.00	106	341458	10.25	10.3		
2	Styrene	10.04		0.00	103	272185m	10.72	10.7		
2	Bromoform	10.25		0.00	173	68094	11.34	11.3		
3	1,1,2,2-Tetrachloroethane	10.78		0.00	83	136451	10.56	10.6		
3	Pentachloroethane	11.36	11.36	0.97	167	1101				
3	1,3-Dichlorobenzene	11.68	0.01	0.00	146	452021	10.99	11.0		
3	1,4-Dichlorobenzene	11.77		0.00	146	460388	11.16	11.2		
3	1,2-Dichlorobenzene	12.15		0.00	146	389189	10.87	10.9		
	Isopropyl Acetate				0	0		10	U	NR
	Ethyl Acetate				0	0		10	U	NR
	Bis(chloromethyl) Ether				0	0		10	U	NR
	Amyl Acetate				0	0		10	U	NR

Prep Amount:	10 ml	**Dilution:**	1.0
Prep Final Vol:	10 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\080111BAYW\0801F006.D Vial: 6
Acq On : 1 Aug 2011 1:28 pm Operator: KR
Sample : 624 LCS Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Aug 02 10:14:42 2011 Quant Results File: 032911624BAYW.R

Quant Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Initial Calibration
DataAcq Meth : 8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	5.94	96	719288	10.00	PPB	0.00
35) Chlorobenzene-d5	9.34	82	307110	10.00	PPB	0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	290861	10.00	PPB	0.00
System Monitoring Compounds						
22) Dibromofluoromethane	5.12	113	166801	10.72	PPB	0.00
Spiked Amount 10.000			Recovery	=	107.20%	
24) 1,2-Dichloroethane-d4	5.59	65	187007	9.56	PPB	0.00
Spiked Amount 10.000			Recovery	=	95.60%	
33) Toluene-d8	7.77	98	725843	10.68	PPB	0.00
Spiked Amount 10.000			Recovery	=	106.80%	
47) 4-Bromofluorobenzene	10.58	95	251602	9.95	PPB	0.00
Spiked Amount 10.000			Recovery	=	99.50%	
Target Compounds						Qvalue
2) Dichlorodifluoromethane	1.20	85	218240	8.64	PPB	99
3) Chloromethane	1.36	50	330587	9.02	PPB	99
4) Vinyl Chloride	1.43	62	264712	9.09	PPB	98
5) Bromomethane	1.70	96	102132	9.59	PPB	88
6) Chloroethane	1.79	49	43329	8.53	PPB	87
7) Trichlorofluoromethane	1.97	101	313859	8.72	PPB	94
8) Acrolein	2.41	56	158839	81.15	PPB	99
9) Trichlorotrifluoroethane	2.41	151	154825	9.76	PPB	96
10) 1,1-Dichloroethene	2.44	96	173715	10.00	PPB	97
11) Acetone	2.56	43	149615	54.81	PPB	98
12) Carbon Disulfide	2.63	76	1287848	17.87	PPB	100
13) Methylene Chloride	2.98	84	201747	11.41	PPB	95
14) Acrylonitrile	3.32	53	38082	11.99	PPB	98
15) trans-1,2-Dichloroethene	3.20	96	204588	11.38	PPB	92
16) 1,1-Dichloroethane	3.73	63	379520	10.67	PPB	99
17) Vinyl Acetate	3.78	86	8310	4.07	PPB	94
18) cis-1,2-Dichloroethene	4.46	96	204713	10.60	PPB	95
19) 2-Butanone	4.51	72	53534	66.91	PPB #	82
20) Chloroform	4.89	83	350663	10.91	PPB	97
21) 1,1,1-Trichloroethane	5.05	97	291706	9.83	PPB	97
23) Carbon Tetrachloride	5.21	117	252255	11.03	PPB	98
25) Benzene	5.54	78	848144	11.22	PPB	97
26) 1,2-Dichloroethane	5.69	62	238287	10.36	PPB	98
27) Trichloroethene	6.37	95	202735	10.61	PPB	94
28) 1,2-Dichloropropane	6.70	63	200922	10.44	PPB	94
29) Bromodichloromethane	7.03	83	237929	10.96	PPB	96
30) 2-Chloroethyl Vinyl Ether	7.42	63	67846	10.33	PPB	91

(#) = qualifier out of range (m) = manual integration
0801F006.D 032911624BAYW.M Tue Aug 02 10:14:55 2011 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\080111BAYW\0801F006.D
Acq On : 1 Aug 2011 1:28 pm
Sample : 624 LCS
Misc :
MS Integration Params: rteint.p
Quant Time: Aug 02 10:14:42 2011

Vial: 6
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624BAYW.R

Quant Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Initial Calibration
DataAcq Meth : 8260

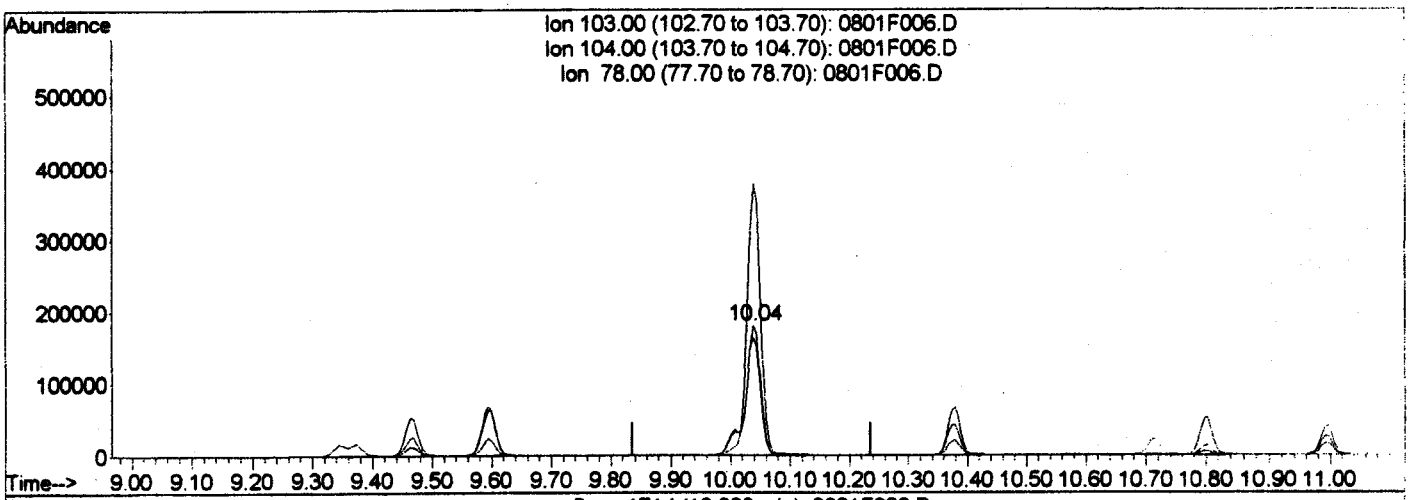
Compound	R.T.	QIon	Response	Conc Unit	Qvalue
31) cis-1,3-Dichloropropene	7.55	75	264514	10.03 PPB	90
32) 4-Methyl-2-pentanone (MIBK	8.65	58	145729	51.77 PPB	93
34) Toluene	7.85	92	532896	11.31 PPB	99
36) trans-1,3-Dichloropropene	8.20	75	191974	8.57 PPB	94
37) 1,1,2-Trichloroethane	8.39	83	112426	11.50 PPB	97
38) Tetrachloroethene	8.40	164	173350	11.91 PPB	96
39) 2-Hexanone	8.65	43	307876	50.32 PPB	97
40) Dibromochloromethane	8.77	129	139926	11.19 PPB	99
41) Chlorobenzene	9.37	112	573706	11.55 PPB	95
42) Ethylbenzene	9.46	106	307471	10.89 PPB	99
43) m,p-Xylenes	9.59	106	766356	21.80 PPB	97
44) o-Xylene	10.01	106	341458	10.25 PPB	95
45) Styrene	10.04	103	272185m	10.72 PPB	
46) Bromoform	10.25	173	68094	11.34 PPB	95
49) 1,1,2,2-Tetrachloroethane	10.78	83	136451	10.56 PPB	97
51) 1,3-Dichlorobenzene	11.68	146	452021	10.99 PPB	97
52) 1,4-Dichlorobenzene	11.77	146	460388	11.16 PPB	98
53) 1,2-Dichlorobenzene	12.15	146	389189	10.87 PPB	100

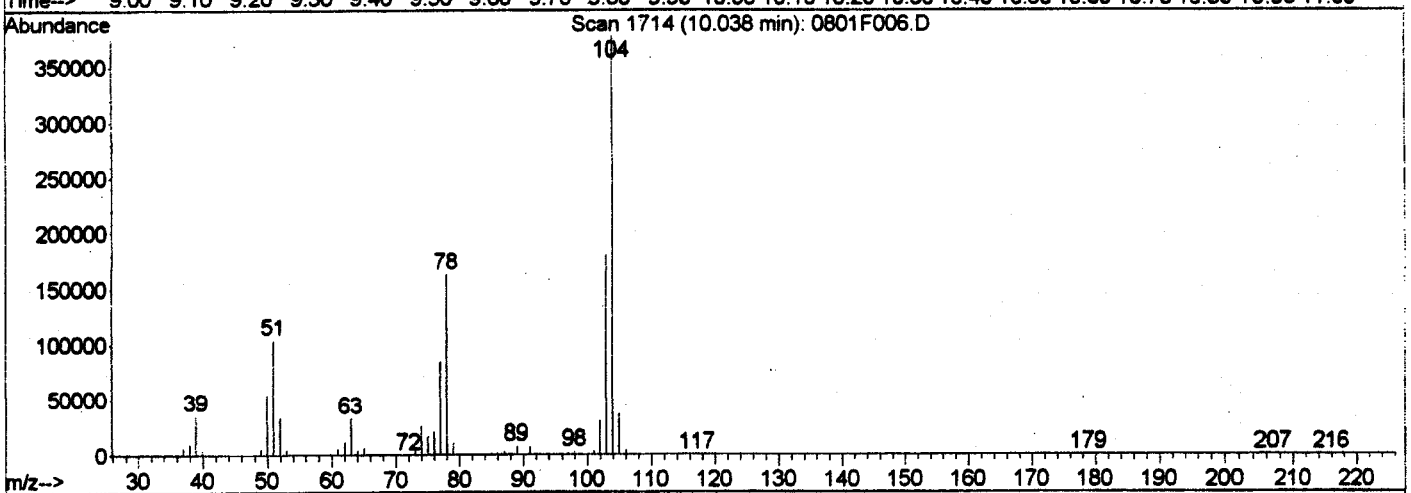
(#) = qualifier out of range (m) = manual integration

Quantitation Report (Qedit)

Data File : J:\MS23\DATA\080111BAYW\0801F006.D Vial: 6
Acq On : 1 Aug 2011 1:28 pm Operator: KR
Sample : 624 LCS Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Aug 2 10:14 2011 Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Multiple Level Calibration





(45) Styrene (T)

10.04min 12.67PPB

response 321878

Ion	Exp%	Act%
103.00	100	100
104.00	217.10	209.22
78.00	101.20	90.53
0.00	0.00	0.00

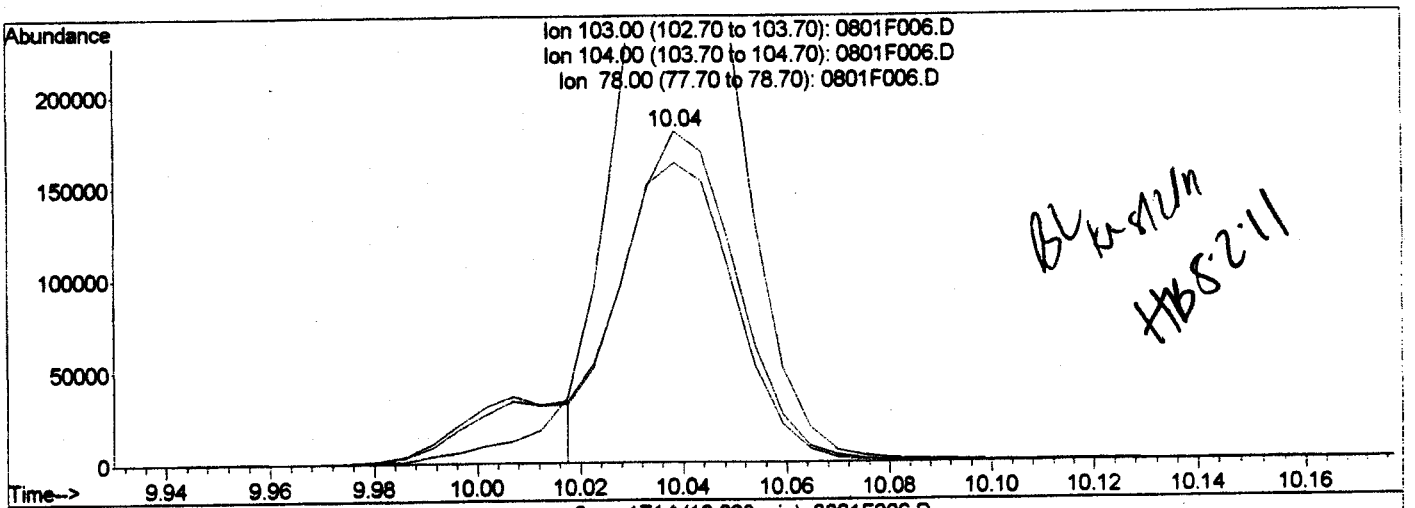
Quantitation Report (Qedit)

Data File : J:\MS23\DATA\080111BAYW\0801F006.D
Acq On : 1 Aug 2011 1:28 pm
Sample : 624 LCS
Misc :
MS Integration Params: rteint.p
Quant Time: Aug 2 10:14 2011

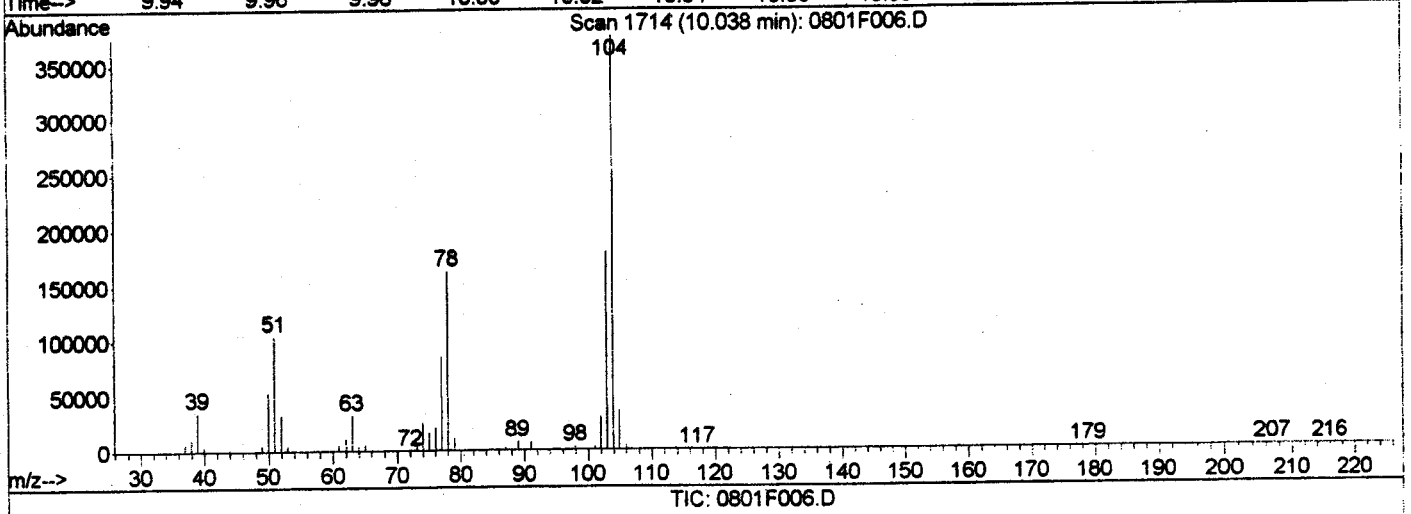
Vial: 6
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Multiple Level Calibration



BL 8/2/11
HB 8.2.11



(45) Styrene (T)

10.04min 10.72PPB m

response 272185

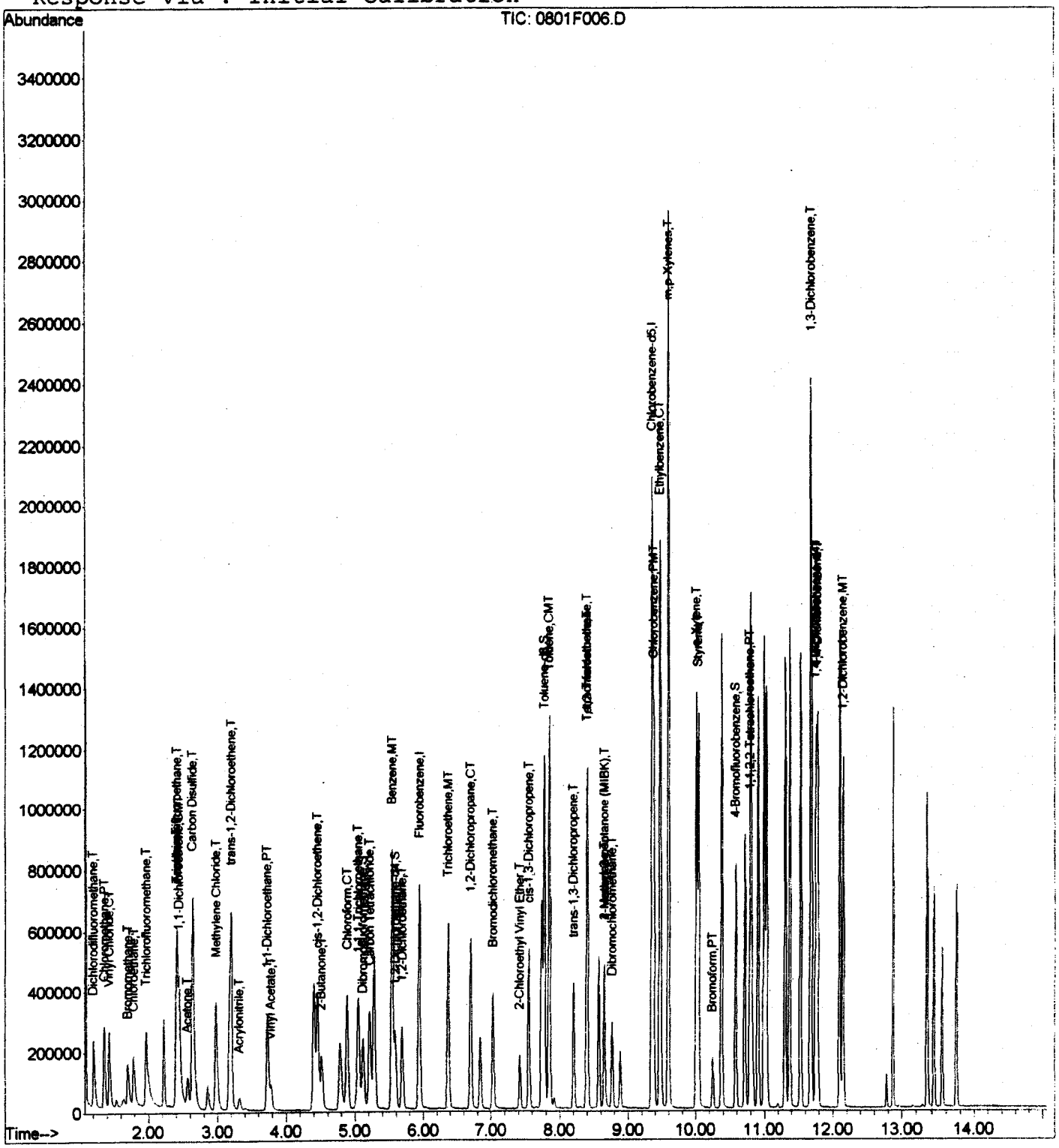
Ion	Exp%	Act%
103.00	100	100
104.00	217.10	209.22
78.00	101.20	90.53
0.00	0.00	0.00

0801F006.D 032911624BAYW.M Tue Aug 02 10:14:51 2011

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\080111BAYW\0801F006.D Vial: 6
Acq On : 1 Aug 2011 1:28 pm Operator: KR
Sample : 624 LCS Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Aug 2 10:14 2011 Quant Results File: 032911624BAY

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Initial Calibration



COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1106869
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	08/05/2011
		Date Analyzed:	08/05/2011

Volatile Organic Compounds

Sample Name:	Lab Control Sample	**Units:**	ug/L
Lab Code:	KWG1107578-3	**Basis:**	NA
File ID:	J:\MS23\DATA\080511BAYW\0805F005.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1107578
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**7.85**		0.25	0.053	
75-35-4	1,1-Dichloroethene	**9.71**		0.50	0.37	
156-60-5	trans-1,2-Dichloroethene	**11.4**		0.50	0.039	
75-34-3	1,1-Dichloroethane	**10.8**		0.50	0.041	
156-59-2	cis-1,2-Dichloroethene	**10.5**		0.50	0.042	
71-55-6	1,1,1-Trichloroethane (TCA)	**9.93**		0.50	0.044	
79-01-6	Trichloroethene (TCE)	**10.8**		0.50	0.044	
127-18-4	Tetrachloroethene (PCE)	**11.7**		0.50	0.043	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	106	61-121	08/05/11	Acceptable
Toluene-d8	107	72-122	08/05/11	Acceptable
4-Bromofluorobenzene	98	70-120	08/05/11	Acceptable

Comments:

Exception Report

Data File: J:\MS23\DATA\080511BAYW\0805F005.D
Lab ID: KWG1107578-3
RunType: LCS
Matrix: WATER

Date Acquired: 08/05/2011 10:40
Date Quantitated: 08/08/2011 15:25
Batch ID: KWG1107577
Analysis Method: 624
MethodJoinID: MJ158

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Primary Review: [illegible]

Secondary Review: HB 8-9-11

Quantitation Report

Data File:	J:\MS23\DATA\080511BAYW\0805F005.D			**Instrument:**	MS23
Acqu Date:	08/05/2011 10:40	**Quant Date:**	08/08/2011 15:25	**Vial:**	4
Run Type:	LCS			**Dilution:**	1.0
Lab ID:	KWG1107578-3			**Soln Conc. Units:**	PPB

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	624 VOC_FP	**Collect Date:**		**Receive Date:**	08/12/2011

Analysis Lot:	KWG1107577	**Prep Lot:**	KWG1107578	**Report Group:**	
Analysis Method:	624	**Prep Method:**	METHOD		
		Prep Date:	08/05/2011		
Prep Ref:	1043653				

Quant Method:	J:\MS23\METHODS\032911624.M	**Calibration ID:**	CAL10443
Title:			
Tune Ref:	J:\MS23\DATA\080511BAYW\0805F003.D	**Method ID:**	MJ158
MB Ref:	J:\MS23\DATA\080511BAYW\0805F009.D	**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	Fluorobenzene	5.94	0.00	96	692443	10.00	OK
2	Chlorobenzene-d5	9.34	-0.01	82	298386	10.00	OK
3	1,4-Dichlorobenzene-d4	11.75	0.00	152	279748	10.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	Dibromofluoromethane	5.12	0.00	0.00	113	158829	10.60	106	61-121	OK	
1	1,2-Dichloroethane-d4	5.59	0.00	0.00	65	175322	9.31	93	54-125	OK	
1	Toluene-d8	7.77	0.00	0.00	98	698590	10.68	107	72-122	OK	
2	4-Bromofluorobenzene	10.58	0.00	0.00	95	240185	9.78	98	70-120	OK	

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	Dichlorodifluoromethane	1.20		0.00	85	122158	5.03	5.03		
1	Chloromethane	1.36	0.01	0.00	50	249011	7.06	7.06		
1	Vinyl Chloride	1.43		0.00	62	220018	7.85	7.85		
1	Bromomethane	1.70		0.00	96	93906	9.16	9.16		
1	Chloroethane	1.79	0.01	0.00	49	40698	8.32	8.32		
1	Trichlorofluoromethane	1.97		0.00	101	284141	8.20	8.20		
1	Acrolein	2.41		0.00	56	83168	44.14	44.1	J	
1	Trichlorotrifluoroethane	2.40	-0.01	0.00	151	147519	9.66	9.66		
1	1,1-Dichloroethene	2.44		0.00	96	162362	9.71	9.71		
1	Acetone	2.56		0.00	43	134519	51.19	51.2		
1	Carbon Disulfide	2.63	-0.01	0.00	76	1171971	16.89	16.9		
1	Methylene Chloride	2.98		0.00	84	190791	11.21	11.2		
1	Acrylonitrile	3.32		0.00	53	34252	11.20	11.2		
1	trans-1,2-Dichloroethene	3.20		0.00	96	196869	11.38	11.4		

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Data File:	J:\MS23\DATA\080511BAYW\0805F005.D			**Instrument:**	MS23
Acqu Date:	08/05/2011 10:40	**Quant Date:**	08/08/2011 15:25	**Vial:**	4
Run Type:	LCS			**Dilution:**	1.0
Lab ID:	KWG1107578-3			**Soln Conc. Units:**	PPB

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,1-Dichloroethane	3.73		0.00	63	369068	10.78	10.8		
1	Vinyl Acetate	3.78		0.00	86	6772	3.44	3.44	J	
1	cis-1,2-Dichloroethene	4.45	-0.01	0.00	96	194977	10.49	10.5		
1	2-Butanone (MEK)	4.51		0.00	72	44702	58.04	58.0		
1	Chloroform	4.88	-0.01	0.00	83	338717	10.95	11.0		
1	1,1,1-Trichloroethane (TCA)	5.05		0.00	97	283886	9.93	9.93		
1	Carbon Tetrachloride	5.21		0.00	117	244069	11.09	11.1		
1	Benzene	5.54		0.00	78	805619	11.08	11.1		
1	1,2-Dichloroethane (EDC)	5.69		0.00	62	223141	10.08	10.1		
1	Trichloroethene (TCE)	6.37		0.00	95	197841	10.75	10.8		
1	1,2-Dichloropropane	6.70		0.00	63	190215	10.27	10.3		
1	Bromodichloromethane	7.03		0.00	83	215825	10.33	10.3		
1	2-Chloroethyl Vinyl Ether	7.42		0.00	63	57819	9.14	9.14	J	
1	cis-1,3-Dichloropropene	7.55		0.00	75	238245	9.38	9.38		
1	4-Methyl-2-pentanone (MIBK)	8.65		0.00	58	120410	44.43	44.4		
1	Toluene	7.85		0.00	92	508195	11.20	11.2		
2	trans-1,3-Dichloropropene	8.20		0.00	75	172433	7.92	7.92		
2	1,1,2-Trichloroethane	8.39		0.00	83	100433	10.58	10.6		
2	Tetrachloroethene (PCE)	8.40		0.00	164	165423	11.70	11.7		
2	2-Hexanone	8.65		0.00	43	254344	42.78	42.8		
2	Dibromochloromethane	8.76	-0.01	0.00	129	122796	10.10	10.1		
2	Chlorobenzene	9.37		0.00	112	533435	11.05	11.1		
2	Ethylbenzene	9.46	-0.01	0.00	106	291206	10.62	10.6		
2	m,p-Xylenes	9.59		0.00	106	729295	21.36	21.4		
2	o-Xylene	10.01		0.00	106	322121	9.96	9.96		
2	Styrene	10.04		0.00	103	249239m	10.10	10.1		
2	Bromoform	10.25		0.00	173	58974	10.11	10.1		
3	1,1,2,2-Tetrachloroethane	10.78		0.00	83	113786	9.15	9.15		
3	Pentachloroethane	11.36			167	581				
3	1,3-Dichlorobenzene	11.67		0.00	146	410515	10.38	10.4		
3	1,4-Dichlorobenzene	11.78	0.01	0.00	146	413243	10.42	10.4		
3	1,2-Dichlorobenzene	12.15	0.01	0.00	146	346746	10.07	10.1		
	Isopropyl Acetate				0	0		10	U	NR
	Ethyl Acetate				0	0		10	U	NR
	Bis(chloromethyl) Ether				0	0		10	U	NR
	Amyl Acetate				0	0		10	U	NR

Prep Amount:	10 ml	**Dilution:**	1.0
Prep Final Vol:	10 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\080511BAYW\0805F005.D
Acq On : 5 Aug 2011 10:40 am
Sample : 624 LCS
Misc :
MS Integration Params: rteint.p
Quant Time: Aug 08 15:25:02 2011

Vial: 4
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624BAYW.R

Quant Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Initial Calibration
DataAcq Meth : 8260

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Fluorobenzene	5.94	96	692443	10.00	PPB		0.00
35) Chlorobenzene-d5	9.34	82	298386	10.00	PPB		0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	279748	10.00	PPB		0.00
System Monitoring Compounds							
22) Dibromofluoromethane	5.12	113	158829	10.60	PPB		0.00
Spiked Amount 10.000			Recovery	=	106.00%		
24) 1,2-Dichloroethane-d4	5.59	65	175322	9.31	PPB		0.00
Spiked Amount 10.000			Recovery	=	93.10%		
33) Toluene-d8	7.77	98	698590	10.68	PPB		0.00
Spiked Amount 10.000			Recovery	=	106.80%		
47) 4-Bromofluorobenzene	10.58	95	240185	9.78	PPB		0.00
Spiked Amount 10.000			Recovery	=	97.80%		
Target Compounds							Qvalue
2) Dichlorodifluoromethane	1.20	85	122158	5.03	PPB		98
3) Chloromethane	1.36	50	249011	7.06	PPB		100
4) Vinyl Chloride	1.43	62	220018	7.85	PPB		98
5) Bromomethane	1.70	96	93906	9.16	PPB		96
6) Chloroethane	1.79	49	40698	8.32	PPB		92
7) Trichlorofluoromethane	1.97	101	284141	8.20	PPB		92
8) Acrolein	2.41	56	83168	44.14	PPB		98
9) Trichlorotrifluoroethane	2.40	151	147519	9.66	PPB		98
10) 1,1-Dichloroethene	2.44	96	162362	9.71	PPB		92
11) Acetone	2.56	43	134519	51.19	PPB		98
12) Carbon Disulfide	2.63	76	1171971	16.89	PPB		100
13) Methylene Chloride	2.98	84	190791	11.21	PPB		96
14) Acrylonitrile	3.32	53	34252	11.20	PPB		98
15) trans-1,2-Dichloroethene	3.20	96	196869	11.38	PPB		94
16) 1,1-Dichloroethane	3.73	63	369068	10.78	PPB		99
17) Vinyl Acetate	3.78	86	6772	3.44	PPB	#	83
18) cis-1,2-Dichloroethene	4.45	96	194977	10.49	PPB		97
19) 2-Butanone	4.51	72	44702	58.04	PPB	#	88
20) Chloroform	4.88	83	338717	10.95	PPB		97
21) 1,1,1-Trichloroethane	5.05	97	283886	9.93	PPB		98
23) Carbon Tetrachloride	5.21	117	244069	11.09	PPB		99
25) Benzene	5.54	78	805619	11.08	PPB		96
26) 1,2-Dichloroethane	5.69	62	223141	10.08	PPB		98
27) Trichloroethene	6.37	95	197841	10.75	PPB		94
28) 1,2-Dichloropropane	6.70	63	190215	10.27	PPB		96
29) Bromodichloromethane	7.03	83	215825	10.33	PPB		99
30) 2-Chloroethyl Vinyl Ether	7.42	63	57819	9.14	PPB		94

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\080511BAYW\0805F005.D Vial: 4
Acq On : 5 Aug 2011 10:40 am Operator: KR
Sample : 624 LCS Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Aug 08 15:25:02 2011 Quant Results File: 032911624BAYW.R

Quant Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Initial Calibration
DataAcq Meth : 8260

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
31) cis-1,3-Dichloropropene	7.55	75	238245	9.38	PPB	94
32) 4-Methyl-2-pentanone (MIBK	8.65	58	120410	44.43	PPB	99
34) Toluene	7.85	92	508195	11.20	PPB	99
36) trans-1,3-Dichloropropene	8.20	75	172433	7.92	PPB	94
37) 1,1,2-Trichloroethane	8.39	83	100433	10.58	PPB	98
38) Tetrachloroethene	8.40	164	165423	11.70	PPB	95
39) 2-Hexanone	8.65	43	254344	42.78	PPB	98
40) Dibromochloromethane	8.76	129	122796	10.10	PPB	100
41) Chlorobenzene	9.37	112	533435	11.05	PPB	97
42) Ethylbenzene	9.46	106	291206	10.62	PPB	98
43) m,p-Xylenes	9.59	106	729295	21.36	PPB	96
44) o-Xylene	10.01	106	322121	9.96	PPB	92
45) Styrene	10.04	103	249239m	10.10	PPB	
46) Bromoform	10.25	173	58974	10.11	PPB	97
49) 1,1,2,2-Tetrachloroethane	10.78	83	113786	9.15	PPB	93
51) 1,3-Dichlorobenzene	11.67	146	410515	10.38	PPB	99
52) 1,4-Dichlorobenzene	11.78	146	413243	10.42	PPB	97
53) 1,2-Dichlorobenzene	12.15	146	346746	10.07	PPB	99

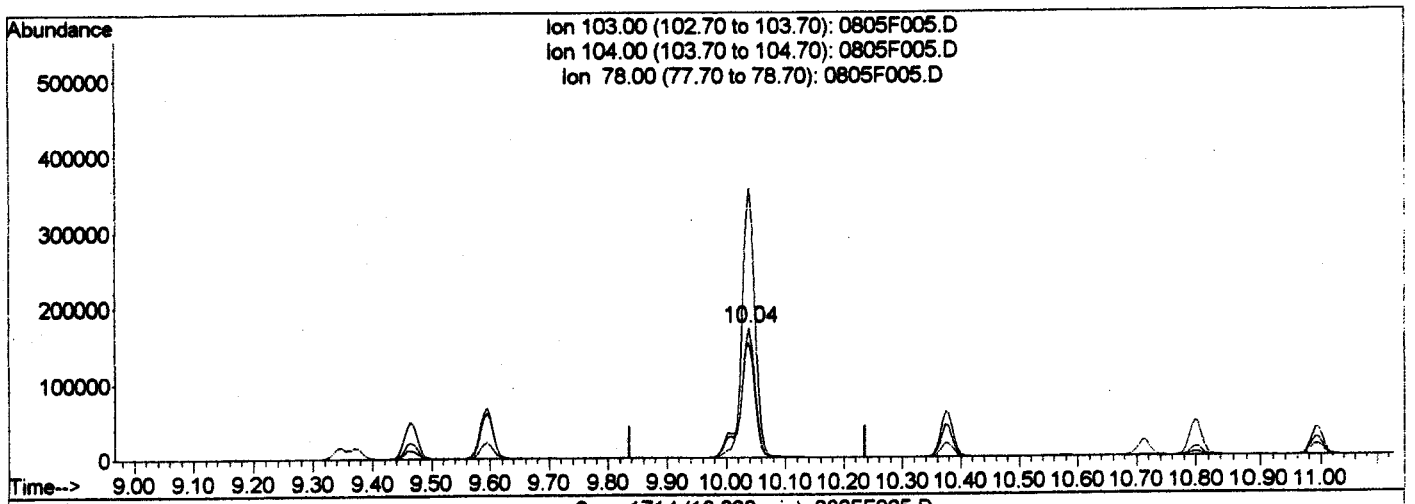
(#) = qualifier out of range (m) = manual integration

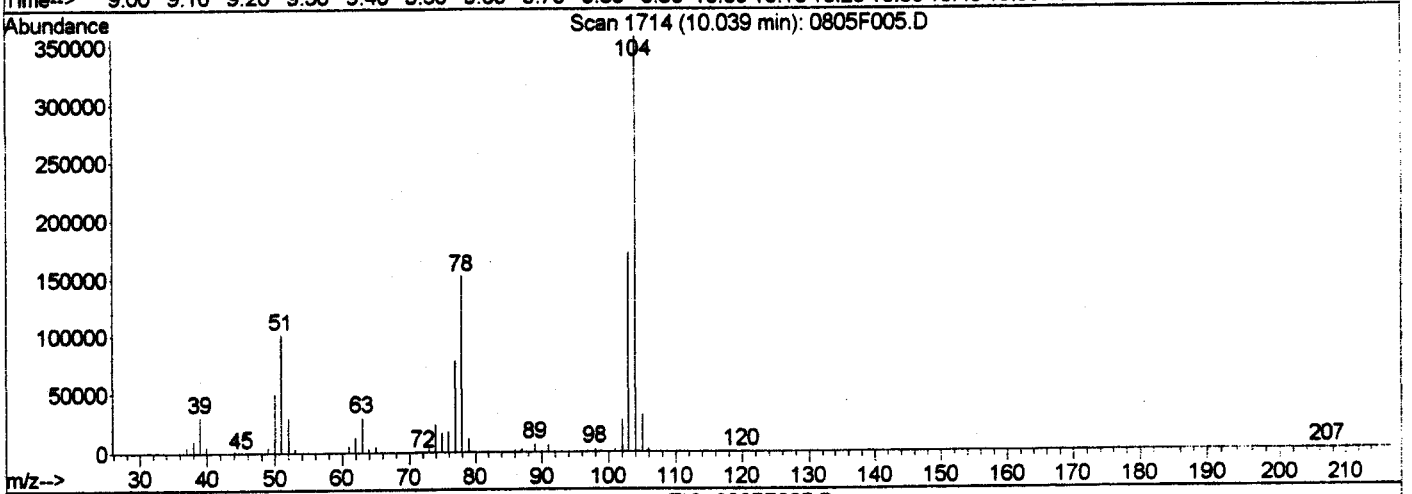
Quantitation Report (Qedit)

Data File : J:\MS23\DATA\080511BAYW\0805F005.D
Acq On : 5 Aug 2011 10:40 am
Sample : 624 LCS
Misc :
MS Integration Params: rteint.p
Quant Time: Aug 8 15:25 2011

Vial: 4
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Multiple Level Calibration





TIC: 0805F005.D

(45) Styrene (T)

10.04min 12.02PPB

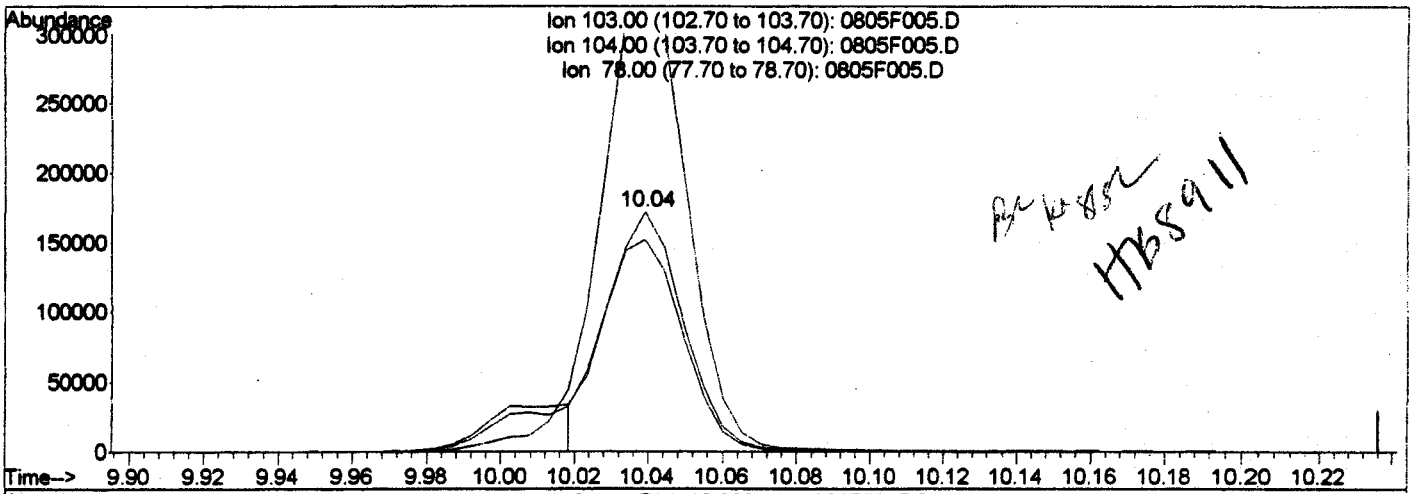
response 296570

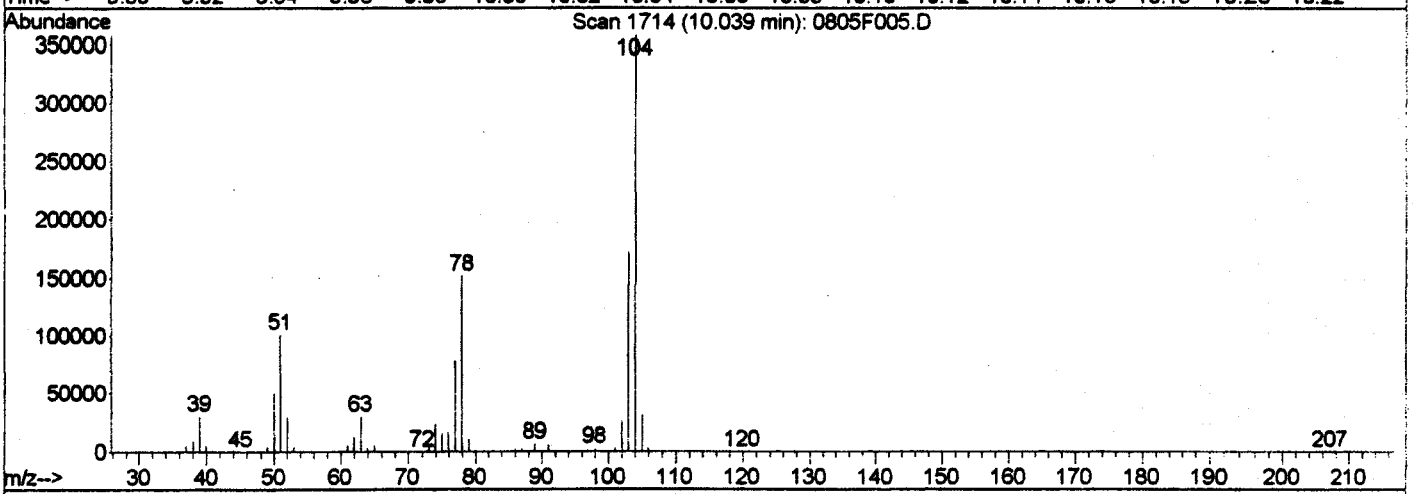
Ion	Exp%	Act%
103.00	100	100
104.00	217.10	208.46
78.00	101.20	88.45
0.00	0.00	0.00

Quantitation Report (Qedit)

Data File : J:\MS23\DATA\080511BAYW\0805F005.D Vial: 4
Acq On : 5 Aug 2011 10:40 am Operator: KR
Sample : 624 LCS Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Aug 8 15:25 2011 Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Multiple Level Calibration





TIC: 0805F005.D

(45) Styrene (T)

10.04min 10.10PPB m

response 249239

Ion	Exp%	Act%
103.00	100	100
104.00	217.10	208.46
78.00	101.20	88.45
0.00	0.00	0.00

0805F005.D 032911624BAYW.M Mon Aug 08 15:25:14 2011

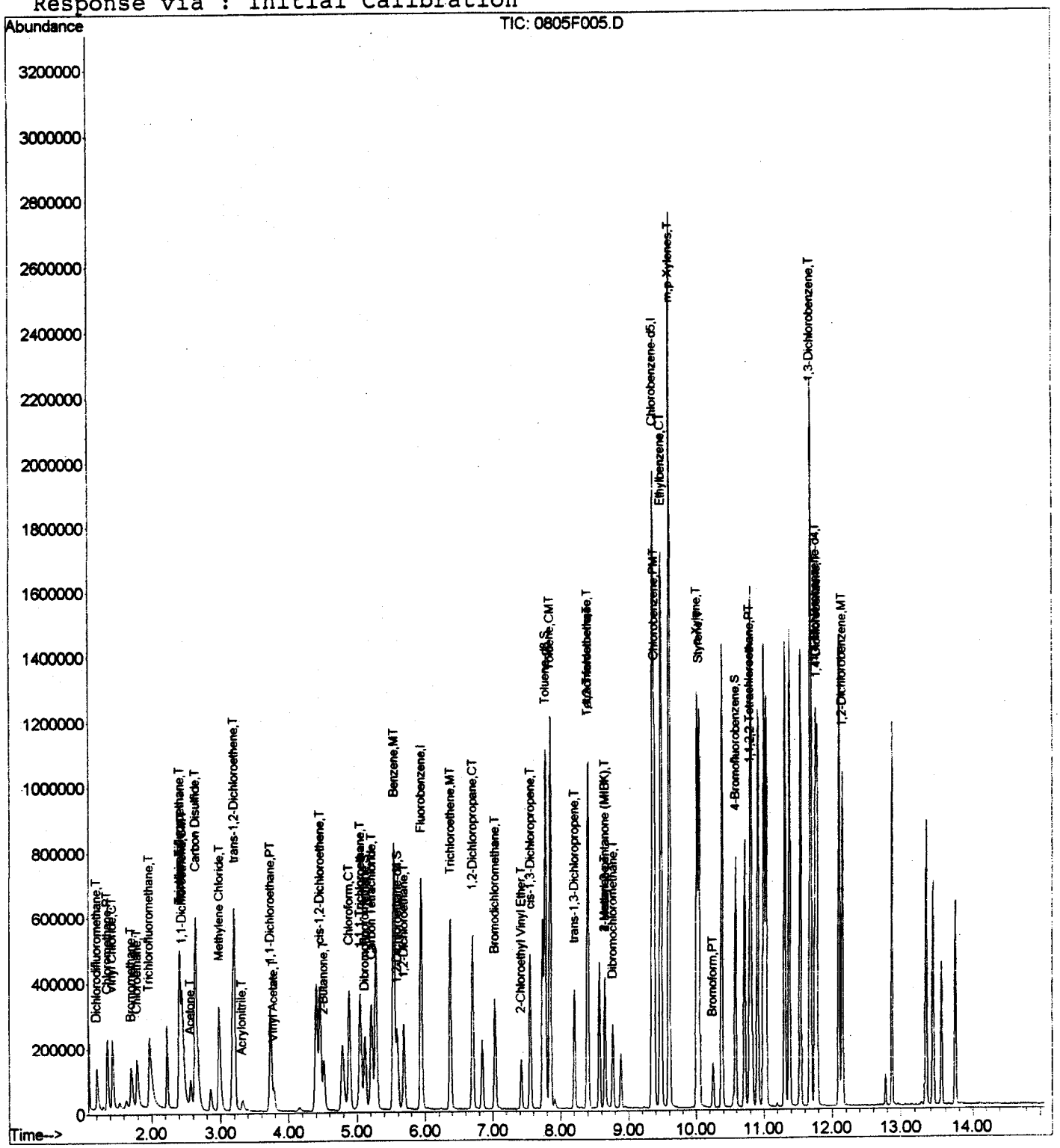
Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\080511BAYW\0805F005.D
Acq On : 5 Aug 2011 10:40 am
Sample : 624 LCS
Misc :
MS Integration Params: rteint.p
Quant Time: Aug 8 15:25 2011

Vial: 4
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: 032911624BAY

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Initial Calibration



Organic Analysis:
Volatile Organic Compounds

Validation Package

Standards Data

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1106869
Date Analyzed: 03/29/2011
Time Analyzed: 13:21

Tune Summary
Volatile Organic Compounds

File ID: J:\MS23\DATA\032911\0329F013.D
Instrument ID: MS23
Column:

Analysis Method: 624
Analysis Lot: KWG1103676

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	24.6	16321	PASS
75	95	30	60	53.6	35557	PASS
95	95	100	100	100.0	66330	PASS
96	95	5	9	6.9	4574	PASS
173	174	0	2	0.7	334	PASS
174	95	50	120	68.8	45626	PASS
175	174	5	9	7.6	3488	PASS
176	174	95	101	98.5	44920	PASS
177	176	5	9	6.8	3050	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Initial Calibration	KWG1103676-2	J:\MS23\DATA\032911BAYW\0329F016.D	03/29/2011	14:27	
Initial Calibration	KWG1103676-3	J:\MS23\DATA\032911BAYW\0329F019.D	03/29/2011	16:02	
Initial Calibration	KWG1103676-4	J:\MS23\DATA\032911BAYW\0329F020.D	03/29/2011	16:32	
Initial Calibration	KWG1103676-5	J:\MS23\DATA\032911BAYW\0329F021.D	03/29/2011	17:02	
Initial Calibration	KWG1103676-6	J:\MS23\DATA\032911BAYW\0329F022.D	03/29/2011	17:31	
Initial Calibration	KWG1103676-7	J:\MS23\DATA\032911BAYW\0329F023.D	03/29/2011	18:01	
Initial Calibration	KWG1103676-8	J:\MS23\DATA\032911BAYW\0329F026.D	03/29/2011	19:31	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1106869
Date Analyzed: 03/30/2011
Time Analyzed: 08:48

Tune Summary
Volatile Organic Compounds

File ID: J:\MS23\DATA\032911BAYW\0329F027.D
Instrument ID: MS23
Column:

Analysis Method: 624
Analysis Lot: KWG1103677

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	26.3	15893	PASS
75	95	30	60	59.3	35786	PASS
95	95	100	100	100.0	60389	PASS
96	95	5	9	7.4	4443	PASS
173	174	0	2	0.6	265	PASS
174	95	50	120	68.3	41240	PASS
175	174	5	9	7.7	3196	PASS
176	174	95	101	97.0	39994	PASS
177	176	5	9	6.8	2712	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Initial Calibration	KWG1103677-2	J:\MS23\DATA\032911BAYW\0329F029.D	03/30/2011	09:48	
Initial Calibration Verification	KWG1103677-3	J:\MS23\DATA\032911BAYW\0329F032.D	03/30/2011	12:58	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1106869
Date Analyzed: 08/01/2011
Time Analyzed: 11:27

Tune Summary
Volatile Organic Compounds

File ID: J:\MS23\DATA\080111BAYW\0801F003.D
Instrument ID: MS23
Column:

Analysis Method: 624
Analysis Lot: KWG1107315

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	21.3	10172	PASS
75	95	30	60	49.7	23711	PASS
95	95	100	100	100.0	47737	PASS
96	95	5	9	6.6	3127	PASS
173	174	0	2	0.5	202	PASS
174	95	50	120	76.9	36732	PASS
175	174	5	9	7.1	2608	PASS
176	174	95	101	95.1	34926	PASS
177	176	5	9	7.1	2496	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1107315-2	J:\MS23\DATA\080111BAYW\0801F004.D	08/01/2011	11:57	
Lab Control Sample	KWG1107316-3	J:\MS23\DATA\080111BAYW\0801F006.D	08/01/2011	13:28	
Fridout 173AMS	KWG1107316-1	J:\MS23\DATA\080111BAYW\0801F007.D	08/01/2011	14:02	
Fridout 173ADMS	KWG1107316-2	J:\MS23\DATA\080111BAYW\0801F008.D	08/01/2011	14:33	
Method Blank	KWG1107316-4	J:\MS23\DATA\080111BAYW\0801F010.D	08/01/2011	15:34	
Fridout 173A	K1106869-001	J:\MS23\DATA\080111BAYW\0801F011.D	08/01/2011	16:05	
Fridout 173B	K1106869-002	J:\MS23\DATA\080111BAYW\0801F014.D	08/01/2011	17:37	
Fridin Air 84A	K1106869-003	J:\MS23\DATA\080111BAYW\0801F015.D	08/01/2011	18:08	
Frideff Air 86A	K1106869-004	J:\MS23\DATA\080111BAYW\0801F016.D	08/01/2011	18:38	
Trip Blank	K1106869-005	J:\MS23\DATA\080111BAYW\0801F017.D	08/01/2011	19:09	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Exception Report

Data File: J:\MS23\DATA\080111BAYW\0801F003.D
Lab ID: KWG1107315-1
RunType: TUNE
Matrix: WATER

Date Acquired: 08/01/2011 11:27
Date Quantitated:
Batch ID: KWG1107315
Analysis Method: BFB
ListJoinID: LJ774

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Ion Ratio	NA	NA	NA	x	

Primary Review: Kr 8/2/11

Secondary Review: HB 8·2·11

Quantitation Report

Data File:	J:\MS23\DATA\080111BAYW\0801F003.D			**Instrument:**	MS23
Acqu Date:	08/01/2011 11:27	**Quant Date:**		**Vial:**	3
Run Type:	TUNE			**Dilution:**	1.0
Lab ID:	KWG1107315-1			**Soln Conc. Units:**	

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	624	**Collect Date:**		**Receive Date:**	08/02/2011

Analysis Lot:	KWG1107315	**Prep Lot:**		**Report Group:**	
Analysis Method:	BFB	**Prep Method:**			
Prep Ref:		**Prep Date:**			

Quant Method:	J:\MS23\METHODS\032911624BAY	**Calibration ID:**	CAL10443
Title:	GC/MS Tuning Evaluation	**Report List ID:**	LJ774
Tune Ref:		**Method ID:**	MJ159
MB Ref:		**Quant based on Report List**	

Tune Results

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	21.3	10172	Pass
75	95	30	60	49.7	23711	Pass
95	95	100	100	100.0	47737	Pass
96	95	5	9	6.6	3127	Pass
173	174	0	2	0.5	202	Pass
174	95	50	120	76.9	36732	Pass
175	174	5	9	7.1	2608	Pass
176	174	95	101	95.1	34926	Pass
177	176	5	9	7.1	2496	Pass

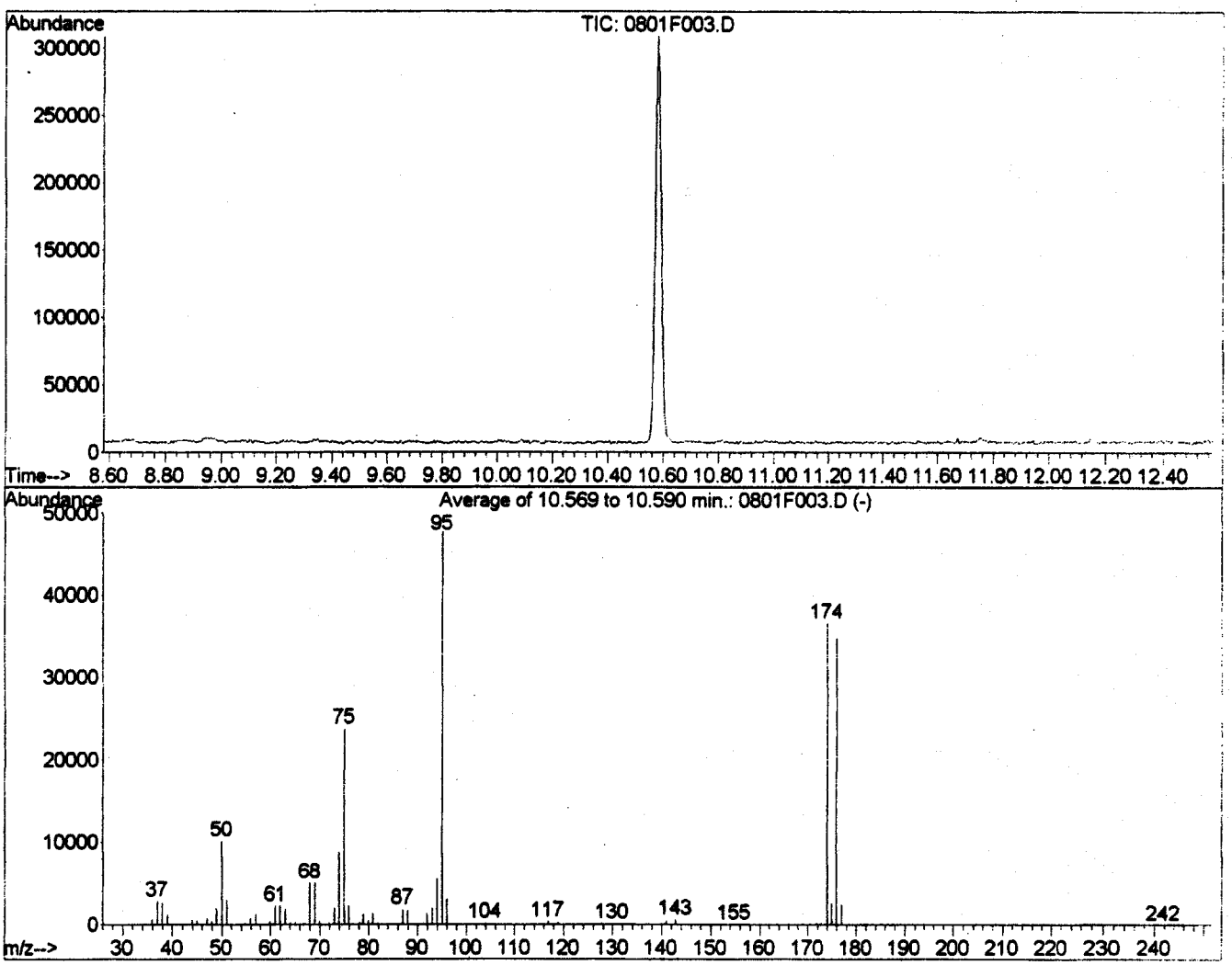
U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

BFB

Data File : J:\MS23\DATA\080111BAYW\0801F003.D Vial: 3
Acq On : 1 Aug 2011 11:27 am Operator: KR
Sample : BFB Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624



Spectrum Information: Average of 10.569 to 10.590 min. hpS - 18 scan

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	21.3	10172	PASS
75	95	30	60	49.7	23711	PASS
95	95	100	100	100.0	47737	PASS
96	95	5	9	6.6	3127	PASS
173	174	0.00	2	0.5	202	PASS
174	95	50	120	76.9	36732	PASS
175	174	5	9	7.1	2608	PASS
176	174	95	101	95.1	34926	PASS
177	176	5	9	7.1	2496	PASS

0801F003.D 032911624BAYW.M Tue Aug 02 10:13:42 2011

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1106869
Date Analyzed: 08/05/2011
Time Analyzed: 09:39

Tune Summary
Volatile Organic Compounds

File ID: J:\MS23\DATA\080511BAYW\0805F003.D
Instrument ID: MS23
Column:

Analysis Method: 624
Analysis Lot: KWG1107577

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	22.9	3605	PASS
75	95	30	60	52.6	8281	PASS
95	95	100	100	100.0	15745	PASS
96	95	5	9	6.9	1086	PASS
173	174	0	2	0.4	55	PASS
174	95	50	120	81.5	12835	PASS
175	174	5	9	7.4	953	PASS
176	174	95	101	95.5	12256	PASS
177	176	5	9	6.3	773	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1107577-2	J:\MS23\DATA\080511BAYW\0805F004.D	08/05/2011	10:09	
Lab Control Sample	KWG1107578-3	J:\MS23\DATA\080511BAYW\0805F005.D	08/05/2011	10:40	
Method Blank	KWG1107578-4	J:\MS23\DATA\080511BAYW\0805F009.D	08/05/2011	13:03	
Fridin Air 84ADL	K1106869-003	J:\MS23\DATA\080511BAYW\0805F017.D	08/05/2011	17:10	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Exception Report

Data File: J:\MS23\DATA\080511BAYW\0805F003.D
Lab ID: KWG1107577-1
RunType: TUNE
Matrix: WATER

Date Acquired: 08/05/2011 09:39
Date Quantitated:
Batch ID: KWG1107577
Analysis Method: BFB
ListJoinID: LJ774

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Ion Ratio	NA	NA	NA	x	

Primary Review: KV

Secondary Review: HB 8/11

Quantitation Report

Data File:	J:\MS23\DATA\080511BAYW\0805F003.D			**Instrument:**	MS23
Acqu Date:	08/05/2011 09:39	**Quant Date:**		**Vial:**	2
Run Type:	TUNE			**Dilution:**	1.0
Lab ID:	KWG1107577-1			**Soln Conc. Units:**	

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	624	**Collect Date:**		**Receive Date:**	08/08/2011

Analysis Lot:	KWG1107577	**Prep Lot:**		**Report Group:**	
Analysis Method:	BFB	**Prep Method:**			
Prep Ref:		**Prep Date:**			

Quant Method:	J:\MS23\METHODS\032911624BAY	**Calibration ID:**	CAL10443
Title:	GC/MS Tuning Evaluation	**Report List ID:**	LJ774
Tune Ref:		**Method ID:**	MJ159
MB Ref:		**Quant based on Report List**	

Tune Results

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	22.9	3605	Pass
75	95	30	60	52.6	8281	Pass
95	95	100	100	100.0	15745	Pass
96	95	5	9	6.9	1086	Pass
173	174	0	2	0.4	55	Pass
174	95	50	120	81.5	12835	Pass
175	174	5	9	7.4	953	Pass
176	174	95	101	95.5	12256	Pass
177	176	5	9	6.3	773	Pass

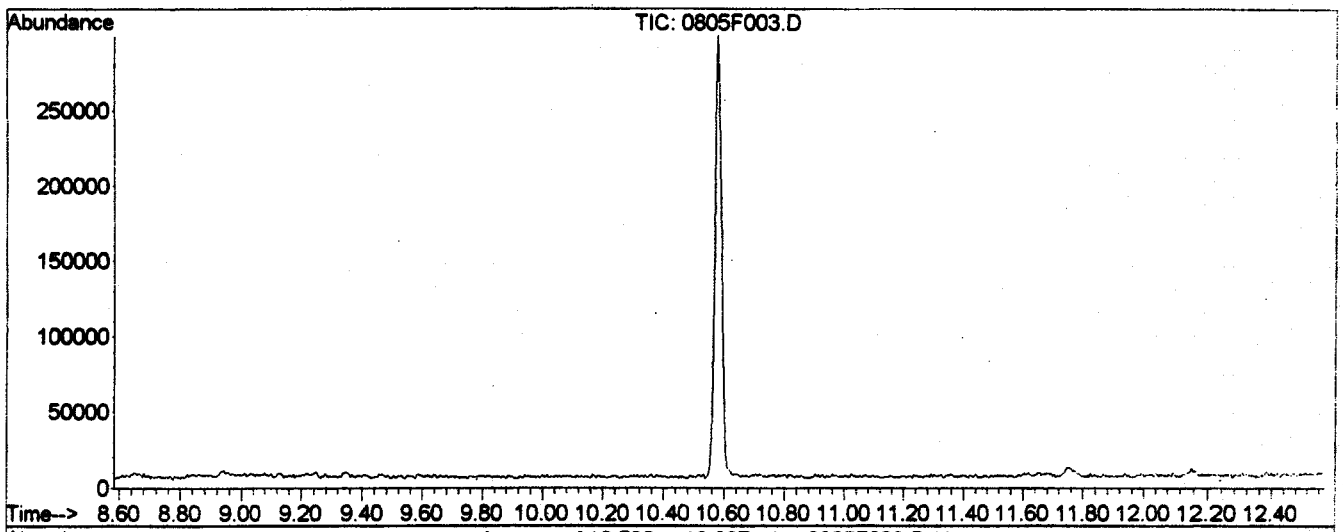
U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

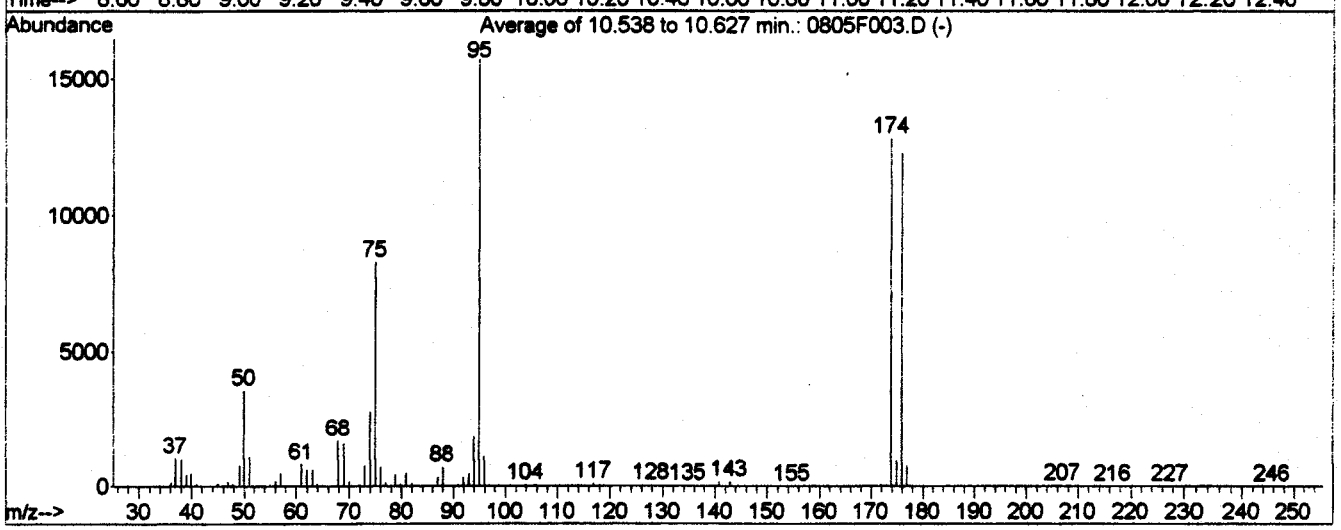
D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

BFB

Data File : J:\MS23\DATA\080511BAYW\0805F003.D Vial: 2
Acq On : 5 Aug 2011 9:39 am Operator: KR
Sample : BFB Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624





Spectrum Information: Average of 10.538 to 10.627 min. Whole peak - 1510 Scan

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	22.9	3605	PASS
75	95	30	60	52.6	8281	PASS
95	95	100	100	100.0	15745	PASS
96	95	5	9	6.9	1086	PASS
173	174	0.00	2	0.4	55	PASS
174	95	50	120	81.5	12835	PASS
175	174	5	9	7.4	953	PASS
176	174	95	101	95.5	12256	PASS
177	176	5	9	6.3	773	PASS

KR 8/9/11

NB 8/12/11

0805F003.D 032911624BAYW.M Mon Aug 08 15:24:32 2011

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1106869
Calibration Date: 03/29/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10443
Instrument ID: MS23

Column: MS

Level ID	File ID
A	J:\MS23\DATA\032911\0329F019.D
B	J:\MS23\DATA\032911\0329F020.D
C	J:\MS23\DATA\032911\0329F021.D
D	J:\MS23\DATA\032911\0329F022.D
E	J:\MS23\DATA\032911\0329F023.D
F	J:\MS23\DATA\032911\0329F026.D
G	J:\MS23\DATA\032911\0329F029.D
H	J:\MS23\DATA\032911BAYW\0329F016.D

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Vinyl Chloride	A	5.0	0.453	B	10	0.427	C	40	0.439	D	80	0.432	E	120	0.431
	F	0.50	0.446	G	1.0	0.330	H	0.25	0.279						
1,1-Dichloroethene	A	5.0	0.247	B	10	0.247	C	40	0.250	D	80	0.250	E	120	0.250
	F	0.50	0.257	G	1.0	0.190									
trans-1,2-Dichloroethene	A	5.0	0.253	B	10	0.244	C	40	0.253	D	80	0.257	E	120	0.257
	F	0.50	0.292	G	1.0	0.194									
1,1-Dichloroethane	A	5.0	0.511	B	10	0.494	C	40	0.511	D	80	0.516	E	120	0.512
	F	0.50	0.535	G	1.0	0.384									
cis-1,2-Dichloroethene	A	5.0	0.266	B	10	0.262	C	40	0.269	D	80	0.274	E	120	0.273
	F	0.50	0.326	G	1.0	0.208									
1,1,1-Trichloroethane (TCA)	A	5.0	0.431	B	10	0.416	C	40	0.433	D	80	0.433	E	120	0.436
	F	0.50	0.430	G	1.0	0.310									
Trichloroethene (TCE)	A	5.0	0.268	B	10	0.259	C	40	0.267	D	80	0.272	E	120	0.272
	F	0.50	0.303	G	1.0	0.218									
Tetrachloroethene (PCE)	A	5.0	0.489	B	10	0.472	C	40	0.484	D	80	0.505	E	120	0.516
	F	0.50	0.493	G	1.0	0.358									
Dibromofluoromethane	A	8.0	0.216	B	10	0.222	C	20	0.228	D	40	0.204	E	60	0.227
				G	6.0	0.201									
Toluene-d8	A	8.0	0.934	B	10	0.959	C	20	1.01	D	40	0.876	E	60	1.00
				G	6.0	0.888									
4-Bromofluorobenzene	A	8.0	0.813	B	10	0.829	C	20	0.859	D	40	0.791	E	60	0.870
				G	6.0	0.776									

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1106869
Calibration Date: 03/29/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10443
Instrument ID: MS23

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Vinyl Chloride	MS	AverageRF	% RSD	15.8		≤ 35	0.405		0.01
1,1-Dichloroethene	MS	AverageRF	% RSD	9.5		≤ 35	0.241		0.01
trans-1,2-Dichloroethene	MS	AverageRF	% RSD	11.6		≤ 35	0.250		0.01
1,1-Dichloroethane	MS	AverageRF	% RSD	10.1		≤ 35	0.495		0.01
cis-1,2-Dichloroethene	MS	AverageRF	% RSD	12.8		≤ 35	0.268		0.01
1,1,1-Trichloroethane (TCA)	MS	AverageRF	% RSD	11.1		≤ 35	0.413		0.01
Trichloroethene (TCE)	MS	AverageRF	% RSD	9.4		≤ 35	0.266		0.01
Tetrachloroethene (PCE)	MS	AverageRF	% RSD	11.2		≤ 35	0.474		0.01
Dibromofluoromethane	SURR	AverageRF	% RSD	5.3		≤ 35	0.216		0.01
Toluene-d8	SURR	AverageRF	% RSD	6.0		≤ 35	0.945		0.01
4-Bromofluorobenzene	SURR	AverageRF	% RSD	4.5		≤ 35	0.823		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1106869
Calibration Date: 03/29/2011
Date Analyzed: 03/30/2011

Second Source Calibration Verification
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 624

Calibration ID: CAL10443
Units: PPB

File ID: J:\MS23\DATA\032911\0329F032.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	11	0.405	0.448	11	NA	± 96 %	AverageRF
1,1-Dichloroethene	10	12	0.241	0.292	21	NA	± 49 %	AverageRF
trans-1,2-Dichloroethene	10	12	0.250	0.290	16	NA	± 30 %	AverageRF
1,1-Dichloroethane	10	12	0.495	0.571	15	NA	± 27 %	AverageRF
cis-1,2-Dichloroethene	10	11	0.268	0.292	9	NA	± 30 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	11	0.413	0.463	12	NA	± 25 %	AverageRF
Trichloroethene (TCE)	10	11	0.266	0.298	12	NA	± 33 %	AverageRF
Tetrachloroethene (PCE)	10	11	0.474	0.533	12	NA	± 26 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

BayWest ICAL

Date: 3/29/11

Columbia Analytical Services, Inc.

Injection Log

MS23 - Agilent 5973

By: KR

IS/SS Std. ID: LOW4-14E (4/11)

CCV Std ID: See prepared

MS/DMS/LCS/ICV Std ID: L

BFB Std. ID: 100ng - 1A 4/15

Tune File: BFB4

New Tune: yes

RUN #: — 10443

ICAL Date: 3/29/11 Cal ~~10403~~

Second RV: HB 3-31-11 HB

LIMS ID: — HB 4-20-11 4-20-11

	Sample Name	File Name	Method	Dilution	ml	R	Comments
1	BFB	0329F0013	8260.m	4.4µl→44ml			
2	IB	14 15					
3	624 Ical 0.25	16 15					
4	0.5	17 14					IB
5	1	18 17					NN
6	5	19 18					
7	10	20 19					
8	40	21 20					
9	80	22 21					
10	120	23 22					
11	IB	24 23					
12	IB	25 23					
13	624 Ical 0.5	26 25					
14	BFB	27 26		4.4µl→44ml			
15	IB	28 27					
16	624 Ical 1	29 28					
17	IB	30 29					
18	ICV	31					Mis-spiked 8260.6
19	ICV	32					
20							
21							
22							
23							
24							
25							
26							
27							

R:\VOA\Injection Logs\INJLOG_MS23_Rev1

Date 3/29/11
Prepared By KL

Analysis: 624
Instrument: M523
Matrix: Water

Stock Solution #1 60USA - 14D 4/5
Stock Solution #2 60USA - 13C 4/5
Stock Solution #3 60USA - 17A 5/29

Analytes: Surrogates 100ppm
Analytes: 624 50ppm
Analytes: Ketones 2000ppm

Aliquot of Stock Solution #1 (µL)	Final Conc. of #1 (µg/L)	Aliquot of Stock Solution #2 (µL)	Final Conc. of #2 (µg/L)	Aliquot of Stock Solution #3 (µL)	Final Conc. of #3 (µg/L)	Final Volume (mL)
		0.25	0.25			50
2.0	4.0	0.5	0.5	0.5	20	50
3.0	6.0	1	1	2	80	50
4.0	8.0	5.0	5	5	200	50
5.0	10.0	10	10	10	400	50
10.0	20	40	40	20	800	50
20	40	80	80	40	1600	50
30	60	120	120	60	2400	50

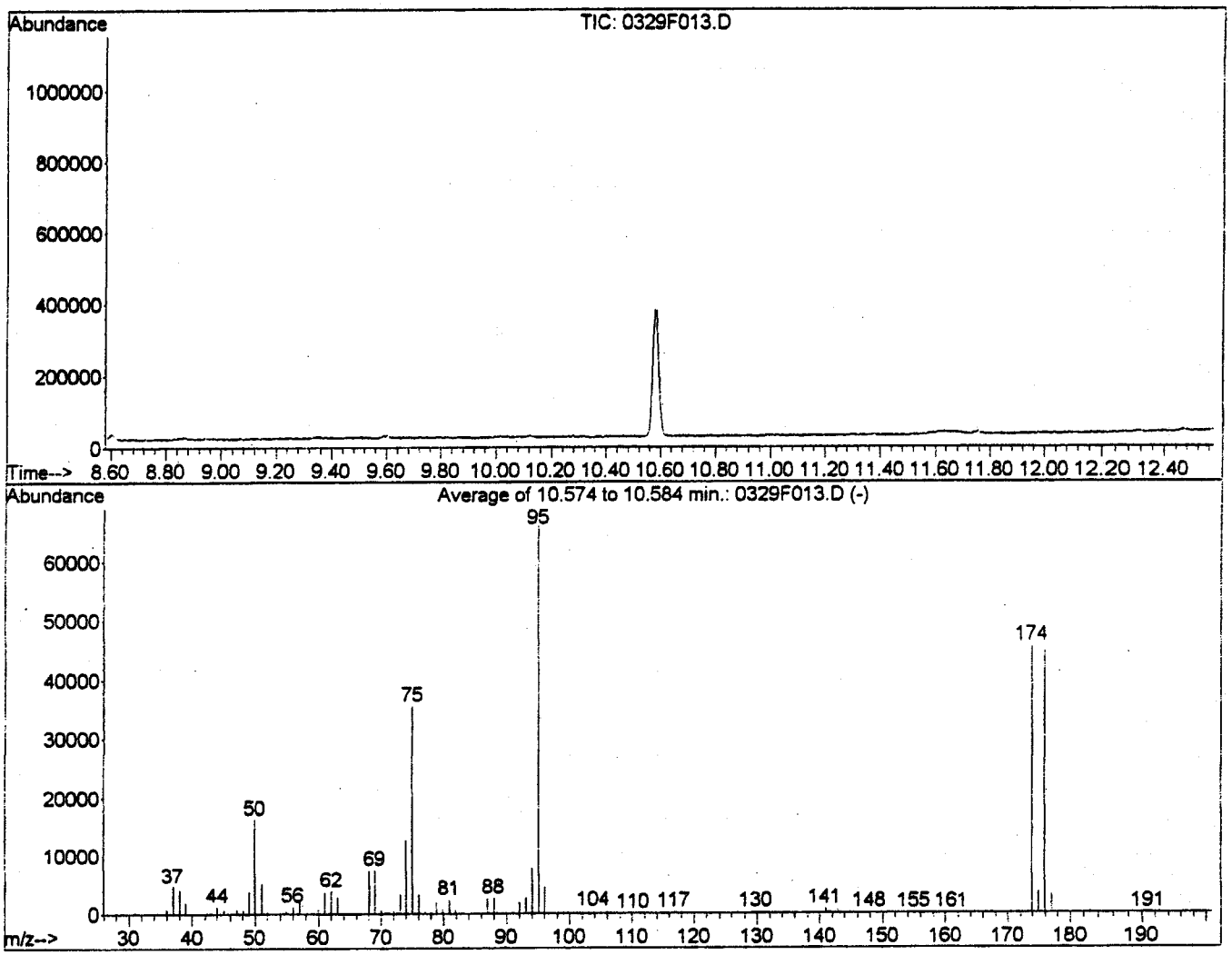
624 ICV: 20uL of 50/250ppm Accustd ICV (60USA - 12C 4/5) + 50uL of 100ppm Acrolein ICV (60USA-12D 4/5

10µL → 50mL 60USA - 12C 4/5 + 50µL 60USA-12D 4/5 → 50mL

BFB

Data File : J:\MS23\DATA\032911\0329F013.D
Acq On : 29 Mar 2011 1:21 pm
Sample : BFB
Misc :
MS Integration Params: rteint.p
Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624

Vial: 2
Operator: KR
Inst : MS23
Multiplr: 1.00



AutoFind: Scans 1861, 1862, 1863; Background Corrected with Scan 1852

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	24.6	16321	PASS
75	95	30	60	53.6	35557	PASS
95	95	100	100	100.0	66330	PASS
96	95	5	9	6.9	4574	PASS
173	174	0.00	2	0.7	334	PASS
174	95	50	120	68.8	45626	PASS
175	174	5	9	7.6	3488	PASS
176	174	95	101	98.5	44920	PASS
177	176	5	9	6.8	3050	PASS

KR 3/30/11
TB 3/31/11

0329F013.D 032911624.M Tue Mar 29 14:40:42 2011

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\032911\0329F014.D
Acq On : 29 Mar 2011 1:51 pm
Sample : IB
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 29 14:42:13 2011

Vial: 3
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: 032911624.RES

Quant Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration
DataAcq Meth : 8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	5.94	96	564765	10.00	PPB	0.00
35) Chlorobenzene-d5	9.34	82	230878	10.00	PPB	0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	187002	10.00	PPB	0.00
System Monitoring Compounds						
22) Dibromofluoromethane	0.00	113	0	0.00	PPB	
Spiked Amount 10.000			Recovery	=	0.00%	
24) 1,2-Dichloroethane-d4	0.00	65	0	0.00	PPB	
Spiked Amount 10.000			Recovery	=	0.00%	
33) Toluene-d8	0.00	98	0d	0.00	PPB	
Spiked Amount 10.000			Recovery	=	0.00%	
47) 4-Bromofluorobenzene	10.58	95	639	0.04	PPB	0.00
Spiked Amount 10.000			Recovery	=	0.40%	
Target Compounds						Qvalue
13) Methylene Chloride	2.98	84	1327	0.09	PPB	# 40

KT 3/31/11
HB 3/31/11

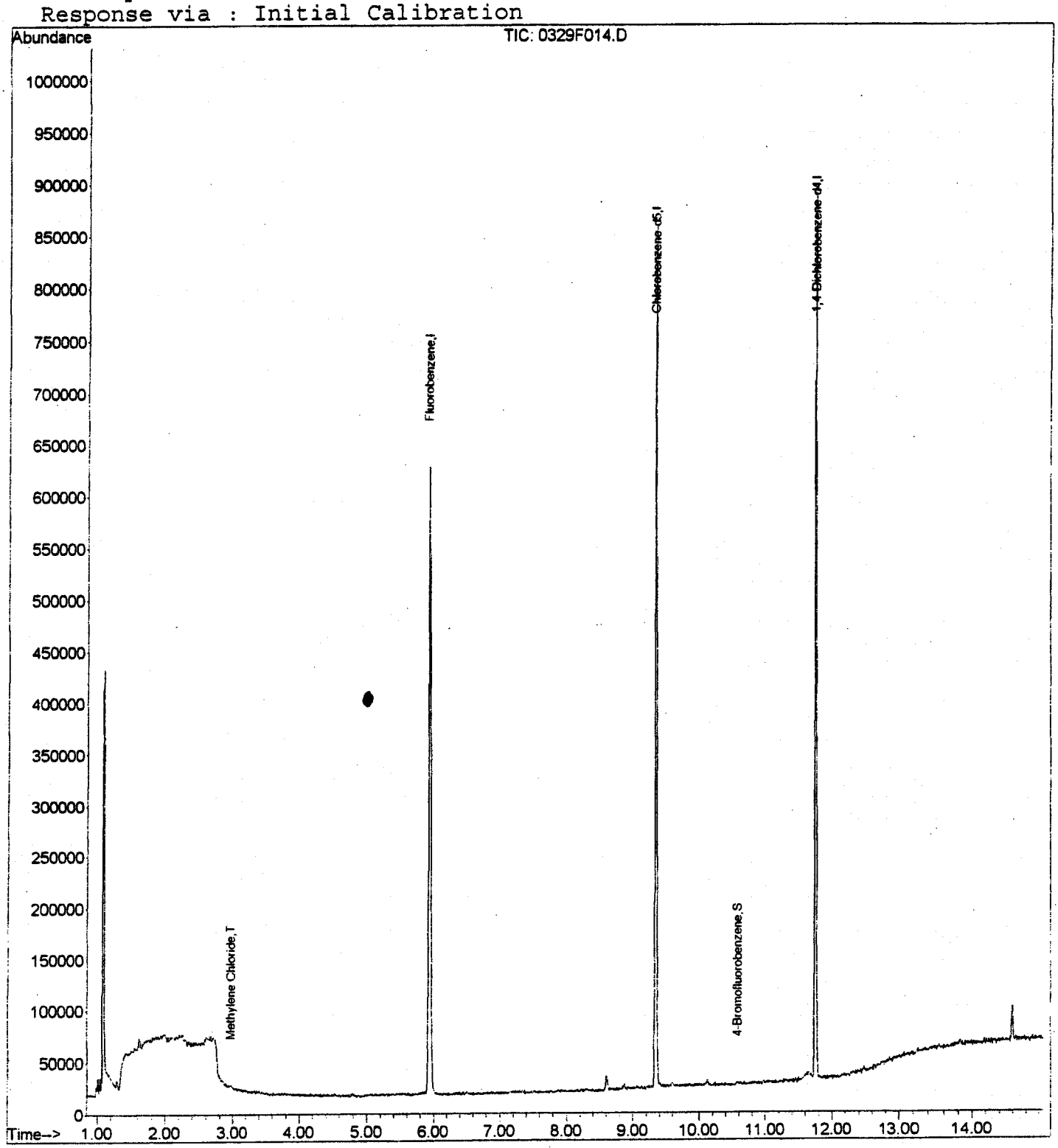
(#) = qualifier out of range (m) = manual integration
0329F014.D 032911624.M Tue Mar 29 14:57:08 2011

Data File : J:\MS23\DATA\032911\0329F014.D
Acq On : 29 Mar 2011 1:51 pm
Sample : IB
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 29 14:57 2011

Vial: 3
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: 032911624.RE

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\032911BAYW\0329F016.D
Acq On : 29 Mar 2011 2:27 pm
Sample : 624 ICAL 0.25
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 29 14:57:34 2011

Vial: 4
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624.RES

Quant Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration
DataAcq Meth : 8260

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorobenzene	5.94	96	559261	10.00 PPB	0.00
35) Chlorobenzene-d5	9.35	82	226331	10.00 PPB	0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	183961	10.00 PPB	0.00
System Monitoring Compounds					
22) Dibromofluoromethane	0.00	113	0	0.00 PPB	
Spiked Amount 10.000			Recovery	= 0.00%	
24) 1,2-Dichloroethane-d4	0.00	65	0	0.00 PPB	
Spiked Amount 10.000			Recovery	= 0.00%	
33) Toluene-d8	0.00	98	0d	0.00 PPB	
Spiked Amount 10.000			Recovery	= 0.00%	
47) 4-Bromofluorobenzene	0.00	95	0d	0.00 PPB	
Spiked Amount 10.000			Recovery	= 0.00%	
Target Compounds					Qvalue
4) Vinyl Chloride	1.43	62	3895m	0.17 PPB	
8) Acrolein	2.41	56	7691	5.16 PPB	100

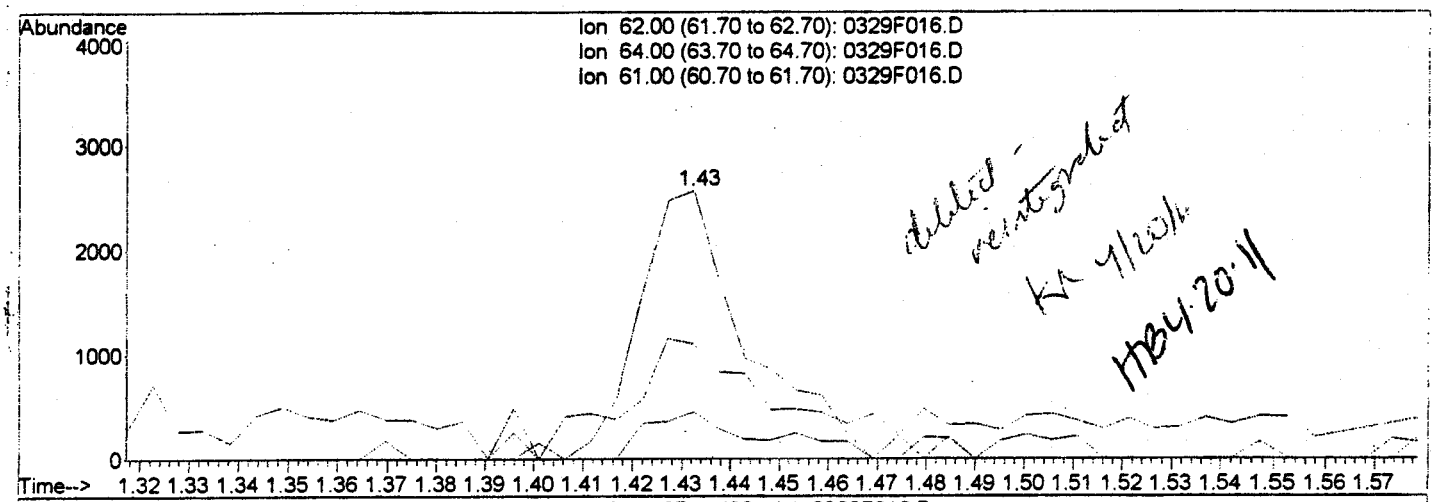
KR 4/20/11
HBU 4-20-11

(#) = qualifier out of range (m) = manual integration
0329F016.D 032911624.M Wed Apr 20 12:43:16 2011

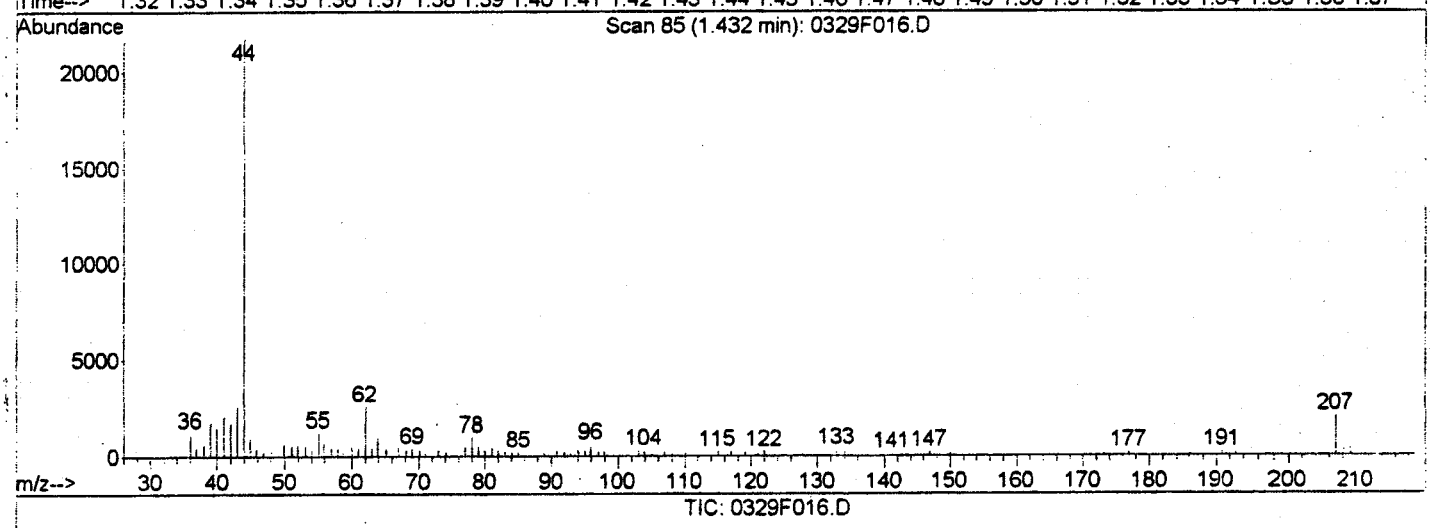
Quantitation Report (Qedit)

Data File : J:\MS23\DATA\032911BAYW\0329F016.D Vial: 4
Acq On : 29 Mar 2011 2:27 pm Operator: KR
Sample : 624 ICAL 0.25 Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Apr 20 12:43 2011 Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 09:07:41 2011
Response via : Multiple Level Calibration



deleted - reintegrated KR 4/20/11 4/20/11



(4) Vinyl Chloride (CT)

1.43min 0.17PPB m

response 3895

Ion	Exp%	Act%
62.00	100	100
64.00	31.20	42.83
61.00	8.80	17.52
0.00	0.00	0.00

0329F016.D 032911624.M Wed Apr 20 12:43:11 2011

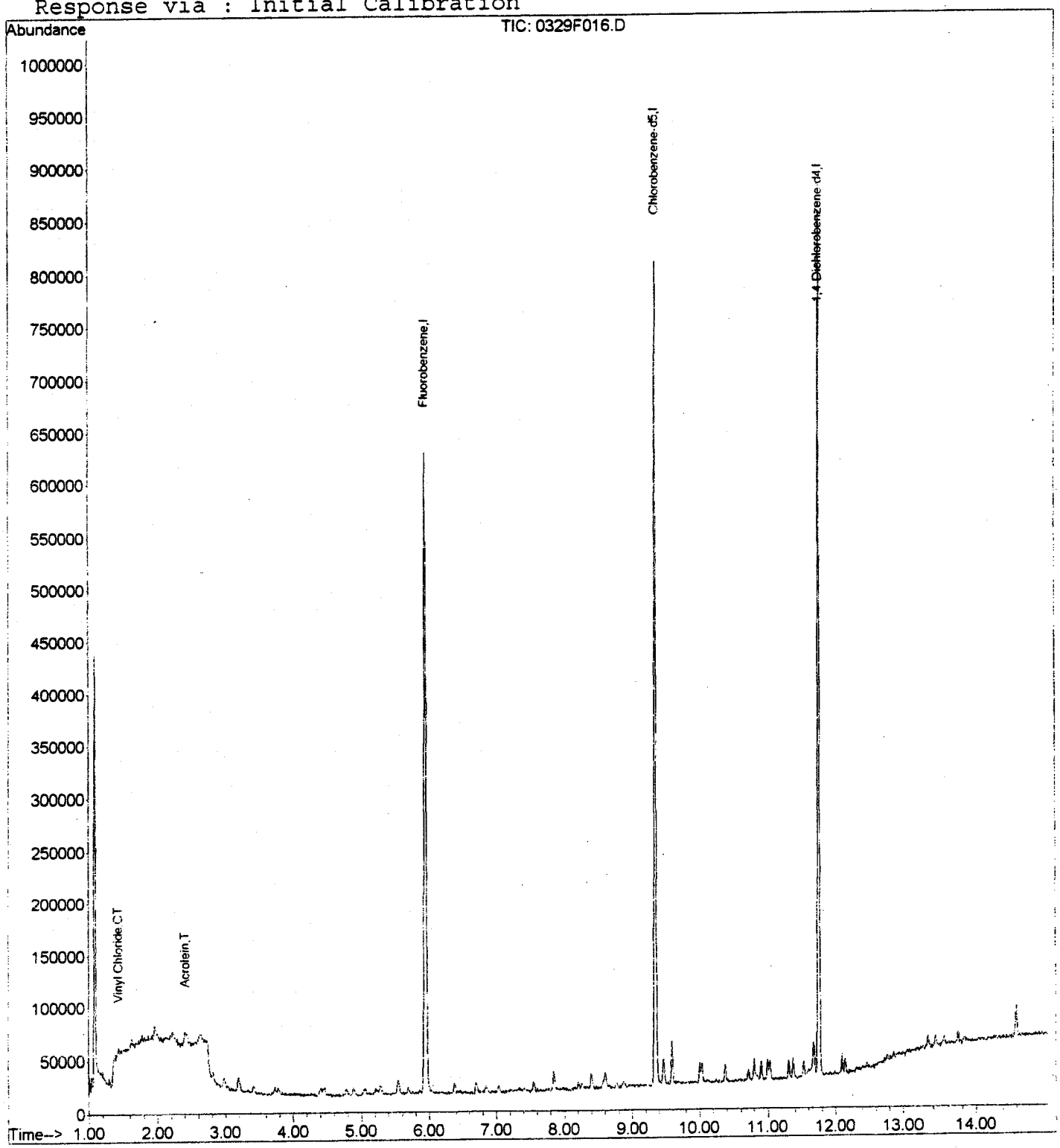
Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\032911BAYW\0329F016.D
Acq On : 29 Mar 2011 2:27 pm
Sample : 624 ICAL 0.25
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 20 12:43 2011

Vial: 4
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: 032911624.RE

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 09:07:41 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\032911\0329F017.D
Acq On : 29 Mar 2011 3:02 pm
Sample : 624 ICAL 0.5
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 29 15:34:41 2011

Vial: 5
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624.RES

Quant Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration
DataAcq Meth : 8260

KR 3/29/11 NA

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Fluorobenzene	5.94	96	561305	10.00	PPB		0.00
35) Chlorobenzene-d5	9.35	82	228570	10.00	PPB		0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	186176	10.00	PPB		0.00
System Monitoring Compounds							
22) Dibromofluoromethane	5.12	113	47747	3.82	PPB		0.00
Spiked Amount 10.000			Recovery	=	38.20%		
24) 1,2-Dichloroethane-d4	5.59	65	61526	3.67	PPB		0.00
Spiked Amount 10.000			Recovery	=	36.70%		
33) Toluene-d8	7.77	98	198805	3.92	PPB		0.00
Spiked Amount 10.000			Recovery	=	39.20%		
47) 4-Bromofluorobenzene	10.58	95	71083	4.02	PPB		0.00
Spiked Amount 10.000			Recovery	=	40.20%		
Target Compounds							Qvalue
2) Dichlorodifluoromethane	1.20	85	7348	0.33	PPB		92
3) Chloromethane	1.35	50	10831	0.46	PPB		90
4) Vinyl Chloride	1.43	62	8311	0.36	PPB		96
6) Chloroethane	1.79	49	1870	0.49	PPB	#	63
7) Trichlorofluoromethane	1.96	101	9122	0.33	PPB		95
8) Acrolein	2.41	56	11853	7.92	PPB		93
9) Trichlorotrifluoroethane	2.41	151	4024	0.40	PPB		94
10) 1,1-Dichloroethene	2.44	96	5802	0.50	PPB	#	81
11) Acetone	2.56	43	53020	20.07	PPB		99
12) Carbon Disulfide	2.63	76	21153	0.46	PPB		98
13) Methylene Chloride	2.98	84	7530	0.51	PPB		86
14) Acrylonitrile	3.32	53	1947	0.55	PPB	#	70
15) trans-1,2-Dichloroethene	3.20	96	5840	0.41	PPB		79
16) 1,1-Dichloroethane	3.72	63	10513	0.37	PPB		92
17) Vinyl Acetate	3.79	86	1361	0.82	PPB	#	20
18) cis-1,2-Dichloroethene	4.46	96	5013	0.33	PPB		99
19) 2-Butanone	4.52	72	14005	15.87	PPB		94
20) Chloroform	4.88	83	9382	0.37	PPB		95
21) 1,1,1-Trichloroethane	5.05	97	8206	0.40	PPB		96
23) Carbon Tetrachloride	5.21	117	6302	0.43	PPB		87
25) Benzene	5.54	78	21429	0.36	PPB		96
26) 1,2-Dichloroethane	5.69	62	6506	0.33	PPB		87
27) Trichloroethene	6.37	95	5304	0.36	PPB		91
28) 1,2-Dichloropropane	6.71	63	5747	0.37	PPB		93
29) Bromodichloromethane	7.03	83	6139	0.37	PPB		88
30) 2-Chloroethyl Vinyl Ether	7.42	63	1705	0.27	PPB		88
31) cis-1,3-Dichloropropene	7.55	75	7064	0.34	PPB		94

(#) = qualifier out of range (m) = manual integration

HB 3-31-11

Data File : J:\MS23\DATA\032911\0329F017.D
Acq On : 29 Mar 2011 3:02 pm
Sample : 624 ICAL 0.5
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 29 15:34:41 2011

Vial: 5
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: 032911624.RES

Quant Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration
DataAcq Meth : 8260

Compound	R.T.	QIon	Response	Conc Unit	Qvalue
32) 4-Methyl-2-pentanone (MIBK	8.65	58	45365	16.08 PPB	96
34) Toluene	7.84	92	12727	0.36 PPB	93
36) trans-1,3-Dichloropropene	8.21	75	5837	0.36 PPB	90
37) 1,1,2-Trichloroethane	8.39	83	2875	0.36 PPB	91
38) Tetrachloroethene	8.40	164	3799	0.38 PPB	90
39) 2-Hexanone	8.65	43	100804	17.64 PPB	99
40) Dibromochloromethane	8.77	129	3001	0.36 PPB	94
41) Chlorobenzene	9.38	112	12660	0.36 PPB	88
42) Ethylbenzene	9.47	106	6537	0.34 PPB	93
43) m,p-Xylenes	9.60	106	16867	0.71 PPB	87
44) o-Xylene	10.01	106	8641	0.39 PPB	89
45) Styrene	10.04	103	6668m	0.39 PPB	
46) Bromoform	10.25	173	1503	0.41 PPB	91
49) 1,1,2,2-Tetrachloroethane	10.78	83	3221	0.36 PPB	91
51) 1,3-Dichlorobenzene	11.67	146	8500	0.35 PPB	97
52) 1,4-Dichlorobenzene	11.78	146	9150	0.37 PPB	95
53) 1,2-Dichlorobenzene	12.14	146	7351	0.33 PPB	97

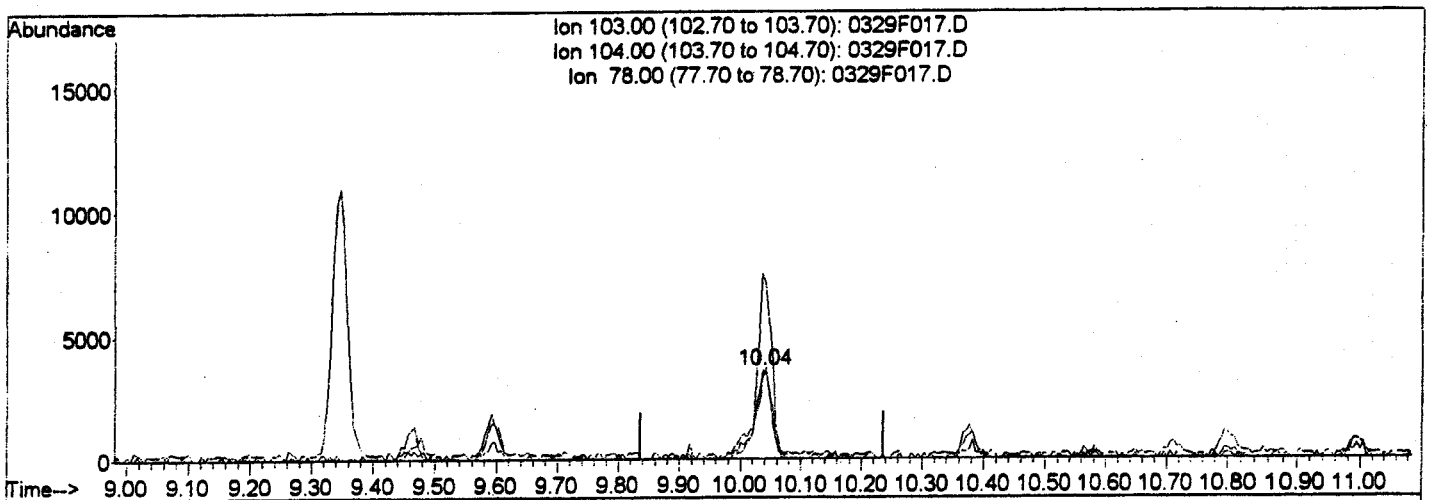
(#) = qualifier out of range (m) = manual integration

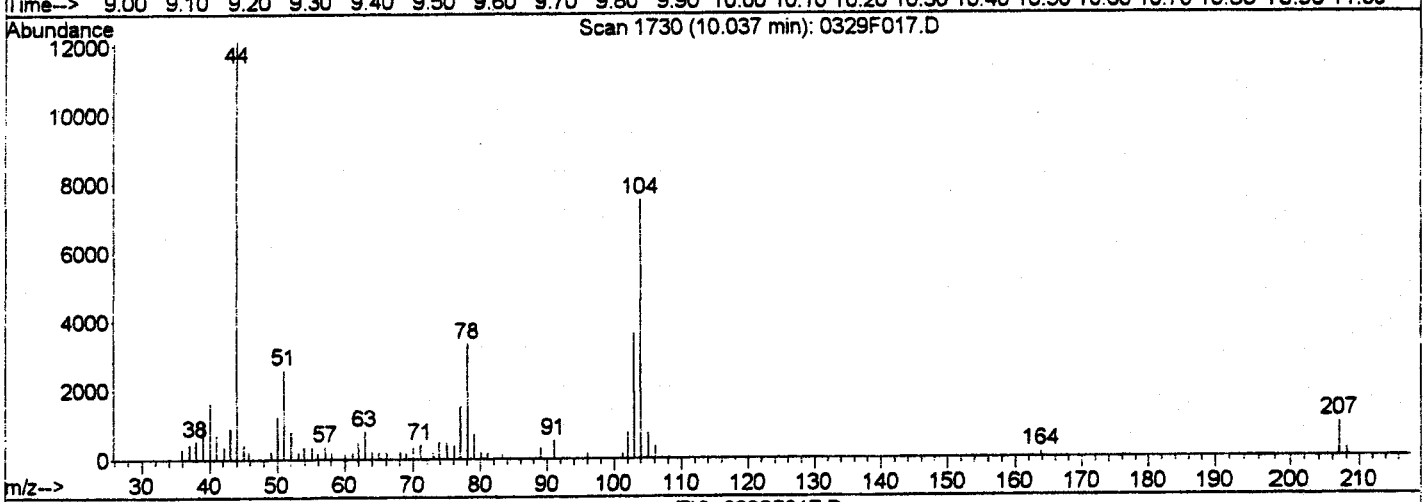
Quantitation Report (Qedit)

Data File : J:\MS23\DATA\032911\0329F017.D
Acq On : 29 Mar 2011 3:02 pm
Sample : 624 ICAL 0.5
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 29 15:34 2011

Vial: 5
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Multiple Level Calibration





TIC: 0329F017.D

(45) Styrene (T)

10.04min 0.42PPB

response 7261

Ion	Exp%	Act%
103.00	100	100
104.00	214.60	207.96
78.00	96.70	85.81
0.00	0.00	0.00

0329F017.D 032911624.M Tue Mar 29 15:35:25 2011

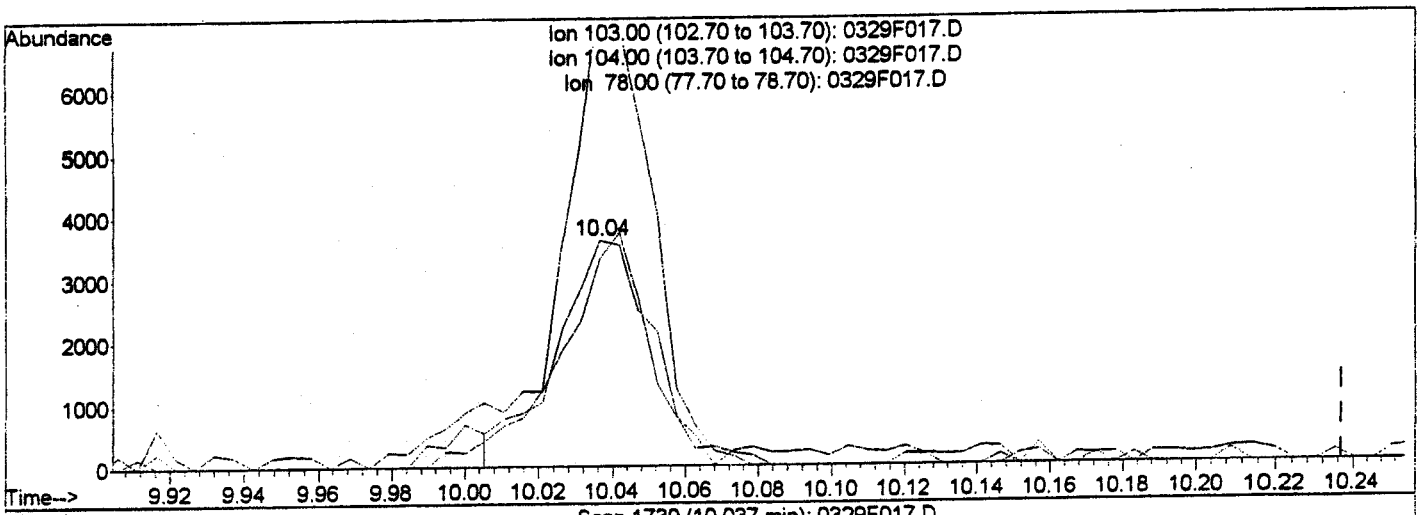
Quantitation Report (Qedit)

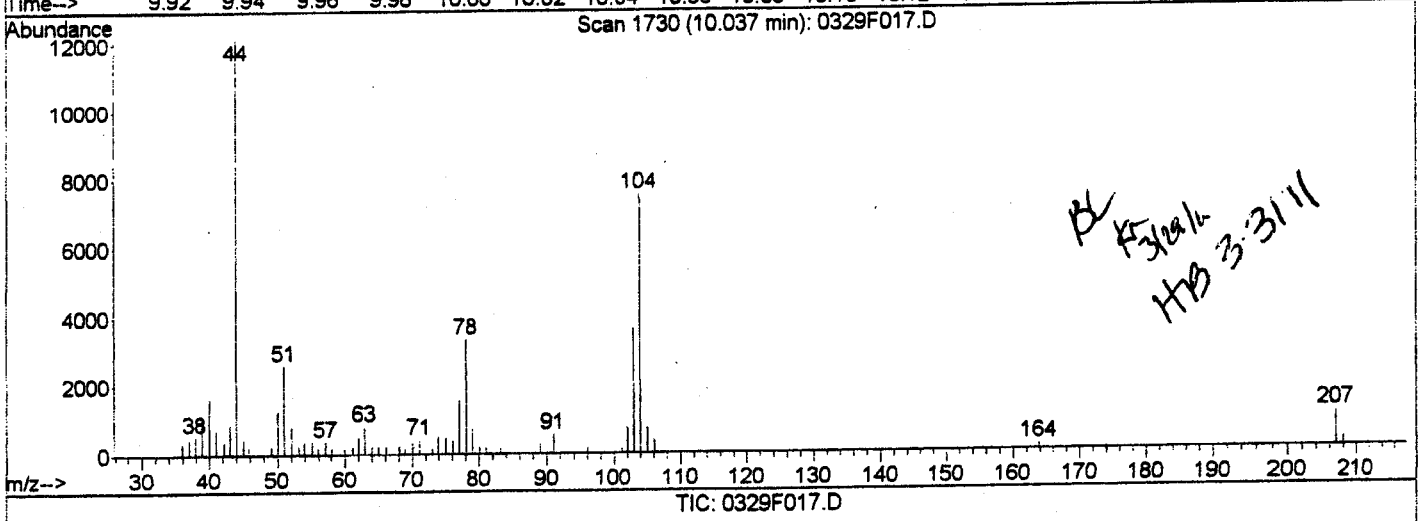
Data File : J:\MS23\DATA\032911\0329F017.D
Acq On : 29 Mar 2011 3:02 pm
Sample : 624 ICAL 0.5
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 29 15:35 2011

Vial: 5
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Multiple Level Calibration





BL 4/28/11
HB 3/31/11

(45) Styrene (T)

10.04min 0.39PPB m

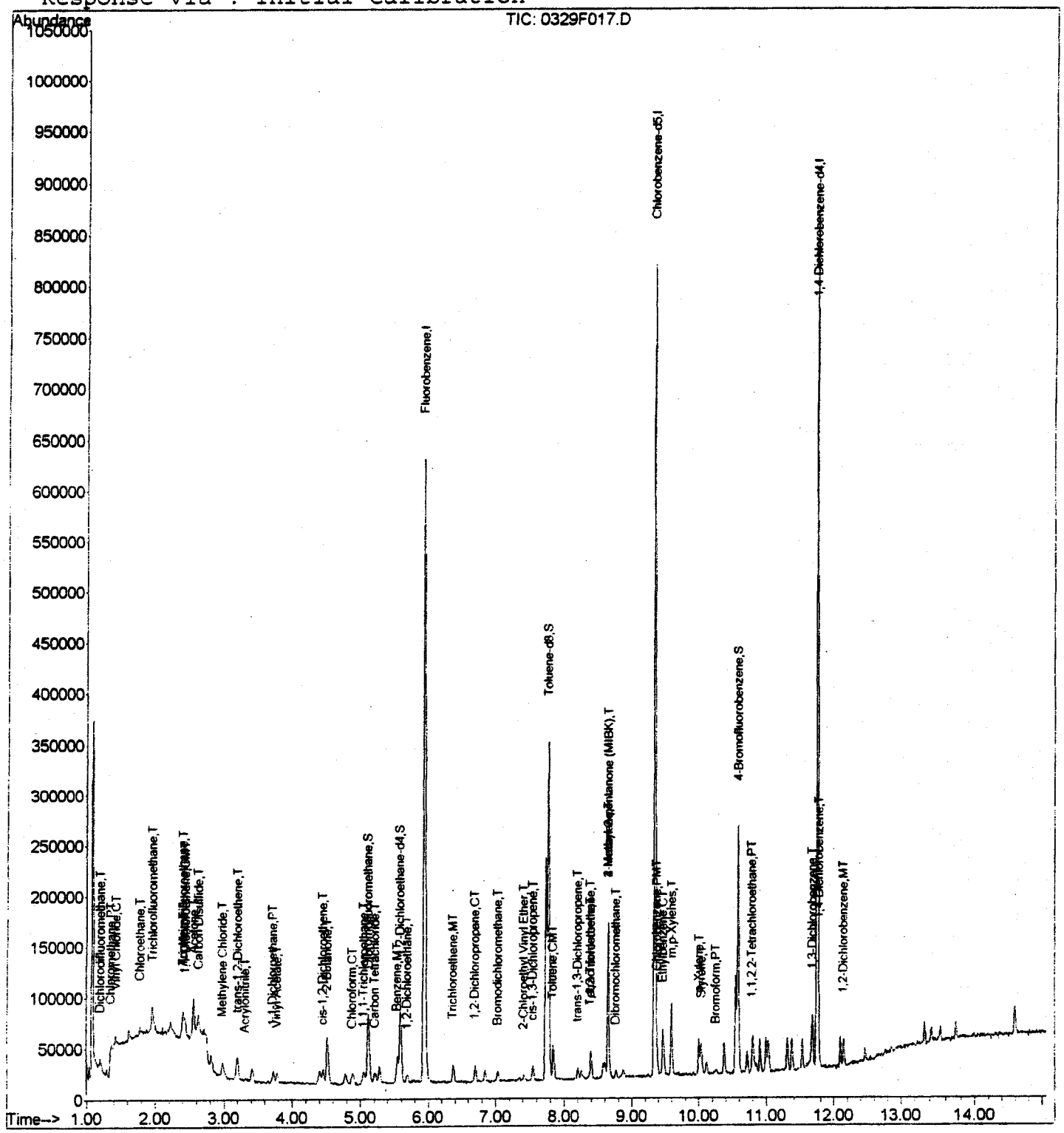
response 6668

Ion	Exp%	Act%
103.00	100	100
104.00	214.60	207.96
78.00	96.70	91.95
0.00	0.00	0.00

Data File : J:\MS23\DATA\032911\0329F017.D
Acq On : 29 Mar 2011 3:02 pm
Sample : 624 ICAL 0.5
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 29 15:35 2011

Vial: 5
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624.RE

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\032911\0329F018.D
Acq On : 29 Mar 2011 3:32 pm
Sample : 624 ICAL 1
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 29 16:32:20 2011

Vial: 6
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: 032911624.RES

Quant Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration
DataAcq Meth : 8260

KR 3/29/11 NN

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	5.94	96	558859	10.00	PPB	0.00
35) Chlorobenzene-d5	9.35	82	226918	10.00	PPB	0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	186274	10.00	PPB	0.00
System Monitoring Compounds						
22) Dibromofluoromethane	5.11	113	69055	5.55	PPB	0.00
Spiked Amount 10.000			Recovery	=	55.50%	
24) 1,2-Dichloroethane-d4	5.59	65	92548	5.55	PPB	0.01
Spiked Amount 10.000			Recovery	=	55.50%	
33) Toluene-d8	7.77	98	283019	5.60	PPB	0.00
Spiked Amount 10.000			Recovery	=	56.00%	
47) 4-Bromofluorobenzene	10.58	95	107414	6.12	PPB	0.00
Spiked Amount 10.000			Recovery	=	61.20%	

Target Compounds							Qvalue
2) Dichlorodifluoromethane	1.20	85	20449	0.93	PPB		94
3) Chloromethane	1.35	50	29515	1.26	PPB		94
4) Vinyl Chloride	1.43	62	23758	1.03	PPB		96
5) Bromomethane	1.71	96	3050m	0.38	PPB		
6) Chloroethane	1.79	49	4120	1.08	PPB		94
7) Trichlorofluoromethane	1.96	101	27367	1.01	PPB		99
8) Acrolein	2.41	56	37021	24.86	PPB		94
9) Trichlorotrifluoroethane	2.40	151	12188	1.23	PPB		96
10) 1,1-Dichloroethene	2.44	96	13032	1.13	PPB		95
11) Acetone	2.56	43	170734	64.93	PPB		93
12) Carbon Disulfide	2.63	76	55746	1.21	PPB		97
13) Methylene Chloride	2.97	84	15517	1.05	PPB		90
14) Acrylonitrile	3.33	53	5255	1.49	PPB		92
15) trans-1,2-Dichloroethene	3.20	96	14035	1.00	PPB		96
16) 1,1-Dichloroethane	3.73	63	28351	1.01	PPB		98
17) Vinyl Acetate	3.79	86	3479	2.11	PPB	#	60
18) cis-1,2-Dichloroethene	4.46	96	16483	1.08	PPB		84
19) 2-Butanone	4.51	72	49673	56.55	PPB		93
20) Chloroform	4.88	83	26624	1.04	PPB		99
21) 1,1,1-Trichloroethane	5.06	97	23726	1.16	PPB		88
23) Carbon Tetrachloride	5.21	117	17434	1.20	PPB		95
25) Benzene	5.54	78	61892	1.04	PPB		98
26) 1,2-Dichloroethane	5.69	62	19511	1.00	PPB		97
27) Trichloroethene	6.37	95	15363	1.05	PPB		90
28) 1,2-Dichloropropane	6.70	63	16986	1.09	PPB		94
29) Bromodichloromethane	7.03	83	20396	1.24	PPB		92
30) 2-Chloroethyl Vinyl Ether	7.42	63	6234	1.01	PPB		93

HB 3-31-11

(#) = qualifier out of range (m) = manual integration

Data File : J:\MS23\DATA\032911\0329F018.D
Acq On : 29 Mar 2011 3:32 pm
Sample : 624 ICAL 1
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 29 16:32:20 2011

Vial: 6
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624.RES

Quant Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration
DataAcq Meth : 8260

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
31)	cis-1,3-Dichloropropene	7.55	75	24101	1.18 PPB	92
32)	4-Methyl-2-pentanone (MIBK	8.65	58	171771	61.17 PPB	99
34)	Toluene	7.84	92	38877	1.11 PPB	97
36)	trans-1,3-Dichloropropene	8.21	75	20827	1.28 PPB	89
37)	1,1,2-Trichloroethane	8.39	83	9680	1.21 PPB	90
38)	Tetrachloroethene	8.40	164	10967	1.11 PPB	96
39)	2-Hexanone	8.65	43	368490	64.94 PPB	98
40)	Dibromochloromethane	8.76	129	12180	1.47 PPB	99
41)	Chlorobenzene	9.38	112	44466	1.28 PPB	97
42)	Ethylbenzene	9.47	106	22785	1.19 PPB	95
43)	m,p-Xylenes	9.60	106	57047	2.42 PPB	94
44)	o-Xylene	10.01	106	28039	1.26 PPB	97
45)	Styrene	10.04	103	20711m	1.22 PPB	
46)	Bromoform	10.24	173	6042	1.64 PPB	97
49)	1,1,2,2-Tetrachloroethane	10.78	83	12400	1.38 PPB	95
51)	1,3-Dichlorobenzene	11.67	146	34744	1.42 PPB	99
52)	1,4-Dichlorobenzene	11.78	146	33563	1.35 PPB	93
53)	1,2-Dichlorobenzene	12.15	146	29965	1.35 PPB	94

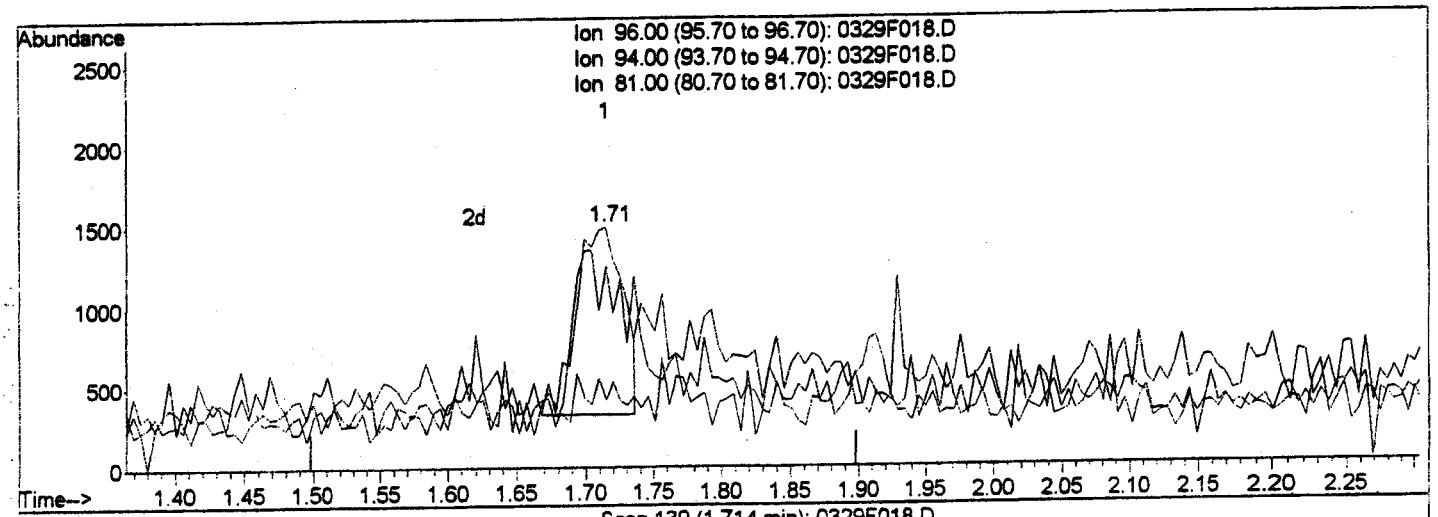
(#) = qualifier out of range (m) = manual integration

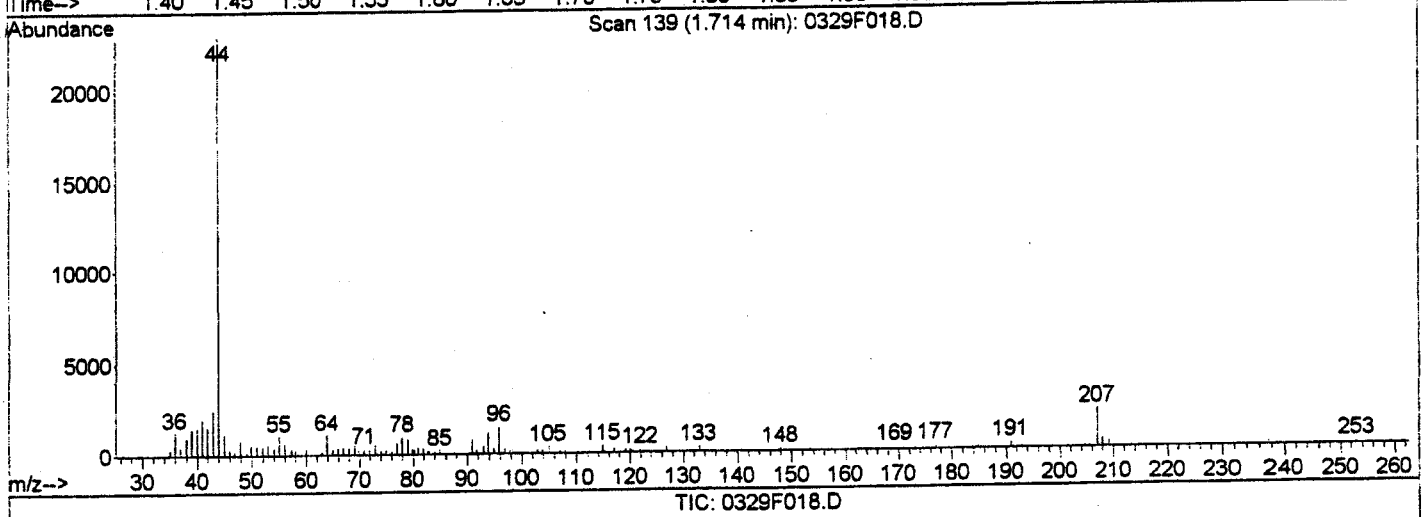
Data File : J:\MS23\DATA\032911\0329F018.D
Acq On : 29 Mar 2011 3:32 pm
Sample : 624 ICAL 1
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 29 16:32 2011

Vial: 6
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Multiple Level Calibration





TIC: 0329F018.D

(5) Bromomethane (T)

1.71min 0.35PPB

response 2805

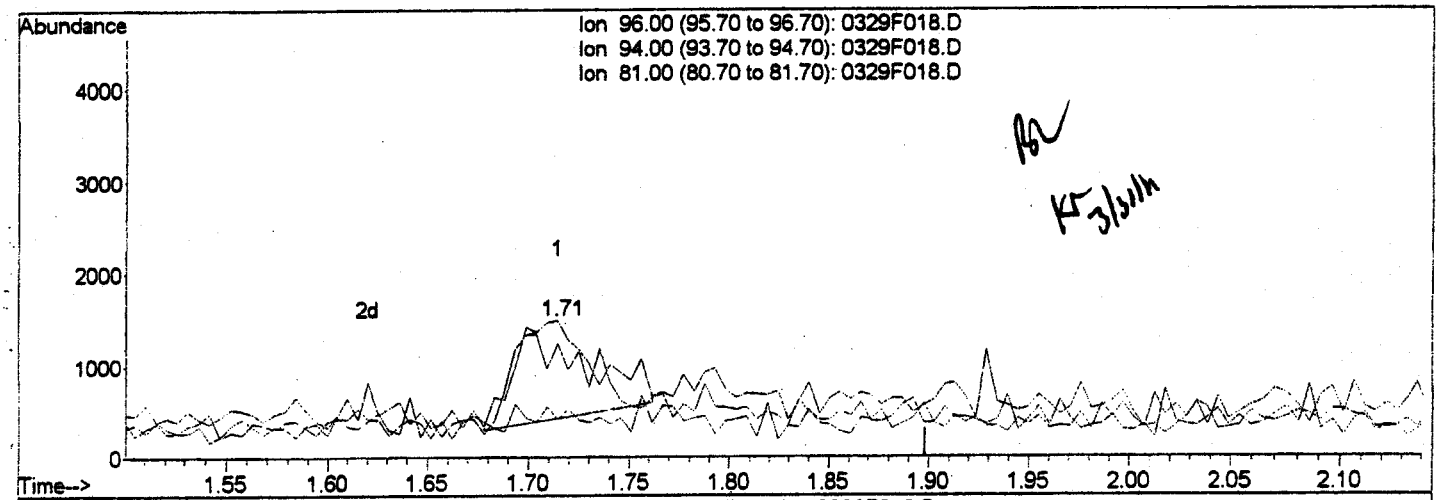
Ion	Exp%	Act%
96.00	100	100
94.00	101.70	72.08
81.00	14.70	2.58
0.00	0.00	0.00

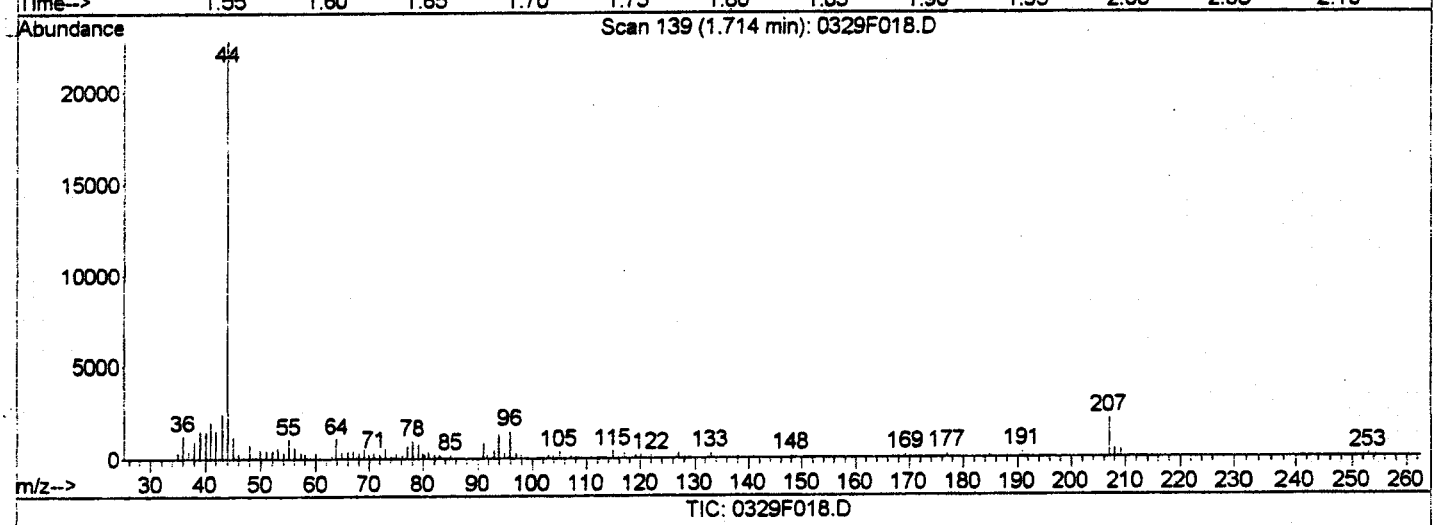
0329F018.D 032911624.M Tue Mar 29 16:32:42 2011

Data File : J:\MS23\DATA\032911\0329F018.D
Acq On : 29 Mar 2011 3:32 pm
Sample : 624 ICAL 1
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 29 16:32 2011

Vial: 6
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Multiple Level Calibration





(5) Bromomethane (T)

1.71min 0.38PPB m

response 3050

Ion	Exp%	Act%
96.00	100	100
94.00	101.70	83.90
81.00	14.70	28.03
0.00	0.00	0.00

HB 3 31 11

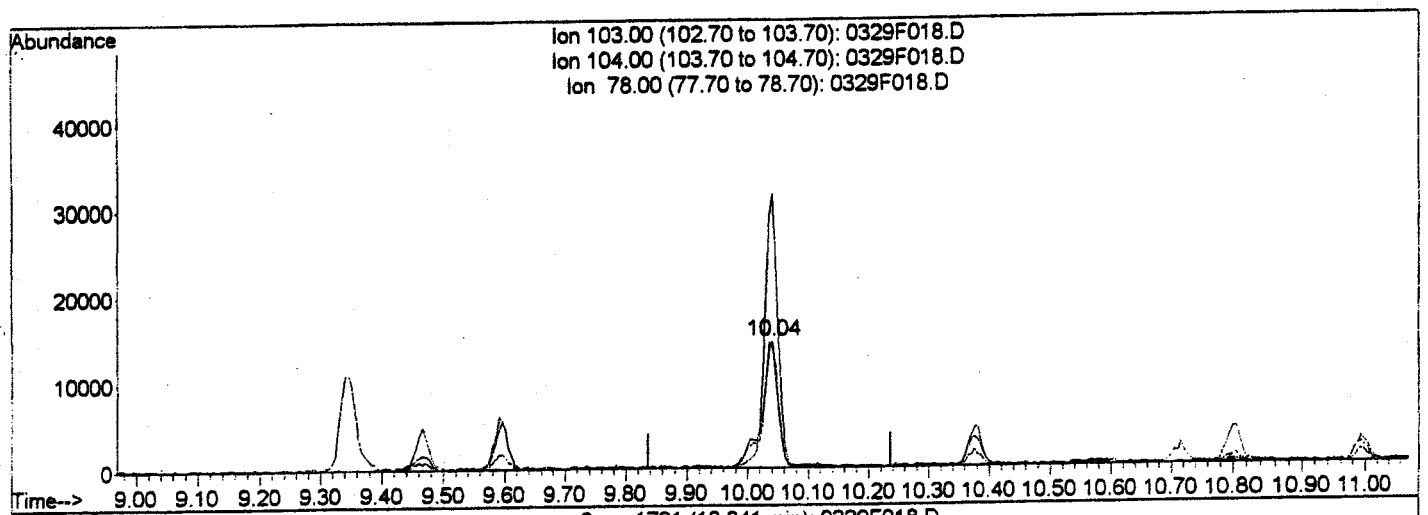
0329F018.D 032911624.M Tue Mar 29 16:32:58 2011

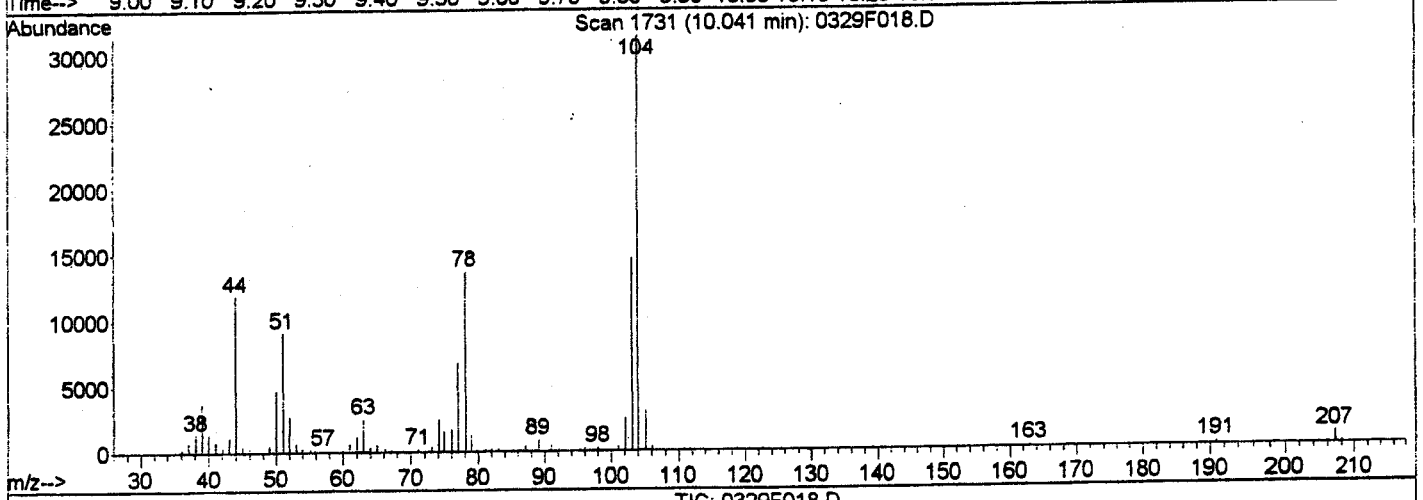
Data File : J:\MS23\DATA\032911\0329F018.D
Acq On : 29 Mar 2011 3:32 pm
Sample : 624 ICAL 1
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 29 16:32 2011

Vial: 6
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Multiple Level Calibration





TIC: 0329F018.D

(45) Styrene (T)

10.04min 1.50PPB

response 25546

Ion	Exp%	Act%
103.00	100	100
104.00	214.60	214.10
78.00	96.70	93.43
0.00	0.00	0.00

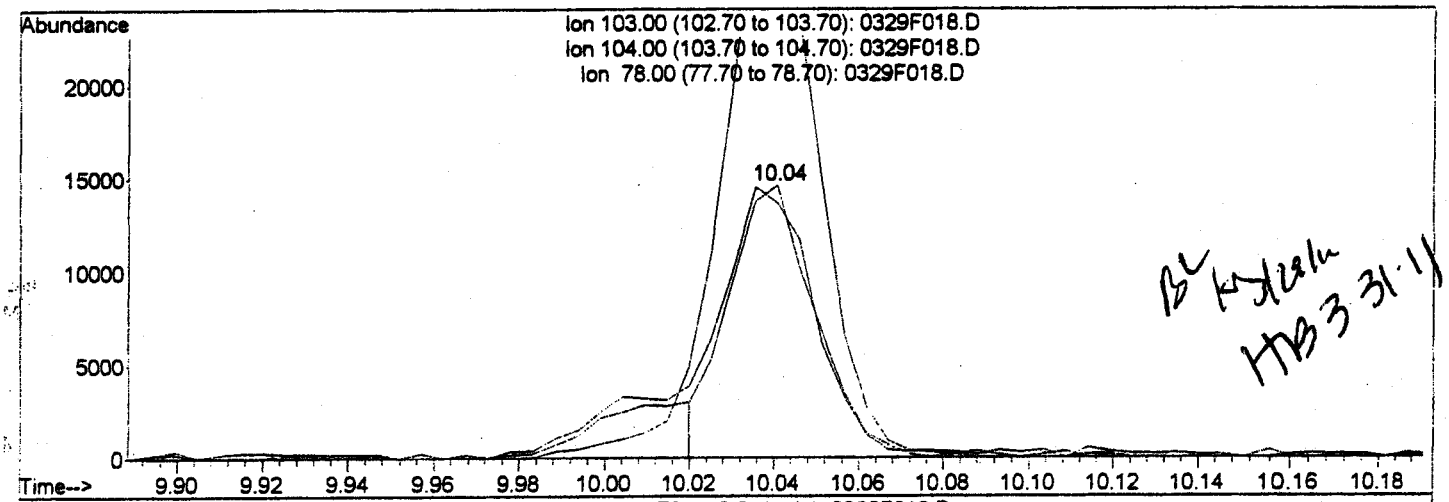
0329F018.D 032911624.M Tue Mar 29 16:33:29 2011

Quantification Report (Quant)

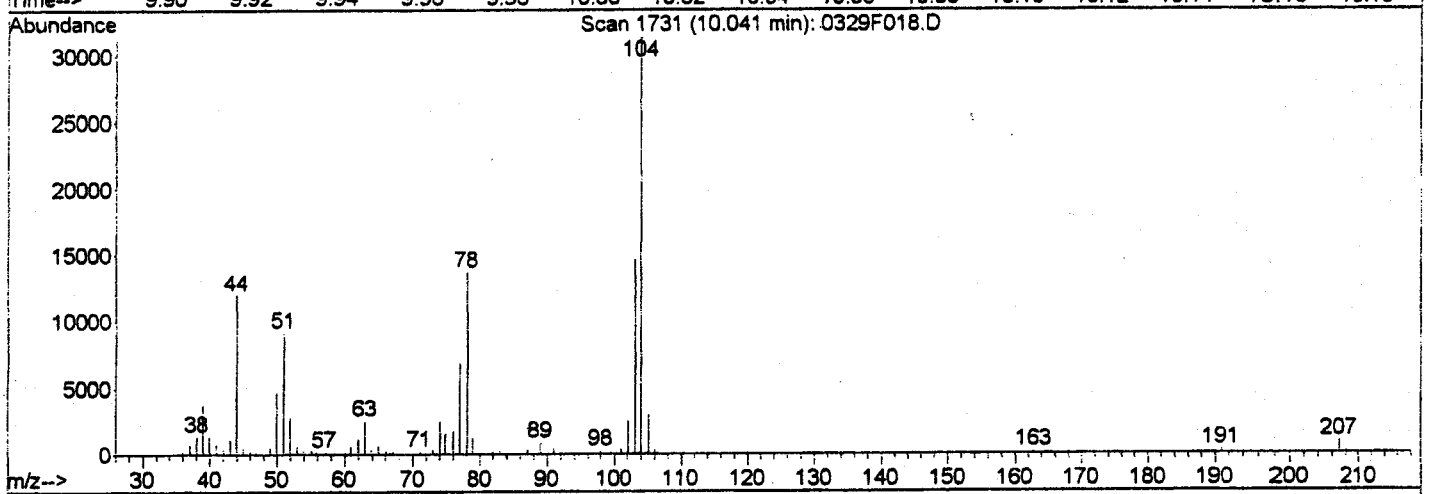
Data File : J:\MS23\DATA\032911\0329F018.D
Acq On : 29 Mar 2011 3:32 pm
Sample : 624 ICAL 1
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 29 16:33 2011

Vial: 6
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Multiple Level Calibration



BL 4/28/11
HB3 31.11



TIC: 0329F018.D

(45) Styrene (T)

10.04min 1.22PPB m

response 20711

Ion	Exp%	Act%
103.00	100	100
104.00	214.60	215.24
78.00	96.70	93.43
0.00	0.00	0.00

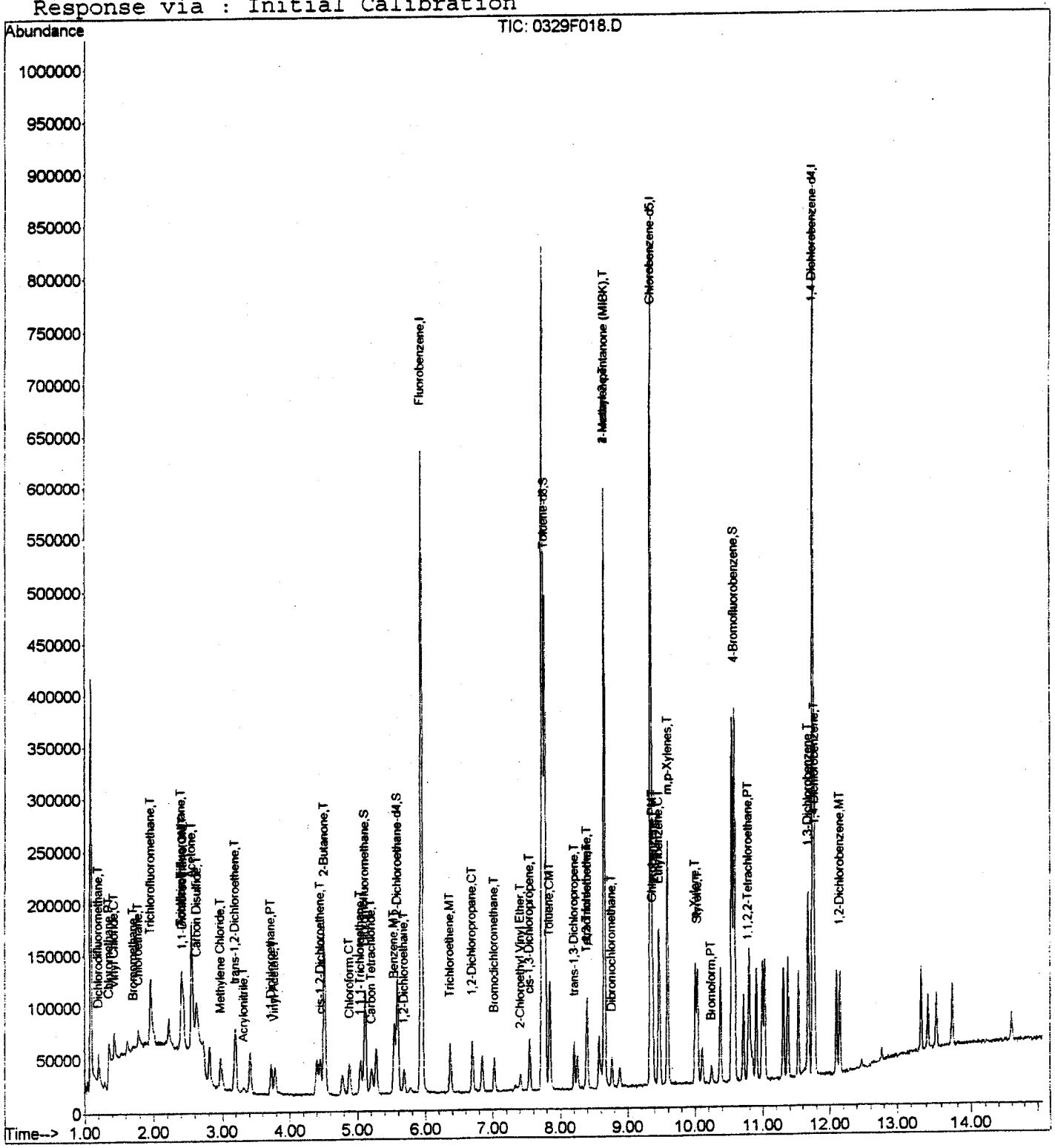
0329F018.D 032911624.M Tue Mar 29 16:33:34 2011

Data File : J:\MS23\DATA\032911\0329F018.D
Acq On : 29 Mar 2011 3:32 pm
Sample : 624 ICAL 1
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 29 16:33 2011

Vial: 6
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: 032911624.RE

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\032911\0329F019.D
Acq On : 29 Mar 2011 4:02 pm
Sample : 624 ICAL 5
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 29 16:33:48 2011

Vial: 7
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624.RES

Quant Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration
DataAcq Meth : 8260

KR 3/30/11

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	5.94	96	558021	10.00	PPB	0.00
35) Chlorobenzene-d5	9.35	82	229491	10.00	PPB	0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	189592	10.00	PPB	0.00
System Monitoring Compounds						
22) Dibromofluoromethane	5.11	113	96533	7.77	PPB	0.00
Spiked Amount 10.000			Recovery	=	77.70%	
24) 1,2-Dichloroethane-d4	5.59	65	123618	7.43	PPB	0.01
Spiked Amount 10.000			Recovery	=	74.30%	
33) Toluene-d8	7.77	98	416902	8.26	PPB	0.00
Spiked Amount 10.000			Recovery	=	82.60%	
47) 4-Bromofluorobenzene	10.58	95	149309	8.41	PPB	0.00
Spiked Amount 10.000			Recovery	=	84.10%	

Target Compounds						Qvalue
2) Dichlorodifluoromethane	1.20	85	107705	4.90	PPB	100
3) Chloromethane	1.35	50	138882	5.92	PPB	99
4) Vinyl Chloride	1.43	62	126496	5.51	PPB	99
5) Bromomethane	1.70	96	21492	2.72	PPB	95
6) Chloroethane	1.78	49	19828	5.22	PPB	91
7) Trichlorofluoromethane	1.96	101	153468	5.65	PPB	98
8) Acrolein	2.41	56	163665	110.07	PPB	99
9) Trichlorotrifluoroethane	2.40	151	65783	6.62	PPB	100
10) 1,1-Dichloroethene	2.44	96	68781	5.96	PPB	97
11) Acetone	2.56	43	428981	163.38	PPB	93
12) Carbon Disulfide	2.63	76	291234	6.33	PPB	96
13) Methylene Chloride	2.97	84	67442	4.57	PPB	98
14) Acrylonitrile	3.31	53	26312	7.45	PPB	94
15) trans-1,2-Dichloroethene	3.21	96	70474	5.03	PPB	97
16) 1,1-Dichloroethane	3.73	63	142443	5.07	PPB	98
17) Vinyl Acetate	3.79	86	16233	9.86	PPB	100
18) cis-1,2-Dichloroethene	4.45	96	74312	4.88	PPB	94
19) 2-Butanone	4.51	72	124146	141.54	PPB	98
20) Chloroform	4.88	83	126708	4.97	PPB	95
21) 1,1,1-Trichloroethane	5.05	97	120304	5.89	PPB	99
23) Carbon Tetrachloride	5.21	117	93027	6.44	PPB	95
25) Benzene	5.54	78	303174	5.11	PPB	100
26) 1,2-Dichloroethane	5.68	62	93030	4.78	PPB	98
27) Trichloroethene	6.37	95	74879	5.14	PPB	97
28) 1,2-Dichloropropane	6.70	63	76450	4.93	PPB	94
29) Bromodichloromethane	7.03	83	85824	5.24	PPB	99
30) 2-Chloroethyl Vinyl Ether	7.42	63	25479	4.12	PPB	91

(#) = qualifier out of range (m) = manual integration

HB 3/31/11

Data File : J:\MS23\DATA\032911\0329F019.D
Acq On : 29 Mar 2011 4:02 pm
Sample : 624 ICAL 5
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 29 16:33:48 2011

Vial: 7
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624.RES

Quant Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration
DataAcq Meth : 8260

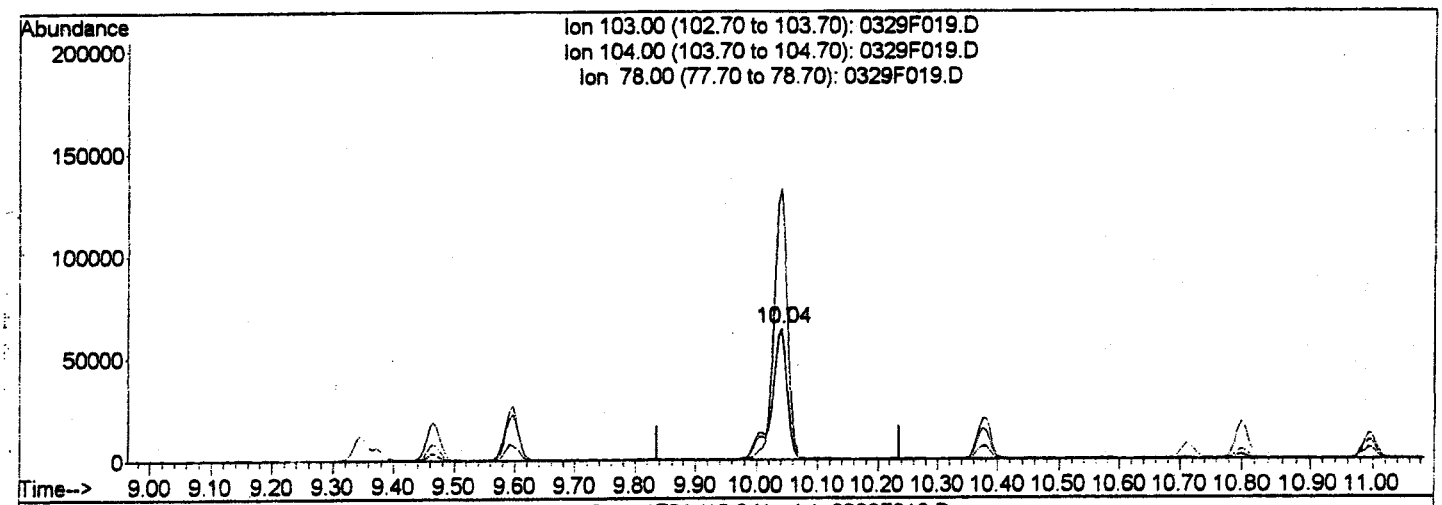
Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
31) cis-1,3-Dichloropropene	7.55	75	104802	5.12	PPB	94
32) 4-Methyl-2-pentanone (MIBK	8.65	58	443306	158.10	PPB	99
34) Toluene	7.84	92	186044	5.31	PPB	100
36) trans-1,3-Dichloropropene	8.21	75	87192	5.30	PPB	98
37) 1,1,2-Trichloroethane	8.39	83	37298	4.63	PPB	85
38) Tetrachloroethene	8.40	164	56141	5.62	PPB	99
39) 2-Hexanone	8.65	43	947872	165.17	PPB	100
40) Dibromochloromethane	8.76	129	48292	5.75	PPB	99
41) Chlorobenzene	9.38	112	193696	5.52	PPB	98
42) Ethylbenzene	9.47	106	107827	5.58	PPB	94
43) m,p-Xylenes	9.60	106	267562	11.23	PPB	98
44) o-Xylene	10.01	106	126709	5.62	PPB	98
45) Styrene	10.04	103	96407m	5.60	PPB	
46) Bromoform	10.25	173	22120	5.95	PPB	99
49) 1,1,2,2-Tetrachloroethane	10.78	83	44690	4.89	PPB	98
51) 1,3-Dichlorobenzene	11.67	146	138110	5.56	PPB	99
52) 1,4-Dichlorobenzene	11.78	146	140514	5.53	PPB	99
53) 1,2-Dichlorobenzene	12.15	146	122422	5.40	PPB	98

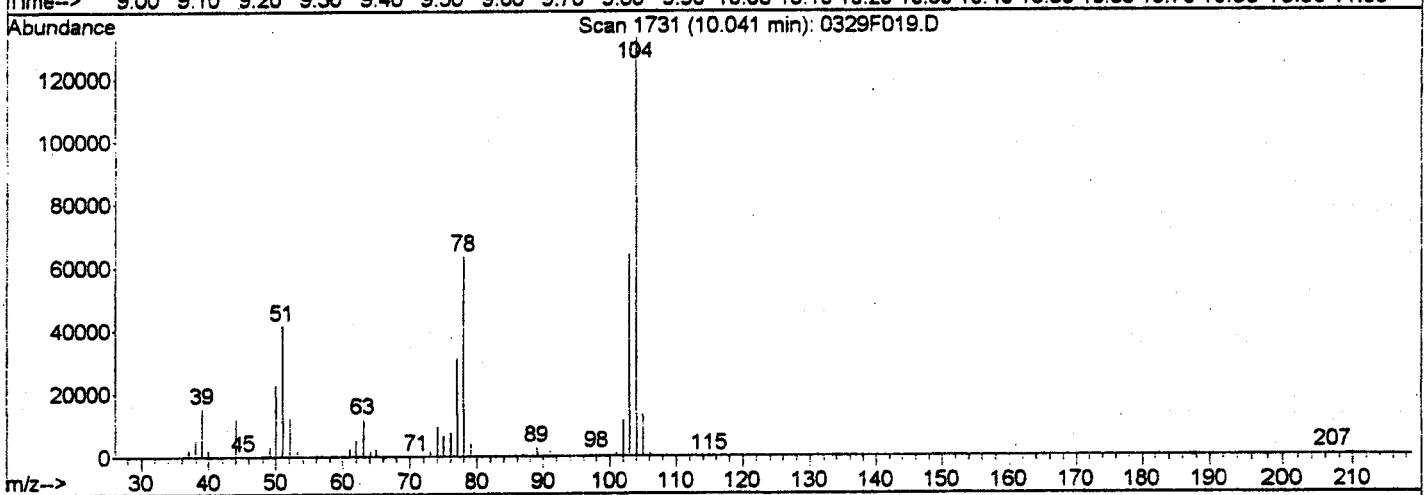
(#) = qualifier out of range (m) = manual integration

Data File : J:\MS23\DATA\032911\0329F019.D
Acq On : 29 Mar 2011 4:02 pm
Sample : 624 ICAL 5
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 29 16:33 2011

Vial: 7
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Multiple Level Calibration





TIC: 0329F019.D

(45) Styrene (T)

10.04min 6.53PPB

response 112426

Ion	Exp%	Act%
103.00	100	100
104.00	214.60	206.76
78.00	96.70	99.20
0.00	0.00	0.00

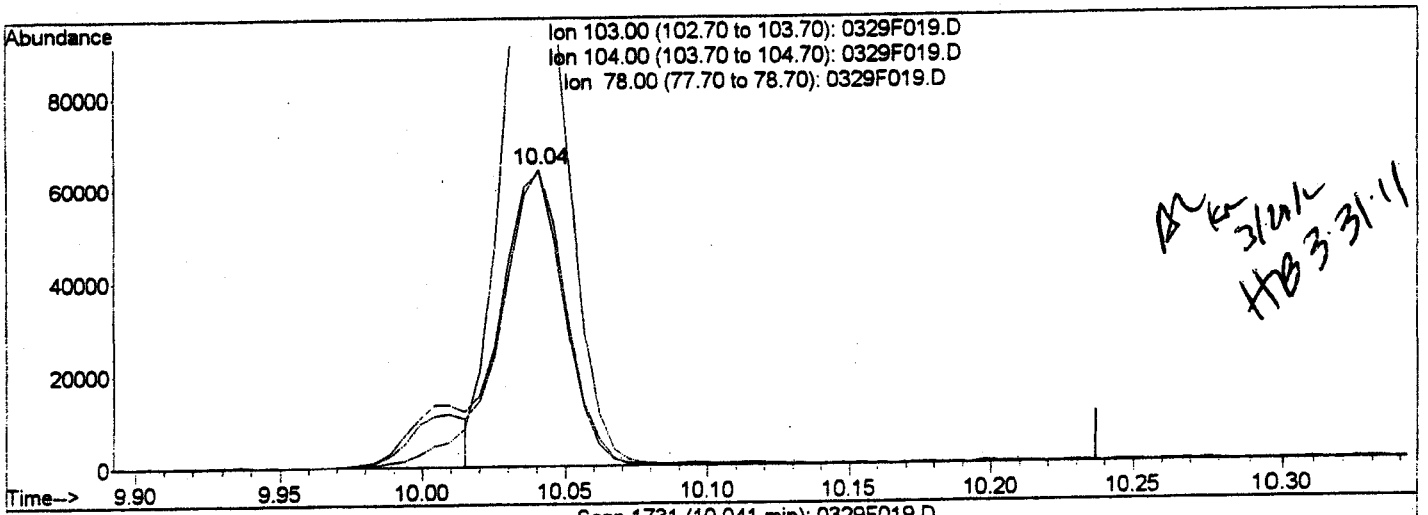
0329F019.D 032911624.M Tue Mar 29 16:34:24 2011

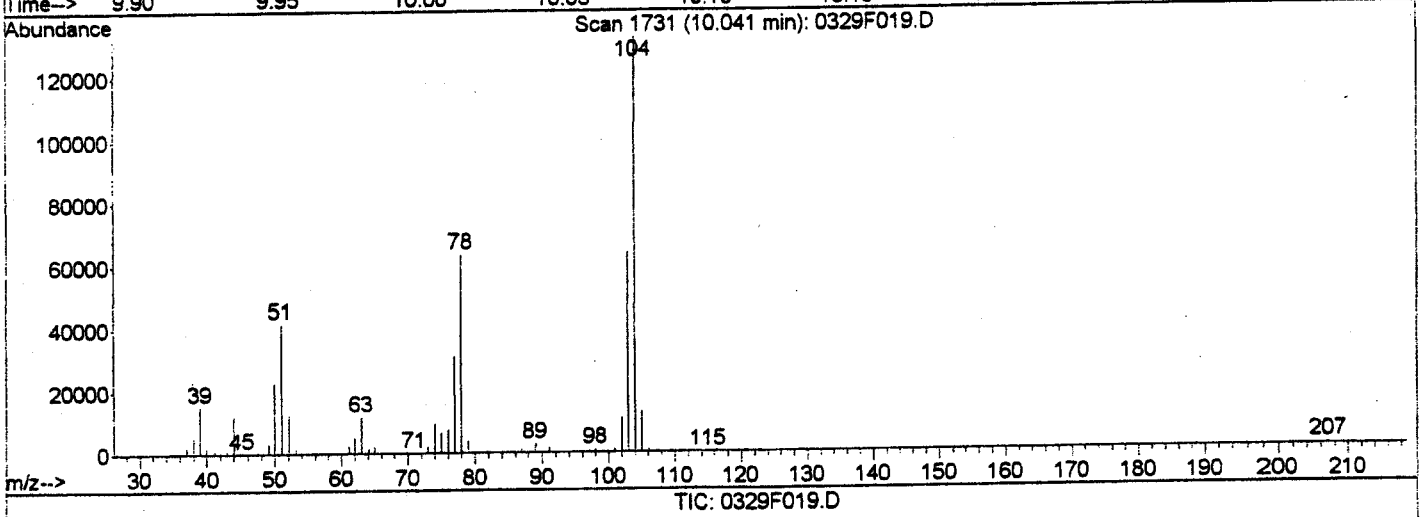
Data File : J:\MS23\DATA\032911\0329F019.D
Acq On : 29 Mar 2011 4:02 pm
Sample : 624 ICAL 5
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 29 16:34 2011

Vial: 7
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Multiple Level Calibration





TIC: 0329F019.D

(45) Styrene (T)

10.04min 5.60PPB m

response 96407

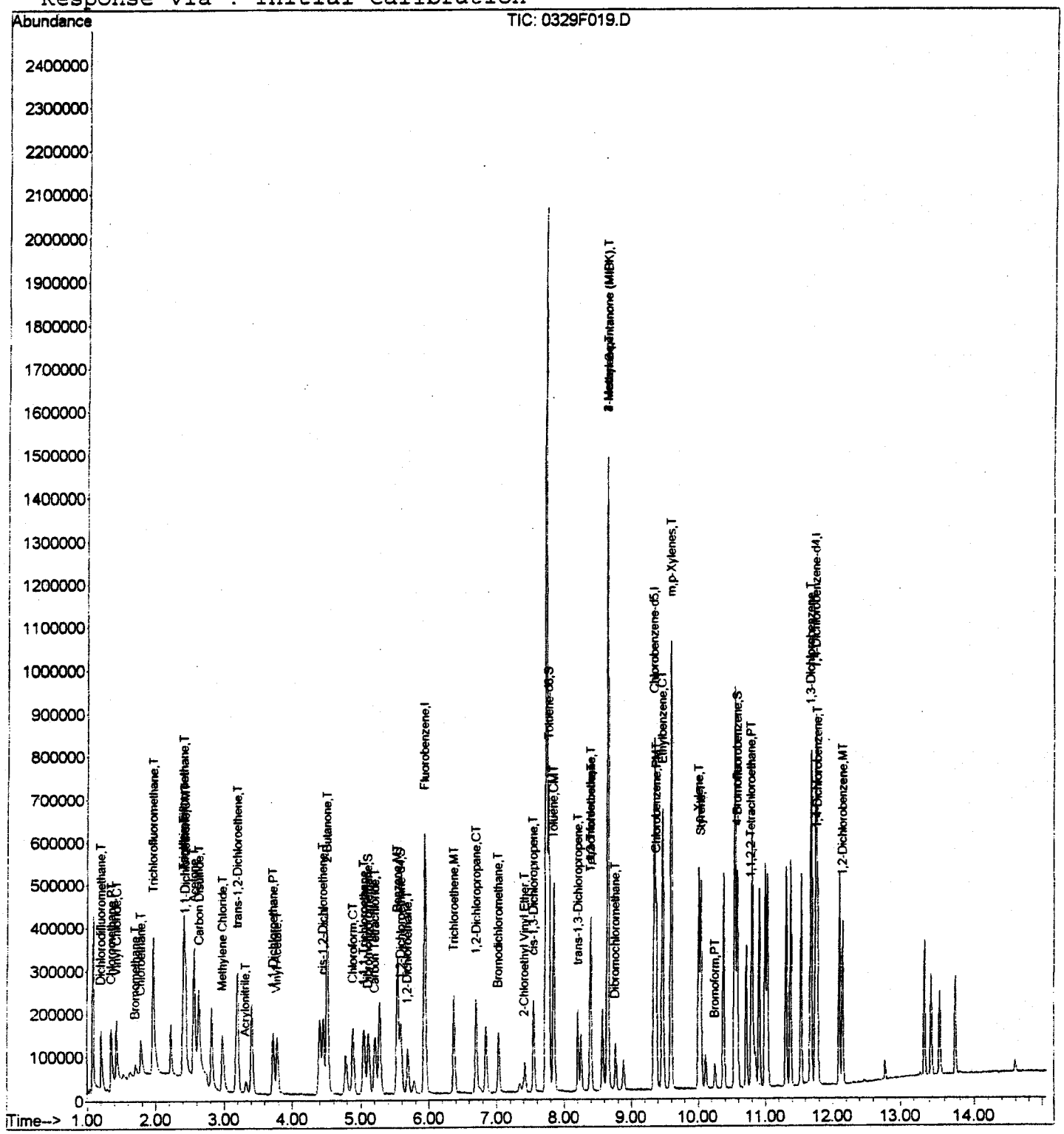
Ion	Exp%	Act%
103.00	100	100
104.00	214.60	206.76
78.00	96.70	99.20
0.00	0.00	0.00

0329F019.D 032911624.M Tue Mar 29 16:34:28 2011

Data File : J:\MS23\DATA\032911\0329F019.D
Acq On : 29 Mar 2011 4:02 pm
Sample : 624 ICAL 5
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 29 16:34 2011

Vial: 7
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624.RE

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\032911\0329F020.D
Acq On : 29 Mar 2011 4:32 pm
Sample : 624 ICAL 10
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 08:58:49 2011

Vial: 8
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: 032911624.RES

Quant Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration
DataAcq Meth : 8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	5.94	96	555419	10.00	PPB	0.00
35) Chlorobenzene-d5	9.34	82	228350	10.00	PPB	0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	192069	10.00	PPB	0.00
System Monitoring Compounds						
22) Dibromofluoromethane	5.12	113	123128	9.96	PPB	0.00
Spiked Amount 10.000			Recovery	=	99.60%	
24) 1,2-Dichloroethane-d4	5.59	65	155087	9.36	PPB	0.00
Spiked Amount 10.000			Recovery	=	93.60%	
33) Toluene-d8	7.77	98	532754	10.61	PPB	0.00
Spiked Amount 10.000			Recovery	=	106.10%	
47) 4-Bromofluorobenzene	10.58	95	189409	10.73	PPB	0.00
Spiked Amount 10.000			Recovery	=	107.30%	

Target Compounds							Qvalue
2) Dichlorodifluoromethane	1.20	85	207079	9.47	PPB		98
3) Chloromethane	1.36	50	274921	11.78	PPB		97
4) Vinyl Chloride	1.43	62	237382	10.39	PPB		99
5) Bromomethane	1.71	96	56963	7.23	PPB		97
6) Chloroethane	1.79	49	38232	10.11	PPB		97
7) Trichlorofluoromethane	1.96	101	291358	10.77	PPB		96
8) Acrolein	2.41	56	314337	212.39	PPB		100
9) Trichlorotrifluoroethane	2.41	151	128820	13.03	PPB		98
10) 1,1-Dichloroethene	2.44	96	137268	11.96	PPB		97
11) Acetone	2.56	43	874976	334.80	PPB		94
12) Carbon Disulfide	2.63	76	570093	12.44	PPB		95
13) Methylene Chloride	2.98	84	129598	8.83	PPB		98
14) Acrylonitrile	3.32	53	50208	14.29	PPB		99
15) trans-1,2-Dichloroethene	3.20	96	135486	9.72	PPB		99
16) 1,1-Dichloroethane	3.73	63	274582	9.82	PPB		98
17) Vinyl Acetate	3.79	86	31661	19.32	PPB	#	87
18) cis-1,2-Dichloroethene	4.46	96	145751	9.62	PPB		98
19) 2-Butanone	4.51	72	264486	302.96	PPB		97
20) Chloroform	4.89	83	245454	9.68	PPB		99
21) 1,1,1-Trichloroethane	5.05	97	231234	11.38	PPB		97
23) Carbon Tetrachloride	5.22	117	182601	12.70	PPB		94
25) Benzene	5.54	78	587325	9.95	PPB		99
26) 1,2-Dichloroethane	5.69	62	177288	9.15	PPB		97
27) Trichloroethene	6.37	95	144093	9.93	PPB		99
28) 1,2-Dichloropropane	6.70	63	145520	9.44	PPB		93
29) Bromodichloromethane	7.03	83	167416	10.27	PPB		97
30) 2-Chloroethyl Vinyl Ether	7.42	63	48728	7.92	PPB		95

(#) = qualifier out of range (m) = manual integration

HB 33111

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\032911\0329F020.D
Acq On : 29 Mar 2011 4:32 pm
Sample : 624 ICAL 10
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 08:58:49 2011

Vial: 8
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624.RES

Quant Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration
DataAcq Meth : 8260

	Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
31)	cis-1,3-Dichloropropene	7.55	75	204950	10.06	PPB	94
32)	4-Methyl-2-pentanone (MIBK	8.65	58	930340	333.36	PPB	99
34)	Toluene	7.85	92	360772	10.34	PPB	99
36)	trans-1,3-Dichloropropene	8.20	75	165629	10.12	PPB	95
37)	1,1,2-Trichloroethane	8.39	83	72448	9.03	PPB	96
38)	Tetrachloroethene	8.40	164	107728	10.84	PPB	98
39)	2-Hexanone	8.65	43	1996185	349.57	PPB	100
40)	Dibromochloromethane	8.77	129	93403	11.18	PPB	99
41)	Chlorobenzene	9.37	112	365346	10.47	PPB	98
42)	Ethylbenzene	9.47	106	208764	10.87	PPB	95
43)	m,p-Xylenes	9.59	106	520051	21.93	PPB	98
44)	o-Xylene	10.01	106	245832	10.97	PPB	97
45)	Styrene	10.04	103	185069m	10.80	PPB	
46)	Bromoform	10.25	173	44005	11.89	PPB	99
49)	1,1,2,2-Tetrachloroethane	10.79	83	86712	9.37	PPB	96
51)	1,3-Dichlorobenzene	11.68	146	267699	10.63	PPB	99
52)	1,4-Dichlorobenzene	11.78	146	268169	10.43	PPB	98
53)	1,2-Dichlorobenzene	12.15	146	235094	10.24	PPB	99

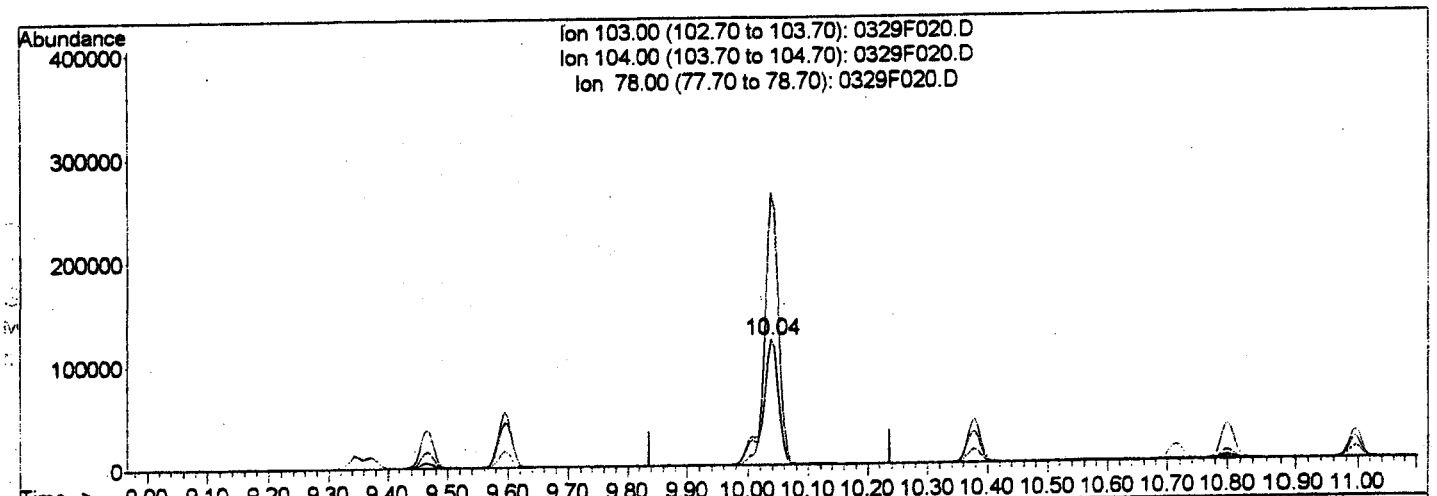
(#) = qualifier out of range (m) = manual integration

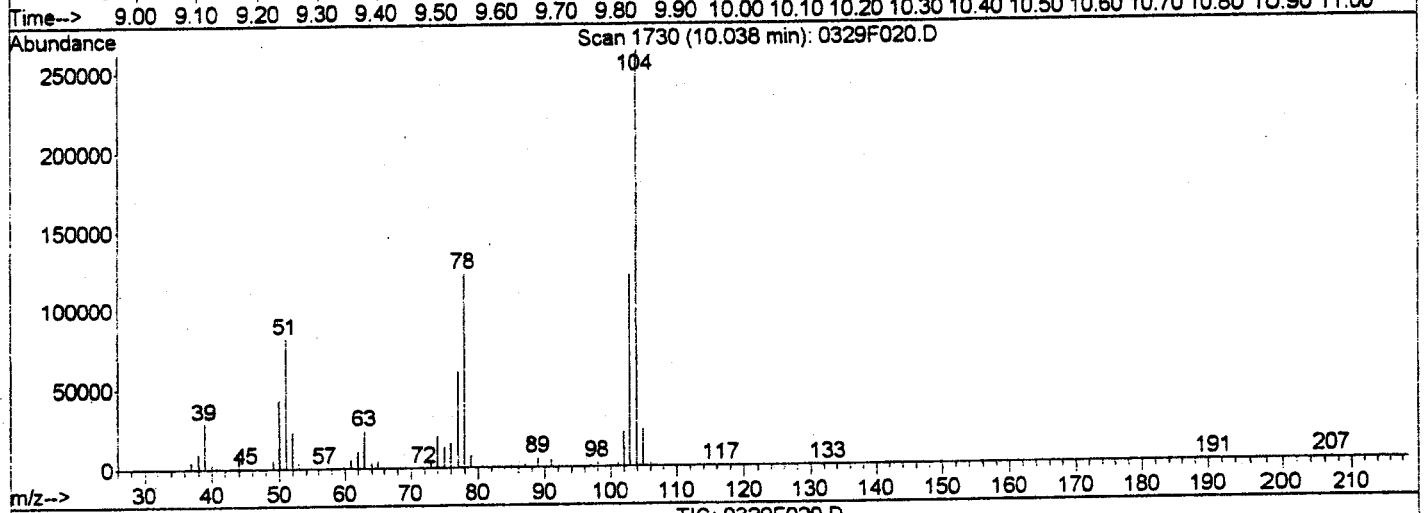
Data File : J:\MS23\DATA\032911\0329F020.D
Acq On : 29 Mar 2011 4:32 pm
Sample : 624 ICAL 10
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 8:58 2011

Vial: 8
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Multiple Level Calibration





TIC: 0329F020.D

(45) Styrene (T)

10.04min 12.81PPB

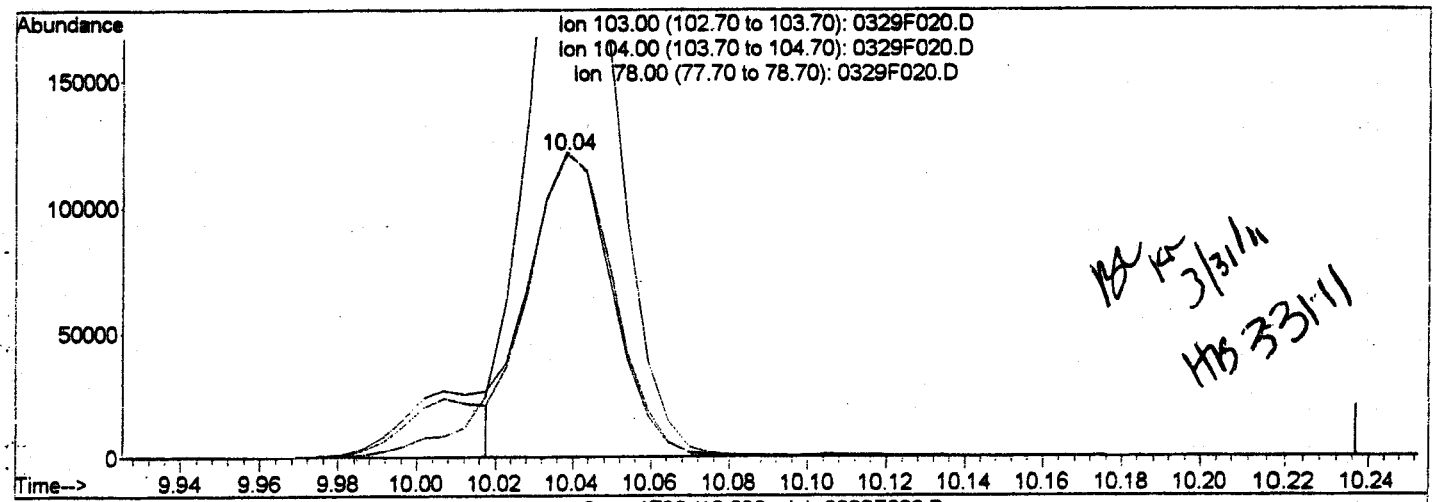
response 219489

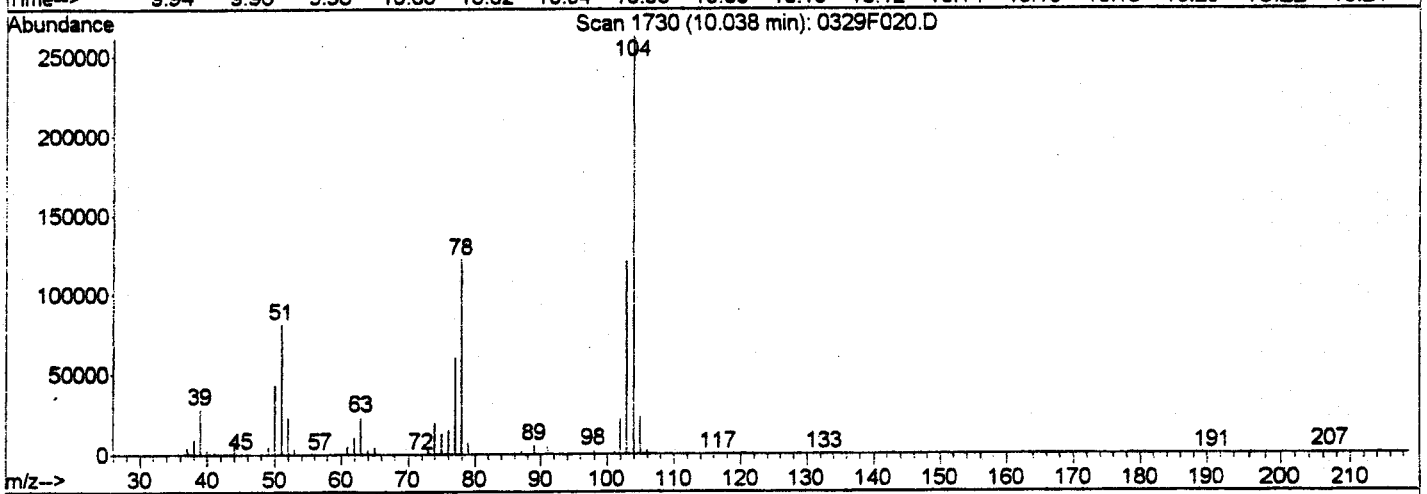
Ion	Exp%	Act%
103.00	100	100
104.00	214.60	217.11
78.00	96.70	101.16
0.00	0.00	0.00

Data File : J:\MS23\DATA\032911\0329F020.D
Acq On : 29 Mar 2011 4:32 pm
Sample : 624 ICAL 10
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 8:59 2011

Vial: 8
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Multiple Level Calibration





TIC: 0329F020.D

(45) Styrene (T)

10.04min 10.80PPB m

response 185069

Ion	Exp%	Act%
103.00	100	100
104.00	214.60	217.11
78.00	96.70	101.16
0.00	0.00	0.00

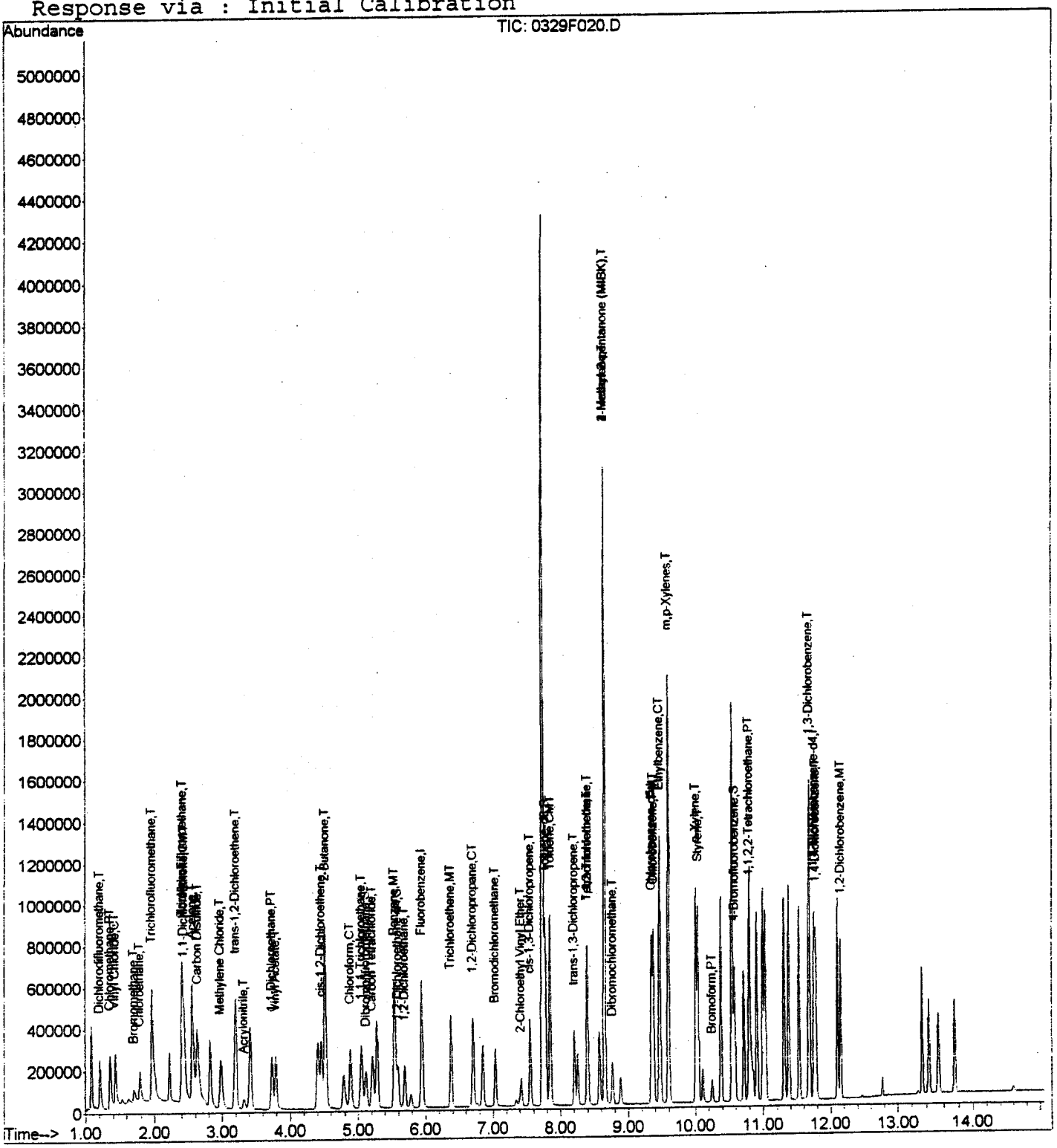
0329F020.D 032911624.M Wed Mar 30 08:59:23 2011

Data File : J:\MS23\DATA\032911\0329F020.D
Acq On : 29 Mar 2011 4:32 pm
Sample : 624 ICAL 10
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 8:59 2011

Vial: 8
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: 032911624.RE

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\032911\0329F021.D
Acq On : 29 Mar 2011 5:02 pm
Sample : 624 ICAL 40
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 08:59:41 2011

Vial: 9
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624.RES

Quant Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration
DataAcq Meth : 8260

KR 3/30/11

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	5.94	96	562445	10.00	PPB	0.00
35) Chlorobenzene-d5	9.34	82	234604	10.00	PPB	0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	200624	10.00	PPB	0.00
System Monitoring Compounds						
22) Dibromofluoromethane	5.11	113	256063	20.46	PPB	0.00
Spiked Amount 10.000			Recovery	=	204.60%	
24) 1,2-Dichloroethane-d4	5.59	65	313592	18.69	PPB	0.01
Spiked Amount 10.000			Recovery	=	186.90%	
33) Toluene-d8	7.77	98	1133829	22.30	PPB	0.00
Spiked Amount 10.000			Recovery	=	223.00%	
47) 4-Bromofluorobenzene	10.58	95	402922	22.21	PPB	0.00
Spiked Amount 10.000			Recovery	=	222.10%	

Target Compounds						Qvalue
2) Dichlorodifluoromethane	1.20	85	843570	38.09	PPB	98
3) Chloromethane	1.35	50	1084312	45.88	PPB	98
4) Vinyl Chloride	1.43	62	988050	42.69	PPB	99
5) Bromomethane	1.70	96	361484	45.31	PPB	97
6) Chloroethane	1.78	49	152360	39.79	PPB	96
7) Trichlorofluoromethane	1.96	101	1188063	43.38	PPB	100
8) Acrolein	2.41	56	1223416	816.30	PPB	99
9) Trichlorotrifluoroethane	2.40	151	523885	52.32	PPB	98
10) 1,1-Dichloroethene	2.43	96	561849	48.33	PPB	98
11) Acetone	2.55	43	1681576	635.41	PPB	93
12) Carbon Disulfide	2.63	76	2329548	50.20	PPB	95
13) Methylene Chloride	2.98	84	514215	34.58	PPB	98
14) Acrylonitrile	3.32	53	197868	55.60	PPB	98
15) trans-1,2-Dichloroethene	3.20	96	569581	40.35	PPB	98
16) 1,1-Dichloroethane	3.73	63	1148516	40.56	PPB	99
17) Vinyl Acetate	3.78	86	122855	74.03	PPB	95
18) cis-1,2-Dichloroethene	4.45	96	605142	39.45	PPB	99
19) 2-Butanone	4.51	72	513868	581.26	PPB	95
20) Chloroform	4.88	83	1019689	39.69	PPB	99
21) 1,1,1-Trichloroethane	5.04	97	973238	47.29	PPB	99
23) Carbon Tetrachloride	5.21	117	781470	53.66	PPB	98
25) Benzene	5.54	78	2429816	40.67	PPB	99
26) 1,2-Dichloroethane	5.69	62	722485	36.82	PPB	98
27) Trichloroethene	6.37	95	600903	40.90	PPB	99
28) 1,2-Dichloropropane	6.70	63	611429	39.15	PPB	95
29) Bromodichloromethane	7.03	83	702585	42.54	PPB	97
30) 2-Chloroethyl Vinyl Ether	7.42	63	213175	34.23	PPB	93

(#) = qualifier out of range (m) = manual integration

HB 3/31/11

Data File : J:\MS23\DATA\032911\0329F021.D
Acq On : 29 Mar 2011 5:02 pm
Sample : 624 ICAL 40
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 08:59:41 2011

Vial: 9
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: 032911624.RES

Quant Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration
DataAcq Meth : 8260

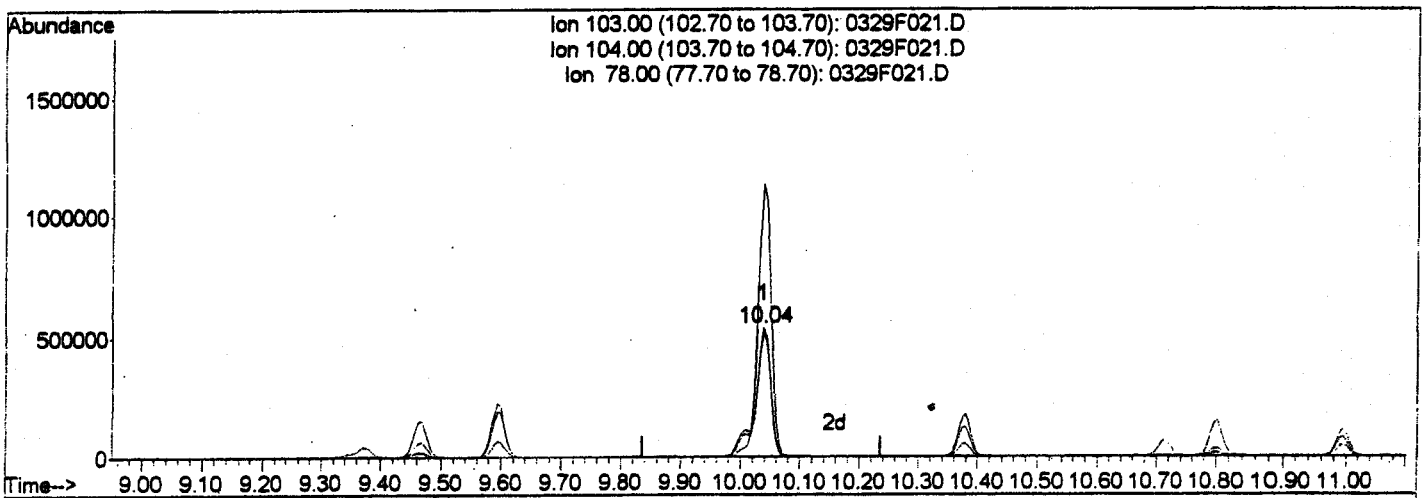
Compound	R.T.	QIon	Response	Conc Unit	Qvalue
31) cis-1,3-Dichloropropene	7.55	75	877877	42.54 PPB	96
32) 4-Methyl-2-pentanone (MIBK	8.65	58	1819036	643.65 PPB	99
34) Toluene	7.85	92	1523794	43.14 PPB	100
36) trans-1,3-Dichloropropene	8.20	75	711126	42.29 PPB	96
37) 1,1,2-Trichloroethane	8.39	83	301211	36.54 PPB	96
38) Tetrachloroethene	8.40	164	454631	44.52 PPB	98
39) 2-Hexanone	8.65	43	3858983	657.77 PPB	99
40) Dibromochloromethane	8.77	129	393621	45.88 PPB	99
41) Chlorobenzene	9.37	112	1528875	42.66 PPB	98
42) Ethylbenzene	9.47	106	887659	44.97 PPB	93
43) m,p-Xylenes	9.59	106	2240209	91.97 PPB	98
44) o-Xylene	10.01	106	1047486	45.48 PPB	100
45) Styrene	10.04	103	808116m	45.90 PPB	
46) Bromoform	10.25	173	195010	51.28 PPB	96
49) 1,1,2,2-Tetrachloroethane	10.79	83	341669	35.35 PPB	96
51) 1,3-Dichlorobenzene	11.68	146	1154814	43.90 PPB	99
52) 1,4-Dichlorobenzene	11.77	146	1121339	41.74 PPB	99
53) 1,2-Dichlorobenzene	12.15	146	984951	41.06 PPB	100

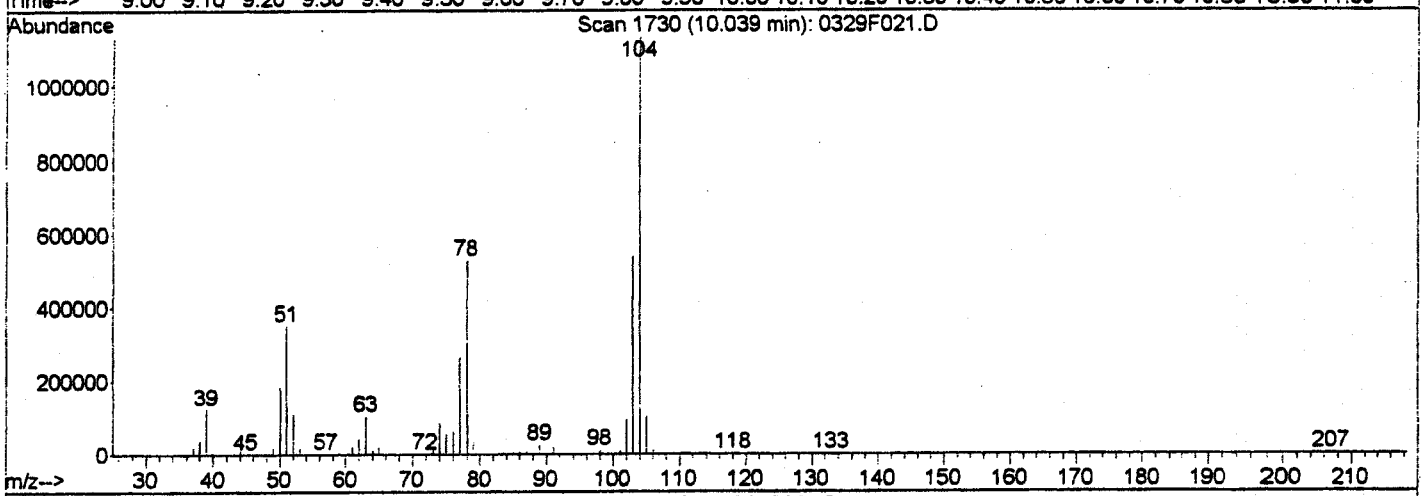
(#) = qualifier out of range (m) = manual integration

Data File : J:\MS23\DATA\032911\0329F021.D
Acq On : 29 Mar 2011 5:02 pm
Sample : 624 ICAL 40
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 8:59 2011

Vial: 9
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Multiple Level Calibration





TIC: 0329F021.D

(45) Styrene (T)

10.04min 54.42PPB

response 958180

Ion	Exp%	Act%
103.00	100	100
104.00	214.60	209.77
78.00	96.70	97.93
0.00	0.00	0.00

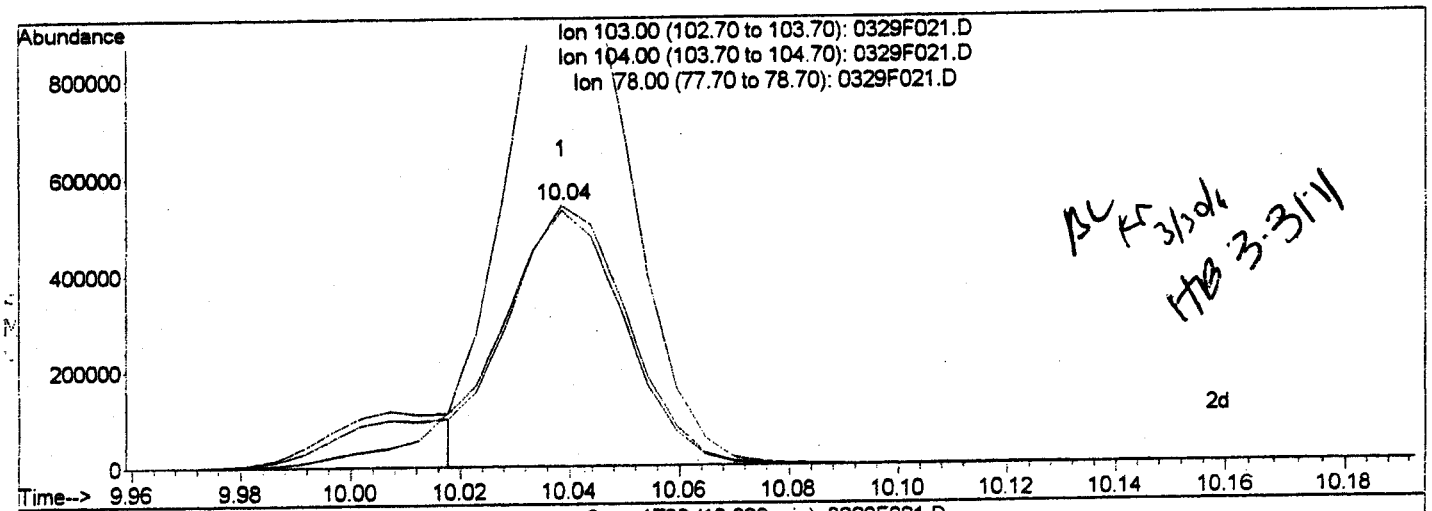
0329F021.D 032911624.M Wed Mar 30 09:00:06 2011

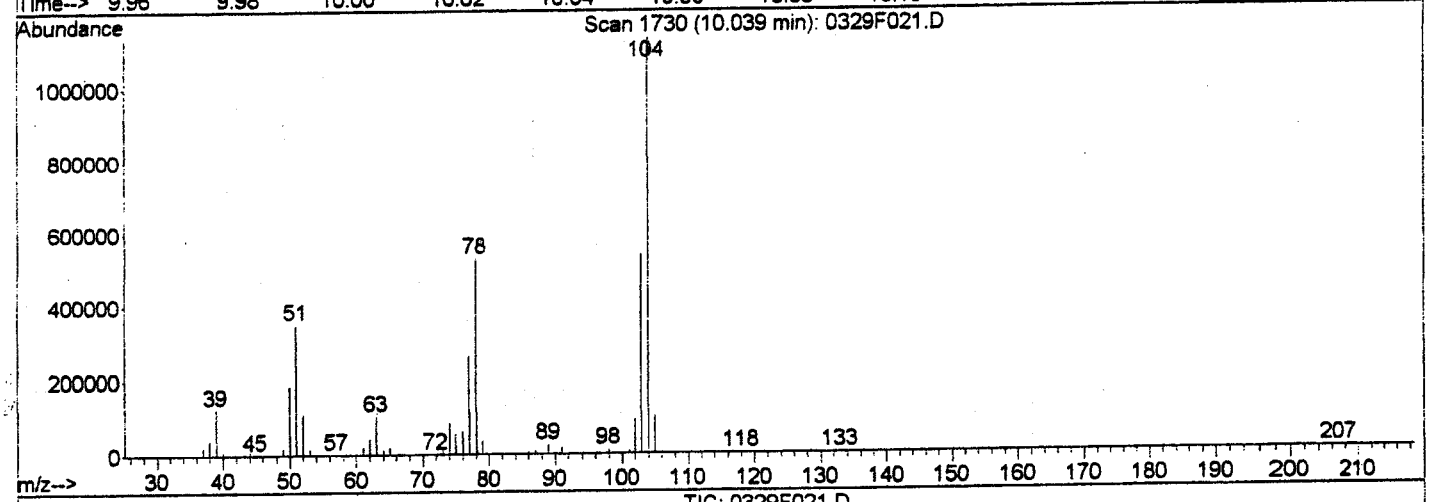
Data File : J:\MS23\DATA\032911\0329F021.D
Acq On : 29 Mar 2011 5:02 pm
Sample : 624 ICAL 40
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 9:00 2011

Vial: 9
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Multiple Level Calibration





TIC: 0329F021.D

(45) Styrene (T)

10.04min 45.90PPB m

response 808116

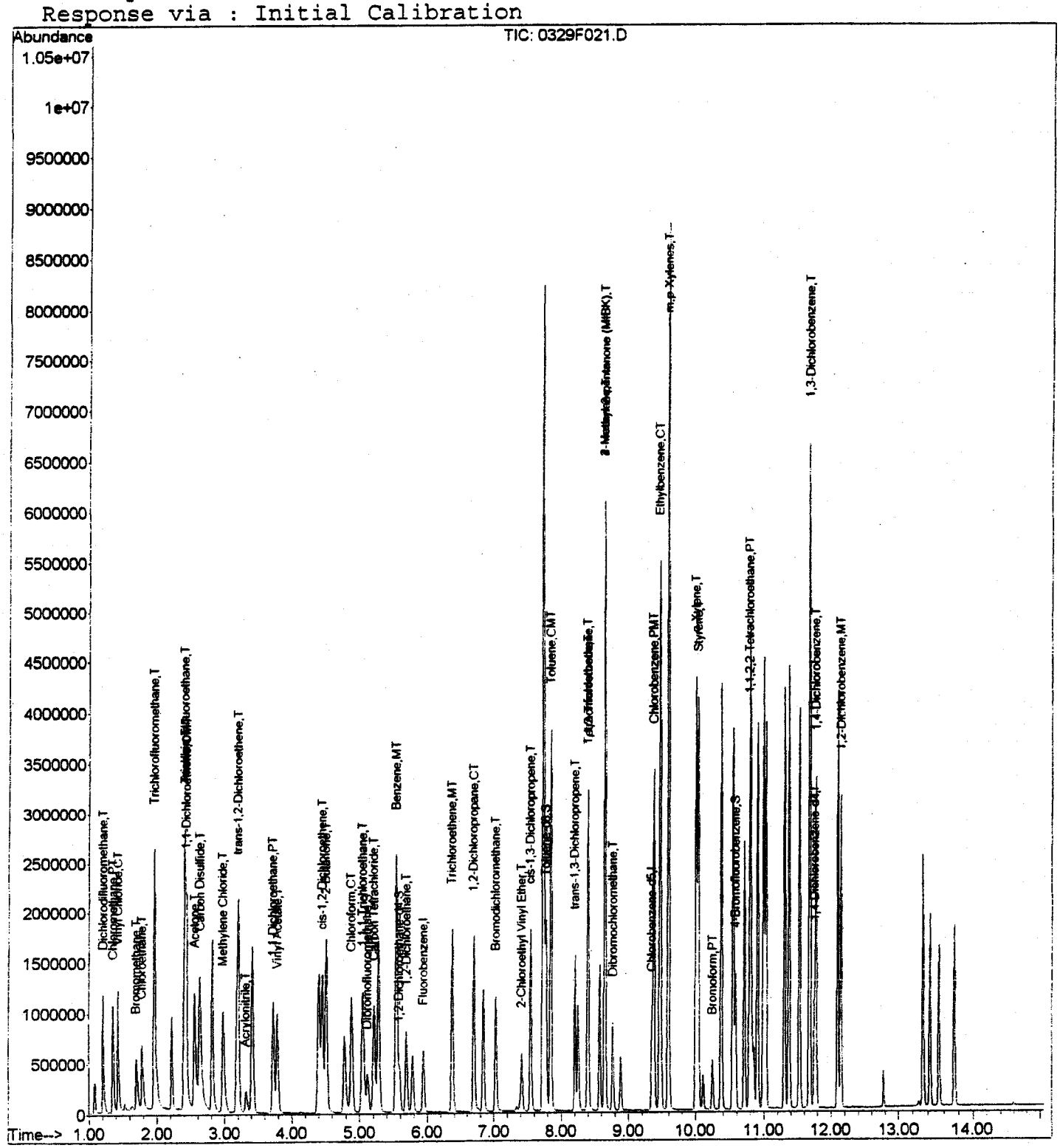
Ion	Exp%	Act%
103.00	100	100
104.00	214.60	209.77
78.00	96.70	97.96
0.00	0.00	0.00

0329F021.D 032911624.M Wed Mar 30 09:00:11 2011

Data File : J:\MS23\DATA\032911\0329F021.D
Acq On : 29 Mar 2011 5:02 pm
Sample : 624 ICAL 40
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 9:00 2011

Vial: 9
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624.RE

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\032911\0329F022.D
Acq On : 29 Mar 2011 5:31 pm
Sample : 624 ICAL 80
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 09:00:30 2011

Vial: 10
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: 032911624.RES

Quant Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration
DataAcq Meth : 8260

KT 3/30/11

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	5.94	96	577607	10.00	PPB	0.00
35) Chlorobenzene-d5	9.35	82	239719	10.00	PPB	0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	209209	10.00	PPB	0.00
System Monitoring Compounds						
22) Dibromofluoromethane	5.11	113	472094	36.73	PPB	0.00
Spiked Amount 10.000			Recovery	=	367.30%	
24) 1,2-Dichloroethane-d4	5.59	65	594434	34.50	PPB	0.00
Spiked Amount 10.000			Recovery	=	345.00%	
33) Toluene-d8	7.78	98	2023597	38.75	PPB	0.00
Spiked Amount 10.000			Recovery	=	387.50%	
47) 4-Bromofluorobenzene	10.58	95	758883	40.94	PPB	0.00
Spiked Amount 10.000			Recovery	=	409.40%	

Target Compounds							Qvalue
2) Dichlorodifluoromethane	1.20	85	1683333	74.01	PPB		98
3) Chloromethane	1.35	50	2230676	91.91	PPB		98
4) Vinyl Chloride	1.43	62	1998171	84.07	PPB		99
5) Bromomethane	1.69	96	813151	99.26	PPB		94
6) Chloroethane	1.78	49	307042	78.07	PPB		88
7) Trichlorofluoromethane	1.97	101	2383766	84.76	PPB		99
8) Acrolein	2.41	56	2462373	1599.84	PPB		99
9) Trichlorotrifluoroethane	2.41	151	1064962	103.57	PPB		99
10) 1,1-Dichloroethene	2.44	96	1153376	96.61	PPB		98
11) Acetone	2.56	43	3577135	1316.19	PPB		92
12) Carbon Disulfide	2.64	76	4707717	98.78	PPB		96
13) Methylene Chloride	2.98	84	1083604	70.97	PPB		99
14) Acrylonitrile	3.32	53	418047	114.39	PPB		100
15) trans-1,2-Dichloroethene	3.20	96	1185853	81.81	PPB		99
16) 1,1-Dichloroethane	3.73	63	2383789	81.97	PPB		99
17) Vinyl Acetate	3.79	86	265969	156.07	PPB	#	93
18) cis-1,2-Dichloroethene	4.46	96	1264133	80.25	PPB		99
19) 2-Butanone	4.51	72	1115416	1228.59	PPB		93
20) Chloroform	4.88	83	2121902	80.43	PPB		100
21) 1,1,1-Trichloroethane	5.05	97	1999397	94.60	PPB		98
23) Carbon Tetrachloride	5.21	117	1627143	108.79	PPB		97
25) Benzene	5.54	78	5029219	81.96	PPB		99
26) 1,2-Dichloroethane	5.69	62	1501143	74.49	PPB		98
27) Trichloroethene	6.37	95	1255854	83.24	PPB		98
28) 1,2-Dichloropropane	6.70	63	1279476	79.78	PPB		96
29) Bromodichloromethane	7.03	83	1482880	87.44	PPB		98
30) 2-Chloroethyl Vinyl Ether	7.42	63	458702	71.72	PPB		93

(#) = qualifier out of range (m) = manual integration

HB 3-31-11

Data File : J:\MS23\DATA\032911\0329F022.D
Acq On : 29 Mar 2011 5:31 pm
Sample : 624 ICAL 80
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 09:00:30 2011

Vial: 10
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624.RES

Quant Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration
DataAcq Meth : 8260

	Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
31)	cis-1,3-Dichloropropene	7.55	75	1852797	87.42	PPB	97
32)	4-Methyl-2-pentanone (MIBK	8.65	58	4018124	1384.46	PPB	94
34)	Toluene	7.84	92	3201878	88.27	PPB	97
36)	trans-1,3-Dichloropropene	8.21	75	1525901	88.80	PPB	99
37)	1,1,2-Trichloroethane	8.39	83	635172	75.41	PPB	96
38)	Tetrachloroethene	8.40	164	968109	92.78	PPB	98
39)	2-Hexanone	8.65	43	8255553	1377.14	PPB	97
40)	Dibromochloromethane	8.77	129	866869	98.87	PPB	99
41)	Chlorobenzene	9.38	112	3225296	88.07	PPB	99
42)	Ethylbenzene	9.47	106	1902686	94.33	PPB	92
43)	m,p-Xylenes	9.60	106	4797084	192.74	PPB	91
44)	o-Xylene	10.01	106	2221497	94.40	PPB	98
45)	Styrene	10.04	103	1790533m	99.53	PPB	
46)	Bromoform	10.25	173	432533	111.31	PPB	96
49)	1,1,2,2-Tetrachloroethane	10.78	83	751595	74.57	PPB	95
51)	1,3-Dichlorobenzene	11.68	146	2496646	91.02	PPB	99
52)	1,4-Dichlorobenzene	11.78	146	2421404	86.43	PPB	98
53)	1,2-Dichlorobenzene	12.15	146	2094168	83.72	PPB	100

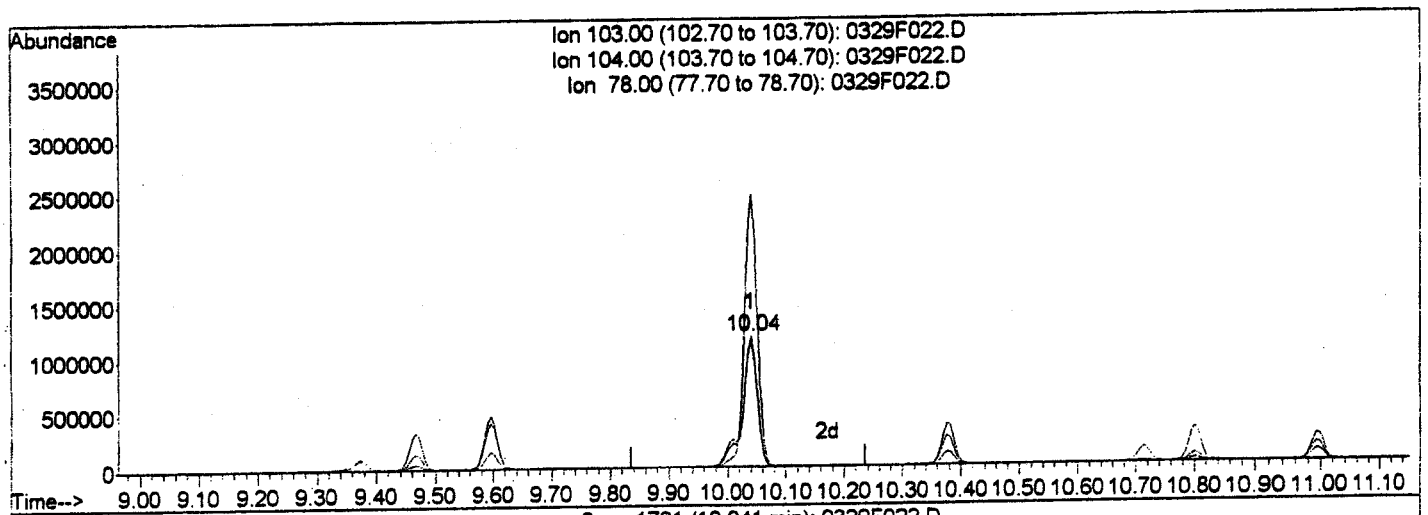
(#) = qualifier out of range (m) = manual integration

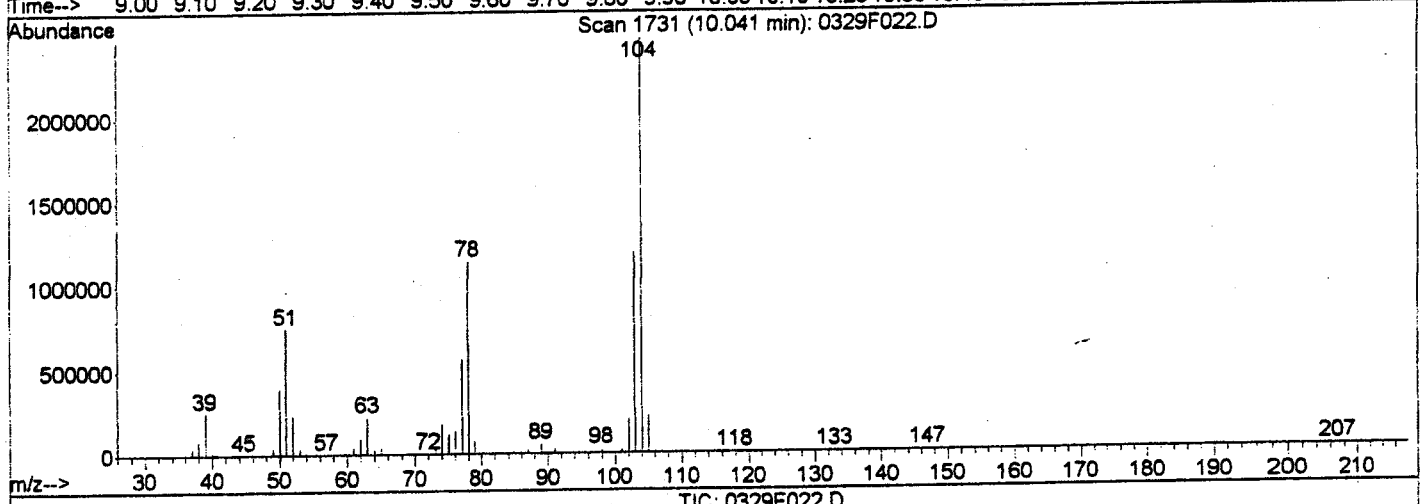
Data File : J:\MS23\DATA\032911\0329F022.D
Acq On : 29 Mar 2011 5:31 pm
Sample : 624 ICAL 80
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 9:00 2011

Vial: 10
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Multiple Level Calibration





TIC: 0329F022.D

(45) Styrene (T)

10.04min 114.96PPB

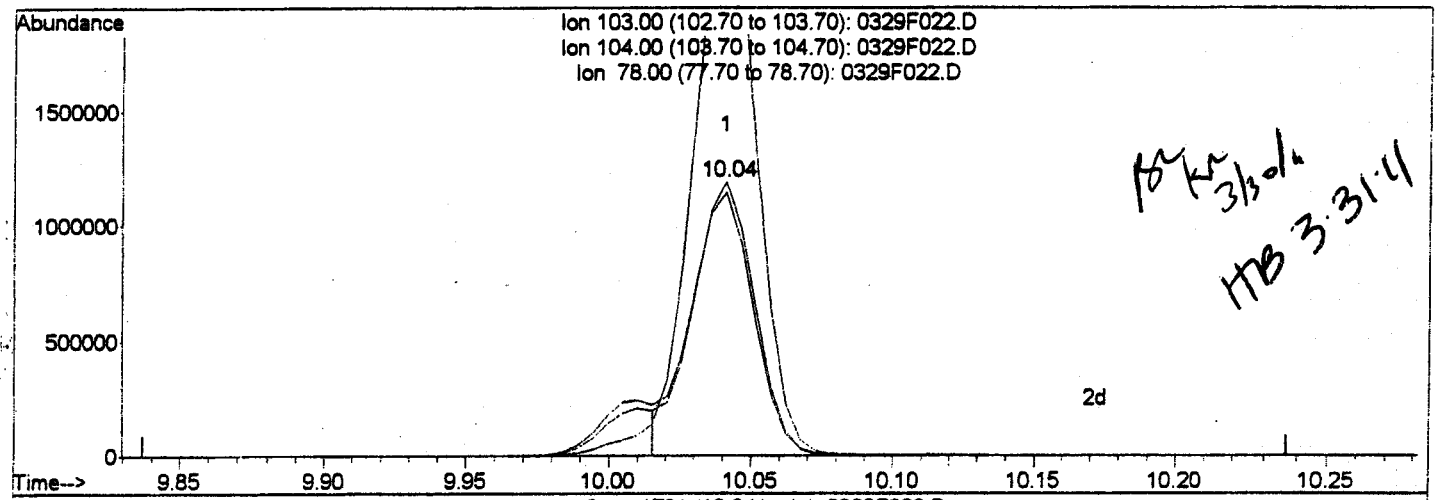
response 2068041

Ion	Exp%	Act%
103.00	100	100
104.00	214.60	208.00
78.00	96.70	95.93
0.00	0.00	0.00

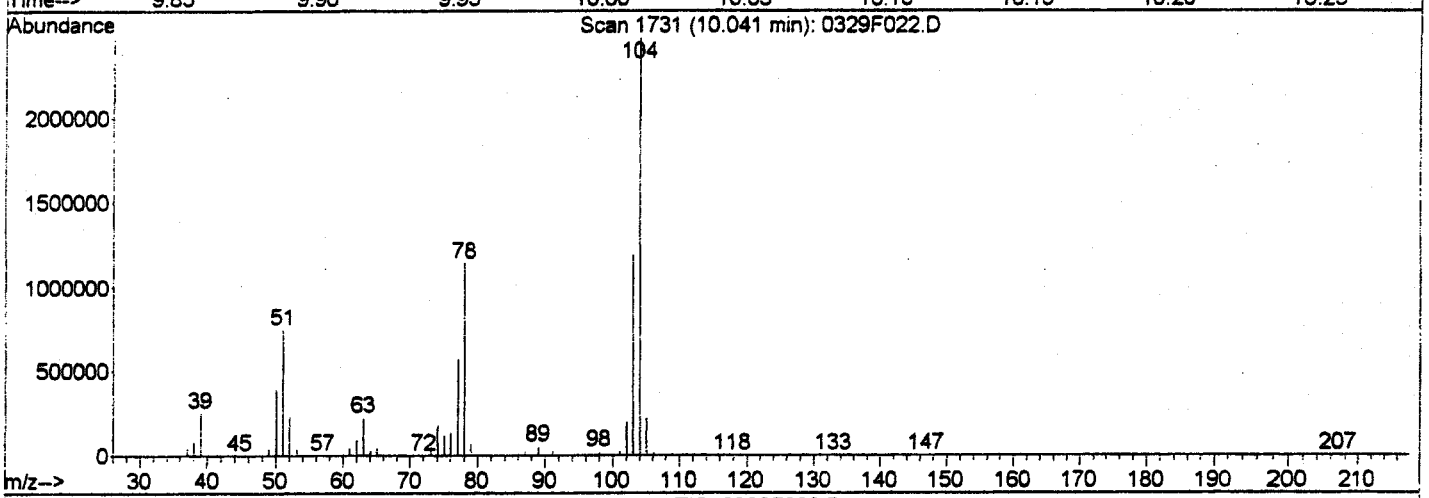
Quantitation Report (Qedit)

Data File : J:\MS23\DATA\032911\0329F022.D Vial: 10
Acq On : 29 Mar 2011 5:31 pm Operator: KR
Sample : 624 ICAL 80 Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Mar 30 9:01 2011 Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Multiple Level Calibration



KR 3/30/11
HB 3.31.11



TIC: 0329F022.D

(45) Styrene (T)

10.04min 99.53PPB m

response 1790533

Ion	Exp%	Act%
103.00	100	100
104.00	214.60	208.00
78.00	96.70	95.96
0.00	0.00	0.00

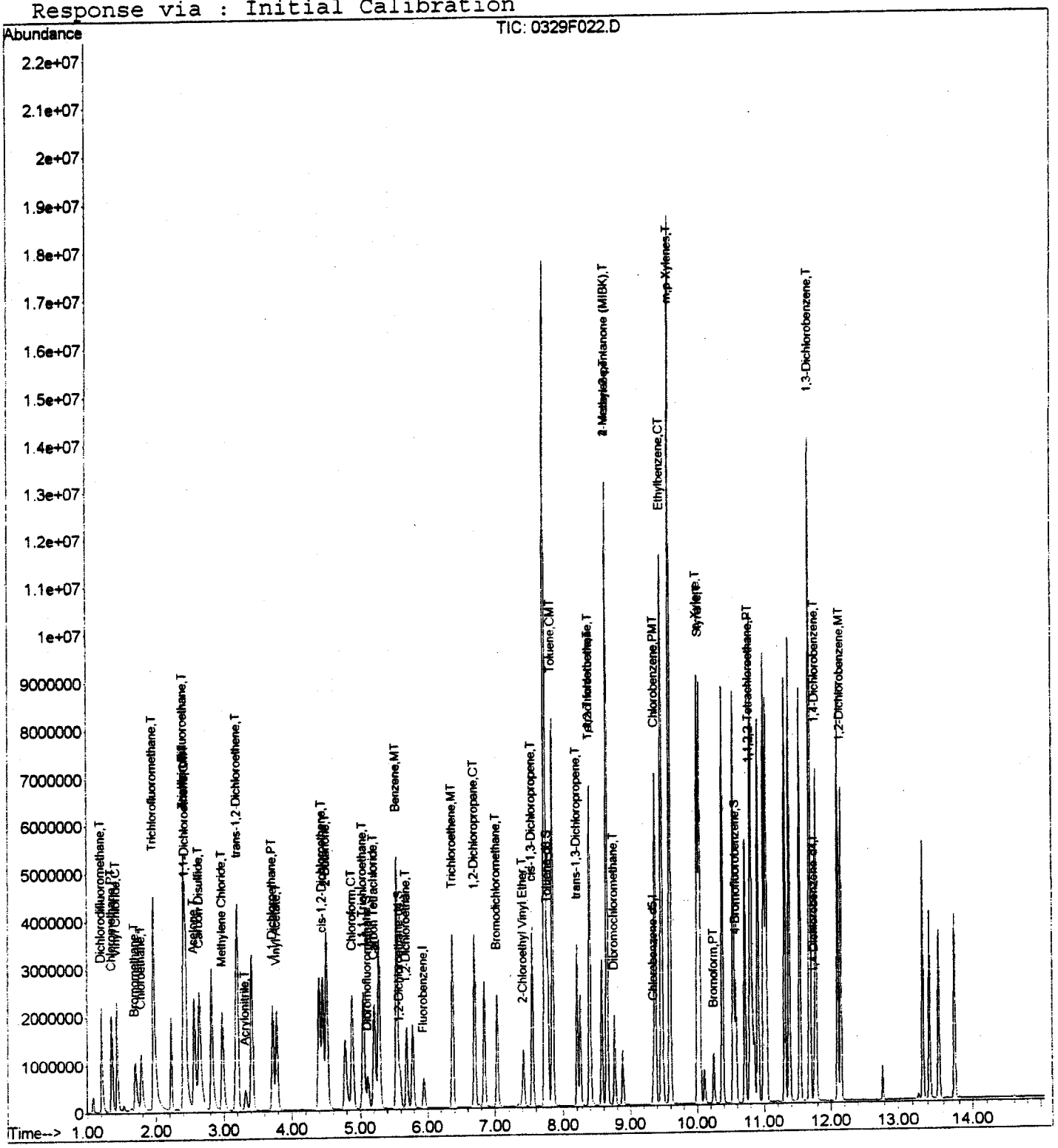
0329F022.D 032911624.M Wed Mar 30 09:01:04 2011

Data File : J:\MS23\DATA\032911\0329F022.D
Acq On : 29 Mar 2011 5:31 pm
Sample : 624 ICAL 80
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 9:01 2011

Vial: 10
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: 032911624.RE

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\032911\0329F023.D
Acq On : 29 Mar 2011 6:01 pm
Sample : 624 ICAL 120
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 09:01:20 2011

Vial: 11
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624.RES

Quant Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration
DataAcq Meth : 8260

KR 3/30/11

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	5.94	96	584662	10.00	PPB	0.00
35) Chlorobenzene-d5	9.34	82	243147	10.00	PPB	0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	214669	10.00	PPB	0.00
System Monitoring Compounds						
22) Dibromofluoromethane	5.12	113	796500	61.22	PPB	0.00
Spiked Amount 10.000			Recovery	=	612.20%	
24) 1,2-Dichloroethane-d4	5.59	65	957737	54.92	PPB	0.00
Spiked Amount 10.000			Recovery	=	549.20%	
33) Toluene-d8	7.77	98	3523152	66.65	PPB	0.00
Spiked Amount 10.000			Recovery	=	666.50%	
47) 4-Bromofluorobenzene	10.58	95	1269631	67.53	PPB	0.00
Spiked Amount 10.000			Recovery	=	675.30%	

Target Compounds							Qvalue
2) Dichlorodifluoromethane	1.20	85	2522236	109.56	PPB		98
3) Chloromethane	1.36	50	3431495	139.69	PPB		98
4) Vinyl Chloride	1.43	62	3021684	125.60	PPB		99
5) Bromomethane	1.69	96	1232249	148.60	PPB		94
6) Chloroethane	1.78	49	457439	114.91	PPB		88
7) Trichlorofluoromethane	1.97	101	3614261	126.96	PPB		99
8) Acrolein	2.41	56	3541474	2273.19	PPB		99
9) Trichlorotrifluoroethane	2.41	151	1640834	157.65	PPB		98
10) 1,1-Dichloroethene	2.44	96	1751963	144.98	PPB		97
11) Acetone	2.56	43	5468101	1987.68	PPB		92
12) Carbon Disulfide	2.64	76	7151242	148.25	PPB		96
13) Methylene Chloride	2.98	84	1632866	105.65	PPB		98
14) Acrylonitrile	3.32	53	618836	167.29	PPB		98
15) trans-1,2-Dichloroethene	3.20	96	1802697	122.86	PPB		100
16) 1,1-Dichloroethane	3.73	63	3593375	122.07	PPB		98
17) Vinyl Acetate	3.79	86	398324	230.91	PPB	#	90
18) cis-1,2-Dichloroethene	4.46	96	1916083	120.16	PPB		99
19) 2-Butanone	4.52	72	1736661	1889.78	PPB	#	88
20) Chloroform	4.89	83	3180460	119.10	PPB		98
21) 1,1,1-Trichloroethane	5.05	97	3061936	143.13	PPB		98
23) Carbon Tetrachloride	5.21	117	2496871	164.92	PPB		97
25) Benzene	5.54	78	7540717	121.41	PPB		98
26) 1,2-Dichloroethane	5.69	62	2223407	109.00	PPB		98
27) Trichloroethene	6.37	95	1906972	124.87	PPB		98
28) 1,2-Dichloropropane	6.70	63	1915964	118.02	PPB		96
29) Bromodichloromethane	7.03	83	2226069	129.68	PPB		98
30) 2-Chloroethyl Vinyl Ether	7.42	63	689594	106.53	PPB		93

(#) = qualifier out of range (m) = manual integration

HB 3/31/11

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\032911\0329F023.D
Acq On : 29 Mar 2011 6:01 pm
Sample : 624 ICAL 120
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 09:01:20 2011

Vial: 11
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: 032911624.RES

Quant Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration
DataAcq Meth : 8260

	Compound	R.T.	QIon	Response	Conc	Unit		Qvalue
31)	cis-1,3-Dichloropropene	7.55	75	2774046	129.31	PPB		95
32)	4-Methyl-2-pentanone (MIBK	8.65	58	6242156	2124.81	PPB		86
34)	Toluene	7.85	92	4880661	132.92	PPB		96
36)	trans-1,3-Dichloropropene	8.20	75	2281422	130.89	PPB		96
37)	1,1,2-Trichloroethane	8.39	83	957375	112.06	PPB		96
38)	Tetrachloroethene	8.40	164	1504810	142.18	PPB		98
39)	2-Hexanone	8.65	43	12275723	2018.89	PPB		94
40)	Dibromochloromethane	8.77	129	1304139	146.65	PPB		99
41)	Chlorobenzene	9.37	112	4858713	130.80	PPB		97
42)	Ethylbenzene	9.47	106	2919997	142.72	PPB	#	86
43)	m,p-Xylenes	9.60	106	7343971	290.90	PPB	#	82
44)	o-Xylene	10.01	106	3412888	142.98	PPB		96
45)	Styrene	10.04	103	2706498m	148.33	PPB		
46)	Bromoform	10.25	173	660841	167.66	PPB		97
49)	1,1,2,2-Tetrachloroethane	10.79	83	1118452	108.15	PPB		94
51)	1,3-Dichlorobenzene	11.68	146	3841702	136.49	PPB		99
52)	1,4-Dichlorobenzene	11.77	146	3657824	127.25	PPB		100
53)	1,2-Dichlorobenzene	12.15	146	3175968	123.75	PPB		100

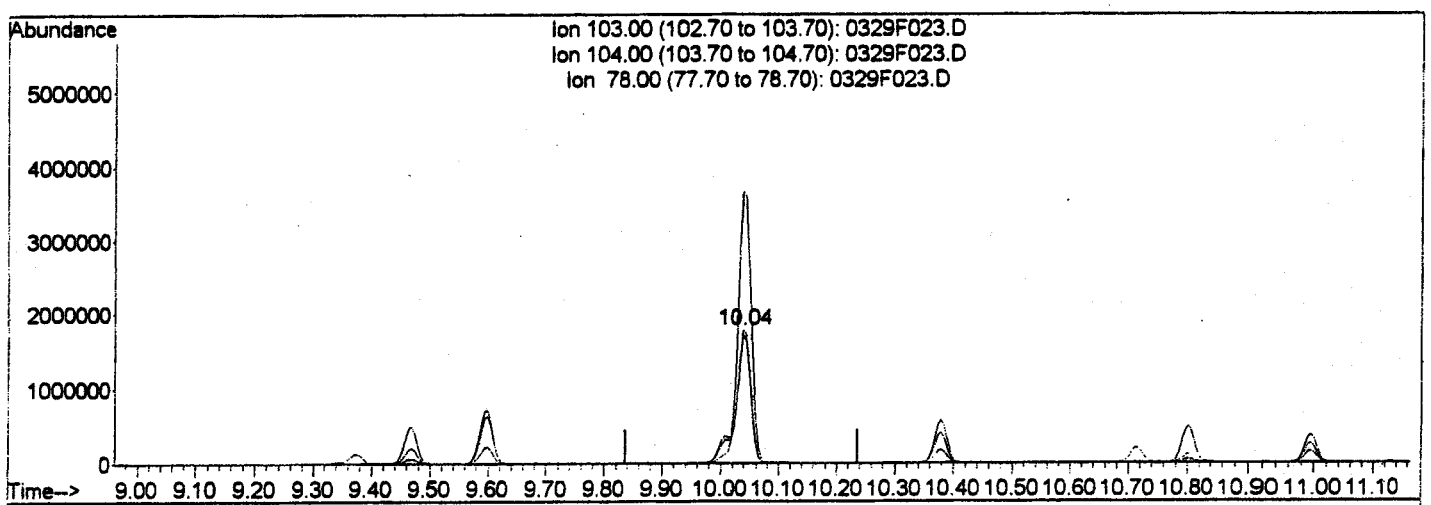
(#) = qualifier out of range (m) = manual integration

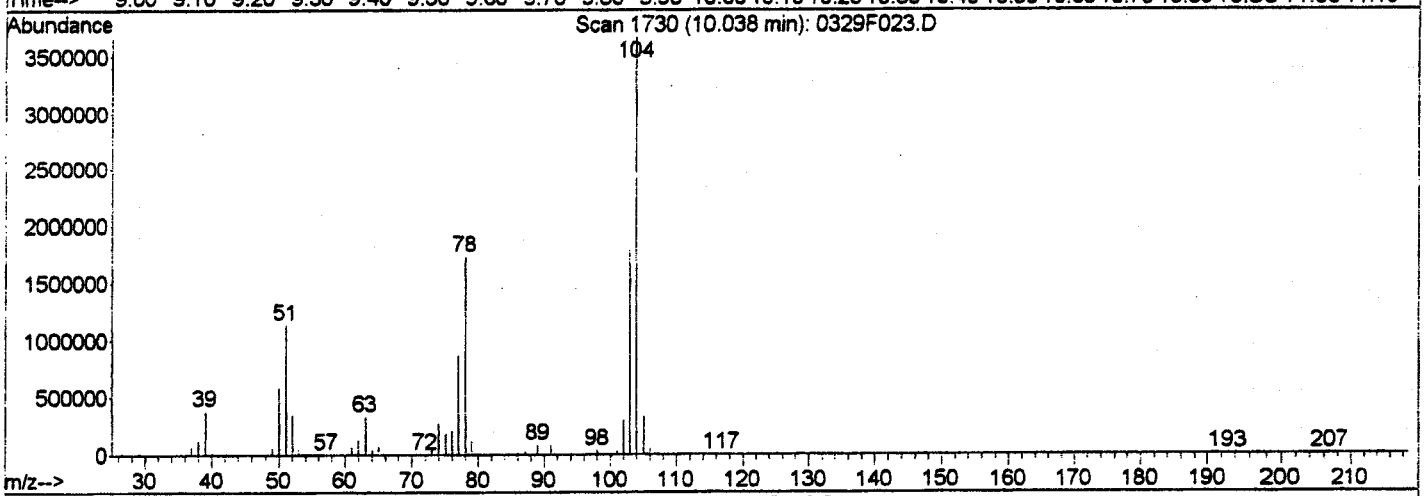
Quantitation Report (Qedit)

Data File : J:\MS23\DATA\032911\0329F023.D
Acq On : 29 Mar 2011 6:01 pm
Sample : 624 ICAL 120
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 9:01 2011

Vial: 11
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Multiple Level Calibration





TIC: 0329F023.D

(45) Styrene (T)

10.04min 173.53PPB

response 3166474

Ion	Exp%	Act%
103.00	100	100
104.00	214.60	206.41
78.00	96.70	97.17
0.00	0.00	0.00

0329F023.D 032911624.M Wed Mar 30 09:01:47 2011

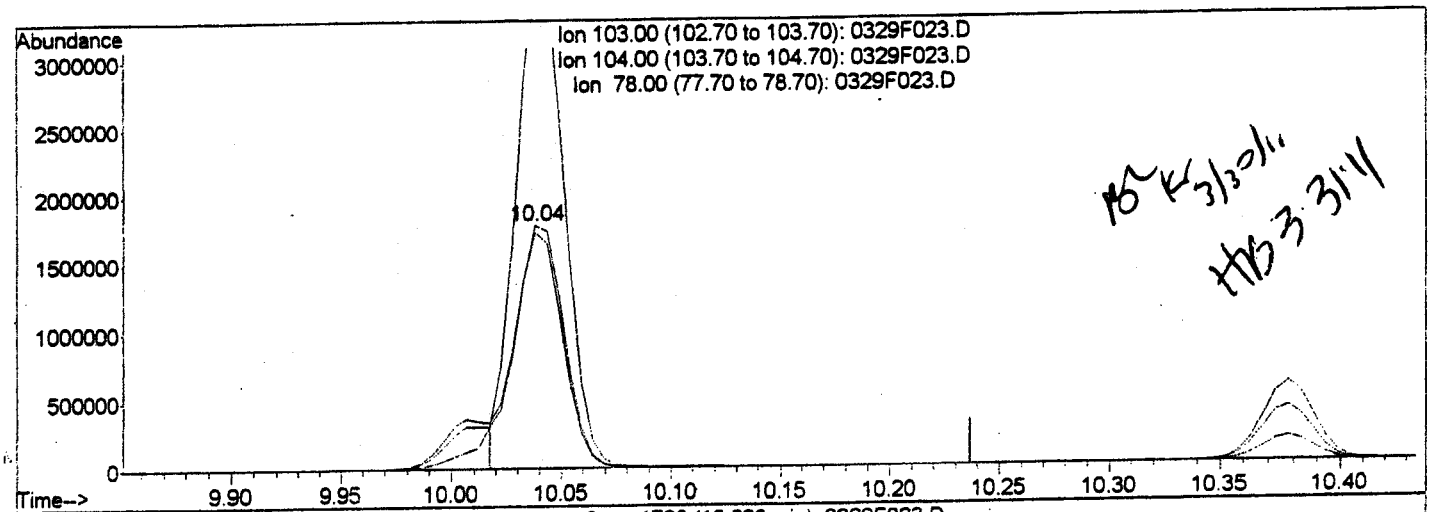
Quantitation Report (Qedit)

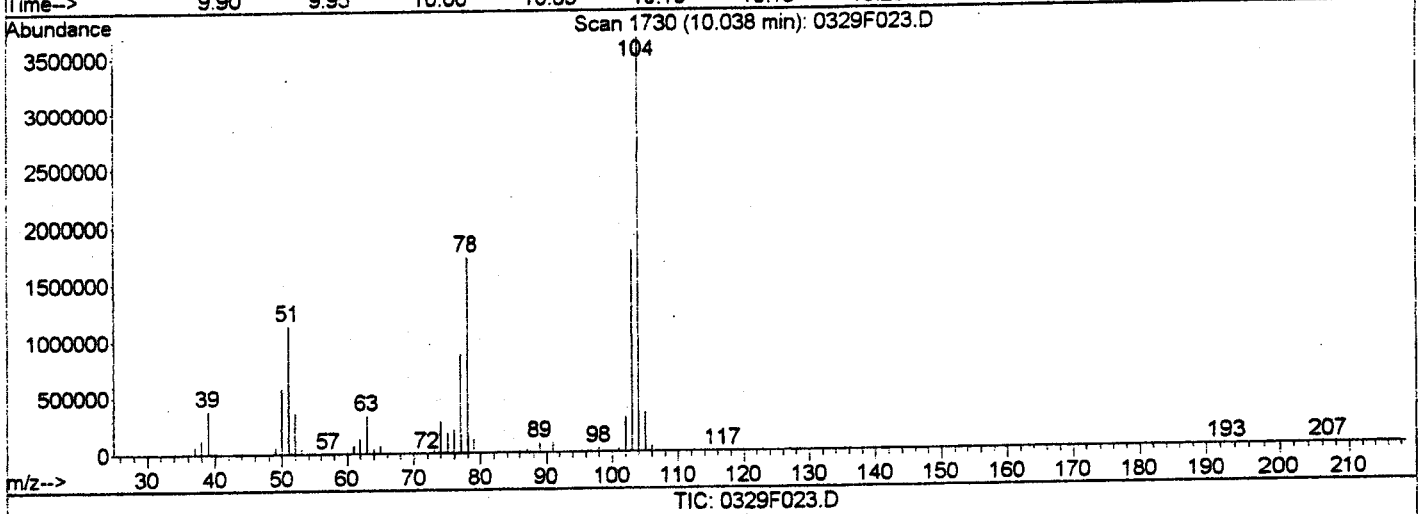
Data File : J:\MS23\DATA\032911\0329F023.D
Acq On : 29 Mar 2011 6:01 pm
Sample : 624 ICAL 120
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 9:01 2011

Vial: 11
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Multiple Level Calibration





TIC: 0329F023.D

(45) Styrene (T)

10.04min 148.33PPB m

response 2706498

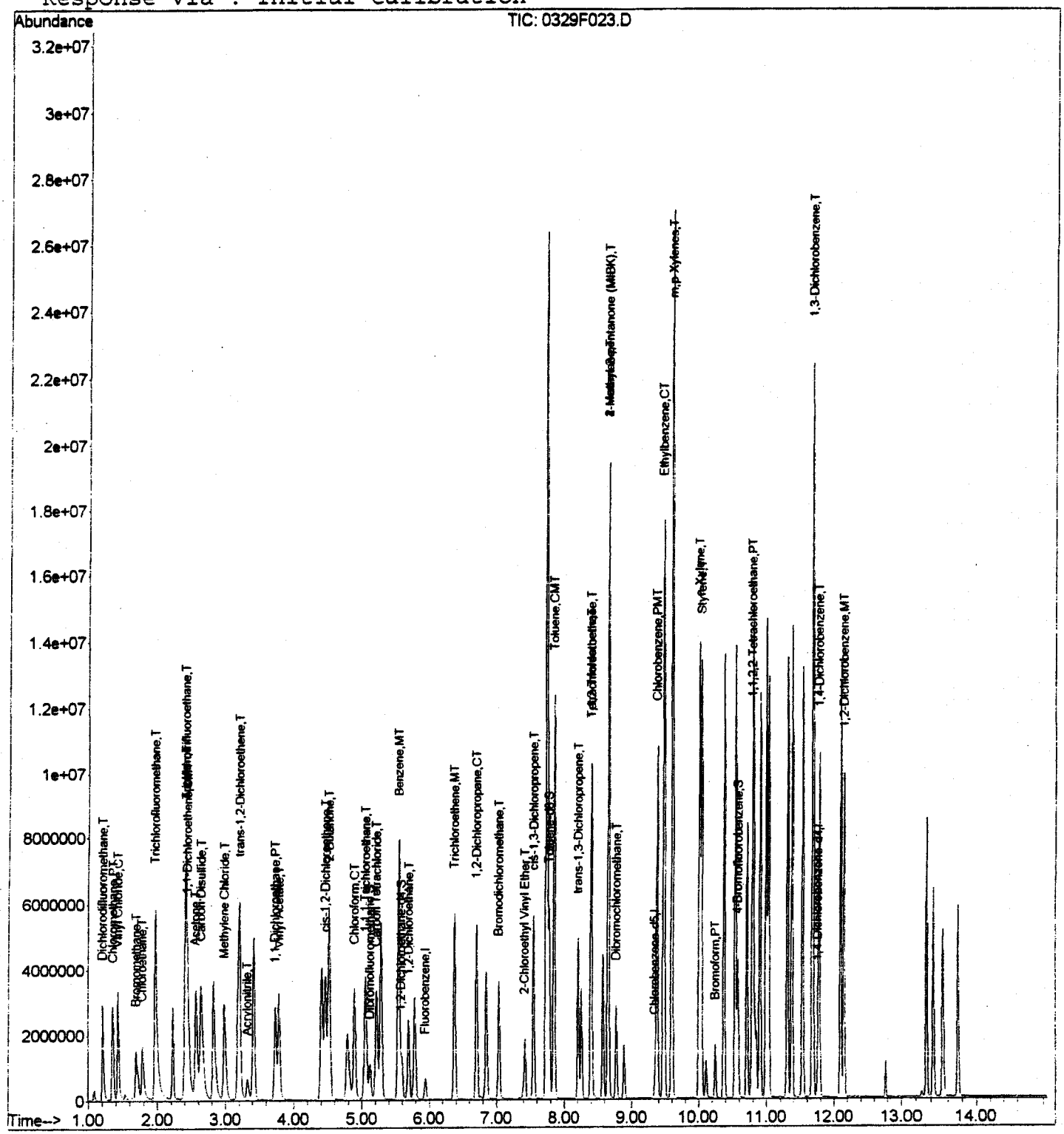
Ion	Exp%	Act%
103.00	100	100
104.00	214.60	206.39
78.00	96.70	97.18
0.00	0.00	0.00

0329F023.D 032911624.M Wed Mar 30 09:01:52 2011

Data File : J:\MS23\DATA\032911\0329F023.D
Acq On : 29 Mar 2011 6:01 pm
Sample : 624 ICAL 120
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 9:01 2011

Vial: 11
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624.RE

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\032911\0329F025.D
Acq On : 29 Mar 2011 7:01 pm
Sample : IB
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 09:02:14 2011

Vial: 13
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: 032911624.RES

Quant Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration
DataAcq Meth : 8260

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Fluorobenzene	5.94	96	554877	10.00	PPB		0.00
35) Chlorobenzene-d5	9.34	82	228738	10.00	PPB		0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	185033	10.00	PPB		0.00
System Monitoring Compounds							
22) Dibromofluoromethane	0.00	113	0	0.00	PPB		
Spiked Amount 10.000			Recovery	=	0.00%		
24) 1,2-Dichloroethane-d4	0.00	65	0	0.00	PPB		
Spiked Amount 10.000			Recovery	=	0.00%		
33) Toluene-d8	7.78	98	688	0.01	PPB		0.01
Spiked Amount 10.000			Recovery	=	0.10%		
47) 4-Bromofluorobenzene	10.62	95	538	0.03	PPB		0.03
Spiked Amount 10.000			Recovery	=	0.30%		
Target Compounds							Qvalue
3) Chloromethane	1.35	50	2420	0.10	PPB		81
43) m,p-Xylenes	9.60	106	1619	0.07	PPB	#	56
44) o-Xylene	10.00	106	652	0.03	PPB	#	50
51) 1,3-Dichlorobenzene	11.68	146	2262	0.09	PPB		74
52) 1,4-Dichlorobenzene	11.78	146	2317	0.09	PPB		76
53) 1,2-Dichlorobenzene	12.15	146	2044	0.09	PPB		82

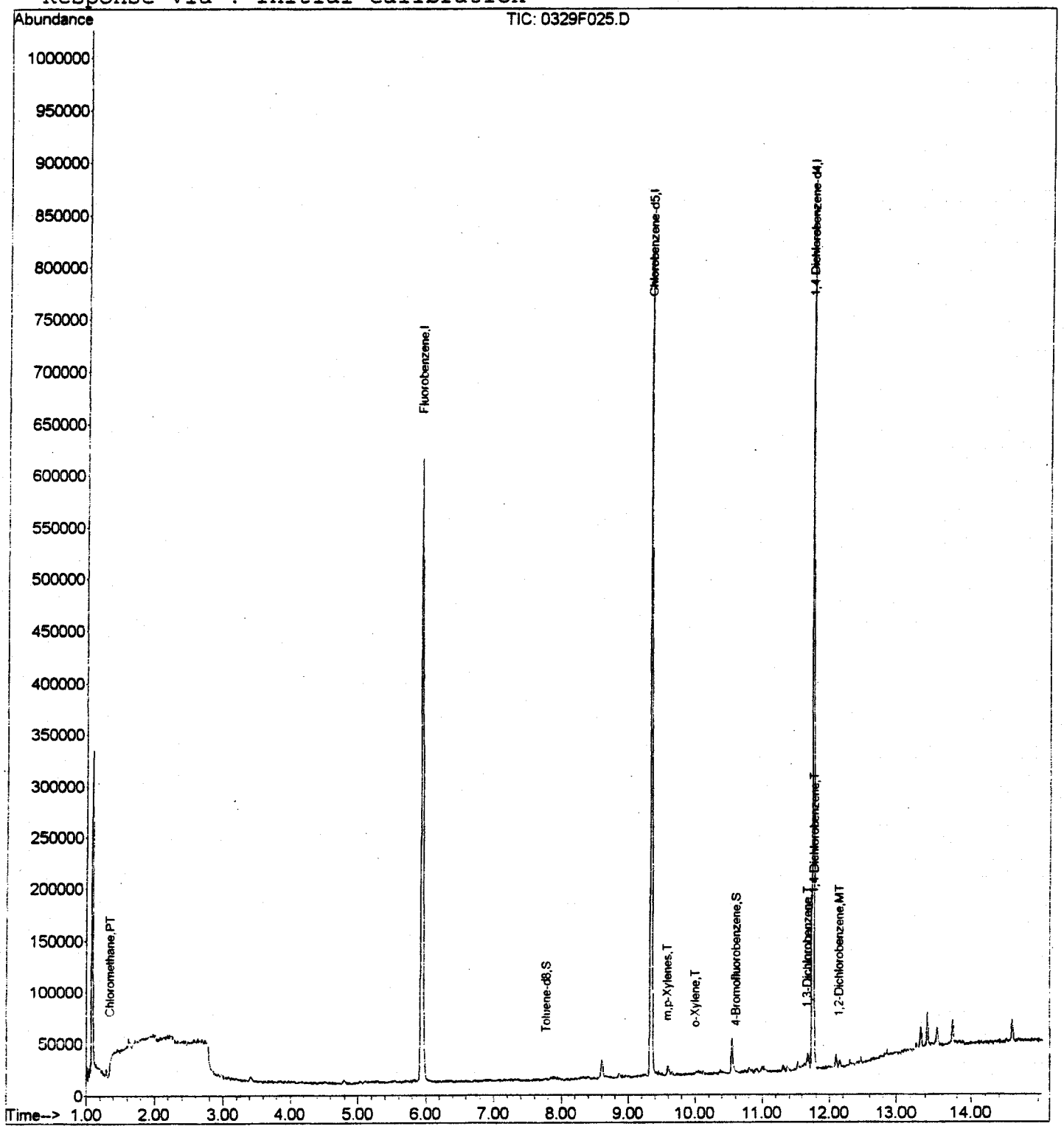
KR 3/30/11
IB 3.31.11

(#) = qualifier out of range (m) = manual integration
0329F025.D 032911624.M Wed Mar 30 09:03:27 2011

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\032911\0329F025.D Vial: 13
Acq On : 29 Mar 2011 7:01 pm Operator: KR
Sample : IB Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Mar 30 9:03 2011 Quant Results File: 032911624.RE

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\032911\0329F026.D
Acq On : 29 Mar 2011 7:31 pm
Sample : 624 ICAL 0.5
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 07:37:59 2011

Vial: 14
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: 032911624.RES

Quant Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration
DataAcq Meth : 8260

KM 3/30/11

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	5.94	96	541888	10.00	PPB	0.00
35) Chlorobenzene-d5	9.35	82	219261	10.00	PPB	0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	177259	10.00	PPB	0.00
System Monitoring Compounds						
22) Dibromofluoromethane	5.12	113	98900	8.20	PPB	0.01
Spiked Amount 10.000			Recovery	=	82.00%	
24) 1,2-Dichloroethane-d4	5.59	65	125121	7.74	PPB	0.00
Spiked Amount 10.000			Recovery	=	77.40%	
33) Toluene-d8	7.77	98	421079	8.60	PPB	0.00
Spiked Amount 10.000			Recovery	=	86.00%	
47) 4-Bromofluorobenzene	10.58	95	145920	8.61	PPB	0.00
Spiked Amount 10.000			Recovery	=	86.10%	

Target Compounds							Qvalue
2) Dichlorodifluoromethane	1.20	85	9013	0.42	PPB		94
3) Chloromethane	1.35	50	17787	0.78	PPB		95
4) Vinyl Chloride	1.43	62	12094	0.54	PPB		98
5) Bromomethane	1.70	96	5959	0.78	PPB		89
6) Chloroethane	1.78	49	2520	0.68	PPB		83
7) Trichlorofluoromethane	1.96	101	13441	0.51	PPB		93
8) Acrolein	2.41	56	17619	12.20	PPB		94
9) Trichlorotrifluoroethane	2.41	151	5977	0.62	PPB		99
10) 1,1-Dichloroethene	2.44	96	6966	0.62	PPB		93
11) Acetone	2.56	43	33722	13.23	PPB		92
12) Carbon Disulfide	2.63	76	29430	0.66	PPB		97
13) Methylene Chloride	2.97	84	9108	0.64	PPB		90
14) Acrylonitrile	3.32	53	2203	0.64	PPB		82
15) trans-1,2-Dichloroethene	3.20	96	7904	0.58	PPB		92
16) 1,1-Dichloroethane	3.73	63	14482	0.53	PPB		91
17) Vinyl Acetate	3.79	86	1399	0.88	PPB	#	56
18) cis-1,2-Dichloroethene	4.45	96	8846	0.60	PPB		88
19) 2-Butanone	4.52	72	7850	9.22	PPB		99
20) Chloroform	4.89	83	13618	0.55	PPB		87
21) 1,1,1-Trichloroethane	5.05	97	11649	0.59	PPB		93
23) Carbon Tetrachloride	5.21	117	7778	0.55	PPB		84
25) Benzene	5.54	78	30699	0.53	PPB		94
26) 1,2-Dichloroethane	5.68	62	9879	0.52	PPB		95
27) Trichloroethene	6.37	95	8210	0.58	PPB		89
28) 1,2-Dichloropropane	6.71	63	8172	0.54	PPB		95
29) Bromodichloromethane	7.03	83	8815	0.55	PPB		97
30) 2-Chloroethyl Vinyl Ether	7.42	63	2817	0.47	PPB		89

HB 3-31-11

(#) = qualifier out of range (m) = manual integration
0329F026.D 032911624.M Wed Mar 30 09:04:28 2011

Data File : J:\MS23\DATA\032911\0329F026.D
Acq On : 29 Mar 2011 7:31 pm
Sample : 624 ICAL 0.5
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 07:37:59 2011

Vial: 14
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624.RES

Quant Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration
DataAcq Meth : 8260

	Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
31)	cis-1,3-Dichloropropene	7.55	75	10264	0.52	PPB	94
32)	4-Methyl-2-pentanone (MIBK	8.65	58	26525	9.74	PPB	96
34)	Toluene	7.84	92	18892	0.56	PPB	94
36)	trans-1,3-Dichloropropene	8.21	75	8718	0.55	PPB	90
37)	1,1,2-Trichloroethane	8.39	83	3984	0.52	PPB	92
38)	Tetrachloroethene	8.40	164	5408	0.57	PPB	98
39)	2-Hexanone	8.65	43	56538	10.31	PPB	99
40)	Dibromochloromethane	8.77	129	4542	0.57	PPB	91
41)	Chlorobenzene	9.37	112	19966	0.60	PPB	97
42)	Ethylbenzene	9.47	106	10384	0.56	PPB	94
43)	m,p-Xylenes	9.59	106	25827	1.13	PPB	92
44)	o-Xylene	10.00	106	12911	0.60	PPB	90
45)	Styrene	10.04	103	9376m	0.57	PPB	
46)	Bromoform	10.25	173	2120	0.60	PPB	80
49)	1,1,2,2-Tetrachloroethane	10.78	83	5034	0.59	PPB	91
51)	1,3-Dichlorobenzene	11.67	146	14218	0.61	PPB	99
52)	1,4-Dichlorobenzene	11.78	146	15012	0.63	PPB	95
53)	1,2-Dichlorobenzene	12.15	146	12894	0.61	PPB	95

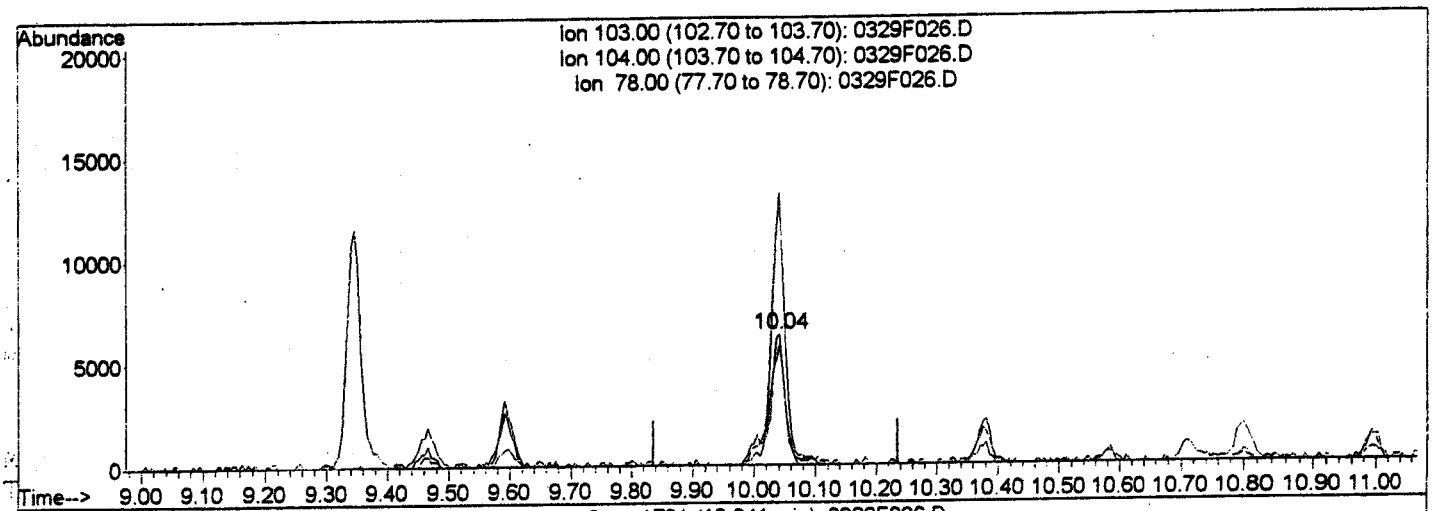
(#) = qualifier out of range (m) = manual integration

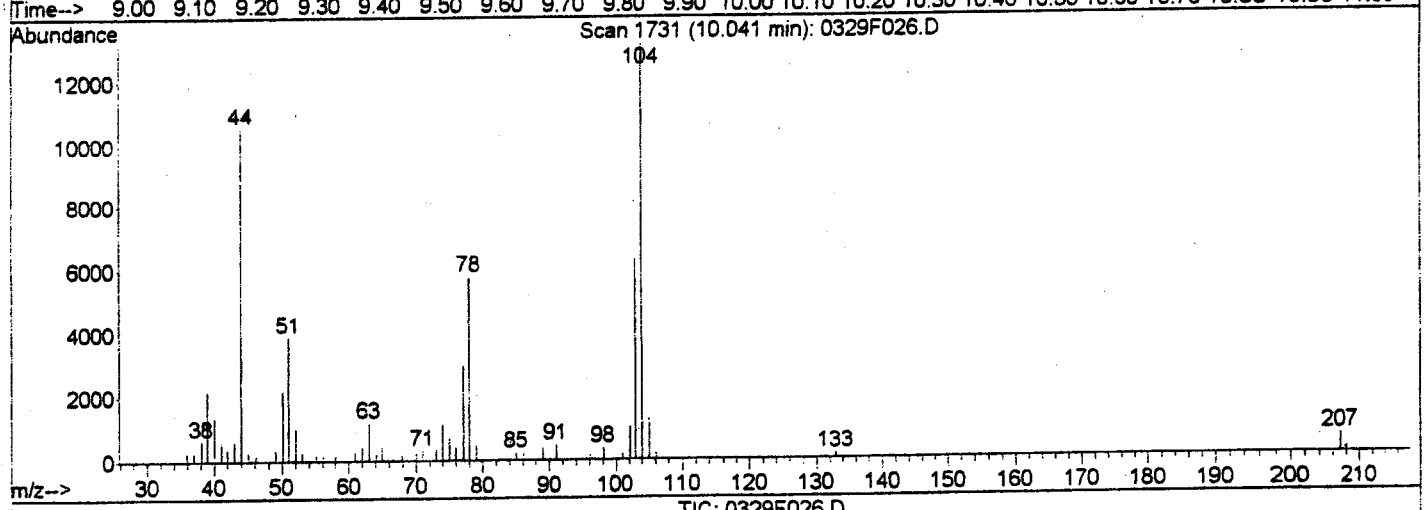
Data File : J:\MS23\DATA\032911\0329F026.D
Acq On : 29 Mar 2011 7:31 pm
Sample : 624 ICAL 0.5
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 7:38 2011

Vial: 14
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Multiple Level Calibration





TIC: 0329F026.D

(45) Styrene (T)

10.04min 0.66PPB

response 10896

Ion	Exp%	Act%
103.00	100	100
104.00	214.60	209.20
78.00	96.70	91.81
0.00	0.00	0.00

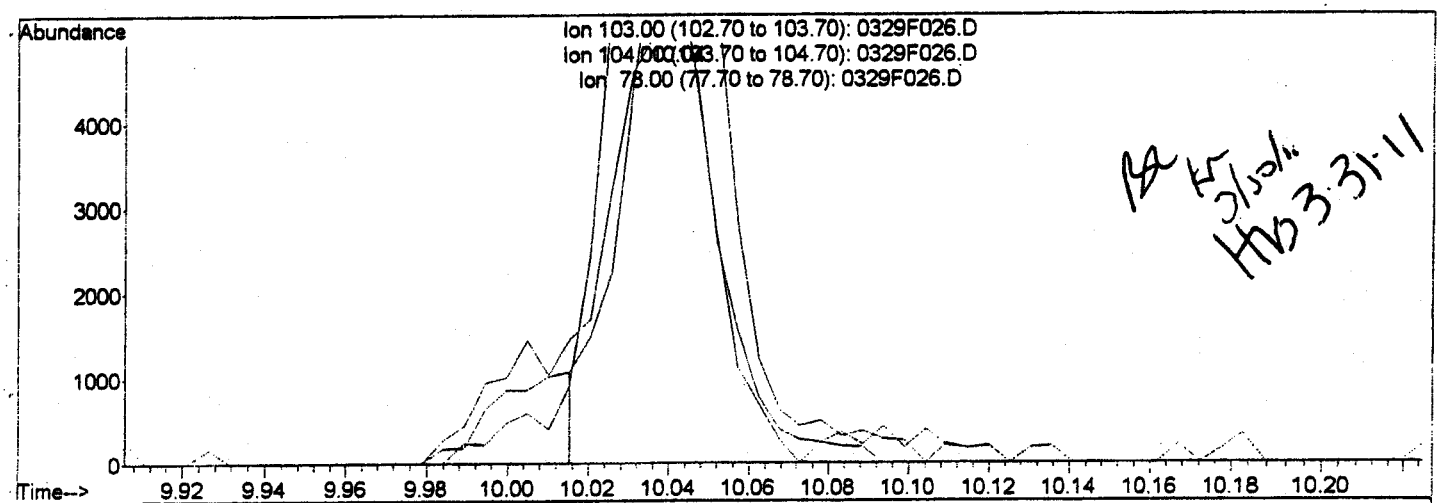
0329F026.D 032911624.M Wed Mar 30 09:04:08 2011

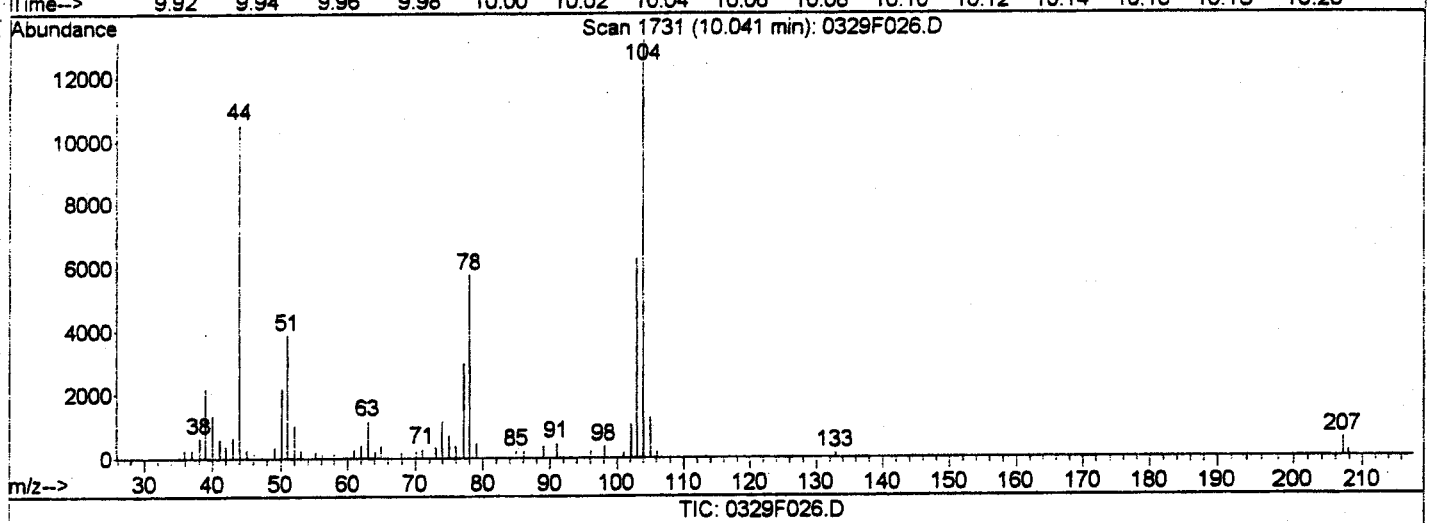
Quantitation Report (Qedit)

Data File : J:\MS23\DATA\032911\0329F026.D
Acq On : 29 Mar 2011 7:31 pm
Sample : 624 ICAL 0.5
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 9:04 2011

Vial: 14
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Multiple Level Calibration





TIC: 0329F026.D

(45) Styrene (T)

10.04min 0.57PPB m

response 9376

Ion	Exp%	Act%
103.00	100	100
104.00	214.60	209.20
78.00	96.70	91.81
0.00	0.00	0.00

0329F026.D 032911624.M Wed Mar 30 09:04:17 2011

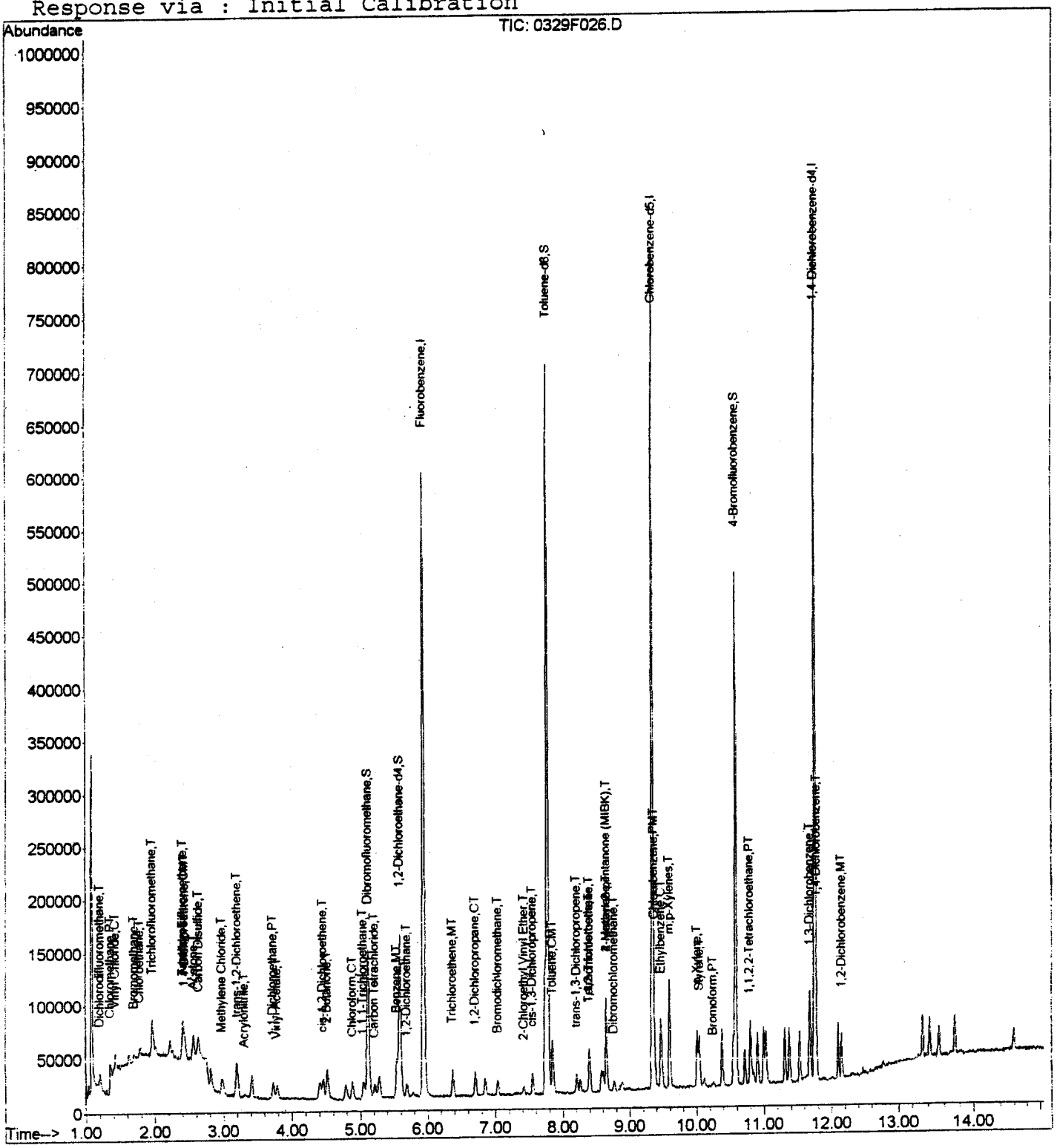
Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\032911\0329F026.D
Acq On : 29 Mar 2011 7:31 pm
Sample : 624 ICAL 0.5
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 9:04 2011

Vial: 14
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: 032911624.RE

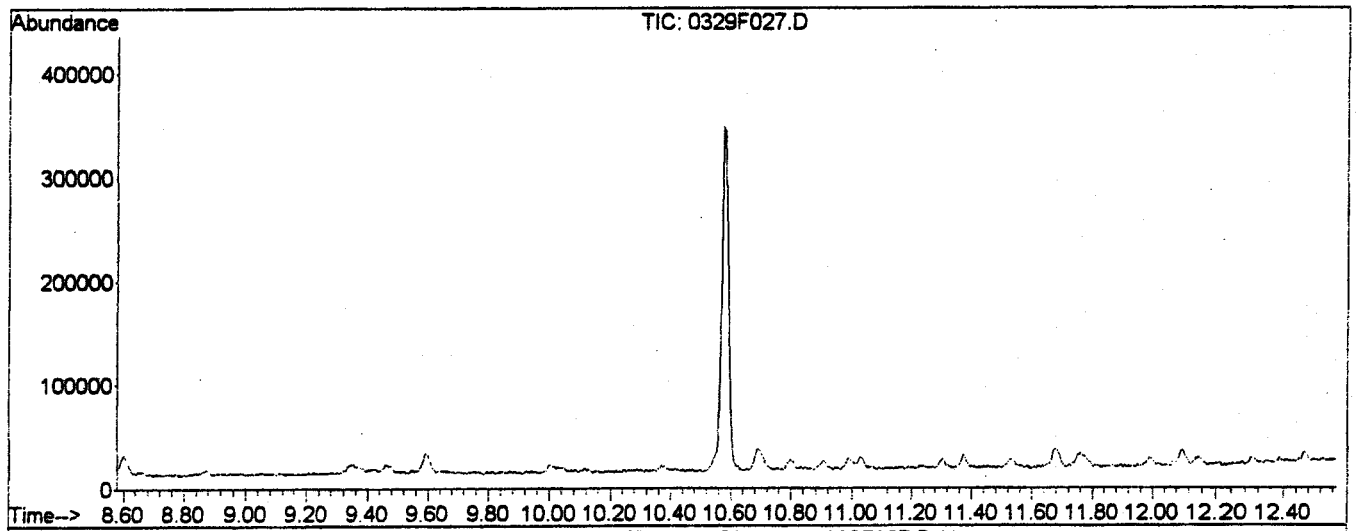
Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration

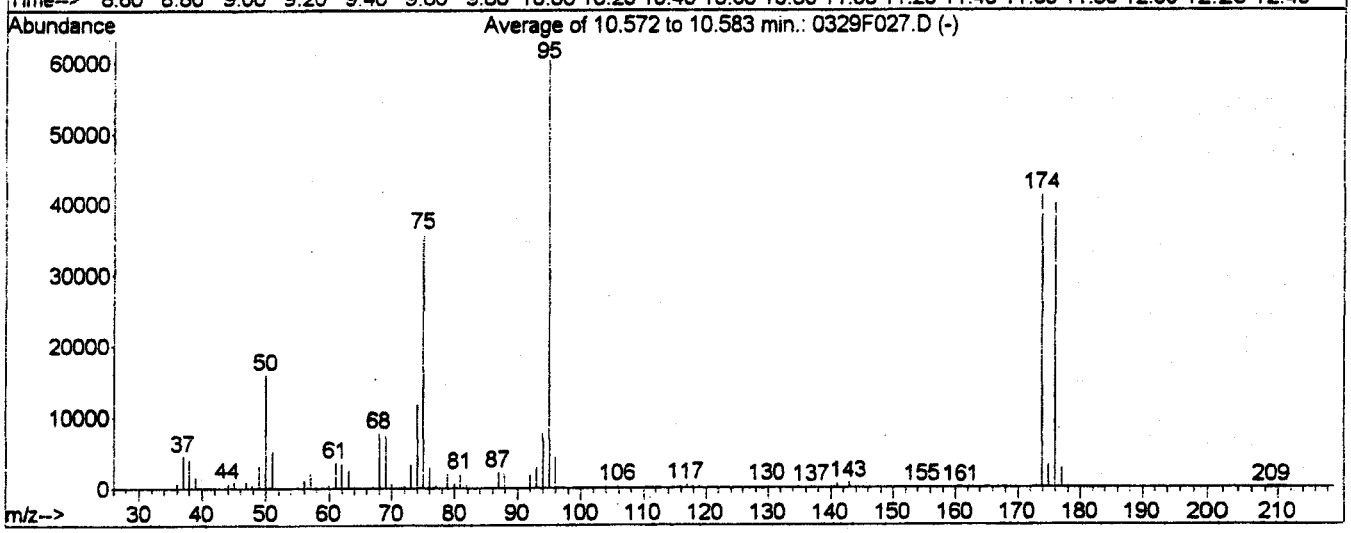


BFB

Data File : J:\MS23\DATA\032911\0329F027.D
Acq On : 30 Mar 2011 8:48 am
Sample : 624 ICAL 1
Misc :
MS Integration Params: rteint.p
Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624

Vial: 15
Operator: KR
Inst : MS23
Multiplr: 1.00





AutoFind: Scans 1832, 1833, 1834; Background Corrected with Scan 1822

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	26.3	15893	PASS
75	95	30	60	59.3	35786	PASS
95	95	100	100	100.0	60389	PASS
96	95	5	9	7.4	4443	PASS
173	174	0.00	2	0.6	265	PASS
174	95	50	120	68.3	41240	PASS
175	174	5	9	7.7	3196	PASS
176	174	95	101	97.0	39994	PASS
177	176	5	9	6.8	2712	PASS

KR 3/30/11
MB 3.31.11

0329F027.D 032911624.M Wed Mar 30 09:04:46 2011

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\032911\0329F028.D
Acq On : 30 Mar 2011 9:18 am
Sample : IB
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 09:49:10 2011

Vial: 16
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624.RES

Quant Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration
DataAcq Meth. : 8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	5.94	96	555020	10.00	PPB	0.00
35) Chlorobenzene-d5	9.34	82	224145	10.00	PPB	0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	181142	10.00	PPB	0.00
System Monitoring Compounds						
22) Dibromofluoromethane	0.00	113	0	0.00	PPB	
Spiked Amount 10.000			Recovery	=	0.00%	
24) 1,2-Dichloroethane-d4	0.00	65	0	0.00	PPB	
Spiked Amount 10.000			Recovery	=	0.00%	
33) Toluene-d8	0.00	98	0	0.00	PPB	
Spiked Amount 10.000			Recovery	=	0.00%	
47) 4-Bromofluorobenzene	0.00	95	0d	0.00	PPB	
Spiked Amount 10.000			Recovery	=	0.00%	
Target Compounds						Qvalue
3) Chloromethane	1.34	50	1672	0.07	PPB	93
5) Bromomethane	1.70	96	2106	0.27	PPB	86
52) 1,4-Dichlorobenzene	11.77	146	538	0.02	PPB	68

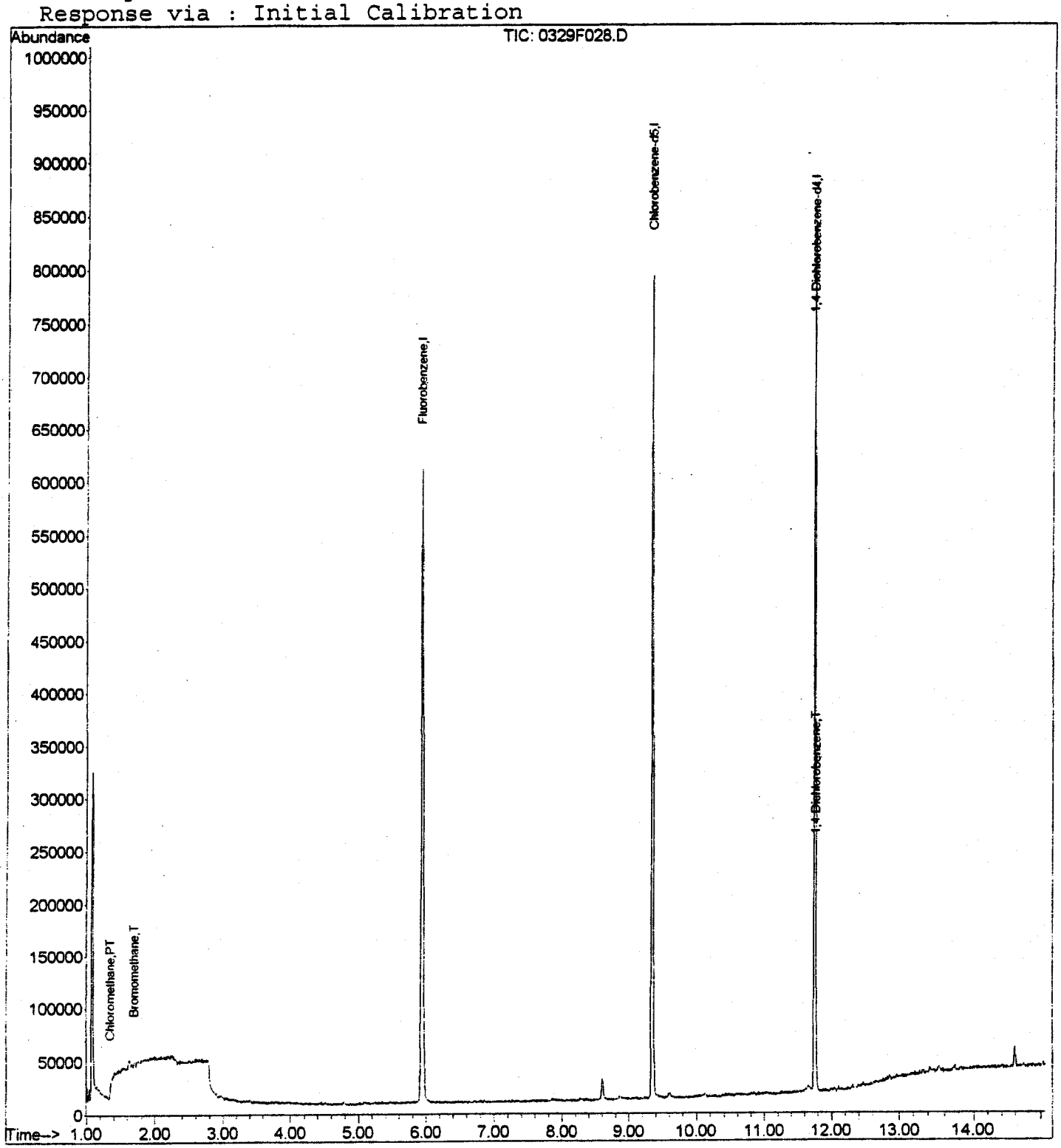
KR 3/30/11.
MB 3.31.11

(#) = qualifier out of range (m) = manual integration
0329F028.D 032911624.M Wed Mar 30 09:49:48 2011 Page 1

Data File : J:\MS23\DATA\032911\0329F028.D
Acq On : 30 Mar 2011 9:18 am
Sample : IB
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 9:49 2011

Vial: 16
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624.RE

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Mar 29 08:11:43 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\032911\0329F029.D
Acq On : 30 Mar 2011 9:48 am
Sample : 624 ICAL 1
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 10:18:12 2011

Vial: 17
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: 032911624.RES

Quant Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Mar 30 09:58:04 2011
Response via : Initial Calibration
DataAcq Meth : 8260

KT 3/30/11

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Fluorobenzene	5.94	96	543159	10.00	PPB		0.00
35) Chlorobenzene-d5	9.34	82	222678	10.00	PPB		0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	181934	10.00	PPB		0.00
System Monitoring Compounds							
22) Dibromofluoromethane	5.11	113	65512	5.50	PPB		0.00
Spiked Amount 10.000			Recovery	=	55.00%		
24) 1,2-Dichloroethane-d4	5.59	65	86728	5.85	PPB		0.00
Spiked Amount 10.000			Recovery	=	58.50%		
33) Toluene-d8	7.77	98	289350	5.57	PPB		0.00
Spiked Amount 10.000			Recovery	=	55.70%		
47) 4-Bromofluorobenzene	10.58	95	103735	5.59	PPB		0.00
Spiked Amount 10.000			Recovery	=	55.90%		
Target Compounds							Qvalue
2) Dichlorodifluoromethane	1.20	85	14515	0.73	PPB		98
3) Chloromethane	1.35	50	25099	0.89	PPB		99
4) Vinyl Chloride	1.42	62	17929	0.75	PPB		97
5) Bromomethane	1.70	96	6782	0.82	PPB		91
6) Chloroethane	1.78	49	3373	0.86	PPB		88
7) Trichlorofluoromethane	1.96	101	20178	0.71	PPB		95
8) Acrolein	2.41	56	22783	14.93	PPB		98
9) Trichlorotrifluoroethane	2.41	151	8593	0.69	PPB		92
10) 1,1-Dichloroethene	2.44	96	10327	0.76	PPB	#	80
11) Acetone	2.55	43	181134	89.33	PPB		98
12) Carbon Disulfide	2.63	76	42514	0.75	PPB		98
13) Methylene Chloride	2.98	84	11621	0.85	PPB		90
14) Acrylonitrile	3.32	53	4661	1.93	PPB		87
15) trans-1,2-Dichloroethene	3.20	96	10531	0.75	PPB		96
16) 1,1-Dichloroethane	3.73	63	20873	0.75	PPB		95
17) Vinyl Acetate	3.79	86	849	0.56	PPB	#	55
18) cis-1,2-Dichloroethene	4.45	96	11322	0.75	PPB		98
19) 2-Butanone	4.52	72	50945	85.09	PPB		96
20) Chloroform	4.89	83	19686	0.79	PPB		89
21) 1,1,1-Trichloroethane	5.05	97	16824	0.72	PPB		98
23) Carbon Tetrachloride	5.21	117	11964	0.66	PPB		95
25) Benzene	5.54	78	45256	0.77	PPB		98
26) 1,2-Dichloroethane	5.69	62	13990	0.78	PPB		96
27) Trichloroethene	6.37	95	11864	0.80	PPB		94
28) 1,2-Dichloropropane	6.70	63	11618	0.77	PPB		95
29) Bromodichloromethane	7.03	83	12378	0.73	PPB		89
30) 2-Chloroethyl Vinyl Ether	7.42	63	3476	0.67	PPB		83

(#) = qualifier out of range (m) = manual integration

HB 3/31/11

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\032911\0329F029.D Vial: 17
Acq On : 30 Mar 2011 9:48 am Operator: KR
Sample : 624 ICAL 1 Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Mar 30 10:18:12 2011 Quant Results File: 032911624.RES

Quant Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Mar 30 09:58:04 2011
Response via : Initial Calibration
DataAcq Meth : 8260

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
31)	cis-1,3-Dichloropropene	7.55	75	13951	0.67 PPB	97
32)	4-Methyl-2-pentanone (MIBK	8.65	58	171653	80.87 PPB	99
34)	Toluene	7.84	92	27557	0.75 PPB	90
36)	trans-1,3-Dichloropropene	8.20	75	10907	0.64 PPB	95
37)	1,1,2-Trichloroethane	8.39	83	5376	0.73 PPB	97
38)	Tetrachloroethene	8.40	164	7969	0.73 PPB	95
39)	2-Hexanone	8.65	43	373052	84.81 PPB	100
40)	Dibromochloromethane	8.77	129	6423	0.68 PPB	98
41)	Chlorobenzene	9.37	112	27578	0.74 PPB	95
42)	Ethylbenzene	9.47	106	15442	0.72 PPB	98
43)	m,p-Xylenes	9.59	106	36786	1.38 PPB	99
44)	o-Xylene	10.01	106	17550	0.70 PPB	95
45)	Styrene	10.04	103	12505m	0.64 PPB	
46)	Bromoform	10.24	173	2884	0.63 PPB	96
49)	1,1,2,2-Tetrachloroethane	10.79	83	5644	0.66 PPB	96
51)	1,3-Dichlorobenzene	11.68	146	18607	0.69 PPB	96
52)	1,4-Dichlorobenzene	11.78	146	19787	0.74 PPB	97
53)	1,2-Dichlorobenzene	12.15	146	17054	0.73 PPB	99

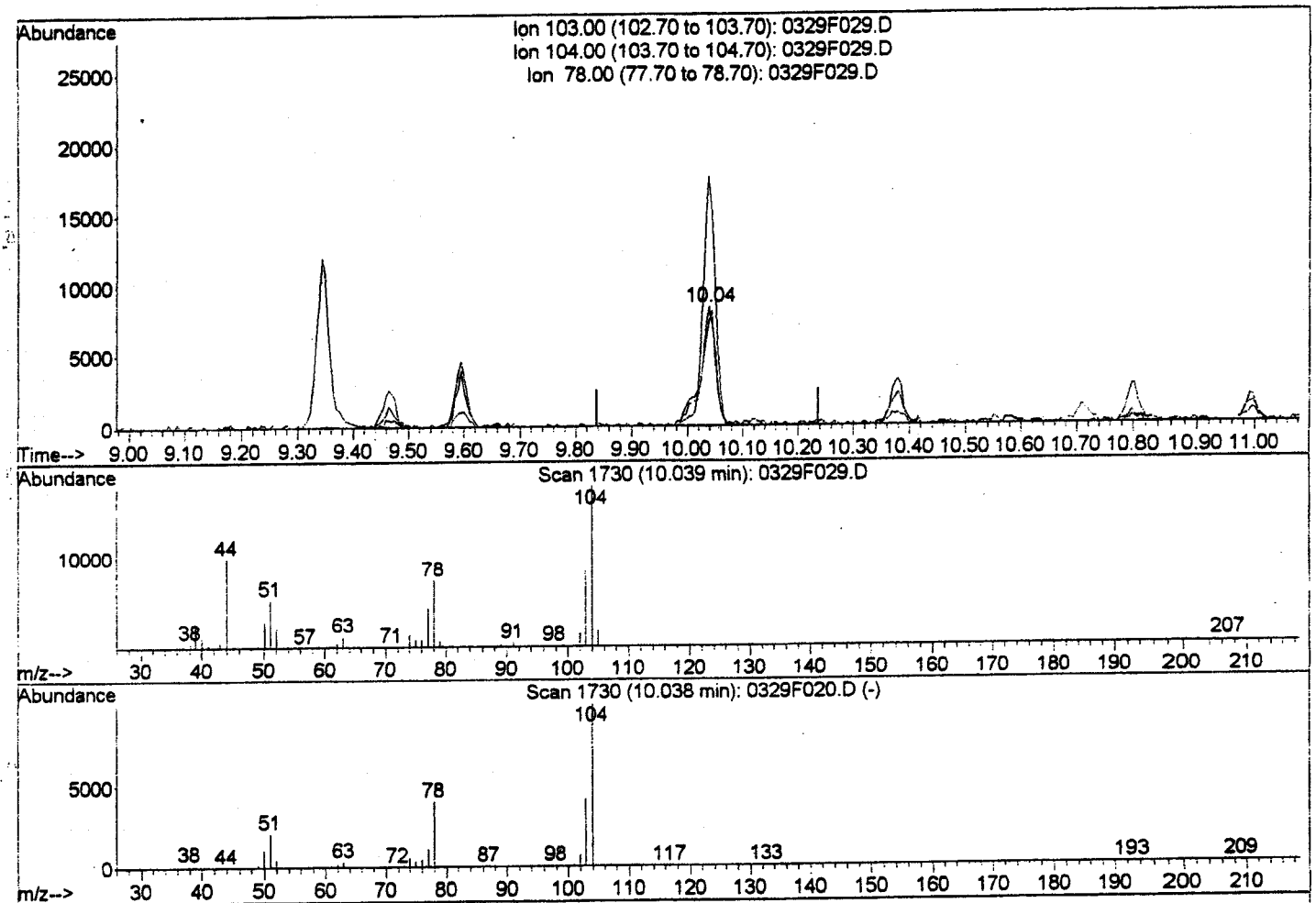
(#) = qualifier out of range (m) = manual integration

Data File : J:\MS23\DATA\032911\0329F029.D
Acq On : 30 Mar 2011 9:48 am
Sample : 624 ICAL 1
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 10:18 2011

Vial: 17
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Mar 30 09:58:04 2011
Response via : Multiple Level Calibration



(45) Styrene (T)

10.04min 0.78PPB

response 15138

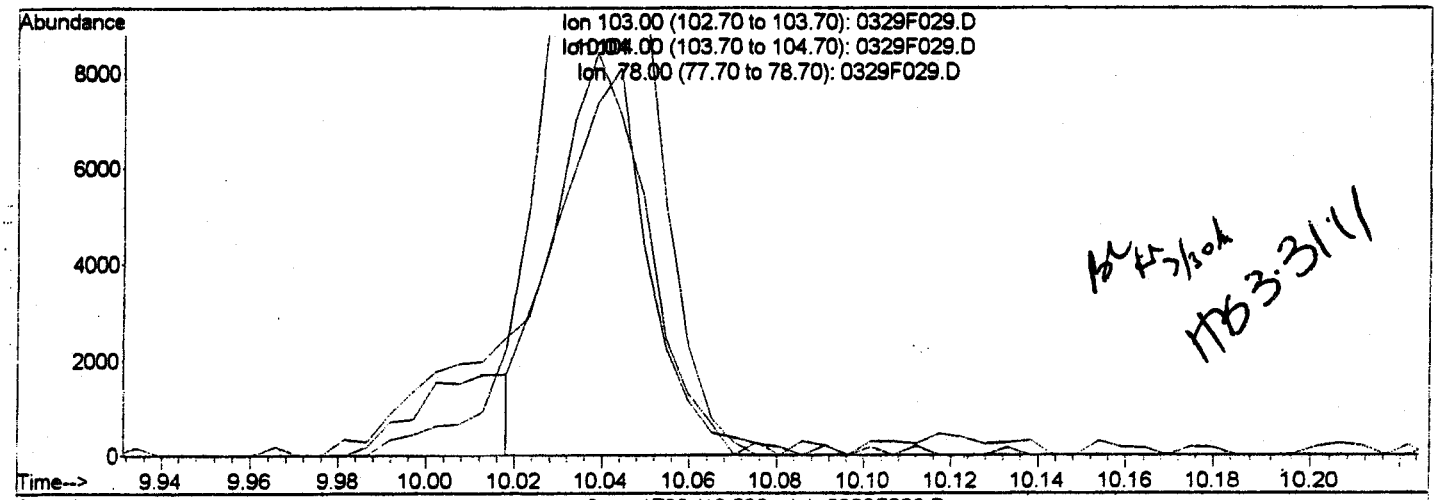
Ion	Exp%	Act%
103.00	100	100
104.00	217.10	209.99
78.00	101.20	87.83
0.00	0.00	0.00

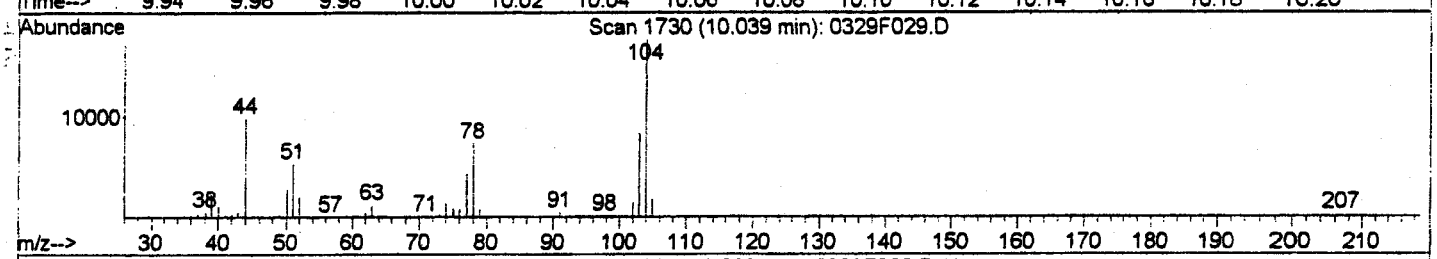
0329F029.D 032911624.M Wed Mar 30 10:19:01 2011

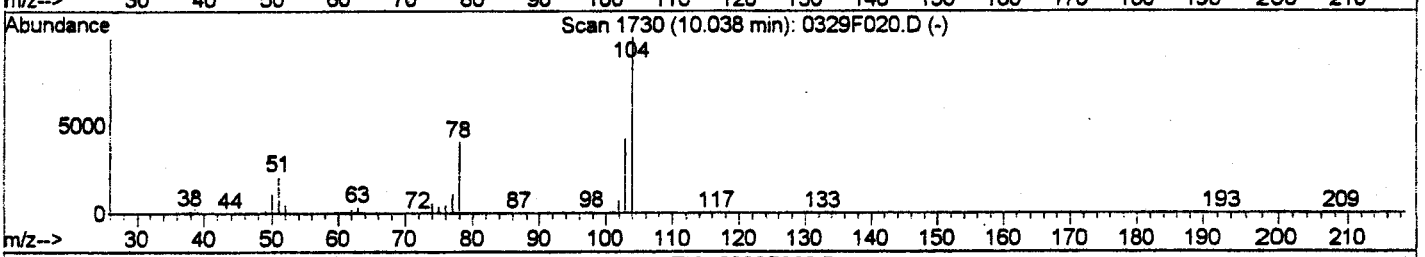
Quantitation Report (Qedit)

Data File : J:\MS23\DATA\032911\0329F029.D Vial: 17
Acq On : 30 Mar 2011 9:48 am Operator: KR
Sample : 624 ICAL 1 Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Mar 30 10:19 2011 Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Mar 30 09:58:04 2011
Response via : Multiple Level Calibration







TIC: 0329F029.D

(45) Styrene (T)

10.04min 0.64PPB m

response 12505

Ion	Exp%	Act%
103.00	100	100
104.00	217.10	209.99
78.00	101.20	87.83
0.00	0.00	0.00

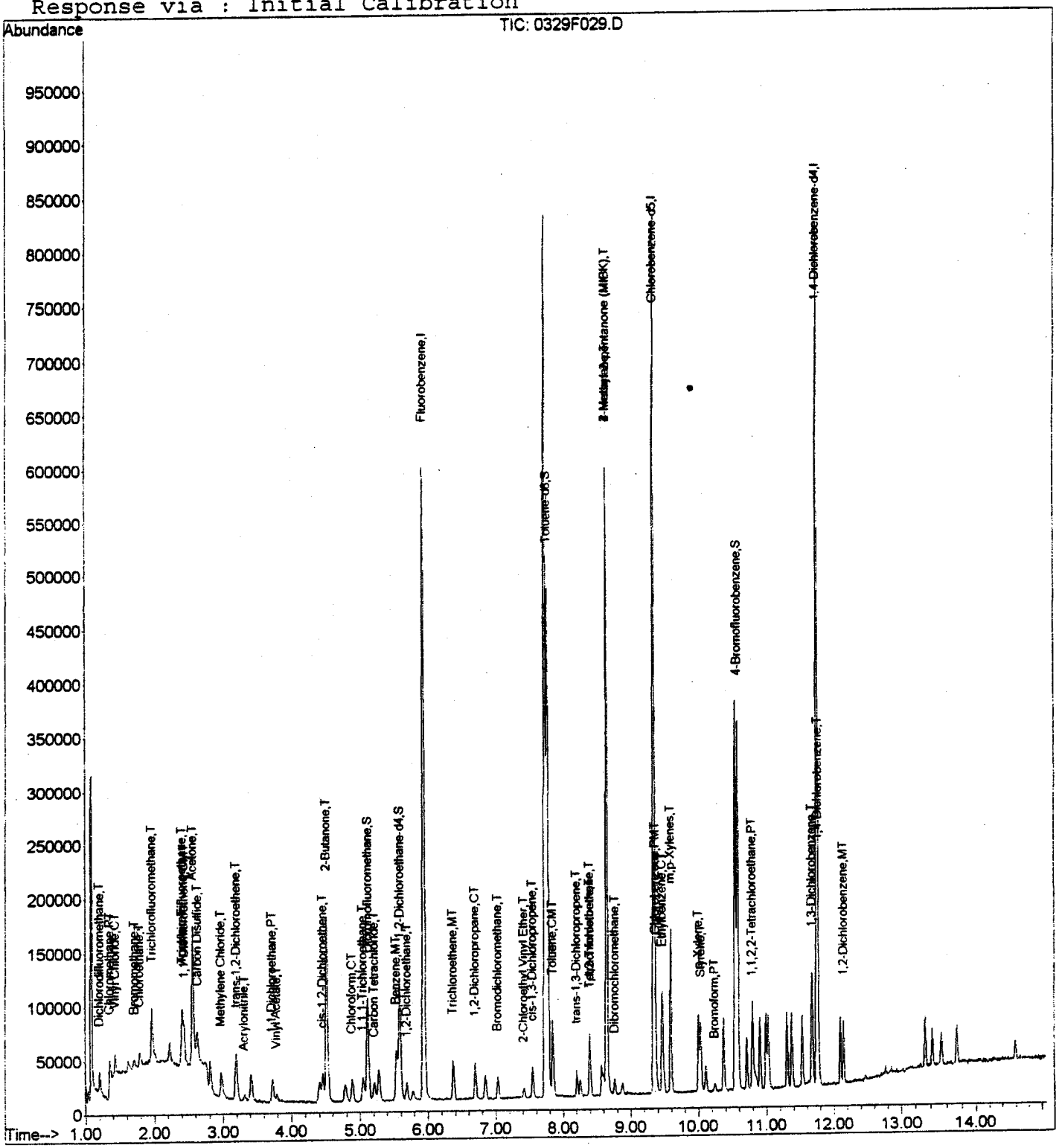
0329F029.D 032911624.M Wed Mar 30 10:19:07 2011

Data File : J:\MS23\DATA\032911\0329F029.D
Acq On : 30 Mar 2011 9:48 am
Sample : 624 ICAL 1
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 30 10:19 2011

Vial: 17
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: 032911624.RE

Method : J:\MS23\METHODS\032911624.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Mar 30 09:58:04 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\032911BAYW\0329F032.D
Acq On : 30 Mar 2011 12:58 pm
Sample : ICV
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 20 12:44:40 2011

Vial: 20
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624BAYW.R

Quant Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 12:44:23 2011
Response via : Initial Calibration
DataAcq Meth : 8260

for 4.20.11

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Fluorobenzene	5.94	96	537544	10.00	PPB		0.00
35) Chlorobenzene-d5	9.34	82	220891	10.00	PPB		0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	183680	10.00	PPB		0.00
System Monitoring Compounds							
22) Dibromofluoromethane	5.11	113	118079	10.15	PPB		0.00
Spiked Amount 10.000			Recovery	=	101.50%		
24) 1,2-Dichloroethane-d4	5.59	65	145583	9.96	PPB		0.00
Spiked Amount 10.000			Recovery	=	99.60%		
33) Toluene-d8	7.77	98	522895	10.30	PPB		0.00
Spiked Amount 10.000			Recovery	=	103.00%		
47) 4-Bromofluorobenzene	10.58	95	182144	10.02	PPB		0.00
Spiked Amount 10.000			Recovery	=	100.20%		
Target Compounds							Qvalue
2) Dichlorodifluoromethane	1.20	85	183132	9.70	PPB		96
3) Chloromethane	1.35	50	280051	10.23	PPB		97
4) Vinyl Chloride	1.43	62	240563	11.06	PPB		99
5) Bromomethane	1.70	96	82542	10.37	PPB		93
6) Chloroethane	1.78	49	41490	10.93	PPB		95
7) Trichlorofluoromethane	1.96	101	257664	9.58	PPB		96
8) Acrolein	2.41	56	154969	105.95	PPB		98
9) Trichlorotrifluoroethane	2.40	151	123554	10.42	PPB		95
10) 1,1-Dichloroethene	2.43	96	157071	12.10	PPB		99
11) Acetone	2.55	43	129610	63.53	PPB		99
12) Carbon Disulfide	2.63	76	1164040	21.62	PPB		99
13) Methylene Chloride	2.98	84	147710	11.18	PPB		96
14) Acrylonitrile	3.32	53	27694	11.66	PPB		99
15) trans-1,2-Dichloroethene	3.20	96	155986	11.61	PPB		98
16) 1,1-Dichloroethane	3.72	63	306859	11.54	PPB		99
17) Vinyl Acetate	3.78	86	37417	24.50	PPB	#	94
18) cis-1,2-Dichloroethene	4.45	96	156763	10.86	PPB		96
19) 2-Butanone	4.51	72	34315	57.39	PPB		93
20) Chloroform	4.88	83	276312	11.51	PPB		98
21) 1,1,1-Trichloroethane	5.05	97	249072	11.23	PPB		98
23) Carbon Tetrachloride	5.21	117	198392	11.61	PPB		98
25) Benzene	5.54	78	650447	11.52	PPB		99
26) 1,2-Dichloroethane	5.69	62	197645	11.50	PPB		97
27) Trichloroethene	6.37	95	160455	11.23	PPB		97
28) 1,2-Dichloropropane	6.70	63	160559	11.16	PPB		96
29) Bromodichloromethane	7.03	83	183230	11.29	PPB		100
30) 2-Chloroethyl Vinyl Ether	7.42	63	49948	10.17	PPB		96

(#) = qualifier out of range (m) = manual integration

HB 4.20.11

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\032911BAYW\0329F032.D
Acq On : 30 Mar 2011 12:58 pm
Sample : ICV
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 20 12:44:40 2011

Vial: 20
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: 032911624BAYW.R

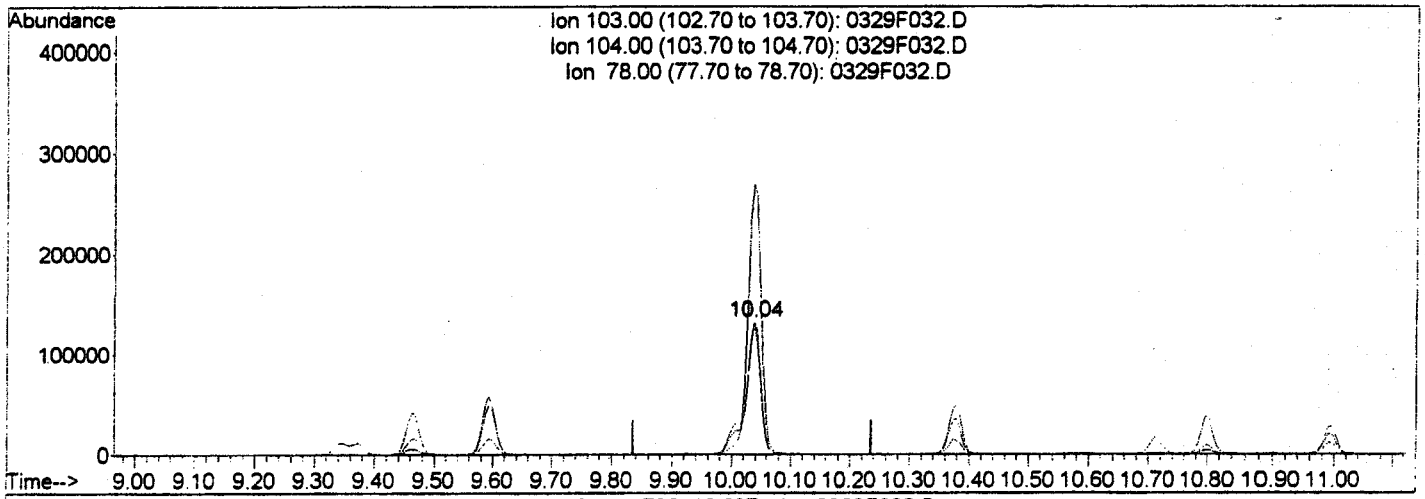
Quant Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 12:44:23 2011
Response via : Initial Calibration
DataAcq Meth : 8260

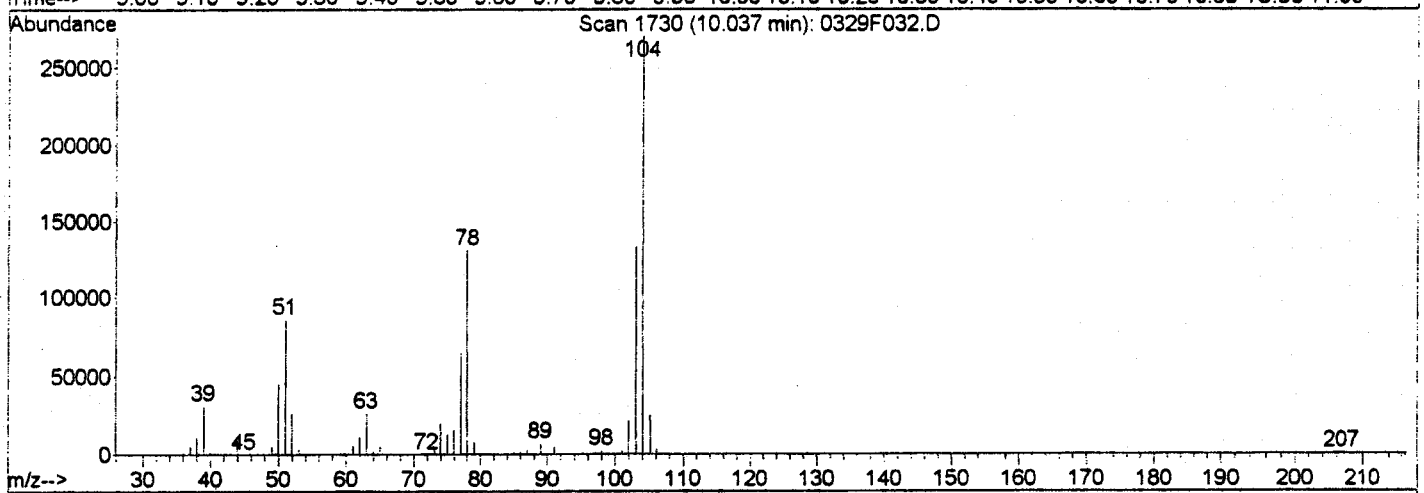
Compound	R.T.	QIon	Response	Conc Unit	Qvalue
31) cis-1,3-Dichloropropene	7.55	75	225898	11.46 PPB	99
32) 4-Methyl-2-pentanone (MIBK	8.65	58	112596	53.52 PPB	97
34) Toluene	7.85	92	398621	11.32 PPB	99
36) trans-1,3-Dichloropropene	8.20	75	167153	10.37 PPB	98
37) 1,1,2-Trichloroethane	8.39	83	78308	11.14 PPB	96
38) Tetrachloroethene	8.40	164	117720	11.25 PPB	97
39) 2-Hexanone	8.65	43	241059	54.78 PPB	99
40) Dibromochloromethane	8.77	129	99175	11.02 PPB	100
41) Chlorobenzene	9.37	112	401479	11.24 PPB	98
42) Ethylbenzene	9.46	106	229041	11.28 PPB	95
43) m,p-Xylenes	9.59	106	562047	22.23 PPB	96
44) o-Xylene	10.01	106	262114	10.94 PPB	97
45) Styrene	10.04	103	205714m	11.26 PPB	
46) Bromoform	10.25	173	45831	10.62 PPB	96
49) 1,1,2,2-Tetrachloroethane	10.79	83	87919	10.77 PPB	99
51) 1,3-Dichlorobenzene	11.67	146	295667	11.38 PPB	98
52) 1,4-Dichlorobenzene	11.77	146	294570	11.31 PPB	98
53) 1,2-Dichlorobenzene	12.14	146	251216	11.11 PPB	99

(#) = qualifier out of range (m) = manual integration

Data File : J:\MS23\DATA\032911BAYW\0329F032.D Vial: 20
Acq On : 30 Mar 2011 12:58 pm Operator: KR
Sample : ICV Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Apr 20 12:44 2011 Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 12:44:23 2011
Response via : Multiple Level Calibration





TIC: 0329F032.D

(45) Styrene (T)

10.04min 12.88PPB

response 235372

Ion	Exp%	Act%
103.00	100	100
104.00	217.10	202.84
78.00	101.20	98.63
0.00	0.00	0.00

0329F032.D 032911624BAYW.M Wed Apr 20 12:44:52 2011

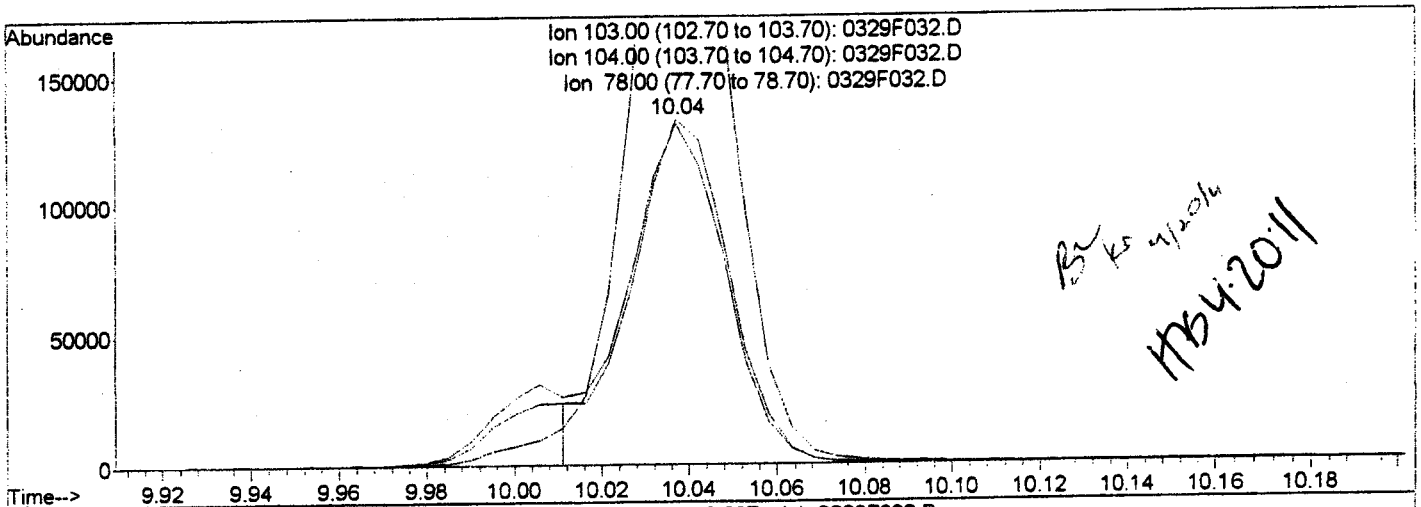
Quantitation Report (QedIt)

Data File : J:\MS23\DATA\032911BAYW\0329F032.D
Acq On : 30 Mar 2011 12:58 pm
Sample : ICV
Misc :
MS Integration Params: rteint.p
Quant Time: Apr 20 12:44 2011

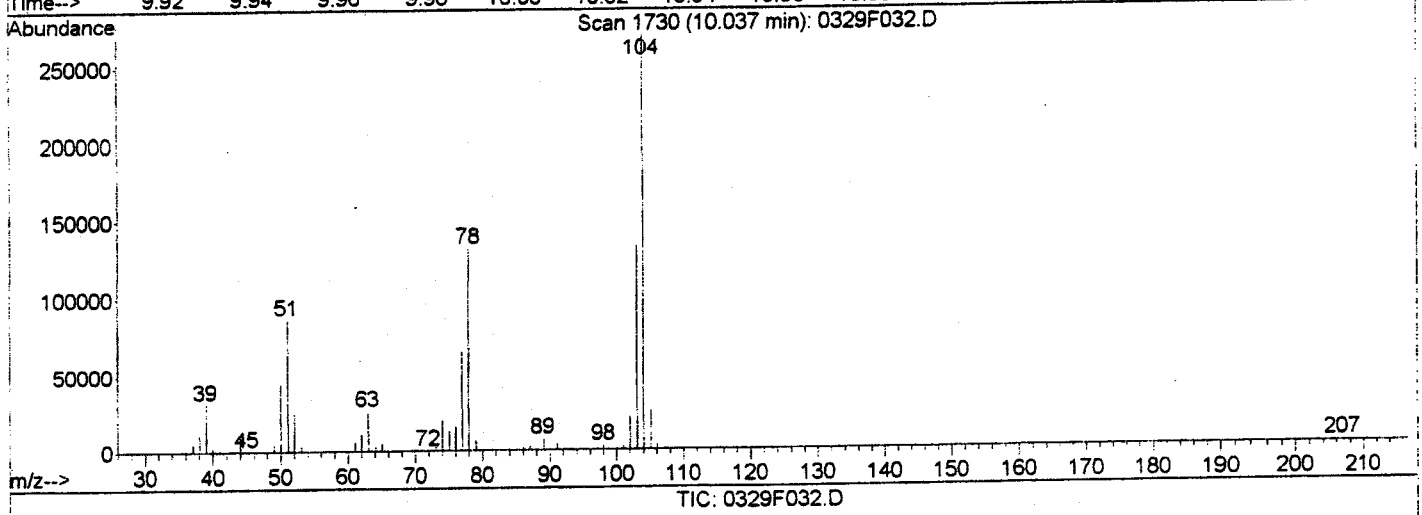
Vial: 20
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 12:44:23 2011
Response via : Multiple Level Calibration



BK 4/20/11
MB 4/20/11



(45) Styrene (T)

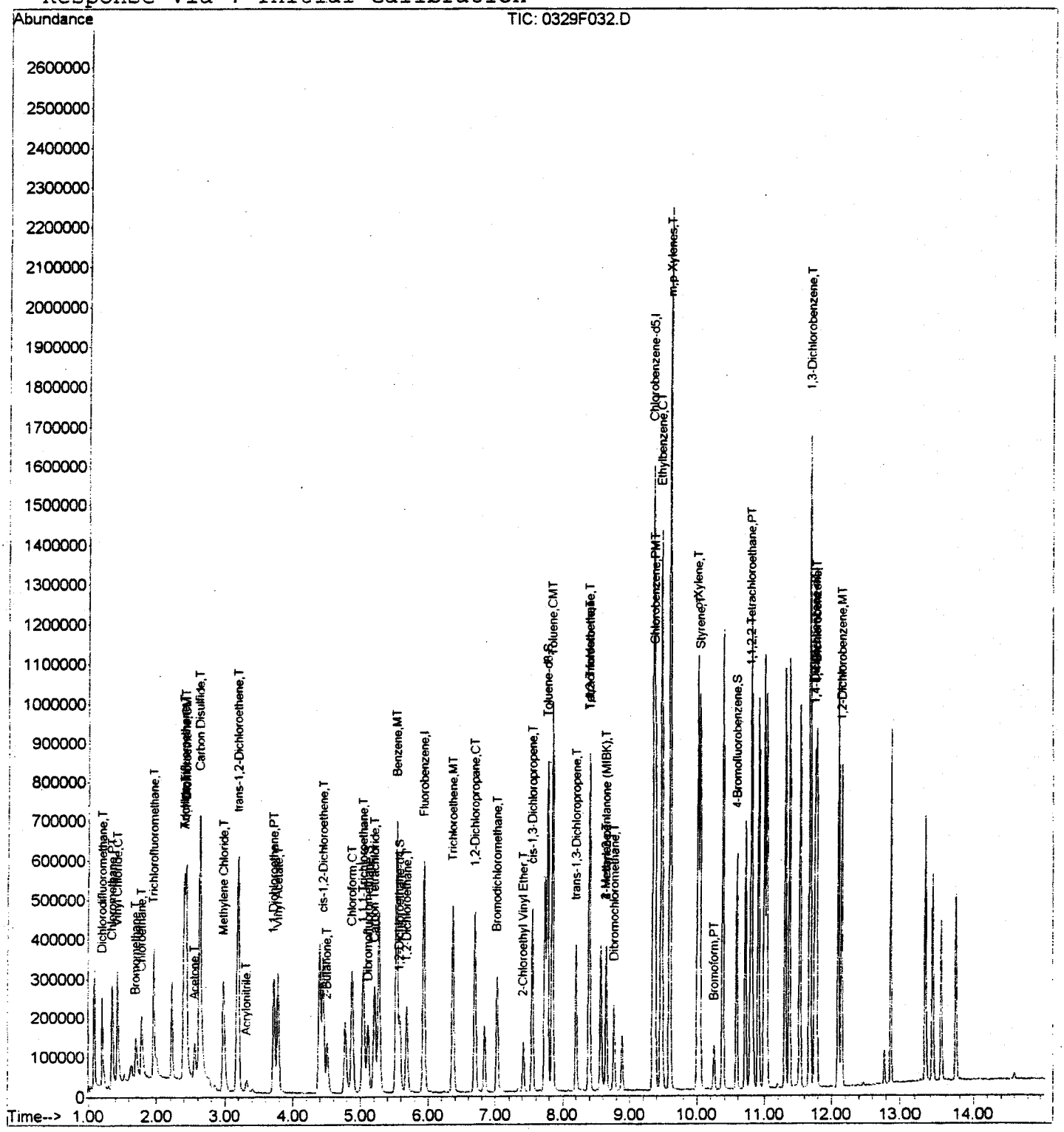
10.04min 11.26PPB m

response 205714

Ion	Exp%	Act%
103.00	100	100
104.00	217.10	202.84
78.00	101.20	98.75
0.00	0.00	0.00

Data File : J:\MS23\DATA\032911BAYW\0329F032.D Vial: 20
Acq On : 30 Mar 2011 12:58 pm Operator: KR
Sample : ICV Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Apr 20 12:44 2011 Quant Results File: 032911624BAY

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 12:44:23 2011
Response via : Initial Calibration



COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1106869
Date Analyzed: 08/01/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 624

Calibration Date: 03/29/2011
Calibration ID: CAL10443
Analysis Lot: KWG1107315
Units: PPB

File ID: J:\MS23\DATA\080111BAYW\0801F004.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	10	0.01	0.405	0.403	0	NA	± 96 %	AverageRF
1,1-Dichloroethene	10	8.5	0.01	0.241	0.206	-15	NA	± 49 %	AverageRF
trans-1,2-Dichloroethene	10	10	0.01	0.250	0.250	0	NA	± 30 %	AverageRF
1,1-Dichloroethane	10	9.5	0.01	0.495	0.469	-5	NA	± 27 %	AverageRF
cis-1,2-Dichloroethene	10	9.8	0.01	0.268	0.263	-2	NA	± 30 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	9.2	0.01	0.413	0.380	-8	NA	± 25 %	AverageRF
Trichloroethene (TCE)	10	10	0.01	0.266	0.268	1	NA	± 33 %	AverageRF
Tetrachloroethene (PCE)	10	12	0.01	0.474	0.574	21	NA	± 26 %	AverageRF
Dibromofluoromethane	10	10	0.01	0.216	0.226	4	NA	± 30 %	AverageRF
Toluene-d8	10	11	0.01	0.945	1.03	9	NA	± 30 %	AverageRF
4-Bromofluorobenzene	10	11	0.01	0.823	0.886	8	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Exception Report

Data File: J:\MS23\DATA\080111BAYW\0801F004.D
Lab ID: KWG1107315-2
RunType: CCV
Matrix: WATER

Date Acquired: 08/01/2011 11:57
Date Quantitated: 08/02/2011 10:46
Batch ID: KWG1107315
Analysis Method: 624
MethodJoinID: MJ158

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	

Primary Review: Kr 8/2/11

Secondary Review: HB 8·2·11

Quantitation Report

Data File:	J:\MS23\DATA\080111BAYW\0801F004.D			**Instrument:**	MS23
Acqu Date:	08/01/2011 11:57	**Quant Date:**	08/02/2011 13:07	**Vial:**	4
Run Type:	CCV			**Dilution:**	1.0
Lab ID:	KWG1107315-2			**Soln Conc. Units:**	PPB

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	624	**Collect Date:**		**Receive Date:**	08/02/2011

Analysis Lot:	KWG1107315	**Prep Lot:**		**Report Group:**
Analysis Method:	624	**Prep Method:**		
Prep Ref:		**Prep Date:**		

Quant Method:	J:\MS23\METHODS\032911624BAY	**Calibration ID:**	CAL10443
Title:			
Tune Ref:	J:\MS23\DATA\080111BAYW\0801F003.D	**Method ID:**	MJ158
MB Ref:		**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	Fluorobenzene	5.94	0.00	96	702745	10.00	OK
2	Chlorobenzene-d5	9.34	-0.01	82	284052	10.00	OK
3	1,4-Dichlorobenzene-d4	11.75	0.00	152	274192	10.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	Dibromofluoromethane	5.12			113	158688	10.44		61-121	NA
1	1,2-Dichloroethane-d4	5.59			65	178991	9.37		54-125	NA
1	Toluene-d8	7.77			98	724735	10.91		72-122	NA
2	4-Bromofluorobenzene	10.58			95	251538	10.76		70-120	NA

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	Dichlorodifluoromethane	1.20			85	236185	9.57			
1	Chloromethane	1.35			50	316465	8.84			
1	Vinyl Chloride	1.43			62	283423	9.96			
1	Bromomethane	1.70			96	80867	7.77			
1	Chloroethane	1.78			49	40203	8.10			
1	Trichlorofluoromethane	1.96			101	312068	8.88			
1	Acrolein	2.41			56	259763	135.84			
1	Trichlorotrifluoroethane	2.40			151	145207	9.37			
1	1,1-Dichloroethene	2.44			96	144679	8.53			
1	Acetone	2.56			43	490667	183.97			
1	Carbon Disulfide	2.63			76	566991	8.05			
1	Methylene Chloride	2.98			84	165542	9.58			
1	Acrylonitrile	3.32			53	61879	19.93			
1	trans-1,2-Dichloroethene	3.20			96	175866	10.02			

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Data File:	J:\MS23\DATA\080111BAYW\0801F004.D			**Instrument:**	MS23
Acqu Date:	08/01/2011 11:57	**Quant Date:**	08/02/2011 13:07	**Vial:**	4
Run Type:	CCV			**Dilution:**	1.0
Lab ID:	KWG1107315-2			**Soln Conc. Units:**	PPB

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,1-Dichloroethane	3.73			63	329411	9.48			
1	Vinyl Acetate	3.78			86	34057	17.06			
1	cis-1,2-Dichloroethene	4.45			96	184838	9.80			
1	2-Butanone (MEK)	4.51			72	159895	204.55			
1	Chloroform	4.89			83	322988	10.29			
1	1,1,1-Trichloroethane (TCA)	5.04			97	266952	9.20			
1	Carbon Tetrachloride	5.21			117	226437	10.14			
1	Benzene	5.54			78	746137	10.11			
1	1,2-Dichloroethane (EDC)	5.69			62	215350	9.59			
1	Trichloroethene (TCE)	6.37			95	188302	10.08			
1	1,2-Dichloropropane	6.70			63	187469	9.97			
1	Bromodichloromethane	7.03			83	217738	10.27			
1	2-Chloroethyl Vinyl Ether	7.42			63	54202	8.44			
1	cis-1,3-Dichloropropene	7.55			75	235622	9.14			
1	4-Methyl-2-pentanone (MIBK)	8.65			58	520713	189.32			
1	Toluene	7.85			92	500986	10.88			
2	trans-1,3-Dichloropropene	8.20			75	180974	8.74			
2	1,1,2-Trichloroethane	8.39			83	100443	11.11			
2	Tetrachloroethene (PCE)	8.40			164	162905	12.10			
2	2-Hexanone	8.65			43	1092511	193.05			
2	Dibromochloromethane	8.77			129	126586	10.94			
2	Chlorobenzene	9.37			112	521683	11.35			
2	Ethylbenzene	9.47			106	288873	11.07			
2	m,p-Xylenes	9.59			106	746127	22.95			
2	o-Xylene	10.01			106	331140	10.75			
2	Styrene	10.04			103	260485m	11.09			
2	Bromoform	10.25			173	59773	10.77			
3	1,1,2,2-Tetrachloroethane	10.78			83	119019	9.77			
3	Pentachloroethane				167	0				
3	1,3-Dichlorobenzene	11.67			146	417131	10.76			
3	1,4-Dichlorobenzene	11.77			146	414750	10.67			
3	1,2-Dichlorobenzene	12.15			146	355319	10.52			

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\080111BAYW\0801F004.D Vial: 4
Acq On : 1 Aug 2011 11:57 am Operator: KR
Sample : 624 CCV Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Aug 02 10:46:11 2011 Quant Results File: 032911624BAYW.R

Quant Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Aug 02 10:17:07 2011
Response via : Initial Calibration
DataAcq Meth : 8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	5.94	96	702745	10.00	PPB	0.00
35) Chlorobenzene-d5	9.34	82	284052	10.00	PPB	0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	274192	10.00	PPB	0.00
System Monitoring Compounds						
22) Dibromofluoromethane	5.12	113	158688	10.44	PPB	0.00
Spiked Amount 10.000			Recovery	=	104.40%	
24) 1,2-Dichloroethane-d4	5.59	65	178991	9.37	PPB	0.00
Spiked Amount 10.000			Recovery	=	93.70%	
33) Toluene-d8	7.77	98	724735	10.91	PPB	0.00
Spiked Amount 10.000			Recovery	=	109.10%	
47) 4-Bromofluorobenzene	10.58	95	251538	10.76	PPB	0.00
Spiked Amount 10.000			Recovery	=	107.60%	

Target Compounds							Qvalue
2) Dichlorodifluoromethane	1.20	85	236185	9.57	PPB		97
3) Chloromethane	1.35	50	316465	8.84	PPB		99
4) Vinyl Chloride	1.43	62	283423	9.96	PPB		100
5) Bromomethane	1.70	96	80867	7.77	PPB		90
6) Chloroethane	1.78	49	40203	8.10	PPB		95
7) Trichlorofluoromethane	1.96	101	312068	8.88	PPB		95
8) Acrolein	2.41	56	259763	135.84	PPB		99
9) Trichlorotrifluoroethane	2.40	151	145207	9.37	PPB		97
10) 1,1-Dichloroethene	2.44	96	144679	8.53	PPB		93
11) Acetone	2.56	43	490667	183.97	PPB		98
12) Carbon Disulfide	2.63	76	566991	8.05	PPB		100
13) Methylene Chloride	2.98	84	165542	9.58	PPB		91
14) Acrylonitrile	3.32	53	61879	19.93	PPB		96
15) trans-1,2-Dichloroethene	3.20	96	175866	10.02	PPB		93
16) 1,1-Dichloroethane	3.73	63	329411	9.48	PPB		96
17) Vinyl Acetate	3.78	86	34057	17.06	PPB	#	87
18) cis-1,2-Dichloroethene	4.45	96	184838	9.80	PPB		92
19) 2-Butanone	4.51	72	159895	204.55	PPB	#	85
20) Chloroform	4.89	83	322988	10.29	PPB		98
21) 1,1,1-Trichloroethane	5.04	97	266952	9.20	PPB		97
23) Carbon Tetrachloride	5.21	117	226437	10.14	PPB		97
25) Benzene	5.54	78	746137	10.11	PPB		97
26) 1,2-Dichloroethane	5.69	62	215350	9.59	PPB		99
27) Trichloroethene	6.37	95	188302	10.08	PPB		97
28) 1,2-Dichloropropane	6.70	63	187469	9.97	PPB		98
29) Bromodichloromethane	7.03	83	217738	10.27	PPB		99
30) 2-Chloroethyl Vinyl Ether	7.42	63	54202	8.44	PPB		97

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\080111BAYW\0801F004.D
Acq On : 1 Aug 2011 11:57 am
Sample : 624 CCV
Misc :
MS Integration Params: rteint.p
Quant Time: Aug 02 10:46:11 2011

Vial: 4
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624BAYW.R

Quant Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Tue Aug 02 10:17:07 2011
Response via : Initial Calibration
DataAcq Meth : 8260

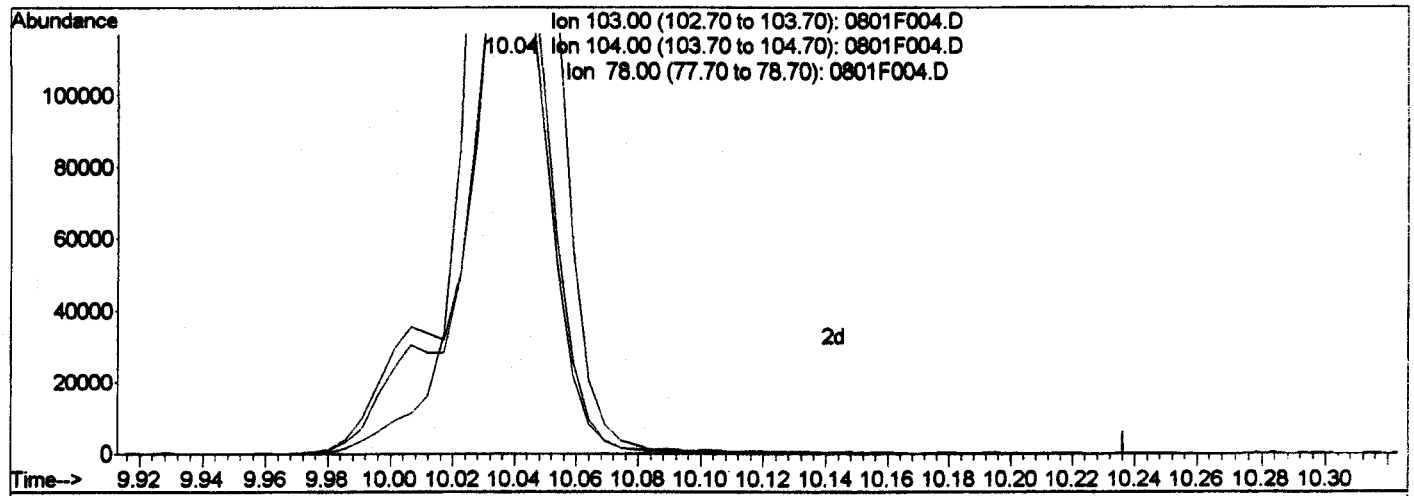
Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
31) cis-1,3-Dichloropropene	7.55	75	235622	9.14	PPB	93
32) 4-Methyl-2-pentanone (MIBK	8.65	58	520713	189.32	PPB	96
34) Toluene	7.85	92	500986	10.88	PPB	99
36) trans-1,3-Dichloropropene	8.20	75	180974	8.74	PPB	96
37) 1,1,2-Trichloroethane	8.39	83	100443	11.11	PPB	97
38) Tetrachloroethene	8.40	164	162905	12.10	PPB	95
39) 2-Hexanone	8.65	43	1092511	193.05	PPB	99
40) Dibromochloromethane	8.77	129	126586	10.94	PPB	99
41) Chlorobenzene	9.37	112	521683	11.35	PPB	97
42) Ethylbenzene	9.47	106	288873	11.07	PPB	98
43) m,p-Xylenes	9.59	106	746127	22.95	PPB	98
44) o-Xylene	10.01	106	331140	10.75	PPB	95
45) Styrene	10.04	103	260485m	11.09	PPB	
46) Bromoform	10.25	173	59773	10.77	PPB	97
49) 1,1,2,2-Tetrachloroethane	10.78	83	119019	9.77	PPB	97
51) 1,3-Dichlorobenzene	11.67	146	417131	10.76	PPB	97
52) 1,4-Dichlorobenzene	11.77	146	414750	10.67	PPB	99
53) 1,2-Dichlorobenzene	12.15	146	355319	10.52	PPB	96

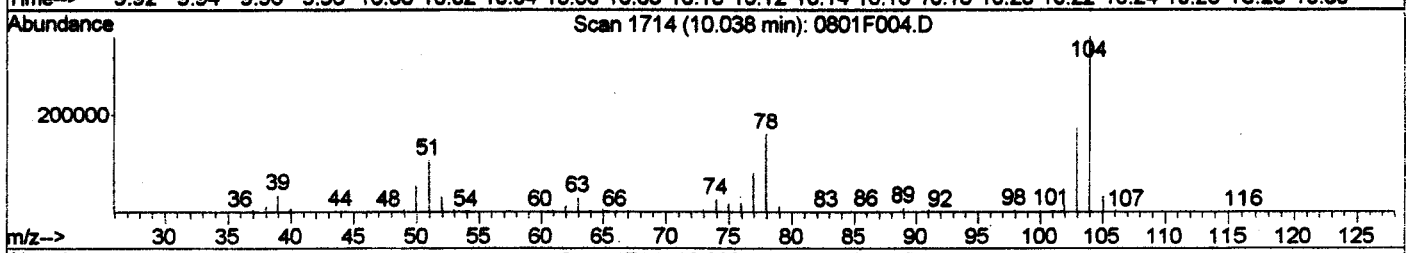
(#) = qualifier out of range (m) = manual integration

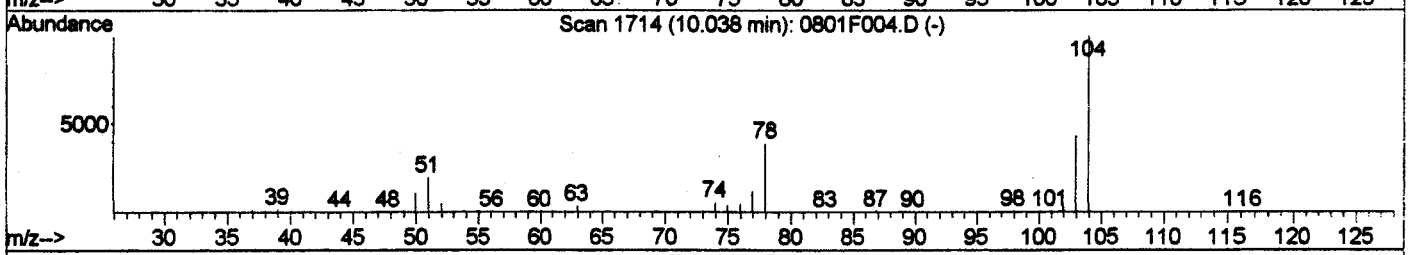
Quantitation Report (Qedit)

Data File : J:\MS23\DATA\080111BAYW\0801F004.D Vial: 4
Acq On : 1 Aug 2011 11:57 am Operator: KR
Sample : 624 CCV Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Aug 2 10:46 2011 Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Multiple Level Calibration







TIC: 0801F004.D

(45) Styrene (T)

10.04min 12.92PPB

response 303563

Ion	Exp%	Act%
103.00	100	100
104.00	217.10	211.64
78.00	101.20	93.64
0.00	0.00	0.00

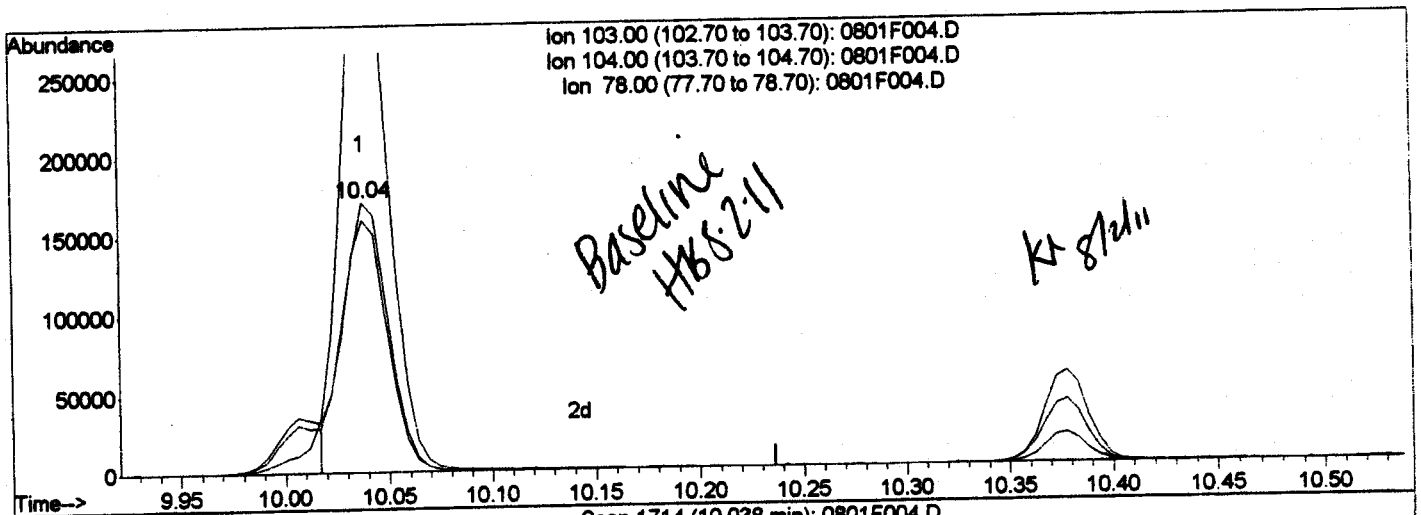
Quantitation Report (Qedit)

Data File : J:\MS23\DATA\080111BAYW\0801F004.D
Acq On : 1 Aug 2011 11:57 am
Sample : 624 CCV
Misc :
MS Integration Params: rteint.p
Quant Time: Aug 2 13:07 2011

Vial: 4
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Multiple Level Calibration



(45) Styrene (T)

10.04min 11.09PPB m

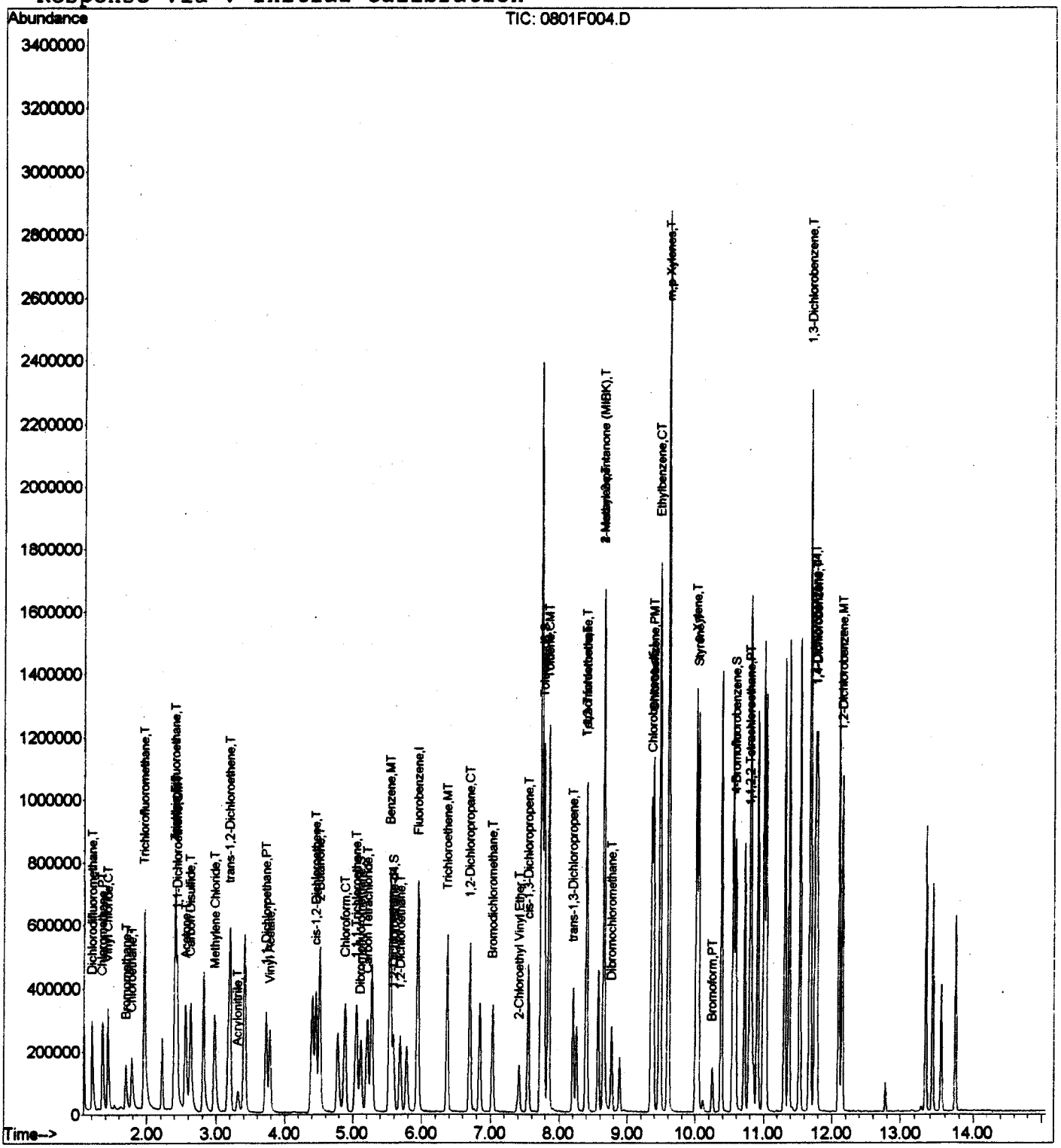
response 260485

Ion	Exp%	Act%
103.00	100	100
104.00	217.10	211.64
78.00	101.20	93.64
0.00	0.00	0.00

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\080111BAYW\0801F004.D Vial: 4
Acq On : 1 Aug 2011 11:57 am Operator: KR
Sample : 624 CCV Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Aug 2 13:07 2011 Quant Results File: 032911624BAY

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Initial Calibration



Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1106869
Date Analyzed: 08/05/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 624

Calibration Date: 03/29/2011
Calibration ID: CAL10443
Analysis Lot: KWG1107577
Units: PPB

File ID: J:\MS23\DATA\080511BAYW\0805F004.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	8.2	0.01	0.405	0.332	-18	NA	± 96 %	AverageRF
1,1-Dichloroethene	10	7.4	0.01	0.241	0.179	-26	NA	± 49 %	AverageRF
trans-1,2-Dichloroethene	10	9.0	0.01	0.250	0.224	-10	NA	± 30 %	AverageRF
1,1-Dichloroethane	10	9.1	0.01	0.495	0.449	-9	NA	± 27 %	AverageRF
cis-1,2-Dichloroethene	10	9.5	0.01	0.268	0.255	-5	NA	± 30 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	8.9	0.01	0.413	0.368	-11	NA	± 25 %	AverageRF
Trichloroethene (TCE)	10	9.9	0.01	0.266	0.264	-1	NA	± 33 %	AverageRF
Tetrachloroethene (PCE)	10	12	0.01	0.474	0.580	22	NA	± 26 %	AverageRF
Dibromofluoromethane	10	10	0.01	0.216	0.224	4	NA	± 30 %	AverageRF
Toluene-d8	10	11	0.01	0.945	1.03	9	NA	± 30 %	AverageRF
4-Bromofluorobenzene	10	11	0.01	0.823	0.871	6	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Exception Report

Data File: J:\MS23\DATA\080511BAYW\0805F004.D
Lab ID: KWG1107577-2
RunType: CCV
Matrix: WATER

Date Acquired: 08/05/2011 10:09
Date Quantitated: 08/08/2011 15:24
Batch ID: KWG1107577
Analysis Method: 624
MethodJoinID: MJ158

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	

Primary Review: [illegible]

Secondary Review: HB 8/9/11

Quantitation Report

Data File:	J:\MS23\DATA\080511BAYW\0805F004.D			**Instrument:**	MS23
Acqu Date:	08/05/2011 10:09	**Quant Date:**	08/08/2011 15:24	**Vial:**	3
Run Type:	CCV			**Dilution:**	1.0
Lab ID:	KWG1107577-2			**Soln Conc. Units:**	PPB

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	624	**Collect Date:**		**Receive Date:**	08/08/2011

Analysis Lot:	KWG1107577	**Prep Lot:**		**Report Group:**
Analysis Method:	624	**Prep Method:**		
Prep Ref:		**Prep Date:**		

Quant Method:	J:\MS23\METHODS\032911624.M	**Calibration ID:**	CAL10443
Title:			
Tune Ref:	J:\MS23\DATA\080511BAYW\0805F003.D	**Method ID:**	MJ158
MB Ref:		**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	Fluorobenzene	5.94	0.00	96	687014	10.00	OK
2	Chlorobenzene-d5	9.35	0.00	82	282036	10.00	OK
3	1,4-Dichlorobenzene-d4	11.75	0.00	152	273289	10.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	Dibromofluoromethane	5.12			113	154213	10.38		61-121	NA
1	1,2-Dichloroethane-d4	5.59			65	171257	9.17		54-125	NA
1	Toluene-d8	7.77			98	709488	10.93		72-122	NA
2	4-Bromofluorobenzene	10.58			95	245558	10.58		70-120	NA

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	Dichlorodifluoromethane	1.20			85	191477	7.94			
1	Chloromethane	1.35			50	240056	6.86			
1	Vinyl Chloride	1.43			62	228201	8.21			
1	Bromomethane	1.70			96	70310	6.91			
1	Chloroethane	1.78			49	33639	6.93			
1	Trichlorofluoromethane	1.97			101	261927	7.62			
1	Acrolein	2.41			56	264759	141.62			
1	Trichlorotrifluoroethane	2.41			151	126164	8.33			
1	1,1-Dichloroethene	2.44			96	123178	7.43			
1	Acetone	2.56			43	466955	179.09			
1	Carbon Disulfide	2.64			76	461282	6.70			
1	Methylene Chloride	2.98			84	147446	8.73			
1	Acrylonitrile	3.32			53	59063	19.46			
1	trans-1,2-Dichloroethene	3.20			96	153652	8.95			

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Data File:	J:\MS23\DATA\080511BAYW\0805F004.D			**Instrument:**	MS23
Acqu Date:	08/05/2011 10:09	**Quant Date:**	08/08/2011 15:24	**Vial:**	3
Run Type:	CCV			**Dilution:**	1.0
Lab ID:	KWG1107577-2			**Soln Conc. Units:**	PPB

Target Compounds **Final Conc. Units:** ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,1-Dichloroethane	3.73			63	308343	9.07			
1	Vinyl Acetate	3.78			86	32096	16.44			
1	cis-1,2-Dichloroethene	4.46			96	175511	9.52			
1	2-Butanone (MEK)	4.51			72	154087	201.64			
1	Chloroform	4.89			83	315110	10.27			
1	1,1,1-Trichloroethane (TCA)	5.05			97	252786	8.92			
1	Carbon Tetrachloride	5.21			117	210613	9.65			
1	Benzene	5.54			78	693318	9.61			
1	1,2-Dichloroethane (EDC)	5.69			62	208912	9.51			
1	Trichloroethene (TCE)	6.37			95	181128	9.92			
1	1,2-Dichloropropane	6.70			63	189345	10.30			
1	Bromodichloromethane	7.03			83	222811	10.75			
1	2-Chloroethyl Vinyl Ether	7.42			63	57347	9.14			
1	cis-1,3-Dichloropropene	7.55			75	249280	9.90			
1	4-Methyl-2-pentanone (MIBK)	8.65			58	496737	184.74			
1	Toluene	7.85			92	497190	11.04			
2	trans-1,3-Dichloropropene	8.20			75	193342	9.40			
2	1,1,2-Trichloroethane	8.39			83	106342	11.85			
2	Tetrachloroethene (PCE)	8.40			164	163558	12.24			
2	2-Hexanone	8.65			43	1035701	184.32			
2	Dibromochloromethane	8.77			129	134089	11.67			
2	Chlorobenzene	9.37			112	545627	11.96			
2	Ethylbenzene	9.47			106	300922	11.61			
2	m,p-Xylenes	9.59			106	778549	24.12			
2	o-Xylene	10.01			106	349857	11.44			
2	Styrene	10.04			103	276057m	11.83			
2	Bromoform	10.25			173	63256	11.47			
3	1,1,2,2-Tetrachloroethane	10.78			83	125010	10.30			
3	Pentachloroethane	11.37			167	694				
3	1,3-Dichlorobenzene	11.67			146	439495	11.37			
3	1,4-Dichlorobenzene	11.77			146	431699	11.14			
3	1,2-Dichlorobenzene	12.14			146	377391	11.22			

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\080511BAYW\0805F004.D Vial: 3
Acq On : 5 Aug 2011 10:09 am Operator: KR
Sample : 624 CCV Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Aug 08 15:24:38 2011 Quant Results File: 032911624BAYW.R

Quant Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Initial Calibration
DataAcq Meth : 8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	5.94	96	687014	10.00	PPB	0.00
35) Chlorobenzene-d5	9.35	82	282036	10.00	PPB	0.00
48) 1,4-Dichlorobenzene-d4	11.75	152	273289	10.00	PPB	0.00
System Monitoring Compounds						
22) Dibromofluoromethane	5.12	113	154213	10.38	PPB	0.00
Spiked Amount 10.000			Recovery	=	103.80%	
24) 1,2-Dichloroethane-d4	5.59	65	171257	9.17	PPB	0.00
Spiked Amount 10.000			Recovery	=	91.70%	
33) Toluene-d8	7.77	98	709488	10.93	PPB	0.00
Spiked Amount 10.000			Recovery	=	109.30%	
47) 4-Bromofluorobenzene	10.58	95	245558	10.58	PPB	0.00
Spiked Amount 10.000			Recovery	=	105.80%	
Target Compounds						Qvalue
2) Dichlorodifluoromethane	1.20	85	191477	7.94	PPB	97
3) Chloromethane	1.35	50	240056	6.86	PPB	98
4) Vinyl Chloride	1.43	62	228201	8.21	PPB	98
5) Bromomethane	1.70	96	70310	6.91	PPB	92
6) Chloroethane	1.78	49	33639	6.93	PPB	99
7) Trichlorofluoromethane	1.97	101	261927	7.62	PPB	98
8) Acrolein	2.41	56	264759	141.62	PPB	99
9) Trichlorotrifluoroethane	2.41	151	126164	8.33	PPB	97
10) 1,1-Dichloroethene	2.44	96	123178	7.43	PPB	91
11) Acetone	2.56	43	466955	179.09	PPB	96
12) Carbon Disulfide	2.64	76	461282	6.70	PPB	99
13) Methylene Chloride	2.98	84	147446	8.73	PPB	97
14) Acrylonitrile	3.32	53	59063	19.46	PPB	98
15) trans-1,2-Dichloroethene	3.20	96	153652	8.95	PPB	98
16) 1,1-Dichloroethane	3.73	63	308343	9.07	PPB	98
17) Vinyl Acetate	3.78	86	32096	16.44	PPB #	88
18) cis-1,2-Dichloroethene	4.46	96	175511	9.52	PPB	93
19) 2-Butanone	4.51	72	154087	201.64	PPB #	89
20) Chloroform	4.89	83	315110	10.27	PPB	98
21) 1,1,1-Trichloroethane	5.05	97	252786	8.92	PPB	98
23) Carbon Tetrachloride	5.21	117	210613	9.65	PPB	96
25) Benzene	5.54	78	693318	9.61	PPB	97
26) 1,2-Dichloroethane	5.69	62	208912	9.51	PPB	99
27) Trichloroethene	6.37	95	181128	9.92	PPB	91
28) 1,2-Dichloropropane	6.70	63	189345	10.30	PPB	98
29) Bromodichloromethane	7.03	83	222811	10.75	PPB	99
30) 2-Chloroethyl Vinyl Ether	7.42	63	57347	9.14	PPB	91

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\080511BAYW\0805F004.D
Acq On : 5 Aug 2011 10:09 am
Sample : 624 CCV
Misc :
MS Integration Params: rteint.p
Quant Time: Aug 08 15:24:38 2011

Vial: 3
Operator: KR
Inst : MS23
Multiplr: 1.00
Quant Results File: 032911624BAYW.R

Quant Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Initial Calibration
DataAcq Meth : 8260

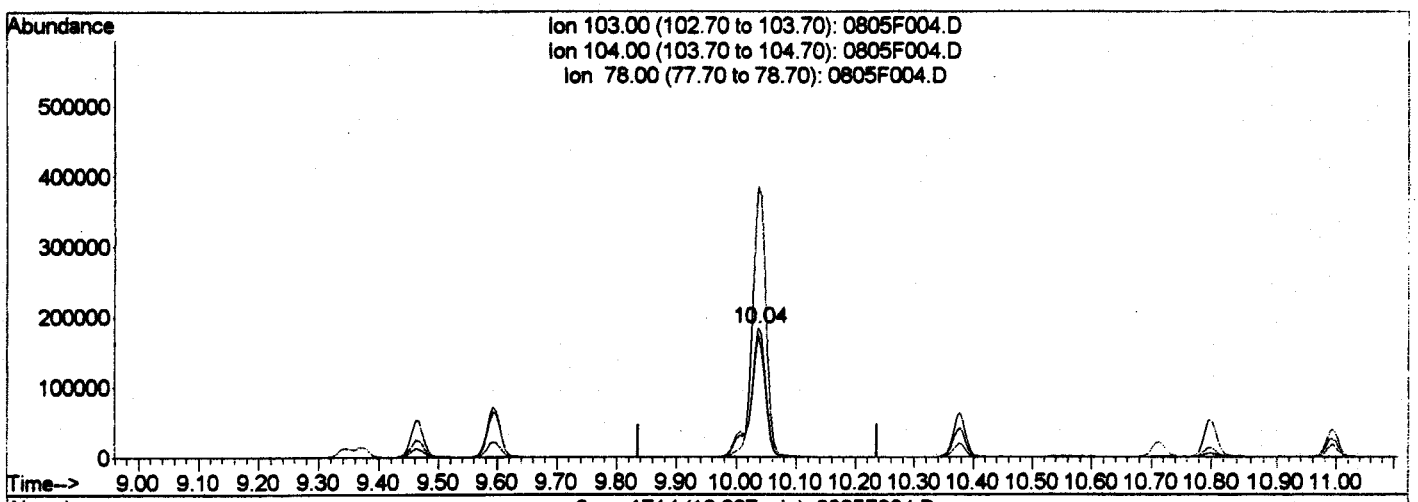
Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
31) cis-1,3-Dichloropropene	7.55	75	249280	9.90	PPB	92
32) 4-Methyl-2-pentanone (MIBK	8.65	58	496737	184.74	PPB	94
34) Toluene	7.85	92	497190	11.04	PPB	98
36) trans-1,3-Dichloropropene	8.20	75	193342	9.40	PPB	91
37) 1,1,2-Trichloroethane	8.39	83	106342	11.85	PPB	98
38) Tetrachloroethene	8.40	164	163558	12.24	PPB	96
39) 2-Hexanone	8.65	43	1035701	184.32	PPB	99
40) Dibromochloromethane	8.77	129	134089	11.67	PPB	99
41) Chlorobenzene	9.37	112	545627	11.96	PPB	97
42) Ethylbenzene	9.47	106	300922	11.61	PPB	98
43) m,p-Xylenes	9.59	106	778549	24.12	PPB	97
44) o-Xylene	10.01	106	349857	11.44	PPB	93
45) Styrene	10.04	103	276057m	11.83	PPB	
46) Bromoform	10.25	173	63256	11.47	PPB	97
49) 1,1,2,2-Tetrachloroethane	10.78	83	125010	10.30	PPB	97
51) 1,3-Dichlorobenzene	11.67	146	439495	11.37	PPB	99
52) 1,4-Dichlorobenzene	11.77	146	431699	11.14	PPB	99
53) 1,2-Dichlorobenzene	12.14	146	377391	11.22	PPB	98

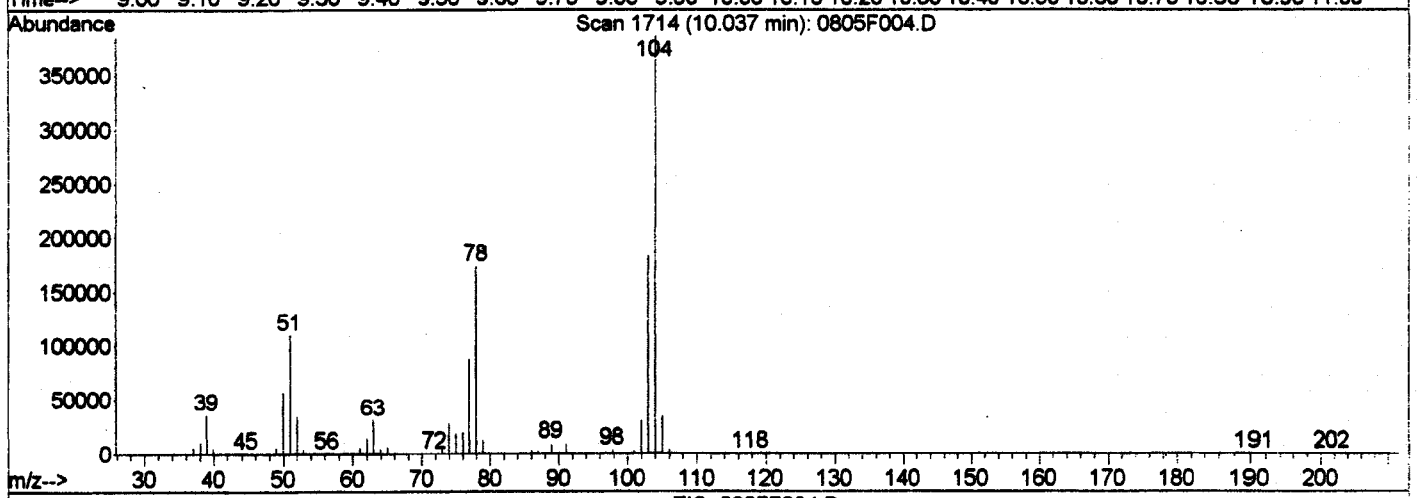
(#) = qualifier out of range (m) = manual integration

Quantitation Report (Qedit)

Data File : J:\MS23\DATA\080511BAYW\0805F004.D Vial: 3
Acq On : 5 Aug 2011 10:09 am Operator: KR
Sample : 624 CCV Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Aug 8 15:24 2011 Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Multiple Level Calibration





(45) Styrene (T)

10.04min 13.86PPB

response 323225

Ion	Exp%	Act%
103.00	100	100
104.00	217.10	209.79
78.00	101.20	94.77
0.00	0.00	0.00

0805F004.D 032911624BAYW.M Mon Aug 08 15:24:46 2011

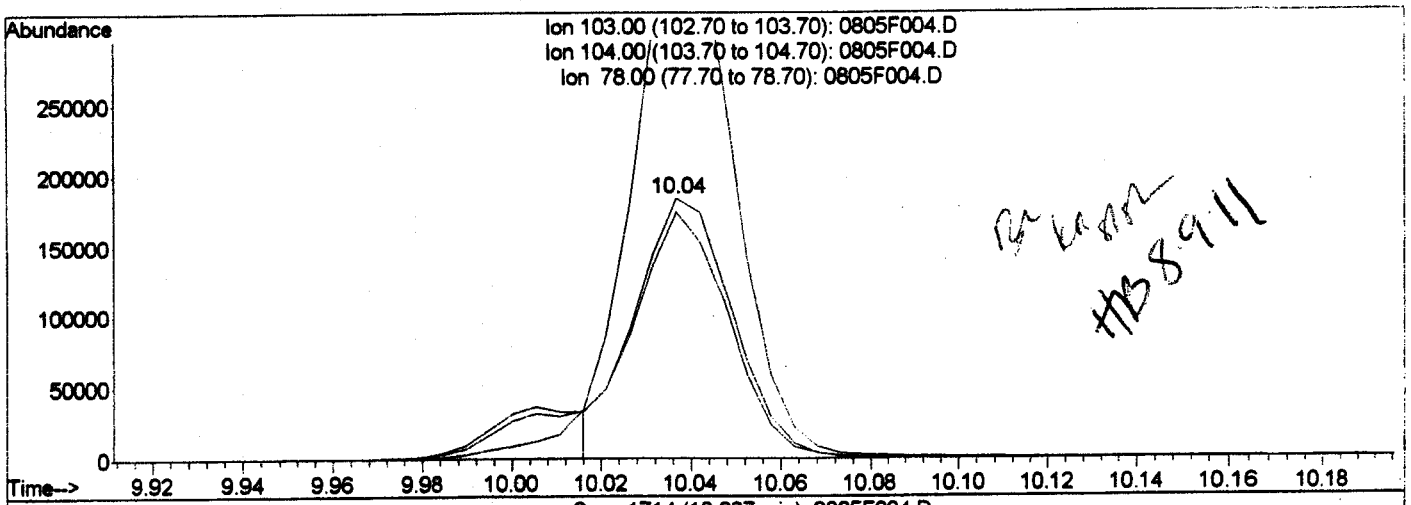
Quantitation Report (Qedit)

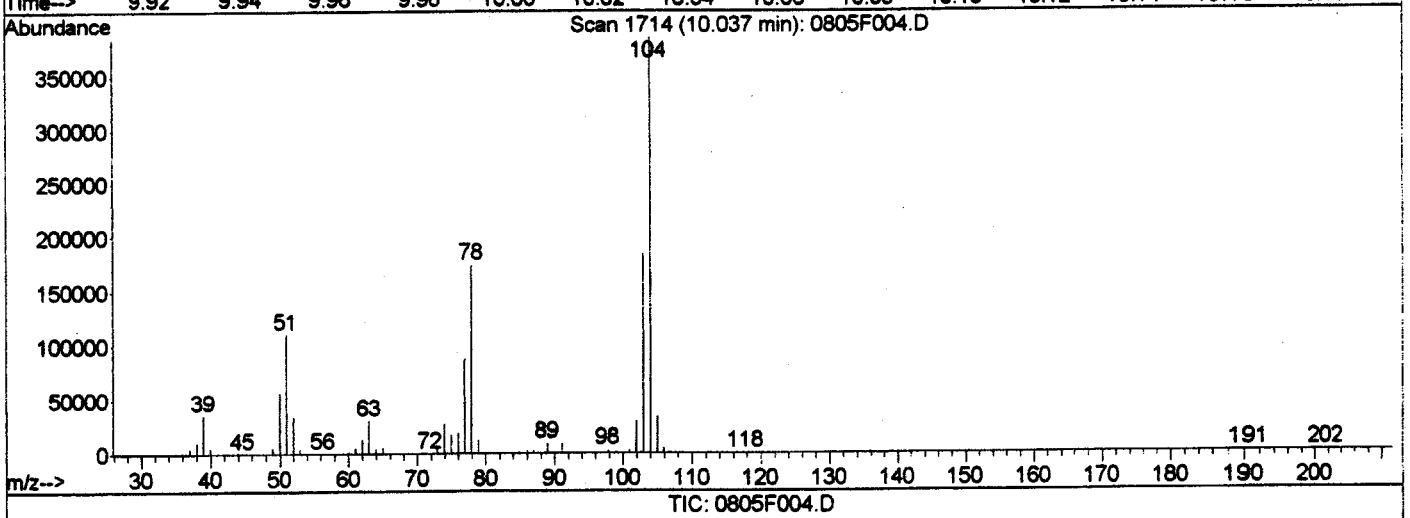
Data File : J:\MS23\DATA\080511BAYW\0805F004.D
Acq On : 5 Aug 2011 10:09 am
Sample : 624 CCV
Misc :
MS Integration Params: rteint.p
Quant Time: Aug 8 15:24 2011

Vial: 3
Operator: KR
Inst : MS23
Multiplr: 1.00

Quant Results File: temp.res

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Multiple Level Calibration





(45) Styrene (T)

10.04min 11.83PPB m

response 276057

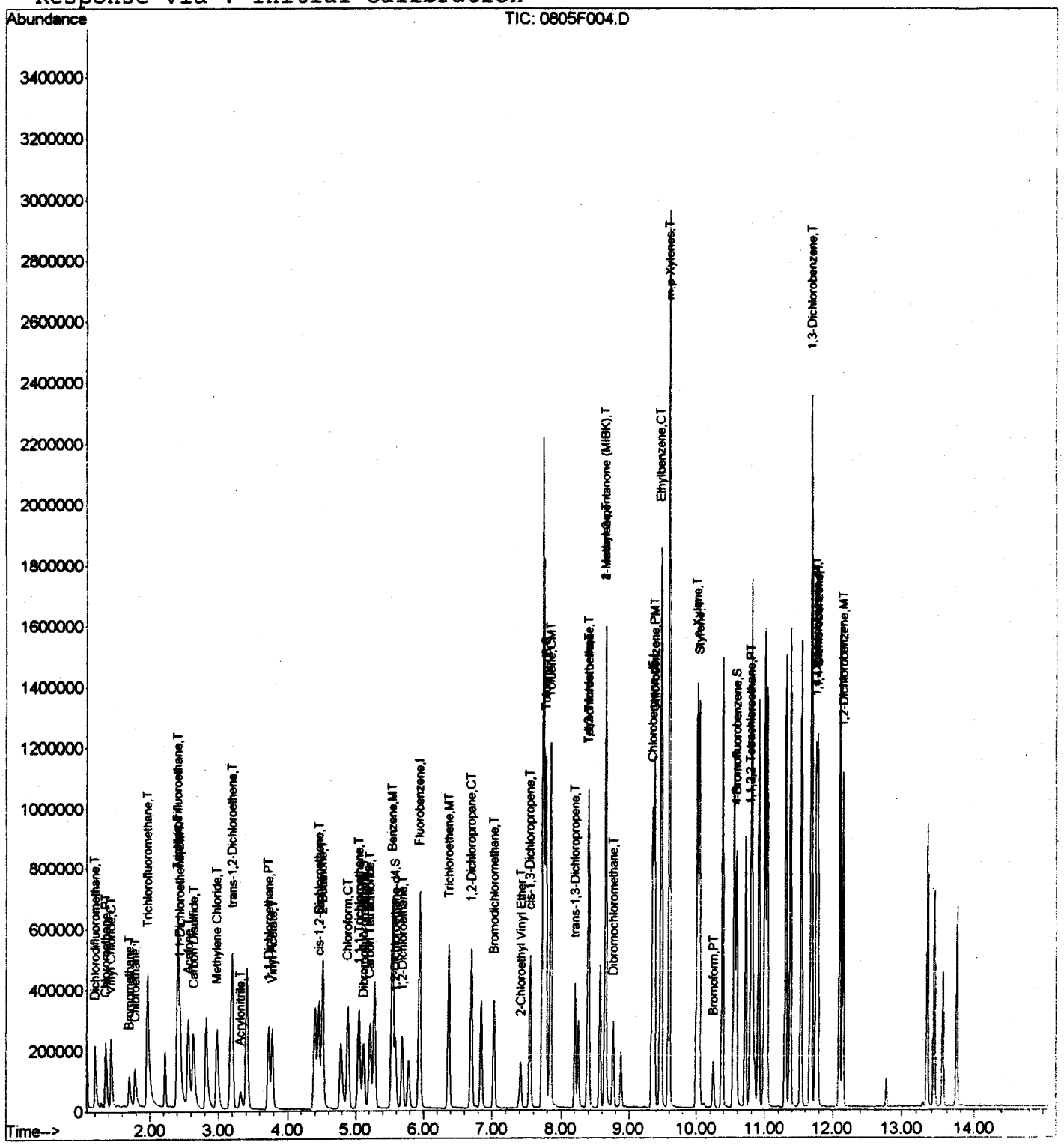
Ion	Exp%	Act%
103.00	100	100
104.00	217.10	209.79
78.00	101.20	94.77
0.00	0.00	0.00

0805F004.D 032911624BAYW.M Mon Aug 08 15:24:50 2011

Quantitation Report (QT Reviewed)

Data File : J:\MS23\DATA\080511BAYW\0805F004.D Vial: 3
Acq On : 5 Aug 2011 10:09 am Operator: KR
Sample : 624 CCV Inst : MS23
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Aug 8 15:24 2011 Quant Results File: 032911624BAY

Method : J:\MS23\METHODS\032911624BAYW.M (RTE Integrator)
Title : VOA MS23 EPA Method 624
Last Update : Wed Apr 20 13:32:59 2011
Response via : Initial Calibration



Organic Analysis:
Volatile Organic Compounds

Validation Package

Sample Prep and Screen Data

Date: 8/1/11

Columbia Analytical Services, Inc.

Injection Log

MS23 - Agilent 5973

Tune File: BFB4

By: KC

New Tune: NO

IS/SS Std. ID: 61100 - 91c 8/11

RUN #: 255552

CCV Std ID: 61100-53A 8/15/91c 9/1

ICAL Date: 3/28/11 Cal 10943 Any value 3/29/11 Cal 10903

MS/DMS/LCS/ICV Std ID: 61100-52B 8/05/53B 8/05

Second RV: HB 8-2-11

BFB Std. ID: 61100-23D 8/14

LIMS ID: K1107275/7276 7315/7316 Bayered

	Sample Name	File Name	Method	Dilution	pH	R	Comments
1	BFB	0801F003	8260.M	4.4ml+49ml			
2	CCV	4		10.5ml+52ml			
3	LCS	5		10.0ml+52ml			
4	LCS	6		↓			
5	K1069-1MS	7		8.1ml+40ml	LL		
6	↓ 1DMS	8		↓	↓		
7	1B	9					
8	MB	10					
9	K6669-1	11			LL		
10	K6825-1C	12			↓		
11	K6680-59	13		10x 5ml+50ml	LL		
12	K6669-2	14			LL		
13	3	15					
14	4	16					
15	↓ 5	17					TB45355
16	K6825-12	↓ 18	↓		↓		TB45475
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							

all mg/mL. Clean

R:\VOA\Injection Logs\INJLOG_MS23_Rev1.XLS

Date: 8/5/11

Columbia Analytical Services, Inc.

Injection Log

MS23 - Agilent 5973

Tune File: BFB4

By: KR

New Tune: NO

IS/SS Std. ID: 61WOA - ~~616~~ 9/15 KR 9/16 KR

RUN #: 256244

CCV Std ID: 61WOA - 53A 8/5 / 53A 8/10

ICAL Date: 8/2/11 Cal 10403 Bay Lab

MS/DMS/LCS/ICV Std ID: 61WOA - 61B 8/10 / 53A 8/10

Second RV: HTB 8-9-11

BFB Std. ID: 61WOA - 61B 8/15

LIMS ID: EW11074B3/7501 7502/7503 Bay Lab

	Sample Name	File Name	Method	Dilution	pH	R	Comments
1	BFB	080SF03	8260.M	4.4 µl 1 ml			
2	624 CW	4		10 µl 1.5 ml			
3	LY	5		10/50 µl 1 ml			
4	K7021-9MS	6		2x 25 ml 50 ml 10/50 µl 5 ml			(Sample contained particulate)
5	⊥ 9DMS	7		⊥			
6	IB	8					
7	MB	9					
8	~~K70~~ Figure BL. 7/10	10					
9	K7021-9	11			12		(ND)
10	K7018-9	12			12		(ND)
11	K7214-58 Dup	13		10x 5 ml 50 ml	12		
12	59	14			12		
13	60	15			12		
14	⊥ 61	16			12		
15	K6869-3 Dil	17		10x 5 ml 50 ml	12		
16	LCS (R)	18		10/50 µl 750 ml			(NF)
17	K7094-1	19			12		
18	⊥ 2	20			12		
19	K7164-5	21			12		
20	K7022-1	22					(NC)
21	⊥ 2	23					TB45180 ⊥
22	K7135-3	24					
23	5	25					
24	⊥ 7	26			⊥		
25	IB	27	—				
26							
27							

all neg resid. Chlorine

R:\VOA\Injection Logs\INJLOG_MS23_Rev1.XLS

FACILITY NAME/ADDRESS:
Former Naval Industrial Reserve Ordinance Plant
4800 E River Rd
Fridley,MN 55421

STATION INFORMATION:
SD-001 (Groundwater Remediation Treatment System)
Surface Discharge, Effluent To Surface Water

No Discharge ('Yes' or 'No'): No

WASTEWATER TREATMENT
DISCHARGE MONITORING REPORT

PERMIT#	LIMIT STATUS	FORMER #
MNG790159	FINAL	

MONITORING PERIOD			
	YEAR|MO|DAY		YEAR|MO|DAY
FROM:	2011-10-01	TO:	2011-12-31

PERMITEE NAME/ADDRESS:
Former Naval Industrial Reserve Ordinance Plant
201 Decatur Ave Bldg 1A
Great Lakes,IL 60088

PARAMETER		QUANTITY		UNITS	CONCENTRATION			UNITS	FREQUENCY OF ANALYSIS		SAMPLE TYPE
Flow	SAMPLE VALUE	******	29.447	MG	******	0.32	******	mgd	1	Quarter	Continuous Flow Meter
50050	PERMIT REQ	******	REPORT CalQtrTot		******	REPORT CalQtrAve	******		1x	Quarter	Measur
1,1,1-Trichloroethane	SAMPLE VALUE	******	******	****	******	******	<0.50	ug/L	1	Quarter	Grab
34506	PERMIT REQ	******	******		******	******	200 CalQtrMax		1x	Quarter	Grab
1,1-Dichloroethane	SAMPLE VALUE	******	******	****	******	<0.50	******	ug/L	1	Quarter	Grab
34496	PERMIT REQ	******	******		******	5 CalQtrAve	******		1x	Quarter	Grab
1,1-Dichloroethylene (Vinylidene chloride)	SAMPLE VALUE	******	******	****	******	<0.50	******	ug/L	1	Quarter	Grab
34501	PERMIT REQ	******	******		******	3.2 CalQtrAve	******		1x	Quarter	Grab
1,2-Dichloroethylene (trans-)	SAMPLE VALUE	******	******	****	******	<0.50	******	ug/L	1	Quarter	Grab
34546	PERMIT REQ	******	******		******	50 CalQtrAve	******		1x	Quarter	Grab
1,2-Dichloroethylene (cis-)	SAMPLE VALUE	******	******	****	******	<0.50	<0.50	ug/L	1	Quarter	Grab
81686	PERMIT REQ	******	******		******	70 CalQtrAve	140 CalQtrMax		1x	Quarter	Grab
Methylene Chloride (Dichloromethane)	SAMPLE VALUE	******	******	****	******	<5.0	******	ug/L	1	Quarter	Grab
34423	PERMIT REQ	******	******		******	4.6 CalQtrAve	******		1x	Quarter	Grab
Tetrachloroethylene (Perchloroethylene)	SAMPLE VALUE	******	******	****	******	<0.50	******	ug/L	1	Quarter	Grab
34475	PERMIT REQ	******	******		******	5.0 CalQtrAve	******		1x	Quarter	Grab
Trichloroethylene (TCE or Trichloroethene)	SAMPLE VALUE	******	******	****	******	<0.50	******	ug/L	1	Quarter	Grab
39180	PERMIT REQ	******	******		******	5.0 CalQtrAve	******		1x	Quarter	Grab

COMMENTS:

Principal Executive Officer or Authorized Agent

_____ Date _____

Chief Operating Officer

_____ Date _____

A-2 MCES SPECIAL DISCHARGE REPORT

Bay West
Delivering Environmental, Industrial, and Emergency Solutions

Bay West Inc.
5 Empire Drive, St. Paul, MN 55103
651-291-0456 * FAX 651-291-0099
www.baywest.com * info@baywest.com

January 30, 2012

Mr. Michael Flaherty
Metropolitan Council Environmental Services
Industrial Waste and Pollution Prevention Section
390 Robert Street North
St. Paul, MN 55101-1805

RE: 2011 Special Discharge Report
MCES Special Discharge Permit No. 2154
Naval Industrial Reserve Ordnance Plant (NIROP) - Fridley, Minnesota

Dear Mr. Flaherty:

On behalf of the U.S. Navy, Bay West, Inc. (Bay West) is submitting the information required to fulfill annual reporting requirements associated with the above-referenced permit. Due to special conditions related to site work in 2011, two Special Discharge Reports (SDRs) have been prepared and are being submitted for Permit No. 2154. The first SDR provides pertinent information regarding the discharge of water from NIROP to the sanitary sewer as an element of groundwater extraction and treatment facility (GWTF) operation and maintenance work (O&M), including purge water from monitoring well sampling. As the O&M Contractor, Bay West has prepared an SDR for sanitary sewer discharges that occurred in 2011 from GWTF operations. Included in the SDR is a 2011 Discharge Log which details GWTF O&M related discharge types and volumes in 2011, and laboratory data sheets from all sanitary sewer wastewater sampling events. Types of discharges associated with GWTF O&M allowed under the permit include:

- Air stripper cleaning solution (after neutralization).
- Water that collects as condensate in a GWTF floor sump during humid weather conditions.
- Extraction wells and discharge lines purge material (accumulated material from the lines and groundwater from the aquifer).
- Water removed from extraction wells during well redevelopment (after neutralization).
- Water removed from extraction and monitoring wells during monitoring well sampling.
- Treated and untreated groundwater (when necessary, to divert the discharge from the Mississippi River).

In 2011, the Navy installed three new extraction wells at the site. As part of this work, pump tests were performed at the three new wells. Pump tests consisted of pumping the extraction wells at various rates, for various time periods, for the purpose of sizing extraction well pumps that will be purchased for long-term operation. Recovered groundwater (untreated) was pumped directly to the sanitary sewer during a portion of this work. AGVIQ-CH_2M Hill was the Contractor responsible for extraction well installation and pump tests performance. The second SDR included in this submittal was prepared by AGVIQ-CH_2M Hill to account for water

discharged to the sanitary sewer during the completion of pump tests. The source of the discharge (i.e., extraction well number), the volumes discharged to the sanitary sewer, and laboratory data sheets for samples collected during the pump tests are included with the SDR.

Each SDR has been signed by the party that prepared the SDR. The appropriate Navy representative has signed both SDRs. Please contact Mr. Howard Hickey at 847.688.2600 (ext. #243) or me if you have any questions regarding the 2011 SDR submittals.

Sincerely,

Paul T. Walz, P.E.
Senior Engineer
(651) 291-3491
paulw@baywest.com

Enclosures

cc: Howard Hickey, NAVFAC Midwest, Environmental
Jeff Tinney, Toltest Inc.
Stephanie Warino, Tetra Tech Nus, Inc.

Metropolitan Council Environmental Services
Industrial Waste & Pollution Prevention Section
390 Robert Street North
St. Paul, Minnesota 55101-1805

For MCES Use Only
Permit/Approval No: _____
Staff: _____
Received: **O L 45 E**

08/2008

Special Discharge Report

1. **Permittee*:** US Navy NAVFAC
*The corporation, proprietorship, government unit or individual that was issued the MCES Permit or Approval Letter.

2. **Site Address:** 4800 E River Rd, Fridley, MN 55421
Billing Address or Mailing Address Changed? ☐ Yes ☒ No If Yes, attach the change(s).

3. **Reporting Period:**
A. ☐ Jan-Mar, 20__ ☐ Apr-Jun, 20__ ☐ Jul-Sep, 20__ ☐ Oct-Dec, 20__
B. ☒ Jan-Dec, 20__11
C. ☐ Short-Term Discharge Start Date: _____ End Date: _____

4. **Discharge Information:**
Indicate whether the wastewater was discharged on-site and/or hauled during this reporting period, and complete the associated questions. If no wastewater was disposed to MCES during this reporting period, indicate no discharge.

☐ **No Discharge to MCES during this reporting period**
If no discharge was selected, proceed directly to Item #10.

☒ **On-Site Discharge**
A. Total volume discharged during this reporting period (gallons): 172572
B. Total days of discharge during this reporting period (days): 21
C. Average volume discharged per day (gallons/day): 8218
D. Method of volume determination for this period: Continuous Flow meter or calibrated tank

☐ **Hauled Discharge**
A. Total number of loads hauled during this reporting period: _____
B. Total volume hauled during this reporting period (gallons): _____
C. Total days of discharge during this reporting period (days): _____
D. Average volume per discharge day (gallons/day): _____
E. Method of volume determination for this period: _____

5. **Sampling Information:**
A. Number of sampling events during this reporting period: _____
B. Sample(s) collected by: ☐ Permittee ☒ Other, name Bay West, Inc
C. Describe method of sample collection:
Grab samples were collected in laboratory-provided glassware, preserved on ice, and analyzed per requirements.
D. Sample(s) analyzed by: ☐ Permittee ☒ Other, name Pace Analytical
E. Were all samples collected according to MCES requirements? ☒ Yes ☐ No If No, attach an explanation.

This form is available in electronic format at:
http://www.metrocouncil.org/environment/IndustrialWaste/forms.htm

6. **Sample Results:** In the table below (or an MCES-approved alternative), enter the values for each sampling event during the reporting period. If there is more than one sampling point, attach a separate table to provide the information. In addition to completing the information in the table below, list the parameters and results for analytical values that are > 0.100 mg/L.

	Results				Averages *(if applicable)*	Units
Sampling Point	SP: 01 Description: Treatment System Discharge Pipe					
Sample Date	1/20/2011				N/A	N/A
pH	8.3				N/A	Units
TSS	205				N/A	mg/L
COD	71.3				N/A	mg/L
	Results				**Averages** *(if applicable)*	**Units**
Sampling Point	SP: 02 Description: Condensate					
Sample Date	1/5/12				N/A	N/A
pH	7.9				N/A	Units
TSS	<10				N/A	mg/L
COD	<50				N/A	mg/L
	Results				**Averages** *(if applicable)*	**Units**
Sampling Point	SP: 03 Description: 300 Tank- Groundwater Sampling Event					
Sample Date	2/17/11				N/A	N/A
pH	6.8				N/A	Units
TSS	305				N/A	mg/L
COD	1380				N/A	mg/L
Chromium	0.264				N/A	mg/L
Lead	0.228				N/A	mg/L
Nickel	0.267				N/A	mg/L
Zinc	1.780				N/A	mg/L
Acetone	1.280				N/A	mg/L
	Results				**Averages** *(if applicable)*	**Units**
Sampling Point	SP: 04 Description: 300 Tank – Well Redevelopment Water					
Sample Date	5/10/11				N/A	N/A
pH	6.0				N/A	Units
TSS	15600				N/A	mg/L
COD	17800				N/A	mg/L
Arsenic	1.520				N/A	mg/L
Copper	7.730				N/A	mg/L
Lead	1.430				N/A	mg/L
Nickel	1.900				N/A	mg/L
Zinc	1.970				N/A	mg/L
Chromium	0.245				N/A	mg/L
Selenium	0.324				N/A	mg/L
Acetone	2.470				N/A	mg/L
Trichloroethene	0.106				N/A	mg/L

7. **Data Sheets:** Are laboratory data sheets from **all** wastewater sampling events included with this report?
☒ Yes ☐ No If No, attach an explanation.

8. **Representative Discharge:** Are the analytical results, for Item #6 above, representative of the wastewater discharged during this reporting period? ☒ Yes ☐ No If No, attach an explanation.

9. **Compliance Status:** All values reported during the reporting period are: ☒ In compliance ☒ **Not** in compliance with MCES Discharge Limitations. *The copper concentration at Sampling Point SP04 (Well Redevelopment Water) of 7.73 mg/L exceeded the discharge limit of 4.0 mg/L. The lead concentration of 1.430 mg/L in the same sample exceeded the discharge limit of 1.0 mg/L. The remaining analytical results for samples collected for the 2011 reporting period were in compliance with MCES discharge limits.*

10. **Process Changes:**
   a. Have there been any significant process problems/changes during this reporting period?
   ☐ Yes ☒ No If Yes, attach an explanation.
   b. Are there any planned or expected future changes that will impact discharge volume or quality?
   ☐ Yes ☒ No If Yes, attach an explanation.

11. **Certification Statement*:**
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties under law for submitting false information, including the possibility of fine and imprisonment for knowing violations.

System Operator

Name (print):	Paul Walz, P.E.	Title:	Project Manager
Signature:	Paul Walz	Date:	1/27/12
Email:	paulw@baywest.com	Phone:	651-291-3491

Authorized Representative

Name (print):	Howard Hickey	Title:	Environmental Restoration Program Manager, NAVFAC Midwest
Signature:	Howard M. Hickey	Date:	1/27/2011
Email:	Howard.hickey@navy.mil	Phone:	847-688-2600 ext. #243

*This report must be signed by the authorized representative or designated representative.

NIROP FRIDLEY GWTF
2010 DISCHARGE LOG
MCES Special Discharge Permit No. 2154

Discharge No.	Discharge Description			Date	Start Total FQI-304 (gal)	End Total FQI-304 (gal)	Total Discharge (gal)	pH
1	Condensate	SP-02	to Sanitary	1/3/2011	203054	204992	1938	6.0
2	Air Scour Discharge	SP-01	to Sanitary	1/20/2011	74240	74288	48000	7.0
3	Well Redevelopment/Nuetralized Acid Solution Discharge	SP-04	to Sanitary	1/25/2011			55	7.0
4	Condensate	SP-02	to Sanitary	1/31/2011	204992	206908	1916	7.0
5	Pipe Pigging	SP-01	to Sanitary	2/15/2011			1000	7.0
6	Pipe Pigging	SP-01	to Sanitary	2/17/2011			2600	7.0
7	Sampling Discharge	SP-03	to Sanitary	2/17/2011			340	7.0
8	Condensate	SP-02	to Sanitary	2/28/2011	206910	208934	2024	7.0
9	Groundwater Discharge	SP-01	to Sanitary	4/28/2011	28359	28370	11000	7.0
10	Well Redevelopment/Nuetralized Acid Solution Discharge	SP-04	to Sanitary	5/15/2011			14000	7.0
11	Condensate	SP-02	to Sanitary	5/5/2011	208934	211683	2749	7.0
12	Well Redevelopment/Nuetralized Acid Solution Discharge	SP-04	to Sanitary	7/6/2011			140	7.0
13	Well Redevelopment/Nuetralized Acid Solution Discharge	SP-04	to Sanitary	8/8/2011			240	6.0
14	Sampling Discharge	SP-03	to Sanitary	8/18/2011			615	7.0
15	Groundwater Discharge	SP-01	to Sanitary	9/6/2011			2500	7.0
16	Well Redevelopment/Nuetralized Acid Solution Discharge	SP-04	to Sanitary	9/30/2011			1500	7.0
17	Condensate	SP-02	to Sanitary	12/8/2011	211683	214163	2480	7.0
18	Sampling Discharge	SP-03	to Sanitary	2/17/2011			3400	7.0
19	Air Scour Discharge	SP-01	to Sanitary	4/19/2011	23700	23773	73000	7.0
20	Well Redevelopment/Nuetralized Acid Solution Discharge	SP-04	to Sanitary	9/22/2011			2500	6.0
21	Sampling Discharge	SP-03	to Sanitary	5/11/2011			575	7.0

Total volume discharged during this reporting period:	172572	gallons
Total days of discharge during this reporting period:	21	days
Average volume discharged per day:	8218	gal/day

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SAMPLE SUMMARY

Project: NIROP J070047
Pace Project No.: 10147751

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10147751001	**Scouring System Discharge**	Water	01/20/11 12:30	01/20/11 15:10
10147751002	**Trip Blanks**	Water	01/20/11 00:00	01/20/11 15:10

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SAMPLE ANALYTE COUNT

Project: NIROP J070047
Pace Project No.: 10147751

Lab ID	Sample ID	Method	Analysts	Analytes Reported
10147751001	**Scouring System Discharge**	EPA 200.7	IP	9
		EPA 245.1	TEM	1
		EPA 8260	ECB	73
		SM 2540D	AS1	1
		SM 4500-H+B	MWD	1
		EPA 410.4	MWD	1
10147751002	**Trip Blanks**	EPA 8260	ECB	73

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ANALYTICAL RESULTS

Project: NIROP J070047
Pace Project No.: 10147751

Sample: Scouring System Discharge **Lab ID: 10147751001** Collected: 01/20/11 12:30 Received: 01/20/11 15:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 MET ICP	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Arsenic	**60.3**	ug/L	10.0	3.2	1	01/24/11 15:12	01/25/11 15:55	7440-38-2	
Cadmium	ND	ug/L	1.0	0.22	1	01/24/11 15:12	01/25/11 15:55	7440-43-9	
Chromium	ND	ug/L	10.0	1.8	1	01/24/11 15:12	01/25/11 15:55	7440-47-3	
Copper	ND	ug/L	10.0	0.61	1	01/24/11 15:12	01/25/11 15:55	7440-50-8	
Lead	**24.8**	ug/L	3.0	0.58	1	01/24/11 15:12	01/25/11 15:55	7439-92-1	
Molybdenum	ND	ug/L	15.0	2.7	1	01/24/11 15:12	01/25/11 15:55	7439-98-7	
Nickel	ND	ug/L	20.0	3.9	1	01/24/11 15:12	01/25/11 15:55	7440-02-0	
Selenium	**28.2**	ug/L	15.0	3.4	1	01/24/11 15:12	01/25/11 15:55	7782-49-2	
Zinc	ND	ug/L	20.0	2.8	1	01/24/11 15:12	01/25/11 15:55	7440-66-6	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1								
Mercury	ND	ug/L	0.20	0.037	1	01/24/11 15:13	01/25/11 09:09	7439-97-6	
8260 VOC	Analytical Method: EPA 8260								
Acetone	ND	ug/L	25.0	5.0	1		01/27/11 11:29	67-64-1	
Allyl chloride	ND	ug/L	4.0	0.84	1		01/27/11 11:29	107-05-1	
Benzene	ND	ug/L	1.0	0.080	1		01/27/11 11:29	71-43-2	
Bromobenzene	ND	ug/L	1.0	0.11	1		01/27/11 11:29	108-86-1	
Bromochloromethane	ND	ug/L	1.0	0.21	1		01/27/11 11:29	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	0.15	1		01/27/11 11:29	75-27-4	
Bromoform	ND	ug/L	8.0	0.19	1		01/27/11 11:29	75-25-2	
Bromomethane	ND	ug/L	4.0	1.3	1		01/27/11 11:29	74-83-9	
2-Butanone (MEK)	ND	ug/L	4.0	2.0	1		01/27/11 11:29	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	0.12	1		01/27/11 11:29	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	0.10	1		01/27/11 11:29	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	0.13	1		01/27/11 11:29	98-06-6	
Carbon tetrachloride	ND	ug/L	4.0	0.19	1		01/27/11 11:29	56-23-5	
Chlorobenzene	ND	ug/L	1.0	0.13	1		01/27/11 11:29	108-90-7	
Chloroethane	ND	ug/L	1.0	0.32	1		01/27/11 11:29	75-00-3	
Chloroform	ND	ug/L	1.0	0.090	1		01/27/11 11:29	67-66-3	
Chloromethane	ND	ug/L	4.0	0.36	1		01/27/11 11:29	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	0.50	1		01/27/11 11:29	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	0.10	1		01/27/11 11:29	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	4.0	0.48	1		01/27/11 11:29	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	0.15	1		01/27/11 11:29	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	0.10	1		01/27/11 11:29	106-93-4	
Dibromomethane	ND	ug/L	4.0	0.22	1		01/27/11 11:29	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	0.13	1		01/27/11 11:29	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	0.10	1		01/27/11 11:29	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	0.11	1		01/27/11 11:29	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	0.30	1		01/27/11 11:29	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	0.080	1		01/27/11 11:29	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	0.080	1		01/27/11 11:29	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	0.20	1		01/27/11 11:29	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	0.23	1		01/27/11 11:29	156-59-2	

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ANALYTICAL RESULTS

Project: NIROP J070047
Pace Project No.: 10147751

Sample: Scouring System Discharge **Lab ID: 10147751001** Collected: 01/20/11 12:30 Received: 01/20/11 15:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 VOC	Analytical Method: EPA 8260								
trans-1,2-Dichloroethene	ND	ug/L	1.0	0.11	1		01/27/11 11:29	156-60-5	
Dichlorofluoromethane	ND	ug/L	1.0	0.29	1		01/27/11 11:29	75-43-4	
1,2-Dichloropropane	ND	ug/L	1.0	0.10	1		01/27/11 11:29	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	0.090	1		01/27/11 11:29	142-28-9	
2,2-Dichloropropane	ND	ug/L	4.0	0.13	1		01/27/11 11:29	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	0.11	1		01/27/11 11:29	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	4.0	0.090	1		01/27/11 11:29	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	4.0	0.11	1		01/27/11 11:29	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	4.0	0.26	1		01/27/11 11:29	60-29-7	
Ethylbenzene	ND	ug/L	1.0	0.080	1		01/27/11 11:29	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	4.0	0.51	1		01/27/11 11:29	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	0.10	1		01/27/11 11:29	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	0.090	1		01/27/11 11:29	99-87-6	
Methylene Chloride	ND	ug/L	4.0	2.0	1		01/27/11 11:29	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	4.0	2.0	1		01/27/11 11:29	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	0.11	1		01/27/11 11:29	1634-04-4	
Naphthalene	ND	ug/L	4.0	0.41	1		01/27/11 11:29	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	0.10	1		01/27/11 11:29	103-65-1	
Styrene	ND	ug/L	1.0	0.090	1		01/27/11 11:29	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	0.16	1		01/27/11 11:29	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	0.14	1		01/27/11 11:29	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	0.15	1		01/27/11 11:29	127-18-4	
Tetrahydrofuran	ND	ug/L	10.0	1.5	1		01/27/11 11:29	109-99-9	
Toluene	ND	ug/L	1.0	0.11	1		01/27/11 11:29	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	0.16	1		01/27/11 11:29	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	0.16	1		01/27/11 11:29	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	0.090	1		01/27/11 11:29	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	0.11	1		01/27/11 11:29	79-00-5	
Trichloroethene	ND	ug/L	1.0	0.14	1		01/27/11 11:29	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	0.14	1		01/27/11 11:29	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	4.0	0.14	1		01/27/11 11:29	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	0.13	1		01/27/11 11:29	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	0.080	1		01/27/11 11:29	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	0.10	1		01/27/11 11:29	108-67-8	
Vinyl chloride	ND	ug/L	0.40	0.11	1		01/27/11 11:29	75-01-4	
Xylene (Total)	ND	ug/L	3.0	0.25	1		01/27/11 11:29	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	0.15	1		01/27/11 11:29	179601-23-1	
o-Xylene	ND	ug/L	1.0	0.10	1		01/27/11 11:29	95-47-6	
Dibromofluoromethane (S)	101	%	75-130		1		01/27/11 11:29	1868-53-7	
1,2-Dichloroethane-d4 (S)	109	%	75-131		1		01/27/11 11:29	17060-07-0	
Toluene-d8 (S)	78	%	75-125		1		01/27/11 11:29	2037-26-5	
4-Bromofluorobenzene (S)	96	%	75-125		1		01/27/11 11:29	460-00-4	
2540D Total Suspended Solids	Analytical Method: SM 2540D								
Total Suspended Solids	**205**	mg/L	22.2	11.1	1		01/24/11 11:13		

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ANALYTICAL RESULTS

Project: NIROP J070047
Pace Project No.: 10147751

Sample: Scouring System Discharge **Lab ID: 10147751001** Collected: 01/20/11 12:30 Received: 01/20/11 15:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**8.3**	Std. Units	0.10		1		01/27/11 11:12		H6
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	**71.3**	mg/L	50.0	12.0	1		01/24/11 09:07		

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ANALYTICAL RESULTS

Project: NIROP J070047
Pace Project No.: 10147751

Sample: Trip Blanks **Lab ID: 10147751002** Collected: 01/20/11 00:00 Received: 01/20/11 15:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 VOC	Analytical Method: EPA 8260								
Acetone	ND	ug/L	25.0	5.0	1		01/26/11 19:04	67-64-1	
Allyl chloride	ND	ug/L	4.0	0.84	1		01/26/11 19:04	107-05-1	
Benzene	ND	ug/L	1.0	0.080	1		01/26/11 19:04	71-43-2	
Bromobenzene	ND	ug/L	1.0	0.11	1		01/26/11 19:04	108-86-1	
Bromochloromethane	ND	ug/L	1.0	0.21	1		01/26/11 19:04	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	0.15	1		01/26/11 19:04	75-27-4	
Bromoform	ND	ug/L	8.0	0.19	1		01/26/11 19:04	75-25-2	
Bromomethane	ND	ug/L	4.0	1.3	1		01/26/11 19:04	74-83-9	
2-Butanone (MEK)	ND	ug/L	4.0	2.0	1		01/26/11 19:04	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	0.12	1		01/26/11 19:04	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	0.10	1		01/26/11 19:04	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	0.13	1		01/26/11 19:04	98-06-6	
Carbon tetrachloride	ND	ug/L	4.0	0.19	1		01/26/11 19:04	56-23-5	
Chlorobenzene	ND	ug/L	1.0	0.13	1		01/26/11 19:04	108-90-7	
Chloroethane	ND	ug/L	1.0	0.32	1		01/26/11 19:04	75-00-3	
Chloroform	ND	ug/L	1.0	0.090	1		01/26/11 19:04	67-66-3	
Chloromethane	ND	ug/L	4.0	0.36	1		01/26/11 19:04	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	0.50	1		01/26/11 19:04	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	0.10	1		01/26/11 19:04	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	4.0	0.48	1		01/26/11 19:04	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	0.15	1		01/26/11 19:04	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	0.10	1		01/26/11 19:04	106-93-4	
Dibromomethane	ND	ug/L	4.0	0.22	1		01/26/11 19:04	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	0.13	1		01/26/11 19:04	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	0.10	1		01/26/11 19:04	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	0.11	1		01/26/11 19:04	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	0.30	1		01/26/11 19:04	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	0.080	1		01/26/11 19:04	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	0.080	1		01/26/11 19:04	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	0.20	1		01/26/11 19:04	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	0.23	1		01/26/11 19:04	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	0.11	1		01/26/11 19:04	156-60-5	
Dichlorofluoromethane	ND	ug/L	1.0	0.29	1		01/26/11 19:04	75-43-4	
1,2-Dichloropropane	ND	ug/L	1.0	0.10	1		01/26/11 19:04	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	0.090	1		01/26/11 19:04	142-28-9	
2,2-Dichloropropane	ND	ug/L	4.0	0.13	1		01/26/11 19:04	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	0.11	1		01/26/11 19:04	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	4.0	0.090	1		01/26/11 19:04	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	4.0	0.11	1		01/26/11 19:04	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	4.0	0.26	1		01/26/11 19:04	60-29-7	
Ethylbenzene	ND	ug/L	1.0	0.080	1		01/26/11 19:04	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	4.0	0.51	1		01/26/11 19:04	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	0.10	1		01/26/11 19:04	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	0.090	1		01/26/11 19:04	99-87-6	
Methylene Chloride	ND	ug/L	4.0	2.0	1		01/26/11 19:04	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	4.0	2.0	1		01/26/11 19:04	108-10-1	

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ANALYTICAL RESULTS

Project: NIROP J070047
Pace Project No.: 10147751

Sample: Trip Blanks **Lab ID: 10147751002** Collected: 01/20/11 00:00 Received: 01/20/11 15:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 VOC	Analytical Method: EPA 8260								
Methyl-tert-butyl ether	ND	ug/L	1.0	0.11	1		01/26/11 19:04	1634-04-4	
Naphthalene	ND	ug/L	4.0	0.41	1		01/26/11 19:04	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	0.10	1		01/26/11 19:04	103-65-1	
Styrene	ND	ug/L	1.0	0.090	1		01/26/11 19:04	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	0.16	1		01/26/11 19:04	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	0.14	1		01/26/11 19:04	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	0.15	1		01/26/11 19:04	127-18-4	
Tetrahydrofuran	ND	ug/L	10.0	1.5	1		01/26/11 19:04	109-99-9	
Toluene	ND	ug/L	1.0	0.11	1		01/26/11 19:04	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	0.16	1		01/26/11 19:04	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	0.16	1		01/26/11 19:04	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	0.090	1		01/26/11 19:04	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	0.11	1		01/26/11 19:04	79-00-5	
Trichloroethene	ND	ug/L	1.0	0.14	1		01/26/11 19:04	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	0.14	1		01/26/11 19:04	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	4.0	0.14	1		01/26/11 19:04	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	0.13	1		01/26/11 19:04	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	0.080	1		01/26/11 19:04	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	0.10	1		01/26/11 19:04	108-67-8	
Vinyl chloride	ND	ug/L	0.40	0.11	1		01/26/11 19:04	75-01-4	
Xylene (Total)	ND	ug/L	3.0	0.25	1		01/26/11 19:04	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	0.15	1		01/26/11 19:04	179601-23-1	
o-Xylene	ND	ug/L	1.0	0.10	1		01/26/11 19:04	95-47-6	
Dibromofluoromethane (S)	106	%	75-130		1		01/26/11 19:04	1868-53-7	
1,2-Dichloroethane-d4 (S)	99	%	75-131		1		01/26/11 19:04	17060-07-0	
Toluene-d8 (S)	91	%	75-125		1		01/26/11 19:04	2037-26-5	
4-Bromofluorobenzene (S)	97	%	75-125		1		01/26/11 19:04	460-00-4	

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SAMPLE SUMMARY

Project: J070047 NIROP
Pace Project No.: 10179952

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10179952001	**Condensate**	Water	01/05/12 13:40	01/05/12 15:54
10179952002	**Trip Blank**	Water	01/05/12 00:00	01/05/12 15:54

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SAMPLE ANALYTE COUNT

Project: J070047 NIROP
Pace Project No.: 10179952

Lab ID	Sample ID	Method	Analysts	Analytes Reported
10179952001	**Condensate**	EPA 200.7	IP	9
		EPA 245.1	TEM	1
		EPA 8260	SE	73
		SM 2540D	RLB	1
		SM 4500-H+B	RLB	1
		SM 5220D	MWD	1
10179952002	**Trip Blank**	EPA 8260	SE	73

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ANALYTICAL RESULTS

Project: J070047 NIROP
Pace Project No.: 10179952

Sample: Condensate **Lab ID: 10179952001** Collected: 01/05/12 13:40 Received: 01/05/12 15:54 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 MET ICP	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Arsenic	ND	ug/L	10.0	3.4	1	01/06/12 13:41	01/09/12 12:18	7440-38-2	
Cadmium	ND	ug/L	1.0	0.23	1	01/06/12 13:41	01/09/12 12:18	7440-43-9	
Chromium	ND	ug/L	10.0	1.7	1	01/06/12 13:41	01/09/12 12:18	7440-47-3	
Copper	ND	ug/L	10.0	0.43	1	01/06/12 13:41	01/09/12 12:18	7440-50-8	
Lead	ND	ug/L	3.0	1.3	1	01/06/12 13:41	01/09/12 12:18	7439-92-1	
Molybdenum	ND	ug/L	15.0	2.0	1	01/06/12 13:41	01/09/12 12:18	7439-98-7	
Nickel	ND	ug/L	20.0	10.0	1	01/06/12 13:41	01/09/12 12:18	7440-02-0	
Selenium	ND	ug/L	15.0	2.7	1	01/06/12 13:41	01/09/12 12:18	7782-49-2	
Zinc	**27.1**	ug/L	20.0	1.8	1	01/06/12 13:41	01/09/12 12:18	7440-66-6	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1								
Mercury	ND	ug/L	0.20		1	01/08/12 06:35	01/09/12 09:36	7439-97-6	
8260 VOC	Analytical Method: EPA 8260								
Acetone	ND	ug/L	25.0	12.5	1		01/06/12 14:10	67-64-1	
Allyl chloride	ND	ug/L	4.0	0.51	1		01/06/12 14:10	107-05-1	
Benzene	ND	ug/L	1.0	0.36	1		01/06/12 14:10	71-43-2	
Bromobenzene	ND	ug/L	1.0	0.31	1		01/06/12 14:10	108-86-1	
Bromochloromethane	ND	ug/L	1.0	0.22	1		01/06/12 14:10	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	0.23	1		01/06/12 14:10	75-27-4	
Bromoform	ND	ug/L	4.0	2.0	1		01/06/12 14:10	75-25-2	
Bromomethane	ND	ug/L	4.0	0.36	1		01/06/12 14:10	74-83-9	
2-Butanone (MEK)	ND	ug/L	4.0	2.0	1		01/06/12 14:10	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	0.38	1		01/06/12 14:10	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	0.37	1		01/06/12 14:10	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	0.47	1		01/06/12 14:10	98-06-6	
Carbon tetrachloride	ND	ug/L	1.0	0.38	1		01/06/12 14:10	56-23-5	
Chlorobenzene	ND	ug/L	1.0	0.33	1		01/06/12 14:10	108-90-7	
Chloroethane	ND	ug/L	1.0	0.32	1		01/06/12 14:10	75-00-3	
Chloroform	ND	ug/L	1.0	0.34	1		01/06/12 14:10	67-66-3	
Chloromethane	ND	ug/L	4.0	0.36	1		01/06/12 14:10	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	0.37	1		01/06/12 14:10	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	0.29	1		01/06/12 14:10	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	4.0	1.2	1		01/06/12 14:10	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	0.36	1		01/06/12 14:10	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	0.26	1		01/06/12 14:10	106-93-4	
Dibromomethane	ND	ug/L	4.0	0.48	1		01/06/12 14:10	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	0.31	1		01/06/12 14:10	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	0.40	1		01/06/12 14:10	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	0.34	1		01/06/12 14:10	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	0.23	1		01/06/12 14:10	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	0.23	1		01/06/12 14:10	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	0.23	1		01/06/12 14:10	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	0.47	1		01/06/12 14:10	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	0.37	1		01/06/12 14:10	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	4.0	0.21	1		01/06/12 14:10	156-60-5	

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ANALYTICAL RESULTS

Project: J070047 NIROP
Pace Project No.: 10179952

Sample: Condensate **Lab ID: 10179952001** Collected: 01/05/12 13:40 Received: 01/05/12 15:54 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 VOC	Analytical Method: EPA 8260								
Dichlorofluoromethane	ND	ug/L	1.0	0.25	1		01/06/12 14:10	75-43-4	
1,2-Dichloropropane	ND	ug/L	4.0	0.41	1		01/06/12 14:10	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	0.36	1		01/06/12 14:10	142-28-9	
2,2-Dichloropropane	ND	ug/L	4.0	0.42	1		01/06/12 14:10	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	0.46	1		01/06/12 14:10	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	4.0	0.27	1		01/06/12 14:10	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	4.0	0.18	1		01/06/12 14:10	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	4.0	0.28	1		01/06/12 14:10	60-29-7	
Ethylbenzene	ND	ug/L	1.0	0.38	1		01/06/12 14:10	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	5.0	0.20	1		01/06/12 14:10	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	0.36	1		01/06/12 14:10	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	0.36	1		01/06/12 14:10	99-87-6	
Methylene Chloride	ND	ug/L	4.0	2.0	1		01/06/12 14:10	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	4.0	2.0	1		01/06/12 14:10	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	0.24	1		01/06/12 14:10	1634-04-4	
Naphthalene	ND	ug/L	4.0	0.57	1		01/06/12 14:10	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	0.42	1		01/06/12 14:10	103-65-1	
Styrene	ND	ug/L	1.0	0.35	1		01/06/12 14:10	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	0.35	1		01/06/12 14:10	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	0.17	1		01/06/12 14:10	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	0.26	1		01/06/12 14:10	127-18-4	
Tetrahydrofuran	ND	ug/L	10.0	4.1	1		01/06/12 14:10	109-99-9	
Toluene	ND	ug/L	1.0	0.39	1		01/06/12 14:10	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	0.29	1		01/06/12 14:10	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	0.33	1		01/06/12 14:10	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	0.26	1		01/06/12 14:10	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	0.38	1		01/06/12 14:10	79-00-5	
Trichloroethene	ND	ug/L	1.0	0.20	1		01/06/12 14:10	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	0.30	1		01/06/12 14:10	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	4.0	0.25	1		01/06/12 14:10	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	0.49	1		01/06/12 14:10	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	0.26	1		01/06/12 14:10	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	0.38	1		01/06/12 14:10	108-67-8	
Vinyl chloride	ND	ug/L	0.40	0.17	1		01/06/12 14:10	75-01-4	
Xylene (Total)	ND	ug/L	3.0	1.1	1		01/06/12 14:10	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	0.66	1		01/06/12 14:10	179601-23-1	
o-Xylene	ND	ug/L	1.0	0.46	1		01/06/12 14:10	95-47-6	
Surrogates									
Dibromofluoromethane (S)	102	%	75-125		1		01/06/12 14:10	1868-53-7	
1,2-Dichloroethane-d4 (S)	86	%	75-125		1		01/06/12 14:10	17060-07-0	
Toluene-d8 (S)	89	%	75-125		1		01/06/12 14:10	2037-26-5	
4-Bromofluorobenzene (S)	89	%	75-125		1		01/06/12 14:10	460-00-4	
2540D Total Suspended Solids	Analytical Method: SM 2540D								
Total Suspended Solids	ND	mg/L	10.0	5.1	1		01/07/12 09:34		

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ANALYTICAL RESULTS

Project: J070047 NIROP
Pace Project No.: 10179952

Sample: Condensate **Lab ID: 10179952001** Collected: 01/05/12 13:40 Received: 01/05/12 15:54 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.9**	Std. Units	0.10	0.050	1		01/07/12 14:20		H6
5220D COD	Analytical Method: SM 5220D								
Chemical Oxygen Demand	ND	mg/L	50.0	25.0	1		01/11/12 09:02		

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ANALYTICAL RESULTS

Project: J070047 NIROP
Pace Project No.: 10179952

Sample: Trip Blank **Lab ID: 10179952002** Collected: 01/05/12 00:00 Received: 01/05/12 15:54 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 VOC	Analytical Method: EPA 8260								
Acetone	ND	ug/L	25.0	12.5	1		01/06/12 12:19	67-64-1	
Allyl chloride	ND	ug/L	4.0	0.51	1		01/06/12 12:19	107-05-1	
Benzene	ND	ug/L	1.0	0.36	1		01/06/12 12:19	71-43-2	
Bromobenzene	ND	ug/L	1.0	0.31	1		01/06/12 12:19	108-86-1	
Bromochloromethane	ND	ug/L	1.0	0.22	1		01/06/12 12:19	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	0.23	1		01/06/12 12:19	75-27-4	
Bromoform	ND	ug/L	4.0	2.0	1		01/06/12 12:19	75-25-2	
Bromomethane	ND	ug/L	4.0	0.36	1		01/06/12 12:19	74-83-9	
2-Butanone (MEK)	ND	ug/L	4.0	2.0	1		01/06/12 12:19	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	0.38	1		01/06/12 12:19	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	0.37	1		01/06/12 12:19	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	0.47	1		01/06/12 12:19	98-06-6	
Carbon tetrachloride	ND	ug/L	1.0	0.38	1		01/06/12 12:19	56-23-5	
Chlorobenzene	ND	ug/L	1.0	0.33	1		01/06/12 12:19	108-90-7	
Chloroethane	ND	ug/L	1.0	0.32	1		01/06/12 12:19	75-00-3	
Chloroform	ND	ug/L	1.0	0.34	1		01/06/12 12:19	67-66-3	
Chloromethane	ND	ug/L	4.0	0.36	1		01/06/12 12:19	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	0.37	1		01/06/12 12:19	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	0.29	1		01/06/12 12:19	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	4.0	1.2	1		01/06/12 12:19	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	0.36	1		01/06/12 12:19	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	0.26	1		01/06/12 12:19	106-93-4	
Dibromomethane	ND	ug/L	4.0	0.48	1		01/06/12 12:19	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	0.31	1		01/06/12 12:19	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	0.40	1		01/06/12 12:19	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	0.34	1		01/06/12 12:19	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	0.23	1		01/06/12 12:19	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	0.23	1		01/06/12 12:19	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	0.23	1		01/06/12 12:19	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	0.47	1		01/06/12 12:19	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	0.37	1		01/06/12 12:19	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	4.0	0.21	1		01/06/12 12:19	156-60-5	
Dichlorofluoromethane	ND	ug/L	1.0	0.25	1		01/06/12 12:19	75-43-4	
1,2-Dichloropropane	ND	ug/L	4.0	0.41	1		01/06/12 12:19	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	0.36	1		01/06/12 12:19	142-28-9	
2,2-Dichloropropane	ND	ug/L	4.0	0.42	1		01/06/12 12:19	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	0.46	1		01/06/12 12:19	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	4.0	0.27	1		01/06/12 12:19	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	4.0	0.18	1		01/06/12 12:19	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	4.0	0.28	1		01/06/12 12:19	60-29-7	
Ethylbenzene	ND	ug/L	1.0	0.38	1		01/06/12 12:19	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	5.0	0.20	1		01/06/12 12:19	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	0.36	1		01/06/12 12:19	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	0.36	1		01/06/12 12:19	99-87-6	
Methylene Chloride	ND	ug/L	4.0	2.0	1		01/06/12 12:19	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	4.0	2.0	1		01/06/12 12:19	108-10-1	

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ANALYTICAL RESULTS

Project: J070047 NIROP
Pace Project No.: 10179952

Sample: Trip Blank **Lab ID: 10179952002** Collected: 01/05/12 00:00 Received: 01/05/12 15:54 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 VOC	Analytical Method: EPA 8260								
Methyl-tert-butyl ether	ND	ug/L	1.0	0.24	1		01/06/12 12:19	1634-04-4	
Naphthalene	ND	ug/L	4.0	0.57	1		01/06/12 12:19	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	0.42	1		01/06/12 12:19	103-65-1	
Styrene	ND	ug/L	1.0	0.35	1		01/06/12 12:19	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	0.35	1		01/06/12 12:19	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	0.17	1		01/06/12 12:19	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	0.26	1		01/06/12 12:19	127-18-4	
Tetrahydrofuran	ND	ug/L	10.0	4.1	1		01/06/12 12:19	109-99-9	
Toluene	ND	ug/L	1.0	0.39	1		01/06/12 12:19	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	0.29	1		01/06/12 12:19	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	0.33	1		01/06/12 12:19	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	0.26	1		01/06/12 12:19	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	0.38	1		01/06/12 12:19	79-00-5	
Trichloroethene	ND	ug/L	1.0	0.20	1		01/06/12 12:19	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	0.30	1		01/06/12 12:19	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	4.0	0.25	1		01/06/12 12:19	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	0.49	1		01/06/12 12:19	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	0.26	1		01/06/12 12:19	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	0.38	1		01/06/12 12:19	108-67-8	
Vinyl chloride	ND	ug/L	0.40	0.17	1		01/06/12 12:19	75-01-4	
Xylene (Total)	ND	ug/L	3.0	1.1	1		01/06/12 12:19	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	0.66	1		01/06/12 12:19	179601-23-1	
o-Xylene	ND	ug/L	1.0	0.46	1		01/06/12 12:19	95-47-6	
Surrogates									
Dibromofluoromethane (S)	102	%	75-125		1		01/06/12 12:19	1868-53-7	
1,2-Dichloroethane-d4 (S)	87	%	75-125		1		01/06/12 12:19	17060-07-0	
Toluene-d8 (S)	90	%	75-125		1		01/06/12 12:19	2037-26-5	
4-Bromofluorobenzene (S)	89	%	75-125		1		01/06/12 12:19	460-00-4	

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ANALYTICAL RESULTS

Project: J070047.31 NIROP
Pace Project No.: 10156888

Sample: Trip Blank **Lab ID: 10156888002** Collected: 05/10/11 00:00 Received: 05/10/11 13:40 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 VOC	Analytical Method: EPA 8260								
Methyl-tert-butyl ether	ND	ug/L	1.0	0.24	1		05/12/11 17:06	1634-04-4	
Naphthalene	ND	ug/L	4.0	0.57	1		05/12/11 17:06	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	0.42	1		05/12/11 17:06	103-65-1	
Styrene	ND	ug/L	1.0	0.35	1		05/12/11 17:06	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	0.35	1		05/12/11 17:06	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	0.17	1		05/12/11 17:06	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	0.26	1		05/12/11 17:06	127-18-4	
Tetrahydrofuran	ND	ug/L	10.0	4.1	1		05/12/11 17:06	109-99-9	
Toluene	ND	ug/L	1.0	0.39	1		05/12/11 17:06	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	0.29	1		05/12/11 17:06	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	0.33	1		05/12/11 17:06	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	0.26	1		05/12/11 17:06	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	0.38	1		05/12/11 17:06	79-00-5	
Trichloroethene	ND	ug/L	1.0	0.20	1		05/12/11 17:06	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	0.30	1		05/12/11 17:06	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	4.0	0.25	1		05/12/11 17:06	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	0.49	1		05/12/11 17:06	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	0.26	1		05/12/11 17:06	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	0.38	1		05/12/11 17:06	108-67-8	
Vinyl chloride	ND	ug/L	0.40	0.17	1		05/12/11 17:06	75-01-4	
Xylene (Total)	ND	ug/L	3.0	1.1	1		05/12/11 17:06	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	0.66	1		05/12/11 17:06	179601-23-1	
o-Xylene	ND	ug/L	1.0	0.46	1		05/12/11 17:06	95-47-6	
Dibromofluoromethane (S)	102	%	75-125		1		05/12/11 17:06	1868-53-7	
1,2-Dichloroethane-d4 (S)	108	%	75-125		1		05/12/11 17:06	17060-07-0	
Toluene-d8 (S)	97	%	75-125		1		05/12/11 17:06	2037-26-5	
4-Bromofluorobenzene (S)	101	%	75-125		1		05/12/11 17:06	460-00-4	

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ANALYTICAL RESULTS

Project: J070047 NIROP
Pace Project No.: 10179952

Sample: Trip Blank **Lab ID: 10179952002** Collected: 01/05/12 00:00 Received: 01/05/12 15:54 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 VOC	Analytical Method: EPA 8260								
Methyl-tert-butyl ether	ND	ug/L	1.0	0.24	1		01/06/12 12:19	1634-04-4	
Naphthalene	ND	ug/L	4.0	0.57	1		01/06/12 12:19	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	0.42	1		01/06/12 12:19	103-65-1	
Styrene	ND	ug/L	1.0	0.35	1		01/06/12 12:19	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	0.35	1		01/06/12 12:19	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	0.17	1		01/06/12 12:19	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	0.26	1		01/06/12 12:19	127-18-4	
Tetrahydrofuran	ND	ug/L	10.0	4.1	1		01/06/12 12:19	109-99-9	
Toluene	ND	ug/L	1.0	0.39	1		01/06/12 12:19	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	0.29	1		01/06/12 12:19	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	0.33	1		01/06/12 12:19	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	0.26	1		01/06/12 12:19	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	0.38	1		01/06/12 12:19	79-00-5	
Trichloroethene	ND	ug/L	1.0	0.20	1		01/06/12 12:19	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	0.30	1		01/06/12 12:19	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	4.0	0.25	1		01/06/12 12:19	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	0.49	1		01/06/12 12:19	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	0.26	1		01/06/12 12:19	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	0.38	1		01/06/12 12:19	108-67-8	
Vinyl chloride	ND	ug/L	0.40	0.17	1		01/06/12 12:19	75-01-4	
Xylene (Total)	ND	ug/L	3.0	1.1	1		01/06/12 12:19	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	0.66	1		01/06/12 12:19	179601-23-1	
o-Xylene	ND	ug/L	1.0	0.46	1		01/06/12 12:19	95-47-6	
Surrogates									
Dibromofluoromethane (S)	102	%	75-125		1		01/06/12 12:19	1868-53-7	
1,2-Dichloroethane-d4 (S)	87	%	75-125		1		01/06/12 12:19	17060-07-0	
Toluene-d8 (S)	90	%	75-125		1		01/06/12 12:19	2037-26-5	
4-Bromofluorobenzene (S)	89	%	75-125		1		01/06/12 12:19	460-00-4	

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ANALYTICAL RESULTS

Project: J070047.31 NIROP
Pace Project No.: 10156888

Sample: Trip Blank **Lab ID: 10156888002** Collected: 05/10/11 00:00 Received: 05/10/11 13:40 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 VOC	Analytical Method: EPA 8260								
Methyl-tert-butyl ether	ND	ug/L	1.0	0.24	1		05/12/11 17:06	1634-04-4	
Naphthalene	ND	ug/L	4.0	0.57	1		05/12/11 17:06	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	0.42	1		05/12/11 17:06	103-65-1	
Styrene	ND	ug/L	1.0	0.35	1		05/12/11 17:06	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	0.35	1		05/12/11 17:06	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	0.17	1		05/12/11 17:06	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	0.26	1		05/12/11 17:06	127-18-4	
Tetrahydrofuran	ND	ug/L	10.0	4.1	1		05/12/11 17:06	109-99-9	
Toluene	ND	ug/L	1.0	0.39	1		05/12/11 17:06	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	0.29	1		05/12/11 17:06	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	0.33	1		05/12/11 17:06	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	0.26	1		05/12/11 17:06	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	0.38	1		05/12/11 17:06	79-00-5	
Trichloroethene	ND	ug/L	1.0	0.20	1		05/12/11 17:06	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	0.30	1		05/12/11 17:06	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	4.0	0.25	1		05/12/11 17:06	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	0.49	1		05/12/11 17:06	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	0.26	1		05/12/11 17:06	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	0.38	1		05/12/11 17:06	108-67-8	
Vinyl chloride	ND	ug/L	0.40	0.17	1		05/12/11 17:06	75-01-4	
Xylene (Total)	ND	ug/L	3.0	1.1	1		05/12/11 17:06	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	0.66	1		05/12/11 17:06	179601-23-1	
o-Xylene	ND	ug/L	1.0	0.46	1		05/12/11 17:06	95-47-6	
Dibromofluoromethane (S)	102	%	75-125		1		05/12/11 17:06	1868-53-7	
1,2-Dichloroethane-d4 (S)	108	%	75-125		1		05/12/11 17:06	17060-07-0	
Toluene-d8 (S)	97	%	75-125		1		05/12/11 17:06	2037-26-5	
4-Bromofluorobenzene (S)	101	%	75-125		1		05/12/11 17:06	460-00-4	

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ANALYTICAL RESULTS

Project: J070047 NIROP
Pace Project No.: 10179952

Sample: Trip Blank **Lab ID: 10179952002** Collected: 01/05/12 00:00 Received: 01/05/12 15:54 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 VOC	Analytical Method: EPA 8260								
Methyl-tert-butyl ether	ND	ug/L	1.0	0.24	1		01/06/12 12:19	1634-04-4	
Naphthalene	ND	ug/L	4.0	0.57	1		01/06/12 12:19	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	0.42	1		01/06/12 12:19	103-65-1	
Styrene	ND	ug/L	1.0	0.35	1		01/06/12 12:19	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	0.35	1		01/06/12 12:19	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	0.17	1		01/06/12 12:19	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	0.26	1		01/06/12 12:19	127-18-4	
Tetrahydrofuran	ND	ug/L	10.0	4.1	1		01/06/12 12:19	109-99-9	
Toluene	ND	ug/L	1.0	0.39	1		01/06/12 12:19	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	0.29	1		01/06/12 12:19	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	0.33	1		01/06/12 12:19	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	0.26	1		01/06/12 12:19	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	0.38	1		01/06/12 12:19	79-00-5	
Trichloroethene	ND	ug/L	1.0	0.20	1		01/06/12 12:19	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	0.30	1		01/06/12 12:19	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	4.0	0.25	1		01/06/12 12:19	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	0.49	1		01/06/12 12:19	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	0.26	1		01/06/12 12:19	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	0.38	1		01/06/12 12:19	108-67-8	
Vinyl chloride	ND	ug/L	0.40	0.17	1		01/06/12 12:19	75-01-4	
Xylene (Total)	ND	ug/L	3.0	1.1	1		01/06/12 12:19	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	0.66	1		01/06/12 12:19	179601-23-1	
o-Xylene	ND	ug/L	1.0	0.46	1		01/06/12 12:19	95-47-6	
Surrogates									
Dibromofluoromethane (S)	102	%	75-125		1		01/06/12 12:19	1868-53-7	
1,2-Dichloroethane-d4 (S)	87	%	75-125		1		01/06/12 12:19	17060-07-0	
Toluene-d8 (S)	90	%	75-125		1		01/06/12 12:19	2037-26-5	
4-Bromofluorobenzene (S)	89	%	75-125		1		01/06/12 12:19	460-00-4	

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ANALYTICAL RESULTS

Project: J070047.31 NIROP
Pace Project No.: 10156888

Sample: Trip Blank **Lab ID: 10156888002** Collected: 05/10/11 00:00 Received: 05/10/11 13:40 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 VOC	Analytical Method: EPA 8260								
Methyl-tert-butyl ether	ND	ug/L	1.0	0.24	1		05/12/11 17:06	1634-04-4	
Naphthalene	ND	ug/L	4.0	0.57	1		05/12/11 17:06	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	0.42	1		05/12/11 17:06	103-65-1	
Styrene	ND	ug/L	1.0	0.35	1		05/12/11 17:06	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	0.35	1		05/12/11 17:06	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	0.17	1		05/12/11 17:06	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	0.26	1		05/12/11 17:06	127-18-4	
Tetrahydrofuran	ND	ug/L	10.0	4.1	1		05/12/11 17:06	109-99-9	
Toluene	ND	ug/L	1.0	0.39	1		05/12/11 17:06	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	0.29	1		05/12/11 17:06	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	0.33	1		05/12/11 17:06	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	0.26	1		05/12/11 17:06	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	0.38	1		05/12/11 17:06	79-00-5	
Trichloroethene	ND	ug/L	1.0	0.20	1		05/12/11 17:06	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	0.30	1		05/12/11 17:06	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	4.0	0.25	1		05/12/11 17:06	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	0.49	1		05/12/11 17:06	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	0.26	1		05/12/11 17:06	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	0.38	1		05/12/11 17:06	108-67-8	
Vinyl chloride	ND	ug/L	0.40	0.17	1		05/12/11 17:06	75-01-4	
Xylene (Total)	ND	ug/L	3.0	1.1	1		05/12/11 17:06	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	0.66	1		05/12/11 17:06	179601-23-1	
o-Xylene	ND	ug/L	1.0	0.46	1		05/12/11 17:06	95-47-6	
Dibromofluoromethane (S)	102	%	75-125		1		05/12/11 17:06	1868-53-7	
1,2-Dichloroethane-d4 (S)	108	%	75-125		1		05/12/11 17:06	17060-07-0	
Toluene-d8 (S)	97	%	75-125		1		05/12/11 17:06	2037-26-5	
4-Bromofluorobenzene (S)	101	%	75-125		1		05/12/11 17:06	460-00-4	

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SAMPLE ANALYTE COUNT

Project: J070047 - NIROP
Pace Project No.: 10149907

Lab ID	Sample ID	Method	Analysts	Analytes Reported
10149907001	REDEVELOP-AT--8 (AW) groundwater sample	EPA 200.7	IP	9
		EPA 245.1	TEM	1
		EPA 8260	ECB	73
		SM 2540D	ACH	1
		SM 4500-H+B	PH1	1
		EPA 410.4	MWD	1

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ANALYTICAL RESULTS

Project: J070047 - NIROP
Pace Project No.: 10149907

Sample: REDEVELOP-AT--8 **Lab ID: 10149907001** Collected: 02/17/11 12:05 Received: 02/17/11 15:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 MET ICP	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Arsenic	**83.4**	ug/L	10.0		1	02/18/11 16:35	02/23/11 10:57	7440-38-2	
Cadmium	**2.8**	ug/L	1.0		1	02/18/11 16:35	02/23/11 10:57	7440-43-9	
Chromium	**264**	ug/L	10.0		1	02/18/11 16:35	02/23/11 10:57	7440-47-3	
Copper	ND	ug/L	10.0		1	02/18/11 16:35	02/23/11 10:57	7440-50-8	
Lead	**228**	ug/L	3.0		1	02/18/11 16:35	02/23/11 10:57	7439-92-1	
Molybdenum	ND	ug/L	15.0		1	02/18/11 16:35	02/23/11 10:57	7439-98-7	
Nickel	**267**	ug/L	20.0		1	02/18/11 16:35	02/23/11 10:57	7440-02-0	
Selenium	**99.0**	ug/L	15.0		1	02/18/11 16:35	02/23/11 10:57	7782-49-2	
Zinc	**1780**	ug/L	20.0		1	02/18/11 16:35	02/23/11 10:57	7440-66-6	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1								
Mercury	ND	ug/L	0.20	0.037	1	02/28/11 12:46	02/28/11 13:49	7439-97-6	
8260 VOC	Analytical Method: EPA 8260								
Acetone	**1280**	ug/L	1250	250	50		02/23/11 01:58	67-64-1	
Allyl chloride	ND	ug/L	4.0	0.84	1		02/24/11 18:25	107-05-1	
Benzene	ND	ug/L	1.0	0.080	1		02/24/11 18:25	71-43-2	
Bromobenzene	ND	ug/L	1.0	0.11	1		02/24/11 18:25	108-86-1	
Bromochloromethane	ND	ug/L	4.0	0.21	1		02/24/11 18:25	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	0.15	1		02/24/11 18:25	75-27-4	
Bromoform	ND	ug/L	8.0	0.19	1		02/24/11 18:25	75-25-2	
Bromomethane	ND	ug/L	4.0	1.3	1		02/24/11 18:25	74-83-9	
2-Butanone (MEK)	**4.7**	ug/L	4.0	2.0	1		02/24/11 18:25	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	0.12	1		02/24/11 18:25	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	0.10	1		02/24/11 18:25	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	0.13	1		02/24/11 18:25	98-06-6	
Carbon tetrachloride	ND	ug/L	4.0	0.19	1		02/24/11 18:25	56-23-5	
Chlorobenzene	ND	ug/L	1.0	0.13	1		02/24/11 18:25	108-90-7	
Chloroethane	ND	ug/L	1.0	0.32	1		02/24/11 18:25	75-00-3	
Chloroform	ND	ug/L	1.0	0.090	1		02/24/11 18:25	67-66-3	
Chloromethane	ND	ug/L	4.0	0.36	1		02/24/11 18:25	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	0.50	1		02/24/11 18:25	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	0.10	1		02/24/11 18:25	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	4.0	0.48	1		02/24/11 18:25	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	0.15	1		02/24/11 18:25	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	0.10	1		02/24/11 18:25	106-93-4	
Dibromomethane	ND	ug/L	4.0	0.22	1		02/24/11 18:25	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	0.13	1		02/24/11 18:25	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	0.10	1		02/24/11 18:25	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	0.11	1		02/24/11 18:25	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	0.30	1		02/24/11 18:25	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	0.080	1		02/24/11 18:25	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	0.080	1		02/24/11 18:25	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	0.20	1		02/24/11 18:25	75-35-4	
cis-1,2-Dichloroethene	**17.1**	ug/L	1.0	0.23	1		02/24/11 18:25	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	0.11	1		02/24/11 18:25	156-60-5	

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ANALYTICAL RESULTS

Project: J070047 - NIROP
Pace Project No.: 10149907

Sample: REDEVELOP-AT--8 groundwater sample **Lab ID: 10149907001** Collected: 02/17/11 12:05 Received: 02/17/11 15:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 VOC	Analytical Method: EPA 8260								
Dichlorofluoromethane	ND	ug/L	1.0	0.29	1		02/24/11 18:25	75-43-4	
1,2-Dichloropropane	ND	ug/L	1.0	0.10	1		02/24/11 18:25	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	0.090	1		02/24/11 18:25	142-28-9	
2,2-Dichloropropane	ND	ug/L	4.0	0.13	1		02/24/11 18:25	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	0.11	1		02/24/11 18:25	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	4.0	0.090	1		02/24/11 18:25	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	4.0	0.11	1		02/24/11 18:25	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	4.0	0.26	1		02/24/11 18:25	60-29-7	
Ethylbenzene	ND	ug/L	1.0	0.080	1		02/24/11 18:25	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	4.0	0.51	1		02/24/11 18:25	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	0.10	1		02/24/11 18:25	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	0.090	1		02/24/11 18:25	99-87-6	
Methylene Chloride	ND	ug/L	4.0	2.0	1		02/24/11 18:25	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	4.0	2.0	1		02/24/11 18:25	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	0.11	1		02/24/11 18:25	1634-04-4	
Naphthalene	ND	ug/L	4.0	0.41	1		02/24/11 18:25	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	0.10	1		02/24/11 18:25	103-65-1	
Styrene	ND	ug/L	1.0	0.090	1		02/24/11 18:25	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	0.16	1		02/24/11 18:25	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	0.14	1		02/24/11 18:25	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	0.15	1		02/24/11 18:25	127-18-4	
Tetrahydrofuran	ND	ug/L	10.0	1.5	1		02/24/11 18:25	109-99-9	
Toluene	ND	ug/L	1.0	0.11	1		02/24/11 18:25	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	0.16	1		02/24/11 18:25	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	0.16	1		02/24/11 18:25	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	0.090	1		02/24/11 18:25	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	0.11	1		02/24/11 18:25	79-00-5	
Trichloroethene	**3.3**	ug/L	1.0	0.14	1		02/24/11 18:25	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	0.14	1		02/24/11 18:25	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	4.0	0.14	1		02/24/11 18:25	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	0.13	1		02/24/11 18:25	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	0.080	1		02/24/11 18:25	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	0.10	1		02/24/11 18:25	108-67-8	
Vinyl chloride	ND	ug/L	0.40	0.11	1		02/24/11 18:25	75-01-4	
Xylene (Total)	ND	ug/L	3.0	0.25	1		02/24/11 18:25	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	0.15	1		02/24/11 18:25	179601-23-1	
o-Xylene	ND	ug/L	1.0	0.10	1		02/24/11 18:25	95-47-6	
Dibromofluoromethane (S)	99	%	75-130		1		02/24/11 18:25	1868-53-7	
1,2-Dichloroethane-d4 (S)	99	%	75-131		1		02/24/11 18:25	17060-07-0	
Toluene-d8 (S)	100	%	75-125		1		02/24/11 18:25	2037-26-5	
4-Bromofluorobenzene (S)	99	%	75-125		1		02/24/11 18:25	460-00-4	
2540D Total Suspended Solids	Analytical Method: SM 2540D								
Total Suspended Solids	**305**	mg/L	10.0	5.0	1		02/23/11 16:34		

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ANALYTICAL RESULTS

Project: J070047 - NIROP
Pace Project No.: 10149907

Sample: REDEVELOP-AT--8 **Lab ID: 10149907001** Collected: 02/17/11 12:05 Received: 02/17/11 15:30 Matrix: Water

Groundwater Sample

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**6.8**	Std. Units	0.10		1		02/24/11 12:35		H6
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	**1380**	mg/L	50.0	12.0	1		02/22/11 15:34		

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SAMPLE SUMMARY

Project: J070047 - NIROP
Pace Project No.: 10149907

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10149907001	REDEVELOP-AT--8 groundwater sample	Water	02/17/11 12:05	02/17/11 15:30

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SAMPLE SUMMARY

Project: J070047.31 NIROP
Pace Project No.: 10156888

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10156888001	**Unicid Neutral**	Water	05/10/11 11:00	05/10/11 13:33
10156888002	**Trip Blank**	Water	05/10/11 00:00	05/10/11 13:40

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SAMPLE ANALYTE COUNT

Project: J070047.31 NIROP
Pace Project No.: 10156888

Lab ID	Sample ID	Method	Analysts	Analytes Reported
10156888001	**Unicid Neutral**	EPA 200.7	IP	9
		EPA 245.1	TEM	1
		EPA 8260	ECB	73
		SM 2540D	CAP	1
		SM 4500-H+B	CAP	1
		EPA 410.4	MWD	1
10156888002	**Trip Blank**	EPA 8260	DJT	73

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ANALYTICAL RESULTS

Project: J070047.31 NIROP
Pace Project No.: 10156888

Sample: Unicid Neutral **Lab ID: 10156888001** Collected: 05/10/11 11:00 Received: 05/10/11 13:33 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 MET ICP	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Arsenic	**1520**	ug/L	50.0	17.1	1	05/11/11 16:19	05/12/11 13:41	7440-38-2	
Cadmium	**98.1**	ug/L	5.0	1.2	1	05/11/11 16:19	05/12/11 13:41	7440-43-9	
Chromium	**245**	ug/L	50.0	8.3	1	05/11/11 16:19	05/12/11 13:41	7440-47-3	
Copper	**7730**	ug/L	50.0	2.2	1	05/11/11 16:19	05/12/11 13:41	7440-50-8	
Lead	**1430**	ug/L	15.0	6.3	1	05/11/11 16:19	05/12/11 13:41	7439-92-1	
Molybdenum	ND	ug/L	75.0	10.1	1	05/11/11 16:19	05/12/11 13:41	7439-98-7	
Nickel	**1900**	ug/L	100	50.0	1	05/11/11 16:19	05/12/11 13:41	7440-02-0	
Selenium	**324**	ug/L	75.0	13.4	1	05/11/11 16:19	05/12/11 13:41	7782-49-2	
Zinc	**1970**	ug/L	100	8.8	1	05/11/11 16:19	05/12/11 13:41	7440-66-6	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1								
Mercury	ND	ug/L	0.20	0.037	1	05/12/11 17:11	05/13/11 09:58	7439-97-6	M1
8260 VOC	Analytical Method: EPA 8260								
Acetone	**2470**	ug/L	250	125	10		05/13/11 14:07	67-64-1	L1
Allyl chloride	ND	ug/L	40.0	5.1	10		05/13/11 14:07	107-05-1	
Benzene	ND	ug/L	10.0	3.6	10		05/13/11 14:07	71-43-2	
Bromobenzene	ND	ug/L	10.0	3.1	10		05/13/11 14:07	108-86-1	
Bromochloromethane	ND	ug/L	10.0	2.2	10		05/13/11 14:07	74-97-5	
Bromodichloromethane	ND	ug/L	10.0	2.3	10		05/13/11 14:07	75-27-4	
Bromoform	ND	ug/L	40.0	20.0	10		05/13/11 14:07	75-25-2	
Bromomethane	ND	ug/L	40.0	3.6	10		05/13/11 14:07	74-83-9	
2-Butanone (MEK)	**82.4**	ug/L	40.0	20.0	10		05/13/11 14:07	78-93-3	
n-Butylbenzene	ND	ug/L	10.0	3.8	10		05/13/11 14:07	104-51-8	
sec-Butylbenzene	ND	ug/L	10.0	3.7	10		05/13/11 14:07	135-98-8	
tert-Butylbenzene	ND	ug/L	10.0	4.7	10		05/13/11 14:07	98-06-6	
Carbon tetrachloride	ND	ug/L	10.0	3.8	10		05/13/11 14:07	56-23-5	
Chlorobenzene	ND	ug/L	10.0	3.3	10		05/13/11 14:07	108-90-7	
Chloroethane	ND	ug/L	10.0	3.2	10		05/13/11 14:07	75-00-3	L3
Chloroform	ND	ug/L	10.0	3.4	10		05/13/11 14:07	67-66-3	
Chloromethane	ND	ug/L	40.0	3.6	10		05/13/11 14:07	74-87-3	
2-Chlorotoluene	ND	ug/L	10.0	3.7	10		05/13/11 14:07	95-49-8	
4-Chlorotoluene	ND	ug/L	10.0	2.9	10		05/13/11 14:07	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	40.0	12.3	10		05/13/11 14:07	96-12-8	
Dibromochloromethane	ND	ug/L	10.0	3.6	10		05/13/11 14:07	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	10.0	2.6	10		05/13/11 14:07	106-93-4	
Dibromomethane	ND	ug/L	40.0	4.8	10		05/13/11 14:07	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	10.0	3.1	10		05/13/11 14:07	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	10.0	4.0	10		05/13/11 14:07	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	10.0	3.4	10		05/13/11 14:07	106-46-7	
Dichlorodifluoromethane	ND	ug/L	10.0	2.3	10		05/13/11 14:07	75-71-8	
1,1-Dichloroethane	ND	ug/L	10.0	2.3	10		05/13/11 14:07	75-34-3	
1,2-Dichloroethane	ND	ug/L	10.0	2.3	10		05/13/11 14:07	107-06-2	
1,1-Dichloroethene	ND	ug/L	10.0	4.7	10		05/13/11 14:07	75-35-4	
cis-1,2-Dichloroethene	**26.9**	ug/L	10.0	3.7	10		05/13/11 14:07	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	40.0	2.1	10		05/13/11 14:07	156-60-5	

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1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: J070047.31 NIROP
Pace Project No.: 10156888

Sample: Unicid Neutral **Lab ID: 10156888001** Collected: 05/10/11 11:00 Received: 05/10/11 13:33 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 VOC	Analytical Method: EPA 8260								
Dichlorofluoromethane	ND	ug/L	10.0	2.5	10		05/13/11 14:07	75-43-4	
1,2-Dichloropropane	ND	ug/L	40.0	4.1	10		05/13/11 14:07	78-87-5	
1,3-Dichloropropane	ND	ug/L	10.0	3.6	10		05/13/11 14:07	142-28-9	
2,2-Dichloropropane	ND	ug/L	40.0	4.2	10		05/13/11 14:07	594-20-7	
1,1-Dichloropropene	ND	ug/L	10.0	4.6	10		05/13/11 14:07	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	40.0	2.7	10		05/13/11 14:07	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	40.0	1.8	10		05/13/11 14:07	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	40.0	2.8	10		05/13/11 14:07	60-29-7	
Ethylbenzene	ND	ug/L	10.0	3.8	10		05/13/11 14:07	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	50.0	2.0	10		05/13/11 14:07	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	10.0	3.6	10		05/13/11 14:07	98-82-8	
p-Isopropyltoluene	ND	ug/L	10.0	3.6	10		05/13/11 14:07	99-87-6	
Methylene Chloride	ND	ug/L	40.0	20.0	10		05/13/11 14:07	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	40.0	20.0	10		05/13/11 14:07	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	10.0	2.4	10		05/13/11 14:07	1634-04-4	
Naphthalene	ND	ug/L	40.0	5.7	10		05/13/11 14:07	91-20-3	
n-Propylbenzene	ND	ug/L	10.0	4.2	10		05/13/11 14:07	103-65-1	
Styrene	ND	ug/L	10.0	3.5	10		05/13/11 14:07	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	10.0	3.5	10		05/13/11 14:07	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	10.0	1.7	10		05/13/11 14:07	79-34-5	
Tetrachloroethene	ND	ug/L	10.0	2.6	10		05/13/11 14:07	127-18-4	
Tetrahydrofuran	ND	ug/L	100	41.0	10		05/13/11 14:07	109-99-9	
Toluene	**14.6**	ug/L	10.0	3.9	10		05/13/11 14:07	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	10.0	2.9	10		05/13/11 14:07	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	10.0	3.3	10		05/13/11 14:07	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	10.0	2.6	10		05/13/11 14:07	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	10.0	3.8	10		05/13/11 14:07	79-00-5	
Trichloroethene	**106**	ug/L	10.0	2.0	10		05/13/11 14:07	79-01-6	
Trichlorofluoromethane	ND	ug/L	10.0	3.0	10		05/13/11 14:07	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	40.0	2.5	10		05/13/11 14:07	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	10.0	4.9	10		05/13/11 14:07	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	10.0	2.6	10		05/13/11 14:07	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	10.0	3.8	10		05/13/11 14:07	108-67-8	
Vinyl chloride	ND	ug/L	4.0	1.7	10		05/13/11 14:07	75-01-4	
Xylene (Total)	ND	ug/L	30.0	11.2	10		05/13/11 14:07	1330-20-7	
m&p-Xylene	ND	ug/L	20.0	6.6	10		05/13/11 14:07	179601-23-1	
o-Xylene	ND	ug/L	10.0	4.6	10		05/13/11 14:07	95-47-6	
Dibromofluoromethane (S)	104	%	75-125		10		05/13/11 14:07	1868-53-7	F1
1,2-Dichloroethane-d4 (S)	106	%	75-125		10		05/13/11 14:07	17060-07-0	
Toluene-d8 (S)	100	%	75-125		10		05/13/11 14:07	2037-26-5	
4-Bromofluorobenzene (S)	100	%	75-125		10		05/13/11 14:07	460-00-4	
2540D Total Suspended Solids	Analytical Method: SM 2540D								
Total Suspended Solids	**15600**	mg/L	500	255	1		05/11/11 14:22		

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ANALYTICAL RESULTS

Project: J070047.31 NIROP
Pace Project No.: 10156888

Sample: Unicid Neutral **Lab ID: 10156888001** Collected: 05/10/11 11:00 Received: 05/10/11 13:33 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**6.0**	Std. Units	0.10	0.050	1		05/16/11 17:10		H6
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	**17800**	mg/L	5000	2500	100		05/16/11 08:45		1M

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ANALYTICAL RESULTS

Project: J070047.31 NIROP
Pace Project No.: 10156888

Sample: Trip Blank **Lab ID: 10156888002** Collected: 05/10/11 00:00 Received: 05/10/11 13:40 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 VOC	Analytical Method: EPA 8260								
Acetone	ND	ug/L	25.0	12.5	1		05/12/11 17:06	67-64-1	
Allyl chloride	ND	ug/L	4.0	0.51	1		05/12/11 17:06	107-05-1	
Benzene	ND	ug/L	1.0	0.36	1		05/12/11 17:06	71-43-2	
Bromobenzene	ND	ug/L	1.0	0.31	1		05/12/11 17:06	108-86-1	
Bromochloromethane	ND	ug/L	1.0	0.22	1		05/12/11 17:06	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	0.23	1		05/12/11 17:06	75-27-4	
Bromoform	ND	ug/L	4.0	2.0	1		05/12/11 17:06	75-25-2	
Bromomethane	ND	ug/L	4.0	0.36	1		05/12/11 17:06	74-83-9	
2-Butanone (MEK)	ND	ug/L	4.0	2.0	1		05/12/11 17:06	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	0.38	1		05/12/11 17:06	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	0.37	1		05/12/11 17:06	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	0.47	1		05/12/11 17:06	98-06-6	
Carbon tetrachloride	ND	ug/L	1.0	0.38	1		05/12/11 17:06	56-23-5	
Chlorobenzene	ND	ug/L	1.0	0.33	1		05/12/11 17:06	108-90-7	
Chloroethane	ND	ug/L	1.0	0.32	1		05/12/11 17:06	75-00-3	
Chloroform	ND	ug/L	1.0	0.34	1		05/12/11 17:06	67-66-3	
Chloromethane	ND	ug/L	4.0	0.36	1		05/12/11 17:06	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	0.37	1		05/12/11 17:06	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	0.29	1		05/12/11 17:06	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	4.0	1.2	1		05/12/11 17:06	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	0.36	1		05/12/11 17:06	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	0.26	1		05/12/11 17:06	106-93-4	
Dibromomethane	ND	ug/L	4.0	0.48	1		05/12/11 17:06	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	0.31	1		05/12/11 17:06	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	0.40	1		05/12/11 17:06	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	0.34	1		05/12/11 17:06	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	0.23	1		05/12/11 17:06	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	0.23	1		05/12/11 17:06	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	0.23	1		05/12/11 17:06	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	0.47	1		05/12/11 17:06	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	0.37	1		05/12/11 17:06	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	4.0	0.21	1		05/12/11 17:06	156-60-5	
Dichlorofluoromethane	ND	ug/L	1.0	0.25	1		05/12/11 17:06	75-43-4	
1,2-Dichloropropane	ND	ug/L	4.0	0.41	1		05/12/11 17:06	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	0.36	1		05/12/11 17:06	142-28-9	
2,2-Dichloropropane	ND	ug/L	4.0	0.42	1		05/12/11 17:06	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	0.46	1		05/12/11 17:06	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	4.0	0.27	1		05/12/11 17:06	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	4.0	0.18	1		05/12/11 17:06	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	4.0	0.28	1		05/12/11 17:06	60-29-7	
Ethylbenzene	ND	ug/L	1.0	0.38	1		05/12/11 17:06	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	5.0	0.20	1		05/12/11 17:06	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	0.36	1		05/12/11 17:06	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	0.36	1		05/12/11 17:06	99-87-6	
Methylene Chloride	ND	ug/L	4.0	2.0	1		05/12/11 17:06	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	4.0	2.0	1		05/12/11 17:06	108-10-1	

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Metropolitan Council Environmental Services
Industrial Waste & Pollution Prevention Section
390 Robert Street North
St. Paul, Minnesota 55101-1805

For MCES Use Only
Permit/Approval No: _____
Staff: _____
Received: O L 45 E

08/2008

Special Discharge Report

1. **Permittee*:** US NAVY – Naval Facilities Engineering Command (NAVFAC)
*The corporation, proprietorship, government unit or individual that was issued the MCES Permit or Approval Letter.

2. **Site Address:** 4800 River Rd E, Minneapolis, MN 55421
Billing Address or Mailing Address Changed? ☐ Yes ☒ No If Yes, attach the change(s).

3. **Reporting Period:**
A. ☐ Jan-Mar, 20__ ☐ Apr-Jun, 20__ ☐ Jul-Sep, 20__ ☒ Oct-Dec, 2011
B. ☐ Jan-Dec, 2011
C. ☐ Short-Term Approval: Discharge Start Date: _____ End Date: _____

4. **Discharge Information:**
Indicate whether the wastewater was discharged on-site and/or hauled during this reporting period, and complete the associated questions. If no wastewater was disposed to MCES during this reporting period, indicate no discharge.

☐ **No Discharge to MCES during this reporting period**
If no discharge was selected, proceed directly to Item #10.

☒ **On-Site Discharge**
A. Total volume discharged during this reporting period (gallons): 686,765
B. Total days of discharge during this reporting period (days): 5
C. Average volume discharged per day (gallons/day): variable
D. Method of volume determination for this period: Flow meter/totalizer

☐ **Hauled Discharge**
A. Total number of loads hauled during this reporting period: _____
B. Total volume hauled during this reporting period (gallons): _____
C. Total days of discharge during this reporting period (days): _____
D. Average volume per discharge day (gallons/day): _____
E. Method of volume determination for this period: _____

5. **Sampling Information:**
A. Number of sampling events during this reporting period: 4
B. Sample(s) collected by: ☐ Permittee ☒ Other, name CH2MHILL
C. Describe method of sample collection:
Grab sample collected from sampling port at approximately the mid-point of each discharge event.
D. Sample(s) analyzed by: ☐ Permittee ☒ Other, name Trimatrix Laboratories
E. Were all samples collected according to MCES requirements? ☒ Yes ☐ No If No, attach an explanation.

6. **Sample Results:** In the table below (or an MCES-approved alternative), enter the values for each sampling event during the reporting period. If there is more than one sampling point, attach a separate table to provide the information. In addition to completing the information in the table below, list the parameters and results for analytical values that are > 0.100 mg/L.

	Results				Averages (if applicable)	Units
Sampling Point	SP: 04 Description: Well Development/Pump Test					
Sample Date	10/5/11 (AT-13)	10/10/11(AT-12)	10//12/11 (AT-11)	12/20/11 (AT-13)	N/A	N/A
pH	7.8	7.4	7.8	7.4	N/A	Units
TSS	3.3 U	3.3 U	3.3 U	3.3 U	N/A	mg/L
COD	4.1	3.8	4.7	4.7	N/A	mg/L
Trichloroethylene	0.620	0.560	0.510	2.0	N/A	mg/L
cis-1,2-dichloroethene	0.013	0.042	0.0084	0.110	N/A	mg/L

7. **Data Sheets:** Are laboratory data sheets from **all** wastewater sampling events included with this report?
☒ Yes ☐ No If No, attach an explanation.

8. **Representative Discharge:** Are the analytical results, for Item #6 above, representative of the wastewater discharged during this reporting period? ☒ Yes ☐ No If No, attach an explanation.

9. **Compliance Status:** All values reported during the reporting period are: ☒ In compliance ☐ **Not** in compliance with MCES Discharge Limitations.

10. **Process Changes:**
a. Have there been any significant process problems/changes during this reporting period?
☐ Yes ☒ No If Yes, attach an explanation.
b. Are there any planned or expected future changes that will impact discharge volume or quality?
☐ Yes ☒ No If Yes, attach an explanation.

11. **Certification Statement*:**
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties under law for submitting false information, including the possibility of fine and imprisonment for knowing violations.

System Operator

Name (print):	Renee Clore	Title:	Project Manager, AGIVQ-CH2M HILL
Signature:	Renee M. Clore	Date:	1/25/12
Email:	Renee.Clore@ch2m.com	Phone:	312-873-9758

Authorized Representative

Name (print):	Howard Hickey	Title:	Environmental Restoration Program Manager, NAVFAC MIDWEST
Signature:	Howard R Hickey	Date:	1/25/2012
Email:	howard.hickey@navy.mil	Phone:	847-688-2600 , ext 243

*This report must be signed by the authorized representative or designated representative.

ORGANIC ANALYSIS DATA SHEET
USEPA-8260B

NIROP-EW-AT13-Discharge-S001

Laboratory: TriMatrix Laboratories, Inc. SDG: NIROP100611

Client: CH2M HILL - VA Project: NIROP Fridley TO-F270

Matrix: Water Laboratory ID: 1110105-01 File ID: 1110105-01A.D

Sampled: 10/05/11 16:15 Prepared: 10/11/11 08:00 Analyzed: 10/11/11 19:29

Solids: Preparation: 5030B Aqueous Purge & Initial/Final: 5 mL / 5 mL

QC Batch: 1111037 Sequence: 1J12011 Calibration: 1J07011 Instrument: 224

CAS No.	Analyte	Dilution	CONC. (ug/L)	DL	LOD	LOQ	Q
67-64-1	Acetone	1	1.0	0.66	1.0	5.0	U
71-43-2	Benzene	1	0.50	0.12	0.50	1.0	U
75-27-4	Bromodichloromethane	1	0.50	0.13	0.50	1.0	U
75-25-2	Bromoform	1	0.25	0.10	0.25	1.0	U
74-83-9	Bromomethane	1	0.50	0.28	0.50	1.0	U
75-15-0	Carbon Disulfide	1	0.50	0.19	0.50	5.0	U
56-23-5	Carbon Tetrachloride	1	0.50	0.14	0.50	1.0	U
108-90-7	Chlorobenzene	1	0.50	0.13	0.50	1.0	U
75-00-3	Chloroethane	1	0.50	0.15	0.50	1.0	U
67-66-3	Chloroform	1	0.50	0.16	0.50	1.0	U
74-87-3	Chloromethane	1	0.50	0.18	0.50	1.0	U
110-82-7	Cyclohexane	1	0.50	0.29	0.50	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.50	0.25	0.50	2.0	U
124-48-1	Dibromochloromethane	1	0.25	0.094	0.25	1.0	U
106-93-4	1,2-Dibromoethane	1	0.25	0.11	0.25	1.0	U
95-50-1	1,2-Dichlorobenzene	1	0.50	0.15	0.50	1.0	U
541-73-1	1,3-Dichlorobenzene	1	0.25	0.11	0.25	1.0	U
106-46-7	1,4-Dichlorobenzene	1	0.50	0.16	0.50	1.0	U
75-71-8	Dichlorodifluoromethane	1	0.50	0.25	0.50	1.0	U
75-34-3	1,1-Dichloroethane	1	0.36	0.19	0.50	1.0	J
107-06-2	1,2-Dichloroethane	1	0.22	0.12	0.50	1.0	J
75-35-4	1,1-Dichloroethene	1	0.68	0.17	0.50	1.0	J
156-59-2	cis-1,2-Dichloroethene	1	13	0.17	0.50	1.0	
156-60-5	trans-1,2-Dichloroethene	1	17	0.11	0.50	1.0	
78-87-5	1,2-Dichloropropane	1	0.50	0.15	0.50	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1	0.10	0.050	0.10	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1	0.25	0.11	0.25	1.0	U
100-41-4	Ethylbenzene	1	0.25	0.11	0.25	1.0	U
591-78-6	2-Hexanone	1	0.50	0.24	0.50	5.0	U
98-82-8	Isopropylbenzene	1	0.50	0.17	0.50	1.0	U
79-20-9	Methyl Acetate	1	0.50	0.27	0.50	5.0	U
1634-04-4	Methyl tert-Butyl Ether	1	0.50	0.13	0.50	1.0	U
108-87-2	Methylcyclohexane	1	0.50	0.23	0.50	5.0	U
75-09-2	Methylene Chloride	1	0.50	0.35	0.50	1.0	U
78-93-3	2-Butanone (MEK)	1	0.50	0.28	0.50	5.0	U
108-10-1	4-Methyl-2-pentanone (MIBK)	1	0.50	0.23	0.50	5.0	U
100-42-5	Styrene	1	0.10	0.056	0.10	1.0	U

ORGANIC ANALYSIS DATA SHEET
USEPA-8260B

NIROP-EW-AT13-Discharge-S001

Laboratory: TriMatrix Laboratories, Inc. SDG: NIROP100611

Client: CH2M HILL - VA Project: NIROP Fridley TO-F270

Matrix: Water Laboratory ID: 1110105-01 File ID: 1110105-01A.D

Sampled: 10/05/11 16:15 Prepared: 10/11/11 08:00 Analyzed: 10/11/11 19:29

Solids: Preparation: 5030B Aqueous Purge & Initial/Final: 5 mL / 5 mL

QC Batch: 1111037 Sequence: 1J12011 Calibration: 1J07011 Instrument: 224

CAS No.	Analyte	Dilution	CONC. (ug/L)	DL	LOD	LOQ	Q
79-34-5	1,1,2,2-Tetrachloroethane	1	0.50	0.12	0.50	1.0	U
127-18-4	Tetrachloroethene	1	6.8	0.16	0.50	1.0	
108-88-3	Toluene	1	0.16	0.057	0.10	1.0	J
120-82-1	1,2,4-Trichlorobenzene	1	0.50	0.15	0.50	2.0	U
71-55-6	1,1,1-Trichloroethane	1	0.50	0.14	0.50	1.0	U
79-00-5	1,1,2-Trichloroethane	1	0.50	0.15	0.50	1.0	U
79-01-6	Trichloroethene	1	760	0.18	0.50	1.0	E
75-69-4	Trichlorofluoromethane	1	0.50	0.18	0.50	1.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.50	0.22	0.50	1.0	U
75-01-4	Vinyl Chloride	1	0.32	0.24	0.50	1.0	J
1330-20-7	Xylene (Total)	1	0.75	0.39	0.75	3.0	U

System Monitoring Compound	ADDED (ug/L)	CONC (ug/L)	% REC.	QC Limits	Q
Dibromofluoromethane	40.0	38.1	95	85 - 115	
1,2-Dichloroethane-d4	40.0	39.4	99	70 - 120	
Toluene-d8	40.0	38.9	97	85 - 120	
4-Bromofluorobenzene	40.0	37.9	95	75 - 120	

Internal Standard	Area	RT	Ref. Area	Ref. RT	Q
Fluorobenzene	621491	5.13	716338	5.13	
Chlorobenzene-d5	478955	8.08	549529	8.08	
1,4-Dichlorobenzene-d4	261556	10.38	323353	10.38	

* Values outside of QC limits

ORGANIC ANALYSIS DATA SHEET
USEPA-8260B

NIROP-EW-AT13-Discharge-S001

Laboratory: TriMatrix Laboratories, Inc. SDG: NIROP100611

Client: CH2M HILL - VA Project: NIROP Fridley TO-F270

Matrix: Water Laboratory ID: 1110105-01RE1 File ID: 1110105-01.D

Sampled: 10/05/11 16:15 Prepared: 10/11/11 08:00 Analyzed: 10/11/11 11:11

Solids: Preparation: 5030B Aqueous Purge & Initial/Final: 5 mL / 5 mL

QC Batch: 1111037 Sequence: 1J12011 Calibration: 1J07011 Instrument: 224

CAS No.	Analyte	Dilution	CONC. (ug/L)	DL	LOD	LOQ	Q
67-64-1	Acetone	10	10	6.6	10	50	U
71-43-2	Benzene	10	5.0	1.2	5.0	10	U
75-27-4	Bromodichloromethane	10	5.0	1.3	5.0	10	U
75-25-2	Bromoform	10	2.5	1.0	2.5	10	U
74-83-9	Bromomethane	10	5.0	2.8	5.0	10	U
75-15-0	Carbon Disulfide	10	5.0	1.9	5.0	50	U
56-23-5	Carbon Tetrachloride	10	5.0	1.4	5.0	10	U
108-90-7	Chlorobenzene	10	5.0	1.3	5.0	10	U
75-00-3	Chloroethane	10	5.0	1.5	5.0	10	U
67-66-3	Chloroform	10	5.0	1.6	5.0	10	U
74-87-3	Chloromethane	10	5.0	1.8	5.0	10	U
110-82-7	Cyclohexane	10	5.0	2.9	5.0	50	U
96-12-8	1,2-Dibromo-3-chloropropane	10	5.0	2.5	5.0	20	U
124-48-1	Dibromochloromethane	10	2.5	0.94	2.5	10	U
106-93-4	1,2-Dibromoethane	10	2.5	1.1	2.5	10	U
95-50-1	1,2-Dichlorobenzene	10	5.0	1.5	5.0	10	U
541-73-1	1,3-Dichlorobenzene	10	2.5	1.1	2.5	10	U
106-46-7	1,4-Dichlorobenzene	10	5.0	1.6	5.0	10	U
75-71-8	Dichlorodifluoromethane	10	5.0	2.5	5.0	10	U
75-34-3	1,1-Dichloroethane	10	5.0	1.9	5.0	10	U
107-06-2	1,2-Dichloroethane	10	5.0	1.2	5.0	10	U
75-35-4	1,1-Dichloroethene	10	5.0	1.7	5.0	10	U
156-59-2	cis-1,2-Dichloroethene	10	12	1.7	5.0	10	
156-60-5	trans-1,2-Dichloroethene	10	15	1.1	5.0	10	
78-87-5	1,2-Dichloropropane	10	5.0	1.5	5.0	10	U
10061-01-5	cis-1,3-Dichloropropene	10	1.0	0.50	1.0	10	U
10061-02-6	trans-1,3-Dichloropropene	10	2.5	1.1	2.5	10	U
100-41-4	Ethylbenzene	10	2.5	1.1	2.5	10	U
591-78-6	2-Hexanone	10	5.0	2.4	5.0	50	U
98-82-8	Isopropylbenzene	10	5.0	1.7	5.0	10	U
79-20-9	Methyl Acetate	10	5.0	2.7	5.0	50	U
1634-04-4	Methyl tert-Butyl Ether	10	5.0	1.3	5.0	10	U
108-87-2	Methylcyclohexane	10	5.0	2.3	5.0	50	U
75-09-2	Methylene Chloride	10	5.0	3.5	5.0	10	U
78-93-3	2-Butanone (MEK)	10	5.0	2.8	5.0	50	U
108-10-1	4-Methyl-2-pentanone (MIBK)	10	5.0	2.3	5.0	50	U
100-42-5	Styrene	10	1.0	0.56	1.0	10	U

ORGANIC ANALYSIS DATA SHEET
USEPA-8260B

NIROP-EW-AT13-Discharge-S001

Laboratory: TriMatrix Laboratories, Inc. SDG: NIROP100611

Client: CH2M HILL - VA Project: NIROP Fridley TO-F270

Matrix: Water Laboratory ID: 1110105-01RE1 File ID: 1110105-01.D

Sampled: 10/05/11 16:15 Prepared: 10/11/11 08:00 Analyzed: 10/11/11 11:11

Solids: Preparation: 5030B Aqueous Purge & Initial/Final: 5 mL / 5 mL

QC Batch: 1111037 Sequence: 1J12011 Calibration: 1J07011 Instrument: 224

CAS No.	Analyte	Dilution	CONC. (ug/L)	DL	LOD	LOQ	Q
79-34-5	1,1,2,2-Tetrachloroethane	10	5.0	1.2	5.0	10	U
127-18-4	Tetrachloroethene	10	6.2	1.6	5.0	10	J
108-88-3	Toluene	10	1.0	0.57	1.0	10	U
120-82-1	1,2,4-Trichlorobenzene	10	5.0	1.5	5.0	20	U
71-55-6	1,1,1-Trichloroethane	10	5.0	1.4	5.0	10	U
79-00-5	1,1,2-Trichloroethane	10	5.0	1.5	5.0	10	U
79-01-6	Trichloroethene	10	620	1.8	5.0	10	
75-69-4	Trichlorofluoromethane	10	5.0	1.8	5.0	10	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	10	5.0	2.2	5.0	10	U
75-01-4	Vinyl Chloride	10	5.0	2.4	5.0	10	U
1330-20-7	Xylene (Total)	10	7.5	3.9	7.5	30	U

System Monitoring Compound	ADDED (ug/L)	CONC (ug/L)	% REC.	QC Limits	Q
Dibromofluoromethane	40.0	39.6	99	85 - 115	
1,2-Dichloroethane-d4	40.0	40.1	100	70 - 120	
Toluene-d8	40.0	38.8	97	85 - 120	
4-Bromofluorobenzene	40.0	37.4	94	75 - 120	

Internal Standard	Area	RT	Ref. Area	Ref. RT	Q
Fluorobenzene	565341	5.13	716338	5.13	
Chlorobenzene-d5	433510	8.08	549529	8.08	
1,4-Dichlorobenzene-d4	236581	10.38	323353	10.38	

* Values outside of QC limits

INORGANIC ANALYSIS DATA SHEET
USEPA-200.7

NIROP-EW-AT13-Discharge-S001

Laboratory: TriMatrix Laboratories, Inc.
Client: CH2M HILL - VA
Matrix: Water
Sampled: 10/05/11 16:15
Solids: 0.00
QC Batch: 1111362

SDG: NIROP100611
Project: NIROP Fridley TO-F270
Laboratory ID: 1110105-01
Prepared: 10/19/11 07:00
Preparation: 3010A Digestion
Initial/Final: 25 mL / 25 mL

CAS No.	Analyte	Dil. Factor	Conc.	Units	DL	LOD	LOQ	Q	Analyzed
7440-38-2	Arsenic, Total	1	39	ug/L	35	100	100	J	10/19/11 15:28
7440-43-9	Cadmium, Total	1	10	ug/L	2.0	10	10	U	10/19/11 15:28
7440-47-3	Chromium, Total	1	10	ug/L	4.6	10	50	U	10/19/11 15:28
7440-50-8	Copper, Total	1	20	ug/L	6.0	10	10		10/19/11 15:28
7439-92-1	Lead, Total	1	50	ug/L	15	50	50	U	10/19/11 15:28
7439-98-7	Molybdenum, Total	1	26	ug/L	22	50	100	J	10/19/11 15:28
7440-02-0	Nickel, Total	1	10	ug/L	7.6	10	10	U	10/19/11 15:28
7782-49-2	Selenium, Total	1	100	ug/L	76	100	100	U	10/19/11 15:28
7440-66-6	Zinc, Total	1	45	ug/L	5.6	10	20		10/19/11 15:28

INORGANIC ANALYSIS DATA SHEET
USEPA-245.1

NIROP-EW-AT13-Discharge-S001

Laboratory: TriMatrix Laboratories, Inc.
Client: CH2M HILL - VA
Matrix: Water
Sampled: 10/05/11 16:15
Solids: 0.00
QC Batch: 1111213

SDG: NIROP100611
Project: NIROP Fridley TO-F270
Laboratory ID: 1110105-01
Prepared: 10/17/11 13:00
Preparation: 245.1 Mercury Digestion
Initial/Final: 30 mL / 30 mL

CAS No.	Analyte	Dil. Factor	Conc.	Units	DL	LOD	LOQ	Q	Analyzed
7439-97-6	Mercury, Total	1	0.10	ug/L	0.055	0.10	0.20	U	10/18/11 10:46

INORGANIC ANALYSIS DATA SHEET
SM 2540 D 20th

NIROP-EW-AT13-Discharge-S001

Laboratory: TriMatrix Laboratories, Inc.
Client: CH2M HILL - VA
Matrix: Water
Sampled: 10/05/11 16:15
Solids: 0.00
QC Batch: 1110957

SDG: NIROP100611
Project: NIROP Fridley TO-F270
Laboratory ID: 1110105-01
Prepared: 10/10/11 18:20
Preparation: General Inorganic Prep
Initial/Final: 750 mL / 1000 mL

CAS No.	Analyte	Dil. Factor	Conc.	Units	DL	LOD	LOQ	Q	Analyzed
	Residue, Suspended	1	3.3	mg/L	3.3		3.3	U	10/10/11 18:20

INORGANIC ANALYSIS DATA SHEET
SM 4500-CN E 20th

NIROP-EW-AT13-Discharge-S001

Laboratory: TriMatrix Laboratories, Inc.
Client: CH2M HILL - VA
Matrix: Water
Sampled: 10/05/11 16:15
Solids: 0.00
QC Batch: 1111281

SDG: NIROP100611
Project: NIROP Fridley TO-F270
Laboratory ID: 1110105-01
Prepared: 10/17/11 06:45
Preparation: 4500-CN C Cyanide Distillation
Initial/Final: 50 mL / 50 mL

CAS No.	Analyte	Dil. Factor	Conc.	Units	DL	LOD	LOQ	Q	Analyzed
57-12-5	Cyanide, Total	1	0.0050	mg/L	0.0029	0.0050	0.0050	U	10/17/11 14:17

INORGANIC ANALYSIS DATA SHEET
SM 4500-H B 20th

NIROP-EW-AT13-Discharge-S001

Laboratory: TriMatrix Laboratories, Inc.
Client: CH2M HILL - VA
Matrix: Water
Sampled: 10/05/11 16:15
Solids: 0.00
QC Batch: 1111055

SDG: NIROP100611
Project: NIROP Fridley TO-F270
Laboratory ID: 1110105-01
Prepared: 10/12/11 12:28
Preparation: General Inorganic Prep
Initial/Final: 20 mL / 20 mL

CAS No.	Analyte	Dil. Factor	Conc.	Units	DL	LOD	LOQ	Q	Analyzed
	pH	1	7.8	pH Units		1.0	1.0		10/12/11 13:14

INORGANIC ANALYSIS DATA SHEET
SM 5220 D 20th

NIROP-EW-AT13-Discharge-S001

Laboratory: TriMatrix Laboratories, Inc.
Client: CH2M HILL - VA
Matrix: Water
Sampled: 10/05/11 16:15
Solids: 0.00
QC Batch: 1111103

SDG: NIROP100611
Project: NIROP Fridley TO-F270
Laboratory ID: 1110105-01
Prepared: 10/14/11 11:14
Preparation: 5220 D COD Digestion
Initial/Final: 2 mL / 2 mL

CAS No.	Analyte	Dil. Factor	Conc.	Units	DL	LOD	LOQ	Q	Analyzed
	Chemical Oxygen Demand	1	4.1	mg/L	2.4	5.0	5.0	J	10/14/11 15:31

ORGANIC ANALYSIS DATA SHEET
USEPA-8260B

NIROP-EW-AT11-Discharge S002

Laboratory: TriMatrix Laboratories, Inc. SDG: NIROP101111

Client: CH2M HILL - VA Project: NIROP Fridley TO-F270

Matrix: Water Laboratory ID: 1110179-01 File ID: 1110179-01.D

Sampled: 10/10/11 13:25 Prepared: 10/21/11 07:00 Analyzed: 10/21/11 12:47

Solids: Preparation: 5030B Aqueous Purge & Initial/Final: 5 mL / 5 mL

QC Batch: 1111567 Sequence: 1J21039 Calibration: 1J24006 Instrument: 224

CAS No.	Analyte	Dilution	CONC. (ug/L)	DL	LOD	LOQ	Q
67-64-1	Acetone	1	1.4	0.66	1.0	5.0	JB
71-43-2	Benzene	1	0.50	0.12	0.50	1.0	U
75-27-4	Bromodichloromethane	1	0.50	0.13	0.50	1.0	U
75-25-2	Bromoform	1	0.25	0.10	0.25	1.0	U
74-83-9	Bromomethane	1	0.50	0.28	0.50	1.0	U
75-15-0	Carbon Disulfide	1	0.50	0.19	0.50	5.0	U
56-23-5	Carbon Tetrachloride	1	0.50	0.14	0.50	1.0	U
108-90-7	Chlorobenzene	1	0.50	0.13	0.50	1.0	U
75-00-3	Chloroethane	1	0.50	0.15	0.50	1.0	U
67-66-3	Chloroform	1	0.50	0.16	0.50	1.0	U
74-87-3	Chloromethane	1	0.50	0.18	0.50	1.0	U
110-82-7	Cyclohexane	1	0.50	0.29	0.50	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.50	0.25	0.50	2.0	U
124-48-1	Dibromochloromethane	1	0.25	0.094	0.25	1.0	U
106-93-4	1,2-Dibromoethane	1	0.25	0.11	0.25	1.0	U
95-50-1	1,2-Dichlorobenzene	1	0.50	0.15	0.50	1.0	U
541-73-1	1,3-Dichlorobenzene	1	0.25	0.11	0.25	1.0	U
106-46-7	1,4-Dichlorobenzene	1	0.50	0.16	0.50	1.0	U
75-71-8	Dichlorodifluoromethane	1	0.50	0.25	0.50	1.0	U
75-34-3	1,1-Dichloroethane	1	3.0	0.19	0.50	1.0	
107-06-2	1,2-Dichloroethane	1	0.50	0.12	0.50	1.0	U
75-35-4	1,1-Dichloroethene	1	0.97	0.17	0.50	1.0	J
156-59-2	cis-1,2-Dichloroethene	1	42	0.17	0.50	1.0	
156-60-5	trans-1,2-Dichloroethene	1	36	0.11	0.50	1.0	
78-87-5	1,2-Dichloropropane	1	0.50	0.15	0.50	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1	0.10	0.050	0.10	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1	0.25	0.11	0.25	1.0	U
100-41-4	Ethylbenzene	1	0.25	0.11	0.25	1.0	U
591-78-6	2-Hexanone	1	0.50	0.24	0.50	5.0	U
98-82-8	Isopropylbenzene	1	0.50	0.17	0.50	1.0	U
79-20-9	Methyl Acetate	1	0.50	0.27	0.50	5.0	U
1634-04-4	Methyl tert-Butyl Ether	1	0.50	0.13	0.50	1.0	U
108-87-2	Methylcyclohexane	1	0.50	0.23	0.50	5.0	U
75-09-2	Methylene Chloride	1	0.50	0.35	0.50	1.0	U
78-93-3	2-Butanone (MEK)	1	0.50	0.28	0.50	5.0	U
108-10-1	4-Methyl-2-pentanone (MIBK)	1	0.50	0.23	0.50	5.0	U
100-42-5	Styrene	1	0.10	0.056	0.10	1.0	U

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ORGANIC ANALYSIS DATA SHEET
USEPA-8260B

NIROP-EW-AT11-Discharge S002

Laboratory: TriMatrix Laboratories, Inc. SDG: NIROP101111

Client: CH2M HILL - VA Project: NIROP Fridley TO-F270

Matrix: Water Laboratory ID: 1110179-01 File ID: 1110179-01.D

Sampled: 10/10/11 13:25 Prepared: 10/21/11 07:00 Analyzed: 10/21/11 12:47

Solids: Preparation: 5030B Aqueous Purge & Initial/Final: 5 mL / 5 mL

QC Batch: 1111567 Sequence: 1J21039 Calibration: 1J24006 Instrument: 224

CAS No.	Analyte	Dilution	CONC. (ug/L)	DL	LOD	LOQ	Q
79-34-5	1,1,2,2-Tetrachloroethane	1	0.50	0.12	0.50	1.0	U
127-18-4	Tetrachloroethene	1	0.50	0.16	0.50	1.0	U
108-88-3	Toluene	1	0.14	0.057	0.10	1.0	J
120-82-1	1,2,4-Trichlorobenzene	1	0.50	0.15	0.50	2.0	U
71-55-6	1,1,1-Trichloroethane	1	0.50	0.14	0.50	1.0	U
79-00-5	1,1,2-Trichloroethane	1	0.50	0.15	0.50	1.0	U
79-01-6	Trichloroethene	1	740	0.18	0.50	1.0	E
75-69-4	Trichlorofluoromethane	1	0.50	0.18	0.50	1.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.50	0.22	0.50	1.0	U
75-01-4	Vinyl Chloride	1	0.52	0.24	0.50	1.0	J
1330-20-7	Xylene (Total)	1	0.75	0.39	0.75	3.0	U

System Monitoring Compound	ADDED (ug/L)	CONC (ug/L)	% REC.	QC Limits	Q
Dibromofluoromethane	40.0	40.2	101	85 - 115	
1,2-Dichloroethane-d4	40.0	41.6	104	70 - 120	
Toluene-d8	40.0	38.5	96	85 - 120	
4-Bromofluorobenzene	40.0	38.2	96	75 - 120	

Internal Standard	Area	RT	Ref. Area	Ref. RT	Q
Fluorobenzene	593104	5.13	671314	5.13	
Chlorobenzene-d5	446431	8.08	525765	8.08	
1,4-Dichlorobenzene-d4	233117	10.38	299206	10.38	

* Values outside of QC limits

ORGANIC ANALYSIS DATA SHEET
USEPA-8260B

NIROP-EW-AT11-Discharge S002

Laboratory: TriMatrix Laboratories, Inc. SDG: NIROP101111

Client: CH2M HILL - VA Project: NIROP Fridley TO-F270

Matrix: Water Laboratory ID: 1110179-01RE1 File ID: 1110179-01A.D

Sampled: 10/10/11 13:25 Prepared: 10/21/11 07:00 Analyzed: 10/21/11 14:01

Solids: Preparation: 5030B Aqueous Purge & Initial/Final: 5 mL / 5 mL

QC Batch: 1111567 Sequence: 1J21039 Calibration: 1J24006 Instrument: 224

CAS No.	Analyte	Dilution	CONC. (ug/L)	DL	LOD	LOQ	Q
67-64-1	Acetone	10	44	6.6	10	50	JB
71-43-2	Benzene	10	5.0	1.2	5.0	10	U
75-27-4	Bromodichloromethane	10	5.0	1.3	5.0	10	U
75-25-2	Bromoform	10	2.5	1.0	2.5	10	U
74-83-9	Bromomethane	10	5.0	2.8	5.0	10	U
75-15-0	Carbon Disulfide	10	5.0	1.9	5.0	50	U
56-23-5	Carbon Tetrachloride	10	5.0	1.4	5.0	10	U
108-90-7	Chlorobenzene	10	5.0	1.3	5.0	10	U
75-00-3	Chloroethane	10	5.0	1.5	5.0	10	U
67-66-3	Chloroform	10	5.0	1.6	5.0	10	U
74-87-3	Chloromethane	10	5.0	1.8	5.0	10	U
110-82-7	Cyclohexane	10	5.0	2.9	5.0	50	U
96-12-8	1,2-Dibromo-3-chloropropane	10	5.0	2.5	5.0	20	U
124-48-1	Dibromochloromethane	10	2.5	0.94	2.5	10	U
106-93-4	1,2-Dibromoethane	10	2.5	1.1	2.5	10	U
95-50-1	1,2-Dichlorobenzene	10	5.0	1.5	5.0	10	U
541-73-1	1,3-Dichlorobenzene	10	2.5	1.1	2.5	10	U
106-46-7	1,4-Dichlorobenzene	10	5.0	1.6	5.0	10	U
75-71-8	Dichlorodifluoromethane	10	5.0	2.5	5.0	10	U
75-34-3	1,1-Dichloroethane	10	2.7	1.9	5.0	10	J
107-06-2	1,2-Dichloroethane	10	5.0	1.2	5.0	10	U
75-35-4	1,1-Dichloroethene	10	5.0	1.7	5.0	10	U
156-59-2	cis-1,2-Dichloroethene	10	35	1.7	5.0	10	
156-60-5	trans-1,2-Dichloroethene	10	30	1.1	5.0	10	
78-87-5	1,2-Dichloropropane	10	5.0	1.5	5.0	10	U
10061-01-5	cis-1,3-Dichloropropene	10	1.0	0.50	1.0	10	U
10061-02-6	trans-1,3-Dichloropropene	10	2.5	1.1	2.5	10	U
100-41-4	Ethylbenzene	10	2.5	1.1	2.5	10	U
591-78-6	2-Hexanone	10	5.0	2.4	5.0	50	U
98-82-8	Isopropylbenzene	10	5.0	1.7	5.0	10	U
79-20-9	Methyl Acetate	10	5.0	2.7	5.0	50	U
1634-04-4	Methyl tert-Butyl Ether	10	5.0	1.3	5.0	10	U
108-87-2	Methylcyclohexane	10	5.0	2.3	5.0	50	U
75-09-2	Methylene Chloride	10	5.0	3.5	5.0	10	U
78-93-3	2-Butanone (MEK)	10	5.0	2.8	5.0	50	U
108-10-1	4-Methyl-2-pentanone (MIBK)	10	5.0	2.3	5.0	50	U
100-42-5	Styrene	10	1.0	0.56	1.0	10	U

ORGANIC ANALYSIS DATA SHEET
USEPA-8260B

NIROP-EW-AT11-Discharge S002

Laboratory: TriMatrix Laboratories, Inc. SDG: NIROP101111

Client: CH2M HILL - VA Project: NIROP Fridley TO-F270

Matrix: Water Laboratory ID: 1110179-01RE1 File ID: 1110179-01A.D

Sampled: 10/10/11 13:25 Prepared: 10/21/11 07:00 Analyzed: 10/21/11 14:01

Solids: Preparation: 5030B Aqueous Purge & Initial/Final: 5 mL / 5 mL

QC Batch: 1111567 Sequence: 1J21039 Calibration: 1J24006 Instrument: 224

CAS No.	Analyte	Dilution	CONC. (ug/L)	DL	LOD	LOQ	Q
79-34-5	1,1,2,2-Tetrachloroethane	10	5.0	1.2	5.0	10	U
127-18-4	Tetrachloroethene	10	5.0	1.6	5.0	10	U
108-88-3	Toluene	10	1.0	0.57	1.0	10	U
120-82-1	1,2,4-Trichlorobenzene	10	5.0	1.5	5.0	20	U
71-55-6	1,1,1-Trichloroethane	10	5.0	1.4	5.0	10	U
79-00-5	1,1,2-Trichloroethane	10	5.0	1.5	5.0	10	U
79-01-6	Trichloroethene	10	560	1.8	5.0	10	
75-69-4	Trichlorofluoromethane	10	5.0	1.8	5.0	10	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	10	5.0	2.2	5.0	10	U
75-01-4	Vinyl Chloride	10	5.0	2.4	5.0	10	U
1330-20-7	Xylene (Total)	10	7.5	3.9	7.5	30	U

System Monitoring Compound	ADDED (ug/L)	CONC (ug/L)	% REC.	QC Limits	Q
Dibromofluoromethane	40.0	40.8	102	85 - 115	
1,2-Dichloroethane-d4	40.0	41.8	104	70 - 120	
Toluene-d8	40.0	39.1	98	85 - 120	
4-Bromofluorobenzene	40.0	37.7	94	75 - 120	

Internal Standard	Area	RT	Ref. Area	Ref. RT	Q
Fluorobenzene	631793	5.13	671314	5.13	
Chlorobenzene-d5	493376	8.08	525765	8.08	
1,4-Dichlorobenzene-d4	257586	10.38	299206	10.38	

* Values outside of QC limits

INORGANIC ANALYSIS DATA SHEET
USEPA-200.7

NIROP-EW-AT11-Discharge S002

Laboratory: TriMatrix Laboratories, Inc.
Client: CH2M HILL - VA
Matrix: Water
Sampled: 10/10/11 13:25
Solids: 0.00
QC Batch: 1111362

SDG: NIROP101111
Project: NIROP Fridley TO-F270
Laboratory ID: 1110179-01
Prepared: 10/19/11 07:00
Preparation: 3010A Digestion
Initial/Final: 25 mL / 25 mL

CAS No.	Analyte	Dil. Factor	Conc.	Units	DL	LOD	LOQ	Q	Analyzed
7440-38-2	Arsenic, Total	1	67	ug/L	35	100	100	J	10/19/11 15:31
7440-43-9	Cadmium, Total	1	10	ug/L	2.0	10	10	U	10/19/11 15:31
7440-47-3	Chromium, Total	1	10	ug/L	4.6	10	50	U	10/19/11 15:31
7440-50-8	Copper, Total	1	13	ug/L	6.0	10	10		10/19/11 15:31
7439-92-1	Lead, Total	1	18	ug/L	15	50	50	J	10/19/11 15:31
7439-98-7	Molybdenum, Total	1	27	ug/L	22	50	100	J	10/19/11 15:31
7440-02-0	Nickel, Total	1	10	ug/L	7.6	10	10	U	10/19/11 15:31
7782-49-2	Selenium, Total	1	100	ug/L	76	100	100	U	10/19/11 15:31
7440-66-6	Zinc, Total	1	22	ug/L	5.6	10	20		10/19/11 15:31

INORGANIC ANALYSIS DATA SHEET
USEPA-245.1

NIROP-EW-AT11-Discharge S002

Laboratory: TriMatrix Laboratories, Inc.
Client: CH2M HILL - VA
Matrix: Water
Sampled: 10/10/11 13:25
Solids: 0.00
QC Batch: 1111213

SDG: NIROP101111
Project: NIROP Fridley TO-F270
Laboratory ID: 1110179-01
Prepared: 10/17/11 13:00
Preparation: 245.1 Mercury Digestion
Initial/Final: 30 mL / 30 mL

CAS No.	Analyte	Dil. Factor	Conc.	Units	DL	LOD	LOQ	Q	Analyzed
7439-97-6	Mercury, Total	1	0.10	ug/L	0.055	0.10	0.20	U	10/18/11 11:01

INORGANIC ANALYSIS DATA SHEET
SM 2540 D 20th

NIROP-EW-AT11-Discharge S002

Laboratory: TriMatrix Laboratories, Inc.
Client: CH2M HILL - VA
Matrix: Water
Sampled: 10/10/11 13:25
Solids: 0.00
QC Batch: 1111059

SDG: NIROP101111
Project: NIROP Fridley TO-F270
Laboratory ID: 1110179-01
Prepared: 10/12/11 15:25
Preparation: General Inorganic Prep
Initial/Final: 750 mL / 1000 mL

CAS No.	Analyte	Dil. Factor	Conc.	Units	DL	LOD	LOQ	Q	Analyzed
	Residue, Suspended	1	3.3	mg/L	3.3		3.3	U	10/12/11 15:25

INORGANIC ANALYSIS DATA SHEET
SM 4500-CN E 20th

NIROP-EW-AT11-Discharge S002

Laboratory: TriMatrix Laboratories, Inc.
Client: CH2M HILL - VA
Matrix: Water
Sampled: 10/10/11 13:25
Solids: 0.00
QC Batch: 1111281

SDG: NIROP101111
Project: NIROP Fridley TO-F270
Laboratory ID: 1110179-01
Prepared: 10/17/11 06:45
Preparation: 4500-CN C Cyanide Distillation
Initial/Final: 50 mL / 50 mL

CAS No.	Analyte	Dil. Factor	Conc.	Units	DL	LOD	LOQ	Q	Analyzed
57-12-5	Cyanide, Total	1	0.0050	mg/L	0.0029	0.0050	0.0050	U	10/17/11 14:17

00254

INORGANIC ANALYSIS DATA SHEET
SM 4500-H B 20th

NIROP-EW-AT11-Discharge S002

Laboratory: TriMatrix Laboratories, Inc.
Client: CH2M HILL - VA
Matrix: Water
Sampled: 10/10/11 13:25
Solids: 0.00
QC Batch: 1111055

SDG: NIROP101111
Project: NIROP Fridley TO-F270
Laboratory ID: 1110179-01
Prepared: 10/12/11 12:28
Preparation: General Inorganic Prep
Initial/Final: 20 mL / 20 mL

CAS No.	Analyte	Dil. Factor	Conc.	Units	DL	LOD	LOQ	Q	Analyzed
	pH	1	7.4	pH Units		1.0	1.0		10/12/11 13:14

INORGANIC ANALYSIS DATA SHEET
SM 5220 D 20th

NIROP-EW-AT11-Discharge S002

Laboratory: TriMatrix Laboratories, Inc.
Client: CH2M HILL - VA
Matrix: Water
Sampled: 10/10/11 13:25
Solids: 0.00
QC Batch: 1111103

SDG: NIROP101111
Project: NIROP Fridley TO-F270
Laboratory ID: 1110179-01
Prepared: 10/14/11 11:14
Preparation: 5220 D COD Digestion
Initial/Final: 2 mL / 2 mL

CAS No.	Analyte	Dil. Factor	Conc.	Units	DL	LOD	LOQ	Q	Analyzed
	Chemical Oxygen Demand	1	3.8	mg/L	2.4	5.0	5.0	J	10/14/11 15:33

ORGANIC ANALYSIS DATA SHEET
USEPA-8260B

NIROP-EW-AT12-Discharge S003

Laboratory: TriMatrix Laboratories, Inc. SDG: NIROP101311

Client: CH2M HILL - VA Project: NIROP Fridley TO-F270

Matrix: Water Laboratory ID: 1110224-01 File ID: 1110224-01.D

Sampled: 10/12/11 13:20 Prepared: 10/21/11 07:00 Analyzed: 10/21/11 13:24

Solids: Preparation: 5030B Aqueous Purge & Initial/Final: 5 mL / 5 mL

QC Batch: 1111567 Sequence: 1J21039 Calibration: 1J24006 Instrument: 224

CAS No.	Analyte	Dilution	CONC. (ug/L)	DL	LOD	LOQ	Q
67-64-1	Acetone	1	1.0	0.66	1.0	5.0	U
71-43-2	Benzene	1	0.50	0.12	0.50	1.0	U
75-27-4	Bromodichloromethane	1	0.50	0.13	0.50	1.0	U
75-25-2	Bromoform	1	0.25	0.10	0.25	1.0	U
74-83-9	Bromomethane	1	0.50	0.28	0.50	1.0	U
75-15-0	Carbon Disulfide	1	0.50	0.19	0.50	5.0	U
56-23-5	Carbon Tetrachloride	1	0.50	0.14	0.50	1.0	U
108-90-7	Chlorobenzene	1	0.50	0.13	0.50	1.0	U
75-00-3	Chloroethane	1	0.50	0.15	0.50	1.0	U
67-66-3	Chloroform	1	0.50	0.16	0.50	1.0	U
74-87-3	Chloromethane	1	0.50	0.18	0.50	1.0	U
110-82-7	Cyclohexane	1	0.50	0.29	0.50	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.50	0.25	0.50	2.0	U
124-48-1	Dibromochloromethane	1	0.25	0.094	0.25	1.0	U
106-93-4	1,2-Dibromoethane	1	0.25	0.11	0.25	1.0	U
95-50-1	1,2-Dichlorobenzene	1	0.50	0.15	0.50	1.0	U
541-73-1	1,3-Dichlorobenzene	1	0.25	0.11	0.25	1.0	U
106-46-7	1,4-Dichlorobenzene	1	0.50	0.16	0.50	1.0	U
75-71-8	Dichlorodifluoromethane	1	0.50	0.25	0.50	1.0	U
75-34-3	1,1-Dichloroethane	1	0.50	0.19	0.50	1.0	U
107-06-2	1,2-Dichloroethane	1	0.50	0.12	0.50	1.0	U
75-35-4	1,1-Dichloroethene	1	0.45	0.17	0.50	1.0	J
156-59-2	cis-1,2-Dichloroethene	1	8.4	0.17	0.50	1.0	
156-60-5	trans-1,2-Dichloroethene	1	10	0.11	0.50	1.0	
78-87-5	1,2-Dichloropropane	1	0.50	0.15	0.50	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1	0.10	0.050	0.10	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1	0.25	0.11	0.25	1.0	U
100-41-4	Ethylbenzene	1	0.25	0.11	0.25	1.0	U
591-78-6	2-Hexanone	1	0.50	0.24	0.50	5.0	U
98-82-8	Isopropylbenzene	1	0.50	0.17	0.50	1.0	U
79-20-9	Methyl Acetate	1	0.50	0.27	0.50	5.0	U
1634-04-4	Methyl tert-Butyl Ether	1	0.50	0.13	0.50	1.0	U
108-87-2	Methylcyclohexane	1	0.50	0.23	0.50	5.0	U
75-09-2	Methylene Chloride	1	0.50	0.35	0.50	1.0	U
78-93-3	2-Butanone (MEK)	1	0.50	0.28	0.50	5.0	U
108-10-1	4-Methyl-2-pentanone (MIBK)	1	0.50	0.23	0.50	5.0	U
100-42-5	Styrene	1	0.10	0.056	0.10	1.0	U

ORGANIC ANALYSIS DATA SHEET
USEPA-8260B

NIROP-EW-AT12-Discharge S003

Laboratory: TriMatrix Laboratories, Inc. SDG: NIROP101311

Client: CH2M HILL - VA Project: NIROP Fridley TO-F270

Matrix: Water Laboratory ID: 1110224-01 File ID: 1110224-01.D

Sampled: 10/12/11 13:20 Prepared: 10/21/11 07:00 Analyzed: 10/21/11 13:24

Solids: Preparation: 5030B Aqueous Purge & Initial/Final: 5 mL / 5 mL

QC Batch: 1111567 Sequence: 1J21039 Calibration: 1J24006 Instrument: 224

CAS No.	Analyte	Dilution	CONC. (ug/L)	DL	LOD	LOQ	Q
79-34-5	1,1,2,2-Tetrachloroethane	1	0.50	0.12	0.50	1.0	U
127-18-4	Tetrachloroethene	1	1.5	0.16	0.50	1.0	
108-88-3	Toluene	1	0.15	0.057	0.10	1.0	J
120-82-1	1,2,4-Trichlorobenzene	1	0.50	0.15	0.50	2.0	U
71-55-6	1,1,1-Trichloroethane	1	0.50	0.14	0.50	1.0	U
79-00-5	1,1,2-Trichloroethane	1	0.50	0.15	0.50	1.0	U
79-01-6	Trichloroethene	1	650	0.18	0.50	1.0	E
75-69-4	Trichlorofluoromethane	1	0.50	0.18	0.50	1.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.50	0.22	0.50	1.0	U
75-01-4	Vinyl Chloride	1	0.50	0.24	0.50	1.0	U
1330-20-7	Xylene (Total)	1	0.75	0.39	0.75	3.0	U

System Monitoring Compound	ADDED (ug/L)	CONC (ug/L)	% REC.	QC Limits	Q
Dibromofluoromethane	40.0	40.3	101	85 - 115	
1,2-Dichloroethane-d4	40.0	41.6	104	70 - 120	
Toluene-d8	40.0	38.5	96	85 - 120	
4-Bromofluorobenzene	40.0	38.5	96	75 - 120	

Internal Standard	Area	RT	Ref. Area	Ref. RT	Q
Fluorobenzene	636753	5.13	671314	5.13	
Chlorobenzene-d5	477651	8.08	525765	8.08	
1,4-Dichlorobenzene-d4	250846	10.38	299206	10.38	

* Values outside of QC limits

ORGANIC ANALYSIS DATA SHEET
USEPA-8260B

NIROP-EW-AT12-Discharge S003

Laboratory: TriMatrix Laboratories, Inc. SDG: NIROP101311

Client: CH2M HILL - VA Project: NIROP Fridley TO-F270

Matrix: Water Laboratory ID: 1110224-01RE1 File ID: 1110224-01A.D

Sampled: 10/12/11 13:20 Prepared: 10/21/11 07:00 Analyzed: 10/21/11 14:38

Solids: Preparation: 5030B Aqueous Purge & Initial/Final: 5 mL / 5 mL

QC Batch: 1111567 Sequence: 1J21039 Calibration: 1J24006 Instrument: 224

CAS No.	Analyte	Dilution	CONC. (ug/L)	DL	LOD	LOQ	Q
67-64-1	Acetone	10	10	6.6	10	50	U
71-43-2	Benzene	10	5.0	1.2	5.0	10	U
75-27-4	Bromodichloromethane	10	5.0	1.3	5.0	10	U
75-25-2	Bromoform	10	2.5	1.0	2.5	10	U
74-83-9	Bromomethane	10	5.0	2.8	5.0	10	U
75-15-0	Carbon Disulfide	10	5.0	1.9	5.0	50	U
56-23-5	Carbon Tetrachloride	10	5.0	1.4	5.0	10	U
108-90-7	Chlorobenzene	10	5.0	1.3	5.0	10	U
75-00-3	Chloroethane	10	5.0	1.5	5.0	10	U
67-66-3	Chloroform	10	5.0	1.6	5.0	10	U
74-87-3	Chloromethane	10	5.0	1.8	5.0	10	U
110-82-7	Cyclohexane	10	5.0	2.9	5.0	50	U
96-12-8	1,2-Dibromo-3-chloropropane	10	5.0	2.5	5.0	20	U
124-48-1	Dibromochloromethane	10	2.5	0.94	2.5	10	U
106-93-4	1,2-Dibromoethane	10	2.5	1.1	2.5	10	U
95-50-1	1,2-Dichlorobenzene	10	5.0	1.5	5.0	10	U
541-73-1	1,3-Dichlorobenzene	10	2.5	1.1	2.5	10	U
106-46-7	1,4-Dichlorobenzene	10	5.0	1.6	5.0	10	U
75-71-8	Dichlorodifluoromethane	10	5.0	2.5	5.0	10	U
75-34-3	1,1-Dichloroethane	10	5.0	1.9	5.0	10	U
107-06-2	1,2-Dichloroethane	10	5.0	1.2	5.0	10	U
75-35-4	1,1-Dichloroethene	10	5.0	1.7	5.0	10	U
156-59-2	cis-1,2-Dichloroethene	10	8.4	1.7	5.0	10	J
156-60-5	trans-1,2-Dichloroethene	10	11	1.1	5.0	10	
78-87-5	1,2-Dichloropropane	10	5.0	1.5	5.0	10	U
10061-01-5	cis-1,3-Dichloropropene	10	1.0	0.50	1.0	10	U
10061-02-6	trans-1,3-Dichloropropene	10	2.5	1.1	2.5	10	U
100-41-4	Ethylbenzene	10	2.5	1.1	2.5	10	U
591-78-6	2-Hexanone	10	5.0	2.4	5.0	50	U
98-82-8	Isopropylbenzene	10	5.0	1.7	5.0	10	U
79-20-9	Methyl Acetate	10	5.0	2.7	5.0	50	U
1634-04-4	Methyl tert-Butyl Ether	10	5.0	1.3	5.0	10	U
108-87-2	Methylcyclohexane	10	5.0	2.3	5.0	50	U
75-09-2	Methylene Chloride	10	5.0	3.5	5.0	10	U
78-93-3	2-Butanone (MEK)	10	5.0	2.8	5.0	50	U
108-10-1	4-Methyl-2-pentanone (MIBK)	10	5.0	2.3	5.0	50	U
100-42-5	Styrene	10	1.0	0.56	1.0	10	U

ORGANIC ANALYSIS DATA SHEET
USEPA-8260B

NIROP-EW-AT12-Discharge S003

Laboratory: TriMatrix Laboratories, Inc. SDG: NIROP101311

Client: CH2M HILL - VA Project: NIROP Fridley TO-F270

Matrix: Water Laboratory ID: 1110224-01RE1 File ID: 1110224-01A.D

Sampled: 10/12/11 13:20 Prepared: 10/21/11 07:00 Analyzed: 10/21/11 14:38

Solids: Preparation: 5030B Aqueous Purge & Initial/Final: 5 mL / 5 mL

QC Batch: 1111567 Sequence: 1J21039 Calibration: 1J24006 Instrument: 224

CAS No.	Analyte	Dilution	CONC. (ug/L)	DL	LOD	LOQ	Q
79-34-5	1,1,2,2-Tetrachloroethane	10	5.0	1.2	5.0	10	U
127-18-4	Tetrachloroethene	10	5.0	1.6	5.0	10	U
108-88-3	Toluene	10	1.0	0.57	1.0	10	U
120-82-1	1,2,4-Trichlorobenzene	10	5.0	1.5	5.0	20	U
71-55-6	1,1,1-Trichloroethane	10	5.0	1.4	5.0	10	U
79-00-5	1,1,2-Trichloroethane	10	5.0	1.5	5.0	10	U
79-01-6	Trichloroethene	10	510	1.8	5.0	10	
75-69-4	Trichlorofluoromethane	10	5.0	1.8	5.0	10	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	10	5.0	2.2	5.0	10	U
75-01-4	Vinyl Chloride	10	5.0	2.4	5.0	10	U
1330-20-7	Xylene (Total)	10	7.5	3.9	7.5	30	U

System Monitoring Compound	ADDED (ug/L)	CONC (ug/L)	% REC.	QC Limits	Q
Dibromofluoromethane	40.0	41.1	103	85 - 115	
1,2-Dichloroethane-d4	40.0	42.3	106	70 - 120	
Toluene-d8	40.0	39.8	99	85 - 120	
4-Bromofluorobenzene	40.0	38.0	95	75 - 120	

Internal Standard	Area	RT	Ref. Area	Ref. RT	Q
Fluorobenzene	622775	5.13	671314	5.13	
Chlorobenzene-d5	485891	8.08	525765	8.08	
1,4-Dichlorobenzene-d4	255507	10.38	299206	10.38	

* Values outside of QC limits

INORGANIC ANALYSIS DATA SHEET
USEPA-200.7

NIROP-EW-AT12-Discharge S003

Laboratory: TriMatrix Laboratories, Inc.
Client: CH2M HILL - VA
Matrix: Water
Sampled: 10/12/11 13:20
Solids: 0.00
QC Batch: 1111362

SDG: NIROP101311
Project: NIROP Fridley TO-F270
Laboratory ID: 1110224-01
Prepared: 10/19/11 07:00
Preparation: 3010A Digestion
Initial/Final: 25 mL / 25 mL

CAS No.	Analyte	Dil. Factor	Conc.	Units	DL	LOD	LOQ	Q	Analyzed
7440-38-2	Arsenic, Total	1	51	ug/L	35	100	100	J	10/19/11 15:35
7440-43-9	Cadmium, Total	1	10	ug/L	2.0	10	10	U	10/19/11 15:35
7440-47-3	Chromium, Total	1	10	ug/L	4.6	10	50	U	10/19/11 15:35
7440-50-8	Copper, Total	1	37	ug/L	6.0	10	10		10/19/11 15:35
7439-92-1	Lead, Total	1	50	ug/L	15	50	50	U	10/19/11 15:35
7439-98-7	Molybdenum, Total	1	50	ug/L	22	50	100	U	10/19/11 15:35
7440-02-0	Nickel, Total	1	10	ug/L	7.6	10	10	U	10/19/11 15:35
7782-49-2	Selenium, Total	1	100	ug/L	76	100	100	U	10/19/11 15:35
7440-66-6	Zinc, Total	1	28	ug/L	5.6	10	20		10/19/11 15:35

INORGANIC ANALYSIS DATA SHEET
USEPA-245.1

NIROP-EW-AT12-Discharge S003

Laboratory: TriMatrix Laboratories, Inc.
Client: CH2M HILL - VA
Matrix: Water
Sampled: 10/12/11 13:20
Solids: 0.00
QC Batch: 1111213

SDG: NIROP101311
Project: NIROP Fridley TO-F270
Laboratory ID: 1110224-01
Prepared: 10/17/11 13:00
Preparation: 245.1 Mercury Digestion
Initial/Final: 30 mL / 30 mL

CAS No.	Analyte	Dil. Factor	Conc.	Units	DL	LOD	LOQ	Q	Analyzed
7439-97-6	Mercury, Total	1	0.10	ug/L	0.055	0.10	0.20	U	10/18/11 11:06

INORGANIC ANALYSIS DATA SHEET
SM 4500-H B 20th

NIROP-EW-AT12-Discharge S003

Laboratory: TriMatrix Laboratories, Inc.
Client: CH2M HILL - VA
Matrix: Water
Sampled: 10/12/11 13:20
Solids: 0.00
QC Batch: 1111341

SDG: NIROP101311
Project: NIROP Fridley TO-F270
Laboratory ID: 1110224-01
Prepared: 10/18/11 08:05
Preparation: General Inorganic Prep
Initial/Final: 20 mL / 20 mL

CAS No.	Analyte	Dil. Factor	Conc.	Units	DL	LOD	LOQ	Q	Analyzed
	pH	1	7.8	pH Units		1.0	1.0		10/18/11 13:43

INORGANIC ANALYSIS DATA SHEET
SM 2540 D 20th

NIROP-EW-AT12-Discharge S003

Laboratory: TriMatrix Laboratories, Inc.
Client: CH2M HILL - VA
Matrix: Water
Sampled: 10/12/11 13:20
Solids: 0.00
QC Batch: 1111183

SDG: NIROP101311
Project: NIROP Fridley TO-F270
Laboratory ID: 1110224-01
Prepared: 10/14/11 15:55
Preparation: General Inorganic Prep
Initial/Final: 750 mL / 1000 mL

CAS No.	Analyte	Dil. Factor	Conc.	Units	DL	LOD	LOQ	Q	Analyzed
	Residue, Suspended	1	3.3	mg/L	3.3		3.3	U	10/14/11 15:55

INORGANIC ANALYSIS DATA SHEET
SM 5220 D 20th

NIROP-EW-AT12-Discharge S003

Laboratory: TriMatrix Laboratories, Inc.
Client: CH2M HILL - VA
Matrix: Water
Sampled: 10/12/11 13:20
Solids: 0.00
QC Batch: 1111103

SDG: NIROP101311
Project: NIROP Fridley TO-F270
Laboratory ID: 1110224-01
Prepared: 10/14/11 11:14
Preparation: 5220 D COD Digestion
Initial/Final: 2 mL / 2 mL

CAS No.	Analyte	Dil. Factor	Conc.	Units	DL	LOD	LOQ	Q	Analyzed
	Chemical Oxygen Demand	1	4.7	mg/L	2.4	5.0	5.0	J	10/14/11 15:34

INORGANIC ANALYSIS DATA SHEET
SM 4500-CN E 20th

NIROP-EW-AT12-Discharge S003

Laboratory: TriMatrix Laboratories, Inc.
Client: CH2M HILL - VA
Matrix: Water
Sampled: 10/12/11 13:20
Solids: 0.00
QC Batch: 1111281

SDG: NIROP101311
Project: NIROP Fridley TO-F270
Laboratory ID: 1110224-01
Prepared: 10/17/11 06:45
Preparation: 4500-CN C Cyanide Distillation
Initial/Final: 50 mL / 50 mL

CAS No.	Analyte	Dil. Factor	Conc.	Units	DL	LOD	LOQ	Q	Analyzed
57-12-5	Cyanide, Total	1	0.0050	mg/L	0.0029	0.0050	0.0050	U	10/17/11 14:17

INORGANIC ANALYSIS DATA SHEET
SM 4500-CN E 20th

AT-13-Discharge

Laboratory: TriMatrix Laboratories, Inc.
Client: CH2M HILL - VA
Matrix: Water
Sampled: 12/20/11 14:00
Solids: 0.00
QC Batch: 1114668

SDG: NIROP1222SS
Project: NIROP Fridley TO-F270
Laboratory ID: 1112370-01
Prepared: 12/27/11 07:00
Preparation: 4500-CN C Cyanide Distillation
Initial/Final: 50 mL / 50 mL

CAS No.	Analyte	Dil. Factor	Conc.	Units	DL	LOD	LOQ	Q	Analyzed
57-12-5	Cyanide, Total	1	0.0050	mg/L	0.0029	0.0050	0.0050	U	12/29/11 08:05

ORGANIC ANALYSIS DATA SHEET
USEPA-8260B

AT-13-Discharge

Laboratory: TriMatrix Laboratories, Inc. SDG: NIROP1222SS

Client: CH2M HILL - VA Project: NIROP Fridley TO-F270

Matrix: Water Laboratory ID: 1112370-01 File ID: 1112370-01.D

Sampled: 12/20/11 14:00 Prepared: 12/30/11 09:00 Analyzed: 12/30/11 13:18

Solids: Preparation: 5030B Aqueous Purge & Initial/Final: 5 mL / 5 mL

QC Batch: 1200010 Sequence: 2A03010 Calibration: 1L30002 Instrument: 224

CAS No.	Analyte	Dilution	CONC. (ug/L)	DL	LOD	LOQ	Q
67-64-1	Acetone	1	1.0	0.66	1.0	5.0	U
71-43-2	Benzene	1	0.50	0.12	0.50	1.0	U
75-27-4	Bromodichloromethane	1	0.50	0.13	0.50	1.0	U
75-25-2	Bromoform	1	0.25	0.10	0.25	1.0	U
74-83-9	Bromomethane	1	0.50	0.28	0.50	1.0	U
75-15-0	Carbon Disulfide	1	0.50	0.19	0.50	5.0	U
56-23-5	Carbon Tetrachloride	1	0.50	0.14	0.50	1.0	U
108-90-7	Chlorobenzene	1	0.50	0.13	0.50	1.0	U
75-00-3	Chloroethane	1	0.50	0.15	0.50	1.0	U
67-66-3	Chloroform	1	0.50	0.16	0.50	1.0	U
74-87-3	Chloromethane	1	0.50	0.18	0.50	1.0	U
110-82-7	Cyclohexane	1	0.50	0.29	0.50	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.50	0.25	0.50	2.0	U
124-48-1	Dibromochloromethane	1	0.25	0.094	0.25	1.0	U
106-93-4	1,2-Dibromoethane	1	0.25	0.11	0.25	1.0	U
95-50-1	1,2-Dichlorobenzene	1	0.50	0.15	0.50	1.0	U
541-73-1	1,3-Dichlorobenzene	1	0.25	0.11	0.25	1.0	U
106-46-7	1,4-Dichlorobenzene	1	0.50	0.16	0.50	1.0	U
75-71-8	Dichlorodifluoromethane	1	0.50	0.25	0.50	1.0	U
75-34-3	1,1-Dichloroethane	1	0.61	0.19	0.50	1.0	**J**
107-06-2	1,2-Dichloroethane	1	0.49	0.12	0.50	1.0	**J**
75-35-4	1,1-Dichloroethene	1	1.9	0.17	0.50	1.0	
156-59-2	cis-1,2-Dichloroethene	1	110	0.17	0.50	1.0	
156-60-5	trans-1,2-Dichloroethene	1	50	0.11	0.50	1.0	
78-87-5	1,2-Dichloropropane	1	0.50	0.15	0.50	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1	0.10	0.050	0.10	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1	0.25	0.11	0.25	1.0	U
100-41-4	Ethylbenzene	1	0.25	0.11	0.25	1.0	U
591-78-6	2-Hexanone	1	0.50	0.24	0.50	5.0	U
98-82-8	Isopropylbenzene	1	0.50	0.17	0.50	1.0	U
79-20-9	Methyl Acetate	1	0.50	0.27	0.50	5.0	U
1634-04-4	Methyl tert-Butyl Ether	1	0.50	0.13	0.50	1.0	U
108-87-2	Methylcyclohexane	1	0.50	0.23	0.50	5.0	U
75-09-2	Methylene Chloride	1	0.50	0.35	0.50	1.0	U
78-93-3	2-Butanone (MEK)	1	0.50	0.28	0.50	5.0	U
108-10-1	4-Methyl-2-pentanone (MIBK)	1	0.50	0.23	0.50	5.0	U
100-42-5	Styrene	1	0.10	0.056	0.10	1.0	U

ORGANIC ANALYSIS DATA SHEET
USEPA-8260B

AT-13-Discharge

Laboratory: TriMatrix Laboratories, Inc. SDG: NIROP1222SS

Client: CH2M HILL - VA Project: NIROP Fridley TO-F270

Matrix: Water Laboratory ID: 1112370-01 File ID: 1112370-01.D

Sampled: 12/20/11 14:00 Prepared: 12/30/11 09:00 Analyzed: 12/30/11 13:18

Solids: Preparation: 5030B Aqueous Purge & Initial/Final: 5 mL / 5 mL

QC Batch: 1200010 Sequence: 2A03010 Calibration: 1L30002 Instrument: 224

CAS No.	Analyte	Dilution	CONC. (ug/L)	DL	LOD	LOQ	Q
79-34-5	1,1,2,2-Tetrachloroethane	1	0.50	0.12	0.50	1.0	U
127-18-4	Tetrachloroethene	1	3.8	0.16	0.50	1.0	
108-88-3	Toluene	1	0.11	0.057	0.10	1.0	**J**
120-82-1	1,2,4-Trichlorobenzene	1	0.50	0.15	0.50	2.0	U
71-55-6	1,1,1-Trichloroethane	1	0.50	0.14	0.50	1.0	U
79-00-5	1,1,2-Trichloroethane	1	0.50	0.15	0.50	1.0	U
79-01-6	Trichloroethene	1	2600	0.18	0.50	1.0	**E**
75-69-4	Trichlorofluoromethane	1	0.50	0.18	0.50	1.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.50	0.22	0.50	1.0	U
75-01-4	Vinyl Chloride	1	0.84	0.24	0.50	1.0	**J**
1330-20-7	Xylene (Total)	1	0.75	0.39	0.75	3.0	U

System Monitoring Compound	ADDED (ug/L)	CONC (ug/L)	% REC.	QC Limits	Q
Dibromofluoromethane	40.0	39.2	98	85 - 115	
1,2-Dichloroethane-d4	40.0	38.0	95	70 - 120	
Toluene-d8	40.0	39.2	98	85 - 120	
4-Bromofluorobenzene	40.0	37.0	92	75 - 120	

Internal Standard	Area	RT	Ref. Area	Ref. RT	Q
Fluorobenzene	427528	5.13	370867	5.13	
Chlorobenzene-d5	389030	8.08	335194	8.08	
1,4-Dichlorobenzene-d4	219215	10.38	215727	10.38	

* Values outside of QC limits

ORGANIC ANALYSIS DATA SHEET
USEPA-8260B

AT-13-Discharge

Laboratory: TriMatrix Laboratories, Inc.
SDG: NIROP1222SS
Client: CH2M HILL - VA
Project: NIROP Fridley TO-F270
Matrix: Water
Laboratory ID: 1112370-01RE1
File ID: 1112370-01RE1.D
Sampled: 12/20/11 14:00
Prepared: 12/30/11 09:00
Analyzed: 12/30/11 16:34
Solids:
Preparation: 5030B Aqueous Purge &
Initial/Final: 5 mL / 5 mL
QC Batch: 1200010
Sequence: 2A03010
Calibration: 1L30002
Instrument: 224

CAS No.	Analyte	Dilution	CONC. (ug/L)	DL	LOD	LOQ	Q
67-64-1	Acetone	25	25	16	25	120	U
71-43-2	Benzene	25	12	2.9	12	25	U
75-27-4	Bromodichloromethane	25	12	3.4	12	25	U
75-25-2	Bromoform	25	6.2	2.6	6.2	25	U
74-83-9	Bromomethane	25	12	7.0	12	25	U
75-15-0	Carbon Disulfide	25	12	4.7	12	120	U
56-23-5	Carbon Tetrachloride	25	12	3.6	12	25	U
108-90-7	Chlorobenzene	25	12	3.2	12	25	U
75-00-3	Chloroethane	25	12	3.8	12	25	U
67-66-3	Chloroform	25	12	4.0	12	25	U
74-87-3	Chloromethane	25	12	4.5	12	25	U
110-82-7	Cyclohexane	25	12	7.2	12	120	U
96-12-8	1,2-Dibromo-3-chloropropane	25	12	6.3	12	50	U
124-48-1	Dibromochloromethane	25	6.2	2.4	6.2	25	U
106-93-4	1,2-Dibromoethane	25	6.2	2.7	6.2	25	U
95-50-1	1,2-Dichlorobenzene	25	12	3.8	12	25	U
541-73-1	1,3-Dichlorobenzene	25	6.2	2.6	6.2	25	U
106-46-7	1,4-Dichlorobenzene	25	12	3.9	12	25	U
75-71-8	Dichlorodifluoromethane	25	12	6.2	12	25	U
75-34-3	1,1-Dichloroethane	25	12	4.8	12	25	U
107-06-2	1,2-Dichloroethane	25	12	3.0	12	25	U
75-35-4	1,1-Dichloroethene	25	12	4.3	12	25	U
156-59-2	cis-1,2-Dichloroethene	25	87	4.3	12	25	
156-60-5	trans-1,2-Dichloroethene	25	50	2.8	12	25	
78-87-5	1,2-Dichloropropane	25	12	3.6	12	25	U
10061-01-5	cis-1,3-Dichloropropene	25	2.5	1.3	2.5	25	U
10061-02-6	trans-1,3-Dichloropropene	25	6.2	2.7	6.2	25	U
100-41-4	Ethylbenzene	25	6.2	2.7	6.2	25	U
591-78-6	2-Hexanone	25	12	6.0	12	120	U
98-82-8	Isopropylbenzene	25	12	4.2	12	25	U
79-20-9	Methyl Acetate	25	12	6.8	12	120	U
1634-04-4	Methyl tert-Butyl Ether	25	12	3.2	12	25	U
108-87-2	Methylcyclohexane	25	12	5.8	12	120	U
75-09-2	Methylene Chloride	25	12	8.7	12	25	U
78-93-3	2-Butanone (MEK)	25	12	7.0	12	120	U
108-10-1	4-Methyl-2-pentanone (MIBK)	25	12	5.8	12	120	U
100-42-5	Styrene	25	2.5	1.4	2.5	25	U

ORGANIC ANALYSIS DATA SHEET
USEPA-8260B

AT-13-Discharge

Laboratory: TriMatrix Laboratories, Inc.
SDG: NIROP1222SS
Client: CH2M HILL - VA
Project: NIROP Fridley TO-F270
Matrix: Water
Laboratory ID: 1112370-01RE1
File ID: 1112370-01RE1.D
Sampled: 12/20/11 14:00
Prepared: 12/30/11 09:00
Analyzed: 12/30/11 16:34
Solids:
Preparation: 5030B Aqueous Purge &
Initial/Final: 5 mL / 5 mL
QC Batch: 1200010
Sequence: 2A03010
Calibration: 1L30002
Instrument: 224

CAS No.	Analyte	Dilution	CONC. (ug/L)	DL	LOD	LOQ	Q
79-34-5	1,1,2,2-Tetrachloroethane	25	12	3.0	12	25	U
127-18-4	Tetrachloroethene	25	12	4.1	12	25	U
108-88-3	Toluene	25	2.5	1.4	2.5	25	U
120-82-1	1,2,4-Trichlorobenzene	25	12	3.7	12	50	U
71-55-6	1,1,1-Trichloroethane	25	12	3.6	12	25	U
79-00-5	1,1,2-Trichloroethane	25	12	3.8	12	25	U
79-01-6	Trichloroethene	25	2000	4.6	12	25	
75-69-4	Trichlorofluoromethane	25	12	4.5	12	25	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	25	12	5.6	12	25	U
75-01-4	Vinyl Chloride	25	12	6.0	12	25	U
1330-20-7	Xylene (Total)	25	19	9.8	19	75	U

System Monitoring Compound	ADDED (ug/L)	CONC (ug/L)	% REC.	QC Limits	Q
Dibromofluoromethane	40.0	40.0	100	85 - 115	
1,2-Dichloroethane-d4	40.0	38.4	96	70 - 120	
Toluene-d8	40.0	39.2	98	85 - 120	
4-Bromofluorobenzene	40.0	37.4	93	75 - 120	

Internal Standard	Area	RT	Ref. Area	Ref. RT	Q
Fluorobenzene	419798	5.13	370867	5.13	
Chlorobenzene-d5	384684	8.08	335194	8.08	
1,4-Dichlorobenzene-d4	221763	10.38	215727	10.38	

* Values outside of QC limits

INORGANIC ANALYSIS DATA SHEET
USEPA-245.1

AT-13-Discharge

Laboratory: TriMatrix Laboratories, Inc.
Client: CH2M HILL - VA
Matrix: Water
Sampled: 12/20/11 14:00
Solids: 0.00
QC Batch: 1200035

SDG: NIROP1222SS
Project: NIROP Fridley TO-F270
Laboratory ID: 1112370-01
Prepared: 01/09/12 07:00
Preparation: 245.1 Mercury Digestion
Initial/Final: 30 mL / 30 mL

CAS No.	Analyte	Dil. Factor	Conc.	Units	DL	LOD	LOQ	Q	Analyzed
7439-97-6	Mercury, Total	1	0.10	ug/L	0.055	0.10	0.20	U	01/10/12 10:52

INORGANIC ANALYSIS DATA SHEET
USEPA-200.7

AT-13-Discharge

Laboratory: TriMatrix Laboratories, Inc.
Client: CH2M HILL - VA
Matrix: Water
Sampled: 12/20/11 14:00
Solids: 0.00
QC Batch: 1114591

SDG: NIROP1222SS
Project: NIROP Fridley TO-F270
Laboratory ID: 1112370-01
Prepared: 12/23/11 06:30
Preparation: 3010A Digestion
Initial/Final: 25 mL / 25 mL

CAS No.	Analyte	Dil. Factor	Conc.	Units	DL	LOD	LOQ	Q	Analyzed
7440-38-2	Arsenic, Total	1	100	ug/L	35	100	100	U	01/06/12 08:35
7440-43-9	Cadmium, Total	1	5.0	ug/L	2.0	5.0	10	U	01/06/12 08:35
7440-47-3	Chromium, Total	1	10	ug/L	4.6	10	50	U	01/06/12 08:35
7440-50-8	Copper, Total	1	10	ug/L	6.0	10	10	U	01/06/12 08:35
7439-92-1	Lead, Total	1	50	ug/L	15	50	50	U	01/06/12 08:35
7439-98-7	Molybdenum, Total	1	28	ug/L	22	50	100	J	01/06/12 08:35
7440-02-0	Nickel, Total	1	10	ug/L	7.6	10	10	U	01/06/12 08:35
7782-49-2	Selenium, Total	1	100	ug/L	76	100	100	U	01/06/12 08:35
7440-66-6	Zinc, Total	1	12	ug/L	5.6	10	20	J	01/06/12 08:35

INORGANIC ANALYSIS DATA SHEET
SM 2540 D 20th

AT-13-Discharge

Laboratory: TriMatrix Laboratories, Inc.
Client: CH2M HILL - VA
Matrix: Water
Sampled: 12/20/11 14:00
Solids: 0.00
QC Batch: 1114650

SDG: NIROP1222SS
Project: NIROP Fridley TO-F270
Laboratory ID: 1112370-01
Prepared: 12/23/11 14:50
Preparation: General Inorganic Prep
Initial/Final: 750 mL / 1000 mL

CAS No.	Analyte	Dil. Factor	Conc.	Units	DL	LOD	LOQ	Q	Analyzed
	Residue, Suspended	1	3.3	mg/L	3.3		3.3	U	12/23/11 14:50

INORGANIC ANALYSIS DATA SHEET
SM 4500-H B 20th

AT-13-Discharge

Laboratory: TriMatrix Laboratories, Inc.
Client: CH2M HILL - VA
Matrix: Water
Sampled: 12/20/11 14:00
Solids: 0.00
QC Batch: 1114619

SDG: NIROP1222SS
Project: NIROP Fridley TO-F270
Laboratory ID: 1112370-01
Prepared: 12/23/11 10:50
Preparation: General Inorganic Prep
Initial/Final: 20 mL / 20 mL

CAS No.	Analyte	Dil. Factor	Conc.	Units	DL	LOD	LOQ	Q	Analyzed
	pH	1	7.4	pH Units		1.0	1.0		12/23/11 10:50

INORGANIC ANALYSIS DATA SHEET
SM 5220 D 20th

AT-13-Discharge

Laboratory: TriMatrix Laboratories, Inc.
Client: CH2M HILL - VA
Matrix: Water
Sampled: 12/20/11 14:00
Solids: 0.00
QC Batch: 1114753

SDG: NIROP1222SS
Project: NIROP Fridley TO-F270
Laboratory ID: 1112370-01
Prepared: 12/28/11 10:36
Preparation: 5220 D COD Digestion
Initial/Final: 2 mL / 2 mL

CAS No.	Analyte	Dil. Factor	Conc.	Units	DL	LOD	LOQ	Q	Analyzed
	Chemical Oxygen Demand	1	4.7	mg/L	2.4	5.0	5.0	J	12/28/11 18:11

A-3 MONTHLY O&M REPORTS

Bay West
Customer-Focused Environmental & Industrial Solutions

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February 23, 2011

Mr. Howard Hickey
Naval Facilities Engineering Command Midwest
201 Decatur Ave., Bldg. 1A
Great Lakes, IL 60088-2801

RE: January 2011 Treatment System Report
Naval Industrial Reserve Ordinance Plant, Fridley, Minnesota
EMAC Contract No. N40083-06-D-4015
Delivery Order #0005

Dear Mr. Hickey,

Enclosed please find the above-referenced report for the Naval Industrial Reserve Ordinance Plant (NIROP) in Fridley, Minnesota. Bay West, Inc. (Bay West) has prepared this report in accordance with Contract Document requirements for the project. In accordance with a request by the Navy, four additional figures are included in the report. These figures, which provide graphical illustrations of costs versus various operational parameters, are prepared and submitted on a quarterly basis. Finally, Bay West has also included an Air Stripper Screening Evaluation form. This form is also submitted on a quarterly basis, after the completion of an air stripper influent and effluent sampling event. If you have any questions or comments regarding the information being submitted, please contact me.

Respectfully,

Paul T. Walz, PE
Senior Engineer
651-291-3491
paulw@baywest.com

Enclosures

cc: Mark Sladic, Tetra Tech Nus, Inc.
Richard Kuhlthau, TechLaw, Inc.
Venky Venkatesh, CH_2M-Hill
Stephanie Warino, Tetra Tech Nus, Inc.
Robert Magee, U.S. Navy
John Estes, Delta Environmental
Jeff Tinney, Toltest, Inc.
Dan Musser, Bay West, Inc
Nicole Goers, TechLaw, Inc.
Deepa DeAlwis, MPCA
Mary Tierney, U.S. EPA
Arun Gavaskar, NAVFAC Atlantic
Val Jurka, NAVFAC Atlantic
Dean Krebs, Delta Environmental
Paul Lucas, Delta Environmental
Steve Head, Bay West, Inc.

BWJ070047-21
Doc. No. 94419 v5

Monthly Project Status Report January 2011
Facility Maintenance
Naval Industrial Reserve Ordnance Plant - Fridley, Minnesota
Prepared by Bay West, Inc.

EMAC Contract No. N40083-06-D-4015, Task Order #0005

SYSTEM OVERVIEW

- The GWTF was in operation for 742.5 hours during the month of January 2011.
- The on-stream factor for January was 100%. The on-stream factor is the actual operation time divided by the available operation time.
- The system processed an estimated 17,199,000 gallons of groundwater in January, for a total of 2,910,970,000 gallons to date.
- Effluent sampling from Outfall 020 was performed on January 4, 2010. Per the National Pollutant Discharge Elimination System (NPDES) permit requirements, the samples were analyzed for eight specific volatile organic compounds (VOC) by EPA Method 624. Laboratory analytical results were below NPDES permit limits for all analytes. The Discharge Monitoring Report (DMR) and a copy of the analytical results will be forwarded to the Minnesota Pollution Control Agency (MPCA) by the due date of April 21, 2010.
- Influent and effluent sampling from ports in the main treatment area, was performed on January 4, 2010, for the purpose of calculating emission rates from the ASUs. Treatment system sampling, and subsequent air emissions calculations, are performed on a quarterly basis. The calculated emission rates for all chemicals of concern were below the corresponding site-specific allowable emission rates (AERs). The emissions reporting form is included with this report.
- Electrical use was approximately 64,951 kilowatt-hours (kWh) for January 2011.
- Approximately 11,453 pounds of trichloroethylene (TCE) have been removed from the aquifer since system start-up.
- The fourth quarter 2010 NPDES DMR under permit MNG790159 was submitted by the due date of January 21, 2011. This report is submitted to the MPCA on a quarterly basis along with the analytical reports for samples collected at Outfall 020.
- The 2010 Metropolitan Council Environmental Services (MCES) Special Discharge Report for Special Discharge Permit 2154 was submitted by the due date of January 30, 2011. This report is submitted to MCES on an annual basis along with the analytical reports for samples collected from discharges to the sanitary sewer.
- The 2010 Annual Water Use Report under the Department of Natural Resources (DNR) permit 1992-6127 will be submitted during the month of February. This report is submitted on an annual basis to document the amount of water pumped from each extraction well.

SCHEDULED MAINTENANCE

- Visually inspected the flow meters and level probes for material buildup and proper operation.
- Tested the four safety showers/eyewash stations to assure adequate performance.

- Lubricated blower motors, influent pumps, and effluent pumps.
- Collected extraction well water levels on a weekly basis.
- Alternated pumps P-101A/101B monthly.
- Measured pump P-101A bearing temperature. All values were within normal operation range.
- Alternated pumps P-301A/301B weekly.
- On January 20, 2011, air scoured the influent line between the well house (i.e., Building 52/53) and the main treatment area for approximately one hour.

PROBLEMS AND SOLUTIONS

- Bay West has executed a Subcontract to improve electronic data transmission and accessibility at NIROP. Bay West's Subcontractor will: resolve scaling and calibration errors between field instruments in Building 52/53 and the values on the operator interface screens on the Site's supervisory control and data acquisition (SCADA) system; ensure all flow totalization and motor run time calculations made by the programmable logic controller (PLC) are correct, as presented on the SCADA screens; and provide better data transmission and improved data quality for information that is available remotely via the Site's telemetry system.
- The average pumping rate from extraction well AT-8 was below the minimum flow rate of 10 gpm for the beginning part of January. Based on an analysis of operational data, Bay West concluded the low flow and intermittent faulting out of the pump was most likely attributable to a decline in the well's specific capacity due to the accumulation of debris on the well screen and formation materials adjacent the screen. An extended well redevelopment procedure (a.k.a. Super Soak) with Unicid® product was initiated to remove this debris. Redevelopment work commenced on January 25, and will continue for approximately one month.
- On January 20, the air scouring procedure was executed to clean the pipe from the equalization tank to the air stripping units. This procedure was necessary as pump 101 was not able to meet the demand of the incoming flow from the extraction wells, resulting in a high level alarm condition in the equalization tank. After air scouring, the level in the tank stabilized around the control set point and pump 101 was able to meet the demand of the incoming flow.
- The average flow rate for AT-10 was below the minimum of 20 gpm for the month of January. Bay West and Renner inspected the well pump, pipe, and fittings on January 31. After inspection, a broken coupler was found and replaced, which resulted in a slight increase in flow. Bay West will perform additional investigation to determine further actions required to increase and maintain the flow rate above the minimum.
- The average flow rate for AT-7 was below the minimum of 37 gpm for the month of January. Bay West and Renner inspected the well pump, pipe, and fittings on January 28 and determined the drop pipe and pump intake were fouled. The pump end was replaced with a clean spare and the drop pipe was cleaned. As this did not increase the flow rate above the minimum, Bay West will perform additional investigation to determine the actions required to increase the flow rate.
- The average flow rate for AT-5B was below the minimum of 70 gpm for the month of January. Based on pressure loss between the well head and Building 52/53, Bay West believes the extraction pipe, from the well head to the equalization tank, is fouled. The measured pressure drop is greater than historical pressure drop at the ideal flow. Extraction line pigging is scheduled for February to remove the debris.

Well Performance Summary

Well	Average Monthly Flow Rate (GPM) (Available)	Average Monthly Flow Rate (GPM) (Operational)	Ideal Flow Rate (GPM)	% of Ideal Flow (Available)	% of Ideal Flow (Operational)	Minimum Flow Rate (GPM)	Available Hours of Operation	Operating Hours	On-Stream Factor (Available)
AT-3A	67.7	67.7	135	50.15%	50.15%	115	742	742	100.00%
AT-5A	142.6	142.6	156	91.41%	91.41%	138	742	742	100.00%
AT-5B	63.2	63.2	82	77.07%	77.07%	70	742	742	100.00%
AT-7	20.4	20.4	46	44.35%	44.35%	37	740	740	100.00%
AT-8	4.2	5.7	15	28.00%	38.00%	10	574	418	72.82%
AT-9	149.8	149.8	150	99.87%	99.87%	125	742	742	100.00%
AT-10	16.1	17.1	23	70.00%	74.35%	20	740	698	94.32%

TABLES

1. Groundwater Treatment Facility Operations
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3. Form 1.1 - Air Stripper Screening Evaluation

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1. Monthly GWTF On Stream Factor
2. GWTF Total Treated Flow
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Tables

NIROP FRIDLEY
Groundwater Treatment Facility (GWTF)

	OPERATIONS (hrs)			WATER DISCHARGED (thousands of gallons)					WATER TREATED (thousands of gallons)	
Month	Available	Operating	On-stream factor	to Storm	to Sanitary	Untreated to Sanitary	Total to Sanitary	% Storm	Monthly	Cumulative
Nov-98	480.0	480.0	100.0%	0	17,524	0	17,524	0%	17,524	17,524
Dec-98	718.0	628.0	87.5%	16,078	7,087	0	7,087	69%	23,165	40,689
Jan-99	744.0	743.0	99.9%	25,571	0	0	0	100%	25,571	66,260
Feb-99	672.0	672.0	100.0%	23,938	0	0	0	100%	23,938	90,198
Mar-99	744.0	744.0	100.0%	27,394	0	0	0	100%	27,394	117,592
Apr-99	720.0	720.0	100.0%	25,254	0	0	0	100%	25,254	142,846
May-99	744.0	744.0	100.0%	23,291	0	0	0	100%	23,291	166,137
Jun-99	720.0	713.0	99.0%	25,823	0	0	0	100%	25,823	191,960
Jul-99	744.0	744.0	100.0%	22,266	0	0	0	100%	22,266	214,226
Aug-99	684.0	684.0	100.0%	21,634	0	0	0	100%	21,634	235,860
Sep-99	720.0	720.0	100.0%	18,205	0	0	0	100%	18,205	254,065
Oct-99	744.0	744.0	100.0%	23,029	0	0	0	100%	23,029	277,094
Nov-99	720.0	720.0	100.0%	22,783	0	0	0	100%	22,783	299,877
Dec-99	535.0	535.0	100.0%	12,818	0	0	0	100%	12,818	312,695
Jan-00	356.0	356.0	100.0%	10,400	0	0	0	100%	10,400	323,095
Feb-00	695.0	694.0	99.9%	16,944	0	0	0	100%	16,944	340,039
Mar-00	744.0	743.5	99.9%	27,131	0	0	0	100%	27,131	367,170
Apr-00	720.0	720.0	100.0%	25,899	0	0	0	100%	25,899	393,069
May-00	744.0	744.0	100.0%	27,458	0	0	0	100%	27,458	420,527
Jun-00	718.9	718.9	100.0%	25,136	0	0	0	100%	25,136	445,663
Jul-00	744.0	744.0	100.0%	25,637	0	0	0	100%	25,637	471,300
Aug-00	744.0	744.0	100.0%	24,341	0	0	0	100%	24,341	495,641
Sep-00	655.5	655.5	100.0%	22,559	0	0	0	100%	22,559	518,200
Oct-00	744.0	744.0	100.0%	25,955	0	0	0	100%	25,955	544,155
Nov-00	720.0	718.0	99.7%	25,759	0	0	0	100%	25,759	569,914
Dec-00	744.0	743.5	99.9%	27,404	0	0	0	100%	27,404	597,318
Jan-01	744.0	744.0	100.0%	24,666	0	0	0	100%	24,666	621,984
Feb-01	672.0	671.0	99.9%	23,956	0	0	0	100%	23,956	645,940
Mar-01	744.0	737.0	99.1%	24,694	0	0	0	100%	24,694	670,634
Apr-01	720.0	719.5	99.9%	24,964	0	0	0	100%	24,964	695,598
May-01	604.3	602.3	99.7%	13,656	0	0	0	100%	13,656	709,254
Jun-01	709.5	708.3	99.8%	20,000	0	0	0	100%	20,000	729,254
Jul-01	730.0	730.0	100.0%	18,077	0	0	0	100%	18,077	747,331
Aug-01	491.0	491.0	100.0%	17,921	0	0	0	100%	17,921	765,252
Sep-01	0.0	0.0	100.0%	0	0	0	0	100%	0	765,252
Oct-01	736.0	472.5	64.2%	21,376	0	0	0	100%	21,376	786,628
Nov-01	720.0	720.0	100.0%	30,205	0	0	0	100%	30,205	816,833
Dec-01	744.0	744.0	100.0%	28,114	0	0	0	100%	28,114	844,947
Jan-02	742.0	737.0	99.3%	30,483	0	0	0	100%	30,483	875,430
Feb-02	672.0	672.0	100.0%	25,538	0	0	0	100%	25,538	900,968
Mar-02	744.0	744.0	100.0%	29,957	0	0	0	100%	29,957	930,925
Apr-02	744.0	743.8	100.0%	28,569	0	0	0	100%	28,569	959,494
May-02	744.0	741.0	99.6%	28,656	0	0	0	100%	28,656	988,150
Jun-02	720.0	720.0	100.0%	22,131	0	0	0	100%	22,131	1,010,281
Jul-02	744.0	744.0	100.0%	21,367	0	0	0	100%	21,367	1,031,648
Aug-02	744.0	744.0	100.0%	28,328	0	0	0	100%	28,328	1,059,976
Sep-02	630.3	630.3	100.0%	20,861	0	0	0	100%	20,861	1,080,837
Oct-02	744.0	744.0	100.0%	21,417	0	0	0	100%	21,417	1,102,254
Nov-02	720.0	720.0	100.0%	25,003	0	0	0	100%	25,003	1,127,257
Dec-02	744.0	742.0	99.7%	25,327	0	0	0	100%	25,327	1,152,584
Jan-03	744.0	55.0	7.4%	1,048	0	0	0	100%	1,048	1,153,632
Feb-03	672.0	0.0	0.0%	0	0	0	0	100%	0	1,153,632
Mar-03	744.0	309.0	41.5%	13,387	0	0	0	100%	13,387	1,167,019
Apr-03	526.5	425.5	80.8%	16,584	0	0	0	100%	16,584	1,183,603
May-03	744.0	298.5	40.1%	7,448	0	0	0	100%	7,448	1,191,051
Jun-03	720.0	253.0	35.1%	10,775	0	0	0	100%	10,775	1,201,826
Jul-03	734.0	576.3	78.5%	22,629	0	0	0	100%	22,629	1,224,455

NIROP FRIDLEY
Groundwater Treatment Facility (GWTF)

	OPERATIONS (hrs)			WATER DISCHARGED (thousands of gallons)					WATER TREATED (thousands of gallons)	
Month	Available	Operating	On-stream factor	to Storm	to Sanitary	Untreated to Sanitary	Total to Sanitary	% Storm	Monthly	Cumulative
Aug-03	732.5	639.8	87.3%	25,591	46	0	46	99.8%	25,637	1,250,092
Sep-03	720.0	719.0	99.9%	23,028	4,532	0	4,532	83.6%	27,560	1,277,652
Oct-03	681.7	648.5	95.1%	25,389	0	0	0	100%	25,389	1,303,041
Nov-03	720.0	694.0	96.4%	22,882	0	0	0	100%	22,882	1,325,923
Dec-03	743.0	740.5	99.7%	31,010	0	0	0	100%	31,010	1,356,933
Jan-04	744.0	727.0	97.7%	25,456	0	0	0	100%	25,456	1,382,389
Feb-04	689.7	689.7	100.0%	23,771	0	0	0	100%	23,771	1,406,160
Mar-04	506.5	353.5	69.8%	12,928	0	0	0	100%	12,928	1,419,088
Apr-04	720.0	2.0	0.3%	60	0	0	0	100%	60	1,419,148
May-04	744.0	635.0	85.3%	24,104	0	0	0	100%	24,104	1,443,252
Jun-04	613.5	613.5	100.0%	20,988	0	0	0	100%	20,988	1,464,240
Jul-04	735.5	732.8	99.6%	26,846	0	0	0	100%	26,846	1,491,086
Aug-04	741.0	741.0	100.0%	26,760	0	0	0	100%	26,760	1,517,846
Sep-04	718.0	717.0	99.9%	27,276	0	0	0	100%	27,276	1,545,122
Oct-04	676.8	676.8	100.0%	24,709	0	0	0	100%	24,709	1,569,831
Nov-04	720.0	720.0	100.0%	25,859	0	0	0	100%	25,859	1,595,690
Dec-04	744.0	744.0	100.0%	26,229	0	0	0	100%	26,229	1,621,919
Jan-05	744.0	667.0	89.7%	20,915	0	0	0	100%	20,915	1,642,834
Feb-05	672.0	672.0	100.0%	22,329	0	0	0	100%	22,329	1,665,163
Mar-05	744.0	716.8	96.3%	22,960	0	0	0	100%	22,960	1,688,123
Apr-05	384.0	322.0	83.9%	6,515	0	0	0	100%	6,515	1,694,638
May-05	576.0	503.5	87.4%	17,859	0	0	0	100%	17,859	1,712,497
Jun-05	720.0	714.5	99.2%	24,450	0	0	0	100%	24,450	1,736,947
Jul-05	744.0	712.5	95.8%	25,301	0	0	0	100%	25,301	1,762,248
Aug-05	744.0	744.0	100.0%	25,916	0	0	0	100%	25,916	1,788,164
Sep-05	720.0	715.3	99.4%	20,837	0	0	0	100%	20,837	1,809,001
Oct-05	744.0	744.0	100.0%	24,028	0	0	0	100%	24,028	1,833,029
Nov-05	720.0	720.0	100.0%	20,553	0	0	0	100%	20,553	1,853,582
Dec-05	686.0	622.3	90.7%	19,037	0	0	0	100%	19,037	1,872,619
Jan-06	744.0	744.0	100.0%	21,858	0	0	0	100%	21,858	1,894,477
Feb-06	672.0	672.0	100.0%	19,590	0	0	0	100%	19,590	1,914,067
Mar-06	710.5	710.0	99.9%	13,935	0	0	0	100%	13,935	1,928,002
Apr-06	654.0	654.0	100.0%	18,391	0	0	0	100%	18,391	1,946,393
May-06	744.0	744.0	100.0%	18,116	0	0	0	100%	18,116	1,964,509
Jun-06	720.0	719.5	99.9%	16,616	0	0	0	100%	16,616	1,981,125
Jul-06	716.0	716.0	100.0%	14,232	0	0	0	100%	14,232	1,995,357
Aug-06	744.0	742.0	99.7%	13,291	0	0	0	100%	13,291	2,008,648
Sep-06	720.0	720.0	100.0%	14,269	0	0	0	100%	14,269	2,022,917
Oct-06	731.0	730.5	99.9%	13,496	0	0	0	100%	13,496	2,036,413
Nov-06	396.0	110.0	27.8%	3,073	0	0	0	100%	3,073	2,039,486
Dec-06	744.0	743.5	99.9%	25,287	0	0	0	100%	25,287	2,064,773
Jan-07	720.0	719.5	99.9%	25,118	0	0	0	100%	25,118	2,089,891
Feb-07	671.8	659.8	98.2%	21,953	0	0	0	100%	21,953	2,111,844
Mar-07	744.0	734.0	98.7%	25,860	0	0	0	100%	25,860	2,137,703
Apr-07	720.0	720.0	100.0%	24,240	0	0	0	100%	24,240	2,161,943
May-07	744.0	744.0	100.0%	19,004	0	0	0	100%	19,004	2,180,947
Jun-07	719.5	719.5	100.0%	20,659	0	0	0	100%	20,659	2,201,606
Jul-07	744.0	744.0	100.0%	19,389	0	0	0	100%	19,389	2,220,995
Aug-07	696.0	696.0	100.0%	16,354	0	0	0	100%	16,354	2,237,349
Sep-07	720.0	720.0	100.0%	15,320	0	0	0	100%	15,320	2,252,669
Oct-07	744.0	744.0	100.0%	14,409	0	0	0	100%	14,409	2,267,078
Nov-07	720.0	720.0	100.0%	17,388	0	0	0	100%	17,388	2,284,466
Dec-07	744.0	739.0	99.3%	17,002	0	0	0	100%	17,002	2,301,468
Jan-08	742.0	684.0	92.2%	17,115	0	0	0	100%	17,115	2,318,583
Feb-08	695.3	611.8	88.0%	13,581	0	0	0	100%	13,581	2,332,164
Mar-08	744.0	742.0	99.7%	13,277	0	0	0	100%	13,277	2,345,441
Apr-08	720.0	717.0	99.6%	12,518	0	0	0	100%	12,518	2,357,959

NIROP FRIDLEY
Groundwater Treatment Facility (GWTF)

	OPERATIONS (hrs)			WATER DISCHARGED (thousands of gallons)					WATER TREATED (thousands of gallons)	
Month	Available	Operating	On-stream factor	to Storm	to Sanitary	Untreated to Sanitary	Total to Sanitary	% Storm	Monthly	Cumulative
May-08	718.0	692.0	96.4%	15,430	0	0	0	100%	15,430	2,373,389
Jun-08	333.5	333.5	100.0%	6,523	0	0	0	100%	6,523	2,379,912
Jul-08	719.0	719.0	100.0%	15,762	0	0	0	100%	15,762	2,395,674
Aug-08	729.3	729.3	100.0%	20,183	0	0	0	100%	20,183	2,415,857
Sep-08	720.0	720.0	100.0%	19,632	0	0	0	100%	19,632	2,435,489
Oct-08	737.0	737.0	100.0%	19,818	0	0	0	100%	19,818	2,455,307
Nov-08	662.0	662.0	100.0%	18,191	0	0	0	100%	18,191	2,473,498
Dec-08	744.0	744.0	100.0%	20,926	0	0	0	100%	20,926	2,494,424
Jan-09	741.0	741.0	100.0%	20,301	44	0	44	99.8%	20,301	2,514,725
Feb-09	672.0	672.0	100.0%	17,546	0	0	0	100%	17,546	2,532,271
Mar-09	711.9	711.2	99.9%	17,766	0	0	0	100%	17,766	2,550,037
Apr-09	709.0	705.6	99.5%	16,434	0	0	0	100%	16,434	2,566,471
May-09	739.8	739.8	100.0%	23,663	0	0	0	100%	23,663	2,590,134
Jun-09	719.8	719.8	100.0%	21,234	0	0	0	100%	21,234	2,611,368
Jul-09	744.0	744.0	100.0%	21,846	0	0	0	100%	21,846	2,633,214
Aug-09	744.0	744.0	100.0%	20,933	0	0	0	100%	20,933	2,654,147
Sep-09	697.2	697.2	100.0%	16,585	0	0	0	100%	16,585	2,670,732
Oct-09	743.5	743.5	100.0%	18,919	0	0	0	100%	18,919	2,689,651
Nov-09	720.0	720.0	100.0%	19,768	0	0	0	100%	19,768	2,709,419
Dec-09	744.0	744.0	100.0%	18,162	0	0	0	100%	18,162	2,727,581
Jan-10	740.3	740.3	100.0%	19,542	0	0	0	100%	19,542	2,747,123
Feb-10	672.0	658.0	97.9%	14,805	0	0	0	100%	14,805	2,761,928
Mar-10	744.0	744.0	100.0%	14,596	0	0	0	100%	14,596	2,776,524
Apr-10	720.0	720.0	100.0%	15,598	0	0	0	100%	15,598	2,792,122
May-10	744.0	742.5	99.8%	18,090	0	0	0	100%	18,090	2,810,212
Jun-10	720.0	697.0	96.8%	10,717	0	0	0	100%	10,717	2,820,929
Jul-10	744.0	722.2	97.1%	12,254	0	0	0	100%	12,254	2,833,183
Aug-10	694.5	404.0	58.2%	3,789	0	0	0	100%	3,789	2,836,972
Sep-10	712.0	700.0	98.3%	12,552	0	0	0	100%	12,552	2,849,524
Oct-10	690.6	690.6	100.0%	12,926	0	0	0	100%	12,926	2,862,450
Nov-10	719.5	716.0	99.5%	15,466	0	0	0	100%	15,466	2,877,916
Dec-10	737.0	721.5	97.9%	15,855	0	0	0	100%	15,855	2,893,771
Jan-11	744.0	744.0	100.0%	17,199	0	0	0	100%	17,199	2,910,970

Note: Available hours are 24 hours per day, less scheduled down time and power outages.

* Monthly flow incorrectly reported for Jul-04 through Dec-04 - corrected January 2005 using the corrected estimate for AT-10 monthly flow.

NIROP FRIDLEY
Ground Water Treatment Facility (GWTF)

	Electrical Meter Readings (kW·h)					
Date	MCC #1	MCC #2	Wells 2, 3A, 5A, 5B	Well 1A	Well 4	Monthy Usage
2/1/2000	57,305	620,300				38,046
3/1/2000	59,597	656,054				36,133
3/9/2000	60,348	667,580	18,260	3,284	2,312	65,029
4/3/2000	63,080	704,113	38698	6043	4879	74,067
5/1/2000	66,067	746,920	60,940	9,238	7,715	81,545
6/1/2000	68,972	793,455	86495	12728	10775	66,128
7/1/2000	71,562	840,441	110,243	16,307		
7/6/2000					13701	13,701
8/1/2000	73,881	881,304	130,691	19,559	16,686	72,336
9/1/2000	76,316	924,799	152695	22976	17671	67,877
10/2/2000	78,561	964,802	172,714	26,079	20,178	
11/1/2000	80,952	7,402	195655	29408	22454	89,927
12/4/2000	83,561	56,966	225,897	33,105	26,269	81,706
1/2/2001	85,851	101,872	254750	36270	28761	72,935
2/1/2001	88,106	143,918	282,532	37,122	28,761	83,944
3/1/2001	90,240	190,303	314000	41079	28761	66,663
4/3/2001	92,677	230,575	335,297	43,736	28,761	65,567
5/1/2001	94,779	269,617	357244	46212	28761	
6/5/2001	97,821	304,746	*	*	*	38,108
7/2/2001	102,175	338,500	*	*	*	44,802
8/2/2001	106,592	378,885	*	*	*	37,804
9/12/2001	111,321	411,960	*	*	*	13,663
10/18/2001	112,956	423,988	*	*	*	29,471
11/1/2001	117,010	449,405	*	*	*	68,542
12/4/2001	126,457	508,500	*	*	*	60,932
1/2/2002	134,884	561,005	*	*	*	56,801
2/1/2002	142,948	609,742	*	*	*	55,300
3/1/2002	150,583	657,407	*	*	*	64,231
4/1/2002	159,332	712,889	*	*	*	59,291
5/1/2002	167,808	763,704	*	*	*	63,448
6/3/2002	176,272	818,688	*	*	*	43,974
7/1/2002	182,246	856,688	*	*	*	45,609
8/1/2002	188,404	896,139	*	*	*	60,074
9/3/2002	196,255	948,362	*	*	*	44,067
10/1/2002	202,142	986,542	*	*	*	60,158
11/1/2002	209,581	1,039,261	*	*	*	60,538
12/2/2002	216,632	1,092,748	*	*	*	
1/1/2003	223,233	0	*	*	*	
2/1/2003	224,233	1,146,792	*	*	*	7,827
3/19/2003	227,523	1,151,329	*	*	*	22,891
4/3/2003	230,589	1,171,154	*	*	*	32,058
5/1/2003	235,275	1,198,526	*	*	*	18,373
6/4/2003	237,675	1,214,499	*	*	*	20,360
7/1/2003	240,411	1,232,123	*	*	*	42,930
8/1/2003	246,351	1,269,113	*	*	*	49,909
9/2/2003	253,306	1,312,067	*	*	*	52,166
10/1/2003	260,662	1,356,877	*	*	*	58,962
11/3/2003	268,788	1,407,713	*	*	*	57,373
12/1/2003	276,592	1,457,282	*	*	*	67,477
1/2/2004	285,175	1,516,176	*	*	*	67,278
2/2/2004	293,559	1,575,070	*	*	*	60,542
3/1/2004	301,245	1,627,926	*	*	*	31,187
4/1/2004	305,283	1,655,075	*	*	*	1,037
5/3/2004	305,515	1,655,880	*	*	*	51,931
6/1/2004	312,129	1,701,197	*	*	*	47,852
7/1/2004	318,012	1,743,166	*	*	*	60,764
8/3/2004	326,133	1,795,809	*	*	*	55,312

NIROP FRIDLEY
Ground Water Treatment Facility (GWTF)

Date	Electrical Meter Readings (kW·h)					Monthy Usage
	MCC #1	MCC #2	Wells 2, 3A, 5A, 5B	Well 1A	Well 4	
9/1/2004	335,039	1,842,215	*	*	*	52,307
10/1/2004	340,422	1,889,139	*	*	*	53,798
11/2/2004	347,296	1,936,063	*	*	*	64,045
12/1/2004	354,514	1,992,890	*	*	*	64,887
1/5/2005	362,574	49,717	*	*	*	48,313
2/1/2005	368,114	92,490	*	*	*	56,517
3/1/2005	374,689	142,432	*	*	*	35,669
4/1/2005	381,858	170,932	*	*	*	32,506
5/11/2005	384,388	200,908	*	*	*	37,857
6/2/2005	389,382	233,771	*	*	*	53,851
7/1/2005	395,908	281,096	*	*	*	55,772
8/1/2005	402,786	329,990	*	*	*	58,530
9/1/2005	410,054	381,252	*	*	*	59,756
10/4/2005	416,742	434,320	*	*	*	54,337
11/1/2005	423,117	482,282	*	*	*	59,439
12/1/2005	429,602	535,236	*	*	*	58,139
1/3/2006	437,032	585,945	*	*	*	64,273
2/3/2006	444,929	642,321	*	*	*	59,745
3/3/2006	451,966	695,029	*	*	*	59,447
4/4/2006	458,470	747,972	*	*	*	52,154
5/2/2006	464,407	794,189	*	*	*	56,066
6/1/2006	470,107	844,555	*	*	*	67,078
7/7/2006	476,656	905,084	*	*	*	75,362
8/17/2006	483,201	973,901	*	*	*	28,651
9/1/2006	485,579	174	*	*	*	60,559
10/2/2006	490,846	55,466	*	*	*	64,783
11/16/2006	497,232	113,863	*	*	*	30,896
12/12/2006	501,656	140,335	*	*	*	41,005
1/2/2007	507,345	175,651	*	*	*	89,453
2/14/2007	519,226	253,223	*	*	*	60,625
3/15/2007	526,775	306,299	*	*	*	37,019
4/1/2007	531,435	338,658	*	*	*	59,380
5/1/2007	538,780	390,693	*	*	*	60,309
6/2/2007	546,435	443,347	*	*	*	57,976
7/2/2007	552,240	495,518	*	*	*	54,945
8/1/2007	558,047	544,656	*	*	*	56,900
9/4/2007	563,999	595,604	*	*	*	48,947
10/1/2007	568,907	639,643	*	*	*	55,912
11/1/2007	574,269	690,193	*	*	*	61,551
12/3/2007	580,906	745,107	*	*	*	58,075
1/2/2008	587,234	796,854	*	*	*	61,758
2/1/2008	593,878	851,968	*	*	*	56,961
3/6/2008	601,457	901,350	*	*	*	47,128
4/1/2008	607,103	942,832	*	*	*	51,563
5/2/2008	613,973	987,525	*	*	*	45,409
6/2/2008	619,382	27,525	*	*	*	23,755
7/1/2008	621,730	48,932	*	*	*	57,458
8/1/2008	627,904	100,216	*	*	*	59,836
9/2/2008	634,818	153,138	*	*	*	57,157
10/4/2008	641,270	203,843	*	*	*	61,110
11/3/2008	648,196	258,027	*	*	*	58,512
12/1/2008	655,158	309,577	*	*	*	71,027

NIROP FRIDLEY
Ground Water Treatment Facility (GWTF)

Date	Electrical Meter Readings (kW·h)					Monthy Usage
	MCC #1	MCC #2	Wells 2, 3A, 5A, 5B	Well 1A	Well 4	
1/2/2009	663,755	372,007	*	*	*	69,361
2/2/2009	672,125	432,998	*	*	*	62,234
3/2/2009	679,788	487,569	*	*	*	61,618
4/1/2009	687,315	541,660	*	*	*	63,015
5/1/2009	694,461	597,529	*	*	*	63,751
6/1/2009	701,440	654,301	*	*	*	60,286
7/1/2009	708,069	707,958	*	*	*	65,088
8/3/2009	715,267	765,848	*	*	*	57,140
9/1/2009	721,611	816,644	*	*	*	56,282
10/1/2009	727,548	866,989	*	*	*	65,845
11/2/2009	734,666	925,716	*	*	*	60,372
12/1/2009	741,891	978,863	*	*	*	77,030
1/1/2010	750,050	1,047,734	*	*	*	63,139
2/1/2010	757,037	1,103,886	*	*	*	61,079
3/1/2010	763,509	1,158,493	*	*	*	69,431
4/1/2010	769,960	1,221,473	*	*	*	59,638
5/3/2010	775,813	1,275,258	*	*	*	54,143
6/1/2010	780,680	1,324,534	*	*	*	51,279
7/1/2010	784,369	1,372,124	*	*	*	75,167
8/2/2010	789,289	1,442,371	*	*	*	8,482
9/1/2010	791,567	1,448,575	*	*	*	55,237
10/1/2010	796,016	1,499,363	*	*	*	61,303
11/1/2010	800,411	1,556,271	*	*	*	60,565
12/1/2010	806,672	1,610,575	*	*	*	68,226
1/3/2011	813,611	1,671,862	*	*	*	64951
2/1/2011	820,001	1,730,423	*	*	*	

* Electrical metering for the extraction wells runs through MCC #1

- The electrical meter in the main treatment area was misread on 1/1/03, thus it was not reset. December electricity usage wa estimated to be the same as November 2002.

^ The electrical meter in the main treatment area had reset after the scheduled power shut-down. October 2004 electricity usage for MCC#2 was estimated to be the same as September 2004.

+ - electrical readings were not obtained on December 1, 2004, therefore electrical usage for November was estimated to be similar to October 2004.

Table 3

Form 1.1 - Air Stripper Screening Evaluation

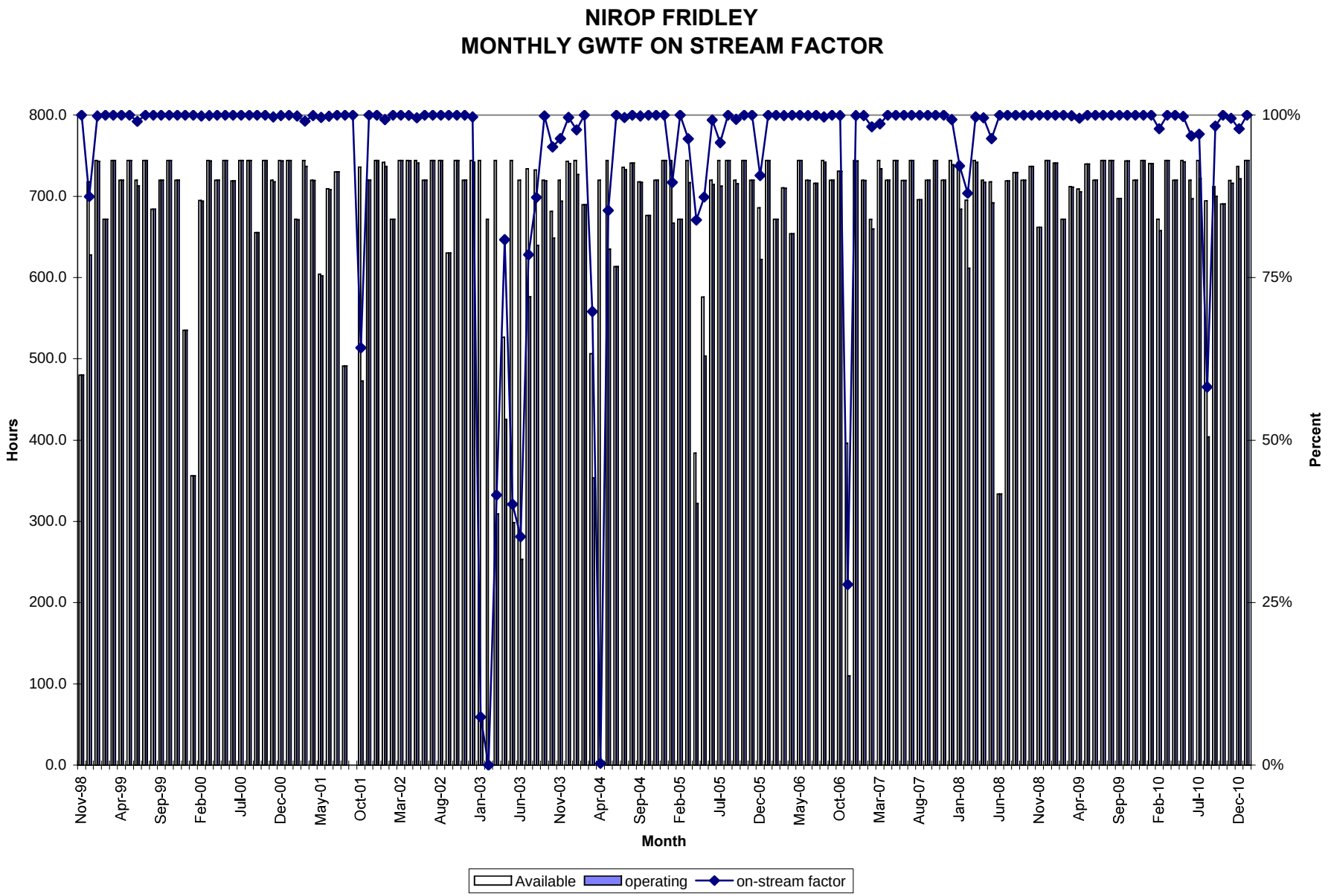
Site Name: NIROP Fridley	Responsible Party Contact:	Form Completed by:
Address: 4800 East River Road Minneapolis, MN 55421	Name: Howard Hickey Affiliation: Midwest Division Naval Facilities Engineering Command	Steve Head Date: 2/18/2011
MPCA Leak #: Not Applicable	Phone #: 847-668-5999	

	A	B	C	D	E	
Contaminant (CAS #)	Contaminant Concentration (GC) (ug/liter)	Air Stripper Influent Flow Rate (IFR) (liters/sec)	Removal Factor (RF)	Emission Rate (ER) (ug/sec)	Site Specific Allowable Emission Rate (AER) (ug/sec)	Is ER >/= AER? (yes/no)
1,1-dichloroethane (75-34-3)	1.50	21.00	1	31.5	135,000,000	No
1,1-dichloroethylene (75-35-4)	0.67	21.00	1	14.1	54,000	No
methylene chloride (75-09-2)	0.15	21.00	1	3.2	54,000	No
tetrachloroethylene (127-18-4)	1.50	21.00	1	31.5	4,600,000	No
trichloroethylene (79-01-6)	300	21.00	1	6,300.0	1,600,000	No

..

Note: If the incoming concentration is not detectable the Emission Rate is based on the detection limit.

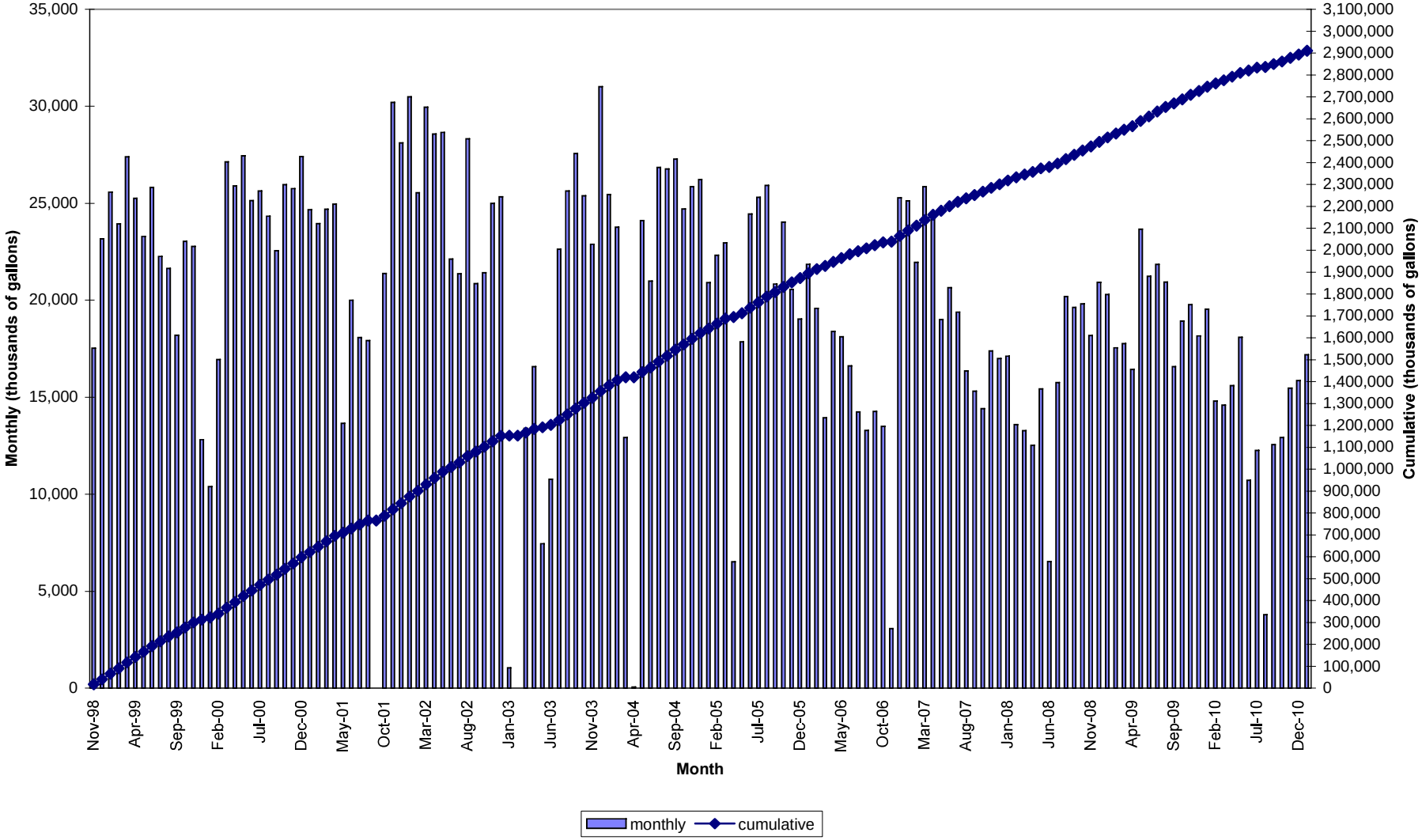
Figures



Docs 58644

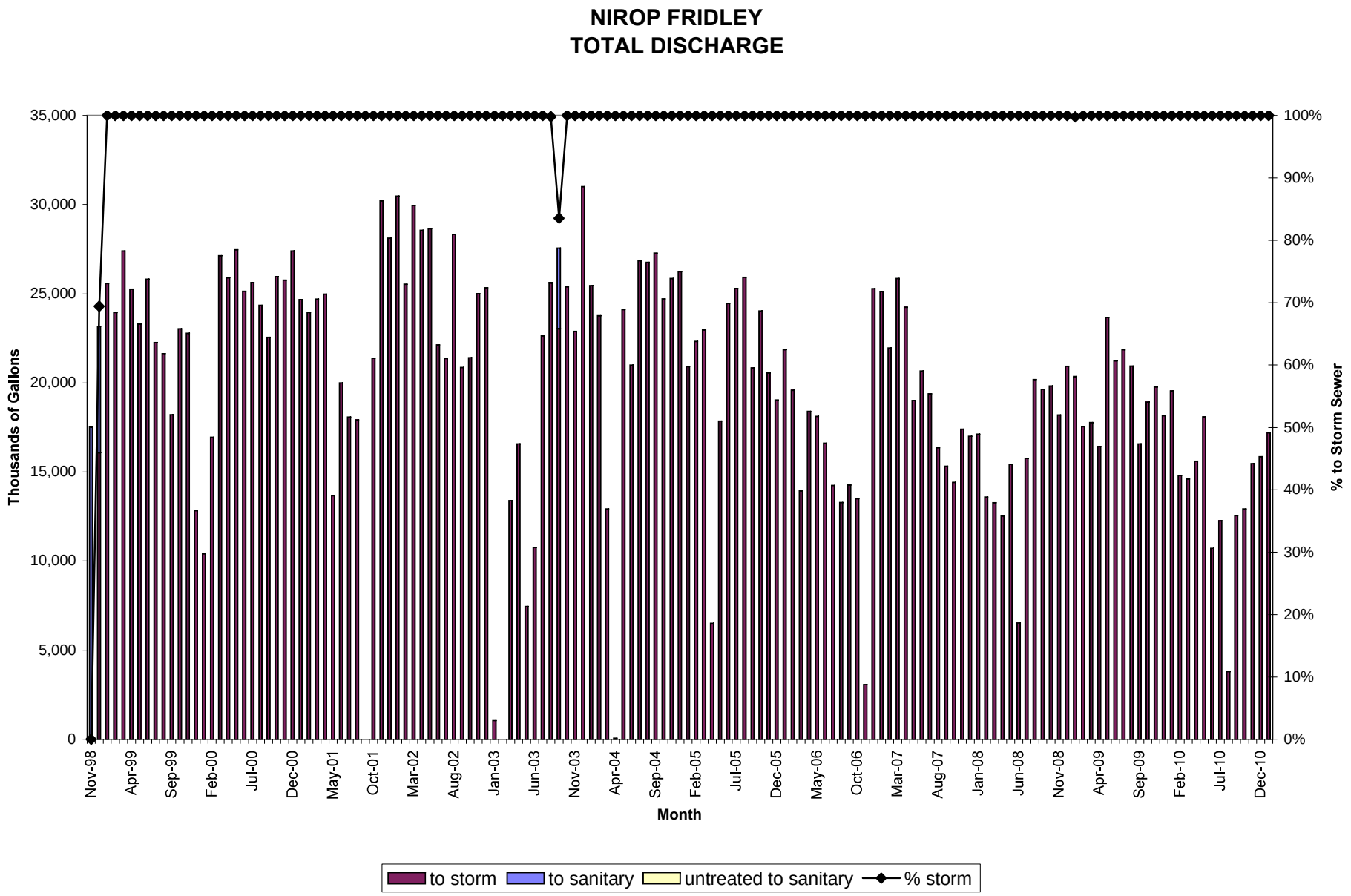
Figure 1

NIROP FRIDLEY
GWTF TOTAL TREATED FLOW



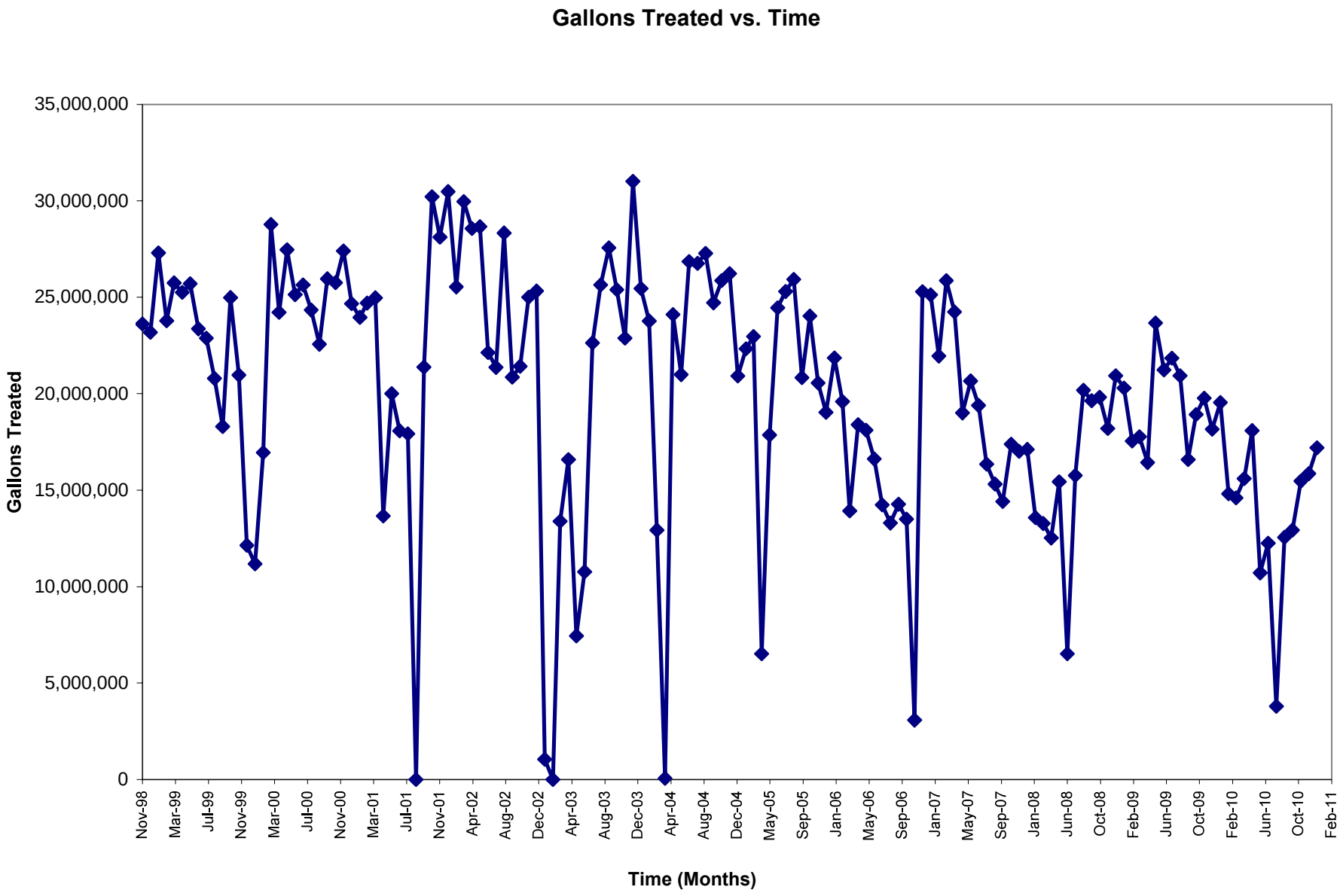
Docs 58644

Figure 2



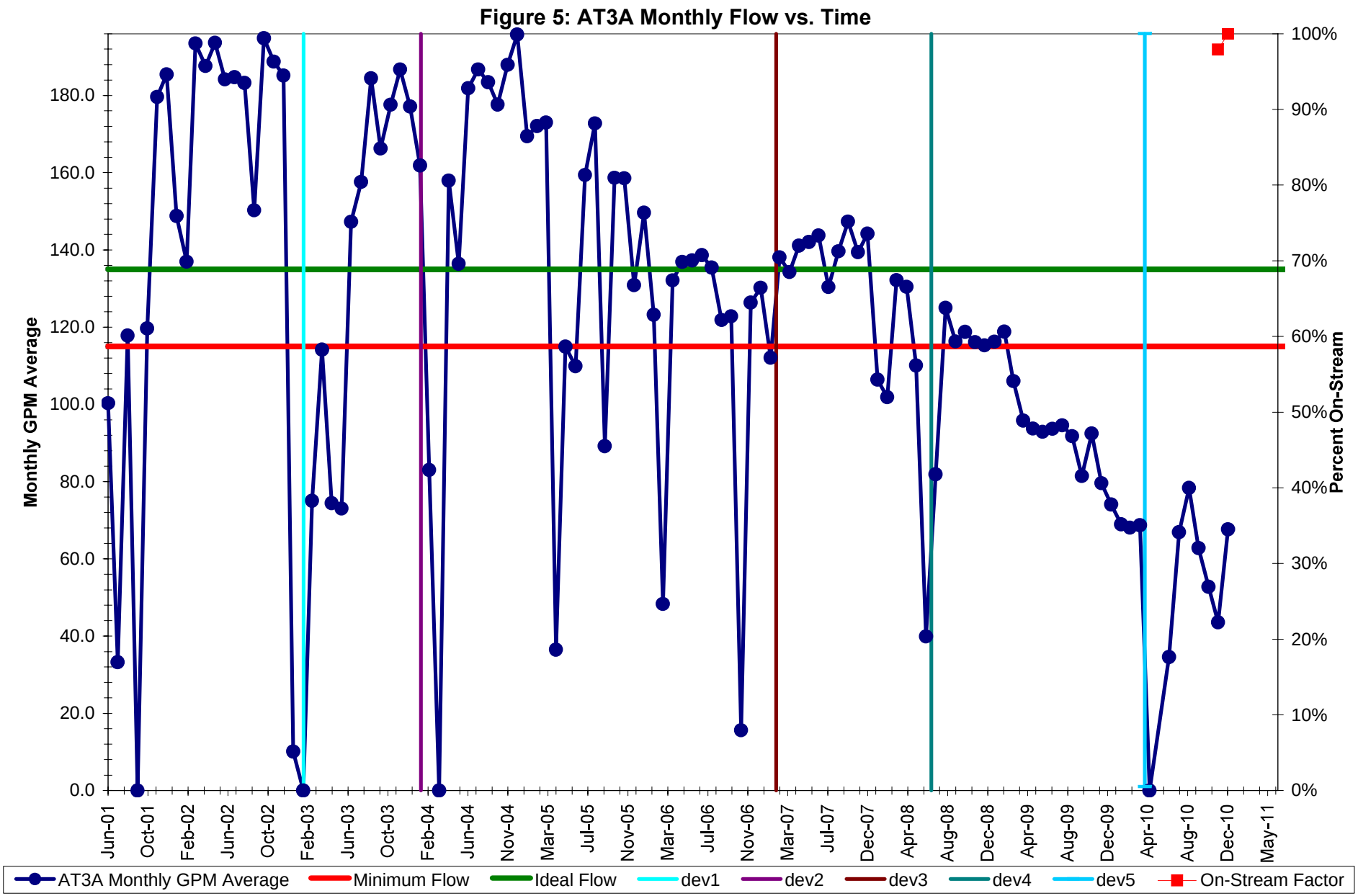
Docs 58644

Figure 3

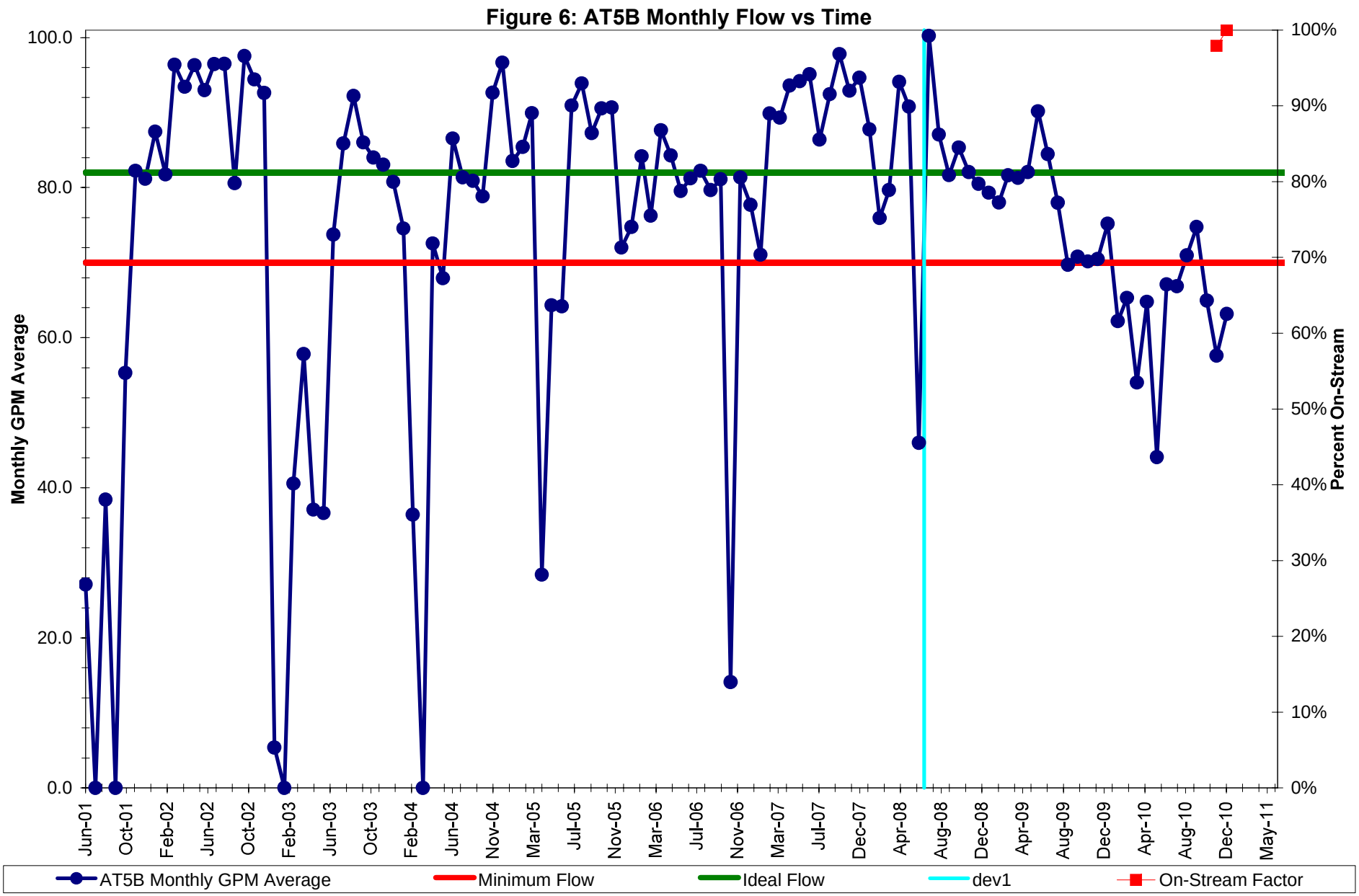


Docs 49267

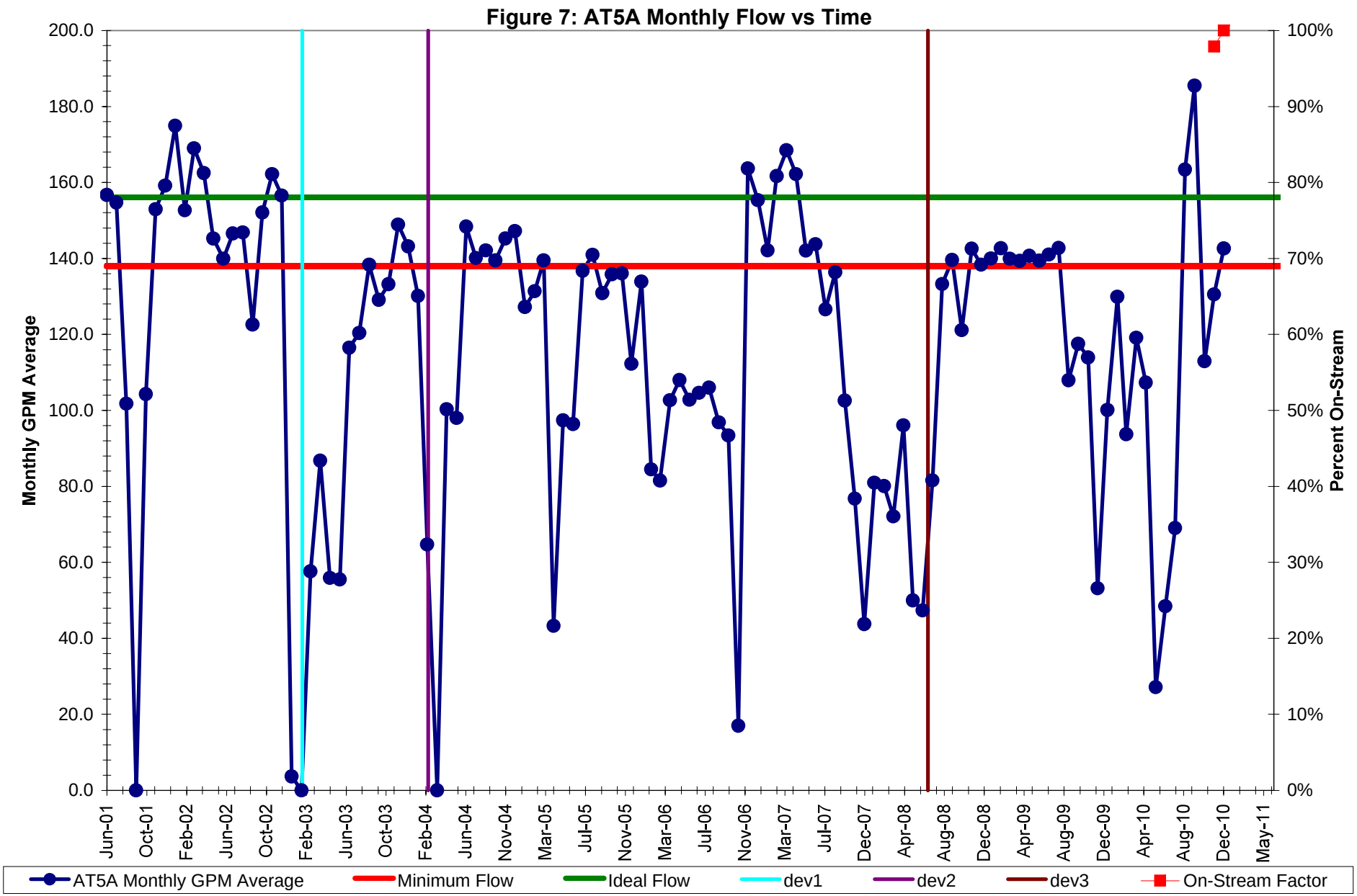
Figure 4



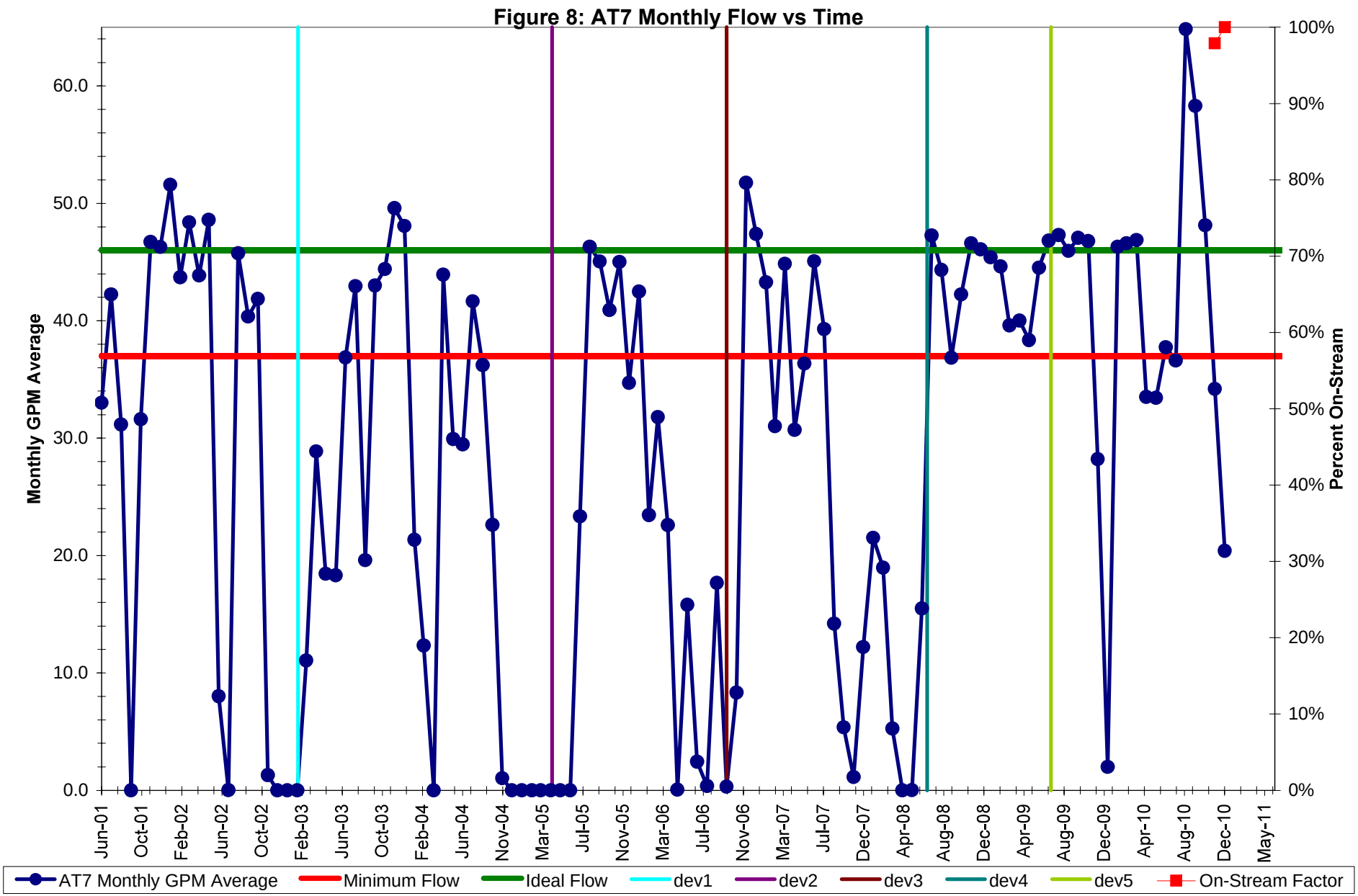
* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.



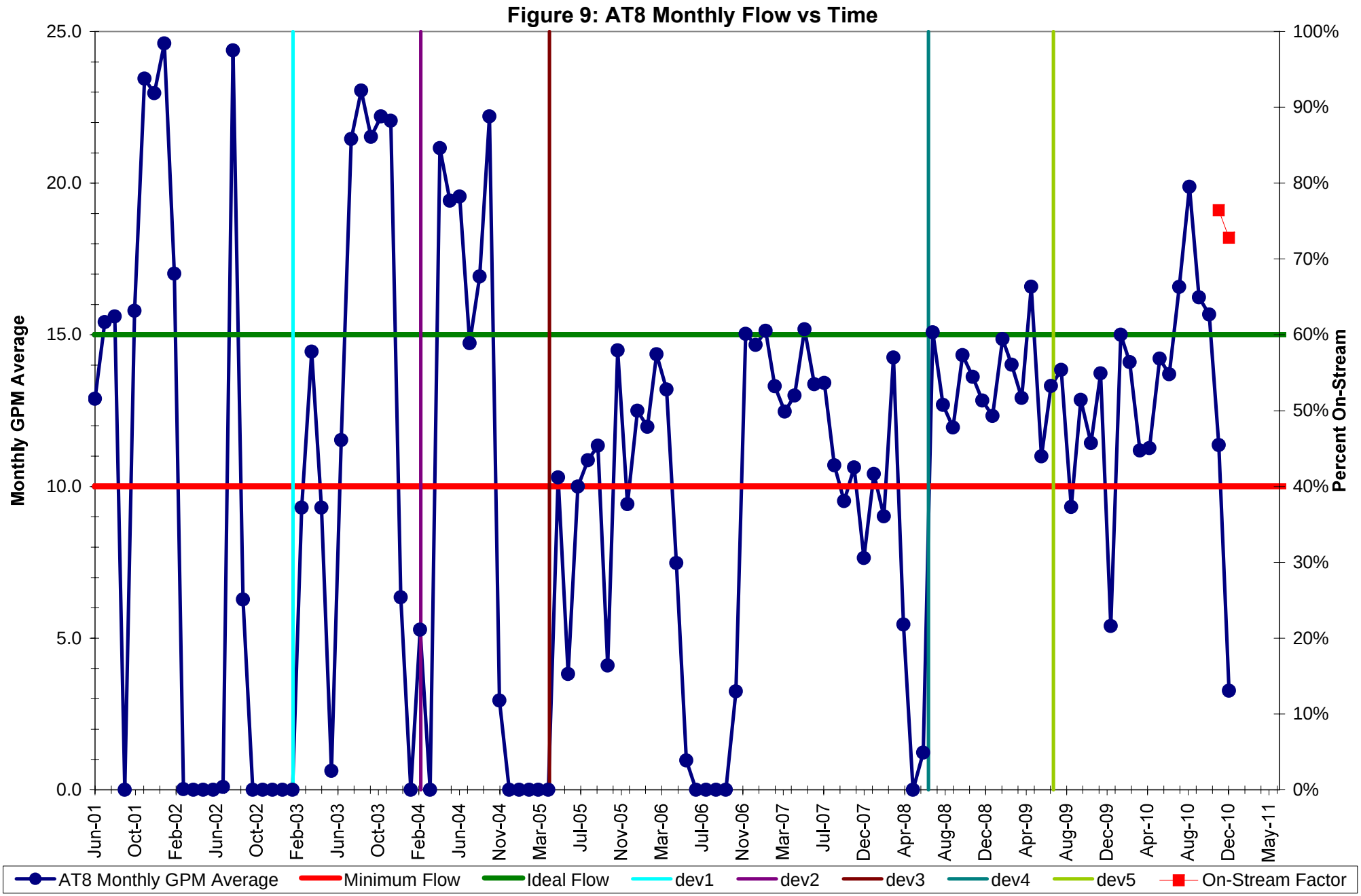
* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.



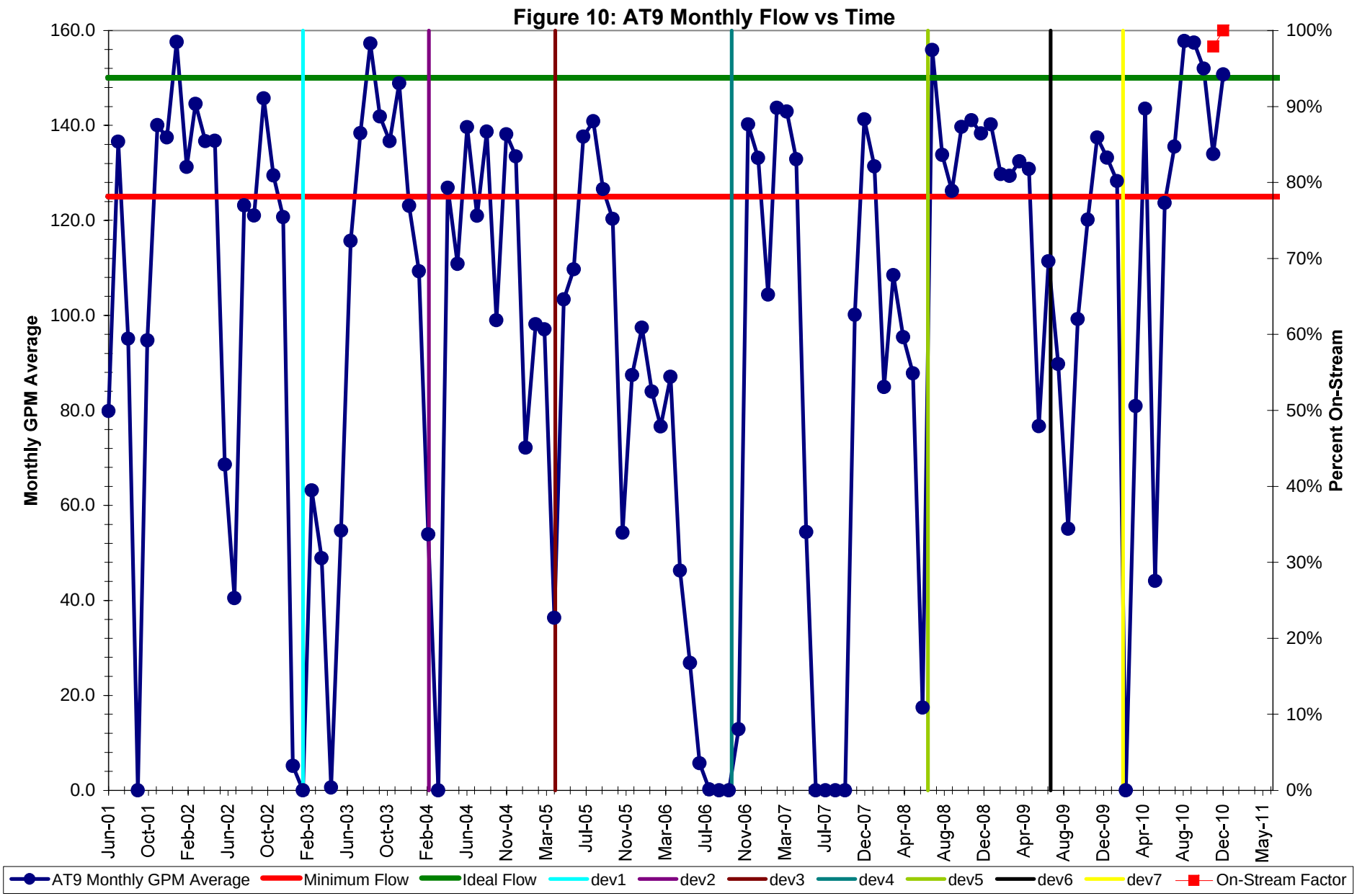
* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.



* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.



* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.



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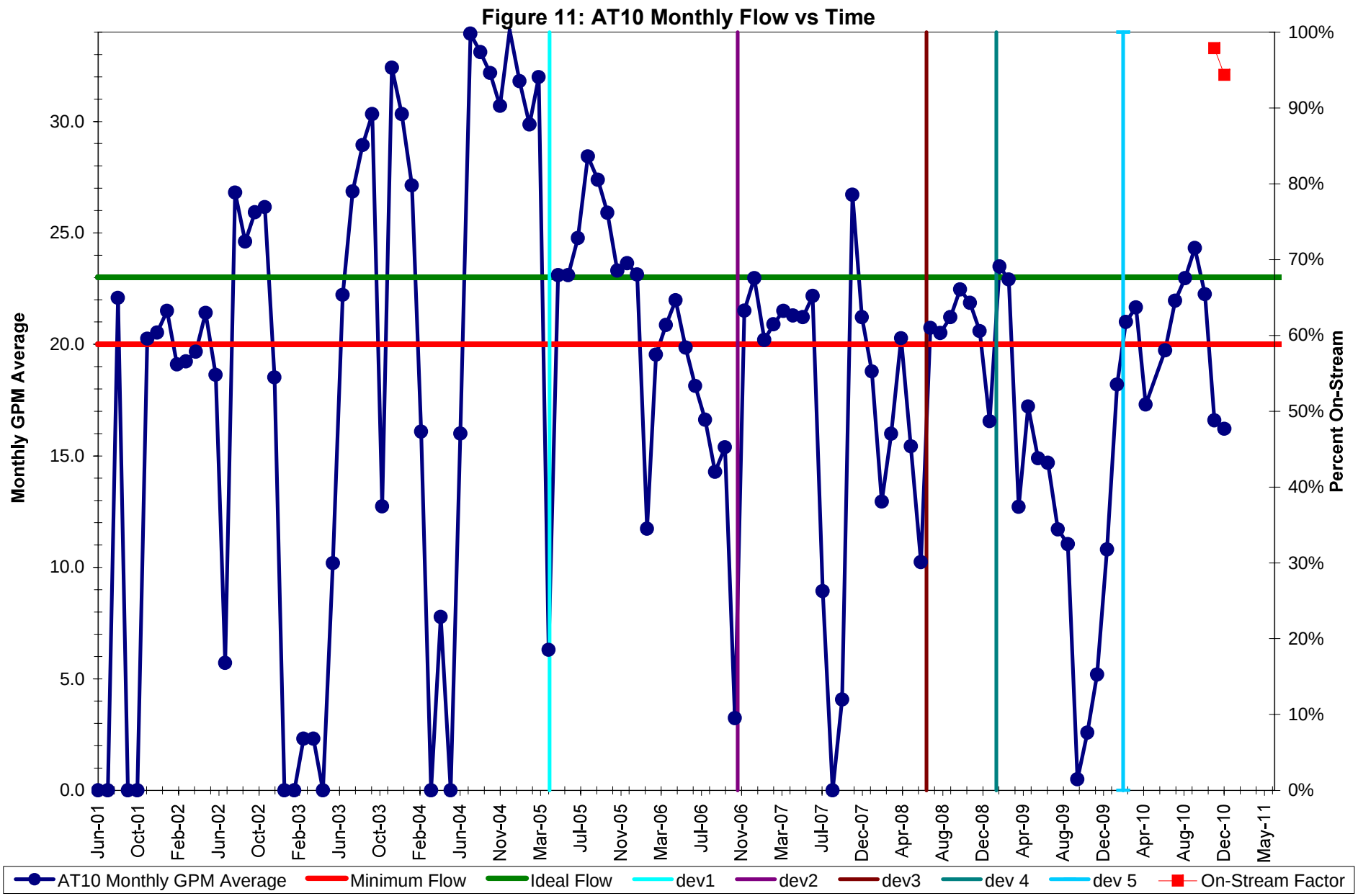
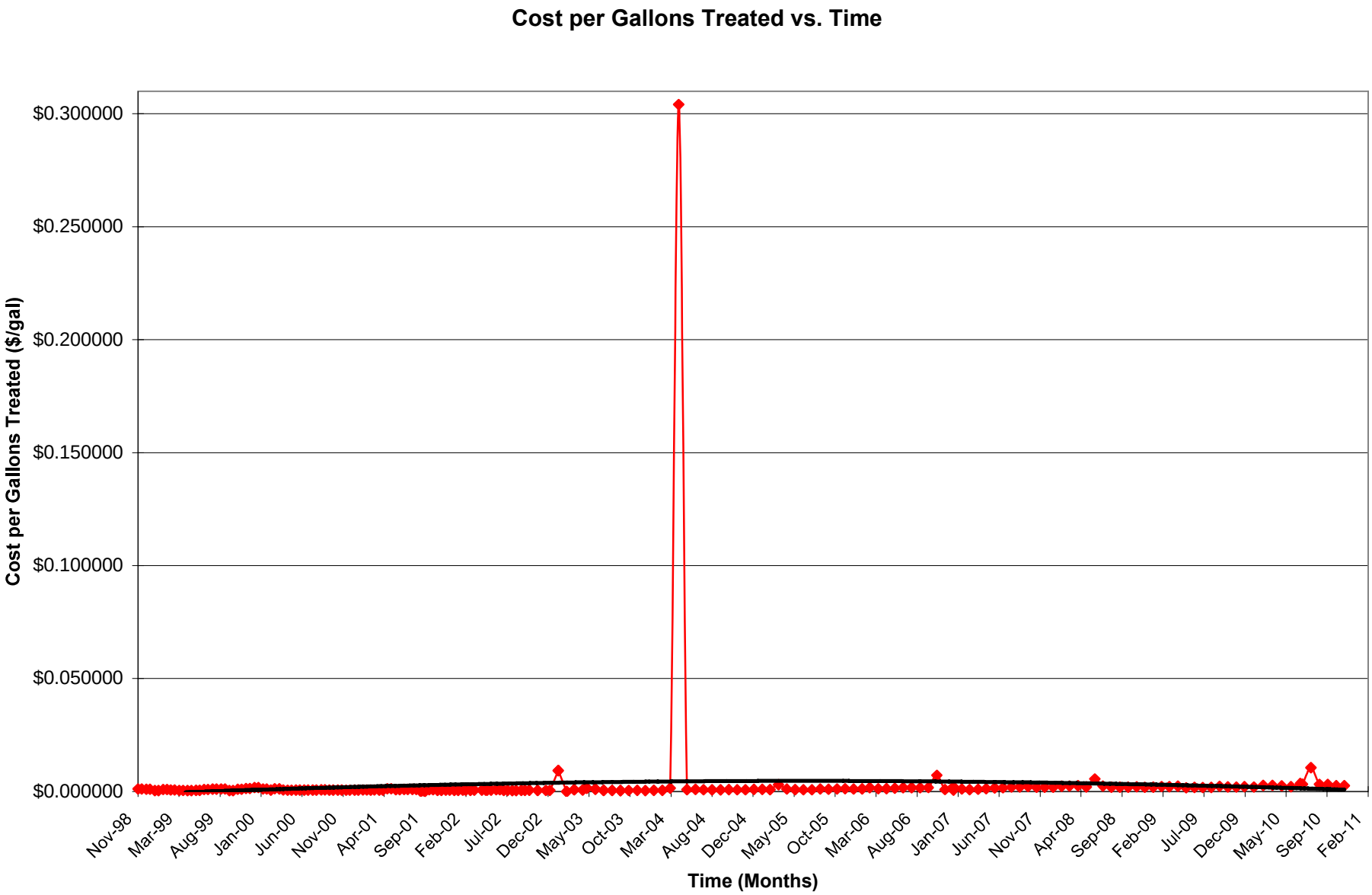
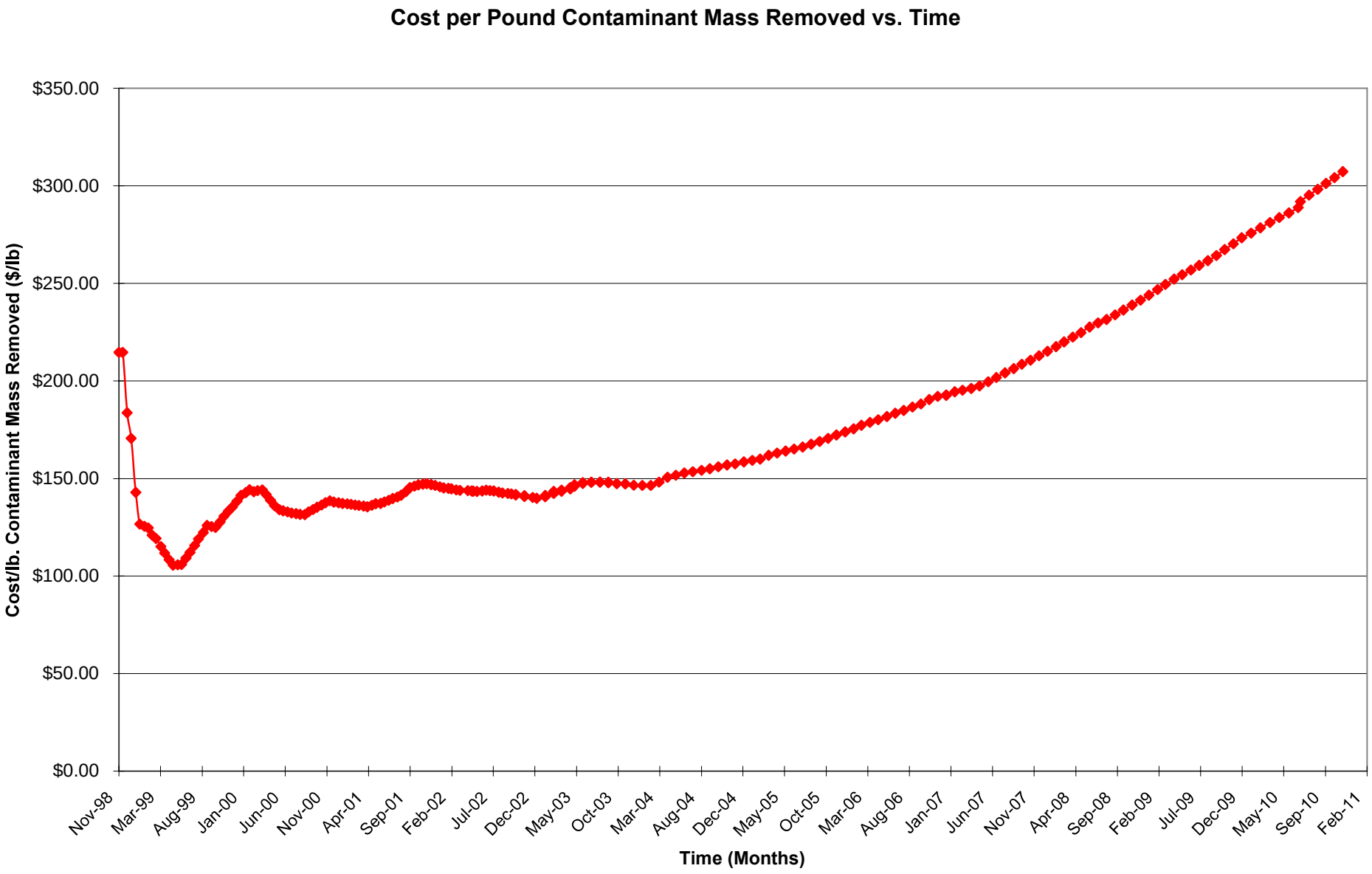


* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.



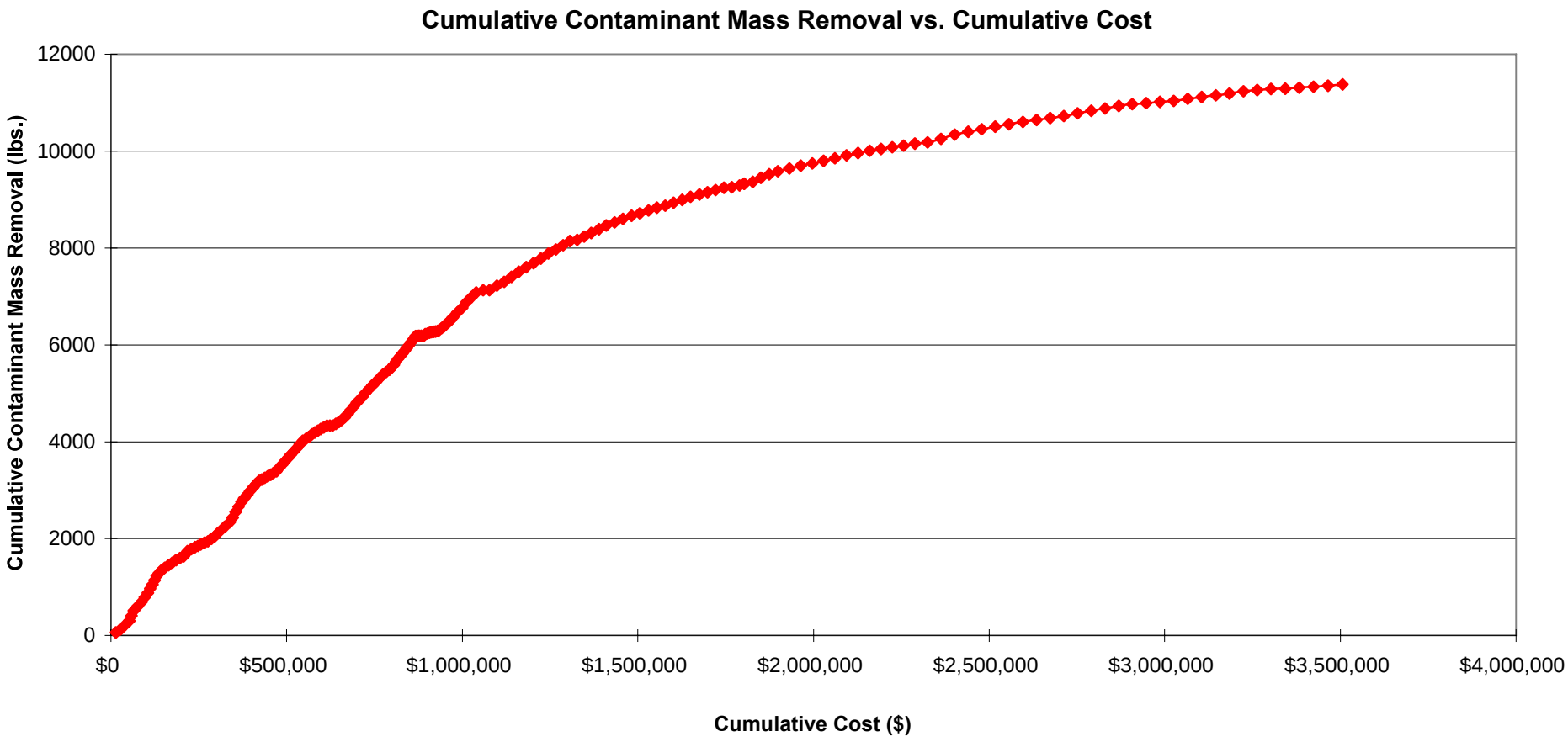
Docs 49267

Figure 12



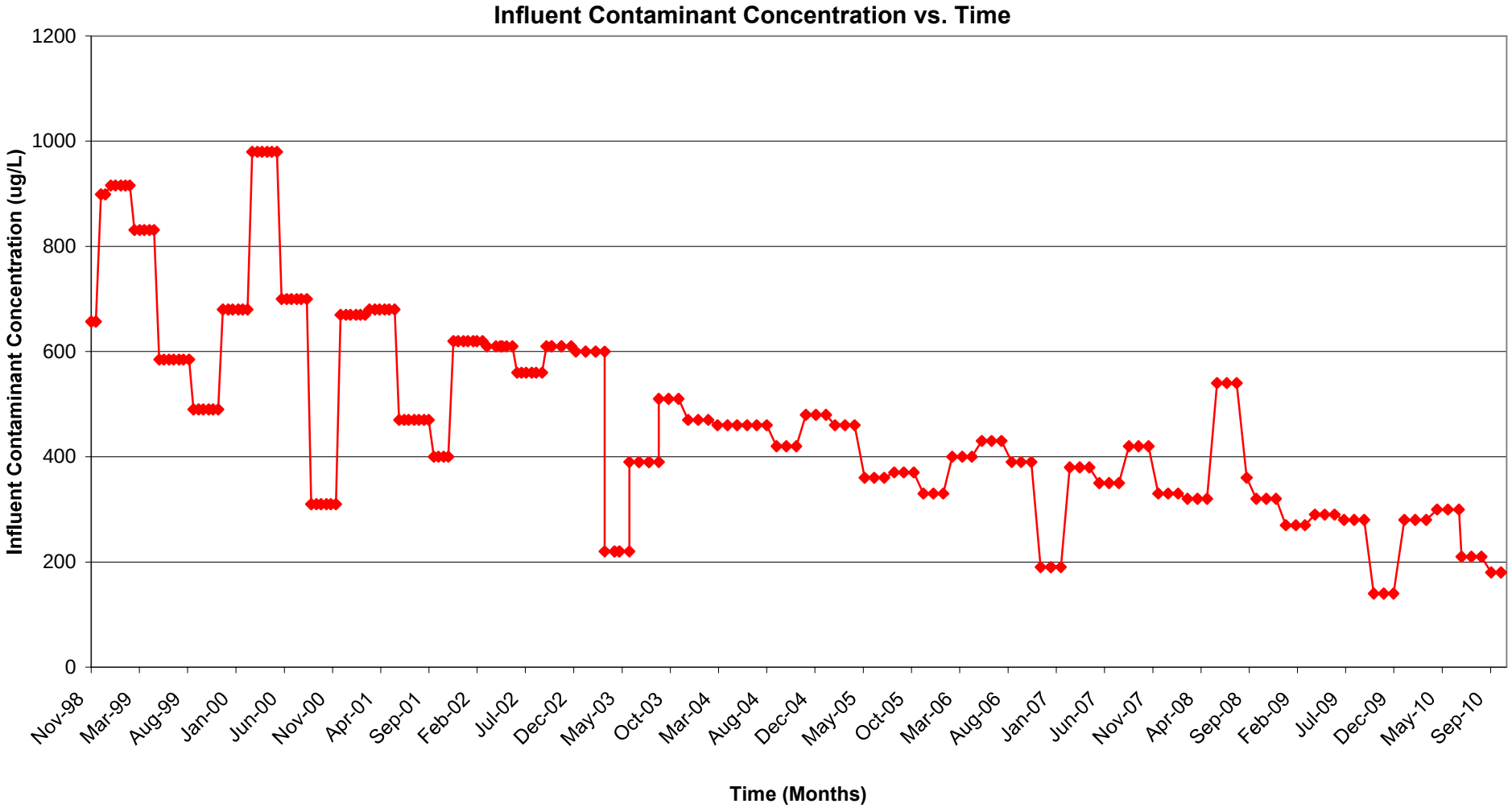
Docs 49267

Figure 13



Docs 49267

Figure14



Docs 49267

Figure 15

Bay West
Customer-Focused Environmental & Industrial Solutions

Bay West Inc.
5 Empire Drive, St. Paul, MN 55103
651-291-0456 * FAX 651-291-0099
www.baywest.com * info@baywest.com

April 1, 2011

Mr. Howard Hickey
Naval Facilities Engineering Command Midwest
201 Decatur Ave., Bldg. 1A
Great Lakes, IL 60088-2801

RE: February 2011 Treatment System Report
Naval Industrial Reserve Ordnance Plant, Fridley, Minnesota
EMAC Contract No. N40083-06-D-4015
Delivery Order #0005

Dear Mr. Hickey:

Enclosed please find the above-referenced report for the treatment system at the Naval Industrial Reserve Ordnance Plant (NIROP) in Fridley, Minnesota. Bay West, Inc. (Bay West) has prepared this report in accordance with the requirements of the Contract Documents for the project. If you have any questions or comments regarding this information, please contact me at 651-291-3491.

Respectfully,

Paul T. Walz, P.E.
Senior Engineer
651-291-3491
paulw@baywest.com

Enclosure

cc: Mark Sladic, Tetra Tech Nus, Inc.
Deepa DeAlwis, MPCA
Stephanie Warino, Tetra Tech Nus, Inc.
Robert Magee, U.S. Navy
John Estes, Delta Environmental
Jeff Tinney, Toltest, Inc.
Dan Musser, Bay West, Inc
Richard Kuhlthau, TechLaw, Inc.
Mary Tierney, U.S. EPA
Arun Gavaskar, NAVFAC Atlantic
Val Jurka, NAVFAC Atlantic
Dean Krebs, Delta Environmental
Paul Lucas, Delta Environmental
Steve Head, Bay West, Inc.

BWJ070047-31
Docs #81788 v5

Monthly Project Status Report February 2011
Facility Maintenance
Naval Industrial Reserve Ordnance Plant - Fridley, Minnesota
Prepared by Bay West, Inc.

EMAC Contract No. N40083-06-D-4015, Task Order #0005

SYSTEM OVERVIEW

- The GWTF was in operation for 667 hours during the month of February 2011.
- The on-stream factor for February was 99.7%. The on-stream factor is the actual operation time divided by the available operation time.
- The system processed an estimated 16,550,000 gallons of groundwater in February, for a total of 2,927,521,000 gallons to date.
- Electrical use was approximately 58,883 kilowatt-hours (kWh) for February 2011.
- Approximately 11,495 pounds of trichloroethylene (TCE) have been removed from the aquifer since system start-up.
- A quarterly groundwater monitoring event was performed by Bay West from February 14 to 18, 2011. Three extraction wells and 21 monitoring wells were scheduled to be sampled during this event. Samples were successfully collected and submitted for VOC analyses to Columbia Analytical Services (CAS) in Kelso, WA. Two wells, 13-IS and MS-38S, could not be sampled as they were located beneath snow banks created from parking lot snow plowing work performed by others. One well, MS-56S, was not sampled due to lack of recharge in the well during purging. Based on the field sampling log, water from the well turned black and the well went dry. During the previous sampling event (2010 Annual Groundwater Monitoring Event), the well also went dry and sediments were observed in the purge water. Analytical results will be forwarded to TetraTech NUS, Inc. for inclusion in the 2011 Annual Monitoring Report (AMR).

SCHEDULED MAINTENANCE

- Visually inspected flow meters and level probes for material buildup and proper operation.
- Tested the four safety showers/eyewash stations to assure adequate performance.
- Lubricated blower motors, influent pumps, and effluent pumps.
- Collected extraction well water levels on a weekly basis.
- Alternated pumps P-101A/101B monthly.
- Measured pump P-101A bearing temperature. All values were within normal operation range.
- Alternated pumps P-301A/301B weekly.
- Redeveloped extraction well AT-8.

PROBLEMS AND SOLUTIONS

- Bay West has executed a Subcontract to improve electronic data transmission and accessibility at NIROP. The scope of services and work performance period are being re-evaluated in light of current plans to install three new extraction wells and abandon AT-3A. The modifications required to the site's programmable logic controller (PLC) and SCADA system to bring the new wells on-line

go significantly beyond the scope of work authorized. Combining both work scopes into a single system upgrade will likely increase overall efficiency and minimize implementation issues.

- The pumping rate from extraction well AT-8 was below the minimum flow rate of 10 gpm for the first part of January. An extended well redevelopment procedure (a.k.a. Super Soak) with Unicid® product was initiated. Redevelopment work commenced on January 25 and terminated on February 17. The flow rate returned to above the minimum of 10 gpm upon start-up of the extraction well pump. Bay West will continue to monitor AT-8 operational data. There are no additional actions required at this time.
- The pumping rate for AT-10 was below the minimum of 20 gpm in late January and first part of February. Bay West and licensed well driller EH Renner inspected the well pump, pipe, and fittings on January 31. After inspection, a broken coupler was found and replaced, which resulted in a slight increase in flow. After further investigation, Bay West determined the extraction line was obstructed with debris. Pipe pigging was initiated to remove the debris in the extraction pipe. Licensed well driller TL Stevens was on-site with Bay West to execute the procedure. After completion of pipe pigging, the flow rate returned above the minimum. Bay West will continue to monitor AT-10 operational data on AT-10. There are no additional actions required at this time.
- The pumping rate for AT-7 was below the minimum of 37 gpm in late January and the first part of February. Bay West and EH Renner inspected the well pump, pipe and fittings on January 28 and determined the drop pipe and pump intake were fouled. The pump end was replaced with a clean spare and the drop pipe was cleaned. Flow remained below the minimum after pump replacement and drop pipe inspection. Extraction well AT-7 returned to above minimum flow rate in the mid part of February, with no action from Bay West. A discharged pipe obstruction was suspected to cause the increase in flow rate. Bay West will continue to monitor AT-7 operational data on AT-7. There are no additional actions required at this time.
- The pumping rate for AT-5B was below the minimum of 70 gpm in late January and first part of February. Bay West determined the extraction pipe, from the well to the equalization tank, was fouled with debris. The measured pressure drop was greater than historical pressure drop at the design flow. Licensed well driller TL Stevens and Bay West executed pipe pigging on February 17. The flow rate was unchanged upon start-up of the extraction well pump. Debris was observed in the discharge during the pigging procedure. However, hard debris is suspected to remain on the inside of the pipe, since the flow rate r and pressure drop across the pipe remains the same. Bay West will perform additional investigation work to identify the cause of low flow rate and appropriate response actions.
- On February 14, licensed well driller TL Stevens and Bay West executed pipe pigging at AT-5A. Debris was observed in the discharge during the pigging procedure, and the flow increased to the optimal flow rate of 156 gpm after start-up of the extraction well pump. The pumping rate then declined to a rate below the design flow rate, but remained above the minimum. Bay West will perform additional investigation to determine the cause of loss in flow rate.
- On February 24, a power outage in the BAE Systems area caused the treatment plant to shutdown. Bay West was able to successfully restart the system after electrical repairs were completed.

Well Performance Summary

Well	Average Monthly Flow Rate (GPM) (Available)	Average Monthly Flow Rate (GPM) (Operational)	Ideal Flow Rate (GPM)	% of Ideal Flow (Available)	% of Ideal Flow (Operational)	Minimum Flow Rate (GPM)	Available Hours of Operation	Operating Hours	On-Stream Factor (Available)
AT-3A	80.6	80.6	135	59.70%	59.70%	115	669	669	100.00%
AT-5A	141.4	141.4	156	90.64%	90.64%	138	664	664	100.00%
AT-5B	61.4	61.4	82	74.88%	74.88%	70	663	663	100.00%
AT-7	34.1	34.1	46	74.13%	74.13%	37	669	669	100.00%
AT-8	11.7	12.2	15	78.00%	81.33%	10	252	243	96.43%
AT-9	140.3	140.3	150	93.53%	93.53%	125	669	669	100.00%
AT-10	19.2	19.2	23	83.48%	83.48%	20	665	665	100.00%

TABLES

1. Groundwater Treatment Facility Operations
2. Electrical Meter Readings

FIGURES

1. Monthly GWTF On Stream Factor
2. GWTF Total Treated Flow
3. Total Discharge
4. Gallons Treated vs. Time
5. AT-3A Monthly Flow vs. Time
6. AT-5B Monthly Flow vs. Time
7. AT-5A Monthly Flow vs. Time
8. AT-7 Monthly Flow vs. Time
9. AT-8 Monthly Flow vs. Time
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11. AT-10 Monthly Flow vs. Time

Tables

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NIROP FRIDLEY
Groundwater Treatment Facility (GWTF)

Month	OPERATIONS (hrs)			WATER DISCHARGED (thousands of gallons)					WATER TREATED (thousands of gallons)	
	Available	Operating	On-stream factor	to Storm	to Sanitary	Untreated to Sanitary	Total to Sanitary	% Storm	Monthly	Cumulative
Nov-98	480.0	480.0	100.0%	0	17,524	0	17,524	0%	17,524	17,524
Dec-98	718.0	628.0	87.5%	16,078	7,087	0	7,087	69%	23,165	40,689
Jan-99	744.0	743.0	99.9%	25,571	0	0	0	100%	25,571	66,260
Feb-99	672.0	672.0	100.0%	23,938	0	0	0	100%	23,938	90,198
Mar-99	744.0	744.0	100.0%	27,394	0	0	0	100%	27,394	117,592
Apr-99	720.0	720.0	100.0%	25,254	0	0	0	100%	25,254	142,846
May-99	744.0	744.0	100.0%	23,291	0	0	0	100%	23,291	166,137
Jun-99	720.0	713.0	99.0%	25,823	0	0	0	100%	25,823	191,960
Jul-99	744.0	744.0	100.0%	22,266	0	0	0	100%	22,266	214,226
Aug-99	684.0	684.0	100.0%	21,634	0	0	0	100%	21,634	235,860
Sep-99	720.0	720.0	100.0%	18,205	0	0	0	100%	18,205	254,065
Oct-99	744.0	744.0	100.0%	23,029	0	0	0	100%	23,029	277,094
Nov-99	720.0	720.0	100.0%	22,783	0	0	0	100%	22,783	299,877
Dec-99	535.0	535.0	100.0%	12,818	0	0	0	100%	12,818	312,695
Jan-00	356.0	356.0	100.0%	10,400	0	0	0	100%	10,400	323,095
Feb-00	695.0	694.0	99.9%	16,944	0	0	0	100%	16,944	340,039
Mar-00	744.0	743.5	99.9%	27,131	0	0	0	100%	27,131	367,170
Apr-00	720.0	720.0	100.0%	25,899	0	0	0	100%	25,899	393,069
May-00	744.0	744.0	100.0%	27,458	0	0	0	100%	27,458	420,527
Jun-00	718.9	718.9	100.0%	25,136	0	0	0	100%	25,136	445,663
Jul-00	744.0	744.0	100.0%	25,637	0	0	0	100%	25,637	471,300
Aug-00	744.0	744.0	100.0%	24,341	0	0	0	100%	24,341	495,641
Sep-00	655.5	655.5	100.0%	22,559	0	0	0	100%	22,559	518,200
Oct-00	744.0	744.0	100.0%	25,955	0	0	0	100%	25,955	544,155
Nov-00	720.0	718.0	99.7%	25,759	0	0	0	100%	25,759	569,914
Dec-00	744.0	743.5	99.9%	27,404	0	0	0	100%	27,404	597,318
Jan-01	744.0	744.0	100.0%	24,666	0	0	0	100%	24,666	621,984
Feb-01	672.0	671.0	99.9%	23,956	0	0	0	100%	23,956	645,940
Mar-01	744.0	737.0	99.1%	24,694	0	0	0	100%	24,694	670,634
Apr-01	720.0	719.5	99.9%	24,964	0	0	0	100%	24,964	695,598
May-01	604.3	602.3	99.7%	13,656	0	0	0	100%	13,656	709,254
Jun-01	709.5	708.3	99.8%	20,000	0	0	0	100%	20,000	729,254
Jul-01	730.0	730.0	100.0%	18,077	0	0	0	100%	18,077	747,331
Aug-01	491.0	491.0	100.0%	17,921	0	0	0	100%	17,921	765,252
Sep-01	0.0	0.0	100.0%	0	0	0	0	100%	0	765,252
Oct-01	736.0	472.5	64.2%	21,376	0	0	0	100%	21,376	786,628
Nov-01	720.0	720.0	100.0%	30,205	0	0	0	100%	30,205	816,833
Dec-01	744.0	744.0	100.0%	28,114	0	0	0	100%	28,114	844,947
Jan-02	742.0	737.0	99.3%	30,483	0	0	0	100%	30,483	875,430
Feb-02	672.0	672.0	100.0%	25,538	0	0	0	100%	25,538	900,968
Mar-02	744.0	744.0	100.0%	29,957	0	0	0	100%	29,957	930,925
Apr-02	744.0	743.8	100.0%	28,569	0	0	0	100%	28,569	959,494
May-02	744.0	741.0	99.6%	28,656	0	0	0	100%	28,656	988,150
Jun-02	720.0	720.0	100.0%	22,131	0	0	0	100%	22,131	1,010,281
Jul-02	744.0	744.0	100.0%	21,367	0	0	0	100%	21,367	1,031,648
Aug-02	744.0	744.0	100.0%	28,328	0	0	0	100%	28,328	1,059,976
Sep-02	630.3	630.3	100.0%	20,861	0	0	0	100%	20,861	1,080,837
Oct-02	744.0	744.0	100.0%	21,417	0	0	0	100%	21,417	1,102,254
Nov-02	720.0	720.0	100.0%	25,003	0	0	0	100%	25,003	1,127,257
Dec-02	744.0	742.0	99.7%	25,327	0	0	0	100%	25,327	1,152,584
Jan-03	744.0	55.0	7.4%	1,048	0	0	0	100%	1,048	1,153,632
Feb-03	672.0	0.0	0.0%	0	0	0	0	100%	0	1,153,632
Mar-03	744.0	309.0	41.5%	13,387	0	0	0	100%	13,387	1,167,019
Apr-03	526.5	425.5	80.8%	16,584	0	0	0	100%	16,584	1,183,603
May-03	744.0	298.5	40.1%	7,448	0	0	0	100%	7,448	1,191,051
Jun-03	720.0	253.0	35.1%	10,775	0	0	0	100%	10,775	1,201,826
Jul-03	734.0	576.3	78.5%	22,629	0	0	0	100%	22,629	1,224,455

O&M Start Date: 11 November 1998
Docs 58644

Table 1

NIROP FRIDLEY
Groundwater Treatment Facility (GWTF)

Month	OPERATIONS (hrs)			WATER DISCHARGED (thousands of gallons)					WATER TREATED (thousands of gallons)	
	Available	Operating	On-stream factor	to Storm	to Sanitary	Untreated to Sanitary	Total to Sanitary	% Storm	Monthly	Cumulative
Aug-03	732.5	639.8	87.3%	25,591	46	0	46	99.8%	25,637	1,250,092
Sep-03	720.0	719.0	99.9%	23,028	4,532	0	4,532	83.6%	27,560	1,277,652
Oct-03	681.7	648.5	95.1%	25,389	0	0	0	100%	25,389	1,303,041
Nov-03	720.0	694.0	96.4%	22,882	0	0	0	100%	22,882	1,325,923
Dec-03	743.0	740.5	99.7%	31,010	0	0	0	100%	31,010	1,356,933
Jan-04	744.0	727.0	97.7%	25,456	0	0	0	100%	25,456	1,382,389
Feb-04	689.7	689.7	100.0%	23,771	0	0	0	100%	23,771	1,406,160
Mar-04	506.5	353.5	69.8%	12,928	0	0	0	100%	12,928	1,419,088
Apr-04	720.0	2.0	0.3%	60	0	0	0	100%	60	1,419,148
May-04	744.0	635.0	85.3%	24,104	0	0	0	100%	24,104	1,443,252
Jun-04	613.5	613.5	100.0%	20,988	0	0	0	100%	20,988	1,464,240
Jul-04	735.5	732.8	99.6%	26,846	0	0	0	100%	26,846	1,491,086
Aug-04	741.0	741.0	100.0%	26,760	0	0	0	100%	26,760	1,517,846
Sep-04	718.0	717.0	99.9%	27,276	0	0	0	100%	27,276	1,545,122
Oct-04	676.8	676.8	100.0%	24,709	0	0	0	100%	24,709	1,569,831
Nov-04	720.0	720.0	100.0%	25,859	0	0	0	100%	25,859	1,595,690
Dec-04	744.0	744.0	100.0%	26,229	0	0	0	100%	26,229	1,621,919
Jan-05	744.0	667.0	89.7%	20,915	0	0	0	100%	20,915	1,642,834
Feb-05	672.0	672.0	100.0%	22,329	0	0	0	100%	22,329	1,665,163
Mar-05	744.0	716.8	96.3%	22,960	0	0	0	100%	22,960	1,688,123
Apr-05	384.0	322.0	83.9%	6,515	0	0	0	100%	6,515	1,694,638
May-05	576.0	503.5	87.4%	17,859	0	0	0	100%	17,859	1,712,497
Jun-05	720.0	714.5	99.2%	24,450	0	0	0	100%	24,450	1,736,947
Jul-05	744.0	712.5	95.8%	25,301	0	0	0	100%	25,301	1,762,248
Aug-05	744.0	744.0	100.0%	25,916	0	0	0	100%	25,916	1,788,164
Sep-05	720.0	715.3	99.4%	20,837	0	0	0	100%	20,837	1,809,001
Oct-05	744.0	744.0	100.0%	24,028	0	0	0	100%	24,028	1,833,029
Nov-05	720.0	720.0	100.0%	20,553	0	0	0	100%	20,553	1,853,582
Dec-05	686.0	622.3	90.7%	19,037	0	0	0	100%	19,037	1,872,619
Jan-06	744.0	744.0	100.0%	21,858	0	0	0	100%	21,858	1,894,477
Feb-06	672.0	672.0	100.0%	19,590	0	0	0	100%	19,590	1,914,067
Mar-06	710.5	710.0	99.9%	13,935	0	0	0	100%	13,935	1,928,002
Apr-06	654.0	654.0	100.0%	18,391	0	0	0	100%	18,391	1,946,393
May-06	744.0	744.0	100.0%	18,116	0	0	0	100%	18,116	1,964,509
Jun-06	720.0	719.5	99.9%	16,616	0	0	0	100%	16,616	1,981,125
Jul-06	716.0	716.0	100.0%	14,232	0	0	0	100%	14,232	1,995,357
Aug-06	744.0	742.0	99.7%	13,291	0	0	0	100%	13,291	2,008,648
Sep-06	720.0	720.0	100.0%	14,269	0	0	0	100%	14,269	2,022,917
Oct-06	731.0	730.5	99.9%	13,496	0	0	0	100%	13,496	2,036,413
Nov-06	396.0	110.0	27.8%	3,073	0	0	0	100%	3,073	2,039,486
Dec-06	744.0	743.5	99.9%	25,287	0	0	0	100%	25,287	2,064,773
Jan-07	720.0	719.5	99.9%	25,118	0	0	0	100%	25,118	2,089,891
Feb-07	671.8	659.8	98.2%	21,953	0	0	0	100%	21,953	2,111,844
Mar-07	744.0	734.0	98.7%	25,860	0	0	0	100%	25,860	2,137,703
Apr-07	720.0	720.0	100.0%	24,240	0	0	0	100%	24,240	2,161,943
May-07	744.0	744.0	100.0%	19,004	0	0	0	100%	19,004	2,180,947
Jun-07	719.5	719.5	100.0%	20,659	0	0	0	100%	20,659	2,201,606
Jul-07	744.0	744.0	100.0%	19,389	0	0	0	100%	19,389	2,220,995
Aug-07	696.0	696.0	100.0%	16,354	0	0	0	100%	16,354	2,237,349
Sep-07	720.0	720.0	100.0%	15,320	0	0	0	100%	15,320	2,252,669
Oct-07	744.0	744.0	100.0%	14,409	0	0	0	100%	14,409	2,267,078
Nov-07	720.0	720.0	100.0%	17,388	0	0	0	100%	17,388	2,284,466
Dec-07	744.0	739.0	99.3%	17,002	0	0	0	100%	17,002	2,301,468
Jan-08	742.0	684.0	92.2%	17,115	0	0	0	100%	17,115	2,318,583
Feb-08	695.3	611.8	88.0%	13,581	0	0	0	100%	13,581	2,332,164
Mar-08	744.0	742.0	99.7%	13,277	0	0	0	100%	13,277	2,345,441
Apr-08	720.0	717.0	99.6%	12,518	0	0	0	100%	12,518	2,357,959

NIROP FRIDLEY
Groundwater Treatment Facility (GWTF)

	OPERATIONS (hrs)			WATER DISCHARGED (thousands of gallons)					WATER TREATED (thousands of gallons)	
Month	Available	Operating	On-stream factor	to Storm	to Sanitary	Untreated to Sanitary	Total to Sanitary	% Storm	Monthly	Cumulative
May-08	718.0	692.0	96.4%	15,430	0	0	0	100%	15,430	2,373,389
Jun-08	333.5	333.5	100.0%	6,523	0	0	0	100%	6,523	2,379,912
Jul-08	719.0	719.0	100.0%	15,762	0	0	0	100%	15,762	2,395,674
Aug-08	729.3	729.3	100.0%	20,183	0	0	0	100%	20,183	2,415,857
Sep-08	720.0	720.0	100.0%	19,632	0	0	0	100%	19,632	2,435,489
Oct-08	737.0	737.0	100.0%	19,818	0	0	0	100%	19,818	2,455,307
Nov-08	662.0	662.0	100.0%	18,191	0	0	0	100%	18,191	2,473,498
Dec-08	744.0	744.0	100.0%	20,926	0	0	0	100%	20,926	2,494,424
Jan-09	741.0	741.0	100.0%	20,301	44	0	44	99.8%	20,301	2,514,725
Feb-09	672.0	672.0	100.0%	17,546	0	0	0	100%	17,546	2,532,271
Mar-09	711.9	711.2	99.9%	17,766	0	0	0	100%	17,766	2,550,037
Apr-09	709.0	705.6	99.5%	16,434	0	0	0	100%	16,434	2,566,471
May-09	739.8	739.8	100.0%	23,663	0	0	0	100%	23,663	2,590,134
Jun-09	719.8	719.8	100.0%	21,234	0	0	0	100%	21,234	2,611,368
Jul-09	744.0	744.0	100.0%	21,846	0	0	0	100%	21,846	2,633,214
Aug-09	744.0	744.0	100.0%	20,933	0	0	0	100%	20,933	2,654,147
Sep-09	697.2	697.2	100.0%	16,585	0	0	0	100%	16,585	2,670,732
Oct-09	743.5	743.5	100.0%	18,919	0	0	0	100%	18,919	2,689,651
Nov-09	720.0	720.0	100.0%	19,768	0	0	0	100%	19,768	2,709,419
Dec-09	744.0	744.0	100.0%	18,162	0	0	0	100%	18,162	2,727,581
Jan-10	740.3	740.3	100.0%	19,542	0	0	0	100%	19,542	2,747,123
Feb-10	672.0	658.0	97.9%	14,805	0	0	0	100%	14,805	2,761,928
Mar-10	744.0	744.0	100.0%	14,596	0	0	0	100%	14,596	2,776,524
Apr-10	720.0	720.0	100.0%	15,598	0	0	0	100%	15,598	2,792,122
May-10	744.0	742.5	99.8%	18,090	0	0	0	100%	18,090	2,810,212
Jun-10	720.0	697.0	96.8%	10,717	0	0	0	100%	10,717	2,820,929
Jul-10	744.0	722.2	97.1%	12,254	0	0	0	100%	12,254	2,833,183
Aug-10	694.5	404.0	58.2%	3,789	0	0	0	100%	3,789	2,836,972
Sep-10	712.0	700.0	98.3%	12,552	0	0	0	100%	12,552	2,849,524
Oct-10	690.6	690.6	100.0%	12,926	0	0	0	100%	12,926	2,862,450
Nov-10	719.5	716.0	99.5%	15,466	0	0	0	100%	15,466	2,877,916
Dec-10	737.0	721.5	97.9%	15,855	0	0	0	100%	15,855	2,893,771
Jan-11	744.0	744.0	100.0%	17,199	0	0	0	100%	17,199	2,910,970
Feb-11	667.0	665.0	99.7%	16,551	0	0	0	100%	16,551	2,927,521

Note: Available hours are 24 hours per day, less scheduled down time and power outages.

* Monthly flow incorrectly reported for Jul-04 through Dec-04 - corrected January 2005 using the corrected estimate for AT-10 monthly flow.

NIROP FRIDLEY
Ground Water Treatment Facility (GWTF)

Date	Electrical Meter Readings (kW·h)					Monthy Usage
	MCC #1	MCC #2	Wells 2, 3A, 5A, 5B	Well 1A	Well 4	
2/1/2000	57,305	620,300				38,046
3/1/2000	59,597	656,054				36,133
3/9/2000	60,348	667,580	18,260	3,284	2,312	65,029
4/3/2000	63,080	704,113	38698	6043	4879	74,067
5/1/2000	66,067	746,920	60,940	9,238	7,715	81,545
6/1/2000	68,972	793,455	86495	12728	10775	66,128
7/1/2000	71,562	840,441	110,243	16,307		
7/6/2000					13701	13,701
8/1/2000	73,881	881,304	130,691	19,559	16,686	72,336
9/1/2000	76,316	924,799	152695	22976	17671	67,877
10/2/2000	78,561	964,802	172,714	26,079	20,178	
11/1/2000	80,952	7,402	195655	29408	22454	89,927
12/4/2000	83,561	56,966	225,897	33,105	26,269	81,706
1/2/2001	85,851	101,872	254750	36270	28761	72,935
2/1/2001	88,106	143,918	282,532	37,122	28,761	83,944
3/1/2001	90,240	190,303	314000	41079	28761	66,663
4/3/2001	92,677	230,575	335,297	43,736	28,761	65,567
5/1/2001	94,779	269,617	357244	46212	28761	
6/5/2001	97,821	304,746	*	*	*	38,108
7/2/2001	102,175	338,500	*	*	*	44,802
8/2/2001	106,592	378,885	*	*	*	37,804
9/12/2001	111,321	411,960	*	*	*	13,663
10/18/2001	112,956	423,988	*	*	*	29,471
11/1/2001	117,010	449,405	*	*	*	68,542
12/4/2001	126,457	508,500	*	*	*	60,932
1/2/2002	134,884	561,005	*	*	*	56,801
2/1/2002	142,948	609,742	*	*	*	55,300
3/1/2002	150,583	657,407	*	*	*	64,231
4/1/2002	159,332	712,889	*	*	*	59,291
5/1/2002	167,808	763,704	*	*	*	63,448
6/3/2002	176,272	818,688	*	*	*	43,974
7/1/2002	182,246	856,688	*	*	*	45,609
8/1/2002	188,404	896,139	*	*	*	60,074
9/3/2002	196,255	948,362	*	*	*	44,067
10/1/2002	202,142	986,542	*	*	*	60,158
11/1/2002	209,581	1,039,261	*	*	*	60,538
12/2/2002	216,632	1,092,748	*	*	*	
1/1/2003	223,233	0	*	*	*	
2/1/2003	224,233	1,146,792	*	*	*	7,827
3/19/2003	227,523	1,151,329	*	*	*	22,891
4/3/2003	230,589	1,171,154	*	*	*	32,058
5/1/2003	235,275	1,198,526	*	*	*	18,373
6/4/2003	237,675	1,214,499	*	*	*	20,360
7/1/2003	240,411	1,232,123	*	*	*	42,930
8/1/2003	246,351	1,269,113	*	*	*	49,909
9/2/2003	253,306	1,312,067	*	*	*	52,166
10/1/2003	260,662	1,356,877	*	*	*	58,962
11/3/2003	268,788	1,407,713	*	*	*	57,373
12/1/2003	276,592	1,457,282	*	*	*	67,477
1/2/2004	285,175	1,516,176	*	*	*	67,278
2/2/2004	293,559	1,575,070	*	*	*	60,542
3/1/2004	301,245	1,627,926	*	*	*	31,187
4/1/2004	305,283	1,655,075	*	*	*	1,037
5/3/2004	305,515	1,655,880	*	*	*	51,931
6/1/2004	312,129	1,701,197	*	*	*	47,852
7/1/2004	318,012	1,743,166	*	*	*	60,764
8/3/2004	326,133	1,795,809	*	*	*	55,312

NIROP FRIDLEY
Ground Water Treatment Facility (GWTF)

Date	Electrical Meter Readings (kW·h)					Monthy Usage
	MCC #1	MCC #2	Wells 2, 3A, 5A, 5B	Well 1A	Well 4	
9/1/2004	335,039	1,842,215	*	*	*	52,307
10/1/2004	340,422	1,889,139	*	*	*	53,798
11/2/2004	347,296	1,936,063	*	*	*	64,045
12/1/2004	354,514	1,992,890	*	*	*	64,887
1/5/2005	362,574	49,717	*	*	*	48,313
2/1/2005	368,114	92,490	*	*	*	56,517
3/1/2005	374,689	142,432	*	*	*	35,669
4/1/2005	381,858	170,932	*	*	*	32,506
5/11/2005	384,388	200,908	*	*	*	37,857
6/2/2005	389,382	233,771	*	*	*	53,851
7/1/2005	395,908	281,096	*	*	*	55,772
8/1/2005	402,786	329,990	*	*	*	58,530
9/1/2005	410,054	381,252	*	*	*	59,756
10/4/2005	416,742	434,320	*	*	*	54,337
11/1/2005	423,117	482,282	*	*	*	59,439
12/1/2005	429,602	535,236	*	*	*	58,139
1/3/2006	437,032	585,945	*	*	*	64,273
2/3/2006	444,929	642,321	*	*	*	59,745
3/3/2006	451,966	695,029	*	*	*	59,447
4/4/2006	458,470	747,972	*	*	*	52,154
5/2/2006	464,407	794,189	*	*	*	56,066
6/1/2006	470,107	844,555	*	*	*	67,078
7/7/2006	476,656	905,084	*	*	*	75,362
8/17/2006	483,201	973,901	*	*	*	28,651
9/1/2006	485,579	174	*	*	*	60,559
10/2/2006	490,846	55,466	*	*	*	64,783
11/16/2006	497,232	113,863	*	*	*	30,896
12/12/2006	501,656	140,335	*	*	*	41,005
1/2/2007	507,345	175,651	*	*	*	89,453
2/14/2007	519,226	253,223	*	*	*	60,625
3/15/2007	526,775	306,299	*	*	*	37,019
4/1/2007	531,435	338,658	*	*	*	59,380
5/1/2007	538,780	390,693	*	*	*	60,309
6/2/2007	546,435	443,347	*	*	*	57,976
7/2/2007	552,240	495,518	*	*	*	54,945
8/1/2007	558,047	544,656	*	*	*	56,900
9/4/2007	563,999	595,604	*	*	*	48,947
10/1/2007	568,907	639,643	*	*	*	55,912
11/1/2007	574,269	690,193	*	*	*	61,551
12/3/2007	580,906	745,107	*	*	*	58,075
1/2/2008	587,234	796,854	*	*	*	61,758
2/1/2008	593,878	851,968	*	*	*	56,961
3/6/2008	601,457	901,350	*	*	*	47,128
4/1/2008	607,103	942,832	*	*	*	51,563
5/2/2008	613,973	987,525	*	*	*	45,409
6/2/2008	619,382	27,525	*	*	*	23,755
7/1/2008	621,730	48,932	*	*	*	57,458
8/1/2008	627,904	100,216	*	*	*	59,836
9/2/2008	634,818	153,138	*	*	*	57,157
10/4/2008	641,270	203,843	*	*	*	61,110
11/3/2008	648,196	258,027	*	*	*	58,512
12/1/2008	655,158	309,577	*	*	*	71,027

NIROP FRIDLEY
Ground Water Treatment Facility (GWTF)

Date	Electrical Meter Readings (kW·h)					Monthy Usage
	MCC #1	MCC #2	Wells 2, 3A, 5A, 5B	Well 1A	Well 4	
1/2/2009	663,755	372,007	*	*	*	69,361
2/2/2009	672,125	432,998	*	*	*	62,234
3/2/2009	679,788	487,569	*	*	*	61,618
4/1/2009	687,315	541,660	*	*	*	63,015
5/1/2009	694,461	597,529	*	*	*	63,751
6/1/2009	701,440	654,301	*	*	*	60,286
7/1/2009	708,069	707,958	*	*	*	65,088
8/3/2009	715,267	765,848	*	*	*	57,140
9/1/2009	721,611	816,644	*	*	*	56,282
10/1/2009	727,548	866,989	*	*	*	65,845
11/2/2009	734,666	925,716	*	*	*	60,372
12/1/2009	741,891	978,863	*	*	*	77,030
1/1/2010	750,050	1,047,734	*	*	*	63,139
2/1/2010	757,037	1,103,886	*	*	*	61,079
3/1/2010	763,509	1,158,493	*	*	*	69,431
4/1/2010	769,960	1,221,473	*	*	*	59,638
5/3/2010	775,813	1,275,258	*	*	*	54,143
6/1/2010	780,680	1,324,534	*	*	*	51,279
7/1/2010	784,369	1,372,124	*	*	*	75,167
8/2/2010	789,289	1,442,371	*	*	*	8,482
9/1/2010	791,567	1,448,575	*	*	*	55,237
10/1/2010	796,016	1,499,363	*	*	*	61,303
11/1/2010	800,411	1,556,271	*	*	*	60,565
12/1/2010	806,672	1,610,575	*	*	*	68,226
1/3/2011	813,611	1,671,862	*	*	*	64,951
2/1/2011	820,001	1,730,423	*	*	*	58,883
3/1/2011	825,935	1,783,372	*	*	*	

* Electrical metering for the extraction wells runs through MCC #1

- The electrical meter in the main treatment area was misread on 1/1/03, thus it was not reset. December electricity usage wa estimated to be the same as November 2002.

^ The electrical meter in the main treatment area had reset after the scheduled power shut-down. October 2004 electricity usage for MCC#2 was estimated to be the same as September 2004.

+ - electrical readings were not obtained on December 1, 2004, therefore electrical usage for November was estimated to be similar to October 2004.

Figures

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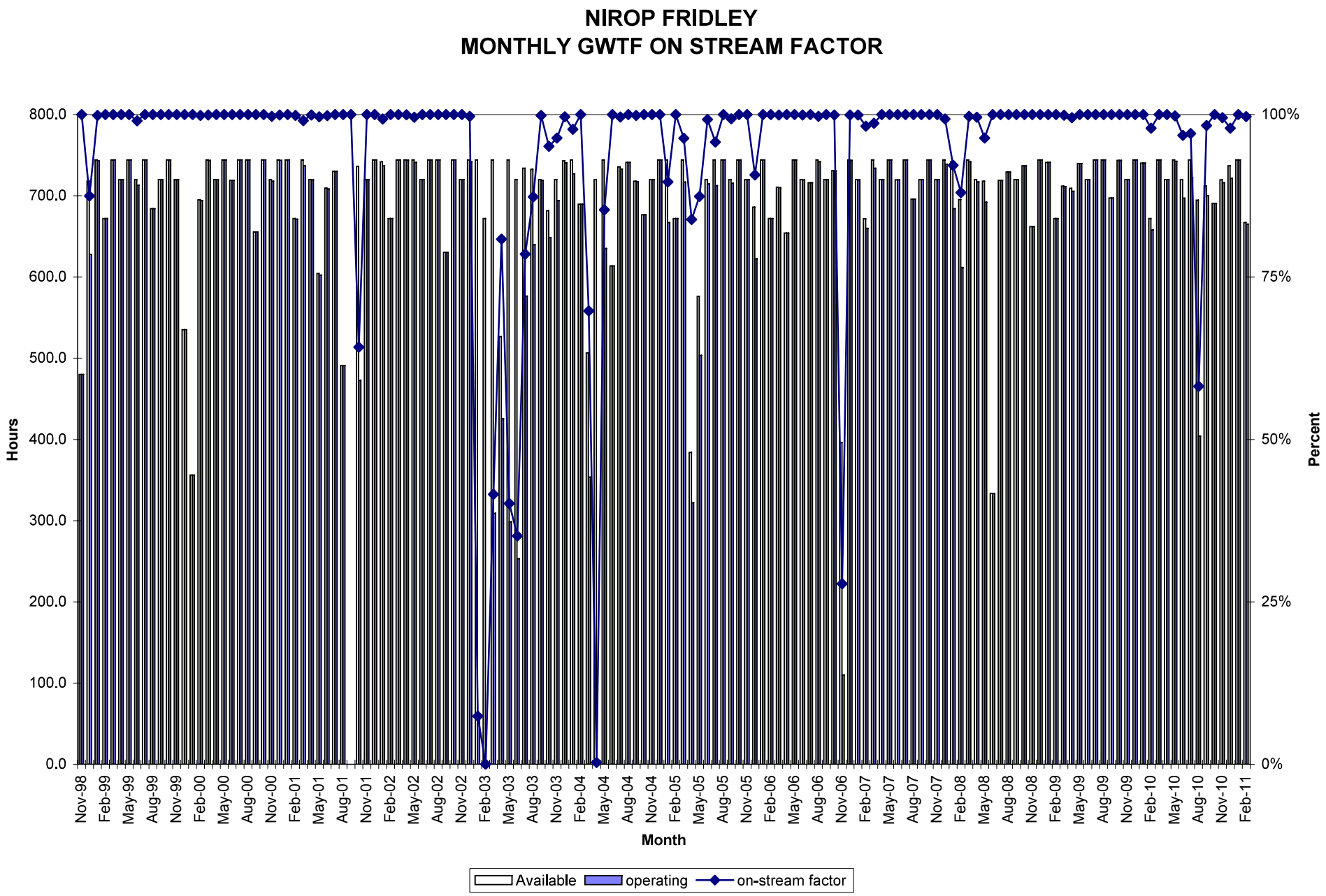
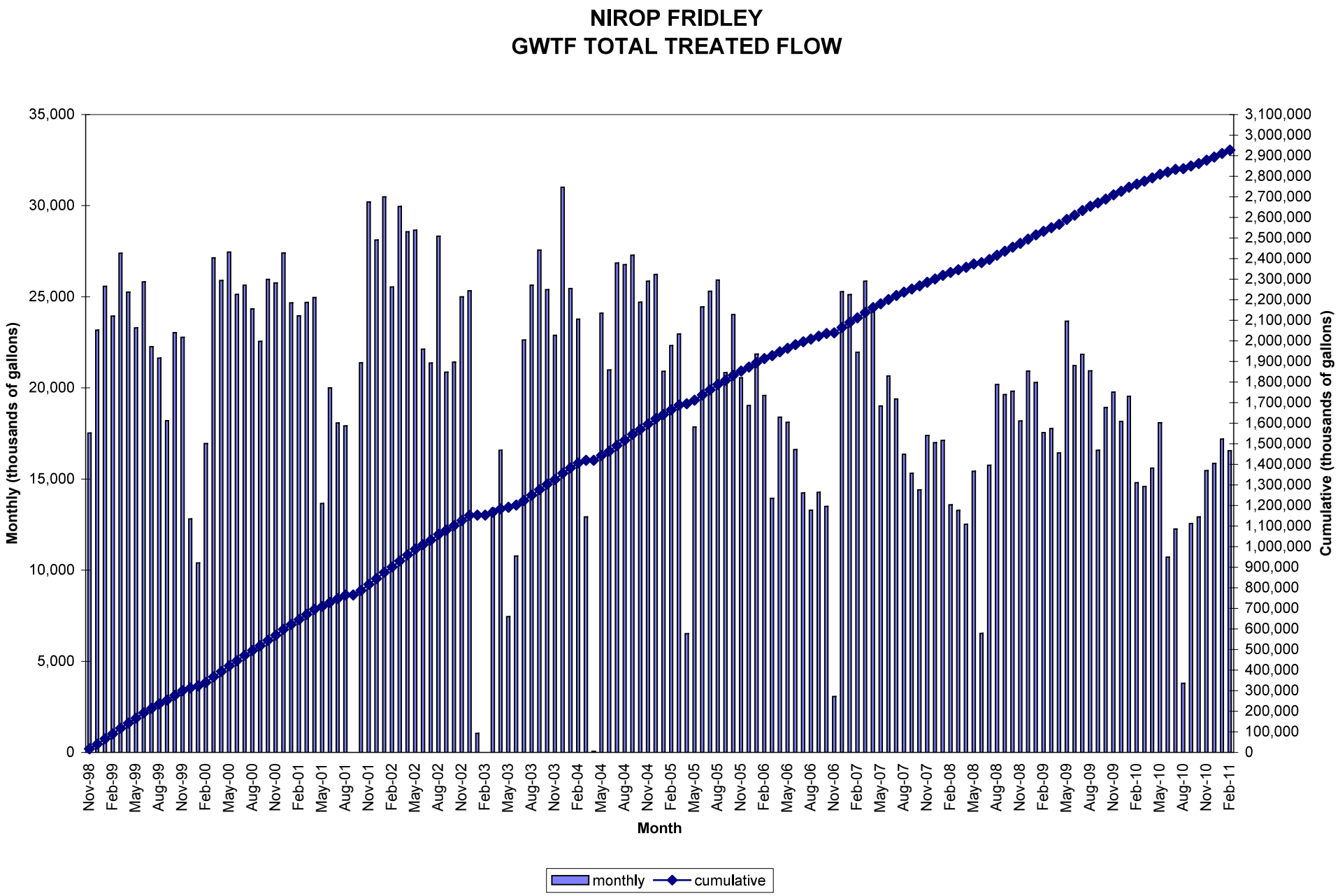


Docs 58644

Figure 1



Docs 58644

Figure 2

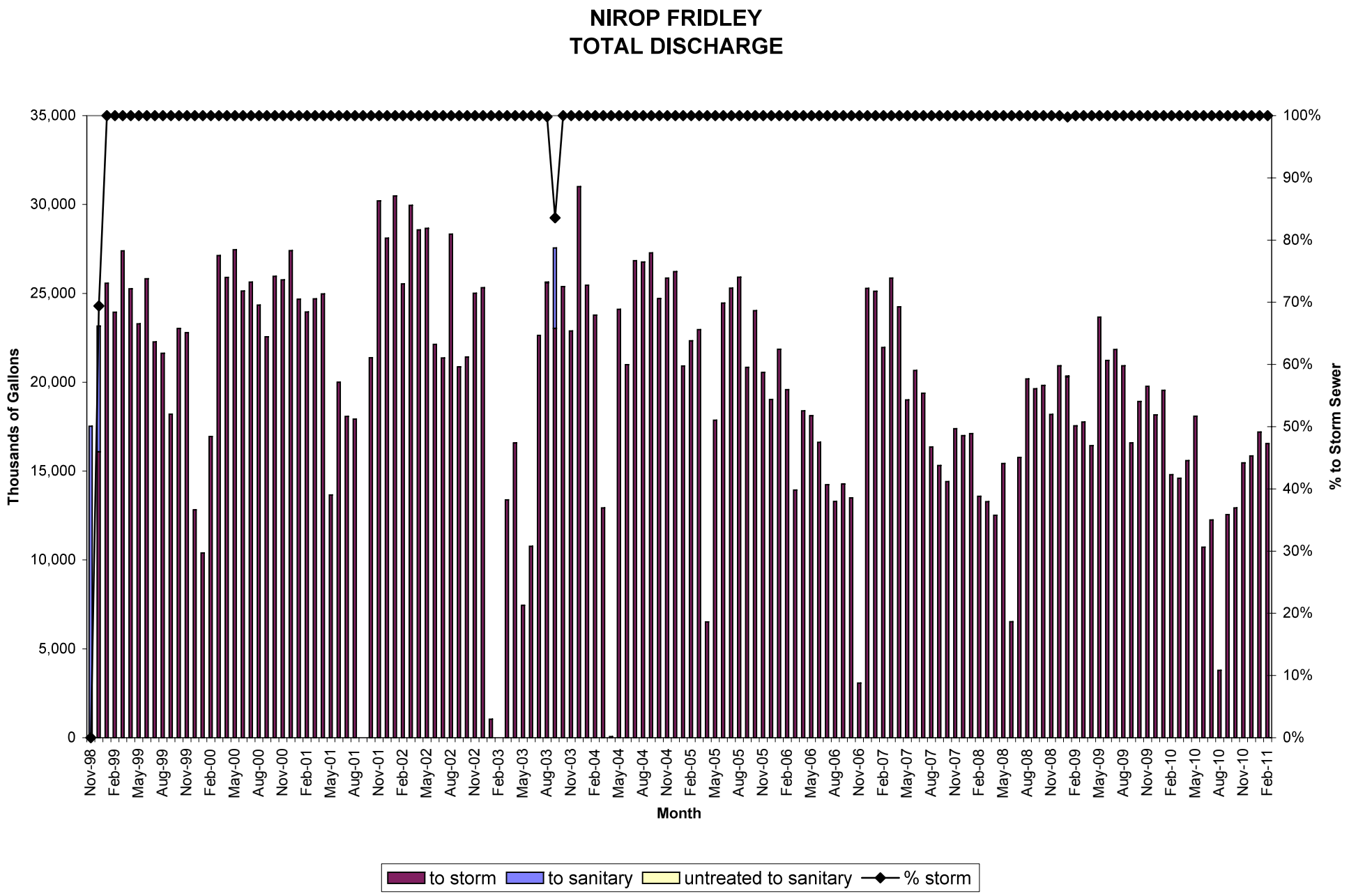


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Figure 3

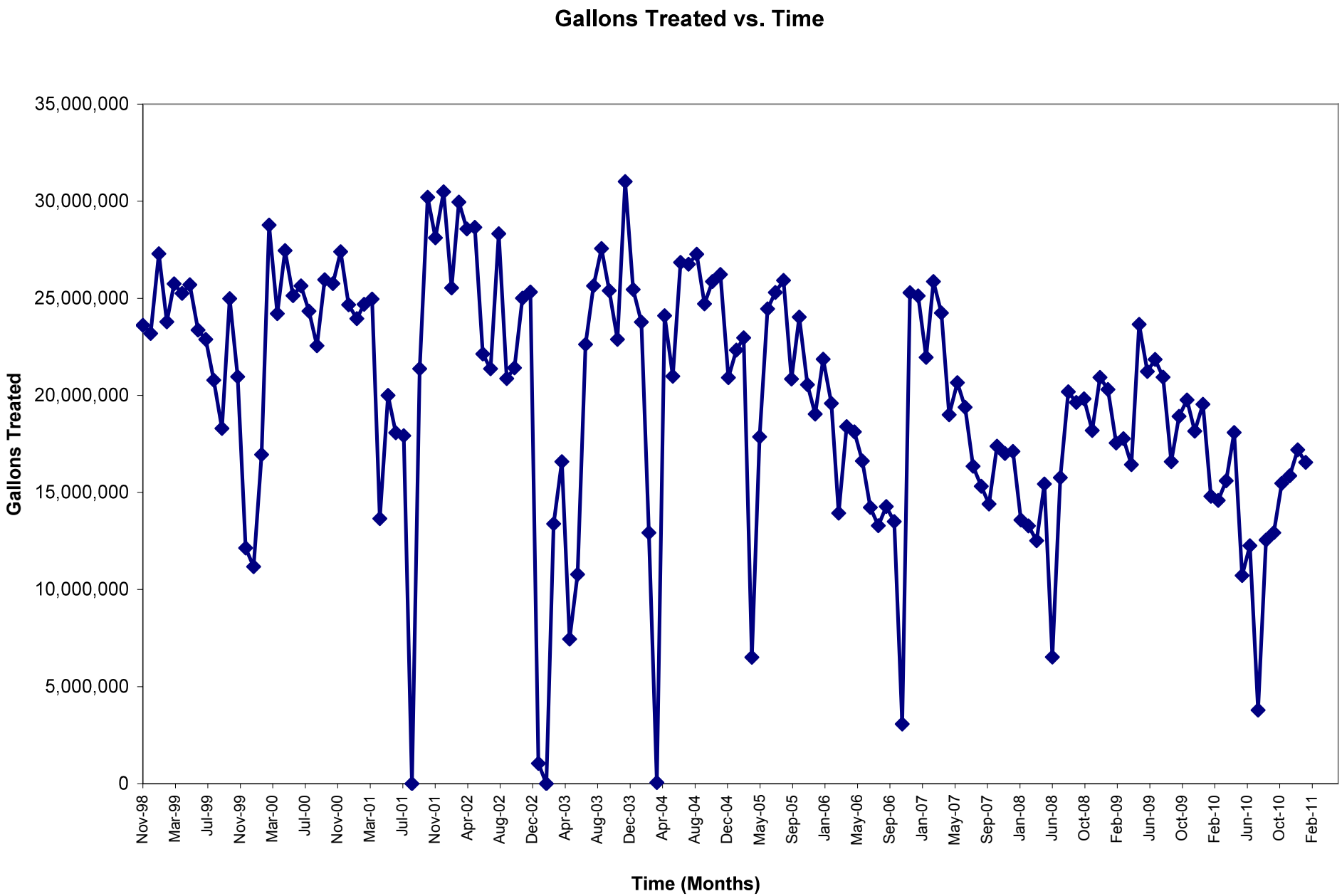

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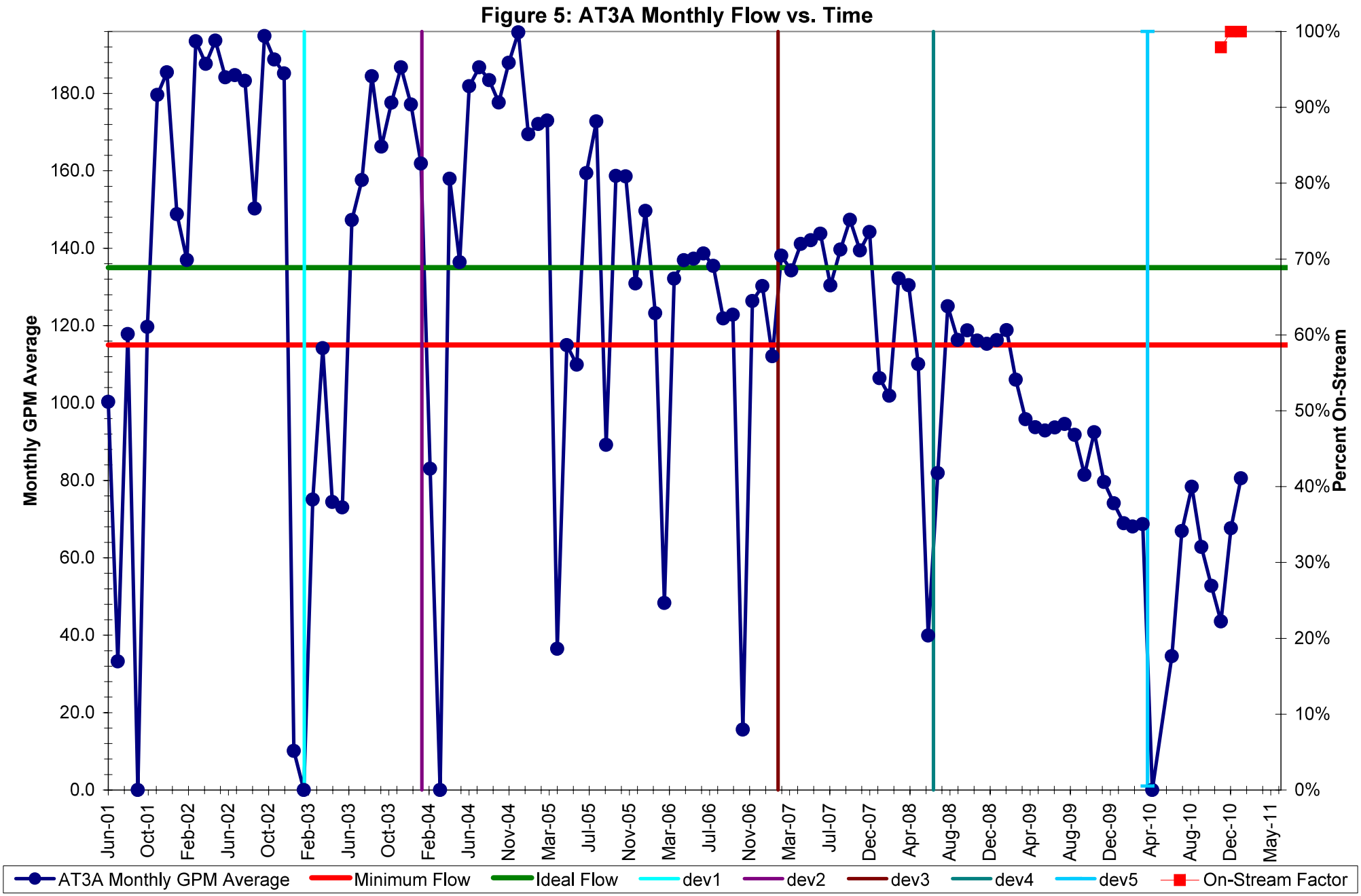
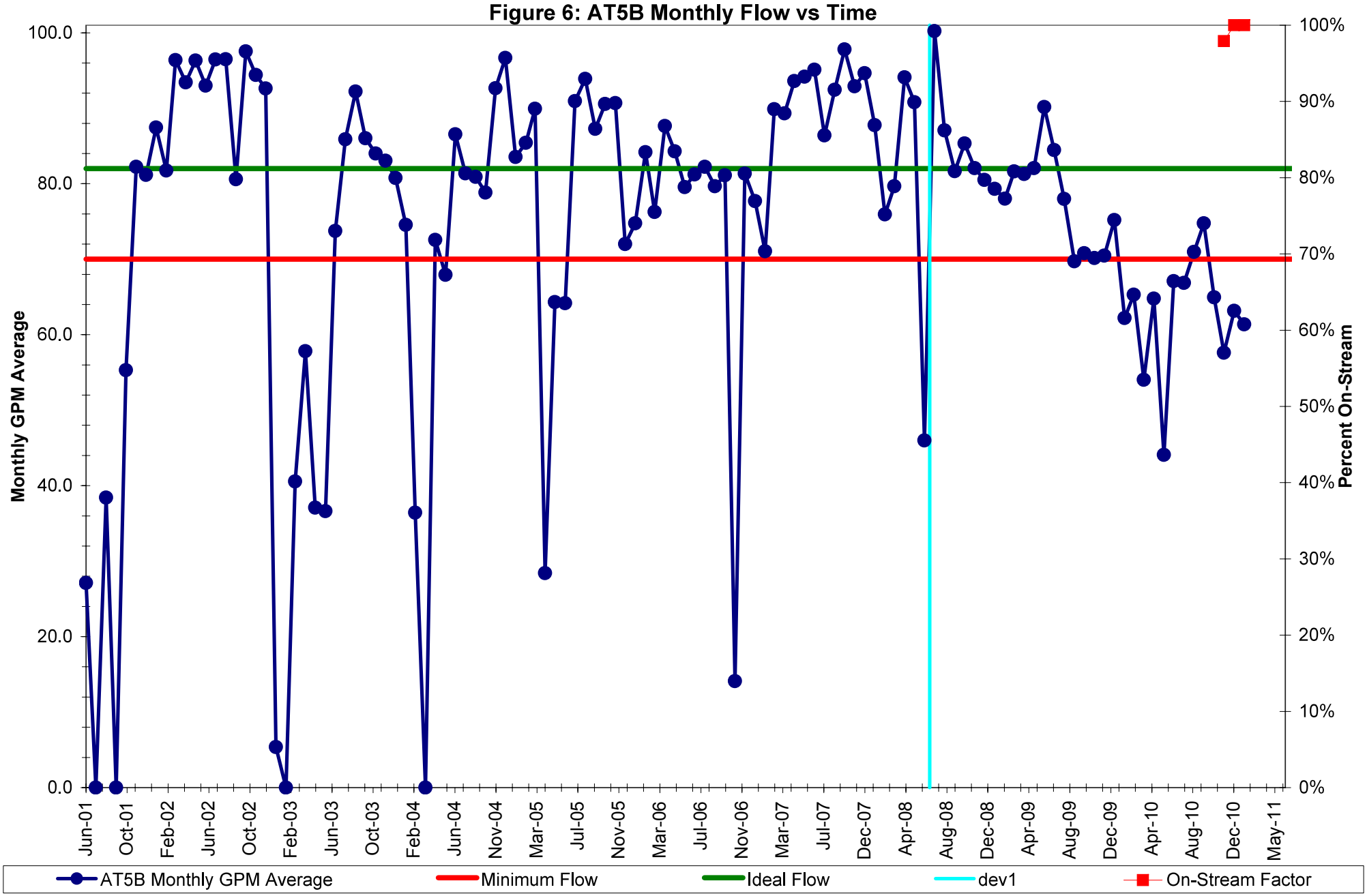
Figure 4



* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.



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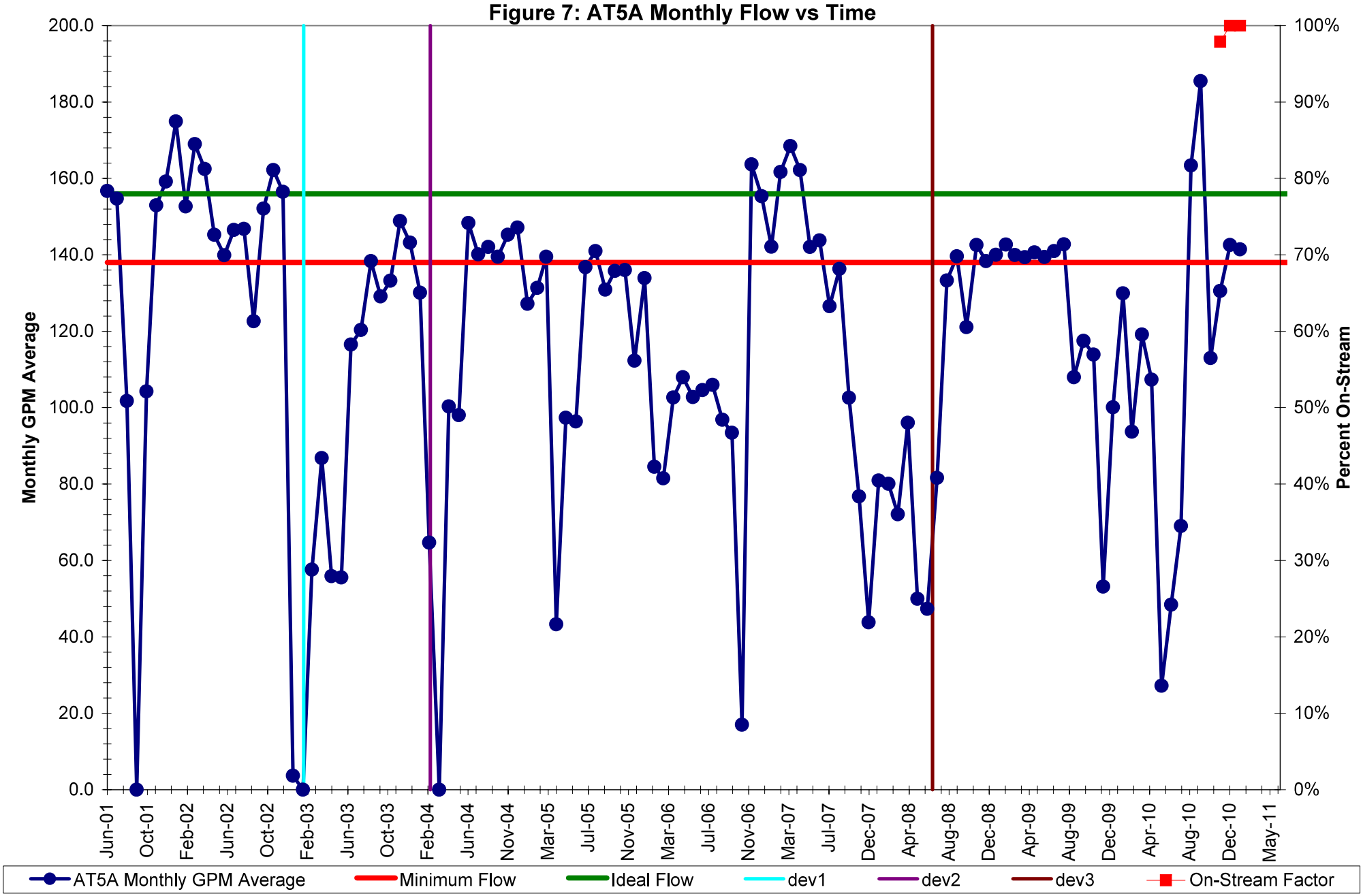

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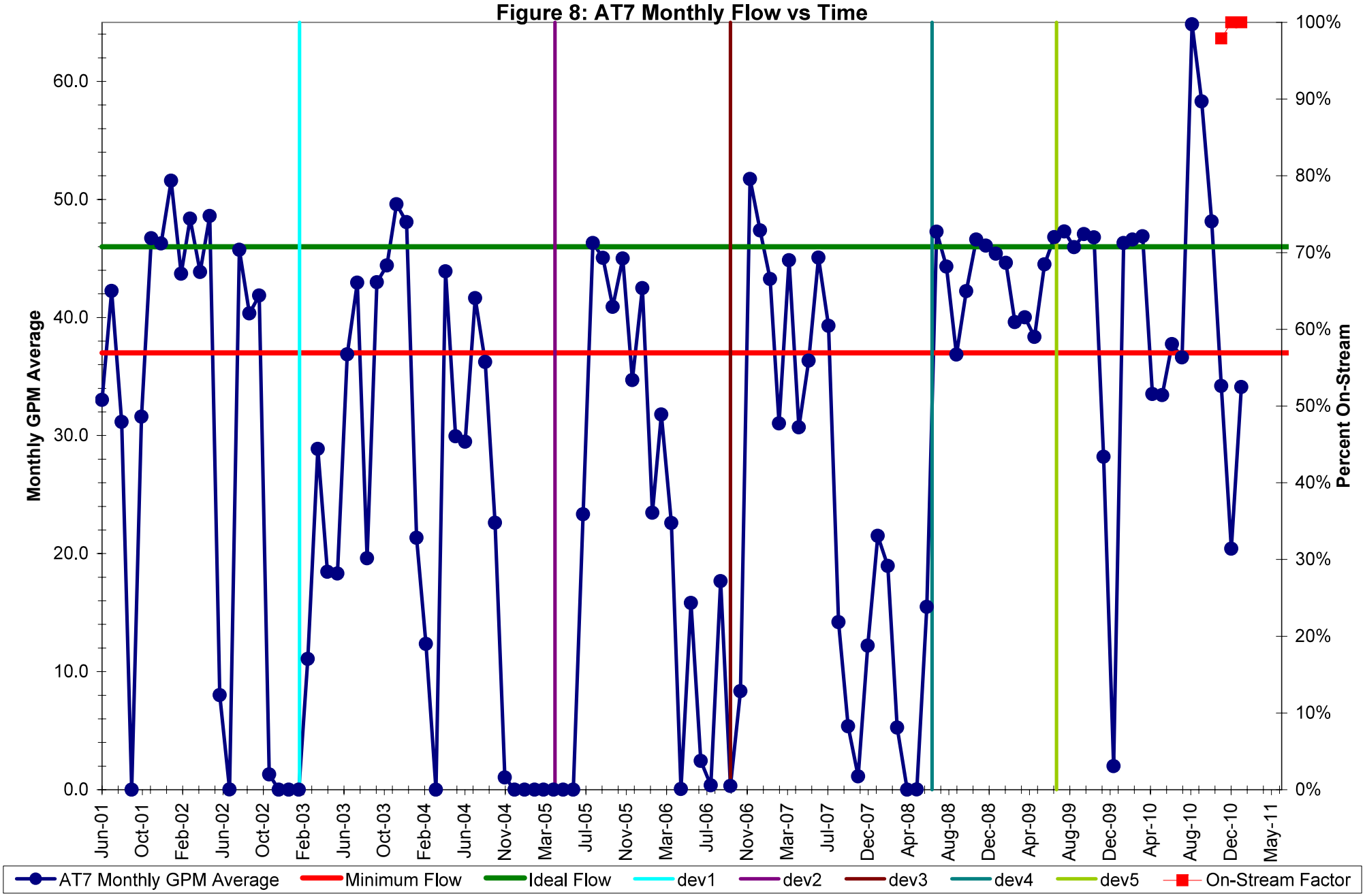

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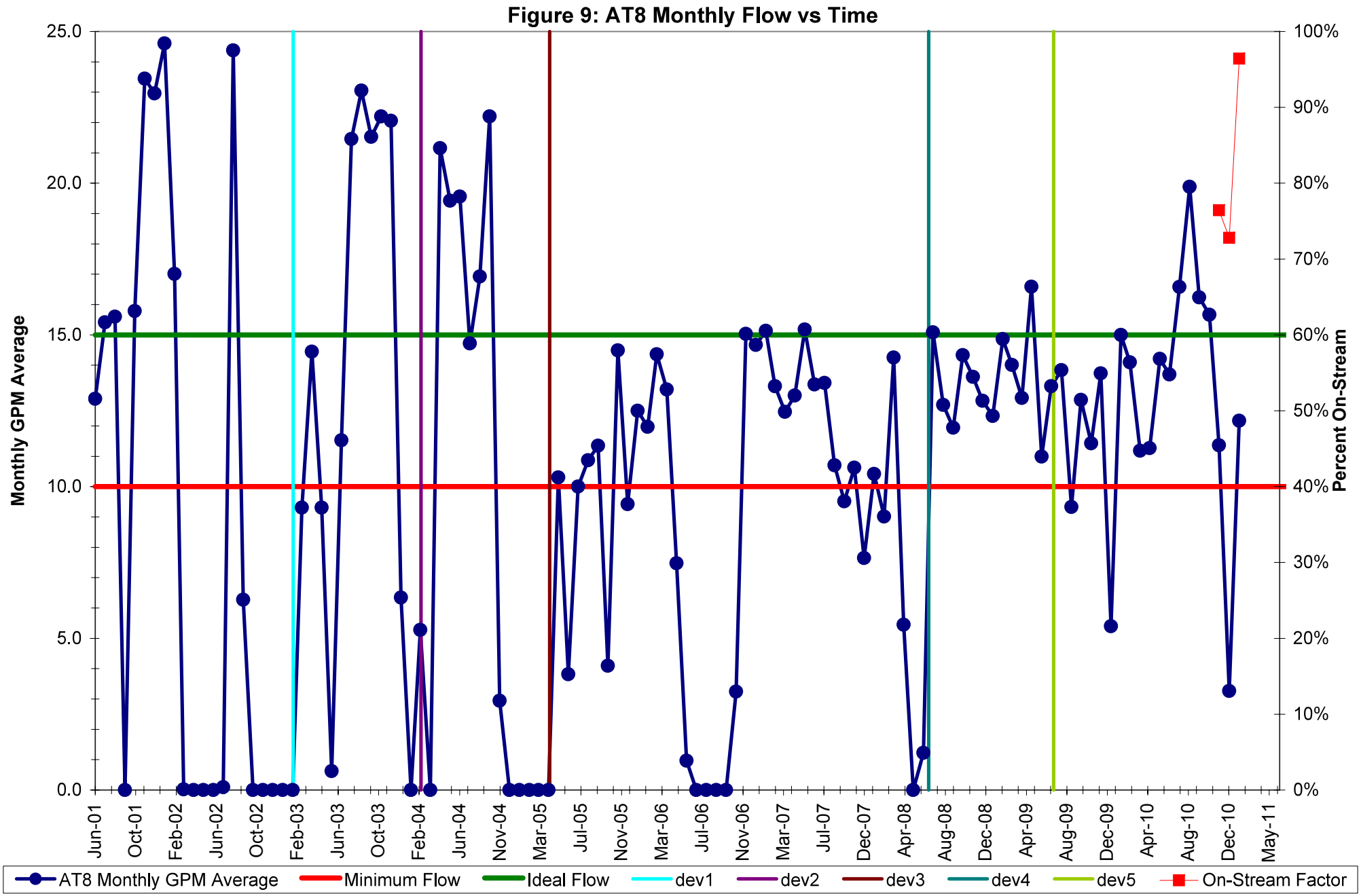

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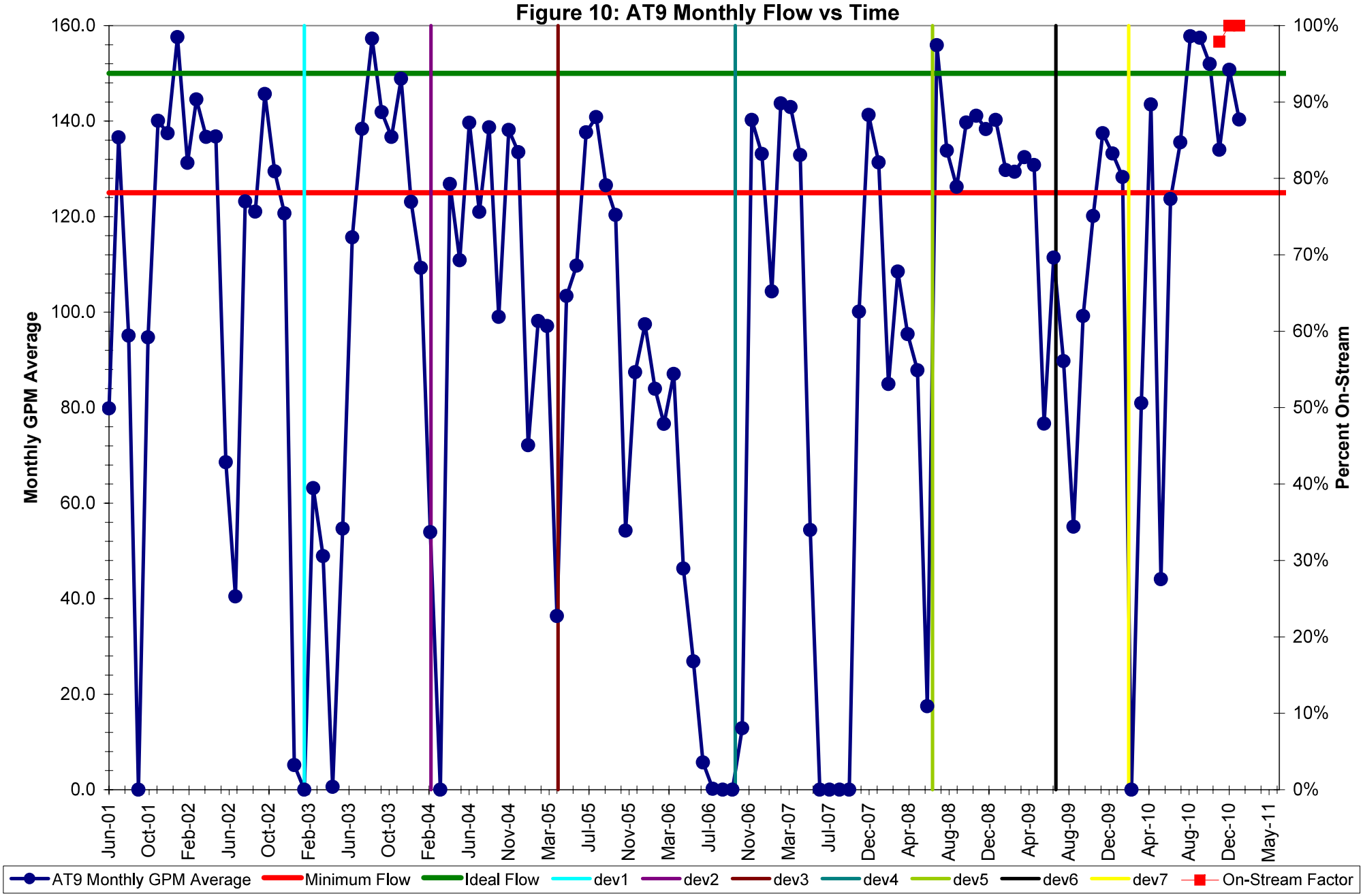

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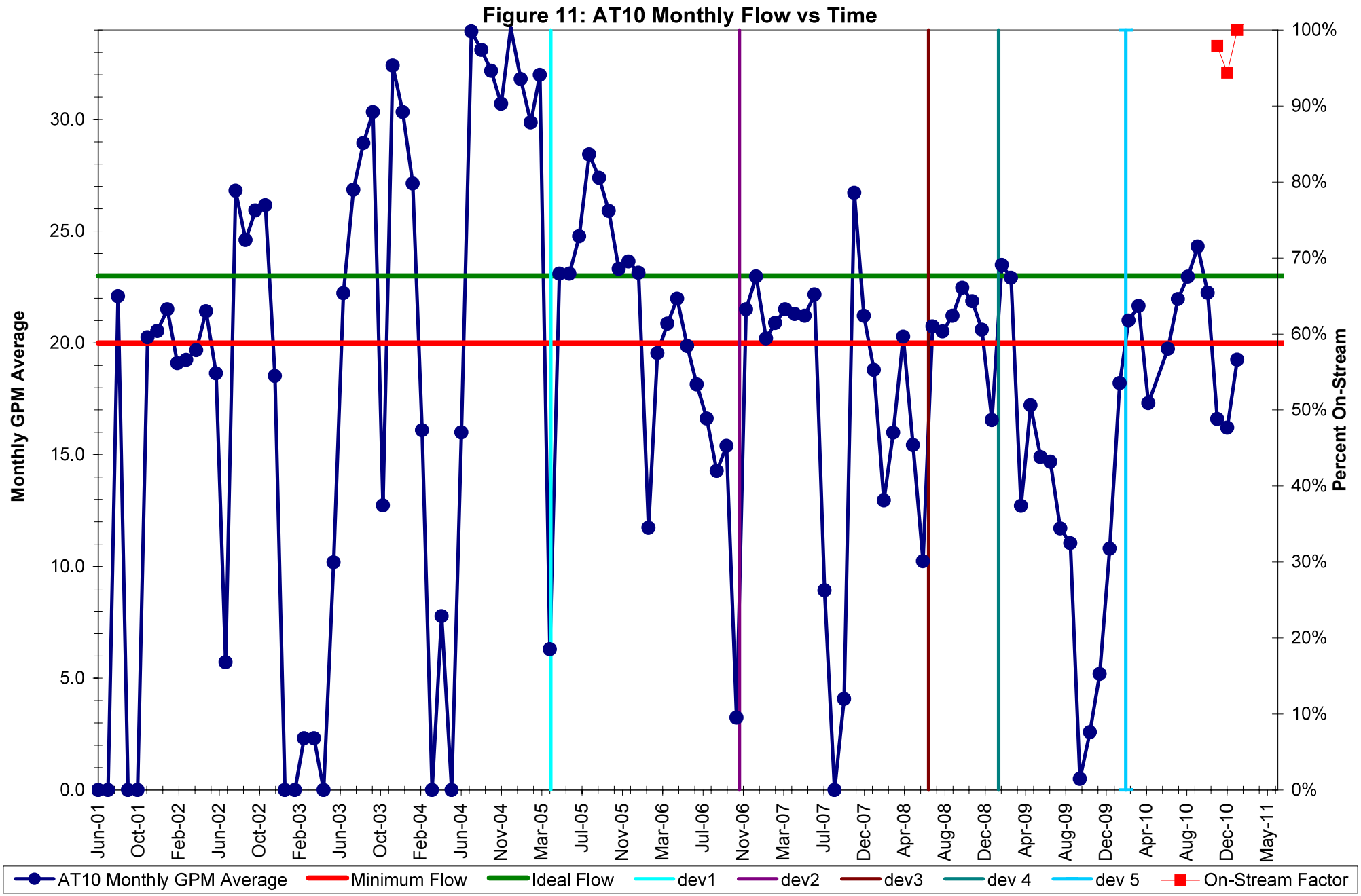

* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.

Monthly Project Status Report March 2011
Facility Maintenance
Naval Industrial Reserve Ordnance Plant - Fridley, Minnesota
Prepared by Bay West, Inc.

EMAC Contract No. N40083-06-D-4015, Task Order #0005

SYSTEM OVERVIEW

- The GWTF was in operation for 744 hours during the month of March 2011.
- The on-stream factor for March was 100%. The on-stream factor is the actual operation time divided by the available operation time.
- The system processed an estimated 17,827,000 gallons of groundwater in March, for a total of 2,995,348,000 gallons to date.
- Electrical use was approximately 68,939 kilowatt-hours (kWh) for March 2011.
- Approximately 11,539 pounds of trichloroethylene (TCE) have been removed from the aquifer since groundwater treatment system start-up in 1999. Approximately 37,188 pounds of TCE have been removed from the aquifer since groundwater extraction activities began in 1992.

SCHEDULED MAINTENANCE

- Visually inspected flow meters and level probes for material buildup and proper operation.
- Tested the four safety showers/eyewash stations to assure adequate performance.
- Lubricated blower motors, influent pumps, and effluent pumps.
- Collected extraction well water levels on a weekly basis.
- Alternated pumps P-101A/101B monthly.
- Measured pump P-101A bearing temperature. All values were within normal operation range.
- Alternated pumps P-301A/301B weekly.
- Visually inspected the inside of extraction well piping of AT-5A, AT-5B, and AT-7.

PROBLEMS AND SOLUTIONS

- Bay West has executed a Subcontract to improve electronic data transmission and accessibility at NIROP. The scope of services and work performance period are being re-evaluated in light of current plans to install three new extraction wells and abandon AT-3A.
- The pumping rate for AT-5B was below the minimum of 70 gpm in the month of March. Bay West pigged the extraction line between the wellhead and Building 52/53 on February 17, 2011 to remove debris that had accumulated on the pipe wall. While some debris was removed by the pigging process, the pressure loss in the extraction pipe has returned to its pre-pigging level. This data suggests the debris is a harder material that is not easily removed by pigging. Bay West is performing an acid cleaning event of the feed pipe between Building 52/53 and the groundwater treatment facility in May. Bay West will evaluate the utility of this cleaning approach and the efficacy of implementing it for the groundwater extraction lines.
- Extraction well AT-7 was slightly below the minimum flow rate of 37 gpm for the month of March. Based on the pipe inspection and pressure loss data, the extraction well line, which includes the pump intake and all extraction well piping, is fouled with debris. Bay West has scheduled maintenance with well driller EH Renner.

Well Performance Summary

Well	Average Monthly Flow Rate (GPM) (Available)	Average Monthly Flow Rate (GPM) (Operational)	Ideal Flow Rate (GPM)	% of Ideal Flow (Available)	% of Ideal Flow (Operational)	Minimum Flow Rate (GPM)	Available Hours of Operation	Operating Hours	On-Stream Factor (Available)
AT-3A	67.6	67.6	135	50.07%	50.07%	115	744	744	100.00%
AT-5A	138.7	138.7	156	88.91%	88.91%	138	738	738	100.00%
AT-5B	61.1	61.4	82	74.51%	74.88%	70	741	741	100.00%
AT-7	34.8	34.8	46	75.65%	75.65%	37	740	740	100.00%
AT-8	13.0	13.5	15	86.67%	90.00%	10	744	720	96.77%
AT-9	131.2	131.2	150	87.47%	87.47%	125	744	744	100.00%
AT-10	21.4	21.4	23	93.04%	93.04%	20	740	740	100.00%

TABLES

1. Groundwater Treatment Facility Operations
2. Electrical Meter Readings

FIGURES

1. Monthly GWTF On Stream Factor
2. GWTF Total Treated Flow
3. Total Discharge
4. Gallons Treated vs. Time
5. AT-3A Monthly Flow vs. Time
6. AT-5B Monthly Flow vs. Time
7. AT-5A Monthly Flow vs. Time
8. AT-7 Monthly Flow vs. Time
9. AT-8 Monthly Flow vs. Time
10. AT-9 Monthly Flow vs. Time
11. AT-10 Monthly Flow vs. Time

Tables

NIROP FRIDLEY
Groundwater Treatment Facility (GWTF)

Month	OPERATIONS (hrs)			WATER DISCHARGED (thousands of gallons)					WATER TREATED (thousands of gallons)	
	Available	Operating	On-stream factor	to Storm	to Sanitary	Untreated to Sanitary	Total to Sanitary	% Storm	Monthly	Cumulative
Nov-98	480.0	480.0	100.0%	0	17,524	0	17,524	0%	17,524	17,524
Dec-98	718.0	628.0	87.5%	16,078	7,087	0	7,087	69%	23,165	40,689
Jan-99	744.0	743.0	99.9%	25,571	0	0	0	100%	25,571	66,260
Feb-99	672.0	672.0	100.0%	23,938	0	0	0	100%	23,938	90,198
Mar-99	744.0	744.0	100.0%	27,394	0	0	0	100%	27,394	117,592
Apr-99	720.0	720.0	100.0%	25,254	0	0	0	100%	25,254	142,846
May-99	744.0	744.0	100.0%	23,291	0	0	0	100%	23,291	166,137
Jun-99	720.0	713.0	99.0%	25,823	0	0	0	100%	25,823	191,960
Jul-99	744.0	744.0	100.0%	22,266	0	0	0	100%	22,266	214,226
Aug-99	684.0	684.0	100.0%	21,634	0	0	0	100%	21,634	235,860
Sep-99	720.0	720.0	100.0%	18,205	0	0	0	100%	18,205	254,065
Oct-99	744.0	744.0	100.0%	23,029	0	0	0	100%	23,029	277,094
Nov-99	720.0	720.0	100.0%	22,783	0	0	0	100%	22,783	299,877
Dec-99	535.0	535.0	100.0%	12,818	0	0	0	100%	12,818	312,695
Jan-00	356.0	356.0	100.0%	10,400	0	0	0	100%	10,400	323,095
Feb-00	695.0	694.0	99.9%	16,944	0	0	0	100%	16,944	340,039
Mar-00	744.0	743.5	99.9%	27,131	0	0	0	100%	27,131	367,170
Apr-00	720.0	720.0	100.0%	25,899	0	0	0	100%	25,899	393,069
May-00	744.0	744.0	100.0%	27,458	0	0	0	100%	27,458	420,527
Jun-00	718.9	718.9	100.0%	25,136	0	0	0	100%	25,136	445,663
Jul-00	744.0	744.0	100.0%	25,637	0	0	0	100%	25,637	471,300
Aug-00	744.0	744.0	100.0%	24,341	0	0	0	100%	24,341	495,641
Sep-00	655.5	655.5	100.0%	22,559	0	0	0	100%	22,559	518,200
Oct-00	744.0	744.0	100.0%	25,955	0	0	0	100%	25,955	544,155
Nov-00	720.0	718.0	99.7%	25,759	0	0	0	100%	25,759	569,914
Dec-00	744.0	743.5	99.9%	27,404	0	0	0	100%	27,404	597,318
Jan-01	744.0	744.0	100.0%	24,666	0	0	0	100%	24,666	621,984
Feb-01	672.0	671.0	99.9%	23,956	0	0	0	100%	23,956	645,940
Mar-01	744.0	737.0	99.1%	24,694	0	0	0	100%	24,694	670,634
Apr-01	720.0	719.5	99.9%	24,964	0	0	0	100%	24,964	695,598
May-01	604.3	602.3	99.7%	13,656	0	0	0	100%	13,656	709,254
Jun-01	709.5	708.3	99.8%	20,000	0	0	0	100%	20,000	729,254
Jul-01	730.0	730.0	100.0%	18,077	0	0	0	100%	18,077	747,331
Aug-01	491.0	491.0	100.0%	17,921	0	0	0	100%	17,921	765,252
Sep-01	0.0	0.0	100.0%	0	0	0	0	100%	0	765,252
Oct-01	736.0	472.5	64.2%	21,376	0	0	0	100%	21,376	786,628
Nov-01	720.0	720.0	100.0%	30,205	0	0	0	100%	30,205	816,833
Dec-01	744.0	744.0	100.0%	28,114	0	0	0	100%	28,114	844,947
Jan-02	742.0	737.0	99.3%	30,483	0	0	0	100%	30,483	875,430
Feb-02	672.0	672.0	100.0%	25,538	0	0	0	100%	25,538	900,968
Mar-02	744.0	744.0	100.0%	29,957	0	0	0	100%	29,957	930,925
Apr-02	744.0	743.8	100.0%	28,569	0	0	0	100%	28,569	959,494
May-02	744.0	741.0	99.6%	28,656	0	0	0	100%	28,656	988,150
Jun-02	720.0	720.0	100.0%	22,131	0	0	0	100%	22,131	1,010,281
Jul-02	744.0	744.0	100.0%	21,367	0	0	0	100%	21,367	1,031,648
Aug-02	744.0	744.0	100.0%	28,328	0	0	0	100%	28,328	1,059,976
Sep-02	630.3	630.3	100.0%	20,861	0	0	0	100%	20,861	1,080,837
Oct-02	744.0	744.0	100.0%	21,417	0	0	0	100%	21,417	1,102,254
Nov-02	720.0	720.0	100.0%	25,003	0	0	0	100%	25,003	1,127,257
Dec-02	744.0	742.0	99.7%	25,327	0	0	0	100%	25,327	1,152,584
Jan-03	744.0	55.0	7.4%	1,048	0	0	0	100%	1,048	1,153,632
Feb-03	672.0	0.0	0.0%	0	0	0	0	100%	0	1,153,632
Mar-03	744.0	309.0	41.5%	13,387	0	0	0	100%	13,387	1,167,019
Apr-03	526.5	425.5	80.8%	16,584	0	0	0	100%	16,584	1,183,603
May-03	744.0	298.5	40.1%	7,448	0	0	0	100%	7,448	1,191,051
Jun-03	720.0	253.0	35.1%	10,775	0	0	0	100%	10,775	1,201,826
Jul-03	734.0	576.3	78.5%	22,629	0	0	0	100%	22,629	1,224,455

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Table 1

NIROP FRIDLEY
Groundwater Treatment Facility (GWTF)

Month	OPERATIONS (hrs)			WATER DISCHARGED (thousands of gallons)					WATER TREATED (thousands of gallons)	
	Available	Operating	On-stream factor	to Storm	to Sanitary	Untreated to Sanitary	Total to Sanitary	% Storm	Monthly	Cumulative
Aug-03	732.5	639.8	87.3%	25,591	46	0	46	99.8%	25,637	1,250,092
Sep-03	720.0	719.0	99.9%	23,028	4,532	0	4,532	83.6%	27,560	1,277,652
Oct-03	681.7	648.5	95.1%	25,389	0	0	0	100%	25,389	1,303,041
Nov-03	720.0	694.0	96.4%	22,882	0	0	0	100%	22,882	1,325,923
Dec-03	743.0	740.5	99.7%	31,010	0	0	0	100%	31,010	1,356,933
Jan-04	744.0	727.0	97.7%	25,456	0	0	0	100%	25,456	1,382,389
Feb-04	689.7	689.7	100.0%	23,771	0	0	0	100%	23,771	1,406,160
Mar-04	506.5	353.5	69.8%	12,928	0	0	0	100%	12,928	1,419,088
Apr-04	720.0	2.0	0.3%	60	0	0	0	100%	60	1,419,148
May-04	744.0	635.0	85.3%	24,104	0	0	0	100%	24,104	1,443,252
Jun-04	613.5	613.5	100.0%	20,988	0	0	0	100%	20,988	1,464,240
Jul-04	735.5	732.8	99.6%	26,846	0	0	0	100%	26,846	1,491,086
Aug-04	741.0	741.0	100.0%	26,760	0	0	0	100%	26,760	1,517,846
Sep-04	718.0	717.0	99.9%	27,276	0	0	0	100%	27,276	1,545,122
Oct-04	676.8	676.8	100.0%	24,709	0	0	0	100%	24,709	1,569,831
Nov-04	720.0	720.0	100.0%	25,859	0	0	0	100%	25,859	1,595,690
Dec-04	744.0	744.0	100.0%	26,229	0	0	0	100%	26,229	1,621,919
Jan-05	744.0	667.0	89.7%	20,915	0	0	0	100%	20,915	1,642,834
Feb-05	672.0	672.0	100.0%	22,329	0	0	0	100%	22,329	1,665,163
Mar-05	744.0	716.8	96.3%	22,960	0	0	0	100%	22,960	1,688,123
Apr-05	384.0	322.0	83.9%	6,515	0	0	0	100%	6,515	1,694,638
May-05	576.0	503.5	87.4%	17,859	0	0	0	100%	17,859	1,712,497
Jun-05	720.0	714.5	99.2%	24,450	0	0	0	100%	24,450	1,736,947
Jul-05	744.0	712.5	95.8%	25,301	0	0	0	100%	25,301	1,762,248
Aug-05	744.0	744.0	100.0%	25,916	0	0	0	100%	25,916	1,788,164
Sep-05	720.0	715.3	99.4%	20,837	0	0	0	100%	20,837	1,809,001
Oct-05	744.0	744.0	100.0%	24,028	0	0	0	100%	24,028	1,833,029
Nov-05	720.0	720.0	100.0%	20,553	0	0	0	100%	20,553	1,853,582
Dec-05	686.0	622.3	90.7%	19,037	0	0	0	100%	19,037	1,872,619
Jan-06	744.0	744.0	100.0%	21,858	0	0	0	100%	21,858	1,894,477
Feb-06	672.0	672.0	100.0%	19,590	0	0	0	100%	19,590	1,914,067
Mar-06	710.5	710.0	99.9%	13,935	0	0	0	100%	13,935	1,928,002
Apr-06	654.0	654.0	100.0%	18,391	0	0	0	100%	18,391	1,946,393
May-06	744.0	744.0	100.0%	18,116	0	0	0	100%	18,116	1,964,509
Jun-06	720.0	719.5	99.9%	16,616	0	0	0	100%	16,616	1,981,125
Jul-06	716.0	716.0	100.0%	14,232	0	0	0	100%	14,232	1,995,357
Aug-06	744.0	742.0	99.7%	13,291	0	0	0	100%	13,291	2,008,648
Sep-06	720.0	720.0	100.0%	14,269	0	0	0	100%	14,269	2,022,917
Oct-06	731.0	730.5	99.9%	13,496	0	0	0	100%	13,496	2,036,413
Nov-06	396.0	110.0	27.8%	3,073	0	0	0	100%	3,073	2,039,486
Dec-06	744.0	743.5	99.9%	25,287	0	0	0	100%	25,287	2,064,773
Jan-07	720.0	719.5	99.9%	25,118	0	0	0	100%	25,118	2,089,891
Feb-07	671.8	659.8	98.2%	21,953	0	0	0	100%	21,953	2,111,844
Mar-07	744.0	734.0	98.7%	25,860	0	0	0	100%	25,860	2,137,703
Apr-07	720.0	720.0	100.0%	24,240	0	0	0	100%	24,240	2,161,943
May-07	744.0	744.0	100.0%	19,004	0	0	0	100%	19,004	2,180,947
Jun-07	719.5	719.5	100.0%	20,659	0	0	0	100%	20,659	2,201,606
Jul-07	744.0	744.0	100.0%	19,389	0	0	0	100%	19,389	2,220,995
Aug-07	696.0	696.0	100.0%	16,354	0	0	0	100%	16,354	2,237,349
Sep-07	720.0	720.0	100.0%	15,320	0	0	0	100%	15,320	2,252,669
Oct-07	744.0	744.0	100.0%	14,409	0	0	0	100%	14,409	2,267,078
Nov-07	720.0	720.0	100.0%	17,388	0	0	0	100%	17,388	2,284,466
Dec-07	744.0	739.0	99.3%	17,002	0	0	0	100%	17,002	2,301,468
Jan-08	742.0	684.0	92.2%	17,115	0	0	0	100%	17,115	2,318,583
Feb-08	695.3	611.8	88.0%	13,581	0	0	0	100%	13,581	2,332,164
Mar-08	744.0	742.0	99.7%	13,277	0	0	0	100%	13,277	2,345,441
Apr-08	720.0	717.0	99.6%	12,518	0	0	0	100%	12,518	2,357,959

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Table 1

NIROP FRIDLEY
Groundwater Treatment Facility (GWTF)

Month	OPERATIONS (hrs)			WATER DISCHARGED (thousands of gallons)					WATER TREATED (thousands of gallons)	
	Available	Operating	On-stream factor	to Storm	to Sanitary	Untreated to Sanitary	Total to Sanitary	% Storm	Monthly	Cumulative
May-08	718.0	692.0	96.4%	15,430	0	0	0	100%	15,430	2,373,389
Jun-08	333.5	333.5	100.0%	6,523	0	0	0	100%	6,523	2,379,912
Jul-08	719.0	719.0	100.0%	15,762	0	0	0	100%	15,762	2,395,674
Aug-08	729.3	729.3	100.0%	20,183	0	0	0	100%	20,183	2,415,857
Sep-08	720.0	720.0	100.0%	19,632	0	0	0	100%	19,632	2,435,489
Oct-08	737.0	737.0	100.0%	19,818	0	0	0	100%	19,818	2,455,307
Nov-08	662.0	662.0	100.0%	18,191	0	0	0	100%	18,191	2,473,498
Dec-08	744.0	744.0	100.0%	20,926	0	0	0	100%	20,926	2,494,424
Jan-09	741.0	741.0	100.0%	20,301	44	0	44	99.8%	20,301	2,514,725
Feb-09	672.0	672.0	100.0%	17,546	0	0	0	100%	17,546	2,532,271
Mar-09	711.9	711.2	99.9%	17,766	0	0	0	100%	17,766	2,550,037
Apr-09	709.0	705.6	99.5%	16,434	0	0	0	100%	16,434	2,566,471
May-09	739.8	739.8	100.0%	23,663	0	0	0	100%	23,663	2,590,134
Jun-09	719.8	719.8	100.0%	21,234	0	0	0	100%	21,234	2,611,368
Jul-09	744.0	744.0	100.0%	21,846	0	0	0	100%	21,846	2,633,214
Aug-09	744.0	744.0	100.0%	20,933	0	0	0	100%	20,933	2,654,147
Sep-09	697.2	697.2	100.0%	16,585	0	0	0	100%	16,585	2,670,732
Oct-09	743.5	743.5	100.0%	18,919	0	0	0	100%	18,919	2,689,651
Nov-09	720.0	720.0	100.0%	19,768	0	0	0	100%	19,768	2,709,419
Dec-09	744.0	744.0	100.0%	18,162	0	0	0	100%	18,162	2,727,581
Jan-10	740.3	740.3	100.0%	19,542	0	0	0	100%	19,542	2,747,123
Feb-10	672.0	658.0	97.9%	14,805	0	0	0	100%	14,805	2,761,928
Mar-10	744.0	744.0	100.0%	14,596	0	0	0	100%	14,596	2,776,524
Apr-10	720.0	720.0	100.0%	15,598	0	0	0	100%	15,598	2,792,122
May-10	744.0	742.5	99.8%	18,090	0	0	0	100%	18,090	2,810,212
Jun-10	720.0	697.0	96.8%	10,717	0	0	0	100%	10,717	2,820,929
Jul-10	744.0	722.2	97.1%	12,254	0	0	0	100%	12,254	2,833,183
Aug-10	694.5	404.0	58.2%	3,789	0	0	0	100%	3,789	2,836,972
Sep-10	712.0	700.0	98.3%	12,552	0	0	0	100%	12,552	2,849,524
Oct-10	690.6	690.6	100.0%	12,926	0	0	0	100%	12,926	2,862,450
Nov-10	719.5	716.0	99.5%	15,466	0	0	0	100%	15,466	2,877,916
Dec-10	737.0	721.5	97.9%	15,855	0	0	0	100%	15,855	2,893,771
Jan-11	744.0	744.0	100.0%	17,199	0	0	0	100%	17,199	2,910,970
Feb-11	667.0	665.0	99.7%	16,551	0	0	0	100%	16,551	2,927,521
Mar-11	744.0	744.0	100.0%	17,827	0	0	0	100%	17,827	2,945,348

Note: Available hours are 24 hours per day, less scheduled down time and power outages.

* Monthly flow incorrectly reported for Jul-04 through Dec-04 - corrected January 2005 using the corrected estimate for AT-10 monthly flow.

NIROP FRIDLEY
Ground Water Treatment Facility (GWTF)

Date	Electrical Meter Readings (kW·h)					Monthy Usage
	MCC #1	MCC #2	Wells 2, 3A, 5A, 5B	Well 1A	Well 4	
2/1/2000	57,305	620,300				38,046
3/1/2000	59,597	656,054				36,133
3/9/2000	60,348	667,580	18,260	3,284	2,312	65,029
4/3/2000	63,080	704,113	38698	6043	4879	74,067
5/1/2000	66,067	746,920	60,940	9,238	7,715	81,545
6/1/2000	68,972	793,455	86495	12728	10775	66,128
7/1/2000	71,562	840,441	110,243	16,307		
7/6/2000					13701	13,701
8/1/2000	73,881	881,304	130,691	19,559	16,686	72,336
9/1/2000	76,316	924,799	152695	22976	17671	67,877
10/2/2000	78,561	964,802	172,714	26,079	20,178	
11/1/2000	80,952	7,402	195655	29408	22454	89,927
12/4/2000	83,561	56,966	225,897	33,105	26,269	81,706
1/2/2001	85,851	101,872	254750	36270	28761	72,935
2/1/2001	88,106	143,918	282,532	37,122	28,761	83,944
3/1/2001	90,240	190,303	314000	41079	28761	66,663
4/3/2001	92,677	230,575	335,297	43,736	28,761	65,567
5/1/2001	94,779	269,617	357244	46212	28761	
6/5/2001	97,821	304,746	*	*	*	38,108
7/2/2001	102,175	338,500	*	*	*	44,802
8/2/2001	106,592	378,885	*	*	*	37,804
9/12/2001	111,321	411,960	*	*	*	13,663
10/18/2001	112,956	423,988	*	*	*	29,471
11/1/2001	117,010	449,405	*	*	*	68,542
12/4/2001	126,457	508,500	*	*	*	60,932
1/2/2002	134,884	561,005	*	*	*	56,801
2/1/2002	142,948	609,742	*	*	*	55,300
3/1/2002	150,583	657,407	*	*	*	64,231
4/1/2002	159,332	712,889	*	*	*	59,291
5/1/2002	167,808	763,704	*	*	*	63,448
6/3/2002	176,272	818,688	*	*	*	43,974
7/1/2002	182,246	856,688	*	*	*	45,609
8/1/2002	188,404	896,139	*	*	*	60,074
9/3/2002	196,255	948,362	*	*	*	44,067
10/1/2002	202,142	986,542	*	*	*	60,158
11/1/2002	209,581	1,039,261	*	*	*	60,538
12/2/2002	216,632	1,092,748	*	*	*	
1/1/2003	223,233	0	*	*	*	
2/1/2003	224,233	1,146,792	*	*	*	7,827
3/19/2003	227,523	1,151,329	*	*	*	22,891
4/3/2003	230,589	1,171,154	*	*	*	32,058
5/1/2003	235,275	1,198,526	*	*	*	18,373
6/4/2003	237,675	1,214,499	*	*	*	20,360
7/1/2003	240,411	1,232,123	*	*	*	42,930
8/1/2003	246,351	1,269,113	*	*	*	49,909
9/2/2003	253,306	1,312,067	*	*	*	52,166
10/1/2003	260,662	1,356,877	*	*	*	58,962
11/3/2003	268,788	1,407,713	*	*	*	57,373
12/1/2003	276,592	1,457,282	*	*	*	67,477
1/2/2004	285,175	1,516,176	*	*	*	67,278
2/2/2004	293,559	1,575,070	*	*	*	60,542
3/1/2004	301,245	1,627,926	*	*	*	31,187
4/1/2004	305,283	1,655,075	*	*	*	1,037
5/3/2004	305,515	1,655,880	*	*	*	51,931
6/1/2004	312,129	1,701,197	*	*	*	47,852
7/1/2004	318,012	1,743,166	*	*	*	60,764

NIROP FRIDLEY
Ground Water Treatment Facility (GWTF)

Date	Electrical Meter Readings (kW·h)					Monthy Usage
	MCC #1	MCC #2	Wells 2, 3A, 5A, 5B	Well 1A	Well 4	
8/3/2004	326,133	1,795,809	*	*	*	55,312
9/1/2004	335,039	1,842,215	*	*	*	52,307
10/1/2004	340,422	1,889,139	*	*	*	53,798
11/2/2004	347,296	1,936,063	*	*	*	64,045
12/1/2004	354,514	1,992,890	*	*	*	64,887
1/5/2005	362,574	49,717	*	*	*	48,313
2/1/2005	368,114	92,490	*	*	*	56,517
3/1/2005	374,689	142,432	*	*	*	35,669
4/1/2005	381,858	170,932	*	*	*	32,506
5/11/2005	384,388	200,908	*	*	*	37,857
6/2/2005	389,382	233,771	*	*	*	53,851
7/1/2005	395,908	281,096	*	*	*	55,772
8/1/2005	402,786	329,990	*	*	*	58,530
9/1/2005	410,054	381,252	*	*	*	59,756
10/4/2005	416,742	434,320	*	*	*	54,337
11/1/2005	423,117	482,282	*	*	*	59,439
12/1/2005	429,602	535,236	*	*	*	58,139
1/3/2006	437,032	585,945	*	*	*	64,273
2/3/2006	444,929	642,321	*	*	*	59,745
3/3/2006	451,966	695,029	*	*	*	59,447
4/4/2006	458,470	747,972	*	*	*	52,154
5/2/2006	464,407	794,189	*	*	*	56,066
6/1/2006	470,107	844,555	*	*	*	67,078
7/7/2006	476,656	905,084	*	*	*	75,362
8/17/2006	483,201	973,901	*	*	*	28,651
9/1/2006	485,579	174	*	*	*	60,559
10/2/2006	490,846	55,466	*	*	*	64,783
11/16/2006	497,232	113,863	*	*	*	30,896
12/12/2006	501,656	140,335	*	*	*	41,005
1/2/2007	507,345	175,651	*	*	*	89,453
2/14/2007	519,226	253,223	*	*	*	60,625
3/15/2007	526,775	306,299	*	*	*	37,019
4/1/2007	531,435	338,658	*	*	*	59,380
5/1/2007	538,780	390,693	*	*	*	60,309
6/2/2007	546,435	443,347	*	*	*	57,976
7/2/2007	552,240	495,518	*	*	*	54,945
8/1/2007	558,047	544,656	*	*	*	56,900
9/4/2007	563,999	595,604	*	*	*	48,947
10/1/2007	568,907	639,643	*	*	*	55,912
11/1/2007	574,269	690,193	*	*	*	61,551
12/3/2007	580,906	745,107	*	*	*	58,075
1/2/2008	587,234	796,854	*	*	*	61,758
2/1/2008	593,878	851,968	*	*	*	56,961
3/6/2008	601,457	901,350	*	*	*	47,128
4/1/2008	607,103	942,832	*	*	*	51,563
5/2/2008	613,973	987,525	*	*	*	45,409
6/2/2008	619,382	27,525	*	*	*	23,755
7/1/2008	621,730	48,932	*	*	*	57,458
8/1/2008	627,904	100,216	*	*	*	59,836
9/2/2008	634,818	153,138	*	*	*	57,157
10/4/2008	641,270	203,843	*	*	*	61,110

NIROP FRIDLEY
Ground Water Treatment Facility (GWTF)

Date	Electrical Meter Readings (kW·h)					Monthy Usage
	MCC #1	MCC #2	Wells 2, 3A, 5A, 5B	Well 1A	Well 4	
11/3/2008	648,196	258,027	*	*	*	58,512
12/1/2008	655,158	309,577	*	*	*	71,027
1/2/2009	663,755	372,007	*	*	*	69,361
2/2/2009	672,125	432,998	*	*	*	62,234
3/2/2009	679,788	487,569	*	*	*	61,618
4/1/2009	687,315	541,660	*	*	*	63,015
5/1/2009	694,461	597,529	*	*	*	63,751
6/1/2009	701,440	654,301	*	*	*	60,286
7/1/2009	708,069	707,958	*	*	*	65,088
8/3/2009	715,267	765,848	*	*	*	57,140
9/1/2009	721,611	816,644	*	*	*	56,282
10/1/2009	727,548	866,989	*	*	*	65,845
11/2/2009	734,666	925,716	*	*	*	60,372
12/1/2009	741,891	978,863	*	*	*	77,030
1/1/2010	750,050	1,047,734	*	*	*	63,139
2/1/2010	757,037	1,103,886	*	*	*	61,079
3/1/2010	763,509	1,158,493	*	*	*	69,431
4/1/2010	769,960	1,221,473	*	*	*	59,638
5/3/2010	775,813	1,275,258	*	*	*	54,143
6/1/2010	780,680	1,324,534	*	*	*	51,279
7/1/2010	784,369	1,372,124	*	*	*	75,167
8/2/2010	789,289	1,442,371	*	*	*	8,482
9/1/2010	791,567	1,448,575	*	*	*	55,237
10/1/2010	796,016	1,499,363	*	*	*	61,303
11/1/2010	800,411	1,556,271	*	*	*	60,565
12/1/2010	806,672	1,610,575	*	*	*	68,226
1/3/2011	813,611	1,671,862	*	*	*	64,951
2/1/2011	820,001	1,730,423	*	*	*	58,883
3/1/2011	825,935	1,783,372	*	*	*	68,939
4/1/2011	832,880	1,845,366	*	*	*	*

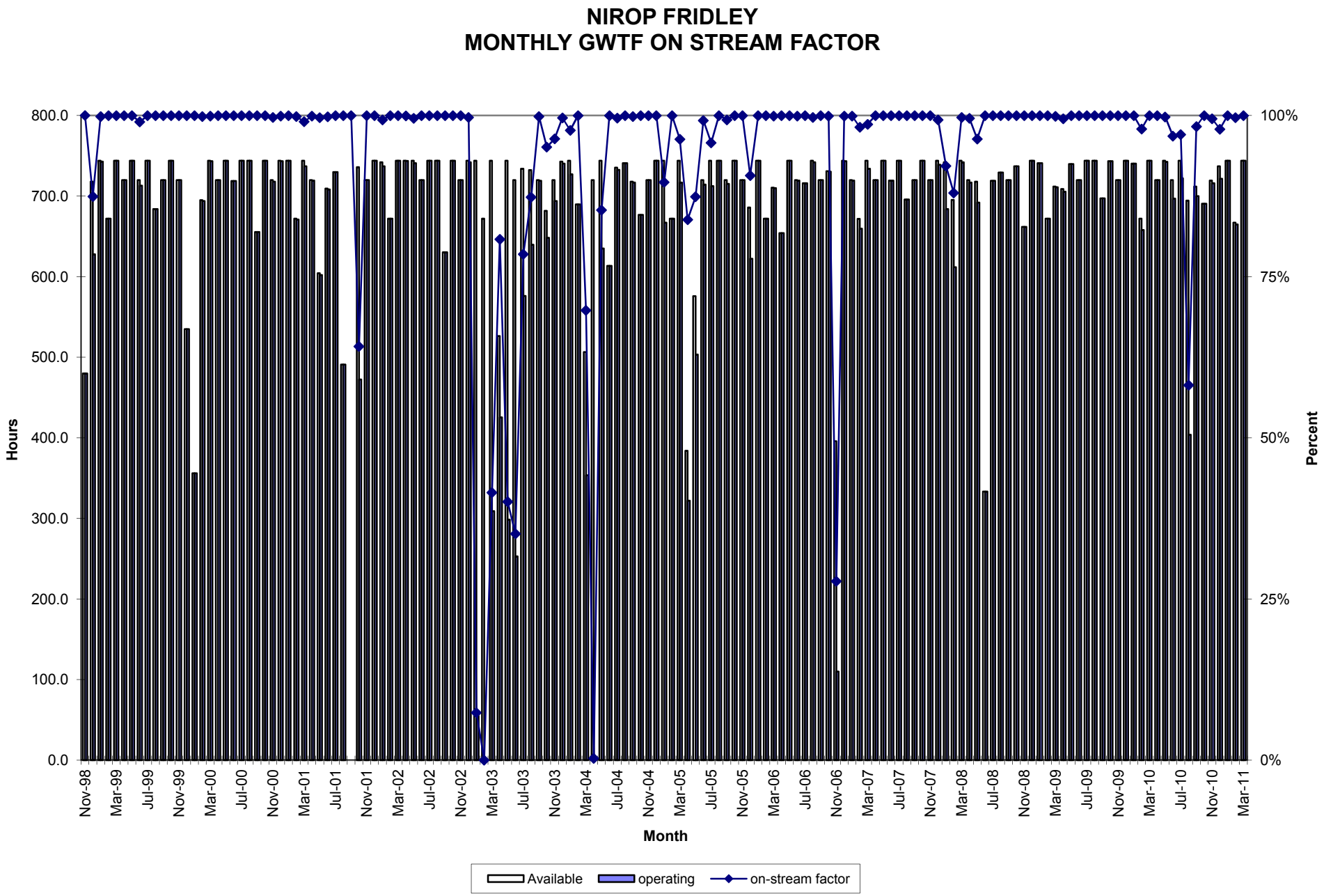
* Electrical metering for the extraction wells runs through MCC #1

- The electrical meter in the main treatment area was misread on 1/1/03, thus it was not reset. December electricity usage was estimated to be the same as November 2002.

^ The electrical meter in the main treatment area had reset after the scheduled power shut-down. October 2004 electricity usage for MCC#2 was estimated to be the same as September 2004.

+ - electrical readings were not obtained on December 1, 2004, therefore electrical usage for November was estimated to be similar to October 2004.

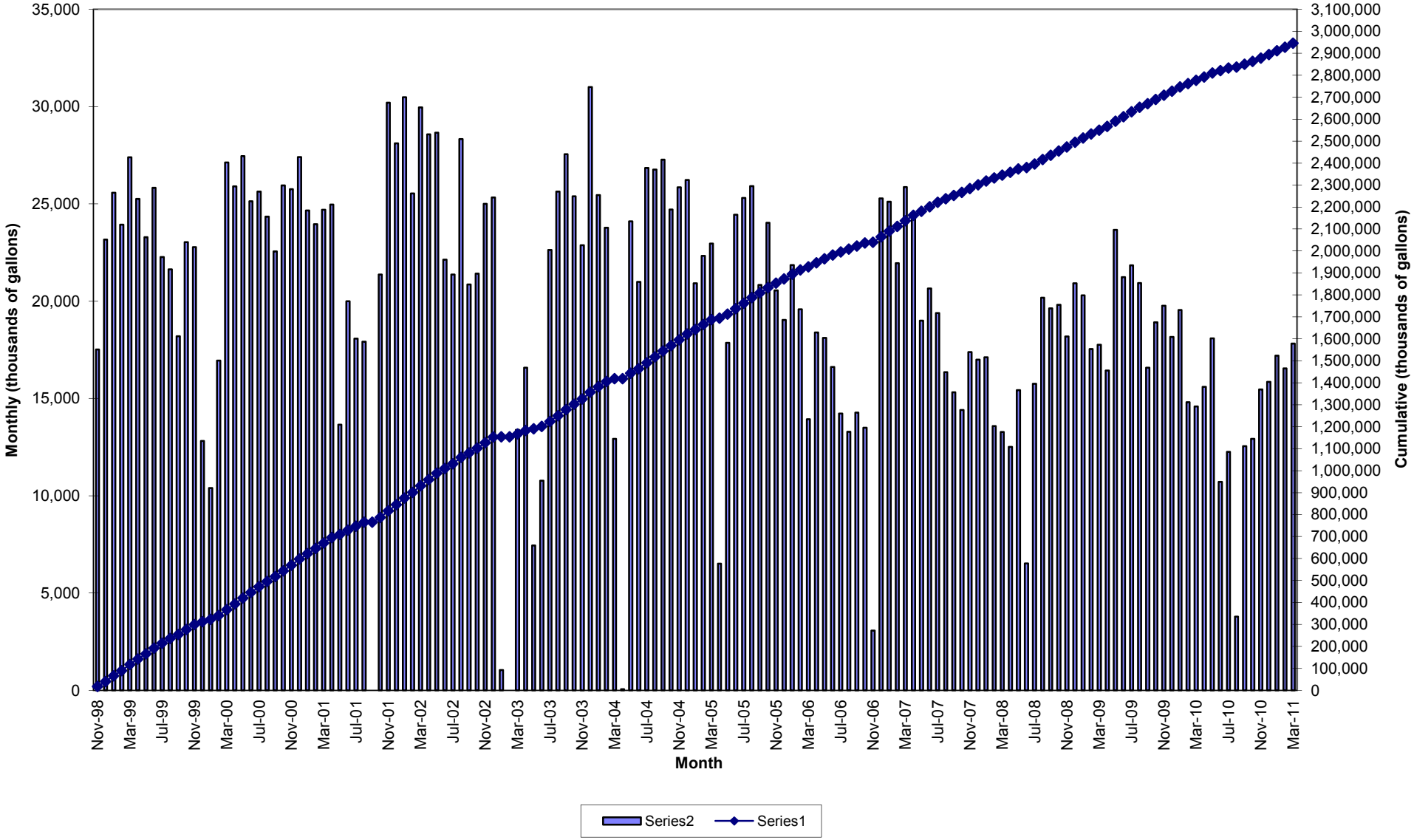
Figures



Docs 58644

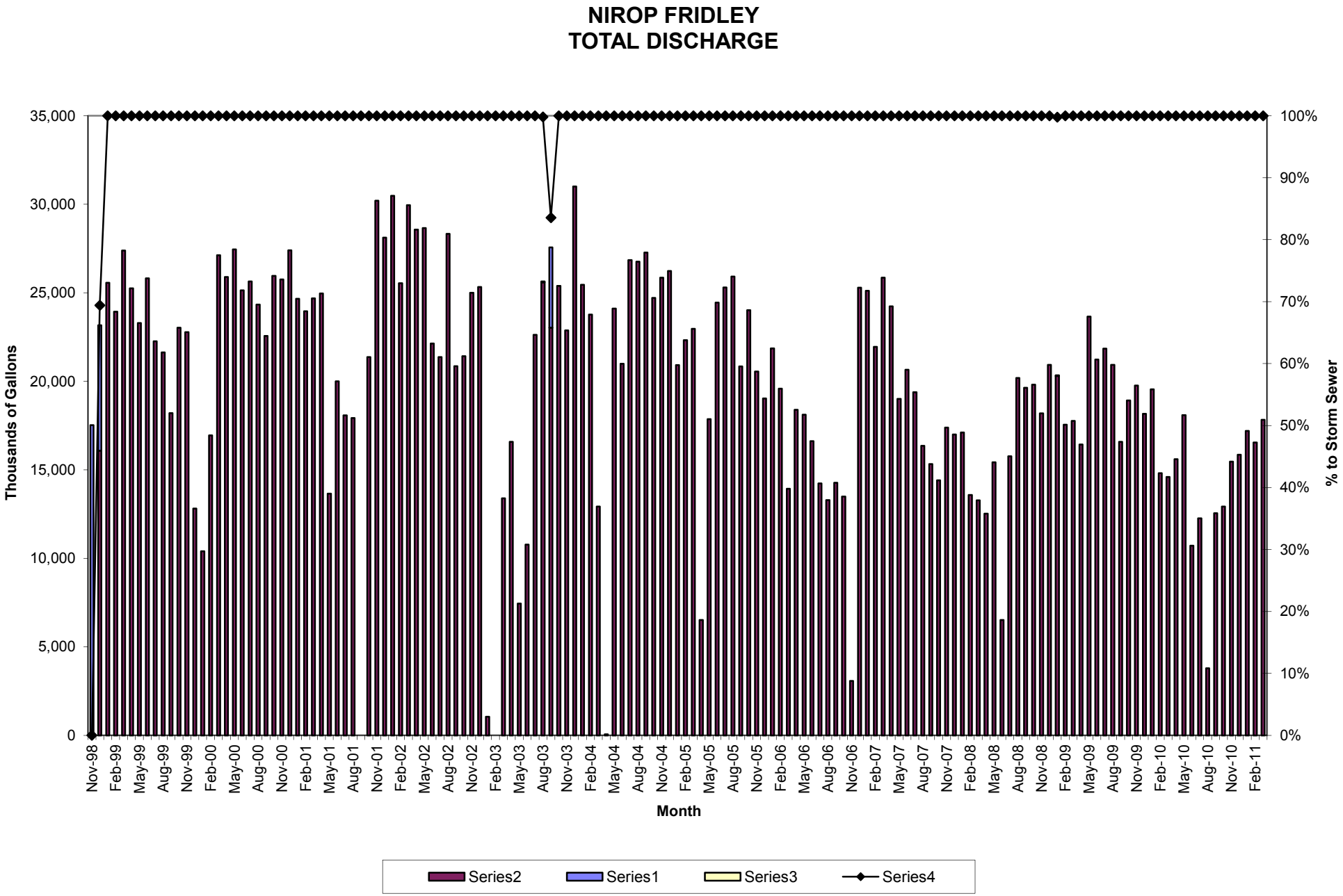
Figure 1

NIROP FRIDLEY
GWTF TOTAL TREATED FLOW



Docs 58644

Figure 2



Docs 58644

Figure 3

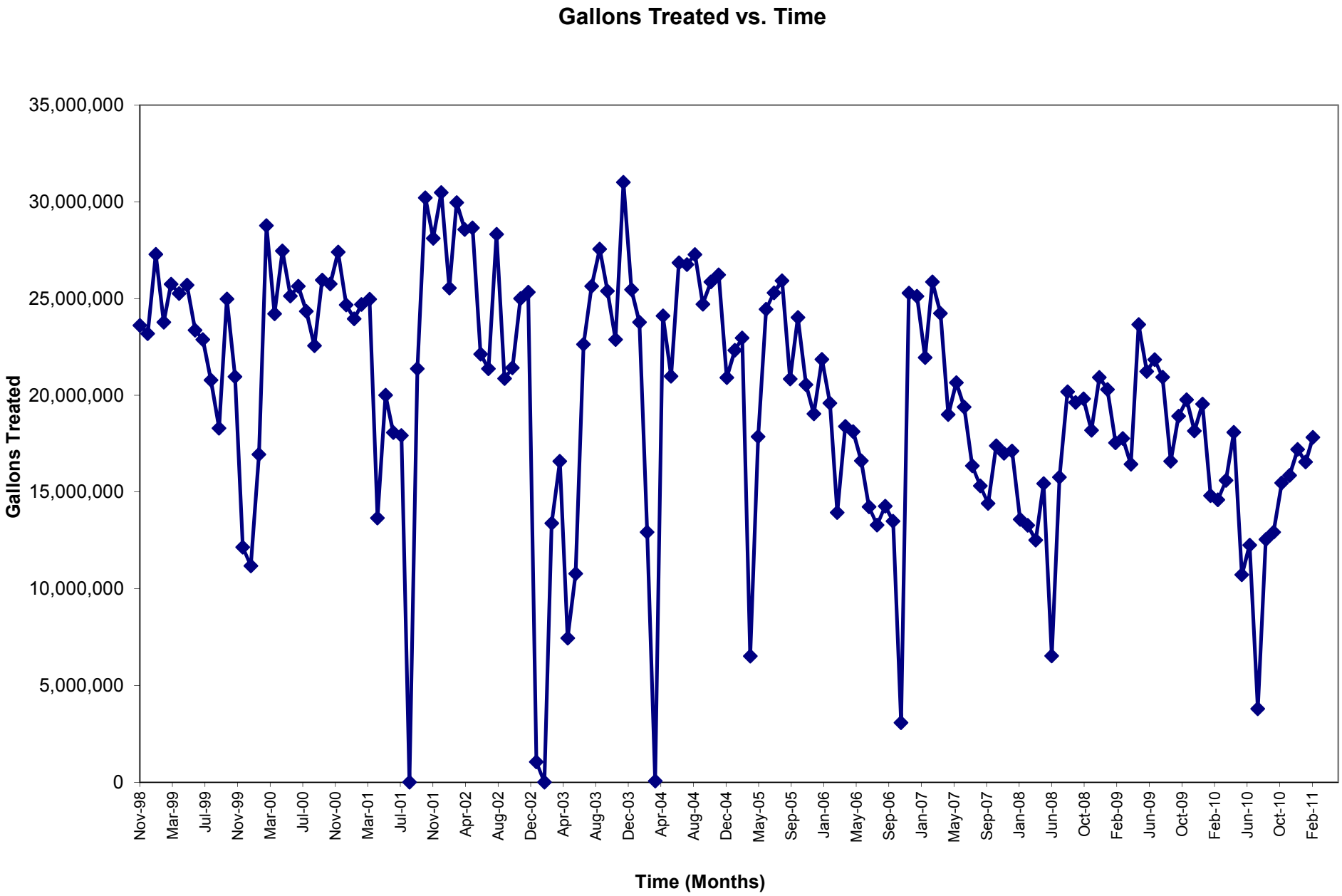


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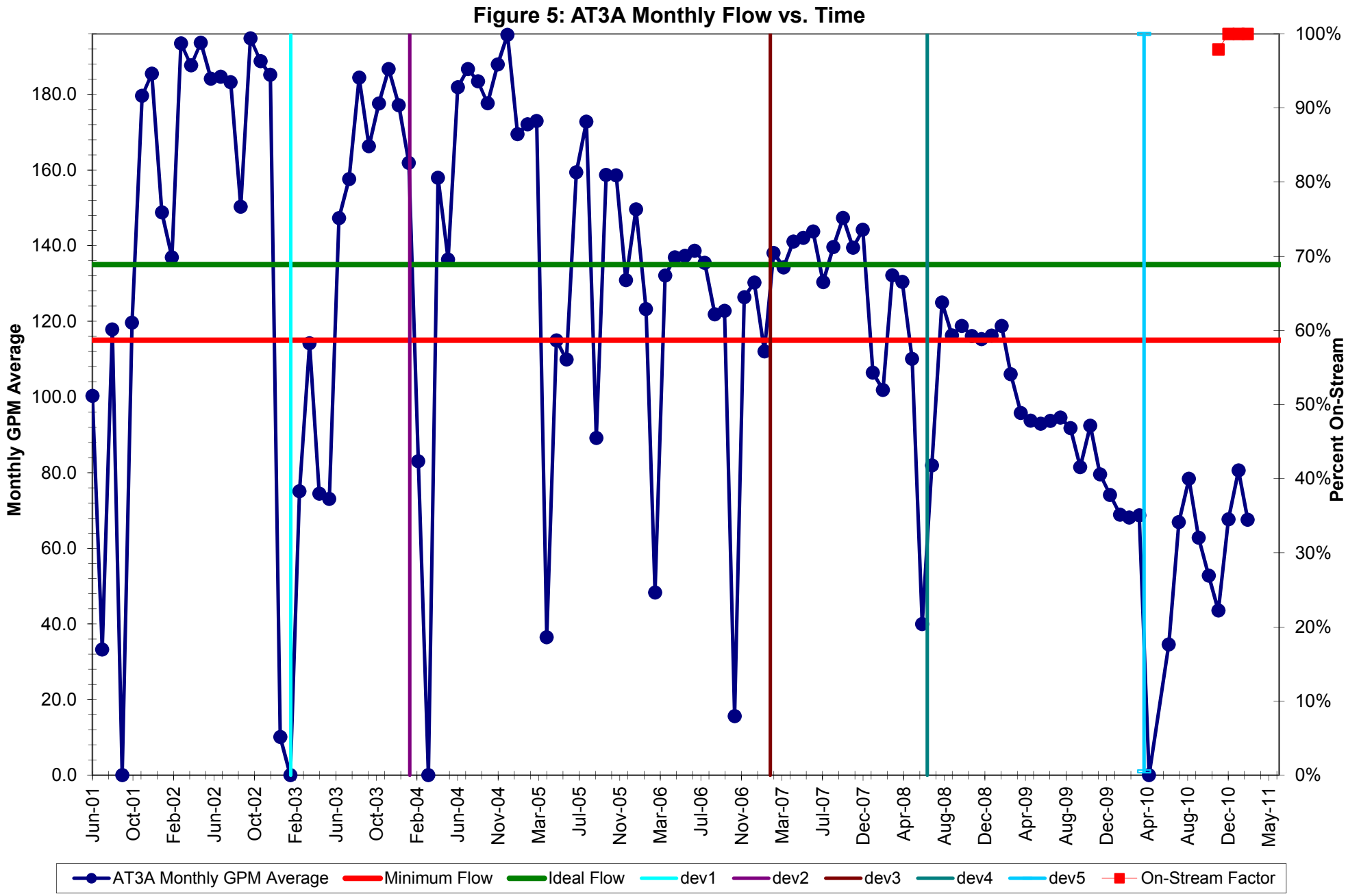
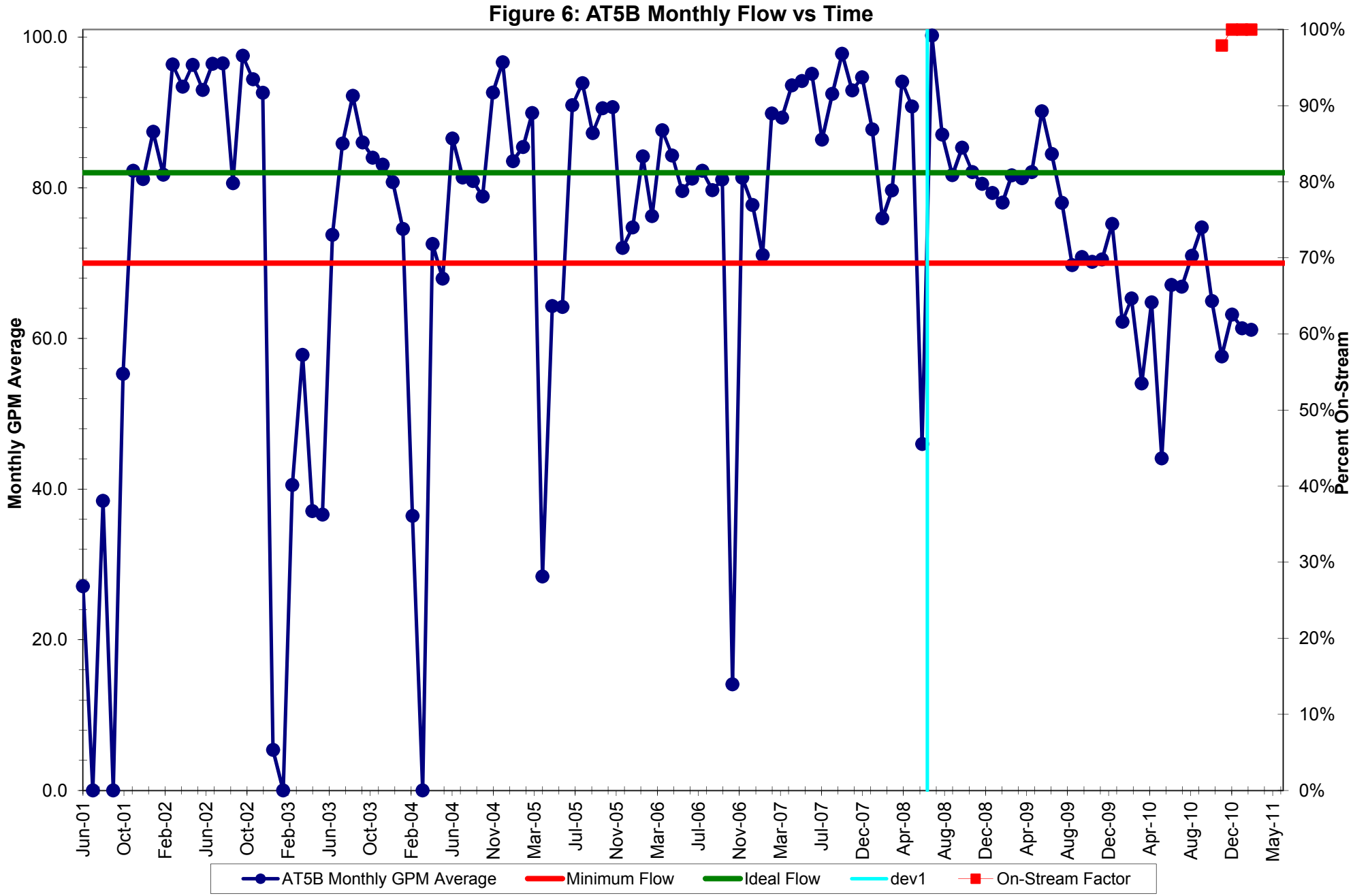
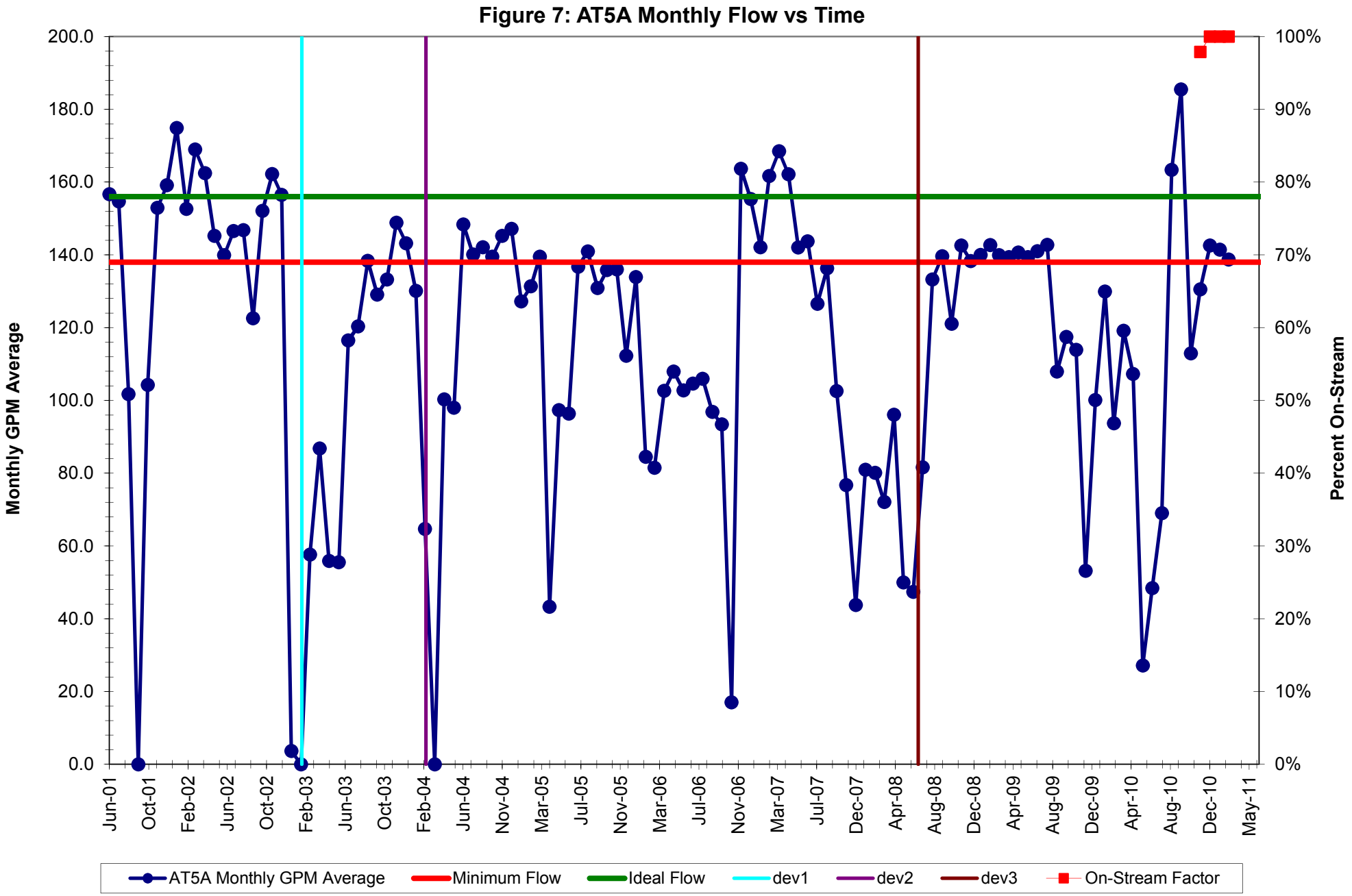
Figure 4



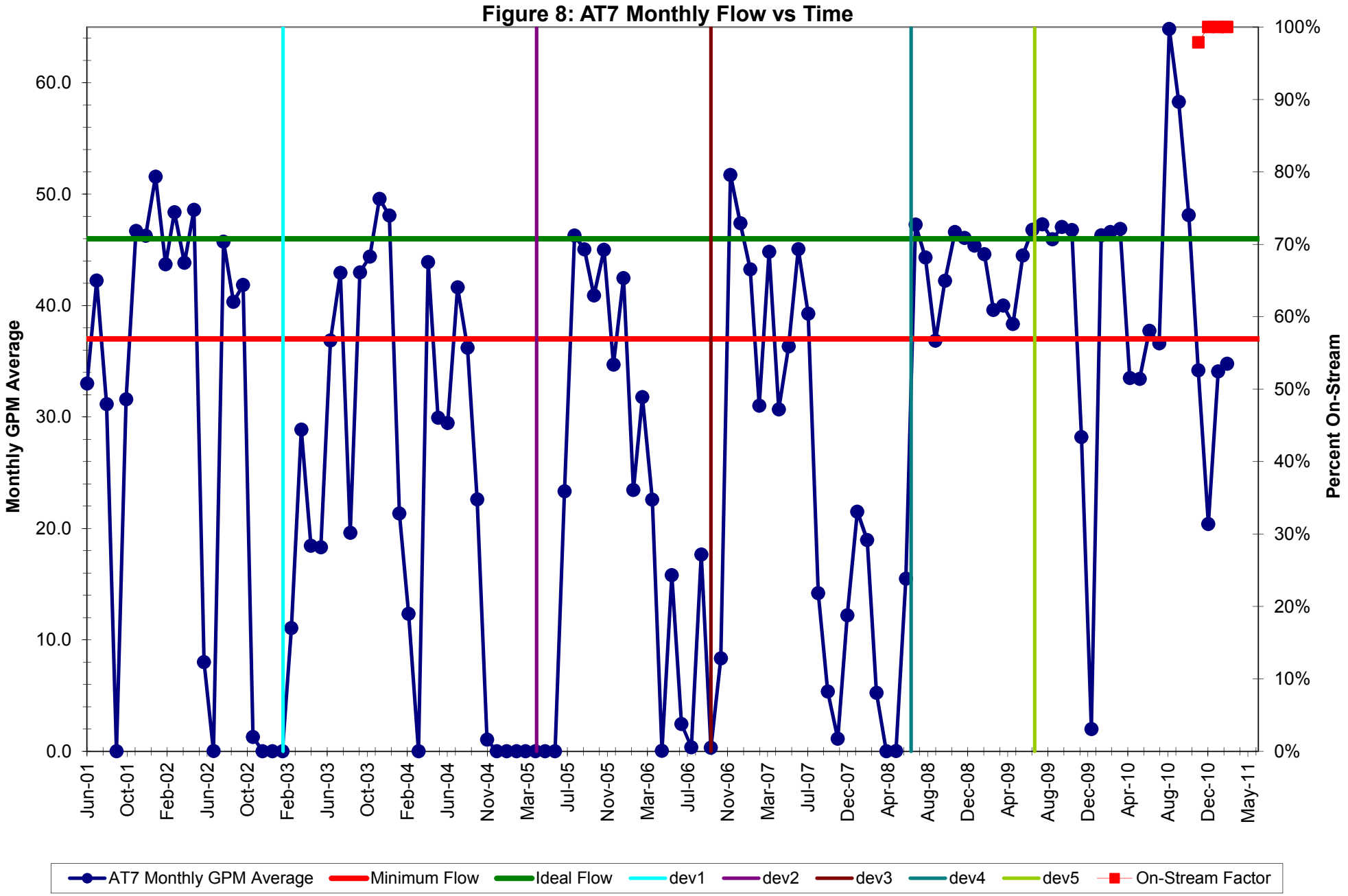
* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.



* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.

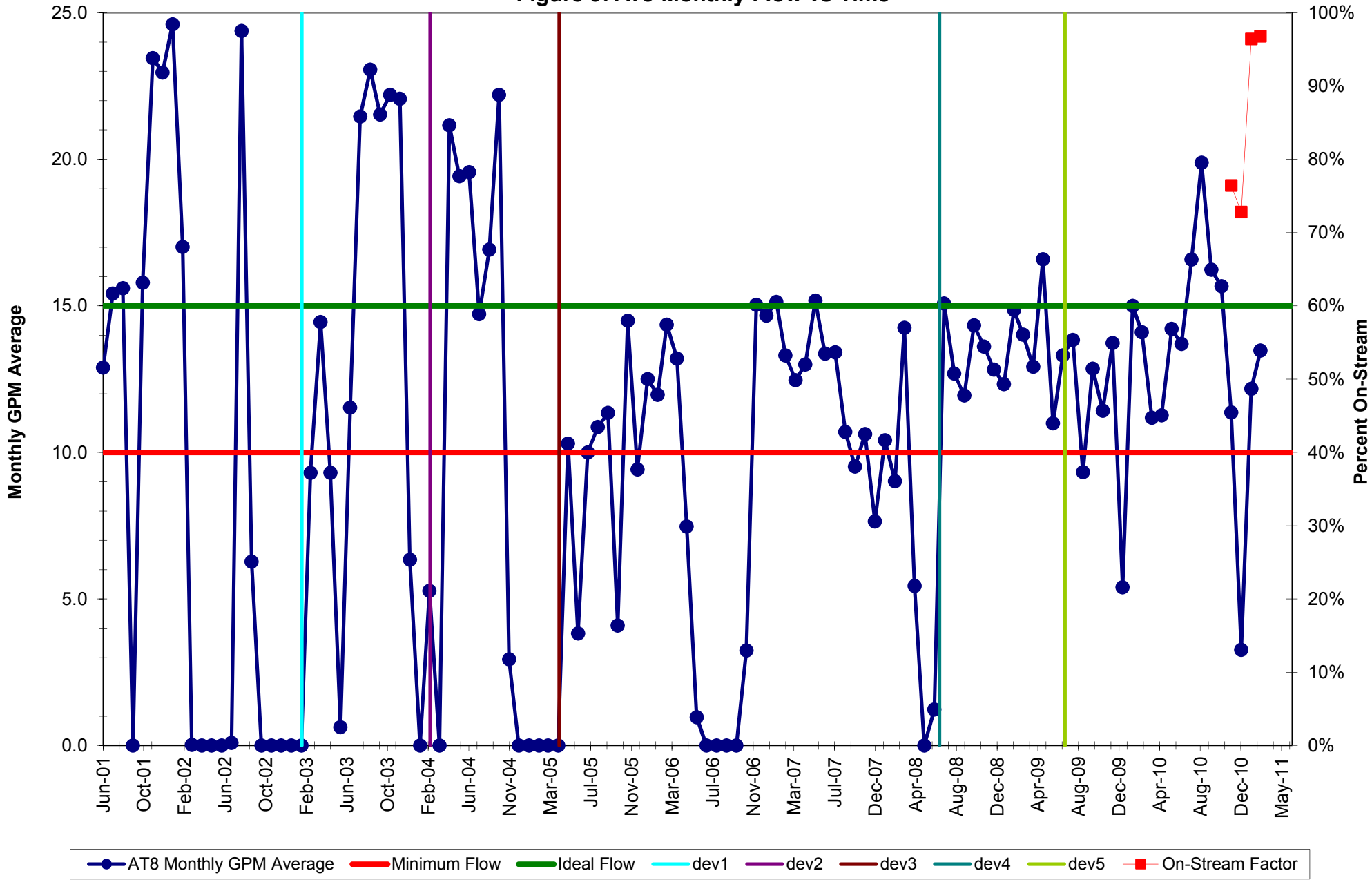


* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.

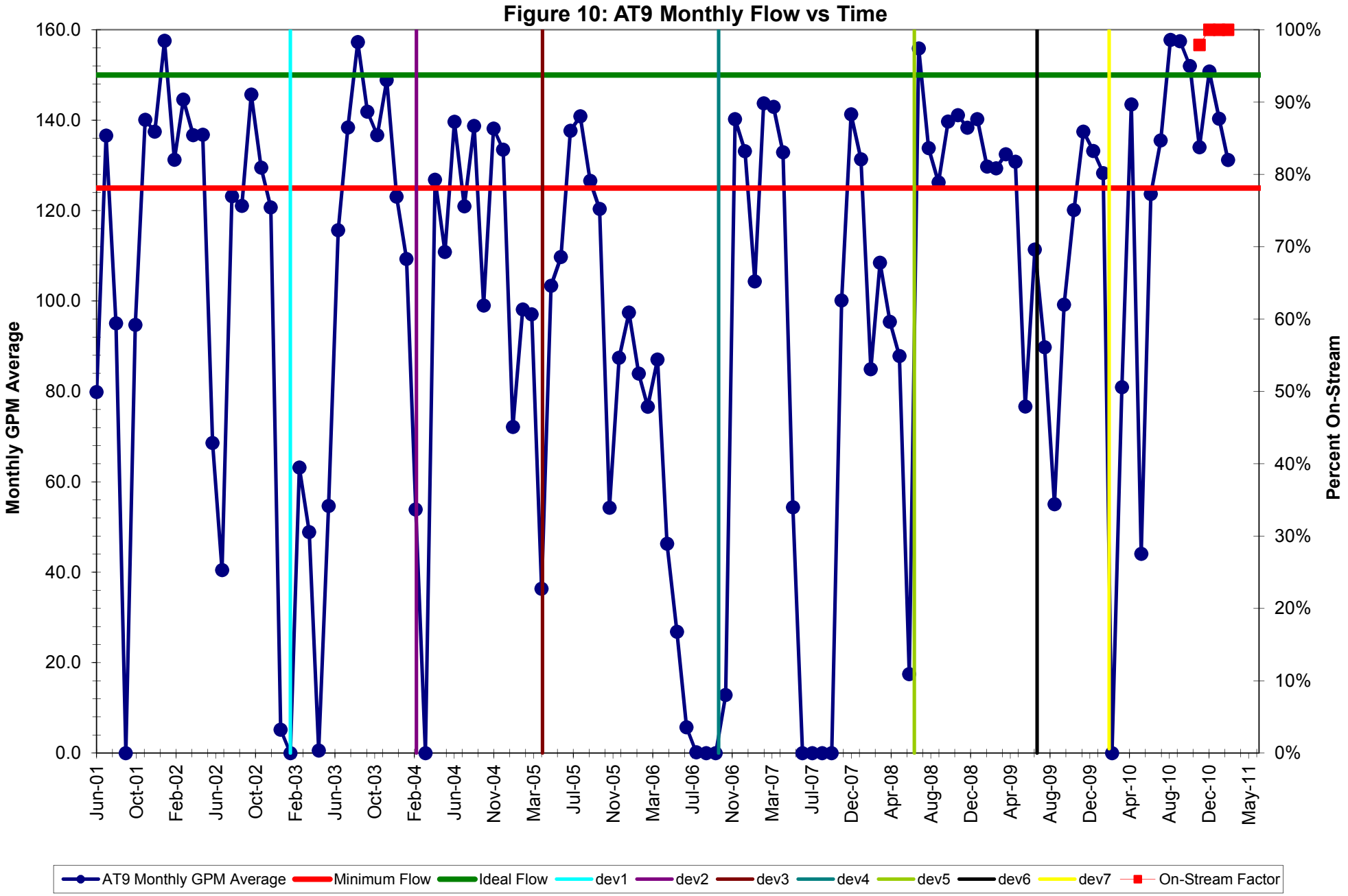


* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.

Figure 9: AT8 Monthly Flow vs Time

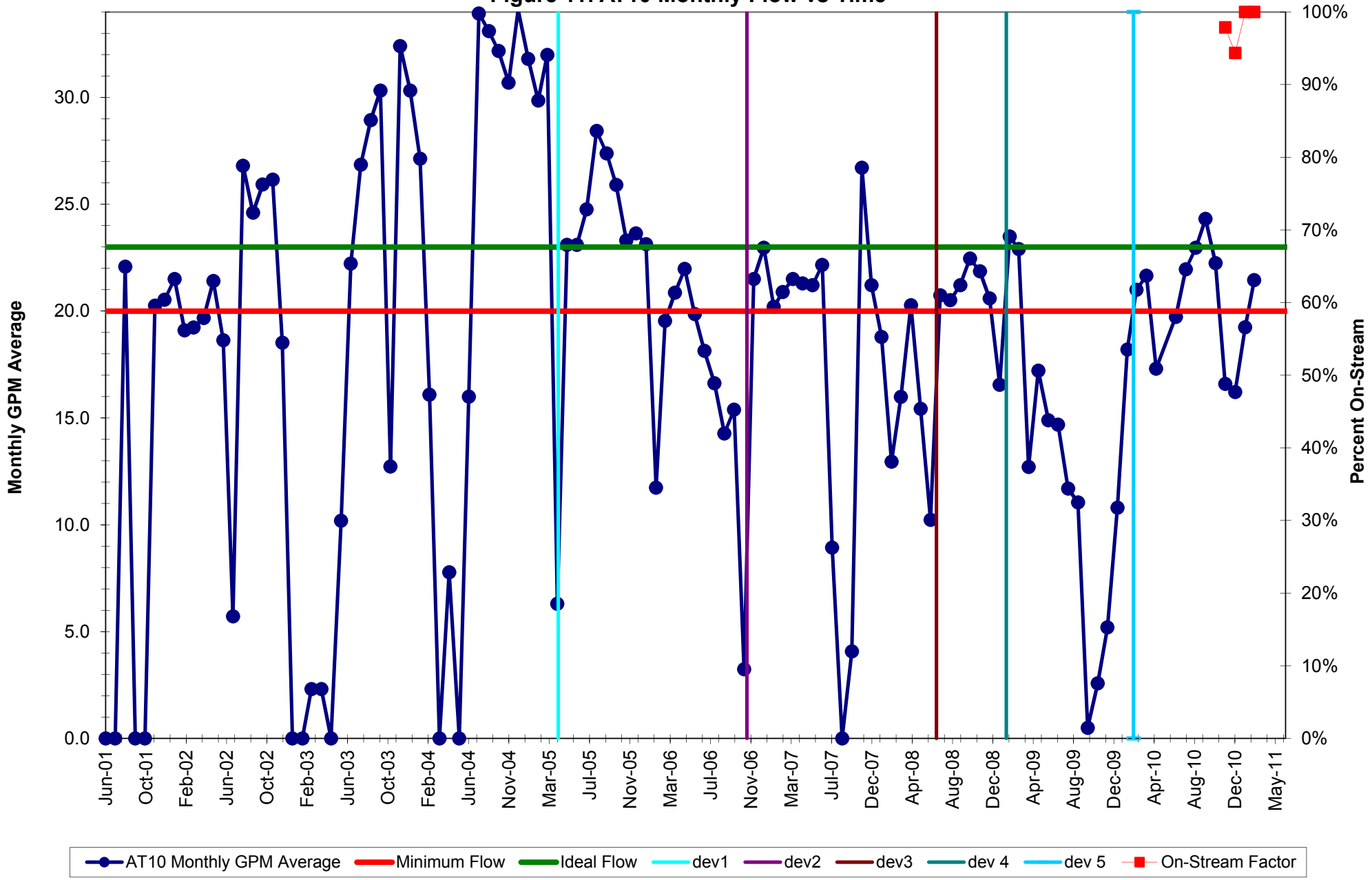


* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.



* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.

Figure 11: AT10 Monthly Flow vs Time



* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.

Monthly Project Status Report April 2011
Facility Maintenance
Naval Industrial Reserve Ordnance Plant - Fridley, Minnesota
Prepared by Bay West, Inc.

EMAC Contract No. N40083-06-D-4015, Task Order #0005

SYSTEM OVERVIEW

- The GWTF was in operation for 711.3 hours during the month of April 2011.
- The on-stream factor for April was 99.6%. The on-stream factor is the actual operation time divided by the available operation time.
- The system processed an estimated 14,063,000 gallons of groundwater in April, for a total of 2,959,411,000 gallons to date.
- Electrical use was approximately 58,997 kilowatt-hours (kWh) for April 2011.
- Approximately 11,584 pounds of trichloroethylene (TCE) have been removed from the aquifer since groundwater treatment system start-up in 1999. Approximately 37,233 pounds of TCE have been removed from the aquifer since groundwater extraction activities began in 1992.
- Effluent sampling from Outfall 020 was performed on April 7, 2011. Per the National Pollutant Discharge Elimination System (NPDES) permit requirements, the samples were analyzed for eight specific volatile organic compounds (VOC) by EPA Method 624. Laboratory analytical results were below NPDES permit limits for all analytes. The Discharge Monitoring Report (DMR) and a copy of the analytical results will be forwarded to the Minnesota Pollution Control Agency (MPCA) by the due date of July 21, 2011.
- Influent and effluent sampling from ports in the main treatment area was performed on April 7, 2011, for the purpose of calculating emission rates from the ASUs. Treatment system sampling, and subsequent air emissions calculations, are performed on a quarterly basis. The calculated emission rates for all chemicals of concern were below the corresponding site-specific allowable emission rates (AERs). The emissions reporting form is included with this report.

SCHEDULED MAINTENANCE

- Visually inspected flow meters and level probes for material buildup and proper operation.
- Tested the four safety showers/eyewash stations to assure adequate performance.
- Lubricated blower motors, influent pumps, and effluent pumps.
- Collected extraction well water levels on a weekly basis.
- Alternated pumps P-101A/101B monthly.
- Measured pump P-101A bearing temperature. All values were within normal operation range.

PROBLEMS AND SOLUTIONS

- Bay West has executed a Subcontract to improve electronic data transmission and accessibility at NIROP. As discussed in the March 2011 status report, the scope of services are being re-evaluated in light of current plans to install three new extraction wells and abandon AT-3A to ensure system improvements incorporate the increase in the number of extraction wells planned for the site.

- Effluent pump P301A had fail to run status when performing the weekly switch on 4/11/11. The site electrician performed troubleshooting activities and determined the motor was drawing too many amps. This caused the overload protector to trip and shut down P301A. PFC Equipment (PFC), the manufacturer's authorized service representative, has been retained for pump repair. The treatment plant will run with P301B continuously until PFC completes P301A pump rebuild work.
- Extraction well AT-3A piping inside building 52/53 was found leaking on 4/12/11. Bay West replaced the leaking pipe fitting.
- Influent pump P101B exhibited a squealing noise while in operation. PFC performed diagnostics and determined the pump needs to be rebuilt. P101A will run continuously until P101B is repaired.
- The high level alarm in equalization tank T101 was shutting down the system due to high level in the tank. Bay West determined the feed pipe between building 52/53 and the treatment area was fouled such that pump P101A/B could not meet the incoming flow rate from the extraction wells. As a short-term remedy, an air scouring procedure was executed and the system returned to normal operation. Cleaning the feed line with the same Unicid products used for extraction well redevelopment is scheduled for May.
- Extraction well AT-9 flow rate decreased to below the minimum flow rate of 125 gpm. Based on an assessment of AT-9 drawdown data, Bay West has determined the well is in need of redevelopment. To minimize extraction well downtime, Bay West will allow AT-9 to pump below minimum flow rate and perform re-development work in conjunction with piping upgrade work scheduled for Building 52/53.
- The pumping rate for AT-5B was below the minimum of 70 gpm for the month of April. As discussed in the March 2011 status report, Bay West is performing an acid cleaning event of the feed pipe between Building 52/53 and the groundwater treatment facility in May. Bay West will evaluate the utility of this cleaning approach and the efficacy of implementing it for the groundwater extraction lines.
- AT-7 flow rate was below the minimum of 37 gpm for the month of May. Well driller EH Renner inspected the pump and drop pipe, and found the pump intake to be fouled with debris. The pump was replaced with a clean spare and the drop pipe cleaned. The flow rate returned to 45 gpm after the change.

Well Performance Summary

Well	Average Monthly Flow Rate (GPM) (Available)	Average Monthly Flow Rate (GPM) (Operational)	Ideal Flow Rate (GPM)	% of Ideal Flow (Available)	% of Ideal Flow (Operational)	Minimum Flow Rate (GPM)	Available Hours of Operation	Operating Hours	On-Stream Factor (Available)
AT-3A	53.7	58.6	135	39.78%	43.41%	115	720	660	91.67%
AT-5A	137.0	139.4	156	87.82%	89.36%	138	720	708	98.33%
AT-5B	53.8	53.8	82	65.61%	65.61%	70	720	720	100.00%
AT-7	31.4	31.4	46	68.26%	68.26%	37	717	717	100.00%
AT-8	14.9	14.9	15	99.33%	99.33%	10	720	720	100.00%
AT-9	98.5	101.8	150	65.67%	67.87%	125	717	694	96.79%
AT-10	19.7	19.7	23	85.65%	85.65%	20	720	720	100.00%

TABLES

1. Groundwater Treatment Facility Operations
2. Electrical Meter Readings
3. Air Emissions

FIGURES

1. Monthly GWTF On Stream Factor
2. GWTF Total Treated Flow
3. Total Discharge
4. Gallons Treated vs. Time
5. AT-3A Monthly Flow vs. Time
6. AT-5A Monthly Flow vs. Time
7. AT-5B Monthly Flow vs. Time
8. AT-7 Monthly Flow vs. Time
9. AT-8 Monthly Flow vs. Time
10. AT-9 Monthly Flow vs. Time
11. AT-10 Monthly Flow vs. Time
12. Cost Per Gallons Treated vs. Time
13. Cost per Pound Contaminant Mass Removed vs. Time
14. Cumulative Contaminant Mass Removed vs. Cumulative Cost
15. Influent Contaminant Concentration vs. Time

Tables

NIROP FRIDLEY
Groundwater Treatment Facility (GWTF)

Month	OPERATIONS (hrs)			WATER DISCHARGED (thousands of gallons)					WATER TREATED (thousands of gallons)	
	Available	Operating	On-stream factor	to Storm	to Sanitary	Untreated to Sanitary	Total to Sanitary	% Storm	Monthly	Cumulative
Nov-98	480.0	480.0	100.0%	0	17,524	0	17,524	0%	17,524	17,524
Dec-98	718.0	628.0	87.5%	16,078	7,087	0	7,087	69%	23,165	40,689
Jan-99	744.0	743.0	99.9%	25,571	0	0	0	100%	25,571	66,260
Feb-99	672.0	672.0	100.0%	23,938	0	0	0	100%	23,938	90,198
Mar-99	744.0	744.0	100.0%	27,394	0	0	0	100%	27,394	117,592
Apr-99	720.0	720.0	100.0%	25,254	0	0	0	100%	25,254	142,846
May-99	744.0	744.0	100.0%	23,291	0	0	0	100%	23,291	166,137
Jun-99	720.0	713.0	99.0%	25,823	0	0	0	100%	25,823	191,960
Jul-99	744.0	744.0	100.0%	22,266	0	0	0	100%	22,266	214,226
Aug-99	684.0	684.0	100.0%	21,634	0	0	0	100%	21,634	235,860
Sep-99	720.0	720.0	100.0%	18,205	0	0	0	100%	18,205	254,065
Oct-99	744.0	744.0	100.0%	23,029	0	0	0	100%	23,029	277,094
Nov-99	720.0	720.0	100.0%	22,783	0	0	0	100%	22,783	299,877
Dec-99	535.0	535.0	100.0%	12,818	0	0	0	100%	12,818	312,695
Jan-00	356.0	356.0	100.0%	10,400	0	0	0	100%	10,400	323,095
Feb-00	695.0	694.0	99.9%	16,944	0	0	0	100%	16,944	340,039
Mar-00	744.0	743.5	99.9%	27,131	0	0	0	100%	27,131	367,170
Apr-00	720.0	720.0	100.0%	25,899	0	0	0	100%	25,899	393,069
May-00	744.0	744.0	100.0%	27,458	0	0	0	100%	27,458	420,527
Jun-00	718.9	718.9	100.0%	25,136	0	0	0	100%	25,136	445,663
Jul-00	744.0	744.0	100.0%	25,637	0	0	0	100%	25,637	471,300
Aug-00	744.0	744.0	100.0%	24,341	0	0	0	100%	24,341	495,641
Sep-00	655.5	655.5	100.0%	22,559	0	0	0	100%	22,559	518,200
Oct-00	744.0	744.0	100.0%	25,955	0	0	0	100%	25,955	544,155
Nov-00	720.0	718.0	99.7%	25,759	0	0	0	100%	25,759	569,914
Dec-00	744.0	743.5	99.9%	27,404	0	0	0	100%	27,404	597,318
Jan-01	744.0	744.0	100.0%	24,666	0	0	0	100%	24,666	621,984
Feb-01	672.0	671.0	99.9%	23,956	0	0	0	100%	23,956	645,940
Mar-01	744.0	737.0	99.1%	24,694	0	0	0	100%	24,694	670,634
Apr-01	720.0	719.5	99.9%	24,964	0	0	0	100%	24,964	695,598
May-01	604.3	602.3	99.7%	13,656	0	0	0	100%	13,656	709,254
Jun-01	709.5	708.3	99.8%	20,000	0	0	0	100%	20,000	729,254
Jul-01	730.0	730.0	100.0%	18,077	0	0	0	100%	18,077	747,331
Aug-01	491.0	491.0	100.0%	17,921	0	0	0	100%	17,921	765,252
Sep-01	0.0	0.0	100.0%	0	0	0	0	100%	0	765,252
Oct-01	736.0	472.5	64.2%	21,376	0	0	0	100%	21,376	786,628
Nov-01	720.0	720.0	100.0%	30,205	0	0	0	100%	30,205	816,833
Dec-01	744.0	744.0	100.0%	28,114	0	0	0	100%	28,114	844,947
Jan-02	742.0	737.0	99.3%	30,483	0	0	0	100%	30,483	875,430
Feb-02	672.0	672.0	100.0%	25,538	0	0	0	100%	25,538	900,968
Mar-02	744.0	744.0	100.0%	29,957	0	0	0	100%	29,957	930,925
Apr-02	744.0	743.8	100.0%	28,569	0	0	0	100%	28,569	959,494
May-02	744.0	741.0	99.6%	28,656	0	0	0	100%	28,656	988,150
Jun-02	720.0	720.0	100.0%	22,131	0	0	0	100%	22,131	1,010,281
Jul-02	744.0	744.0	100.0%	21,367	0	0	0	100%	21,367	1,031,648
Aug-02	744.0	744.0	100.0%	28,328	0	0	0	100%	28,328	1,059,976
Sep-02	630.3	630.3	100.0%	20,861	0	0	0	100%	20,861	1,080,837
Oct-02	744.0	744.0	100.0%	21,417	0	0	0	100%	21,417	1,102,254
Nov-02	720.0	720.0	100.0%	25,003	0	0	0	100%	25,003	1,127,257
Dec-02	744.0	742.0	99.7%	25,327	0	0	0	100%	25,327	1,152,584
Jan-03	744.0	55.0	7.4%	1,048	0	0	0	100%	1,048	1,153,632
Feb-03	672.0	0.0	0.0%	0	0	0	0	100%	0	1,153,632
Mar-03	744.0	309.0	41.5%	13,387	0	0	0	100%	13,387	1,167,019
Apr-03	526.5	425.5	80.8%	16,584	0	0	0	100%	16,584	1,183,603
May-03	744.0	298.5	40.1%	7,448	0	0	0	100%	7,448	1,191,051
Jun-03	720.0	253.0	35.1%	10,775	0	0	0	100%	10,775	1,201,826
Jul-03	734.0	576.3	78.5%	22,629	0	0	0	100%	22,629	1,224,455

O&M Start Date: 11 November 1998
Docs 58644

Table 1

NIROP FRIDLEY
Groundwater Treatment Facility (GWTF)

Month	OPERATIONS (hrs)			WATER DISCHARGED (thousands of gallons)					WATER TREATED (thousands of gallons)	
	Available	Operating	On-stream factor	to Storm	to Sanitary	Untreated to Sanitary	Total to Sanitary	% Storm	Monthly	Cumulative
Aug-03	732.5	639.8	87.3%	25,591	46	0	46	99.8%	25,637	1,250,092
Sep-03	720.0	719.0	99.9%	23,028	4,532	0	4,532	83.6%	27,560	1,277,652
Oct-03	681.7	648.5	95.1%	25,389	0	0	0	100%	25,389	1,303,041
Nov-03	720.0	694.0	96.4%	22,882	0	0	0	100%	22,882	1,325,923
Dec-03	743.0	740.5	99.7%	31,010	0	0	0	100%	31,010	1,356,933
Jan-04	744.0	727.0	97.7%	25,456	0	0	0	100%	25,456	1,382,389
Feb-04	689.7	689.7	100.0%	23,771	0	0	0	100%	23,771	1,406,160
Mar-04	506.5	353.5	69.8%	12,928	0	0	0	100%	12,928	1,419,088
Apr-04	720.0	2.0	0.3%	60	0	0	0	100%	60	1,419,148
May-04	744.0	635.0	85.3%	24,104	0	0	0	100%	24,104	1,443,252
Jun-04	613.5	613.5	100.0%	20,988	0	0	0	100%	20,988	1,464,240
Jul-04	735.5	732.8	99.6%	26,846	0	0	0	100%	26,846	1,491,086
Aug-04	741.0	741.0	100.0%	26,760	0	0	0	100%	26,760	1,517,846
Sep-04	718.0	717.0	99.9%	27,276	0	0	0	100%	27,276	1,545,122
Oct-04	676.8	676.8	100.0%	24,709	0	0	0	100%	24,709	1,569,831
Nov-04	720.0	720.0	100.0%	25,859	0	0	0	100%	25,859	1,595,690
Dec-04	744.0	744.0	100.0%	26,229	0	0	0	100%	26,229	1,621,919
Jan-05	744.0	667.0	89.7%	20,915	0	0	0	100%	20,915	1,642,834
Feb-05	672.0	672.0	100.0%	22,329	0	0	0	100%	22,329	1,665,163
Mar-05	744.0	716.8	96.3%	22,960	0	0	0	100%	22,960	1,688,123
Apr-05	384.0	322.0	83.9%	6,515	0	0	0	100%	6,515	1,694,638
May-05	576.0	503.5	87.4%	17,859	0	0	0	100%	17,859	1,712,497
Jun-05	720.0	714.5	99.2%	24,450	0	0	0	100%	24,450	1,736,947
Jul-05	744.0	712.5	95.8%	25,301	0	0	0	100%	25,301	1,762,248
Aug-05	744.0	744.0	100.0%	25,916	0	0	0	100%	25,916	1,788,164
Sep-05	720.0	715.3	99.4%	20,837	0	0	0	100%	20,837	1,809,001
Oct-05	744.0	744.0	100.0%	24,028	0	0	0	100%	24,028	1,833,029
Nov-05	720.0	720.0	100.0%	20,553	0	0	0	100%	20,553	1,853,582
Dec-05	686.0	622.3	90.7%	19,037	0	0	0	100%	19,037	1,872,619
Jan-06	744.0	744.0	100.0%	21,858	0	0	0	100%	21,858	1,894,477
Feb-06	672.0	672.0	100.0%	19,590	0	0	0	100%	19,590	1,914,067
Mar-06	710.5	710.0	99.9%	13,935	0	0	0	100%	13,935	1,928,002
Apr-06	654.0	654.0	100.0%	18,391	0	0	0	100%	18,391	1,946,393
May-06	744.0	744.0	100.0%	18,116	0	0	0	100%	18,116	1,964,509
Jun-06	720.0	719.5	99.9%	16,616	0	0	0	100%	16,616	1,981,125
Jul-06	716.0	716.0	100.0%	14,232	0	0	0	100%	14,232	1,995,357
Aug-06	744.0	742.0	99.7%	13,291	0	0	0	100%	13,291	2,008,648
Sep-06	720.0	720.0	100.0%	14,269	0	0	0	100%	14,269	2,022,917
Oct-06	731.0	730.5	99.9%	13,496	0	0	0	100%	13,496	2,036,413
Nov-06	396.0	110.0	27.8%	3,073	0	0	0	100%	3,073	2,039,486
Dec-06	744.0	743.5	99.9%	25,287	0	0	0	100%	25,287	2,064,773
Jan-07	720.0	719.5	99.9%	25,118	0	0	0	100%	25,118	2,089,891
Feb-07	671.8	659.8	98.2%	21,953	0	0	0	100%	21,953	2,111,844
Mar-07	744.0	734.0	98.7%	25,860	0	0	0	100%	25,860	2,137,703
Apr-07	720.0	720.0	100.0%	24,240	0	0	0	100%	24,240	2,161,943
May-07	744.0	744.0	100.0%	19,004	0	0	0	100%	19,004	2,180,947
Jun-07	719.5	719.5	100.0%	20,659	0	0	0	100%	20,659	2,201,606
Jul-07	744.0	744.0	100.0%	19,389	0	0	0	100%	19,389	2,220,995
Aug-07	696.0	696.0	100.0%	16,354	0	0	0	100%	16,354	2,237,349
Sep-07	720.0	720.0	100.0%	15,320	0	0	0	100%	15,320	2,252,669
Oct-07	744.0	744.0	100.0%	14,409	0	0	0	100%	14,409	2,267,078
Nov-07	720.0	720.0	100.0%	17,388	0	0	0	100%	17,388	2,284,466
Dec-07	744.0	739.0	99.3%	17,002	0	0	0	100%	17,002	2,301,468
Jan-08	742.0	684.0	92.2%	17,115	0	0	0	100%	17,115	2,318,583
Feb-08	695.3	611.8	88.0%	13,581	0	0	0	100%	13,581	2,332,164
Mar-08	744.0	742.0	99.7%	13,277	0	0	0	100%	13,277	2,345,441
Apr-08	720.0	717.0	99.6%	12,518	0	0	0	100%	12,518	2,357,959

O&M Start Date: 11 November 1998
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Table 1

NIROP FRIDLEY
Groundwater Treatment Facility (GWTF)

Month	OPERATIONS (hrs)			WATER DISCHARGED (thousands of gallons)					WATER TREATED (thousands of gallons)	
	Available	Operating	On-stream factor	to Storm	to Sanitary	Untreated to Sanitary	Total to Sanitary	% Storm	Monthly	Cumulative
May-08	718.0	692.0	96.4%	15,430	0	0	0	100%	15,430	2,373,389
Jun-08	333.5	333.5	100.0%	6,523	0	0	0	100%	6,523	2,379,912
Jul-08	719.0	719.0	100.0%	15,762	0	0	0	100%	15,762	2,395,674
Aug-08	729.3	729.3	100.0%	20,183	0	0	0	100%	20,183	2,415,857
Sep-08	720.0	720.0	100.0%	19,632	0	0	0	100%	19,632	2,435,489
Oct-08	737.0	737.0	100.0%	19,818	0	0	0	100%	19,818	2,455,307
Nov-08	662.0	662.0	100.0%	18,191	0	0	0	100%	18,191	2,473,498
Dec-08	744.0	744.0	100.0%	20,926	0	0	0	100%	20,926	2,494,424
Jan-09	741.0	741.0	100.0%	20,301	44	0	44	99.8%	20,301	2,514,725
Feb-09	672.0	672.0	100.0%	17,546	0	0	0	100%	17,546	2,532,271
Mar-09	711.9	711.2	99.9%	17,766	0	0	0	100%	17,766	2,550,037
Apr-09	709.0	705.6	99.5%	16,434	0	0	0	100%	16,434	2,566,471
May-09	739.8	739.8	100.0%	23,663	0	0	0	100%	23,663	2,590,134
Jun-09	719.8	719.8	100.0%	21,234	0	0	0	100%	21,234	2,611,368
Jul-09	744.0	744.0	100.0%	21,846	0	0	0	100%	21,846	2,633,214
Aug-09	744.0	744.0	100.0%	20,933	0	0	0	100%	20,933	2,654,147
Sep-09	697.2	697.2	100.0%	16,585	0	0	0	100%	16,585	2,670,732
Oct-09	743.5	743.5	100.0%	18,919	0	0	0	100%	18,919	2,689,651
Nov-09	720.0	720.0	100.0%	19,768	0	0	0	100%	19,768	2,709,419
Dec-09	744.0	744.0	100.0%	18,162	0	0	0	100%	18,162	2,727,581
Jan-10	740.3	740.3	100.0%	19,542	0	0	0	100%	19,542	2,747,123
Feb-10	672.0	658.0	97.9%	14,805	0	0	0	100%	14,805	2,761,928
Mar-10	744.0	744.0	100.0%	14,596	0	0	0	100%	14,596	2,776,524
Apr-10	720.0	720.0	100.0%	15,598	0	0	0	100%	15,598	2,792,122
May-10	744.0	742.5	99.8%	18,090	0	0	0	100%	18,090	2,810,212
Jun-10	720.0	697.0	96.8%	10,717	0	0	0	100%	10,717	2,820,929
Jul-10	744.0	722.2	97.1%	12,254	0	0	0	100%	12,254	2,833,183
Aug-10	694.5	404.0	58.2%	3,789	0	0	0	100%	3,789	2,836,972
Sep-10	712.0	700.0	98.3%	12,552	0	0	0	100%	12,552	2,849,524
Oct-10	690.6	690.6	100.0%	12,926	0	0	0	100%	12,926	2,862,450
Nov-10	719.5	716.0	99.5%	15,466	0	0	0	100%	15,466	2,877,916
Dec-10	737.0	721.5	97.9%	15,855	0	0	0	100%	15,855	2,893,771
Jan-11	744.0	744.0	100.0%	17,199	0	0	0	100%	17,199	2,910,970
Feb-11	667.0	665.0	99.7%	16,551	0	0	0	100%	16,551	2,927,521
Mar-11	744.0	744.0	100.0%	17,827	0	0	0	100%	17,827	2,945,348
Apr-11	711.3	708.3	99.6%	14,063	0	0	0	100%	14,063	2,959,411

Note: Available hours are 24 hours per day, less scheduled down time and power outages.

* Monthly flow incorrectly reported for Jul-04 through Dec-04 - corrected January 2005 using the corrected estimate for AT-10 monthly flow.

NIROP FRIDLEY
Ground Water Treatment Facility (GWTF)

Date	Electrical Meter Readings (kW·h)					Monthy Usage
	MCC #1	MCC #2	Wells 2, 3A, 5A, 5B	Well 1A	Well 4	
2/1/2000	57,305	620,300				38,046
3/1/2000	59,597	656,054				36,133
3/9/2000	60,348	667,580	18,260	3,284	2,312	65,029
4/3/2000	63,080	704,113	38698	6043	4879	74,067
5/1/2000	66,067	746,920	60,940	9,238	7,715	81,545
6/1/2000	68,972	793,455	86495	12728	10775	66,128
7/1/2000	71,562	840,441	110,243	16,307		
7/6/2000					13701	13,701
8/1/2000	73,881	881,304	130,691	19,559	16,686	72,336
9/1/2000	76,316	924,799	152695	22976	17671	67,877
10/2/2000	78,561	964,802	172,714	26,079	20,178	
11/1/2000	80,952	7,402	195655	29408	22454	89,927
12/4/2000	83,561	56,966	225,897	33,105	26,269	81,706
1/2/2001	85,851	101,872	254750	36270	28761	72,935
2/1/2001	88,106	143,918	282,532	37,122	28,761	83,944
3/1/2001	90,240	190,303	314000	41079	28761	66,663
4/3/2001	92,677	230,575	335,297	43,736	28,761	65,567
5/1/2001	94,779	269,617	357244	46212	28761	
6/5/2001	97,821	304,746	*	*	*	38,108
7/2/2001	102,175	338,500	*	*	*	44,802
8/2/2001	106,592	378,885	*	*	*	37,804
9/12/2001	111,321	411,960	*	*	*	13,663
10/18/2001	112,956	423,988	*	*	*	29,471
11/1/2001	117,010	449,405	*	*	*	68,542
12/4/2001	126,457	508,500	*	*	*	60,932
1/2/2002	134,884	561,005	*	*	*	56,801
2/1/2002	142,948	609,742	*	*	*	55,300
3/1/2002	150,583	657,407	*	*	*	64,231
4/1/2002	159,332	712,889	*	*	*	59,291
5/1/2002	167,808	763,704	*	*	*	63,448
6/3/2002	176,272	818,688	*	*	*	43,974
7/1/2002	182,246	856,688	*	*	*	45,609
8/1/2002	188,404	896,139	*	*	*	60,074
9/3/2002	196,255	948,362	*	*	*	44,067
10/1/2002	202,142	986,542	*	*	*	60,158
11/1/2002	209,581	1,039,261	*	*	*	60,538
12/2/2002	216,632	1,092,748	*	*	*	
1/1/2003	223,233	0	*	*	*	
2/1/2003	224,233	1,146,792	*	*	*	7,827
3/19/2003	227,523	1,151,329	*	*	*	22,891
4/3/2003	230,589	1,171,154	*	*	*	32,058
5/1/2003	235,275	1,198,526	*	*	*	18,373
6/4/2003	237,675	1,214,499	*	*	*	20,360
7/1/2003	240,411	1,232,123	*	*	*	42,930
8/1/2003	246,351	1,269,113	*	*	*	49,909
9/2/2003	253,306	1,312,067	*	*	*	52,166
10/1/2003	260,662	1,356,877	*	*	*	58,962
11/3/2003	268,788	1,407,713	*	*	*	57,373
12/1/2003	276,592	1,457,282	*	*	*	67,477
1/2/2004	285,175	1,516,176	*	*	*	67,278
2/2/2004	293,559	1,575,070	*	*	*	60,542
3/1/2004	301,245	1,627,926	*	*	*	31,187
4/1/2004	305,283	1,655,075	*	*	*	1,037
5/3/2004	305,515	1,655,880	*	*	*	51,931
6/1/2004	312,129	1,701,197	*	*	*	47,852
7/1/2004	318,012	1,743,166	*	*	*	60,764

NIROP FRIDLEY
Ground Water Treatment Facility (GWTF)

Date	Electrical Meter Readings (kW·h)					Monthy Usage
	MCC #1	MCC #2	Wells 2, 3A, 5A, 5B	Well 1A	Well 4	
8/3/2004	326,133	1,795,809	*	*	*	55,312
9/1/2004	335,039	1,842,215	*	*	*	52,307
10/1/2004	340,422	1,889,139	*	*	*	53,798
11/2/2004	347,296	1,936,063	*	*	*	64,045
12/1/2004	354,514	1,992,890	*	*	*	64,887
1/5/2005	362,574	49,717	*	*	*	48,313
2/1/2005	368,114	92,490	*	*	*	56,517
3/1/2005	374,689	142,432	*	*	*	35,669
4/1/2005	381,858	170,932	*	*	*	32,506
5/11/2005	384,388	200,908	*	*	*	37,857
6/2/2005	389,382	233,771	*	*	*	53,851
7/1/2005	395,908	281,096	*	*	*	55,772
8/1/2005	402,786	329,990	*	*	*	58,530
9/1/2005	410,054	381,252	*	*	*	59,756
10/4/2005	416,742	434,320	*	*	*	54,337
11/1/2005	423,117	482,282	*	*	*	59,439
12/1/2005	429,602	535,236	*	*	*	58,139
1/3/2006	437,032	585,945	*	*	*	64,273
2/3/2006	444,929	642,321	*	*	*	59,745
3/3/2006	451,966	695,029	*	*	*	59,447
4/4/2006	458,470	747,972	*	*	*	52,154
5/2/2006	464,407	794,189	*	*	*	56,066
6/1/2006	470,107	844,555	*	*	*	67,078
7/7/2006	476,656	905,084	*	*	*	75,362
8/17/2006	483,201	973,901	*	*	*	28,651
9/1/2006	485,579	174	*	*	*	60,559
10/2/2006	490,846	55,466	*	*	*	64,783
11/16/2006	497,232	113,863	*	*	*	30,896
12/12/2006	501,656	140,335	*	*	*	41,005
1/2/2007	507,345	175,651	*	*	*	89,453
2/14/2007	519,226	253,223	*	*	*	60,625
3/15/2007	526,775	306,299	*	*	*	37,019
4/1/2007	531,435	338,658	*	*	*	59,380
5/1/2007	538,780	390,693	*	*	*	60,309
6/2/2007	546,435	443,347	*	*	*	57,976
7/2/2007	552,240	495,518	*	*	*	54,945
8/1/2007	558,047	544,656	*	*	*	56,900
9/4/2007	563,999	595,604	*	*	*	48,947
10/1/2007	568,907	639,643	*	*	*	55,912
11/1/2007	574,269	690,193	*	*	*	61,551
12/3/2007	580,906	745,107	*	*	*	58,075
1/2/2008	587,234	796,854	*	*	*	61,758
2/1/2008	593,878	851,968	*	*	*	56,961
3/6/2008	601,457	901,350	*	*	*	47,128
4/1/2008	607,103	942,832	*	*	*	51,563
5/2/2008	613,973	987,525	*	*	*	45,409
6/2/2008	619,382	27,525	*	*	*	23,755
7/1/2008	621,730	48,932	*	*	*	57,458
8/1/2008	627,904	100,216	*	*	*	59,836
9/2/2008	634,818	153,138	*	*	*	57,157
10/4/2008	641,270	203,843	*	*	*	61,110

NIROP FRIDLEY
Ground Water Treatment Facility (GWTF)

Date	Electrical Meter Readings (kW·h)					Monthy Usage
	MCC #1	MCC #2	Wells 2, 3A, 5A, 5B	Well 1A	Well 4	
11/3/2008	648,196	258,027	*	*	*	58,512
12/1/2008	655,158	309,577	*	*	*	71,027
1/2/2009	663,755	372,007	*	*	*	69,361
2/2/2009	672,125	432,998	*	*	*	62,234
3/2/2009	679,788	487,569	*	*	*	61,618
4/1/2009	687,315	541,660	*	*	*	63,015
5/1/2009	694,461	597,529	*	*	*	63,751
6/1/2009	701,440	654,301	*	*	*	60,286
7/1/2009	708,069	707,958	*	*	*	65,088
8/3/2009	715,267	765,848	*	*	*	57,140
9/1/2009	721,611	816,644	*	*	*	56,282
10/1/2009	727,548	866,989	*	*	*	65,845
11/2/2009	734,666	925,716	*	*	*	60,372
12/1/2009	741,891	978,863	*	*	*	77,030
1/1/2010	750,050	1,047,734	*	*	*	63,139
2/1/2010	757,037	1,103,886	*	*	*	61,079
3/1/2010	763,509	1,158,493	*	*	*	69,431
4/1/2010	769,960	1,221,473	*	*	*	59,638
5/3/2010	775,813	1,275,258	*	*	*	54,143
6/1/2010	780,680	1,324,534	*	*	*	51,279
7/1/2010	784,369	1,372,124	*	*	*	75,167
8/2/2010	789,289	1,442,371	*	*	*	8,482
9/1/2010	791,567	1,448,575	*	*	*	55,237
10/1/2010	796,016	1,499,363	*	*	*	61,303
11/1/2010	800,411	1,556,271	*	*	*	60,565
12/1/2010	806,672	1,610,575	*	*	*	68,226
1/3/2011	813,611	1,671,862	*	*	*	64,951
2/1/2011	820,001	1,730,423	*	*	*	58,883
3/1/2011	825,935	1,783,372	*	*	*	68,939
4/1/2011	832,880	1,845,366	*	*	*	58,997

* Electrical metering for the extraction wells runs through MCC #1

- The electrical meter in the main treatment area was misread on 1/1/03, thus it was not reset. December electricity usage was estimated to be the same as November 2002.

^ The electrical meter in the main treatment area had reset after the scheduled power shut-down. October 2004 electricity usage for MCC#2 was estimated to be the same as September 2004.

+ - electrical readings were not obtained on December 1, 2004, therefore electrical usage for November was estimated to be similar to October 2004.

Table 3

Form 1.1 - Air Stripper Screening Evaluation

Site Name: NIROP Fridley	Responsible Party Contact:	Form Completed by:
Address: 4800 East River Road Minneapolis, MN 55421	Name: Howard Hickey Affiliation: Midwest Division Naval Facilities Engineering Command	Steve Head Date: 4/25/2011
MPCA Leak #: Not Applicable	Phone #: 847-668-5999	

	A	B	C	D	E	
Contaminant (CAS #)	Contaminant Concentration (GC) (ug/liter)	Air Stripper Influent Flow Rate (IFR) (liters/sec)	Removal Factor (RF)	Emission Rate (ER) (ug/sec)	Site Specific Allowable Emission Rate (AER) (ug/sec)	Is ER >/= AER? (yes/no)
1,1-dichloroethane (75-34-3)	1.50	25.10	1	37.7	135,000,000	No
1,1-dichloroethylene (75-35-4)	0.67	25.10	1	16.8	54,000	No
methylene chloride (75-09-2)	0.15	25.10	1	3.8	54,000	No
tetrachloroethylene (127-18-4)	1.50	25.10	1	37.7	4,600,000	No
trichloroethylene (79-01-6)	300	25.10	1	7,530.0	1,600,000	No

Note: If the incoming concentration is not detectable the Emission Rate is based on the detection limit.

Figures

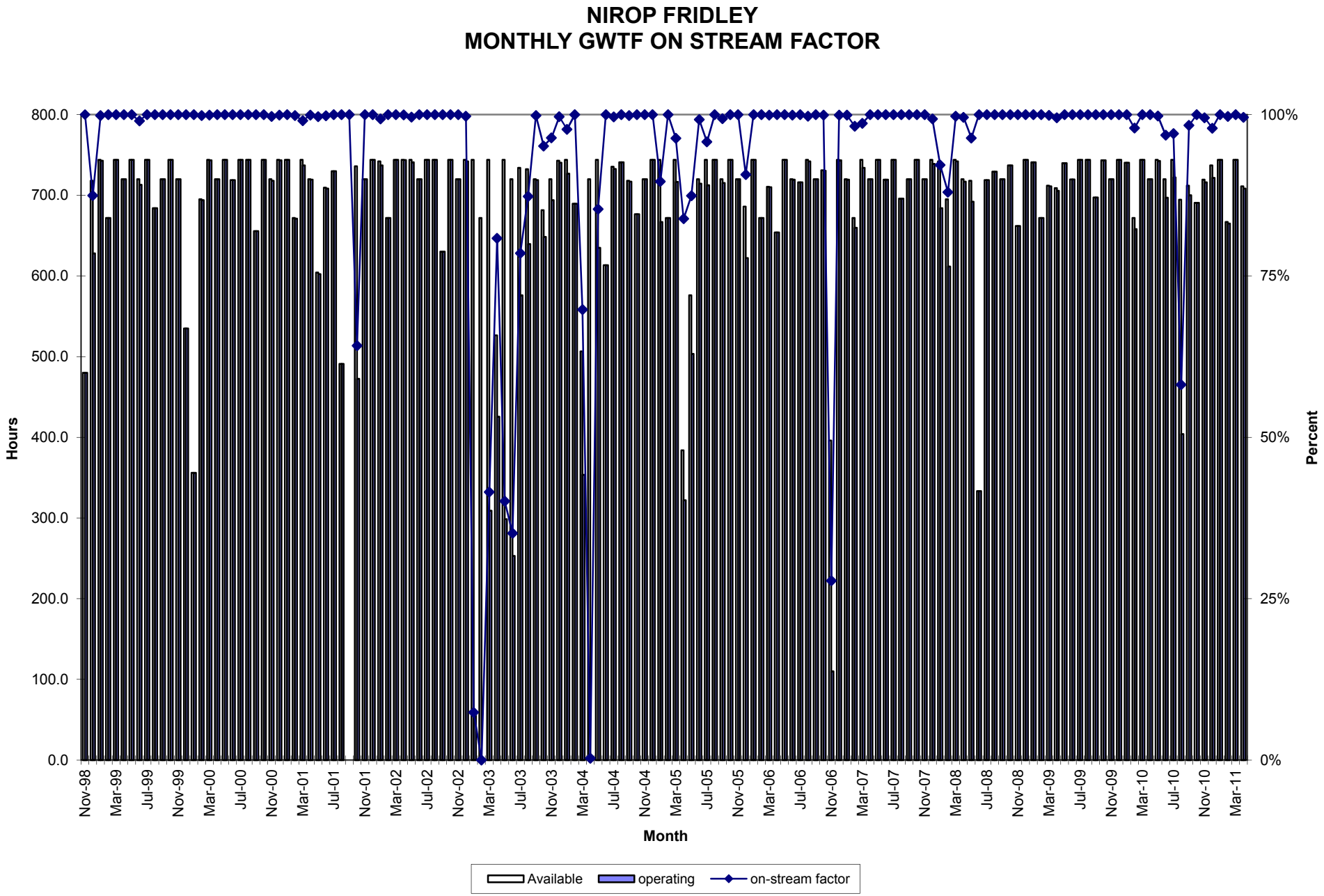

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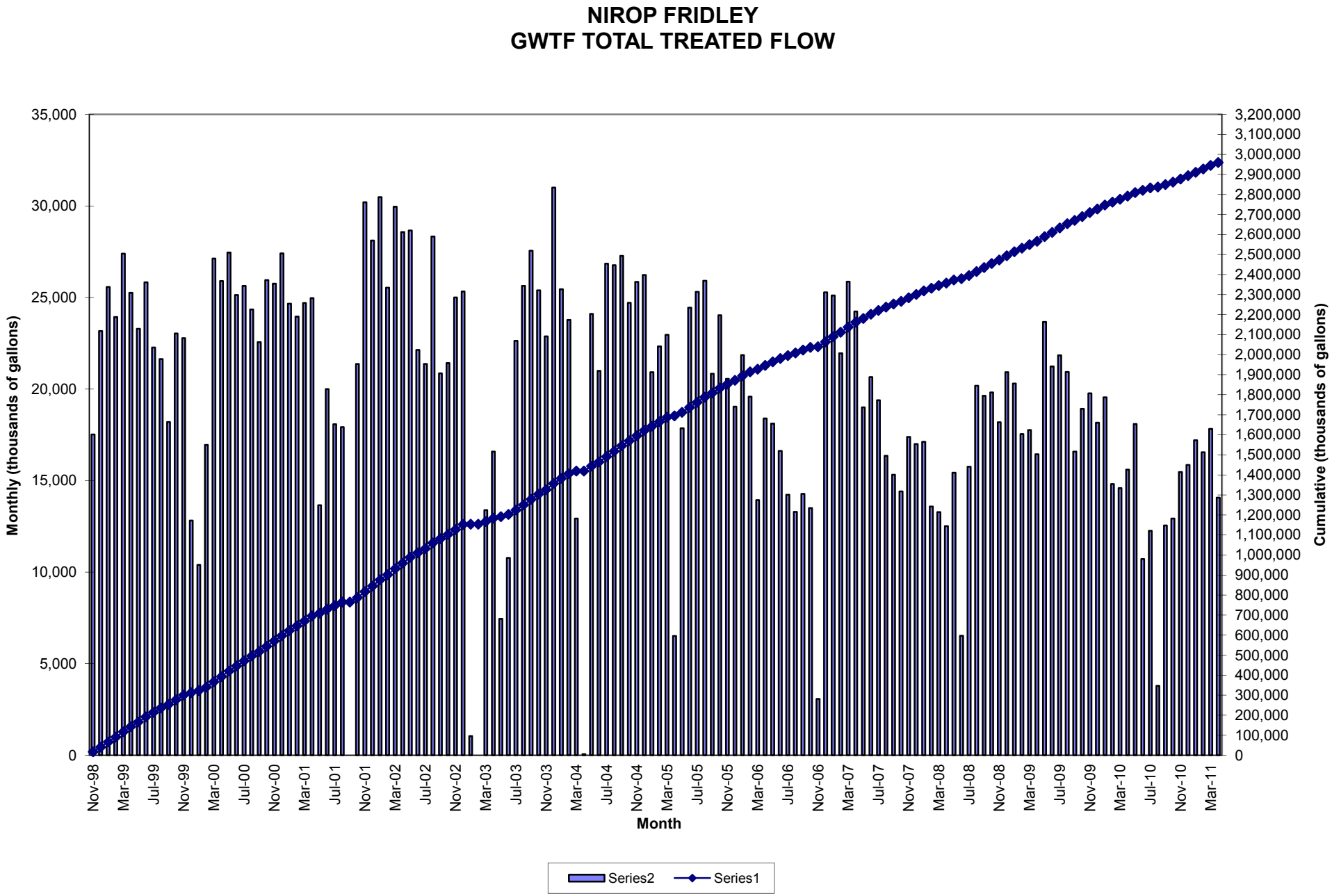
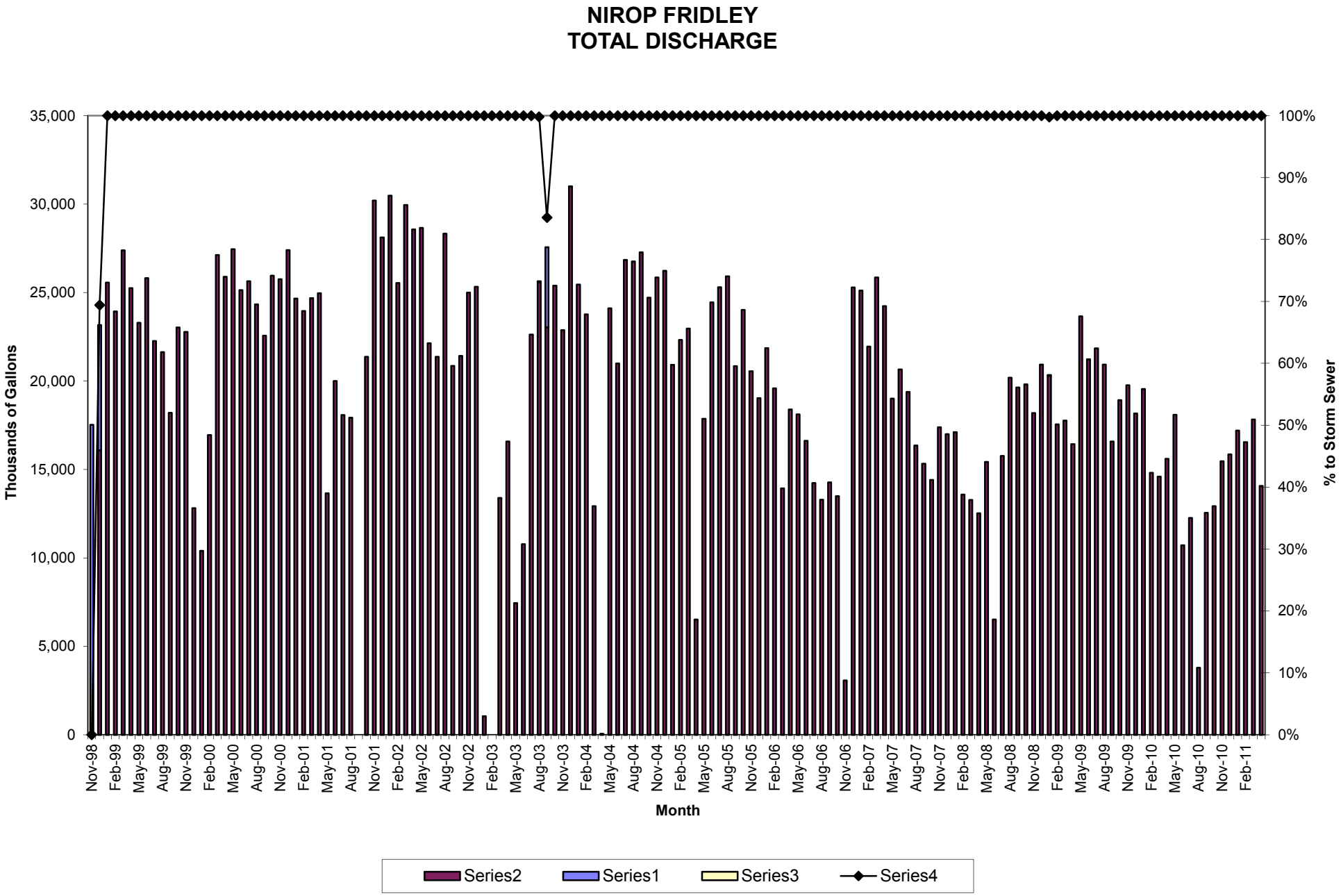
Figure 1



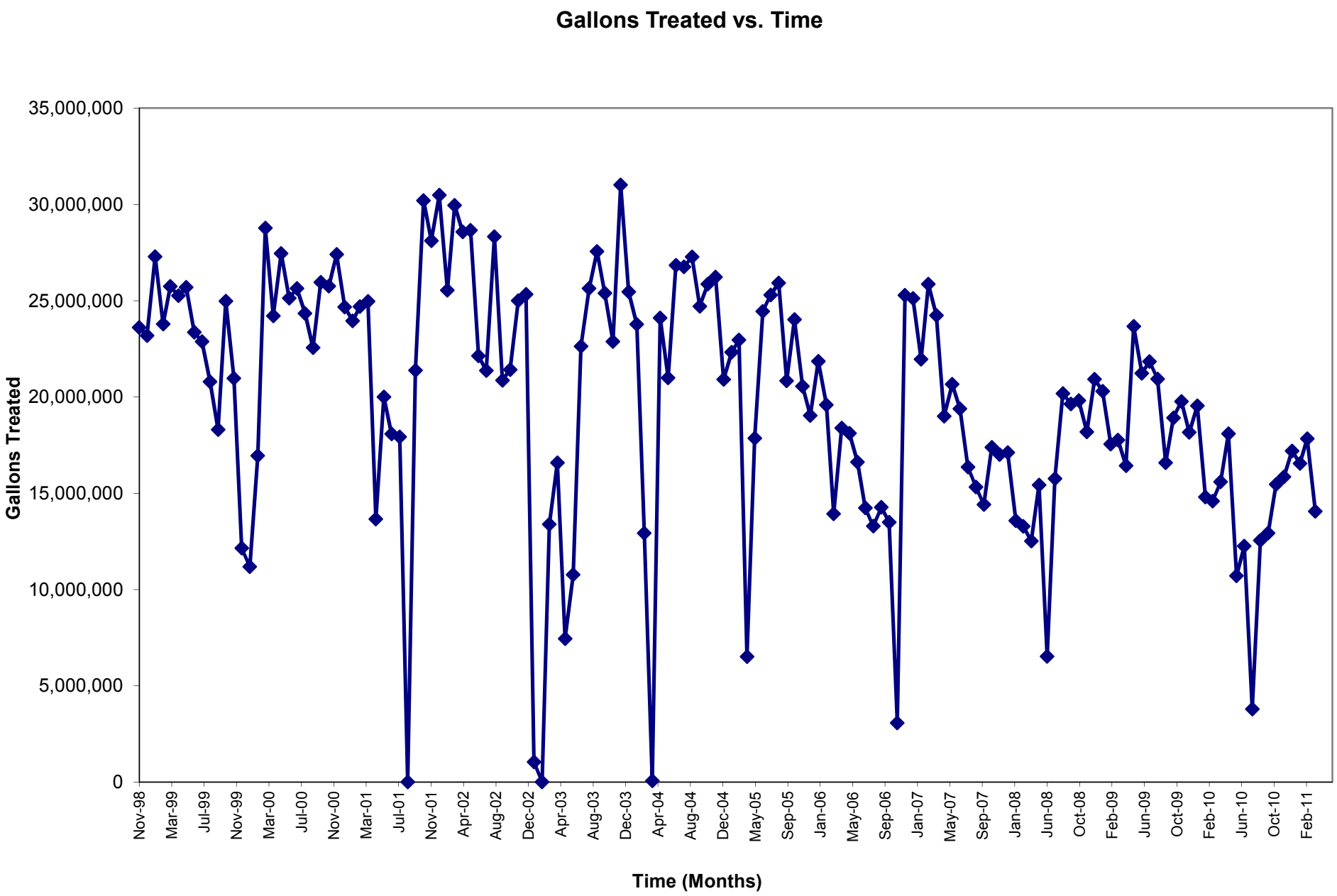
Docs 58644

Figure 2



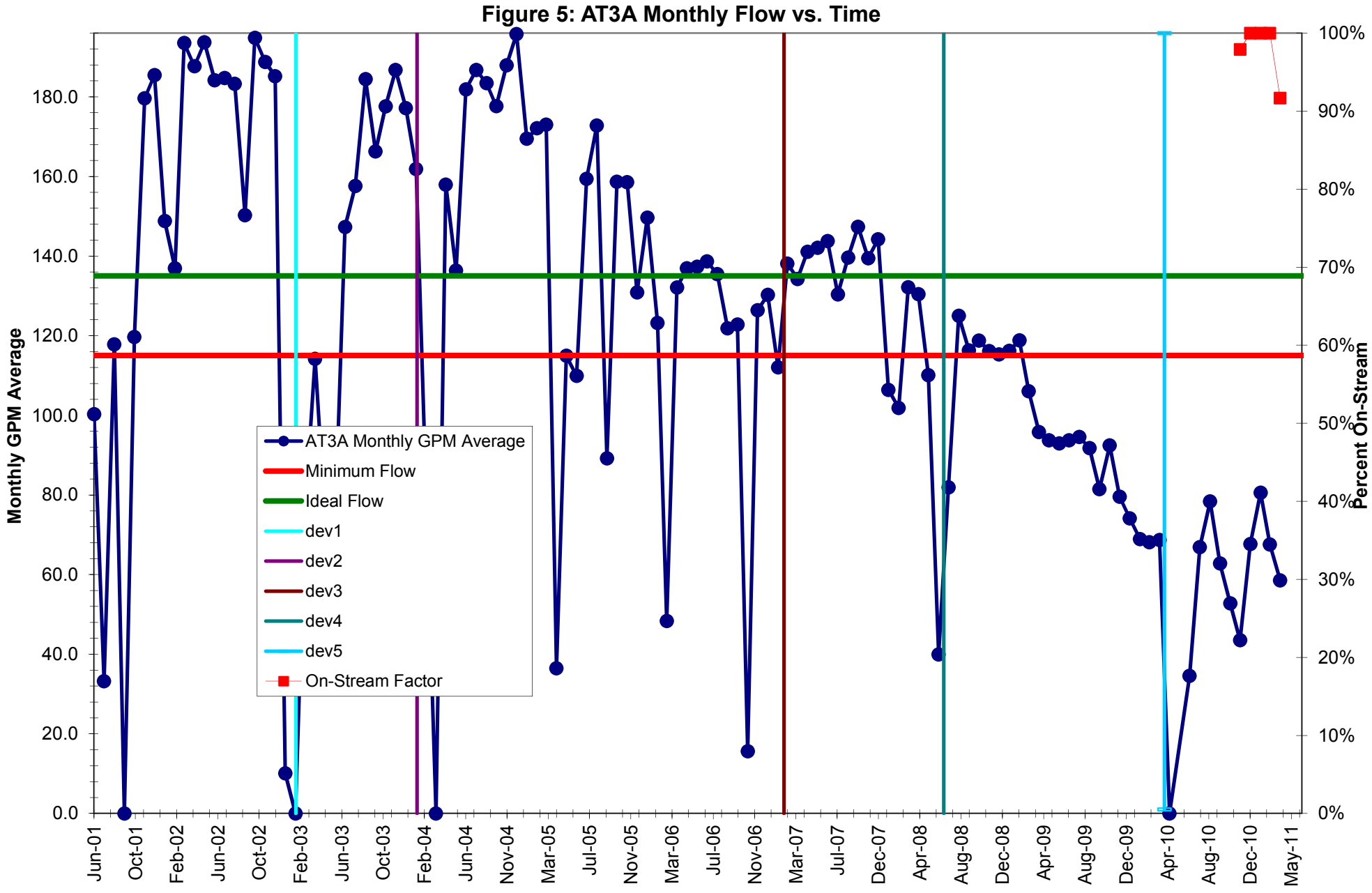
Docs 58644

Figure 3

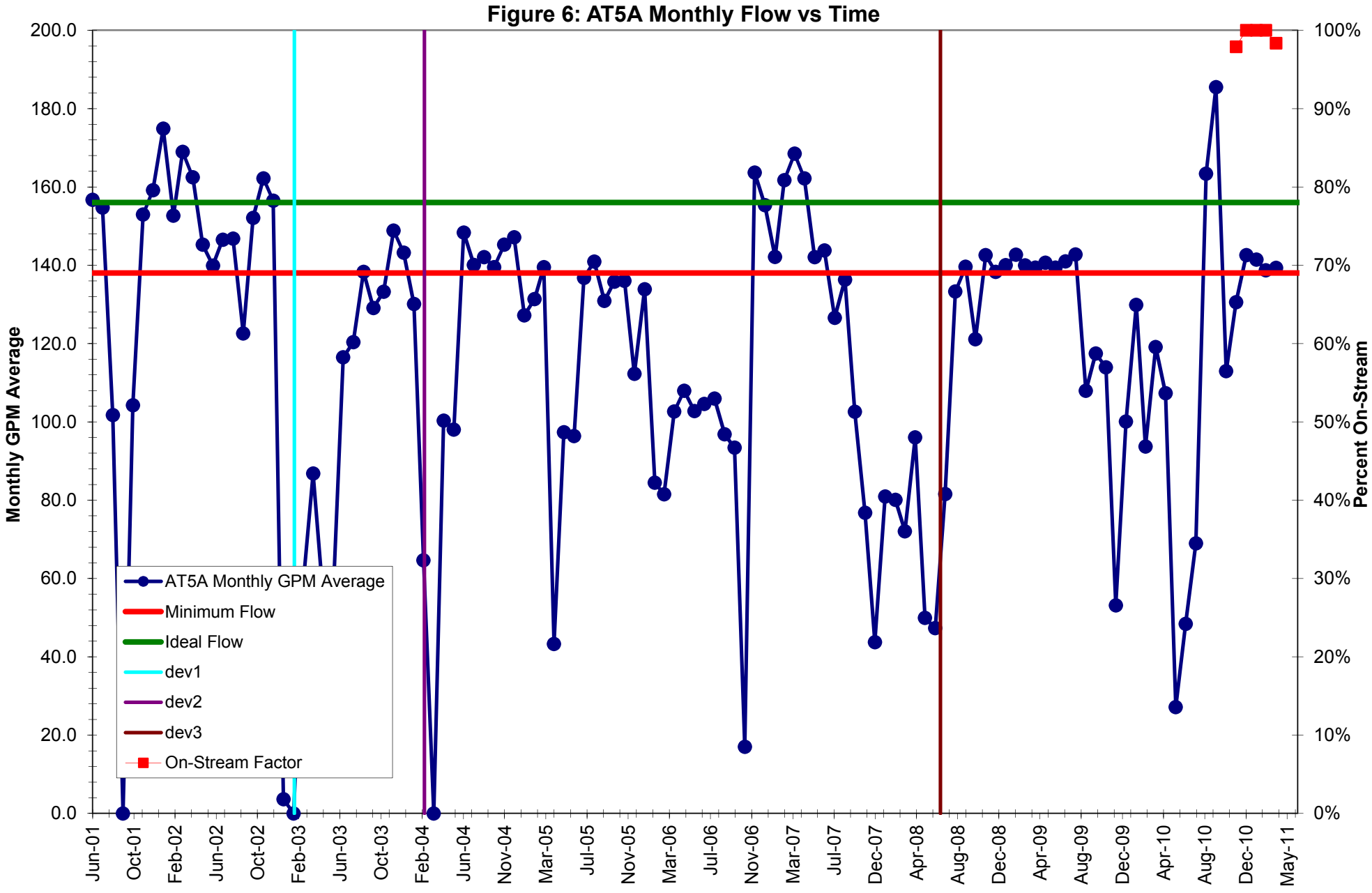


Docs 49267

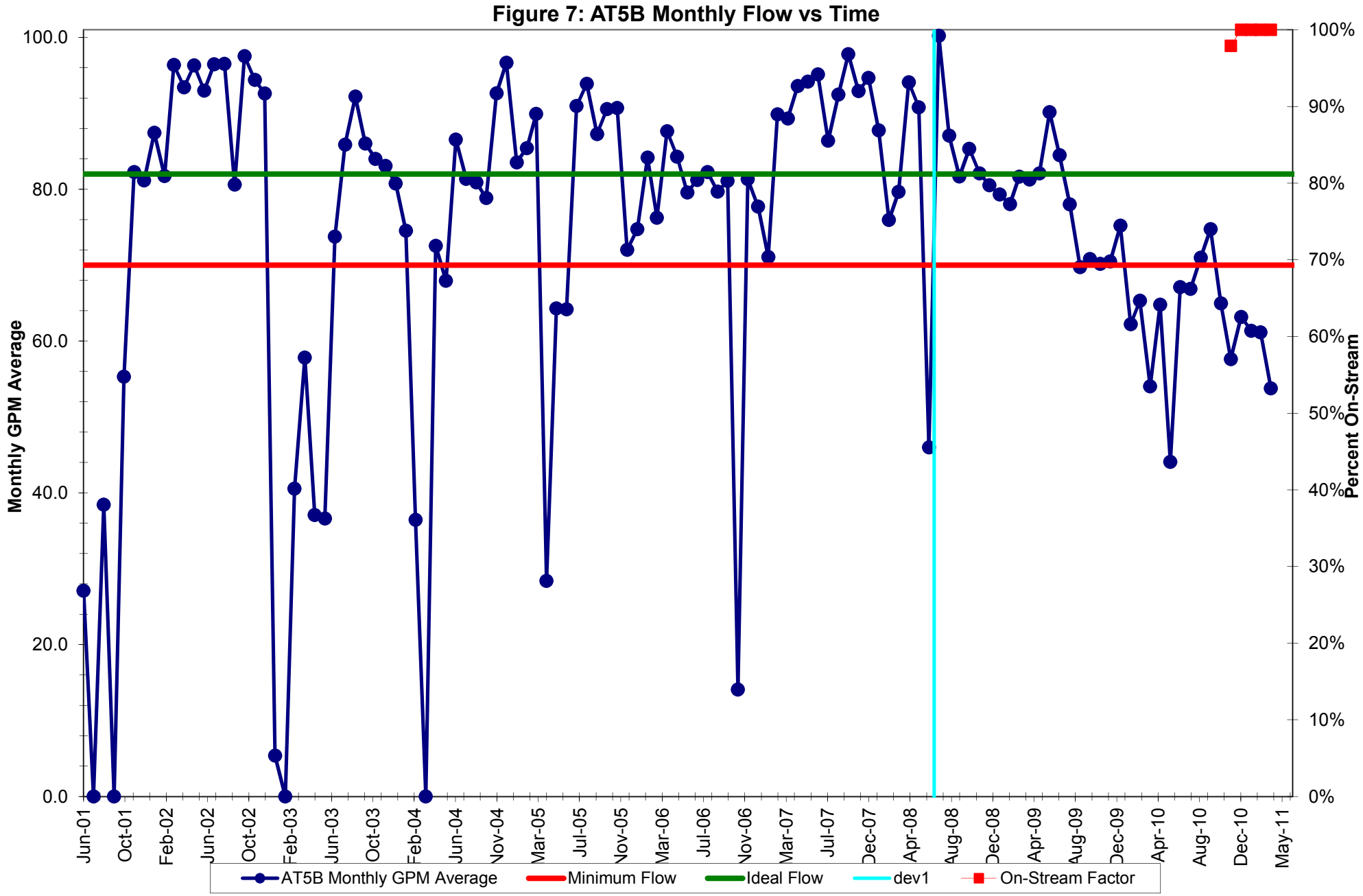
Figure 4



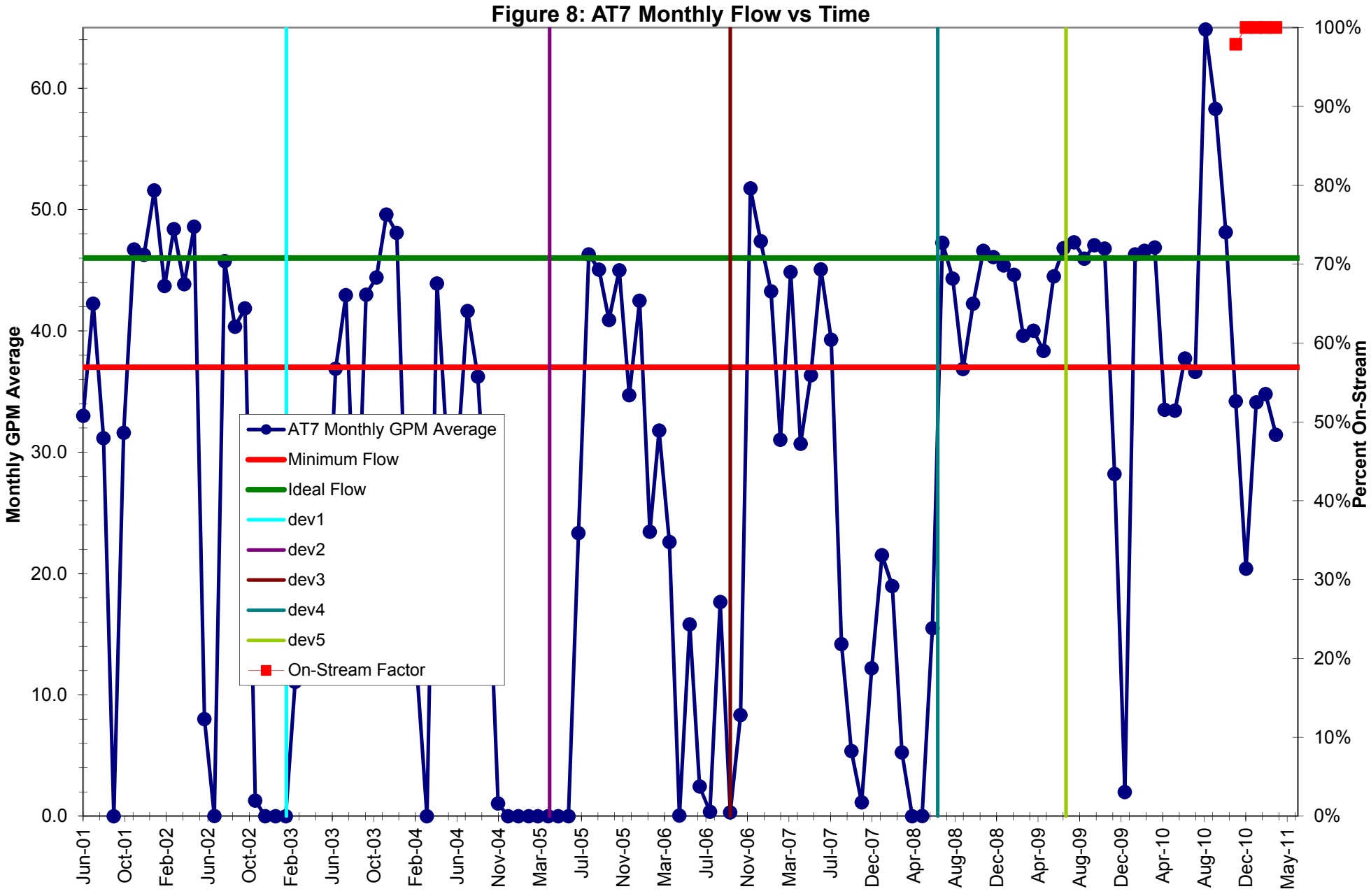
* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.



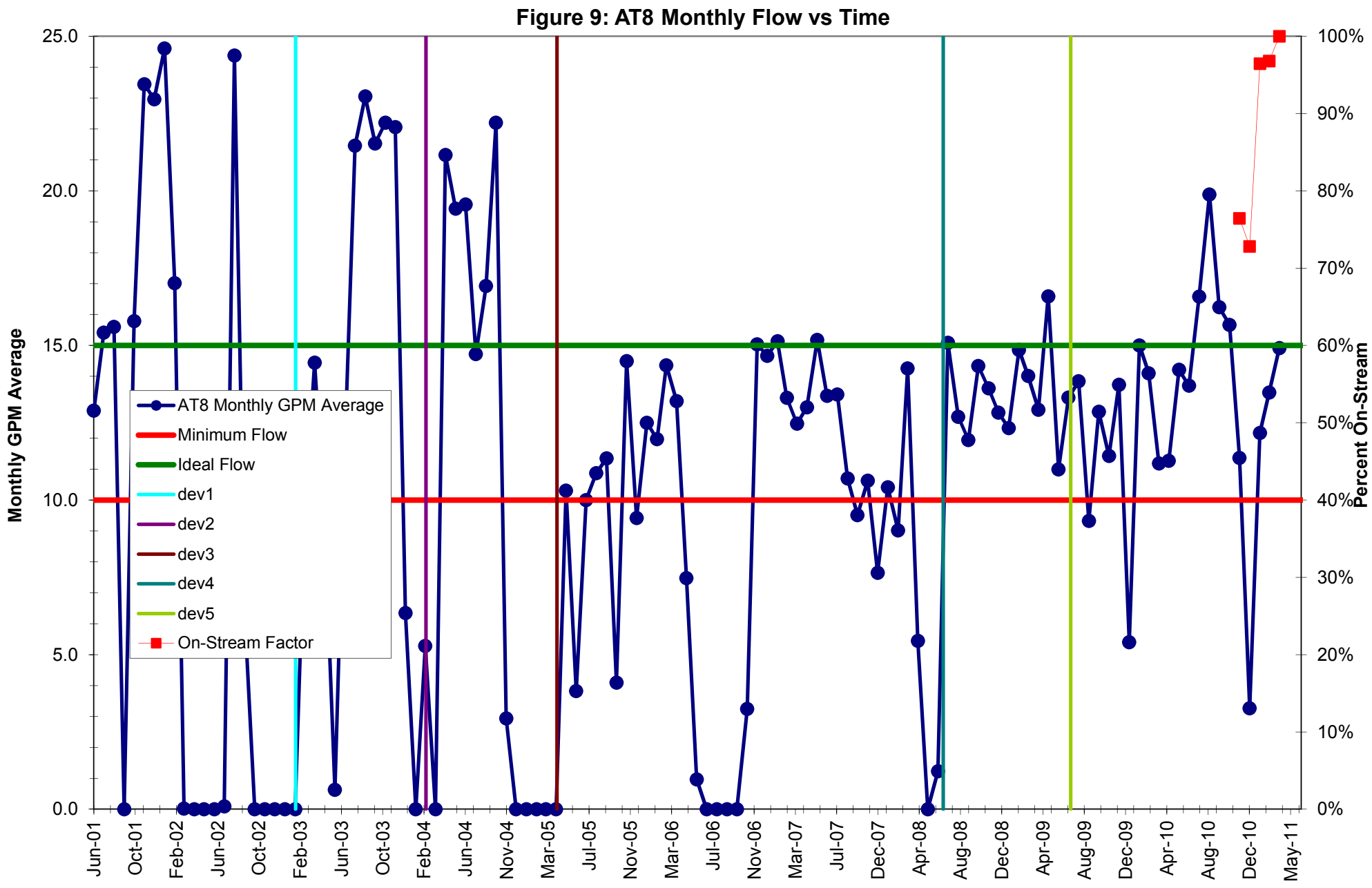
* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.



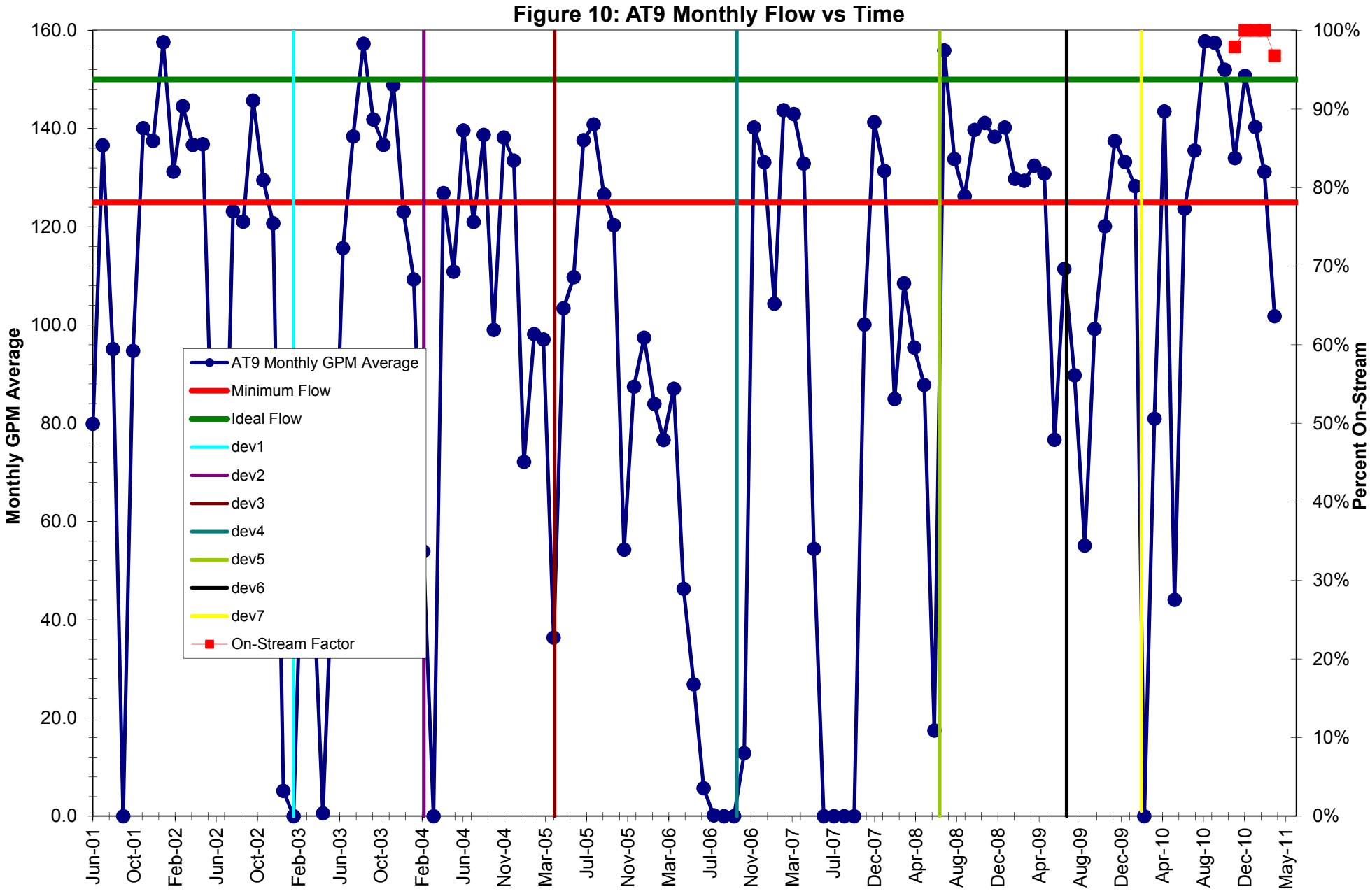
* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.



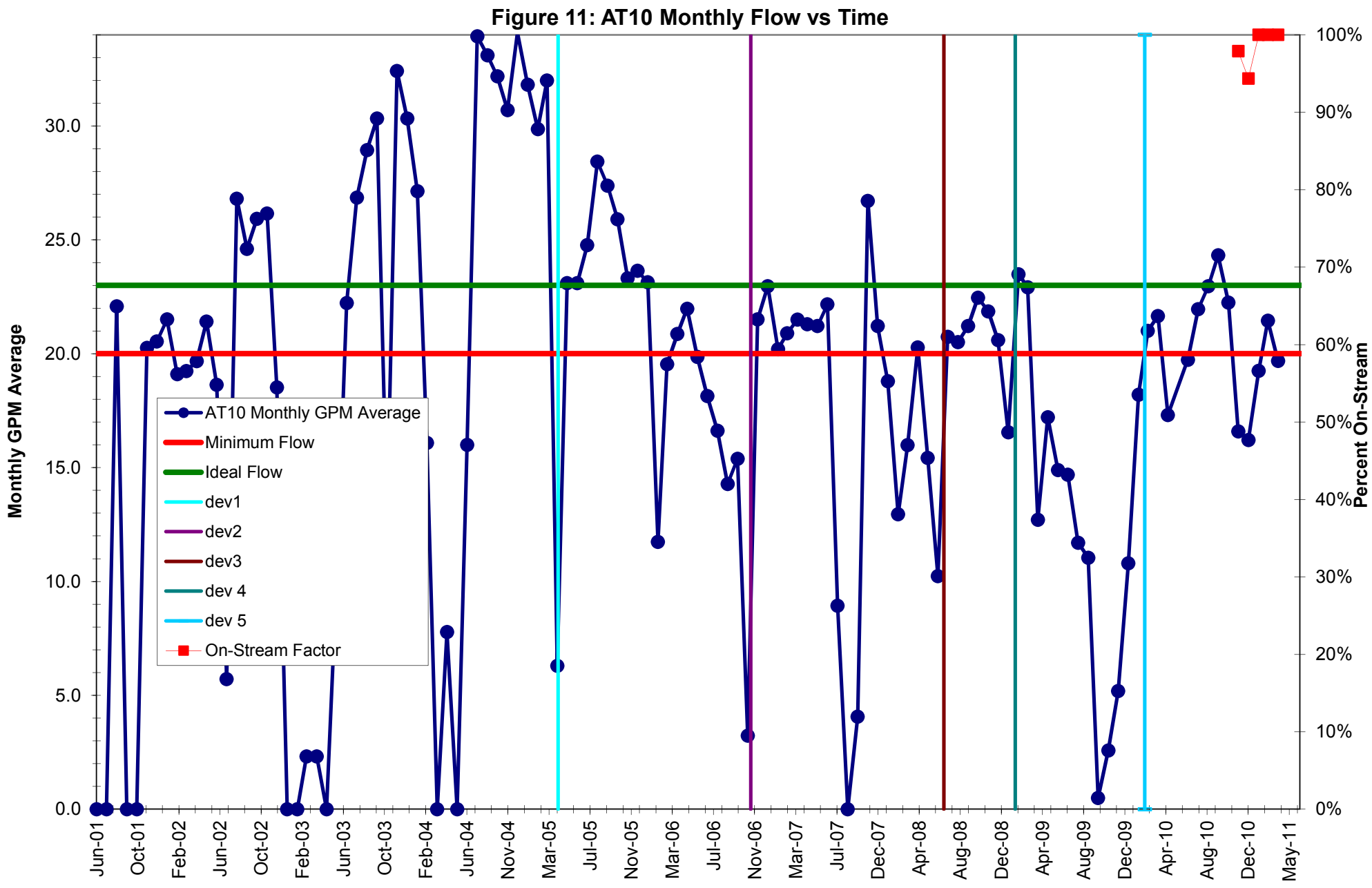
* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.



* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.



* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.



* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.

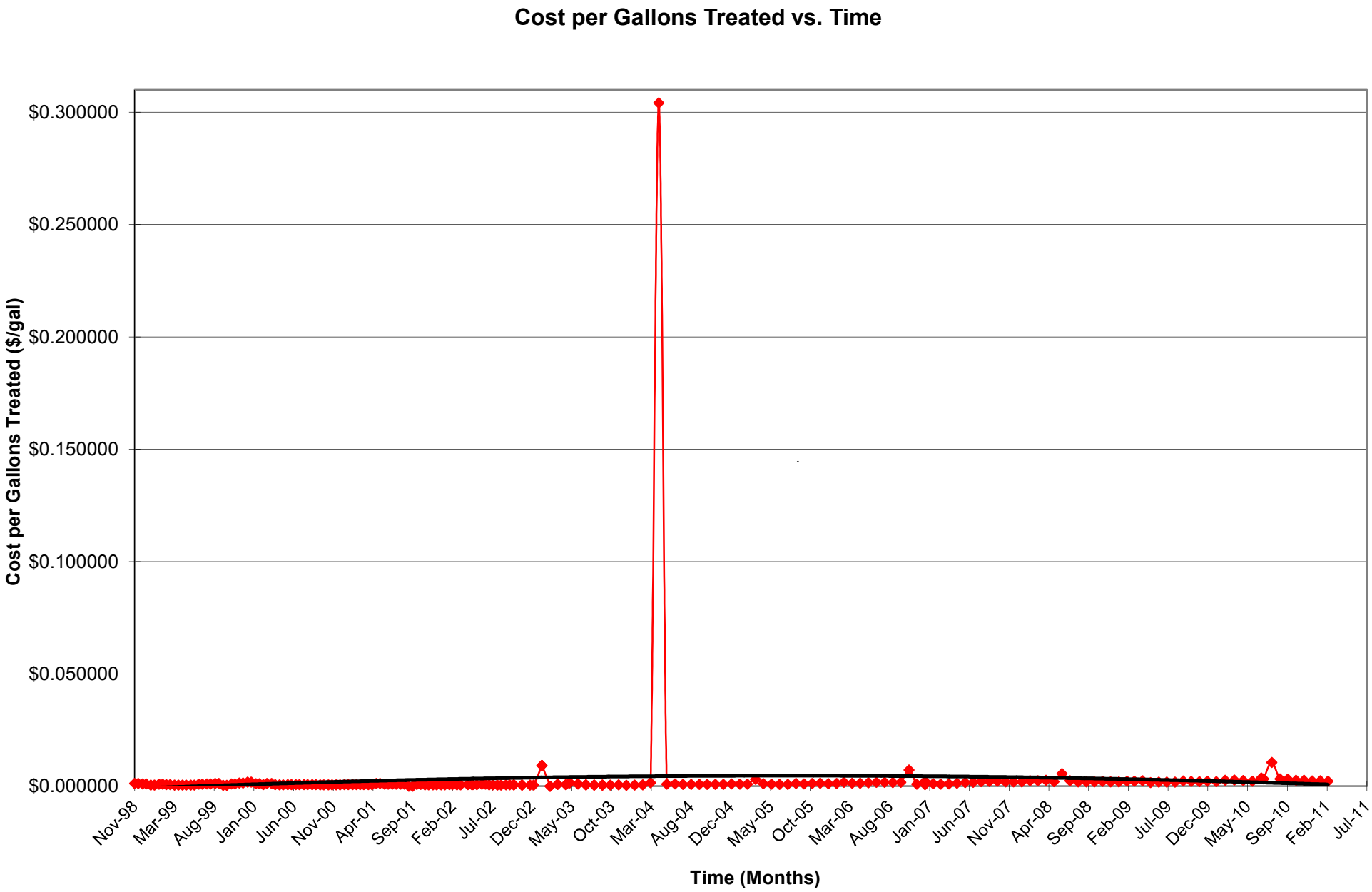


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Figure 12

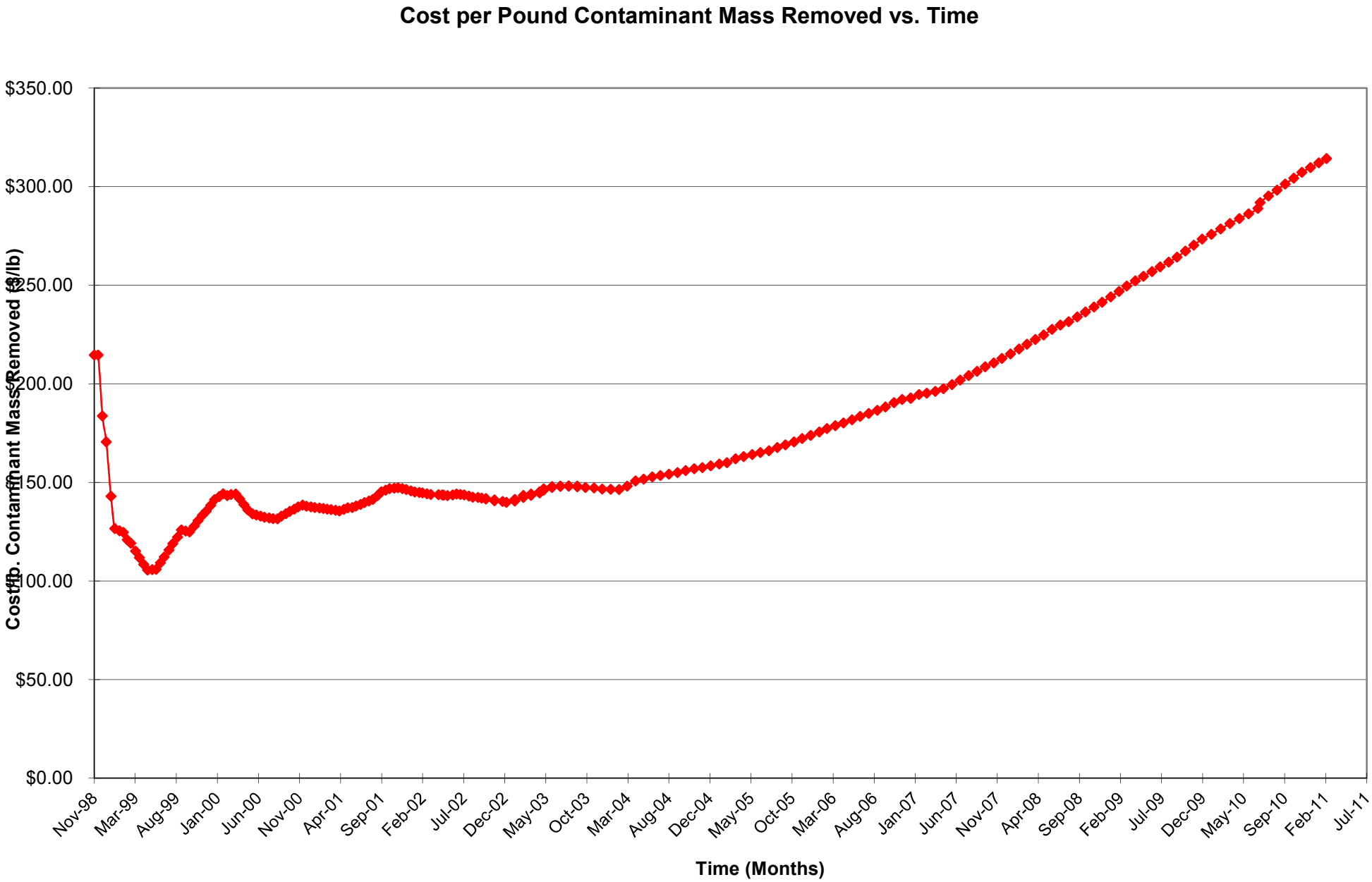

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Figure 13

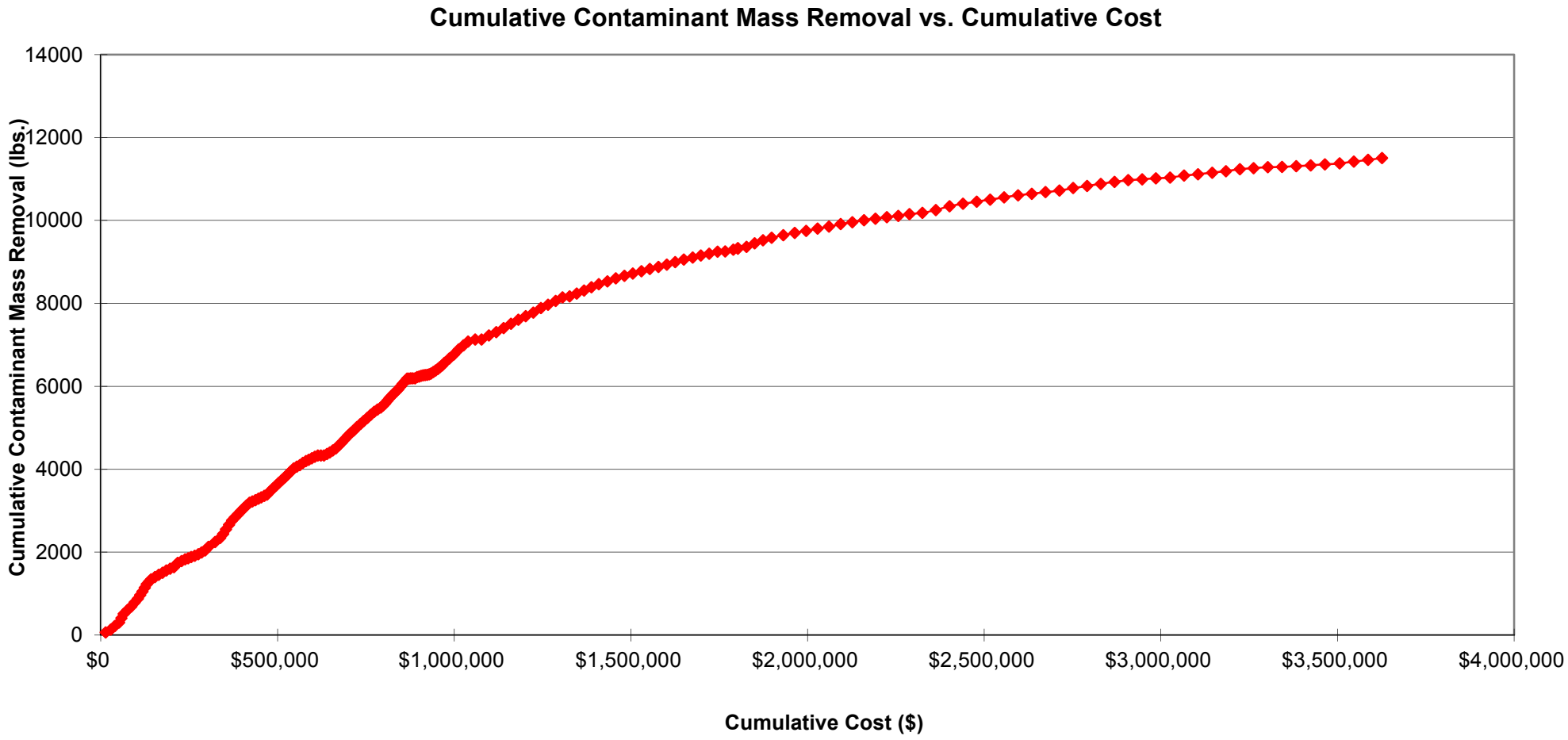

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Figure 14

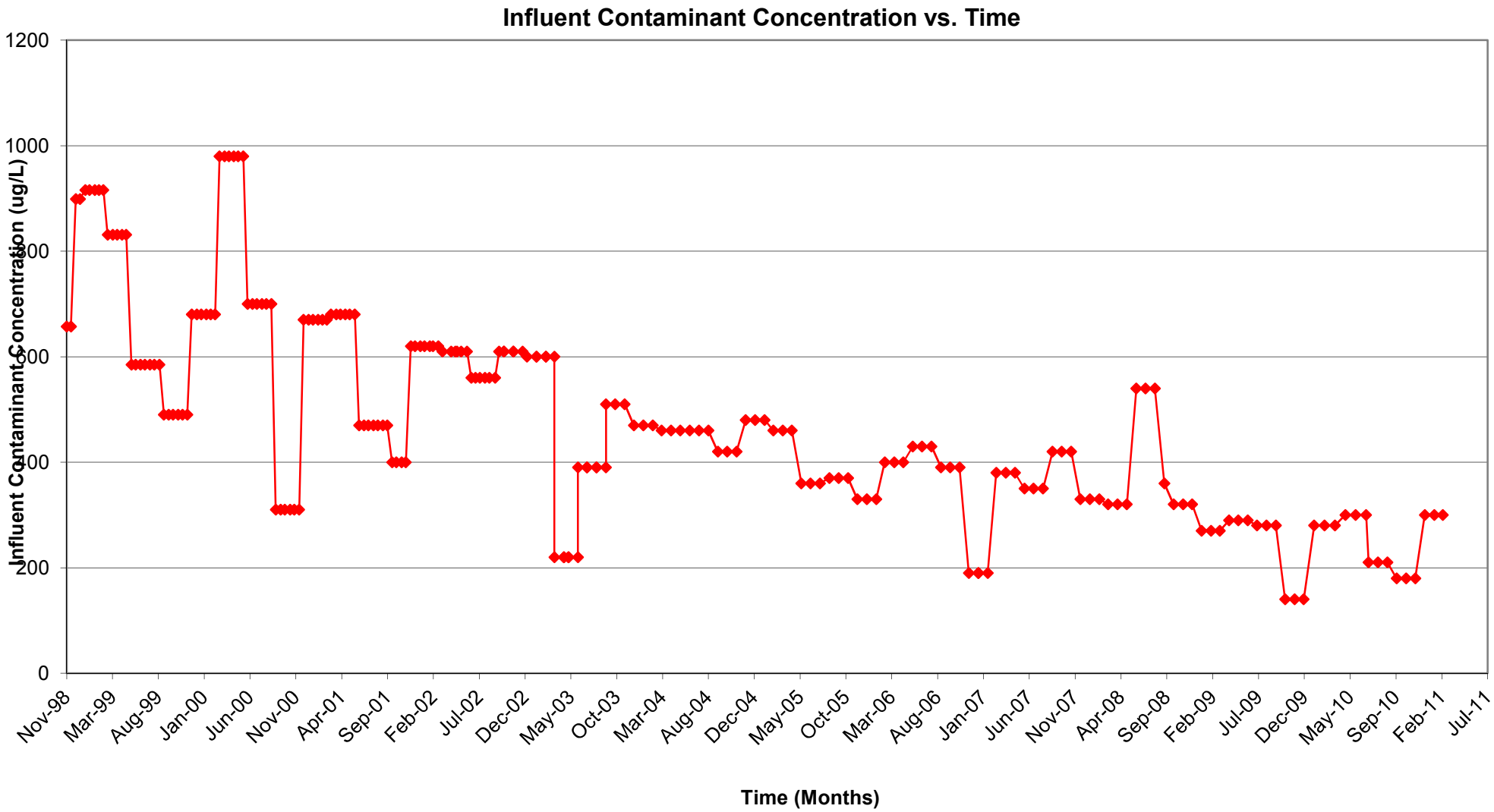

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Figure 15

Monthly Project Status Report May 2011
Facility Maintenance
Naval Industrial Reserve Ordnance Plant - Fridley, Minnesota
Prepared by Bay West, Inc.

EMAC Contract No. N40083-06-D-4015, Task Order #0005

SYSTEM OVERVIEW

- The GWTF was in operation for 408 hours during the month of May 2011.
- The on-stream factor for May was 100%. The on-stream factor is the actual operation time divided by the available operation time.
- The system processed an estimated 9,042,000 gallons of groundwater in May, for a total of 2,968,453,000 gallons to date.
- Electrical use was approximately 29,524 kilowatt-hours (kWh) for May 2011.
- Approximately 11,612 pounds of trichloroethylene (TCE) have been removed from the aquifer since groundwater treatment system start-up in 1999. Approximately 37,261 pounds of TCE have been removed from the aquifer since groundwater extraction activities began in 1992.

SCHEDULED MAINTENANCE

- Visually inspected flow meters and level probes for material buildup and proper operation.
- Tested the four safety showers/eyewash stations to assure adequate performance.
- Lubricated blower motors, influent pumps, and effluent pumps.
- Collected extraction well water levels on a weekly basis.
- Measured pump P-101A bearing temperature. All values were within normal operation range.
- Cleaned feed pipe between Tank T-101 and the treatment plant area with Unicid product. Cleaned effluent pipe between the treatment plant area and Building 52/53 with Unicid product.
- Repair of feed pump P101B and effluent pump P301A by PFC Equipment (PFC) continues. Pumps are expected to be returned to service in July. The treatment plant continues to operate using feed pump P101A and effluent pump P301B.
- As discussed in the April status report, Bay West has determined AT-9 is in need of redevelopment. AT-9 will be redeveloped at the same time the treatment plant is off-line to replace all extraction well pipe in Building 52/53. Extraction well pipe will be replaced upon receipt of new spool pieces for extraction well flow meters and new pressure transducers and flow meters for the new extraction wells.

PROBLEMS AND SOLUTIONS

- Bay West has executed a Subcontract to improve electronic data transmission and accessibility at NIROP. The scope of services were re-evaluated in light of current plans to install three new extraction wells and abandon AT-3A to ensure system improvements incorporate the increase in extraction wells planned for the site. As a result of this assessment, the Navy approved a more extensive control system modification, which includes the replacement of the programmable logic controller (PLC) and supervisory control and data acquisition (SCADA) system with current generation equipment. The PLC/SCADA system upgrades will be coordinated with the new extraction well installation.
- The pumping rate for AT-5B was below the minimum of 70 gpm for the month of May. As stated under the Scheduled Maintenance section of this report, Bay West completed an acid cleaning event of the feed pipe between Building 52/53 and the groundwater treatment facility in May. Based on the success of this approach in decreasing pressure loss/increasing flow in the feed pipe, Bay West will also clean the AT-5B extraction line with Unicid product. To minimize down time, the extraction line will be cleaned at the same time the treatment plant is off-line to replace all extraction well pipe in Building 52/53. The extraction line for AT-5A will be cleaned at the same time.
- AT-7 pump did not operate upon start-up after the scheduled piping cleaning procedure. Bay West mobilized E.H. Renner to the site to replace the pump end with a pump end from the spare parts inventory. The AT-7 pump remained non-operational. The flow meter transducers were removed from the AT-7 extraction line, cleaned, and reinstalled. A flow rate below the minimum flow rate of 37 gpm was recorded. With the other extraction wells off-line, Bay West performed a manual flow rate determination at AT-7 by monitoring the increase in the equalization tank (T-101) level over time, and determined the flow meter is in need of diagnostics due to a significant difference in manual and instrument measurements. Bay West will perform diagnostics in the month of June.
- AT-10 flow rate steadily decreased during the latter part of May. Bay West changed the pump end with a clean spare. Shortly after replacing, the motor overload protector began to trip. Bay West will perform electrical diagnostics during the month of June and take corrective actions as warranted.
- AT-8 motor overload began tripping during the latter part of May. Bay West determined the pump was operating at too high of a flow rate. The flow control valve was throttled to reduce the flow rate to between 10 and15 gpm, per specifications.
- There were multiple incidences of ASU 201 high level conditions. Bay West inspected ASU 201, 202, 203, and 204, and determined that a stainless steel ball float in ASU 201 and 202 have detached from an outlet plug flap in each ASU sump. Bay West re-balanced flow rates to each ASU to allow the ASUs to process 100% of the flow through the operational ball float/plug flap assemblies. To minimize down time, Bay West has scheduled replacing the damaged plug flap assemblies for the same time the treatment plant is off-line to replace all extraction well pipe in Building 52/53.
- ASU 201 air inlet pressure was below the alarm condition in the latter part of May. Bay West performed leak tests on the pressure transmitter impulse tubing. The leak tests showed the impulse tubing is in need of replacement. Bay West will replace the impulse tubing and take additional corrective actions as warranted.

Well Performance Summary

Well	Average Monthly Flow Rate (GPM) (Available)	Average Monthly Flow Rate (GPM) (Operational)	Ideal Flow Rate (GPM)	% of Ideal Flow (Available)	% of Ideal Flow (Operational)	Minimum Flow Rate (GPM)	Available Hours of Operation	Operating Hours	On-Stream Factor (Available)
AT-3A	84.5	84.5	135	62.59%	62.59%	115	408	408	100.00%
AT-5A	152.8	152.8	156	97.95%	97.95%	138	408	408	100.00%
AT-5B	65.7	65.7	82	80.12%	80.12%	70	408	408	100.00%
AT-7	7.9	53.9	46	17.17%	117.17%	37	408	60	14.71%
AT-8	20.6	21.9	15	137.33%	146.00%	10	408	384	94.12%
AT-9	84.9	99.5	150	56.60%	66.33%	125	408	348	85.29%
AT-10	13.6	22.0	23	59.13%	95.65%	20	408	252	61.76%

TABLES

1. Groundwater Treatment Facility Operations
2. Electrical Meter Readings

FIGURES

1. Monthly GWTF On Stream Factor
2. GWTF Total Treated Flow
3. Total Discharge
4. Gallons Treated vs. Time
5. AT-3A Monthly Flow vs. Time
6. AT-5A Monthly Flow vs. Time
7. AT-5B Monthly Flow vs. Time
8. AT-7 Monthly Flow vs. Time
9. AT-8 Monthly Flow vs. Time
10. AT-9 Monthly Flow vs. Time
11. AT-10 Monthly Flow vs. Time

Tables

NIROP FRIDLEY
Groundwater Treatment Facility (GWTF)

Month	OPERATIONS (hrs)			WATER DISCHARGED (thousands of gallons)					WATER TREATED (thousands of gallons)	
	Available	Operating	On-stream factor	to Storm	to Sanitary	Untreated to Sanitary	Total to Sanitary	% Storm	Monthly	Cumulative
Nov-98	480.0	480.0	100.0%	0	17,524	0	17,524	0%	17,524	17,524
Dec-98	718.0	628.0	87.5%	16,078	7,087	0	7,087	69%	23,165	40,689
Jan-99	744.0	743.0	99.9%	25,571	0	0	0	100%	25,571	66,260
Feb-99	672.0	672.0	100.0%	23,938	0	0	0	100%	23,938	90,198
Mar-99	744.0	744.0	100.0%	27,394	0	0	0	100%	27,394	117,592
Apr-99	720.0	720.0	100.0%	25,254	0	0	0	100%	25,254	142,846
May-99	744.0	744.0	100.0%	23,291	0	0	0	100%	23,291	166,137
Jun-99	720.0	713.0	99.0%	25,823	0	0	0	100%	25,823	191,960
Jul-99	744.0	744.0	100.0%	22,266	0	0	0	100%	22,266	214,226
Aug-99	684.0	684.0	100.0%	21,634	0	0	0	100%	21,634	235,860
Sep-99	720.0	720.0	100.0%	18,205	0	0	0	100%	18,205	254,065
Oct-99	744.0	744.0	100.0%	23,029	0	0	0	100%	23,029	277,094
Nov-99	720.0	720.0	100.0%	22,783	0	0	0	100%	22,783	299,877
Dec-99	535.0	535.0	100.0%	12,818	0	0	0	100%	12,818	312,695
Jan-00	356.0	356.0	100.0%	10,400	0	0	0	100%	10,400	323,095
Feb-00	695.0	694.0	99.9%	16,944	0	0	0	100%	16,944	340,039
Mar-00	744.0	743.5	99.9%	27,131	0	0	0	100%	27,131	367,170
Apr-00	720.0	720.0	100.0%	25,899	0	0	0	100%	25,899	393,069
May-00	744.0	744.0	100.0%	27,458	0	0	0	100%	27,458	420,527
Jun-00	718.9	718.9	100.0%	25,136	0	0	0	100%	25,136	445,663
Jul-00	744.0	744.0	100.0%	25,637	0	0	0	100%	25,637	471,300
Aug-00	744.0	744.0	100.0%	24,341	0	0	0	100%	24,341	495,641
Sep-00	655.5	655.5	100.0%	22,559	0	0	0	100%	22,559	518,200
Oct-00	744.0	744.0	100.0%	25,955	0	0	0	100%	25,955	544,155
Nov-00	720.0	718.0	99.7%	25,759	0	0	0	100%	25,759	569,914
Dec-00	744.0	743.5	99.9%	27,404	0	0	0	100%	27,404	597,318
Jan-01	744.0	744.0	100.0%	24,666	0	0	0	100%	24,666	621,984
Feb-01	672.0	671.0	99.9%	23,956	0	0	0	100%	23,956	645,940
Mar-01	744.0	737.0	99.1%	24,694	0	0	0	100%	24,694	670,634
Apr-01	720.0	719.5	99.9%	24,964	0	0	0	100%	24,964	695,598
May-01	604.3	602.3	99.7%	13,656	0	0	0	100%	13,656	709,254
Jun-01	709.5	708.3	99.8%	20,000	0	0	0	100%	20,000	729,254
Jul-01	730.0	730.0	100.0%	18,077	0	0	0	100%	18,077	747,331
Aug-01	491.0	491.0	100.0%	17,921	0	0	0	100%	17,921	765,252
Sep-01	0.0	0.0	100.0%	0	0	0	0	100%	0	765,252
Oct-01	736.0	472.5	64.2%	21,376	0	0	0	100%	21,376	786,628
Nov-01	720.0	720.0	100.0%	30,205	0	0	0	100%	30,205	816,833
Dec-01	744.0	744.0	100.0%	28,114	0	0	0	100%	28,114	844,947
Jan-02	742.0	737.0	99.3%	30,483	0	0	0	100%	30,483	875,430
Feb-02	672.0	672.0	100.0%	25,538	0	0	0	100%	25,538	900,968
Mar-02	744.0	744.0	100.0%	29,957	0	0	0	100%	29,957	930,925
Apr-02	744.0	743.8	100.0%	28,569	0	0	0	100%	28,569	959,494
May-02	744.0	741.0	99.6%	28,656	0	0	0	100%	28,656	988,150
Jun-02	720.0	720.0	100.0%	22,131	0	0	0	100%	22,131	1,010,281
Jul-02	744.0	744.0	100.0%	21,367	0	0	0	100%	21,367	1,031,648
Aug-02	744.0	744.0	100.0%	28,328	0	0	0	100%	28,328	1,059,976
Sep-02	630.3	630.3	100.0%	20,861	0	0	0	100%	20,861	1,080,837
Oct-02	744.0	744.0	100.0%	21,417	0	0	0	100%	21,417	1,102,254
Nov-02	720.0	720.0	100.0%	25,003	0	0	0	100%	25,003	1,127,257
Dec-02	744.0	742.0	99.7%	25,327	0	0	0	100%	25,327	1,152,584
Jan-03	744.0	55.0	7.4%	1,048	0	0	0	100%	1,048	1,153,632
Feb-03	672.0	0.0	0.0%	0	0	0	0	100%	0	1,153,632
Mar-03	744.0	309.0	41.5%	13,387	0	0	0	100%	13,387	1,167,019
Apr-03	526.5	425.5	80.8%	16,584	0	0	0	100%	16,584	1,183,603
May-03	744.0	298.5	40.1%	7,448	0	0	0	100%	7,448	1,191,051
Jun-03	720.0	253.0	35.1%	10,775	0	0	0	100%	10,775	1,201,826
Jul-03	734.0	576.3	78.5%	22,629	0	0	0	100%	22,629	1,224,455

O&M Start Date: 11 November 1998
Docs 58644

Table 1

NIROP FRIDLEY
Groundwater Treatment Facility (GWTF)

Month	OPERATIONS (hrs)			WATER DISCHARGED (thousands of gallons)					WATER TREATED (thousands of gallons)	
	Available	Operating	On-stream factor	to Storm	to Sanitary	Untreated to Sanitary	Total to Sanitary	% Storm	Monthly	Cumulative
Aug-03	732.5	639.8	87.3%	25,591	46	0	46	99.8%	25,637	1,250,092
Sep-03	720.0	719.0	99.9%	23,028	4,532	0	4,532	83.6%	27,560	1,277,652
Oct-03	681.7	648.5	95.1%	25,389	0	0	0	100%	25,389	1,303,041
Nov-03	720.0	694.0	96.4%	22,882	0	0	0	100%	22,882	1,325,923
Dec-03	743.0	740.5	99.7%	31,010	0	0	0	100%	31,010	1,356,933
Jan-04	744.0	727.0	97.7%	25,456	0	0	0	100%	25,456	1,382,389
Feb-04	689.7	689.7	100.0%	23,771	0	0	0	100%	23,771	1,406,160
Mar-04	506.5	353.5	69.8%	12,928	0	0	0	100%	12,928	1,419,088
Apr-04	720.0	2.0	0.3%	60	0	0	0	100%	60	1,419,148
May-04	744.0	635.0	85.3%	24,104	0	0	0	100%	24,104	1,443,252
Jun-04	613.5	613.5	100.0%	20,988	0	0	0	100%	20,988	1,464,240
Jul-04	735.5	732.8	99.6%	26,846	0	0	0	100%	26,846	1,491,086
Aug-04	741.0	741.0	100.0%	26,760	0	0	0	100%	26,760	1,517,846
Sep-04	718.0	717.0	99.9%	27,276	0	0	0	100%	27,276	1,545,122
Oct-04	676.8	676.8	100.0%	24,709	0	0	0	100%	24,709	1,569,831
Nov-04	720.0	720.0	100.0%	25,859	0	0	0	100%	25,859	1,595,690
Dec-04	744.0	744.0	100.0%	26,229	0	0	0	100%	26,229	1,621,919
Jan-05	744.0	667.0	89.7%	20,915	0	0	0	100%	20,915	1,642,834
Feb-05	672.0	672.0	100.0%	22,329	0	0	0	100%	22,329	1,665,163
Mar-05	744.0	716.8	96.3%	22,960	0	0	0	100%	22,960	1,688,123
Apr-05	384.0	322.0	83.9%	6,515	0	0	0	100%	6,515	1,694,638
May-05	576.0	503.5	87.4%	17,859	0	0	0	100%	17,859	1,712,497
Jun-05	720.0	714.5	99.2%	24,450	0	0	0	100%	24,450	1,736,947
Jul-05	744.0	712.5	95.8%	25,301	0	0	0	100%	25,301	1,762,248
Aug-05	744.0	744.0	100.0%	25,916	0	0	0	100%	25,916	1,788,164
Sep-05	720.0	715.3	99.4%	20,837	0	0	0	100%	20,837	1,809,001
Oct-05	744.0	744.0	100.0%	24,028	0	0	0	100%	24,028	1,833,029
Nov-05	720.0	720.0	100.0%	20,553	0	0	0	100%	20,553	1,853,582
Dec-05	686.0	622.3	90.7%	19,037	0	0	0	100%	19,037	1,872,619
Jan-06	744.0	744.0	100.0%	21,858	0	0	0	100%	21,858	1,894,477
Feb-06	672.0	672.0	100.0%	19,590	0	0	0	100%	19,590	1,914,067
Mar-06	710.5	710.0	99.9%	13,935	0	0	0	100%	13,935	1,928,002
Apr-06	654.0	654.0	100.0%	18,391	0	0	0	100%	18,391	1,946,393
May-06	744.0	744.0	100.0%	18,116	0	0	0	100%	18,116	1,964,509
Jun-06	720.0	719.5	99.9%	16,616	0	0	0	100%	16,616	1,981,125
Jul-06	716.0	716.0	100.0%	14,232	0	0	0	100%	14,232	1,995,357
Aug-06	744.0	742.0	99.7%	13,291	0	0	0	100%	13,291	2,008,648
Sep-06	720.0	720.0	100.0%	14,269	0	0	0	100%	14,269	2,022,917
Oct-06	731.0	730.5	99.9%	13,496	0	0	0	100%	13,496	2,036,413
Nov-06	396.0	110.0	27.8%	3,073	0	0	0	100%	3,073	2,039,486
Dec-06	744.0	743.5	99.9%	25,287	0	0	0	100%	25,287	2,064,773
Jan-07	720.0	719.5	99.9%	25,118	0	0	0	100%	25,118	2,089,891
Feb-07	671.8	659.8	98.2%	21,953	0	0	0	100%	21,953	2,111,844
Mar-07	744.0	734.0	98.7%	25,860	0	0	0	100%	25,860	2,137,703
Apr-07	720.0	720.0	100.0%	24,240	0	0	0	100%	24,240	2,161,943
May-07	744.0	744.0	100.0%	19,004	0	0	0	100%	19,004	2,180,947
Jun-07	719.5	719.5	100.0%	20,659	0	0	0	100%	20,659	2,201,606
Jul-07	744.0	744.0	100.0%	19,389	0	0	0	100%	19,389	2,220,995
Aug-07	696.0	696.0	100.0%	16,354	0	0	0	100%	16,354	2,237,349
Sep-07	720.0	720.0	100.0%	15,320	0	0	0	100%	15,320	2,252,669
Oct-07	744.0	744.0	100.0%	14,409	0	0	0	100%	14,409	2,267,078
Nov-07	720.0	720.0	100.0%	17,388	0	0	0	100%	17,388	2,284,466
Dec-07	744.0	739.0	99.3%	17,002	0	0	0	100%	17,002	2,301,468
Jan-08	742.0	684.0	92.2%	17,115	0	0	0	100%	17,115	2,318,583
Feb-08	695.3	611.8	88.0%	13,581	0	0	0	100%	13,581	2,332,164
Mar-08	744.0	742.0	99.7%	13,277	0	0	0	100%	13,277	2,345,441
Apr-08	720.0	717.0	99.6%	12,518	0	0	0	100%	12,518	2,357,959

O&M Start Date: 11 November 1998
Docs 58644

Table 1

NIROP FRIDLEY
Groundwater Treatment Facility (GWTF)

Month	OPERATIONS (hrs)			WATER DISCHARGED (thousands of gallons)					WATER TREATED (thousands of gallons)	
	Available	Operating	On-stream factor	to Storm	to Sanitary	Untreated to Sanitary	Total to Sanitary	% Storm	Monthly	Cumulative
May-08	718.0	692.0	96.4%	15,430	0	0	0	100%	15,430	2,373,389
Jun-08	333.5	333.5	100.0%	6,523	0	0	0	100%	6,523	2,379,912
Jul-08	719.0	719.0	100.0%	15,762	0	0	0	100%	15,762	2,395,674
Aug-08	729.3	729.3	100.0%	20,183	0	0	0	100%	20,183	2,415,857
Sep-08	720.0	720.0	100.0%	19,632	0	0	0	100%	19,632	2,435,489
Oct-08	737.0	737.0	100.0%	19,818	0	0	0	100%	19,818	2,455,307
Nov-08	662.0	662.0	100.0%	18,191	0	0	0	100%	18,191	2,473,498
Dec-08	744.0	744.0	100.0%	20,926	0	0	0	100%	20,926	2,494,424
Jan-09	741.0	741.0	100.0%	20,301	44	0	44	99.8%	20,301	2,514,725
Feb-09	672.0	672.0	100.0%	17,546	0	0	0	100%	17,546	2,532,271
Mar-09	711.9	711.2	99.9%	17,766	0	0	0	100%	17,766	2,550,037
Apr-09	709.0	705.6	99.5%	16,434	0	0	0	100%	16,434	2,566,471
May-09	739.8	739.8	100.0%	23,663	0	0	0	100%	23,663	2,590,134
Jun-09	719.8	719.8	100.0%	21,234	0	0	0	100%	21,234	2,611,368
Jul-09	744.0	744.0	100.0%	21,846	0	0	0	100%	21,846	2,633,214
Aug-09	744.0	744.0	100.0%	20,933	0	0	0	100%	20,933	2,654,147
Sep-09	697.2	697.2	100.0%	16,585	0	0	0	100%	16,585	2,670,732
Oct-09	743.5	743.5	100.0%	18,919	0	0	0	100%	18,919	2,689,651
Nov-09	720.0	720.0	100.0%	19,768	0	0	0	100%	19,768	2,709,419
Dec-09	744.0	744.0	100.0%	18,162	0	0	0	100%	18,162	2,727,581
Jan-10	740.3	740.3	100.0%	19,542	0	0	0	100%	19,542	2,747,123
Feb-10	672.0	658.0	97.9%	14,805	0	0	0	100%	14,805	2,761,928
Mar-10	744.0	744.0	100.0%	14,596	0	0	0	100%	14,596	2,776,524
Apr-10	720.0	720.0	100.0%	15,598	0	0	0	100%	15,598	2,792,122
May-10	744.0	742.5	99.8%	18,090	0	0	0	100%	18,090	2,810,212
Jun-10	720.0	697.0	96.8%	10,717	0	0	0	100%	10,717	2,820,929
Jul-10	744.0	722.2	97.1%	12,254	0	0	0	100%	12,254	2,833,183
Aug-10	694.5	404.0	58.2%	3,789	0	0	0	100%	3,789	2,836,972
Sep-10	712.0	700.0	98.3%	12,552	0	0	0	100%	12,552	2,849,524
Oct-10	690.6	690.6	100.0%	12,926	0	0	0	100%	12,926	2,862,450
Nov-10	719.5	716.0	99.5%	15,466	0	0	0	100%	15,466	2,877,916
Dec-10	737.0	721.5	97.9%	15,855	0	0	0	100%	15,855	2,893,771
Jan-11	744.0	744.0	100.0%	17,199	0	0	0	100%	17,199	2,910,970
Feb-11	667.0	665.0	99.7%	16,551	0	0	0	100%	16,551	2,927,521
Mar-11	744.0	744.0	100.0%	17,827	0	0	0	100%	17,827	2,945,348
Apr-11	711.3	708.3	99.6%	14,063	0	0	0	100%	14,063	2,959,411
May-11	384.0	384.0	100.0%	9,042	0	0	0	100%	9,042	2,968,453

Note: Available hours are 24 hours per day, less scheduled down time and power outages.

* Monthly flow incorrectly reported for Jul-04 through Dec-04 - corrected January 2005 using the corrected estimate for AT-10 monthly flow.

NIROP FRIDLEY
Ground Water Treatment Facility (GWTF)

Date	Electrical Meter Readings (kW·h)					Monthy Usage
	MCC #1	MCC #2	Wells 2, 3A, 5A, 5B	Well 1A	Well 4	
2/1/2000	57,305	620,300				38,046
3/1/2000	59,597	656,054				36,133
3/9/2000	60,348	667,580	18,260	3,284	2,312	65,029
4/3/2000	63,080	704,113	38698	6043	4879	74,067
5/1/2000	66,067	746,920	60,940	9,238	7,715	81,545
6/1/2000	68,972	793,455	86495	12728	10775	66,128
7/1/2000	71,562	840,441	110,243	16,307		
7/6/2000					13701	13,701
8/1/2000	73,881	881,304	130,691	19,559	16,686	72,336
9/1/2000	76,316	924,799	152695	22976	17671	67,877
10/2/2000	78,561	964,802	172,714	26,079	20,178	
11/1/2000	80,952	7,402	195655	29408	22454	89,927
12/4/2000	83,561	56,966	225,897	33,105	26,269	81,706
1/2/2001	85,851	101,872	254750	36270	28761	72,935
2/1/2001	88,106	143,918	282,532	37,122	28,761	83,944
3/1/2001	90,240	190,303	314000	41079	28761	66,663
4/3/2001	92,677	230,575	335,297	43,736	28,761	65,567
5/1/2001	94,779	269,617	357244	46212	28761	
6/5/2001	97,821	304,746	*	*	*	38,108
7/2/2001	102,175	338,500	*	*	*	44,802
8/2/2001	106,592	378,885	*	*	*	37,804
9/12/2001	111,321	411,960	*	*	*	13,663
10/18/2001	112,956	423,988	*	*	*	29,471
11/1/2001	117,010	449,405	*	*	*	68,542
12/4/2001	126,457	508,500	*	*	*	60,932
1/2/2002	134,884	561,005	*	*	*	56,801
2/1/2002	142,948	609,742	*	*	*	55,300
3/1/2002	150,583	657,407	*	*	*	64,231
4/1/2002	159,332	712,889	*	*	*	59,291
5/1/2002	167,808	763,704	*	*	*	63,448
6/3/2002	176,272	818,688	*	*	*	43,974
7/1/2002	182,246	856,688	*	*	*	45,609
8/1/2002	188,404	896,139	*	*	*	60,074
9/3/2002	196,255	948,362	*	*	*	44,067
10/1/2002	202,142	986,542	*	*	*	60,158
11/1/2002	209,581	1,039,261	*	*	*	60,538
12/2/2002	216,632	1,092,748	*	*	*	
1/1/2003	223,233	0	*	*	*	
2/1/2003	224,233	1,146,792	*	*	*	7,827
3/19/2003	227,523	1,151,329	*	*	*	22,891
4/3/2003	230,589	1,171,154	*	*	*	32,058
5/1/2003	235,275	1,198,526	*	*	*	18,373
6/4/2003	237,675	1,214,499	*	*	*	20,360
7/1/2003	240,411	1,232,123	*	*	*	42,930
8/1/2003	246,351	1,269,113	*	*	*	49,909
9/2/2003	253,306	1,312,067	*	*	*	52,166
10/1/2003	260,662	1,356,877	*	*	*	58,962
11/3/2003	268,788	1,407,713	*	*	*	57,373
12/1/2003	276,592	1,457,282	*	*	*	67,477
1/2/2004	285,175	1,516,176	*	*	*	67,278
2/2/2004	293,559	1,575,070	*	*	*	60,542
3/1/2004	301,245	1,627,926	*	*	*	31,187
4/1/2004	305,283	1,655,075	*	*	*	1,037
5/3/2004	305,515	1,655,880	*	*	*	51,931
6/1/2004	312,129	1,701,197	*	*	*	47,852
7/1/2004	318,012	1,743,166	*	*	*	60,764

NIROP FRIDLEY
Ground Water Treatment Facility (GWTF)

Date	Electrical Meter Readings (kW·h)					Monthy Usage
	MCC #1	MCC #2	Wells 2, 3A, 5A, 5B	Well 1A	Well 4	
8/3/2004	326,133	1,795,809	*	*	*	55,312
9/1/2004	335,039	1,842,215	*	*	*	52,307
10/1/2004	340,422	1,889,139	*	*	*	53,798
11/2/2004	347,296	1,936,063	*	*	*	64,045
12/1/2004	354,514	1,992,890	*	*	*	64,887
1/5/2005	362,574	49,717	*	*	*	48,313
2/1/2005	368,114	92,490	*	*	*	56,517
3/1/2005	374,689	142,432	*	*	*	35,669
4/1/2005	381,858	170,932	*	*	*	32,506
5/11/2005	384,388	200,908	*	*	*	37,857
6/2/2005	389,382	233,771	*	*	*	53,851
7/1/2005	395,908	281,096	*	*	*	55,772
8/1/2005	402,786	329,990	*	*	*	58,530
9/1/2005	410,054	381,252	*	*	*	59,756
10/4/2005	416,742	434,320	*	*	*	54,337
11/1/2005	423,117	482,282	*	*	*	59,439
12/1/2005	429,602	535,236	*	*	*	58,139
1/3/2006	437,032	585,945	*	*	*	64,273
2/3/2006	444,929	642,321	*	*	*	59,745
3/3/2006	451,966	695,029	*	*	*	59,447
4/4/2006	458,470	747,972	*	*	*	52,154
5/2/2006	464,407	794,189	*	*	*	56,066
6/1/2006	470,107	844,555	*	*	*	67,078
7/7/2006	476,656	905,084	*	*	*	75,362
8/17/2006	483,201	973,901	*	*	*	28,651
9/1/2006	485,579	174	*	*	*	60,559
10/2/2006	490,846	55,466	*	*	*	64,783
11/16/2006	497,232	113,863	*	*	*	30,896
12/12/2006	501,656	140,335	*	*	*	41,005
1/2/2007	507,345	175,651	*	*	*	89,453
2/14/2007	519,226	253,223	*	*	*	60,625
3/15/2007	526,775	306,299	*	*	*	37,019
4/1/2007	531,435	338,658	*	*	*	59,380
5/1/2007	538,780	390,693	*	*	*	60,309
6/2/2007	546,435	443,347	*	*	*	57,976
7/2/2007	552,240	495,518	*	*	*	54,945
8/1/2007	558,047	544,656	*	*	*	56,900
9/4/2007	563,999	595,604	*	*	*	48,947
10/1/2007	568,907	639,643	*	*	*	55,912
11/1/2007	574,269	690,193	*	*	*	61,551
12/3/2007	580,906	745,107	*	*	*	58,075
1/2/2008	587,234	796,854	*	*	*	61,758
2/1/2008	593,878	851,968	*	*	*	56,961
3/6/2008	601,457	901,350	*	*	*	47,128
4/1/2008	607,103	942,832	*	*	*	51,563
5/2/2008	613,973	987,525	*	*	*	45,409
6/2/2008	619,382	27,525	*	*	*	23,755
7/1/2008	621,730	48,932	*	*	*	57,458
8/1/2008	627,904	100,216	*	*	*	59,836
9/2/2008	634,818	153,138	*	*	*	57,157
10/4/2008	641,270	203,843	*	*	*	61,110

NIROP FRIDLEY
Ground Water Treatment Facility (GWTF)

Date	Electrical Meter Readings (kW·h)					Monthy Usage
	MCC #1	MCC #2	Wells 2, 3A, 5A, 5B	Well 1A	Well 4	
11/3/2008	648,196	258,027	*	*	*	58,512
12/1/2008	655,158	309,577	*	*	*	71,027
1/2/2009	663,755	372,007	*	*	*	69,361
2/2/2009	672,125	432,998	*	*	*	62,234
3/2/2009	679,788	487,569	*	*	*	61,618
4/1/2009	687,315	541,660	*	*	*	63,015
5/1/2009	694,461	597,529	*	*	*	63,751
6/1/2009	701,440	654,301	*	*	*	60,286
7/1/2009	708,069	707,958	*	*	*	65,088
8/3/2009	715,267	765,848	*	*	*	57,140
9/1/2009	721,611	816,644	*	*	*	56,282
10/1/2009	727,548	866,989	*	*	*	65,845
11/2/2009	734,666	925,716	*	*	*	60,372
12/1/2009	741,891	978,863	*	*	*	77,030
1/1/2010	750,050	1,047,734	*	*	*	63,139
2/1/2010	757,037	1,103,886	*	*	*	61,079
3/1/2010	763,509	1,158,493	*	*	*	69,431
4/1/2010	769,960	1,221,473	*	*	*	59,638
5/3/2010	775,813	1,275,258	*	*	*	54,143
6/1/2010	780,680	1,324,534	*	*	*	51,279
7/1/2010	784,369	1,372,124	*	*	*	75,167
8/2/2010	789,289	1,442,371	*	*	*	8,482
9/1/2010	791,567	1,448,575	*	*	*	55,237
10/1/2010	796,016	1,499,363	*	*	*	61,303
11/1/2010	800,411	1,556,271	*	*	*	60,565
12/1/2010	806,672	1,610,575	*	*	*	68,226
1/3/2011	813,611	1,671,862	*	*	*	64,951
2/1/2011	820,001	1,730,423	*	*	*	58,883
3/1/2011	825,935	1,783,372	*	*	*	68,939
4/1/2011	832,880	1,845,366	*	*	*	58,997
5/9/2011	838,973	1,898,270	*	*	*	29,524
6/1/2011	841,656	1,925,111	*	*	*	-2,766,767

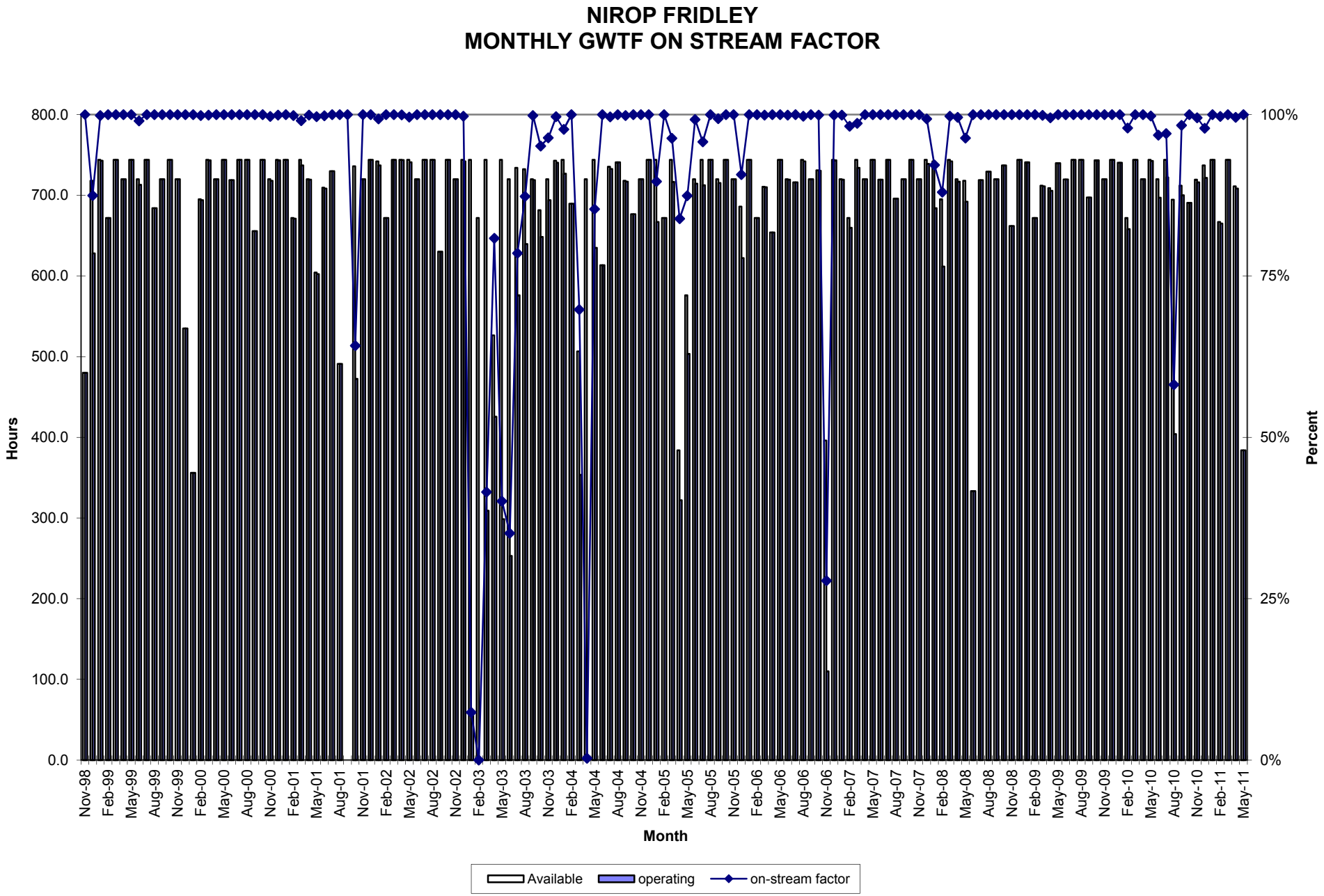
* Electrical metering for the extraction wells runs through MCC #1

- The electrical meter in the main treatment area was misread on 1/1/03, thus it was not reset. December electricity usage was estimated to be the same as November 2002.

^ The electrical meter in the main treatment area had reset after the scheduled power shut-down. October 2004 electricity usage for MCC#2 was estimated to be the same as September 2004.

+ - electrical readings were not obtained on December 1, 2004, therefore electrical usage for November was estimated to be similar to October 2004.

Figures



Docs 58644

Figure 1

NIROP FRIDLEY
GWTF TOTAL TREATED FLOW

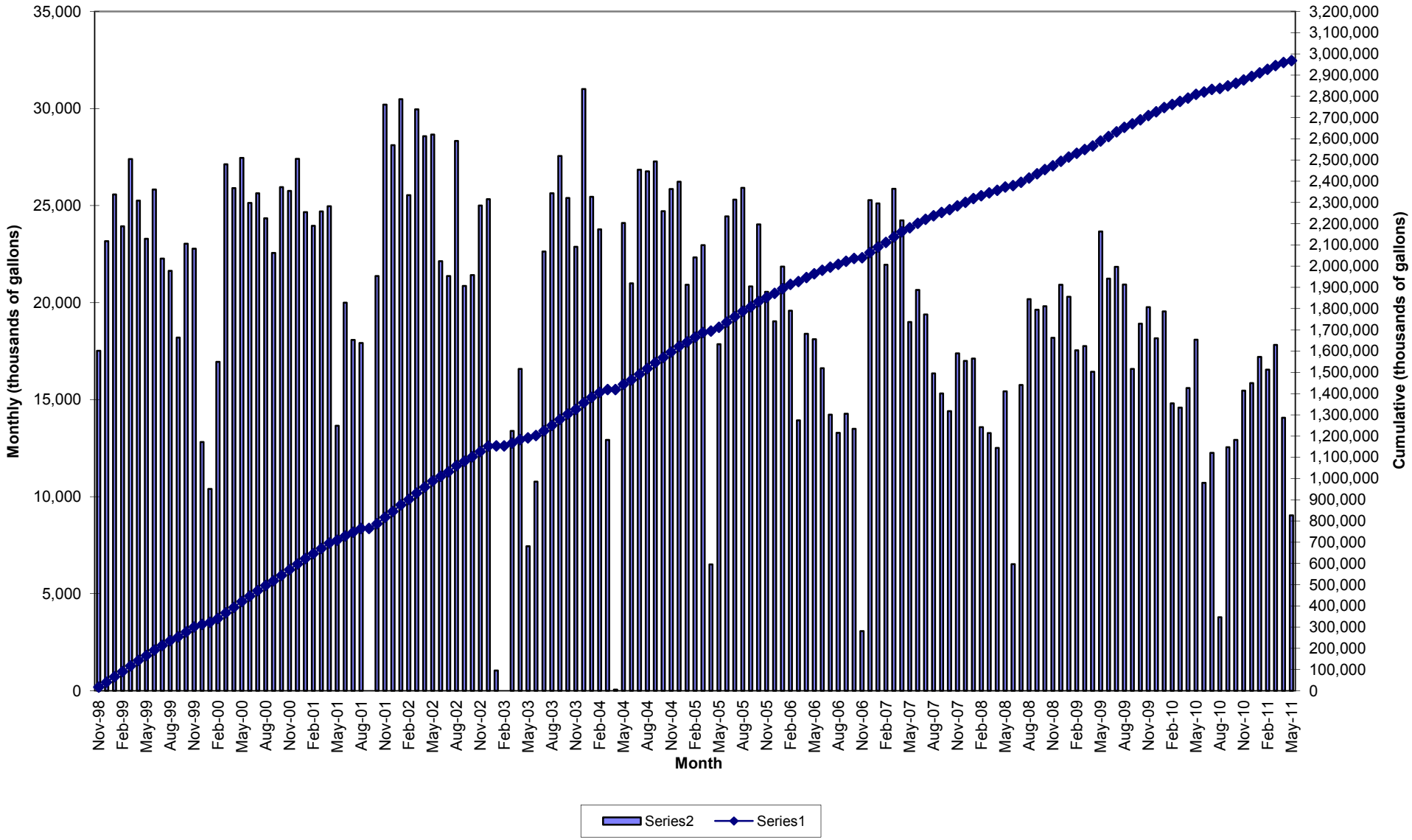


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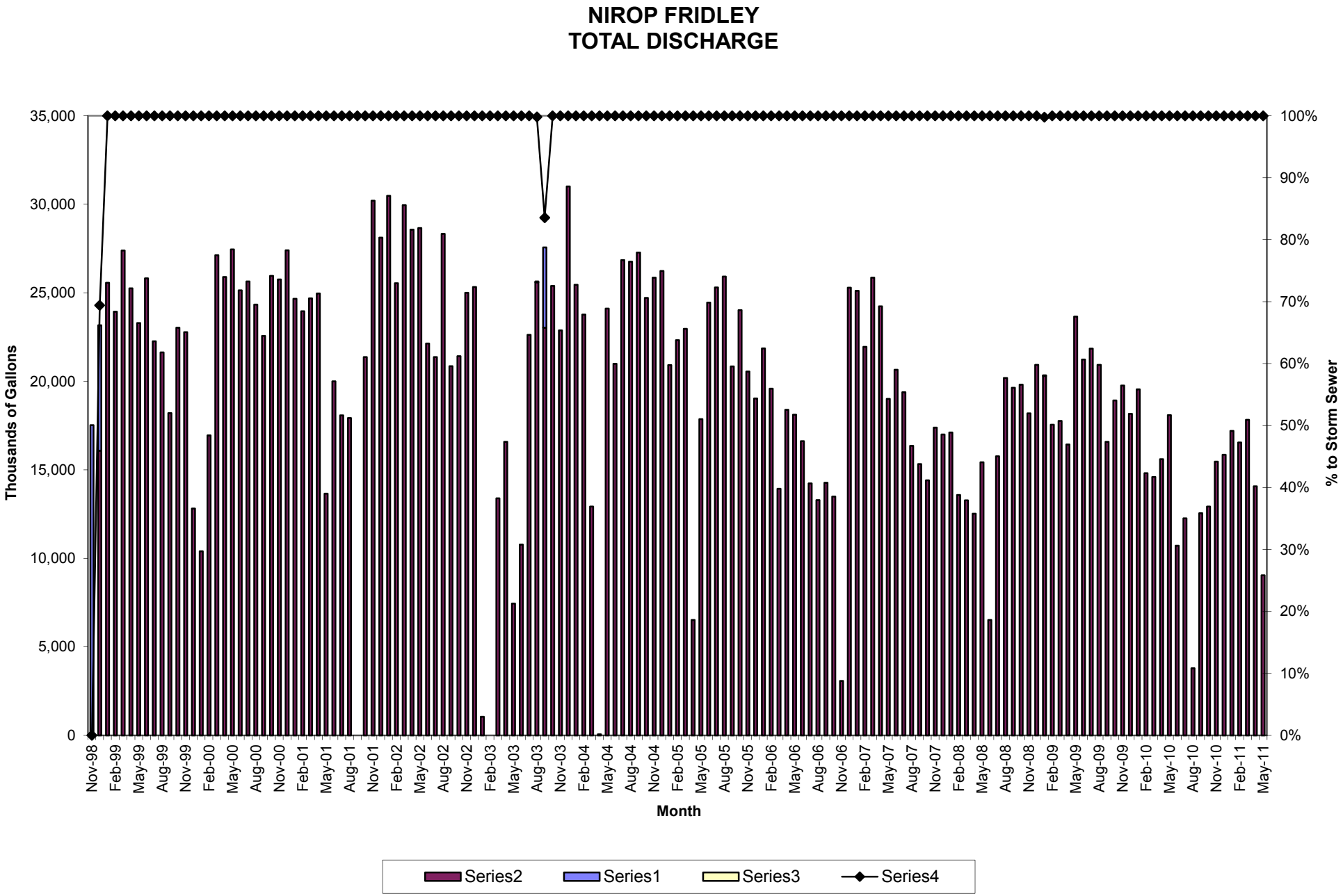
Figure 2



Docs 58644

Figure 3

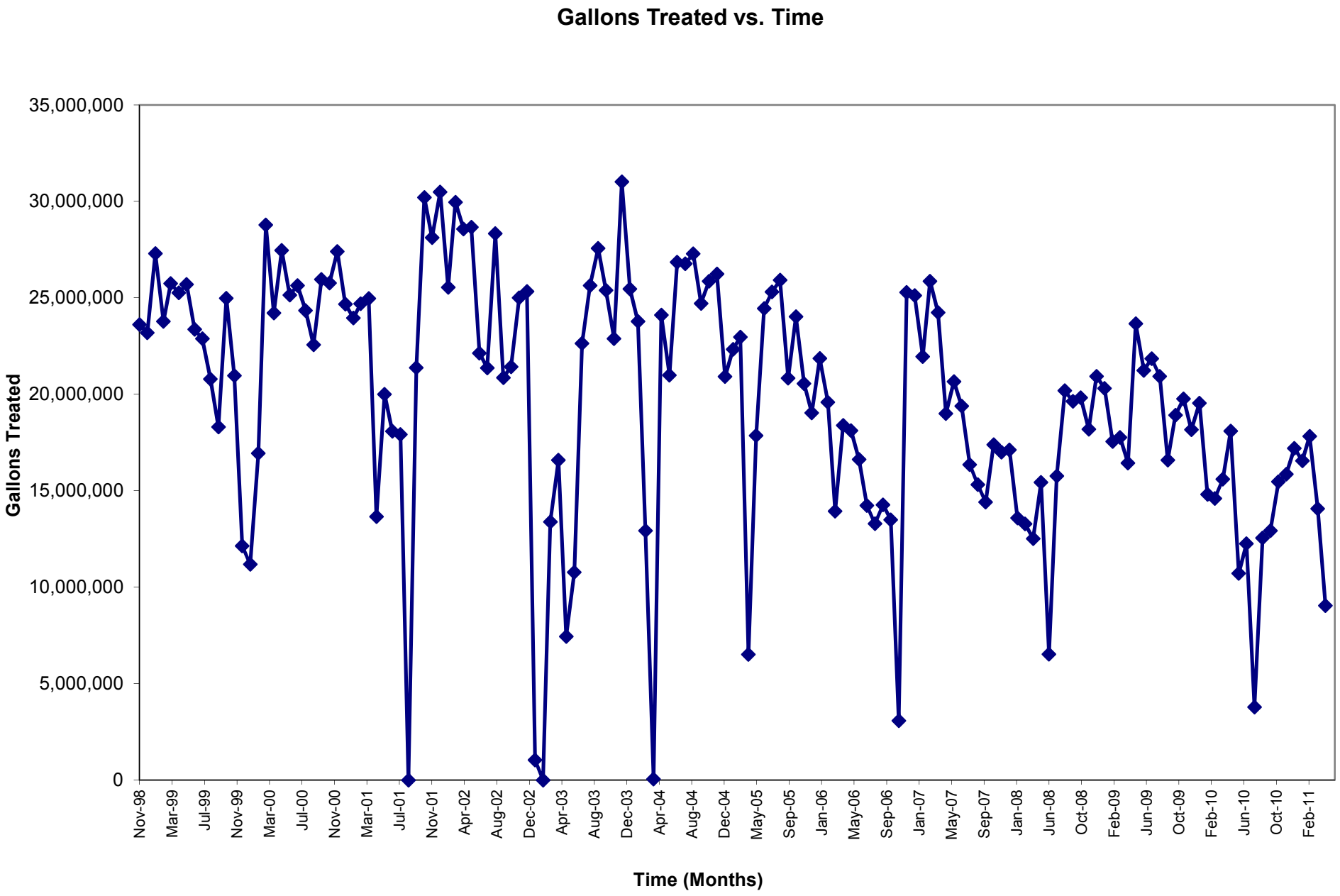


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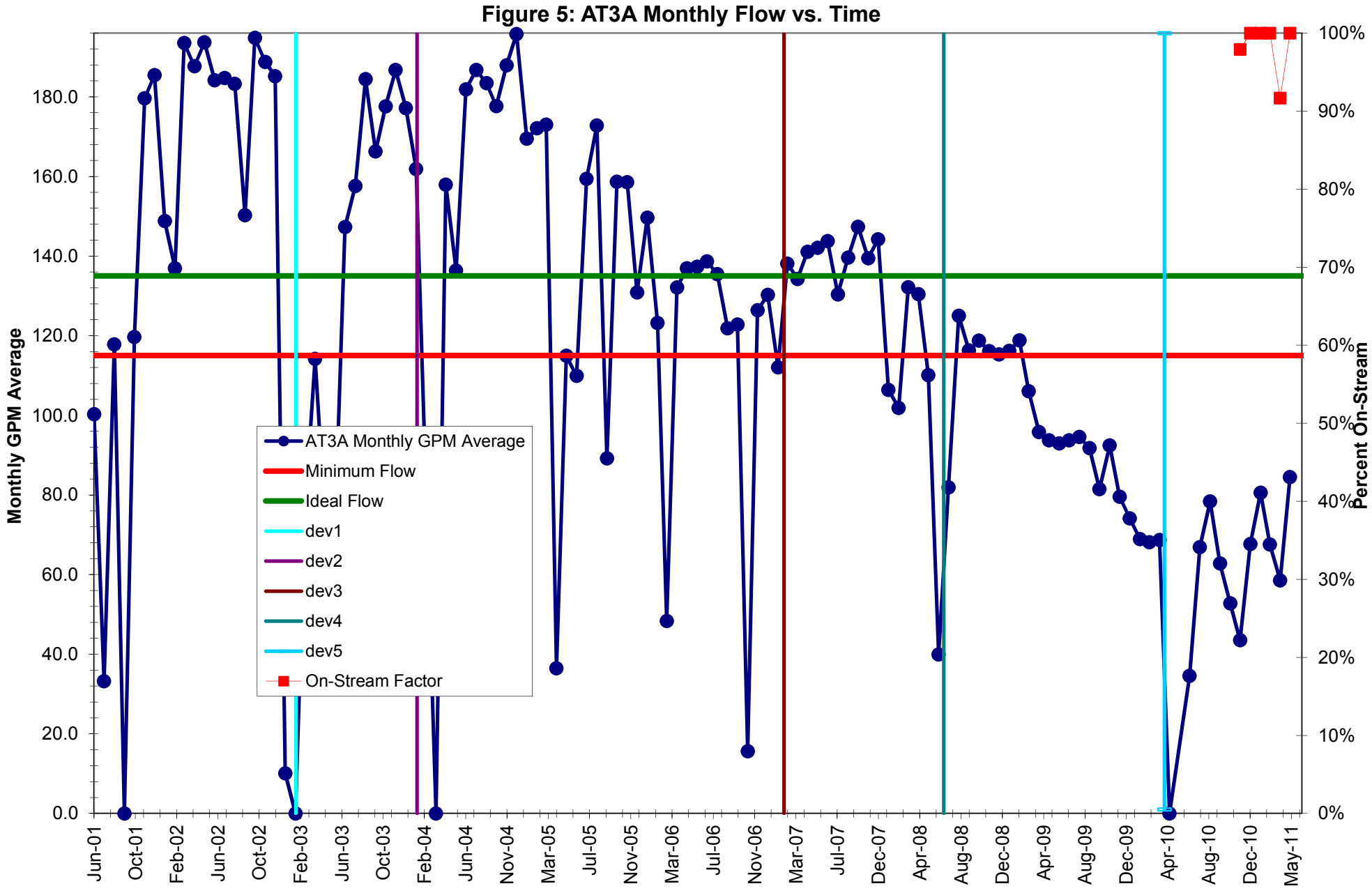
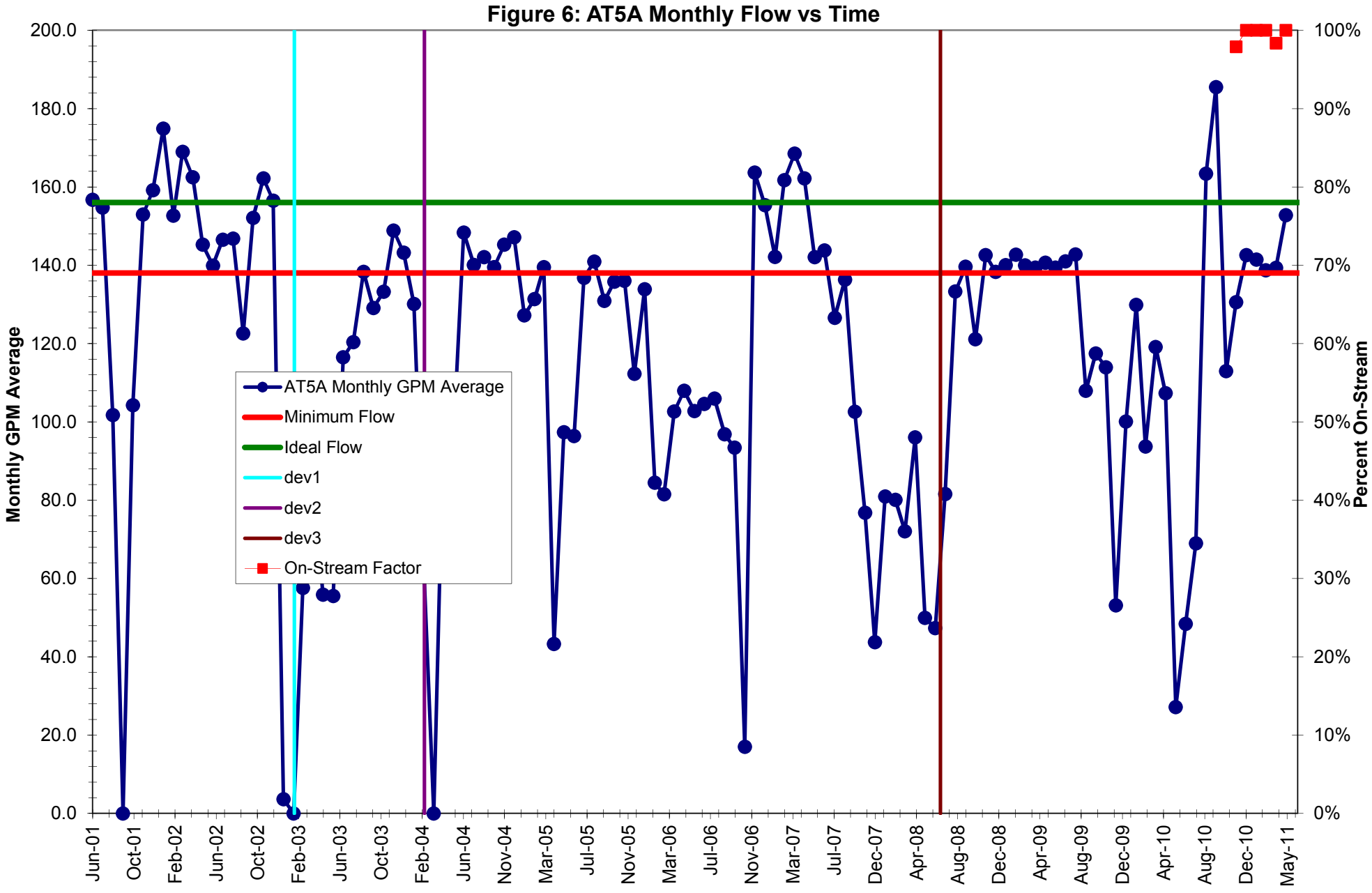
Figure 4



* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.



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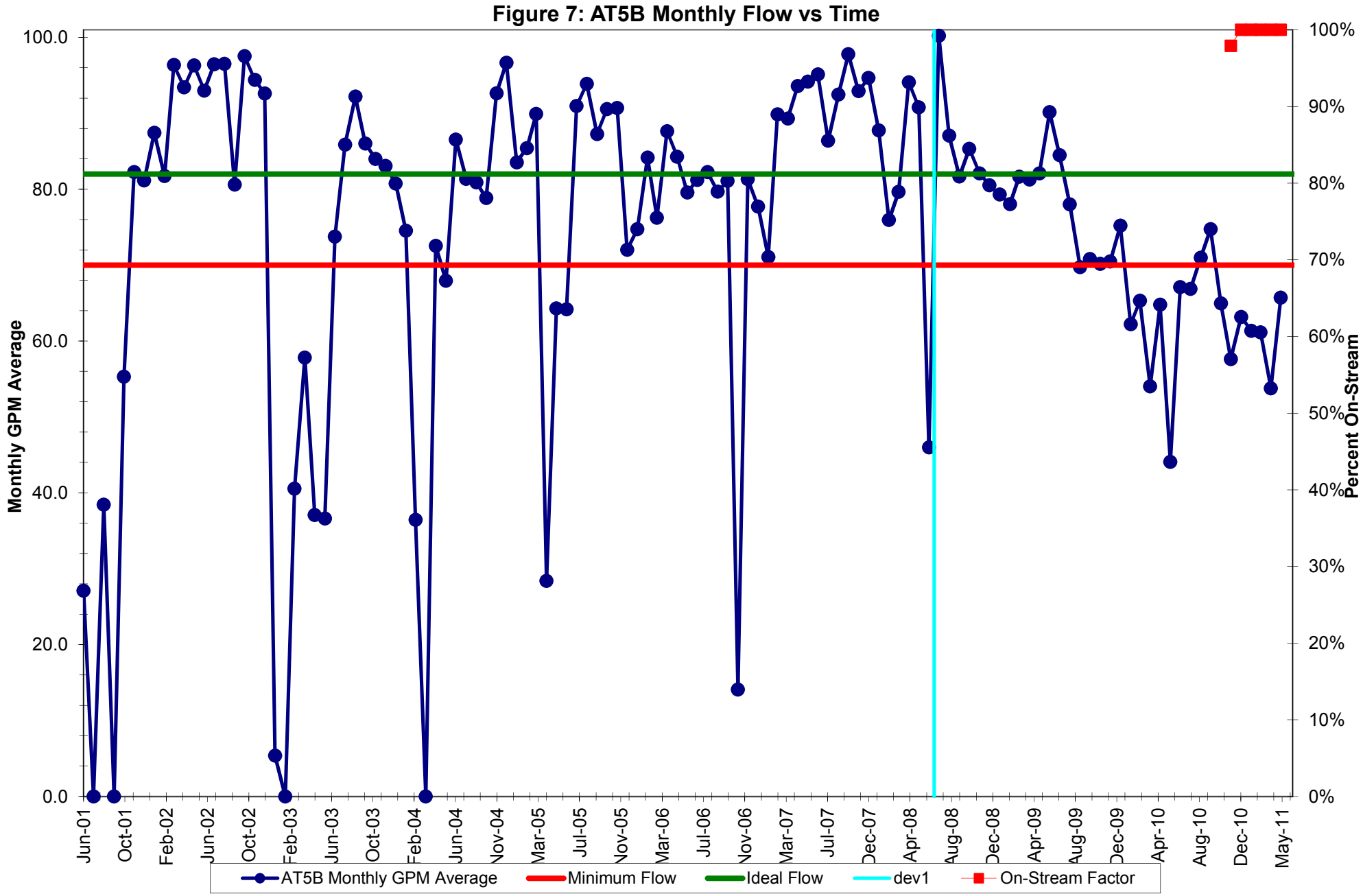
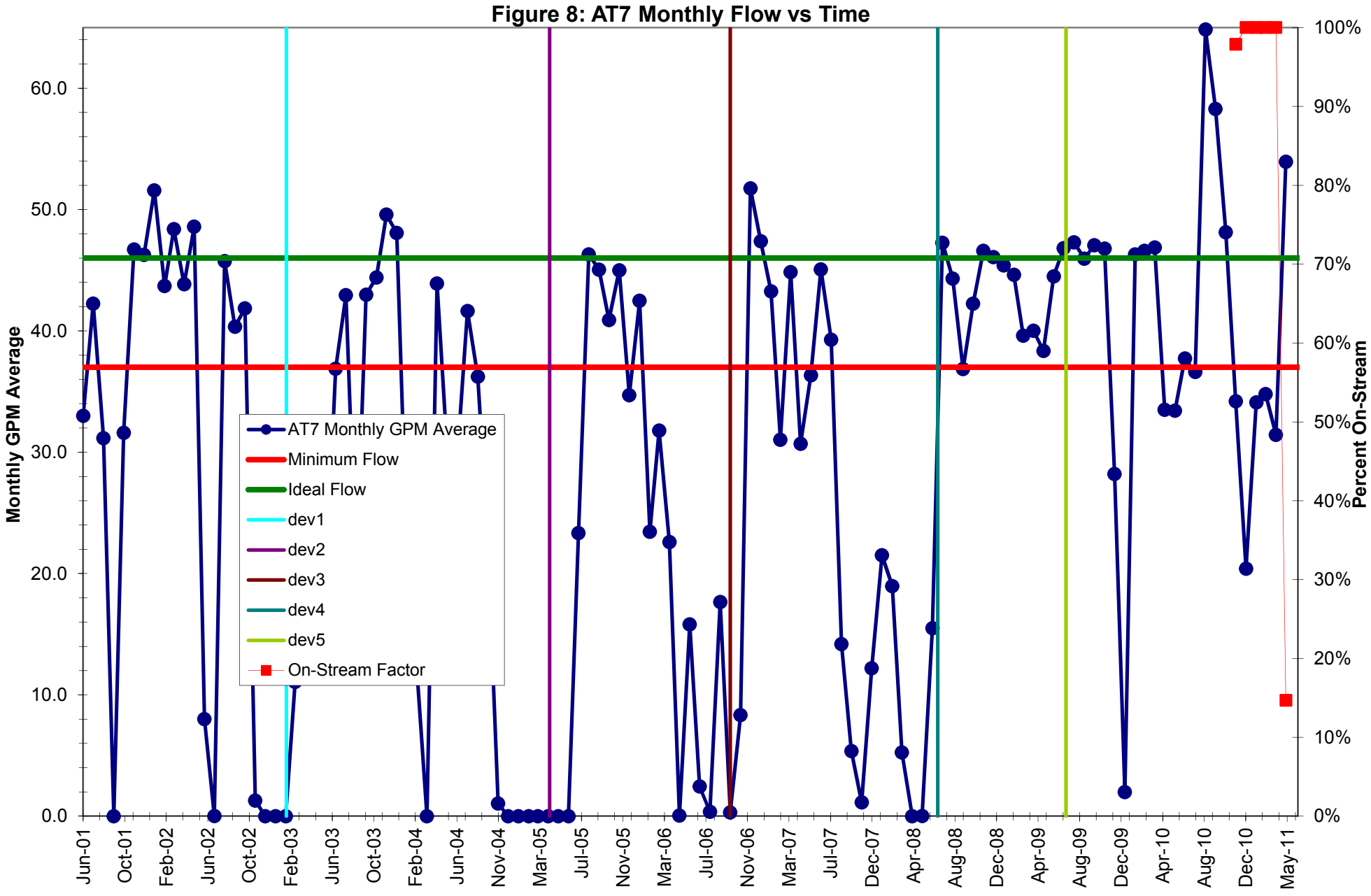
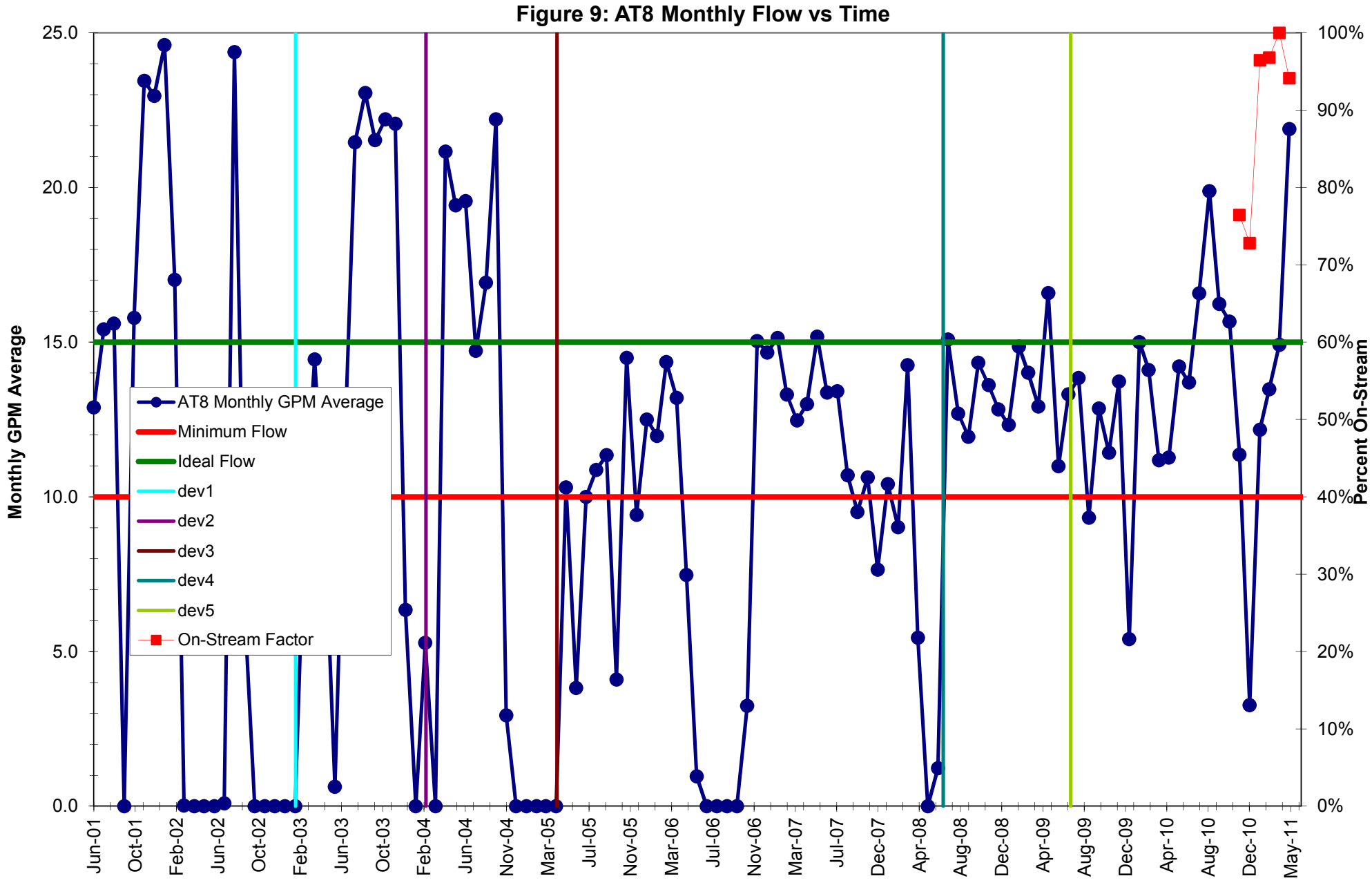


* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.



* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.



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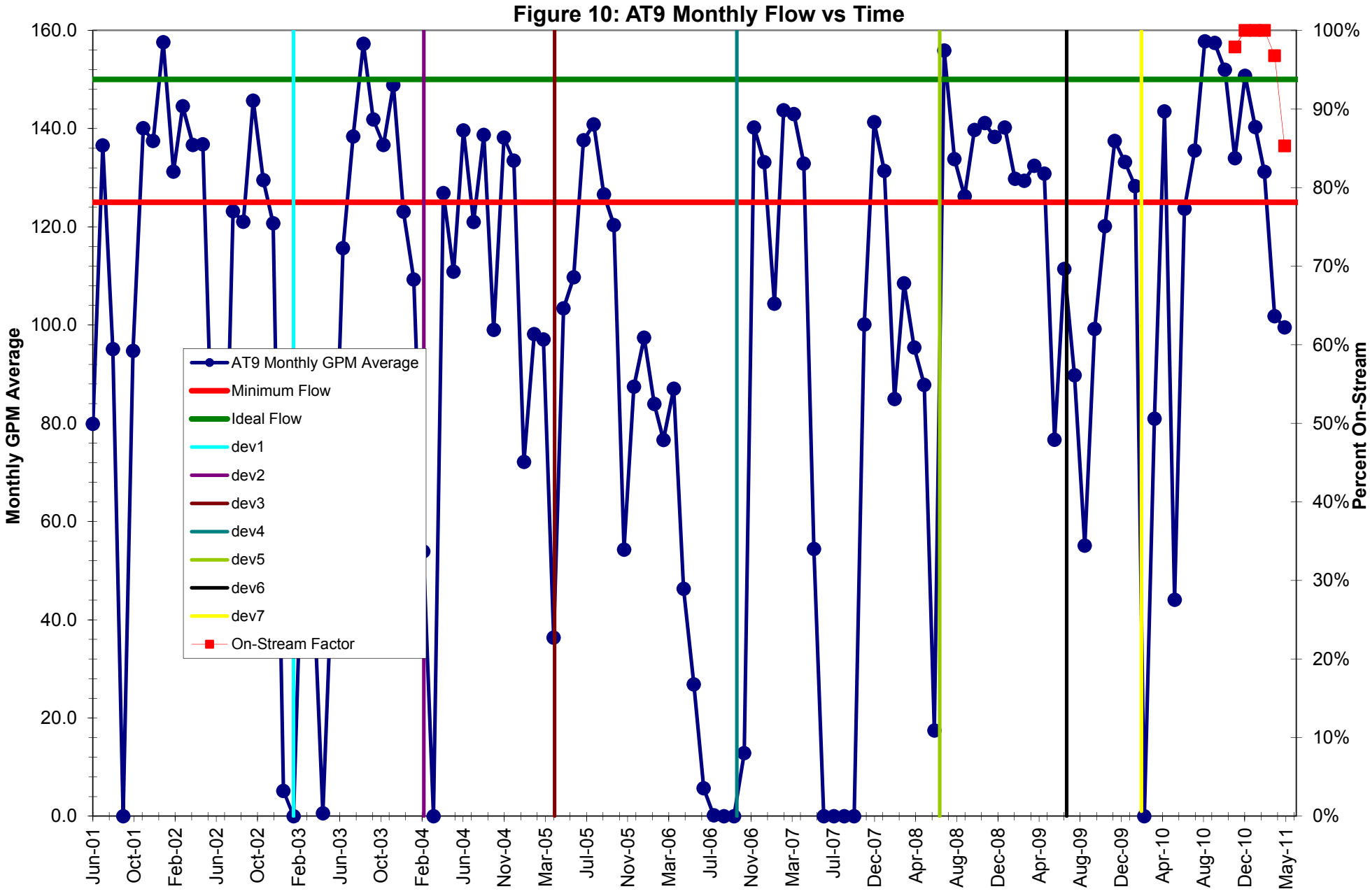
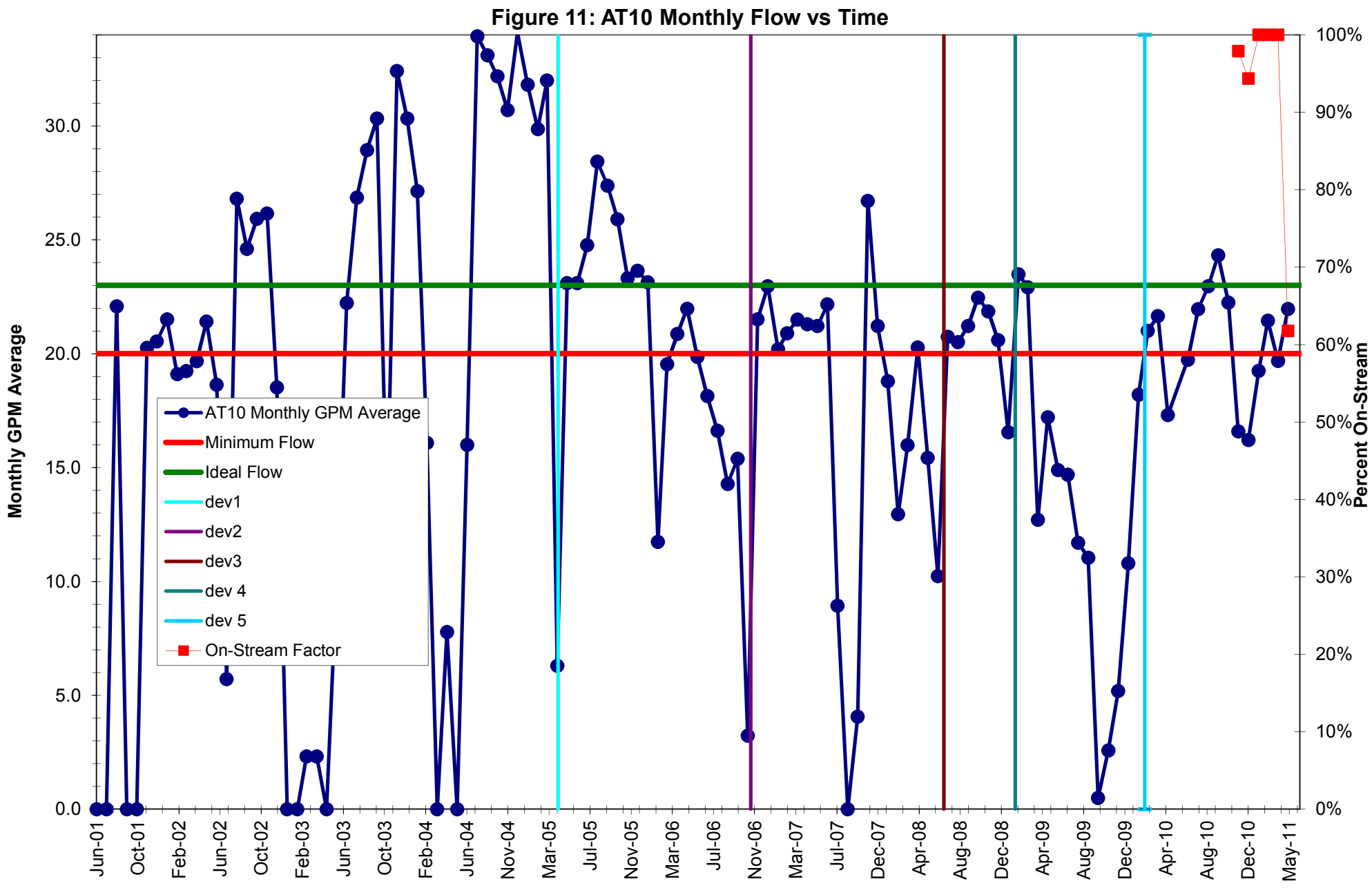


* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.



* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.

Monthly Project Status Report June 2011
Facility Maintenance
Naval Industrial Reserve Ordnance Plant - Fridley, Minnesota
Prepared by Bay West, Inc.

EMAC Contract No. N40083-06-D-4015, Task Order #0005

SYSTEM OVERVIEW

- The GWTF was in operation for 716.8 hours during the month of June 2011.
- The on-stream factor for June was 99.6%. The on-stream factor is the actual operation time divided by the available operation time.
- The system processed an estimated 13,216,000 gallons of groundwater in June, for a total of 2,981,669,000 gallons to date.
- Electrical use was approximately 52,109 kilowatt-hours (kWh) for June 2011.
- Approximately 11,654 pounds of trichloroethylene (TCE) have been removed from the aquifer since groundwater treatment system start-up in 1999. Approximately 37,303 pounds of TCE have been removed from the aquifer since groundwater extraction activities began in 1992.

SCHEDULED MAINTENANCE

- Visually inspected flow meters and level probes for material buildup and proper operation.
- Tested the four safety showers/eyewash stations to assure adequate performance.
- Lubricated blower motors, influent pumps, and effluent pumps.
- Collected extraction well water levels on a weekly basis.
- Measured pump P-101A bearing temperature. All values were within normal operation range.
- Measured the amount of fouling debris in Air Stripping Units.
- Replaced pressure gages on P101A/B, P301A/B, and P-205 (air stripper intake location).
- Inspected ASU 202 and 204 flow meter transducers.
- Repair of feed pump P101B and effluent pump P301A by PFC Equipment (PFC) continues. Pumps are expected to be returned to service in July. The treatment plant continues to operate using feed pump P101A and effluent pump P301B.
- Extraction well pipe in Building 52/53 will be replaced upon receipt of new spool pieces for extraction well flow meters, scheduled for delivery in mid to late August. All other equipment required for the pipe replacement project has been received.
- Chemical cleaning of groundwater extraction lines between AT-5A and AT-5B and Building 52/53 with will be performed at the same time as extraction well pipe replacement work is completed in Building 52/53.
- Chemical cleaning of the groundwater extraction line between AT-3A and building 52/53 will be performed at the time AT-3A is ready to be taken off-line and the extraction line extended from AT-3A to AT-13.

- Due to continued deterioration in performance, the AT-9 redevelopment schedule has been moved up to July. Previously it was scheduled to coincide with extraction well pipe replacement work in Building 52/53.
- Upgrading programmable logic controller (PLC) and supervisory control and data acquisition (SCADA) system with current generation equipment is in progress. Field implementation will be performed in September and October.

PROBLEMS AND SOLUTIONS

- The overload protector for AT-10 pump motor continually tripped at the beginning part of the month. Bay West concluded the motor bearing assembly was misaligned. Well driller EH Renner replaced the motor, and pump operation returned to normal.
- ASU sump level sensors were transmitting a high level alarm condition in the beginning part of the month, causing the system to shut-down. The flow meters for ASU 202 and 204 were reading a fault condition, and the ASU flow rates were likely unbalanced. Bay West changed the ASU control valve positions to balance the ASU flow rates. Jasper Engineering, Siemens flow meter representatives, worked with Bay West to troubleshoot the ASU flow meters. Jasper Engineering concluded the ultrasonic signal is too low, which is likely caused by pipe fouling. Bay West will continue to monitor the ASU levels for proper system operation. Additionally, Bay West will visually inspect the inside of the pipe for scale at the same time the treatment plant is off-line to replace all extraction well pipe in Building 52/53. Corrective actions, as appropriate, will be implemented based on inspection results.
- **Well Performance Summary**

Well	Average Monthly Flow Rate (GPM) (Available)	Average Monthly Flow Rate (GPM) (Operational)	Ideal Flow Rate (GPM)	% of Ideal Flow (Available)	% of Ideal Flow (Operational)	Minimum Flow Rate (GPM)	Available Hours of Operation	Operating Hours	On-Stream Factor (Available)
AT-3A	66.2	66.5	135	49.04%	49.26%	115	720	717	99.58%
AT-5A	140.5	141	156	90.06%	90.38%	138	720	717	99.58%
AT-5B	61.0	61.3	82	74.39%	74.76%	70	720	717	99.58%
AT-7	50.3	50.5	46	109.35%	109.78%	37	720	717	99.58%
AT-8	12.4	12.4	15	82.67%	82.67%	10	720	717	99.58%
AT-9	37.5	56.5	150	25.00%	37.67%	125	720	476	66.11%
AT-10	19.7	20.0	23	85.65%	86.96%	20	714	702	98.32%

TABLES

1. Groundwater Treatment Facility Operations
2. Electrical Meter Readings

FIGURES

1. Monthly GWTF On Stream Factor
2. GWTF Total Treated Flow
3. Total Discharge
4. Gallons Treated vs. Time
5. AT-3A Monthly Flow vs. Time
6. AT-5A Monthly Flow vs. Time
7. AT-5B Monthly Flow vs. Time
8. AT-7 Monthly Flow vs. Time
9. AT-8 Monthly Flow vs. Time
10. AT-9 Monthly Flow vs. Time
11. AT-10 Monthly Flow vs. Time

Tables

NIROP FRIDLEY
Groundwater Treatment Facility (GWTF)

	OPERATIONS (hrs)			WATER DISCHARGED (thousands of gallons)					WATER TREATED (thousands of gallons)	
Month	Available	Operating	On-stream factor	to Storm	to Sanitary	Untreated to Sanitary	Total to Sanitary	% Storm	Monthly	Cumulative
Nov-98	480.0	480.0	100.0%	0	17,524	0	17,524	0%	17,524	17,524
Dec-98	718.0	628.0	87.5%	16,078	7,087	0	7,087	69%	23,165	40,689
Jan-99	744.0	743.0	99.9%	25,571	0	0	0	100%	25,571	66,260
Feb-99	672.0	672.0	100.0%	23,938	0	0	0	100%	23,938	90,198
Mar-99	744.0	744.0	100.0%	27,394	0	0	0	100%	27,394	117,592
Apr-99	720.0	720.0	100.0%	25,254	0	0	0	100%	25,254	142,846
May-99	744.0	744.0	100.0%	23,291	0	0	0	100%	23,291	166,137
Jun-99	720.0	713.0	99.0%	25,823	0	0	0	100%	25,823	191,960
Jul-99	744.0	744.0	100.0%	22,266	0	0	0	100%	22,266	214,226
Aug-99	684.0	684.0	100.0%	21,634	0	0	0	100%	21,634	235,860
Sep-99	720.0	720.0	100.0%	18,205	0	0	0	100%	18,205	254,065
Oct-99	744.0	744.0	100.0%	23,029	0	0	0	100%	23,029	277,094
Nov-99	720.0	720.0	100.0%	22,783	0	0	0	100%	22,783	299,877
Dec-99	535.0	535.0	100.0%	12,818	0	0	0	100%	12,818	312,695
Jan-00	356.0	356.0	100.0%	10,400	0	0	0	100%	10,400	323,095
Feb-00	695.0	694.0	99.9%	16,944	0	0	0	100%	16,944	340,039
Mar-00	744.0	743.5	99.9%	27,131	0	0	0	100%	27,131	367,170
Apr-00	720.0	720.0	100.0%	25,899	0	0	0	100%	25,899	393,069
May-00	744.0	744.0	100.0%	27,458	0	0	0	100%	27,458	420,527
Jun-00	718.9	718.9	100.0%	25,136	0	0	0	100%	25,136	445,663
Jul-00	744.0	744.0	100.0%	25,637	0	0	0	100%	25,637	471,300
Aug-00	744.0	744.0	100.0%	24,341	0	0	0	100%	24,341	495,641
Sep-00	655.5	655.5	100.0%	22,559	0	0	0	100%	22,559	518,200
Oct-00	744.0	744.0	100.0%	25,955	0	0	0	100%	25,955	544,155
Nov-00	720.0	718.0	99.7%	25,759	0	0	0	100%	25,759	569,914
Dec-00	744.0	743.5	99.9%	27,404	0	0	0	100%	27,404	597,318
Jan-01	744.0	744.0	100.0%	24,666	0	0	0	100%	24,666	621,984
Feb-01	672.0	671.0	99.9%	23,956	0	0	0	100%	23,956	645,940
Mar-01	744.0	737.0	99.1%	24,694	0	0	0	100%	24,694	670,634
Apr-01	720.0	719.5	99.9%	24,964	0	0	0	100%	24,964	695,598
May-01	604.3	602.3	99.7%	13,656	0	0	0	100%	13,656	709,254
Jun-01	709.5	708.3	99.8%	20,000	0	0	0	100%	20,000	729,254
Jul-01	730.0	730.0	100.0%	18,077	0	0	0	100%	18,077	747,331
Aug-01	491.0	491.0	100.0%	17,921	0	0	0	100%	17,921	765,252
Sep-01	0.0	0.0	100.0%	0	0	0	0	100%	0	765,252
Oct-01	736.0	472.5	64.2%	21,376	0	0	0	100%	21,376	786,628
Nov-01	720.0	720.0	100.0%	30,205	0	0	0	100%	30,205	816,833
Dec-01	744.0	744.0	100.0%	28,114	0	0	0	100%	28,114	844,947
Jan-02	742.0	737.0	99.3%	30,483	0	0	0	100%	30,483	875,430
Feb-02	672.0	672.0	100.0%	25,538	0	0	0	100%	25,538	900,968
Mar-02	744.0	744.0	100.0%	29,957	0	0	0	100%	29,957	930,925
Apr-02	744.0	743.8	100.0%	28,569	0	0	0	100%	28,569	959,494
May-02	744.0	741.0	99.6%	28,656	0	0	0	100%	28,656	988,150
Jun-02	720.0	720.0	100.0%	22,131	0	0	0	100%	22,131	1,010,281
Jul-02	744.0	744.0	100.0%	21,367	0	0	0	100%	21,367	1,031,648
Aug-02	744.0	744.0	100.0%	28,328	0	0	0	100%	28,328	1,059,976
Sep-02	630.3	630.3	100.0%	20,861	0	0	0	100%	20,861	1,080,837
Oct-02	744.0	744.0	100.0%	21,417	0	0	0	100%	21,417	1,102,254
Nov-02	720.0	720.0	100.0%	25,003	0	0	0	100%	25,003	1,127,257
Dec-02	744.0	742.0	99.7%	25,327	0	0	0	100%	25,327	1,152,584
Jan-03	744.0	55.0	7.4%	1,048	0	0	0	100%	1,048	1,153,632
Feb-03	672.0	0.0	0.0%	0	0	0	0	100%	0	1,153,632
Mar-03	744.0	309.0	41.5%	13,387	0	0	0	100%	13,387	1,167,019
Apr-03	526.5	425.5	80.8%	16,584	0	0	0	100%	16,584	1,183,603
May-03	744.0	298.5	40.1%	7,448	0	0	0	100%	7,448	1,191,051
Jun-03	720.0	253.0	35.1%	10,775	0	0	0	100%	10,775	1,201,826
Jul-03	734.0	576.3	78.5%	22,629	0	0	0	100%	22,629	1,224,455

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Table 1

NIROP FRIDLEY
Groundwater Treatment Facility (GWTF)

Month	OPERATIONS (hrs)			WATER DISCHARGED (thousands of gallons)					WATER TREATED (thousands of gallons)	
	Available	Operating	On-stream factor	to Storm	to Sanitary	Untreated to Sanitary	Total to Sanitary	% Storm	Monthly	Cumulative
Aug-03	732.5	639.8	87.3%	25,591	46	0	46	99.8%	25,637	1,250,092
Sep-03	720.0	719.0	99.9%	23,028	4,532	0	4,532	83.6%	27,560	1,277,652
Oct-03	681.7	648.5	95.1%	25,389	0	0	0	100%	25,389	1,303,041
Nov-03	720.0	694.0	96.4%	22,882	0	0	0	100%	22,882	1,325,923
Dec-03	743.0	740.5	99.7%	31,010	0	0	0	100%	31,010	1,356,933
Jan-04	744.0	727.0	97.7%	25,456	0	0	0	100%	25,456	1,382,389
Feb-04	689.7	689.7	100.0%	23,771	0	0	0	100%	23,771	1,406,160
Mar-04	506.5	353.5	69.8%	12,928	0	0	0	100%	12,928	1,419,088
Apr-04	720.0	2.0	0.3%	60	0	0	0	100%	60	1,419,148
May-04	744.0	635.0	85.3%	24,104	0	0	0	100%	24,104	1,443,252
Jun-04	613.5	613.5	100.0%	20,988	0	0	0	100%	20,988	1,464,240
Jul-04	735.5	732.8	99.6%	26,846	0	0	0	100%	26,846	1,491,086
Aug-04	741.0	741.0	100.0%	26,760	0	0	0	100%	26,760	1,517,846
Sep-04	718.0	717.0	99.9%	27,276	0	0	0	100%	27,276	1,545,122
Oct-04	676.8	676.8	100.0%	24,709	0	0	0	100%	24,709	1,569,831
Nov-04	720.0	720.0	100.0%	25,859	0	0	0	100%	25,859	1,595,690
Dec-04	744.0	744.0	100.0%	26,229	0	0	0	100%	26,229	1,621,919
Jan-05	744.0	667.0	89.7%	20,915	0	0	0	100%	20,915	1,642,834
Feb-05	672.0	672.0	100.0%	22,329	0	0	0	100%	22,329	1,665,163
Mar-05	744.0	716.8	96.3%	22,960	0	0	0	100%	22,960	1,688,123
Apr-05	384.0	322.0	83.9%	6,515	0	0	0	100%	6,515	1,694,638
May-05	576.0	503.5	87.4%	17,859	0	0	0	100%	17,859	1,712,497
Jun-05	720.0	714.5	99.2%	24,450	0	0	0	100%	24,450	1,736,947
Jul-05	744.0	712.5	95.8%	25,301	0	0	0	100%	25,301	1,762,248
Aug-05	744.0	744.0	100.0%	25,916	0	0	0	100%	25,916	1,788,164
Sep-05	720.0	715.3	99.4%	20,837	0	0	0	100%	20,837	1,809,001
Oct-05	744.0	744.0	100.0%	24,028	0	0	0	100%	24,028	1,833,029
Nov-05	720.0	720.0	100.0%	20,553	0	0	0	100%	20,553	1,853,582
Dec-05	686.0	622.3	90.7%	19,037	0	0	0	100%	19,037	1,872,619
Jan-06	744.0	744.0	100.0%	21,858	0	0	0	100%	21,858	1,894,477
Feb-06	672.0	672.0	100.0%	19,590	0	0	0	100%	19,590	1,914,067
Mar-06	710.5	710.0	99.9%	13,935	0	0	0	100%	13,935	1,928,002
Apr-06	654.0	654.0	100.0%	18,391	0	0	0	100%	18,391	1,946,393
May-06	744.0	744.0	100.0%	18,116	0	0	0	100%	18,116	1,964,509
Jun-06	720.0	719.5	99.9%	16,616	0	0	0	100%	16,616	1,981,125
Jul-06	716.0	716.0	100.0%	14,232	0	0	0	100%	14,232	1,995,357
Aug-06	744.0	742.0	99.7%	13,291	0	0	0	100%	13,291	2,008,648
Sep-06	720.0	720.0	100.0%	14,269	0	0	0	100%	14,269	2,022,917
Oct-06	731.0	730.5	99.9%	13,496	0	0	0	100%	13,496	2,036,413
Nov-06	396.0	110.0	27.8%	3,073	0	0	0	100%	3,073	2,039,486
Dec-06	744.0	743.5	99.9%	25,287	0	0	0	100%	25,287	2,064,773
Jan-07	720.0	719.5	99.9%	25,118	0	0	0	100%	25,118	2,089,891
Feb-07	671.8	659.8	98.2%	21,953	0	0	0	100%	21,953	2,111,844
Mar-07	744.0	734.0	98.7%	25,860	0	0	0	100%	25,860	2,137,703
Apr-07	720.0	720.0	100.0%	24,240	0	0	0	100%	24,240	2,161,943
May-07	744.0	744.0	100.0%	19,004	0	0	0	100%	19,004	2,180,947
Jun-07	719.5	719.5	100.0%	20,659	0	0	0	100%	20,659	2,201,606
Jul-07	744.0	744.0	100.0%	19,389	0	0	0	100%	19,389	2,220,995
Aug-07	696.0	696.0	100.0%	16,354	0	0	0	100%	16,354	2,237,349
Sep-07	720.0	720.0	100.0%	15,320	0	0	0	100%	15,320	2,252,669
Oct-07	744.0	744.0	100.0%	14,409	0	0	0	100%	14,409	2,267,078
Nov-07	720.0	720.0	100.0%	17,388	0	0	0	100%	17,388	2,284,466
Dec-07	744.0	739.0	99.3%	17,002	0	0	0	100%	17,002	2,301,468
Jan-08	742.0	684.0	92.2%	17,115	0	0	0	100%	17,115	2,318,583
Feb-08	695.3	611.8	88.0%	13,581	0	0	0	100%	13,581	2,332,164
Mar-08	744.0	742.0	99.7%	13,277	0	0	0	100%	13,277	2,345,441
Apr-08	720.0	717.0	99.6%	12,518	0	0	0	100%	12,518	2,357,959

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Table 1

NIROP FRIDLEY
Groundwater Treatment Facility (GWTF)

Month	OPERATIONS (hrs)			WATER DISCHARGED (thousands of gallons)					WATER TREATED (thousands of gallons)	
	Available	Operating	On-stream factor	to Storm	to Sanitary	Untreated to Sanitary	Total to Sanitary	% Storm	Monthly	Cumulative
May-08	718.0	692.0	96.4%	15,430	0	0	0	100%	15,430	2,373,389
Jun-08	333.5	333.5	100.0%	6,523	0	0	0	100%	6,523	2,379,912
Jul-08	719.0	719.0	100.0%	15,762	0	0	0	100%	15,762	2,395,674
Aug-08	729.3	729.3	100.0%	20,183	0	0	0	100%	20,183	2,415,857
Sep-08	720.0	720.0	100.0%	19,632	0	0	0	100%	19,632	2,435,489
Oct-08	737.0	737.0	100.0%	19,818	0	0	0	100%	19,818	2,455,307
Nov-08	662.0	662.0	100.0%	18,191	0	0	0	100%	18,191	2,473,498
Dec-08	744.0	744.0	100.0%	20,926	0	0	0	100%	20,926	2,494,424
Jan-09	741.0	741.0	100.0%	20,301	44	0	44	99.8%	20,301	2,514,725
Feb-09	672.0	672.0	100.0%	17,546	0	0	0	100%	17,546	2,532,271
Mar-09	711.9	711.2	99.9%	17,766	0	0	0	100%	17,766	2,550,037
Apr-09	709.0	705.6	99.5%	16,434	0	0	0	100%	16,434	2,566,471
May-09	739.8	739.8	100.0%	23,663	0	0	0	100%	23,663	2,590,134
Jun-09	719.8	719.8	100.0%	21,234	0	0	0	100%	21,234	2,611,368
Jul-09	744.0	744.0	100.0%	21,846	0	0	0	100%	21,846	2,633,214
Aug-09	744.0	744.0	100.0%	20,933	0	0	0	100%	20,933	2,654,147
Sep-09	697.2	697.2	100.0%	16,585	0	0	0	100%	16,585	2,670,732
Oct-09	743.5	743.5	100.0%	18,919	0	0	0	100%	18,919	2,689,651
Nov-09	720.0	720.0	100.0%	19,768	0	0	0	100%	19,768	2,709,419
Dec-09	744.0	744.0	100.0%	18,162	0	0	0	100%	18,162	2,727,581
Jan-10	740.3	740.3	100.0%	19,542	0	0	0	100%	19,542	2,747,123
Feb-10	672.0	658.0	97.9%	14,805	0	0	0	100%	14,805	2,761,928
Mar-10	744.0	744.0	100.0%	14,596	0	0	0	100%	14,596	2,776,524
Apr-10	720.0	720.0	100.0%	15,598	0	0	0	100%	15,598	2,792,122
May-10	744.0	742.5	99.8%	18,090	0	0	0	100%	18,090	2,810,212
Jun-10	720.0	697.0	96.8%	10,717	0	0	0	100%	10,717	2,820,929
Jul-10	744.0	722.2	97.1%	12,254	0	0	0	100%	12,254	2,833,183
Aug-10	694.5	404.0	58.2%	3,789	0	0	0	100%	3,789	2,836,972
Sep-10	712.0	700.0	98.3%	12,552	0	0	0	100%	12,552	2,849,524
Oct-10	690.6	690.6	100.0%	12,926	0	0	0	100%	12,926	2,862,450
Nov-10	719.5	716.0	99.5%	15,466	0	0	0	100%	15,466	2,877,916
Dec-10	737.0	721.5	97.9%	15,855	0	0	0	100%	15,855	2,893,771
Jan-11	744.0	744.0	100.0%	17,199	0	0	0	100%	17,199	2,910,970
Feb-11	667.0	665.0	99.7%	16,551	0	0	0	100%	16,551	2,927,521
Mar-11	744.0	744.0	100.0%	17,827	0	0	0	100%	17,827	2,945,348
Apr-11	711.3	708.3	99.6%	14,063	0	0	0	100%	14,063	2,959,411
May-11	384.0	384.0	100.0%	9,042	0	0	0	100%	9,042	2,968,453
Jun-11	719.5	716.8	99.6%	13,216	0	0	0	100%	13,216	2,981,669

Note: Available hours are 24 hours per day, less scheduled down time and power outages.

* Monthly flow incorrectly reported for Jul-04 through Dec-04 - corrected January 2005 using the corrected estimate for AT-10 monthly flow.

NIROP FRIDLEY
Ground Water Treatment Facility (GWTF)

Date	Electrical Meter Readings (kW·h)					Monthy Usage
	MCC #1	MCC #2	Wells 2, 3A, 5A, 5B	Well 1A	Well 4	
8/3/2004	326,133	1,795,809	*	*	*	55,312
9/1/2004	335,039	1,842,215	*	*	*	52,307
10/1/2004	340,422	1,889,139	*	*	*	53,798
11/2/2004	347,296	1,936,063	*	*	*	64,045
12/1/2004	354,514	1,992,890	*	*	*	64,887
1/5/2005	362,574	49,717	*	*	*	48,313
2/1/2005	368,114	92,490	*	*	*	56,517
3/1/2005	374,689	142,432	*	*	*	35,669
4/1/2005	381,858	170,932	*	*	*	32,506
5/11/2005	384,388	200,908	*	*	*	37,857
6/2/2005	389,382	233,771	*	*	*	53,851
7/1/2005	395,908	281,096	*	*	*	55,772
8/1/2005	402,786	329,990	*	*	*	58,530
9/1/2005	410,054	381,252	*	*	*	59,756
10/4/2005	416,742	434,320	*	*	*	54,337
11/1/2005	423,117	482,282	*	*	*	59,439
12/1/2005	429,602	535,236	*	*	*	58,139
1/3/2006	437,032	585,945	*	*	*	64,273
2/3/2006	444,929	642,321	*	*	*	59,745
3/3/2006	451,966	695,029	*	*	*	59,447
4/4/2006	458,470	747,972	*	*	*	52,154
5/2/2006	464,407	794,189	*	*	*	56,066
6/1/2006	470,107	844,555	*	*	*	67,078
7/7/2006	476,656	905,084	*	*	*	75,362
8/17/2006	483,201	973,901	*	*	*	28,651
9/1/2006	485,579	174	*	*	*	60,559
10/2/2006	490,846	55,466	*	*	*	64,783
11/16/2006	497,232	113,863	*	*	*	30,896
12/12/2006	501,656	140,335	*	*	*	41,005
1/2/2007	507,345	175,651	*	*	*	89,453
2/14/2007	519,226	253,223	*	*	*	60,625
3/15/2007	526,775	306,299	*	*	*	37,019
4/1/2007	531,435	338,658	*	*	*	59,380
5/1/2007	538,780	390,693	*	*	*	60,309
6/2/2007	546,435	443,347	*	*	*	57,976
7/2/2007	552,240	495,518	*	*	*	54,945
8/1/2007	558,047	544,656	*	*	*	56,900
9/4/2007	563,999	595,604	*	*	*	48,947
10/1/2007	568,907	639,643	*	*	*	55,912
11/1/2007	574,269	690,193	*	*	*	61,551
12/3/2007	580,906	745,107	*	*	*	58,075
1/2/2008	587,234	796,854	*	*	*	61,758
2/1/2008	593,878	851,968	*	*	*	56,961
3/6/2008	601,457	901,350	*	*	*	47,128
4/1/2008	607,103	942,832	*	*	*	51,563
5/2/2008	613,973	987,525	*	*	*	45,409
6/2/2008	619,382	27,525	*	*	*	23,755
7/1/2008	621,730	48,932	*	*	*	57,458
8/1/2008	627,904	100,216	*	*	*	59,836
9/2/2008	634,818	153,138	*	*	*	57,157
10/4/2008	641,270	203,843	*	*	*	61,110

NIROP FRIDLEY
Ground Water Treatment Facility (GWTF)

Date	Electrical Meter Readings (kW·h)					Monthy Usage
	MCC #1	MCC #2	Wells 2, 3A, 5A, 5B	Well 1A	Well 4	
11/3/2008	648,196	258,027	*	*	*	58,512
12/1/2008	655,158	309,577	*	*	*	71,027
1/2/2009	663,755	372,007	*	*	*	69,361
2/2/2009	672,125	432,998	*	*	*	62,234
3/2/2009	679,788	487,569	*	*	*	61,618
4/1/2009	687,315	541,660	*	*	*	63,015
5/1/2009	694,461	597,529	*	*	*	63,751
6/1/2009	701,440	654,301	*	*	*	60,286
7/1/2009	708,069	707,958	*	*	*	65,088
8/3/2009	715,267	765,848	*	*	*	57,140
9/1/2009	721,611	816,644	*	*	*	56,282
10/1/2009	727,548	866,989	*	*	*	65,845
11/2/2009	734,666	925,716	*	*	*	60,372
12/1/2009	741,891	978,863	*	*	*	77,030
1/1/2010	750,050	1,047,734	*	*	*	63,139
2/1/2010	757,037	1,103,886	*	*	*	61,079
3/1/2010	763,509	1,158,493	*	*	*	69,431
4/1/2010	769,960	1,221,473	*	*	*	59,638
5/3/2010	775,813	1,275,258	*	*	*	54,143
6/1/2010	780,680	1,324,534	*	*	*	51,279
7/1/2010	784,369	1,372,124	*	*	*	75,167
8/2/2010	789,289	1,442,371	*	*	*	8,482
9/1/2010	791,567	1,448,575	*	*	*	55,237
10/1/2010	796,016	1,499,363	*	*	*	61,303
11/1/2010	800,411	1,556,271	*	*	*	60,565
12/1/2010	806,672	1,610,575	*	*	*	68,226
1/3/2011	813,611	1,671,862	*	*	*	64,951
2/1/2011	820,001	1,730,423	*	*	*	58,883
3/1/2011	825,935	1,783,372	*	*	*	68,939
4/1/2011	832,880	1,845,366	*	*	*	58,997
5/9/2011	838,973	1,898,270	*	*	*	29,524
6/1/2011	841,656	1,925,111	*	*	*	52,109

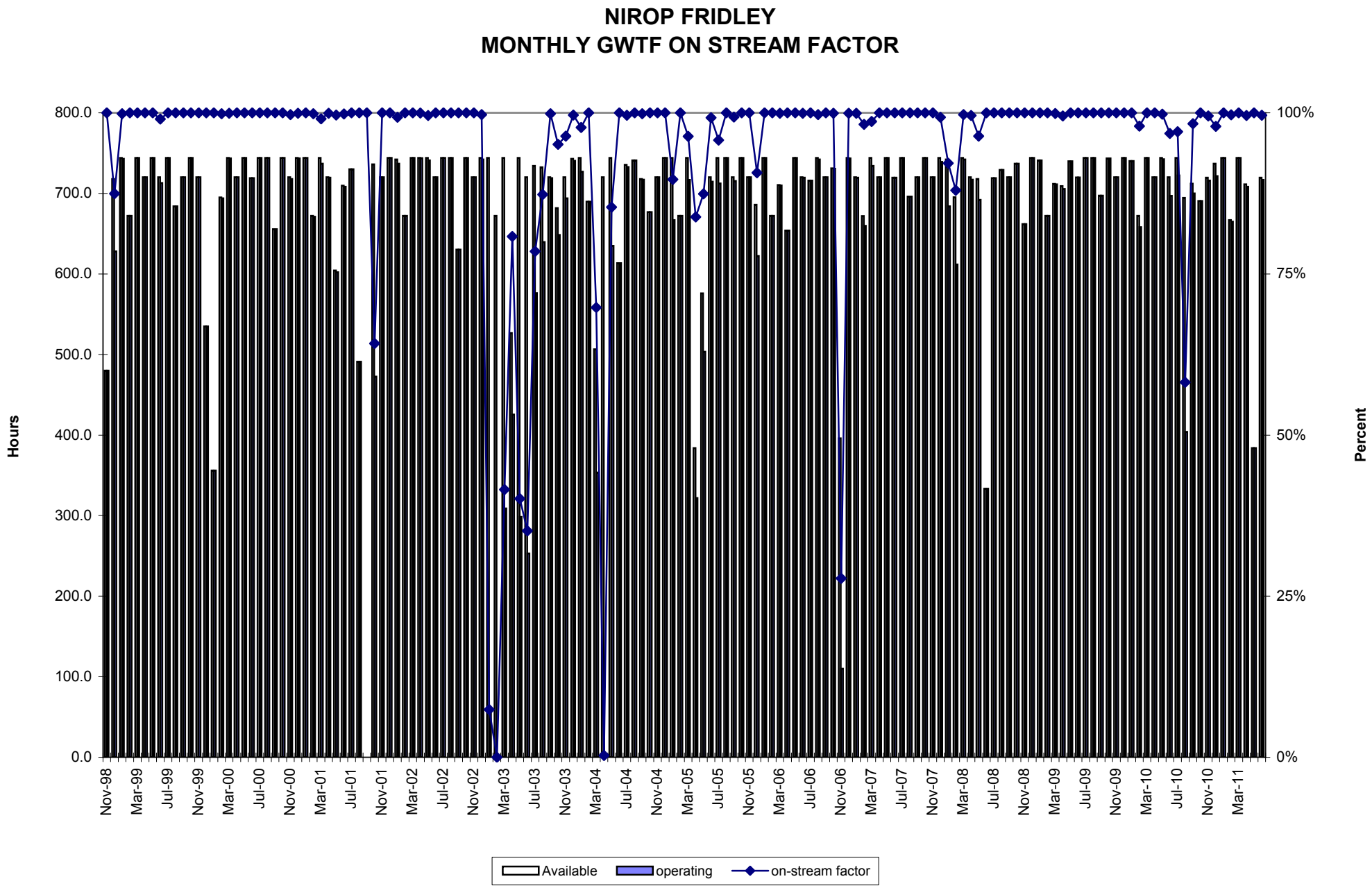
* Electrical metering for the extraction wells runs through MCC #1

- The electrical meter in the main treatment area was misread on 1/1/03, thus it was not reset. December electricity usage was estimated to be the same as November 2002.

^ The electrical meter in the main treatment area had reset after the scheduled power shut-down. October 2004 electricity usage for MCC#2 was estimated to be the same as September 2004.

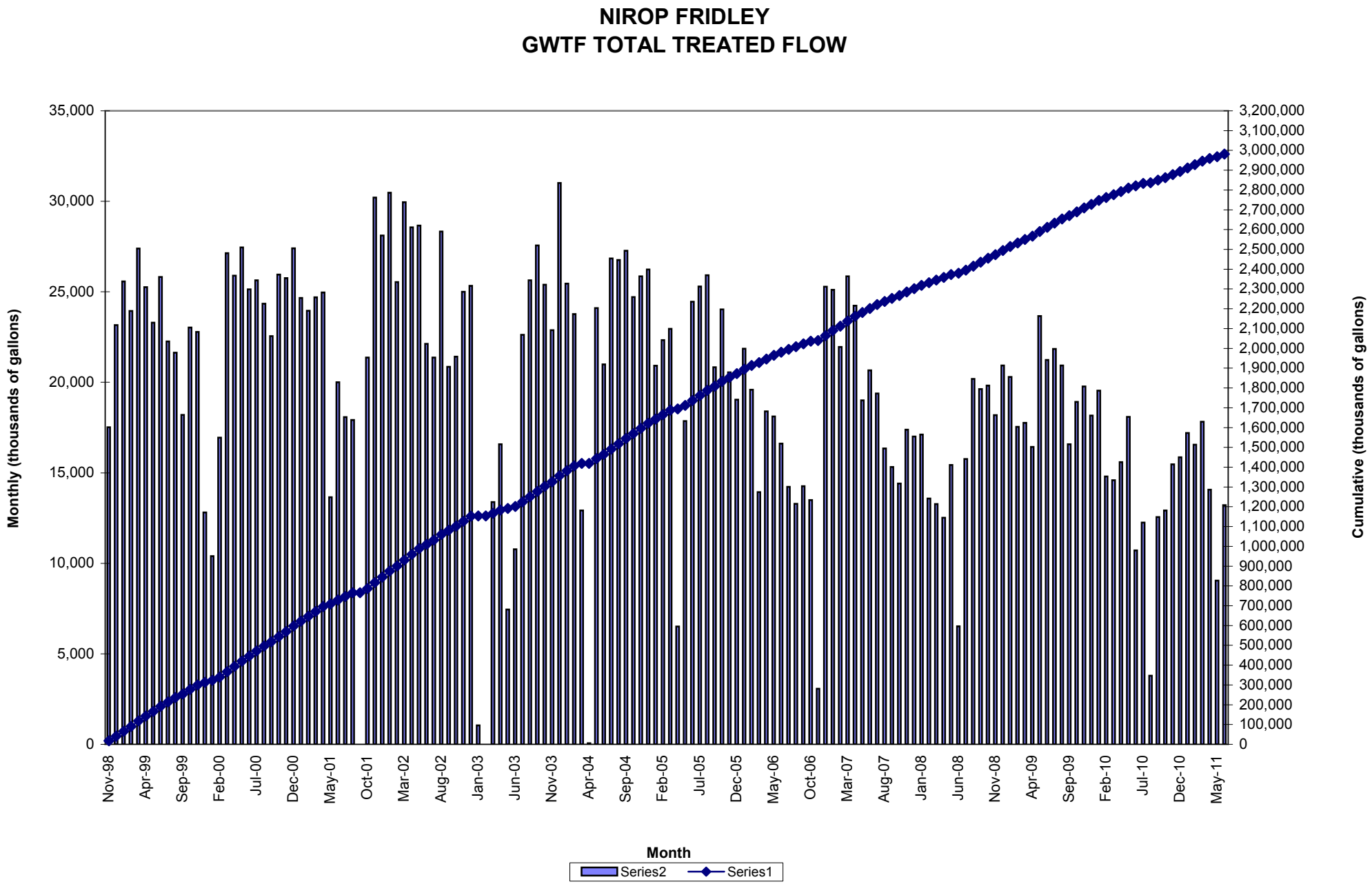
+ - electrical readings were not obtained on December 1, 2004, therefore electrical usage for November was estimated to be similar to October 2004.

Figures



Docs 58644

Figure 1



Docs 58644

Figure 2

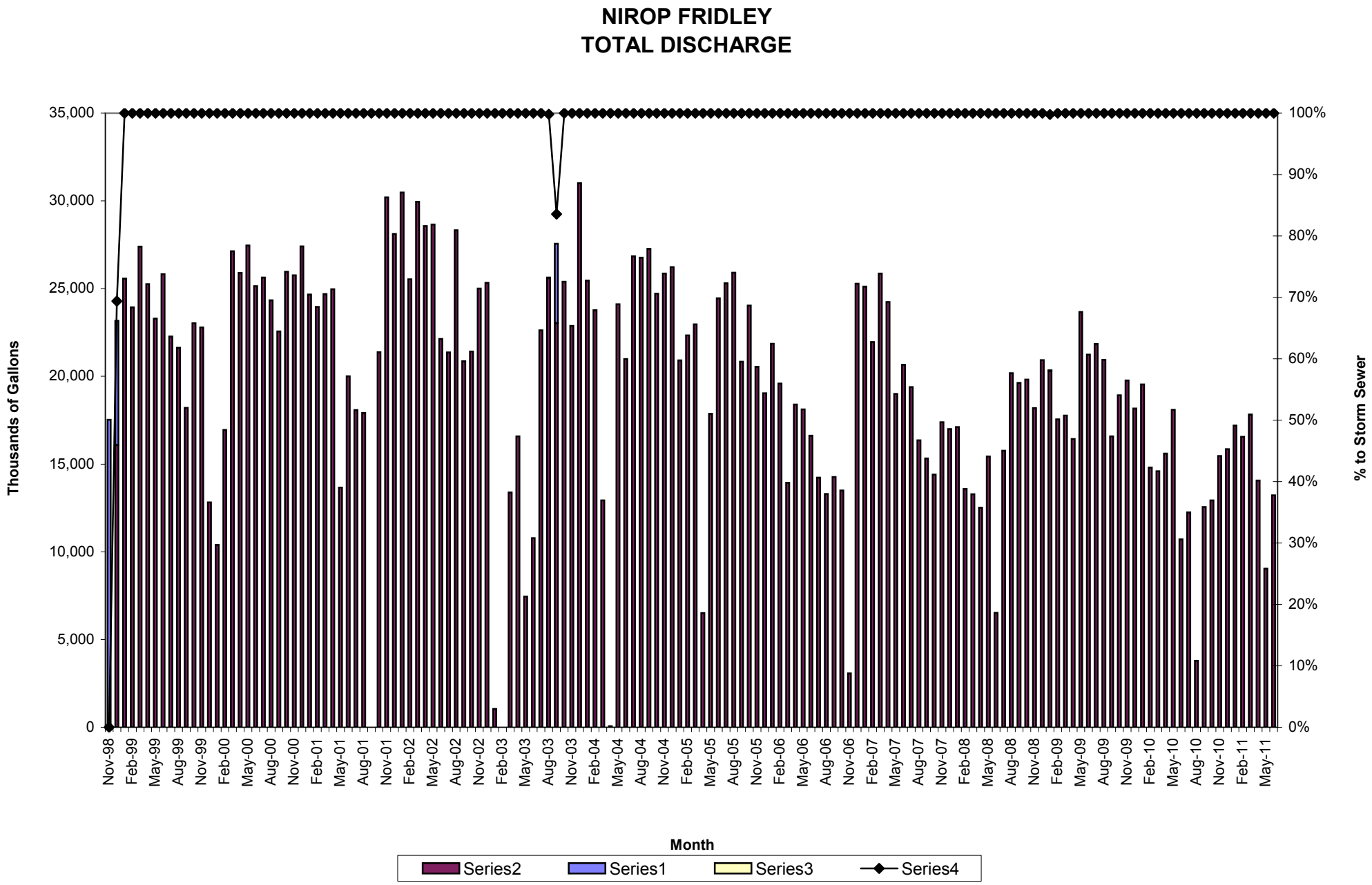


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Figure 3

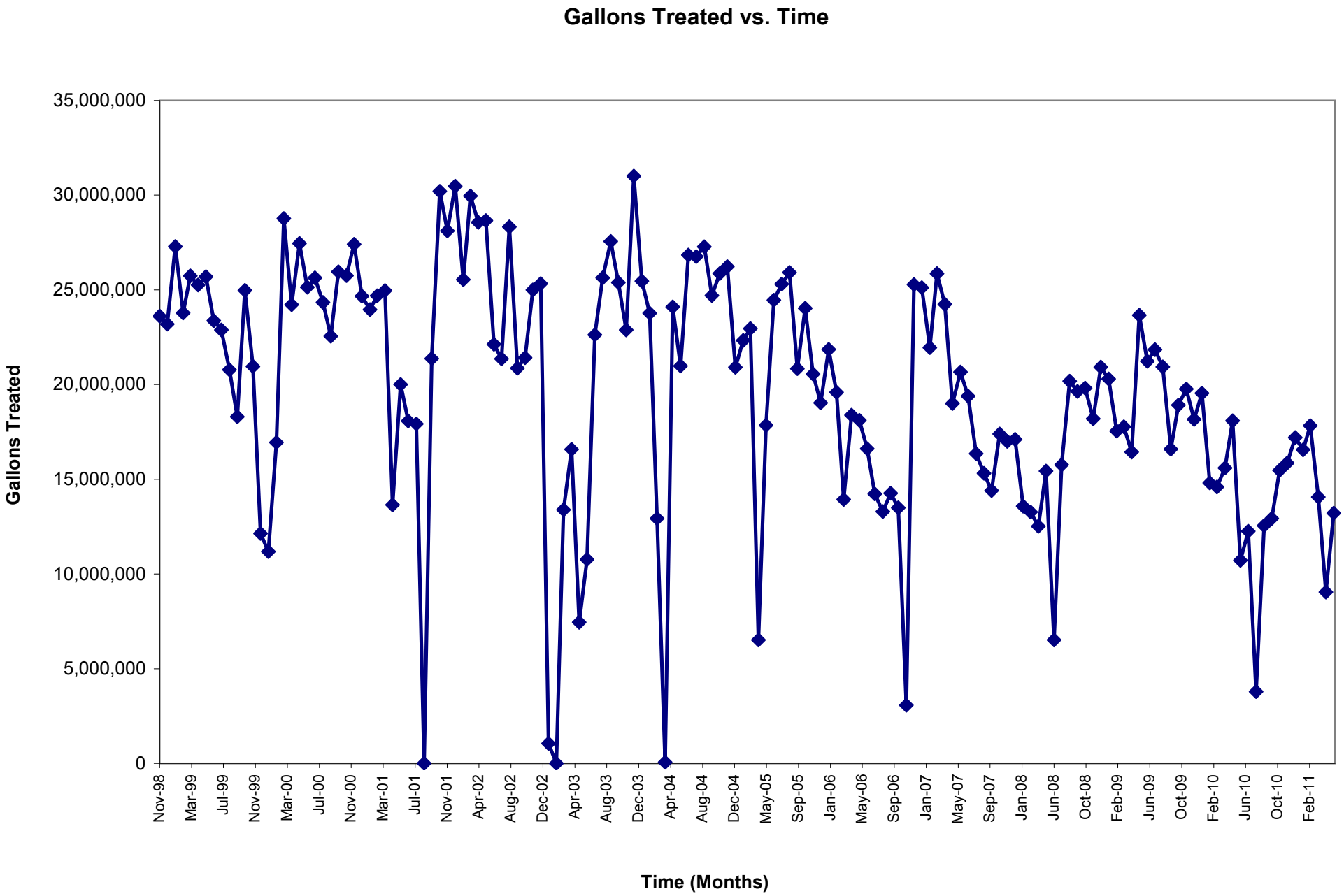

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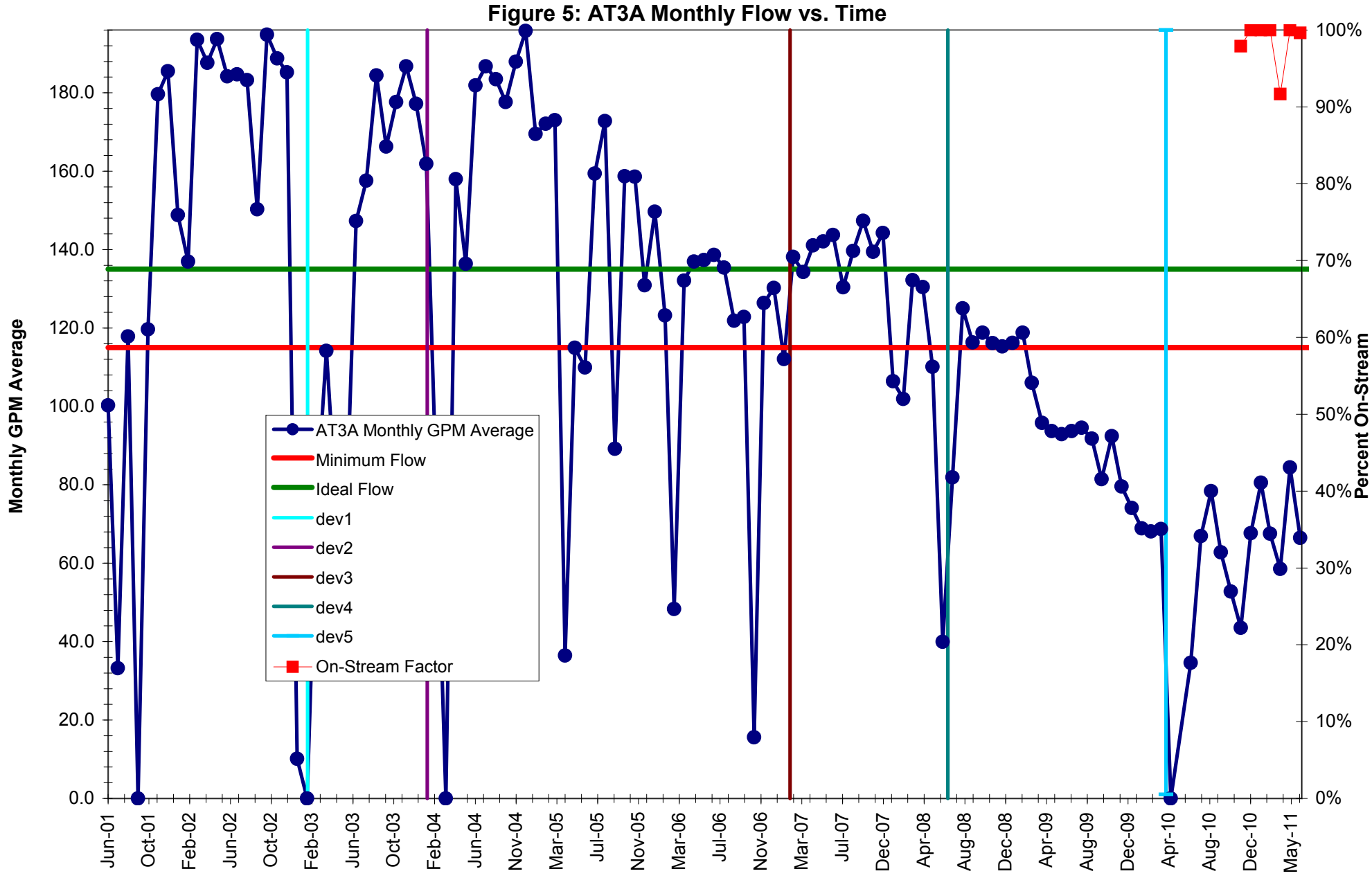
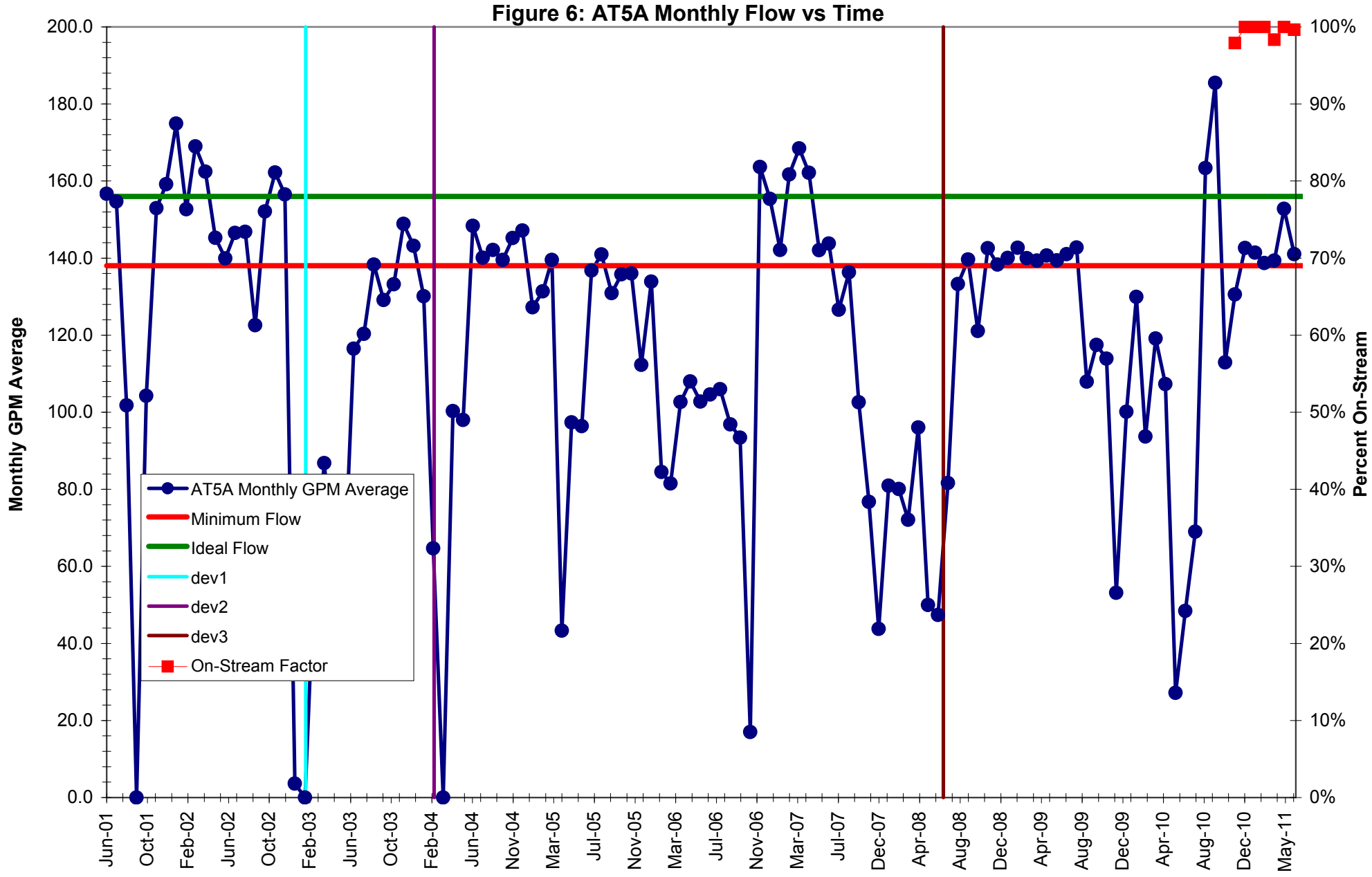
Figure 4



* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.



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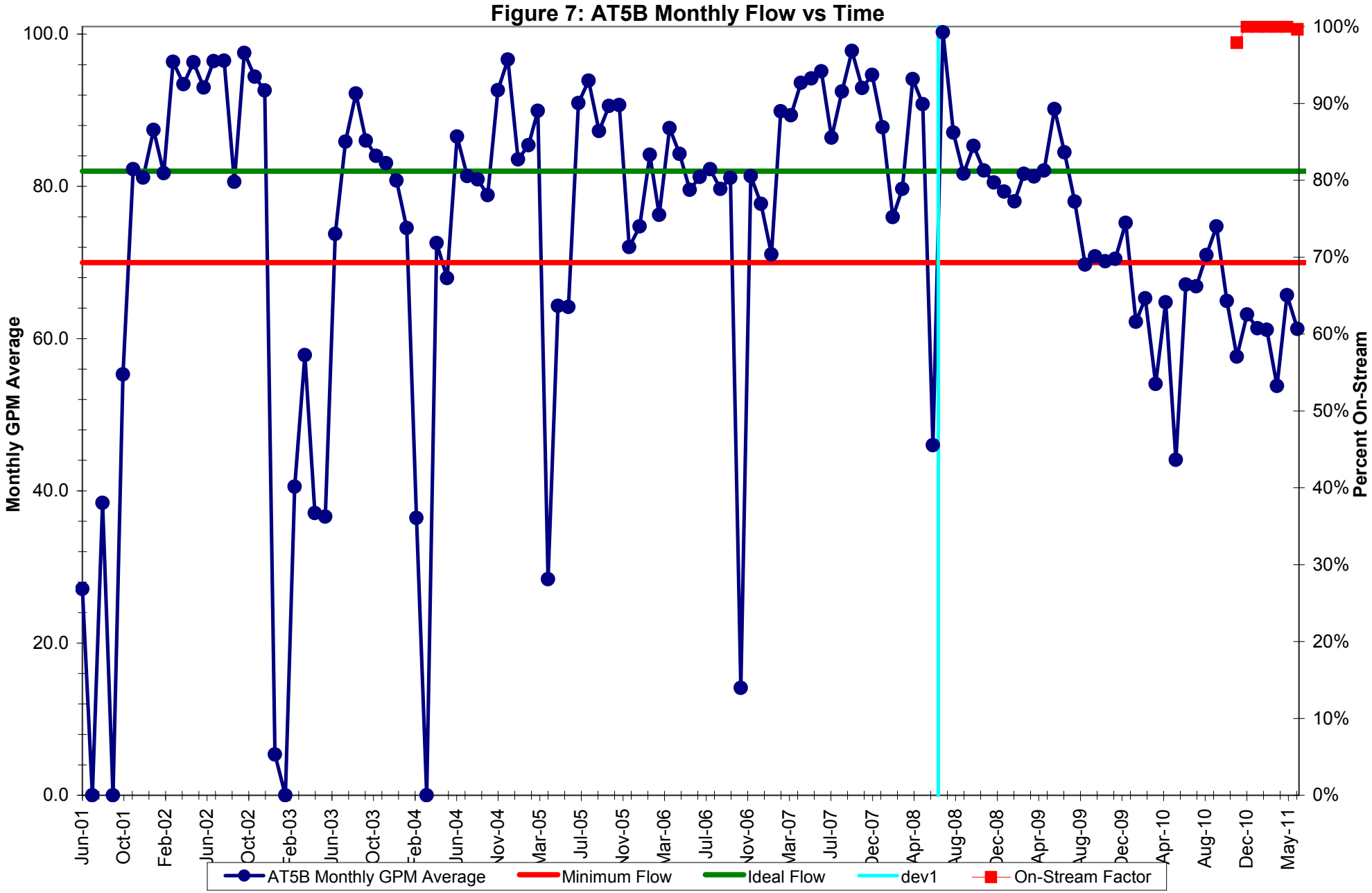

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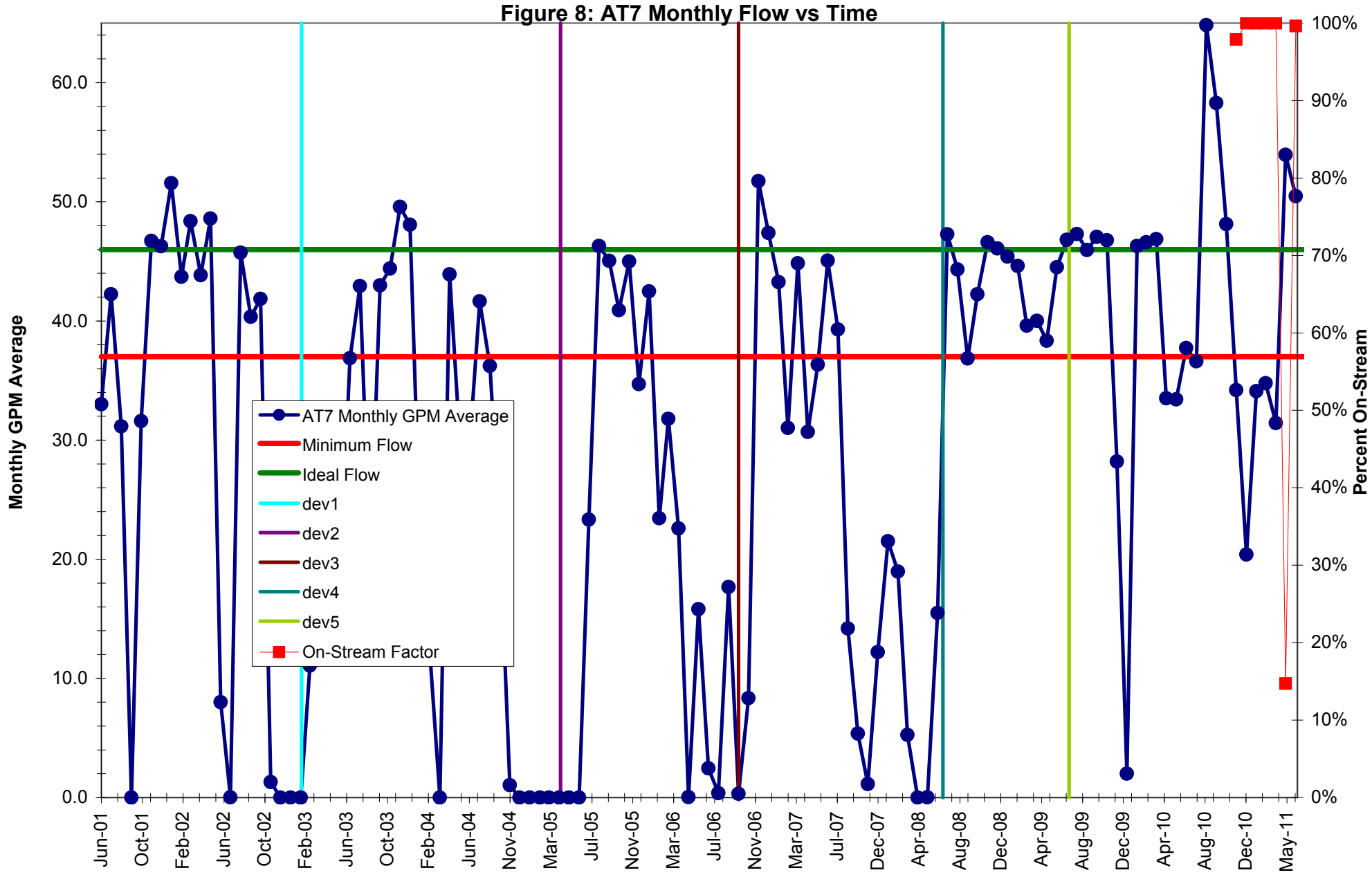

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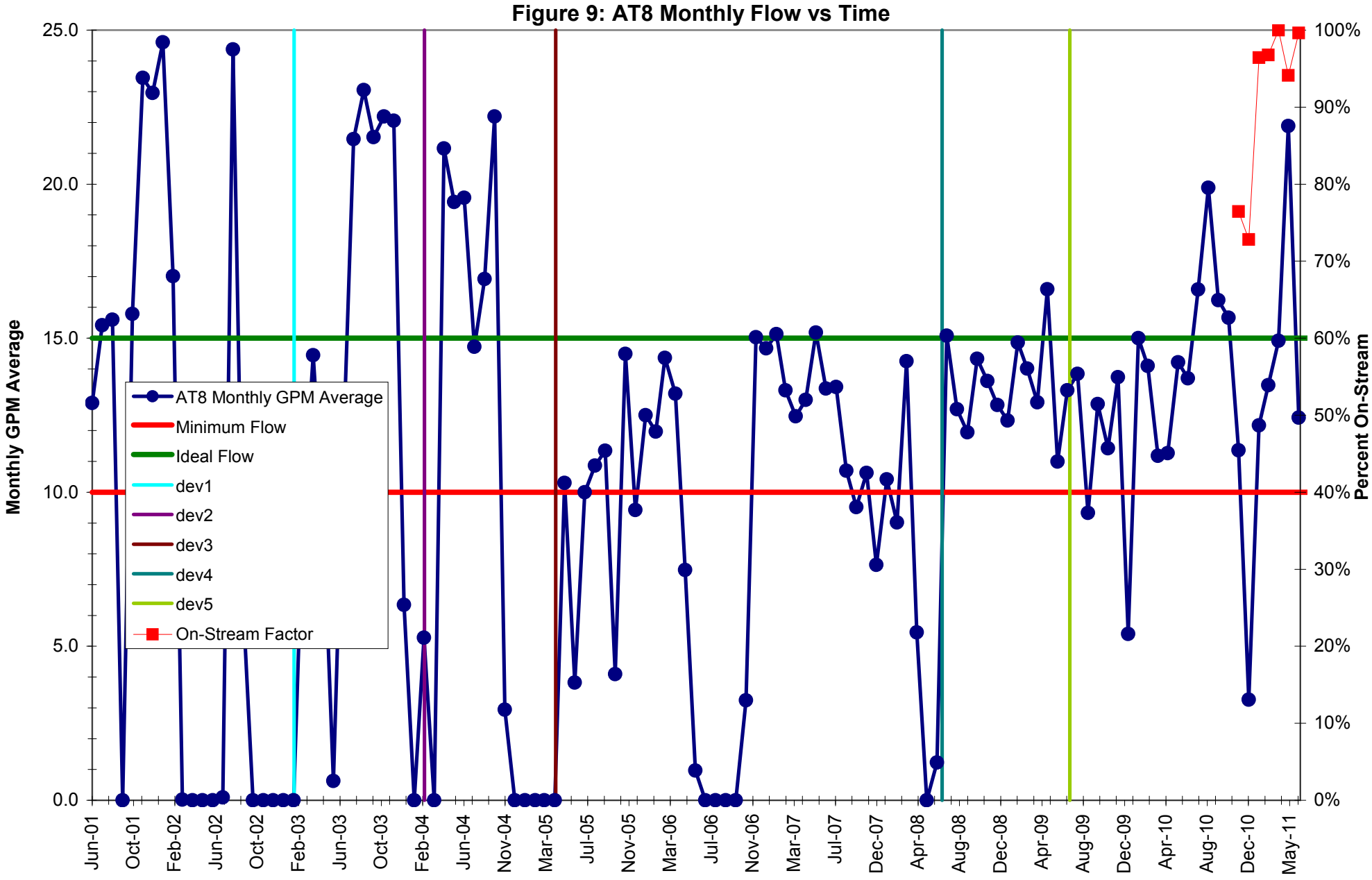

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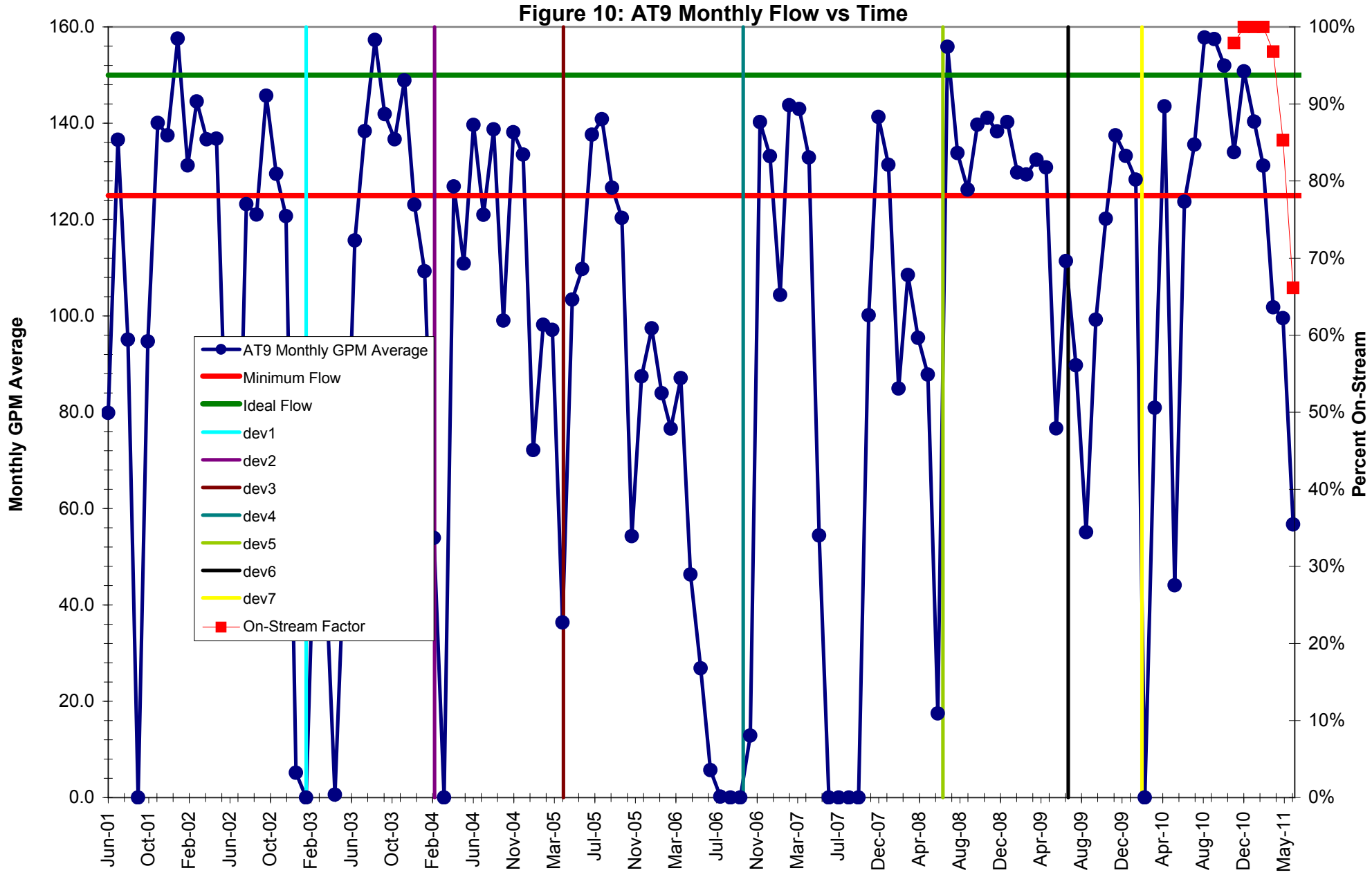

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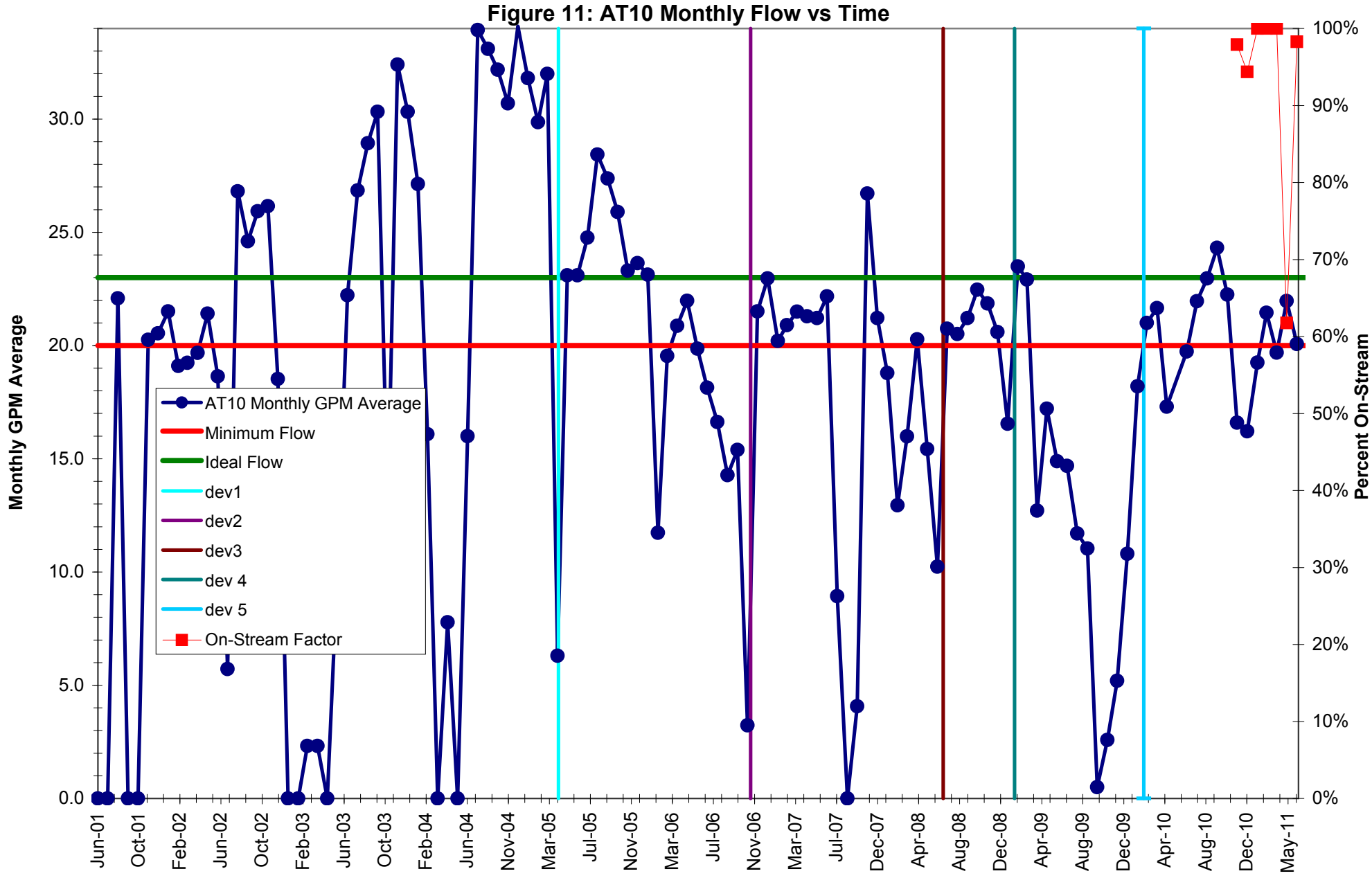

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Monthly Project Status Report July 2011
Facility Maintenance
Naval Industrial Reserve Ordnance Plant - Fridley, Minnesota
Prepared by Bay West, Inc.

EMAC Contract No. N40083-06-D-4015, Task Order #0005

SYSTEM OVERVIEW

- The GWTF was in operation for 744 hours during the month of July 2011.
- The on-stream factor for July was 100%. The on-stream factor is the actual operation time divided by the available operation time.
- The system processed an estimated 13,119,000 gallons of groundwater in July, for a total of 2,994,788,000 gallons to date.
- Electrical use was approximately 43,675 kilowatt-hours (kWh) for July 2011.
- Approximately 11,703 pounds of trichloroethylene (TCE) have been removed from the aquifer since groundwater treatment system start-up in 1999. Approximately 37,352 pounds of TCE have been removed from the aquifer since groundwater extraction activities began in 1992.
- Effluent sampling from Outfall 020 was performed on July 27, 2011. Per the National Pollutant Discharge Elimination System (NPDES) permit requirements, the samples were analyzed for eight specific volatile organic compounds (VOC) by EPA Method 624. Laboratory analytical results were below NPDES permit limits for all analytes. The Discharge Monitoring Report (DMR) and a copy of the analytical results will be forwarded to the Minnesota Pollution Control Agency (MPCA) by the due date of October 21, 2011.
- Influent and effluent sampling from ports in the main treatment area was performed on July 27, 2011, for the purpose of calculating emission rates from the ASUs. Treatment system sampling, and subsequent air emissions calculations, are performed on a quarterly basis. The calculated emission rates for all chemicals of concern were below the corresponding site-specific allowable emission rates (AERs). The emissions reporting form is included with this report.

SCHEDULED MAINTENANCE

- Visually inspected flow meters and level probes for material buildup and proper operation.
- Tested the four safety showers/eyewash stations to assure adequate performance.
- Lubricated blower motors, influent pumps, and effluent pumps.
- Collected extraction well water levels on a weekly basis.
- Alternated pumps P-101A/101B monthly.
- Measured pump P-101A bearing temperature. All values were within normal operation range.
- Repair of feed pump P101B and effluent pump P301A by PFC Equipment (PFC) continued. PFC reinstalled P301A on 11 July 2011 and Bay West returned P301A to service. PFC reinstalled pump P101A on 28 July 2011. Bay West will return the pump to service at the beginning of August 2011.

- Extraction well pipe in Building 52/53 will be replaced upon receipt of new spool pieces for extraction well flow meters, scheduled for delivery in mid to late August. All other equipment required for the pipe replacement project has been received.
- Chemical cleaning of groundwater extraction lines between AT-5A and AT-5B and Building 52/53 with will be performed at the same time as extraction well pipe replacement work is completed in Building 52/53.
- Chemical cleaning of the groundwater extraction line between AT-3A and building 52/53 will be performed at the time AT-3A is ready to be taken off-line and the extraction line extended from AT-3A to AT-13.
- Redevelop of AT-9 extraction well using the Unicid chemical extended soak procedure. The redevelopment procedure commenced on July 6, and is anticipated to terminate in the beginning part of August.
- Upgrading programmable logic controller (PLC) and supervisory control and data acquisition (SCADA) system with current generation equipment is in progress. Field implementation will be performed in September and October.

PROBLEMS AND SOLUTIONS

- AT-10 was intermittently faulting and had a below minimum flow rate (20 gpm) near the end of July. Based on water level and wellhead pressure measurements, and the electrical power draw, Bay West concluded the faulting and low flow rate is due to pump fouling. The well maintenance contractor, EH Renner, is scheduled to inspect the intake, and, if necessary, replace the pump end with a spare. Bay West expects AT-10 to be operational by the first week in August 2011.

Well Performance Summary

Well	Average Monthly Flow Rate (GPM) (Available)	Average Monthly Flow Rate (GPM) (Operational)	Ideal Flow Rate (GPM)	% of Ideal Flow (Available)	% of Ideal Flow (Operational)	Minimum Flow Rate (GPM)	Available Hours of Operation	Operating Hours	On-Stream Factor (Available)
AT-3A	69.6	69.6	135	51.56%	51.56%	115	744	744	100.00%
AT-5A	142.3	142.3	156	91.22%	91.22%	138	744	744	100.00%
AT-5B	63.9	63.9	82	77.93%	77.93%	70	744	744	100.00%
AT-7	46.6	46.6	46	101.30%	101.30%	37	744	744	100.00%
AT-8	11.2	11.2	15	74.67%	74.67%	10	744	744	100.00%
AT-9	4.6	27.3	150	3.07%	18.20%	125	156	26	16.67%
AT-10	17.5	21.7	23	76.09%	94.35%	20	744	601	80.78%

TABLES

1. Groundwater Treatment Facility Operations
2. Electrical Meter Readings
3. Air Emissions

FIGURES

1. Monthly GWTF On Stream Factor
2. GWTF Total Treated Flow
3. Total Discharge
4. Gallons Treated vs. Time
5. AT-3A Monthly Flow vs. Time
6. AT-5A Monthly Flow vs. Time
7. AT-5B Monthly Flow vs. Time
8. AT-7 Monthly Flow vs. Time
9. AT-8 Monthly Flow vs. Time
10. AT-9 Monthly Flow vs. Time
11. AT-10 Monthly Flow vs. Time
12. Cost Per Gallons Treated vs. Time
13. Cost per Pound Contaminant Mass Removed vs. Time
14. Cumulative Contaminant Mass Removed vs. Cumulative Cost
15. Influent Contaminant Concentration vs. Time

Tables

NIROP FRIDLEY
Groundwater Treatment Facility (GWTF)

	OPERATIONS (hrs)			WATER DISCHARGED (thousands of gallons)					WATER TREATED (thousands of gallons)	
Month	Available	Operating	On-stream factor	to Storm	to Sanitary	Untreated to Sanitary	Total to Sanitary	% Storm	Monthly	Cumulative
Nov-98	480.0	480.0	100.0%	0	17,524	0	17,524	0%	17,524	17,524
Dec-98	718.0	628.0	87.5%	16,078	7,087	0	7,087	69%	23,165	40,689
Jan-99	744.0	743.0	99.9%	25,571	0	0	0	100%	25,571	66,260
Feb-99	672.0	672.0	100.0%	23,938	0	0	0	100%	23,938	90,198
Mar-99	744.0	744.0	100.0%	27,394	0	0	0	100%	27,394	117,592
Apr-99	720.0	720.0	100.0%	25,254	0	0	0	100%	25,254	142,846
May-99	744.0	744.0	100.0%	23,291	0	0	0	100%	23,291	166,137
Jun-99	720.0	713.0	99.0%	25,823	0	0	0	100%	25,823	191,960
Jul-99	744.0	744.0	100.0%	22,266	0	0	0	100%	22,266	214,226
Aug-99	684.0	684.0	100.0%	21,634	0	0	0	100%	21,634	235,860
Sep-99	720.0	720.0	100.0%	18,205	0	0	0	100%	18,205	254,065
Oct-99	744.0	744.0	100.0%	23,029	0	0	0	100%	23,029	277,094
Nov-99	720.0	720.0	100.0%	22,783	0	0	0	100%	22,783	299,877
Dec-99	535.0	535.0	100.0%	12,818	0	0	0	100%	12,818	312,695
Jan-00	356.0	356.0	100.0%	10,400	0	0	0	100%	10,400	323,095
Feb-00	695.0	694.0	99.9%	16,944	0	0	0	100%	16,944	340,039
Mar-00	744.0	743.5	99.9%	27,131	0	0	0	100%	27,131	367,170
Apr-00	720.0	720.0	100.0%	25,899	0	0	0	100%	25,899	393,069
May-00	744.0	744.0	100.0%	27,458	0	0	0	100%	27,458	420,527
Jun-00	718.9	718.9	100.0%	25,136	0	0	0	100%	25,136	445,663
Jul-00	744.0	744.0	100.0%	25,637	0	0	0	100%	25,637	471,300
Aug-00	744.0	744.0	100.0%	24,341	0	0	0	100%	24,341	495,641
Sep-00	655.5	655.5	100.0%	22,559	0	0	0	100%	22,559	518,200
Oct-00	744.0	744.0	100.0%	25,955	0	0	0	100%	25,955	544,155
Nov-00	720.0	718.0	99.7%	25,759	0	0	0	100%	25,759	569,914
Dec-00	744.0	743.5	99.9%	27,404	0	0	0	100%	27,404	597,318
Jan-01	744.0	744.0	100.0%	24,666	0	0	0	100%	24,666	621,984
Feb-01	672.0	671.0	99.9%	23,956	0	0	0	100%	23,956	645,940
Mar-01	744.0	737.0	99.1%	24,694	0	0	0	100%	24,694	670,634
Apr-01	720.0	719.5	99.9%	24,964	0	0	0	100%	24,964	695,598
May-01	604.3	602.3	99.7%	13,656	0	0	0	100%	13,656	709,254
Jun-01	709.5	708.3	99.8%	20,000	0	0	0	100%	20,000	729,254
Jul-01	730.0	730.0	100.0%	18,077	0	0	0	100%	18,077	747,331
Aug-01	491.0	491.0	100.0%	17,921	0	0	0	100%	17,921	765,252
Sep-01	0.0	0.0	100.0%	0	0	0	0	100%	0	765,252
Oct-01	736.0	472.5	64.2%	21,376	0	0	0	100%	21,376	786,628
Nov-01	720.0	720.0	100.0%	30,205	0	0	0	100%	30,205	816,833
Dec-01	744.0	744.0	100.0%	28,114	0	0	0	100%	28,114	844,947
Jan-02	742.0	737.0	99.3%	30,483	0	0	0	100%	30,483	875,430
Feb-02	672.0	672.0	100.0%	25,538	0	0	0	100%	25,538	900,968
Mar-02	744.0	744.0	100.0%	29,957	0	0	0	100%	29,957	930,925
Apr-02	744.0	743.8	100.0%	28,569	0	0	0	100%	28,569	959,494
May-02	744.0	741.0	99.6%	28,656	0	0	0	100%	28,656	988,150
Jun-02	720.0	720.0	100.0%	22,131	0	0	0	100%	22,131	1,010,281
Jul-02	744.0	744.0	100.0%	21,367	0	0	0	100%	21,367	1,031,648
Aug-02	744.0	744.0	100.0%	28,328	0	0	0	100%	28,328	1,059,976
Sep-02	630.3	630.3	100.0%	20,861	0	0	0	100%	20,861	1,080,837
Oct-02	744.0	744.0	100.0%	21,417	0	0	0	100%	21,417	1,102,254
Nov-02	720.0	720.0	100.0%	25,003	0	0	0	100%	25,003	1,127,257
Dec-02	744.0	742.0	99.7%	25,327	0	0	0	100%	25,327	1,152,584
Jan-03	744.0	55.0	7.4%	1,048	0	0	0	100%	1,048	1,153,632
Feb-03	672.0	0.0	0.0%	0	0	0	0	100%	0	1,153,632
Mar-03	744.0	309.0	41.5%	13,387	0	0	0	100%	13,387	1,167,019
Apr-03	526.5	425.5	80.8%	16,584	0	0	0	100%	16,584	1,183,603
May-03	744.0	298.5	40.1%	7,448	0	0	0	100%	7,448	1,191,051
Jun-03	720.0	253.0	35.1%	10,775	0	0	0	100%	10,775	1,201,826
Jul-03	734.0	576.3	78.5%	22,629	0	0	0	100%	22,629	1,224,455

NIROP FRIDLEY
Groundwater Treatment Facility (GWTF)

	OPERATIONS (hrs)			WATER DISCHARGED (thousands of gallons)					WATER TREATED (thousands of gallons)	
Month	Available	Operating	On-stream factor	to Storm	to Sanitary	Untreated to Sanitary	Total to Sanitary	% Storm	Monthly	Cumulative
Aug-03	732.5	639.8	87.3%	25,591	46	0	46	99.8%	25,637	1,250,092
Sep-03	720.0	719.0	99.9%	23,028	4,532	0	4,532	83.6%	27,560	1,277,652
Oct-03	681.7	648.5	95.1%	25,389	0	0	0	100%	25,389	1,303,041
Nov-03	720.0	694.0	96.4%	22,882	0	0	0	100%	22,882	1,325,923
Dec-03	743.0	740.5	99.7%	31,010	0	0	0	100%	31,010	1,356,933
Jan-04	744.0	727.0	97.7%	25,456	0	0	0	100%	25,456	1,382,389
Feb-04	689.7	689.7	100.0%	23,771	0	0	0	100%	23,771	1,406,160
Mar-04	506.5	353.5	69.8%	12,928	0	0	0	100%	12,928	1,419,088
Apr-04	720.0	2.0	0.3%	60	0	0	0	100%	60	1,419,148
May-04	744.0	635.0	85.3%	24,104	0	0	0	100%	24,104	1,443,252
Jun-04	613.5	613.5	100.0%	20,988	0	0	0	100%	20,988	1,464,240
Jul-04	735.5	732.8	99.6%	26,846	0	0	0	100%	26,846	1,491,086
Aug-04	741.0	741.0	100.0%	26,760	0	0	0	100%	26,760	1,517,846
Sep-04	718.0	717.0	99.9%	27,276	0	0	0	100%	27,276	1,545,122
Oct-04	676.8	676.8	100.0%	24,709	0	0	0	100%	24,709	1,569,831
Nov-04	720.0	720.0	100.0%	25,859	0	0	0	100%	25,859	1,595,690
Dec-04	744.0	744.0	100.0%	26,229	0	0	0	100%	26,229	1,621,919
Jan-05	744.0	667.0	89.7%	20,915	0	0	0	100%	20,915	1,642,834
Feb-05	672.0	672.0	100.0%	22,329	0	0	0	100%	22,329	1,665,163
Mar-05	744.0	716.8	96.3%	22,960	0	0	0	100%	22,960	1,688,123
Apr-05	384.0	322.0	83.9%	6,515	0	0	0	100%	6,515	1,694,638
May-05	576.0	503.5	87.4%	17,859	0	0	0	100%	17,859	1,712,497
Jun-05	720.0	714.5	99.2%	24,450	0	0	0	100%	24,450	1,736,947
Jul-05	744.0	712.5	95.8%	25,301	0	0	0	100%	25,301	1,762,248
Aug-05	744.0	744.0	100.0%	25,916	0	0	0	100%	25,916	1,788,164
Sep-05	720.0	715.3	99.4%	20,837	0	0	0	100%	20,837	1,809,001
Oct-05	744.0	744.0	100.0%	24,028	0	0	0	100%	24,028	1,833,029
Nov-05	720.0	720.0	100.0%	20,553	0	0	0	100%	20,553	1,853,582
Dec-05	686.0	622.3	90.7%	19,037	0	0	0	100%	19,037	1,872,619
Jan-06	744.0	744.0	100.0%	21,858	0	0	0	100%	21,858	1,894,477
Feb-06	672.0	672.0	100.0%	19,590	0	0	0	100%	19,590	1,914,067
Mar-06	710.5	710.0	99.9%	13,935	0	0	0	100%	13,935	1,928,002
Apr-06	654.0	654.0	100.0%	18,391	0	0	0	100%	18,391	1,946,393
May-06	744.0	744.0	100.0%	18,116	0	0	0	100%	18,116	1,964,509
Jun-06	720.0	719.5	99.9%	16,616	0	0	0	100%	16,616	1,981,125
Jul-06	716.0	716.0	100.0%	14,232	0	0	0	100%	14,232	1,995,357
Aug-06	744.0	742.0	99.7%	13,291	0	0	0	100%	13,291	2,008,648
Sep-06	720.0	720.0	100.0%	14,269	0	0	0	100%	14,269	2,022,917
Oct-06	731.0	730.5	99.9%	13,496	0	0	0	100%	13,496	2,036,413
Nov-06	396.0	110.0	27.8%	3,073	0	0	0	100%	3,073	2,039,486
Dec-06	744.0	743.5	99.9%	25,287	0	0	0	100%	25,287	2,064,773
Jan-07	720.0	719.5	99.9%	25,118	0	0	0	100%	25,118	2,089,891
Feb-07	671.8	659.8	98.2%	21,953	0	0	0	100%	21,953	2,111,844
Mar-07	744.0	734.0	98.7%	25,860	0	0	0	100%	25,860	2,137,703
Apr-07	720.0	720.0	100.0%	24,240	0	0	0	100%	24,240	2,161,943
May-07	744.0	744.0	100.0%	19,004	0	0	0	100%	19,004	2,180,947
Jun-07	719.5	719.5	100.0%	20,659	0	0	0	100%	20,659	2,201,606
Jul-07	744.0	744.0	100.0%	19,389	0	0	0	100%	19,389	2,220,995
Aug-07	696.0	696.0	100.0%	16,354	0	0	0	100%	16,354	2,237,349
Sep-07	720.0	720.0	100.0%	15,320	0	0	0	100%	15,320	2,252,669
Oct-07	744.0	744.0	100.0%	14,409	0	0	0	100%	14,409	2,267,078
Nov-07	720.0	720.0	100.0%	17,388	0	0	0	100%	17,388	2,284,466
Dec-07	744.0	739.0	99.3%	17,002	0	0	0	100%	17,002	2,301,468
Jan-08	742.0	684.0	92.2%	17,115	0	0	0	100%	17,115	2,318,583
Feb-08	695.3	611.8	88.0%	13,581	0	0	0	100%	13,581	2,332,164
Mar-08	744.0	742.0	99.7%	13,277	0	0	0	100%	13,277	2,345,441
Apr-08	720.0	717.0	99.6%	12,518	0	0	0	100%	12,518	2,357,959

NIROP FRIDLEY
Groundwater Treatment Facility (GWTF)

	OPERATIONS (hrs)			WATER DISCHARGED (thousands of gallons)					WATER TREATED (thousands of gallons)	
Month	Available	Operating	On-stream factor	to Storm	to Sanitary	Untreated to Sanitary	Total to Sanitary	% Storm	Monthly	Cumulative
May-08	718.0	692.0	96.4%	15,430	0	0	0	100%	15,430	2,373,389
Jun-08	333.5	333.5	100.0%	6,523	0	0	0	100%	6,523	2,379,912
Jul-08	719.0	719.0	100.0%	15,762	0	0	0	100%	15,762	2,395,674
Aug-08	729.3	729.3	100.0%	20,183	0	0	0	100%	20,183	2,415,857
Sep-08	720.0	720.0	100.0%	19,632	0	0	0	100%	19,632	2,435,489
Oct-08	737.0	737.0	100.0%	19,818	0	0	0	100%	19,818	2,455,307
Nov-08	662.0	662.0	100.0%	18,191	0	0	0	100%	18,191	2,473,498
Dec-08	744.0	744.0	100.0%	20,926	0	0	0	100%	20,926	2,494,424
Jan-09	741.0	741.0	100.0%	20,301	44	0	44	99.8%	20,301	2,514,725
Feb-09	672.0	672.0	100.0%	17,546	0	0	0	100%	17,546	2,532,271
Mar-09	711.9	711.2	99.9%	17,766	0	0	0	100%	17,766	2,550,037
Apr-09	709.0	705.6	99.5%	16,434	0	0	0	100%	16,434	2,566,471
May-09	739.8	739.8	100.0%	23,663	0	0	0	100%	23,663	2,590,134
Jun-09	719.8	719.8	100.0%	21,234	0	0	0	100%	21,234	2,611,368
Jul-09	744.0	744.0	100.0%	21,846	0	0	0	100%	21,846	2,633,214
Aug-09	744.0	744.0	100.0%	20,933	0	0	0	100%	20,933	2,654,147
Sep-09	697.2	697.2	100.0%	16,585	0	0	0	100%	16,585	2,670,732
Oct-09	743.5	743.5	100.0%	18,919	0	0	0	100%	18,919	2,689,651
Nov-09	720.0	720.0	100.0%	19,768	0	0	0	100%	19,768	2,709,419
Dec-09	744.0	744.0	100.0%	18,162	0	0	0	100%	18,162	2,727,581
Jan-10	740.3	740.3	100.0%	19,542	0	0	0	100%	19,542	2,747,123
Feb-10	672.0	658.0	97.9%	14,805	0	0	0	100%	14,805	2,761,928
Mar-10	744.0	744.0	100.0%	14,596	0	0	0	100%	14,596	2,776,524
Apr-10	720.0	720.0	100.0%	15,598	0	0	0	100%	15,598	2,792,122
May-10	744.0	742.5	99.8%	18,090	0	0	0	100%	18,090	2,810,212
Jun-10	720.0	697.0	96.8%	10,717	0	0	0	100%	10,717	2,820,929
Jul-10	744.0	722.2	97.1%	12,254	0	0	0	100%	12,254	2,833,183
Aug-10	694.5	404.0	58.2%	3,789	0	0	0	100%	3,789	2,836,972
Sep-10	712.0	700.0	98.3%	12,552	0	0	0	100%	12,552	2,849,524
Oct-10	690.6	690.6	100.0%	12,926	0	0	0	100%	12,926	2,862,450
Nov-10	719.5	716.0	99.5%	15,466	0	0	0	100%	15,466	2,877,916
Dec-10	737.0	721.5	97.9%	15,855	0	0	0	100%	15,855	2,893,771
Jan-11	744.0	744.0	100.0%	17,199	0	0	0	100%	17,199	2,910,970
Feb-11	667.0	665.0	99.7%	16,551	0	0	0	100%	16,551	2,927,521
Mar-11	744.0	744.0	100.0%	17,827	0	0	0	100%	17,827	2,945,348
Apr-11	711.3	708.3	99.6%	14,063	0	0	0	100%	14,063	2,959,411
May-11	384.0	384.0	100.0%	9,042	0	0	0	100%	9,042	2,968,453
Jun-11	719.5	716.8	99.6%	13,216	0	0	0	100%	13,216	2,981,669
Jul-11	744.0	744.0	100.0%	13,119	0	0	0	100%	13,119	2,994,788

Note: Available hours are 24 hours per day, less scheduled down time and power outages.

* Monthly flow incorrectly reported for Jul-04 through Dec-04 - corrected January 2005 using the corrected estimate for AT-10 monthly flow.

NIROP FRIDLEY
Ground Water Treatment Facility (GWTF)

Date	Electrical Meter Readings (kW·h)					Monthy Usage
	MCC #1	MCC #2	Wells 2, 3A, 5A, 5B	Well 1A	Well 4	
2/1/2000	57,305	620,300				38,046
3/1/2000	59,597	656,054				36,133
3/9/2000	60,348	667,580	18,260	3,284	2,312	65,029
4/3/2000	63,080	704,113	38698	6043	4879	74,067
5/1/2000	66,067	746,920	60,940	9,238	7,715	81,545
6/1/2000	68,972	793,455	86495	12728	10775	66,128
7/1/2000	71,562	840,441	110,243	16,307		
7/6/2000					13701	13,701
8/1/2000	73,881	881,304	130,691	19,559	16,686	72,336
9/1/2000	76,316	924,799	152695	22976	17671	67,877
10/2/2000	78,561	964,802	172,714	26,079	20,178	
11/1/2000	80,952	7,402	195655	29408	22454	89,927
12/4/2000	83,561	56,966	225,897	33,105	26,269	81,706
1/2/2001	85,851	101,872	254750	36270	28761	72,935
2/1/2001	88,106	143,918	282,532	37,122	28,761	83,944
3/1/2001	90,240	190,303	314000	41079	28761	66,663
4/3/2001	92,677	230,575	335,297	43,736	28,761	65,567
5/1/2001	94,779	269,617	357244	46212	28761	
6/5/2001	97,821	304,746	*	*	*	38,108
7/2/2001	102,175	338,500	*	*	*	44,802
8/2/2001	106,592	378,885	*	*	*	37,804
9/12/2001	111,321	411,960	*	*	*	13,663
10/18/2001	112,956	423,988	*	*	*	29,471
11/1/2001	117,010	449,405	*	*	*	68,542
12/4/2001	126,457	508,500	*	*	*	60,932
1/2/2002	134,884	561,005	*	*	*	56,801
2/1/2002	142,948	609,742	*	*	*	55,300
3/1/2002	150,583	657,407	*	*	*	64,231
4/1/2002	159,332	712,889	*	*	*	59,291
5/1/2002	167,808	763,704	*	*	*	63,448
6/3/2002	176,272	818,688	*	*	*	43,974
7/1/2002	182,246	856,688	*	*	*	45,609
8/1/2002	188,404	896,139	*	*	*	60,074
9/3/2002	196,255	948,362	*	*	*	44,067
10/1/2002	202,142	986,542	*	*	*	60,158
11/1/2002	209,581	1,039,261	*	*	*	60,538
12/2/2002	216,632	1,092,748	*	*	*	
1/1/2003	223,233	0	*	*	*	
2/1/2003	224,233	1,146,792	*	*	*	7,827
3/19/2003	227,523	1,151,329	*	*	*	22,891
4/3/2003	230,589	1,171,154	*	*	*	32,058
5/1/2003	235,275	1,198,526	*	*	*	18,373
6/4/2003	237,675	1,214,499	*	*	*	20,360
7/1/2003	240,411	1,232,123	*	*	*	42,930
8/1/2003	246,351	1,269,113	*	*	*	49,909
9/2/2003	253,306	1,312,067	*	*	*	52,166
10/1/2003	260,662	1,356,877	*	*	*	58,962
11/3/2003	268,788	1,407,713	*	*	*	57,373
12/1/2003	276,592	1,457,282	*	*	*	67,477
1/2/2004	285,175	1,516,176	*	*	*	67,278
2/2/2004	293,559	1,575,070	*	*	*	60,542
3/1/2004	301,245	1,627,926	*	*	*	31,187
4/1/2004	305,283	1,655,075	*	*	*	1,037
5/3/2004	305,515	1,655,880	*	*	*	51,931
6/1/2004	312,129	1,701,197	*	*	*	47,852
7/1/2004	318,012	1,743,166	*	*	*	60,764
8/3/2004	326,133	1,795,809	*	*	*	55,312

NIROP FRIDLEY
Ground Water Treatment Facility (GWTF)

Date	Electrical Meter Readings (kW·h)					Monthy Usage
	MCC #1	MCC #2	Wells 2, 3A, 5A, 5B	Well 1A	Well 4	
9/1/2004	335,039	1,842,215	*	*	*	52,307
10/1/2004	340,422	1,889,139	*	*	*	53,798
11/2/2004	347,296	1,936,063	*	*	*	64,045
12/1/2004	354,514	1,992,890	*	*	*	64,887
1/5/2005	362,574	49,717	*	*	*	48,313
2/1/2005	368,114	92,490	*	*	*	56,517
3/1/2005	374,689	142,432	*	*	*	35,669
4/1/2005	381,858	170,932	*	*	*	32,506
5/11/2005	384,388	200,908	*	*	*	37,857
6/2/2005	389,382	233,771	*	*	*	53,851
7/1/2005	395,908	281,096	*	*	*	55,772
8/1/2005	402,786	329,990	*	*	*	58,530
9/1/2005	410,054	381,252	*	*	*	59,756
10/4/2005	416,742	434,320	*	*	*	54,337
11/1/2005	423,117	482,282	*	*	*	59,439
12/1/2005	429,602	535,236	*	*	*	58,139
1/3/2006	437,032	585,945	*	*	*	64,273
2/3/2006	444,929	642,321	*	*	*	59,745
3/3/2006	451,966	695,029	*	*	*	59,447
4/4/2006	458,470	747,972	*	*	*	52,154
5/2/2006	464,407	794,189	*	*	*	56,066
6/1/2006	470,107	844,555	*	*	*	67,078
7/7/2006	476,656	905,084	*	*	*	75,362
8/17/2006	483,201	973,901	*	*	*	28,651
9/1/2006	485,579	174	*	*	*	60,559
10/2/2006	490,846	55,466	*	*	*	64,783
11/16/2006	497,232	113,863	*	*	*	30,896
12/12/2006	501,656	140,335	*	*	*	41,005
1/2/2007	507,345	175,651	*	*	*	89,453
2/14/2007	519,226	253,223	*	*	*	60,625
3/15/2007	526,775	306,299	*	*	*	37,019
4/1/2007	531,435	338,658	*	*	*	59,380
5/1/2007	538,780	390,693	*	*	*	60,309
6/2/2007	546,435	443,347	*	*	*	57,976
7/2/2007	552,240	495,518	*	*	*	54,945
8/1/2007	558,047	544,656	*	*	*	56,900
9/4/2007	563,999	595,604	*	*	*	48,947
10/1/2007	568,907	639,643	*	*	*	55,912
11/1/2007	574,269	690,193	*	*	*	61,551
12/3/2007	580,906	745,107	*	*	*	58,075
1/2/2008	587,234	796,854	*	*	*	61,758
2/1/2008	593,878	851,968	*	*	*	56,961
3/6/2008	601,457	901,350	*	*	*	47,128
4/1/2008	607,103	942,832	*	*	*	51,563
5/2/2008	613,973	987,525	*	*	*	45,409
6/2/2008	619,382	27,525	*	*	*	23,755
7/1/2008	621,730	48,932	*	*	*	57,458
8/1/2008	627,904	100,216	*	*	*	59,836
9/2/2008	634,818	153,138	*	*	*	57,157
10/4/2008	641,270	203,843	*	*	*	61,110
11/3/2008	648,196	258,027	*	*	*	58,512
12/1/2008	655,158	309,577	*	*	*	71,027

NIROP FRIDLEY
Ground Water Treatment Facility (GWTF)

Date	Electrical Meter Readings (kW·h)					Monthy Usage
	MCC #1	MCC #2	Wells 2, 3A, 5A, 5B	Well 1A	Well 4	
1/2/2009	663,755	372,007	*	*	*	69,361
2/2/2009	672,125	432,998	*	*	*	62,234
3/2/2009	679,788	487,569	*	*	*	61,618
4/1/2009	687,315	541,660	*	*	*	63,015
5/1/2009	694,461	597,529	*	*	*	63,751
6/1/2009	701,440	654,301	*	*	*	60,286
7/1/2009	708,069	707,958	*	*	*	65,088
8/3/2009	715,267	765,848	*	*	*	57,140
9/1/2009	721,611	816,644	*	*	*	56,282
10/1/2009	727,548	866,989	*	*	*	65,845
11/2/2009	734,666	925,716	*	*	*	60,372
12/1/2009	741,891	978,863	*	*	*	77,030
1/1/2010	750,050	1,047,734	*	*	*	63,139
2/1/2010	757,037	1,103,886	*	*	*	61,079
3/1/2010	763,509	1,158,493	*	*	*	69,431
4/1/2010	769,960	1,221,473	*	*	*	59,638
5/3/2010	775,813	1,275,258	*	*	*	54,143
6/1/2010	780,680	1,324,534	*	*	*	51,279
7/1/2010	784,369	1,372,124	*	*	*	75,167
8/2/2010	789,289	1,442,371	*	*	*	8,482
9/1/2010	791,567	1,448,575	*	*	*	55,237
10/1/2010	796,016	1,499,363	*	*	*	61,303
11/1/2010	800,411	1,556,271	*	*	*	60,565
12/1/2010	806,672	1,610,575	*	*	*	68,226
1/3/2011	813,611	1,671,862	*	*	*	64,951
2/1/2011	820,001	1,730,423	*	*	*	58,883
3/1/2011	825,935	1,783,372	*	*	*	68,939
4/1/2011	832,880	1,845,366	*	*	*	58,997
5/9/2011	838,973	1,898,270	*	*	*	29,524
6/1/2011	841,656	1,925,111	*	*	*	52,109
7/1/2011	846,958	1,971,918	*	*	*	43,675

* Electrical metering for the extraction wells runs through MCC #1

- The electrical meter in the main treatment area was misread on 1/1/03, thus it was not reset. December electricity usage was estimated to be the same as November 2002.

^ The electrical meter in the main treatment area had reset after the scheduled power shut-down. October 2004 electricity usage for MCC#2 was estimated to be the same as September 2004.

+ - electrical readings were not obtained on December 1, 2004, therefore electrical usage for November was estimated to be similar to October 2004.

Table 3

Form 1.1 - Air Stripper Screening Evaluation

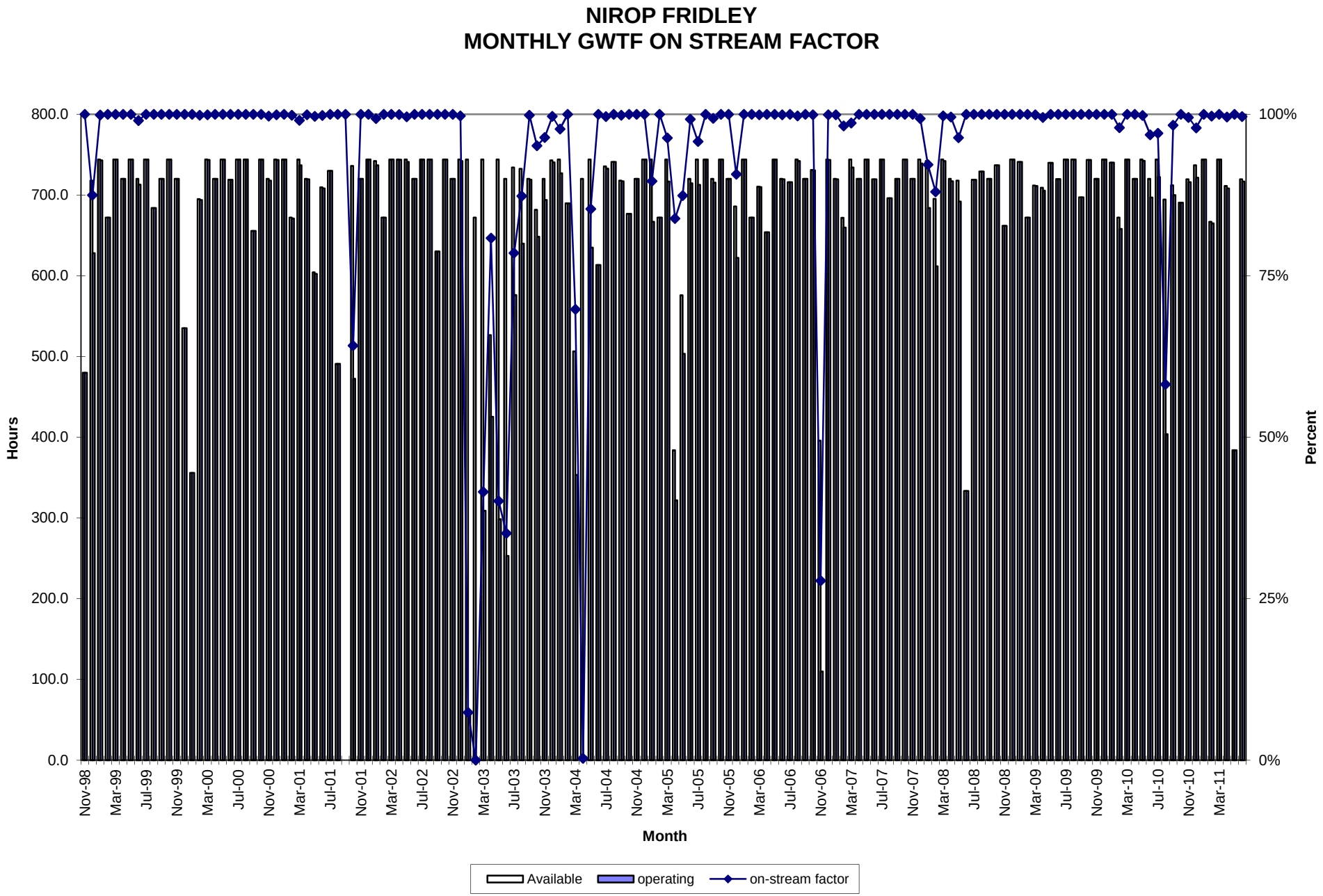
Site Name:	NIROP Fridley	Responsible Party Contact:		Form Completed by:	
Address:	4800 East River Road Minneapolis, MN 55421	Name:	Howard Hickey	Steve Head	
		Affiliation:	Midwest Division Naval Facilities Engineering Command	Date:	7/29/2011
MPCA Leak #:	Not Applicable	Phone #:	847-668-5999		

	A	B	C	D	E	
Contaminant (CAS #)	Contaminant Concentration (GC) (ug/liter)	Air Stripper Influent Flow Rate (IFR) (liters/sec)	Removal Factor (RF)	Emission Rate (ER) (ug/sec)	Site Specific Allowable Emission Rate (AER) (ug/sec)	Is ER >/= AER? (yes/no)
1,1-dichloroethane (75-34-3)	1.50	16.84	1	25.3	135,000,000	No
1,1-dichloroethylene (75-35-4)	0.67	16.84	1	11.3	54,000	No
methylene chloride (75-09-2)	0.15	16.84	1	2.5	54,000	No
tetrachloroethylene (127-18-4)	1.50	16.84	1	25.3	4,600,000	No
trichloroethylene (79-01-6)	380	16.84	1	6,399.2	1,600,000	No

..

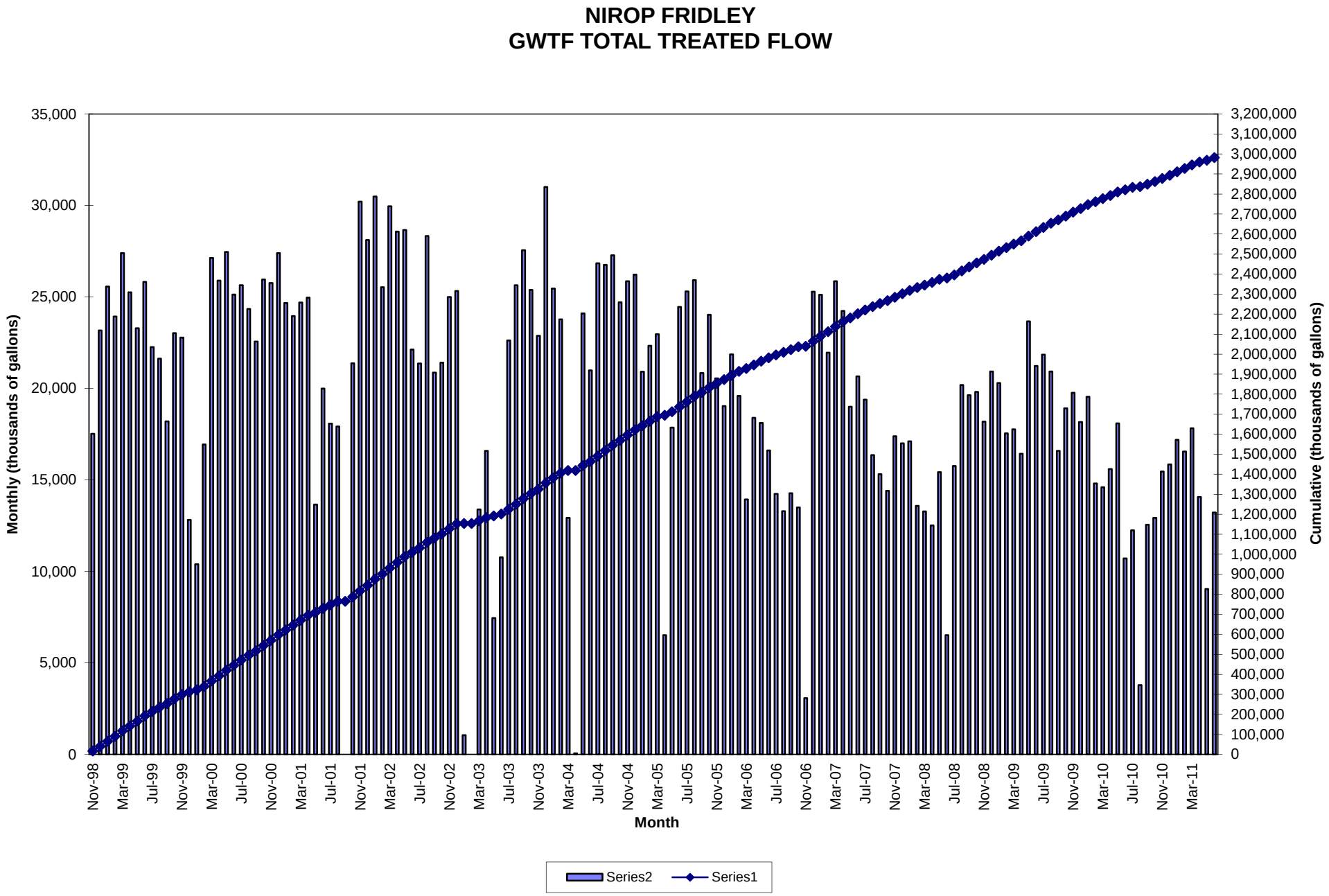
Note: If the incoming concentration is not detectable the Emission Rate is based on the detection limit.

Figures



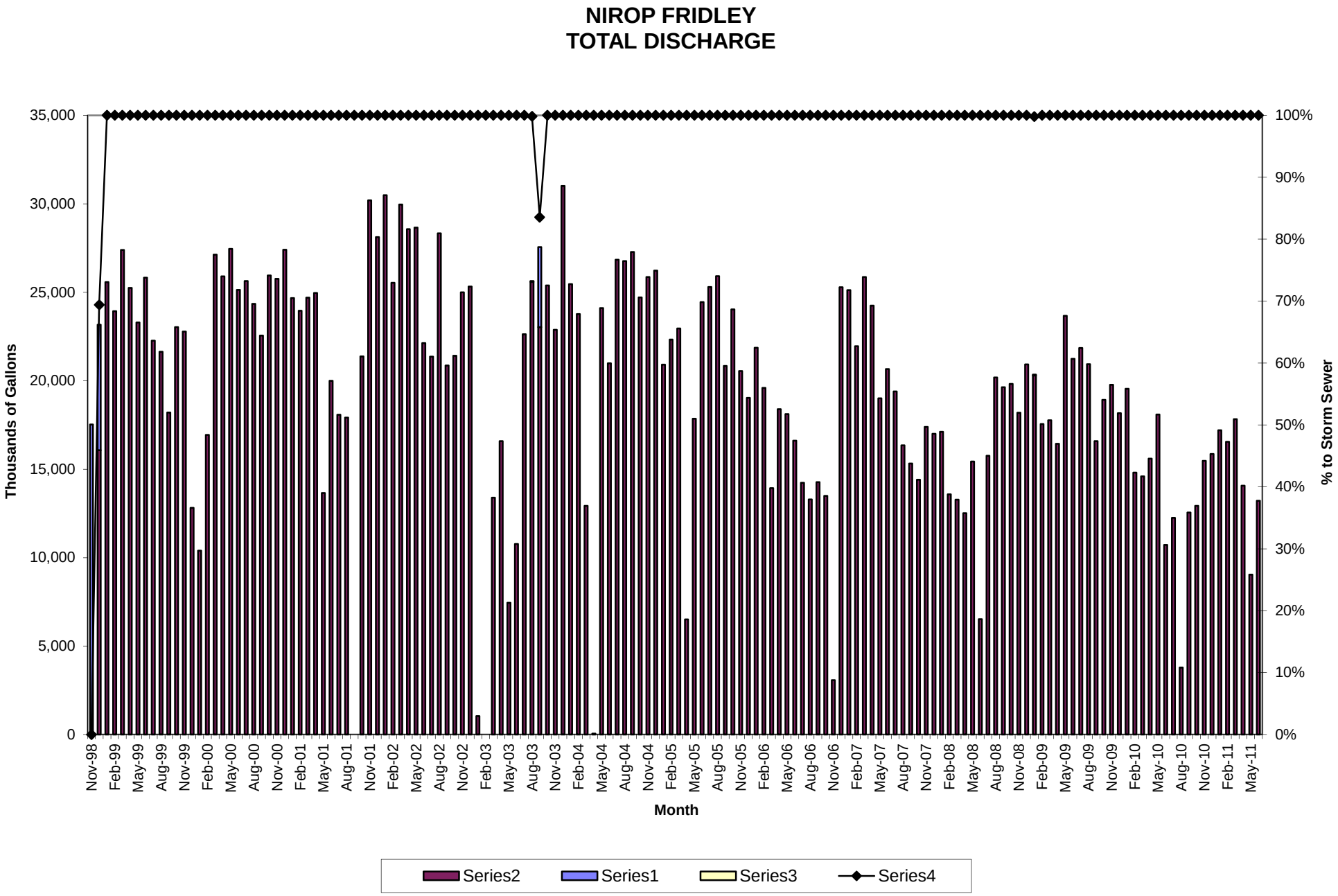
Docs 58644

Figure 1



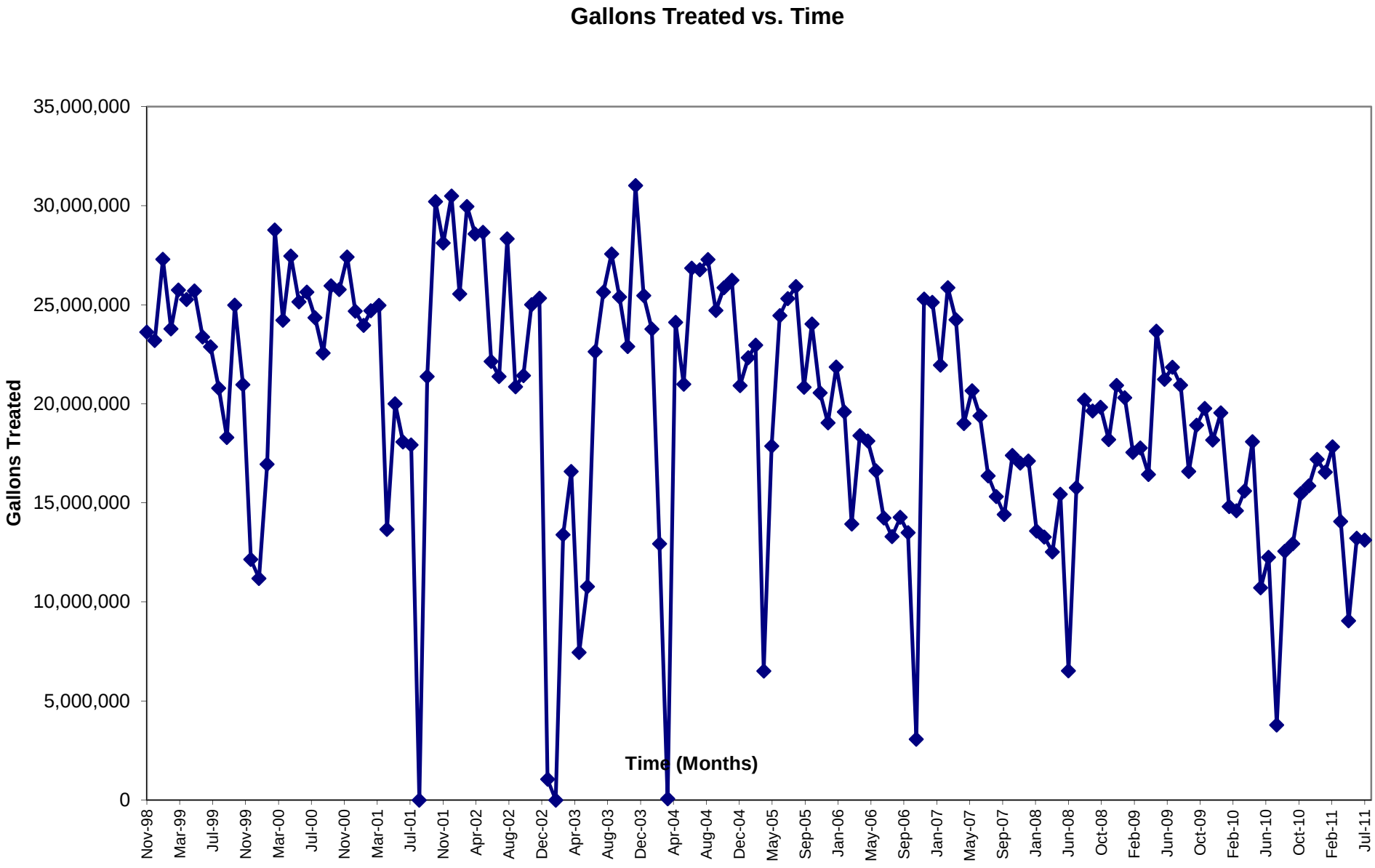
Docs 58644

Figure 2



Docs 58644

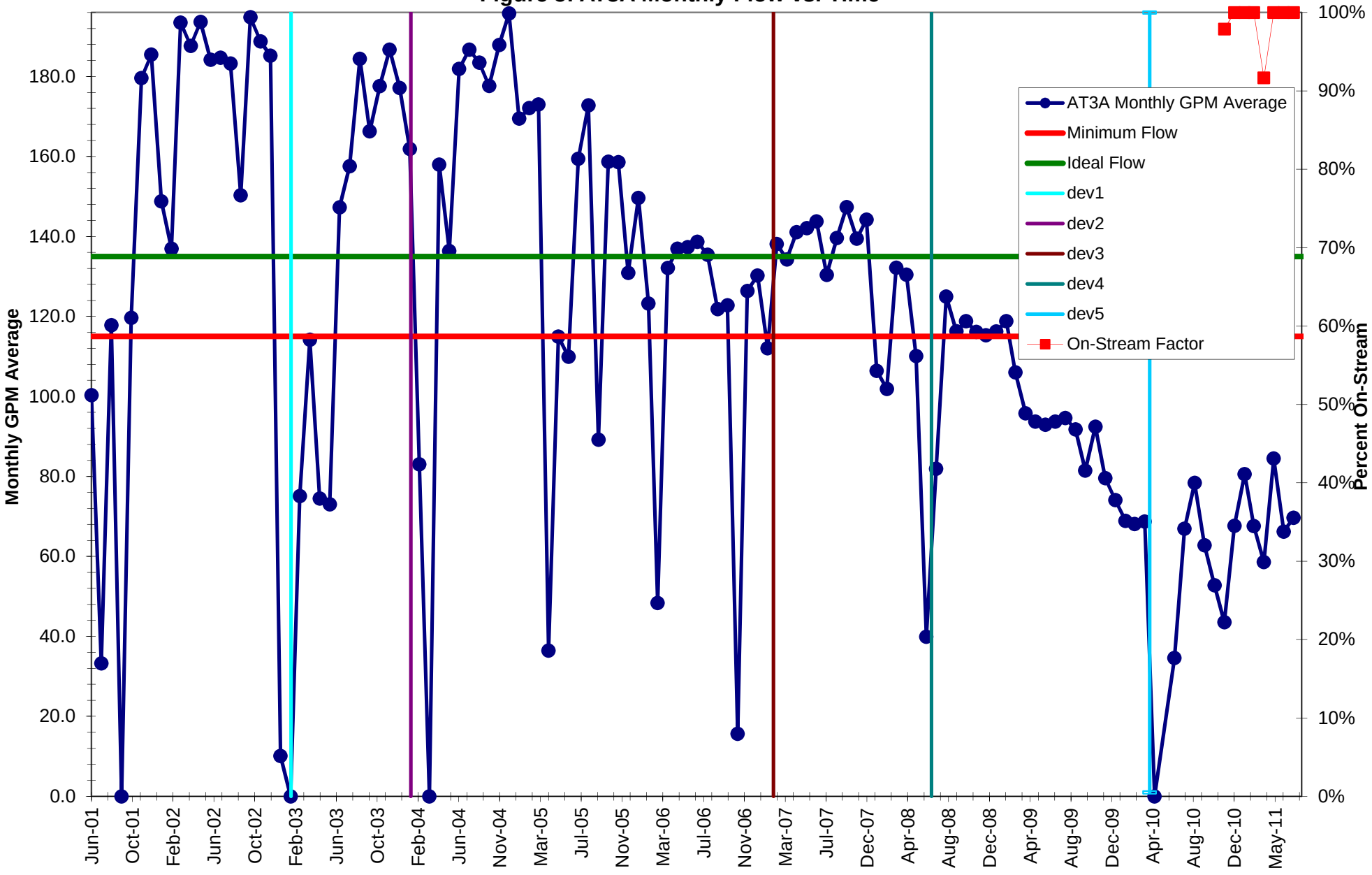
Figure 3



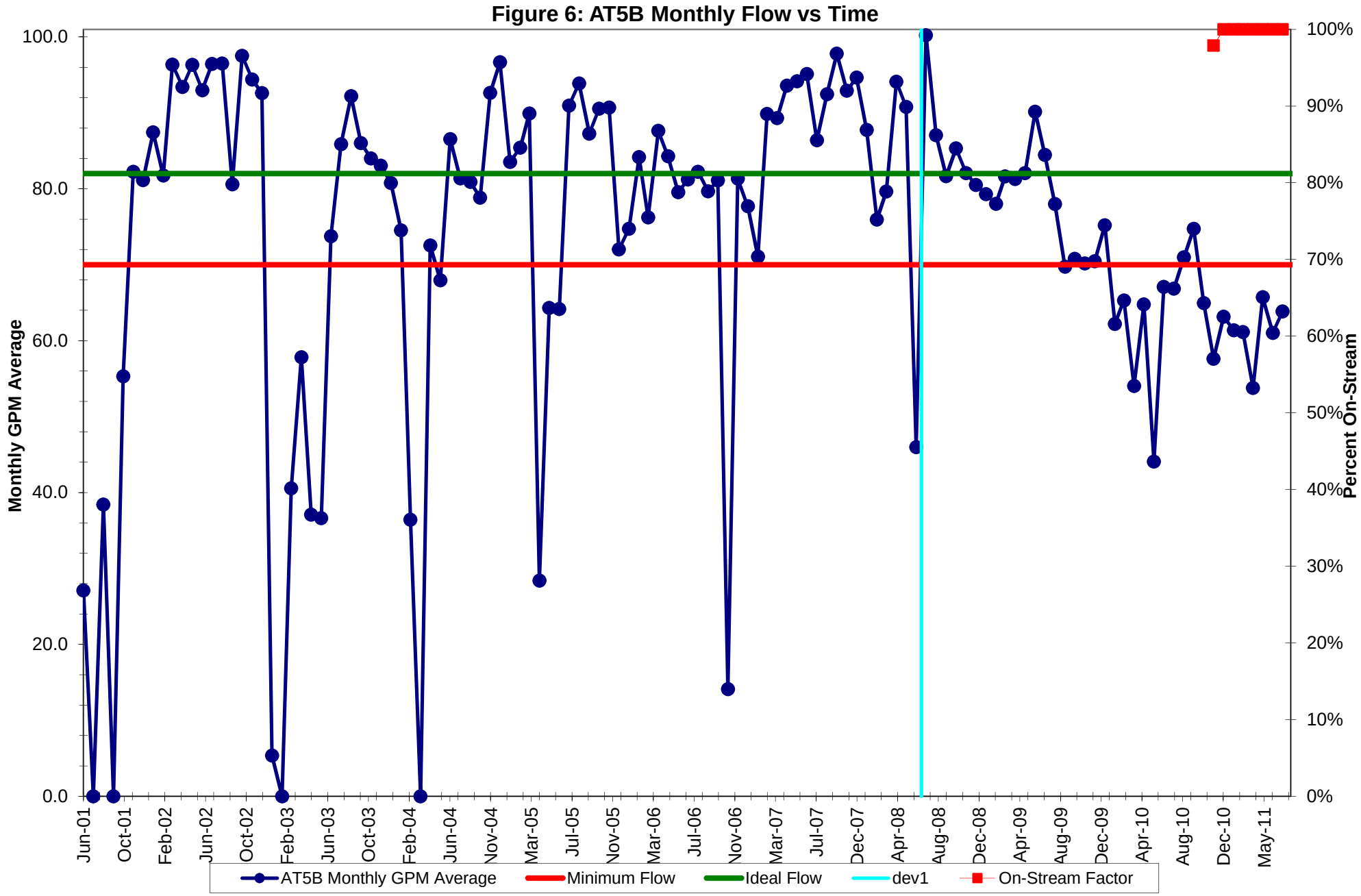
Docs 49267

Figure 4

Figure 5: AT3A Monthly Flow vs. Time



* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.



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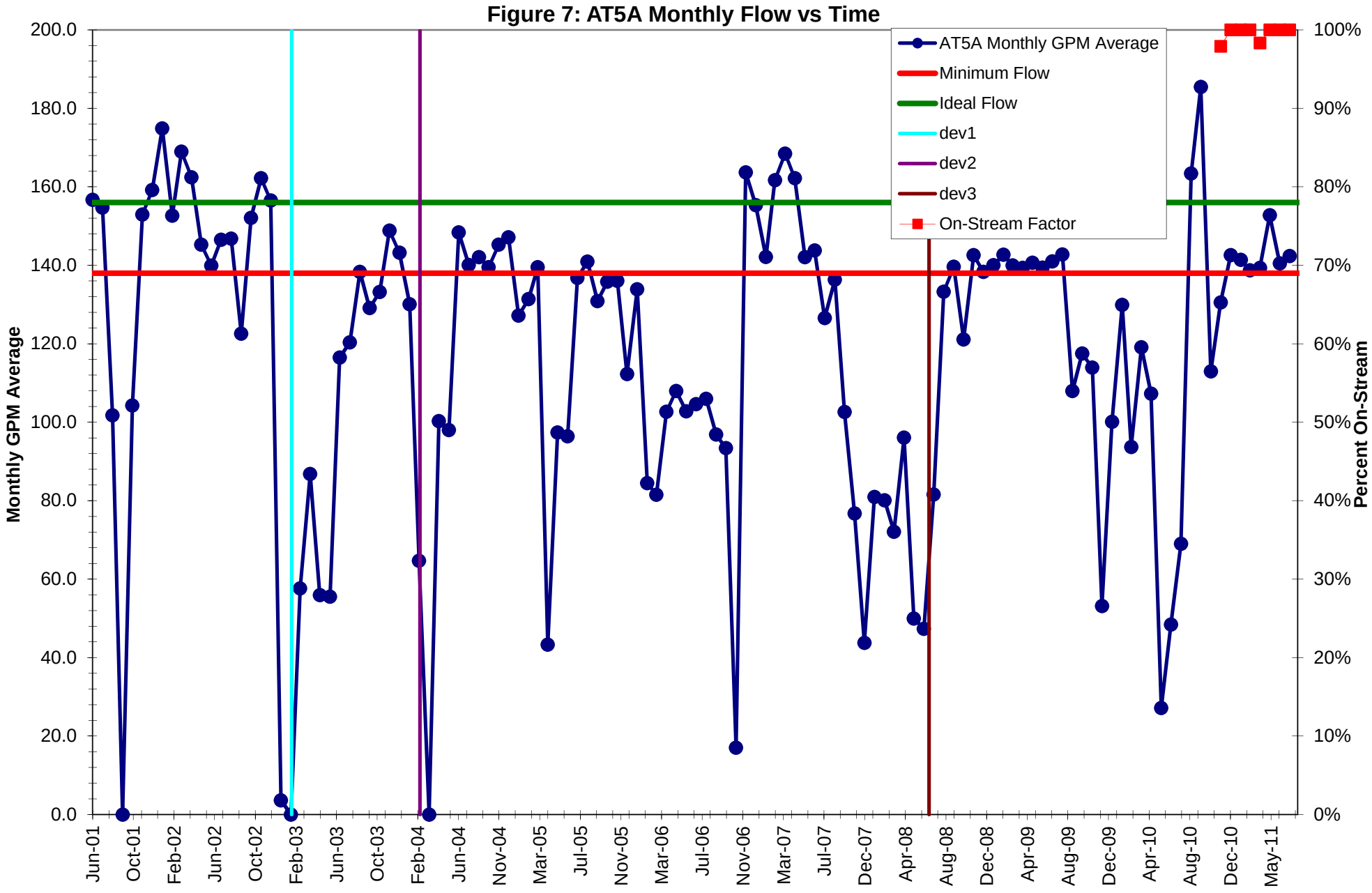

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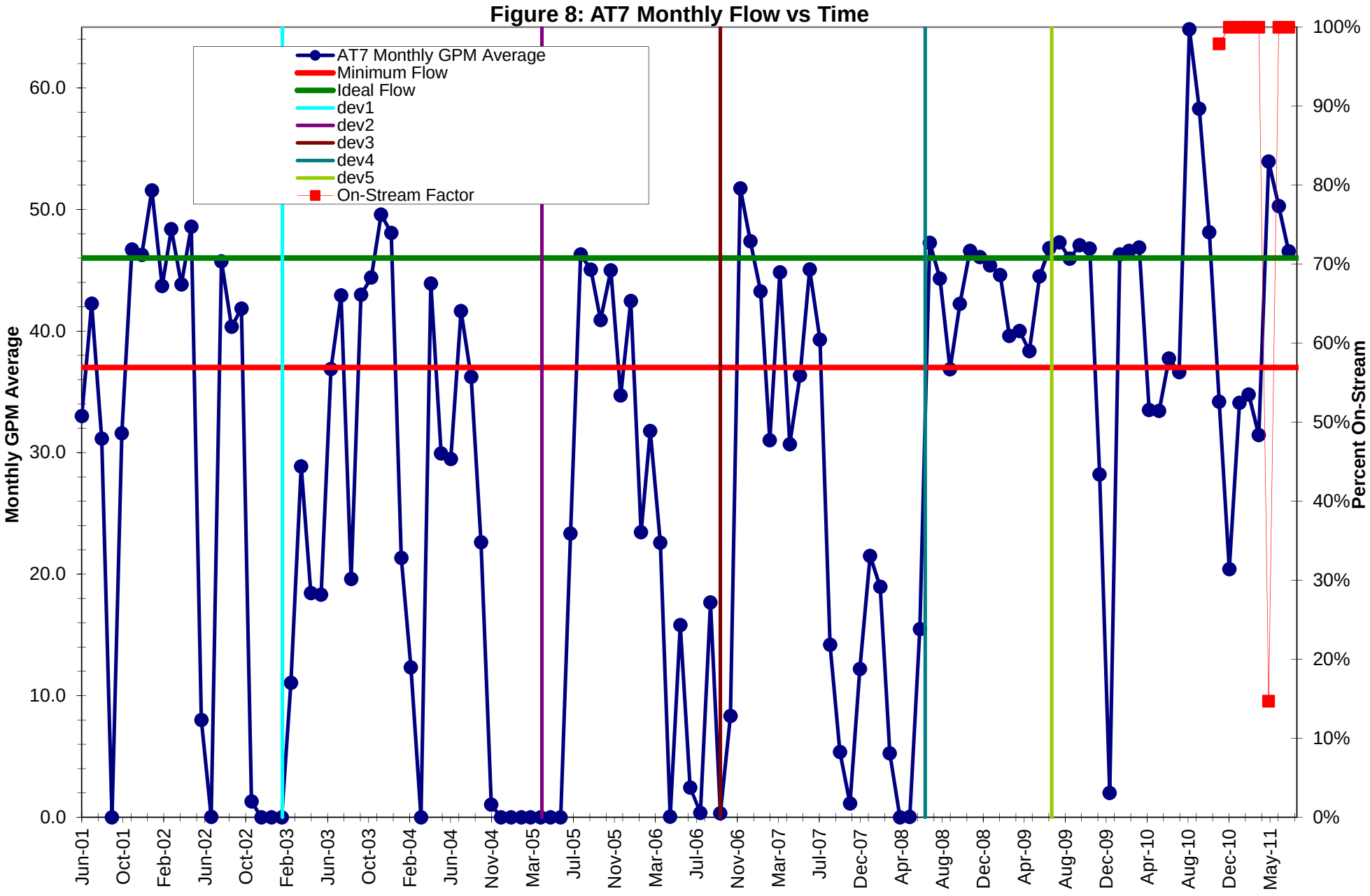

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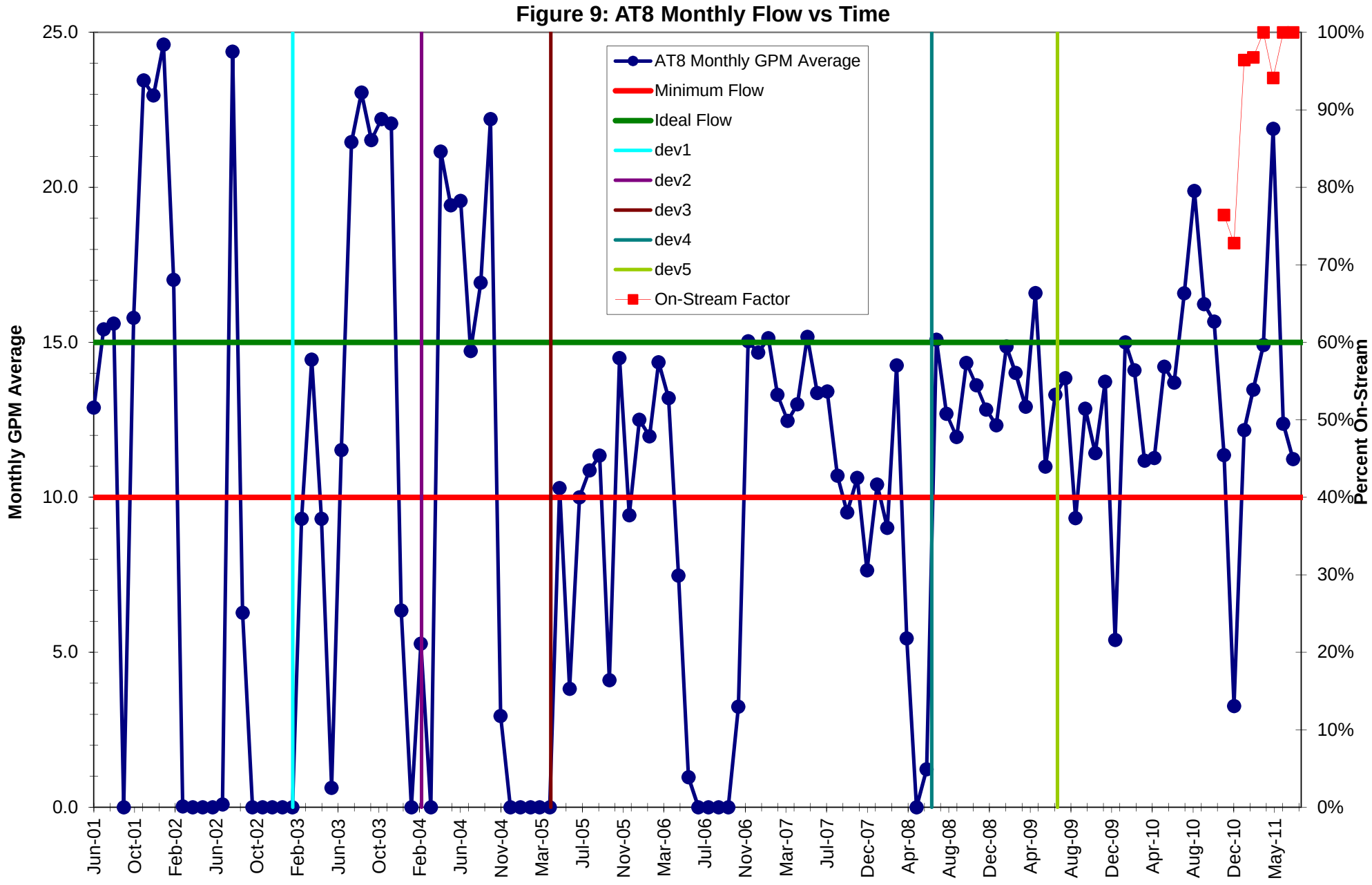

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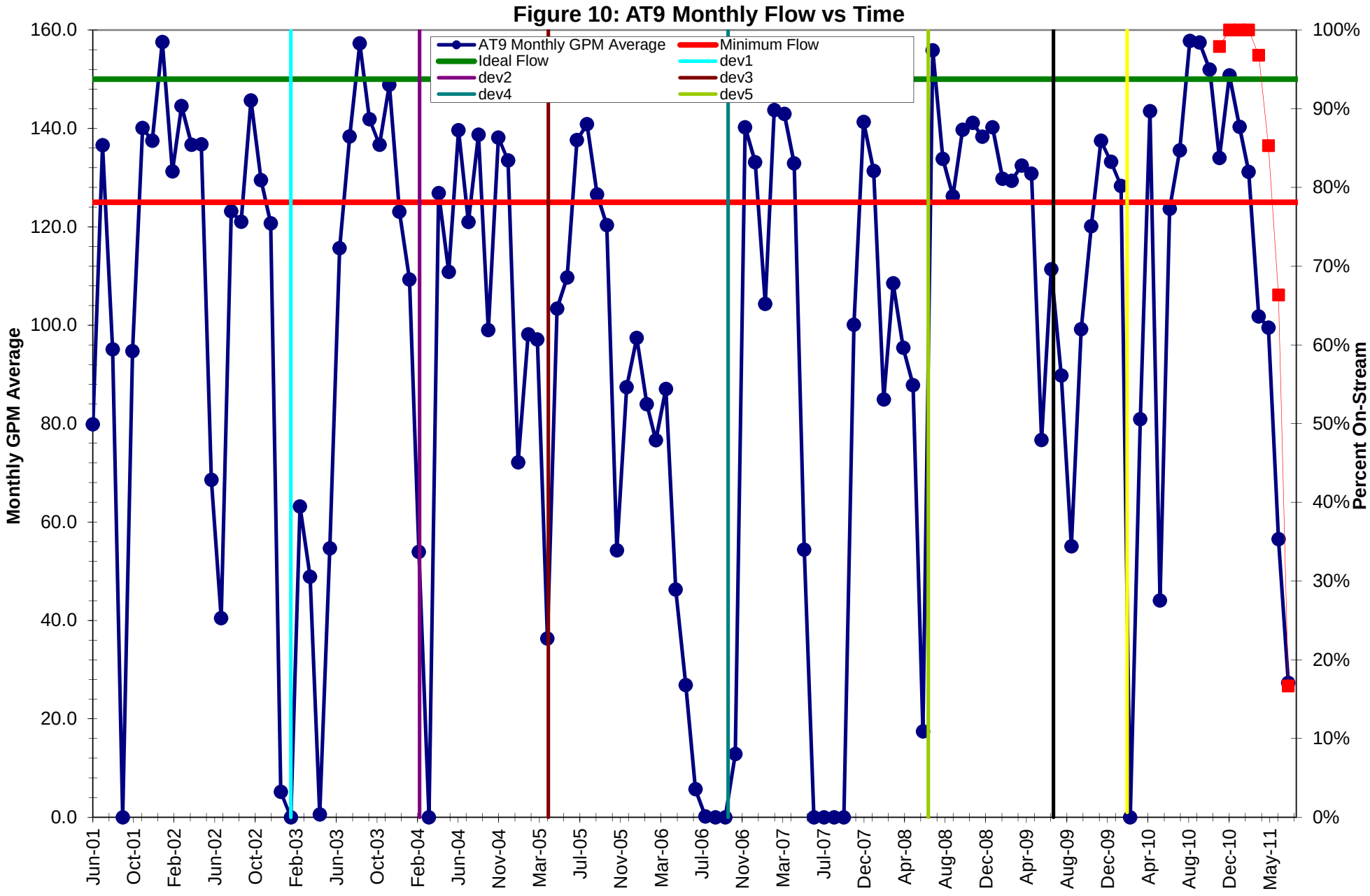

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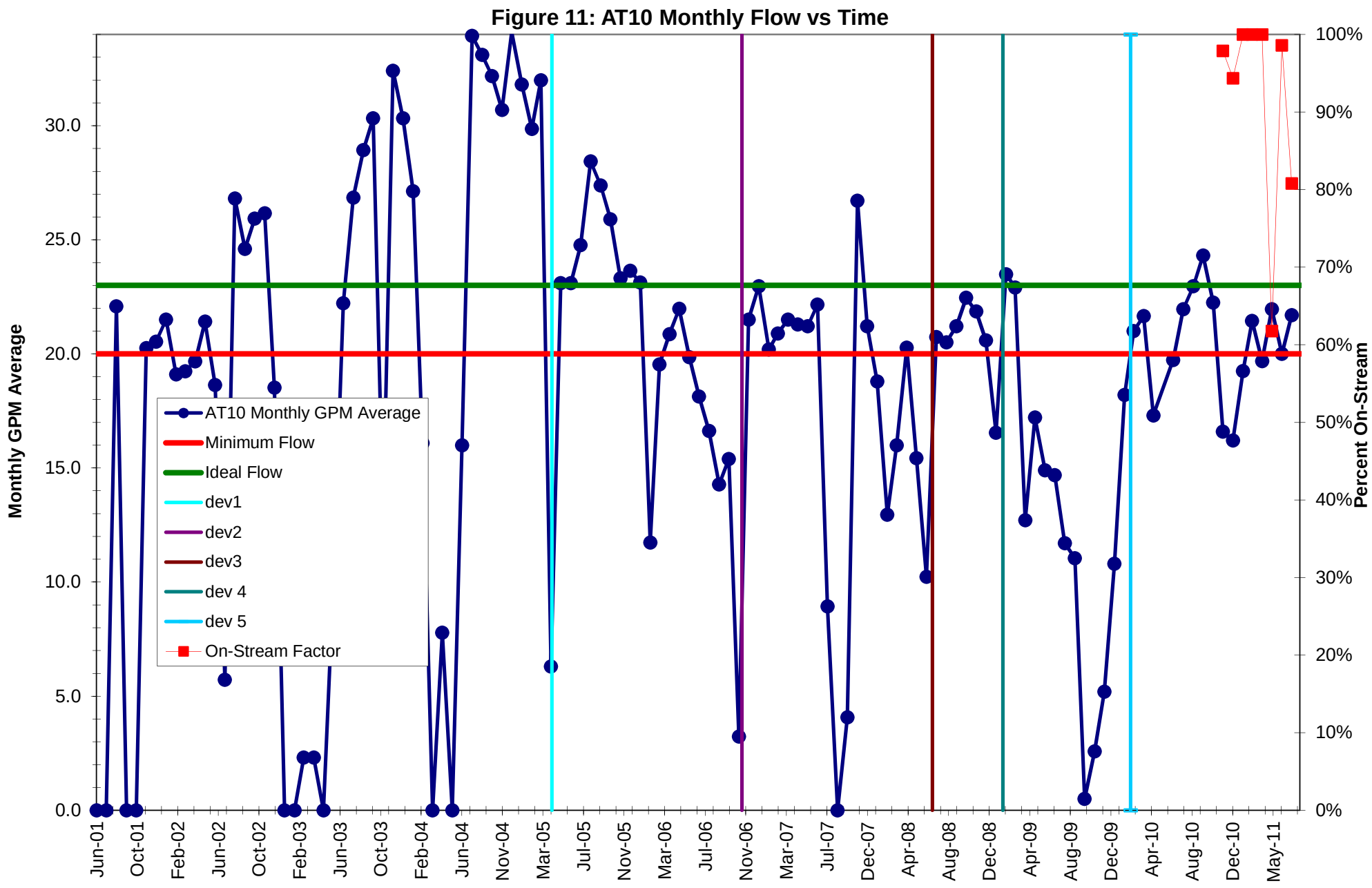

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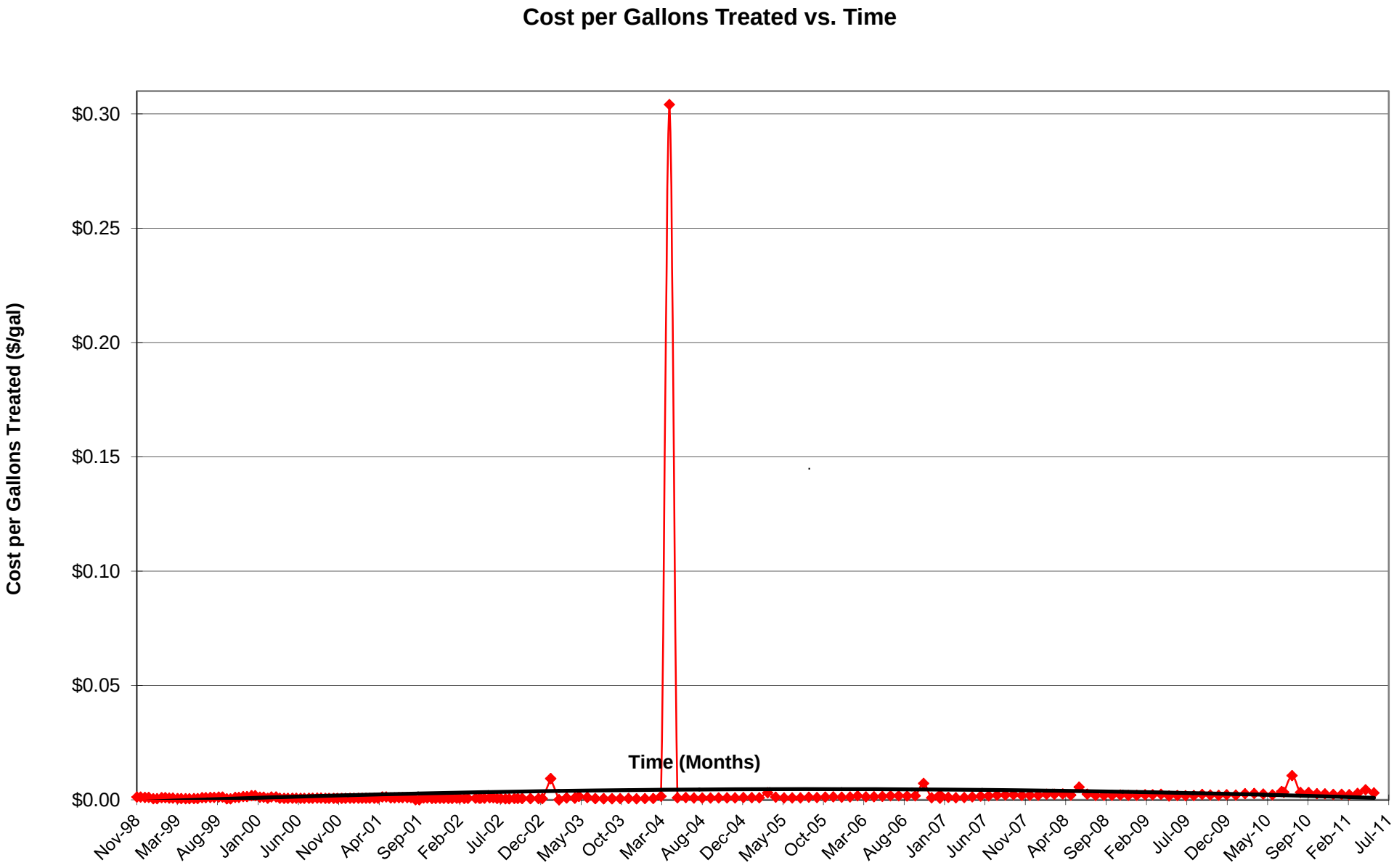

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Figure 12

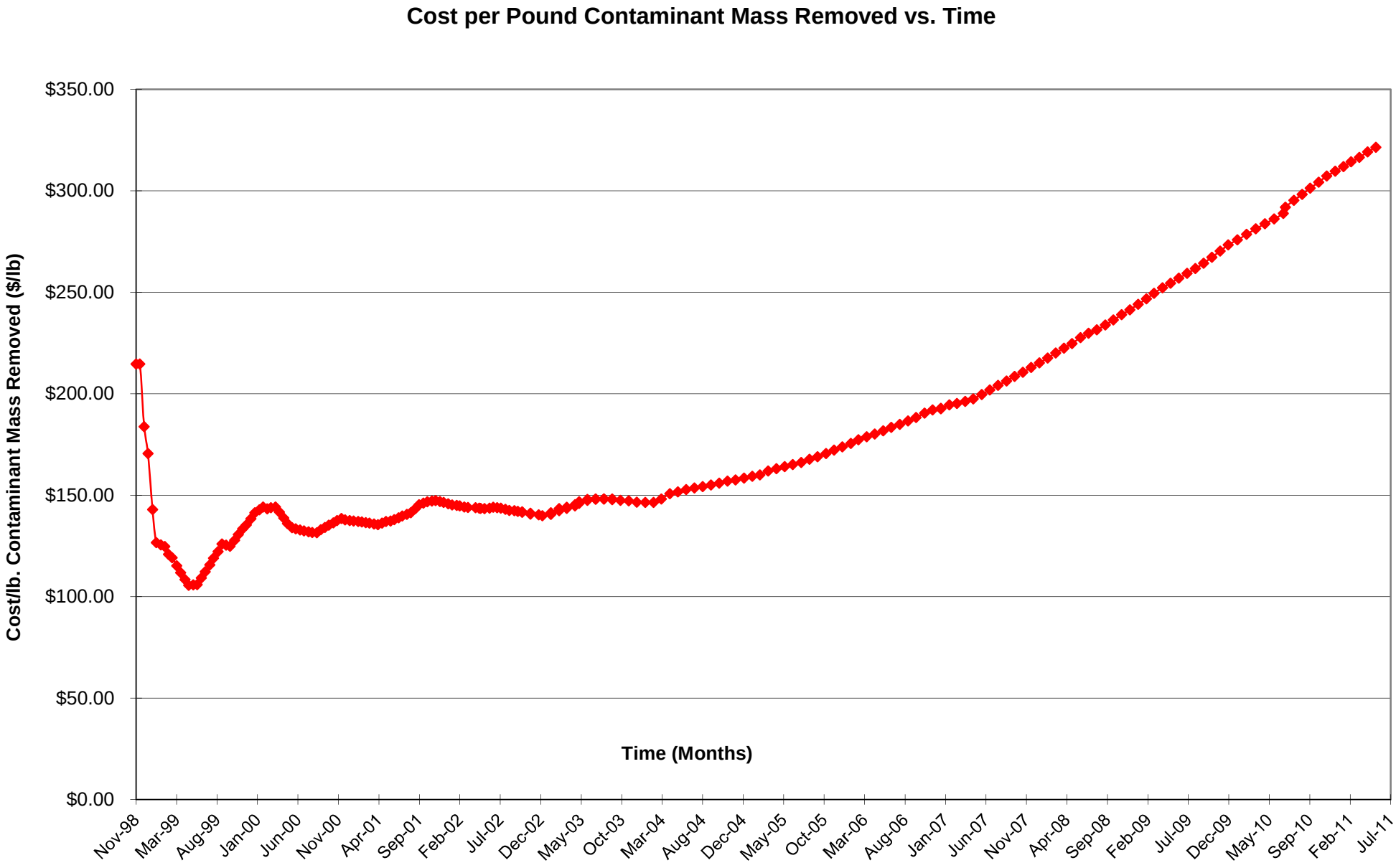

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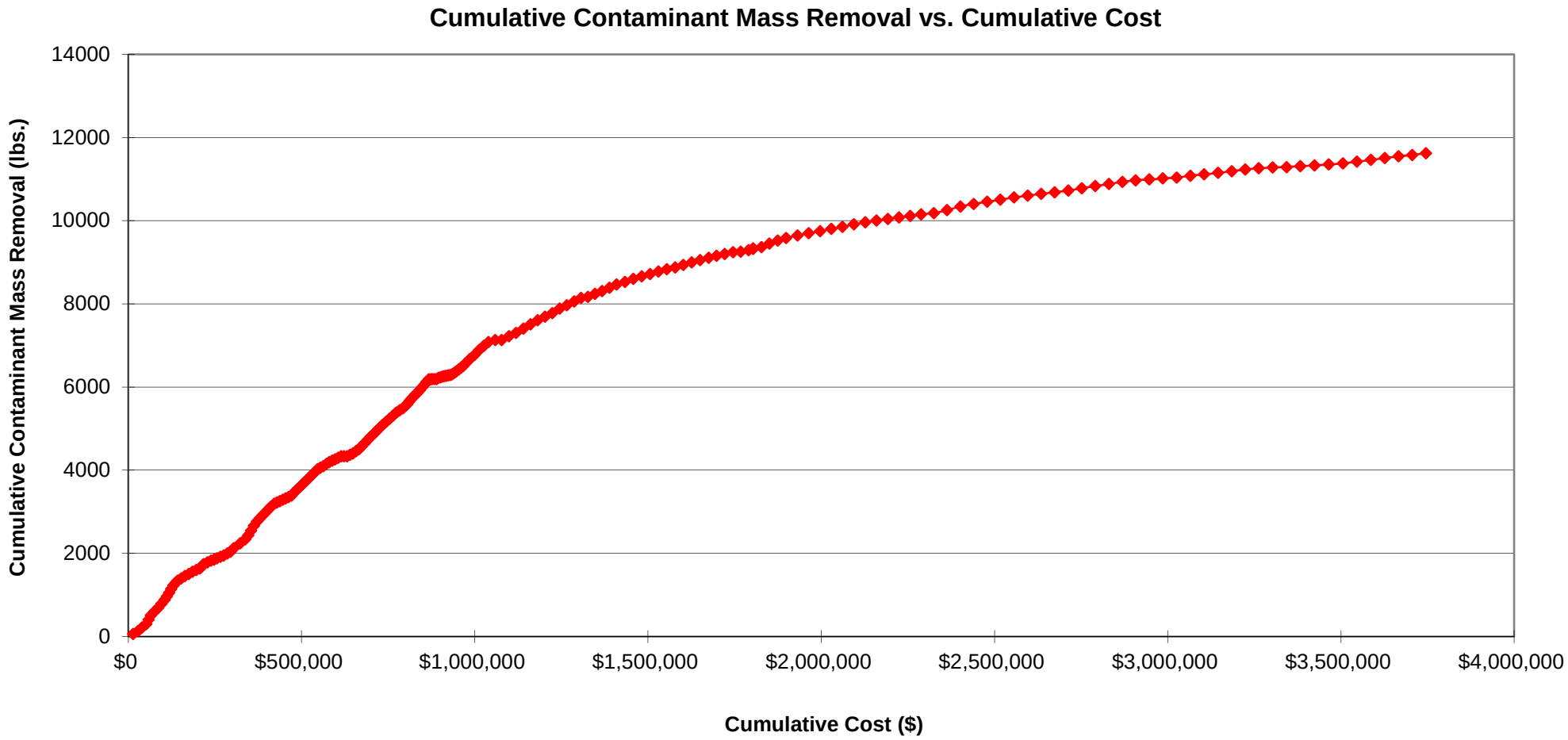
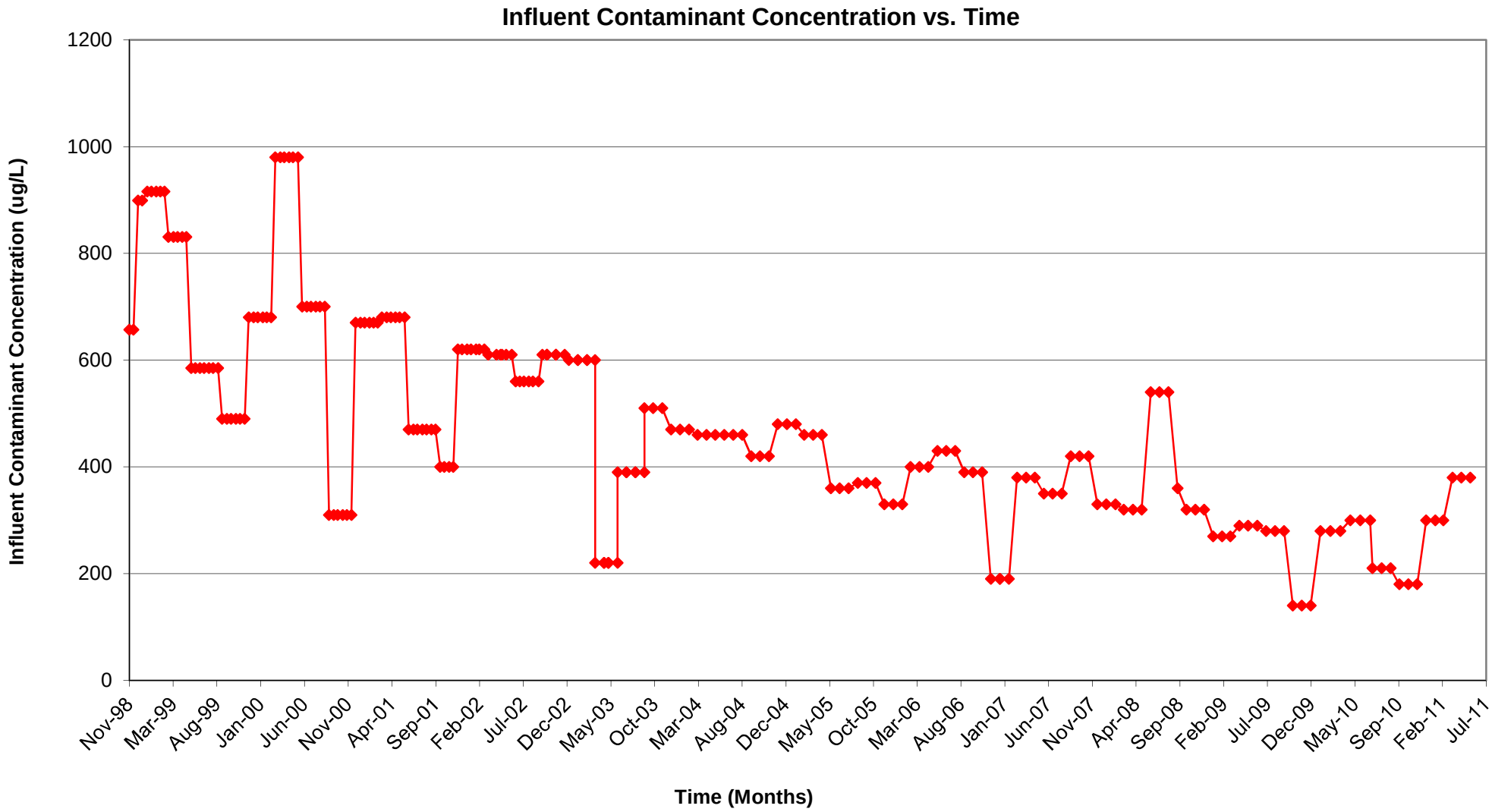
Figure 13



Docs 49267

Figure14



Docs 49267

Figure 15

Monthly Project Status Report August 2011
Facility Maintenance
Naval Industrial Reserve Ordnance Plant - Fridley, Minnesota
Prepared by Bay West, Inc.

EMAC Contract No. N40083-06-D-4015, Task Order #0005

SYSTEM OVERVIEW

- The GWTF was in operation for 682 hours during the month of August 2011.
- The on-stream factor for August was 91.7%. The on-stream factor is the actual operation time divided by the available operation time.
- The system processed an estimated 12,377,000 gallons of groundwater in August, for a total of 3,007,165,000 gallons to date.
- Electrical use was approximately 38,885 kilowatt-hours (kWh) for August 2011.
- Approximately 11,750 pounds of trichloroethylene (TCE) have been removed from the aquifer since groundwater treatment system start-up in 1999. Approximately 37,399 pounds of TCE have been removed from the aquifer since groundwater extraction activities began in 1992.
- Quarterly sampling of 24 monitoring wells was performed August 15 - 18. The wells were gauged for water levels and sampled for VOC's in accordance with the RAWP.

SCHEDULED MAINTENANCE

- Visually inspected flow meters and level probes for material buildup and proper operation.
- Tested the four safety showers/eyewash stations to assure adequate performance.
- Lubricated blower motors, influent pumps, and effluent pumps.
- Collected extraction well water levels on a weekly basis.
- Measured pump P-101A bearing temperature. All values were within normal operation range.
- Measured the amount of fouling debris in Air Stripping Units.
- Extraction well pipe in Building 52/53 is scheduled to be replaced by Harris Mechanical starting September 12, 2011. Bay West will remove the existing extraction well pipe prior to Harris mechanical commencing work.
- Chemical cleaning of groundwater extraction lines between AT-5A and AT-5B and Building 52/53 with will be performed at the same time as extraction well pipe replacement work is completed in Building 52/53.
- Chemical cleaning of the groundwater extraction line between AT-3A and building 52/53 will be performed at the time AT-3A is ready to be taken off-line and the extraction line extended from AT-3A to AT-13.
- Upgrading programmable logic controller (PLC) and supervisory control and data acquisition (SCADA) system with current generation equipment is in progress. Field implementation will be performed in September and October.

- AT-9 redevelopment was terminated on August 8, 2011. The Super Soak redevelopment procedure was applied between July 6, 2011 and August 8, 2011, approximately 34 days.
- Inspect AT-9 extraction pump and replace with a spare if necessary in September 2011 during system shutdown.
- Maintenance and acid treatment of the ASU's will be performed in September 2011.
- Replace P101A/B outlet check valves.
- Inspect AT-7 pump end, motor, and drop pipe in September 2011.

PROBLEMS AND SOLUTIONS

- A plant power outage caused the GWTF to shutdown in the on August 1, 2011. The GWTFwas down approximately 12 hours. The GWTF was successfully returned to normal operation upon the return of power.
- AT-10 extraction pump operated at a flow below minimum rate of 20 gpm for the last part of July and the beginning of August. Bay West determined the extraction pump was fouled, after inspecting the pump with well driller EH Renner. The pump end was replaced, and the flow returned to above the minimum flow rate of 20 gpm.
- AT-9 was returned to service on August 8, 2011, after the completion of well redevelopment work. The extraction pump faulted out intermittently after start-up. Bay West will investigate further the performance of AT-9 extraction pump.
- Acid cleaning the ASUs had been scheduled for September, in conjunction with the pipe replacement project in Building 52/53. However, Bay West observed the air flow rates beginning to decline below the design minimum of 1,300 cfm. Bay West determined the fouling on the bottom tray of each ASU was more severe than the upper trays. The bottom trays were acid cleaned and the air flow rates returned to normal. All ASU trays will be acid cleaned in September, as previously scheduled.
- Bay West observed the pressure gauges for ASU feed pumps P101A and P101B do not return to zero when the pumps are not energized. Bay West determined the check valves on P101A/B are no longer working properly. Bay West has ordered replacement check valves, which will be installed immediately upon receipt.
- On average, AT-7 was below the minimum flow rate of 37 gpm for the month of August. Bay West will perform additional investigative activities to restore AT-7 flow.

Well Performance Summary

Well	Average Monthly Flow Rate (GPM) (Available)	Average Monthly Flow Rate (GPM) (Operational)	Ideal Flow Rate (GPM)	% of Ideal Flow (Available)	% of Ideal Flow (Operational)	Minimum Flow Rate (GPM)	Available Hours of Operation	Operating Hours	On-Stream Factor (Available)
AT-3A	66.7	72.7	135	49.41%	53.85%	115	744	682	91.67%
AT-5A	126.6	138.2	156	81.15%	88.59%	138	744	682	91.67%
AT-5B	57.5	62.7	82	70.12%	76.46%	70	744	682	91.67%
AT-7	29.4	32.1	46	63.91%	69.78%	37	744	682	91.67%
AT-8	10.3	11.3	15	68.67%	75.33%	10	744	682	91.67%
AT-9	13.3	25.3	150	8.87%	16.87%	125	552	291	52.72%
AT-10	22.9	24.9	23	99.57%	108.26%	20	744	682	91.67%

TABLES

1. Groundwater Treatment Facility Operations
2. Electrical Meter Readings

FIGURES

1. Monthly GWTF On Stream Factor
2. GWTF Total Treated Flow
3. Total Discharge
4. Gallons Treated vs. Time
5. AT-3A Monthly Flow vs. Time
6. AT-5A Monthly Flow vs. Time
7. AT-5B Monthly Flow vs. Time
8. AT-7 Monthly Flow vs. Time
9. AT-8 Monthly Flow vs. Time
10. AT-9 Monthly Flow vs. Time
11. AT-10 Monthly Flow vs. Time

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10. AT-9 Monthly Flow vs. Time
11. AT-10 Monthly Flow vs. Time

Tables

NIROP FRIDLEY
Groundwater Treatment Facility (GWTF)

	OPERATIONS (hrs)			WATER DISCHARGED (thousands of gallons)					WATER TREATED (thousands of gallons)	
Month	Available	Operating	On-stream factor	to Storm	to Sanitary	Untreated to Sanitary	Total to Sanitary	% Storm	Monthly	Cumulative
Nov-98	480.0	480.0	100.0%	0	17,524	0	17,524	0%	17,524	17,524
Dec-98	718.0	628.0	87.5%	16,078	7,087	0	7,087	69%	23,165	40,689
Jan-99	744.0	743.0	99.9%	25,571	0	0	0	100%	25,571	66,260
Feb-99	672.0	672.0	100.0%	23,938	0	0	0	100%	23,938	90,198
Mar-99	744.0	744.0	100.0%	27,394	0	0	0	100%	27,394	117,592
Apr-99	720.0	720.0	100.0%	25,254	0	0	0	100%	25,254	142,846
May-99	744.0	744.0	100.0%	23,291	0	0	0	100%	23,291	166,137
Jun-99	720.0	713.0	99.0%	25,823	0	0	0	100%	25,823	191,960
Jul-99	744.0	744.0	100.0%	22,266	0	0	0	100%	22,266	214,226
Aug-99	684.0	684.0	100.0%	21,634	0	0	0	100%	21,634	235,860
Sep-99	720.0	720.0	100.0%	18,205	0	0	0	100%	18,205	254,065
Oct-99	744.0	744.0	100.0%	23,029	0	0	0	100%	23,029	277,094
Nov-99	720.0	720.0	100.0%	22,783	0	0	0	100%	22,783	299,877
Dec-99	535.0	535.0	100.0%	12,818	0	0	0	100%	12,818	312,695
Jan-00	356.0	356.0	100.0%	10,400	0	0	0	100%	10,400	323,095
Feb-00	695.0	694.0	99.9%	16,944	0	0	0	100%	16,944	340,039
Mar-00	744.0	743.5	99.9%	27,131	0	0	0	100%	27,131	367,170
Apr-00	720.0	720.0	100.0%	25,899	0	0	0	100%	25,899	393,069
May-00	744.0	744.0	100.0%	27,458	0	0	0	100%	27,458	420,527
Jun-00	718.9	718.9	100.0%	25,136	0	0	0	100%	25,136	445,663
Jul-00	744.0	744.0	100.0%	25,637	0	0	0	100%	25,637	471,300
Aug-00	744.0	744.0	100.0%	24,341	0	0	0	100%	24,341	495,641
Sep-00	655.5	655.5	100.0%	22,559	0	0	0	100%	22,559	518,200
Oct-00	744.0	744.0	100.0%	25,955	0	0	0	100%	25,955	544,155
Nov-00	720.0	718.0	99.7%	25,759	0	0	0	100%	25,759	569,914
Dec-00	744.0	743.5	99.9%	27,404	0	0	0	100%	27,404	597,318
Jan-01	744.0	744.0	100.0%	24,666	0	0	0	100%	24,666	621,984
Feb-01	672.0	671.0	99.9%	23,956	0	0	0	100%	23,956	645,940
Mar-01	744.0	737.0	99.1%	24,694	0	0	0	100%	24,694	670,634
Apr-01	720.0	719.5	99.9%	24,964	0	0	0	100%	24,964	695,598
May-01	604.3	602.3	99.7%	13,656	0	0	0	100%	13,656	709,254
Jun-01	709.5	708.3	99.8%	20,000	0	0	0	100%	20,000	729,254
Jul-01	730.0	730.0	100.0%	18,077	0	0	0	100%	18,077	747,331
Aug-01	491.0	491.0	100.0%	17,921	0	0	0	100%	17,921	765,252
Sep-01	0.0	0.0	100.0%	0	0	0	0	100%	0	765,252
Oct-01	736.0	472.5	64.2%	21,376	0	0	0	100%	21,376	786,628
Nov-01	720.0	720.0	100.0%	30,205	0	0	0	100%	30,205	816,833
Dec-01	744.0	744.0	100.0%	28,114	0	0	0	100%	28,114	844,947
Jan-02	742.0	737.0	99.3%	30,483	0	0	0	100%	30,483	875,430
Feb-02	672.0	672.0	100.0%	25,538	0	0	0	100%	25,538	900,968
Mar-02	744.0	744.0	100.0%	29,957	0	0	0	100%	29,957	930,925
Apr-02	744.0	743.8	100.0%	28,569	0	0	0	100%	28,569	959,494
May-02	744.0	741.0	99.6%	28,656	0	0	0	100%	28,656	988,150
Jun-02	720.0	720.0	100.0%	22,131	0	0	0	100%	22,131	1,010,281
Jul-02	744.0	744.0	100.0%	21,367	0	0	0	100%	21,367	1,031,648
Aug-02	744.0	744.0	100.0%	28,328	0	0	0	100%	28,328	1,059,976
Sep-02	630.3	630.3	100.0%	20,861	0	0	0	100%	20,861	1,080,837
Oct-02	744.0	744.0	100.0%	21,417	0	0	0	100%	21,417	1,102,254
Nov-02	720.0	720.0	100.0%	25,003	0	0	0	100%	25,003	1,127,257
Dec-02	744.0	742.0	99.7%	25,327	0	0	0	100%	25,327	1,152,584
Jan-03	744.0	55.0	7.4%	1,048	0	0	0	100%	1,048	1,153,632
Feb-03	672.0	0.0	0.0%	0	0	0	0	100%	0	1,153,632
Mar-03	744.0	309.0	41.5%	13,387	0	0	0	100%	13,387	1,167,019
Apr-03	526.5	425.5	80.8%	16,584	0	0	0	100%	16,584	1,183,603
May-03	744.0	298.5	40.1%	7,448	0	0	0	100%	7,448	1,191,051
Jun-03	720.0	253.0	35.1%	10,775	0	0	0	100%	10,775	1,201,826
Jul-03	734.0	576.3	78.5%	22,629	0	0	0	100%	22,629	1,224,455

NIROP FRIDLEY
Groundwater Treatment Facility (GWTF)

	OPERATIONS (hrs)			WATER DISCHARGED (thousands of gallons)					WATER TREATED (thousands of gallons)	
Month	Available	Operating	On-stream factor	to Storm	to Sanitary	Untreated to Sanitary	Total to Sanitary	% Storm	Monthly	Cumulative
Aug-03	732.5	639.8	87.3%	25,591	46	0	46	99.8%	25,637	1,250,092
Sep-03	720.0	719.0	99.9%	23,028	4,532	0	4,532	83.6%	27,560	1,277,652
Oct-03	681.7	648.5	95.1%	25,389	0	0	0	100%	25,389	1,303,041
Nov-03	720.0	694.0	96.4%	22,882	0	0	0	100%	22,882	1,325,923
Dec-03	743.0	740.5	99.7%	31,010	0	0	0	100%	31,010	1,356,933
Jan-04	744.0	727.0	97.7%	25,456	0	0	0	100%	25,456	1,382,389
Feb-04	689.7	689.7	100.0%	23,771	0	0	0	100%	23,771	1,406,160
Mar-04	506.5	353.5	69.8%	12,928	0	0	0	100%	12,928	1,419,088
Apr-04	720.0	2.0	0.3%	60	0	0	0	100%	60	1,419,148
May-04	744.0	635.0	85.3%	24,104	0	0	0	100%	24,104	1,443,252
Jun-04	613.5	613.5	100.0%	20,988	0	0	0	100%	20,988	1,464,240
Jul-04	735.5	732.8	99.6%	26,846	0	0	0	100%	26,846	1,491,086
Aug-04	741.0	741.0	100.0%	26,760	0	0	0	100%	26,760	1,517,846
Sep-04	718.0	717.0	99.9%	27,276	0	0	0	100%	27,276	1,545,122
Oct-04	676.8	676.8	100.0%	24,709	0	0	0	100%	24,709	1,569,831
Nov-04	720.0	720.0	100.0%	25,859	0	0	0	100%	25,859	1,595,690
Dec-04	744.0	744.0	100.0%	26,229	0	0	0	100%	26,229	1,621,919
Jan-05	744.0	667.0	89.7%	20,915	0	0	0	100%	20,915	1,642,834
Feb-05	672.0	672.0	100.0%	22,329	0	0	0	100%	22,329	1,665,163
Mar-05	744.0	716.8	96.3%	22,960	0	0	0	100%	22,960	1,688,123
Apr-05	384.0	322.0	83.9%	6,515	0	0	0	100%	6,515	1,694,638
May-05	576.0	503.5	87.4%	17,859	0	0	0	100%	17,859	1,712,497
Jun-05	720.0	714.5	99.2%	24,450	0	0	0	100%	24,450	1,736,947
Jul-05	744.0	712.5	95.8%	25,301	0	0	0	100%	25,301	1,762,248
Aug-05	744.0	744.0	100.0%	25,916	0	0	0	100%	25,916	1,788,164
Sep-05	720.0	715.3	99.4%	20,837	0	0	0	100%	20,837	1,809,001
Oct-05	744.0	744.0	100.0%	24,028	0	0	0	100%	24,028	1,833,029
Nov-05	720.0	720.0	100.0%	20,553	0	0	0	100%	20,553	1,853,582
Dec-05	686.0	622.3	90.7%	19,037	0	0	0	100%	19,037	1,872,619
Jan-06	744.0	744.0	100.0%	21,858	0	0	0	100%	21,858	1,894,477
Feb-06	672.0	672.0	100.0%	19,590	0	0	0	100%	19,590	1,914,067
Mar-06	710.5	710.0	99.9%	13,935	0	0	0	100%	13,935	1,928,002
Apr-06	654.0	654.0	100.0%	18,391	0	0	0	100%	18,391	1,946,393
May-06	744.0	744.0	100.0%	18,116	0	0	0	100%	18,116	1,964,509
Jun-06	720.0	719.5	99.9%	16,616	0	0	0	100%	16,616	1,981,125
Jul-06	716.0	716.0	100.0%	14,232	0	0	0	100%	14,232	1,995,357
Aug-06	744.0	742.0	99.7%	13,291	0	0	0	100%	13,291	2,008,648
Sep-06	720.0	720.0	100.0%	14,269	0	0	0	100%	14,269	2,022,917
Oct-06	731.0	730.5	99.9%	13,496	0	0	0	100%	13,496	2,036,413
Nov-06	396.0	110.0	27.8%	3,073	0	0	0	100%	3,073	2,039,486
Dec-06	744.0	743.5	99.9%	25,287	0	0	0	100%	25,287	2,064,773
Jan-07	720.0	719.5	99.9%	25,118	0	0	0	100%	25,118	2,089,891
Feb-07	671.8	659.8	98.2%	21,953	0	0	0	100%	21,953	2,111,844
Mar-07	744.0	734.0	98.7%	25,860	0	0	0	100%	25,860	2,137,703
Apr-07	720.0	720.0	100.0%	24,240	0	0	0	100%	24,240	2,161,943
May-07	744.0	744.0	100.0%	19,004	0	0	0	100%	19,004	2,180,947
Jun-07	719.5	719.5	100.0%	20,659	0	0	0	100%	20,659	2,201,606
Jul-07	744.0	744.0	100.0%	19,389	0	0	0	100%	19,389	2,220,995
Aug-07	696.0	696.0	100.0%	16,354	0	0	0	100%	16,354	2,237,349
Sep-07	720.0	720.0	100.0%	15,320	0	0	0	100%	15,320	2,252,669
Oct-07	744.0	744.0	100.0%	14,409	0	0	0	100%	14,409	2,267,078
Nov-07	720.0	720.0	100.0%	17,388	0	0	0	100%	17,388	2,284,466
Dec-07	744.0	739.0	99.3%	17,002	0	0	0	100%	17,002	2,301,468
Jan-08	742.0	684.0	92.2%	17,115	0	0	0	100%	17,115	2,318,583
Feb-08	695.3	611.8	88.0%	13,581	0	0	0	100%	13,581	2,332,164
Mar-08	744.0	742.0	99.7%	13,277	0	0	0	100%	13,277	2,345,441
Apr-08	720.0	717.0	99.6%	12,518	0	0	0	100%	12,518	2,357,959

NIROP FRIDLEY
Groundwater Treatment Facility (GWTF)

	OPERATIONS (hrs)			WATER DISCHARGED (thousands of gallons)					WATER TREATED (thousands of gallons)	
Month	Available	Operating	On-stream factor	to Storm	to Sanitary	Untreated to Sanitary	Total to Sanitary	% Storm	Monthly	Cumulative
May-08	718.0	692.0	96.4%	15,430	0	0	0	100%	15,430	2,373,389
Jun-08	333.5	333.5	100.0%	6,523	0	0	0	100%	6,523	2,379,912
Jul-08	719.0	719.0	100.0%	15,762	0	0	0	100%	15,762	2,395,674
Aug-08	729.3	729.3	100.0%	20,183	0	0	0	100%	20,183	2,415,857
Sep-08	720.0	720.0	100.0%	19,632	0	0	0	100%	19,632	2,435,489
Oct-08	737.0	737.0	100.0%	19,818	0	0	0	100%	19,818	2,455,307
Nov-08	662.0	662.0	100.0%	18,191	0	0	0	100%	18,191	2,473,498
Dec-08	744.0	744.0	100.0%	20,926	0	0	0	100%	20,926	2,494,424
Jan-09	741.0	741.0	100.0%	20,301	44	0	44	99.8%	20,301	2,514,725
Feb-09	672.0	672.0	100.0%	17,546	0	0	0	100%	17,546	2,532,271
Mar-09	711.9	711.2	99.9%	17,766	0	0	0	100%	17,766	2,550,037
Apr-09	709.0	705.6	99.5%	16,434	0	0	0	100%	16,434	2,566,471
May-09	739.8	739.8	100.0%	23,663	0	0	0	100%	23,663	2,590,134
Jun-09	719.8	719.8	100.0%	21,234	0	0	0	100%	21,234	2,611,368
Jul-09	744.0	744.0	100.0%	21,846	0	0	0	100%	21,846	2,633,214
Aug-09	744.0	744.0	100.0%	20,933	0	0	0	100%	20,933	2,654,147
Sep-09	697.2	697.2	100.0%	16,585	0	0	0	100%	16,585	2,670,732
Oct-09	743.5	743.5	100.0%	18,919	0	0	0	100%	18,919	2,689,651
Nov-09	720.0	720.0	100.0%	19,768	0	0	0	100%	19,768	2,709,419
Dec-09	744.0	744.0	100.0%	18,162	0	0	0	100%	18,162	2,727,581
Jan-10	740.3	740.3	100.0%	19,542	0	0	0	100%	19,542	2,747,123
Feb-10	672.0	658.0	97.9%	14,805	0	0	0	100%	14,805	2,761,928
Mar-10	744.0	744.0	100.0%	14,596	0	0	0	100%	14,596	2,776,524
Apr-10	720.0	720.0	100.0%	15,598	0	0	0	100%	15,598	2,792,122
May-10	744.0	742.5	99.8%	18,090	0	0	0	100%	18,090	2,810,212
Jun-10	720.0	697.0	96.8%	10,717	0	0	0	100%	10,717	2,820,929
Jul-10	744.0	722.2	97.1%	12,254	0	0	0	100%	12,254	2,833,183
Aug-10	694.5	404.0	58.2%	3,789	0	0	0	100%	3,789	2,836,972
Sep-10	712.0	700.0	98.3%	12,552	0	0	0	100%	12,552	2,849,524
Oct-10	690.6	690.6	100.0%	12,926	0	0	0	100%	12,926	2,862,450
Nov-10	719.5	716.0	99.5%	15,466	0	0	0	100%	15,466	2,877,916
Dec-10	737.0	721.5	97.9%	15,855	0	0	0	100%	15,855	2,893,771
Jan-11	744.0	744.0	100.0%	17,199	0	0	0	100%	17,199	2,910,970
Feb-11	667.0	665.0	99.7%	16,551	0	0	0	100%	16,551	2,927,521
Mar-11	744.0	744.0	100.0%	17,827	0	0	0	100%	17,827	2,945,348
Apr-11	711.3	708.3	99.6%	14,063	0	0	0	100%	14,063	2,959,411
May-11	384.0	384.0	100.0%	9,042	0	0	0	100%	9,042	2,968,453
Jun-11	719.5	716.8	99.6%	13,216	0	0	0	100%	13,216	2,981,669
Jul-11	744.0	744.0	100.0%	13,119	0	0	0	100%	13,119	2,994,788
Aug-11	744.0	682.0	91.7%	12,377	0	0	0	100%	12,377	3,007,165

Note: Available hours are 24 hours per day, less scheduled down time and power outages.

* Monthly flow incorrectly reported for Jul-04 through Dec-04 - corrected January 2005 using the corrected estimate for AT-10 monthly flow.

NIROP FRIDLEY
Ground Water Treatment Facility (GWTF)

Date	Electrical Meter Readings (kW·h)					Monthy Usage
	MCC #1	MCC #2	Wells 2, 3A, 5A, 5B	Well 1A	Well 4	
2/1/2000	57,305	620,300				38,046
3/1/2000	59,597	656,054				36,133
3/9/2000	60,348	667,580	18,260	3,284	2,312	65,029
4/3/2000	63,080	704,113	38698	6043	4879	74,067
5/1/2000	66,067	746,920	60,940	9,238	7,715	81,545
6/1/2000	68,972	793,455	86495	12728	10775	66,128
7/1/2000	71,562	840,441	110,243	16,307		
7/6/2000					13701	13,701
8/1/2000	73,881	881,304	130,691	19,559	16,686	72,336
9/1/2000	76,316	924,799	152695	22976	17671	67,877
10/2/2000	78,561	964,802	172,714	26,079	20,178	
11/1/2000	80,952	7,402	195655	29408	22454	89,927
12/4/2000	83,561	56,966	225,897	33,105	26,269	81,706
1/2/2001	85,851	101,872	254750	36270	28761	72,935
2/1/2001	88,106	143,918	282,532	37,122	28,761	83,944
3/1/2001	90,240	190,303	314000	41079	28761	66,663
4/3/2001	92,677	230,575	335,297	43,736	28,761	65,567
5/1/2001	94,779	269,617	357244	46212	28761	
6/5/2001	97,821	304,746	*	*	*	38,108
7/2/2001	102,175	338,500	*	*	*	44,802
8/2/2001	106,592	378,885	*	*	*	37,804
9/12/2001	111,321	411,960	*	*	*	13,663
10/18/2001	112,956	423,988	*	*	*	29,471
11/1/2001	117,010	449,405	*	*	*	68,542
12/4/2001	126,457	508,500	*	*	*	60,932
1/2/2002	134,884	561,005	*	*	*	56,801
2/1/2002	142,948	609,742	*	*	*	55,300
3/1/2002	150,583	657,407	*	*	*	64,231
4/1/2002	159,332	712,889	*	*	*	59,291
5/1/2002	167,808	763,704	*	*	*	63,448
6/3/2002	176,272	818,688	*	*	*	43,974
7/1/2002	182,246	856,688	*	*	*	45,609
8/1/2002	188,404	896,139	*	*	*	60,074
9/3/2002	196,255	948,362	*	*	*	44,067
10/1/2002	202,142	986,542	*	*	*	60,158
11/1/2002	209,581	1,039,261	*	*	*	60,538
12/2/2002	216,632	1,092,748	*	*	*	
1/1/2003	223,233	0	*	*	*	
2/1/2003	224,233	1,146,792	*	*	*	7,827
3/19/2003	227,523	1,151,329	*	*	*	22,891
4/3/2003	230,589	1,171,154	*	*	*	32,058
5/1/2003	235,275	1,198,526	*	*	*	18,373
6/4/2003	237,675	1,214,499	*	*	*	20,360
7/1/2003	240,411	1,232,123	*	*	*	42,930
8/1/2003	246,351	1,269,113	*	*	*	49,909
9/2/2003	253,306	1,312,067	*	*	*	52,166
10/1/2003	260,662	1,356,877	*	*	*	58,962
11/3/2003	268,788	1,407,713	*	*	*	57,373
12/1/2003	276,592	1,457,282	*	*	*	67,477
1/2/2004	285,175	1,516,176	*	*	*	67,278
2/2/2004	293,559	1,575,070	*	*	*	60,542
3/1/2004	301,245	1,627,926	*	*	*	31,187
4/1/2004	305,283	1,655,075	*	*	*	1,037
5/3/2004	305,515	1,655,880	*	*	*	51,931
6/1/2004	312,129	1,701,197	*	*	*	47,852
7/1/2004	318,012	1,743,166	*	*	*	60,764
8/3/2004	326,133	1,795,809	*	*	*	55,312

NIROP FRIDLEY
Ground Water Treatment Facility (GWTF)

Date	Electrical Meter Readings (kW·h)					Monthy Usage
	MCC #1	MCC #2	Wells 2, 3A, 5A, 5B	Well 1A	Well 4	
9/1/2004	335,039	1,842,215	*	*	*	52,307
10/1/2004	340,422	1,889,139	*	*	*	53,798
11/2/2004	347,296	1,936,063	*	*	*	64,045
12/1/2004	354,514	1,992,890	*	*	*	64,887
1/5/2005	362,574	49,717	*	*	*	48,313
2/1/2005	368,114	92,490	*	*	*	56,517
3/1/2005	374,689	142,432	*	*	*	35,669
4/1/2005	381,858	170,932	*	*	*	32,506
5/11/2005	384,388	200,908	*	*	*	37,857
6/2/2005	389,382	233,771	*	*	*	53,851
7/1/2005	395,908	281,096	*	*	*	55,772
8/1/2005	402,786	329,990	*	*	*	58,530
9/1/2005	410,054	381,252	*	*	*	59,756
10/4/2005	416,742	434,320	*	*	*	54,337
11/1/2005	423,117	482,282	*	*	*	59,439
12/1/2005	429,602	535,236	*	*	*	58,139
1/3/2006	437,032	585,945	*	*	*	64,273
2/3/2006	444,929	642,321	*	*	*	59,745
3/3/2006	451,966	695,029	*	*	*	59,447
4/4/2006	458,470	747,972	*	*	*	52,154
5/2/2006	464,407	794,189	*	*	*	56,066
6/1/2006	470,107	844,555	*	*	*	67,078
7/7/2006	476,656	905,084	*	*	*	75,362
8/17/2006	483,201	973,901	*	*	*	28,651
9/1/2006	485,579	174	*	*	*	60,559
10/2/2006	490,846	55,466	*	*	*	64,783
11/16/2006	497,232	113,863	*	*	*	30,896
12/12/2006	501,656	140,335	*	*	*	41,005
1/2/2007	507,345	175,651	*	*	*	89,453
2/14/2007	519,226	253,223	*	*	*	60,625
3/15/2007	526,775	306,299	*	*	*	37,019
4/1/2007	531,435	338,658	*	*	*	59,380
5/1/2007	538,780	390,693	*	*	*	60,309
6/2/2007	546,435	443,347	*	*	*	57,976
7/2/2007	552,240	495,518	*	*	*	54,945
8/1/2007	558,047	544,656	*	*	*	56,900
9/4/2007	563,999	595,604	*	*	*	48,947
10/1/2007	568,907	639,643	*	*	*	55,912
11/1/2007	574,269	690,193	*	*	*	61,551
12/3/2007	580,906	745,107	*	*	*	58,075
1/2/2008	587,234	796,854	*	*	*	61,758
2/1/2008	593,878	851,968	*	*	*	56,961
3/6/2008	601,457	901,350	*	*	*	47,128
4/1/2008	607,103	942,832	*	*	*	51,563
5/2/2008	613,973	987,525	*	*	*	45,409
6/2/2008	619,382	27,525	*	*	*	23,755
7/1/2008	621,730	48,932	*	*	*	57,458
8/1/2008	627,904	100,216	*	*	*	59,836
9/2/2008	634,818	153,138	*	*	*	57,157
10/4/2008	641,270	203,843	*	*	*	61,110
11/3/2008	648,196	258,027	*	*	*	58,512
12/1/2008	655,158	309,577	*	*	*	71,027

NIROP FRIDLEY
Ground Water Treatment Facility (GWTF)

Date	Electrical Meter Readings (kW·h)					Monthy Usage
	MCC #1	MCC #2	Wells 2, 3A, 5A, 5B	Well 1A	Well 4	
1/2/2009	663,755	372,007	*	*	*	69,361
2/2/2009	672,125	432,998	*	*	*	62,234
3/2/2009	679,788	487,569	*	*	*	61,618
4/1/2009	687,315	541,660	*	*	*	63,015
5/1/2009	694,461	597,529	*	*	*	63,751
6/1/2009	701,440	654,301	*	*	*	60,286
7/1/2009	708,069	707,958	*	*	*	65,088
8/3/2009	715,267	765,848	*	*	*	57,140
9/1/2009	721,611	816,644	*	*	*	56,282
10/1/2009	727,548	866,989	*	*	*	65,845
11/2/2009	734,666	925,716	*	*	*	60,372
12/1/2009	741,891	978,863	*	*	*	77,030
1/1/2010	750,050	1,047,734	*	*	*	63,139
2/1/2010	757,037	1,103,886	*	*	*	61,079
3/1/2010	763,509	1,158,493	*	*	*	69,431
4/1/2010	769,960	1,221,473	*	*	*	59,638
5/3/2010	775,813	1,275,258	*	*	*	54,143
6/1/2010	780,680	1,324,534	*	*	*	51,279
7/1/2010	784,369	1,372,124	*	*	*	75,167
8/2/2010	789,289	1,442,371	*	*	*	8,482
9/1/2010	791,567	1,448,575	*	*	*	55,237
10/1/2010	796,016	1,499,363	*	*	*	61,303
11/1/2010	800,411	1,556,271	*	*	*	60,565
12/1/2010	806,672	1,610,575	*	*	*	68,226
1/3/2011	813,611	1,671,862	*	*	*	64,951
2/1/2011	820,001	1,730,423	*	*	*	58,883
3/1/2011	825,935	1,783,372	*	*	*	68,939
4/1/2011	832,880	1,845,366	*	*	*	58,997
5/9/2011	838,973	1,898,270	*	*	*	29,524
6/1/2011	841,656	1,925,111	*	*	*	52,109
7/1/2011	846,958	1,971,918	*	*	*	43,675
8/1/2011	851,869	2,010,682	*	*	*	38,885

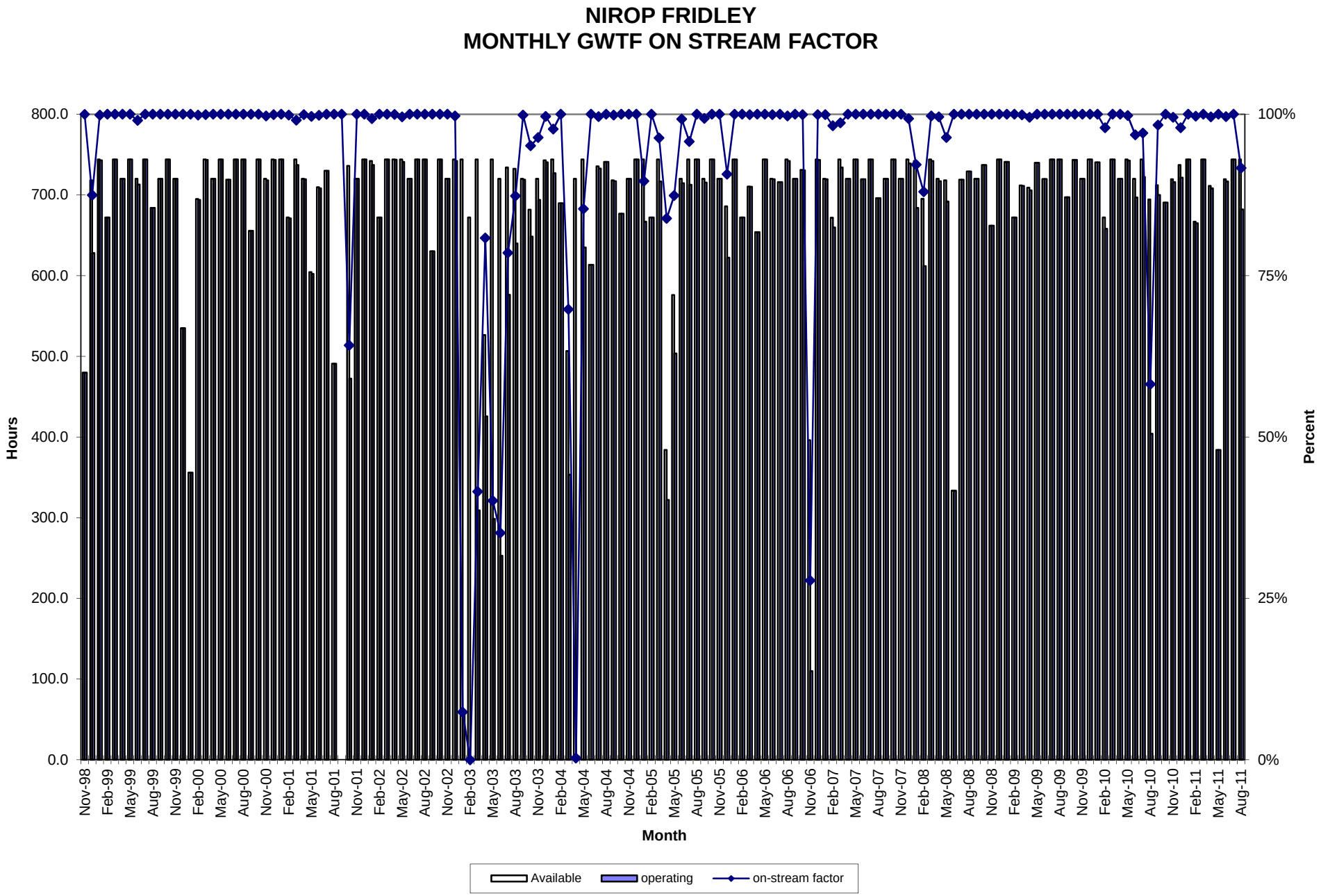
* Electrical metering for the extraction wells runs through MCC #1

- The electrical meter in the main treatment area was misread on 1/1/03, thus it was not reset. December electricity usage was estimated to be the same as November 2002.

^ The electrical meter in the main treatment area had reset after the scheduled power shut-down. October 2004 electricity usage for MCC#2 was estimated to be the same as September 2004.

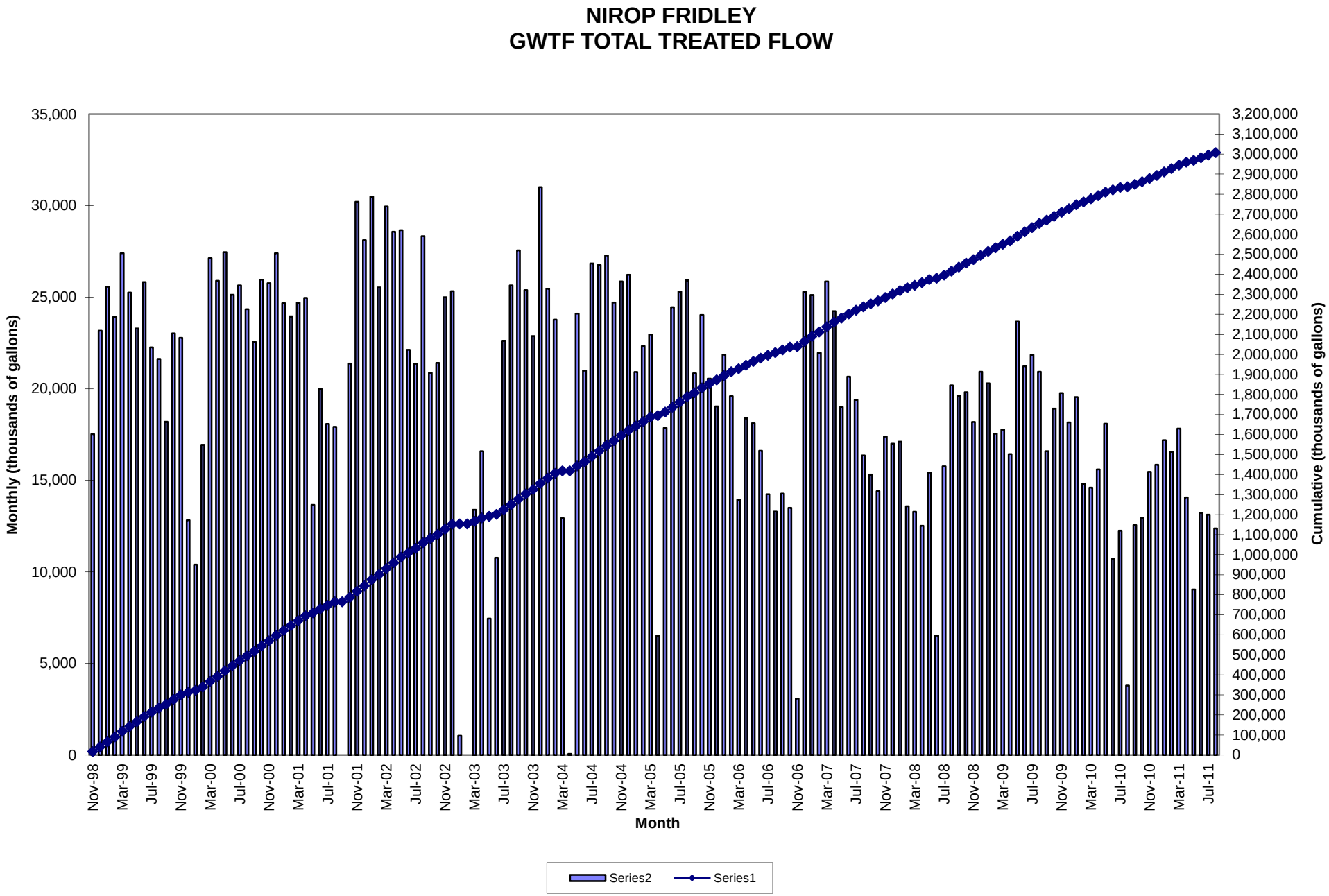
+ - electrical readings were not obtained on December 1, 2004, therefore electrical usage for November was estimated to be similar to October 2004.

Figures



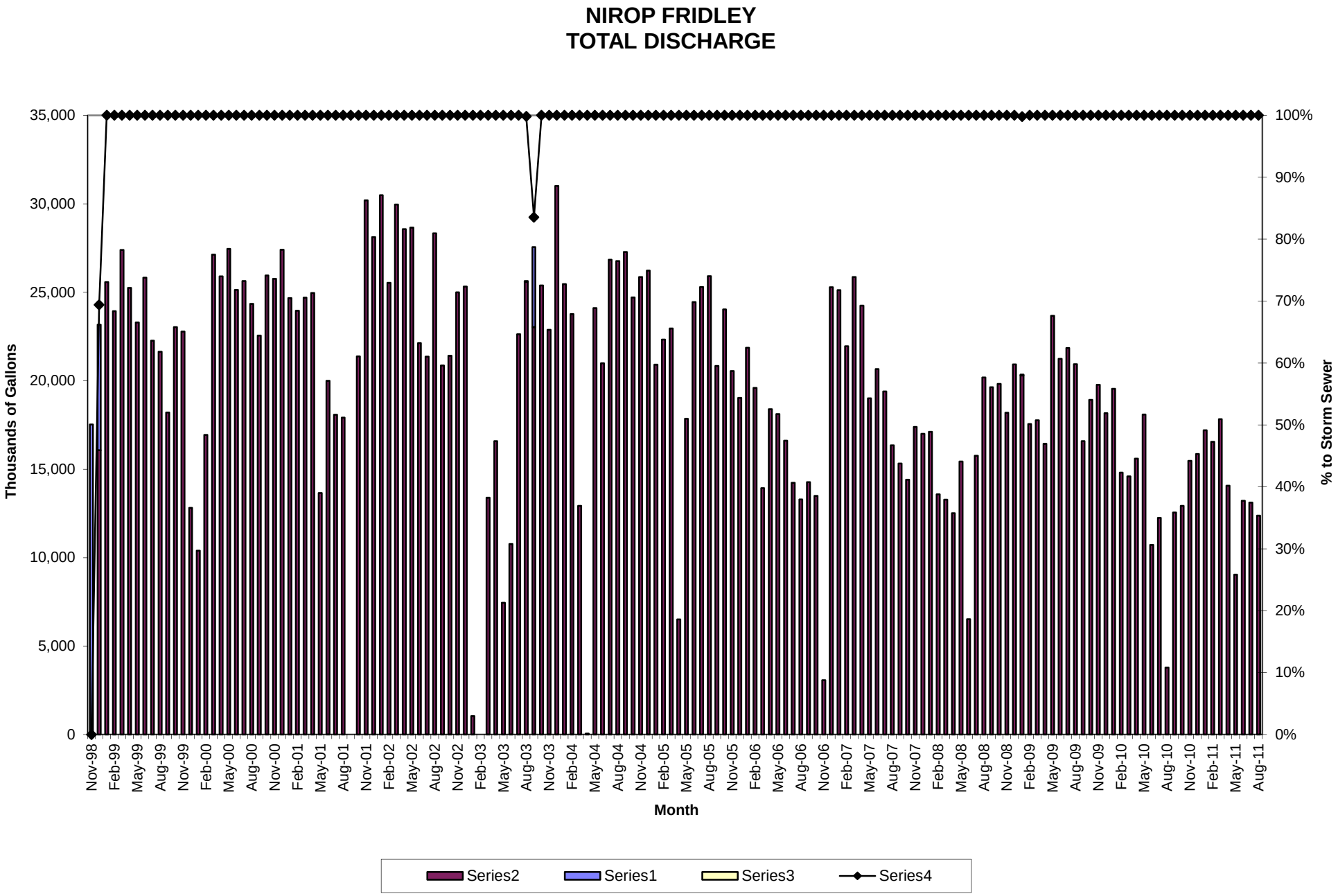
Docs 58644

Figure 1



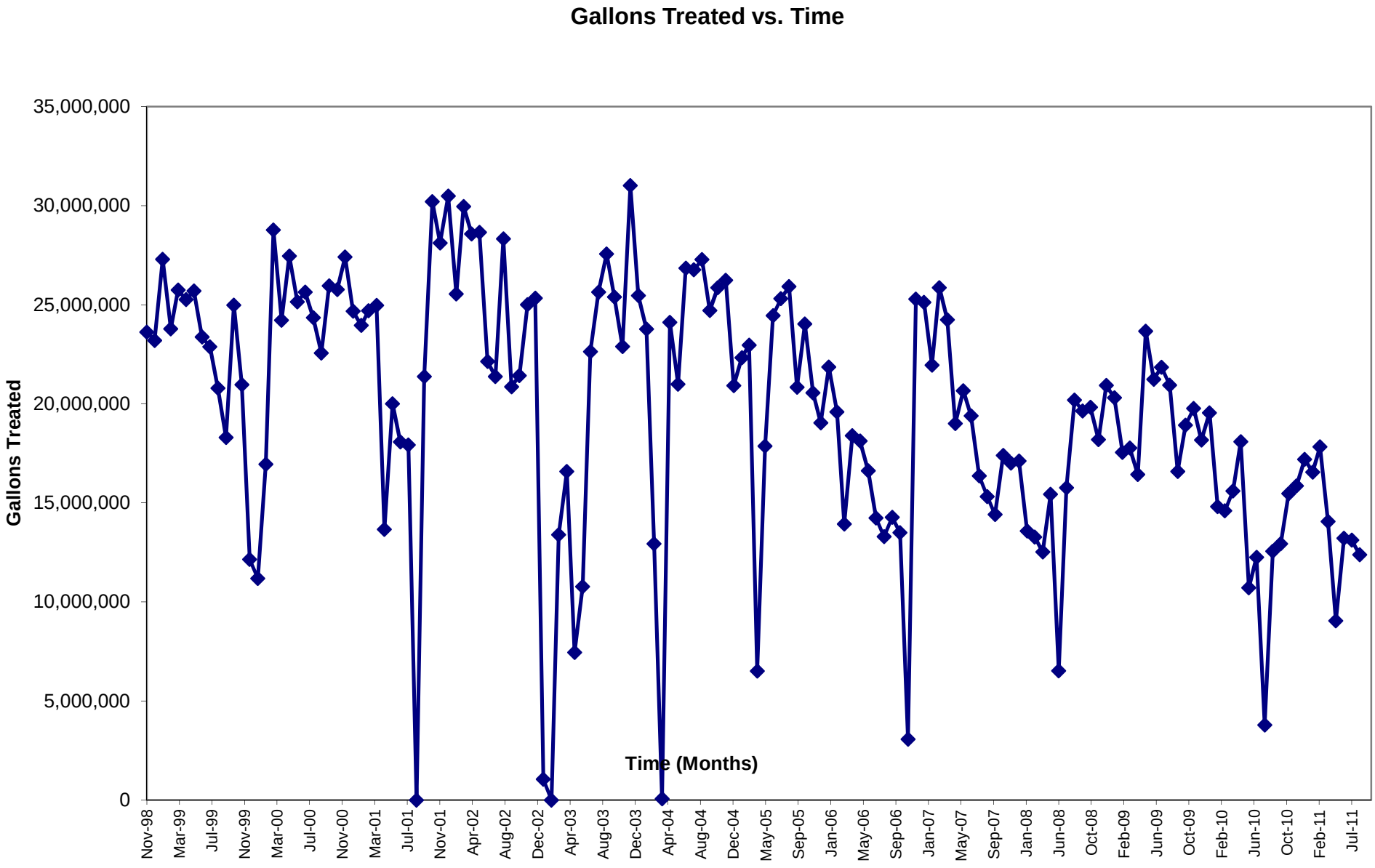
Docs 58644

Figure 2



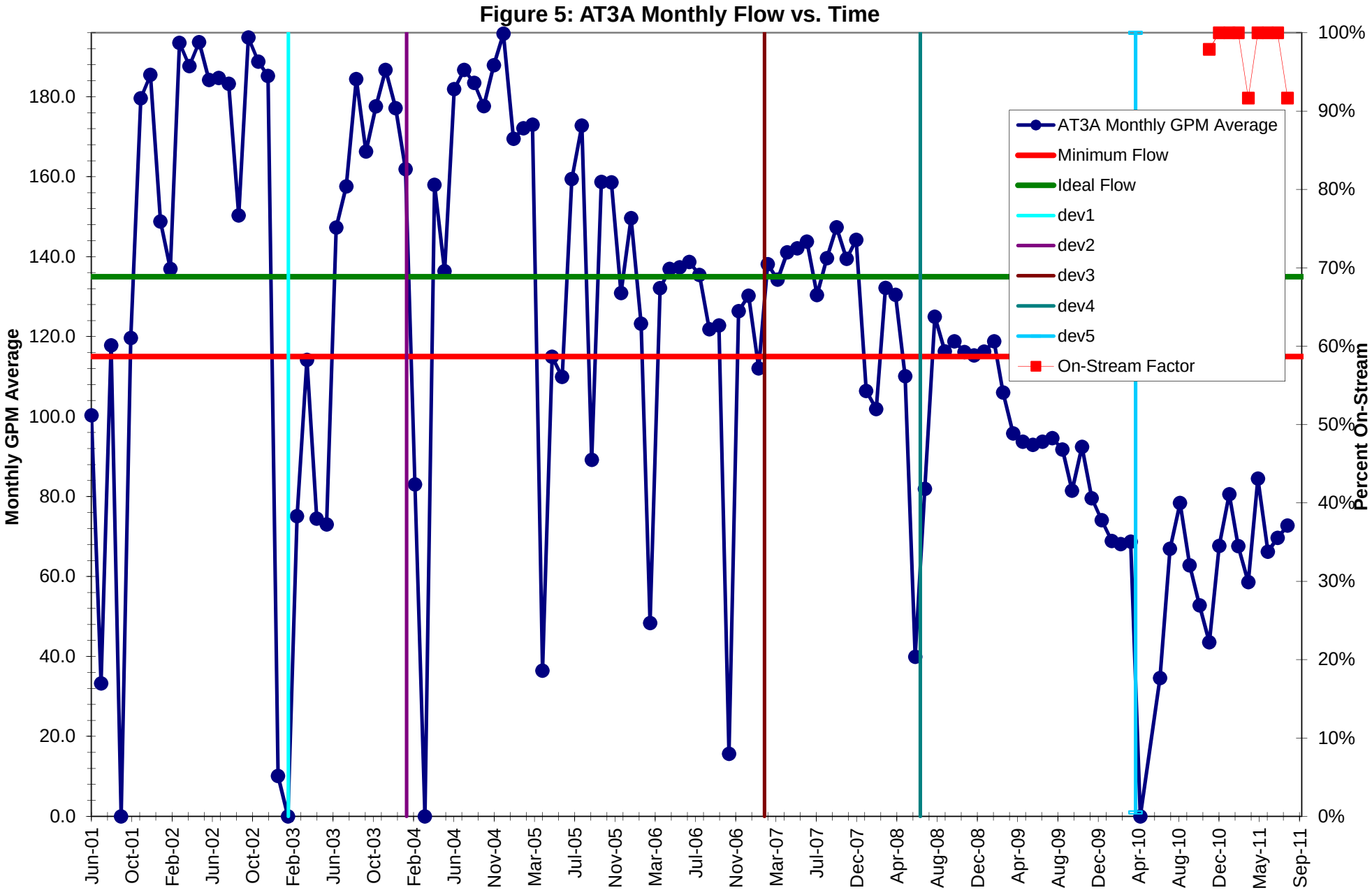
Docs 58644

Figure 3



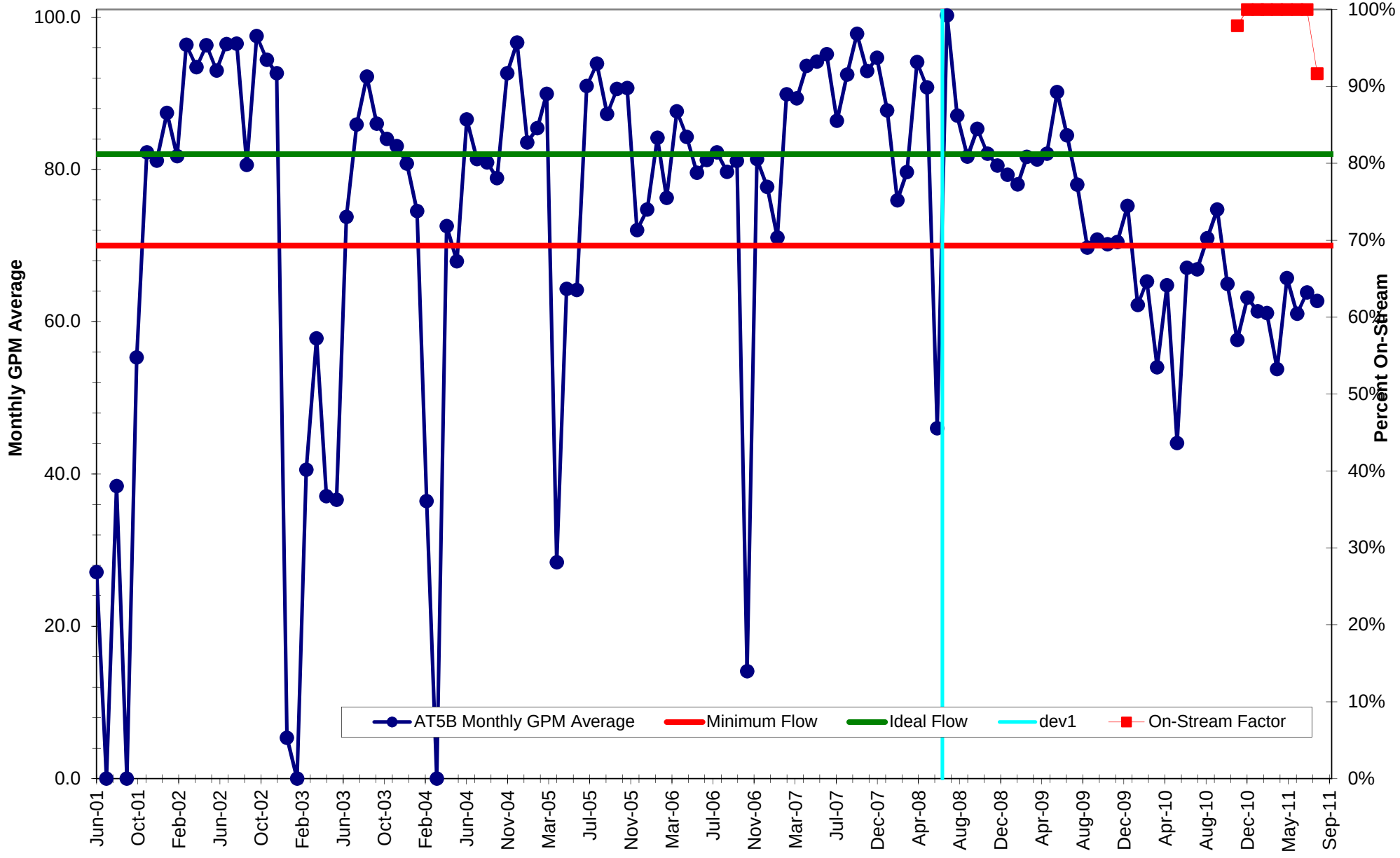
Docs 49267

Figure 4

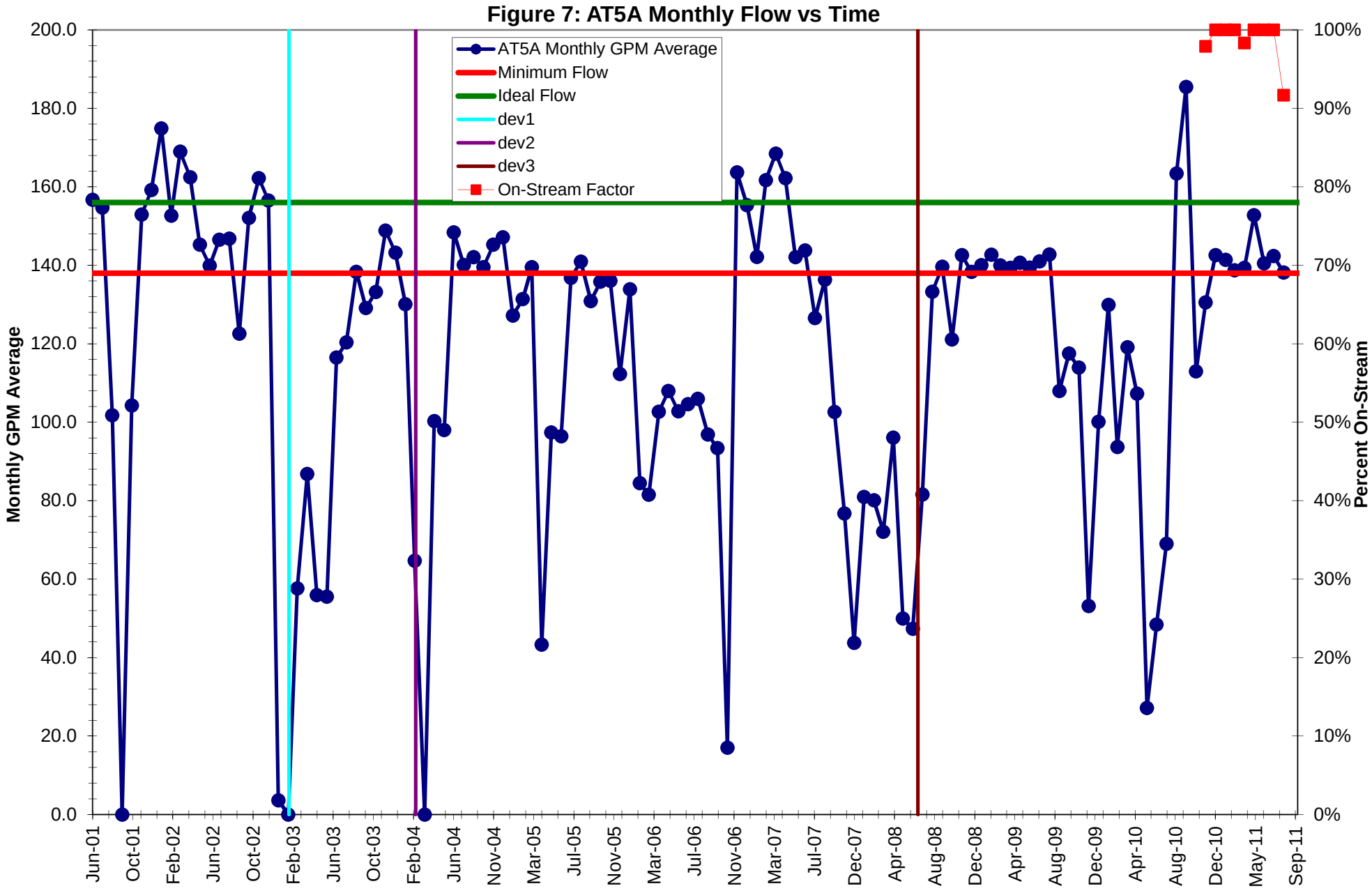


* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.

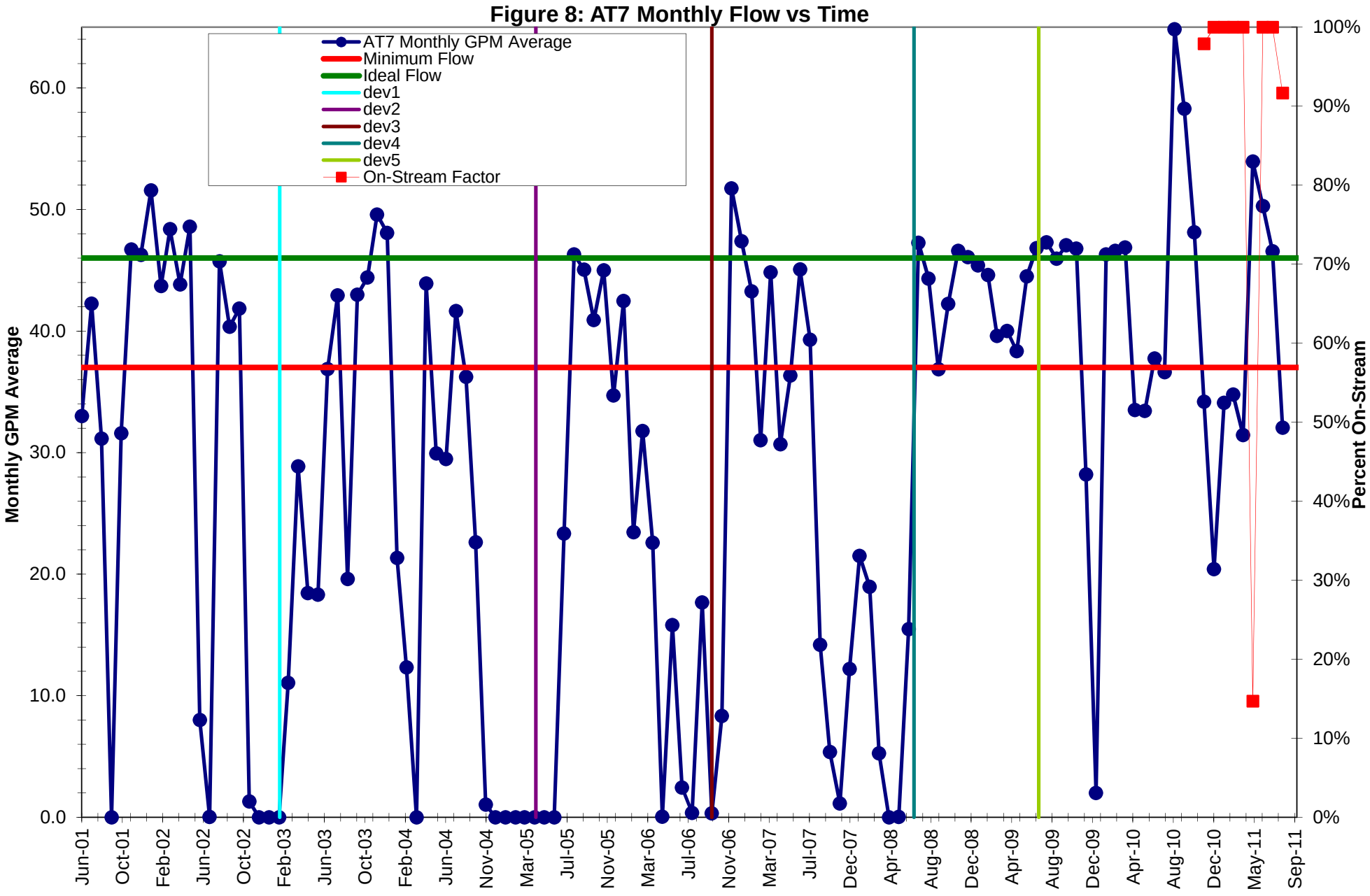
Figure 6: AT5B Monthly Flow vs Time



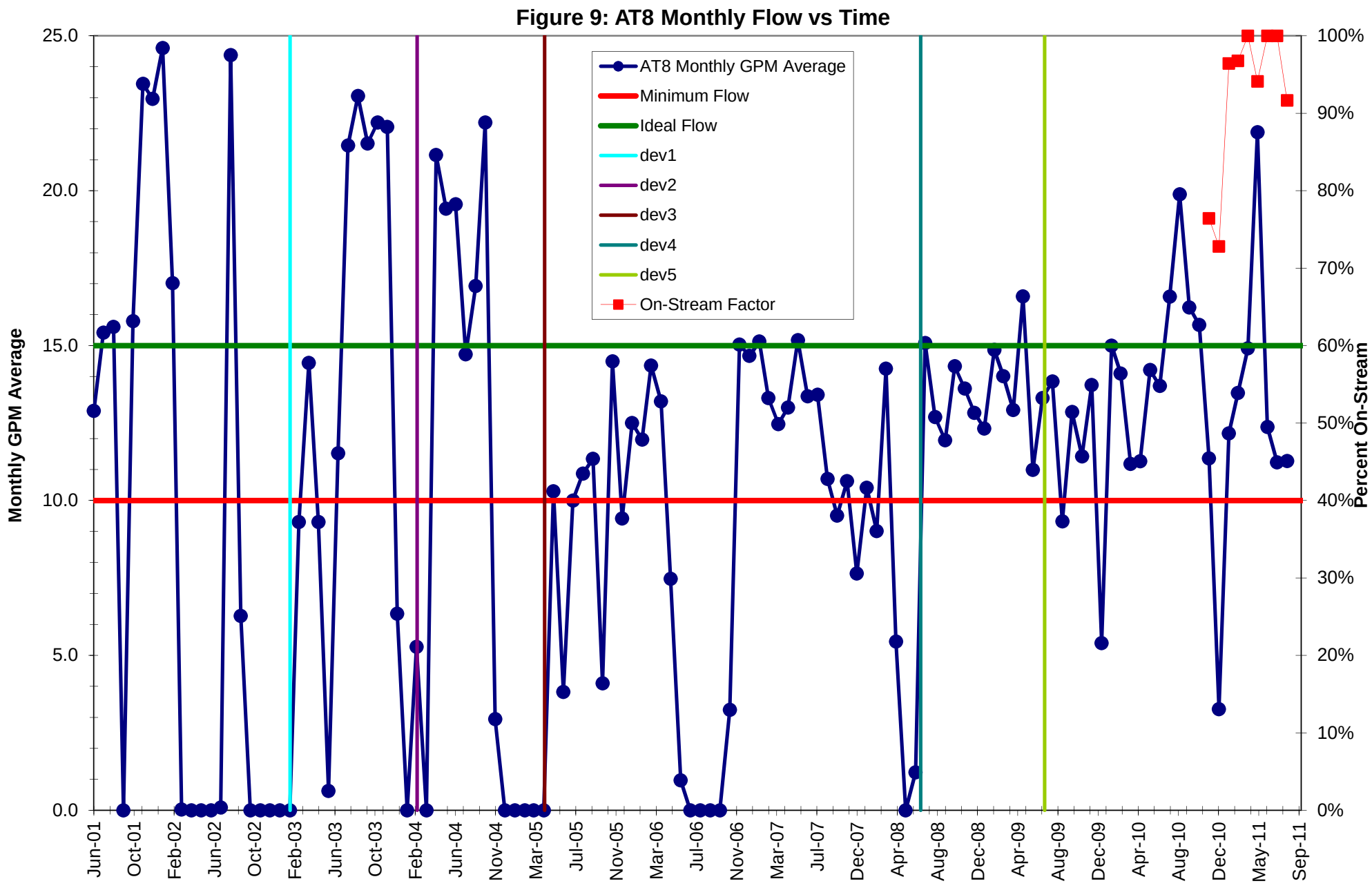
* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.



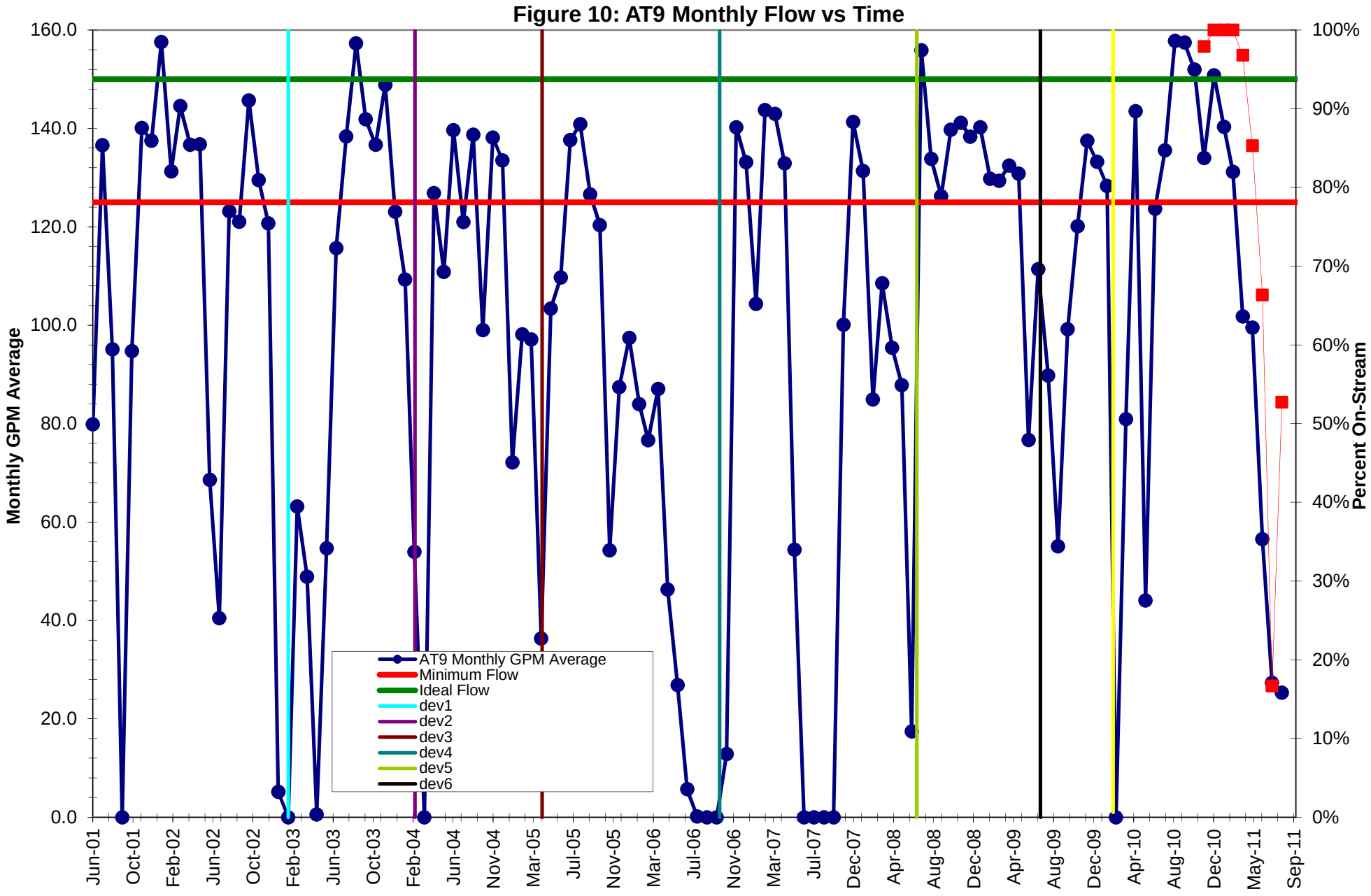
* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.



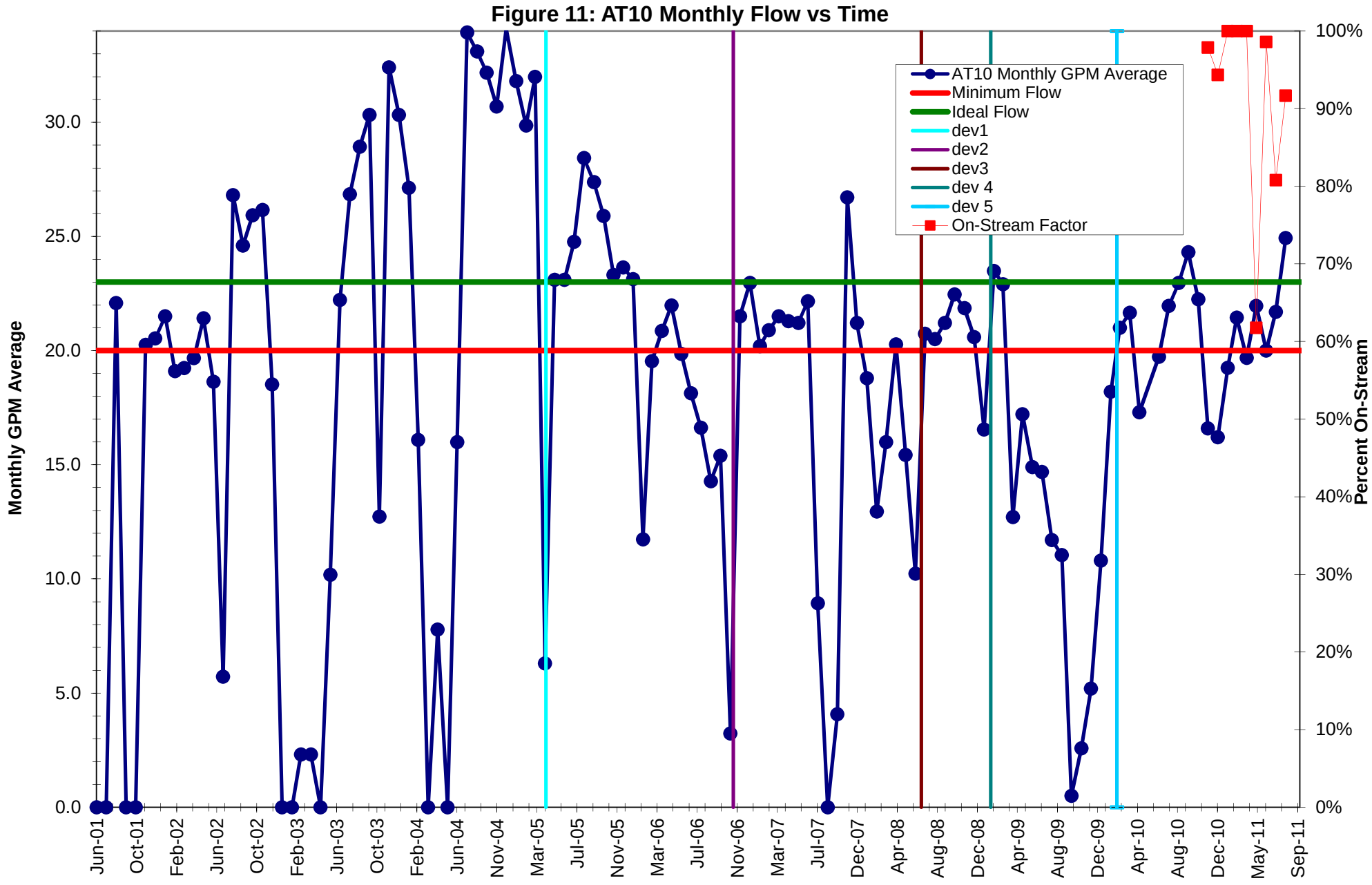
* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.



* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.



* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.



* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.

Monthly Project Status Report September 2011
Facility Maintenance
Naval Industrial Reserve Ordnance Plant - Fridley, Minnesota
Prepared by Bay West, Inc.

EMAC Contract No. N40083-06-D-4015, Task Order #0005

SYSTEM OVERVIEW

- The GWTF was in operation for 120 hours during the month of September 2011.
- The on-stream factor for September was 100%. The on-stream factor is the actual operation time divided by the available operation time.
- The system processed an estimated 4,522,000 gallons of groundwater in September, for a total of 3,011,687,000 gallons to date.
- Electrical use was approximately 7,098 kilowatt-hours (kWh) for September 2011.
- Approximately 11,767 pounds of trichloroethylene (TCE) have been removed from the aquifer since groundwater treatment system start-up in 1999. Approximately 37,416 pounds of TCE have been removed from the aquifer since groundwater extraction activities began in 1992.

SCHEDULED MAINTENANCE

- Visually inspected flow meters and level probes for material buildup and proper operation.
- Tested the four safety showers/eyewash stations to assure adequate performance.
- Lubricated blower motors, influent pumps, and effluent pumps.
- Collected extraction well water levels on a weekly basis.
- Measured pump P-101A bearing temperature. All values were within normal operation range.
- Replaced original carbon steel groundwater extraction lines in Building 52/53 with PVC pipe. Installed two new groundwater extraction lines in Building 52/53 to accommodate new extraction wells AT-11 and AT-12.
- Installed switches on the extraction well flow meters to allow each flow meter to be initialized independently of the other flow meters.
- Acid cleaned AT-5A and AT-5B groundwater extraction lines by recirculating a phosphoric acid solution to dissolve the pipe scale.
- Chemical cleaning of the groundwater extraction line between AT-3A and building 52/53 will be performed at the time AT-3A is ready to be taken off-line and the extraction line extended from AT-3A to AT-13.
- Upgrading programmable logic controller (PLC) and supervisory control and data acquisition (SCADA) system with current generation equipment is in progress. Field implementation will be performed in October.
- AT-9 extraction well equipment maintenance.
- ASU maintenance and acid cleaning.

- AT-7 extraction well equipment maintenance.
- ASU feed pumps P101A/B replacement check valves have been ordered and will be installed immediately upon receipt.

PROBLEMS AND SOLUTIONS

- Bay West visually inspected the individual feed lines to the four ASUs and the ASU effluent manifold. Pipe scale/fouling, similar to that found in both the groundwater extraction lines and the main ASU feed line between Building 52/53 and the GWTF, was present in the individual ASU feed lines. Little to no pipe scale or fouling was present in the effluent manifold. The feed line fouling is suspected to cause low signal strength for ASU flow meter transducers, which results in the flow meters faulting out. Bay West will continue to monitor GWTF performance and develop a plan replace the feed pipe or remove the pipe scale, as appropriate.
- Leaks were observed in the ASU-201, ASU202, and ASU-203 sumps during the acid cleaning event. Leaks are suspected to occur at or near the welds.
- The ASU 202 sump was replaced with the sump from the spare parts inventory. Upon placement of the new sump on the ASU 202 platform, it was determined that some of the sump pipe/flanges did not line up with the corresponding pipe/flanges on the original sump. As a result, several process pipes could not be connected to the new sump. Bay West contacted Carbonair, the ASU manufacturer and arranged for an on-site inspection. After completing their inspection, Carbonair agreed to make the necessary repairs/modifications to ensure proper alignment between sump ports and process pipe. Modifications are scheduled to be completed in October, at which time the sump will be returned to NIROP and installed. Carbonair will also inspect the original ASU-202 sump and assess whether there are any potentially viable repair options.

Well Performance Summary

Well	Average Monthly Flow Rate (GPM) (Available)	Average Monthly Flow Rate (GPM) (Operational)	Ideal Flow Rate (GPM)	% of Ideal Flow (Available)	% of Ideal Flow (Operational)	Minimum Flow Rate (GPM)	Available Hours of Operation	Operating Hours	On-Stream Factor (Available)
AT-3A	63.1	63.1	135	46.74%	46.74%	115	120	120	100.00%
AT-5A	131.9	131.9	156	84.55%	84.55%	138	120	120	100.00%
AT-5B	62.4	62.4	82	76.10%	76.10%	70	120	120	100.00%
AT-7	21.7	21.7	46	47.17%	47.17%	37	120	120	100.00%
AT-8	10.9	10.9	15	72.67%	72.67%	10	120	120	100.00%
AT-9	136.2	136.2	150	90.80%	90.80%	125	120	120	100.00%
AT-10	24.5	24.5	23	106.52%	106.52%	20	120	120	100.00%

TABLES

1. Groundwater Treatment Facility Operations
2. Electrical Meter Readings

FIGURES

1. Monthly GWTF On Stream Factor
2. GWTF Total Treated Flow
3. Total Discharge
4. Gallons Treated vs. Time
5. AT-3A Monthly Flow vs. Time
6. AT-5A Monthly Flow vs. Time
7. AT-5B Monthly Flow vs. Time
8. AT-7 Monthly Flow vs. Time
9. AT-8 Monthly Flow vs. Time
10. AT-9 Monthly Flow vs. Time
11. AT-10 Monthly Flow vs. Time

Tables

NIROP FRIDLEY
Groundwater Treatment Facility (GWTF)

	OPERATIONS (hrs)			WATER DISCHARGED (thousands of gallons)					WATER TREATED (thousands of gallons)	
Month	Available	Operating	On-stream factor	to Storm	to Sanitary	Untreated to Sanitary	Total to Sanitary	% Storm	Monthly	Cumulative
Nov-98	480.0	480.0	100.0%	0	17,524	0	17,524	0%	17,524	17,524
Dec-98	718.0	628.0	87.5%	16,078	7,087	0	7,087	69%	23,165	40,689
Jan-99	744.0	743.0	99.9%	25,571	0	0	0	100%	25,571	66,260
Feb-99	672.0	672.0	100.0%	23,938	0	0	0	100%	23,938	90,198
Mar-99	744.0	744.0	100.0%	27,394	0	0	0	100%	27,394	117,592
Apr-99	720.0	720.0	100.0%	25,254	0	0	0	100%	25,254	142,846
May-99	744.0	744.0	100.0%	23,291	0	0	0	100%	23,291	166,137
Jun-99	720.0	713.0	99.0%	25,823	0	0	0	100%	25,823	191,960
Jul-99	744.0	744.0	100.0%	22,266	0	0	0	100%	22,266	214,226
Aug-99	684.0	684.0	100.0%	21,634	0	0	0	100%	21,634	235,860
Sep-99	720.0	720.0	100.0%	18,205	0	0	0	100%	18,205	254,065
Oct-99	744.0	744.0	100.0%	23,029	0	0	0	100%	23,029	277,094
Nov-99	720.0	720.0	100.0%	22,783	0	0	0	100%	22,783	299,877
Dec-99	535.0	535.0	100.0%	12,818	0	0	0	100%	12,818	312,695
Jan-00	356.0	356.0	100.0%	10,400	0	0	0	100%	10,400	323,095
Feb-00	695.0	694.0	99.9%	16,944	0	0	0	100%	16,944	340,039
Mar-00	744.0	743.5	99.9%	27,131	0	0	0	100%	27,131	367,170
Apr-00	720.0	720.0	100.0%	25,899	0	0	0	100%	25,899	393,069
May-00	744.0	744.0	100.0%	27,458	0	0	0	100%	27,458	420,527
Jun-00	718.9	718.9	100.0%	25,136	0	0	0	100%	25,136	445,663
Jul-00	744.0	744.0	100.0%	25,637	0	0	0	100%	25,637	471,300
Aug-00	744.0	744.0	100.0%	24,341	0	0	0	100%	24,341	495,641
Sep-00	655.5	655.5	100.0%	22,559	0	0	0	100%	22,559	518,200
Oct-00	744.0	744.0	100.0%	25,955	0	0	0	100%	25,955	544,155
Nov-00	720.0	718.0	99.7%	25,759	0	0	0	100%	25,759	569,914
Dec-00	744.0	743.5	99.9%	27,404	0	0	0	100%	27,404	597,318
Jan-01	744.0	744.0	100.0%	24,666	0	0	0	100%	24,666	621,984
Feb-01	672.0	671.0	99.9%	23,956	0	0	0	100%	23,956	645,940
Mar-01	744.0	737.0	99.1%	24,694	0	0	0	100%	24,694	670,634
Apr-01	720.0	719.5	99.9%	24,964	0	0	0	100%	24,964	695,598
May-01	604.3	602.3	99.7%	13,656	0	0	0	100%	13,656	709,254
Jun-01	709.5	708.3	99.8%	20,000	0	0	0	100%	20,000	729,254
Jul-01	730.0	730.0	100.0%	18,077	0	0	0	100%	18,077	747,331
Aug-01	491.0	491.0	100.0%	17,921	0	0	0	100%	17,921	765,252
Sep-01	0.0	0.0	100.0%	0	0	0	0	100%	0	765,252
Oct-01	736.0	472.5	64.2%	21,376	0	0	0	100%	21,376	786,628
Nov-01	720.0	720.0	100.0%	30,205	0	0	0	100%	30,205	816,833
Dec-01	744.0	744.0	100.0%	28,114	0	0	0	100%	28,114	844,947
Jan-02	742.0	737.0	99.3%	30,483	0	0	0	100%	30,483	875,430
Feb-02	672.0	672.0	100.0%	25,538	0	0	0	100%	25,538	900,968
Mar-02	744.0	744.0	100.0%	29,957	0	0	0	100%	29,957	930,925
Apr-02	744.0	743.8	100.0%	28,569	0	0	0	100%	28,569	959,494
May-02	744.0	741.0	99.6%	28,656	0	0	0	100%	28,656	988,150
Jun-02	720.0	720.0	100.0%	22,131	0	0	0	100%	22,131	1,010,281
Jul-02	744.0	744.0	100.0%	21,367	0	0	0	100%	21,367	1,031,648
Aug-02	744.0	744.0	100.0%	28,328	0	0	0	100%	28,328	1,059,976
Sep-02	630.3	630.3	100.0%	20,861	0	0	0	100%	20,861	1,080,837
Oct-02	744.0	744.0	100.0%	21,417	0	0	0	100%	21,417	1,102,254
Nov-02	720.0	720.0	100.0%	25,003	0	0	0	100%	25,003	1,127,257
Dec-02	744.0	742.0	99.7%	25,327	0	0	0	100%	25,327	1,152,584
Jan-03	744.0	55.0	7.4%	1,048	0	0	0	100%	1,048	1,153,632
Feb-03	672.0	0.0	0.0%	0	0	0	0	100%	0	1,153,632
Mar-03	744.0	309.0	41.5%	13,387	0	0	0	100%	13,387	1,167,019
Apr-03	526.5	425.5	80.8%	16,584	0	0	0	100%	16,584	1,183,603
May-03	744.0	298.5	40.1%	7,448	0	0	0	100%	7,448	1,191,051
Jun-03	720.0	253.0	35.1%	10,775	0	0	0	100%	10,775	1,201,826
Jul-03	734.0	576.3	78.5%	22,629	0	0	0	100%	22,629	1,224,455

NIROP FRIDLEY
Groundwater Treatment Facility (GWTF)

	OPERATIONS (hrs)			WATER DISCHARGED (thousands of gallons)					WATER TREATED (thousands of gallons)	
Month	Available	Operating	On-stream factor	to Storm	to Sanitary	Untreated to Sanitary	Total to Sanitary	% Storm	Monthly	Cumulative
Aug-03	732.5	639.8	87.3%	25,591	46	0	46	99.8%	25,637	1,250,092
Sep-03	720.0	719.0	99.9%	23,028	4,532	0	4,532	83.6%	27,560	1,277,652
Oct-03	681.7	648.5	95.1%	25,389	0	0	0	100%	25,389	1,303,041
Nov-03	720.0	694.0	96.4%	22,882	0	0	0	100%	22,882	1,325,923
Dec-03	743.0	740.5	99.7%	31,010	0	0	0	100%	31,010	1,356,933
Jan-04	744.0	727.0	97.7%	25,456	0	0	0	100%	25,456	1,382,389
Feb-04	689.7	689.7	100.0%	23,771	0	0	0	100%	23,771	1,406,160
Mar-04	506.5	353.5	69.8%	12,928	0	0	0	100%	12,928	1,419,088
Apr-04	720.0	2.0	0.3%	60	0	0	0	100%	60	1,419,148
May-04	744.0	635.0	85.3%	24,104	0	0	0	100%	24,104	1,443,252
Jun-04	613.5	613.5	100.0%	20,988	0	0	0	100%	20,988	1,464,240
Jul-04	735.5	732.8	99.6%	26,846	0	0	0	100%	26,846	1,491,086
Aug-04	741.0	741.0	100.0%	26,760	0	0	0	100%	26,760	1,517,846
Sep-04	718.0	717.0	99.9%	27,276	0	0	0	100%	27,276	1,545,122
Oct-04	676.8	676.8	100.0%	24,709	0	0	0	100%	24,709	1,569,831
Nov-04	720.0	720.0	100.0%	25,859	0	0	0	100%	25,859	1,595,690
Dec-04	744.0	744.0	100.0%	26,229	0	0	0	100%	26,229	1,621,919
Jan-05	744.0	667.0	89.7%	20,915	0	0	0	100%	20,915	1,642,834
Feb-05	672.0	672.0	100.0%	22,329	0	0	0	100%	22,329	1,665,163
Mar-05	744.0	716.8	96.3%	22,960	0	0	0	100%	22,960	1,688,123
Apr-05	384.0	322.0	83.9%	6,515	0	0	0	100%	6,515	1,694,638
May-05	576.0	503.5	87.4%	17,859	0	0	0	100%	17,859	1,712,497
Jun-05	720.0	714.5	99.2%	24,450	0	0	0	100%	24,450	1,736,947
Jul-05	744.0	712.5	95.8%	25,301	0	0	0	100%	25,301	1,762,248
Aug-05	744.0	744.0	100.0%	25,916	0	0	0	100%	25,916	1,788,164
Sep-05	720.0	715.3	99.4%	20,837	0	0	0	100%	20,837	1,809,001
Oct-05	744.0	744.0	100.0%	24,028	0	0	0	100%	24,028	1,833,029
Nov-05	720.0	720.0	100.0%	20,553	0	0	0	100%	20,553	1,853,582
Dec-05	686.0	622.3	90.7%	19,037	0	0	0	100%	19,037	1,872,619
Jan-06	744.0	744.0	100.0%	21,858	0	0	0	100%	21,858	1,894,477
Feb-06	672.0	672.0	100.0%	19,590	0	0	0	100%	19,590	1,914,067
Mar-06	710.5	710.0	99.9%	13,935	0	0	0	100%	13,935	1,928,002
Apr-06	654.0	654.0	100.0%	18,391	0	0	0	100%	18,391	1,946,393
May-06	744.0	744.0	100.0%	18,116	0	0	0	100%	18,116	1,964,509
Jun-06	720.0	719.5	99.9%	16,616	0	0	0	100%	16,616	1,981,125
Jul-06	716.0	716.0	100.0%	14,232	0	0	0	100%	14,232	1,995,357
Aug-06	744.0	742.0	99.7%	13,291	0	0	0	100%	13,291	2,008,648
Sep-06	720.0	720.0	100.0%	14,269	0	0	0	100%	14,269	2,022,917
Oct-06	731.0	730.5	99.9%	13,496	0	0	0	100%	13,496	2,036,413
Nov-06	396.0	110.0	27.8%	3,073	0	0	0	100%	3,073	2,039,486
Dec-06	744.0	743.5	99.9%	25,287	0	0	0	100%	25,287	2,064,773
Jan-07	720.0	719.5	99.9%	25,118	0	0	0	100%	25,118	2,089,891
Feb-07	671.8	659.8	98.2%	21,953	0	0	0	100%	21,953	2,111,844
Mar-07	744.0	734.0	98.7%	25,860	0	0	0	100%	25,860	2,137,703
Apr-07	720.0	720.0	100.0%	24,240	0	0	0	100%	24,240	2,161,943
May-07	744.0	744.0	100.0%	19,004	0	0	0	100%	19,004	2,180,947
Jun-07	719.5	719.5	100.0%	20,659	0	0	0	100%	20,659	2,201,606
Jul-07	744.0	744.0	100.0%	19,389	0	0	0	100%	19,389	2,220,995
Aug-07	696.0	696.0	100.0%	16,354	0	0	0	100%	16,354	2,237,349
Sep-07	720.0	720.0	100.0%	15,320	0	0	0	100%	15,320	2,252,669
Oct-07	744.0	744.0	100.0%	14,409	0	0	0	100%	14,409	2,267,078
Nov-07	720.0	720.0	100.0%	17,388	0	0	0	100%	17,388	2,284,466
Dec-07	744.0	739.0	99.3%	17,002	0	0	0	100%	17,002	2,301,468
Jan-08	742.0	684.0	92.2%	17,115	0	0	0	100%	17,115	2,318,583
Feb-08	695.3	611.8	88.0%	13,581	0	0	0	100%	13,581	2,332,164
Mar-08	744.0	742.0	99.7%	13,277	0	0	0	100%	13,277	2,345,441
Apr-08	720.0	717.0	99.6%	12,518	0	0	0	100%	12,518	2,357,959

NIROP FRIDLEY
Groundwater Treatment Facility (GWTF)

	OPERATIONS (hrs)			WATER DISCHARGED (thousands of gallons)					WATER TREATED (thousands of gallons)	
Month	Available	Operating	On-stream factor	to Storm	to Sanitary	Untreated to Sanitary	Total to Sanitary	% Storm	Monthly	Cumulative
May-08	718.0	692.0	96.4%	15,430	0	0	0	100%	15,430	2,373,389
Jun-08	333.5	333.5	100.0%	6,523	0	0	0	100%	6,523	2,379,912
Jul-08	719.0	719.0	100.0%	15,762	0	0	0	100%	15,762	2,395,674
Aug-08	729.3	729.3	100.0%	20,183	0	0	0	100%	20,183	2,415,857
Sep-08	720.0	720.0	100.0%	19,632	0	0	0	100%	19,632	2,435,489
Oct-08	737.0	737.0	100.0%	19,818	0	0	0	100%	19,818	2,455,307
Nov-08	662.0	662.0	100.0%	18,191	0	0	0	100%	18,191	2,473,498
Dec-08	744.0	744.0	100.0%	20,926	0	0	0	100%	20,926	2,494,424
Jan-09	741.0	741.0	100.0%	20,301	44	0	44	99.8%	20,301	2,514,725
Feb-09	672.0	672.0	100.0%	17,546	0	0	0	100%	17,546	2,532,271
Mar-09	711.9	711.2	99.9%	17,766	0	0	0	100%	17,766	2,550,037
Apr-09	709.0	705.6	99.5%	16,434	0	0	0	100%	16,434	2,566,471
May-09	739.8	739.8	100.0%	23,663	0	0	0	100%	23,663	2,590,134
Jun-09	719.8	719.8	100.0%	21,234	0	0	0	100%	21,234	2,611,368
Jul-09	744.0	744.0	100.0%	21,846	0	0	0	100%	21,846	2,633,214
Aug-09	744.0	744.0	100.0%	20,933	0	0	0	100%	20,933	2,654,147
Sep-09	697.2	697.2	100.0%	16,585	0	0	0	100%	16,585	2,670,732
Oct-09	743.5	743.5	100.0%	18,919	0	0	0	100%	18,919	2,689,651
Nov-09	720.0	720.0	100.0%	19,768	0	0	0	100%	19,768	2,709,419
Dec-09	744.0	744.0	100.0%	18,162	0	0	0	100%	18,162	2,727,581
Jan-10	740.3	740.3	100.0%	19,542	0	0	0	100%	19,542	2,747,123
Feb-10	672.0	658.0	97.9%	14,805	0	0	0	100%	14,805	2,761,928
Mar-10	744.0	744.0	100.0%	14,596	0	0	0	100%	14,596	2,776,524
Apr-10	720.0	720.0	100.0%	15,598	0	0	0	100%	15,598	2,792,122
May-10	744.0	742.5	99.8%	18,090	0	0	0	100%	18,090	2,810,212
Jun-10	720.0	697.0	96.8%	10,717	0	0	0	100%	10,717	2,820,929
Jul-10	744.0	722.2	97.1%	12,254	0	0	0	100%	12,254	2,833,183
Aug-10	694.5	404.0	58.2%	3,789	0	0	0	100%	3,789	2,836,972
Sep-10	712.0	700.0	98.3%	12,552	0	0	0	100%	12,552	2,849,524
Oct-10	690.6	690.6	100.0%	12,926	0	0	0	100%	12,926	2,862,450
Nov-10	719.5	716.0	99.5%	15,466	0	0	0	100%	15,466	2,877,916
Dec-10	737.0	721.5	97.9%	15,855	0	0	0	100%	15,855	2,893,771
Jan-11	744.0	744.0	100.0%	17,199	0	0	0	100%	17,199	2,910,970
Feb-11	667.0	665.0	99.7%	16,551	0	0	0	100%	16,551	2,927,521
Mar-11	744.0	744.0	100.0%	17,827	0	0	0	100%	17,827	2,945,348
Apr-11	711.3	708.3	99.6%	14,063	0	0	0	100%	14,063	2,959,411
May-11	384.0	384.0	100.0%	9,042	0	0	0	100%	9,042	2,968,453
Jun-11	719.5	716.8	99.6%	13,216	0	0	0	100%	13,216	2,981,669
Jul-11	744.0	744.0	100.0%	13,119	0	0	0	100%	13,119	2,994,788
Aug-11	744.0	682.0	91.7%	12,377	0	0	0	100%	12,377	3,007,165
Sep-11	120.0	120.0	100.0%	4,522	0	0	0	100%	4,522	3,011,687

Note: Available hours are 24 hours per day, less scheduled down time and power outages.

* Monthly flow incorrectly reported for Jul-04 through Dec-04 - corrected January 2005 using the corrected estimate for AT-10 monthly flow.

NIROP FRIDLEY
Ground Water Treatment Facility (GWTF)

Date	Electrical Meter Readings (kW·h)					Monthy Usage
	MCC #1	MCC #2	Wells 2, 3A, 5A, 5B	Well 1A	Well 4	
2/1/2000	57,305	620,300				38,046
3/1/2000	59,597	656,054				36,133
3/9/2000	60,348	667,580	18,260	3,284	2,312	65,029
4/3/2000	63,080	704,113	38698	6043	4879	74,067
5/1/2000	66,067	746,920	60,940	9,238	7,715	81,545
6/1/2000	68,972	793,455	86495	12728	10775	66,128
7/1/2000	71,562	840,441	110,243	16,307		
7/6/2000					13701	13,701
8/1/2000	73,881	881,304	130,691	19,559	16,686	72,336
9/1/2000	76,316	924,799	152695	22976	17671	67,877
10/2/2000	78,561	964,802	172,714	26,079	20,178	
11/1/2000	80,952	7,402	195655	29408	22454	89,927
12/4/2000	83,561	56,966	225,897	33,105	26,269	81,706
1/2/2001	85,851	101,872	254750	36270	28761	72,935
2/1/2001	88,106	143,918	282,532	37,122	28,761	83,944
3/1/2001	90,240	190,303	314000	41079	28761	66,663
4/3/2001	92,677	230,575	335,297	43,736	28,761	65,567
5/1/2001	94,779	269,617	357244	46212	28761	
6/5/2001	97,821	304,746	*	*	*	38,108
7/2/2001	102,175	338,500	*	*	*	44,802
8/2/2001	106,592	378,885	*	*	*	37,804
9/12/2001	111,321	411,960	*	*	*	13,663
10/18/2001	112,956	423,988	*	*	*	29,471
11/1/2001	117,010	449,405	*	*	*	68,542
12/4/2001	126,457	508,500	*	*	*	60,932
1/2/2002	134,884	561,005	*	*	*	56,801
2/1/2002	142,948	609,742	*	*	*	55,300
3/1/2002	150,583	657,407	*	*	*	64,231
4/1/2002	159,332	712,889	*	*	*	59,291
5/1/2002	167,808	763,704	*	*	*	63,448
6/3/2002	176,272	818,688	*	*	*	43,974
7/1/2002	182,246	856,688	*	*	*	45,609
8/1/2002	188,404	896,139	*	*	*	60,074
9/3/2002	196,255	948,362	*	*	*	44,067
10/1/2002	202,142	986,542	*	*	*	60,158
11/1/2002	209,581	1,039,261	*	*	*	60,538
12/2/2002	216,632	1,092,748	*	*	*	
1/1/2003	223,233	0	*	*	*	
2/1/2003	224,233	1,146,792	*	*	*	7,827
3/19/2003	227,523	1,151,329	*	*	*	22,891
4/3/2003	230,589	1,171,154	*	*	*	32,058
5/1/2003	235,275	1,198,526	*	*	*	18,373
6/4/2003	237,675	1,214,499	*	*	*	20,360
7/1/2003	240,411	1,232,123	*	*	*	42,930
8/1/2003	246,351	1,269,113	*	*	*	49,909
9/2/2003	253,306	1,312,067	*	*	*	52,166
10/1/2003	260,662	1,356,877	*	*	*	58,962
11/3/2003	268,788	1,407,713	*	*	*	57,373
12/1/2003	276,592	1,457,282	*	*	*	67,477
1/2/2004	285,175	1,516,176	*	*	*	67,278
2/2/2004	293,559	1,575,070	*	*	*	60,542
3/1/2004	301,245	1,627,926	*	*	*	31,187
4/1/2004	305,283	1,655,075	*	*	*	1,037
5/3/2004	305,515	1,655,880	*	*	*	51,931
6/1/2004	312,129	1,701,197	*	*	*	47,852
7/1/2004	318,012	1,743,166	*	*	*	60,764
8/3/2004	326,133	1,795,809	*	*	*	55,312

NIROP FRIDLEY
Ground Water Treatment Facility (GWTF)

Date	Electrical Meter Readings (kW·h)					Monthy Usage
	MCC #1	MCC #2	Wells 2, 3A, 5A, 5B	Well 1A	Well 4	
9/1/2004	335,039	1,842,215	*	*	*	52,307
10/1/2004	340,422	1,889,139	*	*	*	53,798
11/2/2004	347,296	1,936,063	*	*	*	64,045
12/1/2004	354,514	1,992,890	*	*	*	64,887
1/5/2005	362,574	49,717	*	*	*	48,313
2/1/2005	368,114	92,490	*	*	*	56,517
3/1/2005	374,689	142,432	*	*	*	35,669
4/1/2005	381,858	170,932	*	*	*	32,506
5/11/2005	384,388	200,908	*	*	*	37,857
6/2/2005	389,382	233,771	*	*	*	53,851
7/1/2005	395,908	281,096	*	*	*	55,772
8/1/2005	402,786	329,990	*	*	*	58,530
9/1/2005	410,054	381,252	*	*	*	59,756
10/4/2005	416,742	434,320	*	*	*	54,337
11/1/2005	423,117	482,282	*	*	*	59,439
12/1/2005	429,602	535,236	*	*	*	58,139
1/3/2006	437,032	585,945	*	*	*	64,273
2/3/2006	444,929	642,321	*	*	*	59,745
3/3/2006	451,966	695,029	*	*	*	59,447
4/4/2006	458,470	747,972	*	*	*	52,154
5/2/2006	464,407	794,189	*	*	*	56,066
6/1/2006	470,107	844,555	*	*	*	67,078
7/7/2006	476,656	905,084	*	*	*	75,362
8/17/2006	483,201	973,901	*	*	*	28,651
9/1/2006	485,579	174	*	*	*	60,559
10/2/2006	490,846	55,466	*	*	*	64,783
11/16/2006	497,232	113,863	*	*	*	30,896
12/12/2006	501,656	140,335	*	*	*	41,005
1/2/2007	507,345	175,651	*	*	*	89,453
2/14/2007	519,226	253,223	*	*	*	60,625
3/15/2007	526,775	306,299	*	*	*	37,019
4/1/2007	531,435	338,658	*	*	*	59,380
5/1/2007	538,780	390,693	*	*	*	60,309
6/2/2007	546,435	443,347	*	*	*	57,976
7/2/2007	552,240	495,518	*	*	*	54,945
8/1/2007	558,047	544,656	*	*	*	56,900
9/4/2007	563,999	595,604	*	*	*	48,947
10/1/2007	568,907	639,643	*	*	*	55,912
11/1/2007	574,269	690,193	*	*	*	61,551
12/3/2007	580,906	745,107	*	*	*	58,075
1/2/2008	587,234	796,854	*	*	*	61,758
2/1/2008	593,878	851,968	*	*	*	56,961
3/6/2008	601,457	901,350	*	*	*	47,128
4/1/2008	607,103	942,832	*	*	*	51,563
5/2/2008	613,973	987,525	*	*	*	45,409
6/2/2008	619,382	27,525	*	*	*	23,755
7/1/2008	621,730	48,932	*	*	*	57,458
8/1/2008	627,904	100,216	*	*	*	59,836
9/2/2008	634,818	153,138	*	*	*	57,157
10/4/2008	641,270	203,843	*	*	*	61,110
11/3/2008	648,196	258,027	*	*	*	58,512
12/1/2008	655,158	309,577	*	*	*	71,027

NIROP FRIDLEY
Ground Water Treatment Facility (GWTF)

Date	Electrical Meter Readings (kW·h)					Monthy Usage
	MCC #1	MCC #2	Wells 2, 3A, 5A, 5B	Well 1A	Well 4	
1/2/2009	663,755	372,007	*	*	*	69,361
2/2/2009	672,125	432,998	*	*	*	62,234
3/2/2009	679,788	487,569	*	*	*	61,618
4/1/2009	687,315	541,660	*	*	*	63,015
5/1/2009	694,461	597,529	*	*	*	63,751
6/1/2009	701,440	654,301	*	*	*	60,286
7/1/2009	708,069	707,958	*	*	*	65,088
8/3/2009	715,267	765,848	*	*	*	57,140
9/1/2009	721,611	816,644	*	*	*	56,282
10/1/2009	727,548	866,989	*	*	*	65,845
11/2/2009	734,666	925,716	*	*	*	60,372
12/1/2009	741,891	978,863	*	*	*	77,030
1/1/2010	750,050	1,047,734	*	*	*	63,139
2/1/2010	757,037	1,103,886	*	*	*	61,079
3/1/2010	763,509	1,158,493	*	*	*	69,431
4/1/2010	769,960	1,221,473	*	*	*	59,638
5/3/2010	775,813	1,275,258	*	*	*	54,143
6/1/2010	780,680	1,324,534	*	*	*	51,279
7/1/2010	784,369	1,372,124	*	*	*	75,167
8/2/2010	789,289	1,442,371	*	*	*	8,482
9/1/2010	791,567	1,448,575	*	*	*	55,237
10/1/2010	796,016	1,499,363	*	*	*	61,303
11/1/2010	800,411	1,556,271	*	*	*	60,565
12/1/2010	806,672	1,610,575	*	*	*	68,226
1/3/2011	813,611	1,671,862	*	*	*	64,951
2/1/2011	820,001	1,730,423	*	*	*	58,883
3/1/2011	825,935	1,783,372	*	*	*	68,939
4/1/2011	832,880	1,845,366	*	*	*	58,997
5/9/2011	838,973	1,898,270	*	*	*	29,524
6/1/2011	841,656	1,925,111	*	*	*	52,109
7/1/2011	846,958	1,971,918	*	*	*	43,675
8/1/2011	851,869	2,010,682	*	*	*	38,885
9/1/2011	856,221	2,045,215	*	*	*	7,098

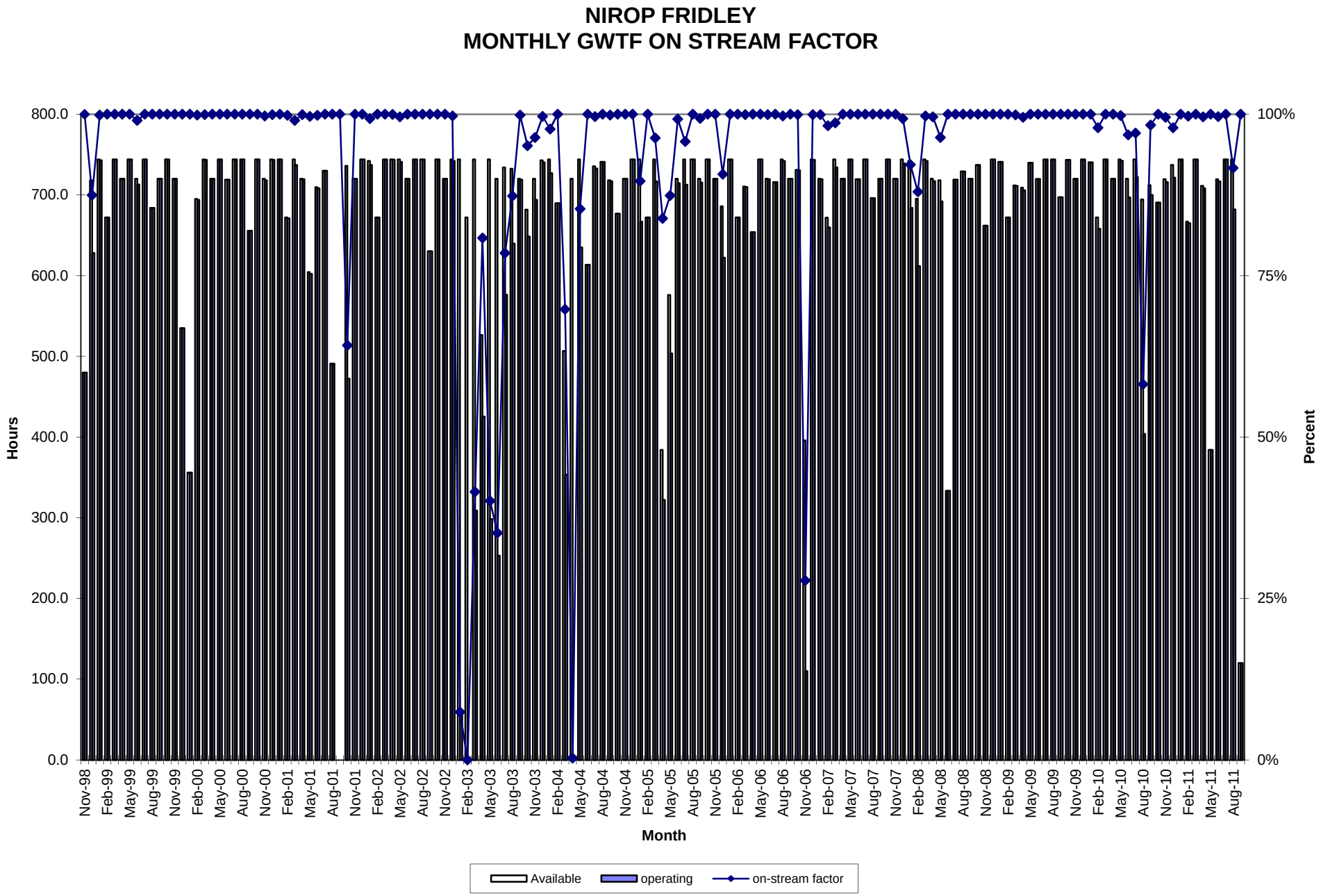
* Electrical metering for the extraction wells runs through MCC #1

- The electrical meter in the main treatment area was misread on 1/1/03, thus it was not reset. December electricity usage was estimated to be the same as November 2002.

^ The electrical meter in the main treatment area had reset after the scheduled power shut-down. October 2004 electricity usage for MCC#2 was estimated to be the same as September 2004.

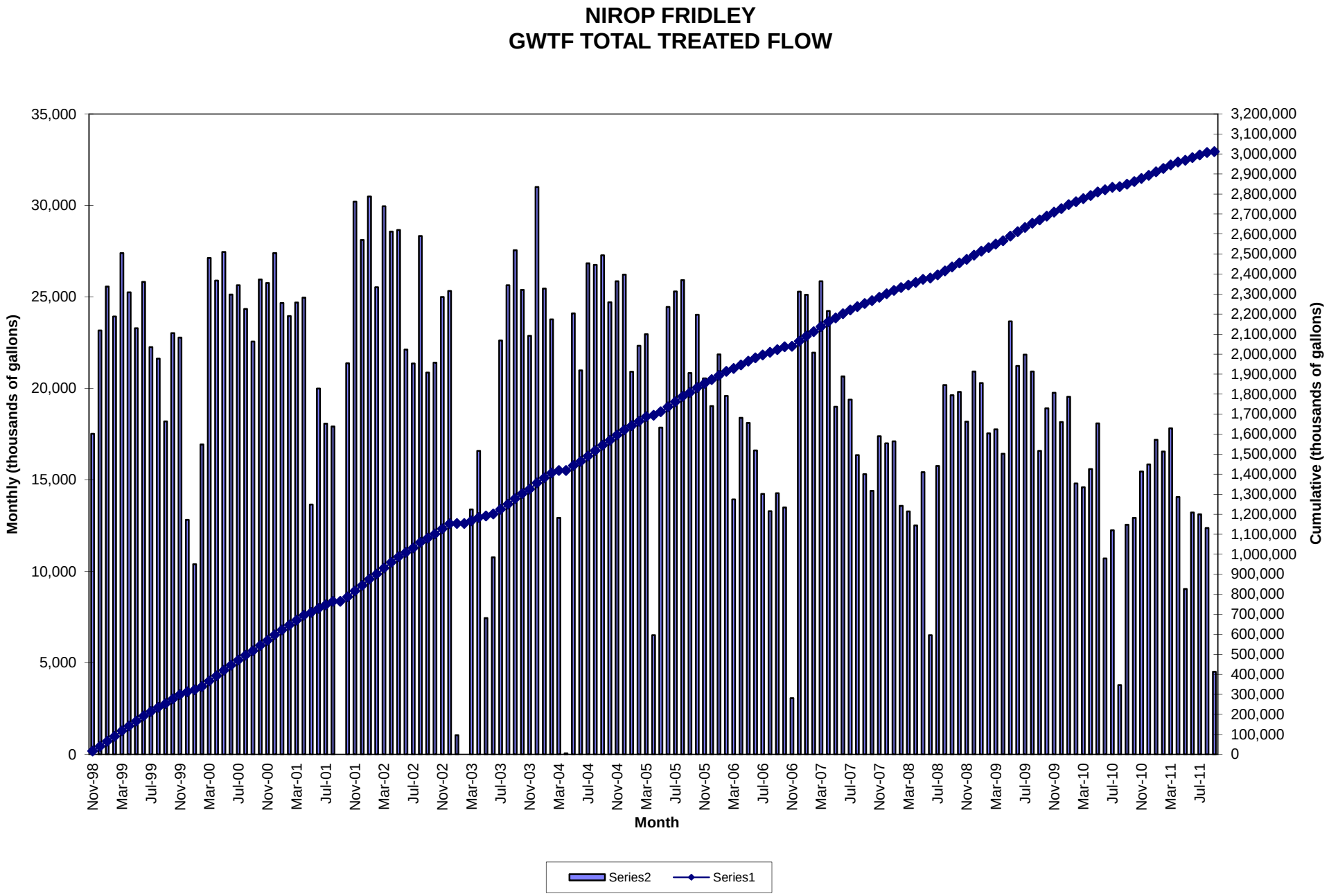
+ - electrical readings were not obtained on December 1, 2004, therefore electrical usage for November was estimated to be similar to October 2004.

Figures



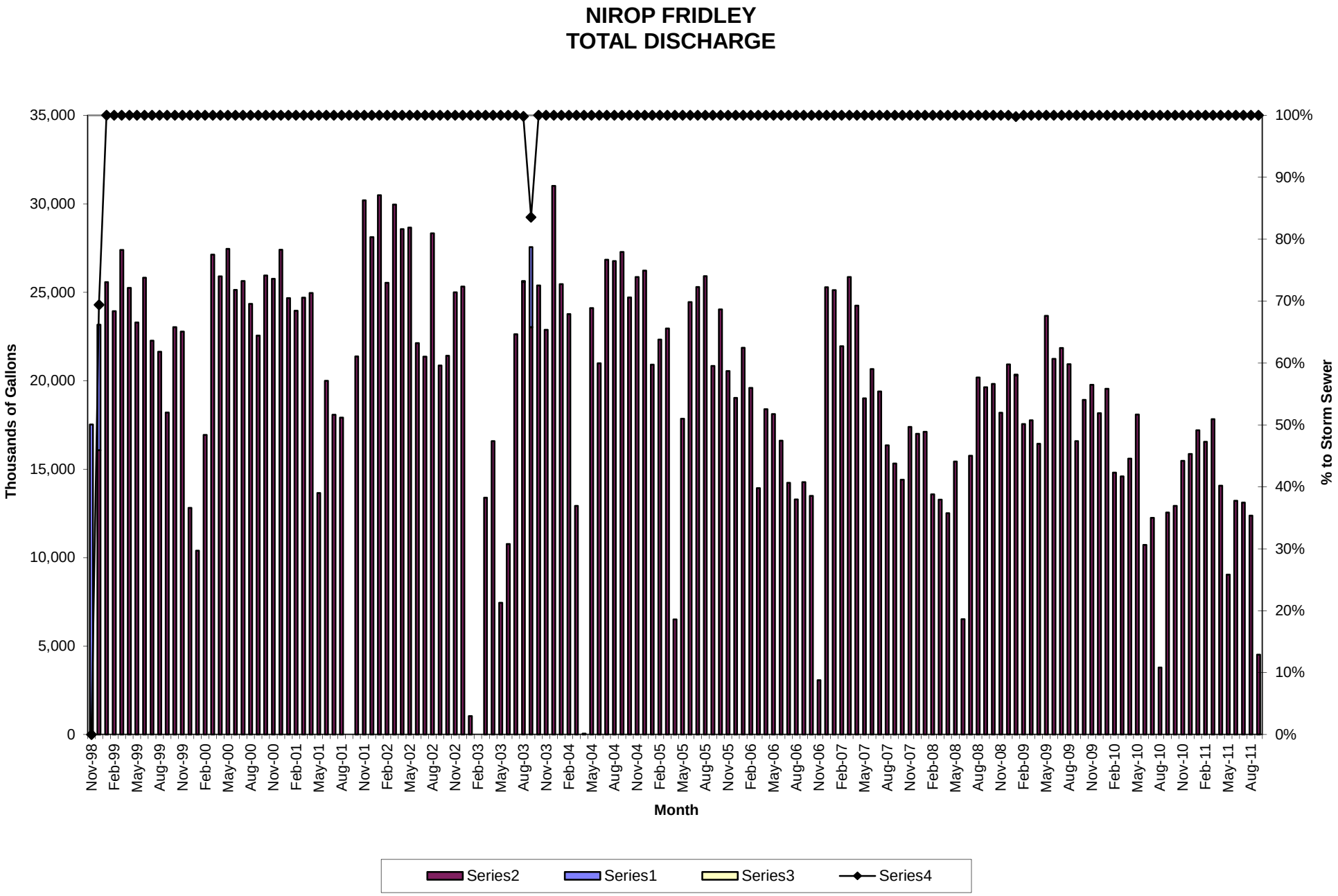
Docs 58644

Figure 1



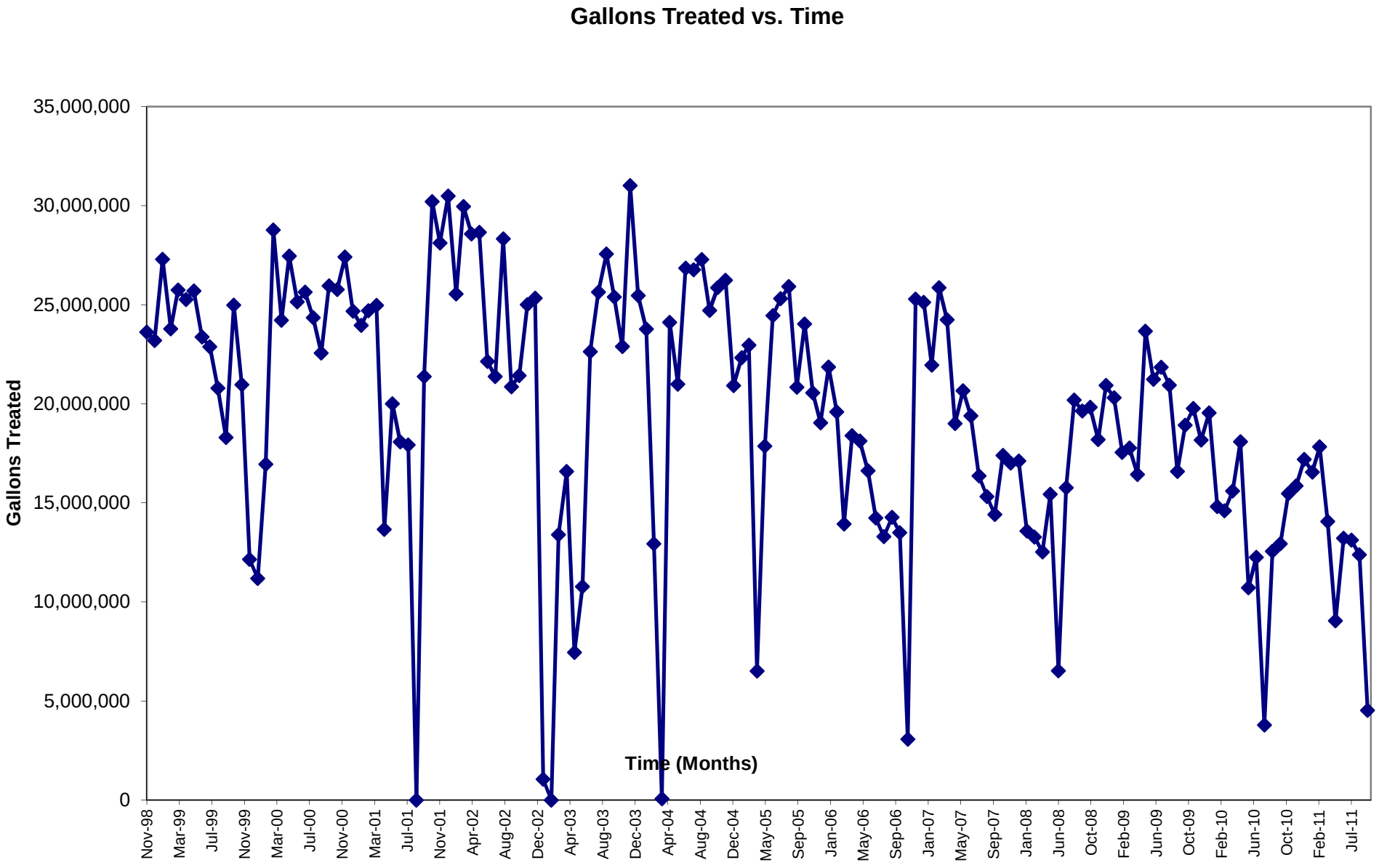
Docs 58644

Figure 2



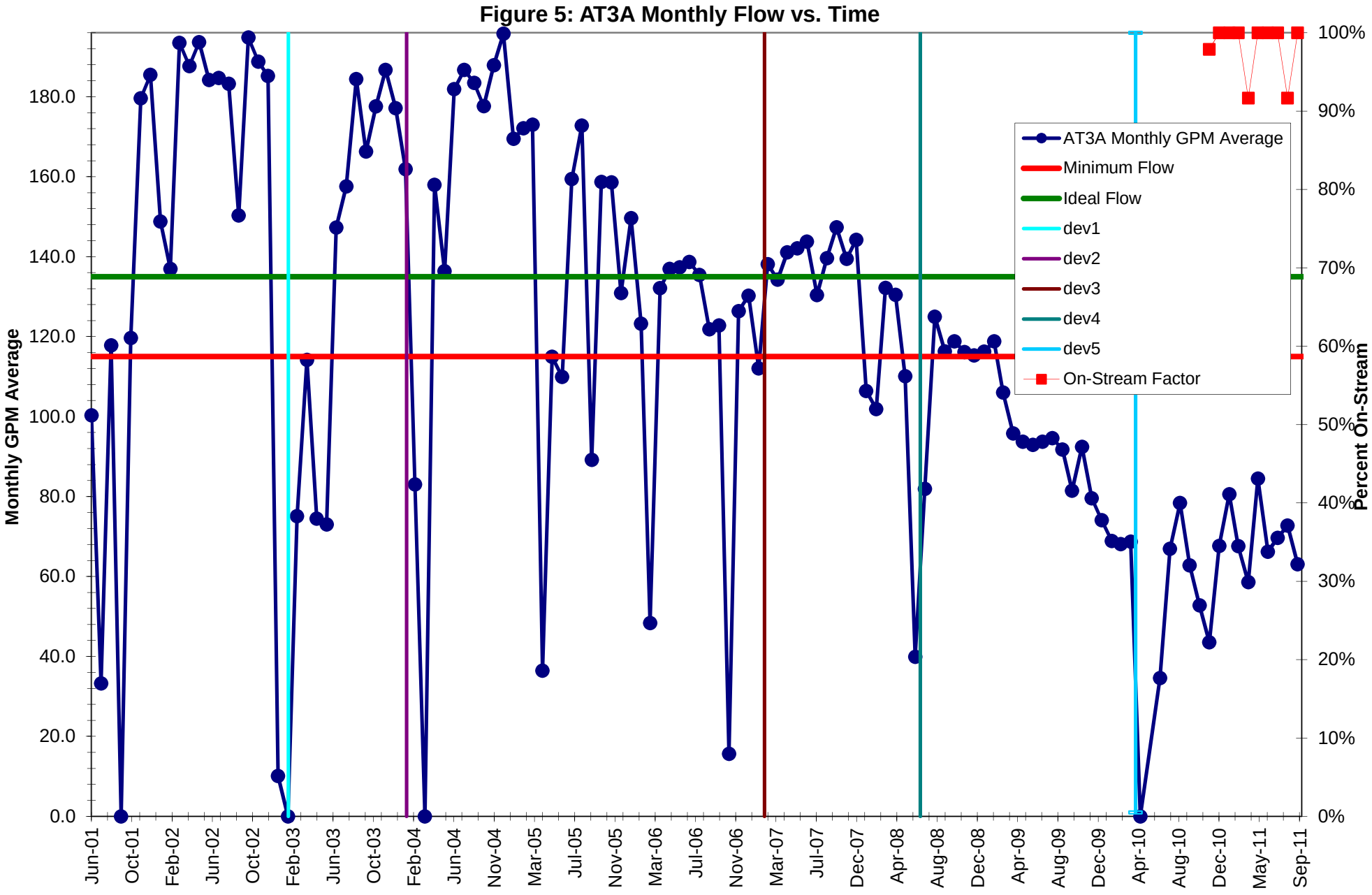
Docs 58644

Figure 3

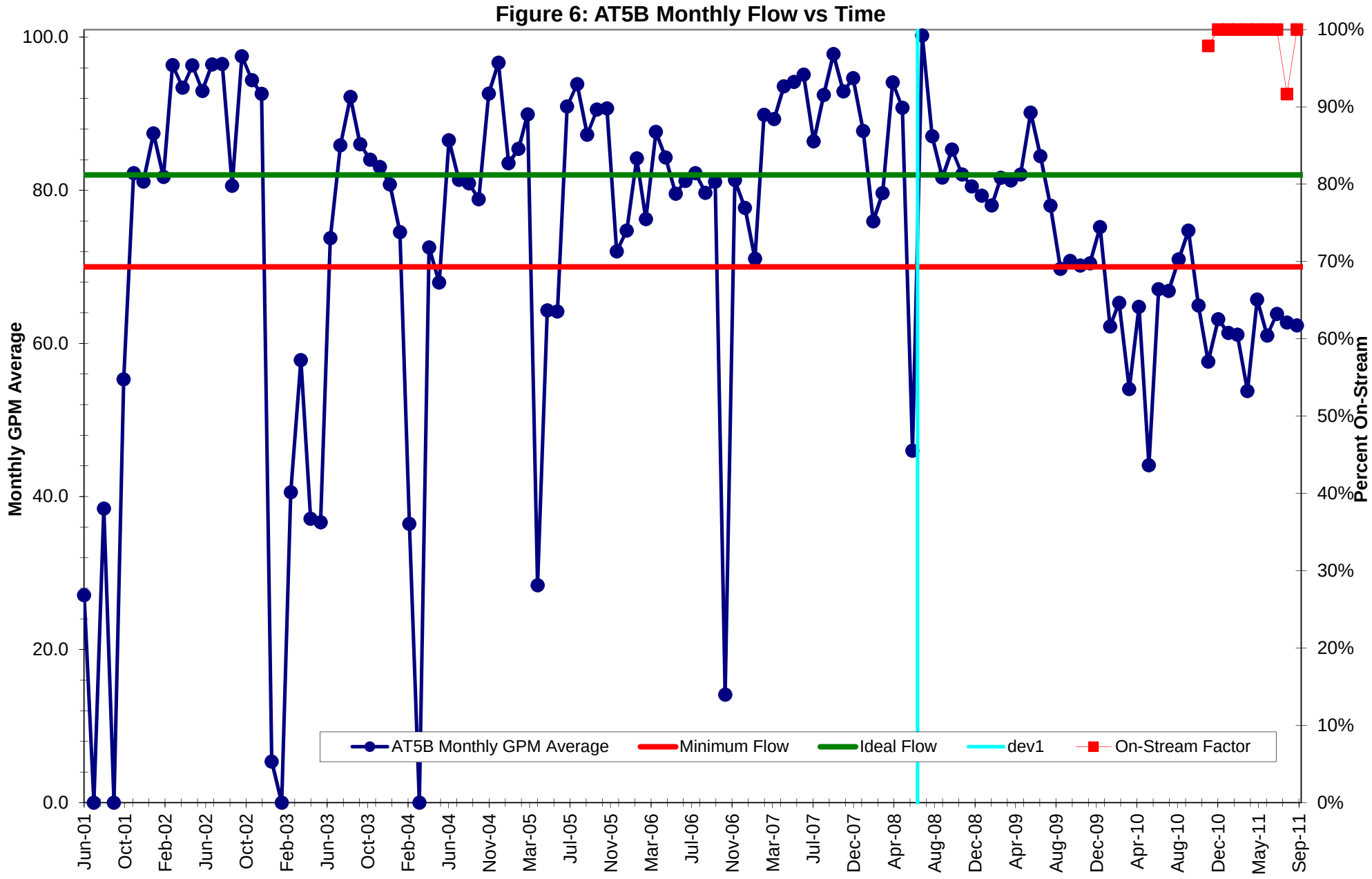


Docs 49267

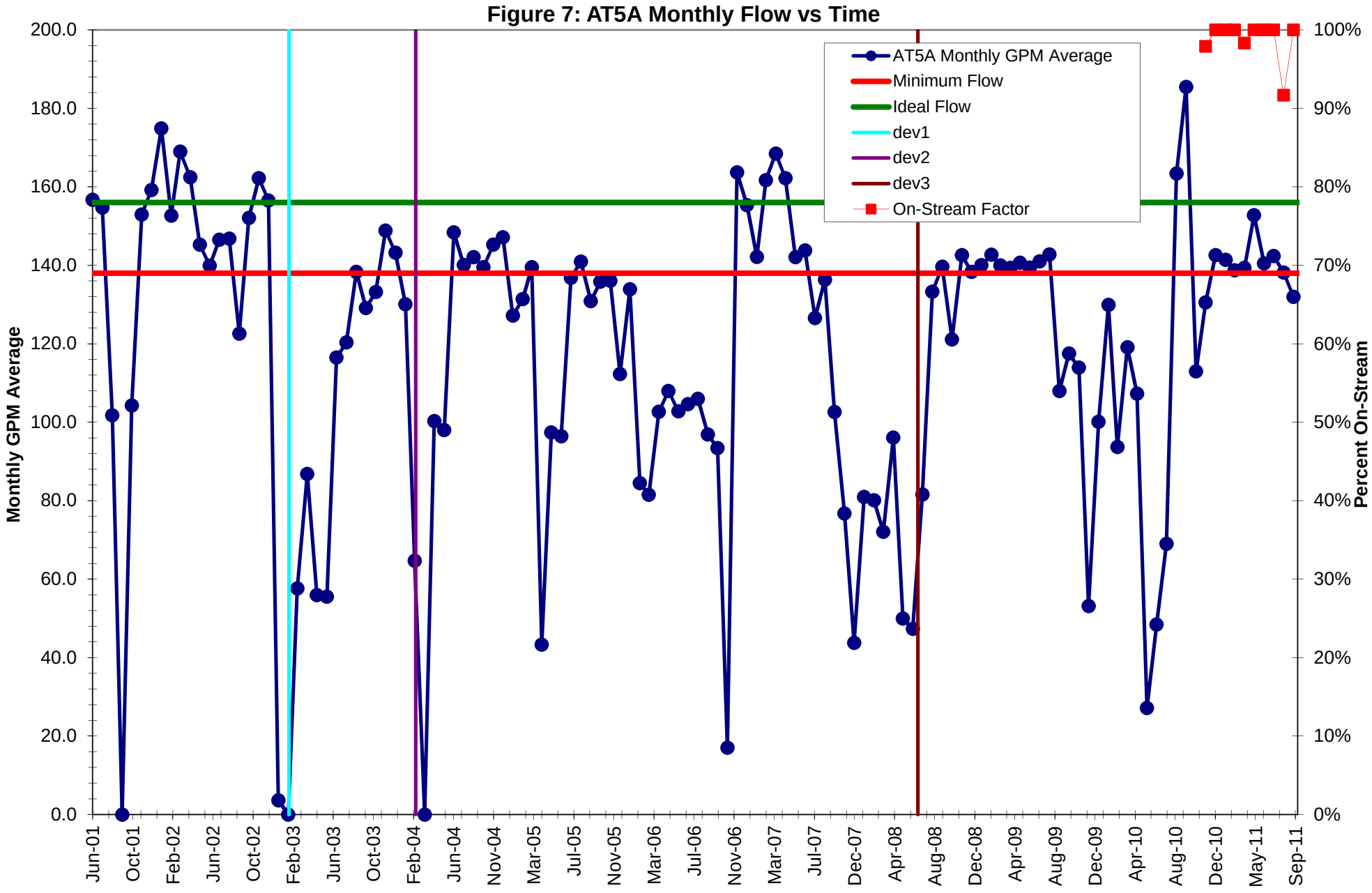
Figure 4



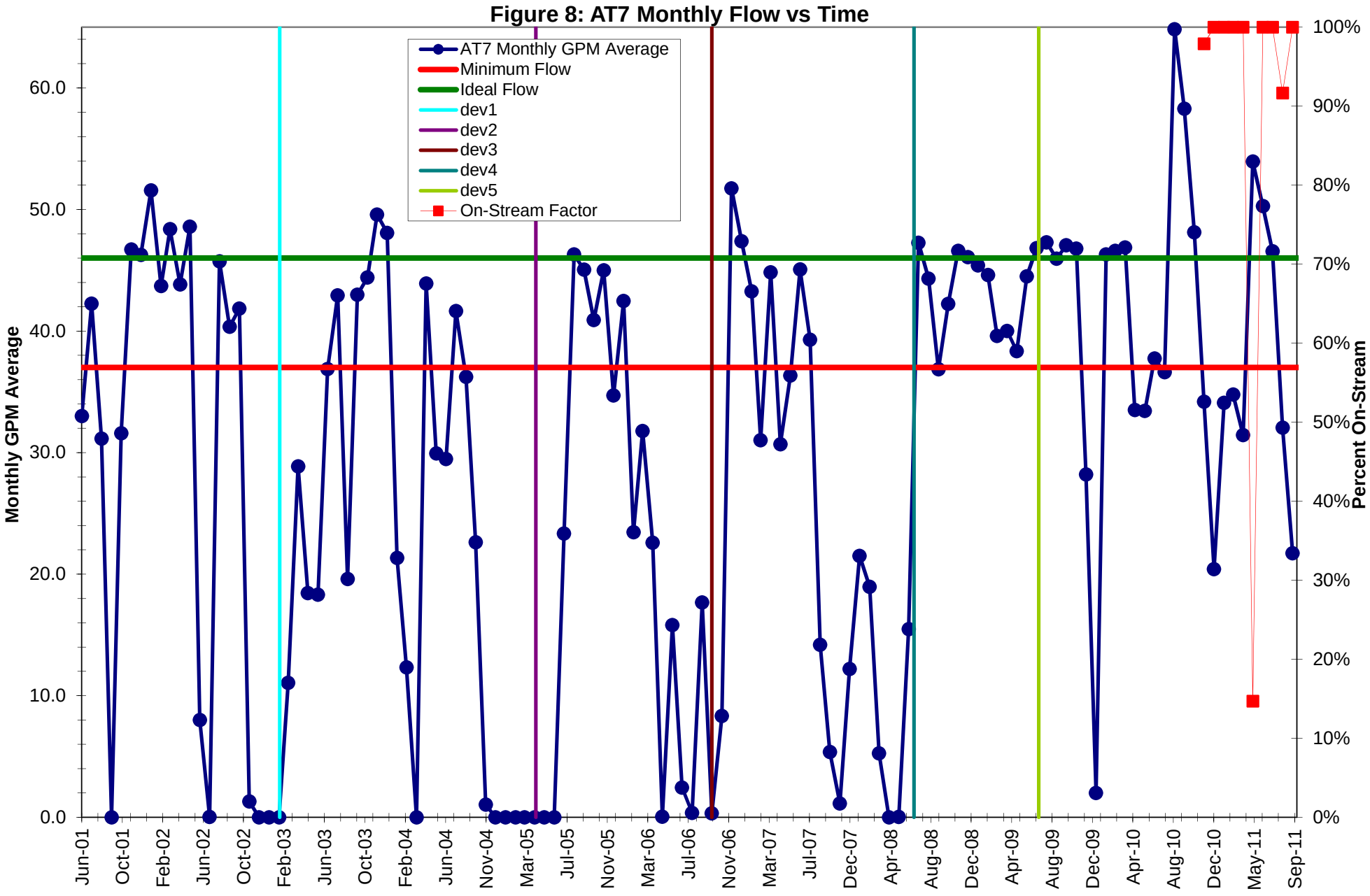
* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.



* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.

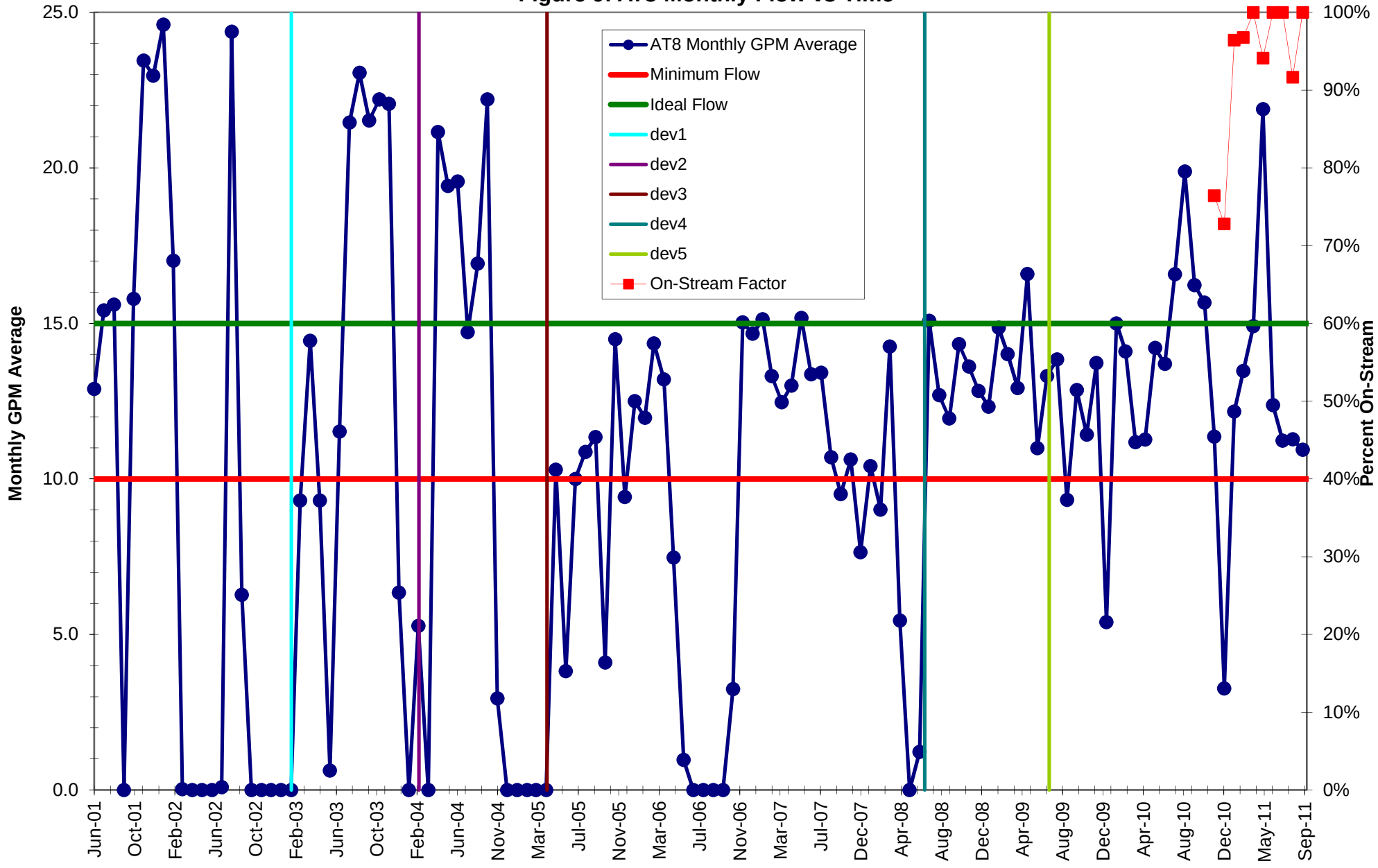


* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.

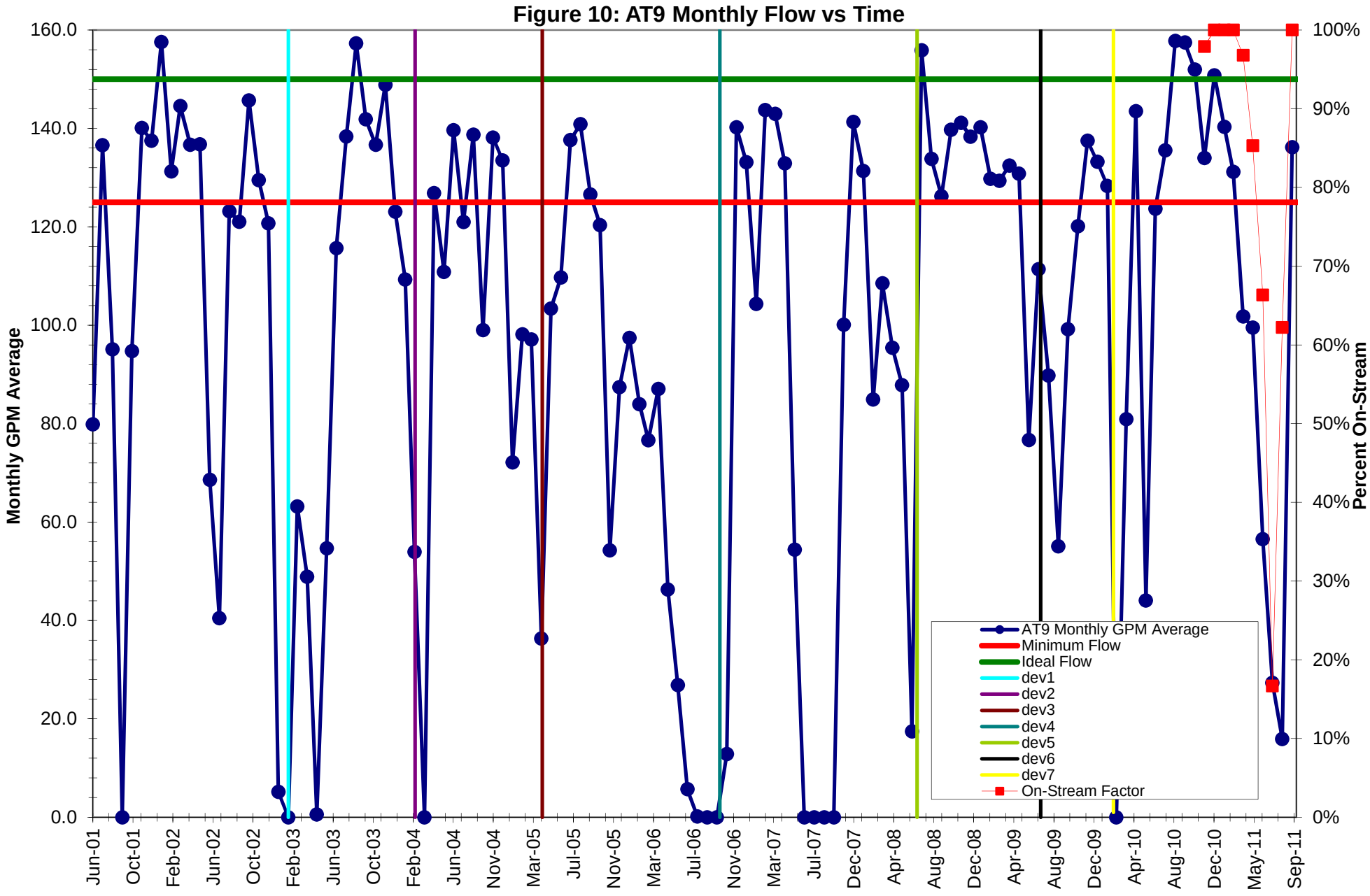


* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.

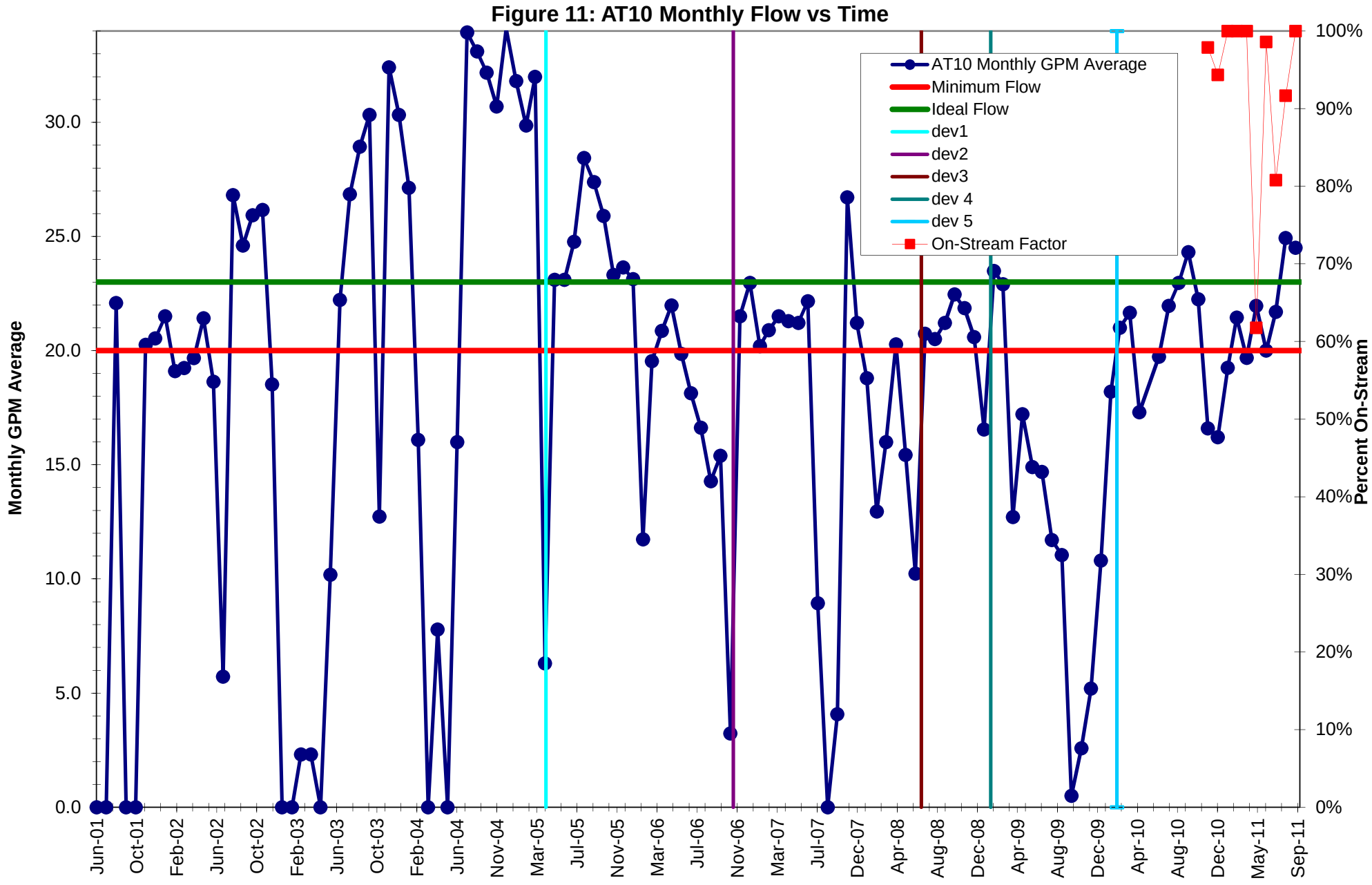
Figure 9: AT8 Monthly Flow vs Time



* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.



* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.



* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.

Monthly Project Status Report October 2011
Facility Maintenance
Naval Industrial Reserve Ordnance Plant - Fridley, Minnesota
Prepared by Bay West, Inc.

EMAC Contract No. N40083-06-D-4015, Task Order #0005

SYSTEM OVERVIEW

- The groundwater treatment facility (GWTF) was in operation for 170 hours during the month of October 2011. Refer to **Table 1, Figure 1, and Figure 2** for historical GWTF operation data.
- The on-stream factor for October was 48.7%. The on-stream factor is the actual operation time divided by the available operation time.
- The system processed an estimated 3,896,000 gallons of groundwater in October. Historical GWTF processed groundwater volumes are provided in **Table 1, Figure 3, and Figure 4**.
- Electrical use was approximately 18,094 kilowatt-hours (kWh) for October 2011. Historical GWTF electrical power usage is included in **Table 2.**
- The GWTF removed approximately 20 pounds of trichloroethylene (TCE) from the aquifer in October 2011. Refer to **Table 3 and Figure 5** for historical GWTF TCE mass removed.
- Treatment system air emissions calculations are performed on a quarterly basis. The calculated emission rates for all chemicals of concern were below the corresponding site-specific allowable emission rates (AERs). The emissions reporting form is included with this report (**Table 4**).

SCHEDULED MAINTENANCE

- Visually inspected flow meters and level probes for material buildup and proper operation.
- Tested the four safety showers/eyewash stations to assure adequate performance.
- Lubricated blower motors, influent pumps, and effluent pumps.
- Collected extraction well water levels on a weekly basis.
- Acid cleaned former extraction well AT-3A groundwater extraction line by recirculating a hydrochloric acid solution to dissolve pipe scale.
- Upgraded the programmable logic controller (PLC) and supervisory control and data acquisition (SCADA) system with current generation equipment.
- Replace AT-7 pipe spool piece, used for flow meter transducer placement.
- ASU maintenance: replaced individual tray gaskets and sump effluent flap valve assemblies on all four ASUs.
- ASU 202 spare sump modification and installation.
- AT-5A well drop pipe, pitless adaptor, and fittings inspection is scheduled for November 3, 2011.
- AT-7 extraction well flow rate troubleshoot and maintenance.

PROBLEMS AND SOLUTIONS

- The AT-5A extraction well flow rate for the month was less than 138 gpm, below the minimum flow rate. Bay West analyzed the pressure data between AT-5A wellhead and Building 52/53, the manufacturer's pump curve, and water levels. As a result of this analysis, it was determined that extraction pump was producing a groundwater flow rate less than predicted by the manufacturer's pump curve, based on the operating pressure. Possible causes include a leak at the pitless adaptor or a pipe connection inside the extraction well, and/or fouled or faulty extraction pump. Bay West has scheduled a licensed well maintenance contractor to inspect the extraction pump, pipe, and fittings inside extraction well AT-5A.
- The AT-5B extraction well flow rate for the month was less than 70 gpm, below the minimum flow rate. Bay West analyzed the pressure data between the AT-5B wellhead and Building 52/53, the manufacturer's pump curve, and water levels. As a result of this analysis, it was determined that extraction pump was producing a groundwater flow rate predicted by the manufacturer's pump curve, based on the operating pressure. The high pressure reading at the AT-5B wellhead and low pressure reading inside Building 52/53 suggest the phosphoric acid cleaning of the AT-5A and AT-5B extraction lines in September did not remove all obstructions in the groundwater extraction lines. Additional options for restoring capacity in the AT-5B extraction line will be evaluated.
- ASU 201, ASU 203, and ASU 204 were found to be below the normal capacity after startup of the groundwater treatment system. Bay West inspected the ASU sumps and determined that at least one flap valve assembly had failed in each ASU sump. Each ASU sump has four flap valve assemblies covering four effluent ports. A flap valve assembly consists of a rubber flap with an attached stainless steel ball float. The ball floats allow the flaps to rise (i.e., open) with the rising water level in the ASU sump, thereby increasing the effluent flow rate from the sump. Due to wear and tear, the at least one ball float ball became detached from the corresponding rubber flap in each sump. Bay West replaced all four flap valve assemblies in each sump and the capacity of each ASU returned to normal.
- The recorded AT-10 extraction well pumping rate was below the minimum flow, 20 gpm, for the month of October. Bay West determined there were errors in some of the programming parameters used to convert the transducer signal into a flow rate and calculate the total volume of groundwater pumped. Bay West re-programmed the flow meter and verified the flow meter was correctly interpreting the transducer signal by comparing the flow rate reported by the flow meter with manual volumetric flow rate measurements in the equalization tank. Manual flow rate measurements were made by timing the water level increase in the equalization tank, converting the water level increase into a volume, and dividing by the amount of time over which the volumetric measurement was made to calculate a flow rate.
- The AT-7 spool piece used to mount the internal ultrasonic flow meter transducers for measuring the groundwater extraction rate was found to be damaged (i.e., leaked) when the extraction line replacement project in Building 52/53 was completed and the extraction wells returned to operation. The spool piece was returned to the fabricator (Mid America Plastics) for repair. The repaired spool piece was re-installed after repairs were completed and AT-7 was restarted.
- Upon restarting AT-7, the recorded extraction well pumping rate was zero gpm, with the flow meter generating error readings. The flow meter defaults to 0 gpm when internal errors are present. Additional flow meter troubleshooting and repairs are planned for November 2011.

Well Performance Summary

Well	Average Monthly Flow Rate (GPM) (Available)	Average Monthly Flow Rate (GPM) (Operational)	Ideal Flow Rate (GPM)	% of Ideal Flow (Available)	% of Ideal Flow (Operational)	Minimum Flow Rate (GPM)	Available Hours of Operation	Operating Hours	On-Stream Factor (Available)
AT-3A	Well Taken Off-Line in Preparation for Extending AT-3A Extraction Line and Conduit to AT-13								
AT-5A	45.6	97.9	156	29.23%	62.76%	138	335.0	156.0	46.57%
AT-5B	14.8	34.5	82	18.05%	42.07%	70	314.0	135.0	42.99%
AT-7	0.0[1]	0.1[1]	46	0.00%	0.22%	37	199.0	20.0	10.05%
AT-8	4.3	10.1	15	28.67%	67.33%	10	312.0	133.0	42.63%
AT-9	72.2	154.5	150	48.13%	103.00%	125	336.0	157.0	46.73%
AT-10	6.5[1]	15.8[1]	23	28.26%	68.70%	20	349.0	157.0	44.99%

(1) Flow meter had erroneous readings for the portion of the month.

TABLES

1. Groundwater Treatment Facility Operations
2. Electrical Meter Readings
3. TCE Mass Removed by the GWTF
4. Air Emissions

FIGURES

1. Monthly GWTF On Stream Factor
2. GWTF Total Treated Flow
3. Total Discharge
4. Gallons Treated vs. Time
5. TCE Mass Removed
6. AT-5A Monthly Flow vs. Time
7. AT-5B Monthly Flow vs. Time
8. AT-7 Monthly Flow vs. Time
9. AT-8 Monthly Flow vs. Time
10. AT-9 Monthly Flow vs. Time
11. AT-10 Monthly Flow vs. Time
12. Cost Per Gallons Treated vs. Time
13. Cost per Pound Contaminant Mass Removed vs. Time
14. Cumulative Contaminant Mass Removed vs. Cumulative Cost
15. Influent Contaminant Concentration vs. Time

Tables

NIROP FRIDLEY

Groundwater Treatment Facility (GWTF)

	OPERATIONS (hrs)			WATER DISCHARGED (thousands of gallons)					WATER TREATED (thousands of gallons)	
Month	Available	Operating	On-stream factor	to Storm	to Sanitary	Untreated to Sanitary	Total to Sanitary	% Storm	Monthly	Cumulative
Nov-98	480.0	480.0	100.0%	0	17,524	0	17,524	0%	17,524	17,524
Dec-98	718.0	628.0	87.5%	16,078	7,087	0	7,087	69%	23,165	40,689
Jan-99	744.0	743.0	99.9%	25,571	0	0	0	100%	25,571	66,260
Feb-99	672.0	672.0	100.0%	23,938	0	0	0	100%	23,938	90,198
Mar-99	744.0	744.0	100.0%	27,394	0	0	0	100%	27,394	117,592
Apr-99	720.0	720.0	100.0%	25,254	0	0	0	100%	25,254	142,846
May-99	744.0	744.0	100.0%	23,291	0	0	0	100%	23,291	166,137
Jun-99	720.0	713.0	99.0%	25,823	0	0	0	100%	25,823	191,960
Jul-99	744.0	744.0	100.0%	22,266	0	0	0	100%	22,266	214,226
Aug-99	684.0	684.0	100.0%	21,634	0	0	0	100%	21,634	235,860
Sep-99	720.0	720.0	100.0%	18,205	0	0	0	100%	18,205	254,065
Oct-99	744.0	744.0	100.0%	23,029	0	0	0	100%	23,029	277,094
Nov-99	720.0	720.0	100.0%	22,783	0	0	0	100%	22,783	299,877
Dec-99	535.0	535.0	100.0%	12,818	0	0	0	100%	12,818	312,695
Jan-00	356.0	356.0	100.0%	10,400	0	0	0	100%	10,400	323,095
Feb-00	695.0	694.0	99.9%	16,944	0	0	0	100%	16,944	340,039
Mar-00	744.0	743.5	99.9%	27,131	0	0	0	100%	27,131	367,170
Apr-00	720.0	720.0	100.0%	25,899	0	0	0	100%	25,899	393,069
May-00	744.0	744.0	100.0%	27,458	0	0	0	100%	27,458	420,527
Jun-00	718.9	718.9	100.0%	25,136	0	0	0	100%	25,136	445,663
Jul-00	744.0	744.0	100.0%	25,637	0	0	0	100%	25,637	471,300
Aug-00	744.0	744.0	100.0%	24,341	0	0	0	100%	24,341	495,641
Sep-00	655.5	655.5	100.0%	22,559	0	0	0	100%	22,559	518,200
Oct-00	744.0	744.0	100.0%	25,955	0	0	0	100%	25,955	544,155
Nov-00	720.0	718.0	99.7%	25,759	0	0	0	100%	25,759	569,914
Dec-00	744.0	743.5	99.9%	27,404	0	0	0	100%	27,404	597,318
Jan-01	744.0	744.0	100.0%	24,666	0	0	0	100%	24,666	621,984
Feb-01	672.0	671.0	99.9%	23,956	0	0	0	100%	23,956	645,940
Mar-01	744.0	737.0	99.1%	24,694	0	0	0	100%	24,694	670,634
Apr-01	720.0	719.5	99.9%	24,964	0	0	0	100%	24,964	695,598
May-01	604.3	602.3	99.7%	13,656	0	0	0	100%	13,656	709,254
Jun-01	709.5	708.3	99.8%	20,000	0	0	0	100%	20,000	729,254
Jul-01	730.0	730.0	100.0%	18,077	0	0	0	100%	18,077	747,331
Aug-01	491.0	491.0	100.0%	17,921	0	0	0	100%	17,921	765,252
Sep-01	0.0	0.0	100.0%	0	0	0	0	100%	0	765,252
Oct-01	736.0	472.5	64.2%	21,376	0	0	0	100%	21,376	786,628
Nov-01	720.0	720.0	100.0%	30,205	0	0	0	100%	30,205	816,833
Dec-01	744.0	744.0	100.0%	28,114	0	0	0	100%	28,114	844,947
Jan-02	742.0	737.0	99.3%	30,483	0	0	0	100%	30,483	875,430
Feb-02	672.0	672.0	100.0%	25,538	0	0	0	100%	25,538	900,968
Mar-02	744.0	744.0	100.0%	29,957	0	0	0	100%	29,957	930,925
Apr-02	744.0	743.8	100.0%	28,569	0	0	0	100%	28,569	959,494

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Table 1

NIROP FRIDLEY

Groundwater Treatment Facility (GWTF)

	OPERATIONS (hrs)			WATER DISCHARGED (thousands of gallons)					WATER TREATED (thousands of gallons)	
Month	Available	Operating	On-stream factor	to Storm	to Sanitary	Untreated to Sanitary	Total to Sanitary	% Storm	Monthly	Cumulative
May-02	744.0	741.0	99.6%	28,656	0	0	0	100%	28,656	988,150
Jun-02	720.0	720.0	100.0%	22,131	0	0	0	100%	22,131	1,010,281
Jul-02	744.0	744.0	100.0%	21,367	0	0	0	100%	21,367	1,031,648
Aug-02	744.0	744.0	100.0%	28,328	0	0	0	100%	28,328	1,059,976
Sep-02	630.3	630.3	100.0%	20,861	0	0	0	100%	20,861	1,080,837
Oct-02	744.0	744.0	100.0%	21,417	0	0	0	100%	21,417	1,102,254
Nov-02	720.0	720.0	100.0%	25,003	0	0	0	100%	25,003	1,127,257
Dec-02	744.0	742.0	99.7%	25,327	0	0	0	100%	25,327	1,152,584
Jan-03	744.0	55.0	7.4%	1,048	0	0	0	100%	1,048	1,153,632
Feb-03	672.0	0.0	0.0%	0	0	0	0	100%	0	1,153,632
Mar-03	744.0	309.0	41.5%	13,387	0	0	0	100%	13,387	1,167,019
Apr-03	526.5	425.5	80.8%	16,584	0	0	0	100%	16,584	1,183,603
May-03	744.0	298.5	40.1%	7,448	0	0	0	100%	7,448	1,191,051
Jun-03	720.0	253.0	35.1%	10,775	0	0	0	100%	10,775	1,201,826
Jul-03	734.0	576.3	78.5%	22,629	0	0	0	100%	22,629	1,224,455
Aug-03	732.5	639.8	87.3%	25,591	46	0	46	99.8%	25,637	1,250,092
Sep-03	720.0	719.0	99.9%	23,028	4,532	0	4,532	83.6%	27,560	1,277,652
Oct-03	681.7	648.5	95.1%	25,389	0	0	0	100%	25,389	1,303,041
Nov-03	720.0	694.0	96.4%	22,882	0	0	0	100%	22,882	1,325,923
Dec-03	743.0	740.5	99.7%	31,010	0	0	0	100%	31,010	1,356,933
Jan-04	744.0	727.0	97.7%	25,456	0	0	0	100%	25,456	1,382,389
Feb-04	689.7	689.7	100.0%	23,771	0	0	0	100%	23,771	1,406,160
Mar-04	506.5	353.5	69.8%	12,928	0	0	0	100%	12,928	1,419,088
Apr-04	720.0	2.0	0.3%	60	0	0	0	100%	60	1,419,148
May-04	744.0	635.0	85.3%	24,104	0	0	0	100%	24,104	1,443,252
Jun-04	613.5	613.5	100.0%	20,988	0	0	0	100%	20,988	1,464,240
Jul-04	735.5	732.8	99.6%	26,846	0	0	0	100%	26,846	1,491,086
Aug-04	741.0	741.0	100.0%	26,760	0	0	0	100%	26,760	1,517,846
Sep-04	718.0	717.0	99.9%	27,276	0	0	0	100%	27,276	1,545,122
Oct-04	676.8	676.8	100.0%	24,709	0	0	0	100%	24,709	1,569,831
Nov-04	720.0	720.0	100.0%	25,859	0	0	0	100%	25,859	1,595,690
Dec-04	744.0	744.0	100.0%	26,229	0	0	0	100%	26,229	1,621,919
Jan-05	744.0	667.0	89.7%	20,915	0	0	0	100%	20,915	1,642,834
Feb-05	672.0	672.0	100.0%	22,329	0	0	0	100%	22,329	1,665,163
Mar-05	744.0	716.8	96.3%	22,960	0	0	0	100%	22,960	1,688,123
Apr-05	384.0	322.0	83.9%	6,515	0	0	0	100%	6,515	1,694,638
May-05	576.0	503.5	87.4%	17,859	0	0	0	100%	17,859	1,712,497
Jun-05	720.0	714.5	99.2%	24,450	0	0	0	100%	24,450	1,736,947
Jul-05	744.0	712.5	95.8%	25,301	0	0	0	100%	25,301	1,762,248
Aug-05	744.0	744.0	100.0%	25,916	0	0	0	100%	25,916	1,788,164
Sep-05	720.0	715.3	99.4%	20,837	0	0	0	100%	20,837	1,809,001
Oct-05	744.0	744.0	100.0%	24,028	0	0	0	100%	24,028	1,833,029

NIROP FRIDLEY

Groundwater Treatment Facility (GWTF)

	OPERATIONS (hrs)			WATER DISCHARGED (thousands of gallons)					WATER TREATED (thousands of gallons)	
Month	Available	Operating	On-stream factor	to Storm	to Sanitary	Untreated to Sanitary	Total to Sanitary	% Storm	Monthly	Cumulative
Nov-05	720.0	720.0	100.0%	20,553	0	0	0	100%	20,553	1,853,582
Dec-05	686.0	622.3	90.7%	19,037	0	0	0	100%	19,037	1,872,619
Jan-06	744.0	744.0	100.0%	21,858	0	0	0	100%	21,858	1,894,477
Feb-06	672.0	672.0	100.0%	19,590	0	0	0	100%	19,590	1,914,067
Mar-06	710.5	710.0	99.9%	13,935	0	0	0	100%	13,935	1,928,002
Apr-06	654.0	654.0	100.0%	18,391	0	0	0	100%	18,391	1,946,393
May-06	744.0	744.0	100.0%	18,116	0	0	0	100%	18,116	1,964,509
Jun-06	720.0	719.5	99.9%	16,616	0	0	0	100%	16,616	1,981,125
Jul-06	716.0	716.0	100.0%	14,232	0	0	0	100%	14,232	1,995,357
Aug-06	744.0	742.0	99.7%	13,291	0	0	0	100%	13,291	2,008,648
Sep-06	720.0	720.0	100.0%	14,269	0	0	0	100%	14,269	2,022,917
Oct-06	731.0	730.5	99.9%	13,496	0	0	0	100%	13,496	2,036,413
Nov-06	396.0	110.0	27.8%	3,073	0	0	0	100%	3,073	2,039,486
Dec-06	744.0	743.5	99.9%	25,287	0	0	0	100%	25,287	2,064,773
Jan-07	720.0	719.5	99.9%	25,118	0	0	0	100%	25,118	2,089,891
Feb-07	671.8	659.8	98.2%	21,953	0	0	0	100%	21,953	2,111,844
Mar-07	744.0	734.0	98.7%	25,860	0	0	0	100%	25,860	2,137,703
Apr-07	720.0	720.0	100.0%	24,240	0	0	0	100%	24,240	2,161,943
May-07	744.0	744.0	100.0%	19,004	0	0	0	100%	19,004	2,180,947
Jun-07	719.5	719.5	100.0%	20,659	0	0	0	100%	20,659	2,201,606
Jul-07	744.0	744.0	100.0%	19,389	0	0	0	100%	19,389	2,220,995
Aug-07	696.0	696.0	100.0%	16,354	0	0	0	100%	16,354	2,237,349
Sep-07	720.0	720.0	100.0%	15,320	0	0	0	100%	15,320	2,252,669
Oct-07	744.0	744.0	100.0%	14,409	0	0	0	100%	14,409	2,267,078
Nov-07	720.0	720.0	100.0%	17,388	0	0	0	100%	17,388	2,284,466
Dec-07	744.0	739.0	99.3%	17,002	0	0	0	100%	17,002	2,301,468
Jan-08	742.0	684.0	92.2%	17,115	0	0	0	100%	17,115	2,318,583
Feb-08	695.3	611.8	88.0%	13,581	0	0	0	100%	13,581	2,332,164
Mar-08	744.0	742.0	99.7%	13,277	0	0	0	100%	13,277	2,345,441
Apr-08	720.0	717.0	99.6%	12,518	0	0	0	100%	12,518	2,357,959
May-08	718.0	692.0	96.4%	15,430	0	0	0	100%	15,430	2,373,389
Jun-08	333.5	333.5	100.0%	6,523	0	0	0	100%	6,523	2,379,912
Jul-08	719.0	719.0	100.0%	15,762	0	0	0	100%	15,762	2,395,674
Aug-08	729.3	729.3	100.0%	20,183	0	0	0	100%	20,183	2,415,857
Sep-08	720.0	720.0	100.0%	19,632	0	0	0	100%	19,632	2,435,489
Oct-08	737.0	737.0	100.0%	19,818	0	0	0	100%	19,818	2,455,307
Nov-08	662.0	662.0	100.0%	18,191	0	0	0	100%	18,191	2,473,498
Dec-08	744.0	744.0	100.0%	20,926	0	0	0	100%	20,926	2,494,424
Jan-09	741.0	741.0	100.0%	20,301	44	0	44	99.8%	20,301	2,514,725
Feb-09	672.0	672.0	100.0%	17,546	0	0	0	100%	17,546	2,532,271
Mar-09	711.9	711.2	99.9%	17,766	0	0	0	100%	17,766	2,550,037
Apr-09	709.0	705.6	99.5%	16,434	0	0	0	100%	16,434	2,566,471

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Table 1

NIROP FRIDLEY

Groundwater Treatment Facility (GWTF)

	OPERATIONS (hrs)			WATER DISCHARGED (thousands of gallons)					WATER TREATED (thousands of gallons)	
Month	Available	Operating	On-stream factor	to Storm	to Sanitary	Untreated to Sanitary	Total to Sanitary	% Storm	Monthly	Cumulative
May-09	739.8	739.8	100.0%	23,663	0	0	0	100%	23,663	2,590,134
Jun-09	719.8	719.8	100.0%	21,234	0	0	0	100%	21,234	2,611,368
Jul-09	744.0	744.0	100.0%	21,846	0	0	0	100%	21,846	2,633,214
Aug-09	744.0	744.0	100.0%	20,933	0	0	0	100%	20,933	2,654,147
Sep-09	697.2	697.2	100.0%	16,585	0	0	0	100%	16,585	2,670,732
Oct-09	743.5	743.5	100.0%	18,919	0	0	0	100%	18,919	2,689,651
Nov-09	720.0	720.0	100.0%	19,768	0	0	0	100%	19,768	2,709,419
Dec-09	744.0	744.0	100.0%	18,162	0	0	0	100%	18,162	2,727,581
Jan-10	740.3	740.3	100.0%	19,542	0	0	0	100%	19,542	2,747,123
Feb-10	672.0	658.0	97.9%	14,805	0	0	0	100%	14,805	2,761,928
Mar-10	744.0	744.0	100.0%	14,596	0	0	0	100%	14,596	2,776,524
Apr-10	720.0	720.0	100.0%	15,598	0	0	0	100%	15,598	2,792,122
May-10	744.0	742.5	99.8%	18,090	0	0	0	100%	18,090	2,810,212
Jun-10	720.0	697.0	96.8%	10,717	0	0	0	100%	10,717	2,820,929
Jul-10	744.0	722.2	97.1%	12,254	0	0	0	100%	12,254	2,833,183
Aug-10	694.5	404.0	58.2%	3,789	0	0	0	100%	3,789	2,836,972
Sep-10	712.0	700.0	98.3%	12,552	0	0	0	100%	12,552	2,849,524
Oct-10	690.6	690.6	100.0%	12,926	0	0	0	100%	12,926	2,862,450
Nov-10	719.5	716.0	99.5%	15,466	0	0	0	100%	15,466	2,877,916
Dec-10	737.0	721.5	97.9%	15,855	0	0	0	100%	15,855	2,893,771
Jan-11	744.0	744.0	100.0%	17,199	0	0	0	100%	17,199	2,910,970
Feb-11	667.0	665.0	99.7%	16,551	0	0	0	100%	16,551	2,927,521
Mar-11	744.0	744.0	100.0%	17,827	0	0	0	100%	17,827	2,945,348
Apr-11	711.3	708.3	99.6%	14,063	0	0	0	100%	14,063	2,959,411
May-11	384.0	384.0	100.0%	9,042	0	0	0	100%	9,042	2,968,453
Jun-11	719.5	716.8	99.6%	13,216	0	0	0	100%	13,216	2,981,669
Jul-11	744.0	744.0	100.0%	13,119	0	0	0	100%	13,119	2,994,788
Aug-11	744.0	682.0	91.7%	12,377	0	0	0	100%	12,377	3,007,165
Sep-11	120.0	120.0	100.0%	4,522	0	0	0	100%	4,522	3,011,687
Oct-11	349.0	170.0	48.7%	3,896	0	0	0	100%	3,896	3,015,583

Note: Available hours are 24 hours per day, less scheduled down time and power outages.

* Monthly flow incorrectly reported for Jul-04 through Dec-04 - corrected January 2005 using the corrected estimate for AT-10 monthly flow.

NIROP FRIDLEY
Ground Water Treatment Facility (GWTF)

	Electrical Meter Readings (kW·h)					
Date	**MCC #1**	**MCC #2**	**Wells 2, 3A, 5A, 5B**	**Well 1A**	**Well 4**	**Monthy Usage**
2/1/2000	57,305	620,300				38,046
3/1/2000	59,597	656,054				36,133
3/9/2000	60,348	667,580	18,260	3,284	2,312	65,029
4/3/2000	63,080	704,113	38698	6043	4879	74,067
5/1/2000	66,067	746,920	60,940	9,238	7,715	81,545
6/1/2000	68,972	793,455	86495	12728	10775	66,128
7/1/2000	71,562	840,441	110,243	16,307		
7/6/2000					13701	13,701
8/1/2000	73,881	881,304	130,691	19,559	16,686	72,336
9/1/2000	76,316	924,799	152695	22976	17671	67,877
10/2/2000	78,561	964,802	172,714	26,079	20,178	
11/1/2000	80,952	7,402	195655	29408	22454	89,927
12/4/2000	83,561	56,966	225,897	33,105	26,269	81,706
1/2/2001	85,851	101,872	254750	36270	28761	72,935
2/1/2001	88,106	143,918	282,532	37,122	28,761	83,944
3/1/2001	90,240	190,303	314000	41079	28761	66,663
4/3/2001	92,677	230,575	335,297	43,736	28,761	65,567
5/1/2001	94,779	269,617	357244	46212	28761	
6/5/2001	97,821	304,746	*	*	*	38,108
7/2/2001	102,175	338,500	*	*	*	44,802
8/2/2001	106,592	378,885	*	*	*	37,804
9/12/2001	111,321	411,960	*	*	*	13,663
10/18/2001	112,956	423,988	*	*	*	29,471
11/1/2001	117,010	449,405	*	*	*	68,542
12/4/2001	126,457	508,500	*	*	*	60,932
1/2/2002	134,884	561,005	*	*	*	56,801
2/1/2002	142,948	609,742	*	*	*	55,300
3/1/2002	150,583	657,407	*	*	*	64,231
4/1/2002	159,332	712,889	*	*	*	59,291
5/1/2002	167,808	763,704	*	*	*	63,448
6/3/2002	176,272	818,688	*	*	*	43,974
7/1/2002	182,246	856,688	*	*	*	45,609
8/1/2002	188,404	896,139	*	*	*	60,074
9/3/2002	196,255	948,362	*	*	*	44,067
10/1/2002	202,142	986,542	*	*	*	60,158
11/1/2002	209,581	1,039,261	*	*	*	60,538
12/2/2002	216,632	1,092,748	*	*	*	
1/1/2003	223,233	0	*	*	*	
2/1/2003	224,233	1,146,792	*	*	*	7,827
3/19/2003	227,523	1,151,329	*	*	*	22,891
4/3/2003	230,589	1,171,154	*	*	*	32,058
5/1/2003	235,275	1,198,526	*	*	*	18,373

NIROP FRIDLEY
Ground Water Treatment Facility (GWTF)

	Electrical Meter Readings (kW·h)					
Date	**MCC #1**	**MCC #2**	**Wells 2, 3A, 5A, 5B**	**Well 1A**	**Well 4**	**Monthy Usage**
6/4/2003	237,675	1,214,499	*	*	*	20,360
7/1/2003	240,411	1,232,123	*	*	*	42,930
8/1/2003	246,351	1,269,113	*	*	*	49,909
9/2/2003	253,306	1,312,067	*	*	*	52,166
10/1/2003	260,662	1,356,877	*	*	*	58,962
11/3/2003	268,788	1,407,713	*	*	*	57,373
12/1/2003	276,592	1,457,282	*	*	*	67,477
1/2/2004	285,175	1,516,176	*	*	*	67,278
2/2/2004	293,559	1,575,070	*	*	*	60,542
3/1/2004	301,245	1,627,926	*	*	*	31,187
4/1/2004	305,283	1,655,075	*	*	*	1,037
5/3/2004	305,515	1,655,880	*	*	*	51,931
6/1/2004	312,129	1,701,197	*	*	*	47,852
7/1/2004	318,012	1,743,166	*	*	*	60,764
8/3/2004	326,133	1,795,809	*	*	*	55,312
9/1/2004	335,039	1,842,215	*	*	*	52,307
10/1/2004	340,422	1,889,139	*	*	*	53,798
11/2/2004	347,296	1,936,063	*	*	*	64,045
12/1/2004	354,514	1,992,890	*	*	*	64,887
1/5/2005	362,574	49,717	*	*	*	48,313
2/1/2005	368,114	92,490	*	*	*	56,517
3/1/2005	374,689	142,432	*	*	*	35,669
4/1/2005	381,858	170,932	*	*	*	32,506
5/11/2005	384,388	200,908	*	*	*	37,857
6/2/2005	389,382	233,771	*	*	*	53,851
7/1/2005	395,908	281,096	*	*	*	55,772
8/1/2005	402,786	329,990	*	*	*	58,530
9/1/2005	410,054	381,252	*	*	*	59,756
10/4/2005	416,742	434,320	*	*	*	54,337
11/1/2005	423,117	482,282	*	*	*	59,439
12/1/2005	429,602	535,236	*	*	*	58,139
1/3/2006	437,032	585,945	*	*	*	64,273
2/3/2006	444,929	642,321	*	*	*	59,745
3/3/2006	451,966	695,029	*	*	*	59,447
4/4/2006	458,470	747,972	*	*	*	52,154
5/2/2006	464,407	794,189	*	*	*	56,066
6/1/2006	470,107	844,555	*	*	*	67,078
7/7/2006	476,656	905,084	*	*	*	75,362
8/17/2006	483,201	973,901	*	*	*	28,651
9/1/2006	485,579	174	*	*	*	60,559
10/2/2006	490,846	55,466	*	*	*	64,783

NIROP FRIDLEY
Ground Water Treatment Facility (GWTF)

	Electrical Meter Readings (kW·h)					
Date	**MCC #1**	**MCC #2**	**Wells 2, 3A, 5A, 5B**	**Well 1A**	**Well 4**	**Monthy Usage**
11/16/2006	497,232	113,863	*	*	*	30,896
12/12/2006	501,656	140,335	*	*	*	41,005
1/2/2007	507,345	175,651	*	*	*	89,453
2/14/2007	519,226	253,223	*	*	*	60,625
3/15/2007	526,775	306,299	*	*	*	37,019
4/1/2007	531,435	338,658	*	*	*	59,380
5/1/2007	538,780	390,693	*	*	*	60,309
6/2/2007	546,435	443,347	*	*	*	57,976
7/2/2007	552,240	495,518	*	*	*	54,945
8/1/2007	558,047	544,656	*	*	*	56,900
9/4/2007	563,999	595,604	*	*	*	48,947
10/1/2007	568,907	639,643	*	*	*	55,912
11/1/2007	574,269	690,193	*	*	*	61,551
12/3/2007	580,906	745,107	*	*	*	58,075
1/2/2008	587,234	796,854	*	*	*	61,758
2/1/2008	593,878	851,968	*	*	*	56,961
3/6/2008	601,457	901,350	*	*	*	47,128
4/1/2008	607,103	942,832	*	*	*	51,563
5/2/2008	613,973	987,525	*	*	*	45,409
6/2/2008	619,382	27,525	*	*	*	23,755
7/1/2008	621,730	48,932	*	*	*	57,458
8/1/2008	627,904	100,216	*	*	*	59,836
9/2/2008	634,818	153,138	*	*	*	57,157
10/4/2008	641,270	203,843	*	*	*	61,110
11/3/2008	648,196	258,027	*	*	*	58,512
12/1/2008	655,158	309,577	*	*	*	71,027
1/2/2009	663,755	372,007	*	*	*	69,361
2/2/2009	672,125	432,998	*	*	*	62,234
3/2/2009	679,788	487,569	*	*	*	61,618
4/1/2009	687,315	541,660	*	*	*	63,015
5/1/2009	694,461	597,529	*	*	*	63,751
6/1/2009	701,440	654,301	*	*	*	60,286
7/1/2009	708,069	707,958	*	*	*	65,088
8/3/2009	715,267	765,848	*	*	*	57,140
9/1/2009	721,611	816,644	*	*	*	56,282
10/1/2009	727,548	866,989	*	*	*	65,845
11/2/2009	734,666	925,716	*	*	*	60,372
12/1/2009	741,891	978,863	*	*	*	77,030
1/1/2010	750,050	1,047,734	*	*	*	63,139
2/1/2010	757,037	1,103,886	*	*	*	61,079

NIROP FRIDLEY
Ground Water Treatment Facility (GWTF)

	Electrical Meter Readings (kW·h)					
Date	**MCC #1**	**MCC #2**	**Wells 2, 3A, 5A, 5B**	**Well 1A**	**Well 4**	**Monthy Usage**
3/1/2010	763,509	1,158,493	*	*	*	69,431
4/1/2010	769,960	1,221,473	*	*	*	59,638
5/3/2010	775,813	1,275,258	*	*	*	54,143
6/1/2010	780,680	1,324,534	*	*	*	51,279
7/1/2010	784,369	1,372,124	*	*	*	75,167
8/2/2010	789,289	1,442,371	*	*	*	8,482
9/1/2010	791,567	1,448,575	*	*	*	55,237
10/1/2010	796,016	1,499,363	*	*	*	61,303
11/1/2010	800,411	1,556,271	*	*	*	60,565
12/1/2010	806,672	1,610,575	*	*	*	68,226
1/3/2011	813,611	1,671,862	*	*	*	64,951
2/1/2011	820,001	1,730,423	*	*	*	58,883
3/1/2011	825,935	1,783,372	*	*	*	68,939
4/1/2011	832,880	1,845,366	*	*	*	58,997
5/9/2011	838,973	1,898,270	*	*	*	29,524
6/1/2011	841,656	1,925,111	*	*	*	52,109
7/1/2011	846,958	1,971,918	*	*	*	43,675
8/1/2011	851,869	2,010,682	*	*	*	38,885
9/1/2011	856,221	2,045,215	*	*	*	7,098
10/1/2011	857,222	2,051,312	*	*	*	18,094

* Electrical metering for the extraction wells runs through MCC #1

- The electrical meter in the main treatment area was misread on 1/1/03, thus it was not reset. December electricity usage was estimated to be the same as November 2002.

^ The electrical meter in the main treatment area had reset after the scheduled power shut-down. October 2004 electricity usage for MCC#2 was estimated to be the same as September 2004.

+ - electrical readings were not obtained on December 1, 2004, therefore electrical usage for November was estimated to be similar to October 2004.

Table 3 TCE Mass Removed by the GWTF

Month	Influent Concentration	Effluent Concentration	TCE Mass Removed		
			Measured Period Total	GWTF Total TCE Mass Removed	Cumulative TCE Mass Removed[1]
Month-Year	*µ g/L*	*µ g/L*	*lbs*	*lbs*	*lbs*
Nov-98	657	2.74	129	129	25778
Dec-98	899	1	173	303	25952
Jan-99	916	1.26	208	511	26160
Feb-99	916	2.49	181	692	26341
Mar-99	831	1.18	187	880	26529
Apr-99	831	1.56	175	1054	26703
May-99	831	1.32	178	1232	26881
Jun-99	585	1.84	114	1346	26995
Jul-99	585	1.38	111	1457	27106
Aug-99	585	1	101	1559	27208
Sep-99	490	1	82	1641	27290
Oct-99	490	1	102	1743	27392
Nov-99	490	1	85	1828	27477
Dec-99	680	1	59	1887	27536
Jan-00	680	2	63	1951	27600
Feb-00	680	1	96	2047	27696
Mar-00	980	7.1	198	2245	27894
Apr-00	980	1.5	197	2443	28092
May-00	980	1.6	224	2667	28316
Jun-00	700	1.9	176	2843	28492
Jul-00	700	2.2	149	2992	28641
Aug-00	700	1.5	142	3134	28783
Sep-00	310	2.1	94	3229	28878
Oct-00	310	1.6	67	3296	28945
Nov-00	310	1.4	66	3363	29012
Dec-00	670	4.9	111	3474	29123
Jan-01	670	2.8	137	3612	29261
Feb-01	670	1	133	3746	29395
Mar-01	680	4.9	138	3884	29533
Apr-01	680	1.4	146	4031	29680
May-01	680	1	77	4109	29758
Jun-01	470	1.1	96	4204	29853
Jul-01	470	1	71	4275	29924
Aug-01	470	1	70	4345	29994
Sep-01	470	1	0	4345	29994
Oct-01	400	1	71	4416	30065
Nov-01	400	1	100	4517	30166
Dec-01	620	1	145	4662	30311
Jan-02	620	1	157	4820	30469
Feb-02	620	1	132	4951	30600
Mar-02	610	1	153	5105	30754

Table 3 TCE Mass Removed by the GWTF

Month	Influent Concentration	Effluent Concentration	TCE Mass Removed		
			Measured Period Total	GWTF Total TCE Mass Removed	Cumulative TCE Mass Removed[1]
Month-Year	*µ g/L*	*µ g/L*	*lbs*	*lbs*	*lbs*
Apr-02	610	1	145	5250	30899
May-02	610	1	145	5395	31044
Jun-02	560	4.3	107	5503	31152
Jul-02	560	4.3	99	5603	31252
Aug-02	560	1	132	5735	31384
Sep-02	610	1	101	5837	31486
Oct-02	610	1	109	5945	31594
Nov-02	610	1	127	6072	31721
Dec-02	600	1	127	6200	31849
Jan-03	600	1	5	6205	31854
Feb-03	600	1	0	6205	31854
Mar-03	220	1	46	6251	31900
Apr-03	220	1	30	6281	31930
May-03	220	1	14	6295	31944
Jun-03	390	1	27	6322	31971
Jul-03	390	1	73	6396	32045
Aug-03	390	1.1	83	6479	32128
Sep-03	510	1	101	6582	32231
Oct-03	510	1	108	6690	32339
Nov-03	510	1	97	6787	32436
Dec-03	470	1	121	6909	32558
Jan-04	470	1	99	7008	32657
Feb-04	470	1	93	7101	32750
Mar-04	460	1	49	7151	32800
Apr-04	460	1	0	7151	32800
May-04	460	1	92	7243	32892
Jun-04	460	1	80	7324	32973
Jul-04	460	1	103	7427	33076
Aug-04	460	1	102	7529	33178
Sep-04	420	1	95	7625	33274
Oct-04	420	1	86	7711	33360
Nov-04	420	1	90	7801	33450
Dec-04	480	1	105	7906	33555
Jan-05	480	1	83	7990	33639
Feb-05	480	1	89	8079	33728
Mar-05	460	1	88	8167	33816
Apr-05	460	1	25	8192	33841
May-05	460	1	68	8260	33909
Jun-05	360	1.8	73	8334	33983
Jul-05	360	1	76	8410	34059
Aug-05	360	1	77	8487	34136

Table 3 TCE Mass Removed by the GWTF

Month	Influent Concentration	Effluent Concentration	TCE Mass Removed		
			Measured Period Total	GWTF Total TCE Mass Removed	Cumulative TCE Mass Removed[1]
Month-Year	*µ g/L*	*µ g/L*	*lbs*	*lbs*	*lbs*
Sep-05	370	1	64	8551	34200
Oct-05	370	1	74	8625	34274
Nov-05	370	1	63	8689	34338
Dec-05	330	0.29	52	8741	34390
Jan-06	330	0.46	60	8801	34450
Feb-06	330	5	53	8855	34504
Mar-06	400	5	46	8901	34550
Apr-06	400	5	60	8963	34612
May-06	400	5	60	9023	34672
Jun-06	430	1	59	9082	34731
Jul-06	430	5	50	9133	34782
Aug-06	430	0.46	48	9181	34830
Sep-06	390	0.46	46	9227	34876
Oct-06	390	0.46	44	9271	34920
Nov-06	390	0.46	10	9281	34930
Dec-06	190	2.3	40	9321	34970
Jan-07	190	11	28	9351	35000
Jan-07	190	0.46	10	9361	35010
Feb-07	190	0.14	35	9396	35045
Mar-07	380	0.46	82	9477	35126
Apr-07	380	0.46	77	9554	35203
May-07	380	0.46	60	9614	35263
Jun-07	350	0.46	60	9675	35324
Jul-07	350	0.46	56	9731	35380
Aug-07	350	0.46	48	9779	35428
Sep-07	420	0.55	54	9832	35481
Oct-07	420	0.55	50	9883	35532
Nov-07	420	0.55	61	9943	35592
Dec-07	330	0.55	47	9990	35639
Jan-08	330	0.55	47	10037	35686
Feb-08	330	0.55	37	10075	35724
Mar-08	320	0.46	35	10110	35759
Apr-08	320	0.46	33	10143	35792
May-08	320	0.46	41	10184	35833
Jun-08	540	2.7	29	10214	35863
Jul-08	540	2.7	71	10285	35934
Aug-08	540	2.7	90	10375	36024
Sep-08	360	0.57	59	10434	36083
Oct-08	320	0.29	53	10487	36136
Nov-08	320	0.29	48	10535	36184
Dec-08	320	0.29	56	10591	36240

Table 3 TCE Mass Removed by the GWTF

Month	Influent Concentration	Effluent Concentration	TCE Mass Removed		
			Measured Period Total	GWTF Total TCE Mass Removed	Cumulative TCE Mass Removed[1]
Month-Year	*µ g/L*	*µ g/L*	*lbs*	*lbs*	*lbs*
Jan-09	270	0.21	46	10637	36286
Feb-09	270	0.21	39	10676	36325
Mar-09	270	0.21	40	10716	36365
Apr-09	290	0.23	40	10756	36405
May-09	290	0.23	57	10813	36462
Jun-09	290	0.23	51	10864	36513
Jul-09	280	0.18	51	10915	36564
Aug-09	280	0.18	49	10964	36613
Sep-09	280	0.18	39	11003	36652
Oct-09	140	0.13	22	11025	36674
Nov-09	140	0.13	23	11048	36697
Dec-09	140	0.13	21	11069	36718
Jan-10	280	0.23	46	11115	36764
Feb-10	280	0.23	34	11149	36798
Mar-10	280	0.23	34	11183	36832
Apr-10	300	0.68	39	11222	36871
May-10	300	0.68	45	11267	36916
Jun-10	300	0.68	27	11294	36943
Jul-10	210	0.65	21	11316	36965
Aug-10	210	0.65	7	11322	36971
Sep-10	210	0.65	22	11344	36993
Oct-10	180	0.65	19	11363	37012
Nov-10	180	0.65	23	11387	37036
Dec-10	180	0.65	24	11410	37059
Jan-11	260	0.17	37	11448	37097
Feb-11	260	0.17	36	11484	37133
Mar-11	260	0.17	39	11522	37171
Apr-11	380	0.5	44	11567	37216
May-11	380	0.5	29	11595	37244
Jun-11	380	0.5	42	11637	37286
Jul-11	390	1.4	42	11680	37329
Aug-11	390	1.4	40	11720	37369
Sep-11	390	1.4	15	11735	37384
Oct-11	610	0.14	20	11754	37403

[1]*Includes TCE mass removed from 1992 to the start-up of GWTF in 1998.*
During this time, recovered groundwater was discharged directly to the sanitary sewer without treatment.

Table 4

Form 1.1 - Air Stripper Screening Evaluation

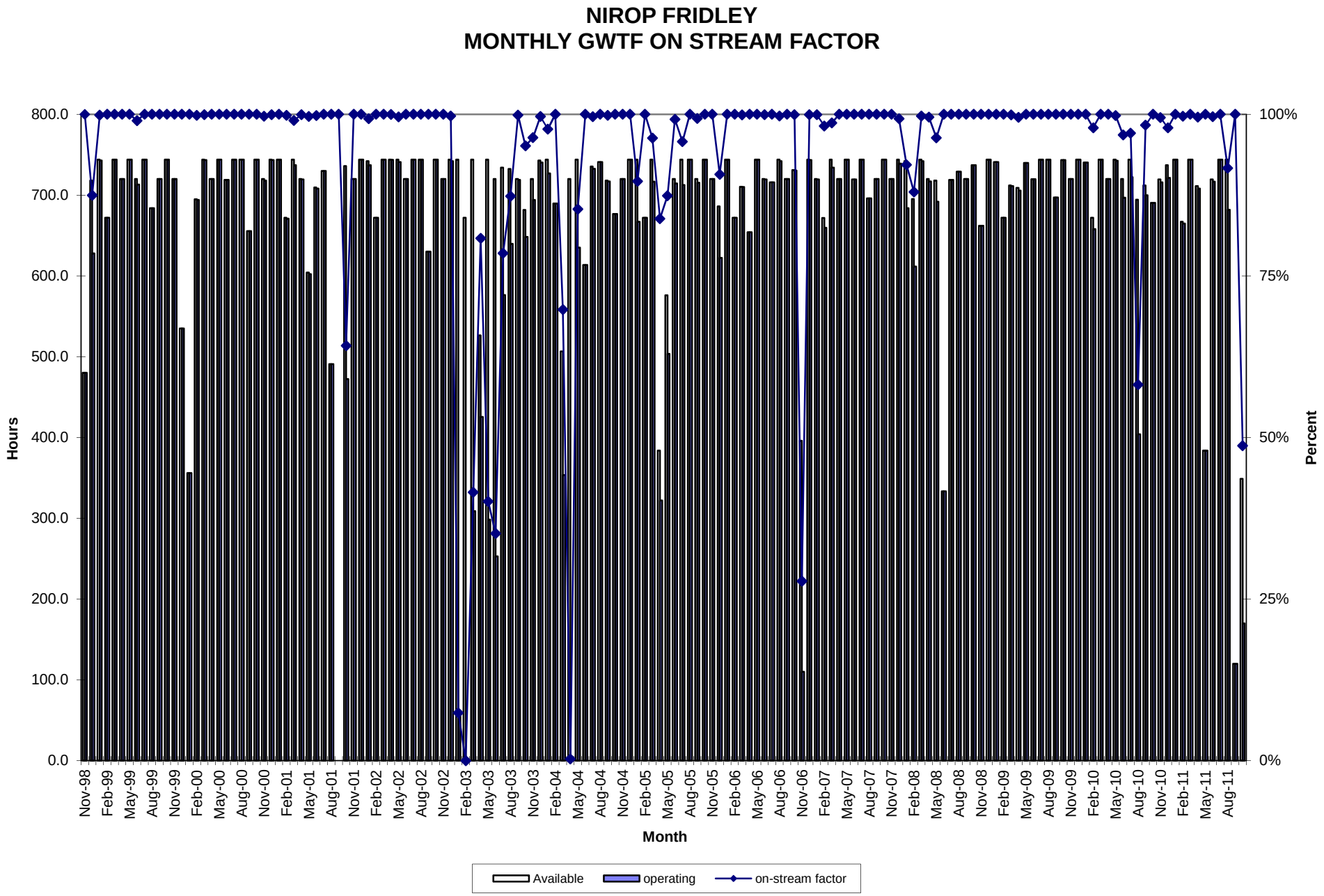
Site Name:	NIROP Fridley	Responsible Party Contact:		Form Completed by:	
Address:	4800 East River Road Minneapolis, MN 55421	Name:	Howard Hickey	Steve Head	
		Affiliation:	Midwest Division Naval Facilities Engineering Command	Date:	10/31/2011
MPCA Leak #:	Not Applicable	Phone #:	847-668-5999		

	A	B	C	D	E	
Contaminant (CAS #)	Contaminant Concentration (GC) (ug/liter)	Air Stripper Influent Flow Rate (IFR) (liters/sec)	Removal Factor (RF)	Emission Rate (ER) (ug/sec)	Site Specific Allowable Emission Rate (AER) (ug/sec)	Is ER >/= AER? (yes/no)
1,1-dichloroethane (75-34-3)	1.20	10.01	1	12.0	135,000,000	No
1,1-dichloroethylene (75-35-4)	0.68	10.01	1	6.8	54,000	No
methylene chloride (75-09-2)	0.25	10.01	1	2.5	54,000	No
tetrachloroethylene (127-18-4)	2.10	10.01	1	21.0	4,600,000	No
trichloroethylene (79-01-6)	390	10.01	1	3,904.2	1,600,000	No

..

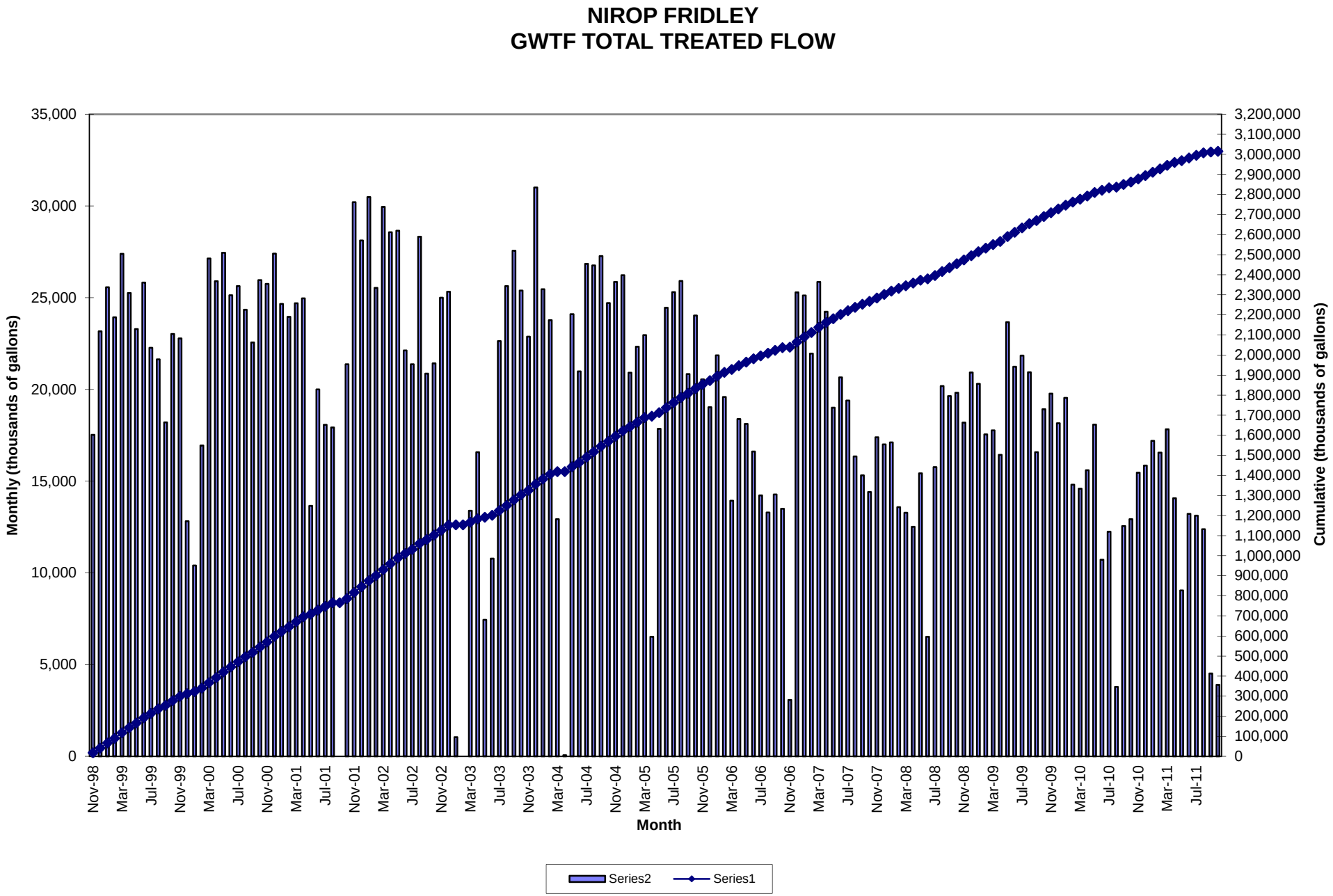
Note: If the incoming concentration is not detectable the Emission Rate is based on the detection limit.

Figures



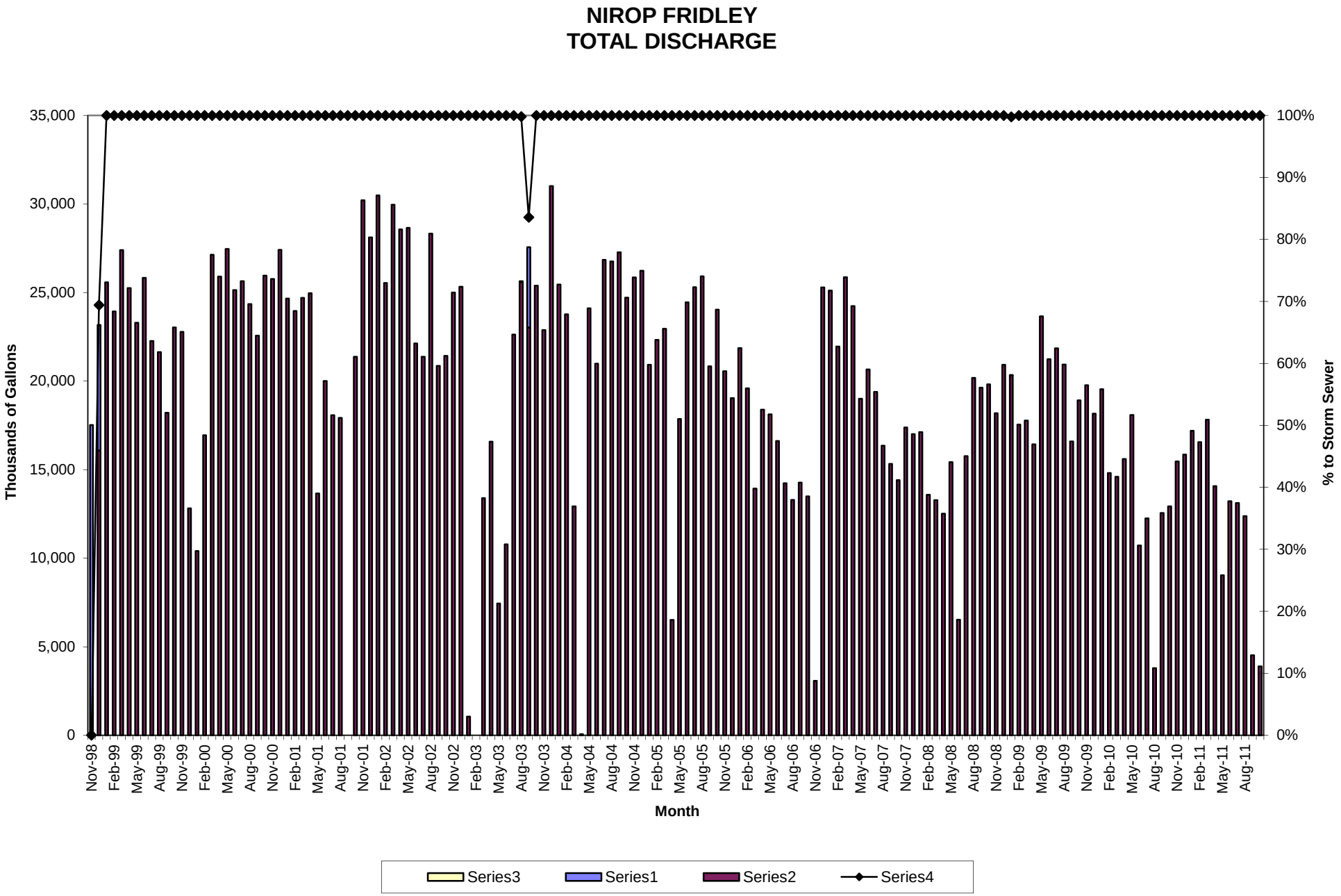
Docs 58644

Figure 1



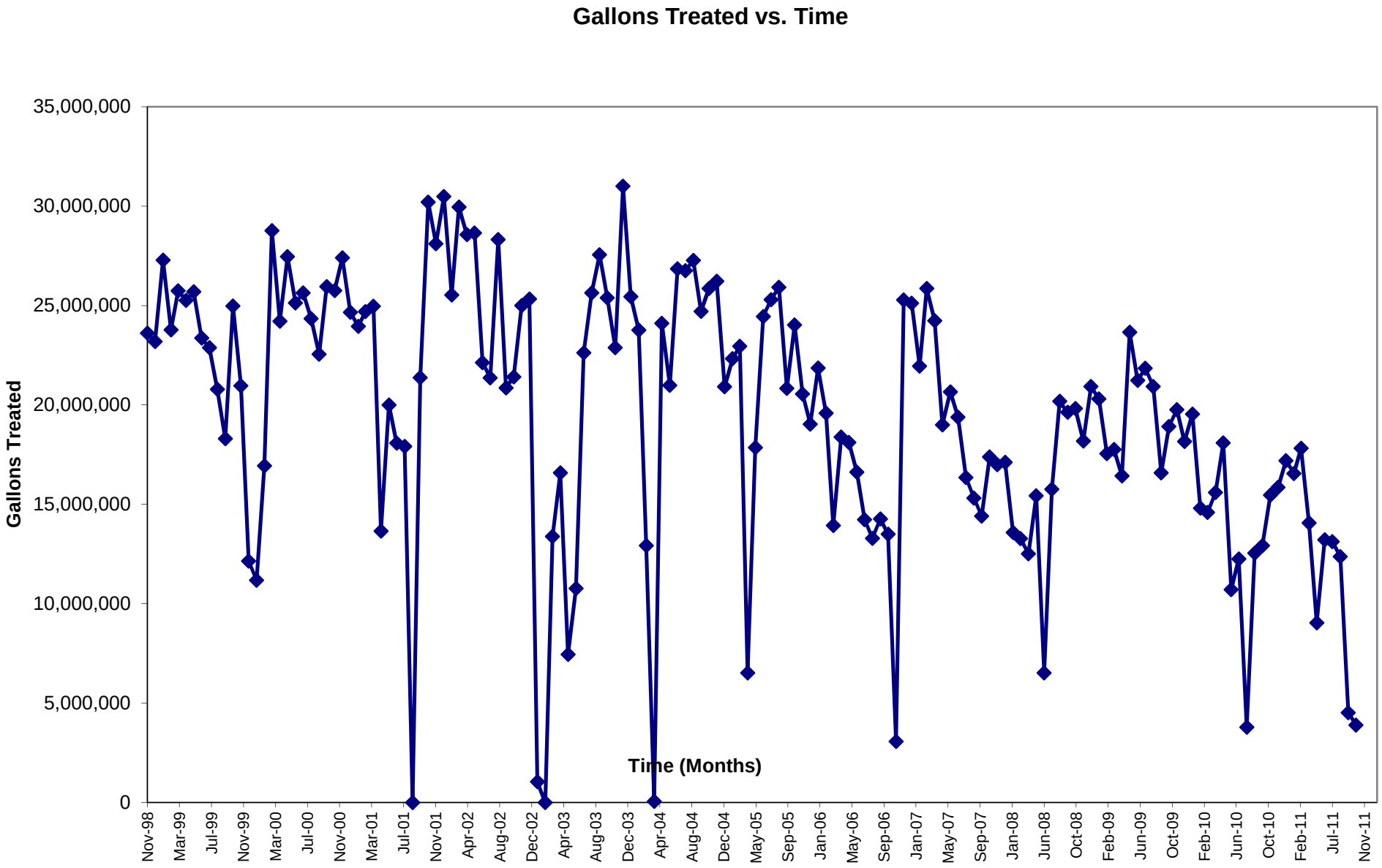
Docs 58644

Figure 2



Docs 58644

Figure 3



Docs 49267

Figure 4

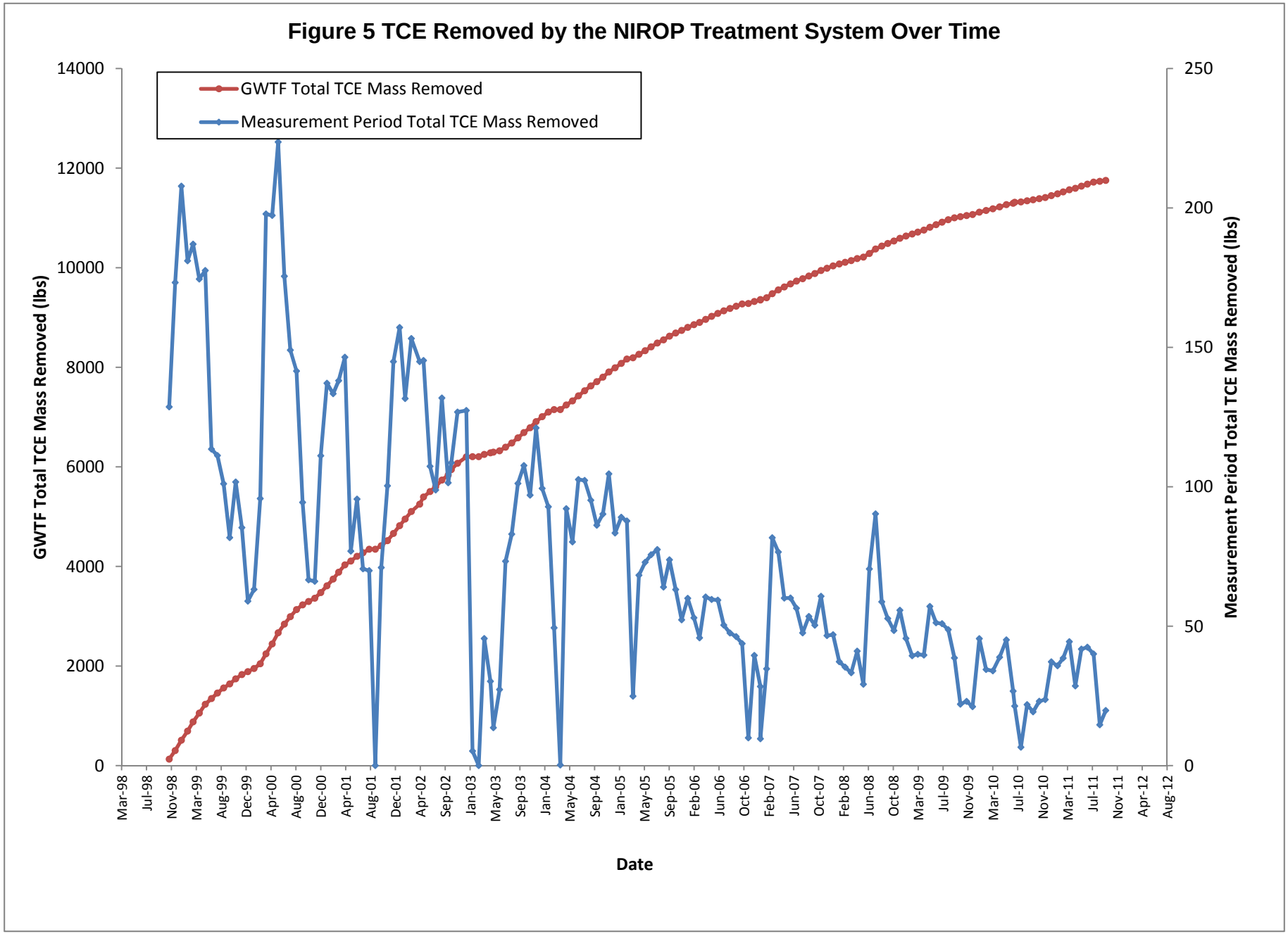


Figure 5 TCE Removed by the NIROP Treatment System Over Time
GWTF Total TCE Mass Removed
Measurement Period Total TCE Mass Removed
GWTF Total TCE Mass Removed (lbs)
Measurement Period Total TCE Mass Removed (lbs)
Date
14000
12000
10000
8000
6000
4000
2000
0
250
200
150
100
50
0
Mar-98
Jul-98
Nov-98
Mar-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Sep-02
Jan-03
May-03
Sep-03
Jan-04
May-04
Sep-04
Jan-05
May-05
Sep-05
Feb-06
Jun-06
Oct-06
Feb-07
Jun-07
Oct-07
Feb-08
Jun-08
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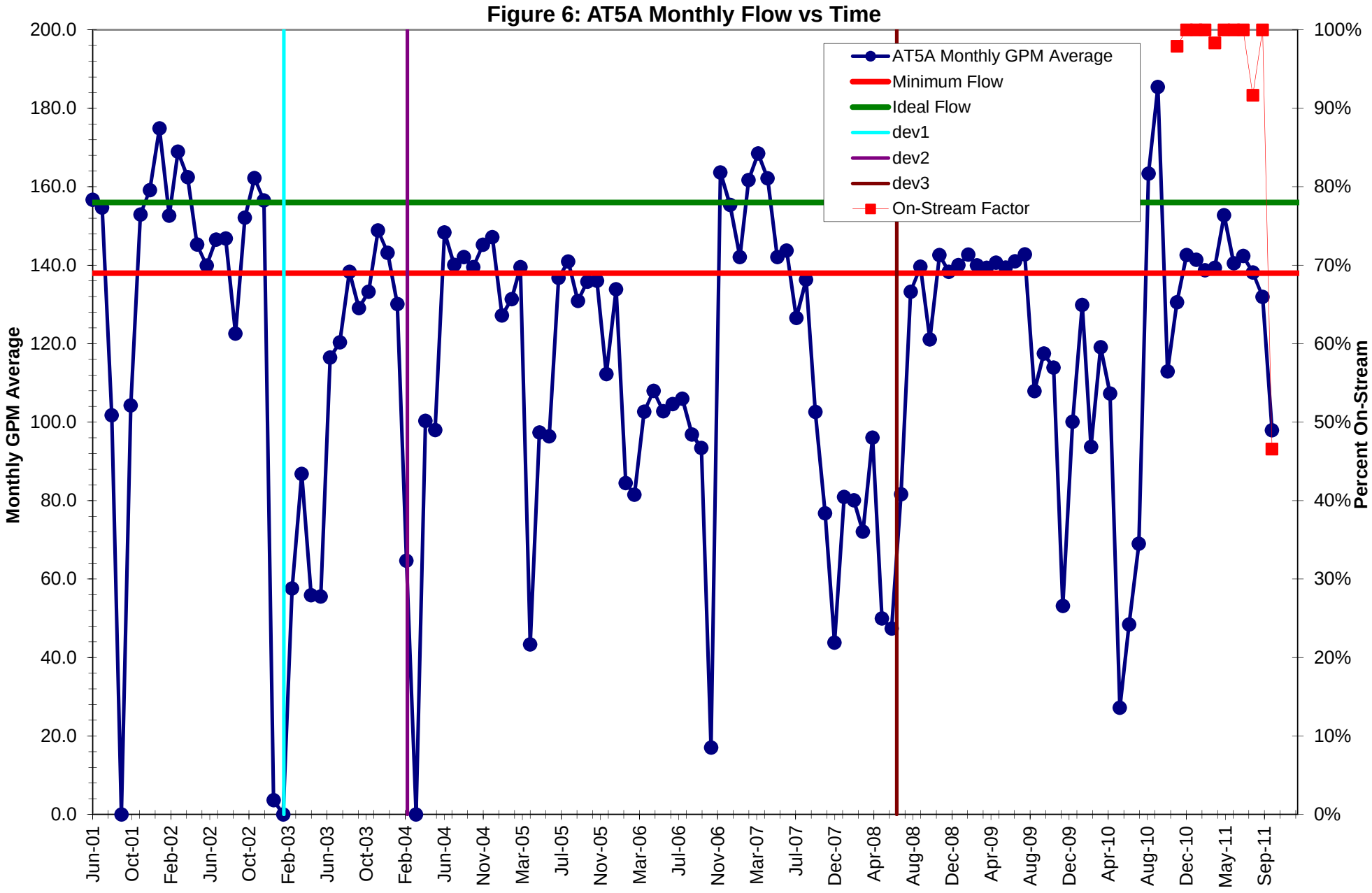
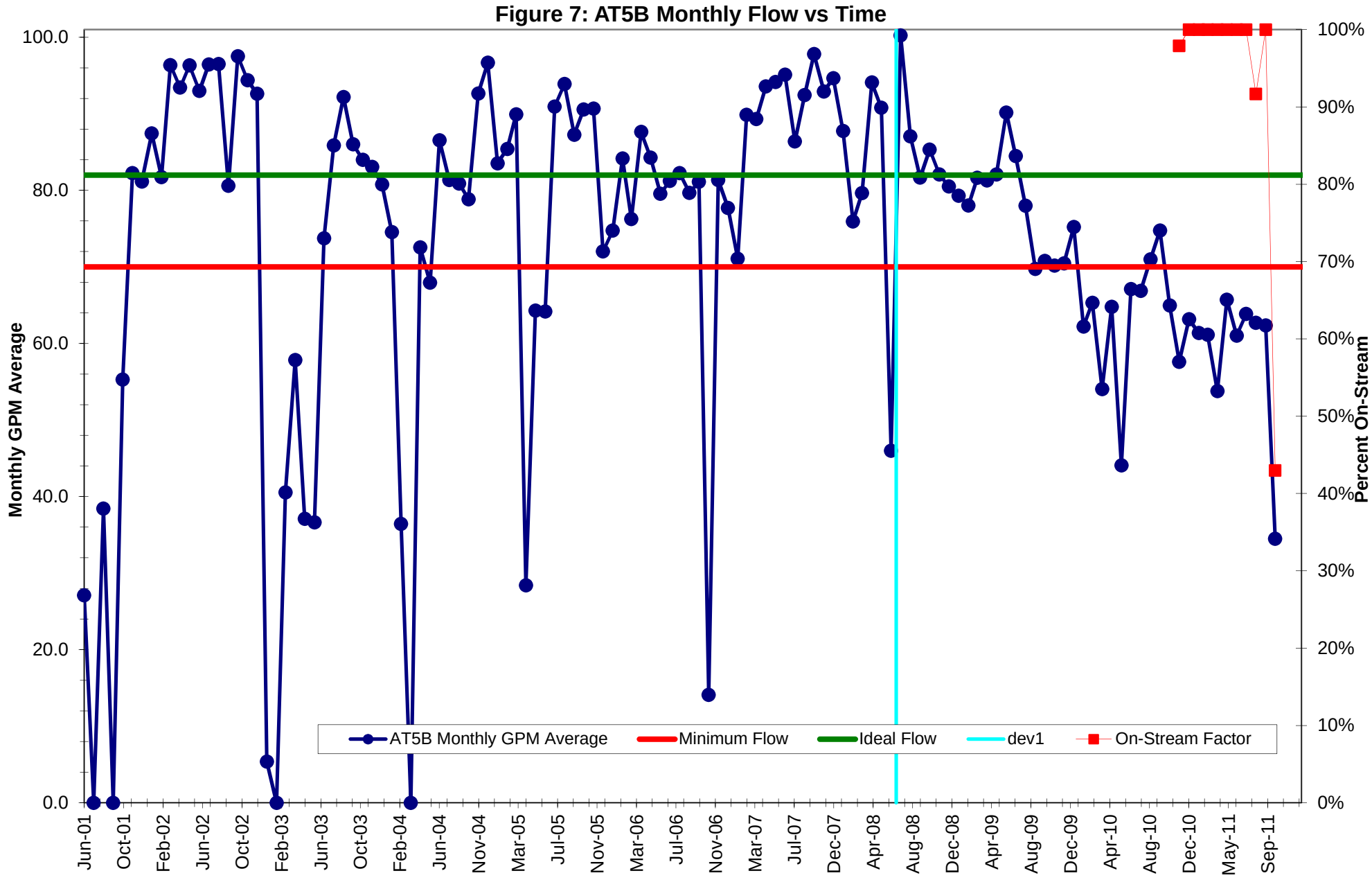
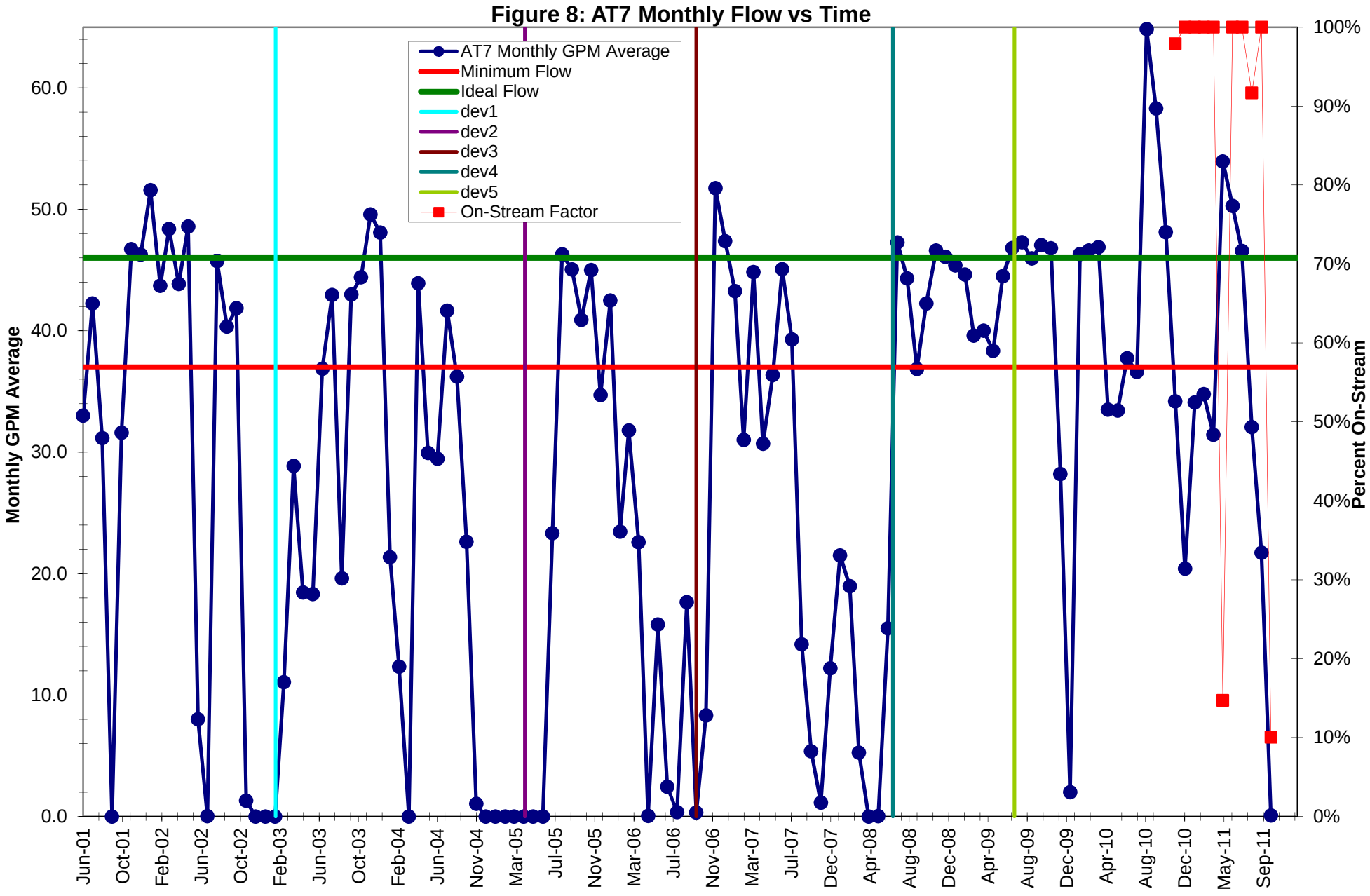
Jul-11
Nov-11
Apr-12
Aug-12



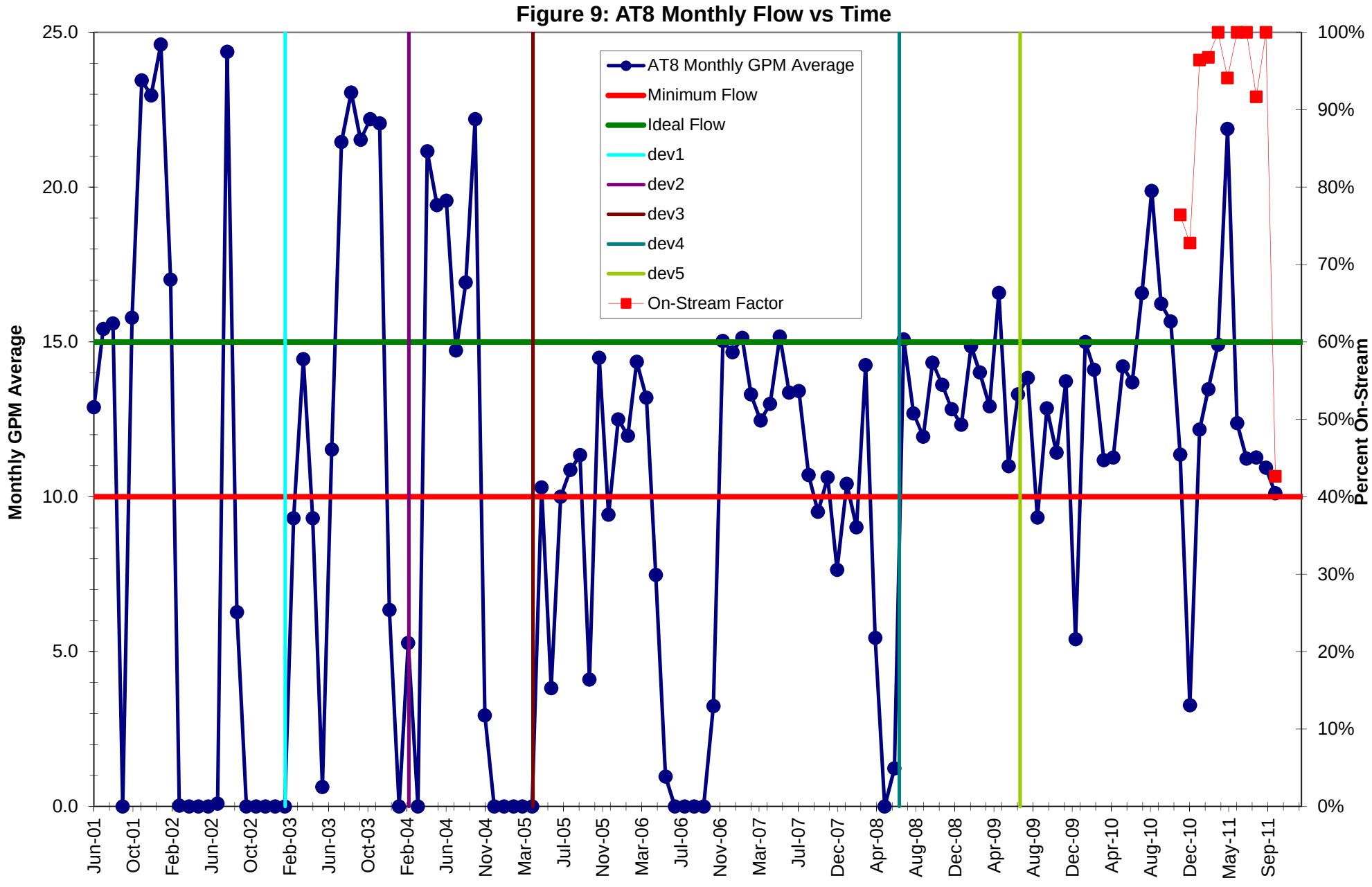
* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.



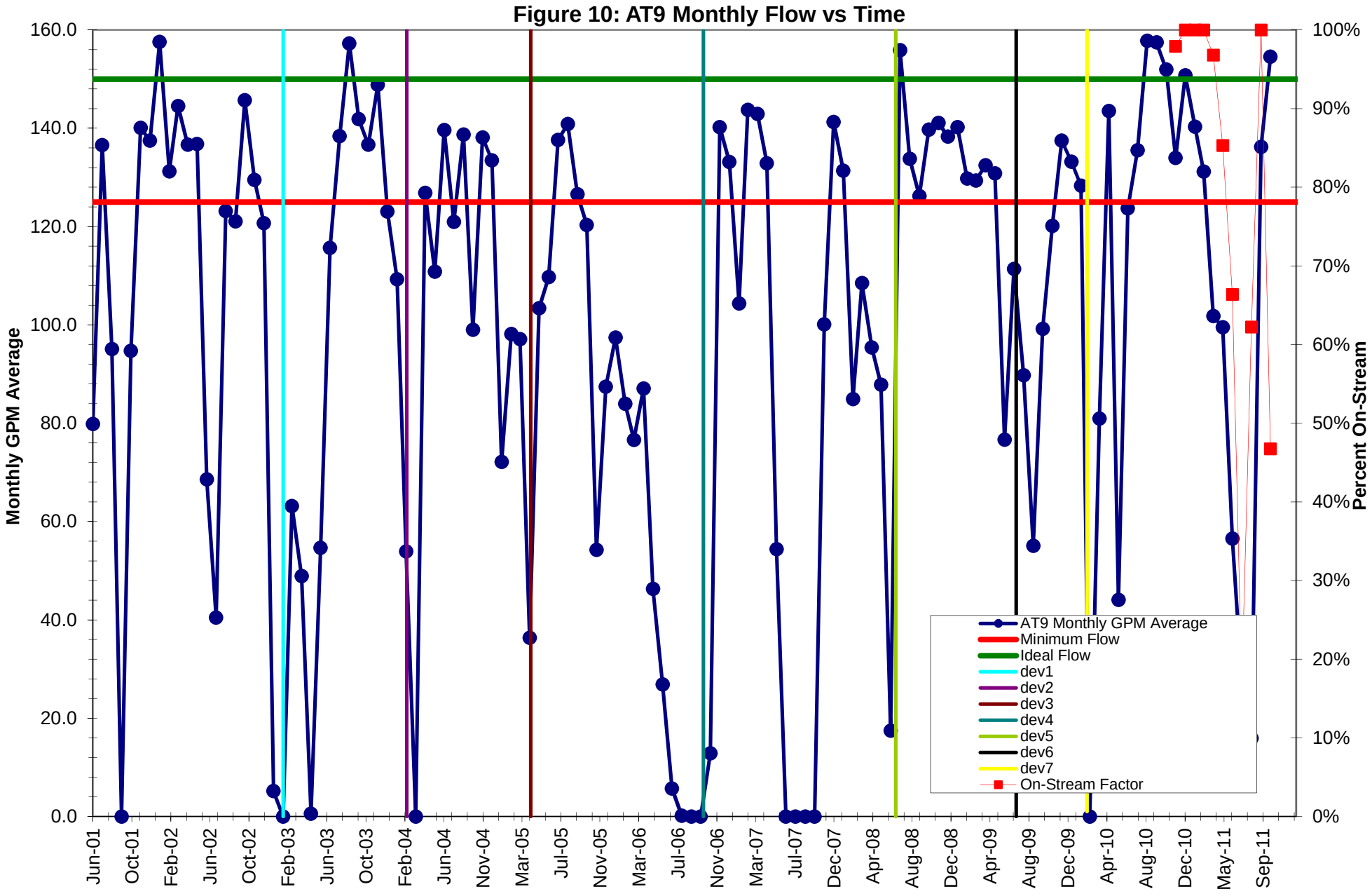
* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.



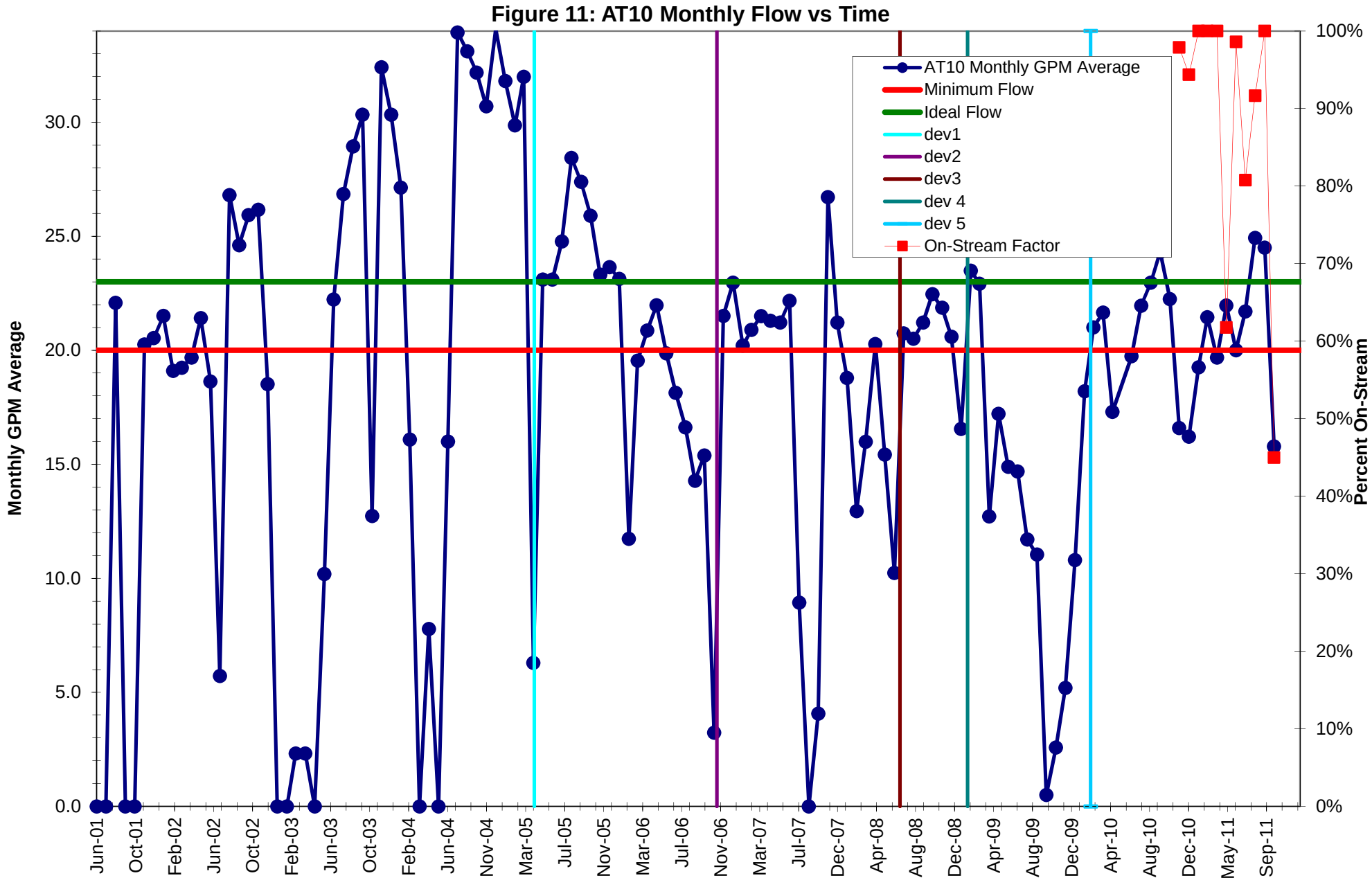
* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.



* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.



* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.



* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.

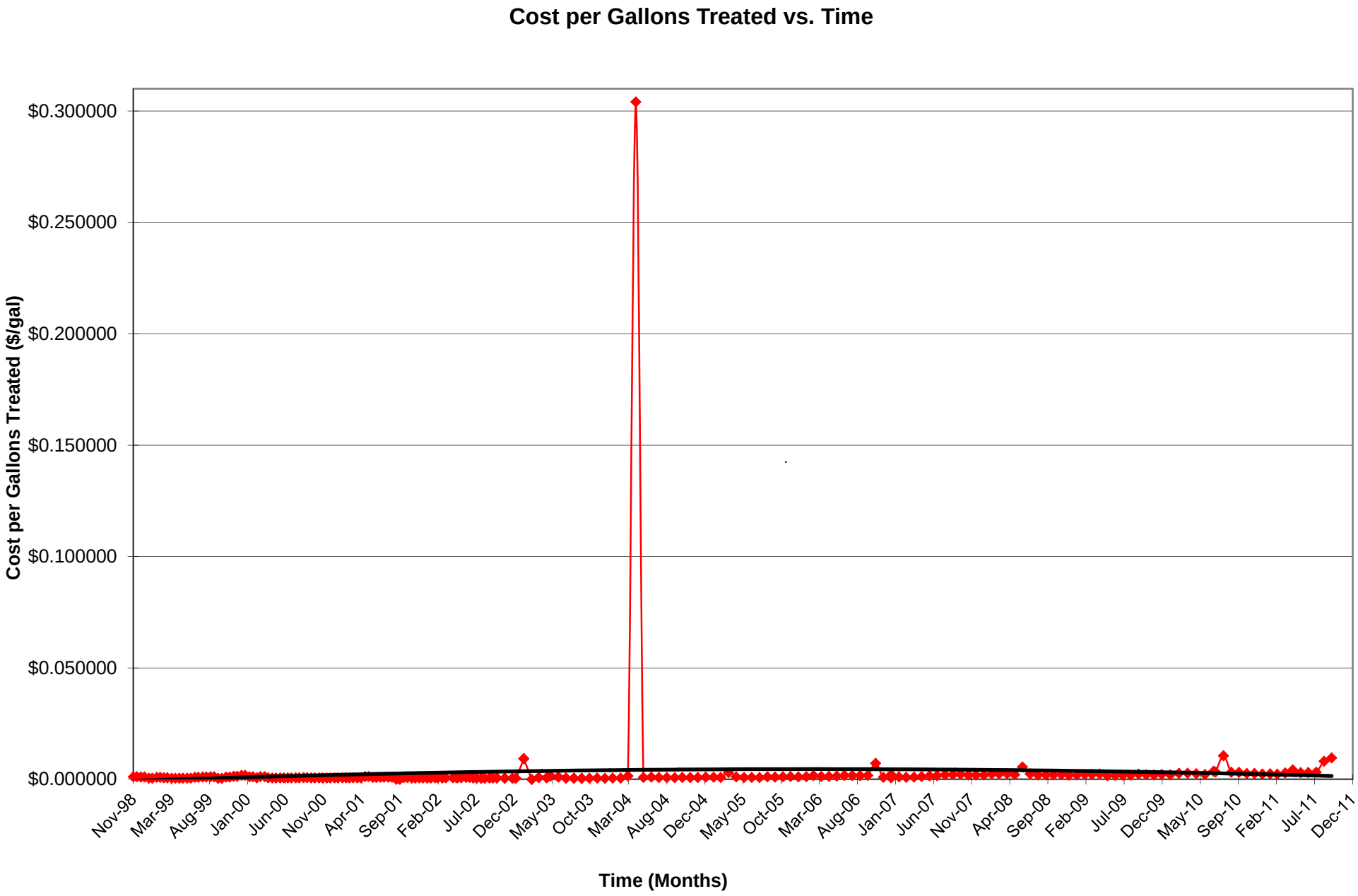


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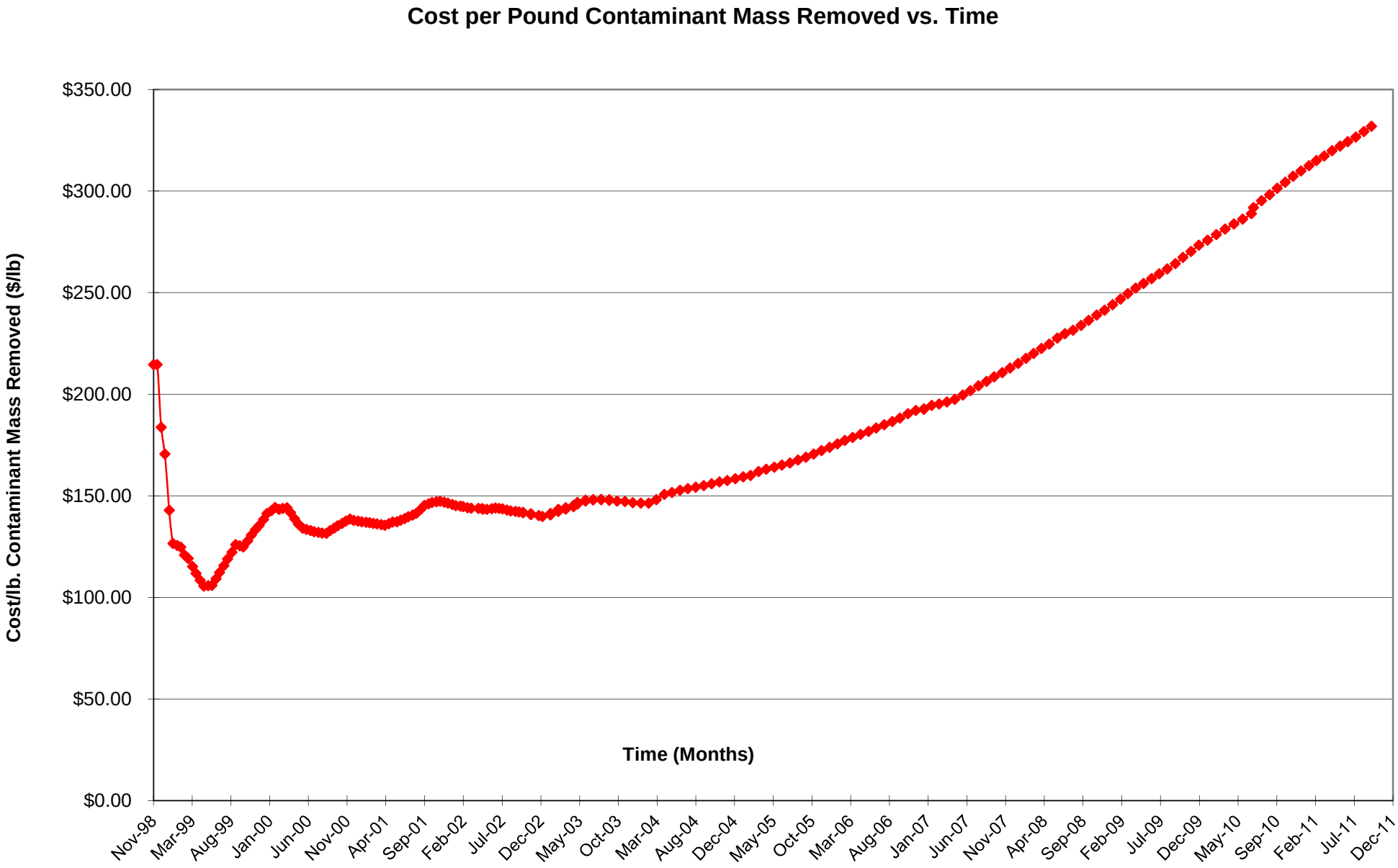
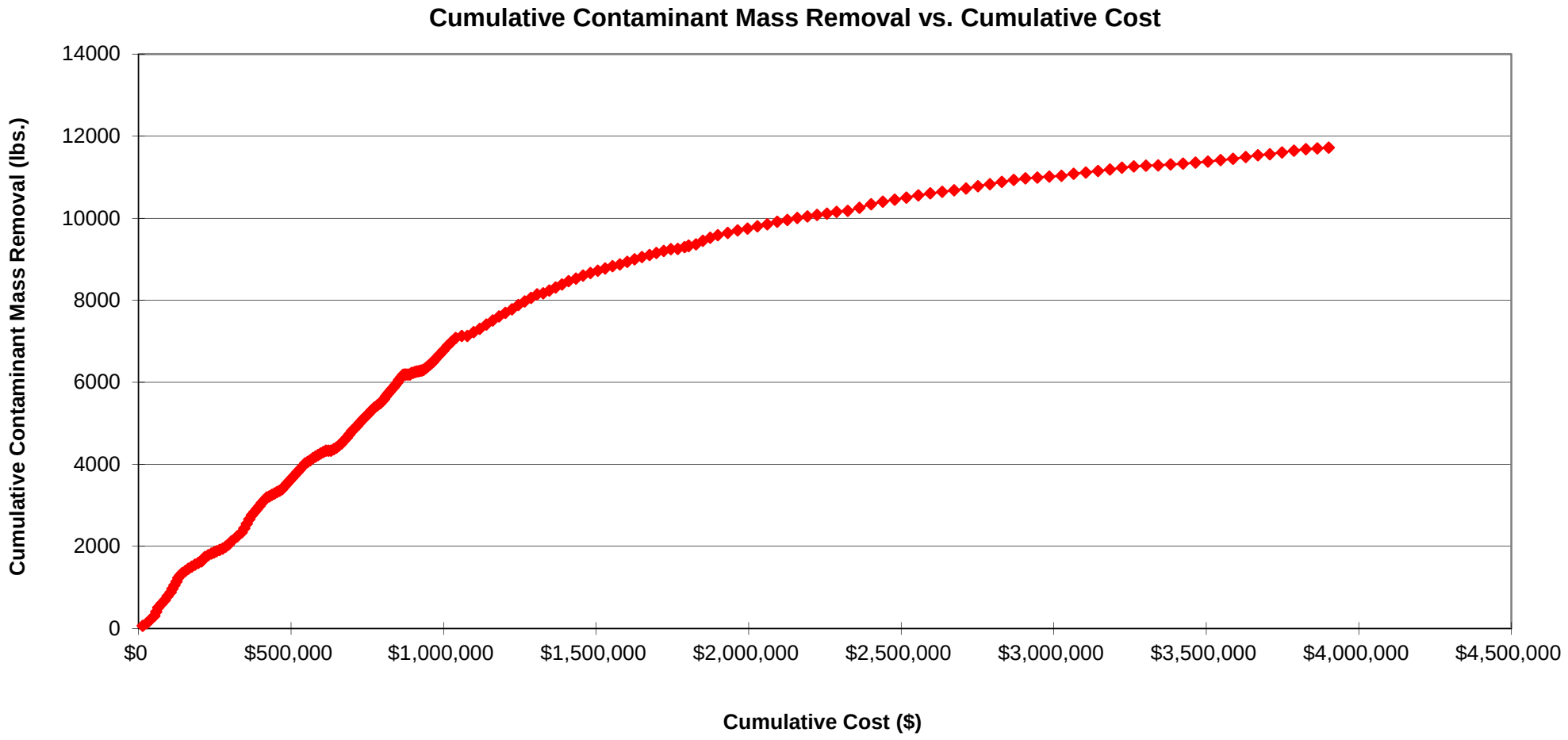
Figure 12



Docs 49267

Figure 13



Docs 49267

Figure14

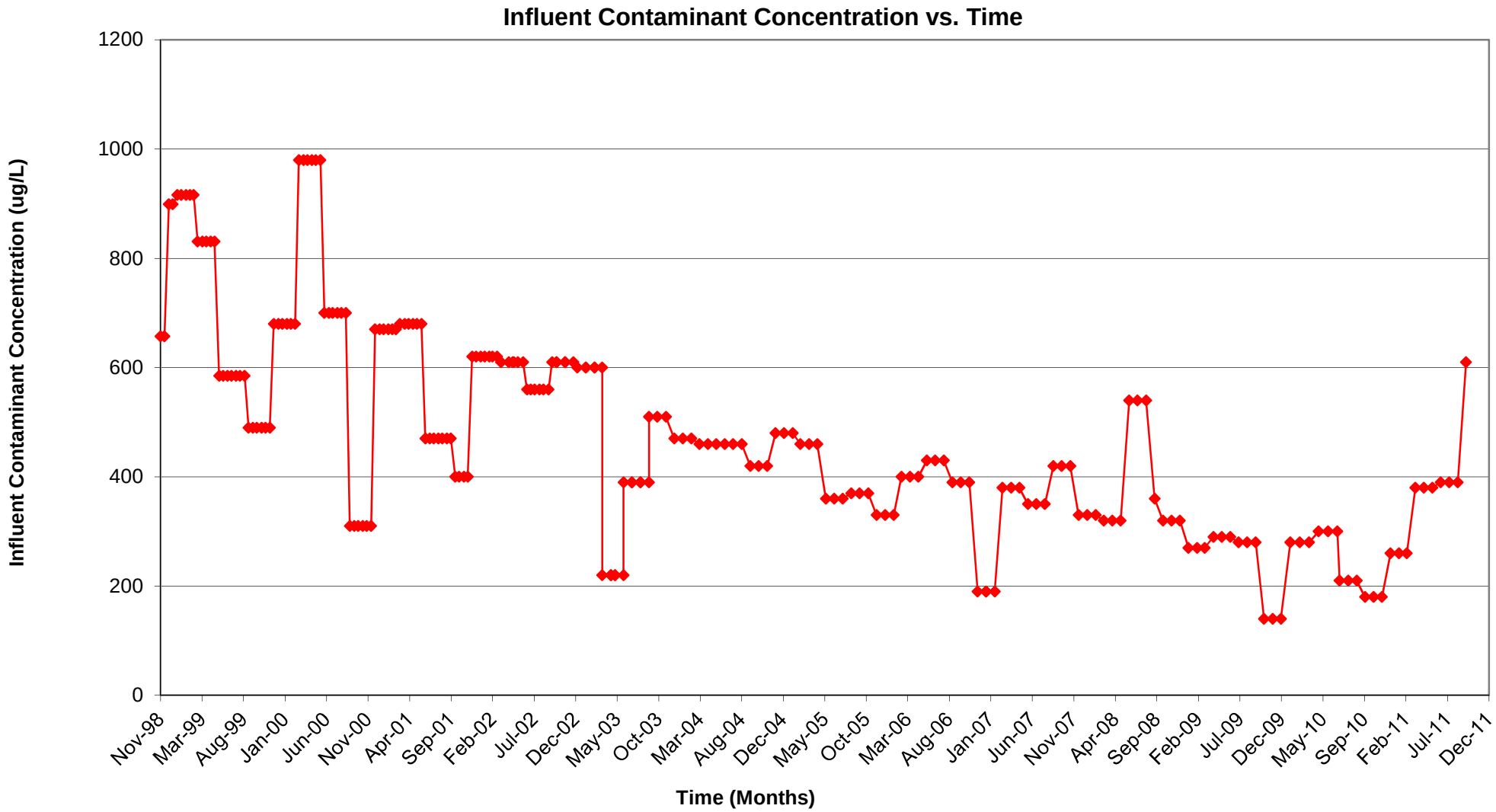


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Figure 15

Monthly Project Status Report November 2011
Facility Maintenance
Naval Industrial Reserve Ordnance Plant - Fridley, Minnesota
Prepared by Bay West, Inc.

EMAC Contract No. N40083-06-D-4015, Task Order #0005

SYSTEM OVERVIEW

- The groundwater treatment facility (GWTF) was in operation for 496 hours during the month of November 2011. Refer to **Table 1, Figure 1, and Figure 2** for historical GWTF operation data.
- The on-stream factor for November was 69.7%. The on-stream factor is the actual operation time divided by the available operation time.
- The system processed an estimated 13,814,000 gallons of groundwater in November. Historical GWTF processed groundwater volumes are provided in **Table 1, Figure 3, and Figure 4**.
- Electrical use was approximately 36,292 kilowatt-hours (kWh) for November 2011. Historical GWTF electrical power usage is included in **Table 2**.
- The GWTF removed approximately 70 pounds of trichloroethylene (TCE) from the aquifer in November 2011. Refer to **Table 3 and Figure 5** for historical GWTF TCE mass removed.
- Effluent sampling from Outfall 020 was performed on November 29, 2011. Per the National Pollutant Discharge Elimination System (NPDES) permit requirements, the samples were analyzed for eight specific volatile organic compounds (VOCs) by EPA Method 624. Laboratory analytical results were below NPDES permit limits for all analytes. The Discharge Monitoring Report (DMR) and a copy of the analytical results will be forwarded to the Minnesota Pollution Control Agency (MPCA) by the due date of January 21, 2012.
- Influent and effluent sampling from ports in the main treatment area was performed on November 29, 2011, for the purpose of calculating emission rates from the ASUs. Treatment system sampling, and subsequent air emissions calculations, are performed on a quarterly basis. The calculated emission rates for all chemicals of concern were below the corresponding site specific allowable emission rates (AERs). The emissions reporting form is included with this report in **Table 4**.

SCHEDULED MAINTENANCE

- Visually inspected flow meters and level probes for material buildup and proper operation;
- Tested the four safety showers/eyewash stations to assure adequate performance;
- Lubricated blower motors, influent pumps, and effluent pumps;
- Collected extraction well water levels on a weekly basis;
- Continued on-site and remote work associated with upgrading the programmable logic controller (PLC) and supervisory control and data acquisition (SCADA) system with current generation equipment;
- Replaced AT-7 pipe spool piece, used for flow meter transducer placement;
- Inspected AT-5A well drop pipe, pitless adaptor, and fittings;

- Implemented troubleshooting and maintenance of flow rate measurements at AT-7; and
- Began investigating the cause of higher than normal pressure losses in AT-5A and AT-5B groundwater extraction lines.

PROBLEMS AND SOLUTIONS

- Upon restarting AT-7 in October 2011, the recorded extraction well pumping rate was zero gallons-per-minute (gpm), with the flow meter generating error readings. Bay West mobilized licensed well driller E.H. Renner to the site and determined the AT-7 pump end and motor required replacement. A pump end and motor was removed from the spare parts inventory and installed. Upon start-up of the new equipment, the local flow meter continued to generate error readings and record a flow rate of 0 gpm. As the flow meter defaults to 0 gpm when internal errors are present, Bay West measured the depth to groundwater at AT-7 to assess whether the new pump and motor were functioning. Drawdown was observed, which indicated the flow meter was not functioning properly. Manual flow rate measurements were then made at AT-7 by measuring the increase in water level in the equalization tank over time with the other extraction wells temporarily turned off. The measurements started at the lowest valve opening position and were repeated as the valve was incrementally adjusted to more open positions. Through this process, it was determined that at a flow rate of approximately 37 gpm, the water table elevation stabilized at an elevation of approximately 28 feet below ground surface (bgs). This elevation is approximately 3.4 feet above the top of the AT-7 well screen. Bay West is working with the flow meter manufacturer's representative, Tech Sales, to identify and implement the most appropriate remedy for the AT-7 flow meter. Until the flow meter is repaired, Bay West will perform manual flow rate measurements on a weekly basis. The AT-7 flow rate will be adjusted based on the weekly flow rate measurements, depth to groundwater measurements, and any deviations from the design flow rate.
- Operation of new extraction well AT-13 commenced on November 11, 2011. Upon start-up, the recorded extraction well pumping rate was zero gpm. Bay West replaced the flow meter transducers with a set of transducers from the spare parts inventory. The flow meter then operated correctly, and the AT-13 pumping rate was adjusted to approximately 80 gpm, which is the most recent pumping rate at the well AT-13 replaced (AT-3A).
- Periodic ASU 202 and ASU 203 sump high water level alarms prompted the groundwater treatment system to shut-down. The automatic email alarm notification feature associated with the new SCADA system was being implemented and tested during this time period. As the notification system was not fully functional, there was no response to the alarm until the next regularly scheduled site visit. The groundwater treatment system was restarted upon arrival on-site. The automatic alarm notification system, including remote access, became fully operational on November 29, 2011. As a result, responses to future alarm conditions will occur as soon as an email notification is received.

Well Performance Summary

Well	Average Monthly Flow Rate (GPM) (Available)	Average Monthly Flow Rate (GPM) (Operational)	Ideal Flow Rate (GPM)	% of Ideal Flow (Available)	% of Ideal Flow (Operational)	Minimum Flow Rate (GPM)	Available Hours of Operation	Operating Hours	On-Stream Factor (Available)
AT-5A	58.7	104.8	156	37.63%	67.18%	137	708.5	397.0	56.03%
AT-5B	36.4	52.2	82	44.39%	63.66%	70	708.5	495.0	69.87%
AT-7	8.8[1]	37.0[1]	46	19.13%	80.43%	37	711.5	169.0	23.75%
AT-8	12.8	18.3	15	85.33%	122.00%	10	711.5	496.0	69.71%
AT-9	107.9	155.1	150	71.93%	103.40%	125	711.5	495.0	69.57%
AT-10	14.8	22.6	23	64.35%	98.26%	20	711.5	464.0	65.21%
AT-13	46.5	82.7	NA	NA	NA	NA	468.0	263.0	56.20%

NA = Not Applicable. Ideal and minimum flow rates at AT-13 have not yet been specified.

(1) Flow meter had erroneous readings during the month. Flow totals and flow rates were calculated using a manual flow rate measurement by timing the equalization tank T-101 level increase.

TABLES

1. Groundwater Treatment Facility Operations
2. Electrical Meter Readings
3. TCE Mass Removed by the GWTF
4. Air Emissions

FIGURES

1. Monthly GWTF On Stream Factor
2. GWTF Total Treated Flow
3. Total Discharge
4. Gallons Treated vs. Time
5. TCE Mass Removed
6. AT-5A Monthly Flow vs. Time
7. AT-5B Monthly Flow vs. Time
8. AT-7 Monthly Flow vs. Time
9. AT-8 Monthly Flow vs. Time
10. AT-9 Monthly Flow vs. Time
11. AT-10 Monthly Flow vs. Time
12. AT-13 Monthly Flow vs. Time

Tables

NIROP FRIDLEY

Groundwater Treatment Facility (GWTF)

	OPERATIONS (hrs)			WATER DISCHARGED (thousands of gallons)					WATER TREATED (thousands of gallons)	
Month	Available	Operating	On-stream factor	to Storm	to Sanitary	Untreated to Sanitary	Total to Sanitary	% Storm	Monthly	Cumulative
Nov-98	480.0	480.0	100.0%	0	17,524	0	17,524	0%	17,524	17,524
Dec-98	718.0	628.0	87.5%	16,078	7,087	0	7,087	69%	23,165	40,689
Jan-99	744.0	743.0	99.9%	25,571	0	0	0	100%	25,571	66,260
Feb-99	672.0	672.0	100.0%	23,938	0	0	0	100%	23,938	90,198
Mar-99	744.0	744.0	100.0%	27,394	0	0	0	100%	27,394	117,592
Apr-99	720.0	720.0	100.0%	25,254	0	0	0	100%	25,254	142,846
May-99	744.0	744.0	100.0%	23,291	0	0	0	100%	23,291	166,137
Jun-99	720.0	713.0	99.0%	25,823	0	0	0	100%	25,823	191,960
Jul-99	744.0	744.0	100.0%	22,266	0	0	0	100%	22,266	214,226
Aug-99	684.0	684.0	100.0%	21,634	0	0	0	100%	21,634	235,860
Sep-99	720.0	720.0	100.0%	18,205	0	0	0	100%	18,205	254,065
Oct-99	744.0	744.0	100.0%	23,029	0	0	0	100%	23,029	277,094
Nov-99	720.0	720.0	100.0%	22,783	0	0	0	100%	22,783	299,877
Dec-99	535.0	535.0	100.0%	12,818	0	0	0	100%	12,818	312,695
Jan-00	356.0	356.0	100.0%	10,400	0	0	0	100%	10,400	323,095
Feb-00	695.0	694.0	99.9%	16,944	0	0	0	100%	16,944	340,039
Mar-00	744.0	743.5	99.9%	27,131	0	0	0	100%	27,131	367,170
Apr-00	720.0	720.0	100.0%	25,899	0	0	0	100%	25,899	393,069
May-00	744.0	744.0	100.0%	27,458	0	0	0	100%	27,458	420,527
Jun-00	718.9	718.9	100.0%	25,136	0	0	0	100%	25,136	445,663
Jul-00	744.0	744.0	100.0%	25,637	0	0	0	100%	25,637	471,300
Aug-00	744.0	744.0	100.0%	24,341	0	0	0	100%	24,341	495,641
Sep-00	655.5	655.5	100.0%	22,559	0	0	0	100%	22,559	518,200
Oct-00	744.0	744.0	100.0%	25,955	0	0	0	100%	25,955	544,155
Nov-00	720.0	718.0	99.7%	25,759	0	0	0	100%	25,759	569,914
Dec-00	744.0	743.5	99.9%	27,404	0	0	0	100%	27,404	597,318
Jan-01	744.0	744.0	100.0%	24,666	0	0	0	100%	24,666	621,984
Feb-01	672.0	671.0	99.9%	23,956	0	0	0	100%	23,956	645,940
Mar-01	744.0	737.0	99.1%	24,694	0	0	0	100%	24,694	670,634
Apr-01	720.0	719.5	99.9%	24,964	0	0	0	100%	24,964	695,598
May-01	604.3	602.3	99.7%	13,656	0	0	0	100%	13,656	709,254
Jun-01	709.5	708.3	99.8%	20,000	0	0	0	100%	20,000	729,254
Jul-01	730.0	730.0	100.0%	18,077	0	0	0	100%	18,077	747,331
Aug-01	491.0	491.0	100.0%	17,921	0	0	0	100%	17,921	765,252
Sep-01	0.0	0.0	100.0%	0	0	0	0	100%	0	765,252
Oct-01	736.0	472.5	64.2%	21,376	0	0	0	100%	21,376	786,628
Nov-01	720.0	720.0	100.0%	30,205	0	0	0	100%	30,205	816,833
Dec-01	744.0	744.0	100.0%	28,114	0	0	0	100%	28,114	844,947
Jan-02	742.0	737.0	99.3%	30,483	0	0	0	100%	30,483	875,430
Feb-02	672.0	672.0	100.0%	25,538	0	0	0	100%	25,538	900,968
Mar-02	744.0	744.0	100.0%	29,957	0	0	0	100%	29,957	930,925
Apr-02	744.0	743.8	100.0%	28,569	0	0	0	100%	28,569	959,494

O&M Start Date: 11 November 1998
Docs 58644

Table 1

NIROP FRIDLEY

Groundwater Treatment Facility (GWTF)

	OPERATIONS (hrs)			WATER DISCHARGED (thousands of gallons)					WATER TREATED (thousands of gallons)	
Month	Available	Operating	On-stream factor	to Storm	to Sanitary	Untreated to Sanitary	Total to Sanitary	% Storm	Monthly	Cumulative
May-02	744.0	741.0	99.6%	28,656	0	0	0	100%	28,656	988,150
Jun-02	720.0	720.0	100.0%	22,131	0	0	0	100%	22,131	1,010,281
Jul-02	744.0	744.0	100.0%	21,367	0	0	0	100%	21,367	1,031,648
Aug-02	744.0	744.0	100.0%	28,328	0	0	0	100%	28,328	1,059,976
Sep-02	630.3	630.3	100.0%	20,861	0	0	0	100%	20,861	1,080,837
Oct-02	744.0	744.0	100.0%	21,417	0	0	0	100%	21,417	1,102,254
Nov-02	720.0	720.0	100.0%	25,003	0	0	0	100%	25,003	1,127,257
Dec-02	744.0	742.0	99.7%	25,327	0	0	0	100%	25,327	1,152,584
Jan-03	744.0	55.0	7.4%	1,048	0	0	0	100%	1,048	1,153,632
Feb-03	672.0	0.0	0.0%	0	0	0	0	100%	0	1,153,632
Mar-03	744.0	309.0	41.5%	13,387	0	0	0	100%	13,387	1,167,019
Apr-03	526.5	425.5	80.8%	16,584	0	0	0	100%	16,584	1,183,603
May-03	744.0	298.5	40.1%	7,448	0	0	0	100%	7,448	1,191,051
Jun-03	720.0	253.0	35.1%	10,775	0	0	0	100%	10,775	1,201,826
Jul-03	734.0	576.3	78.5%	22,629	0	0	0	100%	22,629	1,224,455
Aug-03	732.5	639.8	87.3%	25,591	46	0	46	99.8%	25,637	1,250,092
Sep-03	720.0	719.0	99.9%	23,028	4,532	0	4,532	83.6%	27,560	1,277,652
Oct-03	681.7	648.5	95.1%	25,389	0	0	0	100%	25,389	1,303,041
Nov-03	720.0	694.0	96.4%	22,882	0	0	0	100%	22,882	1,325,923
Dec-03	743.0	740.5	99.7%	31,010	0	0	0	100%	31,010	1,356,933
Jan-04	744.0	727.0	97.7%	25,456	0	0	0	100%	25,456	1,382,389
Feb-04	689.7	689.7	100.0%	23,771	0	0	0	100%	23,771	1,406,160
Mar-04	506.5	353.5	69.8%	12,928	0	0	0	100%	12,928	1,419,088
Apr-04	720.0	2.0	0.3%	60	0	0	0	100%	60	1,419,148
May-04	744.0	635.0	85.3%	24,104	0	0	0	100%	24,104	1,443,252
Jun-04	613.5	613.5	100.0%	20,988	0	0	0	100%	20,988	1,464,240
Jul-04	735.5	732.8	99.6%	26,846	0	0	0	100%	26,846	1,491,086
Aug-04	741.0	741.0	100.0%	26,760	0	0	0	100%	26,760	1,517,846
Sep-04	718.0	717.0	99.9%	27,276	0	0	0	100%	27,276	1,545,122
Oct-04	676.8	676.8	100.0%	24,709	0	0	0	100%	24,709	1,569,831
Nov-04	720.0	720.0	100.0%	25,859	0	0	0	100%	25,859	1,595,690
Dec-04	744.0	744.0	100.0%	26,229	0	0	0	100%	26,229	1,621,919
Jan-05	744.0	667.0	89.7%	20,915	0	0	0	100%	20,915	1,642,834
Feb-05	672.0	672.0	100.0%	22,329	0	0	0	100%	22,329	1,665,163
Mar-05	744.0	716.8	96.3%	22,960	0	0	0	100%	22,960	1,688,123
Apr-05	384.0	322.0	83.9%	6,515	0	0	0	100%	6,515	1,694,638
May-05	576.0	503.5	87.4%	17,859	0	0	0	100%	17,859	1,712,497
Jun-05	720.0	714.5	99.2%	24,450	0	0	0	100%	24,450	1,736,947
Jul-05	744.0	712.5	95.8%	25,301	0	0	0	100%	25,301	1,762,248
Aug-05	744.0	744.0	100.0%	25,916	0	0	0	100%	25,916	1,788,164
Sep-05	720.0	715.3	99.4%	20,837	0	0	0	100%	20,837	1,809,001
Oct-05	744.0	744.0	100.0%	24,028	0	0	0	100%	24,028	1,833,029

NIROP FRIDLEY

Groundwater Treatment Facility (GWTF)

	OPERATIONS (hrs)			WATER DISCHARGED (thousands of gallons)					WATER TREATED (thousands of gallons)	
Month	Available	Operating	On-stream factor	to Storm	to Sanitary	Untreated to Sanitary	Total to Sanitary	% Storm	Monthly	Cumulative
Nov-05	720.0	720.0	100.0%	20,553	0	0	0	100%	20,553	1,853,582
Dec-05	686.0	622.3	90.7%	19,037	0	0	0	100%	19,037	1,872,619
Jan-06	744.0	744.0	100.0%	21,858	0	0	0	100%	21,858	1,894,477
Feb-06	672.0	672.0	100.0%	19,590	0	0	0	100%	19,590	1,914,067
Mar-06	710.5	710.0	99.9%	13,935	0	0	0	100%	13,935	1,928,002
Apr-06	654.0	654.0	100.0%	18,391	0	0	0	100%	18,391	1,946,393
May-06	744.0	744.0	100.0%	18,116	0	0	0	100%	18,116	1,964,509
Jun-06	720.0	719.5	99.9%	16,616	0	0	0	100%	16,616	1,981,125
Jul-06	716.0	716.0	100.0%	14,232	0	0	0	100%	14,232	1,995,357
Aug-06	744.0	742.0	99.7%	13,291	0	0	0	100%	13,291	2,008,648
Sep-06	720.0	720.0	100.0%	14,269	0	0	0	100%	14,269	2,022,917
Oct-06	731.0	730.5	99.9%	13,496	0	0	0	100%	13,496	2,036,413
Nov-06	396.0	110.0	27.8%	3,073	0	0	0	100%	3,073	2,039,486
Dec-06	744.0	743.5	99.9%	25,287	0	0	0	100%	25,287	2,064,773
Jan-07	720.0	719.5	99.9%	25,118	0	0	0	100%	25,118	2,089,891
Feb-07	671.8	659.8	98.2%	21,953	0	0	0	100%	21,953	2,111,844
Mar-07	744.0	734.0	98.7%	25,860	0	0	0	100%	25,860	2,137,703
Apr-07	720.0	720.0	100.0%	24,240	0	0	0	100%	24,240	2,161,943
May-07	744.0	744.0	100.0%	19,004	0	0	0	100%	19,004	2,180,947
Jun-07	719.5	719.5	100.0%	20,659	0	0	0	100%	20,659	2,201,606
Jul-07	744.0	744.0	100.0%	19,389	0	0	0	100%	19,389	2,220,995
Aug-07	696.0	696.0	100.0%	16,354	0	0	0	100%	16,354	2,237,349
Sep-07	720.0	720.0	100.0%	15,320	0	0	0	100%	15,320	2,252,669
Oct-07	744.0	744.0	100.0%	14,409	0	0	0	100%	14,409	2,267,078
Nov-07	720.0	720.0	100.0%	17,388	0	0	0	100%	17,388	2,284,466
Dec-07	744.0	739.0	99.3%	17,002	0	0	0	100%	17,002	2,301,468
Jan-08	742.0	684.0	92.2%	17,115	0	0	0	100%	17,115	2,318,583
Feb-08	695.3	611.8	88.0%	13,581	0	0	0	100%	13,581	2,332,164
Mar-08	744.0	742.0	99.7%	13,277	0	0	0	100%	13,277	2,345,441
Apr-08	720.0	717.0	99.6%	12,518	0	0	0	100%	12,518	2,357,959
May-08	718.0	692.0	96.4%	15,430	0	0	0	100%	15,430	2,373,389
Jun-08	333.5	333.5	100.0%	6,523	0	0	0	100%	6,523	2,379,912
Jul-08	719.0	719.0	100.0%	15,762	0	0	0	100%	15,762	2,395,674
Aug-08	729.3	729.3	100.0%	20,183	0	0	0	100%	20,183	2,415,857
Sep-08	720.0	720.0	100.0%	19,632	0	0	0	100%	19,632	2,435,489
Oct-08	737.0	737.0	100.0%	19,818	0	0	0	100%	19,818	2,455,307
Nov-08	662.0	662.0	100.0%	18,191	0	0	0	100%	18,191	2,473,498
Dec-08	744.0	744.0	100.0%	20,926	0	0	0	100%	20,926	2,494,424
Jan-09	741.0	741.0	100.0%	20,301	44	0	44	99.8%	20,301	2,514,725
Feb-09	672.0	672.0	100.0%	17,546	0	0	0	100%	17,546	2,532,271
Mar-09	711.9	711.2	99.9%	17,766	0	0	0	100%	17,766	2,550,037
Apr-09	709.0	705.6	99.5%	16,434	0	0	0	100%	16,434	2,566,471

O&M Start Date: 11 November 1998
Docs 58644

Table 1

NIROP FRIDLEY

Groundwater Treatment Facility (GWTF)

	OPERATIONS (hrs)			WATER DISCHARGED (thousands of gallons)					WATER TREATED (thousands of gallons)	
Month	Available	Operating	On-stream factor	to Storm	to Sanitary	Untreated to Sanitary	Total to Sanitary	% Storm	Monthly	Cumulative
May-09	739.8	739.8	100.0%	23,663	0	0	0	100%	23,663	2,590,134
Jun-09	719.8	719.8	100.0%	21,234	0	0	0	100%	21,234	2,611,368
Jul-09	744.0	744.0	100.0%	21,846	0	0	0	100%	21,846	2,633,214
Aug-09	744.0	744.0	100.0%	20,933	0	0	0	100%	20,933	2,654,147
Sep-09	697.2	697.2	100.0%	16,585	0	0	0	100%	16,585	2,670,732
Oct-09	743.5	743.5	100.0%	18,919	0	0	0	100%	18,919	2,689,651
Nov-09	720.0	720.0	100.0%	19,768	0	0	0	100%	19,768	2,709,419
Dec-09	744.0	744.0	100.0%	18,162	0	0	0	100%	18,162	2,727,581
Jan-10	740.3	740.3	100.0%	19,542	0	0	0	100%	19,542	2,747,123
Feb-10	672.0	658.0	97.9%	14,805	0	0	0	100%	14,805	2,761,928
Mar-10	744.0	744.0	100.0%	14,596	0	0	0	100%	14,596	2,776,524
Apr-10	720.0	720.0	100.0%	15,598	0	0	0	100%	15,598	2,792,122
May-10	744.0	742.5	99.8%	18,090	0	0	0	100%	18,090	2,810,212
Jun-10	720.0	697.0	96.8%	10,717	0	0	0	100%	10,717	2,820,929
Jul-10	744.0	722.2	97.1%	12,254	0	0	0	100%	12,254	2,833,183
Aug-10	694.5	404.0	58.2%	3,789	0	0	0	100%	3,789	2,836,972
Sep-10	712.0	700.0	98.3%	12,552	0	0	0	100%	12,552	2,849,524
Oct-10	690.6	690.6	100.0%	12,926	0	0	0	100%	12,926	2,862,450
Nov-10	719.5	716.0	99.5%	15,466	0	0	0	100%	15,466	2,877,916
Dec-10	737.0	721.5	97.9%	15,855	0	0	0	100%	15,855	2,893,771
Jan-11	744.0	744.0	100.0%	17,199	0	0	0	100%	17,199	2,910,970
Feb-11	667.0	665.0	99.7%	16,551	0	0	0	100%	16,551	2,927,521
Mar-11	744.0	744.0	100.0%	17,827	0	0	0	100%	17,827	2,945,348
Apr-11	711.3	708.3	99.6%	14,063	0	0	0	100%	14,063	2,959,411
May-11	384.0	384.0	100.0%	9,042	0	0	0	100%	9,042	2,968,453
Jun-11	719.5	716.8	99.6%	13,216	0	0	0	100%	13,216	2,981,669
Jul-11	744.0	744.0	100.0%	13,119	0	0	0	100%	13,119	2,994,788
Aug-11	744.0	682.0	91.7%	12,377	0	0	0	100%	12,377	3,007,165
Sep-11	120.0	120.0	100.0%	4,522	0	0	0	100%	4,522	3,011,687
Oct-11	349.0	170.0	48.7%	3,896	0	0	0	100%	3,896	3,015,583
Nov-11	711.5	496.0	69.7%	13,814	0	0	.	100%	13,814	3,029,397

Note: Available hours are 24 hours per day, less scheduled down time and power outages.

* Monthly flow incorrectly reported for Jul-04 through Dec-04 - corrected January 2005 using the corrected estimate for AT-10 monthly flow.

NIROP FRIDLEY
Ground Water Treatment Facility (GWTF)

	Electrical Meter Readings (kW·h)					
Date	**MCC #1**	**MCC #2**	**Wells 2, 3A, 5A, 5B**	**Well 1A**	**Well 4**	**Monthy Usage**
2/1/2000	57,305	620,300				38,046
3/1/2000	59,597	656,054				36,133
3/9/2000	60,348	667,580	18,260	3,284	2,312	65,029
4/3/2000	63,080	704,113	38698	6043	4879	74,067
5/1/2000	66,067	746,920	60,940	9,238	7,715	81,545
6/1/2000	68,972	793,455	86495	12728	10775	66,128
7/1/2000	71,562	840,441	110,243	16,307		
7/6/2000					13701	13,701
8/1/2000	73,881	881,304	130,691	19,559	16,686	72,336
9/1/2000	76,316	924,799	152695	22976	17671	67,877
10/2/2000	78,561	964,802	172,714	26,079	20,178	
11/1/2000	80,952	7,402	195655	29408	22454	89,927
12/4/2000	83,561	56,966	225,897	33,105	26,269	81,706
1/2/2001	85,851	101,872	254750	36270	28761	72,935
2/1/2001	88,106	143,918	282,532	37,122	28,761	83,944
3/1/2001	90,240	190,303	314000	41079	28761	66,663
4/3/2001	92,677	230,575	335,297	43,736	28,761	65,567
5/1/2001	94,779	269,617	357244	46212	28761	
6/5/2001	97,821	304,746	*	*	*	38,108
7/2/2001	102,175	338,500	*	*	*	44,802
8/2/2001	106,592	378,885	*	*	*	37,804
9/12/2001	111,321	411,960	*	*	*	13,663
10/18/2001	112,956	423,988	*	*	*	29,471
11/1/2001	117,010	449,405	*	*	*	68,542
12/4/2001	126,457	508,500	*	*	*	60,932
1/2/2002	134,884	561,005	*	*	*	56,801
2/1/2002	142,948	609,742	*	*	*	55,300
3/1/2002	150,583	657,407	*	*	*	64,231
4/1/2002	159,332	712,889	*	*	*	59,291
5/1/2002	167,808	763,704	*	*	*	63,448
6/3/2002	176,272	818,688	*	*	*	43,974
7/1/2002	182,246	856,688	*	*	*	45,609
8/1/2002	188,404	896,139	*	*	*	60,074
9/3/2002	196,255	948,362	*	*	*	44,067
10/1/2002	202,142	986,542	*	*	*	60,158
11/1/2002	209,581	1,039,261	*	*	*	60,538
12/2/2002	216,632	1,092,748	*	*	*	
1/1/2003	223,233	0	*	*	*	
2/1/2003	224,233	1,146,792	*	*	*	7,827
3/19/2003	227,523	1,151,329	*	*	*	22,891
4/3/2003	230,589	1,171,154	*	*	*	32,058
5/1/2003	235,275	1,198,526	*	*	*	18,373

NIROP FRIDLEY
Ground Water Treatment Facility (GWTF)

	Electrical Meter Readings (kW·h)					
Date	**MCC #1**	**MCC #2**	**Wells 2, 3A, 5A, 5B**	**Well 1A**	**Well 4**	**Monthy Usage**
6/4/2003	237,675	1,214,499	*	*	*	20,360
7/1/2003	240,411	1,232,123	*	*	*	42,930
8/1/2003	246,351	1,269,113	*	*	*	49,909
9/2/2003	253,306	1,312,067	*	*	*	52,166
10/1/2003	260,662	1,356,877	*	*	*	58,962
11/3/2003	268,788	1,407,713	*	*	*	57,373
12/1/2003	276,592	1,457,282	*	*	*	67,477
1/2/2004	285,175	1,516,176	*	*	*	67,278
2/2/2004	293,559	1,575,070	*	*	*	60,542
3/1/2004	301,245	1,627,926	*	*	*	31,187
4/1/2004	305,283	1,655,075	*	*	*	1,037
5/3/2004	305,515	1,655,880	*	*	*	51,931
6/1/2004	312,129	1,701,197	*	*	*	47,852
7/1/2004	318,012	1,743,166	*	*	*	60,764
8/3/2004	326,133	1,795,809	*	*	*	55,312
9/1/2004	335,039	1,842,215	*	*	*	52,307
10/1/2004	340,422	1,889,139	*	*	*	53,798
11/2/2004	347,296	1,936,063	*	*	*	64,045
12/1/2004	354,514	1,992,890	*	*	*	64,887
1/5/2005	362,574	49,717	*	*	*	48,313
2/1/2005	368,114	92,490	*	*	*	56,517
3/1/2005	374,689	142,432	*	*	*	35,669
4/1/2005	381,858	170,932	*	*	*	32,506
5/11/2005	384,388	200,908	*	*	*	37,857
6/2/2005	389,382	233,771	*	*	*	53,851
7/1/2005	395,908	281,096	*	*	*	55,772
8/1/2005	402,786	329,990	*	*	*	58,530
9/1/2005	410,054	381,252	*	*	*	59,756
10/4/2005	416,742	434,320	*	*	*	54,337
11/1/2005	423,117	482,282	*	*	*	59,439
12/1/2005	429,602	535,236	*	*	*	58,139
1/3/2006	437,032	585,945	*	*	*	64,273
2/3/2006	444,929	642,321	*	*	*	59,745
3/3/2006	451,966	695,029	*	*	*	59,447
4/4/2006	458,470	747,972	*	*	*	52,154
5/2/2006	464,407	794,189	*	*	*	56,066
6/1/2006	470,107	844,555	*	*	*	67,078
7/7/2006	476,656	905,084	*	*	*	75,362
8/17/2006	483,201	973,901	*	*	*	28,651
9/1/2006	485,579	174	*	*	*	60,559
10/2/2006	490,846	55,466	*	*	*	64,783

NIROP FRIDLEY
Ground Water Treatment Facility (GWTF)

	Electrical Meter Readings (kW·h)					
Date	**MCC #1**	**MCC #2**	**Wells 2, 3A, 5A, 5B**	**Well 1A**	**Well 4**	**Monthy Usage**
11/16/2006	497,232	113,863	*	*	*	30,896
12/12/2006	501,656	140,335	*	*	*	41,005
1/2/2007	507,345	175,651	*	*	*	89,453
2/14/2007	519,226	253,223	*	*	*	60,625
3/15/2007	526,775	306,299	*	*	*	37,019
4/1/2007	531,435	338,658	*	*	*	59,380
5/1/2007	538,780	390,693	*	*	*	60,309
6/2/2007	546,435	443,347	*	*	*	57,976
7/2/2007	552,240	495,518	*	*	*	54,945
8/1/2007	558,047	544,656	*	*	*	56,900
9/4/2007	563,999	595,604	*	*	*	48,947
10/1/2007	568,907	639,643	*	*	*	55,912
11/1/2007	574,269	690,193	*	*	*	61,551
12/3/2007	580,906	745,107	*	*	*	58,075
1/2/2008	587,234	796,854	*	*	*	61,758
2/1/2008	593,878	851,968	*	*	*	56,961
3/6/2008	601,457	901,350	*	*	*	47,128
4/1/2008	607,103	942,832	*	*	*	51,563
5/2/2008	613,973	987,525	*	*	*	45,409
6/2/2008	619,382	27,525	*	*	*	23,755
7/1/2008	621,730	48,932	*	*	*	57,458
8/1/2008	627,904	100,216	*	*	*	59,836
9/2/2008	634,818	153,138	*	*	*	57,157
10/4/2008	641,270	203,843	*	*	*	61,110
11/3/2008	648,196	258,027	*	*	*	58,512
12/1/2008	655,158	309,577	*	*	*	71,027
1/2/2009	663,755	372,007	*	*	*	69,361
2/2/2009	672,125	432,998	*	*	*	62,234
3/2/2009	679,788	487,569	*	*	*	61,618
4/1/2009	687,315	541,660	*	*	*	63,015
5/1/2009	694,461	597,529	*	*	*	63,751
6/1/2009	701,440	654,301	*	*	*	60,286
7/1/2009	708,069	707,958	*	*	*	65,088
8/3/2009	715,267	765,848	*	*	*	57,140
9/1/2009	721,611	816,644	*	*	*	56,282
10/1/2009	727,548	866,989	*	*	*	65,845
11/2/2009	734,666	925,716	*	*	*	60,372
12/1/2009	741,891	978,863	*	*	*	77,030
1/1/2010	750,050	1,047,734	*	*	*	63,139
2/1/2010	757,037	1,103,886	*	*	*	61,079

NIROP FRIDLEY
Ground Water Treatment Facility (GWTF)

	Electrical Meter Readings (kW·h)					
Date	**MCC #1**	**MCC #2**	**Wells 2, 3A, 5A, 5B**	**Well 1A**	**Well 4**	**Monthy Usage**
3/1/2010	763,509	1,158,493	*	*	*	69,431
4/1/2010	769,960	1,221,473	*	*	*	59,638
5/3/2010	775,813	1,275,258	*	*	*	54,143
6/1/2010	780,680	1,324,534	*	*	*	51,279
7/1/2010	784,369	1,372,124	*	*	*	75,167
8/2/2010	789,289	1,442,371	*	*	*	8,482
9/1/2010	791,567	1,448,575	*	*	*	55,237
10/1/2010	796,016	1,499,363	*	*	*	61,303
11/1/2010	800,411	1,556,271	*	*	*	60,565
12/1/2010	806,672	1,610,575	*	*	*	68,226
1/3/2011	813,611	1,671,862	*	*	*	64,951
2/1/2011	820,001	1,730,423	*	*	*	58,883
3/1/2011	825,935	1,783,372	*	*	*	68,939
4/1/2011	832,880	1,845,366	*	*	*	58,997
5/9/2011	838,973	1,898,270	*	*	*	29,524
6/1/2011	841,656	1,925,111	*	*	*	52,109
7/1/2011	846,958	1,971,918	*	*	*	43,675
8/1/2011	851,869	2,010,682	*	*	*	38,885
9/1/2011	856,221	2,045,215	*	*	*	7,098
10/1/2011	857,222	2,051,312	*	*	*	18,094
11/1/2011	859,066	2,067,562	*	*	*	36,292

* Electrical metering for the extraction wells runs through MCC #1

- The electrical meter in the main treatment area was misread on 1/1/03, thus it was not reset. December electricity usage was estimated to be the same as November 2002.

^ The electrical meter in the main treatment area had reset after the scheduled power shut-down. October 2004 electricity usage for MCC#2 was estimated to be the same as September 2004.

+ - electrical readings were not obtained on December 1, 2004, therefore electrical usage for November was estimated to be similar to October 2004.

Table 3 TCE Mass Removed by the GWTF

Month	Influent Concentration	Effluent Concentration	TCE Mass Removed		
			Measured Period Total	GWTF Total TCE Mass Removed	Cumulative TCE Mass Removed[1]
Month-Year	*µ g/L*	*µ g/L*	*lbs*	*lbs*	*lbs*
Nov-98	657	2.74	129	129	25778
Dec-98	899	1	173	303	25952
Jan-99	916	1.26	208	511	26160
Feb-99	916	2.49	181	692	26341
Mar-99	831	1.18	187	880	26529
Apr-99	831	1.56	175	1054	26703
May-99	831	1.32	178	1232	26881
Jun-99	585	1.84	114	1346	26995
Jul-99	585	1.38	111	1457	27106
Aug-99	585	1	101	1559	27208
Sep-99	490	1	82	1641	27290
Oct-99	490	1	102	1743	27392
Nov-99	490	1	85	1828	27477
Dec-99	680	1	59	1887	27536
Jan-00	680	2	63	1951	27600
Feb-00	680	1	96	2047	27696
Mar-00	980	7.1	198	2245	27894
Apr-00	980	1.5	197	2443	28092
May-00	980	1.6	224	2667	28316
Jun-00	700	1.9	176	2843	28492
Jul-00	700	2.2	149	2992	28641
Aug-00	700	1.5	142	3134	28783
Sep-00	310	2.1	94	3229	28878
Oct-00	310	1.6	67	3296	28945
Nov-00	310	1.4	66	3363	29012
Dec-00	670	4.9	111	3474	29123
Jan-01	670	2.8	137	3612	29261
Feb-01	670	1	133	3746	29395
Mar-01	680	4.9	138	3884	29533
Apr-01	680	1.4	146	4031	29680
May-01	680	1	77	4109	29758
Jun-01	470	1.1	96	4204	29853
Jul-01	470	1	71	4275	29924
Aug-01	470	1	70	4345	29994
Sep-01	470	1	0	4345	29994
Oct-01	400	1	71	4416	30065
Nov-01	400	1	100	4517	30166
Dec-01	620	1	145	4662	30311
Jan-02	620	1	157	4820	30469
Feb-02	620	1	132	4951	30600
Mar-02	610	1	153	5105	30754

Table 3 TCE Mass Removed by the GWTF

Month	Influent Concentration	Effluent Concentration	TCE Mass Removed		
			Measured Period Total	GWTF Total TCE Mass Removed	Cumulative TCE Mass Removed[1]
Month-Year	*µ g/L*	*µ g/L*	*lbs*	*lbs*	*lbs*
Apr-02	610	1	145	5250	30899
May-02	610	1	145	5395	31044
Jun-02	560	4.3	107	5503	31152
Jul-02	560	4.3	99	5603	31252
Aug-02	560	1	132	5735	31384
Sep-02	610	1	101	5837	31486
Oct-02	610	1	109	5945	31594
Nov-02	610	1	127	6072	31721
Dec-02	600	1	127	6200	31849
Jan-03	600	1	5	6205	31854
Feb-03	600	1	0	6205	31854
Mar-03	220	1	46	6251	31900
Apr-03	220	1	30	6281	31930
May-03	220	1	14	6295	31944
Jun-03	390	1	27	6322	31971
Jul-03	390	1	73	6396	32045
Aug-03	390	1.1	83	6479	32128
Sep-03	510	1	101	6582	32231
Oct-03	510	1	108	6690	32339
Nov-03	510	1	97	6787	32436
Dec-03	470	1	121	6909	32558
Jan-04	470	1	99	7008	32657
Feb-04	470	1	93	7101	32750
Mar-04	460	1	49	7151	32800
Apr-04	460	1	0	7151	32800
May-04	460	1	92	7243	32892
Jun-04	460	1	80	7324	32973
Jul-04	460	1	103	7427	33076
Aug-04	460	1	102	7529	33178
Sep-04	420	1	95	7625	33274
Oct-04	420	1	86	7711	33360
Nov-04	420	1	90	7801	33450
Dec-04	480	1	105	7906	33555
Jan-05	480	1	83	7990	33639
Feb-05	480	1	89	8079	33728
Mar-05	460	1	88	8167	33816
Apr-05	460	1	25	8192	33841
May-05	460	1	68	8260	33909
Jun-05	360	1.8	73	8334	33983
Jul-05	360	1	76	8410	34059
Aug-05	360	1	77	8487	34136

Table 3 TCE Mass Removed by the GWTF

Month	Influent Concentration	Effluent Concentration	TCE Mass Removed		
			Measured Period Total	GWTF Total TCE Mass Removed	Cumulative TCE Mass Removed[1]
Month-Year	*µ g/L*	*µ g/L*	*lbs*	*lbs*	*lbs*
Sep-05	370	1	64	8551	34200
Oct-05	370	1	74	8625	34274
Nov-05	370	1	63	8689	34338
Dec-05	330	0.29	52	8741	34390
Jan-06	330	0.46	60	8801	34450
Feb-06	330	5	53	8855	34504
Mar-06	400	5	46	8901	34550
Apr-06	400	5	60	8963	34612
May-06	400	5	60	9023	34672
Jun-06	430	1	59	9082	34731
Jul-06	430	5	50	9133	34782
Aug-06	430	0.46	48	9181	34830
Sep-06	390	0.46	46	9227	34876
Oct-06	390	0.46	44	9271	34920
Nov-06	390	0.46	10	9281	34930
Dec-06	190	2.3	40	9321	34970
Jan-07	190	11	28	9351	35000
Jan-07	190	0.46	10	9361	35010
Feb-07	190	0.14	35	9396	35045
Mar-07	380	0.46	82	9477	35126
Apr-07	380	0.46	77	9554	35203
May-07	380	0.46	60	9614	35263
Jun-07	350	0.46	60	9675	35324
Jul-07	350	0.46	56	9731	35380
Aug-07	350	0.46	48	9779	35428
Sep-07	420	0.55	54	9832	35481
Oct-07	420	0.55	50	9883	35532
Nov-07	420	0.55	61	9943	35592
Dec-07	330	0.55	47	9990	35639
Jan-08	330	0.55	47	10037	35686
Feb-08	330	0.55	37	10075	35724
Mar-08	320	0.46	35	10110	35759
Apr-08	320	0.46	33	10143	35792
May-08	320	0.46	41	10184	35833
Jun-08	540	2.7	29	10214	35863
Jul-08	540	2.7	71	10285	35934
Aug-08	540	2.7	90	10375	36024
Sep-08	360	0.57	59	10434	36083
Oct-08	320	0.29	53	10487	36136
Nov-08	320	0.29	48	10535	36184
Dec-08	320	0.29	56	10591	36240

Table 3 TCE Mass Removed by the GWTF

Month	Influent Concentration	Effluent Concentration	TCE Mass Removed		
			Measured Period Total	GWTF Total TCE Mass Removed	Cumulative TCE Mass Removed[1]
Month-Year	*µ g/L*	*µ g/L*	*lbs*	*lbs*	*lbs*
Jan-09	270	0.21	46	10637	36286
Feb-09	270	0.21	39	10676	36325
Mar-09	270	0.21	40	10716	36365
Apr-09	290	0.23	40	10756	36405
May-09	290	0.23	57	10813	36462
Jun-09	290	0.23	51	10864	36513
Jul-09	280	0.18	51	10915	36564
Aug-09	280	0.18	49	10964	36613
Sep-09	280	0.18	39	11003	36652
Oct-09	140	0.13	22	11025	36674
Nov-09	140	0.13	23	11048	36697
Dec-09	140	0.13	21	11069	36718
Jan-10	280	0.23	46	11115	36764
Feb-10	280	0.23	34	11149	36798
Mar-10	280	0.23	34	11183	36832
Apr-10	300	0.68	39	11222	36871
May-10	300	0.68	45	11267	36916
Jun-10	300	0.68	27	11294	36943
Jul-10	210	0.65	21	11316	36965
Aug-10	210	0.65	7	11322	36971
Sep-10	210	0.65	22	11344	36993
Oct-10	180	0.65	19	11363	37012
Nov-10	180	0.65	23	11387	37036
Dec-10	180	0.65	24	11410	37059
Jan-11	260	0.17	37	11448	37097
Feb-11	260	0.17	36	11484	37133
Mar-11	260	0.17	39	11522	37171
Apr-11	380	0.5	44	11567	37216
May-11	380	0.5	29	11595	37244
Jun-11	380	0.5	42	11637	37286
Jul-11	390	1.4	42	11680	37329
Aug-11	390	1.4	40	11720	37369
Sep-11	390	1.4	15	11735	37384
Oct-11	610	0.14	20	11754	37403
Nov-11	610	0.14	70	11824	37473

[1]*Includes TCE mass removed from 1992 to the start-up of GWTF in 1998.*
During this time, recovered groundwater was discharged directly to the sanitary sewer without treatment.

Table 4

Form 1.1 - Air Stripper Screening Evaluation

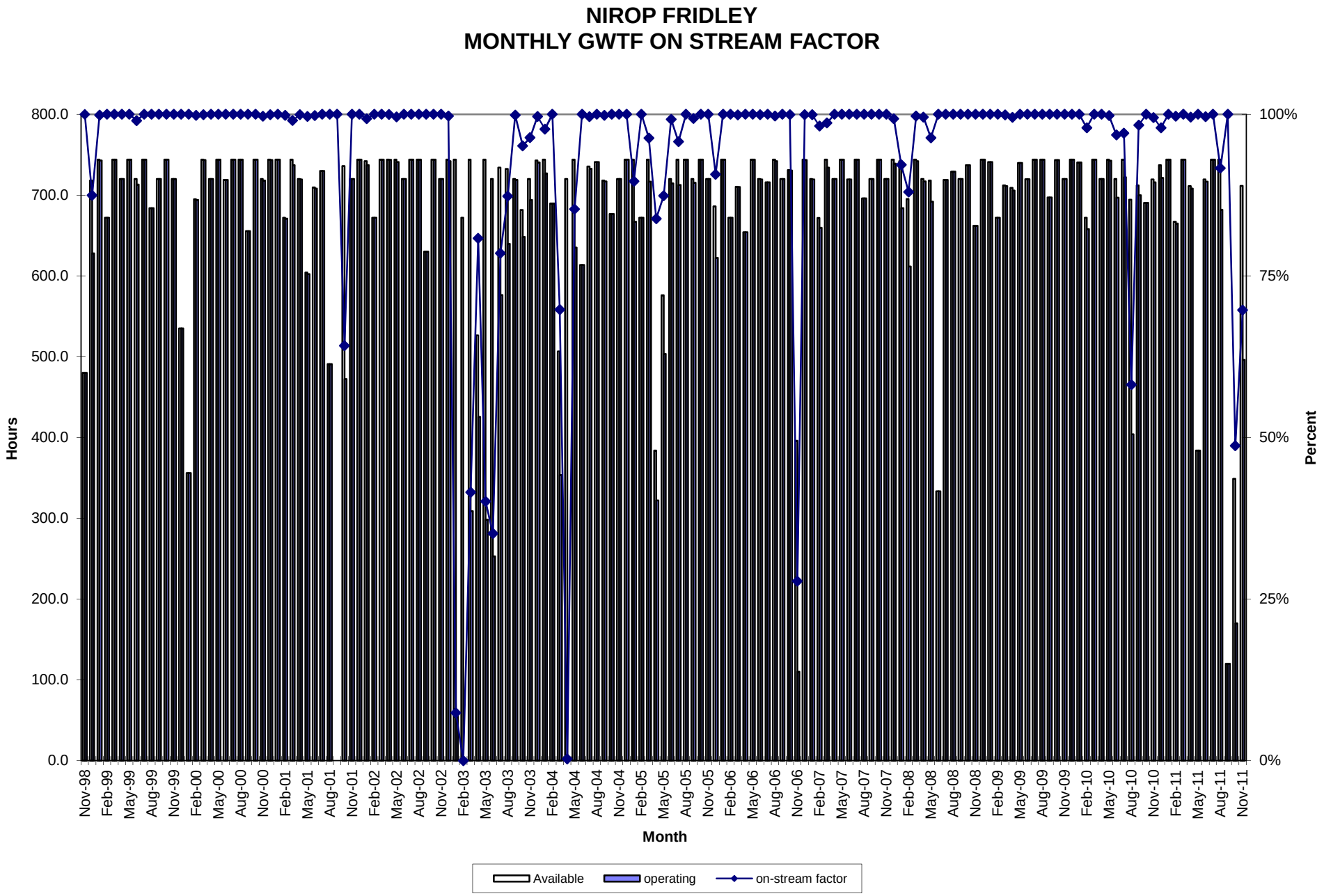
Site Name:	NIROP Fridley	Responsible Party Contact:		Form Completed by:	
Address:	4800 East River Road Minneapolis, MN 55421	Name:	Howard Hickey	Steve Head	
		Affiliation:	Midwest Division Naval Facilities Engineering Command	Date:	12/1/2011
MPCA Leak #:	Not Applicable	Phone #:	847-668-5999		

	A	B	C	D	E	
Contaminant (CAS #)	Contaminant Concentration (GC) (ug/liter)	Air Stripper Influent Flow Rate (IFR) (liters/sec)	Removal Factor (RF)	Emission Rate (ER) (ug/sec)	Site Specific Allowable Emission Rate (AER) (ug/sec)	Is ER >/= AER? (yes/no)
1,1-dichloroethane (75-34-3)	1.50	10.01	1	15.0	135,000,000	No
1,1-dichloroethylene (75-35-4)	9.30	10.01	1	93.1	54,000	No
methylene chloride (75-09-2)	2.80	10.01	1	28.0	54,000	No
tetrachloroethylene (127-18-4)	2.20	10.01	1	22.0	4,600,000	No
trichloroethylene (79-01-6)	610	10.01	1	6,106.6	1,600,000	No

..

Note: If the incoming concentration is not detectable the Emission Rate is based on the detection limit.

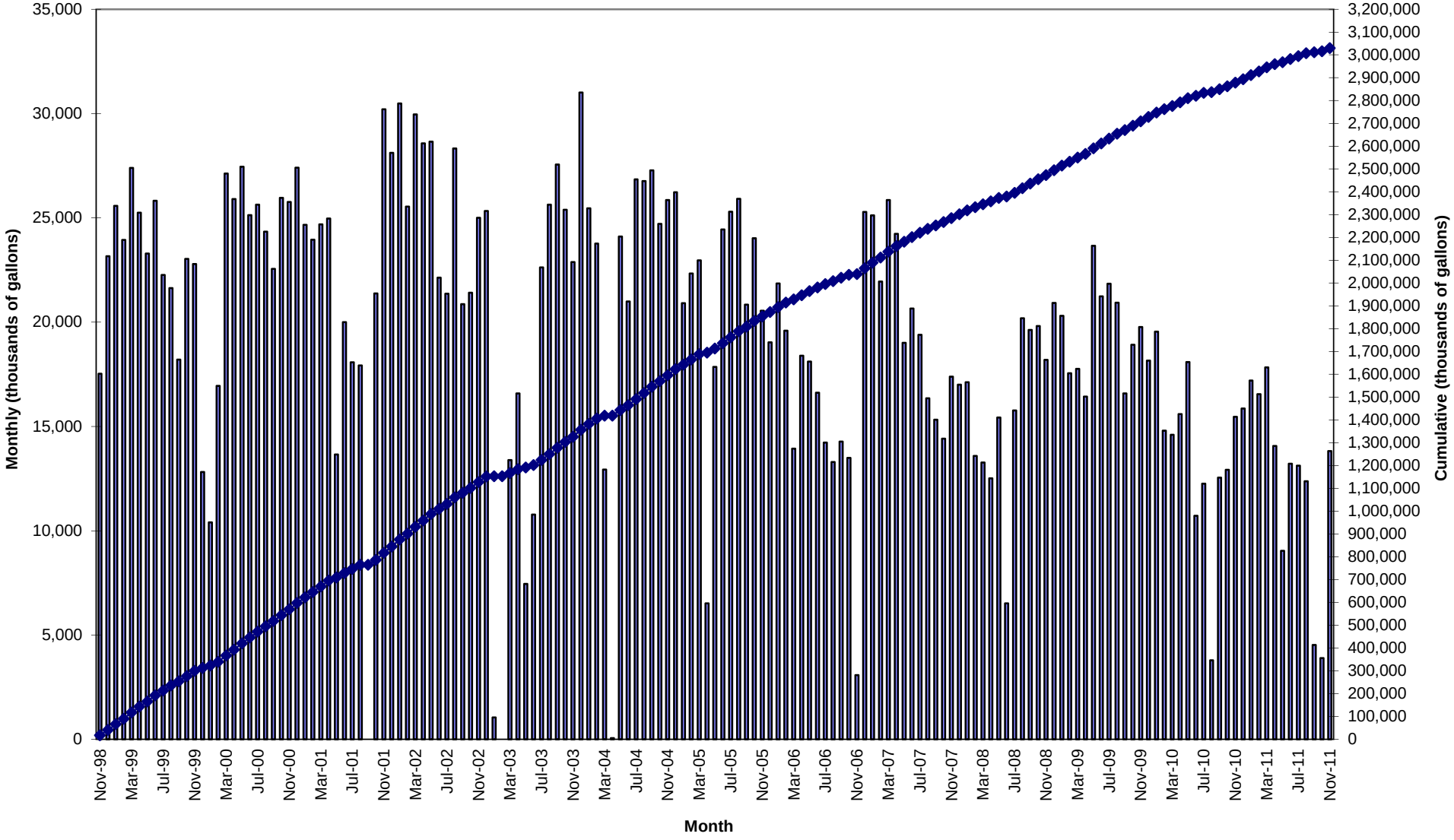
Figures



Docs 58644

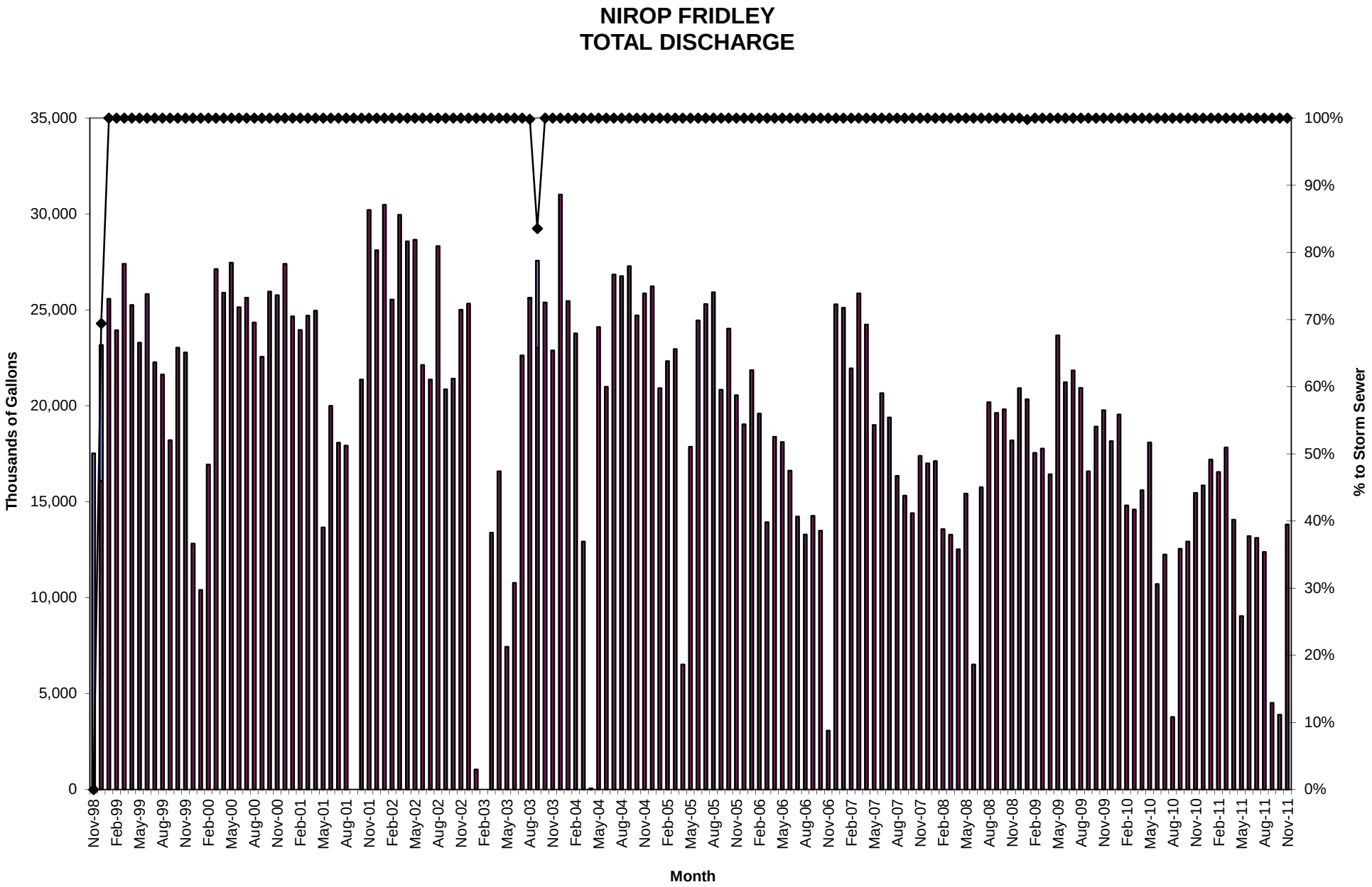
Figure 1

NIROP FRIDLEY
GWTF TOTAL TREATED FLOW



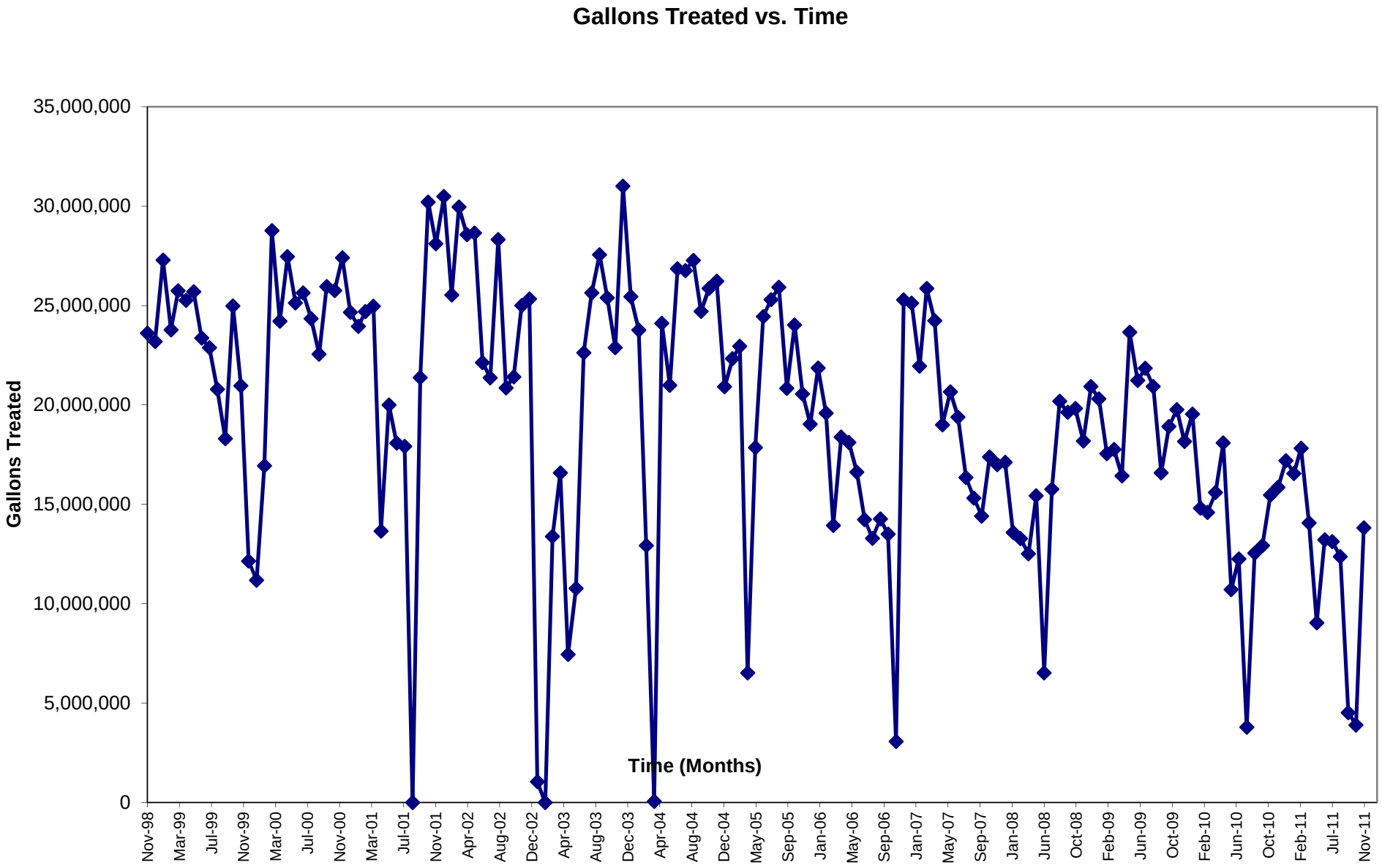
Docs 58644

Figure 2



Docs 58644

Figure 3



Docs 49267

Figure 4

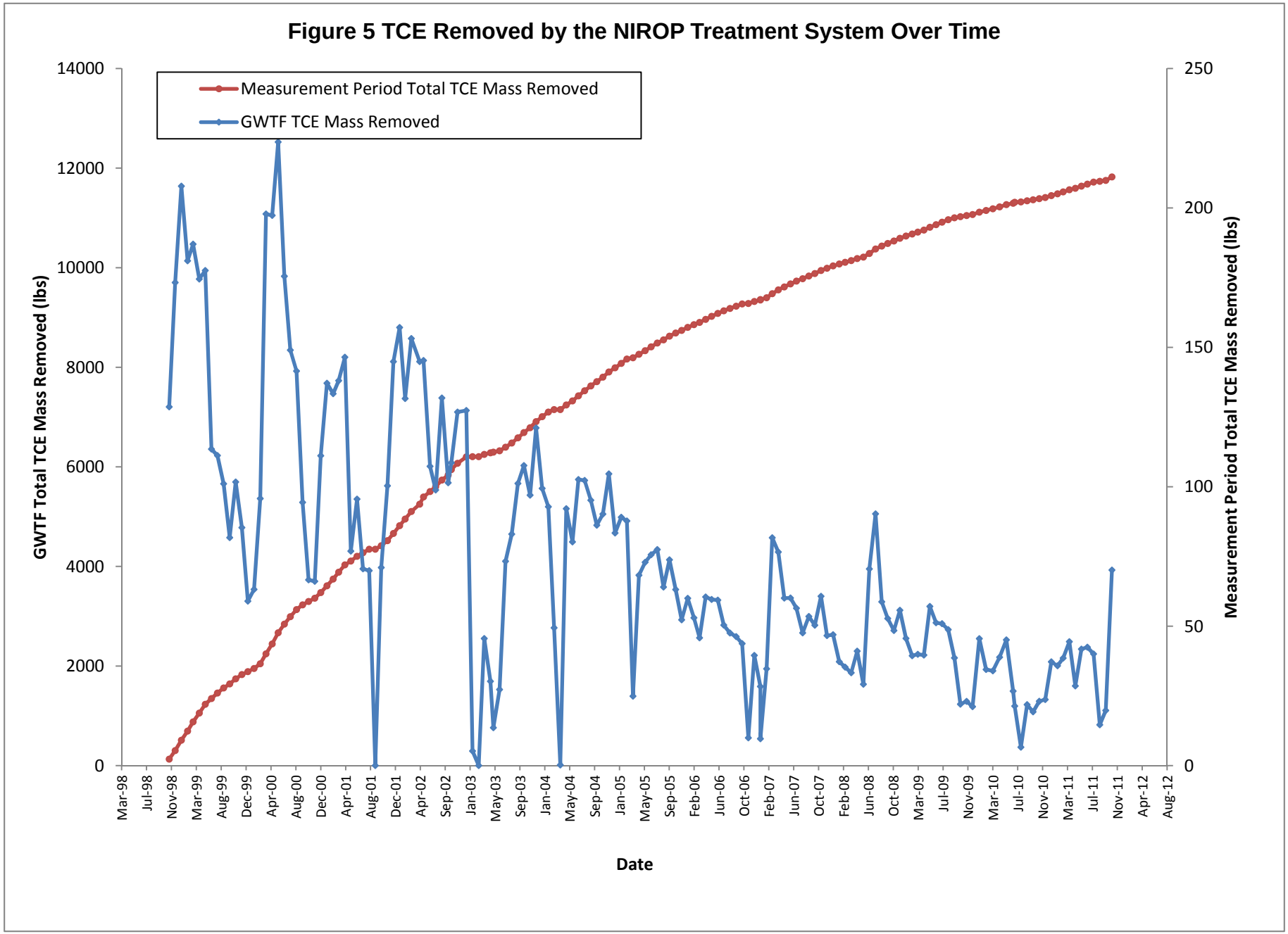


Figure 5 TCE Removed by the NIROP Treatment System Over Time
Measurement Period Total TCE Mass Removed
GWTF TCE Mass Removed
GWTF Total TCE Mass Removed (lbs)
Measurement Period Total TCE Mass Removed (lbs)
Date
14000
12000
10000
8000
6000
4000
2000
0
250
200
150
100
50
0
Mar-98
Jul-98
Nov-98
Mar-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Sep-02
Jan-03
May-03
Sep-03
Jan-04
May-04
Sep-04
Jan-05
May-05
Sep-05
Feb-06
Jun-06
Oct-06
Feb-07
Jun-07
Oct-07
Feb-08
Jun-08
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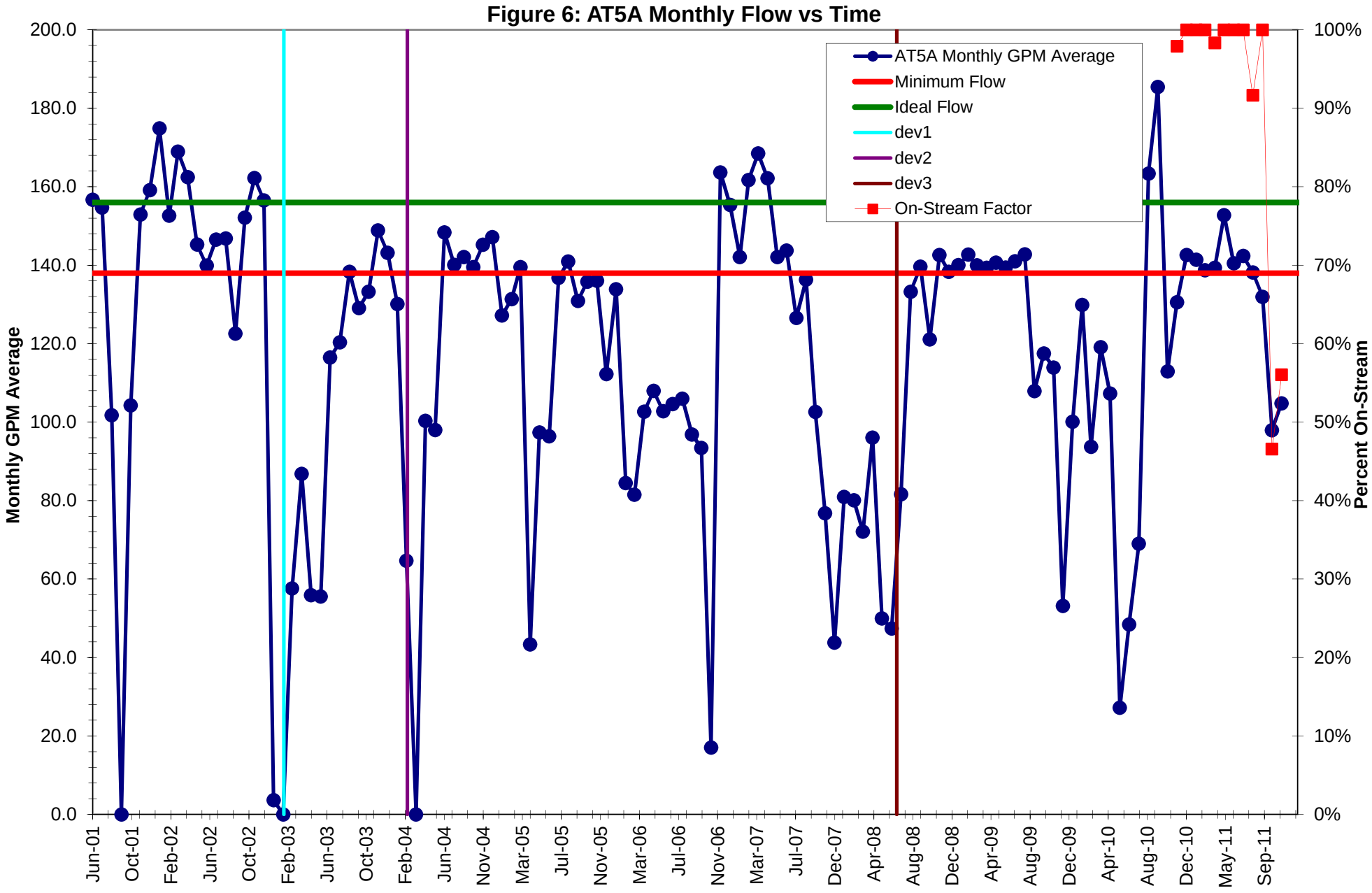
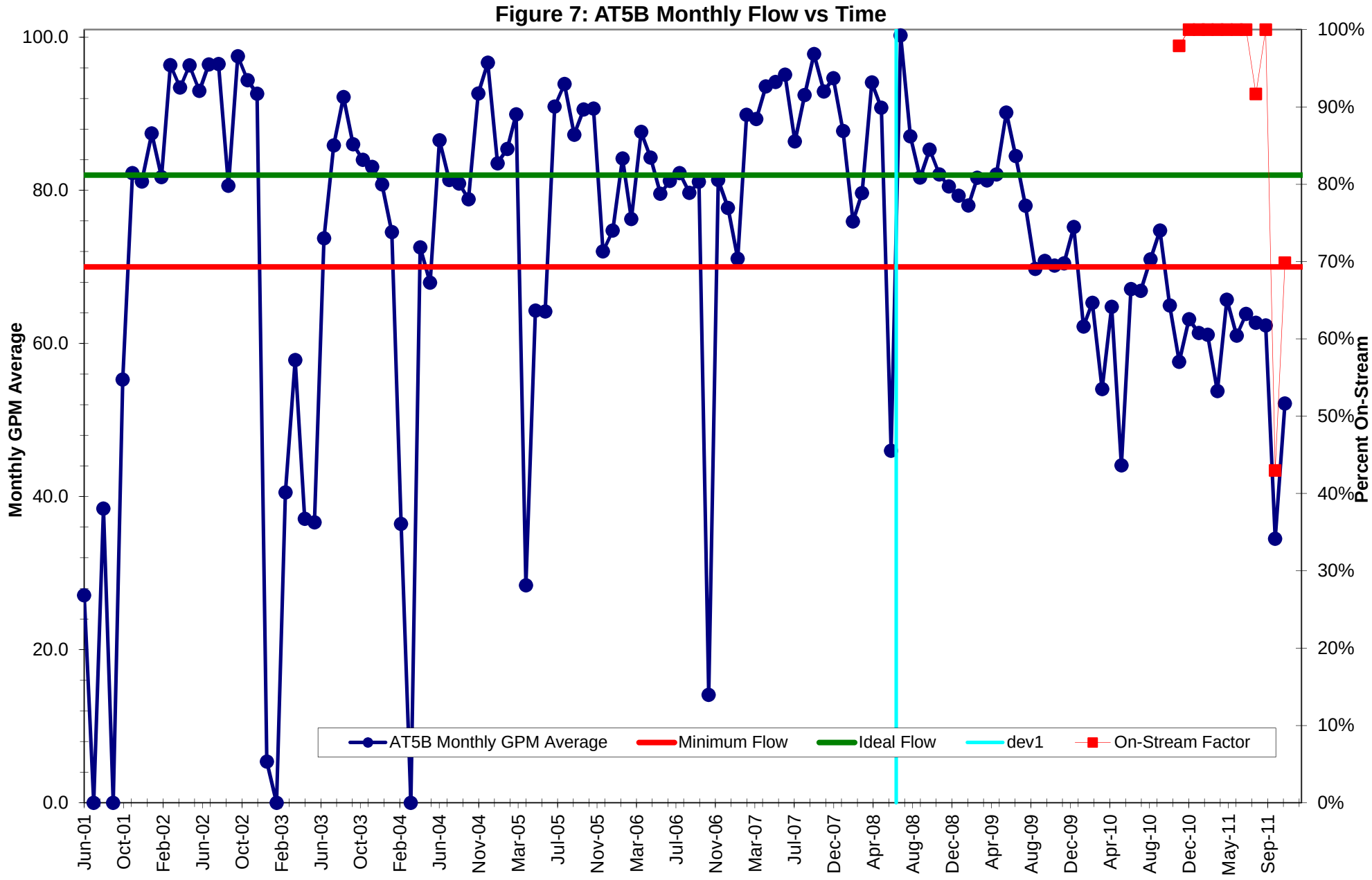
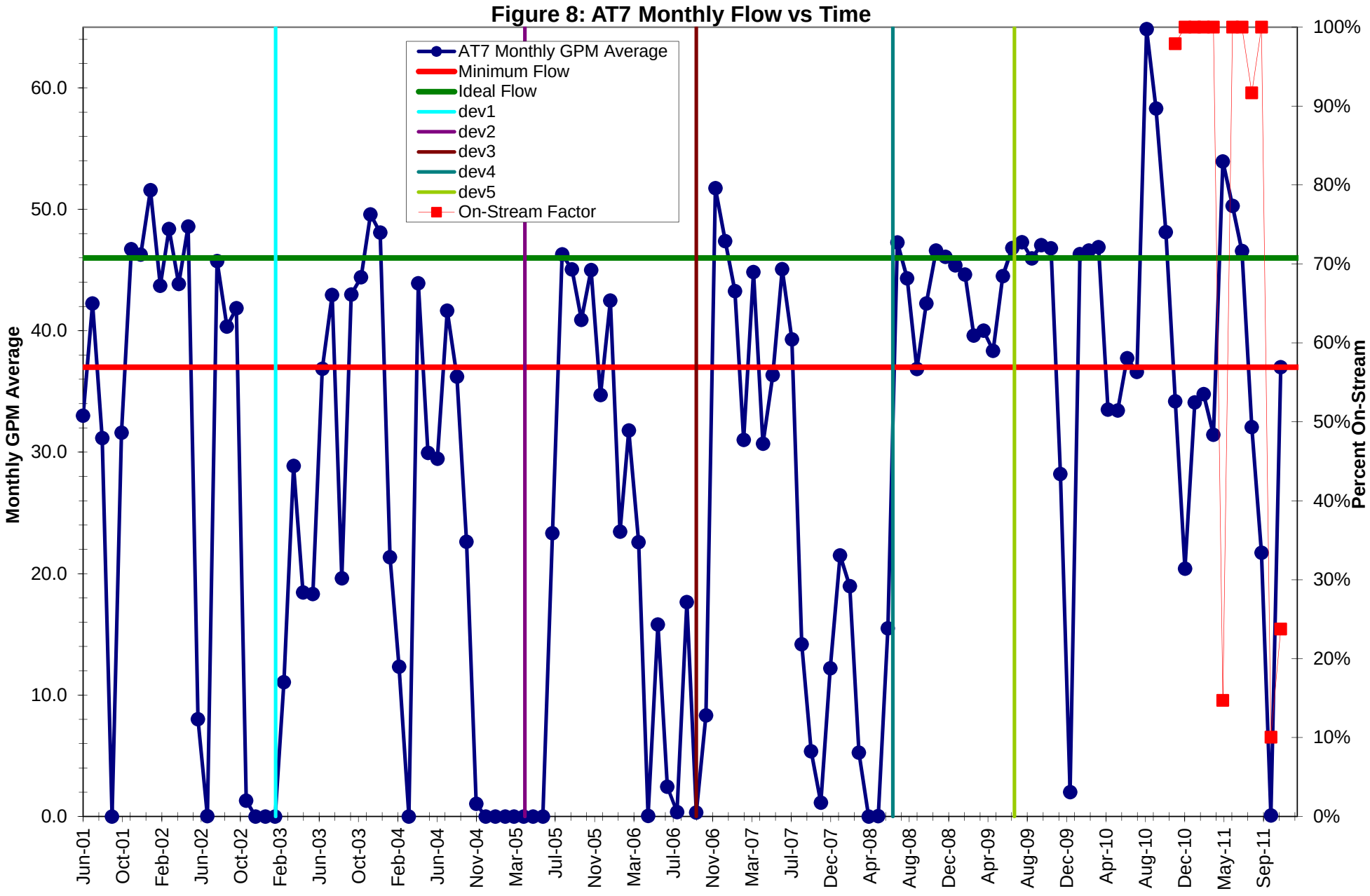
Jul-11
Nov-11
Apr-12
Aug-12



* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.

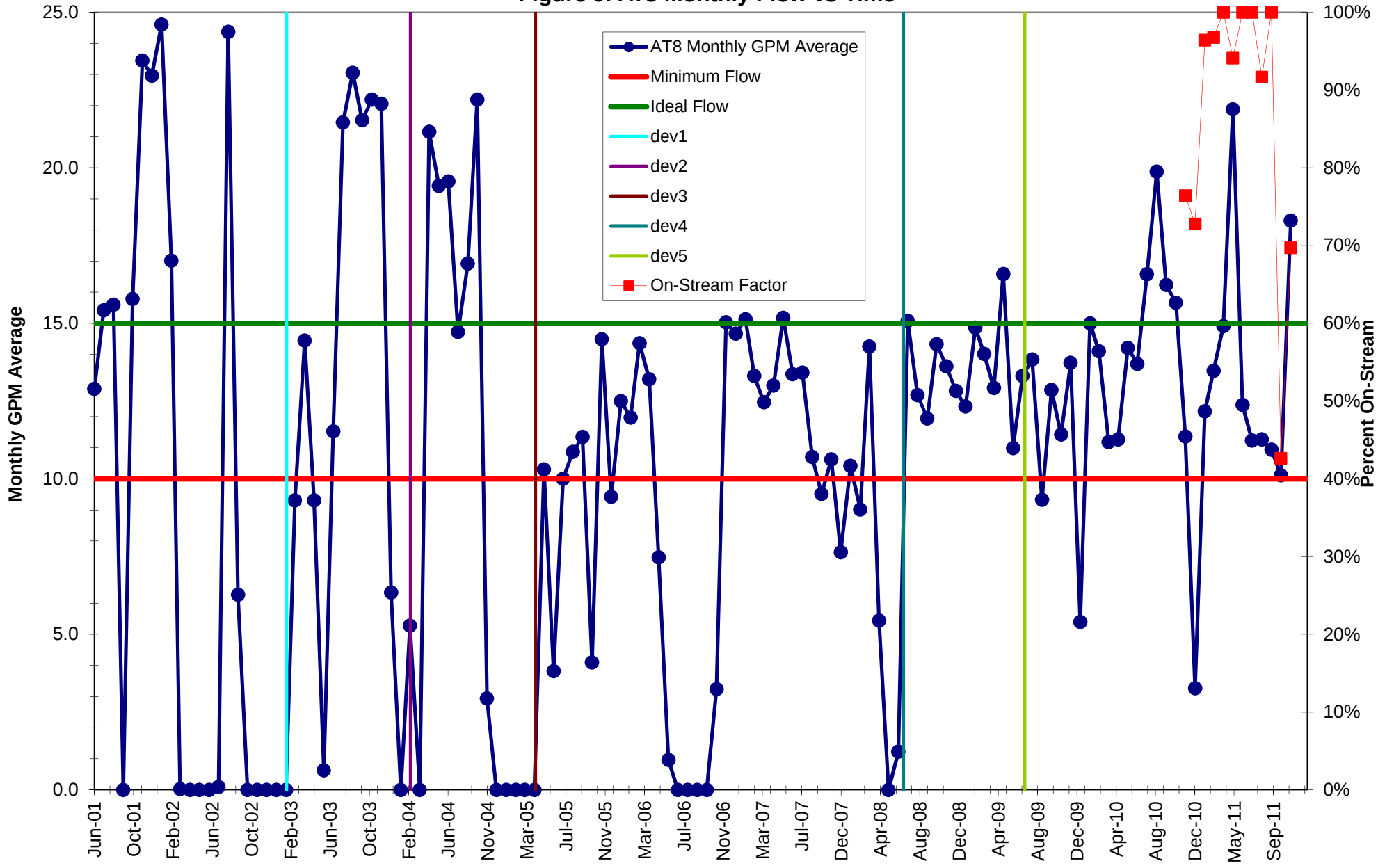


* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.

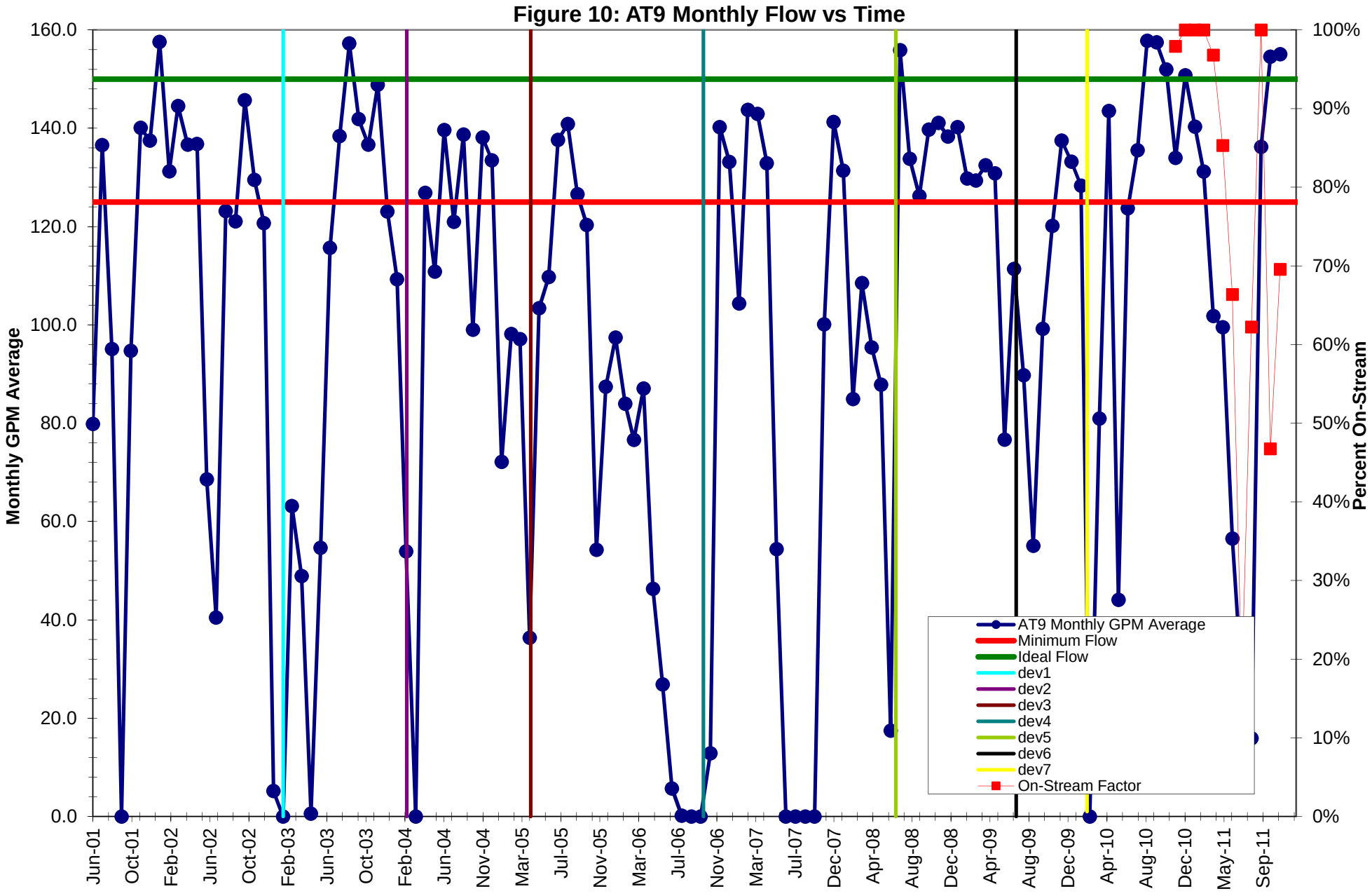


* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.

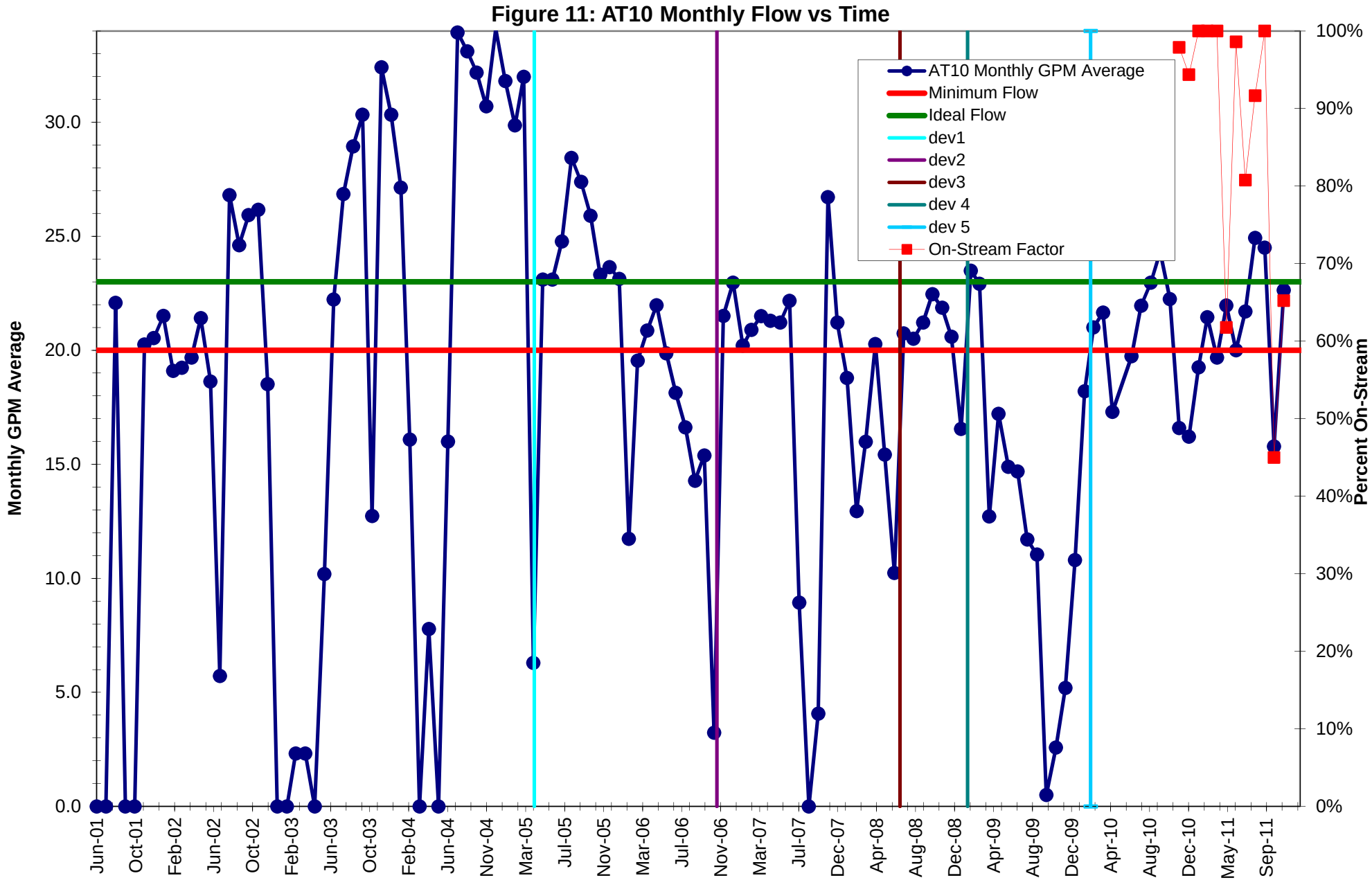
Figure 9: AT8 Monthly Flow vs Time



* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.

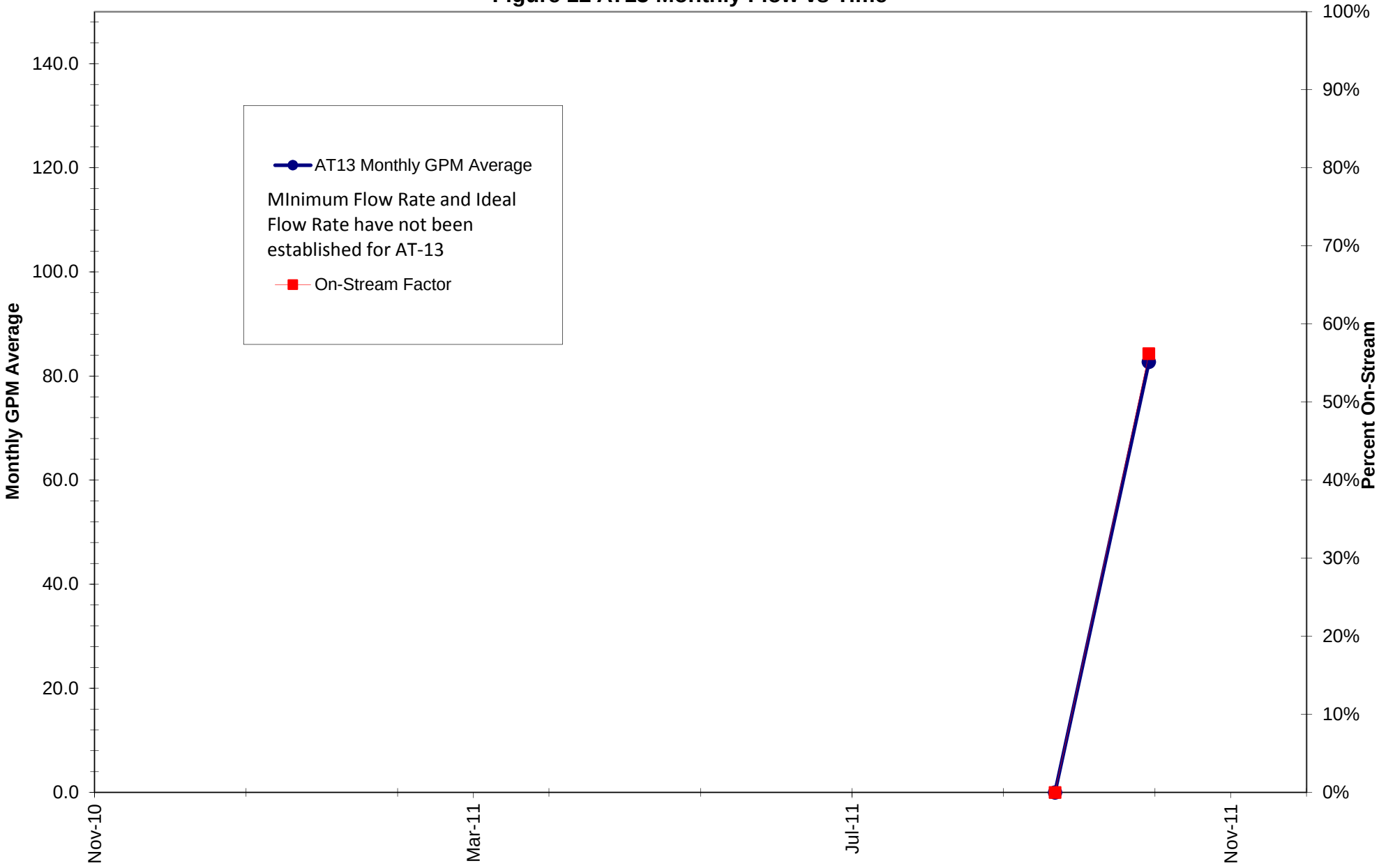


* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.



* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.

Figure 12 AT13 Monthly Flow vs Time



* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.

Monthly Project Status Report December 2011
Facility Maintenance
Naval Industrial Reserve Ordnance Plant - Fridley, Minnesota
Prepared by Bay West, Inc.

EMAC Contract No. N40083-06-D-4015, Task Order #0005

SYSTEM OVERVIEW

- The groundwater treatment facility (GWTF) was in operation for 299 hours during the month of December 2011. Refer to **Table 1, Figure 1, and Figure 2** for historical GWTF operation data.
- The on-stream factor for December was 96.8%. The on-stream factor is the actual operation time divided by the available operation time.
- The system processed an estimated 11,373,000 gallons of groundwater in December. Historical GWTF processed groundwater volumes are provided in **Table 1, Figure 3, and Figure 4**.
- Electrical use was approximately 39,734 kilowatt-hours (kWh) for December 2011. Historical GWTF electrical power usage is included in **Table 2**.
- The GWTF removed approximately 58 pounds of trichloroethylene (TCE) from the aquifer in December 2011. Refer to **Table 3 and Figure 5** for historical GWTF TCE mass removed.
- Step and constant flow rate tests of newly installed extraction wells AT-11, AT-12, and AT-13, were performed by AGVIQ Environmental Services, with operational support from Bay West, from December 2 through December 20, 2011.
- On December 20, 2011, the extraction pump previously used in AT-3A was installed in extraction well AT-13 and set at a flow rate of approximately 80 gpm, which was the pumping rate at AT-3A immediately before it was taken out of service. On December 22, 2011, the Navy requested that the flow rate be increased to approximately 150 gpm. Bay West increased the flow rate to 148 gpm later that day.

SCHEDULED MAINTENANCE

- Visually inspected flow meters and level probes for material buildup and proper operation;
- Tested the four safety showers/eyewash stations to assure adequate performance;
- Lubricated blower motors, influent pumps, and effluent pumps;
- Collected extraction well water levels on a weekly basis;
- Continued on-site and remote work associated with upgrading the programmable logic controller (PLC) and supervisory control and data acquisition (SCADA) system with current generation equipment;
- Continued investigating the cause of higher than normal pressure losses in AT-5A and AT-5B groundwater extraction lines; and
- ASU 202 acid treatment to be complete in January 2012. The acid treatment will consist of recirculating a phosphoric acid solution to dissolve the fouling debris.

PROBLEMS AND SOLUTIONS

- ASU 202 had a low air flow condition on 12/28/2011, which resulted in a full system shutdown. The ASU's are designed to have a minimum flow rate of 1,300 cubic feet per minute (cfm) to achieve the removal of TCE. Bay West determined ASU 202's trays are fouled and restricting the air flow. After responding to the alarm, Bay West was able to balance the incoming groundwater flow between the remaining ASU's and restart the system to pre-alarm capacity.

Well Performance Summary

Well	Average Monthly Flow Rate (GPM) (Available)	Average Monthly Flow Rate (GPM) (Operational)	Ideal Flow Rate (GPM)	% of Ideal Flow (Available)	% of Ideal Flow (Operational)	Minimum Flow Rate (GPM)	Available Hours of Operation[1]	Operating Hours[1]	On-Stream Factor (Available)
AT-5A	120.1	124.5	156	77.0%	79.8%	137	309.0	298.0	96.4%
AT-5B	52.5	54.2	82	64.0%	66.2%	70	309.0	299.0	96.8%
AT-7	35.7	37.0	46	77.6%	78.7%	37	309.0	298.0	96.4%
AT-8	17.9	18.5	15	119.4%	123.4%	10	309.0	299.0	96.8%
AT-9	147.7	152.6	150	98.5%	101.8%	125	309.0	299.0	96.8%
AT-10	21.3	22.0	23	92.6%	95.7%	20	309.0	299.0	96.8%
AT-13[2]	131.9	136.7	NA	NA	NA	NA	309.0	298.0	96.4%

NA = Not Applicable. Ideal and minimum flow rates at AT-13 have not yet been specified.

[1]*Available Hours of Operation and Operating Hours do not include any hours associated with the step tests or the constant rate tests at the new extraction wells (AT-11, AT-12, and AT-13).*

[2]*Average Monthly Flow Rate (Available) and Average Monthly Flow Rate (Operational) values for AT-13 are based on the pumping rates the well produced when the entire GWTF was operational. Pumping rates during the step test and constant rate tests where AT-13 was operational are not included in the Well Performance Summary.*

TABLES

1. Groundwater Treatment Facility Operations
2. Electrical Meter Readings
3. TCE Mass Removed by the GWTF

FIGURES

1. Monthly GWTF On Stream Factor
2. GWTF Total Treated Flow
3. Total Discharge
4. Gallons Treated vs. Time
5. TCE Mass Removed
6. AT-5A Monthly Flow vs. Time
7. AT-5B Monthly Flow vs. Time
8. AT-7 Monthly Flow vs. Time
9. AT-8 Monthly Flow vs. Time
10. AT-9 Monthly Flow vs. Time
11. AT-10 Monthly Flow vs. Time
12. AT-13 Monthly Flow vs. Time

Tables

NIROP FRIDLEY

Groundwater Treatment Facility (GWTF)

	OPERATIONS (hrs)			WATER DISCHARGED (thousands of gallons)					WATER TREATED (thousands of gallons)	
Month	Available	Operating	On-stream factor	to Storm	to Sanitary	Untreated to Sanitary	Total to Sanitary	% Storm	Monthly	Cumulative
Nov-98	480.0	480.0	100.0%	0	17,524	0	17,524	0%	17,524	17,524
Dec-98	718.0	628.0	87.5%	16,078	7,087	0	7,087	69%	23,165	40,689
Jan-99	744.0	743.0	99.9%	25,571	0	0	0	100%	25,571	66,260
Feb-99	672.0	672.0	100.0%	23,938	0	0	0	100%	23,938	90,198
Mar-99	744.0	744.0	100.0%	27,394	0	0	0	100%	27,394	117,592
Apr-99	720.0	720.0	100.0%	25,254	0	0	0	100%	25,254	142,846
May-99	744.0	744.0	100.0%	23,291	0	0	0	100%	23,291	166,137
Jun-99	720.0	713.0	99.0%	25,823	0	0	0	100%	25,823	191,960
Jul-99	744.0	744.0	100.0%	22,266	0	0	0	100%	22,266	214,226
Aug-99	684.0	684.0	100.0%	21,634	0	0	0	100%	21,634	235,860
Sep-99	720.0	720.0	100.0%	18,205	0	0	0	100%	18,205	254,065
Oct-99	744.0	744.0	100.0%	23,029	0	0	0	100%	23,029	277,094
Nov-99	720.0	720.0	100.0%	22,783	0	0	0	100%	22,783	299,877
Dec-99	535.0	535.0	100.0%	12,818	0	0	0	100%	12,818	312,695
Jan-00	356.0	356.0	100.0%	10,400	0	0	0	100%	10,400	323,095
Feb-00	695.0	694.0	99.9%	16,944	0	0	0	100%	16,944	340,039
Mar-00	744.0	743.5	99.9%	27,131	0	0	0	100%	27,131	367,170
Apr-00	720.0	720.0	100.0%	25,899	0	0	0	100%	25,899	393,069
May-00	744.0	744.0	100.0%	27,458	0	0	0	100%	27,458	420,527
Jun-00	718.9	718.9	100.0%	25,136	0	0	0	100%	25,136	445,663
Jul-00	744.0	744.0	100.0%	25,637	0	0	0	100%	25,637	471,300
Aug-00	744.0	744.0	100.0%	24,341	0	0	0	100%	24,341	495,641
Sep-00	655.5	655.5	100.0%	22,559	0	0	0	100%	22,559	518,200
Oct-00	744.0	744.0	100.0%	25,955	0	0	0	100%	25,955	544,155
Nov-00	720.0	718.0	99.7%	25,759	0	0	0	100%	25,759	569,914
Dec-00	744.0	743.5	99.9%	27,404	0	0	0	100%	27,404	597,318
Jan-01	744.0	744.0	100.0%	24,666	0	0	0	100%	24,666	621,984
Feb-01	672.0	671.0	99.9%	23,956	0	0	0	100%	23,956	645,940
Mar-01	744.0	737.0	99.1%	24,694	0	0	0	100%	24,694	670,634
Apr-01	720.0	719.5	99.9%	24,964	0	0	0	100%	24,964	695,598
May-01	604.3	602.3	99.7%	13,656	0	0	0	100%	13,656	709,254
Jun-01	709.5	708.3	99.8%	20,000	0	0	0	100%	20,000	729,254
Jul-01	730.0	730.0	100.0%	18,077	0	0	0	100%	18,077	747,331
Aug-01	491.0	491.0	100.0%	17,921	0	0	0	100%	17,921	765,252
Sep-01	0.0	0.0	100.0%	0	0	0	0	100%	0	765,252
Oct-01	736.0	472.5	64.2%	21,376	0	0	0	100%	21,376	786,628
Nov-01	720.0	720.0	100.0%	30,205	0	0	0	100%	30,205	816,833
Dec-01	744.0	744.0	100.0%	28,114	0	0	0	100%	28,114	844,947
Jan-02	742.0	737.0	99.3%	30,483	0	0	0	100%	30,483	875,430
Feb-02	672.0	672.0	100.0%	25,538	0	0	0	100%	25,538	900,968
Mar-02	744.0	744.0	100.0%	29,957	0	0	0	100%	29,957	930,925
Apr-02	744.0	743.8	100.0%	28,569	0	0	0	100%	28,569	959,494

O&M Start Date: 11 November 1998
Docs 58644

Table 1

NIROP FRIDLEY

Groundwater Treatment Facility (GWTF)

	OPERATIONS (hrs)			WATER DISCHARGED (thousands of gallons)					WATER TREATED (thousands of gallons)	
Month	Available	Operating	On-stream factor	to Storm	to Sanitary	Untreated to Sanitary	Total to Sanitary	% Storm	Monthly	Cumulative
May-02	744.0	741.0	99.6%	28,656	0	0	0	100%	28,656	988,150
Jun-02	720.0	720.0	100.0%	22,131	0	0	0	100%	22,131	1,010,281
Jul-02	744.0	744.0	100.0%	21,367	0	0	0	100%	21,367	1,031,648
Aug-02	744.0	744.0	100.0%	28,328	0	0	0	100%	28,328	1,059,976
Sep-02	630.3	630.3	100.0%	20,861	0	0	0	100%	20,861	1,080,837
Oct-02	744.0	744.0	100.0%	21,417	0	0	0	100%	21,417	1,102,254
Nov-02	720.0	720.0	100.0%	25,003	0	0	0	100%	25,003	1,127,257
Dec-02	744.0	742.0	99.7%	25,327	0	0	0	100%	25,327	1,152,584
Jan-03	744.0	55.0	7.4%	1,048	0	0	0	100%	1,048	1,153,632
Feb-03	672.0	0.0	0.0%	0	0	0	0	100%	0	1,153,632
Mar-03	744.0	309.0	41.5%	13,387	0	0	0	100%	13,387	1,167,019
Apr-03	526.5	425.5	80.8%	16,584	0	0	0	100%	16,584	1,183,603
May-03	744.0	298.5	40.1%	7,448	0	0	0	100%	7,448	1,191,051
Jun-03	720.0	253.0	35.1%	10,775	0	0	0	100%	10,775	1,201,826
Jul-03	734.0	576.3	78.5%	22,629	0	0	0	100%	22,629	1,224,455
Aug-03	732.5	639.8	87.3%	25,591	46	0	46	99.8%	25,637	1,250,092
Sep-03	720.0	719.0	99.9%	23,028	4,532	0	4,532	83.6%	27,560	1,277,652
Oct-03	681.7	648.5	95.1%	25,389	0	0	0	100%	25,389	1,303,041
Nov-03	720.0	694.0	96.4%	22,882	0	0	0	100%	22,882	1,325,923
Dec-03	743.0	740.5	99.7%	31,010	0	0	0	100%	31,010	1,356,933
Jan-04	744.0	727.0	97.7%	25,456	0	0	0	100%	25,456	1,382,389
Feb-04	689.7	689.7	100.0%	23,771	0	0	0	100%	23,771	1,406,160
Mar-04	506.5	353.5	69.8%	12,928	0	0	0	100%	12,928	1,419,088
Apr-04	720.0	2.0	0.3%	60	0	0	0	100%	60	1,419,148
May-04	744.0	635.0	85.3%	24,104	0	0	0	100%	24,104	1,443,252
Jun-04	613.5	613.5	100.0%	20,988	0	0	0	100%	20,988	1,464,240
Jul-04	735.5	732.8	99.6%	26,846	0	0	0	100%	26,846	1,491,086
Aug-04	741.0	741.0	100.0%	26,760	0	0	0	100%	26,760	1,517,846
Sep-04	718.0	717.0	99.9%	27,276	0	0	0	100%	27,276	1,545,122
Oct-04	676.8	676.8	100.0%	24,709	0	0	0	100%	24,709	1,569,831
Nov-04	720.0	720.0	100.0%	25,859	0	0	0	100%	25,859	1,595,690
Dec-04	744.0	744.0	100.0%	26,229	0	0	0	100%	26,229	1,621,919
Jan-05	744.0	667.0	89.7%	20,915	0	0	0	100%	20,915	1,642,834
Feb-05	672.0	672.0	100.0%	22,329	0	0	0	100%	22,329	1,665,163
Mar-05	744.0	716.8	96.3%	22,960	0	0	0	100%	22,960	1,688,123
Apr-05	384.0	322.0	83.9%	6,515	0	0	0	100%	6,515	1,694,638
May-05	576.0	503.5	87.4%	17,859	0	0	0	100%	17,859	1,712,497
Jun-05	720.0	714.5	99.2%	24,450	0	0	0	100%	24,450	1,736,947
Jul-05	744.0	712.5	95.8%	25,301	0	0	0	100%	25,301	1,762,248
Aug-05	744.0	744.0	100.0%	25,916	0	0	0	100%	25,916	1,788,164
Sep-05	720.0	715.3	99.4%	20,837	0	0	0	100%	20,837	1,809,001
Oct-05	744.0	744.0	100.0%	24,028	0	0	0	100%	24,028	1,833,029

NIROP FRIDLEY

Groundwater Treatment Facility (GWTF)

	OPERATIONS (hrs)			WATER DISCHARGED (thousands of gallons)					WATER TREATED (thousands of gallons)	
Month	Available	Operating	On-stream factor	to Storm	to Sanitary	Untreated to Sanitary	Total to Sanitary	% Storm	Monthly	Cumulative
Nov-05	720.0	720.0	100.0%	20,553	0	0	0	100%	20,553	1,853,582
Dec-05	686.0	622.3	90.7%	19,037	0	0	0	100%	19,037	1,872,619
Jan-06	744.0	744.0	100.0%	21,858	0	0	0	100%	21,858	1,894,477
Feb-06	672.0	672.0	100.0%	19,590	0	0	0	100%	19,590	1,914,067
Mar-06	710.5	710.0	99.9%	13,935	0	0	0	100%	13,935	1,928,002
Apr-06	654.0	654.0	100.0%	18,391	0	0	0	100%	18,391	1,946,393
May-06	744.0	744.0	100.0%	18,116	0	0	0	100%	18,116	1,964,509
Jun-06	720.0	719.5	99.9%	16,616	0	0	0	100%	16,616	1,981,125
Jul-06	716.0	716.0	100.0%	14,232	0	0	0	100%	14,232	1,995,357
Aug-06	744.0	742.0	99.7%	13,291	0	0	0	100%	13,291	2,008,648
Sep-06	720.0	720.0	100.0%	14,269	0	0	0	100%	14,269	2,022,917
Oct-06	731.0	730.5	99.9%	13,496	0	0	0	100%	13,496	2,036,413
Nov-06	396.0	110.0	27.8%	3,073	0	0	0	100%	3,073	2,039,486
Dec-06	744.0	743.5	99.9%	25,287	0	0	0	100%	25,287	2,064,773
Jan-07	720.0	719.5	99.9%	25,118	0	0	0	100%	25,118	2,089,891
Feb-07	671.8	659.8	98.2%	21,953	0	0	0	100%	21,953	2,111,844
Mar-07	744.0	734.0	98.7%	25,860	0	0	0	100%	25,860	2,137,703
Apr-07	720.0	720.0	100.0%	24,240	0	0	0	100%	24,240	2,161,943
May-07	744.0	744.0	100.0%	19,004	0	0	0	100%	19,004	2,180,947
Jun-07	719.5	719.5	100.0%	20,659	0	0	0	100%	20,659	2,201,606
Jul-07	744.0	744.0	100.0%	19,389	0	0	0	100%	19,389	2,220,995
Aug-07	696.0	696.0	100.0%	16,354	0	0	0	100%	16,354	2,237,349
Sep-07	720.0	720.0	100.0%	15,320	0	0	0	100%	15,320	2,252,669
Oct-07	744.0	744.0	100.0%	14,409	0	0	0	100%	14,409	2,267,078
Nov-07	720.0	720.0	100.0%	17,388	0	0	0	100%	17,388	2,284,466
Dec-07	744.0	739.0	99.3%	17,002	0	0	0	100%	17,002	2,301,468
Jan-08	742.0	684.0	92.2%	17,115	0	0	0	100%	17,115	2,318,583
Feb-08	695.3	611.8	88.0%	13,581	0	0	0	100%	13,581	2,332,164
Mar-08	744.0	742.0	99.7%	13,277	0	0	0	100%	13,277	2,345,441
Apr-08	720.0	717.0	99.6%	12,518	0	0	0	100%	12,518	2,357,959
May-08	718.0	692.0	96.4%	15,430	0	0	0	100%	15,430	2,373,389
Jun-08	333.5	333.5	100.0%	6,523	0	0	0	100%	6,523	2,379,912
Jul-08	719.0	719.0	100.0%	15,762	0	0	0	100%	15,762	2,395,674
Aug-08	729.3	729.3	100.0%	20,183	0	0	0	100%	20,183	2,415,857
Sep-08	720.0	720.0	100.0%	19,632	0	0	0	100%	19,632	2,435,489
Oct-08	737.0	737.0	100.0%	19,818	0	0	0	100%	19,818	2,455,307
Nov-08	662.0	662.0	100.0%	18,191	0	0	0	100%	18,191	2,473,498
Dec-08	744.0	744.0	100.0%	20,926	0	0	0	100%	20,926	2,494,424
Jan-09	741.0	741.0	100.0%	20,301	44	0	44	99.8%	20,301	2,514,725
Feb-09	672.0	672.0	100.0%	17,546	0	0	0	100%	17,546	2,532,271
Mar-09	711.9	711.2	99.9%	17,766	0	0	0	100%	17,766	2,550,037
Apr-09	709.0	705.6	99.5%	16,434	0	0	0	100%	16,434	2,566,471

O&M Start Date: 11 November 1998
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Table 1

NIROP FRIDLEY

Groundwater Treatment Facility (GWTF)

	OPERATIONS (hrs)			WATER DISCHARGED (thousands of gallons)					WATER TREATED (thousands of gallons)	
Month	Available	Operating	On-stream factor	to Storm	to Sanitary	Untreated to Sanitary	Total to Sanitary	% Storm	Monthly	Cumulative
May-09	739.8	739.8	100.0%	23,663	0	0	0	100%	23,663	2,590,134
Jun-09	719.8	719.8	100.0%	21,234	0	0	0	100%	21,234	2,611,368
Jul-09	744.0	744.0	100.0%	21,846	0	0	0	100%	21,846	2,633,214
Aug-09	744.0	744.0	100.0%	20,933	0	0	0	100%	20,933	2,654,147
Sep-09	697.2	697.2	100.0%	16,585	0	0	0	100%	16,585	2,670,732
Oct-09	743.5	743.5	100.0%	18,919	0	0	0	100%	18,919	2,689,651
Nov-09	720.0	720.0	100.0%	19,768	0	0	0	100%	19,768	2,709,419
Dec-09	744.0	744.0	100.0%	18,162	0	0	0	100%	18,162	2,727,581
Jan-10	740.3	740.3	100.0%	19,542	0	0	0	100%	19,542	2,747,123
Feb-10	672.0	658.0	97.9%	14,805	0	0	0	100%	14,805	2,761,928
Mar-10	744.0	744.0	100.0%	14,596	0	0	0	100%	14,596	2,776,524
Apr-10	720.0	720.0	100.0%	15,598	0	0	0	100%	15,598	2,792,122
May-10	744.0	742.5	99.8%	18,090	0	0	0	100%	18,090	2,810,212
Jun-10	720.0	697.0	96.8%	10,717	0	0	0	100%	10,717	2,820,929
Jul-10	744.0	722.2	97.1%	12,254	0	0	0	100%	12,254	2,833,183
Aug-10	694.5	404.0	58.2%	3,789	0	0	0	100%	3,789	2,836,972
Sep-10	712.0	700.0	98.3%	12,552	0	0	0	100%	12,552	2,849,524
Oct-10	690.6	690.6	100.0%	12,926	0	0	0	100%	12,926	2,862,450
Nov-10	719.5	716.0	99.5%	15,466	0	0	0	100%	15,466	2,877,916
Dec-10	737.0	721.5	97.9%	15,855	0	0	0	100%	15,855	2,893,771
Jan-11	744.0	744.0	100.0%	17,199	0	0	0	100%	17,199	2,910,970
Feb-11	667.0	665.0	99.7%	16,551	0	0	0	100%	16,551	2,927,521
Mar-11	744.0	744.0	100.0%	17,827	0	0	0	100%	17,827	2,945,348
Apr-11	711.3	708.3	99.6%	14,063	0	0	0	100%	14,063	2,959,411
May-11	384.0	384.0	100.0%	9,042	0	0	0	100%	9,042	2,968,453
Jun-11	719.5	716.8	99.6%	13,216	0	0	0	100%	13,216	2,981,669
Jul-11	744.0	744.0	100.0%	13,119	0	0	0	100%	13,119	2,994,788
Aug-11	744.0	682.0	91.7%	12,377	0	0	0	100%	12,377	3,007,165
Sep-11	120.0	120.0	100.0%	4,522	0	0	0	100%	4,522	3,011,687
Oct-11	349.0	170.0	48.7%	3,896	0	0	0	100%	3,896	3,015,583
Nov-11	711.5	496.0	69.7%	13,814	0	0	.	100%	13,814	3,029,397
Dec-11	309.0	299.0	96.8%	11,373	0	0	0	100%	11,373	3,040,770

Note: Available hours are 24 hours per day, less scheduled down time and power outages.

* Monthly flow incorrectly reported for Jul-04 through Dec-04 - corrected January 2005 using the corrected estimate for AT-10 monthly flow.

NIROP FRIDLEY
Ground Water Treatment Facility (GWTF)

	Electrical Meter Readings (kW·h)					
Date	**MCC #1**	**MCC #2**	**Wells 2, 3A, 5A, 5B**	**Well 1A**	**Well 4**	**Monthy Usage**
2/1/2000	57,305	620,300				38,046
3/1/2000	59,597	656,054				36,133
3/9/2000	60,348	667,580	18,260	3,284	2,312	65,029
4/3/2000	63,080	704,113	38698	6043	4879	74,067
5/1/2000	66,067	746,920	60,940	9,238	7,715	81,545
6/1/2000	68,972	793,455	86495	12728	10775	66,128
7/1/2000	71,562	840,441	110,243	16,307		
7/6/2000					13701	13,701
8/1/2000	73,881	881,304	130,691	19,559	16,686	72,336
9/1/2000	76,316	924,799	152695	22976	17671	67,877
10/2/2000	78,561	964,802	172,714	26,079	20,178	
11/1/2000	80,952	7,402	195655	29408	22454	89,927
12/4/2000	83,561	56,966	225,897	33,105	26,269	81,706
1/2/2001	85,851	101,872	254750	36270	28761	72,935
2/1/2001	88,106	143,918	282,532	37,122	28,761	83,944
3/1/2001	90,240	190,303	314000	41079	28761	66,663
4/3/2001	92,677	230,575	335,297	43,736	28,761	65,567
5/1/2001	94,779	269,617	357244	46212	28761	
6/5/2001	97,821	304,746	*	*	*	38,108
7/2/2001	102,175	338,500	*	*	*	44,802
8/2/2001	106,592	378,885	*	*	*	37,804
9/12/2001	111,321	411,960	*	*	*	13,663
10/18/2001	112,956	423,988	*	*	*	29,471
11/1/2001	117,010	449,405	*	*	*	68,542
12/4/2001	126,457	508,500	*	*	*	60,932
1/2/2002	134,884	561,005	*	*	*	56,801
2/1/2002	142,948	609,742	*	*	*	55,300
3/1/2002	150,583	657,407	*	*	*	64,231
4/1/2002	159,332	712,889	*	*	*	59,291
5/1/2002	167,808	763,704	*	*	*	63,448
6/3/2002	176,272	818,688	*	*	*	43,974
7/1/2002	182,246	856,688	*	*	*	45,609
8/1/2002	188,404	896,139	*	*	*	60,074
9/3/2002	196,255	948,362	*	*	*	44,067
10/1/2002	202,142	986,542	*	*	*	60,158
11/1/2002	209,581	1,039,261	*	*	*	60,538
12/2/2002	216,632	1,092,748	*	*	*	
1/1/2003	223,233	0	*	*	*	
2/1/2003	224,233	1,146,792	*	*	*	7,827
3/19/2003	227,523	1,151,329	*	*	*	22,891
4/3/2003	230,589	1,171,154	*	*	*	32,058
5/1/2003	235,275	1,198,526	*	*	*	18,373

NIROP FRIDLEY
Ground Water Treatment Facility (GWTF)

	Electrical Meter Readings (kW·h)					
Date	**MCC #1**	**MCC #2**	**Wells 2, 3A, 5A, 5B**	**Well 1A**	**Well 4**	**Monthy Usage**
6/4/2003	237,675	1,214,499	*	*	*	20,360
7/1/2003	240,411	1,232,123	*	*	*	42,930
8/1/2003	246,351	1,269,113	*	*	*	49,909
9/2/2003	253,306	1,312,067	*	*	*	52,166
10/1/2003	260,662	1,356,877	*	*	*	58,962
11/3/2003	268,788	1,407,713	*	*	*	57,373
12/1/2003	276,592	1,457,282	*	*	*	67,477
1/2/2004	285,175	1,516,176	*	*	*	67,278
2/2/2004	293,559	1,575,070	*	*	*	60,542
3/1/2004	301,245	1,627,926	*	*	*	31,187
4/1/2004	305,283	1,655,075	*	*	*	1,037
5/3/2004	305,515	1,655,880	*	*	*	51,931
6/1/2004	312,129	1,701,197	*	*	*	47,852
7/1/2004	318,012	1,743,166	*	*	*	60,764
8/3/2004	326,133	1,795,809	*	*	*	55,312
9/1/2004	335,039	1,842,215	*	*	*	52,307
10/1/2004	340,422	1,889,139	*	*	*	53,798
11/2/2004	347,296	1,936,063	*	*	*	64,045
12/1/2004	354,514	1,992,890	*	*	*	64,887
1/5/2005	362,574	49,717	*	*	*	48,313
2/1/2005	368,114	92,490	*	*	*	56,517
3/1/2005	374,689	142,432	*	*	*	35,669
4/1/2005	381,858	170,932	*	*	*	32,506
5/11/2005	384,388	200,908	*	*	*	37,857
6/2/2005	389,382	233,771	*	*	*	53,851
7/1/2005	395,908	281,096	*	*	*	55,772
8/1/2005	402,786	329,990	*	*	*	58,530
9/1/2005	410,054	381,252	*	*	*	59,756
10/4/2005	416,742	434,320	*	*	*	54,337
11/1/2005	423,117	482,282	*	*	*	59,439
12/1/2005	429,602	535,236	*	*	*	58,139
1/3/2006	437,032	585,945	*	*	*	64,273
2/3/2006	444,929	642,321	*	*	*	59,745
3/3/2006	451,966	695,029	*	*	*	59,447
4/4/2006	458,470	747,972	*	*	*	52,154
5/2/2006	464,407	794,189	*	*	*	56,066
6/1/2006	470,107	844,555	*	*	*	67,078
7/7/2006	476,656	905,084	*	*	*	75,362
8/17/2006	483,201	973,901	*	*	*	28,651
9/1/2006	485,579	174	*	*	*	60,559
10/2/2006	490,846	55,466	*	*	*	64,783

NIROP FRIDLEY
Ground Water Treatment Facility (GWTF)

	Electrical Meter Readings (kW·h)					
Date	**MCC #1**	**MCC #2**	**Wells 2, 3A, 5A, 5B**	**Well 1A**	**Well 4**	**Monthy Usage**
11/16/2006	497,232	113,863	*	*	*	30,896
12/12/2006	501,656	140,335	*	*	*	41,005
1/2/2007	507,345	175,651	*	*	*	89,453
2/14/2007	519,226	253,223	*	*	*	60,625
3/15/2007	526,775	306,299	*	*	*	37,019
4/1/2007	531,435	338,658	*	*	*	59,380
5/1/2007	538,780	390,693	*	*	*	60,309
6/2/2007	546,435	443,347	*	*	*	57,976
7/2/2007	552,240	495,518	*	*	*	54,945
8/1/2007	558,047	544,656	*	*	*	56,900
9/4/2007	563,999	595,604	*	*	*	48,947
10/1/2007	568,907	639,643	*	*	*	55,912
11/1/2007	574,269	690,193	*	*	*	61,551
12/3/2007	580,906	745,107	*	*	*	58,075
1/2/2008	587,234	796,854	*	*	*	61,758
2/1/2008	593,878	851,968	*	*	*	56,961
3/6/2008	601,457	901,350	*	*	*	47,128
4/1/2008	607,103	942,832	*	*	*	51,563
5/2/2008	613,973	987,525	*	*	*	45,409
6/2/2008	619,382	27,525	*	*	*	23,755
7/1/2008	621,730	48,932	*	*	*	57,458
8/1/2008	627,904	100,216	*	*	*	59,836
9/2/2008	634,818	153,138	*	*	*	57,157
10/4/2008	641,270	203,843	*	*	*	61,110
11/3/2008	648,196	258,027	*	*	*	58,512
12/1/2008	655,158	309,577	*	*	*	71,027
1/2/2009	663,755	372,007	*	*	*	69,361
2/2/2009	672,125	432,998	*	*	*	62,234
3/2/2009	679,788	487,569	*	*	*	61,618
4/1/2009	687,315	541,660	*	*	*	63,015
5/1/2009	694,461	597,529	*	*	*	63,751
6/1/2009	701,440	654,301	*	*	*	60,286
7/1/2009	708,069	707,958	*	*	*	65,088
8/3/2009	715,267	765,848	*	*	*	57,140
9/1/2009	721,611	816,644	*	*	*	56,282
10/1/2009	727,548	866,989	*	*	*	65,845
11/2/2009	734,666	925,716	*	*	*	60,372
12/1/2009	741,891	978,863	*	*	*	77,030
1/1/2010	750,050	1,047,734	*	*	*	63,139
2/1/2010	757,037	1,103,886	*	*	*	61,079

NIROP FRIDLEY
Ground Water Treatment Facility (GWTF)

	Electrical Meter Readings (kW·h)					
Date	**MCC #1**	**MCC #2**	**Wells 2, 3A, 5A, 5B**	**Well 1A**	**Well 4**	**Monthy Usage**
3/1/2010	763,509	1,158,493	*	*	*	69,431
4/1/2010	769,960	1,221,473	*	*	*	59,638
5/3/2010	775,813	1,275,258	*	*	*	54,143
6/1/2010	780,680	1,324,534	*	*	*	51,279
7/1/2010	784,369	1,372,124	*	*	*	75,167
8/2/2010	789,289	1,442,371	*	*	*	8,482
9/1/2010	791,567	1,448,575	*	*	*	55,237
10/1/2010	796,016	1,499,363	*	*	*	61,303
11/1/2010	800,411	1,556,271	*	*	*	60,565
12/1/2010	806,672	1,610,575	*	*	*	68,226
1/3/2011	813,611	1,671,862	*	*	*	64,951
2/1/2011	820,001	1,730,423	*	*	*	58,883
3/1/2011	825,935	1,783,372	*	*	*	68,939
4/1/2011	832,880	1,845,366	*	*	*	58,997
5/9/2011	838,973	1,898,270	*	*	*	29,524
6/1/2011	841,656	1,925,111	*	*	*	52,109
7/1/2011	846,958	1,971,918	*	*	*	43,675
8/1/2011	851,869	2,010,682	*	*	*	38,885
9/1/2011	856,221	2,045,215	*	*	*	7,098
10/1/2011	857,222	2,051,312	*	*	*	18,094
11/1/2011	859,066	2,067,562	*	*	*	36,292
12/1/2011	862,818	2,100,102	*	*	*	39,734

* Electrical metering for the extraction wells runs through MCC #1

- The electrical meter in the main treatment area was misread on 1/1/03, thus it was not reset. December electricity usage was estimated to be the same as November 2002.

^ The electrical meter in the main treatment area had reset after the scheduled power shut-down. October 2004 electricity usage for MCC#2 was estimated to be the same as September 2004.

+ - electrical readings were not obtained on December 1, 2004, therefore electrical usage for November was estimated to be similar to October 2004.

Table 3 TCE Mass Removed by the GWTF

Month	Influent Concentration	Effluent Concentration	TCE Mass Removed		
			Measured Period Total	GWTF Total TCE Mass Removed	Cumulative TCE Mass Removed[1]
Month-Year	*µ g/L*	*µ g/L*	*lbs*	*lbs*	*lbs*
Nov-98	657	2.74	129	129	25778
Dec-98	899	1	173	303	25952
Jan-99	916	1.26	208	511	26160
Feb-99	916	2.49	181	692	26341
Mar-99	831	1.18	187	880	26529
Apr-99	831	1.56	175	1054	26703
May-99	831	1.32	178	1232	26881
Jun-99	585	1.84	114	1346	26995
Jul-99	585	1.38	111	1457	27106
Aug-99	585	1	101	1559	27208
Sep-99	490	1	82	1641	27290
Oct-99	490	1	102	1743	27392
Nov-99	490	1	85	1828	27477
Dec-99	680	1	59	1887	27536
Jan-00	680	2	63	1951	27600
Feb-00	680	1	96	2047	27696
Mar-00	980	7.1	198	2245	27894
Apr-00	980	1.5	197	2443	28092
May-00	980	1.6	224	2667	28316
Jun-00	700	1.9	176	2843	28492
Jul-00	700	2.2	149	2992	28641
Aug-00	700	1.5	142	3134	28783
Sep-00	310	2.1	94	3229	28878
Oct-00	310	1.6	67	3296	28945
Nov-00	310	1.4	66	3363	29012
Dec-00	670	4.9	111	3474	29123
Jan-01	670	2.8	137	3612	29261
Feb-01	670	1	133	3746	29395
Mar-01	680	4.9	138	3884	29533
Apr-01	680	1.4	146	4031	29680
May-01	680	1	77	4109	29758
Jun-01	470	1.1	96	4204	29853
Jul-01	470	1	71	4275	29924
Aug-01	470	1	70	4345	29994
Sep-01	470	1	0	4345	29994
Oct-01	400	1	71	4416	30065
Nov-01	400	1	100	4517	30166
Dec-01	620	1	145	4662	30311
Jan-02	620	1	157	4820	30469
Feb-02	620	1	132	4951	30600
Mar-02	610	1	153	5105	30754

Table 3 TCE Mass Removed by the GWTF

Month	Influent Concentration	Effluent Concentration	TCE Mass Removed		
			Measured Period Total	GWTF Total TCE Mass Removed	Cumulative TCE Mass Removed[1]
Month-Year	*µ g/L*	*µ g/L*	*lbs*	*lbs*	*lbs*
Apr-02	610	1	145	5250	30899
May-02	610	1	145	5395	31044
Jun-02	560	4.3	107	5503	31152
Jul-02	560	4.3	99	5603	31252
Aug-02	560	1	132	5735	31384
Sep-02	610	1	101	5837	31486
Oct-02	610	1	109	5945	31594
Nov-02	610	1	127	6072	31721
Dec-02	600	1	127	6200	31849
Jan-03	600	1	5	6205	31854
Feb-03	600	1	0	6205	31854
Mar-03	220	1	46	6251	31900
Apr-03	220	1	30	6281	31930
May-03	220	1	14	6295	31944
Jun-03	390	1	27	6322	31971
Jul-03	390	1	73	6396	32045
Aug-03	390	1.1	83	6479	32128
Sep-03	510	1	101	6582	32231
Oct-03	510	1	108	6690	32339
Nov-03	510	1	97	6787	32436
Dec-03	470	1	121	6909	32558
Jan-04	470	1	99	7008	32657
Feb-04	470	1	93	7101	32750
Mar-04	460	1	49	7151	32800
Apr-04	460	1	0	7151	32800
May-04	460	1	92	7243	32892
Jun-04	460	1	80	7324	32973
Jul-04	460	1	103	7427	33076
Aug-04	460	1	102	7529	33178
Sep-04	420	1	95	7625	33274
Oct-04	420	1	86	7711	33360
Nov-04	420	1	90	7801	33450
Dec-04	480	1	105	7906	33555
Jan-05	480	1	83	7990	33639
Feb-05	480	1	89	8079	33728
Mar-05	460	1	88	8167	33816
Apr-05	460	1	25	8192	33841
May-05	460	1	68	8260	33909
Jun-05	360	1.8	73	8334	33983
Jul-05	360	1	76	8410	34059
Aug-05	360	1	77	8487	34136

Table 3 TCE Mass Removed by the GWTF

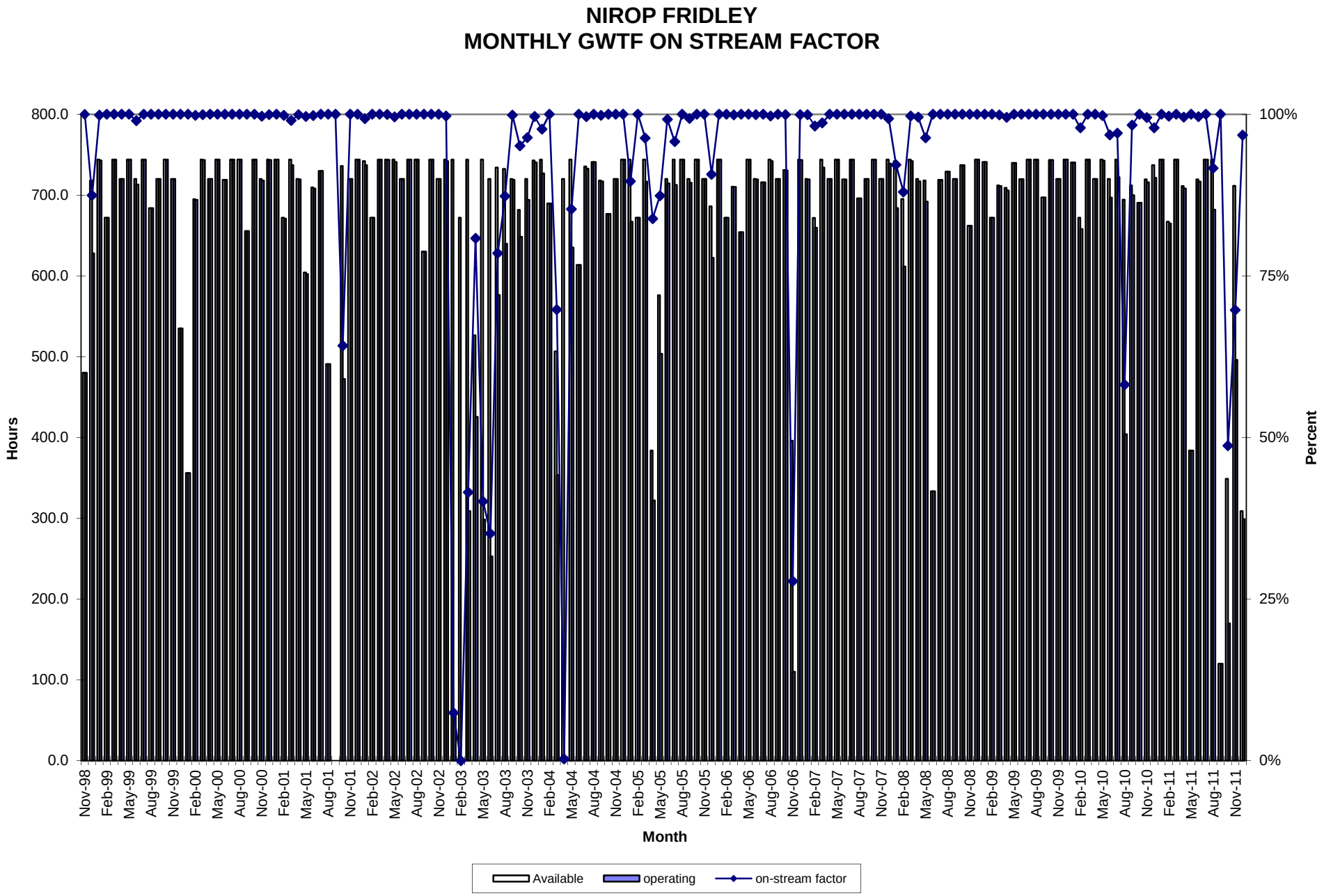
Month	Influent Concentration	Effluent Concentration	TCE Mass Removed		
			Measured Period Total	GWTF Total TCE Mass Removed	Cumulative TCE Mass Removed[1]
Month-Year	*µ g/L*	*µ g/L*	*lbs*	*lbs*	*lbs*
Sep-05	370	1	64	8551	34200
Oct-05	370	1	74	8625	34274
Nov-05	370	1	63	8689	34338
Dec-05	330	0.29	52	8741	34390
Jan-06	330	0.46	60	8801	34450
Feb-06	330	5	53	8855	34504
Mar-06	400	5	46	8901	34550
Apr-06	400	5	60	8963	34612
May-06	400	5	60	9023	34672
Jun-06	430	1	59	9082	34731
Jul-06	430	5	50	9133	34782
Aug-06	430	0.46	48	9181	34830
Sep-06	390	0.46	46	9227	34876
Oct-06	390	0.46	44	9271	34920
Nov-06	390	0.46	10	9281	34930
Dec-06	190	2.3	40	9321	34970
Jan-07	190	11	28	9351	35000
Jan-07	190	0.46	10	9361	35010
Feb-07	190	0.14	35	9396	35045
Mar-07	380	0.46	82	9477	35126
Apr-07	380	0.46	77	9554	35203
May-07	380	0.46	60	9614	35263
Jun-07	350	0.46	60	9675	35324
Jul-07	350	0.46	56	9731	35380
Aug-07	350	0.46	48	9779	35428
Sep-07	420	0.55	54	9832	35481
Oct-07	420	0.55	50	9883	35532
Nov-07	420	0.55	61	9943	35592
Dec-07	330	0.55	47	9990	35639
Jan-08	330	0.55	47	10037	35686
Feb-08	330	0.55	37	10075	35724
Mar-08	320	0.46	35	10110	35759
Apr-08	320	0.46	33	10143	35792
May-08	320	0.46	41	10184	35833
Jun-08	540	2.7	29	10214	35863
Jul-08	540	2.7	71	10285	35934
Aug-08	540	2.7	90	10375	36024
Sep-08	360	0.57	59	10434	36083
Oct-08	320	0.29	53	10487	36136
Nov-08	320	0.29	48	10535	36184
Dec-08	320	0.29	56	10591	36240

Table 3 TCE Mass Removed by the GWTF

Month	Influent Concentration	Effluent Concentration	TCE Mass Removed		
			Measured Period Total	GWTF Total TCE Mass Removed	Cumulative TCE Mass Removed[1]
Month-Year	*µ g/L*	*µ g/L*	*lbs*	*lbs*	*lbs*
Jan-09	270	0.21	46	10637	36286
Feb-09	270	0.21	39	10676	36325
Mar-09	270	0.21	40	10716	36365
Apr-09	290	0.23	40	10756	36405
May-09	290	0.23	57	10813	36462
Jun-09	290	0.23	51	10864	36513
Jul-09	280	0.18	51	10915	36564
Aug-09	280	0.18	49	10964	36613
Sep-09	280	0.18	39	11003	36652
Oct-09	140	0.13	22	11025	36674
Nov-09	140	0.13	23	11048	36697
Dec-09	140	0.13	21	11069	36718
Jan-10	280	0.23	46	11115	36764
Feb-10	280	0.23	34	11149	36798
Mar-10	280	0.23	34	11183	36832
Apr-10	300	0.68	39	11222	36871
May-10	300	0.68	45	11267	36916
Jun-10	300	0.68	27	11294	36943
Jul-10	210	0.65	21	11316	36965
Aug-10	210	0.65	7	11322	36971
Sep-10	210	0.65	22	11344	36993
Oct-10	180	0.65	19	11363	37012
Nov-10	180	0.65	23	11387	37036
Dec-10	180	0.65	24	11410	37059
Jan-11	260	0.17	37	11448	37097
Feb-11	260	0.17	36	11484	37133
Mar-11	260	0.17	39	11522	37171
Apr-11	380	0.5	44	11567	37216
May-11	380	0.5	29	11595	37244
Jun-11	380	0.5	42	11637	37286
Jul-11	390	1.4	42	11680	37329
Aug-11	390	1.4	40	11720	37369
Sep-11	390	1.4	15	11735	37384
Oct-11	610	0.14	20	11754	37403
Nov-11	610	0.14	70	11824	37473
Dec-11	610	0.14	58	11882	37531

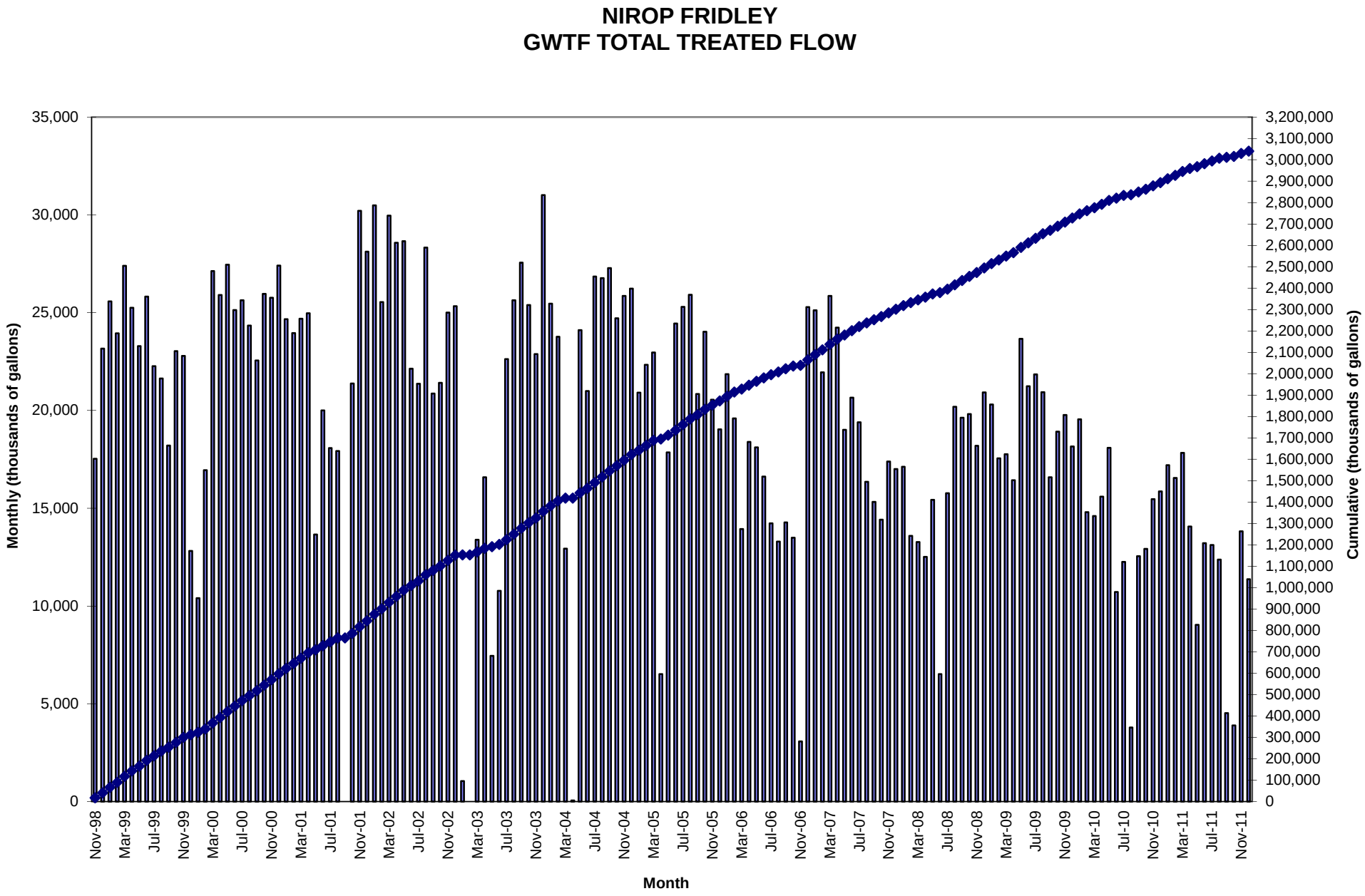
[1]*Includes TCE mass removed from 1992 to the start-up of GWTF in 1998.*
During this time, recovered groundwater was discharged directly to the sanitary sewer without treatment.

Figures



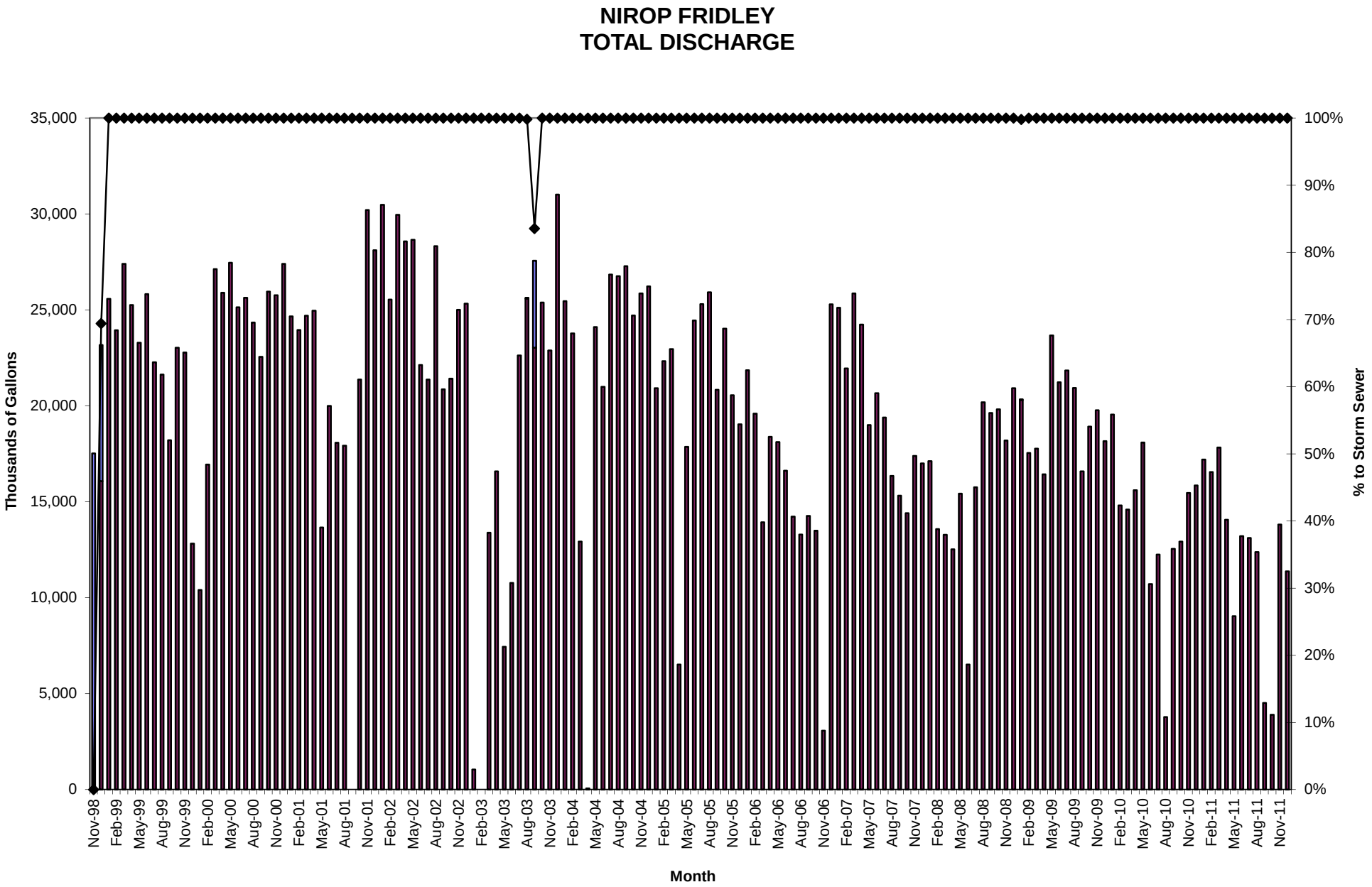
Docs 58644

Figure 1



Docs 58644

Figure 2



Docs 58644

Figure 3

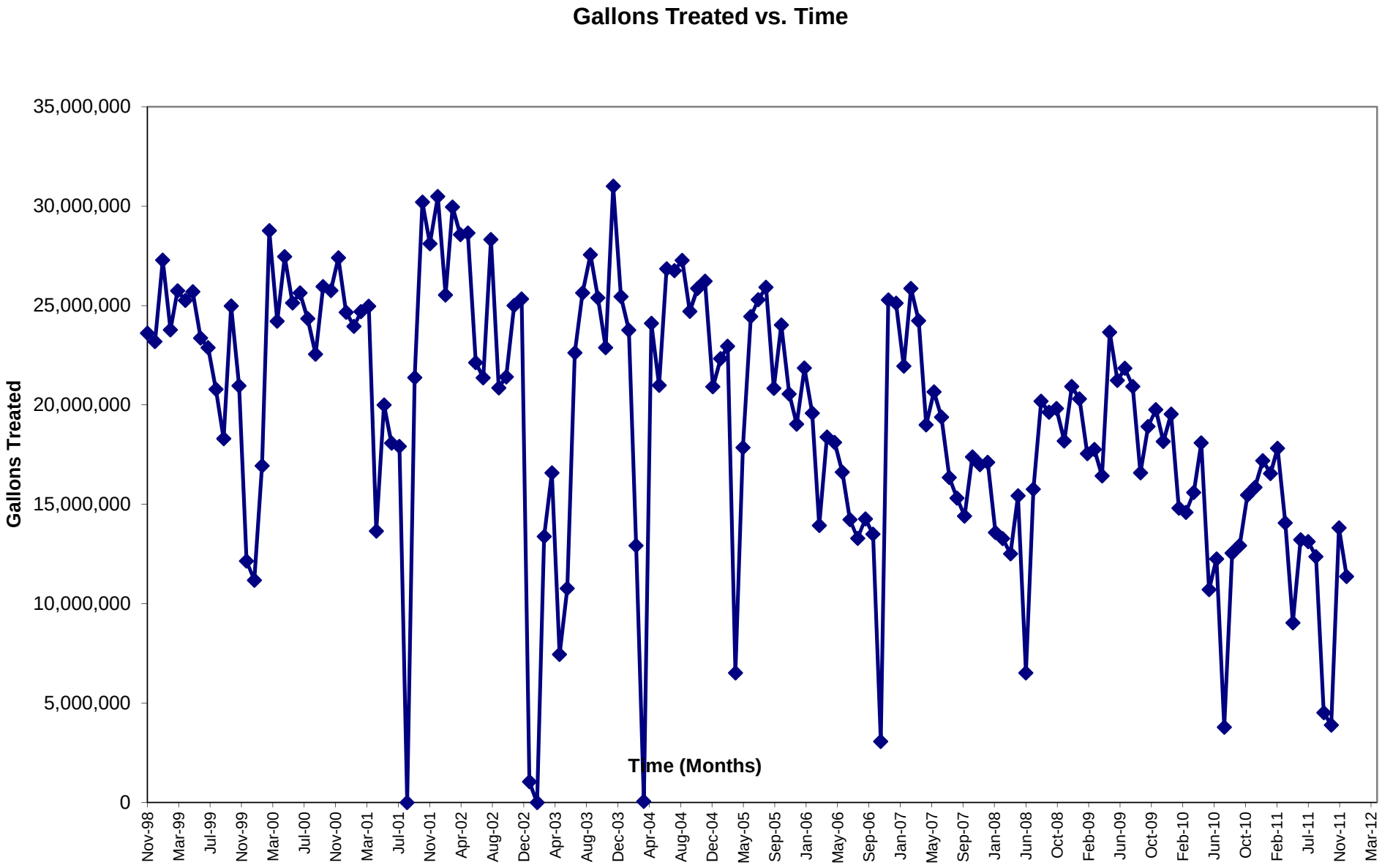


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Figure 4

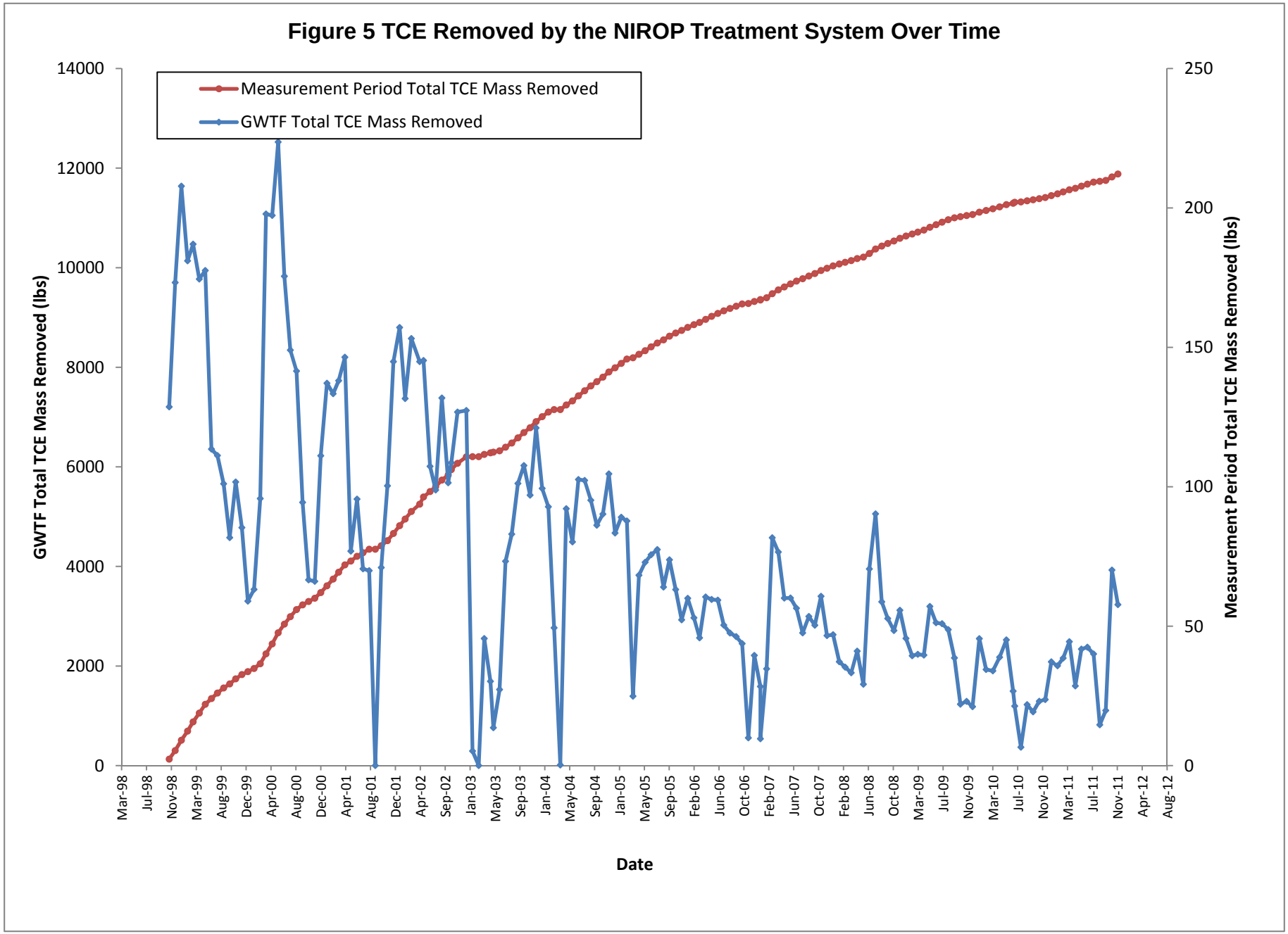
Figure 5 TCE Removed by the NIROP Treatment System Over Time
Measurement Period Total TCE Mass Removed
GWTF Total TCE Mass Removed
GWTF Total TCE Mass Removed (lbs)
Measurement Period Total TCE Mass Removed (lbs)
Date
14000
12000
10000
8000
6000
4000
2000
0
250
200
150
100
50
0
Mar-98
Jul-98
Nov-98
Mar-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Sep-02
Jan-03
May-03
Sep-03
Jan-04
May-04
Sep-04
Jan-05
May-05
Sep-05
Feb-06
Jun-06
Oct-06
Feb-07
Jun-07
Oct-07
Feb-08
Jun-08
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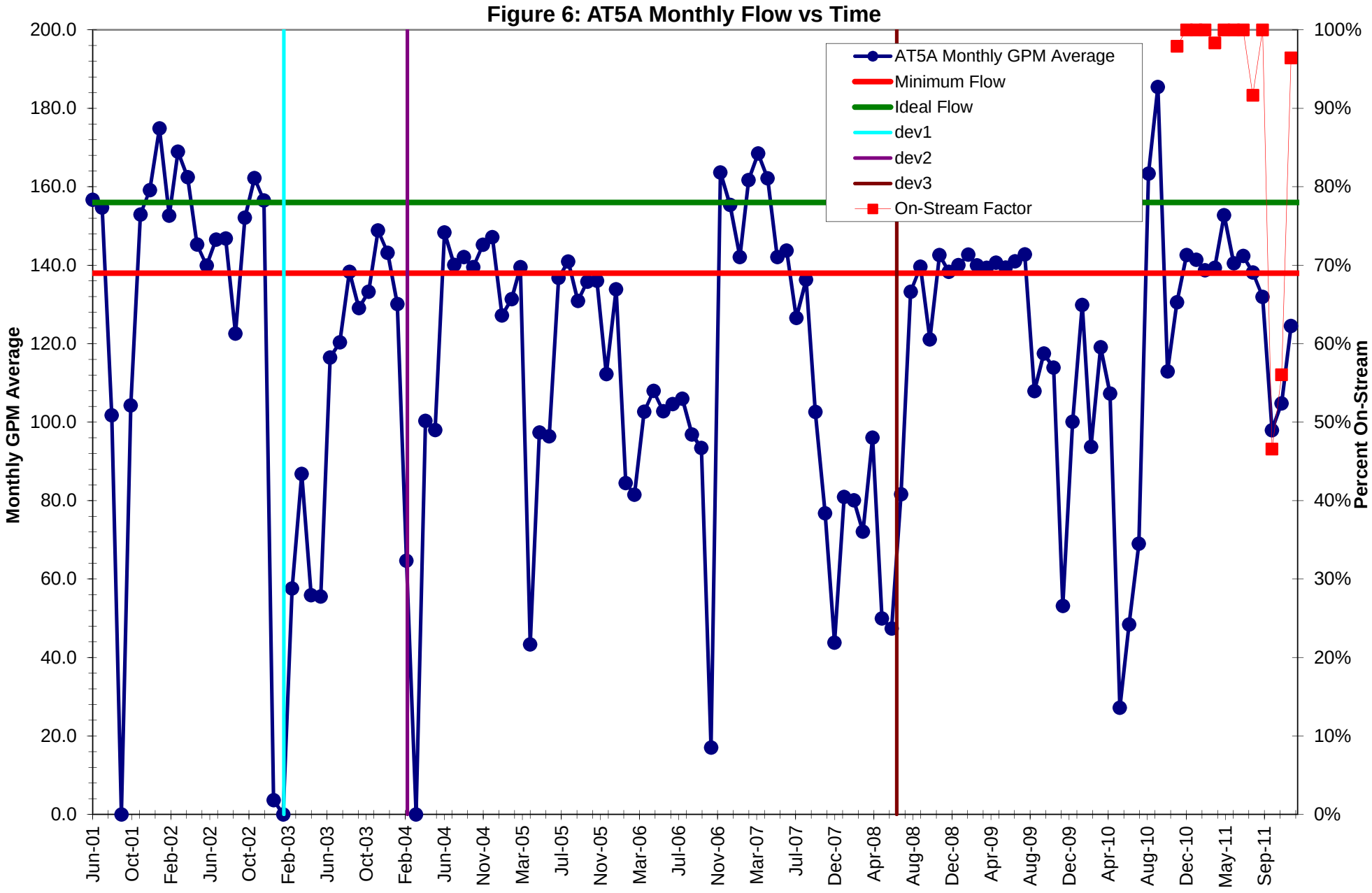
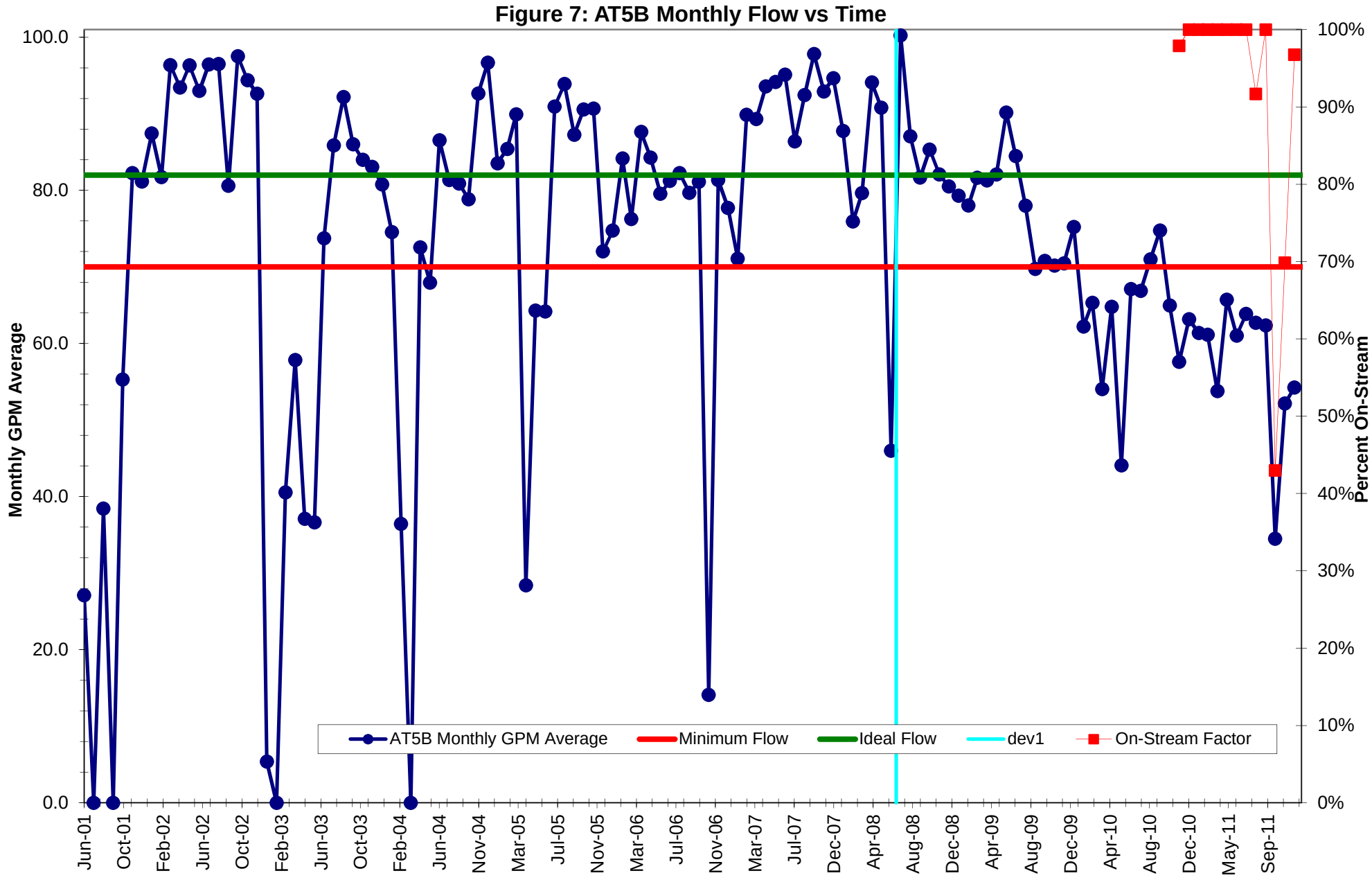
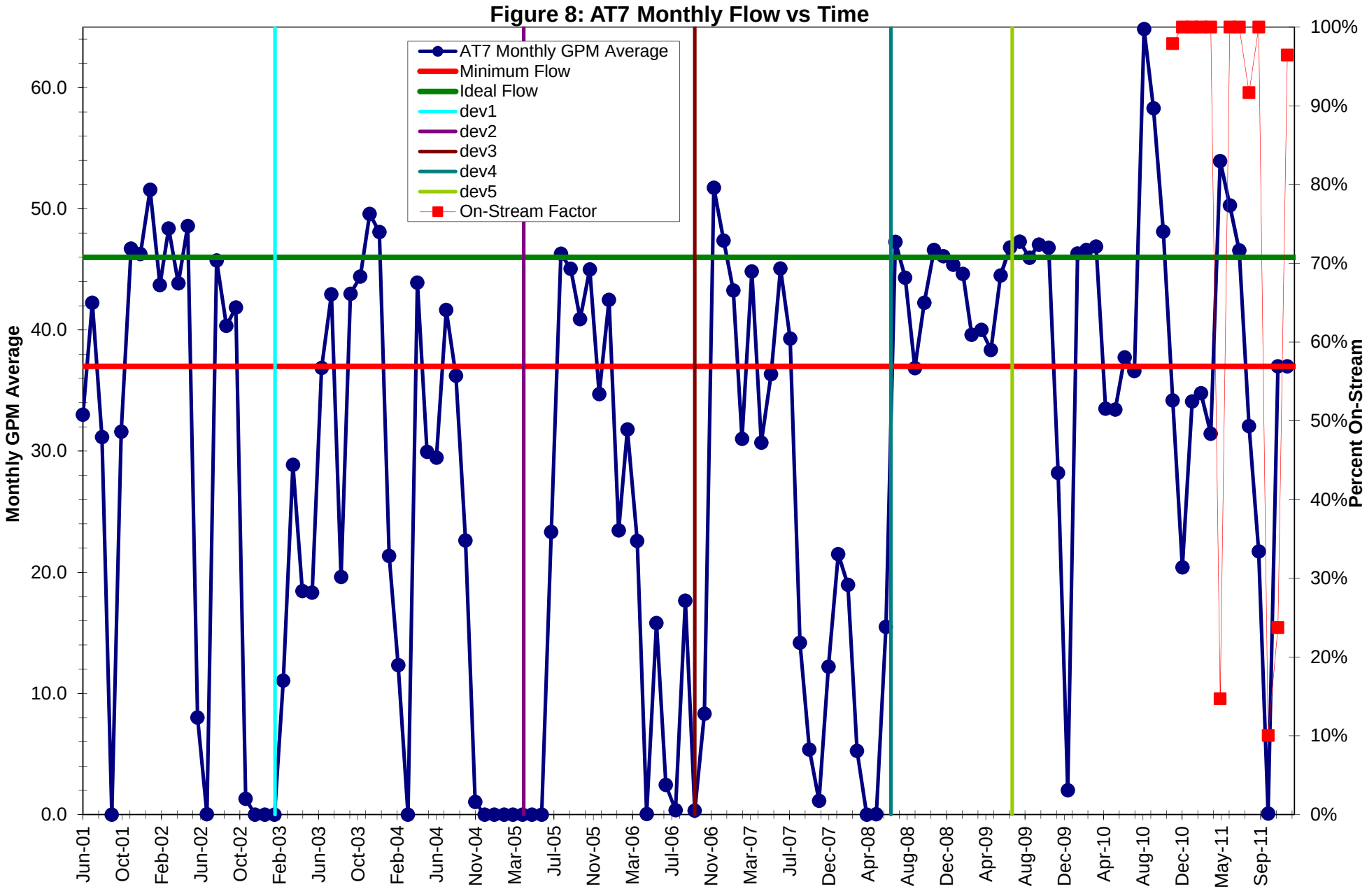
Jul-11
Nov-11
Apr-12
Aug-12



* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.

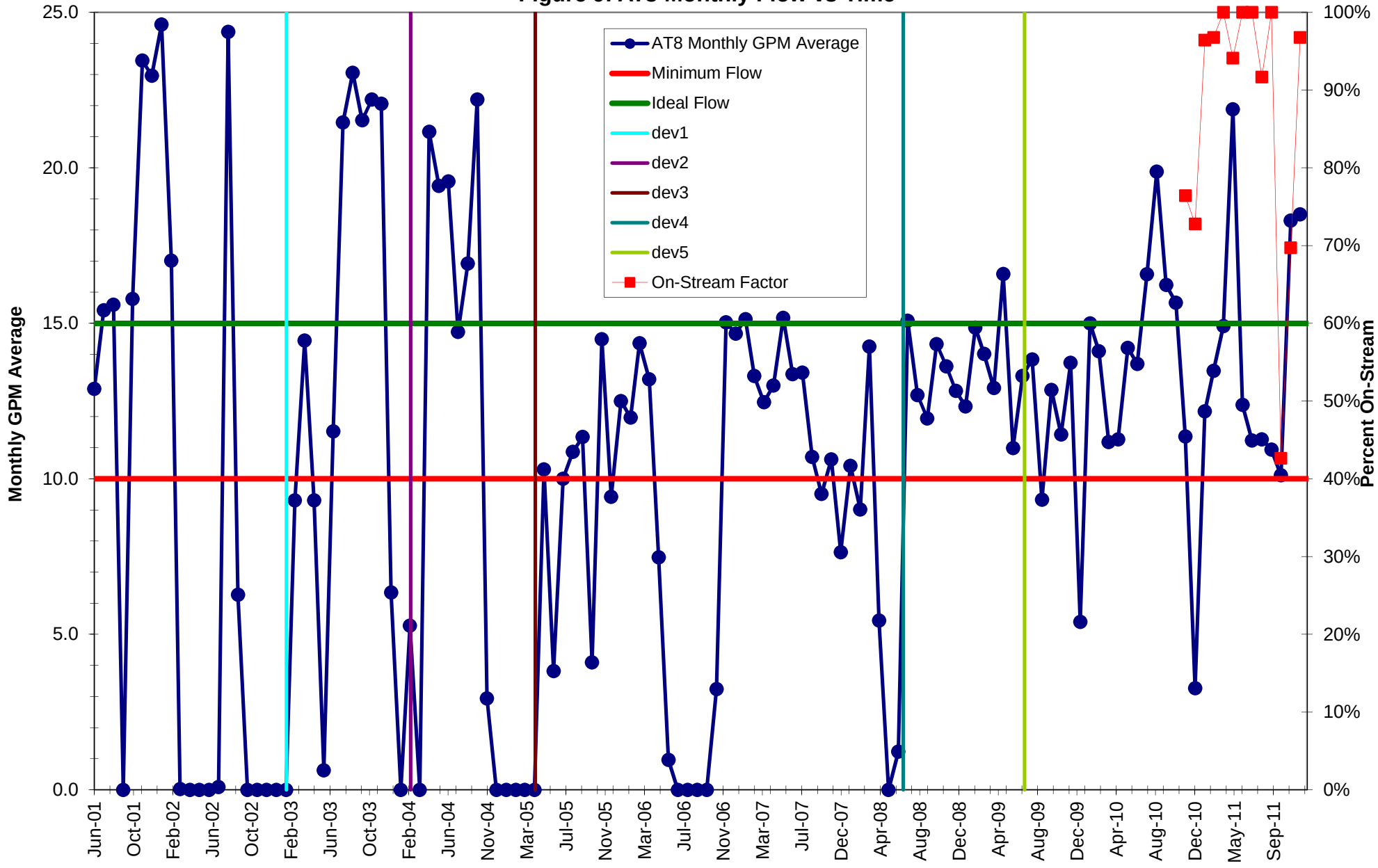


* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.

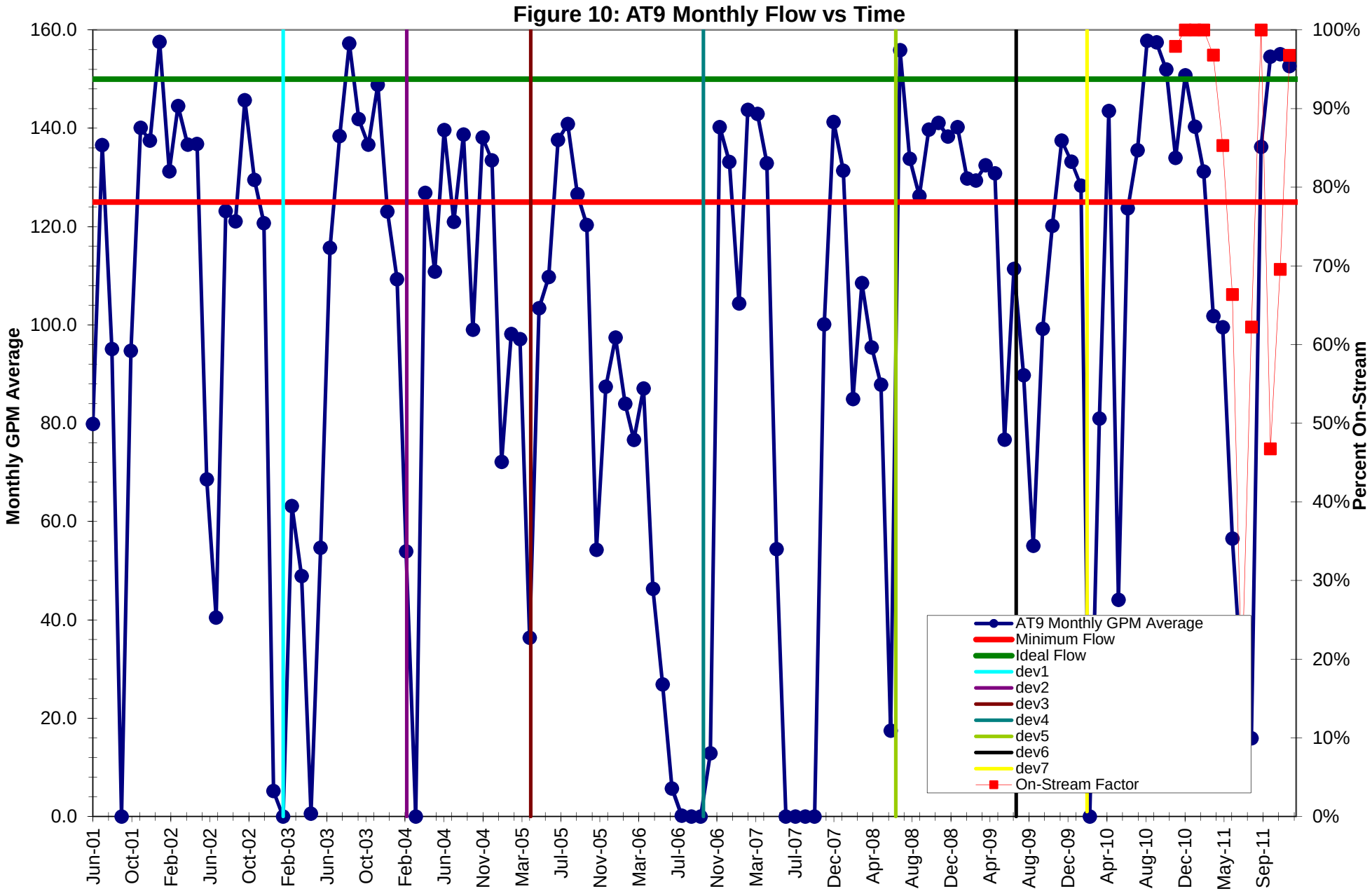


* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.

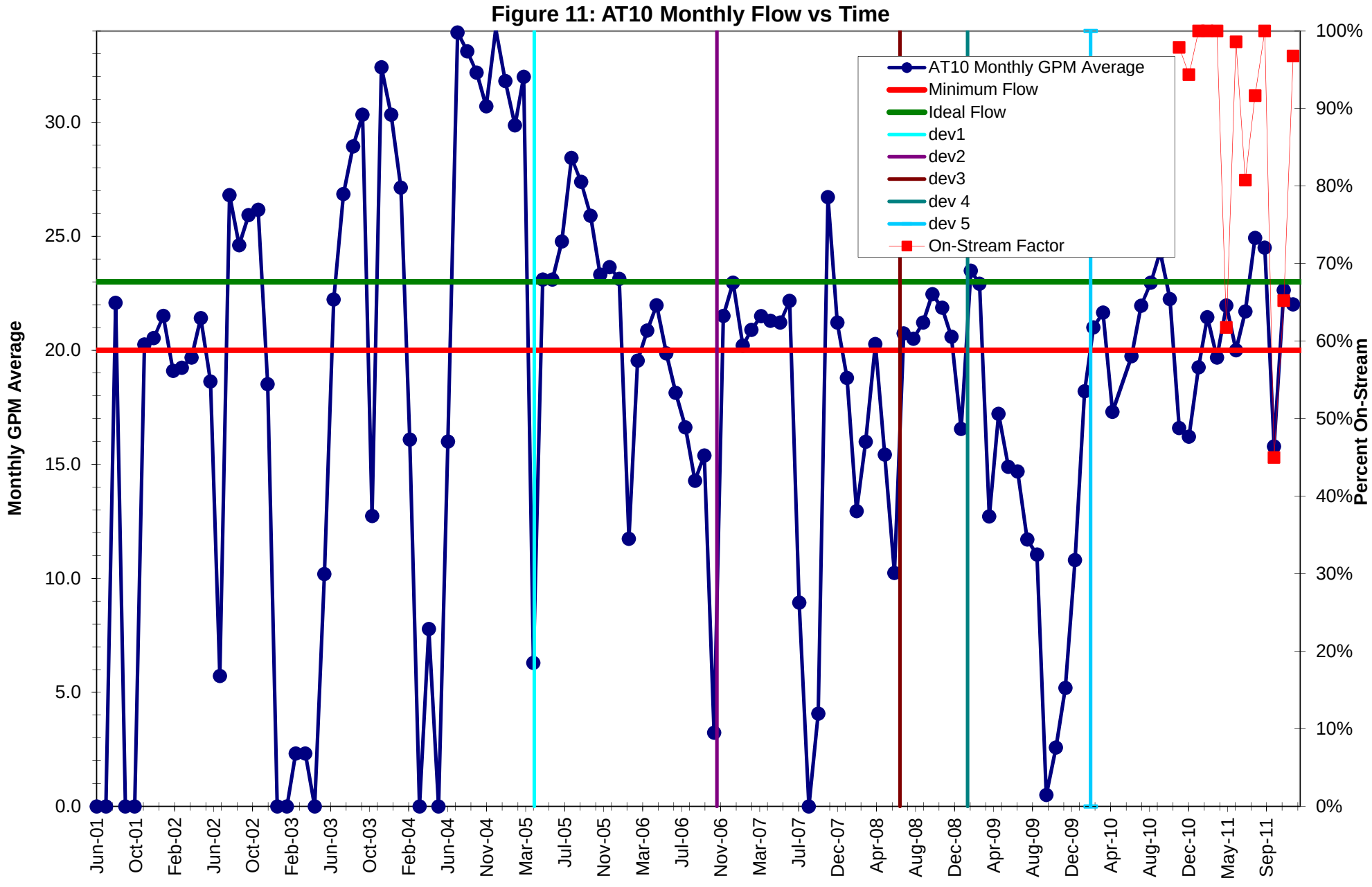
Figure 9: AT8 Monthly Flow vs Time



* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.

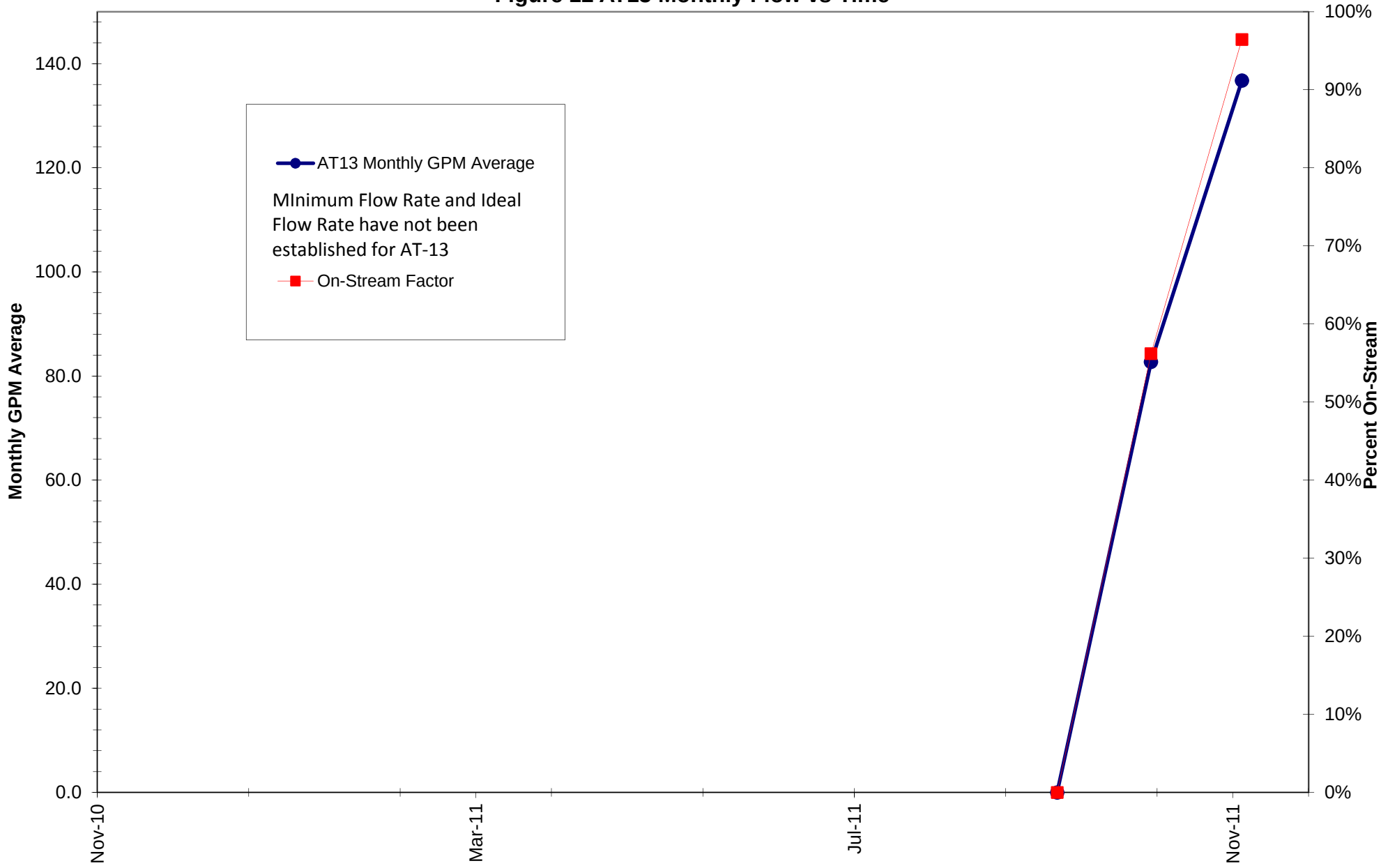


* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.



* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.

Figure 12 AT13 Monthly Flow vs Time



* The average monthly flow rate is the total gallons pumped during the month divided by the total minutes the pump was operational during the month.

A-4 REDEVELOPMENT FIELD LOG SHEETS

Redevelopment of AT-8

Jan/Feb 2011

Chemistry Materials: Design Water Technologies Unicid Granular and Unicid Catalyst

			Unicid Catalyst	Unicid Granular Acid		Surging				
Date	Duration between Events (days)	Cumulative Duration (days)	Added (gal)	Added (lbs)	Cumulative Added (lbs)	Start	Finish	Duration (hrs:min)	pH Start	pH end
1/25/2011	0	0	2.2	19	19	13:05	16:00	2:55	7	1.64
1/28/2011	3	3	0.8	12	31	9:15	11:20	2:05	2.54	1.79
1/31/2011	3	6	1.6	24	55	11:40	13:40	2:00	3.24	1.3
2/4/2012	3	9	0	6	61	9:30	11:30	2:00	1.86	1.68
2/8/2011	5	14	0	18	79	10:15	12:25	2:10	2.94	1.24
2/11/2011	5	19	0	6	85	9:45	11:50	2:05	1.41	1.26
2/17/2011	5	24	Redevelopment terminated - Pump and motor reinstalled							

Redevelopment of AT-9

July/Aug 2011

Chemistry Materials: Design Water Technologies Unicid Granular and Unicid Catalyst

			Unicid Catalyst	Unicid Granular Acid		Surging				
Date	Duration between Events (days)	Cumulative Duration (days)	Added (gal)	Added (lbs)	Cumulative Added (lbs)	Start	Finish	Duration (hrs:min)	pH Start	pH end
7/6/2011	0	0	4	90	90	11:46	14:15	2:29	7	1
7/11/2011	5	5	0	15	105	9:20	11:30	2:10	4.5	1.6
7/14/2011	3	8	0	20	125	9:20	11:20	2:00	5.7	1.88
7/20/2011	6	14	2.5	35	160	9:13	11:16	2:03	6.62	1.62
7/26/2011	6	20	0	20	180	9:50	11:55	2:05	5.23	1.42
7/29/2011	3	23	0	20	200	9:18	11:18	2:00	4.76	1.41
8/3/2011	5	28	0	20	220	7:40	9:15	1:35	5.6	2.4
8/8/2011	5	33	Redevelopment terminated - Pump and motor reinstalled							

APPENDIX B

EXTRACTION SYSTEM OPERATIONAL PERFORMANCE

B-1 SUMMARY OF OPERATION COST/PERFORMANCE

B-2 ANNUAL WATER USE REPORT

B-1 SUMMARY OF OPERATION COST/PERFORMANCE

Appendix B-1

SUMMARY OF OPERATION COST AND PERFORMANCE
2010 ANNUAL MONITORING REPORT
NAVAL INDUSTRIUAL RESERVE ORDNANCE PLANT
FRIDLEY, MINNESOTA

Month	Gallons Treated	Influent Concentration (ug/L)	Effluent Concentration (ug/L)	Convert To Liters	RF	ER	Convert To Pounds	Monthly Cost	Contaminant Removed (lbs)	Cumulative Cost	Cost per Pound	Cost per Gallon	Cumulative Gallons	Cum. Cost per Cum. Gallons
Nov-98	11807500	657	2.74	44691388	0.99583	2.9240E+10	64.3275	$13,862.00	64.3275	$13,862	$215.49	$0.001174	11807500	$0.0012
Nov-98	11807500	657	2.74	44691388	0.99583	2.9240E+10	64.3275	$13,862.00	128.6551	$27,724	$215.49	$0.001174	23615000	$0.0012
Dec-98	11595000	899	2.68	43887075	0.99702	3.9337E+10	86.5411	$11,955.00	215.1962	$39,679	$184.39	$0.001031	35210000	$0.0011
Dec-98	11595000	899	1.00	43887075	0.99889	3.9411E+10	86.7033	$11,955.00	301.8995	$51,634	$171.03	$0.001031	46805000	$0.0011
Jan-99	13645500	916	1.65	51648218	0.99820	4.7225E+10	103.8940	$6,521.00	405.7935	$58,155	$143.31	$0.000478	60450500	$0.0010
Jan-99	13645500	916	1.26	51648218	0.99862	4.7245E+10	103.9383	$6,521.00	509.7318	$64,676	$126.88	$0.000478	74096000	$0.0009
Feb-99	11890500	916	1.09	45005543	0.99881	4.1176E+10	90.5872	$10,823.50	600.3190	$75,500	$125.77	$0.000910	85986500	$0.0009
Feb-99	11890500	916	2.49	45005543	0.99728	4.1113E+10	90.4486	$10,823.50	690.7677	$86,323	$124.97	$0.000910	97877000	$0.0009
Mar-99	12872500	916	1.00	48722413	0.99891	4.4581E+10	98.0782	$9,257.50	788.8459	$95,581	$121.16	$0.000719	110749500	$0.0009
Mar-99	12872500	831	1.18	48722413	0.99858	4.0431E+10	88.9478	$9,257.50	877.7937	$104,838	$119.43	$0.000719	123622000	$0.0008
Apr-99	12628500	831	1.00	47798873	0.99880	3.9673E+10	87.2807	$6,522.00	965.0745	$111,360	$115.39	$0.000516	136250500	$0.0008
Apr-99	12628500	831	1.56	47798873	0.99812	3.9646E+10	87.2219	$6,522.00	1052.2963	$117,882	$112.02	$0.000516	148879000	$0.0008
May-99	12847500	831	1.00	48627788	0.99880	4.0361E+10	88.7943	$6,096.50	1141.0906	$123,979	$108.65	$0.000475	161726500	$0.0008
May-99	12847500	831	1.32	48627788	0.99841	4.0346E+10	88.7601	$6,096.50	1229.8508	$130,075	$105.76	$0.000475	174574000	$0.0007
Jun-99	11682000	585	1.20	44216370	0.99795	2.5814E+10	56.7897	$6,250.00	1286.6405	$136,325	$105.95	$0.000535	186256000	$0.0007
Jun-99	11682000	585	1.84	44216370	0.99685	2.5785E+10	56.7275	$6,250.00	1343.3680	$142,575	$106.13	$0.000535	197938000	$0.0007
Jul-99	11440000	585	0.99	43300400	0.99831	2.5288E+10	55.6333	$10,477.00	1399.0013	$153,052	$109.40	$0.000916	209378000	$0.0007
Jul-99	11440000	585	1.38	43300400	0.99764	2.5271E+10	55.5962	$10,477.00	1454.5974	$163,529	$112.42	$0.000916	220818000	$0.0007
Aug-99	10394000	585	1.00	39341290	0.99829	2.2975E+10	50.5457	$10,927.50	1505.1431	$174,457	$115.91	$0.001051	231212000	$0.0008
Aug-99	10394000	585	1.00	39341290	0.99829	2.2975E+10	50.5457	$10,927.50	1555.6888	$185,384	$119.17	$0.001051	241606000	$0.0008
Sep-99	9151000	585	1.13	34636535	0.99807	2.0223E+10	44.4911	$10,614.00	1600.1799	$195,998	$122.48	$0.001160	250757000	$0.0008
Sep-99	9151000	490	1.00	34636535	0.99796	1.6937E+10	37.2620	$10,614.00	1637.4419	$206,612	$126.18	$0.001160	259908000	$0.0008
Oct-99	12489000	490	1.00	47270865	0.99796	2.3115E+10	50.8540	$5,470.50	1688.2959	$212,083	$125.62	$0.000438	272397000	$0.0008
Oct-99	12489000	490	1.00	47270865	0.99796	2.3115E+10	50.8540	$5,470.50	1739.1499	$217,553	$125.09	$0.000438	284886000	$0.0008
Nov-99	10482500	490	1.00	39676263	0.99796	1.9402E+10	42.6837	$10,609.00	1781.8336	$228,162	$128.05	$0.001012	295368500	$0.0008
Nov-99	10482500	490	1.00	39676263	0.99796	1.9402E+10	42.6837	$10,609.00	1824.5173	$238,771	$130.87	$0.001012	305851000	$0.0008
Dec-99	6072000	490	2.00	22982520	0.99592	1.1215E+10	24.6740	$8,366.50	1849.1914	$247,138	$133.65	$0.001378	311923000	$0.0008
Dec-99	6072000	680	1.00	22982520	0.99853	1.5605E+10	34.3313	$8,366.50	1883.5227	$255,504	$135.65	$0.001378	317995000	$0.0008
Jan-00	5591500	680	1.00	21163828	0.99853	1.4370E+10	31.6145	$10,030.00	1915.1372	$265,534	$138.65	$0.001794	323586500	$0.0008
Jan-00	5591500	680	2.00	21163828	0.99706	1.4349E+10	31.5680	$10,030.00	1946.7052	$275,564	$141.55	$0.001794	329178000	$0.0008
Feb-00	8471500	680	1.00	32064628	0.99853	2.1772E+10	47.8981	$9,780.00	1994.6033	$285,344	$143.06	$0.001154	337649500	$0.0008
Feb-00	8471500	680	1.00	32064628	0.99853	2.1772E+10	47.8981	$9,780.00	2042.5014	$295,124	$144.49	$0.001154	346121000	$0.0009
Mar-00	14385500	680	1.10	54449118	0.99838	3.6966E+10	81.3241	$9,780.00	2123.8256	$304,904	$143.56	$0.000680	360506500	$0.0008
Mar-00	14385500	980	7.10	54449118	0.99276	5.2974E+10	116.5418	$21,725.00	2240.3674	$326,629	$145.79	$0.001510	374892000	$0.0009
Apr-00	12107000	980	1.10	45824995	0.99888	4.4858E+10	98.6878	$18,557.00	2339.0552	$345,186	$147.57	$0.001533	386999000	$0.0009
Apr-00	12107000	980	1.50	45824995	0.99847	4.4840E+10	98.6475	$10,400.00	2437.7026	$355,586	$145.87	$0.000859	399106000	$0.0009
May-00	13729000	980	2.10	51964265	0.99786	5.0816E+10	111.7949	$10,400.00	2549.4975	$365,986	$143.55	$0.000758	412835000	$0.0009
May-00	13729000	980	1.60	51964265	0.99837	5.0842E+10	111.8520	$10,400.00	2661.3495	$376,386	$141.43	$0.000758	426564000	$0.0009
Jun-00	12568000	980	1.00	47569880	0.99898	4.6571E+10	102.4560	$10,400.00	2763.8055	$386,786	$139.95	$0.000827	439132000	$0.0009
Jun-00	12568000	700	1.90	47569880	0.99729	3.3209E+10	73.0588	$10,400.00	2836.8643	$397,186	$140.01	$0.000827	451700000	$0.0009
Jul-00	12818500	700	1.90	48518023	0.99729	3.3870E+10	74.5149	$20,577.00	2911.3793	$417,763	$143.49	$0.001605	464518500	$0.0009
Jul-00	12818500	700	2.20	48518023	0.99686	3.3856E+10	74.4829	$20,577.00	2985.8622	$438,340	$146.81	$0.001605	477337000	$0.0009
Aug-00	12170500	700	2.20	46065343	0.99686	3.2144E+10	70.7177	$10,406.50	3056.5799	$448,747	$146.81	$0.000855	489507500	$0.0009
Aug-00	12170500	700	1.50	46065343	0.99786	3.2177E+10	70.7886	$10,406.50	3127.3685	$459,153	$146.82	$0.000855	501678000	$0.0009
Sep-00	11279500	700	2.60	42692908	0.99629	2.9774E+10	65.5029	$10,406.50	3192.8714	$469,560	$147.06	$0.000923	512957500	$0.0009
Sep-00	11279500	310	2.10	42692908	0.99323	1.3145E+10	28.9193	$10,406.50	3221.7907	$479,966	$148.97	$0.000923	524237000	$0.0009
Oct-00	12977500	310	1.80	49119838	0.99419	1.5139E+10	33.3052	$9,657.00	3255.0959	$489,623	$150.42	$0.000744	537214500	$0.0009
Oct-00	12977500	310	1.60	49119838	0.99484	1.5149E+10	33.3268	$9,657.00	3288.4227	$499,280	$151.83	$0.000744	550192000	$0.0009
Nov-00	12879500	310	2.30	48748908	0.99258	1.5000E+10	33.0001	$10,657.00	3321.4228	$509,937	$153.53	$0.000827	563071500	$0.0009
Nov-00	12879500	310	1.40	48748908	0.99548	1.5044E+10	33.0966	$10,657.00	3354.5194	$520,594	$155.19	$0.000827	575951000	$0.0009
Dec-00	13702000	310	1.00	51862070	0.99677	1.6025E+10	35.2558	$10,407.00	3389.7752	$531,001	$156.65	$0.000760	589653000	$0.0009
Dec-00	13702000	670	4.90	51862070	0.99269	3.4493E+10	75.8856	$10,407.00	3465.6609	$541,408	$156.22	$0.000760	603355000	$0.0009
Jan-01	12333000	670	1.80	46680405	0.99731	3.1192E+10	68.6221	$10,579.00	3534.2829	$551,987	$156.18	$0.000858	615688000	$0.0009
Jan-01	12333000	670	2.80	46680405	0.99582	3.1145E+10	68.5194	$10,579.00	3602.8023	$562,566	$156.15	$0.000858	628021000	$0.0009
Feb-01	11978000	670	1.80	45336730	0.99731	3.0294E+10	66.6468	$10,851.00	3669.4491	$573,417	$156.27	$0.000906	639999000	$0.0009
Feb-01	11978000	670	1.00	45336730	0.99851	3.0330E+10	66.7266	$10,851.00	3736.1757	$584,268	$156.38	$0.000906	651977000	$0.0009
Mar-01	12347000	670	2.10	46733395	0.99687	3.1213E+10	68.6691	$8,809.00	3804.8448	$593,077	$155.87	$0.000713	664324000	$0.0009
Mar-01	12347000	680	4.90	46733395	0.99279	3.1550E+10	69.4094	$8,809.00	3874.2542	$601,886	$155.36	$0.000713	676671000	$0.0009
Apr-01	12964000	680	1.90	49068740	0.99721	3.3274E+10	73.2017	$11,970.37	3947.4559	$613,856	$155.51	$0.000923	689635000	$0.0009

Appendix B-1

SUMMARY OF OPERATION COST AND PERFORMANCE
2010 ANNUAL MONITORING REPORT
NAVAL INDUSTRIUAL RESERVE ORDNANCE PLANT
FRIDLEY, MINNESOTA

Month	Gallons Treated	Influent Concentration (ug/L)	Effluent Concentration (ug/L)	Convert To Liters	RF	ER	Convert To Pounds	Monthly Cost	Contaminant Removed (lbs)	Cumulative Cost	Cost per Pound	Cost per Gallon	Cumulative Gallons	Cum. Cost per Cum. Gallons
Apr-01	12964000	680	1.40	49068740	0.99794	3.3298E+10	73.2557	$11,970.37	4020.7116	$625,827	$155.65	$0.000923	702599000	$0.0009
May-01	6828000	680	5.80	25843980	0.99147	1.7424E+10	38.3328	$11,294.92	4059.0444	$637,122	$156.96	$0.001654	709427000	$0.0009
May-01	6828000	680	1.00	25843980	0.99853	1.7548E+10	38.6057	$11,294.92	4097.6502	$648,417	$158.24	$0.001654	716255000	$0.0009
Jun-01	10000000	680	1.00	37850000	0.99853	2.5700E+10	56.5403	$11,293.36	4154.1905	$659,710	$158.81	$0.001129	726255000	$0.0009
Jun-01	10000000	470	1.10	37850000	0.99766	1.7748E+10	39.0453	$11,293.36	4193.2358	$671,003	$160.02	$0.001129	736255000	$0.0009
Jul-01	9038500	470	1.00	34210723	0.99787	1.6045E+10	35.2986	$11,458.50	4228.5344	$682,462	$161.39	$0.001268	745293500	$0.0009
Jul-01	9038500	470	1.00	34210723	0.99787	1.6045E+10	35.2986	$11,458.50	4263.8331	$693,920	$162.75	$0.001268	754332000	$0.0009
Aug-01	8960500	470	1.70	33915493	0.99638	1.5883E+10	34.9418	$10,798.50	4298.7748	$704,719	$163.93	$0.001205	763292500	$0.0009
Aug-01	8960500	470	1.00	33915493	0.99787	1.5906E+10	34.9940	$10,798.50	4333.7688	$715,517	$165.10	$0.001205	772253000	$0.0009
Sep-01	0	470	1.00	0	0.99787	0.0000E+00	0.0000	$19,449.31	4333.7688	$734,967	$169.59	$0.000000	772253000	$0.0010
Sep-01	0	470	1.00	0	0.99787	0.0000E+00	0.0000	$19,449.31	4333.7688	$754,416	$174.08	$0.000000	772253000	$0.0010
Oct-01	10688000	400	1.00	40454080	0.99750	1.6141E+10	35.5106	$10,264.96	4369.2794	$764,681	$175.01	$0.000960	782941000	$0.0010
Oct-01	10688000	400	1.00	40454080	0.99750	1.6141E+10	35.5106	$10,264.96	4404.7900	$774,946	$175.93	$0.000960	793629000	$0.0010
Nov-01	15102500	400	1.00	57162963	0.99750	2.2808E+10	50.1776	$9,922.05	4454.9677	$784,868	$176.18	$0.000657	808731500	$0.0010
Nov-01	15102500	400	1.00	57162963	0.99750	2.2808E+10	50.1776	$9,922.05	4505.1453	$794,790	$176.42	$0.000657	823834000	$0.0010
Dec-01	14057000	620	1.00	53205745	0.99839	3.2934E+10	72.4556	$9,733.48	4577.6009	$804,523	$175.75	$0.000692	837891000	$0.0010
Dec-01	14057000	620	1.00	53205745	0.99839	3.2934E+10	72.4556	$9,733.48	4650.0565	$814,257	$175.11	$0.000692	851948000	$0.0010
Jan-02	15241500	620	1.00	57689078	0.99839	3.5710E+10	78.5610	$9,640.16	4728.6175	$823,897	$174.24	$0.000632	867189500	$0.0010
Jan-02	15241500	620	1.00	57689078	0.99839	3.5710E+10	78.5610	$9,640.16	4807.1785	$833,537	$173.39	$0.000632	882431000	$0.0009
Feb-02	12769000	620	1.00	48330665	0.99839	2.9917E+10	65.8167	$9,594.65	4872.9952	$843,132	$173.02	$0.000751	895200000	$0.0009
Feb-02	12769000	620	1.00	48330665	0.99839	2.9917E+10	65.8167	$9,594.65	4938.8119	$852,727	$172.66	$0.000751	907969000	$0.0009
Mar-02	14978500	620	1.00	56693623	0.99839	3.5093E+10	77.2054	$9,777.79	5016.0172	$862,504	$171.95	$0.000653	922947500	$0.0009
Mar-02	14978500	610	1.00	56693623	0.99836	3.4526E+10	75.9581	$9,777.79	5091.9753	$872,282	$171.31	$0.000653	937926000	$0.0009
Apr-02	14284500	610	1.00	54066833	0.99836	3.2927E+10	72.4387	$9,777.79	5164.4141	$882,060	$170.80	$0.000685	952210500	$0.0009
Apr-02	14284500	610	1.00	54066833	0.99836	3.2927E+10	72.4387	$9,777.79	5236.8528	$891,838	$170.30	$0.000685	966495000	$0.0009
May-02	14328000	610	1.00	54231480	0.99836	3.3027E+10	72.6593	$9,777.79	5309.5122	$901,615	$169.81	$0.000682	980823000	$0.0009
May-02	14328000	610	1.00	54231480	0.99836	3.3027E+10	72.6593	$9,777.79	5382.1715	$911,393	$169.34	$0.000682	995151000	$0.0009
Jun-02	11065500	610	1.00	41882918	0.99836	2.5507E+10	56.1147	$11,504.96	5438.2862	$922,898	$169.70	$0.001040	1006216500	$0.0009
Jun-02	11065500	560	4.30	41882918	0.99232	2.3274E+10	51.2035	$11,504.96	5489.4898	$934,403	$170.22	$0.001040	1017282000	$0.0009
Jul-02	10683500	560	4.30	40437048	0.99232	2.2471E+10	49.4359	$9,769.26	5538.9257	$944,172	$170.46	$0.000914	1027965500	$0.0009
Jul-02	10683500	560	4.30	40437048	0.99232	2.2471E+10	49.4359	$9,769.26	5588.3616	$953,942	$170.70	$0.000914	1038649000	$0.0009
Aug-02	14164000	560	1.00	53610740	0.99821	2.9968E+10	65.9305	$10,125.82	5654.2921	$964,068	$170.50	$0.000715	1052813000	$0.0009
Aug-02	14164000	560	1.00	53610740	0.99821	2.9968E+10	65.9305	$10,125.82	5720.2226	$974,193	$170.31	$0.000715	1066977000	$0.0009
Sep-02	10430500	560	1.00	39479443	0.99821	2.2069E+10	48.5518	$17,301.75	5768.7744	$991,495	$171.87	$0.001659	1077407500	$0.0009
Sep-02	10430500	610	1.00	39479443	0.99836	2.4043E+10	52.8946	$17,301.75	5821.6689	$1,008,797	$173.28	$0.001659	1087838000	$0.0009
Oct-02	10708500	610	1.00	40531673	0.99836	2.4684E+10	54.3043	$10,127.89	5875.9733	$1,018,925	$173.41	$0.000946	1098546500	$0.0009
Oct-02	10708500	610	1.00	40531673	0.99836	2.4684E+10	54.3043	$10,127.89	5930.2776	$1,029,053	$173.53	$0.000946	1109255000	$0.0009
Nov-02	12501500	610	1.00	47318178	0.99836	2.8817E+10	63.3969	$10,137.26	5993.6745	$1,039,190	$173.38	$0.000811	1121756500	$0.0009
Nov-02	12501500	610	1.00	47318178	0.99836	2.8817E+10	63.3969	$10,137.26	6057.0714	$1,049,327	$173.24	$0.000811	1134258000	$0.0009
Dec-02	12663500	610	1.00	47931348	0.99836	2.9190E+10	64.2184	$10,137.26	6121.2898	$1,059,464	$173.08	$0.000801	1146921500	$0.0009
Dec-02	12663500	600	1.00	47931348	0.99833	2.8711E+10	63.1639	$10,137.26	6184.4538	$1,069,602	$172.95	$0.000801	1159585000	$0.0009
Jan-03	524000	600	1.00	1983340	0.99833	1.1880E+09	2.6136	$10,137.26	6187.0674	$1,079,739	$174.52	$0.019346	1160109000	$0.0009
Jan-03	524000	600	1.00	1983340	0.99833	1.1880E+09	2.6136	$10,137.26	6189.6810	$1,089,876	$176.08	$0.019346	1160633000	$0.0009
Feb-03	0	600	1.00	0	0.99833	0.0000E+00	0.00	$8,837.94	6189.6810	$1,098,714	$177.51	$0.000000	1160633000	$0.0009
Feb-03	0	600	1.00	0	0.99833	0.0000E+00	0.00	$8,837.94	6189.6810	$1,107,552	$178.94	$0.000000	1160633000	$0.0010
Mar-03	6693500	600	1.00	25334898	0.99833	1.5176E+10	33.3863	$39,517.01	6223.0674	$1,147,069	$184.33	$0.005904	1167326500	$0.0010
Mar-03	6693500	220	1.00	25334898	0.99545	5.5483E+09	12.2064	$39,517.01	6235.2737	$1,186,586	$190.30	$0.005904	1174020000	$0.0010
Apr-03	8292000	220	1.00	31385220	0.99545	6.8734E+09	15.1214	$9,865.73	6250.3951	$1,196,452	$191.42	$0.001190	1182312000	$0.0010
Apr-03	8292000	220	1.00	31385220	0.99545	6.8734E+09	15.1214	$9,865.73	6265.5165	$1,206,318	$192.53	$0.001190	1190604000	$0.0010
May-03	3724000	220	1.00	14095340	0.99545	3.0869E+09	6.7911	$9,528.39	6272.3077	$1,215,846	$193.84	$0.002559	1194328000	$0.0010
May-03	3724000	220	1.00	14095340	0.99545	3.0869E+09	6.7911	$9,528.39	6279.0988	$1,225,374	$195.15	$0.002559	1198052000	$0.0010
Jun-03	5387500	220	1.00	20391688	0.99545	4.4658E+09	9.8247	$14,690.87	6288.9235	$1,240,065	$197.18	$0.002727	1203439500	$0.0010
Jun-03	5387500	390	1.00	20391688	0.99744	7.9324E+09	17.4512	$14,690.87	6306.3747	$1,254,756	$198.97	$0.002727	1208827000	$0.0010
Jul-03	11314500	390	1.00	42825383	0.99744	1.6659E+10	36.6500	$12,087.72	6343.0247	$1,266,844	$199.72	$0.001068	1220141500	$0.0010
Jul-03	11314500	390	1.00	42825383	0.99744	1.6659E+10	36.6500	$12,087.72	6379.6746	$1,278,932	$200.47	$0.001068	1231456000	$0.0010
Aug-03	12818500	390	1.00	48518023	0.997435897	1.8874E+10	41.5217	$10,305.76	6421.1964	$1,289,237	$200.78	$0.000804	1244274500	$0.0010
Aug-03	12818500	390	1.10	48518023	0.997179487	1.8869E+10	41.5110	$10,305.76	6462.7074	$1,299,543	$201.08	$0.000804	1257093000	$0.0010
Sep-03	13780000	390	17	52157300	0.956410256	1.9455E+10	42.8003	$10,361.39	6505.5077	$1,309,904	$201.35	$0.000752	1270873000	$0.0010
Sep-03	13780000	510	1.00	52157300	0.998039216	2.6548E+10	58.4057	$10,361.39	6563.9134	$1,320,266	$201.14	$0.000752	1284653000	$0.0010

Appendix B-1

SUMMARY OF OPERATION COST AND PERFORMANCE
2010 ANNUAL MONITORING REPORT
NAVAL INDUSTRIUAL RESERVE ORDNANCE PLANT
FRIDLEY, MINNESOTA

	Month	Gallons Treated	Influent Concentration (ug/L)	Effluent Concentration (ug/L)	Convert To Liters	RF	ER	Convert To Pounds	Monthly Cost	Contaminant Removed (lbs)	Cumulative Cost	Cost per Pound	Cost per Gallon	Cumulative Gallons	Cum. Cost per Cum. Gallons
	Oct-03	25389000	510	1.00	96097365	0.998039216	4.8914E+10	107.6098	$21,057.83	6671.5233	$1,341,324	$201.05	$0.000829	1310042000	$0.0010
	Nov-03	22882000	510	1.00	86608370	0.998039216	4.4084E+10	96.9841	$20,979.49	6768.5073	$1,362,303	$201.27	$0.000917	1332924000	$0.0010
	Dec-03	31010000	470	1.00	117372850	0.99787234	5.5048E+10	121.1053	$21,477.62	6889.6126	$1,383,781	$200.85	$0.000693	1363934000	$0.0010
	Jan-04	25456000	470	1.00	96350960	0.99787234	4.5189E+10	99.4149	$21,467.81	6989.0276	$1,405,249	$201.06	$0.000843	1389390000	$0.0010
	Feb-04	23771000	470	1.00	89973235	0.99787234	4.2197E+10	92.8344	$29,277.72	7081.8619	$1,434,526	$202.56	$0.001232	1413161000	$0.0010
	Mar-04	12928000	460	1.00	48932480	0.997826087	2.2460E+10	49.4120	$58,044.52	7131.2740	$1,492,571	$209.30	$0.004490	1426089000	$0.0010
	Apr-04	60000	460	1.00	227100	0.997826087	1.0424E+08	0.2293	$19,780.12	7131.5033	$1,512,351	$212.07	$0.329669	1426149000	$0.0011
	May-04	24104000	460	1.00	91233640	0.997826087	4.1876E+10	92.1277	$22,289.20	7223.6310	$1,534,640	$212.45	$0.000925	1450253000	$0.0011
	Jun-04	20988000	460	1.00	79439580	0.997826087	36462767220	80.21808788	$28,315.10	7303.8491	$1,562,955	$213.99	$0.001349	1471241000	$0.0011
*	Jul-04	26846000	460	1.00	101612110	0.997826087	46639958490	102.6079087	$22,724.67	7406.4570	$1,585,680	$214.09	$0.000846	1498087000	$0.0011
*	Aug-04	26760000	460	1.00	101286600	0.997826087	46490549400	102.2792087	$22,455.88	7508.7362	$1,608,136	$214.17	$0.000839	1524847000	$0.0011
*	Sep-04	27276000	420	1.00	103239660	0.997619048	43257417540	95.16631859	$22,307.74	7603.9025	$1,630,444	$214.42	$0.000818	1552123000	$0.0011
*	Oct-04	24709000	420	1.00	93523565	0.997619048	39186373735	86.21002222	$22,381.24	7690.1126	$1,652,825	$214.93	$0.000906	1576832000	$0.0010
*	Nov-04	25859000	420	1.00	97876315	0.997619048	41010175985	90.22238717	$22,381.24	7780.3349	$1,675,206	$215.31	$0.000866	1602691000	$0.0010
	Dec-04	26229000	480	1.00	99276765	0.997916667	47553570435	104.617855	$22,927.93	7884.9528	$1,698,134	$215.36	$0.000874	1628920000	$0.0010
	Jan-05	20915000	480	1.00	79163275	0.997916667	37919208725	83.4222592	$22,110.83	7968.3751	$1,720,245	$215.88	$0.001057	1649835000	$0.0010
	Feb-05	22329000	480	1	84515265	0.997916667	40482811935	89.06218626	$22,515.29	8057.4372	$1,742,760	$216.29	$0.001008	1672164000	$0.0010
	Mar-05	22960000	460	1	86903600	0.997826087	39888752400	87.75525528	$21,487.48	8145.1925	$1,764,248	$216.60	$0.000936	1695124000	$0.0010
	Apr-05	6515000	460	1	24659275	0.997826087	11318607225	24.9009359	$21,331.55	8170.0934	$1,785,579	$218.55	$0.003274	1701639000	$0.0010
	May-05	17859000	460	1	67596315	0.997826087	31026708585	68.25875889	$21,595.35	8238.3522	$1,807,174	$219.36	$0.001209	1719498000	$0.0011
	Jun-05	24450000	360	1.8	92543250	0.99500000	33148992150	72.92778273	$22,383.85	8311.2800	$1,829,558	$220.13	$0.000915	1743948000	$0.0010
	Jul-05	25301000	360	1	95764285	0.997222222	34379378315	75.63463229	$22,478.56	8386.9146	$1,852,037	$220.82	$0.000888	1769249000	$0.0010
	Aug-05	25916000	360	1	98092060	0.997222222	35215049540	77.47310899	$22,614.53	8464.3877	$1,874,651	$221.48	$0.000873	1795165000	$0.0010
	Sep-05	20837000	370	1	78868045	0.997297297	29102308605	64.02507893	$22,407.81	8528.4128	$1,897,059	$222.44	$0.001075	1816002000	$0.0010
	Oct-05	24028000	370	1	90945980	0.997297297	33559066620	73.82994656	$22,674.97	8602.2427	$1,919,734	$223.17	$0.000944	1840030000	$0.0010
	Nov-05	20553000	370	1	77793105	0.997297297	28705655745	63.15244264	$22,659.34	8665.3952	$1,942,393	$224.16	$0.001102	1860583000	$0.0010
	Dec-05	19037000	330	0.29	72055045	0.999121212	23757268887	52.26599155	$22,595.25	8717.6612	$1,964,989	$225.40	$0.001187	1879620000	$0.0010
	Jan-06	21858000	330	0.46	82732530	0.998606061	27263677936	59.98009146	$27,440.81	8777.6413	$2,047,333	$232.62	$0.001255	1901478000	$0.0011
	Feb-06	19590000	330	5	74148150	0.984848485	24098148750	53.01592725	$24,118.81	8830.6572	$2,071,452	$233.93	$0.001231	1921068000	$0.0011
	Mar-06	13935000	400	5	52743975	0.9875	20833870125	45.83451428	$24,118.81	8876.4917	$2,095,571	$235.42	$0.001731	1935003000	$0.0011
	Apr-06	18391000	400	5	69609935	0.9875	27495924325	60.49103352	$24,118.81	8936.9827	$2,119,690	$236.50	$0.001311	1953394000	$0.0011
	May-06	18116000	400	5	68569060	0.9875	27084778700	59.58651314	$24,118.81	8996.5693	$2,143,809	$237.59	$0.001331	1971510000	$0.0011
	Jun-06	16616000	430	1	62891560	0.997674419	26980479240	59.35705433	$24,118.81	9055.9263	$2,167,928	$238.69	$0.001452	1988126000	$0.0011
	Jul-06	14232000	430	5	53868120	0.988372093	22893951000	50.3666922	$24,118.81	9106.2930	$2,192,046	$240.00	$0.001695	2002358000	$0.0011
	Aug-06	13291000	430	0.46	50306435	0.998930233	21608626090	47.5389774	$24,118.81	9153.8320	$2,216,165	$241.39	$0.001815	2015649000	$0.0011
	Sep-06	14269000	390	0.46	54008165	0.998820513	21038340594	46.28434931	$24,910.56	9200.1163	$2,241,076	$242.87	$0.001746	2029918000	$0.0011
	Oct-06	13496000	390	0.46	51082360	0.998820513	19898622514	43.77696953	$24,910.56	9243.8933	$2,265,986	$244.41	$0.001846	2043414000	$0.0011
	Nov-06	3073000	390	0.46	11631305	0.998820513	4530858550	9.967888809	$24,910.56	9253.8612	$2,290,897	$246.83	$0.008106	2046487000	$0.0011
	Dec-06	25286500	190	2.3	95709402.5	0.987894737	17964654849	39.52224067	$78,113.56	9293.3834	$2,369,010	$254.15	$0.003089	2071773500	$0.0011
	Jan-07	19027416	190	11	72018769.56	0.942105263	12891359751	28.36099145	$46,005.10	9321.7444	$2,415,015	$259.07	$0.000726	2071812587	$0.0012
	Jan-07	6091344	190	0.46	23055737.04	0.997578947	4369984399	9.613965677	$46,005.10	9331.3584	$2,461,021	$263.74	$0.000246	2071851674	$0.0012
	Feb-07	21953400	190	0.14	83093619	0.999263158	15776154503	34.70753991	$25,619.10	9366.0659	$2,486,640	$265.49	$0.000887	2071890792	$0.0012
	Mar-07	25859533	380	0.46	97878332.41	0.998789474	37148742281	81.72723302	$25,619.10	9447.7932	$2,512,259	$265.91	$0.002088	2071929938	$0.0012
	Apr-07	24240000	380	0.46	91748400	0.998789474	34822187736	76.60881302	$25,619.10	9524.4020	$2,537,878	$266.46	$0.001955	2071969115	$0.0012
	May-07	19004000	380	0.46	71930140	0.998789474	27300365336	60.06080374	$25,619.10	9584.4628	$2,563,497	$267.46	$0.001532	2072008322	$0.0012
	Jun-07	20659000	350	0.46	78194315	0.998685714	27332040865	60.1304899	$25,619.10	9644.5933	$2,589,116	$268.45	$0.001532	2072047560	$0.0012
	Jul-07	19389000	350	0.46	73387365	0.998685714	25651819562	56.43400304	$25,491.00	9701.0273	$2,614,607	$269.52	$0.001437	2072086824	$0.0013
	Aug-07	16354000	350	0.46	61899890	0.998685714	21636487551	47.60027261	$25,491.00	9748.6275	$2,640,098	$270.82	$0.001211	2072126119	$0.0013
	Sep-07	15320000	420	0.55	57986200	0.998690476	24322311590	53.5090855	$25,491.00	9802.1366	$2,665,589	$271.94	$0.001361	2072165445	$0.0013
	Oct-07	14409000	420	0.55	54538065	0.998690476	22875991364	50.327181	$25,491.00	9852.4638	$2,691,080	$273.14	$0.001279	2072204801	$0.0013
	Nov-07	17388000	420	0.55	65813580	0.998690476	27605506131	60.73211349	$25,491.00	9913.1959	$2,716,571	$274.04	$0.001542	2072244188	$0.0013
	Dec-07	17002000	330	0.55	64352570	0.998333333	21200954187	46.64209921	$25,491.00	9959.8380	$2,742,062	$275.31	$0.001183	2072283605	$0.0013
	Jan-08	17115000	330	0.55	64780275	0.998333333	21341861599	46.95209552	$32,927.24	10006.7901	$2,774,989	$277.31	$0.001190	2072323053	$0.0013
	Feb-08	13581000	330	0.55	51404085	0.998333333	16935075803	37.25716677	$32,634.62	10044.0473	$2,807,624	$279.53	$0.000944	2072362532	$0.0014
	Mar-08	13277000	320	0.46	50253445	0.9985625	16057985815	35.32756879	$32,034.81	10079.3748	$2,839,659	$281.73	$0.000894	2072402040	$0.0014
	Apr-08	12518000	320	0.46	47380630	0.9985625	15140006510	33.30801432	$32,305.34	10112.6829	$2,871,964	$284.00	$0.000842	2072441579	$0.0014
	May-08	15430000	320	0.46	58402550	0.9985625	18661950827	41.05629182	$31,929.95	10153.7392	$2,903,894	$285.99	$0.001038	2072481148	$0.0014
	Jun-08	6523000	540	2.7	24689555	0.995	13265697902	29.18453538	$36,294.96	10182.9237	$2,940,189	$288.74	$0.000737	2072520748	$0.0014
	Jul-08	15762000	540	2.7	59659170	0.995	32054872041	70.52071849	$38,350.84	10253.4444	$2,978,540	$290.49	$0.001779	2072560378	$0.0014

Appendix B-1

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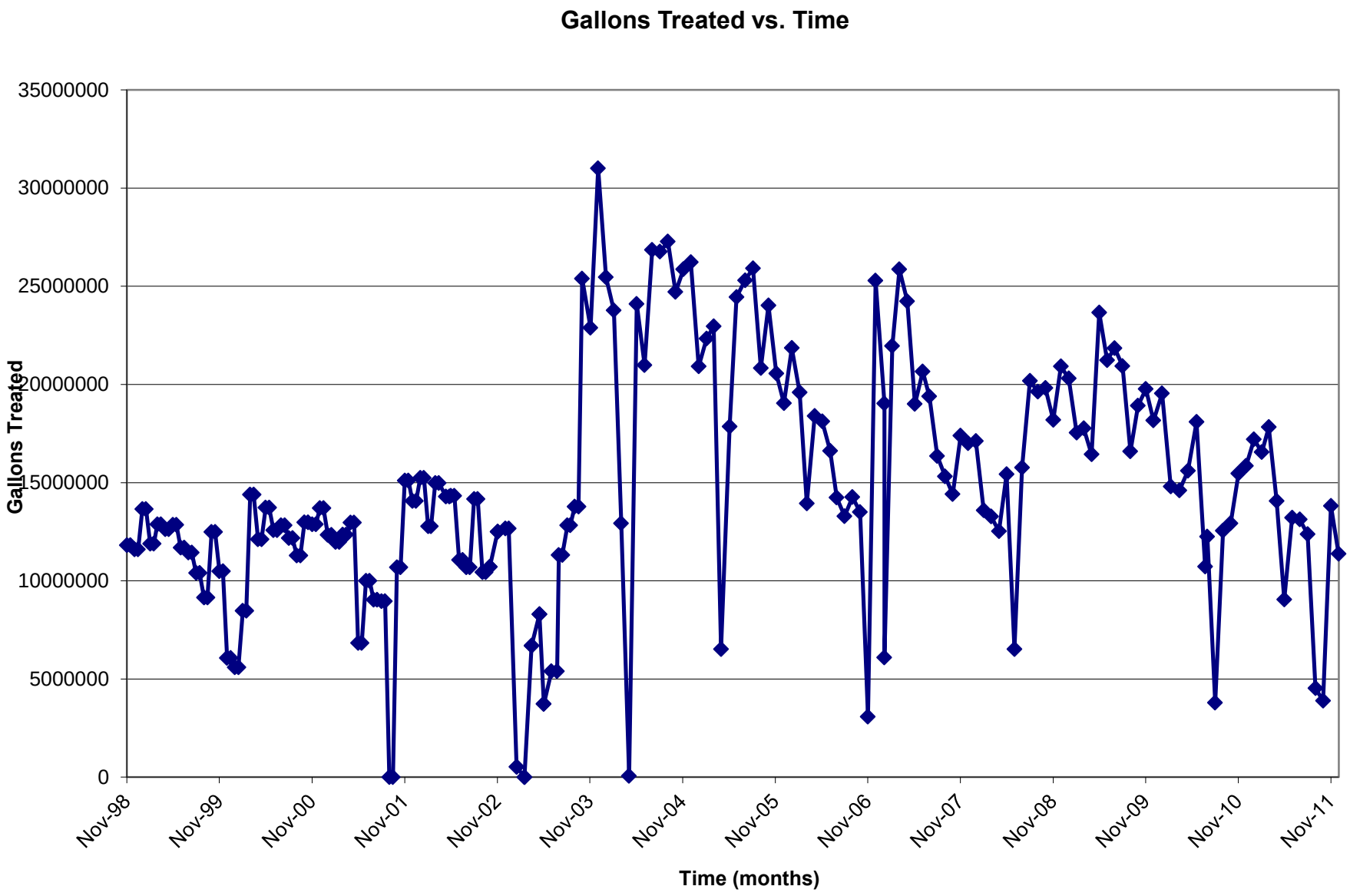
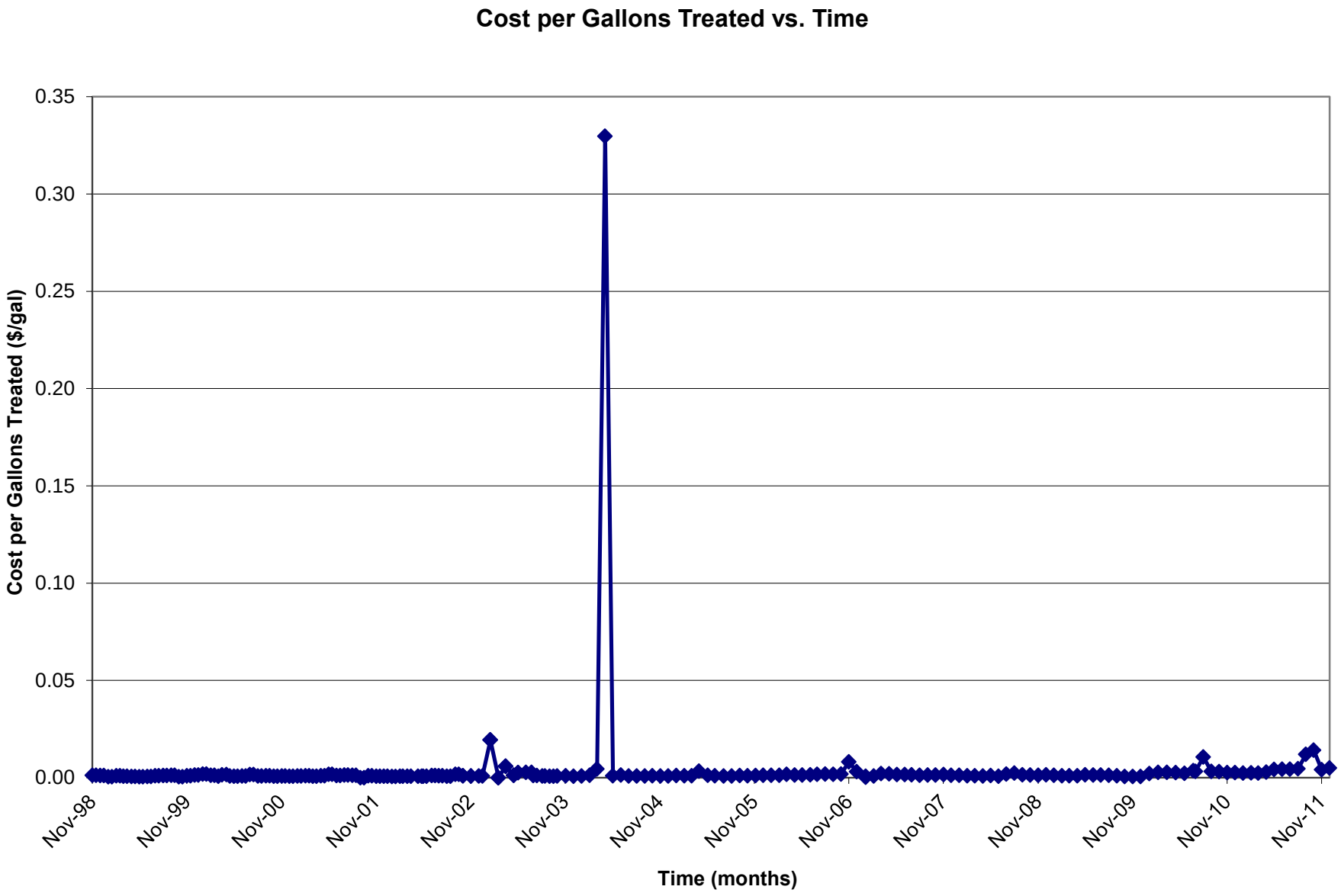
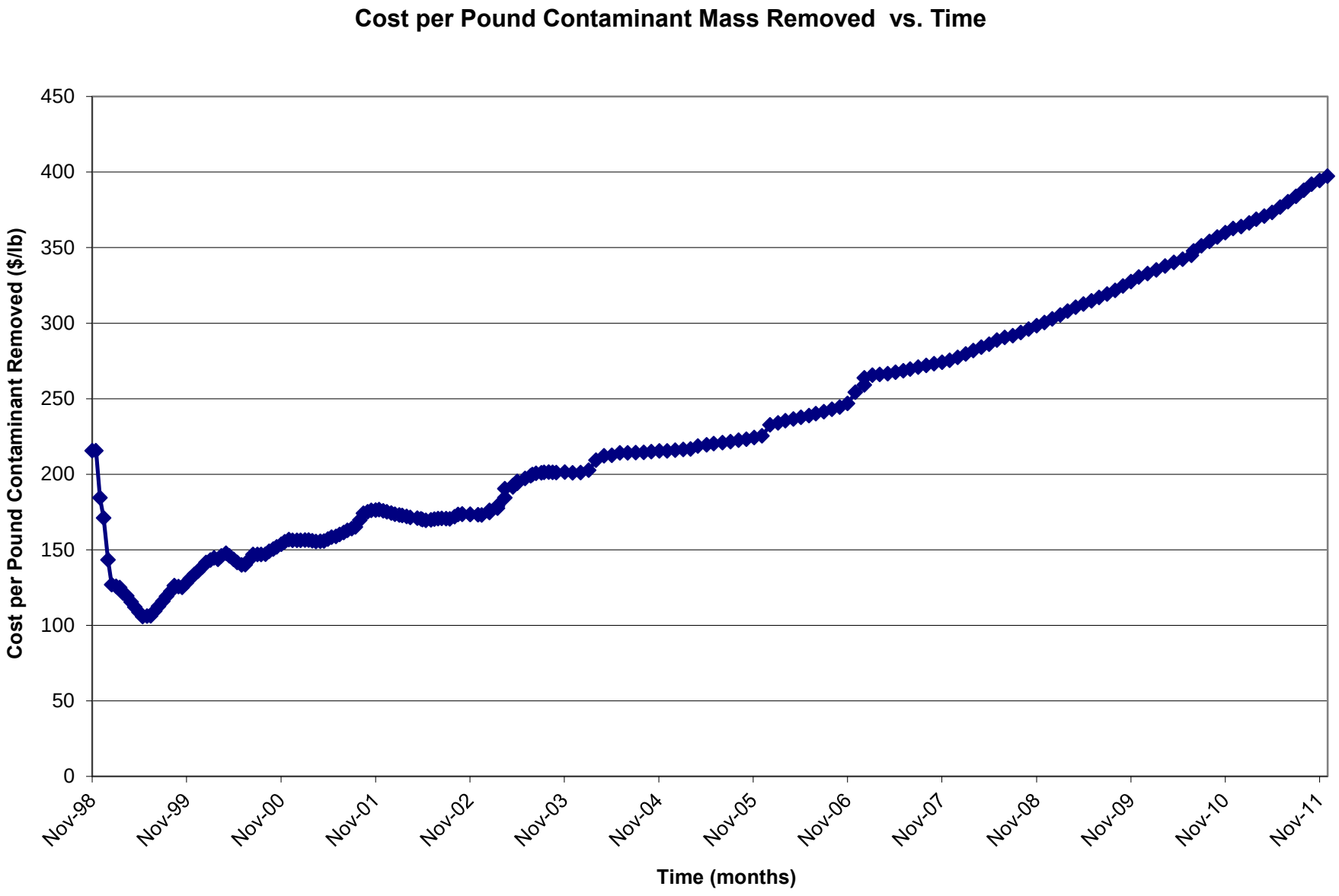
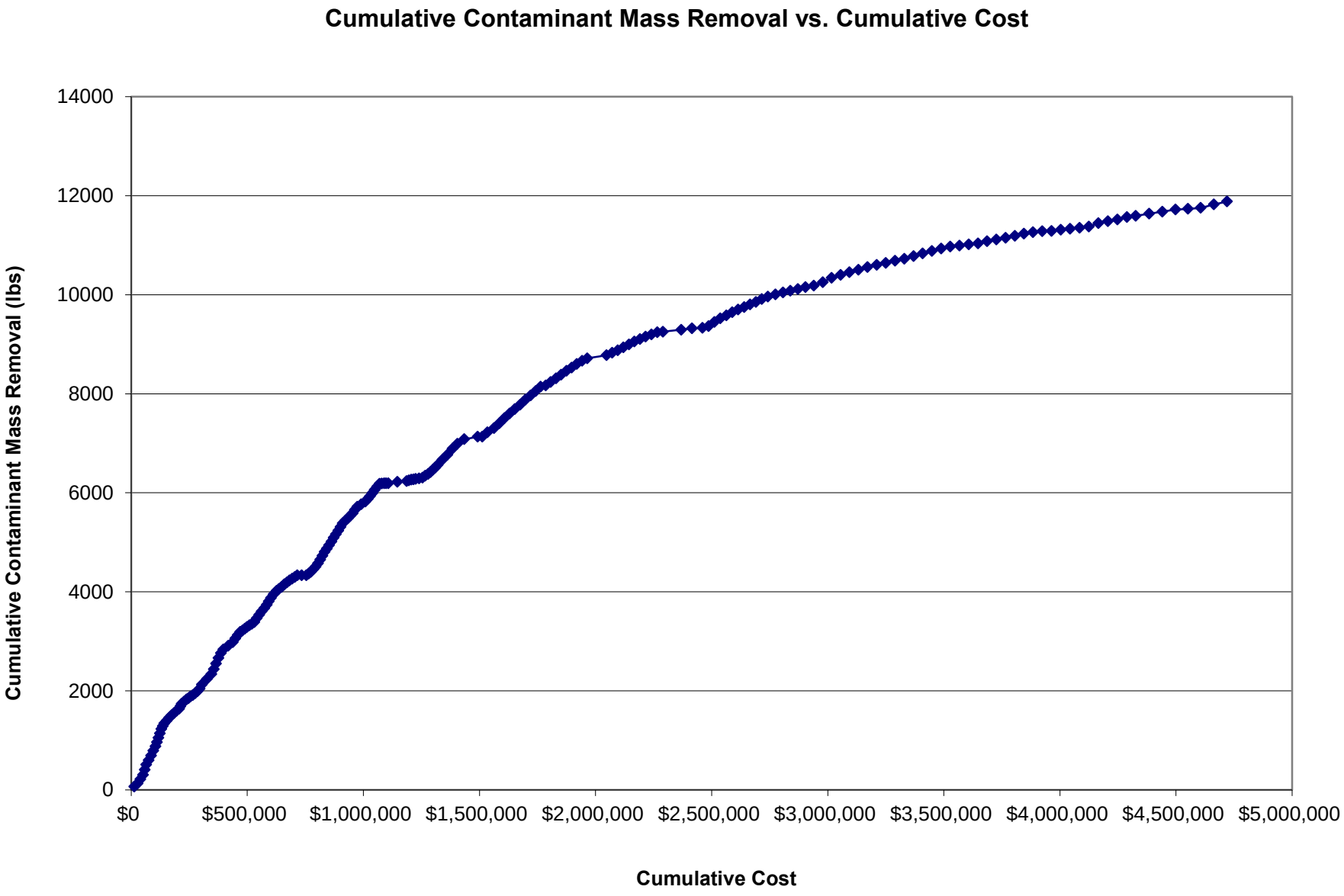
2010 ANNUAL MONITORING REPORT
NAVAL INDUSTRIUAL RESERVE ORDNANCE PLANT
FRIDLEY, MINNESOTA

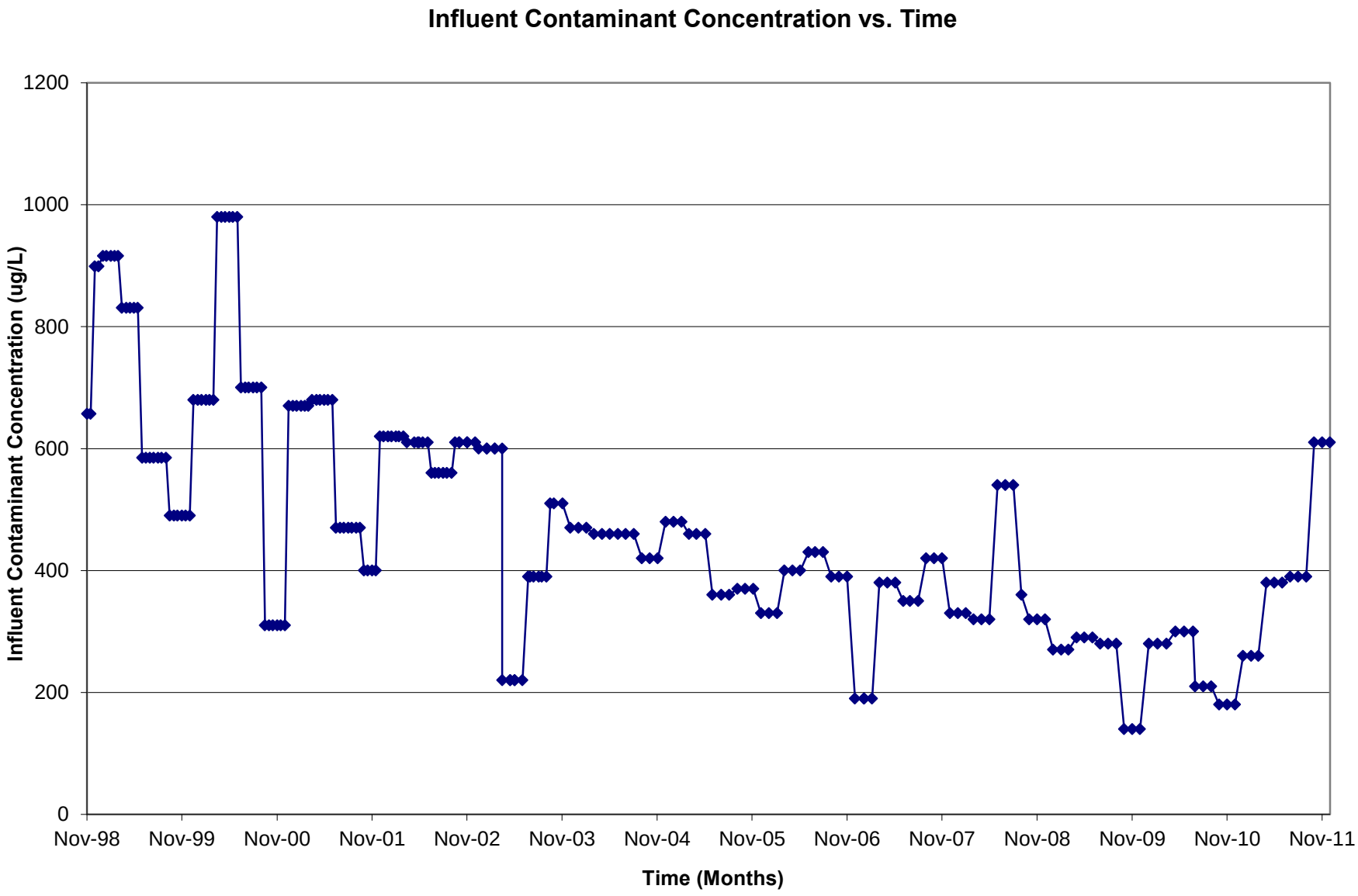
Month	Gallons Treated	Influent Concentration (ug/L)	Effluent Concentration (ug/L)	Convert To Liters	RF	ER	Convert To Pounds	Monthly Cost	Contaminant Removed (lbs)	Cumulative Cost	Cost per Pound	Cost per Gallon	Cumulative Gallons	Cum. Cost per Cum. Gallons
Aug-08	20183000	540	2.7	76392655	0.995	41045773532	90.30070177	$38,495.90	10343.7451	$3,017,036	$291.68	$0.002277	2072600039	$0.0015
Sep-08	19632000	360	0.57	74307120	0.998416667	26708208142	58.75805791	$38,332.48	10402.5032	$3,055,368	$293.71	$0.001480	2072639731	$0.0015
Oct-08	19818000	320	0.29	75011130	0.99909375	23981808372	52.75997842	$38,573.61	10455.2631	$3,093,942	$295.92	$0.001328	2072679453	$0.0015
Nov-08	18191000	320	0.29	68852935	0.99909375	22012971849	48.42853807	$38,415.13	10503.6917	$3,132,357	$298.21	$0.001218	2072719206	$0.0015
Dec-08	20926000	320	0.29	79204910	0.99909375	25322601776	55.70972391	$39,178.55	10559.4014	$3,171,535	$300.35	$0.001400	2072758989	$0.0015
Jan-09	20301000	270	0.21	76839285	0.999222222	20730470700	45.60703554	$39,531.24	10605.0084	$3,211,067	$302.79	$0.001146	2072798803	$0.0015
Feb-09	17546000	270	0.21	66411610	0.999222222	17917188262	39.41781418	$39,643.77	10644.4263	$3,250,710	$305.39	$0.000989	2072838648	$0.0016
Mar-09	17766000	270	0.21	67244310	0.999222222	18141842395	39.91205327	$39,643.77	10684.3383	$3,290,354	$307.96	$0.001001	2072878521	$0.0016
Apr-09	16434000	290	0.23	62202690	0.999206897	18024473481	39.65384166	$39,643.77	10723.9922	$3,329,998	$310.52	$0.000994	2072918425	$0.0016
May-09	23663000	290	0.23	89564455	0.999206897	25953092125	57.09680268	$39,643.77	10781.0890	$3,369,642	$312.55	$0.001430	2072958359	$0.0016
Jun-09	21234000	290	0.23	80370690	0.999206897	23289014841	51.23583265	$39,643.77	10832.3248	$3,409,286	$314.73	$0.001282	2072998324	$0.0016
Jul-09	21846000	280	0.18	82687110	0.999357143	23137507120	50.90251566	$39,643.77	10883.2273	$3,448,929	$316.90	$0.001273	2073038319	$0.0017
Aug-09	20933000	280	0.18	79231405	0.999357143	22170531747	48.77516984	$39,643.77	10932.0025	$3,488,573	$319.12	$0.001219	2073078345	$0.0017
Sep-09	16585000	280	0.18	62774225	0.999357143	17565483640	38.64406401	$39,643.77	10970.6465	$3,528,217	$321.61	$0.000965	2073118402	$0.0017
Oct-09	18919000	140	0.13	71608415	0.999071429	10015869006	22.03491181	$39,643.77	10992.6815	$3,567,861	$324.57	$0.000550	2073158489	$0.0017
Nov-09	19768000	140	0.13	74821880	0.999071429	10465336356	23.02373998	$39,643.77	11015.7052	$3,607,504	$327.49	$0.000574	2073198607	$0.0017
Dec-09	18162000	140	0.13	68743170	0.999071429	9615107188	21.15323581	$39,643.77	11036.8584	$3,647,148	$330.45	$0.000527	2073238755	$0.0018
Jan-10	19542000	280	0.23	73966470	0.999178571	20693599312	45.52591849	$39,662.14	11082.3843	$3,686,810	$332.67	$0.002030	2754125193	$0.0011
Feb-10	14805000	280	0.23	56036925	0.999178571	15677450507	34.49039112	$39,505.01	11116.8747	$3,726,315	$335.19	0.002668356	2768930193	0.001121392
Mar-10	14596000	280	0.23	55245860	0.999178571	15456134252	34.00349535	$40,142.10	11150.8782	$3,766,457	$337.77	0.002750212	2783526193	0.001129933
Apr-10	15598000	300	0.68	59038430	0.997733333	17671382868	38.87704231	$39,395.09	11189.7553	$3,805,853	$340.12	0.00252565	2799124193	0.00113771
May-10	18090000	300	0.68	68470650	0.997733333	20494634958	45.08819691	$39,395.09	11234.8435	$3,845,248	$342.26	0.002177727	2817214193	0.001144388
Jun-10	10717000	300	0.68	40563845	0.997733333	12141570085	26.71145419	$38,757.46	11261.5549	$3,884,005	$344.89	0.003616447	2827931193	0.001153757
Jul-10	12254000	210	0.65	46381390	0.996904762	9709943997	21.36187679	$40,086.99	11282.9168	$3,924,092	$347.79	0.003271339	2840185193	0.001162893
Aug-10	3789000	210	0.65	14341365	0.996904762	3002364763	6.605202478	$40,086.99	11289.5220	$3,964,179	$351.14	0.010579834	2843974193	0.001175439
Sep-10	12552000	210	0.65	47509320	0.996904762	9946076142	21.88136751	$40,086.99	11311.4034	$4,004,266	$354.00	0.003193673	2856526193	0.001184308
Oct-10	12926000	180	0.65	48924910	0.996388889	8774682609	19.30430174	$40,086.99	11330.7077	$4,044,353	$356.94	0.003101268	2869452193	0.001192943
Nov-10	15466000	180	0.65	58538810	0.996388889	10498935574	23.09765826	$40,086.99	11353.8053	$4,084,440	$359.74	0.002591943	2884918193	0.001200443
Dec-10	15855000	180	0.65	60011175	0.996388889	10763004236	23.67860932	$40,086.99	11377.4839	$4,124,527	$362.52	0.00252835	2900773193	0.001207701
Jan-11	17199000	260	0.17	65098215	0.999346154	16914469203	37.21183225	$41,129.89	11447.6783	$4,165,657	$363.89	$0.002391	2917972193	$0.0012
Feb-11	16551000	260	0.17	62645535	0.999346154	16277189359	35.80981659	$40,667.02	11483.5116	$4,206,324	$366.29	$0.002457	2934523193	$0.0012
Mar-11	17827000	260	0.17	67475195	0.999346154	17532079917	38.57057582	$41,434.09	11522.1074	$4,247,758	$368.66	$0.002324	2952350193	$0.0012
Apr-11	14063000	380	0.5	53228455	0.998684211	20200198673	44.44043708	$40,675.72	11566.6064	$4,288,434	$370.76	$0.002892	2966413193	$0.0012
May-11	9042000	380	0.5	34223970	0.998684211	12987996615	28.57359255	$38,427.52	11595.2176	$4,326,861	$373.16	$0.004250	2975455193	$0.0012
Jun-11	13216000	380	0.5	50022560	0.998684211	18983561520	41.76383534	$57,504.26	11637.0365	$4,384,366	$376.76	$0.004351	2988671193	$0.0013
Jul-11	13119000	390	1.4	49655415	0.996410256	19296094269	42.45140739	$56,860.92	11679.6408	$4,441,226	$380.25	$0.004334	3001790193	$0.0013
Aug-11	12377000	390	1.4	46846945	0.996410256	18204722827	40.05039022	$56,495.54	11719.8355	$4,497,722	$383.77	$0.004565	3014167193	$0.0013
Sep-11	4522000	390	1.4	17115770	0.996410256	6651188222	14.63261409	$54,070.83	11734.5208	$4,551,793	$387.90	$0.011957	3018689193	$0.0013
Oct-11	3895600	610	0.14	14744846	0.999770492	8992291782	19.78304192	$54,909.60	11754.3084	$4,606,702	$391.92	$0.014095	3022584793	$0.0013
Nov-11	13814000	610	0.14	52285990	0.999770492	31887133861	70.1516945	$56,297.74	11824.4762	$4,663,000	$394.35	$0.004075	3036398793	$0.0013
Dec-11	11373000	610	0.14	43046805	0.999770492	26252524497	57.75555389	$56,560.30	11882.2450	$4,719,560	$397.19	$0.004973	3047771793	$0.0013
	146998600													
	3047771793	410					471.1947916				$379.58			
	6247771793.00													

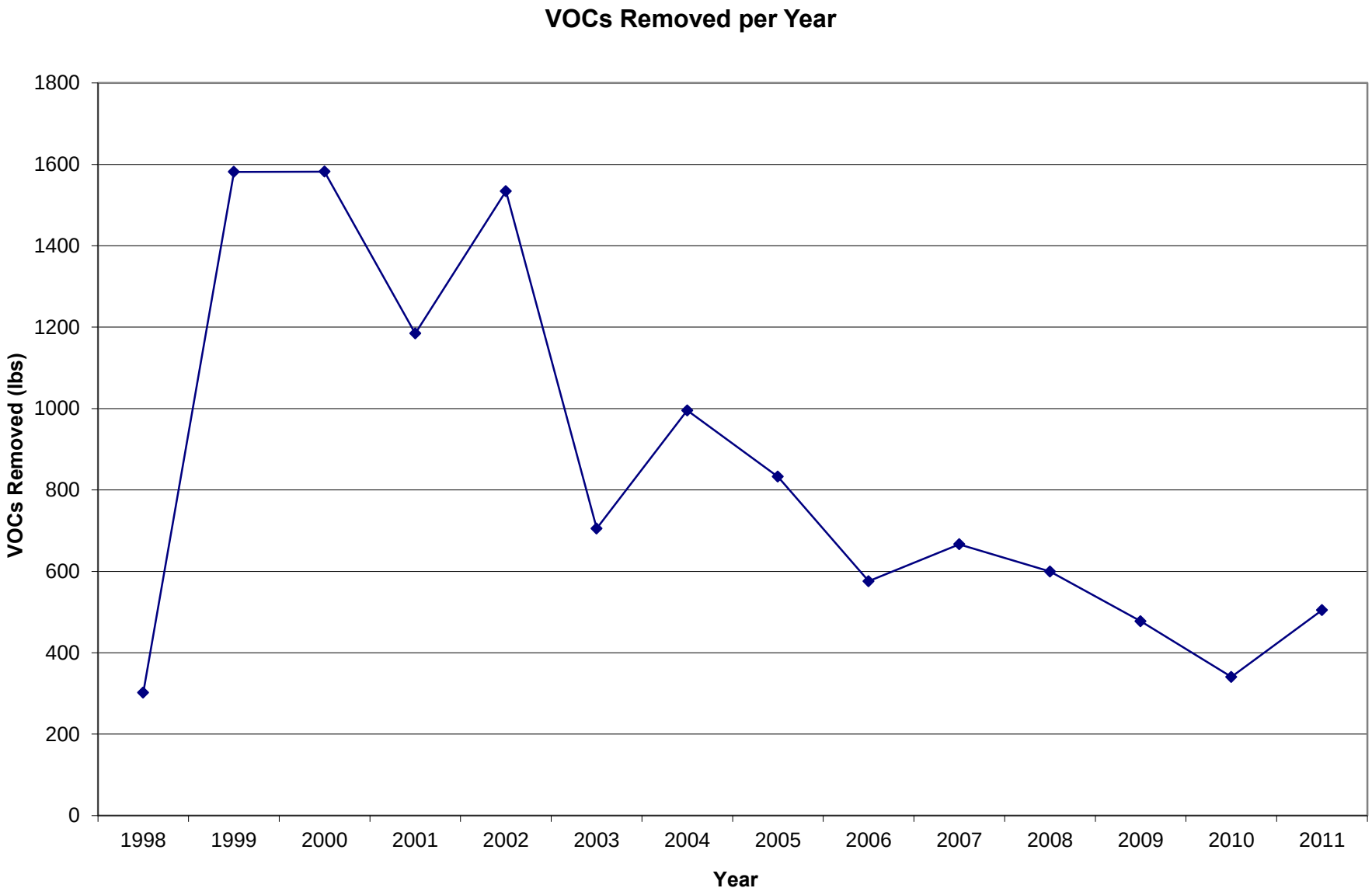

Gallons Treated vs. Time
35000000
30000000
25000000
20000000
15000000
10000000
5000000
0
Gallons Treated
Nov-98
Nov-99
Nov-00
Nov-01
Nov-02
Nov-03
Nov-04
Nov-05
Nov-06
Nov-07
Nov-08
Nov-09
Nov-10
Nov-11
Time (months)

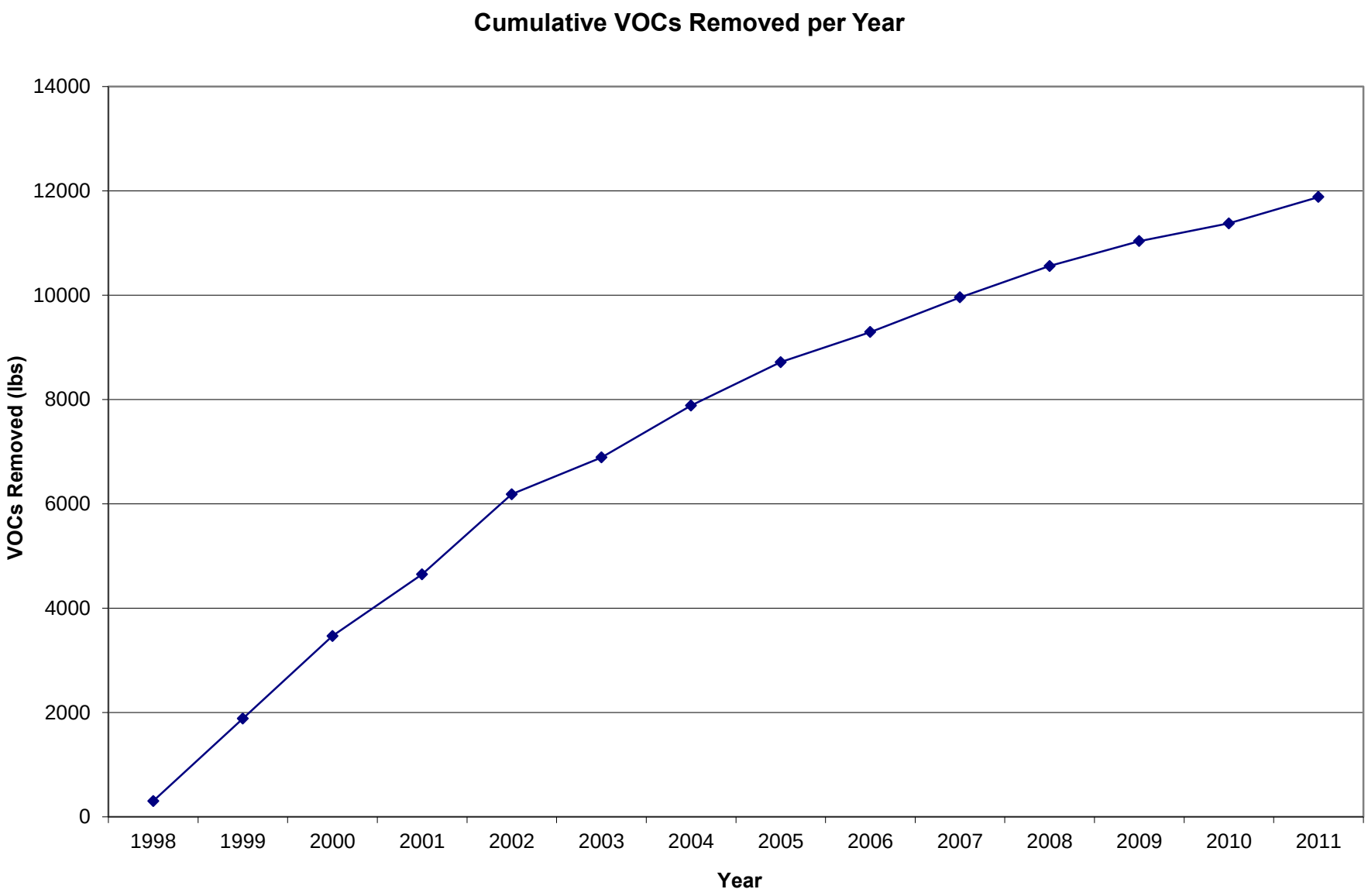

Cost per Gallons Treated vs. Time
Cost per Gallons Treated ($/gal)
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
Nov-98
Nov-99
Nov-00
Nov-01
Nov-02
Nov-03
Nov-04
Nov-05
Nov-06
Nov-07
Nov-08
Nov-09
Nov-10
Nov-11
Time (months)


Cost per Pound Contaminant Mass Removed vs. Time
Cost per Pound Contaminant Removed ($/lb)
450
400
350
300
250
200
150
100
50
0
Nov-98
Nov-99
Nov-00
Nov-01
Nov-02
Nov-03
Nov-04
Nov-05
Nov-06
Nov-07
Nov-08
Nov-09
Nov-10
Nov-11
Time (months)


Cumulative Contaminant Mass Removal vs. Cumulative Cost
Cumulative Contaminant Mass Removal (lbs)
14000
12000
10000
8000
6000
4000
2000
0
$0
$500,000
$1,000,000
$1,500,000
$2,000,000
$2,500,000
$3,000,000
$3,500,000
$4,000,000
$4,500,000
$5,000,000
Cumulative Cost


Influent Contaminant Concentration vs. Time
Influent Contaminant Concentration (ug/L)
1200
1000
800
600
400
200
0
Nov-98
Nov-99
Nov-00
Nov-01
Nov-02
Nov-03
Nov-04
Nov-05
Nov-06
Nov-07
Nov-08
Nov-09
Nov-10
Nov-11
Time (Months)


VOCs Removed per Year
VOCs Removed (lbs)
1800
1600
1400
1200
1000
800
600
400
200
0
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
Year


Cumulative VOCs Removed per Year
VOCs Removed (lbs)
14000
12000
10000
8000
6000
4000
2000
0
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
Year

B-2 ANNUAL WATER USE REPORT

Bay West

Delivering Environmental, Industrial, and Emergency Solutions

Bay West Inc.
5 Empire Drive, St. Paul, MN 55103
651-291-0456 * FAX 651-291-0099
www.baywest.com * info@baywest.com

February 14, 2012

Minnesota DNR - OMB
500 Lafayette Road Box 10
St. Paul, MN 55155-4048

RE: Annual Water Use Report – 2011
Naval Industrial Reserve Ordnance Plant (NIROP)
Fridley, Minnesota
DNR Permit No. 1992-6127

On behalf of the United States Navy, Bay West, Inc. is submitting the completed 2011 Water Use Report forms. The Water Use Report covers ground water extraction wells AT-3A, AT-5A, AT-5B, AT-7, AT-8, AT-9, and AT-10. These wells are used to remove contaminated groundwater located beneath the NIROP property. In accordance with Permit 1992-6127, Federal Agencies are exempt from annual processing fees.

Also, a change in the groundwater extraction system occurred in the latter part of 2011. In October 2011, the modification included the installation of three new extraction wells (AT-11, AT-12, and AT-13) by another Navy Contractor. Extraction well AT-3A was taken out of service at the same time the new wells were installed. Currently, an amendment to permit 1992-6127 is being prepared for submittal by the Contractor the Naval Facilities Engineering Command (NAVFAC) retained for extraction well installation. In accordance with instructions received during a telephone conversation with the Minnesota Department of Natural Resources (DNR), Bay West, Inc. has included the water usage for AT-11, AT-12, and AT-13 in the 2011 Annual Water Use Report. A copy of a DNR provided Installation Worksheet, with the Minnesota Dept of Health unique well number, is provided in the 2011 Annual Water Use Report to account for AT-11, AT-12, and AT-13 water use.

If you need additional information or have any questions, please contact me at 651-291-3491.

Sincerely,

Paul T. Walz, P.E.
Senior Engineer
651/291-3491
paulw@baywest.com

Enclosures

cc: Howard Hickey, NAVFAC Midwest
Jeff Tinney, Toltest Inc.
Stephanie Warino, Tetra Tech Nus, Inc.

Equal Employment Opportunity/Affirmative Action Employer

STD

1992-6127
2011

2011 MN DNR - Annual Report of Water Use
Fee Calculation Worksheet

Permit: **1992-6127** Permitted Volume (MG/Y): **526.0** Permitted Installations: **7**
Use: **Pollution Containment**

US NAVY
HAWARD HICKEY
NAVFAC ENG COMMAND MIDWEST
201 DECATUR AVE BLDG 1A
GREAT LAKES IL 60088-2801

Please correct address if needed:

Phone: **847-688-2600 X243**
Email:

1. Enter the total volume of water from all installations of this permit. 167,946,590 gallons
2. Divide line 1 by one million, round to the nearest decimal place. 167.9 million gallons
3. If the amount on line 2 is less than 50 million gallons, skip to line 5. If 50 million gallons or greater, enter the **Fee Rate** from the table. $ — per million gallons

Volume Pumped (from line 2)	Fee
Less than 50 million gallons	Minimum fee $140
	Fee Rate
50 to 100 million gallons	$3.50
100 to 150 million gallons	$4.00 **per**
150 to 200 million gallons	$4.50 **million**
200 to 250 million gallons	$5.00 **gallons**
250 to 300 million gallons	$5.50
300 to 350 million gallons	$6.00
350 to 400 million gallons	$6.50
400 to 450 million gallons	$7.00
450 to 500 million gallons	$7.50
over 500 million gallons	$8.00

Maximum Fee

Classification	Fee
entity with 1 to 3 permits	$60,000
entity with 4 to 5 permits	$90,000
entity with more than 5 permits	$300,000
city of the first class	$250,000

4. Multiply line 2 by line 3 (when volume is 50 MG or greater). $ **Exempt**
5. **Fee Determination**
   a) If the amount on line 2 is less than 50 million gallons, enter the minimum permit fee of $140.
   b) If the amount on line 4 is greater than the maximum fee, enter the applicable maximum fee.
   c) Otherwise, enter the amount from line 4.

Return this fee with the water use reports and any additional information required. $ **Exempt**

Make checks payable to: "MN DNR Eco-Waters"
Mail forms and fees to: Minnesota DNR - OMB
500 Lafayette Rd Box 10
St Paul MN 55155

Check Amt $
Check #

This report and fee are due by February 15th. Please call (651)259-5679 with questions on water use reporting/fees.

STD

1992-6127
2011

2011 MN DNR - Annual Report of Water Use
Installation Worksheet

Permit: **1992-6127** Installation: **7**

Permittee: **US NAVY**

Use: **Pollution Containment**
Source Type: **Ground Water**
Source Name: **QWTA**

Well Unique Number: 611095
Twp: **30** Rng: **24** Sec: **27** Qtr: **CACD**
Anoka County

A. If no water was withdrawn this year, indicate the reason.
____ 1. Well Sealed ____ 2. System Removed
____ 3. Water received from an alternate source, specify:
____ 4. Other, specify:

B. List the number of **gallons** withdrawn in each month of 2011. Pumping Rate (GPM): 33.3

January	906,000	July	2,879,000
February	1,369,000	August	1,312,000
March	1,544,000	September	156,000
April	1,353,000	October	100
May	194,000	November	375,000
June	2,172,000	December	662,000
		Total	12,922,100

C. Measurement method (indicate one)

____ 1. Flow Meter
X 2. Flow Rate Meter with: X Totalizer *or* ____ Hour meter
____ 3. Timing Device with: ____ Hour Meter *or* ____ Electric meter
____ 4. Alternate method: If not already approved, enclose request for approval
____ 5. Estimated: An approved measuring device or method is required (describe below)

Signature [signature] Date 2/14/12 Phone (651) 291-3491

STD

1992-6127
2011

2011 MN DNR - Annual Report of Water Use
Installation Worksheet

Permit: **1992-6127** Installation: **8**

Permittee: **US NAVY**

Use: **Pollution Containment**
Source Type: **Ground Water**
Source Name: **QWTA**

Well Unique Number: 611098
Twp: **30** Rng: **24** Sec: **27** Qtr: **CACD**
Anoka County

A. If no water was withdrawn this year, indicate the reason.
____ 1. Well Sealed ____ 2. System Removed
____ 3. Water received from an alternate source, specify:
____ 4. Other, specify:

B. List the number of **gallons** withdrawn in each month of 2011. Pumping Rate (GPM): 13.2

January	143,000	July	501,000
February	177,000	August	461,000
March	582,000	September	79,000
April	644,000	October	81,000
May	504,000	November	545,000
June	535,000	December	332,000
		Total	4,584,000

C. Measurement method (indicate one)

____ 1. Flow Meter
X 2. Flow Rate Meter with: X Totalizer *or* ____ Hour meter
____ 3. Timing Device with: ____ Hour Meter *or* ____ Electric meter
____ 4. Alternate method: If not already approved, enclose request for approval
____ 5. Estimated: An approved measuring device or method is required (describe below)

Signature PWWaly Date 2/14/12 Phone (651)291-3491

STD

1992-6127
2011

2011 MN DNR - Annual Report of Water Use
Installation Worksheet

Permit: **1992-6127** Installation: **9**

Permittee: **US NAVY**

Use: **Pollution Containment**
Source Type: **Ground Water**
Source Name: **QWTA**

Well Unique Number: 611097
Twp: **30** Rng: **24** Sec: **27** Qtr: **CACD**
Anoka County

A. If no water was withdrawn this year, indicate the reason.
____ 1. Well Sealed ____ 2. System Removed
____ 3. Water received from an alternate source, specify:
____ 4. Other, specify:

B. List the number of **gallons** withdrawn in each month of 2011. Pumping Rate (GPM): 110.1

January	6,666,000	July	43,000
February	5,633,000	August	442,000
March	5,856,000	September	980,000
April	4,239,000	October	1,456,000
May	2,078,000	November	4,606,000
June	1,620,000	December	2,738,000
		Total	36,357,000

C. Measurement method (indicate one)

____ 1. Flow Meter
X 2. Flow Rate Meter with: X Totalizer *or* ____ Hour meter
____ 3. Timing Device with: ____ Hour Meter *or* ____ Electric meter
____ 4. Alternate method: If not already approved, enclose request for approval
____ 5. Estimated: An approved measuring device or method is required (describe below)

Signature Paul Wally Date 2/14/12 Phone (651) 291-3491

STD

1992-6127
2011

2011 MN DNR - Annual Report of Water Use
Installation Worksheet

Permit: **1992-6127** Installation: **10**

Permittee: **US NAVY**

Use: **Pollution Containment**
Source Type: **Ground Water**
Source Name: **QBAA**

Well Unique Number: 611096
Twp: **30** Rng: **24** Sec: **27** Qtr: **CACD**
Anoka County

A. If no water was withdrawn this year, indicate the reason.
___ 1. Well Sealed ___ 2. System Removed
___ 3. Water received from an alternate source, specify:
___ 4. Other, specify:

B. List the number of **gallons** withdrawn in each month of 2011. Pumping Rate (GPM): 208

January	715,000	July	782,000
February	768,000	August	1,020,000
March	952,000	September	176,000
April	850,000	October	149,000
May	332,000	November	630,000
June	845,000	December	395,000
		Total	7,614,000

C. Measurement method (indicate one)

___ 1. Flow Meter
X 2. Flow Rate Meter with: X Totalizer *or* ___ Hour meter
___ 3. Timing Device with: ___ Hour Meter *or* ___ Electric meter
___ 4. Alternate method: If not already approved, enclose request for approval
___ 5. Estimated: An approved measuring device or method is required (describe below)

Signature Paul Wally Date 2/14/12 Phone (651) 291-3491

STD

1992-6127
2011

2011 MN DNR - Annual Report of Water Use
Installation Worksheet

Permit: **1992-6127** Installation: **5A**

Permittee: **US NAVY**

Use: **Pollution Containment**
Source Type: **Ground Water**
Source Name: **QWTA**

Unique Well: 561185
Twp: **30** Rng: **24** Sec: **27** Qtr: **DBC**
Anoka County

A. If no water was withdrawn this year, indicate the reason.
____ 1. Well Sealed ____ 2. System Removed
____ 3. Water received from an alternate source, specify:
____ 4. Other, specify:

B. List the number of **gallons** withdrawn in each month of 2011. Pumping Rate (GPM): 1329

January	6,344,000	July	6,354,000
February	5,634,000	August	5,654,000
March	6,142,000	September	950,000
April	5,920,000	October	917,000
May	3,739,000	November	2,496,000
June	6,069,000	December	2,226,000
		Total	52,445,000

C. Measurement method (indicate one)

____ 1. Flow Meter
X 2. Flow Rate Meter with: X Totalizer *or* ____ Hour meter
____ 3. Timing Device with: ____ Hour Meter *or* ____ Electric meter
____ 4. Alternate method: If not already approved, enclose request for approval
____ 5. Estimated: An approved measuring device or method is required (describe below)

Signature [signature] Date 2/14/12 Phone (651) 291-3491

STD

1992-6127
2011

2011 MN DNR - Annual Report of Water Use
Installation Worksheet

Permit: **1992-6127** Installation: **5B**

Permittee: **US NAVY**

Unique well: 561186

Use: **Pollution Containment**
Source Type: **Ground Water**
Source Name: **QBAA**

Twp: **30** Rng: **24** Sec: **27** Qtr: **DBC**
Anoka County

A. If no water was withdrawn this year, indicate the reason.
____ 1. Well Sealed ____ 2. System Removed
____ 3. Water received from an alternate source, specify:
____ 4. Other, specify:

B. List the number of **gallons** withdrawn in each month of 2011. Pumping Rate (GPM): 58.0

January	2,810,000	July	2,850,000
February	2,441,000	August	2,566,000
March	2,719,000	September	449,000.
April	2,323,000	October	280,000
May	1,609,000	November	1,549,000
June	2,637,000	December	973,000
		Total	23,206,000

C. Measurement method (indicate one)

____ 1. Flow Meter
X 2. Flow Rate Meter with: X Totalizer *or* ____ Hour meter
____ 3. Timing Device with: ____ Hour Meter *or* ____ Electric meter
____ 4. Alternate method: If not already approved, enclose request for approval
____ 5. Estimated: An approved measuring device or method is required (describe below)

Signature Paul Walz Date 2/14/12 Phone (651) 291-3491

STD

1992-6127
2011

2011 MN DNR - Annual Report of Water Use
Installation Worksheet

Permit: **1992-6127** Installation: **3A**

Permittee: **US NAVY**

Use: **Pollution Containment**
Source Type: **Ground Water**
Source Name: **QBAA**

Twp: **30** Rng: **24** Sec: **27** Qtr: **CAD**
Anoka County

A. If no water was withdrawn this year, indicate the reason.
____ 1. Well Sealed ____ 2. System Removed
____ 3. Water received from an alternate source, specify:
____ 4. Other, specify:

B. List the number of **gallons** withdrawn in each month of 2011. Pumping Rate (GPM): 70.1

January	3,010,000	July	3,109,000
February	3,234,000	August	2,977,000
March	3,016,000	September	454,000
April	2,317,000	October	0
May	2,068,000	November	0
June	2,860,000	December	0
		Total	23,045,000

C. Measurement method (indicate one)

____ 1. Flow Meter
X 2. Flow Rate Meter with: X Totalizer *or* ____ Hour meter
____ 3. Timing Device with: ____ Hour Meter *or* ____ Electric meter
____ 4. Alternate method: If not already approved, enclose request for approval
____ 5. Estimated: An approved measuring device or method is required (describe below)

Signature Paul Walz Date 2/14/12 Phone (651) 291-3491

STD

1992-6127
2011

2011 MN DNR - Annual Report of Water Use
Installation Worksheet

Permit: **1992-6127** Installation: ~~3A~~ 11

Permittee: **US NAVY**

Use: **Pollution Containment**
Source Type: **Ground Water**
Source Name: **QBAA**

Unique Well : 0000785140
~~Twp: 30 Rng: 24 Sec: 27 Qtr: CAD~~
Anoka County

A. If no water was withdrawn this year, indicate the reason.
____ 1. Well Sealed ____ 2. System Removed
____ 3. Water received from an alternate source, specify:
____ 4. Other, specify:

B. List the number of **gallons** withdrawn in each month of 2011. Pumping Rate (GPM): 273

January	0	July	0
February	0	August	0
March	0	September	0
April	0	October	58,500
May	0	November	0
June	0	December	1,332,840
		Total	1,391,340

C. Measurement method (indicate one)

____ 1. Flow Meter
X 2. Flow Rate Meter with: X Totalizer *or* ____ Hour meter
____ 3. Timing Device with: ____ Hour Meter *or* ____ Electric meter
____ 4. Alternate method: If not already approved, enclose request for approval
____ 5. Estimated: An approved measuring device or method is required (describe below)

Signature Paul Waly Date 2/14/12 Phone (651) 291-3491

STD

1992-6127
2011

2011 MN DNR - Annual Report of Water Use
Installation Worksheet

Permit: **1992-6127** Installation: ~~3A~~ 12

Permittee: **US NAVY**

Use: **Pollution Containment**
Source Type: **Ground Water**
Source Name: **QBAA**

Unique Well: 0000785141
~~Twp: **30** Rng: **24** Sec: **27** Qtr: **CAD**~~
Anoka County

A. If no water was withdrawn this year, indicate the reason.
____ 1. Well Sealed ____ 2. System Removed
____ 3. Water received from an alternate source, specify:
____ 4. Other, specify:

B. List the number of **gallons** withdrawn in each month of 2011. Pumping Rate (GPM): 252

January	0	July	0
February	0	August	0
March	0	September	0
April	0	October	69500
May	0	November	0
June	0	December	1,234,267
		Total	1,303,767

C. Measurement method (indicate one)

____ 1. Flow Meter
X 2. Flow Rate Meter with: X Totalizer *or* ____ Hour meter
____ 3. Timing Device with: ____ Hour Meter *or* ____ Electric meter
____ 4. Alternate method: If not already approved, enclose request for approval
____ 5. Estimated: An approved measuring device or method is required (describe below)

Signature Paul Wally Date 2/14/12 Phone (651) 291-3491

STD

1992-6127
2011

2011 MN DNR - Annual Report of Water Use
Installation Worksheet

Permit: **1992-6127** Installation: ~~3A~~ 13

Permittee: **US NAVY**

Use: **Pollution Containment**
Source Type: **Ground Water**
Source Name: **QBAA**

Unique Well: 999978514 2
~~Twp: 30 Rng: 24 Sec: 27 Qtr: CAD~~
Anoka County

A. If no water was withdrawn this year, indicate the reason.
____ 1. Well Sealed ____ 2. System Removed
____ 3. Water received from an alternate source, specify:
____ 4. Other, specify:

B. List the number of **gallons** withdrawn in each month of 2011. Pumping Rate (GPM): 151

January	0	July	0
February	0	August	0
March	0	September	0
April	0	October	60,790
May	0	November	1,305,000
June	0	December	3,712,593
		Total	5,078,383

C. Measurement method (indicate one)

____ 1. Flow Meter
X 2. Flow Rate Meter with: X Totalizer *or* ____ Hour meter
____ 3. Timing Device with: ____ Hour Meter *or* ____ Electric meter
____ 4. Alternate method: If not already approved, enclose request for approval
____ 5. Estimated: An approved measuring device or method is required (describe below)

Signature Pat Waly Date 2/14/12 Phone (651) 291-3491

APPENDIX C

NIROP SITE MONITORING DATA AND FIELD LOG SHEETS

C-1 2011 WATER LEVEL DATA

C-2 WATER LEVEL DATA TO DATE AND HYDROGRAPHS

C-3 FIELD FORMS

C-1 2011 WATER LEVEL DATA

APPENDIX C-1

2011 WATER LEVEL DATA
2011 ANNUAL MONITORING REPORT
NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT
FRIDLEY, MINNESOTA

NIROP - J070047-33

Date: 10/31/2011 **Weather:**

Well	Depth to water (ft)	Well	Depth to water (ft)	Well	Depth to water (ft)	Well	Depth to water (ft)
23-S	27.54	22-S	18.61	PES-MW-1	26.73	AT-7	34.97
12-S	19.97	5-IS	19.38	PES-MW-2	26.72	MS-35D	21.93
16-S	18.67	9-S	17.57	PES-MW-5	30.91	MS-35S	19.95
11-D	18.40	14-D	19.35	MS-48PC	14.84	MS-35I	23.44
13-S	15.95	MS-33S	16.91	27-S	30.71	7-IS	28.77
14-S	17.34	MS-33I	17.13	16-IS	30.71	6-IS	26.71
15-S	15.82	MS-33D	17.12	16-D	31.41	AT-3A	
5-PC	14.91	MS-32S	15.98	PES-CW-2	31.41	USGS-9	22.11
10-D	15.26	MS-32I	19.74	MS-47I	33.27	USGS-10	26.43
1-IS	15.77	MS-32D	24.36	MS-47D	29.57	MS-37S	23.57
USGS-1	18.07	MS-29S	17.49	MS-47S	33.51	8-IS	26.32
25-S	17.24	MS-29I	16.89	MS-49I	33.59	12-IS	21.64
13-D	16.99	MS-29D	15.64	MS-49D	33.11	13-IS	24.22
USGS-2	19.57	MS-31S	17.57	MS-49S	33.73	MS-38S	34.79
1-PC	17.84	MS-31I	17.08	MS-50PC	16.81	AT-10	74.35
2-D	17.53	MS-31D	15.86	9-D	34.02	MS-39S	35.50
2-S	17.58	MS-28S	16.58	19-S	33.77	AT-5A	34.08
USGS-6	18.79	MS-28I	16.50	MS-51I	33.09	AT-5B	55.13
11-SB	19.22	MS-28D	16.03	MS-52I	33.49	14-IS	36.31
8-S	17.25	7-D	31.47	MS-52S	33.21	17-D	25.83
3-IS	18.85	17-S	22.86	MS-52D	22.50	20-S	18.95
12-D	18.42	MS-42I	22.86	River Level (1)	NO	USGS-7	18.98
2-PC	18.65	MS-44I	26.86	UD-63S(2)	BAE WELL	USGS-8	35.99
3-S	18.40	MS-44D	26.88	5-S	18.79	MS-40I	34.59
7-S	17.33	MS-44S	27.59	4-PC	15.99	MS-40D	25.07
5-D	17.34	4-IS	26.55	4-D	27.46	MS-40S	34.87
10-IS	18.41	18-S	27.27	10-S	19.19	MS-41D	28.22
1-D	18.29	8-D	27.22	6-S	20.07	MS-41S	34.18
1-S	17.37	MS-45I	25.87	24-S	21.53	MS-41I	28.21
21-S	18.44	MS-45S	26.01	AT-9	34.07	MS-36S	26.36
2-IS	19.10	15-D	27.56	6-D	25.04	MS-36I	26.74
4-S	18.28	26-S	28.07	11-S	27.28	MS-36D	24.53
3-PC	19.45	15-IS	27.71	MS-34S	19.64	MS-56S	22.82
MS-30S	16.17	MS-53PC	15.77	MS-34I	25.68	MS-56I	26.31
MS-30I	16.88	MS-46I	25.74	MS-34D	23.52	MS-54S	28.08
MS-30D	16.80	MS-46S	25.87	AT-8	25.09	MS-54I	28.04
MS-55I	25.91	USGS-4	22.91	MS-43D	30.62	MS-43I	32.22
USGS-3	34.49	USGS-5	32.92	MS-43S	32.17	3-D	18.94

(1) - Side wall down to the river edge had fallen in and covered the outfall gauging point. Made it unsafe to gauge at this point. Based on conversation with BAE, last 10 feet of culvert has fallen into river. River elevation can no longer be gauged relative to a surveyed reference point.

(2) - Data from UD-63S included pending availablility from BAE Systems, and may be collected at a different period (~within 6 months of AMR data). If data is not available then 20-S will be sampled in its place. If this is the case 20-S will represent the plume edge at this location (i.e., in place of UD-63S).

C-2 WATER LEVEL DATA TO DATE AND HYDROGRAPHS

APPENDIX C-2

COMPREHENSIVE SHALLOW ZONE WATER LEVEL ELEVATIONS
2011 ANNUAL MONITORING REPORT
NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT
FRIDLEY, MINNESOTA

Well Name	1-S			2-S			3-S			4-S			5-S			6-S			7-S		
TOC Elev.	836.93			835.91			836.62			837.33			834.92			835.6			835.8		
Date	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change
1/13/93	22.61	814.32	NA	21.55	814.36	NA	22.72	813.90	NA	23.12	814.21	NA	22.51	812.41	NA	23.61	811.99	NA	21.51	814.29	NA
2/6/93	22.70	814.23	-0.09	20.34	815.57	1.21	22.74	813.88	-0.02	23.26	814.07	-0.14	22.44	812.48	0.07	23.49	812.11	0.12	21.59	814.21	-0.08
3/21/93	22.12	814.81	0.59	21.12	814.79	-0.78	22.12	814.50	0.62	22.73	814.60	0.54	21.60	813.32	0.84	22.57	813.03	0.93	20.99	814.81	0.60
5/20/93	22.32	814.61	-0.20	21.34	814.57	-0.22	22.33	814.29	-0.21	22.97	814.36	-0.24	21.51	813.41	0.09	NA	NA	NA	21.20	814.60	-0.21
8/24/93	20.69	816.24	1.63	20.01	815.90	1.33	20.90	815.72	1.43	21.11	816.22	1.86	20.31	814.61	1.20	21.29	814.31	1.28	19.80	816.00	1.40
12/4/93	21.17	815.76	-0.48	20.36	815.55	-0.35	21.24	815.38	-0.34	21.72	815.61	-0.61	20.70	814.22	-0.39	21.64	813.96	-0.35	20.15	815.65	-0.35
3/19/94	21.82	815.11	-0.65	20.96	814.95	-0.60	21.86	814.76	-0.62	22.11	815.22	-0.39	21.26	813.66	-0.56	21.64	813.96	0.00	20.79	815.01	-0.64
6/30/94	21.46	815.47	0.36	20.78	815.13	0.18	21.57	815.05	0.29	21.67	815.66	0.44	20.95	813.97	0.31	21.92	813.68	-0.28	20.54	815.26	0.25
9/28/94	22.60	814.33	-1.14	21.14	814.77	-0.36	22.14	814.48	-0.57	22.55	814.78	-0.88	21.59	813.33	-0.64	22.55	813.05	-0.63	20.99	814.81	-0.45
12/20/94	21.39	815.54	1.21	20.41	815.50	0.73	21.41	815.21	0.73	21.81	815.52	0.74	20.93	813.99	0.66	21.90	813.70	0.65	20.36	815.44	0.63
3/31/95	21.31	815.62	0.08	20.30	815.61	0.11	21.42	815.20	-0.01	21.85	815.48	-0.04	21.02	813.90	-0.09	21.10	814.50	0.80	20.21	815.59	0.15
6/27/95	21.16	815.77	0.15	20.48	815.43	-0.18	21.45	815.17	-0.03	21.35	815.98	0.50	21.35	813.57	-0.33	22.54	813.06	-1.44	20.24	815.56	-0.03
7/26/95	21.16	815.77	0.00	20.48	815.43	0.00	21.41	815.21	0.04	21.41	815.92	-0.06	21.28	813.64	0.07	22.40	813.20	0.14	20.22	815.58	0.02
9/29/95	21.61	815.32	-0.45	20.77	815.14	-0.29	21.75	814.87	-0.34	22.03	815.30	-0.62	21.52	813.40	-0.24	22.61	812.99	-0.21	20.60	815.20	-0.38
12/27/95	21.06	815.87	0.55	20.11	815.80	0.66	21.20	815.42	0.55	21.52	815.81	0.51	20.93	813.99	0.59	22.02	813.58	0.59	19.95	815.85	0.65
3/31/96	21.13	815.80	-0.07	20.18	815.73	-0.07	21.23	815.39	-0.03	21.72	815.61	-0.20	21.00	813.92	-0.07	22.08	813.52	-0.06	20.05	815.75	-0.10
5/2/96	20.85	816.08	0.28	19.78	816.13	0.40	20.85	815.77	0.38	21.30	816.03	0.42	20.71	814.21	0.29	21.74	813.86	0.34	19.64	816.16	0.41
12/6/96	21.68	815.25	-0.83	20.70	815.21	-0.92	21.78	814.84	-0.93	22.18	815.15	-0.88	21.26	813.66	-0.55	22.20	813.40	-0.46	20.58	815.22	-0.94
4/5/97	20.60	816.33	1.08	19.89	816.02	0.81	20.86	815.76	0.92	21.45	815.88	0.73	20.11	814.81	1.15	21.06	814.54	1.14	19.72	816.08	0.86
10/30/97	20.47	816.46	0.13	19.93	815.98	-0.04	20.66	815.96	0.20	21.11	816.22	0.34	20.26	814.66	-0.15	21.23	814.37	-0.17	19.52	816.28	0.20
1/13/98	20.69	816.24	-0.22	19.68	816.23	0.25	20.54	816.08	0.12	21.04	816.29	0.07	19.90	815.02	0.36	20.68	814.92	0.55	19.55	816.25	-0.03
3/31/98	20.86	816.07	-0.17	19.84	816.07	-0.16	20.88	815.74	-0.34	21.42	815.91	-0.38	20.43	814.49	-0.53	21.48	814.12	-0.80	19.68	816.12	-0.13
4/30/98	20.53	816.40	0.33	19.68	816.23	0.16	20.58	816.04	0.30	21.13	816.20	0.29	20.28	814.64	0.15	21.42	814.18	0.06	19.49	816.31	0.19
10/30/98	21.71	815.22	-1.18	20.77	815.14	-1.09	21.89	814.73	-1.31	22.32	815.01	-1.19	21.22	813.70	-0.94	21.96	813.64	-0.54	20.61	815.19	-1.12
11/30/99	21.19	815.74	0.52	20.28	815.63	0.49	21.15	815.47	0.74	21.69	815.64	0.63	20.68	814.24	0.54	21.62	813.98	0.34	20.06	815.74	0.55
5/17/00	21.68	815.25	-0.49	20.74	815.17	0.03	21.66	814.96	-0.51	22.19	815.14	-0.50	21.1	813.82	-0.42	22.04	813.56	-0.42	20.57	815.23	-0.51
10/2/00	22.06	814.87	-0.38	21.18	814.73	-0.9	21.97	814.65	-0.31	22.48	814.85	-0.29	21.15	813.77	-0.05	22.00	813.60	0.04	21.00	814.80	-0.43
8/20/01	20.47	816.46	1.59	19.93	815.98	0.81	20.78	815.84	1.19	20.65	816.68	1.83	21.24	813.68	-0.09	22.46	813.14	-0.46	19.61	816.19	1.39
9/26/01	20.62	816.31	-0.15	19.85	816.06	1.33	21.64	814.98	-0.86	20.91	816.42	-0.26	20.02	814.90	1.22	20.86	814.74	1.60	19.62	816.18	-0.01
11/26/01	21.07	815.86	-0.45	20.33	815.58	-0.48	21.32	815.30	0.32	21.39	815.94	-0.48	21.96	812.96	-1.94	23.25	812.35	-2.39	20.18	815.62	-0.56
3/10/03	19.75	817.18	1.32	18.82	817.09	1.03	19.57	817.05	1.75	19.96	817.37	1.43	19.10	815.82	2.86	19.98	815.62	3.27	18.65	817.15	1.53
10/6/03	20.70	816.23	-0.95	19.99	815.92	-1.17	20.90	815.72	-1.33	20.84	816.49	-0.88	21.83	813.09	-2.73	22.95	812.65	-2.97	19.71	816.09	-1.06
10/15/04	20.69	816.24	0.01	19.91	816	0.08	20.78	815.84	0.12	20.74	816.59	0.10	21.53	813.39	0.30	22.80	812.80	0.15	19.65	816.15	0.06
11/4/05	19.40	817.53	1.29	18.70	817.21	1.21	19.45	817.17	1.33	19.23	818.10	1.51	20.27	814.65	1.26	21.50	814.10	1.30	18.40	817.40	1.25
12/27/06	20.30	816.63	-0.90	19.48	816.43	-0.78	20.43	816.19	-0.98	20.35	816.98	-1.12	21.07	813.85	-0.80	22.47	813.13	-0.97	19.24	816.56	-0.84
10/15/07	20.06	816.87	0.24	19.24	816.67	0.24	20.07	816.55	0.36	20.21	817.12	0.14	19.5	815.42	1.57	20.36	815.24	2.11	19.06	816.74	0.18
10/13/08	20.79	816.14	-0.73	20.01	815.9	-0.77	20.92	815.7	-0.85	20.9	816.43	-0.69	21.18	813.74	-1.68	22.28	813.32	-1.92	19.77	816.03	-0.71
9/21/09	21.44	815.49	-0.65	20.63	815.28	-0.62	21.43	815.19	-0.51	21.4	815.93	-0.50	21.15	813.77	0.03	22.22	813.38	0.06	20.42	815.38	-0.65
10/4/10	19.75	817.18	1.69	19.02	816.89	1.61	19.94	816.68	1.49	19.75	817.58	1.65	19.7	815.22	1.45	21.79	813.81	0.43	18.76	817.04	1.66
10/31/11	17.37	819.56	2.38	17.58	818.33	1.44	18.4	818.22	1.54	18.28	819.05	1.47	18.79	816.13	0.91	20.07	815.53	1.72	17.33	818.47	1.43

APPENDIX C-2

COMPREHENSIVE SHALLOW ZONE WATER LEVEL ELEVATIONS
2011 ANNUAL MONITORING REPORT
NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT
FRIDLEY, MINNESOTA

Well Name	8-S			9-S			10-S			11-SB			12-S			13-S			14-S		
TOC Elev.	835.59			836.53			835.73			837.28			838.38			834.4			835.82		
Date	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change
1/13/93	21.45	814.14	NA	22.42	814.11	NA	23.02	812.71	NA							20.03	814.37	NA	21.41	814.41	NA
2/6/93	21.59	814.00	-0.14	24.15	812.38	-1.73	22.97	812.76	0.05							19.36	815.04	0.67	21.46	814.36	-0.05
3/21/93	20.93	814.66	0.66	23.11	813.42	1.04	22.18	813.55	0.79							19.549	814.85	-0.19	20.961	814.86	0.50
5/20/93	21.12	814.47	-0.19	23.41	813.12	-0.30	22.17	813.56	0.01							19.76	814.64	-0.21	21.16	814.66	-0.20
8/24/93	19.72	815.87	1.40	21.34	815.19	2.07	20.92	814.81	1.25							18.28	816.12	1.48	19.55	816.27	1.61
12/4/93	20.09	815.50	-0.37	21.74	814.79	-0.40	21.28	814.45	-0.36							18.70	815.70	-0.42	20.07	815.75	-0.52
3/19/94	20.71	814.88	-0.62	21.88	814.65	-0.14	21.86	813.87	-0.58							19.32	815.08	-0.62	20.70	815.12	-0.63
6/30/94	20.47	815.12	0.24	21.58	814.95	0.30	21.53	814.20	0.33							19.02	815.38	0.30	20.30	815.52	0.40
9/28/94	20.90	814.69	-0.43	22.31	814.22	-0.73	22.19	813.54	-0.66							19.50	814.90	-0.48	20.89	814.93	-0.59
12/20/94	20.20	815.39	0.70	21.39	815.14	0.92	21.53	814.20	0.66							18.86	815.54	0.64	20.31	815.51	0.58
3/31/95	20.12	815.47	0.08	21.65	814.88	-0.26	21.59	814.14	-0.06							18.74	815.66	0.12	20.20	815.62	0.11
6/27/95	20.21	815.38	-0.09	21.34	815.19	0.31	21.86	813.87	-0.27							18.67	815.73	0.07	19.93	815.89	0.27
7/26/95	20.20	815.39	0.01	21.30	815.23	0.04	21.81	813.92	0.05							18.71	815.69	-0.04	20.00	815.82	-0.07
9/29/95	20.54	815.05	-0.34	21.87	814.66	-0.57	22.08	813.65	-0.27							19.10	815.30	-0.39	20.44	815.38	-0.44
12/27/95	19.92	815.67	0.62	21.20	815.33	0.67	21.49	814.24	0.59							18.50	815.90	0.60	19.92	815.90	0.52
3/31/96	19.98	815.61	-0.06	21.20	815.33	0.00	21.56	814.17	-0.07							22.47	811.93	-3.97	19.98	815.84	-0.06
5/2/96	19.62	815.97	0.36	20.80	815.73	0.40	21.20	814.53	0.36							18.27	816.13	4.20	19.64	816.18	0.34
12/6/96	20.51	815.08	-0.89	21.52	815.01	-0.72	21.88	813.85	-0.68							19.15	815.25	-0.88	20.58	815.24	-0.94
4/5/97	19.55	816.04	0.96	21.11	815.42	0.41	20.70	815.03	1.18							18.35	816.05	0.80	19.49	816.33	1.09
10/30/97	19.46	816.13	0.09	20.72	815.81	0.39	20.86	814.87	-0.16							18.05	816.35	0.30	19.53	816.29	-0.04
1/13/98	19.40	816.19	0.06	20.87	815.66	-0.15	21.02	814.71	-0.16							18.23	816.17	-0.18	19.69	816.13	-0.16
3/31/98	19.60	815.99	-0.20	20.86	815.67	0.01	21.06	814.67	-0.04							18.25	816.15	-0.02	19.68	816.14	0.01
4/30/98	19.42	816.17	0.18	20.55	815.98	0.31	20.99	814.74	0.07							18.05	816.35	0.20	19.59	816.23	0.09
10/30/98	20.65	814.94	-1.23	21.95	814.58	-1.40	21.76	813.97	-0.77							19.21	815.19	-1.16	20.60	815.22	-1.01
11/30/99	19.97	815.62	0.68	21.25	815.28	0.70	21.29	814.44	0.47	22.05	815.23	NA				19.7	814.70	-0.49	20.11	815.71	0.49
5/17/00	20.50	815.09	-0.53	21.77	814.76	-0.52	21.70	814.03	-0.41	22.61	814.67	-0.56	23.11	815.27	NA	19.15	815.25	0.55	20.55	815.27	-0.44
10/2/00	20.78	814.81	-0.28	22.02	814.51	-0.25	21.92	813.81	-0.22	22.91	814.37	-0.30	23.53	814.85	-0.42	19.56	814.84	-0.41	20.92	814.90	-0.37
8/20/01	19.59	816.00	1.19	20.24	816.29	1.78	21.66	814.07	0.26	21.58	815.70	1.33	22.14	816.24	1.39	18.04	816.36	1.52	19.24	816.58	1.68
9/26/01	19.52	816.07	0.07	20.27	816.26	-0.03	20.66	815.07	1.00	21.37	815.91	0.21	22.17	816.21	-0.03	18.14	816.26	-0.10	19.44	816.38	-0.20
11/26/01	20.05	815.54	-0.53	20.70	815.83	-0.43	22.44	813.29	-1.78	22.09	815.19	-0.72	22.63	815.75	-0.46	18.59	815.81	-0.45	19.93	815.89	-0.49
3/10/03	18.52	817.07	1.53	19.15	817.38	1.55	19.70	816.03	2.74	20.37	816.91	1.72	21.51	816.87	1.12	17.81	816.59	0.78	19.23	816.59	0.70
10/6/03	19.67	815.92	-1.15	19.94	816.59	-0.79	22.08	813.65	-2.38	21.70	815.58	-1.33	22.24	816.14	-0.73	18.22	816.18	-0.41	19.54	816.28	-0.31
10/15/04	19.53	816.06	0.14	19.92	816.61	0.02	21.80	813.93	0.28	21.66	815.62	0.04	22.22	816.16	0.02	18.17	816.23	0.05	19.51	816.31	0.03
11/4/05	18.37	817.22	1.16	18.48	818.05	1.44	20.72	815.01	1.08	20.42	816.86	1.24	21.00	817.38	1.22	16.98	817.42	1.19	18.30	817.52	1.21
12/27/06	19.22	816.37	-0.85	19.48	817.05	-1.00	21.41	814.32	-0.69	21.24	816.04	-0.82	21.82	816.56	-0.82	17.83	816.57	-0.85	19.22	816.60	-0.92
10/15/07	18.93	816.66	0.29	19.36	817.17	0.12	20.14	815.59	1.27	20.84	816.44	0.40	21.65	816.73	0.17	17.66	816.74	0.17	19.05	816.77	0.17
10/13/08	19.71	815.88	-0.78	20.15	816.38	-0.79	21.7	814.03	-1.56	21.74	815.54	-0.9	22.31	816.07	-0.66	19.29	815.11	-1.63	19.65	816.17	-0.6
9/21/09	20.3	815.29	-0.59	20.73	815.8	-0.58	21.73	814	-0.03	22.22	815.06	-0.48	22.99	815.39	-0.68	18.98	815.42	0.31	20.33	815.49	-0.68
10/4/10	18.7	816.89	1.60	18.91	817.62	1.82	20.67	815.06	1.06	20.78	816.5	1.44	21.36	817.02	1.63	17.33	817.07	1.65	18.7	817.12	1.63
10/31/11	17.25	818.34	1.45	17.57	818.96	1.34	19.19	816.54	1.48	19.22	818.06	1.56	19.97	818.41	1.39	15.95	818.45	1.38	17.34	818.48	1.36

APPENDIX C-2

COMPREHENSIVE SHALLOW ZONE WATER LEVEL ELEVATIONS
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NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT
FRIDLEY, MINNESOTA

Well Name	14-IS			15-S			16-S			17-S			18-S			19-S			20-S		
TOC Elev.	835.21			834.68			837.12			835.48			833.86			834.18			837.51		
Date	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change
1/13/93	34.00	801.21	NA	20.17	814.51	NA	22.74	814.38	NA	26.32	809.16	NA	29.79	804.07	NA	33.73	800.45	NA	23.87	813.64	NA
2/6/93	34.02	801.19	-0.02	20.28	814.40	-0.11	22.77	814.35	-0.03	26.28	809.20	0.04	29.76	804.10	0.03	33.70	800.48	0.03	23.85	813.66	0.02
3/21/93	33.224	801.99	0.80	19.742	814.94	0.54	22.181	814.94	0.59	25.102	810.38	1.18	28.922	804.94	0.84	32.999	801.18	0.70	23.305	814.21	0.55
5/20/93	30.9	804.31	2.32	19.92	814.76	-0.18	22.42	814.70	-0.24	24.88	810.60	0.22	27.38	806.48	1.54	30.98	803.20	2.02	23.04	814.47	0.26
8/24/93	30.61	804.60	0.29	18.10	816.58	1.82	21.08	816.04	1.34	23.71	811.77	1.17	27.08	806.78	0.30	31.20	802.98	-0.22	20.77	816.74	2.27
12/4/93	32.11	803.10	-1.50	18.70	815.98	-0.60	21.48	815.64	-0.40	24.31	811.17	-0.60	27.92	805.94	-0.84	32.15	802.03	-0.95	22.21	815.30	-1.44
3/19/94	32.53	802.68	-0.42	19.40	815.28	-0.70	22.04	815.08	-0.56	24.74	810.74	-0.43	27.89	805.97	0.03	31.86	802.32	0.29	22.68	814.83	-0.47
6/30/94	32.11	803.10	0.42	18.92	815.76	0.48	21.89	815.23	0.15	24.35	811.13	0.39	28.09	805.77	-0.20	31.81	802.37	0.05	22.08	815.43	0.60
9/28/94	33.4	801.81	-1.29	19.58	815.10	-0.66	22.63	814.49	-0.74	25.25	810.23	-0.90	29.07	804.79	-0.98	33.81	800.37	-2.00	22.82	814.69	-0.74
12/20/94	31.22	803.99	2.18	18.99	815.69	0.59	21.50	815.62	1.13	24.49	810.99	0.76	27.13	806.73	1.94	30.64	803.54	3.17	22.32	815.19	0.50
3/31/95	30.2	805.01	1.02	18.91	815.77	0.08	21.39	815.73	0.11	24.45	811.03	0.04	26.35	807.51	0.78	29.46	804.72	1.18	22.20	815.31	0.12
6/27/95	32.3	802.91	-2.10	18.45	816.23	0.46	21.55	815.57	-0.16	24.78	810.70	-0.33	28.67	805.19	-2.32	33.23	800.95	-3.77	20.98	816.53	1.22
7/26/95	37.89	797.32	-5.59	18.60	816.08	-0.15	21.55	815.57	0.00	24.88	810.60	-0.10	29.02	804.84	-0.35	33.20	800.98	0.03	21.20	816.31	-0.22
9/29/95	39.6	795.61	-1.71	19.06	815.62	-0.46	21.88	815.24	-0.33	25.26	810.22	-0.38	29.79	804.07	-0.77	34.61	799.57	-1.41	22.47	815.04	-1.27
12/27/95	35.63	799.58	3.97	18.60	816.08	0.46	21.16	815.96	0.72	24.51	810.97	0.75	27.17	806.69	2.62	27.36	806.82	7.25	23.00	814.51	-0.53
3/31/96	well obstructed			18.70	815.98	-0.10	21.20	815.92	-0.04	24.64	810.84	-0.13	28.05	805.81	-0.88	32.42	801.76	-5.06	21.98	815.53	1.02
5/2/96	33.54	801.67	2.09	18.48	816.20	0.22	20.84	816.28	0.36	24.28	811.20	0.36	25.98	807.88	2.07	28.74	805.44	3.68	21.73	815.78	0.25
12/6/96	34.6	800.61	-1.06	19.32	815.36	-0.84	21.79	815.33	-0.95	24.86	810.62	-0.58	27.16	806.70	-1.18	30.02	804.16	-1.28	22.01	815.50	-0.28
4/5/97	37.45	797.76	-2.85	18.46	816.22	0.86	20.95	816.17	0.84	23.91	811.57	0.95	27.45	806.41	-0.29	32.10	802.08	-2.08	21.82	815.69	0.19
10/30/97	38.58	796.63	-1.13	17.83	816.85	0.63	20.81	816.31	0.14	24.11	811.37	-0.20	29.31	804.55	-1.86	33.98	800.20	-1.88	21.05	816.46	0.77
1/13/98	32.32	802.89	6.26	18.35	816.33	-0.52	20.83	816.29	-0.02	23.56	811.92	0.55	26.30	807.56	3.01	32.03	802.15	1.95	21.48	816.03	-0.43
3/31/98	38.06	797.15	-5.74	18.28	816.40	0.07	20.91	816.21	-0.08	24.39	811.09	-0.83	28.73	805.13	-2.43	32.60	801.58	-0.57	21.20	816.31	0.28
4/30/98	37.53	797.68	0.53	18.11	816.57	0.17	20.77	816.35	0.14	24.07	811.41	0.32	28.96	804.90	-0.23	32.90	801.28	-0.30	21.36	816.15	-0.16
10/30/98	35.39	799.82	2.14	19.25	815.43	-1.14	21.85	815.27	-1.08	25.29	810.19	-1.22	29.69	804.17	-0.73	33.53	800.65	-0.63	22.64	814.87	-1.28
11/30/99	37.28	797.93	-1.89	18.81	815.87	0.44	21.39	815.73	0.46	24.56	810.92	0.73	29.56	804.30	0.13	33.8	800.38	-0.27	22.4	815.11	0.24
5/17/00	39.42	795.79	-2.14	19.28	815.40	-0.47	21.85	815.27	-0.46	25.15	810.33	-0.59	30.04	803.82	-0.48	33.62	800.56	0.18	22.75	814.76	-0.35
10/2/00	40.03	795.18	-0.61	19.56	815.12	-0.28	22.31	814.81	-0.46	25.01	810.47	0.14	30.25	803.61	-0.21	34.90	799.28	-1.28	23.11	814.40	-0.36
8/20/01	38.36	796.85	1.67	17.78	816.90	1.78	29.5	807.62	-7.19	25.1	810.38	-0.09	29.78	804.08	0.47	34.29	799.89	0.61	20.82	816.69	2.29
9/26/01	32.28	802.93	6.08	18.04	816.64	-0.26	20.91	816.21	8.59	23.81	811.67	1.29	27.73	806.13	2.05	33.78	800.40	0.51	20.86	816.65	-0.04
11/26/01	38.89	796.32	-6.61	18.54	816.14	-0.50	21.35	815.77	-0.44	26.04	809.44	-2.23	29.76	804.10	-2.03	34.23	799.95	-0.45	21.82	815.69	-0.96
3/10/03	33.05	802.16	5.84	17.83	816.85	0.71	20.36	816.76	0.99	23.29	812.19	2.75	26.87	806.99	2.89	33.56	800.62	0.67	20.54	816.97	1.28
10/6/03	40.04	795.17	-6.99	18.13	816.55	-0.30	21.00	816.12	-0.64	25.63	809.85	-2.34	29.72	804.14	-2.85	35.15	799.03	-1.59	21.61	815.90	-1.07
10/15/04	27.52	807.69	12.52	18.15	816.53	-0.02	20.95	816.17	0.05	25.70	809.78	-0.07	29.15	804.71	0.57	33.73	800.45	1.42	21.28	816.23	0.33
11/4/05	26.52	808.69	1.00	16.87	817.81	1.28	19.73	817.39	1.22	24.29	811.19	1.41	27.88	805.98	1.27	32.67	801.51	1.06	19.70	817.81	1.58
12/27/06	27.50	807.71	-0.98	17.85	816.83	-0.98	20.53	816.59	-0.80	25.04	810.44	-0.75	29.25	804.61	-1.37	34.93	799.25	-2.26	20.90	816.61	-1.20
10/15/07	37.25	797.96	-9.75	17.62	817.06	0.23	20.33	816.79	0.20	23.71	811.77	1.33	28.39	805.47	0.86	33.58	800.6	1.35	19.74	817.77	1.16
10/13/08	28.56	806.65	8.69	18.21	816.47	-0.59	21.04	816.08	-0.71	25.33	810.15	-1.62	29.11	804.75	-0.72	34.43	799.75	-0.85	21.5	816.01	-1.76
9/21/09	38.93	796.28	-10.37	18.97	815.71	-0.76	21.72	815.4	-0.68	25.19	810.29	0.14	29.44	804.42	-0.33	34.67	799.51	-0.24	22.01	815.5	-0.51
10/4/10	34.75	800.46	4.18	17.26	817.42	1.71	20.06	817.06	1.66	24.37	811.11	0.82	24.46	809.4	4.98	31.37	802.81	3.30	19.81	817.7	2.20
10/31/11	36.31	798.9	-1.56	15.82	818.86	1.44	18.67	818.45	1.39	22.86	812.62	1.51	27.27	806.59	-2.81	33.77	800.41	-2.40	18.95	818.56	0.86

Note: Water level at MS-20S shown in Appendix C-1 was not consistent with nistoric data; so the initial water level from the groundwater purge data sheet was used for the potentiometric surfac

APPENDIX C-2

COMPREHENSIVE SHALLOW ZONE WATER LEVEL ELEVATIONS
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NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT
FRIDLEY, MINNESOTA

Well Name	21-S			22-S			23-S			24-S			25-S			26-S			27-S		
TOC Elev.	837.5			837.6			846.96			836.19			835.14			834.06			832.74		
Date	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change
1/13/93	23.10	814.40	NA	23.50	814.10	NA				24.90	811.29	NA	21.25	813.89	NA	30.07	803.99	NA	30.61	802.13	NA
2/6/93	23.23	814.27	-0.13	23.98	813.62	-0.48				24.71	811.48	0.19	21.26	813.88	-0.01	30.02	804.04	0.05	30.58	802.16	0.03
3/21/93	23.23	814.27	0.00	24.011	813.59	-0.03				23.658	812.53	1.05	20.672	814.47	0.59	29.211	804.85	0.81	29.949	802.79	0.63
5/20/93	22.97	814.53	0.26	23.81	813.79	0.20				23.11	813.08	0.55	20.82	814.32	-0.15	27.73	806.33	1.48	28.33	804.41	1.62
8/24/93	20.62	816.88	2.35	22.31	815.29	1.50				22.24	813.95	0.87	19.40	815.74	1.42	27.54	806.52	0.19	28.41	804.33	-0.08
12/4/93	21.60	815.90	-0.98	22.69	814.91	-0.38				22.58	813.61	-0.34	19.83	815.31	-0.43	28.34	805.72	-0.80	29.34	803.40	-0.93
3/19/94	22.17	815.33	-0.57	22.86	814.74	-0.17				23.19	813.00	-0.61	19.41	815.73	0.42	28.19	805.87	0.15	28.79	803.95	0.55
6/30/94	21.69	815.81	0.48	22.59	815.01	0.27				22.94	813.25	0.25	20.11	815.03	-0.70	28.39	805.67	-0.20	29.00	803.74	-0.21
9/28/94	22.52	814.98	-0.83	23.33	814.27	-0.74				23.51	812.68	-0.57	20.63	814.51	-0.52	29.46	804.60	-1.07	30.37	802.37	-1.37
12/20/94	21.79	815.71	0.73	22.41	815.19	0.92				22.82	813.37	0.69	19.99	815.15	0.64	27.35	806.71	2.11	27.76	804.98	2.61
3/31/95	21.88	815.62	-0.09	22.65	814.95	-0.24				23.38	812.81	-0.56	19.81	815.33	0.18	26.52	807.54	0.83	26.73	806.01	1.03
6/27/95	21.16	816.34	0.72	22.35	815.25	0.30				24.06	812.13	-0.68	19.90	815.24	-0.09	29.11	804.95	-2.59	30.80	801.94	-4.07
7/26/95	21.10	816.40	0.06	22.31	815.29	0.04				23.74	812.45	0.32	19.96	815.18	-0.06	29.36	804.70	-0.25	30.31	802.43	0.49
9/29/95	21.98	815.52	-0.88	22.90	814.70	-0.59				23.75	812.44	-0.01	20.34	814.80	-0.38	30.22	803.84	-0.86	31.43	801.31	-1.12
12/27/95	21.46	816.04	0.52	22.25	815.35	0.65	30.71	816.25	NA	23.23	812.96	0.52	19.69	815.45	0.65	27.36	806.70	2.86	27.79	804.95	3.64
3/31/96	21.72	815.78	-0.26	22.25	815.35	0.00	30.74	816.22	-0.03	23.23	812.96	0.00	19.65	815.49	0.04	28.32	805.74	-0.96	29.23	803.51	-1.44
5/2/96	21.37	816.13	0.35	21.83	815.77	0.42	30.82	816.14	-0.08	23.03	813.16	0.20	19.46	815.68	0.19	26.04	808.02	2.28	26.07	806.67	3.16
12/6/96	22.07	815.43	-0.70	22.56	815.04	-0.73	31.13	815.83	-0.31	23.14	813.05	-0.11	20.27	814.87	-0.81	27.26	806.80	-1.22	27.42	805.32	-1.35
4/5/97	21.39	816.11	0.68	21.87	815.73	0.69	30.82	816.14	0.31	21.65	814.54	1.49	19.35	815.79	0.92	28.03	806.03	-0.77	26.85	805.89	0.57
10/30/97	20.89	816.61	0.50	21.75	815.85	0.12	30.69	816.27	0.13	22.27	813.92	-0.62	19.16	815.98	0.19	29.68	804.38	-1.65	30.45	802.29	-3.60
1/13/98	21.10	816.40	-0.21	21.33	816.27	0.42	30.27	816.69	0.42	21.41	814.78	0.86	19.22	815.92	-0.06	26.88	807.18	2.80	28.86	803.88	1.59
3/31/98	21.44	816.06	-0.34	21.89	815.71	-0.56	30.38	816.58	-0.11	22.55	813.64	-1.14	19.20	815.94	0.02	28.82	805.24	-1.94	29.38	803.36	-0.52
4/30/98	20.92	816.58	0.52	NA	NA	NA	30.38	816.58	0.00	22.30	813.89	0.25	19.18	815.96	0.02	29.22	804.84	-0.40	30.07	802.67	-0.69
10/30/98	22.25	815.25	-1.33	23.04	814.56	-1.15	31.57	815.39	-1.19	23.21	812.98	-0.91	20.30	814.84	-1.12	29.94	804.12	-0.72	30.24	802.50	-0.17
11/30/99	21.72	815.78	0.53	22.29	815.31	0.75	31.06	815.90	0.51	22.46	813.73	0.75	19.79	815.35	0.51	29.93	804.13	0.01	30.4	802.34	-0.16
5/17/00	22.25	815.25	-0.53	22.82	814.78	-0.53	31.52	815.44	-0.46	22.85	813.34	-0.39	20.22	814.92	-0.43	30.12	803.94	-0.19	30.08	802.66	0.32
10/2/00	21.35	816.15	0.90	22.88	814.72	-0.06	23.18	823.78	8.34	22.63	813.56	0.22	20.60	814.54	-0.38	31.03	803.03	-0.91	31.46	801.28	-1.38
8/20/01	20.79	816.71	0.56	21.3	816.30	1.58	30.6	816.36	-7.42	23.74	812.45	-1.11	19.41	815.73	1.19	30.12	803.94	0.91	30.85	801.89	0.61
9/26/01	20.93	816.57	-0.14	21.30	816.30	0.00	30.47	816.49	0.13	21.47	814.72	2.27	19.26	815.88	0.15	28.46	805.60	1.66	30.41	802.33	0.44
11/26/01	21.44	816.06	-0.51	21.74	815.86	-0.44	30.54	816.42	-0.07	24.60	811.59	-3.13	20.00	815.14	-0.74	30.04	804.02	-1.58	30.70	802.04	-0.29
3/10/03	20.08	817.42	1.36	20.20	817.40	1.54	28.88	818.08	1.66	20.64	815.55	3.96	17.66	817.48	2.34	27.32	806.74	2.72	30.10	802.64	0.60
10/6/03	18.05	819.45	2.03	21.15	816.45	-0.95	29.98	816.98	-1.10	24.37	811.82	-3.73	19.71	815.43	-2.05	30.19	803.87	-2.87	31.62	801.12	-1.52
10/15/04	20.64	816.86	-2.59	20.88	816.72	0.27	29.80	817.16	0.18	24.04	812.15	0.33	19.66	815.48	0.05	29.42	804.64	0.77	30.44	802.30	1.18
11/4/05	20.15	817.35	0.49	19.59	818.01	1.29	28.67	818.29	1.13	23.85	812.34	0.19	18.00	817.14	1.66	28.30	805.76	1.12	29.72	803.02	0.72
12/27/06	20.45	817.05	-0.30	20.49	817.11	-0.90	29.20	817.76	-0.53	23.77	812.42	0.08	19.22	815.92	-1.22	29.76	804.30	-1.46	31.47	801.27	-1.75
10/15/07	20.87	816.63	-0.42	20.36	817.24	0.13	29.91	817.05	-0.71	21.02	815.17	2.75	18.76	816.38	0.46	28.79	805.27	0.97	30.35	802.39	1.12
10/13/08	20.99	816.51	-0.12	21.18	816.42	-0.82	29.98	816.98	-0.07	23.15	813.04	-2.13	19.68	815.46	-0.92	28.56	805.5	0.23	30.98	801.76	-0.63
9/21/09	21.48	816.02	-0.49	21.59	816.01	-0.41	30.87	816.09	-0.89	23.26	812.93	-0.11	20.17	814.97	-0.49	29.89	804.17	-1.33	31.81	800.93	-0.83
10/4/10	19.5	818	1.98	19.91	817.69	1.68	29.02	817.94	1.85	23.21	812.98	0.05	18.72	816.42	1.45	26.52	807.54	3.37	28.36	804.38	3.45
10/31/11	18.44	819.06	1.06	18.61	818.99	1.30	27.54	819.42	1.48	21.53	814.66	1.68	17.25	817.89	1.47	28.07	805.99	-1.55	30.71	802.03	-2.35

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APPENDIX C-2

COMPREHENSIVE SHALLOW ZONE WATER LEVEL ELEVATIONS
2011 ANNUAL MONITORING REPORT
NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT
FRIDLEY, MINNESOTA

Well Name	MS-28S			MS-29S			MS-30S			MS-31S			MS-32S			MS-33S			MS-34S		
TOC Elev.	834.81			834.68			834.83			834.81			834.76			834.72			834.31		
Date	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change
1/13/93																					
2/6/93																					
3/21/93																					
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10/30/97																					
1/13/98																					
3/31/98																					
4/30/98																					
10/30/98																					
11/30/99	19.53	815.28	NA	19.74	814.94	NA	19.59	815.24	NA	19.88	814.93	NA	20.24	814.52	NA	20.46	814.26	NA	20.13	814.18	NA
5/17/00	19.99	814.82	-0.46	19.71	814.97	0.03	20.02	814.81	-0.43	20.30	814.51	-0.42	20.62	814.14	-0.38	20.89	813.83	-0.43	20.47	813.84	-0.34
10/2/00	20.13	814.68	-0.14	18.88	815.80	0.83	21.50	813.33	-1.48	20.39	814.42	-0.09	20.73	814.03	-0.11	21.18	813.54	-0.29	20.54	813.77	-0.07
8/20/01	19.07	815.74	1.06	19.96	814.72	-1.08	18.66	816.17	2.84	20.11	814.70	0.28	19.62	815.14	1.11	19.72	815.00	1.46	21.82	812.49	-1.28
9/26/01	18.92	815.89	0.15	19.20	815.48	0.76	18.81	816.02	-0.15	19.34	815.47	0.77	19.63	815.13	-0.01	19.26	815.46	0.46	19.46	814.85	2.36
11/26/01	19.60	815.21	-0.68	20.60	814.08	-1.40	19.33	815.50	-0.52	20.78	814.03	-1.44	21.92	812.84	-2.29	22.40	812.32	-3.14	22.70	811.61	-3.24
3/10/03	17.88	816.93	1.72	18.24	816.44	2.36	17.74	817.09	1.59	18.36	816.45	2.42	18.73	816.03	3.19	18.23	816.49	4.17	18.72	815.59	3.98
10/6/03	18.81	816.00	-0.93	20.20	814.48	-1.96	19.75	815.08	-2.01	20.20	814.61	-1.84	21.65	813.11	-2.92	19.70	815.02	-1.47	22.50	811.81	-3.78
10/15/04	18.95	815.86	-0.14	20.14	814.54	0.06	18.71	816.12	1.04	20.19	814.62	0.01	21.46	813.30	0.19	19.57	815.15	0.13	21.96	812.35	0.54
11/4/05	16.89	817.92	2.06	17.98	816.70	2.16	16.92	817.91	1.79	18.11	816.70	2.08	20.20	814.56	1.26	17.51	817.21	2.06	20.90	813.41	1.06
12/27/06	18.60	816.21	-1.71	19.66	815.02	-1.68	18.52	816.31	-1.60	19.81	815.00	-1.70	21.22	813.54	-1.02	18.94	815.78	-1.43	21.71	812.60	-0.81
10/15/07	18.37	816.44	0.23	18.64	816.04	1.02	18.21	816.62	0.31	18.81	816	1.00	19.13	815.63	2.09	18.58	816.14	0.36	19.06	815.25	2.65
10/13/08	19.13	815.68	-0.76	19.96	814.72	-1.32	18.84	815.99	-0.63	20.08	814.73	-1.27	21.08	813.68	-1.95	19.77	814.95	-1.19	21.64	812.67	-2.58
9/21/09	19.62	815.19	-0.49	20.18	814.5	-0.22	19.34	815.49	-0.5	20.31	814.5	-0.23	21.14	813.62	-0.06	20.03	814.69	-0.26	21.53	812.78	0.11
10/4/10	18.16	816.65	1.46	19.17	815.51	1.01	17.77	817.06	1.57	19.32	815.49	0.99	20.67	814.09	0.47	18.2	816.52	1.83	21.29	813.02	0.24
10/31/11	16.58	818.23	1.58	17.49	817.19	1.68	16.17	818.66	1.60	17.57	817.24	1.75	15.98	818.78	4.69	16.91	817.81	1.29	19.64	814.67	1.65

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COMPREHENSIVE SHALLOW ZONE WATER LEVEL ELEVATIONS
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NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT
FRIDLEY, MINNESOTA

Well Name	MS-35S			MS-36S			MS-38S			MS-39S			MS-40S			MS-40I		
TOC Elev.	834.22			834.8			834.64			834.76			834.61			834.64		
Date	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change
1/13/93																		
2/6/93																		
3/21/93																		
5/20/93																		
8/24/93																		
12/4/93																		
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10/30/97																		
1/13/98																		
3/31/98																		
4/30/98																		
10/30/98																		
11/30/99	20.02	814.20	NA	27.93	806.87	NA	36.63	798.01	NA	37.02	797.74	NA	35.63	798.98	NA	35.65	798.99	NA
5/17/00	30.37	803.85	-10.35	28.25	806.55	-0.32	38.77	795.87	-2.14	39.13	795.63	-2.11	36.84	797.77	-1.21	36.84	797.80	-1.19
10/2/00	20.42	813.80	9.95	28.37	806.43	-0.12	38.85	795.79	-0.08	39.42	795.34	-0.29	37.56	797.05	-0.72	37.60	797.04	-0.76
8/20/01	22.05	812.17	-1.63	28.44	806.36	-0.07	36.78	797.86	2.07	37.47	797.29	1.95	36.29	798.32	1.27	36.41	798.23	1.19
9/26/01	19.52	814.70	2.53	26.67	808.13	1.77	22.03	812.61	14.75	32.75	802.01	4.72	33.40	801.21	2.89	33.42	801.22	2.99
11/26/01	22.97	811.25	-3.45	28.77	806.03	-2.10	37.99	796.65	-15.96	38.42	796.34	-5.67	38.67	795.94	-5.27	36.68	797.96	-3.26
3/10/03	18.71	815.51	4.26	26.16	808.64	2.61	31.86	802.78	6.13	31.76	803.00	6.66	33.11	801.50	5.56	33.15	801.49	3.53
10/6/03	22.67	811.55	-3.96	28.61	806.19	-2.45	38.92	795.72	-7.06	39.51	795.25	-7.75	37.67	796.94	-4.56	37.68	796.96	-4.53
10/15/04	22.08	812.14	0.59	28.44	806.36	0.17	37.51	797.13	1.41	37.91	796.85	1.60	36.10	798.51	1.57	36.09	798.55	1.59
11/4/05	21.22	813.00	0.86	27.27	807.53	1.17	34.39	800.25	3.12	34.90	799.86	3.01	33.79	800.82	2.31	33.92	800.72	2.17
12/27/06	29.94	804.28	-8.72	28.11	806.69	-0.84	38.20	796.44	-3.81	38.59	796.17	-3.69	37.15	797.46	-3.36	37.10	797.54	-3.18
10/15/07	18.95	815.27	10.99	27.21	807.59	0.90	35.42	799.22	2.78	35.15	799.61	3.44	35.3	799.31	1.85	35.4	799.24	1.70
10/13/08	21.75	812.47	-2.8	28.38	806.42	-1.17	38.3	796.34	-2.88	38.55	796.21	-3.4	36.92	797.69	-1.62	36.94	797.7	-1.54
9/21/09	21.6	812.62	0.15	28.43	806.37	-0.05	38.11	796.53	0.19	38.52	796.24	0.03	36.95	797.66	-0.03	36.96	797.68	-0.02
10/4/10	21.44	812.78	0.16	22.96	811.84	5.47	35.25	799.39	2.86	34.11	800.65	4.41	33.1	801.51	3.85	33.21	801.43	3.75
10/31/11	19.95	814.27	1.49	26.36	808.44	-3.40	34.79	799.85	0.46	35.5	799.26	-1.39	34.87	799.74	-1.77	34.59	800.05	-1.38

APPENDIX C-2

COMPREHENSIVE SHALLOW ZONE WATER LEVEL ELEVATIONS
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NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT
FRIDLEY, MINNESOTA

Well Name	MS-41S			MS-42I			MS-43S			MS-44S			MS-45S			MS-46S			MS-47S		
TOC Elev.	834.82			835.33			834.42			833.53			832.13			831.67			834.83		
Date	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change
1/13/93																					
2/6/93																					
3/21/93																					
5/20/93																					
8/24/93																					
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12/6/96																					
4/5/97																					
10/30/97																					
1/13/98																					
3/31/98																					
4/30/98																					
10/30/98																					
11/30/99	35.71	799.11	NA	24.41	810.92	NA	32.43	801.99	NA	29.79	803.74	NA	28.1	804.03	NA	27.8	803.87	NA	33.65	801.18	NA
5/17/00	37.53	797.29	-1.82	25.01	810.32	-0.60	32.07	802.35	0.36	30.39	803.14	-0.60	28.39	803.74	-0.29	28.00	803.67	-0.20	33.53	801.30	0.12
10/2/00	31.91	802.91	5.62	25.00	810.33	0.01	32.95	801.47	-0.88	30.63	802.90	-0.24	29.44	802.69	-1.05	28.00	803.67	0.00	34.84	799.99	-1.31
8/20/01	36.04	798.78	-4.13	24.94	810.39	0.06	32.55	801.87	0.40	29.92	803.61	0.71	28.26	803.87	1.18	28.01	803.66	-0.01	38.2	796.63	-3.36
9/26/01	32.33	802.49	3.71	23.65	811.68	1.29	32.58	801.84	-0.03	28.55	804.98	1.37	26.48	805.65	1.78	26.41	805.26	1.60	33.71	801.12	4.49
11/26/01	36.81	798.01	-4.48	25.88	809.45	-2.23	32.83	801.59	-0.25	30.30	803.23	-1.75	28.21	803.92	-1.73	27.89	803.78	-1.48	34.10	800.73	-0.39
3/10/03	32.06	802.76	4.75	23.15	812.18	2.73	30.00	804.42	2.83	27.50	806.03	2.80	25.67	806.46	2.54	25.63	806.04	2.26	33.32	801.51	0.78
10/6/03	37.82	797.00	-5.76	25.49	809.84	-2.34	33.53	800.89	-3.53	30.60	802.93	-3.10	28.29	803.84	-2.62	28.15	803.52	-2.52	34.93	799.90	-1.61
10/15/04	36.35	798.47	1.47	25.52	809.81	-0.03	32.30	802.12	1.23	29.86	803.67	0.74	27.52	804.61	0.77	27.22	804.45	0.93	33.59	801.24	1.34
11/4/05	33.57	801.25	2.78	24.12	811.21	1.40	31.61	802.81	0.69	28.16	805.37	1.70	26.37	805.76	1.15	26.14	805.53	1.08	32.62	802.21	0.97
12/27/06	34.7	800.12	-1.13	24.94	810.39	-0.82	33.38	801.04	-1.77	29.92	803.61	-1.76	27.81	804.32	-1.44	27.55	804.12	-1.41	33.73	801.10	-1.11
10/15/07	35.19	799.63	-0.49	23.53	811.80	1.41	32.19	802.23	1.19	25.72	807.81	4.20	26.95	805.18	0.86	26.24	805.43	1.31	33.47	801.36	0.26
10/13/08	37.19	797.63	-2	25.27	810.06	-1.74	32.17	802.25	0.02	30.13	803.4	-4.41	27.63	804.5	-0.68	26.03	805.64	0.21	33.82	801.01	-0.35
9/21/09	37.18	797.64	0.01	25.04	810.29	0.23	33.54	800.88	-1.37	30.3	803.23	-0.17	27.95	804.18	-0.32	27.66	804.01	-1.63	34.59	800.24	-0.77
10/4/10	32.82	802	4.36	24.47	810.86	0.57	30.31	804.11	3.23	27.45	806.08	2.85	25.11	807.02	2.84	24.83	806.84	2.83	31.3	803.53	3.29
10/31/11	34.18	800.64	-1.36	22.86	812.47	1.61	32.17	802.25	-1.86	27.59	805.94	-0.14	26.01	806.12	-0.90	25.87	805.8	-1.04	33.51	801.32	-2.21

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COMPREHENSIVE SHALLOW ZONE WATER LEVEL ELEVATIONS
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NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT
FRIDLEY, MINNESOTA

Well Name	MS-49S			MS-52S			MS-54S			MS-56S			USGS 1			USGS 2			USGS 3		
TOC Elev.	834.16			833.14			835.51			835.03			835.63			837.39			834.24		
Date	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change
1/13/93																					
2/6/93																					
3/21/93																					
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4/5/97																					
10/30/97																					
1/13/98																					
3/31/98																					
4/30/98																					
10/30/98																					
11/30/99	33.56	800.60	NA	32.9	800.24	NA							20.51	815.12	NA	22.11	815.28	NA	33.66	800.58	NA
5/17/00	33.13	801.03	0.43	32.42	800.72	0.48							20.91	814.72	-0.40	22.59	814.80	-0.48	32.49	801.75	1.17
10/2/00	34.12	800.04	-0.99	31.95	801.19	0.47							21.22	814.41	-0.31	22.88	814.51	-0.29	34.75	799.49	-2.26
8/20/01	34.21	799.95	-0.09	33.4	799.74	-1.45							20.3	815.33	0.92	21.96	815.43	0.92	34.29	799.95	0.46
9/26/01	33.94	800.22	0.27	33.35	799.79	0.05							19.99	815.64	0.31	21.64	815.75	0.32	34.65	799.59	-0.36
11/26/01	33.88	800.28	0.06	33.24	799.90	0.11							20.93	814.70	-0.94	22.51	814.88	-0.87	33.95	800.29	0.70
3/10/03	33.60	800.56	0.28	33.00	800.14	0.24							19.07	816.56	1.86	20.61	816.78	1.90	34.28	799.96	-0.33
10/6/03	34.80	799.36	-1.20	34.28	798.86	-1.28							20.63	815.00	-1.56	22.13	815.26	-1.52	35.18	799.06	-0.90
10/15/04	33.56	800.60	1.24	32.44	800.70	1.84							25.90	809.73	-5.27	22.10	815.29	0.03	33.58	800.66	1.60
11/4/05	32.61	801.55	0.95	32.02	801.12	0.42	28.99	804.15	NA	24.35	808.79	NA	19.36	816.27	6.54	20.85	816.54	1.25	33.20	801.04	0.38
12/27/06	34.66	799.50	-2.05	34.09	799.05	-2.07	30.10	803.04	-1.11	26.36	806.78	-2.01	20.11	815.52	-0.75	21.63	815.76	-0.78	34.97	799.27	-1.77
10/15/07	33.3	800.86	1.36	32.81	800.33	1.28	29.55	803.59	0.55	23.75	809.39	2.61	19.44	816.19	0.67	21.07	816.32	0.56	33.6	800.64	1.37
10/13/08	34.02	800.14	-0.72	33.51	799.63	-0.7	30.25	802.89	-0.7	25.35	807.79	-1.6	20.49	815.14	-1.05	22.08	815.31	-1.01	34.29	799.95	-0.69
9/21/09	34.49	799.67	-0.47	33.66	799.48	-0.15	30.51	802.63	-0.26	29.29	803.85	-3.94	20.89	814.74	-0.4	22.48	814.91	-0.4	35.25	798.99	-0.96
10/4/10	31.34	802.82	3.15	30.49	802.65	3.17	24.41	808.73	6.10	23.45	809.69	5.84	19.59	816.04	1.30	21.14	816.25	1.34	31.38	802.86	3.87
10/31/11	33.73	800.43	-2.39	33.21	799.93	-2.72	28.08	805.06	-3.67	22.82	810.32	0.63	18.07	817.56	1.52	19.57	817.82	1.57	34.49	799.75	-3.11

APPENDIX C-2

COMPREHENSIVE SHALLOW ZONE WATER LEVEL ELEVATIONS
2011 ANNUAL MONITORING REPORT
NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT
FRIDLEY, MINNESOTA

Well Name	USGS 4			USGS 5			USGS 6			USGS 7			USGS 8			USGS 9			AT-2		
TOC Elev.	831.84			832.86			836.83			835.47			836.1			836.5			834.99		
Date	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change
1/13/93																			30.74	804.25	NA
2/6/93																			29.58	805.41	1.16
3/21/93																			27.66	807.33	1.92
5/20/93																			23.46	811.53	4.20
8/24/93																			24.94	810.05	-1.48
12/4/93																			26.40	808.59	-1.46
3/19/94																			28.60	806.39	-2.20
6/30/94																			28.10	806.89	0.50
9/28/94																			26.50	808.49	1.60
12/20/94																			26.00	808.99	0.50
3/31/95																			31.60	803.39	-5.60
6/27/95																			38.80	796.19	-7.20
7/26/95																			35.50	799.49	3.30
9/29/95																			36.40	798.59	-0.90
12/27/95																			39.10	795.89	-2.70
3/31/96																			34.71	800.28	4.39
5/2/96																			33.20	801.79	1.51
12/6/96																			36.10	798.89	-2.90
4/5/97																			36.10	798.89	0.00
10/30/97																			35.01	799.98	1.09
1/13/98																			20.42	814.57	14.59
3/31/98																			33.10	801.89	-12.68
4/30/98																			32.90	802.09	0.20
10/30/98																			34.00	800.99	-1.10
11/30/99	31.16	800.68	NA	32.25	800.61	NA	21.5	815.33	NA	22	813.47	NA	36.34	799.76	NA	26.27	810.23	NA	35	799.99	-1.00
5/17/00	30.12	801.72	1.04	31.31	801.55	0.94	21.98	814.85	-0.48	22.5	812.97	-0.50	37.56	798.54	-1.22	27	809.50	-0.73	33.29	801.70	1.71
10/2/00	32.25	799.59	-2.13	33.33	799.53	-2.02	22.33	814.50	-0.35	23.25	812.22	-0.75	38.32	797.78	-0.76	27.31	809.19	-0.31	22.70	812.29	10.59
8/20/01	31.77	800.07	0.48	32.83	800.03	0.50	21.77	815.06	0.56	21.75	813.72	1.50	37.24	798.86	1.08	25.84	810.66	1.47	NA	NA	NA
9/26/01	32.08	799.76	-0.31	33.12	799.74	-0.29	20.95	815.88	0.82	21.15	814.32	0.60	35.08	801.02	2.16	23.18	813.32	2.66	NA	NA	NA
11/26/01	31.46	800.38	0.62	32.55	800.31	0.57	21.57	815.26	-0.62	21.62	813.85	-0.47	37.55	798.55	-2.47	26.06	810.44	-2.88	NA	NA	NA
3/10/03	31.68	800.16	-0.22	32.66	800.20	-0.11	19.93	816.90	1.64	19.91	815.56	1.71	34.77	801.33	2.78	21.81	814.69	4.25	NA	NA	NA
10/6/03	32.62	799.22	-0.94	33.68	799.18	-1.02	21.31	815.52	-1.38	21.38	814.09	-1.47	38.48	797.62	-3.71	24.08	812.42	-2.27	NA	NA	NA
10/15/04	31.10	800.74	1.52	32.18	800.68	1.50	21.26	815.57	0.05	21.00	814.47	0.38	36.88	799.22	1.60	24.96	811.54	-0.88	NA	NA	NA
11/4/05	30.67	801.17	0.43	31.73	801.13	0.45	20.00	816.83	1.26	19.83	815.64	1.17	34.92	801.18	1.96	23.05	813.45	1.91	NA	NA	NA
12/27/06	32.43	799.41	-1.76	33.50	799.36	-1.77	21.82	815.01	-1.82	20.50	814.97	-0.67	38.74	797.36	-3.82	23.65	812.85	-0.60	NA	NA	NA
10/15/07	31.1	800.74	1.33	32.22	800.64	1.28	20.38	816.45	1.44	20.23	815.24	0.27	36.35	799.75	2.39	22.17	814.33	1.48	NA	NA	NA
10/13/08	31.83	800.01	-0.73	32.89	799.97	-0.67	21.28	815.55	-0.9	21.09	814.38	-0.86	37.88	798.22	-1.53	24.37	812.13	-2.2	NA	NA	NA
9/21/09	32.76	799.08	-0.93	33.8	799.06	-0.91	21.77	815.06	-0.49	21.93	813.54	-0.84	37.87	798.23	0.01	24.49	812.01	-0.12	NA	NA	NA
10/4/10	28.98	802.86	3.78	30.11	802.75	3.69	20.32	816.51	1.45	19.7	815.77	2.23	34.11	801.99	3.76	22.46	814.04	2.03	NA	NA	NA
10/31/11	22.91	808.93	6.07	32.92	799.94	-2.81	18.79	818.04	1.53	18.98	816.49	0.72	35.99	800.11	-1.88	22.11	814.39	0.35	NA	NA	NA

APPENDIX C-2

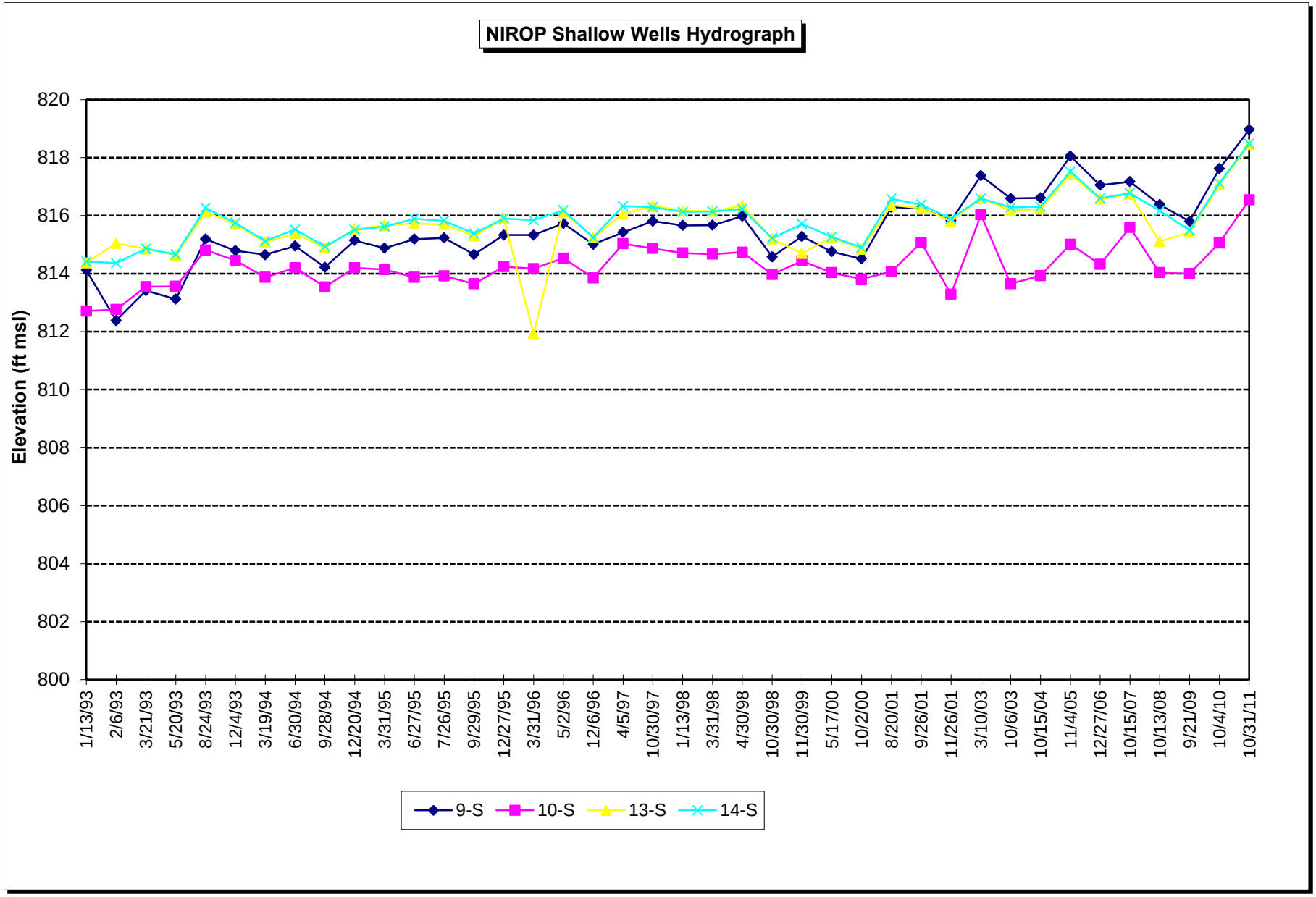
COMPREHENSIVE SHALLOW ZONE WATER LEVEL ELEVATIONS
2011 ANNUAL MONITORING REPORT
NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT
FRIDLEY, MINNESOTA

Well Name	AT-4			AT-5A			AT-7			AT-8			AT-9			FMC 33			MWW3		
TOC Elev.	836.44			835.57			836.3			835.18			836.82			837.05			836.14		
Date	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change
1/13/93	24.46	811.98	NA													23.16	813.89	NA			
2/6/93	24.02	812.42	0.44													23.20	813.85	-0.04			
3/21/93	23.88	812.56	0.14													22.534	814.52	0.66			
5/20/93	23.13	813.31	0.75													22.76	814.29	-0.23			
8/24/93	22.01	814.43	1.12													21.31	815.74	1.45			
12/4/93	21.30	815.14	0.71													21.66	815.39	-0.35			
3/19/94	23.70	812.74	-2.40													22.29	814.76	-0.63			
6/30/94	20.60	815.84	3.10													21.98	815.07	0.31			
9/28/94	23.47	812.97	-2.87													22.56	814.49	-0.58			
12/20/94	22.30	814.14	1.17													21.85	815.20	0.71			
3/31/95	23.25	813.19	-0.95													21.88	815.17	-0.03			
6/27/95	25.50	810.94	-2.25	33.11	802.46	NA										21.89	815.16	-0.01			
7/26/95	24.30	812.14	1.20	41.4	794.17	-8.29										21.88	815.17	0.01			
9/29/95	24.10	812.34	0.20	43.4	792.17	-2.00										22.18	814.87	-0.30			
12/27/95	22.80	813.64	1.30	39.5	796.07	3.90										21.65	815.40	0.53			
3/31/96	22.25	814.19	0.55	41.3	794.27	-1.80										21.75	815.30	-0.10			
5/2/96	21.60	814.84	0.65	38	797.57	3.30										21.24	815.81	0.51			
12/6/96	22.80	813.64	-1.20	34.1	801.47	3.90										22.23	814.82	-0.99			
4/5/97	21.60	814.84	1.20	37.21	798.36	-3.11										21.07	815.98	1.16			
10/30/97	21.85	814.59	-0.25	41.6	793.97	-4.39										21.17	815.88	-0.10			
1/13/98	20.52	815.92	1.33	32.92	802.65	8.68										20.98	816.07	0.19			
3/31/98	22.06	814.38	-1.54	42.01	793.56	-9.09										21.33	815.72	-0.35			
4/30/98	21.82	814.62	0.24	42.45	793.12	-0.44										21.21	815.84	0.12			
10/30/98	23.80	812.64	-1.98	51.9	783.67	-9.45										22.34	814.71	-1.13			
11/30/99	22.6	813.84	1.20	38.80	796.77	13.10										21.61	815.44	0.73	28.25	807.89	NA
5/17/00	22.63	813.81	-0.03	42.86	792.71	-4.06										NA	NA	NA			
10/2/00	22.98	813.46	-0.35	43.57	792.00	-0.71										22.42	814.63	NA			
8/20/01	NA	NA	NA	41.72	793.85	1.85	27.01	809.29	NA	30.57	804.61	NA	30.97	805.85	NA	NA	NA	NA	27.78	808.36	NA
9/26/01	NA	NA	NA	34.01	801.56	7.71	21.41	814.89	5.60	20.25	814.93	10.32	21.95	814.87	9.02	NA	NA	NA	27.83	808.31	0.05
11/26/01	NA	NA	NA	42.20	793.37	-8.19	38.68	797.62	-17.27	30.58	804.60	-10.33	32.90	803.92	-10.95	NA	NA	NA	NA	NA	NA
3/10/03	NA	NA	NA	34.41	801.16	7.79	21.57	814.73	17.11	20.33	814.85	10.25	22.05	814.77	10.85	NA	NA	NA	28.15	807.99	NA
10/6/03	NA	NA	NA	44.23	791.34	-9.82	29.61	806.69	-8.04	29.75	805.43	-9.42	35.41	801.41	-13.36	NA	NA	NA	28.08	808.06	0.07
10/15/04	NA	NA	NA	42.49	793.08	1.74	34.05	802.25	-4.44	25.86	809.32	3.89	36.97	799.85	-1.56	NA	NA	NA	28.12	808.02	-0.04
11/4/05	NA	NA	NA	39.35	796.22	3.14	28.92	807.38	5.13	24.18	811.00	1.68	36.34	800.48	0.63	NA	NA	NA	27.74	808.40	0.38
12/27/06	NA	NA	NA	43.90	791.67	-4.55	28.39	807.91	0.53	26.16	809.02	-1.98	34.65	802.17	1.69	NA	NA	NA	27.98	808.16	-0.24
10/15/07	NA	NA	NA	41.57	794	2.33	21.64	814.66	6.75	21.89	813.29	4.27	22.45	814.37	12.20	NA	NA	NA	NA	NA	NA
10/13/08	NA	NA	NA	42.98	792.59	-1.41	27.54	808.76	-5.9	28.15	807.03	-6.26	41.12	795.7	-18.67	NA	NA	NA	NA	NA	NA
9/21/09	NA	NA	NA	42.99	792.58	-0.01	27.18	809.12	0.36	32.1	803.08	-3.95	32.71	804.11	8.41	NA	NA	NA	NA	NA	NA
10/4/10	NA	NA	NA	38.54	797.03	4.45	29.34	806.96	-2.16	31.14	804.04	0.96	35.96	800.86	-3.25	NA	NA	NA	NA	NA	NA
10/31/11	NA	NA	NA	34.08	801.49	4.46	34.97	801.33	-5.63	25.09	810.09	6.05	34.07	802.75	1.89	NA	NA	NA	NA	NA	NA

APPENDIX C-2

COMPREHENSIVE SHALLOW ZONE WATER LEVEL ELEVATIONS
2011 ANNUAL MONITORING REPORT
NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT
FRIDLEY, MINNESOTA

Well Name	MWW5			MWW6			MWW13			River Level		
TOC Elev.	831.39			831.05			833.33			808.82		
Date	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change
1/13/93												
2/6/93												
3/21/93												
5/20/93												
8/24/93												
12/4/93												
3/19/94												
6/30/94												
9/28/94												
12/20/94											froze over	
3/31/95										4.73	804.09	NA
6/27/95										9.47	799.35	-4.74
7/26/95										8.19	800.63	1.28
9/29/95										9.71	799.11	-1.52
12/27/95										5.41	803.41	4.30
3/31/96										6.96	801.86	-1.55
5/2/96										5.3	803.52	1.66
12/6/96										5.5	803.32	-0.20
4/5/97										5.1	803.72	0.40
10/30/97										8.98	799.84	-3.88
1/13/98											ice cover	
3/31/98										6.46	802.36	NA
4/30/98												
10/30/98										8.5	800.32	NA
11/30/99	31.46	799.93	NA	25.28	805.77	NA	31.59	801.74	NA			
5/17/00												
10/2/00										9.85	798.97	NA
8/20/01	31.96	799.43	NA	25.61	805.44	NA	31.84	801.49	NA	9.53	799.29	0.32
9/26/01	31.95	799.44	-0.01	25.39	805.66	-0.22	31.27	802.06	-0.57	9.8	799.02	0.27
11/26/01	NA	NA	NA	NA	NA	NA	NA	NA	NA	8.82	800.00	-0.98
3/10/03	31.37	800.02	NA	25.16	805.89	NA	30.75	802.58	NA		froze over	
10/6/03	32.82	798.57	-1.45	25.92	805.13	-0.76	32.3	801.03	1.55	10.13	798.69	NA
10/15/04	41.41	789.98	-8.59	25.2	805.85	0.72	31.4	801.93	0.90	8.4	800.42	1.73
11/4/05	52.03	779.36	-10.62	24.51	806.54	0.69	30.31	803.02	1.09	8.26	800.56	0.14
12/27/06	50.51	780.88	1.52	25.46	805.59	-0.95	NA	NA	NA	NA	NA	NA
10/15/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
10/13/08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9/21/09	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
10/4/10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
10/31/11	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA


NIROP Shallow Wells Hydrograph
Elevation (ft msl)
820
818
816
814
812
810
808
806
804
802
800
1/13/93
2/6/93
3/21/93
5/20/93
8/24/93
12/4/93
3/19/94
6/30/94
9/28/94
12/20/94
3/31/95
6/27/95
7/26/95
9/29/95
12/27/95
3/31/96
5/2/96
12/6/96
4/5/97
10/30/97
1/13/98
3/31/98
4/30/98
10/30/98
11/30/99
5/17/00
10/2/00
8/20/01
9/26/01
11/26/01
3/10/03
10/6/03
10/15/04
11/4/05
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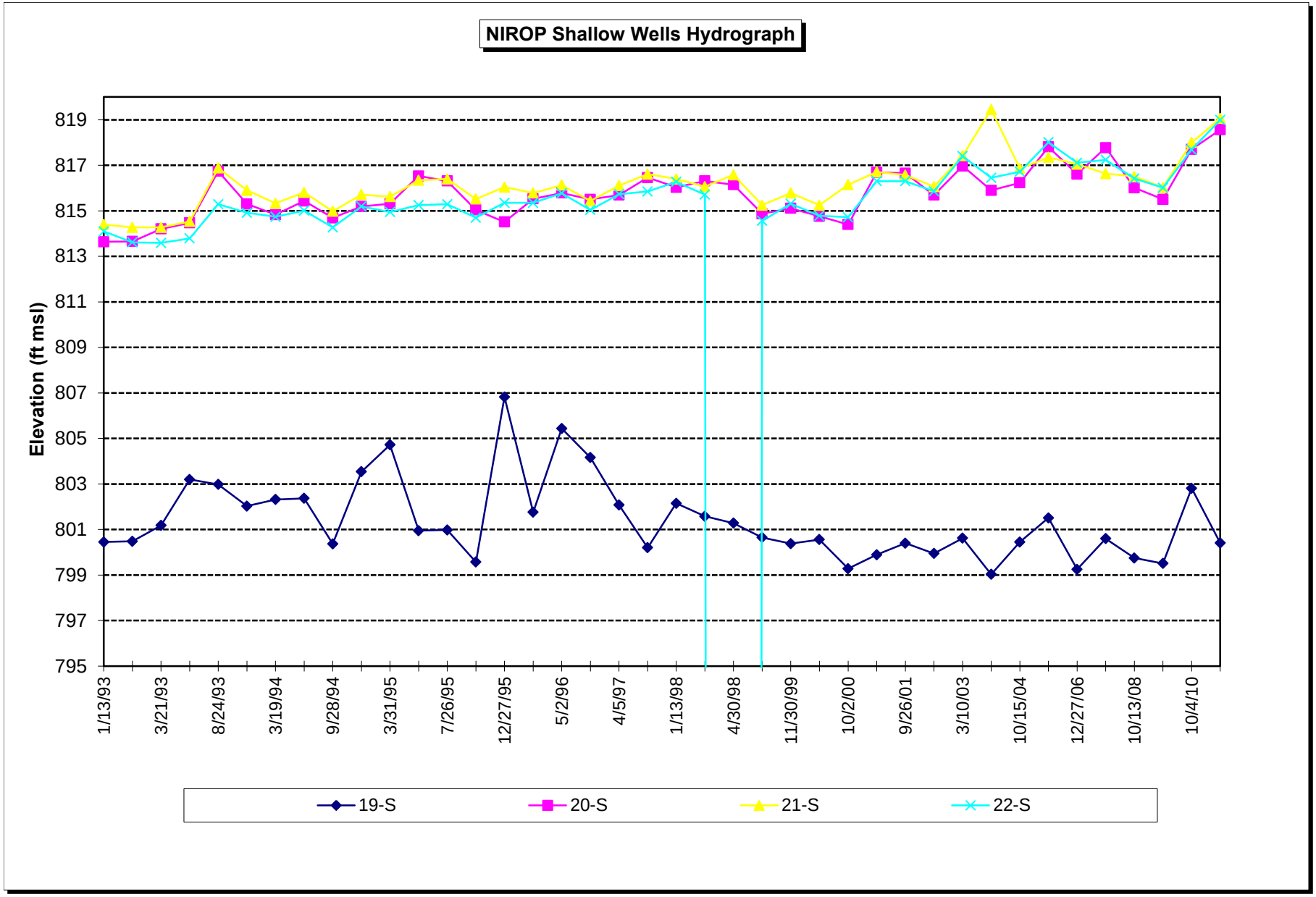
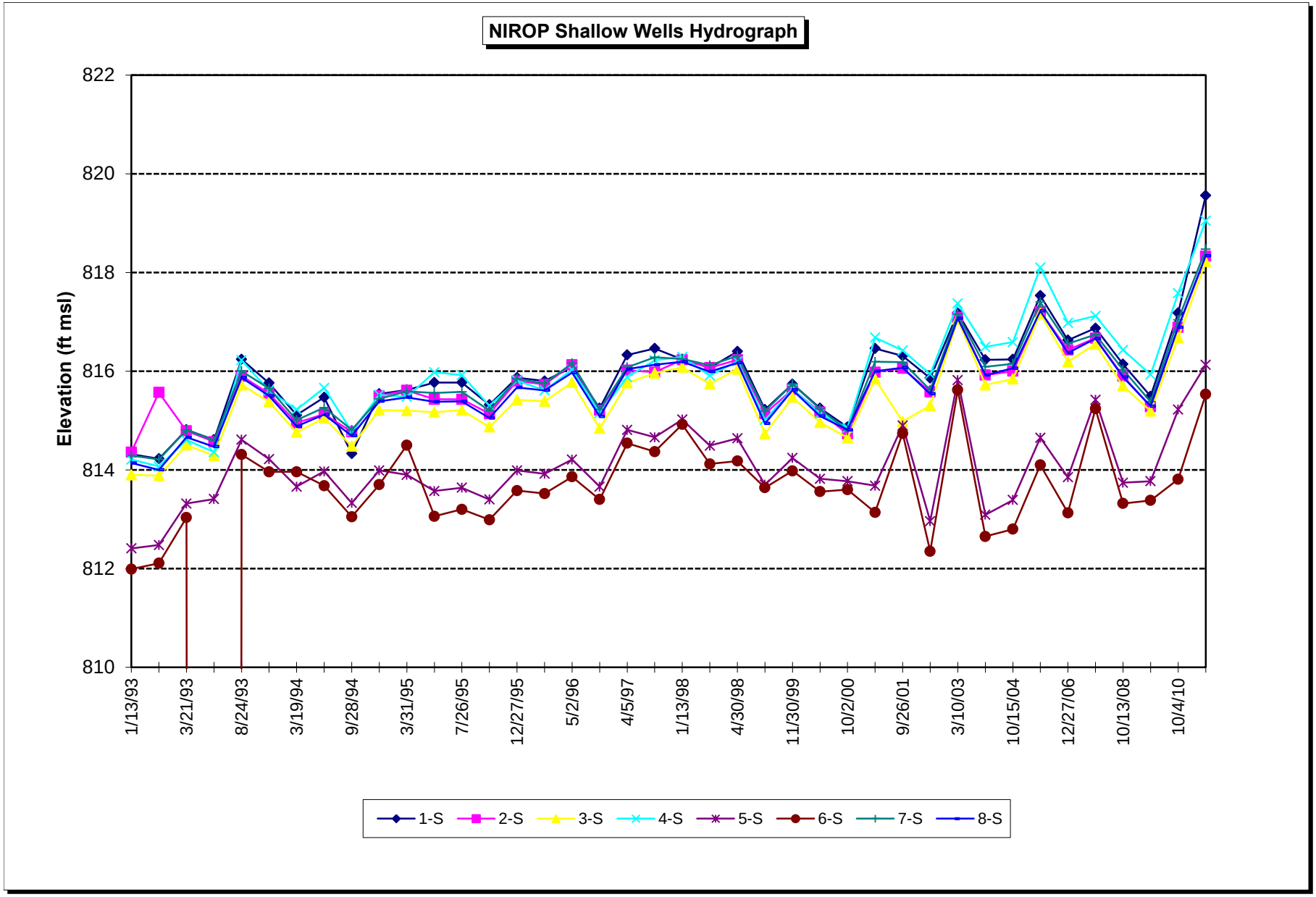
9-S
10-S
13-S
14-S


NIROP Shallow Wells Hydrograph
Elevation (ft msl)
819
817
815
813
811
809
807
805
803
801
799
797
795
1/13/93
3/21/93
8/24/93
3/19/94
9/28/94
3/31/95
7/26/95
12/27/95
5/2/96
4/5/97
1/13/98
4/30/98
11/30/99
10/2/00
9/26/01
3/10/03
10/15/04
12/27/06
10/13/08
10/4/10
19-S
20-S
21-S
22-S


NIROP Shallow Wells Hydrograph
Elevation (ft msl)
822
820
818
816
814
812
810
1/13/93
3/21/93
8/24/93
3/19/94
9/28/94
3/31/95
7/26/95
12/27/95
5/2/96
4/5/97
1/13/98
4/30/98
11/30/99
10/2/00
9/26/01
3/10/03
10/15/04
12/27/06
10/13/08
10/4/10
1-S
2-S
3-S
4-S
5-S
6-S
7-S
8-S

APPENDIX C-2

COMPREHENSIVE INTERMEDIATE ZONE WATER LEVEL ELEVATIONS
2011 ANNUAL MONITORING REPORT
NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT
FRIDLEY, MINNESOTA

Well Name		1-IS			2-IS			3-IS			4-IS			5-IS			6-IS			7-IS			8-IS	
TOC Elev.		835.12			837.89			837.21			833.34			837.86			836.53			837.02			836.65	
Date	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change
1/13/93	20.00	815.12	NA	23.66	814.23	NA	22.92	814.29	NA	29.22	804.12	NA	24.01	813.85	NA	33.17	803.36	NA	33.41	803.61	NA	32.77	803.88	NA
2/6/93	19.95	815.17	0.05	23.66	814.23	0.00	21.59	815.62	1.33	29.17	804.17	0.05	22.51	815.35	1.50	33.14	803.39	0.03	33.40	803.62	0.01	32.71	803.94	0.06
3/21/93	19.517	815.60	0.43	23.273	814.62	0.38	21.475	815.74	0.11	28.376	804.96	0.79	27.895	809.97	-5.39	32.1	804.43	1.04	32.421	804.60	0.98	31.747	804.90	0.96
5/20/93	19.7	815.42	-0.18	23.44	814.45	-0.17	22.68	814.53	-1.21	26.79	806.55	1.59	26.21	811.65	1.68	30.02	806.51	2.08	30.36	806.66	2.06	29.88	806.77	1.87
8/24/93	18.77	816.35	0.93	22.42	815.47	1.02	21.29	815.92	1.39	26.49	806.85	0.30	25.91	811.95	0.30	29.42	807.11	0.60	29.77	807.25	0.59	29.29	807.36	0.59
12/4/93	19.12	816.00	-0.35	22.35	815.54	0.07	21.64	815.57	-0.35	27.36	805.98	-0.87	25.97	811.89	-0.06	30.51	806.02	-1.09	31.05	805.97	-1.28	30.51	806.14	-1.22
3/19/94	19.45	815.67	-0.33	22.73	815.16	-0.38	22.26	814.95	-0.62	27.3	806.04	0.06	25.41	812.45	0.56	30.84	805.69	-0.33	31.15	805.87	-0.10	30.57	806.08	-0.06
6/30/94	20.11	815.01	-0.66	23.08	814.81	-0.35	21.94	815.27	0.32	27.49	805.85	-0.19	25.58	812.28	-0.17	31.08	805.45	-0.24	31.38	805.64	-0.23	30.81	805.84	-0.24
9/28/94	19.71	815.41	0.40	23.38	814.51	-0.30	22.46	814.75	-0.52	28.48	804.86	-0.99	26.14	811.72	-0.56	31.95	804.58	-0.87	32.25	804.77	-0.87	31.63	805.02	-0.82
12/20/94	18.67	816.45	1.04	22.25	815.64	1.13	21.75	815.46	0.71	26.53	806.81	1.95	24.54	813.32	1.60	30.22	806.31	1.73	30.52	806.50	1.73	29.93	806.72	1.70
3/31/95	18.39	816.73	0.28	22.18	815.71	0.07	21.69	815.52	0.06	25.75	807.59	0.78	26.88	810.98	-2.34	29.52	807.01	0.70	29.83	807.19	0.69	29.24	807.41	0.69
6/27/95	19.28	815.84	-0.89	22.79	815.10	-0.61	21.76	815.45	-0.07	28.14	805.20	-2.39	26.91	810.95	-0.03	31.38	805.15	-1.86	31.71	805.31	-1.88	31.23	805.42	-1.99
7/26/95	19.37	815.75	-0.09	22.82	815.07	-0.03	21.76	815.45	0.00	28.45	804.89	-0.31	26.25	811.61	0.66	31.81	804.72	-0.43	32.15	804.87	-0.44	31.68	804.97	-0.45
9/29/95	19.49	815.63	-0.12	23.18	814.71	-0.36	22.08	815.13	-0.32	29.23	804.11	-0.78	26.36	811.50	-0.11	32.42	804.11	-0.61	32.74	804.28	-0.59	32.32	804.33	-0.64
12/27/95	18.34	816.78	1.15	22.05	815.84	1.13	21.46	815.75	0.62	26.58	806.76	2.65	26.12	811.74	0.24	30.09	806.44	2.33	30.45	806.57	2.29	29.96	806.69	2.36
3/31/96	18.05	817.07	0.29	22.08	815.81	-0.03	21.52	815.69	-0.06	27.43	805.91	-0.85	25.39	812.47	0.73	30.91	805.62	-0.82	31.27	805.75	-0.82	30.64	806.01	-0.68
5/2/96	17.81	817.31	0.24	21.51	816.38	0.57	21.14	816.07	0.38	25.29	808.05	2.14	24.89	812.97	0.50	29.17	807.36	1.74	29.54	807.48	1.73	29.21	807.44	1.43
12/6/96	18.88	816.24	-1.07	22.49	815.40	-0.98	22.08	815.13	-0.94	26.57	806.77	-1.28	25.06	812.80	-0.17	30.57	805.96	-1.40	30.87	806.15	-1.33	30.29	806.36	-1.08
4/5/97	18.3	816.82	0.58	22.05	815.84	0.44	21.15	816.06	0.93	26.85	806.49	-0.28	25.25	812.61	-0.19	28.06	808.47	2.51	28.33	808.69	2.54	27.72	808.93	2.57
10/30/97	18.38	816.74	-0.08	22.21	815.68	-0.16	20.66	816.55	0.49	28.75	804.59	-1.90	24.16	813.70	1.09	32.08	804.45	-4.02	32.36	804.66	-4.03	31.82	804.83	-4.10
1/13/98	18.11	817.01	0.27	21.46	816.43	0.75	20.97	816.24	-0.31	25.7	807.64	3.05	21.71	816.15	2.45	27.49	809.04	4.59	27.93	809.09	4.43	27.69	808.96	4.13
3/31/98	18.12	817.00	-0.01	21.88	816.01	-0.42	21.14	816.07	-0.17	28.11	805.23	-2.41	24.66	813.20	-2.95	32.27	804.26	-4.78	32.54	804.48	-4.61	31.86	804.79	-4.17
4/30/98	18.32	816.80	-0.20	21.91	815.98	-0.03	20.97	816.24	0.17	28.33	805.01	-0.22	24.39	813.47	0.27	32.77	803.76	-0.50	33.05	803.97	-0.51	32.5	804.15	-0.64
10/30/98	19.25	815.87	-0.93	22.9	814.99	-0.99	22.13	815.08	-1.16	29.09	804.25	-0.76	26.03	811.83	-1.64	33.25	803.28	-0.48	33.5	803.52	-0.45	32.91	803.74	-0.41
11/30/99	18.70	816.42	0.55	22.43	815.46	0.47	21.55	815.66	0.58	29.09	804.25	0.00	24.28	813.58	1.75	33.04	803.49	0.21	33.27	803.75	0.23	32.71	803.94	0.20
5/17/00	19.25	815.87	-0.55	22.98	814.91	-0.55	22.04	815.17	-0.49	29.44	803.90	-0.35	24.62	813.24	-0.34	34.05	802.48	-1.01	34.23	802.79	-0.96	38.77	797.88	-6.06
10/2/00	20.12	815.00	-0.87	23.68	814.21	-0.70	22.48	814.73	-0.44	30.42	802.92	-0.98	25.00	812.86	-0.38	34.97	801.56	-0.92	35.16	801.86	-0.93	31.28	805.37	7.49
8/20/01	18.87	816.25	1.25	22.18	815.71	1.50	21.14	816.07	1.34	29.18	804.16	1.24	22.15	815.71	2.85	32.80	803.73	2.17	33.10	803.92	2.06	30.35	806.30	0.93
9/26/01	18.61	816.51	0.26	21.90	815.99	0.28	21.11	816.10	0.03	27.13	806.21	2.05	21.95	815.91	0.20	28.81	807.72	3.99	29.29	807.73	3.81	26.85	809.80	3.50
11/26/01	18.47	816.65	0.14	22.06	815.83	-0.16	21.58	815.63	-0.47	29.14	804.20	-2.01	22.28	815.58	-0.33	32.83	803.70	-4.02	33.06	803.96	-3.77	29.49	807.16	-2.64
3/10/03	17.81	817.31	0.66	20.33	817.56	1.73	20.04	817.17	1.54	26.30	807.04	2.84	20.62	817.24	1.66	27.82	808.71	5.01	28.25	808.77	4.81	26.04	810.61	3.45
10/6/03	18.24	816.88	-0.43	21.59	816.30	-1.26	21.23	815.98	-1.19	29.02	804.32	-2.72	21.85	816.01	-1.23	32.60	803.93	-4.78	32.93	804.09	-4.68	30.36	806.29	-4.32
10/10/04	17.81	817.31	0.43	21.37	816.52	0.22	21.16	816.05	0.07	28.51	804.83	0.51	21.59	816.27	0.26	32.02	804.51	0.58	32.47	804.55	0.46	29.87	806.78	0.49
11/4/05	16.47	818.65	1.34	17.62	820.27	3.75	19.22	817.99	1.94	27.29	806.05	1.22	20.35	817.51	1.24	30.35	806.18	1.67	30.75	806.27	1.72	28.08	808.57	1.79
12/27/06	17.36	817.76	-0.89	21.81	816.08	-4.19	20.75	816.46	-1.53	28.66	804.68	-1.37	21.13	816.73	-0.78	31.21	805.32	-0.86	29.42	807.60	1.33	29.25	807.40	-1.17
10/15/07	17.59	817.53	-0.23	19.87	818.02	1.94	20.48	816.73	0.27	27.49	805.85	1.17	21.09	816.77	0.04	30.45	806.08	0.76	29.61	807.41	-0.19	28.35	808.3	0.90
10/13/08	18.1	817.02	-0.51	21.51	816.38	-1.64	21.28	815.93	-0.8	27.56	805.78	-0.07	21.81	816.05	-0.72	31.41	805.12	-0.96	31.84	805.18	-2.23	29.31	807.34	-0.96

APPENDIX C-2

COMPREHENSIVE INTERMEDIATE ZONE WATER LEVEL ELEVATIONS
2011 ANNUAL MONITORING REPORT
NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT
FRIDLEY, MINNESOTA

Well Name		10-IS			11-S			12-IS			13-IS			15-IS			16-IS			17-D			MS-28I		
TOC Elev.		836.87			835.75			834.94			834.96			833.67			832.77			835.24			834.83		
Date	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading
1/13/93	22.58	814.29	NA	DRY	NA	NA	23.42	811.52	NA	23.06	811.90	NA	29.75	803.92	NA	30.41	802.36	NA	29.71	805.53	NA				
2/6/93	22.64	814.23	-0.06	31.07	804.68	NA	23.39	811.55	0.03	23.03	811.93	0.03	29.69	803.98	0.06	30.38	802.39	0.03	29.66	805.58	0.05				
3/21/93	22.021	814.85	0.62	30.142	805.61	0.93	22.791	812.15	0.60	22.438	812.52	0.59	28.9221	804.75	0.77	29.7888	802.98	0.59	28.89	806.35	0.77				
5/20/93	22.27	814.60	-0.25	28.47	807.28	1.67	22.35	812.59	0.44	22.07	812.89	0.37	27.41	806.26	1.51	28.19	804.58	1.60	27.48	807.76	1.41				
8/24/93	20.85	816.02	1.42	27.89	807.86	0.58	21.06	813.88	1.29	20.78	814.18	1.29	27.2	806.47	0.21	28.26	804.51	-0.07	27.01	808.23	0.47				
12/4/93	21.21	815.66	-0.36	28.92	806.83	-1.03	21.64	813.30	-0.58	21.32	813.64	-0.54	28.02	805.65	-0.82	29.19	803.58	-0.93	27.89	807.35	-0.88				
3/19/94	21.84	815.03	-0.63	29.1	806.65	-0.18	21.9	813.04	-0.26	21.61	813.35	-0.29	27.82	805.85	0.20	28.51	804.26	0.68	27.77	807.47	0.12				
6/30/94	21.59	815.28	0.25	29.27	806.48	-0.17	21.79	813.15	0.11	21.51	813.45	0.10	28.04	805.63	-0.22	28.79	803.98	-0.28	27.86	807.38	-0.09				
9/28/94	22.05	814.82	-0.46	31.17	804.58	-1.90	22.39	812.55	-0.60	22.11	812.85	-0.60	29.11	804.56	-1.07	30.16	802.61	-1.37	28.28	806.96	-0.42				
12/20/94	21.34	815.53	0.71	28.4	807.35	2.77	21.41	813.53	0.98	21.13	813.83	0.98	27	806.67	2.11	27.56	805.21	2.60	25.82	809.42	2.46				
3/31/95	21.25	815.62	0.09	27.72	808.03	0.68	21.15	813.79	0.26	20.87	814.09	0.26	27.17	806.50	-0.17	26.54	806.23	1.02	23.59	811.65	2.23				
6/27/95	21.3	815.57	-0.05	30.26	805.49	-2.54	22.32	812.62	-1.17	22.32	812.64	-1.45	28.81	804.86	-1.64	30.25	802.52	-3.71	26.12	809.12	-2.53				
7/26/95	21.3	815.57	0.00	30.05	805.70	0.21	23.63	811.31	-1.31	24.05	810.91	-1.73	29.05	804.62	-0.24	30.26	802.51	-0.01	29.89	805.35	-3.77				
9/29/95	21.65	815.22	-0.35	30.71	805.04	-0.66	24.18	810.76	-0.55	24.61	810.35	-0.56	29.89	803.78	-0.84	31.37	801.40	-1.11	30.55	804.69	-0.66				
12/27/95	21	815.87	0.65	28.38	807.37	2.33	23	811.94	1.18	23.33	811.63	1.28	27.04	806.63	2.85	27.76	805.01	3.61	28.54	806.70	2.01				
3/31/96	21.1	815.77	-0.10	29.23	806.52	-0.85	23.2	811.74	-0.20	23.49	811.47	-0.16	27.95	805.72	-0.91	29.1	803.67	-1.34	OBSTRUCTED						
5/2/96	20.74	816.13	0.36	27.49	808.26	1.74	22.3	812.64	0.90	22.79	812.17	0.70	25.66	808.01	2.29	25.81	806.96	3.29	27.50	807.74	1.04				
12/6/96	21.65	815.22	-0.91	28.64	807.11	-1.15	23.26	811.68	-0.96	23.62	811.34	-0.83	26.94	806.73	-1.28	27.43	805.34	-1.62	28.71	806.53	-1.21				
4/5/97	20.81	816.06	0.84	26.37	809.38	2.27	22.95	811.99	0.31	22.26	812.70	1.36	27.6	806.07	-0.66	26.6	806.17	0.83	22.75	812.49	5.96				
10/30/97	20.59	816.28	0.22	30.05	805.70	-3.68	23.29	811.65	-0.34	23.61	811.35	-1.35	29.34	804.33	-1.74	30.28	802.49	-3.68	29.91	805.33	-7.16				
1/13/98	20.62	816.25	-0.03	26.44	809.31	3.61	20.74	814.20	2.55	20.1	814.86	3.51	26.59	807.08	2.75	28.28	804.49	2.00	24.37	810.87	5.54				
3/31/98	20.74	816.13	-0.12	30.1	805.65	-3.66	23.23	811.71	-2.49	23.67	811.29	-3.57	28.51	805.16	-1.92	29.36	803.41	-1.08	29.77	805.47	-5.40				
4/30/98	20.56	816.31	0.18	30.6	805.15	-0.50	23.23	811.71	0.00	23.98	810.98	-0.31	28.87	804.80	-0.36	29.92	802.85	-0.56	29.92	805.32	-0.15				
10/30/98	21.71	815.16	-1.15	31.03	804.72	-0.43	24.5	810.44	-1.27	24.88	810.08	-0.90	29.96	803.71	-1.09	30.1	802.67	-0.18	30.50	804.74	-0.58				
11/30/99	21.15	815.72	0.56	30.76	804.99	0.27	23.61	811.33	0.89	23.99	810.97	0.89	29.60	804.07	0.36	30.27	802.50	-0.17	29.77	805.47	0.73	19.53	815.30	NA	19.71
5/17/00	21.64	815.23	-0.49	dry	NA	NA	24.02	810.92	-0.41	24.35	810.61	-0.36	29.74	803.93	-0.14	29.93	802.84	0.34	29.88	805.36	-0.11	19.96	814.87	-0.43	20.12
10/2/00	22.08	814.79	-0.44	dry	NA	NA	24.50	810.44	-0.48	24.85	810.11	-0.50	30.84	802.83	-1.10	31.35	801.42	-1.42	30.40	804.84	-0.52	20.35	814.48	-0.39	20.16
8/20/01	20.67	816.20	1.41	30.81	804.94	NA	24.40	810.54	0.10	26.02	808.94	-1.17	29.77	803.90	1.07	30.79	801.98	0.56	29.32	805.92	1.08	19.01	815.82	1.34	19.89
9/26/01	20.69	816.18	-0.02	27.90	807.85	2.91	21.88	813.06	2.52	20.89	814.07	5.13	28.14	805.53	1.63	30.34	802.43	0.45	23.72	811.52	5.60	18.91	815.92	0.10	19.17
11/26/01	21.15	815.72	-0.46	30.90	804.85	-3.00	24.41	810.53	-2.53	25.80	809.16	-4.91	29.66	804.01	-1.52	30.62	802.15	-0.28	29.05	806.19	-5.33	19.53	815.30	-0.62	20.55
3/10/03	19.72	817.15	1.43	26.87	808.88	4.03	19.62	815.32	4.79	19.30	815.66	6.50	27.38	806.29	2.28	30.10	802.67	0.52	22.30	812.94	6.75	17.87	816.96	1.66	18.19
10/6/03	20.79	816.08	-1.07	30.86	804.89	-3.99	23.93	811.01	-4.31	25.28	809.68	-5.98	29.70	803.97	-2.32	31.59	801.18	-1.49	28.21	807.03	-5.91	19.05	815.78	-1.18	20.15
10/10/04	20.73	816.14	0.06	30.25	805.50	0.61	23.91	811.03	0.02	25.52	809.44	-0.24	29.05	804.62	0.65	30.33	802.44	1.26	38.35	796.89	-10.14	18.99	815.84	0.06	19.94
11/4/05	19.50	817.37	1.23	28.79	806.96	1.46	21.70	813.24	2.21	23.00	811.96	2.52	27.97	805.70	1.08	29.70	803.07	0.63	35.56	799.68	2.79	17.52	817.31	1.47	18.62
12/27/06	20.33	816.54	-0.83	29.96	805.79	-1.17	21.51	813.43	0.19	23.12	811.84	-0.12	29.42	804.25	-1.45	31.39	801.38	-1.69	39.37	795.87	-3.81	18.54	816.29	-1.02	19.64
10/15/07	20.12	816.75	0.21	29.08	806.67	0.88	19.92	815.02	1.59	20	814.96	3.12	28.49	805.18	0.93	30.23	802.54	1.16	26.61	808.63	12.76	18.31	816.52	0.23	18.63
10/13/08	20.83	816.04	-0.71	30.05	805.7	-0.97	23.12	811.82	-3.2	24.35	810.61	-4.35	29.18	804.49	-0.69	30.97	801.8	-0.74	38.83	796.41	-12.22	19.13	815.7	-0.82	19.91

APPENDIX C-2

COMPREHENSIVE INTERMEDIATE ZONE WATER LEVEL ELEVATIONS
2011 ANNUAL MONITORING REPORT
NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT
FRIDLEY, MINNESOTA

Well Name	MS-29I			MS-31I			MS-32I			MS-33I			MS-34I			MS-35I			MS-36I			MS-37S			MS-41I	
TOC Elev.	834.67			834.81			834.69			834.74			834.35			834.21			834.7			834.21			834.82	
Date	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change
1/13/93																										
2/6/93																										
3/21/93																										
5/20/93																										
8/24/93																										
12/4/93																										
3/19/94																										
6/30/94																										
9/28/94																										
12/20/94																										
3/31/95																										
6/27/95																										
7/26/95																										
9/29/95																										
12/27/95																										
3/31/96																										
5/2/96																										
12/6/96																										
4/5/97																										
10/30/97																										
1/13/98																										
3/31/98																										
4/30/98																										
10/30/98																										
11/30/99	814.96	NA	20.05	814.76	NA	28.36	806.33	NA	20.65	814.09	NA	29.49	804.86	NA	29.62	804.59	NA	30.14	804.56	NA	29.66	804.55	NA	30.53	804.29	NA
5/17/00	814.55	-0.41	20.58	814.23	-0.53	29.05	805.64	-0.69	21.48	813.26	-0.83	30.18	804.17	-0.69	20.37	813.84	9.25	30.82	803.88	-0.68	32.48	801.73	-2.82	30.90	803.92	-0.37
10/2/00	814.51	-0.04	20.75	814.06	-0.17	29.77	804.92	-0.72	21.47	813.27	0.01	31.07	803.28	-0.89	31.25	802.96	-10.88	31.72	802.98	-0.90	31.32	802.89	1.16	38.04	796.78	-7.14
8/20/01	814.78	0.27	19.52	815.29	1.23	28.25	806.44	1.52	20.00	814.74	1.47	29.47	804.88	1.60	29.54	804.67	1.71	30.18	804.52	1.54	29.71	804.50	1.61	30.68	804.14	7.36
9/26/01	815.50	0.72	19.22	815.59	0.30	25.58	809.11	2.67	19.48	815.26	0.52	26.53	807.82	2.94	26.45	807.76	3.09	27.32	807.38	2.86	26.22	807.99	3.49	28.53	806.29	2.15
11/26/01	814.12	-1.38	20.07	814.74	-0.85	28.20	806.49	-2.62	20.38	814.36	-0.90	29.55	804.80	-3.02	29.63	804.58	-3.18	30.18	804.52	-2.86	29.85	804.36	-3.63	30.61	804.21	-2.08
3/10/03	816.48	2.36	18.19	816.62	1.88	25.46	809.23	2.74	18.30	816.44	2.08	25.59	808.76	3.96	25.52	808.69	4.11	26.35	808.35	3.83	NA	NA	NA	27.72	807.10	2.89
10/6/03	814.52	-1.96	19.60	815.21	-1.41	28.25	806.44	-2.79	19.78	814.96	-1.48	29.50	804.85	-3.91	29.56	804.65	-4.04	30.19	804.51	-3.84	29.60	804.61	NA	30.90	803.92	-3.18
10/10/04	814.73	0.21	19.51	815.30	0.09	27.70	806.99	0.55	19.70	815.04	0.08	28.95	805.40	0.55	29.02	805.19	0.54	29.51	805.19	0.68	29.35	804.86	0.25	30.03	804.79	0.87
11/4/05	816.05	1.32	18.00	816.81	1.51	26.18	808.51	1.52	18.21	816.53	1.49	27.45	806.90	1.50	27.49	806.72	1.53	28.24	806.46	1.27	27.18	807.03	2.17	28.75	806.07	1.28
12/27/06	815.03	-1.02	19.03	815.78	-1.03	27.27	807.42	-1.09	19.08	815.66	-0.87	28.50	805.85	-1.05	28.60	805.61	-1.11	28.95	805.75	-0.71	28.35	805.86	-1.17	29.91	804.91	-1.16
10/15/07	816.04	1.01	18.77	816.04	0.26	26.4	808.29	0.87	18.77	815.97	0.31	27.78	806.57	0.72	27.8	806.41	0.80	28.54	806.16	0.41	26.85	807.36	1.50	29.49	805.33	0.42
10/13/08	814.76	-1.28	19.65	815.16	-0.88	27.42	807.27	-1.02	19.62	815.12	-0.85	28.67	805.68	-0.89	28.62	805.59	-0.82	29.29	805.41	-0.75	28.33	805.88	-1.48	30.06	804.76	-0.57

APPENDIX C-2

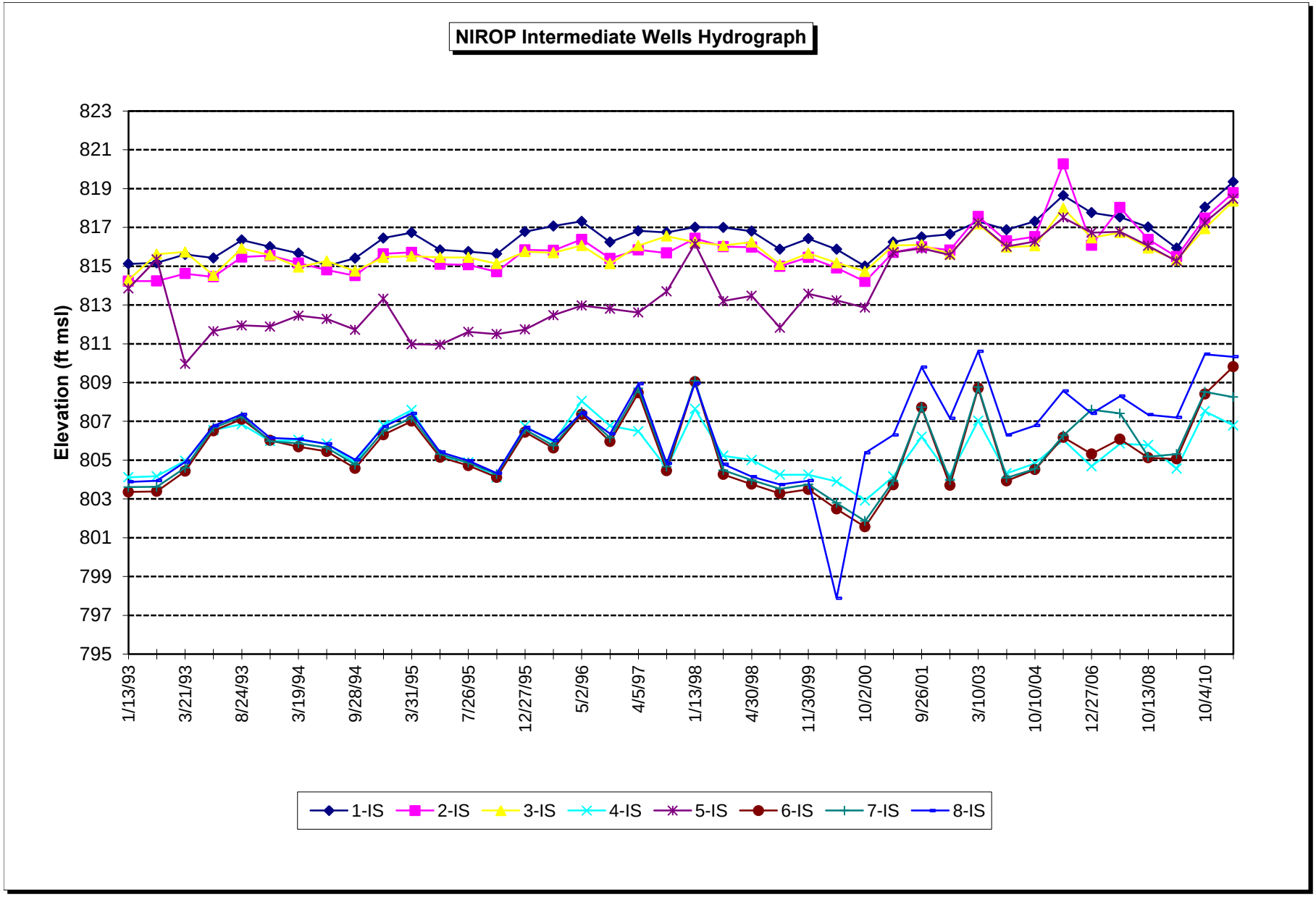
COMPREHENSIVE INTERMEDIATE ZONE WATER LEVEL ELEVATIONS
2011 ANNUAL MONITORING REPORT
NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT
FRIDLEY, MINNESOTA

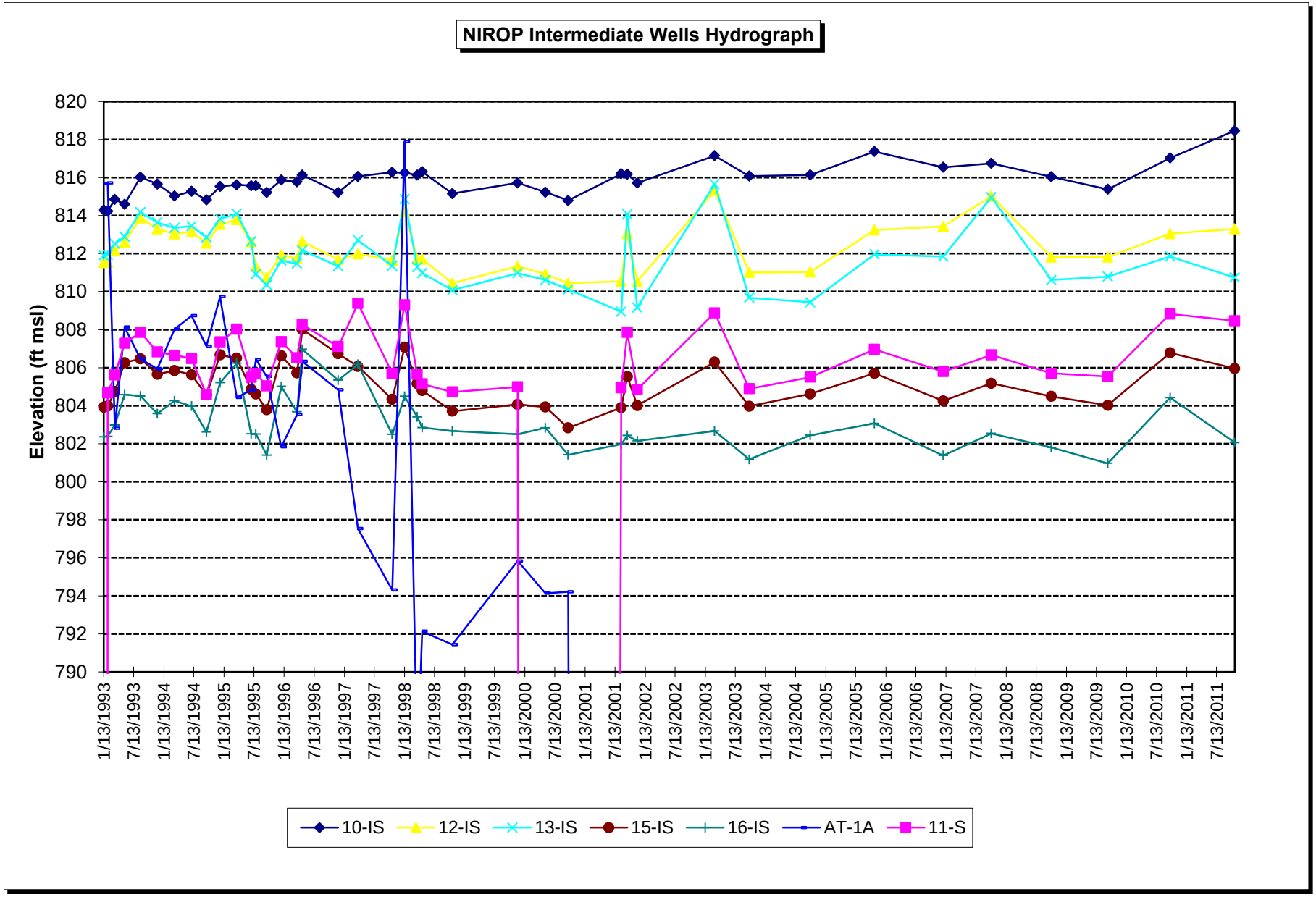
Well Name		MS-43I			MS-44I			MS-45I			MS-46I			MS-47I			MS-49I			MS-51I			MS-52I	
TOC Elev.		834.32			833.62			832.07			831.61			834.55			834.02			833.66			833.25	
Date	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change
1/13/93																								
2/6/93																								
3/21/93																								
5/20/93																								
8/24/93																								
12/4/93																								
3/19/94																								
6/30/94																								
9/28/94																								
12/20/94																								
3/31/95																								
6/27/95																								
7/26/95																								
9/29/95																								
12/27/95																								
3/31/96																								
5/2/96																								
12/6/96																								
4/5/97																								
10/30/97																								
1/13/98																								
3/31/98																								
4/30/98																								
10/30/98																								
11/30/99	32.27	802.05	NA	29.37	804.25	NA	27.98	804.09	NA	27.70	803.91	NA	33.42	801.13	NA	33.37	800.65	NA	33.26	800.40	NA	33.00	800.25	NA
5/17/00	31.92	802.40	0.35	29.72	803.90	-0.35	28.24	803.83	-0.26	27.88	803.73	-0.18	33.21	801.34	0.21	32.94	801.08	0.43	33.07	800.59	0.19	32.52	800.73	0.48
10/2/00	33.21	801.11	-1.29	30.61	803.01	-0.89	29.25	802.82	-1.01	28.94	802.67	-1.06	34.52	800.03	-1.31	34.36	799.66	-1.42	34.20	799.46	-1.13	33.98	799.27	-1.46
8/20/01	32.68	801.64	0.53	29.49	804.13	1.12	28.13	803.94	1.12	29.76	801.85	-0.82	33.86	800.69	0.66	33.85	800.17	0.51	33.75	799.91	0.45	33.50	799.75	0.48
9/26/01	32.59	801.73	0.09	27.47	806.15	2.02	26.34	805.73	1.79	26.30	805.31	3.46	33.36	801.19	0.50	33.58	800.44	0.27	33.24	800.42	0.51	33.45	799.80	0.05
11/26/01	32.98	801.34	-0.39	29.45	804.17	-1.98	28.06	804.01	-1.72	27.77	803.84	-1.47	33.77	800.78	-0.41	33.68	800.34	-0.10	33.68	799.98	-0.44	33.33	799.92	0.12
3/10/03	31.50	802.82	1.48	26.60	807.02	2.85	25.50	806.57	2.56	25.43	806.18	2.34	32.99	801.56	0.78	33.35	800.67	0.33	32.97	800.69	0.71	33.24	800.01	0.09
10/6/03	33.39	800.93	-1.89	29.42	804.20	-2.82	28.11	803.96	-2.61	28.03	803.58	-2.60	34.62	799.93	-1.63	34.61	799.41	-1.26	34.13	799.53	-1.16	34.37	798.88	-1.13
10/10/04	32.16	802.16	1.23	28.85	804.77	0.57	27.41	804.66	0.70	27.14	804.47	0.89	33.29	801.26	1.33	33.22	800.80	1.39	33.19	800.47	0.94	32.85	800.40	1.52
11/4/05	31.45	802.87	0.71	27.55	806.07	1.30	26.25	805.82	1.16	25.97	805.64	1.17	32.28	802.27	1.01	32.42	801.60	0.80	32.14	801.52	1.05	32.11	801.14	0.74
12/27/06	33.20	801.12	-1.75	28.94	804.68	-1.39	27.67	804.40	-1.42	27.43	804.18	-1.46	34.32	800.23	-2.04	34.41	799.61	-1.99	34.30	799.36	-2.16	34.18	799.07	-2.07
10/15/07	32.03	802.29	1.17	27.97	805.65	0.97	26.79	805.28	0.88	26.42	805.19	1.01	33.15	801.4	1.17	33.09	800.93	1.32	33.04	800.62	1.26	32.85	800.4	1.33
10/13/08	32.92	801.4	-0.89	28.04	805.58	-0.07	27.49	804.58	-0.7	27.22	804.39	-0.8	33.86	800.69	-0.71	33.84	800.18	-0.75	33.89	799.77	-0.85	33.56	799.69	-0.71

APPENDIX C-2

COMPREHENSIVE INTERMEDIATE ZONE WATER LEVEL ELEVATIONS
2011 ANNUAL MONITORING REPORT
NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT
FRIDLEY, MINNESOTA

Well Name		MS-54I			MS-55I			MS-56I			MWW4			AT-1A			AT-3A			AT-10	
TOC Elev.		835.58			834.61			834.87			832.01			838.53			836.1			837.11	
Date	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change
1/13/93													22.85	815.68	NA	40.82	795.28	NA			
2/6/93													22.82	815.71	0.03	40.94	795.16	-0.12			
3/21/93													35.72	802.81	-12.90	39.82	796.28	1.12			
5/20/93													30.40	808.13	5.32	33.96	802.14	5.86			
8/24/93													32.07	806.46	-1.67	32.72	803.38	1.24			
12/4/93													32.6	805.93	-0.53	33.60	802.50	-0.88			
3/19/94													30.5	808.03	2.10	32.80	803.30	0.80			
6/30/94													29.8	808.73	0.70	33.00	803.10	-0.20			
9/28/94													31.4	807.13	-1.60	33.80	802.30	-0.80			
12/20/94													28.8	809.73	2.60	31.50	804.60	2.30			
3/31/95													34.1	804.43	-5.30	30.80	805.30	0.70			
6/27/95													33.7	804.83	0.40	35.90	800.20	-5.10			
7/26/95													32.1	806.43	1.60	38.00	798.10	-2.10			
9/29/95													32.99	805.54	-0.89	37.60	798.50	0.40			
12/27/95													36.7	801.83	-3.71	41.73	794.37	-4.13			
3/31/96													35	803.53	1.70	38.50	797.60	3.23			
5/2/96													32.2	806.33	2.80	40.00	796.10	-1.50			
12/6/96													33.7	804.83	-1.50	42.98	793.12	-2.98			
4/5/97													41	797.53	-7.30	41.68	794.42	1.30			
10/30/97													44.23	794.30	-3.23	47.02	789.08	-5.34			
1/13/98													20.65	817.88	23.58	26.08	810.02	20.94			
3/31/98													53.4	785.13	-32.75	49.78	786.32	-23.70			
4/30/98													46.4	792.13	7.00	51.08	785.02	-1.30			
10/30/98													47.1	791.43	-0.70	52.00	784.10	-0.92			
11/30/99										31.64	800.37	NA	42.70	795.83	4.40	63.10	773.00	-11.10			
5/17/00													44.40	794.13	-1.70	68.7	767.40	-5.60			
10/2/00													44.32	794.21	0.08	75.45	760.65	-6.75			
8/20/01										31.23	800.78	NA	NA	NA	NA	70.12	765.98	5.33	45.20	791.91	NA
9/26/01										31.92	800.09	-0.69	NA	NA	NA	27.40	808.70	42.72	23.10	814.01	22.10
11/26/01										NA	NA	NA	NA	NA	NA	69.19	766.91	-41.79	41.89	795.22	-18.79
3/10/03										31.72	800.29	NA	NA	NA	NA	26.83	809.27	42.36	22.85	814.26	19.04
10/6/03										29.32	802.69	2.40	NA	NA	NA	83.35	752.75	-56.52	46.45	790.66	-23.60
10/10/04										31.31	800.7	-1.99	NA	NA	NA	79.72	756.38	3.63	57.27	779.84	-10.82
11/4/05	29.04	804.21	NA	27.33	805.92	NA	27.65	805.60	NA	30.56	801.45	0.75	NA	NA	NA	79.95	756.15	-0.23	61.23	775.88	-3.96
12/27/06	30.30	802.95	-1.26	28.49	804.76	-1.16	28.81	804.44	-1.16	32.61	799.4	-2.05	NA	NA	NA	79.63	756.47	0.32	61.19	775.92	0.04
10/15/07	29.64	803.61	0.66	27.75	805.5	0.74	28.05	805.2	0.76	NA	NA	NA	NA	NA	NA	79.61	756.49	0.02	23.57	813.54	37.62
10/13/08	30.24	803.01	-0.6	28.53	804.72	-0.78	28.83	804.42	-0.78	NA	NA	NA	NA	NA	NA	99.76	736.34	-20.15	68.26	768.85	-44.69


NIROP Intermediate Wells Hydrograph
Elevation (ft msl)
823
821
819
817
815
813
811
809
807
805
803
801
799
797
795
1/13/93
3/21/93
8/24/93
3/19/94
9/28/94
3/31/95
7/26/95
12/27/95
5/2/96
4/5/97
1/13/98
4/30/98
11/30/99
10/2/00
9/26/01
3/10/03
10/10/04
12/27/06
10/13/08
10/4/10
1-IS
2-IS
3-IS
4-IS
5-IS
6-IS
7-IS
8-IS


NIROP Intermediate Wells Hydrograph
Elevation (ft msl)
820
818
816
814
812
810
808
806
804
802
800
798
796
794
792
790
1/13/1993
7/13/1993
1/13/1994
7/13/1994
1/13/1995
7/13/1995
1/13/1996
7/13/1996
1/13/1997
7/13/1997
1/13/1998
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1/13/2006
7/13/2006
1/13/2007
7/13/2007
1/13/2008
7/13/2008
1/13/2009
7/13/2009
1/13/2010
7/13/2010
1/13/2011
7/13/2011
10-IS
12-IS
13-IS
15-IS
16-IS
AT-1A
11-S

APPENDIX C-2

COMPREHENSIVE DEEP ZONE WATER LEVEL ELEVATIONS
2011 ANNUAL MONITORING REPORT
NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT
FRIDLEY, MINNESOTA

Well Name		1-D			2-D			3-D			4-D			5-D			6-D			7-D	
TOC Elev.		836.55			835.89			837.35			834.65			835.83			835.54			835.61	
Date	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change
1/13/93	21.59	814.96	NA	21.55	814.34	NA	23.40	813.95	NA	29.14	805.51	NA	21.51	814.32	NA	30.81	804.73	NA	32.72	802.89	NA
2/6/93	21.65	814.90	-0.06	21.62	814.27	-0.07	23.59	813.76	-0.19	29.04	805.61	0.10	21.59	814.24	-0.08	30.78	804.76	0.03	32.68	802.93	0.04
3/21/93	21.12	815.43	0.53	21.026	814.86	0.60	23.176	814.17	0.41	28.248	806.40	0.79	20.993	814.84	0.60	29.853	805.69	0.92	31.972	803.64	0.71
5/20/93	21.31	815.24	-0.19	21.21	814.68	-0.18	23.22	814.13	-0.04	27.03	807.62	1.22	21.2	814.63	-0.21	28.2	807.34	1.65	30.48	805.13	1.49
8/24/93	20.58	815.97	0.73	19.97	815.92	1.24	22.31	815.04	0.91	26.64	808.01	0.39	19.81	816.02	1.39	27.66	807.88	0.54	30.51	805.10	-0.03
12/4/93	20.76	815.79	-0.18	20.31	815.58	-0.34	22.38	814.97	-0.07	27.22	807.43	-0.58	20.17	815.66	-0.36	28.69	806.85	-1.03	31.27	804.34	-0.76
3/19/94	21.09	815.46	-0.33	20.89	815.00	-0.58	22.56	814.79	-0.18	27.73	806.92	-0.51	20.80	815.03	-0.63	28.85	806.69	-0.16	31.00	804.61	0.27
6/30/94	21.69	814.86	-0.60	20.80	815.09	0.09	22.92	814.43	-0.36	27.49	807.16	0.24	20.59	815.24	0.21	29.03	806.51	-0.18	31.13	804.48	-0.13
9/28/94	21.44	815.11	0.25	21.06	814.83	-0.26	23.22	814.13	-0.30	28.60	806.05	-1.11	21.00	814.83	-0.41	29.90	805.64	-0.87	32.37	803.24	-1.24
12/20/94	20.29	816.26	1.15	20.29	815.60	0.77	22.07	815.28	1.15	26.69	807.96	1.91	20.28	815.55	0.72	28.15	807.39	1.75	29.98	805.63	2.39
3/31/95	20.07	816.48	0.22	20.18	815.71	0.11	21.99	815.36	0.08	25.79	808.86	0.90	21.20	814.63	-0.92	27.49	808.05	0.66	28.97	806.64	1.01
6/27/95	20.96	815.59	-0.89	20.43	815.46	-0.25	22.71	814.64	-0.72	28.48	806.17	-2.69	20.25	815.58	0.95	29.48	806.06	-1.99	33.39	802.22	-4.42
7/26/95	21.00	815.55	-0.04	20.41	815.48	0.02	22.81	814.54	-0.10	28.11	806.54	0.37	20.27	815.56	-0.02	29.82	805.72	-0.34	31.93	803.68	1.46
9/29/95	21.11	815.44	-0.11	20.70	815.19	-0.29	23.08	814.27	-0.27	28.94	805.71	-0.83	20.60	815.23	-0.33	30.45	805.09	-0.63	32.91	802.70	-0.98
12/27/95	19.98	816.57	1.13	20.08	815.81	0.62	21.95	815.40	1.13	27.46	807.19	1.48	20.05	815.78	0.55	28.97	806.57	1.48	30.91	804.70	2.00
3/31/96	20.95	815.60	-0.97	20.98	814.91	-0.90	22.92	814.43	-0.97	27.41	807.24	0.05	20.95	814.88	-0.90	29.15	806.39	-0.18	30.66	804.95	0.25
5/2/96	19.43	817.12	1.52	19.59	816.30	1.39	21.41	815.94	1.51	24.86	809.79	2.55	19.59	816.24	1.36	26.88	808.66	2.27	28.18	807.43	2.48
12/6/96	20.52	816.03	-1.09	20.56	815.33	-0.97	22.36	814.99	-0.95	26.14	808.51	-1.28	20.58	815.25	-0.99	28.40	807.14	-1.52	29.39	806.22	-1.21
4/5/97	19.94	816.61	0.58	19.71	816.18	0.85	21.13	816.22	1.23	27.21	807.44	-1.07	19.40	816.43	1.18	29.15	806.39	-0.75	30.20	805.41	-0.81
10/30/97	20.14	816.41	-0.20	19.64	816.25	0.07	22.02	815.33	-0.89	28.12	806.53	-0.91	19.62	816.21	-0.22	30.11	805.43	-0.96	32.12	803.49	-1.92
1/13/98	19.54	817.01	0.60	19.57	816.32	0.07	21.20	816.15	0.82	26.67	807.98	1.45	19.56	816.27	0.06	26.24	809.30	3.87	29.76	805.85	2.36
3/31/98	19.76	816.79	-0.22	19.72	816.17	-0.15	21.74	815.61	-0.54	27.72	806.93	-1.05	19.70	816.13	-0.14	29.85	805.69	-3.61	31.04	804.57	-1.28
4/30/98	19.97	816.58	-0.21	19.62	816.27	0.10	22.15	815.20	-0.41	27.51	807.14	0.21	19.68	816.15	0.02	29.80	805.74	0.05	31.57	804.04	-0.53
10/30/98	20.85	815.70	-0.88	20.65	815.24	-1.03	23.02	814.33	-0.87	28.49	806.16	-0.98	21.57	814.26	-1.89	30.10	805.44	-0.30	31.95	803.66	-0.38
11/30/99	20.29	816.26	0.56	20.19	815.70	0.46	22.31	815.04	0.71	28.49	806.16	0.00	20.08	815.75	1.49	30.52	805.02	-0.42	32.32	803.29	-0.37
5/17/00	20.94	815.61	-0.65	20.67	815.22	-0.48	22.87	814.48	-0.56	28.59	806.06	-0.10	20.6	815.23	-0.52	31.6	803.94	-1.08	32.2	803.41	0.12
10/2/00	21.76	814.79	-0.82	21.15	814.74	-0.48	23.47	813.88	-0.60	29.55	805.10	-0.96	21.07	814.76	-0.47	32.13	803.41	-0.53	33.53	802.08	-1.33
8/20/01	20.46	816.09	1.30	19.88	816.01	1.27	22.04	815.31	1.43	28.95	805.70	0.60	19.64	816.19	1.43	30.58	804.96	1.55	32.43	803.18	1.10
9/26/01	20.24	816.31	0.22	19.78	816.11	0.10	21.69	815.66	0.35	27.95	806.70	1.00	19.64	816.19	0.00	27.71	807.83	2.87	31.38	804.23	1.05
11/26/01	20.18	816.37	0.06	20.28	815.61	-0.50	21.60	815.75	0.09	29.20	805.45	-1.25	21.08	814.75	-1.44	30.65	804.89	-2.94	32.33	803.28	-0.95
3/10/03	18.56	817.99	1.62	18.74	817.15	1.54	20.20	817.15	1.40	27.00	807.65	2.20	18.63	817.20	2.45	26.68	808.86	3.97	30.90	804.71	1.43
10/6/03	19.86	816.69	-1.30	19.91	815.98	-1.17	21.72	815.63	-1.52	29.38	805.27	-2.38	19.71	816.12	-1.08	30.61	804.93	-3.93	33.01	802.60	-2.11
10/15/04	19.18	817.37	0.68	19.75	816.14	0.16	21.20	816.15	0.52	28.66	805.99	0.72	19.66	816.17	0.05	29.94	805.60	0.67	32.04	803.57	0.97
11/4/05	18.35	818.20	0.83	18.61	817.28	1.14	20.05	817.30	1.15	27.62	807.03	1.04	18.37	817.46	1.29	28.58	806.96	1.36	31.21	804.40	0.83
12/27/06	18.97	817.58	-0.62	19.42	816.47	-0.81	20.63	816.72	-0.58	29.25	805.40	-1.63	19.24	816.59	-0.87	29.74	805.80	-1.16	32.71	802.90	-1.50
10/15/07	19.13	817.42	-0.16	19.18	816.71	0.24	NA	NA	NA	27.72	806.93	1.53	19.06	816.77	0.18	28.87	806.67	0.87	31.75	803.86	0.96
10/13/08	19.7	816.85	-0.57	19.93	815.96	-0.75	NA	NA	NA	29.09	805.56	-1.37	19.76	816.07	-0.7	29.77	805.77	-0.9	32.55	803.06	-0.8
9/21/09	20.75	815.8	-1.05	20.58	815.31	-0.65	NA	NA	NA	29.52	805.13	-0.43	20.43	815.4	-0.67	29.99	805.55	-0.22	33.05	802.56	-0.5
10/4/10	18.65	817.9	2.1	18.95	816.94	1.63	20.21	817.14	NA	25.42	809.23	4.1	18.75	817.08	1.68	26.84	808.7	3.15	29.91	805.7	3.14
10/31/11	18.29	818.26	0.36	17.53	818.36	1.42	NA	NA	NA	27.46	807.19	-2.04	17.34	818.49	1.41	25.04	810.5	1.8	31.47	804.14	-1.56

APPENDIX C-2

COMPREHENSIVE DEEP ZONE WATER LEVEL ELEVATIONS
2011 ANNUAL MONITORING REPORT
NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT
FRIDLEY, MINNESOTA

Well Name		8-D			9-D			10-D			11-D			12-D			13-D			14-D	
TOC Elev.		833.92			834.22			834.61			837.37			837.63			835.59			837.75	
Date	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change
1/13/93	29.77	804.15	NA	33.88	800.34	NA	19.44	815.17	NA	22.69	814.68	NA	22.68	814.95	NA	20.88	814.71	NA	23.97	813.78	NA
2/6/93	29.73	804.19	0.04	33.86	800.36	0.02	19.36	815.25	0.08	22.44	814.93	0.25	22.70	814.93	-0.02	20.83	814.76	0.05	23.56	814.19	0.41
3/21/93	28.89	805.03	0.84	33.127	801.09	0.73	18.939	815.67	0.42	22.117	815.25	0.33	22.149	815.48	0.56	20.287	815.30	0.55	24.171	813.58	-0.61
5/20/93	27.37	806.55	1.52	31.18	803.04	1.95	19.09	815.52	-0.15	22.32	815.05	-0.20	22.38	815.25	-0.23	20.41	815.18	-0.12	24.02	813.73	0.15
8/24/93	27.06	806.86	0.31	31.35	802.87	-0.17	18.28	816.33	0.81	21.21	816.16	1.11	21.61	816.02	0.77	19.50	816.09	0.91	23.20	814.55	0.82
12/4/93	27.92	806.00	-0.86	32.31	801.91	-0.96	18.61	816.00	-0.33	21.70	815.67	-0.49	22.02	815.61	-0.41	20.05	815.54	-0.55	23.22	814.53	-0.02
3/19/94	27.86	806.06	0.06	31.99	802.23	0.32	18.89	815.72	-0.28	22.12	815.25	-0.42	22.36	815.27	-0.34	20.45	815.14	-0.40	23.27	814.48	-0.05
6/30/94	28.06	805.86	-0.20	31.96	802.26	0.03	19.69	814.92	-0.80	22.42	814.95	-0.30	22.95	814.68	-0.59	20.85	814.74	-0.40	23.64	814.11	-0.37
9/28/94	29.04	804.88	-0.98	33.53	800.69	-1.57	19.18	815.43	0.51	22.25	815.12	0.17	22.53	815.10	0.42	20.55	815.04	0.30	23.99	813.76	-0.35
12/20/94	27.10	806.82	1.94	30.79	803.43	2.74	18.07	816.54	1.11	21.33	816.04	0.92	21.39	816.24	1.14	19.52	816.07	1.03	22.78	814.97	1.21
3/31/95	26.31	807.61	0.79	29.62	804.60	1.17	17.79	816.82	0.28	21.09	816.28	0.24	21.13	816.50	0.26	19.28	816.31	0.24	23.02	814.73	-0.24
6/27/95	28.68	805.24	-2.37	33.39	800.83	-3.77	18.81	815.80	-1.02	21.71	815.66	-0.62	22.08	815.55	-0.95	20.07	815.52	-0.79	23.68	814.07	-0.66
7/26/95	29.01	804.91	-0.33	33.35	800.87	0.04	18.89	815.72	-0.08	21.75	815.62	-0.04	22.11	815.52	-0.03	20.10	815.49	-0.03	23.61	814.14	0.07
9/29/95	29.79	804.13	-0.78	34.75	799.47	-1.40	18.96	815.65	-0.07	21.95	815.42	-0.20	22.61	815.02	-0.50	20.28	815.31	-0.18	23.92	813.83	-0.31
12/27/95	28.02	805.90	1.77	32.55	801.67	2.20	17.62	816.99	1.34	20.93	816.44	1.02	21.06	816.57	1.55	19.13	816.46	1.15	22.77	814.98	1.15
3/31/96	28.17	805.75	-0.15	31.81	802.41	0.74	18.75	815.86	-1.13	21.97	815.40	-1.04	22.03	815.60	-0.97	20.19	815.40	-1.06	24.00	813.75	-1.23
5/2/96	25.87	808.05	2.30	28.93	805.29	2.88	17.35	817.26	1.40	20.61	816.76	1.36	20.52	817.11	1.51	18.66	816.93	1.53	22.20	815.55	1.80
12/6/96	27.14	806.78	-1.27	30.23	803.99	-1.30	18.26	816.35	-0.91	21.52	815.85	-0.91	21.58	816.05	-1.06	19.71	815.88	-1.05	23.08	814.67	-0.88
4/5/97	27.45	806.47	-0.31	32.21	802.01	-1.98	16.74	817.87	1.52	20.07	817.30	1.45	20.95	816.68	0.63	19.10	816.49	0.61	22.80	814.95	0.28
10/30/97	29.31	804.61	-1.86	34.11	800.11	-1.90	17.83	816.78	-1.09	20.86	816.51	-0.79	20.96	816.67	-0.01	19.28	816.31	-0.18	22.89	814.86	-0.09
1/13/98	26.22	807.70	3.09	32.16	802.06	1.95	17.52	817.09	0.31	20.64	816.73	0.22	20.66	816.97	0.30	18.99	816.60	0.29	21.66	816.09	1.23
3/31/98	28.68	805.24	-2.46	32.74	801.48	-0.58	17.55	817.06	-0.03	20.65	816.72	-0.01	20.88	816.75	-0.22	19.03	816.56	-0.04	22.63	815.12	-0.97
4/30/98	28.90	805.02	-0.22	33.07	801.15	-0.33	18.13	816.48	-0.58	21.10	816.27	-0.45	21.09	816.54	-0.21	19.13	816.46	-0.10	22.66	815.09	-0.03
10/30/98	29.65	804.27	-0.75	33.70	800.52	-0.63	18.73	815.88	-0.60	21.77	815.60	-0.67	22.00	815.63	-0.91	20.05	815.54	-0.92	23.97	813.78	-1.31
11/30/99	29.66	804.26	-0.01	33.96	800.26	-0.26	18.11	816.50	0.62	21.17	816.20	0.60	21.42	816.21	0.58	19.58	816.01	0.47	23.10	814.65	0.87
5/17/00	30.01	803.91	-0.35	33.77	800.45	0.19	18.73	815.88	-0.62	21.74	815.63	-0.57	22.03	815.60	-0.61	20.1	815.49	-0.52	23.64	814.11	-0.54
10/2/00	30.96	802.96	-0.95	35.07	799.15	-1.30	19.62	814.99	-0.89	22.51	814.86	-0.77	22.85	814.78	-0.82	20.87	814.72	-0.77	24.34	813.41	-0.70
8/20/01	29.76	804.16	1.20	34.44	799.78	0.63	18.42	816.19	1.20	21.04	816.33	1.47	21.58	816.05	1.27	19.65	815.94	1.22	22.46	815.29	1.88
9/26/01	27.68	806.24	2.08	33.92	800.30	0.52	18.10	816.51	0.32	21.00	816.37	0.04	21.36	816.27	0.22	19.41	816.18	0.24	22.10	815.65	0.36
11/26/01	29.72	804.20	-2.04	34.37	799.85	-0.45	17.95	816.66	0.15	21.06	816.31	-0.06	21.32	816.31	0.04	19.46	816.13	-0.05	22.33	815.42	-0.23
3/10/03	26.87	807.05	2.85	33.67	800.55	0.70	16.60	818.01	1.35	19.75	817.62	1.31	19.75	817.88	1.57	17.92	817.67	1.54	20.56	817.19	1.77
10/6/03	29.58	804.34	-2.71	35.31	798.91	-1.64	17.72	816.89	-1.12	20.81	816.56	-1.06	21.04	816.59	-1.29	19.30	816.29	-1.38	21.92	815.83	-1.36
10/15/04	29.06	804.86	0.52	33.88	800.34	1.43	17.24	817.37	0.48	20.48	816.89	0.33	20.61	817.02	0.43	18.90	816.69	0.40	21.63	816.12	0.29
11/4/05	27.87	806.05	1.19	32.85	801.37	1.03	16.24	818.37	1.00	19.33	818.04	1.15	19.35	818.28	1.26	17.71	817.88	1.19	20.43	817.32	1.20
12/27/06	29.22	804.70	-1.35	35.08	799.14	-2.23	16.77	817.84	-0.53	19.98	817.39	-0.65	20.01	817.62	-0.66	18.51	817.08	-0.80	21.06	816.69	-0.63
10/15/07	28.4	805.52	0.82	33.72	800.5	1.36	17.05	817.56	-0.28	20.07	817.3	-0.09	20.11	817.52	-0.10	18.5	817.09	0.01	21.06	816.69	0.00
10/13/08	29.05	804.87	-0.65	34.55	799.67	-0.83	17.56	817.05	-0.51	20.65	816.72	-0.58	20.66	816.97	-0.55	19.14	816.45	-0.64	21.79	815.96	-0.73
9/21/09	29.23	804.69	-0.18	34.84	799.38	-0.29	18.7	815.91	-1.14	21.67	815.7	-1.02	21.71	815.92	-1.05	20.12	815.47	-0.98	22.6	815.15	-0.81
10/4/10	26.41	807.51	2.82	31.57	802.65	3.27	16.54	818.07	2.16	19.54	817.83	2.13	19.57	818.06	2.14	18	817.59	2.12	20.56	817.19	2.04
10/31/11	27.22	806.7	-0.81	34.02	800.2	-2.45	15.26	819.35	1.28	18.4	818.97	1.14	18.42	819.21	1.15	16.99	818.6	1.01	19.35	818.4	1.21

APPENDIX C-2

COMPREHENSIVE DEEP ZONE WATER LEVEL ELEVATIONS
2011 ANNUAL MONITORING REPORT
NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT
FRIDLEY, MINNESOTA

Well Name		15-D			16-D			MS-28D			MS-29D			MS-30I			MS-30D			MS-31D			MS-32D	
TOC Elev.		834.01			833.08			834.8			834.69			834.85			834.81			834.81			834.75	
Date	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change
1/13/93	29.69	804.32	NA	31.16	801.92	NA																		
2/6/93	29.79	804.22	-0.10	31.10	801.98	0.06																		
3/21/93	29.018	804.99	0.77	30.495	802.59	0.61																		
5/20/93	27.52	806.49	1.50	28.91	804.17	1.59																		
8/24/93	27.30	806.71	0.22	29.03	804.05	-0.12																		
12/4/93	28.09	805.92	-0.79	29.95	803.13	-0.92																		
3/19/94	27.87	806.14	0.22	29.30	803.78	0.65																		
6/30/94	28.07	805.94	-0.20	29.56	803.52	-0.26																		
9/28/94	29.09	804.92	-1.02	30.94	802.14	-1.38																		
12/20/94	27.02	806.99	2.07	28.33	804.75	2.61																		
3/31/95	26.16	807.85	0.86	27.30	805.78	1.03																		
6/27/95	28.97	805.04	-2.81	31.05	802.03	-3.75																		
7/26/95	29.14	804.87	-0.17	30.55	802.53	0.50																		
9/29/95	30.05	803.96	-0.91	31.63	801.45	-1.08																		
12/27/95	27.99	806.02	2.06	29.40	803.68	2.23																		
3/31/96	28.17	805.84	-0.18	29.05	804.03	0.35																		
5/2/96	25.61	808.40	2.56	26.51	806.57	2.54																		
12/6/96	26.98	807.03	-1.37	27.72	805.36	-1.21																		
4/5/97	27.51	806.50	-0.53	28.27	804.81	-0.55																		
10/30/97	29.21	804.80	-1.70	31.08	802.00	-2.81																		
1/13/98	26.46	807.55	2.75	29.07	804.01	2.01																		
3/31/98	28.46	805.55	-2.00	28.62	804.46	0.45																		
4/30/98	27.69	806.32	0.77	30.62	802.46	-2.00																		
10/30/98	29.32	804.69	-1.63	30.70	802.38	-0.08																		
11/30/99	29.43	804.58	-0.11	31.08	802.00	-0.38	19.13	815.67	NA	18.44	816.25	NA	20.29	814.56	NA	20.23	814.58	NA	18.83	815.98	NA	27.79	806.96	NA
5/17/00	29.61	804.40	-0.18	30.69	802.39	0.39	19.68	815.12	-0.55	19.05	815.64	-0.61	20.79	814.06	-0.50	20.73	814.08	-0.50	19.41	815.40	-0.58	28.54	806.21	-0.75
10/2/00	30.65	803.36	-1.04	31.96	801.12	-1.27	20.45	814.35	-0.77	19.84	814.85	-0.79	20.37	814.48	0.42	21.05	813.76	-0.32	20.14	814.67	-0.73	29.39	805.36	-0.85
8/20/01	29.61	804.40	1.04	31.53	801.55	0.43	19.11	815.69	1.34	18.61	816.08	1.23	20.00	814.85	0.37	19.88	814.93	1.17	18.98	815.83	1.16	27.45	807.30	1.94
9/26/01	27.98	806.03	1.63	31.12	801.96	0.41	18.78	816.02	0.33	18.20	816.49	0.41	19.52	815.33	0.48	19.47	815.34	0.41	-	-	-	24.46	810.29	2.99
11/26/01	29.47	804.54	-1.49	31.37	801.71	-0.25	18.81	815.99	-0.03	18.37	816.32	-0.17	19.88	814.97	-0.36	19.78	815.03	-0.31	18.59	816.22	-	27.27	807.48	-2.81
3/10/03	27.20	806.81	2.27	30.74	802.34	0.63	17.17	817.63	1.64	16.76	817.93	1.61	18.01	816.84	1.87	17.95	816.86	1.83	17.00	817.81	1.59	23.21	811.54	4.06
10/6/03	29.46	804.55	-2.26	32.29	800.79	-1.55	18.51	816.29	-1.34	18.05	816.64	-1.29	19.35	815.50	-1.34	19.40	815.41	-1.45	18.39	816.42	-1.39	27.26	807.49	-4.05
10/15/04	28.87	805.14	0.59	31.10	801.98	1.19	18.14	816.66	0.37	17.45	817.24	0.60	19.04	815.81	0.31	19.05	815.76	0.35	17.89	816.92	0.50	26.62	808.13	0.64
11/4/05	27.77	806.24	1.10	30.43	802.65	0.67	17.05	817.75	1.09	16.59	818.10	0.86	17.94	816.91	1.10	17.86	816.95	1.19	16.71	818.10	1.18	25.24	809.51	1.38
12/27/06	29.19	804.82	-1.42	32.16	800.92	-1.73	17.62	817.18	-0.57	17.17	817.52	-0.58	18.91	815.94	-0.97	18.82	815.99	-0.96	17.40	817.41	-0.69	26.20	808.55	-0.96
10/15/07	28.17	805.84	1.02	30.99	802.09	1.17	17.73	817.07	-0.11	17.28	817.41	-0.11	18.56	816.29	0.35	18.5	816.31	0.32	18.57	816.24	-1.17	25.76	808.99	0.44
10/13/08	28.98	805.03	-0.81	31.72	801.36	-0.73	18.3	816.5	-0.57	17.84	816.85	-0.56	19.27	815.58	-0.71	19.2	815.61	-0.7	18.08	816.73	0.49	26.39	808.36	-0.63
9/21/09	29.42	804.59	-0.44	32.53	800.55	-0.81	19.26	815.54	-0.96	18.87	815.82	-1.03	20.07	814.78	-0.8	19.99	814.82	-0.79	19.11	815.7	-1.03	26.54	808.21	-0.15
10/4/10	26.4	807.61	3.02	29.05	804.03	3.48	17.22	817.58	2.04	16.73	817.96	2.14	18.04	816.81	2.03	17.97	816.84	2.02	17	817.81	2.11	23.13	811.62	3.41
10/31/11	27.56	806.45	-1.16	31.41	801.67	-2.36	16.03	818.77	1.19	15.64	819.05	1.09	16.88	817.97	1.16	16.8	818.01	1.17	15.86	818.95	1.14	24.36	810.39	-1.23

APPENDIX C-2

COMPREHENSIVE DEEP ZONE WATER LEVEL ELEVATIONS
2011 ANNUAL MONITORING REPORT
NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT
FRIDLEY, MINNESOTA

Well Name		MS-33D			MS-34D			MS-35D			MS-35DPZ*			MS-36D			MS-40D			MS-41D	
TOC Elev.		834.76			834.35			834.45			834.26			834.79			834.7			834.89	
Date	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change
1/13/93																					
2/6/93																					
3/21/93																					
5/20/93																					
8/24/93																					
12/4/93																					
3/19/94																					
6/30/94																					
9/28/94																					
12/20/94																					
3/31/95																					
6/27/95																					
7/26/95																					
9/29/95																					
12/27/95																					
3/31/96																					
5/2/96																					
12/6/96																					
4/5/97																					
10/30/97																					
1/13/98																					
3/31/98																					
4/30/98																					
10/30/98																					
11/30/99	20.48	814.28	NA	28.41	805.94	NA				25.99	808.27	NA	23.93	810.86	NA	28.36	806.34	NA	30.58	804.31	NA
5/17/00	20.98	813.78	-0.50	29.17	805.18	-0.76	29.6	804.85	NA	27.14	807.12	-1.15	30.12	804.67	-6.19	28.62	806.08	-0.26	30.88	804.01	-0.30
10/2/00	20.85	813.91	0.13	30.05	804.30	-0.88	30.45	804.00	-0.85	28.62	805.64	-1.48	31.05	803.74	-0.93	29.62	805.08	-1.00	31.87	803.02	-0.99
8/20/01	20.30	814.46	0.55	28.04	806.31	2.01	28.73	805.72	1.72	24.70	809.56	3.92	29.92	804.87	1.13	28.56	806.14	1.06	30.75	804.14	1.12
9/26/01	19.74	815.02	0.56	24.77	809.58	3.27	24.91	809.54	3.82	24.93	809.33	-0.23	25.74	809.05	4.18	27.04	807.66	1.52	28.62	806.27	2.13
11/26/01	20.19	814.57	-0.45	27.90	806.45	-3.13	28.20	806.25	-3.29	26.35	807.91	-1.42	28.84	805.95	-3.10	28.32	806.38	-1.28	30.60	804.29	-1.98
3/10/03	18.21	816.55	1.98	23.55	810.80	4.35	23.50	810.95	4.70	23.68	810.58	2.67	24.43	810.36	4.41	26.05	808.65	2.27	27.92	806.97	2.68
10/6/03	19.68	815.08	-1.47	27.80	806.55	-4.25	28.11	806.34	-4.61	27.97	806.29	-4.29	28.75	806.04	-4.32	28.47	806.23	-2.42	30.82	804.07	-2.90
10/15/04	18.92	815.84	0.76	27.13	807.22	0.67	27.52	806.93	0.59	27.33	806.93	0.64	28.11	806.68	0.64	27.41	807.29	1.06	30.05	804.84	0.77
11/4/05	18.07	816.69	0.85	25.88	808.47	1.25	26.20	808.25	1.32	26.02	808.24	1.31	26.90	807.89	1.21	26.55	808.15	0.86	28.90	805.99	1.15
12/27/06	18.83	815.93	-0.76	26.71	807.64	-0.83	27.00	807.45	-0.80	26.80	807.46	-0.78	27.73	807.06	-0.83	27.54	807.16	-0.99	30.10	804.79	-1.20
10/15/07	18.76	816	0.07	26.23	808.12	0.48	26.50	807.95	0.50	NA	NA	NA	27.16	807.63	0.57	26.84	807.86	0.70	29.42	805.47	0.68
10/13/08	19.48	815.28	-0.72	26.82	807.53	-0.59	27.09	807.36	-0.59	NA	NA	NA	27.72	807.07	-0.56	27.64	807.06	-0.8	30.06	804.83	-0.64
9/21/09	20.26	814.5	-0.78	26.9	807.45	-0.08	27.10	807.35	-0.01	NA	NA	NA	27.76	807.03	-0.04	28.19	806.51	-0.55	30.43	804.46	-0.37
10/4/10	18.16	816.6	2.1	23.3	811.05	3.6	25.38	809.07	1.72	NA	NA	NA	26.53	808.26	1.23	25.11	809.59	3.08	26.57	808.32	3.86
10/31/11	17.12	817.64	1.04	23.52	810.83	-0.22	21.93	812.52	3.45	NA	NA	NA	24.53	810.26	2	25.07	809.63	0.04	28.22	806.67	-1.65

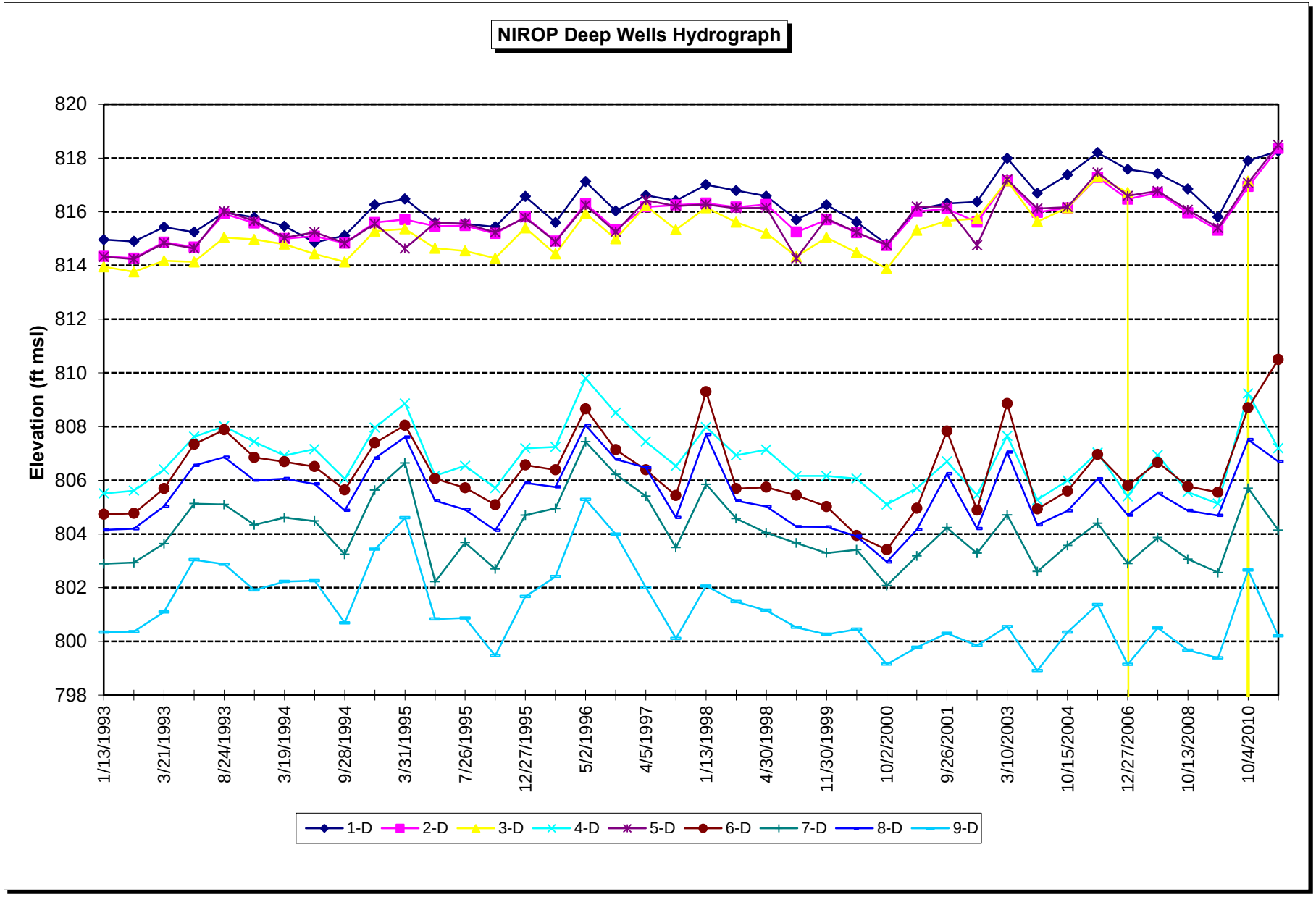
* Well screen blocked at 103.8 ft (Hal Davis & Baywest); well should NOT be used for water levels or gw sampling

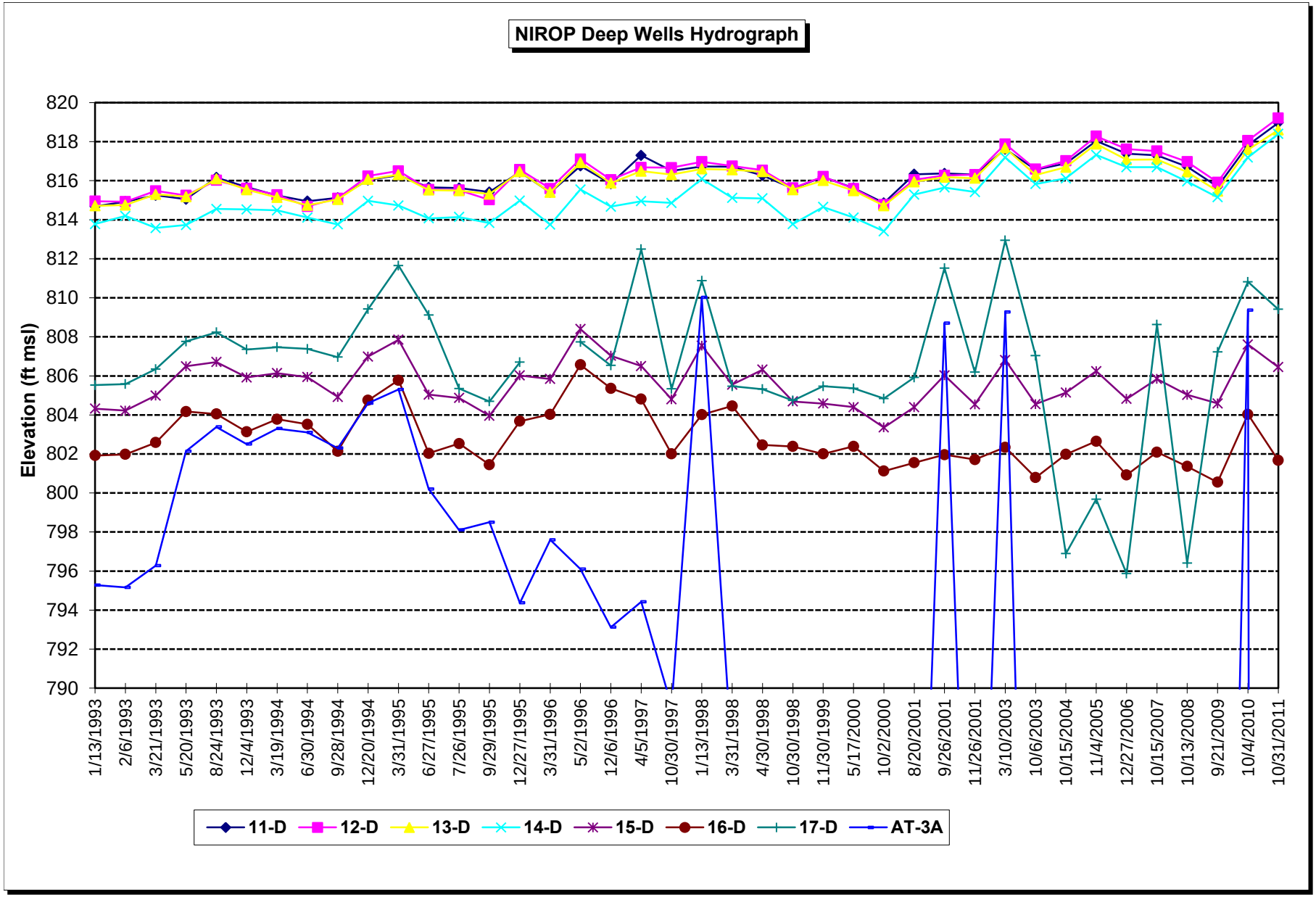
APPENDIX C-2

COMPREHENSIVE DEEP ZONE WATER LEVEL ELEVATIONS
2011 ANNUAL MONITORING REPORT
NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT
FRIDLEY, MINNESOTA

Well Name		MS-43D			MS-44D			MS-47D			MS-49D			MS-52D			USGS 10			AT-5B	
TOC Elev.		834.27			833.58			834.51			833.87			833.27			836.85			835.62	
Date	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change
1/13/93																					
2/6/93																					
3/21/93																					
5/20/93																					
8/24/93																					
12/4/93																					
3/19/94																					
6/30/94																					
9/28/94																					
12/20/94																					
3/31/95																					
6/27/95																			27.87	807.75	NA
7/26/95																			36.6	799.02	-8.73
9/29/95																			37.5	798.12	-0.90
12/27/95																			36.1	799.52	1.40
3/31/96																			36.7	798.92	-0.60
5/2/96																			35.2	800.42	1.50
12/6/96																			35.84	799.78	-0.64
4/5/97																			33.68	801.94	2.16
10/30/97																			37.29	798.33	-3.61
1/13/98																			25.21	810.41	12.08
3/31/98																			38.62	797.00	-13.41
4/30/98																			39.31	796.31	-0.69
10/30/98																			39.8	795.82	-0.49
11/30/99	31.25	803.02	NA	29.33	804.25	NA	31.11	803.40	NA	33.01	800.86	NA	24.04	809.23	NA	32.41	804.44	NA	62.80	772.82	-23.00
5/17/00	31.08	803.19	0.17	29.66	803.92	-0.33	31.14	803.37	-0.03	32.69	801.18	0.32	24.28	808.99	-0.24	33.51	803.34	-1.10	41.05	794.57	21.75
10/2/00	32.40	801.87	-1.32	30.65	802.93	-0.99	32.27	802.24	-1.13	34.10	799.77	-1.41	25.27	808.00	-0.99	34.37	802.48	-0.86	42.50	793.12	-1.45
8/20/01	31.30	802.97	1.10	29.44	804.14	1.21	31.35	803.16	0.92	33.80	800.07	0.30	24.24	809.03	1.03	28.77	808.08	5.60	43.82	791.80	-1.32
9/26/01	30.44	803.83	0.86	27.47	806.11	1.97	30.06	804.45	1.29	33.28	800.59	0.52	23.62	809.65	0.62	27.54	809.31	1.23	27.95	807.67	15.87
11/26/01	31.26	803.01	-0.82	29.38	804.20	-1.91	31.23	803.28	-1.17	33.42	800.45	-0.14	23.84	809.43	-0.22	21.64	815.21	5.90	45.50	790.12	-17.55
3/10/03	30.00	804.27	1.26	26.60	806.98	2.78	29.37	805.14	1.86	22.94	810.93	10.48	22.91	810.36	0.93	26.28	810.57	-4.64	28.39	807.23	17.11
10/6/03	31.99	802.28	-1.99	29.40	804.18	-2.80	31.60	802.91	-2.23	34.32	799.55	-11.38	24.10	809.17	-1.19	28.69	808.16	-2.41	46.52	789.10	-18.13
10/15/04	31.00	803.27	0.99	28.71	804.87	0.69	30.60	803.91	1.00	32.98	800.89	1.34	23.47	809.80	0.63	30.94	805.91	-2.25	47.79	787.83	-1.27
11/4/05	30.22	804.05	0.78	27.47	806.11	1.24	29.50	805.01	1.10	32.14	801.73	0.84	22.46	810.81	1.01	29.58	807.27	1.36	47.52	788.10	0.27
12/27/06	31.70	802.57	-1.48	28.86	804.72	-1.39	31.08	803.43	-1.58	34.11	799.76	-1.97	23.51	809.76	-1.05	30.27	806.58	-0.69	49.49	786.13	-1.97
10/15/07	30.78	803.49	0.92	27.86	805.72	1.00	30.1	804.41	0.98	32.81	801.06	1.30	22.79	810.48	0.72	29.77	807.08	0.50	NA	NA	NA
10/13/08	31.26	803.01	-0.48	28.54	805.04	-0.68	30.77	803.74	-0.67	33.17	800.7	-0.36	23.57	809.7	-0.78	30.28	806.57	-0.51	50.07	785.55	NA
9/21/09	32.19	802.08	-0.93	28.96	804.62	-0.42	31.16	803.35	-0.39	34.01	799.86	-0.84	24.3	808.97	-0.73	30.07	806.78	0.21	52.41	783.21	-2.34
10/4/10	28.93	805.34	3.26	25.98	807.6	2.98	28.15	806.36	3.01	30.67	803.2	3.34	22	811.27	2.3	25.68	811.17	4.39	48.54	787.08	3.87
10/31/11	30.62	803.65	-1.69	26.88	806.7	-0.9	29.57	804.94	-1.42	33.11	800.76	-2.44	22.5	810.77	-0.5	26.43	810.42	-0.75	55.13	780.49	-6.59

Note: Monitoring well USGS-10 was measured on Oct. 7, 2003.

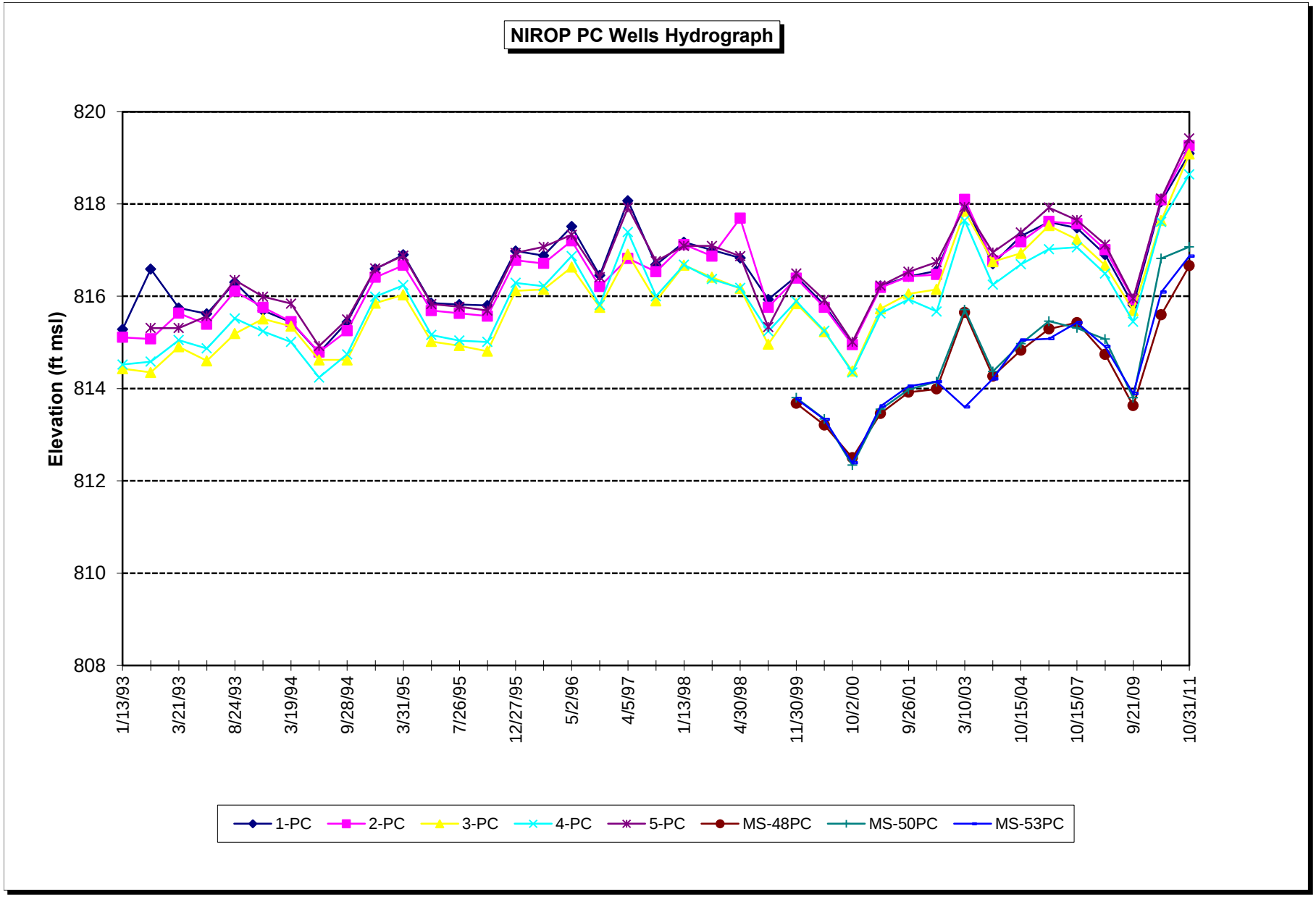

NIROP Deep Wells Hydrograph
Elevation (ft msl)
820
818
816
814
812
810
808
806
804
802
800
798
1/13/1993
3/21/1993
8/24/1993
3/19/1994
9/28/1994
3/31/1995
7/26/1995
12/27/1995
5/2/1996
4/5/1997
1/13/1998
4/30/1998
11/30/1999
10/2/2000
9/26/2001
3/10/2003
10/15/2004
12/27/2006
10/13/2008
10/4/2010
1-D
2-D
3-D
4-D
5-D
6-D
7-D
8-D
9-D


NIROP Deep Wells Hydrograph
Elevation (ft msl)
820
818
816
814
812
810
808
806
804
802
800
798
796
794
792
790
1/13/1993
2/6/1993
3/21/1993
5/20/1993
8/24/1993
12/4/1993
3/19/1994
6/30/1994
9/28/1994
12/20/1994
3/31/1995
6/27/1995
7/26/1995
9/29/1995
12/27/1995
3/31/1996
5/2/1996
12/6/1996
4/5/1997
10/30/1997
1/13/1998
3/31/1998
4/30/1998
10/30/1998
11/30/1999
5/17/2000
10/2/2000
8/20/2001
9/26/2001
11/26/2001
3/10/2003
10/6/2003
10/15/2004
11/4/2005
12/27/2006
10/15/2007
10/13/2008
9/21/2009
10/4/2010
10/31/2011
11-D
12-D
13-D
14-D
15-D
16-D
17-D
AT-3A

APPENDIX C-2

COMPREHENSIVE PRAIRIE DU CHIEN WATER LEVEL ELEVATIONS
2011 ANNUAL MONITORING REPORT
NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT
FRIDLEY, MINNESOTA

Well Name		1-PC			2-PC			3-PC			4-PC			5-PC			MS-48PC			MS-50PC			MS-53PC	
TOC Elev.		836.93			837.91			838.53			834.63			834.33			831.50			833.88			832.64	
Date	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change	reading	elevation	change
1/13/93	21.65	815.28	NA	22.80	815.11	NA	24.10	814.43	NA	20.11	814.52	NA												
2/6/93	20.34	816.59	1.31	22.84	815.07	-0.04	24.18	814.35	-0.08	20.05	814.58	0.06	19.02	815.31	NA									
3/21/93	21.19	815.74	-0.84	22.277	815.63	0.56	23.63	814.90	0.56	19.581	815.05	0.47	19.02	815.31	0.00									
5/20/93	21.31	815.62	-0.12	22.52	815.39	-0.24	23.93	814.60	-0.30	19.76	814.87	-0.18	18.76	815.57	0.26									
8/24/93	20.63	816.30	0.68	21.8	816.11	0.72	23.34	815.19	0.59	19.11	815.52	0.65	17.98	816.35	0.78									
12/4/93	21.24	815.69	-0.61	22.15	815.76	-0.35	23.02	815.51	0.32	19.39	815.24	-0.28	18.34	815.99	-0.36									
3/19/94	21.49	815.44	-0.25	22.46	815.45	-0.31	23.18	815.35	-0.16	19.62	815.01	-0.23	18.49	815.84	-0.15									
6/30/94	22.15	814.78	-0.66	23.12	814.79	-0.66	23.91	814.62	-0.73	20.39	814.24	-0.77	19.41	814.92	-0.92									
9/28/94	21.49	815.44	0.66	22.66	815.25	0.46	23.91	814.62	0.00	19.89	814.74	0.50	18.83	815.50	0.58									
12/20/94	20.34	816.59	1.15	21.5	816.41	1.16	22.68	815.85	1.23	18.64	815.99	1.25	17.73	816.60	1.10									
3/31/95	20.03	816.90	0.31	21.24	816.67	0.26	22.5	816.03	0.18	18.39	816.24	0.25	17.45	816.88	0.28									
6/27/95	21.08	815.85	-1.05	22.22	815.69	-0.98	23.51	815.02	-1.01	19.47	815.16	-1.08	18.5	815.83	-1.05									
7/26/95	21.11	815.82	-0.03	22.28	815.63	-0.06	23.6	814.93	-0.09	19.59	815.04	-0.12	18.56	815.77	-0.06									
9/29/95	21.13	815.80	-0.02	22.34	815.57	-0.06	23.72	814.81	-0.12	19.62	815.01	-0.03	18.64	815.69	-0.08									
12/27/95	19.95	816.98	1.18	21.13	816.78	1.21	22.41	816.12	1.31	18.34	816.29	1.28	17.39	816.94	1.25									
3/31/96	20.05	816.88	-0.10	21.2	816.71	-0.07	22.38	816.15	0.03	18.41	816.22	-0.07	17.26	817.07	0.13									
5/2/96	19.42	817.51	0.63	20.71	817.20	0.49	21.9	816.63	0.48	17.76	816.87	0.65	17	817.33	0.26									
12/6/96	20.48	816.45	-1.06	21.7	816.21	-0.99	22.77	815.76	-0.87	18.82	815.81	-1.06	17.92	816.41	-0.92									
4/5/97	18.86	818.07	1.62	21.09	816.82	0.61	21.62	816.91	1.15	17.24	817.39	1.58	16.41	817.92	1.51									
10/31/97	20.25	816.68	-1.39	21.38	816.53	-0.29	22.63	815.90	-1.01	18.63	816.00	-1.39	17.57	816.76	-1.16									
1/13/98	19.76	817.17	0.49	20.79	817.12	0.59	21.86	816.67	0.77	17.95	816.68	0.68	17.24	817.09	0.33									
3/31/98	19.93	817.00	-0.17	21.04	816.87	-0.25	22.12	816.41	-0.26	18.26	816.37	-0.31	17.24	817.09	0.00									
4/30/98	20.1	816.83	-0.17	20.22	817.69	0.82	22.36	816.17	-0.24	18.45	816.18	-0.19	17.46	816.87	-0.22									
10/30/98	21	815.93	-0.90	22.15	815.76	-1.93	23.57	814.96	-1.21	19.39	815.24	-0.94	19	815.33	-1.54									
11/30/99	20.50	816.43	0.50	21.52	816.39	0.63	22.69	815.84	0.88	18.74	815.89	0.65	17.84	816.49	1.16	17.82	813.68	NA	20.08	813.80	NA	18.86	813.78	NA
5/17/00	21.12	815.81	-0.62	22.15	815.76	-0.63	23.3	815.23	-0.61	19.38	815.25	-0.64	18.41	815.92	-0.57	18.29	813.21	-0.47	20.54	813.34	-0.46	19.31	813.33	-0.45
10/2/00	21.97	814.96	-0.85	22.96	814.95	-0.81	24.15	814.38	-0.85	20.28	814.35	-0.90	19.32	815.01	-0.91	19.00	812.50	-0.71	21.54	812.34	-1.00	20.25	812.39	-0.94
8/20/01	20.71	816.22	1.26	21.72	816.19	1.24	22.80	815.73	1.35	19.00	815.63	1.28	18.10	816.23	1.22	18.04	813.46	0.96	20.33	813.55	1.21	19.02	813.62	1.23
9/26/01	20.50	816.43	0.21	21.48	816.43	0.24	22.48	816.05	0.32	18.70	815.93	0.30	17.80	816.53	0.30	17.58	813.92	0.46	19.90	813.98	0.43	18.59	814.05	0.43
11/26/01	20.38	816.55	0.12	21.44	816.47	0.04	22.38	816.15	0.10	18.96	815.67	-0.26	17.59	816.74	0.21	17.51	813.99	0.07	19.73	814.15	0.17	18.49	814.15	0.10
3/10/03	18.92	818.01	1.46	19.81	818.10	1.63	20.69	817.84	1.69	16.99	817.64	1.97	16.40	817.93	1.19	15.85	815.65	1.66	18.17	815.71	1.56	19.04	813.60	-0.55
10/6/03	20.23	816.70	-1.31	21.14	816.77	-1.33	21.78	816.75	-1.09	18.38	816.25	-1.39	17.38	816.95	-0.98	17.23	814.27	-1.38	19.51	814.37	-1.34	18.43	814.21	0.61
10/15/04	19.63	817.30	0.60	20.73	817.18	0.41	21.60	816.93	0.18	17.94	816.69	0.44	16.95	817.38	0.43	16.67	814.83	0.56	18.91	814.97	0.60	17.59	815.05	0.84
12/27/06	19.32	817.61	0.31	20.29	817.62	0.44	21.00	817.53	0.60	17.61	817.02	0.33	16.41	817.92	0.54	16.21	815.29	0.46	18.42	815.46	0.49	17.56	815.08	0.03
10/15/07	19.45	817.48	-0.13	20.34	817.57	-0.05	21.3	817.23	-0.30	17.57	817.06	0.04	16.68	817.65	-0.27	16.07	815.43	0.14	18.57	815.31	-0.15	17.21	815.43	0.35
10/13/08	20.03	816.9	-0.58	20.9	817.01	-0.56	21.86	816.67	-0.56	18.14	816.49	-0.57	17.21	817.12	-0.53	16.76	814.74	-0.69	18.81	815.07	-0.24	17.73	814.91	-0.52


NIROP PC Wells Hydrograph
Elevation (ft msl)
820
818
816
814
812
810
808
1/13/93
3/21/93
8/24/93
3/19/94
9/28/94
3/31/95
7/26/95
12/27/95
5/2/96
4/5/97
1/13/98
4/30/98
11/30/99
10/2/00
9/26/01
3/10/03
10/15/04
10/15/07
9/21/09
10/31/11
1-PC
2-PC
3-PC
4-PC
5-PC
MS-48PC
MS-50PC
MS-53PC

C-3 FIELD FORMS

K1101307

CHAIN OF CUSTODY

SR#: ~~021411-01~~ PAR

PAGE 1 OF 3 COC # 021411-01

Columbia Analytical Services™
1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

PROJECT NAME: NIRP
PROJECT NUMBER: 50700047
PROJECT MANAGER: Paul Walz
COMPANY ADDRESS: BayWest, 5 Empire Drive
CITY STATE ZIP: St. Paul, MN
E-MAIL ADDRESS: paulw@baywest.com
PHONE #: 651-291-3491 FAX #: 651-291-0079
SAMPLER'S SIGNATURE: [signature]

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625 ☐ 8270 ☐ 8270LL ☐	Volatile Organics 624 ☐ 8260 ☒ 8021 ☐ BTEX ☐	Hydrocarbons (See below) Gas ☐ Diesel ☐ Oil ☐	Fuel Fingerprint (FIQ) NW-HCID Screen	Oil & Grease/TRPH 1664 HEM ☐ 1664 SGT ☐	PCB's Aroclors ☐ Congeners ☐	Pesticides/Herbicides 608 ☐ 8081A ☐ 8141A ☐ 8151A ☐	Chlorophenolics - 8151M Tri ☐ Tetra ☐ PCP ☐	PAHS 8310 ☐ SIM ☐	Metals, Total or Dissolved (See list below)	Cyanide ☐ Hex-Chrom ☐	pH, Cond., Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS (circle)	NH_3-N, COD, Total-P, TKN, TOC, DOC (circle) NO_2+NO_3	TOX 9020 ☐ AOX 1650 ☐ 506 ☐					REMARKS
MS37S	2-14-11	1229		water	9		X																		MS/MSD
MS35D		1352			3		X																		
AT10		1425			3		X																		
AT05B ✓		1430			3		X																		
AT03A ✓		1438			3		X																		
QCR01		1543			3		X																		
QCT02		—			2		X																		
MS35T	2/15/11	0932			3		X																		
MS34I		1221			3		X																		
QCD02		—			3		X																		

REPORT REQUIREMENTS

I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
~~X III. Data Validation Report (includes all raw data)~~
X IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION
P.O. # 34003
Bill To: Account Payable
5 Empire Drive
St Paul MN 55103

TURNAROUND REQUIREMENTS
___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results
___ Requested Report Date

Circle which metals are to be analyzed:
Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg
Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:
for 8 specific compounds
TN# 12A198R9019743634 3

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature] Date/Time: 2/15/11 1600	Signature: [signature] Date/Time: 2/16/11 1030	Signature: Date/Time:	Signature: Date/Time:
Printed Name: Amanda Mahaney Firm: BayWest	Printed Name: S HOPKINS Firm: CAS	Printed Name: Firm:	Printed Name: Firm:

BCOC #1 03/10

Columbia Analytical Services

CHAIN OF CUSTODY

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

SR#: _____

PAGE 2 OF 3 COC # 02141102

PROJECT NAME: NiRoP
PROJECT NUMBER: 0070047
PROJECT MANAGER: Paul Walz
COMPANY ADDRESS: Baywest, 5 Empire Dr
CITY STATE ZIP: St Paul MN 55103
E-MAIL ADDRESS: Paulw@baywest.com
PHONE #: 651-291-3491 FAX #: 651-291-0099
SAMPLER'S SIGNATURE: [signature]

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐ 8270LL☐	Volatile Organics 624☐ 8260☒ 8021☐ BTEX☐	Hydrocarbons (*see below) Gas☐ Diesel☐ Oil☐ ☐ Fuel Fingerprint (FIQ) ☐ NW-HCID Screen	Oil & Grease/TRPH 1664 HEM☐ 1664 SGT☐	PCB's Aroclors☐ Congeners☐	Pesticides/Herbicides 608☐ 8081A☐ 8141A☐ 8151A☐	Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐	PAHs 8310☐ SIM☐	Metals, Total or Dissolved (See list below)	Cyanide☐ Hex-Chrom☐	pH, Cond, Cl, SO4, PO4, F, NO2, NO3, BOD, TSS, TDS (circle)	NH3-N, COD, Total-P, TKN, TOC, DOC (circle) NO2+NO3	TOX 9020☐ AOX 1650☐ 506☐	REMARKS
MS43I	02/14/11	1125		WT	9		X (MS)	X											MS/MSD
MS45I		1243			3		X	X											
MS46S		1355			3		X	X											
MS18S		1457			3		X	X											
QCD01		—			3		X	X											
QCT01	02/14/11	—			2		X	X											
MS45S	02/15/11	1013			3			X											
MS15IS		1233			3			X											
MS44I		1424			3			X											
QCD03		—			3			X											

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. # 74003
Bill To: Accts Payable, 5 Empire Dr, St Paul, MN 55103

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:

for 8 specific compounds

TN# IZA198R901956139 59

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature] Date/Time: 2/15/11 1600	Signature: [signature] Date/Time: 2/16/11 1030	Signature: Date/Time:	Signature: Date/Time:
Printed Name: Amanda Maloney Firm: Baywest	Printed Name: S. Hopkins Firm: CAS	Printed Name: Firm:	Printed Name: Firm:

RCOC #1 03/10

10

Columbia Analytical Services™

CHAIN OF CUSTODY

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SR#: _____

PAGE 3 OF 3 COC # 021411-03

PROJECT NAME: NRCP
PROJECT NUMBER: 3720047
PROJECT MANAGER: Paul Walz
COMPANY ADDRESS: BayWest, Sample D
CITY STATE ZIP: St. Paul, MN 55103
E MAIL ADDRESS: paul.w@baywest.com
PHONE #: 651-291-3491 FAX #: 651-291-0099
SAMPLER'S SIGNATURE: [signature]

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐ 8270LL☐	Volatile Organics 624☐ 8260☒ 8021☐ BTEX☐	Hydrocarbons (*see below) Gas☐ Diesel☐ Oil☐ ☐ Fuel Fingerprint (FIQ) ☐ NW-HCID Screen	Oil & Grease/TRPH 1664 HEM☐ 1664 SGT☐	PCB's Aroclors☐ Congeners☐	Pesticides/Herbicides 608☐ 8081A☐ 8141A☐ 8151A☐	Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐	PAHS 8310☐ SIM☐	Metals, Total or Dissolved (See list below)	Cyanide☐ Hex-Chrom☐	pH, Cond., Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS (circle)	NH_3-N, COD, Total-P, TKN, TOC, DOC (circle) NO_2+NO_3	TOX 9020☐ AOX 1650☐ 506☐						REMARKS
RCB02	2/15/11	1445		WT	3		X																		

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. # 3400 3
Bill To: Accts Payable

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:

for 8 Specific Compounds

TN # 17A198290197436342

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature] Date/Time: 2/15/11 1500	Signature: [signature] Date/Time: 2/16/11 1030	Signature: Date/Time:	Signature: Date/Time:
Printed Name: Amanda Mahney Firm: BayWest	Printed Name: S HOPKINS Firm: CAS	Printed Name: Firm:	Printed Name: Firm:

RCOC #1 03/10

Columbia Analytical Services™

CHAIN OF CUSTODY

1317 South 13th Ave. Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

SR#: K1101425

PAGE 1 OF 1 COC # 021711-01

PROJECT NAME: NIROP
PROJECT NUMBER: J070047
PROJECT MANAGER: Paul Walz
COMPANY/ADDRESS: BayWest, 5 Empire Drive
CITY-STATE-ZIP: St. Paul, MN 55103
E MAIL ADDRESS: paulw@baywest.com
PHONE #: 651-291-3491 FAX #: 651-291-0099
SAMPLER'S SIGNATURE: [signature]

SAMPLE ID.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐ 8270LL☐	Volatile Organics 624☐ 8260☐ 8021☐ BTEX☐	Hydrocarbons (*see below) Gas☐ Diesel☐ Oil☐	Fuel Fingerprint (FIQ) ☐ NW-HCID Screen	Oil & Grease/TRPH 1664 SGT☐ 1664 HEM☐	PCB's Aroclors☐ Congeners☐	Pesticides/Herbicides 608☐ 8081A☐ 8141A☐ 8151A☐	Chlorophenolics: 8151M Tri☐ Tetra☐ PCP☐	PAHS 8310☐ SIM☐	Metals, Total or Dissolved (See list below)	Cyanide☐ Hex-Chrom☐	pH, Cond., Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS (circle)	NH_3-N, COD, Total-P, TKN, TOC, DOC (circle) NO_2+NO_3	TOX 9020☐ AOX 1650☐ 506☐	REMARKS
~~MS565~~ QCT03	2/16/11	—		Water	2		X													
MS41I	2/16/11	1100			3		X													
MS55I	2/16/11	1150			3		X													
MS36S		1152			3		X													
MS56I		1236			3		X													
MS54I		1245			3		X													
MS54S		1333			3		X													
QCR04	2/17/11	1310			3		X													
MS33I		1142			3		X													
QCR03	2/17/11	1411			3		X													

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. # 54003
Bill To: Accts Payable

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:
For 8 specific Compounds

TN# 12A19S29019344 1700

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature] Date/Time: 2/17/11 1415	Signature: [signature] Date/Time: 2/18/11 1010	Signature: Date/Time:	Signature: Date/Time:
Printed Name: Amanda Manning Firm: BayWest	Printed Name: S. HOPKINS Firm: CAS	Printed Name: Firm:	Printed Name: Firm:

RCOC #1 03/10

8

FIELD SAMPLING DATA SHEET

Page: 1 of 1

QC/QA Check _____

PROJECT NAME :	NIROP Winter '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS43I
CITY, STATE, ZIP :	Fridley, MN	DATE:	2/14/11
SAMPLER :	Amanda Malanoy	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	021411-02

WELL DATA

WELL NAME :	MS43I
CASING MATERIAL :	Steel
WELL DIAMETER (in) :	2
WELL DEPTH (ft) :	82.05
DEPTH TO WATER (toc):	29.90 DATE: 2/14/11
WATER COLUMN HEIGHT (ft):	52.15
WELL VOLUME (gal) :	8.50

PURGE DATA

PURGE METHOD :	Grundfos Pump
PUMP CONTROLLER SETTINGS:	185
PURGE RATE (gpm) :	1.42
PURGE START / END TIME :	1105 / 1123
SAMPLING BEGIN / END TIME :	1125 / 1130
PUMP ID # :	275106 YSI ID # : 217003
WATER LEVEL ID # :	230009

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤ 5	WATER LEVEL (ft BTOC)
1	1108	4.26	10.52	0.959	2.57	7.20	-21.4	7.9	29.65
2	1111	8.52	10.57	0.961	0.26	7.26	-24.4	0.8	
3	1114	12.78	10.52	0.964	0.24	7.26	-24.7	3.8	29.65
4	1117	17.04	10.54	0.964	0.21	7.26	-24.9	0.0	
5	1120	21.30	10.50	0.964	0.19	7.27	-25.0	0.0	
6	1123	25.56	10.55	0.964	0.17	7.27	-25.0	0.0	
7									
8									
9									
10									

STABILIZATION DATA

TOTAL VOLUME (Gal) :	25.56
# OF WELL VOLUMES PURGED:	3
STAB. TEMP (C) :	10.55
STAB. Sp. CONDUCTIVITY :	0.964
STAB. D.O. :	0.17
STAB. pH :	7.27
STAB. ORP :	-25.0
STAB. TURBIDITY:	0.0

SAMPLE CONTAINERS

VOC: 9 ~~3~~ -40 ml vials w/ HCl pres.

SAMPLE FIELD FILTERED ? : Yes / (No)

SAMPLE TIME : 1125

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

'S/MSD? (Yes)/ No (name/time/comments): MS43I

COMMENTS

'E DESCRIPTION (Begin / End): COLOR: black / clear ODOR: none / clear

'ATIONS :

'n well at completion? (Yes or (No)):

TEMP.: 40°F SKY: pt cloudy WIND: 10 mph

FIELD SAMPLING DATA SHEET

Page: | of |

QC/QA Check _____

PROJECT NAME :	NIROP Winter '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS45I
CITY, STATE, ZIP :	Fridley, MN	DATE:	2/14/11
SAMPLER :	Amanda Malaney	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	02141-02

WELL DATA

WELL NAME :	MS45I
CASING MATERIAL :	steel
WELL DIAMETER (in) :	2
WELL DEPTH (ft) :	91.75
DEPTH TO WATER (toc):	24.89 DATE: 2/14/11
WATER COLUMN HEIGHT (ft):	66.86
WELL VOLUME (gal) :	10.90

PURGE DATA

PURGE METHOD :	Grundfos Pump
PUMP CONTROLLER SETTINGS:	205 Hz
PURGE RATE (gpm) :	1.82
PURGE START / END TIME :	1217 / 1241
SAMPLING BEGIN / END TIME :	1243 / 1247
PUMP ID # :	275106 YSI ID # : 217003
WATER LEVEL ID # :	230009

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤ 5	WATER LEVEL (ft BTOC)
1	1220	5.46	11.21	0.564	0.56	7.72	-196.5	3.0	
2	~~1223~~	~~10.92~~	~~11.68~~	~~0.743~~		~~7.41~~	~~-155.9~~		~~24.50~~ Pump Stopp
3	12:29	10.92	11.36	0.740	2.1	7.36	-158.2	~~-0.20~~	25.22
4	12:32	16.38	11:38	0.743	0.14	7.34	-158.7	0.5	
5	12:35	21.84	11:40	0.743	0.11	7.34	-157.9	2.5	~~25.64~~ 25.24
6	12:38	27.30	11:41	0.743	0.10	7.33	-158.4	0	
7	12:41	32.76	11:42	0.743	0.10	7.32	-160.1	0	25.24
8									
9									
10									

STABILIZATION DATA

TOTAL VOLUME (Gal) :	32.76
# OF WELL VOLUMES PURGED:	3
STAB. TEMP (C) :	11.42
STAB. Sp. CONDUCTIVITY :	0.743
STAB. D.O. :	0.10
STAB. pH :	7.32
STAB. ORP :	-160.1
STAB. TURBIDITY:	0.0

SAMPLE CONTAINERS

VOC: 6 -40 ml vials w/ HCl pres.

SAMPLE FIELD FILTERED ? : Yes / (No)

SAMPLE TIME : 1243

FIELD BLANK? Yes / (No) (name/time/comments): QCD01

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: ~~Sulfur~~ gray/clear ODOR: sulfur/sulfur

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 40°F SKY : pt cloudy WIND : 10 mph

FIELD SAMPLING DATA SHEET

Page: of

QC/QA Check _____

PROJECT NAME :	NIROP Winter '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS465
CITY, STATE, ZIP :	Fridley, MN	DATE:	2/14/11

SAMPLER :	Amanda Malaney	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	021411-02

WELL DATA		PURGE DATA	
WELL NAME :	MS465	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	112
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.34
WELL DEPTH (ft) :	35.92	PURGE START / END TIME :	1324 / 1354
DEPTH TO WATER (toc):	23.64 DATE: 2/14/11	SAMPLING BEGIN / END TIME :	1355 / 1358
WATER COLUMN HEIGHT (ft):	12.28	PUMP ID # : 275106	YSI ID # : 217003
WELL VOLUME (gal) :	2.01	WATER LEVEL ID # :	230009

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤ 5	WATER LEVEL (ft BTOC)
1	1327	1.02	11.14	0.996	0.71	7.22	-103.9	135.7	
2	1330	2.04	11.41	0.997	0.83	7.22	-108.5	42.8	24.35
3	1333	3.06	11.44	0.996	0.63	7.22	-109.0	32.0	
4	1336	4.08	11.44	0.995	0.53	7.22	-109.2	39.0	24.35
5	1339	5.10	11.47	0.996	0.43	7.22	-108.8	11.0	
6	1342	6.12	11.50	0.996	0.32	7.22	-107.8	9.7	24.35
7	1345	7.14	11.43	0.996	0.28	7.22	-107.9	7.7	
8	1348	8.16	11.43	0.997	0.24	7.22	-108.4	12.4	
9	1351	9.18	11.40	0.998	0.19	7.22	-109.2	15.0	24.35
10	1354	10.20	11.45	0.998	0.17	7.22	-109.6	10.9	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	10.20	VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5	
STAB. TEMP (C) :	11.45	
STAB. Sp. CONDUCTIVITY :	0.998	
STAB. D.O. :	0.17	
STAB. pH :	7.22	
STAB. ORP :	-109.6	
STAB. TURBIDITY:	10.9	

not stable

SAMPLE TIME : 1355 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: brown / clear ODOR: none / none

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 40°F SKY : Cloudy WIND : 5 mph

FIELD SAMPLING DATA SHEET

QC/QA Check _____

Page: 1 of 1

PROJECT NAME :	NIROP Winter '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS18S
CITY, STATE, ZIP :	Fridley, MN	DATE:	2/14/11
SAMPLER :	Amanda Malaney	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	021411-02

WELL DATA		PURGE DATA	
WELL NAME :	MS18S	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	121
WELL DIAMETER (in) :	~~4~~ 2 (AW)	PURGE RATE (gpm) :	0.37
WELL DEPTH (ft) :	40.07	PURGE START / END TIME :	1437 / 1455
DEPTH TO WATER (toc):	26.52 DATE: 2/14/11	SAMPLING BEGIN / END TIME :	1457 / 1501
WATER COLUMN HEIGHT (ft):	13.55	PUMP ID # :	275106
WELL VOLUME (gal) :	~~2.70~~ 2.21 (AW)	WATER LEVEL ID # :	230009
		YSI ID # :	218003

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤ 5	WATER LEVEL (ft BTOC)
1	1440	1.11	11.68	1.018	0.30	7.01	-77.0	13.8	
2	1443	2.22	11.76	1.013	0.21	7.17	-85.7	3.1	26.63
3	1446	3.33	11.83	1.009	0.18	7.22	-91.0	2.2	
4	1449	4.44	11.90	1.009	0.16	7.24	-95.2	0.4	26.62
5	1452	5.55	11.87	1.009	0.14	7.25	-98.9	0.3	
6	1455	6.66	11.90	1.010	0.14	7.25	-100.5	0.2	26.61
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	6.66	VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3	
STAB. TEMP (C) :	11.90	
STAB. Sp. CONDUCTIVITY :	1.010	
STAB. D.O. :	0.14	
STAB. pH :	7.25	
STAB. ORP :	-100.5	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1457 SAMPLE FIELD FILTERED ? : Yes / No

FIELD BLANK? Yes / No (name/time/comments):

DUPLICATE SAMPLE? Yes / No (name/time/comments):

MS/MSD? Yes / No (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: yellow / clear ODOR : none/none

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or No):

WEATHER DATA : TEMP.: 40°F SKY : cloudy WIND : 5 mph

FIELD SAMPLING DATA SHEET

QC/QA Check _____

PROJECT NAME :	NIROP Winter '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS375
CITY, STATE, ZIP :	Fridley, MN	DATE:	2-14-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	02-1411-074

WELL DATA

WELL NAME :	MS-375
CASING MATERIAL :	Steel
WELL DIAMETER (in) :	2
WELL DEPTH (ft) :	47.73
DEPTH TO WATER (toc):	25.98 DATE: 2-14-11
WATER COLUMN HEIGHT (ft):	21.75
WELL VOLUME (gal) :	3.55

PURGE DATA

PURGE METHOD :	Grundfos Pump
PUMP CONTROLLER SETTINGS:	131
PURGE RATE (gpm) :	0.3
PURGE START / END TIME :	1127 / 1229
SAMPLING BEGIN / END TIME :	1229 / 1231
PUMP ID # :	Rental
YSI ID # :	217052
WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

5=17.75

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤ 5	WATER LEVEL (ft BTOC)
1	1132	2.2	15.35	1.084	0.55	6.80	-75.3	40.7	28
2	1137	3.8	15.37	1.054	0.40	7.16	-117.8	27.4	28.31
3	1142	5.0	15.37	1.038	0.33	7.22	-125.5	21.2	
4	1147	7.0	15.48	1.188	0.29	7.23	-132.6	14.0	28.08
5	1152	8.2	15.44	1.170	0.26	7.23	-134.4	13.7	
6	1157	9.5	15.42	1.150	0.21	7.23	-135.8	12.3	28.04
7	1202	11.0	15.42	1.131	0.19	7.22	-136.9	8.4	
8	1207	12.3	15.45	1.114	0.18	7.22	-137.9	5.8	28.04
9	1212	13.8	15.40	1.106	0.15	7.22	-138.7	4.7	
10	1217	15.1	15.49	1.095	0.14	7.22	-139.3	2.6	

STABILIZATION DATA

TOTAL VOLUME (Gal) :	17.8
# OF WELL VOLUMES PURGED:	5
STAB. TEMP (C) :	15.50
STAB. Sp. CONDUCTIVITY :	1.088
STAB. D.O. :	0.15
STAB. pH :	7.22
STAB. ORP :	-139.9
STAB. TURBIDITY:	1.8

SAMPLE CONTAINERS

VOC: 9 -40 ml vials w/ HCl pres.

SAMPLE TIME : 1229

SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes (No) (name/time/comments):

DUPLICATE SAMPLE? Yes (No) (name/time/comments):

MS/MSD? (Yes) / (No) (name/time/comments): 2 sets for MS375 @

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Cloudy black / clear ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 36°F SKY : Cloudy WIND : 5-10 W

FIELD SAMPLING DATA SHEET

QC/QA Check _____

PROJECT NAME :	NIROP Winter '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS375
CITY, STATE, ZIP :	Fridley, MN	DATE:	2-14-11
SAMPLER :		ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	021911-01

WELL DATA

WELL NAME :	MS-375
CASING MATERIAL :	Steel
WELL DIAMETER (in) :	2
WELL DEPTH (ft) :	47.73
DEPTH TO WATER (toc):	25.98 DATE: 2-14-11
WATER COLUMN HEIGHT (ft):	21.75
WELL VOLUME (gal) :	3.55

PURGE DATA

PURGE METHOD :	Grundfos Pump
PUMP CONTROLLER SETTINGS:	131
PURGE RATE (gpm) :	0.3
PURGE START / END TIME :	1127 / 1227
SAMPLING BEGIN / END TIME :	1229 / 1231
PUMP ID # :	Rental / YSI ID # : 217003
WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤ 5	WATER LEVEL (ft BTOC)
1	1222	16.5	15.45	1.090	0.14	7.21	-139.7	1.7	
2	1227	17.8	15.50	1.088	0.15	7.22	-139.9	1.8	
3	~~1230~~	~~1~~	~~1289~~	~~0.985~~	DNR				
4									
5									
6									
7									
8									
9									
10									

STABILIZATION DATA

TOTAL VOLUME (Gal) :	17.8
# OF WELL VOLUMES PURGED:	5
STAB. TEMP (C) :	15.50
STAB. Sp. CONDUCTIVITY :	1.088
STAB. D.O. :	0.15
STAB. pH :	7.22
STAB. ORP :	-139.9
STAB. TURBIDITY:	1.8

SAMPLE CONTAINERS

VOC: 9 -40 ml vials w/ HCl pres.

SAMPLE TIME : 1229

SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? (Yes) / No (name/time/comments): 2 sets of MS375

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: cloudy black/clear ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 38°F SKY : Cloudy WIND : 5-10 W

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: 1 of 1

PROJECT NAME :	NIROP Winter '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS35D
CITY, STATE, ZIP :	Fridley, MN	DATE:	2-14-11

SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	02141101

WELL DATA		PURGE DATA	
WELL NAME :	MS35D	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	2.95
WELL DEPTH (ft) :	132.60	PURGE START / END TIME :	1320 /
DEPTH TO WATER (toc):	24.40 DATE: 2-14-11	SAMPLING BEGIN / END TIME :	/
WATER COLUMN HEIGHT (ft):	108.20	PUMP ID # : Rented	YSI ID # : 217002
WELL VOLUME (gal) :	17.65	WATER LEVEL ID # :	232007

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ±0.1	COND (mS/cm) ±5%	D.O. (mg/L)	pH ±0.1	ORP (mV)	TURBIDITY (ntu) ≤5	WATER LEVEL (ft BTOC)
1	1323	8.85	13.04	0.830	4.36	7.62	-202.1	17.4	
2	1326	17.70	12.94	0.910	3.37	7.42	-169.2	1.4	25.02
3	1329	26.55	12.70	0.923	2.75	7.36	-149.5	0.0	
4	1332	35.40	12.54	0.925	2.50	7.34	-142.4	0.0	25.02
5	1335	44.25	12.17	0.925	2.30	7.32	-131.6	0.0	
6	1338	53.10	12.88	0.925	1.64	7.31	-124.0	0.0	
7	1341	61.95	12.87	0.924	1.20	7.30	-120.9	0.0	25.04
8	1344	70.80	12.80	0.924	0.95	7.30	-118.8	0.0	
9	1347	79.65	12.80	0.923	0.65	7.30	-115.8	0.0	
10	1350	88.50	12.84	0.923	0.40	7.29	-114.4	0.0	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	88.50	VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5	
STAB. TEMP (C) :	12.84	
STAB. Sp. CONDUCTIVITY :	0.923	
STAB. D.O. :	0.40	
STAB. pH :	7.29	
STAB. ORP :	-114.4	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1352 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: cloudy/clear ODOR :

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No))

WEATHER DATA : TEMP.: 39°F SKY : cloudy WIND : 5-10 W

FIELD SAMPLING DATA SHEET

Page: 1 of 1

QC/QA Check _____

PROJECT NAME :	NIROP Winter '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	AT10
CITY, STATE, ZIP :	Fridley, MN	DATE:	2-14-11

SAMPLER :		ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	021411-01

WELL DATA		PURGE DATA	
WELL NAME :	AT10	PURGE METHOD : ~~Grundfos Pump~~	TAP
CASING MATERIAL :		PUMP CONTROLLER SETTINGS:	
WELL DIAMETER (in) :		PURGE RATE (gpm) :	
WELL DEPTH (ft) :		PURGE START / END TIME :	/
DEPTH TO WATER (toc):	DATE:	SAMPLING BEGIN / END TIME :	/
WATER COLUMN HEIGHT (ft):		PUMP ID # : TAP	YSI ID # : 27 7002
WELL VOLUME (gal) :		WATER LEVEL ID # : TAP	

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤ 5	WATER LEVEL (ft BTOC)
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :		VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:		
STAB. TEMP (C) :	13.016	
STAB. Sp. CONDUCTIVITY :	1.634	
STAB. D.O. :	0.62	
STAB. pH :	7.19	
STAB. ORP :	-100.3	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1425 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Clear ODOR: None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or **No**):

WEATHER DATA : TEMP.: SKY: Lndo 25 WIND :

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: 1 of 1

PROJECT NAME :	NIROP Winter '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	AT05B
CITY, STATE, ZIP :	Fridley, MN	DATE:	2-14-11
SAMPLER :		ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	021411-01

WELL DATA		PURGE DATA	
WELL NAME :	AT-5B	PURGE METHOD : ~~Grundfos Pump~~	TAP
CASING MATERIAL :		PUMP CONTROLLER SETTINGS:	
WELL DIAMETER (in) :		PURGE RATE (gpm) :	
WELL DEPTH (ft) :		PURGE START / END TIME :	/
DEPTH TO WATER (toc):	DATE:	SAMPLING BEGIN / END TIME :	/
WATER COLUMN HEIGHT (ft):		PUMP ID # : —	YSI ID # : 217002
WELL VOLUME (gal) :		WATER LEVEL ID # : —	

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤ 5	WATER LEVEL (ft BTOC)
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :		VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:		
STAB. TEMP (C) :	11.85	
STAB. Sp. CONDUCTIVITY :	0.964	
STAB. D.O. :	1.98	
STAB. pH :	7.15	
STAB. ORP :	-56.5	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1430 SAMPLE FIELD FILTERED ? : Yes / **No**

FIELD BLANK? Yes / No (name/time/comments):

DUPLICATE SAMPLE? Yes / No (name/time/comments):

MS/MSD? Yes / No (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear ODOR : ?

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No))

WEATHER DATA : TEMP.: SKY : Indoors WIND :

FIELD SAMPLING DATA SHEET

Page: 1 of 1

QC/QA Check _____

PROJECT NAME :	NIROP Winter '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	AT03A
CITY, STATE, ZIP :	Fridley, MN	DATE:	2-14-11

SAMPLER :	ANALYTICAL LABORATORY : CAS
COMPANY : Bay West, Inc.	CHAIN OF CUSTODY # : 62141-01

WELL DATA	PURGE DATA
WELL NAME : AT-3A	PURGE METHOD : ~~Grundfos Pump~~ TAD
CASING MATERIAL :	PUMP CONTROLLER SETTINGS:
WELL DIAMETER (in) :	PURGE RATE (gpm) :
WELL DEPTH (ft) :	PURGE START / END TIME : /
DEPTH TO WATER (toc): DATE:	SAMPLING BEGIN / END TIME : /
WATER COLUMN HEIGHT (ft):	PUMP ID # : — YSI ID # : 217003
WELL VOLUME (gal) :	WATER LEVEL ID # : —

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤ 5	WATER LEVEL (ft BTOC)
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :		VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:		
STAB. TEMP (C) :	12.57	
STAB. Sp. CONDUCTIVITY :	0.858	
STAB. D.O. :	6.46	
STAB. pH :	7.24	
STAB. ORP :	27.9	
STAB. TURBIDITY:		

SAMPLE TIME : 1438 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? (Yes) / No (name/time/comments): QCR01 @ 1543

DUPLICATE SAMPLE? Yes / No (name/time/comments):

MS/MSD? Yes / No (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear ODOR :

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: SKY : Partly cloudy WIND :

FIELD SAMPLING DATA SHEET

QC/QA Check _____

Page: 1 of 1

PROJECT NAME :	NIROP Winter '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS35I
CITY, STATE, ZIP :	Fridley, MN	DATE:	2/15/11

SAMPLER :	Shawn Lyman	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	02141-01

WELL DATA		PURGE DATA	
WELL NAME :	MS35I	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	180
WELL DIAMETER (in) :	2"	PURGE RATE (gpm) :	1.52
WELL DEPTH (ft) :	81.76	PURGE START / END TIME :	~~9:04~~ 9:08 / 9:29
DEPTH TO WATER (toc):	26.06 DATE: 2/15/11	SAMPLING BEGIN / END TIME :	9:32 / 9:35
WATER COLUMN HEIGHT (ft):	55.7	PUMP ID # : 275106	YSI ID # : 217002
WELL VOLUME (gal) :	9.08	WATER LEVEL ID # :	

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤ 5	WATER LEVEL (ft BTOC)
1	9:11	4.56	13.06	1.036	0.47	7.33	-125.9	2.1	
2	9:14	9.12	12.98	1.045	0.32	7.31	-126.3	0.4	26.08
3	9:17	13.68	12.91	1.046	0.31	7.30	-127.9	0.7	
4	9:20	18.24	12.95	1.047	0.29	7.30	-130.0	0.3	26.15
5	9:23	22.80	12.92	1.047	0.28	7.30	-131.1	0.1	
6	9:26	27.36	12.95	1.047	0.26	7.29	-132.2	0	26.15
7	9:29	31.92	12.92	1.047	0.26	7.29	-132.6	0.1	
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	31.92	VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.52	
STAB. TEMP (C) :	12.92	
STAB. Sp. CONDUCTIVITY :	1.047	
STAB. D.O. :	0.26	
STAB. pH :	7.29	
STAB. ORP :	-132.6	
STAB. TURBIDITY:	0.1	

SAMPLE TIME : 9:32 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Black at Start / Clear ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or **No**):

WEATHER DATA : TEMP.: 35-40 SKY : Overcast WIND : 15-20

FIELD SAMPLING DATA SHEET

QC/QA Check _____		Page: 1 of 2	
PROJECT NAME :	NIROP Winter '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS34I
CITY, STATE, ZIP :	Fridley, MN	DATE:	2/15/11
SAMPLER :	Shawn Lyman	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	02411-01

WELL DATA		PURGE DATA	
WELL NAME :	MS34I	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	127
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	~~1.45~~ 0.4
WELL DEPTH (ft) :	79.32	PURGE START / END TIME :	1107 / 1217
DEPTH TO WATER (toc):	26.03 DATE: 2/15/11	SAMPLING BEGIN / END TIME :	1221 /
WATER COLUMN HEIGHT (ft):	53.92	PUMP ID # : 275106	YSI ID # : 217002
WELL VOLUME (gal) :	8.69	WATER LEVEL ID # :	230009

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤ 5	WATER LEVEL (ft BTOC)
1	1112	2.0	13.78	0.892	3.05	7.46	-196.8	15.8	26.20
2	1117	4.0	13.55	1.151	1.31	7.13	-148.7	1.0	
3	1122	6.0	13.43	1.157	0.87	7.12	-147.4	0.5	26.14
4	1127	8.0	13.37	1.157	0.53	7.13	-147.4	0.1	
5	1132	10.0	13.37	1.154	0.40	7.12	-147.6	0	26.19
6	1137	12.0	13.32	1.152	0.34	7.12	-147.9	0	
7	1142	14.0	13.33	1.150	0.32	7.13	-148.2	0	26.20
8	1147	16.0	13.27	1.149	0.31	7.12	-148.3	0	
9	1152	18.0	13.28	1.148	0.30	7.12	-148.6	0	26.20
10	1157	20.0	13.26	1.146	0.29	7.12	-148.7	0	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	28.0	VOC: 6 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.23	
STAB. TEMP (C) :	13.24	
STAB. Sp. CONDUCTIVITY :	1.142	
STAB. D.O. :	0.29	
STAB. pH :	7.13	
STAB. ORP :	-149.3	
STAB. TURBIDITY:	0	

SAMPLE TIME : 1221 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? (Yes) / No (name/time/comments): QCR02 @ 1545

DUPLICATE SAMPLE? (Yes) / No (name/time/comments): SCD02 @ —

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Black / Clear ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or **No**):

WEATHER DATA : TEMP.: 35-40 SKY : Overcast WIND : 15-20 mph

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

PROJECT NAME :	NIROP Winter '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS34 I
CITY, STATE, ZIP :	Fridley, MN	DATE:	2/15/11

SAMPLER :	Shawn Lyman	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	

WELL DATA		PURGE DATA	
WELL NAME :	MS34 I	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	127
WELL DIAMETER (in) :	2"	PURGE RATE (gpm) :	0.4
WELL DEPTH (ft) :	79.32	PURGE START / END TIME :	11:07 / 12:17
DEPTH TO WATER (toc):	26.03 DATE 2/15/11	SAMPLING BEGIN / END TIME :	12:21
WATER COLUMN HEIGHT (ft):	53.92	PUMP ID # : 275106	YSI ID # : 217002
WELL VOLUME (gal) :	8.69	WATER LEVEL ID # :	230009

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤ 5	WATER LEVEL (ft BTOC)
1	1202	22.0	13.26	1.145	0.29	7.12	-149.0	0	26.20
2	1207	24.0	13.25	1.144	0.29	7.13	-149.1	0	
3	1212	26.0	13.25	1.144	0.31	7.13	-149.3	0	26.20
4	1217	28.0	13.24	1.142	0.29	7.13	-149.3	0	26.20
5									
6									
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	28.0	VOC: 10 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.23	
STAB. TEMP (C) :	13.24	
STAB. Sp. CONDUCTIVITY :	1.142	
STAB. D.O. :	0.29	
STAB. pH :	7.13	
STAB. ORP :	-149.3	
STAB. TURBIDITY:	0	

SAMPLE TIME : 1221 SAMPLE FIELD FILTERED ? : Yes / **No**

FIELD BLANK? Yes / No (name/time/comments):

DUPLICATE SAMPLE? Yes / No (name/time/comments): QCD02 @ —

MS/MSD? Yes / No (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Black / Clear ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or **No**):

WEATHER DATA : TEMP.: 35-40 SKY : Overcast WIND : 15

25.1

FIELD SAMPLING DATA SHEET

QC/QA Check _____		Page: 1 of 1	
PROJECT NAME :	NIROP Winter '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS15IS
CITY, STATE, ZIP :	Fridley, MN	DATE:	02/15/11
SAMPLER :	Joe S	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	021411-02

WELL DATA		PURGE DATA	
WELL NAME :	MS15IS	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	145
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.84
WELL DEPTH (ft) :	77.86	PURGE START / END TIME :	~~1246/1140~~ 1200 / 1230
DEPTH TO WATER (toc):	26.47 DATE: 02/15/11	SAMPLING BEGIN / END TIME :	1233 / 1234
WATER COLUMN HEIGHT (ft):	51.39	PUMP ID # : Rental	YSI ID # : 217003
WELL VOLUME (gal) :	8.37	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤ 5	WATER LEVEL (ft BTOC)
1	1200 ~~1151~~	0.0	11.66	0.771	0.32	7.32	-35.4	14.2	30.00
2	1205 ~~1156~~	4.2	11.69	0.779	0.16	7.28	-43.9	10.7	
3	1210 ~~1201~~	8.4	11.75	0.784	0.14	7.26	-44.5	6.4	30.14
4	1215 ~~1206~~	12.6	11.72	0.785	0.11	7.25	-43.7	4.6	30.27
5	1220 ~~1211~~	16.8	11.69	0.786	0.10	7.25	-42.6	3.7	
6	1225 ~~1216~~	21.0	11.65	0.786	0.09	7.24	-42.3	3.7	30.35
7	1230 ~~1221~~	25.2	11.67	0.787	0.08	7.24	-30.1	3.1	
8	~~1235~~ 1235								
9	~~1240~~ 1240								
10	~~1245~~ 1245								

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	25.2 ~~11.67~~	VOC: 6 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	~~0.787~~	3.01
STAB. TEMP (C) :	~~0.08~~	11.67
STAB. Sp. CONDUCTIVITY :	~~7.24~~	0.787
STAB. D.O. :	~~-~~	0.08
STAB. pH :	7.24	~~-~~
STAB. ORP :	-30.10	
STAB. TURBIDITY:	3.10	

SAMPLE TIME : 1233 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes (No) (name/time/comments):

DUPLICATE SAMPLE? (Yes) No (name/time/comments): QCD03 @ —

MS/MSD? Yes (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Black / clear ODOR : None / None

OBSERVATIONS : Well Drew down to fast @ 3 min / ¼ well volume. Went to Readings every 5 mins. @ Lower Purge Rate. Original Purge Rate = 1.40 Original Depth to water 26.47'. Depth to water @ new Rate Start = 30.00'.

Sample tubing left in well at completion? (Yes or **No**):

WEATHER DATA : TEMP.: 38 SKY : Mostly cloudy WIND : 5-10 MPH

FIELD SAMPLING DATA SHEET

QC/QA Check _____.		Page:	of 1
PROJECT NAME :	NIROP Winter '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS455
CITY, STATE, ZIP :	Fridley, MN	DATE:	2/15/11
SAMPLER :	JCS	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	02411-02

WELL DATA		PURGE DATA	
WELL NAME :	MS455	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	122.4
WELL DIAMETER (in) :	2"	PURGE RATE (gpm) :	0.27
WELL DEPTH (ft) :	34.9'	PURGE START / END TIME :	949 / 1010
DEPTH TO WATER (toc):	25.10 DATE: 02/15/11	SAMPLING BEGIN / END TIME :	1013 / 1014
WATER COLUMN HEIGHT (ft):	~~25.10~~ 9.80'	PUMP ID # : Rental	YSI ID # : 917003
WELL VOLUME (gal) :	~~0.275~~ 1.60	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤ 5	WATER LEVEL (ft BTOC)
1	952	~~0.220~~ 0.81	11.37	1.105	1.39	7.07	-25.1	3.9	25.10
2	955	~~0.54~~ 1.61	11.46	1.098	1.71	7.09	-45.2	5.5	
3	958	~~0.91~~ 2.43	12.09	1.092	3.07	7.12	-54.0	5.0	25.20
4	1001	3.24	11.74	1.091	1.87	7.12	-56.9	4.7	
5	1004	4.05	11.58	1.090	1.95	7.12	-57.5	3.5	25.20
6	1007	4.86	11.55	1.085	2.12	7.12	-57.6	3.4	
7	1010	5.67	11.60	1.079	2.15	7.12	-58.3	3.2	
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	5.67	VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.54	
STAB. TEMP (C) :	11.60	
STAB. Sp. CONDUCTIVITY :	1.079	
STAB. D.O. :	2.15	
STAB. pH :	7.12	
STAB. ORP :	-58.3	
STAB. TURBIDITY:	3.20	

SAMPLE TIME : 1013 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Light orange/clear ODOR : none/none

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No))

WEATHER DATA : TEMP.: 36° SKY : Mostly cloudy WIND : 5-7 MPH

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: 1 of 1

PROJECT NAME :	NIROP Winter '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS44I
CITY, STATE, ZIP :	Fridley, MN	DATE:	02/15/11

SAMPLER :	Joes	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	0214-11-02

WELL DATA		PURGE DATA	
WELL NAME :	MS44I	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	1.52
WELL DEPTH (ft) :	81.84	PURGE START / END TIME :	1403 / 1421
DEPTH TO WATER (toc):	26.06 DATE: 02/15/11	SAMPLING BEGIN / END TIME :	1424 / 1424
WATER COLUMN HEIGHT (ft):	55.78	PUMP ID # : Rental	YSI ID # : 217003
WELL VOLUME (gal) :	~~9.09~~ 9.10	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTORS: (0.163 - 2") 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤ 5	WATER LEVEL (ft BTOC)
1	1406	4.56	11.33	0.754	0.20	7.75	-58.9	17.5	~~26.31~~ 26.3
2	1409	9.12	11.18	1.147	0.14	7.34	-172.6	5.3	26.31
3	1412	13.68	11.37	1.162	0.08	7.24	-147.7	3.3	26.31
4	1415	18.24	11.38	1.163	0.07	7.22	-137.5	2.7	
5	1418	22.80	11.38	1.161	0.07	7.21	-131.4	2.5	
6	1421	27.36	11.41	1.160	0.06	7.21	-127.9	2.6	26.32
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	27.36	VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.01	
STAB. TEMP (C) :	11.33	
STAB. Sp. CONDUCTIVITY :	1.160	
STAB. D.O. :	0.06	
STAB. pH :	7.21	
STAB. ORP :	-127.9	
STAB. TURBIDITY:	2.6	

SAMPLE TIME : 1424 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Black / Clear ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No))

WEATHER DATA : TEMP.: 41 SKY : Sun WIND : 5mph

FIELD SAMPLING DATA SHEET

Page: of

QC/QA Check _____.

PROJECT NAME :	NIROP Winter '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS56T
CITY, STATE, ZIP :	Fridley, MN	DATE:	~~2/17/11~~ 2/16/11
SAMPLER :		ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	021711-01

WELL DATA

WELL NAME :	MS56T
CASING MATERIAL :	steel
WELL DIAMETER (in) :	2
WELL DEPTH (ft) :	76.50 2/16/11
DEPTH TO WATER (toc):	24.81 DATE: ~~12/17/11~~
WATER COLUMN HEIGHT (ft):	51.69
WELL VOLUME (gal) :	8.43

PURGE DATA

PURGE METHOD :	Grundfos Pump
PUMP CONTROLLER SETTINGS:	168
PURGE RATE (gpm) :	1.41
PURGE START / END TIME :	1213 / 1234
SAMPLING BEGIN / END TIME :	1236 / 1240
PUMP ID # : 275106	YSI ID # : 217002
WATER LEVEL ID # :	730009

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤ 5	WATER LEVEL (ft BTOC)
1	1216	4.23	12.67	0.656	0.64	7.96	-287.7	6.4	26.20
2	1219	8.46	12.46	1.175	1.25	7.20	-197.8	3.7	
3	1222	12.69	12.44	1.208	1.31	7.06	-168.0	2.5	
4	1225	16.92	12.43	1.216	1.52	7.01	-154.5	3.3	25.75
5	1228	21.15	12.35	1.221	1.53	6.98	-147.1	3.2	
6	1231	25.38	12.33	1.226	1.60	6.97	-144.0	2.4	25.75
7	1234	29.61	12.32	1.228	1.40	6.96	-140.4	2.6	
8									
9									
10									

STABILIZATION DATA

TOTAL VOLUME (Gal) :	29.61
# OF WELL VOLUMES PURGED:	3.5
STAB. TEMP (C) :	12.32
STAB. Sp. CONDUCTIVITY :	1.228
STAB. D.O. :	1.40
STAB. pH :	6.96
STAB. ORP :	-140.4
STAB. TURBIDITY:	2.6

SAMPLE CONTAINERS

VOC: 3 -40 ml vials w/ HCl pres.

SAMPLE TIME : 1236

SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: black / clear ODOR: none / none

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 45°F SKY : pt cloudy WIND : 5 mph

FIELD SAMPLING DATA SHEET

QC/QA Check _____		Page: 1 of 1	
PROJECT NAME :	NIROP Winter '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS4 I
CITY, STATE, ZIP :	Fridley, MN	DATE:	~~2/17/11~~ 2/16/11 (AM)
SAMPLER :	Amanda Maloney	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	021711-01

WELL DATA		PURGE DATA	
WELL NAME :	MS4 I	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Stainless	PUMP CONTROLLER SETTINGS:	1.75
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	1.86
WELL DEPTH (ft) :	92.52 (AM) 2/16/11	PURGE START / END TIME :	1040 / 1058
DEPTH TO WATER (toc):	24.14 DATE: ~~2/17/11~~	SAMPLING BEGIN / END TIME :	1100 / 1103
WATER COLUMN HEIGHT (ft):	68.38	PUMP ID # : 275106	YSI ID # : 217002
WELL VOLUME (gal) :	11.15	WATER LEVEL ID # :	230009

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤ 5	WATER LEVEL (ft BTOC)
1	1043	5.58	12.18	0.570	0.54	7.54	-210.9	8.0	~~27.55~~ (AM) 24.55
2	1046	11.16	12.13	0.860	0.39	7.10	-144.5	5.6	
3	1049	16.84	12.08	0.868	0.42	7.09	-131.2	5.4	24.70
4	1052	22.42	12.16	0.866	0.53	7.11	-121.0	4.1	
5	1055	28.0	12.11	0.875	0.38	7.10	-119.2	3.5	25.10
6	1058	33.58	12.14	0.875	0.36	7.11	-119.0	3.9	
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	33.58	VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3	
STAB. TEMP (C) :	12.14	
STAB. Sp. CONDUCTIVITY :	0.875	
STAB. D.O. :	0.36	
STAB. pH :	7.11	
STAB. ORP :	-119.0	
STAB. TURBIDITY:	3.9	

SAMPLE TIME : 1100 SAMPLE FIELD FILTERED ? : Yes / **No**

FIELD BLANK? Yes / **No** (name/time/comments):

DUPLICATE SAMPLE? Yes / **No** (name/time/comments):

MS/MSD? Yes / **No** (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: black / clear ODOR: none / none

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or **No**):

WEATHER DATA : TEMP.: 45°F SKY : Sunny WIND : 5 mph

FIELD SAMPLING DATA SHEET

QC/QA Check _____		Page: 1 of 1	
PROJECT NAME :	NIROP Winter '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS55I
CITY, STATE, ZIP :	Fridley, MN	DATE:	~~2/17/11~~ 2/16/11 AM
SAMPLER :	Amanda Malaney	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	~~14~~ 021711-01

WELL DATA		PURGE DATA	
WELL NAME :	MS55I	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	steel	PUMP CONTROLLER SETTINGS:	165
WELL DIAMETER (in) :	2 AM	PURGE RATE (gpm) :	1.5
WELL DEPTH (ft) :	79.50 2/16/11	PURGE START / END TIME :	1129 / 1148
DEPTH TO WATER (toc):	24.03 DATE: ~~2/17/11~~	SAMPLING BEGIN / END TIME :	1150 / 1153
WATER COLUMN HEIGHT (ft):	55.47	PUMP ID # : 275106	YSI ID # : 217003 002 AM
WELL VOLUME (gal) :	9.05	WATER LEVEL ID # :	230089

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤ 5	WATER LEVEL (ft BTOC)
1	1132	4.53	11.34	1.126	0.58	7.26	-158.0	4.7	25.15
2	1135	9.06	11.36	1.136	0.49	7.21	-147.0	3.3	
3	1138	13.59	11.32	1.142	0.48	7.17	-139.8	2.9	
4	1141	18.12	11.31	1.148	0.49	7.15	-134.9	3.1	25.90
5	1145	22.65	11.32	1.161	0.52	7.13	-130.9	2.6	
6	1148	27.18	11.33	1.163	0.55	7.12	-128.9	2.5	25.90
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	27.18	VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3	
STAB. TEMP (C) :	11.33	
STAB. Sp. CONDUCTIVITY :	1.163	
STAB. D.O. :	0.55	
STAB. pH :	7.12	
STAB. ORP :	-128.9	
STAB. TURBIDITY:	2.5	

SAMPLE TIME : 1150 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: black / black ODOR : none

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 45°F SKY : pt cloudy WIND : 5mph

FIELD SAMPLING DATA SHEET

QC/QA Check _____		Page: 1 of 2	
PROJECT NAME :	NIROP Winter '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS36S
CITY, STATE, ZIP :	Fridley, MN	DATE:	2-16-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	021711-01

WELL DATA		PURGE DATA	
WELL NAME :	MS36S	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	
WELL DEPTH (ft) :	44.70	PURGE START / END TIME :	~~9:40~~ 940
DEPTH TO WATER (toc):	26.74 DATE: 2-16-11	SAMPLING BEGIN / END TIME :	/
WATER COLUMN HEIGHT (ft):	17.96	PUMP ID # : Rental	YSI ID # : 217002
WELL VOLUME (gal) :	2.93	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤ 5	WATER LEVEL (ft BTOC)
1	~~9:50~~ 945	0.75	12.83	1.065	0.69	8.28	-228.3	85.5	31.70
2	950	2.00	13.36	1.193	1.19	8.16	-231.8	54.6	34.55
3	955	2.95	13.54	1.401	0.54	7.94	-222.2	32.1	~~35.12~~ 36.12
4	1000	3.11	13.51	1.568	0.46	7.83	-225.8	27.2	36.21
5	1005	4.00	13.76	1.832	0.39	7.72	-218.1	13.0	36.93
6	~~1010~~ 1010	4.90	13.67	1.941	0.42	7.68	-211.9	10.3	37.21
7	1015	5.11	13.75	2.037	0.44	7.68	-210.8	12.4	37.12
8	1020	5.95	14.34	1.900	0.45	7.79	-222.2	19.4	37.6
9	1025	6.20	14.40	1.956	0.49	7.82	-214.8	15.20	38.51
10	1030	7.1	13.73	1.818	0.50	7.79	-199.8	10.0	38.55

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :		VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:		
STAB. TEMP (C) :		
STAB. Sp. CONDUCTIVITY :		
STAB. D.O. :		
STAB. pH :		
STAB. ORP :		
STAB. TURBIDITY:		

SAMPLE TIME : SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Black ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or **No**):

WEATHER DATA : TEMP.: 38 SKY : Sunny WIND : 5 MPH

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: 2 of 2

PROJECT NAME :	NIROP Winter '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS 36 S
CITY, STATE, ZIP :	Fridley, MN	DATE:	2/16/11

SAMPLER : Ryan Riley	ANALYTICAL LABORATORY : CAS
COMPANY : Bay West, Inc.	CHAIN OF CUSTODY # : ~~2-16-11~~ 02171-01

WELL DATA		PURGE DATA	
WELL NAME :	MS36S	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	stainless steel	PUMP CONTROLLER SETTINGS:	
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	
WELL DEPTH (ft) :	44.70	PURGE START / END TIME :	940 / 1120
DEPTH TO WATER (toc):	26.74 DATE: 2-16-11	SAMPLING BEGIN / END TIME :	1152 / 1152
WATER COLUMN HEIGHT (ft):	17.96	PUMP ID # : Rental	YSI ID # : 212002
WELL VOLUME (gal) :	2.93	WATER LEVEL ID # : 270007	

VOLUME CONVERSION FACTORS: (0.163 - 2") 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤ 5	WATER LEVEL (ft BTOC)
1	1035	7.6	14.84	1.608	3.68	7.84	-206.8	50.3	
2	1040	8.1	14.44	~~3.552~~ 1.781	3.50	7.87	-204.0	38.2	38.90
3	1045	8.5	15.15	2.064	1.28	7.88	-181.1	19.2	38.48
4	1050	9.45	14.32	1.800	0.91	7.82	-179.3	14.4	
5	1055	10.11	14.72	2.037	0.77	7.82	-177.9	6.4	
6	1100	11.00	14.11	1.856	0.80	7.89	-186.5	42.6	40.72
7	1105	11.85	13.97	1.791	0.65	7.80	-176.4	58.2	
8	1110	13.00	14.16	1.653	0.47	7.77	-181.3	32.2	
9	1115	* ~~14.50~~ 13.75	14.51	2.146	2.10	8.02	-164.9	208.0	42.67
10	1120								Dry

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :		VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:		
STAB. TEMP (C) :		
STAB. Sp. CONDUCTIVITY :		
STAB. D.O. :		
STAB. pH :		
STAB. ORP :		
STAB. TURBIDITY:		

SAMPLE TIME : SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes (No) (name/time/comments):

DUPLICATE SAMPLE? Yes (No) (name/time/comments):

MS/MSD? Yes (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: ODOR :

OBSERVATIONS : Bobble on DO Meter @ 1035 Able to Remove by 1045 Reading
water went Black @ 42.67 about 1 ft water @ bottom of well
39 ft @ Sample 1152 AM
Dry @ 1120 AM 43.44 ft to top of Pump

Sample tubing left in well at completion? (Yes or **No**):

WEATHER DATA : TEMP.: 40 SKY : Sun WIND : 5 mph

FIELD SAMPLING DATA SHEET

QC/QA Check _____ | Page: 1 of 1

PROJECT NAME :	NIROP Winter '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS54I
CITY, STATE, ZIP :	Fridley, MN	DATE:	2-16-11

SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	021701-01

WELL DATA		PURGE DATA	
WELL NAME :	MS54I	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	180.00 Hz
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	1.33
WELL DEPTH (ft) :	76.50	PURGE START / END TIME :	1225 / 1243
DEPTH TO WATER (toc):	27.57 DATE: 2-16-11	SAMPLING BEGIN / END TIME :	1245 / 1247
WATER COLUMN HEIGHT (ft):	48.93	PUMP ID # :	Rented / YSI ID # : 217003
WELL VOLUME (gal) :	7.98	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤ 5	WATER LEVEL (ft BTOC)
1	1228	3.99	12.15	0.960	1.62	7.59	-186.0	12.0	
2	1231	7.98	12.15	0.996	1.32	7.49	-173.7	6.0	
3	1234	11.97	12.14	1.018	0.77	7.39	-160.8	1.2	28.12
4	1237	15.96	12.14	1.024	0.57	7.35	-157.1	0.3	
5	1240	19.95	12.14	1.028	0.44	7.32	-154.0	~~0.5~~ 0	
6	1243	23.94	12.12	1.032	0.34	7.31	-152.5	0	
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	23.94	VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3 ~~8.12~~	
STAB. TEMP (C) :	12.12	
STAB. Sp. CONDUCTIVITY :	1.032	
STAB. D.O. :	0.34	
STAB. pH :	7.31	
STAB. ORP :	-152.5	
STAB. TURBIDITY:	0	

SAMPLE TIME : 1225 | SAMPLE FIELD FILTERED ? : Yes / No

FIELD BLANK? Yes / No (name/time/comments):

DUPLICATE SAMPLE? Yes / No (name/time/comments):

MS/MSD? Yes / No (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: grey / clear ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or **No**):

WEATHER DATA : TEMP.: 43 SKY : Sun WIND : 5mph

FIELD SAMPLING DATA SHEET

QC/QA Check _____ | Page: 1 of 1

PROJECT NAME :	NIROP Winter '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS545
CITY, STATE, ZIP :	Fridley, MN	DATE:	02/16/11

SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	02171-01

WELL DATA		PURGE DATA	
WELL NAME :	MS545	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	Stainless	PUMP CONTROLLER SETTINGS:	128
WELL DIAMETER (in) :	2 in	PURGE RATE (gpm) :	0.24
WELL DEPTH (ft) :	36.5	PURGE START / END TIME :	1301 /
DEPTH TO WATER (toc):	27.75 DATE: 02/16/11	SAMPLING BEGIN / END TIME :	/
WATER COLUMN HEIGHT (ft):	8.75	PUMP ID # : ~~RM230007~~	YSI ID # : 217023
WELL VOLUME (gal) :	1.43	WATER LEVEL ID # : 230007	

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤ 5	WATER LEVEL (ft BTOC)
1	1304	0.75	12.37	1.085	3.26	7.15	-80.8	20.4	27.82
2	1307	1.50	13.07	1.087	0.80	7.12	-80.6	20.4	
3	1310	2.25	13.25	1.088	0.59	7.10	-82.2	20.0	~~28.81~~ 27.81
4	1313	3.00	13.25	1.088	1.21	7.11	-83.3	30.4	27.83
5	1316 ~~1310~~	3.75	13.23	1.088	0.92	7.10	-84.3	28.5	
6	1319 ~~1322~~	4.50	13.26	1.088	0.73	7.10	-84.1	29.2	
7	1322	5.25	13.27	1.088	0.60	7.10	-84.5	27.1	
8	1325	6.00	13.31	1.088	0.46	7.10	-84.8	22.6	27.81
9	1328	6.75	13.36	1.088	0.39	7.09	-86.1	17.7	
10	1331	7.50	13.37	1.089	0.33	7.09	-86.4	13.8	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	7.50	VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5	
STAB. TEMP (C) :		
STAB. Sp. CONDUCTIVITY :		
STAB. D.O. :		
STAB. pH :		
STAB. ORP :		
STAB. TURBIDITY:		

SAMPLE TIME : | SAMPLE FIELD FILTERED ? : Yes (No)

FIELD BLANK? (Yes) / No (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Clear/Clear ODOR: None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No))

WEATHER DATA : TEMP.: 43 SKY : Sun WIND : 5mPH

FIELD SAMPLING DATA SHEET

Page: 1 of 1

QC/QA Check _____

PROJECT NAME :	NIROP Winter '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS33I
CITY, STATE, ZIP :	Fridley, MN	DATE:	2/17/11
SAMPLER :	Amanda Malaney	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	021711-01

WELL DATA		PURGE DATA	
WELL NAME :	MS33I	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	129 → 127
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	
WELL DEPTH (ft) :	75.87	PURGE START / END TIME :	1025 / 1140
DEPTH TO WATER (toc):	18.09 DATE: 2/17/11	SAMPLING BEGIN / END TIME :	1142 / 1145
WATER COLUMN HEIGHT (ft):	57.78	PUMP ID # : 275106	YSI ID # : 217002
WELL VOLUME (gal) :	9.42	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

28.25 = 3 well vol.

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤ 5	WATER LEVEL (ft BTOC)
1	1030	3.0	18.85	1.213	0.56	7.76	-181.9	18.1	
2	1035	5.5	18.19	1.374	0.27	7.48	-166.7	8.5	29.39
3	1040	6.5	17.77	1.423	0.20	7.41	-164.2	5.9	
4	1045	8.5	17.54	1.442	0.18	7.45	-171.2	6.5	29.50
5	1050	10.00	17.27	1.461	0.17	7.28	-142.7	9.3	
6	1055	12.50	17.11	1.508	0.15	7.22	-131.6	4.3	29.50
7	1100	15.00	17.09	1.511	0.15	7.20	-129.6	3.3	
8	1105	17.00	17.03	1.517	0.14	7.19	-127.2	3.2	29.38
9	~~1200~~ 1110	18.50	16.91	1.506	0.14	7.18	-125.8	2.7	
10	~~1205~~ 1115	21.00	16.97	1.509	0.14	7.17	-125.6	2.6	29.37

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	29.00	VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.1	
STAB. TEMP (C) :	Sp 16.88	
STAB. Sp. CONDUCTIVITY :	1.518	
STAB. D.O. :	0.12	
STAB. pH :	7.15	
STAB. ORP :	-125.0	
STAB. TURBIDITY:	2.5	

SAMPLE TIME : SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? (Yes) / No (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: black / clear ODOR : ~~ele~~ none / none

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: SKY : indoors WIND :

GROUNDWATER INSTRUMENT CALIBRATION FORM

PROJECT: NIROP Winter 2011 GW Monitoring

PERSONNEL: Amanda Malaney

PROJECT #: J070047-37

STARTING DATE:

DATE	TIME		INSTRUMENT / MODEL #	pH		COND. (mS)	ORP (mV)	TURBIDITY (NTU)		DO (mg/L)	DO (%)	BP (mmHg)	Comments
	Standard Cal. Concentrations →			7	10	1.000	244.0	0					
2/14/11	0830	pre	217002	7.02	10.02	0.864	244.9	0.9	125.5	10.53	99.0	740.5	
		post		7.00	10.00	1.000	244.0	0.0	126.0	10.38	97.4		
	Standard Cal. Concentrations →			7	10	1.000	244.0	0					
2/14/11	0830	pre	217003	7.04	10.10	1.034	239.7	-0.1	110.6	97.4	113.8	740.5	
		post		7.00	10.00	1.000	244.0	0.0	100.0	10.66	12.46		
	Standard Cal. Concentrations →			7	10	1.000		0					
2/15/11	0720	pre	217002	6.97	10.02	0.986	242.6	-0.3	99.6	10.35	97.5	736.4	
		post		7.00	10.00	1.000	240.0	0.0	100.0	10.29	96.9		
	Standard Cal. Concentrations →			7	10	1.000		0					
2/15/11	0720	pre	217003	6.99	10.01	1.000	243.8	0.8	120.2	12.96	120.2	736.4	
		post		7.00	10.00	1.000	244.0	0.0	126.0	10.44	96.8		
	Standard Cal. Concentrations →			7	10	1.000	~~244.0~~	0					
2/16/11	0710	pre	217002	7.06	9.93	0.982	~~126.5~~ 243.2	0.1	126.5	11.33	103.7	733.3	
		post		7.00	10.00	1.000	~~126.0~~ ~~244.0~~	0.0	126.0	~~9.65~~ 10.55	~~10~~ 96.6		
	Standard Cal. Concentrations →			7	10	1.000	~~244.0~~	0					
2/16/11	0710	pre	217003	6.98	9.99	0.997	253.2	0.3	101.0	10.53	95.5	733.3	
		post		7.00	10.00	1.000	244.0	0.0	100.0	10.63	96.5		

Notes:
- "Pre" refers to the instrument readings during calibration right before calibration is entered/accepted.
- "Post" refers to the instrument readings just after calibration has been accepted. "Post" calibration can also refer to instrument readings taken at end of sampling day to document any instrument "drift" in readings.

GROUNDWATER INSTRUMENT CALIBRATION FORM

PROJECT: NIROP Winter 2011 GW Monitoring **PERSONNEL:** Amanda Malaney

PROJECT #: J070047-37 **STARTING DATE:** 2/17/11

DATE	TIME		INSTRUMENT / MODEL #	pH		COND. (mS)	ORP (mV)	TURBIDITY (NTU)		DO (mg/L)	DO (%)	BP (mmHg)	Comments
	Standard Cal. Concentrations →			7	10	1.000	244.0	0	126.0				
2/17/11	~~2/~~ (AM) 0845	pre	217002	6.95	10.03	1.021	235.6	0.4	126.8	9.17	86.8	722.4	
		post		7.00	10.00	1.000	~~240.0~~ 244.0	0.0	126.0	10.02	95.0		
	Standard Cal. Concentrations →			7	10	1.000		0					
		pre											
		post											
	Standard Cal. Concentrations →			7	10	1.000		0					
		pre											
		post											
	Standard Cal. Concentrations →			7	10	1.000		0					
		pre											
		post											
	Standard Cal. Concentrations →			7	10	1.000		0					
		pre											
		post											
	Standard Cal. Concentrations →			7	10	1.000		0					
		pre											
		post											

Notes:
- "Pre" refers to the instrument readings during calibration right before calibration is entered/accepted.
- "Post" refers to the instrument readings just after calibration has been accepted. "Post" calibration can also refer to instrument readings taken at end of sampling day to document any instrument "drift" in readings.

Columbia Analytical Services™

CHAIN OF CUSTODY

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K1104746

SR#: ~~050911-1~~ RAR

PAGE 1 OF 2 COC # 050911-1

PROJECT NAME: NIROP
PROJECT NUMBER: J0700427
PROJECT MANAGER: Paul Walz
COMPANY ADDRESS: 5 Empire Drive
CITY STATE ZIP: St. Paul MN 55103
E MAIL ADDRESS: Paul@Bayquest.com
PHONE #: 651-291-3491 FAX #: 651-291-0099
SAMPLER'S SIGNATURE:

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625 ☐ 8270 ☐ 8270LL ☐	Volatile Organics 624 ☐ 8260 ☒ 8021 ☐ BTEX ☐	Hydrocarbons Gas ☐ Diesel ☐ Oil ☐ (*see below)	Fuel Fingerprint (FIQ)	NW-HCID Screen	Oil & Grease/TRPH 1664 SGT ☐ 1664 HEM ☐	PCB's Aroclors ☐ Congeners ☐	Pesticides/Herbicides 608 ☐ 8081A ☐ 8141A ☐ 8151A ☐	Chlorophenolics - 8151M Tri ☐ Tetra ☐ PCP ☐	PAHS 8310 ☐ SIM ☐	Metals, Total or Dissolved (See list below)	Cyanide ☐ Hex-Chrom ☐	pH, Cond., Cl, SO4, PO4, F, NO2, NO3, BOD, TSS, TDS (circle)	NH3-N, COD, Total-P, TKN, TOC, DOC (circle) NO2+NO3	TOX 9020 ☐ AOX 1650 ☐ 506 ☐					REMARKS
MS35D	5-9-11	1138		water	9			X																		
MS13IS		1246			3			X																		
MS37S		1430			3			X																		
QCD01		1510			3			X																		
MS35I		1528			3			X																		
QCR01		1625			3			X																		
MS55I	5-10-11	937			3			X																		
MS36S		1303			3			X																		
MS56I		1306			3			X																		
MS38S		1411			3			X																		

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. # 34003
Bill To: Account Payable
BayWest, 5 Empire Dr.
St. Paul MN 55103

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:
for 8 specific compounds

Tracking# 1Z A19 6R9 01 9559 3507

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature] Date/Time: 5-11-11 15:15	Signature: [signature] Date/Time: 5/12/11 1030	Signature: Date/Time:	Signature: Date/Time:
Printed Name: Lynn Riley Firm: BayWest	Printed Name: Brewton Firm: CAS	Printed Name: Firm:	Printed Name: Firm:

RCOC #1 03/10

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CHAIN OF CUSTODY

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SR#: K1104246

PAGE 2 OF 2 COC # 050911-3

PROJECT NAME: NiRoP
PROJECT NUMBER: JD70097
PROJECT MANAGER: Paul Walz
COMPANY ADDRESS: Bay West, 5 Empire Drive
CITY/STATE/ZIP: St. Paul MN 55103
E-MAIL ADDRESS: paulw@baywest.com
PHONE #: 651-291-3491 FAX #: 651-291-0099
SAMPLER'S SIGNATURE: Ryan Riley

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐ 8270LL☐	Volatile Organics 624☐ 8260☐ 8260XL☐ 8021☐ BTEX☐	Hydrocarbons Gas☐ Diesel☐ Oil☐ (*see below) ☐ Fuel Fingerprint (FIQ) ☐ NW-HCID Screen	Oil & Grease/TRPH 1664 HEM☐ 1664 SGT☐	PCB's Aroclors☐ Congeners☐	Pesticides/Herbicides 608☐ 8081A☐ 8141A☐ 8151A☐	Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐	PAHS 8310☐ SIM☐	Metals, Total or Dissolved (See list below)	Cyanide☐ Hex-Chrom☐	pH, Cond, Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS (circle)	NH_3-N, COD, Total-P, TKN, TOC, DOC (circle) NO_2+NO_3	TOX 9020☐ AOX 1650☐ 506☐	REMARKS
MS34I	5-11-11	1028		water	3		X												
MS33I	↓	1409		↓	3		X												
QCD01	↓	1510		↓	3		X												
QCT02	5-9-11	—		↓	2		X												
QCR03	5-11-11	1455		↓	3		X												

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. # 34003
Bill To: Account Payable

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:
for 8 specific compounds

Tracking # 1Z A19 8R9 01 9559 3507

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature] Date/Time: 5-11-11 15:15	Signature: [signature] Date/Time: 5/12/11 1030	Signature: Date/Time:	Signature: Date/Time:
Printed Name: Ryan Riley Firm: Bay West	Printed Name: Brad Blain Firm: CAS	Printed Name: Firm:	Printed Name: Firm:

RCOC #1 03/10

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CHAIN OF CUSTODY

1317 South 13th Ave. Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

SR#: K1104246

PAGE 1 OF 2 COC # 050911-2

PROJECT NAME: NIROP
PROJECT NUMBER: J070047
PROJECT MANAGER: Paul Walz
COMPANY ADDRESS: Bay West, 5 Empire Drive
CITY STATE ZIP: St. Paul MN 55103
E MAIL ADDRESS: paulw@baywest.com
PHONE: 651-291-3491 FAX: 651-291-0099
SAMPLER'S SIGNATURE:

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625 ☐ 8270 ☐ 8270LL ☐	Volatile Organics 624 ☐ 8260 ☐ 8021 ☐ BTEX ☐	Hydrocarbons (*see below) Gas ☐ Diesel ☐ Oil ☐ Fuel Fingerprint (FIQ) NW-HCID Screen	Oil & Grease/TRPH 1664 HEM ☐ 1664 SGT ☐	PCB's Aroclors ☐ Congeners ☐	Pesticides/Herbicides 608 ☐ 8081A ☐ 8141A ☐ 8151A ☐	Chlorophenolics - 8151M Tri ☐ Tetra ☐ PCP ☐	PAHS 8310 ☐ SIM ☐	Metals, Total or Dissolved (See list below)	Cyanide ☐ Hex-Chrom ☐	pH, Cond., Cl, SO4, PO4, F, NO2, NO3, BOD, TSS, TDS (circle) NH3-N, COD, Total-P, TKN, TOC, DOC (circle) NO2+NO3	TOX 9020 ☐ AOX 1650 ☐ 506 ☐	REMARKS
MS15IS	6-9-11	1219		water	9		X												MS/MSD
MS43I	↓	1328		↓	3		X												
MS45I	↓	1426		↓	3		X												
MS45S	↓	1532		↓	3		X												
MS54I	5/10/11	1119		↓	3		X												
MS54S	↓	1032		↓	3		X												
MS41I	↓	935		↓	3		X												
MS44I	↓	1234		↓	3		X												
MS46S	↓	1357		↓	3		X												
MS18S	↓	1455		↓	3		X												

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. # 34003
Bill To: Accounts Payable

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:

for 8 specific compounds

Tracking # 1Z A19 0R9 01 9735 1112

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature] Date/Time: 5/11/11 13:15	Signature: [signature] Date/Time: 5/12/11 1032	Signature: Date/Time:	Signature: Date/Time:
Printed Name: Joe Stabach Firm: Bay West	Printed Name: Brian Klitzkin Firm: CAS	Printed Name: Firm:	Printed Name: Firm:

RCCC #1 03/10

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CHAIN OF CUSTODY

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SR#: K1104246

PAGE 2 OF 2 COC # 050911-2

PROJECT NAME: NIRDP
PROJECT NUMBER: J0700017
PROJECT MANAGER: Paul Wolz
COMPANY ADDRESS: Bay West, 5 Empire Drive
CITY STATE/ZIP: St Paul MN 55103
E MAIL ADDRESS: paul.wolz@baywest.com
PHONE #: 651-291-0491 FAX #: 651-291-0099
SAMPLER'S SIGNATURE:

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐ 8270LL☐	Volatile Organics 624☐ 8260☐ 8260LL☐ 8021☐ BTEX☐	Hydrocarbons Gas☐ Diesel☐ Fuel Fingerprint (FIQ) NW-HCID Screen (*see below) Oil☐	Oil & Grease/TRPH 1664 HEM☐ 1664 SGT☐	PCB's Aroclors☐ Congeners☐	Pesticides/Herbicides 608☐ 8081A☐ 8141A☐ 8151A☐	Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐	PAHS 8310☐ SIM☐	Metals, Total or Dissolved (See list below)	Cyanide☐ Hex-Chrom☐	pH Cond, Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS (circle)	NH_3-N, COD, Total-P, TKN, TOC, DOC (circle) NO_2+NO_3	TOX 9020☐ AOX 1650☐ 506☐	REMARKS
QCR02	5-10-11	1135		water	3		X												
QCT02	5-9-11	—		water	2		X												

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. # 39003
Bill To: Accounts Payable

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:

for 8 specific compounds

Tracking # 1Z A19 8R9 01 9735 1112

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature] Date/Time: 5/11/11 13:15	Signature: [signature] Date/Time: 5/12/11 1030	Signature: Date/Time:	Signature: Date/Time:
Printed Name: Joe Stalcup Firm: Bay West	Printed Name: Brad Tubin Firm: CAS	Printed Name: Firm:	Printed Name: Firm:

RCOC #1 03/10

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CHAIN OF CUSTODY

SR#: K1105242

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PAGE 1 OF 1 COC # 060911

PROJECT NAME: NIROP
PROJECT NUMBER: J070047
PROJECT MANAGER: Paul Weltz
COMPANY ADDRESS: Bay West, 5 Empire Drive
CITY STATE ZIP: St. Paul MN 55103
E-MAIL ADDRESS: paulw@baywest.com
PHONE #: 651-291-3491 FAX #: 651-291-0094
SAMPLER'S SIGNATURE:

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625 ☐ 8270 ☐ 8270LL ☐	Volatile Organics 624 ☐ 8260 VA 8021 ☐ BTEX ☐	Hydrocarbons (*see below) Gas ☐ Diesel ☐ Oil ☐ ☐ Fuel Fingerprint (FIQ) ☐ NW-HCID	Oil & Grease/TRPH 1664 SGT ☐ 1664 HEM ☐	PCB's Aroclors ☐ Congeners ☐	Pesticides/Herbicides 608 ☐ 8081A ☐ 8141A ☐ 8151A ☐	Chlorophenolics - 8151M Tri ☐ Tetra ☐ PCP ☐	PAHS 8310 ☐ SIM ☐	Metals, Total or Dissolved (See list below)	Cyanide ☐ Hex-Chrom ☐	pH, Cond, Cl, SO4, PO4, F, NO2, NO3, BOD, TSS, TDS (circle) NH3-N, COD, Total-P, TKN, TOC, DOC (circle) NO2+NO3	TOX 9020 ☐ AOX 1650 ☐ 506 ☐	REMARKS
AT10	6-9-11	1352		water	3		X											
AT05B	↓	1403		↓	3		X											
QCD03		1451			3		X											
AT03A		1417			3		X											
QCT03		—			2		X											

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. # 34003
Bill To: Accounts Payable, Bay West, 5 Empire Dr, St. Paul MN 55103

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:
for 8 specific Compounds.
UPS # 1ZA19 8R9 01 9118 3449

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature] Date/Time: 6-9-11 / 1445	Signature: [signature] Date/Time: 6/10/11 1000	Signature: Date/Time:	Signature: Date/Time:
Printed Name: Logan Petley Firm: Bay West	Printed Name: [signature] Firm: TAS	Printed Name: Firm:	Printed Name: Firm:

RCOC #1 03/10

FIELD SAMPLING DATA SHEET

QC/QA Check _____.		Page: 1 of 2	
PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS 15 IS
CITY, STATE, ZIP :	Fridley, MN	DATE:	5/9/11

SAMPLER :	Joe Stabach	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	050911-2

WELL DATA		PURGE DATA	
WELL NAME :	MS15IS	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	165 - 131 - 130 - 126
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	1.47 0.59 0.57 0.45
WELL DEPTH (ft) :	77.86	PURGE START / END TIME :	1103 / 1217
DEPTH TO WATER (toc):	23.79 DATE: 5/9/11	SAMPLING BEGIN / END TIME :	1219 / 1221
WATER COLUMN HEIGHT (ft):	54.07	PUMP ID # : Rental 2	YSI ID # : Rental
WELL VOLUME (gal) :	8.81	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTORS: (0.163 - 2") 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤ 5	WATER LEVEL (ft BTOC)
1	1106	4.41	11.18	0.519	1.12	8.01	-201.2	40.2	
2	1109	8.82	12.06	0.555	1.14	7.91	-177.0	15.7	27.75
3	1122	10.22	12.26	0.800	1.62	7.13	-52.0	22.0	
4	1137	13.17	12.14	0.803	0.62	7.11	-49.1	8.4	27.88
5	1132	16.12	12.09	0.805	0.67	7.10	-47.6	8.8	27.95
6	1137	19.07	12.11	0.806	0.55	7.11	-45.9	9.2	27.96
7	1142	22.02	12.16	0.806	0.47	7.10	-49.8	12.8	28.12
8	1147	24.87	12.12	0.806	0.39	7.10	-46.0	3.1	28.01
9	1152	27.72	12.18	0.807	0.55	7.10	-45.5	3.7	27.41
10	1157	29.97	12.17	0.808	0.45	7.10	-47.6	2.2	27.61

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	38.97	VOC: 9 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	4.42	
STAB. TEMP (C) :	12.12	
STAB. Sp. CONDUCTIVITY : 0.809	~~0.809~~	
STAB. D.O. : 0.17	~~0.45~~	
STAB. pH :	7.13	
STAB. ORP :	-45.3	
STAB. TURBIDITY:	0	

SAMPLE TIME : 1219 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes (No) (name/time/comments):

DUPLICATE SAMPLE? Yes (No) (name/time/comments):

MS/MSD? (Yes) No (name/time/comments): MS15IS @ 1219

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: greyish / clear ODOR : None

OBSERVATIONS : Took water level @ 1109 Drawing down Significantly Stop purge. Restart @ 1117 adjusted Pump controller down gradually to 131 Rate 0.59 gpm Also Fixed bubbles coming into YSI Setting 130 1142 Setting 126 @ 1152 Rate 0.45 0.57

Sample tubing left in well at completion? (Yes or (No)

WEATHER DATA : TEMP.: 53 SKY : MC WIND : 3-5 MPH

FIELD SAMPLING DATA SHEET

QC/QA Check _____.		Page: 2 of 2	
PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS15IS
CITY, STATE, ZIP :	Fridley, MN	DATE:	

SAMPLER :	Jes	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	050911-2

WELL DATA		PURGE DATA	
WELL NAME :	MS15IS	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	165 - 131 - 130 - 120
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	1.47 - 0.59 - 0.57 - 0.45
WELL DEPTH (ft) :	77.86	PURGE START / END TIME :	1103 / 1217
DEPTH TO WATER (toc):	23.79 DATE: 5/9/11	SAMPLING BEGIN / END TIME :	1219 / 1221
WATER COLUMN HEIGHT (ft):	54.07	PUMP ID # : Rental 2	YSI ID # : Rental
WELL VOLUME (gal) :	8.81	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤ 5	WATER LEVEL (ft BTOC)
1	1202	32.22	12.20	0.808	0.18	7.12	-42.2	0.3	27.61
2	1207	34.47	12.21	0.808	0.21	7.12	-44.8	1.7	27.61
3	1212	36.72	12.21	0.809	0.17	7.12	-45.3	0	
4	1217	38.97	12.22	0.809	0.17	7.13	-45.3	0	27.61
5									
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STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	38.97	VOC: 9 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	4.42	
STAB. TEMP (C) :	12.22	
STAB. Sp. CONDUCTIVITY :	0.809	
STAB. D.O. :	0.17	
STAB. pH :	7.13	
STAB. ORP :	-45.3	
STAB. TURBIDITY:	0	

SAMPLE TIME : 1219 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? (Yes) No (name/time/comments): MS15IS @ 1219

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: greyish / clear ODOR : No/NO

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 53 SKY : MC WIND : 3-5 mPH

FIELD SAMPLING DATA SHEET

QC/QA Check _____		Page: 1 of 1	
PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS43I
CITY, STATE, ZIP :	Fridley, MN	DATE:	5/9/11
SAMPLER :	Joe S	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	050911-2

WELL DATA		PURGE DATA	
WELL NAME :	MS43I	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	~~200~~ 192
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	1.48
WELL DEPTH (ft) :	82.05	PURGE START / END TIME :	1308 /
DEPTH TO WATER (toc):	27.74 DATE: 5/9/11	SAMPLING BEGIN / END TIME :	1328 / 1329
WATER COLUMN HEIGHT (ft):	54.31	PUMP ID # : Rental 2	YSI ID # : Rental 1
WELL VOLUME (gal) :	8.85	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTORS: (0.163 - 2") 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤ 5	WATER LEVEL (ft BTOC)
1	1311	4.44	11.12	0.977	0.33	7.19	-107.0	4.9	27.85
2	1314	8.88	11.04	0.988	0.12	7.19	-90.1	0.3	
3	1317	13.32	10.94	0.999	0.09	7.18	-84.5	0	27.85
4	1320	17.76	10.93	1.002	0.09	7.18	-79.1	0	
5	1323	22.22	10.94	1.003	0.13	7.17	-75.7	0	27.85
6	1326	26.64	10.86	1.003	0.28	7.17	-74.3	0	
7									
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9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	26.64	VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.01	
STAB. TEMP (C) :	10.86	
STAB. Sp. CONDUCTIVITY :	1.003	
STAB. D.O. :	0.28	
STAB. pH :	7.17	
STAB. ORP :	-74.3	
STAB. TURBIDITY:	0	

SAMPLE TIME : 1328 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: grey / clear ODOR : NO / NO

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No))

WEATHER DATA : TEMP.: 55 SKY : M WIND : 2-3 mph

FIELD SAMPLING DATA SHEET

QC/QA Check _____.		Page: 1 of 1	
PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS45I
CITY, STATE, ZIP :	Fridley, MN	DATE:	5/9/11
SAMPLER :	Joe Stalech	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	05091l-2

WELL DATA		PURGE DATA	
WELL NAME :	MS45I	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	200
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	1.90
WELL DEPTH (ft) :	91.75	PURGE START / END TIME :	1405 /
DEPTH TO WATER (toc):	22.07 DATE: 5/9/11	SAMPLING BEGIN / END TIME :	1428 / 1429
WATER COLUMN HEIGHT (ft):	69.68	PUMP ID # : Rental 2	YSI ID # : Rental
WELL VOLUME (gal) :	11.35	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤ 5	WATER LEVEL (ft BTOC)
1	1408	5.7	12.12	0.601	0.96	7.53	-108.5	9.8	22.41
2	1411	11.4	11.80	0.721	0.24	7.35	-99.0	2.7	22.42
3	1414	17.1	11.61	0.747	0.17	7.28	-85.7	0.0	22.43
4	1417	22.8	11.60	0.754	0.16	7.26	-77.7	0.0	22.44
5	1420	28.5	11.58	0.755	0.15	7.23	-72.9	0.0	22.44
6	1423	34.2	11.59	0.755	0.17	7.22	-72.2	0.0	22.45
7	1426	39.9	11.59	0.756	0.14	7.22	-71.5	0.0	22.44
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	39.9	VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.51	
STAB. TEMP (C) :	11.59	
STAB. Sp. CONDUCTIVITY :	0.756	
STAB. D.O. :	0.14	
STAB. pH :	7.22	
STAB. ORP :	-71.5	
STAB. TURBIDITY:	0	

SAMPLE TIME : 1428 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: greyish/None ODOR : No/NO

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or **No**):

WEATHER DATA : TEMP.: 58 SKY : MC WIND : 2-3 MPH

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: 1 of 1

PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS45S
CITY, STATE, ZIP :	Fridley, MN	DATE:	5/9/11
SAMPLER :	Joe S	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	050911-2

WELL DATA		PURGE DATA	
WELL NAME :	MS45S	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	116
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.35
WELL DEPTH (ft) :	34.90	PURGE START / END TIME :	1459 /
DEPTH TO WATER (toc):	22.26 DATE:	SAMPLING BEGIN / END TIME :	1532 /
WATER COLUMN HEIGHT (ft):	12.64	PUMP ID # : Rental 2	YSI ID # : Rental
WELL VOLUME (gal) :	2.06	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTORS: (0.163 - 2") 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤ 5	WATER LEVEL (ft BTOC)
1	1502	1.05	11.90	1.018	11.1	7.12	-71.1	69.1	
2	1505	2.10	11.62	1.031	1.63	7.12	-69.5	48.6	
3	1508	3.15	11.59	1.035	1.83	7.11	-66.4	37.4	22.32
4	1510	4.20	11.56	1.023	2.27	7.09	-61.5	23.3	
5	1514	5.25	11.54	1.020	2.95	7.08	-56.9	15.4	22.32
6	1517	6.30	11.58	1.019	2.84	7.06	-51.3	15.4	
7	1520	7.35	11.57	1.017	3.17	7.06	-51.3	11.7	
8	1523	8.40	11.48	1.018	2.98	7.06	-50.5	10.0	22.32
9	1526	9.45	11.55	1.016	3.27	7.06	-50.1	9.4	
10	1529	10.50	11.61	1.021	3.06	7.05	-49.5	12.7	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	10.50	VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5.09	
STAB. TEMP (C) :	11.61	Well not Stabilized
STAB. Sp. CONDUCTIVITY :	1.021	Sampled after 5 well Volumes
STAB. D.O. :	3.06	
STAB. pH :	7.05	
STAB. ORP :	-49.5	
STAB. TURBIDITY:	12.7	

SAMPLE TIME : 1532 SAMPLE FIELD FILTERED ? : Yes (No)

FIELD BLANK? Yes (No) (name/time/comments):

DUPLICATE SAMPLE? Yes (No) (name/time/comments):

MS/MSD? Yes (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Orange/clear ODOR: NO/NO

OBSERVATIONS :

Sampled After 5 well Volumes well not Stable

Sample tubing left in well at completion? (Yes or No)

WEATHER DATA : TEMP.: 62 SKY : OVC WIND : 2-3 mPH

FIELD SAMPLING DATA SHEET

QC/QA Check _____.		Page: 1 of 1	
PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS35D
CITY, STATE, ZIP :	Fridley, MN	DATE:	5-9-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	050911-1

WELL DATA		PURGE DATA	
WELL NAME :	MS-35D	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	250
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	3.04
WELL DEPTH (ft) :	132.66	PURGE START / END TIME :	1118 / 1136
DEPTH TO WATER (toc):	20.88 DATE: 5-9-11	SAMPLING BEGIN / END TIME :	1138 / 1142
WATER COLUMN HEIGHT (ft):	111.78	PUMP ID #:	~~230002~~ Rental
		YSI ID # :	217003
WELL VOLUME (gal) :	18.22	WATER LEVEL ID # :	230002

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤ 5	WATER LEVEL (ft BTOC)
1	1121 DS	9.12	13.66	0.783	0.88	7.43	-169.5	14.4	21.47
2	1124	18.24	13.43	0.944	0.45	7.39	-177.9	8.0	21.53
3	1127	27.36	13.07	1.020	0.33	7.31	-148.7	0.5	21.62
4	1130	36.48	12.97	1.022	0.32	7.26	-127.0	0.5	
5	1133	45.60	12.93	1.023	0.31	7.26	-118.6	0.3	21.63
6	1136	54.72	12.91	1.022	0.32	7.25	-114.7	0.5	
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	54.72	VOC: 9 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3	
STAB. TEMP (C) :	12.91	
STAB. Sp. CONDUCTIVITY :	1.022	
STAB. D.O. :	0.32	
STAB. pH :	7.25	
STAB. ORP :	-114.7	
STAB. TURBIDITY:	0.5	

SAMPLE TIME : 1138 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? (Yes) / No (name/time/comments): MS35D @ 1138 x 6 vials

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear / clear ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 54°F SKY : cloudy WIND : 15-20 S

FIELD SAMPLING DATA SHEET

QC/QA Check _____.		Page: 1 of 1	
PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS13IS
CITY, STATE, ZIP :	Fridley, MN	DATE:	5-9-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	050911-1

WELL DATA		PURGE DATA	
WELL NAME :	MS13IS	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	165-145
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	1.54 - 1.15
WELL DEPTH (ft) :	73.57	PURGE START / END TIME :	1213 / 1244
DEPTH TO WATER (toc):	17.14 DATE: 5-9-11	SAMPLING BEGIN / END TIME :	1246 / 1248
WATER COLUMN HEIGHT (ft):	56.43	PUMP ID # : Rental #1	YSI ID # : 217003
WELL VOLUME (gal) :	9.20	WATER LEVEL ID # :	230002

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤ 5	WATER LEVEL (ft BTOC)
1	1218	4.62	13.54	0.801	3.85	7.52	-121.7	36.0	
2	1219	9.24	13.52	0.376	3.30	7.36	-120.0	14.0	18.63
3	1221	13.86	13.55	1.509	3.04	7.26	-118.1	38.3	
4	1224	18.48	13.56	1.579	2.76	7.19	-109.3	24.6	18.84*
5	1228	23.08	13.71	1.609	2.37**	7.13	-105.1	10.8	
6	1232	27.68	13.54	1.634	0.60	7.11	-104.1	5.4	18.93
7	1236	32.28	13.56	1.634	0.46	7.09	-104.1	2.4	18.98
8	1240	36.88	13.58	1.636	0.48	7.08	-104.5	1.1	
9	1244	41.48	13.54	1.637	0.47	7.07	-104.7	0.1	
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	41.48	VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	4.5	
STAB. TEMP (C) :	13.54	
STAB. Sp. CONDUCTIVITY :	1.637	
STAB. D.O. :	0.47	
STAB. pH :	7.07	
STAB. ORP :	-104.7	
STAB. TURBIDITY:	0.1	

SAMPLE TIME : 1246 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: cloudy brown / clear ODOR : None

OBSERVATIONS : * slowed purge rate to 1.15 gal/min
** observed air bubbles on probe

Sample tubing left in well at completion? (Yes or (No))

WEATHER DATA : TEMP.: 56°F SKY : cloudy WIND : 10-15 S

FIELD SAMPLING DATA SHEET

QC/QA Check _____.		Page: 1 of 2	
PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS37S
CITY, STATE, ZIP :	Fridley, MN	DATE:	5-9-11
SAMPLER :	Ryan Haley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	050911-1

WELL DATA		PURGE DATA	
WELL NAME :	MS-37S	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	125 → 121 → 120
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.3 → 0.2
WELL DEPTH (ft) :	47.73	PURGE START / END TIME :	1316 / 1436
DEPTH TO WATER (toc):	22.55 DATE: 5-9-11	SAMPLING BEGIN / END TIME :	1438 / 1440
WATER COLUMN HEIGHT (ft):	25.18	PUMP ID # : Rewind #1	YSI ID # : 217003
WELL VOLUME (gal) :	4.10	WATER LEVEL ID # :	230002

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤ 5	WATER LEVEL (ft BTOC)
1	1321	1.5	15.22	0.272	0.38	8.02	-167.3	53.5	27.94
2	1326	2.8	15.92	0.040	0.49	7.28	-137.8	25.7	27.94
3	1331	3.7	16.35	1.064	0.54	7.26	-133.6	22.4	26.83
1 4	1336	4.5	16.43	1.077	0.54	7.25	-134.6	15.4	
5	1341	5.4	16.36	1.087	0.54	7.24	-135.1	10.1	
6	1346	6.4	16.34	1.091	0.54	7.23	-135.4	8.5	27.00
7	1351	7.3	16.33	1.097	0.55	7.22	-135.6	6.7	
2 8	1356	8.2	16.46	1.102	0.55	7.22	-135.8	5.2	27.02
9	1401	9.1	16.52	1.105	0.56	7.22	-135.9	4.7	
10	1406	9.9	16.70	1.107	0.57	7.22	-136.0	3.2	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	14.5	VOC: 6 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.53	
STAB. TEMP (C) :	16.81	
STAB. Sp. CONDUCTIVITY :	1.111	
STAB. D.O. :	0.56	
STAB. pH :	7.19	
STAB. ORP :	-135.7	
STAB. TURBIDITY:	3.5	

SAMPLE TIME : 1436 SAMPLE FIELD FILTERED ? : Yes (No)

FIELD BLANK? Yes (No) (name/time/comments):

DUPLICATE SAMPLE? (Yes) / No (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: cloudy brown / clear ODOR : None

OBSERVATIONS : ↓ lowered purge rate

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 55°F SKY : cloudy WIND : 10-15 S

FIELD SAMPLING DATA SHEET

QC/QA Check _____		Page: 2 of 2	
PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS37S
CITY, STATE, ZIP :	Fridley, MN	DATE:	5-9-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	050911-1

WELL DATA		PURGE DATA	
WELL NAME :	MS-37S	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	120
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.3 → 0.2
WELL DEPTH (ft) :	47.73	PURGE START / END TIME :	1316 / 1436
DEPTH TO WATER (toc): 22.55	DATE: 5-9-11	SAMPLING BEGIN / END TIME :	1438 / 1440
WATER COLUMN HEIGHT (ft):	25.18	PUMP ID # : Rental #1	YSI ID # : 217003
WELL VOLUME (gal) :	4.10	WATER LEVEL ID # : 230002	

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤ 5	WATER LEVEL (ft BTOC)
1	1411	10.7	16.61	1.109	0.57	7.22	-136.4	5.2	
2	1416	11.7	16.49	1.111	0.56	7.21	-136.5	8.6	
3	1421	12.3	16.71	1.113	0.56	7.21	-138.0	12.3	23.94
4	1426	13.2	16.77	1.113	0.56	7.20	-136.7	4.5	
5	1431	13.8	16.79	1.113	0.56	7.20	-135.9	2.9	23.94
6	1436	14.5	16.81	1.111	0.56	7.19	-135.7	3.5	
7	~~1441~~ PAP								
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	14.5	VOC: 6 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.53	
STAB. TEMP (C) :	16.81	
STAB. Sp. CONDUCTIVITY :	1.111	
STAB. D.O. :	0.56	
STAB. pH :	7.19	
STAB. ORP :	-135.7	
STAB. TURBIDITY:	3.5	

SAMPLE TIME : 1438 SAMPLE FIELD FILTERED ? : Yes (No)

FIELD BLANK? Yes (No) (name/time/comments):

DUPLICATE SAMPLE? (Yes) No (name/time/comments): QCD01 @ 1510

MS/MSD? Yes (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: cloudy brown / clear ODOR: None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 55°F SKY : cloudy WIND : 10-15 S

FIELD SAMPLING DATA SHEET

QC/QA Check ____		Page: 1 of 1	
PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS35I
CITY, STATE, ZIP :	Fridley, MN	DATE:	5-9-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	050911-1

WELL DATA		PURGE DATA	
WELL NAME :	MS-35I	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	180
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	1.61
WELL DEPTH (ft) :	81.76	PURGE START / END TIME :	1508 / 1526
DEPTH TO WATER (toc):	22.74 DATE: 5-9-11	SAMPLING BEGIN / END TIME :	1528 / 1530
WATER COLUMN HEIGHT (ft):	59.02	PUMP ID # : Rental #1	YSI ID # : 217003
WELL VOLUME (gal) :	9.62	WATER LEVEL ID # :	230002

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤ 5	WATER LEVEL (ft BTOC)
1	15:11	4.83	13.75	1.094	0.68	7.38	-117.4	11.4	
2	15:14	9.66	13.75	1.092	0.59	7.37	-122.9	10.6	
3	15:17	14.49	13.68	1.090	0.50	7.27	-121.5	1.1	23.30
4	15:20	19.32	13.63	1.095	0.48	7.25	-120.8	0.4	
5	15:23	24.15	13.62	1.097	0.48	7.23	-120.8	0.0	23.30
6	15:26	28.98	13.60	1.099	0.47	7.21	-121.3	0.0	
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	28.98	VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.0	
STAB. TEMP (C) :	13.60	
STAB. Sp. CONDUCTIVITY :	1.099	
STAB. D.O. :	0.47	
STAB. pH :	7.21	
STAB. ORP :	-121.3	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1528 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? (Yes) / No (name/time/comments): QCR01 @

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear / clear ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No))

WEATHER DATA : TEMP.: 55°F SKY : Cloudy WIND : 10-15 S

FIELD SAMPLING DATA SHEET

QC/QA Check _____.		Page: 1 of 1	
PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS55I
CITY, STATE, ZIP :	Fridley, MN	DATE:	5-10-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	050911 - 1

WELL DATA		PURGE DATA	
WELL NAME :	MS-55 I	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	160
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	1.55
WELL DEPTH (ft) :	79.50	PURGE START / END TIME :	9:17 / 935
DEPTH TO WATER (toc):	22.67 DATE:	SAMPLING BEGIN / END TIME :	9:37 / 939
WATER COLUMN HEIGHT (ft):	56.83	PUMP ID # : Rental #1	YSI ID # : 217003
WELL VOLUME (gal) :	9.26	WATER LEVEL ID # :	230002

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤ 5	WATER LEVEL (ft BTOC)
1	9:20	4.65	11.68	1.166	1.50	6.70	-62.8	31.8	
2	9:23	9.30	11.52	1.203	0.34	6.76	-106.9	4.6	22.97
3	9:26	13.95	11.50	1.214	0.32	6.78	-107.9	0.4	22.97
4	9:29	18.60	11.50	1.219	0.32	6.82	-105.8	0.5	
5	9:32	23.25	11.48	1.222	0.30	6.81	-104.8	0.1	22.97
6	9:35	27.90	11.49	1.223	0.29	6.82	-104.1	0.1	
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	27.90	VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3	
STAB. TEMP (C) :	11.49	
STAB. Sp. CONDUCTIVITY :	1.223	
STAB. D.O. :	0.29	
STAB. pH :	6.82	
STAB. ORP :	-104.1	
STAB. TURBIDITY:	0.1	

SAMPLE TIME : 937 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Cloudy black ODOR : None /

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 55°F SKY : Pt Cloudy WIND : S-10 S

FIELD SAMPLING DATA SHEET

QC/QA Check _____.		Page: 1 of 3	
PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS36S
CITY, STATE, ZIP :	Fridley, MN	DATE:	5-10-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	050911-1

WELL DATA		PURGE DATA	
WELL NAME :	MS-36S	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Stainless steel	PUMP CONTROLLER SETTINGS:	124
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	
WELL DEPTH (ft) :	44.70	PURGE START / END TIME :	10:06 / 12:01
DEPTH TO WATER (toc):	26.40 DATE: 5-10-11	SAMPLING BEGIN / END TIME :	12:03 / 12:05
WATER COLUMN HEIGHT (ft):	18.30	PUMP ID # : Rental #1	YSI ID # : 217003
WELL VOLUME (gal) :	2.99	WATER LEVEL ID # :	230009

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤ 5	WATER LEVEL (ft BTOC)
1	10:11	0.5	15.60	1.297	1.45	7.73	-174.4	76.0	28.79
2	10:16	1.2	15.90	1.305	0.97	7.68	-176.7	66.2	28.79
3	10:21	1.7	16.53	1.342	0.84	7.59	-171.6	56.2	
4	10:26	2.6	15.52	1.332	0.42	7.59	-176.4	41.3	
5	10:31	3.4	15.79	1.442	0.42	7.34	-146.7	32.7	
6	10:36	4.2	16.42	1.531	0.42	7.35	-147.7	20.0	30.18
7	10:41	4.8	16.87	1.563	0.56	7.32	-136.7	17.6	
8	10:46	5.4	16.94	1.582	0.57	7.38	-138.7	19.7	
9 *	10:51	6.0	17.63	1.524	1.25	7.42	-132.7	45.4	
10	10:56	6.7	16.65	1.632	0.48	7.33	-146.9	26.9	30.32

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	15.0	VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5	
STAB. TEMP (C) :	17.12	
STAB. Sp. CONDUCTIVITY :	2.060	
STAB. D.O. :	0.58	
STAB. pH :	7.31	
STAB. ORP :	-130.1	
STAB. TURBIDITY:	13.0	

SAMPLE TIME : 12:03 SAMPLE FIELD FILTERED ? : Yes / **No**

FIELD BLANK? Yes / **No** (name/time/comments):

DUPLICATE SAMPLE? Yes / **No** (name/time/comments):

MS/MSD? Yes / **No** (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: cloudy brown / ODOR : None

OBSERVATIONS : pump would not continue to run at a slow level. Temp parameters rose due to inconsistent purge rate.

Sample tubing left in well at completion? (Yes or **No**):

WEATHER DATA : TEMP.: 60 SKY : Pt Cloudy WIND : S-10 S

FIELD SAMPLING DATA SHEET

QC/QA Check _____.		Page: 2 of 3	
PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS36S
CITY, STATE, ZIP :	Fridley, MN	DATE:	5-10-11

SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	050911-1

WELL DATA		PURGE DATA	
WELL NAME :	MS36S	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	Stainless steel	PUMP CONTROLLER SETTINGS:	124 → 144
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	
WELL DEPTH (ft) :	44.70	PURGE START / END TIME :	10:06 / 12:01
DEPTH TO WATER (toc):	26.40 DATE: 5-10-11	SAMPLING BEGIN / END TIME :	12:03 / 12:05
WATER COLUMN HEIGHT (ft):	18.30	PUMP ID # : Rental #2	YSI ID # : 217003
WELL VOLUME (gal) :	2.99	WATER LEVEL ID # :	230009

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤ 5	WATER LEVEL (ft BTOC)
1	11:01	~~10~~ 7.1	16.57	1.622	0.44	7.26	-136.0	15.7	37.87
2	11:06	7.7	17.34	1.570	0.45	7.28	-131.6	9.7	
3	11:11	8.7	16.42	1.64	0.50	7.24	-122.9	9.1	
4	11:16	9.4	16.76	1.603	0.48	7.22	-119.4	8.1	39.10 *
5	11:21	10.1	16.28	1.454	0.45	7.32	-136.4	93.8	39.38
6	11:26	10.9	15.86	1.450	0.39	7.28	-155.3	68.5	39.77
7	11:31	11.5	16.69	1.618	0.39	7.28	-156.5	164.9	39.95
8	11:36	12.1	17.39	1.812	0.46	7.32	-157.6	62.5	40.11
9	11:41	12.6	17.52	1.919	0.57	7.34	-148.4	24.4	
10	11:46	13.1	17.23	1.997	0.67	7.34	-138.8	12.5	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	15.0	VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5	
STAB. TEMP (C) :	17.12	
STAB. Sp. CONDUCTIVITY :	2.060	
STAB. D.O. :	0.58	
STAB. pH :	7.31	
STAB. ORP :	-130.1	
STAB. TURBIDITY:	13.0	

SAMPLE TIME : 12:03 SAMPLE FIELD FILTERED ? : Yes / **No**

FIELD BLANK? Yes / **No** (name/time/comments):

DUPLICATE SAMPLE? Yes / **No** (name/time/comments):

MS/MSD? Yes / **No** (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: cloudy brown / ODOR : None

OBSERVATIONS : * cavitated pump

Sample tubing left in well at completion? (Yes or **No**):

WEATHER DATA : TEMP.: 60 SKY : Pt Cloudy WIND : SE-10 S

FIELD SAMPLING DATA SHEET

QC/QA Check _____.		Page: 3 of 3	
PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS 36S
CITY, STATE, ZIP :	Fridley, MN	DATE:	5-10-11

SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	050911-1

WELL DATA		PURGE DATA	
WELL NAME :	MS-36S	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Stainless steel	PUMP CONTROLLER SETTINGS:	124-144
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	
WELL DEPTH (ft) :	44.70	PURGE START / END TIME :	10:06 / 12:01
DEPTH TO WATER (toc):	26.40 DATE: 5-10-11	SAMPLING BEGIN / END TIME :	12:03 / 12:05
WATER COLUMN HEIGHT (ft):	18.30	PUMP ID # : Rental #1	YSI ID # : 217003
WELL VOLUME (gal) :	2.99	WATER LEVEL ID # :	230009

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤ 5	WATER LEVEL (ft BTOC)
1	11:51	13.9	17.17	2.011	0.73	7.33	-131.6	16.1	40.67
2	11:56	14.3	17.57	1.963	0.63	7.33	-128.4	14.7	40.63
3	12:01	15.0	17.12	2.060	0.58	7.31	-130.1	13.0	
4									
5									
6									
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	15.0	VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED: 5	~~17.12~~	
STAB. TEMP (C) :	17.12	
STAB. Sp. CONDUCTIVITY :	2.060	
STAB. D.O. :	0.58	
STAB. pH :	7.31	
STAB. ORP :	-130.1	
STAB. TURBIDITY:	13.0	

SAMPLE TIME : 12:03 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: cloudy black / ODOR :

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 60°F SKY : Pt Cloudy WIND : SW 5

FIELD SAMPLING DATA SHEET

QC/QA Check _____		Page: 1 of 1	
PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS561
CITY, STATE, ZIP :	Fridley, MN	DATE:	5-10-11
SAMPLER :		ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	050911-1

WELL DATA		PURGE DATA	
WELL NAME :	MS-561	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	-169
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	1.46
WELL DEPTH (ft) :	76.50	PURGE START / END TIME :	1243 /
DEPTH TO WATER (toc):	22.98 DATE: 5-10-11	SAMPLING BEGIN / END TIME :	/
WATER COLUMN HEIGHT (ft):	53.52	PUMP ID # : Rosebal #1	YSI ID # : 217003
WELL VOLUME (gal) :	8.73	WATER LEVEL ID # :	230009

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤ 5	WATER LEVEL (ft BTOC)
1	1246	4.38	13.82	0.660	3.41	7.85	-200.0	27.3	23.54
2	1249	8.76	12.90	1.207	1.49	6.67	-119.3	5.2	
3	1252	13.14	12.84	1.228	1.19	6.52	-103.1	2.5	23.56
4	1255	17.52	12.80	1.238	0.85	6.40	-89.4	0.3	
5	1258	21.90	12.81	1.238	0.70	6.36	-85.7	0.0	23.56
6	1301	26.28	12.81	1.239	0.69	6.34	-84.2	0.0	
7	1304	30.66	12.82	1.241	0.62	6.32	-81.3	0.0	
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	30.66	VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.5	
STAB. TEMP (C) :	12.82	
STAB. Sp. CONDUCTIVITY :	1.241	
STAB. D.O. :	0.62	
STAB. pH :	6.32	
STAB. ORP :	-81.3	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1306 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Clear / Clear ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No))

WEATHER DATA : TEMP.: 60°F SKY : Partly Cloudy WIND : S-10 S

FIELD SAMPLING DATA SHEET

QC/QA Check _____		Page: 1 of 1	
PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS38S
CITY, STATE, ZIP :	Fridley, MN	DATE:	5-10-11

SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	050911-1

WELL DATA		PURGE DATA	
WELL NAME :	MS38S	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	132
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.23
WELL DEPTH (ft) :	41.69	PURGE START / END TIME :	1334 / 1409
DEPTH TO WATER (toc):	27.76 DATE: 5-10-11	SAMPLING BEGIN / END TIME :	1411 / 1413
WATER COLUMN HEIGHT (ft):	13.93	PUMP ID # : Rambal #1	YSI ID # : ~~230~~ 217003
WELL VOLUME (gal) :	2.27	WATER LEVEL ID # :	230002

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤ 5	WATER LEVEL (ft BTOC)
1	1339	PAR 0.15	15.20	1.162	0.93	6.84	-44.9	10.0	27.80
2	1344	2.30	15.09	1.160	0.78	6.58	-10.7	16.8	27.82
3	1349	3.45	15.60	1.165	0.85	6.59	9.7	6.3	
4	1354	4.60	15.84	1.167	0.88	6.60	14.0	5.0	
5	1359	5.75	15.62	1.171	0.87	6.60	22.4	3.3	27.82
6	1404	6.90	15.69	1.173	0.91	6.60	32.1	2.8	
7	1409	8.05	15.70	1.175	0.94	6.60	39.6	2.2	27.82
8	~~1414~~ PAR								
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	8.05	VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.54	
STAB. TEMP (C) :	15.70	
STAB. Sp. CONDUCTIVITY :	1.175	
STAB. D.O. :	0.94	
STAB. pH :	6.60	
STAB. ORP :	39.6	
STAB. TURBIDITY:	2.2	

SAMPLE TIME : 1411 SAMPLE FIELD FILTERED ? : Yes (No)

FIELD BLANK? Yes (No) (name/time/comments):

DUPLICATE SAMPLE? Yes (No) (name/time/comments):

MS/MSD? Yes (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear / clear ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No))

WEATHER DATA : TEMP.: 75°F SKY : cloudy WIND : 10-15

FIELD SAMPLING DATA SHEET

QC/QA Check _____.		Page: 1 of 1	
PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS56S
CITY, STATE, ZIP :	Fridley, MN	DATE:	5-10-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	—

WELL DATA		PURGE DATA	
WELL NAME :	MS56S	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	135 → 120
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.43
WELL DEPTH (ft) :	36.50	PURGE START / END TIME :	1440 /
DEPTH TO WATER (toc):	20.96 DATE: 5-10-11	SAMPLING BEGIN / END TIME :	/
WATER COLUMN HEIGHT (ft):	15.54	PUMP ID # :	~~275~~ Rehel #1 / YSI ID # : 217003
WELL VOLUME (gal) :	2.53	WATER LEVEL ID # :	230002

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤ 5	WATER LEVEL (ft BTOC)
1	1443	1.0	15.53	1.024	1.67	6.98	-107.5	252.7	28.12 *
2	1446	1.5	16.26	1.181	0.80	6.74	-107.9	147.2	27.27
3	1449	1.8	16.49	1.342	0.70	6.70	-111.0	119.3	27.03
4	1452	2.2	17.09	1.440	0.71	6.71	-118.8	76.0	
5									
6									
7									
8			NO	SAMPLE	TAKEN				
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :		VOC: ____ -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:		
STAB. TEMP (C) :		
STAB. Sp. CONDUCTIVITY :		
STAB. D.O. :		
STAB. pH :		
STAB. ORP :		
STAB. TURBIDITY:		

SAMPLE TIME : SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / No (name/time/comments):

DUPLICATE SAMPLE? Yes / No (name/time/comments):

MS/MSD? Yes / No (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Cloudy black ODOR : none

OBSERVATIONS : * Slowed flow rate

Per Paul Wolz stopped purging after 1452 because lane closure permit would not allow us to continue and well had not stabilized. No sample was taken. Original was not on field WP List

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 80°F SKY : cloudy WIND : S 10S

FIELD SAMPLING DATA SHEET

QC/QA Check _____.		Page: 1 of 1	
PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS465
CITY, STATE, ZIP :	Fridley, MN	DATE:	5/10/11

SAMPLER :	Joe Stalock	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	050911-2

WELL DATA		PURGE DATA	
WELL NAME :	MS465	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	118
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.38
WELL DEPTH (ft) :	35.92	PURGE START / END TIME :	1320 / 1349
DEPTH TO WATER (toc):	22.16 DATE: 5/10/11	SAMPLING BEGIN / END TIME :	1351 /
WATER COLUMN HEIGHT (ft):	13.76	PUMP ID # : Rental 2	YSI ID # : Rental
WELL VOLUME (gal) :	2.24	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTORS: (0.163 - 2") 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤ 5	WATER LEVEL (ft BTOC)
1	1323	1.14	12.98	1.083	1.25	6.97	-104.2	25.5	
2	1326	2.28	12.92	1.072	1.63	6.99	-102.6	16.2	22.52
3	1329	3.42	12.98	1.075	1.05	6.99	-97.4	9.1	
4	1332	4.56	12.07	1.074	0.10	6.96	-97.6	9.9	22.73
5	1335	5.70	12.06	1.072	0.09	6.96	-97.4	11.9	
6	1338	6.84	12.08	1.072	0.10	6.96	-98.4	11.9	22.69
7	1341	7.98	12.08	1.071	0.11	6.96	-99.9	4.9	
8	1343	9.12	12.13	1.071	0.15	6.96	-98.7	5.2	22.69
9	1346	10.26	12.02	1.072	0.16	6.96	-99.2	10.4	
10	1349	11.40	11.95	1.072	0.15	6.96	-100.4	7.3	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	11.40	VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5.08	
STAB. TEMP (C) :	11.95	** Parameters did not stabilize to specified
STAB. Sp. CONDUCTIVITY :	1.072	criteria but 5 well volumes purged so sample
STAB. D.O. :	0.015	was collected.
STAB. pH :	6.96	
STAB. ORP :	-100.4	
STAB. TURBIDITY:	7.3	

SAMPLE TIME : 1351 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: (Orange tint) / clear ODOR :

OBSERVATIONS : Air entering into YSI, effected D.O Readings. Fixed tubing and DO recovered to normal readings (1329).

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 75 SKY : OVC WIND : 1-5 MPH

FIELD SAMPLING DATA SHEET

QC/QA Check _____		Page: 1 of 1	
PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS185
CITY, STATE, ZIP :	Fridley, MN	DATE:	5/10/11
SAMPLER :	Joe Stalock	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	050911-2

WELL DATA		PURGE DATA	
WELL NAME :	MS185	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	123
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.45
WELL DEPTH (ft) :	40.07	PURGE START / END TIME :	1423 / 1453
DEPTH TO WATER (toc):	23.61 DATE: 5/10/11	SAMPLING BEGIN / END TIME :	1455 / 1456
WATER COLUMN HEIGHT (ft):	16.46	PUMP ID # : Rental 2	YSI ID # : Rental
WELL VOLUME (gal) :	2.68	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTORS: (0.163 - 2") 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤ 5	WATER LEVEL (ft BTOC)
1	1426	1.35	13.10	1.051	0.63	7.08	-63.5	64.3	
2	1429	2.70	12.48	1.033	0.20	7.02	-72.2	46.0	23.71
3	1432	4.05	12.55	1.031	0.22	7.02	-78.9	31.2	23.71
4	1435	5.40	12.40	1.030	0.12	7.01	-85.4	19.3	
5	1438	6.75	12.45	1.030	0.10	7.01	-88.0	16.8	
6	1441	8.10	12.30	1.030	0.07	7.01	-89.4	14.3	23.71
7	1444	~~12.36~~ 9.45	12.36	1.031	0.08	7.01	-90.5	11.4	
8	1447	10.80	12.38	1.031	0.08	7.01	-92.2	14.3	23.71
9	1450	12.15	12.32	1.029	0.08	7.01	-93.0	15.0	
10	1453	13.50	12.42	1.029	0.13	7.01	-94.0	5.7	

~~Temp~~ Vol-9.45

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	13.50	VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5.03	
STAB. TEMP (C) :	12.42	Stabilization not achieved (Turb)
STAB. Sp. CONDUCTIVITY :	1.029	5 well volumes purged before sampling
STAB. D.O. :	0.13	
STAB. pH :	7.01	
STAB. ORP :	-94.0	
STAB. TURBIDITY:	5.7	

SAMPLE TIME : 1455 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Moderate / Clear ODOR : NO / NO

OBSERVATIONS : Well not stable (Turb) Sampled After 5 well volumes

No Plug in well

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 79 SKY : OVC WIND : 5 MPH

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: 1 of 1

PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS44I
CITY, STATE, ZIP :	Fridley, MN	DATE:	5/10/11

SAMPLER :	Joe Stalboh	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	050911-2

WELL DATA		PURGE DATA	
WELL NAME :	MS44I	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	177
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	1.60
WELL DEPTH (ft) :	81.84	PURGE START / END TIME :	1211 / 1232
DEPTH TO WATER (toc):	23.30 DATE: 5/10/11	SAMPLING BEGIN / END TIME :	1234 / 1235
WATER COLUMN HEIGHT (ft):	58.54	PUMP ID # : Rental 2	YSI ID # : Rental
WELL VOLUME (gal) :	9.54	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤ 5	WATER LEVEL (ft BTOC)
1	1214	4.80	11.83	0.752	0.21	7.57	-258.6	22.4	
2	1217	9.60	11.78	1.185	0.08	7.05	-164.0	2.40	23.61
3	1220	14.40	11.95	1.274	0.09	6.97	-134.4	0.00	23.61
4	1223	19.20	11.99	1.298	0.07	6.95	-127.3	0.00	
5	1226	24.00	11.70	1.302	0.03	6.95	-122.6	0.00	23.61
6	1229	28.80	11.71	1.305	0.04	6.94	-121.6	0.00	
7	1232	33.60	11.75	1.307	0.05	6.94	-119.3	0.00	
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	33.60	VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.52	
STAB. TEMP (C) :	11.75	
STAB. Sp. CONDUCTIVITY :	1.307	
STAB. D.O. :	0.05	
STAB. pH :	6.94	
STAB. ORP :	-119.3	
STAB. TURBIDITY:	0.00	

SAMPLE TIME : 1234 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Greyish / Clear ODOR: NO / NO

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 74 SKY : Sun WIND : 3-5 MPH

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: 1 of 1

PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS54I
CITY, STATE, ZIP :	Fridley, MN	DATE:	5/10/11

SAMPLER :	Joe Stalock	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	0509112

WELL DATA		PURGE DATA	
WELL NAME :	MS54I	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	176
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	1.42
WELL DEPTH (ft) :	76.50	PURGE START / END TIME :	1047 / 1117
DEPTH TO WATER (toc):	24.51 DATE: 5/10/11	SAMPLING BEGIN / END TIME :	1119 / 1120
WATER COLUMN HEIGHT (ft):	51.99	PUMP ID # : Rental 2	YSI ID # : Rental
WELL VOLUME (gal) :	8.47	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTORS: (0.163 - 2") 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤ 5	WATER LEVEL (ft BTOC)
1	1050	4.26	14.53	1.093	0.46	6.94	-81.8	3.4	
2	1053	8.52	12.97	1.088	0.32	7.01	-101.1	0.9	
3	1056	12.78	12.82	1.087	0.19	7.03	-103.1	0	25.03
4	1059	17.04	12.95	1.105	0.25	7.03	-100.2	0	25.08
5	1102	21.3	13.00	1.107	0.19	7.02	-99.2	0	25.08
6	1105	25.56	13.04	1.112	0.18	7.02	-99.0	0	
7	1108	29.82	12.66	1.110	0.24	7.01	-99.0	0	25.08
8	1111	34.08	12.72	1.111	0.19	7.01	-99.2	0	
9	1114	38.34	12.66	1.113	0.17	7.01	-99.4	0	25.08
10	1117	42.60	12.68	1.112	0.17	7.01	-99.6	0	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	42.60	VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5.02	
STAB. TEMP (C) :	12.68	
STAB. Sp. CONDUCTIVITY :	1.112	
STAB. D.O. :	0.17	
STAB. pH :	7.01	
STAB. ORP :	-99.6	
STAB. TURBIDITY:	0	

SAMPLE TIME : (illegible) SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? (Yes) / No (name/time/comments): QCR02 1135

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Grevish / clear ODOR: ~~Sifoul~~ NO/NO

OBSERVATIONS : Noticed temperature close to going out of Range @ 1105
Abbrupt change in temp after adjusting YSI valve to keep steady flow

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 70 SKY : Sun WIND : 5-10 mph

FIELD SAMPLING DATA SHEET

QC/QA Check _____

Page: 1 of 1

PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS54S
CITY, STATE, ZIP :	Fridley, MN	DATE:	5/10/11
SAMPLER :	Joe Stalboch	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	050911-2

WELL DATA		PURGE DATA	
WELL NAME :	MS54S	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Stainless	PUMP CONTROLLER SETTINGS:	~~118~~ 119
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.32
WELL DEPTH (ft) :	36.5	PURGE START / END TIME :	1009 / 1030
DEPTH TO WATER (toc):	24.72 DATE: 5/10/11	SAMPLING BEGIN / END TIME :	1032 / 1033
WATER COLUMN HEIGHT (ft):	11.78	PUMP ID # :	Rental 2 / YSI ID # : Rental
WELL VOLUME (gal) :	1.92	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTORS: (0.163 - 2") 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal) 0.96	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤5	WATER LEVEL (ft BTOC)
1	1012	~~1.55~~	13.55	1.102	0.32	6.90	-71.4	4.3	
2	1015	1.92	12.97	1.117	0.20	6.88	-70.0	3.5	24.86
3	1018	2.88	13.26	1.114	0.17	6.88	-68.6	5.6	
4	1021	3.84	13.40	1.116	0.22	6.88	-66.2	2.7	24.88
5	1024	4.80	13.22	1.117	0.22	6.87	-65.3	3.9	
6	1027	5.76	13.22	1.117	0.20	6.87	-66.4	3.5	24.88
7	1030	6.72	13.26	1.117	0.19	6.88	-67.1	3.4	
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	6.72	VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.5	
STAB. TEMP (C) :	13.26	
STAB. Sp. CONDUCTIVITY :	1.117	
STAB. D.O. :	0.19	
STAB. pH :	6.88	
STAB. ORP :	-67.1	
STAB. TURBIDITY:	3.4	

SAMPLE TIME : 1032 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / No (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Rusty / Clear ODOR : NO / NO

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 67 SKY : Sun WIND : 3mph

FIELD SAMPLING DATA SHEET

QC/QA Check _____

Page: 1 of 1

PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS41I
CITY, STATE, ZIP :	Fridley, MN	DATE:	5/10/11
SAMPLER :	Joe Spalsch	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	050911-2

WELL DATA		PURGE DATA	
WELL NAME :	MS41I	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Stainless	PUMP CONTROLLER SETTINGS:	185
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	1.86
WELL DEPTH (ft) :	92.52	PURGE START / END TIME :	915 / 933
DEPTH TO WATER (toc):	24.39 DATE: 5/10/11	SAMPLING BEGIN / END TIME :	935 / 937
WATER COLUMN HEIGHT (ft):	68.13	PUMP ID # : Rental 2	YSI ID # : Rental
WELL VOLUME (gal) :	11.10	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTORS: (0.163 - 2") 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤ 5	WATER LEVEL (ft BTOC)
1	918	5.58	13.06	0.756	2.28	7.40	-21.5	25.7	
2	921	11.16	12.38	0.831	0.23	7.08	-67.9	13.3	24.81
3	924	16.74	12.33	0.885	0.25	7.01	-66.2	1.6	24.81
4	927	22.32	12.30	0.899	0.22	7.00	-69.5	0.21	
5	930	27.90	12.34	0.914	0.22	6.99	-75.1	0	
6	933	33.48	12.32	0.923	0.12	6.98	-77.3	0	24.81
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	33.48	VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.01	
STAB. TEMP (C) :	12.32	
STAB. Sp. CONDUCTIVITY :	0.923	
STAB. D.O. :	0.12	
STAB. pH :	6.98	
STAB. ORP :	-77.3	
STAB. TURBIDITY:	0	

SAMPLE TIME : 935 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes (No) (name/time/comments):

DUPLICATE SAMPLE? Yes (No) (name/time/comments):

MS/MSD? Yes (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Clear/Clear ODOR : None

OBSERVATIONS : Bubble on Probe for Reading 1 (DO)

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 63 SKY : Sunny WIND : 1-3mph

FIELD SAMPLING DATA SHEET

QC/QA Check _____.		Page: 1 of 1	
PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS34I
CITY, STATE, ZIP :	Fridley, MN	DATE:	5-11-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	050911-1

WELL DATA		PURGE DATA	
WELL NAME :	MS34I	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	150
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	~~1.54~~ 0.93
WELL DEPTH (ft) :	79.32	PURGE START / END TIME :	956 /
DEPTH TO WATER (toc):	22.78 DATE: 5-11-11	SAMPLING BEGIN / END TIME :	/
WATER COLUMN HEIGHT (ft):	56.54'	PUMP ID # : Rental #1	YSI ID # : 217003
WELL VOLUME (gal) :	9.22	WATER LEVEL ID # : 230007	

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤ 5	WATER LEVEL (ft BTOC)
1	1001	4.65	14.11	0.829	0.50	7.00	-142.9	25.6	22.98
2	1006	9.30	13.56	1.272	0.50	6.86	-110.6	2.6	23.01
3	1011	13.95	13.48	1.277	0.51	6.88	-109.9	1.3	23.03
4	1016	18.60	13.43	1.276	0.51	6.89	-110.5	0.9	23.04
5	1021	23.25	13.43	1.275	0.50	6.91	-111.2	0.7	23.04
6	1026	27.90	13.40	1.271	0.51	6.92	-111.9	0.7	
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	27.90	VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3	
STAB. TEMP (C) :	13.40	
STAB. Sp. CONDUCTIVITY :	1.271	
STAB. D.O. :	0.51	
STAB. pH :	6.92	
STAB. ORP :	-111.9	
STAB. TURBIDITY:	0.7	

SAMPLE TIME : 1028 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: cloudy brown / clear ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 60°F SKY : RAIN WIND : 10 · 5

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: 1 of 4

PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS33I
CITY, STATE, ZIP :	Fridley, MN	DATE:	5-11-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	OK 0911-3

WELL DATA		PURGE DATA	
WELL NAME :	MS-33I	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	117
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.39 → 0.18
WELL DEPTH (ft) :	75.87	PURGE START / END TIME :	11:22 / 1407
DEPTH TO WATER (toc):	16.73 DATE: 5-11-11	SAMPLING BEGIN / END TIME :	1409 / 1412
WATER COLUMN HEIGHT (ft):	59.14	PUMP ID # : Lowflow	YSI ID # : 217303
WELL VOLUME (gal) :	9.64	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤ 5	WATER LEVEL (ft BTOC)
1	11:27	0.5	18.95	1.048	2.50	7.69	-163.6	27.8	21.74
2	11:32	1.3	19.46	1.044	0.44	8.02	-232.1	11.2	22.07
3	11:37	2.2	19.61	1.054	0.38	7.98	-252.6	5.5	21.92
4	11:42	3.0	19.52	1.054	0.35	7.98	-260.3	4.5	
5	11:47	3.9	19.37	1.054	0.33	7.99	-268.4	3.6	21.94
6	11:52	4.6	19.27	1.055	0.32	8.00	-264.8	3.6	22.16
7	11:57	5.8	19.07	1.053	0.32	7.98	-256.2	3.8	
8	12:02	7.0	18.87	1.052	0.32	7.96	-248.0	4.5	22.61
9	12:07	8.2	18.85	1.080	0.25	8.27	-303.6	1.7	21.94
10	12:12	9.2	18.92	1.378	0.37	7.67	-234.3	1.5	21.89

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	29.2	VOC: 8-40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3	
STAB. TEMP (C) :	18.57	
STAB. Sp. CONDUCTIVITY :	1.594	
STAB. D.O. :	0.75	
STAB. pH :	7.02	
STAB. ORP :	-136.6	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1409 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes (No) (name/time/comments):

DUPLICATE SAMPLE? (Yes) / No (name/time/comments): QCD02 @ 1510

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: cloudy gray ODOR : yes.

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: SKY : Indoors WIND :

FIELD SAMPLING DATA SHEET

QC/QA Check _____

PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS 337
CITY, STATE, ZIP :	Fridley, MN	DATE:	5-11-11

SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	050941 -3

WELL DATA		PURGE DATA	
WELL NAME :	MS-337	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	~~0.18~~ 117
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.18
WELL DEPTH (ft) :	75.87	PURGE START / END TIME :	1122 / 1407
DEPTH TO WATER (toc):	16.73 DATE: 5-11-11	SAMPLING BEGIN / END TIME :	1409 / 1412
WATER COLUMN HEIGHT (ft):	59.14	PUMP ID # : Rental #1	YSI ID # : 217003
WELL VOLUME (gal) :	9.64	WATER LEVEL ID # :	230207

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤ 5	WATER LEVEL (ft BTOC)
1	12:17	10.0	18.74	1.408	0.52	7.44	-200.5	3.3	22.61
2	12:22	11.2	18.82	1.511	0.55	7.34	-190.7	1.2	21.95
3	12:27	12.1	18.70	1.564	0.63	7.25	-177.3	0.3	21.94
4	12:32	13.0	18.69	1.576	0.65	7.21	-169.3	0.2	21.93
5	12:37	13.8	18.68	1.580	0.66	7.18	-164.7	0.2	21.94
6	12:42	14.5	18.65	1.585	0.67	7.16	-160.2	0.3	21.95
7	12:47	15.4	18.63	1.589	0.69	7.13	-155.2	0.4	21.95
8	12:52	16.4	18.62	1.590	0.69	7.12	-154.4	0.3	21.95
9	12:57	17.2	18.61	1.591	0.70	7.11	-152.6	0.2	21.95
10	13:02	18.1	18.60	1.592	0.70	7.10	-150.9	0.1	21.95

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	29.2	VOC: 6 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3	
STAB. TEMP (C) :	18.57	
STAB. Sp. CONDUCTIVITY :	1.594	
STAB. D.O. :	0.75	
STAB. pH :	7.02	
STAB. ORP :	-131.6	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1409 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? (Yes) / No (name/time/comments): QCD02 @ 1510

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: cloudy gray / clear ODOR : yes.

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No))

WEATHER DATA : TEMP.: SKY : Partly cloudy WIND :

FIELD SAMPLING DATA SHEET

QC/QA Check _____.		Page: 3 of 4	
PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS33I
CITY, STATE, ZIP :	Fridley, MN	DATE:	5-11-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	050911 -3

WELL DATA		PURGE DATA	
WELL NAME :	MS-33I	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	117
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.18
WELL DEPTH (ft) :	75.87	PURGE START / END TIME :	1122 / 1407
DEPTH TO WATER (toc):	16.73 DATE: 5-11-11	SAMPLING BEGIN / END TIME :	1409 / 1412
WATER COLUMN HEIGHT (ft):	59.14	PUMP ID # : Rental #1	YSI ID # : 217003
WELL VOLUME (gal) :	9.64	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤ 5	WATER LEVEL (ft BTOC)
1	1307	19.0	18.58	1.594	0.71	7.09	-149.1	0.1	21.95
2	1312	19.9	18.58	1.595	0.71	7.08	-147.8	0.1	21.95
3	1317	20.8	18.55	1.594	0.72	7.07	-146.4	0.0	21.95
4	1322	21.7	18.55	1.595	0.72	7.06	-145.5	0.0	21.95
5	1327	22.5	18.54	1.594	0.72	7.06	-144.3	0.0	21.95
6	1332	23.3	18.54	1.595	0.80	7.07	* -109.6	0.0	21.95
7	1337	24.1	18.55	1.595	0.75	7.06	-119.8	0.0	21.95
8	1342	25.1	18.52	1.594	0.75	7.05	-127.1	0.0	21.95
9	1347	26.0	18.54	1.596	0.74	7.04	-128.4	0.0	21.95
10	1352	26.9	18.55	1.594	0.74	7.03	-130.1	0.0	21.90

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	29.2	VOC: 6 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3	
STAB. TEMP (C) :	18.57	
STAB. Sp. CONDUCTIVITY :	1.594	
STAB. D.O. :	0.75	
STAB. pH :	7.02	
STAB. ORP :	-136.6	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1409 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? (Yes) / No (name/time/comments): QCD02 @ 1510

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: ODOR : Yes

OBSERVATIONS :

* YSI turned off, when turned back on ORP Readings were significantly lower

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: SKY : Indoor WIND :

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS33I
CITY, STATE, ZIP :	Fridley, MN	DATE:	5-11-11

SAMPLER : Ryan Riley	ANALYTICAL LABORATORY : CAS
COMPANY : Bay West, Inc.	CHAIN OF CUSTODY # : 050911 -3

WELL DATA	PURGE DATA
WELL NAME : MS33I	PURGE METHOD : Grundfos Pump
CASING MATERIAL : Steel	PUMP CONTROLLER SETTINGS: 117
WELL DIAMETER (in) : 2	PURGE RATE (gpm) : 0.18
WELL DEPTH (ft) : 75.87	PURGE START / END TIME : 1122 / 1407
DEPTH TO WATER (toc): 16.73 DATE: 5-11-11	SAMPLING BEGIN / END TIME : 1409 / 1412
WATER COLUMN HEIGHT (ft): 59.14	PUMP ID # : Rental #1 YSI ID # : 217003
WELL VOLUME (gal) : 9.64	WATER LEVEL ID # : 236007

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤ 5	WATER LEVEL (ft BTOC)
1	1357	27.4	18.56	1.594	0.75	7.03	-130.7	(SD) 0.0	21.84
2	1402	28.3	18.56	1.594	0.75	7.02	-131.3	0.0	21.88
3	1407	29.2	18.57	1.594	0.75	7.02	-131.6	0.0	21.88
4									
5									
6									
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	29.2	VOC: 6 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3	
STAB. TEMP (C) :	18.57	
STAB. Sp. CONDUCTIVITY :	1.594	
STAB. D.O. :	0.75	
STAB. pH :	7.02	
STAB. ORP :	-131.6	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1409 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? (Yes) / No (name/time/comments): QCD02 @ 1510

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: ODOR : Yes

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: SKY : Indoor WIND :

FIELD SAMPLING DATA SHEET

Bay West
Customer-Focused Environmental & Industrial Solutions

Page: 1 of 1

PROJECT NAME :	NIROP May 2011 GW Monitoring	PROJECT # :	J070047
ADDRESS :	4800 E River Rd	SAMPLE ID:	AT03A
CITY, STATE, ZIP :	Fridley, MN	DATE:	6-9-11

SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	060911

WELL DATA		PURGE DATA	
WELL NAME :	AT03A	PURGE METHOD : ~~Grundfos Pump~~	TAP
CASING MATERIAL :		PUMP CONTROLLER SETTINGS:	
WELL DIAMETER (in) :		PURGE RATE (gpm) :	
WELL DEPTH (ft) :		PURGE START TIME :	
DEPTH TO WATER (toc):	DATE:	PURGE END TIME :	
WATER COLUMN HEIGHT (ft):		SAMPLING BEGIN / END TIME :	/
WELL VOLUME (gal) :		PUMP ID # : —	WATER LEVEL ID # : —

VOLUME CONVERSION FACTOR : .16 - 2" .65 - 4" 1.47 - 6" 2.61 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)
Stabilization Parameters								
1			12.74	0.902	1.24	7.08	-206	4.0
2								
3								
4								
5								
6								
7								
8								
9								

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :		VOC: 3 - (3)-40 ml vials w/HCL pres.
# OF WELL VOLUMES PURGED:		
STAB. TEMP (C) :	12.74	
STAB. Sp. CONDUCTIVITY :	0.902	
STAB. D.O. :	1.24	
STAB. pH :	7.08	
STAB. ORP :	-206	

SAMPLE TIME : 1417 SAMPLE FIELD FILTERED ? : Yes / No

FIELD BLANK? Yes / No (name/time/comments):

DUPLICATE SAMPLE? Yes / No (name/time/comments):

MS/MSD? Yes / No (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear ODOR : none

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or No)

WEATHER DATA : TEMP.: SKY : Cloudy WIND :

Docs 59885

FIELD SAMPLING DATA SHEET

Bay West
Customer-Focused Environmental & Industrial Solutions

Page: 1 of 1

PROJECT NAME :	NIROP May 2011 GW Monitoring	PROJECT # :	J070047
ADDRESS :	4800 E River Rd	SAMPLE ID:	AT05B
CITY, STATE, ZIP :	Fridley, MN	DATE:	6-9-11

SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	060911

WELL DATA		PURGE DATA	
WELL NAME :	AT05B	PURGE METHOD : ~~Grundfos Pump~~	TAP
CASING MATERIAL :		PUMP CONTROLLER SETTINGS:	
WELL DIAMETER (in) :		PURGE RATE (gpm) :	
WELL DEPTH (ft) :		PURGE START TIME :	
DEPTH TO WATER (toc):	DATE:	PURGE END TIME :	
WATER COLUMN HEIGHT (ft):		SAMPLING BEGIN / END TIME :	/
WELL VOLUME (gal) :		PUMP ID # : —	WATER LEVEL ID # : —

VOLUME CONVERSION FACTOR : .16 - 2" .65 - 4" 1.47 - 6" 2.61 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)
Stabilization Parameters								
1	1403		12.15	0.982	0.64	6.93	-37.0	0.8
2								
3								
4								
5								
6								
7								
8								
9								

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :		VOC: 6 - (3)-40 ml vials w/HCL pres.
# OF WELL VOLUMES PURGED:		
STAB. TEMP (C) :	12.15	
STAB. Sp. CONDUCTIVITY :	0.982	
STAB. D.O. :	0.64	
STAB. pH :	6.93	
STAB. ORP :	-37.0	

SAMPLE TIME : 1403 SAMPLE FIELD FILTERED ? : Yes (No)

FIELD BLANK? Yes (No) (name/time/comments):

DUPLICATE SAMPLE? (Yes) / No (name/time/comments): QCD03 @ 1451

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear ODOR : ~~clear~~ none

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 70's SKY : WIND :

Docs 59885

FIELD SAMPLING DATA SHEET

Bay West
Customer-Focused Environmental & Industrial Solutions

PROJECT NAME :	NIROP May 2011 GW Monitoring	PROJECT # :	J070047
ADDRESS :	4800 E River Rd	SAMPLE ID:	AT10
CITY, STATE, ZIP :	Fridley, MN	DATE:	6-9-11

SAMPLER : Ryan Riley	ANALYTICAL LABORATORY : CAS
COMPANY : Bay West, Inc.	CHAIN OF CUSTODY # : 060911

WELL DATA	PURGE DATA
WELL NAME : AT10	PURGE METHOD : ~~Grundfos Pump~~ TAP
CASING MATERIAL :	PUMP CONTROLLER SETTINGS:
WELL DIAMETER (in) :	PURGE RATE (gpm) :
WELL DEPTH (ft) :	PURGE START TIME :
DEPTH TO WATER (toc): DATE:	PURGE END TIME :
WATER COLUMN HEIGHT (ft):	SAMPLING BEGIN / END TIME : /
WELL VOLUME (gal) :	PUMP ID # : WATER LEVEL ID # :

VOLUME CONVERSION FACTOR : .16 - 2" .65 - 4" 1.47 - 6" 2.61 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)
Stabilization Parameters								
1			13.86	1.686	7.20	6.88	37.4	20.9
2								
3								
4								
5								
6								
7								
8								
9								

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :		VOC: 1 - (3)-40 ml vials w/HCL pres.
# OF WELL VOLUMES PURGED:		
STAB. TEMP (C) :	13.86	
STAB. Sp. CONDUCTIVITY :	1.686	
STAB. D.O. :	7.20	
STAB. pH :	6.88	
STAB. ORP :	37.4	

SAMPLE TIME : 1352	SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? (Yes) / No (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear ODOR : ~~clear~~ none

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: Indoor SKY : WIND :

Docs 59885

Columbia Analytical Services

CHAIN OF CUSTODY

SR#: _____

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

PAGE 1 OF 1 COC # 060911

PROJECT NAME: NIRDP
PROJECT NUMBER: J070047
PROJECT MANAGER: Paul Wolz
COMPANY/ADDRESS: Bay West, 5 Empire Drive
CITY/STATE/ZIP: St. Paul MN 55103
E-MAIL ADDRESS: paulw@baywest.com
PHONE #: 651-291-3491 | FAX #: 651-291-0099
SAMPLER'S SIGNATURE: [signature]

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐ 8270LL☐	Volatile Organics 624☐ 8260☐ 8260LL☐ 8021☐ BTEX☐	Hydrocarbons (*see below) Gas☐ Diesel☐ Oil☐	☐ Fuel Fingerprint (FIQ) ☐ NW-HCID Screen	Oil & Grease/TRPH 1664 HEM☐ 1664 SGT☐	PCB's Aroclors☐ Congeners☐	Pesticides/Herbicides 608☐ 8081A☐ 8141A☐ 8151A☐	Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐	PAHS 8310☐ SIM☐	Metals, Total or Dissolved (See list below)	Cyanide☐ Hex-Chrom☐	pH, Cond., Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS (circle)	NH_3-N, COD, Total-P, TKN, TOC, DOC (circle) NO_2+NO_3	TOX 9020☐ AOX 1650☐ 506☐					REMARKS
AT10	6-9-1	1352		water	3		X																	
AT05B	↓	1403		↓	3		X																	
QCD03		1451			3		X																	
AT03A		1417			3		X																	
QCT03	↓	—		↓	2		X																	

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. # 34003
Bill To: Accounts Payable, Bay West, 5 Empire Dr, St. Paul MN 55103

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results
___ Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:
for 6 specific Compounds.
UPS # 1ZA19 8R9 01 9118 3449

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature] Date/Time: 6-9-11 / 1445	Signature: Date/Time:	Signature: Date/Time:	Signature: Date/Time:
Printed Name: Tiegan Ritter Firm: Bay West	Printed Name: Firm:	Printed Name: Firm:	Printed Name: Firm:

RCOC #1 03/10

Columbia Analytical Services

CHAIN OF CUSTODY

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

SR#: ~~050911-1~~ RNR

PAGE 1 OF 2 COC # 050911-1

PROJECT NAME: NIROP
PROJECT NUMBER: J070047
PROJECT MANAGER: Paul Walz
COMPANY/ADDRESS: 5 Empire Drive
CITY/STATE/ZIP: St. Paul MN 55103
E-MAIL ADDRESS: paulw@baywest.com
PHONE #: 651-291-3491 | FAX #: 651-291-0099
SAMPLER'S SIGNATURE: [signature]

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐ 8270LL☐	Volatile Organics 624☐ 8260☐ 8260LL☐	Hydrocarbons (*see below) Gas☐ Diesel☐ Oil☐	BTEX☐ 8021☐	☐ Fuel Fingerprint (FIQ) ☐ NW-HCID Screen	Oil & Grease/TRPH 1664 HEM☐ 1664 SGT☐	PCB's Aroclors☐ Congeners☐	Pesticides/Herbicides 608☐ 8081A☐ 8141A☐ 8151A☐	Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐	PAHS 8310☐ SIM☐	Metals, Total or Dissolved (See list below)	Cyanide☐ Hex-Chrom☐	pH, Cond., Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS (circle)	NH_3-N, COD, Total-P, TKN, TOC, DOC (circle) NO_2+NO_3	TOX 9020☐ AOX 1650☐ 506☐					REMARKS
MS35D	5-9-11	1138		water	9			X																		
MS13IS		1246			3			X																		
MS37S		1430			3			X																		
QCD01		1510			3			X																		
MS35I		1528			3			X																		
QCR01		1625			3			X																		
MS55I	5-10-11	937			3			X																		
MS36S		1203			3			X																		
MS56I		1306			3			X																		
MS38S		1411			3			X																		

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. # 34003
Bill To: Account Payable
Bay West, 5 Empire Dr.
St Paul MN 55103

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:
for 8 specific compounds.

Tracking # 1Z A19 0R9 01 9559 3507

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature]	Signature:	Signature:	Signature:
Date/Time: 5-11-11 15:15	Date/Time:	Date/Time:	Date/Time:
Printed Name: Ryan Riley	Printed Name:	Printed Name:	Printed Name:
Firm: Bay West	Firm:	Firm:	Firm:

RCOC #1 03/10

Columbia Analytical Services

CHAIN OF CUSTODY

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

SR#: _____

PAGE 1 OF 2 COC # 050911-2

PROJECT NAME: NIROP
PROJECT NUMBER: J070047
PROJECT MANAGER: Paul Walz
COMPANY/ADDRESS: Bay West, 5 Empire Drive
CITY/STATE/ZIP: St. Paul MN 55103
E-MAIL ADDRESS: paulw@baywest.com
PHONE #: 651-291-3491 FAX #: 651-291-0099
SAMPLER'S SIGNATURE: [signature]

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐ 8270LL☐	Volatile Organics 624☐ 8260☒ 8021☐ BTEX☐	Hydrocarbons (*see below) Gas☐ Diesel☐ Oil☐ ☐ Fuel Fingerprint (FIQ) ☐ NW-HCID Screen	Oil & Grease/TRPH 1664 HEM☐ 1664 SGT☐	PCB's Aroclors☐ Congeners☐	Pesticides/Herbicides 608☐ 8081A☐ 8141A☐ 8151A☐	Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐	PAHS 8310☐ SIM☐	Metals, Total or Dissolved (See list below)	Cyanide☐ Hex-Chrom☐	pH, Cond., Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS (circle)	NH_3-N, COD, Total-P, TKN, TOC, DOC (circle) NO_2+NO_3	TOX 9020☐ AOX 1650☐ 506☐					REMARKS
MS15IS	5-9-11	1219		water	9			X																	MS/MSD
MS43I		1328			3			X																	
MS45I		1428			3			X																	
MS45S		1532			3			X																	
MS 54I	5/10/11	1119			3			X																	
MS 54S		1032			3			X																	
MS 41I		935			3			X																	
MS 44I		1234			3			X																	
MS 46S		1351			3			X																	
MS18S		1455			3			X																	

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. # 34003
Bill To: Account Payable

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:

for 8 specific compounds

Tracking # 1Z A19 0R9 01 9735 1112

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature] Date/Time: 5/11/11 13:15	Signature: Date/Time:	Signature: Date/Time:	Signature: Date/Time:
Printed Name: Joe Stalvik Firm: Bay West	Printed Name: Firm:	Printed Name: Firm:	Printed Name: Firm:

Columbia Analytical Services™

CHAIN OF CUSTODY

SR#: _____

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

PAGE 2 OF 2 COC # 050911-3

PROJECT NAME: NIROP
PROJECT NUMBER: J070047
PROJECT MANAGER: Paul Walz
COMPANY/ADDRESS: Bay West, 5 Empire Drive
CITY/STATE/ZIP: St. Paul MN 55103
E-MAIL ADDRESS: paulw@baywest.com
PHONE #: 651-291-3491 FAX #: 651-291-0099
SAMPLER'S SIGNATURE: Ryan Riley

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐ 8270LL☐	Volatile Organics 624☐ 8260☐ 8021☐ BTEX☐	Hydrocarbons (*see below) Gas☐ Diesel☐ Oil☐	☐-Fuel Fingerprint (FIQ) ☐ NW-HCID Screen	Oil & Grease/TRPH 1664 SGT☐ 1664 HEM☐	PCB's Aroclors☐ Congeners☐	Pesticides/Herbicides 608☐ 8081A☐ 8141A☐ 8151A☐	Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐	PAHS 8310☐ SIM☐	Metals, Total or Dissolved (See list below)	Cyanide☐	Hex-Chrom☐	pH, Cond, Cl, SO4, PO4, F, NO2, NO3, BOD, TSS, TDS (circle)	NH3-N, COD, Total-P, TKN, TOC, DOC (circle) NO2+NO3	TOX 9020☐ AOX 1650☐ 506☐					REMARKS
MS34I	5-11-11	1028		water	3			X																	
MS33I	↓	1409		↓	3			X																	
QCD02	↓	1510		↓	3			X																	
QCT02	5-9-11	—		↓	2			X																	
QCR03	5-11-11	1455		↓	3			X																	

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. # 34003
Bill To: Account Payable

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:

for 8 specific compounds

Tracking # 1Z A19 8R9 01 9559 3507

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature] Date/Time: 5-11-11 15:15	Signature: Date/Time:	Signature: Date/Time:	Signature: Date/Time:
Printed Name: Ryan Riley Firm: Bay West	Printed Name: Firm:	Printed Name: Firm:	Printed Name: Firm:

RCOC #1 03/10

Columbia Analytical Services™

CHAIN OF CUSTODY

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

SR#: _____

PAGE 2 OF 2 COC # 050911-2

PROJECT NAME: NRDP
PROJECT NUMBER: J072047
PROJECT MANAGER: Paul Walz
COMPANY/ADDRESS: Bay West, 5 Empire Drive
CITY/STATE/ZIP: St Paul MN 55103
E-MAIL ADDRESS: paulw@baywest.com
PHONE #: 651-291-0491 FAX#: 651-291-0099
SAMPLER'S SIGNATURE: [signature]

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐ 8270LL☐	Volatile Organics 624☐ 8260☐ 8021☐ BTEX☐	Hydrocarbons (*see below) Gas☐ Diesel☐ Oil☐ ☐ Fuel Fingerprint (FIQ) ☐ NW-HCID Screen	Oil & Grease/TRPH 1664 SGT☐ 1664 HEM☐	PCB's Aroclors☐ Congeners☐	Pesticides/Herbicides 608☐ 8081A☐ 8141A☐ 8151A☐	Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐	PAHS 8310☐ SIM☐	Metals, Total or Dissolved (See list below)	Cyanide☐ Hex-Chrom☐	pH, Cond., Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS (circle)	NH_3-N, COD, Total-P, TKN, TOC, DOC (circle) NO_2+NO_3	TOX 9020☐ AOX 1650☐ 506☐					REMARKS
QCR02	5-10-11	1135		water	3			X																
QCT02	5-9-11	--		water	2			X																

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. # 34003
Bill To: Accounts Payable

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:

for 8 specific compounds.

Tracking# 1Z A19 8R9 01 9735 1112

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature] Date/Time: 5/11/11 13:15	Signature: Date/Time:	Signature: Date/Time:	Signature: Date/Time:
Printed Name: Joe Sialoth Firm: Bay West	Printed Name: Firm:	Printed Name: Firm:	Printed Name: Firm:

GROUNDWATER INSTRUMENT CALIBRATION FORM

PROJECT: NIROP Spring 2011 GW Monitoring

PERSONNEL: Ryan R, Shawn L, Joe S

PROJECT #: J070047-37

STARTING DATE: 5-9-11

DATE	TIME		INSTRUMENT / MODEL #	pH		COND. (mS)	ORP (mV)	TURBIDITY (NTU)		DO (mg/L)	DO (%)	BP (mmHg)	Comments
	Standard Cal. Concentrations →			7	10	1.000		0					
5/09/11	7:40	pre	217003	7.05	9.98	0.978	234.1	0.7	94.2	10.29	117.1	730.8	
		post		7.00	10.00	1.000	240.0	0.0	100.0	8.45	96.3		
	Standard Cal. Concentrations →			7	10	1.000		0					
5/09/11	7:40	pre	Rental	7.13	9.95	1.002	244.1	-1.9	110.2	8.37	94.0	730.3	
		post		7.00	10.00	1.000	240.0	0.0	126.0	8.54	96.1		
	Standard Cal. Concentrations →			7	10	1.000		0					
5/10/11	07:30	pre	217003	7.01	10.02	1.001	238.3	0.1	105.5	8.73	97.7	728.4	
		post		7.0	10.0	1.000	240.0	0.0	100.0	8.55	95.8		BP= 728.4
	Standard Cal. Concentrations →			7	10	1.000		0					
5/10/11	07:30	pre	Rental	7.09	10.01	0.972	245.5	0.7	127.8	9.17	97.4	728.4	
		post		7.0	10.0	1.000	240.0	0.0	126.0	8.99	95.9	-	BP= 728.4
	Standard Cal. Concentrations →			7	10	1.000		0					
5/11/11	0837	pre	217003	7.03	9.94	0.996	232.0	-1.0	100.4	9.29	100.1		BP= 735.67
		post		7.0	10.0	1.000	240.0	0.0	100.0	8.94	96.8		
	Standard Cal. Concentrations →			7	10	1.000		0					
		pre											
		post											

Notes:
- "Pre" refers to the instrument readings during calibration right before calibration is entered/accepted.
- "Post" refers to the instrument readings just after calibration has been accepted. "Post" calibration can also refer to instrument readings taken at end of sampling day to document any instrument "drift" in readings.

GROUNDWATER INSTRUMENT CALIBRATION FORM

PROJECT: 2011 NIROP Annual Sampling Event

PERSONNEL: Ryan Riley

PROJECT #: J070047

STARTING DATE: 6/7/2011

DATE	TIME		INSTRUMENT / MODEL #	pH		COND. (mS)	ORP (mV)	TURBIDITY (NTU)		DO (mg/L)	DO (%)	Comments
	Standard Cal. Concentrations →			7	10	1.000		0	100			
6/7/2011	11:00	pre	6820 / 217003	6.93	9.97	1.007	231.9	-1.2	100.7	6.47	84.7	BP = 730.09
		post		7.00	10.00	1.000	240.0	0.0	100.0	7.32	96.1	
	Standard Cal. Concentrations →			7	10	1.000		0	100			
6-9-11	10:35	pre	6820/217003	7.07	10.03	1.000	244.7	0.1	101.0	8.74	100.0	BP= 748.30
		post		7.00	10.00	1.000	240.0	0.0	100.0	8.61	98.5	
	Standard Cal. Concentrations →			7	10	1.000		0	100			
		pre										
		post										
	Standard Cal. Concentrations →			7	10	1.000		0	100			
		pre										
		post										
	Standard Cal. Concentrations →			7	10	1.000		0	100			
		pre										
		post										

Notes:
- "Pre" refers to the instrument readings during calibration right before calibration is entered/accepted.
- "Post" refers to the instrument readings just after calibration has been accepted. "Post" calibration can also refer to instrument readings taken at end of sampling day to document any instrument "drift" in readings.

Docs# 76050

Columbia Analytical Services

CHAIN OF CUSTODY

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

SR#: K1107403

PAGE 1 OF 1 COC # 081541-02

PROJECT NAME: NIROP
PROJECT NUMBER: J070047
PROJECT MANAGER: Paul Walz
COMPANY/ADDRESS: Bay West, 5 Empire Drive
CITY/STATE/ZIP: St. Paul MN 55103
E-MAIL ADDRESS: paul.w@baywest.com
PHONE #: 651-291-3491 FAX #: 651-291-0099
SAMPLER'S SIGNATURE: [signature]

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐ 8270LL☐	Volatile Organics 624☐ 8260☐ 8260B☐ 8021☐ BTEX☐	Hydrocarbons (*see below) Gas☐ Diesel☐ Oil☐ ☐ Fuel Fingerprint (FIQ) ☐ NW-HCID Screen	Oil & Grease/TRPH 1664 HEM☐ 1664 SGT☐	PCB's Aroclors☐ Congeners☐	Pesticides/Herbicides 608☐ 8081A☐ 8141A☐ 8151A☐	Chlorophenolics Tri☐ Tetra☐ 8151M PCP☐	PAHS 8310☐ SIM☐	Metals, Total or Dissolved (See list below)	Cyanide☐ Hex-Chrom☐	pH, Cond., Cl, SO4, PO4, F, NO2, NO3, BOD, TSS, TDS (circle) NH3-N, COD, Total-P, TKN, TOC, DOC (circle) NO2+NO3	TOX 9020☐ AOX 1650☐ 506☐					REMARKS
MS37S	8-15-11	1259		water	9		X																		MS/MSD
MS13IS		1415			3		X																		
AT1D		1518			3		X																		
AT05B		1525			3		X																		
AT03A		1545			3		X																		
QCD03		1600			3		X																		
QCT01		—			2		X																		

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. # 34003
Bill To: Account Payable, Bay West, 5 Empire Dr. St. Paul MN

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:

for 8 specific compounds

UPS Track# 1Z A19 8R9 01 9880 3337

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature] Date/Time: 8-15-11 15:30	Signature: [signature] Date/Time: 8/17/11 945	Signature: Date/Time:	Signature: Date/Time:
Printed Name: Ryan Riley Firm: Bay West	Printed Name: Rachel Moore Firm:	Printed Name: Firm:	Printed Name: Firm:

RCOC #1 03/10

Columbia Analytical Services

CHAIN OF CUSTODY

1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222x07 • FAX (360) 636-1068

SR#: K1107601

PAGE 1 OF 2 COC # 0815IF03

PROJECT NAME: NIROP
PROJECT NUMBER: J070047
PROJECT MANAGER: Paul Walz
COMPANY/ADDRESS: Bay West, 5 Empire Drive
CITY/STATE/ZIP: St. Paul MN 55103
E MAIL ADDRESS: paulw@baywest.com
PHONE #: 651-291-3491 FAX #: 651-291-0099
SAMPLER'S SIGNATURE: [signature]

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐ 8270LL☐	Volatile Organics 624☐ 8260B☐	Hydrocarbons Gas☐ 8021☐ BTEX☐ Diesel☐ Oil☐ (*see below)	Fuel Fingerprint (FIO)	NW-HCID Screen	Oil & Grease/TRPH 1664 HEM☐ 1664 SGT☐	PCB's Aroclors☐ Congeners☐	Pesticides/Herbicides 608☐ 8081A☐ 8141A☐ 8151A☐	Chlorophenolics Tri☐ Tetra☐ 8151M PCP☐	PAHS 8310☐ SIM☐	Metals, Total or Dissolved (See list below)	Cyanide☐	Hex-Chrom☐	pH, Cond, Cl, SO4, PO4, F, NO2, NO3, BOD, TSS, TDS (circle)	NH3-N, COD, Total-P, TKN, TOC, DOC (circle) NO2+NO3	TOX 9020☐ AOX 1650☐ 506☐					REMARKS
MS15IS	8-15-11	1213		WT	9		X																			MS/MSD
MS43I	↓	1315		↓	3		X																			
MS45I		1424			3		X																			
MS45S		1523			3		X																			
QCD01	↓	0800			3		X																			
MS46S	8-16-11	1005			3		X																			
MS18S		1109			3		X																			
MS35D		1245			3		X																			
MS35I		1318			3		X																			
QCR02	↓	1140		↓	3		X																			

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. # 34003
Bill To: Account Payable Bay West

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed.

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:
for 8 specific compounds

UPS Tracking # 1Z A198R9 01 9880 3337

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature] Date/Time: 8-16-11 1530	Signature: [signature] Date/Time: 8/17/11 945	Signature: Date/Time:	Signature: Date/Time:
Printed Name: Joe Swiech Firm: Bay West	Printed Name: Rachel Moore Firm:	Printed Name: Firm:	Printed Name: Firm:

Columbia Analytical Services™

CHAIN OF CUSTODY

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SR#: K1107601

PAGE 2 OF 2 COC # 081511-03

PROJECT NAME: NIRDP
PROJECT NUMBER: J070047
PROJECT MANAGER: Paul Welz
COMPANY/ADDRESS: Bay West, 5 Empire Drive
CITY/STATE/ZIP: St. Paul MN 55103
E-MAIL ADDRESS: paul@baywest.com
PHONE #: 651-291-3491 FAX #: 651-291-0099
SAMPLER'S SIGNATURE: [signature]

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐ 8270LL☐	Volatile Organics 624☐ 8260☐ 8021☐ BTEX☐	Hydrocarbons (see below) Gas☐ Diesel☐ Oil☐ ☐ Fuel Fingerprint (FIQ) ☐ NW-HCID Screen	Oil & Grease/TRPH 1664 HEM☐ 1664 SGT☐	PCB's Aroclors☐ Congeners☐	Pesticides/Herbicides 608☐ 8081A☐ 8141A☐ 8151A☐	Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐	PAHS 8310☐ SIM☐	Metals, Total or Dissolved (See list below)	Cyanide☐ Hex-Chrom☐	pH, Cond., Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS (circle)	NH_3-N, COD, Total-P, TKN, TOC, DOC (circle) NO_2+NO_3	TOX 9020☐ AOX 1650☐ 506☐	REMARKS
QCR01	8-15-11	1559		WT	3		X												
MS44I	8-16-11	1430		↓	3		X												
~~QCTD2~~	~~8-15-11~~			↓	~~2~~		~~X~~	omit RAR											

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. # 34003
Bill To: Account Payable Bay West

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:
for 8 specific compounds

UPS Track# 1Z A19 8R9 01 9880 3337

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature] Date/Time: 8/16/11 15:30	Signature: [signature] Date/Time: 8/17/11 945	Signature: Date/Time:	Signature: Date/Time:
Printed Name: Gary Riley Firm: Bay West	Printed Name: Rachel Moore Firm:	Printed Name: Firm:	Printed Name: Firm:

RCOC #1 06/08

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SR#: K1107770

PAGE 1 OF 1 COC # 081511-04

PROJECT NAME: NIROP
PROJECT NUMBER: 5072047
PROJECT MANAGER: Paul Wolz
COMPANY ADDRESS: Bay West, 5 Empire Drive
CITY/STATE/ZIP: St. Paul MN 55103
E-MAIL ADDRESS: paulw@bayweststcm
PHONE #: 651-291-0491 FAX #: 651-291-0099
SAMPLER'S SIGNATURE:

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625 ☐ 8270 ☐ 8270LL ☐	Volatile Organics 624 ☐ 8260B ☐	Hydrocarbons (See below) Gas ☐ Diesel ☐ Oil ☐ ☐ Fuel Fingerprint (FIQ) ☐ NW-HCID Screen	Oil & Grease/TRPH 1664 HEM ☐ 1664 SGT ☐	PCB's Aroclors ☐ Congeners ☐	Pesticides/Herbicides 608 ☐ 8081A ☐ 8141A ☐ 8151A ☐	Chlorophenolics - 8151M Tri ☐ Tetra ☐ PCP ☐	PAHS 8310 ☐ SIM ☐	Metals, Total or Dissolved (See list below)	Cyanide ☐ Hex-Chrom ☐	pH, Cond., Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS (circle) NH_3-N, COD, Total-P, TKN, TOC, DOC (circle) NO_2+NO_3	TOX 9020 ☐ AOX 1650 ☐ 506 ☐	REMARKS
MS36S	8-17-11	1135		WT	3		X	~~X~~ BTEX											
MS55I		1235			3		X												
MS56I		1340			3		X												
MS34I		1438			3		X												
QCR03		1550			3		X												
MS33I	8-18-11	1245			3		X												
QCD02		1330			3		X												
QCR04		1335			3		X												
QCT02	8-17-11	—			2		X												

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. # 34003
Bill To: Account Payable, Bay West, 5 Empire Dr., St. Paul MN 55103

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:
for 8 specific compounds. VOC 8260B
UPS Track# 1Z A19 8R9 01 9215 3229

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature] Date/Time: 8-18-11 1530	Signature: [signature] Date/Time: 8/20/11 0830	Signature: Date/Time:	Signature: Date/Time:
Printed Name: Ryan Riley Firm: Bay West	Printed Name: Les Kennedy Firm: CAS	Printed Name: Firm:	Printed Name: Firm:

RCOC #1 03/10

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CHAIN OF CUSTODY

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SR#: K1107770

PAGE 1 OF 1 COC # 081511-05

PROJECT NAME: NIROP
PROJECT NUMBER: J070047
PROJECT MANAGER: Paul Walz
COMPANY/ADDRESS: Bay West, 5 Empire Drive
CITY/STATE/ZIP: St Paul MN 55103
E MAIL ADDRESS: paulw@baywest.com
PHONE #: 651-291-3491 FAX: 651-291-0099
SAMPLER'S SIGNATURE: Joe

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625 ☐ 8270 ☐ 8270LL ☐	Volatile Organics 624 ☐ 8260 ☐	Hydrocarbons (see below) Gas ☐ Diesel ☐ Oil ☐	BTEX ☐ 8021 ☐	Fuel Fingerprint (FIO) ☐ NW HCID Screen	Oil & Grease/TRPH 1664 HEM ☐ 1664 SGT ☐	PCB's Aroclors ☐ Congeners ☐	Pesticides/Herbicides 608 ☐ 8081A ☐ 8141A ☐ 8151A ☐	Chlorophenolics - 8151M Tri ☐ Tetra ☐ PCP ☐	PAHS 8310 ☐ SIM ☐	Metals, Total or Dissolved (See list below)	Cyanide ☐ Hex-Chrom ☐	pH, Cond., Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS (circle)	NH_3-N, COD, Total-P, TKN, TOC, DOC (circle) NO_2+NO_3	TOX 9020 ☐ AOX 1650 ☐ 506 ☐						REMARKS
MS41I	8-17-11	9:48		WT	3			X																		
MS54S	↓	1056		↓	3			X																		
MS54I		1155			3			X																		
MS56S		1344			3			X																		
MS36S	↓	1520		↓	3			X																		

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. # 34003
Bill To: Account Payable, Bay West, 5 Empire Dr., St. Paul MN 55103

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:
for 8 specific Compounds. VOC 8260B
UPS Track # 1Z A19 8R9 01 9215 3229

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: Joe; Date/Time: 8-18-11 1530	Signature: ; Date/Time: 8/20/11 0830	Signature: ; Date/Time:	Signature: ; Date/Time:
Printed Name: Joe Stalnik; Firm: Baywest	Printed Name: Les Kennedy; Firm: CAS	Printed Name: ; Firm:	Printed Name: ; Firm:

RCOC #1 03/10

6

FIELD SAMPLING DATA SHEET

QC/QA Check _____			Page: 1 of
PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS45I
CITY, STATE, ZIP :	Fridley, MN	DATE:	8-15-11

SAMPLER :	Joe S	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	

WELL DATA		PURGE DATA	
WELL NAME :	MS45I	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	1.86
WELL DEPTH (ft) :	91.75	PURGE START / END TIME :	1357 / 1421
DEPTH TO WATER (toc):	23.52 DATE: 8-15-11	SAMPLING BEGIN / END TIME :	1424 / 1427
WATER COLUMN HEIGHT (ft):	68.23	PUMP ID # : Rental	YSI ID # : 217003
WELL VOLUME (gal) :	11.12	WATER LEVEL ID # :	

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤5	WATER LEVEL (ft BTOC)
1	1400	5.58	12.52	0.348	4.39	7.45	-301.8	727	
2	1403	11.16	12.53	0.492	0.88	6.74	-257.4	51.3	24.01
3	1406	16.74	12.53	0.630	0.64	6.36	-194.5	7.3	
4	1409	22.32	12.53	0.640	0.56	6.32	-182.0	6.60	
5	1412	27.90	12.56	0.645	0.46	6.32	-171.0	1.6	24.01
6	1415	28.48	12.62	0.647	0.43	6.34	-170.4	1.2	24.01
7	1418	34.06	12.64	0.648	0.40	6.37	-172.8	0.90	
8	1421	39.64	12.58	0.649	0.39	6.38	-175.9	0.9	
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	34.64	VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.11	
STAB. TEMP (C) :	12.58	
STAB. Sp. CONDUCTIVITY :	0.649	
STAB. D.O. :	0.39	
STAB. pH :	6.38	
STAB. ORP :	-175.9	
STAB. TURBIDITY:	0.9	

SAMPLE TIME : 1424 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Grey / clear ODOR : NO/NO

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No))

WEATHER DATA : TEMP.: 82 SKY : Sunny WIND : 1-5

FIELD SAMPLING DATA SHEET

QC/QA Check _____		Page: 1 of	
PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS 455
CITY, STATE, ZIP :	Fridley, MN	DATE:	8-15-11

SAMPLER :	Joe S.	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	

WELL DATA		PURGE DATA	
WELL NAME :	MS455	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	120
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	~~0.95~~ ~~0.34~~ 0.40 min it wo old go
WELL DEPTH (ft) :	34.90	PURGE START / END TIME :	1453 / 1520
DEPTH TO WATER (toc):	23.57 DATE: 8-15-11	SAMPLING BEGIN / END TIME :	1523 / 1525
WATER COLUMN HEIGHT (ft):	11.33	PUMP ID # : Rented	YSI ID # : 217003
WELL VOLUME (gal)	~~5.68~~ 1.84	WATER LEVEL ID # :	

VOLUME CONVERSION FACTORS: 0.163 - 2" / 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤5	WATER LEVEL (ft BTOC)
1	1456	1.20	11.55	0.810	1.79	6.73	-104.6	94.3	
2	1459	2.40	11.66	0.806	2.37	6.49	-101.3	44.3	
3	1502	3.60	11.57	0.808	3.14	6.42	-101.6	25.0	23.74
4	1505	4.80	11.63	0.814	3.62	6.45	-89.8	29.8	
5	1508	6.00	11.58	0.808	3.87	6.39	-92.7	39.8	23.74
6	1511	7.20	11.45	0.812	3.63	6.36	-97.7	8.2	
7	1514	8.40	11.48	0.809	3.57	6.35	-98.4	4.8	23.74
8	1517	9.60	11.44	0.807	3.53	6.35	-98.6	4.1	
9	1520	10.80	11.43	0.808	3.47	6.34	-99.5	4.3	
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	10.80	VOC: 6 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5.86	
STAB. TEMP (C) :	11.43	
STAB. Sp. CONDUCTIVITY :	0.808	
STAB. D.O. :	3.47	
STAB. pH :	6.34	
STAB. ORP :	-99.5	
STAB. TURBIDITY:	4.3	

SAMPLE TIME : 1523 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? (Yes) / No (name/time/comments): QCR01 1559

DUPLICATE SAMPLE? (Yes) / No (name/time/comments): QCD01 (0800)

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: ORange / Clear ODOR : NO/NO

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No))

WEATHER DATA : TEMP.: 82 SKY : Sunny WIND : 1-3

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: 1 of 3

PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS375
CITY, STATE, ZIP :	Fridley, MN	DATE:	8-15-11

SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	081511-D2

WELL DATA		PURGE DATA	
WELL NAME :	MS-375	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.2
WELL DEPTH (ft) :	47.73	PURGE START / END TIME :	1131 / 1258
DEPTH TO WATER (toc):	24.21 DATE: 8-15-11	SAMPLING BEGIN / END TIME :	1259 / 1303
WATER COLUMN HEIGHT (ft):	23.52	PUMP ID # : 275LD6	YSI ID # : 217002
WELL VOLUME (gal) :	3.83	WATER LEVEL ID # : 230009	

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤5	WATER LEVEL (ft BTOC)
1	1134	0.7	17.10	1.180	0.75	7.26	-167.0	24.8	26.00
2	1137	1.3	17.14	1.179	0.45	7.23	-175.4	15.0	
3	1146	2.0	18.18	1.159	5.67	7.23	-148.3	43.6	26.00
4	1149	2.8	17.54	1.155	5.49	7.23	-160.1	30.9	~~26.33~~
5	1152	3.8	17.14	1.156	0.44	7.21	-178.3	23.5	26.33
6	1155	4.3	17.58	1.157	0.29	7.20	-187.5	19.8	25.74
7	1158	5.0	17.71	1.158	0.26	7.20	-188.0	15.0	—
8	1201	~~5.0~~ 5.5	17.76	1.160	0.24	7.20	-190.3	15.1	25.89
9	1204	6.0	18.10	1.178	0.26	7.21	-191.3	9.1	
10	1207	6.7	18.39	1.183	0.26	7.20	-187.5	57.4	26.31

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	19.3	VOC: 9 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5.04	
STAB. TEMP (C) :	17.37	
STAB. Sp. CONDUCTIVITY :	1.170	
STAB. D.O. :	0.12	
STAB. pH :	7.19	
STAB. ORP :	-201.4	
STAB. TURBIDITY:	1.3	

SAMPLE TIME : 1259 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? (Yes) / No (name/time/comments): MS375 x 6

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: cloudy brown/clear ODOR : none

OBSERVATIONS : 1141 shut down pump spoiled due to no flow. Pulled pump

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 70s SKY : Pt Cloudy WIND : 10-15 S

FIELD SAMPLING DATA SHEET

QC/QA Check _____

PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS375
CITY, STATE, ZIP :	Fridley, MN	DATE:	6-15-11

SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	UB1511-02

WELL DATA		PURGE DATA	
WELL NAME :	MS-375	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	173
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.23
WELL DEPTH (ft) :	47.73	PURGE START / END TIME :	1131 / 1258
DEPTH TO WATER (toc):	24.2 DATE: 6-15-11	SAMPLING BEGIN / END TIME :	1259 / 1303
WATER COLUMN HEIGHT (ft):	23.52	PUMP ID # :	275106 YSI ID # : 217002
WELL VOLUME (gal) :	3.83	WATER LEVEL ID # :	230009

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤5	WATER LEVEL (ft BTOC)
1	12:10	7.1	17.93	1.180	0.24	7.20	-191.2	13.0	
2	12:13	7.8	17.81	1.180	0.21	7.20	-193.8	7.2	26.14
3	12:16	8.1	17.77	1.179	0.18	7.20	-195.5	5.4	
4	12:19	9.0	18.30	1.176	0.16	7.19	-197.2	3.9	25.39
5	12:22	9.9	17.66	1.183	0.19	7.20	-192.5	3.9	
6	12:25	10.5	17.58	1.178	0.16	7.20	-195.2	3.8	26.05
7	12:28	11.2	17.69	1.176	0.14	7.19	-195.5	3.8	
8	12:31	12.0	17.81	1.175	0.13	7.19	-195.0	4.4	
9	12:34	12.8	17.55	1.173	0.14	7.19	-195.5	5.4	
10	12:37	13.6	17.57	1.174	0.13	7.19	-194.3	1.0	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	19.3	VOC: 9 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5.04	
STAB. TEMP (C) :	17.37	
STAB. Sp. CONDUCTIVITY :	1.170	
STAB. D.O. :	0.12	
STAB. pH :	7.19	
STAB. ORP :	-201.4	
STAB. TURBIDITY:	1.3	

SAMPLE TIME : 1259 SAMPLE FIELD FILTERED ? : Yes / No

FIELD BLANK? Yes / No (name/time/comments):

DUPLICATE SAMPLE? Yes / No (name/time/comments):

MS/MSD? Yes / No (name/time/comments): MS375 x 6

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: ODOR :

OBSERVATIONS :

See Pg 1

Sample tubing left in well at completion? (Yes or **No**):

WEATHER DATA : TEMP.: SKY : WIND :

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: 3 of 3

PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS37S
CITY, STATE, ZIP :	Fridley, MN	DATE:	8-15-11

SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	08151 1-02

WELL DATA		PURGE DATA	
WELL NAME :	MS-37S	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	173
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.23
WELL DEPTH (ft) :	47.73	PURGE START / END TIME :	1131 / 1258
DEPTH TO WATER (toc):	24.21 DATE: 8-15-11	SAMPLING BEGIN / END TIME :	1259 / 1303
WATER COLUMN HEIGHT (ft):	23.52	PUMP ID # : 275106	YSI ID # : 217002
WELL VOLUME (gal) :	3.83	WATER LEVEL ID # : 230009	

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤5	WATER LEVEL (ft BTOC)
1	12:40	14.3	17.28	1.171	0.13	7.20	-195.2	2.7	
2	12:43	15.1	17.18	1.171	0.12	7.19	-197.4	2.4	26.35
3	12:46	16.0	17.51	1.173	0.12	7.19	-197.9	2.2	
4	12:49	16.8	17.42	1.173	0.12	7.19	-200.0	2.8	26.18
5	12:52	17.4	17.40	1.173	0.13	7.19	-200.4	2.3	
6	12:55	18.4	16.97	1.173	0.13	7.19	-199.6	1.7	26.13
7	12:58	19.3	17.37	1.170	0.12	7.19	-201.4	1.3	
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	19.3	VOC: 9 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5.04	
STAB. TEMP (C) :	17.37	
STAB. Sp. CONDUCTIVITY:	1.170	
STAB. D.O. :	0.12	
STAB. pH :	7.19	
STAB. ORP :	-201.4	
STAB. TURBIDITY:	1.3	

SAMPLE TIME : 1259 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? (Yes) / No (name/time/comments): MS37S x 10

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Clear / Clear ODOR: None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 90°F SKY : pt Cloudy WIND : 10-15 N

FIELD SAMPLING DATA SHEET

QC/QA Check _____.		Page: 1 of 1	
PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS13IS
CITY, STATE, ZIP :	Fridley, MN	DATE:	8-15-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	DB1511-02

WELL DATA		PURGE DATA	
WELL NAME :	MS13IS	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	1.45
WELL DEPTH (ft) :	73.57	PURGE START / END TIME :	1353 / 1414
DEPTH TO WATER (toc):	20.36 DATE: 8-15-11	SAMPLING BEGIN / END TIME :	1415 / 1418
WATER COLUMN HEIGHT (ft):	53.21	PUMP ID # : 275006	YSI ID # : 217002
WELL VOLUME (gal) :	8.67	WATER LEVEL ID # :	230009

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤5	WATER LEVEL (ft BTOC)
1	1356	4.35	14.27	1.231	1.24	7.96	-251.5	18.3	21.30
2	1359	8.70	13.98	1.469	0.33	7.22	-149.6	7.4	
3	1402	13.05	14.00	1.505	0.31	7.17	-144.6	6.3	
4	1405	17.40	14.03	1.502	0.26	7.13	-146.0	5.8	21.30
5	1408	21.75	14.04	1.523	0.34	7.11	-144.8	4.7	
6	1411	26.10	14.06	1.535	0.26	7.10	-141.8	0.7	21.30
7	1414	30.45	14.08	1.535	0.24	7.10	-142.0	0.0	
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	30.45	VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.51	
STAB. TEMP (C) :	14.08	
STAB. Sp. CONDUCTIVITY :	1.535	
STAB. D.O. :	0.24	
STAB. pH :	7.10	
STAB. ORP :	-142.0	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1415 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear / clear ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No))

WEATHER DATA : TEMP.: 60s SKY : Pt. Cloudy WIND : 10-15 S

FIELD SAMPLING DATA SHEET

QC/QA Check _____.		Page: 1 of 1	
PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	AT10
CITY, STATE, ZIP :	Fridley, MN	DATE:	8-15-11

SAMPLER :	ANALYTICAL LABORATORY : CAS
COMPANY : Bay West, Inc.	CHAIN OF CUSTODY # :

WELL DATA	PURGE DATA
WELL NAME : AT10	PURGE METHOD : ~~Grundfos Pump~~ TAP
CASING MATERIAL :	PUMP CONTROLLER SETTINGS:
WELL DIAMETER (in) :	PURGE RATE (gpm) :
WELL DEPTH (ft) :	PURGE START / END TIME : /
DEPTH TO WATER (toc): DATE:	SAMPLING BEGIN / END TIME : /
WATER COLUMN HEIGHT (ft):	PUMP ID # : — YSI ID # : 217002
WELL VOLUME (gal) :	WATER LEVEL ID # : —

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤5	WATER LEVEL (ft BTOC)
1			14.50	1.673	0.19	7.18	-113.4	0.0	
2									
3									
4									
5									
6									
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :		VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:		
STAB. TEMP (C) :	14.50	
STAB. Sp. CONDUCTIVITY :	1.673	
STAB. D.O. :	0.19	
STAB. pH :	7.18	
STAB. ORP :	-113.4	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1518 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: SKY : Tadeats WIND :

FIELD SAMPLING DATA SHEET

QC/QA Check _____.		Page: 1 of 1	
PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	AT05B
CITY, STATE, ZIP :	Fridley, MN	DATE:	8-15-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	081511-02

WELL DATA		PURGE DATA	
WELL NAME :	AT05B	PURGE METHOD : ~~Grundfos Pump~~	TAP
CASING MATERIAL :		PUMP CONTROLLER SETTINGS:	
WELL DIAMETER (in) :		PURGE RATE (gpm) :	
WELL DEPTH (ft) :		PURGE START / END TIME :	/
DEPTH TO WATER (toc):	DATE:	SAMPLING BEGIN / END TIME :	/
WATER COLUMN HEIGHT (ft):		PUMP ID # : ~	YSI ID # : 217002
WELL VOLUME (gal) :		WATER LEVEL ID # : —	

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤5	WATER LEVEL (ft BTOC)
1			12.62	0.986	0.28	7.14	-28.5	0.0	
2									
3									
4									
5									
6									
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :		VOC: 6 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:		
STAB. TEMP (C) :	12.62	
STAB. Sp. CONDUCTIVITY :	0.986	
STAB. D.O. :	0.28	
STAB. pH :	7.14	
STAB. ORP :	-28.5	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1525 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / No (name/time/comments):

DUPLICATE SAMPLE? (Yes) / No (name/time/comments): QCD3@1600

MS/MSD? Yes / No (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear ODOR : none

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: SKY : Indoors WIND :

FIELD SAMPLING DATA SHEET

QC/QA Check _____.			Page: 1 of 1
PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	ATD3A
CITY, STATE, ZIP :	Fridley, MN	DATE:	8-15-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	081511-02

WELL DATA		PURGE DATA	
WELL NAME :	ATD3A	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :		PUMP CONTROLLER SETTINGS:	
WELL DIAMETER (in) :		PURGE RATE (gpm) :	
WELL DEPTH (ft) :		PURGE START / END TIME :	/
DEPTH TO WATER (toc):	DATE:	SAMPLING BEGIN / END TIME :	/
WATER COLUMN HEIGHT (ft):		PUMP ID # : —	YSI ID # : 217002
WELL VOLUME (gal) :		WATER LEVEL ID # : 230009	no gauged

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤5	WATER LEVEL (ft BTOC)
1			13.06	0.904	0.61	7.26	-15.5	0.0	
2									
3									
4									
5									
6									
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :		VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:		
STAB. TEMP (C) :	13.06	
STAB. Sp. CONDUCTIVITY :	0.904	
STAB. D.O. :	0.61	
STAB. pH :	7.26	
STAB. ORP :	-15.5	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1545 SAMPLE FIELD FILTERED ? : Yes (No)

FIELD BLANK? Yes / No (name/time/comments):

DUPLICATE SAMPLE? Yes / No (name/time/comments):

MS/MSD? Yes / No (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear ODOR : none

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: SKY : Sunny WIND :

FIELD SAMPLING DATA SHEET

QC/QA Check _____

Page: 1 of 1

PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS46S
CITY, STATE, ZIP :	Fridley, MN	DATE:	8-15-11

SAMPLER : JOES	ANALYTICAL LABORATORY : CAS
COMPANY : Bay West, Inc.	CHAIN OF CUSTODY # :

WELL DATA	PURGE DATA
WELL NAME : MS46S	PURGE METHOD : Grundfos Pump
CASING MATERIAL : Steel	PUMP CONTROLLER SETTINGS: 115
WELL DIAMETER (in) : 2	PURGE RATE (gpm) : ~~0.34~~ 0.37 (as Lowes in bailed pump)
WELL DEPTH (ft) : 35.90	PURGE START / END TIME : 933 / 1003
DEPTH TO WATER (toc): 23.57 DATE: 8-15-11	SAMPLING BEGIN / END TIME : 1006 / 1009
WATER COLUMN HEIGHT (ft): 12.33	PUMP ID # : Rental / YSI ID # : 210003
WELL VOLUME (gal) : 2.00	WATER LEVEL ID # : 230007

VOLUME CONVERSION FACTORS: (0.163 - 2") 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤5	WATER LEVEL (ft BTOC)
1	0936	1.1	11.54	0.866	1.41	6.54	-113.7	101.7	24.32
2	0939	2.2	11.55	0.864	0.71	6.36	-99.7	64.5	24.32
3	0942	3.3	11.54	0.862	0.65	6.34	-95.0	55.4	
4	0945	4.3	11.66	0.861	0.58	6.34	-93.2	44.5	
5	0948	~~5.5~~ 5.4	11.66	0.865	0.54	6.38	-92.6	29.0	
6	0951	6.6	11.65	0.864	0.52	6.40	-92.4	26.1	
7	0954	7.7	11.65	0.865	0.49	6.42	-93.4	20.3	24.32
8	0957	8.8	11.62	0.863	0.48	6.44	-92.3	16.5	
9	10:00	9.9	11.66	0.863	0.46	6.46	-93.1	12.1	
10	1003	10.00	11.57	0.864	0.44	6.47	-94.1	6.3	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) : 10.00	NA	VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED: 5		
STAB. TEMP (C) : 11.57		
STAB. Sp. CONDUCTIVITY : 0.864		
STAB. D.O. : 0.44		
STAB. pH : 6.47		
STAB. ORP : -94.1		
STAB. TURBIDITY: 6.3		

SAMPLE TIME : 1006 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Rusty / clear ODOR : No / NO

OBSERVATIONS : Had to tag from Yesterday for Depth / Pump caught up on a joint and Likely knocked some particles down. Turbidity would not Stabilize, Sampled after 5 well volumes

Sample tubing left in well at completion? (Yes or (No))

WEATHER DATA : TEMP.: 69 SKY : Sunny WIND :

FIELD SAMPLING DATA SHEET

QC/QA Check _____

Page: 1 of 1

PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS1RS
CITY, STATE, ZIP :	Fridley, MN	DATE:	8-16-11

SAMPLER :	Joe Stalock	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	081511-01

WELL DATA		PURGE DATA	
WELL NAME :	MS1RS	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	122
WELL DIAMETER (in) :	2"	PURGE RATE (gpm) :	0.41
WELL DEPTH (ft) :	40.07	PURGE START / END TIME :	1042 / 1106
DEPTH TO WATER (toc):	25.17 DATE: 8-16-11	SAMPLING BEGIN / END TIME:	1042 / 1109 / 1112
WATER COLUMN HEIGHT (ft):	14.90	PUMP ID # : Rental	YSI ID #: 217003
WELL VOLUME (gal) :	2.42	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤5	WATER LEVEL (ft BTOC)
1	1045	1.23	12.19	0.886	2.18	6.52	-78.1	118.2	
2	1048	2.46	12.02	0.874	0.68	6.42	-84.1	88.4	
3	1051	3.69	12.06	0.876	0.59	6.35	-86.4	31.6	25.26
4	1054	4.92	12.05	0.876	0.54	6.30	-87.9	8.8	
5	1057	6.15	12.01	0.877	0.50	6.26	~~-86.2~~ -88.0	6.2	25.40
6	1100	7.38	11.98	0.875	0.47	6.23	-87.7	3.2	25.40
7	1103	8.61	12.07	0.875	0.45	6.22	-89.8	3.0	
8	1106	9.84	12.04	0.875	0.43	6.21	-90.7	2.4	
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	9.84	VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	4.06	
STAB. TEMP (C) :	12.04	
STAB. Sp. CONDUCTIVITY :	0.875	
STAB. D.O. :	0.43	
STAB. pH :	6.21	
STAB. ORP :	-90.7	
STAB. TURBIDITY:	2.4	

SAMPLE TIME : 1109 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments): QCR02 1140

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Rusty/clear ODOR: No/No

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or No):

WEATHER DATA : TEMP.: 77 SKY: Sunny WIND : 13 mph

FIELD SAMPLING DATA SHEET

QC/QA Check _____

Page: 1 of 1

PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS35D
CITY, STATE, ZIP :	Fridley, MN	DATE:	8-16-11

SAMPLER :	Jors	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	OR1511-01

WELL DATA		PURGE DATA	
WELL NAME :	MS35D	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	242
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	2.99
WELL DEPTH (ft) :	132.66	PURGE START / END TIME :	1210 / ~~1228~~
DEPTH TO WATER (toc):	22.22 DATE: 8-16-11	SAMPLING BEGIN / END TIME :	/
WATER COLUMN HEIGHT (ft):	109.94	PUMP ID # : Rental	YSI ID # : 217003
WELL VOLUME (gal) :	17.92	WATER LEVEL ID # :	

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤5	WATER LEVEL (ft BTOC)
1	1213	8.97	15.07	0.601	1.72	7.08	-225.3	23.7	
2	1216	17.94	13.99	0.836	0.70	6.04	-165.3	6.6	
3	1219	26.91	14.15	0.911	0.67	6.15	-115.8	22.8	
4	1222	35.88	14.22	0.913	0.63	6.14	-113.0	0	
5	1225	44.85	14.27	0.913	0.65	6.13	-108.0	3.1	
6	1228	53.82	14.34	0.912	0.63	6.13	-104.3	0	
7	1231	62.79	13.51	0.913	0.50	6.04	-101.0	0.2	
8	1234	71.76	13.14	0.911	0.47	5.98	-99.9	0	
9	1237	80.73	13.12	0.910	0.47	5.97	-98.9	0	
10	1240	89.70	13.13	0.910	0.44	5.96	-98.0	0	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	89.70	VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5.00	
STAB. TEMP (C) :	13.13	
STAB. Sp. CONDUCTIVITY :	0.910	
STAB. D.O. :	0.44	
STAB. pH :	5.96	
STAB. ORP :	-98.0	
STAB. TURBIDITY:	0	

SAMPLE TIME : 1245 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Blackish / None ODOR: NO/NO

OBSERVATIONS : Temp water Stowing stable. Kept Rising Increased flow through YSI and removed flow through cell. well Stable @ 5 well volumes

Sample tubing left in well at completion? (Yes or (No))

WEATHER DATA : TEMP.: 82 SKY : Sunny WIND : 1-5 MPH

FIELD SAMPLING DATA SHEET

QC/QA Check _____

Page: 1 of 1

PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS35I
CITY, STATE, ZIP :	Fridley, MN	DATE:	8-16-11

SAMPLER :	Joe S	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	081511-01

WELL DATA		PURGE DATA	
WELL NAME :	MS35I	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	1.57
WELL DEPTH (ft) :	81.76	PURGE START / END TIME :	1255 / 1316
DEPTH TO WATER (toc):	24.20 DATE: 8-16-11	SAMPLING BEGIN / END TIME :	1318 / 1321
WATER COLUMN HEIGHT (ft):	57.56	PUMP ID # : Rental	YSI ID # : 212003
WELL VOLUME (gal) :	9.38	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤5	WATER LEVEL (ft BTOC)
1	1258	4.71	14.65	0.454	0.97	7.47	-331.1	60.5	
2	1301	9.42	14.30	0.879	0.99	6.30	-191.6	43.2	24.63
3	1304	14.13	13.89	0.919	1.19	6.12	-169.3	13.7	
4	1307	18.84	13.77	0.919	0.71	6.07	-169.1	7.5	24.63
5	1310	23.55	13.73	0.923	0.48	6.03	-162.7	4.1	
6	1313	28.26	13.70	0.923	0.44	6.01	-165.7	1.1	24.90
7	1316	32.97	13.68	0.926	0.41	5.98	-164.5	1.0	
8	~~1319~~	~~37.68~~							
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	32.97	VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:		
STAB. TEMP (C) :	13.68	
STAB. Sp. CONDUCTIVITY :	0.926	
STAB. D.O. :	0.41	
STAB. pH :	5.98	
STAB. ORP :	-164.5	
STAB. TURBIDITY:	1.0	

SAMPLE TIME : 1319 SAMPLE FIELD FILTERED ? : Yes / **No**

FIELD BLANK? Yes / No (name/time/comments):

DUPLICATE SAMPLE? Yes / No (name/time/comments):

MS/MSD? Yes / No (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Clear ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or **No**):

WEATHER DATA : TEMP.: 85°F SKY : Pt Cloudy WIND : 10-15 S

FIELD SAMPLING DATA SHEET

QC/QA Check _____

Page: 1 of 1

PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS44I
CITY, STATE, ZIP :	Fridley, MN	DATE:	8-16-11
SAMPLER :	Joe S	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	08511-01

WELL DATA		PURGE DATA	
WELL NAME :	MS44I	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	265
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	1.55
WELL DEPTH (ft) :	81.84	PURGE START / END TIME :	1358 / 1428
DEPTH TO WATER (toc):	24.86 DATE: 8-16-11	SAMPLING BEGIN / END TIME :	1430 / 1433
WATER COLUMN HEIGHT (ft):	56.98	PUMP ID # :	275106
WELL VOLUME (gal) :	9.29	YSI ID # :	217003
		WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤5	WATER LEVEL (ft BTOC)
1	1401	4.65	12.19	1.003	3.26	5.25	-155.0	32.8	25.30
2	1404	9.30	12.19	1.034	1.18	4.86	-135.5	7.4	
3	1407	13.95	12.15	1.041	0.90	4.82	-129.6	4.4	25.30
4	1410	18.60	12.14	1.044	0.60	4.83	-125.4	2.0	
5	1413	23.25	12.13	1.048	0.51	4.89	-122.3	1.2	
6	1416	27.90	12.14	1.050	0.49	4.97	-122.1	1.1	25.30
7	1419	32.55	12.13	1.051	0.47	5.05	-121.3	0.7	
8	1422	37.20	12.13	1.053	0.44	5.17	-121.4	1.4	
9	1425	41.85	12.12	1.053	0.43	5.26	-122.8	0.4	
10	1428	46.50	12.14	1.054	0.42	5.39	-123.1	0.5	

STABILIZATION DATA			SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :		46.50	VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:		5.00	
STAB. TEMP (C) :	12.14	NA	
STAB. Sp. CONDUCTIVITY :	1.054	↓	
STAB. D.O. :	0.42	↓	
STAB. pH :	5.39	↓	
STAB. ORP :	-123.1	↓	
STAB. TURBIDITY :	0.5	↓	

SAMPLE TIME : 1430

SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / No (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Grey/clear ODOR: Sulfur

OBSERVATIONS : pH Not Stable after 5 well Volumes Sampled after 5 well volumes.

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 85 SKY : MC WIND : 3-5 MPH

FIELD SAMPLING DATA SHEET

QC/QA Check _____

Page: 1 of 1

PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS41I
CITY, STATE, ZIP :	Fridley, MN	DATE:	8-17-11
SAMPLER :	JoeS	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	081511-05

WELL DATA		PURGE DATA	
WELL NAME :	~~JoeS~~ MS41I	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	~~Stainless Steel~~ Stainless	PUMP CONTROLLER SETTINGS:	
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	1.51
WELL DEPTH (ft) :	92.52	PURGE START / END TIME :	0925 / 0946
DEPTH TO WATER (toc):	26.01 DATE: 8-17-11	SAMPLING BEGIN / END TIME :	0948 / 0951
WATER COLUMN HEIGHT (ft):	66.51	PUMP ID # :	Rental / YSI ID # : 217203
WELL VOLUME (gal) :	10.84	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤5	WATER LEVEL (ft BTOC)
1	0928	5.43	12.27	0.672	0.40	7.22	-201.0	130.2	
2	0931	10.86	12.22	0.882	0.43	6.67	-174.2	21.0	26.42
3	0934	16.29	12.23	0.896	0.57	6.56	-175.1	0.4	
4	0937	21.72	12.21	0.900	0.61	6.53	-177.4	0	26.42
5	0940	27.15	12.22	0.901	0.49	6.49	-180.0	0	
6	0943	32.58	12.22	0.902	0.44	6.47	-181.1	0	26.42
7	0946	38.01	12.24	0.902	0.41	6.45	-182.5	0	
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	38.08	VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.50	
STAB. TEMP (C) :	12.24	
STAB. Sp. CONDUCTIVITY :	0.902	
STAB. D.O. :	0.41	
STAB. pH :	6.45	
STAB. ORP :	-182.5	
STAB. TURBIDITY:	0	

SAMPLE TIME : 0948 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Brown gray / clear ODOR : NO / NO

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or **No**):

WEATHER DATA : TEMP.: 71 SKY : Sunny WIND : NO

FIELD SAMPLING DATA SHEET

QC/QA Check _____		Page: 1 of 1	
PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS 54S
CITY, STATE, ZIP :	Fridley, MN	DATE:	8-17-11
SAMPLER :		ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	081511-05

WELL DATA		PURGE DATA	
WELL NAME :	MS54S	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	~~Stainless Steel~~	PUMP CONTROLLER SETTINGS:	120
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.28
WELL DEPTH (ft) :	36.5	PURGE START / END TIME :	1024 / 1054
DEPTH TO WATER (toc):	26.19 DATE: 8-17-11	SAMPLING BEGIN / END TIME :	1056 / 1059
WATER COLUMN HEIGHT (ft):	10.31	PUMP ID # :	Rental / YSI ID # : 01700 3
WELL VOLUME (gal) :	1.68	WATER LEVEL ID # :	23000

VOLUME CONVERSION FACTORS: (0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤5	WATER LEVEL (ft BTOC)
1	1027	0.84	13.64	1.136	2.25	6.50	-144.0	47.8	
2	1030	1.68	13.11	1.135	0.86	6.44	-135.8	28.2	26.31
3	1033	2.52	13.03	1.132	0.47	6.41	-133.2	5.2	
4	1036	3.36	13.02	1.133	0.72	6.41	-132.4	310.0	26.31
5	1039	4.20	13.05	1.134	0.39	6.44	-138.3	122.4	
6	1042	5.04	13.06	1.133	0.37	6.44	-135.8	36.3	26.31
7	1045	5.88	13.08	1.132	0.36	6.47	-134.3	14.9	
8	1048	6.72	13.05	1.132	0.35	6.47	-134.4	19.6	
9	1051	7.56	13.07	1.132	0.34	6.49	-132.6	10.6	
10	1054	8.40	13.12	1.131	0.34	6.50	-139.7	12.8	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	8.40	VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5	
STAB. TEMP (C) :	13.12	~~Not Stable~~
STAB. Sp. CONDUCTIVITY :	1.131	
STAB. D.O. :	0.34	
STAB. pH :	6.50	
STAB. ORP :	-139.7	
STAB. TURBIDITY:	12.8	

SAMPLE TIME : 1056 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear ODOR: None

OBSERVATIONS : Pump/ Weed clamp Fell to side @ 1038 High turb ~~clayey~~

Sample tubing left in well at completion? (Yes or (No))

WEATHER DATA : TEMP.: 75 SKY: Sunny WIND : Calm

FIELD SAMPLING DATA SHEET

QC/QA Check _____

Page: 1 of 1

PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS 38S
CITY, STATE, ZIP :	Fridley, MN	DATE:	8-17-11
SAMPLER :	Joe S	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	OB1511-05

WELL DATA		PURGE DATA	
WELL NAME :	MS38S	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	130 → 127
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.17
WELL DEPTH (ft) :	41.69	PURGE START / END TIME :	1429 / 1519
DEPTH TO WATER (toc):	30.66 DATE: 8-17-11	SAMPLING BEGIN / END TIME :	1520 / 1522
WATER COLUMN HEIGHT (ft):	11.03	PUMP ID # : Rental	YSI ID # : 277003
WELL VOLUME (gal) :	1.78	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤5	WATER LEVEL (ft BTOC)
1	1434	0.89	15.50	1.396	1.59	6.05	-10.1	569.8	30.70
2	1439	1.78	15.42	1.391	0.61	5.99	22.0	224.4	30.50
3	1444	2.67	15.07	1.374	0.54	5.94	24.9	85.1	30.70
4	1449	3.56	15.14	1.385	0.55	5.98	36.4	41.0	
5	1454	4.45	15.06	1.395	0.55	6.08	44.0	14.5	30.70
6	1459	5.34	14.93	1.408	0.59	6.25	44.4	8.6	
7	1504	6.23	16.18	1.389	0.50	6.48	45.7	4.4	
8	1509	7.12	15.88	1.386	0.46	6.51	44.2	3.3	
9	1514	8.01	15.66	1.390	0.47	6.52	43.7	1.3	30.70
10	1519	8.90	15.64	1.394	0.46	6.53	42.6	0.9	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	8.90	VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5	
STAB. TEMP (C) :	15.64	
STAB. Sp. CONDUCTIVITY :	1.394	
STAB. D.O. :	0.46	
STAB. pH :	6.53	
STAB. ORP :	42.6	
STAB. TURBIDITY:	0.9	

SAMPLE TIME : 1520 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Murky / clear ODOR : None

OBSERVATIONS : tagged bottom with pump - could not find water

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 77 SKY : Sunny WIND : calm

FIELD SAMPLING DATA SHEET

QC/QA Check _____

Page: 1 of 3

PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS36S
CITY, STATE, ZIP :	Fridley, MN	DATE:	8-17-11
SAMPLER :	Ryan Reley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	081511-04

WELL DATA		PURGE DATA	
WELL NAME :	MS36S	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	stainless steel	PUMP CONTROLLER SETTINGS:	165
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.08
WELL DEPTH (ft) :	44.70	PURGE START / END TIME :	925 / 1133
DEPTH TO WATER (toc):	24.65 DATE: 8-17-11	SAMPLING BEGIN / END TIME :	1135 / 1138
WATER COLUMN HEIGHT (ft):	20.05	PUMP ID # : 275106	YSI ID # : 217002
WELL VOLUME (gal) :	3.27	WATER LEVEL ID # :	230009

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤5	WATER LEVEL (ft BTOC)
1	930	0.5	14.81	1.068	0.53	8.32	-287.8	60.4	30.08
2	940	1.0	15.60	1.167	1.82	7.98	-248.2	104.1	30.10
3	945	1.8	15.62	1.197	0.62	7.93	-246.7	122.0	
4	1003	4.0	13.63	1.347	2.23	7.35	-239.9	65.4	32.80
5	1008	4.4	15.36	1.367	0.59	7.67	-249.8	54.4	33.68
6	1013	4.7	16.98	1.391	0.41	7.75	-251.7	49.4	33.25
7	1018	5.1	16.99	1.438	0.35	7.76	-245.4	56.8	34.27
8	1023	5.6	17.23	1.489	0.27	7.73	-244.4	51.4	34.45
9	1028	6.0	17.52	1.549	0.25	7.70	-242.2	44.3	34.83
10	1033	6.3	17.94	1.626	0.25	7.68	-237.0	39.0	34.62

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	11.0	VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.36	
STAB. TEMP (C) :	18.57	
STAB. Sp. CONDUCTIVITY :	2.542	
STAB. D.O. :	0.17	
STAB. pH :	7.37	
STAB. ORP :	-211.6	
STAB. TURBIDITY:	1.2	

SAMPLE TIME : 1135 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: cloudy black / ODOR: sulfur / none

OBSERVATIONS : 930 - Pulled pump and cleaned screen. 940 Restart.
946 - Pump still having difficulty pumping. Readjust depth lowered
958 - Restart Pump.

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 72°F SKY: clear WIND : 5-10 S

FIELD SAMPLING DATA SHEET

QC/QA Check _____		Page: 2 of 3	
PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS 36S
CITY, STATE, ZIP :	Fridley, MN	DATE:	8-17-11

SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	081511-04

WELL DATA		PURGE DATA	
WELL NAME :	MS36S	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	stainless steel	PUMP CONTROLLER SETTINGS:	165
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.08
WELL DEPTH (ft) :	44.70	PURGE START / END TIME :	925 / 1133
DEPTH TO WATER (toc):	24.65 DATE: 8-17-11	SAMPLING BEGIN / END TIME :	1135 / 1138
WATER COLUMN HEIGHT (ft):	20.05	PUMP ID # : 275106	YSI ID # : 217002
WELL VOLUME (gal) :	3.27	WATER LEVEL ID # :	230009

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤5	WATER LEVEL (ft BTOC)
1	1038	6.8	18.23	1.668	0.25	7.66	-228.6	364	34.58
2	1043	6.9	18.34	1.766	0.24	7.64	-231.4	26.7	33.83
3	1048	7.2	18.54	1.805	0.24	7.62	-224.0	24.1	33.94
4	1053	7.7	18.54	1.917	0.24	7.58	-219.8	17.7	33.80
5	1058	8.1	18.54	2.026	0.23	7.55	-216.9	13.8	33.90
6	1103	8.6	18.47	2.155	0.20	7.51	-213.3	9.5	34.21
7	1108	9.0	18.35	2.230	0.21	7.47	-212.8	7.3	34.34
8	1113	9.4	18.41	2.347	0.20	7.43	-209.3	4.8	
9	1118	9.7	18.44	2.373	0.20	7.42	-207.1	4.4	34.43
10	1123	10.1	18.53	2.453	0.19	7.40	-211.4	3.9	34.56

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	11.0	VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.36	
STAB. TEMP (C) :	18.57	
STAB. Sp. CONDUCTIVITY :	2.542	
STAB. D.O. :	0.17	
STAB. pH :	7.37	
STAB. ORP :	-214.6	
STAB. TURBIDITY:	1.2	

SAMPLE TIME : 1135 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear black / ODOR : sulfur /

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 75°F SKY : Clear WIND : SW 5

FIELD SAMPLING DATA SHEET

QC/QA Check _____.		Page: 3 of 3	
PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS365
CITY, STATE, ZIP :	Fridley, MN	DATE:	8-17-11

SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	081511-04

WELL DATA		PURGE DATA	
WELL NAME :	MS365	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	stainless steel	PUMP CONTROLLER SETTINGS:	165
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.08
WELL DEPTH (ft) :	44.70	PURGE START / END TIME :	925 / 1133
DEPTH TO WATER (toc):	24.65 DATE: 8-17-11	SAMPLING BEGIN / END TIME :	1135 / 1138
WATER COLUMN HEIGHT (ft):	20.05	PUMP ID # : 275106	YSI ID # : 217002
WELL VOLUME (gal) :	3.27	WATER LEVEL ID # :	23009

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤5	WATER LEVEL (ft BTOC)
1	1128	10.5	18.50	2.514	0.17	7.38	-210.4	2.2	34.78
2	1133	11.0	18.57	2.542	0.17	7.37	-211.6	1.2	
3									
4									
5									
6									
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	11.0	VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.36	
STAB. TEMP (C) :	18.57	
STAB. Sp. CONDUCTIVITY :	2.542	
STAB. D.O. :	0.17	
STAB. pH :	7.37	
STAB. ORP :	-211.6	
STAB. TURBIDITY:	1.2	

SAMPLE TIME : 1135 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: ODOR :

OBSERVATIONS :

See page 1

Sample tubing left in well at completion? (Yes or **No**):

WEATHER DATA : TEMP.: SKY : WIND :

FIELD SAMPLING DATA SHEET

QC/QA Check _____		Page: 1 of 1	
PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS55I
CITY, STATE, ZIP :	Fridley, MN	DATE:	8-17-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	081511-04

WELL DATA		PURGE DATA	
WELL NAME :	MS55I	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	steel	PUMP CONTROLLER SETTINGS:	
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	1.51
WELL DEPTH (ft) :	79.5	PURGE START / END TIME :	12:15 / 1233
DEPTH TO WATER (toc):	24.03 DATE: 8-17-11	SAMPLING BEGIN / END TIME :	12:35 / 1237
WATER COLUMN HEIGHT (ft):	55.47	PUMP ID # :	275106 YSI ID # : 217002
WELL VOLUME (gal) :	9.04	WATER LEVEL ID # :	23009

VOLUME CONVERSION FACTORS: (0.163 - 2") 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤5	WATER LEVEL (ft BTOC)
1	12:18	7.53	12.16	1.185	0.55	7.28	-150.2	0	24.28
2	12:21	9.06	12.28	1.176	0.37	7.19	-150.5	0	24.27
3	12:24	13.59	12:29	1.179	0.32	7.14	-143.0	0	
4	12:27	18.12	12.19	1.185	0.25	7.10	-141.0	0	
5	12:30	22.65	12.16	1.185	0.23	7.10	-144.6	0	24.27
6	12:33	27.18	12.17	1.187	0.20	7.08	-145.3	0	
7	~~12:36~~								
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	27.18	VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3	
STAB. TEMP (C) :	12.17	
STAB. Sp. CONDUCTIVITY :	1.187	
STAB. D.O. :	0.20	
STAB. pH :	7.08	
STAB. ORP :	-145.3	
STAB. TURBIDITY:	0	

SAMPLE TIME : 1235 SAMPLE FIELD FILTERED ? : Yes / No

FIELD BLANK? Yes / No (name/time/comments):

DUPLICATE SAMPLE? Yes / No (name/time/comments):

MS/MSD? Yes / No (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or No)

WEATHER DATA : TEMP.: 75 SKY : clear WIND : 5-10

FIELD SAMPLING DATA SHEET

QC/QA Check _____		Page: 1 of 1	
PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS56I
CITY, STATE, ZIP :	Fridley, MN	DATE:	8-17-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	081511-04

WELL DATA		PURGE DATA	
WELL NAME :	MS56I	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	263
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	1.42
WELL DEPTH (ft) :	76.50	PURGE START / END TIME :	1318 / 1336
DEPTH TO WATER (toc):	24.28 DATE: 8-17-11	SAMPLING BEGIN / END TIME :	1340 / 1342
WATER COLUMN HEIGHT (ft):	52.22	PUMP ID # :	275106 YSI ID # : 217002
WELL VOLUME (gal) :	8.51	WATER LEVEL ID # :	230009

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤5	WATER LEVEL (ft BTOC)
1	1321	4.26	13.65	1.176	1.55	7.14	-119.1	1.2	24.40
2	1324	8.52	13.24	1.189	0.46	7.01	-122.9	0	
3	1327	12.78	13.15	1.197	0.36	6.98	-125.7	0	24.87
4	1330	17.04	13.11	1.202	0.28	6.96	-130.7	0	
5	1333	21.30	13.11	1.202	0.26	6.96	-133.3	0	24.90
6	1336	25.56	13.13	1.205	0.24	6.96	-136.9	0	
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	25.56	VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3	
STAB. TEMP (C) :	13.13	
STAB. Sp. CONDUCTIVITY :	1.205	
STAB. D.O. :	0.24	
STAB. pH :	6.96	
STAB. ORP :	-136.9	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1340 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: cloudy black ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 77°F SKY : clear WIND : 5-10 W

FIELD SAMPLING DATA SHEET

QC/QA Check _____		Page: 1 of 1	
PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS34I
CITY, STATE, ZIP :	Fridley, MN	DATE:	8-17-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	081511-04

WELL DATA		PURGE DATA	
WELL NAME :	MS34I	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	273
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	1.52
WELL DEPTH (ft) :	79.32	PURGE START / END TIME :	1417 / 1435
DEPTH TO WATER (toc):	23.51 DATE: 8-17-11	SAMPLING BEGIN / END TIME :	1438 / 1440
WATER COLUMN HEIGHT (ft):	55.81	PUMP ID # : 275106	YSI ID # : 217002
WELL VOLUME (gal) :	9.00	WATER LEVEL ID # :	230009

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤5	WATER LEVEL (ft BTOC)
1	1420	4.56	14.41	1.127	0.88	7.16	-138.8	7.8	24.38
2	1423	9.12	14.01	1.210	1.05	7.06	-141.4	0.7	24.38
3	1426	13.68	13.89	1.219	0.74	7.03	-145.5	0.1	
4	1429	18.24	13.83	1.220	0.48	7.01	-149.7	0.0	24.38
5	1432	22.80	13.75	1.218	0.38	7.01	-151.3	0.0	
6	1435	27.36	13.78	1.217	0.24	7.01	-153.7	0.0	24.38
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	27.36	VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3	
STAB. TEMP (C) :	13.78	
STAB. Sp. CONDUCTIVITY :	1.217	
STAB. D.O. :	0.24	
STAB. pH :	7.01	
STAB. ORP :	-153.7	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1438 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? (Yes) / No (name/time/comments): QCRD3@ 15:50

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear / ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 78°F SKY : clear WIND : S 10 mph

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS15IS
CITY, STATE, ZIP :	Fridley, MN	DATE:	8-15-11

SAMPLER :	Joe S	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	

WELL DATA		PURGE DATA	
WELL NAME :	MS15IS	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	155 - 140 - 135
WELL DIAMETER (in) :	2"	PURGE RATE (gpm) :	1.44 0.75
WELL DEPTH (ft) :	77.86	PURGE START / END TIME :	1127 / 1210
DEPTH TO WATER (toc):	25.21 DATE: 25.21	SAMPLING BEGIN / END TIME :	~~1127~~ / 1203 / 1215
WATER COLUMN HEIGHT (ft):	52.65	PUMP ID # : Rental	YSI ID # : 217003
WELL VOLUME (gal) :	8.58	WATER LEVEL ID # :	

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤5	WATER LEVEL (ft BTOC)
1	1130	1.50	12.74	0.444	0.46	7.02	7.3	34.5	
2	1133	3.00	12.91	0.680	0.66	6.18	63.0	10.9	32.21
3	1136	4.75	12.71	0.697	0.67	6.07	71.2	6.4	
4	1139	7.00	12.80	0.709	0.65	5.99	73.1	1.9	
5	1142	9.25	12.84	0.710	0.63	5.97	71.8	1.8	32.41
6	1145	11.50	12.88	0.711	0.59	5.97	71.7	1.4	
7	1148	~~13.75~~ 12.75	12.86	0.713	0.58	5.95	71.3	1.3	31.31
8	1151	16.00	12.83	0.714	0.56	5.93	70.5	1.2	31.31
9	1154	18.25	12.84	0.714	0.55	5.91	70.3	0.9	
10	1157	20.50	12.80	0.715	0.54	5.87	69.1	0.9	31.31

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	29.50	VOC: 9 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.43	
STAB. TEMP (C) :	12.77	
STAB. Sp. CONDUCTIVITY :	0.716	
STAB. D.O. :	0.51	
STAB. pH :	5.72	
STAB. ORP :	64.2	
STAB. TURBIDITY:	2.0	

25.75

SAMPLE TIME : 1212 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? (Yes) / No (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: ODOR :

OBSERVATIONS : Noticed drew down when starting up pump Reduced level bill water level already down 2+ Feet

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 75 SKY : Sunny WIND : L-3

FIELD SAMPLING DATA SHEET

QC/QA Check _____

PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS15IS
CITY, STATE, ZIP :	Fridley, MN	DATE:	8/15/11

SAMPLER :	Joe S	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	

WELL DATA		PURGE DATA	
WELL NAME :	MS15IS	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	See Pg 1
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	
WELL DEPTH (ft) :		PURGE START / END TIME :	/
DEPTH TO WATER (toc):	DATE:	SAMPLING BEGIN / END TIME :	/
WATER COLUMN HEIGHT (ft):		PUMP ID # :	YSI ID # :
WELL VOLUME (gal) :		WATER LEVEL ID # :	

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤5	WATER LEVEL (ft BTOC)
1	1200	22.75	12.76	0.715	0.53	5.84	67.7	1.9	31.32
2	1203	25.00	12.80	0.716	0.52	5.78	65.8	1.3	31.32
3	1206	27.25	12.70	0.716	0.51	5.74	65.9	1.4	
4	1209	29.50	12.77	0.716	0.51	5.72	64.2	2.0	
5									
6									
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :		VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:		
STAB. TEMP (C) :	SEE	
STAB. Sp. CONDUCTIVITY :	Pg	
STAB. D.O. :	1	
STAB. pH :		
STAB. ORP :		
STAB. TURBIDITY:		

SAMPLE TIME : SAMPLE FIELD FILTERED ? : Yes / **No**

FIELD BLANK? Yes / No (name/time/comments):

DUPLICATE SAMPLE? Yes / No (name/time/comments): See Pg 1

MS/MSD? Yes / No (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: ODOR :

OBSERVATIONS :

See Pg 1

Sample tubing left in well at completion? (Yes or **No**):

WEATHER DATA : TEMP.: SKY : WIND :

26.07

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: | of |

PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	~~MS43S~~ (5) MS43I
CITY, STATE, ZIP :	Fridley, MN	DATE:	8-15-11

SAMPLER :	Joe S	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	

WELL DATA		PURGE DATA	
WELL NAME :	(5) ~~MS43S~~ MS43I	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	155
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	1.45
WELL DEPTH (ft) :	~~78.745~~ 82.05	PURGE START / END TIME :	1253 / 1312
DEPTH TO WATER (toc):	28.71 DATE: 8-15-11	SAMPLING BEGIN / END TIME :	1315 / 1318
WATER COLUMN HEIGHT (ft):	53.34	PUMP ID # :	Rental / YSI ID # : 217003
WELL VOLUME (gal) :	8.69	WATER LEVEL ID # :	

VOLUME CONVERSION FACTORS: (0.163 - 2") 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤5	WATER LEVEL (ft BTOC)
1	1256	4.35	11.57	0.878	0.87	5.90	-86.5	24.3	28.78
2	1259	8.70	11.72	0.886	0.75	5.63	-71.1	10.3	
3	(5) ~~1302~~ 1305	13.05	11.69	0.892	0.68	5.41	-60.9	3.1	
4	(5) ~~1305~~ 1308	17.40	11.68	0.893	0.65	5.38	-57.9	2.30	29.00
5	(5) ~~1308~~ 1311	21.75	11.69	0.897	0.58	5.36	-58.1	1.00	~~29.00~~
6	(5) ~~1311~~ 1314	26.10	11.70	0.898	0.56	5.38	-57.5	0.90	
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	26.10	VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.00	
STAB. TEMP (C) :	11.70	
STAB. Sp. CONDUCTIVITY :	0.898	
STAB. D.O. :	0.56	
STAB. pH :	5.38	
STAB. ORP :	-57.5	
STAB. TURBIDITY:	0.90	

SAMPLE TIME : SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes (No) (name/time/comments):

DUPLICATE SAMPLE? Yes (No) (name/time/comments):

MS/MSD? Yes (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Black / Clear ODOR : None / None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 82 SKY : Sunny WIND : 1-3

FIELD SAMPLING DATA SHEET

QC/QA Check _____		Page: 1 of 3	
PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS 33I
CITY, STATE, ZIP :	Fridley, MN	DATE:	8-18-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	08511-04

WELL DATA		PURGE DATA	
WELL NAME :	MS33I	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	142
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	~~1.645~~ 0.20
WELL DEPTH (ft) :	75.87	PURGE START / END TIME :	1018 / 1243
DEPTH TO WATER (toc):	15.63 DATE: 8-18-11	SAMPLING BEGIN / END TIME :	1245 / 1247
WATER COLUMN HEIGHT (ft):	60.24	PUMP ID # : 275106	YSI ID # : 217002
WELL VOLUME (gal) :	9.88	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤5	WATER LEVEL (ft BTOC)
1	1023	0.80	21.82	0.969	3.07	8.46	-88.8	69.9	18.67
2	1028	1.20	21.73	0.994	0.67	8.29	-264.7	15.6	18.94
3	1033	2.0	21.89	0.997	1.30	8.28	-261.5	24.4	19.51
4	1038	2.6	21.63	0.997	0.66	8.28	-286.3	21.5	19.36
5	1043	3.3	21.08	0.998	0.20	8.30	-282.0	14.1	20.71
6	1048	4.6	20.82	0.999	0.25	8.30	-281.7	9.0	
7	1053	5.5	19.38	1.004	0.40	8.29	-272.8	11.9	22.66
8	1058	7.2	18.69	1.002	0.14	8.31	-301.9	0.0	23.30
9	1103	8.1	18.89	1.042	0.14	8.04	-255.9	0.0	22.63
10	1108	9.2	18.97	1.337	0.16	7.33	-183.8	0	22.18

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	30.0	VOC: 10 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3	
STAB. TEMP (C) :	18.23	
STAB. Sp. CONDUCTIVITY :	1.494	
STAB. D.O. :	0.12	
STAB. pH :	7.11	
STAB. ORP :	-179.8	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1245 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? (Yes) / No (name/time/comments): QCB04 @ 1335

DUPLICATE SAMPLE? (Yes) / No (name/time/comments): QCD02 @ 1330

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear ODOR : yes

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: SKY : Indoors WIND :

FIELD SAMPLING DATA SHEET

QC/QA Check _____		Page: 2 of 3	
PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS 33I
CITY, STATE, ZIP :	Fridley, MN	DATE:	8-18-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	081511-04

WELL DATA		PURGE DATA	
WELL NAME :	MS 33I	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	142
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.80
WELL DEPTH (ft) :	75.87	PURGE START / END TIME :	1018 / 1043
DEPTH TO WATER (toc):	15.63 DATE: 8-18-11	SAMPLING BEGIN / END TIME :	1245 / 1247
WATER COLUMN HEIGHT (ft):	60.24	PUMP ID # :	275106
WELL VOLUME (gal) :	9.82	YSI ID # :	217002
		WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTORS: (0.163 - 2") 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤5	WATER LEVEL (ft BTOC)
1	1113	10.3	18.84	1.431	0.16	7.17	-172.8	0.0	22.11
2	1118	11.4	18.78	1.453	0.15	7.13	-171.3	0.0	22.11
3	1123	12.5	18.71	1.465	0.13	7.12	-170.0	0.00	22.11
4	1128	13.6	18.66	1.476	0.14	7.11	-171.2	0.00	22.11
5	1133	14.7	18.66	1.494	0.13	7.11	-172.3	0	
6	1138	15.8	18.60	1.492	0.13	7.11	-173.0	0	
7	1143	16.9	18.58	1.501	0.15	7.10	-174.2	0	
8	1148	18.0	18.60	1.492	0.13	7.10	-175.5	0	
9	1153	19.1	18.59	1.486	0.13	7.10	-176.3	0.0	
10	1158	20.2	18.59	1.487	0.12	7.10	-177.8	0.0	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	30.2	VOC: 6 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3	
STAB. TEMP (C) :	18.23	
STAB. Sp. CONDUCTIVITY :	1.494	
STAB. D.O. :	0.12	
STAB. pH :	7.11	
STAB. ORP :	-179.8	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1245 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? (Yes) / No (name/time/comments): QCR 04 @ 1335

DUPLICATE SAMPLE? (Yes) / No (name/time/comments): QC102 @ 1330

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear ODOR : yes.

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: SKY : Indoors WIND :

FIELD SAMPLING DATA SHEET

QC/QA Check _____		Page: 3 of	
PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS331
CITY, STATE, ZIP :	Fridley, MN	DATE:	8-18-11

SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	001511-04

WELL DATA		PURGE DATA	
WELL NAME :	MS331	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	steel	PUMP CONTROLLER SETTINGS:	142
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.20
WELL DEPTH (ft) :	75.87	PURGE START / END TIME :	1018 / 1243
DEPTH TO WATER (toc):	15.63 DATE: 8-18-11	SAMPLING BEGIN / END TIME :	1245 / 1248
WATER COLUMN HEIGHT (ft):	60.24	PUMP ID # : 275106	YSI ID # : 217002
WELL VOLUME (gal) :	9.82	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤5	WATER LEVEL (ft BTOC)
1	1203	21.3	18.56	1.488	0.12	7.10	-177.1	0.0	
2	1208	22.2	18.58	1.490	0.12	7.10	-175.8	0	
3	1213	23.0	18.59	1.496	0.13	7.10	-176.7	0	
4	1218	24.3	18.38	1.481	0.12	7.12	-179.5	0	
5	1223	25.4	18.33	1.483	0.12	7.11	-179.2	0	
6	1228	26.5	18.30	1.486	0.12	7.11	-177.6	0	
7	1233	28.0	18.29	1.493	0.12	7.11	-177.7	0	
8	1238	29.0	18.25	1.494	0.12	7.10	-178.1	0	
9	1243	30.0	18.23	1.494	0.12	7.11	-179.8	0	
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	30.0	VOC: 6 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3	
STAB. TEMP (C) :	18.23	
STAB. Sp. CONDUCTIVITY :	1.494	
STAB. D.O. :	0.12	
STAB. pH :	7.11	
STAB. ORP :	-179.8	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1245 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? (Yes) / No (name/time/comments): QCR04 @ 1335

DUPLICATE SAMPLE? (Yes) / No (name/time/comments): QCD02 @ 1330

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear ODOR : yes

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: SKY : Indoors WIND :

7-53

FIELD SAMPLING DATA SHEET

QC/QA Check _____

Page: 1 of 2

PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS565
CITY, STATE, ZIP :	Fridley, MN	DATE:	8-17-11
SAMPLER :	JES	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	081511-05

WELL DATA		PURGE DATA	
WELL NAME :	MS565	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	135 - 120 - 119
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.42
WELL DEPTH (ft) :	36.50	PURGE START / END TIME :	1248 / 1342
DEPTH TO WATER (toc):	21.05 DATE: 8-17-11	SAMPLING BEGIN / END TIME :	1344 / 1347
WATER COLUMN HEIGHT (ft):	15.45	PUMP ID # : Rental	YSI ID #: 317003
WELL VOLUME (gal) :	2.51	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤5	WATER LEVEL (ft BTOC)
1	1251	1.30	14.96	1.364	1.65	5.87	-191.0	89.5	29.15
2	1254	2.00	16.06	1.392	1.44	5.94	-184.3	37.8	29.50 *
3	1257	3.00	15.22	1.521	0.92	5.75	-174.7	36.7	29.20
4	1300	3.30	15.40	1.523	0.68	5.75	-175.8	10.4	29.35
5	1303	4.00	15.74	1.523	0.68	5.77	-170.1	6.1	
6	1306	4.20	15.87	1.520	0.69	5.76	-165.8	2.2	29.50
7	1309	4.80	16.15	1.520	0.65	5.77	-163.0	0.2	
8	1312	5.10	16.85	1.522	0.61	5.85	-164.4	23.7	*
9	1315	5.20	16.45	1.527	0.54	5.83	-174.8	2.5	
10	1318	6.00	15.42	1.524	0.53	5.63	-166.4	1.6	30.20

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	6.40	VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.34	
STAB. TEMP (C) :	16.00	
STAB. Sp. CONDUCTIVITY : 1.532	~~17.00~~	
STAB. D.O. :	0.50	
STAB. pH :	6.02	
STAB. ORP :	-165.6	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1344 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Grey / None ODOR : Sulfur / No

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 77°F SKY : Clear WIND : Calm

FIELD SAMPLING DATA SHEET

QC/QA Check _____.		Page: 2 of 2	
PROJECT NAME :	NIROP Spring '11 GW Monitoring	PROJECT # :	J070047 T37
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS565
CITY, STATE, ZIP :	Fridley, MN	DATE:	8-17-11
SAMPLER :	JRC	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	081511-05

WELL DATA		PURGE DATA	
WELL NAME :	MS565	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	117
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.42
WELL DEPTH (ft) :	36.50	PURGE START / END TIME :	1248 / 1342
DEPTH TO WATER (toc):	21.05 DATE: 8-17-11	SAMPLING BEGIN / END TIME :	1344 / 1347
WATER COLUMN HEIGHT (ft):	15.45	PUMP ID # :	Rental / YSI ID # : 217003
WELL VOLUME (gal) :	2.51	WATER LEVEL ID # :	23000 /

VOLUME CONVERSION FACTORS: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING #	TIME	VOLUME (gal)	TEMP (°C) ± 0.1	COND (mS/cm) ± 5%	D.O. (mg/L)	pH ± 0.1	ORP (mV)	TURBIDITY (ntu) ≤5	WATER LEVEL (ft BTOC)
1	1321	6.20	15.95	1.516	0.54	5.68	-160.1	2.4	29.95
2	1324	6.50	16.66	1.525	0.56	5.85	-159.5	0.9	
3	1327	6.80	17.01	1.530	0.53	5.96	-163.0	0	29.81
4	1330	7.10	16.55	1.533	0.53	5.92	-162.7	0	30.05
5	1333	7.40	16.58	1.531	0.51	5.93	-161.4	0.7	29.90
6	1336	7.80	16.87	1.531	0.51	5.98	-163.1	0	30.05
7	1339	8.10	16.86	1.533	0.49	6.01	-164.2	0	30.05
8	1342	8.40	16.88	1.532	0.50	6.02	-165.6	0	
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	8.40	VOC: 3 -40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.34	
STAB. TEMP (C) :	16.88	
STAB. Sp. CONDUCTIVITY :	1.532	
STAB. D.O. :	0.50	
STAB. pH :	6.02	
STAB. ORP :	-165.6	
STAB. TURBIDITY:	0	

SAMPLE TIME : 1344 SAMPLE FIELD FILTERED ? : Yes / **No**

FIELD BLANK? Yes / No (name/time/comments):

DUPLICATE SAMPLE? Yes / No (name/time/comments):

MS/MSD? Yes / No (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Grey/Clear ODOR : NO/NO

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or **No**):

WEATHER DATA : TEMP.: 77 SKY : Sunny WIND : 1-3

Columbia Analytical Services

027601 CHAIN OF CUSTODY

SR# K1110800

COC Set____of____

Page 1 OF 1 COC# 110111-01

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

Project Name: NIROP
Project Number: J070047
Project Manager: Paul Walz
Company Name: Bay West
Comany Address: 5 Empire Drive
City/State/Zip: St. Paul MN 55103
E-Mail Address: paulw@baywest.com
Phone #: 651-291-3491 FAX #: 651-291-0099
Sampler Signature: [signature]

	Sample ID	Date	Time	Lab ID	Matrix	Number of Containers	14D	8260B / VOC_FP				Remarks
1	MS05D	11-1-11	1451		water	9		X				1 MS/MSD
2	MS10IS	↓	1547			3		X				2
3	MS03PC	11-2-11	1514			3		X				3
4	QCR02	↓	1655			3		X				4
5	MS06S	11-3-11	1025			3		X				5
6	MS34S		1140			3		X				6
7	MS24S		1242			3		X				7
8	USGS10		1349			3		X				8
9	QCD03		1255			3		X				9
10	MS35S	↓	1503			3		X				10
11	QCT01	11-1-11	--			2		X				11

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

Invoice Information

P.O.# 27488
Bill To: Account Payable
Bay West, 5 Empire Dr.
St. Paul MN 55103

Turnaround Requirements

___ 24 hr ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide Fax Results

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments: *Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other____(Circle One)

8 specific chemicals of concern via method 8260B

UPS Tracking # 1Z A19 8R9 01 9613 2002

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

Relinquished By:		Received By:		Relinquished By:		Received By:	
Signature: [signature]	Date/Time: 11-3-11 / 1715	Signature: [signature]	Date/Time: 11/4/11 1030	Signature:	Date/Time:	Signature:	Date/Time:
Printed Name: Ryan Riley	Firm: Bay West	Printed Name: RSmith	Firm: CAS	Printed Name:	Firm:	Printed Name:	Firm:

Columbia Analytical Services

027601 CHAIN OF CUSTODY

SR# 11110800

COC Set____of____

Page 1 OF 1 COC# 110111-02

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

Project Name: NIROP
Project Number: J070047
Project Manager: Paul Walz
Company Name: Baywest
Company Address: 5 Empire Drive
City/State/Zip: Saint Paul MN
E-Mail Address: paulw ~~Pwalz~~@baywest.com
Phone #: 651-291-3491 FAX #: 651-291-0099
Sampler Signature:

651-291-0099

	Sample ID	Date	Time	Lab ID	Matrix	Number of Containers	14D	8260B / VOC_FP				Remarks
1	USGS05	11-1-11	1107		water	3		X				
2	MS17S		1218			3		X				
3	MS16S		1330			3		X				
4	MS52D		1448			3		X				
5	MS42I		1548			3		X				
6	QCR01		1627			3		X				
7	MS05PC	11.02.11	1120		WT	3		X				
8	MS53PC		1378			3		X				3 Containers
9	QCD02		0800			3		X				
10	MS48PC		1520			3		X				
11	MS49D		1627			3		X				

Report Requirements

___ I. Routine Report, Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

Invoice Information

P.O.# 27488
Bill To: Baywest Accounts payable

Turnaround Requirements

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide Fax Results

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments: *Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other____(Circle One)

Analyze for 8 specific chemicals of concern via Method 8260B

UPS Tracking # 1Z A19 8R 01 9642 9394

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

Relinquished By:		Received By:		Relinquished By:		Received By:	
Signature	Date/Time 11.03.11 1745	Signature	Date/Time 11/4/11 1030	Signature	Date/Time	Signature	Date/Time
Jor Stalah	Baywest	Smith	CAS				
Printed Name	Firm	Printed Name	Firm	Printed Name	Firm	Printed Name	Firm

Columbia Analytical Services

027601 CHAIN OF CUSTODY

SR# N1110800

COC Set____of____

Page 1 OF 1 COC# 110111-03

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

Project Name	NIROP
Project Number	J070047
Project Manager	Paul Walz
Company Name	Bay West
Comany Address	5 Empire Drive
City/State/Zip	St Paul MN 55103
E-Mail Address	paulw@baywest.com
Phone #	FAX #
Sampler Signature	

Sample ID	Date	Time	Lab ID	Matrix	Number of Containers	8260B / VOC_FP	14D			Remarks
1 AT09	11-2-11	0940		WT	3	X				1
2 AT08		0952			3	X				2
3 AT07		1003			3	X				3
4 AT05A		1015			3	X				4
5 AT10		1027			3	X				5
6 AT05B		1038			3	X				6
7 QCT03	11-2-11	—			2	X				7
8 ~~MS03~~ PC	~~11.2.11~~	~~1514~~			~~3~~	~~X~~	RAR			8
9										9
10										10
11										11

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required

___ II. Report Dup., MS, MSD as required

___ III. Data Validation Report (includes all raw data)

X IV. CLP Deliverable Report

___ V. EDD

Invoice Information

P.O.# 27488

Bill To: Accounts Payable
Bay West, 5 Empire Dr.
St Paul MN 55103

Turnaround Requirements

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide Fax Results

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments: *Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other____(Circle One)

Analyze for 8 specific chemicals of concern via method 8260B
UPS Track # 1Z A19 8R9 01 9713 9610

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

Relinquished By:	Received By:	Relinquished By:	Received By:
Signature: [signature]	Signature: [signature]	Signature:	Signature:
Date/Time: 11-3-11 / 1715	Date/Time: 11/4/11 1030	Date/Time:	Date/Time:
Printed Name: Ryan Riley	Printed Name: R Smith	Printed Name:	Printed Name:
Firm: Bay West	Firm: CAS	Firm:	Firm:

11

Columbia Analytical Services

26033 CHAIN OF CUSTODY

SR# V11110800

COC Set____of____

Page 1 OF 1 COC# 110111-04

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

Project Name	NIROP
Project Number	J070047
Project Manager	Paul Walz
Company Name	Baywest
Comany Address	5 Empire Drive
City/State/Zip	Saint Paul 55103
E-Mail Address	Paulw@baywest
Phone #	651-291-3191
FAX #	651-291-0099
Sampler Signature	Joe Stalboch

	Sample ID	Date	Time	Lab ID	Matrix	Number of Containers	8260B / VOC_FP (14D)				Remarks
1	MS 43D	11.03.11	10.31		WT	3	X				1
2	MS 51I	11.03.11	1111		WT	3	X				2
3	MS07D	11.03.11	1431		WT	3	X				3
4	MS15D	11.03.11	1621		WT	3	X				4
5	QCR03	11.03.11	1655		WT	3	X				5
6	MS44D	11.03.11	1525		WT	3	X				6
7											7
8											8
9											9
10											10
11											11

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required

___ II. Report Dup., MS, MSD as required

___ III. Data Validation Report (includes all raw data)

X IV. CLP Deliverable Report

___ V. EDD

Invoice Information

P.O.# 27488

Bill To: Account Payable BayWest, 5 Empire Dr. St. Paul MN 55103

Turnaround Requirements

___ 24 hr. ___ 48 hr.

___ 5 Day

X Standard (10-15 working days)

___ Provide Fax Results

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments:

*Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other_____(Circle One)

8 specific chemicals of concern via method 8260B

UPS Tracking # 1Z A19 8R9 01 9647 9399

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

Relinquished By:		Received By:		Relinquished By:		Received By:	
Signature: Joe Stalboch	Date/Time: 11.03.11 1715	Signature: P Smith	Date/Time: 11/4/11 1030	Signature	Date/Time	Signature	Date/Time
Printed Name: Joe Stalboch	Firm: Baywest	Printed Name: P Smith	Firm: CAS	Printed Name	Firm	Printed Name	Firm

10

Columbia Analytical Services

027601 CHAIN OF CUSTODY

SR# K1110838

COC Set____of____

Page 1 OF 1 COC# 110111-05

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

Project Name: NIROP
Project Number: J070047
Project Manager: Paul Walz
Company Name: Baywest
Comany Address: 5 Empire Drive
City/State/Zip: Saint Paul MN
E-Mail Address: Paulw@baywest
Phone #: 651-291-3491 FAX #:
Sampler Signature: Joe Stabach

	Sample ID	Date	Time	Lab ID	Matrix	Number of Containers	14D	8260B / VOC_FP				Remarks
1	MS09D	11.04.11	1245		WT	3		X				1
2	MS49I	11.04.11	1423		WT	3		X				2
3	~~QCB04~~	~~11.04.11~~	~~0830~~		~~WT~~	~~3~~		~~X~~				3
4	QCT05	11.04.11	—		WT	2		X				4
5	MS17D	11-04-11	1413		WT	3		X				5
6	QCR04	11-04-11	1505		WT	3		X				6
7	QCD04	11-04-11	0830		WT	3		X				7
8												8
9												9
10												10
11												11

JBS

Report Requirements

___ I. Routine Report. Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

Invoice Information

P.O.# 27488
Bill To: Account Payable
Baywest, 5 Empire Dr.
St. Paul MN 55103

Turnaround Requirements

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide Fax Results

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments: *Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other____(Circle One)

Analyze for 8 specific chemicals of concern via method 8260B

UPS Tracking # 1Z A19 8R9 41 9179 7386

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

Relinquished By:		Received By:		Relinquished By:		Received By:	
Signature: Joe Stabach	Date/Time: 11.04.11 1600	Signature: [illegible]	Date/Time: 11/5/11 0900	Signature	Date/Time	Signature	Date/Time
Printed Name: Joe Stabach	Firm: Baywest	Printed Name: [illegible]	Firm: CAS	Printed Name	Firm	Printed Name	Firm

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Columbia Analytical Services

027601 CHAIN OF CUSTODY

SR#_____

COC Set____of____

Page 1 OF 1 COC# 110111-06

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

Project Name: NTROP
Project Number: J070047
Project Manager: Paul Walz
Company Name: Bay West
Comany Address: 5 Empire Drive
City/State/Zip: Saint Paul / MN / 55103
E-Mail Address: Paulw@baywest.com
Phone #: 651-291-3011 FAX #:
Sampler Signature: Joe

	Sample ID	Date	Time	Lab ID	Matrix	Number of Containers	8260B / VOC_FP	14D			Remarks
1	~~MS52F~~	~~0952~~			~~wt~~		~~X~~				
2	MS52I	11.07.11	0952		wt	3	X				
3	MS44S		1051			3	X				
4	PESCW02		1144			3	X				
5	MS16IS		1314			3	X				
6	MS16D		1236			3	X				
7	MS47D		1400			3	X				
8	MS52S		1506		wt	3	X				
9	MS19S	11.07.11	1549		wt	9	X				
10	MS43I	11.07.11	1633		wt	3	X				
11	QCR05	11.07.11	1705		wt	3	X				

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

Invoice Information

P.O.# 27488
Bill To: Accounts Payable
Bay West, 5 Empire Dr
Saint Paul MN, 55103

Turnaround Requirements

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide Fax Results

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments: *Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other_____(Circle One)

analyze for 8 specific chemicals of concern via method 8260B

UPS Tracking # 1Z A19 8R9 01 9743 3104

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

Relinquished By:		Received By:		Relinquished By:		Received By:	
Signature: Joe	Date/Time: 11.9.11 1640	Signature: [illegible]	Date/Time: 11/10/11 1020	Signature:	Date/Time:	Signature:	Date/Time:
Printed Name: Joe Sinlach	Firm: Bay West	Printed Name: [illegible]	Firm: OAS	Printed Name:	Firm:	Printed Name:	Firm:

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Columbia Analytical Services

027601 CHAIN OF CUSTODY

SR# K1111019

COC Set____of____

Page 1 OF 1 COC# 110111-07

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

Project Name: NIROP
Project Number: J070047
Project Manager: Paul Walz
Company Name: Bay West
Comany Address: 5 Empire Drive
City/State/Zip: St. Paul MN 55103
E-Mail Address: paulw@baywest.com
Phone #: 651-291-3491 FAX #: 651-291-0099
Sampler Signature:

Sample ID	Date	Time	Lab ID	Matrix	Number of Containers	8260B / VOC_FP	14D			Remarks
1 MS04PC	11-7-11	1542		water	3	X				1
2 MS01PC	↓	1243		↓	3	X				2
3 MS04D	↓	1640		↓	3	X				3
4 MS31D	11-8-11	1126		↓	3	X				4
5 MS06D	↓	1230		↓	3	X				5
6 MS32D	↓	1358		↓	3	X				6
7 MS02S	↓	1557		↓	3	X				7
8 QCR05	↓	1630		↓	3	X				8
9 MS29D	11-9-11	1024		↓	3	X				9
10 MS02PC	↓	1338		↓	3	X				10
11 MS05IS	↓	1442		↓	3	X				11

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

Invoice Information

P.O.# 27488
Bill To: Account Payable
BayWest 5 Empire Dr.
St Paul MN 55103

Turnaround Requirements

___ 24 hr ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide Fax Results

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments: *Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other_____(Circle One)

analyze for 8 specific chemicals of concern via method 8260B

UPS Tracking# 1Z A19 8R9 01 9899 0715

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

Relinquished By:		Received By:		Relinquished By:		Received By:	
Signature	Date/Time 11-9-11 1630	Signature	Date/Time 11/10/11 1020	Signature	Date/Time	Signature	Date/Time
Printed Name	Firm Bay West	Printed Name BWOLF	Firm CAS	Printed Name	Firm	Printed Name	Firm

Columbia Analytical Services

027601 CHAIN OF CUSTODY

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

SR# K111019

COC Set ____ of ____

Page 1 OF 1 COC# 110111-08

Project Name: NIROP
Project Number: J070047
Project Manager: Paul Walz
Company Name: Baywest
Comany Address: 5 Empire Drive
City/State/Zip: Saint Paul
E-Mail Address: Paul.Walz@baywest.com
Phone #: 651-291-3491 FAX #:
Sampler Signature:

	Sample ID	Date	Time	Lab ID	Matrix	Number of Containers	8260B / VOC_FP (14D)				Remarks
1	MS47S	11.08.11	1012		WT	3	X				
2	MS27S		1103		WT	3	X				
3	MS47I		1157		WT	3	X				
4	MS49S		1634		WT	3	X				
5	MS08D		1424		WT	3	X				
6	QCT06	11-7-11	—		WT	2	X				
7											
8											
9											
10											
11											

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

Invoice Information

P.O.# 27488
Bill To: Accounts Payable Baywest 5 Empire Drive Saint Paul MN 55103

Turnaround Requirements

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide Fax Results

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments: analyze for 8 specific chemicals of concern via method 8260B
UPS Tracking # 1Z A19 8R9 01 9899 0715

*Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other____ (Circle One)

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

Relinquished By:	Received By:	Relinquished By:	Received By:
Signature: [signature]	Signature: [signature]	Signature:	Signature:
Date/Time: 11.9.11 1620	Date/Time: 11/10/11 1020	Date/Time:	Date/Time:
Printed Name: Joe Stalock	Printed Name: Bruce F	Printed Name:	Printed Name:
Firm: Baywest	Firm: CAS	Firm:	Firm:

10

Columbia Analytical Services

027601 CHAIN OF CUSTODY

SR#_____

COC Set____of____

Page 1 OF 1 COC# 110111-09

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

Project Name: NIROP
Project Number: BayWest
Project Manager: Paul Walz
Company Name: BayWest
Comany Address: 5 Empire Drive
City/State/Zip: Saint Paul, MN 55103
E-Mail Address: paulw@baywest.com
Phone #: 651-291-3491 FAX #:
Sampler Signature:

	Sample ID	Date	Time	Lab ID	Matrix	Number of Containers	8260B / VOC_FP (14D)				Remarks
28	1 MS45I	11.09.11	979		wt	3	X				1
29	2 MS43S	↓	~~1133~~		↓	3	X				2
30	3 MS45S		1134			3	X				3
31	4 QCØ9		1000			3	X				4
32	5 MSØ4IS		1424			3	X				5
33	6 MS15IS	↓	1430		↓	3	X				6
34	7 QCTØ5	11.7.11	—		wt	3	X				7
35	8 QCRØ7	11.9.11	1510		wt	3	X				8
36	9 QCDØ8	11.8.11	0930		wt	3	X				9
	10										10
	11										11

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

Invoice Information

P.O.# 274488
Bill To: Accounts Payable
BayWest 5 Empire Drive
Saint Paul MN 55103

Turnaround Requirements

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide Fax Results

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments:

*Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other_____(Circle One)

Analyze for 8 specific chemicals of concern via 8260B
UPS Tracking # 1Z A19 8R9 01 9743 3104

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

Relinquished By:	Received By:	Relinquished By:	Received By:
Signature: [signature]	Signature: [signature]	Signature:	Signature:
Date/Time: 11.9.11 1670	Date/Time: 11/10/11 1020	Date/Time:	Date/Time:
Printed Name: Joe Stakun	Printed Name: Bruce F	Printed Name:	Printed Name:
Firm: BayWest	Firm: CAS	Firm:	Firm:

12

Columbia Analytical Services

027601 CHAIN OF CUSTODY

SR# K111079

COC Set____of____

Page 1 OF 1 COC# 110111-10

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

Project Name: NFROP
Project Number: J070047
Project Manager: Paul walz
Company Name: Bay West
Comany Address: 5 empire drive
City/State/Zip: Saint Paul, MN, 55103
E-Mail Address: Paulw@baywest.com
Phone #: 651-291-3491 FAX #: 651-291-0099
Sampler Signature: Joe Stalach

	Sample ID	Date	Time	Lab ID	Matrix	Number of Containers	8260B / VOC_FP	14D			Remarks
1	MS26S	11.10.11	0952		wt	3	X				1
2	MS44I		1041			3	X				2
3	MS46S		1142			3	X				3
4	MS18S		1246			3	X				4
5	MS14IS		1455			3	X				5
6	MS35I		1618			3	X				6
7	MS38S		1717			3	X				7
8	QCD10		1100			3	X				8
9	QCR08		1745			3	X				9
10	MS02IS	11.11.11	0956			3	X				10
11	MS08S		1102			3	X				11

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

Invoice Information

P.O.# 27400
Bill To: Accounts Payable Baywest 5 Empire Dr Saint Paul MN, 55103

Turnaround Requirements

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide Fax Results

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments: *Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other_____(Circle One)

Analyze for 8 specific chemicals of concern via method 8260B
UPS Tracking# 1Z A19 8R9 41 9161 8430

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

Relinquished By:		Received By:		Relinquished By:		Received By:	
Signature: Joe Stalach	Date/Time: 11.11.11 1630	Signature:	Date/Time: 11/12/11 0930	Signature	Date/Time	Signature	Date/Time
Printed Name: Joe Stalach	Firm: Baywest	Printed Name	Firm: CAS	Printed Name	Firm	Printed Name	Firm

Columbia Analytical Services

027601 CHAIN OF CUSTODY

SR# 1C1111079

COC Set____of____

Page 1 OF 2 COC# 110111-11

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

Project Name	NIROP
Project Number	J070047
Project Manager	Paul Walz
Company Name	Bay West Inc.
Comany Address	5 Empire Drive
City/State/Zip	St. Paul / MN / 55103
E-Mail Address	paulw@baywest.com
Phone #	651-291-3491
FAX #	651-291-0099
Sampler Signature	Ryan Riley

Sample ID	Date	Time	Lab ID	Matrix	Number of Containers	8260B / VOC_FP (14D)				Remarks
1 MS33D	11-10-11	1148		WT	9	X				1
2 MS07S	↓	1514			3	X				2
3 US6S02	↓	1631			3	X				3
4 MS33S	11-11-11	1017			3	X				4
5 MS31S	↓	1138			3	X				5
6 MS28D	↓	1322			3	X				6
7 QCD05	↓	1355			3	X				7
8 QCT08	11-10-11	—			2	Y				8
9 ~~QCD06~~	~~11-11-11~~	~~—~~								9 RAR
10 QCD06	11.11.11	1530			3	X				10
11 MS28S	11.11.11	1456			3	X				11

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required

___ II. Report Dup., MS, MSD as required

___ III. Data Validation Report (includes all raw data)

X IV. CLP Deliverable Report

___ V. EDD

Invoice Information

P.O.# 27488

Bill To: Accounts Payable, Bay West 5 Empire Dr. St Paul MN 55103

Turnaround Requirements

___ 24 hr. ___ 48 hr.

___ 5 Day

X Standard (10-15 working days)

___ Provide Fax Results

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments: *Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other_____(Circle One)

analyze for 8 specific chemicals of concern via method 8260B

UPS # 1Z A19 8R9 41 9367 0423

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

Relinquished By:	Received By:	Relinquished By:	Received By:
Signature: Ryan Riley	Signature: [illegible]	Signature	Signature
Date/Time: 11-11-11/1630	Date/Time: 11/12/11 0930	Date/Time	Date/Time
Printed Name: Ryan Riley	Printed Name: [illegible]	Printed Name	Printed Name
Firm: Bay West	Firm: [illegible]	Firm	Firm

10

Columbia Analytical Services™

CHAIN OF CUSTODY

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

SR#: 10111079

PAGE 1 OF 1 COC # 110111-12

PROJECT NAME: NIROP
PROJECT NUMBER: J070047
PROJECT MANAGER: Paul Walz
COMPANY ADDRESS: Baywest 5 Empire Drive
CITY/STATE/ZIP: Saint Paul, MN, 55103
E-MAIL ADDRESS: paulw@baywest
PHONE #: 651-291-3491 FAX #: 651-291-0099
SAMPLER'S SIGNATURE:

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625 ☐ 8270 ☐ 8270LL ☐	Volatile Organics 624 ☐ 8260 ☐ 8021 ☐ BTEX ☐	Hydrocarbons (*see below) Gas ☐ Diesel ☐ Oil ☐ ☐ Fuel Fingerprint (FIQ) ☐ NW-HCID Screen	Oil & Grease/TRPH 1664 HEM ☐ 1664 SGT ☐	PCB's Aroclors ☐ Congeners ☐	Pesticides/Herbicides 608 ☐ 8081A ☐ 8141A ☐ 8151A ☐	Chlorophenolics - 8151M Tri ☐ Tetra ☐ PCP ☐	PAHS 8310 ☐ SIM ☐	Metals, Total or Dissolved (See list below)	Cyanide ☐ Hex-Chrom ☐	pH, Cond., Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS (circle)	NH_3-N, COD, Total-P, TKN, TOC, DOC (circle) NO_2+NO_3	TOX 9020 ☐ AOX 1650 ☐ 506 ☐				REMARKS
MS40D	11.11.11	1241		wt	3		X																
~~QCT07~~	~~11.11.11~~																						
QCT07	11.10.11	—		wt	2		X																

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. # 27488
Bill To: Accounts Payable, Baywest 5 Empire Dr, Saint Paul, MN 55103

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:

Analyze for 8 specific chemicals of concern via Method 8260B

UPS Tracking # 1Z A19 0R9 41 9161 0430

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: 11.11.11 1630	Signature: 11/12/11 930	Signature / Date/Time	Signature / Date/Time
Printed Name: Jo Stalock / Firm: Baywest	Printed Name / Firm	Printed Name / Firm	Printed Name / Firm

RCOC #1 03/10

6

Columbia Analytical Services™

CHAIN OF CUSTODY

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

SR#: 1C1111079

PAGE 2 OF 2 COC # 110411-13

PROJECT NAME: NIRDP
PROJECT NUMBER: J072017
PROJECT MANAGER: Paul Walz
COMPANY/ADDRESS: Bay West, 5 Empire Drive
CITY/STATE/ZIP: St. Paul MN 55103
E MAIL ADDRESS: paulw@baywest.com
PHONE #: 651-291-3491 FAX #: 651-291-0099
SAMPLER & SIGNATURE: [signature]

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625 ☐ 8270 ☐ 8270LL ☐	Volatile Organics 624 ☐ 8260 ☐	Hydrocarbons (*see below) Gas ☐ Diesel ☐ Oil ☐ ☐ Fuel Fingerprint (FIQ) ☐ NW-HCID Screen	Oil & Grease/TRPH 1664 HEM ☐ 1664 SGT ☐	PCB's Aroclors ☐ Congeners ☐	Pesticides/Herbicides 608 ☐ 8081A ☐ 8141A ☐ 8151A ☐	Chlorophenolics - 8151M Tri ☐ Tetra ☐ PCP ☐	PAHS 8310 ☐ SIM ☐	Metals, Total or Dissolved (See list below)	Cyanide ☐ Hex-Chrom ☐	pH, Cond, Cl, SO4, PO4, F, NO2, NO3, BOD, TSS, TDS (circle) NH3-N, COD, Total-P, TKN, TOC, DOC (circle) NO2+NO3	TOX 9020 ☐ AOX 1650 ☐ 506 ☐	REMARKS
QCRD9	11-4-11	1545		WT	3		X											

BTEX ☐ 8021 ☐ X

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. # 27488
Bill To: Accounts Payable, Bay West, 5 Empire Drive, St. Paul MN 55103

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:

analyze for 8 specific chemicals of concern via method 8260B

UPS # 1Z A19 8R9 41 9367 0423

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature] Date/Time: 11-4-11/1630	Signature: [signature] Date/Time: 11/4/11 0930	Signature: Date/Time:	Signature: Date/Time:
Printed Name: Ryan Riley Firm: Bay West	Printed Name: [signature] Firm: CAS	Printed Name: Firm:	Printed Name: Firm:

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RCOC #1 03/10

Columbia Analytical Services

027601 CHAIN OF CUSTODY

SR# K1111233

COC Set____of____

Page 1 OF 1 COC# 110111-14

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

Project Name	NIROP
Project Number	J070047
Project Manager	Paul Walz
Company Name	Bay West
Comany Address	5 Empire Drive
City/State/Zip	St. Paul MN 55103
E-Mail Address	paulw@baywest.com
Phone #	651-291-3491
FAX #	651-291-0299
Sampler Signature	

	Sample ID	Date	Time	Lab ID	Matrix	Number of Containers	14D	8260B / VOC_FP				Remarks
1	MS37S	11-14-11	1316		WT	3		X				
2	MS30D	↓	1459		↓	9		X				MS/MSD
3	MS03IS	↓	1610		↓	3		X				
4	MS20S	11-15-11	1012		↓	3		X				
5	MS02D	↓	1106		↓	3		X				
6	~~MS11IS~~	↓	~~1221~~		↓	~~3~~		~~X~~				VOID
7	MS30I	↓	1413		↓	3		X				
8	MS09S	↓	1509		↓	3		X				
9	QCR12	↓	1610		↓	3		X				
10	MS56S	11-16-11	1146		↓	3		X				
11	MS36D	↓	1243		↓	3		X				

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required

___ II. Report Dup., MS, MSD as required

___ III. Data Validation Report (includes all raw data)

X IV. CLP Deliverable Report

___ V. EDD

Invoice Information

P.O.# 27488

Bill To: Account Payable
Bay West, 5 Empire Dr.
St. Paul MN 55103

Turnaround Requirements

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide Fax Results

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments:

*Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other____(Circle One)

Analyze for 8 specific chemicals of concern via 8260B

UPS Tracking # 1Z A19 8R9 15 9102 5530

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

Relinquished By:		Received By:		Relinquished By:		Received By:	
Signature	Date/Time 11-16-11/17:00	Signature	Date/Time 11/17/11 0840	Signature	Date/Time	Signature	Date/Time
Printed Name Ryan Riley	Firm Bay West	Printed Name	Firm	Printed Name	Firm	Printed Name	Firm

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Columbia Analytical Services

027601 CHAIN OF CUSTODY

SR# K111233

COC Set____of____

Page 1 OF 1 COC# 11011-15

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

Project Name: NIROP
Project Number: J070047
Project Manager: Paul Walz
Company Name: BayWest
Comany Address: 5 Empire Drive
City/State/Zip: St. Paul, MN 55103
E-Mail Address: paulw@baywest.com
Phone #: 651-291-3491 FAX #: 651-291-0099
Sampler Signature:

	Sample ID	Date	Time	Lab ID	Matrix	Number of Containers	8260B / VOC_FP (14D)				Remarks
1	MS40S	11/14/11	1138		WT	3	X				1
2	MS12D	↓	1440		↓	3	X				2
3	MS35D	↓	1708		↓	3	X				3
4	MS29S	11/15/11	1019		↓	3	X				4
5	MS32S	↓	1222		↓	3	X				5
6	MS13IS	↓	1355		↓	3	X				6
7	MS12IS	↓	1518		↓	3	X				7
8	QCD7	↓	1430		↓	3	X				8
9	QCR11	↓	1610		↓	3	X				9
10	MS41D	11/16/11	1027		WT	3	X				10
11	MS41I	↓	1137		↓	3	X				11

Report Requirements

___ I. Routine Report, Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

Invoice Information

P.O.# 27488
Bill To: Accts Payable
BayWest, 5 Empire Dr.
St. Paul MN 55103

Turnaround Requirements

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide Fax Results

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments: *Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other_____(Circle One)

8 specific chemicals of concern via 8260B
UPS Tracking # 1Z A19 8R9 15 9478 8916

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

Relinquished By:		Received By:		Relinquished By:		Received By:	
Signature	Date/Time 11/16/11 1700	Signature	Date/Time 11/17/11 0840	Signature	Date/Time	Signature	Date/Time
Printed Name: Shawn Lyman	Firm: BayWest	Printed Name: SWZF	Firm: CAS	Printed Name	Firm	Printed Name	Firm

8

Columbia Analytical Services

027601 CHAIN OF CUSTODY

SR# K1111233

COC Set____of____

Page 1 OF 1 COC# 110111-16

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

Project Name	NIROP
Project Number	3070047
Project Manager	Paul Walz
Company Name	Bay West
Comany Address	5 Empire Drive
City/State/Zip	St. Paul MN 55103
E-Mail Address	paulw@baywest.com
Phone #	651-291-3491
FAX #	651-291-0099
Sampler Signature	[signature]

	Sample ID	Date	Time	Lab ID	Matrix	Number of Containers	14D	8260B / VOC_FP				Remarks
1	MS55I	11-16-11	1328		WT	3		X				1
2	MS36I		1420			3		X				2
3	QCD11		1445			3		X				3
4	MS56I		1511			3		X				4
5	QCT10	11-14-11	—			2		X				5
6	QCR10	11-14-11	1750			3		X				6
7	MS11S	11-15-11	1221			3		X				7
8												8
9												9
10												10
11												11

Report Requirements

___ I. Routine Report, Method Blank, Surrogate, as required

___ II. Report Dup., MS, MSD as required

___ III. Data Validation Report (includes all raw data)

X IV. CLP Deliverable Report

___ V. EDD

Invoice Information

P.O.# 27488

Bill To: Account Payable
Bay West, 5 Empire Dr.
St. Paul MN 55103

Turnaround Requirements

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide Fax Results

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments: *Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other____(Circle One)

Analyze for 8 specific chemicals of concern via method 8260B
UPS Tracking # 1Z A19 8R9 15 9102 5530

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

Relinquished By:		Received By:		Relinquished By:		Received By:	
[signature]	11-16-11 / 17:00	[signature]	11/17/11 0840				
Signature	Date/Time	Signature	Date/Time	Signature	Date/Time	Signature	Date/Time
Ryan Riley	Bay West	SMALE	CAS				
Printed Name	Firm	Printed Name	Firm	Printed Name	Firm	Printed Name	Firm

11

Columbia Analytical Services

027601 CHAIN OF CUSTODY

SR# K111233

COC Set ____ of ____

Page 1 OF 1 COC# 110111-17

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

Project Name: NIROP
Project Number: J070047
Project Manager: Paul Walz
Company Name: BayWest
Comany Address: 5 Empire Drive
City/State/Zip: St. Paul, MN 55103
E-Mail Address: paulw@baywest.com
Phone #: 651-291-3491 FAX #: 651-291-0099
Sampler Signature: [signature]

	Sample ID	Date	Time	Lab ID	Matrix	Number of Containers	14D	8260B / VOC_FP				Remarks
1	MS41S	11/16/11	1256		WT	3		X				
2	MS54I		1503			9		X				MS/MSD
3	~~QCR12~~		~~1010~~			~~3~~		~~X~~				~~VOID BAR~~
4	QCT09	11-14-11	—			2		X				SJL
5												
6												
7												
8												
9												
10												
11												

Report Requirements

___ I. Routine Report. Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

Invoice Information

P.O.# 27488
Bill To: Accts Payable
BayWest, 5 Empire Dr.
St. Paul MN 55103

Turnaround Requirements

___ 24 hr. ___ 48 hr
___ 5 Day
X Standard (10-15 working days)
___ Provide Fax Results

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments: *Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other____(Circle One)

8 Specific Chemicals of concern via 8260B
UPS Tracking # 1Z A19 8R9 15 9478 8916

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

Relinquished By:		Received By:		Relinquished By:		Received By:	
Signature: [signature]	Date/Time: 11/16/11 1700	Signature: [signature]	Date/Time: 11/17/11 0840	Signature:	Date/Time:	Signature:	Date/Time:
Printed Name: Shawn Lynner	Firm: BayWest	Printed Name: SADLF	Firm: CAS	Printed Name:	Firm:	Printed Name:	Firm:

Columbia Analytical Services

027601 CHAIN OF CUSTODY

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

SR#_____

COC Set____of____

Page 1 OF 1 COC# 110111-19

Project Name: NIROP
Project Number: J070047
Project Manager: Paul Walz
Company Name: Bay West
Comany Address: 5 Empire Drive
City/State/Zip: St. Paul MN 55103
E-Mail Address: paulw@baywest.com
Phone #: 651-291-3491 FAX #: 651-291-0099
Sampler Signature: [signature]

	Sample ID	Date	Time	Lab ID	Matrix	Number of Containers	8260B / VOC_FP (14D)				Remarks
1	MS36S	11-17-11	1233		WT	3	X				
2	MS07IS	↓	1515		↓	3	X				
3	FW13	11-18-11	1316			3	X				
4	MS29I		1330			3	X				
5	MS33I		1639			3	X				
6	QCR14		1730			3	X				
7	~~QCT11~~										VOID
8	QCD01	↓	1340		↓	3	X				
9											
10											
11											

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup, MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

Invoice Information

P.O.# 27488
Bill To: Account Payable
Bay West, 5 Empire Dr.
St. Paul MN 55103

Turnaround Requirements

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide Fax Results

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments: *Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other____(Circle One)

analyze for 8 specific chemicals of concern via method 8260B

UPS Tracking # 1Z A19 8R9 41 9919 2911

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

Relinquished By:	Received By:	Relinquished By:	Received By:
Signature: [signature]	Signature: [signature]	Signature:	Signature:
Date/Time: 11-18-11 1735	Date/Time: 11/19/11 845	Date/Time:	Date/Time:
Printed Name: Ryan Riley	Printed Name: Brian Erbon	Printed Name:	Printed Name:
Firm: Bay West	Firm: CAS	Firm:	Firm:

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Columbia Analytical Services

027601 CHAIN OF CUSTODY

SR# K111349

COC Set____of____

Page 1 OF 1 COC# 110111-19

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

Project Name: NIROP
Project Number: J070047
Project Manager: Paul Walz
Company Name: Bay West
Comany Address: 5 Empire Drive
City/State/Zip: St. Paul MN 55103
E-Mail Address: paulw@baywest.com
Phone #: 651-291-3491 FAX #: 651-291-0094
Sampler Signature:

Sample ID	Date	Time	Lab ID	Matrix	Number of Containers	8260B / VOC_FP (14D)				Remarks
1 MS54S	11/17/11	1000		WT	3	X				1
2 MS03S	↓	1217		↓	3	X				2
3 MS08IS		1555			9	X				3
4 QCR13	↓	1710			3	X				4
5 MS32I	11/18/11	1050			3	X				5
6 MS28I	↓	1415			3	X				6
7 MS34I	↓	1544			3	X				7
8 QCT11	11/17/11	—		↓	2	X				8
9										9
10										10
11										11

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

Invoice Information

P.O.# 27488
Bill To: Account Payable
Bay West, 5 Empire Dr.
St. Paul MN 55103

Turnaround Requirements

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide Fax Results

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments: *Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other____(Circle One)

Analyze for 8 specific chemicals of concern via method 8260B
UPS Tracking # 1Z A19 0R9 41 9919 2911

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

Relinquished By:		Received By:		Relinquished By:		Received By:	
Signature	Date/Time 11/18/11 1755	Signature	Date/Time 11/19/11 845	Signature	Date/Time	Signature	Date/Time
Printed Name Shawn Lynn	Firm BayWest	Printed Name Brad Tebin	Firm CAS	Printed Name	Firm	Printed Name	Firm

8

FIELD SAMPLING DATA SHEET

QC/QA Check _____		Page: 1 of 1	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS05D
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-01-11
SAMPLER :	Rayna Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-01

WELL DATA		PURGE DATA	
WELL NAME :	MS05D	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	steel	PUMP CONTROLLER SETTINGS:	380
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	2.72
WELL DEPTH (ft) :	117.27	PURGE START / END TIME :	1432 / 1450
DEPTH TO WATER (toc):	17.38 DATE: 11-1-11	SAMPLING BEGIN / END TIME :	1451 / 1455
WATER COLUMN HEIGHT (ft):	99.89	PUMP ID # : ~~Rental~~ 275902	YSI ID # : 217002
WELL VOLUME (gal) :	16.28	WATER LEVEL ID # :	Rental

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1435	8.16	12.32	0.912	0.69	7.17	-87.6	1.8	17.88
2	1438	16.32	12.16	0.909	0.29	7.14	-95.0	2.6	
3	1441	24.48	12.11	0.908	0.24	7.14	-97.7	2.1	17.88
4	1444	32.64	12.08	0.906	0.25	7.15	-99.0	1.3	
5	1447	40.80	12.06	0.904	0.23	7.17	-100.3	1.0	17.88
6	1450	48.96	12.04	0.904	0.20	7.18	-101.0	0.7	
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	48.96	VOC: 9 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3	
STAB. TEMP (C) :	12.04	
STAB. Sp. CONDUCTIVITY :	0.904	
STAB. D.O. :	0.20	
STAB. pH :	7.18	
STAB. ORP :	-101.0	
STAB. TURBIDITY:	0.7	

SAMPLE TIME : 1451 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? (Yes) / No (name/time/comments): MS05D x 6 @ 1451

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear / clear ODOR : None / None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 65°F SKY : Pt Cloudy WIND : 5-10

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: 1 of 1

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS10IS
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-01-11

SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-01

WELL DATA		PURGE DATA	
WELL NAME :	MS-10IS	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Stainless steel	PUMP CONTROLLER SETTINGS:	265
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	1.60
WELL DEPTH (ft) :	77.30	PURGE START / END TIME :	1528 / 1546
DEPTH TO WATER (toc):	18.44 DATE: 11-01-11	SAMPLING BEGIN / END TIME :	1547 / 1549
WATER COLUMN HEIGHT (ft):	58.86	PUMP ID # : 275903	YSI ID # : 217002
WELL VOLUME (gal) :	9.60	WATER LEVEL ID # :	

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1531	4.8	11.88	1.108	2.39	7.10	-92.0	20.1	
2	1534	9.6	11.81	1.104	0.22	7.03	-94.9	1.9	18.55
3	1537	14.4	11.82	1.103	0.22	7.02	-96.7	0.7	
4	1540	19.2	11.82	1.104	0.22	7.01	-97.2	0.5	18.55
5	1543	24.0	11.81	1.104	0.22	7.01	-98.0	0.4	
6	1546	28.8	11.81	1.102	0.22	7.01	-98.8	0.4	18.55
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	28.8	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:		
STAB. TEMP (C) :	11.81	
STAB. Sp. CONDUCTIVITY :	1.102	
STAB. D.O. :	0.22	
STAB. pH :	7.01	
STAB. ORP :	-98.8	
STAB. TURBIDITY:	0.4	

SAMPLE TIME : 1547 SAMPLE FIELD FILTERED ? : Yes (No)

FIELD BLANK? Yes /(No) (name/time/comments):

DUPLICATE SAMPLE? Yes (No) (name/time/comments):

MS/MSD? Yes /(No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: cloudy orange tint / clear ODOR : none / none

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 60°F SKY : cloudy WIND : 5-10

FIELD SAMPLING DATA SHEET

QC/QA Check _____.		Page: 1 of 1	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	USGS 05
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-1-11
SAMPLER :	DeStaloch	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-02

WELL DATA		PURGE DATA	
WELL NAME :	USGS-05	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	PVC	PUMP CONTROLLER SETTINGS:	136
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.41
WELL DEPTH (ft) :	47.80	PURGE START / END TIME :	1043 / 1104
DEPTH TO WATER (toc):	32.93 DATE: 11.1.11	SAMPLING BEGIN / END TIME :	1107 / 1110
WATER COLUMN HEIGHT (ft):	14.87	PUMP ID # : Rental	YSI ID # : 217003
WELL VOLUME (gal) :	2.42	WATER LEVEL ID # : Rental	

VOLUME CONVERSION FACTOR: (0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1046	1.23	11.24	1.246	4.35	6.66	127.7	21.3	
2	1049	2.46	11.38	1.240	4.03	6.70	104.3	11.2	33.03
3	1052	3.69	11.39	1.239	3.87	6.71	98.6	9.9	
4	1055	4.92	11.48	1.235	3.78	6.72	81.1	9.6	33.03
5	1058	6.15	11.48	1.226	3.67	6.73	73.7	0.9	
6	1101	7.38	11.47	1.225	3.64	6.73	73.1	0.0	33.03
7	1104	8.61	11.47	1.223	3.61	6.73	69.3	0.0	
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	8.61	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.50	
STAB. TEMP (C) :	11.47	
STAB. Sp. CONDUCTIVITY :	1.223	
STAB. D.O. :	3.61	
STAB. pH :	6.73	
STAB. ORP :	69.3	
STAB. TURBIDITY:	0	

SAMPLE TIME : 1107 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Clear/Clear ODOR : No-No

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No):

WEATHER DATA : TEMP.: 45 SKY : MC WIND : 0

FIELD SAMPLING DATA SHEET

QC/QA Check _____.		Page: 1	of 1
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS-175
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-01-11
SAMPLER :	Joe Stalock	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-02

WELL DATA		PURGE DATA	
WELL NAME :	MS175	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	116 - 114
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.41
WELL DEPTH (ft) :	38.18	PURGE START / END TIME :	1154 / 1215
DEPTH TO WATER (toc):	23.08 DATE: 11.1.11	SAMPLING BEGIN / END TIME :	1218 / 1221
WATER COLUMN HEIGHT (ft):	15.10	PUMP ID # : Rental	YSI ID # : 217002
WELL VOLUME (gal) :	2.46	WATER LEVEL ID # :	Rental

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1157	1.23	12.90	1.121	1.80	7.05	12.5	28.4	23.12
2	1200	2.46	13.02	1.107	1.67	7.02	6.0	14.0	
3	1203	3.69	13.05	1.103	3.64	7.02	-2.0	13.5	23.13
4	1206	4.92	13.11	1.102	2.40	7.01	-3.9	2.7	
5	1209	6.15	13.13	1.094	2.38	7.04	0.0	2.5	
6	1212	7.38	13.14	1.091	2.45	7.00	-2.9	2.0	23.13
7	1215	8.61	13.06	1.096	2.43	7.01	-2.5	1.8	
8									
9									
10									

Turb high 1200 Partially corrected

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	8.61	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.50	
STAB. TEMP (C) :	13.06	
STAB. Sp. CONDUCTIVITY :	1.096	
STAB. D.O. :	2.43	
STAB. pH :	7.01	
STAB. ORP :	-2.5	
STAB. TURBIDITY:	1.8	

SAMPLE TIME : 1218 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Orange / Clear ODOR : Sulfur / None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 50 SKY : Mostly cloudy WIND : 0

FIELD SAMPLING DATA SHEET

QC/QA Check _____.		Page: 1 of 1	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS16S
CITY, STATE, ZIP :	Fridley, MN	DATE:	11.1.11
SAMPLER :	Joe Stalock	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	

WELL DATA		PURGE DATA	
WELL NAME :	MS16S	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.45
WELL DEPTH (ft) :	~~35.18~~ 35.13	PURGE START / END TIME :	1306 / 1327
DEPTH TO WATER (toc):	18.65 DATE: 11.1.11	SAMPLING BEGIN / END TIME :	1330 /
WATER COLUMN HEIGHT (ft):	16.48	PUMP ID # : Rental	YSI ID # : 217003
WELL VOLUME (gal) :	2.68	WATER LEVEL ID # : Rental	

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1309	1.35	12.15	1.188	2.08	7.09	-86.7	25.0	18.88 – Read upside down
2	1312	2.70	12.26	1.163	0.84	7.02	-75.5	18.2	
3	1315	4.05	12.27	1.155	0.57	6.97	-65.3	5.8	18.68
4	1318	5.40	12.34	1.152	0.49	6.95	-60.9	5.0	
5	1321	6.75	12.28	1.151	0.45	6.94	-57.2	3.8	
6	1324	8.10	12.33	1.150	0.40	6.94	-52.9	1.9	18.68
7	1327	9.45	12.36	1.150	0.39	6.93	-48.4	2.2	
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	9.45	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.53	
STAB. TEMP (C) :	12.36	
STAB. Sp. CONDUCTIVITY :	1.150	
STAB. D.O. :	0.39	
STAB. pH :	6.93	
STAB. ORP :	-48.4	
STAB. TURBIDITY:	2.2	

SAMPLE TIME : 1330 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: CLR-CLR ODOR : NO-NO

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 58 SKY : PC WIND : N-1

FIELD SAMPLING DATA SHEET

QC/QA Check _____.		Page: 1 of 1	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS52D
CITY, STATE, ZIP :	Fridley, MN	DATE:	11.1.11

SAMPLER :		ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-02

WELL DATA		PURGE DATA	
WELL NAME :	MS52D	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	230
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	3.20
WELL DEPTH (ft) :	140.03	PURGE START / END TIME :	1415 / 1445
DEPTH TO WATER (toc):	22.48 DATE: 11.1.11	SAMPLING BEGIN / END TIME :	1448 / 1448
WATER COLUMN HEIGHT (ft):	117.55	PUMP ID # : Rental	YSI ID # : 217003
WELL VOLUME (gal) :	19.16	WATER LEVEL ID # : Rental	

VOLUME CONVERSION FACTOR: (0.163 - 2") 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1418	9.6	11.73	0.425	3.39	8.43	-266.5	79.7	
2	1421	19.20	11.876	0.471	1.15	8.17	-248.0	140.0	23.48
3	1424	28.80	11.91	0.619	0.87	7.72	-179.0	51.20	
4	1427	38.4	11.55	0.774	0.82	7.35	-128.3	37.1	
5	1430	48.00	11.57	0.771	0.78	7.29	-117.8	36.1	23.52
6	1433	57.60	11.48	0.780	0.75	7.24	-110.1	24.1	
7	1436	67.20	11.35	0.780	0.75	7.22	-109.2	12.80	
8	1439	76.80	11.34	0.779	0.72	7.20	-107.8	10.4	23.61
9	1442	86.40	11.35	0.778	0.70	7.20	-104.4	10.2	
10	1445	96.00	11.33	0.779	0.70	7.26	-94.9	8.1	

A 0.779

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	96.00	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5	
STAB. TEMP (C) :	11.33	
STAB. Sp. CONDUCTIVITY :	0.779	
STAB. D.O. :	0.70	
STAB. pH :	7.26	
STAB. ORP :	-94.9	
STAB. TURBIDITY:	8.1	

SAMPLE TIME : 1448 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Rusty / CLR ODOR: NO-NO

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 57 SKY : MC WIND : Q-3

FIELD SAMPLING DATA SHEET

QC/QA Check _____.		Page: 1 of 1	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS42I
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-01-11
SAMPLER :	Joe Stalock	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-02

WELL DATA		PURGE DATA	
WELL NAME :	MS42I	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.86
WELL DEPTH (ft) :	54.36	PURGE START / END TIME :	1528 / 1546
DEPTH TO WATER (toc):	23.00 DATE: 11.1.11	SAMPLING BEGIN / END TIME :	1548 /
WATER COLUMN HEIGHT (ft):	31.36	PUMP ID # : Rental	YSI ID # : 217003
WELL VOLUME (gal) :	5.11	WATER LEVEL ID # : Rental	

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1531	2.58	11.89	1.264	3.08	6.94	-82.5	11.20	
2	1534	5.16	11.84	1.327	0.93	6.99	-92.5	5.1	
3	1537	7.74	11.82	1.344	0.53	7.00	-98.4	7.1	23.00
4	1540	10.32	11.85	1.350	0.44	7.00	-100.5	4.8	
5	1543	12.90	11.83	1.354	0.40	7.00	-109.3	1.7	23.00
6	1546	15.48	11.82	1.357	0.35	7.00	-103.8	0.6	
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	15.48	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3	
STAB. TEMP (C) :	11.82	
STAB. Sp. CONDUCTIVITY :	1.357	
STAB. D.O. :	0.35	
STAB. pH :	7.00	
STAB. ORP :	-103.8	
STAB. TURBIDITY:	0.6	

SAMPLE TIME : 1548 SAMPLE FIELD FILTERED ? : Yes / No

FIELD BLANK? Yes / No (name/time/comments): QCR01 1627

DUPLICATE SAMPLE? Yes / No (name/time/comments):

MS/MSD? Yes / No (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Black / Clear ODOR : NO - NO

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or No):

WEATHER DATA : TEMP.: 57 SKY : MC WIND : 0-3

FIELD SAMPLING DATA SHEET

QC/QA Check _____.		Page: 1 of 3	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS03PC
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-2-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-01

WELL DATA		PURGE DATA	
WELL NAME :	MS03PC	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	
WELL DIAMETER (in) :	4	PURGE RATE (gpm) :	2.62
WELL DEPTH (ft) :	159.58	PURGE START / END TIME :	1312 / 1517
DEPTH TO WATER (toc):	19.57 DATE: 11-2-11	SAMPLING BEGIN / END TIME :	1514 / 1516
WATER COLUMN HEIGHT (ft):	140.01	PUMP ID # : 275902	YSI ID # : 217002
WELL VOLUME (gal) :	91.43	WATER LEVEL ID # :	230008

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1317	13.10	12.66	0.679	0.79	7.55	-59.6	0.1	20.74
2	1322	26.20	12.55	0.679	0.50	7.55	-94.9	0.1	20.77
3	1327	39.30	12.37	0.679	0.32	7.56	-128.3	0.1	20.78
4	1332	52.40	12.24	0.679	0.29	7.58	-140.5	0.1	20.79
5	1337	65.50	12.06	0.628	0.26	7.43	-110.2	0.2	20.79
6	1342	78.60	12.02	0.626	0.23	7.38	-98.2	0.1	
7	1347	91.70	12.00	0.625	0.20	7.34	-88.4	0.0	
8	1352	104.80	11.98	0.625	0.20	7.32	-81.5	0.0	20.79
9	1357	117.90	11.97	0.625	0.18	7.31	-77.5	0.0	
10	1402	131.00	11.95	0.625	0.17	7.31	-73.4	0.0	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	306.4	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.35	
STAB. TEMP (C) :	11.76	
STAB. Sp. CONDUCTIVITY :	0.625	
STAB. D.O. :	0.20	
STAB. pH :	7.27	
STAB. ORP :	-46.0	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1514 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? (Yes) / No (name/time/comments): QCR02 @ 1655

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear / clear ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 45 60°F SKY : Cloudy WIND : 5-10

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS03PC
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-2-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-01

WELL DATA		PURGE DATA	
WELL NAME :	MS03PC	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	steel	PUMP CONTROLLER SETTINGS:	2.62
WELL DIAMETER (in) :	4	PURGE RATE (gpm) :	2.62
WELL DEPTH (ft) :	159.58	PURGE START / END TIME :	1312 / 1517
DEPTH TO WATER (toc):	19.57 DATE: 11-2-11	SAMPLING BEGIN / END TIME :	1514 / 1516
WATER COLUMN HEIGHT (ft):	140.01	PUMP ID # : 275902	YSI ID # : 217002
WELL VOLUME (gal) :	91.43	WATER LEVEL ID # :	230003

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1407	144.10	11.96	0.625	0.16	7.30	-70.4	0.1	
2	1412	157.20	11.93	0.625	0.15	7.29	-65.0	0.0	20.76
3	1417	170.30	11.93	0.625	0.14	7.29	-63.7	0.0	
4	1422	183.40	11.93	0.625	0.14	7.29	-62.5	0.1	20.75
5	1427	196.50	11.92	0.626	0.14	7.28	-59.4	0.0	
6	1432	209.60	11.92	0.626	0.14	7.28	-57.9	0.0	20.75
7	1437	222.70	11.91	0.626	0.14	7.28	-56.1	0.0	
8	1442	235.80	11.91	0.625	0.13	7.27	-54.3	0.0	20.75
9	1447	248.90	11.95	0.625	0.13	7.27	-53.4	0.0	
10	1452	260.40	11.82	0.625	0.56	7.27	-49.8	0.0	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	306.4	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.35	
STAB. TEMP (C) :	11.76	
STAB. Sp. CONDUCTIVITY :	0.625	
STAB. D.O. :	0.70	
STAB. pH :	7.27	
STAB. ORP :	-46.0	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1514 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? (Yes) / No (name/time/comments): QCR02 @

DUPLICATE SAMPLE? Yes / No (name/time/comments):

MS/MSD? Yes / No (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: pl/pal / clear ODOR : none

OBSERVATIONS :

1450 - controller stopped. Had to decrease flow to allow generator to continue to purge.

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 46°F SKY : Cloudy WIND : 5-10

FIELD SAMPLING DATA SHEET

QC/QA Check _____.			Page: 3 of
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS03PC
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-02-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-01

WELL DATA		PURGE DATA	
WELL NAME :	MS03PC	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	~~2.62~~ 285
WELL DIAMETER (in) :	4	PURGE RATE (gpm) :	2.61
WELL DEPTH (ft) :	159.58	PURGE START / END TIME :	1312 / 1517
DEPTH TO WATER (toc):	19.57 DATE: 11-2-11	SAMPLING BEGIN / END TIME :	1514 / 1516
WATER COLUMN HEIGHT (ft):	140.01	PUMP ID # : 275902	YSI ID # : 217002
WELL VOLUME (gal) :	91.43	WATER LEVEL ID # : 230008	

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1457	271.9	11.80	0.675	0.50	7.27	-49.8	0.0	
2	1502	283.4	11.79	0.675	0.49	7.27	-49.2	0.1	20.63
3	1507	294.9	11.78	0.676	0.22	7.27	-46.6	0.0	
4	1512	306.4	11.76	0.675	0.20	7.27	-46.0	0.0	
5									
6									
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	306.4	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.35	
STAB. TEMP (C) :	11.76	
STAB. Sp. CONDUCTIVITY :	0.675	
STAB. D.O. :	0.20	
STAB. pH :	7.27	
STAB. ORP :	-46.0	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1514 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / No (name/time/comments): QCR02@

DUPLICATE SAMPLE? Yes / No (name/time/comments):

MS/MSD? Yes / No (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Clear / clear ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 41°F SKY : Cloudy WIND : 5-10

FIELD SAMPLING DATA SHEET

QC/QA Check _____.		Page: 1 of 1	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	AT09
CITY, STATE, ZIP :	Fridley, MN	DATE:	11/02/11

SAMPLER : Ryan Riley	ANALYTICAL LABORATORY : CAS
COMPANY : Bay West, Inc.	CHAIN OF CUSTODY # : 110111 - 03

WELL DATA	PURGE DATA
WELL NAME : AT - 09	PURGE METHOD : ~~Grundfos Pump~~ tap
CASING MATERIAL :	PUMP CONTROLLER SETTINGS:
WELL DIAMETER (in) :	PURGE RATE (gpm) :
WELL DEPTH (ft) :	PURGE START / END TIME : /
DEPTH TO WATER (toc): DATE:	SAMPLING BEGIN / END TIME : 940 / 942
WATER COLUMN HEIGHT (ft):	PUMP ID # : YSI ID # : 217002
WELL VOLUME (gal) :	WATER LEVEL ID # :

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	0932		12.52	1.051	0.52	6.86	-82.4	0.2	
2	0935		12.48	1.050	0.31	6.87	-85.8	0.2	
3	0938		12.47	1.048	0.29	6.87	-88.0	0.3	
4									
5									
6									
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :		VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:		
STAB. TEMP (C) :	12.47	
STAB. Sp. CONDUCTIVITY :	1.048	
STAB. D.O. :	0.29	
STAB. pH :	6.87	
STAB. ORP :	-88.0	
STAB. TURBIDITY:	0.3	

SAMPLE TIME : 0940 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Clear ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No))

WEATHER DATA : TEMP.: SKY : Indoors WIND :

FIELD SAMPLING DATA SHEET

QC/QA Check _____.		Page: 1 of 1	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	AT 08
CITY, STATE, ZIP :	Fridley, MN	DATE:	11/2/11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111 - 07

WELL DATA		PURGE DATA	
WELL NAME :	AT-08	PURGE METHOD : ~~Grundfos Pump~~	Tap
CASING MATERIAL :		PUMP CONTROLLER SETTINGS:	
WELL DIAMETER (in) :		PURGE RATE (gpm) :	
WELL DEPTH (ft) :		PURGE START / END TIME :	/
DEPTH TO WATER (toc):	DATE:	SAMPLING BEGIN / END TIME :	952 / 954
WATER COLUMN HEIGHT (ft):		PUMP ID # :	YSI ID # : 217002
WELL VOLUME (gal) :		WATER LEVEL ID # :	

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	0944		15.05	1.197	0.60	6.69	-93.6	0.7	
2	0947		15.06	1.197	0.54	6.67	-95.3	0.2	
3	0950		15.07	1.195	0.64	6.67	-96.5	0.2	
4									
5									
6									
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :		VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:		
STAB. TEMP (C) :	15.07	
STAB. Sp. CONDUCTIVITY :	1.195	
STAB. D.O. :	0.64	
STAB. pH :	6.67	
STAB. ORP :	-96.5	
STAB. TURBIDITY:	0.2	

SAMPLE TIME : 0952 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Clear ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No))

WEATHER DATA : TEMP.: SKY : Indoors WIND :

FIELD SAMPLING DATA SHEET

QC/QA Check _____.			Page: 1 of 1
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	AT07
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-2-11

SAMPLER :	ANALYTICAL LABORATORY : CAS
COMPANY : Bay West, Inc.	CHAIN OF CUSTODY # : 110111-03

WELL DATA	PURGE DATA
WELL NAME : AT-07	PURGE METHOD : ~~Grundfos Pump~~ Tap
CASING MATERIAL :	PUMP CONTROLLER SETTINGS:
WELL DIAMETER (in) :	PURGE RATE (gpm) :
WELL DEPTH (ft) :	PURGE START / END TIME : /
DEPTH TO WATER (toc): DATE:	SAMPLING BEGIN / END TIME : 1003 / 1005
WATER COLUMN HEIGHT (ft):	PUMP ID # : YSI ID # : 217002
WELL VOLUME (gal) :	WATER LEVEL ID # :

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	0955		16.44	1.256	0.66	6.67	-64.0	0.6	
2	0958		16.45	1.255	0.58	6.66	-62.0	0.8	
3	1001		16.47	1.255	0.56	6.66	-60.0	3.1	
4									
5									
6									
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :		VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:		
STAB. TEMP (C) :	16.47	
STAB. Sp. CONDUCTIVITY :	1.255	
STAB. D.O. :	0.56	
STAB. pH :	6.66	
STAB. ORP :	-60.0	
STAB. TURBIDITY:	3.1	

SAMPLE TIME : 1003 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear ODOR : slight odor

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or No):

WEATHER DATA : TEMP.: SKY : WIND :

FIELD SAMPLING DATA SHEET

QC/QA Check _____.			Page: 1 of 1
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	AT05A
CITY, STATE, ZIP :	Fridley, MN	DATE:	11/2/11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111 - 03

WELL DATA	PURGE DATA
WELL NAME : AT-5A	PURGE METHOD : ~~Grundfos Pump~~ Tap
CASING MATERIAL :	PUMP CONTROLLER SETTINGS:
WELL DIAMETER (in) :	PURGE RATE (gpm) :
WELL DEPTH (ft) :	PURGE START / END TIME : /
DEPTH TO WATER (toc): DATE:	SAMPLING BEGIN / END TIME : 1015 / 1017
WATER COLUMN HEIGHT (ft):	PUMP ID # : YSI ID # : 217002
WELL VOLUME (gal) :	WATER LEVEL ID # :

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	10:07		12.25	1.419	3.51	6.83	-20.0	0.0	
2	10:10		12.22	1.421	3.32	6.84	-8.5	0.0	
3	10:13		12.20	1.423	3.23	6.85	0.8	0.0	
4									
5									
6									
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :		VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:		
STAB. TEMP (C) :	12.20	
STAB. Sp. CONDUCTIVITY :	1.423	
STAB. D.O. :	3.23	
STAB. pH :	6.85	
STAB. ORP :	0.8	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1015 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear ODOR : 11/2 AZ ~~odorless~~ product odor

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or No):

WEATHER DATA : TEMP.: SKY : Indoors WIND :

FIELD SAMPLING DATA SHEET

QC/QA Check _____		Page: 1 of 1	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	AT10
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-2-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-03

WELL DATA	PURGE DATA
WELL NAME : AT-10	PURGE METHOD : ~~Grundfos Pump~~ Tap
CASING MATERIAL :	PUMP CONTROLLER SETTINGS:
WELL DIAMETER (in) :	PURGE RATE (gpm) :
WELL DEPTH (ft) :	PURGE START / END TIME : /
DEPTH TO WATER (toc): DATE:	SAMPLING BEGIN / END TIME : 1027 / 1029
WATER COLUMN HEIGHT (ft):	PUMP ID # : YSI ID # : 217002
WELL VOLUME (gal) :	WATER LEVEL ID # :

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1019		13.85	1.796	0.44	6.96	-105.1	3.9	
2	1022		13.86	1.796	0.26	6.98	-111.2	3.9	
3	1025		13.86	1.792	0.24	6.99	-113.8	5.6	
4									
5									
6									
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :		VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:		
STAB. TEMP (C) :	13.86	
STAB. Sp. CONDUCTIVITY :	1.792	
STAB. D.O. :	0.24	
STAB. pH :	6.99	
STAB. ORP :	-113.8	
STAB. TURBIDITY:	5.6	

SAMPLE TIME : 1027 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: ODOR :

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No))

WEATHER DATA : TEMP.: SKY : Indoors WIND :

FIELD SAMPLING DATA SHEET

QC/QA Check _____.		Page: 1 of 1	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	AT05B
CITY, STATE, ZIP :	Fridley, MN	DATE:	11/2/11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-03

WELL DATA	PURGE DATA
WELL NAME : AT-5B	PURGE METHOD : ~~Grundfos Pump~~ Tap
CASING MATERIAL :	PUMP CONTROLLER SETTINGS:
WELL DIAMETER (in) :	PURGE RATE (gpm) :
WELL DEPTH (ft) :	PURGE START / END TIME : /
DEPTH TO WATER (toc): DATE:	SAMPLING BEGIN / END TIME : 1038 / 1040
WATER COLUMN HEIGHT (ft):	PUMP ID # : ~~275902~~ YSI ID # : 217002
WELL VOLUME (gal) :	WATER LEVEL ID # :

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1030		12.14	0.986	5.75	7.04	-79.0	0.8	
2	1033		12.12	0.981	5.88	6.99	-76.8	0.7	
3	1036		12.12	0.979	4.65	6.99	-77.5	0.5	
4									
5									
6									
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :		VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:		
STAB. TEMP (C) :	12.12	
STAB. Sp. CONDUCTIVITY :	0.979	
STAB. D.O. :	4.65	
STAB. pH :	6.99	
STAB. ORP :	-77.5	
STAB. TURBIDITY:	0.5	

SAMPLE TIME : 1038 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: ODOR :

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No))

WEATHER DATA : TEMP.: SKY : WIND :

FIELD SAMPLING DATA SHEET

QC/QA Check _____.		Page: 1 of 2	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS05PC
CITY, STATE, ZIP :	Fridley, MN	DATE:	11.02.11
SAMPLER :	Joe Stalock	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	1102 11-02

WELL DATA		PURGE DATA	
WELL NAME :	MS05PC	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	295
WELL DIAMETER (in) :	4	PURGE RATE (gpm) :	3.88
WELL DEPTH (ft) :	192.84	PURGE START / END TIME :	947 /
DEPTH TO WATER (toc):	15.02 DATE: 11.02.11	SAMPLING BEGIN / END TIME :	/
WATER COLUMN HEIGHT (ft):	177.82	PUMP ID # : Rental	YSI ID # : 21700 3
WELL VOLUME (gal) :	116.11	WATER LEVEL ID # : Rental	

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" (0.653 - 4") 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

	READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
	Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
	1	952	19.40	11.67	0.307	0.55	9.29	-54.3	8.3	15.12
	2	957	38.80	11.51	0.306	0.36	9.34	-88.8	8.9	
1 wv	3	1002	58.20	11.30	0.309	0.37	9.35	-107.3	7.9	
	4	1007	77.60	11.00	0.310	0.32	9.36	-121.0	6.9	15.16
	5	1012	97.00	10.93	0.513	0.40	8.73	-120.6	5.20	
	6	1017	116.60	11.23	0.689	0.23	7.63	-98.8	2.8	
	7	1022	136.00	11.18	0.696	0.23	7.46	-91.5	2.5	
1.5	8	1027	155.60	11.24	0.690	0.42	7.39	-95.7	2.6	
	9	1032	175.00	11.26	0.698	0.17	7.38	-104.7	2.9	15.17
	10	1037	194.6	11.26	0.699	0.18	7.38	-104.3	2.9	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	349.8	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.01	
STAB. TEMP (C) :	11.25	
STAB. Sp. CONDUCTIVITY :	0.710	
STAB. D.O. :	0.13	
STAB. pH :	7.35	
STAB. ORP :	-121.5	
STAB. TURBIDITY:	0	

SAMPLE TIME : 1120 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Slight Grey / clear ODOR : NO-NO

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 45 SKY : OVC WIND : 0-3 MPH

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS05 PC
CITY, STATE, ZIP :	Fridley, MN	DATE:	11.02.11

SAMPLER :	Joe Stalock	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-02

WELL DATA		PURGE DATA	
WELL NAME :	MS05 PC	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	395
WELL DIAMETER (in) :	4	PURGE RATE (gpm) :	3.88
WELL DEPTH (ft) :	192.84	PURGE START / END TIME :	947 / 1117
DEPTH TO WATER (toc):	15.02 DATE: 11.02.11	SAMPLING BEGIN / END TIME :	1120 / 1123
WATER COLUMN HEIGHT (ft):	177.82	PUMP ID # : Rental	YSI ID # : 217003
WELL VOLUME (gal) :	116.11	WATER LEVEL ID # :	Rental

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" (0.653 - 4") 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

	READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
	Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
2	1	1042	214.0	11.21	0.705	0.17	7.36	-105.2	2.0	
	2	1047	233.4	11.22	0.705	0.19	7.36	-113.1	2.4	
2.5	3	1052	252.8	11.26	0.707	0.15	7.35	-118.6	2.0	
	4	1057	272.2	11.27	0.707	0.15	7.35	-121.7	1.6	15.20
	5	1102	291.6	11.25	0.710	0.14	7.35	-119.3	0.8	
3.0	6	1107	311.00	11.25	0.710	0.14	7.34	-109.0	0.3	15.20
	7	1112	330.4	11.26	0.709	0.13	7.35	-117.4	0.1	
	8	1117	349.8	11.25	0.710	0.13	7.35	-121.5	Ø	15.20
	9									
	10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	349.8	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.01	
STAB. TEMP (C) :	11.25	
STAB. Sp. CONDUCTIVITY :	0.710	
STAB. D.O. :	0.13	
STAB. pH :	7.35	
STAB. ORP :	121.5	
STAB. TURBIDITY:	Ø	

SAMPLE TIME : 1120 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Slight Grey/clear ODOR : NO-NO

OBSERVATIONS : Bailard Missing

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 45 SKY : OVC WIND : Ø - 3 MPH

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: 1 of 2

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS53PC
CITY, STATE, ZIP :	Fridley, MN	DATE:	11.02.11
SAMPLER :	Jer Stakel	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111.02

WELL DATA		PURGE DATA	
WELL NAME :	MS53PC	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	312 - 218 - 178
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	4.16 → 2.00 → 1.57
WELL DEPTH (ft) :	169.16	PURGE START / END TIME :	1246 / 1325
DEPTH TO WATER (toc):	15.90 DATE: 11.02.11	SAMPLING BEGIN / END TIME :	1328 / 1331
WATER COLUMN HEIGHT (ft):	153.26	PUMP ID # :	Rental / YSI ID # : 215003
WELL VOLUME (gal) :	24.98	WATER LEVEL ID # :	Rental

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1249	12.48	11.94	0.550	0.91	7.83	-212.7	41.2	20.06
2	1252	24.96	11.90	0.589	0.35	7.73	-204.4	68.0	20.09
3	1255	37.44	11.89	0.594	0.30	7.71	-194.6	58.0	20.10
4	1258	49.92	11.78	0.630	0.23	7.44	-151.6	46.2	
5	1301	62.40	11.72	0.630	0.28	7.41	-151.4	23.4	18.72
6	1304	68.40	11.63	0.630	0.20	7.39	-147.6	25.0	18.72
7	1307	73.11	11.65	0.630	0.17	7.37	-150.8	13.1	
8	1310	77.82	11.51	0.630	0.17	7.37	-150.3	18.6	
9	1313	82.53	11.52	0.630	0.16	7.36	-149.9	26.8	17.90
10	1316	87.24	11.53	0.630	0.16	7.35	-150.3	1.3	

1241.7

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	101.37	VOC: 6 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	4.05	
STAB. TEMP (C) :	11.79	
STAB. Sp. CONDUCTIVITY :	0.630	
STAB. D.O. :	0.15	
STAB. pH :	7.34	
STAB. ORP :	-149.6	
STAB. TURBIDITY:	1.2	

SAMPLE TIME : 1325 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? (Yes) / No (name/time/comments): QCD 02 0800

MS/MSD? Yes / No (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Gray/Green / CLR ODOR : NO-NO

OBSERVATIONS : * ADJUSTED GPM *

Sample tubing left in well at completion? (Yes or (No))

WEATHER DATA : TEMP.: 48 SKY : OVC WIND : 0-3

FIELD SAMPLING DATA SHEET

QC/QA Check _____		Page: 2 of 2	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS 53PC
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-02-11
SAMPLER :	Joe Stalnch	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-02

WELL DATA		PURGE DATA	
WELL NAME :	MS53PC	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	212-218-178
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	4.16-2.00-1.57
WELL DEPTH (ft) :	169.16	PURGE START / END TIME :	1246 / 1325
DEPTH TO WATER (toc):	15.90 DATE: 11.02.11	SAMPLING BEGIN / END TIME :	1328 / 1331
WATER COLUMN HEIGHT (ft):	153.26	PUMP ID # : Rental	YSI ID # : 212003
WELL VOLUME (gal) :	24.98	WATER LEVEL ID # : Rental	

VOLUME CONVERSION FACTOR: 0.163 - 2" / 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1319	99.92	16.54	0.630	0.15	7.35	-150.2	0.2	17.91
2	1322	96.66	11.53	0.630	0.15	7.35	-149.3	0.6	17.91
3	1325	101.37	11.49	0.630	0.15	7.34	-149.6	1.2	17.91
4									
5									
6									
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	101.37	VOC: 6 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	4.05	
STAB. TEMP (C) :	11.49	
STAB. Sp. CONDUCTIVITY :	0.630	
STAB. D.O. :	0.15	
STAB. pH :	7.34	
STAB. ORP :	-149.6	
STAB. TURBIDITY:	1.2	

SAMPLE TIME : 1328 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? (Yes) / No (name/time/comments): QCD02 0900

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Grey/Green/Clear ODOR : NO-NO

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No))

WEATHER DATA : TEMP.: 45 SKY : OVC WIND : Q-3

FIELD SAMPLING DATA SHEET

QC/QA Check _____.		Page: 1 of 1	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS48PC
CITY, STATE, ZIP :	Fridley, MN	DATE:	11.02.11
SAMPLER :	JOESraloch	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-02

WELL DATA		PURGE DATA	
WELL NAME :	MS48PC	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	PVC	PUMP CONTROLLER SETTINGS:	230
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	2.23
WELL DEPTH (ft) :	166.9	PURGE START / END TIME :	1428 / 1517
DEPTH TO WATER (toc):	30.23 DATE: 11.02.11	SAMPLING BEGIN / END TIME :	1520 / 1523
WATER COLUMN HEIGHT (ft):	136.67	PUMP ID # : Rental	YSI ID # : 217003
WELL VOLUME (gal) :	22.27	WATER LEVEL ID # : Rental	

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1432	11.15	11.35	1.448	1.54	6.97	-77.6	2.9	30.23
2	1437	22.30	11.39	1.483	0.82	6.89	-65.0	0.1	30.72
3	1442	33.45	11.40	1.497	0.75	6.88	-53.0	Ø	30.73
4	1447	44.60	11.41	1.488	0.79	6.87	-43.1	Ø	30.75
5	1452	55.75	11.41	1.480	0.86	~~7.3~~ 6.86	-37.2	Ø	30.75
6	1457	66.90	11.41	1.479	0.99	6.86	-33.5	Ø	30.75
7	1502	78.05	11.40	1.468	1.02	6.86	-32.5	Ø	30.75
8	1507	89.20	11.40	1.464	1.08	6.86	-32.0	Ø	30.75
9	1512	100.35	11.41	1.458	1.14	6.86	-30.6	Ø	30.75
10	1517	111.50	11.41	1.454	1.20	6.86	-30.0	Ø	30.75

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	111.50	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5.00	
STAB. TEMP (C) :	11.41	
STAB. Sp. CONDUCTIVITY :	1.454	
STAB. D.O. :	1.20	
STAB. pH :	6.86	
STAB. ORP :	-30.0	
STAB. TURBIDITY:	Ø	

SAMPLE TIME : 1520 SAMPLE FIELD FILTERED ? : Yes / No

FIELD BLANK? Yes / No (name/time/comments):

DUPLICATE SAMPLE? Yes / No (name/time/comments):

MS/MSD? Yes / No (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Grey/Clear ODOR: No-NO

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or No):

WEATHER DATA : TEMP.: 51 SKY : OVC WIND : Ø-5 MPH

FIELD SAMPLING DATA SHEET

QC/QA Check _____.		Page: 1 of 1	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS49D
CITY, STATE, ZIP :	Fridley, MN	DATE:	10.02.11
SAMPLER :	Joe Stalock	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-02

WELL DATA		PURGE DATA	
WELL NAME :	MS49D	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	225
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	1.96
WELL DEPTH (ft) :	129.19	PURGE START / END TIME :	1550 / 1624
DEPTH TO WATER (toc):	33.35 DATE: 11.02.11	SAMPLING BEGIN / END TIME :	1627 /
WATER COLUMN HEIGHT (ft):	95.84	PUMP ID # : Rental	YSI ID # : 217003
WELL VOLUME (gal) :	15.62	WATER LEVEL ID # : Renter	

VOLUME CONVERSION FACTOR: (0.163 - 2") 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1554	7.84	11.75	0.499	1.33	8.60	-280.0	213.[illegible]	
2	1558	15.68	11.55	0.458	0.29	8.08	-250.3	127.2	33.50
* 3	1602	23.52	11.50	0.688	0.27	7.53	-166.4	685.6	
4	1606	31.36	11.52	0.739	0.62	7.34	-128.2	57.8	33.51
5	1610	39.20	11.44	0.742	0.38	7.32	-122.1	50.4	
6	1614	47.04	11.43	0.743	0.37	7.31	-119.6	26.7	33.51
7	1618	54.88	11.44	0.744	0.36	7.30	-118.0	3.1	
8	1622	62.72	11.44	0.744	0.30	7.30	-116.1	1.0	
9	1624	70.56	11.42	0.744	0.35	7.30	-119.4	1.0	33.51
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	70.56	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	4.51	
STAB. TEMP (C) :	11.42	
STAB. Sp. CONDUCTIVITY :	0.744	
STAB. D.O. :	0.55	
STAB. pH :	7.30	
STAB. ORP :	-119.4	
STAB. TURBIDITY:	1.0	

SAMPLE TIME : 1627 SAMPLE FIELD FILTERED ? : Yes / No

FIELD BLANK? Yes / No (name/time/comments):

DUPLICATE SAMPLE? Yes / No (name/time/comments):

MS/MSD? Yes / No (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Brown/Clear ODOR : NO/NO

OBSERVATIONS : * Turb Increased after WL Reading

Sample tubing left in well at completion? (Yes or No)

WEATHER DATA : TEMP.: 50°F SKY : Overcast WIND : 0-3mph

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: 1 of 1

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS06S
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-03-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-01

WELL DATA		PURGE DATA	
WELL NAME :	MS06S	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	150
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.4
WELL DEPTH (ft) :	34.55	PURGE START / END TIME :	953 / 1023
DEPTH TO WATER (toc):	19.83 DATE: 11-3-11	SAMPLING BEGIN / END TIME :	1025 / 1027
WATER COLUMN HEIGHT (ft):	14.72	PUMP ID # : 275106	YSI ID # : 217002
WELL VOLUME (gal) :	2.40	WATER LEVEL ID # : 232008	

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	956	1.2	13.65	1.002	0.94	6.41	72.9	70.9	
2	0959	2.4	14.03	1.031	1.23	6.61	95.8	7.0	
3	1002	3.6	14.31	1.027	1.21	6.62	97.3	5.5	
4	1005	4.8	14.33	1.024	1.27	6.62	99.9	3.3	
5	1008	6.0	14.20	1.030	1.28	6.63	101.1	2.7	
6	1011	7.2	14.28	1.024	1.27	6.63	101.5	2.0	20.00
7	1014	8.4	14.25	1.010	1.13	6.64	101.5	7.3	
8	1017	9.6	14.29	1.029	1.33	6.64	99.5	6.1	
9	1020	10.8	14.26	1.027	1.37	6.64	98.5	2.1	19.88
10	1023	12.0	14.27	1.022	1.32	6.64	98.5	1.8	

54

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	12.0	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5	
STAB. TEMP (C) :	14.27	
STAB. Sp. CONDUCTIVITY :	1.022	
STAB. D.O. :	1.32	
STAB. pH :	6.64	
STAB. ORP :	98.5	
STAB. TURBIDITY:	1.8	

SAMPLE TIME : 1025 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes (No) (name/time/comments):

DUPLICATE SAMPLE? Yes (No) (name/time/comments):

MS/MSD? Yes (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear / clear ODOR: None / None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 45°F SKY : clear WIND : 5-10

FIELD SAMPLING DATA SHEET

QC/QA Check _____		Page: 1 of 1	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS34S
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-03-11

SAMPLER :	Ryan Ridley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110311-01

WELL DATA		PURGE DATA	
WELL NAME :	MS-34S	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	144
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.21
WELL DEPTH (ft) :	26.76	PURGE START / END TIME :	1109 / 1138
DEPTH TO WATER (toc):	19.30 DATE: 11-3-11	SAMPLING BEGIN / END TIME :	1140 / 1142
WATER COLUMN HEIGHT (ft):	7.46	PUMP ID # : 275106	YSI ID # : 217002
WELL VOLUME (gal) :	1.22	WATER LEVEL ID # :	230008

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			±0.1	± 5%		± 0.1		≤5	
1	11:11	0.63	17.13	1.245	1.20	6.55	74.5	86.8	
2	11:14	1.26	17.20	1.244	1.12	6.53	71.3	81.9	19.30
3	11:17	1.89	17.43	1.237	0.99	6.52	69.7	76.0	
4	11:20	2.52	17.63	1.230	0.93	6.51	60.7	46.0	
5	11:23	3.15	18.22	1.235	1.07	6.51	46.0	29.3	19.30
6	11:26	3.78	18.17	1.242	1.13	6.51	35.1	23.7	
7	11:29	4.41	17.79	1.244	1.09	6.51	15.8	14.2	19.31
8	11:32	5.04	17.22	1.240	1.08	6.51	-0.3	7.1	
9	11:35	5.67	17.52	1.246	1.14	6.51	-5.1	4.6	
10	11:38	6.30	17.47	1.244	1.10	6.51	-6.5	3.6	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	6.30	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5	
STAB. TEMP (C) :	17.47	
STAB. Sp. CONDUCTIVITY :	1.244	
STAB. D.O. :	1.10	
STAB. pH :	6.51	
STAB. ORP :	-6.5	
STAB. TURBIDITY:	3.6	

SAMPLE TIME : 1140 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: cloudy brown / clear ODOR : none / None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 45°F SKY : clear WIND : 5-10

FIELD SAMPLING DATA SHEET

QC/QA Check _____.		Page: 1 of 1	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS24S
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-03-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-01

WELL DATA		PURGE DATA	
WELL NAME :	MS24S	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	150
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.43
WELL DEPTH (ft) :	36.78	PURGE START / END TIME :	1213 / 1240
DEPTH TO WATER (toc):	21.17 DATE: 11-3-11	SAMPLING BEGIN / END TIME :	1242 / 1244
WATER COLUMN HEIGHT (ft):	15.61	PUMP ID # : 275166	YSI ID # : 217002
WELL VOLUME (gal) :	2.54	WATER LEVEL ID # : 230008	

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1216	1.29	15.08	1.099	0.46	6.64	20.0	51.5	
2	1219	2.58	15.31	1.122	0.45	6.62	26.1	26.3	21.21
3	1222	3.87	15.34	1.129	0.45	6.60	33.5	12.6	
4	1225	5.16	15.35	1.129	0.44	6.60	38.6	8.0	21.16
5	1228	6.45	15.35	1.131	0.46	6.60	41.3	6.3	
6	1231	7.74	15.39	1.132	0.46	6.60	44.2	6.1	21.16
7	1234	9.03	15.40	1.133	0.43	6.60	48.3	4.7	
8	1237	10.32	15.40	1.140	0.47	6.60	50.7	3.3	21.16
9	1240	11.61	15.41	1.136	0.46	6.60	51.7	3.0	
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	11.61	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	4.57	
STAB. TEMP (C) :	15.41	
STAB. Sp. CONDUCTIVITY :	1.136	
STAB. D.O. :	0.46	
STAB. pH :	6.60	
STAB. ORP :	51.7	
STAB. TURBIDITY:	3.0	

SAMPLE TIME : 1247 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? (Yes) / No (name/time/comments): QCT03@ 1255

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: cloudy brown / ODOR : None / None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 47°F SKY : clear WIND : 5-10

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: 1 of 1

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	~~AA~~ US6S10
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-3-11

SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-01

WELL DATA		PURGE DATA	
WELL NAME :	US6S-10	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	PVC	PUMP CONTROLLER SETTINGS:	
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	~~2.83~~ 2.12
WELL DEPTH (ft) :	130.30	PURGE START / END TIME :	1323 /
DEPTH TO WATER (toc):	26.39 DATE: 11-3-11	SAMPLING BEGIN / END TIME :	/
WATER COLUMN HEIGHT (ft):	103.91	PUMP ID # : 275106	YSI ID # : 217002
WELL VOLUME (gal) :	16.94	WATER LEVEL ID # : 230008	

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1327	8.48	14.57	0.661	1.70	7.06	38.1	0.1	27.13
2	1331	16.96	13.65	0.662	0.40	7.02	41.6	0.0	27.18
3	1335	25.44	13.53	0.663	0.21	7.01	42.4	0.0	
4	1339	33.92	13.51	0.663	0.19	7.01	42.5	0.0	27.18
5	1343	42.40	13.49	0.663	0.18	7.00	42.3	0.0	
6	1347	50.88	13.45	0.664	0.17	7.00	42.2	0.0	
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	50.88	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3	
STAB. TEMP (C) :	13.45	
STAB. Sp. CONDUCTIVITY :	0.664	
STAB. D.O. :	0.17	
STAB. pH :	7.00	
STAB. ORP :	42.2	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1349 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear / clear ODOR : None / None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 48°F SKY : Clear WIND : 5-10

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: 1 of 1

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS35S
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-03-11

SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-01

WELL DATA		PURGE DATA	
WELL NAME :	MS35S	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.2
WELL DEPTH (ft) :	26.77	PURGE START / END TIME :	1431 / 1501
DEPTH TO WATER (toc):	19.61 DATE: 11-3-4	SAMPLING BEGIN / END TIME :	1503 / 1505
WATER COLUMN HEIGHT (ft):	7.16	PUMP ID # : 275106	YSI ID # : 277002
WELL VOLUME (gal) :	1.17	WATER LEVEL ID # : 230008	

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1434	0.6	18.10	1.019	4.79	6.24	49.2	82.0	~~19.61~~
2	1437	1.2	18.38	1.016	3.47	6.55	55.5	51.3	19.61
3	1440	1.8	18.60	1.012	2.97	6.70	59.5	42.5	
4	1443	2.4	18.69	1.017	3.08	6.71	60.6	28.5	19.61
5	1446	3.0	18.77	1.023	3.09	6.71	61.6	17.8	
6	1449	3.6	18.77	1.017	2.94	6.71	62.7	10.2	19.61
7	1452	4.2	18.77	1.008	2.81	6.70	64.0	7.9	
8	1455	4.8	18.77	1.007	2.78	6.70	64.9	6.7	19.61
9	1458	5.4	18.82	1.008	2.78	6.69	66.1	5.6	
10	1501	6.0	18.82	1.007	2.74	6.64	67.2	5.1	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	6.0	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5	
STAB. TEMP (C) :	18.82	
STAB. Sp. CONDUCTIVITY :	1.007	
STAB. D.O. :	2.74	
STAB. pH :	6.64	
STAB. ORP :	67.2	
STAB. TURBIDITY:	5.1	

SAMPLE TIME : 1503 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear/brown ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 49°F SKY : Clear WIND : 5-10

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: 1 of 1

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS43D
CITY, STATE, ZIP :	Fridley, MN	DATE:	11.03.11
SAMPLER :	Joe Stabach	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-04

WELL DATA		PURGE DATA	
WELL NAME :	MS43D	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	225
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	2.25
WELL DEPTH (ft) :	112.94	PURGE START / END TIME :	948 / 1018
DEPTH TO WATER (toc):	30.96 DATE: 11.3.11	SAMPLING BEGIN / END TIME :	1021 / 1024
WATER COLUMN HEIGHT (ft):	81.98	PUMP ID # :	Rental / YSI ID # : 217003
WELL VOLUME (gal) :	13.36	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTOR: (0.163 - 2") 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	951	6.75	10.28	0.823	2.35	7.28	-33.8	18.4	31.05
2	954	13.50	10.18	0.833	0.74	7.30	-98.2	12.3	
3	957	20.25	10.59	0.935	0.51	7.23	-112.7	Ø.Ø	
4	1000	27.00	10.60	0.938	0.40	7.23	-125.7	Ø.Ø	31.05
5	1003	33.75	10.58	0.944	0.36	7.24	-133.6	Ø	
6	1006	40.50	10.59	0.946	0.32	7.24	-138.7	Ø	31.05
7	1009	47.25	10.60	0.945	0.28	7.24	-141.8	Ø	
8	1012	54.00	10.57	0.943	0.24	7.24	-143.4	0.6	
9	1015	60.75	10.57	0.942	0.24	7.24	-143.9	Ø.Ø	31.05
10	1018	67.50	10.58	0.944	0.22	7.24	-145.1	Ø	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	67.5	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5	
STAB. TEMP (C) :	10.58	
STAB. Sp. CONDUCTIVITY :	0.944	
STAB. D.O. :	0.22	
STAB. pH :	7.24	
STAB. ORP :	-145.1	
STAB. TURBIDITY:	Ø	

SAMPLE TIME : 1021 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Gray / CR ODOR : NO - NO

OBSERVATIONS : Went to Suv P/C waiting on Sample bottles that were not loaded in the morning when I was calibrating Both YSI's

Sample tubing left in well at completion? (Yes or (No))

WEATHER DATA : TEMP.: 40 SKY : CLR WIND : Ø - 5

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: 1 of 1

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS51I
CITY, STATE, ZIP :	Fridley, MN	DATE:	11.03.11
SAMPLER :	Joe Stalock	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-04

WELL DATA		PURGE DATA	
WELL NAME :	MS51I	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	175
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	1.18
WELL DEPTH (ft) :	76.94	PURGE START / END TIME :	1050 / ~~1112~~ 1108
DEPTH TO WATER (toc):	33.52 DATE: 11.03.11	SAMPLING BEGIN / END TIME :	1111 / 1114
WATER COLUMN HEIGHT (ft):	43.42	PUMP ID # :	Rental / YSI ID # : 917003
WELL VOLUME (gal) :	7.07	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1053	3.54	11.31	0.578	2.38	7.03	-150.7	3.50	33.55
2	1056	7.08	11.24	0.680	1.25	7.23	-108.6	4.0	34.45
3	1059	10.62	11.25	0.725	1.17	7.25	-100.0	5.8	34.45
4	1102	14.16	11.31	0.729	0.61	7.27	-89.5	Ø	34.45
5	1105	17.70	11.32	0.730	0.50	7.27	-87.3	Ø	
6	1108	21.24	11.31	0.731	0.34	7.28	-85.2	Ø	34.45
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	21.24	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3	
STAB. TEMP (C) :	11.31	
STAB. Sp. CONDUCTIVITY :	0.731	
STAB. D.O. :	0.34	
STAB. pH :	7.28	
STAB. ORP :	-85.2	
STAB. TURBIDITY:	Ø	

SAMPLE TIME : 1111 SAMPLE FIELD FILTERED ? : Yes / No

FIELD BLANK? Yes / No (name/time/comments):

DUPLICATE SAMPLE? Yes / No (name/time/comments):

MS/MSD? Yes / No (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Gray / Clear ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or No):

WEATHER DATA : TEMP.: 45°F SKY : Clear WIND : 0-3 mph

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: 1 of ~~3~~ 4

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS07D
CITY, STATE, ZIP :	Fridley, MN	DATE:	11.03.11
SAMPLER :	Joe Kalocin	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-04

WELL DATA		PURGE DATA	
WELL NAME :	MS07D	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	~~189~~ ~~1.20~~
WELL DIAMETER (in) :	4	PURGE RATE (gpm) :	~~3.70~~ 1.85 - 1.20 - 0.84 - 0.94
WELL DEPTH (ft) :	117.46	PURGE START / END TIME :	1143 /
DEPTH TO WATER (toc):	32.~~34~~ DATE: 11.03.11	SAMPLING BEGIN / END TIME :	/
WATER COLUMN HEIGHT (ft):	85.08	PUMP ID # : Rental	YSI ID # : 217003
WELL VOLUME (gal) :	55.55	WATER LEVEL ID # :	230007

15 min w/

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1148	9.25	11.41	0.794	1.99	7.69	-104.3	Ø	35.20
2	1153	15.25	11.30	0.793	0.18	7.79	-141.2	Ø	34.60
3	1158	19.45	11.25	0.793	0.16	7.79	-148.7	Ø	33.82
4	1203	23.65	11.25	0.793	0.16	7.76	-150.1	Ø	33.88
5	1208	27.85	11.22	0.838	0.14	7.59	-166.1	34.8	~~34.01~~ 33.33
6	1213	32.55	11.19	0.860	0.14	7.42	-161.4	21.7	34.02
7	1218	36.25	11.17	0.870	0.14	7.31	-162.1	14.0	34.02
8	1223	40.95	11.20	0.876	0.13	7.21	-160.3	8.0	34.02
9	1228	49.65	11.20	0.888	0.14	7.16	-159.5	4.0	34.02
10	1233	54.35	11.21	0.887	0.14	7.06	-160.6	1.6	

adjusting Rate

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	167.5	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.0	
STAB. TEMP (C) :	11.02	
STAB. Sp. CONDUCTIVITY :	0.93	
STAB. D.O. :	0.12	
STAB. pH :	7.26	
STAB. ORP :	-151.6	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Clr / Clr ODOR: None - None

OBSERVATIONS : This well can recharge w/in 2 ft @ 1 gal per min

* Turb Spike Likely b/c of frequent gauging

Sample tubing left in well at completion? (Yes or No):

WEATHER DATA : TEMP.: 52 SKY : Clr WIND : 0-5

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS07D
CITY, STATE, ZIP :	Fridley, MN	DATE:	11.03.11
SAMPLER :	Joe Stalock	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-04

WELL DATA		PURGE DATA	
WELL NAME :	MS07D	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	170
WELL DIAMETER (in) :	4	PURGE RATE (gpm) :	0.94
WELL DEPTH (ft) :	117.46	PURGE START / END TIME :	1143 /
DEPTH TO WATER (toc):	32.38 DATE: 11.03.11	SAMPLING BEGIN / END TIME :	/
WATER COLUMN HEIGHT (ft):	85.08	PUMP ID # : Rental	YSI ID # : 217003
WELL VOLUME (gal) :	55.55	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" (0.653 - 4") 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1238	59.05	11.20	0.898	0.14	7.04	-160.2	0.8	
2	1243	63.75	11.18	0.893	0.14	6.99	-158.2	0.3	34.02
3	1248	68.45	11.17	0.896	0.14	6.93	-156.5	Ø	
4	1253	73.15	11.17	0.899	0.14	6.87	-156.3	Ø	34.02
5	1258	77.85	11.10	0.905	0.15	6.74	-153.4	Ø	
6	1303	82.55	11.07	0.905	0.14	6.72	-151.3	Ø	34.02
7	1308	87.25	11.06	0.908	0.13	6.73	-151.8	Ø	
8	1313	91.95	11.03	0.912	0.13	6.81	-151.3	Ø	34.02
9	1318	96.65	11.04	0.913	0.12	6.87	-151.6	0.7	
10	1323	101.35	11.04	0.915	0.12	6.94	-152.5	0.6	34.02

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	167.15	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.0	
STAB. TEMP (C) :	11.02	
STAB. Sp. CONDUCTIVITY :	0.93	
STAB. D.O. :	0.12	
STAB. pH :	7.26	
STAB. ORP :	-151.6	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Grey Clear ODOR: NO

OBSERVATIONS : * Put YSI Purge Directly into tank

Sample tubing left in well at completion? (Yes or (No))

WEATHER DATA : TEMP.: 45 SKY : CLR WIND : Ø-5

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: 3 of 4

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS07D
CITY, STATE, ZIP :	Fridley, MN	DATE:	11.03.11
SAMPLER :	Joe Stalberg	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-041

WELL DATA		PURGE DATA	
WELL NAME :	MS07D	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	170
WELL DIAMETER (in) :	4	PURGE RATE (gpm) :	0.94
WELL DEPTH (ft) :	117.46	PURGE START / END TIME :	1143 /
DEPTH TO WATER (toc):	32.38 DATE: 11.03.11	SAMPLING BEGIN / END TIME :	/
WATER COLUMN HEIGHT (ft):	85.08	PUMP ID # : Rental	YSI ID # : 217003
WELL VOLUME (gal) :	55.55	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1328	106.05	11.05	0.917	0.11	7.01	-153.7	Ø	34.02
2	1333	110.75	11.04	0.920	0.11	7.07	-155.1	Ø	
3	1338	115.45	11.04	0.922	0.12	7.12	-155.6	Ø	
4	1343	120.15	11.02	0.923	0.11	7.14	-154.6	Ø	
5	1348	124.85	11.03	0.925	0.12	7.17	-155.8	Ø	34.02
6	1353	129.55	11.03	0.926	0.12	7.19	-155.4	Ø	
7	1358	134.25	11.04	0.928	0.11	7.21	-156.0	Ø	
8	1403	138.95	11.03	0.929	0.11	7.22	-156.0	Ø	34.02
9	1408	143.65	11.03	0.930	0.11	7.23	-156.2	Ø	
10	1413	148.35	11.03	0.931	0.11	7.24	-156.6	Ø	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	167.15	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.0	
STAB. TEMP (C) :	11.02	
STAB. Sp. CONDUCTIVITY :	0.933	
STAB. D.O. :	0.12	
STAB. pH :	7.26	
STAB. ORP :	-159.6	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes (No) (name/time/comments):

DUPLICATE SAMPLE? Yes (No) (name/time/comments):

MS/MSD? Yes (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Grey / clear ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 45 SKY : CLR WIND : Ø-5

162.45

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: 4 of 4

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS07D
CITY, STATE, ZIP :	Fridley, MN	DATE:	11.03.11
SAMPLER :	Joe Stulock	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	11.0111-021

WELL DATA		PURGE DATA	
WELL NAME :	MS07D	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	170
WELL DIAMETER (in) :	4	PURGE RATE (gpm) :	0.94
WELL DEPTH (ft) :	117.46	PURGE START / END TIME :	1143 / 1428
DEPTH TO WATER (toc):	32.38 DATE:	SAMPLING BEGIN / END TIME :	~~1428~~ / 1431 - 1434
WATER COLUMN HEIGHT (ft):	85.08	PUMP ID # : Rental	YSI ID # : 217003
WELL VOLUME (gal) :	55.55	WATER LEVEL ID # :	230087

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" (0.653 - 4") 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1418	153.05	11.02	0.931	0.11	7.25	-157.1	Ø	
2	1423	157.75	11.01	0.932	0.11	7.26	-158.2	Ø	
3	1428	167.15	11.02	0.933	0.12	7.26	-157.6	Ø	34.02
4									
5									
6									
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	167.15	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.0	
STAB. TEMP (C) :	11.02	
STAB. Sp. CONDUCTIVITY :	0.933	
STAB. D.O. :	0.12	
STAB. pH :	7.26	
STAB. ORP :	-151.6	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1431 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Grey/Clear ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No))

WEATHER DATA : TEMP.: 45 SKY : CLR WIND : 0-5

FIELD SAMPLING DATA SHEET

QC/QA Check _____

Page: 1 of 1

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS15D
CITY, STATE, ZIP :	Fridley, MN	DATE:	11.03.11
SAMPLER :	Joe Sykalocy	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-04

WELL DATA		PURGE DATA	
WELL NAME :	MS15D	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	270.0
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	2.98
WELL DEPTH (ft) :	137.84	PURGE START / END TIME :	1600 / 1618
DEPTH TO WATER (toc):	28.33 DATE: 11.03.11	SAMPLING BEGIN / END TIME :	1621 / 1624
WATER COLUMN HEIGHT (ft):	109.51	PUMP ID # : Rental	YSI ID # : 217003
WELL VOLUME (gal) :	17.85	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1603	8.94	11.96	0.361	0.64	8.10	-147.4	50.8	28.91
2	1606	17.88	11.95	0.367	0.33	8.20	-97.8	76.7	29.95
3	1609	26.83	11.82	0.834	0.19	7.20	-108.1	Ø	29.95
4	1612	35.76	11.80	0.836	0.17	7.14	-101.8	Ø	
5	1615	44.70	11.79	0.836	0.16	7.12	-98.4	Ø	29.95
6	1618	53.64	11.78	0.836	0.15	7.11	-96.7	Ø	
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	53.64	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.0	
STAB. TEMP (C) :	11.78	
STAB. Sp. CONDUCTIVITY :	0.836	
STAB. D.O. :	0.15	
STAB. pH :	7.11	
STAB. ORP :	-96.7	
STAB. TURBIDITY:	Ø	

SAMPLE TIME : 1621 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? (Yes) / No (name/time/comments): QCR03 @ 1655

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Clear / clear ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 58 SKY : CLR WIND : Ø-3

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: 1 of 1

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS44D
CITY, STATE, ZIP :	Fridley, MN	DATE:	11.03.11
SAMPLER :	Joe Stalock	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111 -04

WELL DATA		PURGE DATA	
WELL NAME :	MS44D	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	235
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	2.50
WELL DEPTH (ft) :	119.87	PURGE START / END TIME :	1458 / 1522
DEPTH TO WATER (toc):	27.79 DATE: 11.03.11	SAMPLING BEGIN / END TIME :	1525 /
WATER COLUMN HEIGHT (ft):	92.08	PUMP ID # : Rental	YSI ID # : 217023
WELL VOLUME (gal) :	15.00	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTOR: (0.163 - 2") 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1501	7.50	11.41	0.510	3.28	8.49	-279.6	15.8	28.22
2	1504	15.00	11.48	0.820	0.60	7.40	-156.1	Ø	28.21
3	1507	22.50	11.43	0.920	0.49	7.36	-152.7	Ø	28.22
4	1510	30.00	11.52	0.927	0.47	7.28	-144.4	Ø	
5	1513	37.80	11.54	0.931	0.64	7.25	-140.0	Ø	
6	1516	45.60	11.25	0.940	0.36	7.20	-139.8	0.3	28.22
7	1519	53.40	11.26	0.940	0.32	7.19	-139.7	Ø	
8	1522	60.90	11.30	0.941	0.25	7.17	-137.9	Ø	
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	60.90	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	4.06	
STAB. TEMP (C) :	11.30	
STAB. Sp. CONDUCTIVITY :	0.941	
STAB. D.O. :	0.25	
STAB. pH :	7.17	
STAB. ORP :	-137.9	
STAB. TURBIDITY:	Ø	

SAMPLE TIME : 1525 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: grey/clear ODOR : Solvent?

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No))

WEATHER DATA : TEMP.: 54 SKY : CLR WIND : 0-5

FIELD SAMPLING DATA SHEET

QC/QA Check _____

Page: 1 of 5

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS09D
CITY, STATE, ZIP :	Fridley, MN	DATE:	11.04.11
SAMPLER :	Joe Stalock	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	11011-05

WELL DATA		PURGE DATA	
WELL NAME :	MS09D	PURGE METHOD : Grundfos Pump	340
CASING MATERIAL :		PUMP CONTROLLER SETTINGS:	3.60 → 1.70 → 1.40
WELL DIAMETER (in) :	4	PURGE RATE (gpm) :	3.90 → 1.7 → 1.7 → 0.50
WELL DEPTH (ft) :	123.82	PURGE START / END TIME :	957 / 1242
DEPTH TO WATER (toc):	34.17 DATE: 11.04.11	SAMPLING BEGIN / END TIME :	1245 / 1248
WATER COLUMN HEIGHT (ft):	89.65	PUMP ID # : Rental	YSI ID # : 217003
WELL VOLUME (gal) :	58.54	WATER LEVEL ID # :	230007

WV f=15

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1002	~~12.5~~ 195	12.55	0.774	0.46	7.68	106.9	15.8	36.70
2	1007	22.00	11.87	0.775	0.32	7.76	-149.4	15.7	36.35
3	1012	24.50	—	—	—	—	—	—	—
4	1017	27.00	11.87	0.774	0.30	7.78	-153.8	16.1	~~37.23~~ 36.35
5	1022	29.50	11.18	0.773	0.30	7.79	-169.9		
6	1027	32.0	12.02	0.774	0.29	7.80	-188.9	0.6	37.28
7	1032	34.5	12.00	0.773	0.26	7.80	-191.5	1.2	36.96
8	1037	37.0	12.20	0.773	0.27	7.80	-184.9	1.7	
9	1042	39.5	11.98	0.773	0.59	7.80	-181.9	2.5	36.43
10	1047	42.0	12.01	0.773	0.27	7.79	-193.8	2.6	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	212.5	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.62	
STAB. TEMP (C) :	11.45	
STAB. Sp. CONDUCTIVITY :	0.762	
STAB. D.O. :	0.29	
STAB. pH :	6.44	
STAB. ORP :	-66.6	
STAB. TURBIDITY:	Ø	

SAMPLE TIME : 1245 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? (Yes) / No (name/time/comments): ~~QCDUP @~~ Not taken b/c well sampled off & with Alteration to SOP

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: CLR-CLR ODOR : None

OBSERVATIONS : Adjust Flow Rate + Attempt higher Rate (160 HZ) ↑ (140 HZ)

Final WL Drop of 9.18 feet pumping @ 2.gpm

Pump Set 25 Ft below Static WL

Sample tubing left in well at completion? (Yes or (No))

WEATHER DATA : TEMP.: SKY : WIND :

FIELD SAMPLING DATA SHEET

4

QC/QA Check _____.

Page: 2 of 3

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS09D
CITY, STATE, ZIP :	Fridley, MN	DATE:	11.04.11
SAMPLER :	Joe Stalach	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-05

WELL DATA		PURGE DATA	
WELL NAME :	MS09D	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	140 — 218
WELL DIAMETER (in) :	4	PURGE RATE (gpm) :	0.5 — 2gpm
WELL DEPTH (ft) :	123.82	PURGE START / END TIME :	957 / 1242
DEPTH TO WATER (toc):	34.17 DATE: 11.04.11	SAMPLING BEGIN / END TIME :	1245 / 1248
WATER COLUMN HEIGHT (ft):	89.65	PUMP ID # : Rental	YSI ID # : 217003
WELL VOLUME (gal) :	56.54	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" (0.653 - 4") 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1052	44.50	12.03	0.773	0.23	7.78	-172.9	1.8	36.35
2	1057	47.00	11.91	0.772	0.22	7.75	-194.7	2.2	
3	1102	49.50	11.89	0.771	0.20	7.73	-193.0	2.2	
4	1107	52.00	12.05	0.773	0.20	7.70	-190.0	2.0	36.10
5	1112	54.50	12.35	0.773	0.69	7.67	-173.3	1.8	
6	1117	57.00	11.91	0.773	0.53	7.59	-150.8	0.2	
7	1122	59.50	11.39	0.774	0.36	7.50	-137.3	0	40.15
8	1127	~~62.00~~	11.37	0.773	0.24	7.42	-115.3	0	41.28
9	1132	~~64.50~~	11.31	0.773	0.22	7.33	-96.3	Ø	41.67
10	1137	~~67.00~~	11.30	0.773	0.22	7.25	-84.4	Ø	~~41.86~~ 42.13

~~69.50~~ 79.50 89.50

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	213.5	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.62	
STAB. TEMP (C) :	11.45	
STAB. Sp. CONDUCTIVITY :	0.762	
STAB. D.O. :	0.29	
STAB. pH :	6.44	
STAB. ORP :	-66.6	
STAB. TURBIDITY:	Ø	

SAMPLE TIME : 1245 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes (No) name/time/comments):

DUPLICATE SAMPLE? Yes (No) name/time/comments): ~~QCD04~~

MS/MSD? Yes (No) name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: ODOR :

OBSERVATIONS : * Given Okay to Purge Faster Pump dropped 20 ft total of 25 ft Below WT

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: SKY : WIND :

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: ~~3~~ 4 of ~~3~~ 4

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS09D
CITY, STATE, ZIP :	Fridley, MN	DATE:	11.04.11

SAMPLER :	Joe Stalock	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	11011-05

WELL DATA		PURGE DATA	
WELL NAME :	MS04 D	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	218
WELL DIAMETER (in) :	4	PURGE RATE (gpm) :	~ 2 gpm
WELL DEPTH (ft) :	123.82	PURGE START / END TIME :	957 / 1242
DEPTH TO WATER (toc):	34.17 DATE: 11.04.11	SAMPLING BEGIN / END TIME :	1245 / 1248
WATER COLUMN HEIGHT (ft):	89.65	PUMP ID # : Rental	YSI ID # : 217003
WELL VOLUME (gal) :	58.54	WATER LEVEL ID # :	232007

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1142	99.50	11.23	0.773	0.22	7.20	-80.1	Ø	43.26
2	1147	109.50	11.30	0.771	0.22	7.18	-77.3	Ø	43.34
3	1152	119.50	11.30	0.771	0.23	7.17	-74.7	0	43.35
4	1157	129.50	11.31	0.769	0.24	7.13	-71.3	Ø	43.35
5	1202	139.50	11.34	0.769	0.24	7.08	-69.8	Ø	43.35
6	1207	149.50	11.38	0.767	0.25	7.01	-66.0	Ø	
7	1212	154.50	11.38	0.767	0.26	6.90	-62.6	Ø	43.35
8	1217	169.50	11.40	0.766	0.26	6.80	-58.0	Ø	43.30
9	1222	179.50	11.40	0.765	0.27	6.60	-57.1	Ø	43.30
10	1227	189.50	11.41	0.765	0.28	6.60	-58.1	Ø	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	212.5	VOC: 6 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.62	
STAB. TEMP (C) :	11.45	
STAB. Sp. CONDUCTIVITY :	0.762	
STAB. D.O. :	0.29	
STAB. pH :	6.44	
STAB. ORP :	-66.6	
STAB. TURBIDITY:	Ø	

SAMPLE TIME : 1245 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? (Yes) / (No) (name/time/comments): ~~MSD04 @~~ → Not taken

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: ODOR :

OBSERVATIONS :

WL Drop of 9.18 Feet and Stable Pumping 2gpm
Pump Set 25 Feet Below Static

Sample tubing left in well at completion? (Yes or (No)).

WEATHER DATA : TEMP.: 47 SKY : CLR WIND : Ø - 8 mph

175.62

FIELD SAMPLING DATA SHEET

QC/QA Check _____		Page: 4 of 4	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS09D
CITY, STATE, ZIP :	Fridley, MN	DATE:	11.04.11

SAMPLER :	Joe Stalock	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	~~110~~ 110111-05

WELL DATA		PURGE DATA	
WELL NAME :	MS09D	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	218
WELL DIAMETER (in) :	4	PURGE RATE (gpm) :	2.00
WELL DEPTH (ft) :	123.32	PURGE START / END TIME :	957 / 1242
DEPTH TO WATER (toc):	DATE: 11.04.11	SAMPLING BEGIN / END TIME :	1245 / 1248
WATER COLUMN HEIGHT (ft):	89.65	PUMP ID # : Rental	YSI ID # : 217009
WELL VOLUME (gal) :	58.54	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" (0.653 - 4") 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
+ 1	1232	197.00	11.40	0.764	0.28	6.49	-57.5	Ø	
2	1237	209.50	11.48	0.763	0.28	6.45	-61.4	Ø	91.50
3	1242	218.50	11.45	0.762	0.29	6.44	-66.6	Ø	
4									
5									
6									
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	218.50	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.62	
STAB. TEMP (C) :	11.45	
STAB. Sp. CONDUCTIVITY :	0.762	
STAB. D.O. :	0.29	
STAB. pH :	6.44	
STAB. ORP :	-66.6	
STAB. TURBIDITY:	Ø	

SAMPLE TIME : 1245 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: ODOR :

OBSERVATIONS : Reduce Rate to 1.5 gpm @ 1232

Sample tubing left in well at completion? (Yes or (No))

WEATHER DATA : TEMP.: 47 SKY : Clr WIND : Ø-5

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: 1 of

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS49I
CITY, STATE, ZIP :	Fridley, MN	DATE:	11.04.11

SAMPLER :	JoeStalock	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	

WELL DATA		PURGE DATA	
WELL NAME :	MS49I	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	1.43
WELL DEPTH (ft) :	86.75	PURGE START / END TIME :	1350 / 1420
DEPTH TO WATER (toc):	34.48 DATE: 11.04.11	SAMPLING BEGIN / END TIME :	1423 / 1425
WATER COLUMN HEIGHT (ft):	52.27	PUMP ID # : Rented	YSI ID # : 217003
WELL VOLUME (gal) :	8.52	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTOR: (0.163 - 2") 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1353	4.29	11.78	0.755	0.80	7.14	-119.7		34.75
2	1356	8.58	11.95	0.818	0.33	6.97	-100.3	223.7	
3	1359	12.87	11.76	0.837	0.25	6.90	-82.4	73.7	
4	1402	17.16	11.75	0.838	0.22	6.87	-82.7	33.2	3.75
5	1405	21.45	11.78	0.842	0.20	6.86	-81.8	38.5	
6	1408	25.74	11.82	0.843	0.19	6.86	-80.4	39.4	
7	1411	30.03	11.83	0.843	0.19	6.86	-84.2	42.2	
8	1414	34.32	11.83	0.845	0.23	6.87	-78.9	20.6	3.75
9	1417	38.61	11.83	0.845	0.19	6.87	-79.3	27.7	
10	1420	42.90	11.85	0.845	0.18	6.87	-80.0	17.2	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	42.90	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5.03	
STAB. TEMP (C) :	11.85	* well not Stable
STAB. Sp. CONDUCTIVITY :	0.845	
STAB. D.O. :	0.18	
STAB. pH :	6.87	Turb
STAB. ORP :	-80.0	
STAB. TURBIDITY:	17.2	

SAMPLE TIME : 1423 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / No (name/time/comments):

DUPLICATE SAMPLE? (Yes) / No (name/time/comments): QCD04 @

MS/MSD? Yes / No (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: ODOR :

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or No):

WEATHER DATA : TEMP.: SKY : WIND :

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: 1 of 3

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS17D
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-04-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-065

WELL DATA		PURGE DATA	
WELL NAME :	MS17D	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	184
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	~~1.24~~ 0.34
WELL DEPTH (ft) :	105.00	PURGE START / END TIME :	1206 / ~~12~~ 1411
DEPTH TO WATER (toc):	25.98 DATE: 11-4-11	SAMPLING BEGIN / END TIME :	1413 / 1415
WATER COLUMN HEIGHT (ft):	79.02	PUMP ID # :	275106 / YSI ID # : 217002
WELL VOLUME (gal) :	12.88	WATER LEVEL ID # :	230008

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1211	1.0	14.27	1.006	0.27	7.48	-257.1	21.7	
2	1216	2.1	14.50	1.025	0.25	7.50	-258.9	21.6	29.84
3	1221	3.7	14.37	1.450	0.24	7.17	-237.2	16.1	
4	1226	5.3	14.12	1.690	0.23	6.89	-180.5	4.1	
5	1231	7.0	14.14	1.700	0.24	6.83	-179.6	4.9	32.17
6	1236	8.7	14.16	1.712	0.23	6.28	-173.8	6.0	
7	1241	10.4	14.19	1.717	0.23	6.80	-173.8	9.6	32.15
8	1246	1	14.16	1.717	0.23	6.80	-174.1	7.6	
9	1251	13.5	14.17	1.721	0.23	6.80	-174.1	7.2	
10	1256	~~16.5~~	14.19	1.716	0.23	6.80	-174.2	4.8	32.04

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	34.0	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.03	
STAB. TEMP (C) :	14.16	
STAB. Sp. CONDUCTIVITY :	1.660	
STAB. D.O. :	0.24	
STAB. pH :	6.80	
STAB. ORP :	172.4	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1413 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments): QCROU @ 1505

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: cloudy brown / clear ODOR : none / none

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 48°F SKY : Clear WIND : 20 from S

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS17D
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-04-11

SAMPLER :		ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-085

WELL DATA		PURGE DATA	
WELL NAME :	MS17D	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	184
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	6.34
WELL DEPTH (ft) :	105.00	PURGE START / END TIME :	1206 / 1411
DEPTH TO WATER (toc):	25.98 DATE: 11-4-11	SAMPLING BEGIN / END TIME :	1413 / 1415
WATER COLUMN HEIGHT (ft):	79.02	PUMP ID # :	275106 YSI ID # : 217002
WELL VOLUME (gal) :	12.88	WATER LEVEL ID # :	230008

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1301	16.5	14.22	1.720	0.24	6.79	-174.3	4.9	
2	1306	17.1	14.19	1.719	0.24	6.79	-174.6	3.5	
3	1311	19.7	14.18	1.722	0.24	6.79	-174.5	3.1	32.15
4	1316	21.5	14.21	1.713	0.24	6.79	-174.5	2.8	
5	1321	23.0	14.21	1.712	0.24	6.79	-174.4	2.1	32.14
6	1326	24.6	14.20	1.708	0.24	6.79	-174.1	2.6	
7	1331	26.1	14.23	1.702	0.25	6.80	-173.8	1.8	32.14
8	1336	27.9	14.22	1.691	0.25	6.80	-174.2	1.3	
9	1341	29.3	14.22	1.687	0.25	6.79	-174.0	0.9	32.14
10	1346	31.0	14.22	1.680	0.2	6.79	-162.3	0.5	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	29.0	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.03	
STAB. TEMP (C) :	14.16	
STAB. Sp. CONDUCTIVITY :	1.660	
STAB. D.O. :	0.24	
STAB. pH :	6.80	
STAB. ORP :	-172.4	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1413 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments): QCR04 @

DUPLICATE SAMPLE? Yes / No (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: cloudy brown / clear ODOR: None / None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 48°F SKY : clear WIND : 20 from S

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: 3 of

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS17D
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-04-11

SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-05

WELL DATA		PURGE DATA	
WELL NAME :	MS17D	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	184
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.34
WELL DEPTH (ft) :	105.00	PURGE START / END TIME :	1406 / 1411
DEPTH TO WATER (toc):	25.98 DATE: 11-4-11	SAMPLING BEGIN / END TIME :	1413 / 1415
WATER COLUMN HEIGHT (ft):	79.02	PUMP ID # :	275106 YSI ID # : 217002
WELL VOLUME (gal) :	12.08	WATER LEVEL ID # :	230008

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1351	32.7	14.23	1.674	0.27	6.79	-168.0	0.3	
2	1356	34.2	14.23	1.671	0.27	6.80	-169.4	0.2	32.14
3	1401	35.8	14.24	1.665	0.26	6.79	-170.8	0.2	
4	1406	37.3	14.25	1.663	0.26	6.80	-171.7	0.0	32.14
5	1411	39.0	14.16	1.660	0.26	6.80	-172.4	0.0	
6	~~1416~~								
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	39.0	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.03	
STAB. TEMP (C) :	14.16	
STAB. Sp. CONDUCTIVITY :	1.660	
STAB. D.O. :	0.26	
STAB. pH :	6.80	
STAB. ORP :	-172.4	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1413 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? (Yes) / No (name/time/comments): QCR04 @

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: cloudy brown / clear ODOR : None / None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 48°F SKY : clear WIND : 20 S

FIELD SAMPLING DATA SHEET

QC/QA Check _____

Page: 1 of 3

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS01PC
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-7-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-07

WELL DATA		PURGE DATA	
WELL NAME :	MS01PC	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	400
WELL DIAMETER (in) :	4	PURGE RATE (gpm) :	~~3.55~~ 2.6
WELL DEPTH (ft) :	207.92	PURGE START / END TIME :	1016 / 1148
DEPTH TO WATER (toc):	17.83 DATE: 11-7-11	SAMPLING BEGIN / END TIME :	1243 / 1245
WATER COLUMN HEIGHT (ft):	190.09	PUMP ID # : 275603	YSI ID # : 217002
WELL VOLUME (gal) :	124.13	WATER LEVEL ID # : 230008	

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1021	13.0	11.41	0.845	3.25	7.07	13.0	8.9	17.93
2	1026	26	11.33	0.847	2.47	6.88	-37.4	10.4	
3	1031	39	11.17	0.853	1.54	6.88	-77.2	9.2	17.94
4	1036	52	11.08	0.854	1.20	6.93	-84.9	4.2	
5	1041	65	11.08	0.853	0.67	6.99	-93.9	0.0	17.94
6	1046	78	11.10	0.853	0.38	7.02	-97.8	0.0	
7	1051	91	11.07	0.876	0.25	7.03	-96.5	0.0	17.94
8	1056	104	11.05	0.907	0.22	7.04	-89.3	0.0	
9	1101	117	11.02	0.921	0.20	7.05	-83.7	0.0	17.94
10	1106	130	11.09	0.932	0.19	7.05	-77.0	0.0	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	377	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.03	
STAB. TEMP (C) :	11.14	
STAB. Sp. CONDUCTIVITY :	0.954	
STAB. D.O. :	0.19	
STAB. pH :	7.08	
STAB. ORP :	-50.6	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear / clear ODOR : None / None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 40°F SKY : clear WIND : 5-10

FIELD SAMPLING DATA SHEET

QC/QA Check _____

Page: 2 of 3

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS01PC
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-7-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-07

WELL DATA		PURGE DATA	
WELL NAME :	MS01PC	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	400
WELL DIAMETER (in) :	4	PURGE RATE (gpm) :	2.6
WELL DEPTH (ft) :	207.92	PURGE START / END TIME :	1016 / 1241
DEPTH TO WATER (toc):	17.83 DATE: 11-7-11	SAMPLING BEGIN / END TIME :	1243 / 1245
WATER COLUMN HEIGHT (ft):	190.09	PUMP ID # : 275106	YSI ID # : 217002
WELL VOLUME (gal) :	124-13	WATER LEVEL ID # :	230008

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1111	143	11.08	0.936	0.18	7.06	-73.0	0.0	17.94
2	1116	156	10.99	0.940	0.18	7.06	-69.4	0.0	
3	1121	169	11.02	0.940	0.18	7.06	-68.0	0.0	17.94
4	1126	182	11.04	0.943	0.18	7.07	-65.3	0.0	
5	1131	195	11.05	0.944	0.18	7.07	-63.2	0.0	17.94
6	1136	208	11.07	0.946	0.17	7.07	-60.4	0.0	
7	1141	221	11.09	0.948	0.17	7.07	-59.1	0.0	17.94
8	1146	234	11.10	0.949	0.17	7.07	-57.9	0.0	
9	1151	247	11.11	0.950	0.18	7.07	-57.2	0.0	17.94
10	1156	260	11.11	0.950	0.18	7.07	-57.3	0.0	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	377	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.03	
STAB. TEMP (C) :	11.14	
STAB. Sp. CONDUCTIVITY :	0.954	
STAB. D.O. :	0.19	
STAB. pH :	7.08	
STAB. ORP :	-50.6	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : SAMPLE FIELD FILTERED ? : Yes / No

FIELD BLANK? Yes / No (name/time/comments):

DUPLICATE SAMPLE? Yes / No (name/time/comments):

MS/MSD? Yes / No (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear / clear ODOR : None / None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or No):

WEATHER DATA : TEMP.: 45°F SKY : clear WIND : 5-10

FIELD SAMPLING DATA SHEET

QC/QA Check _____

Page: 3 of 3

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS01PC
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-7-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-07

WELL DATA		PURGE DATA	
WELL NAME :	MS01PC	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	400
WELL DIAMETER (in) :	4	PURGE RATE (gpm) :	2.6
WELL DEPTH (ft) :	207.92	PURGE START / END TIME :	1016 / 1241
DEPTH TO WATER (toc):	17.83 DATE: 11-7-11	SAMPLING BEGIN / END TIME :	1243 / 1245
WATER COLUMN HEIGHT (ft):	190.09	PUMP ID # : 275 106	YSI ID # : 217002
WELL VOLUME (gal) :	124.13	WATER LEVEL ID # :	230009

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1201	273	11.13	0.951	0.18	7.08	-57.5	0.0	
2	1206	286	11.13	0.952	0.18	7.07	-57.2	0.0	17.94
3	1211	299	11.11	0.952	0.20	7.07	-56.2	0.0	
4	1216	312	11.11	0.953	0.19	7.08	-55.6	0.0	17.94
5	1221	325	11.10	0.953	0.18	7.08	-55.2	0.0	
6	1226	338	11.11	0.953	0.18	7.08	-54.3	0.0	17.94
7	1231	351	11.09	0.954	0.18	7.08	-52.6	0.0	
8	1236	364	11.09	0.954	0.19	7.08	-51.8	0.0	17.94
9	1241	377	11.14	0.954	0.19	7.08	-50.6	0.0	
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	377	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.03	
STAB. TEMP (C) :	11.14	
STAB. Sp. CONDUCTIVITY :	0.954	
STAB. D.O. :	0.19	
STAB. pH :	7.08	
STAB. ORP :	-50.6	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1243 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear / clear ODOR : None / None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 41°F SKY : clear WIND : 5-10

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: of 2

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS04PC
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-07-11
SAMPLER :	Ryan Bebey	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-07

WELL DATA		PURGE DATA	
WELL NAME :	MS04PC	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	400
WELL DIAMETER (in) :	4	PURGE RATE (gpm) :	2.6
WELL DEPTH (ft) :	182.71	PURGE START / END TIME :	1330 / 1540
DEPTH TO WATER (toc):	15.86 DATE: 11-7-11	SAMPLING BEGIN / END TIME :	1547 / 1549
WATER COLUMN HEIGHT (ft):	166.85	PUMP ID # : 275106	YSI ID # : 217002
WELL VOLUME (gal) :	108.63	WATER LEVEL ID # :	230008

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1335	13	12.60	0.676	0.76	8.07	-227.6	3.2	15.99
2	1340	26	12.13	0.876	0.31	7.50	-183.9	1.0	
3	1345	39	12.05	0.879	0.31	7.46	-183.7	0.4	15.99
4	1350	52	11.62	0.886	0.23	7.38	-188.3	0.0	
5	1355	65	11.53	0.890	0.22	7.35	-186.8	0.0	16.00
6	1400	78	11.52	0.898	0.20	7.32	-172.9	0.5	
7	1405	91	11.47	0.923	0.20	7.26	-153.9	0.9	16.02
8	1410	104	11.42	0.939	0.20	7.21	-137.9	0.1	
9	1415	117	11.38	0.948	0.20	7.18	-128.2	0.0	16.06
10	1420	130	11.37	0.952	0.20	7.16	-119.6	0.0	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	338	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3	
STAB. TEMP (C) :	11.25	
STAB. Sp. CONDUCTIVITY :	0.971	
STAB. D.O. :	0.21	
STAB. pH :	7.10	
STAB. ORP :	-78.9	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1542 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Clear / Clear ODOR : None / None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 42°F SKY : Clear WIND : Calm

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS04PC
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-7-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-07

WELL DATA		PURGE DATA	
WELL NAME :	MS04PC	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	400
WELL DIAMETER (in) :	4	PURGE RATE (gpm) :	2.6
WELL DEPTH (ft) :	182.21	PURGE START / END TIME :	1330 / 1540
DEPTH TO WATER (toc):	15.86 DATE: 11-7-11	SAMPLING BEGIN / END TIME :	1542 / 1544
WATER COLUMN HEIGHT (ft):	166.35	PUMP ID # : 275106	YSI ID # : 217002
WELL VOLUME (gal) :	108.63	WATER LEVEL ID # :	230008

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1425	143	11.35	0.956	0.20	7.14	-111.3	0.0	16.09
2	1430	156	11.34	0.958	0.20	7.14	-107.8	0.0	
3	1435	169	11.33	0.961	0.20	7.13	-102.7	0.0	16.09
4	1440	182	11.32	0.962	0.20	7.12	-99.1	0.0	
5	1445	195	11.32	0.963	0.20	7.12	-97.8	0.0	16.09
6	1450	208	11.30	0.964	0.20	7.12	-94.6	0.0	
7	1455	221	11.30	0.965	0.20	7.12	-92.7	0.0	16.09
8	1500	234	11.30	0.966	0.21	7.11	-90.7	0.0	
9	1505	247	11.28	0.967	0.20	7.11	-88.7	0.0	16.09
10	1510	260	11.27	0.968	0.21	7.11	-86.5	0.0	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	330	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3	
STAB. TEMP (C) :	11.25	
STAB. Sp. CONDUCTIVITY :	0.971	
STAB. D.O. :	0.21	
STAB. pH :	7.10	
STAB. ORP :	-78.9	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1542 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear / clear ODOR : None / None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 40°F SKY : clear WIND : calm

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS04PC
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-07-11

SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-07

WELL DATA		PURGE DATA	
WELL NAME :	MS04PC	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	400
WELL DIAMETER (in) :	4	PURGE RATE (gpm) :	2.6
WELL DEPTH (ft) :	182.21	PURGE START / END TIME :	1330 / 1540
DEPTH TO WATER (toc):	15.86 DATE: 11-7-11	SAMPLING BEGIN / END TIME :	1537 / 1544
WATER COLUMN HEIGHT (ft):	166.35	PUMP ID # : 275106	YSI ID # : 217002
WELL VOLUME (gal) :	108.63	WATER LEVEL ID # : 230008	

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1515	273	11.26	0.968	0.21	7.11	-86.8	0.0	16.09
2	1520	286	11.26	0.970	0.21	7.11	-83.2	0.0	
3	1525	299	11.26	0.970	0.21	7.11	-82.3	0.0	
4	1530	312	11.25	0.971	0.21	7.10	-81.0	0.0	16.09
5	1535	325	11.25	0.971	0.21	7.10	-79.9	0.0	
6	1540	338	11.25	0.971	0.21	7.10	-78.9	0.0	
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	338	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3	
STAB. TEMP (C) :	11.25	
STAB. Sp. CONDUCTIVITY :	0.971	
STAB. D.O. :	0.21	
STAB. pH :	7.10	
STAB. ORP :	-78.9	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1542 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear / clear ODOR : None / None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 40°F SKY : clear WIND : calm

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: 1 of 1

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS04D
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-7-11
SAMPLER :	Payton Poley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-07

WELL DATA		PURGE DATA	
WELL NAME :	MS04D	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	steel	PUMP CONTROLLER SETTINGS:	3.45
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	2.53
WELL DEPTH (ft) :	120.63	PURGE START / END TIME :	1620 / 1638
DEPTH TO WATER (toc):	27.60 DATE: 11-7-11	SAMPLING BEGIN / END TIME :	1640 / 1642
WATER COLUMN HEIGHT (ft):	93.03	PUMP ID # :	275006
WELL VOLUME (gal) :	15.16	YSI ID # :	~~275~~ 217002
		WATER LEVEL ID # :	230008

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1623	7.59	11.66	0.870	0.65	7.45	-31.9	0.0	28.05
2	1626	15.18	11.68	0.878	0.35	7.37	-42.4	0.0	
3	1629	22.77	11.57	0.888	0.27	7.28	-50.9	0.0	28.08
4	1632	30.36	11.53	0.889	0.24	7.24	-56.6	0.0	
5	1635	37.95	11.50	0.889	0.23	7.22	-60.7	0.0	28.18
6	1638	45.54	11.49	0.889	0.22	7.20	-63.4	0.0	
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	45.54	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.0	
STAB. TEMP (C) :	11.49	
STAB. Sp. CONDUCTIVITY :	0.889	
STAB. D.O. :	0.22	
STAB. pH :	7.20	
STAB. ORP :	-63.4	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1646 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear / clear ODOR : None / None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 40°F SKY : pt cloudy WIND : calm

FIELD SAMPLING DATA SHEET

QC/QA Check _____

Page: 1 of 1

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS43I
CITY, STATE, ZIP :	Fridley, MN	DATE:	~~11.07~~ 11.07.11
SAMPLER :	Joe Stoberg	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-06

WELL DATA		PURGE DATA	
WELL NAME :	MS43I	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	1.33
WELL DEPTH (ft) :	82.05	PURGE START / END TIME :	1618 / 1620
DEPTH TO WATER (toc):	33.30 DATE: 11.7.11	SAMPLING BEGIN / END TIME :	1633 / 1636
WATER COLUMN HEIGHT (ft):	48.75	PUMP ID # :	Rental / YSI ID # : 012005
WELL VOLUME (gal) :	7.94	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1621	3.99	10.69	1.047	0.42	7.22	133.0	9.9	
2	1624	7.98	10.66	1.056	0.37	7.21	-119.1	4.2	32.49
3	1627	11.97	10.64	1.057	0.50	7.21	-117.6	3.2	
4	1630	15.96	10.66	1.059	0.40	7.21	-116.0	1.4	
5	1633	19.95	10.67	1.060	0.19	7.20	116.2	1.7	
6	1636	23.94	10.68	1.061	0.16	7.20	116.0	1.2	
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	23.94	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	~~10.65~~	23.94
STAB. TEMP (C) :	10.68	
STAB. Sp. CONDUCTIVITY :	1.061	
STAB. D.O. :	0.16	
STAB. pH :	7.20	
STAB. ORP :	116.0	
STAB. TURBIDITY:	1.2	

SAMPLE TIME : 1633

SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments): QCB05 @ 1705

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Gray - Clear ODOR: None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No))

WEATHER DATA : TEMP.: 40 SKY : CLR WIND : 0 - 7

FIELD SAMPLING DATA SHEET

QC/QA Check _____

Page: 1 of 1

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS19S
CITY, STATE, ZIP :	Fridley, MN	DATE:	11.07.11
SAMPLER :	Joe Stenlock	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-06

WELL DATA		PURGE DATA	
WELL NAME :	MS19S	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	205
WELL DIAMETER (in) :	2"	PURGE RATE (gpm) :	1.80
WELL DEPTH (ft) :	44.80	PURGE START / END TIME :	15:28 / 1546
DEPTH TO WATER (toc):	34.00 DATE: 11.07.11	SAMPLING BEGIN / END TIME :	1549 / 1552
WATER COLUMN HEIGHT (ft):	~~44.8~~	PUMP ID # :	Remon / YSI ID # : 217003
WELL VOLUME (gal) :	10.8	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTOR: (0.163 - 2") 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1531	5.40	11.74	1.614	6.25	7.20	-48.6	8.0	35.00
2	1534	10.80	11.74	1.619	5.32	7.15	-43.9	3.1	35.0
3	1537	16.20	11.74	1.620	4.88	7.12	-39.9	1.7	
4	1540	21.60	11.74	1.620	4.78	7.12	-33.2	0.5	
5	1543	27.00	11.73	1.620	4.64	7.11	-30.1	Ø	35.0
6	1546	32.40	11.74	1.620	4.55	7.11	-29.2	Ø	
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	32.40	VOC: 9 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:		
STAB. TEMP (C) :	11.74	
STAB. Sp. CONDUCTIVITY :	1.620	
STAB. D.O. :	4.55	
STAB. pH :	7.11	
STAB. ORP :	-29.2	
STAB. TURBIDITY:	Ø	

SAMPLE TIME : 1549 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / No (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? (Yes) / No (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Orange/Clear ODOR :

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No))

WEATHER DATA : TEMP.: 43 SKY : Clr WIND : SE - 5 mph

FIELD SAMPLING DATA SHEET

QC/QA Check _____

Page: 1 of 1

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS16IS
CITY, STATE, ZIP :	Fridley, MN	DATE:	11.07.11
SAMPLER :	JoeStalock	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	~~11.01~~ 110111-06

WELL DATA		PURGE DATA	
WELL NAME :	MS16IS	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	190
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	1.56
WELL DEPTH (ft) :	88.85	PURGE START / END TIME :	1253 / 1311
DEPTH TO WATER (toc):	31.68 DATE: 11.7.11	SAMPLING BEGIN / END TIME :	1314 / 1317
WATER COLUMN HEIGHT (ft):	57.17	PUMP ID # :	Rental / YSI ID # : 217003
WELL VOLUME (gal) :	9.31	WATER LEVEL ID # :	23007

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1256	4.68	11.14	0.673	1.99	7.82	-183.4	43.7	30.97
2	1259	9.36	11.19	0.580	0.59	7.66	-176.8	28.4	
3	1302	14.04	11.23	0.840	0.20	7.23	-131.9	5.0	30.97
4	1305	18.72	11.24	0.860	0.18	7.18	-128.3	2.1	
5	1308	23.4	11.24	0.866	0.16	7.16	-128.4	1.4	30.97
6	1311	28.8	11.25	0.868	0.16	7.15	-128.0	1.0	
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	28.8	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.09	
STAB. TEMP (C) :	11.25	
STAB. Sp. CONDUCTIVITY :	0.868	
STAB. D.O. :	0.16	
STAB. pH :	7.15	
STAB. ORP :	-128.0	
STAB. TURBIDITY:	1.0	

SAMPLE TIME : 1314 SAMPLE FIELD FILTERED ? : Yes / No

FIELD BLANK? Yes / No (name/time/comments):

DUPLICATE SAMPLE? Yes / No (name/time/comments):

MS/MSD? Yes / No (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: CLR-CLR ODOR :

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or No)

WEATHER DATA : TEMP.: 47 SKY : CLR WIND : 0-5 MPH

FIELD SAMPLING DATA SHEET

QC/QA Check _____

Page: 1 of 1

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS16D
CITY, STATE, ZIP :	Fridley, MN	DATE:	11.07.11
SAMPLER :	Joe Stalock	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-06

WELL DATA		PURGE DATA	
WELL NAME :	MS16D	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	2.55
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	(JTS) ~~2.28~~ 2.29
WELL DEPTH (ft) :	116.50	PURGE START / END TIME :	1215 / 1233
DEPTH TO WATER (toc):	32.39 DATE: 11.07.11	SAMPLING BEGIN / END TIME :	1236 / 1237
WATER COLUMN HEIGHT (ft):	84.11	PUMP ID # :	Rental / YSI ID # : 217003
WELL VOLUME (gal) :	13.70	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTOR: (0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1218	6.87	11.15	0.415	1.06	8.26	-206.6	20.5	
2	1221	13.74	11.23	0.685	0.25	7.65	-157.8	15.3	32.76
3	1224	20.61	11.22	0.832	0.22	7.30	-128.8	7.0	
4	1227	27.48	11.26	0.886	0.19	7.18	-122.2	2.3	32.76
5	1230	34.55	11.27	0.891	0.18	7.16	-122.6	2.2	
6	1233	41.22	11.29	0.895	0.18	7.15	-121.4	1.6	
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	41.32	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.01	
STAB. TEMP (C) :	11.29	
STAB. Sp. CONDUCTIVITY :	0.895	
STAB. D.O. :	0.18	
STAB. pH :	7.15	
STAB. ORP :	-121.4	
STAB. TURBIDITY:	1.6	

SAMPLE TIME : 1236 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes (No) (name/time/comments):

DUPLICATE SAMPLE? Yes (No) (name/time/comments):

MS/MSD? Yes (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Clr-Clr ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No))

WEATHER DATA : TEMP.: 47 SKY : Clr WIND : 0-5 mph

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: 1 of 1

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS52I
CITY, STATE, ZIP :	Fridley, MN	DATE:	~~11.04.11~~ 11.07.11
SAMPLER :	JBeSteinbach	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-06

WELL DATA		PURGE DATA	
WELL NAME :	MS52I	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	175
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	1.27
WELL DEPTH (ft) :	81.08 11.07.11	PURGE START / END TIME :	0951 / 949
DEPTH TO WATER (toc):	34.42 DATE: ~~11.04.11~~	SAMPLING BEGIN / END TIME :	952 / 955
WATER COLUMN HEIGHT (ft):	46.66	PUMP ID # : Rental	YSI ID # : 217003
WELL VOLUME (gal) :	7.60	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTOR: 0.163 - 2") 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	934	3.81	11.80	0.473	2.06	8.29	-268.4	35.3	
2	937	7.62	11.87	1.088	0.36	7.25	-140.5	16.6	34.55
3	940	11.43	11.88	1.143	0.30	7.05	-103.4	3.8	
4	943	15.24	11.94	1.152	0.28	7.02	-89.7	3.0	34.55
5	946	18.05	11.98	1.170	0.24	7.00	-80.6	2.0	
6	949	22.86	11.97	1.150	0.24	7.00	-75.3	1.3	34.55
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	22.86	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.00	
STAB. TEMP (C) :	11.97	
STAB. Sp. CONDUCTIVITY :	1.150	
STAB. D.O. :	0.24	
STAB. pH :	7.00	
STAB. ORP :	-75.3	
STAB. TURBIDITY:	1.3	

SAMPLE TIME : 952 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: gray clear ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 40 SKY : CLR WIND : 0-5 MPH

FIELD SAMPLING DATA SHEET

QC/QA Check: _____

Page: 1 of 1

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	PESCW2
CITY, STATE, ZIP :	Fridley, MN	DATE:	11.07.11
SAMPLER :	Joe Stalock	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-06

WELL DATA		PURGE DATA	
WELL NAME :	PESCW2	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :		PUMP CONTROLLER SETTINGS:	132 - 129
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	~~0.29~~ 0.29
WELL DEPTH (ft) :	43.04	PURGE START / END TIME :	1120 / 1141
DEPTH TO WATER (toc):	32.38 DATE: 11.07.11	SAMPLING BEGIN / END TIME :	1144 / 1147
WATER COLUMN HEIGHT (ft):	10.66	PUMP ID # : Rental	YSI ID # : 217003
WELL VOLUME (gal) :	1.73	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTOR: (0.163 - 2") 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1123	0.87	11.28	1.391	1.92	6.91	-16.2	15.30	32.70
2	1126	1.74	11.49	1.403	1.64	6.87	-15.0	18.3	
3	1129	2.61	11.61	1.417	1.54	6.85	-14.7	4.9	
4	1132	3.48	11.55	1.422	1.47	6.84	-14.7	2.5	32.70
5	1135	4.35	~~11.64~~ 11.69	1.425	1.43	6.84	-15.1	2.4	
6	1138	5.22	11.64	1.423	1.41	6.83	-18.6	2.4	32.70
7	1141	6.09	11.70	1.418	1.42	6.84	-21.6	2.5	
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	6.09	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.52	
STAB. TEMP (C) :	11.70	
STAB. Sp. CONDUCTIVITY :	1.418	
STAB. D.O. :	1.42	
STAB. pH :	6.84	
STAB. ORP :	-21.6	
STAB. TURBIDITY:	2.5	

SAMPLE TIME : 1144 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: grey/clear ODOR : NO-NO

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No))

WEATHER DATA : TEMP.: 45 SKY : CLR WIND : 0-5

FIELD SAMPLING DATA SHEET

QC/QA Check: _____

Page: 1 of 1

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS44S
CITY, STATE, ZIP :	Fridley, MN	DATE:	11.09.11
SAMPLER :	Joe Stalock	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	

WELL DATA		PURGE DATA	
WELL NAME :	MS44S	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	121
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.19
WELL DEPTH (ft) :	35.70	PURGE START / END TIME :	1018 / 1048
DEPTH TO WATER (toc):	28.98 DATE: 11.09.11	SAMPLING BEGIN / END TIME :	1051 / 1054
WATER COLUMN HEIGHT (ft):	6.72	PUMP ID # :	Rental / YSI ID # : 217003
WELL VOLUME (gal) :	1.09	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTOR: (0.163 - 2" \0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1021	0.57	11.93	1.563	0.42	6.88	-32.9	67.8	
2	1024	1.14	12.59	1.563	0.40	6.87	-46.5	37.2	28.98
3	1027	1.71	12.59	1.568	0.43	6.88	-46.3	87.6	
* 4	1030	2.28	13.02	1.568	0.43	6.88	-47.2	53.2	
5	1033	2.85	12.83	1.570	0.42	6.88	-48.9	29.1	28.98
* 6	1036	3.42	12.83	1.569	0.41	6.89	-48.7	70.7	
7	1039	3.99	12.81	1.570	0.39	6.89	-48.6	37.0	
+ 8	1042	4.56	12.79	1.572	0.41	6.89	-48.9	26.3	28.98
9	1045	5.13	12.81	1.578	0.43	6.89	-49.2	22.6	
10	1048	5.70	12.80	1.578	0.43	6.89	-48.6	~~30.4~~ 20.1	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	5.70	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5.22	
STAB. TEMP (C) :	12.80	
STAB. Sp. CONDUCTIVITY :	1.578	* Well Not Stable - Turbidity
STAB. D.O. :	0.43	
STAB. pH :	6.89	
STAB. ORP :	-48.6	
STAB. TURBIDITY:	20.1	

SAMPLE TIME : 1051 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes (No) (name/time/comments):

DUPLICATE SAMPLE? Yes (No) (name/time/comments):

MS/MSD? Yes (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Orange / Clear ODOR: NO - NO

OBSERVATIONS : * Spike in turbidity after WL Collected
* Turb Spike after WL check
+ WLM Left @ Water Level Last time and simply turned of WLM. NO turb spike

Sample tubing left in well at completion? (Yes or (No)

WEATHER DATA : TEMP.: 42 SKY : CLR WIND :

FIELD SAMPLING DATA SHEET

QC/QA Check _____

Page: 1 of 1

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS47D
CITY, STATE, ZIP :	Fridley, MN	DATE:	11011-06
SAMPLER :	Joe Stalock	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	11011-06

WELL DATA

WELL NAME :	MS47D
CASING MATERIAL :	Steel
WELL DIAMETER (in) :	2
WELL DEPTH (ft) :	132.35
DEPTH TO WATER (toc):	130.41 DATE: 11.07.11
WATER COLUMN HEIGHT (ft):	101.94
WELL VOLUME (gal) :	16.61

PURGE DATA

PURGE METHOD :	Grundfos Pump
PUMP CONTROLLER SETTINGS:	
PURGE RATE (gpm) :	2.78 2.77
PURGE START / END TIME :	1339 / 1357
SAMPLING BEGIN / END TIME :	1400 / 1403
PUMP ID # :	Rental / YSI ID # : 217003
WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1342	8.31	11.38	0.362	0.65	8.62	-266.2	19.0	
2	1345	16.62	11.58	0.893	0.17	7.40	-124.5	1.9	30.90
3	1348	24.93	11.60	0.905	0.17	7.15	-113.8	2.8	
4	1351	33.24	11.58	0.907	0.17	7.11	-112.2	1.6	
5	1354	41.55	11.58	0.908	0.17	7.08	-112.5	1.5	
6	1357	49.86	11.58	0.908	0.17	7.07	-112.9	1.6	
7									
8									
9									
10									

STABILIZATION DATA

TOTAL VOLUME (Gal) :	49.86
# OF WELL VOLUMES PURGED:	3.00
STAB. TEMP (C) :	11.58
STAB. Sp. CONDUCTIVITY :	0.908
STAB. D.O. :	0.17
STAB. pH :	7.07
STAB. ORP :	-112.9
STAB. TURBIDITY:	1.6

SAMPLE CONTAINERS

VOC: 3 - 40 ml vials w/ HCl pres.

SAMPLE TIME : 1400

SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: ODOR :

OBSERVATIONS : A Small Turb Spike after WL Reading

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 47 SKY : Clr WIND : 0-3 MH

FIELD SAMPLING DATA SHEET

QC/QA Check: _____

Page: 1 of 1

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS525
CITY, STATE, ZIP :	Fridley, MN	DATE:	11.07.11
SAMPLER :	Joe Stelwich	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	11011-06

WELL DATA		PURGE DATA	
WELL NAME :	MS525	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	123
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.16
WELL DEPTH (ft) :	40.04	PURGE START / END TIME :	1433 / 1503
DEPTH TO WATER (toc):	34.42 DATE: 11.07.11	SAMPLING BEGIN / END TIME :	1506 / 1509
WATER COLUMN HEIGHT (ft):	5.72	PUMP ID # : Rental	YSI ID # : 217003
WELL VOLUME (gal) :	0.93	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1436	0.48	13.00	1.532	7.35	7.06	-57.0	42.0	
2	1439	0.96	13.51	1.531	~~7.04~~	7.03	-54.7	64.2	34.42
3	1442	1.44	13.63	1.539	7.50 / 7.49	7.01	-49.6	31.6	
4	1445	1.92	13.69	1.533	7.98	7.00	-45.6	17.0	34.42
5	1448	2.40	13.66	1.526	7.96	6.99	-43.2	13.4	
6	1451	2.88	13.51	1.518	7.96	6.97	-44.7	11.0	
7	1454	~~13.51~~ 3.36	13.51	1.521	8.06	6.97	-43.9	8.0	34.42
8	1557	3.84	13.71	1.517	8.06	6.97	-42.3	5.9	
9	1500	4.32	13.62	1.519	8.07	6.96	-39.3	5.5	
10	1503	4.80	13.61	1.519	8.06	6.96	-36.2	2.5	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	4.80	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5.16	
STAB. TEMP (C) :	13.61	X Well not Stable
STAB. Sp. CONDUCTIVITY :	1.519	
STAB. D.O. :	8.06	
STAB. pH :	6.96	
STAB. ORP :	-36.2	
STAB. TURBIDITY:	2.5	

SAMPLE TIME : SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Orange / CLR ODOR : NO

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or No):

WEATHER DATA : TEMP.: 46 SKY : CLR WIND : 0-5

FIELD SAMPLING DATA SHEET

QC/QA Check _____

Page: 1 of 2

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS31D
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-08-11
SAMPLER :	Ryan Ribay	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-07

WELL DATA		PURGE DATA	
WELL NAME :	MS31D	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	225
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	1.21
WELL DEPTH (ft) :	127.19	PURGE START / END TIME :	1029 / 1124
DEPTH TO WATER (toc):	15.82 DATE: 11-8-11	SAMPLING BEGIN / END TIME :	1126 / 128
WATER COLUMN HEIGHT (ft):	111.37	PUMP ID # :	275106 YSI ID # : 217002
WELL VOLUME (gal) :	18.15	WATER LEVEL ID # :	230008

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1029	6.05	15.56	0.785	0.98	7.54	-161.3	165.0	110.69
2	1034	12.10	14.90	0.865	0.63	7.28	-154.9	95.0	19.82
3	1039	18.15	14.35	0.874	0.42	7.20	-145.6	37.6	19.88
4	1044	24.20	14.31	0.833	0.33	7.17	-142.1	20.0	19.86
5	1049	30.25	14.22	0.872	0.28	7.15	-140.9	13.6	
6	1054	36.30	14.14	0.876	0.24	7.14	-141.3	11.1	19.86
7	1059	42.35	14.10	0.865	0.23	7.13	-142.1	8.0	
8	1104	48.40	14.09	0.873	0.22	7.13	-142.4	6.9	19.86
9	1109	54.45	14.07	0.874	0.20	7.12	-142.9	5.2	
10	1114	60.50	14.05	0.890	0.19	7.12	-143.5	3.8	19.86

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	72.60	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	4	
STAB. TEMP (C) :	14.02	
STAB. Sp. CONDUCTIVITY :	0.887	
STAB. D.O. :	0.19	
STAB. pH :	7.11	
STAB. ORP :	-141.3	
STAB. TURBIDITY:	2.6	

SAMPLE TIME : 1126 SAMPLE FIELD FILTERED ? : Yes (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: cloudy black / clear ODOR : None

OBSERVATIONS : w.l. below 2' but ~~were~~. Dissipation water level was due to length of purge (time), increased drawdown was allowed.

Sample tubing left in well at completion? (Yes or (No))

WEATHER DATA : TEMP.: SKY : Partly cloudy WIND :

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: 2 of 2

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS31D
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-08-11
SAMPLER :	Rayan Poley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	11011-07

WELL DATA		PURGE DATA	
WELL NAME :	MS31D	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	225
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	1.21
WELL DEPTH (ft) :	127.19	PURGE START / END TIME :	1124 / 1124
DEPTH TO WATER (toc):	15.82 DATE: 11-8-11	SAMPLING BEGIN / END TIME :	1126 / 1128
WATER COLUMN HEIGHT (ft):	111.37	PUMP ID # : 275106	YSI ID # : 217002
WELL VOLUME (gal) :	18.15	WATER LEVEL ID # :	230008

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1119	66.55	14.03	0.877	0.19	7.11	-144.2	2.7	
2	1124	72.60	14.02	0.887	0.19	7.11	-141.3	2.6	
3									
4									
5									
6									
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	72.60	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	4	
STAB. TEMP (C) :	14.02	
STAB. Sp. CONDUCTIVITY :	0.887	
STAB. D.O. :	0.19	
STAB. pH :	7.11	
STAB. ORP :	-141.3	
STAB. TURBIDITY:	2.6	

SAMPLE TIME : 1126 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes (No) (name/time/comments):

DUPLICATE SAMPLE? Yes (No) (name/time/comments):

MS/MSD? Yes (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: cloudy black / clear ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)).

WEATHER DATA : TEMP.: SKY : Partly cloudy WIND :

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: 1 of 1

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS06D
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-8-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-07

WELL DATA		PURGE DATA	
WELL NAME :	MS06D	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	345
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	2.1
WELL DEPTH (ft) :	129.98	PURGE START / END TIME :	1204 / 1228
DEPTH TO WATER (toc):	27.08 DATE: 11-8-11	SAMPLING BEGIN / END TIME :	1230 / 1232
WATER COLUMN HEIGHT (ft):	102.90	PUMP ID # : 275106	YSI ID # : 217002
WELL VOLUME (gal) :	16.77	WATER LEVEL ID # :	230008

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1208	8.4	13.81	0.972	0.44	7.15	-66.8	0.3	27.29
2	1212	16.8	12.72	0.972	0.24	7.09	-59.7	0.0	
3	1216	25.2	12.42	0.970	0.21	7.06	-59.2	0.0	27.37
4	1220	33.6	12.34	0.968	0.19	7.05	-59.4	0.0	
5	1224	42.0	12.30	0.966	0.18	7.04	-59.3	0.0	27.38
6	1228	50.4	12.26	0.964	0.18	7.03	-59.4	0.0	
7	~~1232~~ Rec								
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	50.4	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3	
STAB. TEMP (C) :	12.26	
STAB. Sp. CONDUCTIVITY :	0.964	
STAB. D.O. :	0.18	
STAB. pH :	7.03	
STAB. ORP :	-59.4	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1230 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear / clear ODOR : none / none

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 46°F SKY : cloudy WIND : 5-10 S

FIELD SAMPLING DATA SHEET

QC/QA Check _____

Page: 1 of 1

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS 32D
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-8-11

SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-07

WELL DATA		PURGE DATA	
WELL NAME :	MS 32D	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	300
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	1.68
WELL DEPTH (ft) :	126.20	PURGE START / END TIME :	1321 / 1356
DEPTH TO WATER (toc):	23.24 DATE: 11-8-11	SAMPLING BEGIN / END TIME :	1358 / 1400
WATER COLUMN HEIGHT (ft):	102.96	PUMP ID # : 275106	YSI ID # : 217002
WELL VOLUME (gal) :	16.78	WATER LEVEL ID # :	230608

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1326	8.4	16.08	0.560	0.74	8.16	-257.9	47.0	24.81
2	1331	16.8	14.82	0.887	0.26	7.56	-195.0	18.7	24.91
3	1336	25.2	14.10	0.962	0.22	7.27	-163.9	3.3	24.92
4	1341	33.6	13.96	0.968	0.24	7.18	-155.6	1.7	24.92
5	1346	42.0	13.79	0.970	0.20	7.14	-151.5	1.3	24.92
6	1351	50.4	13.74	0.971	0.19	7.11	-150.3	1.2	24.92
7	1356	58.8	13.74	0.970	0.18	7.10	-151.2	0.7	
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	58.8	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.5	
STAB. TEMP (C) :	13.74	
STAB. Sp. CONDUCTIVITY :	0.970	
STAB. D.O. :	0.18	
STAB. pH :	7.10	
STAB. ORP :	-151.2	
STAB. TURBIDITY:	0.7	

SAMPLE TIME : 1358 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / No (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Clear / Clear ODOR : None / None

OBSERVATIONS : Cloudy black

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: SKY : Indoors WIND :

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: 1 of 1

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS025
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-8-11

SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-07

WELL DATA		PURGE DATA	
WELL NAME :	MS025	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	steel	PUMP CONTROLLER SETTINGS:	150
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.45
WELL DEPTH (ft) :	34.27	PURGE START / END TIME :	1525 /
DEPTH TO WATER (toc):	17.69 DATE: 11-8-11	SAMPLING BEGIN / END TIME :	1557 / 1559
WATER COLUMN HEIGHT (ft):	16.58	PUMP ID # :	275106 YSI ID # : 217002
WELL VOLUME (gal) :	2.70	WATER LEVEL ID # :	230008

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1528	1.35	12.69	1.180	0.54	6.48	16.0	40.6	17.71
2	1531	2.70	12.83	1.169	0.39	6.76	7.9	20.3	
3	1534	4.05	12.83	1.168	0.37	6.79	6.2	13.6	17.78
4	1537	5.40	12.81	1.160	0.34	6.79	5.3	12.7	
5	1540	6.75	12.84	1.160	0.34	6.78	5.6	9.2	17.81
6	1543	8.10	13.08	1.155	0.34	6.76	6.0	8.3	17.81
7	1546	9.45	13.25	1.155	0.35	6.75	5.0	15.8	17.81
8	1549	10.80	13.52	1.155	0.36	6.74	1.9	15.5	17.81
9	1552	12.15	13.65	1.154	0.37	6.74	0.5	9.9	17.81
10	1555	13.50	13.67	1.153	0.37	6.74	0.3	7.6	17.81

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	13.50	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5	
STAB. TEMP (C) :	13.67	
STAB. Sp. CONDUCTIVITY :	1.153	* well not stable (5 well volumes)
STAB. D.O. :	0.37	
STAB. pH :	6.74	
STAB. ORP :	0.3	
STAB. TURBIDITY:	7.6	

SAMPLE TIME : 1557 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? (Yes) / No (name/time/comments): QCR05C 1630

DUPLICATE SAMPLE? Yes / (No) (name/time/comments): QCR06 dk

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: orange/brown / clear ODOR : None / None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or No):

WEATHER DATA : TEMP.: SKY : Cloudy WIND : 5-10 S

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: 1 of 1

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS47T
CITY, STATE, ZIP :	Fridley, MN	DATE:	11.08.11
SAMPLER :	Joe Stalock	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-08

WELL DATA		PURGE DATA	
WELL NAME :	MS47I	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	1.27
WELL DEPTH (ft) :	80.91	PURGE START / END TIME :	1139 / 1154
DEPTH TO WATER (toc):	34.25 DATE: 11.08.11	SAMPLING BEGIN / END TIME :	1157 / 1200
WATER COLUMN HEIGHT (ft):	46.66	PUMP ID # : Rental	YSI ID # : 217003
WELL VOLUME (gal) :	7.60	WATER LEVEL ID # :	232007

VOLUME CONVERSION FACTOR: (0.163 - 2") 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1139	3.81	11.32	0.922	1.06	7.25	-143.3	25.0	34.49
2	1142	7.62	11.38	0.952	0.30	7.08	-143.0	14.6	
3	1145	11.43	11.33	0.960	0.27	7.07	-138.9	3.7	34.49
4	1148	15.24	11.38	0.963	0.27	7.05	-139.0	5.0	
5	1151	19.05	11.38	0.962	0.22	7.04	-140.2	1.8	
6	1154	22.86	11.40	0.961	0.21	7.03	-140.1	2.3	34.49
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	22.86	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3	
STAB. TEMP (C) :	11.40	
STAB. Sp. CONDUCTIVITY :	0.961	
STAB. D.O. :	0.21	
STAB. pH :	7.03	
STAB. ORP :	-140.1	
STAB. TURBIDITY:	2.3	

SAMPLE TIME : 1157 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Grey/ clear ODOR :

OBSERVATIONS : * Small Bump after WL Still w/in Stabelization

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 44 SKY : PC WIND : SW

FIELD SAMPLING DATA SHEET

QC/QA Check _____

Page: 2 of 2

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS08D
CITY, STATE, ZIP :	Fridley, MN	DATE:	11.08.11
SAMPLER :	Joe Stalock	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-08

WELL DATA

WELL NAME :	MS08D
CASING MATERIAL :	Steel
WELL DIAMETER (in) :	4
WELL DEPTH (ft) :	127.49
DEPTH TO WATER (toc):	28.06 DATE: 11.08.11
WATER COLUMN HEIGHT (ft):	99.43
WELL VOLUME (gal) :	64.92

PURGE DATA

PURGE METHOD :	Grundfos Pump
PUMP CONTROLLER SETTINGS:	205
PURGE RATE (gpm) :	2.00
PURGE START / END TIME :	1246 / 1421
SAMPLING BEGIN / END TIME :	1424 / 1427
PUMP ID # :	Rental / YSI ID # : 217003
WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1341	110	11.55	0.872	0.21	7.11	-120.3	1.9	30-80
2	1346	120	11.53	0.873	0.26	7.10	-120.3	1.8	
3	1351	130	11.53	0.873	0.24	7.10	-121.3	1.4	
4	1356	140	11.53	0.875	0.25	7.10	-121.2	1.3	
5	1401	150	11.53	0.876	0.22	7.10	-121.4	1.3	30-80
6	1406	160	11.53	0.876	0.28	7.11	-121.9	1.1	
7	1411	180	11.52	0.877	0.21	7.11	-121.9	1.2	
8	1416	190	11.53	0.878	0.23	7.11	-122.3	1.2	30-80
9	1421	200	11.53	0.879	0.25	7.13	-122.5	1.2	
10									

STABILIZATION DATA

TOTAL VOLUME (Gal) :	200
# OF WELL VOLUMES PURGED:	3.08
STAB. TEMP (C) :	11.53
STAB. Sp. CONDUCTIVITY :	0.879
STAB. D.O. :	0.25
STAB. pH :	7.13
STAB. ORP :	-122.5
STAB. TURBIDITY:	1.2

SAMPLE CONTAINERS

VOC: 3 - 40 ml vials w/ HCl pres.

SAMPLE TIME : 1424

SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: CLR-CLR ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 40 SKY : PC WIND : 0-5

FIELD SAMPLING DATA SHEET

QC/QA Check _____

Page: 1 of 2

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS08D
CITY, STATE, ZIP :	Fridley, MN	DATE:	11.08.11
SAMPLER :	Joe Stalock	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-08

WELL DATA		PURGE DATA	
WELL NAME :	MS08D	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	~~225~~ 205
WELL DIAMETER (in) :	4	PURGE RATE (gpm) :	2.0
WELL DEPTH (ft) :	127.49	PURGE START / END TIME :	1246 /
DEPTH TO WATER (toc):	28.06 DATE: 11.08.11	SAMPLING BEGIN / END TIME :	/
WATER COLUMN HEIGHT (ft):	99.43	PUMP ID # :	Rental / YSI ID # : 217803
WELL VOLUME (gal) :	64.92	WATER LEVEL ID # :	238007

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" (0.653 - 4") 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1251	10	11.73	0.765	0.85	7.48	-85.0	2.6	30.80
2	1256	20	11.79	0.763	2.28	7.50	-76.8	2.1	
3	1301	30	11.79	0.763	2.34	7.50	-70.1	2.3	30.80
4	1306	40	11.72	0.764	2.46	7.48	-73.8	2.0	
5	1311	50	11.59	0.781	0.56	7.40	-94.9	3.0	30.80
6	1316	60	11.57	0.842	0.40	7.30	-111.7	3.8	
7	1321	70	11.55	0.856	0.36	7.21	-118.1	4.6	
8	1326	80	11.55	0.863	0.24	7.17	-118.0	4.1	30.80
9	1331	90	11.54	0.867	0.23	7.14	-117.6	3.4	
10	1336	100	11.54	0.870	0.23	7.13	-118.7	2.6	30.80

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	200	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.03	
STAB. TEMP (C) :	11.53	
STAB. Sp. CONDUCTIVITY :	0.879	
STAB. D.O. :	0.25	
STAB. pH :	7.13	
STAB. ORP :	-122.5	
STAB. TURBIDITY:	1.2	

SAMPLE TIME : 1424 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Clr-Clr ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No))

WEATHER DATA : TEMP.: 40 SKY : PC WIND :

FIELD SAMPLING DATA SHEET

QC/QA Check _____

Page: 1 of 1

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS49S
CITY, STATE, ZIP :	Fridley, MN	DATE:	11.08.11
SAMPLER :	Joe Stalich	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-08

WELL DATA		PURGE DATA	
WELL NAME :	MS49S	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	135 - 7 Bottom 50 of
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.15
WELL DEPTH (ft) :	39.92	PURGE START / END TIME :	1601 / 1631
DEPTH TO WATER (toc):	34.71 DATE:	SAMPLING BEGIN / END TIME :	1634 / 1637
WATER COLUMN HEIGHT (ft):	5.21	PUMP ID # : Rental	YSI ID # : 217003
WELL VOLUME (gal) :	0.84	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1604	0.45	11.63	0.907	4.33	7.05	-17.3	9.1	
2	1607	0.90	12.16	0.896	4.44	6.98	-17.3	7.5	34.75
3	1610	1.35	12.42	0.885	4.57	6.94	-17.4	7.1	
4	1613	1.80	12.43	0.885	4.57	6.92	-17.0	5.6	34.75
5	1616	2.25	12.66	0.885	4.40	6.91	-17.8	5.0	
6	1619	2.70	12.60	0.884	4.44	6.90	-18.2	4.2	34.75
7	1622	3.15	12.47	0.888	4.26	6.91	-23.4	4.4	
8	1625	3.60	12.43	0.879	4.41	6.91	-24.7	3.5	
9	1628	4.05	12.44	0.884	4.35	6.89	-24.7	3.4	
10	1631	4.50	12.41	0.885	4.35	6.89	-25.3	3.1	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	4.50	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5.36	
STAB. TEMP (C) :	12.41	
STAB. Sp. CONDUCTIVITY :	0.885	
STAB. D.O. :	4.35	
STAB. pH :	6.89	
STAB. ORP :	-25.3	
STAB. TURBIDITY:	3.1	

SAMPLE TIME : 1634 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? (Yes) / No (name/time/comments): QC1008 @ 0930

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: CLR-CLR ODOR : None

OBSERVATIONS : Pump Positioned 1 ft from btm of well
* Kink found in line from YSI

Sample tubing left in well at completion? (Yes or (No))

WEATHER DATA : TEMP.: 46 SKY : PC WIND : 0-5 mph

FIELD SAMPLING DATA SHEET

QC/QA Check: _____

Page: 1 of 1

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS47S
CITY, STATE, ZIP :	Fridley, MN	DATE:	11.08.11
SAMPLER :	Joe Stalock	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-08

WELL DATA		PURGE DATA	
WELL NAME :	MS47S	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	133 - 129
WELL DIAMETER (in) :	2"	PURGE RATE (gpm) :	0.17
WELL DEPTH (ft) :	39.90	PURGE START / END TIME :	0939 / 1009
DEPTH TO WATER (toc):	33.74 DATE: 11.08.11	SAMPLING BEGIN / END TIME :	1012 / 1015
WATER COLUMN HEIGHT (ft):	6.16	PUMP ID # :	Rental / YSI ID # : 317003
WELL VOLUME (gal) :	1.00	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTOR: (0.163 - 2") 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	0942	0.51	11.45	1.486	3.00	6.46	-139.0	142.4	33.74
2	945	1.02	11.72	1.497	0.65	6.69	-90.0	80.0	34.61
3	948	1.53	11.73	1.500	0.67	6.77	69.4	19.3	34.61
4	951	2.04	12.34	1.497	0.72	6.81	60.5	13.3	
5	954	2.55	12.54	1.492	0.69	6.83	47.8	8.3	34.61
6	957	3.06	12.70	1.491	0.73	6.84	47.0	38.6	
7	1000	3.57	12.46	1.483	0.79	6.84	35.9	10.1	
8	1003	4.08	12.49	1.489	0.70	6.84	27.6	43.1	34.61
9	1006	4.59	12.33	1.465	0.83	6.84	19.6	24.5	
10	1009	5.10	12.41	1.467	0.80	6.84	16.2	11.7	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	5.10	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5.1	
STAB. TEMP (C) :	12.41	* Well Not Stable Turb
STAB. Sp. CONDUCTIVITY :	1.467	
STAB. D.O. :	0.80	
STAB. pH :	6.84	
STAB. ORP :	16.2	
STAB. TURBIDITY:	11.7	

SAMPLE TIME : 1012 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: ORange ODOR : None

OBSERVATIONS : * Decrease Setting to 129
* turb Spike. Why?
* turb Spike after Removing WLM

Sample tubing left in well at completion? (Yes or (No))

WEATHER DATA : TEMP.: 37 SKY : PC WIND : 0-3 MPH

FIELD SAMPLING DATA SHEET

QC/QA Check_____

PROJECT NAME :	NIROP Fall '11 GW Monitoring	Page:	of
ADDRESS :	4800 E River Rd	PROJECT # :	J070047 T54
CITY, STATE, ZIP :	Fridley, MN	SAMPLE ID:	MS27S
		DATE:	11.08.11
SAMPLER :	Joe Stalock	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-08

WELL DATA

WELL NAME :	~~MS27S~~ MS27S
CASING MATERIAL :	Steel
WELL DIAMETER (in) :	2
WELL DEPTH (ft) :	49.33
DEPTH TO WATER (toc):	30.74 DATE: 11.08.11
WATER COLUMN HEIGHT (ft):	18.55
WELL VOLUME (gal) :	3.02

PURGE DATA

PURGE METHOD :	Grundfos Pump
PUMP CONTROLLER SETTINGS:	148
PURGE RATE (gpm) :	0.51
PURGE START / END TIME :	1039 / 1100
SAMPLING BEGIN / END TIME :	1103 / 1106
PUMP ID # :	Remal
YSI ID # :	217003
WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1042	1.53	11.54	1.249	0.41	7.03	-141.2	7.7	
2	1045	3.06	11.40	1.284	0.27	6.98	-130.4	2.9	30.90
3	1048	4.59	11.38	1.285	0.25	6.97	-127.2	2.2	
4	1051	6.12	11.42	1.288	0.23	6.96	-126.9	2.3	31.90
5	1054	7.65	11.48	1.286	0.23	6.95	-127.5	1.9	
6	1057	9.18	11.45	1.290	0.22	6.94	-127.5	1.5	31.90
7	1100	10.71	11.48	1.292	0.21	6.92	-127.4	0.9	
8									
9									
10									

STABILIZATION DATA

TOTAL VOLUME (Gal) :	10.71
# OF WELL VOLUMES PURGED:	3.54
STAB. TEMP (C) :	11.48
STAB. Sp. CONDUCTIVITY :	1.292
STAB. D.O. :	0.21
STAB. pH :	6.92
STAB. ORP :	-127.4
STAB. TURBIDITY:	0.9

SAMPLE CONTAINERS

VOC: 3 - 40 ml vials w/ HCl pres.

SAMPLE TIME : 1103

SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: CLR / CLR ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 43 SKY : Clr WIND : 8-3

Cwo

FIELD SAMPLING DATA SHEET

QC/QA Check _____

Page: 1 of 1

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS29D
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-8-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-07

WELL DATA		PURGE DATA	
WELL NAME :	MS29D	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	305
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	1.98
WELL DEPTH (ft) :	136.67	PURGE START / END TIME :	0937 / 1022
DEPTH TO WATER (toc):	15.57 DATE: 11-8-11	SAMPLING BEGIN / END TIME :	10:24 / 1026
WATER COLUMN HEIGHT (ft):	121.10	PUMP ID # : 275106	YSI ID # : 217002
WELL VOLUME (gal) :	19.74	WATER LEVEL ID # :	230008

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	0942	9.90	13.38	0.720	0.36	7.52	-222.1	139.5	16.30
2	0947	19.80	~~0.720~~	0.955	0.46	7.18	-166.1	57.2	16.30
3	0952	29.70	(13.15) 12.90	0.992	0.35	7.08	-143.5	19.6	16.30
4	0957	39.60	12.79	0.999	0.35	7.03	-134.0	11.1	16.30
5	10:02	49.50	12.71	1.004	0.32	7.02	-130.9	8.7	16.30
6	10:07	59.40	12.63	1.006	0.32	7.01	-127.8	5.3	16.30
7	10:12	69.30	12.43	1.006	0.22	7.01	-125.6	3.1	16.30
8	10:17	79.20	12.39	1.006	0.21	7.00	-124.9	3.1	16.30
9	10:22	89.10	12.36	1.006	0.21	7.00	-124.1	2.8	
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	89.10	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	4.51	
STAB. TEMP (C) :	12.36	
STAB. Sp. CONDUCTIVITY :	1.006	
STAB. D.O. :	0.21	
STAB. pH :	7.00	
STAB. ORP :	-124.1	
STAB. TURBIDITY:	2.8	

SAMPLE TIME : 1024 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Clear / Clear ODOR : None / None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: SKY : Indoors WIND :

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: 1 of 3

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS02PC
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-9-11

SAMPLER :	Rejean Bailey	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-07

WELL DATA		PURGE DATA	
WELL NAME :	MS02PC	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	400
WELL DIAMETER (in) :	4	PURGE RATE (gpm) :	2.61
WELL DEPTH (ft) :	178.08	PURGE START / END TIME :	1126 / 1326
DEPTH TO WATER (toc):	18.56 DATE: 11-9-11	SAMPLING BEGIN / END TIME :	1328 / 1330
WATER COLUMN HEIGHT (ft):	159.52	PUMP ID # : 275106	YSI ID # : 217002
WELL VOLUME (gal) :	104.17	WATER LEVEL ID # :	230008

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1131	13.05	12.29	0.290	6.04	9.57	-61.3	0.9	18.77
2	1136	26.10	12.13	0.291	5.43	9.68	-59.5	1.5	
3	1141	39.15	11.93	0.615	3.08	11.18	-98.9	2.0	
4	1146	52.20	11.80	0.632	0.90	11.04	-109.5	1.5	18.77
5	1151	65.25	11.58	0.563	0.48	9.13	-80.3	0.6	
6	1156	78.30	11.70	0.649	0.58	8.34	-70.6	2.7	
7	1201	91.35	11.48	0.665	0.60	8.08	-8.9	11.9	
8	1206	104.40	11.45	0.679	0.37	7.86	-4.9	5.3	
9	1211	117.45	11.49	0.695	0.19	7.62	-5.5	1.7	18.86
10	1216	130.50	11.49	0.606	0.19	7.48	-6.7	0.8	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	313.20	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3	
STAB. TEMP (C) :	11.46	
STAB. Sp. CONDUCTIVITY :	0.698	
STAB. D.O. :	0.15	
STAB. pH :	7.17	
STAB. ORP :	-2.7	
STAB. TURBIDITY:	0.1	

SAMPLE TIME : ~~1328~~ 1328 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Clear / Clear ODOR: None / None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 48°F SKY : Cloudy WIND : 5-10

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS02PC
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-9-11

SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-07

WELL DATA		PURGE DATA	
WELL NAME :	MS02PC	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	400
WELL DIAMETER (in) :	4	PURGE RATE (gpm) :	2.61
WELL DEPTH (ft) :	178.08	PURGE START / END TIME :	1226 / 1326
DEPTH TO WATER (toc):	18.56 DATE: 11-9-11	SAMPLING BEGIN / END TIME :	1328 / 1330
WATER COLUMN HEIGHT (ft):	159.52	PUMP ID # : 275106	YSI ID # : 217002
WELL VOLUME (gal) :	104.17	WATER LEVEL ID # :	230008

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1221	143.55	11.49	0.696	0.18	7.41	-6.6	0.7	
2	1226	156.60	11.49	0.696	0.18	7.35	-6.4	0.7	
3	1231	169.65	11.48	0.696	0.18	7.32	-6.5	0.7	18.88
4	1236	182.70	11.49	0.697	0.17	7.28	-6.1	0.5	
5	1241	195.75	11.47	0.697	0.18	7.26	-5.8	0.4	
6	1246	208.80	11.47	0.697	0.18	7.25	-5.5	0.3	18.88
7	1251	221.85	11.48	0.697	0.17	7.22	-4.7	0.2	
8	1256	234.90	11.49	0.697	0.17	7.21	-6.2	0.3	
9	1301	247.95	11.47	0.697	0.17	7.21	-5.7	0.2	
10	1306	261.00	11.48	0.698	0.17	7.20	-5.9	0.2	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	313.20	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3	
STAB. TEMP (C) :	11.46	
STAB. Sp. CONDUCTIVITY :	0.698	
STAB. D.O. :	0.15	
STAB. pH :	7.17	
STAB. ORP :	-2.7	
STAB. TURBIDITY:	0.1	

SAMPLE TIME : 1328 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear / clear ODOR : none / none

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 48°F SKY : cloudy WIND : 5-10

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: 3 of 3

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS02PC
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-9-11
SAMPLER :	Rycen Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-07

WELL DATA		PURGE DATA	
WELL NAME :	MS02PC	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	400
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	2.61
WELL DEPTH (ft) :	178.08	PURGE START / END TIME :	1226 / 1326
DEPTH TO WATER (toc):	18.56 DATE: 11-9-11	SAMPLING BEGIN / END TIME :	1328 / 1330
WATER COLUMN HEIGHT (ft):	159.52	PUMP ID # : 275106	YSI ID # : 217002
WELL VOLUME (gal) :	104.17	WATER LEVEL ID # :	230008

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1311	274.05	11.47	0.697	0.17	7.19	-4.7	0.2	18.89
2	1316	287.10	11.46	0.698	0.16	7.18	-4.4	0.3	
3	1321	300.15	11.44	0.698	0.15	7.17	-3.4	0.1	18.89
4	1326	313.20	11.46	0.698	0.15	7.17	-2.7	0.1	
5									
6									
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	313.20	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3	
STAB. TEMP (C) :	11.46	
STAB. Sp. CONDUCTIVITY :	0.698	
STAB. D.O. :	0.15	
STAB. pH :	7.17	
STAB. ORP :	-2.7	
STAB. TURBIDITY:	0.1	

SAMPLE TIME : 1326 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear / clear ODOR: None / None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No))

WEATHER DATA : TEMP.: 48°F SKY : cloudy WIND : 5-10

FIELD SAMPLING DATA SHEET

QC/QA Check _____

Page: 1 of 1

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS65IS
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-9-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-07

WELL DATA		PURGE DATA	
WELL NAME :	MS05IS	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	~~1.21~~ 0.73
WELL DEPTH (ft) :	63.69	PURGE START / END TIME :	1400 / 1440
DEPTH TO WATER (toc):	19.42 DATE: 11-9-11	SAMPLING BEGIN / END TIME :	1442 / 1444
WATER COLUMN HEIGHT (ft):	44.27	PUMP ID # : 275106	YSI ID # : 217002
WELL VOLUME (gal) :	7.22	WATER LEVEL ID # :	23000B

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1415	3.65	12.30	0.812	0.24	7.00	-38.4	103.0	21.64
2	1420	7.30	12.28	0.784	0.22	6.95	-154.4	12.0	21.55
3	1425	10.95	12.24	0.760	0.18	6.92	-154.4	3.5	
4	1430	14.60	12.24	0.748	0.18	6.92	-154.3	2.1	21.52
5	1435	18.25	12.22	0.736	0.20	6.85	-136.0	1.6	
6	1440	21.90	12.21	0.727	0.22	6.85	-136.0	1.2	
7	~~1445~~ PAR								
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	~~21.90~~	VOC: 9 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED: 3	~~21.90~~	
STAB. TEMP (C) :	12.21	
STAB. Sp. CONDUCTIVITY :	0.727	
STAB. D.O. :	0.22	
STAB. pH :	6.85	
STAB. ORP :	-136.0	
STAB. TURBIDITY:	1.2	

SAMPLE TIME : 1442 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes (No) (name/time/comments):

MS/MSD? (Yes) / No (name/time/comments): ~~MS05IS x6~~ PAR

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: ODOR :

OBSERVATIONS : Initial gpm caused w.l. to drop. Slowed to 0.73 gpm

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 70°F SKY : cloudy WIND : S-10

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: 1 of 1

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS45I
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-09-11
SAMPLER :	Joe Staloch	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110117-08

WELL DATA		PURGE DATA	
WELL NAME :	MS45I	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	185
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	1.79
WELL DEPTH (ft) :	~~65~~ 91.75	PURGE START / END TIME :	902 / 926
DEPTH TO WATER (toc):	26.00 ~~91.75~~ DATE: 11-09-11	SAMPLING BEGIN / END TIME :	929 / 932
WATER COLUMN HEIGHT (ft):	~~26.00~~ 65.75	PUMP ID # :	Renral / YSI ID # : 217003
WELL VOLUME (gal) :	~~65.75~~ 10.71	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	905	5.37	11.18	0.842	1.22	7.77	-147.5	50.3	26.30
2	908	10.74	11.27	0.787	0.30	7.35	-180.6	33.0	
3	911	16.11	11.34	0.841	0.28	7.27	-168.2	2.3	27.16
4	914	21.48	11.27	0.845	0.62	7.25	-163.3	13.5	
5	917	26.85	11.38	0.850	0.45	7.24	-164.7	4.65	27.16
6	920	32.22	11.48	0.851	0.27	7.33	-161.9	2.7	27.16
7	923	37.59	11.49	0.851	0.32	7.23	-161.1	2.4	
8	926	42.96	11.50	0.851	0.23	7.22	-162.7	3.4	
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	42.96	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	4	
STAB. TEMP (C) :	11.50	
STAB. Sp. CONDUCTIVITY :	0.851	
STAB. D.O. :	0.23	
STAB. pH :	7.22	
STAB. ORP :	-162.7	
STAB. TURBIDITY:	3.4	

SAMPLE TIME : 929 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: CLR-CLR ODOR: NONE

OBSERVATIONS : * Spike after (WLB)

* Turb Mid Cleaning 4.6 After Cleaning

Sample tubing left in well at completion? (Yes or (No))

WEATHER DATA : TEMP.: 38 SKY : OVC WIND : 0-5MPH

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: 1 of 1

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS43S
CITY, STATE, ZIP :	Fridley, MN	DATE:	11.9.11
SAMPLER :	Joe Stabach	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-08

WELL DATA		PURGE DATA	
WELL NAME :	MS 43S	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	~~129~~ 130 → 128 (+)
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.15
WELL DEPTH (ft) :	38.86	PURGE START / END TIME :	0958 / 1028
DEPTH TO WATER (toc):	33.42 DATE: 11.9.11	SAMPLING BEGIN / END TIME :	1031 / 1234
WATER COLUMN HEIGHT (ft):	5.44	PUMP ID # :	Rental / YSI ID # : 217003
WELL VOLUME (gal) :	0.88	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTOR: (0.163 - 2") 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1001	0.45	11.48	1.093	0.06	6.33	6.5	14.8	
2	1004	0.90	11.73	1.088	0.17	6.59	-7.8	11.3	~~34.45~~ 33.45
(+) 3	1007	1.35	12.00	1.084	0.28	6.91	-25.2	7.2	
4	1010	1.80	12.16	1.079	0.31	7.01	-35.1	6.1	33.45
5	1013	2.25	12.80	1.085	0.34	7.06	-41.3	4.7	
6	1016	2.70	12.82	1.084	0.35	7.07	-45.4	4.1	
(A) 7	1019	3.15	12.99	1.083	0.36	7.09	-47.5	2.6	33.45
8	1022	3.60	12.73	1.083	0.35	7.09	-49.4	2.4	
9	1025	4.05	12.92	1.082	0.32	7.10	-54.4	2.0	
10	1028	4.50	12.96	1.082	0.33	7.10	-56.4	1.7	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	4.5	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5	
STAB. TEMP (C) :	12.96	A well Not Stable
STAB. Sp. CONDUCTIVITY :	1.082	Temp
STAB. D.O. :	0.33	
STAB. pH :	7.10	
STAB. ORP :	-56.4	
STAB. TURBIDITY:	1.7	

SAMPLE TIME : 1031 SAMPLE FIELD FILTERED ? : Yes / No

FIELD BLANK? Yes / No (name/time/comments):

DUPLICATE SAMPLE? Yes / No (name/time/comments):

MS/MSD? Yes / No (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: CLR-CLR ODOR: None

OBSERVATIONS : A Pump Set 1ft off Bottom
A Temp Spike why?

Sample tubing left in well at completion? (Yes or No):

WEATHER DATA : TEMP.: 38 SKY : Ovc WIND : 0-3

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: 1 of 1

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS45S
CITY, STATE, ZIP :	Fridley, MN	DATE:	11.09.11
SAMPLER :	Joe Stala 4	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-08

WELL DATA		PURGE DATA	
WELL NAME :	MS45S	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	118
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.22
WELL DEPTH (ft) :	34.90	PURGE START / END TIME :	1113 / 1131
DEPTH TO WATER (toc):	27.01 DATE: 11.9.11	SAMPLING BEGIN / END TIME :	1134 / 1137
WATER COLUMN HEIGHT (ft):	7.89	PUMP ID # : Rental	YSI ID # : 217003
WELL VOLUME (gal) :	1.28	WATER LEVEL ID # :	030207

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1116	0.66	11.58	1.022	0.72	7.13	-106.2	25.7	27.11
2	1119	1.32	11.90	1.019	0.77	7.11	-120.6	14.1	
3	1122	1.98	12.06	1.007	1.14	7.09	-125.2	5.0	27.11
4	1125	2.64	12.10	0.996	1.74	7.09	-126.3	1.7	
5	1128	3.30	12.11	0.997	1.80	7.08	-127.1	0.2	
6	1131	3.96	12.16	0.990	1.95	7.04	-128.1	0.6	27.11
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	3.96	VOC: 6 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.09	
STAB. TEMP (C) :	12.16	
STAB. Sp. CONDUCTIVITY :	0.990	
STAB. D.O. :	1.95	
STAB. pH :	7.04	
STAB. ORP :	-128.1	
STAB. TURBIDITY:	0.6	

SAMPLE TIME : 1134 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? (Yes) / No (name/time/comments): QCD09 @ 1000

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: CLR-CLR ODOR : Skunky

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No))

WEATHER DATA : TEMP.: 45 SKY : PC WIND : 9-5

FIELD SAMPLING DATA SHEET

QC/QA Check _____

Page: 1 of

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	~~MS4~~ MS04 IS
CITY, STATE, ZIP :	Fridley, MN	DATE:	11.9.11
SAMPLER :	Joe Stalock	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	~~11.01.11~~ 110111-08

WELL DATA		PURGE DATA	
WELL NAME :	MS04IS	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	170
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	1.33
WELL DEPTH (ft) :	76.73	PURGE START / END TIME :	1209 / 1239
DEPTH TO WATER (toc):	27.79 DATE: 11.9.11	SAMPLING BEGIN / END TIME :	1242 / 1245
WATER COLUMN HEIGHT (ft):	48.94	PUMP ID # : Rental	YSI ID # : 217003
WELL VOLUME (gal) :	7.97	WATER LEVEL ID # :	232007

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1212	3.99	11.55	0.810	0.70	7.68	-208.4	16.7	27.86
2	1215	7.98	11.54	0.925	0.29	7.27	-151.3	12.3	
3	1218	11.97	11.58	0.936	0.22	7.19	-143.7	12.9	
4	1221	15.96	11.59	0.943	0.20	7.16	-142.7	9.1	
5	1224	19.95	11.59	0.944	0.19	7.15	-142.3	7.6	27.86
6	1227	23.94	11.58	0.947	0.18	7.14	-144.7	5.7	
7	1230	27.93	11.59	0.948	0.17	7.13	-143.6	5.6	
8	1233	31.92	11.57	0.946	0.17	7.12	-141.2	5.5	
9	1236	35.91	11.59	0.946	0.17	7.12	-141.7	5.1	27.86
10	1239	39.90	11.59	0.946	0.17	7.12	-141.8	4.8	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	39.90	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5	
STAB. TEMP (C) :	11.59	* Well not stable
STAB. Sp. CONDUCTIVITY :	0.946	TURB
STAB. D.O. :	0.17	
STAB. pH :	7.12	
STAB. ORP :	-141.8	
STAB. TURBIDITY:	4.8	

SAMPLE TIME : 1242 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: CLR-CLR ODOR : None

OBSERVATIONS : Pump very Rusty when pulled out Cleaned off w/ Rag and disposed of Rag. Decon Standard

Sample tubing left in well at completion? (Yes or (No)

WEATHER DATA : TEMP.: 45 SKY : PC WIND : 0-5

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: 1 of 1

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS15IS
CITY, STATE, ZIP :	Fridley, MN	DATE:	11.09.11
SAMPLER :	Joe Stalock	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-08

WELL DATA		PURGE DATA	
WELL NAME :	MS15IS	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	155 - 145 - 135
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.80 0.50
WELL DEPTH (ft) :	77.80	PURGE START / END TIME :	1337 / 1427
DEPTH TO WATER (toc):	28.45 DATE: 11.9.11	SAMPLING BEGIN / END TIME :	1430 / 1433
WATER COLUMN HEIGHT (ft):	49.27	PUMP ID # : Rental	YSI ID # : 217003
WELL VOLUME (gal) :	8.03	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1342	4.05	12.86	0.537	2.13	7.67	-274.8	2.4	33.41
2	1347	6.55	12.59	0.682	0.39	7.44	-170.4	3.0	33.70
3	1352	9.05	12.46	0.814	0.28	7.06	-103.5	Ø	33.91
4	1357	11.55	12.46	0.822	0.24	7.04	-100.5	Ø	33.89
5	1302	14.05	12.45	0.825	0.23	7.04	-101.8	Ø	
6	1407	16.55	12.41	0.827	0.21	7.04	-103.0	Ø	33.65
7	1412	19.05	12.36	0.829	0.21	7.04	-106.3	Ø	
8	1417	21.55	12.40	0.826	0.21	7.05	-108.9	Ø	33.84
9	1422	24.05	12.35	0.830	0.20	7.05	-109.1	Ø	33.94
10	1427	26.55	12.32	0.830	0.19	7.05	-109.9	0.6	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	26.55	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.3	
STAB. TEMP (C) :	12.32	
STAB. Sp. CONDUCTIVITY :	0.830	
STAB. D.O. :	0.19	
STAB. pH :	7.05	
STAB. ORP :	-109.9	
STAB. TURBIDITY:	0.6	

SAMPLE TIME : 1430 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments): QCR07 @ 1510

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Gr. Clr ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)

WEATHER DATA : TEMP.: 40 SKY : Sunny WIND : 5 MPH

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: 1 of

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS33D
CITY, STATE, ZIP :	Fridley, MN	DATE:	11.10.11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-11

WELL DATA		PURGE DATA	
WELL NAME :	MS33D	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	225
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	1.13
WELL DEPTH (ft) :	120.29	PURGE START / END TIME :	11:06 /
DEPTH TO WATER (toc):	17.11 DATE: 11.10.11	SAMPLING BEGIN / END TIME :	/
WATER COLUMN HEIGHT (ft):	103.18	PUMP ID # : 275106	YSI ID # : 217002
WELL VOLUME (gal) :	16.52	WATER LEVEL ID # :	230008

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	11:11	8.45	14.91	0.388	0.20	8.38	-301.7	8.4	20.32
* 2	11:16	16.90	14.23	0.670	0.17	7.45	-192.5	8.9	
3	11:21	22.55	14.06	0.679	0.17	7.40	-185.9	6.5	19.47
4	11:26	28.20	13.89	0.698	0.17	7.33	-175.4	1.8	
5	11:31	33.85	13.75	0.708	0.17	7.29	-166.4	0.0	19.38
6	11.36	39.5	13.69	0.712	0.17	7.28	-162.9	0.0	
7	11.41	45.15	13.63	0.714	0.17	7.27	-160.5	0.0	
8	11.46	50.80	13.61	0.720	0.17	7.27	-162.1	0.0	
9									
10									

5.65

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	50.80	VOC: 9 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.02	
STAB. TEMP (C) :	13.61	
STAB. Sp. CONDUCTIVITY :	0.720	
STAB. D.O. :	0.17	
STAB. pH :	7.27	
STAB. ORP :	-162.1	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1148 SAMPLE FIELD FILTERED ? : Yes (No)

FIELD BLANK? Yes (No) (name/time/comments):

DUPLICATE SAMPLE? Yes (No) (name/time/comments):

MS/MSD? (Yes) / No (name/time/comments): MS33D x6

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear / clear ODOR : none.

OBSERVATIONS : * - slowed purge rate due to falling w.l.

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: SKY : Indoors WIND :

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: 1 of 1

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS075
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-10-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-11

WELL DATA		PURGE DATA	
WELL NAME :	MS075	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	150
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.34
WELL DEPTH (ft) :	29.92	PURGE START / END TIME :	1442 / 1517
DEPTH TO WATER (toc):	17.44 DATE: 11-10-11	SAMPLING BEGIN / END TIME :	1514 / 1516
WATER COLUMN HEIGHT (ft):	12.48	PUMP ID # : 275106	YSI ID # : 217002
WELL VOLUME (gal) :	2.03	WATER LEVEL ID # :	230008

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1445	1.02	13.14	1.762	2.11	6.40	33.2	15.9	
2	1448	2.04	13.39	1.755	1.22	6.63	36.7	4.8	17.48
3	1451	3.06	13.40	1.752	1.14	6.64	38.2	6.9	
4	1454	4.08	13.52	1.750	1.03	6.63	41.0	4.3	
5	1457	5.10	13.51	1.758	1.02	6.67	41.2	4.2	17.49
6	1500	6.12	13.52	1.727	1.01	6.64	39.2	3.8	
7	1503	7.14	13.35	1.747	1.00	6.60	37.6	3.8	17.52
8	1506	8.16	13.29	1.737	0.96	6.60	40.2	4.0	
9	1509	9.18	13.40	1.737	0.94	6.58	41.3	4.4	
10	1512	10.20	13.56	1.734	0.92	6.57	38.0	3.8	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	10.20	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5	
STAB. TEMP (C) :	13.56	
STAB. Sp. CONDUCTIVITY :	1.734	
STAB. D.O. :	0.92	Did Stabilize Temp.
STAB. pH :	6.57	
STAB. ORP :	38.0	
STAB. TURBIDITY:	3.8	

SAMPLE TIME : 1514 SAMPLE FIELD FILTERED ? : Yes / No

FIELD BLANK? Yes / No (name/time/comments):

DUPLICATE SAMPLE? Yes / No (name/time/comments):

MS/MSD? Yes / No (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear / clear ODOR : None / None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or No):

WEATHER DATA : TEMP.: 40°F SKY : cloudy WIND : 5-10

FIELD SAMPLING DATA SHEET

QC/QA Check _____

Page: 1 of

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	US6502
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-10-11

SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-11

WELL DATA		PURGE DATA	
WELL NAME :	US6502	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :		PUMP CONTROLLER SETTINGS:	1600
WELL DIAMETER (in) :		PURGE RATE (gpm) :	0.57
WELL DEPTH (ft) :	40.52	PURGE START / END TIME :	1602 / 1631
DEPTH TO WATER (toc):	19.78 DATE: 11-10-11	SAMPLING BEGIN / END TIME :	/
WATER COLUMN HEIGHT (ft):	20.74	PUMP ID # : 275016	YSI ID # : 272002
WELL VOLUME (gal) :	3.38	WATER LEVEL ID # :	230008

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1605	1.71	11.24	1.182	0.58	7.14	-119.4	80.5	19.81
2	1608	3.42	11.44	1.183	0.48	7.12	-119.9	27.8	19.80
3	1611	5.13	11.45	1.182	0.43	7.09	-120.0	15.2	
4	1614	6.84	11.47	1.182	0.38	7.07	-120.0	5.3	19.80
5	1617	8.55	11.51	1.182	0.37	7.05	-119.0	3.3	
6	1620	10.26	11.37	1.183	0.35	7.04	-119.5	2.6	
7	1623	11.97	11.25	1.183	0.34	7.04	-119.8	1.7	19.81
8	1626	13.68	11.21	1.182	0.32	7.04	-120.2	1.7	
9	1629	15.39	11.19	1.178	0.32	7.03	-119.2	0.8	
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	15.39	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	4.55	
STAB. TEMP (C) :	11.19	
STAB. Sp. CONDUCTIVITY :	1.178	
STAB. D.O. :	0.32	
STAB. pH :	7.03	
STAB. ORP :	-119.2	
STAB. TURBIDITY:	0.8	

SAMPLE TIME : 1631 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: cloudy brown / ODOR : None /

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 40°F SKY : cloudy WIND : 5-10

FIELD SAMPLING DATA SHEET

QC/QA Check _____

Page: 1 of 1

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS265
CITY, STATE, ZIP :	Fridley, MN	DATE:	11.10.11
SAMPLER :	Joe Stalock	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-10

WELL DATA		PURGE DATA	
WELL NAME :	MS265	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	139
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.53
WELL DEPTH (ft) :	47.66	PURGE START / END TIME :	919 / 949
DEPTH TO WATER (toc):	28.22 DATE: 11.10.11	SAMPLING BEGIN / END TIME :	952 / 955
WATER COLUMN HEIGHT (ft):	19.44	PUMP ID # : Rental	YSI ID # : 217003
WELL VOLUME (gal) :	3.16	WATER LEVEL ID # :	23000 1

VOLUME CONVERSION FACTOR: (0.163 - 2") 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	922	1.54	11.99	1.442	0.43	6.94	-123.2	31.2	29.25
2	925	3.18	12.02	1.385	0.35	6.98	-122.5	28.3	29.25
3	928	4.77	12.01	1.377	0.28	7.01	-120.4	25.1	29.27
4	931	6.36	12.03	1.367	0.22	7.02	-118.2	23.1	
5	934	7.95	12.03	1.373	0.22	7.03	-117.8	23.1	29.27
6	937	9.54	12.01	1.353	0.21	7.04	-117.3	23.5	
7	940	11.13	12.16	1.362	0.21	7.04	-115.5	20.1	29.20
12.72 8	943	12.74	12.21	1.367	0.20	7.05	-117.3	19.6	
9	946	14.30	12.13	1.350	0.19	7.05	-116.9	17.3	
10	949	15.90	12.07	1.395	0.18	7.04	-116.2	17.7	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	15.90	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5	
STAB. TEMP (C) :	12.07	Well not Stable
STAB. Sp. CONDUCTIVITY :	1.395	
STAB. D.O. :	0.18	temp
STAB. pH :	7.04	cond
STAB. ORP :	-116.2	turbidity
STAB. TURBIDITY:	17.7	

SAMPLE TIME : 952 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Clr-Clr ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 32 SKY : Ovc WIND : 0-5

FIELD SAMPLING DATA SHEET

QC/QA Check _____

Page: 1 of 1

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS44I
CITY, STATE, ZIP :	Fridley, MN	DATE:	11.10.11
SAMPLER :	Joe Stalock	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-10

WELL DATA		PURGE DATA	
WELL NAME :	MS44I	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	175
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	1.49
WELL DEPTH (ft) :	81.84	PURGE START / END TIME :	1020 / 1038
DEPTH TO WATER (toc):	27.15 DATE: 11.10.11	SAMPLING BEGIN / END TIME :	1041 / 1044
WATER COLUMN HEIGHT (ft):	54.69	PUMP ID # : Rental	YSI ID # : 217003
WELL VOLUME (gal) :	8.91	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1023	4.47	11.00	0.889	2.16	7.69	-239.0	15.9	28.29
2	1026	8.94	10.88	1.101	0.65	7.37	-200.6	5.0	28.31
3	1029	13.41	10.94	1.174	0.38	7.20	-156.6	1.6	28.31
4	1032	17.88	10.98	1.183	0.30	7.17	-152.0	1.4	
5	1035	22.35	11.05	1.192	0.24	7.15	-149.5	1.1	28.31
6	1038	26.82	11.07	1.196	0.20	7.14	-149.5	1.1	
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	26.82	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.0	
STAB. TEMP (C) :	11.07	
STAB. Sp. CONDUCTIVITY :	1.196	
STAB. D.O. :	0.20	
STAB. pH :	7.14	
STAB. ORP :	-149.5	
STAB. TURBIDITY:	1.1	

SAMPLE TIME : 1041 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: CLR-CLR ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or No):

WEATHER DATA : TEMP.: 36 SKY : OVC WIND : 5-7 MPH

FIELD SAMPLING DATA SHEET

QC/QA Check _____

Page: 1 of 1

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS46S
CITY, STATE, ZIP :	Fridley, MN	DATE:	11.10.11

SAMPLER : Joe Stalock	ANALYTICAL LABORATORY : CAS
COMPANY : Bay West, Inc.	CHAIN OF CUSTODY # : 110111-10

WELL DATA		PURGE DATA	
WELL NAME :	MS46S	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	1.22
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	~~0.30~~ 0.25
WELL DEPTH (ft) :	35.92	PURGE START / END TIME :	1112 / 1139
DEPTH TO WATER (toc):	26.86 DATE: 11.10.11	SAMPLING BEGIN / END TIME :	1142 / 1145
WATER COLUMN HEIGHT (ft):	9.06	PUMP ID # : Rental	YSI ID # : 217003
WELL VOLUME (gal) :	1.47	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1115	0.75	11.25	1.031	0.44	7.17	-128.8	46.4	
2	1118	1.50	11.75	1.033	0.24	7.15	-130.7	12.0	27.19
3	1121	2.25	11.80	1.032	0.24	7.15	-131.1	11.3	
4	1124	3.0	11.94	1.031	0.20	7.15	-132.6	7.2	27.19
5	1127	3.75	11.97	1.031	0.21	7.15	-134.9	7.7	
6	1130	4.5	12.02	1.032	0.21	7.15	-134.6	6.1	
7	1133	5.25	12.03	1.031	0.20	7.15	-134.6	4.8	27.19
8	1136	6.00	12.10	1.031	0.21	7.15	-134.9	3.70	
9	1139	6.75	12.12	1.032	0.19	7.15	-135.4	3.1	
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	6.75	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	4.59	
STAB. TEMP (C) :	12.12	
STAB. Sp. CONDUCTIVITY :	1.032	
STAB. D.O. :	0.19	
STAB. pH :	7.15	
STAB. ORP :	-135.4	
STAB. TURBIDITY:	3.1	

SAMPLE TIME : 1142 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: CLR-CLR ODOR : NO

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 37 SKY : OVC WIND : 5 MPH

FIELD SAMPLING DATA SHEET

QC/QA Check _____

Page: 1 of 1

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS188
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-10-11
SAMPLER :	Joe Stalock	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-10

WELL DATA		PURGE DATA	
WELL NAME :	MS188	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	~~123~~ 125
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.32
WELL DEPTH (ft) :	40.07	PURGE START / END TIME :	1213 / 1243
DEPTH TO WATER (toc):	28.47 DATE: 11.10.11	SAMPLING BEGIN / END TIME :	1246 / 1249
WATER COLUMN HEIGHT (ft):	11.60	PUMP ID # : Rental	YSI ID # : 217003
WELL VOLUME (gal) :	1.89	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTOR: (0.163 - 2") 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1216	0.96	11.47	1.048	0.51	7.19	-107.4	45.8	28.57
2	1219	1.92	12.44	1.057	0.35	7.15	-122.0	31.3	
3	1222	2.88	12.61	1.058	0.31	7.15	-124.9	23.3	28.57
4	1225	3.84	12.22	1.069	0.27	7.15	-126.0	11.2	
5	1228	4.80	12.28	1.059	0.24	7.15	-127.2	10.2	28.57
6	1231	5.76	12.30	1.058	0.23	7.15	-128.7	9.1	
7	1234	6.72	12.31	1.058	0.21	7.14	-128.8	8.3	
8	1237	7.68	12.18	1.056	0.20	7.14	-129.3	4.9	28.57
9	1240	8.64	12.13	1.062	0.18	7.14	-129.8	4.3	
10	1243	9.60	12.12	1.060	0.17	7.14	-130.3	3.5	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	9.60	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5	
STAB. TEMP (C) :	12.12	
STAB. Sp. CONDUCTIVITY :	1.059	
STAB. D.O. :	0.18	
STAB. pH :	7.14	
STAB. ORP :	-130.3	
STAB. TURBIDITY:	3.3	

SAMPLE TIME : 1246 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes (No) (name/time/comments):

DUPLICATE SAMPLE? (Yes) No (name/time/comments): QCD10 @ 1100

MS/MSD? Yes (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: CLR-CLR ODOR : NONE

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No))

WEATHER DATA : TEMP.: 36 SKY : OVC WIND : 5-7 MPH

FIELD SAMPLING DATA SHEET

QC/QA Check _____

Page: 1 of 1

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS14IS
CITY, STATE, ZIP :	Fridley, MN	DATE:	11.10.11
SAMPLER :	Joe Stokell	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-10

WELL DATA		PURGE DATA	
WELL NAME :	MS14IS	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	165
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.88
WELL DEPTH (ft) :	69.30	PURGE START / END TIME :	1422 / 1453
DEPTH TO WATER (toc):	36.98 DATE: 11.10.11	SAMPLING BEGIN / END TIME :	1455 / 1458
WATER COLUMN HEIGHT (ft):	32.32	PUMP ID # :	Rental / YSI ID # : 217003
WELL VOLUME (gal) :	5.26	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTOR: (0.163 - 2") 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1425	2.64	12.20	1.556	2.51	7.26	-153.2	45.8	
2	1428	5.28	12.38	1.718	0.39	6.99	-82.8	13.9	37.11
* 3	1431	7.92	12.34	1.739	0.27	6.95	-74.3	37.8	
4	1434	10.56	12.34	1.741	0.26	6.94	-75.0	26.4	
5	1437	13.20	12.46	1.755	0.22	6.93	-71.7	11.5	37.11
12.47 6	1440	15.84	21.12 12.47	1.758	0.21	6.92	-71.1	10.4	
12.43 7	1443	18.48	23.76 12.43	1.764	0.20	6.92	-71.6	4.0	
8	1446	21.12	12.46	1.746	0.19	6.91	-71.8	1.7	37.11
9	1449	23.76	12.44	1.745	0.19	6.91	-72.1	1.0	
10	1452	26.40	12.41	1.771	0.18	6.91	-72.2	0.7	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	26.40	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5	
STAB. TEMP (C) :	12.41	Stable
STAB. Sp. CONDUCTIVITY :	1.771	
STAB. D.O. :	0.18	
STAB. pH :	6.91	
STAB. ORP :	-72.2	
STAB. TURBIDITY:	0.7	

SAMPLE TIME : 1455 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: CLR - CLR ODOR : No

OBSERVATIONS : * Turb Spike after WLR

* Temp 6 = 12.47

* Temp 7 = 12.43

Sample tubing left in well at completion? (Yes or (No))

WEATHER DATA : TEMP.: 36 SKY : OVC WIND : 5-10 mph

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: 1 of 1

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS35I
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-10-11
SAMPLER :	Joe Stalock	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-10

WELL DATA		PURGE DATA	
WELL NAME :	MS35I	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	1.49
WELL DEPTH (ft) :	81.76	PURGE START / END TIME :	1557 / 1615
DEPTH TO WATER (toc):	26.83 DATE: 11.10.11	SAMPLING BEGIN / END TIME :	1618 / 1621
WATER COLUMN HEIGHT (ft):	54.79	PUMP ID # : Rental	YSI ID # : 917003
WELL VOLUME (gal) :	8.93	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1600	4.47	13.27	0.844	0.33	7.79	-213.6	5.3	
2	1603	8.94	13.17	1.047	0.25	7.34	-165.5	3.0	26.83
3	1606	13.41	13.11	1.054	0.22	7.27	-154.7	1.0	
4	1609	17.88	13.07	1.061	0.20	7.24	-159.2	1.0	
5	1612	22.35	13.02	1.062	0.18	7.22	-157.6	1.0	26.83
6	1615	26.82	13.01	1.062	0.17	7.21	-157.6	1.2	26.83
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	28.82	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.0	
STAB. TEMP (C) :	13.01	
STAB. Sp. CONDUCTIVITY :	1.062	
STAB. D.O. :	0.17	
STAB. pH :	7.21	
STAB. ORP :	-157.6	
STAB. TURBIDITY:	1.2	

SAMPLE TIME : 1618 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: CLR-CLR ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No))

WEATHER DATA : TEMP.: 36 SKY : OVC WIND : 5 MPH

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: 1 of 1

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS38S
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-10-11
SAMPLER :	JoeStalock	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-10

WELL DATA		PURGE DATA	
WELL NAME :	MS38S	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	128
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.19
WELL DEPTH (ft) :	41.69	PURGE START / END TIME :	1644 / 1714
DEPTH TO WATER (toc):	34.67 DATE: 11.10.11	SAMPLING BEGIN / END TIME :	1717 / 1720
WATER COLUMN HEIGHT (ft):	7.02	PUMP ID # : Rental	YSI ID # : 217003
WELL VOLUME (gal) :	1.14	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTOR: (0.163 - 2") 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1647	0.57	13.34	1.232	0.47	6.95	-62.7	403.0	34.93
2	1650	1.14	13.49	1.232	0.40	6.93	-45.4	309.4	
3	1653	1.71	14.27	1.235	0.32	6.91	-29.5	127.2	35.56
4	1656	2.28	14.12	1.238	0.34	6.90	-24.8	86.2	
5	1659	2.85	~~4.56~~ 14.10	14.19	0.33	6.90	-20.2	46.7	35.56
6	1702	3.42	~~5.13~~ 14.34	1.236	0.33	6.90	-19.3	367.5	
7	1705	3.99	~~5.70~~ 14.31	1.231	0.29	6.90	-15.7	300.5	35.56
8	1708	4.56	14.90	1.230	0.26	6.90	-14.9	80.0	
9	1711	5.13	14.95	1.232	0.28	6.90	-14.9	55.4	35.56
10	1714	5.70	15.12	1.231	0.29	6.90	-15.4	31.5	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	5.70	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5	
STAB. TEMP (C) :	15.12	
STAB. Sp. CONDUCTIVITY :	1.231	
STAB. D.O. :	0.29	
STAB. pH :	6.90	
STAB. ORP :	-15.4	
STAB. TURBIDITY:	31.5	

SAMPLE TIME : 1717 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? (Yes) / No (name/time/comments): QC08 @

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Brown/Tan ODOR : NO

OBSERVATIONS : * Turb Spike after WLR

Bottom tagged when putting pump down well

Last Sample Bottle was almost turbid

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 34 SKY : OK WIND : 5mph

FIELD SAMPLING DATA SHEET

QC/QA Check _____

Page: 1 of 1

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS02IS
CITY, STATE, ZIP :	Fridley, MN	DATE:	11.11.11
SAMPLER :	Joe Stalocy	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-10

WELL DATA		PURGE DATA	
WELL NAME :	MS02IS	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	180
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	1.58
WELL DEPTH (ft) :	77.11	PURGE START / END TIME :	935 / 953
DEPTH TO WATER (toc):	19.07 DATE: 11.11.11	SAMPLING BEGIN / END TIME :	956 / 959
WATER COLUMN HEIGHT (ft):	58.04	PUMP ID # :	Rental / YSI ID # : 217003
WELL VOLUME (gal) :	9.47	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTOR: (0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	938	4.74	11.74	0.750	0.58	8.03	-214.6	5.0	19.59
2	941	9.48	11.61	0.857	0.34	7.38	-176.3	Ø	19.60
3	944	14.22	11.42	0.873	0.30	7.28	-167.3	0.2	20.50
4	947	18.96	11.43	0.875	0.25	7.27	-170.2	2.1	20.50
5	950	23.7	11.50	0.885	0.19	7.24	-171.1	Ø	
6	953	28.44	11.49	0.884	0.19	7.23	-172.1	Ø	20.52
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	28.44	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.2	
STAB. TEMP (C) :	11.49	
STAB. Sp. CONDUCTIVITY :	0.884	
STAB. D.O. :	0.19	
STAB. pH :	7.23	
STAB. ORP :	-172.1	
STAB. TURBIDITY:	Ø	

SAMPLE TIME : ~~0953~~ 09.56 SAMPLE FIELD FILTERED ? : Yes / No

FIELD BLANK? Yes / No (name/time/comments):

DUPLICATE SAMPLE? Yes / No (name/time/comments):

MS/MSD? Yes / No (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Tan/Clr ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or No):

WEATHER DATA : TEMP.: 39 SKY : PC WIND : 5-10MPH

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: 1 of 1

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS08S
CITY, STATE, ZIP :	Fridley, MN	DATE:	11.11.11

SAMPLER :	Joe Stalach	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110911-10

WELL DATA		PURGE DATA	
WELL NAME :	MS08S	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	108 - 106
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.32
WELL DEPTH (ft) :	29.32	PURGE START / END TIME :	1029 / 1059
DEPTH TO WATER (toc):	17.48 DATE: 11.11.11	SAMPLING BEGIN / END TIME :	1102 / 1105
WATER COLUMN HEIGHT (ft):	11.84	PUMP ID # : Rental	YSI ID # : 217003
WELL VOLUME (gal) :	1.92	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1032	0.96	12.38	1.112	0.28	6.66	-111.0	46.5	~~17.50~~ 17.50
2	1035	1.92	12.82	1.089	0.23	6.61	-109.1	22.8	
3	1038	2.88	12.80	1.084	0.22	6.60	-108.6	18.0	
4	1041	3.84	12.88	1.080	0.22	6.59	-108.2	14.1	17.50
5	1044	4.80	12.86	1.076	0.22	6.58	-108.1	11.4	
6	1047	5.76	12.93	1.073	0.22	6.58	-108.1	8.8	
7	1050	6.72	12.93	1.071	0.22	6.57	-108.6	6.6	17.50
8	1053	7.68	12.91	1.070	0.22	6.57	-108.7	4.7	
9	1056	8.64	12.91	1.068	0.22	6.56	-108.8	4.2	
10	1059	9.60	12.92	1.068	0.22	6.56	-108.9	3.6	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	9.60	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5	
STAB. TEMP (C) :	12.92	Stable after 5 wv
STAB. Sp. CONDUCTIVITY :	1.068	
STAB. D.O. :	0.22	
STAB. pH :	6.56	
STAB. ORP :	108.9	
STAB. TURBIDITY:	3.6	

SAMPLE TIME : 1102 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: CLR CLR ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 35 SKY : CLR WIND : 5-10MPH

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: 1 of 1

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS40D
CITY, STATE, ZIP :	Fridley, MN	DATE:	11.11.11
SAMPLER :	Joe Stalock	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-12

WELL DATA		PURGE DATA	
WELL NAME :	MS40D	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	165
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	1.19
WELL DEPTH (ft) :	~~135.5~~ 135.25	PURGE START / END TIME :	1153 / 1238
DEPTH TO WATER (toc):	25.74 DATE: 11.11.11	SAMPLING BEGIN / END TIME :	1241 / 1244
WATER COLUMN HEIGHT (ft):	109.51	PUMP ID # : Rental	YSI ID # : 217003
WELL VOLUME (gal) :	17.85	WATER LEVEL ID # :	230007

VOLUME CONVERSION FACTOR: (0.163 - 2") 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

1 gw 15 min

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1158	5.95	11.79	0.437	0.38	7.84	-230.7	12.8	26.41
2	1203	11.90	11.95	0.732	0.23	7.71	-169.2	20.1	26.48
3	1208	17.85	12.03	0.873	0.21	7.10	-122.3	8.0	26.48
4	1213	23.80	12.00	0.891	0.19	7.02	-118.9	5.2	
5	1218	29.75	12.03	0.899	0.18	6.99	-117.6	4.2	
6	1223	35.70	12.01	0.903	0.16	6.97	-117.7	3.9	26.48
7	1228	41.65	12.05	0.905	0.16	6.96	-118.5	3.5	
8	1233	47.60	12.08	0.907	0.15	6.95	-118.3	3.6	
9	1238	53.55	12.05	0.908	0.15	6.94	-119.5	3.6	
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	53.55	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3	
STAB. TEMP (C) :	12.05	
STAB. Sp. CONDUCTIVITY :	0.908	
STAB. D.O. :	0.15	
STAB. pH :	6.94	
STAB. ORP :	-119.5	
STAB. TURBIDITY:	3.6	

SAMPLE TIME : 1241 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Grey - Clear ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)).

WEATHER DATA : TEMP.: 47 SKY : CLR WIND : 5-10 mph

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: 1 of 1

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS33S
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-11-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-11

WELL DATA		PURGE DATA	
WELL NAME :	MS33S	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	150
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.28
WELL DEPTH (ft) :	27.05	PURGE START / END TIME :	945 /
DEPTH TO WATER (toc):	17.03 DATE: 11-11-11	SAMPLING BEGIN / END TIME :	1017 / 1019
WATER COLUMN HEIGHT (ft):	10.02	PUMP ID # : 275106	YSI ID # : 217002
WELL VOLUME (gal) :	1.64	WATER LEVEL ID # :	230008

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	0948	0.84	19.67	0.550	1.03	7.38	74.2	78.1	17.15
2	0951	1.68	19.99	0.599	0.98	7.45	94.7	17.1	
3	0954	2.52	20.05	0.610	1.04	7.42	97.2	10.0	17.16
4	0957	3.36	20.12	0.612	1.00	7.38	95.8	4.9	
5	10:00	4.20	20.22	0.612	1.01	7.36	90.2	3.0	17.16
6	10:03	5.04	20.70	0.612	0.95	7.35	82.6	2.3	17.15
7	10:06	5.88	20.94	0.611	0.92	7.34	78.1	2.3	17.14
8	10:09	6.72	21.23	0.608	0.95	7.33	70.2	4.8	17.14
9	10:12	7.56	20.46	0.611	0.94	7.33	60.3	4.1	
10	10:15	8.40	20.53	0.612	0.93	7.33	53.3	2.9	

4.92=3

4.2

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	8.40	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5	
STAB. TEMP (C) :	20.53	
STAB. Sp. CONDUCTIVITY :	0.612	NOT STABLE
STAB. D.O. :	0.93	
STAB. pH :	7.33	Temperature
STAB. ORP :	53.3	
STAB. TURBIDITY:	2.9	

SAMPLE TIME : 1017 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: ODOR :

OBSERVATIONS :

* Temperature did NOT stabilize

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: SKY : Inside WIND : —

FIELD SAMPLING DATA SHEET

QC/QA Check _____		Page: 1 of 1	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS31S
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-11-11
SAMPLER :	Ryan Sebey	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-11

WELL DATA		PURGE DATA	
WELL NAME :	MS31S	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	145
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.27
WELL DEPTH (ft) :	27.49	PURGE START / END TIME :	1106 /
DEPTH TO WATER (toc):	17.80 DATE 11-11-11	SAMPLING BEGIN / END TIME :	1138 /
WATER COLUMN HEIGHT (ft):	9.69	PUMP ID # : 245706	YSI ID # : 217002
WELL VOLUME (gal) :	1.58	WATER LEVEL ID # :	230008

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	11:09	0.81	20.32	1.455	1.94	6.92	-72.8	219.3	17.84
2	11:12	1.62	20.46	1.452	1.85	6.90	-63.7	203.9	17.82
3	11:15	2.43	20.98	1.443	1.67	6.84	-65.4	174.4	
4	11:18	3.24	21.20	1.458	1.48	6.82	-67.5	95.2	17.84
5	11:21	4.05	21.38	1.459	1.24	6.30	-71.2	28.1	17.84
6	11:24	4.86	21.66	1.461	1.13	6.78	-72.0	37.2	
7	11:27	5.67	21.07	1.462	1.71	6.79	-73.3	18.3	17.84
8	11:30	6.48	20.66	1.456	1.43	6.73	-72.3	9.0	17.84
9	11:33	7.29	20.39	1.458	1.28	6.78	-72.5	11.3	
10	11:36	8.1	20.87	1.459	0.74	6.77	-72.3	10.1	

7.9

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	8.1	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5	
STAB. TEMP (C) :	20.87	Not stable due to temperature and turbidity
STAB. Sp. CONDUCTIVITY :	1.459	
STAB. D.O. :	0.74	
STAB. pH :	6.77	
STAB. ORP :	-72.3	
STAB. TURBIDITY:	10.1	

SAMPLE TIME : 1138 SAMPLE FIELD FILTERED ? : Yes (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear ODOR : None

OBSERVATIONS :

flow from pump fluctuating

Sample tubing left in well at completion? (Yes or (No))

WEATHER DATA : TEMP.: SKY : Indoors WIND : –

FIELD SAMPLING DATA SHEET

QC/QA Check _____

Page: 1 of 1

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS28D
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-11-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	11014-11

WELL DATA		PURGE DATA	
WELL NAME :	MS28D	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	~~325~~ 215
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	~~2+~~ 1.08
WELL DEPTH (ft) :	114.69	PURGE START / END TIME :	12~~35~~ / 1320
DEPTH TO WATER (toc):	15.90 DATE: 11-11-11	SAMPLING BEGIN / END TIME :	1322 / 1324
WATER COLUMN HEIGHT (ft):	98.79	PUMP ID # :	245706
WELL VOLUME (gal) :	16.10	YSI ID # :	217002
		WATER LEVEL ID # :	230008

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1230	5.4	14.05	0.576	0.49	8.10	-232.3	72.7	
2	1245	10.8	13.22	0.739	0.32	7.54	-163.3	11.3	16.54
3	1250	16.20	13.01	0.737	0.30	7.38	146.9	2.9	16.54
4	1255	21.6	12.95	0.740	0.28	7.33	139.8	1.2	16.54
5	1300	27.0	12.91	0.740	0.28	7.28	139.6	1.0	16.54
6	1305	32.4	12.87	0.740	0.28	7.27	-138.5	0.6	16.54
7	1310	37.8	12.83	0.742	0.27	7.25	-139.0	0.3	16.54
8	1315	43.2	12.80	0.743	0.27	7.24	-143.1	0.3	16.54
9	1320	48.6	12.79	0.743	0.27	7.24	-148.8	0.1	16.54
10									

(48.6 = 3)

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	48.6	VOC: 6 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3	
STAB. TEMP (C) :	12.79	
STAB. Sp. CONDUCTIVITY :	0.743	
STAB. D.O. :	0.27	
STAB. pH :	7.24	
STAB. ORP :	-148.8	
STAB. TURBIDITY:	0.1	

SAMPLE TIME : 1322 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? (Yes) / No (name/time/comments): ~~At~~ QC005 at 1355

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear / clear ODOR : yes

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or No):

WEATHER DATA : TEMP.: SKY : Indoors WIND :

FIELD SAMPLING DATA SHEET

QC/QA Check _____

Page: 1 of 1

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS285
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-11-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-11

WELL DATA		PURGE DATA	
WELL NAME :	MS285	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	145
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.29
WELL DEPTH (ft) :	27.30.	PURGE START / END TIME :	1424 / 1454
DEPTH TO WATER (toc):	16.70 DATE: 11-11-11	SAMPLING BEGIN / END TIME :	1456 / 1458
WATER COLUMN HEIGHT (ft):	10.60	PUMP ID # : 275106	YSI ID # : 217002
WELL VOLUME (gal) :	1.73	WATER LEVEL ID # :	236008

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1427	0.87	17.03	1.669	0.94	6.32	-83.2	131.1	16.79
2	1430	1.74	17.73	1.667	0.61	6.67	-100.3	77.4	
3	1433	2.61	17.53	1.673	0.57	6.70	-105.1	53.6	16.82
4	1436	3.48	17.71	1.673	0.56	6.70	-108.5	35.4	
5	1439	4.35	17.29	1.668	0.50	6.70	-111.4	29.6	16.82
6	1442	5.22	17.34	1.667	0.51	6.70	-111.8	31.2	
7	1445	6.09	17.63	1.670	0.51	6.70	-113.7	10.6	
8	1448	6.96	18.11	1.676	0.44	6.69	-114.9	13.1	16.82
9	1451	7.83	17.98	1.668	0.50	6.69	-115.1	10.9	
10	1454	8.70	17.52	1.676	0.50	6.69	-116.1	10.6	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	8.70	VOC: 6 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5	
STAB. TEMP (C) :	17.52	
STAB. Sp. CONDUCTIVITY :	1.676	NOT STABLE
STAB. D.O. :	0.50	
STAB. pH : 6.69	~~6.69~~	Temp & turbidity
STAB. ORP :	-116.1	
STAB. TURBIDITY:	10.6	

SAMPLE TIME : 1456 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? (Yes) / No (name/time/comments): QCR09 @ 1345

DUPLICATE SAMPLE? (Yes) / No (name/time/comments): QCD06 @ 1530

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: cloudy orange brown / ODOR : slight

OBSERVATIONS :

Heavy gas bubbles observed during purging

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: SKY : Indoors WIND :

6-99

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: 1 of 2

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS12D
CITY, STATE, ZIP :	Fridley, MN	DATE:	11/14/11
SAMPLER :	Shawn Lyman	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	

WELL DATA	PURGE DATA
WELL NAME : MS12D	PURGE METHOD : Grundfos Pump
CASING MATERIAL : Steel	PUMP CONTROLLER SETTINGS: 400
WELL DIAMETER (in) : 3"	PURGE RATE (gpm) : ~~3~~ 2.62
WELL DEPTH (ft) : 132.61	PURGE START / END TIME : 1346 / 1438
DEPTH TO WATER (toc): 18.38 DATE: 11/14/11	SAMPLING BEGIN / END TIME : 1440 / 1441
WATER COLUMN HEIGHT (ft): 114.23	PUMP ID # : 275106 YSI ID # : 217002
WELL VOLUME (gal) : 41.92	WATER LEVEL ID # : Rental

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1350	10.48	11.87	0.474	0.61	8.53	-314.8	6.4	18.66
2	1354	20.96	11.85	0.669	0.42	8.09	-254.4	11.7	
3	1358	31.44	11.73	0.842	0.50	7.62	-181.1	23.0	18.68
4	1402	41.92	11.72	0.851	0.53	7.49	-164.6	14.0	
5	1406	52.40	11.68	0.855	0.32	7.39	-154.2	11.4	18.68
6	1410	62.88	11.68	0.857	0.32	7.36	-150.7	8.3	
7	1414	73.36	11.68	0.858	0.30	7.32	-146.8	4.6	18.68
8	1418	83.84	11.68	0.858	0.30	7.32	-146.3	4.3	
9	1422	94.32	11.67	0.859	0.34	7.30	-144.7	3.1	18.68
10	1426	104.80	11.66	0.860	0.29	7.29	-143.3	2.1	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) : 136.24	~~[illegible]~~	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.25	
STAB. TEMP (C) :	11.65	
STAB. Sp. CONDUCTIVITY :	0.861	
STAB. D.O. :	0.26	
STAB. pH :	7.27	
STAB. ORP :	-140.0	
STAB. TURBIDITY:	0.8	

SAMPLE TIME : 1440

SAMPLE FIELD FILTERED ? : Yes / No

FIELD BLANK? Yes / No (name/time/comments):

DUPLICATE SAMPLE? Yes / No (name/time/comments):

MS/MSD? Yes / No (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Clear ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or No):

WEATHER DATA : TEMP.: SKY : WIND :

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS12D
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-14-11

SAMPLER : Shawn Lyman	ANALYTICAL LABORATORY : CAS
COMPANY : Bay West, Inc.	CHAIN OF CUSTODY # :

WELL DATA	PURGE DATA
WELL NAME : MS12D	PURGE METHOD : Grundfos Pump
CASING MATERIAL : Steel	PUMP CONTROLLER SETTINGS: 400
WELL DIAMETER (in) : 3"	PURGE RATE (gpm) : 2.62
WELL DEPTH (ft) : 132.61	PURGE START / END TIME : 1346 / 1438
DEPTH TO WATER (toc): 18.38 DATE: 11/14/11	SAMPLING BEGIN / END TIME : 1440 / 1441
WATER COLUMN HEIGHT (ft): 114.23	PUMP ID # : 275106 / YSI ID # : 217002
WELL VOLUME (gal) : 41.92	WATER LEVEL ID # : Rental

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1430	115.28	11.66	0.861	0.29	7.28	-141.3	1.4	18.68
2	1434	125.76	11.66	0.861	0.27	7.27	-140.4	1.1	
3	1438	136.24	11.65	0.861	0.26	7.27	-140.0	0.8	18.68
4									
5									
6									
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	136.24	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.25	
STAB. TEMP (C) :	11.65	
STAB. Sp. CONDUCTIVITY :	0.861	
STAB. D.O. :	0.26	
STAB. pH :	7.27	
STAB. ORP :	-140.0	
STAB. TURBIDITY:	0.8	

SAMPLE TIME : 1440 SAMPLE FIELD FILTERED ? : Yes / No

FIELD BLANK? Yes / No (name/time/comments):

DUPLICATE SAMPLE? Yes / No (name/time/comments):

MS/MSD? Yes / No (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Clear ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or No):

WEATHER DATA : TEMP.: SKY : WIND :

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: 1 of 1

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS40S
CITY, STATE, ZIP :	Fridley, MN	DATE:	11/14/11
SAMPLER :	Shawn Lyman	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	

WELL DATA	PURGE DATA
WELL NAME : MS40S	PURGE METHOD : Grundfos Pump
CASING MATERIAL : Steel	PUMP CONTROLLER SETTINGS: 172
WELL DIAMETER (in) : 2"	PURGE RATE (gpm) : 0.18
WELL DEPTH (ft) : 40.74	PURGE START / END TIME : 1106 / 1136
DEPTH TO WATER (toc): 34.22 DATE: 11/14/11	SAMPLING BEGIN / END TIME : 1138 / 1139
WATER COLUMN HEIGHT (ft): 6.52	PUMP ID # : 275106 YSI ID # : 217002
WELL VOLUME (gal) : 1.06	WATER LEVEL ID # : Rental

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1109	0.53	13.59	0.689	8.96	7.55	59.6	110.3	34.41
2	1112	1.06	13.53	0.693	8.01	7.45	85.0	66.3	
3	1115	1.59	13.70	0.688	8.03	7.41	98.9	54.9	34.39
4	1118	2.12	13.75	0.683	8.13	7.37	103.6	46.9	
5	1121	2.65	13.75	0.684	8.13	7.36	105.5	40.8	34.30
6	1124	3.18	13.76	0.684	8.16	7.35	109.2	29.6	
7	1127	3.71	13.79	0.685	8.14	7.34	110.6	25.9	34.29
8	1130	4.24	13.80	0.684	8.19	7.33	112.6	20.3	
9	1133	4.77	13.80	0.681	8.23	7.31	113.7	13.9	34.28
10	1136	5.30	13.82	0.686	8.44	7.29	112.5	13.6	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	5.30	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5	
STAB. TEMP (C) :	13.82	
STAB. Sp. CONDUCTIVITY :	0.686	
STAB. D.O. :	8.44	
STAB. pH :	7.29	
STAB. ORP :	112.5	
STAB. TURBIDITY:	13.6	

SAMPLE TIME : 1138 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Clear ODOR : Faint odor

OBSERVATIONS :

YSI recording high DO values, checked membrane, no signs of bubbles or damage. Will purge 5 well volumes, then sample

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: SKY : WIND :

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS35D
CITY, STATE, ZIP :	Fridley, MN	DATE:	11/14/11
SAMPLER :	Shawn Lyman	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	

WELL DATA		PURGE DATA	
WELL NAME :	MS35D	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	400
WELL DIAMETER (in) :	2"	PURGE RATE (gpm) :	1.11
WELL DEPTH (ft) :	132.66	PURGE START / END TIME :	1614 / 1706
DEPTH TO WATER (toc):	23.69 DATE:	SAMPLING BEGIN / END TIME :	1708 / 1709
WATER COLUMN HEIGHT (ft):	108.97	PUMP ID # : 275106	YSI ID # : 217002
WELL VOLUME (gal) :	17.76	WATER LEVEL ID # :	Rental

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1618	4.44	15.30	0.962	1.25	7.63	-234.9	14.6	23.93
2	1622	8.88	15.11	0.929	0.64	7.42	-190.9	3.1	
3	1626	13.32	15.09	0.932	0.58	7.38	-183.0	2.2	23.96
4	1630	17.76	15.00	0.932	0.54	7.31	-170.1	1.0	
5	1634	22.20	14.96	0.933	0.71	7.27	-163.0	0.4	23.97
6	1638	26.64	14.97	0.932	0.56	7.24	-156.2	0.6	
7	1642	31.08	14.95	0.932	0.44	7.24	-155.7	0.5	23.97
8	1646	35.52	14.96	0.932	0.44	7.22	-152.9	0.0	
9	1650	39.96	14.95	0.933	0.36	7.21	-151.8	0.0	23.98
10	1654	44.40	14.94	0.933	0.35	7.21	-151.4	0.0	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	57.72	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.25	
STAB. TEMP (C) :	14.94	
STAB. Sp. CONDUCTIVITY :	0.935	
STAB. D.O. :	0.27	
STAB. pH :	7.20	
STAB. ORP :	-148.6	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1708 SAMPLE FIELD FILTERED ? : Yes / No

FIELD BLANK? Yes / No (name/time/comments):

DUPLICATE SAMPLE? Yes / No (name/time/comments):

MS/MSD? Yes / No (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Clear ODOR : Paint odor

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or No):

WEATHER DATA : TEMP.: SKY : WIND :

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS35D
CITY, STATE, ZIP :	Fridley, MN	DATE:	11/14/11

SAMPLER : Shawn Lyman	ANALYTICAL LABORATORY : CAS
COMPANY : Bay West, Inc.	CHAIN OF CUSTODY # :

WELL DATA	PURGE DATA
WELL NAME : MS35D	PURGE METHOD : Grundfos Pump
CASING MATERIAL : Steel	PUMP CONTROLLER SETTINGS:
WELL DIAMETER (in) : 2"	PURGE RATE (gpm) : 1.11
WELL DEPTH (ft) : 132.66	PURGE START / END TIME : 1614 / 1706
DEPTH TO WATER (toc): 23.69 DATE: 11/14/11	SAMPLING BEGIN / END TIME : 1708 / 1710
WATER COLUMN HEIGHT (ft): 108.97	PUMP ID # : 275104 YSI ID # : 217002
WELL VOLUME (gal) : 17.76	WATER LEVEL ID # : Rental

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1658	48.84	14.92	0.933	0.32	7.20	-149.8	0.0	23.97
2	1702	53.28	14.94	0.935	0.28	7.20	-148.8	0.0	
3	1706	57.72	14.94	0.935	0.27	7.20	-148.6	0.0	23.97
4									
5									
6									
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	57.72	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.25	
STAB. TEMP (C) :	14.94	
STAB. Sp. CONDUCTIVITY :	0.935	
STAB. D.O. :	0.27	
STAB. pH :	7.20	
STAB. ORP :	-148.6	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1708 SAMPLE FIELD FILTERED ? : Yes / No

FIELD BLANK? Yes / No (name/time/comments):

DUPLICATE SAMPLE? Yes / No (name/time/comments):

MS/MSD? Yes / No (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Clear ODOR: Faint odor

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or No):

WEATHER DATA : TEMP.: SKY : WIND :

FIELD SAMPLING DATA SHEET

QC/QA Check _____

Page: 1 of 2

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS37S
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-14-11

SAMPLER :	Payam Pedey	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-

WELL DATA		PURGE DATA	
WELL NAME :	MS37S	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	135
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.31
WELL DEPTH (ft) :	47.73	PURGE START / END TIME :	1232 / 1314
DEPTH TO WATER (toc): 25.43	DATE: 11-14-11	SAMPLING BEGIN / END TIME :	1316 / 1318
WATER COLUMN HEIGHT (ft):	22.30	PUMP ID # : Rental	YSI ID # : 21700 3
WELL VOLUME (gal) :	3.64	WATER LEVEL ID # : ~~230009~~ Rental	

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1235	1.24	15.78	0.774	0.96	6.55	-185.9	0.0	
2	1239	2.48	15.58	1.068	0.52	6.98	-144.8	0.0	27.74
3	1243	3.72	15.59	1.105	0.47	6.98	-144.3	0.0	
4	1247	4.96	15.60	1.109	0.47	6.99	-149.0	0.0	28.01
5	1251	6.20	15.65	1.110	0.49	6.99	-149.0	0.0	
6	1255	7.44	15.65	1.110	0.48	6.98	-150.5	0.0	27.86
7	1259	8.68	15.67	1.113	0.52	6.98	-153.9	0.0	
8	1303	9.92	15.68	1.111	0.48	6.98	-152.4	0.0	
9	1307	11.16	15.57	1.086	0.61	6.98	-153.1	0.0	27.81
10	1311	12.40	15.55	1.110	0.48	6.98	-154.7	0.1	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	13.64	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.74	
STAB. TEMP (C) :	15.59	
STAB. Sp. CONDUCTIVITY :	1.109	
STAB. D.O. :	0.45	
STAB. pH :	6.97	
STAB. ORP :	-154.7	
STAB. TURBIDITY:	0.7	

SAMPLE TIME : 1316 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear / clear ODOR : yes

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 42°F SKY : Pt cloudy WIND : 15-20 S

FIELD SAMPLING DATA SHEET

QC/QA Check _____.		Page: 2 of 2	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS375
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-14-11

SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110211

WELL DATA		PURGE DATA	
WELL NAME :	MS375	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	steel	PUMP CONTROLLER SETTINGS:	1.35
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.31
WELL DEPTH (ft) :	47.73	PURGE START / END TIME :	1232 / 1314
DEPTH TO WATER (toc):	25.43 DATE: 11-14-11	SAMPLING BEGIN / END TIME :	1316 / 1318
WATER COLUMN HEIGHT (ft):	22.30	PUMP ID # : rental	YSI ID # : J17003
WELL VOLUME (gal) :	3.64	WATER LEVEL ID # : ~~23008~~ rental	

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1314	13.64	15.59	1.109	0.45	6.97	-154.7	0.7	
2									
3									
4									
5									
6									
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	13.64	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.74	
STAB. TEMP (C) :	15.59	
STAB. Sp. CONDUCTIVITY :	1.109	
STAB. D.O. :	0.45	
STAB. pH :	6.97	
STAB. ORP :	-154.7	
STAB. TURBIDITY:	0.7	

SAMPLE TIME : 1318 SAMPLE FIELD FILTERED ? : Yes (No)

FIELD BLANK? Yes (No) (name/time/comments):

DUPLICATE SAMPLE? Yes (No) (name/time/comments):

MS/MSD? Yes (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear / clear ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 42°F SKY : Cloudy WIND : 15-20 S

FIELD SAMPLING DATA SHEET

QC/QA Check _____.		Page: 1 of 1	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS30D
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-14-11

SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111

WELL DATA		PURGE DATA	
WELL NAME :	MS30D	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	205
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	2.25
WELL DEPTH (ft) :	99.30	PURGE START / END TIME :	1439 / 1457
DEPTH TO WATER (toc):	16.79 DATE: 11-14-11	SAMPLING BEGIN / END TIME :	1459 / 1503
WATER COLUMN HEIGHT (ft):	82.51	PUMP ID # : Rental	YSI ID # : 217003
WELL VOLUME (gal) :	13.45	WATER LEVEL ID # : Rental	

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1442	6.75	11.93	1.715	0.57	6.60	-158.6	6.4	17.32
2	1445	13.5	11.84	1.754	0.48	6.68	-145.9	2.6	
3	1448	20.25	11.73	1.308	0.31	6.83	-104.6	0.0	
4	1451	27.00	11.73	1.309	0.30	6.85	-102.5	0.0	17.31
5	1454	33.75	11.72	1.305	0.29	6.87	-99.3	0.0	
6	1457	40.50	11.70	1.304	0.29	6.88	-95.6	0.0	
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	40.50	VOC: 9 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3	
STAB. TEMP (C) :	11.70	
STAB. Sp. CONDUCTIVITY :	1.304	
STAB. D.O. :	0.29	
STAB. pH :	6.88	
STAB. ORP :	-95.6	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1459 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? (Yes) / No (name/time/comments): 6x MS30D @ 1459

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: cloudy black/clear ODOR : yes

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 60°F SKY : 1/4 Cloudy WIND : 15-20 S

FIELD SAMPLING DATA SHEET

QC/QA Check _____.		Page: (of)	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS03IS
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-14-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111 -

WELL DATA		PURGE DATA	
WELL NAME :	MS03IS	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	160
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	1.58
WELL DEPTH (ft) :	77.21	PURGE START / END TIME :	1550 / 1608
DEPTH TO WATER (toc):	19.06 DATE: 11-14-11	SAMPLING BEGIN / END TIME :	1610 / 1612
WATER COLUMN HEIGHT (ft):	58.15	PUMP ID # :	Rentsel
WELL VOLUME (gal) :	9.48	YSI ID # :	17003
		WATER LEVEL ID # :	Rentsel

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1553	4.74	11.13	0.833	0.43	6.79	-128.9	20.2	
2	1556	9.48	11.09	0.873	0.27	7.07	-126.0	4.4	19.19
3	1559	14.22	11.09	0.881	0.24	7.15	-127.4	1.8	
4	1602	18.96	11.07	0.886	0.23	7.20	-128.8	0.0	19.22
5	1605	23.70	11.06	0.889	0.21	7.22	-130.4	0.0	
6	1608	28.44	11.05	0.891	0.21	7.23	-132.0	0.0	
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	28.44	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3	
STAB. TEMP (C) :	11.05	
STAB. Sp. CONDUCTIVITY :	0.891	
STAB. D.O. :	0.21	
STAB. pH :	7.23	
STAB. ORP :	-132.0	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1610 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments): QCRID @ 1750

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Clear / clear ODOR : None / None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 42°F SKY : Clear WIND : 15-20 S

FIELD SAMPLING DATA SHEET

QC/QA Check _____.		Page: 1 of 1	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS79S
CITY, STATE, ZIP :	Fridley, MN	DATE:	11/15/11
SAMPLER :	Amanda Malaney	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	071601

WELL DATA		PURGE DATA	
WELL NAME :	MS-79S	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	steel	PUMP CONTROLLER SETTINGS:	105
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.27
WELL DEPTH (ft) :	27.26	PURGE START / END TIME :	0947 / 1017
DEPTH TO WATER (toc): 17.65	DATE: 11/15/11	SAMPLING BEGIN / END TIME :	1019 / 1022
WATER COLUMN HEIGHT (ft):	9.61	PUMP ID # : Rental	YSI ID # : 217002
WELL VOLUME (gal) :	1.57	WATER LEVEL ID # :	730008

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	0950	0.79	16.73	1.228	0.46	6.88	-84.4	38.2	17.71
2	0953	1.58	17.47	1.241	0.49	6.81	-91.5	27.9	
3	0956	2.37	17.66	1.248	0.53	6.79	-89.0	22.6	17.73
4	0959	3.16	17.82	1.248	0.56	6.78	-85.1	17.5	
5	1002	3.95	17.90	1.254	0.63	6.76	-82.8	7.7	17.73
6	1005	4.74	17.74	1.258	0.72	6.75	-78.5	1.3	
7	1008	5.53	17.78	1.260	0.71	6.74	-78.4	0.0	17.73
8	1011	6.32	17.87	1.262	0.74	6.74	-77.7	0.0	
9	1014	7.11	17.93	1.261	0.74	6.73	-76.5	0.0	17.73
10	1017	7.90	17.72	1.265	0.96	6.70	-64.8	0.0	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	7.90	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5	
STAB. TEMP (C) :	17.72	not stable
STAB. Sp. CONDUCTIVITY :	1.265	
STAB. D.O. :	0.96	
STAB. pH :	6.70	
STAB. ORP :	-64.8	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1019 SAMPLE FIELD FILTERED ? : Yes / No

FIELD BLANK? Yes / No (name/time/comments):

DUPLICATE SAMPLE? Yes / No (name/time/comments):

MS/MSD? Yes / No (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: brown / clear ODOR : none / none

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or No):

WEATHER DATA : TEMP.: 35°F SKY : sunny WIND : 10mph

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS32S
CITY, STATE, ZIP :	Fridley, MN	DATE:	11/15/11
SAMPLER :	Amanda Malaney	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	027601

WELL DATA		PURGE DATA	
WELL NAME :	MS32S	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	107
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.2
WELL DEPTH (ft) :	26.11	PURGE START / END TIME :	1120 / (AM) ~~1150~~ 1220
DEPTH TO WATER (toc):	18.75 DATE: 11/15/11	SAMPLING BEGIN / END TIME :	~~1153~~ 1222 ~~1156~~ 1225
WATER COLUMN HEIGHT (ft):	7.36	PUMP ID # : Rental	YSI ID # : 217002
WELL VOLUME (gal) :	1.20	WATER LEVEL ID # :	230008

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1123	0.60	17.60	1.301	0.67	6.68	-64.9	140.9	18.70
2	1126	1.20	18.41	1.303	0.51	6.70	-78.4	53.9	
3	1129	1.80	18.81	1.306	0.51	6.70	-80.8	27.2	18.71
4	1132	2.40	19.02	1.305	0.52	6.69	-82.4	30.5	
5	1135	3.00	19.21	1.306	0.55	6.68	-84.7	19.7	18.70
6	1138	3.60	19.54	1.306	0.57	6.68	-85.6	10.3	
7	1141	4.20	19.44	1.307	0.56	6.68	-85.4	8.7	18.70
8	1144	4.80	19.42	1.302	0.65	6.68	-86.1	4.0	
9	(AM) ~~1147~~ 1153	5.40	21.03	1.229	0.73	6.68	-86.4	6.6	18.70
10	1206 (AM) ~~1150~~ ~~1156~~	6.00	18.78	1.3000	0.65	6.68	-86.8	119.0	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :		VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:		
STAB. TEMP (C) :		
STAB. Sp. CONDUCTIVITY :	See pg 1	
STAB. D.O. :		
STAB. pH :		
STAB. ORP :		
STAB. TURBIDITY:		

SAMPLE TIME : 1222 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: brown ODOR : none

OBSERVATIONS :

1144 - pump stopped
1150 - resume pumping
1155 - pump stopped again
1205 - resume pumping, sediment, rust maybe caught in pump, took a lot of power to restart, once restarted turb, was high →

Sample tubing left in well at completion? (Yes or (No))

WEATHER DATA : TEMP.: 35°F SKY : Sunny WIND : 10 mph

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS32S
CITY, STATE, ZIP :	Fridley, MN	DATE:	11/15/11
SAMPLER :	Amanda Malaney	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	027601

WELL DATA		PURGE DATA	
WELL NAME :	MS-32S	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	107
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.2
WELL DEPTH (ft) :	26.11	PURGE START / END TIME :	1120 / 1220
DEPTH TO WATER (toc):	18.75 DATE: 11/15/11	SAMPLING BEGIN / END TIME :	1222 / 1225
WATER COLUMN HEIGHT (ft):	7.36	PUMP ID # : Rental	YSI ID # : 217003
WELL VOLUME (gal) :	1.20	WATER LEVEL ID # :	230008

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1211	6.60	18.97 ~~17.97~~	1.222	0.62	6.67	-89.0	114.0	18.70
2	1214	7.20	~~17.22~~ 18.04	1.221	0.56	6.67	-90.3	53.3	
3	1217	~~8.07~~ 8	17.89	1.219	0.55	6.66	-91.2	37.0	18.70
4	1220	8.4	17.87	1.218	0.54	6.66	-92.0	25.8	
5									
6									
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	8.4	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:		
STAB. TEMP (C) :	17.87	
STAB. Sp. CONDUCTIVITY :	1.218	not stable
STAB. D.O. :	0.54	
STAB. pH :	6.66	
STAB. ORP :	-92.0	
STAB. TURBIDITY:	25.8	

SAMPLE TIME : 1222 SAMPLE FIELD FILTERED ? : Yes / No

FIELD BLANK? Yes / No (name/time/comments):

DUPLICATE SAMPLE? Yes / No (name/time/comments):

MS/MSD? Yes / No (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: brown ODOR : none

OBSERVATIONS : (>5 well vol.)

Continue purging to reduce turb.

Sample tubing left in well at completion? (Yes or No):

WEATHER DATA : TEMP.: 35°F SKY : sunny WIND : 10 mph

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: 1 of 1

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS13TS
CITY, STATE, ZIP :	Fridley, MN	DATE:	11/15/11
SAMPLER :	Amanda Malaney	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	027661

WELL DATA		PURGE DATA	
WELL NAME :	MS-13TS	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	1.53 → 1.4
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	1.65 → 1.55
WELL DEPTH (ft) :	74.40	PURGE START / END TIME :	1325 / 1352
DEPTH TO WATER (toc):	18.44 DATE: 11/15/11	SAMPLING BEGIN / END TIME :	1355 / 1400
WATER COLUMN HEIGHT (ft):	55.96	PUMP ID # : Rental	YSI ID # : 217002
WELL VOLUME (gal) :	9.13	WATER LEVEL ID # :	230008

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1328	4.57	13.98	1.388	0.55	7.16	-191.4	28.5	19.69
2	1331	9.13	14.01	1.389	0.44	7.24	-172.6	28.6	19.89
3	1334	~~13.33~~	13.32	1.870	0.27	6.94	-138.6	75.1	19.68
4	1337	17.46	13.31	1.863	0.23	6.91	-137.0	29.8	19.68
5	1340	21.66	13.14	1.865	0.87	6.89	-135.1	18.9	
6	1343	25.86	13.23	1.866	0.37	6.88	-135.7	19.2	19.68
7	1346	30.06	13.26	1.863	0.29	6.88	-136.2	0.0	
8	1349	34.26	13.29	1.862	0.22	6.88	-137.8	0.0	19.68
9	1352	38.46	13.26	1.859	0.19	6.89	-138.7	0.0	
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	38.46	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	4.21	
STAB. TEMP (C) :	13.26	
STAB. Sp. CONDUCTIVITY :	1.859	
STAB. D.O. :	0.19	
STAB. pH :	6.89	
STAB. ORP :	-138.7	
STAB. TURBIDITY:	0.	

SAMPLE TIME : 1355 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: black / clear ODOR: none / none

OBSERVATIONS : 1331 - lowered purge rate to 1.4 gpm

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 35°F SKY : Sunny WIND : 10 mph

27.39
(3 well vol.)

FIELD SAMPLING DATA SHEET

QC/QA Check _____

Page: 1 of 1

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS12TS
CITY, STATE, ZIP :	Fridley, MN	DATE:	11/15/11
SAMPLER :	Amanda Malaney	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	027601

WELL DATA		PURGE DATA	
WELL NAME :	MS-12TS	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	steel	PUMP CONTROLLER SETTINGS:	1.53
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	160
WELL DEPTH (ft) :	74.70	PURGE START / END TIME :	1458 / 1516
DEPTH TO WATER (toc):	18.71 DATE: 11/15/11	SAMPLING BEGIN / END TIME :	1518 / 1521
WATER COLUMN HEIGHT (ft):	55.99	PUMP ID # : Rental	YSI ID # : 217003
WELL VOLUME (gal) :	9.13	WATER LEVEL ID # :	230008

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1501	4.56	13.53	0.443	0.49	7.86	-250.7	107.8	19.22
2	1504	9.13	13.96	0.924	0.27	7.40	-185.7	36.2	19.28
3	1507	13.69	14.10	0.913	0.21	7.25	-166.4	0.0	
4	1510	18.27	14.08	0.914	0.20	7.23	-165.9	0.0	19.31
5	1513	22.85	14.08	0.911	0.18	7.20	-164.4	0.0	
6	1516	27.70	14.13	0.910	0.16	7.18	-162.7	0.0	19.31
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	27.70	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3	
STAB. TEMP (C) :	14.13	
STAB. Sp. CONDUCTIVITY :	0.910	
STAB. D.O. :	0.16	
STAB. pH :	7.18	
STAB. ORP :	-162.7	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1518 SAMPLE FIELD FILTERED ? : Yes / No

FIELD BLANK? Yes / No (name/time/comments):

DUPLICATE SAMPLE? Yes / No (name/time/comments): QCD07 @1430

MS/MSD? Yes / No (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: gray / clear ODOR : none / none

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or No):

WEATHER DATA : TEMP.: 35°F SKY : pt cloudy WIND : 10 mph

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: 1 of 1

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS705
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-14-11

SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	

WELL DATA		PURGE DATA	
WELL NAME :	MS705	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	145
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.45
WELL DEPTH (ft) :	35.45	PURGE START / END TIME :	957 / 1010
DEPTH TO WATER (toc):	19.18 DATE: 11-14-11	SAMPLING BEGIN / END TIME :	1017 / 1019
WATER COLUMN HEIGHT (ft):	16.27	PUMP ID # : 275106	YSI ID # : 21700 2
WELL VOLUME (gal) :	2.65	WATER LEVEL ID # :	Rental

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	955	1.35	14.50	0.731	0.76	7.18	-152.0	0.0	
2	958	2.70	14.66	0.753	0.59	7.34	-160.8	0.0	19.20
3	1003	4.05	14.77	0.775	0.54	7.37	-162.2	0.0	
4	1004	5.40	14.77	0.783	0.51	7.37	-162.5	0.0	19.20
5	1007	6.75	14.79	0.788	0.50	7.38	-163.0	0.0	
6	1010	8.10	14.77	0.789	0.48	7.38	-162.8	0.0	
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	8.10	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.05	
STAB. TEMP (C) :	14.77	
STAB. Sp. CONDUCTIVITY :	0.789	
STAB. D.O. :	0.48	
STAB. pH :	7.38	
STAB. ORP :	-162.8	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1012 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear / clear ODOR : None / None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 42°F SKY : Clear WIND : 5-10 S

FIELD SAMPLING DATA SHEET

QC/QA Check _____.		Page: 1 of	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS02D
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-15-11
SAMPLER :	Dayan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	

WELL DATA		PURGE DATA	
WELL NAME :	MS02D	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	steel	PUMP CONTROLLER SETTINGS:	395
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	2.54
WELL DEPTH (ft) :	111.10	PURGE START / END TIME :	10.46 /
DEPTH TO WATER (toc):	17.78 DATE: 11-15-11	SAMPLING BEGIN / END TIME :	/
WATER COLUMN HEIGHT (ft):	93.32	PUMP ID # : 275106	YSI ID # : 217002
WELL VOLUME (gal) :	15.21	WATER LEVEL ID # :	Rental

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1049	7.62	11.28	1.071	1.11	7.28	-91.0	0.0	18.59
2	1052	15.24	11.31	1.074	0.83	7.23	-91.2	0.0	
3	1055	22.86	11.23	1.083	0.57	7.18	-94.4	0.0	18.58
4	1058	30.48	11.14	1.084	0.49	7.14	-94.9	0.0	
5	1101	38.10	11.15	1.084	0.46	7.11	-95.1	0.0	18.58
6	1104	45.72	11.13	1.083	0.44	7.09	-95.4	0.0	
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	45.72	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.0	
STAB. TEMP (C) :	11.13	
STAB. Sp. CONDUCTIVITY :	1.083	
STAB. D.O. :	0.44	
STAB. pH :	7.09	
STAB. ORP :	-95.4	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1106 SAMPLE FIELD FILTERED ? : Yes / No

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear / clear ODOR : None / None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 43°F SKY : Clear WIND : 5-10 S

FIELD SAMPLING DATA SHEET

QC/QA Check _____.		Page: 1 of 1	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS11IS
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-15-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-1

WELL DATA		PURGE DATA	
WELL NAME :	MS11IS	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.07
WELL DEPTH (ft) :	30.39	PURGE START / END TIME :	1152 /
DEPTH TO WATER (toc):	27.87 DATE: 11-14-11	SAMPLING BEGIN / END TIME :	/
WATER COLUMN HEIGHT (ft):	2.52	PUMP ID # : 275106	YSI ID # : 217003
WELL VOLUME (gal) :	0.41	WATER LEVEL ID # : ~~2300~~ Rental	

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1155	0.21	15.75	1.198	5.71	5.70	212.2	0.0	
2	1158	0.42	16.27	1.200	4.85	6.55	99.0	0.0	
3	1201	0.63	16.31	1.199	4.79	6.65	87.0	0.0	27.88
4	1204	0.84	16.40	1.199	4.33	6.81	38.3	0.0	
5	1207	1.05	16.50	1.194	3.84	6.85	16.2	0.0	27.88
6	1210	1.26	16.52	1.190	3.63	6.86	10.9	0.0	
7	1213	1.47	16.54	1.188	3.27	6.86	4.6	0.0	27.88
8	1216	1.68	16.55	1.188	3.06	6.86	1.1	0.0	
9	1219	1.89	16.52	1.188	2.96	6.87	-0.3	0.0	
10	~~1222~~	~~2.10~~	~~DR~~						

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	1.89	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	4.6	
STAB. TEMP (C) :	16.52	
STAB. Sp. CONDUCTIVITY :	1.188	
STAB. D.O. :	2.96	
STAB. pH :	6.87	
STAB. ORP :	-0.3	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1221 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear / clear ODOR : None / None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 42°F SKY : Clear WIND : S-10 5

FIELD SAMPLING DATA SHEET

QC/QA Check _____.		Page: 1 of	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS3DI
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-15-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-

WELL DATA		PURGE DATA	
WELL NAME :	MS30I	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	240
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	1.39
WELL DEPTH (ft) :	67.77	PURGE START / END TIME :	1353 /
DEPTH TO WATER (toc):	16.90 DATE: 11-15-11	SAMPLING BEGIN / END TIME :	/
WATER COLUMN HEIGHT (ft):	50.87	PUMP ID # : 275106	YSI ID # : ~~217000~~ 217002
WELL VOLUME (gal) :	8.29	WATER LEVEL ID # :	Rental

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1356	4.17	12.82	0.979	0.95	6.61	-111.8	64.0	17.30
2	1359	8.34	12.65	1.012	0.52	6.88	-90.7	10.0	
3	1402	12.51	12.61	1.017	0.48	6.95	-86.0	0.0	
4	1405	16.68	12.57	1.028	0.41	6.95	-86.0	0.5	17.22
5	1408	20.85	12.54	1.028	0.38	6.97	-87.0	0.0	
6	1411	25.02	12.53	1.029	0.38	6.97	-86.2	0.0	
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	25.02	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.01	
STAB. TEMP (C) :	12.53	
STAB. Sp. CONDUCTIVITY :	1.029	
STAB. D.O. :	0.38	
STAB. pH :	6.97	
STAB. ORP :	-86.2	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1413 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Cloudy black/clear ODOR : yes

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 45°F SKY : Cloudy WIND : lots S

FIELD SAMPLING DATA SHEET

QC/QA Check _____.		Page: 1 of 1	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	M509S
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-15-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-

WELL DATA		PURGE DATA	
WELL NAME :	M509S	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	140
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.33
WELL DEPTH (ft) :	29.85	PURGE START / END TIME :	1437 /
DEPTH TO WATER (toc):	17.77 DATE: 11-15-11	SAMPLING BEGIN / END TIME :	/
WATER COLUMN HEIGHT (ft):	12.08	PUMP ID # : 275104	YSI ID # : 217002
WELL VOLUME (gal) :	1.97	WATER LEVEL ID # :	Rental

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1440	0.99	14.57	1.472	5.23	6.84	-89.0	540.4	18.08
2	1443	1.98	14.88	1.571	5.19	7.04	-85.2	185.6	
3	1446	2.97	14.99	1.576	5.20	7.05	-79.4	85.1	18.08
4	1449	3.96	15.04	1.676	5.10	7.03	-72.7	137.2	
5	1452	4.95	15.03	1.748	5.09	7.00	-67.2	195.0	18.08
6	1455	5.94	14.92	1.815	6.14	6.97	-61.3	179.7	
7	1458	6.93	14.93	1.858	5.85	6.95	-60.3	117.9	
8	1501	7.92	14.98	1.947	5.47	6.90	-52.9	14.0	
9	1504	8.91	14.98	1.946	5.47	6.90	-52.9	13.2	
10	1507	9.90	14.97	1.948	5.48	6.90	-52.9	12.0	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	9.90	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5.02	
STAB. TEMP (C) :	14.97	
STAB. Sp. CONDUCTIVITY :	1.948	
STAB. D.O. :	5.48	
STAB. pH :	6.90	
STAB. ORP :	-52.9	
STAB. TURBIDITY:	12.0	

SAMPLE TIME : 1509 SAMPLE FIELD FILTERED ? : Yes (No)

FIELD BLANK? (Yes) No (name/time/comments): QCR11 @ 1610

DUPLICATE SAMPLE? Yes (No) (name/time/comments):

MS/MSD? Yes (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Cloudy / tan/orange ODOR : None / None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 45°F SKY : Cloudy WIND : 10-15 S

FIELD SAMPLING DATA SHEET

QC/QA Check _____		Page: 1 of 1	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS41D
CITY, STATE, ZIP :	Fridley, MN	DATE:	11/16/11

SAMPLER : Shawn Lyman	ANALYTICAL LABORATORY : CAS
COMPANY : Bay West, Inc.	CHAIN OF CUSTODY # : 110111-15

WELL DATA	PURGE DATA
WELL NAME : MS41D	PURGE METHOD : Grundfos Pump
CASING MATERIAL : Steel	PUMP CONTROLLER SETTINGS: 60
WELL DIAMETER (in) : 2"	PURGE RATE (gpm) : ~~3.00~~ ~~2.16~~ 2.17
WELL DEPTH (ft) : 134.57	PURGE START / END TIME : 0953 / 1025
DEPTH TO WATER (toc): 28.47 DATE: 11/16/11	SAMPLING BEGIN / END TIME : 1027 / 1028
WATER COLUMN HEIGHT (ft): 106.1	PUMP ID # : 275106 YSI ID # : 217003
WELL VOLUME (gal) : 17.29	WATER LEVEL ID # : 230088

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	0957	8.68	12.64	0.889	0.81	7.47	-124.3	11.2	28.95
2	1001	17.36	12.64	0.951	0.45	7.22	-121.0	0.8	
3	1005	26.04	12.66	0.956	0.39	7.17	-126.9	0.6	28.96
4	1009	34.72	12.64	0.958	0.37	7.14	-130.0	0.4	
5	1013	43.40	12.63	0.956	0.33	7.12	-133.3	0.7	28.98
6	1017	52.08	12.65	0.956	0.33	7.12	-133.5	0.8	
7	1021	60.76	12.63	0.956	0.33	7.12	-134.6	1.0	28.98
8	1025	69.44	12.64	0.955	0.32	7.12	-135.4	0.9	28.98
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	69.44	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	4.02	
STAB. TEMP (C) :	12.64	
STAB. Sp. CONDUCTIVITY :	0.955	
STAB. D.O. :	0.32	
STAB. pH :	7.12	
STAB. ORP :	-135.4	
STAB. TURBIDITY:	0.9	

SAMPLE TIME : 1027 SAMPLE FIELD FILTERED ? : Yes / No

FIELD BLANK? Yes / No (name/time/comments):

DUPLICATE SAMPLE? Yes / No (name/time/comments):

MS/MSD? Yes / No (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Clear ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or No):

WEATHER DATA : TEMP.: 30-42 °F SKY : Clear WIND : 5-10

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: 1 of 1

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS41I
CITY, STATE, ZIP :	Fridley, MN	DATE:	11/16/11

SAMPLER : Shawn Lyman	ANALYTICAL LABORATORY : CAS
COMPANY : Bay West, Inc.	CHAIN OF CUSTODY # : 110111 - 15

WELL DATA	PURGE DATA
WELL NAME : MS41I	PURGE METHOD : Grundfos Pump
CASING MATERIAL : Steel	PUMP CONTROLLER SETTINGS: 315
WELL DIAMETER (in) : 2"	PURGE RATE (gpm) : 1.74
WELL DEPTH (ft) : 92.52	PURGE START / END TIME : 1131 / 1135
DEPTH TO WATER (toc): 28.49 DATE: 11/16/11	SAMPLING BEGIN / END TIME : 1137 / 1138
WATER COLUMN HEIGHT (ft): 64.03	PUMP ID # : 275104 YSI ID # : 2120003
WELL VOLUME (gal) : 10.44	WATER LEVEL ID # : 23008

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1114	5.22	12.61	0.906	0.52	7.22	-140.8	3.9	28.93
2	1117	10.44	12.62	0.932	0.26	7.19	-149.9	1.1	
3	1120	15.66	12.59	0.933	0.25	7.19	-151.0	0.7	28.94
4	1123	20.88	12.59	0.937	0.24	7.18	-155.1	0.2	
5	1126	26.10	12.60	0.938	0.24	7.18	-155.7	0.3	28.93
6	1129	31.32	12.59	0.939	0.23	7.18	-156.8	0.6	
7	1132	36.54	12.57	0.940	0.22	7.18	-159.3	0.4	28.93
8	1135	41.76	12.58	0.940	0.22	7.18	-159.8	0.1	28.94
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	41.76	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	4	
STAB. TEMP (C) :	12.58	
STAB. Sp. CONDUCTIVITY :	0.940	
STAB. D.O. :	0.22	
STAB. pH :	7.18	
STAB. ORP :	-159.8	
STAB. TURBIDITY:	0.1	

SAMPLE TIME : 1137 SAMPLE FIELD FILTERED ? : Yes / No

FIELD BLANK? Yes / No (name/time/comments):

DUPLICATE SAMPLE? Yes / No (name/time/comments):

MS/MSD? Yes / No (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Clear ODOR: Faint odor

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or No):

WEATHER DATA : TEMP.: 30-42 F SKY : Clear WIND : 5-20 mph

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: 1 of 1

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	M841S
CITY, STATE, ZIP :	Fridley, MN	DATE:	11/16/11
SAMPLER :	Shawn Lynn	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-17

WELL DATA		PURGE DATA	
WELL NAME :	MS41S	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	
WELL DIAMETER (in) :	2"	PURGE RATE (gpm) :	0.26
WELL DEPTH (ft) :	43.41	PURGE START / END TIME :	1224 / 1254
DEPTH TO WATER (toc):	33.73 DATE: 11/16/11	SAMPLING BEGIN / END TIME :	1256 / 1257
WATER COLUMN HEIGHT (ft):	9.68	PUMP ID # :	275106 YSI ID # : 217003
WELL VOLUME (gal) :	1.58	WATER LEVEL ID # :	23008

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1227	0.79	12.45	1.662	0.84	6.91	-46.2	32.2	33.79
2	1230	1.58	12.71	1.607	0.83	6.91	-42.3	30.6	
3	1233	2.37	13.12	1.587	0.79	6.90	-37.3	22.5	33.79
4	1236	3.16	12.88	1.579	0.76	6.91	-37.8	23.2	
5	1239	3.95	13.05	1.556	0.75	6.91	-35.2	18.6	33.81
6	1242	4.74	13.10	1.551	0.72	6.91	-33.1	13.5	
7	1245	5.53	13.11	1.541	0.68	6.90	-32.8	12.3	33.82
8	1248	6.32	13.06	1.540	0.67	6.90	-32.6	8.9	
9	1251	7.11	13.05	1.539	0.65	6.90	-32.3	9.2	33.83
10	1254	7.90	13.05	1.539	0.63	6.90	-32.1	8.3	33.83

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	7.90	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5	
STAB. TEMP (C) :	13.05	
STAB. Sp. CONDUCTIVITY :	1.539	
STAB. D.O. :	0.63	
STAB. pH :	6.90	
STAB. ORP :	-32.1	
STAB. TURBIDITY:	8.3	Did not stabalize to ≤5 ntu, Sampled after 5 well volumes Purged.

SAMPLE TIME : 1256 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Clear ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or No):

WEATHER DATA : TEMP.: 30-42 F SKY : Clear WIND : 5-15

FIELD SAMPLING DATA SHEET

QC/QA Check _____

Page: 1 of 1

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS54I
CITY, STATE, ZIP :	Fridley, MN	DATE:	11/16/11
SAMPLER :	Shawn Lymen	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-17

WELL DATA		PURGE DATA	
WELL NAME :	MS 54I	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	
WELL DIAMETER (in) :	2"	PURGE RATE (gpm) :	1.31
WELL DEPTH (ft) :	76.5	PURGE START / END TIME :	1431 / 1501
DEPTH TO WATER (toc):	28.56 DATE: 11/16/11	SAMPLING BEGIN / END TIME :	1503 / 1504
WATER COLUMN HEIGHT (ft):	47.94	PUMP ID # :	275106 YSI ID # : 217003
WELL VOLUME (gal) :	7.81	WATER LEVEL ID # :	23008

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1434	3.93	11.71	0.961	5.54	7.44	-150.2	17.3	28.13
2	1437	7.86	12.26	1.105	2.55	7.28	-142.4	13.7	
3	1440	11.79	12.26	1.107	2.13	7.25	-141.2	13.5	29.14
4	1443	15.72	12.27	1.109	2.07	7.23	-139.9	13.9	
5	1446	19.65	12.26	1.112	1.92	7.22	-138.6	14.1	29.13
6	1449	23.58	12.30	1.111	1.63	7.19	-136.6	7.0	
7	1452	27.51	12.39	1.110	1.49	7.19	-136.9	6.8	29.13
8	1455	31.44	12.35	1.109	1.70	7.18	-128.2	7.4	
9	1458	35.37	12.41	1.108	1.73	7.18	-130.2	8.7	29.13
10	1501	39.30	12.40	1.108	1.71	7.18	-131.1	8.9	29.13

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	39.30	VOC: 9 - 40 ml vials w/ HCl pres. MS/MSD
# OF WELL VOLUMES PURGED:	5.03	
STAB. TEMP (C) :	12.40	
STAB. Sp. CONDUCTIVITY :	1.108	
STAB. D.O. :	1.71	
STAB. pH :	7.18	
STAB. ORP :	-131.1	
STAB. TURBIDITY:	8.9	* Did not stabalize <5ntu → Sampled after 5 well volumes

SAMPLE TIME : 1503 SAMPLE FIELD FILTERED ? : Yes / No

FIELD BLANK? Yes / No (name/time/comments):

DUPLICATE SAMPLE? Yes / No (name/time/comments):

MS/MSD? Yes / No (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Clear ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or No):

WEATHER DATA : TEMP.: 30-42 F SKY : Clear WIND : 5-15 mph

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: 1 of 1

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS56S
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-16-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-

WELL DATA		PURGE DATA	
WELL NAME :	MS56S	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	116
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.08
WELL DEPTH (ft) :	36.50	PURGE START / END TIME :	9:49 / 1144
DEPTH TO WATER (toc):	22.74 DATE: 11-16-11	SAMPLING BEGIN / END TIME :	1146 / 1148
WATER COLUMN HEIGHT (ft):	13.76	PUMP ID # :	Rental / YSI ID # : 217002
WELL VOLUME (gal) :	2.24	WATER LEVEL ID # :	Rental

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	9:59	0.4	10.88	1.419	1.01	6.94	-167.1	8.0	25.35
2	9:59	0.9	12.90	1.436	0.75	6.90	-170.5	5.6	26.08
3	10:04	1.2	13.25	1.441	0.62	6.89	-171.7	5.2	27.37
4	10:09	1.7	13.28	1.440	0.58	6.88	-169.6	4.6	27.47
5	10:14	2.0	13.37	1.440	0.58	6.87	-167.7	4.8	27.54
6	10:19	2.3	13.53	1.439	0.61	6.87	-169.0	5.0	27.63
7	10:24	2.6	13.67	1.438	0.63	6.86	-162.9	5.2	27.73
8	10:29	3.1	14.57	1.436	0.53	6.86	-164.3	7.9	28.70
9	10:34	3.5	14.18	1.439	0.47	6.86	-164.7	7.6	28.83
10	10:39	3.9	14.02	1.438	0.47	6.86	-166.7	6.4	28.79

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	11.3	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5	
STAB. TEMP (C) :	14.62	
STAB. Sp. CONDUCTIVITY :	1.386	Not Stable
STAB. D.O. :	0.43	
STAB. pH :	6.85	
STAB. ORP :	-130.6	
STAB. TURBIDITY:	2.2	

SAMPLE TIME : 1146 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear / clear ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 42°F SKY : clear WIND : 5-10 S

FIELD SAMPLING DATA SHEET

QC/QA Check _____.		Page: 2 of 3	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS56S
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-16-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-

WELL DATA		PURGE DATA	
WELL NAME :	MS56S	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	116
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.08
WELL DEPTH (ft) :	36.50	PURGE START / END TIME :	9:44 / 1144
DEPTH TO WATER (toc):	22.74 DATE: 11-16-11	SAMPLING BEGIN / END TIME :	1146 / 1148
WATER COLUMN HEIGHT (ft):	13.76	PUMP ID # : Rental	YSI ID # : 17002
WELL VOLUME (gal) :	2.24	WATER LEVEL ID # : Rental	

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1044	4.2	13.92	1.439	0.49	6.86	-162.9	7.1	28.64
2	1049	4.6	13.96	1.437	0.48	6.86	-164.4	6.0	28.81
3	1054	5.2	14.85	1.440	0.43	6.85	-165.8	9.2	29.16
4	1059	5.5	14.45	1.456	0.48	6.80	-157.4	2.4	29.81
5	1104	5.9	14.25	1.463	0.46	6.79	-154.0	0.5	29.81
6	1109	6.4	14.83	1.476	0.45	6.79	-156.8	1.8	29.81
7	1114	7.0	12.87	1.373	0.62	6.81	-165.8	14.3	32.20
8	1119	7.6	13.69	1.357	0.54	6.84	-166.1	12.4	32.20
9	1124	8.4	14.31	1.362	0.54	6.84	-166.5	7.0	32.05
10	1129	9.8	14.56	1.394	0.46	6.84	-165.7	1.3	32.15

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	11.3	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5	
STAB. TEMP (C) :	14.62	
STAB. Sp. CONDUCTIVITY :	1.386	Not Stable
STAB. D.O. :	0.43	
STAB. pH :	6.85	
STAB. ORP :	-130.6	
STAB. TURBIDITY:	2.2	

SAMPLE TIME : 1146 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear / clear ODOR : none / none

OBSERVATIONS :

Dropped pump 11:13

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 42°F SKY : clear WIND : 5-10 S

FIELD SAMPLING DATA SHEET

QC/QA Check _____		Page: 3 of 3	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS565
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-16-11

SAMPLER :	Ryan Ripley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111 -

WELL DATA		PURGE DATA	
WELL NAME :	MS565	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	116
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.08
WELL DEPTH (ft) :	36.50	PURGE START / END TIME :	9:49 / 1144
DEPTH TO WATER (toc): DATE:	11.16.11	SAMPLING BEGIN / END TIME :	1146 / 1148
WATER COLUMN HEIGHT (ft):	13.76	PUMP ID # : Rental	YSI ID # : 217003
WELL VOLUME (gal) :	2.24	WATER LEVEL ID # : Rental	

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1134	10.4	13.68	1.382	0.58	6.84	-146.9	3.6	31.40
2	1139	10.8	15.01	1.382	0.46	6.84	-132.6	5.1	31.65
3	1144	11.3	14.62	1.386	0.43	6.85	-130.6	2.2	
4									
5									
6									
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	11.3	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5	
STAB. TEMP (C) :	14.62	
STAB. Sp. CONDUCTIVITY :	1.386	Not Stable
STAB. D.O. :	0.43	
STAB. pH :	6.85	
STAB. ORP :	-130.6	
STAB. TURBIDITY:	2.2	

SAMPLE TIME : 1146 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear / clear ODOR : none / none

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 42 SKY : clear WIND : 5-10 S

FIELD SAMPLING DATA SHEET

QC/QA Check _____		Page: 1 of 1	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS36D
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-16-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-

WELL DATA		PURGE DATA	
WELL NAME :	MS36D	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	2605
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	2.90
WELL DEPTH (ft) :	134.16	PURGE START / END TIME :	1211 / 1241
DEPTH TO WATER (toc):	25.19 DATE: 11-16-11	SAMPLING BEGIN / END TIME :	1243 / 1245
WATER COLUMN HEIGHT (ft):	108.97	PUMP ID # :	Rental / YSI ID # : 217002
WELL VOLUME (gal) :	17.76	WATER LEVEL ID # :	Rental

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1214	8.88	11.34	0.623	1.23	8.06	-231.3	39.5	25.82
2	1217	17.76	11.14	0.903	0.38	7.39	-156.2	5.8	
3	1220	26.64	11.15	0.936	0.24	7.27	-143.3	1.2	25.87
4	1223	35.52	10.98	0.938	0.30	7.23	-140.1	1.0	
5	1226	44.40	10.98	0.938	0.27	7.18	-138.2	1.3	25.87
6	1229	53.28	10.87	0.937	0.28	7.16	-137.5	0.7	
7	1232	62.16	10.98	0.935	0.23	7.14	-136.9	0.0	25.87
8	1235	71.04	11.04	0.934	0.22	7.12	-136.7	0.0	
9	1238	79.92	11.02	0.933	0.23	7.11	-136.7	0.0	25.87
10	1241	88.80	11.03	0.932	0.22	7.11	-136.6	0.0	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	88.80	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5	
STAB. TEMP (C) :	11.03	
STAB. Sp. CONDUCTIVITY :	0.932	
STAB. D.O. :	0.22	
STAB. pH :	7.11	
STAB. ORP :	-136.6	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1243 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: cloudy brown / clear ODOR : None / None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 42°F SKY : Cloudy WIND : 10-15 N

FIELD SAMPLING DATA SHEET

QC/QA Check _____		Page: 1 of 1	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS55I
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-16-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-

WELL DATA		PURGE DATA	
WELL NAME :	MS55I	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	175
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	1.44
WELL DEPTH (ft) :	79.50	PURGE START / END TIME :	1308 / 1326
DEPTH TO WATER (toc):	26.55 DATE: 11-16-11	SAMPLING BEGIN / END TIME :	1328 / 1330
WATER COLUMN HEIGHT (ft):	52.95	PUMP ID # : Rental	YSI ID # : 217002
WELL VOLUME (gal) :	8.63	WATER LEVEL ID # : Rental	

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1311	4.32	11.12	1.185	0.64	7.05	-174.0	1.2	26.85
2	1314	8.64	11.11	1.185	0.36	7.00	-161.0	0.0	
3	1317	12.96	11.06	1.185	0.33	6.93	-145.8	0.0	26.88
4	1320	17.28	11.09	1.184	0.31	6.89	-139.3	0.0	
5	1323	21.60	11.14	1.185	0.29	6.88	-138.5	0.0	26.86
6	1326	25.92	11.10	1.186	0.28	6.86	-138.2	0.0	
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	25.92	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3	
STAB. TEMP (C) :	11.10	
STAB. Sp. CONDUCTIVITY :	1.186	
STAB. D.O. :	0.28	
STAB. pH :	6.86	
STAB. ORP :	-138.2	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1328 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear/clear ODOR: None/None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 42°F SKY : Cloudy WIND : 10-15 N

FIELD SAMPLING DATA SHEET

QC/QA Check _____.		Page: 1 of 1	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS36I
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-16-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111- 16

WELL DATA		PURGE DATA	
WELL NAME :	MS36I	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	Stainless Steel	PUMP CONTROLLER SETTINGS:	155
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	1.52
WELL DEPTH (ft) :	83.12	PURGE START / END TIME :	1359 / 1417
DEPTH TO WATER (toc):	27.42 DATE: 11-16-11	SAMPLING BEGIN / END TIME :	1419 / 1421
WATER COLUMN HEIGHT (ft):	55.70	PUMP ID # : Rental	YSI ID # : 917002
WELL VOLUME (gal) :	9.08	WATER LEVEL ID # : Rental	

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1402	4.56	11.58	0.943	0.47	7.09	-123.0	9.5	27.65
2	1405	9.12	11.53	0.954	0.38	7.08	-121.6	6.0	27.67
3	1408	13.68	11.42	0.961	0.33	7.06	-121.1	1.2	
4	1411	18.24	11.33	0.962	0.30	7.05	-121.6	0.2	27.67
5	1414	27.36	11.35	0.963	0.29	7.04	-121.9	Ø	27.67
6	1417	31.92	11.34	0.964	0.28	7.04	-122.1	Ø	27.67
7									
8									
9									
10									

=3
27.24

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	31.92	VOC: ____ - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.51	
STAB. TEMP (C) :	11.34	
STAB. Sp. CONDUCTIVITY :	0.964	
STAB. D.O. :	0.28	
STAB. pH :	7.04	
STAB. ORP :	-122.1	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1419 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / No (name/time/comments):

DUPLICATE SAMPLE? (Yes) / No (name/time/comments): QCD11 @ 1445

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: ODOR :

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 40°F SKY : cloudy WIND : S-W

FIELD SAMPLING DATA SHEET

QC/QA Check _____		Page: 1 of 1	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS56I
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-16-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-16

WELL DATA		PURGE DATA	
WELL NAME :	MS 56I	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	170
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	1.35
WELL DEPTH (ft) :	76.50	PURGE START / END TIME :	1451 / 1509
DEPTH TO WATER (toc):	26.94 DATE: 11-16-11	SAMPLING BEGIN / END TIME :	1511 / 1513
WATER COLUMN HEIGHT (ft):	49.56	PUMP ID # : Rental	YSI ID # : 17002
WELL VOLUME (gal) :	8.08	WATER LEVEL ID # : Rental	

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1454	4.05	11.97	1.073	0.42	7.07	-157.6	0.6	27.45
2	1457	8.10	12.02	1.098	0.38	7.02	-151.0	0.0	27.48
3	1500	12.15	12.03	1.125	0.35	6.92	-141.0	0.0	27.49
4	1503	16.20	12.01	1.134	0.33	6.84	-135.6	0.0	
5	1506	20.25	11.99	1.136	0.33	6.81	-134.1	0.0	27.49
6	1509	24.30	11.99	1.139	0.31	6.79	-133.8	0.0	
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	24.30	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3	
STAB. TEMP (C) :	11.99	
STAB. Sp. CONDUCTIVITY :	1.139	
STAB. D.O. :	0.31	
STAB. pH :	6.79	
STAB. ORP :	-133.8	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1511 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? (Yes) / No (name/time/comments): ~~QCB12C~~ BAK QCB12C 1610

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear / clear ODOR : None / None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 40°F SKY : Cloudy WIND : 5-10 S

FIELD SAMPLING DATA SHEET

QC/QA Check _____.		Page: 1 of 4	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS36S
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-17-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-019

WELL DATA		PURGE DATA	
WELL NAME :	MS36S	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Stainless steel	PUMP CONTROLLER SETTINGS:	~~1.29~~ 129
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.08
WELL DEPTH (ft) :	44.70	PURGE START / END TIME :	0936 / 1231
DEPTH TO WATER (toc):	26.66 DATE: 11-17-11	SAMPLING BEGIN / END TIME :	1233 / 1235
WATER COLUMN HEIGHT (ft):	18.04	PUMP ID # :	Rental / YSI ID # : 217002
WELL VOLUME (gal) :	2.94	WATER LEVEL ID # :	Rental

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	941	0.5	11.30	1.193	0.77	8.33	-246.1	53.0	30.72
2	946	1.1	11.79	1.217	0.57	8.16	-262.2	37.5	30.91
3	951	1.5	12.38	1.236	0.56	8.00	-263.0	31.9	31.03
4	956	1.8	12.93	1.247	0.56	7.99	-258.1	27.6	31.12
5	1001	2.0	12.97	1.271	0.54	7.96	-256.8	23.1	31.17
6	1006	2.3	12.96	1.441	0.64	7.81	-233.4	18.4	31.21
7	1011	2.7	13.98	1.671	0.54	7.82	~~-240~~ -247.0	12.4	
8	1016	3.2	13.61	1.837	0.50	7.78	-247.0	12.1	32.21
9	1021	3.7	13.70	1.968	0.49	7.73	-241.8	11.3	32.21
10	1026	4.1	13.76	2.151	0.49	7.68	-240.5	9.7	32.21

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	14.80	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5	
STAB. TEMP (C) :	15.77	
STAB. Sp. CONDUCTIVITY :	3.076	
STAB. D.O. :	0.47	
STAB. pH :	7.47	
STAB. ORP :	-238.2	
STAB. TURBIDITY:	0.7	

SAMPLE TIME : 1233 SAMPLE FIELD FILTERED ? : Yes / No

FIELD BLANK? Yes / No (name/time/comments):

DUPLICATE SAMPLE? Yes / No (name/time/comments):

MS/MSD? Yes / No (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: cloudy blue / clear ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or No):

WEATHER DATA : TEMP.: 20°F SKY : clear WIND : 5-10 N

FIELD SAMPLING DATA SHEET

QC/QA Check _____		Page: 2 of 4	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS36S
CITY, STATE, ZIP :	Fridley, MN	DATE:	11 - 17 - 11

SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111 - 019

WELL DATA		PURGE DATA	
WELL NAME :	MS36S	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	stainless steel	PUMP CONTROLLER SETTINGS:	129
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.08
WELL DEPTH (ft) :	44.70	PURGE START / END TIME :	0936 / 1231
DEPTH TO WATER (toc):	26.66 DATE: 11-17-11	SAMPLING BEGIN / END TIME :	1233 / 1235
WATER COLUMN HEIGHT (ft):	18.04	PUMP ID # : Rental	YSI ID # : 217002
WELL VOLUME (gal) :	2.94	WATER LEVEL ID # :	Rental

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1031	4.4	13.95	2.297	0.49	7.63	-240.5	7.6	32.12
2	1036	4.8	13.73	2.425	0.50	7.58	-231.5	5.0	32.12
3	1041	5.1	13.56	2.519	0.51	7.57	-232.5	3.6	31.79
4	1046	5.3	13.69	2.569	0.49	7.56	-236.2	2.8	31.79
5	1051	5.9	14.66	2.666	0.48	7.51	-235.0	1.7	32.40
6	1056	6.3	14.47	2.744	0.45	7.50	-236.0	1.4	32.46
7	1101	6.8	14.01	2.767	0.44	7.48	-236.2	1.9	32.40
8	1106	7.1	15.16	2.793	0.43	7.46	-235.0	5.3	33.27
9	1111	7.4	14.65	2.795	0.41	7.45	-231.2	13.3	33.82
10	1116	8.0	14.53	2.750	0.41	7.45	-230.3	16.9	34.4

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	14.80	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5	
STAB. TEMP (C) :	15.77	
STAB. Sp. CONDUCTIVITY :	3.076	
STAB. D.O. :	0.47	
STAB. pH :	7.47	
STAB. ORP :	-238.2	
STAB. TURBIDITY:	0.7	

SAMPLE TIME : 1233 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: cloudy black / clear ODOR : NONE

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or No):

WEATHER DATA : TEMP.: 26°F SKY : clear WIND : 5-10 N

FIELD SAMPLING DATA SHEET

QC/QA Check _____.		Page: 3 of 4	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS36S
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-17-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-019

WELL DATA		PURGE DATA	
WELL NAME :	MS36S	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	129
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.08
WELL DEPTH (ft) :	44.70	PURGE START / END TIME :	0936 / 1231
DEPTH TO WATER (toc):	26.86 DATE: 11-17-11	SAMPLING BEGIN / END TIME :	1233 / 1238
WATER COLUMN HEIGHT (ft):	18.04	PUMP ID # : Rental	YSI ID # : 217002
WELL VOLUME (gal) :	2.94	WATER LEVEL ID # : Rental	

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1121	8.3	14.15	2.748	0.40	7.43	-230.8	16.3	
2	1126	8.7	15.05	2.771	0.42	7.40	-236.1	11.8	33.00
3	1131	9.0	15.72	2.885	0.41	7.40	-229.3	8.5	33.98
4	1136	9.5	15.67	2.815	0.39	7.40	-230.7	13.7	
5	1141	10.1	15.61	2.773	0.38	7.41	-232.6	26.7	
6	1146	10.8	15.02	2.635	0.40	7.45	-238.1	19.9	36.27
7	1151	11.5	14.63	2.544	0.37	7.46	-248.3	11.9	
8	1156	11.8	14.73	2.675	0.39	7.44	-242.9	9.6	37.4
9	1201	12.2	14.33	2.844	0.45	7.39	-214.0	6.2	37.9
10	1206	12.7	14.57	2.843	0.44	7.40	-235.6	4.5	38.9

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	14.80	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5	
STAB. TEMP (C) :	15.77	
STAB. Sp. CONDUCTIVITY :	3.076	
STAB. D.O. :	0.47	
STAB. pH :	7.47	
STAB. ORP :	-238.2	
STAB. TURBIDITY:	0.7	

SAMPLE TIME : 1233 SAMPLE FIELD FILTERED ? : Yes / No

FIELD BLANK? Yes / No (name/time/comments):

DUPLICATE SAMPLE? Yes / No (name/time/comments):

MS/MSD? Yes / No (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: cloudy black / clear ODOR : None

OBSERVATIONS : * flow stopped @ 1124 increased to slow flow
1144 lowered pump due to falling w.l.

Sample tubing left in well at completion? (Yes or No):

WEATHER DATA : TEMP.: 70s SKY : clear WIND : S-10

FIELD SAMPLING DATA SHEET

QC/QA Check _____		Page: 4 of 4	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS 36S
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-17-11

SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111 - 019

WELL DATA		PURGE DATA	
WELL NAME :	MS 36S	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	steel	PUMP CONTROLLER SETTINGS:	129
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.00
WELL DEPTH (ft) :	44.70	PURGE START / END TIME :	0936 / 1231
DEPTH TO WATER (toc):	26.66 DATE: 11-17-11	SAMPLING BEGIN / END TIME :	1233 / 1236
WATER COLUMN HEIGHT (ft):	18.04	PUMP ID # : Rental	YSI ID # : 217002
WELL VOLUME (gal) :	2.94	WATER LEVEL ID # : Rental	

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1211	13.00	15.61	2.760	0.42	7.45	-244.9	8.2	39.90
2	1216	13.40	15.48	2.622	0.40	7.49	-251.5	7.4	38.5
3	1221	13.90	16.06	2.876	0.43	7.48	-245.3	4.3	36.9
4	1226	14.40	15.35	2.945	0.47	7.47	-241.8	2.2	
5	1231	14.80	15.77	3.076	0.47	7.47	-238.2	0.7	
6									
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	14.80	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5	
STAB. TEMP (C) :	15.77	
STAB. Sp. CONDUCTIVITY :	3.076	
STAB. D.O. :	0.47	
STAB. pH :	7.47	
STAB. ORP :	-238.2	
STAB. TURBIDITY:	0.7	

SAMPLE TIME : 1233 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: cloudy blue / clear ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: 20°F SKY : clear WIND : 5/10 N

FIELD SAMPLING DATA SHEET

QC/QA Check _____		Page: 1 of 2	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS07IS
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-17-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-09

WELL DATA		PURGE DATA	
WELL NAME :	MS07IS	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	135
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	~~1.36~~ 0.55
WELL DEPTH (ft) :	80.87	PURGE START / END TIME :	~~1415~~ 1348 /
DEPTH TO WATER (toc):	30.35 DATE: 11-17-11	SAMPLING BEGIN / END TIME :	/
WATER COLUMN HEIGHT (ft):	50.52	PUMP ID # : ~~27510~~ Rental	YSI ID # : 717002
WELL VOLUME (gal) :	8.23	WATER LEVEL ID # :	Rental

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1353	4.2	14.68	0.379	0.32	9.26	-307.4	68.4	30.60
2	1358	8.3	14.68	1.014	0.30	7.64	-198.0	154.6	
3	1403	12.5	14.75	1.048	0.35	7.42	-193.3	130.6	
4	1408	13.9	14.35	1.053	0.34	7.32	-192.8	98.8	30.64
5	1413	15.9	14.47	1.056	0.33	7.25	-193.6	66.4	30.56
6	1418	17.9	14.59	1.062	0.33	7.22	-194.7	51.4	
7	1423	21.1	14.73	1.062	0.32	7.19	-195.3	31.9	30.54
8	1428	23.9	14.74	1.066	0.32	7.17	-195.7	58.5	30.54
9	1433	26.4	14.81	1.067	0.32	7.16	-196.0	32.0	30.54
10	1438	28.2	14.66	1.067	0.33	7.15	-196.0	26.7	30.56

24.61 =3

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	42.7	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5	
STAB. TEMP (C) :	14.79	
STAB. Sp. CONDUCTIVITY :	1.068	
STAB. D.O. :	0.33	
STAB. pH :	7.10	Not Stable
STAB. ORP :	-179.2	
STAB. TURBIDITY:	6.0	

SAMPLE TIME : 1515 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: cloudy black / clear ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or No):

WEATHER DATA : TEMP.: 20° F SKY : Clear WIND : 5-10 N

FIELD SAMPLING DATA SHEET

QC/QA Check _____.		Page: 2 of 2	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS07I5
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-17-11
SAMPLER :	Ryan Ripley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-019

WELL DATA		PURGE DATA	
WELL NAME :	MS07I5	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	135
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.55
WELL DEPTH (ft) :	80.87	PURGE START / END TIME :	1348 /
DEPTH TO WATER (toc):	30.35 DATE: 11-17-11	SAMPLING BEGIN / END TIME :	1515 / 1518
WATER COLUMN HEIGHT (ft):	50.52	PUMP ID # : Rental	YSI ID # : 217002
WELL VOLUME (gal) :	8.23	WATER LEVEL ID # : Rental	

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters		31 AZ	± 0.1	± 5%		± 0.1		≤5	
1	1443	30.1	14.65	1.067	0.33	7.14	-196.2	17.6	30.55
2	1448	33.0	14.80	1.067	0.32	7.13	-196.4	14.5	30.55
3	1453	34.9	14.92	1.067	0.32	7.12	-196.7	12.8	30.54
4	1458	36.9	14.90	1.067	0.40	7.03	-156.9	9.1	30.54
5	1503	38.8	14.90	1.068	0.36	7.05	-166.6	7.8	30.53
6	1508	40.8	14.77	1.068	0.35	7.09	-174.2	6.1	30.54
7	1513	42.7	14.79	1.068	0.33	7.10	-179.2	6.0	
8									
9									
10									

41.15

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	42.7	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	5	
STAB. TEMP (C) :	14.79	
STAB. Sp. CONDUCTIVITY :	1.068	
STAB. D.O. :	0.33	
STAB. pH :	7.10	
STAB. ORP :	-179.2	
STAB. TURBIDITY:	6.0	

SAMPLE TIME : 1515 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Brownish / clear ODOR : None

OBSERVATIONS : Cloudy

Sample tubing left in well at completion? (Yes or No):

WEATHER DATA : TEMP.: 20° F SKY : Clear WIND : 5-10

FIELD SAMPLING DATA SHEET

QC/QA Check _____.		Page: 1 of 1	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS54S
CITY, STATE, ZIP :	Fridley, MN	DATE:	11/17/11
SAMPLER :	Shawn Lyman	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-18

WELL DATA		PURGE DATA	
WELL NAME :	MS54S	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	185
WELL DIAMETER (in) :	2"	PURGE RATE (gpm) :	0.22
WELL DEPTH (ft) :	36.5	PURGE START / END TIME :	0937 / 0958
DEPTH TO WATER (toc):	28.63 DATE: 11/17/11	SAMPLING BEGIN / END TIME :	1000 / 1002
WATER COLUMN HEIGHT (ft):	7.87	PUMP ID # : 275106	YSI ID # : 217003
WELL VOLUME (gal) :	1.28	WATER LEVEL ID # : 230008	

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	0940	0.66	12.78	1.150	1.24	8.1	-86.2	7.6	28.82
2	0943	1.32	12.85	1.150	0.48	7.0	-96.2	7.3	
3	0946	1.98	12.73	1.149	0.40	7.0	-97.7	5.2	28.83
4	0949	2.64	12.73	1.149	0.42	6.98	-96.9	3.2	
5	0952	3.33	12.74	1.150	0.44	6.97	-96.8	2.1	28.83
6	0955	3.96	12.74	1.150	0.46	6.96	-97.0	2.1	
7	0958	4.62	12.76	1.151	0.45	6.96	-96.9	2.0	28.83
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	4.62	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.61	
STAB. TEMP (C) :	12.76	
STAB. Sp. CONDUCTIVITY :	1.151	
STAB. D.O. :	0.45	
STAB. pH :	6.96	
STAB. ORP :	-96.9	
STAB. TURBIDITY:	2.0	

SAMPLE TIME : 1000 SAMPLE FIELD FILTERED ? : Yes / No

FIELD BLANK? Yes / No (name/time/comments):

DUPLICATE SAMPLE? Yes / No (name/time/comments):

MS/MSD? Yes / No (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Clear ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or No):

WEATHER DATA : TEMP.: 35-38°F SKY : Clear WIND : 5-10 mph

FIELD SAMPLING DATA SHEET

QC/QA Check _____		Page: 1 of 1	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS3S
CITY, STATE, ZIP :	Fridley, MN	DATE:	11/17/11
SAMPLER :	Shawn Lyman	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-18

WELL DATA		PURGE DATA	
WELL NAME :	MS3S	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	~~0-2~~
WELL DIAMETER (in) :	2"	PURGE RATE (gpm) :	0.43
WELL DEPTH (ft) :	34.17	PURGE START / END TIME :	1155 / 1215
DEPTH TO WATER (toc):	18.65 DATE: 11/17/11	SAMPLING BEGIN / END TIME :	1217 / 1218
WATER COLUMN HEIGHT (ft):	15.52	PUMP ID # : 275106	YSI ID # : 217003
WELL VOLUME (gal) :	2.53	WATER LEVEL ID # :	230008

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1153	1.29	14.08	1.300	0.73	6.54	-11.3	6.2	18.85
2	1201	2.58	14.16	1.303	0.59	6.67	-27.5	4.3	
3	1204	3.87	14.15	1.308	0.48	6.72	-30.2	1.9	18.87
4	1207	5.16	14.15	1.312	0.45	6.71	-30.6	1.4	
5	1210	6.45	14.15	1.312	0.41	6.71	-29.3	1.8	18.88
6	1213	7.74	14.14	1.313	0.42	6.71	-29.0	1.9	
7	1215	9.03	14.13	1.314	0.41	6.71	-28.7	1.8	18.88
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	9.03	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.57	
STAB. TEMP (C) :	14.13	
STAB. Sp. CONDUCTIVITY :	1.314	
STAB. D.O. :	0.41	
STAB. pH :	6.71	
STAB. ORP :	-28.7	
STAB. TURBIDITY:	1.8	

SAMPLE TIME : 1217 SAMPLE FIELD FILTERED ? : Yes / No

FIELD BLANK? Yes / No (name/time/comments):

DUPLICATE SAMPLE? Yes / No (name/time/comments):

MS/MSD? Yes / No (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Clear ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or No):

WEATHER DATA : TEMP.: 25-38°F SKY : Clear WIND : 5-10

FIELD SAMPLING DATA SHEET

QC/QA Check _____		Page: 1 of 3	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS8IS
CITY, STATE, ZIP :	Fridley, MN	DATE:	11/17/11
SAMPLER :	Shawn Lymen	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	11011 - 18

WELL DATA		PURGE DATA	
WELL NAME :	MS8IS	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	
WELL DIAMETER (in) :	2"	PURGE RATE (gpm) :	0.26
WELL DEPTH (ft) :	73.82	PURGE START / END TIME :	1327 / 1553
DEPTH TO WATER (toc):	27.98 DATE: 11/17/11	SAMPLING BEGIN / END TIME :	1555 / 1556
WATER COLUMN HEIGHT (ft):	45.84	PUMP ID # : 275106	YSI ID # : 217003
WELL VOLUME (gal) :	7.47	WATER LEVEL ID # :	230008

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1332	1.3	15.35	0.369	0.76	8.18	-232.8	13.6	30.26
2	1337	2.6	15.38	0.379	0.64	8.20	-233.5	11.8	
3	1342	3.9	15.76	0.377	1.12	8.55	-211.8	0.6	
4	1347	5.2	15.39	0.400	3.11	8.58	-226.8	10.2	30.49
5	1352	6.5	15.35	0.415	0.72	8.46	-237.2	13.6	
6	1357	7.8	15.47	0.426	0.69	8.42	-250.3	12.5	
7	1402	9.1	15.56	0.437	0.55	8.38	-266.3	15.5	31.34
8	1407	10.4	15.71	0.700	0.35	7.70	-229.8	9.8	
9	1412	11.7	15.80	0.824	1.04	7.28	-173.7	32.2	31.46
10	1417	13.0	15.88	0.832	0.59	7.24	-154.3	34.5	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	37.7	VOC: 9 - 40 ml vials w/ HCl pres. MS/MSD
# OF WELL VOLUMES PURGED:	5.05	
STAB. TEMP (C) :	15.89	
STAB. Sp. CONDUCTIVITY :	0.872	
STAB. D.O. :	0.51	
STAB. pH :	7.14	
STAB. ORP :	-152.3	
STAB. TURBIDITY:	7.6	Did not stabilize under ≤5 NTU, Purged 5 well volumes then collected sample

SAMPLE TIME : SAMPLE FIELD FILTERED ? : Yes / No

FIELD BLANK? Yes / No (name/time/comments):

DUPLICATE SAMPLE? Yes / No (name/time/comments):

MS/MSD? Yes / No (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Clear ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or No):

WEATHER DATA : TEMP.: 25-38 SKY : Clear WIND : 5-10 mph

FIELD SAMPLING DATA SHEET

QC/QA Check _____		Page: 2 of	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS8IS
CITY, STATE, ZIP :	Fridley, MN	DATE:	11/17/11
SAMPLER :	Shawn Lyman	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-18

WELL DATA		PURGE DATA	
WELL NAME :	MS 8IS	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	170
WELL DIAMETER (in) :	2"	PURGE RATE (gpm) :	0.26
WELL DEPTH (ft) :	73.82	PURGE START / END TIME :	1327 / 1553
DEPTH TO WATER (toc):	27.98 DATE: 11/17/11	SAMPLING BEGIN / END TIME :	1555 / 1556
WATER COLUMN HEIGHT (ft):	45.84	PUMP ID # : 275106	YSI ID # : 217003
WELL VOLUME (gal) :	7.47	WATER LEVEL ID # :	230008

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1423	14.3	16.09	0.839	0.40	7.21	-169.8	38.6	31.49
2	1428	15.6	15.93	0.839	0.44	7.20	-158.6	47.4	
3	1433	16.9	15.96	0.846	0.32	7.20	-164.6	49.6	31.44
4	1438	18.2	16.02	0.847	0.30	7.19	-153.2	48.3	
5	1443	19.5	15.90	0.843	0.27	7.19	-141.2	47.2	31.54
6	1448	20.8	16.03	0.851	0.27	7.19	-140.1	46.4	
7	1453	22.1	16.26	0.859	0.32	7.19	-162.4	11.0	31.43
8	1458	23.4	16.17	0.860	0.31	7.19	-168.5	9.2	
9	1503	24.7	16.11	0.862	0.29	7.18	-173.8	8.7	31.40
10	1506	26.0	16.05	0.862	0.28	7.18	-178.4	7.6	31.38

-Cleared out flow through cell

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	87.7	VOC: 9 - 40 ml vials w/ HCl pres. MS1MS1D
# OF WELL VOLUMES PURGED:	5.05	
STAB. TEMP (C) :	15.89	
STAB. Sp. CONDUCTIVITY :	0.872	
STAB. D.O. :	0.51	
STAB. pH :	7.14	
STAB. ORP :	-152.3	
STAB. TURBIDITY:	7.6	Did not stabalize below ≤5ntu, Purged 5 well volumes then sampled

SAMPLE TIME : SAMPLE FIELD FILTERED ? : Yes / No

FIELD BLANK? Yes / No (name/time/comments):

DUPLICATE SAMPLE? Yes / No (name/time/comments):

MS/MSD? Yes / No (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Clear ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or No):

WEATHER DATA : TEMP.: 25-38 °F SKY : Clear WIND : 5-10

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS8IS
CITY, STATE, ZIP :	Fridley, MN	DATE:	11/17/11

SAMPLER :	Shawn Lyman	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-18

WELL DATA		PURGE DATA	
WELL NAME :	MS8IS	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	170
WELL DIAMETER (in) :	2"	PURGE RATE (gpm) :	0.26
WELL DEPTH (ft) :	73.82	PURGE START / END TIME :	1327 / 1553
DEPTH TO WATER (toc):	27.98 DATE: 11/17/11	SAMPLING BEGIN / END TIME :	1555 / 1556
WATER COLUMN HEIGHT (ft):	45.84	PUMP ID # : 275106	YSI ID # : 217003
WELL VOLUME (gal) :	7.47	WATER LEVEL ID # :	230008

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1513	27.3	15.96	0.864	0.28	7.18	-179.0	7.5	
2	1518	28.6	16.06	0.866	0.28	7.17	-181.0	7.3	31.62
3	1523	29.9	16.01	0.867	0.27	7.17	-183.0	6.9	
4	1528	31.2	16.12	0.867	0.27	7.17	-181.1	6.0	31.72
5	1533	32.5	16.05	0.870	0.35	7.16	-175.2	8.7	
6	1538	33.8	15.86	0.871	0.39	7.16	-163.9	9.5	31.68
7	1543	35.1	15.83	0.871	0.46	7.15	-158.7	10.1	
8	1548	36.4	15.87	0.872	0.47	7.14	-154.6	8.3	31.67
9	1553	37.7	15.89	0.872	0.51	7.14	-152.3	7.6	31.65
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	37.7	VOC: 9 - 40 ml vials w/ HCl pres. MS/MSD
# OF WELL VOLUMES PURGED:	5.05	
STAB. TEMP (C) :	15.89	
STAB. Sp. CONDUCTIVITY :	0.872	
STAB. D.O. :	0.51	
STAB. pH :	7.14	
STAB. ORP :	-152.3	
STAB. TURBIDITY:	7.6	Did not stabalize ≤ 5 ntu, Purged 5 well volumes and collected sample

SAMPLE TIME : 1555 SAMPLE FIELD FILTERED ? : Yes / No

FIELD BLANK? Yes / No (name/time/comments):

DUPLICATE SAMPLE? Yes / No (name/time/comments):

MS/MSD? Yes / No (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or No):

WEATHER DATA : TEMP.: 25-38°F SKY : clear WIND : 5-10 mph

092400

FIELD SAMPLING DATA SHEET

QC/QA Check _____.		Page: 1 of 1	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	FW13
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-18-11

SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-19

WELL DATA		PURGE DATA	
WELL NAME :	Fridley Well #13	PURGE METHOD : ~~Grundfos Pump~~	Geo Pump
CASING MATERIAL :		PUMP CONTROLLER SETTINGS:	
WELL DIAMETER (in) :		PURGE RATE (gpm) :	~~1000~~ 1500
WELL DEPTH (ft) :		PURGE START / END TIME :	1256 / 1314
DEPTH TO WATER (toc):	DATE:	SAMPLING BEGIN / END TIME :	1316 / 1318
WATER COLUMN HEIGHT (ft):		PUMP ID # : NA	YSI ID # : 217002
WELL VOLUME (gal) :		WATER LEVEL ID # : NA	

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters		4500	± 0.1	± 5%		± 0.1		≤5	
1	1259	~~2500~~	11.67	0.744	2.30	7.15	-134.7	17.3	
2	1302	9000	10.36	0.738	2.01	7.11	-124.3	Ø	
3	1305	13500	10.19	0.738	1.69	7.10	-117.1	Ø	
4	1308	18000	10.09	0.739	1.19	7.10	-112.8	Ø	
5	1311	22500	10.06	0.741	1.06	7.10	-110.4	Ø	
6	1314	27000	10.12	0.741	0.83	7.10	-109.3	Ø	
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	27000	VOC: 6 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:		
STAB. TEMP (C) :	10.12	
STAB. Sp. CONDUCTIVITY :	0.741	
STAB. D.O. :	0.83	
STAB. pH :	7.10	
STAB. ORP :	-109.3	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1316 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? (Yes) / No (name/time/comments): QC001 @ 1340

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear / clear ODOR : None / None

OBSERVATIONS : 93382

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: ~ SKY : Indoors WIND : —

FIELD SAMPLING DATA SHEET

QC/QA Check _____		Page: 2 of 2	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS29I
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-18-11

SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-19

WELL DATA		PURGE DATA	
WELL NAME :	MS29I	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	115
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.14
WELL DEPTH (ft) :	81.15	PURGE START / END TIME :	0954 / 1119
DEPTH TO WATER (toc):	17.43 DATE: 11-18-11	SAMPLING BEGIN / END TIME :	1330 / 1332
WATER COLUMN HEIGHT (ft):	63.72	PUMP ID # : Rental	YSI ID # : 217002
WELL VOLUME (gal) :	10.39	WATER LEVEL ID # :	Rental

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1049	8.0	17.62	0.554	0.26	7.72	-244.8	68.2	62.30
2	1054	8.8	17.62	0.555	0.31	7.66	-237.9	74.3	65.01
3	1059	9.3	17.98	0.595	0.26	7.50	-227.4	82.2	71.33
4	1104	10.0	17.92	0.595	0.26	7.43	-217.2	91.1	75.11
Dropped pump 5	1109	10.8	18.20	0.610	0.29	7.39	-208.7	90.3	76.30
6	1114	11.6	18.57	0.819	0.27	7.17	-189.6	220.0	78.50
7	1119	12.3	18.63	0.820	0.30	7.18	-188.0	222.3	79.77
8									
9									
10									

(79)

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	12.3	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	1.18	
STAB. TEMP (C) :	18.63	
STAB. Sp. CONDUCTIVITY :	0.820	well went dry
STAB. D.O. :	0.30	
STAB. pH :	7.18	Not Stable
STAB. ORP :	-188.0	
STAB. TURBIDITY:	222.3	

SAMPLE TIME : 1330 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: ~~clear~~ ODOR :

OBSERVATIONS : cloudy blackish

well went dry after 12.3 gallons

1135 ~~55.13 [illegible]~~

Sample tubing left in well at completion? (Yes or No):

WEATHER DATA : TEMP.: SKY : Indoors WIND :

FIELD SAMPLING DATA SHEET

QC/QA Check _____		Page: 1 of 2	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS29I
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-18-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-19

WELL DATA		PURGE DATA	
WELL NAME :	MS29I	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	115
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.14
WELL DEPTH (ft) :	81.15	PURGE START / END TIME :	~~1254~~ 0954 / 1119 1119
DEPTH TO WATER (toc):	17.43 DATE: 11-18-11	SAMPLING BEGIN / END TIME :	1330 / 1332
WATER COLUMN HEIGHT (ft):	63.72	PUMP ID # : Rentall	YSI ID # : 217002
WELL VOLUME (gal) :	10.39	WATER LEVEL ID # : Rentall	

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

1.73

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	0959	1.1	14.40	0.503	0.49	8.25	-233.6	64.2	25.16
2	1004	1.9	14.96	0.503	0.36	8.28	-261.3	59.2	29.49
3	1009	2.6	14.41	0.504	0.35	8.30	-254.2	60.3	33.30
4	1014	3.5	15.67	0.505	0.33	8.29	-261.7	62.0	38.50
5	1019	4.1	15.95	0.507	0.32	8.28	-253.3	61.2	41.81
6	1024	4.8	16.18	0.514	0.34	8.23	-251.2	61.2	44.80
7	1029	5.2	16.43	0.517	0.32	8.18	-247.9	61.8	48.85
8	1034	6.0	16.77	0.624	0.27	8.09	-254.0	62.9	52.22
9	1039	6.8	16.66	0.527	0.27	8.03	-249.4	60.6	55.05
10	1044	7.4	17.01	0.534	0.27	7.91	-245.6	60.6	57.90

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	12.3	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	1.18	
STAB. TEMP (C) :	18.82	
STAB. Sp. CONDUCTIVITY :	0.870	well went dry after 12.3 gallons
STAB. D.O. :	0.30	
STAB. pH :	7.18	
STAB. ORP :	-168.0	
STAB. TURBIDITY:	220.3	

SAMPLE TIME : 1330 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: ODOR :

OBSERVATIONS : cloudy black

Allow to recharge. Very slow recharge.

Sample tubing left in well at completion? (Yes or No):

WEATHER DATA : TEMP.: SKY : Indoors WIND :

FIELD SAMPLING DATA SHEET

QC/QA Check _____		Page: 1 of 3	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS33I
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-18-11
SAMPLER :	Ryan Riley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-19

WELL DATA		PURGE DATA	
WELL NAME :	MS33I	PURGE METHOD : Grundfos Pump	
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	126 →
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.18
WELL DEPTH (ft) :	81.15	PURGE START / END TIME :	1411 / 1636
DEPTH TO WATER (toc):	17.26 DATE: 11-18-11	SAMPLING BEGIN / END TIME :	1639 / 1641
WATER COLUMN HEIGHT (ft):	63.89	PUMP ID # : Rental	YSI ID # : 217002
WELL VOLUME (gal) :	10.41	WATER LEVEL ID # : Rental	

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1416	1.1	19.15	0.941	0.64	7.93	-276.2	10.2	22.81
2	1421	2.1	19.40	0.946	0.40	7.93	-279.2	3.4	22.92
3	1426	3.1	19.37	0.949	0.27	7.95	-280.1	2.5	22.92
4	1431	4.1	19.28	0.951	0.20	7.97	-282.4	1.6	22.92
5	1436	5.1	19.18	0.956	0.19	7.98	-286.3	0.1	22.85
6	1441	6.1	19.09	0.959	0.17	8.01	-292.5	0.0	22.84
7	1446	7.1	18.93	0.959	0.18	8.03	-308.2	0.0	22.91
8	1451	8.1	18.83	0.969	0.18	8.01	-299.7	0.0	22.91
9	1456	9.0	18.79	0.999	0.18	8.01	-293.3	0.0	22.91
10	1501	10.0	18.62	1.448	0.20	7.29	-195.5	1.9	22.91

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	31.7	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.04	
STAB. TEMP (C) :	17.49	
STAB. Sp. CONDUCTIVITY :	1.566	
STAB. D.O. :	0.21	
STAB. pH :	7.00	
STAB. ORP :	-178.0	
STAB. TURBIDITY:	0	

SAMPLE TIME : 1639 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? (Yes) / No (name/time/comments): QCR14 @ 1720

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear / clear ODOR : ~~None~~ yes

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No))

WEATHER DATA : TEMP.: SKY : Indoors WIND :

FIELD SAMPLING DATA SHEET

QC/QA Check _____		Page: 2 of 5	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS33I
CITY, STATE, ZIP :	Fridley, MN	DATE:	
SAMPLER :	Dyan Kirby	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-19

WELL DATA		PURGE DATA	
WELL NAME :	MS33I	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	7.00
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.13
WELL DEPTH (ft) :	81.15	PURGE START / END TIME :	1411 / 1636
DEPTH TO WATER (toc):	17.26 DATE: 11-8-11	SAMPLING BEGIN / END TIME :	1639 / 1642
WATER COLUMN HEIGHT (ft):	63.89	PUMP ID # : Rental	YSI ID # : 217202
WELL VOLUME (gal) :	10.41	WATER LEVEL ID # : Rental	

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1506	10.8	18.58	1.457	0.19	7.21	-192.1	1.4	23.78
2	1511	11.8	18.37	1.483	0.20	7.16	-189.7	2.3	24.15
3	1516	12.9	18.16	1.523	0.20	7.10	-183.2	0	24.28
4	1521	14.0	18.04	1.533	0.21	7.08	-182.1	1.4	
5	1526	15.1	17.87	1.524	0.20	7.08	-180.4	0.2	24.89
6	1531	16.2	17.81	1.546	0.20	7.05	-179.5	0	
7	1536	17.4	17.75	1.557	0.21	7.04	-179.2	0	24.89
8	1541	18.6	17.73	1.561	0.20	7.03	-178.1	0	24.93
9	1546	19.8	17.64	1.561	0.21	7.03	-178.4	0	
10	1551	21.0	17.63	1.562	0.20	7.02	-178.1	0	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	31.7	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.04	
STAB. TEMP (C) :	17.49	
STAB. Sp. CONDUCTIVITY :	1.562	
STAB. D.O. :	0.21	
STAB. pH :	7.00	
STAB. ORP :	-178.0	
STAB. TURBIDITY:	0	

SAMPLE TIME : 1644 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? (Yes) / No (name/time/comments): QC214 @1720

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Clear / clear ODOR : yes

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or No):

WEATHER DATA : TEMP.: SKY : WIND :

FIELD SAMPLING DATA SHEET

QC/QA Check _____		Page: 3 of 3	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS33I
CITY, STATE, ZIP :	Fridley, MN	DATE:	11-18-11
SAMPLER :	Ryan Kelley	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-19

WELL DATA		PURGE DATA	
WELL NAME :	MS33I	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	126 7
WELL DIAMETER (in) :	2	PURGE RATE (gpm) :	0.18
WELL DEPTH (ft) :	81.15	PURGE START / END TIME :	1411 / 1636
DEPTH TO WATER (toc):	17.26 DATE: 11-18-11	SAMPLING BEGIN / END TIME :	1639 / 1642
WATER COLUMN HEIGHT (ft):	62.89	PUMP ID # : Rental	YSI ID # : 2172002
WELL VOLUME (gal) :	10.14	WATER LEVEL ID # : Rental	

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1556	22.3	17.60	1.562	0.21	7.01	-177.7	0	
2	1601	23.2	17.58	1.563	0.21	7.01	-178.0	0	26.3
3	1606	24.9	17.58	1.564	0.21	7.01	-177.5	0	
4	1611	26.1	17.57	1.560	0.22	7.01	-177.7	0	26.5
5	1616	27.1	17.50	1.561	0.21	7.01	-177.5	0	
6	1621	28.1	17.52	1.563	0.21	7.01	-177.9	0	
7	1626	29.3	17.49	1.564	0.22	7.00	-177.6	0	
8	1631	30.5	17.50	1.564	0.24	7.01	-177.9	0	25.0
9	1636	31.7	17.49	1.566	0.21	7.00	-178.0	0	
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	31.7	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.04	
STAB. TEMP (C) :	17.49	
STAB. Sp. CONDUCTIVITY :	1.566	
STAB. D.O. :	0.21	
STAB. pH :	7.00	
STAB. ORP :	-178.0	
STAB. TURBIDITY:	0	

SAMPLE TIME : 1639 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? (Yes) / No (name/time/comments): CCR14 @ 1720

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear / clear ODOR : yes

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or (No))

WEATHER DATA : TEMP.: SKY : Indoors WIND :

FIELD SAMPLING DATA SHEET

QC/QA Check _____		Page: 1 of 1	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS32I
CITY, STATE, ZIP :	Fridley, MN	DATE:	11/18/11

SAMPLER : Shawn Lyman	ANALYTICAL LABORATORY : CAS
COMPANY : Bay West, Inc.	CHAIN OF CUSTODY # : 110111-18

WELL DATA	PURGE DATA
WELL NAME : MS32I	PURGE METHOD : Grundfos Pump
CASING MATERIAL : Steel	PUMP CONTROLLER SETTINGS:
WELL DIAMETER (in) : 2"	PURGE RATE (gpm) : 0.65
WELL DEPTH (ft) : 84.74	PURGE START / END TIME : 1003 / 1048
DEPTH TO WATER (toc): 25.41 DATE: 11/18/11	SAMPLING BEGIN / END TIME : 1050 / 1051
WATER COLUMN HEIGHT (ft): 59.33	PUMP ID # : 275106 YSI ID # : 217003
WELL VOLUME (gal) : 9.67	WATER LEVEL ID # : 230008

VOLUME CONVERSION FACTOR: (0.163 - 2") 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1008	3.25	16.81	0.610	0.32	7.67	-180.1	12.2	26.75
2	1013	6.50	16.83	0.615	0.25	7.66	-175.2	8.8	
3	1018	9.75	16.82	1.099	0.28	7.07	-153.3	5.5	26.91
4	1023	13.00	16.82	1.109	0.28	7.02	-147.9	4.9	
5	1028	16.25	16.82	1.118	0.28	7.00	-146.4	4.2	26.93
6	1033	19.50	16.81	1.119	0.27	6.96	-145.8	3.9	
7	1038	22.75	16.80	1.119	0.26	6.93	-149.2	1.0	26.96
8	1043	26.00	16.82	1.120	0.27	6.91	-152.7	1.3	
9	1048	29.25	16.82	1.119	0.27	6.90	-151.5	1.6	26.95
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	29.25	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.02	
STAB. TEMP (C) :	16.82	
STAB. Sp. CONDUCTIVITY :	1.119	
STAB. D.O. :	0.27	
STAB. pH :	6.90	
STAB. ORP :	-151.5	
STAB. TURBIDITY:	1.6	

SAMPLE TIME : 1050 SAMPLE FIELD FILTERED ? : Yes / No

FIELD BLANK? Yes / No (name/time/comments):

DUPLICATE SAMPLE? Yes / No (name/time/comments):

MS/MSD? Yes / No (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Clear ODOR : Faint odor

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or No)

WEATHER DATA : TEMP.: ~75° SKY : N/A WIND : N/A

Inside Facility

FIELD SAMPLING DATA SHEET

QC/QA Check _____		Page: 1 of 4	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS28I
CITY, STATE, ZIP :	Fridley, MN	DATE:	11/18/11

SAMPLER : Shawn Lyman	ANALYTICAL LABORATORY : CAS
COMPANY : Bay West, Inc.	CHAIN OF CUSTODY # : 110111-18

WELL DATA	PURGE DATA
WELL NAME : MS28I	PURGE METHOD : Grundfos Pump
CASING MATERIAL : Steel	PUMP CONTROLLER SETTINGS: 0.23 Purge Rate
WELL DIAMETER (in) : 2"	PURGE RATE (gpm) 135 → 145 → 185 → 220 → 185 → 155 → back + forth between 159 + 259
WELL DEPTH (ft) : 85.52	PURGE START / END TIME : 1131 / 1413
DEPTH TO WATER (toc): 16.71 DATE: 11/18/11	SAMPLING BEGIN / END TIME : 1415 / 1416
WATER COLUMN HEIGHT (ft): 68.81	PUMP ID # : 275106 YSI ID # : 217003
WELL VOLUME (gal) : 11.22	WATER LEVEL ID # : 230008

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1136	0.75	18.95	0.643	0.48	8.29	-205.0	62.3	19.10
2	1141	1.5	19.80	0.653	0.34	8.66	-238.4	45.9	19.03
* 3	1147	2.0	19.92	0.655	0.29	8.71	-235.9	45.7	
* 4	1152	2.3	19.92	0.654	0.29	8.72	-240.5	32.7	DO.15
5	1157	3.2	19.07	0.650	0.29	8.59	-234.7	214.6	
6	1202	4.25	18.77	0.654	0.21	8.82	-258.7	178.3	19.80
7	1207	5.20	19.01	0.653	0.34	8.87	-260.2	26.1	
8	1212	6.5	18.58	0.654	1.26	8.87	-235.6	9.2	20.16
9	1217	7.6	18.21	0.662	1.50	8.87	-234.8	6.2	
10	1222	8.2	17.81	0.663	1.47	8.87	-233.6	2.1	20.19

tilted flow through cell

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	33.40	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.42	
STAB. TEMP (C) :	17.62	
STAB. Sp. CONDUCTIVITY :	1.286	
STAB. D.O. :	0.28	
STAB. pH :	6.89	
STAB. ORP :	-162.6	
STAB. TURBIDITY:	1.7	

SAMPLE TIME : 1415 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Clear ODOR : None

OBSERVATIONS :

Grundfos Pump having difficulties maintaining low flow, frequently needed to adjust controller settings often causing parameters to change

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: ~75°F SKY : N/A WIND : N/A

→ * Inside Facility

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS28I
CITY, STATE, ZIP :	Fridley, MN	DATE:	11/18/11

SAMPLER :	Shawn Lymm	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	11 0111-18

WELL DATA		PURGE DATA	
WELL NAME :	MS28I	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	See First Page
WELL DIAMETER (in) :	2"	PURGE RATE (gpm) :	0.23
WELL DEPTH (ft) :	85.52	PURGE START / END TIME :	1131 / 1413
DEPTH TO WATER (toc):	16.71 DATE: 11/18/11	SAMPLING BEGIN / END TIME :	1415 / 1416
WATER COLUMN HEIGHT (ft):	68.81	PUMP ID # : 275106	YSI ID # : 217003
WELL VOLUME (gal) :	11.22	WATER LEVEL ID # :	230008

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1227	9.4	18.14	0.667	0.50	8.86	249.7	1.0	
2	1232	11.0	17.98	0.683	0.21	8.56	-223.6	20.2	21.10
3	1237	13.5	17.33	0.696	0.28	7.14	-181.9	37.0	
4	1242	15.3	17.11	0.202	0.89	7.06	-175.6	46.9	
5	1247	16.8	16.94	1.242	0.50	6.97	-170.6	2.6	21.38
6	1253	17.9	18.08	1.252	0.32	6.96	-168.9	2.0	
7	1258	19.4	19.96	1.260	0.28	6.99	-171.5	3.8	19.96
8	1303	20.9	19.92	1.279	0.37	7.00	-171.1	7.8	
9	1308	22.6	17.73	1.264	0.29	6.94	-170.8	8.3	21.42
10	1313	24.1	17.96	1.270	0.36	6.93	-167.4	8.4	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	38.40	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.42	
STAB. TEMP (C) :	17.62	
STAB. Sp. CONDUCTIVITY :	1.286	
STAB. D.O. :	0.28	
STAB. pH :	6.89	
STAB. ORP :	-162.6	
STAB. TURBIDITY:	1.7	

SAMPLE TIME : 1415 SAMPLE FIELD FILTERED ? : Yes / No

FIELD BLANK? Yes / No (name/time/comments):

DUPLICATE SAMPLE? Yes / No (name/time/comments):

MS/MSD? Yes / No (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Clear ODOR : None

OBSERVATIONS :

Grundfos Pump having difficulties maintaining low flow, frequently needed to adjust settings often causing parameters to fluctuate.

Sample tubing left in well at completion? (Yes or No):

WEATHER DATA : TEMP.: ~75-80°F SKY : N/A WIND : N/A

→ Inside facility

FIELD SAMPLING DATA SHEET

QC/QA Check _____		Page: 3 of 4	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS28I
CITY, STATE, ZIP :	Fridley, MN	DATE:	11/18/11
SAMPLER :	Shawn Lyman	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-18

WELL DATA		PURGE DATA	
WELL NAME :	MS28I	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	See First Page
WELL DIAMETER (in) :	2"	PURGE RATE (gpm) :	~~52~~ 0.23
WELL DEPTH (ft) :	85.52	PURGE START / END TIME :	1131 / 1413
DEPTH TO WATER (toc):	16.71 DATE: 11/18/11	SAMPLING BEGIN / END TIME :	1415 / 1416
WATER COLUMN HEIGHT (ft):	68.81	PUMP ID # : 275106	YSI ID # : 217003
WELL VOLUME (gal) :	11.22	WATER LEVEL ID # :	230008

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1318	25.8	17.80	1.276	0.25	6.91	-169.4	8.9	20.35
2	1323	26.6	17.42	1.279	0.25	6.89	-169.7	9.6	
3	1328	28.0	17.52	1.290	0.39	6.89	-156.8	6.5	21.51
4	1333	29.2	17.76	1.291	0.36	6.88	-162.3	10.2	
5	1338	30.4	17.42	1.288	0.25	6.86	-165.1	9.9	22.70
6	1343	32.5	17.09	1.286	0.36	6.85	-160.7	9.8	
7	1348	33.6	17.43	1.287	0.27	6.85	-163.4	2.4	21.0
8	1353	34.3	17.63	1.287	0.25	6.84	-165.7	0.0	
9	1358	35.2	17.68	1.295	0.25	6.86	-166.3	1.3	20.71
10	1403	36.3	17.62	1.284	0.25	6.88	-164.2	1.2	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	38.40	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.42	
STAB. TEMP (C) :	17.62	
STAB. Sp. CONDUCTIVITY :	1.286	
STAB. D.O. :	0.28	
STAB. pH :	6.89	
STAB. ORP :	-162.6	
STAB. TURBIDITY:	1.7	

SAMPLE TIME : 1415 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: clear ODOR : None

OBSERVATIONS :

Grundfos pump having difficulties maintaining low flow, frequently needed to adjust controller settings often causing parameters to change

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: ~75-80°F SKY : N/A WIND : N/A

↳ Inside Facility

170 2 13 1L2

FIELD SAMPLING DATA SHEET

QC/QA Check _____		Page: 4 of 4	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS28I
CITY, STATE, ZIP :	Fridley, MN	DATE:	11/18/11

SAMPLER :	Shawn Lyman	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	110111-18

WELL DATA		PURGE DATA	
WELL NAME :	MS28I	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	See First Page
WELL DIAMETER (in) :	2"	PURGE RATE (gpm) :	0.23
WELL DEPTH (ft) :	85.52	PURGE START / END TIME :	1131 / 1413
DEPTH TO WATER (toc):	16.71 DATE: 11/18/11	SAMPLING BEGIN / END TIME :	1415 / 1416
WATER COLUMN HEIGHT (ft):	68.81	PUMP ID # : 275106	YSI ID # : 217003
WELL VOLUME (gal) :	11.22	WATER LEVEL ID # : 230008	

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1408	37.25	17.67	1.285	0.27	6.89	-163.5	1.4	21.15
2	1413	38.40	17.62	1.286	0.28	6.89	-162.6	1.7	21.36
3	SL								
4									
5									
6									
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	38.40	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.42	
STAB. TEMP (C) :	17.62	
STAB. Sp. CONDUCTIVITY :	1.286	
STAB. D.O. :	0.28	
STAB. pH :	6.89	
STAB. ORP :	-162.6	
STAB. TURBIDITY:	1.7	

SAMPLE TIME : 1415 SAMPLE FIELD FILTERED ? : Yes / (No)

FIELD BLANK? Yes / (No) (name/time/comments):

DUPLICATE SAMPLE? Yes / (No) (name/time/comments):

MS/MSD? Yes / (No) (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Clear ODOR: None

OBSERVATIONS :

Grundfos pump having difficulties maintaining low flow, frequently needed to adjust controller settings after receiving parameters to fluctuate.

Sample tubing left in well at completion? (Yes or (No)):

WEATHER DATA : TEMP.: ~75-80°F SKY : N/A WIND : N/A

→ Inside Facility

FIELD SAMPLING DATA SHEET

QC/QA Check _____.

Page: 1 of 2

PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS34I
CITY, STATE, ZIP :	Fridley, MN	DATE:	11/18/11
SAMPLER :	Shawn Lymm	ANALYTICAL LABORATORY :	CAS
COMPANY :	Bay West, Inc.	CHAIN OF CUSTODY # :	11011-18

WELL DATA		PURGE DATA	
WELL NAME :	MS34I	PURGE METHOD :	Grundfos Pump
CASING MATERIAL :	Steel	PUMP CONTROLLER SETTINGS:	184
WELL DIAMETER (in) :	2"	PURGE RATE (gpm) :	0.51
WELL DEPTH (ft) :	79.32	PURGE START / END TIME :	1447 / 1542
DEPTH TO WATER (toc):	26.85 DATE: 11/18/11	SAMPLING BEGIN / END TIME :	1544 / 1545
WATER COLUMN HEIGHT (ft):	52.47	PUMP ID # : 275106	YSI ID # : 217003
WELL VOLUME (gal) :	8.55	WATER LEVEL ID # :	230008

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1452	2.0	15.06	0.590	0.30	7.00	-266.9	18.2	27.19
2	1457	4.5	14.54	1.238	0.27	6.77	-198.8	1.9	
3	1502	7.5	14.32	1.280	0.29	6.68	-183.3	0.7	27.13
4	1507	10.25	14.25	1.290	0.28	6.70	-181.5	0.3	
5	1512	12.75	14.22	1.293	0.27	6.72	-182.3	0.3	27.10
6	1517	15.50	14.20	1.297	0.27	6.73	-182.7	0.1	
7	1522	18.25	14.19	1.299	0.27	6.74	-183.2	0.1	27.12
8	1527	21.00	14.18	1.301	0.26	6.74	-183.3	0.1	
9	1532	23.50	14.16	1.302	0.26	6.75	-183.7	0.0	27.14
10	1537	26.00	14.13	1.303	0.26	6.76	-184.2	0.0	

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	28.5	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.33	
STAB. TEMP (C) :	14.12	
STAB. Sp. CONDUCTIVITY :	1.303	
STAB. D.O. :	0.26	
STAB. pH :	6.76	
STAB. ORP :	-184.9	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1544 SAMPLE FIELD FILTERED ? : Yes / No

FIELD BLANK? Yes / No (name/time/comments):

DUPLICATE SAMPLE? Yes / No (name/time/comments):

MS/MSD? Yes / No (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Clear ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or No):

WEATHER DATA : TEMP.: 30-38°F SKY : Clear WIND : 5-10

FIELD SAMPLING DATA SHEET

QC/QA Check _____.		Page: 2 of 2	
PROJECT NAME :	NIROP Fall '11 GW Monitoring	PROJECT # :	J070047 T54
ADDRESS :	4800 E River Rd	SAMPLE ID:	MS34I
CITY, STATE, ZIP :	Fridley, MN	DATE:	11/18/11

SAMPLER :	ANALYTICAL LABORATORY : CAS
COMPANY : Bay West, Inc.	CHAIN OF CUSTODY # : 110111-18

WELL DATA	PURGE DATA
WELL NAME : MS34I	PURGE METHOD : Grundfos Pump
CASING MATERIAL : Steel	PUMP CONTROLLER SETTINGS: 184
WELL DIAMETER (in) : 2"	PURGE RATE (gpm) : 0.51
WELL DEPTH (ft) : 79.32	PURGE START / END TIME : 1447 / 1542
DEPTH TO WATER (toc): 26.85 DATE: 11/18/11	SAMPLING BEGIN / END TIME : 1544 / 1545
WATER COLUMN HEIGHT (ft): 52.47	PUMP ID # : 275106 YSI ID # : 217003
WELL VOLUME (gal) : 8.55	WATER LEVEL ID # : 230008

VOLUME CONVERSION FACTOR: 0.163 - 2" 0.255 - 2.5" 0.367 - 3" 0.653 - 4" 1.469 - 6" 2.611 - 8"

STABILIZATION READINGS

READING	TIME	VOLUME (gal)	TEMP (°C)	COND (mS/cm)	D.O. (mg/L)	pH	ORP (mV)	TURBIDITY (ntu)	WATER LEVEL (ft BTOC)
Stabilization Parameters			± 0.1	± 5%		± 0.1		≤5	
1	1542	28.5	14.12	1.303	0.26	6.76	-184.9	0.0	27.14
2									
3									
4									
5									
6									
7									
8									
9									
10									

STABILIZATION DATA		SAMPLE CONTAINERS
TOTAL VOLUME (Gal) :	28.5	VOC: 3 - 40 ml vials w/ HCl pres.
# OF WELL VOLUMES PURGED:	3.33	
STAB. TEMP (C) :	14.12	
STAB. Sp. CONDUCTIVITY :	1.303	
STAB. D.O. :	0.26	
STAB. pH :	6.76	
STAB. ORP :	-184.9	
STAB. TURBIDITY:	0.0	

SAMPLE TIME : 1544 SAMPLE FIELD FILTERED ? : Yes / No

FIELD BLANK? Yes / No (name/time/comments):

DUPLICATE SAMPLE? Yes / No (name/time/comments):

MS/MSD? Yes / No (name/time/comments):

COMMENTS

SAMPLE DESCRIPTION (Begin / End): COLOR: Clear ODOR : None

OBSERVATIONS :

Sample tubing left in well at completion? (Yes or No).

WEATHER DATA : TEMP.: 30-38°F SKY : Clear WIND : 5-10 mph

APPENDIX D

DATABASE, DATA QUALITY REVIEW AND DATA VALIDATION

D-1 DATABASE AND GRAPHS OF VOCs VERSUS TIME FROM SYSTEM START-UP THROUGH NOVEMBER 2011

D-2 DATA QUALITY REVIEW

D-3 DATA VALIDATION LETTERS

D-4 TAG MAPS - 2011

D-5 BAE DATA - JUNE 2011

D-1 DATABASE AND GRAPHS OF VOCs VERSUS TIME FROM SYSTEM START-UP THROUGH NOVEMBER 2011

Location	Sample	Zone	Year	Sample Date	Chart PCE	Chart DCE
10-D	10-D-88_R01	DEEP	1988	1/1/1988	0.00	0.00
10-D	M10D-88_R01	DEEP	1988	1/1/1988	0.00	0.00
10-D	M10D-90_R11	DEEP	1990	11/1/1990	0.00	0.00
10-D	M10D-91_R02	DEEP	1991	2/1/1991	0.00	0.00
10-D	MS-10D-97_R03	DEEP	1997	3/31/1997	0.00	6.50
11-D	11-D-88_R01	DEEP	1988	1/1/1988	0.00	0.00
11-D	M11D-88_R01	DEEP	1988	1/1/1988	0.00	0.00
11-D	M11D-90_R11	DEEP	1990	11/1/1990	0.00	0.00
11-D	M11D-91_R02	DEEP	1991	2/1/1991	0.00	0.00
12-D	12-D-88_R01	DEEP	1988	1/1/1988	1.00	12.00
12-D	M12D-88_R01	DEEP	1988	1/1/1988	1.00	12.00
12-D	M12D-90_R11	DEEP	1990	11/1/1990	0.00	4.00
12-D	M12D-91_R02	DEEP	1991	2/1/1991	0.00	7.00
12-D	MS12D-94_R08	DEEP	1994	8/16/1994	0.00	3.00
12-D	MS12D-94_R08-AVG	DEEP	1994	8/16/1994	0.00	2.50
12-D	MS12D-94_R08-D	DEEP	1994	8/16/1994	0.00	2.00
12-D	MS12D-94_R11A	DEEP	1994	11/16/1994	0.00	4.00
12-D	MS12D-94_R11A-AVG	DEEP	1994	11/16/1994	0.00	4.00
12-D	MS12D-94_R11A-D	DEEP	1994	11/16/1994	0.00	4.00
12-D	MS12D-95_R02B	DEEP	1995	2/15/1995	0.00	3.00
12-D	MS12D-95_R02B-AVG	DEEP	1995	2/15/1995	0.00	3.00
12-D	MS12D-95_R02B-D	DEEP	1995	2/15/1995	0.00	3.00
12-D	MS12D-95_R05	DEEP	1995	5/23/1995	0.00	2.00
12-D	MS12D-95_R05-AVG	DEEP	1995	5/23/1995	0.00	2.50
12-D	MS12D-95_R05-D	DEEP	1995	5/23/1995	0.00	3.00
12-D	MS12D-95_R08	DEEP	1995	8/15/1995	0.00	2.00
12-D	MS12D-95_R11	DEEP	1995	11/20/1995	0.00	2.00
12-D	MS12D-96-R01	DEEP	1996	1/15/1996	0.00	0.90
12-D	MS12D-96_R10	DEEP	1996	10/10/1996	0.00	0.00
12-D	MS12D-97_R02	DEEP	1997	2/4/1997	0.00	4.50
12-D	MS-12D-97_R04	DEEP	1997	4/1/1997	0.00	3.10
12-D	MS12D-97_R10	DEEP	1997	10/10/1997	0.00	0.00
12-D	MS12D-98_Q2	DEEP	1998	4/28/1998	1.80	2.20
12-D	MS12D-98_Q4	DEEP	1998	10/28/1998	2.00	0.00
12-D	MS-12D-99_R04	DEEP	1999	4/20/1999	3.30	1.80
12-D	MS-12D-99_R11	DEEP	1999	11/3/1999	6.10	2.00
12-D	MS-12D-99_R11-DIF	DEEP	1999	11/3/1999	0.00	22.00
12-D	MS-12D-00_R10	DEEP	2000	10/16/2000	4.60	3.00
12-D	MS12D-01_R11	DEEP	2001	11/29/2001	16.00	2.50
12-D	MS12D-20061018	DEEP	2006	10/18/2006	47.00	5.45
12-D	MS12D-20061018-AVG	DEEP	2006	10/18/2006	47.00	5.49
12-D	MS12D-20061018-D	DEEP	2006	10/18/2006	47.00	5.52
12-D	MS12D_20071022	DEEP	2007	10/22/2007	44.00	5.27
12-D	MS12D_20081023	DEEP	2008	10/23/2008	46.00	4.89
12-D	MS12D_20090929	DEEP	2009	9/29/2009	61.00	4.67
12-D	MS12D_20101021	DEEP	2010	10/21/2010	43.00	4.02
12-D	MS12D_20111114	DEEP	2011	11/14/2011	35.00	4.28
13-D	13-D-88_R01	DEEP	1988	1/1/1988	0.00	0.00
13-D	M13D-88_R01	DEEP	1988	1/1/1988	0.00	0.00
13-D	M13D-90_R11	DEEP	1990	11/1/1990	0.00	0.00
13-D	M13D-91_R02	DEEP	1991	2/1/1991	0.00	0.00

13-D	MS13D-94_R08	DEEP	1994	8/16/1994	0.00	0.00
13-D	MS13D-94_R11A	DEEP	1994	11/16/1994	0.00	0.00
13-D	MS13D-95_R02B	DEEP	1995	2/15/1995	0.00	0.00
13-D	MS13D-95_R05	DEEP	1995	5/23/1995	0.00	0.00
13-D	MS13D-95_R08	DEEP	1995	8/15/1995	0.00	0.00
13-D	MS13D-95_R11	DEEP	1995	11/20/1995	0.00	0.00
13-D	MS13D-96_R01	DEEP	1996	1/15/1996	0.00	0.00
13-D	MS13D-96_R10	DEEP	1996	10/9/1996	0.00	0.00
13-D	MS13D-97_R02	DEEP	1997	2/4/1997	0.00	0.00
13-D	MS-13D-97_R03	DEEP	1997	3/31/1997	0.00	0.00
13-D	MS13D-97_R10	DEEP	1997	10/14/1997	0.89	0.00
13-D	MS13D-98_Q2	DEEP	1998	4/27/1998	10.00	0.00
13-D	MS13D-98_Q4	DEEP	1998	10/28/1998	0.00	0.00
13-D	MS-13D-99_R04	DEEP	1999	4/20/1999	0.00	0.00
13-D	MS-13D-99_R11	DEEP	1999	11/3/1999	0.00	0.00
14-D	14-D-88_R01	DEEP	1988	1/1/1988	0.00	0.00
14-D	M14D-88_R01	DEEP	1988	1/1/1988	0.00	0.00
14-D	M14D-90_R11	DEEP	1990	11/1/1990	0.00	0.00
14-D	M14D-91_R02	DEEP	1991	2/1/1991	0.00	0.00
14-D	MS14D-92_R10A	DEEP	1992	10/6/1992	0.00	0.00
14-D	MS14D-92_R10C	DEEP	1992	10/20/1992	0.00	0.00
14-D	MS14D-92_R11	DEEP	1992	11/3/1992	0.00	0.00
14-D	MS14D-92_R12	DEEP	1992	12/9/1992	0.00	0.00
14-D	MS14D-93_R02	DEEP	1993	2/10/1993	0.00	0.00
14-D	MS14D-93_R05	DEEP	1993	5/4/1993	0.00	0.00
14-D	MS14D-93_R08	DEEP	1993	8/16/1993	0.00	0.00
14-D	MS14D-93_R11	DEEP	1993	11/9/1993	0.00	0.00
14-D	MS14D-94_R02A	DEEP	1994	2/16/1994	0.00	0.00
14-D	MS14D-94_R05	DEEP	1994	5/10/1994	0.00	0.00
14-D	MS14D-94_R08	DEEP	1994	8/16/1994	0.00	0.00
14-D	MS14D-94_R11A	DEEP	1994	11/16/1994	0.00	0.00
14-D	MS14D-95_R02B	DEEP	1995	2/15/1995	0.00	0.00
14-D	MS14D-95_R05	DEEP	1995	5/23/1995	0.00	0.00
14-D	MS14D-95_R08	DEEP	1995	8/15/1995	0.00	0.00
14-D	MS14D-95_R11	DEEP	1995	11/20/1995	0.00	0.00
14-D	MS14D-96-R01	DEEP	1996	1/15/1996	0.00	0.00
14-D	MS14D-96_R10	DEEP	1996	10/10/1996	0.00	0.00
14-D	MS14D-97_R02	DEEP	1997	2/3/1997	0.00	0.00
14-D	MS-14D-97_R04	DEEP	1997	4/1/1997	0.00	0.00
14-D	MS14D-97_R10	DEEP	1997	10/10/1997	0.00	0.00
14-D	MS14D-98_Q2	DEEP	1998	4/28/1998	0.00	0.00
14-D	MS14D-98_Q4	DEEP	1998	10/28/1998	0.00	0.00
14-D	MS-14D-99_R04	DEEP	1999	4/20/1999	0.00	0.00
14-D	MS-14D-99_R11	DEEP	1999	11/2/1999	0.00	0.00
14-D	MS14D-03_R03	DEEP	2003	3/11/2003	0.00	0.00
14-D	MS14D-04_R09	DEEP	2004	9/20/2004	0.00	0.00
14-D	MS14D-20061010	DEEP	2006	10/10/2006	0.00	0.00
15-D	MS15D-92_R10A	DEEP	1992	10/8/1992	0.00	0.00
15-D	MS15D-92_R10C	DEEP	1992	10/21/1992	1.00	5.00
15-D	MS15D-92_R11	DEEP	1992	11/5/1992	0.00	2.00
15-D	MS15D-92_R12	DEEP	1992	12/9/1992	0.70	5.00
15-D	MS15D-92_R12-AVG	DEEP	1992	12/9/1992	0.55	4.50

15-D	MS15D-92_R12-D	DEEP	1992	12/9/1992	0.40	4.00
15-D	MS15D-93_R02	DEEP	1993	2/10/1993	0.00	2.00
15-D	MS15D-93_R05	DEEP	1993	5/4/1993	0.00	2.00
15-D	MS15D-93_R08	DEEP	1993	8/17/1993	0.00	0.60
15-D	MS15D-93_R11	DEEP	1993	11/9/1993	0.00	0.50
15-D	MS15D-94_R02A	DEEP	1994	2/16/1994	0.40	0.90
15-D	MS15D-94_R05	DEEP	1994	5/11/1994	0.00	0.80
15-D	MS15D-94_R08	DEEP	1994	8/17/1994	0.00	0.00
15-D	MS15D-94_R11A	DEEP	1994	11/18/1994	0.70	1.00
15-D	MS15D-95_R02B	DEEP	1995	2/16/1995	0.80	1.00
15-D	MS15D-95_R05	DEEP	1995	5/24/1995	0.90	1.00
15-D	MS15D-95_R08	DEEP	1995	8/16/1995	2.00	2.00
15-D	MS15D-95_R11	DEEP	1995	11/21/1995	2.00	2.00
15-D	MS15D-96-R01	DEEP	1996	1/15/1996	3.00	6.20
15-D	GWU-MS15D-R10_96	DEEP	1996	10/11/1996	4.50	8.80
15-D	MS15D-97_R02	DEEP	1997	2/4/1997	4.80	8.60
15-D	MS15D-97_R04	DEEP	1997	4/2/1997	5.90	13.00
15-D	MS15D-97_R10	DEEP	1997	10/15/1997	5.00	12.00
15-D	MS15D-98_Q2	DEEP	1998	4/29/1998	6.50	14.00
15-D	MS15D-98_Q4	DEEP	1998	10/29/1998	5.00	12.00
15-D	MS-15D-99_R04	DEEP	1999	4/21/1999	5.20	14.00
15-D	MS-15D-99_R11	DEEP	1999	11/4/1999	4.10	16.00
15-D	MS-15D-00_R10	DEEP	2000	10/23/2000	1.30	8.00
15-D	MS15D-01_R12	DEEP	2001	12/4/2001	3.50	11.00
15-D	MS15D-03_R03	DEEP	2003	3/18/2003	5.40	2.90
15-D	MS15D-03_R06	DEEP	2003	6/11/2003	4.30	2.90
15-D	MS15D-03_R10	DEEP	2003	10/13/2003	2.70	3.40
15-D	MS15D-04_R03	DEEP	2004	3/24/2004	2.20	4.20
15-D	MS15D-04_R09	DEEP	2004	9/29/2004	1.70	4.70
15-D	MS15D-05_R11	DEEP	2005	11/11/2005	1.60	5.20
15-D	MS15D-20060516	DEEP	2006	5/16/2006	1.80	6.27
15-D	MS15D-20061018	DEEP	2006	10/18/2006	1.40	2.50
15-D	MS15D_20071019	DEEP	2007	10/19/2007	1.30	4.06
15-D	MS15D_20081022	DEEP	2008	10/22/2008	1.60	2.71
15-D	MS15D_20090928	DEEP	2009	9/28/2009	1.10	1.63
15-D	MS15D_20101015	DEEP	2010	10/15/2010	0.92	1.26
15-D	MS15D_20111103	DEEP	2011	11/3/2011	1.9	1.72
16-D	MS16D-92_R10A	DEEP	1992	10/7/1992	0.00	0.00
16-D	MS16D-92_R10C	DEEP	1992	10/21/1992	1.00	20.00
16-D	MS16D-92_R11	DEEP	1992	11/4/1992	0.00	20.00
16-D	MS16D-92_R12	DEEP	1992	12/8/1992	0.00	20.00
16-D	MS16D-93_R02	DEEP	1993	2/10/1993	0.00	11.00
16-D	MS16D-93_R05	DEEP	1993	5/5/1993	0.00	7.00
16-D	MS16D-93_R08	DEEP	1993	8/17/1993	0.00	4.00
16-D	MS16D-93_R11	DEEP	1993	11/9/1993	0.00	3.00
16-D	MS16D-94_R02A	DEEP	1994	2/16/1994	0.00	2.00
16-D	MS16D-94_R05	DEEP	1994	5/11/1994	0.00	2.00
16-D	MS16D-94_R08	DEEP	1994	8/17/1994	0.00	0.00
16-D	MS16D-94_R11A	DEEP	1994	11/18/1994	0.00	1.00
16-D	MS16D-95_R02B	DEEP	1995	2/16/1995	0.00	0.70
16-D	MS16D-95_R05	DEEP	1995	5/24/1995	0.00	0.00
16-D	MS16D-95_R08	DEEP	1995	8/16/1995	0.50	1.00

16-D	MS16D-95_R08-AVG	DEEP	1995	8/16/1995	0.60	1.00
16-D	MS16D-95_R08-D	DEEP	1995	8/16/1995	0.70	1.00
16-D	MS16D-95_R11	DEEP	1995	11/22/1995	0.00	1.00
16-D	MS16D-96-R01	DEEP	1996	1/15/1996	1.10	2.40
16-D	GWU-MS16D-R10_96	DEEP	1996	10/11/1996	0.00	2.10
16-D	MS16D-97_R02	DEEP	1997	2/5/1997	1.00	2.50
16-D	MS16D-97_R04	DEEP	1997	4/2/1997	3.60	3.60
16-D	MS16D-97_R10	DEEP	1997	10/16/1997	4.60	5.10
16-D	MS16D-98_Q2	DEEP	1998	4/30/1998	5.60	6.00
16-D	MS16D-98_Q4	DEEP	1998	10/29/1998	4.40	4.90
16-D	MS-16D-99_R04	DEEP	1999	4/21/1999	4.30	2.50
16-D	MS-16D-99_R11	DEEP	1999	11/4/1999	5.30	3.90
16-D	MS-16D-00_R10	DEEP	2000	10/10/2000	0.00	2.90
16-D	MS16D-01_R11	DEEP	2001	11/29/2001	5.80	4.90
16-D	MS16D-03_R03	DEEP	2003	3/13/2003	6.20	3.65
16-D	MS16D-03_R10	DEEP	2003	10/13/2003	8.20	3.74
16-D	MS16D-04_R09	DEEP	2004	9/29/2004	6.00	2.10
16-D	MS16D-05_R11	DEEP	2005	11/11/2005	5.00	2.57
16-D	MS16D-20061016	DEEP	2006	10/16/2006	5.60	2.70
16-D	MS16D_20071019	DEEP	2007	10/19/2007	5.20	2.71
16-D	MS16D_20081022	DEEP	2008	10/22/2008	6.50	2.48
16-D	MS16D_20090929	DEEP	2009	9/29/2009	6.00	2.85
16-D	MS16D_20101021	DEEP	2010	10/21/2010	5.60	3.14
16-D	MS16D_20111107	DEEP	2011	11/7/2011	4.0	4.78
1-D	1-D-83_R10	DEEP	1983	10/1/1983	0.00	0.00
1-D	1-D-84_R04	DEEP	1984	4/1/1984	0.00	0.00
1-D	1-D-84_R10	DEEP	1984	10/1/1984	0.00	0.00
1-D	1-D-85_R01	DEEP	1985	1/1/1985	0.00	0.00
1-D	1-D-85_R06	DEEP	1985	6/1/1985	0.00	0.00
1-D	1-D-86_R11	DEEP	1986	11/1/1986	0.00	0.00
1-D	M01D-86_R11	DEEP	1986	11/1/1986	0.00	0.00
1-D	1-D-88_R01	DEEP	1988	1/1/1988	0.00	0.00
1-D	M01D-88_R01	DEEP	1988	1/1/1988	0.00	0.00
1-D	M01D-90_R11	DEEP	1990	11/1/1990	0.00	0.00
1-D	M01D-91_R02	DEEP	1991	2/1/1991	0.00	0.00
1-D	MS01D-95_R11	DEEP	1995	11/20/1995	0.00	0.80
1-D	MS01D-96-R01	DEEP	1996	1/15/1996	0.00	0.00
1-D	MS01D-96_R10	DEEP	1996	10/9/1996	0.00	0.00
1-D	MS01D-97_R02	DEEP	1997	2/3/1997	1.50	1.20
1-D	MS-01D-97_R03	DEEP	1997	3/31/1997	15.00	2.20
1-D	MS01D-97_R10	DEEP	1997	10/14/1997	16.00	1.70
1-D	MS01D-97_R10-AVG	DEEP	1997	10/14/1997	11.35	1.70
1-D	MS01D-97_R10-D	DEEP	1997	10/14/1997	6.70	0.00
1-D	MS01D-98_Q2	DEEP	1998	4/28/1998	22.00	2.00
1-D	MS01D-98_Q4	DEEP	1998	10/28/1998	21.00	0.00
1-D	MS-01D-99_R04	DEEP	1999	4/20/1999	36.00	1.30
1-D	MS-01D-99_R11	DEEP	1999	11/3/1999	39.00	1.70
1-D	MS-01D-00_R10	DEEP	2000	10/16/2000	0.00	5.50
1-D	MS1D-01_R11	DEEP	2001	11/28/2001	46.00	1.80
1-D	MS1D-03_R03	DEEP	2003	3/13/2003	60.00	1.30
1-D	MS01D-04_R09	DEEP	2004	9/22/2004	38.00	1.40
1-D	MS01D-20061012	DEEP	2006	10/12/2006	21.00	1.80

2-D	2-D-83_R10	DEEP	1983	10/1/1983	0.00	0.00
2-D	2-D-84_R04	DEEP	1984	4/1/1984	0.00	0.00
2-D	2-D-84_R10	DEEP	1984	10/1/1984	0.00	0.00
2-D	2-D-85_R01	DEEP	1985	1/1/1985	0.00	0.00
2-D	2-D-85_R06	DEEP	1985	6/1/1985	0.00	0.00
2-D	2-D-86_R11	DEEP	1986	11/1/1986	0.00	0.00
2-D	M02D-86_R11	DEEP	1986	11/1/1986	0.00	0.00
2-D	2-D-88_R01	DEEP	1988	1/1/1988	0.00	0.00
2-D	M02D-88_R01	DEEP	1988	1/1/1988	0.00	0.00
2-D	M02D-90_R11	DEEP	1990	11/1/1990	0.00	0.00
2-D	M02D-91_R02	DEEP	1991	2/1/1991	0.00	0.00
2-D	MS02D-95_R11	DEEP	1995	11/21/1995	0.70	1.00
2-D	MS02D-96-R01	DEEP	1996	1/15/1996	0.00	0.70
2-D	GWU-MS02D-R10_96	DEEP	1996	10/10/1996	0.00	0.00
2-D	MS-02D-97_R04	DEEP	1997	4/2/1997	0.00	1.80
2-D	MS02D-97_R10	DEEP	1997	10/15/1997	0.00	3.70
2-D	MS02D-98_Q2	DEEP	1998	4/29/1998	0.00	3.10
2-D	MS02D-98_Q4	DEEP	1998	10/29/1998	0.00	2.50
2-D	MS-02D-99_R04	DEEP	1999	4/21/1999	0.00	2.10
2-D	MS-02D-99_R11	DEEP	1999	11/3/1999	0.00	3.10
2-D	MS-02D-99_R11-DIF	DEEP	1999	11/3/1999	0.00	2.80
2-D	MS2D-03_R03	DEEP	2003	3/13/2003	0.70	3.30
2-D	MS2D-03_R03-AVG	DEEP	2003	3/13/2003	24.85	2.09
2-D	MS2D-03_R03-D	DEEP	2003	3/13/2003	49.00	0.88
2-D	MS02D-04_R09	DEEP	2004	9/23/2004	0.00	4.10
2-D	MS02D-20061016	DEEP	2006	10/16/2006	0.80	4.10
2-D	MS02D_20071019	DEEP	2007	10/19/2007	0.77	4.32
2-D	MS02D_20081021	DEEP	2008	10/21/2008	0.46	3.93
2-D	MS02D_20090924	DEEP	2009	9/24/2009	1.10	4.37
2-D	MS02D_20111115	DEEP	2011	11/15/2011	0.62	3.82
3-D	3-D-83_R10	DEEP	1983	10/1/1983	0.00	0.00
3-D	3-D-84_R04	DEEP	1984	4/1/1984	0.00	0.00
3-D	3-D-84_R10	DEEP	1984	10/1/1984	0.00	0.00
3-D	3-D-85_R01	DEEP	1985	1/1/1985	0.00	0.00
3-D	3-D-85_R06	DEEP	1985	6/1/1985	0.00	0.00
3-D	3-D-86_R11	DEEP	1986	11/1/1986	0.00	0.00
3-D	M03D-86_R11	DEEP	1986	11/1/1986	0.00	0.00
3-D	3-D-88_R01	DEEP	1988	1/1/1988	0.00	0.00
3-D	M03D-88_R01	DEEP	1988	1/1/1988	0.00	0.00
3-D	M03D-90_R11	DEEP	1990	11/1/1990	0.00	0.00
3-D	M03D-91_R02	DEEP	1991	2/1/1991	0.00	0.00
4-D	4-D-83_R10	DEEP	1983	10/1/1983	0.00	0.00
4-D	4-D-84_R04	DEEP	1984	4/1/1984	0.00	0.00
4-D	4-D-84_R10	DEEP	1984	10/1/1984	0.00	0.00
4-D	4-D-85_R01	DEEP	1985	1/1/1985	0.00	0.00
4-D	4-D-85_R06	DEEP	1985	6/1/1985	0.00	0.00
4-D	4-D-86_R11	DEEP	1986	11/1/1986	0.00	0.00
4-D	M04D-86_R11	DEEP	1986	11/1/1986	0.00	0.00
4-D	4-D-88_R01	DEEP	1988	1/1/1988	0.00	0.00
4-D	M04D-88_R01	DEEP	1988	1/1/1988	0.00	0.00
4-D	M04D-90_R11	DEEP	1990	11/1/1990	0.00	0.00
4-D	M04D-91_R02	DEEP	1991	2/1/1991	0.00	0.00

4-D	MS04D-94_R08	DEEP	1994	8/16/1994	0.00	0.00
4-D	MS04D-94_R11A	DEEP	1994	11/16/1994	0.00	0.00
4-D	MS04D-95_R02B	DEEP	1995	2/15/1995	0.00	0.00
4-D	MS04D-95_R05	DEEP	1995	5/23/1995	0.00	0.00
4-D	MS04D-95_R08	DEEP	1995	8/15/1995	0.00	0.40
4-D	MS04D-95_R11	DEEP	1995	11/21/1995	0.00	0.00
4-D	MS04D-96-R01	DEEP	1996	1/15/1996	0.00	0.00
4-D	MS04D-96_R10	DEEP	1996	10/10/1996	0.00	0.00
4-D	MS-04D-97_R04	DEEP	1997	4/1/1997	0.00	2.10
4-D	MS04D-97_R10	DEEP	1997	10/10/1997	0.00	0.00
4-D	MS04D-98_Q2	DEEP	1998	4/29/1998	0.00	2.50
4-D	MS04D-98_Q4	DEEP	1998	10/31/1998	0.00	2.50
4-D	MS-04D-99_R04	DEEP	1999	4/21/1999	0.00	2.20
4-D	MS-04D-99_R11	DEEP	1999	11/3/1999	0.00	3.80
4-D	MS4D-03_R03	DEEP	2003	3/12/2003	1.30	2.80
4-D	MS04D-04_R09	DEEP	2004	9/21/2004	4.90	2.80
4-D	MS04D-04_R09-AVG	DEEP	2004	9/21/2004	5.10	2.70
4-D	MS04D-04_R09-D	DEEP	2004	9/21/2004	5.30	2.60
4-D	MS04D-20061010	DEEP	2006	10/10/2006	5.00	3.28
4-D	MS04D_20081020	DEEP	2008	10/20/2008	4.60	2.96
4-D	MS04D_20090923	DEEP	2009	9/23/2009	3.40	2.95
4-D	MS04D_20101007	DEEP	2010	10/7/2010	1.90	2.55
4-D	MS04D_20111107	DEEP	2011	11/7/2011	1.2	2.97
5-D	5-D-85_R06	DEEP	1985	6/1/1985	0.00	0.00
5-D	5-D-86_R04	DEEP	1986	4/1/1986	0.00	0.00
5-D	5-D-86_R11	DEEP	1986	11/1/1986	0.00	0.00
5-D	M05D-86_R11	DEEP	1986	11/1/1986	0.00	0.00
5-D	5-D-88_R01	DEEP	1988	1/1/1988	0.00	0.00
5-D	M05D-88_R01	DEEP	1988	1/1/1988	0.00	0.00
5-D	M05D-90_R11	DEEP	1990	11/1/1990	0.00	0.00
5-D	M05D-91_R02	DEEP	1991	2/1/1991	0.00	0.00
5-D	MS05D_20071017	DEEP	2007	10/17/2007	0.14	0.22
5-D	MS05D_20071017-AVG	DEEP	2007	10/17/2007	0.15	0.23
5-D	MS05D_20071017-D	DEEP	2007	10/17/2007	0.16	0.23
5-D	MS05D_20081017	DEEP	2008	10/17/2008	0.08	0.05
5-D	MS05D_20090922	DEEP	2009	9/22/2009	0.46	0.29
5-D	MS05D_20101007	DEEP	2010	10/7/2010	0.41	0.28
5-D	MS05D_20111101	DEEP	2011	11/1/2011	1.4	0.34
6-D	6-D-85_R06	DEEP	1985	6/1/1985	0.00	0.00
6-D	6-D-86_R04	DEEP	1986	4/1/1986	0.00	0.00
6-D	6-D-86_R11	DEEP	1986	11/1/1986	0.00	0.00
6-D	M06D-86_R11	DEEP	1986	11/1/1986	0.00	0.00
6-D	6-D-88_R01	DEEP	1988	1/1/1988	0.00	0.00
6-D	M06D-88_R01	DEEP	1988	1/1/1988	0.00	0.00
6-D	M06D-90_R11	DEEP	1990	11/1/1990	0.00	0.00
6-D	M06D-90_R11-AVG	DEEP	1990	11/1/1990	0.00	0.00
6-D	M06D-90_R11-D	DEEP	1990	11/1/1990	0.00	0.00
6-D	M06D-91_R02	DEEP	1991	2/1/1991	0.00	0.00
6-D	M06D-91_R02-AVG	DEEP	1991	2/1/1991	0.00	0.00
6-D	M06D-91_R02-D	DEEP	1991	2/1/1991	0.00	0.00
6-D	MS06D-92_R10A	DEEP	1992	10/7/1992	0.00	0.00
6-D	MS06D-92_R10C	DEEP	1992	10/21/1992	0.00	3.00

6-D	MS06D-92_R11	DEEP	1992	11/3/1992	0.00	2.00
6-D	MS06D-92_R11-AVG	DEEP	1992	11/3/1992	0.60	2.00
6-D	MS06D-92_R11-D	DEEP	1992	11/3/1992	0.60	2.00
6-D	MS06D-92_R12	DEEP	1992	12/10/1992	0.00	3.00
6-D	MS06D-93_R02	DEEP	1993	2/10/1993	0.00	0.00
6-D	MS06D-93_R05	DEEP	1993	5/4/1993	0.00	0.00
6-D	MS06D-93_R08	DEEP	1993	8/17/1993	0.00	0.00
6-D	MS06D-93_R11	DEEP	1993	11/9/1993	0.00	0.00
6-D	MS06D-94_R02A	DEEP	1994	2/16/1994	0.00	0.70
6-D	MS06D-94_R02A-AVG	DEEP	1994	2/16/1994	0.00	0.70
6-D	MS06D-94_R02A-D	DEEP	1994	2/16/1994	0.00	0.00
6-D	MS06D-94_R05	DEEP	1994	5/10/1994	0.00	0.70
6-D	MS06D-94_R05-AVG	DEEP	1994	5/10/1994	0.00	0.75
6-D	MS06D-94_R05-D	DEEP	1994	5/10/1994	0.00	0.80
6-D	MS06D-94_R08	DEEP	1994	8/16/1994	0.00	0.00
6-D	MS06D-94_R11A	DEEP	1994	11/16/1994	0.00	1.00
6-D	MS06D-95_R02B	DEEP	1995	2/15/1995	0.00	1.00
6-D	MS06D-95_R05	DEEP	1995	5/23/1995	0.00	1.00
6-D	MS06D-95_R08	DEEP	1995	8/15/1995	0.00	0.90
6-D	MS06D-95_R11	DEEP	1995	11/21/1995	0.00	0.70
6-D	MS06D-96-R01	DEEP	1996	1/15/1996	0.00	0.00
6-D	GWU-MS06D-R10_96	DEEP	1996	10/10/1996	0.00	0.00
6-D	MS-06D-97_R04	DEEP	1997	4/1/1997	0.00	2.40
6-D	MS06D-97_R10	DEEP	1997	10/15/1997	0.67	3.90
6-D	MS06D-97_R10-AVG	DEEP	1997	10/15/1997	0.99	286.95
6-D	MS06D-97_R10-D	DEEP	1997	10/15/1997	1.30	570.00
6-D	MS06D-98_Q2	DEEP	1998	4/29/1998	0.00	4.40
6-D	MS06D-98_Q4	DEEP	1998	10/29/1998	0.00	2.70
6-D	MS-06D-99_R04	DEEP	1999	4/21/1999	0.59	2.40
6-D	MS-06D-99_R11	DEEP	1999	11/3/1999	0.77	3.20
6-D	MS-06D-00_R10	DEEP	2000	10/16/2000	0.00	1.40
6-D	MS6D-01_R11	DEEP	2001	11/28/2001	1.20	2.70
6-D	MS6D-01_R11-AVG	DEEP	2001	11/28/2001	0.85	2.75
6-D	MS6D-01_R11-D	DEEP	2001	11/28/2001	0.00	2.80
6-D	MS6D-03_R03	DEEP	2003	3/12/2003	1.20	2.80
6-D	MS6D-03_R10	DEEP	2003	10/8/2003	3.10	3.28
6-D	MS06D-04_R09	DEEP	2004	9/21/2004	4.30	2.60
6-D	MS06D-05_R11	DEEP	2005	11/8/2005	2.40	3.27
6-D	MS06D-20061011	DEEP	2006	10/11/2006	2.30	3.69
6-D	MS06D_20071016	DEEP	2007	10/16/2007	2.40	3.15
6-D	MS06D_20081020	DEEP	2008	10/20/2008	1.80	2.84
6-D	MS06D_20090923	DEEP	2009	9/23/2009	1.50	2.83
6-D	MS06D_20101007	DEEP	2010	10/7/2010	0.79	2.41
6-D	MS06D20111108	DEEP	2011	11/8/2011	0.51	2.92
7-D	7-D-86_R04	DEEP	1986	4/1/1986	0.00	0.00
7-D	7-D-86_R11	DEEP	1986	11/1/1986	0.00	0.00
7-D	M07D-86_R11	DEEP	1986	11/1/1986	0.00	0.00
7-D	7-D-88_R01	DEEP	1988	1/1/1988	0.00	0.00
7-D	M07D-88_R01	DEEP	1988	1/1/1988	0.00	0.00
7-D	M07D-90_R11	DEEP	1990	11/1/1990	0.00	13.00
7-D	M07D-91_R02	DEEP	1991	2/1/1991	0.00	10.00
7-D	M07D-91_R02-AVG	DEEP	1991	2/1/1991	0.00	10.00

7-D	M07D-91_R02-D	DEEP	1991	2/1/1991	0.00	10.00
7-D	MS07D-95_R11	DEEP	1995	11/21/1995	0.00	0.00
7-D	MS07D-96-R01	DEEP	1996	1/15/1996	0.00	0.00
7-D	GWU-MS07D-R10_96	DEEP	1996	10/11/1996	0.00	2.40
7-D	MS07D-97_R02	DEEP	1997	2/4/1997	0.00	2.20
7-D	MS07D-97_R04	DEEP	1997	4/2/1997	0.00	6.00
7-D	MS07D-97_R10	DEEP	1997	10/15/1997	0.00	6.30
7-D	MS7D-98_Q2	DEEP	1998	4/30/1998	0.00	4.60
7-D	MS07D-98_Q4	DEEP	1998	10/29/1998	0.00	3.50
7-D	MS-07D-99_R04	DEEP	1999	4/22/1999	0.00	3.10
7-D	MS-07D-99_R11	DEEP	1999	11/3/1999	0.00	4.40
7-D	MS-07D-99_R11-DIF	DEEP	1999	11/3/1999	0.00	0.00
7-D	MS-07D-00_R10	DEEP	2000	10/16/2000	0.00	1.70
7-D	MS-07D-00_R10-AVG	DEEP	2000	10/16/2000	0.00	1.65
7-D	MS-07D-00_R10-D	DEEP	2000	10/16/2000	0.00	1.60
7-D	MS7D-01_R11	DEEP	2001	11/29/2001	0.00	2.10
7-D	MS7D-03_R03	DEEP	2003	3/12/2003	0.00	2.10
7-D	MS7D-03_R03-AVG	DEEP	2003	3/12/2003	0.00	2.10
7-D	MS7D-03_R03-D	DEEP	2003	3/12/2003	0.00	2.10
7-D	MS7D-03_R10	DEEP	2003	10/10/2003	0.00	2.10
7-D	MS07D-04_R09	DEEP	2004	9/24/2004	0.00	2.70
7-D	MS07D-05_R11	DEEP	2005	11/9/2005	0.00	2.50
7-D	MS07D-20061013	DEEP	2006	10/13/2006	0.00	2.30
7-D	MS07D_20071018	DEEP	2007	10/18/2007	0.00	2.58
7-D	MS07D_20081017	DEEP	2008	10/17/2008	0.00	2.65
7-D	MS07D_20090924	DEEP	2009	9/24/2009	0.00	2.55
7-D	MS07D_20101014-AVG	DEEP	2010	10/14/2010	0.00	2.47
7-D	MS07D_20111103	DEEP	2011	11/3/2011	0.00	2.56
8-D	8-D-86_R04	DEEP	1986	4/1/1986	0.00	39.00
8-D	8-D-86_R11	DEEP	1986	11/1/1986	0.00	96.00
8-D	M08D-86_R11	DEEP	1986	11/1/1986	0.00	96.00
8-D	8-D-88_R01	DEEP	1988	1/1/1988	0.00	54.00
8-D	M08D-88_R01	DEEP	1988	1/1/1988	0.00	54.00
8-D	M08D-90_R11	DEEP	1990	11/1/1990	0.00	66.00
8-D	M08D-91_R02	DEEP	1991	2/1/1991	1.00	92.00
8-D	MS08D-92_R10A	DEEP	1992	10/7/1992	79.00	120.00
8-D	MS08D-92_R10A-AVG	DEEP	1992	10/7/1992	139.50	120.00
8-D	MS08D-92_R10A-D	DEEP	1992	10/7/1992	200.00	120.00
8-D	MS08D-92_R10C	DEEP	1992	10/20/1992	0.00	0.00
8-D	MS08D-92_R11	DEEP	1992	11/5/1992	0.00	82.00
8-D	MS08D-92_R12	DEEP	1992	12/9/1992	0.00	54.00
8-D	MS08D-93_R05	DEEP	1993	5/6/1993	0.00	0.00
8-D	MS08D-93_R08	DEEP	1993	8/18/1993	0.00	0.00
8-D	MS08D-93_R11	DEEP	1993	11/10/1993	0.00	40.00
8-D	MS08D-94_R02A	DEEP	1994	2/17/1994	0.00	35.00
8-D	MS08D-94_R05	DEEP	1994	5/11/1994	0.00	28.00
8-D	MS08D-94_R08	DEEP	1994	8/17/1994	0.00	22.00
8-D	MS08D-94_R11B	DEEP	1994	11/21/1994	0.00	31.00
8-D	MS08D-95_R02B	DEEP	1995	2/16/1995	0.00	28.00
8-D	MS08D-95_R05	DEEP	1995	5/25/1995	0.00	14.00
8-D	MS08D-95_R08	DEEP	1995	8/17/1995	0.00	15.00
8-D	MS08D-95_R08-AVG	DEEP	1995	8/17/1995	0.00	14.50

8-D	MS08D-95_R08-D	DEEP	1995	8/17/1995	0.00	14.00
8-D	MS08D-95_R11	DEEP	1995	11/22/1995	0.00	20.00
8-D	MS08D-96-R01	DEEP	1996	1/15/1996	0.00	30.00
8-D	GWU-MS08D-R10_96	DEEP	1996	10/14/1996	0.00	19.40
8-D	MS08D-97_R02	DEEP	1997	2/5/1997	0.80	52.00
8-D	MS08D-97_R04	DEEP	1997	4/3/1997	4.00	12.00
8-D	MS08D-97_R10	DEEP	1997	10/16/1997	4.60	17.00
8-D	MS08D-98_Q2	DEEP	1998	4/30/1998	4.60	12.00
8-D	MS08D-98_Q4	DEEP	1998	10/30/1998	4.20	9.70
8-D	MS-08D-99_R04	DEEP	1999	4/22/1999	5.80	11.00
8-D	MS-08D-99_R11	DEEP	1999	11/4/1999	5.50	12.00
8-D	MS-08D-99_R11-DIF	DEEP	1999	11/4/1999	5.00	52.00
8-D	MS-08D-99_R11-DIF-AVG	DEEP	1999	11/4/1999	2.75	52.00
8-D	MS-08D-99_R11-DIF-D	DEEP	1999	11/4/1999	0.00	52.00
8-D	MS-08D-00_R10	DEEP	2000	10/24/2000	0.00	37.00
8-D	MS8D-01_R12	DEEP	2001	12/4/2001	5.20	5.60
8-D	MS8D-03_R03	DEEP	2003	3/18/2003	7.70	6.47
8-D	MS8D-03_R10	DEEP	2003	10/14/2003	9.70	6.67
8-D	MS08D-04_R09	DEEP	2004	9/29/2004	8.80	5.10
8-D	MS08D-05_R11	DEEP	2005	11/14/2005	11.00	6.04
8-D	MS08D-05_R11-AVG	DEEP	2005	11/14/2005	10.50	5.94
8-D	MS08D-05_R11-D	DEEP	2005	11/14/2005	10.00	5.84
8-D	MS08D-20061020	DEEP	2006	10/20/2006	12.00	4.50
8-D	MS08D_20071024	DEEP	2007	10/24/2007	10.00	3.94
8-D	MS08D_20081023	DEEP	2008	10/23/2008	9.90	3.50
8-D	MS08D_20090930	DEEP	2009	9/30/2009	10.00	2.77
8-D	MS08D_20101022	DEEP	2010	10/22/2010	5.90	5.02
8-D	MS08D_20111108	DEEP	2011	11/8/2011	3.7	5.36
9-D	9-D-86_R04	DEEP	1986	4/1/1986	0.00	13.00
9-D	9-D-86_R11	DEEP	1986	11/1/1986	0.00	56.00
9-D	M09D-86_R11	DEEP	1986	11/1/1986	0.00	56.00
9-D	9-D-88_R01	DEEP	1988	1/1/1988	0.00	12.00
9-D	M09D-88_R01	DEEP	1988	1/1/1988	0.00	12.00
9-D	M09D-90_R11	DEEP	1990	11/1/1990	2.00	8.00
9-D	M09D-91_R02	DEEP	1991	2/1/1991	3.00	7.00
9-D	M09D-91_R02-AVG	DEEP	1991	2/1/1991	3.00	7.00
9-D	M09D-91_R02-D	DEEP	1991	2/1/1991	3.00	7.00
9-D	MS09D-92_R10A	DEEP	1992	10/7/1992	2.00	7.00
9-D	MS09D-92_R10A-AVG	DEEP	1992	10/7/1992	1.35	6.50
9-D	MS09D-92_R10A-D	DEEP	1992	10/7/1992	0.70	6.00
9-D	MS09D-92_R10C	DEEP	1992	10/20/1992	2.00	23.00
9-D	MS09D-92_R10C-AVG	DEEP	1992	10/20/1992	3.00	24.00
9-D	MS09D-92_R10C-D	DEEP	1992	10/20/1992	4.00	25.00
9-D	MS09D-92_R11	DEEP	1992	11/5/1992	3.00	14.00
9-D	MS09D-92_R12	DEEP	1992	12/9/1992	4.00	11.00
9-D	MS09D-93_R02	DEEP	1993	2/10/1993	2.00	9.00
9-D	MS09D-93_R05	DEEP	1993	5/5/1993	1.00	5.00
9-D	MS09D-93_R08	DEEP	1993	8/17/1993	0.90	7.00
9-D	MS09D-93_R11	DEEP	1993	11/9/1993	0.90	7.00
9-D	MS09D-94_R02A	DEEP	1994	2/16/1994	1.00	7.00
9-D	MS09D-94_R05	DEEP	1994	5/10/1994	0.90	5.00
9-D	MS09D-94_R08	DEEP	1994	8/16/1994	0.00	4.00

9-D	MS09D-94_R11A	DEEP	1994	11/18/1994	1.00	5.00
9-D	MS09D-95_R02B	DEEP	1995	2/15/1995	0.90	4.00
9-D	MS09D-95_R05	DEEP	1995	5/24/1995	0.00	2.00
9-D	MS09D-95_R08	DEEP	1995	8/16/1995	0.80	2.00
9-D	MS09D-95_R11	DEEP	1995	11/21/1995	0.90	3.00
9-D	MS09D-96-R01	DEEP	1996	1/15/1996	0.50	1.00
9-D	GWU-MS09D-R10_96	DEEP	1996	10/10/1996	0.00	1.70
9-D	MS-09D-97_R04	DEEP	1997	4/1/1997	4.10	13.00
9-D	MS09D-97_R10	DEEP	1997	10/15/1997	3.90	12.00
9-D	MS09D-98_Q2	DEEP	1998	4/29/1998	3.60	14.00
9-D	MS09D-98_Q4	DEEP	1998	10/29/1998	3.00	9.50
9-D	MS-09D-99_R04	DEEP	1999	4/21/1999	2.20	8.30
9-D	MS-09D-99_R11	DEEP	1999	11/3/1999	2.30	9.10
9-D	MS-09D-99_R11-DIF	DEEP	1999	11/3/1999	2.20	10.00
9-D	MS-09D-00_R10	DEEP	2000	10/24/2000	1.30	7.20
9-D	MS9D-01_R12	DEEP	2001	12/3/2001	1.70	4.40
9-D	MS9D-03_R03	DEEP	2003	3/14/2003	1.50	2.00
9-D	MS9D-03_R10	DEEP	2003	10/10/2003	1.60	1.60
9-D	MS09D-04_R09	DEEP	2004	9/28/2004	1.20	2.10
9-D	MS09D-05_R11	DEEP	2005	11/10/2005	1.20	2.00
9-D	MS09D-20061017	DEEP	2006	10/17/2006	1.40	1.40
9-D	MS09D_20071019	DEEP	2007	10/19/2007	1.40	1.90
9-D	MS09D_20071019-AVG	DEEP	2007	10/19/2007	1.35	1.90
9-D	MS09D_20071019-D	DEEP	2007	10/19/2007	1.30	1.90
9-D	MS09D_20081020	DEEP	2008	10/20/2008	1.30	1.16
9-D	MS09D_20090924	DEEP	2009	9/24/2009	1.20	1.20
9-D	MS09D_20101014	DEEP	2010	10/14/2010	0.86	1.10
9-D	MS09D_20111104	DEEP	2011	11/4/2011	0.72	0.65
AT-5B	AT05B-95_R08	DEEP	1995	8/17/1995	3.00	8.00
AT-5B	AT05B-95_R11	DEEP	1995	11/20/1995	2.00	6.00
AT-5B	AT05B-96_R01	DEEP	1996	1/15/1996	0.00	8.00
AT-5B	GWU-AT05B-R11_96	DEEP	1996	11/25/1996	0.00	37.00
AT-5B	AT05B-97_R04	DEEP	1997	4/3/1997	3.50	22.00
AT-5B	AT05B-97_R10	DEEP	1997	10/17/1997	0.00	36.00
AT-5B	AT5B-98_Q2	DEEP	1998	4/30/1998	0.00	32.00
AT-5B	AT05B-98_Q4	DEEP	1998	10/29/1998	2.20	25.00
AT-5B	AT05B-99_R04	DEEP	1999	4/23/1999	4.00	22.00
AT-5B	AT05B-99_R11	DEEP	1999	11/5/1999	2.10	26.00
AT-5B	AT05B-00_R10	DEEP	2000	10/6/2000	3.20	24.00
AT-5B	AT05B-01_R08	DEEP	2001	8/9/2001	0.00	12.60
AT-5B	AT05B-01_R11	DEEP	2001	11/27/2001	2.30	9.80
AT-5B	AT05B-03_R03	DEEP	2003	3/20/2003	0.78	3.40
AT-5B	AT-5B-03_R07	DEEP	2003	7/15/2003	2.70	9.50
AT-5B	AT05B-03_R10	DEEP	2003	10/16/2003	3.20	10.70
AT-5B	AT-5B-04_R07	DEEP	2004	7/26/2004	2.30	15.20
AT-5B	AT05B-04_R09	DEEP	2004	9/27/2004	2.10	18.90
AT-5B	AT5B-05_R11	DEEP	2005	11/21/2005	2.00	18.90
AT-5B	AT5B-20060518	DEEP	2006	5/18/2006	1.70	18.60
AT-5B	AT05B-20061204	DEEP	2006	12/4/2006	2.00	26.00
AT-5B	AT05B_20071030	DEEP	2007	10/30/2007	1.90	28.00
AT-5B	AT05B_20081031	DEEP	2008	10/31/2008	1.80	26.00
AT-5B	AT05B_20091007	DEEP	2009	10/7/2009	2.00	29.00

AT-5B	**AT05B_20101102**	**DEEP**	**2010**	**11/2/2010**	1.90	29.00
AT-5B	**AT05B_20110215**	**DEEP**	**2011**	**2/15/2011**	2.00	27.00
AT-5B	**AT05B_20110609**	**DEEP**	**2011**	**6/9/2011**	2.10	25.00
AT-5B	**AT05B_20110609-AVG**	**DEEP**	**2011**	**6/9/2011**	2.15	25.00
AT-5B	**AT05B_20110609-D**	**DEEP**	**2011**	**6/9/2011**	2.20	25.00
AT-5B	**AT05B_20110815**	**DEEP**	**2011**	**8/15/2011**	2.00	24.00
AT-5B	**AT05B_20110815-AVG**	**DEEP**	**2011**	**8/15/2011**	2.05	24.50
AT-5B	**AT05B_20110815-D**	**DEEP**	**2011**	**8/15/2011**	2.10	25.00
AT-5B	**AT05B_20111102**	**DEEP**	**2011**	**11/2/2011**	2.0	17.80
MS-28D	**003-MS-28D-01**	**DEEP**	**1998**	**2/17/1998**	5.90	11.50
MS-28D	**MS-28D-00_R10**	**DEEP**	**2000**	**10/21/2000**	0.00	1.20
MS-28D	**MS28D-01_R12**	**DEEP**	**2001**	**12/7/2001**	28.00	8.80
MS-28D	**MS28D-20061024**	**DEEP**	**2006**	**10/24/2006**	61.00	4.29
MS-28D	**MS28D_20071023**	**DEEP**	**2007**	**10/23/2007**	57.00	4.04
MS-28D	**MS28D_20081024**	**DEEP**	**2008**	**10/24/2008**	41.00	3.28
MS-28D	**MS28D_20090928**	**DEEP**	**2009**	**9/28/2009**	47.00	2.65
MS-28D	**MS28D_20101021**	**DEEP**	**2010**	**10/21/2010**	27.00	3.67
MS-28D	**MS28D_20111111**	**DEEP**	**2011**	**11/11/2011**	21	3.99
MS-28D	**MS28D_20111111-AVG**	**DEEP**	**2011**	**11/11/2011**	21.50	4.02
MS-28D	**MSD28D_20111111-D**	**DEEP**	**2011**	**11/11/2011**	22.00	4.05
MS-29D	**003-MS-29D-01**	**DEEP**	**1998**	**2/16/1998**	0.30	3.20
MS-29D	**MS29D-20061023**	**DEEP**	**2006**	**10/23/2006**	3.40	3.54
MS-29D	**MS29D-20111109**	**DEEP**	**2011**	**11/9/2011**	0.96	3.10
MS-30D	**003-MS-30D-01**	**DEEP**	**1998**	**3/3/1998**	5.00	1.60
MS-30D	**MS30D-20061027**	**DEEP**	**2006**	**10/27/2006**	6.90	4.06
MS-30D	**MS30D-20061027-AVG**	**DEEP**	**2006**	**10/27/2006**	6.90	4.04
MS-30D	**MS30D-20061027-D**	**DEEP**	**2006**	**10/27/2006**	6.90	4.02
MS-30D	**MS30D-20111114**	**DEEP**	**2011**	**11/14/2011**	2.10	3.96
MS-30I	**003-MS-30I-01**	**DEEP**	**1998**	**2/24/1998**	6.30	5.00
MS-30I	**MS-30I-00_R10**	**DEEP**	**2000**	**10/23/2000**	2.90	3.80
MS-30I	**MS30I-01_R12**	**DEEP**	**2001**	**12/5/2001**	1.40	12.00
MS-30I	**MS30I-20061027**	**DEEP**	**2006**	**10/27/2006**	1.90	9.77
MS-30I	**MS30I_20071024**	**DEEP**	**2007**	**10/24/2007**	1.70	5.85
MS-30I	**MS30I_20081028**	**DEEP**	**2008**	**10/28/2008**	1.80	7.23
MS-30I	**MS30I_20091002**	**DEEP**	**2009**	**10/2/2009**	1.60	3.57
MS-30I	**MS30I_20101027**	**DEEP**	**2010**	**10/27/2010**	1.30	3.33
MS-30I	**MS30I_20111115**	**DEEP**	**2011**	**11/15/2011**	1.7	5.43
MS-31D	**003-MS-31D-01**	**DEEP**	**1998**	**2/26/1998**	0.00	1.20
MS-31D	**MS31D-20061025**	**DEEP**	**2006**	**10/25/2006**	0.56	2.18
MS-31D	**MS31D_20071017**	**DEEP**	**2007**	**10/17/2007**	1.30	2.17
MS-31D	**MS31D_20081021**	**DEEP**	**2008**	**10/21/2008**	2.20	2.29
MS-31D	**MS31D_20090923**	**DEEP**	**2009**	**9/23/2009**	2.10	1.98
MS-31D	**MS31D_20101006**	**DEEP**	**2010**	**10/6/2010**	2.10	2.22
MS-31D	**MS31D_20111108**	**DEEP**	**2011**	**11/8/2011**	1.7	1.86
MS-32D	**003-MS-32D-01**	**DEEP**	**1998**	**3/2/1998**	0.00	5.70
MS-32D	**MS-32D-00_R10**	**DEEP**	**2000**	**10/24/2000**	0.00	2.60
MS-32D	**MS32D-01_R12**	**DEEP**	**2001**	**12/6/2001**	0.00	3.00
MS-32D	**MS32D-20061026**	**DEEP**	**2006**	**10/26/2006**	2.60	4.15
MS-32D	**MS32D_20071018**	**DEEP**	**2007**	**10/18/2007**	2.70	3.40
MS-32D	**MS32D_20081021**	**DEEP**	**2008**	**10/21/2008**	2.10	3.03
MS-32D	**MS32D_20090923**	**DEEP**	**2009**	**9/23/2009**	1.90	3.06
MS-32D	**MS32D_20101006**	**DEEP**	**2010**	**10/6/2010**	1.30	4.13

MS-32D	MS32D_20111108	DEEP	2011	11/8/2011	0.79	6.30
MS-33D	003-MS-33D-01	DEEP	1998	2/26/1998	22.00	2.80
MS-33D	MS-33D-00_R10	DEEP	2000	10/24/2000	18.00	3.60
MS-33D	MS33D-01_R12	DEEP	2001	12/6/2001	13.00	3.30
MS-33D	MS33D-20061026	DEEP	2006	10/26/2006	4.80	2.15
MS-33D	MS33D_20071018	DEEP	2007	10/18/2007	4.30	1.91
MS-33D	MS33D_20081021	DEEP	2008	10/21/2008	4.40	1.34
MS-33D	MS33D_20090924	DEEP	2009	9/24/2009	3.80	1.46
MS-33D	MS33D_20101011	DEEP	2010	10/11/2010	2.40	1.23
MS-33D	MS33D_20111110	DEEP	2011	11/10/2011	2.30	1.25
MS-34D	057-MW-34D-01	DEEP	1999	12/2/1999	0.60	3.90
MS-34D	MS34D-03_R03	DEEP	2003	3/12/2003	1.40	3.00
MS-34D	MS34D-03_R10	DEEP	2003	10/8/2003	2.60	3.59
MS-34D	MS34D-03_R10-AVG	DEEP	2003	10/8/2003	2.65	3.64
MS-34D	MS34D-03_R10-D	DEEP	2003	10/8/2003	2.70	3.68
MS-34D	MS34D-04_R09	DEEP	2004	9/22/2004	2.70	3.50
MS-34D	MS34D-05_R11	DEEP	2005	11/8/2005	2.30	3.86
MS-34D	MS34D-20061011	DEEP	2006	10/11/2006	2.30	3.77
MS-35D	057-MW-35D-01	DEEP	2000	1/6/2000	0.60	3.40
MS-35D	MS-35D-00_R10	DEEP	2000	10/24/2000	0.00	0.00
MS-35D	MS35D-01_R12	DEEP	2001	12/3/2001	0.00	3.20
MS-35D	MS35D-03_R03	DEEP	2003	3/17/2003	0.00	6.03
MS-35D	MS35D-03_R10	DEEP	2003	10/9/2003	0.40	7.87
MS-35D	MS35D-04_R09	DEEP	2004	9/24/2004	0.00	14.00
MS-35D	MS35D-04_R09-AVG	DEEP	2004	9/24/2004	0.00	14.00
MS-35D	MS35D-04_R09-D	DEEP	2004	9/24/2004	0.00	14.00
MS-35D	MS35D-05_R11	DEEP	2005	11/15/2005	0.37	22.88
MS-35D	MS35D-20061019	DEEP	2006	10/19/2006	0.39	24.40
MS-35D	MS35D_20071024	DEEP	2007	10/24/2007	0.43	20.10
MS-35D	MS35D_20081028	DEEP	2008	10/28/2008	0.27	24.30
MS-35D	MS35D_20091001	DEEP	2009	10/1/2009	0.46	16.20
MS-35D	MS35D_20101026	DEEP	2010	10/26/2010	0.24	6.19
MS-35D	MS35D_20110215	DEEP	2011	2/15/2011	0.31	9.52
MS-35D	MS35D_20110509	DEEP	2011	5/9/2011	0.21	12.70
MS-35D	MS35D_20110816	DEEP	2011	8/16/2011	0.00	13.99
MS-35D	MS35D_20111114	DEEP	2011	11/14/2011	0.22	8.98
MS-36D	057-MW-36D-01	DEEP	1999	12/3/1999	1.00	4.50
MS-36D	MS-36D-00_R10	DEEP	2000	10/21/2000	0.00	2.40
MS-36D	MS36D-01_R12	DEEP	2001	12/4/2001	1.60	3.20
MS-36D	MS36D-03_R03	DEEP	2003	3/18/2003	3.30	4.14
MS-36D	MS36D-03_R06	DEEP	2003	6/11/2003	3.00	3.00
MS-36D	MS36D-03_R10	DEEP	2003	10/15/2003	4.00	3.85
MS-36D	MS36D-04_R03	DEEP	2004	3/24/2004	3.60	2.50
MS-36D	MS36D-04_R09	DEEP	2004	9/28/2004	3.00	3.10
MS-36D	MS36D-04_R09-AVG	DEEP	2004	9/28/2004	2.95	3.35
MS-36D	MS36D-04_R09-D	DEEP	2004	9/28/2004	2.90	3.60
MS-36D	MS36D-05_R11	DEEP	2005	11/11/2005	2.30	3.90
MS-36D	MS36D-05_R11-AVG	DEEP	2005	11/11/2005	2.25	3.71
MS-36D	MS36D-05_R11-D	DEEP	2005	11/11/2005	2.20	3.52
MS-36D	MS36D-20060516	DEEP	2006	5/16/2006	2.10	3.80
MS-36D	MS36D-20061017	DEEP	2006	10/17/2006	1.90	4.32
MS-36D	MS36D_20071023	DEEP	2007	10/23/2007	1.40	6.18

MS-36D	MS36D_20081021	DEEP	2008	10/21/2008	1.40	7.58
MS-36D	MS36D_20090928	DEEP	2009	9/28/2009	1.20	8.58
MS-36D	MS36D_20101018	DEEP	2010	10/18/2010	0.82	12.71
MS-36D	MS36D_20111116	DEEP	2011	11/16/2011	0.91	11.60
MS-40D	057-MW-40D-01	DEEP	1999	12/4/1999	2.00	20.00
MS-40D	MS-40D-00_R10	DEEP	2000	10/23/2000	0.00	18.00
MS-40D	MS40D-01_R12	DEEP	2001	12/3/2001	2.70	16.00
MS-40D	MS40D-03_R03	DEEP	2003	3/17/2003	2.10	12.00
MS-40D	MS40D-03_R10	DEEP	2003	10/9/2003	1.80	3.00
MS-40D	MS40D-04_R09	DEEP	2004	9/29/2004	1.40	3.30
MS-40D	MS40D-05_R11	DEEP	2005	11/11/2005	1.70	4.17
MS-40D	MW40D-20061017	DEEP	2006	10/17/2006	1.60	3.65
MS-40D	MW40D-20061017-AVG	DEEP	2006	10/17/2006	1.55	3.62
MS-40D	MW40D-20061017-D	DEEP	2006	10/17/2006	1.50	3.59
MS-40D	MS40D_20071023	DEEP	2007	10/23/2007	1.30	4.91
MS-40D	MS40D_20071023-AVG	DEEP	2007	10/23/2007	1.30	5.02
MS-40D	MS40D_20071023-D	DEEP	2007	10/23/2007	1.30	5.12
MS-40D	MS40D_20081023	DEEP	2008	10/23/2008	1.20	2.50
MS-40D	MS40D_20090928	DEEP	2009	9/28/2009	1.20	1.74
MS-40D	MS40D_20101020-AVG	DEEP	2010	10/20/2010	0.69	1.29
MS-40D	MS40D_20111111	DEEP	2011	11/11/2011	0.56	1.56
MS-41D	057-MW-41D-01	DEEP	1999	12/1/1999	12.00	2.10
MS-41D	MS41D-03_R03	DEEP	2003	3/13/2003	9.00	4.60
MS-41D	MS41D-03_R06	DEEP	2003	6/11/2003	7.60	3.50
MS-41D	MS41D-03_R10	DEEP	2003	10/13/2003	7.60	3.26
MS-41D	MS41D-04_R03	DEEP	2004	3/24/2004	6.30	2.80
MS-41D	MS41D-04_R09	DEEP	2004	9/29/2004	4.50	0.00
MS-41D	MS41D-05_R11	DEEP	2005	11/11/2005	4.80	2.55
MS-41D	MS41D-20060516	DEEP	2006	5/16/2006	5.80	2.79
MS-41D	MS41D-20061018	DEEP	2006	10/18/2006	6.20	2.95
MS-41D	MS41D_20081022	DEEP	2008	10/22/2008	6.30	3.01
MS-41D	MS41D_20090929	DEEP	2009	9/29/2009	7.70	3.03
MS-41D	MS41D_20101027	DEEP	2010	10/27/2010	8.90	2.81
MS-41D	MS41S_20111116	DEEP	2011	11/16/2011	6.2	2.77
MS-43D	057-MW-43D-01	DEEP	1999	12/4/1999	0.60	3.90
MS-43D	057-MW-43D-01-AVG	DEEP	1999	12/4/1999	0.60	3.90
MS-43D	057-MW-43D-01-D	DEEP	1999	12/4/1999	0.60	3.90
MS-43D	MS43D-03_R03	DEEP	2003	3/11/2003	1.10	3.00
MS-43D	MS43D-03_R10	DEEP	2003	10/10/2003	8.00	3.34
MS-43D	MS43D-04_R09	DEEP	2004	9/28/2004	5.80	3.20
MS-43D	MS43D-05_R11	DEEP	2005	11/8/2005	2.00	2.41
MS-43D	MS43D-20061012	DEEP	2006	10/12/2006	4.30	3.28
MS-43D	MS43D_20071016	DEEP	2007	10/16/2007	3.40	3.17
MS-43D	MS43D_20081015	DEEP	2008	10/15/2008	2.50	2.96
MS-43D	MS43D_20090922	DEEP	2009	9/22/2009	1.30	3.05
MS-43D	MS43D_20090922-AVG	DEEP	2009	9/22/2009	1.30	3.06
MS-43D	MS43D_20090922-D	DEEP	2009	9/22/2009	1.30	3.06
MS-43D	MS43D_20101006	DEEP	2010	10/6/2010	0.94	3.73
MS-43D	MS43D_20111103	DEEP	2011	11/3/2011	1.1	3.30
MS-44D	057-MW-44D-01	DEEP	1999	11/15/1999	0.00	10.00
MS-44D	MS-44D-00_R10	DEEP	2000	10/23/2000	0.00	2.00
MS-44D	MS44D-01_R12	DEEP	2001	12/4/2001	0.00	11.80

MS-44D	**MS44D-03_R03**	**DEEP**	**2003**	**3/19/2003**	0.00	32.70
MS-44D	**MS44D-03_R03-AVG**	**DEEP**	**2003**	**3/19/2003**	0.00	32.70
MS-44D	**MS44D-03_R03-D**	**DEEP**	**2003**	**3/19/2003**	0.00	32.70
MS-44D	**MS44D-03_R10**	**DEEP**	**2003**	**10/15/2003**	0.00	16.20
MS-44D	**MS44D-04_R09**	**DEEP**	**2004**	**9/30/2004**	0.97	4.30
MS-44D	**MS44D-05_R11**	**DEEP**	**2005**	**11/15/2005**	0.67	3.88
MS-44D	**MS44D-20061016**	**DEEP**	**2006**	**10/16/2006**	0.27	6.04
MS-44D	**MS44D_20071022**	**DEEP**	**2007**	**10/22/2007**	0.66	4.46
MS-44D	**MS44D_20081021**	**DEEP**	**2008**	**10/21/2008**	0.67	5.25
MS-44D	**MS44D_20081021-AVG**	**DEEP**	**2008**	**10/21/2008**	0.66	5.23
MS-44D	**MS44D_20081021-D**	**DEEP**	**2008**	**10/21/2008**	0.65	5.20
MS-44D	**MS44D_20090923**	**DEEP**	**2009**	**9/23/2009**	0.47	8.09
MS-44D	**MS44D_20101014**	**DEEP**	**2010**	**10/14/2010**	0.29	8.51
MS-44D	**MS44D_20111103**	**DEEP**	**2011**	**11/3/2011**	0.33	19.50
MS-47D	**057-MW-47D-01**	**DEEP**	**1999**	**12/5/1999**	4.50	6.30
MS-47D	**MS-47D-00_R10**	**DEEP**	**2000**	**10/21/2000**	0.00	1.30
MS-47D	**MS47D-01_R12**	**DEEP**	**2001**	**12/3/2001**	6.90	5.00
MS-47D	**MS47D-01_R12-AVG**	**DEEP**	**2001**	**12/3/2001**	6.75	5.15
MS-47D	**MS47D-01_R12-D**	**DEEP**	**2001**	**12/3/2001**	6.60	5.30
MS-47D	**MS47D-03_R03**	**DEEP**	**2003**	**3/17/2003**	6.00	3.81
MS-47D	**MS47D-03_R10**	**DEEP**	**2003**	**10/13/2003**	8.80	4.71
MS-47D	**MS47D-04_R09**	**DEEP**	**2004**	**9/29/2004**	6.10	2.80
MS-47D	**MS47D-05_R11**	**DEEP**	**2005**	**11/11/2005**	7.20	3.32
MS-47D	**MS47D-20061020**	**DEEP**	**2006**	**10/20/2006**	7.70	3.26
MS-47D	**MS47D-20061020-AVG**	**DEEP**	**2006**	**10/20/2006**	7.65	3.32
MS-47D	**MS47D-20061020-D**	**DEEP**	**2006**	**10/20/2006**	7.60	3.37
MS-47D	**MS47D_20071023**	**DEEP**	**2007**	**10/23/2007**	7.10	3.59
MS-47D	**MS47D_20081023**	**DEEP**	**2008**	**10/23/2008**	7.70	3.20
MS-47D	**MS47D_20090930**	**DEEP**	**2009**	**9/30/2009**	8.90	3.42
MS-47D	**MS47D_20101028**	**DEEP**	**2010**	**10/28/2010**	7.70	3.08
MS-47D	**MS47D_20111107**	**DEEP**	**2011**	**11/7/2011**	6.6	2.82
MS-49D	**057-MW-49D-01**	**DEEP**	**1999**	**12/5/1999**	3.40	0.00
MS-49D	**MS-49D-00_R10**	**DEEP**	**2000**	**10/10/2000**	2.10	0.00
MS-49D	**MS-49D-00_R10-AVG**	**DEEP**	**2000**	**10/10/2000**	2.15	0.00
MS-49D	**MS-49D-00_R10-D**	**DEEP**	**2000**	**10/10/2000**	2.20	0.00
MS-49D	**MS49D-01_R11**	**DEEP**	**2001**	**11/28/2001**	2.20	0.00
MS-49D	**MS49D-03_R03**	**DEEP**	**2003**	**3/11/2003**	1.50	1.10
MS-49D	**MS49D-03_R10**	**DEEP**	**2003**	**10/7/2003**	1.20	0.00
MS-49D	**MS49D-04_R09**	**DEEP**	**2004**	**9/28/2004**	0.82	0.00
MS-49D	**MS49D-05_R11**	**DEEP**	**2005**	**11/8/2005**	1.40	1.55
MS-49D	**MS49D-20061012**	**DEEP**	**2006**	**10/12/2006**	0.61	0.25
MS-49D	**MS49D_20071017**	**DEEP**	**2007**	**10/17/2007**	0.47	0.16
MS-49D	**MS49D_20081015**	**DEEP**	**2008**	**10/15/2008**	0.61	0.17
MS-49D	**MS49D_20090923**	**DEEP**	**2009**	**9/23/2009**	0.46	0.23
MS-49D	**MS49D_20101011**	**DEEP**	**2010**	**10/11/2010**	0.38	0.37
MS-49D	**MS49D_20111102**	**DEEP**	**2011**	**11/2/2011**	0.49	1.10
MS-52D	**057-MW-52D-01**	**DEEP**	**1999**	**12/1/1999**	2.50	0.00
MS-52D	**MS-52D-00_R10**	**DEEP**	**2000**	**10/5/2000**	1.70	0.00
MS-52D	**MS52D-01_R11**	**DEEP**	**2001**	**11/28/2001**	1.50	0.00
MS-52D	**MS52D_20081014**	**DEEP**	**2008**	**10/14/2008**	0.41	0.00
MS-52D	**MS52D_20090922**	**DEEP**	**2009**	**9/22/2009**	0.38	0.00
MS-52D	**MS52_D_20101007**	**DEEP**	**2010**	**10/7/2010**	0.30	0.00

MS-52D	MS52D_20111101	DEEP	2011	11/1/2011	0.24	0.00
USGS-10	MSUSGS10-04_R09	DEEP	2004	9/28/2004	11.00	4.00
USGS-10	USGS10_20071026	DEEP	2007	10/26/2007	11.00	3.11
USGS-10	USGS10_20081023	DEEP	2008	10/23/2008	11.00	2.08
USGS-10	USGS10_20090925	DEEP	2009	9/25/2009	11.00	2.79
USGS-10	USGS10_20090925-AVG	DEEP	2009	9/25/2009	11.00	2.28
USGS-10	USGS10_20090925-D	DEEP	2009	9/25/2009	11.00	1.76
USGS-10	USGS10_20101013	DEEP	2010	10/13/2010	6.20	1.09
USGS-10	USGS10_20111103	DEEP	2011	11/3/2011	5.6	0.97
10-IS	M10IR-90_R11	INTERMED	1990	11/1/1990	0.00	0.00
10-IS	M10I-91_R02	INTERMED	1991	2/1/1991	0.00	0.00
10-IS	MS10I-95_R11	INTERMED	1995	11/20/1995	0.00	3.00
10-IS	MS10I-96-R01	INTERMED	1996	1/15/1996	0.00	2.00
10-IS	MS10I-96_R10	INTERMED	1996	10/9/1996	0.00	2.90
10-IS	MS10I-97_R10	INTERMED	1997	10/14/1997	1.10	15.00
10-IS	MS10I-98_Q2	INTERMED	1998	4/28/1998	0.00	10.00
10-IS	MS10I-98_Q4	INTERMED	1998	10/28/1998	0.00	10.00
10-IS	MS10I-98_Q4-AVG	INTERMED	1998	10/28/1998	0.00	10.00
10-IS	MS10I-98_Q4-D	INTERMED	1998	10/28/1998	0.00	10.00
10-IS	MS-10I-99_R04	INTERMED	1999	4/20/1999	0.00	7.10
10-IS	MS-10I-99_R04-AVG	INTERMED	1999	4/20/1999	0.00	7.25
10-IS	MS-10I-99_R04-D	INTERMED	1999	4/20/1999	0.00	7.40
10-IS	MS-10I-99_R11	INTERMED	1999	11/3/1999	0.00	7.20
10-IS	MS-10I-99_R11-AVG	INTERMED	1999	11/3/1999	0.00	7.30
10-IS	MS-10I-99_R11-D	INTERMED	1999	11/4/1999	0.00	7.40
10-IS	MS10IS-03_R03	INTERMED	2003	3/12/2003	0.00	13.00
10-IS	MS10IS-04_R09	INTERMED	2004	9/21/2004	0.00	0.00
10-IS	MS10IS-20061010	INTERMED	2006	10/10/2006	0.00	1.90
10-IS	MS10IS_20071016	INTERMED	2007	10/16/2007	0.00	1.30
10-IS	MS10IS_20081017	INTERMED	2008	10/17/2008	0.00	0.87
10-IS	MS10IS_20090922	INTERMED	2009	9/22/2009	0.00	0.99
10-IS	MS10IS_20101005	INTERMED	2010	10/5/2010	0.00	1.20
10-IS	MS10IS_20111101	INTERMED	2011	11/1/2011	0.61	0.59
11-S	11-S-85_R06	INTERMED	1985	6/1/1985	0.00	36.00
11-S	11-S-86_R01	INTERMED	1986	1/1/1986	0.00	34.00
11-S	11-S-86_R11	INTERMED	1986	11/1/1986	0.00	44.00
11-S	M11S-86_R11	INTERMED	1986	11/1/1986	0.00	44.00
11-S	11-S-88_R01	INTERMED	1988	1/1/1988	0.00	11.00
11-S	M11S-88_R01	INTERMED	1988	1/1/1988	0.00	11.00
11-S	M11S-90_R11	INTERMED	1990	11/1/1990	0.00	3.00
11-S	M11S-91_R02	INTERMED	1991	2/1/1991	0.00	0.00
11-S	MS11S-03_R03	INTERMED	2003	3/19/2003	0.00	476.00
11-S	MS11S-05_R11	INTERMED	2005	11/18/2005	0.00	134.00
11-S	MS11S-20061019	INTERMED	2006	10/19/2006	0.00	235.00
11-S	MS11S_20101025-AVG	INTERMED	2010	10/25/2010	0.00	152.00
11-S	MS11S_20111115	INTERMED	2011	11/15/2011	0.00	138.50
12-IS	MS12I-95_R11	INTERMED	1995	11/22/1995	0.00	2.00
12-IS	MS12I-96-R01	INTERMED	1996	1/15/1996	0.00	10.00
12-IS	GWU-MS12I-R10_96	INTERMED	1996	10/14/1996	0.00	510.00
12-IS	MS12I-97_R04	INTERMED	1997	4/3/1997	0.00	210.00
12-IS	MS12I-97_R10	INTERMED	1997	10/16/1997	0.00	500.00
12-IS	MS12I-98_Q2	INTERMED	1998	4/30/1998	0.00	230.00

12-IS	MS12I-98_Q4	INTERMED	1998	10/30/1998	0.00	130.00
12-IS	MS-12I-99_R04	INTERMED	1999	4/22/1999	0.00	210.00
12-IS	MS-12I-99_R11	INTERMED	1999	11/5/1999	0.00	150.00
12-IS	MS-12IS-00_R10	INTERMED	2000	10/16/2000	0.00	32.00
12-IS	MS12IS-01_R12	INTERMED	2001	12/4/2001	0.00	247.00
12-IS	MS12IS-03_R03	INTERMED	2003	3/18/2003	0.00	201.00
12-IS	MS12IS-03_R10	INTERMED	2003	10/10/2003	0.00	151.00
12-IS	MS12IS-04_R10	INTERMED	2004	10/1/2004	0.00	117.00
12-IS	MS12IS-05_R11	INTERMED	2005	11/16/2005	0.00	152.00
12-IS	MS12IS-20061019	INTERMED	2006	10/19/2006	0.00	140.00
12-IS	MS12IS-20061019-AVG	INTERMED	2006	10/19/2006	0.00	143.00
12-IS	MS12IS-20061019-D	INTERMED	2006	10/19/2006	0.00	146.00
12-IS	MS12IS_20071024	INTERMED	2007	10/24/2007	0.00	133.00
12-IS	MS12IS_20081028	INTERMED	2008	10/28/2008	0.00	145.00
12-IS	MS12IS_20090930	INTERMED	2009	9/30/2009	0.00	143.00
12-IS	MS12IS_20101025	INTERMED	2010	10/25/2010	0.00	150.00
12-IS	MS12IS_20111115	INTERMED	2011	11/15/2011	0.00	106.00
12-IS	MS12IS_20111115-AVG	INTERMED	2011	11/15/2011	0.00	111.50
12-IS	MS12IS_2011115-D	INTERMED	2011	11/15/2011	0.00	117.00
13-IS	MS13IS-03_R03	INTERMED	2003	3/20/2003	0.00	185.00
13-IS	MS13IS-03_R10	INTERMED	2003	10/10/2003	0.00	56.00
13-IS	MS13IS-04_R09	INTERMED	2004	9/28/2004	0.00	19.50
13-IS	MS13IS-05_R11	INTERMED	2005	11/9/2005	35.00	2.34
13-IS	MS13IS-20061016	INTERMED	2006	10/16/2006	0.00	8.60
13-IS	MS13IS_20071022	INTERMED	2007	10/22/2007	0.00	145.00
13-IS	MS13IS_20081027	INTERMED	2008	10/27/2008	0.00	7.90
13-IS	MS13IS_20090929	INTERMED	2009	9/29/2009	0.00	3.99
13-IS	MS13IS_20101021	INTERMED	2010	10/21/2010	0.26	83.00
13-IS	MS13IS_20110509	INTERMED	2011	5/9/2011	0.00	4.46
13-IS	MS13IS_20110815	INTERMED	2011	8/15/2011	0.00	2.69
13-IS	MS13IS_20111115	INTERMED	2011	11/15/2011	0.00	2.33
15-IS	MS15I-92_R10A	INTERMED	1992	10/8/1992	0.00	0.00
15-IS	MS15I-92_R10C	INTERMED	1992	10/21/1992	0.00	68.00
15-IS	MS15I-92_R11	INTERMED	1992	11/5/1992	0.00	68.00
15-IS	MS15I-92_R12	INTERMED	1992	12/9/1992	0.00	44.00
15-IS	MS15I-93_R02	INTERMED	1993	2/10/1993	0.00	20.00
15-IS	MS15I-93_R05	INTERMED	1993	5/5/1993	0.00	9.00
15-IS	MS15I-93_R08	INTERMED	1993	8/17/1993	0.00	1.00
15-IS	MS15I-93_R11	INTERMED	1993	11/9/1993	0.00	1.00
15-IS	MS15I-94_R02A	INTERMED	1994	2/17/1994	0.00	2.00
15-IS	MS15I-94_R05	INTERMED	1994	5/11/1994	0.00	2.00
15-IS	MS15I-94_R08	INTERMED	1994	8/17/1994	0.00	0.00
15-IS	MS15I-94_R11A	INTERMED	1994	11/18/1994	0.00	2.00
15-IS	MS15I-95_R02B	INTERMED	1995	2/16/1995	0.00	1.00
15-IS	MS15I-95_R05	INTERMED	1995	5/24/1995	0.00	2.00
15-IS	MS15I-95_R08	INTERMED	1995	8/16/1995	0.00	2.00
15-IS	MS15I-95_R11	INTERMED	1995	11/22/1995	0.00	4.00
15-IS	MS15I-96-R01	INTERMED	1996	1/15/1996	0.00	2.80
15-IS	GWU-MS15I-R10_96	INTERMED	1996	10/11/1996	0.00	17.00
15-IS	MS15I-97_R04	INTERMED	1997	4/2/1997	0.00	12.00
15-IS	MS15I-97_R10	INTERMED	1997	10/15/1997	0.77	18.00
15-IS	MS15I-98_Q2	INTERMED	1998	4/30/1998	0.00	17.00

15-IS	**MS15I-98_Q4**	**INTERMED**	**1998**	**10/29/1998**	0.00	14.00
15-IS	**MS-15I-99_R04**	**INTERMED**	**1999**	**4/22/1999**	0.00	21.00
15-IS	**MS-15I-99_R11**	**INTERMED**	**1999**	**11/4/1999**	0.00	22.00
15-IS	**MS-15IS-00_R10**	**INTERMED**	**2000**	**10/21/2000**	0.00	17.00
15-IS	**MS-15IS-00_R10-AVG**	**INTERMED**	**2000**	**10/21/2000**	0.00	16.50
15-IS	**MS-15IS-00_R10-D**	**INTERMED**	**2000**	**10/21/2000**	0.00	16.00
15-IS	**MS15IS-01_R12**	**INTERMED**	**2001**	**12/3/2001**	2.50	16.00
15-IS	**MS15IS-03_R03**	**INTERMED**	**2003**	**3/17/2003**	3.60	17.26
15-IS	**MS15IS-03_R10**	**INTERMED**	**2003**	**10/16/2003**	5.20	15.00
15-IS	**MS15IS-04_R09**	**INTERMED**	**2004**	**9/30/2004**	3.70	7.50
15-IS	**MS15IS-05_R11**	**INTERMED**	**2005**	**11/14/2005**	3.60	5.54
15-IS	**MS15IS-20061018**	**INTERMED**	**2006**	**10/18/2006**	4.50	2.88
15-IS	**MS15IS_20071022**	**INTERMED**	**2007**	**10/22/2007**	3.90	2.45
15-IS	**MS15IS_20081021**	**INTERMED**	**2008**	**10/21/2008**	4.30	2.09
15-IS	**MS15IS_20090925**	**INTERMED**	**2009**	**9/25/2009**	4.10	2.62
15-IS	**MS15IS_20101018**	**INTERMED**	**2010**	**10/18/2010**	2.20	75.10
15-IS	**MS15IS_20110215**	**INTERMED**	**2011**	**2/15/2011**	3.50	2.03
15-IS	**MS15IS_20110215-AVG**	**INTERMED**	**2011**	**2/15/2011**	3.50	2.15
15-IS	**MS15IS_20110215-D**	**INTERMED**	**2011**	**2/15/2011**	3.50	2.26
15-IS	**MS15IS_20110509**	**INTERMED**	**2011**	**5/9/2011**	3.70	1.90
15-IS	**MS15IS_20110815**	**INTERMED**	**2011**	**8/15/2011**	3.80	2.00
15-IS	**MS15IS_20111109**	**INTERMED**	**2011**	**11/9/2011**	2.9	2.48
16-IS	**MS16I-92_R10A**	**INTERMED**	**1992**	**10/7/1992**	10.00	0.00
16-IS	**MS16I-92_R10C**	**INTERMED**	**1992**	**10/21/1992**	33.00	63.00
16-IS	**MS16I-92_R10C-AVG**	**INTERMED**	**1992**	**10/21/1992**	33.00	63.00
16-IS	**MS16I-92_R10C-D**	**INTERMED**	**1992**	**10/21/1992**	0.00	0.00
16-IS	**MS16I-92_R11**	**INTERMED**	**1992**	**11/4/1992**	0.00	0.00
16-IS	**MS16I-92_R12**	**INTERMED**	**1992**	**12/10/1992**	0.00	150.00
16-IS	**MS16I-93_R05**	**INTERMED**	**1993**	**5/6/1993**	0.00	490.00
16-IS	**MS16I-93_R05-AVG**	**INTERMED**	**1993**	**5/6/1993**	0.00	535.00
16-IS	**MS16I-93_R05-D**	**INTERMED**	**1993**	**5/6/1993**	0.00	580.00
16-IS	**MS16I-93_R08**	**INTERMED**	**1993**	**8/18/1993**	0.00	160.00
16-IS	**MS16I-93_R08-AVG**	**INTERMED**	**1993**	**8/18/1993**	10.00	94.50
16-IS	**MS16I-93_R08-D**	**INTERMED**	**1993**	**8/18/1993**	10.00	29.00
16-IS	**MS16I-93_R11**	**INTERMED**	**1993**	**11/10/1993**	0.00	240.00
16-IS	**MS16I-93_R11-AVG**	**INTERMED**	**1993**	**11/10/1993**	0.00	235.00
16-IS	**MS16I-93_R11-D**	**INTERMED**	**1993**	**11/10/1993**	0.00	230.00
16-IS	**MS16I-94_R02A**	**INTERMED**	**1994**	**2/17/1994**	0.00	190.00
16-IS	**MS16I-94_R05**	**INTERMED**	**1994**	**5/11/1994**	0.00	160.00
16-IS	**MS16I-94_R08**	**INTERMED**	**1994**	**8/18/1994**	0.00	66.00
16-IS	**MS16I-94_R11B**	**INTERMED**	**1994**	**11/21/1994**	0.00	58.00
16-IS	**MS16I-95_R02B**	**INTERMED**	**1995**	**2/16/1995**	0.00	32.00
16-IS	**MS16I-95_R05**	**INTERMED**	**1995**	**5/25/1995**	0.00	19.00
16-IS	**MS16I-95_R08**	**INTERMED**	**1995**	**8/17/1995**	0.00	8.70
16-IS	**MS16I-95_R11**	**INTERMED**	**1995**	**11/22/1995**	0.00	4.00
16-IS	**MS16I-96-R01**	**INTERMED**	**1996**	**1/15/1996**	0.00	3.10
16-IS	**GWU-MS16I-R10_96**	**INTERMED**	**1996**	**10/14/1996**	0.00	0.00
16-IS	**MS16I-97_R02**	**INTERMED**	**1997**	**2/5/1997**	0.00	12.00
16-IS	**MS16I-97_R04**	**INTERMED**	**1997**	**4/3/1997**	0.60	9.60
16-IS	**MS16I-97_R10**	**INTERMED**	**1997**	**10/16/1997**	1.00	9.30
16-IS	**MS16I-98_Q2**	**INTERMED**	**1998**	**5/1/1998**	1.40	7.10
16-IS	**MS16I-98_Q4**	**INTERMED**	**1998**	**10/30/1998**	1.70	7.50

16-IS	**MS-16I-99_R04**	**INTERMED**	**1999**	**4/21/1999**	1.30	7.10
16-IS	**MS-16I-99_R11**	**INTERMED**	**1999**	**11/4/1999**	1.50	6.00
16-IS	**MS-16IS-00_R10**	**INTERMED**	**2000**	**10/23/2000**	1.90	4.30
16-IS	**MS16IS-01_R12**	**INTERMED**	**2001**	**12/3/2001**	1.10	5.40
16-IS	**MS16IS-03_R03**	**INTERMED**	**2003**	**3/17/2003**	2.10	5.10
16-IS	**MS16IS-03_R10**	**INTERMED**	**2003**	**10/14/2003**	2.30	6.89
16-IS	**MS16IS-04_R09**	**INTERMED**	**2004**	**9/29/2004**	1.80	9.40
16-IS	**MS16IS-05_R11**	**INTERMED**	**2005**	**11/11/2005**	1.60	8.27
16-IS	**MS16IS-05_R11-AVG**	**INTERMED**	**2005**	**11/11/2005**	1.65	7.97
16-IS	**MS16IS-05_R11-D**	**INTERMED**	**2005**	**11/11/2005**	1.70	7.66
16-IS	**MS16IS-20061019**	**INTERMED**	**2006**	**10/19/2006**	2.00	7.26
16-IS	**MS16IS_20071023**	**INTERMED**	**2007**	**10/23/2007**	2.10	13.54
16-IS	**MS16IS_20081023**	**INTERMED**	**2008**	**10/23/2008**	2.10	14.59
16-IS	**MS16IS_20090929**	**INTERMED**	**2009**	**9/29/2009**	2.10	16.69
16-IS	**MS16IS_20101021**	**INTERMED**	**2010**	**10/21/2010**	1.50	16.62
16-IS	**MS16IS_20111107**	**INTERMED**	**2011**	**11/7/2011**	1.0	15.59
17-D	**MS17D-92_R10A**	**INTERMED**	**1992**	**10/6/1992**	0.00	0.00
17-D	**MS17D-92_R10C**	**INTERMED**	**1992**	**10/20/1992**	36.00	24.00
17-D	**MS17D-92_R11**	**INTERMED**	**1992**	**11/5/1992**	0.00	0.00
17-D	**MS17D-92_R12**	**INTERMED**	**1992**	**12/10/1992**	0.00	49.00
17-D	**MS17D-93_R02**	**INTERMED**	**1993**	**2/11/1993**	0.00	0.00
17-D	**MS17D-93_R05**	**INTERMED**	**1993**	**5/6/1993**	0.00	24.00
17-D	**MS17D-93_R08**	**INTERMED**	**1993**	**8/18/1993**	0.00	20.00
17-D	**MS17D-93_R11**	**INTERMED**	**1993**	**11/10/1993**	0.00	16.00
17-D	**MS17D-94_R02A**	**INTERMED**	**1994**	**2/17/1994**	0.00	8.00
17-D	**MS17D-94_R05**	**INTERMED**	**1994**	**5/11/1994**	0.00	6.00
17-D	**MS17D-94_R08**	**INTERMED**	**1994**	**8/17/1994**	0.00	3.00
17-D	**MS17D-94_R11A**	**INTERMED**	**1994**	**11/18/1994**	0.00	8.00
17-D	**MS17D-95_R02B**	**INTERMED**	**1995**	**2/16/1995**	0.00	6.00
17-D	**MS17D-95_R05**	**INTERMED**	**1995**	**5/24/1995**	0.00	5.00
17-D	**MS17D-95_R08**	**INTERMED**	**1995**	**8/16/1995**	0.00	10.00
17-D	**MS17D-95_R11**	**INTERMED**	**1995**	**11/22/1995**	0.00	10.00
17-D	**MS17D-95_R11-AVG**	**INTERMED**	**1995**	**11/22/1995**	0.00	12.50
17-D	**MS17D-95_R11-D**	**INTERMED**	**1995**	**11/22/1995**	0.00	15.00
17-D	**MS17D-96-R01**	**INTERMED**	**1996**	**1/15/1996**	0.00	20.00
17-D	**MS17D-96-R01-AVG**	**INTERMED**	**1996**	**1/15/1996**	12.50	31.00
17-D	**MS17D-96-R01-D**	**INTERMED**	**1996**	**1/15/1996**	20.00	42.00
17-D	**GWU-MS17D-R10_96**	**INTERMED**	**1996**	**10/11/1996**	0.00	176.00
17-D	**MS17D-97_R02**	**INTERMED**	**1997**	**2/5/1997**	0.00	150.00
17-D	**MS17D-97_R04**	**INTERMED**	**1997**	**4/3/1997**	0.00	180.00
17-D	**MS17D-97_R10**	**INTERMED**	**1997**	**10/16/1997**	0.00	540.00
17-D	**MS17D-98_Q2**	**INTERMED**	**1998**	**4/30/1998**	0.00	400.00
17-D	**MS17D-98_Q4**	**INTERMED**	**1998**	**10/30/1998**	0.00	540.00
17-D	**MS-17D-99_R04**	**INTERMED**	**1999**	**4/22/1999**	0.00	360.00
17-D	**MS-17D-99_R11**	**INTERMED**	**1999**	**11/5/1999**	0.00	580.00
17-D	**MS-17D-00_R10**	**INTERMED**	**2000**	**10/25/2000**	0.00	170.00
17-D	**MS17D-01_R12**	**INTERMED**	**2001**	**12/5/2001**	0.00	37.00
17-D	**MS17D-03_R03**	**INTERMED**	**2003**	**3/18/2003**	0.00	9.30
17-D	**MS17D-03_R03-AVG**	**INTERMED**	**2003**	**3/18/2003**	0.00	9.40
17-D	**MS17D-03_R03-D**	**INTERMED**	**2003**	**3/18/2003**	0.00	9.50
17-D	**MS17D-03_R10**	**INTERMED**	**2003**	**10/8/2003**	34.00	6.76
17-D	**MS17D-04_R09**	**INTERMED**	**2004**	**9/28/2004**	0.00	39.00

17-D	MS17D-05_R11	INTERMED	2005	11/11/2005	0.00	25.10
17-D	MS17D-20061011	INTERMED	2006	10/11/2006	0.00	7.58
17-D	MS17D-20061011-AVG	INTERMED	2006	10/11/2006	0.00	7.54
17-D	MS17D-20061011-D	INTERMED	2006	10/11/2006	0.00	7.50
17-D	MS17D_20071022	INTERMED	2007	10/22/2007	0.27	74.90
17-D	MS17D_20081029	INTERMED	2008	10/29/2008	0.00	58.00
17-D	MS17D_20091005	INTERMED	2009	10/5/2009	0.00	4.21
17-D	MS17D_20101013	INTERMED	2010	10/13/2010	0.00	5.14
17-D	MS17D_20111104	INTERMED	2011	11/4/2011	0.00	13.40
1-IS	1-I-88_R01	INTERMED	1988	1/1/1988	0.00	0.00
1-IS	M01I-88_R01	INTERMED	1988	1/1/1988	0.00	0.00
1-IS	M01I-90_R11	INTERMED	1990	11/1/1990	0.00	0.00
1-IS	M01I-91_R02	INTERMED	1991	2/1/1991	0.00	0.00
1-IS	MS01I-92_R10A	INTERMED	1992	10/6/1992	0.00	0.00
1-IS	MS01I-92_R10C	INTERMED	1992	10/20/1992	2.00	0.00
1-IS	MS01I-92_R11	INTERMED	1992	11/4/1992	0.00	5.00
1-IS	MS01I-92_R12	INTERMED	1992	12/8/1992	0.00	0.00
1-IS	MS01I-93_R02	INTERMED	1993	2/10/1993	0.00	0.00
1-IS	MS01I-93_R05	INTERMED	1993	5/4/1993	0.00	0.00
1-IS	MS01I-93_R08	INTERMED	1993	8/16/1993	0.00	0.00
1-IS	MS01I-93_R11	INTERMED	1993	11/9/1993	0.00	0.00
1-IS	MS01I-94_R02A	INTERMED	1994	2/16/1994	0.00	0.00
1-IS	MS01I-94_R05	INTERMED	1994	5/10/1994	0.00	0.00
1-IS	MS01I-94_R08	INTERMED	1994	8/16/1994	0.00	0.00
1-IS	MS01I-94_R11A	INTERMED	1994	11/16/1994	0.00	0.00
1-IS	MS01I-95_R02B	INTERMED	1995	2/15/1995	0.00	0.00
1-IS	MS01I-95_R05	INTERMED	1995	5/23/1995	0.00	0.00
1-IS	MS01I-95_R08	INTERMED	1995	8/15/1995	0.00	0.00
1-IS	MS01I-95_R11	INTERMED	1995	11/20/1995	0.00	0.00
1-IS	MS01I-96-R01	INTERMED	1996	1/15/1996	0.00	0.00
1-IS	MS01I-96_R10	INTERMED	1996	10/9/1996	0.00	0.00
1-IS	MS-01I-97_R03	INTERMED	1997	3/31/1997	0.00	0.00
1-IS	MS01I-97_R10	INTERMED	1997	10/13/1997	13.00	0.00
1-IS	MS01I-98_Q2	INTERMED	1998	4/27/1998	27.00	0.00
1-IS	MS01I-98_Q4	INTERMED	1998	10/28/1998	0.00	0.00
1-IS	MS-01I-99_R04	INTERMED	1999	4/20/1999	0.00	0.00
1-IS	MS-01I-99_R11	INTERMED	1999	11/3/1999	0.00	0.00
1-IS	MS-01IS-00_R10	INTERMED	2000	10/5/2000	0.00	0.00
1-IS	MS1IS-01_R11	INTERMED	2001	11/28/2001	0.00	0.00
1-IS	MS1IS-03_R03	INTERMED	2003	3/11/2003	0.00	0.00
1-IS	MS01IS-04_R09	INTERMED	2004	9/24/2004	0.00	0.00
1-IS	MS01IS-20061009	INTERMED	2006	10/9/2006	0.00	0.00
2-IS	2-I-88_R01	INTERMED	1988	1/1/1988	0.00	0.00
2-IS	M02I-88_R01	INTERMED	1988	1/1/1988	0.00	0.00
2-IS	M02I-90_R11	INTERMED	1990	11/1/1990	0.00	2.00
2-IS	M02I-91_R02	INTERMED	1991	2/1/1991	0.00	0.00
2-IS	M02I-91_R02-AVG	INTERMED	1991	2/1/1991	0.00	0.00
2-IS	M02I-91_R02-D	INTERMED	1991	2/1/1991	0.00	0.00
2-IS	MS02I-95_R11	INTERMED	1995	11/21/1995	0.00	0.00
2-IS	MS02I-96-R01	INTERMED	1996	1/15/1996	0.00	0.00
2-IS	GWU-MS02I-R10_96	INTERMED	1996	10/10/1996	0.00	0.00
2-IS	MS02I-97_R02	INTERMED	1997	2/4/1997	0.00	10.00

2-IS	MS-02I-97_R04	INTERMED	1997	4/1/1997	0.00	1.70
2-IS	MS02I-97_R10	INTERMED	1997	10/15/1997	0.54	3.10
2-IS	MS02I-98_Q2	INTERMED	1998	4/29/1998	0.00	2.20
2-IS	MS02I-98_Q4	INTERMED	1998	10/29/1998	0.00	0.00
2-IS	MS-02I-99_R04	INTERMED	1999	4/21/1999	0.00	0.00
2-IS	MS-02I-99_R11	INTERMED	1999	11/3/1999	0.00	1.60
2-IS	MS-02IS-00_R10	INTERMED	2000	10/6/2000	0.00	1.50
2-IS	MS2IS-01_R11	INTERMED	2001	11/29/2001	0.00	1.90
2-IS	MS02IS-04_R09	INTERMED	2004	9/30/2004	0.00	1.10
2-IS	MS02IS-20061018	INTERMED	2006	10/18/2006	0.00	3.30
2-IS	MS02IS_20081023	INTERMED	2008	10/23/2008	0.00	1.70
2-IS	MS02IS_20101012	INTERMED	2010	10/12/2010	0.00	3.80
2-IS	MS02IS_20111111	INTERMED	2011	11/11/2011	0.00	3.50
3-IS	3-I-88_R01	INTERMED	1988	1/1/1988	33.00	700.00
3-IS	M03I-88_R01	INTERMED	1988	1/1/1988	33.00	700.00
3-IS	M03I-90_R11	INTERMED	1990	11/1/1990	28.00	360.00
3-IS	M03I-90_R11-AVG	INTERMED	1990	11/1/1990	29.00	365.00
3-IS	M03I-90_R11-D	INTERMED	1990	11/1/1990	30.00	370.00
3-IS	M03I-91_R02	INTERMED	1991	2/1/1991	41.00	1000.00
3-IS	MS03I-92_R10A	INTERMED	1992	10/6/1992	31.00	63.00
3-IS	MS03I-92_R10C	INTERMED	1992	10/21/1992	36.00	40.00
3-IS	MS03I-92_R11	INTERMED	1992	11/3/1992	21.00	61.00
3-IS	MS03I-92_R11-AVG	INTERMED	1992	11/3/1992	22.00	61.50
3-IS	MS03I-92_R11-D	INTERMED	1992	11/3/1992	23.00	62.00
3-IS	MS03I-92_R12	INTERMED	1992	12/10/1992	13.00	49.00
3-IS	MS03I-93_R02	INTERMED	1993	2/10/1993	3.00	27.00
3-IS	MS03I-93_R05	INTERMED	1993	5/5/1993	1.00	14.00
3-IS	MS03I-93_R08	INTERMED	1993	8/17/1993	0.70	5.00
3-IS	MS03I-93_R11	INTERMED	1993	11/10/1993	0.40	3.00
3-IS	MS03I-94_R02A	INTERMED	1994	2/16/1994	0.50	2.00
3-IS	MS03I-94_R05	INTERMED	1994	5/10/1994	0.60	2.00
3-IS	MS03I-94_R08	INTERMED	1994	8/16/1994	0.00	2.00
3-IS	MS03I-94_R11A	INTERMED	1994	11/16/1994	0.00	2.00
3-IS	MS03I-95_R02B	INTERMED	1995	2/15/1995	0.00	2.00
3-IS	MS03I-95_R05	INTERMED	1995	5/23/1995	0.00	1.00
3-IS	MS03I-95_R08	INTERMED	1995	8/15/1995	0.00	0.80
3-IS	MS03I-95_R11	INTERMED	1995	11/20/1995	0.00	0.80
3-IS	MS03I-96-R01	INTERMED	1996	1/15/1996	0.00	0.00
3-IS	MS03I-96_R10	INTERMED	1996	10/10/1996	0.00	0.00
3-IS	MS03I-97_R02	INTERMED	1997	2/4/1997	1.60	5.80
3-IS	MS-03I-97_R04	INTERMED	1997	4/1/1997	2.80	7.00
3-IS	MS03I-97_R10	INTERMED	1997	10/10/1997	0.00	0.00
3-IS	MS03I-98_Q2	INTERMED	1998	4/28/1998	2.80	3.70
3-IS	MS03I-98_Q4	INTERMED	1998	10/28/1998	2.50	3.80
3-IS	MS-03I-99_R04	INTERMED	1999	4/20/1999	2.40	3.30
3-IS	MS-03I-99_R11	INTERMED	1999	11/3/1999	2.80	4.20
3-IS	MS-03I-99_R11-DIF	INTERMED	1999	11/3/1999	2.80	6.40
3-IS	MS-03IS-00_R10	INTERMED	2000	10/21/2000	0.00	1.70
3-IS	MS3IS-01_R11	INTERMED	2001	11/29/2001	7.50	4.60
3-IS	MS3IS-03_R03	INTERMED	2003	3/17/2003	18.00	6.14
3-IS	MS3IS-03_R10	INTERMED	2003	10/8/2003	22.00	5.84
3-IS	MS03IS-04_R09	INTERMED	2004	9/24/2004	29.00	4.10

3-IS	**MS3IS-05_R11**	**INTERMED**	**2005**	**11/11/2005**	34.00	4.53
3-IS	**MS03IS-20061018**	**INTERMED**	**2006**	**10/18/2006**	27.00	6.56
3-IS	**MS03IS_20071023**	**INTERMED**	**2007**	**10/23/2007**	31.00	5.91
3-IS	**MS03IS_20081027**	**INTERMED**	**2008**	**10/27/2008**	23.00	14.33
3-IS	**MS03IS_20090929**	**INTERMED**	**2009**	**9/29/2009**	33.00	11.25
3-IS	**MS03IS_20101021**	**INTERMED**	**2010**	**10/21/2010**	**21.00**	11.21
3-IS	**MS03IS_20111114**	**INTERMED**	**2011**	**11/14/2011**	15	14.26
4-IS	**4-I-88_R01**	**INTERMED**	**1988**	**1/1/1988**	0.00	312.00
4-IS	**M04I-88_R01**	**INTERMED**	**1988**	**1/1/1988**	0.00	312.00
4-IS	**M04I-90_R11**	**INTERMED**	**1990**	**11/1/1990**	0.00	870.00
4-IS	**M04I-91_R02**	**INTERMED**	**1991**	**2/1/1991**	0.00	820.00
4-IS	**MS04I-92_R10A**	**INTERMED**	**1992**	**10/7/1992**	73.00	970.00
4-IS	**MS04I-92_R10C**	**INTERMED**	**1992**	**10/21/1992**	0.00	980.00
4-IS	**MS04I-92_R11**	**INTERMED**	**1992**	**11/4/1992**	0.00	1200.00
4-IS	**MS04I-92_R12**	**INTERMED**	**1992**	**12/10/1992**	0.00	210.00
4-IS	**MS04I-92_R12-AVG**	**INTERMED**	**1992**	**12/10/1992**	0.00	195.00
4-IS	**MS04I-92_R12-D**	**INTERMED**	**1992**	**12/10/1992**	0.00	180.00
4-IS	**MS04I-93_R02**	**INTERMED**	**1993**	**2/11/1993**	0.00	500.00
4-IS	**MS04I-93_R05**	**INTERMED**	**1993**	**5/6/1993**	0.00	320.00
4-IS	**MS04I-93_R08**	**INTERMED**	**1993**	**8/18/1993**	0.00	280.00
4-IS	**MS04I-93_R11**	**INTERMED**	**1993**	**11/10/1993**	0.00	310.00
4-IS	**MS04I-94_R02A**	**INTERMED**	**1994**	**2/17/1994**	0.00	240.00
4-IS	**MS04I-94_R05**	**INTERMED**	**1994**	**5/11/1994**	0.00	210.00
4-IS	**MS04I-94_R08**	**INTERMED**	**1994**	**8/17/1994**	0.00	140.00
4-IS	**MS04I-94_R11B**	**INTERMED**	**1994**	**11/21/1994**	0.00	130.00
4-IS	**MS04I-95_R02B**	**INTERMED**	**1995**	**2/16/1995**	0.00	98.00
4-IS	**MS04I-95_R05**	**INTERMED**	**1995**	**5/24/1995**	0.00	56.00
4-IS	**MS04I-95_R08**	**INTERMED**	**1995**	**8/16/1995**	0.00	50.00
4-IS	**MS04I-95_R11**	**INTERMED**	**1995**	**11/22/1995**	0.00	30.00
4-IS	**MS04I-96-R01**	**INTERMED**	**1996**	**1/15/1996**	0.00	19.00
4-IS	**GWU-MS04I-R10_96**	**INTERMED**	**1996**	**10/14/1996**	0.00	16.00
4-IS	**MS04I-97_R02**	**INTERMED**	**1997**	**2/5/1997**	0.60	41.00
4-IS	**MS04I-97_R04**	**INTERMED**	**1997**	**4/3/1997**	0.00	28.00
4-IS	**MS04I-97_R10**	**INTERMED**	**1997**	**10/16/1997**	0.00	100.00
4-IS	**MS04I-98_Q2**	**INTERMED**	**1998**	**4/30/1998**	0.00	100.00
4-IS	**MS04I-98_Q4**	**INTERMED**	**1998**	**10/30/1998**	0.00	79.00
4-IS	**MS-04I-99_R04**	**INTERMED**	**1999**	**4/22/1999**	0.00	80.00
4-IS	**MS-04I-99_R11**	**INTERMED**	**1999**	**11/3/1999**	0.00	53.00
4-IS	**MS-04I-99_R11-DIF**	**INTERMED**	**1999**	**11/4/1999**	0.00	53.00
4-IS	**MS-04IS-00_R10**	**INTERMED**	**2000**	**10/16/2000**	0.00	280.00
4-IS	**MS4IS-01_R12**	**INTERMED**	**2001**	**12/5/2001**	0.00	73.70
4-IS	**MS4IS-03_R03**	**INTERMED**	**2003**	**3/19/2003**	0.00	108.70
4-IS	**MS4IS-03_R06**	**INTERMED**	**2003**	**6/13/2003**	0.00	63.30
4-IS	**MS4IS-03_R06-AVG**	**INTERMED**	**2003**	**6/13/2003**	0.00	67.95
4-IS	**MS4IS-03_R06-D**	**INTERMED**	**2003**	**6/13/2003**	0.00	72.60
4-IS	**MS4IS-03_R10**	**INTERMED**	**2003**	**10/15/2003**	0.00	102.00
4-IS	**MS4IS-04_R03**	**INTERMED**	**2004**	**3/25/2004**	0.00	127.50
4-IS	**MS4IS-04_R09**	**INTERMED**	**2004**	**9/30/2004**	0.00	137.10
4-IS	**MS04IS-05_R11**	**INTERMED**	**2005**	**11/17/2005**	0.00	89.00
4-IS	**MS4IS-20060518**	**INTERMED**	**2006**	**5/18/2006**	0.00	77.00
4-IS	**MS04IS-20061024**	**INTERMED**	**2006**	**10/24/2006**	0.00	75.40
4-IS	**MS04IS_20071029**	**INTERMED**	**2007**	**10/29/2007**	0.00	82.30

4-IS	MS04IS_20081028	INTERMED	2008	10/28/2008	0.00	84.50
4-IS	MS04IS_20091002	INTERMED	2009	10/2/2009	0.08	58.00
4-IS	MS04IS_20101029	INTERMED	2010	10/29/2010	0.00	50.10
4-IS	MS04IS_20111109	INTERMED	2011	11/9/2011	0.00	44.90
5-IS	5-I-88_R01	INTERMED	1988	1/1/1988	141.00	1410.00
5-IS	M05I-88_R01	INTERMED	1988	1/1/1988	141.00	1410.00
5-IS	M05I-90_R11	INTERMED	1990	11/1/1990	11.00	31.00
5-IS	M05I-91_R02	INTERMED	1991	2/1/1991	15.00	72.00
5-IS	MS05I-92_R10A	INTERMED	1992	10/7/1992	190.00	430.00
5-IS	MS05I-92_R10A-AVG	INTERMED	1992	10/7/1992	160.00	435.00
5-IS	MS05I-92_R10A-D	INTERMED	1992	10/7/1992	130.00	440.00
5-IS	MS05I-92_R10C	INTERMED	1992	10/20/1992	86.00	330.00
5-IS	MS05I-92_R11	INTERMED	1992	11/3/1992	61.00	380.00
5-IS	MS05I-92_R12	INTERMED	1992	12/8/1992	67.00	210.00
5-IS	MS05I-93_R02	INTERMED	1993	2/10/1993	23.00	120.00
5-IS	MS05I-93_R05	INTERMED	1993	5/5/1993	13.00	54.00
5-IS	MS05I-93_R08	INTERMED	1993	8/17/1993	6.00	27.00
5-IS	MS05I-93_R11	INTERMED	1993	11/10/1993	4.00	12.00
5-IS	MS05I-94_R02A	INTERMED	1994	2/16/1994	2.00	5.00
5-IS	MS05I-94_R05	INTERMED	1994	5/10/1994	2.00	4.00
5-IS	MS05I-94_R08	INTERMED	1994	8/16/1994	2.00	4.00
5-IS	MS05I-94_R11A	INTERMED	1994	11/16/1994	1.00	3.00
5-IS	MS05I-95_R02B	INTERMED	1995	2/15/1995	0.60	2.00
5-IS	MS05I-95_R05	INTERMED	1995	5/23/1995	0.00	7.00
5-IS	MS05I-95_R08	INTERMED	1995	8/15/1995	0.00	10.00
5-IS	MS05I-95_R08-AVG	INTERMED	1995	8/15/1995	0.60	9.55
5-IS	MS05I-95_R08-D	INTERMED	1995	8/15/1995	0.60	9.10
5-IS	MS05I-95_R11	INTERMED	1995	11/20/1995	0.00	4.00
5-IS	MS05I-96-R01	INTERMED	1996	1/15/1996	0.00	3.60
5-IS	MS05I-96_R10	INTERMED	1996	10/10/1996	0.00	4.70
5-IS	MS-05I-97_R04	INTERMED	1997	4/1/1997	2.70	2.20
5-IS	MS05I-97_R10	INTERMED	1997	10/10/1997	0.00	4.70
5-IS	MS05I-98_Q2	INTERMED	1998	4/28/1998	5.30	4.30
5-IS	MS05I-98_Q4	INTERMED	1998	10/28/1998	4.50	7.10
5-IS	MS-05I-99_R04	INTERMED	1999	4/20/1999	0.00	0.82
5-IS	MS-05I-99_R11	INTERMED	1999	11/3/1999	3.40	2.10
5-IS	MS-5IS-00_R10	INTERMED	2000	10/21/2000	4.50	4.70
5-IS	MS5IS-01_R11	INTERMED	2001	11/30/2001	1.00	3.30
5-IS	MS052S-20061027	INTERMED	2006	10/27/2006	0.17	0.41
5-IS	MS05IS_20071017	INTERMED	2007	10/17/2007	0.19	0.51
5-IS	MS05IS_20081022	INTERMED	2008	10/22/2008	0.31	0.47
5-IS	MS05IS_20090924	INTERMED	2009	9/24/2009	0.30	0.47
5-IS	MS05IS_20101007	INTERMED	2010	10/7/2010	0.32	0.34
5-IS	MS05IS-20111109	INTERMED	2011	11/9/2011	0.14	0.41
6-IS	MS6IS-03_R03	INTERMED	2003	3/19/2003	0.00	390.00
6-IS	MS06IS-03_R10	INTERMED	2003	10/16/2003	0.00	306.00
6-IS	MS06IS-04_R09	INTERMED	2004	9/27/2004	0.00	338.00
8-IS	MS8IS-03_R03	INTERMED	2003	3/19/2003	0.00	420.00
8-IS	MS08IS-03_R10	INTERMED	2003	10/15/2003	0.00	290.00
8-IS	MS08IS-04_R09	INTERMED	2004	9/30/2004	0.00	330.00
8-IS	MS08IS-05_R11	INTERMED	2005	11/21/2005	0.00	215.00
8-IS	MS08IS-20061027	INTERMED	2006	10/27/2006	0.00	219.00

8-IS	MS08IS_20071026	INTERMED	2007	10/26/2007	0.00	216.00
8-IS	MS08IS_20080430	INTERMED	2008	4/30/2008	0.00	303.00
8-IS	MS08IS_20081029	INTERMED	2008	10/29/2008	0.00	244.00
8-IS	MS08IS_20090415	INTERMED	2009	4/15/2009	0.00	251.00
8-IS	MS08IS_20091005	INTERMED	2009	10/5/2009	0.00	187.00
8-IS	MS08IS_20101027	INTERMED	2010	10/27/2010	0.00	211.00
8-IS	MS08IS_20111117	INTERMED	2011	11/17/2011	0.00	156.00
AT-10	AT010-01_R08	INTERMED	2001	8/9/2001	0.00	74.00
AT-10	AT10-01_R11	INTERMED	2001	11/27/2001	0.00	86.00
AT-10	AT10-01_R11-AVG	INTERMED	2001	11/27/2001	0.00	51.05
AT-10	AT10-01_R11-D	INTERMED	2001	11/27/2001	0.00	16.10
AT-10	AT10-03_R03	INTERMED	2003	3/20/2003	0.00	181.00
AT-10	AT-10-03_R07	INTERMED	2003	7/15/2003	0.00	110.00
AT-10	AT10-03_R10	INTERMED	2003	10/16/2003	0.00	105.00
AT-10	AT10-03_R10-AVG	INTERMED	2003	10/16/2003	0.00	106.00
AT-10	AT10-03_R10-D	INTERMED	2003	10/16/2003	0.00	107.00
AT-10	AT-10-04_R07	INTERMED	2004	7/26/2004	0.00	97.00
AT-10	AT-10-04_R07-AVG	INTERMED	2004	7/26/2004	0.00	97.00
AT-10	AT-10-04_R07-D	INTERMED	2004	7/26/2004	0.00	97.00
AT-10	AT10-04_R09	INTERMED	2004	9/27/2004	0.00	97.00
AT-10	AT10-05_R11	INTERMED	2005	11/21/2005	0.00	85.00
AT-10	AT10-20060518	INTERMED	2006	5/18/2006	0.00	63.00
AT-10	AT10-20061204	INTERMED	2006	12/4/2006	0.00	330.00
AT-10	AT10_20071030	INTERMED	2007	10/30/2007	0.00	133.00
AT-10	AT10_20081031	INTERMED	2008	10/31/2008	0.00	76.00
AT-10	AT10_20091007	INTERMED	2009	10/7/2009	0.00	126.00
AT-10	AT10_20101102-AVG	INTERMED	2010	11/2/2010	0.00	72.00
AT-10	AT10_20110215	INTERMED	2011	2/15/2011	0.00	69.00
AT-10	AT10_20110609	INTERMED	2011	6/9/2011	0.00	68.00
AT-10	AT10_20110815	INTERMED	2011	8/15/2011	0.00	69.00
AT-10	AT10_20111102	INTERMED	2011	11/2/2011	0.00	50.00
AT-3A	AT03A-92_R08	INTERMED	1992	8/18/1992	0.00	62.00
AT-3A	AT03A-92_R09	INTERMED	1992	9/21/1992	220.00	0.00
AT-3A	AT03A-92_R10A	INTERMED	1992	10/8/1992	0.00	0.00
AT-3A	AT03A-92_R10B	INTERMED	1992	10/12/1992	63.00	220.00
AT-3A	AT03A-92_R11	INTERMED	1992	11/4/1992	0.00	270.00
AT-3A	AT03A-92_R11-AVG	INTERMED	1992	11/4/1992	0.00	290.00
AT-3A	AT03A-92_R11-D	INTERMED	1992	11/4/1992	0.00	310.00
AT-3A	AT03A-92_R12	INTERMED	1992	12/8/1992	0.00	300.00
AT-3A	AT03A-92_R12-AVG	INTERMED	1992	12/8/1992	0.00	186.50
AT-3A	AT03A-92_R12-D	INTERMED	1992	12/8/1992	0.00	73.00
AT-3A	AT03A-93_R01	INTERMED	1993	1/5/1993	0.00	250.00
AT-3A	AT03A-93_R02	INTERMED	1993	2/10/1993	0.00	290.00
AT-3A	AT03A-93_R03	INTERMED	1993	3/17/1993	0.00	280.00
AT-3A	AT03A-93_R05	INTERMED	1993	5/6/1993	0.00	200.00
AT-3A	AT03A-93_R08	INTERMED	1993	8/18/1993	0.00	14.00
AT-3A	AT03A-93_R11	INTERMED	1993	11/10/1993	0.00	140.00
AT-3A	AT03A-94_R02B	INTERMED	1994	2/24/1994	0.00	100.00
AT-3A	AT03A-94_R05	INTERMED	1994	5/12/1994	0.00	130.00
AT-3A	AT03A-94_R08	INTERMED	1994	8/17/1994	0.00	56.00
AT-3A	AT03A-94_R11A	INTERMED	1994	11/18/1994	0.00	64.00
AT-3A	AT03A-95_R02B	INTERMED	1995	2/16/1995	0.00	95.00

AT-3A	AT03A-95_R05	INTERMED	1995	5/25/1995	0.00	92.00
AT-3A	AT03A-95_R08	INTERMED	1995	8/17/1995	0.00	80.00
AT-3A	AT03A-95_R11	INTERMED	1995	11/20/1995	0.00	98.00
AT-3A	AT03A-96_R01	INTERMED	1996	1/15/1996	0.00	110.00
AT-3A	GWU-AT03A-R11_96	INTERMED	1996	11/25/1996	0.00	213.00
AT-3A	AT03A-97_R04	INTERMED	1997	4/3/1997	3.30	140.00
AT-3A	AT03A-98_Q2	INTERMED	1998	4/30/1998	0.00	97.00
AT-3A	AT03A-98_Q4	INTERMED	1998	10/29/1998	0.00	88.00
AT-3A	AT03A-99_R04	INTERMED	1999	4/23/1999	0.00	76.00
AT-3A	AT03A-99_R11	INTERMED	1999	11/5/1999	2.70	95.00
AT-3A	AT03A-00_R10	INTERMED	2000	10/6/2000	4.80	120.00
AT-3A	AT03A-01_R08	INTERMED	2001	8/9/2001	0.00	51.00
AT-3A	AT03A-01_R11	INTERMED	2001	11/27/2001	3.80	56.00
AT-3A	AT03A-03_R03	INTERMED	2003	3/20/2003	7.30	13.70
AT-3A	AT03A-03_R03-AVG	INTERMED	2003	3/20/2003	7.25	13.75
AT-3A	AT03A-03_R03-D	INTERMED	2003	3/20/2003	7.20	13.80
AT-3A	AT-3A-03_R07	INTERMED	2003	7/15/2003	6.00	52.00
AT-3A	AT-3A-03_R07-AVG	INTERMED	2003	7/15/2003	6.05	52.00
AT-3A	AT-3A-03_R07-D	INTERMED	2003	7/15/2003	6.10	52.00
AT-3A	AT03A-03_R10	INTERMED	2003	10/16/2003	6.90	55.00
AT-3A	AT-3A-04_R07	INTERMED	2004	7/26/2004	6.00	61.00
AT-3A	AT3A-04_R09	INTERMED	2004	9/27/2004	5.60	81.00
AT-3A	AT3A-05_R11	INTERMED	2005	11/21/2005	6.00	38.00
AT-3A	AT3A-05_R11-AVG	INTERMED	2005	11/21/2005	6.10	38.50
AT-3A	AT3A-05_R11-D	INTERMED	2005	11/21/2005	6.20	39.00
AT-3A	AT3A-20060518	INTERMED	2006	5/18/2006	5.50	27.00
AT-3A	AT03A-20061204	INTERMED	2006	12/4/2006	8.20	38.00
AT-3A	AT03A_20071030	INTERMED	2007	10/30/2007	7.00	36.00
AT-3A	AT03A_20081031	INTERMED	2008	10/31/2008	7.50	48.00
AT-3A	AT03A_20091007	INTERMED	2009	10/7/2009	6.70	29.00
AT-3A	AT03A_20101102	INTERMED	2010	11/2/2010	5.00	63.00
AT-3A	AT03A	INTERMED	2011	2/15/2011	5.60	210.00
AT-3A	AT03A_20110609	INTERMED	2011	6/9/2011	5.40	123.00
AT-3A	AT03A_20110815	INTERMED	2011	8/15/2011	4.60	81.00
MS-28I	003-MS-28I-01	INTERMED	1998	2/11/1998	0.00	142.70
MS-28I	MS-28I-00_R10	INTERMED	2000	10/24/2000	0.00	140.00
MS-28I	MS28I-01_R12	INTERMED	2001	12/7/2001	0.00	143.10
MS-28I	MS28I-01_R12-AVG	INTERMED	2001	12/7/2001	0.00	143.10
MS-28I	MS28I-01_R12-D	INTERMED	2001	12/7/2001	0.00	143.10
MS-28I	MS28I-20061024	INTERMED	2006	10/24/2006	0.00	101.60
MS-28I	MS28I_20071025	INTERMED	2007	10/25/2007	0.00	98.00
MS-28I	MS28I_20081029	INTERMED	2008	10/29/2008	0.00	105.50
MS-28I	MS28I_20091006	INTERMED	2009	10/6/2009	0.00	92.10
MS-28I	MS28I_20091006-AVG	INTERMED	2009	10/6/2009	0.00	92.60
MS-28I	MS28I_20091006-D	INTERMED	2009	10/6/2009	0.00	93.10
MS-28I	MS28I_20101028-AVG	INTERMED	2010	10/28/2010	0.00	82.70
MS-28I	MS28I_20111118	INTERMED	2011	11/18/2011	0.00	81.20
MS-29I	003-MS-29I-01	INTERMED	1998	2/16/1998	3.80	46.70
MS-29I	MS-29I-00_R10	INTERMED	2000	10/25/2000	0.00	27.00
MS-29I	MS29I-01_R12	INTERMED	2001	12/7/2001	0.00	28.00
MS-29I	MS29I-03_R03	INTERMED	2003	3/18/2003	1.20	73.10
MS-29I	MS29I-03_R10	INTERMED	2003	10/15/2003	1.20	243.20

MS-29I	MS29I-04_R09	INTERMED	2004	9/27/2004	0.94	423.80
MS-29I	MS29I-05_R11	INTERMED	2005	11/18/2005	1.40	223.50
MS-29I	MS29I-20061020	INTERMED	2006	10/20/2006	1.70	243.20
MS-29I	MS29I_20071025	INTERMED	2007	10/25/2007	1.60	214.10
MS-29I	MS29I_20081028	INTERMED	2008	10/28/2008	1.00	152.80
MS-29I	MS29I_20091002	INTERMED	2009	10/2/2009	0.75	193.60
MS-29I	MS29I_20101026	INTERMED	2010	10/26/2010	0.40	212.20
MS-29I	MS29I_20111118	INTERMED	2011	11/18/2011	0.57	262.80
MS-31I	003-MS-31I-01	INTERMED	1998	2/18/1998	0.00	0.00
MS-31I	MS31I-20061025	INTERMED	2006	10/25/2006	0.00	56.19
MS-31I	MS31I_20081024	INTERMED	2008	10/24/2008	0.00	194.00
MS-31I	MS31I_20101102	INTERMED	2010	11/2/2010	0.00	212.00
MS-32I	003-MS-32I-01	INTERMED	1998	3/2/1998	0.00	1860.00
MS-32I	003-MS-32I-01-AVG	INTERMED	1998	3/2/1998	0.00	1905.00
MS-32I	003-MS-32I-01-D	INTERMED	1998	3/2/1998	0.00	1950.00
MS-32I	MS-32I-00_R10	INTERMED	2000	10/25/2000	0.00	300.00
MS-32I	MS32I-01_R12	INTERMED	2001	12/6/2001	0.00	270.00
MS-32I	MS32I-04_R09	INTERMED	2004	9/29/2004	0.00	530.00
MS-32I	MS32I-20061026	INTERMED	2006	10/26/2006	0.00	620.00
MS-32I	MS32I_20071026	INTERMED	2007	10/26/2007	0.00	680.00
MS-32I	MS32I_20081030	INTERMED	2008	10/30/2008	0.00	610.00
MS-32I	MS32I_20081030-AVG	INTERMED	2008	10/30/2008	0.00	605.00
MS-32I	MS32I_20081030-D	INTERMED	2008	10/30/2008	0.00	600.00
MS-32I	MS32I_20091006	INTERMED	2009	10/6/2009	0.00	520.00
MS-32I	MS32I_20101028	INTERMED	2010	10/28/2010	0.00	460.00
MS-32I	MS32I_20111118	INTERMED	2011	11/18/2011	0.00	420.00
MS-33I	003-MS-33I-01	INTERMED	1998	2/25/1998	6.80	1680.00
MS-33I	003-MS-33I-01-AVG	INTERMED	1998	2/25/1998	6.55	1675.00
MS-33I	003-MS-33I-01-D	INTERMED	1998	2/25/1998	6.30	1670.00
MS-33I	MS-33I-00_R10	INTERMED	2000	10/26/2000	0.00	1600.00
MS-33I	MS-33I-00_R10-AVG	INTERMED	2000	10/26/2000	0.00	1600.00
MS-33I	MS-33I-00_R10-D	INTERMED	2000	10/26/2000	0.00	1600.00
MS-33I	MS33I-01_R12	INTERMED	2001	12/6/2001	0.00	1810.00
MS-33I	MS33I-04_R09	INTERMED	2004	9/28/2004	0.38	2470.00
MS-33I	MS33I-20061026	INTERMED	2006	10/26/2006	0.43	5300.00
MS-33I	MS33I-20061026-AVG	INTERMED	2006	10/26/2006	0.43	5500.00
MS-33I	MS33I-20061026-D	INTERMED	2006	10/26/2006	0.00	5700.00
MS-33I	MS33I_20071030	INTERMED	2007	10/30/2007	0.00	5700.00
MS-33I	MS33I_20081030	INTERMED	2008	10/30/2008	0.00	5800.00
MS-33I	MS33I_20081030-AVG	INTERMED	2008	10/30/2008	0.00	5750.00
MS-33I	MS33I_20081030-D	INTERMED	2008	10/30/2008	0.00	5700.00
MS-33I	MS33I_20090416	INTERMED	2009	4/16/2009	0.00	6000.00
MS-33I	MS33I_20090416-AVG	INTERMED	2009	4/16/2009	0.00	5850.00
MS-33I	MS33I_20090416-D	INTERMED	2009	4/16/2009	0.00	5700.00
MS-33I	MS33I_20091007	INTERMED	2009	10/7/2009	0.50	5100.00
MS-33I	MS33I_20091007-AVG	INTERMED	2009	10/7/2009	0.50	5150.00
MS-33I	MS33I_20091007-D	INTERMED	2009	10/7/2009	0.00	5200.00
MS-33I	MS33I_20101102-AVG	INTERMED	2010	11/2/2010	0.00	3400.00
MS-33I	MS33I_20110215	INTERMED	2011	2/15/2011	0.00	3900.00
MS-33I	MS33I_20110511	INTERMED	2011	5/11/2011	0.00	4800.00
MS-33I	MS33I_20110511-AVG	INTERMED	2011	5/11/2011	0.00	4750.00
MS-33I	MS33I_20110511-D	INTERMED	2011	5/11/2011	0.00	4700.00

MS-33I	MS33I_20110818	INTERMED	2011	8/18/2011	0.00	2800.00
MS-33I	MS33I_20110818-AVG	INTERMED	2011	8/18/2011	0.00	2800.00
MS-33I	MS33I_20110818-D	INTERMED	2011	8/18/2011	0.00	2800.00
MS-33I	MS33I_20111118	INTERMED	2011	11/18/2011	0.00	3100.00
MS-34I	057-MW-34I-01	INTERMED	1999	12/2/1999	0.00	950.00
MS-34I	MS34I-03_R03	INTERMED	2003	3/19/2003	0.00	768.00
MS-34I	MS34I-03_R10	INTERMED	2003	10/15/2003	0.00	711.00
MS-34I	MS34I-04_R09	INTERMED	2004	9/27/2004	0.00	920.00
MS-34I	MS34I-04_R09-AVG	INTERMED	2004	9/27/2004	0.00	965.00
MS-34I	MS34I-04_R09-D	INTERMED	2004	9/27/2004	0.00	1010.00
MS-34I	MS34I-05_R11	INTERMED	2005	11/21/2005	0.00	842.00
MS-34I	MS34I-20061027	INTERMED	2006	10/27/2006	0.00	558.00
MS-34I	MS34I_20071026	INTERMED	2007	10/26/2007	0.00	591.00
MS-34I	MS34I_20080501	INTERMED	2008	5/1/2008	0.00	689.00
MS-34I	MS34I_20080501-AVG	INTERMED	2008	5/1/2008	0.00	693.50
MS-34I	MS34I_20080501-D	INTERMED	2008	5/1/2008	0.00	698.00
MS-34I	MS34I_20081030	INTERMED	2008	10/30/2008	0.00	454.00
MS-34I	MS34I_20090416	INTERMED	2009	4/16/2009	0.00	490.00
MS-34I	MS34I_20091006	INTERMED	2009	10/6/2009	0.00	428.00
MS-34I	MS34I_20101028	INTERMED	2010	10/28/2010	0.00	323.00
MS-34I	MS34I_20110215	INTERMED	2011	2/15/2011	0.00	407.00
MS-34I	MS34I_20110215-AVG	INTERMED	2011	2/15/2011	0.00	402.00
MS-34I	MS34I_20110215-D	INTERMED	2011	2/15/2011	0.00	397.00
MS-34I	MS34I_20110511	INTERMED	2011	5/11/2011	0.00	486.00
MS-34I	MS34I_20110817	INTERMED	2011	8/17/2011	0.00	337.00
MS-34I	MA34I_20111118	INTERMED	2011	11/18/2011	0.00	441.00
MS-35I	057-MW-35I-01	INTERMED	1999	12/2/1999	0.00	240.00
MS-35I	MS-35I-00_R10	INTERMED	2000	10/24/2000	0.00	35.00
MS-35I	MS35I-01_R12	INTERMED	2001	12/4/2001	0.00	31.00
MS-35I	MS35I-01_R12-AVG	INTERMED	2001	12/4/2001	0.00	29.00
MS-35I	MS35I-01_R12-D	INTERMED	2001	12/4/2001	0.00	27.00
MS-35I	MS35I-03_R03	INTERMED	2003	3/19/2003	0.28	36.40
MS-35I	MS35I-03_R10	INTERMED	2003	10/16/2003	0.38	369.00
MS-35I	MS35I-04_R09	INTERMED	2004	9/27/2004	0.00	239.80
MS-35I	MS35I-05_R11	INTERMED	2005	11/21/2005	0.00	543.00
MS-35I	MS35I-20061026	INTERMED	2006	10/26/2006	0.47	301.00
MS-35I	MS35I_20071029	INTERMED	2007	10/29/2007	0.00	234.00
MS-35I	MS35I_20071029-AVG	INTERMED	2007	10/29/2007	0.00	234.50
MS-35I	MS35I_20071029-D	INTERMED	2007	10/29/2007	0.00	235.00
MS-35I	MS35I_20080501	INTERMED	2008	5/1/2008	0.00	162.00
MS-35I	MS35I_20080501-AVG	INTERMED	2008	5/1/2008	0.20	167.00
MS-35I	MS35I_20080501-D	INTERMED	2008	5/1/2008	0.26	172.00
MS-35I	MS35I_20081030	INTERMED	2008	10/30/2008	0.00	146.00
MS-35I	MS35I_20090416	INTERMED	2009	4/16/2009	0.14	88.10
MS-35I	MS35I_20091006	INTERMED	2009	10/6/2009	0.16	124.00
MS-35I	MS35I_20091006-AVG	INTERMED	2009	10/6/2009	0.16	123.50
MS-35I	MS35I_20091006-D	INTERMED	2009	10/6/2009	0.16	123.00
MS-35I	MS35I_20101028	INTERMED	2010	10/28/2010	0.00	254.00
MS-35I	MS35I_20110215	INTERMED	2011	2/15/2011	0.28	216.00
MS-35I	MS35I_20110509	INTERMED	2011	5/9/2011	0.35	253.00
MS-35I	MS35I_20110816	INTERMED	2011	8/16/2011	0.00	288.00
MS-35I	MS35I_20111110	INTERMED	2011	11/10/2011	0.22	336.00

MS-36I	057-MW-36I-01	INTERMED	1999	12/3/1999	0.00	160.00
MS-36I	MS-36I-00_R10	INTERMED	2000	10/16/2000	0.00	110.00
MS-36I	MS36I-01_R12	INTERMED	2001	12/4/2001	0.00	24.00
MS-36I	MS36I-03_R03	INTERMED	2003	3/19/2003	0.00	68.60
MS-36I	MS36I-03_R06	INTERMED	2003	6/12/2003	0.00	53.20
MS-36I	MS36I-03_R10	INTERMED	2003	10/15/2003	0.00	113.70
MS-36I	MS36I-04_R03	INTERMED	2004	3/25/2004	0.00	122.70
MS-36I	MS36I-04_R09	INTERMED	2004	9/30/2004	0.00	205.40
MS-36I	MS36I-05_R11	INTERMED	2005	11/17/2005	0.00	166.00
MS-36I	MS36I-20060517	INTERMED	2006	5/17/2006	0.00	238.00
MS-36I	MS36I-20060517-AVG	INTERMED	2006	5/17/2006	0.00	233.10
MS-36I	MS36I-20060517-D	INTERMED	2006	5/17/2006	0.00	228.20
MS-36I	MS36I-20061025	INTERMED	2006	10/25/2006	0.00	49.60
MS-36I	MS36I_20080430	INTERMED	2008	4/30/2008	0.00	288.50
MS-36I	MS36I_20081029	INTERMED	2008	10/29/2008	0.16	89.20
MS-36I	MS36I_20090415	INTERMED	2009	4/15/2009	0.20	136.70
MS-36I	MS36I_20091006	INTERMED	2009	10/6/2009	0.08	144.20
MS-36I	MS36I_20101029	INTERMED	2010	10/29/2010	0.31	177.20
MS-36I	MS36I_20111116	INTERMED	2011	11/16/2011	0.17	124.70
MS-36I	MS36I_20111116-AVG	INTERMED	2011	11/16/2011	0.17	124.65
MS-36I	MS36I_20111116-D	INTERMED	2011	11/16/2011	0.16	124.60
MS-37S	057-MW-37S-01	INTERMED	1999	11/12/1999	0.00	630.00
MS-37S	MS-37S-00_R10	INTERMED	2000	10/24/2000	0.00	270.00
MS-37S	MS37S-01_R12	INTERMED	2001	12/3/2001	0.00	234.00
MS-37S	MS37S-03_R03	INTERMED	2003	3/17/2003	0.00	310.00
MS-37S	MS37S-03_R10	INTERMED	2003	10/10/2003	0.00	214.00
MS-37S	MS37S-04_R09	INTERMED	2004	9/30/2004	0.00	196.00
MS-37S	MS37S-05_R11	INTERMED	2005	11/16/2005	0.00	165.00
MS-37S	MS37S-20061017	INTERMED	2006	10/17/2006	0.00	176.00
MS-37S	MS37S_20071023	INTERMED	2007	10/23/2007	0.00	152.00
MS-37S	MS37S_20080429	INTERMED	2008	4/29/2008	0.00	147.00
MS-37S	MS37S_20081027	INTERMED	2008	10/27/2008	0.00	147.00
MS-37S	MS37S_20090414	INTERMED	2009	4/14/2009	0.00	146.00
MS-37S	MS37S_20090928	INTERMED	2009	9/28/2009	0.00	146.00
MS-37S	MS37S_20101020	INTERMED	2010	10/20/2010	0.00	144.00
MS-37S	MS37S_20110215	INTERMED	2011	2/15/2011	0.00	139.00
MS-37S	MS37S_20110509	INTERMED	2011	5/9/2011	0.00	130.00
MS-37S	MS37S_20110509-AVG	INTERMED	2011	5/9/2011	0.00	131.00
MS-37S	MS37S_20110509-D	INTERMED	2011	5/9/2011	0.00	132.00
MS-37S	MS37S_20110815	INTERMED	2011	8/15/2011	0.00	129.00
MS-37S	MS37S_20111114	INTERMED	2011	11/14/2011	0.00	45.00
MS-41I	057-MW-41I-01	INTERMED	1999	12/2/1999	3.40	6.60
MS-41I	MS-41I-00_R10	INTERMED	2000	10/23/2000	5.90	2.90
MS-41I	MS41I-01_R11	INTERMED	2001	11/30/2001	3.30	4.90
MS-41I	MS41I-03_R03	INTERMED	2003	3/17/2003	3.00	9.18
MS-41I	MS41I-03_R06	INTERMED	2003	6/11/2003	3.00	11.98
MS-41I	MS41I-03_R10	INTERMED	2003	10/15/2003	3.80	15.78
MS-41I	MS41I-03_R10-AVG	INTERMED	2003	10/15/2003	3.80	15.24
MS-41I	MS41I-03_R10-D	INTERMED	2003	10/15/2003	3.80	14.69
MS-41I	MS41I-04_R03	INTERMED	2004	3/25/2004	3.40	14.00
MS-41I	MS41I-04_R09	INTERMED	2004	9/29/2004	2.90	9.30
MS-41I	MS41I-04_R09-AVG	INTERMED	2004	9/29/2004	2.95	9.65

MS-41I	MS41I-04_R09-D	INTERMED	2004	9/29/2004	3.00	10.00
MS-41I	MS41I-05_R11	INTERMED	2005	11/11/2005	3.50	13.58
MS-41I	MS41I-20060517	INTERMED	2006	5/17/2006	3.80	14.54
MS-41I	MS41I-20061020	INTERMED	2006	10/20/2006	3.90	15.59
MS-41I	MS41I_20071023	INTERMED	2007	10/23/2007	3.60	17.61
MS-41I	MS41I_20080428	INTERMED	2008	4/28/2008	4.50	18.69
MS-41I	MS41I_20081022	INTERMED	2008	10/22/2008	5.20	19.73
MS-41I	MS41I_20090414	INTERMED	2009	4/14/2009	4.80	17.68
MS-41I	MS41I_20090928	INTERMED	2009	9/28/2009	4.30	16.73
MS-41I	MS41I_20101019	INTERMED	2010	10/19/2010	3.40	21.40
MS-41I	MS41I_20110215	INTERMED	2011	2/15/2011	3.90	19.70
MS-41I	MS41I_20110510	INTERMED	2011	5/10/2011	4.30	17.96
MS-41I	MS41I_20110817	INTERMED	2011	8/17/2011	3.40	17.65
MS-41I	MS41I_20111116	INTERMED	2011	11/16/2011	3.1	33.20
MS-43I	057-MW-43I-01	INTERMED	1999	12/4/1999	0.00	4.50
MS-43I	MS-43I-00_R10	INTERMED	2000	10/10/2000	0.00	4.40
MS-43I	MS43I-01_R11	INTERMED	2001	11/29/2001	0.00	4.50
MS-43I	MS43I-03_R03	INTERMED	2003	3/12/2003	0.00	4.20
MS-43I	MS43I-03_R10	INTERMED	2003	10/9/2003	0.00	4.19
MS-43I	MS43I-04_R09	INTERMED	2004	9/24/2004	0.00	5.10
MS-43I	MS43I-05_R11	INTERMED	2005	11/9/2005	0.00	3.14
MS-43I	MS43I-20061013	INTERMED	2006	10/13/2006	0.00	6.66
MS-43I	MS43I_20071019	INTERMED	2007	10/19/2007	0.00	12.63
MS-43I	MS43I_20080428	INTERMED	2008	4/28/2008	0.00	19.80
MS-43I	MS43I_20081023	INTERMED	2008	10/23/2008	0.00	23.90
MS-43I	MS43I_20081023-AVG	INTERMED	2008	10/23/2008	0.00	24.41
MS-43I	MS43I_20081023-D	INTERMED	2008	10/23/2008	0.00	24.91
MS-43I	MS43I_20090414	INTERMED	2009	4/14/2009	0.00	29.00
MS-43I	MS43I_20090930	INTERMED	2009	9/30/2009	0.00	37.30
MS-43I	MS43I_20101027	INTERMED	2010	10/27/2010	0.00	34.98
MS-43I	MS43I_20110215	INTERMED	2011	2/15/2011	0.00	31.00
MS-43I	MS43I_20110509	INTERMED	2011	5/9/2011	0.00	22.87
MS-43I	MS43I_20110815	INTERMED	2011	8/15/2011	0.00	14.88
MS-43I	MS43I_20111107	INTERMED	2011	11/7/2011	0.00	15.77
MS-44I	057-MW-44I-01	INTERMED	1999	11/15/1999	0.00	35.00
MS-44I	MS-44I-00_R10	INTERMED	2000	10/16/2000	0.00	33.00
MS-44I	MS44I-01_R12	INTERMED	2001	12/5/2001	0.00	35.00
MS-44I	MS44I-03_R03	INTERMED	2003	3/20/2003	0.00	133.00
MS-44I	MS44I-03_R06	INTERMED	2003	6/13/2003	0.00	126.00
MS-44I	MS44I-03_R10	INTERMED	2003	10/15/2003	0.00	186.00
MS-44I	MS44I-04_R03	INTERMED	2004	3/26/2004	0.00	159.50
MS-44I	MS44I-04_R10	INTERMED	2004	10/1/2004	0.00	127.10
MS-44I	MS44I-05_R11	INTERMED	2005	11/16/2005	0.00	117.40
MS-44I	MS44I-05_R11-AVG	INTERMED	2005	11/16/2005	0.00	117.35
MS-44I	MS44I-05_R11-D	INTERMED	2005	11/16/2005	0.00	117.30
MS-44I	MS44I-20060518	INTERMED	2006	5/18/2006	0.00	106.40
MS-44I	MS44I-20061025	INTERMED	2006	10/25/2006	0.00	137.30
MS-44I	MS44I_20071029	INTERMED	2007	10/29/2007	0.00	179.80
MS-44I	MS44I_20080430	INTERMED	2008	4/30/2008	0.00	210.00
MS-44I	MS44I_20081029	INTERMED	2008	10/29/2008	0.00	231.00
MS-44I	MS44I_20090417	INTERMED	2009	4/17/2009	0.00	147.70
MS-44I	MS44I_20091002	INTERMED	2009	10/2/2009	0.00	219.50

MS-44I	**MS44I_20101029**	**INTERMED**	**2010**	**10/29/2010**	0.00	296.00
MS-44I	**MS44I_20110215**	**INTERMED**	**2011**	**2/15/2011**	0.00	322.00
MS-44I	**MS44I_20110510**	**INTERMED**	**2011**	**5/10/2011**	0.00	374.00
MS-44I	**MS44I_20110816**	**INTERMED**	**2011**	**8/16/2011**	0.00	284.00
MS-44I	**MS44I_20111110**	**INTERMED**	**2011**	**11/10/2011**	0.00	363.00
MS-45I	**057-MW-45I-01**	**INTERMED**	**1999**	**12/3/1999**	0.00	8.70
MS-45I	**057-MW-45I-01-AVG**	**INTERMED**	**1999**	**12/3/1999**	0.00	8.80
MS-45I	**057-MW-45I-01-D**	**INTERMED**	**1999**	**12/3/1999**	0.00	8.90
MS-45I	**MS-45I-00_R10**	**INTERMED**	**2000**	**10/23/2000**	0.00	5.40
MS-45I	**MS45I-01_R12**	**INTERMED**	**2001**	**12/4/2001**	0.00	5.30
MS-45I	**MS45I-03_R03**	**INTERMED**	**2003**	**3/19/2003**	0.67	18.62
MS-45I	**MS45I-03_R06**	**INTERMED**	**2003**	**6/11/2003**	0.00	16.00
MS-45I	**MS45I-03_R10**	**INTERMED**	**2003**	**10/16/2003**	0.89	20.66
MS-45I	**MS45I-04_R03**	**INTERMED**	**2004**	**3/25/2004**	0.98	17.00
MS-45I	**MS45I-04_R09**	**INTERMED**	**2004**	**9/29/2004**	1.50	16.00
MS-45I	**MS45I-05_R11**	**INTERMED**	**2005**	**11/14/2005**	3.40	17.54
MS-45I	**MS45I-20060517**	**INTERMED**	**2006**	**5/17/2006**	2.90	15.57
MS-45I	**MS45I-20061019**	**INTERMED**	**2006**	**10/19/2006**	3.70	10.26
MS-45I	**MS45I_20071024**	**INTERMED**	**2007**	**10/24/2007**	3.90	27.10
MS-45I	**MS45I_20081027**	**INTERMED**	**2008**	**10/27/2008**	2.90	42.20
MS-45I	**MS45I_20091001**	**INTERMED**	**2009**	**10/1/2009**	4.80	42.30
MS-45I	**MS45I_20101029**	**INTERMED**	**2010**	**10/29/2010**	3.60	35.30
MS-45I	**MS45I_20110215**	**INTERMED**	**2011**	**2/15/2011**	3.50	16.91
MS-45I	**MS45I_20110215-AVG**	**INTERMED**	**2011**	**2/15/2011**	3.55	16.92
MS-45I	**MS45I_20110215-D**	**INTERMED**	**2011**	**2/15/2011**	3.60	16.93
MS-45I	**MS45I_20110509**	**INTERMED**	**2011**	**5/9/2011**	3.30	11.58
MS-45I	**MS45I_20110815**	**INTERMED**	**2011**	**8/15/2011**	2.70	14.66
MS-45I	**MS45I_20111109**	**INTERMED**	**2011**	**11/9/2011**	1.9	11.52
MS-46I	**057-MW-46I-01**	**INTERMED**	**1999**	**11/14/1999**	2.00	6.00
MS-46I	**MS46I-03_R03**	**INTERMED**	**2003**	**3/18/2003**	4.90	4.67
MS-46I	**MS46I-03_R10**	**INTERMED**	**2003**	**10/14/2003**	5.80	4.90
MS-46I	**MS46I-03_R10-AVG**	**INTERMED**	**2003**	**10/14/2003**	5.60	4.94
MS-46I	**MS46I-03_R10-D**	**INTERMED**	**2003**	**10/14/2003**	5.40	4.98
MS-46I	**MS46I-04_R09**	**INTERMED**	**2004**	**9/29/2004**	3.80	4.40
MS-46I	**MS46I-05_R11**	**INTERMED**	**2005**	**11/14/2005**	5.20	7.52
MS-46I	**MS46I-20061020**	**INTERMED**	**2006**	**10/20/2006**	5.50	8.22
MS-47I	**057-MW-47I-01**	**INTERMED**	**1999**	**12/6/1999**	0.00	44.00
MS-47I	**MS-47I-00_R10**	**INTERMED**	**2000**	**10/25/2000**	0.00	22.00
MS-47I	**MS47I-01_R12**	**INTERMED**	**2001**	**12/5/2001**	0.00	74.00
MS-47I	**MS47I-03_R03**	**INTERMED**	**2003**	**3/20/2003**	0.82	51.00
MS-47I	**MS47I-03_R10**	**INTERMED**	**2003**	**10/15/2003**	1.30	53.60
MS-47I	**MS47I-04_R09**	**INTERMED**	**2004**	**9/30/2004**	1.20	41.30
MS-47I	**MS47I-04_R09-AVG**	**INTERMED**	**2004**	**9/30/2004**	1.25	42.95
MS-47I	**MS47I-04_R09-D**	**INTERMED**	**2004**	**9/30/2004**	1.30	44.60
MS-47I	**MS47I-05_R11**	**INTERMED**	**2005**	**11/15/2005**	1.60	31.50
MS-47I	**MS47I-20061023**	**INTERMED**	**2006**	**10/23/2006**	2.40	18.40
MS-47I	**MS47I_20071025**	**INTERMED**	**2007**	**10/25/2007**	2.70	15.99
MS-47I	**MS47I_20071025-AVG**	**INTERMED**	**2007**	**10/25/2007**	2.65	15.49
MS-47I	**MS47I_20071025-D**	**INTERMED**	**2007**	**10/25/2007**	2.60	14.98
MS-47I	**MS47I_20081024**	**INTERMED**	**2008**	**10/24/2008**	2.20	14.98
MS-47I	**MS47I_20091001**	**INTERMED**	**2009**	**10/1/2009**	3.00	13.78
MS-47I	**MS47I_20101027**	**INTERMED**	**2010**	**10/27/2010**	2.30	12.74

MS-47I	**MS47I_20111108**	**INTERMED**	**2011**	**11/8/2011**	1.9	17.30
MS-49I	**057-MW-49I-01**	**INTERMED**	**1999**	**12/5/1999**	7.00	10.00
MS-49I	**MS-49I-00_R10**	**INTERMED**	**2000**	**10/23/2000**	3.70	3.40
MS-49I	**MS49I-01_R12**	**INTERMED**	**2001**	**12/3/2001**	4.50	8.50
MS-49I	**MS49I-03_R03**	**INTERMED**	**2003**	**3/18/2003**	4.20	9.90
MS-49I	**MS49I-03_R10**	**INTERMED**	**2003**	**10/15/2003**	4.30	2.90
MS-49I	**MS49I-04_R09**	**INTERMED**	**2004**	**9/29/2004**	2.00	2.90
MS-49I	**MS49I-05_R11**	**INTERMED**	**2005**	**11/11/2005**	2.20	3.50
MS-49I	**MS49I-20061018**	**INTERMED**	**2006**	**10/18/2006**	2.30	2.40
MS-49I	**MS49I_20071022**	**INTERMED**	**2007**	**10/22/2007**	1.90	3.96
MS-49I	**MS49I_20081023**	**INTERMED**	**2008**	**10/23/2008**	1.70	2.41
MS-49I	**MS49I_20090928**	**INTERMED**	**2009**	**9/28/2009**	1.80	2.43
MS-49I	**MS49I_20101021**	**INTERMED**	**2010**	**10/21/2010**	1.50	1.37
MS-49I	**MS49I_20111104**	**INTERMED**	**2011**	**11/4/2011**	2.6	2.08
MS-49I	**MS49I_20111104-AVG**	**INTERMED**	**2011**	**11/4/2011**	2.60	2.03
MS-49I	**MS49I_20111104-D**	**INTERMED**	**2011**	**11/4/2011**	2.60	1.98
MS-51I	**057-MW-51I-01**	**INTERMED**	**1999**	**11/13/1999**	5.00	5.00
MS-51I	**MS-51I-00_R10**	**INTERMED**	**2000**	**10/10/2000**	3.90	1.40
MS-51I	**MS51I-01_R11**	**INTERMED**	**2001**	**11/30/2001**	2.30	0.00
MS-51I	**MS51I-03_R03**	**INTERMED**	**2003**	**3/12/2003**	2.50	1.60
MS-51I	**MS51I-03_R10**	**INTERMED**	**2003**	**10/9/2003**	2.90	1.60
MS-51I	**MS51I-04_R09**	**INTERMED**	**2004**	**9/24/2004**	1.70	2.40
MS-51I	**MS51I-05_R11**	**INTERMED**	**2005**	**11/10/2005**	1.40	1.30
MS-51I	**MS51I-05_R11-AVG**	**INTERMED**	**2005**	**11/10/2005**	1.40	1.30
MS-51I	**MS51I-05_R11-D**	**INTERMED**	**2005**	**11/10/2005**	1.40	1.30
MS-51I	**MS51I-20061013**	**INTERMED**	**2006**	**10/13/2006**	1.40	0.48
MS-51I	**MS51I_20071017**	**INTERMED**	**2007**	**10/17/2007**	1.40	1.60
MS-51I	**MS51I_20081021**	**INTERMED**	**2008**	**10/21/2008**	1.30	0.26
MS-51I	**MS51I_20090923**	**INTERMED**	**2009**	**9/23/2009**	1.30	1.80
MS-51I	**MS51I_20101015**	**INTERMED**	**2010**	**10/15/2010**	0.79	0.69
MS-51I	**MS51I_20111103**	**INTERMED**	**2011**	**11/3/2011**	0.80	0.68
MS-52I	**057-MW-52I-01**	**INTERMED**	**1999**	**12/1/1999**	0.00	0.00
MS-52I	**MS-52I-00_R10**	**INTERMED**	**2000**	**10/5/2000**	0.00	0.00
MS-52I	**MS52I-01_R11**	**INTERMED**	**2001**	**11/28/2001**	0.00	1.60
MS-52I	**MS52I-03_R03**	**INTERMED**	**2003**	**3/13/2003**	0.50	4.00
MS-52I	**MS52I-03_R03-AVG**	**INTERMED**	**2003**	**3/13/2003**	0.48	3.97
MS-52I	**MS52I-03_R03-D**	**INTERMED**	**2003**	**3/13/2003**	0.46	3.94
MS-52I	**MS52I-03_R10**	**INTERMED**	**2003**	**10/14/2003**	0.86	1.94
MS-52I	**MS52I-04_R09**	**INTERMED**	**2004**	**9/29/2004**	0.85	3.00
MS-52I	**MS52I-05_R11**	**INTERMED**	**2005**	**11/10/2005**	0.57	0.75
MS-52I	**MS52I-20061013**	**INTERMED**	**2006**	**10/13/2006**	0.22	4.04
MS-52I	**MS52I_20071017**	**INTERMED**	**2007**	**10/17/2007**	1.50	2.78
MS-52I	**MS52I_20081021**	**INTERMED**	**2008**	**10/21/2008**	2.70	2.71
MS-52I	**MS52I_20090929**	**INTERMED**	**2009**	**9/29/2009**	0.98	0.70
MS-52I	**MS52I_20090929-AVG**	**INTERMED**	**2009**	**9/29/2009**	1.04	0.77
MS-52I	**MS52I_20090929-D**	**INTERMED**	**2009**	**9/29/2009**	1.10	0.84
MS-52I	**MS52I_20101012**	**INTERMED**	**2010**	**10/12/2010**	1.20	2.27
MS-52I	**MS52I_20111107**	**INTERMED**	**2011**	**11/7/2011**	1.1	3.74
MS-54I	**MS54I-05_R11**	**INTERMED**	**2005**	**11/17/2005**	0.00	53.00
MS-54I	**MS54I-20061026**	**INTERMED**	**2006**	**10/26/2006**	0.00	181.00
MS-54I	**MS54I-K0705423_2007062'**	**INTERMED**	**2007**	**6/21/2007**	0.00	184.00
MS-54I	**MS54I-K0705423_2007062'**	**INTERMED**	**2007**	**6/21/2007**	0.00	184.00

MS-54I	MS54I-K0705423_2007062'	INTERMED	2007	6/21/2007	0.00	192.00
MS-54I	MS54I_20071029	INTERMED	2007	10/29/2007	0.95	205.00
MS-54I	MS54I_20080430	INTERMED	2008	4/30/2008	0.00	254.00
MS-54I	MS54I_20081029	INTERMED	2008	10/29/2008	0.00	222.00
MS-54I	MS54I_20090415	INTERMED	2009	4/15/2009	0.00	258.00
MS-54I	MS54I_20091002	INTERMED	2009	10/2/2009	0.18	250.00
MS-54I	MS54I_20101101	INTERMED	2010	11/1/2010	0.00	209.00
MS-54I	MS54I_20110215	INTERMED	2011	2/15/2011	0.00	333.00
MS-54I	MS54I_20110510	INTERMED	2011	5/10/2011	1.30	331.00
MS-54I	MS54I_20110817	INTERMED	2011	8/17/2011	0.00	250.00
MS-54I	MS54I_20111116	INTERMED	2011	11/16/2011	0.19	170.00
MS-55I	MS55I-05_R11	INTERMED	2005	11/18/2005	0.00	19.00
MS-55I	MS55I-20061024	INTERMED	2006	10/24/2006	0.00	33.40
MS-55I	MS55I-K0705423_2007062'	INTERMED	2007	6/21/2007	0.00	29.90
MS-55I	MS55I_20071026	INTERMED	2007	10/26/2007	0.00	36.20
MS-55I	MS55I_20080429	INTERMED	2008	4/29/2008	0.00	31.40
MS-55I	MS55I_20081027	INTERMED	2008	10/27/2008	0.00	31.00
MS-55I	MS55I_20090415	INTERMED	2009	4/15/2009	0.00	40.10
MS-55I	MS55I_20091001	INTERMED	2009	10/1/2009	0.00	32.90
MS-55I	MS55I_20101029	INTERMED	2010	10/29/2010	0.00	36.10
MS-55I	MS55I_20110215	INTERMED	2011	2/15/2011	0.00	52.70
MS-55I	MS55I_20110510	INTERMED	2011	5/10/2011	0.00	44.00
MS-55I	MS55I_20110817	INTERMED	2011	8/17/2011	0.00	33.30
MS-55I	MS55I_20111116	INTERMED	2011	11/16/2011	0.00	23.70
MS-56I	MS56I-05_R11	INTERMED	2005	11/18/2005	0.00	678.00
MS-56I	MS56I-20061026	INTERMED	2006	10/26/2006	0.00	867.00
MS-56I	MS56I-K0705423_2007062'	INTERMED	2007	6/22/2007	0.00	786.00
MS-56I	MS56I_20071029	INTERMED	2007	10/29/2007	0.00	629.00
MS-56I	MS56I_20080501	INTERMED	2008	5/1/2008	0.00	572.00
MS-56I	MS56I_20081029	INTERMED	2008	10/29/2008	0.00	384.00
MS-56I	MS56I_20090415	INTERMED	2009	4/15/2009	0.00	437.00
MS-56I	MS56I_20090415-AVG	INTERMED	2009	4/15/2009	0.00	429.50
MS-56I	MS56I_20090415-D	INTERMED	2009	4/15/2009	0.00	422.00
MS-56I	MS56I_20091005	INTERMED	2009	10/5/2009	0.00	398.00
MS-56I	MS56I_20101101	INTERMED	2010	11/1/2010	0.00	346.00
MS-56I	MS56I_20110215	INTERMED	2011	2/15/2011	0.00	327.00
MS-56I	MS56I_20110510	INTERMED	2011	5/10/2011	0.00	328.00
MS-56I	MS56I_20110817	INTERMED	2011	8/17/2011	0.00	273.00
MS-56I	MS56I_20111116	INTERMED	2011	11/16/2011	0.00	293.00
1-PC	1-PC-83_R10	PRDC	1983	10/1/1983	10.00	0.00
1-PC	1-PC-84_R04	PRDC	1984	4/1/1984	0.00	0.00
1-PC	1-PC-84_R10	PRDC	1984	10/1/1984	0.00	0.00
1-PC	1-PC-85_R01	PRDC	1985	1/1/1985	0.00	0.00
1-PC	1-PC-85_R06	PRDC	1985	6/1/1985	0.00	0.00
1-PC	1-PC-86_R11	PRDC	1986	11/1/1986	0.00	0.00
1-PC	M01PC-86_R11	PRDC	1986	11/1/1986	0.00	0.00
1-PC	1-PC-88_R01	PRDC	1988	1/1/1988	0.00	0.00
1-PC	M01PC-88_R01	PRDC	1988	1/1/1988	0.00	0.00
1-PC	M01PC-90_R11	PRDC	1990	11/1/1990	0.00	0.00
1-PC	M01PC-91_R02	PRDC	1991	2/1/1991	0.00	0.00
1-PC	MS01PC-97_R03	PRDC	1997	3/20/1997	0.00	0.00
1-PC	PC-1-97_R03	PRDC	1997	3/20/1997	0.00	3.90

1-PC	PC-1-97_R10	PRDC	1997	10/13/1997	2.30	5.20
1-PC	1-PC-98_Q2	PRDC	1998	4/27/1998	0.00	4.60
1-PC	1-PC-98_Q4	PRDC	1998	10/27/1998	0.00	3.10
1-PC	PC-1-99_R04	PRDC	1999	4/19/1999	0.00	3.80
1-PC	PC-1-99_R11	PRDC	1999	11/2/1999	0.00	4.40
1-PC	MS01PC-20061013	PRDC	2006	10/13/2006	0.00	3.69
1-PC	MS01PC_20111107	PRDC	2011	11/7/2011	0.00	3.22
2-PC	2-PC-83_R10	PRDC	1983	10/1/1983	0.00	0.00
2-PC	2-PC-84_R04	PRDC	1984	4/1/1984	0.00	0.00
2-PC	2-PC-84_R10	PRDC	1984	10/1/1984	0.00	24.00
2-PC	2-PC-85_R01	PRDC	1985	1/1/1985	0.00	0.00
2-PC	2-PC-85_R06	PRDC	1985	6/1/1985	0.00	0.00
2-PC	2-PC-86_R11	PRDC	1986	11/1/1986	0.00	0.00
2-PC	M02PC-86_R11	PRDC	1986	11/1/1986	0.00	0.00
2-PC	2-PC-88_R01	PRDC	1988	1/1/1988	0.00	0.00
2-PC	M02PC-88_R01	PRDC	1988	1/1/1988	0.00	0.00
2-PC	M02PC-90_R11	PRDC	1990	11/1/1990	0.00	0.00
2-PC	M02PC-91_R02	PRDC	1991	2/1/1991	0.00	0.00
2-PC	MS02PC-95_R11	PRDC	1995	11/21/1995	0.00	0.00
2-PC	MS02PC-96-R01	PRDC	1996	1/15/1996	0.00	0.00
2-PC	MS02PC-96_R10	PRDC	1996	10/10/1996	0.00	0.00
2-PC	MS02PC-97_R02	PRDC	1997	2/4/1997	0.00	0.80
2-PC	MS02PC-97_R03	PRDC	1997	3/20/1997	0.00	0.00
2-PC	PC-2A-97_R03	PRDC	1997	3/20/1997	0.00	2.60
2-PC	PC-2B-97_R03	PRDC	1997	3/20/1997	0.00	2.40
2-PC	MS-02PC-97_R04	PRDC	1997	4/1/1997	0.00	2.40
2-PC	MS02PC-97_R10	PRDC	1997	10/10/1997	0.00	0.00
2-PC	2-PC-98_Q2	PRDC	1998	4/29/1998	2.50	3.40
2-PC	2-PC-98_Q4	PRDC	1998	10/27/1998	0.00	2.50
2-PC	PC-2-99_R04	PRDC	1999	4/19/1999	5.30	0.00
2-PC	PC-2-99_R11	PRDC	1999	11/1/1999	0.00	3.40
2-PC	MS2PC-03_R03	PRDC	2003	3/12/2003	140.00	1.60
2-PC	MS02PC-04_R09	PRDC	2004	9/22/2004	150.00	1.10
2-PC	MS02PC-20061013	PRDC	2006	10/13/2006	66.00	0.56
2-PC	MS02PC_20081022	PRDC	2008	10/22/2008	33.00	0.23
2-PC	MS02PC_20101007-AVG	PRDC	2010	10/7/2010	17.00	0.14
2-PC	MS02PC_20111109	PRDC	2011	11/9/2011	13	0.17
3-PC	3-PC-83_R10	PRDC	1983	10/1/1983	0.00	0.00
3-PC	3-PC-84_R04	PRDC	1984	4/1/1984	0.00	0.00
3-PC	3-PC-84_R10	PRDC	1984	10/1/1984	0.00	10.00
3-PC	3-PC-85_R01	PRDC	1985	1/1/1985	0.00	0.00
3-PC	3-PC-85_R06	PRDC	1985	6/1/1985	0.00	0.00
3-PC	3-PC-86_R11	PRDC	1986	11/1/1986	0.00	0.00
3-PC	M03PC-86_R11	PRDC	1986	11/1/1986	0.00	0.00
3-PC	3-PC-88_R01	PRDC	1988	1/1/1988	5.80	0.00
3-PC	M03PC-88_R01	PRDC	1988	1/1/1988	5.80	0.00
3-PC	M03PC-90_R11	PRDC	1990	11/1/1990	0.00	0.00
3-PC	M03PC-90_R11-AVG	PRDC	1990	11/1/1990	0.00	0.00
3-PC	M03PC-90_R11-D	PRDC	1990	11/1/1990	0.00	0.00
3-PC	M03PC-91_R02	PRDC	1991	2/1/1991	0.00	0.00
3-PC	PC-3-97_R10	PRDC	1997	10/13/1997	44.00	0.72
3-PC	3-PC-98_Q2	PRDC	1998	4/27/1998	31.00	0.68

3-PC	3-PC-98_Q4	PRDC	1998	10/27/1998	32.00	0.00
3-PC	PC-3-99_R04	PRDC	1999	4/19/1999	37.00	0.00
3-PC	MS03PC-20061016	PRDC	2006	10/16/2006	2.60	0.00
3-PC	MS03PC_20081020	PRDC	2008	10/20/2008	2.30	0.06
3-PC	MS03PC_20090922	PRDC	2009	9/22/2009	1.70	0.00
3-PC	MS03PC_20101006-AVG	PRDC	2010	10/6/2010	1.70	0.00
3-PC	MS03PC_20111102	PRDC	2011	11/2/2011	1.1	0.00
4-PC	4-PC-83_R10	PRDC	1983	10/1/1983	0.00	0.00
4-PC	4-PC-85_R06	PRDC	1985	6/1/1985	0.00	0.00
4-PC	4-PC-86_R11	PRDC	1986	11/1/1986	0.00	0.00
4-PC	M04PC-86_R11	PRDC	1986	11/1/1986	0.00	0.00
4-PC	4-PC-88_R01	PRDC	1988	1/1/1988	0.00	0.00
4-PC	M04PC-88_R01	PRDC	1988	1/1/1988	0.00	0.00
4-PC	M04PC-90_R11	PRDC	1990	11/1/1990	0.00	0.00
4-PC	M04PC-91_R02	PRDC	1991	2/1/1991	0.00	0.00
4-PC	M04PC-91_R02-AVG	PRDC	1991	2/1/1991	0.00	0.00
4-PC	M04PC-91_R02-D	PRDC	1991	2/1/1991	0.00	0.00
4-PC	PC-4-97_R10	PRDC	1997	10/13/1997	1.60	4.50
4-PC	4-PC-98_Q2	PRDC	1998	4/27/1998	0.79	4.40
4-PC	4-PC-98_Q4	PRDC	1998	10/27/1998	0.00	3.00
4-PC	PC-4-99_R04	PRDC	1999	4/19/1999	0.42	2.90
4-PC	PC-4-99_R11	PRDC	1999	11/1/1999	0.00	4.80
4-PC	MS04PC-20061010	PRDC	2006	10/10/2006	5.30	4.22
4-PC	MS04PC_20111107	PRDC	2011	11/7/2011	1.50	4.12
5-PC	5-PC-88_R01	PRDC	1988	1/1/1988	0.00	0.00
5-PC	M05PC-88_R01	PRDC	1988	1/1/1988	0.00	0.00
5-PC	M05PC-90_R11	PRDC	1990	11/1/1990	0.00	0.00
5-PC	M05PC-91_R02	PRDC	1991	2/1/1991	0.80	0.00
5-PC	PC-5-97_R10	PRDC	1997	10/13/1997	460.00	0.97
5-PC	5-PC-98_Q2	PRDC	1998	4/27/1998	550.00	0.00
5-PC	5-PC-98_Q4	PRDC	1998	10/28/1998	490.00	0.00
5-PC	PC-5-99_R04	PRDC	1999	4/20/1999	530.00	0.00
5-PC	PC-5-99_R11	PRDC	1999	11/2/1999	560.00	1.30
5-PC	MS-05PC-00_R10	PRDC	2000	10/16/2000	360.00	0.00
5-PC	MS5-PC-01_R11	PRDC	2001	11/28/2001	240.00	0.00
5-PC	MS5PC-03_R03	PRDC	2003	3/13/2003	190.00	0.58
5-PC	MS5PC-03_R10	PRDC	2003	10/7/2003	160.00	0.38
5-PC	MS5PC-04_R09	PRDC	2004	9/27/2004	96.00	0.00
5-PC	MS5PC-05_R11	PRDC	2005	11/9/2005	89.00	0.26
5-PC	MS05PC-20061012	PRDC	2006	10/12/2006	86.00	0.31
5-PC	MS05PC_20081015	PRDC	2008	10/15/2008	80.00	0.21
5-PC	MS05PC_20081015-AVG	PRDC	2008	10/15/2008	81.50	0.19
5-PC	MS05PC_20081015-D	PRDC	2008	10/15/2008	83.00	0.17
5-PC	MS05PC_20111102	PRDC	2011	11/2/2011	42.00	0.17
FMC-43	057-MW-FMC-43	PRDC	1999	12/7/1999	0.00	2.40
FRIDLEY WELL 13	FW13-92_R10C	PRDC	1992	10/22/1992	0.00	0.00
FRIDLEY WELL 13	FW13-92_R10C-AVG	PRDC	1992	10/22/1992	0.00	0.00
FRIDLEY WELL 13	FW13-92_R10C-D	PRDC	1992	10/22/1992	0.00	0.00
FRIDLEY WELL 13	FW13-92_R11	PRDC	1992	11/5/1992	0.00	0.00
FRIDLEY WELL 13	FW13-92_R11-AVG	PRDC	1992	11/5/1992	0.00	0.00
FRIDLEY WELL 13	FW13-92_R11-D	PRDC	1992	11/5/1992	0.00	0.00
FRIDLEY WELL 13	FW13-93_R05	PRDC	1993	5/5/1993	0.00	0.00

FRIDLEY WELL 13	FW13-94_R05	PRDC	1994	5/11/1994	0.00	0.00
FRIDLEY WELL 13	FW13-95_R05	PRDC	1995	5/24/1995	0.00	0.00
FRIDLEY WELL 13	FW13-96-R01	PRDC	1996	1/15/1996	0.00	0.00
FRIDLEY WELL 13	FW13-97_R04	PRDC	1997	4/2/1997	0.00	0.00
FRIDLEY WELL 13	FW13-98_Q2	PRDC	1998	5/1/1998	0.00	0.00
FRIDLEY WELL 13	FW13-99_R04	PRDC	1999	4/22/1999	0.00	0.00
FRIDLEY WELL 13	FW-13-00_R10	PRDC	2000	10/24/2000	0.00	0.00
FRIDLEY WELL 13	FW13-01_R12	PRDC	2001	12/4/2001	0.00	0.00
FRIDLEY WELL 13	FW13-03_R03	PRDC	2003	3/18/2003	0.00	0.00
FRIDLEY WELL 13	FW13-04_R09	PRDC	2004	9/28/2004	0.00	0.00
FRIDLEY WELL 13	FW13-20061011	PRDC	2006	10/11/2006	0.00	0.00
FRIDLEY WELL 13	FW13_20071023	PRDC	2007	10/23/2007	0.00	0.00
FRIDLEY WELL 13	FW13_20081021	PRDC	2008	10/21/2008	0.00	0.00
FRIDLEY WELL 13	FW13_20090922	PRDC	2009	9/22/2009	0.00	0.00
FRIDLEY WELL 13	FW13_20090922-AVG	PRDC	2009	9/22/2009	0.00	0.00
FRIDLEY WELL 13	FW13_20090922-D	PRDC	2009	9/22/2009	0.00	0.00
FRIDLEY WELL 13	FW13_20101021	PRDC	2010	10/21/2010	0.00	0.00
FRIDLEY WELL 13	FW13_20111118	PRDC	2011	11/18/2011	0.00	0.00
FRIDLEY WELL 13	FW13_20111118-AVG	PRDC	2011	11/18/2011	0.00	0.00
FRIDLEY WELL 13	FW13_20111118-D	PRDC	2011	11/18/2011	0.00	0.00
MS-48PC	057-MW-48P-01	PRDC	1999	11/13/1999	1.00	3.00
MS-48PC	MS-48PC-00_R10	PRDC	2000	10/10/2000	1.20	2.30
MS-48PC	MS48PC-01_R11	PRDC	2001	11/29/2001	0.00	2.20
MS-48PC	MS48PC-20061016	PRDC	2006	10/16/2006	0.49	2.30
MS-48PC	MS48PC_20111102	PRDC	2011	11/2/2011	0.25	2.48
MS-50PC	057-MW-50P-01	PRDC	1999	11/13/1999	0.00	2.00
MS-50PC	057-MW-50P-01-AVG	PRDC	1999	11/13/1999	0.00	2.00
MS-50PC	057-MW-50P-01-D	PRDC	1999	11/13/1999	0.00	2.00
MS-50PC	MS50PC-20061017	PRDC	2006	10/17/2006	0.00	2.75
MS-53PC	057-MW-53P-01	PRDC	1999	11/14/1999	13.00	2.00
MS-53PC	MS-53PC-00_R10	PRDC	2000	10/10/2000	2.00	0.00
MS-53PC	MS53PC-01_R11	PRDC	2001	11/29/2001	8.70	1.60
MS-53PC	MS53PC-01_R11-AVG	PRDC	2001	11/29/2001	8.70	1.65
MS-53PC	MS53PC-01_R11-D	PRDC	2001	11/29/2001	8.70	1.70
MS-53PC	MS53PC-04_R10	PRDC	2004	10/1/2004	1.00	0.00
MS-53PC	MS53PC-04_R10-AVG	PRDC	2004	10/1/2004	1.05	0.00
MS-53PC	MS53PC-04_R10-D	PRDC	2004	10/1/2004	1.10	0.00
MS-53PC	MS53PC-20061012	PRDC	2006	10/12/2006	0.64	0.19
MS-53PC	MS53PC_20081014	PRDC	2008	10/14/2008	0.48	0.20
MS-53PC	MS53PC_20101007	PRDC	2010	10/7/2010	0.23	0.17
MS-53PC	MS53PC_20111102	PRDC	2011	11/2/2011	0.66	0.37
MS-53PC	MS53PC_20111102-AVG	PRDC	2011	11/2/2011	0.64	0.36
MS-53PC	MS53PC_20111102-D	PRDC	2011	11/2/2011	0.62	0.35
10-S	10-S-85_R06	SHALLOW	1985	6/1/1985	0.00	15.00
10-S	10-S-86_R01	SHALLOW	1986	1/1/1986	0.00	12.00
10-S	10-S-86_R11	SHALLOW	1986	11/1/1986	0.00	72.00
10-S	M10S-86_R11	SHALLOW	1986	11/1/1986	0.00	72.00
10-S	10-S-88_R01	SHALLOW	1988	1/1/1988	21.00	45.00
10-S	M10S-88_R01	SHALLOW	1988	1/1/1988	21.00	45.00
10-S	M10S-90_R11	SHALLOW	1990	11/1/1990	71.00	3800.00
10-S	M10S-91_R02	SHALLOW	1991	2/1/1991	52.00	3200.00
12-S	12-S-86_R04	SHALLOW	1986	4/1/1986	0.00	0.00

12-S	12-S-86_R11	SHALLOW	1986	11/1/1986	0.00	0.00
12-S	M12S-86_R11	SHALLOW	1986	11/1/1986	0.00	0.00
12-S	12-S-88_R01	SHALLOW	1988	1/1/1988	0.00	0.00
12-S	M12S-88_R01	SHALLOW	1988	1/1/1988	0.00	0.00
12-S	M12S-90_R11	SHALLOW	1990	11/1/1990	0.00	0.00
12-S	M12S-91_R02	SHALLOW	1991	2/1/1991	0.00	0.00
13-S	13-S-86_R04	SHALLOW	1986	4/1/1986	0.00	0.00
13-S	13-S-86_R11	SHALLOW	1986	11/1/1986	0.00	0.00
13-S	M13S-86_R11	SHALLOW	1986	11/1/1986	0.00	0.00
13-S	13-S-88_R01	SHALLOW	1988	1/1/1988	0.00	0.00
13-S	M13S-88_R01	SHALLOW	1988	1/1/1988	0.00	0.00
13-S	M13S-90_R11	SHALLOW	1990	11/1/1990	0.00	0.00
13-S	M13S-91_R02	SHALLOW	1991	2/1/1991	0.00	0.00
13-S	MS13S-95_R11	SHALLOW	1995	11/20/1995	0.00	0.00
13-S	MS13S-96-R01	SHALLOW	1996	1/15/1996	0.00	0.00
13-S	MS13S-96_R10	SHALLOW	1996	10/9/1996	0.00	0.00
13-S	MS-13S-97_R03	SHALLOW	1997	3/31/1997	0.00	0.00
13-S	MS13S-97_R10	SHALLOW	1997	10/14/1997	1.20	0.00
13-S	MS13S-98_Q2	SHALLOW	1998	4/28/1998	0.00	0.00
13-S	MS13S-98_Q4	SHALLOW	1998	10/28/1998	0.00	0.00
13-S	MS-13S-99_R04	SHALLOW	1999	4/20/1999	1.10	0.00
14-IS	MS14I-92_R10A	SHALLOW	1992	10/6/1992	0.00	160.00
14-IS	MS14I-92_R10C	SHALLOW	1992	10/20/1992	0.00	220.00
14-IS	MS14I-92_R11	SHALLOW	1992	11/5/1992	0.00	210.00
14-IS	MS14I-92_R12	SHALLOW	1992	12/10/1992	0.00	75.00
14-IS	MS14I-93_R02	SHALLOW	1993	2/11/1993	0.00	51.00
14-IS	MS14I-93_R02-AVG	SHALLOW	1993	2/11/1993	0.00	250.50
14-IS	MS14I-93_R02-D	SHALLOW	1993	2/11/1993	0.00	450.00
14-IS	MS14I-93_R05	SHALLOW	1993	5/6/1993	0.00	82.00
14-IS	MS14I-93_R05-AVG	SHALLOW	1993	5/6/1993	0.00	83.50
14-IS	MS14I-93_R05-D	SHALLOW	1993	5/6/1993	0.00	85.00
14-IS	MS14I-93_R08	SHALLOW	1993	8/18/1993	0.00	27.00
14-IS	MS14I-93_R08-AVG	SHALLOW	1993	8/18/1993	0.00	29.50
14-IS	MS14I-93_R08-D	SHALLOW	1993	8/18/1993	0.00	32.00
14-IS	MS14I-93_R11	SHALLOW	1993	11/10/1993	0.00	41.00
14-IS	MS14I-93_R11-AVG	SHALLOW	1993	11/10/1993	0.00	40.00
14-IS	MS14I-93_R11-D	SHALLOW	1993	11/10/1993	0.00	39.00
14-IS	MS14I-94_R02A	SHALLOW	1994	2/17/1994	0.00	24.00
14-IS	MS14I-94_R05	SHALLOW	1994	5/11/1994	0.00	26.00
14-IS	MS14I-94_R08	SHALLOW	1994	8/17/1994	0.00	49.00
14-IS	MS14I-94_R11A	SHALLOW	1994	11/18/1994	0.00	48.00
14-IS	MS14I-95_R02B	SHALLOW	1995	2/16/1995	0.00	53.00
14-IS	MS14I-95_R05	SHALLOW	1995	5/24/1995	0.00	92.00
14-IS	MS14I-95_R08	SHALLOW	1995	8/16/1995	0.00	34.00
14-IS	MS14I-95_R11	SHALLOW	1995	11/22/1995	0.00	54.00
14-IS	MS14I-96-R01	SHALLOW	1996	1/15/1996	0.00	43.00
14-IS	GWU-MS14I-R10_96	SHALLOW	1996	10/11/1996	0.00	66.00
14-IS	MS14I-97_R04	SHALLOW	1997	4/3/1997	2.40	250.00
14-IS	MS14I-97_R10	SHALLOW	1997	10/16/1997	0.00	260.00
14-IS	MS14I-98_Q2	SHALLOW	1998	4/30/1998	0.00	3.30
14-IS	MS14I-98_Q2-AVG	SHALLOW	1998	4/30/1998	0.00	201.65
14-IS	MS14I-98_Q2-D	SHALLOW	1998	4/30/1998	0.00	400.00

14-IS	MS14I-98_Q4	SHALLOW	1998	10/30/1998	0.00	230.00
14-IS	MS-14I-99_R04	SHALLOW	1999	4/22/1999	0.00	190.00
14-IS	MS-14I-99_R11	SHALLOW	1999	11/5/1999	0.00	200.00
14-IS	MS-14IS-00_R10	SHALLOW	2000	10/26/2000	0.00	120.00
14-IS	MS14IS-01_R12	SHALLOW	2001	12/5/2001	0.00	79.00
14-IS	MS14IS-03_R03	SHALLOW	2003	3/19/2003	0.42	350.00
14-IS	MS14IS-03_R10	SHALLOW	2003	10/15/2003	0.93	185.00
14-IS	MS14IS-03_R10-AVG	SHALLOW	2003	10/15/2003	0.97	184.00
14-IS	MS14IS-03_R10-D	SHALLOW	2003	10/15/2003	1.00	183.00
14-IS	MS14IS-04_R10	SHALLOW	2004	10/1/2004	0.00	221.00
14-IS	MS14IS-04_R10-AVG	SHALLOW	2004	10/1/2004	0.00	215.00
14-IS	MS14IS-04_R10-D	SHALLOW	2004	10/1/2004	0.00	209.00
14-IS	MS14IS-05_R11	SHALLOW	2005	11/21/2005	0.30	71.00
14-IS	MS14IS-05_R11-AVG	SHALLOW	2005	11/21/2005	0.31	70.50
14-IS	MS14IS-05_R11-D	SHALLOW	2005	11/21/2005	0.32	70.00
14-IS	MS14IS-20061027	SHALLOW	2006	10/27/2006	0.43	73.00
14-IS	MS14IS_20071025	SHALLOW	2007	10/25/2007	0.27	98.00
14-IS	MS14IS_20081030	SHALLOW	2008	10/30/2008	0.26	115.00
14-IS	MS14IS_20091007	SHALLOW	2009	10/7/2009	0.18	115.00
14-IS	MS14IS_20101028	SHALLOW	2010	10/28/2010	0.48	187.00
14-IS	MS14IS_20111110	SHALLOW	2011	11/10/2011	0.28	128.00
14-S	14-S-86_R04	SHALLOW	1986	4/1/1986	0.00	0.00
14-S	14-S-86_R11	SHALLOW	1986	11/1/1986	0.00	0.00
14-S	M14S-86_R11	SHALLOW	1986	11/1/1986	0.00	0.00
14-S	14-S-88_R01	SHALLOW	1988	1/1/1988	0.00	0.00
14-S	M14S-88_R01	SHALLOW	1988	1/1/1988	0.00	0.00
14-S	M14S-90_R11	SHALLOW	1990	11/1/1990	0.00	0.00
14-S	M14S-91_R02	SHALLOW	1991	2/1/1991	0.00	0.00
15-S	15-S-86_R04	SHALLOW	1986	4/1/1986	0.00	0.00
15-S	15-S-86_R11	SHALLOW	1986	11/1/1986	0.00	0.00
15-S	M15S-86_R11	SHALLOW	1986	11/1/1986	0.00	0.00
15-S	15-S-88_R01	SHALLOW	1988	1/1/1988	0.00	0.00
15-S	M15S-88_R01	SHALLOW	1988	1/1/1988	0.00	0.00
15-S	M15S-90_R11	SHALLOW	1990	11/1/1990	0.00	0.00
15-S	M15S-91_R02	SHALLOW	1991	2/1/1991	0.00	0.00
15-S	MS15S-92_R10A	SHALLOW	1992	10/6/1992	0.00	0.00
15-S	MS15S-92_R10C	SHALLOW	1992	10/20/1992	0.00	0.00
15-S	MS15S-92_R11	SHALLOW	1992	11/4/1992	0.00	0.00
15-S	MS15S-92_R12	SHALLOW	1992	12/8/1992	0.00	0.00
15-S	MS15S-93_R02	SHALLOW	1993	2/9/1993	0.00	0.00
15-S	MS15S-93_R05	SHALLOW	1993	5/4/1993	0.00	0.00
15-S	MS15S-93_R08	SHALLOW	1993	8/16/1993	0.00	0.00
15-S	MS15S-93_R11	SHALLOW	1993	11/9/1993	0.00	0.00
15-S	MS15S-94_R02A	SHALLOW	1994	2/16/1994	0.00	0.00
15-S	MS15S-94_R05	SHALLOW	1994	5/10/1994	0.00	0.00
15-S	MS15S-94_R08	SHALLOW	1994	8/16/1994	0.00	0.00
15-S	MS15S-94_R11A	SHALLOW	1994	11/16/1994	0.00	0.00
15-S	MS15S-95_R02B	SHALLOW	1995	2/14/1995	0.00	0.00
15-S	MS15S-95_R05	SHALLOW	1995	5/23/1995	0.00	0.00
15-S	MS15S-95_R08	SHALLOW	1995	8/15/1995	0.00	0.00
15-S	MS15S-95_R11	SHALLOW	1995	11/20/1995	0.00	0.00
15-S	MS15S-96-R01	SHALLOW	1996	1/15/1996	0.00	0.00

15-S	MS15S-96_R10	SHALLOW	1996	10/9/1996	0.00	0.00
15-S	MS-15S-97_R03	SHALLOW	1997	3/31/1997	0.00	0.00
15-S	MS15S-97_R10	SHALLOW	1997	10/13/1997	33.00	0.00
15-S	MS15S-98_Q2	SHALLOW	1998	4/28/1998	0.00	0.00
15-S	MS15S-98_Q4	SHALLOW	1998	10/28/1998	0.00	0.00
15-S	MS-15S-99_R04	SHALLOW	1999	4/20/1999	0.00	0.00
15-S	MS-15S-99_R11	SHALLOW	1999	11/3/1999	0.00	0.00
15-S	MS-15S-00_R10	SHALLOW	2000	10/5/2000	0.00	0.00
15-S	MS15S-01_R11	SHALLOW	2001	11/29/2001	0.00	0.00
15-S	MS15S-03_R03	SHALLOW	2003	3/11/2003	0.00	0.00
15-S	MS15S-04_R09	SHALLOW	2004	9/27/2004	0.00	0.00
15-S	MS15S-20061010	SHALLOW	2006	10/10/2006	0.00	0.00
16-S	16-S-86_R04	SHALLOW	1986	4/1/1986	0.00	0.00
16-S	16-S-86_R11	SHALLOW	1986	11/1/1986	0.00	0.00
16-S	M16S-86_R11	SHALLOW	1986	11/1/1986	0.00	0.00
16-S	16-S-88_R01	SHALLOW	1988	1/1/1988	1.00	0.00
16-S	M16S-88_R01	SHALLOW	1988	1/1/1988	1.00	0.00
16-S	M16S-90_R11	SHALLOW	1990	11/1/1990	1.00	0.00
16-S	M16S-91_R02	SHALLOW	1991	2/1/1991	0.80	0.00
16-S	MS16S-95_R11	SHALLOW	1995	11/21/1995	0.00	0.00
16-S	MS16S-96-R01	SHALLOW	1996	1/15/1996	0.00	0.00
16-S	GWU-MS16S-R10_96	SHALLOW	1996	10/11/1996	0.00	0.00
16-S	MS-16S-97_R04	SHALLOW	1997	4/2/1997	0.00	0.00
16-S	MS16S-97_R10	SHALLOW	1997	10/15/1997	0.71	0.00
16-S	MS16S-98_Q2	SHALLOW	1998	4/29/1998	0.00	0.00
16-S	MS16S-98_Q4	SHALLOW	1998	10/28/1998	0.00	0.00
16-S	MS-16S-99_R04	SHALLOW	1999	4/21/1999	0.00	0.00
16-S	MS-16S-99_R11	SHALLOW	1999	11/3/1999	0.00	0.00
16-S	MS-16S-00_R10	SHALLOW	2000	10/21/2000	0.00	0.00
16-S	MS16S-01_R11	SHALLOW	2001	11/29/2001	0.00	0.00
16-S	MS16S-20061009	SHALLOW	2006	10/9/2006	0.27	1.30
16-S	MS16S_20071018	SHALLOW	2007	10/18/2007	0.34	1.40
16-S	MS16S_20081017	SHALLOW	2008	10/17/2008	0.60	1.43
16-S	MS16S_20081017-AVG	SHALLOW	2008	10/17/2008	0.56	1.37
16-S	MS16S_20081017-D	SHALLOW	2008	10/17/2008	0.51	1.30
16-S	MS16S_20090923	SHALLOW	2009	9/23/2009	0.29	1.65
16-S	MS16S_20090923-AVG	SHALLOW	2009	9/23/2009	0.29	1.70
16-S	MS16S_20090923-D	SHALLOW	2009	9/23/2009	0.29	1.75
16-S	MS16S_20101008	SHALLOW	2010	10/8/2010	0.12	1.98
16-S	MS16S_20111101	SHALLOW	2011	11/1/2011	0.24	1.77
17-S	17-S-86_R04	SHALLOW	1986	4/1/1986	0.00	44.00
17-S	17-S-86_R11	SHALLOW	1986	11/1/1986	0.00	54.00
17-S	M17S-86_R11	SHALLOW	1986	11/1/1986	0.00	54.00
17-S	17-S-88_R01	SHALLOW	1988	1/1/1988	21.00	26.00
17-S	M17S-88_R01	SHALLOW	1988	1/1/1988	21.00	26.00
17-S	M17S-90_R11	SHALLOW	1990	11/1/1990	8.00	130.00
17-S	M17S-91_R02	SHALLOW	1991	2/1/1991	5.00	16.00
17-S	MS17S-92_R10A	SHALLOW	1992	10/8/1992	0.00	81.00
17-S	MS17S-92_R10C	SHALLOW	1992	10/21/1992	2.00	76.00
17-S	MS17S-92_R11	SHALLOW	1992	11/4/1992	1.00	38.00
17-S	MS17S-92_R11-AVG	SHALLOW	1992	11/4/1992	1.00	33.50
17-S	MS17S-92_R11-D	SHALLOW	1992	11/4/1992	1.00	29.00

17-S	MS17S-92_R12	SHALLOW	1992	12/8/1992	2.00	79.00
17-S	MS17S-92_R12-AVG	SHALLOW	1992	12/8/1992	1.50	74.50
17-S	MS17S-92_R12-D	SHALLOW	1992	12/8/1992	1.00	70.00
17-S	MS17S-93_R02	SHALLOW	1993	2/9/1993	3.00	27.00
17-S	MS17S-93_R02-AVG	SHALLOW	1993	2/9/1993	3.00	25.00
17-S	MS17S-93_R02-D	SHALLOW	1993	2/9/1993	3.00	23.00
17-S	MS17S-93_R05	SHALLOW	1993	5/4/1993	3.00	4.00
17-S	MS17S-93_R05-AVG	SHALLOW	1993	5/4/1993	2.50	3.50
17-S	MS17S-93_R05-D	SHALLOW	1993	5/4/1993	2.00	3.00
17-S	MS17S-93_R08	SHALLOW	1993	8/17/1993	2.00	5.00
17-S	MS17S-93_R08-AVG	SHALLOW	1993	8/17/1993	2.00	4.50
17-S	MS17S-93_R08-D	SHALLOW	1993	8/17/1993	2.00	4.00
17-S	MS17S-93_R11	SHALLOW	1993	11/9/1993	1.00	46.00
17-S	MS17S-93_R11-AVG	SHALLOW	1993	11/9/1993	1.00	45.50
17-S	MS17S-93_R11-D	SHALLOW	1993	11/9/1993	1.00	45.00
17-S	MS17S-94_R02A	SHALLOW	1994	2/16/1994	3.00	360.00
17-S	MS17S-94_R05	SHALLOW	1994	5/11/1994	4.00	180.00
17-S	MS17S-94_R08	SHALLOW	1994	8/17/1994	8.00	350.00
17-S	MS17S-94_R08-AVG	SHALLOW	1994	8/17/1994	7.50	330.00
17-S	MS17S-94_R08-D	SHALLOW	1994	8/17/1994	7.00	310.00
17-S	MS17S-94_R11A	SHALLOW	1994	11/18/1994	6.00	23.00
17-S	MS17S-94_R11A-AVG	SHALLOW	1994	11/18/1994	6.50	25.00
17-S	MS17S-94_R11A-D	SHALLOW	1994	11/18/1994	7.00	27.00
17-S	MS17S-95_R02B	SHALLOW	1995	2/14/1995	5.00	77.00
17-S	MS17S-95_R02B-AVG	SHALLOW	1995	2/14/1995	5.00	82.00
17-S	MS17S-95_R02B-D	SHALLOW	1995	2/14/1995	5.00	87.00
17-S	MS17S-95_R05	SHALLOW	1995	5/24/1995	7.00	260.00
17-S	MS17S-95_R05-AVG	SHALLOW	1995	5/24/1995	7.00	250.00
17-S	MS17S-95_R05-D	SHALLOW	1995	5/24/1995	7.00	240.00
17-S	MS17S-95_R08	SHALLOW	1995	8/16/1995	5.00	14.00
17-S	MS17S-95_R11	SHALLOW	1995	11/21/1995	2.00	3.00
17-S	MS17S-96-R01	SHALLOW	1996	1/15/1996	1.30	6.70
17-S	GWU-MS17S-R10_96	SHALLOW	1996	10/11/1996	1.00	0.00
17-S	MS17S-97_R04	SHALLOW	1997	4/2/1997	0.90	99.00
17-S	MS17S-97_R10	SHALLOW	1997	10/15/1997	4.80	180.00
17-S	MS17S-98_Q2	SHALLOW	1998	4/30/1998	5.80	160.00
17-S	MS17S-98_Q4	SHALLOW	1998	10/30/1998	4.90	96.00
17-S	MS-17S-99_R04	SHALLOW	1999	4/22/1999	3.20	25.00
17-S	MS-17S-99_R11	SHALLOW	1999	11/3/1999	5.00	68.00
17-S	MS-17S-99_R11-DIF	SHALLOW	1999	11/3/1999	6.00	71.00
17-S	MS-17S-00_R10	SHALLOW	2000	10/10/2000	3.40	50.00
17-S	MS17S-01_R11	SHALLOW	2001	11/29/2001	1.70	8.20
17-S	MS17S-03_R03	SHALLOW	2003	3/13/2003	0.46	0.92
17-S	MS17S-03_R10	SHALLOW	2003	10/7/2003	0.64	3.70
17-S	MS17S-04_R09	SHALLOW	2004	9/28/2004	0.00	0.30
17-S	MS17S-05_R11	SHALLOW	2005	11/9/2005	0.27	0.20
17-S	MS17S-20061012	SHALLOW	2006	10/12/2006	0.29	8.48
17-S	MS17S_20071017	SHALLOW	2007	10/17/2007	0.27	3.60
17-S	MS17S_20080428	SHALLOW	2008	4/28/2008	0.27	0.54
17-S	MS17S_20081015	SHALLOW	2008	10/15/2008	0.26	0.23
17-S	MS17S_20090414	SHALLOW	2009	4/14/2009	0.18	0.19
17-S	MS17S_20090922	SHALLOW	2009	9/22/2009	0.16	0.11

17-S	MS17S_20101005	SHALLOW	2010	10/5/2010	0.15	0.21
17-S	MS17S_20111101	SHALLOW	2011	11/1/2011	0.17	2.41
18-S	18-S-86_R04	SHALLOW	1986	4/1/1986	0.00	4700.00
18-S	18-S-86_R11	SHALLOW	1986	11/1/1986	0.00	660.00
18-S	M18S-86_R11	SHALLOW	1986	11/1/1986	0.00	660.00
18-S	18-S-88_R01	SHALLOW	1988	1/1/1988	0.00	2440.00
18-S	M18S-88_R01	SHALLOW	1988	1/1/1988	0.00	2440.00
18-S	M18S-90_R11	SHALLOW	1990	11/1/1990	0.00	1400.00
18-S	M18S-91_R02	SHALLOW	1991	2/1/1991	1.00	2000.00
18-S	MS18S-92_R10A	SHALLOW	1992	10/7/1992	450.00	870.00
18-S	MS18S-92_R10C	SHALLOW	1992	10/20/1992	0.00	1000.00
18-S	MS18S-92_R10C-AVG	SHALLOW	1992	10/20/1992	0.00	990.00
18-S	MS18S-92_R10C-D	SHALLOW	1992	10/20/1992	0.00	980.00
18-S	MS18S-92_R11	SHALLOW	1992	11/4/1992	1.00	1100.00
18-S	MS18S-92_R12	SHALLOW	1992	12/9/1992	0.00	1300.00
18-S	MS18S-93_R02	SHALLOW	1993	2/11/1993	0.00	780.00
18-S	MS18S-93_R05	SHALLOW	1993	5/6/1993	0.00	820.00
18-S	MS18S-93_R08	SHALLOW	1993	8/18/1993	0.00	620.00
18-S	MS18S-93_R11	SHALLOW	1993	11/10/1993	0.00	310.00
18-S	MS18S-94_R02A	SHALLOW	1994	2/17/1994	0.00	930.00
18-S	MS18S-94_R02A-AVG	SHALLOW	1994	2/17/1994	0.00	905.00
18-S	MS18S-94_R02A-D	SHALLOW	1994	2/17/1994	0.00	880.00
18-S	MS18S-94_R05	SHALLOW	1994	5/11/1994	0.00	2500.00
18-S	MS18S-94_R05-AVG	SHALLOW	1994	5/11/1994	0.00	2450.00
18-S	MS18S-94_R05-D	SHALLOW	1994	5/11/1994	0.00	2400.00
18-S	MS18S-94_R08	SHALLOW	1994	8/17/1994	0.00	640.00
18-S	MS18S-94_R08-AVG	SHALLOW	1994	8/17/1994	0.00	400.00
18-S	MS18S-94_R08-D	SHALLOW	1994	8/17/1994	0.00	160.00
18-S	MS18S-94_R11B	SHALLOW	1994	11/21/1994	0.00	1700.00
18-S	MS18S-94_R11B-AVG	SHALLOW	1994	11/21/1994	0.00	1650.00
18-S	MS18S-94_R11B-D	SHALLOW	1994	11/21/1994	0.00	1600.00
18-S	MS18S-95_R02B	SHALLOW	1995	2/14/1995	0.00	1000.00
18-S	MS18S-95_R02B-AVG	SHALLOW	1995	2/14/1995	0.00	1000.00
18-S	MS18S-95_R02B-D	SHALLOW	1995	2/14/1995	0.00	1000.00
18-S	MS18S-95_R05	SHALLOW	1995	5/25/1995	0.00	2100.00
18-S	MS18S-95_R05-AVG	SHALLOW	1995	5/25/1995	0.00	2100.00
18-S	MS18S-95_R05-D	SHALLOW	1995	5/25/1995	0.00	2100.00
18-S	MS18S-95_R08	SHALLOW	1995	8/17/1995	0.00	1400.00
18-S	MS18S-95_R11	SHALLOW	1995	11/22/1995	0.00	840.00
18-S	MS18S-96-R01	SHALLOW	1996	1/15/1996	0.00	1300.00
18-S	GWU-MS18S-R10_96	SHALLOW	1996	10/14/1996	0.00	950.00
18-S	MS18S-97_R04	SHALLOW	1997	4/3/1997	0.00	800.00
18-S	MS18S-97_R10	SHALLOW	1997	10/16/1997	0.99	640.00
18-S	MS18S-98_Q2	SHALLOW	1998	5/1/1998	0.00	520.00
18-S	MS-18S-99_R04	SHALLOW	1999	4/22/1999	0.00	540.00
18-S	MS-18S-99_R11	SHALLOW	1999	11/4/1999	0.00	650.00
18-S	MS-18S-99_R11-DIF	SHALLOW	1999	11/4/1999	0.00	130.00
18-S	MS-18S-00_R10	SHALLOW	2000	10/25/2000	0.00	350.00
18-S	MS-18S-00_R10-AVG	SHALLOW	2000	10/25/2000	0.00	350.00
18-S	MS-18S-00_R10-D	SHALLOW	2000	10/25/2000	0.00	350.00
18-S	MS18S-01_R12	SHALLOW	2001	12/5/2001	0.00	330.00
18-S	MS18S-01_R12-AVG	SHALLOW	2001	12/5/2001	0.00	350.00

18-S	MS18S-01_R12-D	SHALLOW	2001	12/5/2001	0.00	370.00
18-S	MS18S-03_R06	SHALLOW	2003	6/13/2003	0.00	179.00
18-S	MS18S-03_R10	SHALLOW	2003	10/15/2003	0.00	298.00
18-S	MS18S-04_R03	SHALLOW	2004	3/26/2004	0.00	152.00
18-S	MS18S-04_R03-AVG	SHALLOW	2004	3/26/2004	0.00	156.00
18-S	MS18S-04_R03-D	SHALLOW	2004	3/26/2004	0.00	160.00
18-S	MS18S-04_R10	SHALLOW	2004	10/1/2004	0.00	166.00
18-S	MS18S-05_R11	SHALLOW	2005	11/17/2005	0.00	116.00
18-S	MS18S-20060518	SHALLOW	2006	5/18/2006	0.00	101.00
18-S	MS18S-20060518-AVG	SHALLOW	2006	5/18/2006	0.00	100.50
18-S	MS18S-20060518-D	SHALLOW	2006	5/18/2006	0.00	100.00
18-S	MS18S-20061026	SHALLOW	2006	10/26/2006	0.00	132.00
18-S	MS18S-20061026-AVG	SHALLOW	2006	10/26/2006	0.00	126.00
18-S	MS18S-20061026-D	SHALLOW	2006	10/26/2006	0.00	120.00
18-S	MS18S_20080501	SHALLOW	2008	5/1/2008	0.00	116.00
18-S	MS18S_20081029	SHALLOW	2008	10/29/2008	0.00	225.00
18-S	MS18S_20090417	SHALLOW	2009	4/17/2009	0.00	145.00
18-S	MS18S_20091002	SHALLOW	2009	10/2/2009	0.00	134.00
18-S	MS18S_20101029	SHALLOW	2010	10/29/2010	0.00	136.00
18-S	MS18S_20110215	SHALLOW	2011	2/15/2011	0.00	116.00
18-S	MS18S_20110510	SHALLOW	2011	5/10/2011	0.00	74.00
18-S	MS18S_20110816	SHALLOW	2011	8/16/2011	0.00	76.00
18-S	MS18S_20111110	SHALLOW	2011	11/10/2011	0.00	86.00
18-S	MS18S_20111110-AVG	SHALLOW	2011	11/10/2011	0.00	86.00
18-S	MS18S_20111110-D	SHALLOW	2011	11/10/2011	0.00	86.00
19-S	19-S-86_R04	SHALLOW	1986	4/1/1986	0.00	0.00
19-S	19-S-86_R11	SHALLOW	1986	11/1/1986	0.00	0.00
19-S	M19S-86_R11	SHALLOW	1986	11/1/1986	0.00	0.00
19-S	19-S-88_R01	SHALLOW	1988	1/1/1988	0.00	0.00
19-S	M19S-88_R01	SHALLOW	1988	1/1/1988	0.00	0.00
19-S	M19S-90_R11	SHALLOW	1990	11/1/1990	0.00	0.00
19-S	M19S-91_R02	SHALLOW	1991	2/1/1991	0.90	0.00
19-S	MS19S-92_R10A	SHALLOW	1992	10/7/1992	0.70	0.00
19-S	MS19S-92_R10C	SHALLOW	1992	10/21/1992	0.00	0.00
19-S	MS19S-92_R11	SHALLOW	1992	11/4/1992	0.00	0.00
19-S	MS19S-92_R12	SHALLOW	1992	12/9/1992	0.40	0.30
19-S	MS19S-93_R02	SHALLOW	1993	2/9/1993	0.00	0.00
19-S	MS19S-93_R05	SHALLOW	1993	5/4/1993	0.00	0.00
19-S	MS19S-93_R08	SHALLOW	1993	8/16/1993	0.00	0.00
19-S	MS19S-93_R11	SHALLOW	1993	11/9/1993	0.00	0.00
19-S	MS19S-94_R02A	SHALLOW	1994	2/16/1994	0.40	0.00
19-S	MS19S-94_R05	SHALLOW	1994	5/10/1994	0.80	0.00
19-S	MS19S-94_R08	SHALLOW	1994	8/16/1994	0.00	0.00
19-S	MS19S-94_R11A	SHALLOW	1994	11/18/1994	0.00	0.00
19-S	MS19S-95_R02B	SHALLOW	1995	2/14/1995	0.60	0.00
19-S	MS19S-95_R05	SHALLOW	1995	5/24/1995	1.00	0.00
19-S	MS19S-95_R08	SHALLOW	1995	8/16/1995	0.00	4.00
19-S	MS19S-95_R11	SHALLOW	1995	11/21/1995	1.00	290.00
19-S	MS19S-96-R01	SHALLOW	1996	1/15/1996	0.00	160.00
19-S	GWU-MS19S-R10_96	SHALLOW	1996	10/10/1996	0.00	0.00
19-S	MS-19S-97_R04	SHALLOW	1997	4/1/1997	1.10	13.00
19-S	MS19S-97_R10	SHALLOW	1997	10/15/1997	2.60	21.00

19-S	MS19S-98_Q2	SHALLOW	1998	4/29/1998	0.00	19.00
19-S	MS19S-98_Q4	SHALLOW	1998	10/29/1998	0.00	33.00
19-S	MS-19S-99_R04	SHALLOW	1999	4/21/1999	0.00	15.00
19-S	MS-19S-99_R04-AVG	SHALLOW	1999	4/21/1999	0.00	14.50
19-S	MS-19S-99_R04-D	SHALLOW	1999	4/21/1999	0.00	14.00
19-S	MS-19S-99_R11	SHALLOW	1999	11/3/1999	1.70	19.00
19-S	MS-19S-99_R11-DIF	SHALLOW	1999	11/3/1999	2.30	15.00
19-S	MS-19S-00_R10	SHALLOW	2000	10/24/2000	2.70	12.00
19-S	MS-19S-00_R10-AVG	SHALLOW	2000	10/24/2000	2.85	12.00
19-S	MS-19S-00_R10-D	SHALLOW	2000	10/24/2000	3.00	12.00
19-S	MS19S-01_R12	SHALLOW	2001	12/5/2001	3.30	8.90
19-S	MS19S-03_R03	SHALLOW	2003	3/19/2003	1.20	2.30
19-S	MS19S-03_R10	SHALLOW	2003	10/16/2003	3.70	13.60
19-S	MS19S-04_R09	SHALLOW	2004	9/30/2004	1.90	8.50
19-S	MS19S-05_R11	SHALLOW	2005	11/15/2005	1.50	5.90
19-S	MS19S-20061024	SHALLOW	2006	10/24/2006	2.80	6.80
19-S	MS19S_20071026	SHALLOW	2007	10/26/2007	2.10	5.80
19-S	MS19S_20081027	SHALLOW	2008	10/27/2008	1.90	6.90
19-S	MS19S_20090415	SHALLOW	2009	4/15/2009	2.50	8.60
19-S	MS19S_20091001	SHALLOW	2009	10/1/2009	2.50	4.99
19-S	MS19S_20101028-AVG	SHALLOW	2010	10/28/2010	1.75	7.02
19-S	MS19S_20111107	SHALLOW	2011	11/7/2011	0.93	4.22
1-S	1-S-83_R10	SHALLOW	1983	10/1/1983	0.00	0.00
1-S	1-S-84_R04	SHALLOW	1984	4/1/1984	0.00	0.00
1-S	1-S-84_R10	SHALLOW	1984	10/1/1984	0.00	0.00
1-S	1-S-85_R01	SHALLOW	1985	1/1/1985	0.00	0.00
1-S	1-S-85_R06	SHALLOW	1985	6/1/1985	0.00	0.00
1-S	1-S-86_R11	SHALLOW	1986	11/1/1986	0.00	0.00
1-S	M01S-86_R11	SHALLOW	1986	11/1/1986	0.00	0.00
1-S	1-S-88_R01	SHALLOW	1988	1/1/1988	0.00	0.00
1-S	M01S-88_R01	SHALLOW	1988	1/1/1988	0.00	0.00
1-S	M01S-90_R11	SHALLOW	1990	11/1/1990	0.00	2.00
1-S	M01S-90_R11-AVG	SHALLOW	1990	11/1/1990	0.00	2.00
1-S	M01S-90_R11-D	SHALLOW	1990	11/1/1990	0.00	2.00
1-S	M01S-91_R02	SHALLOW	1991	2/1/1991	0.00	0.00
1-S	MS01S-95_R11	SHALLOW	1995	11/20/1995	0.00	2.00
1-S	MS01S-96-R01	SHALLOW	1996	1/15/1996	0.00	1.00
1-S	MS01S-96_R10	SHALLOW	1996	10/9/1996	0.00	1.60
1-S	MS-01S-97_R03	SHALLOW	1997	3/31/1997	0.00	0.00
1-S	MS01S-97_R10	SHALLOW	1997	10/14/1997	1.30	1.60
1-S	MS01S-98_Q2	SHALLOW	1998	5/1/1998	0.00	0.00
1-S	MS01S-98_Q4	SHALLOW	1998	10/28/1998	0.00	0.00
1-S	MS-01S-99_R04	SHALLOW	1999	4/20/1999	0.00	1.30
1-S	MS-01S-99_R11	SHALLOW	1999	11/3/1999	0.00	1.60
1-S	MS1S-03_R03	SHALLOW	2003	3/13/2003	0.00	0.00
1-S	MS01S-04_R09	SHALLOW	2004	9/21/2004	0.00	0.69
1-S	MS01S-20061010	SHALLOW	2006	10/10/2006	0.00	0.77
20-S	20-S-86_R04	SHALLOW	1986	4/1/1986	0.00	0.00
20-S	20-S-86_R11	SHALLOW	1986	11/1/1986	0.00	0.00
20-S	M20S-86_R11	SHALLOW	1986	11/1/1986	0.00	0.00
20-S	20-S-88_R01	SHALLOW	1988	1/1/1988	0.00	0.00
20-S	M20S-88_R01	SHALLOW	1988	1/1/1988	0.00	0.00

20-S	M20S-90_R11	SHALLOW	1990	11/1/1990	0.00	0.00
20-S	M20S-91_R02	SHALLOW	1991	2/1/1991	0.00	0.00
20-S	MS20S-95_R11	SHALLOW	1995	11/20/1995	0.00	0.00
20-S	MS20S-96-R01	SHALLOW	1996	1/15/1996	0.00	0.00
20-S	MS20S-96_R10	SHALLOW	1996	10/10/1996	0.00	0.00
20-S	MS-20S-97_R03	SHALLOW	1997	3/31/1997	0.00	0.00
20-S	MS20S-97_R10	SHALLOW	1997	10/10/1997	0.00	0.00
20-S	MS20S-98_Q2	SHALLOW	1998	4/29/1998	0.00	0.00
20-S	MS20S-98_Q4	SHALLOW	1998	10/28/1998	0.00	0.00
20-S	MS-20S-99_R04	SHALLOW	1999	4/20/1999	0.00	0.00
20-S	MS-20S-99_R11	SHALLOW	1999	11/3/1999	0.00	0.00
20-S	MS-20S-00_R10	SHALLOW	2000	10/21/2000	0.00	0.00
20-S	MS20S-01_R11	SHALLOW	2001	11/28/2001	0.00	0.00
20-S	MS20S-03_R10	SHALLOW	2003	10/16/2003	0.00	0.00
20-S	MS20S-04_R09	SHALLOW	2004	9/27/2004	0.00	0.00
20-S	MS20S-05_R11	SHALLOW	2005	11/8/2005	0.00	0.00
20-S	MS20S-20061011	SHALLOW	2006	10/11/2006	0.00	0.00
20-S	MS20S_20071018	SHALLOW	2007	10/18/2007	0.00	0.00
20-S	MS20S_20081020	SHALLOW	2008	10/20/2008	0.00	0.15
20-S	MS20S_20081020-AVG	SHALLOW	2008	10/20/2008	0.00	0.14
20-S	MS20S_20081020-D	SHALLOW	2008	10/20/2008	0.00	0.10
20-S	MS20S_20090922	SHALLOW	2009	9/22/2009	0.00	0.11
20-S	MS20S_20101005	SHALLOW	2010	10/5/2010	0.00	0.27
20-S	MS20S_20111115	SHALLOW	2011	11/15/2011	0.00	0.00
21-S	21-S-88_R01	SHALLOW	1988	1/1/1988	38.00	4.00
21-S	M21S-88_R01	SHALLOW	1988	1/1/1988	38.00	4.00
21-S	M21S-90_R11	SHALLOW	1990	11/1/1990	63.00	19.00
21-S	M21S-91_R02	SHALLOW	1991	2/1/1991	67.00	14.00
21-S	MS21S-95_R11	SHALLOW	1995	11/22/1995	6.70	0.00
21-S	MS21S-96-R01	SHALLOW	1996	1/15/1996	10.00	0.00
21-S	GWU-MS21S-R10_96	SHALLOW	1996	10/14/1996	11.00	0.00
21-S	MS21S-97_R04	SHALLOW	1997	4/3/1997	8.60	0.00
21-S	MS21S-97_R10	SHALLOW	1997	10/16/1997	5.90	1.40
21-S	MS21S-98_Q2	SHALLOW	1998	5/1/1998	6.00	0.00
21-S	MS21S-98_Q4	SHALLOW	1998	10/30/1998	6.30	0.00
21-S	MS-21S-99_R04	SHALLOW	1999	4/22/1999	7.90	0.00
21-S	MS-21S-99_R11	SHALLOW	1999	11/4/1999	4.80	0.00
21-S	MS-21S-00_R10	SHALLOW	2000	10/6/2000	6.30	0.00
21-S	MS21S-01_R11	SHALLOW	2001	11/29/2001	4.50	0.00
21-S	MS21S-03_R03	SHALLOW	2003	3/13/2003	4.00	0.00
21-S	MS21S-04_R09	SHALLOW	2004	9/23/2004	2.80	0.00
21-S	MS21S-20061017	SHALLOW	2006	10/17/2006	2.80	0.00
21-S	MS21S_20081022	SHALLOW	2008	10/22/2008	3.70	0.00
21-S	MS21S_20101013	SHALLOW	2010	10/13/2010	4.00	0.00
21-S	MS21S_20101102	SHALLOW	2010	11/2/2010	4.40	0.00
22-S	22-S-88_R01	SHALLOW	1988	1/1/1988	41.00	49.00
22-S	M22S-88_R01	SHALLOW	1988	1/1/1988	41.00	49.00
22-S	M22S-90_R11	SHALLOW	1990	11/1/1990	360.00	1300.00
22-S	M22S-91_R02	SHALLOW	1991	2/1/1991	6.00	22.00
22-S	MS22S-92_R10A	SHALLOW	1992	10/6/1992	230.00	450.00
22-S	MS22S-92_R10C	SHALLOW	1992	10/20/1992	150.00	200.00
22-S	MS22S-92_R11	SHALLOW	1992	11/3/1992	140.00	270.00

22-S	MS22S-92_R12	SHALLOW	1992	12/8/1992	110.00	170.00
22-S	MS22S-93_R02	SHALLOW	1993	2/9/1993	93.00	130.00
22-S	MS22S-93_R05	SHALLOW	1993	5/5/1993	110.00	120.00
22-S	MS22S-93_R08	SHALLOW	1993	8/17/1993	49.00	38.00
22-S	MS22S-93_R11	SHALLOW	1993	11/10/1993	110.00	200.00
22-S	MS22S-94_R02A	SHALLOW	1994	2/17/1994	95.00	230.00
22-S	MS22S-94_R02A-AVG	SHALLOW	1994	2/17/1994	95.50	230.00
22-S	MS22S-94_R02A-D	SHALLOW	1994	2/17/1994	96.00	230.00
22-S	MS22S-94_R05	SHALLOW	1994	5/11/1994	77.00	350.00
22-S	MS22S-94_R05-AVG	SHALLOW	1994	5/11/1994	72.00	325.00
22-S	MS22S-94_R05-D	SHALLOW	1994	5/11/1994	67.00	300.00
23-S	23-S-88_R01	SHALLOW	1988	1/1/1988	0.00	0.00
23-S	M23S-88_R01	SHALLOW	1988	1/1/1988	0.00	0.00
23-S	M23S-90_R11	SHALLOW	1990	11/1/1990	2.00	0.00
23-S	M23S-91_R02	SHALLOW	1991	2/1/1991	3.00	0.00
23-S	MS23S-95_R11	SHALLOW	1995	11/20/1995	5.00	0.00
23-S	MS23S-95_R11-AVG	SHALLOW	1995	11/20/1995	5.35	0.00
23-S	MS23S-95_R11-D	SHALLOW	1995	11/20/1995	5.70	0.00
23-S	MS23S-96-R01	SHALLOW	1996	1/15/1996	4.70	0.00
23-S	MS23S-96-R01-AVG	SHALLOW	1996	1/15/1996	5.10	0.00
23-S	MS23S-96-R01-D	SHALLOW	1996	1/15/1996	5.50	0.00
23-S	MS23S-96_R10	SHALLOW	1996	10/9/1996	9.00	0.00
23-S	MS-23S-97_R03	SHALLOW	1997	3/31/1997	8.00	0.00
23-S	MS23S-97_R10	SHALLOW	1997	10/14/1997	6.30	0.00
23-S	MS23S-98_Q2	SHALLOW	1998	4/29/1998	7.50	0.00
23-S	MS23S-98_Q2-AVG	SHALLOW	1998	4/29/1998	7.65	0.00
23-S	MS23S-98_Q2-D	SHALLOW	1998	4/29/1998	7.80	0.00
23-S	MS23S-98_Q4	SHALLOW	1998	10/28/1998	9.10	0.00
23-S	MS-23S-99_R04	SHALLOW	1999	4/20/1999	3.80	0.00
23-S	MS-23S-99_R11	SHALLOW	1999	11/3/1999	6.00	0.00
23-S	MS23S-03_R03	SHALLOW	2003	3/14/2003	2.30	0.00
23-S	MS23S-04_R09	SHALLOW	2004	9/27/2004	1.30	0.00
23-S	MS23S-20061011	SHALLOW	2006	10/11/2006	1.90	0.00
24-S	24-S-88_R01	SHALLOW	1988	1/1/1988	0.00	170.00
24-S	M24S-88_R01	SHALLOW	1988	1/1/1988	0.00	170.00
24-S	M24S-90_R11	SHALLOW	1990	11/1/1990	0.00	49.00
24-S	M24S-91_R02	SHALLOW	1991	2/1/1991	0.00	36.00
24-S	MS24S-95_R11	SHALLOW	1995	11/21/1995	0.00	230.00
24-S	MS24S-95_R11-AVG	SHALLOW	1995	11/21/1995	0.00	250.00
24-S	MS24S-95_R11-D	SHALLOW	1995	11/21/1995	0.00	270.00
24-S	MS24S-96-R01	SHALLOW	1996	1/15/1996	0.00	86.00
24-S	MS24S-96-R01-AVG	SHALLOW	1996	1/15/1996	0.00	85.00
24-S	MS24S-96-R01-D	SHALLOW	1996	1/15/1996	0.00	84.00
24-S	MS24S-96_R10	SHALLOW	1996	10/10/1996	0.00	90.00
24-S	MS-24S-97_R04	SHALLOW	1997	4/1/1997	0.00	420.00
24-S	MS24S-97_R10	SHALLOW	1997	10/10/1997	0.00	90.00
24-S	MS24S-98_Q2	SHALLOW	1998	4/29/1998	0.00	110.00
24-S	MS24S-98_Q2-AVG	SHALLOW	1998	4/29/1998	0.00	165.00
24-S	MS24S-98_Q2-D	SHALLOW	1998	4/29/1998	0.00	220.00
24-S	MS24S-98_Q4	SHALLOW	1998	10/29/1998	0.00	280.00
24-S	MS24S-98_Q4-AVG	SHALLOW	1998	10/29/1998	0.00	220.00
24-S	MS24S-98_Q4-D	SHALLOW	1998	10/29/1998	0.00	160.00

24-S	MS-24S-99_R04	SHALLOW	1999	4/21/1999	0.00	350.00
24-S	MS-24S-99_R11	SHALLOW	1999	11/3/1999	0.00	520.00
24-S	MS-24S-99_R11-AVG	SHALLOW	1999	11/3/1999	0.00	580.00
24-S	MS-24S-99_R11-DIF-A	SHALLOW	1999	11/3/1999	0.00	780.00
24-S	MS-24S-99_R11-DIF-B	SHALLOW	1999	11/3/1999	0.00	600.00
24-S	MS-24S-99_R11-DIF-C	SHALLOW	1999	11/3/1999	0.00	380.00
24-S	MS-24S-99_R11-D	SHALLOW	1999	11/4/1999	0.00	640.00
24-S	MS-24S-00_R10	SHALLOW	2000	10/24/2000	0.00	380.00
24-S	MS24S-01_R12	SHALLOW	2001	12/3/2001	0.00	76.10
24-S	MS24S-03_R03	SHALLOW	2003	3/14/2003	0.00	187.00
24-S	MS24S-03_R10	SHALLOW	2003	10/10/2003	1.60	21.69
24-S	MS24S-03_R10-AVG	SHALLOW	2003	10/10/2003	1.60	22.15
24-S	MS24S-03_R10-D	SHALLOW	2003	10/10/2003	1.60	22.61
24-S	MS24S-04_R09	SHALLOW	2004	9/23/2004	0.38	1.40
24-S	MS24S-05_R11	SHALLOW	2005	11/10/2005	0.52	1.30
24-S	MS24S-20061011	SHALLOW	2006	10/11/2006	0.23	231.00
24-S	MS24S_20071019	SHALLOW	2007	10/19/2007	0.19	76.80
24-S	MS24S_20081022	SHALLOW	2008	10/22/2008	1.10	8.79
24-S	MS24S_20090924	SHALLOW	2009	9/24/2009	0.30	6.42
24-S	MS24S_20101012-AVG	SHALLOW	2010	10/12/2010	0.46	5.92
24-S	MS24S_20111103	SHALLOW	2011	11/3/2011	0.23	35.40
24-S	MS24S_20111103-AVG	SHALLOW	2011	11/3/2011	0.24	35.85
24-S	MS24S_20111103-D	SHALLOW	2011	11/3/2011	0.25	36.30
25-S	25-S-88_R01	SHALLOW	1988	1/1/1988	0.00	0.00
25-S	M25S-88_R01	SHALLOW	1988	1/1/1988	0.00	0.00
25-S	M25S-90_R11	SHALLOW	1990	11/1/1990	0.00	0.00
25-S	M25S-91_R02	SHALLOW	1991	2/1/1991	0.00	0.00
25-S	MS25S-94_R08	SHALLOW	1994	8/16/1994	0.00	0.00
25-S	MS25S-94_R11A	SHALLOW	1994	11/16/1994	0.00	0.00
25-S	MS25S-95_R02B	SHALLOW	1995	2/14/1995	0.00	0.00
25-S	MS25S-95_R05	SHALLOW	1995	5/23/1995	0.00	0.00
25-S	MS25S-95_R08	SHALLOW	1995	8/15/1995	0.00	0.00
25-S	MS25S-95_R11	SHALLOW	1995	11/20/1995	0.00	0.00
25-S	MS25S-96-R01	SHALLOW	1996	1/15/1996	0.00	0.00
25-S	MS25S-96_R10	SHALLOW	1996	10/9/1996	0.00	0.00
25-S	MS-25S-97_R03	SHALLOW	1997	3/31/1997	0.00	0.00
25-S	MS25S-97_R10	SHALLOW	1997	10/14/1997	1.30	0.00
25-S	MS25S-98_Q2	SHALLOW	1998	4/28/1998	0.00	0.00
25-S	MS25S-98_Q4	SHALLOW	1998	10/28/1998	0.00	0.00
25-S	MS-25S-99_R04	SHALLOW	1999	4/20/1999	0.00	0.00
25-S	MS25S-03_R03	SHALLOW	2003	3/11/2003	0.00	0.00
25-S	MS25S-03_R10	SHALLOW	2003	10/7/2003	0.00	0.00
25-S	MS25S-04_R09	SHALLOW	2004	9/21/2004	0.00	0.00
25-S	MS25S-05_R11	SHALLOW	2005	11/8/2005	0.00	0.00
25-S	MS25S-20061009	SHALLOW	2006	10/9/2006	0.00	0.00
26-S	MS26S-92_R10A	SHALLOW	1992	10/8/1992	0.00	4.00
26-S	MS26S-92_R10C	SHALLOW	1992	10/21/1992	0.00	2.00
26-S	MS26S-92_R11	SHALLOW	1992	11/4/1992	0.00	3.00
26-S	MS26S-92_R12	SHALLOW	1992	12/9/1992	0.00	0.60
26-S	MS26S-93_R02	SHALLOW	1993	2/9/1993	0.00	0.00
26-S	MS26S-93_R05	SHALLOW	1993	5/4/1993	0.00	0.00
26-S	MS26S-93_R08	SHALLOW	1993	8/17/1993	0.00	0.80

26-S	MS26S-93_R11	SHALLOW	1993	11/9/1993	0.00	2.00
26-S	MS26S-94_R02A	SHALLOW	1994	2/17/1994	0.00	2.00
26-S	MS26S-94_R05	SHALLOW	1994	5/11/1994	0.00	1.00
26-S	MS26S-94_R08	SHALLOW	1994	8/17/1994	0.00	0.00
26-S	MS26S-94_R11A	SHALLOW	1994	11/18/1994	0.00	5.00
26-S	MS26S-95_R02B	SHALLOW	1995	2/14/1995	0.00	5.00
26-S	MS26S-95_R05	SHALLOW	1995	5/24/1995	0.00	7.00
26-S	MS26S-95_R08	SHALLOW	1995	8/16/1995	0.00	9.00
26-S	MS26S-95_R11	SHALLOW	1995	11/22/1995	0.00	12.00
26-S	MS26S-96-R01	SHALLOW	1996	1/15/1996	0.00	10.00
26-S	GWU-MS26S-R10_96	SHALLOW	1996	10/11/1996	0.00	13.00
26-S	MS26S-97_R04	SHALLOW	1997	4/2/1997	0.00	25.00
26-S	MS26S-97_R10	SHALLOW	1997	10/16/1997	0.00	29.00
26-S	MS26S-98_Q2	SHALLOW	1998	4/30/1998	0.00	0.00
26-S	MS26S-98_Q4	SHALLOW	1998	10/30/1998	0.00	0.00
26-S	MS-26S-99_R04	SHALLOW	1999	4/22/1999	0.00	29.00
26-S	MS-26S-99_R11	SHALLOW	1999	11/4/1999	0.00	38.00
26-S	MS-26S-99_R11-DIF	SHALLOW	1999	11/4/1999	0.00	52.00
26-S	MS-26S-00_R10	SHALLOW	2000	10/26/2000	0.00	380.00
26-S	MS26S-01_R12	SHALLOW	2001	12/6/2001	0.00	170.00
26-S	MS26S-01_R12-AVG	SHALLOW	2001	12/6/2001	0.00	185.00
26-S	MS26S-01_R12-D	SHALLOW	2001	12/6/2001	0.00	200.00
26-S	MS26S-03_R06	SHALLOW	2003	6/13/2003	0.00	95.80
26-S	MS26S-03_R06-AVG	SHALLOW	2003	6/13/2003	0.00	92.40
26-S	MS26S-03_R06-D	SHALLOW	2003	6/13/2003	0.00	89.00
26-S	MS26S-03_R10	SHALLOW	2003	10/16/2003	0.00	102.40
26-S	MS26S-04_R03	SHALLOW	2004	3/26/2004	0.00	43.60
26-S	MS26S-04_R03-AVG	SHALLOW	2004	3/26/2004	0.33	43.65
26-S	MS26S-04_R03-D	SHALLOW	2004	3/26/2004	0.49	43.70
26-S	MS26S-04_R10	SHALLOW	2004	10/1/2004	1.10	72.60
26-S	MS26S-05_R11	SHALLOW	2005	11/16/2005	1.10	29.40
26-S	MS26S-20060518	SHALLOW	2006	5/18/2006	1.50	51.80
26-S	MS26S-20061025	SHALLOW	2006	10/25/2006	2.40	41.70
26-S	MS26S_20071029	SHALLOW	2007	10/29/2007	2.40	26.80
26-S	MS26S_20081028	SHALLOW	2008	10/28/2008	2.00	108.00
26-S	MS26S_20081028-AVG	SHALLOW	2008	10/28/2008	1.90	103.50
26-S	MS26S_20081028-D	SHALLOW	2008	10/28/2008	1.80	99.00
26-S	MS26S_20090416	SHALLOW	2009	4/16/2009	2.50	32.50
26-S	MS26S_20091005	SHALLOW	2009	10/5/2009	3.20	33.80
26-S	MS26S_20101029	SHALLOW	2010	10/29/2010	2.20	36.50
26-S	MS26S_20111110	SHALLOW	2011	11/10/2011	2.2	42.00
27-S	MS27S-92_R10A	SHALLOW	1992	10/7/1992	14.00	57.00
27-S	MS27S-92_R10C	SHALLOW	1992	10/21/1992	0.00	55.00
27-S	MS27S-92_R11	SHALLOW	1992	11/4/1992	0.00	64.00
27-S	MS27S-92_R12	SHALLOW	1992	12/8/1992	0.00	120.00
27-S	MS27S-93_R02	SHALLOW	1993	2/9/1993	0.00	140.00
27-S	MS27S-93_R05	SHALLOW	1993	5/5/1993	0.00	110.00
27-S	MS27S-93_R08	SHALLOW	1993	8/18/1993	0.00	100.00
27-S	MS27S-93_R11	SHALLOW	1993	11/9/1993	0.00	140.00
27-S	MS27S-94_R02A	SHALLOW	1994	2/17/1994	20.00	290.00
27-S	MS27S-94_R05	SHALLOW	1994	5/11/1994	0.00	240.00
27-S	MS27S-94_R08	SHALLOW	1994	8/18/1994	0.00	160.00

27-S	MS27S-94_R11B	SHALLOW	1994	11/21/1994	0.00	430.00
27-S	MS27S-95_R02B	SHALLOW	1995	2/14/1995	0.00	190.00
27-S	MS27S-95_R05	SHALLOW	1995	5/25/1995	0.00	100.00
27-S	MS27S-95_R08	SHALLOW	1995	8/17/1995	0.00	230.00
27-S	MS27S-95_R11	SHALLOW	1995	11/22/1995	0.00	44.00
27-S	MS27S-96-R01	SHALLOW	1996	1/15/1996	0.00	20.00
27-S	GWU-MS27S-R10_96	SHALLOW	1996	10/14/1996	0.00	0.00
27-S	MS27S-97_R04	SHALLOW	1997	4/3/1997	0.00	14.00
27-S	MS27S-97_R10	SHALLOW	1997	10/16/1997	0.00	25.00
27-S	MS27S-98_Q2	SHALLOW	1998	5/1/1998	0.00	39.00
27-S	MS27S-98_Q4	SHALLOW	1998	10/30/1998	0.00	0.00
27-S	MS27S-98_Q4-AVG	SHALLOW	1998	10/30/1998	0.00	0.00
27-S	MS27S-98_Q4-D	SHALLOW	1998	10/30/1998	0.00	0.00
27-S	MS-27S-99_R04	SHALLOW	1999	4/22/1999	0.00	14.00
27-S	MS-27S-99_R04-AVG	SHALLOW	1999	4/22/1999	0.00	12.50
27-S	MS-27S-99_R04-D	SHALLOW	1999	4/22/1999	0.00	11.00
27-S	MS-27S-99_R11	SHALLOW	1999	11/5/1999	0.00	12.00
27-S	MS-27S-99_R11-AVG	SHALLOW	1999	11/5/1999	0.00	12.50
27-S	MS-27S-99_R11-D	SHALLOW	1999	11/5/1999	0.00	13.00
27-S	MS-27S-00_R10	SHALLOW	2000	10/23/2000	0.00	6.20
27-S	MS-27S-00_R10-AVG	SHALLOW	2000	10/23/2000	0.00	6.20
27-S	MS-27S-00_R10-D	SHALLOW	2000	10/23/2000	0.00	6.20
27-S	MS27S-01_R12	SHALLOW	2001	12/4/2001	0.00	19.00
27-S	MS27S-03_R10	SHALLOW	2003	10/16/2003	0.00	32.89
27-S	MS27S-03_R10-AVG	SHALLOW	2003	10/16/2003	0.00	32.93
27-S	MS27S-03_R10-D	SHALLOW	2003	10/16/2003	0.00	32.96
27-S	MS27S-04_R09	SHALLOW	2004	9/29/2004	0.00	29.00
27-S	MS27S-05_R11	SHALLOW	2005	11/11/2005	0.22	64.70
27-S	MS27S-20061024	SHALLOW	2006	10/24/2006	0.00	30.60
27-S	MS27S_20071024	SHALLOW	2007	10/24/2007	0.15	34.85
27-S	MS27S_20081017	SHALLOW	2008	10/17/2008	0.00	59.40
27-S	MS27S_20090928	SHALLOW	2009	9/28/2009	0.14	67.10
27-S	MS27S_20101027	SHALLOW	2010	10/27/2010	0.00	116.00
27-S	MS27S_20101109	SHALLOW	2010	11/9/2010	0.00	126.10
27-S	MS27S_20111108	SHALLOW	2011	11/8/2011	0.00	125.70
2-S	2-S-83_R10	SHALLOW	1983	10/1/1983	0.00	0.00
2-S	2-S-84_R04	SHALLOW	1984	4/1/1984	0.00	0.00
2-S	2-S-84_R10	SHALLOW	1984	10/1/1984	0.00	0.00
2-S	2-S-85_R01	SHALLOW	1985	1/1/1985	0.00	0.00
2-S	2-S-85_R06	SHALLOW	1985	6/1/1985	0.00	0.00
2-S	2-S-86_R11	SHALLOW	1986	11/1/1986	0.00	0.00
2-S	M02S-86_R11	SHALLOW	1986	11/1/1986	0.00	0.00
2-S	2-S-88_R01	SHALLOW	1988	1/1/1988	0.00	0.00
2-S	M02S-88_R01	SHALLOW	1988	1/1/1988	0.00	0.00
2-S	M02S-90_R11	SHALLOW	1990	11/1/1990	0.00	0.00
2-S	M02S-91_R02	SHALLOW	1991	2/1/1991	0.90	0.00
2-S	MS02S-95_R11	SHALLOW	1995	11/21/1995	0.00	0.00
2-S	MS02S-96-R01	SHALLOW	1996	1/15/1996	0.00	0.00
2-S	GWU-MS02S-R10_96	SHALLOW	1996	10/10/1996	0.00	0.00
2-S	MS-02S-97_R04	SHALLOW	1997	4/2/1997	0.00	0.00
2-S	MS02S-97_R10	SHALLOW	1997	10/15/1997	0.90	0.00
2-S	MS02S-98_Q2	SHALLOW	1998	4/29/1998	0.00	0.00

2-S	MS02S-98_Q4	SHALLOW	1998	10/31/1998	0.00	0.00
2-S	MS-02S-99_R04	SHALLOW	1999	4/21/1999	0.00	0.00
2-S	MS-02S-99_R11	SHALLOW	1999	11/3/1999	0.45	0.00
2-S	MS2S-03_R03	SHALLOW	2003	3/13/2003	0.00	1.20
2-S	MS02S-04_R09	SHALLOW	2004	9/22/2004	0.00	1.80
2-S	MS02S-20061012	SHALLOW	2006	10/12/2006	0.20	2.93
2-S	MS02S-20061012-AVG	SHALLOW	2006	10/12/2006	0.13	2.93
2-S	MS02S-20061012-D	SHALLOW	2006	10/12/2006	0.00	2.93
2-S	MS02S_20071017	SHALLOW	2007	10/17/2007	0.00	2.70
2-S	MS02S_20090923	SHALLOW	2009	9/23/2009	0.00	3.09
2-S	MS02S_20111108	SHALLOW	2011	11/8/2011	0.10	1.96
3-S	3-S-83_R10	SHALLOW	1983	10/1/1983	17.00	75.00
3-S	3-S-84_R04	SHALLOW	1984	4/1/1984	13.00	152.00
3-S	3-S-84_R10	SHALLOW	1984	10/1/1984	10.00	168.00
3-S	3-S-85_R01	SHALLOW	1985	1/1/1985	0.00	170.00
3-S	3-S-85_R06	SHALLOW	1985	6/1/1985	0.00	97.00
3-S	3-S-86_R11	SHALLOW	1986	11/1/1986	0.00	580.00
3-S	M03S-86_R11	SHALLOW	1986	11/1/1986	0.00	580.00
3-S	3-S-88_R01	SHALLOW	1988	1/1/1988	0.00	310.00
3-S	M03S-88_R01	SHALLOW	1988	1/1/1988	0.00	310.00
3-S	M03S-90_R11	SHALLOW	1990	11/1/1990	0.00	140.00
3-S	M03S-91_R02	SHALLOW	1991	2/1/1991	0.00	130.00
3-S	MS03S-95_R11	SHALLOW	1995	11/21/1995	0.80	250.00
3-S	MS03S-95_R11-AVG	SHALLOW	1995	11/21/1995	0.75	235.00
3-S	MS03S-95_R11-D	SHALLOW	1995	11/21/1995	0.70	220.00
3-S	MS03S-96-R01	SHALLOW	1996	1/15/1996	0.00	460.00
3-S	MS03S-96-R01-AVG	SHALLOW	1996	1/15/1996	0.00	440.00
3-S	MS03S-96-R01-D	SHALLOW	1996	1/15/1996	0.00	420.00
3-S	GWU-MS03S-R10_96	SHALLOW	1996	10/11/1996	0.00	510.00
3-S	MS03S-97_R04	SHALLOW	1997	4/2/1997	1.40	320.00
3-S	MS03S-97_R10	SHALLOW	1997	10/15/1997	1.80	360.00
3-S	MS03S-98_Q2	SHALLOW	1998	4/29/1998	0.00	330.00
3-S	MS03S-98_Q2-AVG	SHALLOW	1998	4/29/1998	0.00	320.00
3-S	MS03S-98_Q2-D	SHALLOW	1998	4/29/1998	0.00	310.00
3-S	MS03S-98_Q4	SHALLOW	1998	10/31/1998	0.00	350.00
3-S	MS-03S-99_R04	SHALLOW	1999	4/22/1999	0.00	300.00
3-S	MS-03S-99_R11	SHALLOW	1999	11/3/1999	5.00	260.00
3-S	MS-03S-99_R11-DIF	SHALLOW	1999	11/3/1999	0.00	3.70
3-S	MS-03S-99_R11-DIF-AVG	SHALLOW	1999	11/3/1999	0.00	3.65
3-S	MS-03S-99_R11-DIF-D	SHALLOW	1999	11/3/1999	0.00	3.60
3-S	MS-03S-00_R10	SHALLOW	2000	10/16/2000	2.60	100.00
3-S	MS3S-01_R12	SHALLOW	2001	12/4/2001	0.00	135.40
3-S	MS03S-20061018	SHALLOW	2006	10/18/2006	2.00	156.70
3-S	MS03S_20071024	SHALLOW	2007	10/24/2007	1.40	156.20
3-S	MS03S_20091002	SHALLOW	2009	10/2/2009	1.80	155.70
3-S	MS03S_20111117	SHALLOW	2011	11/17/2011	1.50	135.90
4-S	4-S-83_R10	SHALLOW	1983	10/1/1983	0.00	0.00
4-S	4-S-84_R04	SHALLOW	1984	4/1/1984	0.00	0.00
4-S	4-S-84_R10	SHALLOW	1984	10/1/1984	0.00	0.00
4-S	4-S-85_R01	SHALLOW	1985	1/1/1985	0.00	0.00
4-S	4-S-85_R06	SHALLOW	1985	6/1/1985	0.00	0.00
4-S	4-S-86_R11	SHALLOW	1986	11/1/1986	0.00	0.00

4-S	M04S-86_R11	SHALLOW	1986	11/1/1986	0.00	0.00
4-S	4-S-88_R01	SHALLOW	1988	1/1/1988	0.00	0.00
4-S	M04S-88_R01	SHALLOW	1988	1/1/1988	0.00	0.00
4-S	M04S-90_R11	SHALLOW	1990	11/1/1990	0.00	0.00
4-S	M04S-91_R02	SHALLOW	1991	2/1/1991	0.00	0.00
5-S	5-S-83_R10	SHALLOW	1983	10/1/1983	0.00	0.00
5-S	5-S-84_R04	SHALLOW	1984	4/1/1984	0.00	0.00
5-S	5-S-84_R10	SHALLOW	1984	10/1/1984	0.00	0.00
5-S	5-S-85_R01	SHALLOW	1985	1/1/1985	0.00	0.00
5-S	5-S-85_R06	SHALLOW	1985	6/1/1985	0.00	0.00
5-S	5-S-86_R11	SHALLOW	1986	11/1/1986	0.00	0.00
5-S	M05S-86_R11	SHALLOW	1986	11/1/1986	0.00	0.00
5-S	5-S-88_R01	SHALLOW	1988	1/1/1988	0.00	0.00
5-S	M05S-88_R01	SHALLOW	1988	1/1/1988	0.00	0.00
5-S	M05S-90_R11	SHALLOW	1990	11/1/1990	0.00	0.00
5-S	M05S-91_R02	SHALLOW	1991	2/1/1991	0.00	0.00
5-S	MS05S-92_R10A	SHALLOW	1992	10/6/1992	0.00	0.00
5-S	MS05S-92_R10C	SHALLOW	1992	10/21/1992	0.00	0.00
5-S	MS05S-92_R11	SHALLOW	1992	11/3/1992	0.00	0.00
5-S	MS05S-92_R12	SHALLOW	1992	12/10/1992	0.00	0.00
5-S	MS05S-93_R02	SHALLOW	1993	2/9/1993	0.00	0.00
5-S	MS05S-93_R05	SHALLOW	1993	5/4/1993	0.00	0.00
5-S	MS05S-93_R08	SHALLOW	1993	8/16/1993	0.00	0.00
5-S	MS05S-93_R11	SHALLOW	1993	11/9/1993	0.00	0.00
5-S	MS05S-94_R02A	SHALLOW	1994	2/16/1994	0.00	0.00
5-S	MS05S-94_R05	SHALLOW	1994	5/10/1994	0.00	0.00
5-S	MS05S-94_R08	SHALLOW	1994	8/16/1994	0.00	0.00
5-S	MS05S-94_R11A	SHALLOW	1994	11/16/1994	0.00	0.00
5-S	MS05S-95_R02B	SHALLOW	1995	2/14/1995	0.00	0.00
5-S	MS05S-95_R05	SHALLOW	1995	5/23/1995	0.00	0.00
5-S	MS05S-95_R08	SHALLOW	1995	8/15/1995	0.00	0.00
5-S	MS05S-95_R11	SHALLOW	1995	11/20/1995	0.00	0.00
5-S	MS05S-96-R01	SHALLOW	1996	1/15/1996	0.00	0.00
5-S	MS05S-96_R10	SHALLOW	1996	10/10/1996	0.00	0.00
5-S	MS-05S-97_R04	SHALLOW	1997	4/1/1997	0.00	0.00
5-S	MS05S-97_R10	SHALLOW	1997	10/10/1997	0.00	0.00
5-S	MS05S-98_Q2	SHALLOW	1998	5/1/1998	0.00	0.00
5-S	MS05S-98_Q4	SHALLOW	1998	10/31/1998	0.00	0.00
5-S	MS-05S-99_R04	SHALLOW	1999	4/22/1999	0.00	0.00
5-S	MS-05S-99_R11	SHALLOW	1999	11/4/1999	0.00	0.00
6-S	6-S-83_R10	SHALLOW	1983	10/1/1983	10.00	41.00
6-S	6-S-84_R04	SHALLOW	1984	4/1/1984	42.00	300.00
6-S	6-S-84_R10	SHALLOW	1984	10/1/1984	38.00	187.00
6-S	6-S-85_R01	SHALLOW	1985	1/1/1985	0.00	0.00
6-S	6-S-85_R06	SHALLOW	1985	6/1/1985	45.00	93.00
6-S	6-S-86_R11	SHALLOW	1986	11/1/1986	200.00	1160.00
6-S	M06S-86_R11	SHALLOW	1986	11/1/1986	200.00	1160.00
6-S	6-S-88_R01	SHALLOW	1988	1/1/1988	26.00	28.00
6-S	M06S-88_R01	SHALLOW	1988	1/1/1988	26.00	28.00
6-S	M06S-90_R11	SHALLOW	1990	11/1/1990	3.00	83.00
6-S	M06S-90_R11-AVG	SHALLOW	1990	11/1/1990	3.00	83.50
6-S	M06S-90_R11-D	SHALLOW	1990	11/1/1990	3.00	84.00

6-S	M06S-91_R02	SHALLOW	1991	2/1/1991	4.00	130.00
6-S	MS6S-03_R03	SHALLOW	2003	3/19/2003	0.00	7.80
6-S	MS6S-03_R10	SHALLOW	2003	10/8/2003	0.00	0.00
6-S	MS06S-04_R09	SHALLOW	2004	9/22/2004	0.00	0.00
6-S	MS06S-05_R11	SHALLOW	2005	11/8/2005	0.00	0.00
6-S	MS06S-20061010	SHALLOW	2006	10/10/2006	0.40	27.61
6-S	MS06S_20071017	SHALLOW	2007	10/17/2007	0.00	5.05
6-S	MS06S_20081020	SHALLOW	2008	10/20/2008	0.00	0.21
6-S	MS06S_20090922	SHALLOW	2009	9/22/2009	0.00	0.20
6-S	MS06S_20101006	SHALLOW	2010	10/6/2010	0.00	0.25
6-S	MS06S_20111103	SHALLOW	2011	11/3/2011	0.00	3.91
7-S	7-S-85_R06	SHALLOW	1985	6/1/1985	0.00	0.00
7-S	7-S-86_R01	SHALLOW	1986	1/1/1986	0.00	0.00
7-S	7-S-86_R11	SHALLOW	1986	11/1/1986	0.00	0.00
7-S	M07S-86_R11	SHALLOW	1986	11/1/1986	0.00	0.00
7-S	7-S-88_R01	SHALLOW	1988	1/1/1988	0.00	0.00
7-S	M07S-88_R01	SHALLOW	1988	1/1/1988	0.00	0.00
7-S	M07S-90_R11	SHALLOW	1990	11/1/1990	0.00	3.00
7-S	M07S-91_R02	SHALLOW	1991	2/1/1991	1.00	0.00
7-S	MS07S-95_R11	SHALLOW	1995	11/21/1995	1.00	0.80
7-S	MS07S-96-R01	SHALLOW	1996	1/15/1996	1.10	3.10
7-S	GWU-MS07S-R10_96	SHALLOW	1996	10/11/1996	0.00	3.60
7-S	MS-07S-97_R04	SHALLOW	1997	4/2/1997	1.20	0.80
7-S	MS07S-97_R10	SHALLOW	1997	10/15/1997	1.40	4.10
7-S	MS07S-98_Q2	SHALLOW	1998	4/29/1998	0.00	0.00
7-S	MS07S-98_Q4	SHALLOW	1998	10/31/1998	0.00	9.70
7-S	MS-07S-99_R04	SHALLOW	1999	4/21/1999	0.56	2.20
7-S	MS-07S-99_R04-AVG	SHALLOW	1999	4/21/1999	0.65	2.55
7-S	MS-07S-99_R04-D	SHALLOW	1999	4/21/1999	0.74	2.90
7-S	MS-07S-99_R11	SHALLOW	1999	11/4/1999	1.20	1.80
7-S	MS-07S-99_R11-AVG	SHALLOW	1999	11/4/1999	1.25	1.85
7-S	MS-07S-99_R11-D	SHALLOW	1999	11/5/1999	1.30	1.90
7-S	MS-07S-00_R10	SHALLOW	2000	10/21/2000	0.00	2.60
7-S	MS7S-01_R11	SHALLOW	2001	11/29/2001	0.00	8.00
7-S	MS7S-03_R03	SHALLOW	2003	3/13/2003	0.00	15.67
7-S	MS07S-04_R09	SHALLOW	2004	9/22/2004	0.38	4.10
7-S	MS07S-04_R09-AVG	SHALLOW	2004	9/22/2004	0.51	4.05
7-S	MS07S-04_R09-D	SHALLOW	2004	9/22/2004	0.64	4.00
7-S	MS07S-20061012	SHALLOW	2006	10/12/2006	0.88	29.30
7-S	MS07S_20071019	SHALLOW	2007	10/19/2007	0.84	20.50
7-S	MS07S_20081022	SHALLOW	2008	10/22/2008	0.18	42.60
7-S	MS07S_20090923	SHALLOW	2009	9/23/2009	0.36	22.80
7-S	MS07S_20101007	SHALLOW	2010	10/7/2010	0.56	38.70
7-S	MS07S_20111110	SHALLOW	2011	11/10/2011	0.61	11.20
8-S	8-S-85_R06	SHALLOW	1985	6/1/1985	46.00	190.00
8-S	8-S-86_R11	SHALLOW	1986	11/1/1986	46.00	480.00
8-S	M08S-86_R11	SHALLOW	1986	11/1/1986	46.00	480.00
8-S	8-S-88_R01	SHALLOW	1988	1/1/1988	31.00	160.00
8-S	M08S-88_R01	SHALLOW	1988	1/1/1988	31.00	160.00
8-S	M08S-90_R11	SHALLOW	1990	11/1/1990	16.00	120.00
8-S	M08S-91_R02	SHALLOW	1991	2/1/1991	22.00	0.00
8-S	MS08S-92_R10A	SHALLOW	1992	10/6/1992	35.00	540.00

8-S	MS08S-92_R10A-AVG	SHALLOW	1992	10/6/1992	29.00	540.00
8-S	MS08S-92_R10A-D	SHALLOW	1992	10/7/1992	23.00	540.00
8-S	MS08S-92_R10C	SHALLOW	1992	10/21/1992	34.00	740.00
8-S	MS08S-92_R10C-AVG	SHALLOW	1992	10/21/1992	41.00	720.00
8-S	MS08S-92_R10C-D	SHALLOW	1992	10/21/1992	48.00	700.00
8-S	MS08S-92_R11	SHALLOW	1992	11/4/1992	27.00	1000.00
8-S	MS08S-92_R11-AVG	SHALLOW	1992	11/4/1992	22.50	1100.00
8-S	MS08S-92_R11-D	SHALLOW	1992	11/4/1992	18.00	1200.00
8-S	MS08S-92_R12	SHALLOW	1992	12/10/1992	63.00	15000.00
8-S	MS08S-92_R12-AVG	SHALLOW	1992	12/10/1992	63.00	14000.00
8-S	MS08S-92_R12-D	SHALLOW	1992	12/10/1992	0.00	13000.00
8-S	MS08S-93_R02	SHALLOW	1993	2/11/1993	0.00	12000.00
8-S	MS08S-93_R02-AVG	SHALLOW	1993	2/11/1993	0.00	12000.00
8-S	MS08S-93_R05	SHALLOW	1993	5/6/1993	93.00	8100.00
8-S	MS08S-93_R05-AVG	SHALLOW	1993	5/6/1993	93.00	8100.00
8-S	MS08S-93_R08	SHALLOW	1993	8/18/1993	58.00	3600.00
8-S	MS08S-93_R08-AVG	SHALLOW	1993	8/18/1993	58.00	3600.00
8-S	MS08S-93_R11	SHALLOW	1993	11/10/1993	76.00	6000.00
8-S	MS08S-93_R11-AVG	SHALLOW	1993	11/10/1993	76.00	6000.00
8-S	MS08S-94_R02A	SHALLOW	1994	2/17/1994	42.00	1100.00
8-S	MS08S-94_R05	SHALLOW	1994	5/11/1994	58.00	4800.00
8-S	MS08S-94_R08	SHALLOW	1994	8/18/1994	22.00	640.00
8-S	MS08S-94_R11B	SHALLOW	1994	11/21/1994	55.00	2400.00
8-S	MS08S-95_R02B	SHALLOW	1995	2/14/1995	42.00	690.00
8-S	MS08S-95_R05	SHALLOW	1995	5/25/1995	34.00	470.00
8-S	MS08S-95_R08	SHALLOW	1995	8/17/1995	20.00	2300.00
8-S	MS08S-95_R11	SHALLOW	1995	11/22/1995	60.00	3700.00
8-S	MS08S-96-R01	SHALLOW	1996	1/15/1996	22.00	500.00
8-S	GWU-MS08S-R10_96	SHALLOW	1996	10/14/1996	27.00	1585.00
8-S	MS08S-97_R04	SHALLOW	1997	4/3/1997	54.00	2200.00
8-S	MS08S-97_R10	SHALLOW	1997	10/16/1997	15.00	260.00
8-S	MS08S-98_Q2	SHALLOW	1998	5/1/1998	22.00	480.00
8-S	MS08S-98_Q4	SHALLOW	1998	10/30/1998	8.60	540.00
8-S	MS-08S-99_R04	SHALLOW	1999	4/22/1999	19.00	770.00
8-S	MS-08S-99_R11	SHALLOW	1999	11/3/1999	11.00	620.00
8-S	MS-08S-99_R11-DIF	SHALLOW	1999	11/3/1999	3.80	440.00
8-S	MS-08S-00_R10	SHALLOW	2000	10/23/2000	2.80	94.00
8-S	MS8S-01_R12	SHALLOW	2001	12/3/2001	0.00	618.00
8-S	MS08S-20061018	SHALLOW	2006	10/18/2006	3.00	3205.70
8-S	MS08S_20071026	SHALLOW	2007	10/26/2007	4.20	3404.10
8-S	MS08S_20071026-AVG	SHALLOW	2007	10/26/2007	4.35	3404.15
8-S	MS08S_20071026-D	SHALLOW	2007	10/26/2007	4.50	3404.20
8-S	MS08S_20081030	SHALLOW	2008	10/30/2008	2.30	134.30
8-S	MS08S_20090414	SHALLOW	2009	4/14/2009	2.40	504.80
8-S	MS08S_20091001	SHALLOW	2009	10/1/2009	2.40	133.60
8-S	MS08S_20101025	SHALLOW	2010	10/25/2010	1.40	83.00
8-S	MS08S_20111111	SHALLOW	2011	11/11/2011	1.7	217.20
9-S	9-S-85_R06	SHALLOW	1985	6/1/1985	220.00	500.00
9-S	9-S-86_R01	SHALLOW	1986	1/1/1986	210.00	510.00
9-S	9-S-86_R11	SHALLOW	1986	11/1/1986	120.00	680.00
9-S	M09S-86_R11	SHALLOW	1986	11/1/1986	120.00	680.00
9-S	9-S-88_R01	SHALLOW	1988	1/1/1988	110.00	170.00

9-S	M09S-88_R01	SHALLOW	1988	1/1/1988	110.00	170.00
9-S	M09S-90_R11	SHALLOW	1990	11/1/1990	350.00	940.00
9-S	M09S-91_R02	SHALLOW	1991	2/1/1991	360.00	1000.00
9-S	MS09S-92_R10A	SHALLOW	1992	10/6/1992	56.00	110.00
9-S	MS09S-92_R10C	SHALLOW	1992	10/20/1992	48.00	64.00
9-S	MS09S-92_R11	SHALLOW	1992	11/3/1992	43.00	78.00
9-S	MS09S-92_R12	SHALLOW	1992	12/8/1992	51.00	120.00
9-S	MS09S-93_R02	SHALLOW	1993	2/9/1993	120.00	200.00
9-S	MS09S-93_R05	SHALLOW	1993	5/5/1993	40.00	68.00
9-S	MS09S-93_R08	SHALLOW	1993	8/17/1993	38.00	56.00
9-S	MS09S-93_R11	SHALLOW	1993	11/10/1993	43.00	69.00
9-S	MS09S-94_R02A	SHALLOW	1994	2/17/1994	49.00	54.00
9-S	MS09S-94_R05	SHALLOW	1994	5/11/1994	44.00	110.00
9-S	MS09S-94_R08	SHALLOW	1994	8/17/1994	35.00	26.00
9-S	MS09S-94_R11A	SHALLOW	1994	11/18/1994	39.00	33.00
9-S	MS09S-95_R02B	SHALLOW	1995	2/14/1995	31.00	38.00
9-S	MS09S-95_R05	SHALLOW	1995	5/24/1995	29.00	240.00
9-S	MS09S-95_R08	SHALLOW	1995	8/16/1995	32.00	54.00
9-S	MS09S-95_R11	SHALLOW	1995	11/22/1995	20.00	28.00
9-S	MS09S-96-R01	SHALLOW	1996	1/15/1996	23.00	58.00
9-S	GWU-MS09S-R10_96	SHALLOW	1996	10/11/1996	40.00	36.00
9-S	MS09S-97_R04	SHALLOW	1997	4/2/1997	32.00	38.00
9-S	MS09S-97_R10	SHALLOW	1997	10/16/1997	41.00	37.00
9-S	MS09S-98_Q2	SHALLOW	1998	4/30/1998	27.00	14.00
9-S	MS09S-98_Q4	SHALLOW	1998	10/31/1998	34.00	22.00
9-S	MS-09S-99_R04	SHALLOW	1999	4/22/1999	26.00	16.00
9-S	MS-09S-99_R11	SHALLOW	1999	11/3/1999	31.00	19.00
9-S	MS-09S-99_R11-DIF	SHALLOW	1999	11/3/1999	31.00	22.00
9-S	MS-09S-00_R10	SHALLOW	2000	10/23/2000	30.00	15.00
9-S	MS9S-01_R12	SHALLOW	2001	12/3/2001	30.00	13.00
9-S	MS9S-03_R03	SHALLOW	2003	3/17/2003	16.00	10.29
9-S	MS09S-04_R09	SHALLOW	2004	9/27/2004	14.00	19.00
9-S	MS09S-20061019	SHALLOW	2006	10/19/2006	16.00	6.99
9-S	MS09S_20071024	SHALLOW	2007	10/24/2007	9.30	5.89
9-S	MS09S_20071024-AVG	SHALLOW	2007	10/24/2007	9.65	6.09
9-S	MS09S_20071024-D	SHALLOW	2007	10/24/2007	10.00	6.29
9-S	MS09S_20081027	SHALLOW	2008	10/27/2008	8.90	3.97
9-S	MS09S_20081027-AVG	SHALLOW	2008	10/27/2008	8.90	4.02
9-S	MS09S_20081027-D	SHALLOW	2008	10/27/2008	8.90	4.07
9-S	MS09S_20090930	SHALLOW	2009	9/30/2009	9.30	4.13
9-S	MS09S_20090930-AVG	SHALLOW	2009	9/30/2009	10.15	4.33
9-S	MS09S_20090930-D	SHALLOW	2009	9/30/2009	11.00	4.53
9-S	MS09S_20101027	SHALLOW	2010	10/27/2010	10.00	3.70
9-S	MS09S_20111115	SHALLOW	2011	11/15/2011	7.0	2.07
AT-5A	AT05A-95_R08	SHALLOW	1995	8/17/1995	1.00	100.00
AT-5A	AT05A-95_R11	SHALLOW	1995	11/20/1995	0.00	140.00
AT-5A	AT05A-96_R01	SHALLOW	1996	1/15/1996	0.00	100.00
AT-5A	GWU-AT05A-R11_96	SHALLOW	1996	11/25/1996	0.00	101.00
AT-5A	AT05A-97_R04	SHALLOW	1997	4/3/1997	0.00	66.00
AT-5A	AT05A-97_R10	SHALLOW	1997	10/17/1997	0.00	83.00
AT-5A	AT5A-98_Q2	SHALLOW	1998	4/30/1998	0.00	59.00
AT-5A	AT05A-98_Q4	SHALLOW	1998	10/29/1998	0.00	48.00

AT-5A	AT05A-99_R04	SHALLOW	1999	4/23/1999	0.00	30.00
AT-5A	AT05A-99_R11	SHALLOW	1999	11/5/1999	1.80	40.00
AT-5A	AT05A-00_R10	SHALLOW	2000	10/6/2000	2.40	31.00
AT-5A	AT05A-01_R08	SHALLOW	2001	8/9/2001	0.00	35.00
AT-5A	AT05A-01_R11	SHALLOW	2001	11/27/2001	0.00	29.60
AT-5A	AT05A-03_R03	SHALLOW	2003	3/20/2003	0.00	244.00
AT-5A	AT-5A-03_R07	SHALLOW	2003	7/15/2003	1.40	90.00
AT-5A	AT05A-03_R10	SHALLOW	2003	10/16/2003	1.60	51.00
AT-5A	AT-5A-04_R07	SHALLOW	2004	7/26/2004	1.20	41.70
AT-5A	AT05A-04_R09	SHALLOW	2004	9/27/2004	1.20	38.20
AT-5A	AT5A-05_R11	SHALLOW	2005	11/21/2005	0.90	41.90
AT-5A	AT5A-20060518	SHALLOW	2006	5/18/2006	0.91	54.00
AT-5A	AT05A-20061204	SHALLOW	2006	12/4/2006	0.96	51.60
AT-5A	AT05A_20071116	SHALLOW	2007	11/16/2007	0.84	43.10
AT-5A	AT05A_20081031	SHALLOW	2008	10/31/2008	0.96	33.20
AT-5A	AT05A_20091007	SHALLOW	2009	10/7/2009	0.86	30.50
AT-5A	AT05A_20091007-AVG	SHALLOW	2009	10/7/2009	0.85	31.05
AT-5A	AT05A_20091007-D	SHALLOW	2009	10/7/2009	0.83	31.60
AT-5A	AT05A_20101102	SHALLOW	2010	11/2/2010	0.73	64.00
AT-5A	AT05A_20111102	SHALLOW	2011	11/2/2011	0.54	75.00
AT-7	AT07-01_R08	SHALLOW	2001	8/9/2001	0.00	390.00
AT-7	AT07-01_R11	SHALLOW	2001	11/27/2001	0.00	470.00
AT-7	AT07-03_R03	SHALLOW	2003	3/20/2003	1.10	630.00
AT-7	AT-7-03_R07	SHALLOW	2003	7/15/2003	1.10	298.00
AT-7	AT07-03_R10	SHALLOW	2003	10/16/2003	1.60	310.00
AT-7	AT-7-04_R07	SHALLOW	2004	7/26/2004	1.10	274.00
AT-7	AT07-04_R09	SHALLOW	2004	9/27/2004	0.95	350.00
AT-7	AT07-05_R11	SHALLOW	2005	11/21/2005	1.30	300.00
AT-7	AT07-20060518	SHALLOW	2006	5/18/2006	0.46	400.00
AT-7	AT07-20061204	SHALLOW	2006	12/4/2006	1.90	300.00
AT-7	AT07_20071116	SHALLOW	2007	11/16/2007	1.60	250.00
AT-7	AT07_20081031	SHALLOW	2008	10/31/2008	1.50	228.00
AT-7	AT07_20091007	SHALLOW	2009	10/7/2009	0.84	207.00
AT-7	AT07_20101102	SHALLOW	2010	11/2/2010	0.71	189.00
AT-7	AT07_20111102	SHALLOW	2011	11/2/2011	0.60	191.00
AT-8	AT08-01_R08	SHALLOW	2001	8/9/2001	0.00	523.00
AT-8	AT08-01_R08-AVG	SHALLOW	2001	8/9/2001	0.00	523.50
AT-8	AT08-01_R08-D	SHALLOW	2001	8/9/2001	0.00	524.00
AT-8	AT08-01_R11	SHALLOW	2001	11/27/2001	0.00	547.00
AT-8	AT08-03_R03	SHALLOW	2003	3/20/2003	0.00	302.00
AT-8	AT-8-03_R07	SHALLOW	2003	7/15/2003	0.00	551.00
AT-8	AT08-03_R10	SHALLOW	2003	10/16/2003	0.00	311.00
AT-8	AT-8-04_R07	SHALLOW	2004	7/26/2004	0.00	409.00
AT-8	AT08-04_R09	SHALLOW	2004	9/27/2004	0.00	528.00
AT-8	AT8-05_R11	SHALLOW	2005	11/21/2005	0.00	391.00
AT-8	AT08-20060518	SHALLOW	2006	5/18/2006	0.00	403.00
AT-8	AT08-20061204	SHALLOW	2006	12/4/2006	0.00	429.00
AT-8	AT08_20071030	SHALLOW	2007	10/30/2007	0.00	399.00
AT-8	AT08_20081031	SHALLOW	2008	10/31/2008	0.00	225.00
AT-8	AT08_20091007	SHALLOW	2009	10/7/2009	0.00	410.00
AT-8	AT08_20101102	SHALLOW	2010	11/2/2010	0.00	319.00
AT-8	AT08_20111102	SHALLOW	2011	11/2/2011	0.00	335.00

AT-9	AT09-01_R08	SHALLOW	2001	8/9/2001	0.00	181.00
AT-9	AT09-01_R11	SHALLOW	2001	11/27/2001	0.00	193.00
AT-9	AT09-03_R03	SHALLOW	2003	3/20/2003	0.00	194.00
AT-9	AT-9-03_R07	SHALLOW	2003	7/15/2003	0.00	163.00
AT-9	AT09-03_R10	SHALLOW	2003	10/16/2003	0.27	131.00
AT-9	AT-9-04_R07	SHALLOW	2004	7/26/2004	0.00	117.30
AT-9	AT09-04_R09	SHALLOW	2004	9/27/2004	0.00	128.00
AT-9	AT9-05_R11	SHALLOW	2005	11/21/2005	0.97	45.50
AT-9	AT09-20060518	SHALLOW	2006	5/18/2006	0.17	97.50
AT-9	AT09-20061204	SHALLOW	2006	12/4/2006	0.14	118.00
AT-9	AT09-20061204-AVG	SHALLOW	2006	12/4/2006	0.14	118.00
AT-9	AT09-20061204-D	SHALLOW	2006	12/4/2006	0.14	118.00
AT-9	AT09_20071116	SHALLOW	2007	11/16/2007	0.00	77.30
AT-9	AT09_20071116-AVG	SHALLOW	2007	11/16/2007	0.00	77.80
AT-9	AT09_20071116-D	SHALLOW	2007	11/16/2007	0.00	78.30
AT-9	AT09_20081031	SHALLOW	2008	10/31/2008	0.17	103.40
AT-9	AT09_20081031-AVG	SHALLOW	2008	10/31/2008	0.18	98.00
AT-9	AT09_20081031-D	SHALLOW	2008	10/31/2008	0.19	92.60
AT-9	AT09_20091007	SHALLOW	2009	10/7/2009	0.12	47.20
AT-9	AT09_20101102	SHALLOW	2010	11/2/2010	0.15	60.60
AT-9	AT09_20111102	SHALLOW	2011	11/2/2011	0.00	63.20
FMC-20	057-MW-FMC-20	SHALLOW	1999	12/4/1999	0.60	3.20
MS-28S	003-MS-28S-01	SHALLOW	1998	2/11/1998	0.00	151.00
MS-28S	MS-28S-00_R10	SHALLOW	2000	10/24/2000	0.00	12.00
MS-28S	MS28S-01_R12	SHALLOW	2001	12/7/2001	0.00	77.00
MS-28S	MS28S-20061024	SHALLOW	2006	10/24/2006	0.00	170.00
MS-28S	MS28S-20061024-AVG	SHALLOW	2006	10/24/2006	0.19	169.50
MS-28S	MS28S-20061025-D	SHALLOW	2006	10/24/2006	0.31	169.00
MS-28S	MS28S_20071018	SHALLOW	2007	10/18/2007	0.00	148.00
MS-28S	MS28S_20081021	SHALLOW	2008	10/21/2008	0.00	113.00
MS-28S	MS28S_20090924	SHALLOW	2009	9/24/2009	0.00	78.00
MS-28S	MS28S_20101015	SHALLOW	2010	10/15/2010	0.00	86.20
MS-28S	MS28S_20111111	SHALLOW	2011	11/11/2011	0.00	106.10
MS-28S	MS28S_20111111-AVG	SHALLOW	2011	11/11/2011	0.00	116.45
MS-28S	MS28S_20111111-D	SHALLOW	2011	11/11/2011	0.00	126.80
MS-29S	003-MS-29S-01	SHALLOW	1998	2/16/1998	0.00	60.00
MS-29S	MS29S-20061020	SHALLOW	2006	10/20/2006	0.21	208.90
MS-29S	MS29S-20111115	SHALLOW	2011	11/15/2011	0.44	82.10
MS-30S	003-MS-30S-01	SHALLOW	1998	2/24/1998	0.00	0.00
MS-30S	MS30S-20061027	SHALLOW	2006	10/27/2006	0.00	0.56
MS-31S	003-MS-31S-01	SHALLOW	1998	2/17/1998	0.00	213.00
MS-31S	MS-31S-00_R10	SHALLOW	2000	10/24/2000	0.00	85.00
MS-31S	MS31S-01_R12	SHALLOW	2001	12/7/2001	0.00	63.60
MS-31S	MS31S-20061024	SHALLOW	2006	10/24/2006	0.00	229.00
MS-31S	MS31S_20071019	SHALLOW	2007	10/19/2007	0.00	183.00
MS-31S	MS31S_20081023	SHALLOW	2008	10/23/2008	0.00	111.00
MS-31S	MS31S_20090929	SHALLOW	2009	9/29/2009	0.00	86.00
MS-31S	MS31S_20101022	SHALLOW	2010	10/22/2010	0.00	2.76
MS-31S	MS31S_20111111	SHALLOW	2011	11/11/2011	0.00	30.80
MS-32S	003-MS-32S-01	SHALLOW	1998	2/27/1998	2.10	280.00
MS-32S	MS-32S-00_R10	SHALLOW	2000	10/25/2000	0.00	630.00
MS-32S	MS32S-01_R12	SHALLOW	2001	12/6/2001	0.00	331.00

MS-32S	MS32S-20061026	SHALLOW	2006	10/26/2006	0.57	251.00
MS-32S	MS32S_20071024	SHALLOW	2007	10/24/2007	0.43	172.00
MS-32S	MS32S_20081028	SHALLOW	2008	10/28/2008	0.52	205.00
MS-32S	MS32S_20091001	SHALLOW	2009	10/1/2009	0.30	181.00
MS-32S	MS32S_20101022	SHALLOW	2010	10/22/2010	0.21	156.00
MS-32S	MS32S_20111115	SHALLOW	2011	11/15/2011	0.00	107.00
MS-33S	003-MS-33S-01	SHALLOW	1998	2/25/1998	0.00	9.50
MS-33S	MS-33S-00_R10	SHALLOW	2000	10/24/2000	0.00	5.90
MS-33S	MS33S-01_R12	SHALLOW	2001	12/6/2001	0.00	1.00
MS-33S	MS33S-20061025	SHALLOW	2006	10/25/2006	0.00	0.86
MS-33S	MS33S_20071019	SHALLOW	2007	10/19/2007	0.00	4.98
MS-33S	MS33S_20081023	SHALLOW	2008	10/23/2008	0.00	3.88
MS-33S	MS33S_20090928	SHALLOW	2009	9/28/2009	0.10	5.08
MS-33S	MS33S_20101013	SHALLOW	2010	10/13/2010	0.00	1.75
MS-33S	MS33S_20101101	SHALLOW	2010	11/1/2010	0.00	2.30
MS-33S	MS33S_20111111	SHALLOW	2011	11/11/2011	0.00	21.65
MS-34S	057-MW-34S-01	SHALLOW	1999	12/2/1999	0.00	740.00
MS-34S	MS-34S-00_R10	SHALLOW	2000	10/21/2000	0.00	360.00
MS-34S	MS34S-01_R11	SHALLOW	2001	11/30/2001	0.00	965.00
MS-34S	MS34S-01_R11-AVG	SHALLOW	2001	11/30/2001	0.00	966.00
MS-34S	MS34S-01_R11-D	SHALLOW	2001	11/30/2001	0.00	967.00
MS-34S	MS34S-03_R03	SHALLOW	2003	3/17/2003	0.00	138.30
MS-34S	MS34S-03_R10	SHALLOW	2003	10/10/2003	0.00	190.00
MS-34S	MS34S-04_R09	SHALLOW	2004	9/23/2004	0.00	606.00
MS-34S	MS34S-05_R11	SHALLOW	2005	11/11/2005	0.00	518.00
MS-34S	MS34S-20061016	SHALLOW	2006	10/16/2006	0.00	402.00
MS-34S	MS34S_20071019	SHALLOW	2007	10/19/2007	0.00	206.00
MS-34S	MS34S_20081027	SHALLOW	2008	10/27/2008	0.00	152.00
MS-34S	MS34S_20090925	SHALLOW	2009	9/25/2009	0.00	187.60
MS-34S	MS34S_20101011	SHALLOW	2010	10/11/2010	0.00	238.00
MS-34S	MS34S_20111103	SHALLOW	2011	11/3/2011	0.00	263.00
MS-35S	057-MW-35S-01	SHALLOW	1999	12/2/1999	2.10	510.00
MS-35S	MS-35S-00_R10	SHALLOW	2000	10/27/2000	0.00	470.00
MS-35S	MS355-01_R12	SHALLOW	2001	12/3/2001	0.00	213.00
MS-35S	MS35S-03_R03	SHALLOW	2003	3/14/2003	0.00	179.00
MS-35S	MS35S-03_R10	SHALLOW	2003	10/8/2003	0.00	61.80
MS-35S	MS35S-04_R09	SHALLOW	2004	9/23/2004	0.00	46.40
MS-35S	MS35S-05_R11	SHALLOW	2005	11/9/2005	0.00	64.00
MS-35S	MW35S-20061017	SHALLOW	2006	10/17/2006	0.39	193.00
MS-35S	MS35S_20071023	SHALLOW	2007	10/23/2007	0.20	69.00
MS-35S	MS35S_20081024	SHALLOW	2008	10/24/2008	0.21	52.30
MS-35S	MS35S_20090929	SHALLOW	2009	9/29/2009	0.51	16.50
MS-35S	MS35S_20090929-AVG	SHALLOW	2009	9/29/2009	0.27	17.15
MS-35S	MS35S_20090929-D	SHALLOW	2009	9/29/2009	0.00	17.80
MS-35S	MS35S_20101012	SHALLOW	2010	10/12/2010	0.00	15.50
MS-35S	MS35S_20111103	SHALLOW	2011	11/3/2011	0.00	10.20
MS-36S	057-MW-36S-01	SHALLOW	1999	12/3/1999	0.00	330.00
MS-36S	MS-36S-00_R10	SHALLOW	2000	10/16/2000	0.00	320.00
MS-36S	MS36S-01_R12	SHALLOW	2001	12/4/2001	0.00	390.00
MS-36S	MS36S-03_R03	SHALLOW	2003	3/20/2003	0.00	384.00
MS-36S	MS36S-03_R06	SHALLOW	2003	6/12/2003	0.00	327.00
MS-36S	MS36S-03_R10	SHALLOW	2003	10/15/2003	0.00	740.00

MS-36S	MS36S-04_R03	SHALLOW	2004	3/25/2004	0.00	501.00
MS-36S	MS36S-04_R09	SHALLOW	2004	9/30/2004	0.00	750.00
MS-36S	MS36S-05_R11	SHALLOW	2005	11/17/2005	0.00	450.00
MS-36S	MS36S-20060517	SHALLOW	2006	5/17/2006	0.00	292.00
MS-36S	MS36S-20061025	SHALLOW	2006	10/25/2006	0.00	416.00
MS-36S	MS36S_20080429	SHALLOW	2008	4/29/2008	0.00	257.00
MS-36S	MS36S_20081027	SHALLOW	2008	10/27/2008	0.00	358.00
MS-36S	MS36S_20090416	SHALLOW	2009	4/16/2009	0.00	138.00
MS-36S	MS36S_20090925	SHALLOW	2009	9/25/2009	0.12	460.00
MS-36S	MS36S_20101029	SHALLOW	2010	10/29/2010	0.00	295.00
MS-36S	MS36S_20110215	SHALLOW	2011	2/15/2011	0.00	298.00
MS-36S	MS36S_20110510	SHALLOW	2011	5/10/2011	0.00	208.00
MS-36S	MS36S_20110817	SHALLOW	2011	8/17/2011	0.00	273.00
MS-36S	MS36S_20111117	SHALLOW	2011	11/17/2011	0.00	299.00
MS-38S	057-MW-38S-01	SHALLOW	1999	11/12/1999	1.00	450.00
MS-38S	MS38S-03_R03	SHALLOW	2003	3/18/2003	1.40	450.00
MS-38S	MS38S-03_R03-AVG	SHALLOW	2003	3/18/2003	1.30	430.00
MS-38S	MS38S-03_R03-D	SHALLOW	2003	3/18/2003	1.20	410.00
MS-38S	MS38S-03_R10	SHALLOW	2003	10/15/2003	1.50	168.00
MS-38S	MS38S-04_R10	SHALLOW	2004	10/1/2004	0.61	87.00
MS-38S	MS38S-05_R11	SHALLOW	2005	11/21/2005	0.80	235.00
MS-38S	MS38S-20061027	SHALLOW	2006	10/27/2006	0.70	205.00
MS-38S	MS38S-20061027-AVG	SHALLOW	2006	10/27/2006	0.69	205.00
MS-38S	MS38S-20061027-D	SHALLOW	2006	10/27/2006	0.67	205.00
MS-38S	MS38S_20071025	SHALLOW	2007	10/25/2007	0.73	139.00
MS-38S	MS38S_20080430	SHALLOW	2008	4/30/2008	0.80	252.00
MS-38S	MS38S_20081030	SHALLOW	2008	10/30/2008	0.90	214.00
MS-38S	MS38S_20090416	SHALLOW	2009	4/16/2009	0.80	267.00
MS-38S	MS38S_20091007	SHALLOW	2009	10/7/2009	0.24	29.30
MS-38S	MS38S_20101026	SHALLOW	2010	10/26/2010	0.00	201.00
MS-38S	MS38S_20110510	SHALLOW	2011	5/10/2011	0.00	211.00
MS-38S	MS38S_20110817	SHALLOW	2011	8/17/2011	0.22	215.00
MS-38S	MS38S_20111110	SHALLOW	2011	11/10/2011	0.00	194.00
MS-39S	057-MW-39S-01	SHALLOW	1999	11/12/1999	1.00	200.00
MS-39S	MS39S-03_R03	SHALLOW	2003	3/18/2003	1.10	350.00
MS-39S	MS39S-03_R10	SHALLOW	2003	10/15/2003	0.68	38.00
MS-39S	MS39S-04_R09	SHALLOW	2004	9/30/2004	0.00	8.70
MS-39S	MS39S-05_R11	SHALLOW	2005	11/18/2005	0.47	68.00
MS-39S	MS39S-20061019	SHALLOW	2006	10/19/2006	0.61	136.00
MS-40I	057-MW-40I-01	SHALLOW	1999	12/3/1999	4.70	9.40
MS-40I	MS-40I-00_R10	SHALLOW	2000	10/21/2000	1.20	1.10
MS-40I	MS40I-01_R11	SHALLOW	2001	11/30/2001	3.70	5.30
MS-40I	MS40I-03_R03	SHALLOW	2003	3/14/2003	2.20	6.00
MS-40S	057-MW-40S-01	SHALLOW	1999	12/3/1999	2.90	8.10
MS-40S	MS40S-03_R03	SHALLOW	2003	3/18/2003	1.70	5.28
MS-40S	MS40S-03_R10	SHALLOW	2003	10/9/2003	2.30	4.03
MS-40S	MS40S-04_R09	SHALLOW	2004	9/29/2004	1.80	4.50
MS-40S	MS40S-05_R11	SHALLOW	2005	11/15/2005	0.94	1.63
MS-40S	MS40S-20061020	SHALLOW	2006	10/20/2006	1.60	2.44
MS-40S	MS40S_20071023	SHALLOW	2007	10/23/2007	1.50	4.80
MS-40S	MS40S_20081024	SHALLOW	2008	10/24/2008	1.20	3.57
MS-40S	MS40S_20090929	SHALLOW	2009	9/29/2009	1.60	4.87

MS-40S	MS40S_20101021	SHALLOW	2010	10/21/2010	0.86	2.59
MS-40S	MS40S_20111114	SHALLOW	2011	11/14/2011	0.43	0.68
MS-41S	057-MW-41S-01	SHALLOW	1999	12/2/1999	1.10	26.00
MS-41S	MS-41S-00_R10	SHALLOW	2000	10/21/2000	0.00	15.00
MS-41S	MS41S-01_R11	SHALLOW	2001	11/30/2001	0.00	37.50
MS-41S	MS41S-03_R03	SHALLOW	2003	3/17/2003	0.56	70.70
MS-41S	MS41S-03_R03-AVG	SHALLOW	2003	3/17/2003	0.54	70.55
MS-41S	MS41S-03_R03-D	SHALLOW	2003	3/17/2003	0.51	70.40
MS-41S	MS41S-03_R06	SHALLOW	2003	6/12/2003	0.00	72.00
MS-41S	MS41S-03_R10	SHALLOW	2003	10/15/2003	7.10	2.94
MS-41S	MS41S-04_R03	SHALLOW	2004	3/24/2004	0.38	17.70
MS-41S	MS41S-04_R09	SHALLOW	2004	9/30/2004	0.39	55.30
MS-41S	MS41S-05_R11	SHALLOW	2005	11/16/2005	0.28	15.60
MS-41S	MS41S-20060517	SHALLOW	2006	5/17/2006	0.31	12.20
MS-41S	MS41S-20061023	SHALLOW	2006	10/23/2006	0.28	7.55
MS-41S	MS41S_20080428	SHALLOW	2008	4/28/2008	0.25	16.10
MS-41S	MS41S_20081022	SHALLOW	2008	10/22/2008	0.25	11.98
MS-41S	MS41S_20081022-AVG	SHALLOW	2008	10/22/2008	0.25	11.99
MS-41S	MS41S_20081022-D	SHALLOW	2008	10/22/2008	0.25	12.00
MS-41S	MS41S_20090414	SHALLOW	2009	4/14/2009	0.31	47.30
MS-41S	MS41S_20091001	SHALLOW	2009	10/1/2009	0.30	81.40
MS-41S	MS41S_20101027	SHALLOW	2010	10/27/2010	0.17	24.70
MS-41S	MS41S_20111116	SHALLOW	2011	11/16/2011	0.00	4.21
MS-42I	057-MW-42I-01	SHALLOW	1999	11/14/1999	1.00	7.00
MS-42I	MS42I-03_R03	SHALLOW	2003	3/13/2003	0.00	2.90
MS-42I	MS42I-03_R10	SHALLOW	2003	10/9/2003	0.32	3.40
MS-42I	MS42I-04_R09	SHALLOW	2004	9/24/2004	0.00	1.70
MS-42I	MS42I-05_R11	SHALLOW	2005	11/9/2005	0.20	1.40
MS-42I	MS42I-20061012	SHALLOW	2006	10/12/2006	0.18	1.90
MS-42I	MS42I_20080428	SHALLOW	2008	4/28/2008	0.20	1.90
MS-42I	MS42I_20081017	SHALLOW	2008	10/17/2008	0.18	1.50
MS-42I	MS42I_20090414	SHALLOW	2009	4/14/2009	0.21	1.30
MS-42I	MS42I_20090923	SHALLOW	2009	9/23/2009	0.13	1.00
MS-42I	MS42I_20101008	SHALLOW	2010	10/8/2010	0.10	1.00
MS-42I	MS42I_20111101	SHALLOW	2011	11/1/2011	0.11	2.00
MS-43S	057-MW-43S-01	SHALLOW	1999	12/4/1999	1.40	23.00
MS-43S	MS-43S-00_R10	SHALLOW	2000	10/23/2000	0.00	16.00
MS-43S	MS43S-01_R12	SHALLOW	2001	12/4/2001	0.00	22.60
MS-43S	MS43S-03_R03	SHALLOW	2003	3/19/2003	0.00	22.60
MS-43S	MS43S-03_R10	SHALLOW	2003	10/15/2003	0.00	28.90
MS-43S	MS43S-04_R09	SHALLOW	2004	9/30/2004	0.00	39.00
MS-43S	MS43S-05_R11	SHALLOW	2005	11/15/2005	0.00	53.30
MS-43S	MS43S-20061025	SHALLOW	2006	10/25/2006	0.00	58.90
MS-43S	MS43S_20071026	SHALLOW	2007	10/26/2007	0.00	60.30
MS-43S	MS43S_20080429	SHALLOW	2008	4/29/2008	0.00	56.40
MS-43S	MS43S_20080429-AVG	SHALLOW	2008	4/29/2008	0.00	56.40
MS-43S	MS43S_20080429-D	SHALLOW	2008	4/29/2008	0.00	56.40
MS-43S	MS43S_20081028	SHALLOW	2008	10/28/2008	0.00	48.20
MS-43S	MS43S_20090415	SHALLOW	2009	4/15/2009	0.00	43.00
MS-43S	MS43S_20091002	SHALLOW	2009	10/2/2009	0.00	28.50
MS-43S	MS43S_20101029	SHALLOW	2010	10/29/2010	0.00	37.40
MS-43S	MS43S_20111109	SHALLOW	2011	11/9/2011	0.00	38.70

MS-44S	057-MW-44S-01	SHALLOW	1999	11/15/1999	0.00	31.00
MS-44S	MS-44S-00_R10	SHALLOW	2000	10/10/2000	0.00	36.00
MS-44S	MS-44S-00_R10-AVG	SHALLOW	2000	10/10/2000	0.00	36.50
MS-44S	MS-44S-00_R10-D	SHALLOW	2000	10/10/2000	0.00	37.00
MS-44S	MS44S-01_R11	SHALLOW	2001	11/30/2001	0.00	48.20
MS-44S	MS44S-03_R03	SHALLOW	2003	3/19/2003	0.00	53.40
MS-44S	MS44S-03_R06	SHALLOW	2003	6/12/2003	0.00	50.30
MS-44S	MS44S-03_R10	SHALLOW	2003	10/15/2003	0.00	49.30
MS-44S	MS44S-04_R03	SHALLOW	2004	3/25/2004	0.00	46.50
MS-44S	MS44S-04_R10	SHALLOW	2004	10/1/2004	0.00	40.20
MS-44S	MS44S-05_R11	SHALLOW	2005	11/15/2005	0.16	25.20
MS-44S	MS44S-05_R11-AVG	SHALLOW	2005	11/15/2005	0.15	24.10
MS-44S	MS44S-05_R11-D	SHALLOW	2005	11/15/2005	0.14	23.00
MS-44S	MS44S-20060517	SHALLOW	2006	5/17/2006	0.28	16.40
MS-44S	MS44S-20061023	SHALLOW	2006	10/23/2006	0.00	22.80
MS-44S	MS44S_20071024	SHALLOW	2007	10/24/2007	0.00	28.30
MS-44S	MS44S_20080429	SHALLOW	2008	4/29/2008	0.00	19.90
MS-44S	MS44S_20081024	SHALLOW	2008	10/24/2008	0.00	16.30
MS-44S	MS44S_20090414	SHALLOW	2009	4/14/2009	0.00	21.60
MS-44S	MS44S_20090929	SHALLOW	2009	9/29/2009	0.00	22.00
MS-44S	MS44S_20101027-AVG	SHALLOW	2010	10/27/2010	0.00	10.24
MS-44S	MS44S_20111107	SHALLOW	2011	11/7/2011	0.00	10.15
MS-45S	057-MW-45S-01	SHALLOW	1999	12/3/1999	0.70	350.00
MS-45S	MS-45S-00_R10	SHALLOW	2000	10/26/2000	0.00	340.00
MS-45S	MS45S-01_R12	SHALLOW	2001	12/6/2001	0.00	270.00
MS-45S	MS45S-03_R03	SHALLOW	2003	3/20/2003	0.00	670.00
MS-45S	MS45S-03_R10	SHALLOW	2003	10/15/2003	0.00	610.00
MS-45S	MS45S-03_R10-AVG	SHALLOW	2003	10/15/2003	0.00	605.00
MS-45S	MS45S-03_R10-D	SHALLOW	2003	10/15/2003	0.00	600.00
MS-45S	MS45S-04_R09	SHALLOW	2004	9/30/2004	0.00	642.00
MS-45S	MS45S-05_R11	SHALLOW	2005	11/16/2005	0.00	337.00
MS-45S	MS45S-20061026	SHALLOW	2006	10/26/2006	0.00	342.00
MS-45S	MS45S_20071029	SHALLOW	2007	10/29/2007	0.00	288.00
MS-45S	MS45S_20081028	SHALLOW	2008	10/28/2008	0.00	321.00
MS-45S	MS45S_20090416	SHALLOW	2009	4/16/2009	0.00	157.00
MS-45S	MS45S_20091005	SHALLOW	2009	10/5/2009	0.00	253.00
MS-45S	MS45S_20101029	SHALLOW	2010	10/29/2010	0.00	216.00
MS-45S	MS45S_20110215	SHALLOW	2011	2/15/2011	0.00	210.00
MS-45S	MS45S_20110509	SHALLOW	2011	5/9/2011	0.00	167.00
MS-45S	MS45S_20110815	SHALLOW	2011	8/15/2011	0.00	144.00
MS-45S	MS45S_20110815-AVG	SHALLOW	2011	8/15/2011	0.00	144.00
MS-45S	MS45S_20110815-D	SHALLOW	2011	8/15/2011	0.00	144.00
MS-45S	MS45S_20111109	SHALLOW	2011	11/9/2011	0.00	206.00
MS-45S	MS45S_20111109-AVG	SHALLOW	2011	11/9/2011	0.00	216.00
MS-45S	MS45S_20111109-D	SHALLOW	2011	11/9/2011	0.00	226.00
MS-46S	057-MW-46S-01	SHALLOW	1999	11/14/1999	1.00	410.00
MS-46S	MS-46S-00_R10	SHALLOW	2000	10/26/2000	0.00	240.00
MS-46S	MS46S-01_R12	SHALLOW	2001	12/6/2001	0.00	280.00
MS-46S	MS46S-03_R10	SHALLOW	2003	10/16/2003	0.00	194.00
MS-46S	MS46S-04_R10	SHALLOW	2004	10/1/2004	0.00	210.00
MS-46S	MS46S-20061026	SHALLOW	2006	10/26/2006	0.00	162.00
MS-46S	MS46S_20090416	SHALLOW	2009	4/16/2009	0.00	65.00

MS-46S	MS46S_20091006	SHALLOW	2009	10/6/2009	0.00	86.00
MS-46S	MS46S_20101101	SHALLOW	2010	11/1/2010	0.20	90.00
MS-46S	MS46S_20110215	SHALLOW	2011	2/15/2011	0.00	66.00
MS-46S	MS46S_20110510	SHALLOW	2011	5/10/2011	0.00	61.00
MS-46S	MS46S_20110816	SHALLOW	2011	8/16/2011	0.00	51.00
MS-46S	MS46S_20111110	SHALLOW	2011	11/10/2011	0.00	41.00
MS-47S	057-MW-47S-01	SHALLOW	1999	12/6/1999	1.50	29.00
MS-47S	057-MW-47S-01-AVG	SHALLOW	1999	12/6/1999	1.45	28.50
MS-47S	057-MW-47S-01-D	SHALLOW	1999	12/6/1999	1.40	28.00
MS-47S	MS-47S-00_R10	SHALLOW	2000	10/10/2000	0.00	16.00
MS-47S	MS47S-01_R11	SHALLOW	2001	11/30/2001	0.00	19.30
MS-47S	MS47S-03_R10	SHALLOW	2003	10/16/2003	1.20	5.85
MS-47S	MS47S-04_R09	SHALLOW	2004	9/30/2004	0.88	5.00
MS-47S	MS47S-05_R11	SHALLOW	2005	11/11/2005	1.10	2.64
MS-47S	MS47S-20061018	SHALLOW	2006	10/18/2006	0.71	3.11
MS-47S	MS47S_20071022	SHALLOW	2007	10/22/2007	0.86	3.04
MS-47S	MS47S_20081022	SHALLOW	2008	10/22/2008	0.79	5.28
MS-47S	MS47S_20090414	SHALLOW	2009	4/14/2009	0.64	4.69
MS-47S	MS47S_20090928	SHALLOW	2009	9/28/2009	0.81	3.65
MS-47S	MS47S_20101018	SHALLOW	2010	10/18/2010	0.64	34.60
MS-47S	MS47S_20111108	SHALLOW	2011	11/8/2011	0.28	7.99
MS-49S	057-MW-49S-01	SHALLOW	1999	12/5/1999	0.50	39.00
MS-49S	MS-49S-00_R10	SHALLOW	2000	10/10/2000	0.00	33.00
MS-49S	MS49S-01_R11	SHALLOW	2001	11/30/2001	0.00	12.10
MS-49S	MS49S-03_R03	SHALLOW	2003	3/17/2003	0.44	12.94
MS-49S	MS49S-03_R10	SHALLOW	2003	10/13/2003	0.58	31.30
MS-49S	MS49S-04_R09	SHALLOW	2004	9/30/2004	0.00	9.15
MS-49S	MS49S-04_R09-AVG	SHALLOW	2004	9/30/2004	0.00	10.13
MS-49S	MS49S-04_R09-D	SHALLOW	2004	9/30/2004	0.00	11.00
MS-49S	MS49S-05_R11	SHALLOW	2005	11/15/2005	0.40	6.63
MS-49S	MS49S-20061020	SHALLOW	2006	10/20/2006	0.57	13.00
MS-49S	MS49S_20071026	SHALLOW	2007	10/26/2007	0.37	5.52
MS-49S	MS49S_20081024	SHALLOW	2008	10/24/2008	0.26	10.13
MS-49S	MS49S_20090930	SHALLOW	2009	9/30/2009	0.48	6.90
MS-49S	MS49S_20101028	SHALLOW	2010	10/28/2010	0.28	34.10
MS-49S	MS49S_20111108	SHALLOW	2011	11/8/2011	0.16	46.10
MS-49S	MS49S_20111108-AVG	SHALLOW	2011	11/8/2011	0.16	45.45
MS-49S	MS49S_20111108-D	SHALLOW	2011	11/8/2011	0.15	44.80
MS-52S	057-MW-52S-01	SHALLOW	1999	12/1/1999	0.70	3.00
MS-52S	MS-52S-00_R10	SHALLOW	2000	10/21/2000	0.00	0.00
MS-52S	MS52S-01_R12	SHALLOW	2001	12/3/2001	0.00	2.80
MS-52S	MS52S-03_R03	SHALLOW	2003	3/18/2003	1.30	2.81
MS-52S	MS52S-03_R10	SHALLOW	2003	10/14/2003	2.20	2.34
MS-52S	MS52S-04_R09	SHALLOW	2004	9/29/2004	1.70	2.60
MS-52S	MS52S-05_R11	SHALLOW	2005	11/10/2005	1.20	1.43
MS-52S	MS52S-20061017	SHALLOW	2006	10/17/2006	1.10	2.03
MS-52S	MS52S_20071022	SHALLOW	2007	10/22/2007	1.80	2.36
MS-52S	MS52S_20071022-AVG	SHALLOW	2007	10/22/2007	1.75	2.35
MS-52S	MS52S_20071022-D	SHALLOW	2007	10/22/2007	1.70	2.33
MS-52S	MS52S_20081024	SHALLOW	2008	10/24/2008	1.40	2.47
MS-52S	MS52S_20090930	SHALLOW	2009	9/30/2009	1.50	2.69
MS-52S	MS52S_20101027	SHALLOW	2010	10/27/2010	1.30	4.45

MS-52S	MS52S_20111107	SHALLOW	2011	11/7/2011	0.76	0.35
MS-54S	MS54S-05_R11	SHALLOW	2005	11/17/2005	0.00	300.00
MS-54S	MS54S-20061026	SHALLOW	2006	10/26/2006	0.28	89.00
MS-54S	MS54S-K0705423_2007062	SHALLOW	2007	6/22/2007	0.00	328.00
MS-54S	MS54S_20071026	SHALLOW	2007	10/26/2007	0.25	163.00
MS-54S	MS54S_20080430	SHALLOW	2008	4/30/2008	0.00	256.00
MS-54S	MS54S_20081030	SHALLOW	2008	10/30/2008	0.00	292.00
MS-54S	MS54S_20090415	SHALLOW	2009	4/15/2009	0.00	360.00
MS-54S	MS54S_20091007	SHALLOW	2009	10/7/2009	0.00	310.00
MS-54S	MS54S_20101101	SHALLOW	2010	11/1/2010	0.00	380.00
MS-54S	MS54S_20110215	SHALLOW	2011	2/15/2011	0.00	206.00
MS-54S	MS54S_20110510	SHALLOW	2011	5/10/2011	0.00	185.00
MS-54S	MS54S_20110817	SHALLOW	2011	8/17/2011	0.00	218.00
MS-54S	MS54S_20111117	SHALLOW	2011	11/17/2011	0.55	610.00
MS-56S	MS56S-05_R11	SHALLOW	2005	11/18/2005	0.32	470.00
MS-56S	MS56S-20061026	SHALLOW	2006	10/26/2006	0.00	1100.00
MS-56S	MS56S-K0705423_2007062	SHALLOW	2007	6/21/2007	0.44	630.00
MS-56S	MS56S_20071025	SHALLOW	2007	10/25/2007	0.44	740.00
MS-56S	MS56S_20080430	SHALLOW	2008	4/30/2008	0.22	730.00
MS-56S	MS56S_20081028	SHALLOW	2008	10/28/2008	0.00	710.00
MS-56S	MS56S_20090416	SHALLOW	2009	4/16/2009	0.33	640.00
MS-56S	MS56S_20091005	SHALLOW	2009	10/5/2009	0.00	488.00
MS-56S	MS56S_20101028	SHALLOW	2010	10/28/2010	0.00	482.00
MS-56S	MS56S_20110817	SHALLOW	2011	8/17/2011	0.00	496.00
MS-56S	MS56S_20111116	SHALLOW	2011	11/16/2011	0.00	483.00
PES-CW-2	PESCW02_20090415	SHALLOW	2009	4/15/2009	0.50	7.18
PES-CW-2	PESCW02_20090415-AVG	SHALLOW	2009	4/15/2009	0.48	7.12
PES-CW-2	PESCW02_20090415-D	SHALLOW	2009	4/15/2009	0.46	7.06
PES-CW-2	PESCW02_20091001	SHALLOW	2009	10/1/2009	0.71	3.55
PES-CW-2	PESCW02_20101028	SHALLOW	2010	10/28/2010	0.63	7.42
PES-CW-2	PESCW02_20111107	SHALLOW	2011	11/7/2011	0.29	4.12
USGS-2	057-MW-USGS-2	SHALLOW	1999	12/1/1999	1.10	0.70
USGS-2	MS-USGS2-00_R10	SHALLOW	2000	10/21/2000	0.00	0.00
USGS-2	MSUS62-01_R11	SHALLOW	2001	11/30/2001	0.00	0.00
USGS-2	MSUSGS2-03_R03	SHALLOW	2003	3/13/2003	0.00	0.00
USGS-2	MSUSGS02-04_R09	SHALLOW	2004	9/23/2004	0.00	0.97
USGS-2	USGS02-20061017	SHALLOW	2006	10/17/2006	0.15	1.60
USGS-2	USGS02-20061017-AVG	SHALLOW	2006	10/17/2006	0.15	1.60
USGS-2	USGS02-20061017-D	SHALLOW	2006	10/17/2006	0.15	1.60
USGS-2	USGS02_20071019	SHALLOW	2007	10/19/2007	0.19	1.60
USGS-2	USGS02_20081023	SHALLOW	2008	10/23/2008	0.13	2.40
USGS-2	USGS02_20090414	SHALLOW	2009	4/14/2009	0.09	2.26
USGS-2	USGS02_20090924	SHALLOW	2009	9/24/2009	0.07	2.53
USGS-2	USGS02_20101012	SHALLOW	2010	10/12/2010	0.00	2.33
USGS-2	USGS02_20111110	SHALLOW	2011	11/10/2011	0.00	2.95
USGS-4	057-MW-USGS-4	SHALLOW	1999	11/16/1999	1.00	0.00
USGS-5	057-MW-USGS-5	SHALLOW	1999	11/16/1999	0.00	0.00
USGS-5	057-MW-USGS-5-AVG	SHALLOW	1999	11/16/1999	0.00	0.00
USGS-5	057-MW-USGS-5-D	SHALLOW	1999	11/16/1999	0.00	0.00
USGS-5	MS-USGS5-00_R10	SHALLOW	2000	10/10/2000	0.00	0.00
USGS-5	MSUSGS-5-01_R11	SHALLOW	2001	11/28/2001	0.00	0.00
USGS-5	MSUSGS5-03_R03	SHALLOW	2003	3/11/2003	0.00	0.00

USGS-5	**USGS5-03_R10**	**SHALLOW**	**2003**	**10/7/2003**	0.00	0.00
USGS-5	**USGS5-04_R09**	**SHALLOW**	**2004**	**9/27/2004**	0.00	0.00
USGS-5	**USGS5-05_R11**	**SHALLOW**	**2005**	**11/8/2005**	0.00	0.00
USGS-5	**USGS5-20061009**	**SHALLOW**	**2006**	**10/9/2006**	0.17	0.00
USGS-5	**USGS05_20071016**	**SHALLOW**	**2007**	**10/16/2007**	0.16	0.00
USGS-5	**USGS05_20081014**	**SHALLOW**	**2008**	**10/14/2008**	0.20	0.00
USGS-5	**USGS05_20090922**	**SHALLOW**	**2009**	**9/22/2009**	0.15	0.00
USGS-5	**USGS05_20101006**	**SHALLOW**	**2010**	**10/6/2010**	0.18	0.00
USGS-5	**USGS05_20111101**	**SHALLOW**	**2011**	**11/1/2011**	0.13	0.00
USGS-8	**057-MW-USGS-8**	**SHALLOW**	**1999**	**12/4/1999**	0.00	0.00
USGS-8	**MS-USGS8-00_R10**	**SHALLOW**	**2000**	**10/21/2000**	0.00	0.00
USGS-8	**MSUS6-8-01_R11**	**SHALLOW**	**2001**	**11/28/2001**	0.00	0.00
USGS-8	**MSUSGS8-03_R03**	**SHALLOW**	**2003**	**3/12/2003**	0.00	0.00
USGS-8	**MSUSGS8-03_R10**	**SHALLOW**	**2003**	**10/7/2003**	0.00	0.00
USGS-8	**MSUSGS08-04_R09**	**SHALLOW**	**2004**	**9/23/2004**	1.20	98.99
USGS-8	**USGS08-05_R11**	**SHALLOW**	**2005**	**11/8/2005**	0.00	0.00
USGS-8	**USGS08-20061011**	**SHALLOW**	**2006**	**10/11/2006**	0.00	0.00
USGS-8	**USGS08_20081020**	**SHALLOW**	**2008**	**10/20/2008**	0.00	0.00
USGS-8	**USGS08_20101006**	**SHALLOW**	**2010**	**10/6/2010**	0.00	0.00

Chart VOC	Chart TCE	Chart VC
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
6.50	0.00	0.00
4.00	4.00	0.00
4.00	4.00	0.00
0.00	0.00	0.00
1.00	1.00	0.00
343.00	330.00	0.00
343.00	330.00	0.00
4.00	0.00	0.00
27.80	20.00	0.00
6.00	3.00	0.00
5.00	2.50	0.00
4.00	2.00	0.00
9.00	5.00	0.00
9.30	5.00	0.00
9.30	5.00	0.00
7.30	4.00	0.00
7.30	4.00	0.00
7.00	4.00	0.00
7.00	5.00	0.00
7.00	4.50	0.00
7.00	4.00	0.00
6.00	4.00	0.00
7.00	5.00	0.00
5.80	4.90	0.00
11.00	11.00	0.00
36.50	32.00	0.00
34.10	31.00	0.00
11.00	11.00	0.00
34.00	30.00	0.00
22.00	20.00	0.00
33.10	28.00	0.00
32.10	24.00	0.00
36.00	14.00	0.00
27.60	20.00	0.00
42.50	24.00	0.00
87.85	35.00	0.00
87.89	35.00	0.00
87.92	35.00	0.00
82.73	33.00	0.00
87.26	36.00	0.00
98.96	33.00	0.00
80.33	33.00	0.00
66.60	27	0.12
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

0.00	0.00	0.00
1.00	1.00	0.00
0.80	0.80	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
1.53	0.64	0.00
10.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
2.90	2.90	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
4.00	4.00	0.00
3.00	3.00	0.00
3.00	3.00	0.00
3.00	3.00	0.00
2.00	2.00	0.00
2.00	2.00	0.00
2.00	2.00	0.00
2.00	2.00	0.00
2.00	2.00	0.00
2.00	2.00	0.00
2.00	2.00	0.00
1.00	1.00	0.00
1.00	1.00	0.00
0.70	0.70	0.00
1.00	1.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
45.00	45.00	0.00
208.00	200.00	0.00
55.00	53.00	0.00
91.40	83.00	0.00
77.95	70.00	0.00

63.60	57.00	0.00
22.00	18.00	0.00
21.00	17.00	0.00
14.60	12.00	0.00
11.50	9.00	0.00
14.30	12.00	0.00
15.80	14.00	0.00
22.00	22.00	0.00
15.70	13.00	0.00
14.80	12.00	0.00
13.90	11.00	0.00
23.00	18.00	0.00
32.00	28.00	0.00
72.50	60.00	0.00
90.70	73.00	0.00
82.70	64.00	0.00
130.60	110.00	0.00
142.80	120.00	0.00
159.20	130.00	0.00
111.50	88.00	0.00
149.20	120.00	0.00
138.70	110.00	0.00
47.60	35.00	0.00
83.90	65.00	0.00
39.30	30.00	0.00
37.20	30.00	0.00
37.98	31.00	0.00
39.80	32.00	0.00
35.40	29.00	0.00
42.83	34.00	0.00
47.52	37.00	0.00
24.95	20.00	0.00
28.89	22.00	0.00
27.23	22.00	0.00
19.27	16.00	0.00
17.36	15.00	0.00
24.00	20	0.00
14.00	14.00	0.00
571.60	550.00	0.00
430.00	410.00	0.00
360.00	340.00	0.00
108.00	97.00	0.00
71.60	64.00	0.00
51.50	47.00	0.00
21.00	18.00	0.00
39.50	37.00	0.00
43.60	41.00	0.00
25.00	25.00	0.00
25.50	24.00	0.00
19.10	18.00	0.00
20.00	20.00	0.00
29.50	28.00	0.00

31.10	29.00	0.00
32.20	30.00	0.00
29.00	28.00	0.00
26.50	23.00	0.00
16.10	14.00	0.00
22.50	19.00	0.00
41.20	34.00	0.00
69.35	59.00	0.00
76.60	65.00	0.00
50.30	41.00	0.00
43.80	37.00	0.00
39.20	30.00	0.00
2.90	0.00	0.00
45.70	35.00	0.00
41.85	32.00	0.00
40.27	28.00	0.00
28.10	20.00	0.00
32.00	24.00	0.00
31.72	23.00	0.00
30.43	22.00	0.05
34.44	25.00	0.00
36.41	27.00	0.00
36.14	27.00	0.00
33.18	24	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
2.80	2.00	0.00
1.20	1.20	0.00
0.00	0.00	0.00
4.60	1.90	0.00
17.20	0.00	0.00
20.60	2.90	0.00
15.35	2.30	0.00
8.40	1.70	0.00
24.00	0.00	0.00
23.20	2.20	0.00
40.00	2.70	0.00
46.20	5.50	0.00
14.20	8.70	0.00
52.30	4.50	0.00
65.10	3.80	0.00
43.00	3.60	0.00
26.10	3.30	0.00

0.00	0.00	0.00
0.00	0.00	0.00
10.00	10.00	0.00
5.00	5.00	0.00
5.00	5.00	0.00
9.20	9.20	0.00
9.20	9.20	0.00
31.00	31.00	0.00
31.00	31.00	0.00
9.00	9.00	0.00
37.00	37.00	0.00
6.70	4.00	0.00
5.20	4.50	0.00
4.30	4.30	0.00
7.80	6.00	0.00
10.10	6.40	0.00
9.40	6.30	0.00
6.20	3.70	0.00
7.90	5.80	0.00
7.50	4.40	0.00
7.30	4.50	0.00
9.80	5.80	0.00
31.39	4.45	0.00
52.98	3.10	0.00
8.30	4.20	0.00
9.22	4.20	0.12
9.34	4.10	0.15
9.34	4.80	0.15
9.71	4.10	0.14
8.25	3.70	0.11
10.00	10.00	0.00
23.00	23.00	0.00
13.00	13.00	0.00
17.00	17.00	0.00
14.00	14.00	0.00
12.00	12.00	0.00
12.00	12.00	0.00
8.00	8.00	0.00
8.00	8.00	0.00
20.00	20.00	0.00
14.00	14.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
2.00	2.00	0.00
2.00	2.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

0.00	0.00	0.00
2.00	2.00	0.00
2.00	2.00	0.00
2.00	2.00	0.00
3.40	3.00	0.00
3.00	3.00	0.00
2.70	2.70	0.00
1.60	1.60	0.00
2.10	0.00	0.00
1.60	1.60	0.00
2.50	0.00	0.00
4.20	1.70	0.00
4.00	1.80	0.00
7.50	3.70	0.00
5.60	1.50	0.00
9.30	1.60	0.00
9.30	1.50	0.00
9.30	1.40	0.00
9.98	1.60	0.10
9.35	1.60	0.10
7.93	1.50	0.08
5.75	1.30	0.00
5.57	1.4	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.36	0.00	0.00
0.38	0.00	0.00
0.39	0.00	0.00
0.12	0.00	0.00
0.75	0.00	0.00
0.69	0.00	0.00
1.89	0.15	0.00
6.00	6.00	0.00
6.70	6.70	0.00
11.00	11.00	0.00
11.00	11.00	0.00
0.00	0.00	0.00
9.20	9.20	0.00
2.00	2.00	0.00
1.50	1.50	0.00
1.00	1.00	0.00
28.00	28.00	0.00
27.50	27.50	0.00
27.00	27.00	0.00
9.00	9.00	0.00
113.00	110.00	0.00

42.00	40.00	0.00
43.10	40.50	0.00
43.60	41.00	0.00
81.00	78.00	0.00
26.00	26.00	0.00
17.00	17.00	0.00
13.00	13.00	0.00
12.00	12.00	0.00
12.70	12.00	0.00
12.70	12.00	0.00
12.00	12.00	0.00
12.70	12.00	0.00
13.75	13.00	0.00
14.80	14.00	0.00
10.00	10.00	0.00
14.00	13.00	0.00
15.00	14.00	0.00
13.00	12.00	0.00
9.50	8.60	0.00
6.30	5.60	0.00
4.60	4.60	0.00
3.40	3.40	0.00
6.10	3.70	0.00
17.57	13.00	0.00
1098.14	806.50	0.00
2177.70	1600.00	0.00
4.40	0.00	0.00
5.80	3.10	0.00
5.69	2.70	0.00
8.57	4.60	0.00
1.40	0.00	0.00
5.90	2.00	0.00
5.70	2.10	0.00
5.00	2.20	0.00
9.30	5.30	0.00
8.28	1.90	0.00
8.50	1.60	0.00
7.45	1.70	0.08
7.69	1.70	0.00
8.11	2.50	0.06
7.13	2.40	0.09
6.52	2.10	0.09
4.60	1.40	0.00
9.41	5.9	0.080
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
62.00	45.00	0.00
54.00	40.00	0.00
54.50	41.00	0.00

55.00	42.00	0.00
1.00	1.00	0.00
1.50	1.50	0.00
16.80	13.00	0.00
10.40	8.20	0.00
35.00	29.00	0.00
38.90	30.00	0.00
42.90	36.00	0.00
31.10	26.00	0.00
26.50	22.00	0.00
23.10	17.00	0.00
2.20	2.20	0.00
8.40	6.70	0.00
8.40	6.75	0.00
8.40	6.80	0.00
22.10	20.00	0.00
21.76	19.00	0.00
21.76	19.00	0.00
21.75	19.00	0.00
13.76	11.00	0.00
16.70	14.00	0.00
12.46	9.30	0.00
16.84	14.00	0.05
16.19	13.00	0.09
18.36	15.00	0.08
17.11	14.00	0.00
14.83	12.00	0.00
17.05	14	0.00
5739.00	5700.00	0.00
10796.00	10700.00	0.00
10796.00	10700.00	0.00
10857.00	10800.00	0.00
10857.00	10800.00	0.00
14066.00	14000.00	0.00
21096.00	21000.00	0.00
25199.00	25000.00	0.00
22759.50	22500.00	0.00
20320.00	20000.00	0.00
31000.00	31000.00	0.00
30082.00	30000.00	0.00
24054.00	24000.00	0.00
6500.00	6500.00	0.00
3800.00	3800.00	0.00
3340.00	3300.00	0.00
2735.00	2700.00	0.00
1728.00	1700.00	0.00
1222.00	1200.00	0.00
1331.00	1300.00	0.00
1128.00	1100.00	0.00
584.00	570.00	0.00
385.90	370.00	0.00
370.40	355.00	0.00

354.00	340.00	0.00
240.00	220.00	0.00
141.10	110.00	0.00
114.40	95.00	0.00
234.90	180.00	0.00
128.70	110.00	0.00
144.18	120.00	0.00
128.70	110.00	0.00
105.20	90.00	0.00
85.88	67.00	0.00
89.10	70.00	0.00
81.50	23.00	0.00
79.25	23.00	0.00
76.50	23.00	0.00
37.00	0.00	0.00
82.80	72.00	0.00
80.17	66.00	0.00
66.37	50.00	0.00
44.90	31.00	0.00
55.43	38.00	0.00
53.83	37.00	0.00
52.23	36.00	0.00
63.79	47.00	0.00
45.26	31.00	0.00
57.72	44.00	0.00
45.10	32.00	0.00
74.22	63.00	0.00
52.18	43	0.00
263.00	250.00	0.00
714.60	650.00	0.00
714.60	650.00	0.00
170.60	150.00	0.00
170.60	150.00	0.00
74.00	60.00	0.00
93.00	78.00	0.00
87.50	73.00	0.00
82.00	68.00	0.00
60.00	50.00	0.00
55.80	47.00	0.00
51.60	44.00	0.00
289.00	260.00	0.00
296.00	265.00	0.00
303.00	270.00	0.00
192.00	170.00	0.00
131.90	110.00	0.00
90.00	77.00	0.00
49.60	41.00	0.00
61.90	52.00	0.00
58.90	49.00	0.00
56.00	47.00	0.00
40.90	34.00	0.00
31.00	27.00	0.00

35.00	28.00	0.00
33.90	28.00	0.00
19.00	17.00	0.00
18.50	15.00	0.00
16.90	13.00	0.00
12.50	11.00	0.00
14.70	13.00	0.00
123.00	100.00	0.00
113.10	92.00	0.00
123.50	93.00	0.00
82.40	63.00	0.00
89.10	72.00	0.00
79.75	62.00	0.00
86.68	68.00	0.00
10.30	0.00	0.00
45.80	37.00	0.00
30.49	26.00	0.00
23.76	20.00	0.00
28.16	24.00	0.00
28.83	24.00	0.00
21.94	18.00	0.00
23.76	19.00	0.00
23.69	19.00	0.00
23.62	19.00	0.00
18.41	15.00	0.00
18.31	15.00	0.00
15.59	13.00	0.00
11.92	9.9	0.00
441.00	430.00	0.00
518.00	510.00	0.00
718.00	710.00	0.00
957.00	920.00	0.00
585.50	560.00	0.00
716.00	680.00	0.00
452.00	420.00	0.00
487.20	460.00	0.00
556.00	530.00	0.00
509.30	480.00	0.00
498.40	470.00	0.00
153.60	140.00	0.00
272.10	260.00	0.00
64.17	59.00	0.00
203.77	190.00	0.00
244.85	230.00	0.00
378.14	360.00	0.00
331.85	310.00	0.00
282.26	260.00	0.13
211.57	190.00	0.15
269.62	240.00	0.20
411.21	380.00	0.16
389.26	360.00	0.23
462.75	430.00	0.30

552.60	520.00	0.28
450.86	420.00	0.28
358.63	330.00	0.24
353.69	325.00	0.24
348.74	320.00	0.24
327.45	300.00	0.18
343.02	315.00	0.17
358.58	330.00	0.16
231.16	210.00	0.17
79.60	61.00	0.00
1.20	0.00	0.00
125.80	89.00	0.00
106.91	41.00	0.00
101.57	40.00	0.00
77.76	33.00	0.00
80.07	30.00	0.00
57.04	26.00	0.00
47.34	22	0.00
48.40	22.50	0.00
49.46	23.00	0.00
5.30	1.80	0.00
8.34	1.30	0.10
3.10	0.72	0.00
19.60	13.00	0.00
35.43	24.00	0.00
34.90	23.50	0.00
34.37	23.00	0.00
24.23	18.00	0.00
179.60	150.00	0.40
92.40	69.00	0.00
156.43	120.00	0.33
184.96	170.00	0.09
97.30	88.00	0.07
151.15	140.00	0.00
64.42	58.00	0.00
67.42	62.00	0.00
99.49	91.00	0.00
1.90	0.70	0.00
4.13	1.30	0.09
4.44	0.89	0.08
5.85	1.20	0.10
5.18	1.10	0.00
5.52	1.20	0.00
4.66	1.1	0.00
9.10	3.40	0.00
2.60	0.00	0.00
4.50	1.50	0.00
10.45	3.70	0.00
7.91	1.70	0.11
6.72	1.50	0.09
6.26	1.30	0.00
7.73	2.20	0.10

11.90	4.7	0.11
32.30	7.50	0.00
21.60	0.00	0.00
23.50	7.20	0.00
11.75	4.80	0.00
10.61	4.40	0.00
9.49	3.70	0.00
8.96	3.70	0.00
6.73	3.10	0.00
6.25	2.7	0.00
7.60	3.10	0.00
14.40	10.00	0.00
11.49	5.30	0.00
11.59	5.30	0.00
11.68	5.30	0.00
11.30	5.10	0.00
9.86	3.60	0.10
10.06	3.90	0.09
102.00	98.00	0.00
0.00	0.00	0.00
103.20	100.00	0.00
90.03	84.00	0.00
61.27	53.00	0.00
64.00	50.00	0.00
64.00	50.00	0.00
64.00	50.00	0.00
115.61	92.00	0.10
185.48	160.00	0.10
114.04	93.00	0.13
110.98	86.00	0.09
127.22	110.00	0.09
41.52	35.00	0.90
47.03	37.00	0.08
41.08	28.00	0.00
90.99	77.00	0.00
29.30	20	0.00
54.50	49.00	0.00
23.40	21.00	0.00
62.80	58.00	0.00
86.44	79.00	0.00
65.00	59.00	0.00
45.85	38.00	0.00
32.10	26.00	0.00
32.10	26.00	0.00
32.80	26.50	0.00
33.50	27.00	0.00
33.32	27.00	0.12
31.57	25.50	0.11
29.81	24.00	0.09
33.00	27.00	0.10
36.34	30.00	0.12
27.72	20.00	0.14

33.09	24.00	0.11
31.99	22.00	0.11
44.62	31.00	0.90
49.51	37	0.00
154.30	120.00	0.00
25.20	0.00	0.00
133.40	110.00	0.00
100.06	81.00	0.00
49.52	44.00	0.00
43.70	39.00	0.00
53.26	46.00	0.00
41.27	35.00	0.00
41.20	35.00	0.00
41.12	35.00	0.00
38.95	31.00	0.00
39.60	31.50	0.04
40.23	32.00	0.06
34.35	30.00	0.00
27.36	24.00	0.00
20.17	18.00	0.00
17.43	15	0.00
43.80	29.00	0.00
55.83	41.00	0.00
47.10	36.00	0.00
46.52	35.00	0.00
40.56	31.00	0.00
26.50	22.00	0.00
38.12	30.00	0.00
39.29	30.00	0.00
38.90	29.00	0.05
40.93	31.00	0.00
43.44	32.00	0.00
40.21	28.00	0.00
31.43	22	0.00
6.70	2.20	0.00
6.70	2.20	0.00
6.70	2.20	0.00
21.10	17.00	0.00
16.84	5.50	0.00
12.60	3.60	0.00
6.01	1.60	0.00
10.76	3.10	0.08
9.16	2.50	0.09
7.54	2.00	0.08
5.94	1.50	0.09
5.95	1.50	0.09
5.95	1.50	0.09
11.28	6.50	0.11
20.49	16	0.090
351.00	340.00	0.00
85.00	83.00	0.00
191.80	180.00	0.00

253.31	220.00	0.00
253.32	220.00	0.00
253.33	220.00	0.00
104.20	88.00	0.00
20.27	15.00	0.00
24.63	20.00	0.08
34.42	28.00	0.11
24.24	19.00	0.12
20.01	14.00	0.09
19.99	14.00	0.10
19.96	14.00	0.11
21.68	13.00	0.12
20.80	12.00	0.00
81.38	61.00	0.090
74.20	62.00	0.00
1.30	0.00	0.00
57.90	46.00	0.00
59.65	47.00	0.00
60.90	48.00	0.00
58.47	48.00	0.00
57.07	43.00	0.00
41.90	33.00	0.00
50.27	39.00	0.06
47.63	36.00	0.00
47.63	36.00	0.00
47.62	36.00	0.00
44.45	33.00	0.07
47.56	36.00	0.00
52.18	39.00	0.08
44.21	33.00	0.00
38.83	29	0.00
8.10	4.70	0.00
2.10	0.00	0.00
2.15	0.00	0.00
2.20	0.00	0.00
8.50	6.30	0.00
13.08	10.00	0.00
5.30	4.10	0.00
0.82	0.00	0.00
4.95	2.00	0.00
4.97	3.80	0.00
4.31	3.40	0.00
4.76	3.60	0.00
4.94	3.90	0.00
6.01	4.90	0.00
12.39	10	0.00
4.70	2.20	0.00
3.60	1.90	0.00
3.30	1.80	0.00
3.03	2.30	0.00
3.14	2.50	0.00
2.95	2.40	0.00

2.87	2.3	0.00
35.00	20.00	0.00
30.43	16.00	0.00
29.23	16.00	0.00
25.88	12.00	0.00
25.84	12.50	0.00
25.76	13.00	0.00
15.29	8.00	0.00
13.97	7.4	0.00
0.90	0.90	0.00
0.50	0.50	0.00
3.00	0.00	0.00
2.00	0.00	0.00
5.00	2.10	0.00
16.57	0.47	0.00
10.00	0.00	0.00
10.00	0.00	0.00
10.00	0.00	0.00
10.00	0.00	0.00
7.10	0.00	0.00
7.25	0.00	0.00
7.40	0.00	0.00
11.00	3.80	0.00
10.85	3.55	0.00
10.70	3.30	0.00
13.00	0.00	0.00
0.00	0.00	0.00
2.38	0.48	0.00
1.68	0.38	0.00
1.26	0.34	0.00
1.43	0.44	0.00
1.74	0.54	0.00
1.83	0.63	0.00
71.00	35.00	0.00
78.00	44.00	0.00
76.00	32.00	0.00
76.00	32.00	0.00
46.00	35.00	0.00
46.00	35.00	0.00
25.00	22.00	0.00
25.00	25.00	0.00
753.00	250.00	0.00
212.94	77.00	0.31
326.12	89.00	0.08
200.55	47.00	0.00
172.42	33	0.00
55.00	53.00	0.00
72.00	62.00	0.00
2510.00	2000.00	0.00
1510.00	1300.00	0.00
2200.00	1700.00	0.00
1330.00	1100.00	0.00

1060.00	930.00	0.00
1210.00	1000.00	0.00
1000.00	850.00	0.00
66.00	34.00	0.00
628.80	380.00	1.80
398.10	190.00	4.00
274.60	120.00	2.60
217.90	95.00	4.60
267.00	110.00	2.20
238.00	93.00	1.70
244.10	96.00	1.70
250.20	99.00	1.70
207.70	70.00	1.10
224.90	75.00	1.80
220.30	72.00	1.80
212.40	58.00	1.20
152.92	44	0.52
158.92	44.50	0.52
164.91	45.00	0.51
348.00	160.00	1.80
67.20	11.00	0.20
98.50	79.00	0.00
44.44	7.10	0.00
35.08	26.00	0.06
215.60	65.00	1.70
49.50	41.00	0.00
34.22	30.00	0.00
135.08	51.00	0.00
25.80	21.00	0.00
25.01	22.00	0.00
21.50	19	0.00
19.00	19.00	0.00
930.00	860.00	0.00
1028.00	960.00	0.00
484.00	440.00	0.00
120.00	100.00	0.00
55.90	46.00	0.00
19.00	18.00	0.00
17.00	16.00	0.00
26.00	24.00	0.00
30.00	28.00	0.00
15.00	15.00	0.00
22.60	20.00	0.00
17.60	16.00	0.00
24.60	22.00	0.00
29.00	27.00	0.00
69.00	65.00	0.00
60.50	57.00	0.00
337.00	320.00	0.00
343.40	330.00	0.00
261.22	240.00	0.00
114.80	96.00	0.00

76.30	60.00	0.00
84.33	60.00	0.00
85.50	61.00	0.00
58.60	40.00	0.00
58.60	40.50	0.00
58.60	41.00	0.00
76.90	56.00	0.00
97.66	70.00	0.00
87.49	64.00	0.00
56.71	45.00	0.00
45.01	35.00	0.00
37.01	29.00	0.00
28.88	22.00	0.00
27.84	21.00	0.00
30.13	23.00	0.00
388.68	310.00	0.08
26.90	21.00	0.00
27.02	21.00	0.00
27.13	21.00	0.00
29.03	23.00	0.00
29.80	24.00	0.00
26.81	21	0.00
2110.00	2100.00	0.00
33096.00	33000.00	0.00
33596.00	33500.00	0.00
34000.00	34000.00	0.00
30000.00	30000.00	0.00
6650.00	6500.00	0.00
8790.00	8300.00	0.00
9599.00	9050.00	0.00
10394.00	9800.00	0.00
10160.00	10000.00	0.00
5190.30	5085.00	0.00
209.80	170.00	0.00
1540.00	1300.00	0.00
1435.00	1200.00	0.00
1330.00	1100.00	0.00
610.00	420.00	0.00
630.00	470.00	0.00
128.00	62.00	0.00
109.70	51.00	0.00
66.60	34.00	0.00
42.60	23.00	0.00
140.70	130.00	0.00
33.00	28.00	0.00
44.30	40.00	0.00
36.00	36.00	0.00
65.80	51.00	0.00
85.50	74.00	0.00
172.00	160.00	0.00
84.60	74.00	0.00
77.60	67.00	0.00

89.90	80.00	0.00
74.36	66.00	0.00
53.20	47.00	0.00
50.50	44.00	0.00
57.22	49.00	0.00
51.76	42.00	0.00
44.20	33.00	0.00
45.76	35.00	0.00
43.99	33.50	0.00
42.22	32.00	0.00
51.92	42.00	0.00
48.42	32.00	0.07
49.43	32.00	0.00
50.69	31.00	0.00
49.71	31.00	0.00
42.98	26	0.00
6400.00	6400.00	0.00
5160.00	5100.00	0.00
4700.00	4700.00	0.00
1849.00	1800.00	0.00
2600.00	2600.00	0.00
1004.00	980.00	0.00
320.00	300.00	0.00
296.00	280.00	0.00
258.00	250.00	0.00
336.00	330.00	0.00
113.00	110.00	0.00
228.00	220.00	0.00
186.00	180.00	0.00
215.00	210.00	0.00
1110.00	1100.00	0.00
950.00	940.00	0.00
962.50	950.00	0.00
975.00	960.00	0.00
1620.00	1600.00	0.00
1993.50	1950.00	0.00
2362.00	2300.00	0.00
3276.00	3100.00	0.00
2150.00	2000.00	0.00
3380.00	3200.00	0.00
4740.00	4200.00	0.00
4900.00	4500.00	0.00
5240.00	4700.00	0.00
5560.00	5200.00	0.00
4180.00	3600.00	0.00
400.00	230.00	0.00
267.00	230.00	0.00
64.30	55.00	0.00
63.90	54.50	0.00
63.50	54.00	0.00
67.76	27.00	0.00
589.45	550.00	0.00

25.39	0.29	0.00
24.71	17.00	0.00
25.17	17.50	0.00
25.63	18.00	0.00
367.35	290.00	0.16
269.58	210.00	0.57
17.21	13.00	0.00
17.14	12.00	0.00
49.92	36	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.80	0.00	0.00
0.00	0.00	0.00
12.00	10.00	0.00
35.00	30.00	0.00
2.00	2.00	0.00
0.80	0.80	0.00
2.00	2.00	0.00
2.00	2.00	0.00
4.00	4.00	0.00
6.00	6.00	0.00
7.00	7.00	0.00
4.00	4.00	0.00
5.00	5.00	0.00
4.00	4.00	0.00
3.60	3.00	0.00
0.90	0.90	0.00
2.00	2.00	0.00
0.00	0.00	0.00
3.40	3.40	0.00
0.00	0.00	0.00
13.69	0.69	0.00
27.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
7.10	7.10	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
25.00	21.00	0.00
22.00	20.00	0.00
23.70	21.00	0.00
24.70	22.00	0.00
5.10	5.10	0.00
1.00	1.00	0.00
4.90	4.90	0.00
13.20	3.20	0.00

46.30	43.00	0.00
81.34	76.00	0.00
54.30	50.00	0.00
47.10	46.00	0.00
19.00	19.00	0.00
47.48	45.00	0.00
42.50	41.00	0.00
47.90	46.00	0.00
18.10	17.00	0.00
37.54	34.00	0.00
10.40	8.70	0.00
12.59	8.70	0.00
11.00	7.5	0.00
3444.90	2700.00	0.00
3444.90	2700.00	0.00
3098.00	2700.00	0.00
3104.00	2700.00	0.00
3106.00	2700.00	0.00
4557.00	3500.00	0.00
1596.00	1500.00	0.00
1176.00	1100.00	0.00
1482.00	1400.00	0.00
1433.50	1350.00	0.00
1385.00	1300.00	0.00
642.00	580.00	0.00
150.70	120.00	0.00
67.00	51.00	0.00
29.30	23.00	0.00
15.40	12.00	0.00
17.50	15.00	0.00
16.90	14.00	0.00
11.00	9.00	0.00
11.00	9.00	0.00
10.00	8.00	0.00
9.00	8.00	0.00
4.80	4.00	0.00
6.10	5.30	0.00
4.60	4.60	0.00
5.30	5.30	0.00
58.40	51.00	0.00
86.80	77.00	0.00
5.30	5.30	0.00
74.50	68.00	0.00
43.30	37.00	0.00
64.70	59.00	0.00
49.00	42.00	0.00
78.20	69.00	0.00
9.20	7.50	0.00
55.10	43.00	0.00
74.66	50.00	0.00
77.11	49.00	0.00
76.10	43.00	0.00

91.15	52.00	0.00
95.10	61.00	0.00
87.39	50.00	0.00
71.75	34.00	0.00
73.62	29.00	0.00
60.56	28.00	0.00
57.62	28	0.00
8412.00	8100.00	0.00
8412.00	8100.00	0.00
8070.00	7200.00	0.00
7220.00	6400.00	0.00
7943.00	6900.00	0.00
8880.00	7900.00	0.00
8400.00	7200.00	0.00
5310.00	5100.00	0.00
5345.00	5150.00	0.00
5380.00	5200.00	0.00
5500.00	5000.00	0.00
4520.00	4200.00	0.00
4180.00	3900.00	0.00
4910.00	4600.00	0.00
4840.00	4600.00	0.00
5010.00	4800.00	0.00
3040.00	2900.00	0.00
3430.00	3300.00	0.00
3198.00	3100.00	0.00
1856.00	1800.00	0.00
1550.00	1500.00	0.00
1430.00	1400.00	0.00
799.00	780.00	0.00
1016.00	1000.00	0.00
2245.60	2200.00	0.00
1428.00	1400.00	0.00
3800.00	3700.00	0.00
1900.00	1800.00	0.00
1979.00	1900.00	0.00
1006.50	920.00	0.00
1053.00	1000.00	0.00
906.03	850.00	0.00
502.30	220.00	0.00
433.70	360.00	0.00
458.70	350.00	0.00
373.30	310.00	0.00
372.95	305.00	0.00
372.60	300.00	0.00
342.67	240.00	0.00
428.90	300.00	0.00
327.10	190.00	0.00
280.20	190.00	0.00
308.44	230.00	0.08
336.71	260.00	0.09
323.75	240.00	0.15

316.04	230.00	0.20
309.92	250.00	0.16
281.61	230.00	0.13
296.11	250.00	0.10
9058.00	7100.00	0.00
9058.00	7100.00	0.00
392.00	330.00	0.00
529.00	420.00	0.00
2909.00	2200.00	0.00
2834.00	2150.00	0.00
2759.00	2100.00	0.00
1976.00	1500.00	0.00
933.00	460.00	0.00
1255.00	950.00	0.00
317.00	160.00	0.00
176.00	100.00	0.00
87.40	50.00	0.00
49.00	30.00	0.00
38.00	29.00	0.00
38.00	31.00	0.00
30.00	23.00	0.00
22.90	18.00	0.00
14.30	11.00	0.00
17.60	10.00	0.00
21.00	11.00	0.00
22.95	12.00	0.00
23.50	13.00	0.00
13.10	9.10	0.00
11.10	7.50	0.00
10.60	5.90	0.00
46.10	39.00	1.10
10.60	5.90	0.00
66.58	56.00	0.00
68.80	54.00	0.00
30.40	29.00	0.00
57.20	50.00	0.00
48.20	39.00	0.00
13.60	9.30	0.00
3.68	3.10	0.00
5.43	4.60	0.00
3.64	2.80	0.00
2.67	1.90	0.00
3.56	2.90	0.00
3.35	2.8	0.00
5100.00	4700.00	2.90
4314.40	4000.00	1.60
4042.45	3700.00	0.65
1025.42	600.00	0.92
644.50	350.00	2.70
663.20	330.00	0.00
398.51	170.00	0.91
588.14	360.00	0.54

448.00	220.00	2.20
622.62	310.00	0.92
516.50	260.00	2.00
472.40	210.00	1.60
346.18	150.00	0.78
356.50	140.00	1.00
245.00	83.00	1.5
454.00	380.00	0.00
576.00	490.00	0.00
342.05	291.00	0.00
108.10	92.00	0.00
1382.50	1200.00	1.50
841.24	730.00	0.60
736.10	630.00	1.10
732.39	625.00	1.15
728.57	620.00	1.20
938.12	840.00	0.83
898.06	800.00	0.79
858.00	760.00	0.75
788.64	690.00	1.00
617.06	530.00	0.90
454.80	390.00	0.78
431.99	100.00	0.88
685.26	550.00	1.30
477.74	400.00	0.72
518.19	390.00	1.00
278.47	205.00	0.49
310.82	240.00	0.68
289.74	220.00	0.58
260.70	190.00	0.43
221.21	170.00	0.30
26066.30	26000.00	0.00
15220.00	15000.00	0.00
13000.00	13000.00	0.00
11283.00	11000.00	0.00
11270.00	11000.00	0.00
11790.00	11500.00	0.00
12310.00	12000.00	0.00
9800.00	9500.00	0.00
5636.50	5450.00	0.00
1473.00	1400.00	0.00
8650.00	8400.00	0.00
8790.00	8500.00	0.00
8280.00	8000.00	0.00
6449.00	6200.00	0.00
2014.00	2000.00	0.00
4840.00	4700.00	0.00
3900.00	3800.00	0.00
3930.00	3800.00	0.00
2856.00	2800.00	0.00
3006.00	2900.00	0.00
3095.00	3000.00	0.00

2892.00	2800.00	0.00
2380.00	2300.00	0.00
1898.00	1800.00	0.00
2310.00	2200.00	0.00
2413.00	2200.00	0.00
1346.20	1200.00	0.00
1197.00	1100.00	0.00
1288.00	1200.00	0.00
1076.00	1000.00	0.00
1090.00	990.00	0.00
1128.20	1000.00	0.00
731.00	680.00	0.00
891.20	830.00	0.20
251.00	230.00	0.00
251.00	230.00	0.00
251.00	230.00	0.00
960.64	900.00	0.34
925.61	865.00	0.21
890.50	830.00	0.00
984.39	920.00	0.40
1168.84	1100.00	0.00
1039.20	950.00	0.00
775.83	730.00	0.28
801.38	755.00	0.24
826.93	780.00	0.20
624.00	590.00	0.16
367.64	320.00	0.25
774.56	730.00	0.20
887.16	830.00	0.26
686.75	650.00	0.00
728.00	660.00	0.00
1217.95	1000.00	0.00
1230.41	1100.00	0.28
886.86	800.00	0.00
303.80	150.00	0.80
314.30	170.00	0.00
289.23	130.00	0.43
289.23	130.00	0.43
289.22	130.00	0.42
378.95	270.00	0.35
326.30	220.00	0.50
385.26	270.00	0.56
340.39	240.00	0.59
345.88	245.00	0.58
351.37	250.00	0.57
330.22	240.00	0.62
328.18	240.00	0.38
776.10	720.00	0.00
347.00	320.00	0.00
388.00	360.00	0.00
304.95	230.00	0.00
436.43	190.00	0.00

645.84	220.00	0.00
416.47	190.00	0.22
446.93	200.00	0.16
367.65	150.00	0.16
305.30	150.00	0.11
305.70	110.00	0.15
303.22	89.00	0.10
338.22	73.00	0.090
2.40	0.00	0.00
204.81	34.00	0.62
1178.30	930.00	1.30
1188.80	930.00	1.00
15888.00	14000.00	7.80
16427.50	14500.00	7.15
16966.50	15000.00	6.50
1713.00	1400.00	0.00
912.96	620.00	0.96
980.70	410.00	0.00
1084.00	440.00	2.10
1132.30	440.00	1.80
997.96	380.00	0.96
972.70	360.00	0.95
947.44	340.00	0.94
796.20	270.00	1.20
624.53	160.00	0.97
553.18	130.00	0.67
60701.00	59000.00	9.10
58193.90	56500.00	9.30
55686.80	54000.00	9.50
54600.00	53000.00	0.00
55600.00	54000.00	0.00
56600.00	55000.00	0.00
46810.00	45000.00	0.00
9284.98	6800.00	11.00
9333.83	4000.00	14.00
9583.63	4050.00	13.00
9833.00	4100.00	12.00
12027.80	6300.00	13.00
18839.00	13000.00	24.00
16589.18	10800.00	22.00
14338.30	8600.00	20.00
8344.00	2300.00	26.00
8143.90	2250.00	25.50
7943.80	2200.00	25.00
16153.70	11000.00	35.00
16203.10	11000.00	35.50
16252.00	11000.00	36.00
9642.05	6200.00	29.00
6547.80	2600.00	33.00
6348.90	1500.00	34.00
6250.10	1450.00	34.50
6151.30	1400.00	35.00

4940.20	2100.00	27.00
4939.80	2100.00	27.00
4939.40	2100.00	27.00
10153.60	7000.00	38
3274.60	2300.00	2.10
2289.50	1500.00	1.50
2131.20	1400.00	1.30
1871.80	930.00	1.50
1951.30	965.00	1.55
2030.80	1000.00	1.60
1783.60	920.00	1.10
1515.57	940.00	0.97
1150.20	540.00	1.40
1711.95	1000.00	0.85
1716.39	1000.00	0.84
1720.83	1000.00	0.83
1188.70	720.00	0.80
1336.98	830.00	0.68
1119.46	680.00	0.86
1633.60	1300.00	0.70
1617.00	1200.00	0.80
1662.00	1250.00	0.80
1702.00	1300.00	0.80
2200.40	1700.00	1.60
1549.30	1200.00	0.90
1295.13	840.00	0.43
3055.80	2800.00	1.80
36.20	0.00	0.00
2131.00	2100.00	0.00
2129.00	2100.00	0.00
2127.00	2100.00	0.00
3339.70	3300.00	0.42
3172.38	2800.00	0.00
1542.30	1300.00	0.00
2547.05	2000.00	0.30
2004.76	1700.00	0.33
1436.50	1200.00	0.30
1437.25	1200.00	0.33
1438.00	1200.00	0.35
1044.28	880.00	0.22
1069.44	900.00	0.25
1094.46	920.00	0.28
797.85	650.00	0.00
499.88	410.00	0.18
606.30	480.00	0.26
605.78	480.00	0.26
605.26	480.00	0.26
1161.15	890.00	0.85
1070.49	840.00	0.63
1169.38	900.00	0.73
1154.20	850.00	0.60
1177.30	830.00	0.58

970.20	800.00	0.60
630.00	520.00	0.00
194.00	170.00	0.00
153.60	85.00	0.00
283.20	230.00	0.00
256.78	140.00	0.31
294.80	170.00	0.00
367.70	160.00	0.00
389.65	220.00	0.25
522.43	280.00	0.23
512.48	275.00	0.23
502.52	270.00	0.22
281.20	230.00	0.16
772.63	480.00	0.23
421.17	330.00	0.19
700.24	560.00	0.24
316.39	170.00	0.18
360.55	180.00	0.14
246.78	120.00	0.12
246.71	120.00	0.12
246.63	120.00	0.11
826.00	190.00	2.00
357.00	87.00	0.00
389.10	150.00	1.60
474.25	160.00	0.95
286.70	69.00	0.60
232.20	33.00	0.00
226.22	42.00	0.62
221.40	36.00	1.50
195.70	34.00	5.10
201.70	47.00	2.40
188.70	35.00	1.10
183.40	31.00	1.20
175.64	24.00	0.94
174.47	26.00	0.67
166.77	23.00	0.67
150.22	15.00	0.42
151.73	15.50	0.43
153.24	16.00	0.44
153.92	20.00	0.52
63.62	18	0.00
94.50	83.00	0.00
56.80	48.00	0.00
51.20	43.00	0.00
89.61	76.00	0.00
79.98	65.00	0.00
64.58	44.00	0.00
64.04	44.00	0.00
63.49	44.00	0.00
55.45	37.00	0.00
48.20	36.00	0.00
49.10	36.50	0.00

50.00	37.00	0.00
53.99	36.00	0.06
52.18	33.00	0.05
51.29	31.00	0.00
46.05	24.00	0.00
47.98	24.00	0.00
51.78	26.00	0.00
46.24	23.00	0.00
44.98	23.00	0.08
61.55	36.00	0.00
48.17	24.00	0.00
50.86	28.00	0.00
43.54	22.00	0.00
147.52	110	0.090
14.20	9.20	0.00
15.40	11.00	0.00
18.50	14.00	0.00
18.59	14.00	0.00
16.19	12.00	0.00
22.10	17.00	0.00
14.51	11.00	0.06
25.44	18.00	0.08
38.92	25.00	0.12
57.35	36.00	0.08
66.70	41.00	0.09
68.24	42.00	0.10
69.78	43.00	0.11
71.95	41.00	0.12
88.58	49.00	0.10
78.62	42.00	0.08
68.45	36.00	0.08
52.99	29.00	0.00
40.50	25.00	0.00
38.55	22	0.00
938.00	900.00	0.00
843.00	810.00	0.00
797.04	760.00	0.44
887.20	750.00	0.00
866.49	740.00	0.49
800.50	610.00	0.00
683.20	520.00	0.00
437.10	310.00	0.00
490.76	370.00	0.36
495.74	375.00	0.39
500.71	380.00	0.41
489.66	380.00	0.36
520.94	380.00	0.34
525.32	340.00	0.32
545.62	330.00	0.32
618.51	380.00	0.31
453.48	300.00	0.48
627.12	400.00	0.52

686.17	380.00	0.57
713.13	380.00	0.63
885.86	500.00	0.86
725.88	430.00	0.68
904.38	530.00	0.48
131.10	120.00	0.00
131.25	120.00	0.00
131.40	120.00	0.00
83.80	77.00	0.00
93.80	87.00	0.00
87.29	68.00	0.00
75.00	59.00	0.00
78.27	56.00	0.00
71.98	54.00	0.00
62.50	45.00	0.00
55.42	34.00	0.00
74.08	55.00	0.06
68.40	54.00	0.00
93.76	62.00	0.12
137.51	91.00	0.17
188.28	140.00	0.10
160.33	120.00	0.12
88.79	68.00	0.00
88.36	67.50	0.00
87.92	67.00	0.00
72.05	57.00	0.00
65.36	48.00	0.00
59.67	46	0.00
87.00	77.00	0.00
63.57	53.00	0.00
62.62	51.00	0.00
62.44	51.00	0.00
62.26	51.00	0.00
47.20	39.00	0.00
61.70	48.00	0.05
60.61	46.00	0.00
1648.10	1600.00	0.60
762.00	740.00	0.00
1005.50	930.00	0.00
391.82	340.00	0.00
275.65	220.00	0.00
172.50	130.00	0.00
179.20	135.00	0.00
185.90	140.00	0.00
119.13	85.00	0.07
104.73	83.00	0.05
80.48	61.00	0.00
79.96	61.00	0.04
79.41	61.00	0.05
77.93	60.00	0.00
74.51	57.00	0.00
62.67	47.00	0.00

70.82	51	0.00
96.30	72.00	0.00
38.40	30.00	0.00
81.70	66.00	0.00
94.75	76.00	0.00
41.97	34.00	0.00
27.90	23.00	0.00
37.68	30.00	0.00
31.72	26.00	0.00
35.45	28.00	0.00
27.06	22.00	0.00
29.36	24.00	0.00
21.25	18.00	0.00
29.10	24	0.00
29.55	24.50	0.00
30.00	25.00	0.00
51.00	36.00	0.00
23.30	18.00	0.00
15.30	13.00	0.00
19.76	15.00	0.00
22.50	18.00	0.00
21.81	17.00	0.00
21.83	18.00	0.00
21.85	18.00	0.00
21.86	18.00	0.00
12.33	10.00	0.00
25.98	22.00	0.00
10.89	9.10	0.00
19.28	15.00	0.00
11.73	9.80	0.00
12.11	10	0.075
14.40	10.00	0.00
17.20	14.00	0.00
38.60	37.00	0.00
60.45	54.00	0.00
59.59	53.50	0.00
58.50	53.00	0.00
33.80	31.00	0.00
32.85	29.00	0.00
17.10	15.00	0.00
17.71	13.00	0.05
26.89	22.00	0.00
31.59	25.00	0.00
12.04	9.60	0.00
12.39	9.80	0.00
12.73	10.00	0.00
23.23	19.00	0.00
21.45	16	0.00
544.03	490.00	0.00
534.52	350.00	0.62
488.12	300.00	0.52
488.12	300.00	0.52

486.01	290.00	0.51
580.28	370.00	0.43
597.46	340.00	0.26
737.16	510.00	0.36
502.01	240.00	0.31
1085.43	830.00	0.35
1163.10	950.00	0.00
1438.35	1100.00	0.00
1938.40	1600.00	0.00
1355.10	1100.00	0.00
956.49	780.00	0.70
140.05	120.00	0.15
124.76	90.00	0.06
108.02	77.00	0.06
112.29	75.00	0.07
120.46	88.00	0.06
108.14	76.00	0.09
108.25	67.00	0.00
106.83	73.00	0.00
103.26	66.00	0.00
127.07	73.00	0.00
120.42	75.00	0.00
105.28	71.00	0.00
83.39	59	0.00
1437.90	740.00	0.00
1501.81	600.00	0.71
1395.02	580.00	0.52
1161.70	510.00	0.30
1143.57	550.00	0.27
738.74	340.00	0.24
891.15	440.00	0.25
878.60	435.00	0.25
866.05	430.00	0.25
799.82	390.00	0.22
646.35	290.00	0.15
626.34	290.00	0.14
667.76	330.00	0.16
520.43	240.00	0.13
584.92	280.00	0.32
10.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
5.00	1.10	0.00

8.80	1.30	0.00
4.60	0.00	0.00
3.10	0.00	0.00
4.75	0.95	0.00
5.39	0.99	0.00
4.54	0.73	0.12
3.81	0.49	0.10
62.00	62.00	0.00
14.00	14.00	0.00
48.00	24.00	0.00
11.00	11.00	0.00
8.70	8.70	0.00
5.30	5.30	0.00
5.30	5.30	0.00
10.00	10.00	0.00
10.00	10.00	0.00
6.00	6.00	0.00
17.00	17.00	0.00
1.00	1.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
2.00	1.20	0.00
0.00	0.00	0.00
4.80	2.20	0.00
4.10	1.70	0.00
2.40	0.00	0.00
0.00	0.00	0.00
5.90	0.00	0.00
3.90	1.40	0.00
7.30	2.00	0.00
4.80	1.40	0.00
146.60	5.00	0.00
156.10	5.00	0.00
69.77	3.10	0.00
35.58	2.30	0.00
19.34	2.20	0.00
15.27	2.1	0.00
81.00	81.00	0.00
81.00	81.00	0.00
20.00	10.00	0.00
5.00	5.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
8.80	3.00	0.00
8.80	3.00	0.00
2.00	2.00	0.00
2.00	2.00	0.00
2.00	2.00	0.00
4.00	4.00	0.00
48.12	3.40	0.00
31.68	0.00	0.00

34.50	2.50	0.00
39.70	2.70	0.00
3.24	0.64	0.00
3.02	0.66	0.00
2.25	0.55	0.00
2.43	0.73	0.00
1.61	0.51	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
3.00	3.00	0.00
1.00	1.00	0.00
0.85	0.85	0.00
0.70	0.70	0.00
7.90	1.80	0.00
5.19	0.00	0.00
4.10	1.10	0.00
4.52	1.20	0.00
5.90	1.10	0.00
10.72	1.10	0.10
6.34	0.62	0.10
0.00	0.00	0.00
0.00	0.00	0.00
170.00	0.00	0.00
9.80	0.00	0.00
468.87	7.90	0.00
550.00	0.00	0.00
497.10	7.10	0.00
536.50	6.50	0.00
569.20	7.90	0.00
366.10	6.10	0.00
244.00	4.00	0.00
194.18	3.60	0.00
163.08	2.70	0.00
98.40	2.40	0.00
92.07	2.70	0.00
88.91	2.60	0.00
82.58	2.30	0.00
84.06	2.30	0.00
85.54	2.30	0.00
44.17	2.00	0.00
4.40	2.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.13	0.13	0.00
0.07	0.09	0.00
0.00	0.00	0.00
9.00	5.00	0.00
3.50	0.00	0.00
5.10	2.90	0.00
6.47	3.60	0.08
16.73	14.00	0.00
5.00	3.00	0.00
5.00	3.00	0.00
5.00	3.00	0.00
4.40	1.60	0.05
22.00	7.00	0.00
2.00	0.00	0.00
16.80	6.50	0.00
16.80	6.45	0.00
16.80	6.40	0.00
1.00	0.00	0.00
2.15	1.10	0.00
3.20	2.10	0.00
3.13	2.30	0.00
3.75	2.80	0.00
3.48	3.00	0.00
4.73	3.7	0.00
4.75	3.75	0.00
4.77	3.80	0.00
165.00	150.00	0.00
146.00	134.00	0.00
282.00	210.00	0.00
282.00	210.00	0.00
296.00	230.00	0.00
296.00	230.00	0.00
4559.00	640.00	0.00
3836.00	550.00	0.00
0.00	0.00	0.00

0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
2.00	2.00	0.00
2.00	2.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
1.62	0.42	0.00
0.00	0.00	0.00
0.00	0.00	0.00
1.10	0.00	0.00
5160.00	5000.00	0.00
4820.00	4600.00	0.00
4010.00	3800.00	0.00
3175.00	3100.00	0.00
501.00	450.00	0.00
2825.50	2575.00	0.00
5150.00	4700.00	0.00
702.00	620.00	0.00
768.50	685.00	0.00
835.00	750.00	0.00
197.00	170.00	0.00
214.50	185.00	0.00
232.00	200.00	0.00
371.00	330.00	0.00
325.00	285.00	0.00
279.00	240.00	0.00
164.00	140.00	0.00
136.70	110.00	0.00
149.00	100.00	0.00
150.00	100.00	0.00
146.00	91.00	0.00
206.00	110.00	0.00
69.00	33.00	0.00
536.00	480.00	0.00
763.00	720.00	0.00
1766.00	1700.00	0.00
6359.40	6100.00	1.60
5160.00	4900.00	0.00
81.30	78.00	0.00
2690.65	2489.00	0.00
5300.00	4900.00	0.00

8830.00	8600.00	0.00
8890.00	8700.00	0.00
5900.00	5700.00	0.00
4320.00	4200.00	0.00
2379.00	2300.00	0.00
636.61	280.00	0.69
2088.99	1900.00	0.00
2038.16	1850.00	0.00
1987.33	1800.00	0.00
1422.30	1200.00	0.00
1365.71	1150.00	0.00
1309.00	1100.00	0.00
612.44	540.00	0.00
616.95	545.00	0.00
621.46	550.00	0.00
434.74	360.00	0.07
441.15	340.00	0.15
667.42	550.00	0.18
597.68	480.00	0.20
753.16	560.00	0.18
572.09	440.00	0.11
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
2.00	2.00	0.00
2.00	2.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
17.00	17.00	0.00
0.00	0.00	0.00
7.10	7.10	0.00
11.00	11.00	0.00
11.00	11.00	0.00
2.00	2.00	0.00
3.00	3.00	0.00
2.00	2.00	0.00
2.00	2.00	0.00
2.00	2.00	0.00
2.00	2.00	0.00
2.00	2.00	0.00
3.00	3.00	0.00
2.00	2.00	0.00
1.00	1.00	0.00
0.90	0.90	0.00
1.00	1.00	0.00
0.00	0.00	0.00
0.70	0.70	0.00
0.80	0.80	0.00
0.80	0.80	0.00
0.90	0.90	0.00
0.00	0.00	0.00
0.90	0.90	0.00

0.00	0.00	0.00
0.00	0.00	0.00
34.60	1.60	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
17.10	16.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
96.00	96.00	0.00
170.00	170.00	0.00
170.00	170.00	0.00
162.00	160.00	0.00
162.00	160.00	0.00
152.00	150.00	0.00
78.80	78.00	0.00
11.00	11.00	0.00
4.90	4.90	0.00
4.10	4.10	0.00
11.00	11.00	0.00
10.71	10.00	0.00
0.00	0.00	0.00
2.70	2.70	0.00
5.00	5.00	0.00
11.00	11.00	0.00
0.00	0.00	0.00
12.00	12.00	0.00
6.55	4.90	0.08
6.64	4.90	0.00
7.83	5.80	0.00
7.40	5.45	0.00
6.95	5.10	0.00
5.04	3.10	0.00
5.09	3.10	0.00
5.14	3.10	0.00
3.80	1.70	0.00
4.81	2.8	0.00
234.00	190.00	0.00
151.00	97.00	0.00
151.00	97.00	0.00
323.00	276.00	0.00
323.00	276.00	0.00
210.00	72.00	0.00
104.00	83.00	0.00
177.00	85.00	0.00
191.00	96.00	0.00
110.00	62.00	0.00
97.50	55.00	0.00
85.00	48.00	0.00

157.00	71.00	0.00
148.50	68.00	0.00
140.00	65.00	0.00
125.40	93.00	0.00
116.90	86.50	0.00
108.00	80.00	0.00
50.00	41.00	0.00
44.00	36.50	0.00
38.00	32.00	0.00
33.80	26.00	0.00
31.70	24.50	0.00
29.60	23.00	0.00
68.40	21.00	0.00
66.90	20.00	0.00
65.00	19.00	0.00
480.00	110.00	0.00
274.70	88.00	0.00
480.00	120.00	0.00
459.50	120.00	0.00
437.00	120.00	0.00
70.00	41.00	0.00
77.00	45.50	0.00
84.00	50.00	0.00
122.40	39.00	0.00
127.45	39.00	0.00
132.50	39.00	0.00
361.00	69.00	0.00
350.00	69.00	0.00
339.00	69.00	0.00
49.00	28.00	0.00
20.00	15.00	0.00
28.60	19.00	0.00
18.00	17.00	0.00
128.80	20.00	0.00
272.80	70.00	0.00
247.10	52.00	0.00
135.50	31.00	0.00
60.20	32.00	0.00
122.85	42.00	0.00
125.65	40.00	0.00
93.40	40.00	0.00
38.90	29.00	0.00
6.48	5.10	0.00
13.54	9.20	0.00
3.40	3.10	0.00
3.27	2.80	0.00
17.58	8.60	0.00
7.14	3.10	0.00
4.41	3.60	0.00
2.56	2.00	0.00
1.97	1.60	0.00
1.57	1.30	0.00

1.96	1.60	0.00
6.58	4.0	0.00
7600.00	2900.00	0.00
2190.00	1530.00	0.00
2190.00	1530.00	0.00
15149.00	12700.00	0.00
15149.00	12700.00	0.00
5800.00	4400.00	0.00
6007.00	4000.00	4.00
29320.00	28000.00	0.00
26000.00	25000.00	0.00
24990.00	24000.00	0.00
23980.00	23000.00	0.00
34119.00	33000.00	10.00
31300.00	30000.00	0.00
13780.00	13000.00	0.00
7620.00	6800.00	0.00
9620.00	9000.00	0.00
4610.00	4300.00	0.00
11930.00	11000.00	0.00
11905.00	11000.00	0.00
11880.00	11000.00	0.00
20500.00	18000.00	0.00
20450.00	18000.00	0.00
20400.00	18000.00	0.00
6040.00	5400.00	0.00
3850.00	3450.00	0.00
1660.00	1500.00	0.00
15700.00	14000.00	0.00
15150.00	13500.00	0.00
14600.00	13000.00	0.00
9600.00	8600.00	0.00
9500.00	8500.00	0.00
9400.00	8400.00	0.00
24100.00	22000.00	0.00
23600.00	21500.00	0.00
23100.00	21000.00	0.00
11400.00	10000.00	0.00
7040.00	6200.00	0.00
26300.00	25000.00	0.00
10950.00	10000.00	0.00
10000.00	9200.00	0.00
7954.99	7300.00	4.80
5720.00	5200.00	0.00
3640.00	3100.00	0.00
2960.00	2300.00	0.00
701.10	570.00	0.00
1950.00	1600.00	0.00
1950.00	1600.00	0.00
1950.00	1600.00	0.00
1330.00	1000.00	0.00
1400.00	1050.00	0.00

1470.00	1100.00	0.00
1010.80	830.00	0.00
1021.95	720.00	0.65
824.40	670.00	0.00
823.35	665.00	0.00
822.30	660.00	0.00
666.00	500.00	0.00
568.58	450.00	0.56
483.11	380.00	0.21
487.56	385.00	0.22
492.00	390.00	0.22
614.78	480.00	0.28
608.68	480.00	0.28
602.57	480.00	0.27
448.93	330.00	0.43
620.46	390.00	0.46
458.92	310.00	0.42
497.64	360.00	0.34
719.52	580.00	0.22
589.26	470.00	0.26
566.24	490.00	0.00
719.10	640.00	0.00
779.20	690.00	0.20
779.10	690.00	0.20
779.00	690.00	0.20
42.00	42.00	0.00
88.00	88.00	0.00
88.00	88.00	0.00
6.20	6.20	0.00
6.20	6.20	0.00
2.00	2.00	0.00
7.80	6.00	0.00
5.70	5.00	0.00
4.00	4.00	0.00
4.60	4.00	0.00
18.70	18.00	0.00
9.00	9.00	0.00
6.00	6.00	0.00
5.00	5.00	0.00
1.00	1.00	0.00
2.40	2.00	0.00
9.80	9.00	0.00
0.00	0.00	0.00
2.00	2.00	0.00
4.60	4.00	0.00
9.00	8.00	0.00
40.00	36.00	0.00
2696.00	2400.00	2.00
6260.00	6100.00	0.00
850.00	850.00	0.00
259.00	240.00	0.00
459.40	430.00	0.00

429.00	410.00	0.00
1533.00	1500.00	0.00
735.00	720.00	0.00
649.50	635.00	0.00
564.00	550.00	0.00
636.03	610.00	0.00
432.89	410.00	0.00
237.10	220.00	0.00
247.30	230.00	0.00
257.50	240.00	0.00
108.70	91.00	0.00
59.27	55.00	0.00
170.70	150.00	0.00
130.75	120.00	0.00
109.17	100.00	0.00
95.70	84.00	0.00
75.52	66.00	0.00
75.93	65.00	0.10
107.25	95.00	0.00
69.35	60.00	0.00
55.63	44.50	0.00
44.32	38	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
2.50	0.50	0.00
2.50	0.50	0.00
2.50	0.50	0.00
0.00	0.00	0.00
2.00	0.00	0.00
1.00	0.00	0.00
1.60	0.00	0.00
0.00	0.00	0.00
3.46	0.56	0.00
0.00	0.00	0.00
0.00	0.00	0.00
1.30	0.00	0.00
9.70	8.10	0.00
0.00	0.00	0.00
0.69	0.00	0.00
1.17	0.00	0.14
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

1.00	1.00	0.00
2.00	2.00	0.00
0.70	0.70	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.56	0.56	0.00
9.10	9.10	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.88	0.88	0.00
0.65	0.65	0.00
0.48	0.48	0.00
0.44	0.44	0.00
0.49	0.49	0.00
0.58	0.43	0.00
0.57	0.44	0.00
0.54	0.44	0.00
0.55	0.44	0.00
0.76	0.49	0.00
0.37	0.37	0.00
469.00	400.00	0.00
469.00	400.00	0.00
1307.00	1200.00	0.00
1098.00	1000.00	0.00
42.70	36.00	0.00
58.00	48.00	0.00
49.00	38.00	0.00
43.60	35.00	0.00
60.30	53.00	0.00
25.00	19.00	0.00
25.30	19.00	0.00
31.47	23.00	0.00
29.63	24.00	0.00
28.30	22.00	0.00
23.50	19.00	0.00
26.72	22.00	0.00
16.80	14.00	0.00
13.09	10.00	0.00
18.02	14.00	0.00
22.34	18.00	0.00
23.76	19.00	0.00
507.00	400.00	0.00
507.00	400.00	0.00
4314.00	2400.00	0.00
108.00	77.00	0.00
1734.00	990.00	0.00
2229.00	1800.00	0.00
1867.00	1400.00	0.00

1310.00	1000.00	0.00
872.00	620.00	0.00
1110.00	860.00	0.00
345.00	250.00	0.00
668.00	340.00	0.00
706.00	370.00	0.00
717.00	380.00	0.00
728.00	390.00	0.00
710.00	270.00	0.00
659.00	250.00	0.00
608.00	230.00	0.00
6.00	4.00	0.00
6.00	4.00	0.00
7.00	4.00	0.00
7.00	3.00	0.00
7.00	2.00	0.00
8.05	2.00	0.00
8.40	2.00	0.00
7.70	3.00	0.00
8.25	3.15	0.00
8.80	3.30	0.00
9.00	0.00	0.00
8.00	0.00	0.00
8.00	1.70	0.00
7.50	0.00	0.00
7.65	0.00	0.00
7.80	0.00	0.00
12.00	2.90	0.00
5.70	1.90	0.00
15.60	9.60	0.00
3.08	0.78	0.00
2.05	0.75	0.00
2.32	0.42	0.00
193.00	23.00	0.00
193.00	23.00	0.00
50.00	0.00	0.00
40.00	2.00	0.00
1197.00	960.00	0.00
1288.30	1030.00	0.00
1379.60	1100.00	0.00
1686.00	1600.00	0.00
887.25	800.25	0.00
86.00	0.00	0.00
1190.00	1100.00	0.00
2320.00	1900.00	0.00
1190.00	1100.00	0.00
230.00	120.00	0.00
345.00	180.00	0.00
460.00	240.00	0.00
582.00	300.00	0.00
422.00	200.00	0.00
260.00	100.00	0.00

510.00	160.00	0.00
855.00	330.00	0.00
960.05	375.00	0.00
985.40	200.00	0.00
955.70	350.00	0.00
883.80	500.00	0.00
1065.10	420.00	0.00
552.20	170.00	0.00
119.80	42.00	0.00
337.00	150.00	0.00
42.29	19.00	0.00
42.75	19.00	0.00
43.21	19.00	0.00
7.18	5.40	0.00
5.82	4.00	0.00
240.86	8.80	0.30
83.47	6.20	0.13
18.75	8.80	0.00
12.12	5.40	0.00
13.63	7.25	0.00
52.63	17	0.00
52.59	16.50	0.00
52.55	16.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
1.70	0.40	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
154.00	150.00	0.00
152.00	150.00	0.00
143.00	140.00	0.00
120.60	120.00	0.00
71.00	71.00	0.00
64.00	64.00	0.00
75.80	75.00	0.00

122.00	120.00	0.00
102.00	100.00	0.00
80.00	79.00	0.00
69.00	69.00	0.00
245.00	240.00	0.00
449.60	440.00	0.00
487.00	480.00	0.00
309.00	300.00	0.00
422.00	410.00	0.00
1210.00	1200.00	0.00
1413.00	1400.00	0.00
1625.00	1600.00	0.00
1929.00	1900.00	0.00
2600.00	2600.00	0.00
2300.00	2300.00	0.00
2829.00	2800.00	0.00
2938.00	2900.00	0.00
3852.00	3800.00	0.00
2380.00	2000.00	0.00
1270.00	1100.00	0.00
1335.00	1150.00	0.00
1400.00	1200.00	0.00
565.80	470.00	0.00
567.40	475.00	0.00
569.00	480.00	0.00
534.34	430.00	0.00
394.59	350.00	0.00
390.36	345.00	0.00
385.85	340.00	0.00
393.70	320.00	0.00
341.95	310.00	0.09
354.85	300.00	0.00
325.51	280.00	0.10
320.82	290.00	0.16
712.64	600.00	0.34
698.13	590.00	0.33
683.62	580.00	0.32
406.57	370.00	0.13
378.44	340.00	0.14
359.95	320.00	0.10
265.36	220.00	0.10
1371.00	1300.00	0.00
2755.00	2700.00	0.00
1764.00	1700.00	0.00
16120.00	16000.00	0.00
11140.00	11000.00	0.00
4610.00	4500.00	0.00
730.00	630.00	0.00
5840.00	5700.00	0.00
9710.00	9400.00	0.00
6640.00	6400.00	0.00
1660.00	1500.00	0.00

16430.00	16000.00	0.00
7113.00	6900.00	0.00
1600.00	1500.00	0.00
14230.00	14000.00	0.00
714.00	670.00	0.00
3220.00	3200.00	0.00
3200.00	3200.00	0.00
1714.00	1700.00	0.00
1325.00	1300.00	0.00
429.00	390.00	0.00
170.00	170.00	0.00
155.00	155.00	0.00
140.00	140.00	0.00
145.87	130.00	0.00
149.32	135.00	0.00
152.20	140.00	0.00
143.60	130.00	0.00
144.10	130.00	0.00
144.60	130.00	0.00
101.40	94.00	0.00
102.40	95.00	0.00
103.40	96.00	0.00
93.10	73.00	0.00
83.81	50.00	0.00
83.58	49.50	0.00
83.24	49.00	0.00
50.00	21.00	0.00
226.85	160.00	0.12
109.66	78.00	0.07
54.00	18.00	0.09
82.29	22.00	0.08
110.80	42.00	0.21
187.76	68.00	0.25
191.39	62.00	0.22
182.87	54	0.14
130.00	130.00	0.00
68.00	68.00	0.00
71.00	61.00	0.00
65.00	60.00	0.00
74.80	69.00	0.00
65.00	65.00	0.00
65.00	65.00	0.00
50.00	50.00	0.00
50.00	50.00	0.00
73.00	72.00	0.00
90.90	89.00	0.00
15.00	15.00	0.00
10.00	10.00	0.00
15.00	15.00	0.00
12.00	12.00	0.00
26.90	26.00	0.00
15.00	15.00	0.00

16.00	16.00	0.00
8.60	8.60	0.00
19.45	19.00	0.00
4.30	3.10	0.00
4.60	2.80	0.00
5.20	2.00	0.07
5.04	1.90	0.08
4.81	1.80	0.08
5.07	2.30	0.07
4.70	1.50	0.11
4.56	2.50	0.00
28109.00	28000.00	0.00
5191.00	5000.00	0.00
1478.00	1300.00	0.00
800.00	630.00	0.00
717.00	620.00	0.00
1460.00	880.00	0.00
1460.00	880.00	0.00
720.00	410.00	0.00
720.00	410.00	0.00
370.00	230.00	0.00
300.00	170.00	0.00
870.80	600.00	0.00
800.25	545.00	0.00
729.70	490.00	0.00
1582.80	1100.00	0.00
1513.40	1050.00	0.00
1444.00	1000.00	0.00
1941.00	1400.00	0.00
1142.00	820.00	0.00
1279.40	910.00	0.00
1446.00	1100.00	0.00
1386.00	1050.00	0.00
1326.00	1000.00	0.00
1387.00	1000.00	0.00
1145.80	810.00	0.00
1042.30	730.00	0.00
41.70	38.00	0.00
41.65	38.00	0.00
41.60	38.00	0.00
404.80	300.00	0.00
315.40	180.00	0.00
395.75	230.00	0.15
292.81	130.00	0.16
242.75	82.00	0.13
233.17	91.00	0.09
10.00	10.00	0.00
0.00	0.00	0.00
10.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
19.00	19.00	0.00

19.00	19.00	0.00
77.00	77.00	0.00
77.00	77.00	0.00
7.00	7.00	0.00
7.00	7.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
8.00	7.00	0.00
23.00	21.00	0.00
11.00	11.00	0.00
11.00	9.00	0.00
8.00	6.00	0.00
9.00	8.00	0.00
9.00	8.00	0.00
8.00	7.00	0.00
3.80	3.00	0.00
4.90	4.00	0.00
2.70	2.00	0.00
2.70	2.00	0.00
0.00	0.00	0.00
1.10	0.80	0.00
0.70	0.70	0.00
0.00	0.00	0.00
0.60	0.60	0.00
0.50	0.50	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.60	0.60	0.00
0.59	0.59	0.00
1878.00	1800.00	0.00
1380.00	940.00	0.00
1134.00	830.00	0.00
0.00	0.00	0.00
801.00	620.00	0.00
5309.00	3800.00	0.00
5309.00	3800.00	0.00
374.00	320.00	0.00
374.00	320.00	0.00
136.00	48.00	0.00
137.50	49.00	0.00
139.00	50.00	0.00

189.00	55.00	0.00
14.00	6.20	0.00
2.40	2.40	0.00
1.70	1.70	0.00
1.30	1.30	0.00
39.47	11.00	0.00
8.15	3.10	0.00
1.31	0.98	0.00
1.16	0.84	0.00
1.25	0.88	0.00
6.61	2.7	0.00
150.00	150.00	0.00
140.50	134.00	0.00
135.10	130.00	0.00
135.10	130.00	0.00
69.00	66.00	0.00
69.00	66.00	0.00
64.00	59.00	0.00
105.00	100.00	0.00
25.80	24.00	0.00
24.20	20.00	0.00
14.60	11.00	0.00
20.00	18.00	0.00
26.50	21.00	0.00
20.00	20.00	0.00
17.30	7.60	0.00
10.16	7.40	0.00
10.25	7.05	0.00
10.34	6.70	0.00
28.30	24.00	0.00
28.85	24.50	0.00
29.40	25.00	0.00
11.80	9.20	0.00
12.40	4.40	0.00
20.07	4.40	0.00
9.18	4.70	0.00
9.16	4.60	0.00
9.14	4.50	0.00
37.90	7.50	0.07
29.64	8.10	0.00
45.18	2.30	0.10
25.86	2.70	0.00
43.45	4.10	0.09
15.91	4.1	0.00
4275.00	4000.00	0.00
9751.30	9200.00	0.00
9751.30	9200.00	0.00
7042.00	6800.00	0.00
7042.00	6800.00	0.00
2747.00	2600.00	0.00
3122.00	3100.00	0.00
3786.00	3200.00	0.00

3730.00	3150.00	0.00
3663.00	3100.00	0.00
4974.00	4200.00	0.00
4911.00	4150.00	0.00
4848.00	4100.00	0.00
6644.00	5600.00	0.00
6944.00	5800.00	0.00
7237.00	6000.00	0.00
24463.00	9400.00	0.00
22863.00	8800.00	0.00
21200.00	8200.00	0.00
20800.00	8800.00	0.00
20800.00	8800.00	0.00
18193.00	10000.00	0.00
18193.00	10000.00	0.00
8958.00	5300.00	0.00
8958.00	5300.00	0.00
13176.00	7100.00	0.00
13176.00	7100.00	0.00
4042.00	2900.00	0.00
9670.00	4800.00	0.00
1862.00	1200.00	0.00
5155.00	2700.00	0.00
2032.00	1300.00	0.00
1804.00	1300.00	0.00
4020.00	1700.00	0.00
6160.00	2400.00	0.00
1052.00	530.00	0.00
2392.00	780.00	0.00
3654.00	1400.00	0.00
705.76	430.00	0.00
1072.00	570.00	0.00
748.60	200.00	0.00
1279.00	490.00	0.00
973.62	340.00	0.00
685.61	240.00	0.90
147.80	51.00	0.00
788.00	170.00	0.00
3919.60	690.00	0.00
4203.10	770.00	0.00
4208.60	775.00	0.00
4214.10	780.00	0.00
201.19	64.00	0.00
588.00	78.00	0.00
205.35	69.00	0.00
102.65	18.00	0.00
287.58	68	0.00
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5276.60	4200.00	0.00
2755.00	1800.00	0.00
2755.00	1800.00	0.00
1668.00	1320.00	0.00

1668.00	1320.00	0.00
3580.00	2100.00	0.00
3853.00	2300.00	0.00
484.00	300.00	0.00
396.00	270.00	0.00
460.00	320.00	0.00
446.00	260.00	0.00
931.00	580.00	0.00
374.00	250.00	0.00
375.00	270.00	0.00
321.00	200.00	0.00
333.00	220.00	0.00
375.00	210.00	0.00
198.00	130.00	0.00
240.00	160.00	0.00
216.00	140.00	0.00
386.00	110.00	0.00
234.90	140.00	0.00
153.00	100.00	0.00
186.60	100.00	0.00
282.30	190.00	0.00
273.70	200.00	0.00
322.50	240.00	0.00
146.50	99.00	0.00
224.40	160.00	0.00
157.70	110.00	0.00
217.80	160.00	0.00
242.30	180.00	0.00
181.30	130.00	0.00
208.00	160.00	0.00
125.13	96.00	0.00
117.83	84.00	0.00
110.60	86.00	0.00
72.58	56.00	0.00
74.69	57.50	0.00
76.80	59.00	0.00
70.06	56.00	0.00
70.62	56.50	0.00
71.18	57.00	0.00
60.68	46.00	0.00
63.81	48.00	0.00
66.94	50.00	0.00
91.94	77.00	0.00
49.71	40	0.00
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1900.00	1800.00	0.00
1501.00	1400.00	0.00
1166.00	1100.00	0.00
1583.00	1500.00	0.00
1359.00	1300.00	0.00
1148.00	1100.00	0.00

830.00	800.00	0.00
783.80	740.00	0.00
605.30	570.00	0.00
285.00	250.00	0.00
319.60	290.00	0.00
528.90	280.00	0.30
404.11	310.00	0.00
433.90	380.00	0.00
273.90	230.00	0.00
250.96	210.00	0.00
214.86	170.00	0.06
227.00	170.00	0.09
224.65	170.00	0.06
165.81	120.00	0.06
155.67	120.00	0.00
143.00	110.00	0.00
143.52	110.00	0.00
144.04	110.00	0.00
266.62	200.00	0.00
296.09	220.00	0.00
770.00	380.00	0.00
940.00	470.00	0.00
1384.80	750.00	1.80
631.12	330.00	0.42
734.20	420.00	0.60
627.00	350.00	0.00
697.35	340.00	0.00
665.55	360.00	0.55
866.16	460.00	1.20
716.33	410.00	0.83
665.36	410.00	0.66
532.60	300.00	0.50
412.03	200.00	0.39
363.21	170.00	0.40
364.57	170.00	0.37
1043.00	520.00	0.00
1038.50	515.00	0.00
1034.00	510.00	0.00
1096.99	540.00	0.49
564.10	260.00	0.00
870.73	300.00	0.63
520.73	200.00	0.37
650.00	230.00	0.00
785.00	240.00	0.00
571.17	170.00	0.47
576.39	160.00	0.46
604.58	160.00	0.60
573.54	160.00	0.44
320.05	91.00	0.39
545.51	120.00	0.41
448.87	120.00	0.20
427.95	82.00	0.33

567.50	380.00	0.00
621.78	420.00	0.18
504.04	300.00	0.34
412.20	240.00	0.00
347.07	210.00	0.00
300.60	180.00	0.00
312.43	180.00	0.00
268.31	220.00	0.10
220.80	120.00	0.16
251.09	130.00	0.22
251.10	130.00	0.20
251.10	130.00	0.18
175.66	97.00	0.13
177.65	98.50	0.13
179.64	100.00	0.13
204.06	97.00	0.14
192.91	91.50	0.13
181.76	86.00	0.11
110.02	62.00	0.00
125.11	63.00	0.10
131.09	67	0.080
75.00	70.00	0.00
302.90	150.00	0.00
12.00	0.00	0.00
120.00	43.00	0.00
175.67	4.00	0.15
175.32	3.95	0.16
174.91	3.90	0.16
152.82	3.10	0.20
124.50	9.70	0.12
98.03	18.00	0.14
124.32	36.00	0.09
134.92	27	0.00
146.89	28.50	0.00
158.86	30.00	0.00
78.20	18.00	0.00
261.99	52.00	0.05
104.93	22.00	0.00
4.20	3.90	0.00
13.56	13.00	0.00
298.00	82.00	0.00
85.00	0.00	0.00
96.60	33.00	0.00
244.61	14.00	0.19
209.61	25.00	0.18
169.32	57.00	0.16
129.89	43.00	0.00
25.95	21.00	0.00
49.14	18	0.00
659.40	370.00	0.40
630.00	0.00	0.00
461.00	130.00	0.00

415.36	160.00	0.29
244.62	70.00	0.25
327.75	120.00	0.19
243.89	61.00	0.14
211.83	54.00	0.15
127.25	19.00	0.11
96.70	87.00	0.00
45.90	40.00	0.00
36.00	35.00	0.00
12.20	11.00	0.00
19.62	11.00	0.07
17.07	12.00	0.00
20.36	13.00	0.00
15.14	13.00	0.00
15.76	13.00	0.00
65.65	40	0.00
827.90	86.00	0.00
392.00	32.00	0.00
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1165.00	160.00	0.00
1189.00	180.00	0.00
149.30	9.50	0.00
246.40	48.00	0.00
673.30	43.00	0.00
551.10	14.00	0.30
425.36	9.60	0.26
259.84	52.00	0.09
169.11	12.00	0.14
194.80	4.90	0.12
249.58	5.50	0.19
285.85	16	0.12
898.70	380.00	0.00
692.20	220.00	0.00
250.00	37.00	0.00
232.00	53.00	0.00
81.48	19.00	0.00
61.18	14.00	0.00
108.19	43.00	0.05
286.48	91.00	0.10
107.63	38.00	0.00
88.89	36.00	0.00
28.53	11.00	0.00
28.96	11.00	0.00
29.36	11.00	0.00
26.59	11.00	0.00
21.20	11	0.00
1441.70	1100.00	2.20
1145.20	820.00	0.00
1180.00	790.00	0.00
609.80	220.00	1.80
478.10	150.00	1.10
884.80	140.00	1.60

600.70	94.00	2.00
964.70	210.00	1.50
722.94	270.00	1.20
425.26	130.00	1.40
463.47	44.00	1.50
382.23	120.00	3.50
511.60	150.00	1.70
167.14	24.00	4.30
686.12	220.00	2.50
470.13	170.00	2.60
492.68	190.00	2.30
285.08	72.00	3.60
397.63	120.00	2.50
484.36	180.00	2.6
897.00	440.00	0.00
1112.00	650.00	1.60
1056.85	615.00	1.60
1001.70	580.00	1.60
700.80	530.00	0.00
348.81	260.00	0.00
699.42	460.00	0.20
444.25	230.00	0.00
444.29	230.00	0.00
444.32	230.00	0.00
492.95	350.00	0.08
600.20	340.00	0.10
899.80	680.00	0.00
1155.85	880.00	0.45
150.21	120.00	0.00
1186.70	980.00	0.00
1617.30	1400.00	0.00
940.00	720.00	0.00
958.50	760.00	0.00
454.00	250.00	0.00
779.10	420.00	0.00
209.03	170.00	0.00
108.70	100.00	0.00
219.57	150.00	0.00
371.44	230.00	0.00
74.60	58.00	0.00
10.20	7.90	0.00
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185.10	170.00	0.00
96.52	87.00	0.00
68.31	61.00	0.00
68.30	62.00	0.00
38.17	35.00	0.00
47.82	43.00	0.00
54.30	46.00	0.00
45.20	39.00	0.00
49.73	41.00	0.00

33.53	29.00	0.00
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97.50	68.00	0.00
64.00	49.00	0.00
90.50	53.00	0.00
262.82	190.00	0.00
262.57	190.00	0.00
262.31	190.00	0.00
243.20	170.00	0.00
42.63	32.00	0.00
104.08	86.00	0.00
119.69	64.00	0.00
75.06	59.00	0.00
60.66	48.00	0.00
37.83	30.00	0.00
43.56	27.00	0.00
30.48	18.00	0.00
30.49	18.00	0.00
30.49	18.00	0.00
98.52	49.00	0.24
121.80	38.00	0.00
71.23	46.00	0.00
21.21	17	0.00
30.00	22.00	0.00
17.90	15.00	0.00
14.72	11.00	0.00
7.70	6.00	0.00
7.60	6.00	0.00
6.68	4.60	0.00
6.82	4.60	0.00
5.43	3.70	0.00
5.21	3.70	0.00
4.63	3.50	0.00
3.90	2.80	0.00
4.71	2.6	0.00
166.80	140.00	0.00
147.60	130.00	0.00
194.80	170.00	0.00
245.32	220.00	0.00
211.70	180.00	0.00
231.20	190.00	0.00
256.87	200.00	0.12
282.15	220.00	0.11
263.68	200.00	0.14
249.76	190.00	0.10
249.79	190.00	0.10
249.82	190.00	0.10
221.03	170.00	0.09
205.71	160.00	0.10
159.94	130.00	0.08
179.21	140.00	0.09
180.51	140.00	0.080

90.00	58.00	0.00
108.40	71.00	0.00
109.95	72.00	0.00
111.50	73.00	0.00
131.50	82.00	0.00
163.40	110.00	0.00
170.30	120.00	0.00
150.10	100.00	0.00
167.12	120.00	0.00
135.20	95.00	0.00
86.80	61.00	0.00
89.19	64.50	0.00
91.58	68.00	0.00
65.03	48.00	0.00
74.16	51.00	0.00
68.00	39.00	0.00
62.31	42.00	0.00
51.68	35.00	0.00
53.30	31.00	0.00
56.65	34.00	0.00
30.90	20.50	0.00
27.42	17	0.00
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2540.00	2200.00	0.00
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1067.57	450.00	0.67
1045.85	435.00	0.64
1024.01	420.00	0.61
832.00	190.00	0.00
941.46	600.00	0.36
726.06	380.00	0.26
440.92	150.00	0.23
635.82	310.00	0.32
489.73	330.00	0.23
527.47	270.00	0.27
429.57	210.00	0.27
464.05	250.00	0.35
451.08	280.00	0.28
427.50	280.00	0.00
427.45	280.00	0.00
427.40	280.00	0.00
439.24	230.00	0.14
469.29	250.00	0.14
499.33	270.00	0.13
18452.00	18000.00	6.00
12240.00	12000.00	0.00
17280.00	17000.00	0.00
5500.60	5300.00	1.40
4012.60	3800.00	0.00
1767.70	1600.00	0.70
697.36	630.00	0.28

659.61	570.00	0.51
553.32	460.00	0.32
548.80	480.00	0.24
493.34	430.00	0.18
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362.87	320.00	0.15
95.50	63.00	0.00
91.95	60.00	0.00
88.40	57.00	0.00
386.00	370.00	0.00
65.30	46.00	0.00
53.05	46.00	0.00
33.88	28.00	0.00
31.85	28.00	0.00
30.82	27.00	0.00
27.01	23.00	0.00
32.17	26.00	0.00
27.53	22.00	0.00
24.71	20.00	0.00
146.96	110.00	0.11
26.39	18	0.00
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84.40	48.00	0.00
57.10	45.00	0.00
59.76	46.00	0.00
115.50	83.00	0.00
52.15	43.00	0.00
59.13	49.00	0.00
66.00	55.00	0.00
54.03	47.00	0.00
123.84	110.00	0.00
49.89	44.00	0.00
56.56	46.00	0.00
72.53	65.00	0.00
155.11	120.00	0.00
207.83	160.00	0.00
207.12	160.00	0.00
206.41	160.00	0.00
74.30	70.00	0.00
25.00	25.00	0.00
66.90	63.00	0.00
62.01	56.00	0.00
45.17	40.00	0.00
48.30	44.00	0.00
29.48	26.00	0.00
27.21	23.00	0.00
53.37	48.00	0.00
52.79	47.50	0.00
52.20	47.00	0.00
39.03	34.00	0.00
40.72	35.00	0.00
43.75	36.00	0.00

9.51	8.4	0.00
844.93	540.00	0.93
221.45	130.00	0.06
1006.70	670.00	1.20
417.13	250.00	0.33
914.26	650.00	0.56
941.80	640.00	0.70
1260.50	890.00	1.10
978.05	660.00	0.85
1489.30	1100.00	0.70
1311.55	1100.00	0.00
1189.30	1000.00	0.00
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2424.35	1800.00	1.4
886.62	410.00	1.20
1211.70	93.00	1.10
983.34	340.00	1.10
1195.64	440.00	1.10
964.63	220.00	0.48
1034.40	310.00	1.10
983.76	330.00	0.83
564.62	69.00	0.24
518.72	25.00	0.42
535.34	28.00	0.34
550.33	58	0.43
61.24	53.00	0.00
60.65	52.50	0.00
60.05	52.00	0.00
29.44	25.00	0.00
28.24	20.00	0.00
21.41	17	0.00
48.80	47.00	0.00
37.00	37.00	0.00
27.00	27.00	0.00
16.00	16.00	0.00
11.97	11.00	0.00
10.88	9.00	0.13
10.92	9.05	0.12
10.95	9.10	0.10
14.79	13.00	0.00
12.53	10.00	0.00
11.64	9.20	0.09
11.11	8.40	0.11
8.91	6.50	0.08
10.25	7.3	0.00
5.00	4.00	0.00
1.00	1.00	0.00
1.00	1.00	0.00
1.00	1.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

0.36	0.36	0.00
1.10	1.10	0.00
0.25	0.25	0.00
0.48	0.31	0.00
0.52	0.36	0.00
0.60	0.40	0.00
0.37	0.22	0.00
0.51	0.33	0.00
0.30	0.17	0.00
1.90	1.90	0.00
0.00	0.00	0.00
1.90	1.90	0.00
3.00	3.00	0.00
0.57	0.57	0.00
141.19	41.00	0.00
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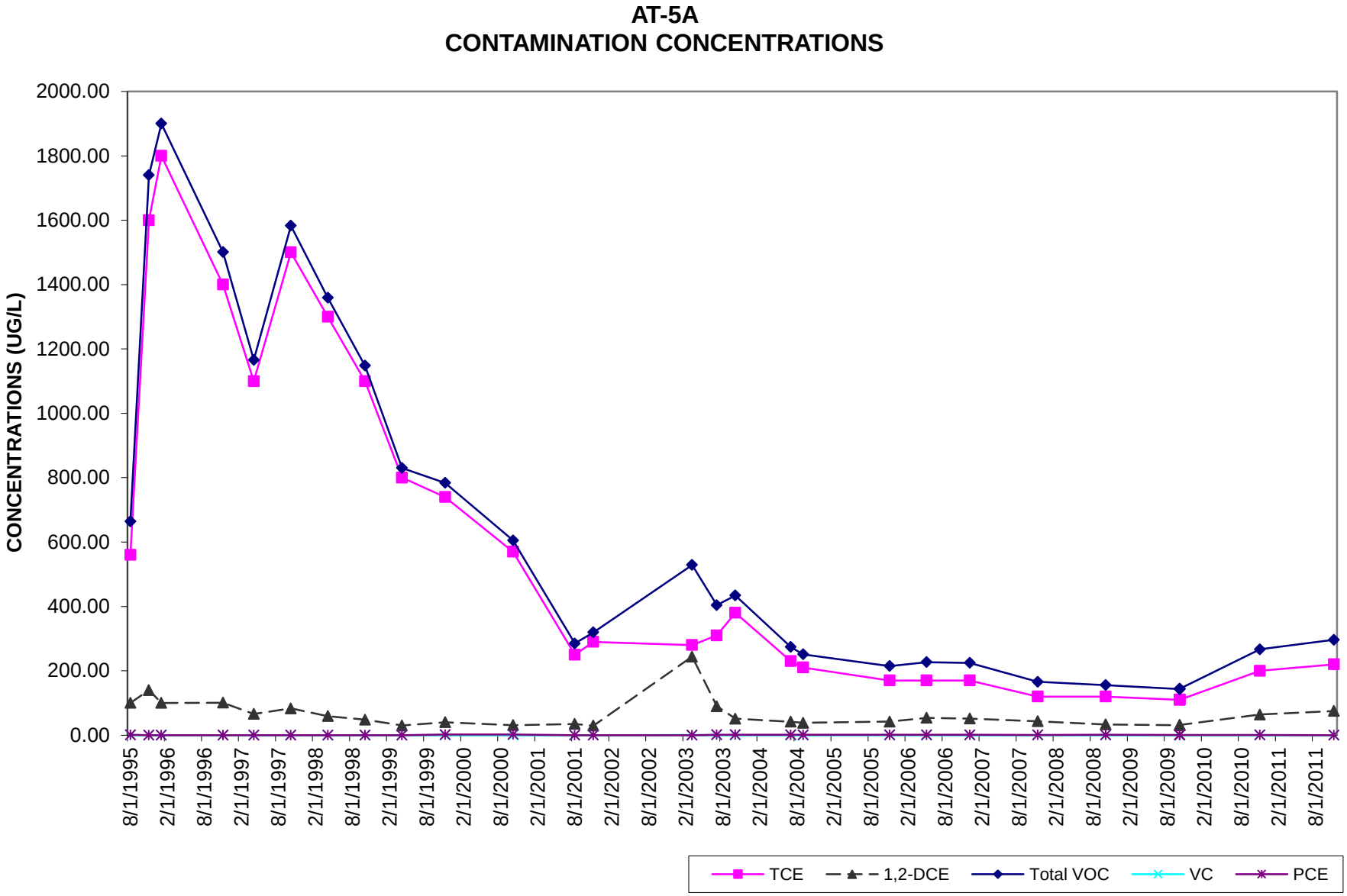
AT-5A
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
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800.00
600.00
400.00
200.00
0.00
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2/1/1996
8/1/1996
2/1/1997
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2/1/2009
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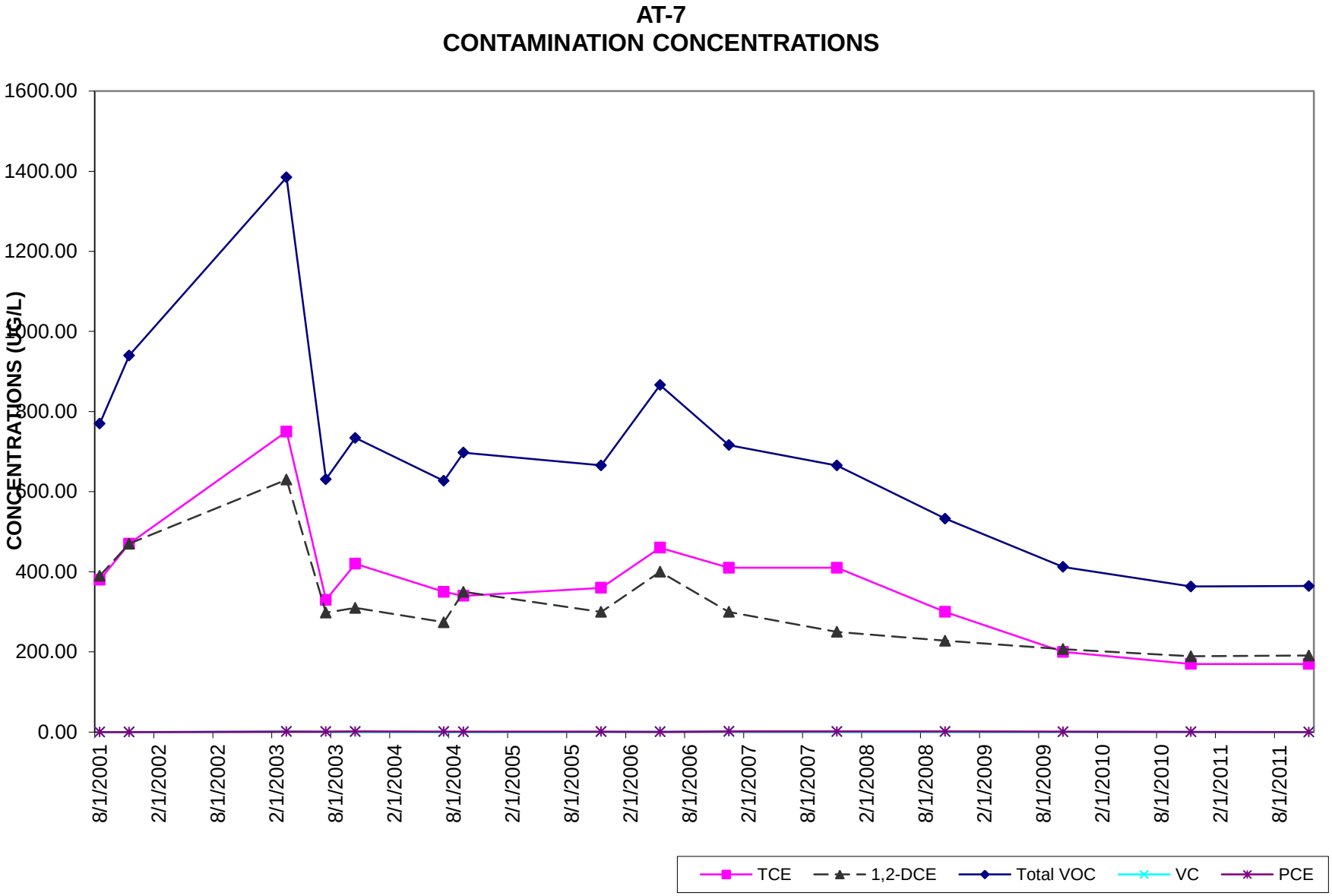
8/1/2010
2/1/2011
8/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE


AT-7
CONTAMINATION CONCENTRATIONS
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200.00
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2/1/2002
8/1/2002
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8/1/2003
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8/1/2005
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2/1/2009
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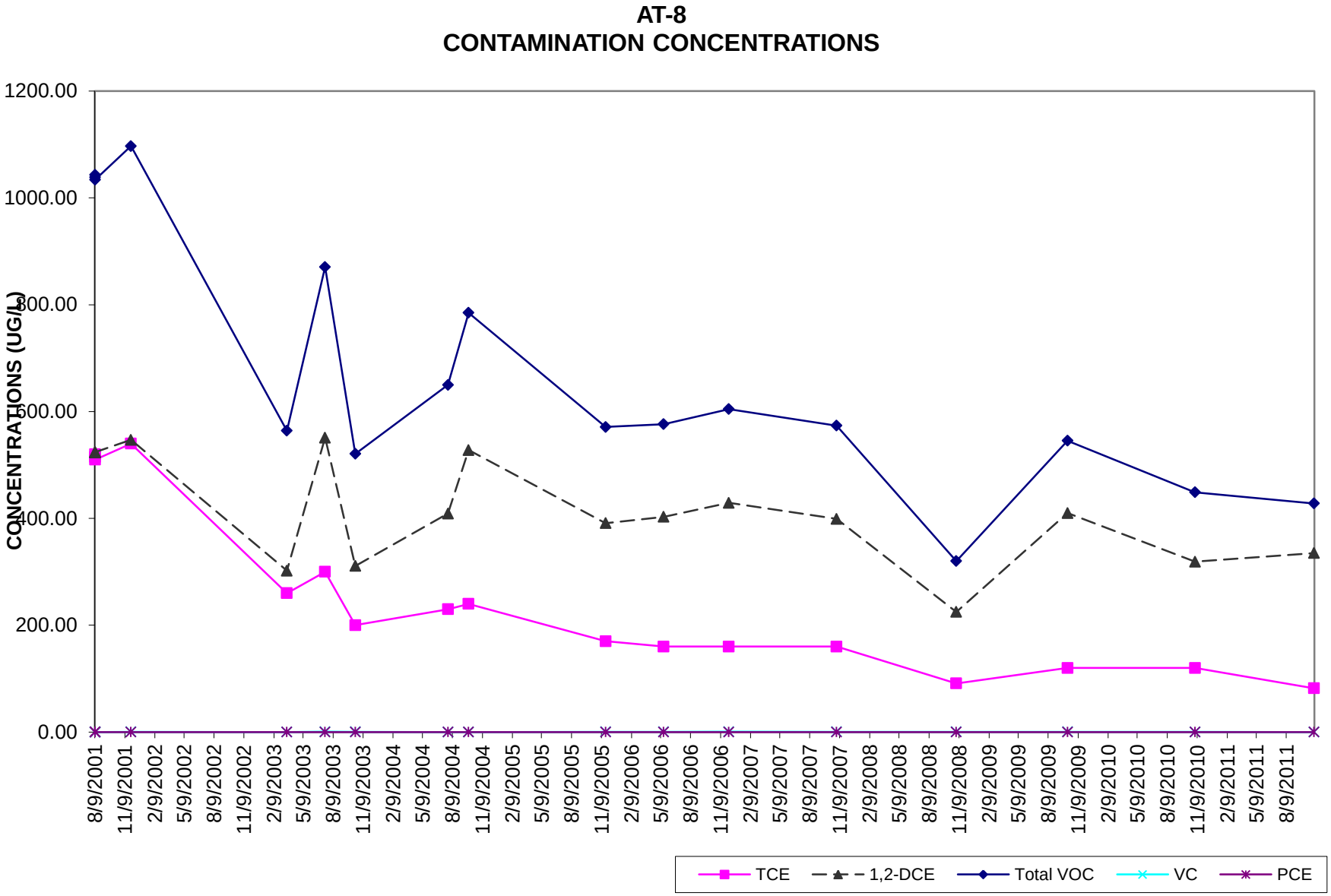
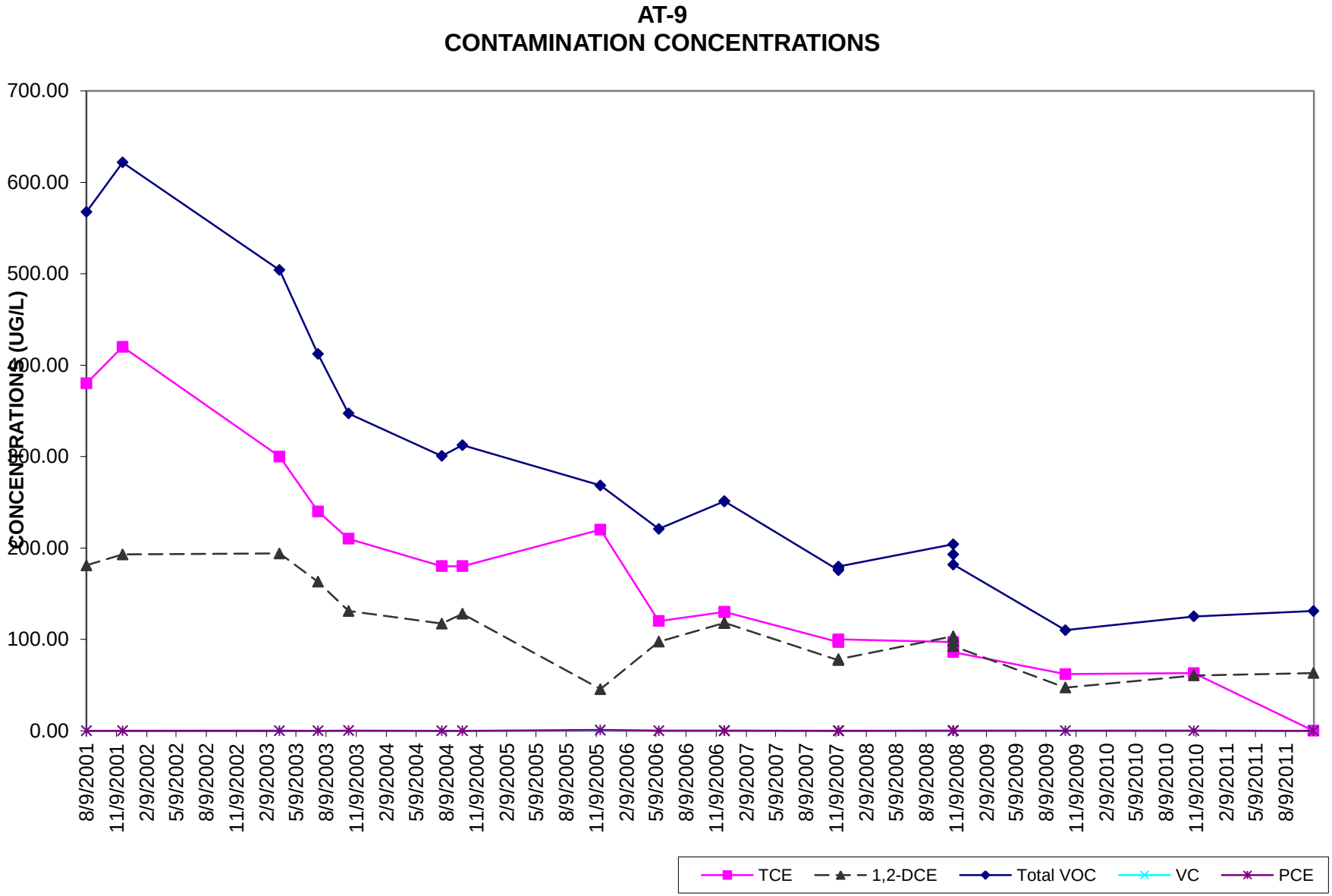
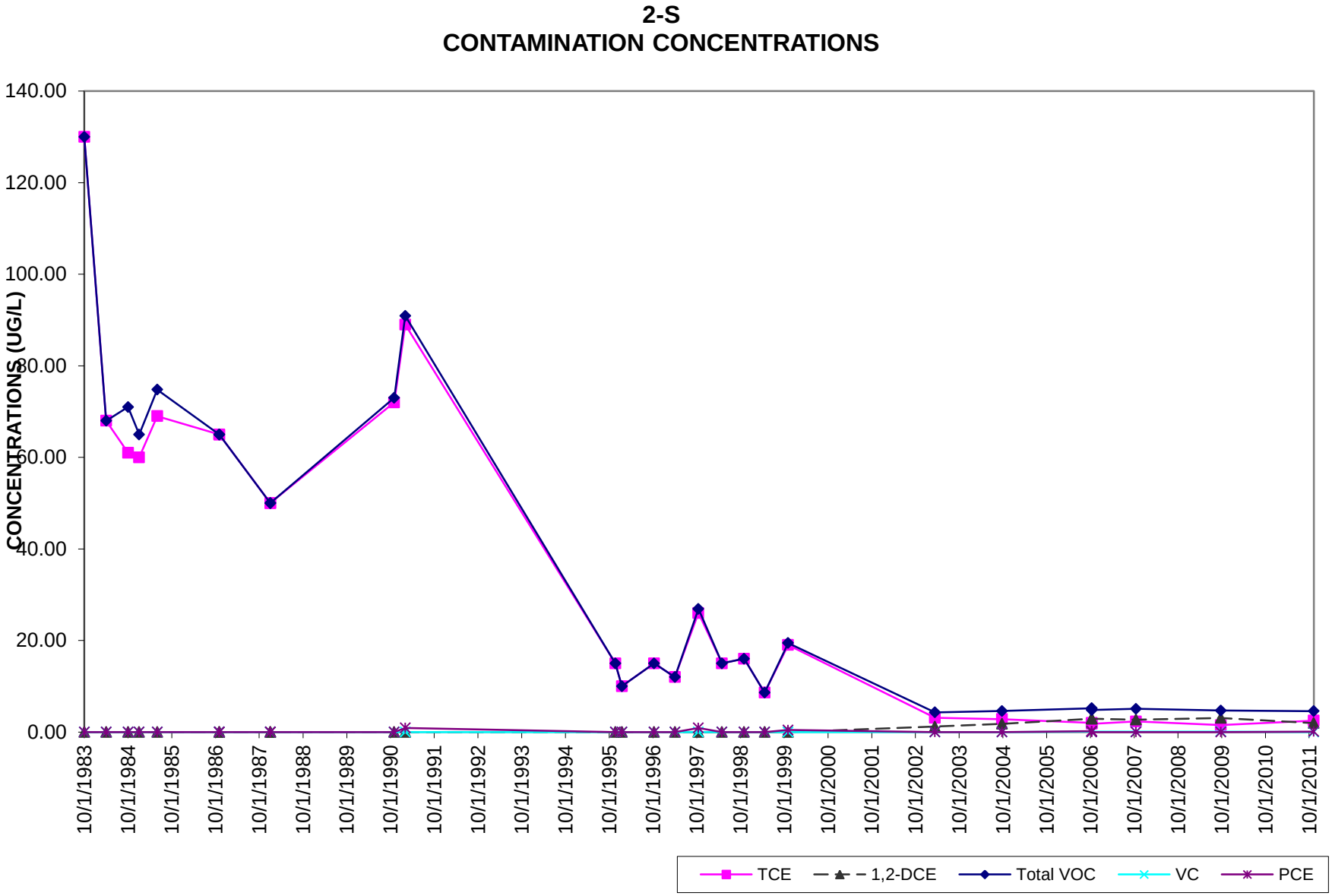
2/1/2010
8/1/2010
2/1/2011
8/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE


AT-8
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
8/9/2001
11/9/2001
2/9/2002
5/9/2002
8/9/2002
11/9/2002
2/9/2003
5/9/2003
8/9/2003
11/9/2003
2/9/2004
5/9/2004
8/9/2004
11/9/2004
2/9/2005
5/9/2005
8/9/2005
11/9/2005
2/9/2006
5/9/2006
8/9/2006
11/9/2006
2/9/2007
5/9/2007
8/9/2007
11/9/2007
2/9/2008
5/9/2008
8/9/2008
11/9/2008
2/9/2009
5/9/2009
8/9/2009
11/9/2009
2/9/2010
5/9/2010
8/9/2010
11/9/2010
2/9/2011
5/9/2011
8/9/2011
TCE
1,2-DCE
Total VOC
VC
PCE


AT-9
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
700.00
600.00
500.00
400.00
300.00
200.00
100.00
0.00
8/9/2001
11/9/2001
2/9/2002
5/9/2002
8/9/2002
11/9/2002
2/9/2003
5/9/2003
8/9/2003
11/9/2003
2/9/2004
5/9/2004
8/9/2004
11/9/2004
2/9/2005
5/9/2005
8/9/2005
11/9/2005
2/9/2006
5/9/2006
8/9/2006
11/9/2006
2/9/2007
5/9/2007
8/9/2007
11/9/2007
2/9/2008
5/9/2008
8/9/2008
11/9/2008
2/9/2009
5/9/2009
8/9/2009
11/9/2009
2/9/2010
5/9/2010
8/9/2010
11/9/2010
2/9/2011
5/9/2011
8/9/2011
TCE
1,2-DCE
Total VOC
VC
PCE


2-S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
10/1/1983
10/1/1984
10/1/1985
10/1/1986
10/1/1987
10/1/1988
10/1/1989
10/1/1990
10/1/1991
10/1/1992
10/1/1993
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10/1/1998
10/1/1999
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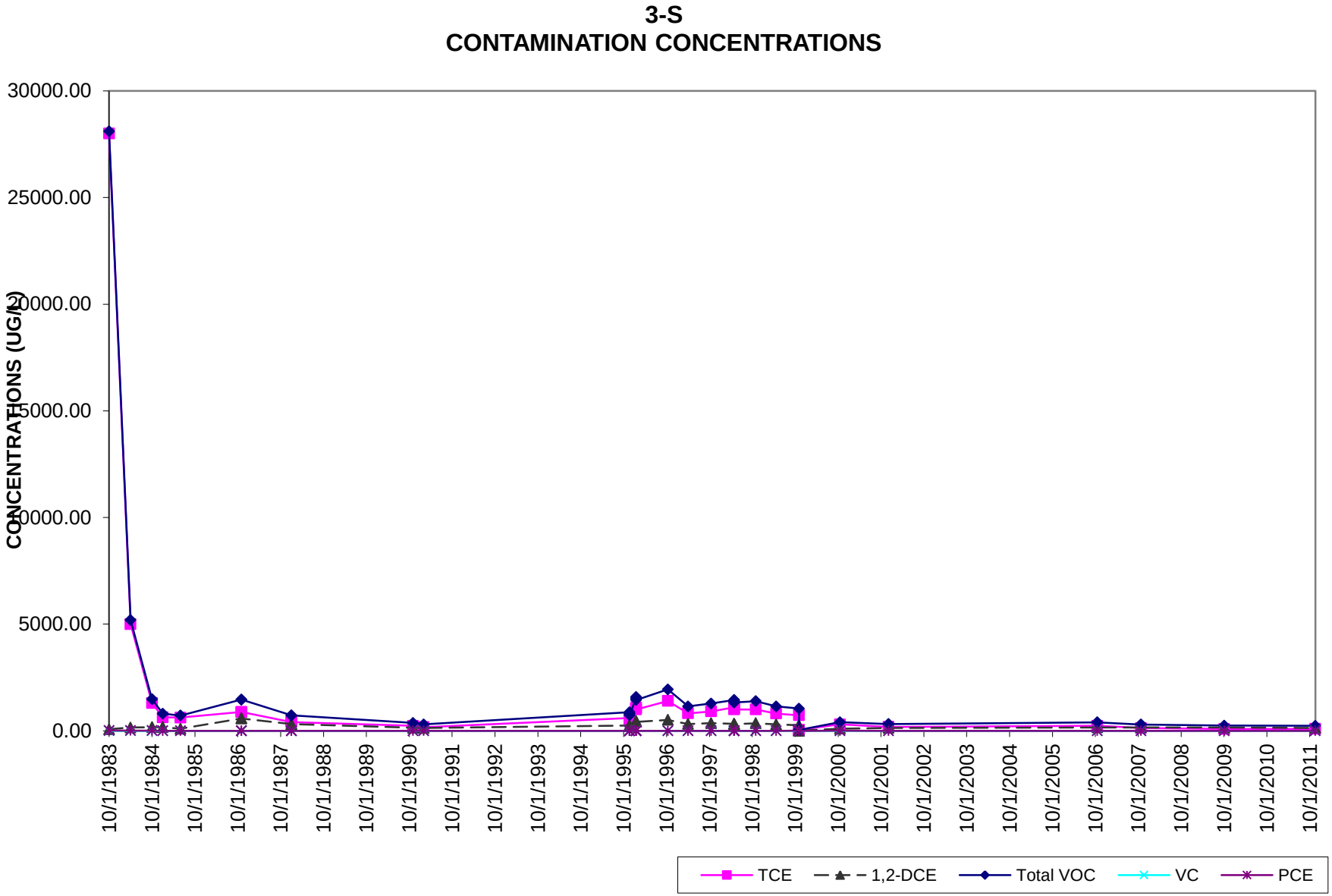
10/1/2001
10/1/2002
10/1/2003
10/1/2004
10/1/2005
10/1/2006
10/1/2007
10/1/2008
10/1/2009
10/1/2010
10/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE


3-S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
30000.00
25000.00
20000.00
15000.00
10000.00
5000.00
0.00
10/1/1983
10/1/1984
10/1/1985
10/1/1986
10/1/1987
10/1/1988
10/1/1989
10/1/1990
10/1/1991
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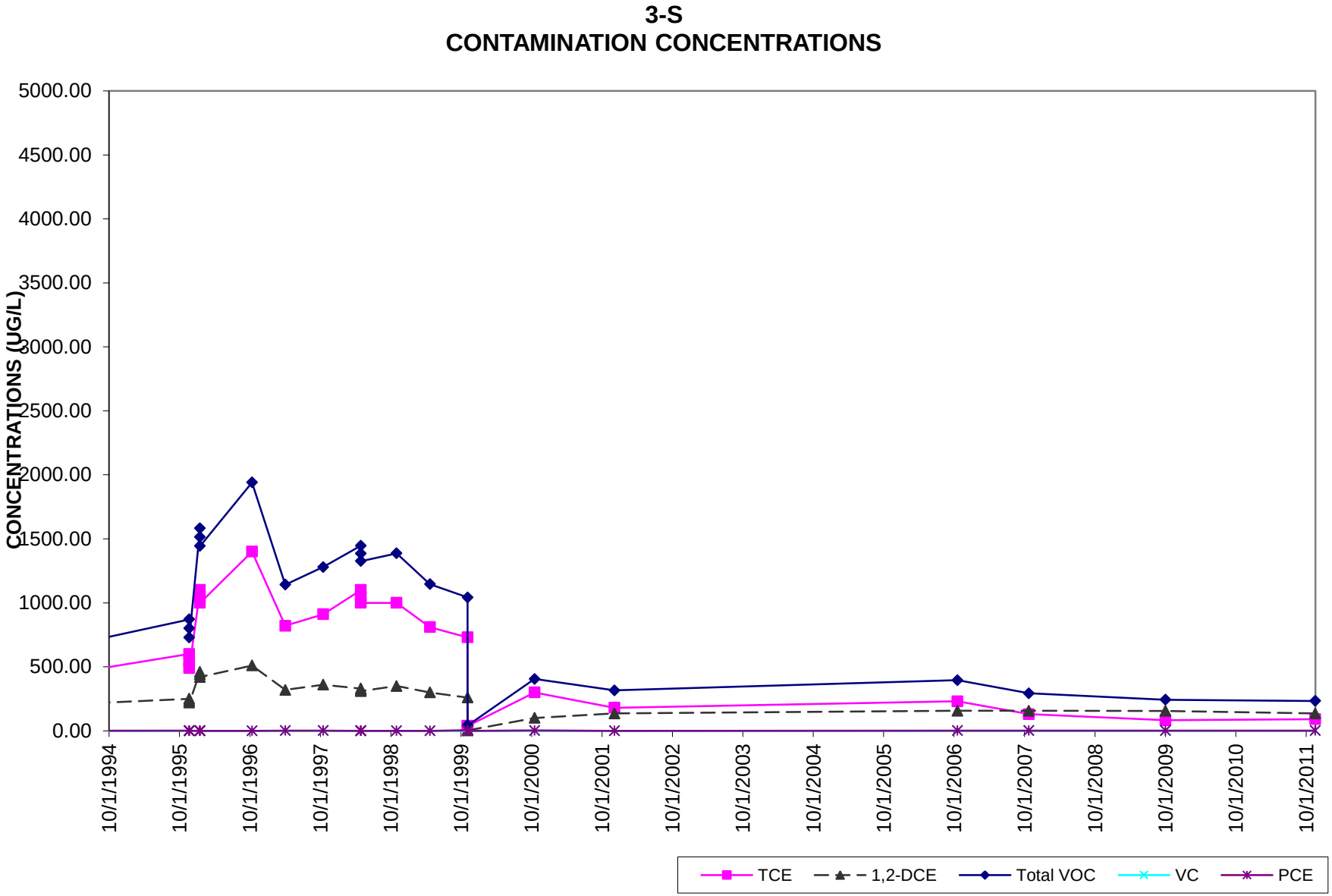
10/1/2001
10/1/2002
10/1/2003
10/1/2004
10/1/2005
10/1/2006
10/1/2007
10/1/2008
10/1/2009
10/1/2010
10/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE


3-S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
5000.00
4500.00
4000.00
3500.00
3000.00
2500.00
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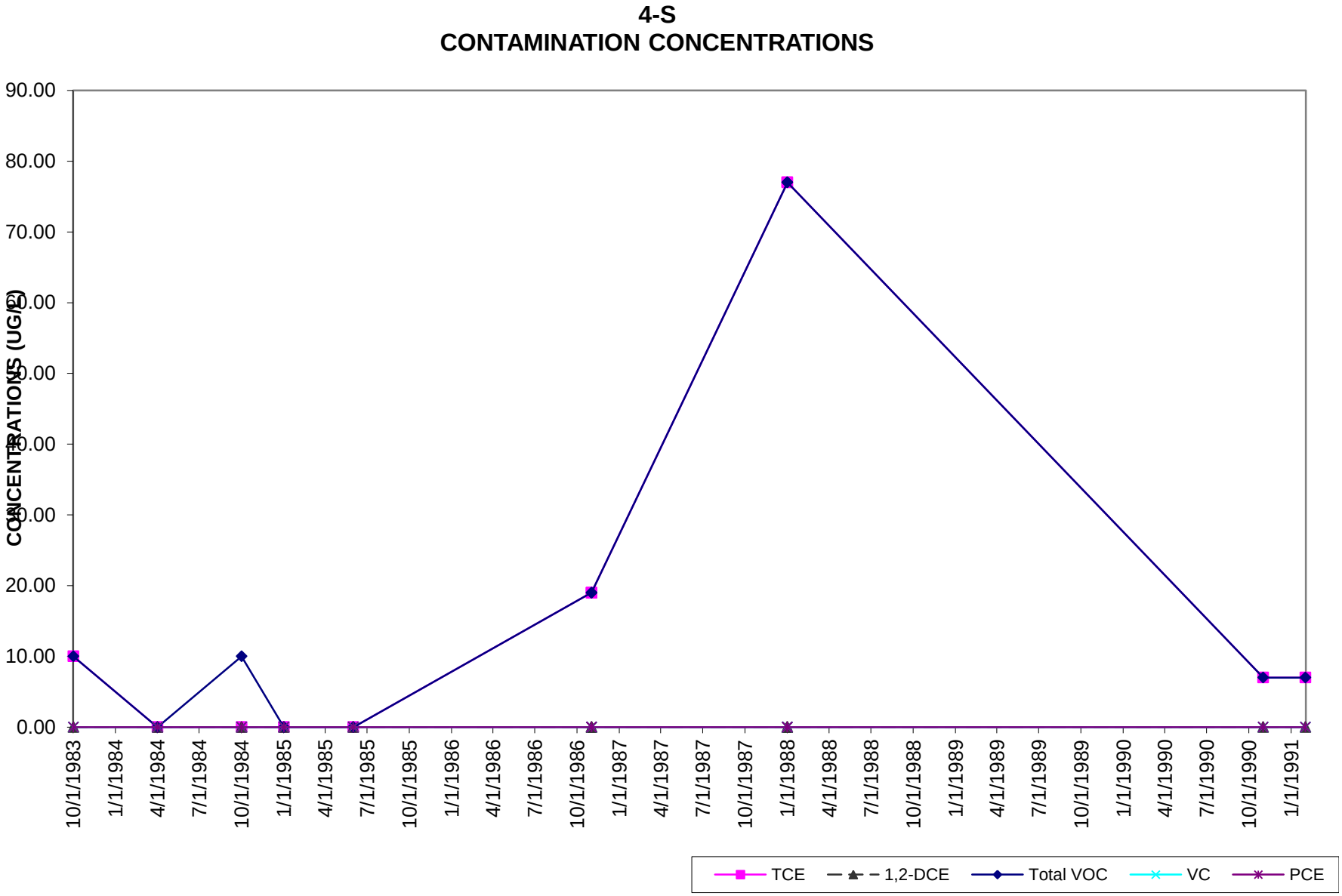
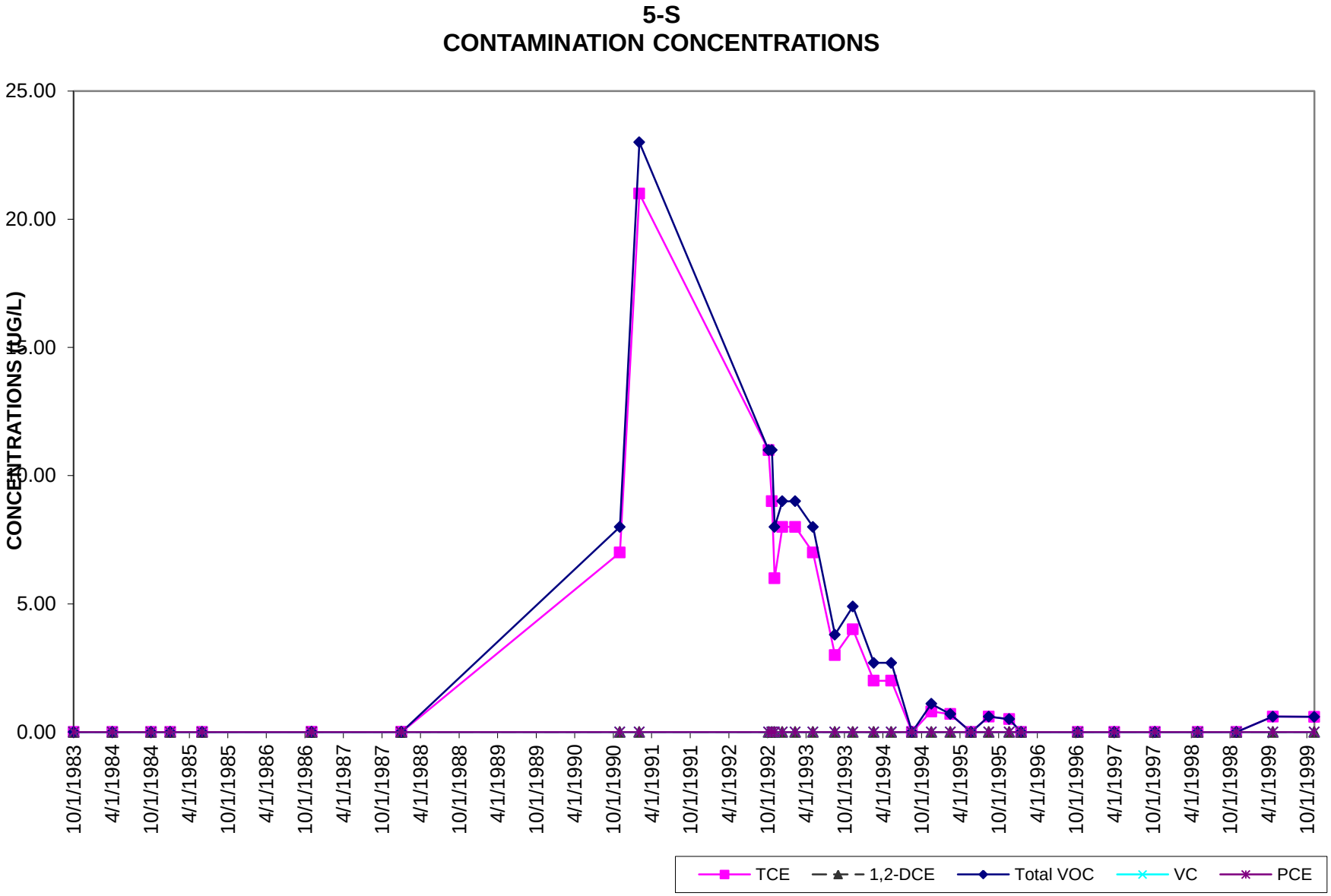
1500.00
1000.00
500.00
0.00
10/1/1994
10/1/1995
10/1/1996
10/1/1997
10/1/1998
10/1/1999
10/1/2000
10/1/2001
10/1/2002
10/1/2003
10/1/2004
10/1/2005
10/1/2006
10/1/2007
10/1/2008
10/1/2009
10/1/2010
10/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE


4-S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
10/1/1983
1/1/1984
4/1/1984
7/1/1984
10/1/1984
1/1/1985
4/1/1985
7/1/1985
10/1/1985
1/1/1986
4/1/1986
7/1/1986
10/1/1986
1/1/1987
4/1/1987
7/1/1987
10/1/1987
1/1/1988
4/1/1988
7/1/1988
10/1/1988
1/1/1989
4/1/1989
7/1/1989
10/1/1989
1/1/1990
4/1/1990
7/1/1990
10/1/1990
1/1/1991
TCE
1,2-DCE
Total VOC
VC
PCE


5-S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
25.00
20.00
15.00
10.00
5.00
0.00
10/1/1983
4/1/1984
10/1/1984
4/1/1985
10/1/1985
4/1/1986
10/1/1986
4/1/1987
10/1/1987
4/1/1988
10/1/1988
4/1/1989
10/1/1989
4/1/1990
10/1/1990
4/1/1991
10/1/1991
4/1/1992
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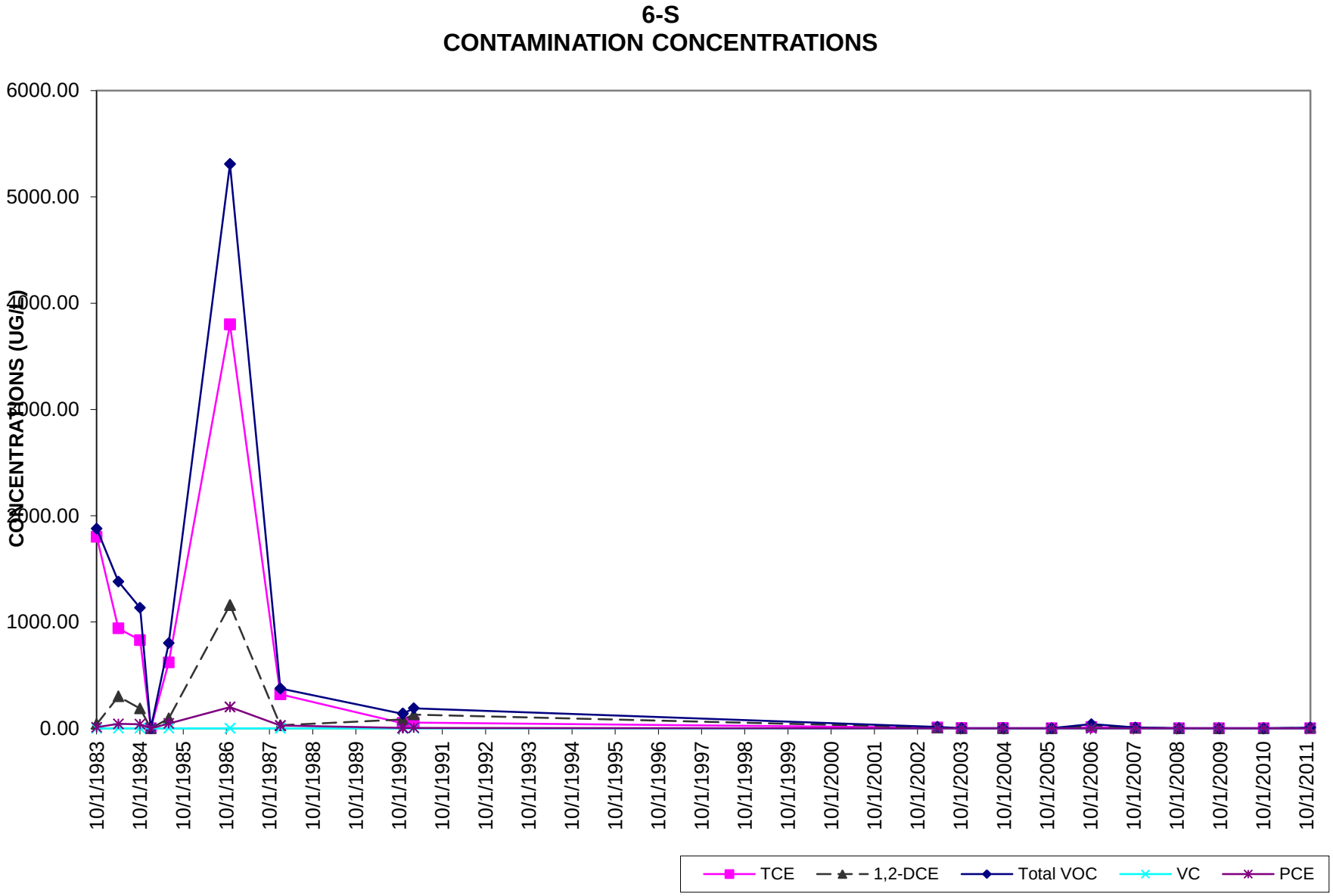
4/1/1994
10/1/1994
4/1/1995
10/1/1995
4/1/1996
10/1/1996
4/1/1997
10/1/1997
4/1/1998
10/1/1998
4/1/1999
10/1/1999
TCE
1,2-DCE
Total VOC
VC
PCE


6-S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
6000.00
5000.00
4000.00
3000.00
2000.00
1000.00
0.00
10/1/1983
10/1/1984
10/1/1985
10/1/1986
10/1/1987
10/1/1988
10/1/1989
10/1/1990
10/1/1991
10/1/1992
10/1/1993
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10/1/1995
10/1/1996
10/1/1997
10/1/1998
10/1/1999
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10/1/2001
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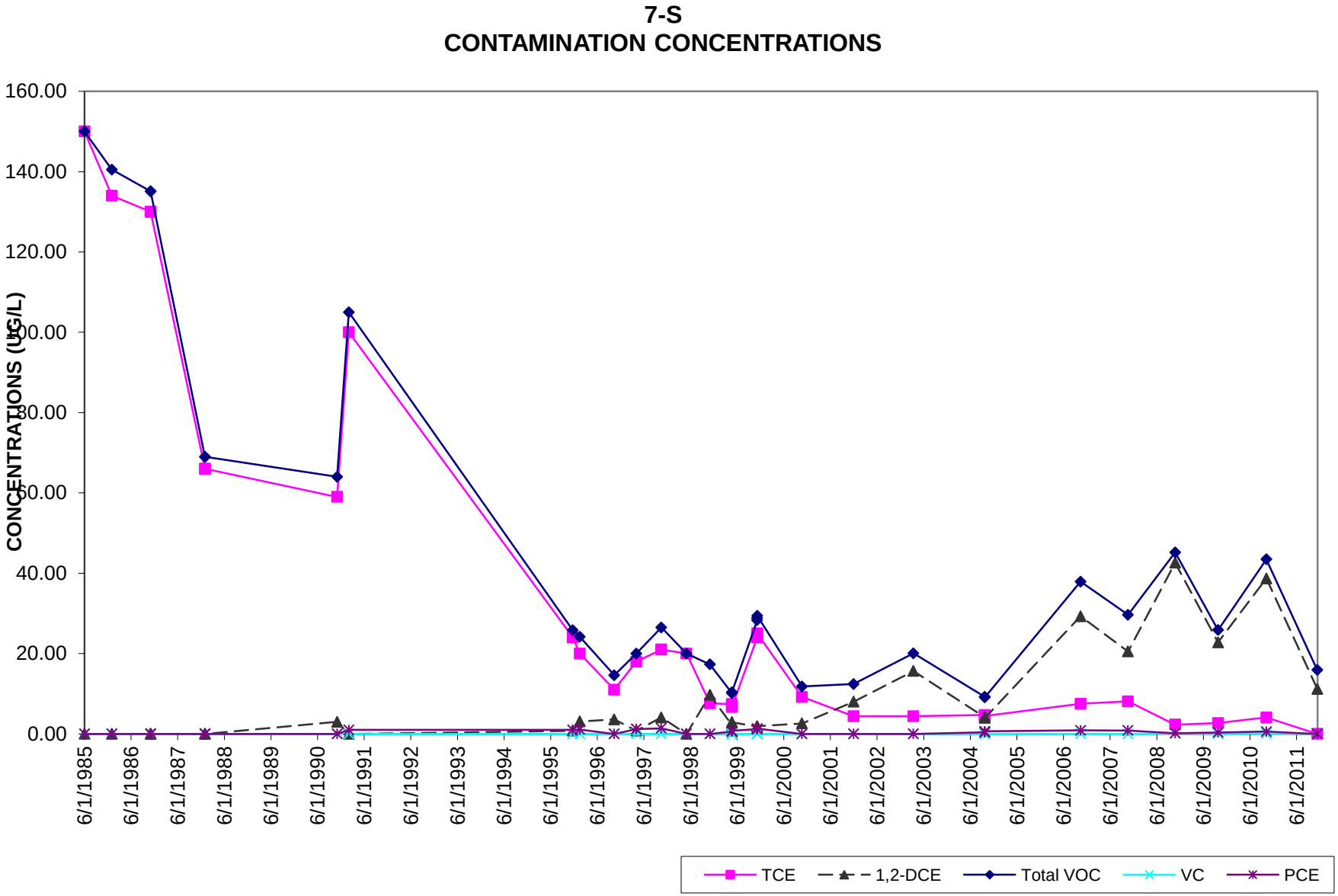
10/1/2003
10/1/2004
10/1/2005
10/1/2006
10/1/2007
10/1/2008
10/1/2009
10/1/2010
10/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE


7-S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
160.00
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
6/1/1985
6/1/1986
6/1/1987
6/1/1988
6/1/1989
6/1/1990
6/1/1991
6/1/1992
6/1/1993
6/1/1994
6/1/1995
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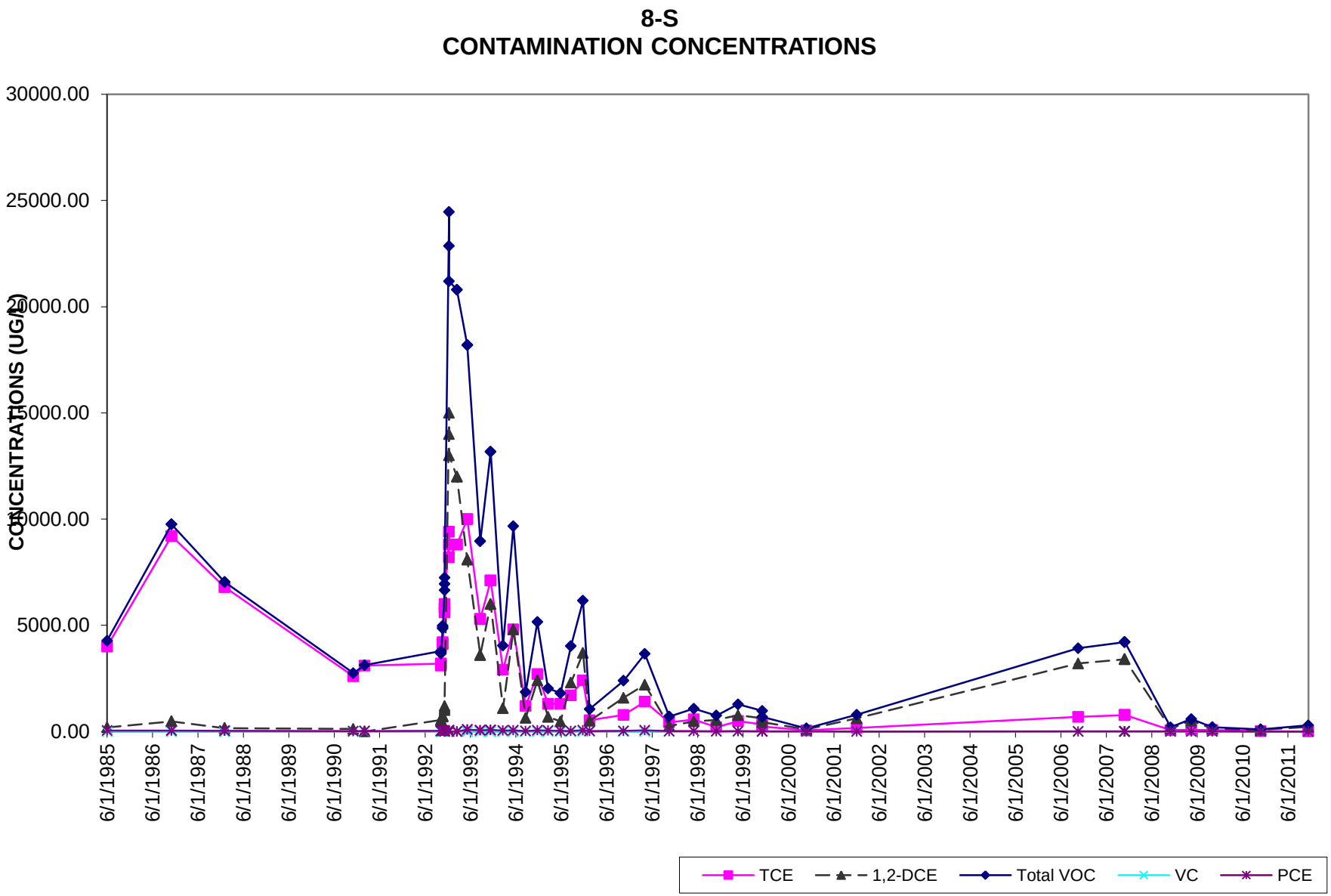
6/1/1998
6/1/1999
6/1/2000
6/1/2001
6/1/2002
6/1/2003
6/1/2004
6/1/2005
6/1/2006
6/1/2007
6/1/2008
6/1/2009
6/1/2010
6/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE


8-S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
30000.00
25000.00
20000.00
15000.00
10000.00
5000.00
0.00
6/1/1985
6/1/1986
6/1/1987
6/1/1988
6/1/1989
6/1/1990
6/1/1991
6/1/1992
6/1/1993
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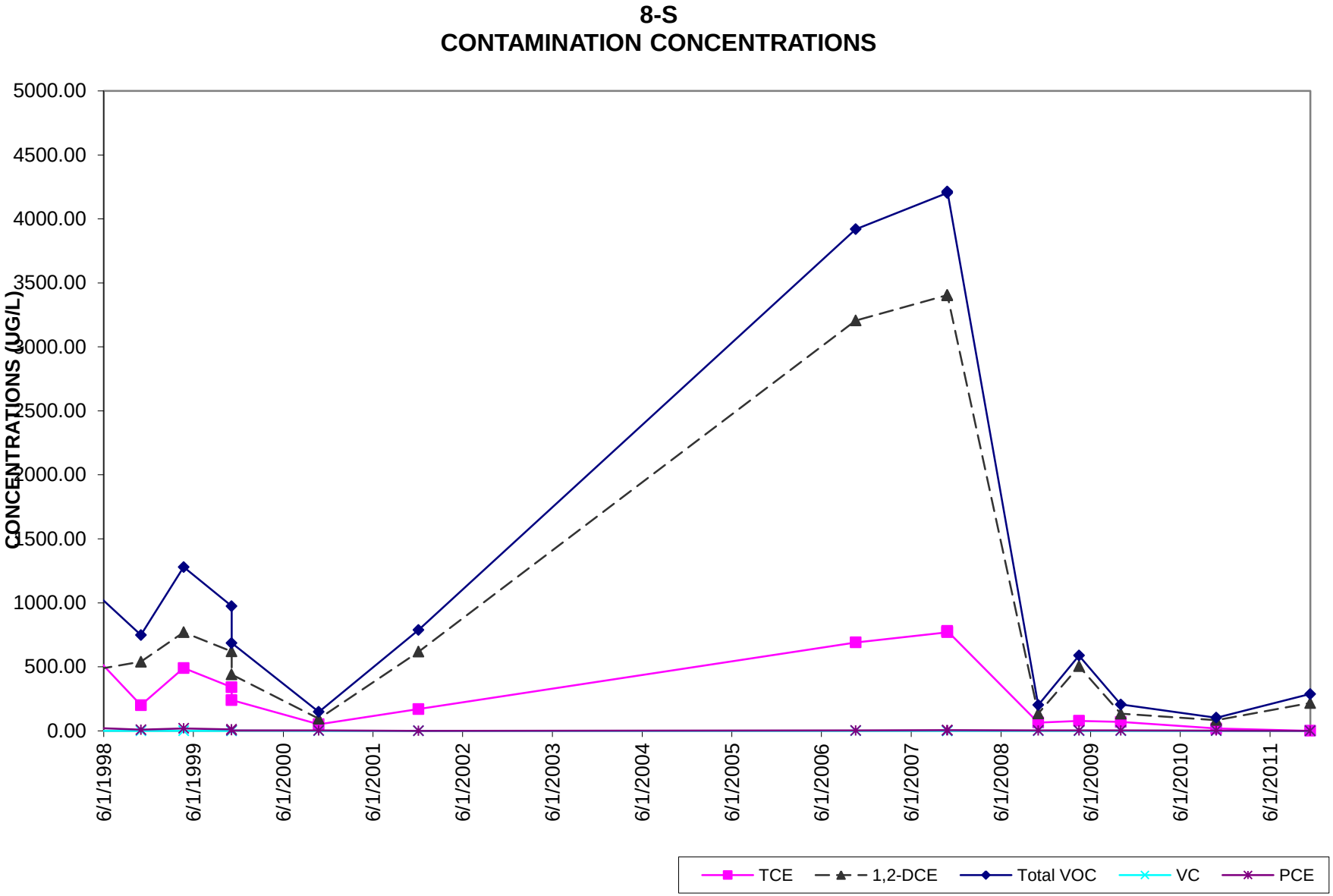
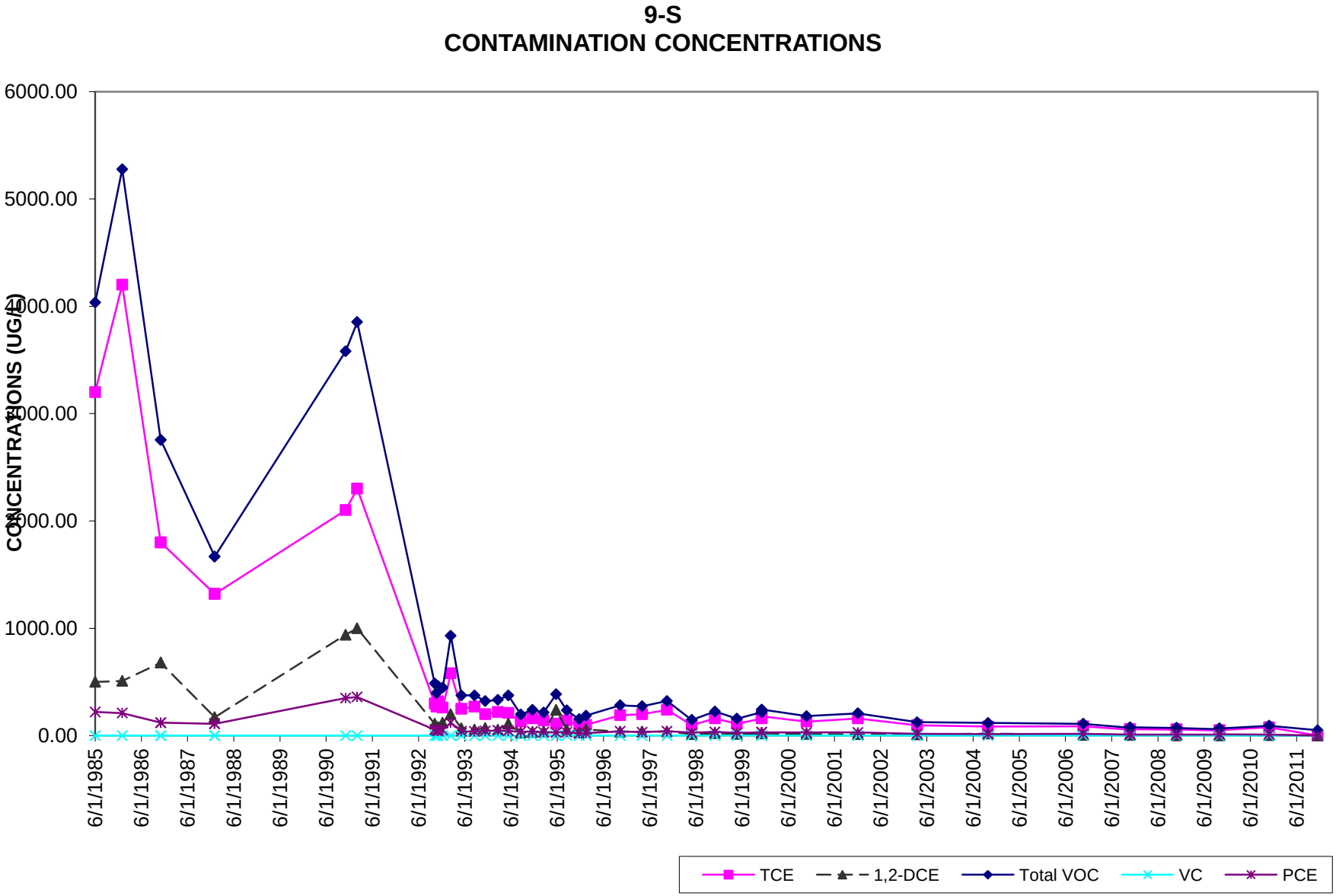
6/1/1998
6/1/1999
6/1/2000
6/1/2001
6/1/2002
6/1/2003
6/1/2004
6/1/2005
6/1/2006
6/1/2007
6/1/2008
6/1/2009
6/1/2010
6/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE


8-S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (µG/L)
5000.00
4500.00
4000.00
3500.00
3000.00
2500.00
2000.00
1500.00
1000.00
500.00
0.00
6/1/1998
6/1/1999
6/1/2000
6/1/2001
6/1/2002
6/1/2003
6/1/2004
6/1/2005
6/1/2006
6/1/2007
6/1/2008
6/1/2009
6/1/2010
6/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE


9-S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
6000.00
5000.00
4000.00
3000.00
2000.00
1000.00
0.00
6/1/1985
6/1/1986
6/1/1987
6/1/1988
6/1/1989
6/1/1990
6/1/1991
6/1/1992
6/1/1993
6/1/1994
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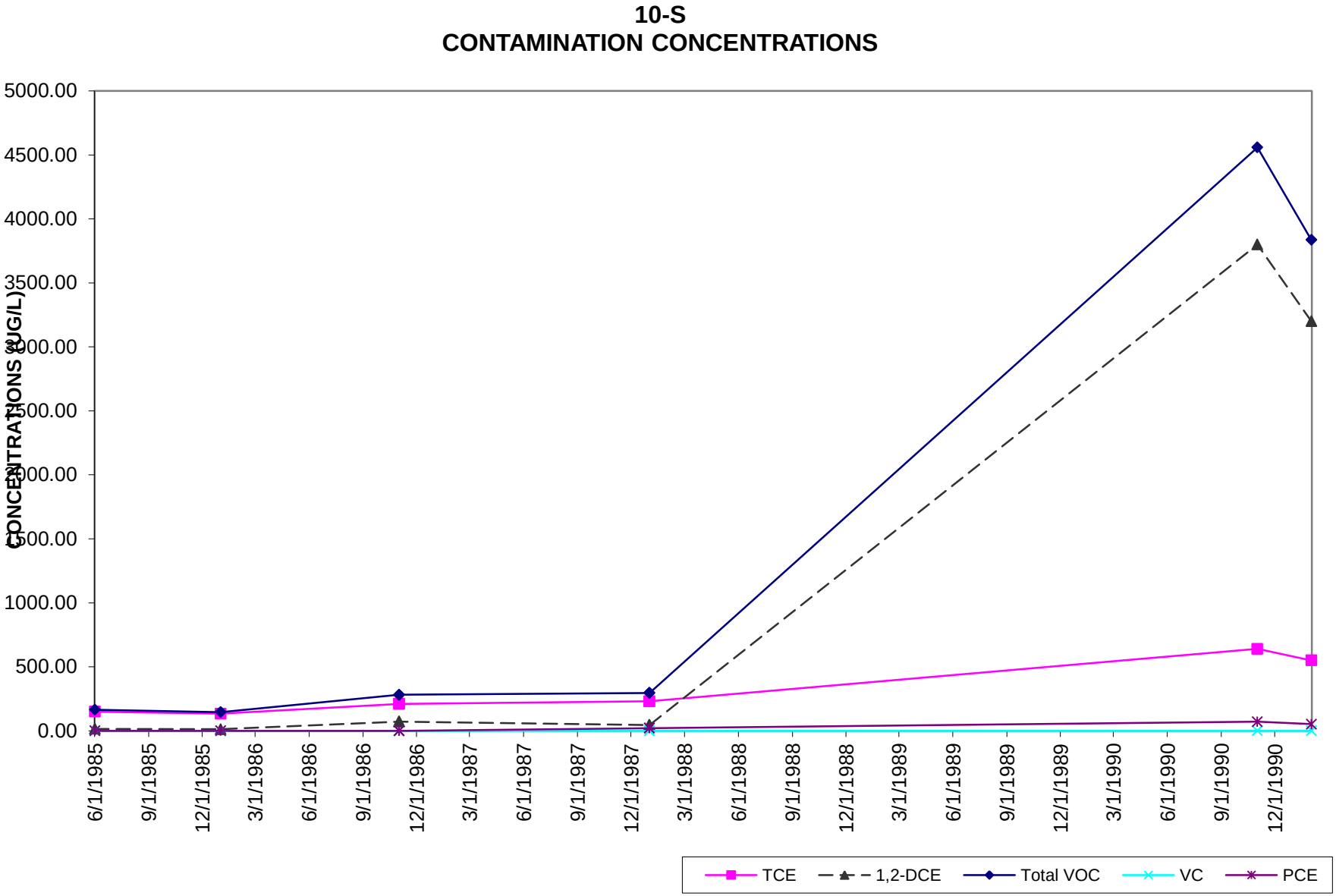
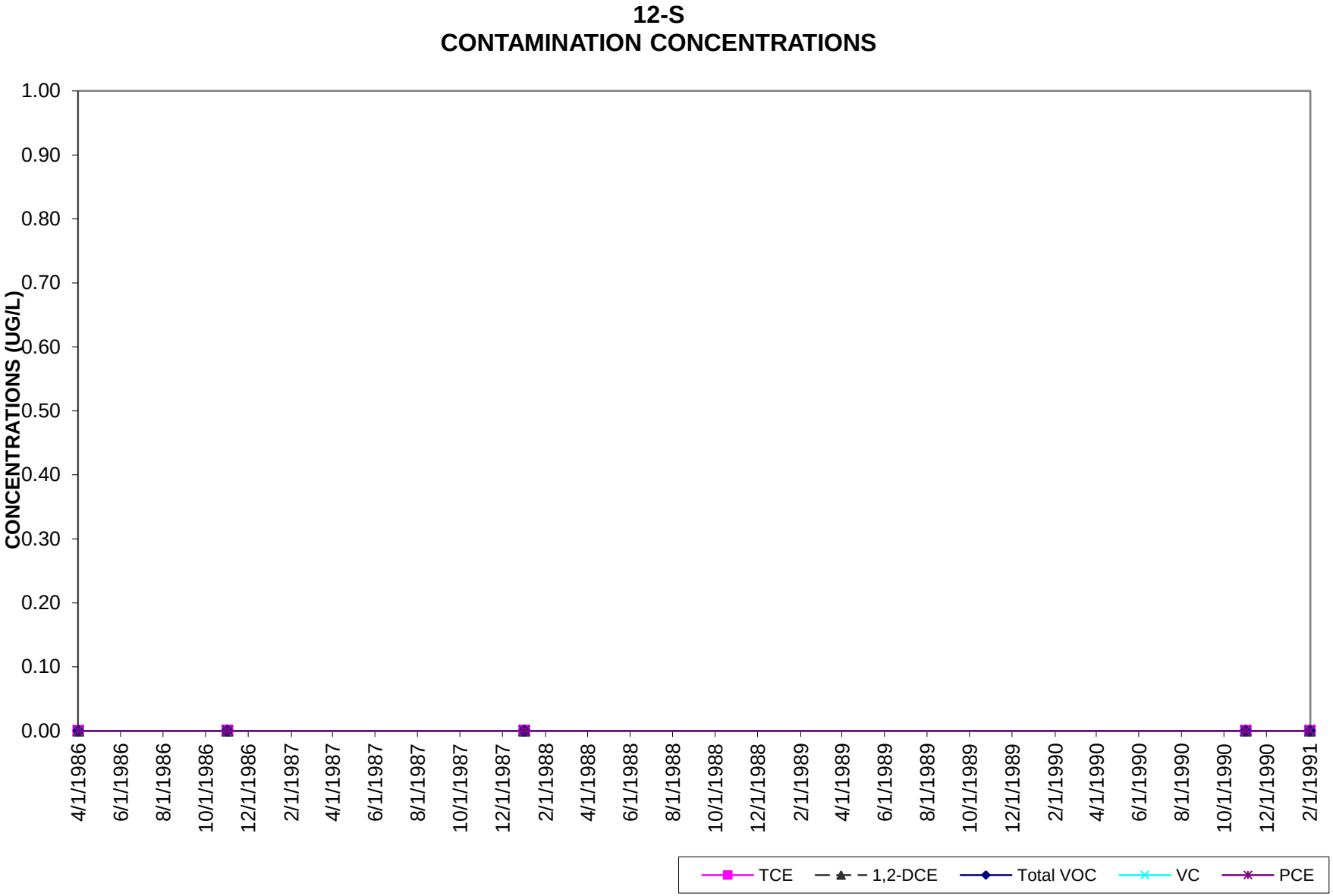
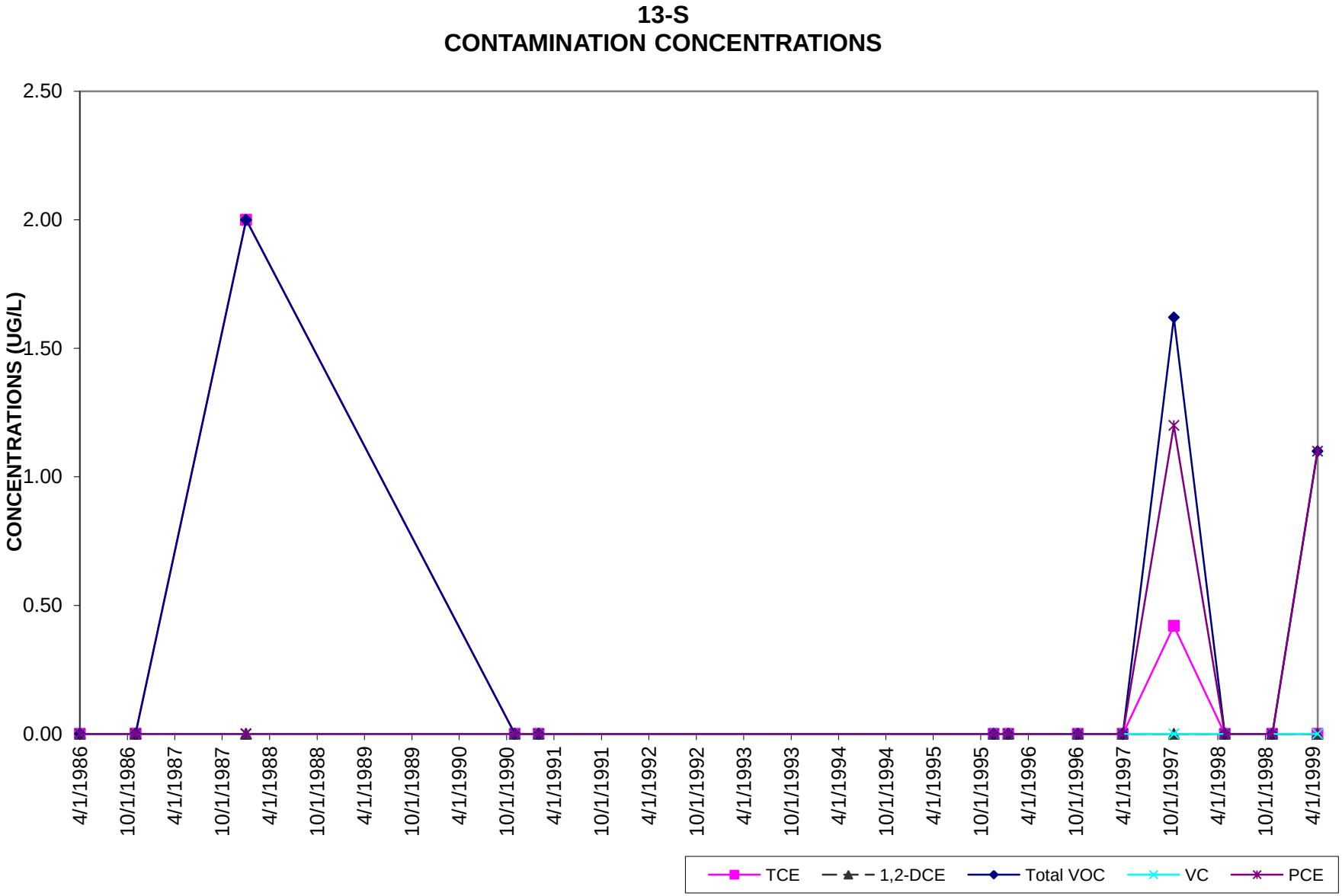
6/1/1996
6/1/1997
6/1/1998
6/1/1999
6/1/2000
6/1/2001
6/1/2002
6/1/2003
6/1/2004
6/1/2005
6/1/2006
6/1/2007
6/1/2008
6/1/2009
6/1/2010
6/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE


10-S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
5000.00
4500.00
4000.00
3500.00
3000.00
2500.00
2000.00
1500.00
1000.00
500.00
0.00
6/1/1985
9/1/1985
12/1/1985
3/1/1986
6/1/1986
9/1/1986
12/1/1986
3/1/1987
6/1/1987
9/1/1987
12/1/1987
3/1/1988
6/1/1988
9/1/1988
12/1/1988
3/1/1989
6/1/1989
9/1/1989
12/1/1989
3/1/1990
6/1/1990
9/1/1990
12/1/1990
TCE
1,2-DCE
Total VOC
VC
PCE


12-S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
4/1/1986
6/1/1986
8/1/1986
10/1/1986
12/1/1986
2/1/1987
4/1/1987
6/1/1987
8/1/1987
10/1/1987
12/1/1987
2/1/1988
4/1/1988
6/1/1988
8/1/1988
10/1/1988
12/1/1988
2/1/1989
4/1/1989
6/1/1989
8/1/1989
10/1/1989
12/1/1989
2/1/1990
4/1/1990
6/1/1990
8/1/1990
10/1/1990
12/1/1990
2/1/1991
TCE
1,2-DCE
Total VOC
VC
PCE


13-S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
2.50
2.00
1.50
1.00
0.50
0.00
4/1/1986
10/1/1986
4/1/1987
10/1/1987
4/1/1988
10/1/1988
4/1/1989
10/1/1989
4/1/1990
10/1/1990
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4/1/1993
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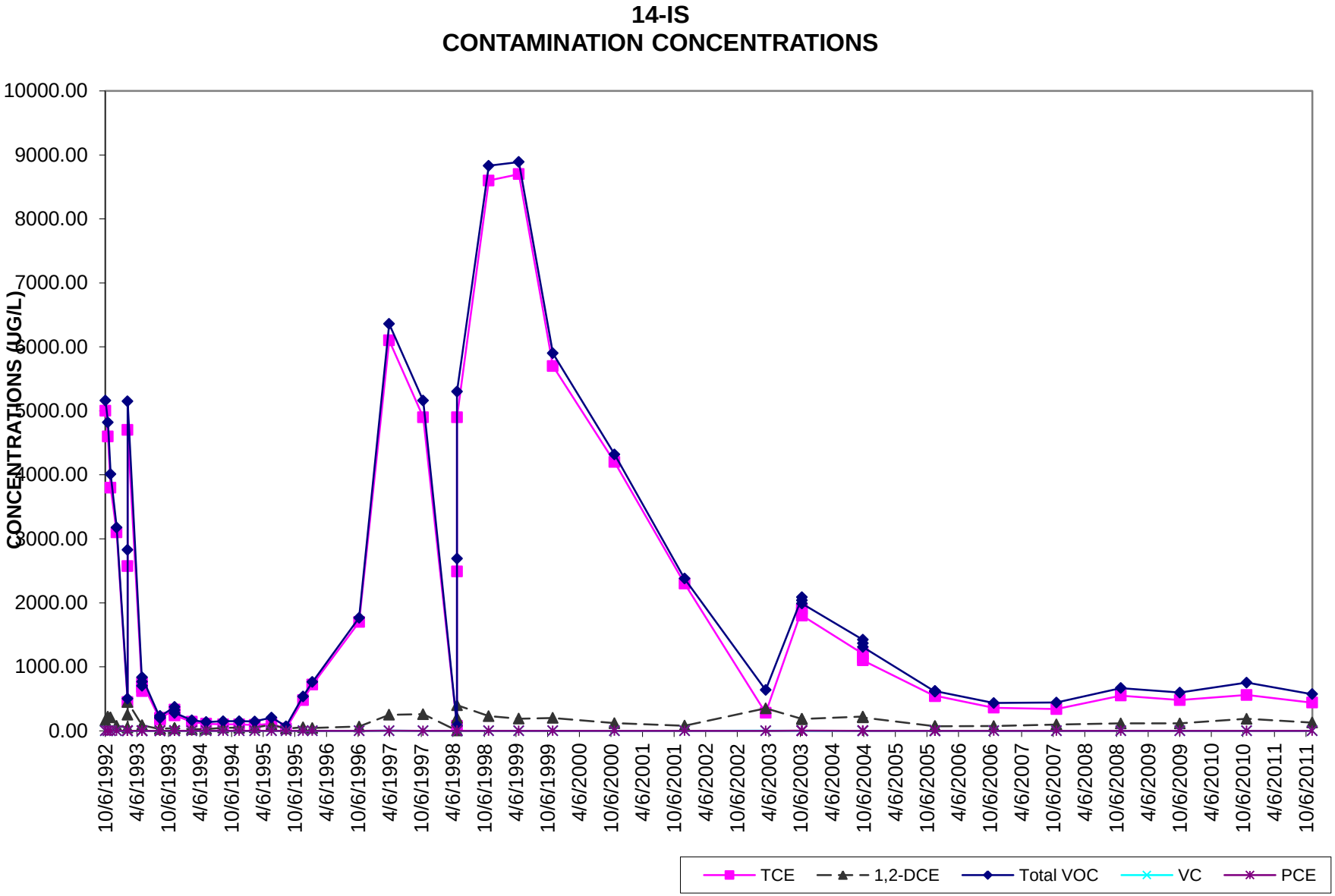
10/1/1996
4/1/1997
10/1/1997
4/1/1998
10/1/1998
4/1/1999
TCE
1,2-DCE
Total VOC
VC
PCE


14-IS
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
10000.00
9000.00
8000.00
7000.00
6000.00
5000.00
4000.00
3000.00
2000.00
1000.00
0.00
10/6/1992
4/6/1993
10/6/1993
4/6/1994
10/6/1994
4/6/1995
10/6/1995
4/6/1996
10/6/1996
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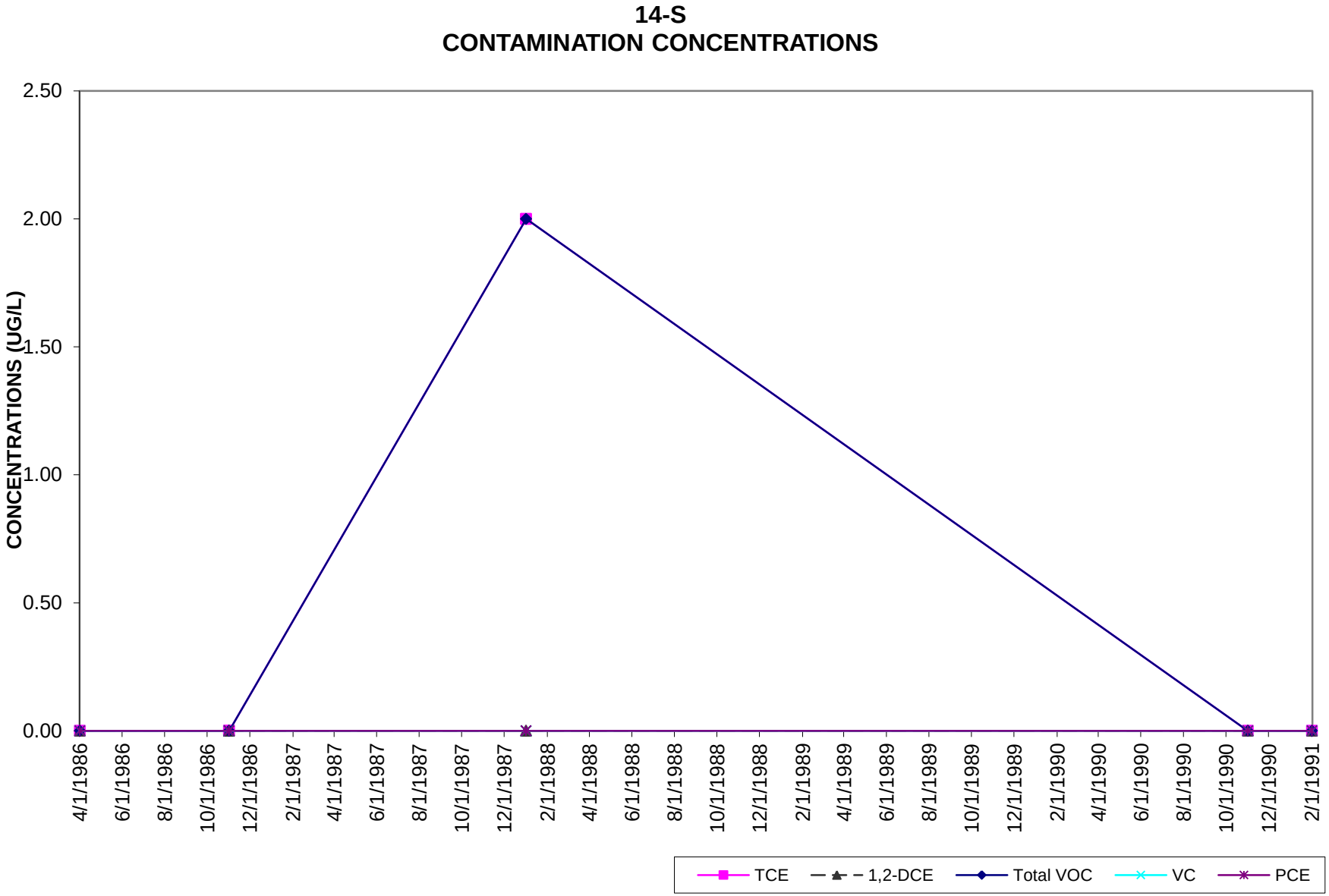
4/6/2009
10/6/2009
4/6/2010
10/6/2010
4/6/2011
10/6/2011
TCE
1,2-DCE
Total VOC
VC
PCE


14-S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
2.50
2.00
1.50
1.00
0.50
0.00
4/1/1986
6/1/1986
8/1/1986
10/1/1986
12/1/1986
2/1/1987
4/1/1987
6/1/1987
8/1/1987
10/1/1987
12/1/1987
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12/1/1988
2/1/1989
4/1/1989
6/1/1989
8/1/1989
10/1/1989
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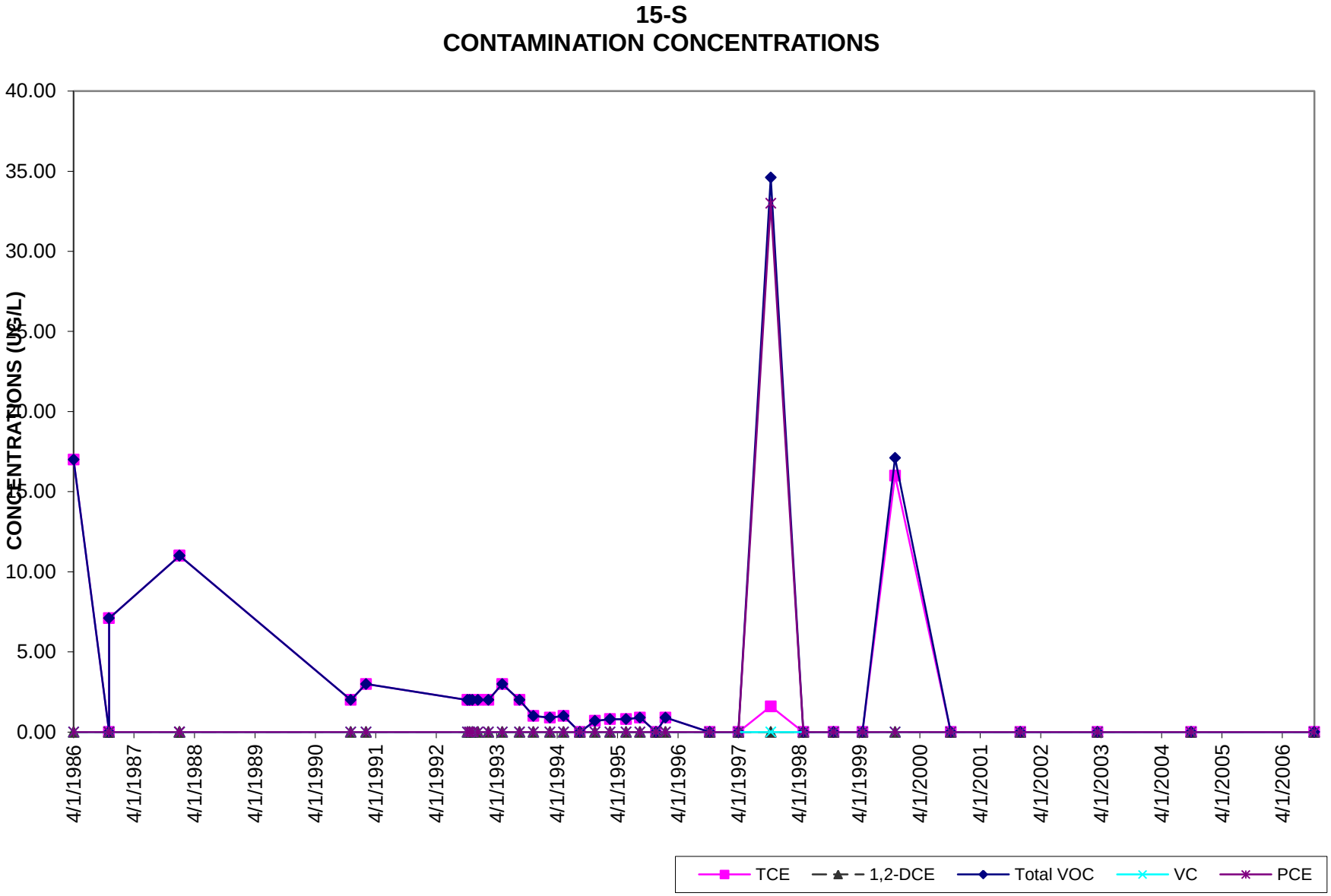
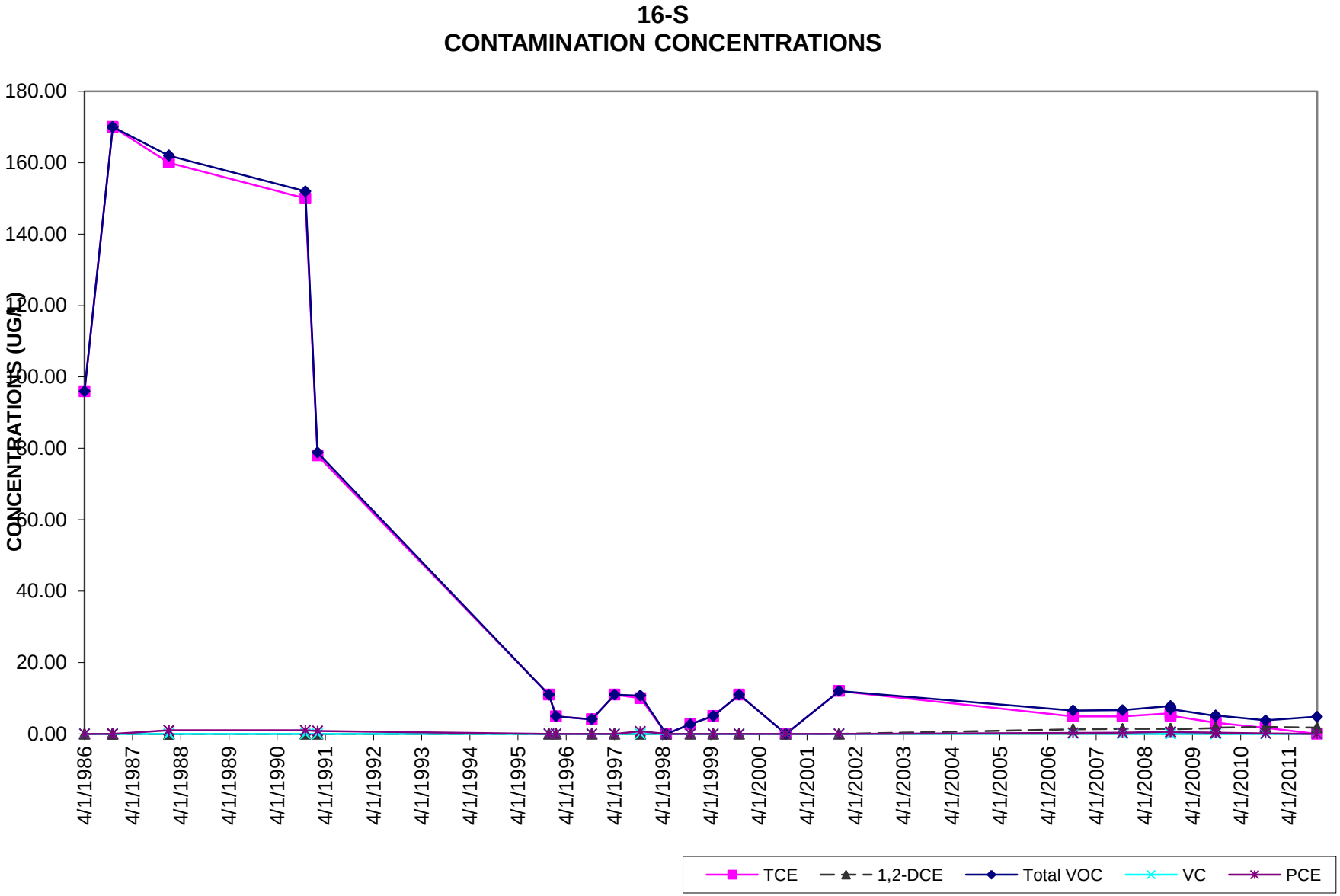
4/1/1990
6/1/1990
8/1/1990
10/1/1990
12/1/1990
2/1/1991
TCE
1,2-DCE
Total VOC
VC
PCE


15-S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
4/1/1986
4/1/1987
4/1/1988
4/1/1989
4/1/1990
4/1/1991
4/1/1992
4/1/1993
4/1/1994
4/1/1995
4/1/1996
4/1/1997
4/1/1998
4/1/1999
4/1/2000
4/1/2001
4/1/2002
4/1/2003
4/1/2004
4/1/2005
4/1/2006
TCE
1,2-DCE
Total VOC
VC
PCE


16-S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
180.00
160.00
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
4/1/1986
4/1/1987
4/1/1988
4/1/1989
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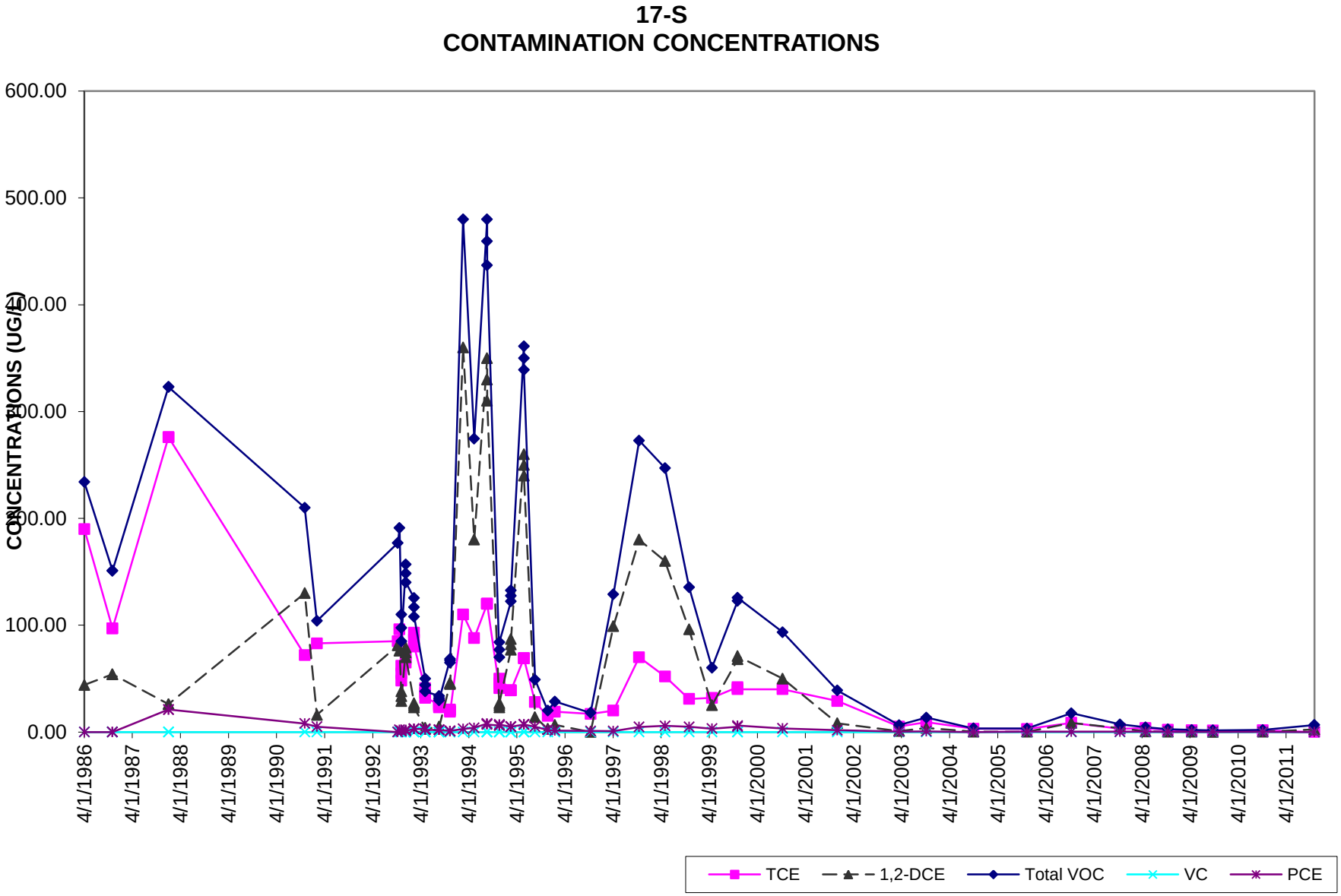
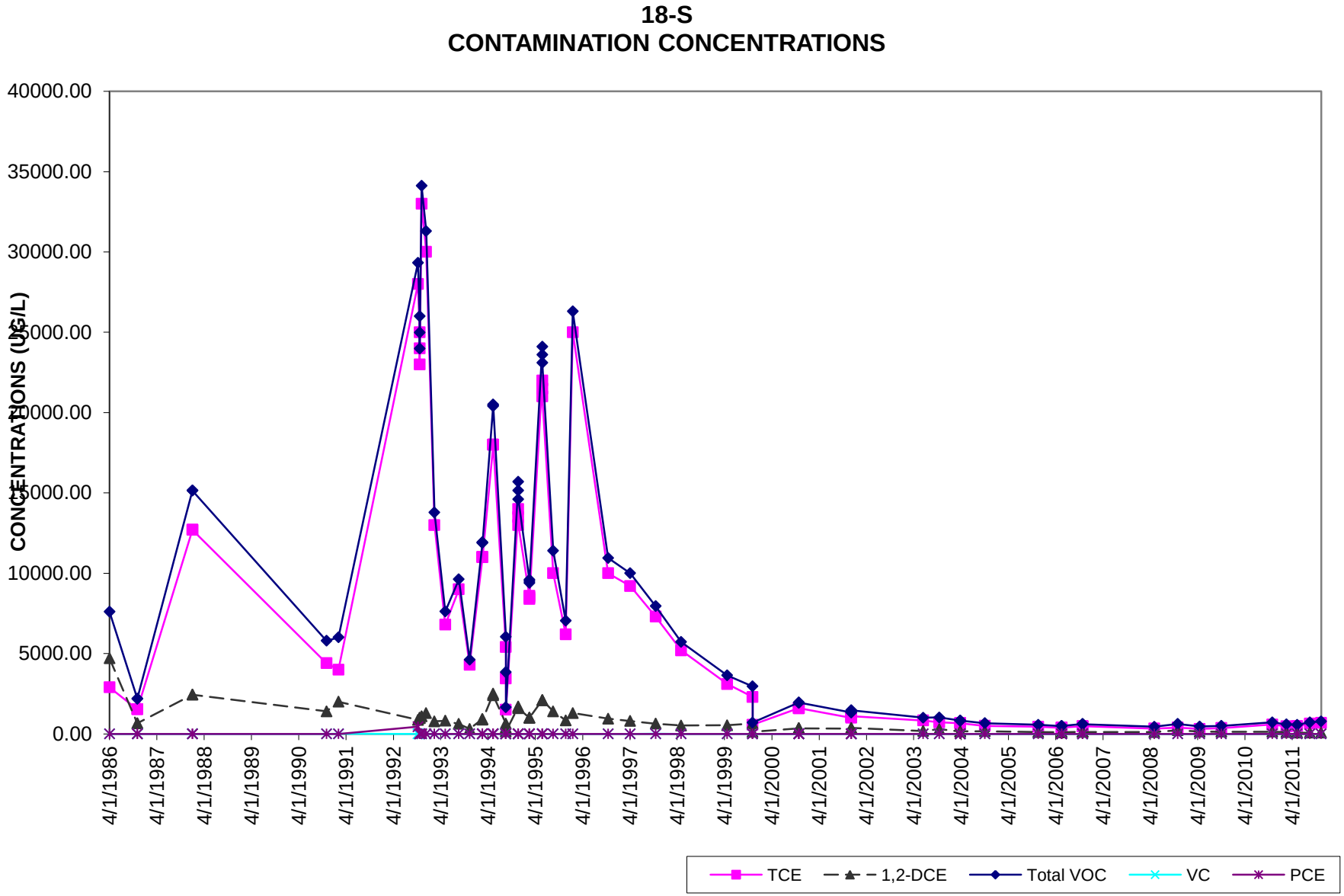
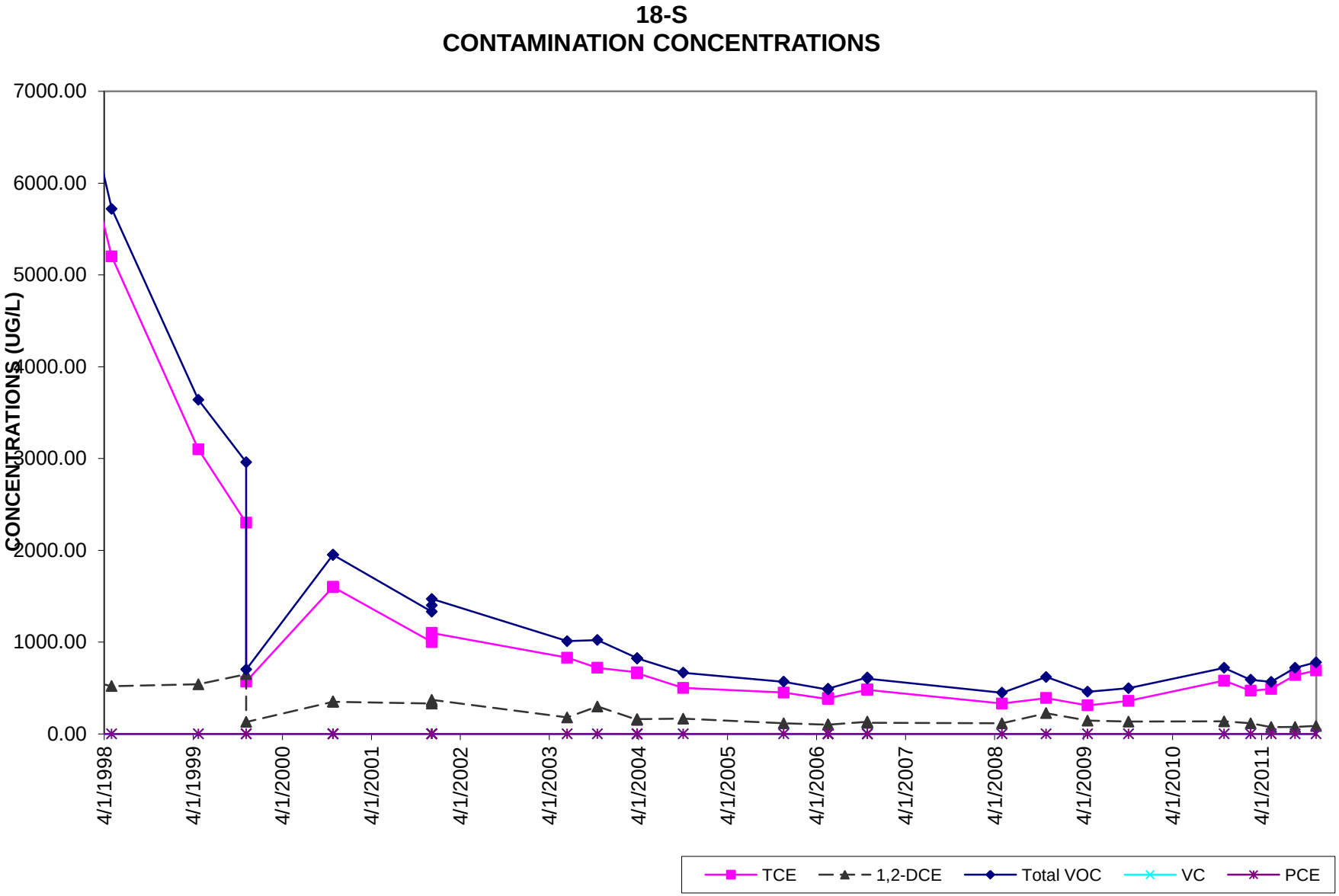
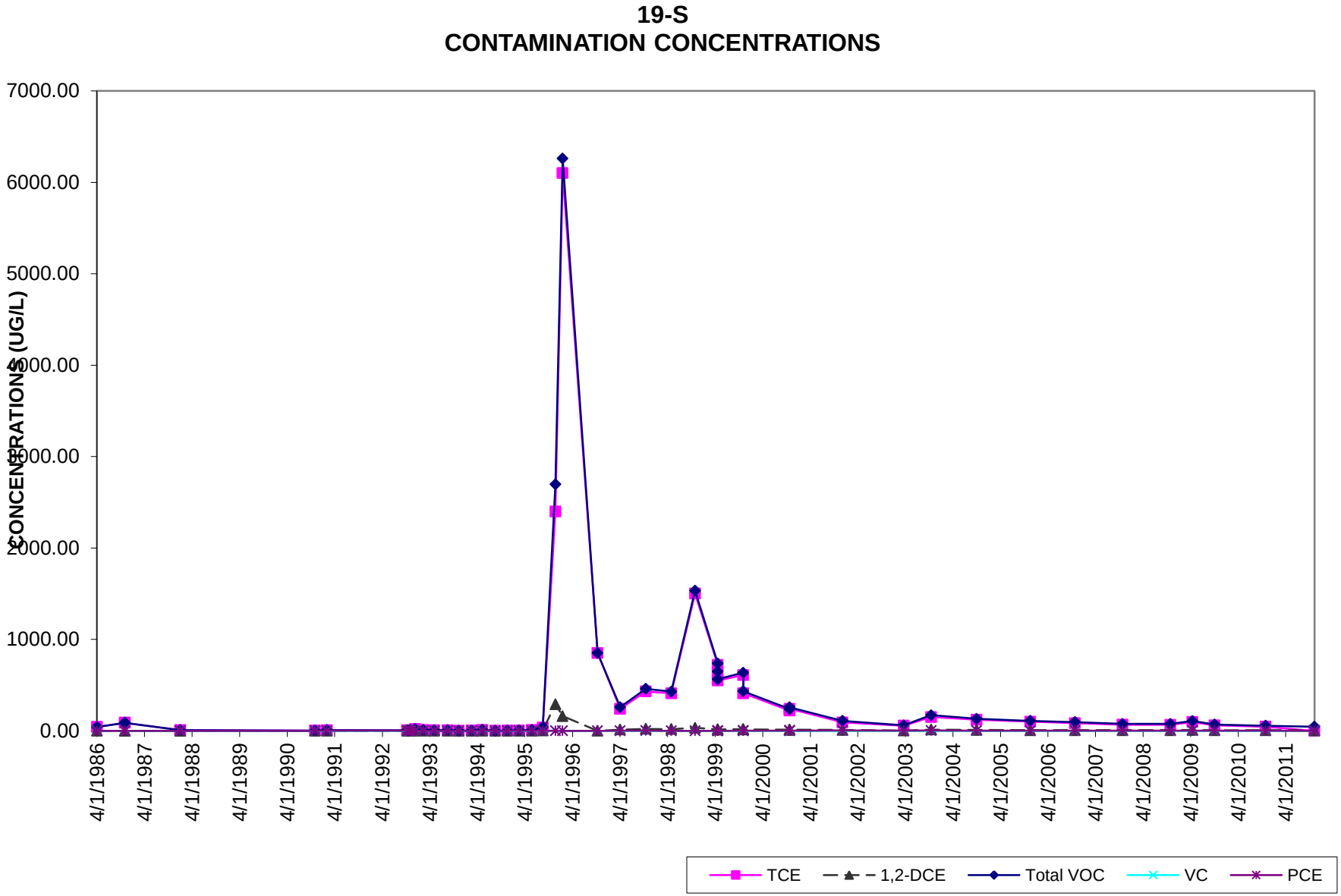
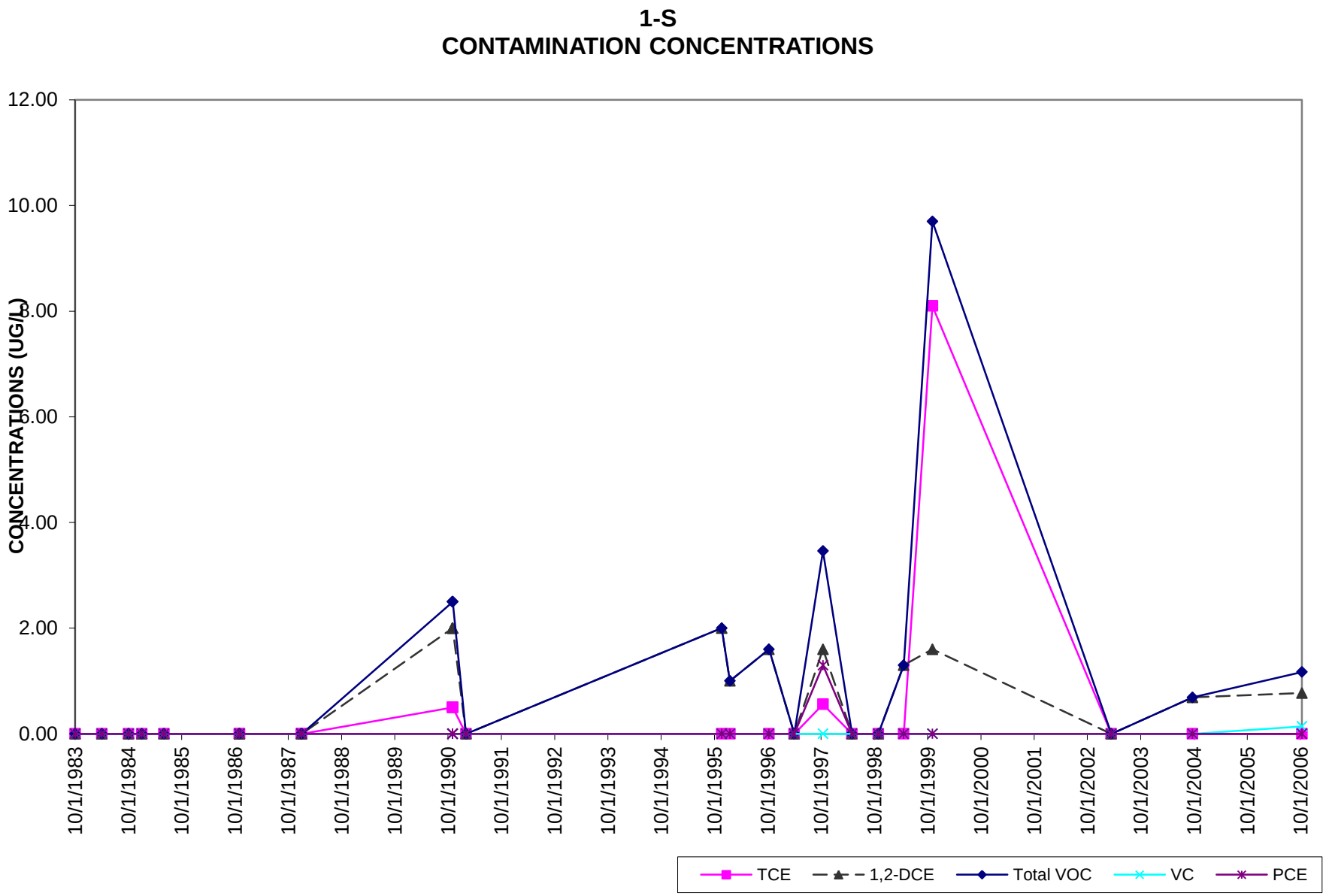
4/1/2005
4/1/2006
4/1/2007
4/1/2008
4/1/2009
4/1/2010
4/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE

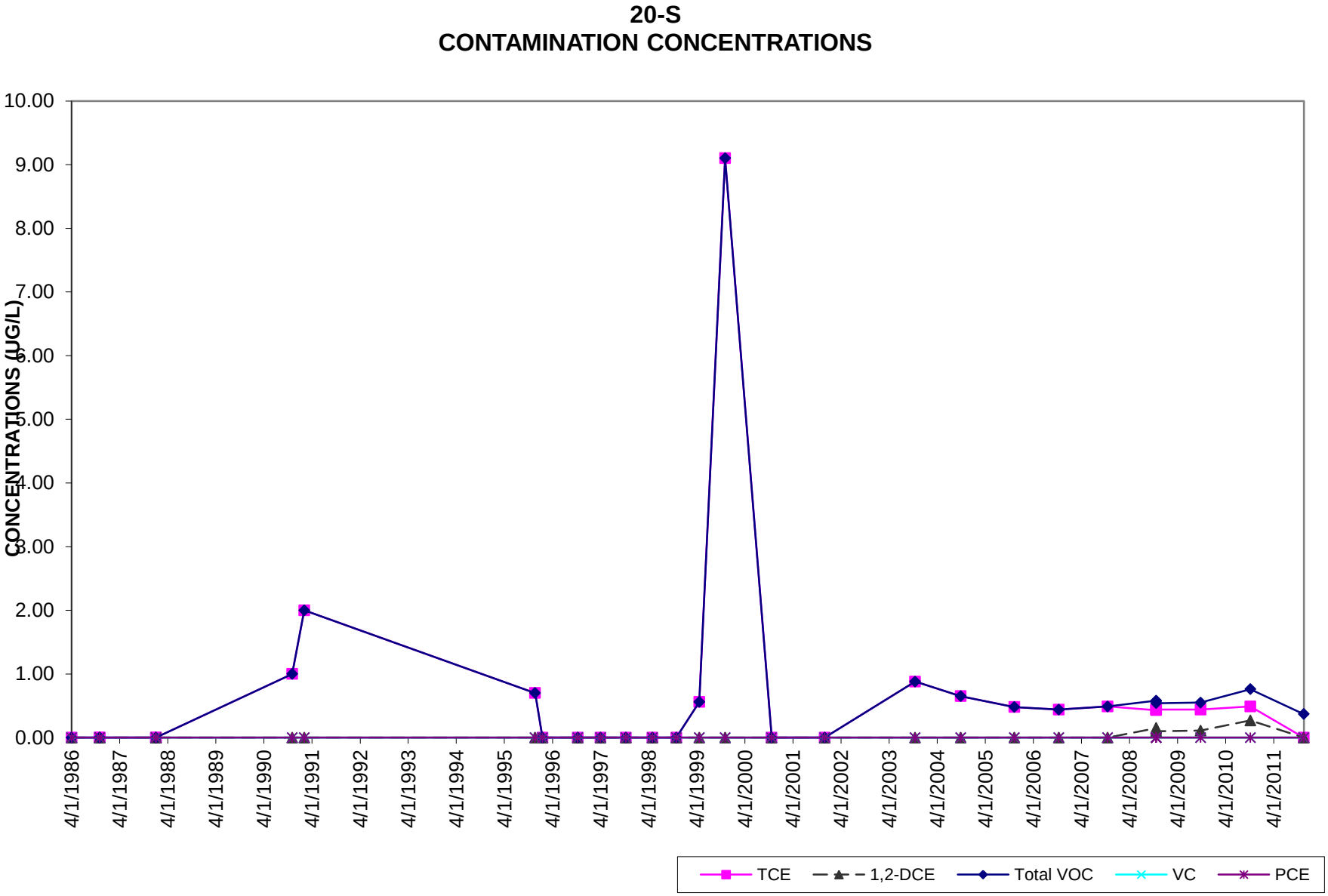

17-S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
600.00
500.00
400.00
300.00
200.00
100.00
0.00
4/1/1986
4/1/1987
4/1/1988
4/1/1989
4/1/1990
4/1/1991
4/1/1992
4/1/1993
4/1/1994
4/1/1995
4/1/1996
4/1/1997
4/1/1998
4/1/1999
4/1/2000
4/1/2001
4/1/2002
4/1/2003
4/1/2004
4/1/2005
4/1/2006
4/1/2007
4/1/2008
4/1/2009
4/1/2010
4/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE

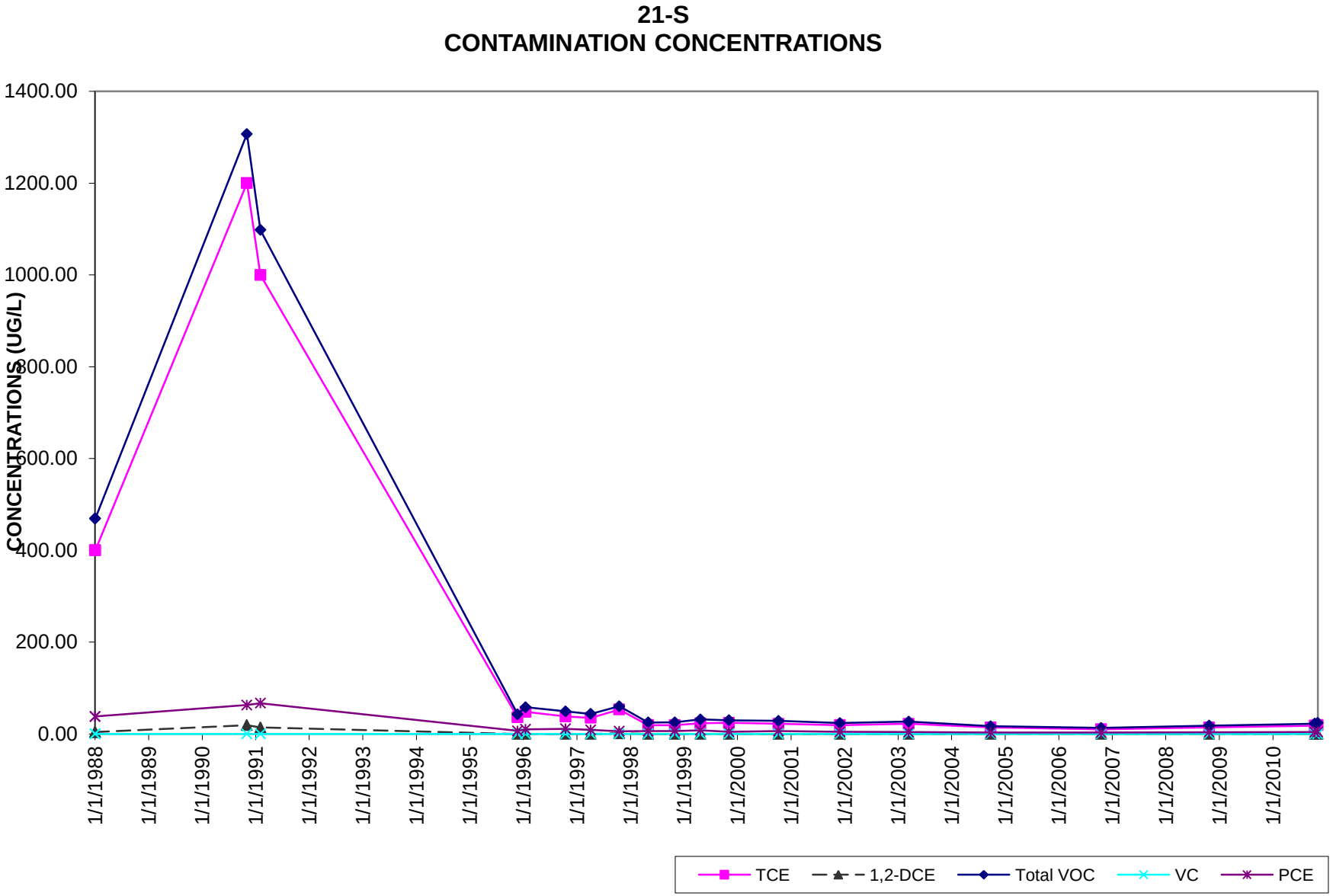

18-S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
40000.00
35000.00
30000.00
25000.00
20000.00
15000.00
10000.00
5000.00
0.00
4/1/1986
4/1/1987
4/1/1988
4/1/1989
4/1/1990
4/1/1991
4/1/1992
4/1/1993
4/1/1994
4/1/1995
4/1/1996
4/1/1997
4/1/1998
4/1/1999
4/1/2000
4/1/2001
4/1/2002
4/1/2003
4/1/2004
4/1/2005
4/1/2006
4/1/2007
4/1/2008
4/1/2009
4/1/2010
4/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE

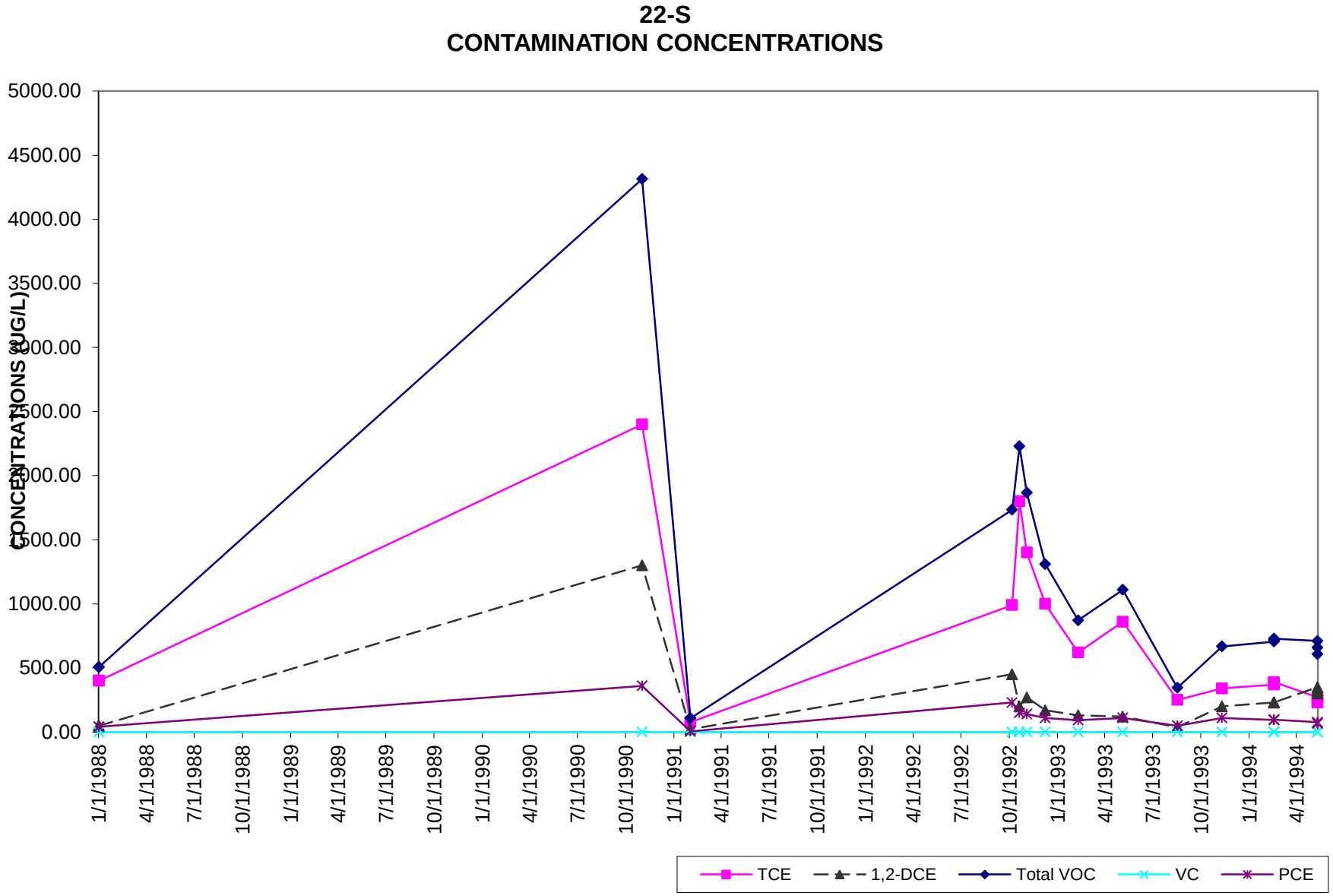

18-S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
7000.00
6000.00
5000.00
4000.00
3000.00
2000.00
1000.00
0.00
4/1/1998
4/1/1999
4/1/2000
4/1/2001
4/1/2002
4/1/2003
4/1/2004
4/1/2005
4/1/2006
4/1/2007
4/1/2008
4/1/2009
4/1/2010
4/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE

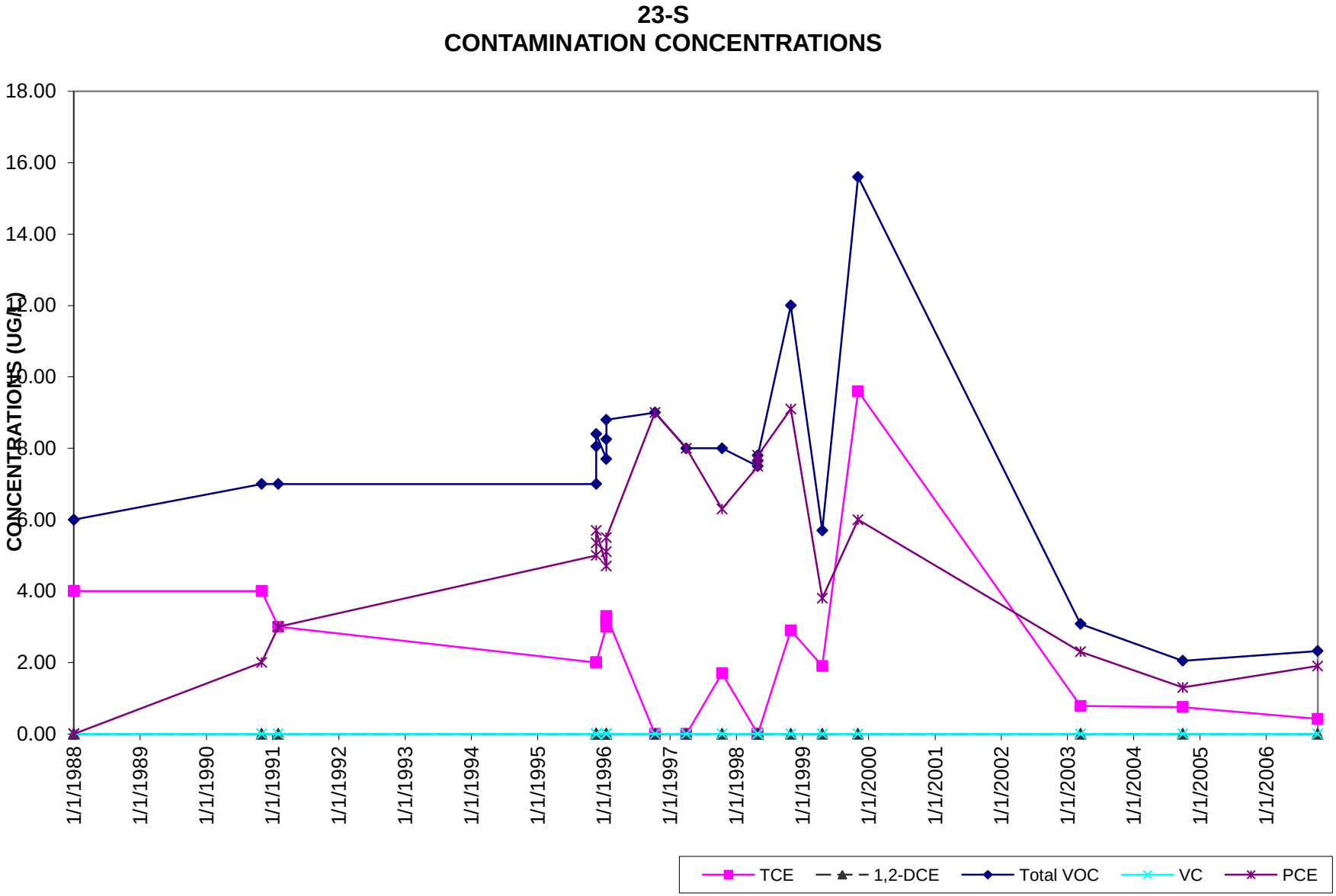

19-S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
7000.00
6000.00
5000.00
4000.00
3000.00
2000.00
1000.00
0.00
4/1/1986
4/1/1987
4/1/1988
4/1/1989
4/1/1990
4/1/1991
4/1/1992
4/1/1993
4/1/1994
4/1/1995
4/1/1996
4/1/1997
4/1/1998
4/1/1999
4/1/2000
4/1/2001
4/1/2002
4/1/2003
4/1/2004
4/1/2005
4/1/2006
4/1/2007
4/1/2008
4/1/2009
4/1/2010
4/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE

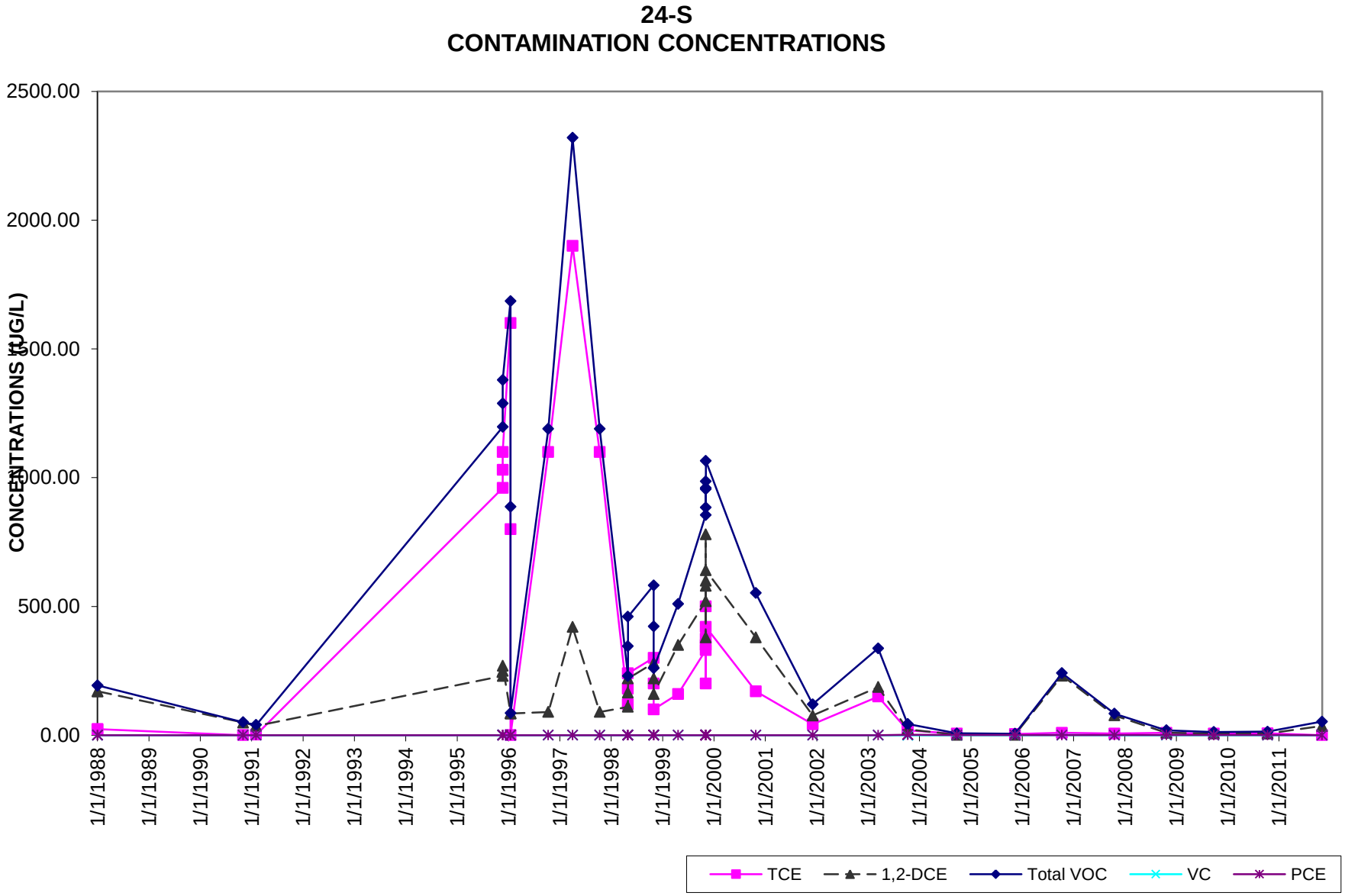

1-S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
12.00
10.00
8.00
6.00
4.00
2.00
0.00
10/1/1983
10/1/1984
10/1/1985
10/1/1986
10/1/1987
10/1/1988
10/1/1989
10/1/1990
10/1/1991
10/1/1992
10/1/1993
10/1/1994
10/1/1995
10/1/1996
10/1/1997
10/1/1998
10/1/1999
10/1/2000
10/1/2001
10/1/2002
10/1/2003
10/1/2004
10/1/2005
10/1/2006
TCE
1,2-DCE
Total VOC
VC
PCE

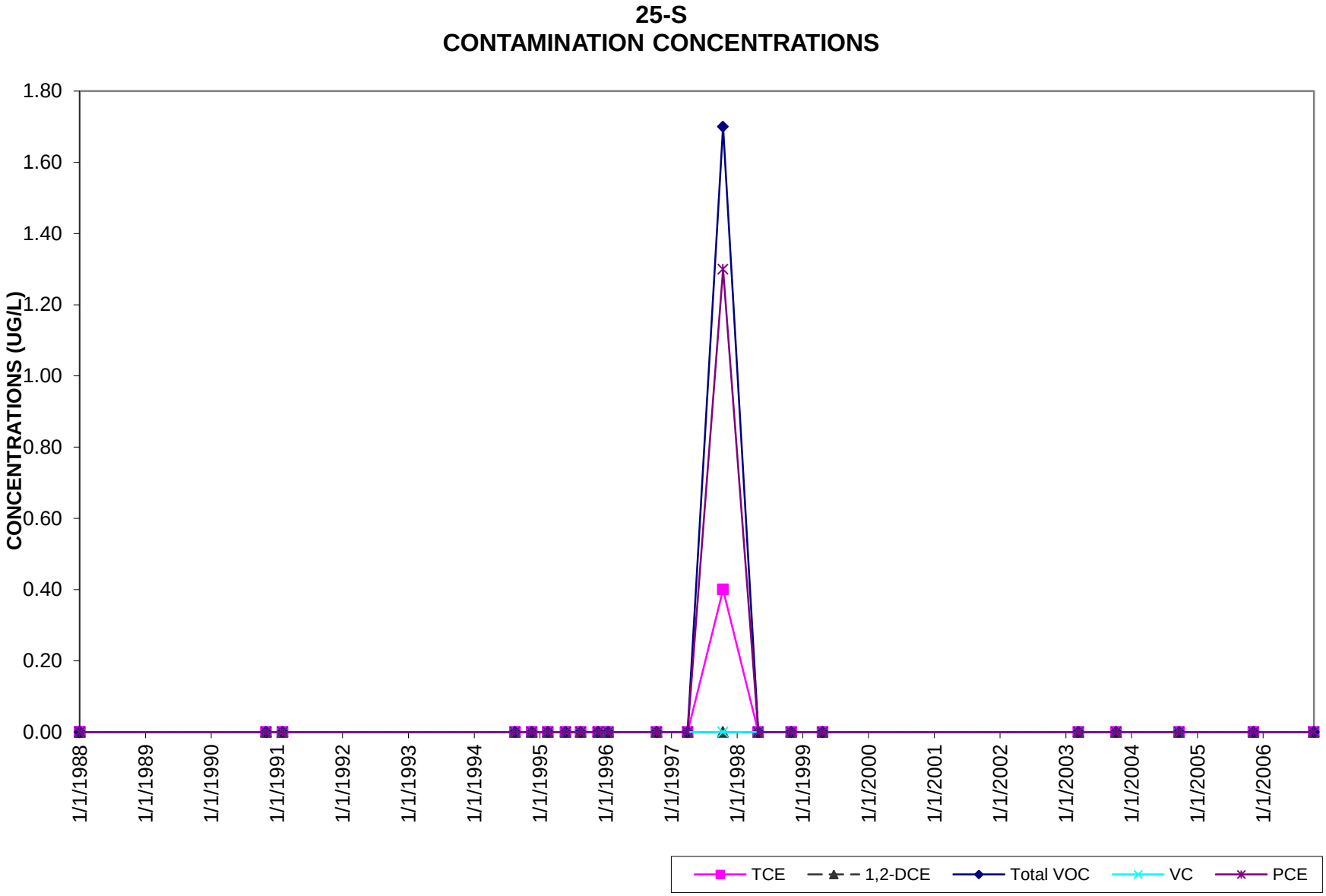

20-S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
4/1/1986
4/1/1987
4/1/1988
4/1/1989
4/1/1990
4/1/1991
4/1/1992
4/1/1993
4/1/1994
4/1/1995
4/1/1996
4/1/1997
4/1/1998
4/1/1999
4/1/2000
4/1/2001
4/1/2002
4/1/2003
4/1/2004
4/1/2005
4/1/2006
4/1/2007
4/1/2008
4/1/2009
4/1/2010
4/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE

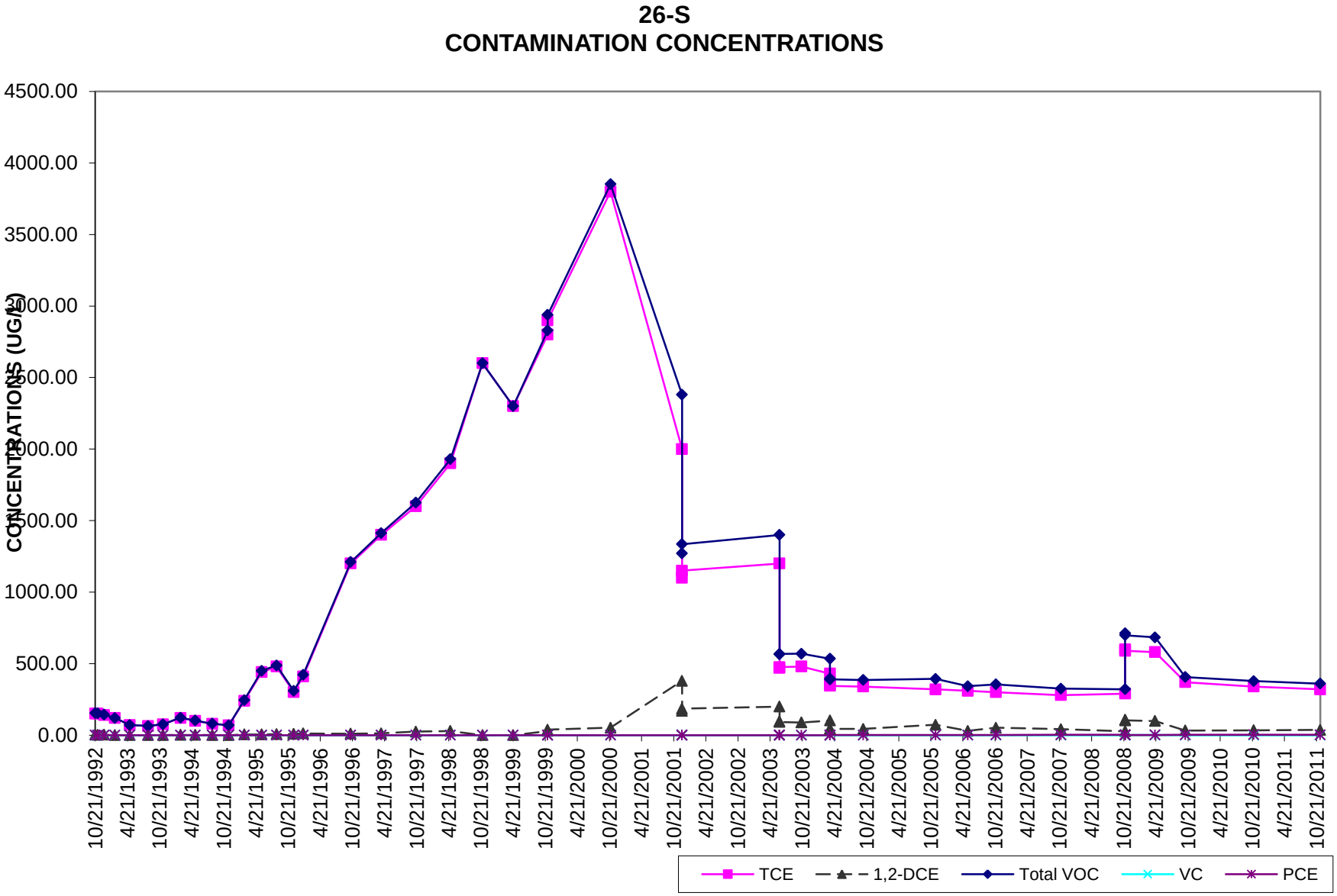

21-S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
1/1/1988
1/1/1989
1/1/1990
1/1/1991
1/1/1992
1/1/1993
1/1/1994
1/1/1995
1/1/1996
1/1/1997
1/1/1998
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
TCE
1,2-DCE
Total VOC
VC
PCE


22-S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
5000.00
4500.00
4000.00
3500.00
3000.00
2500.00
2000.00
1500.00
1000.00
500.00
0.00
1/1/1988
4/1/1988
7/1/1988
10/1/1988
1/1/1989
4/1/1989
7/1/1989
10/1/1989
1/1/1990
4/1/1990
7/1/1990
10/1/1990
1/1/1991
4/1/1991
7/1/1991
10/1/1991
1/1/1992
4/1/1992
7/1/1992
10/1/1992
1/1/1993
4/1/1993
7/1/1993
10/1/1993
1/1/1994
4/1/1994
TCE
1,2-DCE
Total VOC
VC
PCE


23-S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
1/1/1988
1/1/1989
1/1/1990
1/1/1991
1/1/1992
1/1/1993
1/1/1994
1/1/1995
1/1/1996
1/1/1997
1/1/1998
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
TCE
1,2-DCE
Total VOC
VC
PCE


24-S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
2500.00
2000.00
1500.00
1000.00
500.00
0.00
1/1/1988
1/1/1989
1/1/1990
1/1/1991
1/1/1992
1/1/1993
1/1/1994
1/1/1995
1/1/1996
1/1/1997
1/1/1998
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE


25-S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
1/1/1988
1/1/1989
1/1/1990
1/1/1991
1/1/1992
1/1/1993
1/1/1994
1/1/1995
1/1/1996
1/1/1997
1/1/1998
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
TCE
1,2-DCE
Total VOC
VC
PCE


26-S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
4500.00
4000.00
3500.00
3000.00
2500.00
2000.00
1500.00
1000.00
500.00
0.00
10/21/1992
4/21/1993
10/21/1993
4/21/1994
10/21/1994
4/21/1995
10/21/1995
4/21/1996
10/21/1996
4/21/1997
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4/21/1998
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4/21/2001
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4/21/2002
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4/21/2004
10/21/2004
4/21/2005
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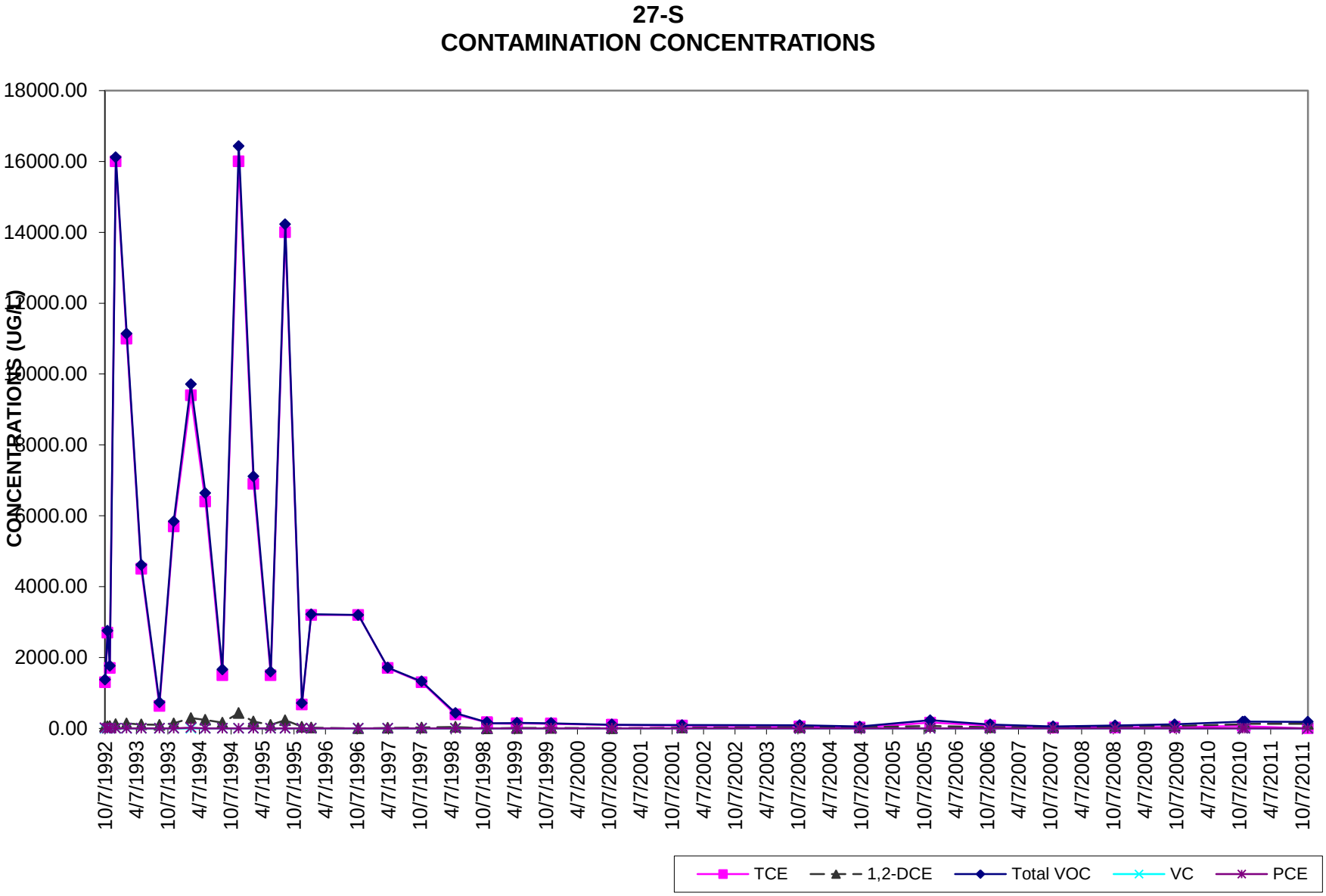
4/21/2006
10/21/2006
4/21/2007
10/21/2007
4/21/2008
10/21/2008
4/21/2009
10/21/2009
4/21/2010
10/21/2010
4/21/2011
10/21/2011
TCE
1,2-DCE
Total VOC
VC
PCE


27-S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
18000.00
16000.00
14000.00
12000.00
10000.00
8000.00
6000.00
4000.00
2000.00
0.00
10/7/1992
4/7/1993
10/7/1993
4/7/1994
10/7/1994
4/7/1995
10/7/1995
4/7/1996
10/7/1996
4/7/1997
10/7/1997
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4/7/1999
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4/7/2000
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4/7/2001
10/7/2001
4/7/2002
10/7/2002
4/7/2003
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4/7/2004
10/7/2004
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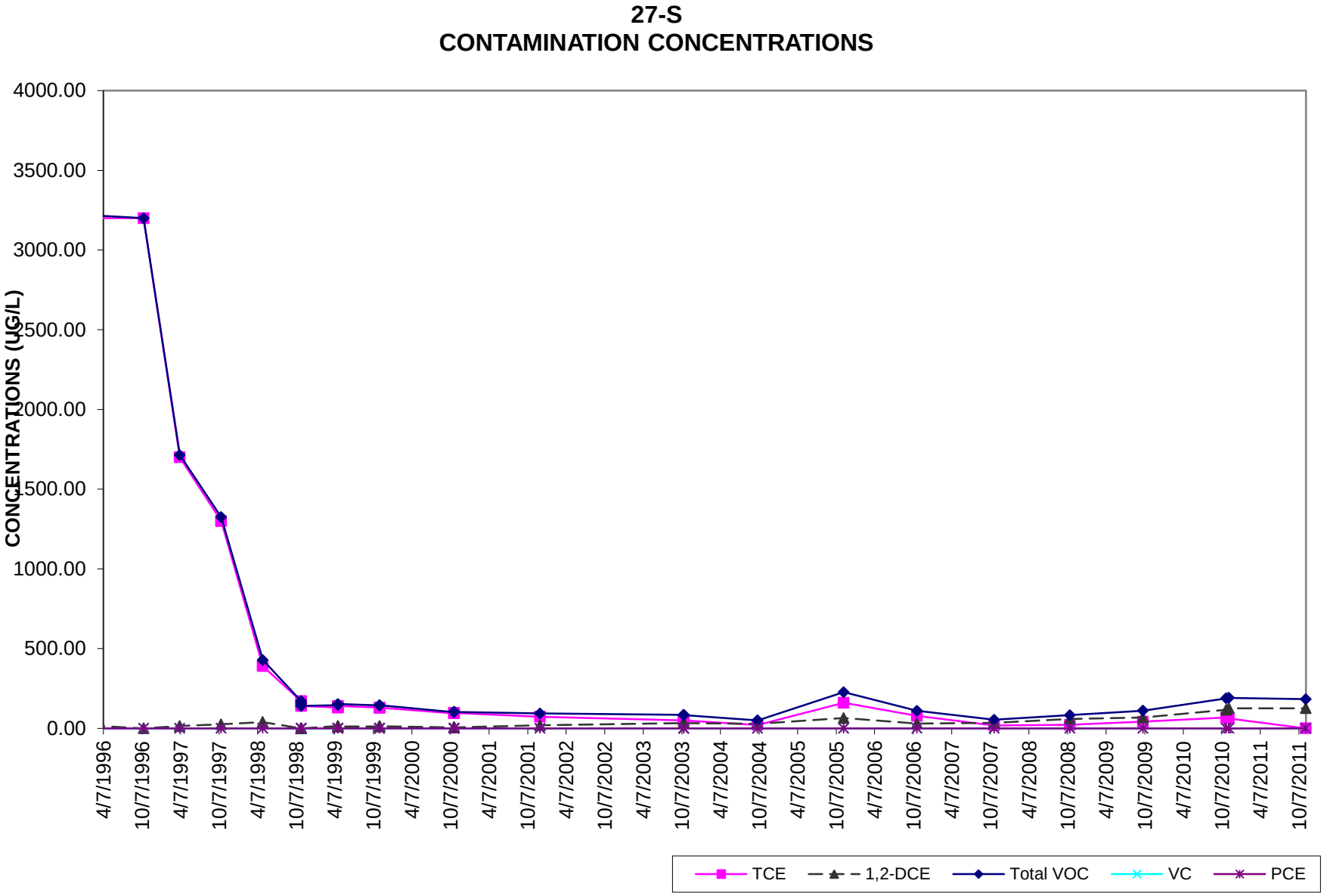
4/7/2006
10/7/2006
4/7/2007
10/7/2007
4/7/2008
10/7/2008
4/7/2009
10/7/2009
4/7/2010
10/7/2010
4/7/2011
10/7/2011
TCE
1,2-DCE
Total VOC
VC
PCE


27-S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
4000.00
3500.00
3000.00
2500.00
2000.00
1500.00
1000.00
500.00
0.00
4/7/1996
10/7/1996
4/7/1997
10/7/1997
4/7/1998
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4/7/1999
10/7/1999
4/7/2000
10/7/2000
4/7/2001
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10/7/2002
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4/7/2004
10/7/2004
4/7/2005
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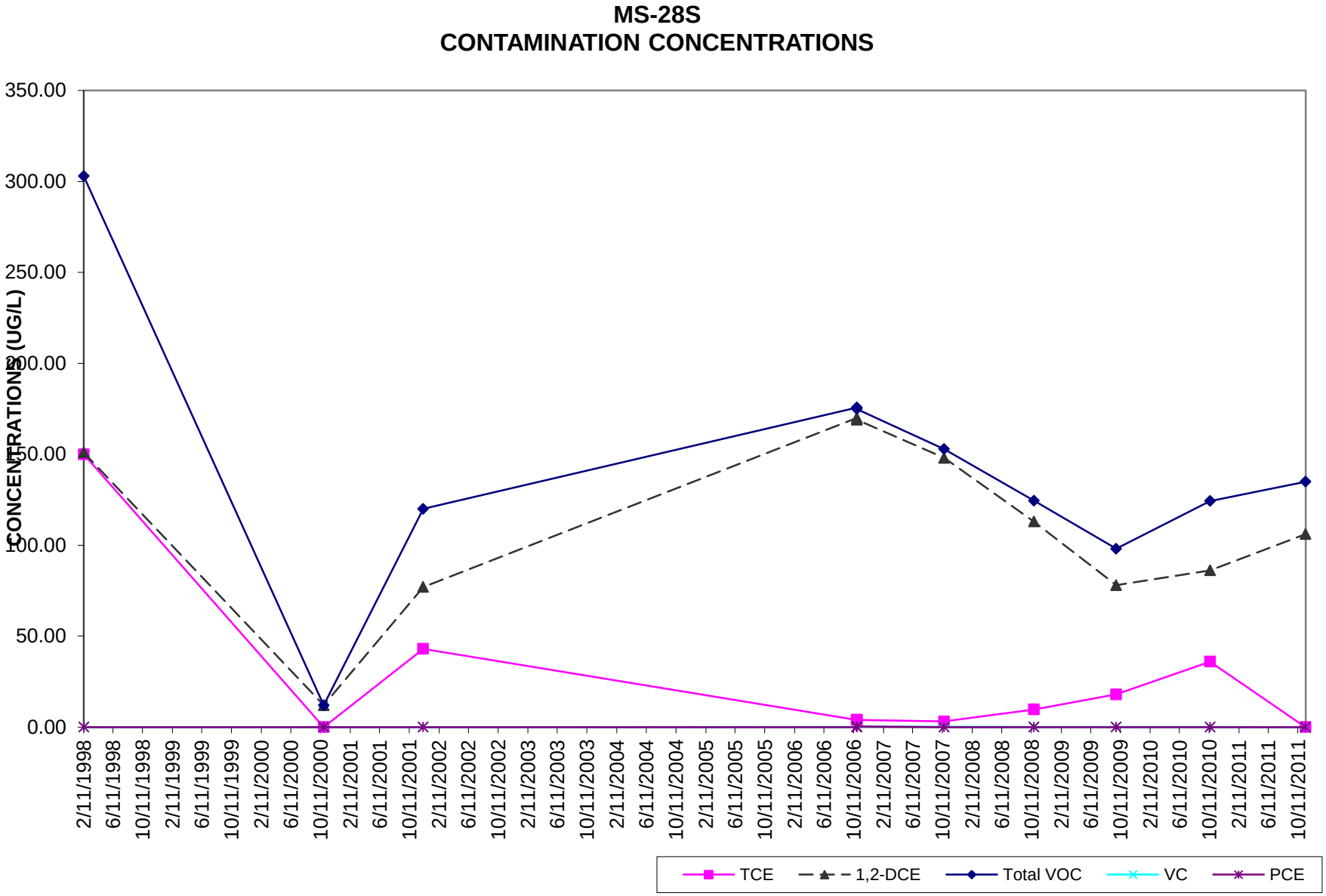
10/7/2006
4/7/2007
10/7/2007
4/7/2008
10/7/2008
4/7/2009
10/7/2009
4/7/2010
10/7/2010
4/7/2011
10/7/2011
TCE
1,2-DCE
Total VOC
VC
PCE


MS-28S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
350.00
300.00
250.00
200.00
150.00
100.00
50.00
0.00
2/11/1998
6/11/1998
10/11/1998
2/11/1999
6/11/1999
10/11/1999
2/11/2000
6/11/2000
10/11/2000
2/11/2001
6/11/2001
10/11/2001
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2/11/2003
6/11/2003
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2/11/2004
6/11/2004
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6/11/2006
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2/11/2007
6/11/2007
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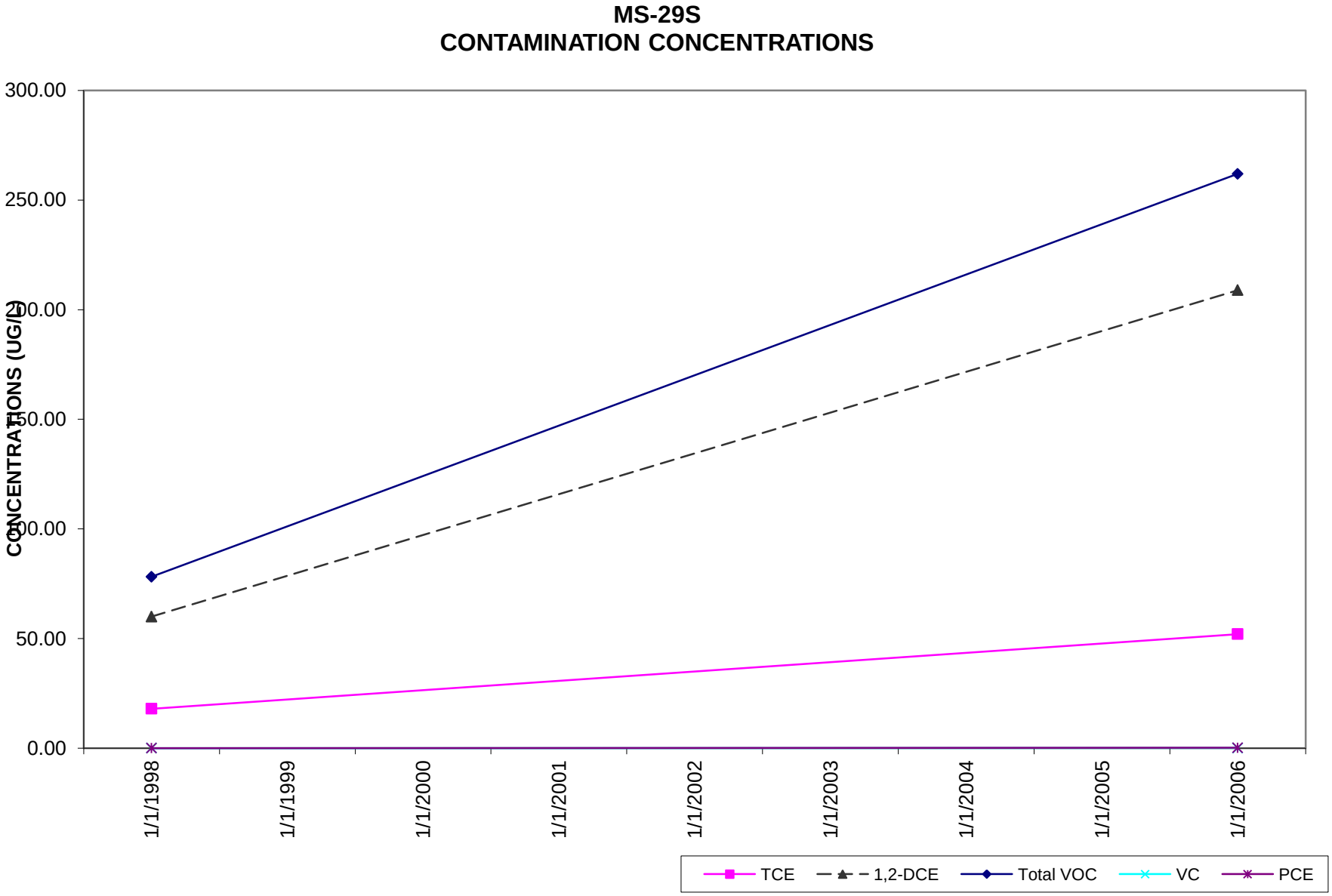
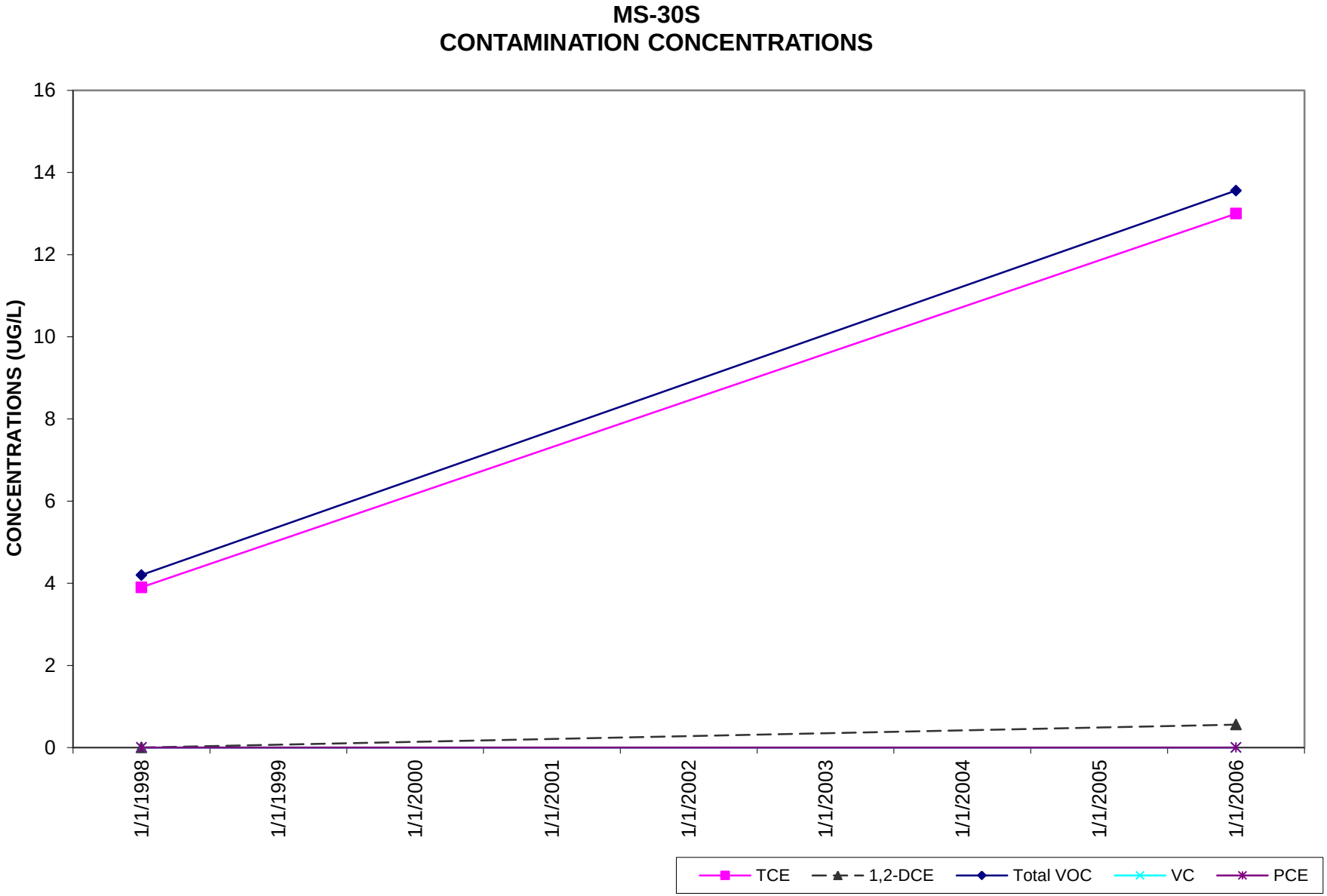
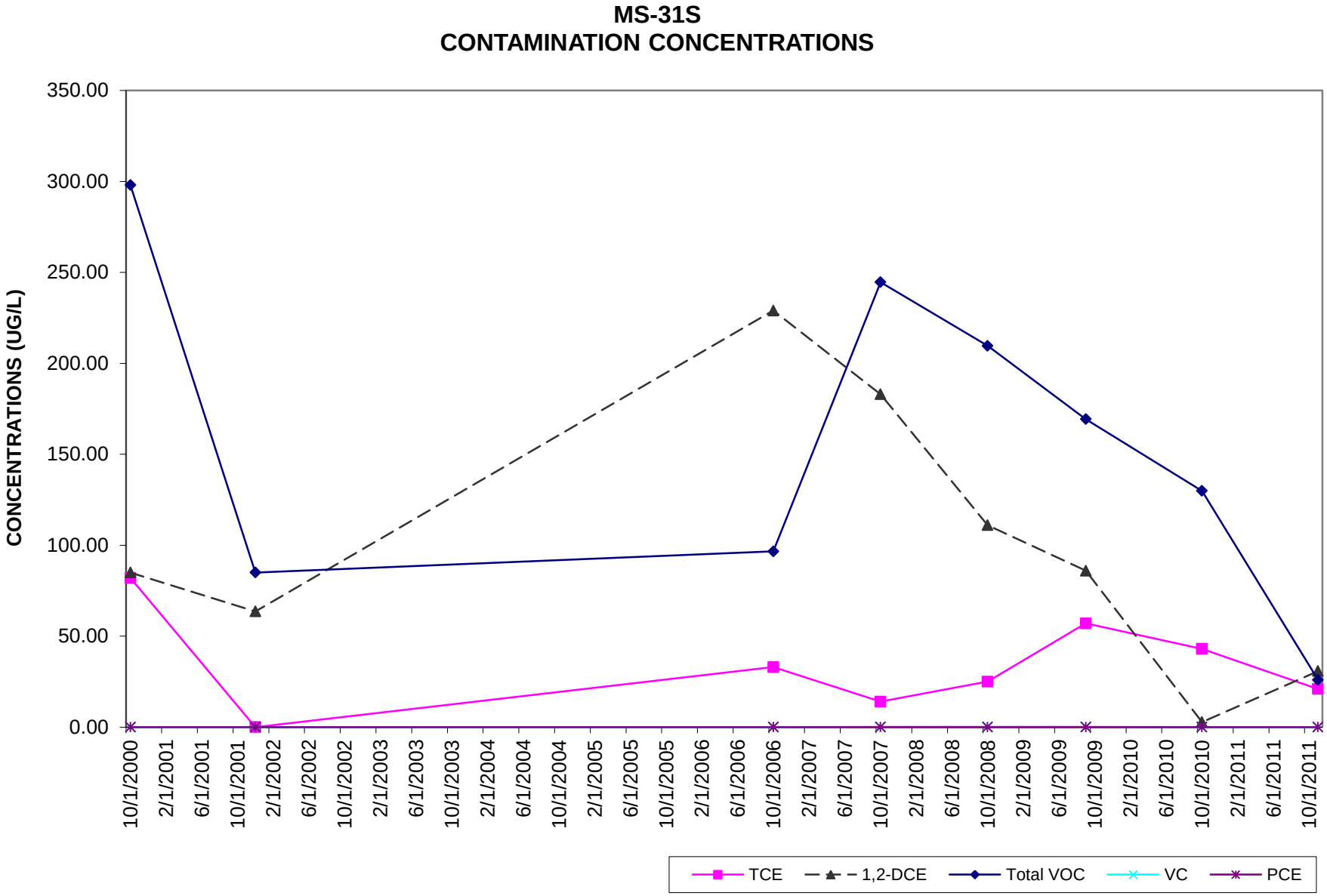
6/11/2008
10/11/2008
2/11/2009
6/11/2009
10/11/2009
2/11/2010
6/11/2010
10/11/2010
2/11/2011
6/11/2011
10/11/2011
TCE
1,2-DCE
Total VOC
VC
PCE


MS-29S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
300.00
250.00
200.00
150.00
100.00
50.00
0.00
1/1/1998
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
TCE
1,2-DCE
Total VOC
VC
PCE


MS-30S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
16
14
12
10
8
6
4
2
0
1/1/1998
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
TCE
1,2-DCE
Total VOC
VC
PCE


MS-31S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
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250.00
200.00
150.00
100.00
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10/1/2000
2/1/2001
6/1/2001
10/1/2001
2/1/2002
6/1/2002
10/1/2002
2/1/2003
6/1/2003
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6/1/2006
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2/1/2007
6/1/2007
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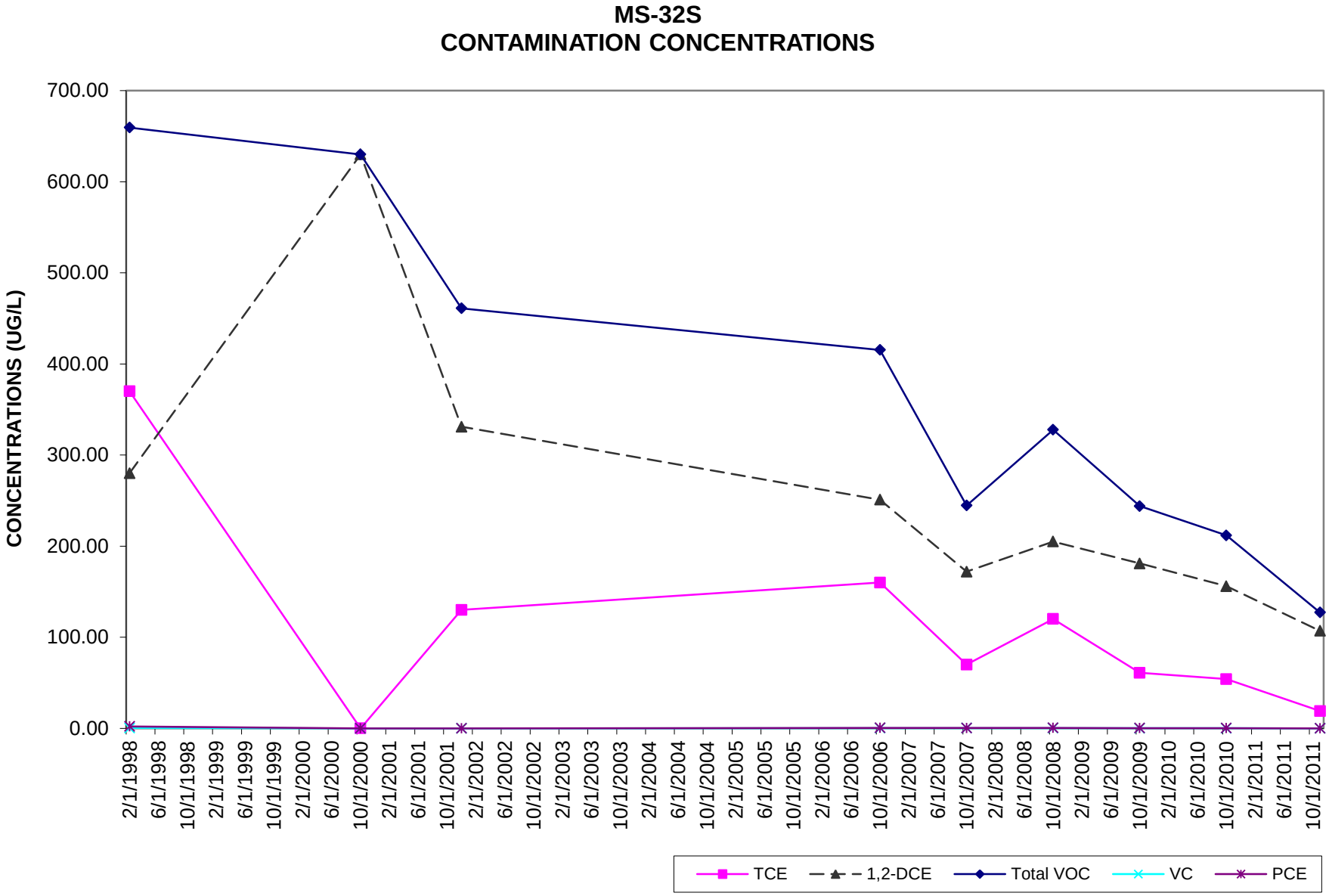
2/1/2008
6/1/2008
10/1/2008
2/1/2009
6/1/2009
10/1/2009
2/1/2010
6/1/2010
10/1/2010
2/1/2011
6/1/2011
10/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE


MS-32S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
700.00
600.00
500.00
400.00
300.00
200.00
100.00
0.00
2/1/1998
6/1/1998
10/1/1998
2/1/1999
6/1/1999
10/1/1999
2/1/2000
6/1/2000
10/1/2000
2/1/2001
6/1/2001
10/1/2001
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2/1/2007
6/1/2007
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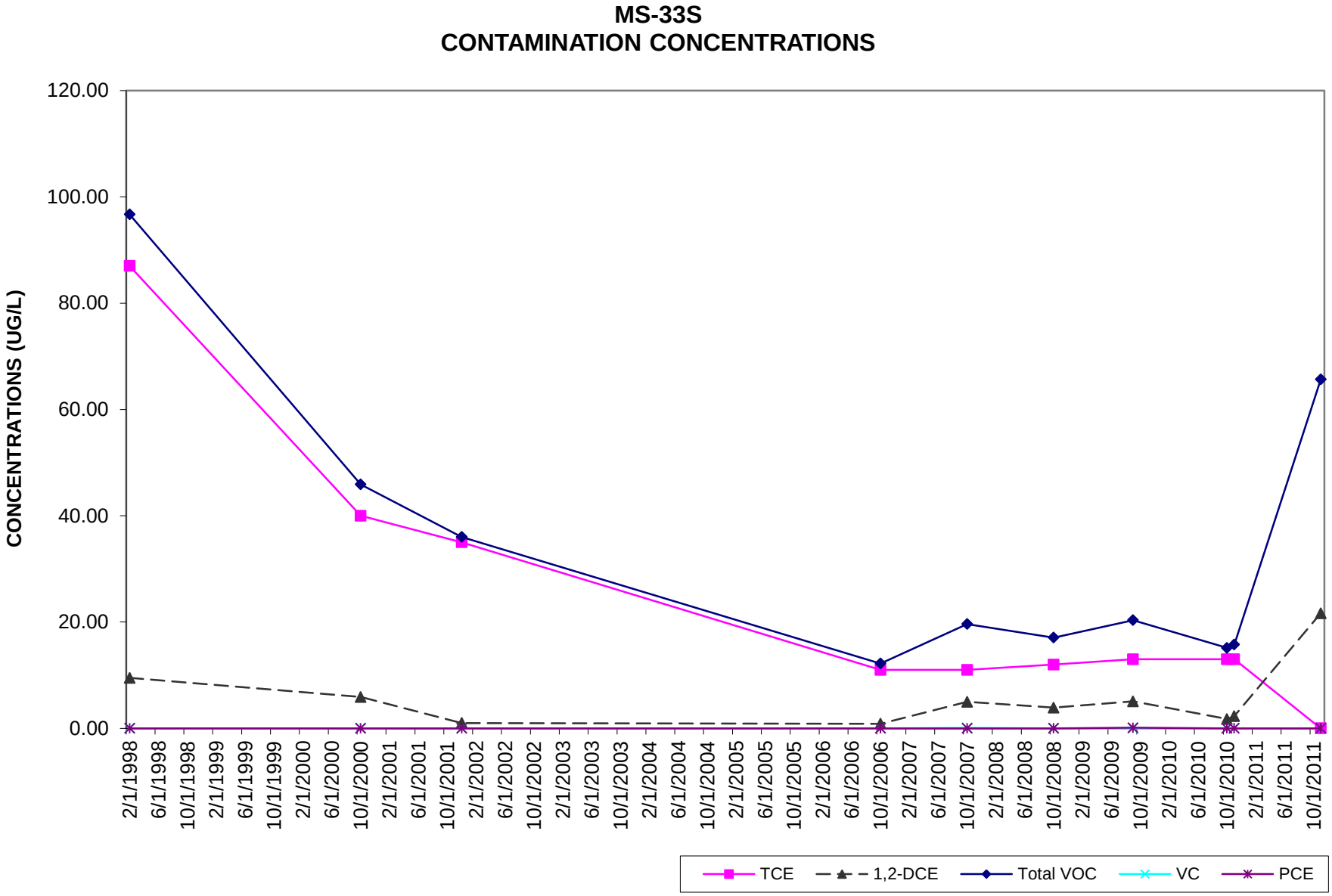
2/1/2008
6/1/2008
10/1/2008
2/1/2009
6/1/2009
10/1/2009
2/1/2010
6/1/2010
10/1/2010
2/1/2011
6/1/2011
10/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE


MS-33S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
120.00
100.00
80.00
60.00
40.00
20.00
0.00
2/1/1998
6/1/1998
10/1/1998
2/1/1999
6/1/1999
10/1/1999
2/1/2000
6/1/2000
10/1/2000
2/1/2001
6/1/2001
10/1/2001
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6/1/2007
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2/1/2008
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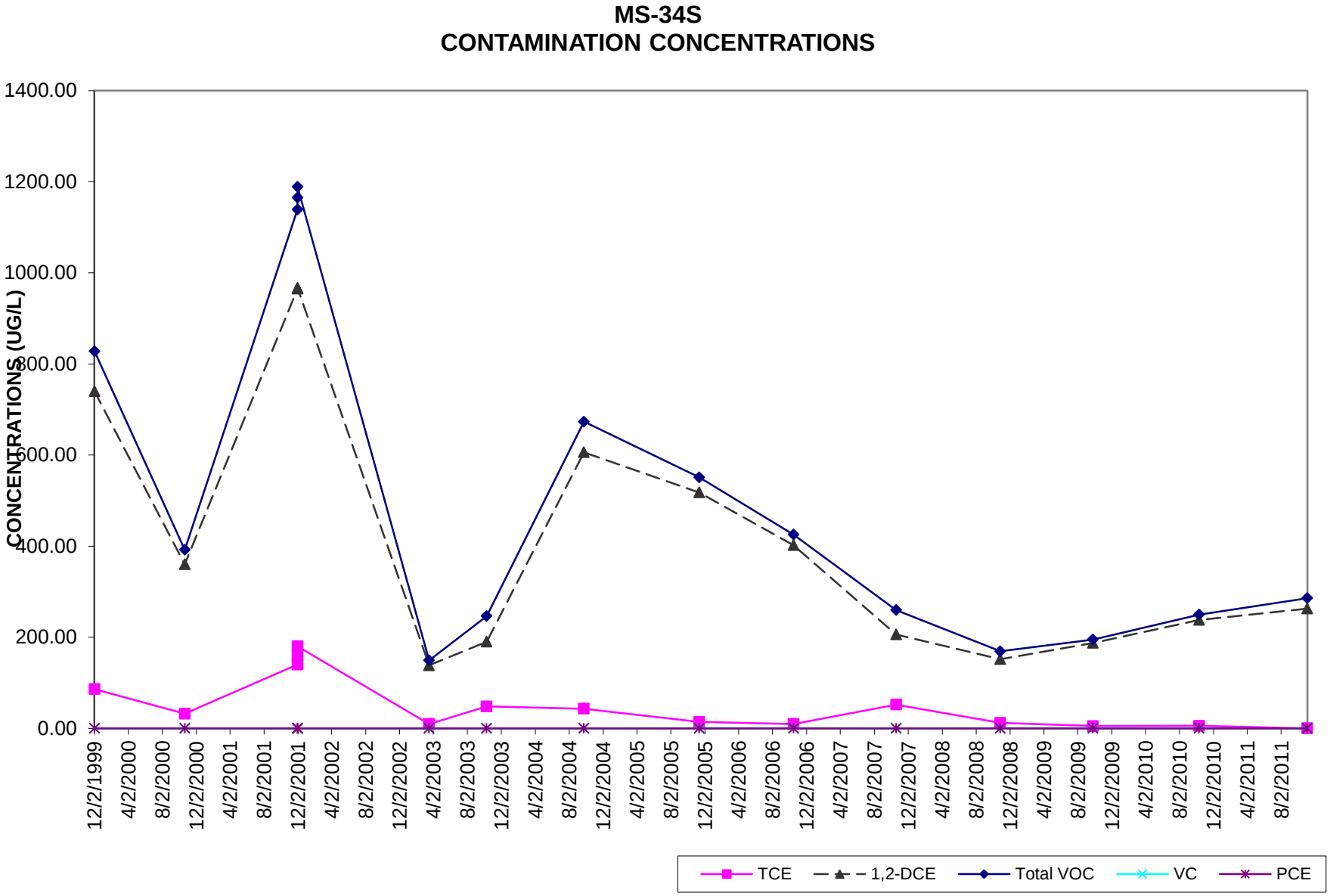
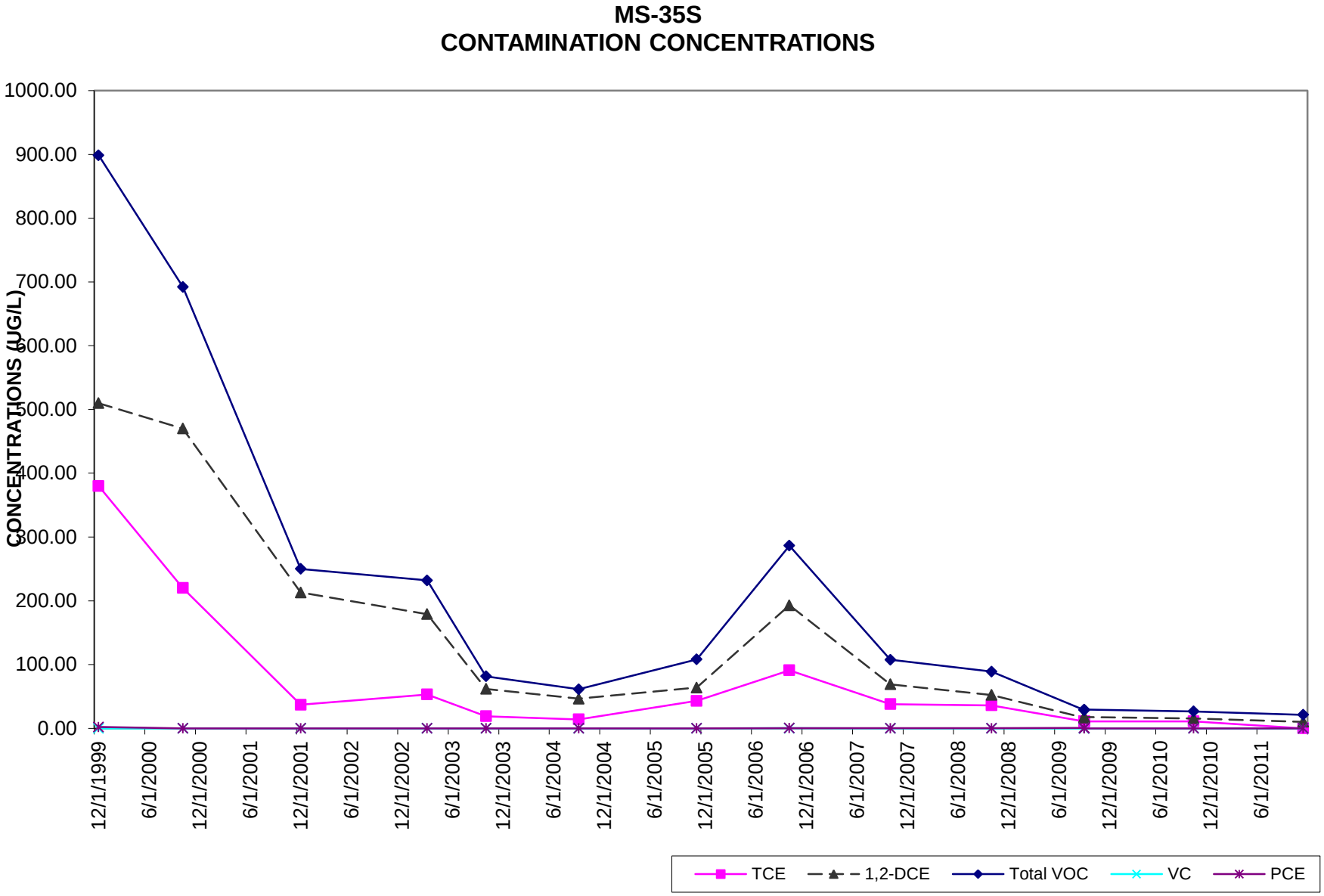
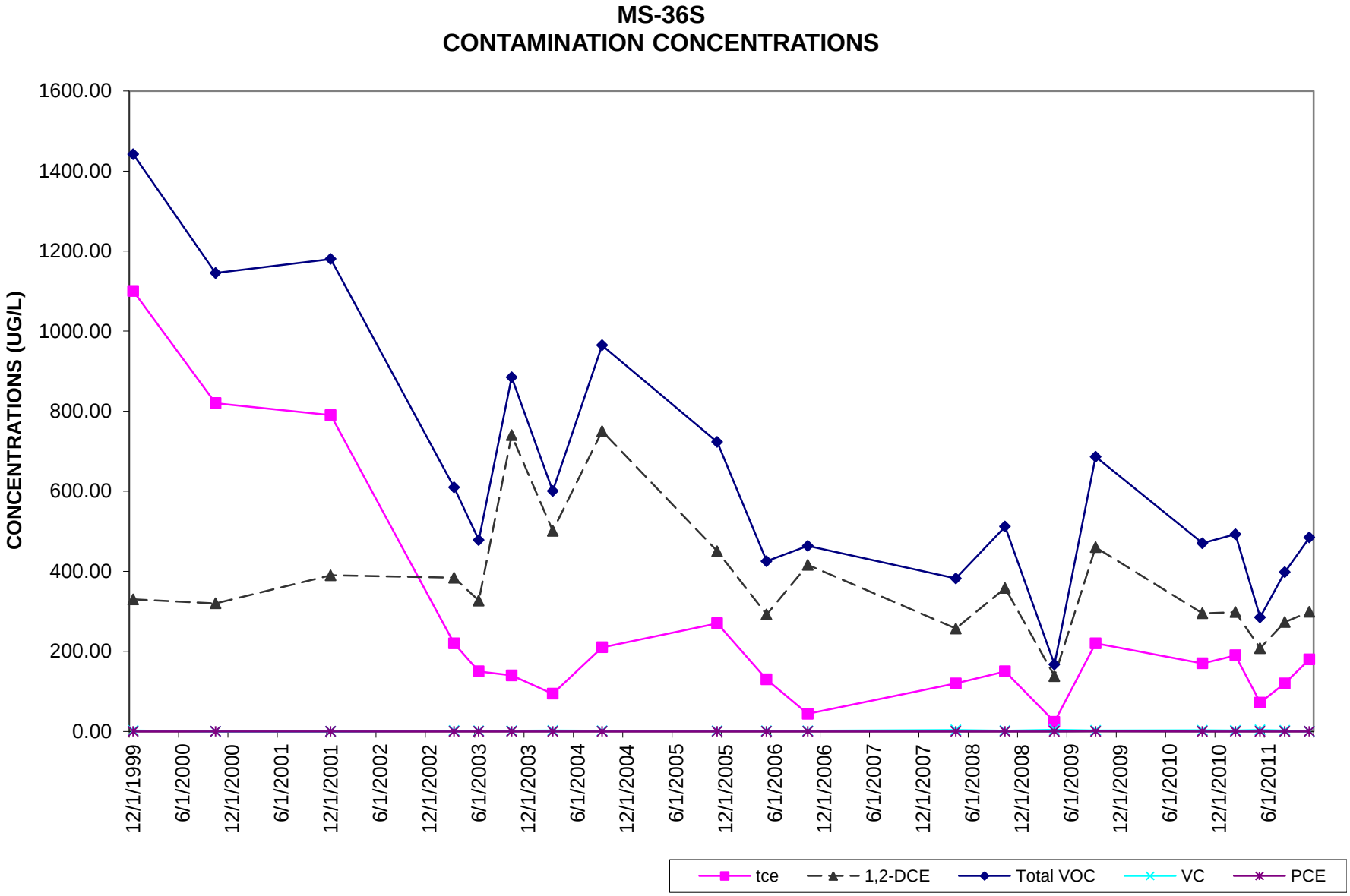
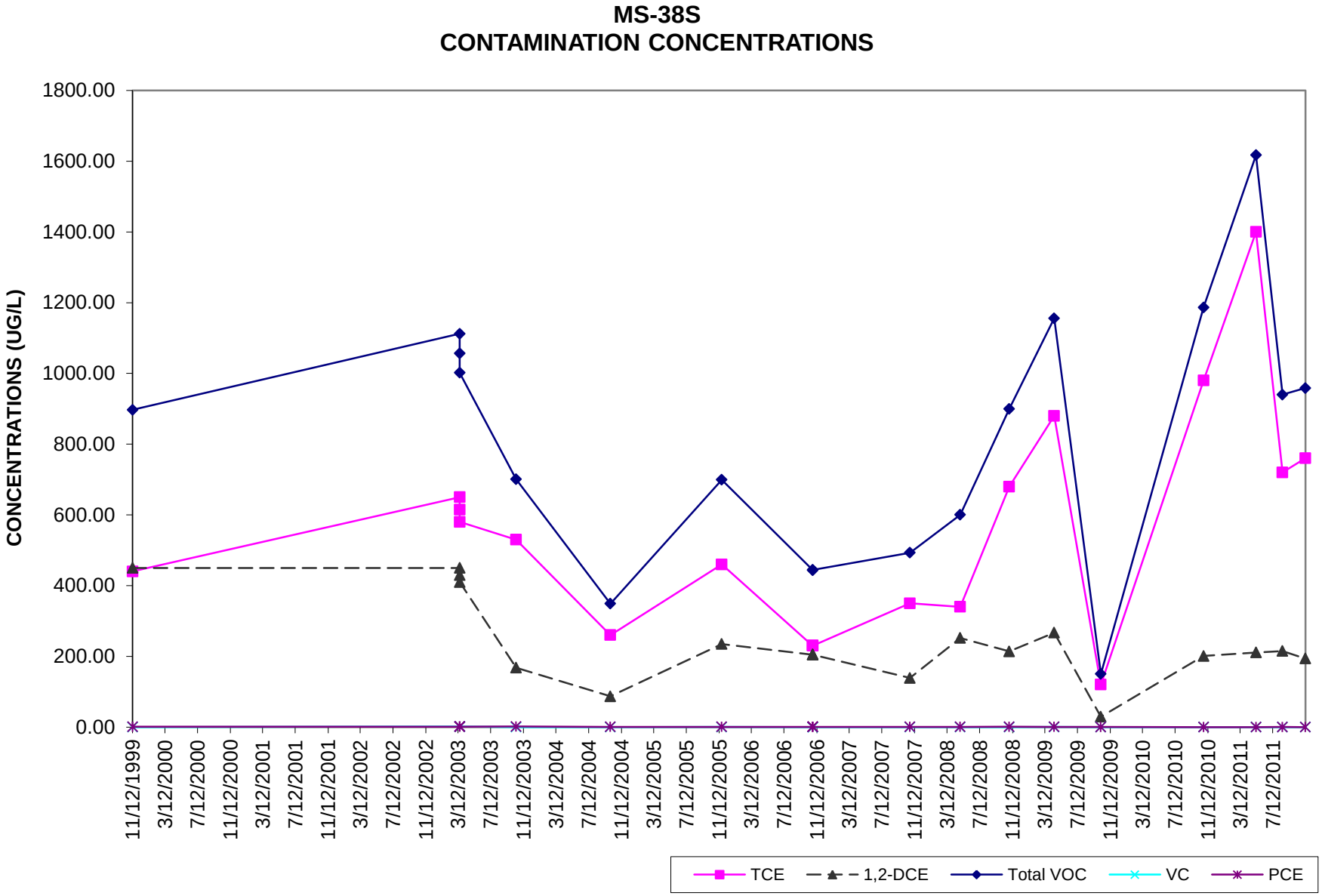
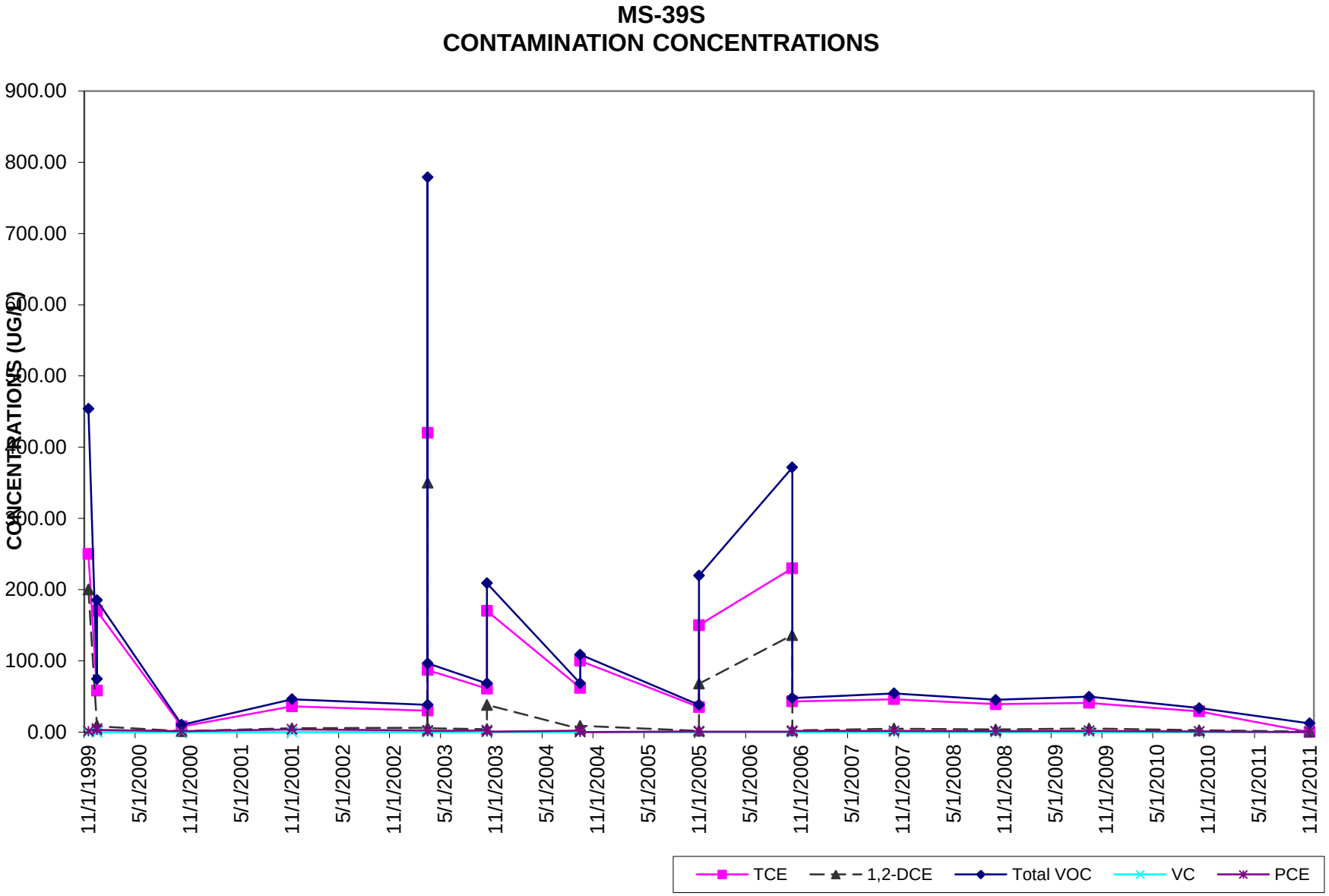
10/1/2008
2/1/2009
6/1/2009
10/1/2009
2/1/2010
6/1/2010
10/1/2010
2/1/2011
6/1/2011
10/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE

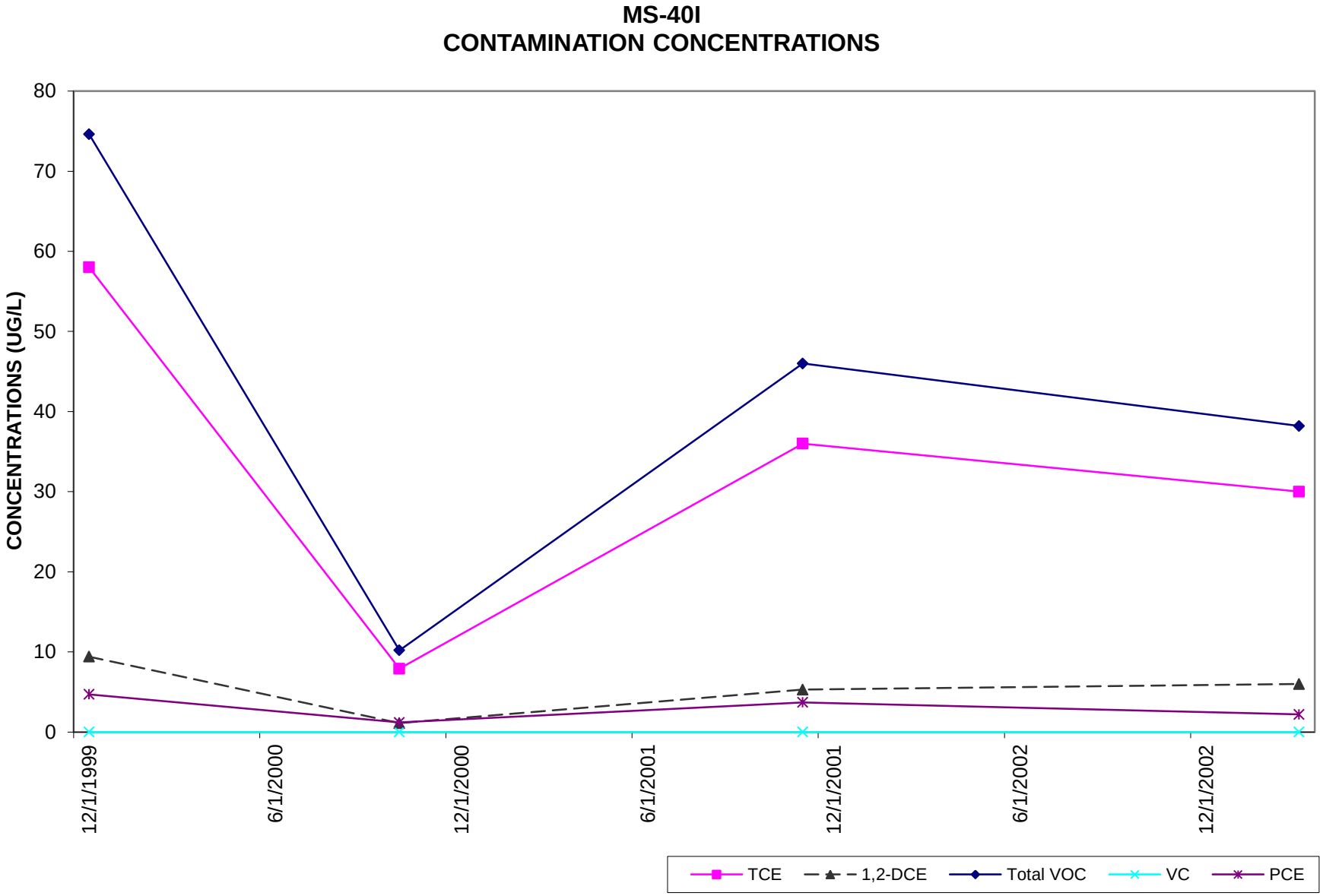

MS-34S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
12/2/1999
4/2/2000
8/2/2000
12/2/2000
4/2/2001
8/2/2001
12/2/2001
4/2/2002
8/2/2002
12/2/2002
4/2/2003
8/2/2003
12/2/2003
4/2/2004
8/2/2004
12/2/2004
4/2/2005
8/2/2005
12/2/2005
4/2/2006
8/2/2006
12/2/2006
4/2/2007
8/2/2007
12/2/2007
4/2/2008
8/2/2008
12/2/2008
4/2/2009
8/2/2009
12/2/2009
4/2/2010
8/2/2010
12/2/2010
4/2/2011
8/2/2011
TCE
1,2-DCE
Total VOC
VC
PCE

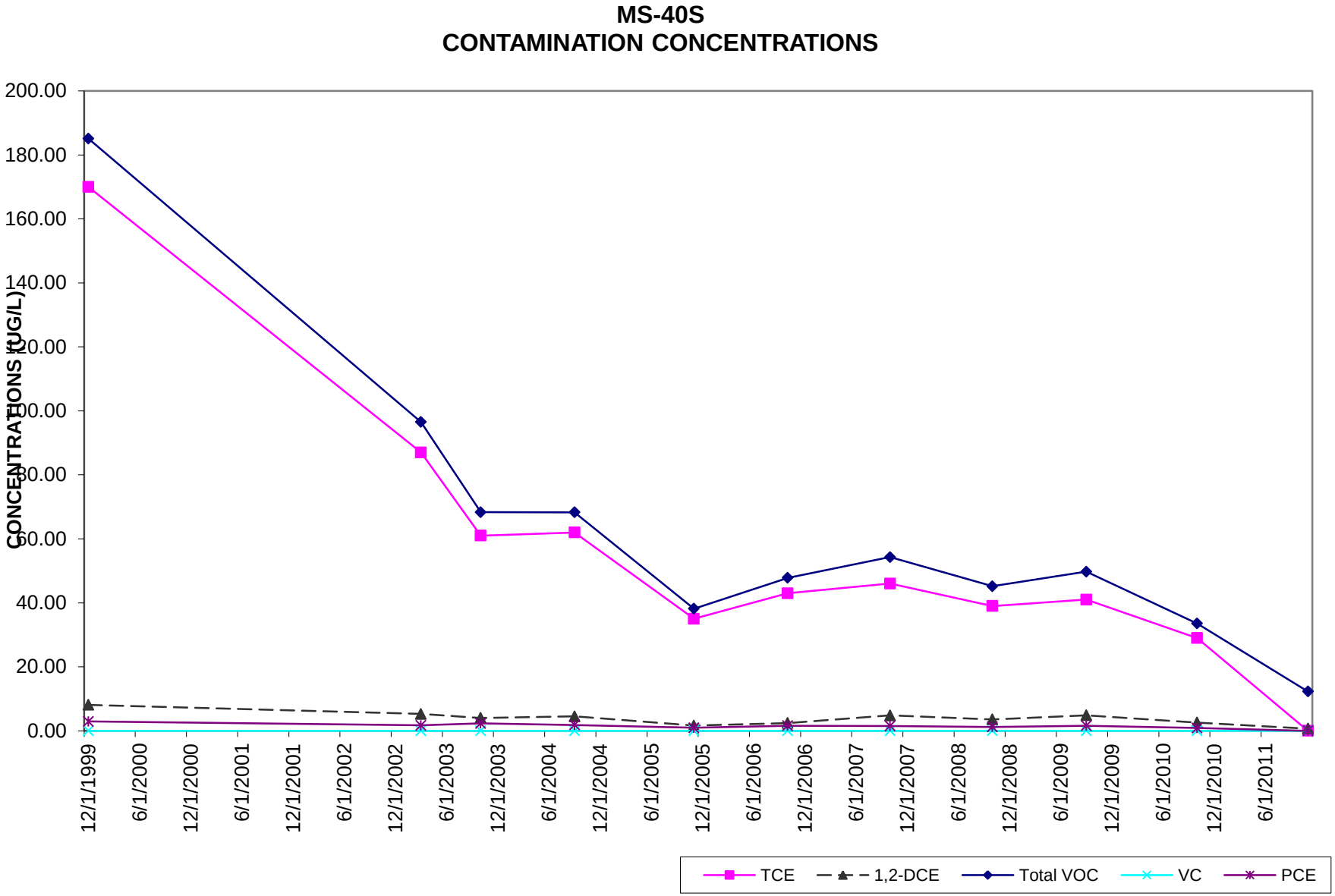

MS-35S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
1000.00
900.00
800.00
700.00
600.00
500.00
400.00
300.00
200.00
100.00
0.00
12/1/1999
6/1/2000
12/1/2000
6/1/2001
12/1/2001
6/1/2002
12/1/2002
6/1/2003
12/1/2003
6/1/2004
12/1/2004
6/1/2005
12/1/2005
6/1/2006
12/1/2006
6/1/2007
12/1/2007
6/1/2008
12/1/2008
6/1/2009
12/1/2009
6/1/2010
12/1/2010
6/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE

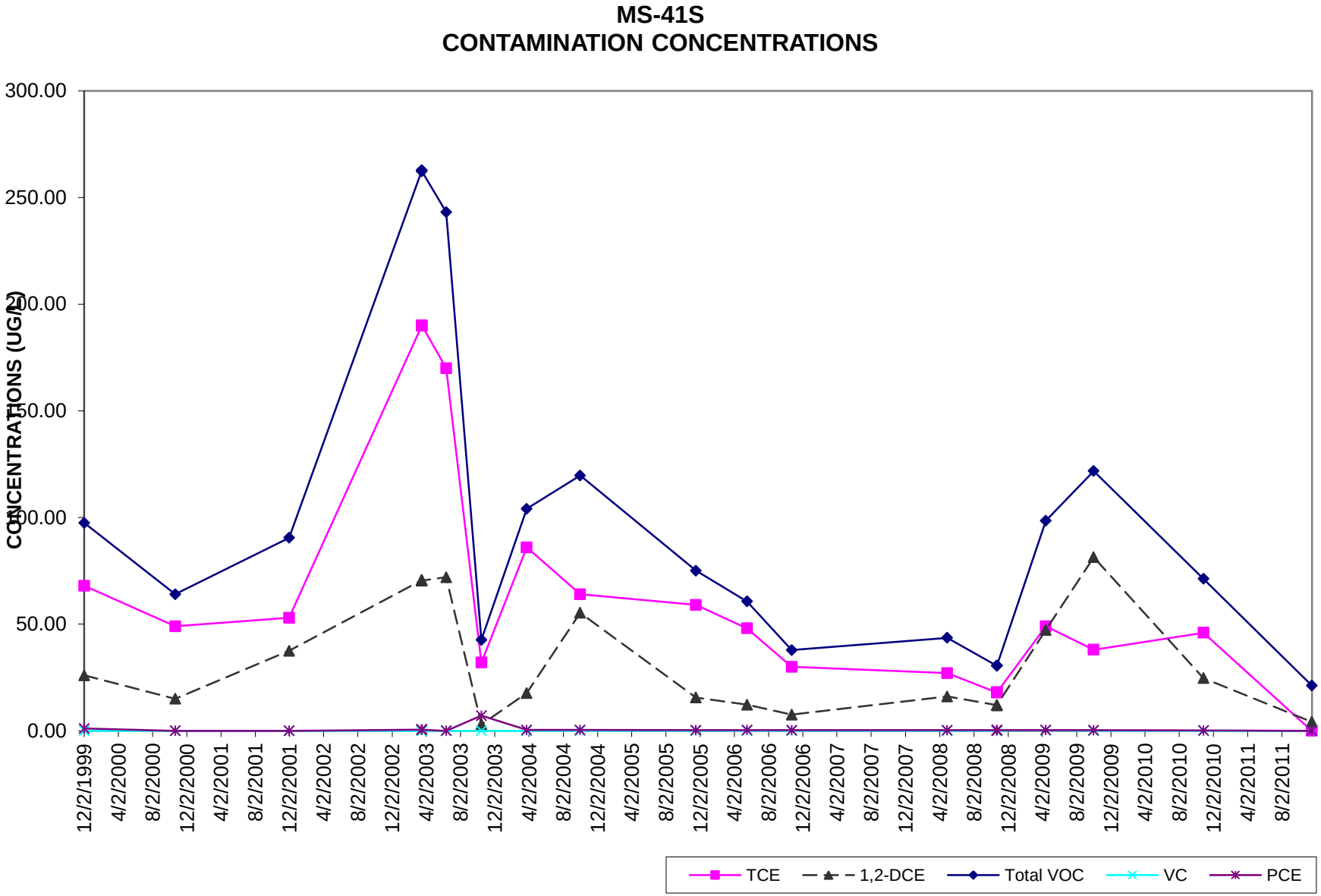

MS-36S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
12/1/1999
6/1/2000
12/1/2000
6/1/2001
12/1/2001
6/1/2002
12/1/2002
6/1/2003
12/1/2003
6/1/2004
12/1/2004
6/1/2005
12/1/2005
6/1/2006
12/1/2006
6/1/2007
12/1/2007
6/1/2008
12/1/2008
6/1/2009
12/1/2009
6/1/2010
12/1/2010
6/1/2011
tce
1,2-DCE
Total VOC
VC
PCE

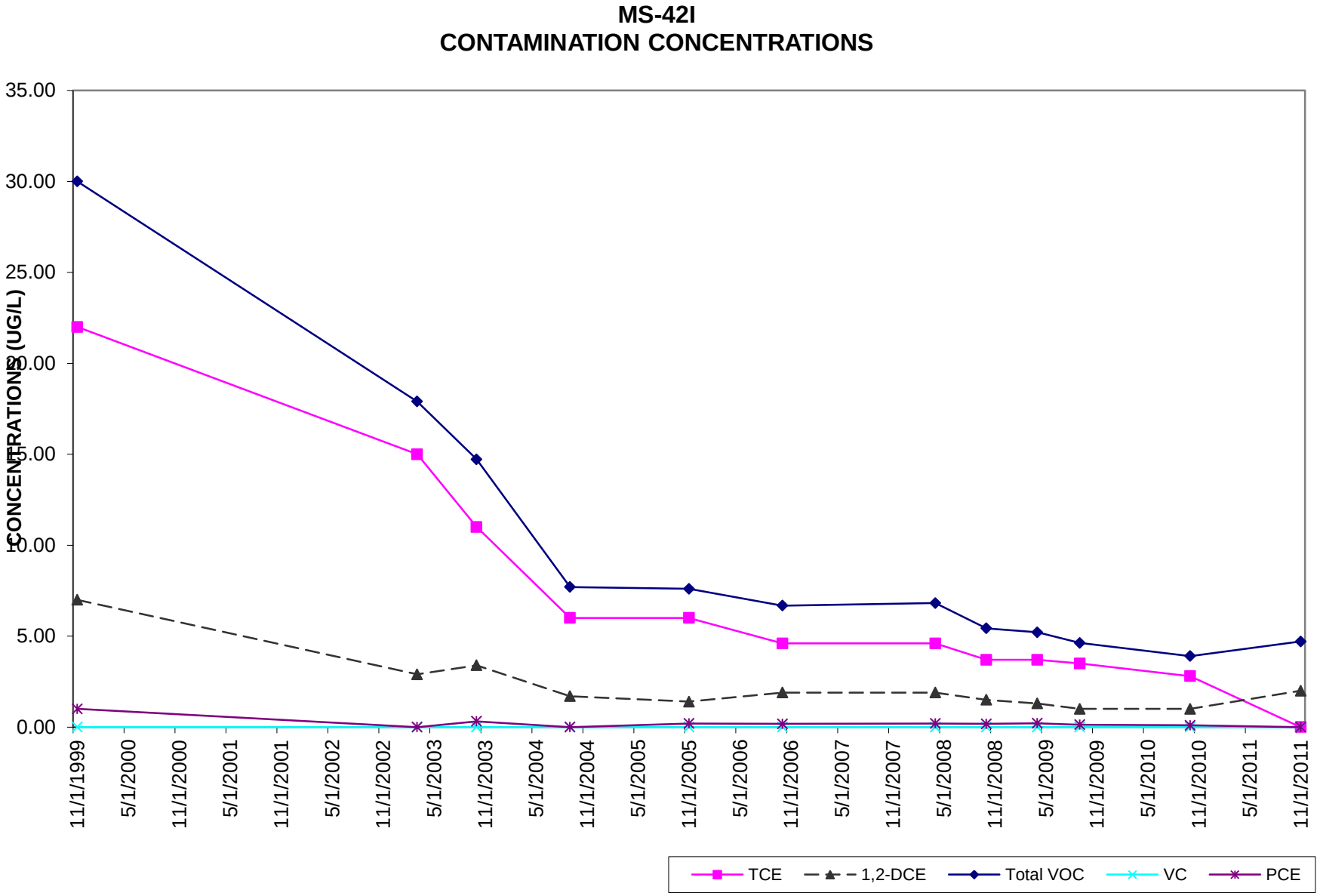

MS-38S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
11/12/1999
3/12/2000
7/12/2000
11/12/2000
3/12/2001
7/12/2001
11/12/2001
3/12/2002
7/12/2002
11/12/2002
3/12/2003
7/12/2003
11/12/2003
3/12/2004
7/12/2004
11/12/2004
3/12/2005
7/12/2005
11/12/2005
3/12/2006
7/12/2006
11/12/2006
3/12/2007
7/12/2007
11/12/2007
3/12/2008
7/12/2008
11/12/2008
3/12/2009
7/12/2009
11/12/2009
3/12/2010
7/12/2010
11/12/2010
3/12/2011
7/12/2011
TCE
1,2-DCE
Total VOC
VC
PCE

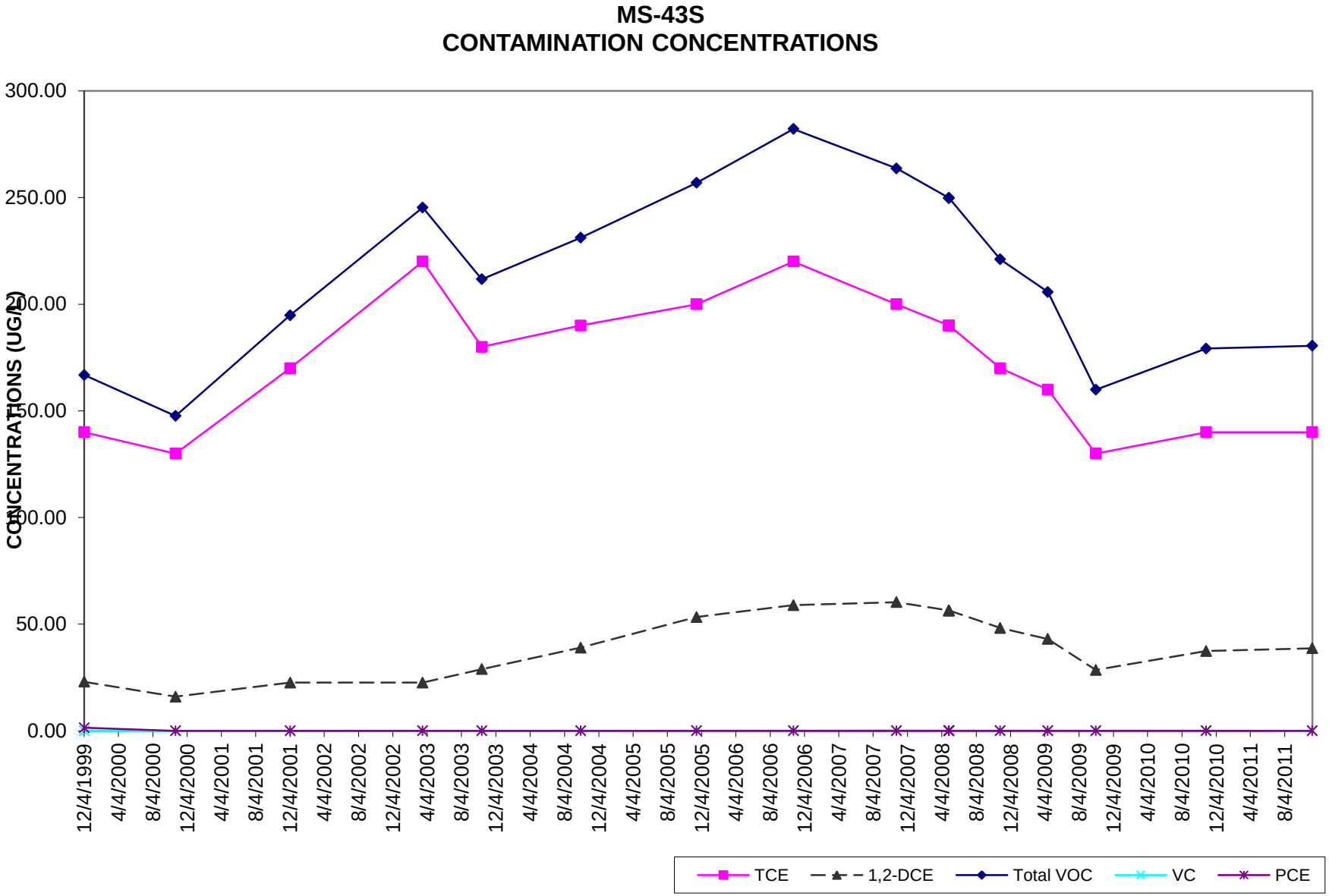

MS-39S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
900.00
800.00
700.00
600.00
500.00
400.00
300.00
200.00
100.00
0.00
11/1/1999
5/1/2000
11/1/2000
5/1/2001
11/1/2001
5/1/2002
11/1/2002
5/1/2003
11/1/2003
5/1/2004
11/1/2004
5/1/2005
11/1/2005
5/1/2006
11/1/2006
5/1/2007
11/1/2007
5/1/2008
11/1/2008
5/1/2009
11/1/2009
5/1/2010
11/1/2010
5/1/2011
11/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE

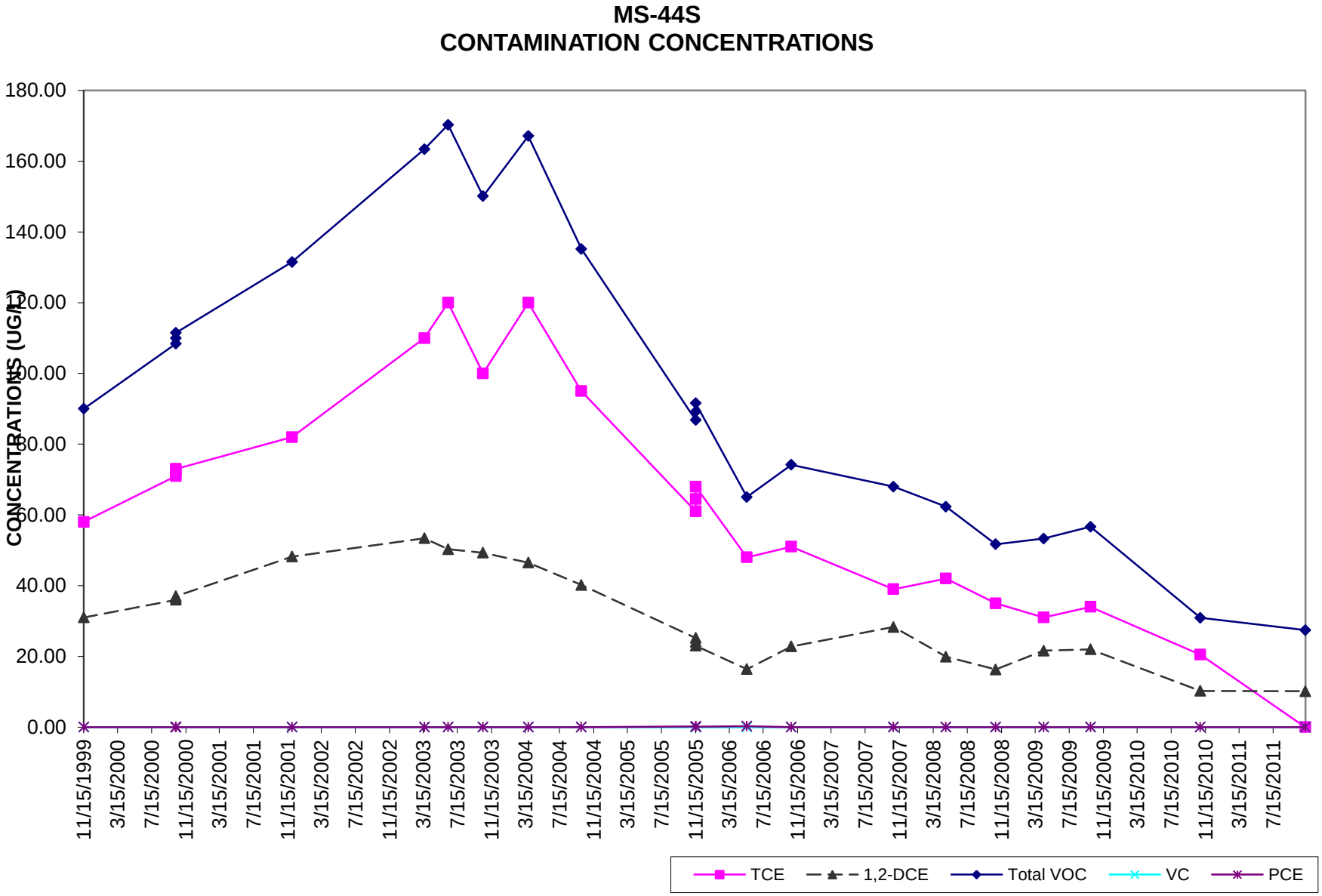

MS-40I
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
80
70
60
50
40
30
20
10
0
12/1/1999
6/1/2000
12/1/2000
6/1/2001
12/1/2001
6/1/2002
12/1/2002
TCE
1,2-DCE
Total VOC
VC
PCE

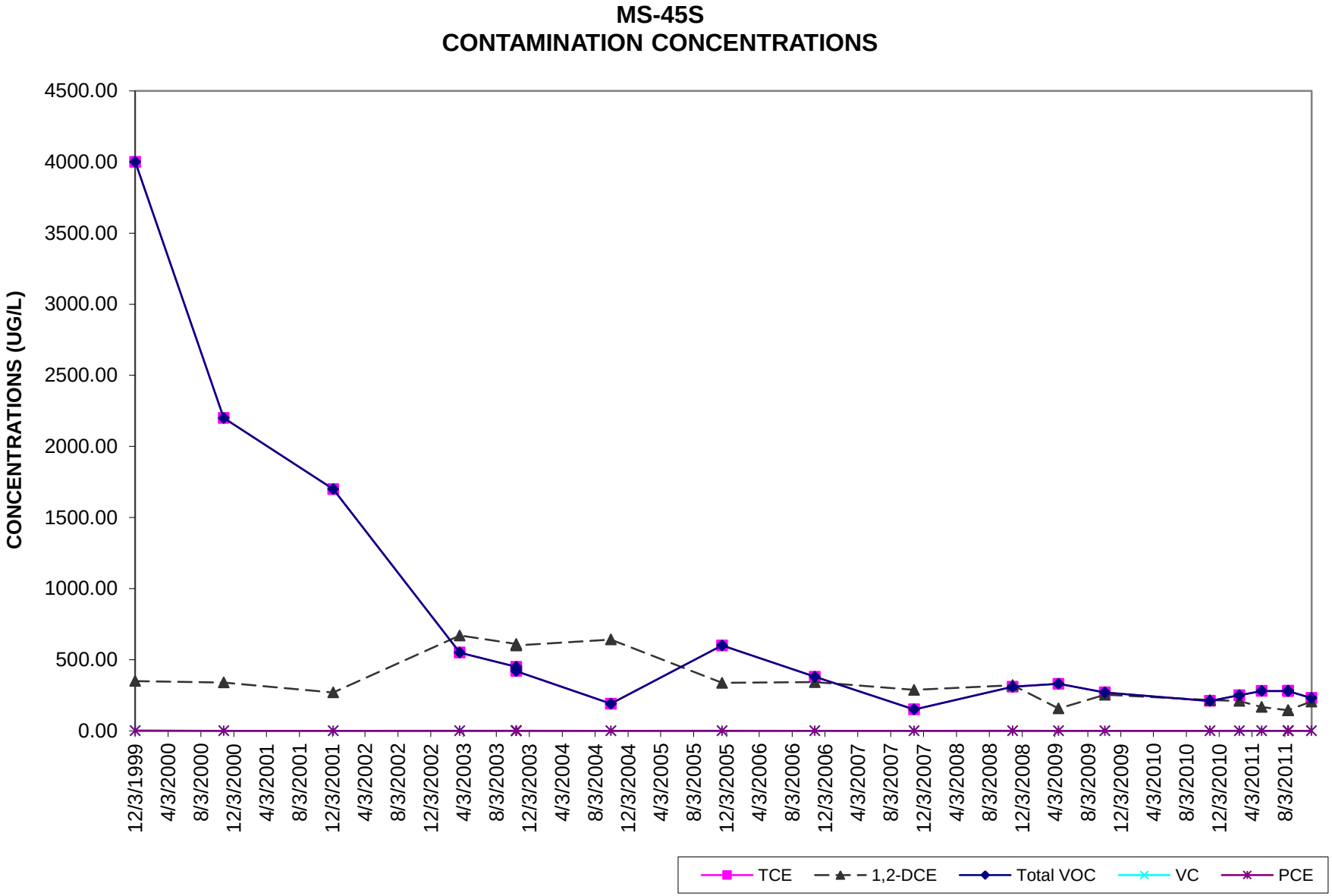

MS-40S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
200.00
180.00
160.00
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
12/1/1999
6/1/2000
12/1/2000
6/1/2001
12/1/2001
6/1/2002
12/1/2002
6/1/2003
12/1/2003
6/1/2004
12/1/2004
6/1/2005
12/1/2005
6/1/2006
12/1/2006
6/1/2007
12/1/2007
6/1/2008
12/1/2008
6/1/2009
12/1/2009
6/1/2010
12/1/2010
6/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE

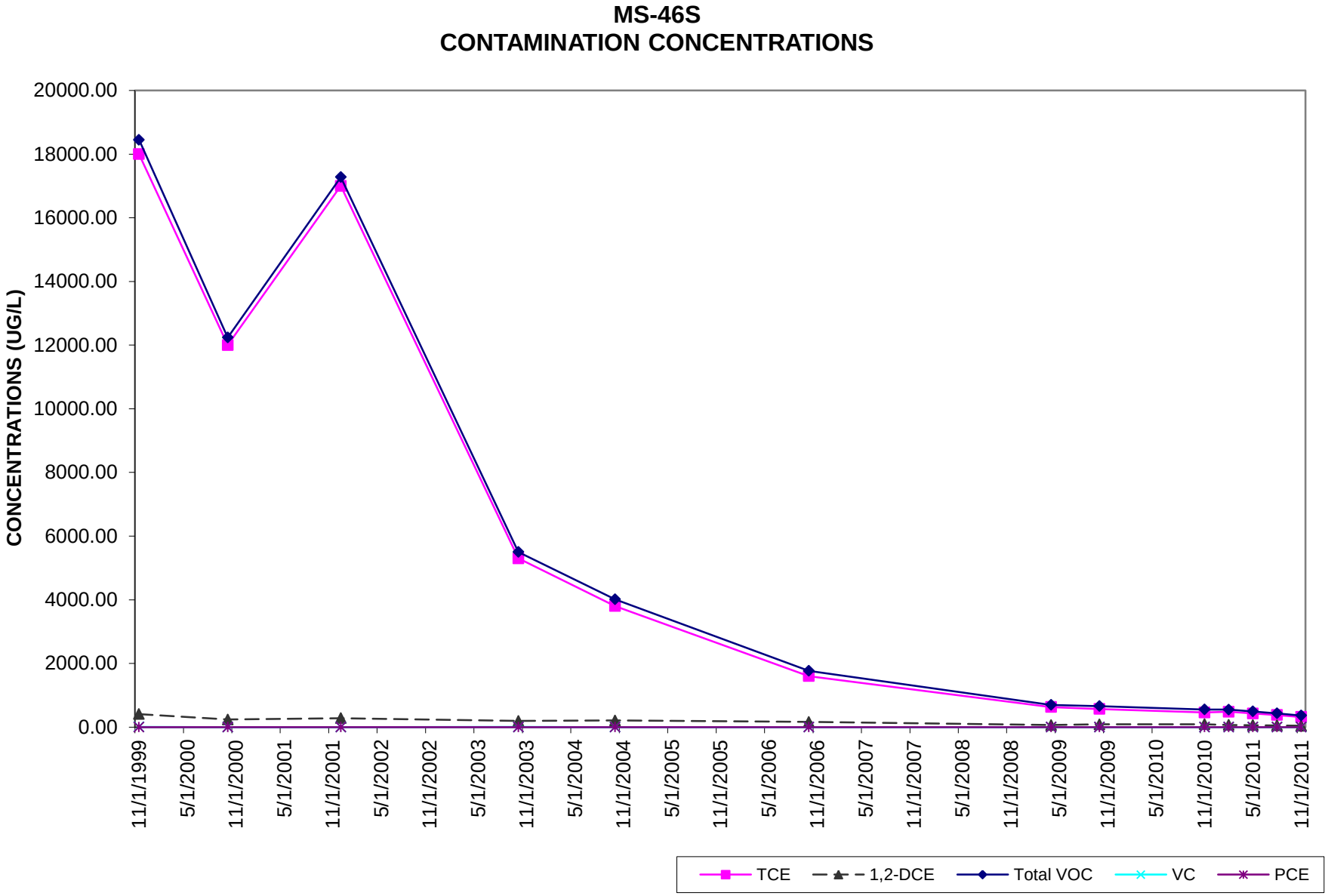

MS-41S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
300.00
250.00
200.00
150.00
100.00
50.00
0.00
12/2/1999
4/2/2000
8/2/2000
12/2/2000
4/2/2001
8/2/2001
12/2/2001
4/2/2002
8/2/2002
12/2/2002
4/2/2003
8/2/2003
12/2/2003
4/2/2004
8/2/2004
12/2/2004
4/2/2005
8/2/2005
12/2/2005
4/2/2006
8/2/2006
12/2/2006
4/2/2007
8/2/2007
12/2/2007
4/2/2008
8/2/2008
12/2/2008
4/2/2009
8/2/2009
12/2/2009
4/2/2010
8/2/2010
12/2/2010
4/2/2011
8/2/2011
TCE
1,2-DCE
Total VOC
VC
PCE

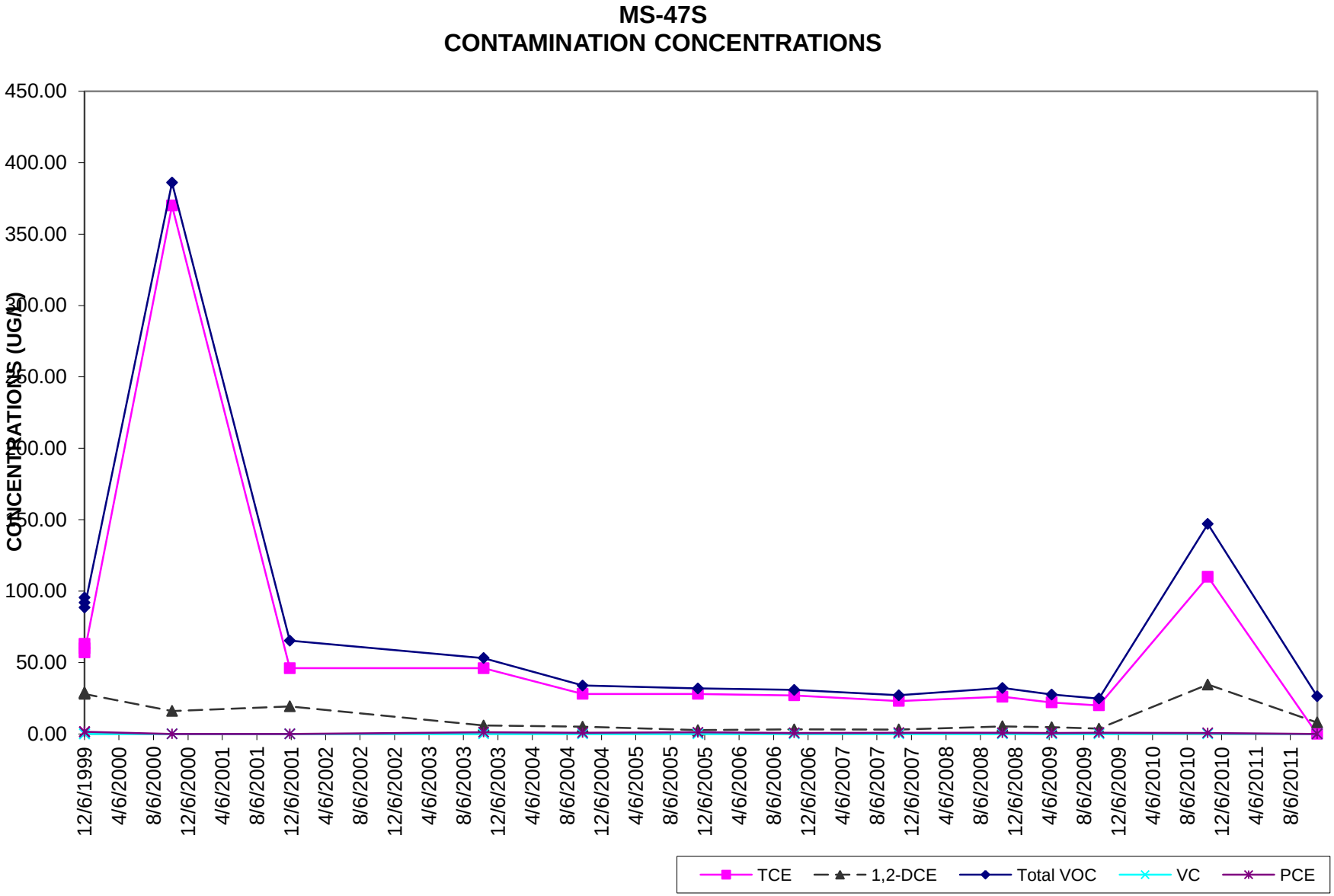

MS-42I
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
11/1/1999
5/1/2000
11/1/2000
5/1/2001
11/1/2001
5/1/2002
11/1/2002
5/1/2003
11/1/2003
5/1/2004
11/1/2004
5/1/2005
11/1/2005
5/1/2006
11/1/2006
5/1/2007
11/1/2007
5/1/2008
11/1/2008
5/1/2009
11/1/2009
5/1/2010
11/1/2010
5/1/2011
11/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE

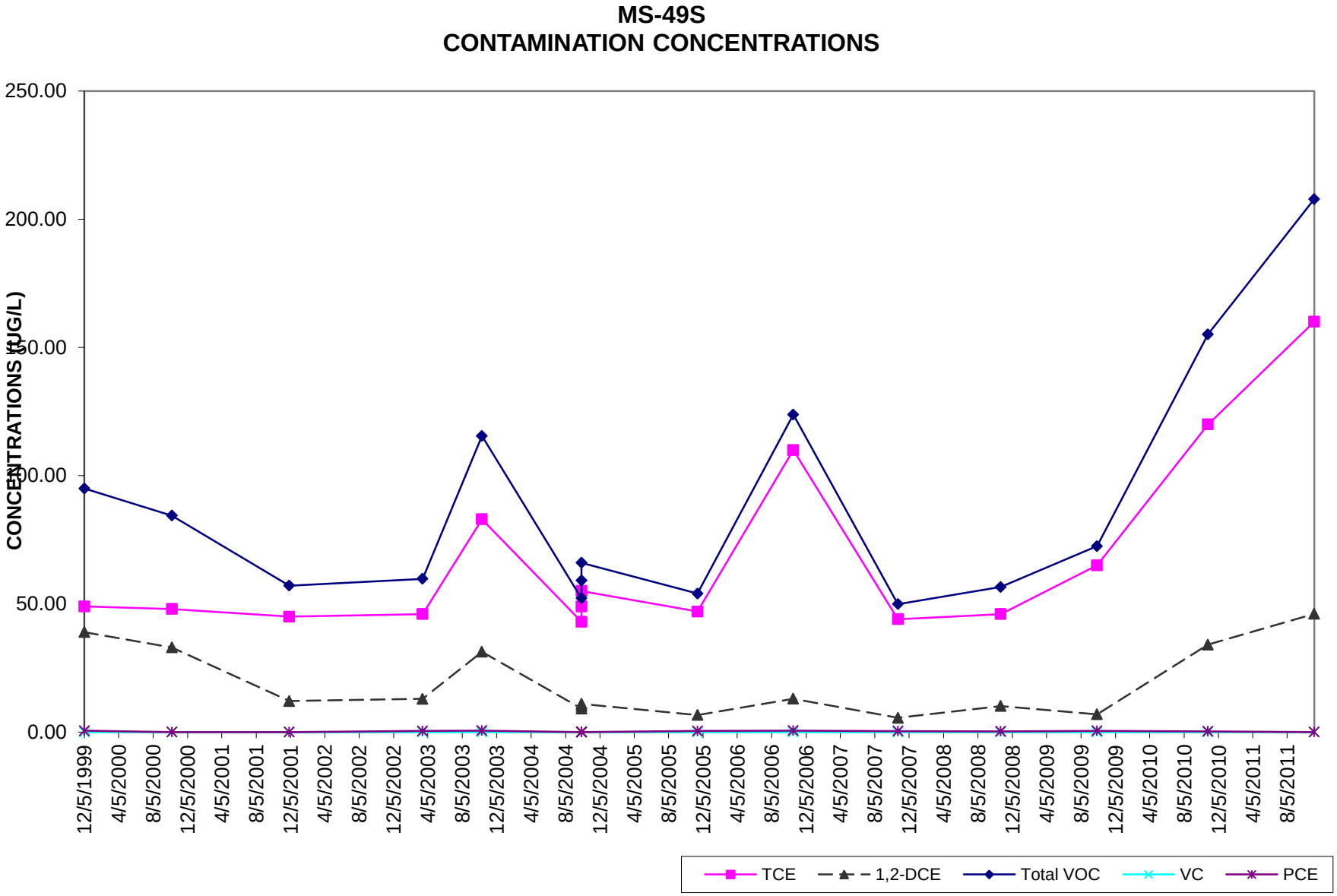

MS-43S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
300.00
250.00
200.00
150.00
100.00
50.00
0.00
12/4/1999
4/4/2000
8/4/2000
12/4/2000
4/4/2001
8/4/2001
12/4/2001
4/4/2002
8/4/2002
12/4/2002
4/4/2003
8/4/2003
12/4/2003
4/4/2004
8/4/2004
12/4/2004
4/4/2005
8/4/2005
12/4/2005
4/4/2006
8/4/2006
12/4/2006
4/4/2007
8/4/2007
12/4/2007
4/4/2008
8/4/2008
12/4/2008
4/4/2009
8/4/2009
12/4/2009
4/4/2010
8/4/2010
12/4/2010
4/4/2011
8/4/2011
TCE
1,2-DCE
Total VOC
VC
PCE

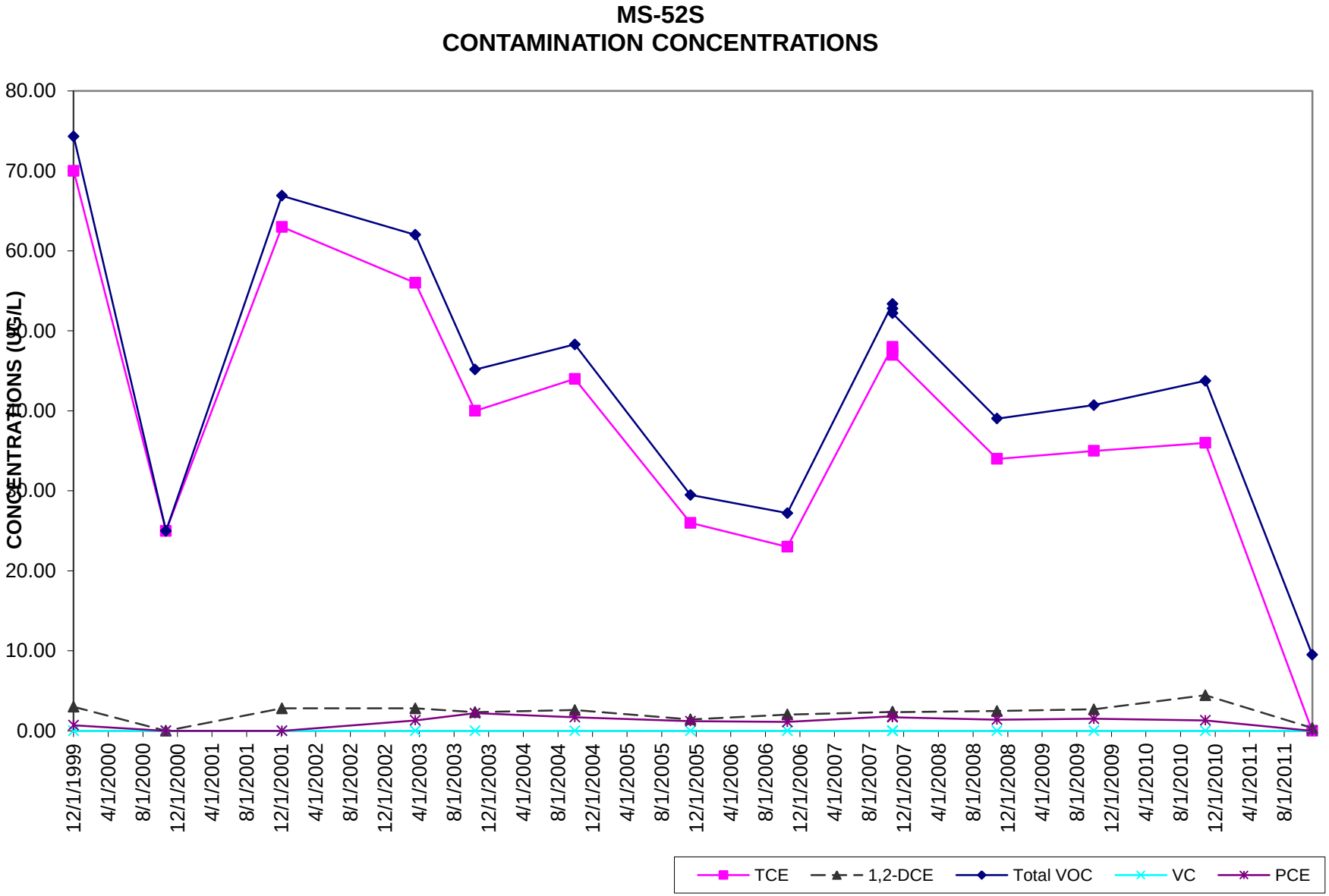

MS-44S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
180.00
160.00
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
11/15/1999
3/15/2000
7/15/2000
11/15/2000
3/15/2001
7/15/2001
11/15/2001
3/15/2002
7/15/2002
11/15/2002
3/15/2003
7/15/2003
11/15/2003
3/15/2004
7/15/2004
11/15/2004
3/15/2005
7/15/2005
11/15/2005
3/15/2006
7/15/2006
11/15/2006
3/15/2007
7/15/2007
11/15/2007
3/15/2008
7/15/2008
11/15/2008
3/15/2009
7/15/2009
11/15/2009
3/15/2010
7/15/2010
11/15/2010
3/15/2011
7/15/2011
TCE
1,2-DCE
Total VOC
VC
PCE

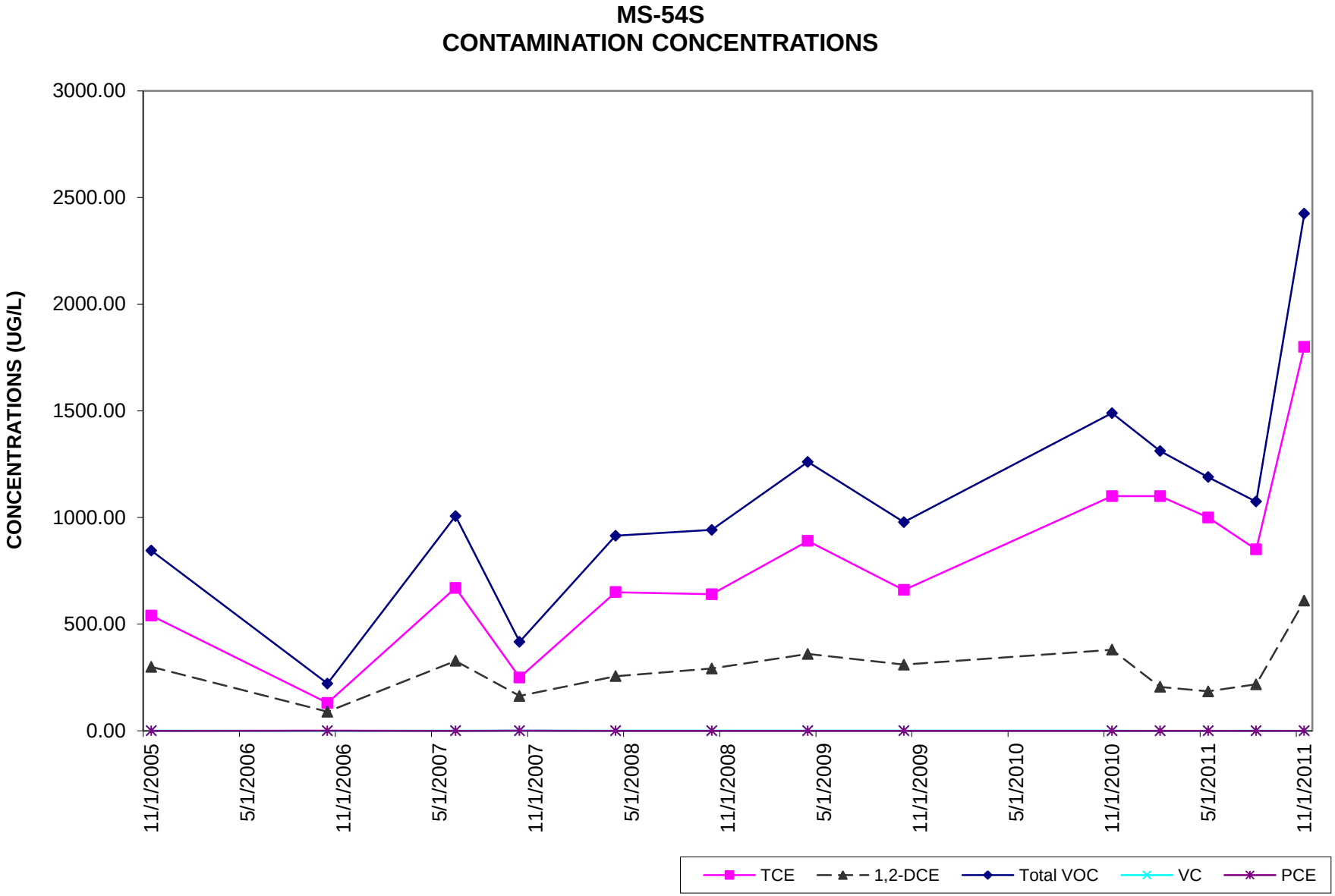

MS-45S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
4500.00
4000.00
3500.00
3000.00
2500.00
2000.00
1500.00
1000.00
500.00
0.00
12/3/1999
4/3/2000
8/3/2000
12/3/2000
4/3/2001
8/3/2001
12/3/2001
4/3/2002
8/3/2002
12/3/2002
4/3/2003
8/3/2003
12/3/2003
4/3/2004
8/3/2004
12/3/2004
4/3/2005
8/3/2005
12/3/2005
4/3/2006
8/3/2006
12/3/2006
4/3/2007
8/3/2007
12/3/2007
4/3/2008
8/3/2008
12/3/2008
4/3/2009
8/3/2009
12/3/2009
4/3/2010
8/3/2010
12/3/2010
4/3/2011
8/3/2011
TCE
1,2-DCE
Total VOC
VC
PCE

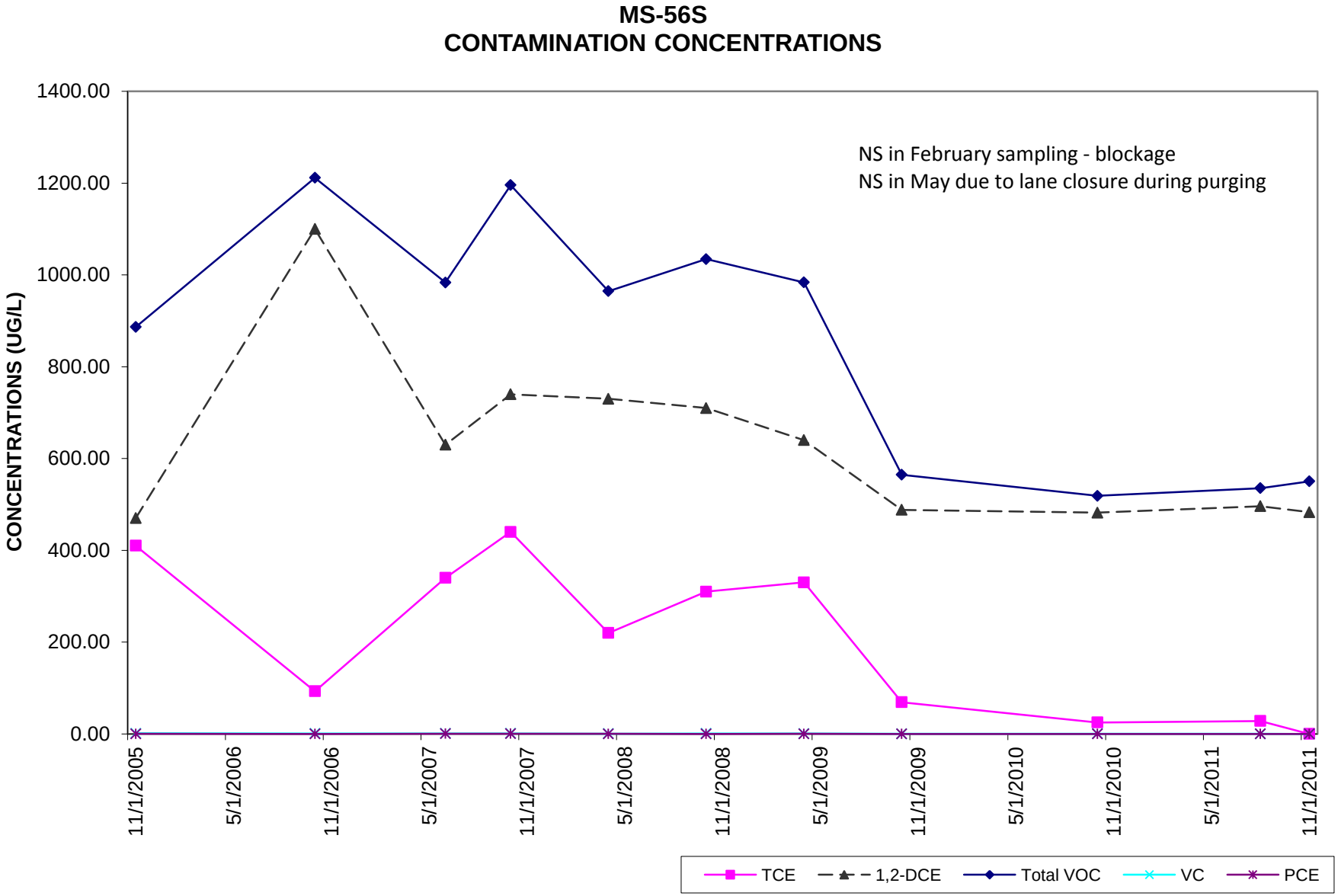

MS-46S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
20000.00
18000.00
16000.00
14000.00
12000.00
10000.00
8000.00
6000.00
4000.00
2000.00
0.00
11/1/1999
5/1/2000
11/1/2000
5/1/2001
11/1/2001
5/1/2002
11/1/2002
5/1/2003
11/1/2003
5/1/2004
11/1/2004
5/1/2005
11/1/2005
5/1/2006
11/1/2006
5/1/2007
11/1/2007
5/1/2008
11/1/2008
5/1/2009
11/1/2009
5/1/2010
11/1/2010
5/1/2011
11/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE

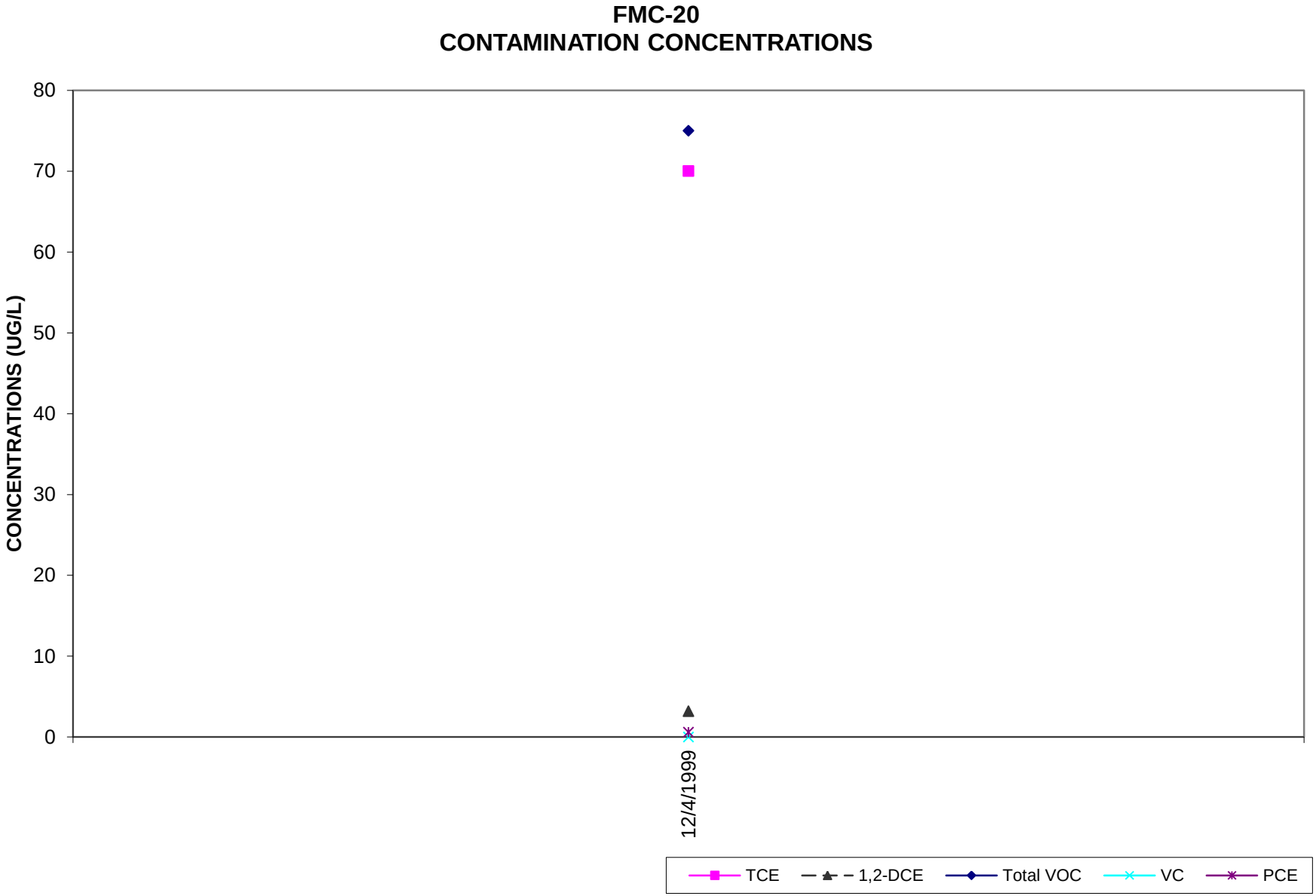

MS-47S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
450.00
400.00
350.00
300.00
250.00
200.00
150.00
100.00
50.00
0.00
12/6/1999
4/6/2000
8/6/2000
12/6/2000
4/6/2001
8/6/2001
12/6/2001
4/6/2002
8/6/2002
12/6/2002
4/6/2003
8/6/2003
12/6/2003
4/6/2004
8/6/2004
12/6/2004
4/6/2005
8/6/2005
12/6/2005
4/6/2006
8/6/2006
12/6/2006
4/6/2007
8/6/2007
12/6/2007
4/6/2008
8/6/2008
12/6/2008
4/6/2009
8/6/2009
12/6/2009
4/6/2010
8/6/2010
12/6/2010
4/6/2011
8/6/2011
TCE
1,2-DCE
Total VOC
VC
PCE

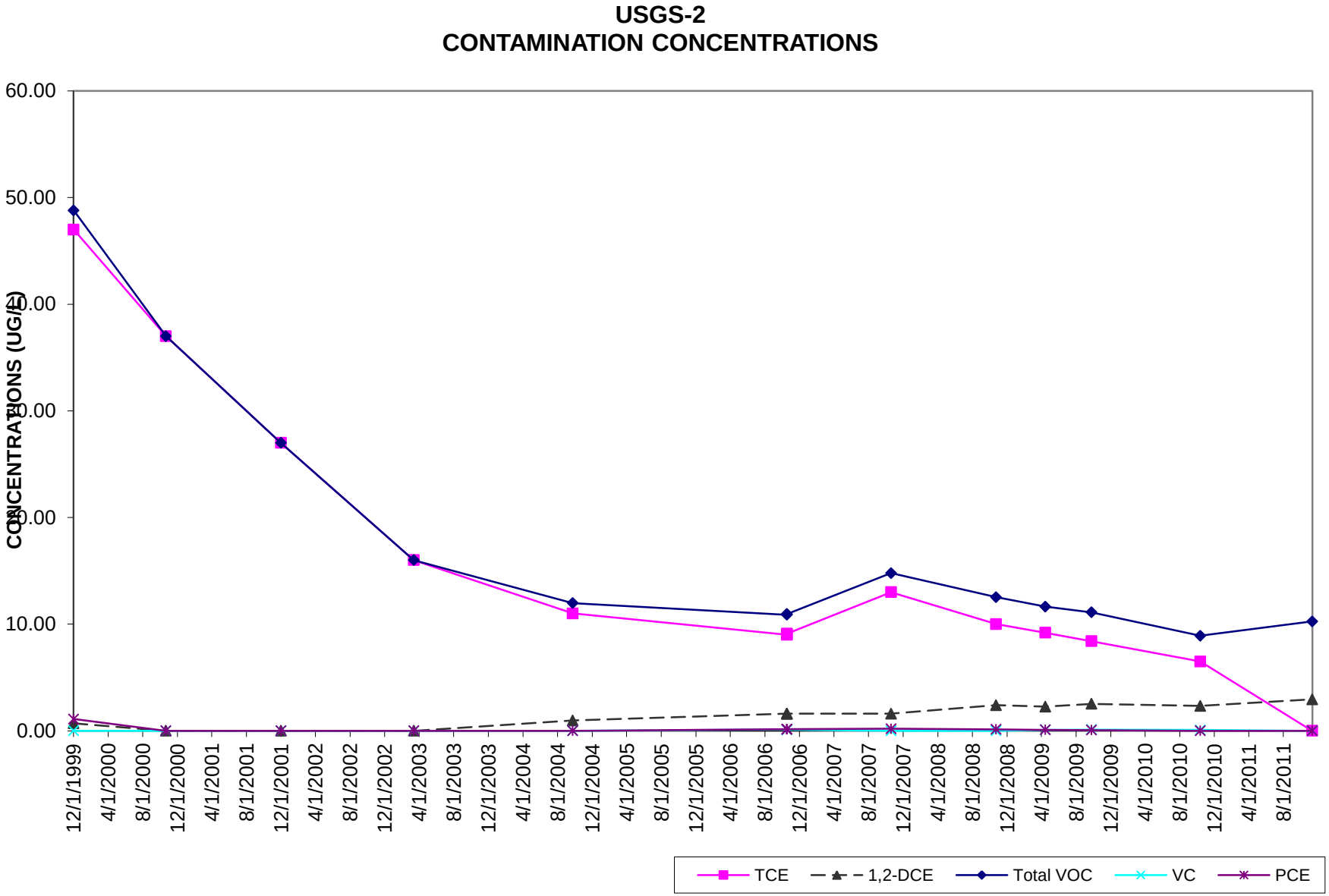

MS-49S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
250.00
200.00
150.00
100.00
50.00
0.00
12/5/1999
4/5/2000
8/5/2000
12/5/2000
4/5/2001
8/5/2001
12/5/2001
4/5/2002
8/5/2002
12/5/2002
4/5/2003
8/5/2003
12/5/2003
4/5/2004
8/5/2004
12/5/2004
4/5/2005
8/5/2005
12/5/2005
4/5/2006
8/5/2006
12/5/2006
4/5/2007
8/5/2007
12/5/2007
4/5/2008
8/5/2008
12/5/2008
4/5/2009
8/5/2009
12/5/2009
4/5/2010
8/5/2010
12/5/2010
4/5/2011
8/5/2011
TCE
1,2-DCE
Total VOC
VC
PCE

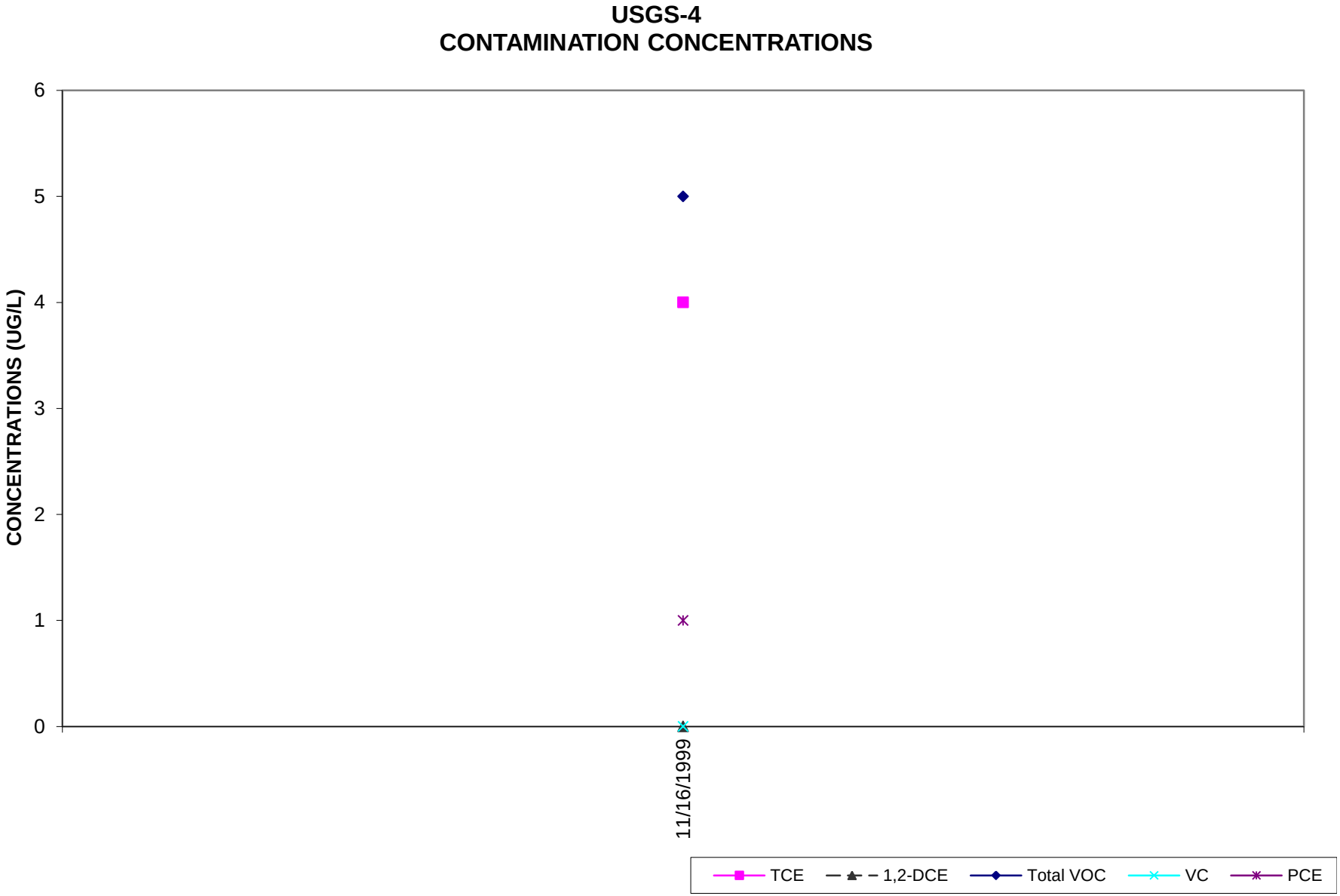

MS-52S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
12/1/1999
4/1/2000
8/1/2000
12/1/2000
4/1/2001
8/1/2001
12/1/2001
4/1/2002
8/1/2002
12/1/2002
4/1/2003
8/1/2003
12/1/2003
4/1/2004
8/1/2004
12/1/2004
4/1/2005
8/1/2005
12/1/2005
4/1/2006
8/1/2006
12/1/2006
4/1/2007
8/1/2007
12/1/2007
4/1/2008
8/1/2008
12/1/2008
4/1/2009
8/1/2009
12/1/2009
4/1/2010
8/1/2010
12/1/2010
4/1/2011
8/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE

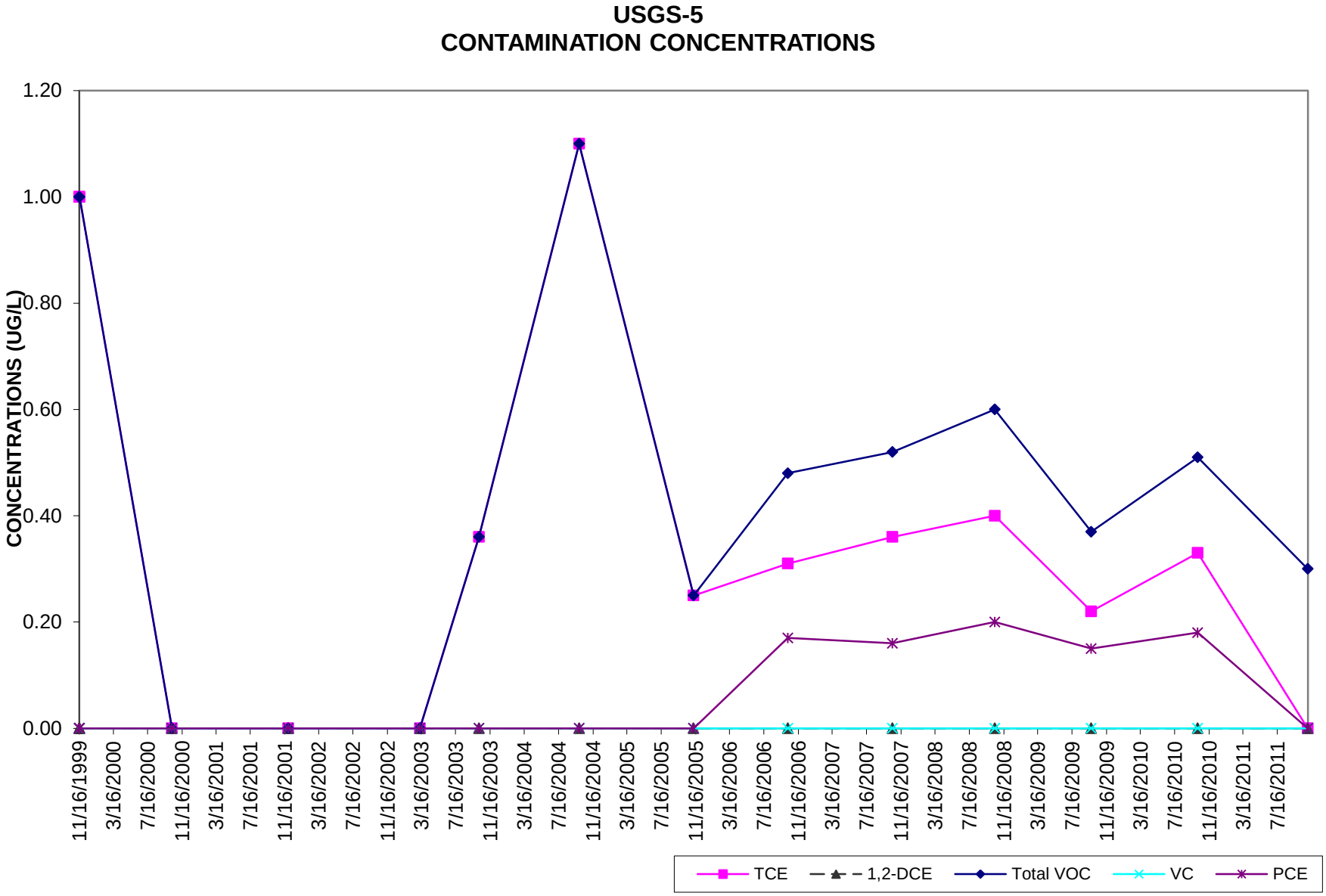

MS-54S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
3000.00
2500.00
2000.00
1500.00
1000.00
500.00
0.00
11/1/2005
5/1/2006
11/1/2006
5/1/2007
11/1/2007
5/1/2008
11/1/2008
5/1/2009
11/1/2009
5/1/2010
11/1/2010
5/1/2011
11/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE

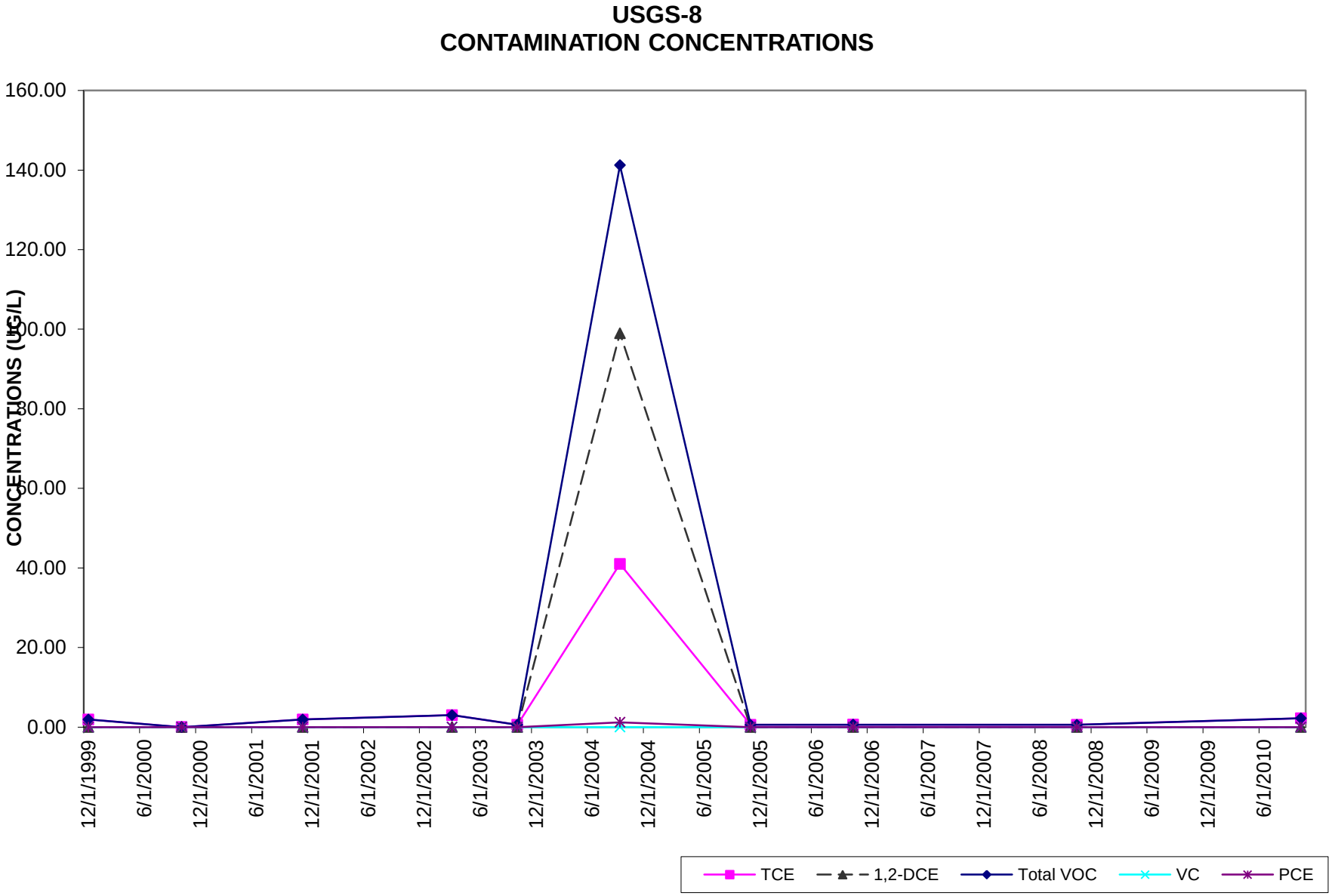

MS-56S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
NS in February sampling - blockage
NS in May due to lane closure during purging
11/1/2005
5/1/2006
11/1/2006
5/1/2007
11/1/2007
5/1/2008
11/1/2008
5/1/2009
11/1/2009
5/1/2010
11/1/2010
5/1/2011
11/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE

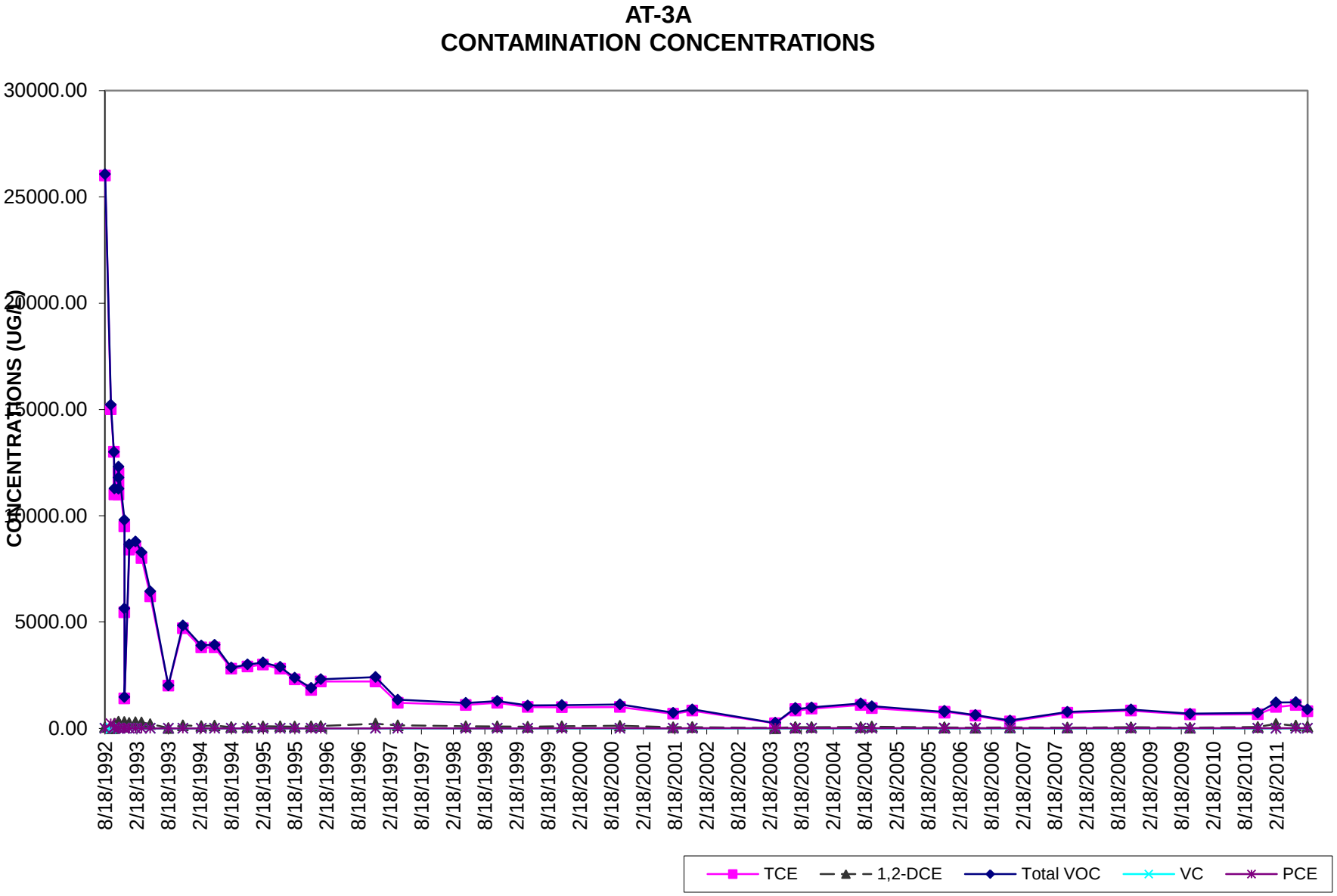

FMC-20
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
80
70
60
50
40
30
20
10
0
12/4/1999
TCE
1,2-DCE
Total VOC
VC
PCE

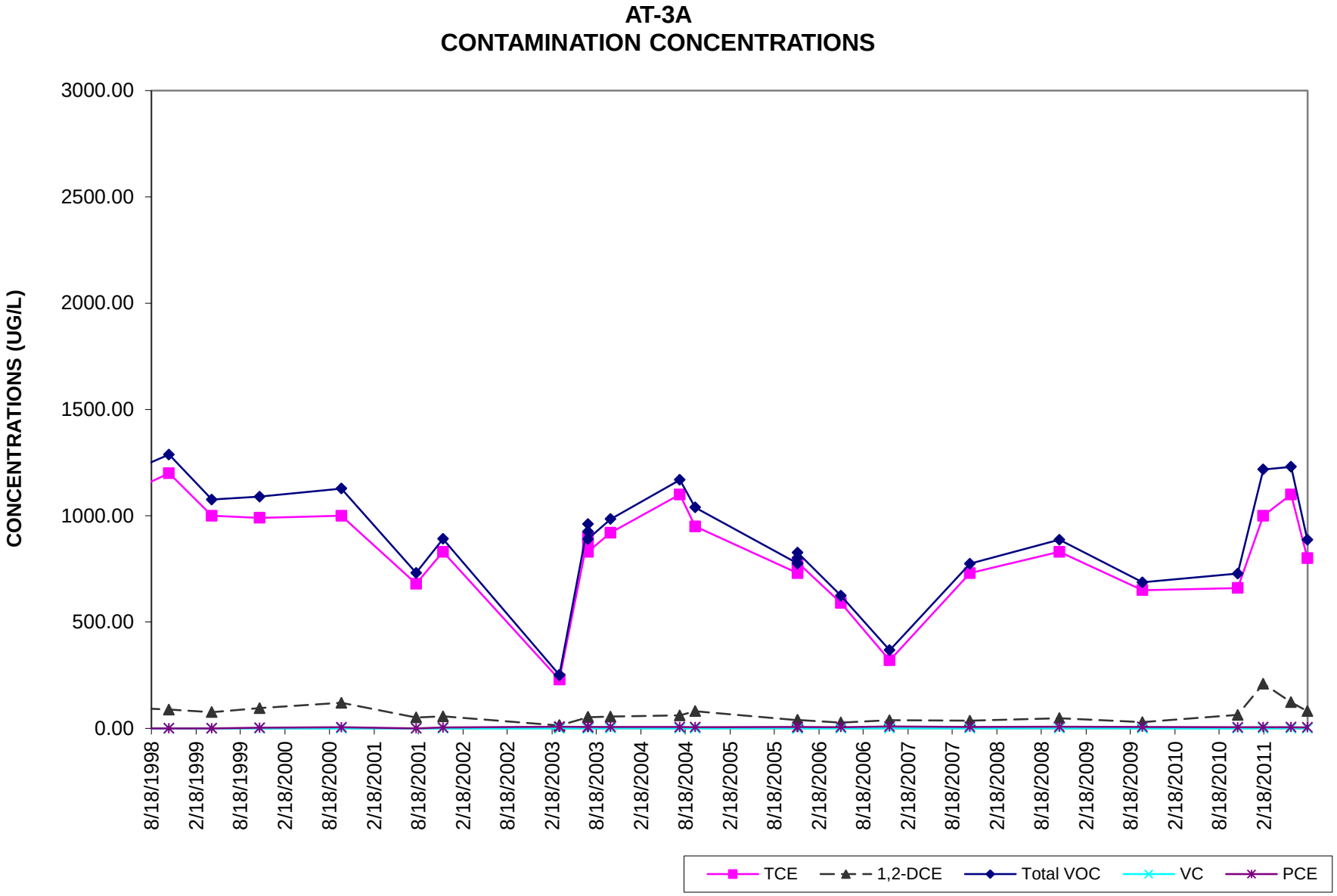

USGS-2
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
60.00
50.00
40.00
30.00
20.00
10.00
0.00
12/1/1999
4/1/2000
8/1/2000
12/1/2000
4/1/2001
8/1/2001
12/1/2001
4/1/2002
8/1/2002
12/1/2002
4/1/2003
8/1/2003
12/1/2003
4/1/2004
8/1/2004
12/1/2004
4/1/2005
8/1/2005
12/1/2005
4/1/2006
8/1/2006
12/1/2006
4/1/2007
8/1/2007
12/1/2007
4/1/2008
8/1/2008
12/1/2008
4/1/2009
8/1/2009
12/1/2009
4/1/2010
8/1/2010
12/1/2010
4/1/2011
8/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE

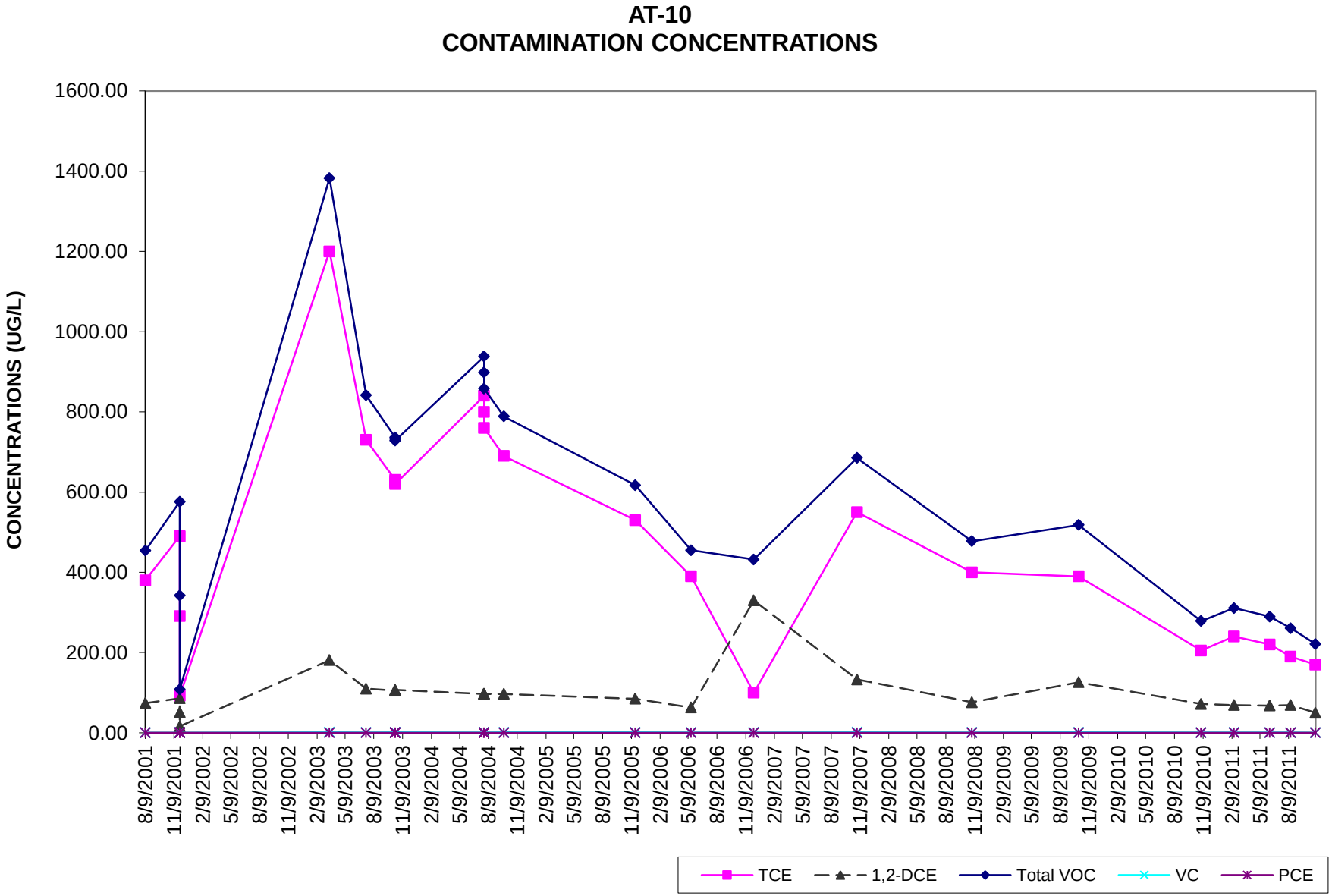

USGS-4
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
6
5
4
3
2
1
0
11/16/1999
TCE
1,2-DCE
Total VOC
VC
PCE

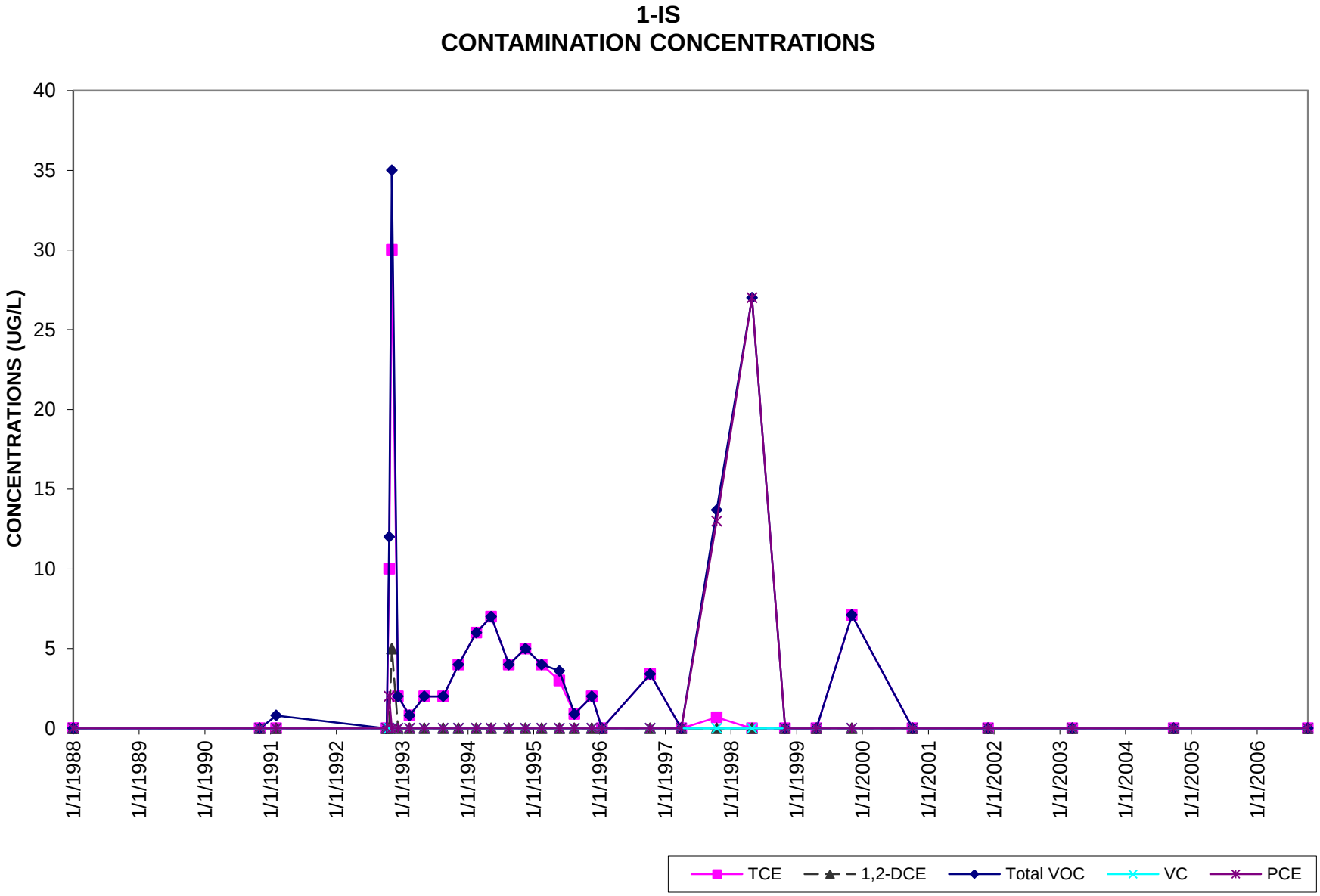

USGS-5
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
1.20
1.00
0.80
0.60
0.40
0.20
0.00
11/16/1999
3/16/2000
7/16/2000
11/16/2000
3/16/2001
7/16/2001
11/16/2001
3/16/2002
7/16/2002
11/16/2002
3/16/2003
7/16/2003
11/16/2003
3/16/2004
7/16/2004
11/16/2004
3/16/2005
7/16/2005
11/16/2005
3/16/2006
7/16/2006
11/16/2006
3/16/2007
7/16/2007
11/16/2007
3/16/2008
7/16/2008
11/16/2008
3/16/2009
7/16/2009
11/16/2009
3/16/2010
7/16/2010
11/16/2010
3/16/2011
7/16/2011
TCE
1,2-DCE
Total VOC
VC
PCE

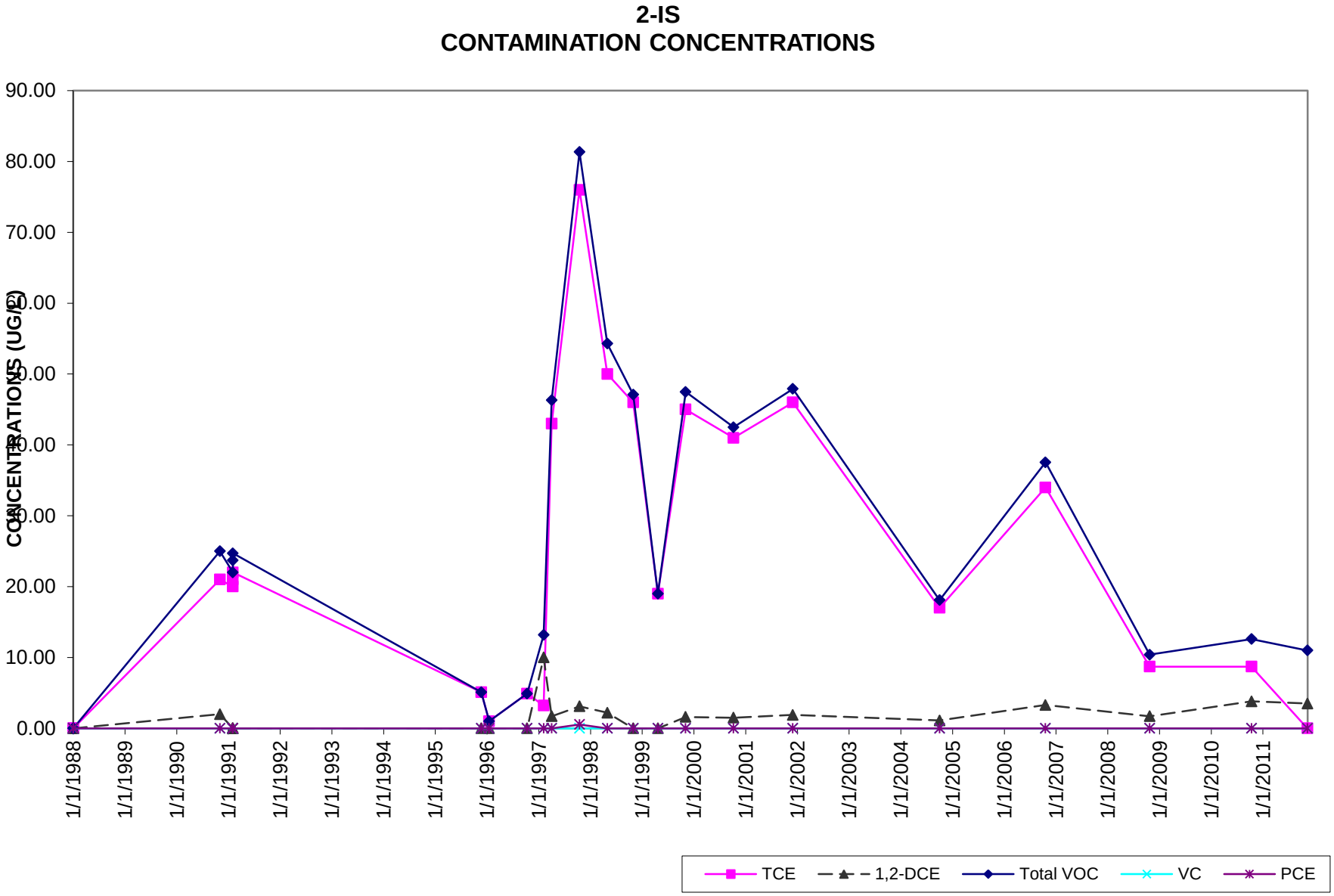

USGS-8
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
160.00
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
12/1/1999
6/1/2000
12/1/2000
6/1/2001
12/1/2001
6/1/2002
12/1/2002
6/1/2003
12/1/2003
6/1/2004
12/1/2004
6/1/2005
12/1/2005
6/1/2006
12/1/2006
6/1/2007
12/1/2007
6/1/2008
12/1/2008
6/1/2009
12/1/2009
6/1/2010
TCE
1,2-DCE
Total VOC
VC
PCE

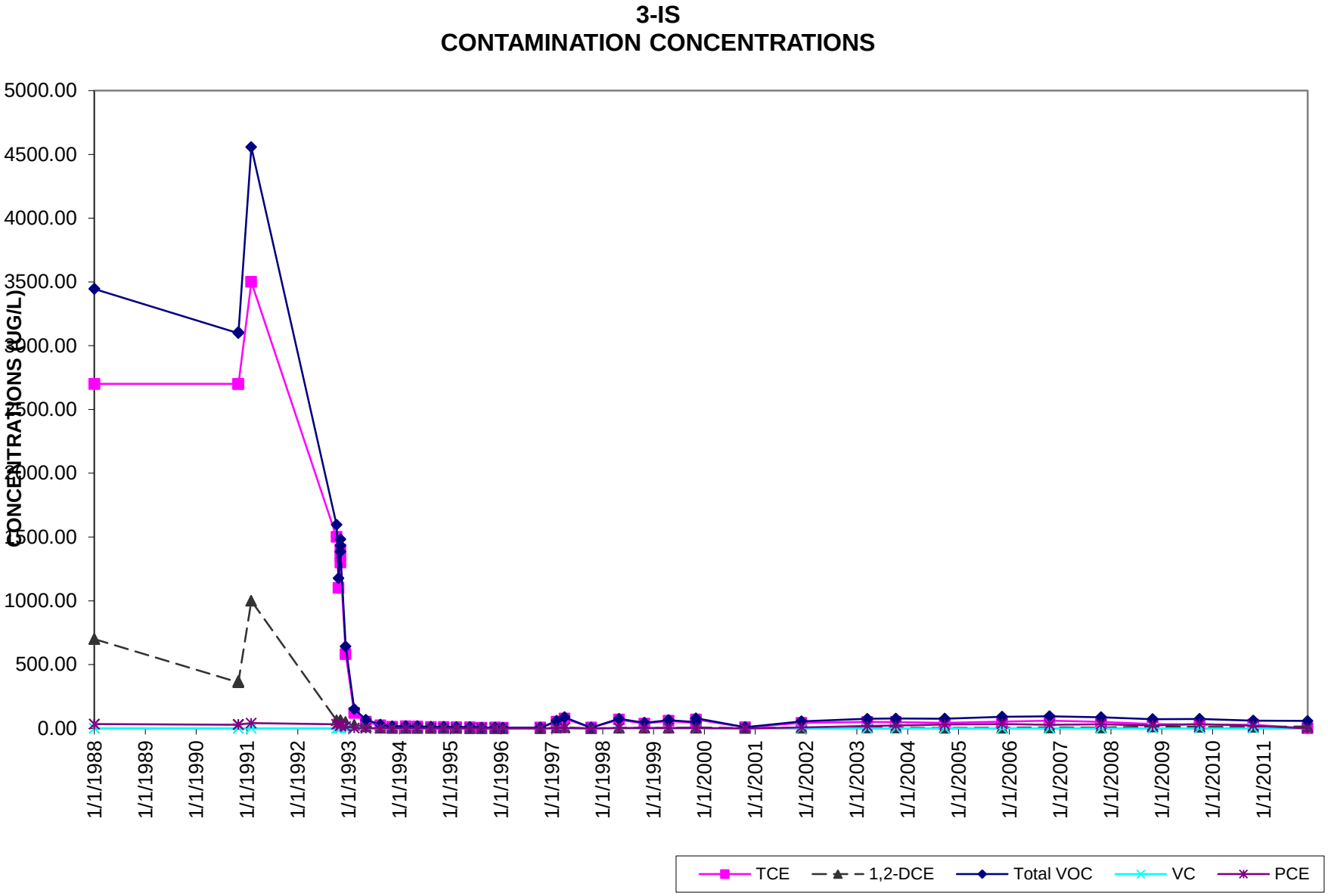

AT-3A
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
30000.00
25000.00
20000.00
15000.00
10000.00
5000.00
0.00
8/18/1992
2/18/1993
8/18/1993
2/18/1994
8/18/1994
2/18/1995
8/18/1995
2/18/1996
8/18/1996
2/18/1997
8/18/1997
2/18/1998
8/18/1998
2/18/1999
8/18/1999
2/18/2000
8/18/2000
2/18/2001
8/18/2001
2/18/2002
8/18/2002
2/18/2003
8/18/2003
2/18/2004
8/18/2004
2/18/2005
8/18/2005
2/18/2006
8/18/2006
2/18/2007
8/18/2007
2/18/2008
8/18/2008
2/18/2009
8/18/2009
2/18/2010
8/18/2010
2/18/2011
TCE
1,2-DCE
Total VOC
VC
PCE

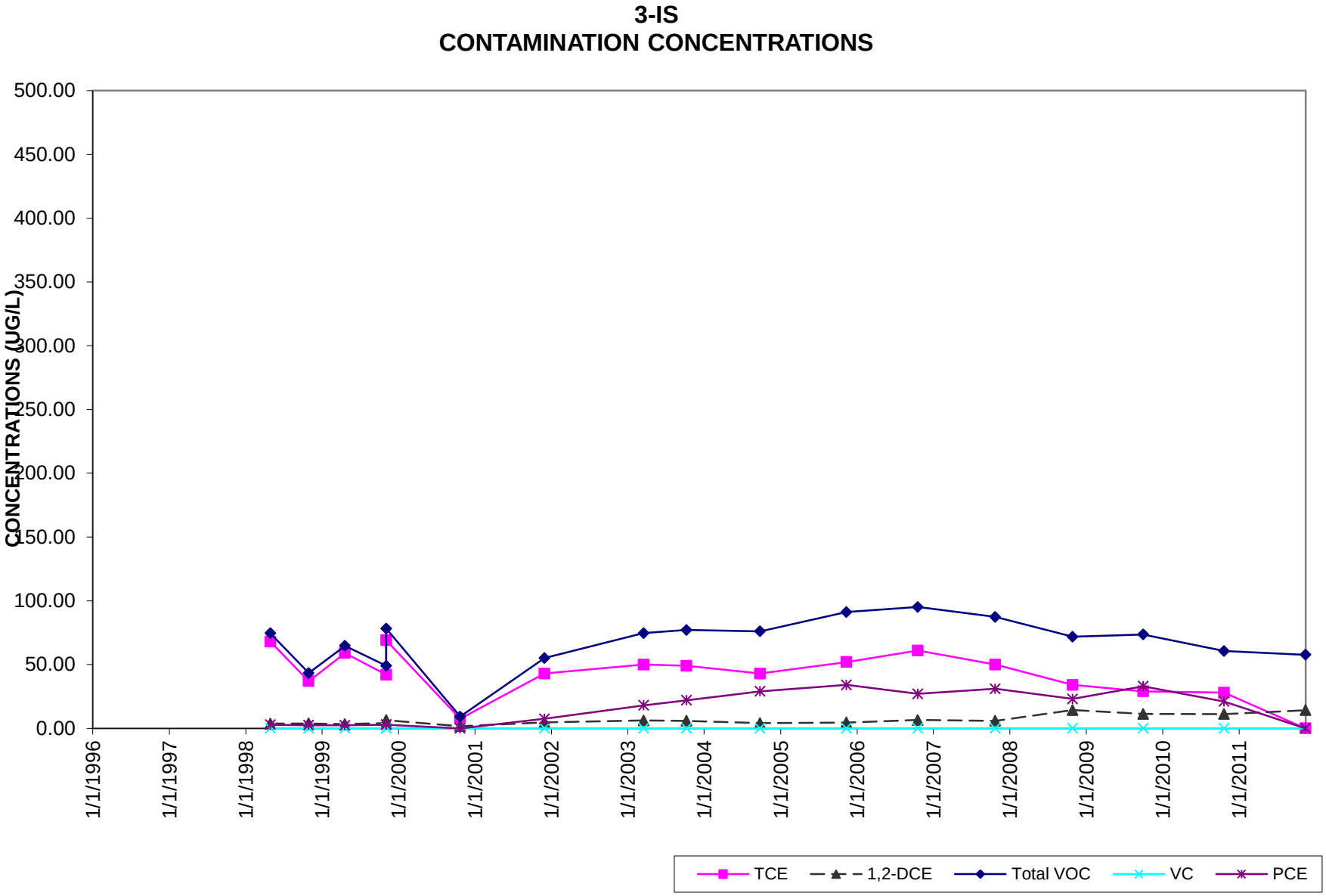

AT-3A
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
3000.00
2500.00
2000.00
1500.00
1000.00
500.00
0.00
8/18/1998
2/18/1999
8/18/1999
2/18/2000
8/18/2000
2/18/2001
8/18/2001
2/18/2002
8/18/2002
2/18/2003
8/18/2003
2/18/2004
8/18/2004
2/18/2005
8/18/2005
2/18/2006
8/18/2006
2/18/2007
8/18/2007
2/18/2008
8/18/2008
2/18/2009
8/18/2009
2/18/2010
8/18/2010
2/18/2011
TCE
1,2-DCE
Total VOC
VC
PCE

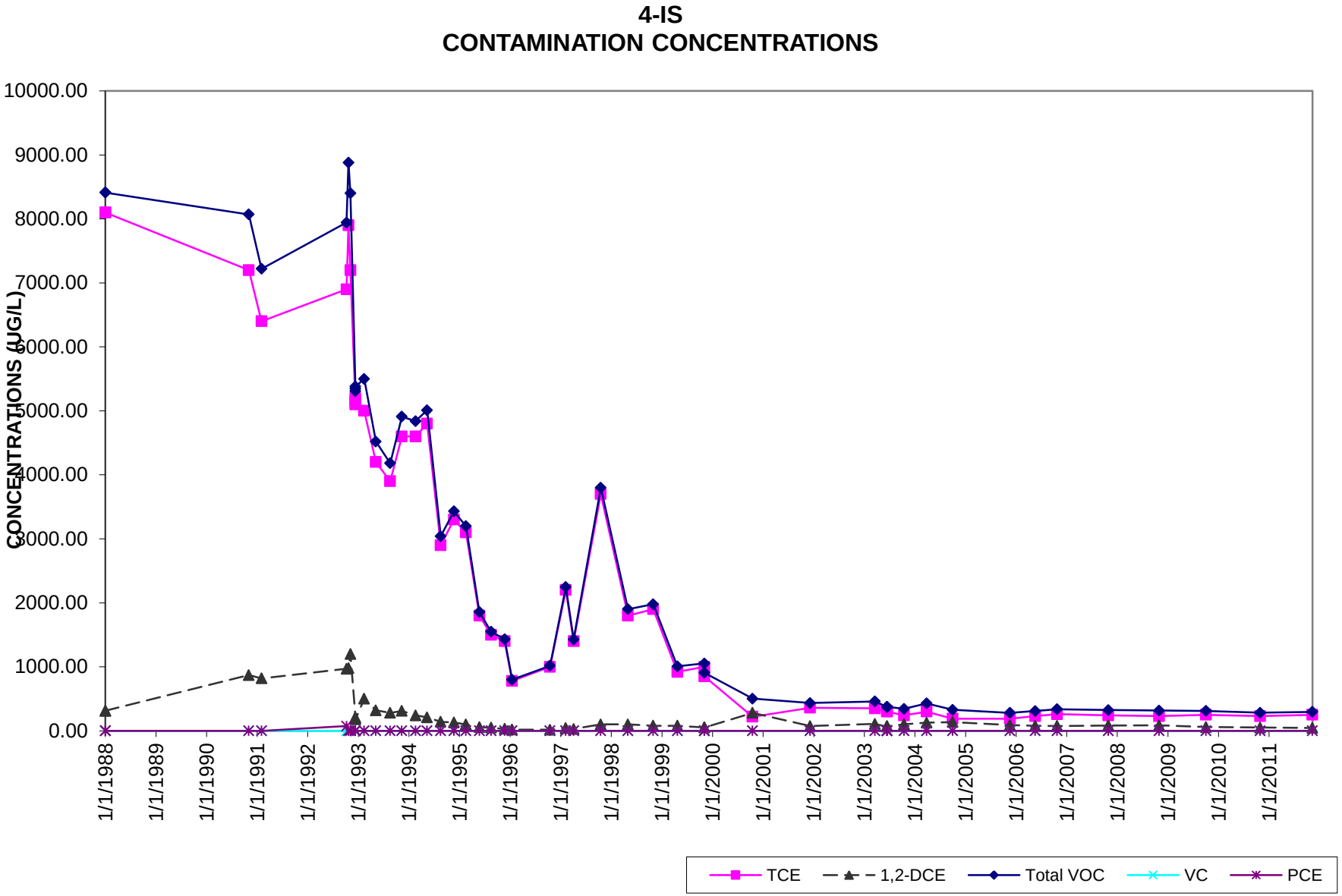

AT-10
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
8/9/2001
11/9/2001
2/9/2002
5/9/2002
8/9/2002
11/9/2002
2/9/2003
5/9/2003
8/9/2003
11/9/2003
2/9/2004
5/9/2004
8/9/2004
11/9/2004
2/9/2005
5/9/2005
8/9/2005
11/9/2005
2/9/2006
5/9/2006
8/9/2006
11/9/2006
2/9/2007
5/9/2007
8/9/2007
11/9/2007
2/9/2008
5/9/2008
8/9/2008
11/9/2008
2/9/2009
5/9/2009
8/9/2009
11/9/2009
2/9/2010
5/9/2010
8/9/2010
11/9/2010
2/9/2011
5/9/2011
8/9/2011
TCE
1,2-DCE
Total VOC
VC
PCE

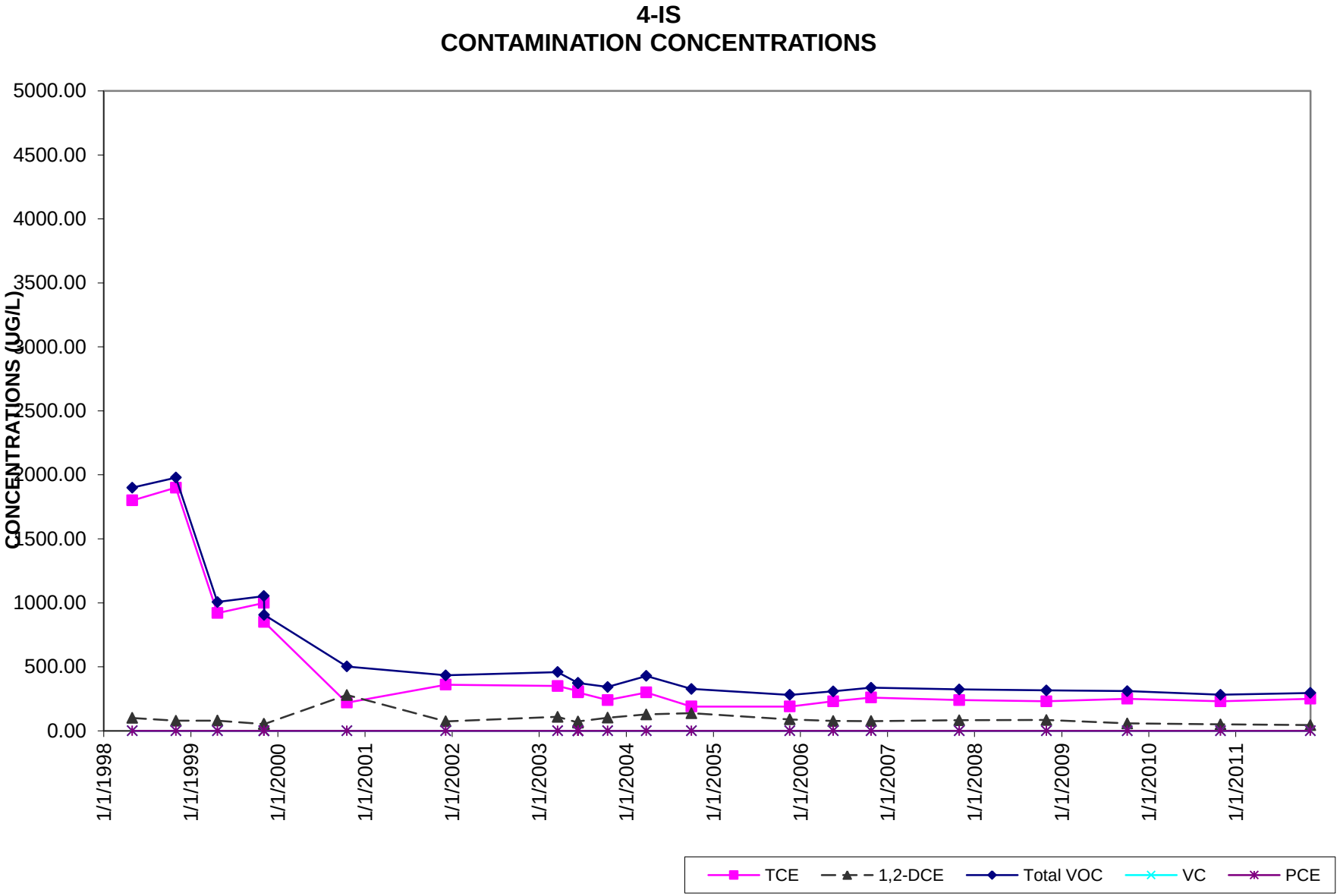

1-IS
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
40
35
30
25
20
15
10
5
0
1/1/1988
1/1/1989
1/1/1990
1/1/1991
1/1/1992
1/1/1993
1/1/1994
1/1/1995
1/1/1996
1/1/1997
1/1/1998
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
TCE
1,2-DCE
Total VOC
VC
PCE

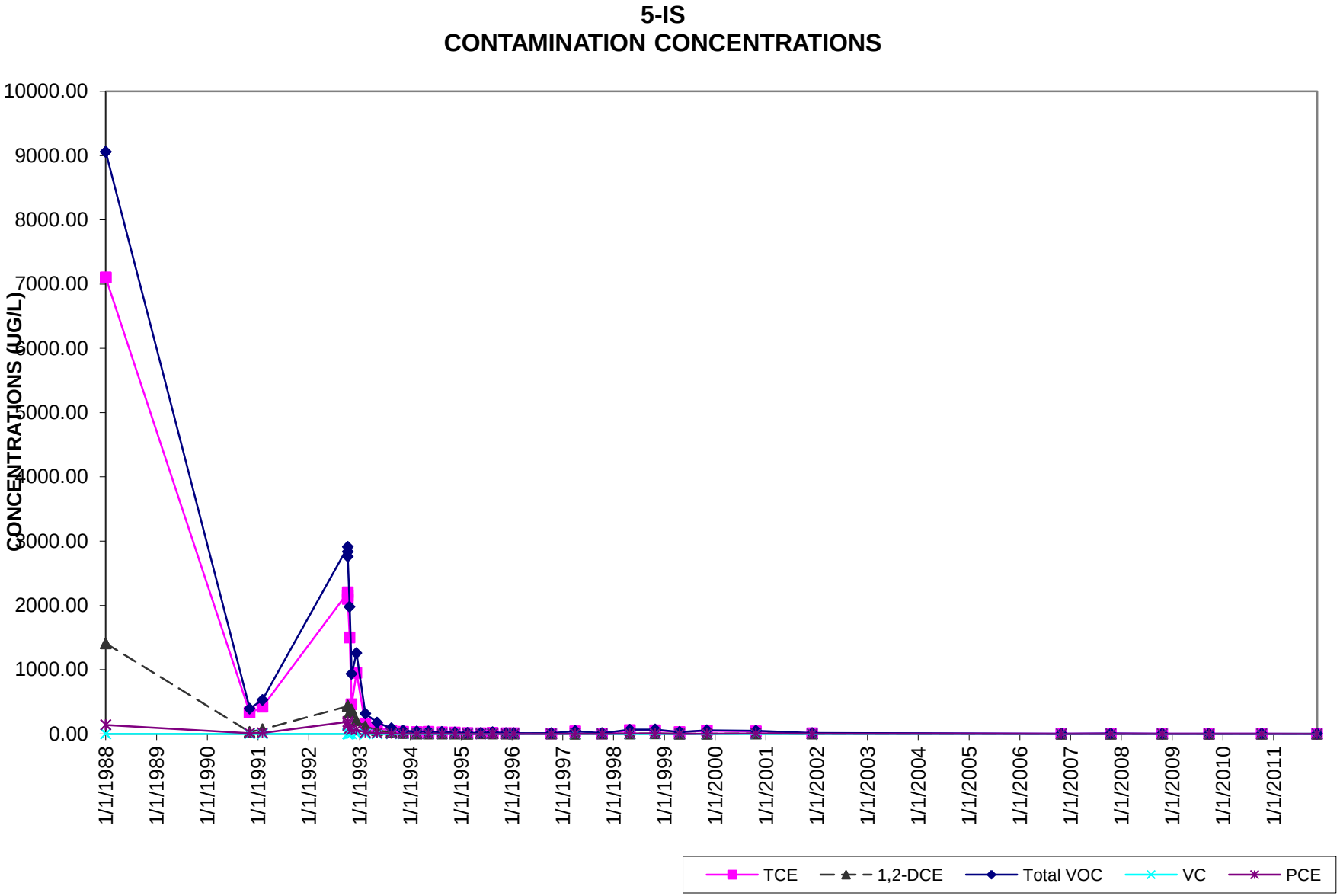

2-IS
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
1/1/1988
1/1/1989
1/1/1990
1/1/1991
1/1/1992
1/1/1993
1/1/1994
1/1/1995
1/1/1996
1/1/1997
1/1/1998
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE

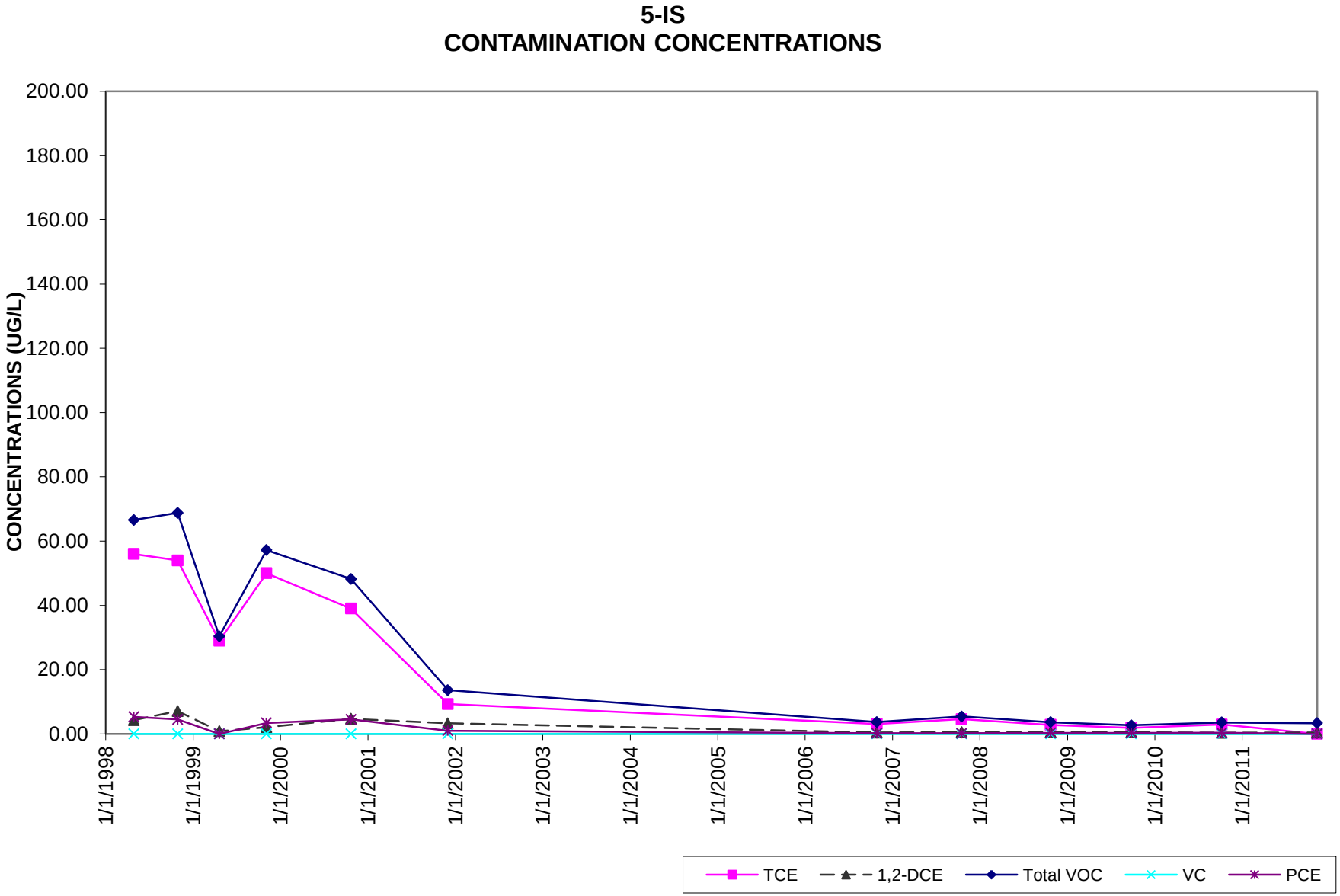

3-IS
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
5000.00
4500.00
4000.00
3500.00
3000.00
2500.00
2000.00
1500.00
1000.00
500.00
0.00
1/1/1988
1/1/1989
1/1/1990
1/1/1991
1/1/1992
1/1/1993
1/1/1994
1/1/1995
1/1/1996
1/1/1997
1/1/1998
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE

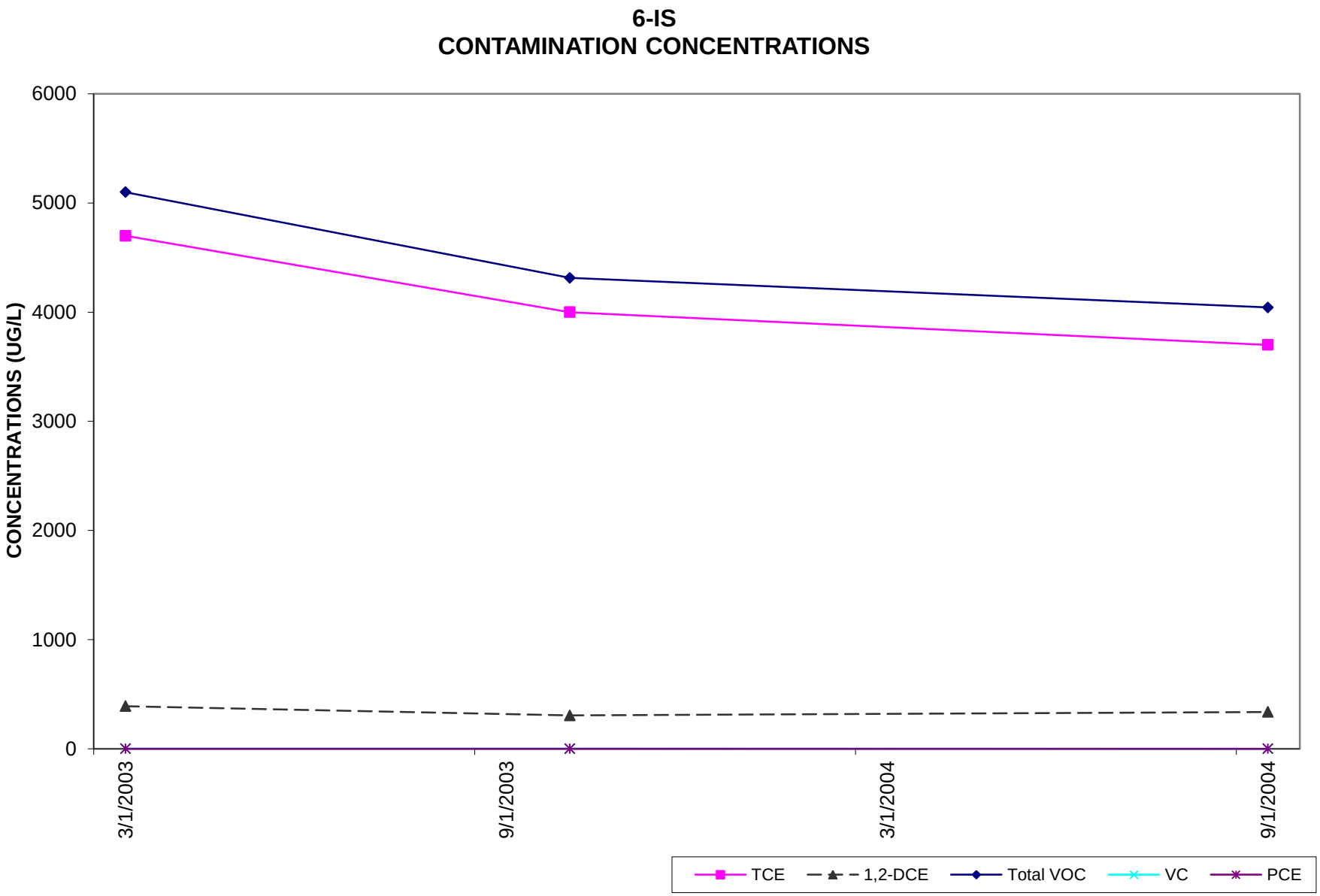

3-IS
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
500.00
450.00
400.00
350.00
300.00
250.00
200.00
150.00
100.00
50.00
0.00
1/1/1996
1/1/1997
1/1/1998
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE

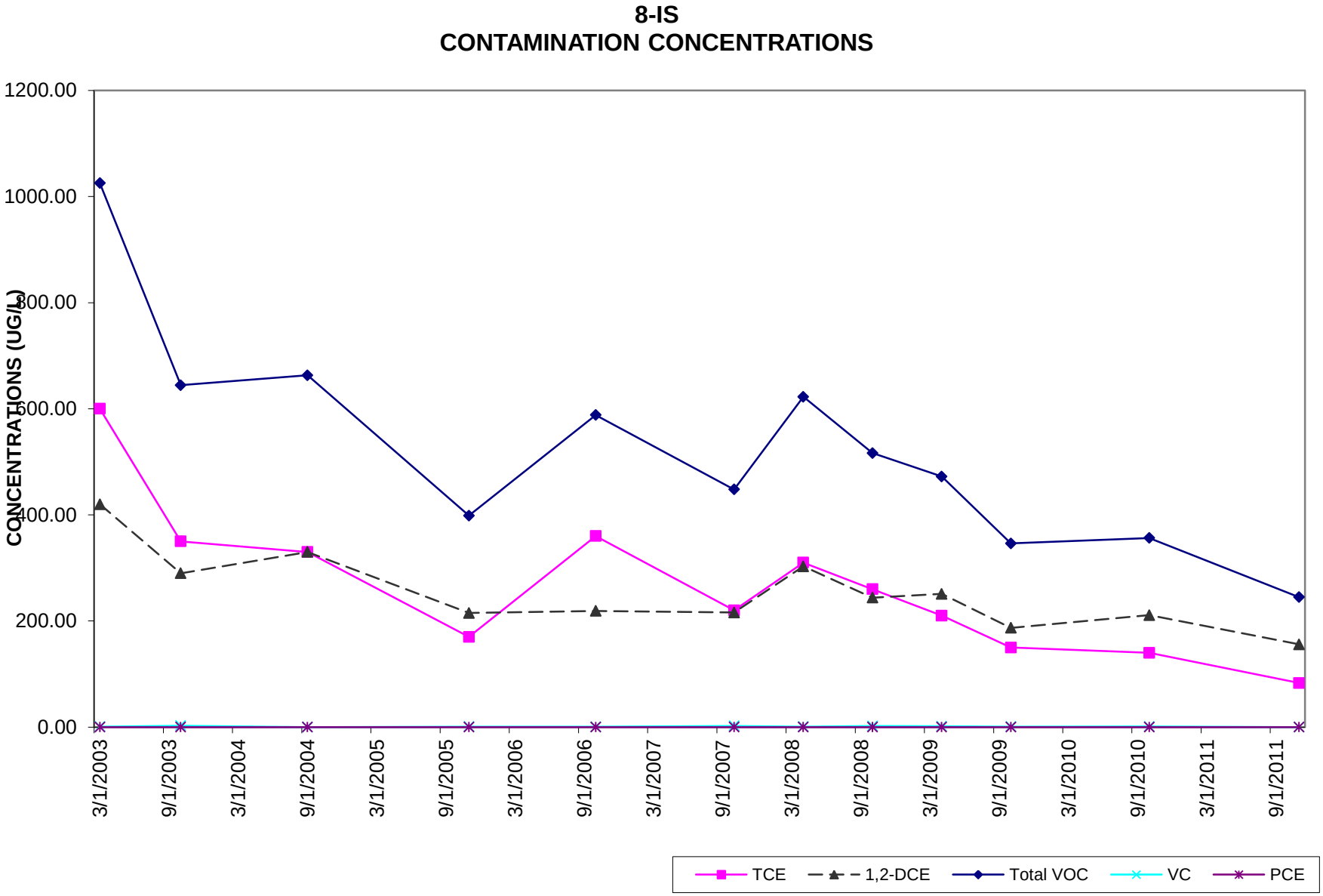

4-IS
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
10000.00
9000.00
8000.00
7000.00
6000.00
5000.00
4000.00
3000.00
2000.00
1000.00
0.00
1/1/1988
1/1/1989
1/1/1990
1/1/1991
1/1/1992
1/1/1993
1/1/1994
1/1/1995
1/1/1996
1/1/1997
1/1/1998
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE

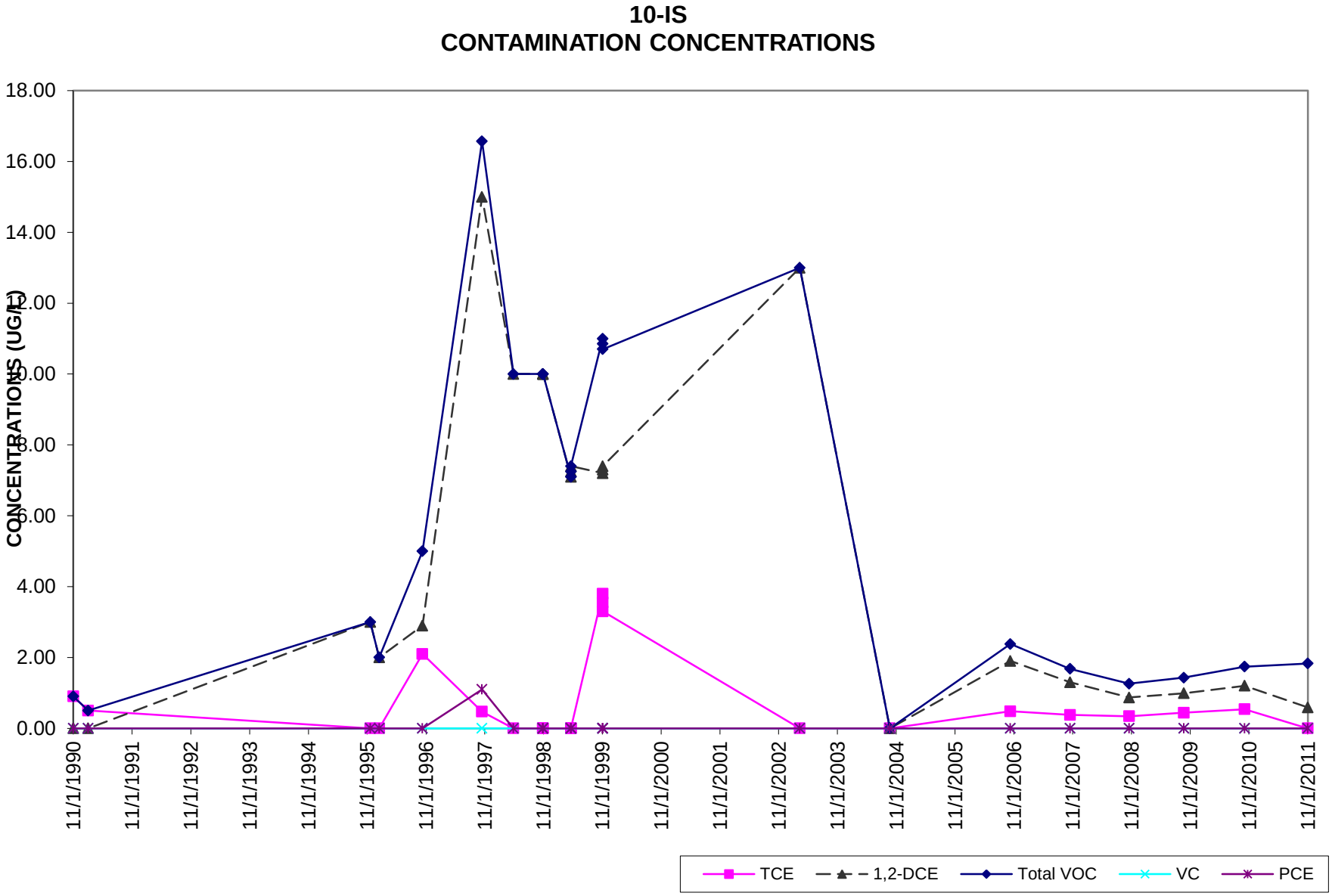

4-IS
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (µG/L)
5000.00
4500.00
4000.00
3500.00
3000.00
2500.00
2000.00
1500.00
1000.00
500.00
0.00
1/1/1998
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE

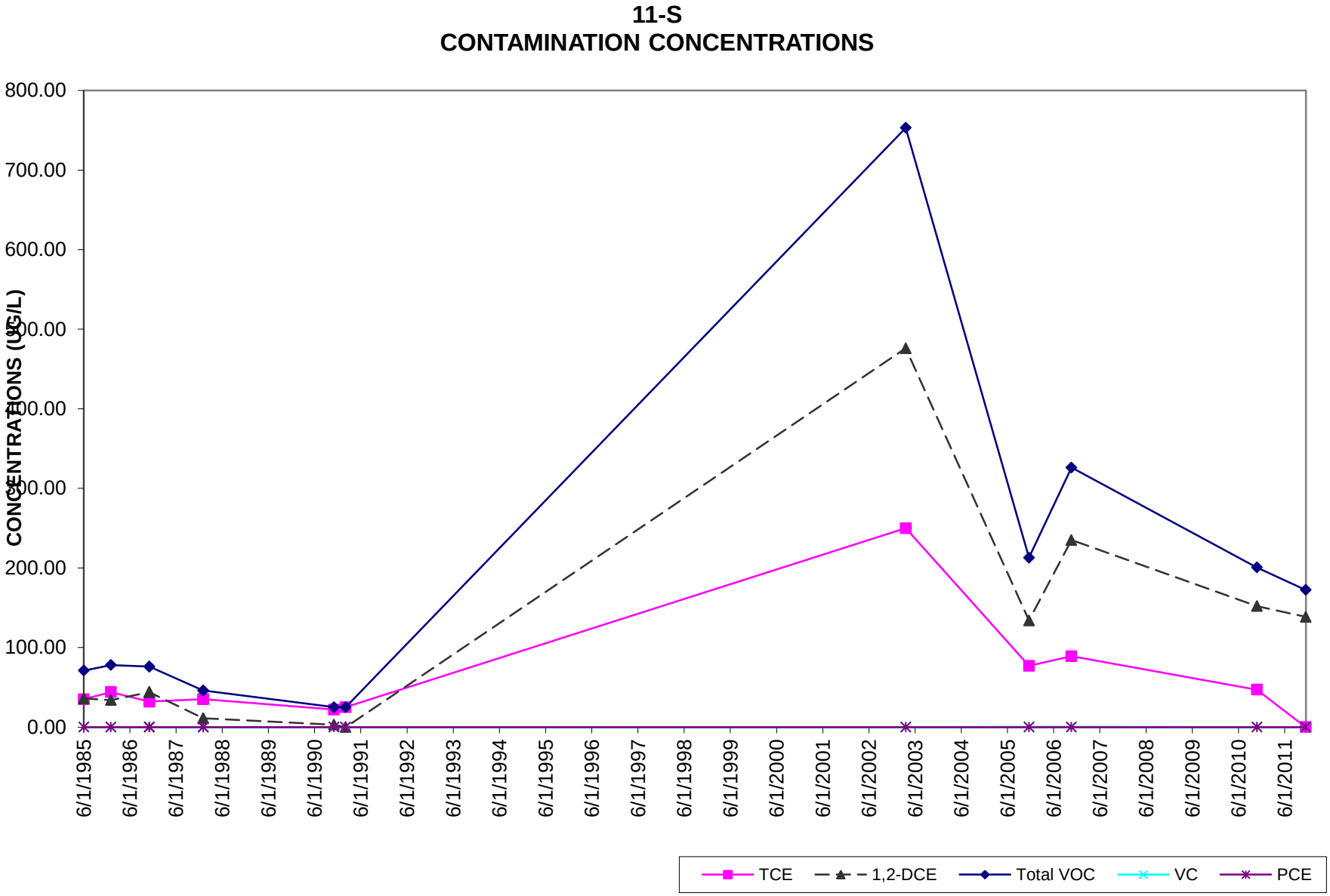

5-IS
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
10000.00
9000.00
8000.00
7000.00
6000.00
5000.00
4000.00
3000.00
2000.00
1000.00
0.00
1/1/1988
1/1/1989
1/1/1990
1/1/1991
1/1/1992
1/1/1993
1/1/1994
1/1/1995
1/1/1996
1/1/1997
1/1/1998
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE

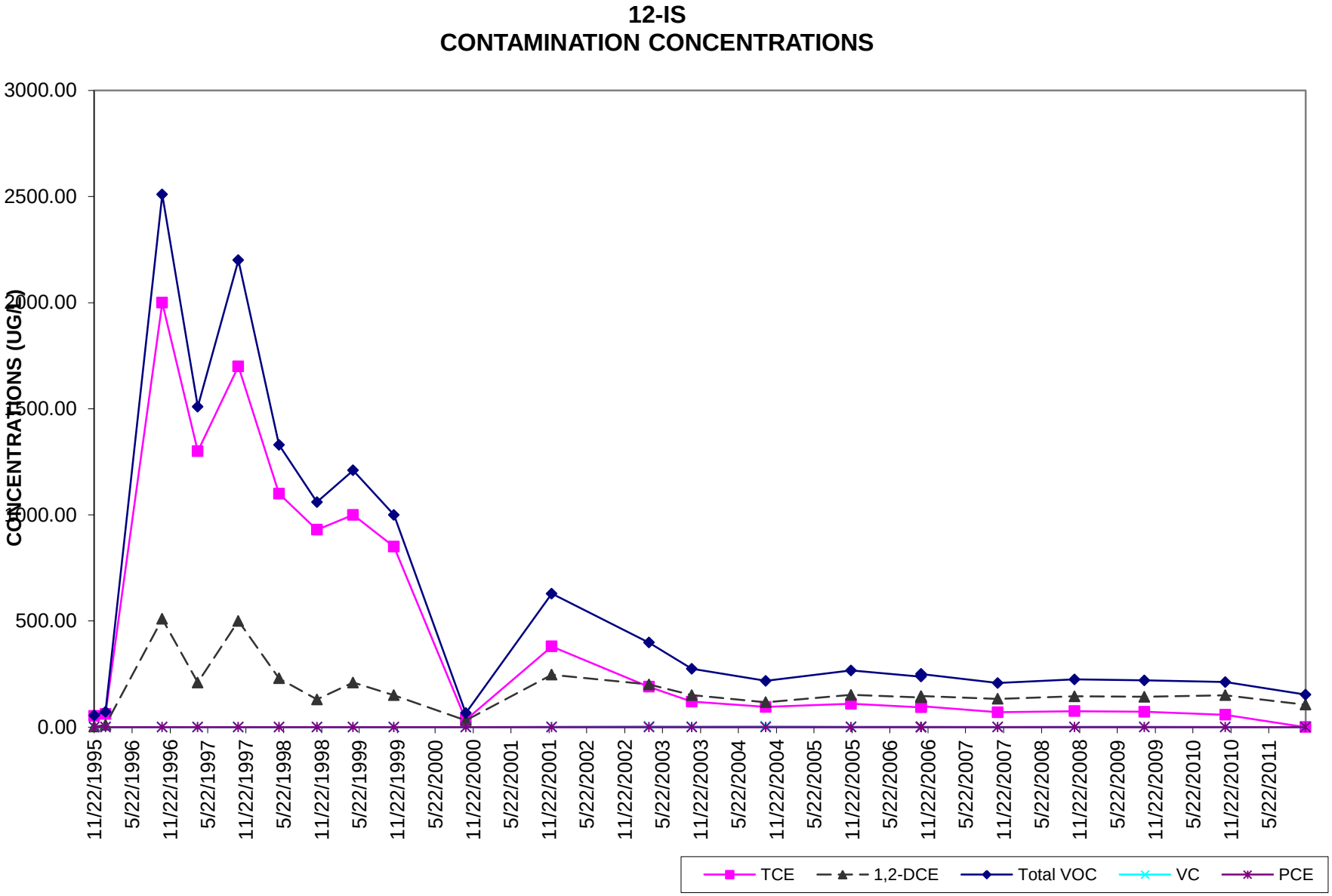

5-IS
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
200.00
180.00
160.00
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
1/1/1998
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE

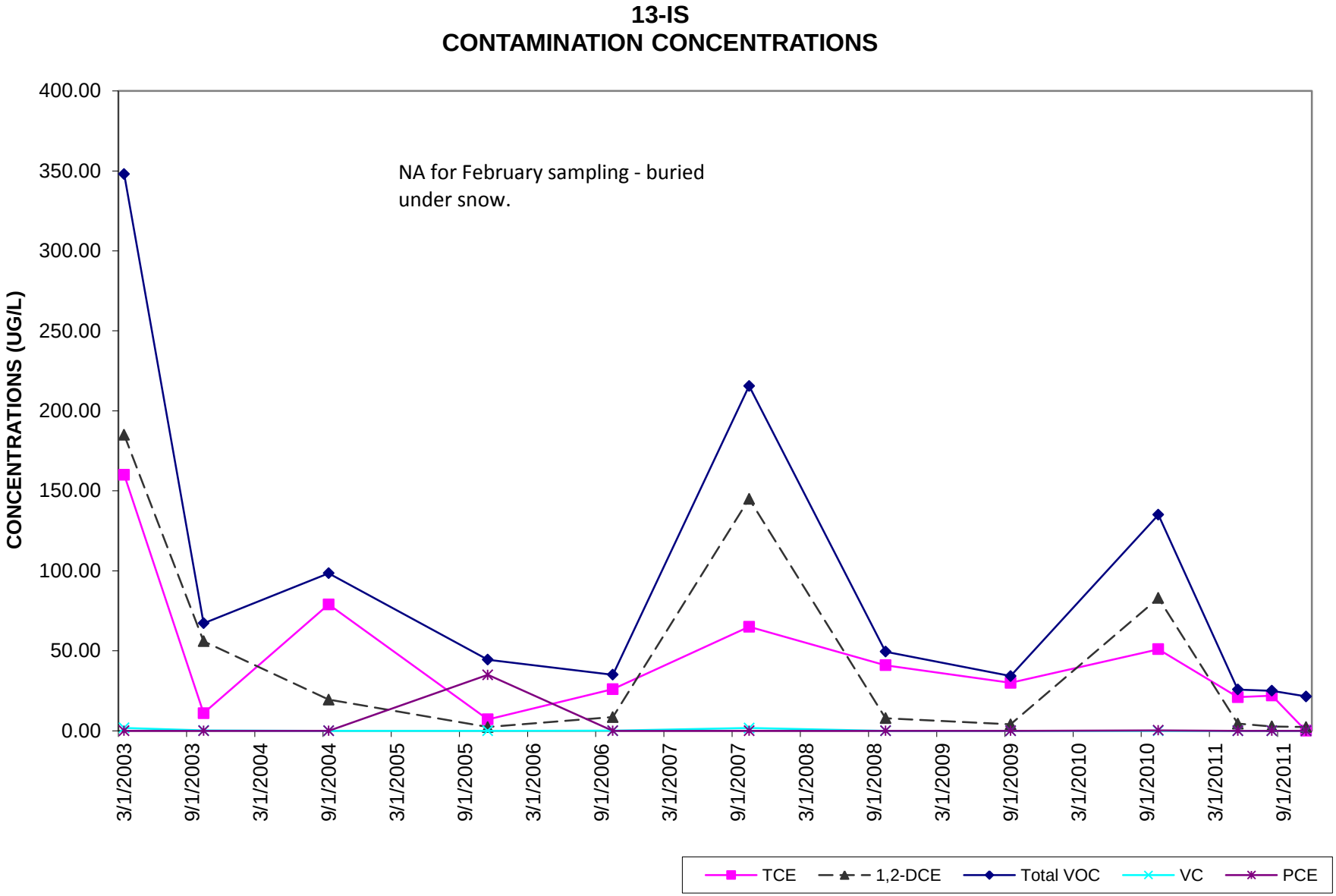

6-IS
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
6000
5000
4000
3000
2000
1000
0
3/1/2003
9/1/2003
3/1/2004
9/1/2004
TCE
1,2-DCE
Total VOC
VC
PCE

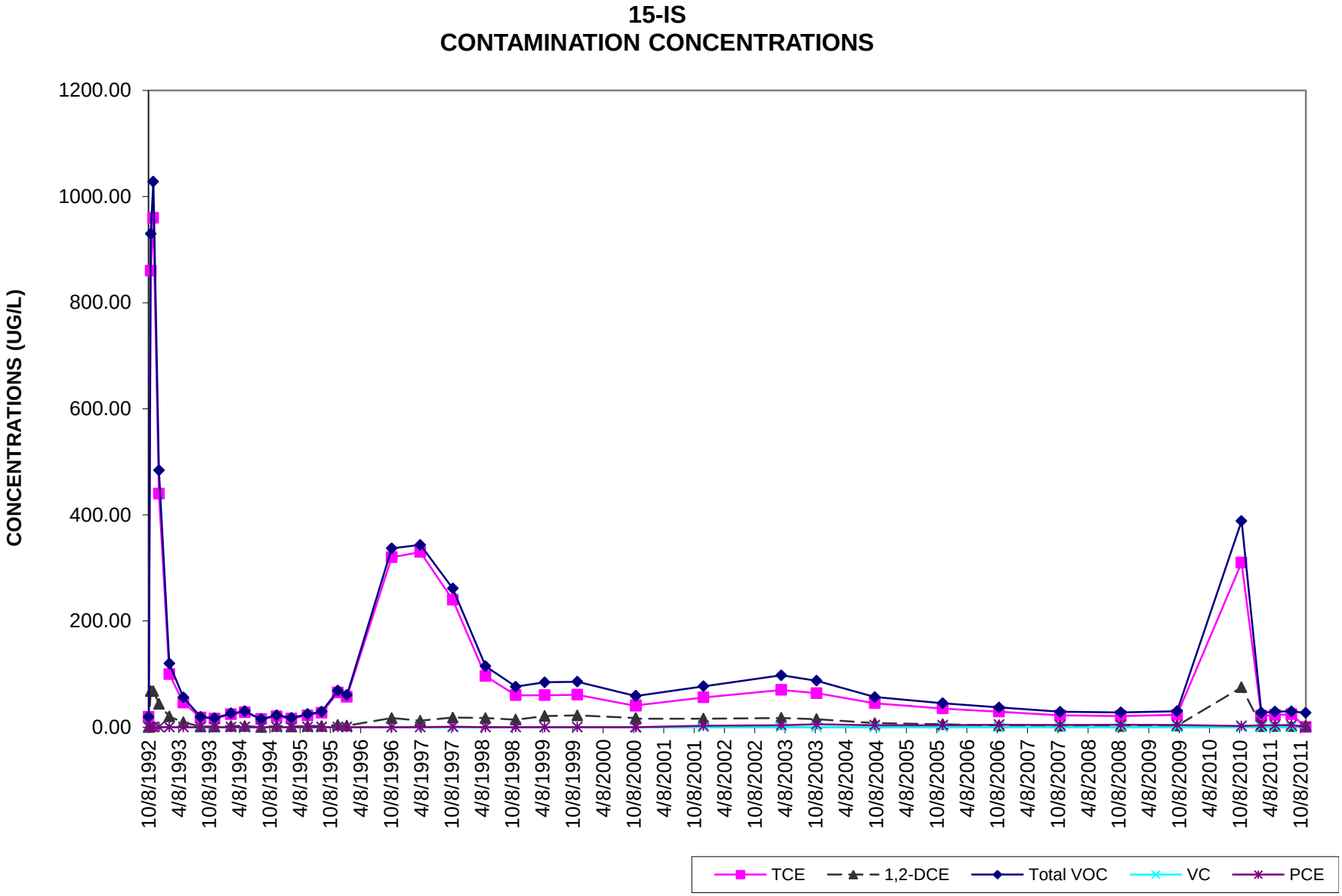

8-IS
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
3/1/2003
9/1/2003
3/1/2004
9/1/2004
3/1/2005
9/1/2005
3/1/2006
9/1/2006
3/1/2007
9/1/2007
3/1/2008
9/1/2008
3/1/2009
9/1/2009
3/1/2010
9/1/2010
3/1/2011
9/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE

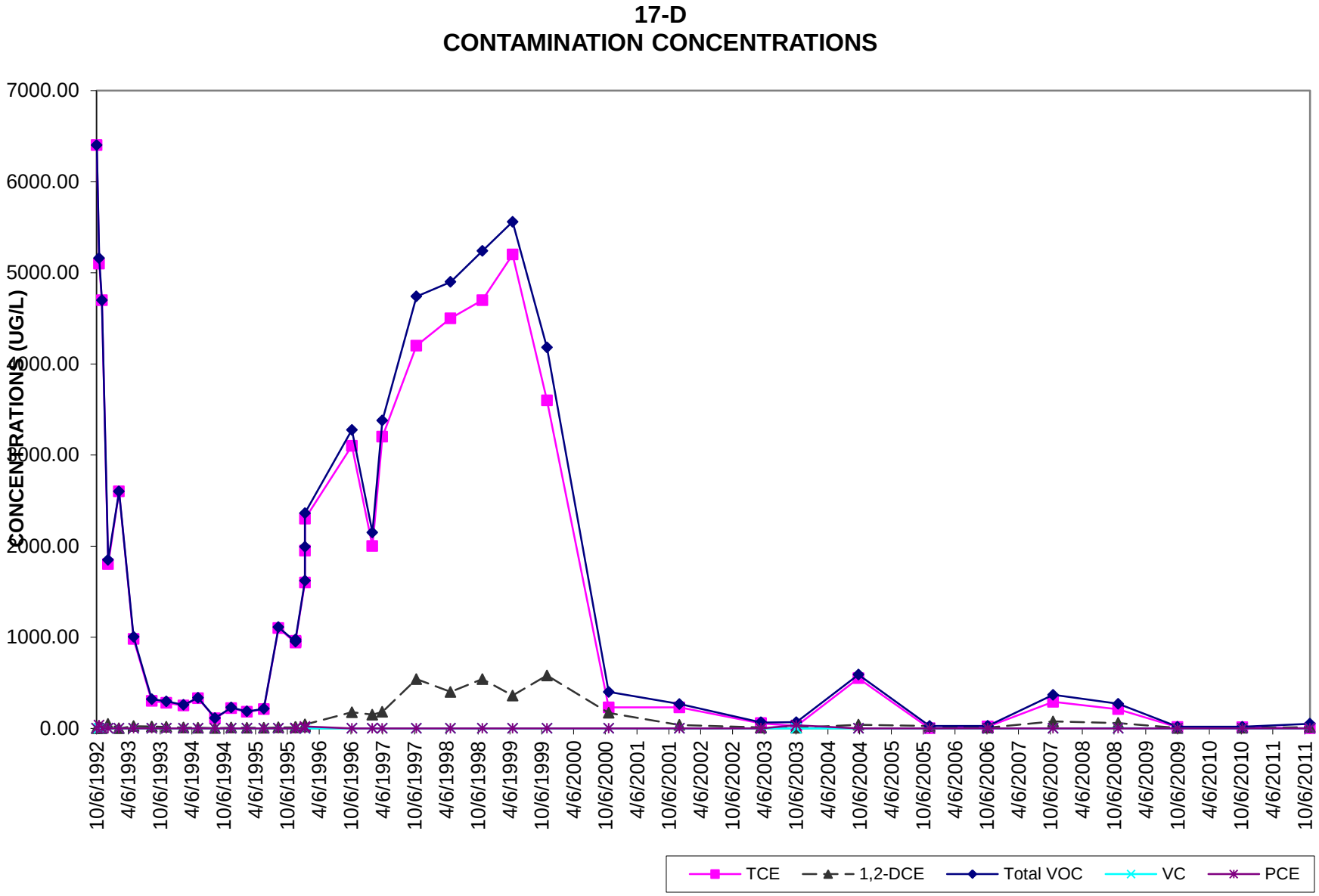

10-IS
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
11/1/1990
11/1/1991
11/1/1992
11/1/1993
11/1/1994
11/1/1995
11/1/1996
11/1/1997
11/1/1998
11/1/1999
11/1/2000
11/1/2001
11/1/2002
11/1/2003
11/1/2004
11/1/2005
11/1/2006
11/1/2007
11/1/2008
11/1/2009
11/1/2010
11/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE

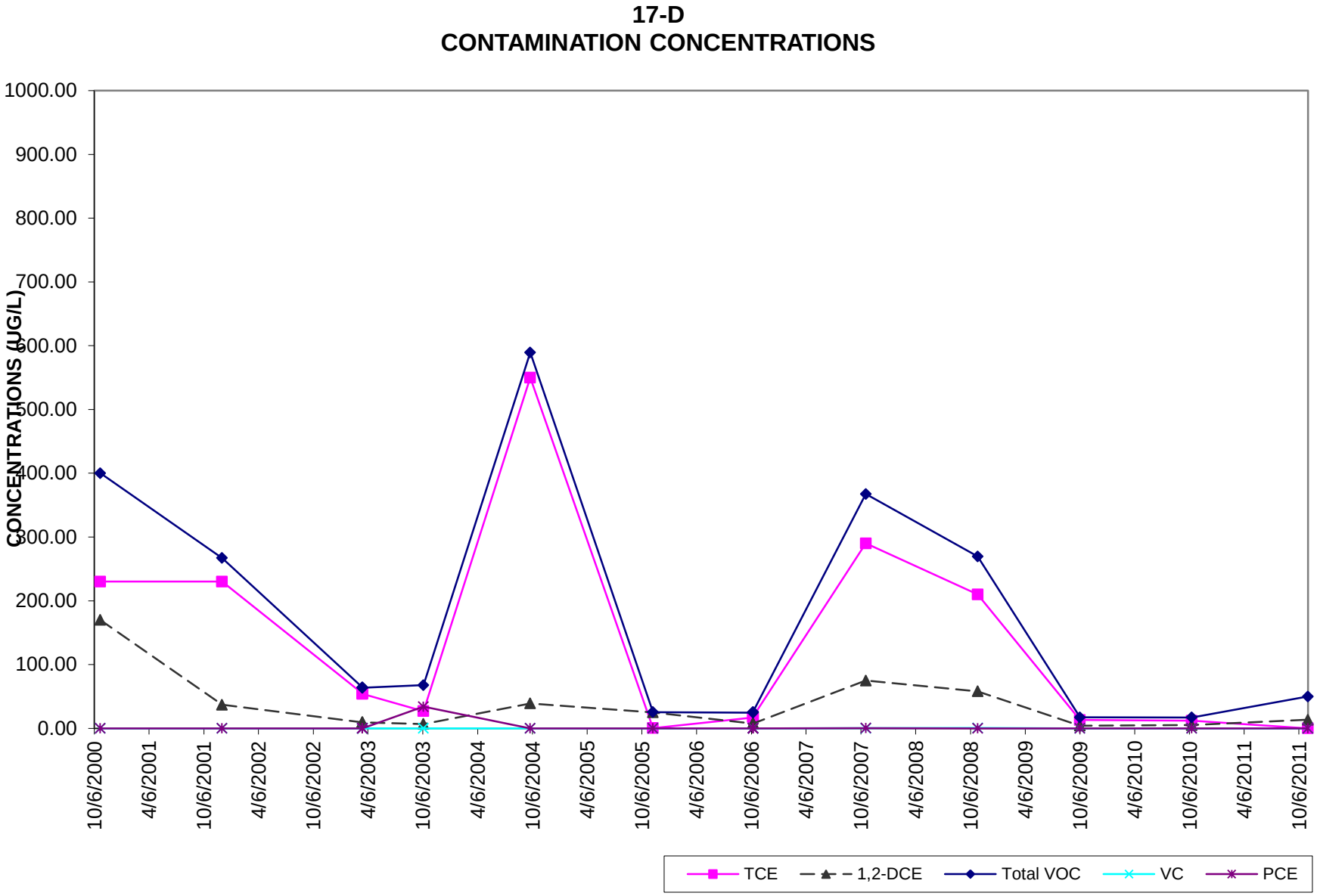

11-S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
800.00
700.00
600.00
500.00
400.00
300.00
200.00
100.00
0.00
6/1/1985
6/1/1986
6/1/1987
6/1/1988
6/1/1989
6/1/1990
6/1/1991
6/1/1992
6/1/1993
6/1/1994
6/1/1995
6/1/1996
6/1/1997
6/1/1998
6/1/1999
6/1/2000
6/1/2001
6/1/2002
6/1/2003
6/1/2004
6/1/2005
6/1/2006
6/1/2007
6/1/2008
6/1/2009
6/1/2010
6/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE

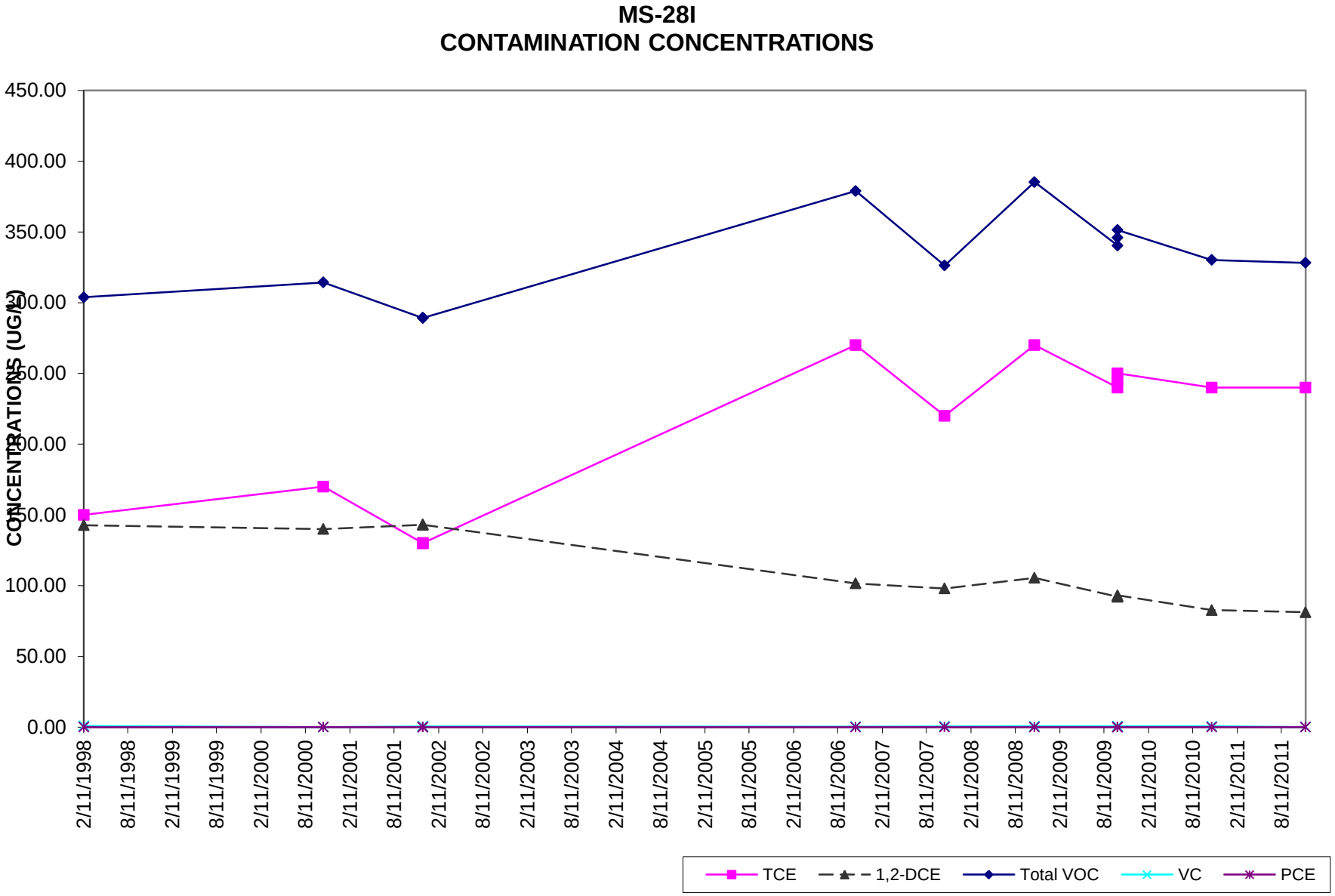

12-IS
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
3000.00
2500.00
2000.00
1500.00
1000.00
500.00
0.00
11/22/1995
5/22/1996
11/22/1996
5/22/1997
11/22/1997
5/22/1998
11/22/1998
5/22/1999
11/22/1999
5/22/2000
11/22/2000
5/22/2001
11/22/2001
5/22/2002
11/22/2002
5/22/2003
11/22/2003
5/22/2004
11/22/2004
5/22/2005
11/22/2005
5/22/2006
11/22/2006
5/22/2007
11/22/2007
5/22/2008
11/22/2008
5/22/2009
11/22/2009
5/22/2010
11/22/2010
5/22/2011
TCE
1,2-DCE
Total VOC
VC
PCE

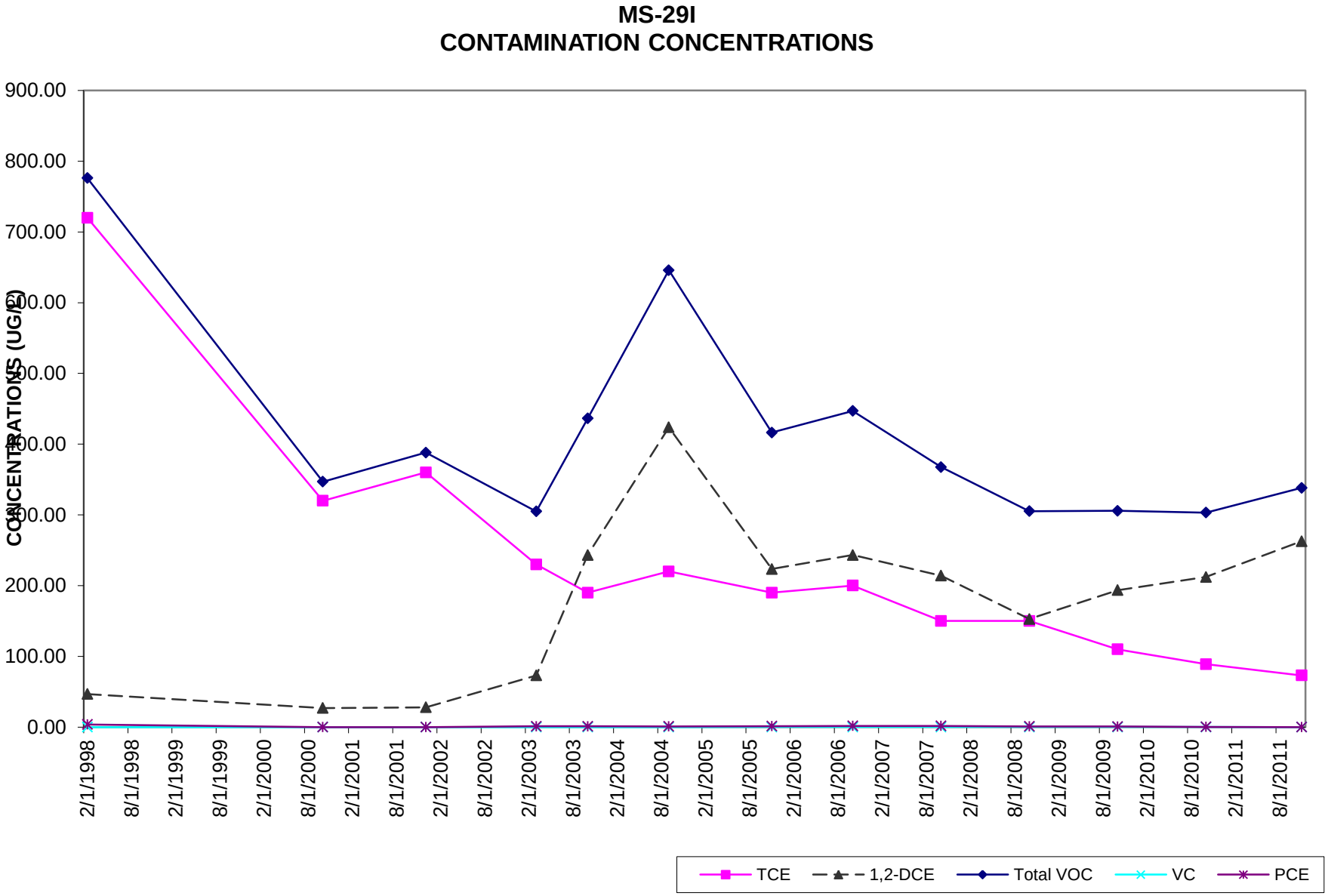

13-IS
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
400.00
350.00
300.00
250.00
200.00
150.00
100.00
50.00
0.00
NA for February sampling - buried under snow.
3/1/2003
9/1/2003
3/1/2004
9/1/2004
3/1/2005
9/1/2005
3/1/2006
9/1/2006
3/1/2007
9/1/2007
3/1/2008
9/1/2008
3/1/2009
9/1/2009
3/1/2010
9/1/2010
3/1/2011
9/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE

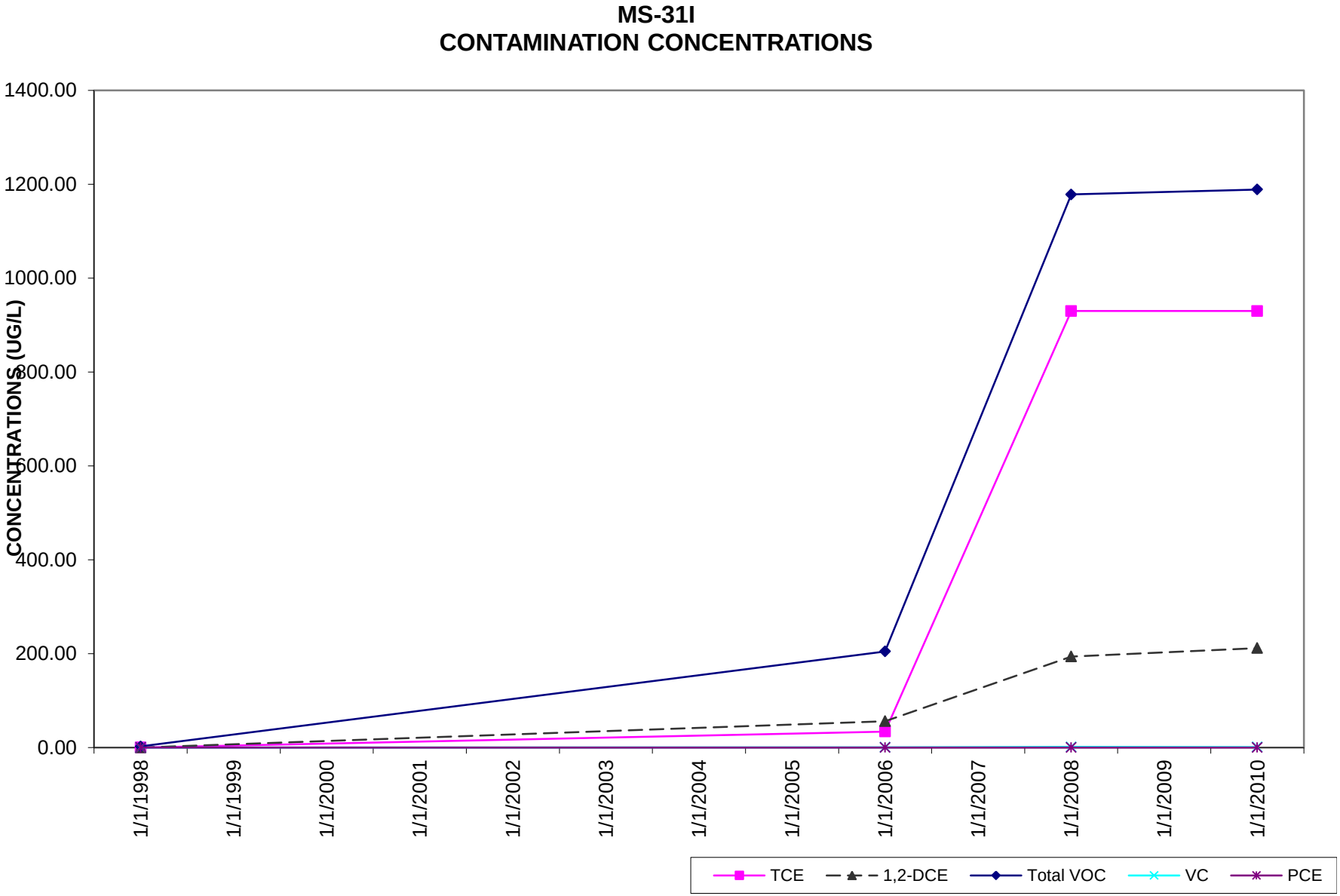

15-IS
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
10/8/1992
4/8/1993
10/8/1993
4/8/1994
10/8/1994
4/8/1995
10/8/1995
4/8/1996
10/8/1996
4/8/1997
10/8/1997
4/8/1998
10/8/1998
4/8/1999
10/8/1999
4/8/2000
10/8/2000
4/8/2001
10/8/2001
4/8/2002
10/8/2002
4/8/2003
10/8/2003
4/8/2004
10/8/2004
4/8/2005
10/8/2005
4/8/2006
10/8/2006
4/8/2007
10/8/2007
4/8/2008
10/8/2008
4/8/2009
10/8/2009
4/8/2010
10/8/2010
4/8/2011
10/8/2011
TCE
1,2-DCE
Total VOC
VC
PCE

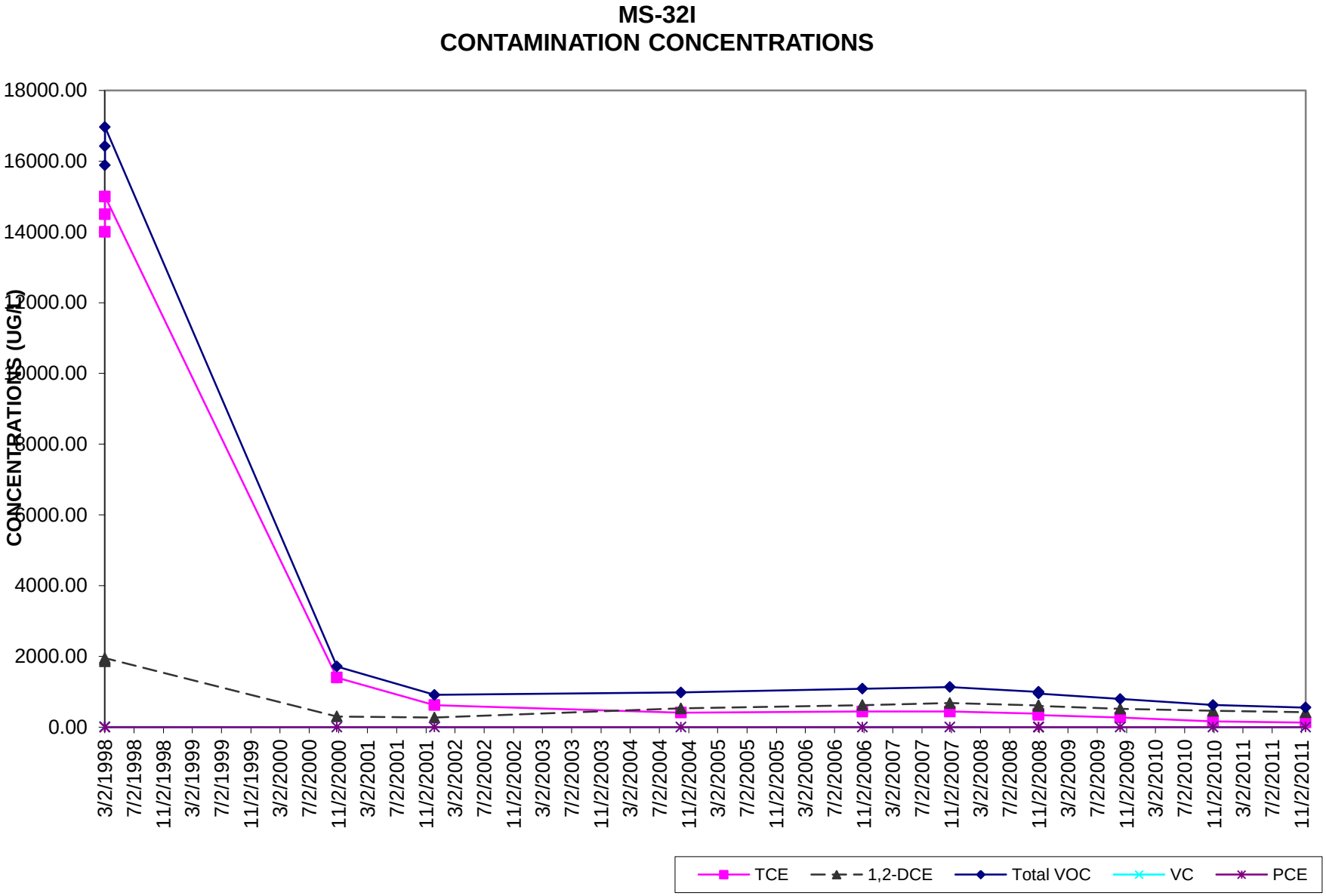

17-D
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
7000.00
6000.00
5000.00
4000.00
3000.00
2000.00
1000.00
0.00
10/6/1992
4/6/1993
10/6/1993
4/6/1994
10/6/1994
4/6/1995
10/6/1995
4/6/1996
10/6/1996
4/6/1997
10/6/1997
4/6/1998
10/6/1998
4/6/1999
10/6/1999
4/6/2000
10/6/2000
4/6/2001
10/6/2001
4/6/2002
10/6/2002
4/6/2003
10/6/2003
4/6/2004
10/6/2004
4/6/2005
10/6/2005
4/6/2006
10/6/2006
4/6/2007
10/6/2007
4/6/2008
10/6/2008
4/6/2009
10/6/2009
4/6/2010
10/6/2010
4/6/2011
10/6/2011
TCE
1,2-DCE
Total VOC
VC
PCE

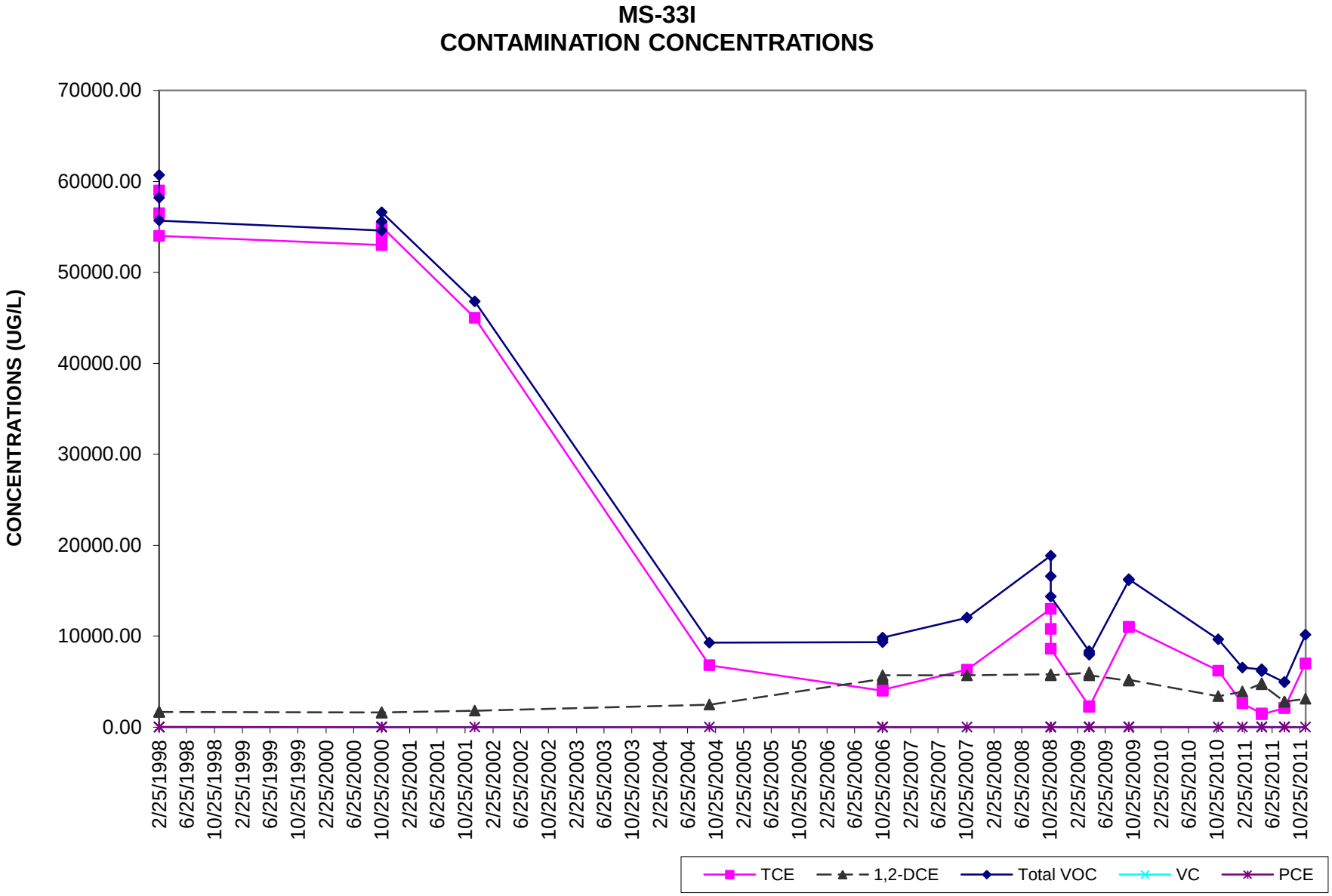

17-D
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
1000.00
900.00
800.00
700.00
600.00
500.00
400.00
300.00
200.00
100.00
0.00
10/6/2000
4/6/2001
10/6/2001
4/6/2002
10/6/2002
4/6/2003
10/6/2003
4/6/2004
10/6/2004
4/6/2005
10/6/2005
4/6/2006
10/6/2006
4/6/2007
10/6/2007
4/6/2008
10/6/2008
4/6/2009
10/6/2009
4/6/2010
10/6/2010
4/6/2011
10/6/2011
TCE
1,2-DCE
Total VOC
VC
PCE

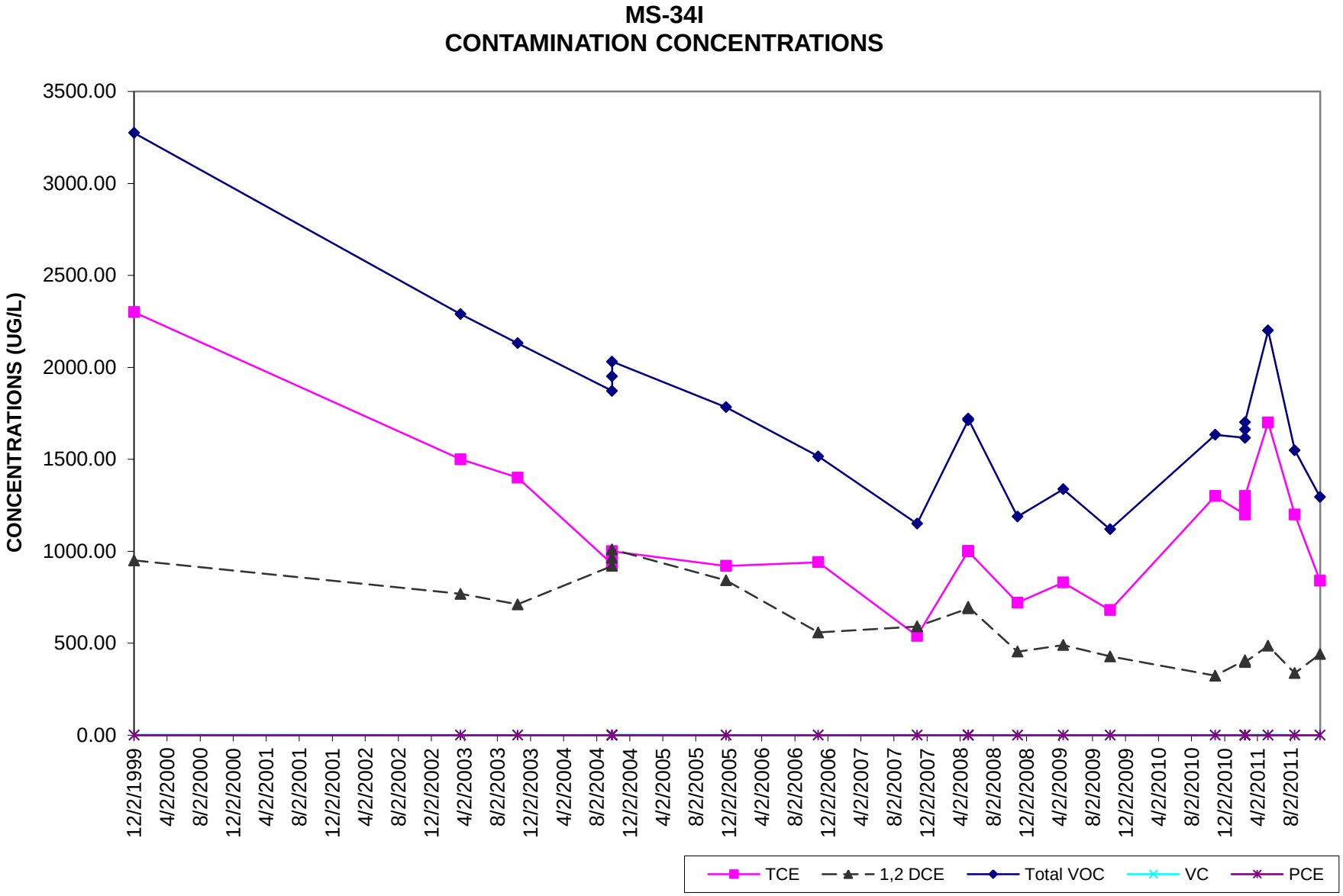

MS-28I
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
450.00
400.00
350.00
300.00
250.00
200.00
150.00
100.00
50.00
0.00
2/11/1998
8/11/1998
2/11/1999
8/11/1999
2/11/2000
8/11/2000
2/11/2001
8/11/2001
2/11/2002
8/11/2002
2/11/2003
8/11/2003
2/11/2004
8/11/2004
2/11/2005
8/11/2005
2/11/2006
8/11/2006
2/11/2007
8/11/2007
2/11/2008
8/11/2008
2/11/2009
8/11/2009
2/11/2010
8/11/2010
2/11/2011
8/11/2011
TCE
1,2-DCE
Total VOC
VC
PCE

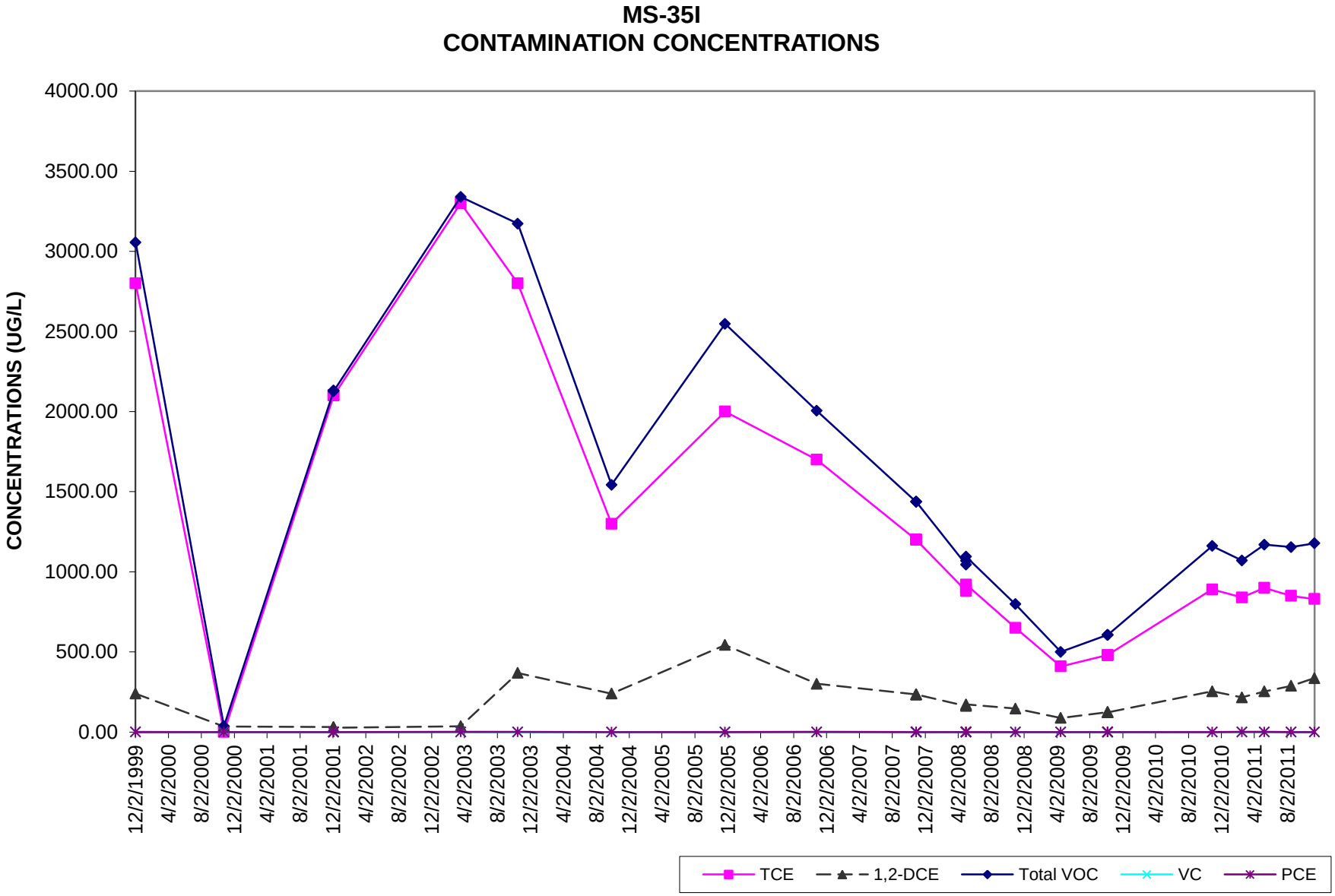

MS-29I
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
900.00
800.00
700.00
600.00
500.00
400.00
300.00
200.00
100.00
0.00
2/1/1998
8/1/1998
2/1/1999
8/1/1999
2/1/2000
8/1/2000
2/1/2001
8/1/2001
2/1/2002
8/1/2002
2/1/2003
8/1/2003
2/1/2004
8/1/2004
2/1/2005
8/1/2005
2/1/2006
8/1/2006
2/1/2007
8/1/2007
2/1/2008
8/1/2008
2/1/2009
8/1/2009
2/1/2010
8/1/2010
2/1/2011
8/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE

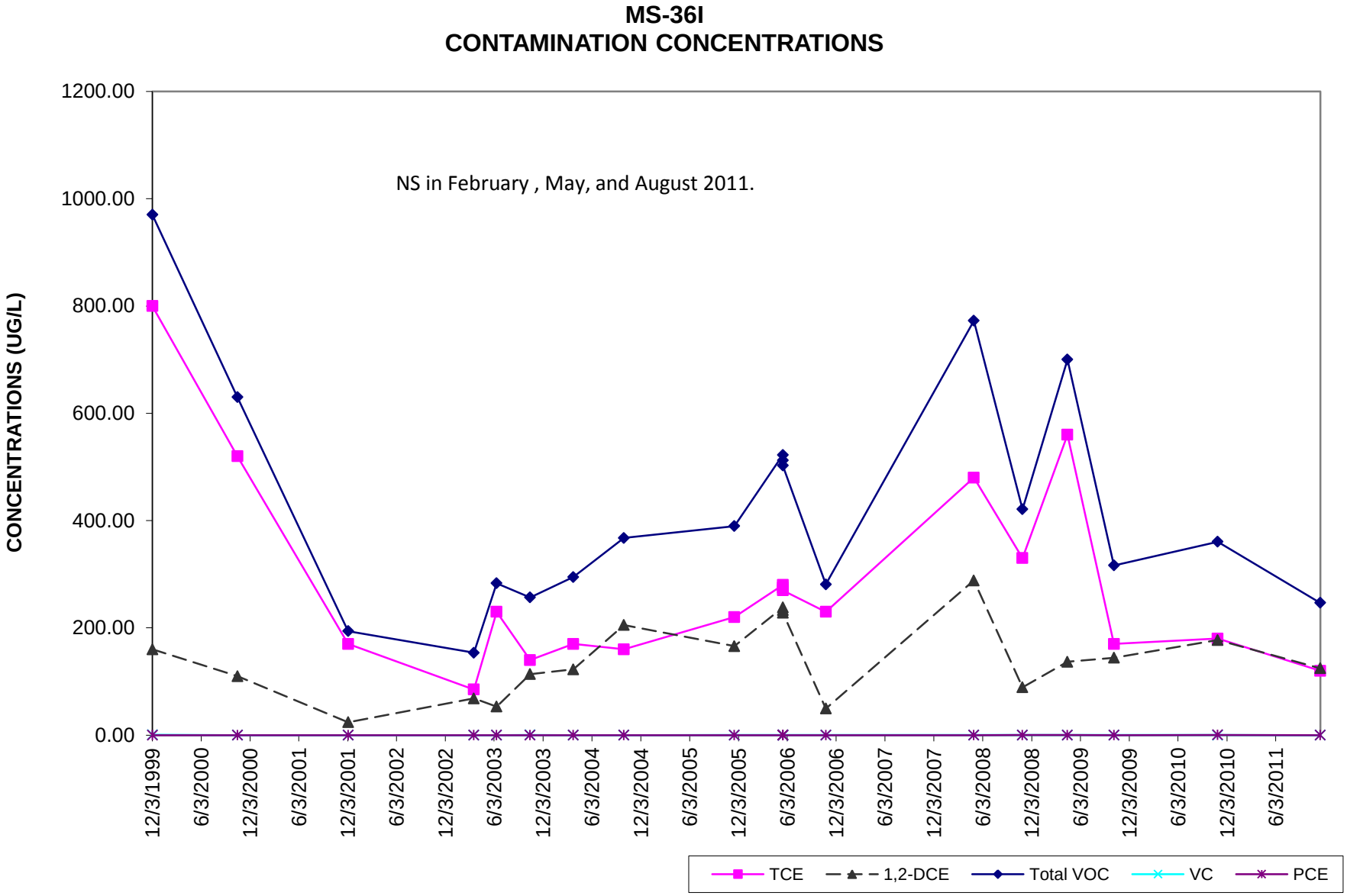

MS-31I
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
1/1/1998
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
TCE
1,2-DCE
Total VOC
VC
PCE

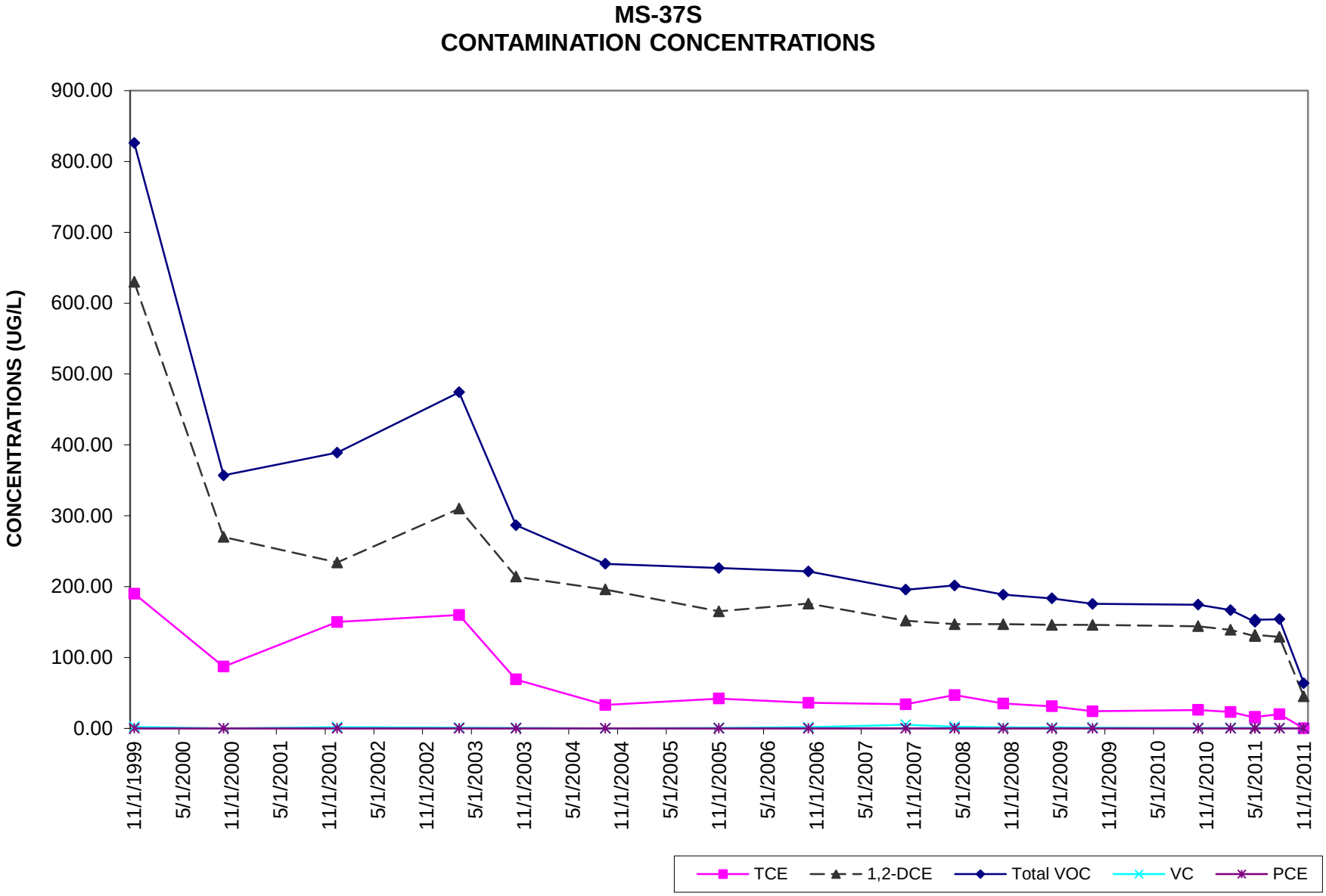

MS-32I
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
18000.00
16000.00
14000.00
12000.00
10000.00
8000.00
6000.00
4000.00
2000.00
0.00
3/2/1998
7/2/1998
11/2/1998
3/2/1999
7/2/1999
11/2/1999
3/2/2000
7/2/2000
11/2/2000
3/2/2001
7/2/2001
11/2/2001
3/2/2002
7/2/2002
11/2/2002
3/2/2003
7/2/2003
11/2/2003
3/2/2004
7/2/2004
11/2/2004
3/2/2005
7/2/2005
11/2/2005
3/2/2006
7/2/2006
11/2/2006
3/2/2007
7/2/2007
11/2/2007
3/2/2008
7/2/2008
11/2/2008
3/2/2009
7/2/2009
11/2/2009
3/2/2010
7/2/2010
11/2/2010
3/2/2011
7/2/2011
11/2/2011
TCE
1,2-DCE
Total VOC
VC
PCE

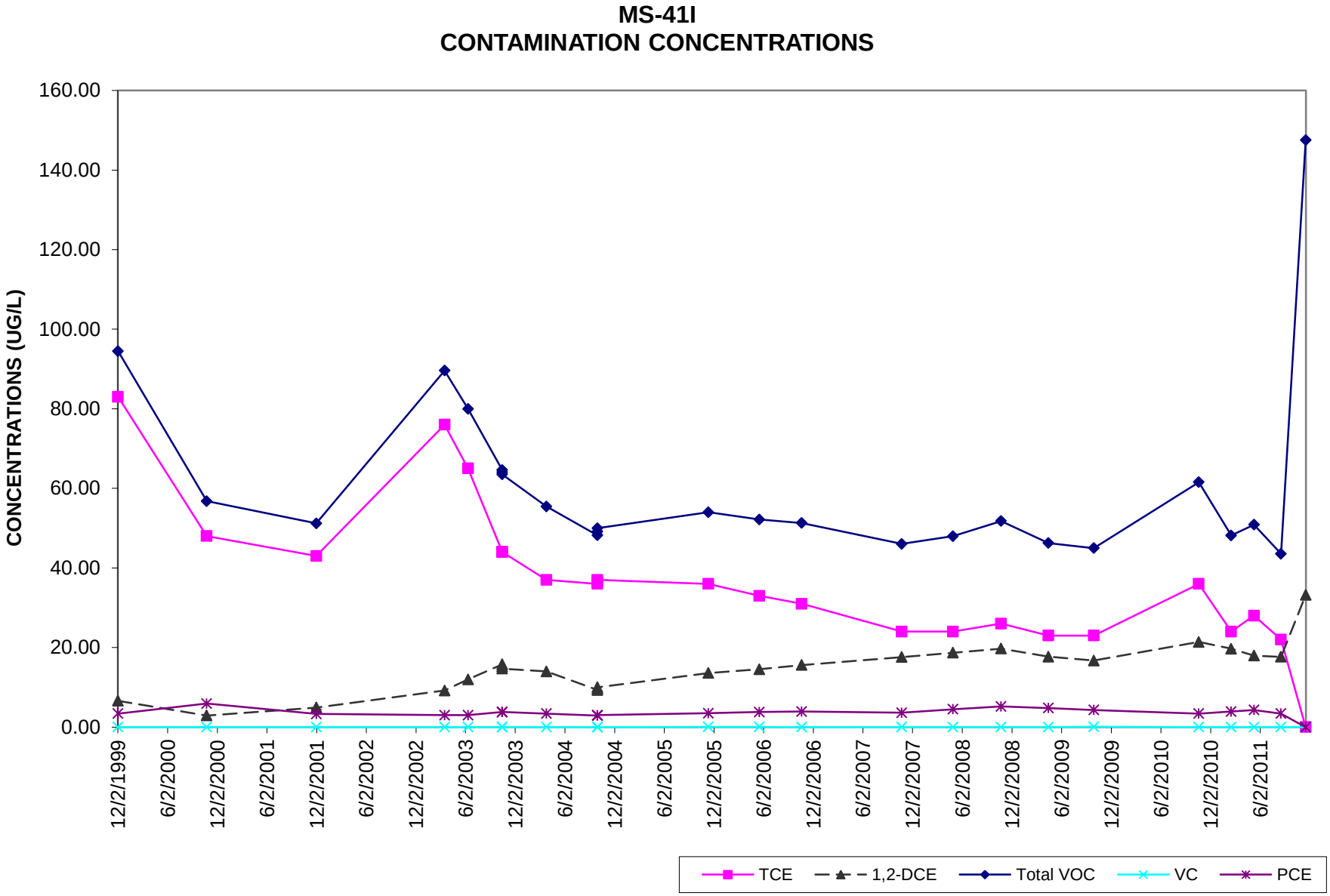

MS-33I
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
70000.00
60000.00
50000.00
40000.00
30000.00
20000.00
10000.00
0.00
2/25/1998
6/25/1998
10/25/1998
2/25/1999
6/25/1999
10/25/1999
2/25/2000
6/25/2000
10/25/2000
2/25/2001
6/25/2001
10/25/2001
2/25/2002
6/25/2002
10/25/2002
2/25/2003
6/25/2003
10/25/2003
2/25/2004
6/25/2004
10/25/2004
2/25/2005
6/25/2005
10/25/2005
2/25/2006
6/25/2006
10/25/2006
2/25/2007
6/25/2007
10/25/2007
2/25/2008
6/25/2008
10/25/2008
2/25/2009
6/25/2009
10/25/2009
2/25/2010
6/25/2010
10/25/2010
2/25/2011
6/25/2011
10/25/2011
TCE
1,2-DCE
Total VOC
VC
PCE

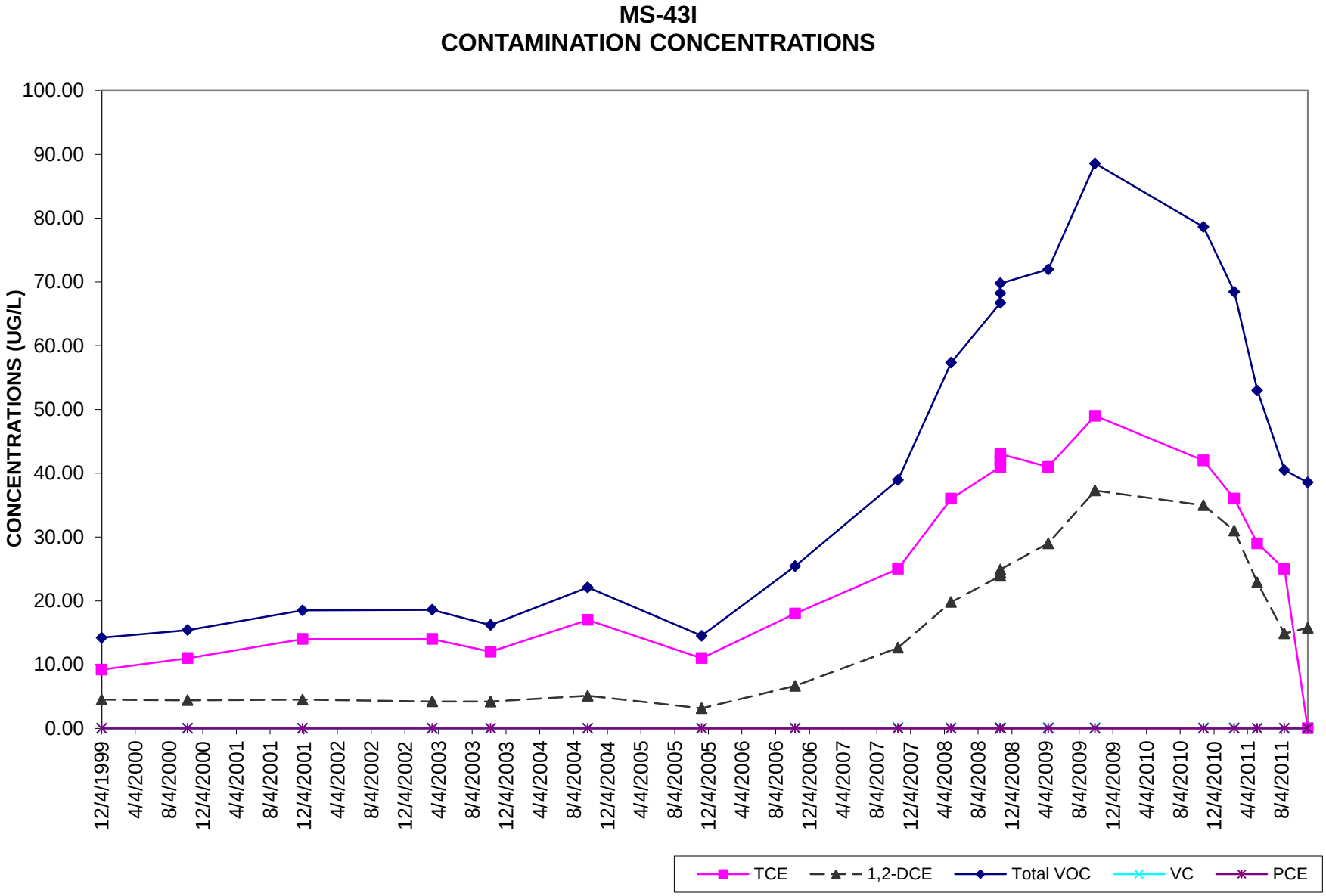

MS-34I
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
3500.00
3000.00
2500.00
2000.00
1500.00
1000.00
500.00
0.00
12/2/1999
4/2/2000
8/2/2000
12/2/2000
4/2/2001
8/2/2001
12/2/2001
4/2/2002
8/2/2002
12/2/2002
4/2/2003
8/2/2003
12/2/2003
4/2/2004
8/2/2004
12/2/2004
4/2/2005
8/2/2005
12/2/2005
4/2/2006
8/2/2006
12/2/2006
4/2/2007
8/2/2007
12/2/2007
4/2/2008
8/2/2008
12/2/2008
4/2/2009
8/2/2009
12/2/2009
4/2/2010
8/2/2010
12/2/2010
4/2/2011
8/2/2011
TCE
1,2 DCE
Total VOC
VC
PCE

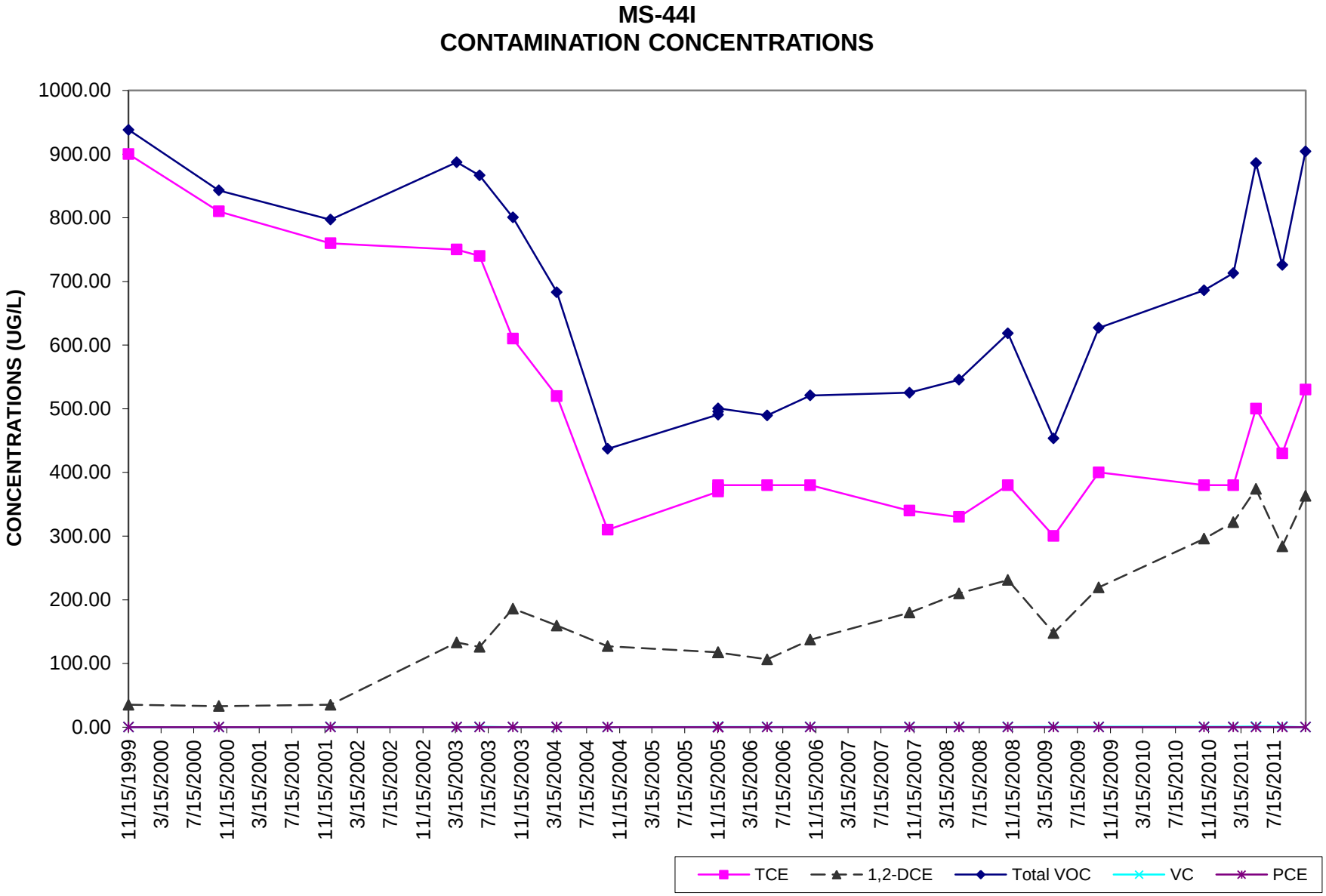

MS-35I
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
4000.00
3500.00
3000.00
2500.00
2000.00
1500.00
1000.00
500.00
0.00
12/2/1999
4/2/2000
8/2/2000
12/2/2000
4/2/2001
8/2/2001
12/2/2001
4/2/2002
8/2/2002
12/2/2002
4/2/2003
8/2/2003
12/2/2003
4/2/2004
8/2/2004
12/2/2004
4/2/2005
8/2/2005
12/2/2005
4/2/2006
8/2/2006
12/2/2006
4/2/2007
8/2/2007
12/2/2007
4/2/2008
8/2/2008
12/2/2008
4/2/2009
8/2/2009
12/2/2009
4/2/2010
8/2/2010
12/2/2010
4/2/2011
8/2/2011
TCE
1,2-DCE
Total VOC
VC
PCE

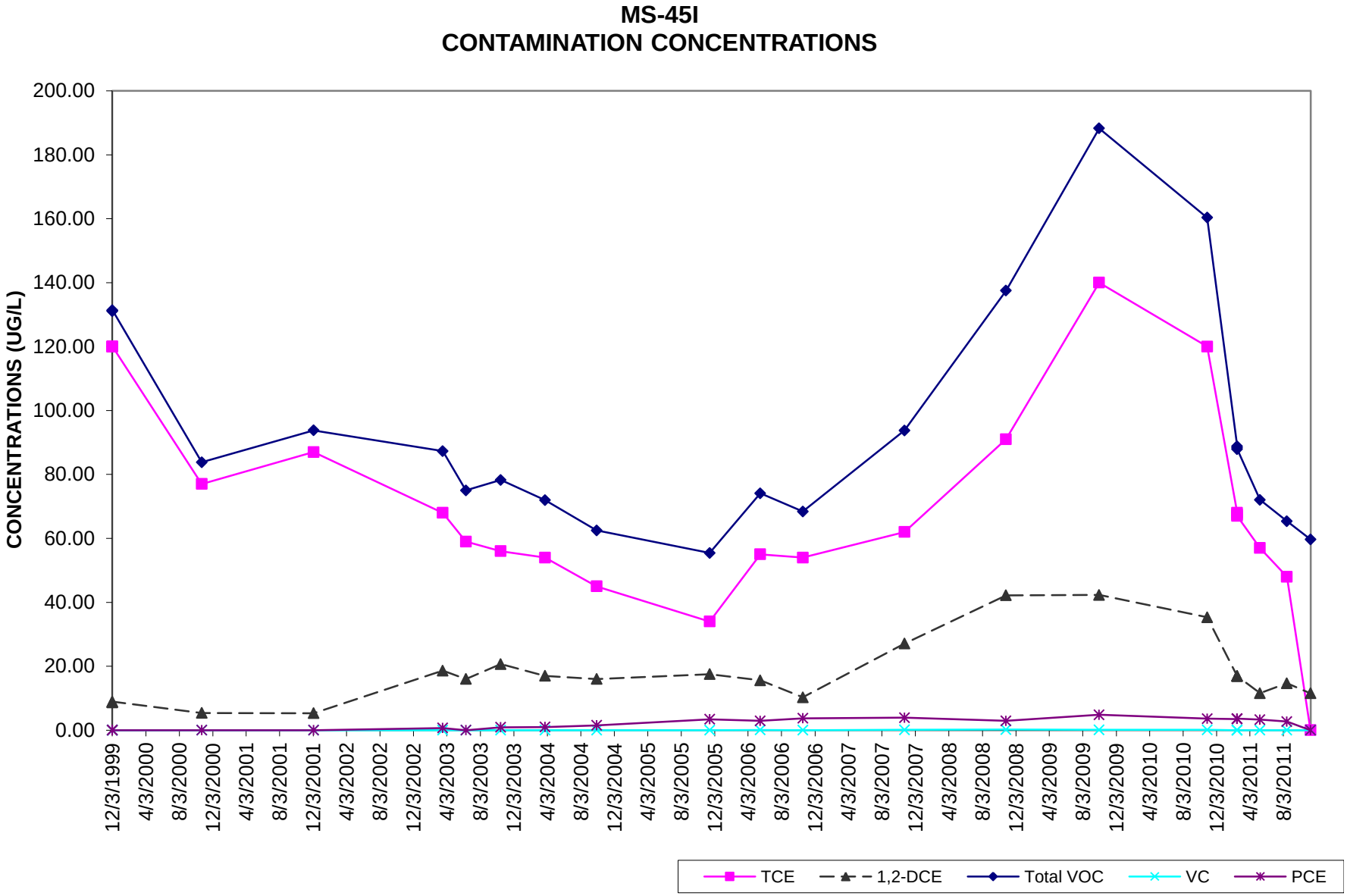

MS-36I
CONTAMINATION CONCENTRATIONS
NS in February , May, and August 2011.
CONCENTRATIONS (UG/L)
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
12/3/1999
6/3/2000
12/3/2000
6/3/2001
12/3/2001
6/3/2002
12/3/2002
6/3/2003
12/3/2003
6/3/2004
12/3/2004
6/3/2005
12/3/2005
6/3/2006
12/3/2006
6/3/2007
12/3/2007
6/3/2008
12/3/2008
6/3/2009
12/3/2009
6/3/2010
12/3/2010
6/3/2011
TCE
1,2-DCE
Total VOC
VC
PCE

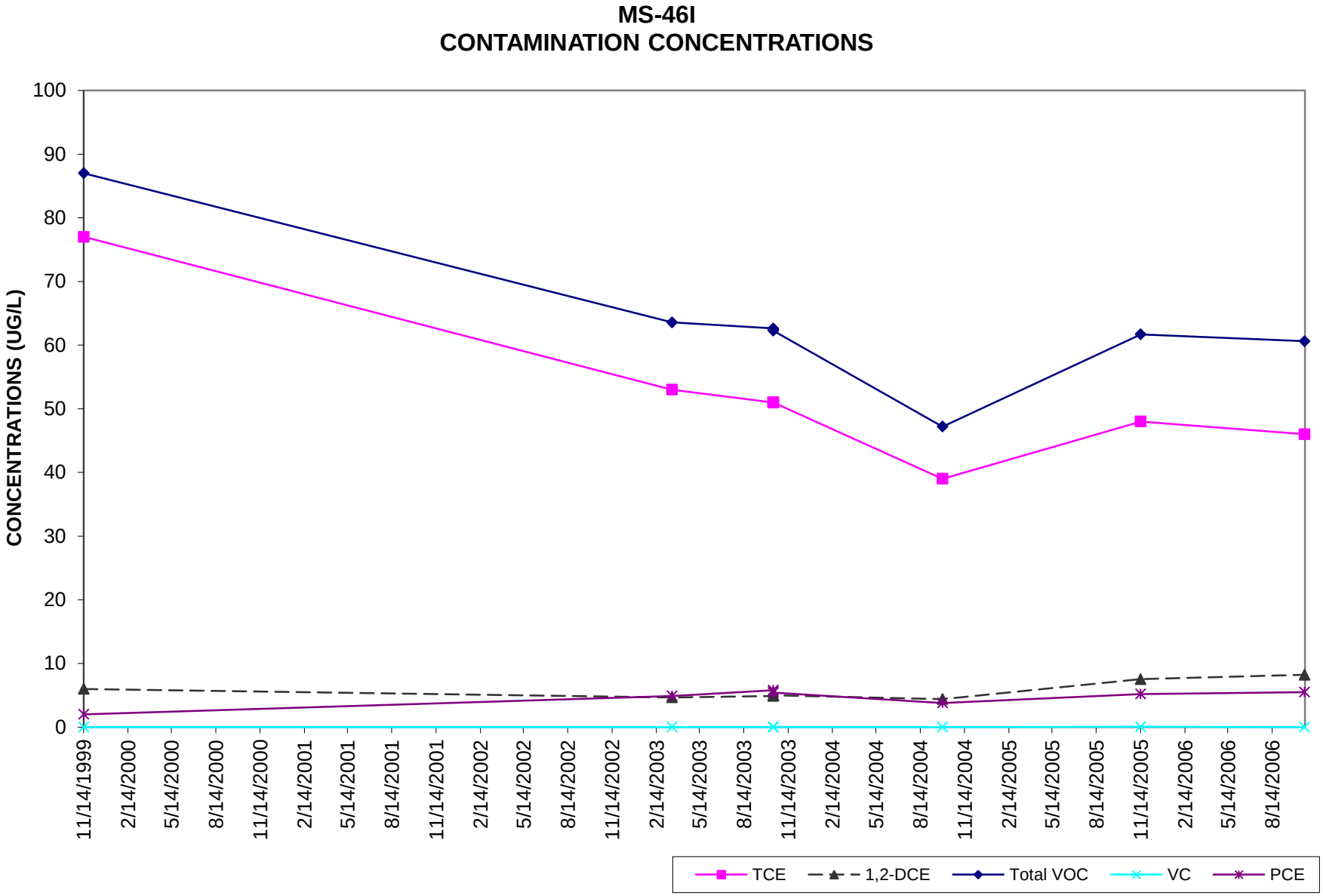

MS-37S
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
900.00
800.00
700.00
600.00
500.00
400.00
300.00
200.00
100.00
0.00
11/1/1999
5/1/2000
11/1/2000
5/1/2001
11/1/2001
5/1/2002
11/1/2002
5/1/2003
11/1/2003
5/1/2004
11/1/2004
5/1/2005
11/1/2005
5/1/2006
11/1/2006
5/1/2007
11/1/2007
5/1/2008
11/1/2008
5/1/2009
11/1/2009
5/1/2010
11/1/2010
5/1/2011
11/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE

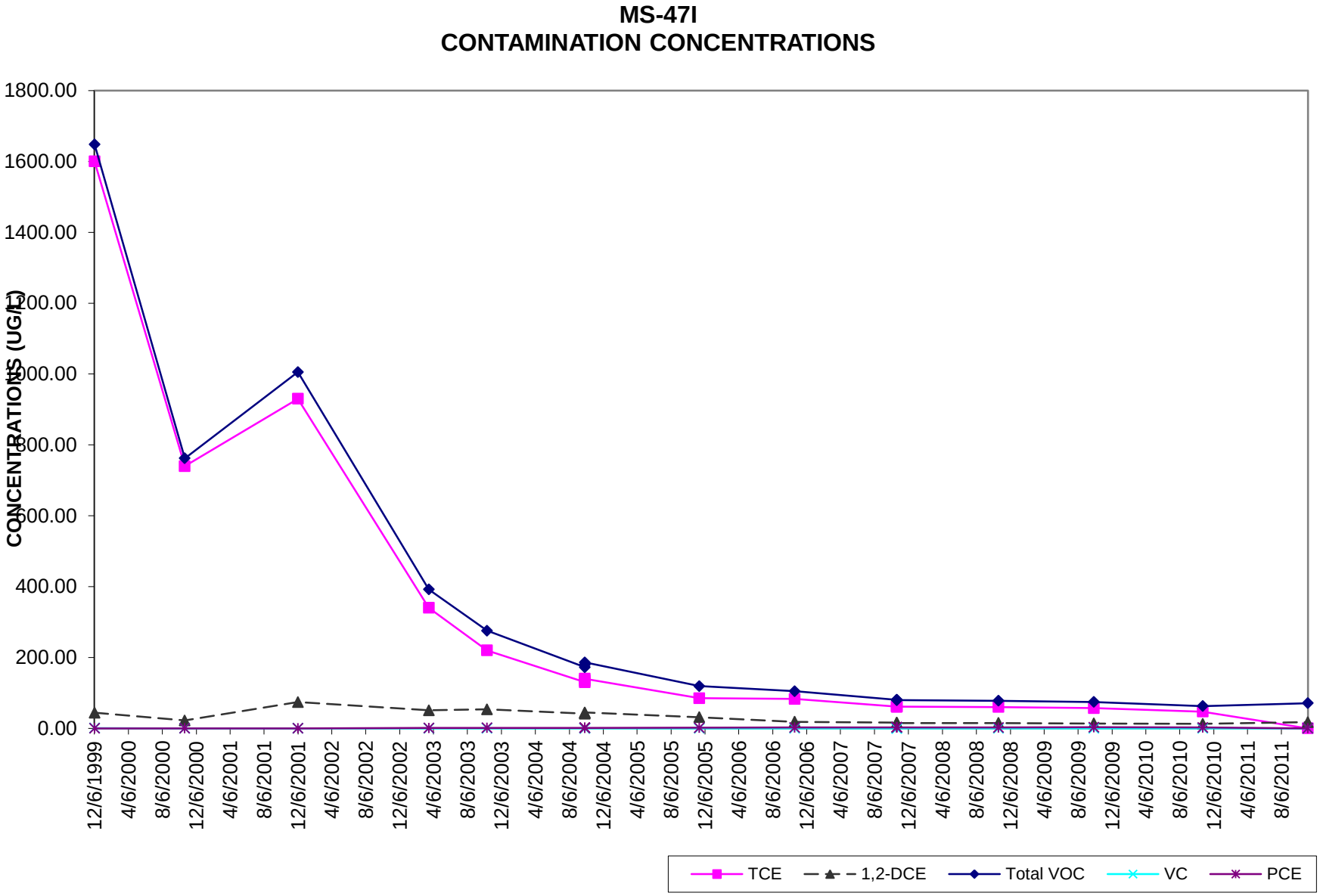

MS-41I
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
160.00
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
12/2/1999
6/2/2000
12/2/2000
6/2/2001
12/2/2001
6/2/2002
12/2/2002
6/2/2003
12/2/2003
6/2/2004
12/2/2004
6/2/2005
12/2/2005
6/2/2006
12/2/2006
6/2/2007
12/2/2007
6/2/2008
12/2/2008
6/2/2009
12/2/2009
6/2/2010
12/2/2010
6/2/2011
TCE
1,2-DCE
Total VOC
VC
PCE

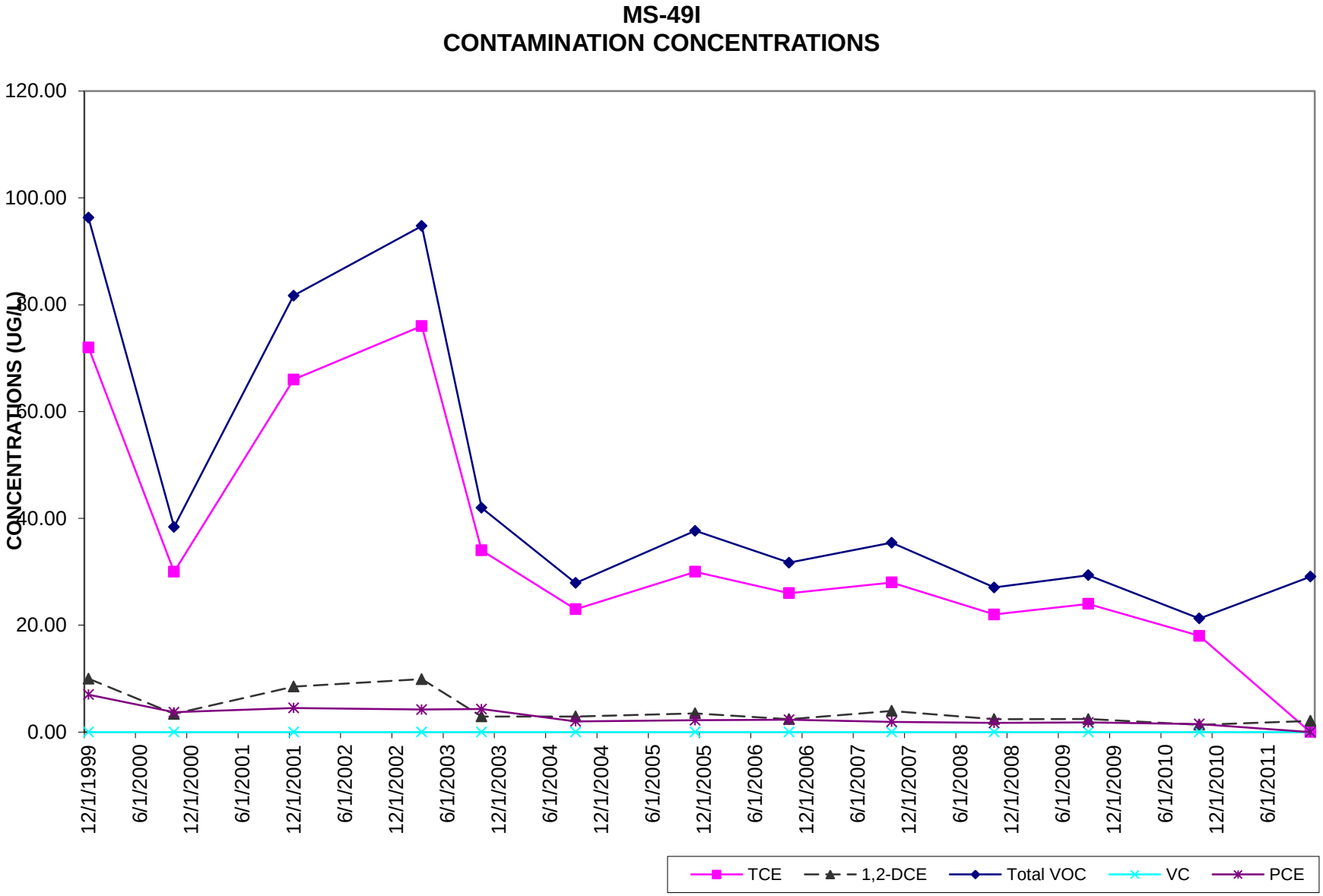

MS-43I
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
12/4/1999
4/4/2000
8/4/2000
12/4/2000
4/4/2001
8/4/2001
12/4/2001
4/4/2002
8/4/2002
12/4/2002
4/4/2003
8/4/2003
12/4/2003
4/4/2004
8/4/2004
12/4/2004
4/4/2005
8/4/2005
12/4/2005
4/4/2006
8/4/2006
12/4/2006
4/4/2007
8/4/2007
12/4/2007
4/4/2008
8/4/2008
12/4/2008
4/4/2009
8/4/2009
12/4/2009
4/4/2010
8/4/2010
12/4/2010
4/4/2011
8/4/2011
TCE
1,2-DCE
Total VOC
VC
PCE

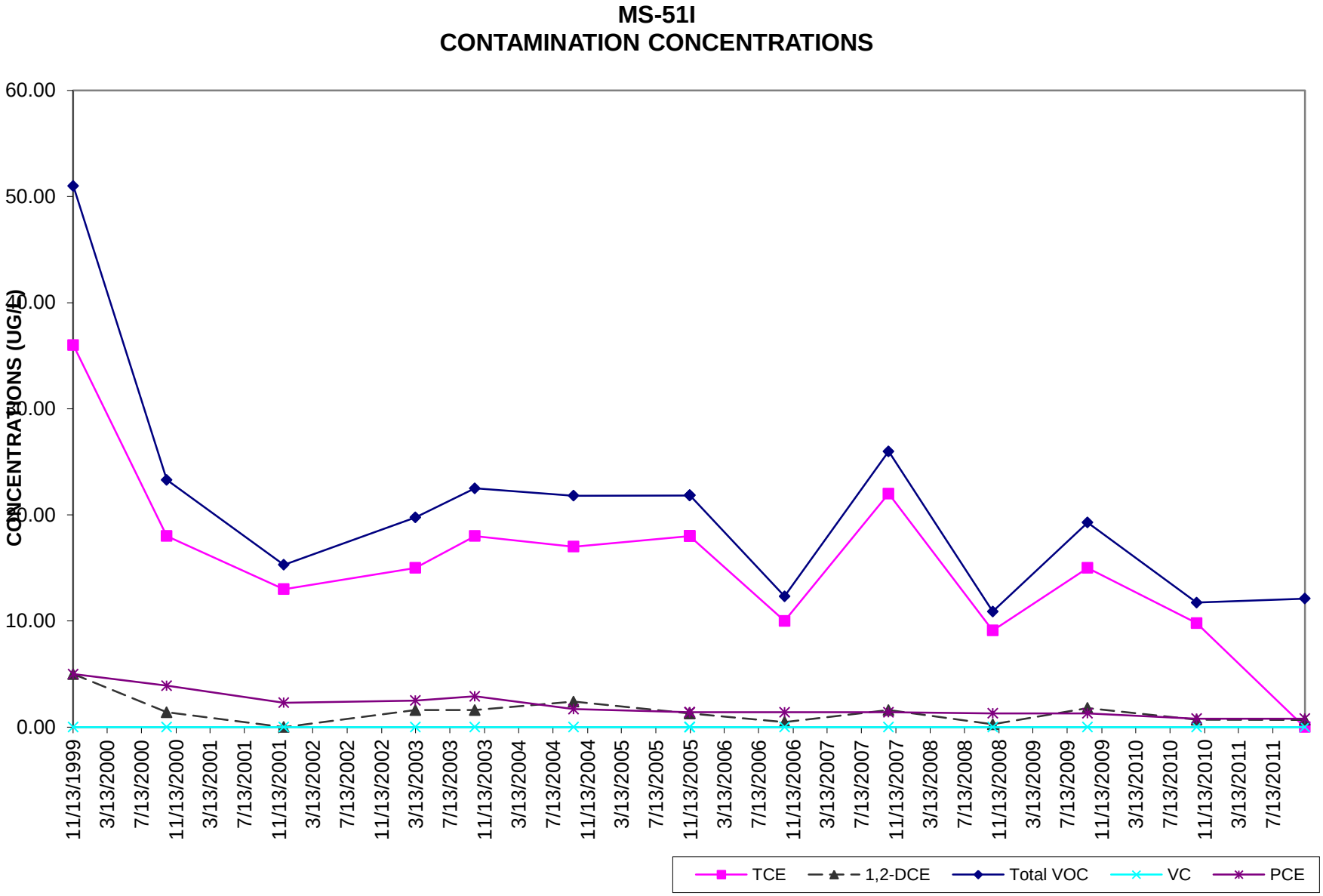

MS-44I
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
1000.00
900.00
800.00
700.00
600.00
500.00
400.00
300.00
200.00
100.00
0.00
11/15/1999
3/15/2000
7/15/2000
11/15/2000
3/15/2001
7/15/2001
11/15/2001
3/15/2002
7/15/2002
11/15/2002
3/15/2003
7/15/2003
11/15/2003
3/15/2004
7/15/2004
11/15/2004
3/15/2005
7/15/2005
11/15/2005
3/15/2006
7/15/2006
11/15/2006
3/15/2007
7/15/2007
11/15/2007
3/15/2008
7/15/2008
11/15/2008
3/15/2009
7/15/2009
11/15/2009
3/15/2010
7/15/2010
11/15/2010
3/15/2011
7/15/2011
TCE
1,2-DCE
Total VOC
VC
PCE

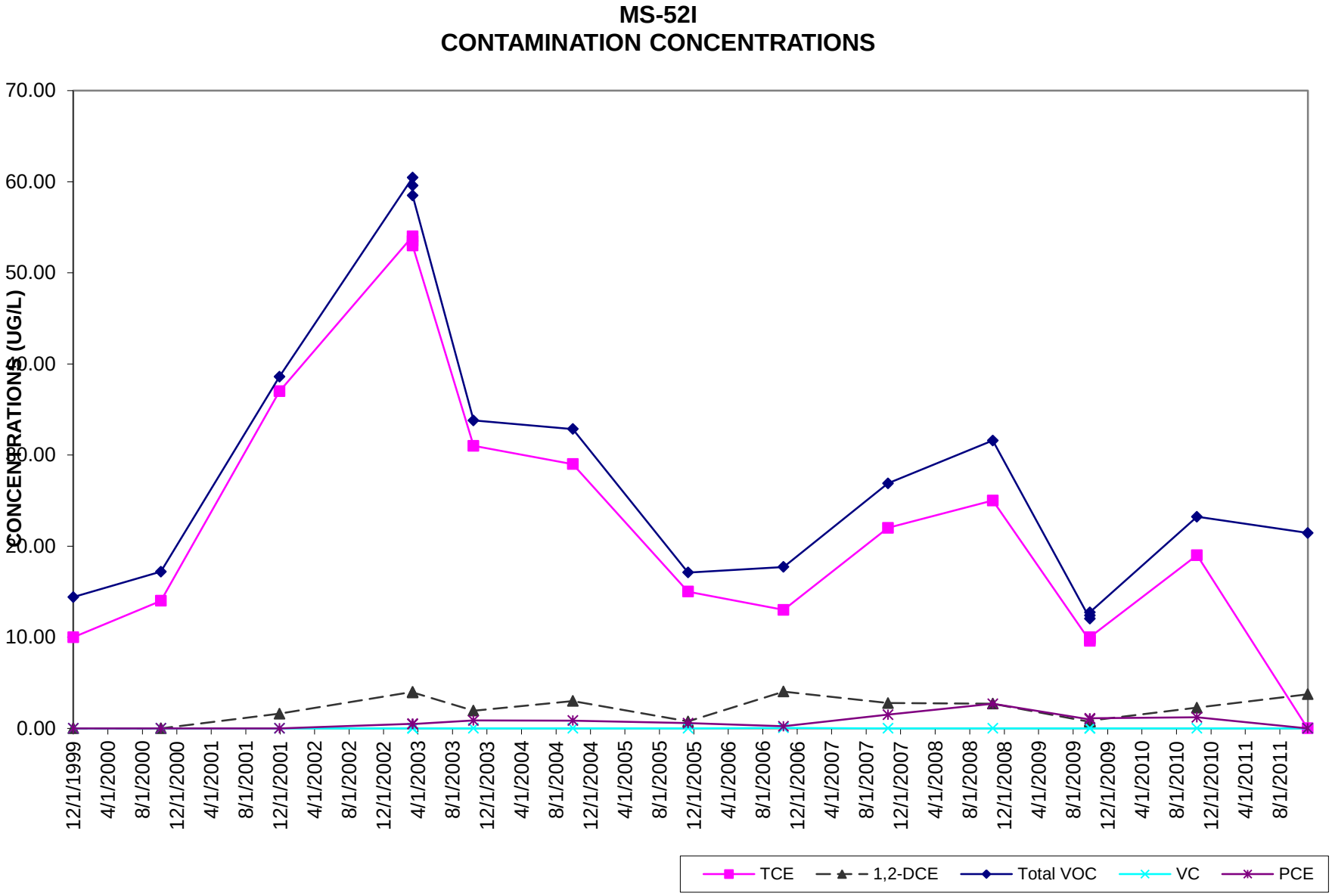

MS-45I
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
200.00
180.00
160.00
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
12/3/1999
4/3/2000
8/3/2000
12/3/2000
4/3/2001
8/3/2001
12/3/2001
4/3/2002
8/3/2002
12/3/2002
4/3/2003
8/3/2003
12/3/2003
4/3/2004
8/3/2004
12/3/2004
4/3/2005
8/3/2005
12/3/2005
4/3/2006
8/3/2006
12/3/2006
4/3/2007
8/3/2007
12/3/2007
4/3/2008
8/3/2008
12/3/2008
4/3/2009
8/3/2009
12/3/2009
4/3/2010
8/3/2010
12/3/2010
4/3/2011
8/3/2011
TCE
1,2-DCE
Total VOC
VC
PCE

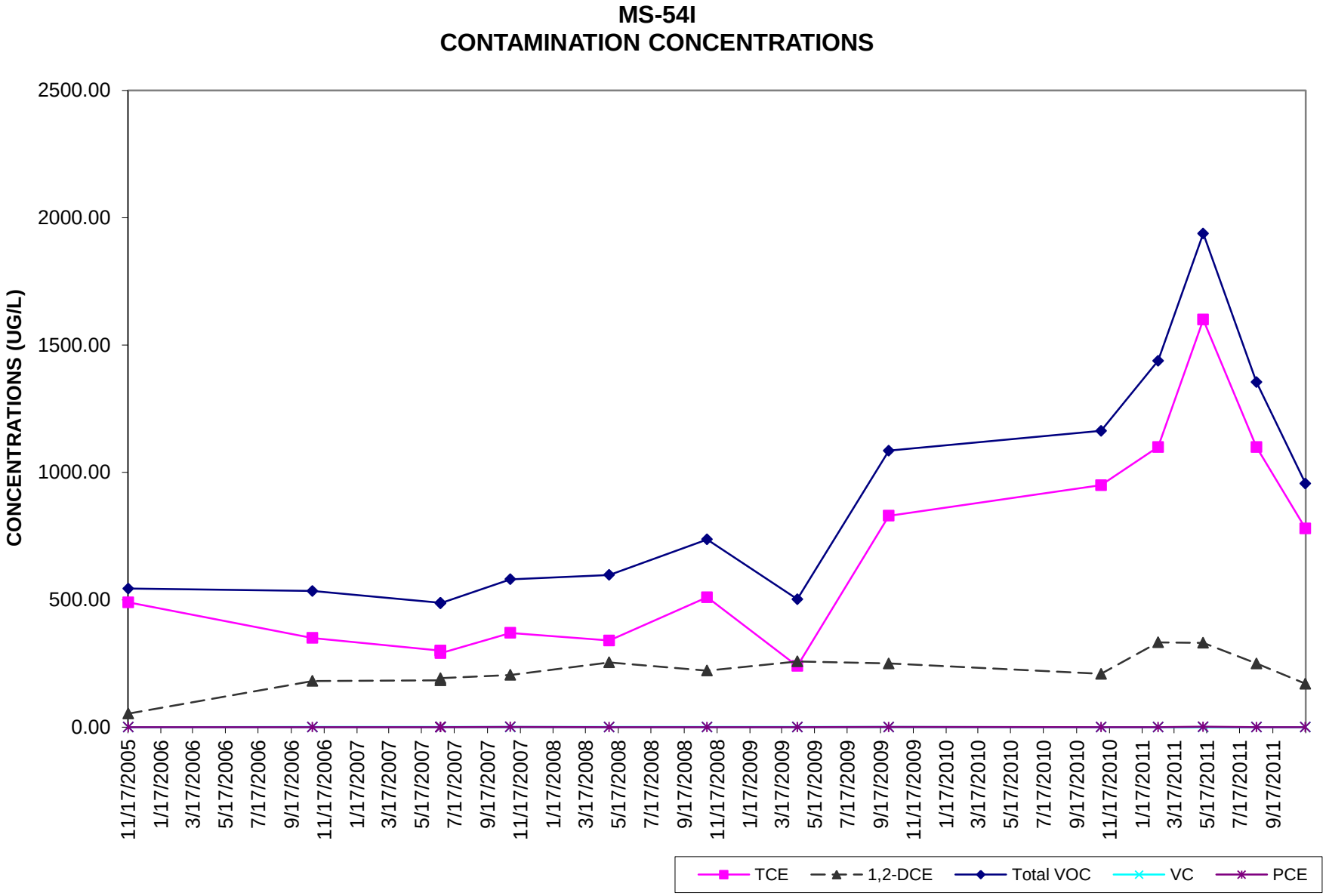

MS-46I
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
100
90
80
70
60
50
40
30
20
10
0
11/14/1999
2/14/2000
5/14/2000
8/14/2000
11/14/2000
2/14/2001
5/14/2001
8/14/2001
11/14/2001
2/14/2002
5/14/2002
8/14/2002
11/14/2002
2/14/2003
5/14/2003
8/14/2003
11/14/2003
2/14/2004
5/14/2004
8/14/2004
11/14/2004
2/14/2005
5/14/2005
8/14/2005
11/14/2005
2/14/2006
5/14/2006
8/14/2006
TCE
1,2-DCE
Total VOC
VC
PCE

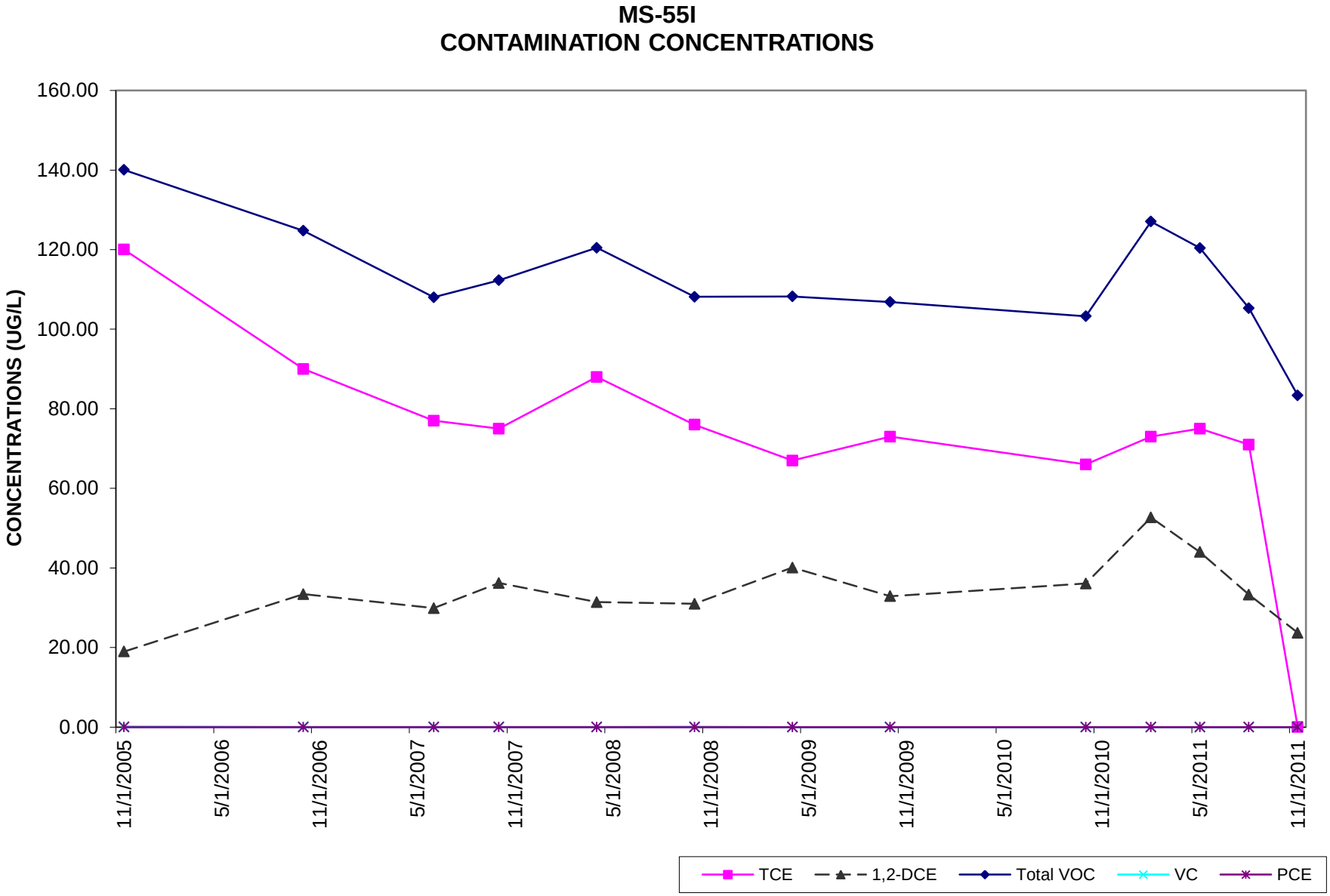

MS-47I
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
12/6/1999
4/6/2000
8/6/2000
12/6/2000
4/6/2001
8/6/2001
12/6/2001
4/6/2002
8/6/2002
12/6/2002
4/6/2003
8/6/2003
12/6/2003
4/6/2004
8/6/2004
12/6/2004
4/6/2005
8/6/2005
12/6/2005
4/6/2006
8/6/2006
12/6/2006
4/6/2007
8/6/2007
12/6/2007
4/6/2008
8/6/2008
12/6/2008
4/6/2009
8/6/2009
12/6/2009
4/6/2010
8/6/2010
12/6/2010
4/6/2011
8/6/2011
TCE
1,2-DCE
Total VOC
VC
PCE

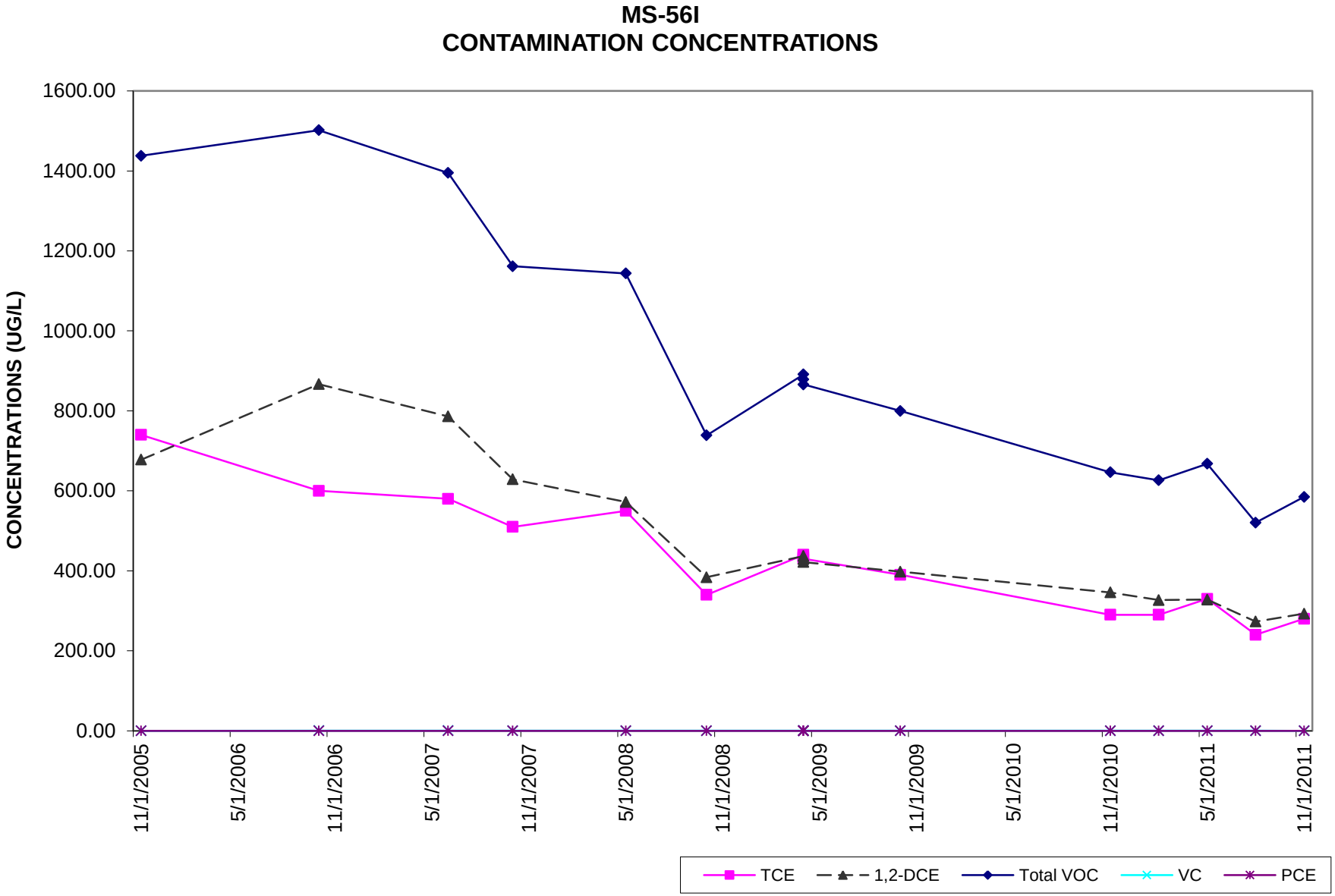

MS-49I
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
120.00
100.00
80.00
60.00
40.00
20.00
0.00
12/1/1999
6/1/2000
12/1/2000
6/1/2001
12/1/2001
6/1/2002
12/1/2002
6/1/2003
12/1/2003
6/1/2004
12/1/2004
6/1/2005
12/1/2005
6/1/2006
12/1/2006
6/1/2007
12/1/2007
6/1/2008
12/1/2008
6/1/2009
12/1/2009
6/1/2010
12/1/2010
6/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE

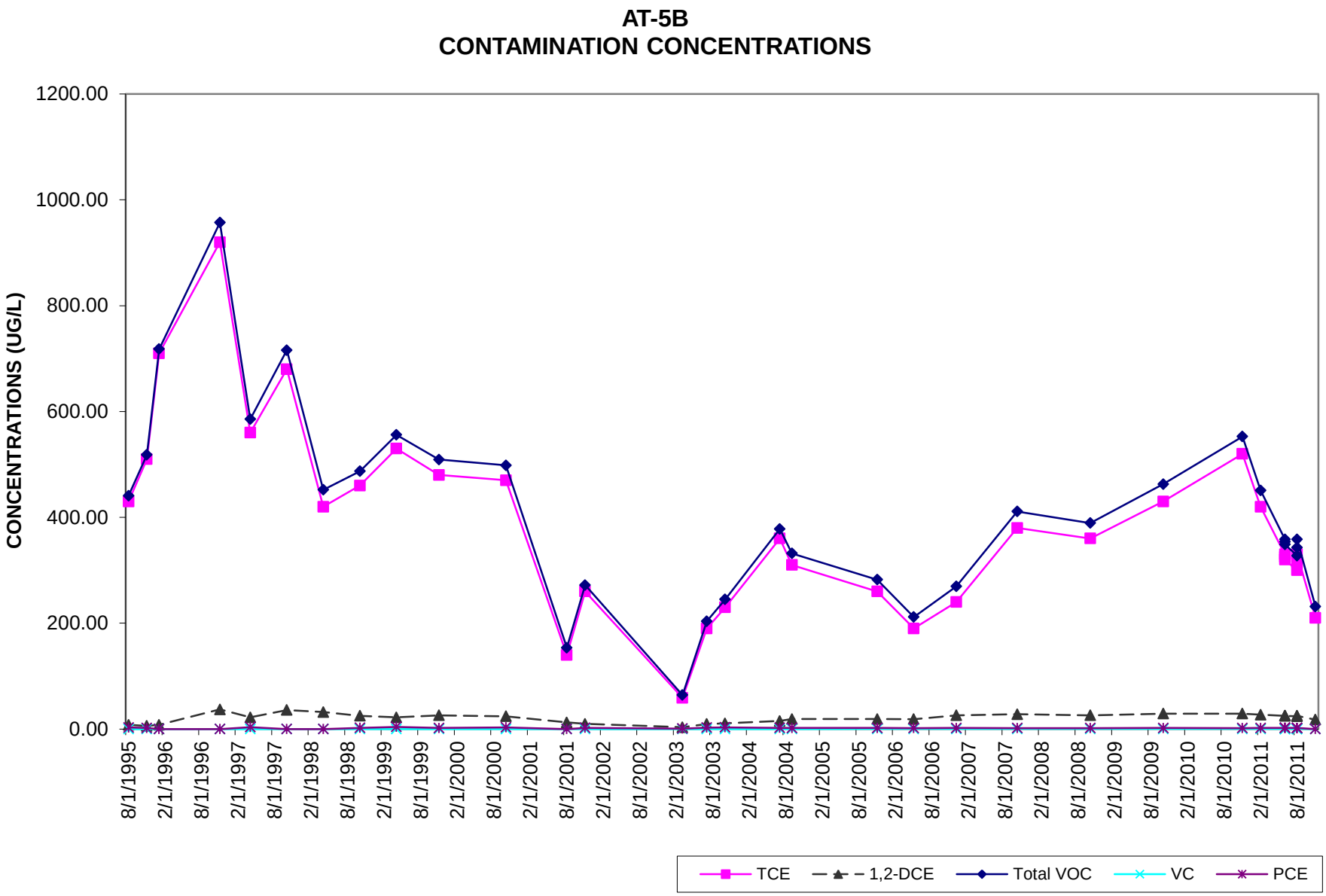

MS-51I
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
60.00
50.00
40.00
30.00
20.00
10.00
0.00
11/13/1999
3/13/2000
7/13/2000
11/13/2000
3/13/2001
7/13/2001
11/13/2001
3/13/2002
7/13/2002
11/13/2002
3/13/2003
7/13/2003
11/13/2003
3/13/2004
7/13/2004
11/13/2004
3/13/2005
7/13/2005
11/13/2005
3/13/2006
7/13/2006
11/13/2006
3/13/2007
7/13/2007
11/13/2007
3/13/2008
7/13/2008
11/13/2008
3/13/2009
7/13/2009
11/13/2009
3/13/2010
7/13/2010
11/13/2010
3/13/2011
7/13/2011
TCE
1,2-DCE
Total VOC
VC
PCE

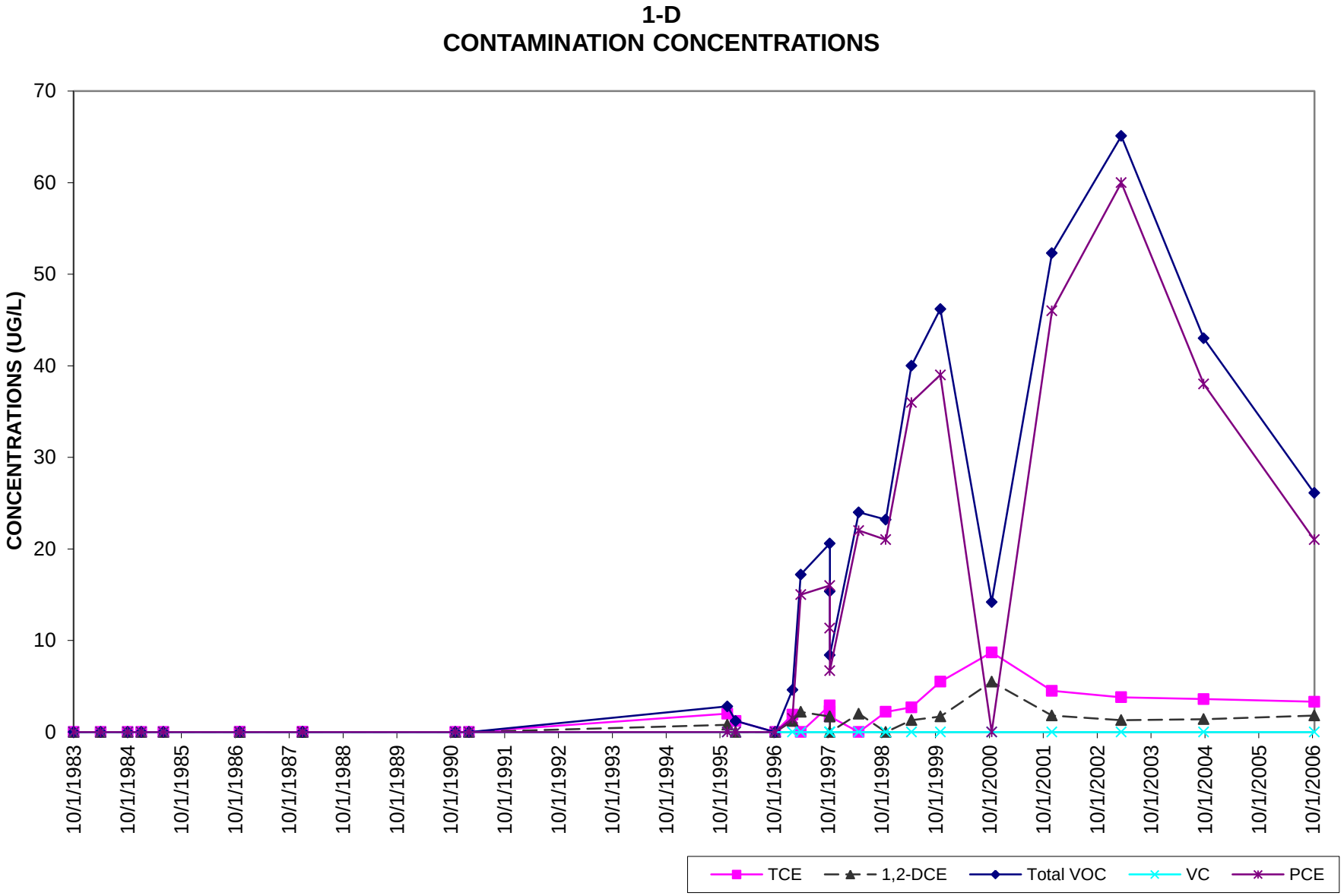

MS-52I
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
12/1/1999
4/1/2000
8/1/2000
12/1/2000
4/1/2001
8/1/2001
12/1/2001
4/1/2002
8/1/2002
12/1/2002
4/1/2003
8/1/2003
12/1/2003
4/1/2004
8/1/2004
12/1/2004
4/1/2005
8/1/2005
12/1/2005
4/1/2006
8/1/2006
12/1/2006
4/1/2007
8/1/2007
12/1/2007
4/1/2008
8/1/2008
12/1/2008
4/1/2009
8/1/2009
12/1/2009
4/1/2010
8/1/2010
12/1/2010
4/1/2011
8/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE

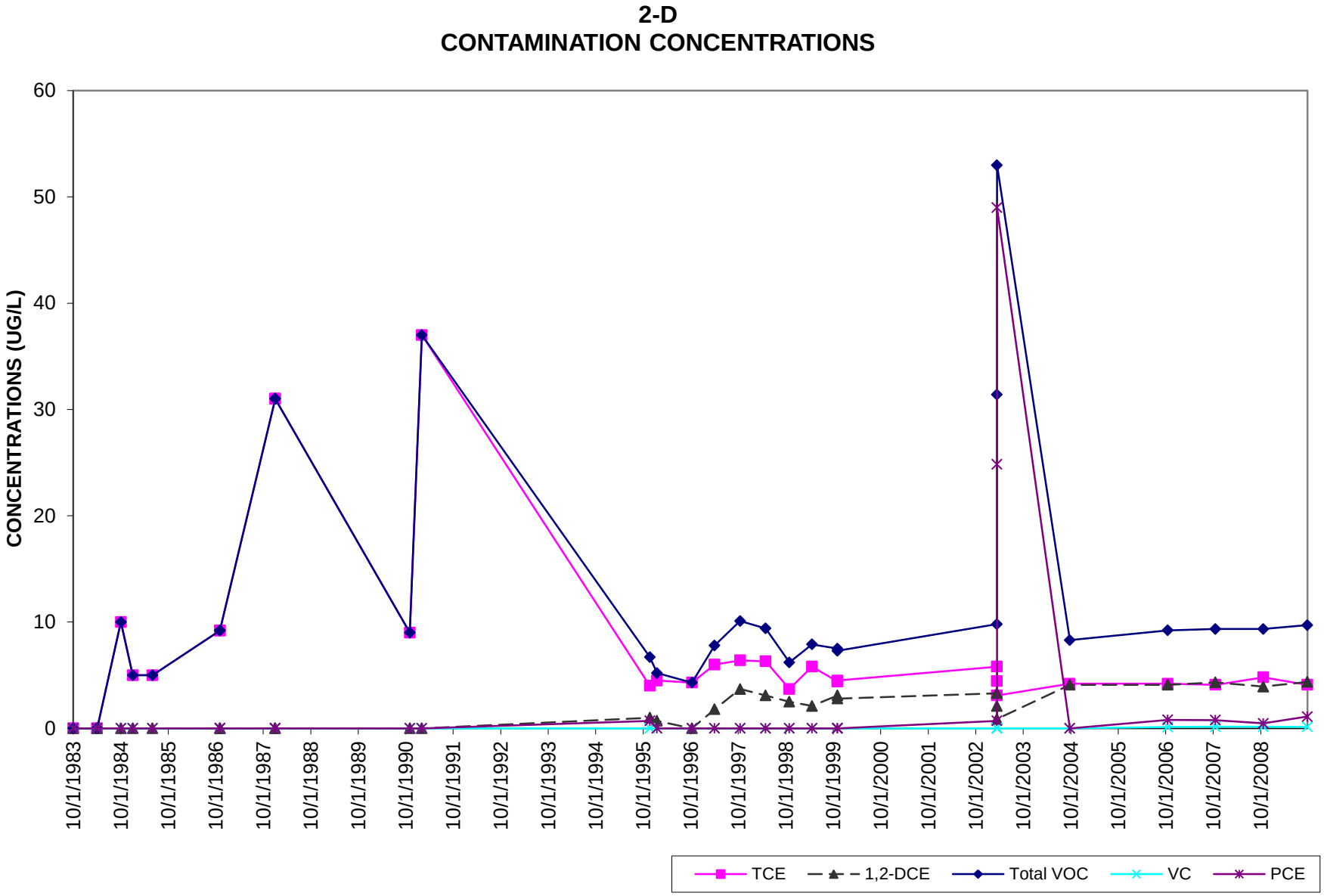

MS-54I
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
2500.00
2000.00
1500.00
1000.00
500.00
0.00
11/17/2005
1/17/2006
3/17/2006
5/17/2006
7/17/2006
9/17/2006
11/17/2006
1/17/2007
3/17/2007
5/17/2007
7/17/2007
9/17/2007
11/17/2007
1/17/2008
3/17/2008
5/17/2008
7/17/2008
9/17/2008
11/17/2008
1/17/2009
3/17/2009
5/17/2009
7/17/2009
9/17/2009
11/17/2009
1/17/2010
3/17/2010
5/17/2010
7/17/2010
9/17/2010
11/17/2010
1/17/2011
3/17/2011
5/17/2011
7/17/2011
9/17/2011
TCE
1,2-DCE
Total VOC
VC
PCE

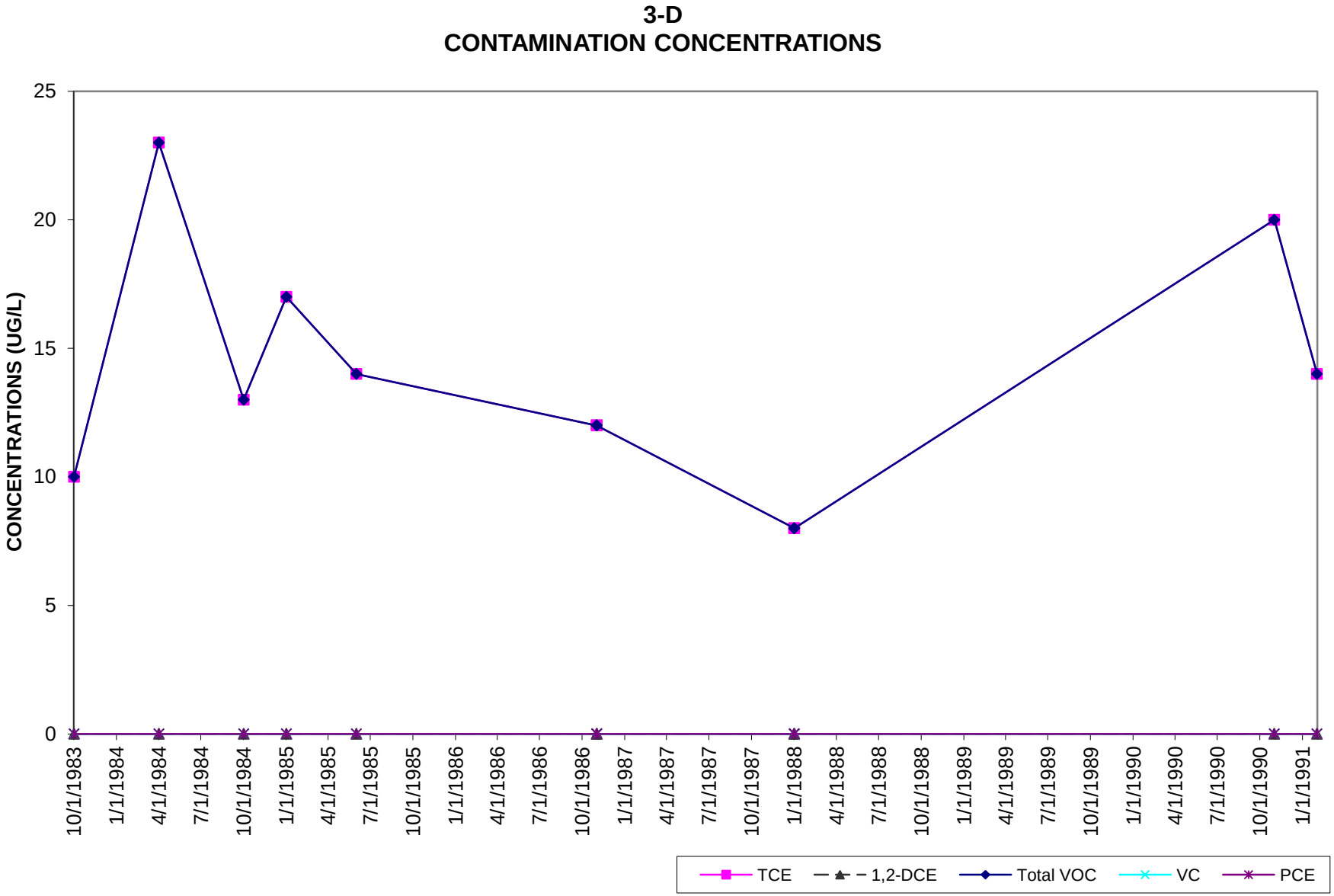

MS-55I
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
160.00
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
11/1/2005
5/1/2006
11/1/2006
5/1/2007
11/1/2007
5/1/2008
11/1/2008
5/1/2009
11/1/2009
5/1/2010
11/1/2010
5/1/2011
11/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE

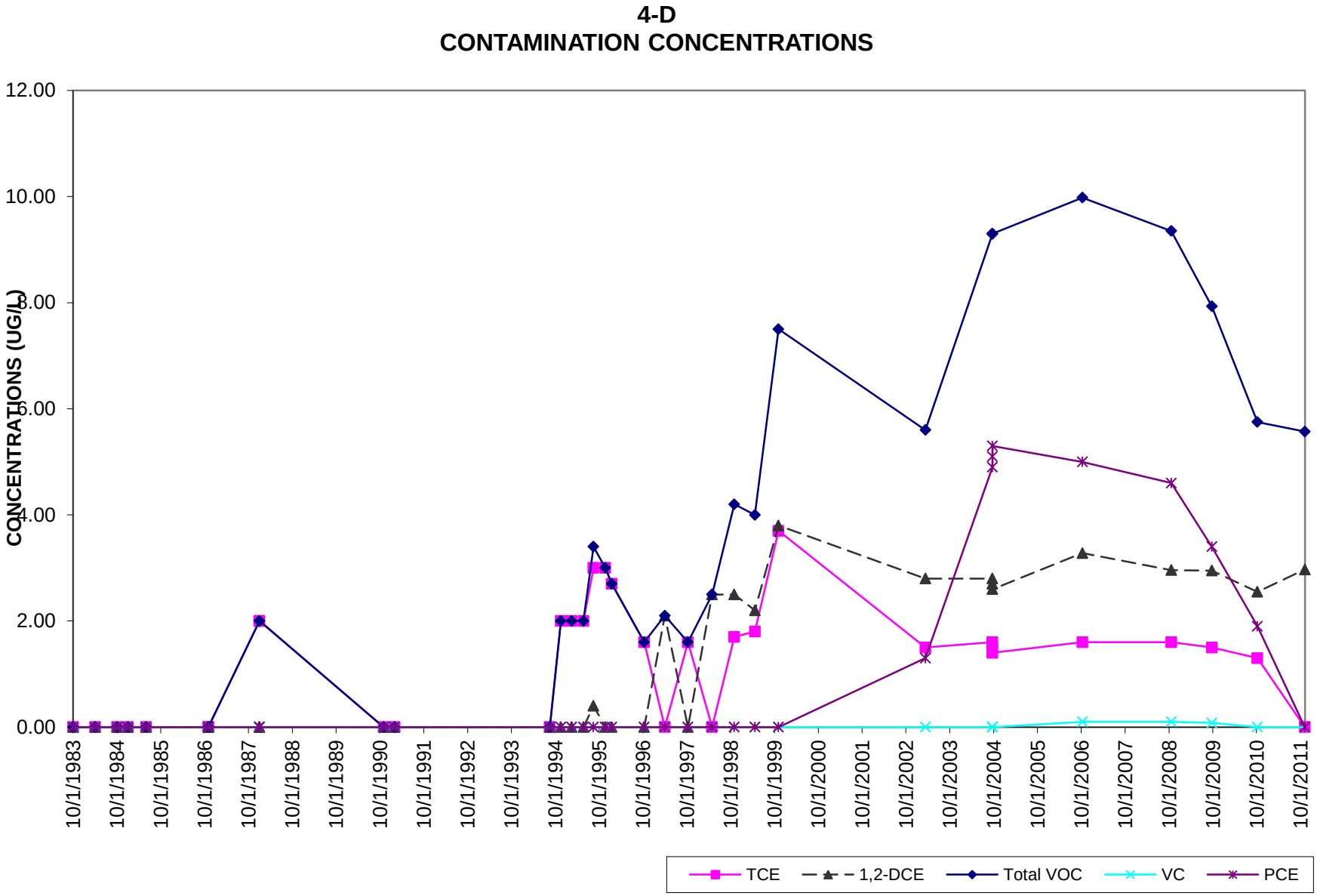

MS-56I
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
11/1/2005
5/1/2006
11/1/2006
5/1/2007
11/1/2007
5/1/2008
11/1/2008
5/1/2009
11/1/2009
5/1/2010
11/1/2010
5/1/2011
11/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE

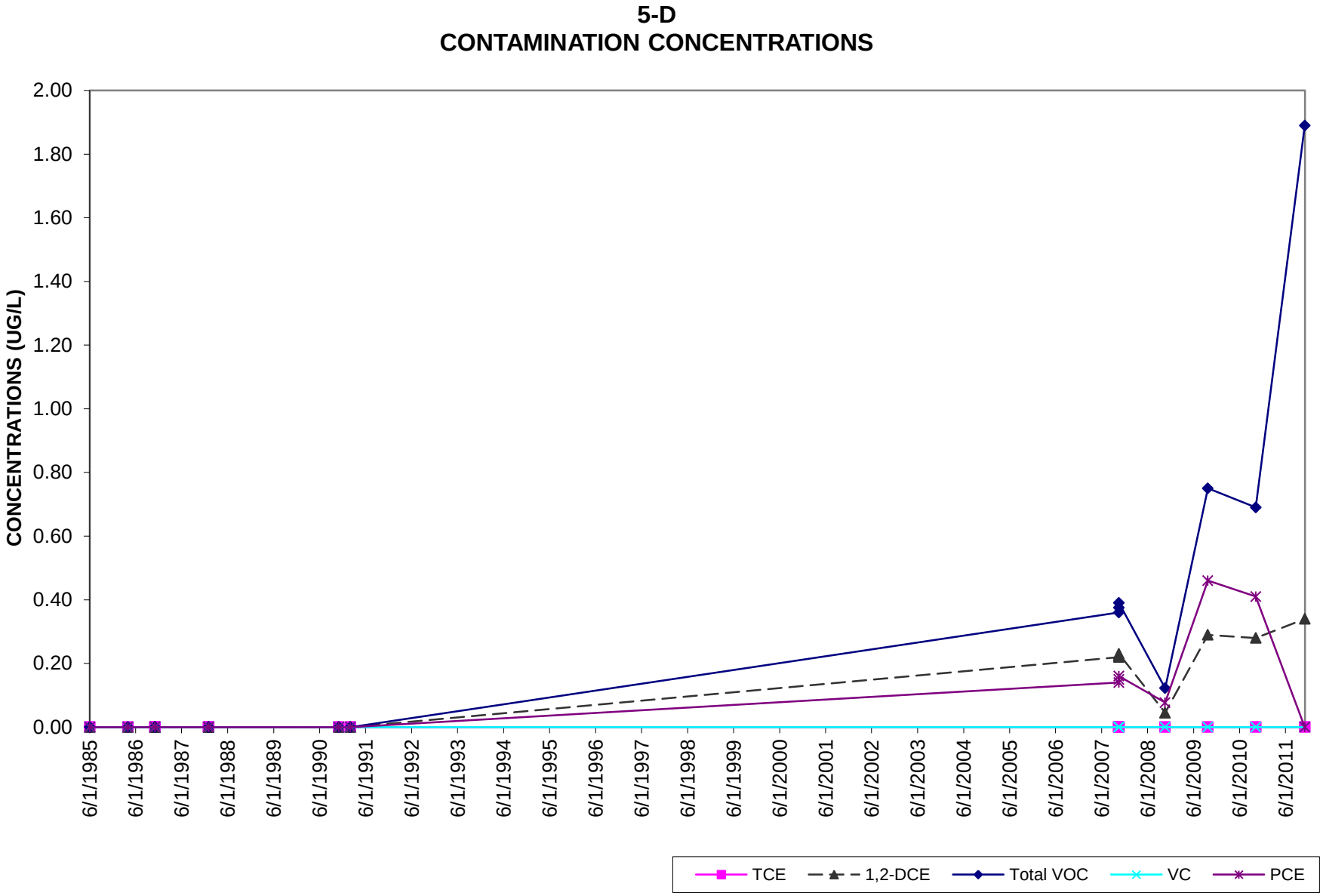

AT-5B
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
8/1/1995
2/1/1996
8/1/1996
2/1/1997
8/1/1997
2/1/1998
8/1/1998
2/1/1999
8/1/1999
2/1/2000
8/1/2000
2/1/2001
8/1/2001
2/1/2002
8/1/2002
2/1/2003
8/1/2003
2/1/2004
8/1/2004
2/1/2005
8/1/2005
2/1/2006
8/1/2006
2/1/2007
8/1/2007
2/1/2008
8/1/2008
2/1/2009
8/1/2009
2/1/2010
8/1/2010
2/1/2011
8/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE

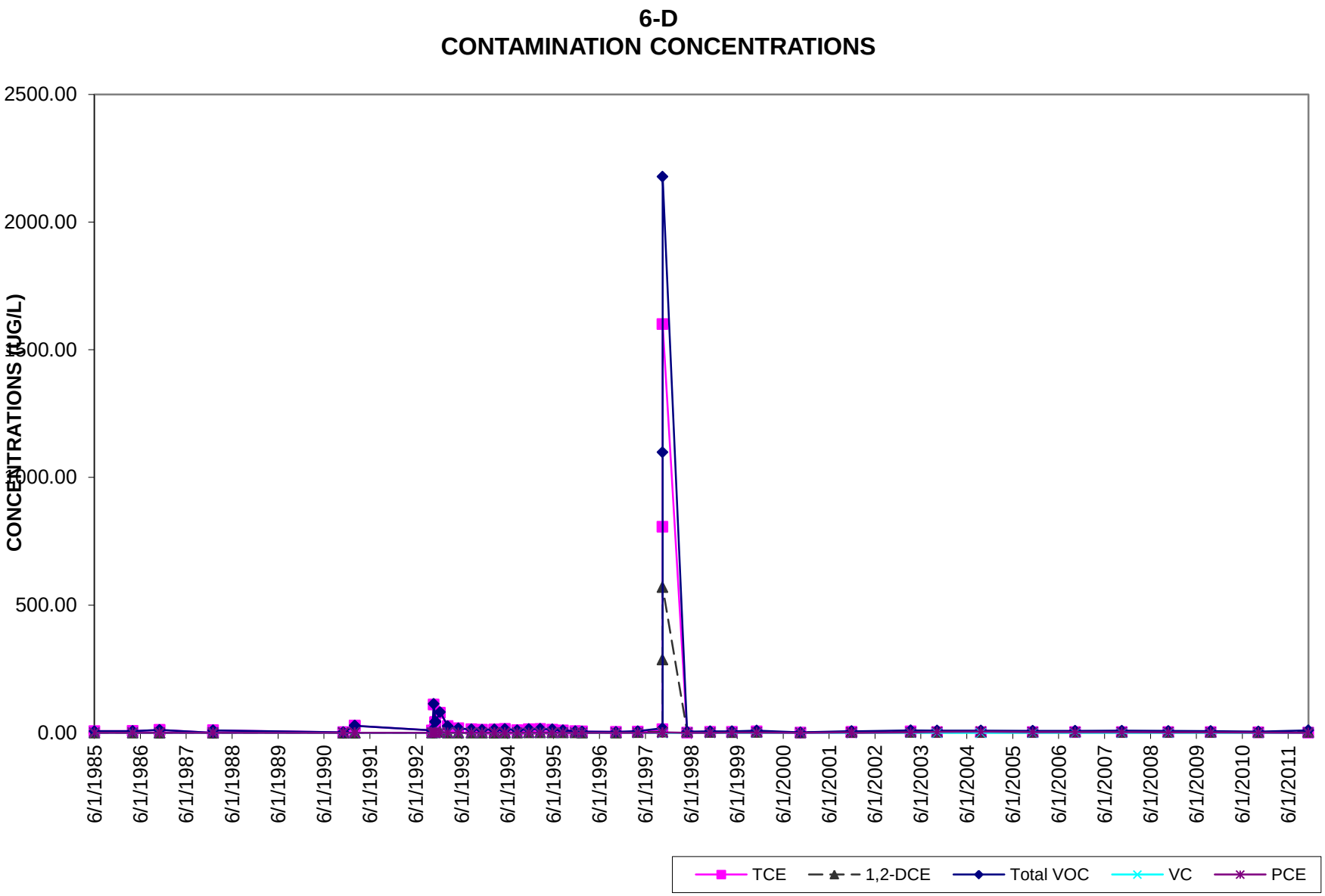

1-D
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
70
60
50
40
30
20
10
0
10/1/1983
10/1/1984
10/1/1985
10/1/1986
10/1/1987
10/1/1988
10/1/1989
10/1/1990
10/1/1991
10/1/1992
10/1/1993
10/1/1994
10/1/1995
10/1/1996
10/1/1997
10/1/1998
10/1/1999
10/1/2000
10/1/2001
10/1/2002
10/1/2003
10/1/2004
10/1/2005
10/1/2006
TCE
1,2-DCE
Total VOC
VC
PCE

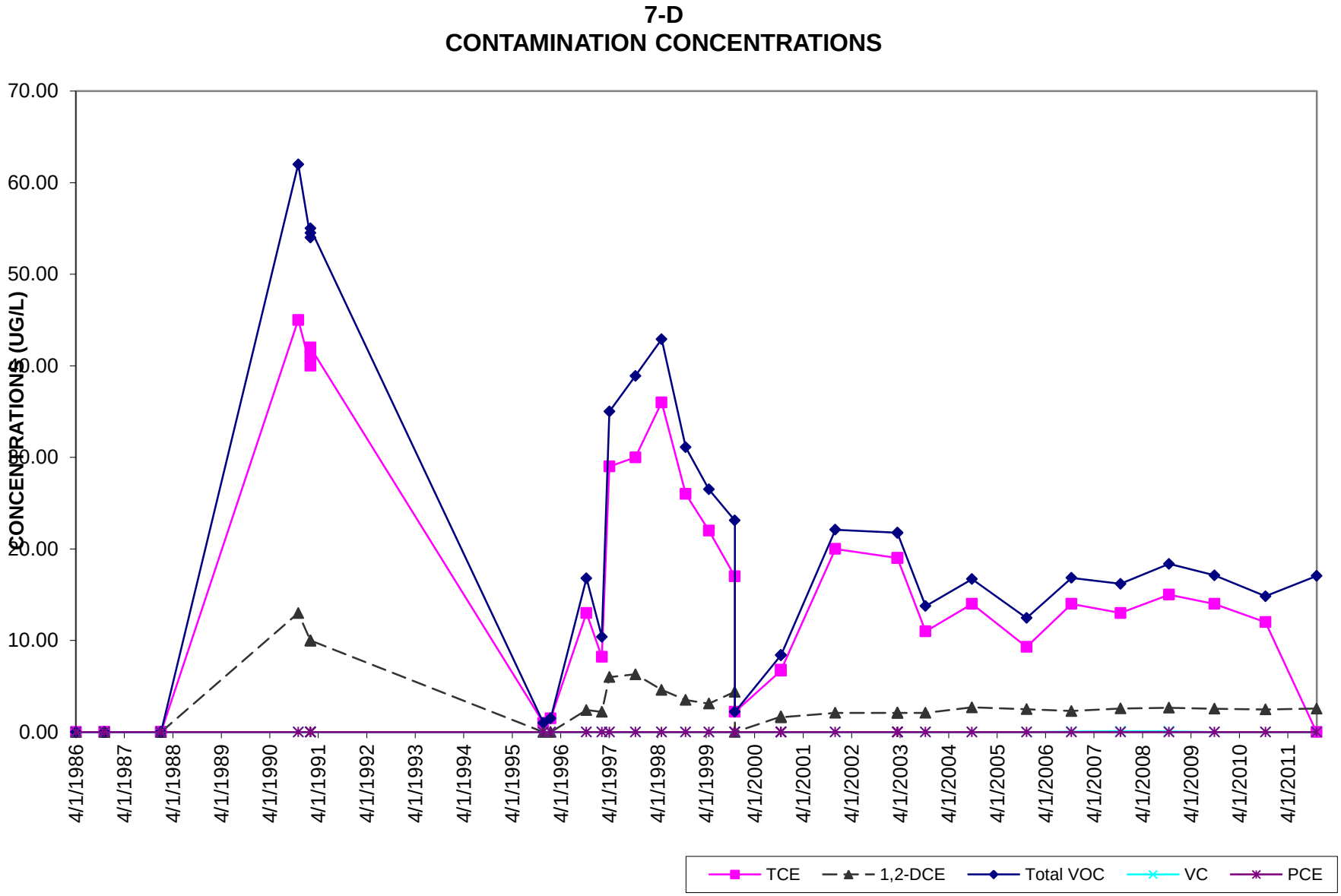

2-D
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
60
50
40
30
20
10
0
10/1/1983
10/1/1984
10/1/1985
10/1/1986
10/1/1987
10/1/1988
10/1/1989
10/1/1990
10/1/1991
10/1/1992
10/1/1993
10/1/1994
10/1/1995
10/1/1996
10/1/1997
10/1/1998
10/1/1999
10/1/2000
10/1/2001
10/1/2002
10/1/2003
10/1/2004
10/1/2005
10/1/2006
10/1/2007
10/1/2008
TCE
1,2-DCE
Total VOC
VC
PCE

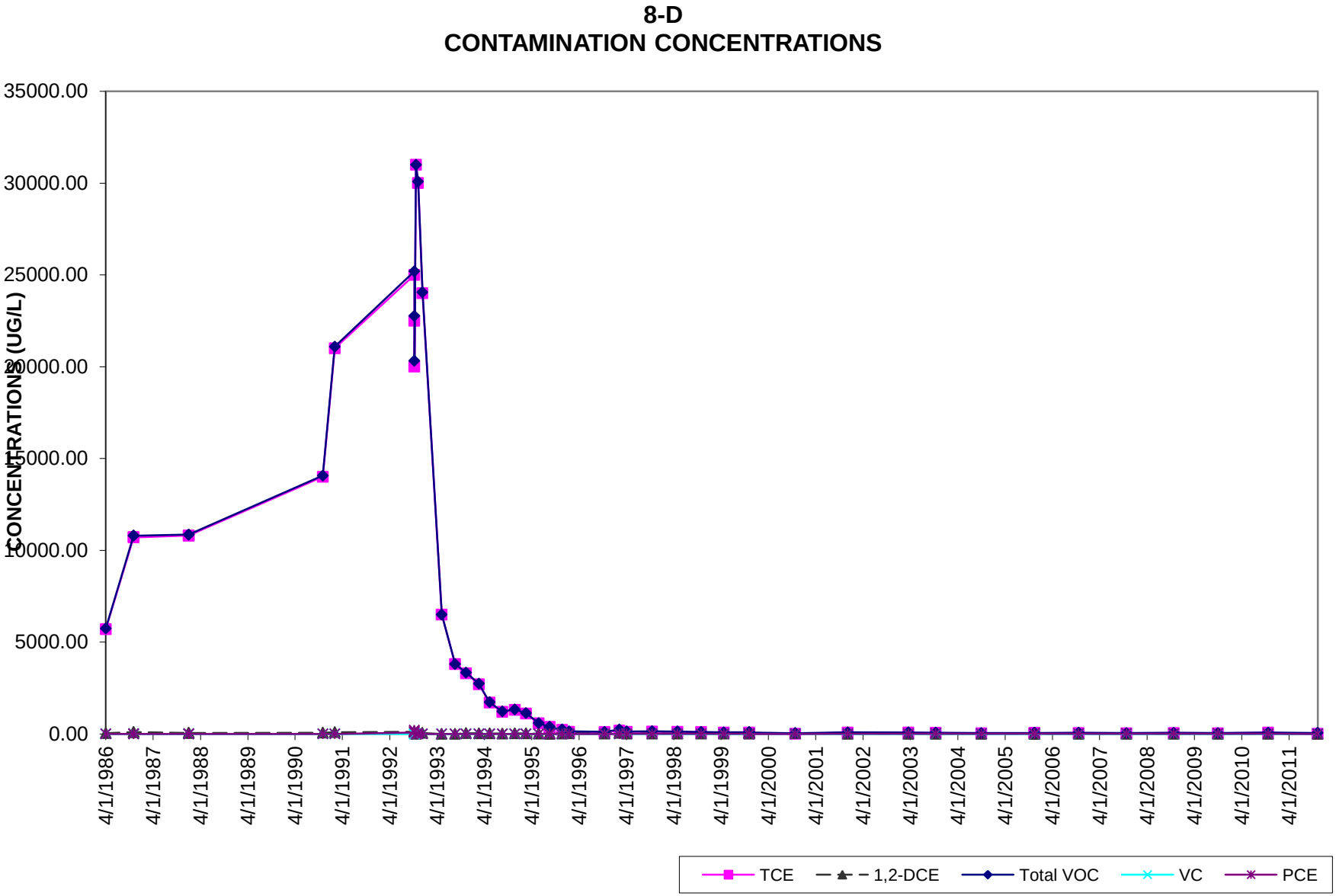

3-D
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
25
20
15
10
5
0
10/1/1983
1/1/1984
4/1/1984
7/1/1984
10/1/1984
1/1/1985
4/1/1985
7/1/1985
10/1/1985
1/1/1986
4/1/1986
7/1/1986
10/1/1986
1/1/1987
4/1/1987
7/1/1987
10/1/1987
1/1/1988
4/1/1988
7/1/1988
10/1/1988
1/1/1989
4/1/1989
7/1/1989
10/1/1989
1/1/1990
4/1/1990
7/1/1990
10/1/1990
1/1/1991
TCE
1,2-DCE
Total VOC
VC
PCE

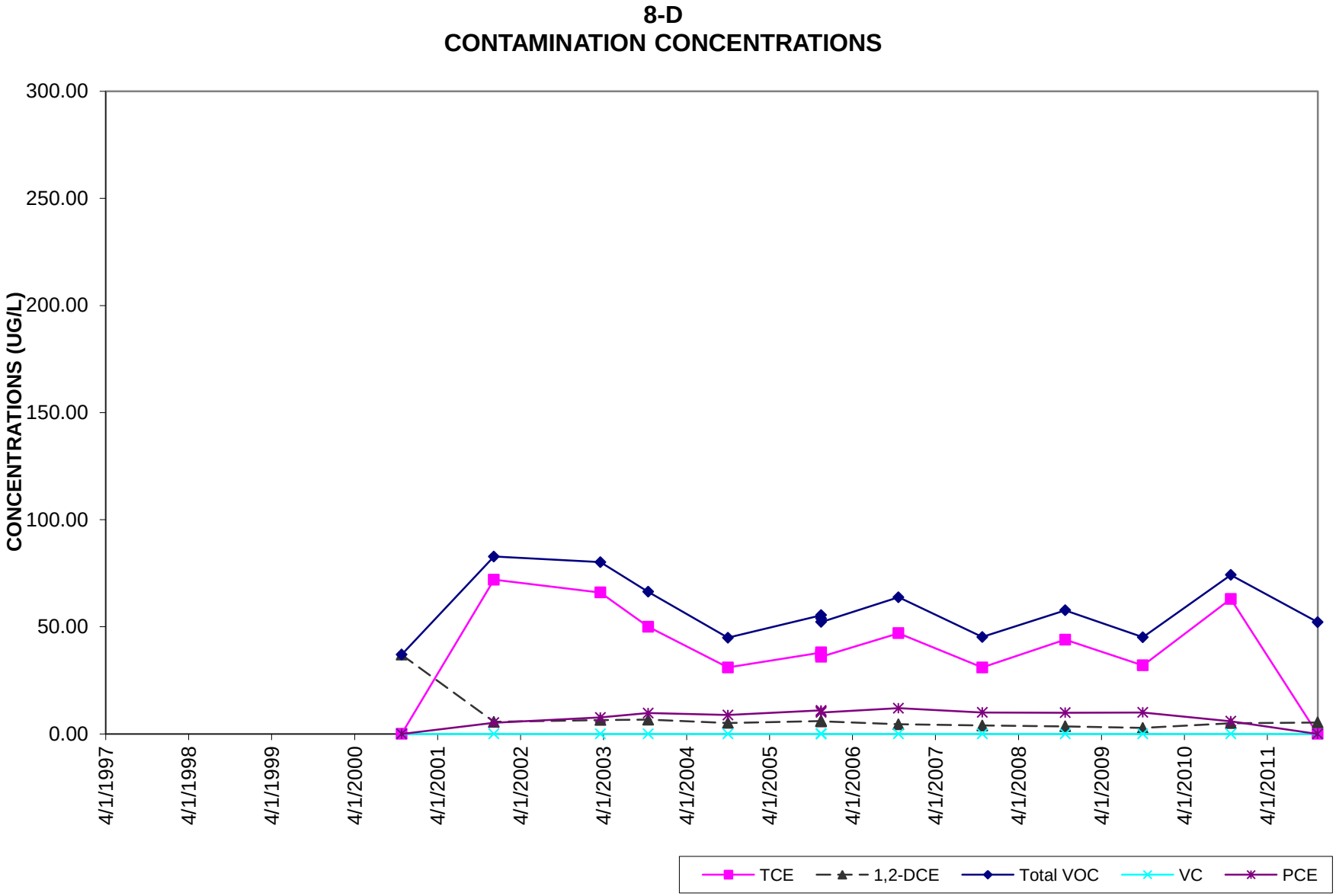

4-D
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
12.00
10.00
8.00
6.00
4.00
2.00
0.00
10/1/1983
10/1/1984
10/1/1985
10/1/1986
10/1/1987
10/1/1988
10/1/1989
10/1/1990
10/1/1991
10/1/1992
10/1/1993
10/1/1994
10/1/1995
10/1/1996
10/1/1997
10/1/1998
10/1/1999
10/1/2000
10/1/2001
10/1/2002
10/1/2003
10/1/2004
10/1/2005
10/1/2006
10/1/2007
10/1/2008
10/1/2009
10/1/2010
10/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE

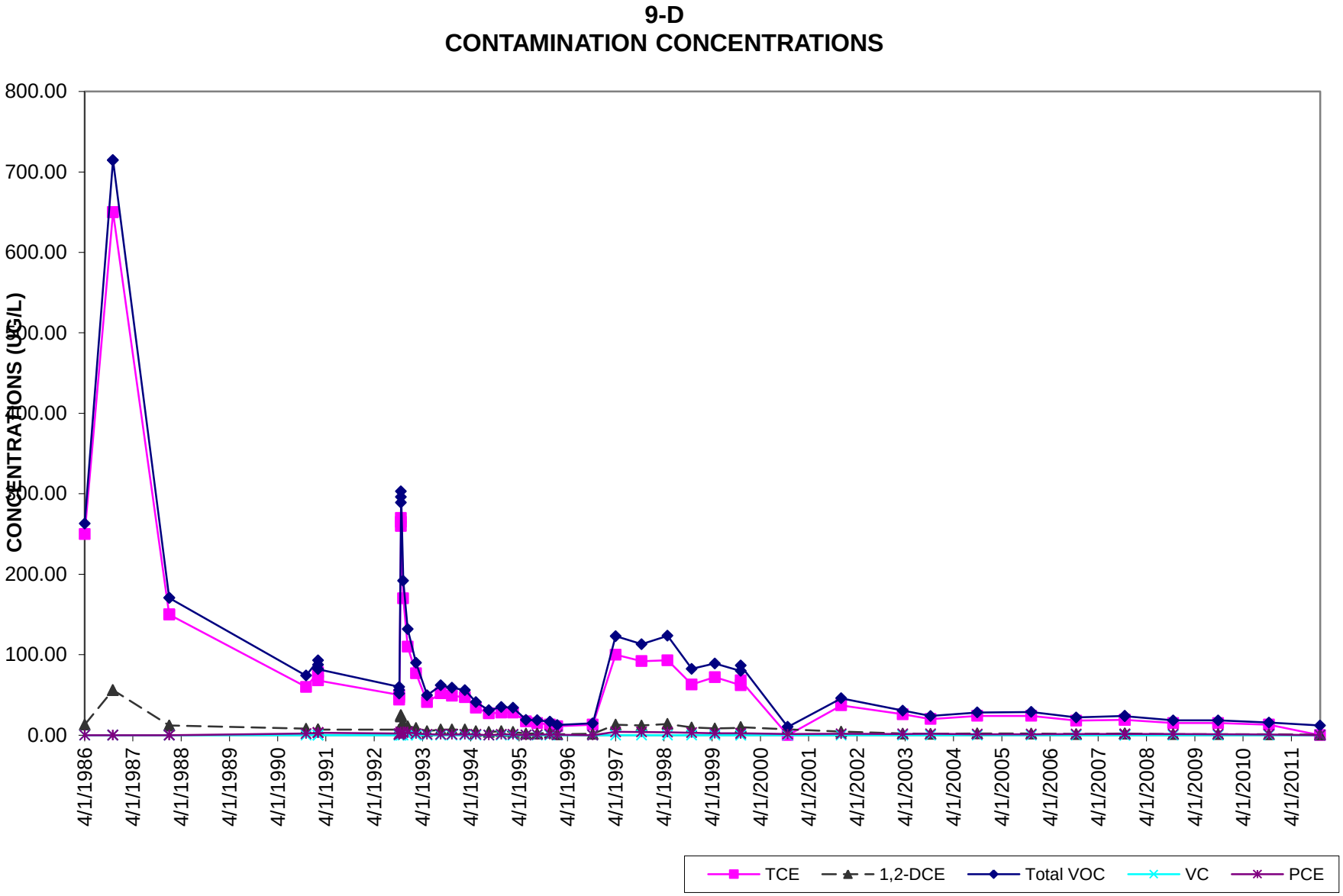

5-D
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
2.00
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
6/1/1985
6/1/1986
6/1/1987
6/1/1988
6/1/1989
6/1/1990
6/1/1991
6/1/1992
6/1/1993
6/1/1994
6/1/1995
6/1/1996
6/1/1997
6/1/1998
6/1/1999
6/1/2000
6/1/2001
6/1/2002
6/1/2003
6/1/2004
6/1/2005
6/1/2006
6/1/2007
6/1/2008
6/1/2009
6/1/2010
6/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE

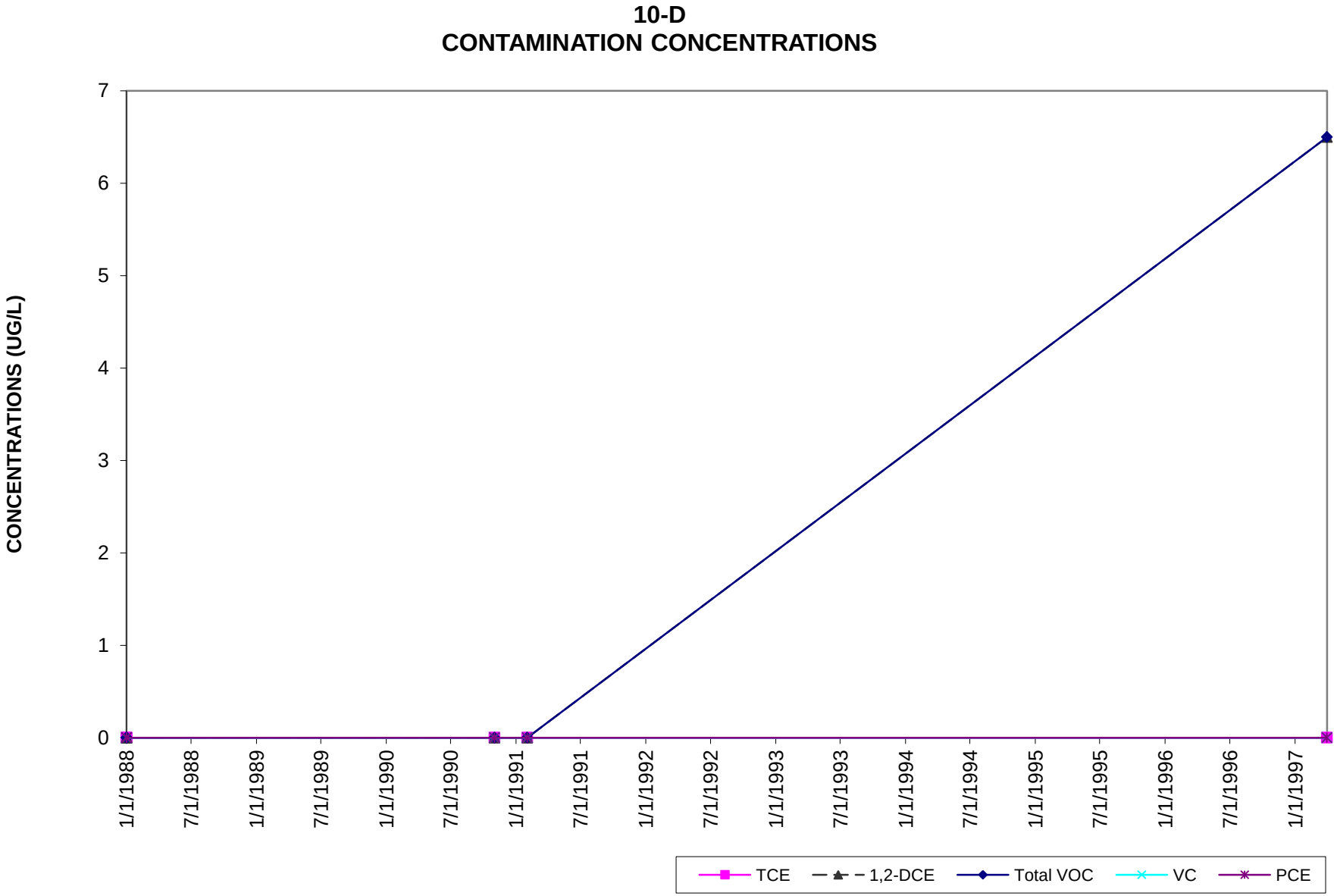

6-D
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
2500.00
2000.00
1500.00
1000.00
500.00
0.00
6/1/1985
6/1/1986
6/1/1987
6/1/1988
6/1/1989
6/1/1990
6/1/1991
6/1/1992
6/1/1993
6/1/1994
6/1/1995
6/1/1996
6/1/1997
6/1/1998
6/1/1999
6/1/2000
6/1/2001
6/1/2002
6/1/2003
6/1/2004
6/1/2005
6/1/2006
6/1/2007
6/1/2008
6/1/2009
6/1/2010
6/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE

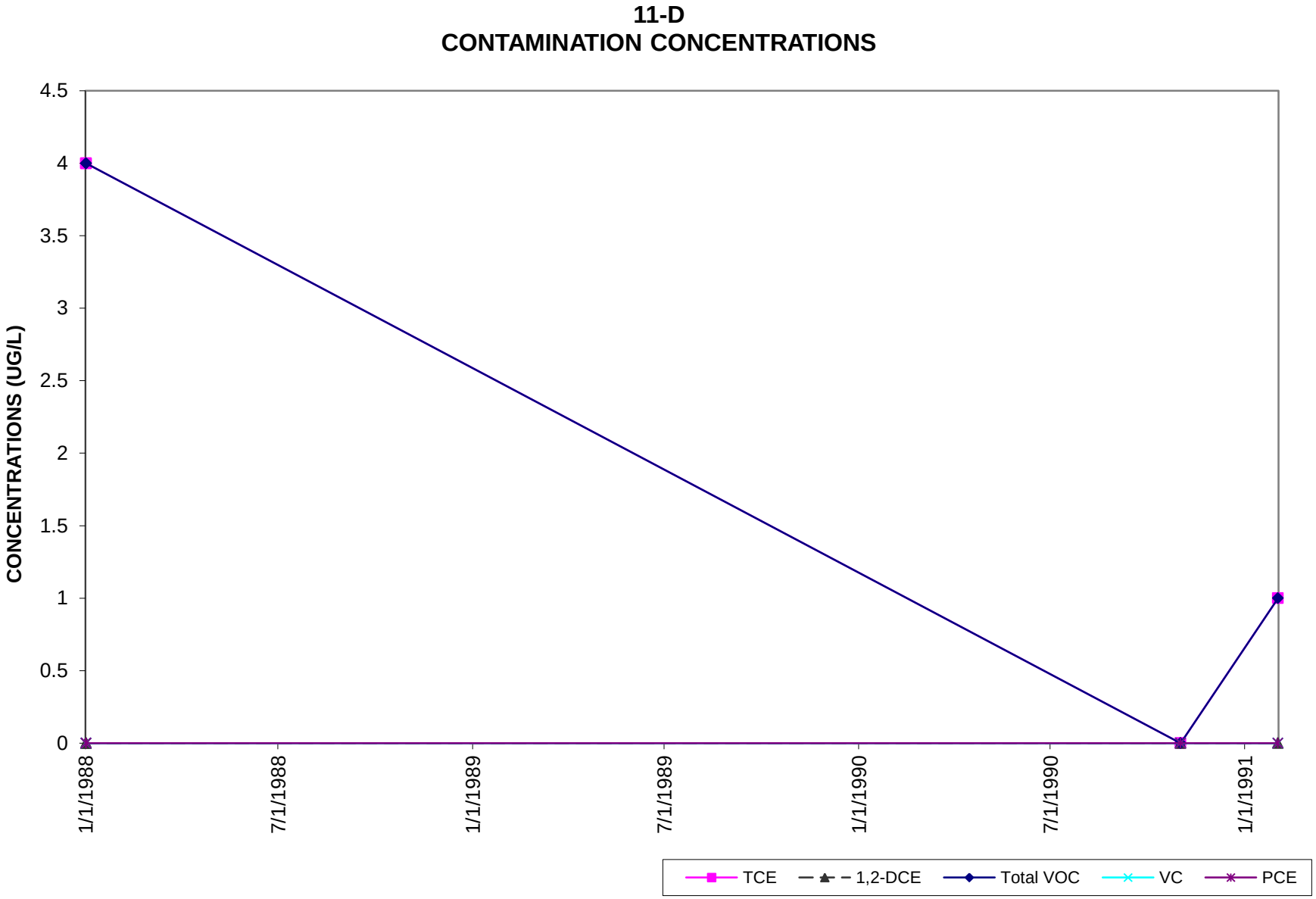

7-D
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
4/1/1986
4/1/1987
4/1/1988
4/1/1989
4/1/1990
4/1/1991
4/1/1992
4/1/1993
4/1/1994
4/1/1995
4/1/1996
4/1/1997
4/1/1998
4/1/1999
4/1/2000
4/1/2001
4/1/2002
4/1/2003
4/1/2004
4/1/2005
4/1/2006
4/1/2007
4/1/2008
4/1/2009
4/1/2010
4/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE

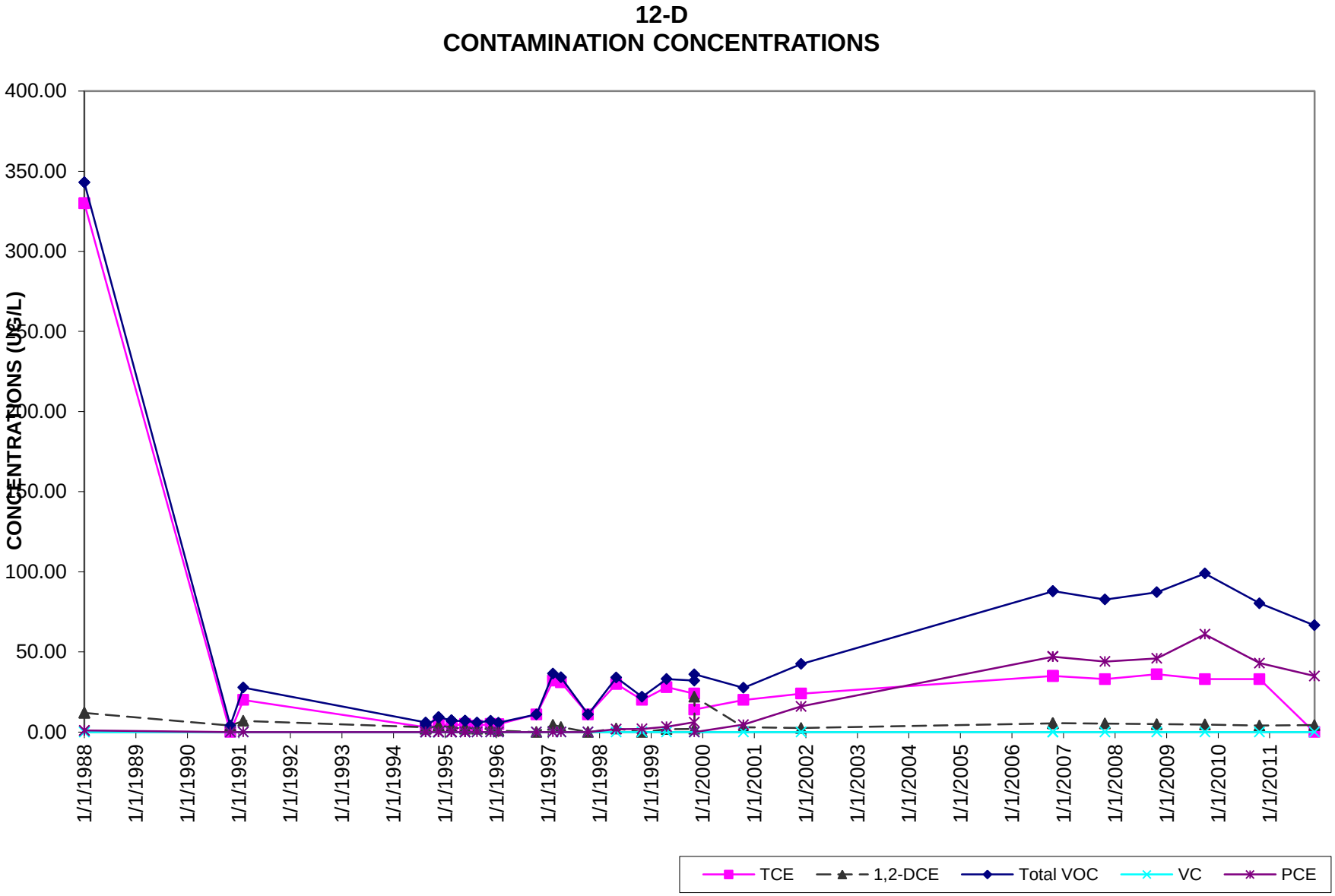

8-D
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
35000.00
30000.00
25000.00
20000.00
15000.00
10000.00
5000.00
0.00
4/1/1986
4/1/1987
4/1/1988
4/1/1989
4/1/1990
4/1/1991
4/1/1992
4/1/1993
4/1/1994
4/1/1995
4/1/1996
4/1/1997
4/1/1998
4/1/1999
4/1/2000
4/1/2001
4/1/2002
4/1/2003
4/1/2004
4/1/2005
4/1/2006
4/1/2007
4/1/2008
4/1/2009
4/1/2010
4/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE

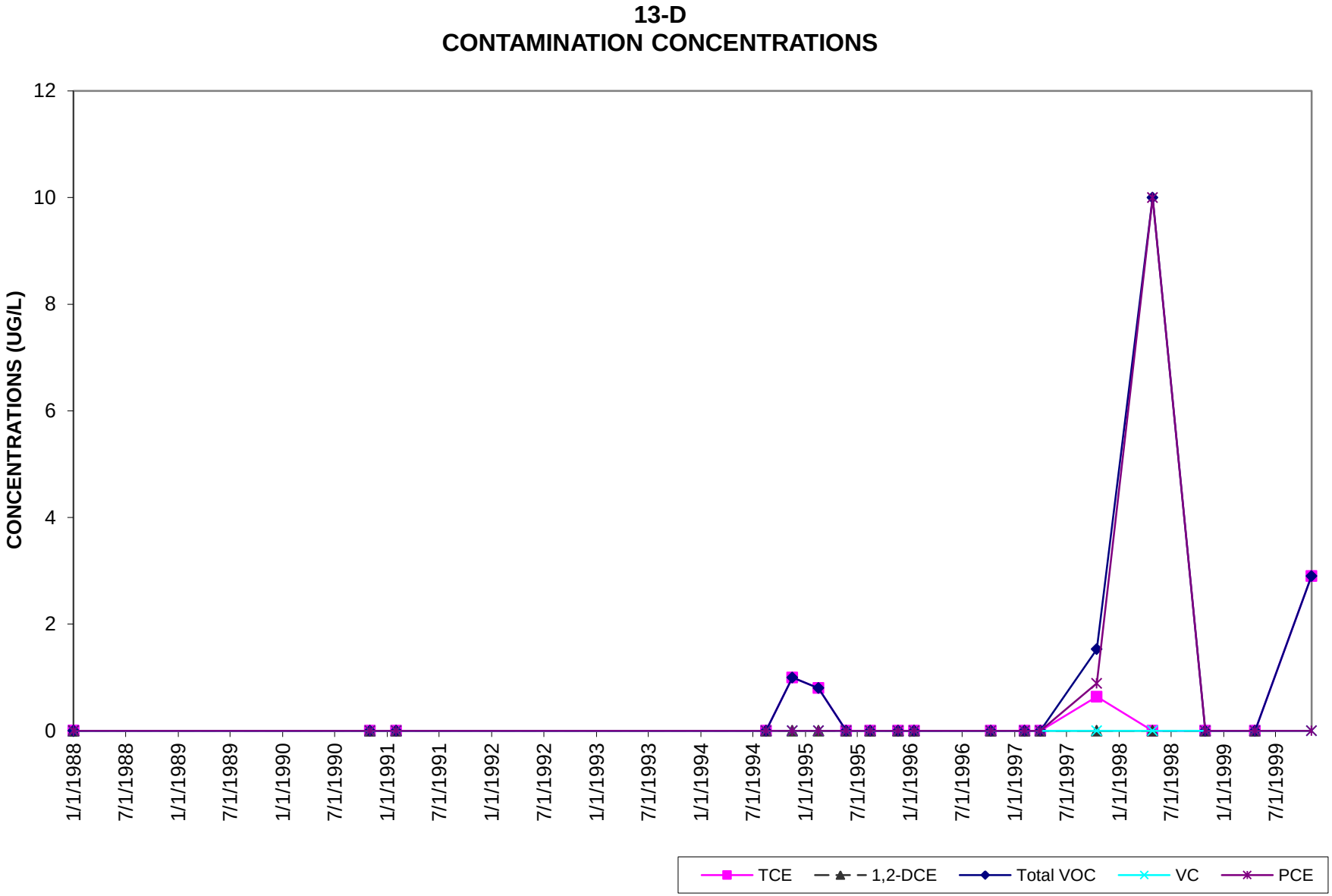

8-D
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
300.00
250.00
200.00
150.00
100.00
50.00
0.00
4/1/1997
4/1/1998
4/1/1999
4/1/2000
4/1/2001
4/1/2002
4/1/2003
4/1/2004
4/1/2005
4/1/2006
4/1/2007
4/1/2008
4/1/2009
4/1/2010
4/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE

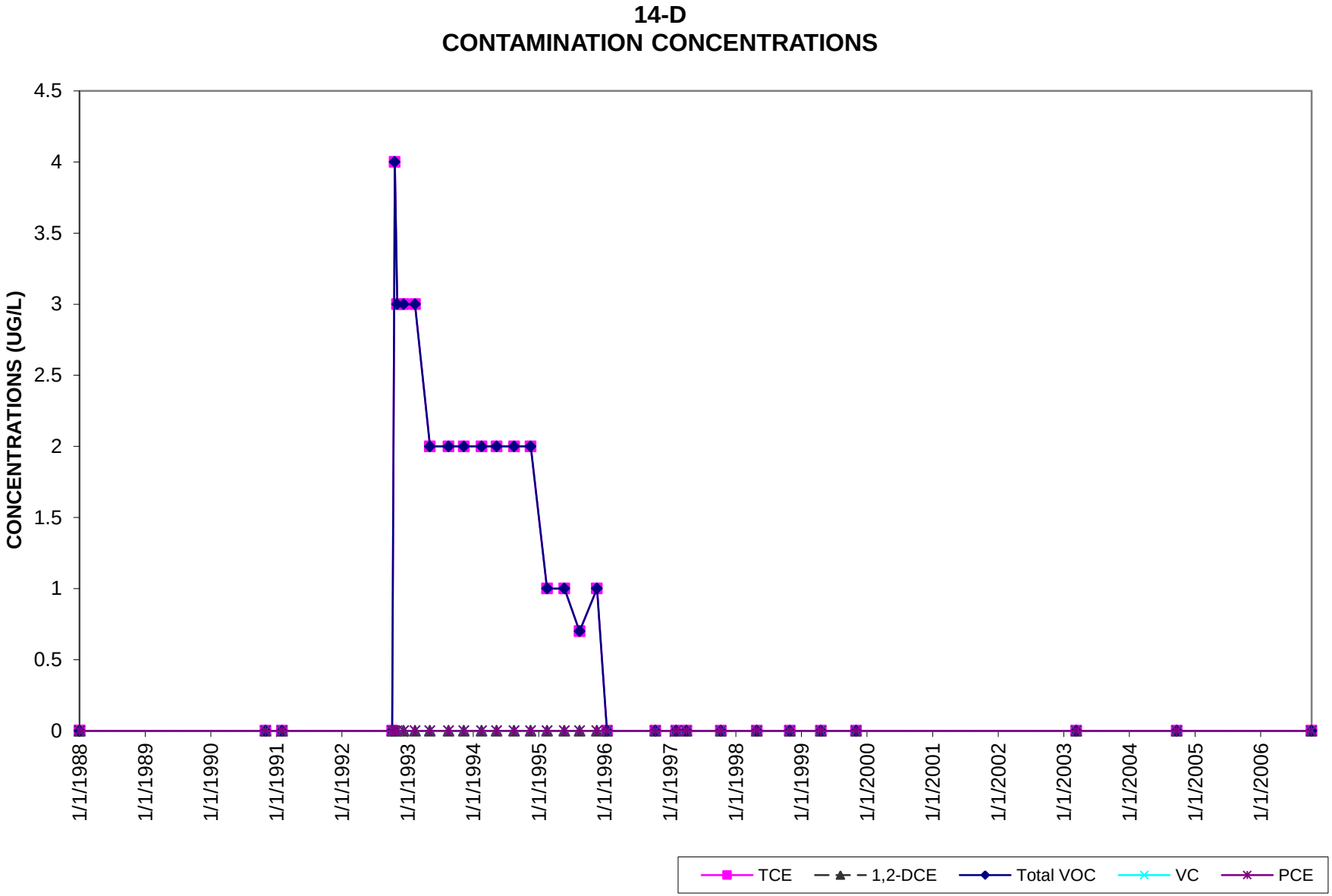

9-D
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
800.00
700.00
600.00
500.00
400.00
300.00
200.00
100.00
0.00
4/1/1986
4/1/1987
4/1/1988
4/1/1989
4/1/1990
4/1/1991
4/1/1992
4/1/1993
4/1/1994
4/1/1995
4/1/1996
4/1/1997
4/1/1998
4/1/1999
4/1/2000
4/1/2001
4/1/2002
4/1/2003
4/1/2004
4/1/2005
4/1/2006
4/1/2007
4/1/2008
4/1/2009
4/1/2010
4/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE

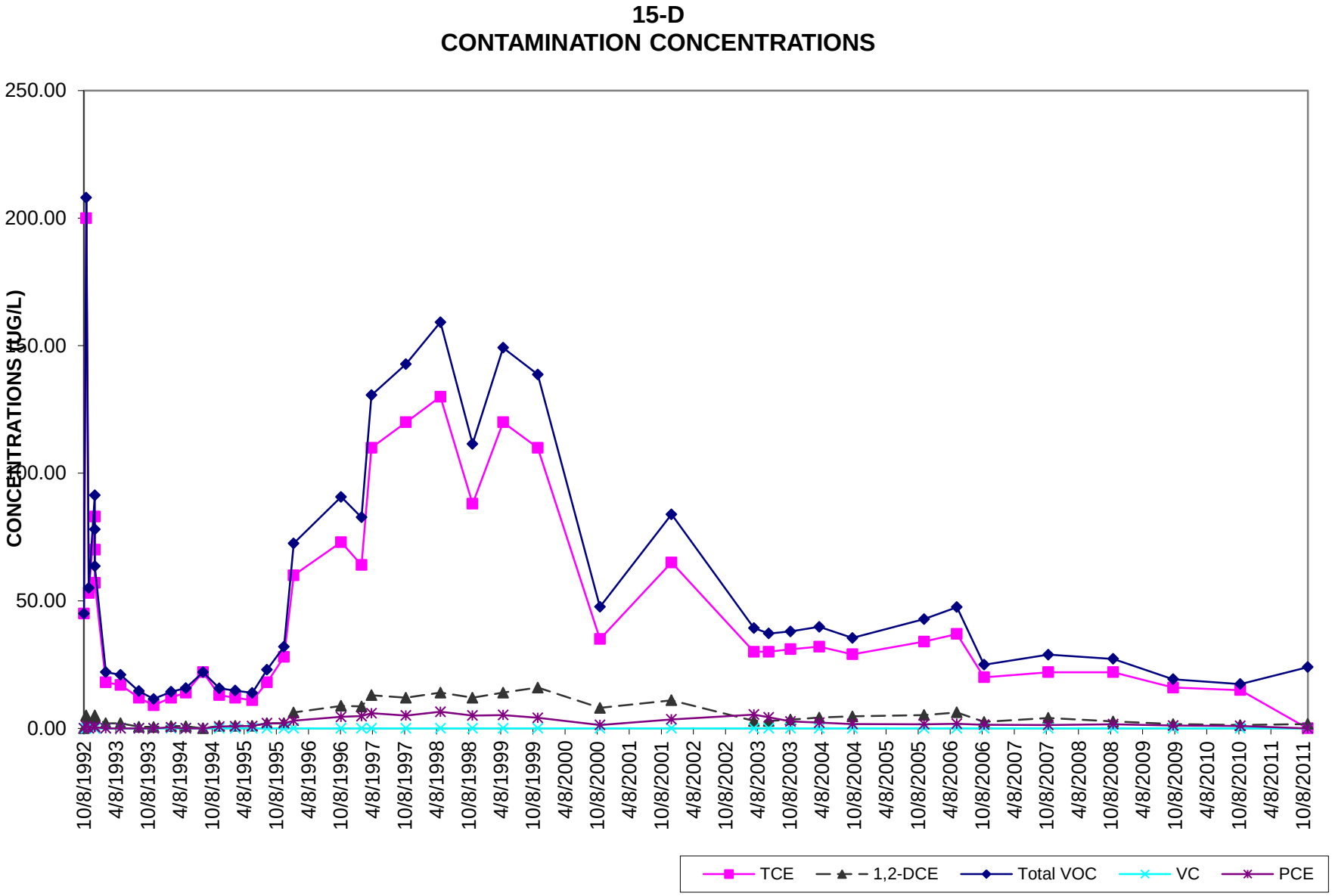

10-D
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
7
6
5
4
3
2
1
0
1/1/1988
7/1/1988
1/1/1989
7/1/1989
1/1/1990
7/1/1990
1/1/1991
7/1/1991
1/1/1992
7/1/1992
1/1/1993
7/1/1993
1/1/1994
7/1/1994
1/1/1995
7/1/1995
1/1/1996
7/1/1996
1/1/1997
TCE
1,2-DCE
Total VOC
VC
PCE

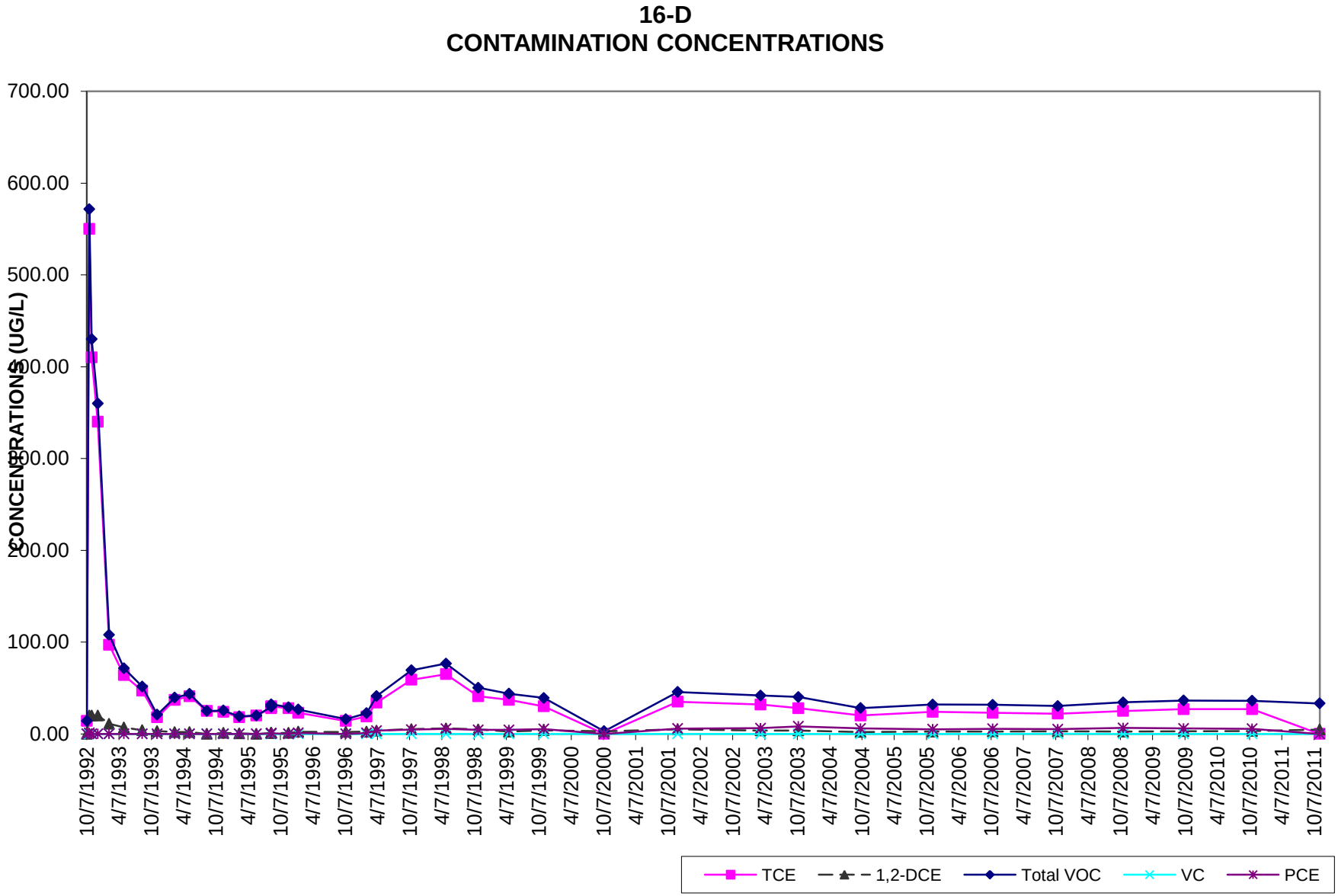

11-D
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
1/1/1988
7/1/1988
1/1/1989
7/1/1989
1/1/1990
7/1/1990
1/1/1991
TCE
1,2-DCE
Total VOC
VC
PCE

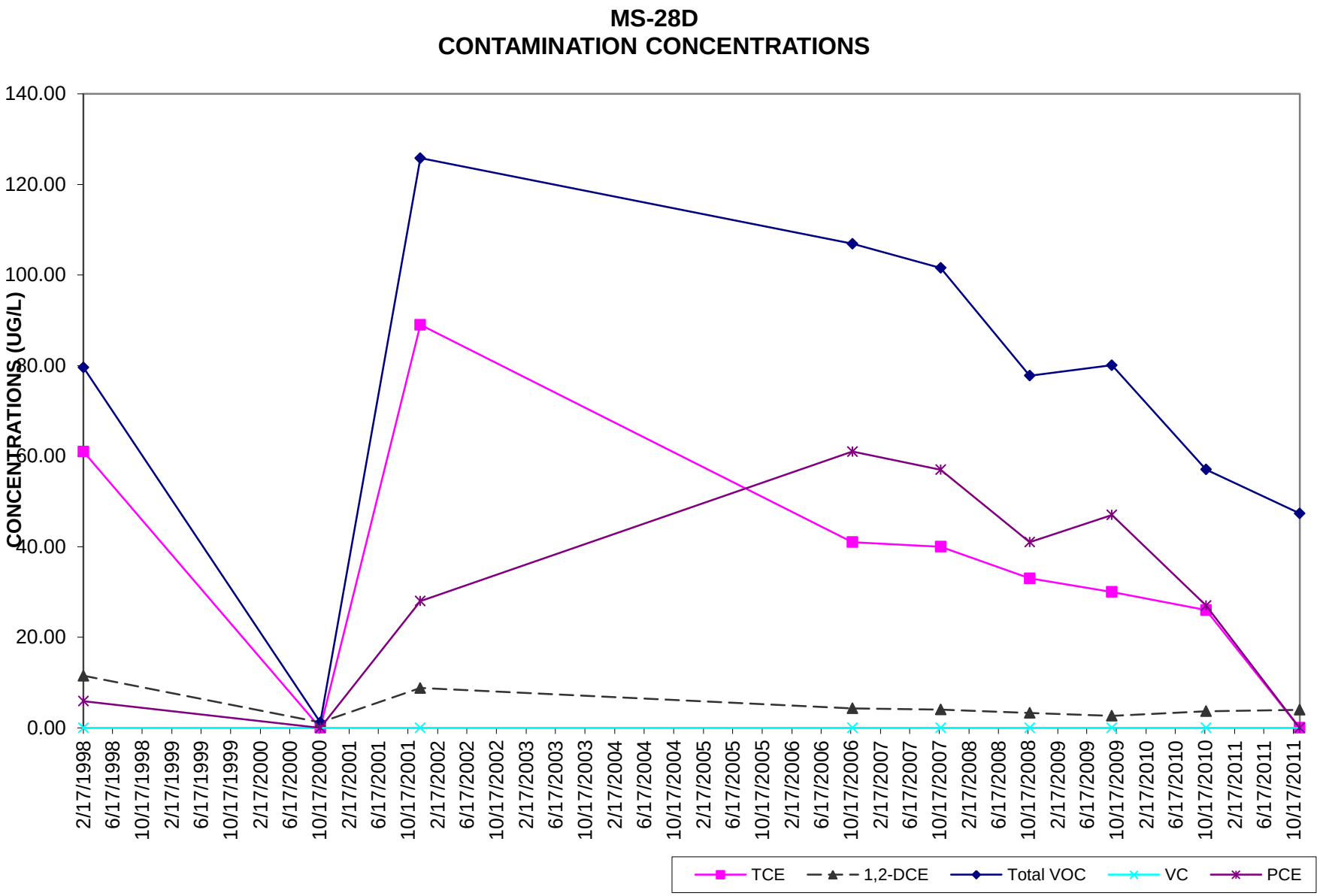

12-D
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
400.00
350.00
300.00
250.00
200.00
150.00
100.00
50.00
0.00
1/1/1988
1/1/1989
1/1/1990
1/1/1991
1/1/1992
1/1/1993
1/1/1994
1/1/1995
1/1/1996
1/1/1997
1/1/1998
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE

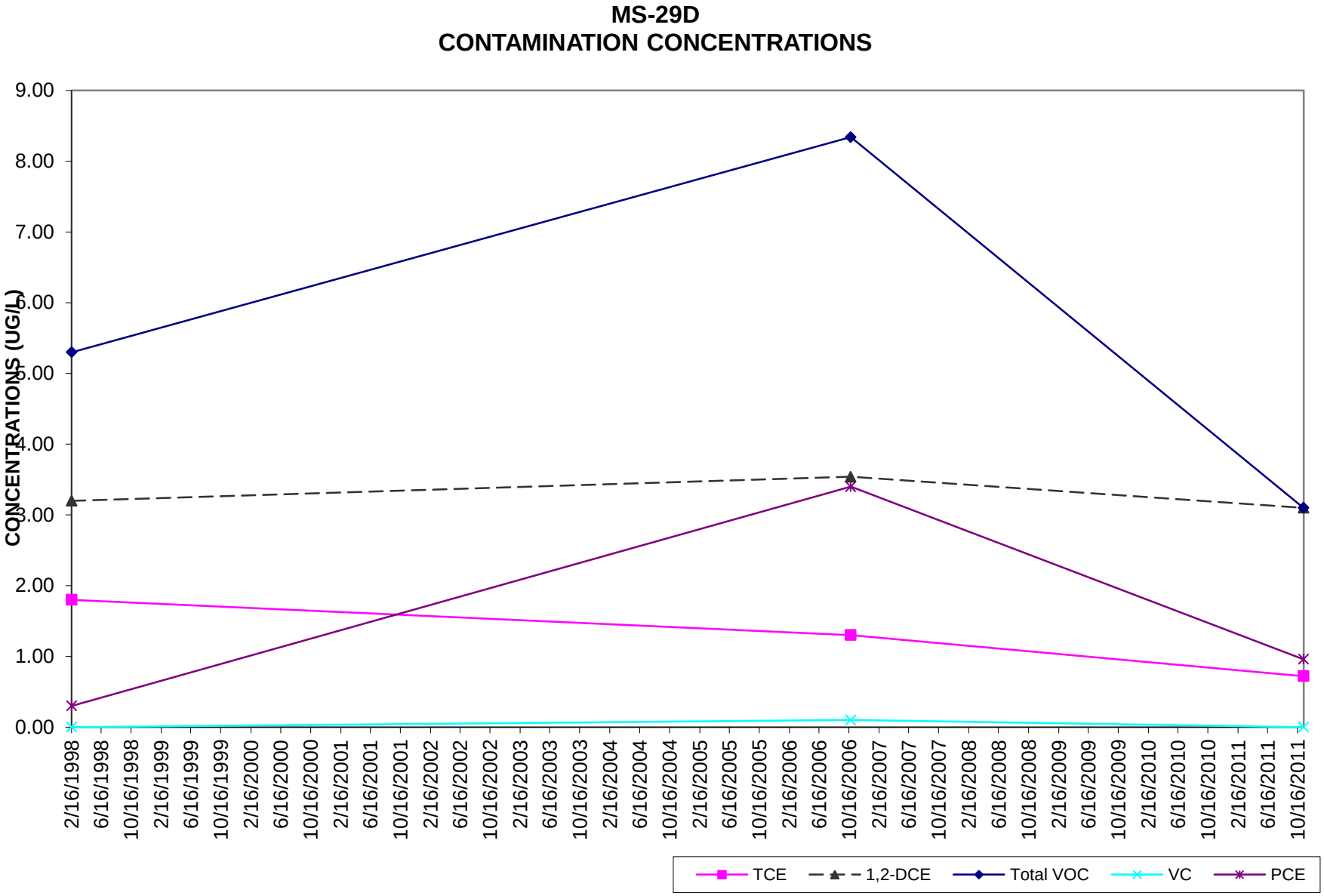

13-D
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
12
10
8
6
4
2
0
1/1/1988
7/1/1988
1/1/1989
7/1/1989
1/1/1990
7/1/1990
1/1/1991
7/1/1991
1/1/1992
7/1/1992
1/1/1993
7/1/1993
1/1/1994
7/1/1994
1/1/1995
7/1/1995
1/1/1996
7/1/1996
1/1/1997
7/1/1997
1/1/1998
7/1/1998
1/1/1999
7/1/1999
TCE
1,2-DCE
Total VOC
VC
PCE

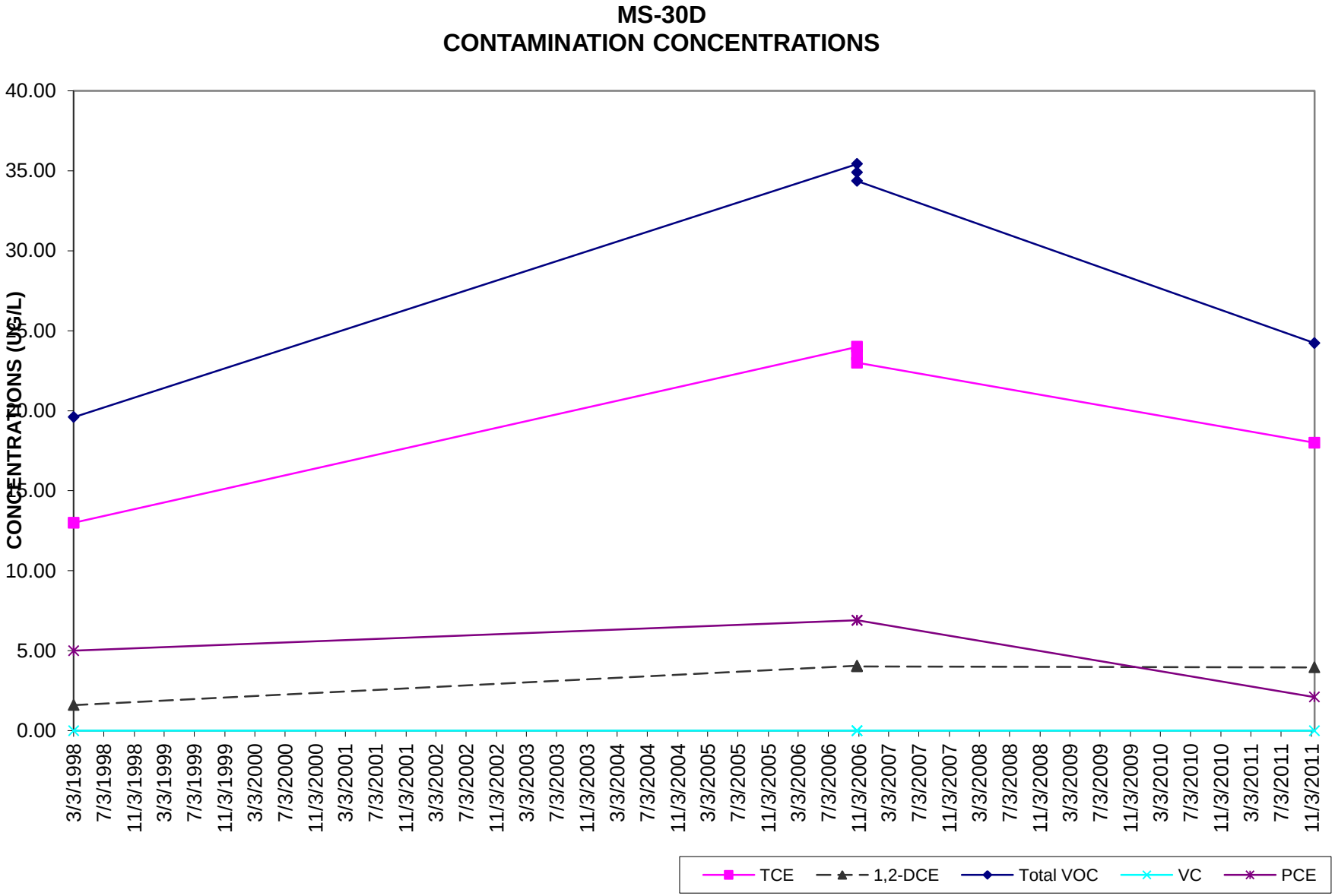

14-D
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
1/1/1988
1/1/1989
1/1/1990
1/1/1991
1/1/1992
1/1/1993
1/1/1994
1/1/1995
1/1/1996
1/1/1997
1/1/1998
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
TCE
1,2-DCE
Total VOC
VC
PCE

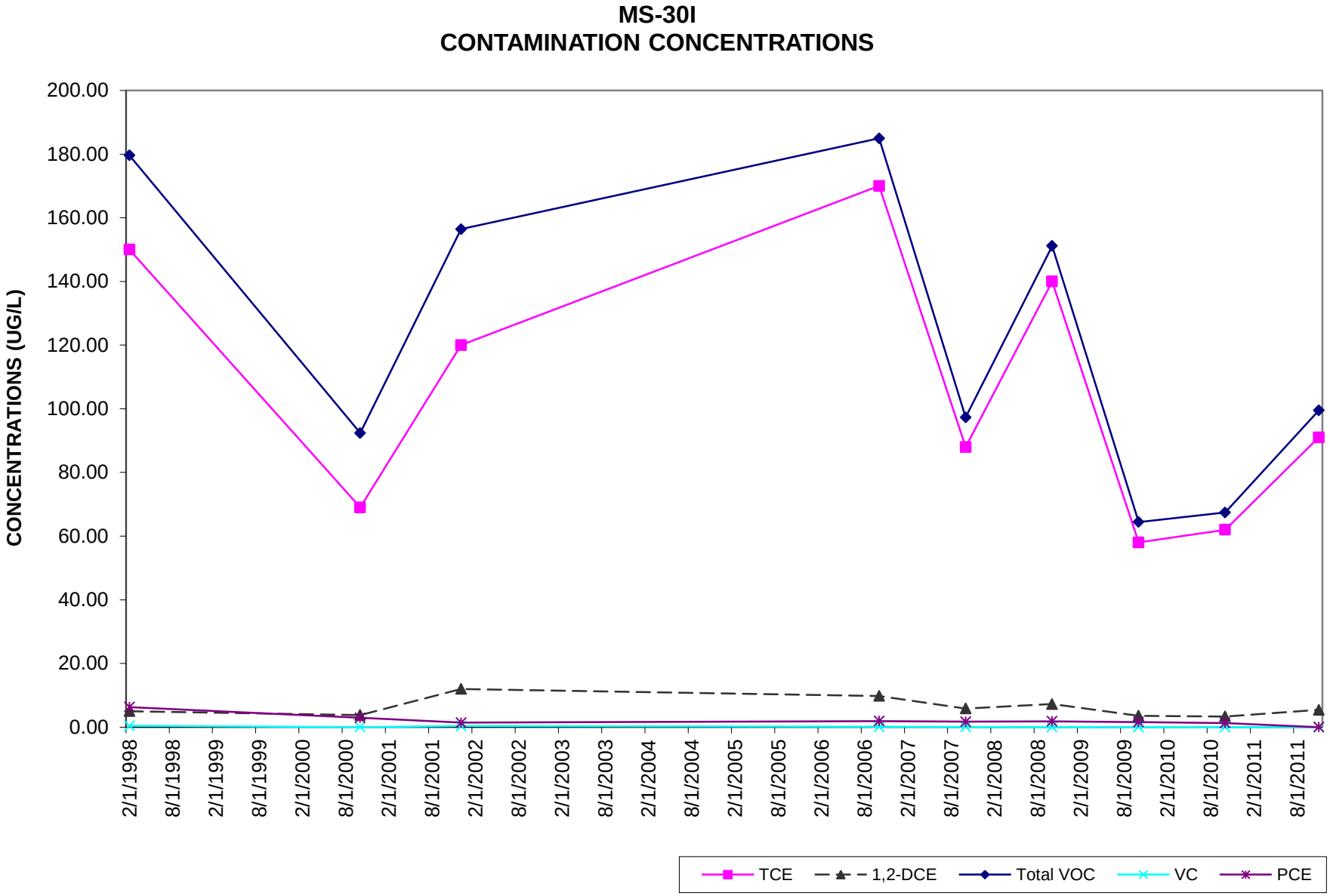

15-D
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
250.00
200.00
150.00
100.00
50.00
0.00
10/8/1992
4/8/1993
10/8/1993
4/8/1994
10/8/1994
4/8/1995
10/8/1995
4/8/1996
10/8/1996
4/8/1997
10/8/1997
4/8/1998
10/8/1998
4/8/1999
10/8/1999
4/8/2000
10/8/2000
4/8/2001
10/8/2001
4/8/2002
10/8/2002
4/8/2003
10/8/2003
4/8/2004
10/8/2004
4/8/2005
10/8/2005
4/8/2006
10/8/2006
4/8/2007
10/8/2007
4/8/2008
10/8/2008
4/8/2009
10/8/2009
4/8/2010
10/8/2010
4/8/2011
10/8/2011
TCE
1,2-DCE
Total VOC
VC
PCE

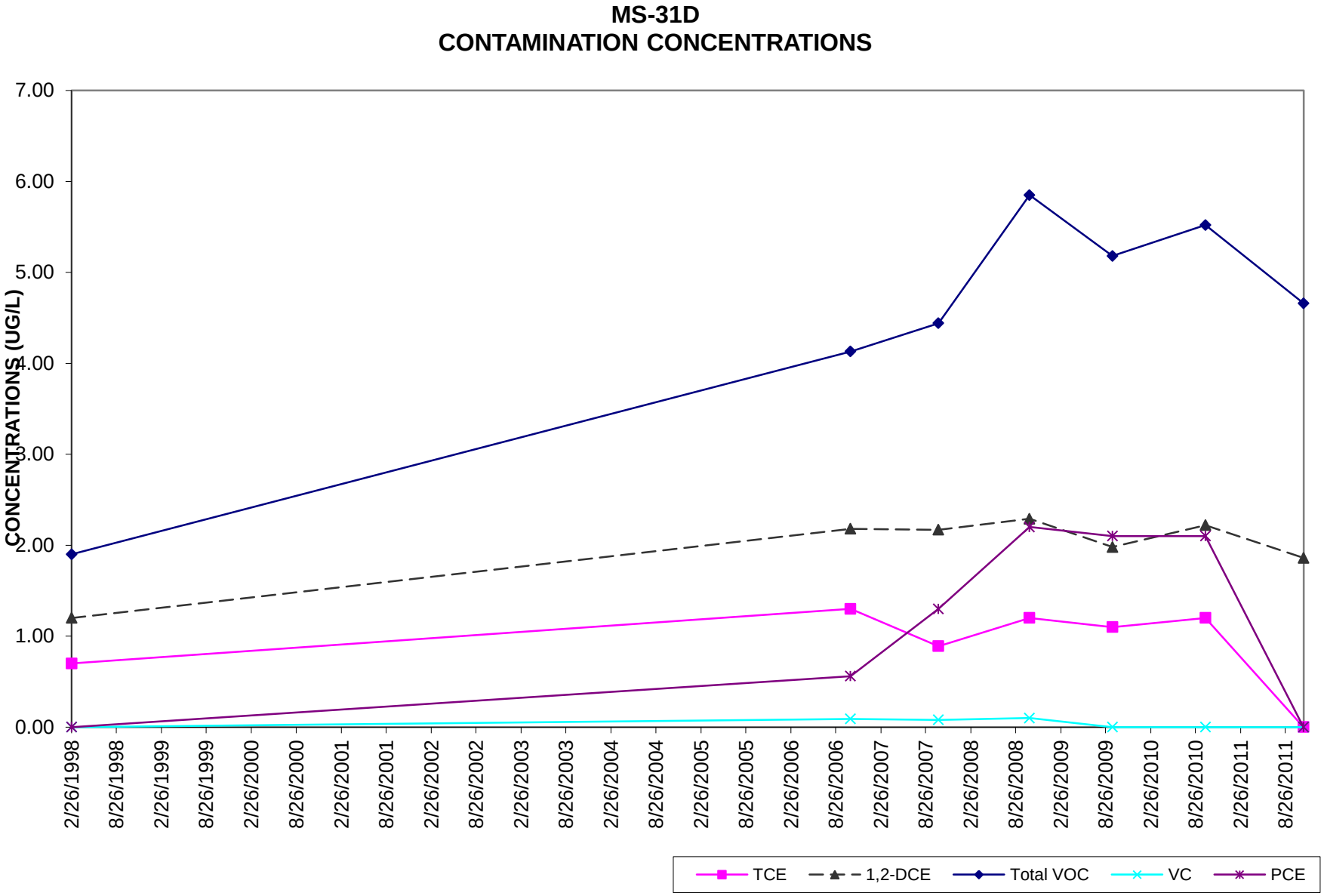

16-D
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
700.00
600.00
500.00
400.00
300.00
200.00
100.00
0.00
10/7/1992
4/7/1993
10/7/1993
4/7/1994
10/7/1994
4/7/1995
10/7/1995
4/7/1996
10/7/1996
4/7/1997
10/7/1997
4/7/1998
10/7/1998
4/7/1999
10/7/1999
4/7/2000
10/7/2000
4/7/2001
10/7/2001
4/7/2002
10/7/2002
4/7/2003
10/7/2003
4/7/2004
10/7/2004
4/7/2005
10/7/2005
4/7/2006
10/7/2006
4/7/2007
10/7/2007
4/7/2008
10/7/2008
4/7/2009
10/7/2009
4/7/2010
10/7/2010
4/7/2011
10/7/2011
TCE
1,2-DCE
Total VOC
VC
PCE

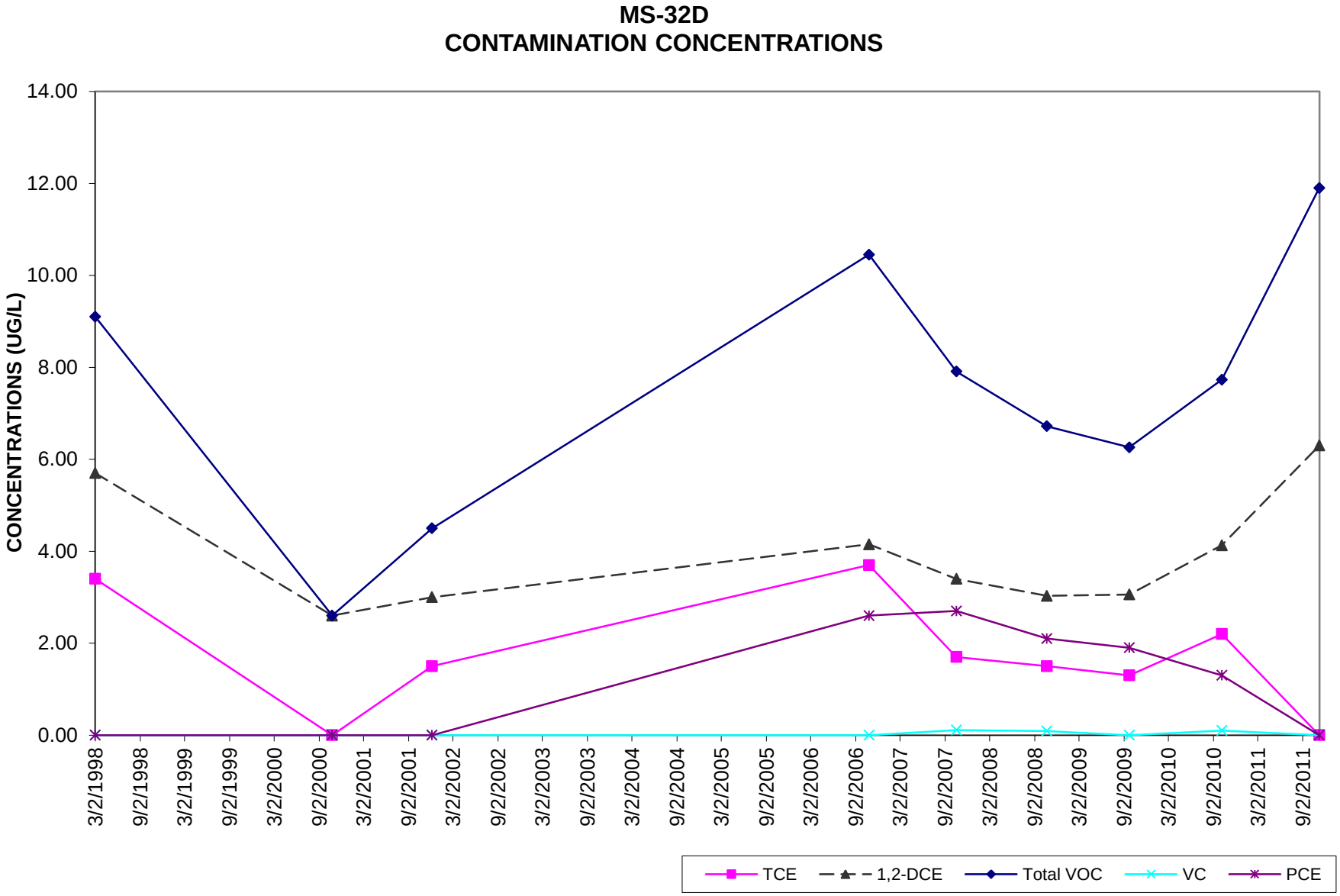

MS-28D
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
2/17/1998
6/17/1998
10/17/1998
2/17/1999
6/17/1999
10/17/1999
2/17/2000
6/17/2000
10/17/2000
2/17/2001
6/17/2001
10/17/2001
2/17/2002
6/17/2002
10/17/2002
2/17/2003
6/17/2003
10/17/2003
2/17/2004
6/17/2004
10/17/2004
2/17/2005
6/17/2005
10/17/2005
2/17/2006
6/17/2006
10/17/2006
2/17/2007
6/17/2007
10/17/2007
2/17/2008
6/17/2008
10/17/2008
2/17/2009
6/17/2009
10/17/2009
2/17/2010
6/17/2010
10/17/2010
2/17/2011
6/17/2011
10/17/2011
TCE
1,2-DCE
Total VOC
VC
PCE

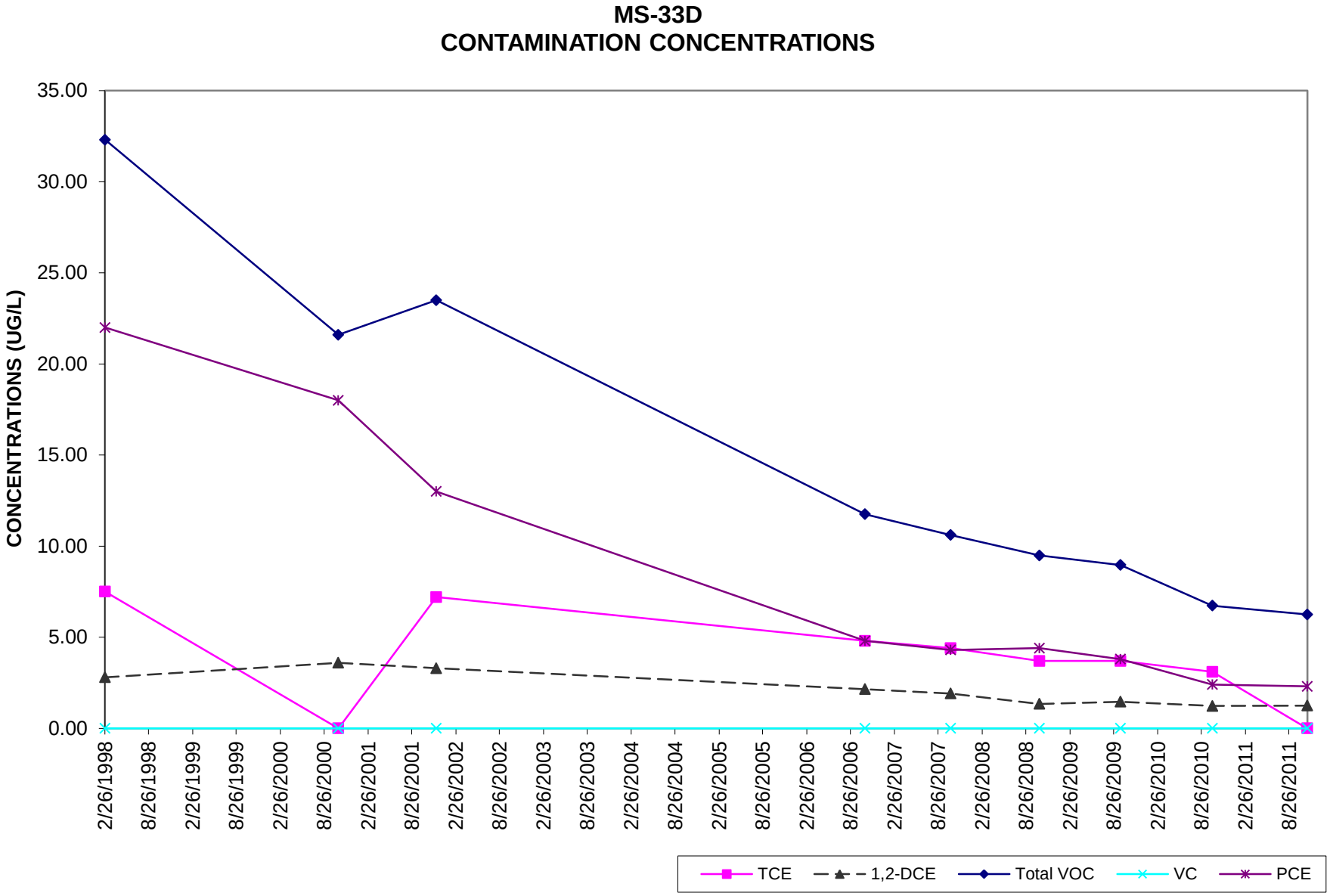

MS-29D
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
2/16/1998
6/16/1998
10/16/1998
2/16/1999
6/16/1999
10/16/1999
2/16/2000
6/16/2000
10/16/2000
2/16/2001
6/16/2001
10/16/2001
2/16/2002
6/16/2002
10/16/2002
2/16/2003
6/16/2003
10/16/2003
2/16/2004
6/16/2004
10/16/2004
2/16/2005
6/16/2005
10/16/2005
2/16/2006
6/16/2006
10/16/2006
2/16/2007
6/16/2007
10/16/2007
2/16/2008
6/16/2008
10/16/2008
2/16/2009
6/16/2009
10/16/2009
2/16/2010
6/16/2010
10/16/2010
2/16/2011
6/16/2011
10/16/2011
TCE
1,2-DCE
Total VOC
VC
PCE

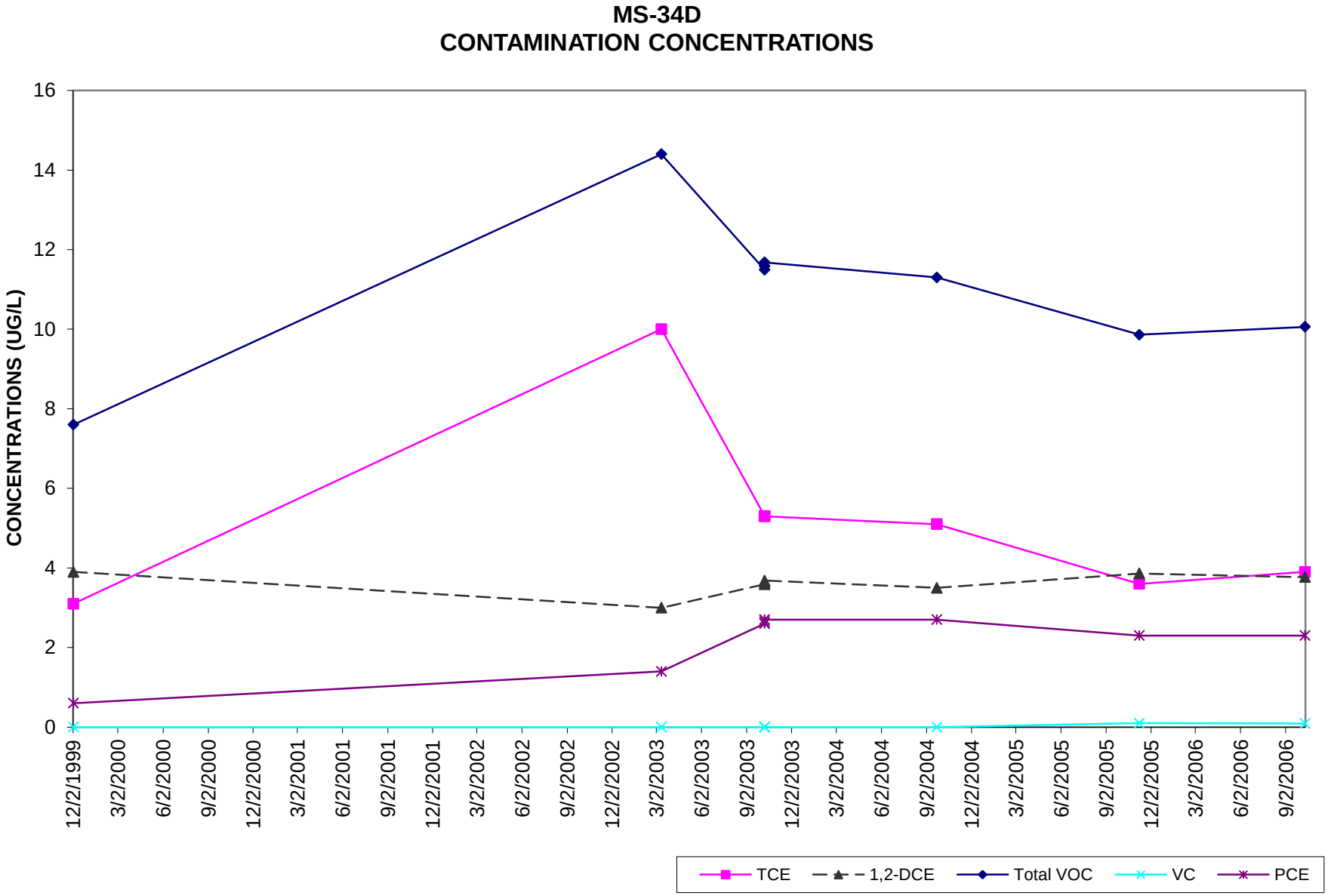

MS-30D
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
3/3/1998
7/3/1998
11/3/1998
3/3/1999
7/3/1999
11/3/1999
3/3/2000
7/3/2000
11/3/2000
3/3/2001
7/3/2001
11/3/2001
3/3/2002
7/3/2002
11/3/2002
3/3/2003
7/3/2003
11/3/2003
3/3/2004
7/3/2004
11/3/2004
3/3/2005
7/3/2005
11/3/2005
3/3/2006
7/3/2006
11/3/2006
3/3/2007
7/3/2007
11/3/2007
3/3/2008
7/3/2008
11/3/2008
3/3/2009
7/3/2009
11/3/2009
3/3/2010
7/3/2010
11/3/2010
3/3/2011
7/3/2011
11/3/2011
TCE
1,2-DCE
Total VOC
VC
PCE

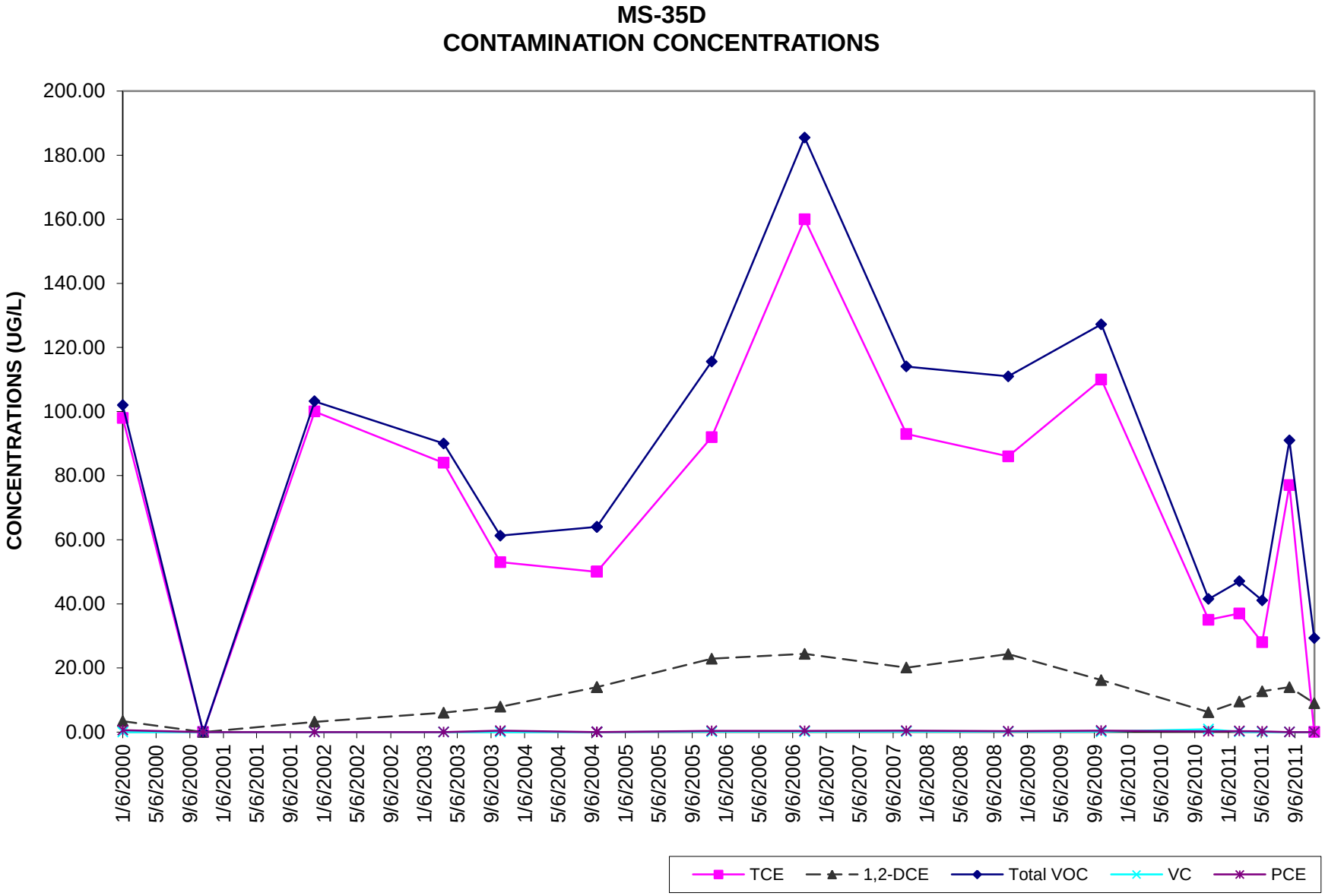

MS-30I
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
200.00
180.00
160.00
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
2/1/1998
8/1/1998
2/1/1999
8/1/1999
2/1/2000
8/1/2000
2/1/2001
8/1/2001
2/1/2002
8/1/2002
2/1/2003
8/1/2003
2/1/2004
8/1/2004
2/1/2005
8/1/2005
2/1/2006
8/1/2006
2/1/2007
8/1/2007
2/1/2008
8/1/2008
2/1/2009
8/1/2009
2/1/2010
8/1/2010
2/1/2011
8/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE


MS-31D
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
2/26/1998
8/26/1998
2/26/1999
8/26/1999
2/26/2000
8/26/2000
2/26/2001
8/26/2001
2/26/2002
8/26/2002
2/26/2003
8/26/2003
2/26/2004
8/26/2004
2/26/2005
8/26/2005
2/26/2006
8/26/2006
2/26/2007
8/26/2007
2/26/2008
8/26/2008
2/26/2009
8/26/2009
2/26/2010
8/26/2010
2/26/2011
8/26/2011
TCE
1,2-DCE
Total VOC
VC
PCE


MS-32D
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
3/2/1998
9/2/1998
3/2/1999
9/2/1999
3/2/2000
9/2/2000
3/2/2001
9/2/2001
3/2/2002
9/2/2002
3/2/2003
9/2/2003
3/2/2004
9/2/2004
3/2/2005
9/2/2005
3/2/2006
9/2/2006
3/2/2007
9/2/2007
3/2/2008
9/2/2008
3/2/2009
9/2/2009
3/2/2010
9/2/2010
3/2/2011
9/2/2011
TCE
1,2-DCE
Total VOC
VC
PCE


MS-33D
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
2/26/1998
8/26/1998
2/26/1999
8/26/1999
2/26/2000
8/26/2000
2/26/2001
8/26/2001
2/26/2002
8/26/2002
2/26/2003
8/26/2003
2/26/2004
8/26/2004
2/26/2005
8/26/2005
2/26/2006
8/26/2006
2/26/2007
8/26/2007
2/26/2008
8/26/2008
2/26/2009
8/26/2009
2/26/2010
8/26/2010
2/26/2011
8/26/2011
TCE
1,2-DCE
Total VOC
VC
PCE


MS-34D
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
16
14
12
10
8
6
4
2
0
12/2/1999
3/2/2000
6/2/2000
9/2/2000
12/2/2000
3/2/2001
6/2/2001
9/2/2001
12/2/2001
3/2/2002
6/2/2002
9/2/2002
12/2/2002
3/2/2003
6/2/2003
9/2/2003
12/2/2003
3/2/2004
6/2/2004
9/2/2004
12/2/2004
3/2/2005
6/2/2005
9/2/2005
12/2/2005
3/2/2006
6/2/2006
9/2/2006
TCE
1,2-DCE
Total VOC
VC
PCE


MS-35D
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
200.00
180.00
160.00
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
1/6/2000
5/6/2000
9/6/2000
1/6/2001
5/6/2001
9/6/2001
1/6/2002
5/6/2002
9/6/2002
1/6/2003
5/6/2003
9/6/2003
1/6/2004
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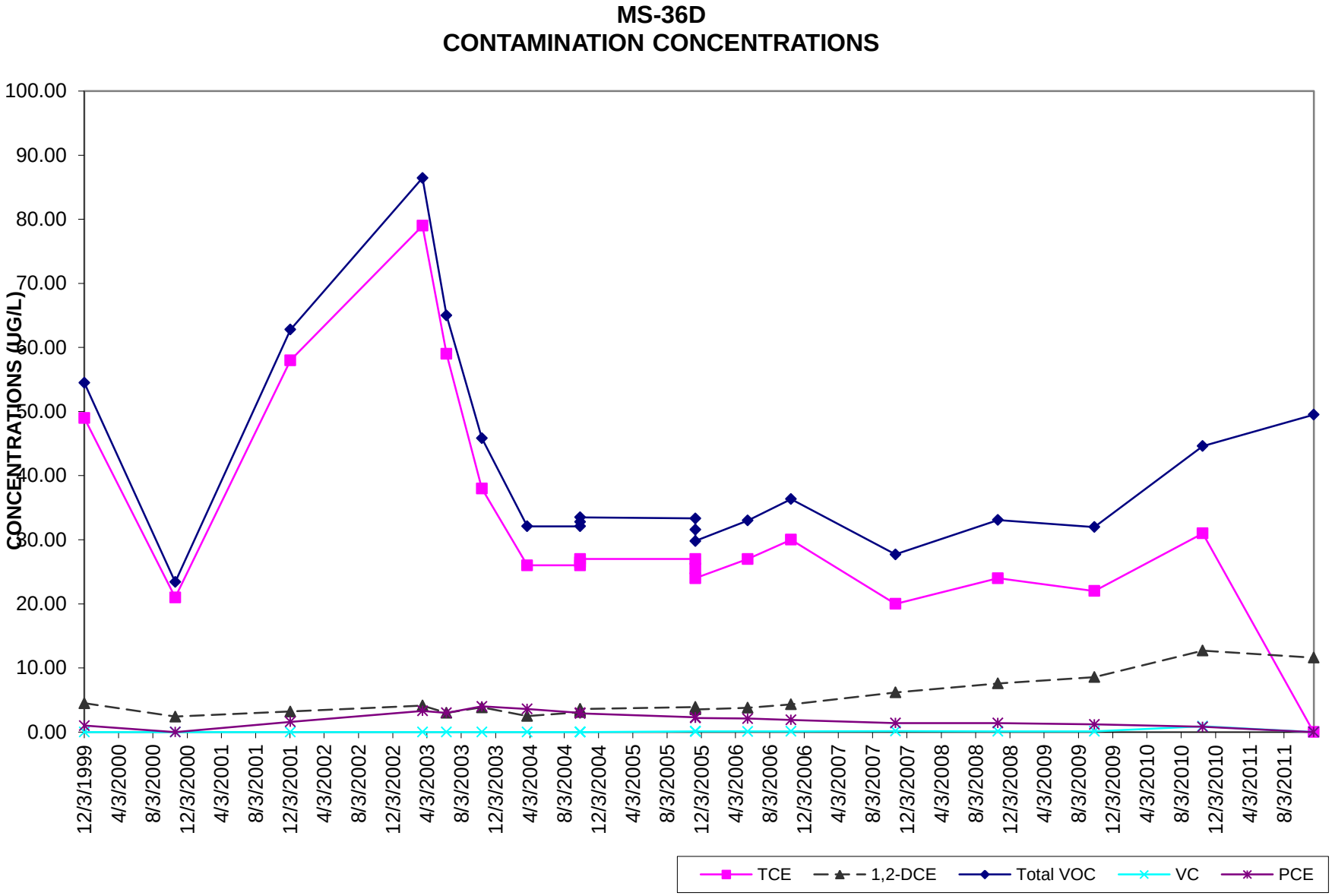
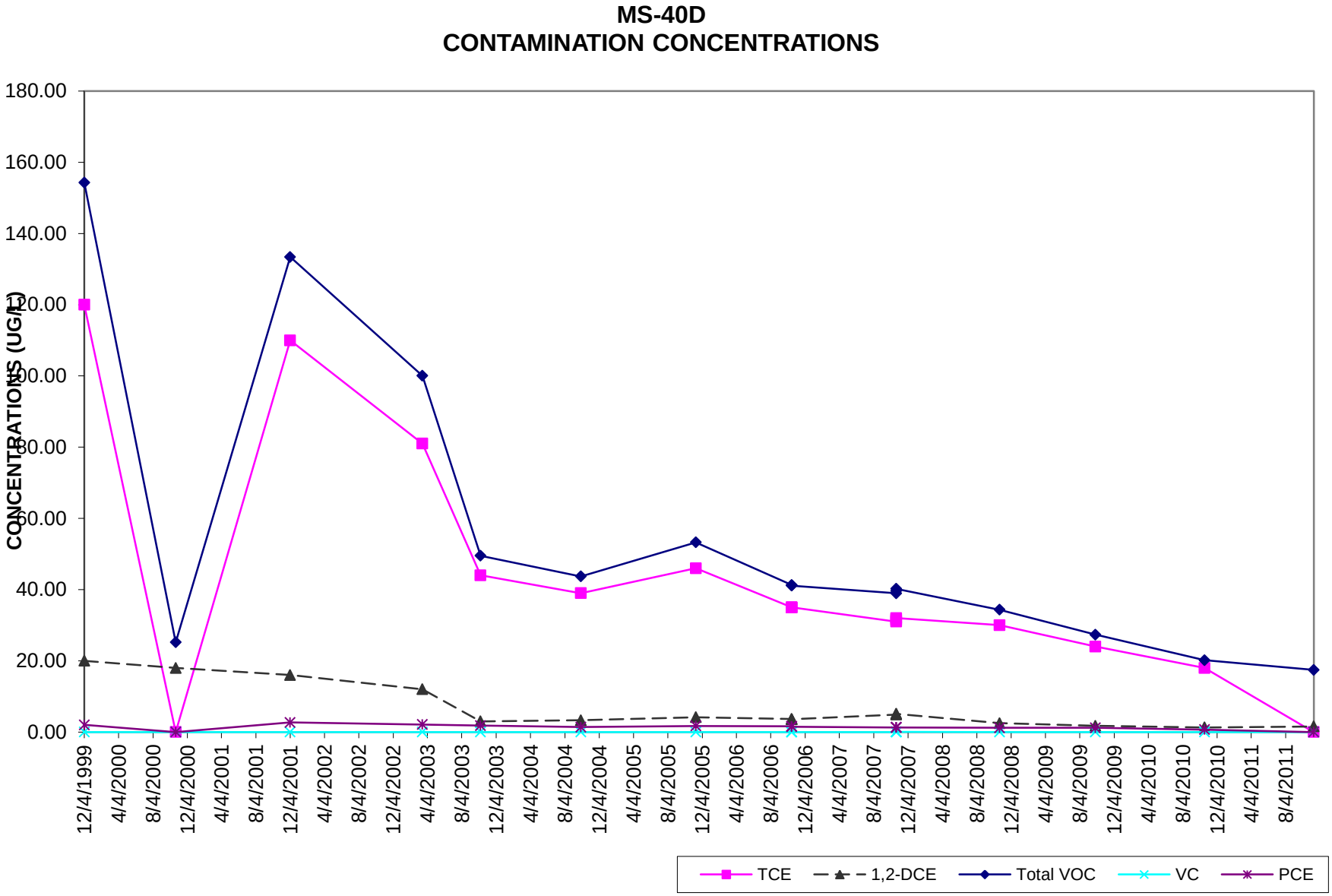
9/6/2004
1/6/2005
5/6/2005
9/6/2005
1/6/2006
5/6/2006
9/6/2006
1/6/2007
5/6/2007
9/6/2007
1/6/2008
5/6/2008
9/6/2008
1/6/2009
5/6/2009
9/6/2009
1/6/2010
5/6/2010
9/6/2010
1/6/2011
5/6/2011
9/6/2011
TCE
1,2-DCE
Total VOC
VC
PCE


MS-36D
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
12/3/1999
4/3/2000
8/3/2000
12/3/2000
4/3/2001
8/3/2001
12/3/2001
4/3/2002
8/3/2002
12/3/2002
4/3/2003
8/3/2003
12/3/2003
4/3/2004
8/3/2004
12/3/2004
4/3/2005
8/3/2005
12/3/2005
4/3/2006
8/3/2006
12/3/2006
4/3/2007
8/3/2007
12/3/2007
4/3/2008
8/3/2008
12/3/2008
4/3/2009
8/3/2009
12/3/2009
4/3/2010
8/3/2010
12/3/2010
4/3/2011
8/3/2011
TCE
1,2-DCE
Total VOC
VC
PCE


MS-40D
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
180.00
160.00
140.00
120.00
100.00
80.00
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20.00
0.00
12/4/1999
4/4/2000
8/4/2000
12/4/2000
4/4/2001
8/4/2001
12/4/2001
4/4/2002
8/4/2002
12/4/2002
4/4/2003
8/4/2003
12/4/2003
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8/4/2004
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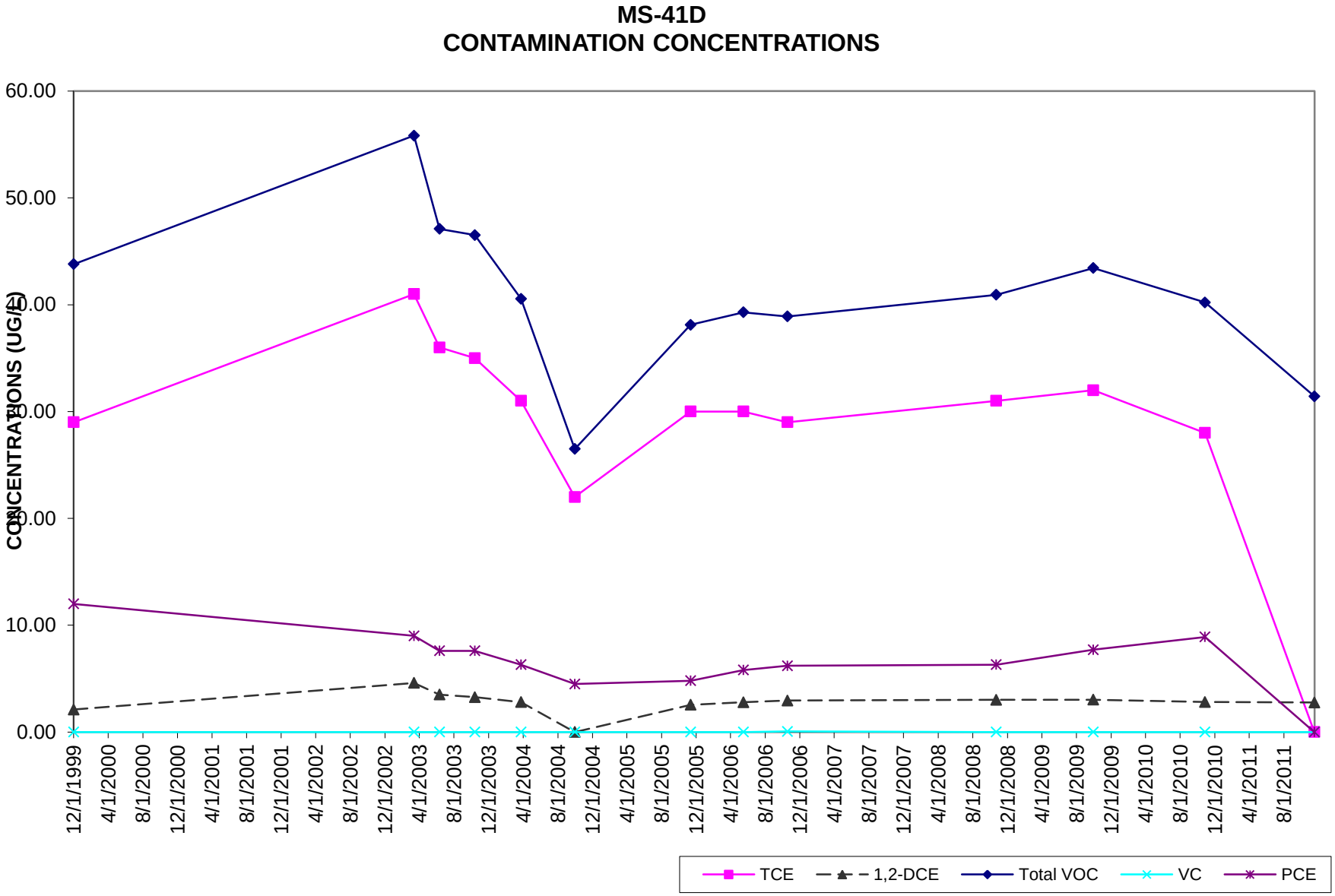
8/4/2005
12/4/2005
4/4/2006
8/4/2006
12/4/2006
4/4/2007
8/4/2007
12/4/2007
4/4/2008
8/4/2008
12/4/2008
4/4/2009
8/4/2009
12/4/2009
4/4/2010
8/4/2010
12/4/2010
4/4/2011
8/4/2011
TCE
1,2-DCE
Total VOC
VC
PCE


MS-41D
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
60.00
50.00
40.00
30.00
20.00
10.00
0.00
12/1/1999
4/1/2000
8/1/2000
12/1/2000
4/1/2001
8/1/2001
12/1/2001
4/1/2002
8/1/2002
12/1/2002
4/1/2003
8/1/2003
12/1/2003
4/1/2004
8/1/2004
12/1/2004
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12/1/2005
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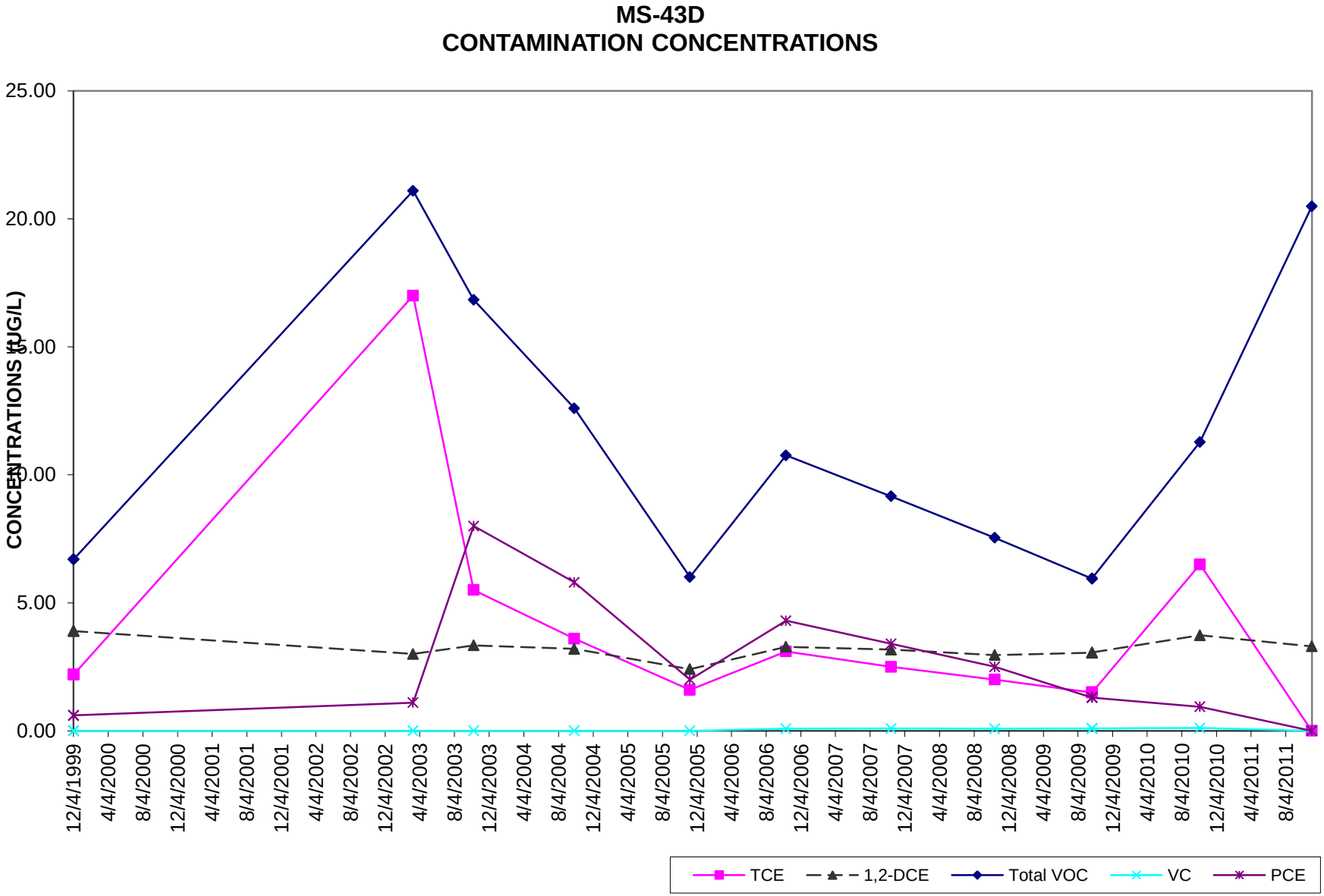
12/1/2006
4/1/2007
8/1/2007
12/1/2007
4/1/2008
8/1/2008
12/1/2008
4/1/2009
8/1/2009
12/1/2009
4/1/2010
8/1/2010
12/1/2010
4/1/2011
8/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE


MS-43D
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
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20.00
15.00
10.00
5.00
0.00
12/4/1999
4/4/2000
8/4/2000
12/4/2000
4/4/2001
8/4/2001
12/4/2001
4/4/2002
8/4/2002
12/4/2002
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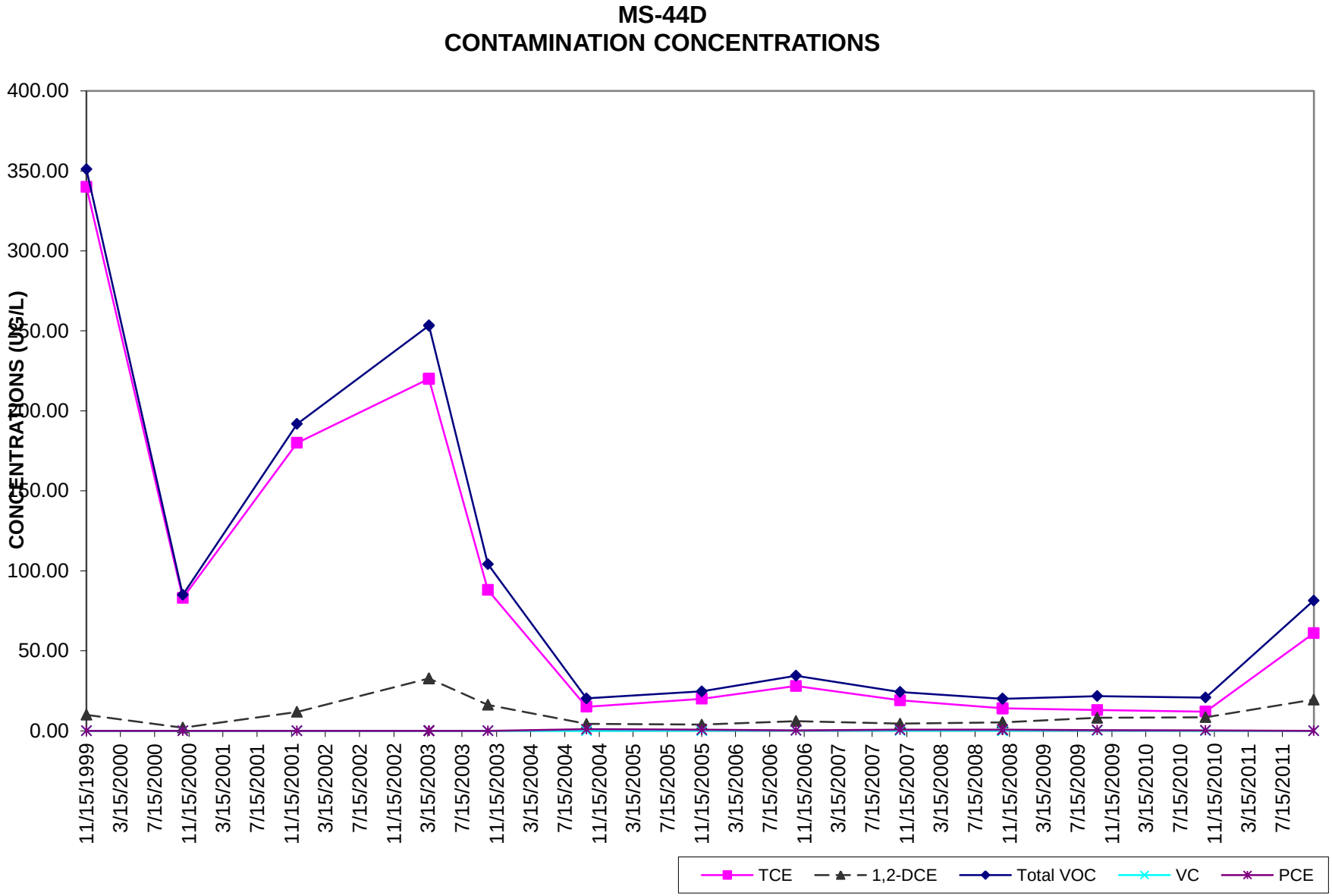
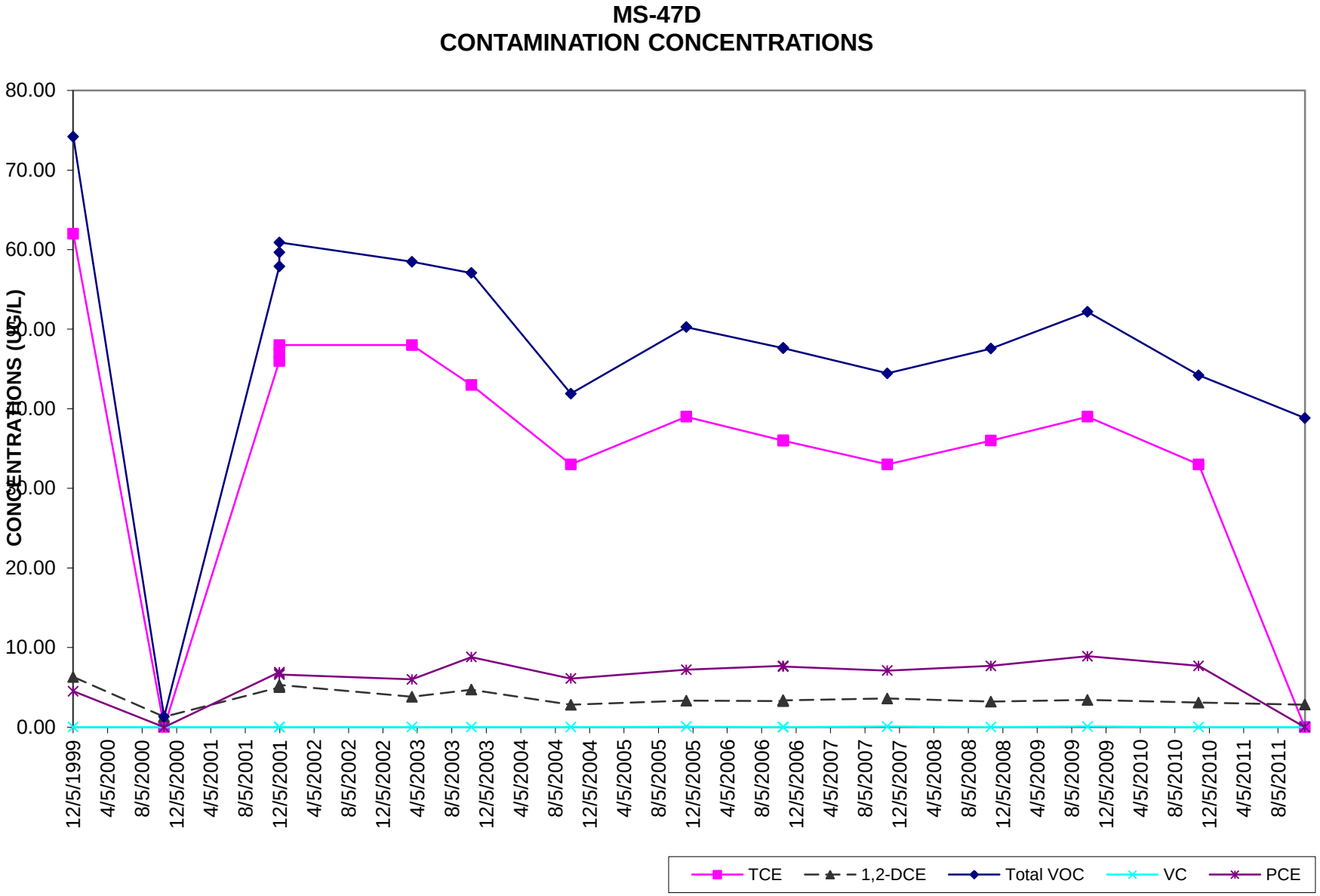
12/4/2005
4/4/2006
8/4/2006
12/4/2006
4/4/2007
8/4/2007
12/4/2007
4/4/2008
8/4/2008
12/4/2008
4/4/2009
8/4/2009
12/4/2009
4/4/2010
8/4/2010
12/4/2010
4/4/2011
8/4/2011
TCE
1,2-DCE
Total VOC
VC
PCE


MS-44D
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
400.00
350.00
300.00
250.00
200.00
150.00
100.00
50.00
0.00
11/15/1999
3/15/2000
7/15/2000
11/15/2000
3/15/2001
7/15/2001
11/15/2001
3/15/2002
7/15/2002
11/15/2002
3/15/2003
7/15/2003
11/15/2003
3/15/2004
7/15/2004
11/15/2004
3/15/2005
7/15/2005
11/15/2005
3/15/2006
7/15/2006
11/15/2006
3/15/2007
7/15/2007
11/15/2007
3/15/2008
7/15/2008
11/15/2008
3/15/2009
7/15/2009
11/15/2009
3/15/2010
7/15/2010
11/15/2010
3/15/2011
7/15/2011
TCE
1,2-DCE
Total VOC
VC
PCE


MS-47D
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
12/5/1999
4/5/2000
8/5/2000
12/5/2000
4/5/2001
8/5/2001
12/5/2001
4/5/2002
8/5/2002
12/5/2002
4/5/2003
8/5/2003
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8/5/2004
12/5/2004
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12/5/2005
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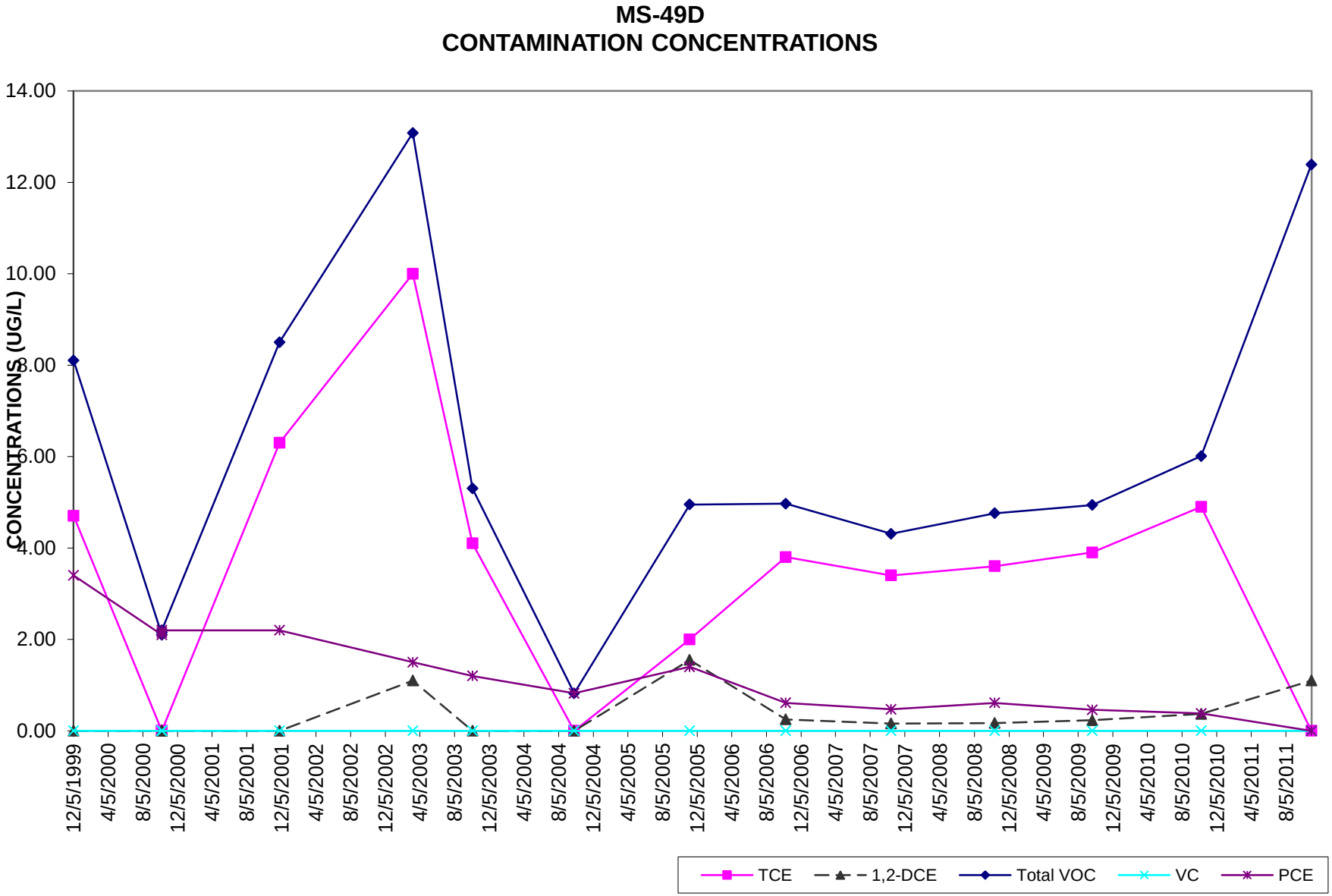
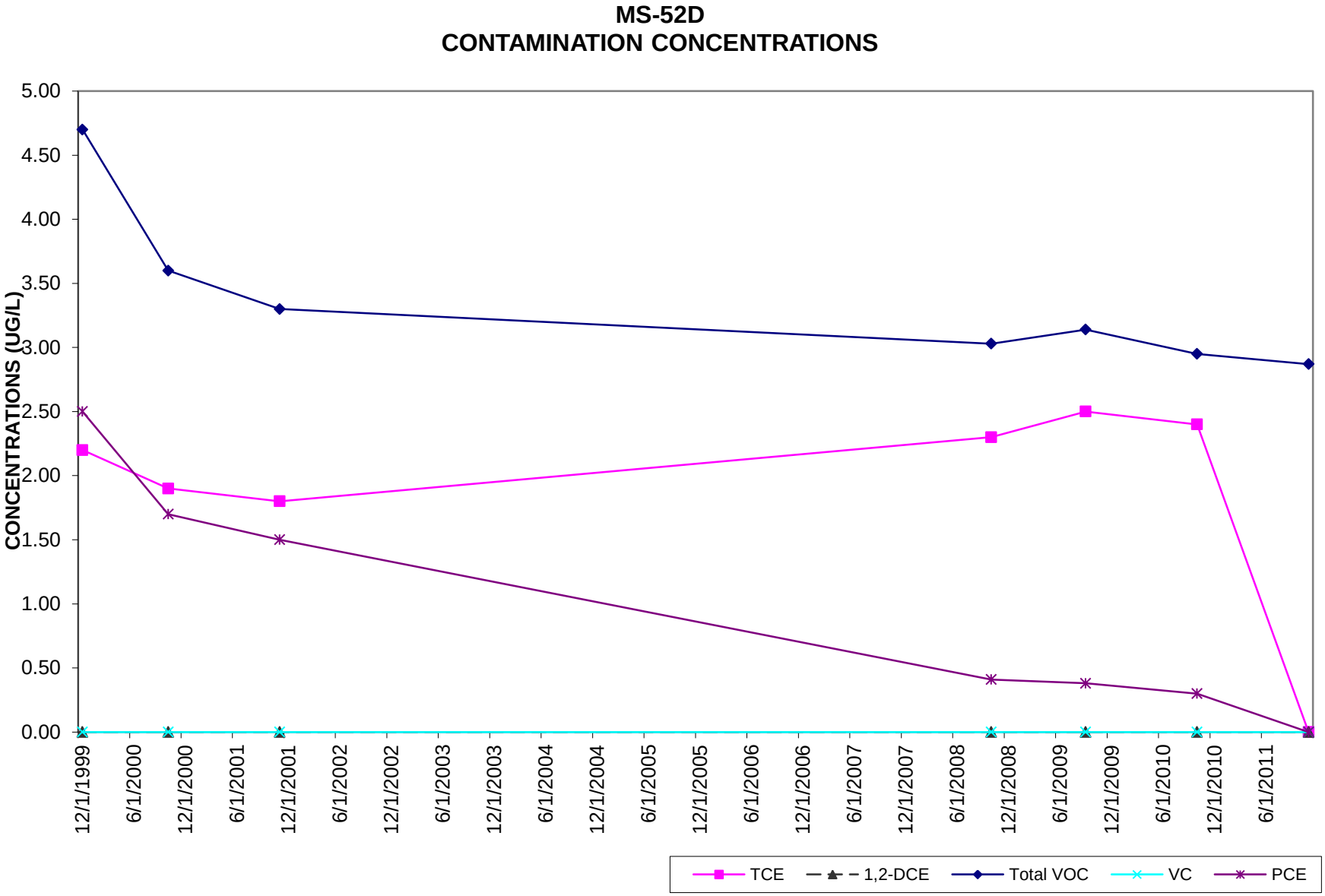
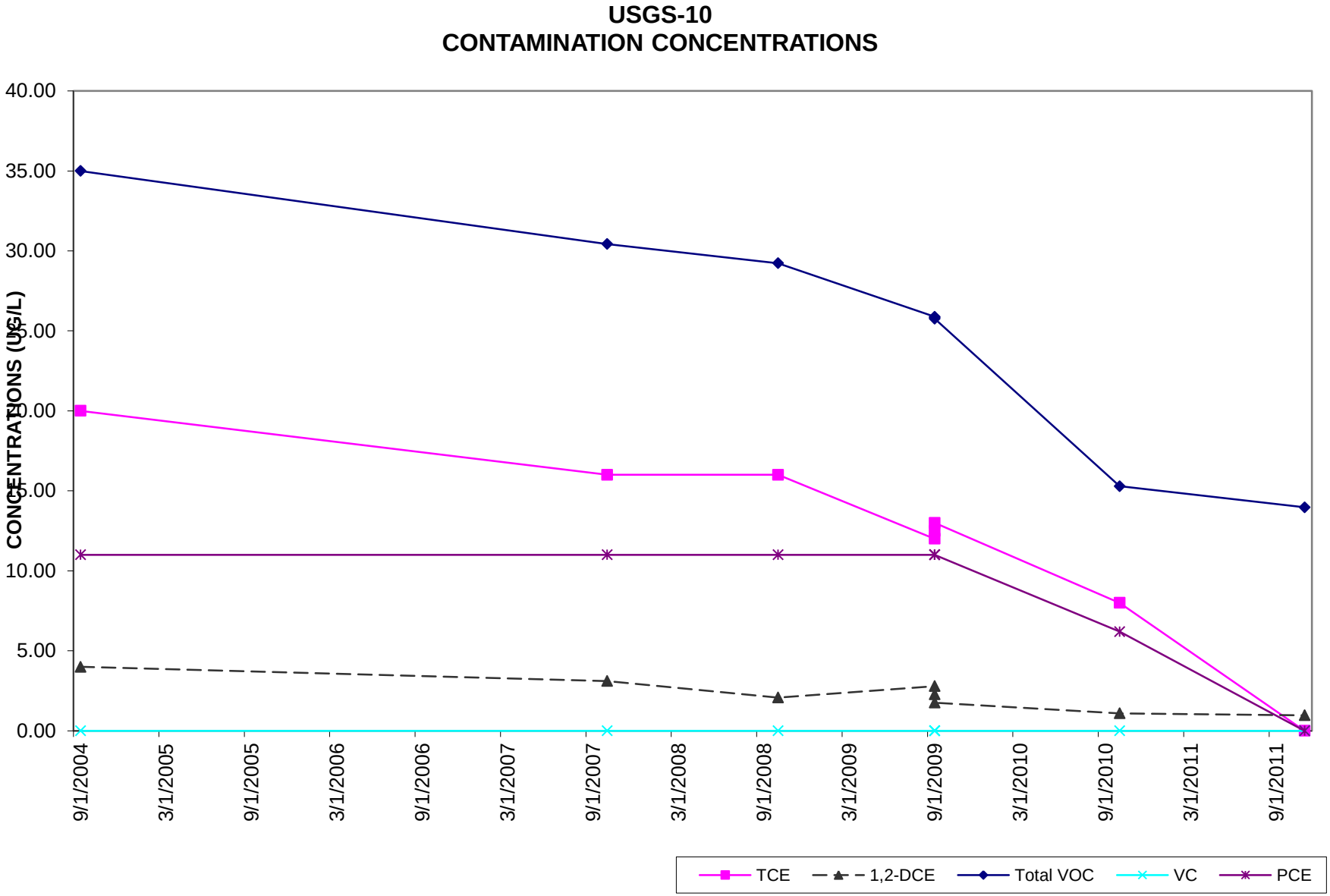
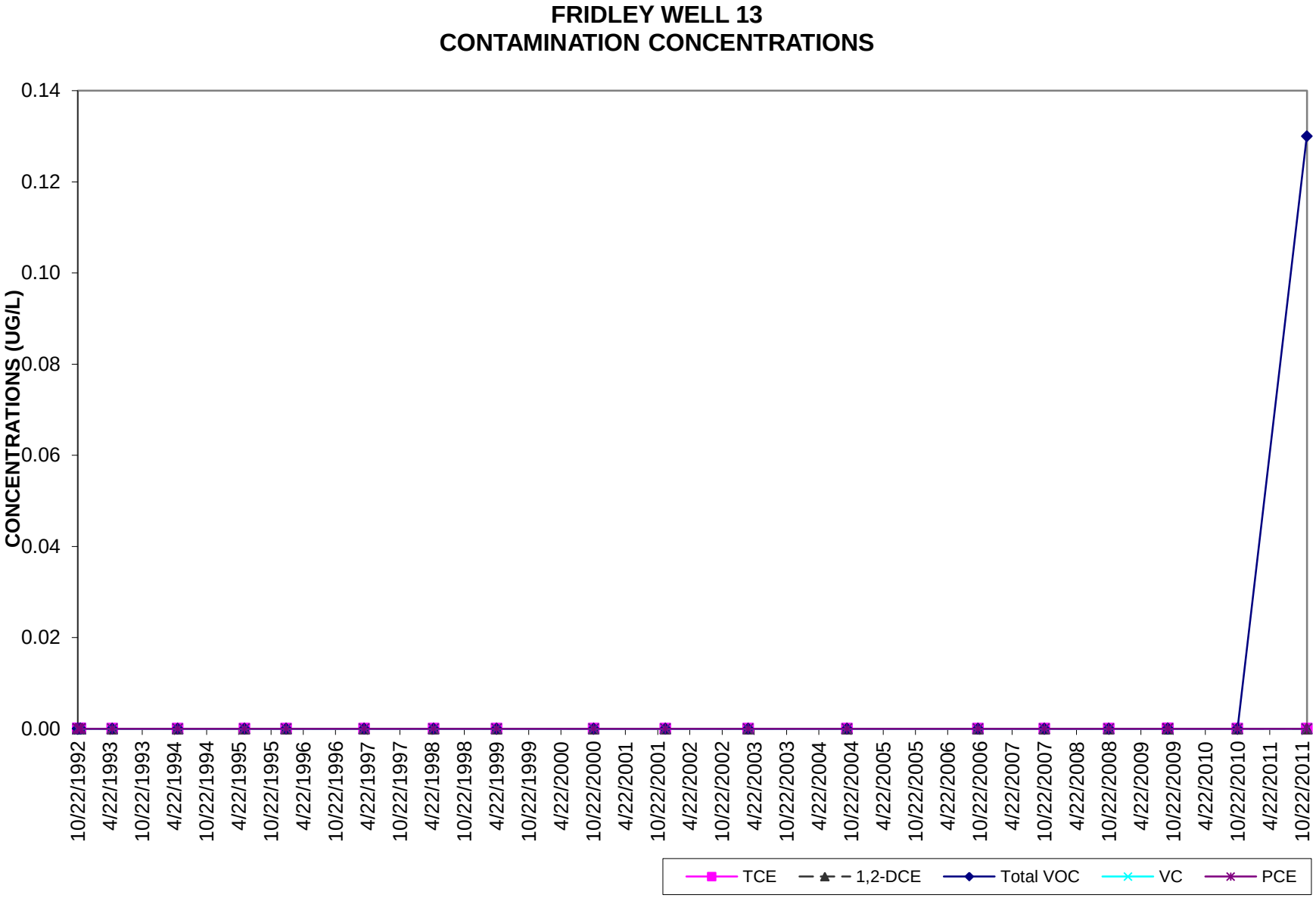
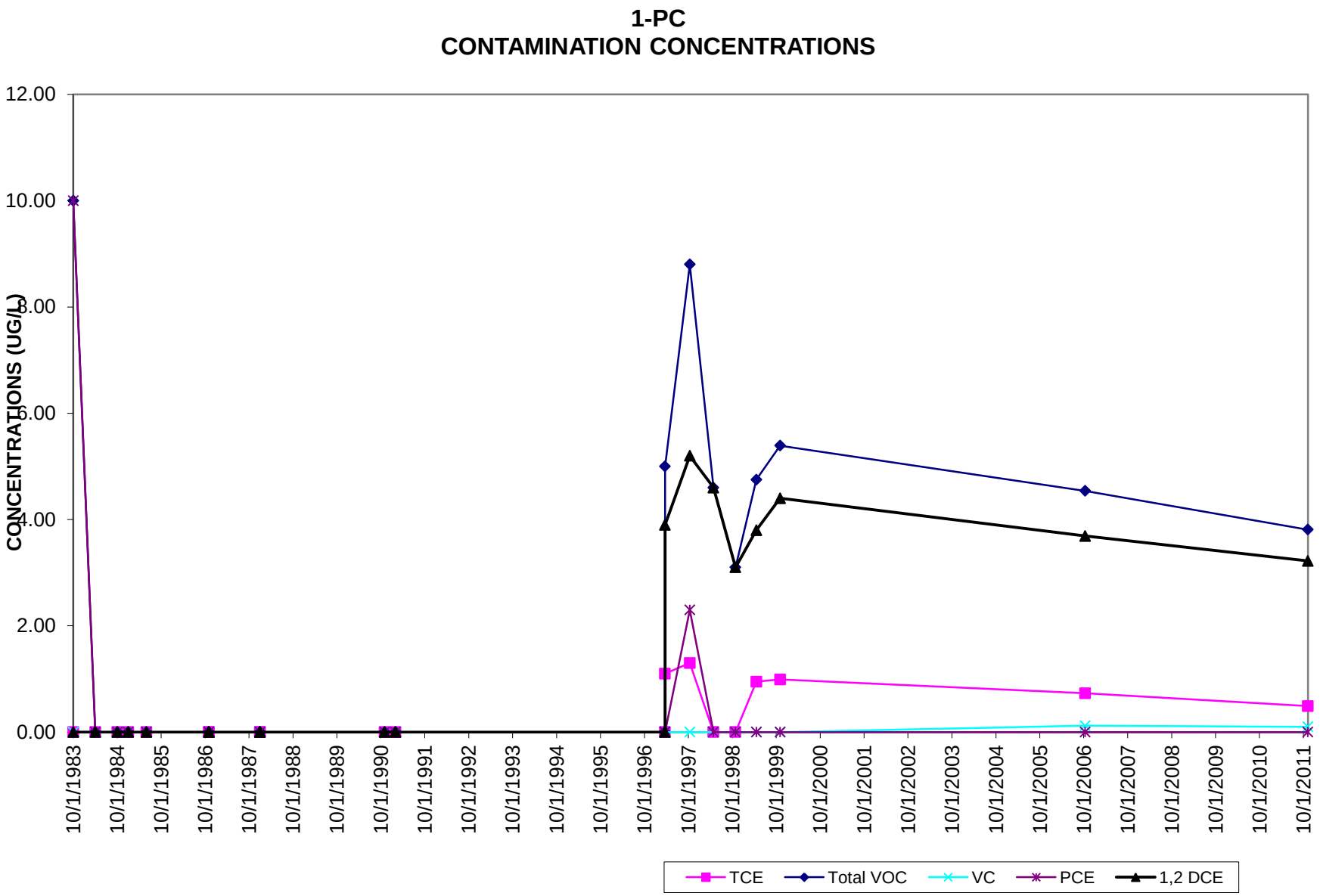
12/5/2006
4/5/2007
8/5/2007
12/5/2007
4/5/2008
8/5/2008
12/5/2008
4/5/2009
8/5/2009
12/5/2009
4/5/2010
8/5/2010
12/5/2010
4/5/2011
8/5/2011
TCE
1,2-DCE
Total VOC
VC
PCE


MS-49D
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
12/5/1999
4/5/2000
8/5/2000
12/5/2000
4/5/2001
8/5/2001
12/5/2001
4/5/2002
8/5/2002
12/5/2002
4/5/2003
8/5/2003
12/5/2003
4/5/2004
8/5/2004
12/5/2004
4/5/2005
8/5/2005
12/5/2005
4/5/2006
8/5/2006
12/5/2006
4/5/2007
8/5/2007
12/5/2007
4/5/2008
8/5/2008
12/5/2008
4/5/2009
8/5/2009
12/5/2009
4/5/2010
8/5/2010
12/5/2010
4/5/2011
8/5/2011
TCE
1,2-DCE
Total VOC
VC
PCE


MS-52D
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
5.00
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
12/1/1999
6/1/2000
12/1/2000
6/1/2001
12/1/2001
6/1/2002
12/1/2002
6/1/2003
12/1/2003
6/1/2004
12/1/2004
6/1/2005
12/1/2005
6/1/2006
12/1/2006
6/1/2007
12/1/2007
6/1/2008
12/1/2008
6/1/2009
12/1/2009
6/1/2010
12/1/2010
6/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE


USGS-10
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
9/1/2004
3/1/2005
9/1/2005
3/1/2006
9/1/2006
3/1/2007
9/1/2007
3/1/2008
9/1/2008
3/1/2009
9/1/2009
3/1/2010
9/1/2010
3/1/2011
9/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE


FRIDLEY WELL 13
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
10/22/1992
4/22/1993
10/22/1993
4/22/1994
10/22/1994
4/22/1995
10/22/1995
4/22/1996
10/22/1996
4/22/1997
10/22/1997
4/22/1998
10/22/1998
4/22/1999
10/22/1999
4/22/2000
10/22/2000
4/22/2001
10/22/2001
4/22/2002
10/22/2002
4/22/2003
10/22/2003
4/22/2004
10/22/2004
4/22/2005
10/22/2005
4/22/2006
10/22/2006
4/22/2007
10/22/2007
4/22/2008
10/22/2008
4/22/2009
10/22/2009
4/22/2010
10/22/2010
4/22/2011
10/22/2011
TCE
1,2-DCE
Total VOC
VC
PCE


1-PC
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
12.00
10.00
8.00
6.00
4.00
2.00
0.00
10/1/1983
10/1/1984
10/1/1985
10/1/1986
10/1/1987
10/1/1988
10/1/1989
10/1/1990
10/1/1991
10/1/1992
10/1/1993
10/1/1994
10/1/1995
10/1/1996
10/1/1997
10/1/1998
10/1/1999
10/1/2000
10/1/2001
10/1/2002
10/1/2003
10/1/2004
10/1/2005
10/1/2006
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10/1/2009
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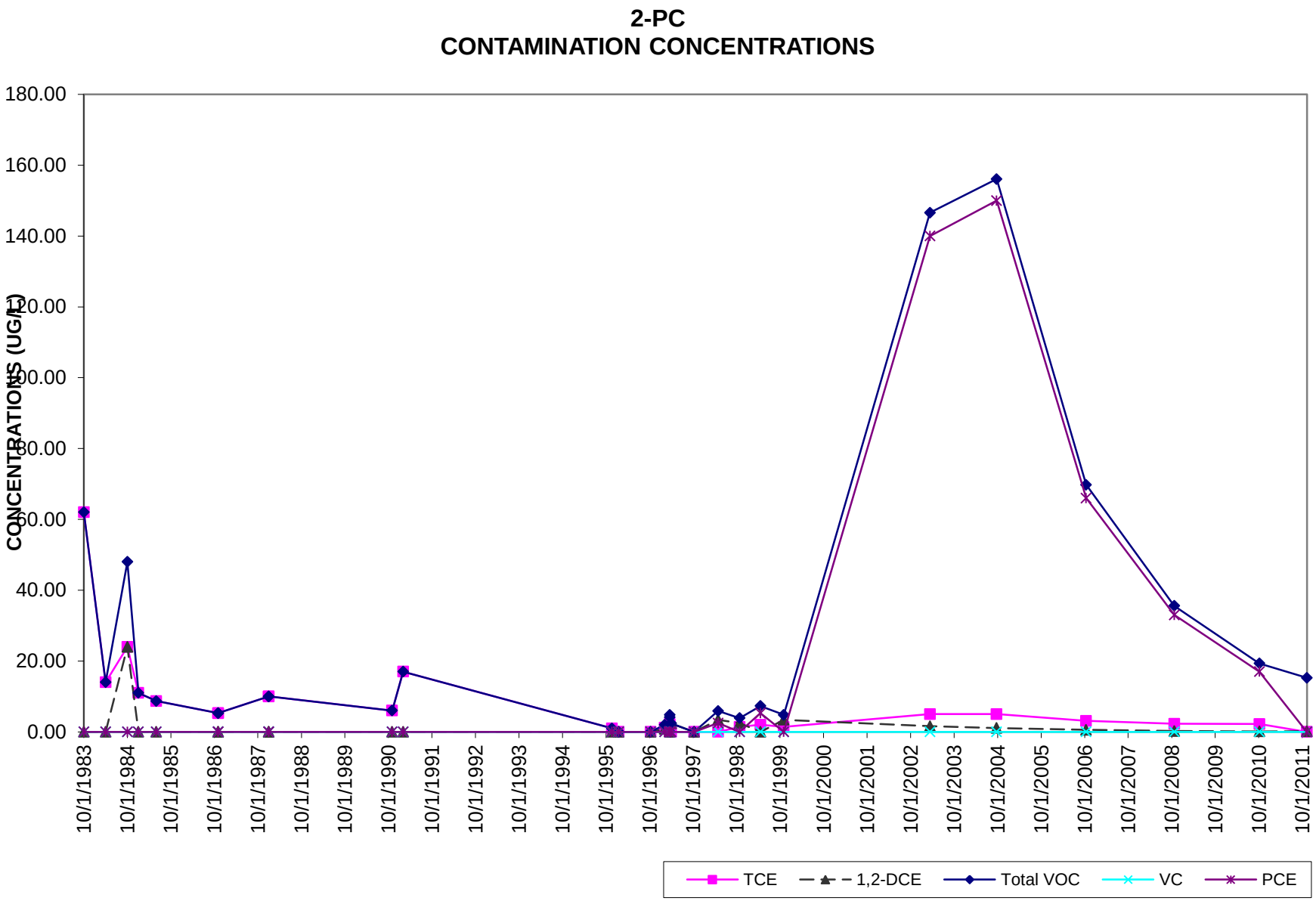
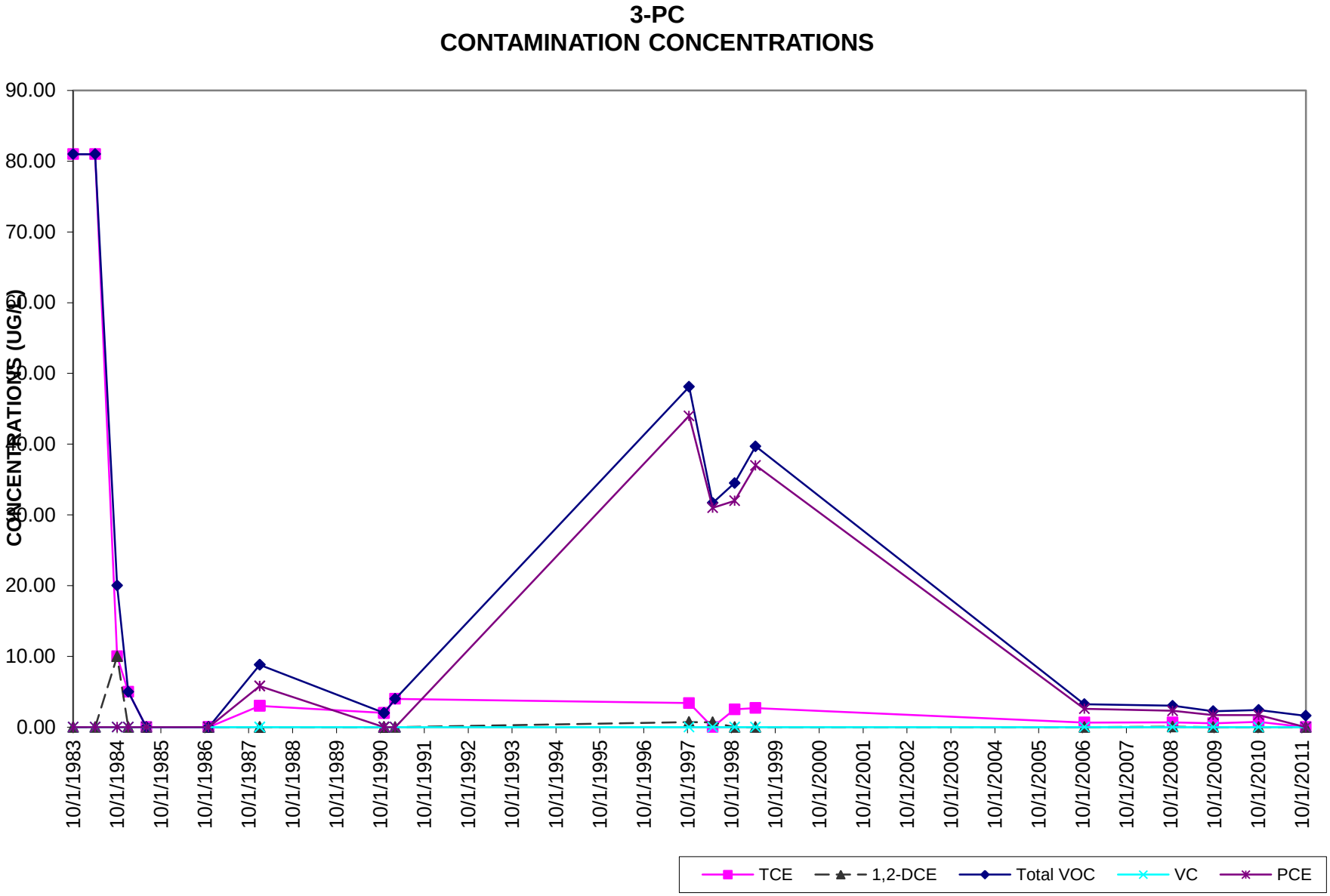
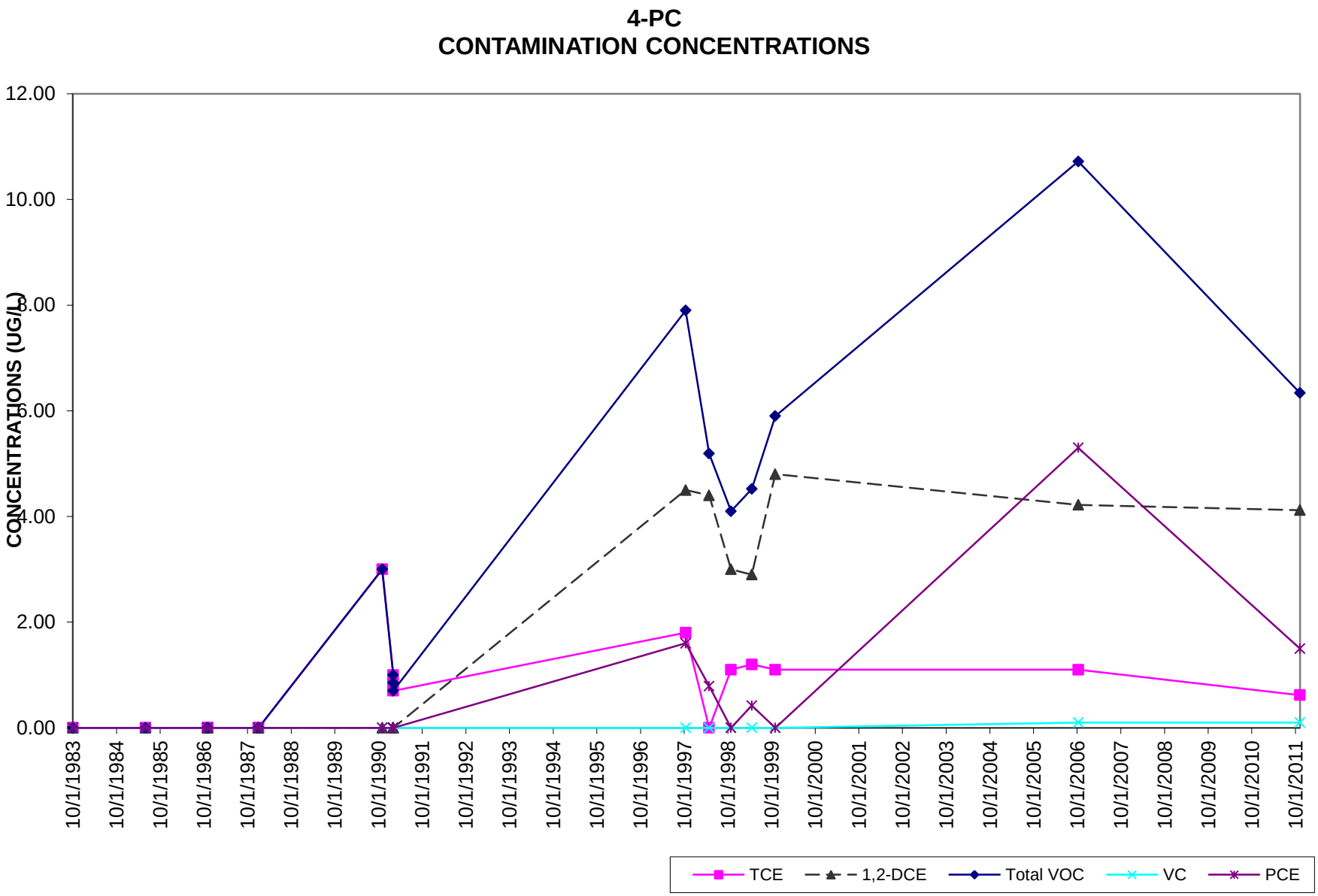
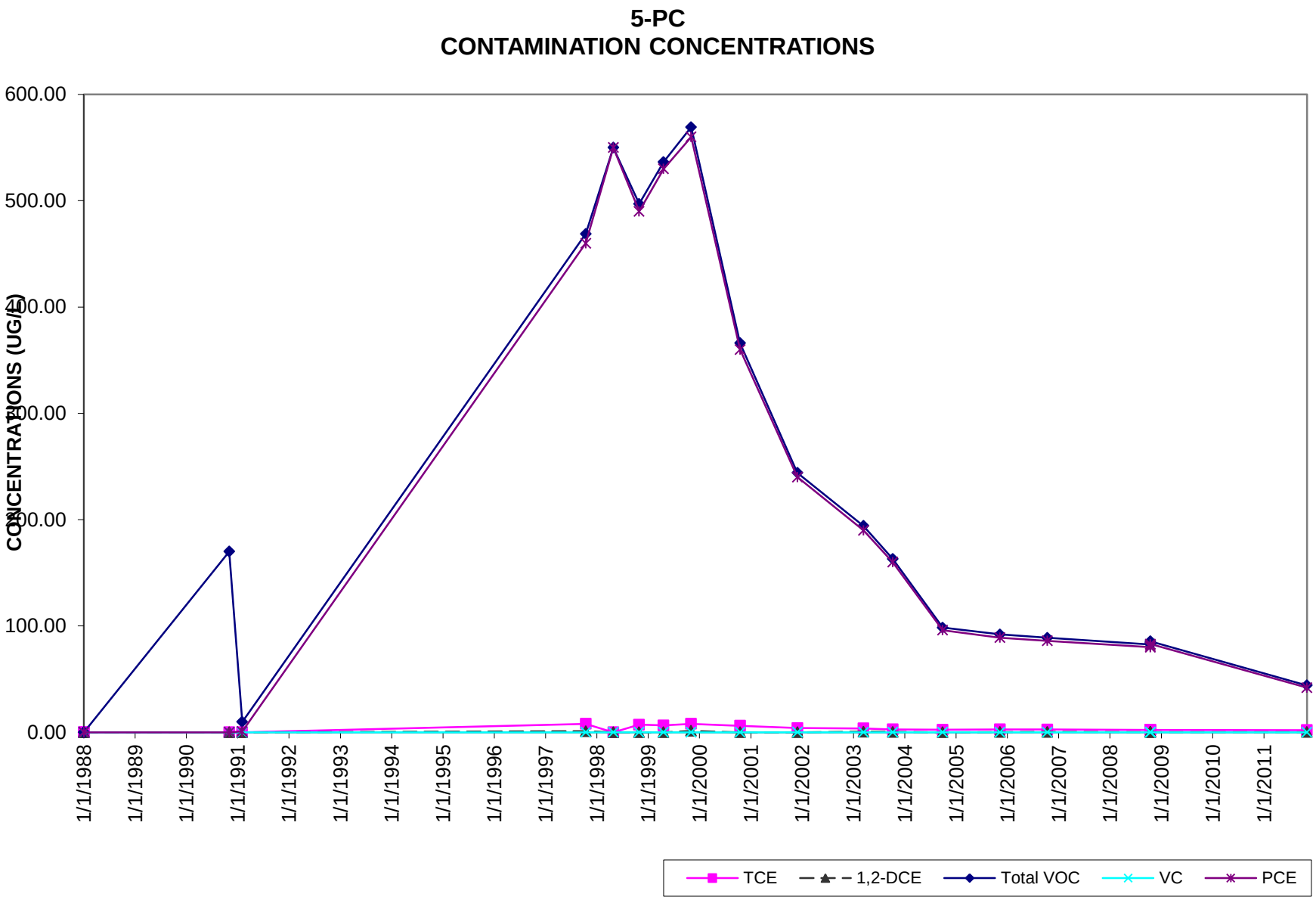
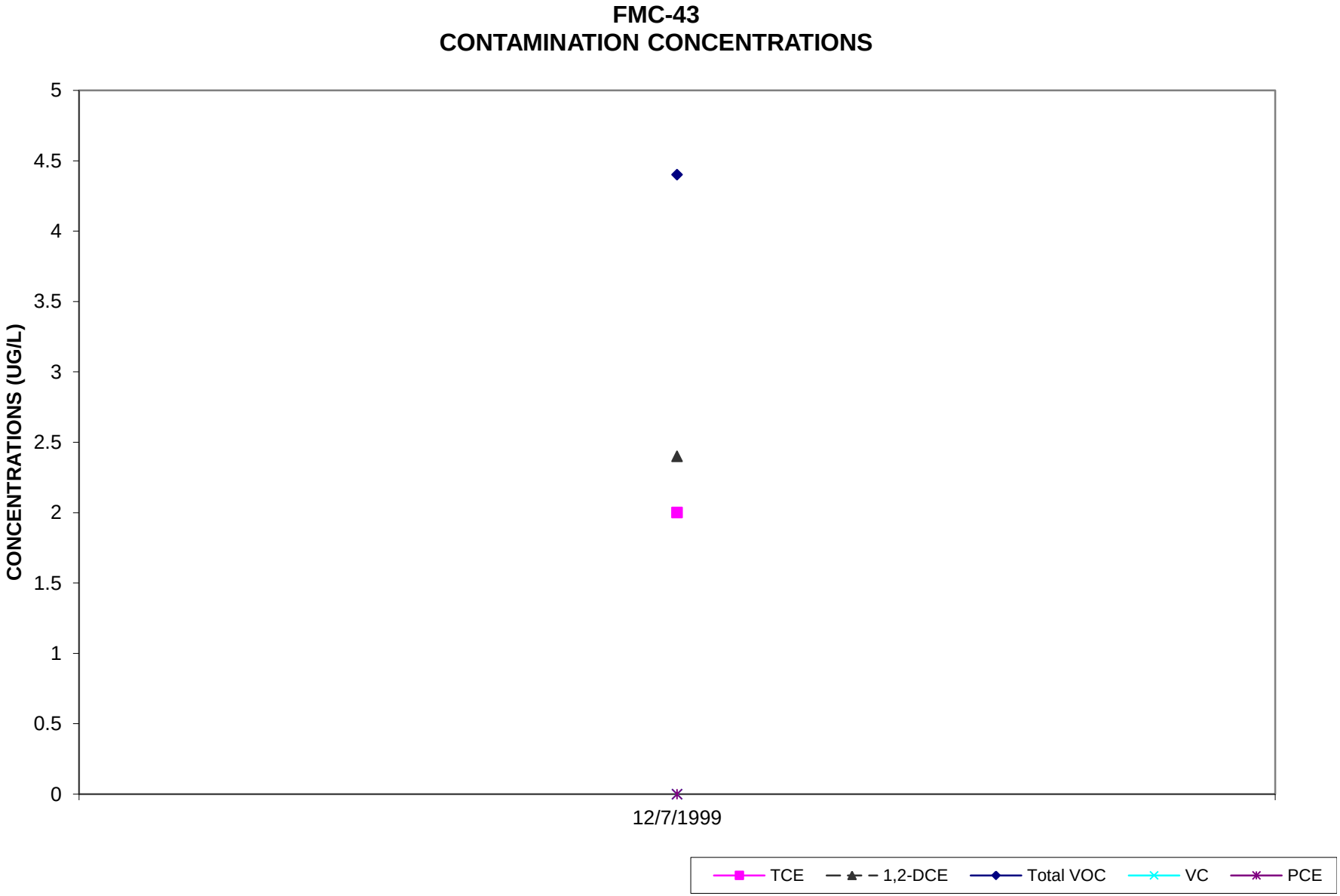
10/1/2011
TCE
Total VOC
VC
PCE
1,2 DCE

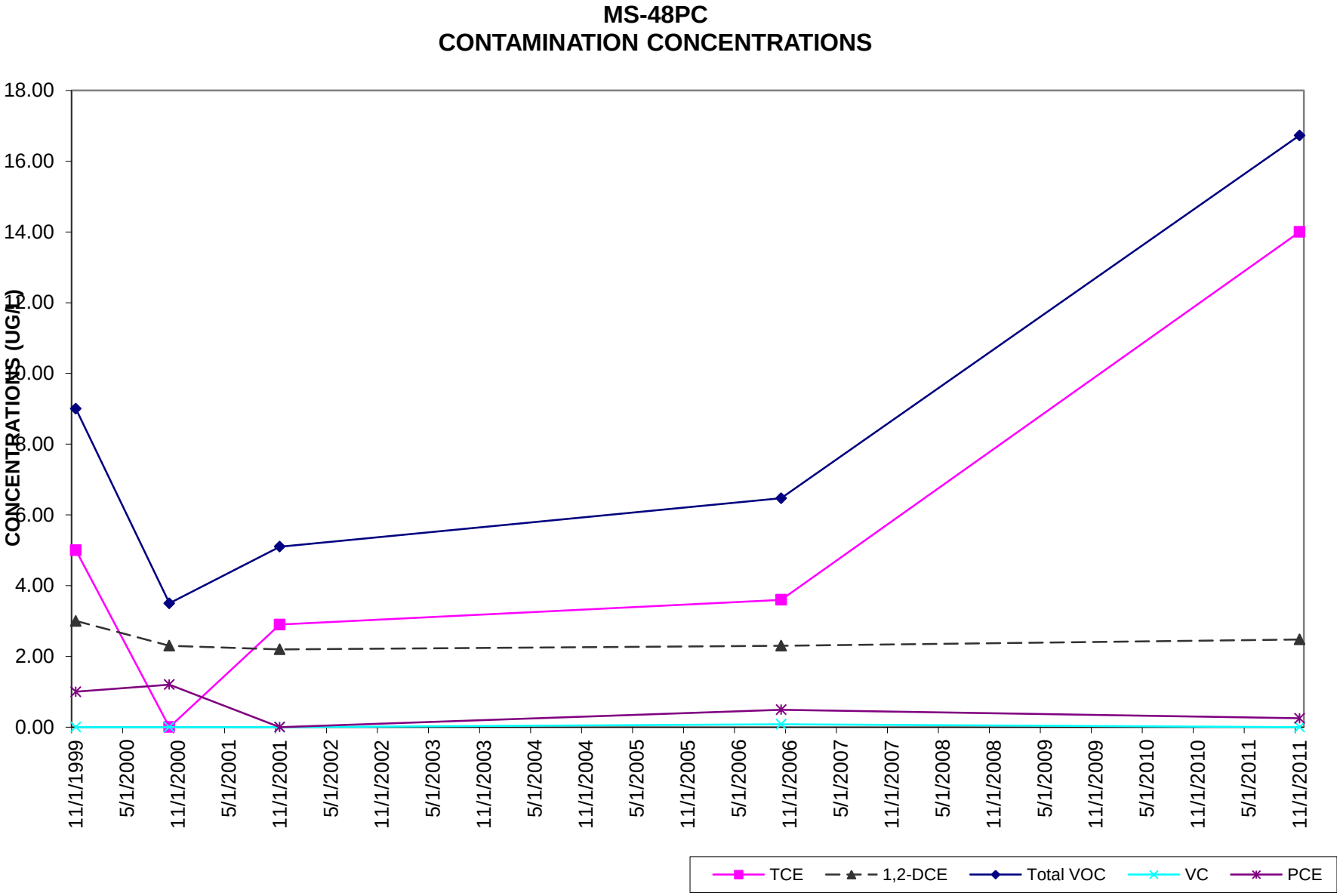

2-PC
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
180.00
160.00
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
10/1/1983
10/1/1984
10/1/1985
10/1/1986
10/1/1987
10/1/1988
10/1/1989
10/1/1990
10/1/1991
10/1/1992
10/1/1993
10/1/1994
10/1/1995
10/1/1996
10/1/1997
10/1/1998
10/1/1999
10/1/2000
10/1/2001
10/1/2002
10/1/2003
10/1/2004
10/1/2005
10/1/2006
10/1/2007
10/1/2008
10/1/2009
10/1/2010
10/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE

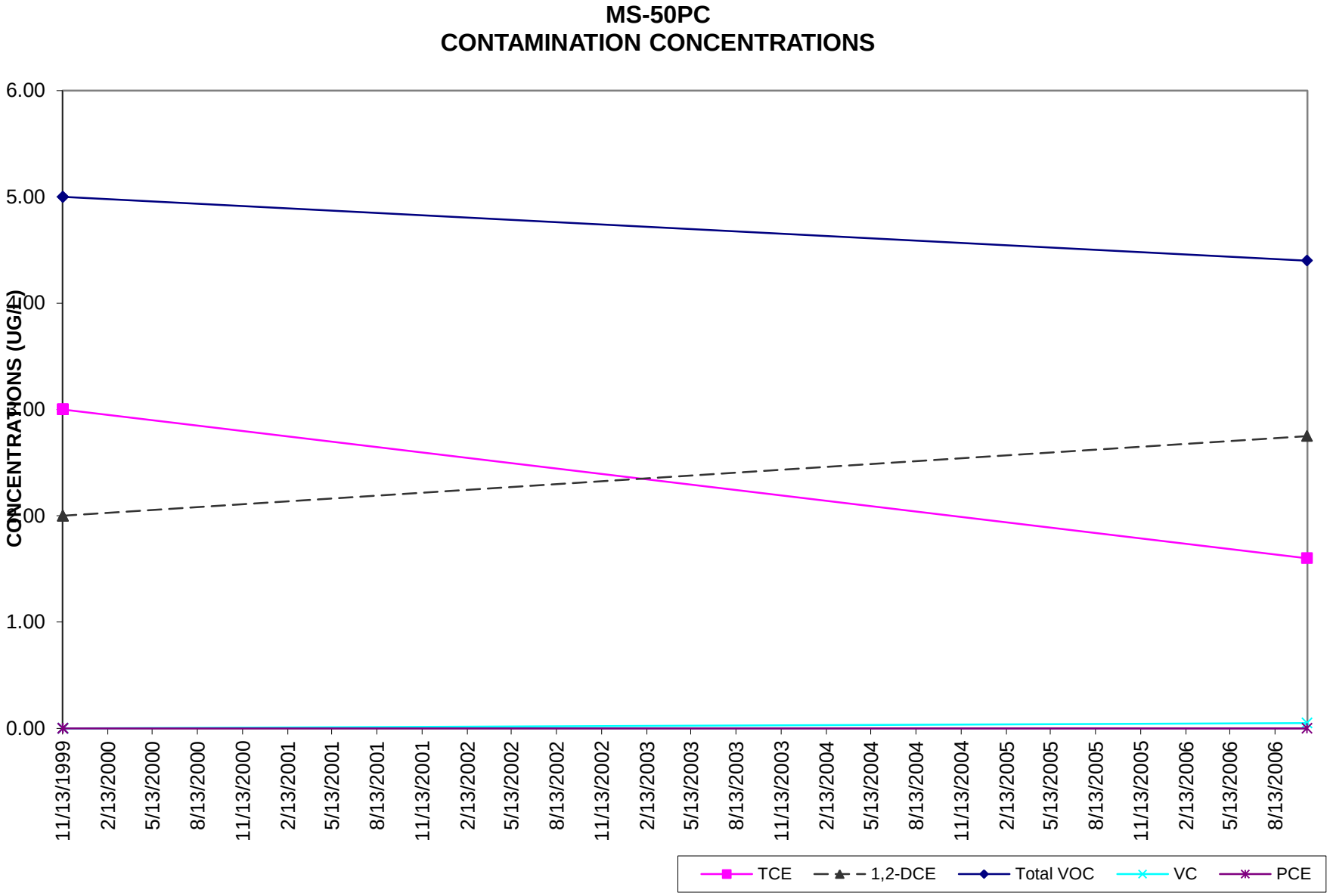

3-PC
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
10/1/1983
10/1/1984
10/1/1985
10/1/1986
10/1/1987
10/1/1988
10/1/1989
10/1/1990
10/1/1991
10/1/1992
10/1/1993
10/1/1994
10/1/1995
10/1/1996
10/1/1997
10/1/1998
10/1/1999
10/1/2000
10/1/2001
10/1/2002
10/1/2003
10/1/2004
10/1/2005
10/1/2006
10/1/2007
10/1/2008
10/1/2009
10/1/2010
10/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE

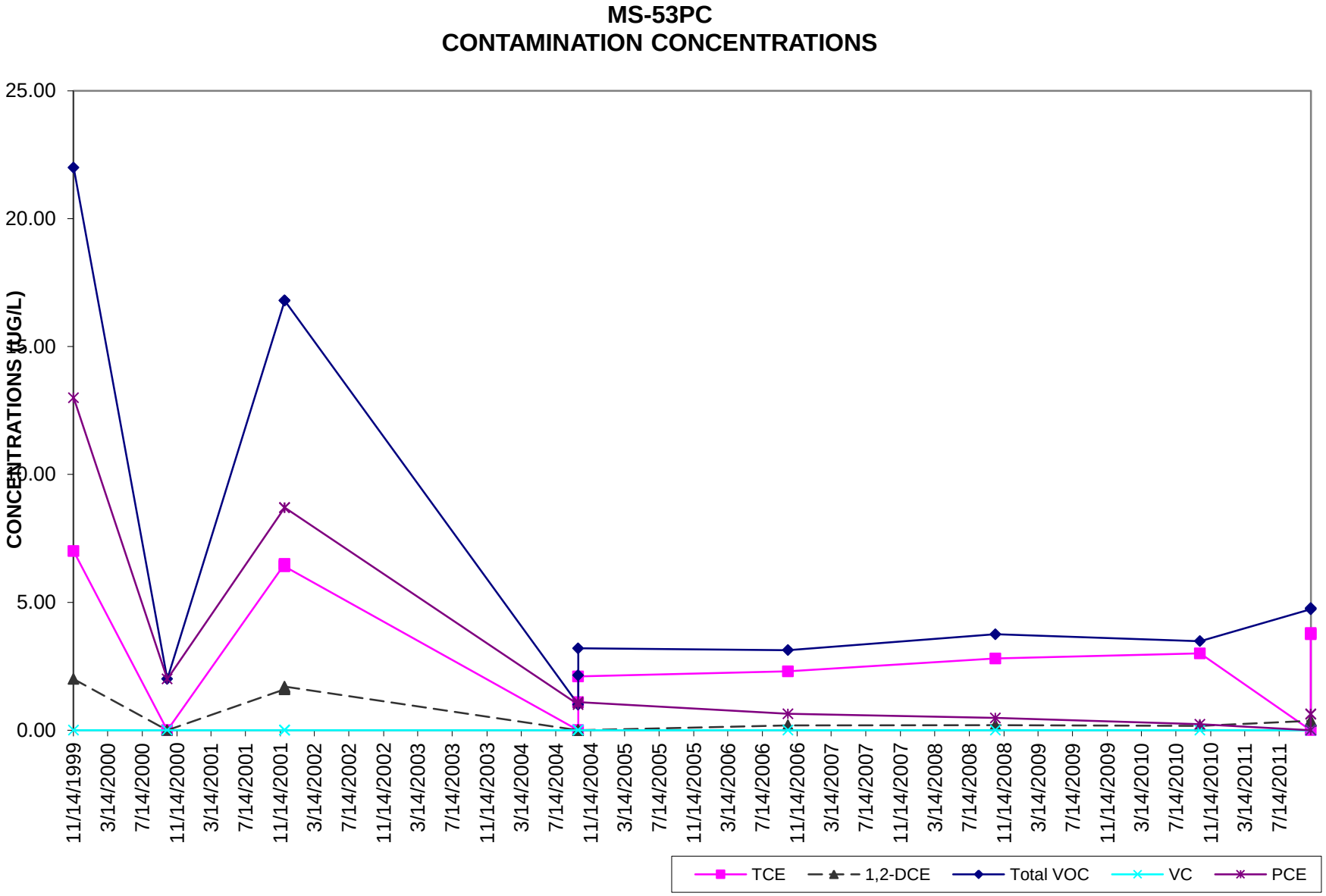

4-PC
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
12.00
10.00
8.00
6.00
4.00
2.00
0.00
10/1/1983
10/1/1984
10/1/1985
10/1/1986
10/1/1987
10/1/1988
10/1/1989
10/1/1990
10/1/1991
10/1/1992
10/1/1993
10/1/1994
10/1/1995
10/1/1996
10/1/1997
10/1/1998
10/1/1999
10/1/2000
10/1/2001
10/1/2002
10/1/2003
10/1/2004
10/1/2005
10/1/2006
10/1/2007
10/1/2008
10/1/2009
10/1/2010
10/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE


5-PC
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
600.00
500.00
400.00
300.00
200.00
100.00
0.00
1/1/1988
1/1/1989
1/1/1990
1/1/1991
1/1/1992
1/1/1993
1/1/1994
1/1/1995
1/1/1996
1/1/1997
1/1/1998
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE


FMC-43
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
12/7/1999
TCE
1,2-DCE
Total VOC
VC
PCE


MS-48PC
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
11/1/1999
5/1/2000
11/1/2000
5/1/2001
11/1/2001
5/1/2002
11/1/2002
5/1/2003
11/1/2003
5/1/2004
11/1/2004
5/1/2005
11/1/2005
5/1/2006
11/1/2006
5/1/2007
11/1/2007
5/1/2008
11/1/2008
5/1/2009
11/1/2009
5/1/2010
11/1/2010
5/1/2011
11/1/2011
TCE
1,2-DCE
Total VOC
VC
PCE


MS-50PC
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
6.00
5.00
4.00
3.00
2.00
1.00
0.00
11/13/1999
2/13/2000
5/13/2000
8/13/2000
11/13/2000
2/13/2001
5/13/2001
8/13/2001
11/13/2001
2/13/2002
5/13/2002
8/13/2002
11/13/2002
2/13/2003
5/13/2003
8/13/2003
11/13/2003
2/13/2004
5/13/2004
8/13/2004
11/13/2004
2/13/2005
5/13/2005
8/13/2005
11/13/2005
2/13/2006
5/13/2006
8/13/2006
TCE
1,2-DCE
Total VOC
VC
PCE


MS-53PC
CONTAMINATION CONCENTRATIONS
CONCENTRATIONS (UG/L)
25.00
20.00
15.00
10.00
5.00
0.00
11/14/1999
3/14/2000
7/14/2000
11/14/2000
3/14/2001
7/14/2001
11/14/2001
3/14/2002
7/14/2002
11/14/2002
3/14/2003
7/14/2003
11/14/2003
3/14/2004
7/14/2004
11/14/2004
3/14/2005
7/14/2005
11/14/2005
3/14/2006
7/14/2006
11/14/2006
3/14/2007
7/14/2007
11/14/2007
3/14/2008
7/14/2008
11/14/2008
3/14/2009
7/14/2009
11/14/2009
3/14/2010
7/14/2010
11/14/2010
3/14/2011
7/14/2011
TCE
1,2-DCE
Total VOC
VC
PCE

D-2 DATA QUALITY REVIEW

DATA QUALITY REVIEW

2011 ANNUAL MONITORING REPORT
NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT
FRIDLEY, MINNESTOA

1.0 DATA VALIDATION PROCESS AND DATA QUALITY REVIEW

This section contains a description of the data review processes used to determine whether analytical laboratory data were of acceptable technical quality for use in decision making. The review began with data validation, which is a comparison of data quality indicators (DQIs) against prescribed acceptance criteria. The DQIs used are measures to assess the bias and precision of the analytical calibrations and sample analyses. The output of this review was a set of alphabetic flags such as ”U,” “J,” “R,” or combinations thereof, that may have been assigned to individual results based on the validation effort. These flags were used to infer the general quality of the data. Also evaluated were the measures of data completeness, sensitivity, comparability and representativeness.

1.1 DATA VALIDATION PROCESS

All of the results from analytical laboratory samples were validated according to U.S. EPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (U.S. EPA, October, 1999) to the greatest extent practicable for non-contract laboratory program data.

Data validation specifications require that various data qualifiers be assigned when a deficiency is detected or when a result is less than its detection limit. If no qualifier is assigned to a result that has been validated, the data user is assured that no technical deficiencies were identified during validation. The qualification flags used are defined below:

U – Indicates that the chemical was not detected at the numerical detection limit (sample-specific detection limit) noted. Non-detected results from the laboratory are reported in this manner. This qualifier is also added to a positive result (reported by the laboratory) if the detected concentration is determined to be attributable to contamination introduced during field sampling or laboratory analysis.

UJ – Indicates that the chemical was not detected; however, the detection limit (sample-specific detection limit) is considered to be estimated based on problems encountered during laboratory analysis. The associated numerical detection limit is regarded as inaccurate or imprecise.

J – Indicates that the chemical was detected; however, the associated numerical result is not a precise representation of the concentration that is actually present in the sample. The laboratory reported concentration is considered to be an estimate of the true concentration.

UR – Indicates that the chemical may or may not be present. The non-detected analytical result reported by the laboratory is considered to be unreliable and unusable. This qualifier is applied in cases of gross technical deficiencies (i.e., holding times missed by a factor of two times the specified time limit, severe calibration non-compliances, and extremely low analyte recoveries).

R – Indicates that the chemical may or may not be present. The positive analytical result reported by the laboratory is considered to be unreliable and unusable. This qualifier is applied in cases of gross technical deficiencies.

The preceding data qualifiers may be categorized as indicative of major or minor problems. Major problems are defined as issues that result in the rejection of data and qualification with UR or R data validation qualifiers. These data are considered invalid and are not used for decision making purposes unless they are used in a qualitative way and the use is justified and documented. Minor problems are defined as issues resulting in the estimation of data, and qualification with U, J, and UJ data validation qualifiers. Estimated analytical results are considered to be suitable for decision-making purposes unless the data use requirements are very stringent and the qualifier indicates a deficiency that is incompatible with the intended data use. It is noteworthy that a U qualifier does not necessarily indicate that a data deficiency exists because all non-detect values are flagged with the U qualifier regardless of whether a quality deficiency has been detected.

No data for NIROP Fridley has been rejected and considered unusable. Qualified data and the reason for qualification are presented in Appendix D2-1. Any data impacts based on the results of the data evaluation are discussed in the remainder of this review.

1.2 DATA VALIDATION OUTPUTS

After data were validated, a list was developed of non-conformities requiring data qualifier flags that were used to alert the data user to inaccurate or imprecise data. For situations in which several QC criteria were out of specification, the data validator made professional judgements and or comments on the validity of the overall data package. The reviewer then prepared a technical memorandum presenting qualification of the data, if necessary, and the rationale for making such qualifications. The net result was a data package that had been carefully reviewed for its adherence to prescribed technical requirements. Pertinent quality estimates are summarized in a more quantitative format in the following section.

1.3 DATA QUALITY REVIEW

DQIs are parameters that are monitored to help establish the quality of data generated during an investigation. Some of the DQIs are generated from analysis of field samples (e.g., field duplicates) and some are generated from the analysis of laboratory samples (e.g., laboratory duplicates). Individually, field and laboratory DQIs provide measures of the performance of the respective investigative operations (field or laboratory). During data validation, individual QC results were evaluated. If individual QC results were acceptable, no validation flag was assigned to an analytical result, otherwise a flag indicating the type of QC deficiency was assigned to the result. Table 4-? lists all the data that has been qualified and the reason for the qualification. Sample results given the qualification code “P” were results that were reported with concentrations greater than the method detection limit (MDL) but less than the laboratory reporting limit (RL). This is a standard qualification for results reported near the MDL that alerts the user to the greater uncertainty of results reported near the MDL. The sample results with the qualification code “C” were results that were associated with a calibration noncompliance. The sample results with the qualification code “A” were results that were associated with laboratory blank contamination.

1.3.1 COMPLETENESS

Completeness is a measure of the number of valid samples or measurements that are available relative to the number of samples or measurements that were intended to be generated. For this project, completeness was measured on two different bases: samples collected and laboratory measurements.

- Sample completeness was a measure of the usable samples collected as compared to those intended to be collected.

- Laboratory measurement completeness was a measure of the amount of usable, valid laboratory measurements per matrix obtained for each target analyte.

Usable, valid samples (or results) were those judged, after data assessment, to represent the sampling populations and to have not been disqualified for use through data validation or additional data review. Completeness was determined using the following equation:

$$\%C = \frac{V}{T} \text{ x } 100$$

where %C = percent completeness
V = number of samples (or results) determined to be valid
T = total number of planned samples (or results)

No validation action taken on this basis it is only noted for information purposes. A total of 185 wells were intended to be sampled. A total of 180 wells were sampled for a sample percent completeness of 97.3%. The percent completeness for laboratory and field measurements for the NIROP Fridley project was 100%.

1.3.2 SENSITIVITY

The MDLs reported by the laboratory were less than the target cleanup levels as specified in Table A6-3 of the Naval Industrial Reserve Ordnance Plant, Remedial Action Work Plan (RAWP), (September 2005) for all compounds.

In many cases the laboratory had to dilute samples because of concentrations greater than the linear calibration range of the instrument. These dilutions did not result in any nondetected results being greater than the project target cleanup levels.

Rinsate and / or trip blanks had detections for trichloroethane, cis-1,2-dichloroethene, and trans-1,2-dichloroethene. No action was taken as these compounds are considered to be compounds of concern and are frequently detected in the wells. Methylene chloride was also detected in method and trip blanks and resulted in the qualification of the methylene chloride results for samples MS18S and MS35I.

1.3.3 LABORATORY ACCURACY

Accuracy in the laboratory is measured through the comparison of a spiked sample or LCS result to a known or calculated value and is expressed as a percent recovery (%R). It was also assessed by monitoring the analytical recovery of select surrogate compounds added to samples that are analyzed by organic chromatographic methods. LCSs were used to assess the accuracy of laboratory operations with minimal sample matrix effects. MS and surrogate compound analyses measure the combined accuracy effects of the sample matrix, sample preparation, and sample measurement. LCS and MS analyses were performed at a frequency of one per 20 associated samples of like matrix as required by the Naval Industrial Reserve Ordnance Plant, Remedial Action Work Plan (RAWP), (September 2005). Laboratory accuracy was assessed by comparing calculated %R values to accuracy control limits specified by the laboratory using SW-846 Method 8260B.

Percent recovery is calculated using the following equation:

$$\%R = \frac{Ss - So}{S} \text{ x } 100$$

where %R = percent recovery

Ss = result of spiked sample

So = result of non-spiked sample

S = concentration of spiked amount.

Calibration noncompliances for compounds 1,1,1-trichloroethane, tetrachloroethene, and vinyl chloride resulted in the qualification of results in several samples. No directional bias can be associated with the calibration noncompliances. The calibration noncompliances are not expected to have significant effect on the accuracy of the data.

1.3.4 LABORATORY PRECISION

Precision is a measure of the degree to which two or more measurements are in agreement and describes the reproducibility of measurements of the same parameter for samples analyzed under similar conditions.

Precision for chemical parameters is expressed as a Relative Percent Difference (RPD), which is defined as the ratio of the difference to the mean for the two values being evaluated. RPDs, typically expressed as percentages, are used to evaluate both field and laboratory duplicate precision and are calculated as follows:

$$RPD = \frac{|V1 - V2|}{(V1 + V2)/2} \times 100$$

where RPD = relative percent difference

V1, V2 = two results obtained by analyzing duplicate samples

The precision estimates obtained from duplicate field samples encompass the combined uncertainty associated with sample collection, homogenization, splitting, handling, laboratory and field storage (as applicable), preparation for analysis, and analysis. In contrast, precision estimates obtained from analyzing duplicate laboratory samples incorporate only homogenization, subsampling, preparation for analysis, laboratory storage (if applicable), and analysis uncertainties.

All MS/MSD, and field duplicate RPDs met quality control limits.

1.3.5 COMPARABILITY

Comparability is defined as the confidence with which one data set can be compared with another (e.g., among sampling points and among sampling events). Comparability was achieved by using standardized sampling and analysis methods, as well as standardized data reporting formats. Comparability of field data was ensured by following the Naval Industrial Reserve Ordnance Plant, Remedial Action Work Plan (RAWP), (September 2005). Comparability of laboratory measurements was achieved primarily through the use and documentation of standard sampling and analytical methods. Results were reported in units that ensured comparability with previous data and with current state and federal standards and guidelines. Comparability of laboratory measurements was assessed primarily through the use of QC samples and through adherence to the QA plan.

No comparability issues were noted during the validation process.

1.3.6 REPRESENTATIVENESS

Representativeness is an expression of the degree to which data accurately and precisely depict the actual characteristics of a population or environmental condition existing at the site.
The Naval Industrial Reserve Ordnance Plant, Remedial Action Work Plan (RAWP), (September 2005) and the use of standardized sampling, sample handling, sample analysis, and data reporting procedures were designed so that the final data would be accurate representations of actual site conditions.

It is believed that all reported data are adequately representative of site conditions.

TABLE D2-1
QUALIFIED DATA FOR SAMPLES COLLECTED
2011 ANNUAL MONITORING REPORT
NIROP FRIDLEY, MINNESOTA

SAMPLE ID	PARAMETER	RESULT (UG/L)	QUALIFIER	QUAL CODE	REASON FOR QUALIFICATION
AT03A	1,1-DICHLOROETHENE	1.6	J	P	Uncertainty near the detection limit.
AT03A	METHYLENE CHLORIDE	0.75	J	P	Uncertainty near the detection limit.
AT03A_20110609	1,1-DICHLOROETHANE	0.43	J	P	Uncertainty near the detection limit.
AT03A_20110609	1,1-DICHLOROETHENE	1.3	J	P	Uncertainty near the detection limit.
AT03A_20110609	VINYL CHLORIDE	0.28	J	P	Uncertainty near the detection limit.
AT03A_20110815	1,1-DICHLOROETHANE	0.33	J	P	Uncertainty near the detection limit.
AT03A_20110815	1,1-DICHLOROETHENE	0.93	J	P	Uncertainty near the detection limit.
AT05B	1,1-DICHLOROETHANE	0.56	J	P	Uncertainty near the detection limit.
AT05B	1,1-DICHLOROETHENE	0.74	J	P	Uncertainty near the detection limit.
AT05B	METHYLENE CHLORIDE	0.28	J	P	Uncertainty near the detection limit.
AT05B	VINYL CHLORIDE	0.28	J	P	Uncertainty near the detection limit.
AT05B_20110815	VINYL CHLORIDE	0.18	J	P	Uncertainty near the detection limit.
AT05B_20110815-D	VINYL CHLORIDE	0.16	J	P	Uncertainty near the detection limit.
AT05B_20111102	VINYL CHLORIDE	0.17	J	P	Uncertainty near the detection limit.
AT09_20111102	1,1,1-TRICHLOROETHANE	0.075	UJ	C	Calibration noncompliance
AT09_20111102	1,1-DICHLOROETHENE	0.22	J	P	Uncertainty near the detection limit.
AT09_20111102	VINYL CHLORIDE	0.08	J	P	Uncertainty near the detection limit.
AT10_20111102	1,1-DICHLOROETHANE	0.48	J	P	Uncertainty near the detection limit.
AT10_20111102	1,1-DICHLOROETHENE	0.43	J	P	Uncertainty near the detection limit.
FW13_20111118	TRICHLOROETHENE	0.13	J	P	Uncertainty near the detection limit.
FW13_20111118-D	1,1,1-TRICHLOROETHANE	0.075	UJ	C	Calibration noncompliance
MS01PC_20111107	1,1,1-TRICHLOROETHANE	0.075	UJ	C	Calibration noncompliance
MS01PC_20111107	TRICHLOROETHENE	0.49	J	P	Uncertainty near the detection limit.
MS01PC_20111107	VINYL CHLORIDE	0.1	J	P	Uncertainty near the detection limit.
MS02D_20111115	VINYL CHLORIDE	0.11	J	P	Uncertainty near the detection limit.
MS02PC_20111109	CIS-1,2-DICHLOROETHENE	0.17	J	P	Uncertainty near the detection limit.
MS02PC_20111109	TETRACHLOROETHENE	13	J	C	Calibration noncompliance
MS02S_20111108	TETRACHLOROETHENE	0.1	J	P	Uncertainty near the detection limit.
MS02S_20111108	TRANS-1,2-DICHLOROETHENE	0.26	J	P	Uncertainty near the detection limit.
MS03IS_20111114	1,1-DICHLOROETHANE	0.13	J	P	Uncertainty near the detection limit.
MS03IS_20111114	1,1-DICHLOROETHENE	0.23	J	P	Uncertainty near the detection limit.
MS03IS_20111114	TRANS-1,2-DICHLOROETHENE	0.26	J	P	Uncertainty near the detection limit.
MS03S_20111117	1,1-DICHLOROETHENE	0.38	J	P	Uncertainty near the detection limit.
MS03S_20111117	VINYL CHLORIDE	0.09	J	P	Uncertainty near the detection limit.
MS04IS_20111109	1,1-DICHLOROETHANE	0.38	J	P	Uncertainty near the detection limit.
MS04IS_20111109	VINYL CHLORIDE	0.1	J	CP	Calibration noncompliance and Uncertainty near detection limit

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MS04PC_20111107	1,1,1-TRICHLOROETHANE	0.075	UJ	C	Calibration noncompliance
MS04PC_20111107	VINYL CHLORIDE	0.1	J	P	Uncertainty near the detection limit.
MS05D_20111101	CIS-1,2-DICHLOROETHENE	0.34	J	P	Uncertainty near the detection limit.
MS05D_20111101	TETRACHLOROETHENE	1.4	J	C	Calibration noncompliance
MS05D_20111101	TRICHLOROETHENE	0.15	J	P	Uncertainty near the detection limit.
MS05IS_20111109	CIS-1,2-DICHLOROETHENE	0.41	J	P	Uncertainty near the detection limit.
MS05IS_20111109	TETRACHLOROETHENE	0.14	J	CP	Calibration noncompliance and Uncertainty near detection limit
MS05PC_20111102	CIS-1,2-DICHLOROETHENE	0.17	J	P	Uncertainty near the detection limit.
MS06D_20111108	VINYL CHLORIDE	0.08	J	P	Uncertainty near the detection limit.
MS06S_20111103	TRANS-1,2-DICHLOROETHENE	0.11	J	P	Uncertainty near the detection limit.
MS07D_20111103	1,1-DICHLOROETHANE	0.4	J	P	Uncertainty near the detection limit.
MS07D_20111103	1,1-DICHLOROETHENE	0.09	J	P	Uncertainty near the detection limit.
MS07D_20111103	TRANS-1,2-DICHLOROETHENE	0.16	J	P	Uncertainty near the detection limit.
MS07IS_20111117	1,1-DICHLOROETHENE	9.3	J	P	Uncertainty near the detection limit.
MS07IS_20111117	VINYL CHLORIDE	2	J	P	Uncertainty near the detection limit.
MS08D_20111108	1,1-DICHLOROETHENE	0.12	J	P	Uncertainty near the detection limit.
MS08D_20111108	TETRACHLOROETHENE	3.7	J	C	Calibration noncompliance
MS08S_20111111	1,1-DICHLOROETHANE	0.48	J	P	Uncertainty near the detection limit.
MS08S_20111111	1,1-DICHLOROETHENE	0.2	J	P	Uncertainty near the detection limit.
MS09D_20111104	1,1,1-TRICHLOROETHANE	0.2	J	CP	Calibration noncompliance and Uncertainty near detection limit
MS09D_20111104	1,1-DICHLOROETHANE	0.33	J	P	Uncertainty near the detection limit.
MS09D_20111104	1,1-DICHLOROETHENE	0.12	J	P	Uncertainty near the detection limit.
MS09S_20111115	1,1-DICHLOROETHANE	0.09	J	P	Uncertainty near the detection limit.
MS09S_20111115	TRANS-1,2-DICHLOROETHENE	0.07	J	P	Uncertainty near the detection limit.
MS10IS_20111101	TETRACHLOROETHENE	0.61	J	C	Calibration noncompliance
MS11S_20111115	1,1-DICHLOROETHENE	0.28	J	P	Uncertainty near the detection limit.
MS12D_20111114	1,1-DICHLOROETHENE	0.2	J	P	Uncertainty near the detection limit.
MS12D_20111114	TRANS-1,2-DICHLOROETHENE	0.18	J	P	Uncertainty near the detection limit.
MS12D_20111114	VINYL CHLORIDE	0.12	J	P	Uncertainty near the detection limit.
MS131S_20110509	1,1-DICHLOROETHANE	0.14	J	P	Uncertainty near the detection limit.
MS131S_20110509	1,1-DICHLOROETHENE	0.2	J	P	Uncertainty near the detection limit.
MS13IS_20110815	1,1-DICHLOROETHANE	0.12	J	P	Uncertainty near the detection limit.
MS13IS_20110815	1,1-DICHLOROETHENE	0.2	J	P	Uncertainty near the detection limit.
MS13IS_20111115	1,1-DICHLOROETHENE	0.17	J	P	Uncertainty near the detection limit.
MS14IS_20111110	TETRACHLOROETHENE	0.28	J	P	Uncertainty near the detection limit.

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MS14IS_20111110	VINYL CHLORIDE	0.11	J	P	Uncertainty near the detection limit.
MS15D_20111103	1,1,1-TRICHLOROETHANE	0.075	UJ	C	Calibration noncompliance
MS15D_20111103	1,1-DICHLOROETHANE	0.23	J	P	Uncertainty near the detection limit.
MS15D_20111103	1,1-DICHLOROETHENE	0.15	J	P	Uncertainty near the detection limit.
MS15D_20111103	TRANS-1,2-DICHLOROETHENE	0.42	J	P	Uncertainty near the detection limit.
MS15IS	1,1,1-TRICHLOROETHANE	0.075	UJ	C	Calibration noncompliance
MS15IS	1,1-DICHLOROETHANE	0.22	J	P	Uncertainty near the detection limit.
MS15IS	1,1-DICHLOROETHENE	0.15	J	P	Uncertainty near the detection limit.
MS15IS	TRANS-1,2-DICHLOROETHENE	0.23	J	P	Uncertainty near the detection limit.
MS15IS-D	1,1,1-TRICHLOROETHANE	0.075	UJ	C	Calibration noncompliance
MS15IS-D	1,1-DICHLOROETHANE	0.22	J	P	Uncertainty near the detection limit.
MS15IS-D	1,1-DICHLOROETHENE	0.15	J	P	Uncertainty near the detection limit.
MS15IS-D	TRANS-1,2-DICHLOROETHENE	0.26	J	P	Uncertainty near the detection limit.
MS15IS_20110509	1,1-DICHLOROETHANE	0.24	J	P	Uncertainty near the detection limit.
MS15IS_20110509	1,1-DICHLOROETHENE	0.19	J	P	Uncertainty near the detection limit.
MS15IS_20110509	TRANS-1,2-DICHLOROETHENE	0.3	J	P	Uncertainty near the detection limit.
MS15IS_20111109	1,1-DICHLOROETHANE	0.25	J	P	Uncertainty near the detection limit.
MS15IS_20111109	1,1-DICHLOROETHENE	0.18	J	P	Uncertainty near the detection limit.
MS15IS_20111109	TETRACHLOROETHENE	2.9	J	C	Calibration noncompliance
MS15IS_20111109	TRANS-1,2-DICHLOROETHENE	0.38	J	P	Uncertainty near the detection limit.
MS16D_20111107	1,1-DICHLOROETHANE	0.22	J	P	Uncertainty near the detection limit.
MS16D_20111107	1,1-DICHLOROETHENE	0.18	J	P	Uncertainty near the detection limit.
MS16D_20111107	TETRACHLOROETHENE	4	J	C	Calibration noncompliance
MS16D_20111107	TRANS-1,2-DICHLOROETHENE	0.48	J	P	Uncertainty near the detection limit.
MS16IS_20111107	1,1-DICHLOROETHANE	0.18	J	P	Uncertainty near the detection limit.
MS16IS_20111107	1,1-DICHLOROETHENE	0.21	J	P	Uncertainty near the detection limit.
MS16IS_20111107	TETRACHLOROETHENE	1	J	C	Calibration noncompliance
MS16S_20111101	TETRACHLOROETHENE	0.24	J	CP	Calibration noncompliance and Uncertainty near detection limit
MS16S_20111101	TRANS-1,2-DICHLOROETHENE	0.17	J	P	Uncertainty near the detection limit.
MS17D_20111104	1,1,1-TRICHLOROETHANE	0.075	UJ	C	Calibration noncompliance
MS17D_20111104	1,1-DICHLOROETHANE	0.28	J	P	Uncertainty near the detection limit.
MS17D_20111104	1,1-DICHLOROETHENE	0.24	J	P	Uncertainty near the detection limit.
MS17S_20111101	TETRACHLOROETHENE	0.17	J	CP	Calibration noncompliance and Uncertainty near detection limit
MS17S_20111101	TRANS-1,2-DICHLOROETHENE	0.11	J	P	Uncertainty near the detection limit.
MS18S	1,1,1-TRICHLOROETHANE	0.15	UJ	C	Calibration noncompliance

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MS18S	METHYLENE CHLORIDE	0.2	U	A	Laboratory Blank Contamination
MS18S	VINYL CHLORIDE	0.26	J	P	Uncertainty near the detection limit.
MS18S_20110510	1,1-DICHLOROETHANE	0.94	J	P	Uncertainty near the detection limit.
MS18S_20111110	1,1-DICHLOROETHANE	1.2	J	P	Uncertainty near the detection limit.
MS18S_20111110	VINYL CHLORIDE	0.2	J	P	Uncertainty near the detection limit.
MS18S_20111110-D	VINYL CHLORIDE	0.2	J	P	Uncertainty near the detection limit.
MS19S_20111107	1,1,1-TRICHLOROETHANE	0.24	J	P	Uncertainty near the detection limit.
MS19S_20111107	1,1-DICHLOROETHENE	0.19	J	P	Uncertainty near the detection limit.
MS19S_20111107	TRANS-1,2-DICHLOROETHENE	0.42	J	P	Uncertainty near the detection limit.
MS20S_20111115	TRICHLOROETHENE	0.37	J	P	Uncertainty near the detection limit.
MS24S_20111103	TETRACHLOROETHENE	0.23	J	P	Uncertainty near the detection limit.
MS24S_20111103-D	TETRACHLOROETHENE	0.25	J	P	Uncertainty near the detection limit.
MS26S_20111110	VINYL CHLORIDE	0.1	J	CP	Calibration noncompliance and Uncertainty near detection limit
MS27S_20111108	VINYL CHLORIDE	0.14	J	P	Uncertainty near the detection limit.
MS28D_20111111	1,1-DICHLOROETHANE	0.21	J	P	Uncertainty near the detection limit.
MS28D_20111111	1,1-DICHLOROETHENE	0.14	J	P	Uncertainty near the detection limit.
MS28D_20111111	TRANS-1,2-DICHLOROETHENE	0.19	J	P	Uncertainty near the detection limit.
MS28D_20111111-D	1,1-DICHLOROETHANE	0.24	J	P	Uncertainty near the detection limit.
MS28D_20111111-D	1,1-DICHLOROETHENE	0.17	J	P	Uncertainty near the detection limit.
MS28D_20111111-D	TRANS-1,2-DICHLOROETHENE	0.15	J	P	Uncertainty near the detection limit.
MS28S_20111111	1,1-DICHLOROETHANE	0.42	J	P	Uncertainty near the detection limit.
MS28S_20111111-D	1,1-DICHLOROETHANE	0.46	J	P	Uncertainty near the detection limit.
MS29D_20111109	TETRACHLOROETHENE	0.96	J	C	Calibration noncompliance
MS29I_20111118	VINYL CHLORIDE	0.09	J	P	Uncertainty near the detection limit.
MS29S_20111115	1,1-DICHLOROETHANE	0.25	J	P	Uncertainty near the detection limit.
MS29S_20111115	1,1-DICHLOROETHENE	0.14	J	P	Uncertainty near the detection limit.
MS29S_20111115	TETRACHLOROETHENE	0.44	J	P	Uncertainty near the detection limit.
MS30D_20111114	1,1-DICHLOROETHENE	0.17	J	P	Uncertainty near the detection limit.
MS30D_20111114	TRANS-1,2-DICHLOROETHENE	0.46	J	P	Uncertainty near the detection limit.
MS31D_20111108	TRANS-1,2-DICHLOROETHENE	0.26	J	P	Uncertainty near the detection limit.
MS31S_20111111	1,1-DICHLOROETHANE	0.22	J	P	Uncertainty near the detection limit.
MS31S_20111111	1,1-DICHLOROETHENE	0.12	J	P	Uncertainty near the detection limit.
MS32D_20111108	VINYL CHLORIDE	0.11	J	P	Uncertainty near the detection limit.
MS32S_20111115	1,1-DICHLOROETHANE	0.48	J	P	Uncertainty near the detection limit.
MS32S_20111115	VINYL CHLORIDE	0.11	J	P	Uncertainty near the detection limit.
MS33D_20111110	TRANS-1,2-DICHLOROETHENE	0.15	J	P	Uncertainty near the detection limit.

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MS33D_20111110	VINYL CHLORIDE	0.075	UJ	C	Calibration noncompliance
MS33I	1,1-DICHLOROETHANE	3.6	J	P	Uncertainty near the detection limit.
MS33I	METHYLENE CHLORIDE	1.2	J	P	Uncertainty near the detection limit.
MS33I_20110511	1,1-DICHLOROETHANE	2.9	J	P	Uncertainty near the detection limit.
MS33I_20110511-D	1,1-DICHLOROETHANE	3.3	J	P	Uncertainty near the detection limit.
MS33I_20110818	VINYL CHLORIDE	27	J	C	Calibration noncompliance
MS33I_20110818-D	VINYL CHLORIDE	27	J	C	Calibration noncompliance
MS33S_20111111	1,1-DICHLOROETHENE	0.3	J	P	Uncertainty near the detection limit.
MS34I	1,1,1-TRICHLOROETHANE	0.38	UJ	C	Calibration noncompliance
MS34I	VINYL CHLORIDE	0.8	J	P	Uncertainty near the detection limit.
MS34I-D	1,1,1-TRICHLOROETHANE	0.38	UJ	C	Calibration noncompliance
MS34I-D	VINYL CHLORIDE	0.8	J	P	Uncertainty near the detection limit.
MS34I_20110817	VINYL CHLORIDE	0.9	J	CP	Calibration noncompliance and Uncertainty near detection limit
MS34I_20111118	VINYL CHLORIDE	0.43	J	P	Uncertainty near the detection limit.
MS34S_20111103	1,1-DICHLOROETHENE	0.43	J	P	Uncertainty near the detection limit.
MS34S_20111103	VINYL CHLORIDE	0.12	J	P	Uncertainty near the detection limit.
MS35D	1,1-DICHLOROETHENE	0.12	J	P	Uncertainty near the detection limit.
MS35D	TETRACHLOROETHENE	0.31	J	P	Uncertainty near the detection limit.
MS35D	VINYL CHLORIDE	0.08	J	P	Uncertainty near the detection limit.
MS35D_20110509	1,1-DICHLOROETHENE	0.17	J	P	Uncertainty near the detection limit.
MS35D_20110509	TETRACHLOROETHENE	0.21	J	P	Uncertainty near the detection limit.
MS35D_20111114	1,1-DICHLOROETHENE	0.1	J	P	Uncertainty near the detection limit.
MS35D_20111114	TETRACHLOROETHENE	0.22	J	P	Uncertainty near the detection limit.
MS35I	1,1,1-TRICHLOROETHANE	0.19	UJ	C	Calibration noncompliance
MS35I	METHYLENE CHLORIDE	0.28	U	A	Laboratory Blank Contamination
MS35I	TETRACHLOROETHENE	0.28	J	P	Uncertainty near the detection limit.
MS35I_20110509	TETRACHLOROETHENE	0.35	J	P	Uncertainty near the detection limit.
MS35I_20111110	TETRACHLOROETHENE	0.22	J	P	Uncertainty near the detection limit.
MS36I_20111116	TETRACHLOROETHENE	0.17	J	P	Uncertainty near the detection limit.
MS36I_20111116	VINYL CHLORIDE	0.12	J	P	Uncertainty near the detection limit.
MS36I_20111116-D	TETRACHLOROETHENE	0.16	J	P	Uncertainty near the detection limit.
MS36I_20111116-D	VINYL CHLORIDE	0.11	J	P	Uncertainty near the detection limit.
MS36S_20110817	VINYL CHLORIDE	2.5	J	C	Calibration noncompliance
MS37S_20111114	1,1-DICHLOROETHANE	0.2	J	P	Uncertainty near the detection limit.
MS37S_20111114	1,1-DICHLOROETHENE	0.42	J	P	Uncertainty near the detection limit.
MS38S_20110817	1,1-DICHLOROETHENE	0.38	J	P	Uncertainty near the detection limit.

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MS38S_20110817	TETRACHLOROETHENE	0.22	J	P	Uncertainty near the detection limit.
MS38S_20110817	VINYL CHLORIDE	0.15	UJ	C	Calibration noncompliance
MS38S_20111110	1,1-DICHLOROETHENE	0.9	J	P	Uncertainty near the detection limit.
MS40D_20111111	1,1-DICHLOROETHANE	0.19	J	P	Uncertainty near the detection limit.
MS40D_20111111	1,1-DICHLOROETHENE	0.12	J	P	Uncertainty near the detection limit.
MS40D_20111111	TRANS-1,2-DICHLOROETHENE	0.46	J	P	Uncertainty near the detection limit.
MS40S_20111114	1,1-DICHLOROETHANE	0.16	J	P	Uncertainty near the detection limit.
MS40S_20111114	TETRACHLOROETHENE	0.43	J	P	Uncertainty near the detection limit.
MS41D_20111116	1,1-DICHLOROETHANE	0.26	J	P	Uncertainty near the detection limit.
MS41D_20111116	1,1-DICHLOROETHENE	0.2	J	P	Uncertainty near the detection limit.
MS41I	1,1-DICHLOROETHANE	0.28	J	P	Uncertainty near the detection limit.
MS41I	1,1-DICHLOROETHENE	0.29	J	P	Uncertainty near the detection limit.
MS41I_20110510	1,1-DICHLOROETHANE	0.26	J	P	Uncertainty near the detection limit.
MS41I_20110510	1,1-DICHLOROETHENE	0.34	J	P	Uncertainty near the detection limit.
MS41I_20110817	1,1-DICHLOROETHANE	0.26	J	P	Uncertainty near the detection limit.
MS41I_20110817	1,1-DICHLOROETHENE	0.23	J	P	Uncertainty near the detection limit.
MS41I_20110817	VINYL CHLORIDE	0.075	UJ	C	Calibration noncompliance
MS41I_20111116	1,1-DICHLOROETHANE	0.49	J	P	Uncertainty near the detection limit.
MS41I_20111116	VINYL CHLORIDE	0.09	J	P	Uncertainty near the detection limit.
MS42I_20111101	TETRACHLOROETHENE	0.11	J	CP	Calibration noncompliance and Uncertainty near detection limit
MS43D_20111103	VINYL CHLORIDE	0.09	J	P	Uncertainty near the detection limit.
MS43I	1,1,1-TRICHLOROETHANE	0.075	UJ	C	Calibration noncompliance
MS43I	1,1-DICHLOROETHENE	0.37	J	P	Uncertainty near the detection limit.
MS43I	VINYL CHLORIDE	0.08	J	P	Uncertainty near the detection limit.
MS43I_20110509	1,1-DICHLOROETHENE	0.33	J	P	Uncertainty near the detection limit.
MS43I_20111107	1,1-DICHLOROETHENE	0.23	J	P	Uncertainty near the detection limit.
MS43I_20111107	TETRACHLOROETHENE	0.099	UJ	C	Calibration noncompliance
MS43S_20111109	1,1-DICHLOROETHENE	0.43	J	P	Uncertainty near the detection limit.
MS43S_20111109	TETRACHLOROETHENE	0.099	UJ	C	Calibration noncompliance
MS43S_20111109	VINYL CHLORIDE	0.08	J	P	Uncertainty near the detection limit.
MS44D_20111103	1,1,1-TRICHLOROETHANE	0.075	UJ	C	Calibration noncompliance
MS44D_20111103	1,1-DICHLOROETHANE	0.3	J	P	Uncertainty near the detection limit.
MS44D_20111103	1,1-DICHLOROETHENE	0.16	J	P	Uncertainty near the detection limit.
MS44D_20111103	TETRACHLOROETHENE	0.33	J	P	Uncertainty near the detection limit.
MS44D_20111103	VINYL CHLORIDE	0.09	J	P	Uncertainty near the detection limit.
MS44I	1,1,1-TRICHLOROETHANE	0.075	UJ	C	Calibration noncompliance

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MS44S_20111107	1,1-DICHLOROETHANE	0.19	J	P	Uncertainty near the detection limit.
MS44S_20111107	1,1-DICHLOROETHENE	0.08	J	P	Uncertainty near the detection limit.
MS45I	1,1-DICHLOROETHANE	0.12	J	P	Uncertainty near the detection limit.
MS45I	1,1-DICHLOROETHENE	0.26	J	P	Uncertainty near the detection limit.
MS45I-D	1,1-DICHLOROETHANE	0.12	J	P	Uncertainty near the detection limit.
MS45I-D	1,1-DICHLOROETHENE	0.27	J	P	Uncertainty near the detection limit.
MS45I_20110509	1,1-DICHLOROETHENE	0.17	J	P	Uncertainty near the detection limit.
MS45I_20111109	1,1-DICHLOROETHANE	0.09	J	P	Uncertainty near the detection limit.
MS45I_20111109	1,1-DICHLOROETHENE	0.16	J	P	Uncertainty near the detection limit.
MS45I_20111109	TETRACHLOROETHENE	1.9	J	C	Calibration noncompliance
MS45S	1,1,1-TRICHLOROETHANE	0.075	UJ	C	Calibration noncompliance
MS45S_20111109	TETRACHLOROETHENE	0.099	UJ	C	Calibration noncompliance
MS45S_20111109	VINYL CHLORIDE	0.14	J	P	Uncertainty near the detection limit.
MS45S_20111109-D	VINYL CHLORIDE	0.13	J	P	Uncertainty near the detection limit.
MS46S	METHYLENE CHLORIDE	0.26	J	P	Uncertainty near the detection limit.
MS46S	VINYL CHLORIDE	0.24	J	P	Uncertainty near the detection limit.
MS46S_20110510	1,1-DICHLOROETHANE	0.86	J	P	Uncertainty near the detection limit.
MS46S_20110510	VINYL CHLORIDE	0.18	J	P	Uncertainty near the detection limit.
MS46S_20111110	VINYL CHLORIDE	0.15	J	P	Uncertainty near the detection limit.
MS47D_20111107	1,1-DICHLOROETHANE	0.25	J	P	Uncertainty near the detection limit.
MS47D_20111107	1,1-DICHLOROETHENE	0.16	J	P	Uncertainty near the detection limit.
MS47D_20111107	TETRACHLOROETHENE	6.6	J	C	Calibration noncompliance
MS47I_20111108	1,1-DICHLOROETHANE	0.32	J	P	Uncertainty near the detection limit.
MS47I_20111108	1,1-DICHLOROETHENE	0.3	J	P	Uncertainty near the detection limit.
MS47S_20111108	1,1-DICHLOROETHANE	0.12	J	P	Uncertainty near the detection limit.
MS47S_20111108	TETRACHLOROETHENE	0.28	J	CP	Calibration noncompliance and Uncertainty near detection limit
MS48PC_20111102	1,1,1-TRICHLOROETHANE	0.075	UJ	C	Calibration noncompliance
MS48PC_20111102	TETRACHLOROETHENE	0.25	J	P	Uncertainty near the detection limit.
MS48PC_20111102	TRANS-1,2-DICHLOROETHENE	0.18	J	P	Uncertainty near the detection limit.
MS49D_20111102	1,1,1-TRICHLOROETHANE	0.23	J	CP	Calibration noncompliance and Uncertainty near detection limit
MS49D_20111102	1,1-DICHLOROETHANE	0.42	J	P	Uncertainty near the detection limit.
MS49D_20111102	1,1-DICHLOROETHENE	0.15	J	P	Uncertainty near the detection limit.
MS49D_20111102	TETRACHLOROETHENE	0.49	J	P	Uncertainty near the detection limit.
MS49I_20111104	1,1,1-TRICHLOROETHANE	0.075	UJ	C	Calibration noncompliance
MS49I_20111104	1,1-DICHLOROETHANE	0.26	J	P	Uncertainty near the detection limit.

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SAMPLE ID	PARAMETER	RESULT (UG/L)	QUALIFIER	QUAL CODE	REASON FOR QUALIFICATION
MS49I_20111104	1,1-DICHLOROETHENE	0.16	J	P	Uncertainty near the detection limit.
MS49I_20111104	TRANS-1,2-DICHLOROETHENE	0.38	J	P	Uncertainty near the detection limit.
MS49I_20111104-D	1,1,1-TRICHLOROETHANE	0.075	UJ	C	Calibration noncompliance
MS49I_20111104-D	1,1-DICHLOROETHANE	0.27	J	P	Uncertainty near the detection limit.
MS49I_20111104-D	1,1-DICHLOROETHENE	0.15	J	P	Uncertainty near the detection limit.
MS49I_20111104-D	TRANS-1,2-DICHLOROETHENE	0.38	J	P	Uncertainty near the detection limit.
MS49S_20111108	1,1-DICHLOROETHENE	0.37	J	P	Uncertainty near the detection limit.
MS49S_20111108	TETRACHLOROETHENE	0.16	J	P	Uncertainty near the detection limit.
MS49S_20111108-D	1,1-DICHLOROETHENE	0.36	J	P	Uncertainty near the detection limit.
MS49S_20111108-D	TETRACHLOROETHENE	0.15	J	P	Uncertainty near the detection limit.
MS51I_20111103	1,1,1-TRICHLOROETHANE	0.23	J	P	Uncertainty near the detection limit.
MS51I_20111103	1,1-DICHLOROETHANE	0.3	J	P	Uncertainty near the detection limit.
MS51I_20111103	1,1-DICHLOROETHENE	0.1	J	P	Uncertainty near the detection limit.
MS51I_20111103	TRANS-1,2-DICHLOROETHENE	0.06	J	P	Uncertainty near the detection limit.
MS52D_20111101	1,1,1-TRICHLOROETHANE	0.12	J	P	Uncertainty near the detection limit.
MS52D_20111101	1,1-DICHLOROETHANE	0.11	J	P	Uncertainty near the detection limit.
MS52D_20111101	1,1-DICHLOROETHENE	0.1	J	P	Uncertainty near the detection limit.
MS52D_20111101	TETRACHLOROETHENE	0.24	J	CP	Calibration noncompliance and Uncertainty near detection limit
MS52I_20111107	1,1,1-TRICHLOROETHANE	0.14	J	P	Uncertainty near the detection limit.
MS52I_20111107	1,1-DICHLOROETHANE	0.32	J	P	Uncertainty near the detection limit.
MS52I_20111107	1,1-DICHLOROETHENE	0.15	J	P	Uncertainty near the detection limit.
MS52S_20111107	CIS-1,2-DICHLOROETHENE	0.29	J	P	Uncertainty near the detection limit.
MS52S_20111107	TETRACHLOROETHENE	0.76	J	C	Calibration noncompliance
MS52S_20111107	TRANS-1,2-DICHLOROETHENE	0.06	J	P	Uncertainty near the detection limit.
MS53PC_20111102	CIS-1,2-DICHLOROETHENE	0.37	J	P	Uncertainty near the detection limit.
MS53PC_20111102-D	CIS-1,2-DICHLOROETHENE	0.35	J	P	Uncertainty near the detection limit.
MS54I	1,1-DICHLOROETHANE	1.4	J	P	Uncertainty near the detection limit.
MS54I	METHYLENE CHLORIDE	0.55	J	P	Uncertainty near the detection limit.
MS54I_20110510	1,1-DICHLOROETHANE	1.8	J	P	Uncertainty near the detection limit.
MS54I_20110510	TETRACHLOROETHENE	1.3	J	P	Uncertainty near the detection limit.
MS54I_20110817	1,1-DICHLOROETHANE	1.6	J	P	Uncertainty near the detection limit.
MS54I_20110817	VINYL CHLORIDE	0.38	UJ	C	Calibration noncompliance
MS54I_20111116	TETRACHLOROETHENE	0.19	J	P	Uncertainty near the detection limit.
MS54S	1,1-DICHLOROETHENE	2.5	J	P	Uncertainty near the detection limit.
MS54S	METHYLENE CHLORIDE	0.55	J	P	Uncertainty near the detection limit.
MS54S_20110510	1,1-DICHLOROETHANE	1.7	J	P	Uncertainty near the detection limit.

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SAMPLE ID	PARAMETER	RESULT (UG/L)	QUALIFIER	QUAL CODE	REASON FOR QUALIFICATION
MS54S_20110817	VINYL CHLORIDE	0.43	J	CP	Calibration noncompliance and Uncertainty near detection limit
MS54S_20111117	TETRACHLOROETHENE	0.55	J	P	Uncertainty near the detection limit.
MS55I	1,1-DICHLOROETHENE	0.39	J	P	Uncertainty near the detection limit.
MS55I_20110510	1,1-DICHLOROETHENE	0.42	J	P	Uncertainty near the detection limit.
MS55I_20110817	1,1-DICHLOROETHENE	0.31	J	P	Uncertainty near the detection limit.
MS55I_20110817	VINYL CHLORIDE	0.075	UJ	C	Calibration noncompliance
MS55I_20111116	1,1-DICHLOROETHANE	0.45	J	P	Uncertainty near the detection limit.
MS55I_20111116	1,1-DICHLOROETHENE	0.24	J	P	Uncertainty near the detection limit.
MS56I	VINYL CHLORIDE	0.14	J	P	Uncertainty near the detection limit.
MS56I_20110510	VINYL CHLORIDE	0.16	J	P	Uncertainty near the detection limit.
MS56I_20110817	VINYL CHLORIDE	0.13	J	CP	Calibration noncompliance and Uncertainty near detection limit
MS56S_20110817	VINYL CHLORIDE	0.34	J	C	Calibration noncompliance
PESCW02_20111107	TETRACHLOROETHENE	0.29	J	P	Uncertainty near the detection limit.
PESCW02_20111107	TRANS-1,2-DICHLOROETHENE	0.32	J	P	Uncertainty near the detection limit.
QCR01_20110509	TRICHLOROETHENE	0.16	J	P	Uncertainty near the detection limit.
QCR01_20111101	TETRACHLOROETHENE	0.099	UJ	C	Calibration noncompliance
QCR02_20110215	1,1,1-TRICHLOROETHANE	0.075	UJ	C	Calibration noncompliance
QCR02_20110215	CIS-1,2-DICHLOROETHENE	0.09	J	P	Uncertainty near the detection limit.
QCR02_20110215	TRICHLOROETHENE	0.39	J	P	Uncertainty near the detection limit.
QCR02_20110510	TRICHLOROETHENE	0.26	J	P	Uncertainty near the detection limit.
QCR03_20110216	TRICHLOROETHENE	0.43	J	P	Uncertainty near the detection limit.
QCR03_20110511	CIS-1,2-DICHLOROETHENE	0.41	J	P	Uncertainty near the detection limit.
QCR03_20110817	CIS-1,2-DICHLOROETHENE	0.19	J	P	Uncertainty near the detection limit.
QCR03_20110817	TRANS-1,2-DICHLOROETHENE	0.07	J	P	Uncertainty near the detection limit.
QCR03_20110817	VINYL CHLORIDE	0.075	UJ	C	Calibration noncompliance
QCR03_20111103	1,1,1-TRICHLOROETHANE	0.075	UJ	C	Calibration noncompliance
QCR04_20110217	CIS-1,2-DICHLOROETHENE	0.38	J	P	Uncertainty near the detection limit.
QCR04_20110217	TRANS-1,2-DICHLOROETHENE	0.32	J	P	Uncertainty near the detection limit.
QCR04_20110818	CIS-1,2-DICHLOROETHENE	0.12	J	P	Uncertainty near the detection limit.
QCR04_20110818	TRANS-1,2-DICHLOROETHENE	0.19	J	P	Uncertainty near the detection limit.
QCR04_20110818	TRICHLOROETHENE	0.37	J	P	Uncertainty near the detection limit.
QCR04_20110818	VINYL CHLORIDE	0.075	UJ	C	Calibration noncompliance
QCR04_20111104	1,1,1-TRICHLOROETHANE	0.075	UJ	C	Calibration noncompliance
QCR07_20111109	VINYL CHLORIDE	0.075	UJ	C	Calibration noncompliance
QCR08_20111110	TRICHLOROETHENE	0.42	J	P	Uncertainty near the detection limit.

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SAMPLE ID	PARAMETER	RESULT (UG/L)	QUALIFIER	QUAL CODE	REASON FOR QUALIFICATION
QCR12_20111115	TRICHLOROETHENE	0.16	J	P	Uncertainty near the detection limit.
QCR13_20111117	CIS-1,2-DICHLOROETHENE	0.08	J	P	Uncertainty near the detection limit.
QCR13_20111117	TRICHLOROETHENE	0.2	J	P	Uncertainty near the detection limit.
QCR14_20111118	1,1,1-TRICHLOROETHANE	0.075	UJ	C	Calibration noncompliance
QCR14_20111118	CIS-1,2-DICHLOROETHENE	0.08	J	P	Uncertainty near the detection limit.
QCR14_20111118	TRANS-1,2-DICHLOROETHENE	0.19	J	P	Uncertainty near the detection limit.
QCT01_20110214	1,1,1-TRICHLOROETHANE	0.075	UJ	C	Calibration noncompliance
QCT01_20110214	METHYLENE CHLORIDE	0.11	J	P	Uncertainty near the detection limit.
QCT01_20111101	TETRACHLOROETHENE	0.099	UJ	C	Calibration noncompliance
QCT02_20110817	VINYL CHLORIDE	0.075	UJ	C	Calibration noncompliance
QCT02_20111101	TETRACHLOROETHENE	0.099	UJ	C	Calibration noncompliance
QCT03_20110216	METHYLENE CHLORIDE	0.12	J	P	Uncertainty near the detection limit.
QCT05_20111104	1,1,1-TRICHLOROETHANE	0.075	UJ	C	Calibration noncompliance
QCT11_20111117	CIS-1,2-DICHLOROETHENE	0.13	J	P	Uncertainty near the detection limit.
QCT11_20111117	TRICHLOROETHENE	0.3	J	P	Uncertainty near the detection limit.
TB_20110727	TRICHLOROETHENE	0.12	J	P	Uncertainty near the detection limit.
USGS02_20111110	TRANS-1,2-DICHLOROETHENE	0.25	J	P	Uncertainty near the detection limit.
USGS05_20111101	TETRACHLOROETHENE	0.13	J	CP	Calibration noncompliance and Uncertainty near detection limit
USGS05_20111101	TRICHLOROETHENE	0.17	J	P	Uncertainty near the detection limit.
USGS10_20111103	TRANS-1,2-DICHLOROETHENE	0.17	J	P	Uncertainty near the detection limit.

D-3 DATA VALIDATION LETTERS

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**S. WARINO**	**DATE:**	**JANUARY 11, 2012**
FROM:	**EDWARD SEDLMYER**	**COPIES:**	**DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – SELECT VOCs**
CTO F27C NIROP FRIDLEY
SAMPLE DELIVERY GROUP (SDG) – K110800

SAMPLES: 36/Aqueous

AT05A	AT05B	AT07	AT08
AT09	AT10	MS03PC	MS05D
MS05PC	MS06S	MS07D	MS10IS
MS15D	MS16S	MS17S	MS24S
MS34S	MS35S	MS42I	MS43D
MS44D	MS48PC	MS49D	MS51I
MS52D	MS53PC	QCD02	QCD03
QCR01	QCR02	QCR03	QCT01
QCT02	QCT03	USGS05	USGS10

Overview

The sample set for NIROP Fridley, CTO F27C, SDG K110800 consists of thirty (30) aqueous environmental samples, three (3) rinse blanks (QCR01, QCR02, and QCR03), and three (3) trip blanks (QCT01, QCT02, and QCT03). Two field duplicate pairs were associated with this SDG: MS53PC / QCD02 and MS24S / QCD03.

All samples were analyzed for select volatile organic compounds (VOCs) including vinyl chloride, 1,1-dichloroethene, trans-1,2-dichloroethene, 1,1-dichloroethane, cis-1,2-dichloroethene, 1,1,1-trichloroethane, trichloroethene and tetrachloroethene. The samples were collected by Bay West on November 1, 2, and 3, 2011 and analyzed by Columbia Analytical Services, Inc. VOC analyses were conducted using SW846 method 8260B.

These data were evaluated based on the following parameters:

* • Data Completeness
* • Holding Times
* • GC/MS Tuning and System Performance
• Initial and Continuing Calibrations
* • Laboratory Method and Field Quality Control Blank Analyses
* • Surrogate Recoveries
* • Laboratory Control Sample / Laboratory Control Sample Duplicate Results
* • Matrix Spike / Matrix Spike Duplicate Results
* • Field Duplicate Precision
* • Internal Standard Recoveries
* • Compound Quantitation
* • Compound Identification
* • Detection Limits

* - All quality control criteria were met for this parameter.

VOC

Calibration verification percent difference (%D) exceeded the 20% quality control limit for 1,1,1-trichloroethane on instrument MS04, on 11/14/11, at 11:16. The positive and nondetected 1,1,1-trichloroethane results for samples MS48PC, MS49D, MS15D, QCR03, AT09, and MS44D have been qualified as estimated (J) and (UJ), respectively.

Calibration verification %D exceeded the 20% quality control limit for tetrachloroethene on instrument MS13, on 11/09/11, at 13:20. The positive and nondetected tetrachloroethene results for samples QCT01, QCT02, MS05D, MS10IS, USGS05, MS17S, MS16S, MS52D, MS42I, and QCR01 have been qualified as estimated (J) and (UJ), respectively.

Notes

All results were reported to the method detection limit (MDL) by the laboratory.

Positive results reported below the reporting limit (RL) but above the method detection limit (MDL) for the organic analyses were qualified as estimated, "J".

The surrogate 4-bromofluorobenzene had a percent recovery greater than the quality control limit for the laboratory control sample associated with QC batch 1111643. No action was taken on this basis because QC samples are not qualified.

Samples AT05A, AT05B, AT07, AT08, AT10, MS34S, and MS44D were diluted due to concentrations greater than the linear range of the instrument for several compounds. The laboratory submitted multiple runs of the samples. The lowest detection limits were used to report the nondetected compounds.

Executive Summary

Laboratory Performance: Continuing calibration noncompliance for two compounds resulted in the qualification of data.

Other Factors Affecting Data Quality: Positive results reported below the reporting limit (RL) but above the method detection limit (MDL) for the organic analyses were qualified as estimated, (J).

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Organic Review", October 1999, and the Department of Defense (DoD) document entitled "Quality Systems Manual (QSM) for Environmental Laboratories", April 2009.

The text of this report has been formulated to address only those problem areas affecting data quality.

Tetra Tech NUS
Edward Sedlmyer
Chemist/Data Validator

Tetra Tech NUS
Joseph A. Samchuck
Quality Assurance Officer

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = ICP PDS Recovery Noncompliance; MSA's $r < 0.995$
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = RPD between columns/detectors >40% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient $r < 0.995$
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is less than sample activity
Z1 = Tentatively Identified Compound considered presumptively present
Z2 = Tentatively Identified Compound column bleed

PROJ_NO: 02583 SDG: K1110800 FRACTION: OV MEDIA: WATER	NSAMPLE	AT05A			AT05ADL			AT05B			AT05BDL		
	LAB_ID	K1110800-033			K1110800-033DL			K1110800-035			K1110800-035DL		
	SAMP_DATE	11/2/2011			11/2/2011			11/2/2011			11/2/2011		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	100.0			100.0			100.0			100.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.075	U					0.075	U				
1,1-DICHLOROETHANE		0.077	U					0.64					
1,1-DICHLOROETHENE		0.55						0.55					
CIS-1,2-DICHLOROETHENE		54						8.9					
TETRACHLOROETHENE		0.54						2					
TRANS-1,2-DICHLOROETHENE		21						8.9					
TRICHLOROETHENE					220						210		
VINYL CHLORIDE		0.075	U					0.17	J	P			

PROJ_NO: 02583	NSAMPLE	MS02D			MS03IS			MS09S			MS11S		
SDG: K1111233	LAB_ID	K1111233-019			K1111233-017			K1111233-021			K1111233-031		
FRACTION: OV	SAMP_DATE	11/15/2011			11/14/2011			11/15/2011			11/15/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.075	U		0.075	U		0.55			0.075	U	
1,1-DICHLOROETHANE		0.077	U		0.13	J	P	0.09	J	P	0.64		
1,1-DICHLOROETHENE		0.074	U		0.23	J	P	0.074	U		0.28	J	P
CIS-1,2-DICHLOROETHENE		3.2			14			2					
TETRACHLOROETHENE		0.62			15			7			0.099	U	
TRANS-1,2-DICHLOROETHENE		0.62			0.26	J	P	0.07	J	P	8.5		
TRICHLOROETHENE		3.7			28			40			33		
VINYL CHLORIDE		0.11	J	P	0.075	U		0.075	U		0.075	U	

PROJ_NO: 02583 SDG: K1111233 FRACTION: OV MEDIA: WATER	NSAMPLE	MS11SDL			MS12D			MS12IS			MS12ISDL		
	LAB_ID	K1111233-031DL			K1111233-002			K1111233-007			K1111233-007DL		
	SAMP_DATE	11/15/2011			11/14/2011			11/15/2011			11/15/2011		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE					0.075	U		0.075	U				
1,1-DICHLOROETHANE					0.077	U		1.3					
1,1-DICHLOROETHENE					0.2	J	P	1.1					
CIS-1,2-DICHLOROETHENE		130			4.1			34					
TETRACHLOROETHENE					35			0.099	U				
TRANS-1,2-DICHLOROETHENE					0.18	J	P				72		
TRICHLOROETHENE					27			44					
VINYL CHLORIDE					0.12	J	P	0.52					

PROJ_NO: 02583 SDG: K1111233 FRACTION: OV MEDIA: WATER	NSAMPLE	MS13IS			MS20S			MS29S			MS29SDL		
	LAB_ID	K1111233-006			K1111233-018			K1111233-004			K1111233-004DL		
	SAMP_DATE	11/15/2011			11/15/2011			11/15/2011			11/15/2011		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.075	U		0.075	U		0.075	U				
1,1-DICHLOROETHANE		0.077	U		0.077	U		0.25	J	P			
1,1-DICHLOROETHENE		0.17	J	P	0.074	U		0.14	J	P			
CIS-1,2-DICHLOROETHENE		1.8			0.067	U					79		
TETRACHLOROETHENE		0.099	U		0.099	U		0.44	J	P			
TRANS-1,2-DICHLOROETHENE		0.53			0.057	U		3.1					
TRICHLOROETHENE		19			0.37	J		22					
VINYL CHLORIDE		0.075	U		0.075	U		0.075	U				

PROJ_NO: 02583 SDG: K1111233 FRACTION: OV MEDIA: WATER	NSAMPLE	MS30D			MS30I			MS30IDL			MS32S		
	LAB_ID	K1111233-016			K1111233-020			K1111233-020DL			K1111233-005		
	SAMP_DATE	11/14/2011			11/15/2011			11/15/2011			11/15/2011		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.075	U		0.075	U					0.075	U	
1,1-DICHLOROETHANE		0.077	U		0.82						0.48	J	P
1,1-DICHLOROETHENE		0.17	J	P	0.54						0.66		
CIS-1,2-DICHLOROETHENE		3.5			4.5								
TETRACHLOROETHENE		2.1			1.7						0.099	U	
TRANS-1,2-DICHLOROETHENE		0.46	J	P	0.93						24		
TRICHLOROETHENE		18						91			19		
VINYL CHLORIDE		0.075	U		0.075	U					0.11	J	P

PROJ_NO: 02583	NSAMPLE	MS32SDL			MS35D			MS36D			MS36I		
SDG: K1111233	LAB_ID	K1111233-005DL			K1111233-003			K1111233-024			K1111233-026		
FRACTION: OV	SAMP_DATE	11/15/2011			11/14/2011			11/16/2011			11/16/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE					0.075	U		0.075	U		0.075	U	
1,1-DICHLOROETHANE					0.077	U		0.077	U		0.69		
1,1-DICHLOROETHENE					0.1	J	P	0.074	U		1.1		
CIS-1,2-DICHLOROETHENE		83			8.4			11					
TETRACHLOROETHENE					0.22	J	P	0.91			0.17	J	P
TRANS-1,2-DICHLOROETHENE					0.58			0.6			4.7		
TRICHLOROETHENE					20			37					
VINYL CHLORIDE					0.075	U		0.075	U		0.12	J	P

PROJ_NO: 02583 SDG: K1111233 FRACTION: OV MEDIA: WATER	NSAMPLE	MS36IDL			MS37S			MS40S			MS41D		
	LAB_ID	K1111233-026DL			K1111233-015			K1111233-001			K1111233-010		
	SAMP_DATE	11/16/2011			11/14/2011			11/14/2011			11/16/2011		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE					0.075	U		0.075	U		0.075	U	
1,1-DICHLOROETHANE					0.2	J	P	0.16	J	P	0.26	J	P
1,1-DICHLOROETHENE					0.42	J	P	0.074	U		0.2	J	P
CIS-1,2-DICHLOROETHENE		120			21			0.68			2.2		
TETRACHLOROETHENE					0.099	U		0.43	J	P	6.2		
TRANS-1,2-DICHLOROETHENE					24			0.057	U		0.57		
TRICHLOROETHENE		120			18			11			22		
VINYL CHLORIDE					0.075	U		0.075	U		0.075	U	

PROJ_NO: 02583	NSAMPLE	MS41I			MS41IDL			MS41S			MS54I		
SDG: K1111233	LAB_ID	K1111233-011			K1111233-011DL			K1111233-012			K1111233-013		
FRACTION: OV	SAMP_DATE	11/16/2011			11/16/2011			11/16/2011			11/16/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.075	U					0.075	U		0.075	U	
1,1-DICHLOROETHANE		0.49	J	P				0.077	U		2.6		
1,1-DICHLOROETHENE		0.64						0.074	U		3		
CIS-1,2-DICHLOROETHENE		27						3.5					
TETRACHLOROETHENE		3.1						0.099	U		0.19	J	P
TRANS-1,2-DICHLOROETHENE		6.2						0.71			20		
TRICHLOROETHENE					110			17					
VINYL CHLORIDE		0.09	J	P				0.075	U		0.7		

PROJ_NO: 02583	NSAMPLE	MS54IDL			MS54IDL2			MS55I			MS56I		
SDG: K1111233	LAB_ID	K1111233-013DL			K1111233-013DL2			K1111233-025			K1111233-028		
FRACTION: OV	SAMP_DATE	11/16/2011			11/16/2011			11/16/2011			11/16/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE								0.075	U		0.075	U	
1,1-DICHLOROETHANE								0.45	J	P	9.5		
1,1-DICHLOROETHENE								0.24	J	P	2.1		
CIS-1,2-DICHLOROETHENE		150						22					
TETRACHLOROETHENE								0.099	U		0.099	U	
TRANS-1,2-DICHLOROETHENE								1.7			33		
TRICHLOROETHENE					780			59					
VINYL CHLORIDE								0.075	U		0.32		

PROJ_NO: 02583 SDG: K1111233 FRACTION: OV MEDIA: WATER	NSAMPLE	MS56IDL			MS56S			MS56SDL			QCD07		
	LAB_ID	K1111233-028DL			K1111233-023			K1111233-023DL			K1111233-008		
	SAMP_DATE	11/16/2011			11/16/2011			11/16/2011			11/15/2011		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF										MS12IS		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE					0.075	U					0.075	U	
1,1-DICHLOROETHANE					7.5						1.3		
1,1-DICHLOROETHENE					1.4						1.1		
CIS-1,2-DICHLOROETHENE		260						420			35		
TETRACHLOROETHENE					0.099	U					0.099	U	
TRANS-1,2-DICHLOROETHENE					63								
TRICHLOROETHENE		280			58						45		
VINYL CHLORIDE					0.43						0.51		

PROJ_NO: 02583	NSAMPLE	QCD07DL			QCD11			QCD11DL			QCR10		
SDG: K1111233	LAB_ID	K1111233-008DL			K1111233-027			K1111233-027DL			K1111233-030		
FRACTION: OV	SAMP_DATE	11/15/2011			11/16/2011			11/16/2011			11/14/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF	MS12IS			MS36I			MS36I					
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE					0.075	U					0.075	U	
1,1-DICHLOROETHANE					0.66						0.077	U	
1,1-DICHLOROETHENE					1.1						0.074	U	
CIS-1,2-DICHLOROETHENE								120			0.067	U	
TETRACHLOROETHENE					0.16	J	P				0.099	U	
TRANS-1,2-DICHLOROETHENE		82			4.6						0.057	U	
TRICHLOROETHENE								120			0.1	U	
VINYL CHLORIDE					0.11	J	P				0.075	U	

PROJ_NO: 02583	NSAMPLE	QCR11			QCR12			QCT09			QCT10		
SDG: K1111233	LAB_ID	K1111233-009			K1111233-022			K1111233-014			K1111233-029		
FRACTION: OV	SAMP_DATE	11/15/2011			11/15/2011			11/14/2011			11/14/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.075	U		0.075	U		0.075	U		0.075	U	
1,1-DICHLOROETHANE		0.077	U		0.077	U		0.077	U		0.077	U	
1,1-DICHLOROETHENE		0.074	U		0.074	U		0.074	U		0.074	U	
CIS-1,2-DICHLOROETHENE		0.067	U		0.067	U		0.067	U		0.067	U	
TETRACHLOROETHENE		0.099	U		0.099	U		0.099	U		0.099	U	
TRANS-1,2-DICHLOROETHENE		0.057	U		0.057	U		0.057	U		0.057	U	
TRICHLOROETHENE		0.1	U		0.16	J	P	0.1	U		0.1	U	
VINYL CHLORIDE		0.075	U		0.075	U		0.075	U		0.075	U	

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1110800
Date Collected: 11/02/2011
Date Received: 11/04/2011
Date Extracted: 11/11/2011
Date Analyzed: 11/11/2011

Volatile Organic Compounds

Sample Name: AT05A
Lab Code: K1110800-033
File ID: J:\MS13\DATA\111111\1111F025.D
Instrument ID: MS13

Units: ug/L
Basis: NA
Level: Low

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1111535
Calibration ID: CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.55**		0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**21**		0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**54**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**240**	E	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**0.54**		0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	105	73-122	11/11/11	Acceptable
Toluene-d8	121	65-144	11/11/11	Acceptable
4-Bromofluorobenzene	107	68-117	11/11/11	Acceptable

Comments

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1110800
Date Collected: 11/02/2011
Date Received: 11/04/2011
Date Extracted: 11/10/2011
Date Analyzed: 11/10/2011

Volatile Organic Compounds

Sample Name: AT05ADL
Lab Code: K1110800-033
File ID: J:\MS13\DATA\111011\1110F022.D
Instrument ID: MS13

Units: ug/L
Basis: NA
Level: Low

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1111499
Calibration ID: CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 5

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.38	U	1.0	0.38	
75-35-4	1,1-Dichloroethene	**0.55**	JD	2.5	0.37	
156-60-5	trans-1,2-Dichloroethene	**19**	D	2.5	0.29	
75-34-3	1,1-Dichloroethane	**1.2**	JD	2.5	0.39	
156-59-2	cis-1,2-Dichloroethene	**49**	D	2.5	0.34	
71-55-6	1,1,1-Trichloroethane (TCA)	0.38	U	2.5	0.38	
79-01-6	Trichloroethene (TCE)	**220**	D	2.5	0.50	
127-18-4	Tetrachloroethene (PCE)	**0.55**	JD	2.5	0.50	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	104	73-122	11/10/11	Acceptable
Toluene-d8	118	65-144	11/10/11	Acceptable
4-Bromofluorobenzene	107	68-117	11/10/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1110800
Date Collected: 11/02/2011
Date Received: 11/04/2011
Date Extracted: 11/14/2011
Date Analyzed: 11/14/2011

Volatile Organic Compounds

Sample Name: AT05B
Lab Code: K1110800-035
File ID: J:\MS13\DATA\111411\1114F019.D
Instrument ID: MS13

Units: ug/L
Basis: NA
Level: Low

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1111607
Calibration ID: CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.17**	J	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.55**		0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**8.9**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.64**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**8.9**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**220**	E	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**2.0**		0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	107	73-122	11/14/11	Acceptable
Toluene-d8	122	65-144	11/14/11	Acceptable
4-Bromofluorobenzene	110	68-117	11/14/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1110800
Date Collected: 11/02/2011
Date Received: 11/04/2011
Date Extracted: 11/14/2011
Date Analyzed: 11/14/2011

Volatile Organic Compounds

Sample Name: AT05BDL
Lab Code: K1110800-035
File ID: J:\MS13\DATA\111411\1114F018.D
Instrument ID: MS13

Units: ug/L
Basis: NA
Level: Low

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1111607
Calibration ID: CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 5

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.38	U	1.0	0.38	
75-35-4	1,1-Dichloroethene	**0.50**	JD	2.5	0.37	
156-60-5	trans-1,2-Dichloroethene	**8.4**	D	2.5	0.29	
75-34-3	1,1-Dichloroethane	**0.65**	JD	2.5	0.39	
156-59-2	cis-1,2-Dichloroethene	**8.6**	D	2.5	0.34	
71-55-6	1,1,1-Trichloroethane (TCA)	0.38	U	2.5	0.38	
79-01-6	Trichloroethene (TCE)	**210**	D	2.5	0.50	
127-18-4	Tetrachloroethene (PCE)	**1.9**	JD	2.5	0.50	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	105	73-122	11/14/11	Acceptable
Toluene-d8	120	65-144	11/14/11	Acceptable
4-Bromofluorobenzene	111	68-117	11/14/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1110800
Date Collected: 11/02/2011
Date Received: 11/04/2011
Date Extracted: 11/11/2011
Date Analyzed: 11/11/2011

Volatile Organic Compounds

Sample Name: AT07
Lab Code: K1110800-032
File ID: J:\MS13\DATA\111111\1111F024.D
Instrument ID: MS13

Units: ug/L
Basis: NA
Level: Low

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1111535
Calibration ID: CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.37**		0.20	0.075	
75-35-4	1,1-Dichloroethene	**1.1**		0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**91**	E	0.50	0.057	
75-34-3	1,1-Dichloroethane	**1.5**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**130**	E	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**190**	E	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**0.60**		0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	108	73-122	11/11/11	Acceptable
Toluene-d8	119	65-144	11/11/11	Acceptable
4-Bromofluorobenzene	109	68-117	11/11/11	Acceptable

Comments

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1110800
Date Collected: 11/02/2011
Date Received: 11/04/2011
Date Extracted: 11/10/2011
Date Analyzed: 11/10/2011

Volatile Organic Compounds

Sample Name: AT07DL
Lab Code: K1110800-032
File ID: J:\MS13\DATA\111011\1110F021.D
Instrument ID: MS13

Units: ug/L
Basis: NA
Level: Low

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1111499
Calibration ID: CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 5

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.38	U	1.0	0.38	
75-35-4	1,1-Dichloroethene	**0.85**	JD	2.5	0.37	
156-60-5	trans-1,2-Dichloroethene	**81**	D	2.5	0.29	
75-34-3	1,1-Dichloroethane	**1.4**	JD	2.5	0.39	
156-59-2	cis-1,2-Dichloroethene	**110**	D	2.5	0.34	
71-55-6	1,1,1-Trichloroethane (TCA)	0.38	U	2.5	0.38	
79-01-6	Trichloroethene (TCE)	**170**	D	2.5	0.50	
127-18-4	Tetrachloroethene (PCE)	**0.60**	JD	2.5	0.50	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	106	73-122	11/10/11	Acceptable
Toluene-d8	119	65-144	11/10/11	Acceptable
4-Bromofluorobenzene	107	68-117	11/10/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1110800
Date Collected: 11/02/2011
Date Received: 11/04/2011
Date Extracted: 11/11/2011
Date Analyzed: 11/11/2011

Volatile Organic Compounds

Sample Name: AT08
Lab Code: K1110800-031
File ID: J:\MS13\DATA\111111\1111F023.D
Instrument ID: MS13

Units: ug/L
Basis: NA
Level: Low

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1111535
Calibration ID: CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.33**		0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.82**		0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**45**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**9.8**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**320**	E	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**92**	E	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	107	73-122	11/11/11	Acceptable
Toluene-d8	120	65-144	11/11/11	Acceptable
4-Bromofluorobenzene	109	68-117	11/11/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1110800
Date Collected: 11/02/2011
Date Received: 11/04/2011
Date Extracted: 11/10/2011
Date Analyzed: 11/10/2011

Volatile Organic Compounds

Sample Name: AT08DL
Lab Code: K1110800-031
File ID: J:\MS13\DATA\111011\1110F020.D
Instrument ID: MS13

Units: ug/L
Basis: NA
Level: Low

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1111499
Calibration ID: CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 5

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.38	U	1.0	0.38	
75-35-4	1,1-Dichloroethene	**0.70**	JD	2.5	0.37	
156-60-5	trans-1,2-Dichloroethene	**40**	D	2.5	0.29	
75-34-3	1,1-Dichloroethane	**8.8**	D	2.5	0.39	
156-59-2	cis-1,2-Dichloroethene	**290**	D	2.5	0.34	
71-55-6	1,1,1-Trichloroethane (TCA)	0.38	U	2.5	0.38	
79-01-6	Trichloroethene (TCE)	**82**	D	2.5	0.50	
127-18-4	Tetrachloroethene (PCE)	0.50	U	2.5	0.50	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	107	73-122	11/10/11	Acceptable
Toluene-d8	120	65-144	11/10/11	Acceptable
4-Bromofluorobenzene	109	68-117	11/10/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1110800
Date Collected: 11/02/2011
Date Received: 11/04/2011
Date Extracted: 11/14/2011
Date Analyzed: 11/14/2011

Volatile Organic Compounds

Sample Name: AT09
Lab Code: K1110800-030
File ID: J:\MS04\DATA\111411\1114F017.D
Instrument ID: MS04

Units: ug/L
Basis: NA
Level: Low

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1111595
Calibration ID: CAL11002

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.080**	J	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.22**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**4.2**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.59**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**59**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**67**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	115	73-122	11/14/11	Acceptable
Toluene-d8	117	65-144	11/14/11	Acceptable
4-Bromofluorobenzene	106	68-117	11/14/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1110800
Date Collected: 11/02/2011
Date Received: 11/04/2011
Date Extracted: 11/11/2011
Date Analyzed: 11/11/2011

Volatile Organic Compounds

Sample Name: AT10
Lab Code: K1110800-034
File ID: J:\MS13\DATA\111111\1111F026.D
Instrument ID: MS13

Units: ug/L
Basis: NA
Level: Low

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1111535
Calibration ID: CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.30**		0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.43**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**33**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.48**	J	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**17**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**180**	E	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	106	73-122	11/11/11	Acceptable
Toluene-d8	120	65-144	11/11/11	Acceptable
4-Bromofluorobenzene	109	68-117	11/11/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1110800
Date Collected: 11/02/2011
Date Received: 11/04/2011
Date Extracted: 11/10/2011
Date Analyzed: 11/10/2011

Volatile Organic Compounds

Sample Name: AT10DL
Lab Code: K1110800-034
File ID: J:\MS13\DATA\111011\1110F023.D
Instrument ID: MS13

Units: ug/L
Basis: NA
Level: Low

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1111499
Calibration ID: CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 5

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.38	U	1.0	0.38	
75-35-4	1,1-Dichloroethene	0.37	U	2.5	0.37	
156-60-5	trans-1,2-Dichloroethene	**30**	D	2.5	0.29	
75-34-3	1,1-Dichloroethane	**0.45**	JD	2.5	0.39	
156-59-2	cis-1,2-Dichloroethene	**16**	D	2.5	0.34	
71-55-6	1,1,1-Trichloroethane (TCA)	0.38	U	2.5	0.38	
79-01-6	Trichloroethene (TCE)	**170**	D	2.5	0.50	
127-18-4	Tetrachloroethene (PCE)	0.50	U	2.5	0.50	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	104	73-122	11/10/11	Acceptable
Toluene-d8	118	65-144	11/10/11	Acceptable
4-Bromofluorobenzene	109	68-117	11/10/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1110800
Date Collected: 11/02/2011
Date Received: 11/04/2011
Date Extracted: 11/10/2011
Date Analyzed: 11/10/2011

Volatile Organic Compounds

Sample Name: MS03PC
Lab Code: K1110800-003
File ID: J:\MS13\DATA\111011\1110F015.D
Instrument ID: MS13

Units: ug/L
Basis: NA
Level: Low

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1111499
Calibration ID: CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**0.51**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**1.1**		0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	107	73-122	11/10/11	Acceptable
Toluene-d8	120	65-144	11/10/11	Acceptable
4-Bromofluorobenzene	109	68-117	11/10/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1110800
Date Collected: 11/01/2011
Date Received: 11/04/2011
Date Extracted: 11/09/2011
Date Analyzed: 11/09/2011

Volatile Organic Compounds

Sample Name: MS05D
Lab Code: K1110800-001
File ID: J:\MS13\DATA\110911\1109F018.D
Instrument ID: MS13

Units: ug/L
Basis: NA
Level: Low

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1111444
Calibration ID: CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**0.34**	J	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**0.15**	J	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**1.4**		0.50	0.099	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	105	73-122	11/09/11	Acceptable
Toluene-d8	117	65-144	11/09/11	Acceptable
4-Bromofluorobenzene	109	68-117	11/09/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1110800
Date Collected: 11/02/2011
Date Received: 11/04/2011
Date Extracted: 11/10/2011
Date Analyzed: 11/10/2011

Volatile Organic Compounds

Sample Name: MS05PC
Lab Code: K1110800-018
File ID: J:\MS13\DATA\111011\1110F017.D
Instrument ID: MS13

Units: ug/L
Basis: NA
Level: Low

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1111499
Calibration ID: CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**0.17**	J	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**2.0**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**42**		0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	105	73-122	11/10/11	Acceptable
Toluene-d8	119	65-144	11/10/11	Acceptable
4-Bromofluorobenzene	108	68-117	11/10/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1110800
Date Collected: 11/03/2011
Date Received: 11/04/2011
Date Extracted: 11/11/2011
Date Analyzed: 11/11/2011

Volatile Organic Compounds

Sample Name: MS06S
Lab Code: K1110800-005
File ID: J:\MS04\DATA\111111\1111F013.D
Instrument ID: MS04

Units: ug/L
Basis: NA
Level: Low

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1111531
Calibration ID: CAL11002

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.11**	J	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**3.8**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**2.7**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	114	73-122	11/11/11	Acceptable
Toluene-d8	117	65-144	11/11/11	Acceptable
4-Bromofluorobenzene	106	68-117	11/11/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1110800
Date Collected: 11/03/2011
Date Received: 11/04/2011
Date Extracted: 11/11/2011
Date Analyzed: 11/11/2011

Volatile Organic Compounds

Sample Name: MS07D
Lab Code: K1110800-025
File ID: J:\MS04\DATA\111111\1111F018.D
Instrument ID: MS04

Units: ug/L
Basis: NA
Level: Low

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1111531
Calibration ID: CAL11002

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.090**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.16**	J	0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.40**	J	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**2.4**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**14**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	118	73-122	11/11/11	Acceptable
Toluene-d8	118	65-144	11/11/11	Acceptable
4-Bromofluorobenzene	105	68-117	11/11/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1110800
Date Collected: 11/01/2011
Date Received: 11/04/2011
Date Extracted: 11/09/2011
Date Analyzed: 11/09/2011

Volatile Organic Compounds

Sample Name: MS10IS
Lab Code: K1110800-002
File ID: J:\MS13\DATA\110911\1109F019.D
Instrument ID: MS13

Units: ug/L
Basis: NA
Level: Low

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1111444
Calibration ID: CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**0.59**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**0.63**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**0.61**		0.50	0.099	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	106	73-122	11/09/11	Acceptable
Toluene-d8	119	65-144	11/09/11	Acceptable
4-Bromofluorobenzene	113	68-117	11/09/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1110800
Date Collected: 11/03/2011
Date Received: 11/04/2011
Date Extracted: 11/14/2011
Date Analyzed: 11/14/2011

Volatile Organic Compounds

Sample Name: MS15D
Lab Code: K1110800-026
File ID: J:\MS04\DATA\111411\1114F015.D
Instrument ID: MS04

Units: ug/L
Basis: NA
Level: Low

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1111595
Calibration ID: CAL11002

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.15**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.42**	J	0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.23**	J	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**1.3**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**20**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**1.9**		0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	113	73-122	11/14/11	Acceptable
Toluene-d8	118	65-144	11/14/11	Acceptable
4-Bromofluorobenzene	106	68-117	11/14/11	Acceptable

Comments

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1110800
Date Collected: 11/01/2011
Date Received: 11/04/2011
Date Extracted: 11/09/2011
Date Analyzed: 11/09/2011

Volatile Organic Compounds

Sample Name: MS16S
Lab Code: K1110800-014
File ID: J:\MS13\DATA\110911\1109F022.D
Instrument ID: MS13

Units: ug/L
Basis: NA
Level: Low

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1111444
Calibration ID: CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.17**	J	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**1.6**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**2.8**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**0.24**	J	0.50	0.099	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	105	73-122	11/09/11	Acceptable
Toluene-d8	119	65-144	11/09/11	Acceptable
4-Bromofluorobenzene	108	68-117	11/09/11	Acceptable

Comments

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1110800
Project:	NIROP/J070047	**Date Collected:**	11/01/2011
Sample Matrix:	Water	**Date Received:**	11/04/2011
		Date Extracted:	11/09/2011
		Date Analyzed:	11/09/2011

Volatile Organic Compounds

Sample Name:	MS17S		
Lab Code:	K1110800-013	**Units:**	ug/L
File ID:	J:\MS13\DATA\110911\1109F021.D	**Basis:**	NA
Instrument ID:	MS13	**Level:**	Low
Extraction Method:	EPA 5030B		
Analysis Method:	8260C	**Extraction Lot:**	KWG1111444
		Calibration ID:	CAL11020
Sample Amount:	10 ml		
% Solids:	NA		
Dilution Factor:	1		

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.11**	J	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**2.3**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**4.0**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**0.17**	J	0.50	0.099	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	106	73-122	11/09/11	Acceptable
Toluene-d8	119	65-144	11/09/11	Acceptable
4-Bromofluorobenzene	111	68-117	11/09/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1110800
Date Collected: 11/03/2011
Date Received: 11/04/2011
Date Extracted: 11/11/2011
Date Analyzed: 11/11/2011

Volatile Organic Compounds

Sample Name: MS24S
Lab Code: K1110800-007
File ID: J:\MS04\DATA\111111\1111F020.D
Instrument ID: MS04

Units: ug/L
Basis: NA
Level: Low

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1111531
Calibration ID: CAL11002

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**1.4**		0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**34**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**17**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**0.23**	J	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	120	73-122	11/11/11	Acceptable
Toluene-d8	117	65-144	11/11/11	Acceptable
4-Bromofluorobenzene	104	68-117	11/11/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1110800
Project:	NIROP/J070047	**Date Collected:**	11/03/2011
Sample Matrix:	Water	**Date Received:**	11/04/2011
		Date Extracted:	11/11/2011
		Date Analyzed:	11/11/2011

Volatile Organic Compounds

Sample Name:	MS34S	**Units:**	ug/L
Lab Code:	K1110800-006	**Basis:**	NA
File ID:	J:\MS04\DATA\111111\1111F022.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111531
Analysis Method:	8260C	**Calibration ID:**	CAL11002

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.12**	J	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.43**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**23**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**6.3**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**300**	E	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**16**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	122	73-122	11/11/11	Acceptable
Toluene-d8	116	65-144	11/11/11	Acceptable
4-Bromofluorobenzene	102	68-117	11/11/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1110800
Date Collected: 11/03/2011
Date Received: 11/04/2011
Date Extracted: 11/11/2011
Date Analyzed: 11/11/2011

Volatile Organic Compounds

Sample Name: MS34SDL
Lab Code: K1110800-006
File ID: J:\MS04\DATA\111111\1111F021.D
Instrument ID: MS04

Units: ug/L
Basis: NA
Level: Low

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1111531
Calibration ID: CAL11002

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 10

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.75	U	2.0	0.75	
75-35-4	1,1-Dichloroethene	0.74	U	5.0	0.74	
156-60-5	trans-1,2-Dichloroethene	**18**	D	5.0	0.57	
75-34-3	1,1-Dichloroethane	**5.6**	D	5.0	0.77	
156-59-2	cis-1,2-Dichloroethene	**240**	D	5.0	0.67	
71-55-6	1,1,1-Trichloroethane (TCA)	0.75	U	5.0	0.75	
79-01-6	Trichloroethene (TCE)	**12**	D	5.0	1.0	
127-18-4	Tetrachloroethene (PCE)	0.99	U	5.0	0.99	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	121	73-122	11/11/11	Acceptable
Toluene-d8	115	65-144	11/11/11	Acceptable
4-Bromofluorobenzene	102	68-117	11/11/11	Acceptable

Comments

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1110800
Project:	NIROP/J070047	**Date Collected:**	11/03/2011
Sample Matrix:	Water	**Date Received:**	11/04/2011
		Date Extracted:	11/11/2011
		Date Analyzed:	11/11/2011

Volatile Organic Compounds

Sample Name:	MS35S	**Units:**	ug/L
Lab Code:	K1110800-010	**Basis:**	NA
File ID:	J:\MS04\DATA\111111\1111F015.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111531
Analysis Method:	8260C	**Calibration ID:**	CAL11002

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.90**		0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**9.3**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**11**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	117	73-122	11/11/11	Acceptable
Toluene-d8	117	65-144	11/11/11	Acceptable
4-Bromofluorobenzene	106	68-117	11/11/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1110800
Project:	NIROP/J070047	**Date Collected:**	11/01/2011
Sample Matrix:	Water	**Date Received:**	11/04/2011
		Date Extracted:	11/09/2011
		Date Analyzed:	11/09/2011

Volatile Organic Compounds

Sample Name:	MS42I	**Units:**	ug/L
Lab Code:	K1110800-016	**Basis:**	NA
File ID:	J:\MS13\DATA\110911\1109F024.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111444
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**2.0**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**2.6**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**0.11**	J	0.50	0.099	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	107	73-122	11/09/11	Acceptable
Toluene-d8	119	65-144	11/09/11	Acceptable
4-Bromofluorobenzene	110	68-117	11/09/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1110800
Project:	NIROP/J070047	**Date Collected:**	11/03/2011
Sample Matrix:	Water	**Date Received:**	11/04/2011
		Date Extracted:	11/11/2011
		Date Analyzed:	11/11/2011

Volatile Organic Compounds

Sample Name:	MS43D	**Units:**	ug/L
Lab Code:	K1110800-023	**Basis:**	NA
File ID:	J:\MS04\DATA\111111\1111F016.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111531
Analysis Method:	8260C	**Calibration ID:**	CAL11002

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.090**	J	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.60**		0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**2.7**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**16**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**1.1**		0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	116	73-122	11/11/11	Acceptable
Toluene-d8	117	65-144	11/11/11	Acceptable
4-Bromofluorobenzene	105	68-117	11/11/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1110800
Project:	NIROP/J070047	**Date Collected:**	11/03/2011
Sample Matrix:	Water	**Date Received:**	11/04/2011
		Date Extracted:	11/14/2011
		Date Analyzed:	11/14/2011

Volatile Organic Compounds

Sample Name:	MS44D	**Units:**	ug/L
Lab Code:	K1110800-028	**Basis:**	NA
File ID:	J:\MS04\DATA\111411\1114F024.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111595
Analysis Method:	8260C	**Calibration ID:**	CAL11002

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.090**	J	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.16**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**1.5**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.30**	J	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**18**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**79**	E	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**0.33**	J	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	121	73-122	11/14/11	Acceptable
Toluene-d8	118	65-144	11/14/11	Acceptable
4-Bromofluorobenzene	101	68-117	11/14/11	Acceptable

Comments

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1110800
Project:	NIROP/J070047	**Date Collected:**	11/03/2011
Sample Matrix:	Water	**Date Received:**	11/04/2011
		Date Extracted:	11/15/2011
		Date Analyzed:	11/15/2011

Volatile Organic Compounds

Sample Name:	MS44DDL	**Units:**	ug/L
Lab Code:	K1110800-028	**Basis:**	NA
File ID:	J:\MS04\DATA\111511\1115F012.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111643
Analysis Method:	8260C	**Calibration ID:**	CAL11002

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 5

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.38	U	1.0	0.38	
75-35-4	1,1-Dichloroethene	0.37	U	2.5	0.37	
156-60-5	trans-1,2-Dichloroethene	**1.4**	JD	2.5	0.29	
75-34-3	1,1-Dichloroethane	0.39	U	2.5	0.39	
156-59-2	cis-1,2-Dichloroethene	**14**	D	2.5	0.34	
71-55-6	1,1,1-Trichloroethane (TCA)	0.38	U	2.5	0.38	
79-01-6	Trichloroethene (TCE)	**61**	D	2.5	0.50	
127-18-4	Tetrachloroethene (PCE)	0.50	U	2.5	0.50	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	117	73-122	11/15/11	Acceptable
Toluene-d8	118	65-144	11/15/11	Acceptable
4-Bromofluorobenzene	104	68-117	11/15/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1110800
Project:	NIROP/J070047	**Date Collected:**	11/02/2011
Sample Matrix:	Water	**Date Received:**	11/04/2011
		Date Extracted:	11/14/2011
		Date Analyzed:	11/14/2011

Volatile Organic Compounds

Sample Name:	MS48PC	**Units:**	ug/L
Lab Code:	K1110800-021	**Basis:**	NA
File ID:	J:\MS04\DATA\111411\1114F013.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111595
Analysis Method:	8260C	**Calibration ID:**	CAL11002

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.18**	J	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**2.3**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**14**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**0.25**	J	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	114	73-122	11/14/11	Acceptable
Toluene-d8	117	65-144	11/14/11	Acceptable
4-Bromofluorobenzene	108	68-117	11/14/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1110800
Project:	NIROP/J070047	**Date Collected:**	11/02/2011
Sample Matrix:	Water	**Date Received:**	11/04/2011
		Date Extracted:	11/14/2011
		Date Analyzed:	11/14/2011

Volatile Organic Compounds

Sample Name:	MS49D	**Units:**	ug/L
Lab Code:	K1110800-022	**Basis:**	NA
File ID:	J:\MS04\DATA\111411\1114F014.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111595
Analysis Method:	8260C	**Calibration ID:**	CAL11002

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.15**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.42**	J	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**1.1**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	**0.23**	J	0.50	0.075	*
79-01-6	Trichloroethene (TCE)	**10**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**0.49**	J	0.50	0.099	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	113	73-122	11/14/11	Acceptable
Toluene-d8	119	65-144	11/14/11	Acceptable
4-Bromofluorobenzene	107	68-117	11/14/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1110800
Project:	NIROP/J070047	**Date Collected:**	11/03/2011
Sample Matrix:	Water	**Date Received:**	11/04/2011
		Date Extracted:	11/11/2011
		Date Analyzed:	11/11/2011

Volatile Organic Compounds

Sample Name:	MS51I	**Units:**	ug/L
Lab Code:	K1110800-024	**Basis:**	NA
File ID:	J:\MS04\DATA\111111\1111F017.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111531
Analysis Method:	8260C	**Calibration ID:**	CAL11002

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.10**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.060**	J	0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.30**	J	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**0.62**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	**0.23**	J	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**10**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**0.80**		0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	119	73-122	11/11/11	Acceptable
Toluene-d8	117	65-144	11/11/11	Acceptable
4-Bromofluorobenzene	104	68-117	11/11/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1110800
Project:	NIROP/J070047	**Date Collected:**	11/01/2011
Sample Matrix:	Water	**Date Received:**	11/04/2011
		Date Extracted:	11/09/2011
		Date Analyzed:	11/09/2011

Volatile Organic Compounds

Sample Name:	MS52D	**Units:**	ug/L
Lab Code:	K1110800-015	**Basis:**	NA
File ID:	J:\MS13\DATA\110911\1109F023.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111444
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.10**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.11**	J	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	**0.12**	J	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**2.3**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**0.24**	J	0.50	0.099	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	106	73-122	11/09/11	Acceptable
Toluene-d8	119	65-144	11/09/11	Acceptable
4-Bromofluorobenzene	108	68-117	11/09/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1110800
Project:	NIROP/J070047	**Date Collected:**	11/02/2011
Sample Matrix:	Water	**Date Received:**	11/04/2011
		Date Extracted:	11/10/2011
		Date Analyzed:	11/10/2011

Volatile Organic Compounds

Sample Name:	MS53PC	**Units:**	ug/L
Lab Code:	K1110800-019	**Basis:**	NA
File ID:	J:\MS13\DATA\111011\1110F018.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111499
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**0.37**	J	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**3.7**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**0.66**		0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	103	73-122	11/10/11	Acceptable
Toluene-d8	121	65-144	11/10/11	Acceptable
4-Bromofluorobenzene	109	68-117	11/10/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1110800
Project:	NIROP/J070047	**Date Collected:**	11/02/2011
Sample Matrix:	Water	**Date Received:**	11/04/2011
		Date Extracted:	11/10/2011
		Date Analyzed:	11/10/2011

Volatile Organic Compounds

Sample Name:	QCD02	**Units:**	ug/L
Lab Code:	K1110800-020	**Basis:**	NA
File ID:	J:\MS13\DATA\111011\1110F019.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111499
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**0.35**	J	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**3.8**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**0.62**		0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	105	73-122	11/10/11	Acceptable
Toluene-d8	119	65-144	11/10/11	Acceptable
4-Bromofluorobenzene	111	68-117	11/10/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1110800
Project:	NIROP/J070047	**Date Collected:**	11/03/2011
Sample Matrix:	Water	**Date Received:**	11/04/2011
		Date Extracted:	11/11/2011
		Date Analyzed:	11/11/2011

Volatile Organic Compounds

Sample Name:	QCD03	**Units:**	ug/L
Lab Code:	K1110800-009	**Basis:**	NA
File ID:	J:\MS04\DATA\111111\1111F019.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111531
Analysis Method:	8260C	**Calibration ID:**	CAL11002

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**1.3**		0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**35**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**16**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**0.25**	J	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	119	73-122	11/11/11	Acceptable
Toluene-d8	117	65-144	11/11/11	Acceptable
4-Bromofluorobenzene	104	68-117	11/11/11	Acceptable

Comments

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1110800
Project:	NIROP/J070047	**Date Collected:**	11/01/2011
Sample Matrix:	Water	**Date Received:**	11/04/2011
		Date Extracted:	11/09/2011
		Date Analyzed:	11/09/2011

Volatile Organic Compounds

Sample Name:	QCR01	**Units:**	ug/L
Lab Code:	K1110800-017	**Basis:**	NA
File ID:	J:\MS13\DATA\110911\1109F025.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111444
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	105	73-122	11/09/11	Acceptable
Toluene-d8	119	65-144	11/09/11	Acceptable
4-Bromofluorobenzene	108	68-117	11/09/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1110800
Project:	NIROP/J070047	**Date Collected:**	11/02/2011
Sample Matrix:	Water	**Date Received:**	11/04/2011
		Date Extracted:	11/10/2011
		Date Analyzed:	11/10/2011

Volatile Organic Compounds

Sample Name:	QCR02	**Units:**	ug/L
Lab Code:	K1110800-004	**Basis:**	NA
File ID:	J:\MS13\DATA\111011\1110F016.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111499
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	105	73-122	11/10/11	Acceptable
Toluene-d8	118	65-144	11/10/11	Acceptable
4-Bromofluorobenzene	108	68-117	11/10/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1110800
Project:	NIROP/J070047	**Date Collected:**	11/03/2011
Sample Matrix:	Water	**Date Received:**	11/04/2011
		Date Extracted:	11/14/2011
		Date Analyzed:	11/14/2011

Volatile Organic Compounds

Sample Name:	QCR03	**Units:**	ug/L
Lab Code:	K1110800-027	**Basis:**	NA
File ID:	J:\MS04\DATA\111411\1114F016.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111595
Analysis Method:	8260C	**Calibration ID:**	CAL11002

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	115	73-122	11/14/11	Acceptable
Toluene-d8	118	65-144	11/14/11	Acceptable
4-Bromofluorobenzene	106	68-117	11/14/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1110800
Project:	NIROP/J070047	**Date Collected:**	11/01/2011
Sample Matrix:	Water	**Date Received:**	11/04/2011
		Date Extracted:	11/09/2011
		Date Analyzed:	11/09/2011

Volatile Organic Compounds

Sample Name:	QCT01	**Units:**	ug/L
Lab Code:	K1110800-011	**Basis:**	NA
File ID:	J:\MS13\DATA\110911\1109F014.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111444
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	106	73-122	11/09/11	Acceptable
Toluene-d8	118	65-144	11/09/11	Acceptable
4-Bromofluorobenzene	110	68-117	11/09/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1110800
Project:	NIROP/J070047	**Date Collected:**	11/01/2011
Sample Matrix:	Water	**Date Received:**	11/04/2011
		Date Extracted:	11/09/2011
		Date Analyzed:	11/09/2011

Volatile Organic Compounds

Sample Name:	QCT02	**Units:**	ug/L
Lab Code:	K1110800-029	**Basis:**	NA
File ID:	J:\MS13\DATA\110911\1109F015.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111444
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	105	73-122	11/09/11	Acceptable
Toluene-d8	118	65-144	11/09/11	Acceptable
4-Bromofluorobenzene	108	68-117	11/09/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1110800
Project:	NIROP/J070047	**Date Collected:**	11/02/2011
Sample Matrix:	Water	**Date Received:**	11/04/2011
		Date Extracted:	11/14/2011
		Date Analyzed:	11/14/2011

Volatile Organic Compounds

Sample Name:	QCT03	**Units:**	ug/L
Lab Code:	K1110800-036	**Basis:**	NA
File ID:	J:\MS13\DATA\111411\1114F012.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111607
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	105	73-122	11/14/11	Acceptable
Toluene-d8	119	65-144	11/14/11	Acceptable
4-Bromofluorobenzene	109	68-117	11/14/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1110800
Project:	NIROP/J070047	**Date Collected:**	11/01/2011
Sample Matrix:	Water	**Date Received:**	11/04/2011
		Date Extracted:	11/09/2011
		Date Analyzed:	11/09/2011

Volatile Organic Compounds

Sample Name:	USGS05	**Units:**	ug/L
Lab Code:	K1110800-012	**Basis:**	NA
File ID:	J:\MS13\DATA\110911\1109F020.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111444
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**0.17**	J	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**0.13**	J	0.50	0.099	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	106	73-122	11/09/11	Acceptable
Toluene-d8	119	65-144	11/09/11	Acceptable
4-Bromofluorobenzene	108	68-117	11/09/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1110800
Project:	NIROP/J070047	**Date Collected:**	11/03/2011
Sample Matrix:	Water	**Date Received:**	11/04/2011
		Date Extracted:	11/11/2011
		Date Analyzed:	11/11/2011

Volatile Organic Compounds

Sample Name:	USGS10	**Units:**	ug/L
Lab Code:	K1110800-008	**Basis:**	NA
File ID:	J:\MS04\DATA\111111\1111F014.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111531
Analysis Method:	8260C	**Calibration ID:**	CAL11002

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.17**	J	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**0.80**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**7.4**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**5.6**		0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	114	73-122	11/11/11	Acceptable
Toluene-d8	116	65-144	11/11/11	Acceptable
4-Bromofluorobenzene	108	68-117	11/11/11	Acceptable

Comments:

APPENDIX C

SUPPORT DOCUMENTATION

Columbia Analytical Services™

1317 S. 13th Avenue, Kelso WA 98626 [illegible] 360.636.1068 [illegible] www.caslab.com

November 29, 2011 Analytical Report for Service Request No: K1110800

Paul Walz
Bay West, Incorporated
5 Empire Dr.
St. Paul, MN 55103-1867

RE: NIROP/J070047

Dear Paul:

Enclosed are the results of the samples submitted to our laboratory on November 04, 2011. For your reference, these analyses have been assigned our service request number K1110800.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3363. You may also contact me via Email at LDomenighini@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.

Lisa Domenighini
Project Chemist

LD/ln

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

Columbia Analytical Services, Inc.
Kelso, WA
State Certifications, Accreditations, and Licenses

Agency	Number
Alaska DEC UST	UST-040
Arizona DHS	AZ0339
Arkansas - DEQ	88-0637
California DHS	2286
DOD ELAP	L11-119
Florida DOH	E87412
Georgia DNR	881
Hawaii DOH	-
Idaho DHW	-
Indiana DOH	C-WA-01
ISO 17025	L11-118
Louisiana DEQ	3016
Louisiana DHH	LA080001
Maine DHS	WA0035
Michigan DEQ	9949
Minnesota DOH	053-999-368
Montana DPHHS	CERT0047
Nevada DEP	WA35
New Jersey DEP	WA005
New Mexico ED	-
North Carolina DWQ	605
Oklahoma DEQ	9801
Oregon – DEQ (NELAP)	WA100010
South Carolina DHEC	61002
Texas CEQ	04704427-08-TX
Washington DOE	C1203
Wisconsin DNR	998386840
Wyoming (EPA Region 8)	-

Case Narrative

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	Bay West, Incorporated	**Service Request No.:**	K1110800
Project:	NIROP/J070047	**Date Received:**	11/04/11
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Thirty six samples were received for analysis at Columbia Analytical Services on 11/04/11. The following discrepancies were noted upon initial sample inspection. Sample QCT02 was not included on the chain of custody but was received and tested. The exceptions are also noted on the cooler receipt and preservation form included in this data package. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Volatile Organic Compounds by EPA Method 8260

Calibration Verification Exceptions:
The following analytes were flagged as outside the lower control criterion for Continuing Calibration Verification (CCV) J:\MS13\1109F007.D: Tetrachloroethene (PCE). The following analytes were flagged as outside the upper control criterion for Continuing Calibration Verification (CCV) J:\MS04\1114F005.D: 1,1,1-Trichloroethane (TCA). The following analytes were flagged as outside the upper control criterion for Continuing Calibration Verification (CCV) J:\MS13\1114F006.D: Toluene-d8. In accordance with the EPA Method, 80% or more of the CCV analytes must pass within 20% of the true value. The CAS SOP allows for 40% difference for the remaining analytes. The CCV met these criteria. The quality of the sample data was not significantly affected. No further corrective action was required.

Surrogate Exceptions:
The control criteria were exceeded for 4-Bromofluorobenzene in LCS KWG1111643-3. The associated matrix spike recoveries of target compounds were in control, indicating the analysis was in control. The surrogate outlier was flagged accordingly. No further corrective action was appropriate.

No other anomalies associated with the analysis of these samples were observed.

Approved by Lisa A Gymenghini **Date** 11/29/11

Chain of Custody

Columbia Analytical Services

027601 CHAIN OF CUSTODY

SR# K1110800

COC Set____of____

Page 1 OF 1 COC# 110111-01

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

Project Name: NIROP
Project Number: 3070047
Project Manager: Paul Walz
Company Name: Bay West
Comany Address: 5 Empire Drive
City/State/Zip: St. Paul MN 55103
E-Mail Address: paulw@baywest.com
Phone #: 651-291-3491 FAX #: 651-291-0099
Sampler Signature: [signature]

	Sample ID	Date	Time	Lab ID	Matrix	Number of Containers	8260B / VOC_FP (14D)				Remarks
1	MS05D	11-1-11	1451		water	9	X				1 MS/MSD
2	MS10IS	↓	1547			3	X				2
3	MS03PC	11-2-11	1514			3	X				3
4	QCR02	↓	1655			3	X				4
5	MS06S	11-3-11	1025			3	X				5
6	MS34S		1140			3	X				6
7	MS24S		1242			3	X				7
8	US6S1D		1349			3	X				8
9	QCD03		1255			3	X				9
10	MS35S	↓	1503			3	X				10
11	QCT01	11-1-11	—			2	X				11

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

Invoice Information

P.O.# 27488
Bill To: Account Payable
Bay West, 5 Empire Dr.
St. Paul MN 55103

Turnaround Requirements

___ 24 hr ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide Fax Results

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments: *Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other____(Circle One)

8 specific chemicals of concern via method 8260B

UPS Tracking # 1Z A19 8R9 01 9613 2002

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

Relinquished By:		Received By:		Relinquished By:		Received By:	
Signature: [signature]	Date/Time: 11-3-11 / 1715	Signature: [signature]	Date/Time: 11/4/11 1030	Signature	Date/Time	Signature	Date/Time
Printed Name: Ryan Haley	Firm: Bay West	Printed Name: RSmith	Firm: CAS	Printed Name	Firm	Printed Name	Firm

Columbia Analytical Services

027601 CHAIN OF CUSTODY

SR# 11110800

COC Set____of____

Page 1 OF 1 COC# 110111-02

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

Project Name: NIROP
Project Number: J0700417
Project Manager: Paul Walz
Company Name: Baywest
Comany Address: 5 Empire Drive
City/State/Zip: Saint Paul MN
E-Mail Address: paulw ~~Pwalz~~@baywest.com
Phone #: 651-291-3491 FAX #: 651-291-0099
Sampler Signature:

651-291-0099

Sample ID	Date	Time	Lab ID	Matrix	Number of Containers	8260B / VOC_FP	14D			Remarks
1 USGS05	11-1-11	1107		water	3	X				1
2 MS17S		1218			3	X				2
3 MS16S		1330			3	X				3
4 MS52D		1448			3	X				4
5 MS42I		1548			3	X				5
6 QCR01		1627			3	X				6
7 MS05PC	11.02.11	1120		WT	3	X				7
8 MS53PC		1338			3	X				8 3 Containers
9 QCD02		0800			3	X				9
10 MS48PC		1520			3	X				10
11 MS49D		1627			3	X				11

Report Requirements

___ I. Routine Report Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

Invoice Information

P.O.# 27488
Bill To: Baywest Accounts payable

Turnaround Requirements

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide Fax Results

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments: *Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other_____(Circle One)

Analyze for 8 specific chemicals of concern via Method 8260B

UPS Tracking # 1Z A19 8R 01 9642 9394

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

Relinquished By:		Received By:		Relinquished By:		Received By:	
Signature	Date/Time 11.03.11 1715	Signature	Date/Time 11/4/11 1030	Signature	Date/Time	Signature	Date/Time
Printed Name Joe Stylach	Firm Baywest	Printed Name R Smith	Firm CAS	Printed Name	Firm	Printed Name	Firm

Columbia Analytical Services

26033 CHAIN OF CUSTODY

SR# 1611110800

COC Set____of____

Page 1 OF 1 COC# 110111-04

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

Project Name	NIROP
Project Number	J070047
Project Manager	Paul Walz
Company Name	Baywest
Comany Address	5 Empire Drive
City/State/Zip	Saint Paul 55103
E-Mail Address	Paulw@baywest
Phone #	651-291-3491
FAX #	651-241-0099
Sampler Signature	Joe Stalboch

	Sample ID	Date	Time	Lab ID	Matrix	Number of Containers	8260B / VOC_FP	14D				Remarks
1	MS43D	11.03.11	10.21		WT	3	X					1
2	MS51I	11.03.11	1111		WT	3	X					2
3	MS07D	11.03.11	1431		WT	3	X					3
4	MS15D	11.03.11	1621		WT	3	X					4
5	QCR03	11.03.11	1655		WT	3	X					5
6	MS44D	11.03.11	1525		WT	3	X					6
7												7
8												8
9												9
10												10
11												11

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required

___ II. Report Dup., MS, MSD as required

___ III. Data Validation Report (includes all raw data)

X IV. CLP Deliverable Report

___ V. EDD

Invoice Information

P.O.# 27488

Bill To: Account Payable
BayWest, 5 Empire Dr.
St. Paul MN 55103

Turnaround Requirements

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide Fax Results

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments: *Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other_____(Circle One)

8 specific chemicals of concern via method 8260B

UPS Tracking # 1Z A19 8R9 01 9647 9399

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

Relinquished By:		Received By:		Relinquished By:		Received By:	
Signature: Joe Stalboch	Date/Time: 11.03.11 1715	Signature: H Smith	Date/Time: 11/4/11 1030	Signature	Date/Time	Signature	Date/Time
Printed Name: Joe Stalboch	Firm: Baywest	Printed Name: H Smith	Firm: CAS	Printed Name	Firm	Printed Name	Firm

10

Columbia Analytical Services

027601 CHAIN OF CUSTODY

SR# 11110800

COC Set ____ of ____

Page 1 OF 1 COC# 110111-03

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

Project Name: NIROP
Project Number: J070047
Project Manager: Paul Walz
Company Name: Bay West
Comany Address: 5 Empire Drive
City/State/Zip: St Paul MN 55103
E-Mail Address: paulw@baywest.com
Phone #:
FAX #:
Sampler Signature:

	Sample ID	Date	Time	Lab ID	Matrix	Number of Containers	8260B / VOC_FP	14D			Remarks
1	AT09	11-2-11	0940		WT	3	X				
2	AT08		0952			3	X				
3	AT07		1003			3	X				
4	AT05A		1015			3	X				
5	AT10		1027			3	X				
6	AT05B		1038			3	X				
7	QCT03	11-2-11	—			2	X				
8	~~MS03 PC~~	~~11-2-11~~	~~1514~~			~~3~~	~~X~~	~~RAR~~			
9											
10											
11											

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

Invoice Information

P.O.# 27488
Bill To: Accounts Payable
Bay West, 5 Empire Dr.
St Paul MN 55103

Turnaround Requirements

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide Fax Results

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments:

*Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other____(Circle One)

Analyze for 8 specific chemicals of concern via method 8260B
UPS Track # 1Z A19 8R9 01 9713 9610

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

Relinquished By:		Received By:		Relinquished By:		Received By:	
Signature: [illegible]	Date/Time: 11-3-11 / 1715	Signature: [illegible]	Date/Time: 11/4/11 1030	Signature:	Date/Time:	Signature:	Date/Time:
Printed Name: Ryan Riley	Firm: Bay West	Printed Name: R Smith	Firm: CAS	Printed Name:	Firm:	Printed Name:	Firm:

PC USA

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

Client / Project: Baynrst Service Request K11 10800

Received: 11/4/11 Opened: 11/4/11 By: HO Unloaded: 11/4/11 By: HO

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? 1, front, 1, back

   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Cooler Temp °C	Temp Blank °C	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
.0	1.8	312	110111-03	1ZA198R9019713961 0	
-.5	.1	300	110111-01	1ZA198R9019613 2002	
.9	.2	287	110111-02	1ZA198R9019642 9399	
" "	" "	" "	110111-04	" "	

7. Packing material used. *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Sleeves* *Other* _____
8. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
9. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
10. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
11. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N *
12. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
13. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
14. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
15. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: * 2CT02 not on COC - 2-40ml VOAs

Volatile Organic Compounds

Organic Analysis:
Volatile Organic Compounds

Summary Package

Sample and QC Results

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1110800

Cover Page - Organic Analysis Data Package
Volatile Organic Compounds

Sample Name	Lab Code	Date Collected	Date Received
MS05D	K1110800-001	11/01/2011	11/04/2011
MS10IS	K1110800-002	11/01/2011	11/04/2011
MS03PC	K1110800-003	11/02/2011	11/04/2011
QCR02	K1110800-004	11/02/2011	11/04/2011
MS06S	K1110800-005	11/03/2011	11/04/2011
MS34S	K1110800-006	11/03/2011	11/04/2011
MS34SDL	K1110800-006	11/03/2011	11/04/2011
MS24S	K1110800-007	11/03/2011	11/04/2011
USGS10	K1110800-008	11/03/2011	11/04/2011
QCD03	K1110800-009	11/03/2011	11/04/2011
MS35S	K1110800-010	11/03/2011	11/04/2011
QCT01	K1110800-011	11/01/2011	11/04/2011
USGS05	K1110800-012	11/01/2011	11/04/2011
MS17S	K1110800-013	11/01/2011	11/04/2011
MS16S	K1110800-014	11/01/2011	11/04/2011
MS52D	K1110800-015	11/01/2011	11/04/2011
MS42I	K1110800-016	11/01/2011	11/04/2011
QCR01	K1110800-017	11/01/2011	11/04/2011
MS05PC	K1110800-018	11/02/2011	11/04/2011
MS53PC	K1110800-019	11/02/2011	11/04/2011
QCD02	K1110800-020	11/02/2011	11/04/2011
MS48PC	K1110800-021	11/02/2011	11/04/2011
MS49D	K1110800-022	11/02/2011	11/04/2011
MS43D	K1110800-023	11/03/2011	11/04/2011
MS51I	K1110800-024	11/03/2011	11/04/2011
MS07D	K1110800-025	11/03/2011	11/04/2011
MS15D	K1110800-026	11/03/2011	11/04/2011
QCR03	K1110800-027	11/03/2011	11/04/2011
MS44D	K1110800-028	11/03/2011	11/04/2011
MS44DDL	K1110800-028	11/03/2011	11/04/2011
QCT02	K1110800-029	11/01/2011	11/04/2011
AT09	K1110800-030	11/02/2011	11/04/2011
AT08	K1110800-031	11/02/2011	11/04/2011
AT08DL	K1110800-031	11/02/2011	11/04/2011
AT07	K1110800-032	11/02/2011	11/04/2011
AT07DL	K1110800-032	11/02/2011	11/04/2011
AT05ADL	K1110800-033	11/02/2011	11/04/2011
AT05A	K1110800-033	11/02/2011	11/04/2011

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Klassom

Name: Klassom

Date: 11/28/11

Title: Scientist

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1110800

Cover Page - Organic Analysis Data Package
Volatile Organic Compounds

Sample Name	Lab Code	Date Collected	Date Received
AT10	K1110800-034	11/02/2011	11/04/2011
AT10DL	K1110800-034	11/02/2011	11/04/2011
AT05B	K1110800-035	11/02/2011	11/04/2011
AT05BDL	K1110800-035	11/02/2011	11/04/2011
QCT03	K1110800-036	11/02/2011	11/04/2011
MS05DMS	KWG1111444-1	11/01/2011	11/04/2011
MS05DDMS	KWG1111444-2	11/01/2011	11/04/2011
MS03PCMS	KWG1111499-1	11/02/2011	11/04/2011
MS03PCDMS	KWG1111499-2	11/02/2011	11/04/2011

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: K Pearson

Name: K Pearson

Date: 11/28/11

Title: Scientist

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1110800

Surrogate Recovery Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
MS05D	K1110800-001	105	117	109
MS10IS	K1110800-002	106	119	113
MS03PC	K1110800-003	107	120	109
QCR02	K1110800-004	105	118	108
MS06S	K1110800-005	114	117	106
MS34SDL	K1110800-006	121	115	102
MS34S	K1110800-006	122	116	102
MS24S	K1110800-007	120	117	104
USGS10	K1110800-008	114	116	108
QCD03	K1110800-009	119	117	104
MS35S	K1110800-010	117	117	106
QCT01	K1110800-011	106	118	110
USGS05	K1110800-012	106	119	108
MS17S	K1110800-013	106	119	111
MS16S	K1110800-014	105	119	108
MS52D	K1110800-015	106	119	108
MS42I	K1110800-016	107	119	110
QCR01	K1110800-017	105	119	108
MS05PC	K1110800-018	105	119	108
MS53PC	K1110800-019	103	121	109
QCD02	K1110800-020	105	119	111
MS48PC	K1110800-021	114	117	108
MS49D	K1110800-022	113	119	107
MS43D	K1110800-023	116	117	105
MS51I	K1110800-024	119	117	104
MS07D	K1110800-025	118	118	105
MS15D	K1110800-026	113	118	106
QCR03	K1110800-027	115	118	106
MS44D	K1110800-028	121	118	101
MS44DDL	K1110800-028	117	118	104
QCT02	K1110800-029	105	118	108
AT09	K1110800-030	115	117	106
AT08	K1110800-031	107	120	109
AT08DL	K1110800-031	107	120	109
AT07	K1110800-032	108	119	109

Surrogate Recovery Control Limits (%)

Sur1 =	Dibromofluoromethane	73-122
Sur2 =	Toluene-d8	65-144
Sur3 =	4-Bromofluorobenzene	68-117

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1110800

Surrogate Recovery Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3	
AT07DL	K1110800-032	106	119	107	
AT05ADL	K1110800-033	104	118	107	
AT05A	K1110800-033	105	121	107	
AT10	K1110800-034	106	120	109	
AT10DL	K1110800-034	104	118	109	
AT05B	K1110800-035	107	122	110	
AT05BDL	K1110800-035	105	120	111	
QCT03	K1110800-036	105	119	109	
Method Blank	KWG1111444-4	107	119	109	
Method Blank	KWG1111499-4	107	121	109	
Method Blank	KWG1111531-4	108	116	110	
Method Blank	KWG1111535-4	106	120	109	
Method Blank	KWG1111595-4	107	116	112	
Method Blank	KWG1111607-4	109	121	108	
Method Blank	KWG1111643-4	110	117	109	
MS05DMS	KWG1111444-1	111	119	110	
MS05DDMS	KWG1111444-2	110	120	107	
MS03PCMS	KWG1111499-1	110	121	109	
MS03PCDMS	KWG1111499-2	107	120	109	
Lab Control Sample	KWG1111444-3	110	119	111	
Lab Control Sample	KWG1111499-3	110	119	108	
Lab Control Sample	KWG1111531-3	106	117	117	
Lab Control Sample	KWG1111535-3	109	120	110	
Lab Control Sample	KWG1111595-3	108	117	116	
Lab Control Sample	KWG1111607-3	111	121	107	
Lab Control Sample	KWG1111643-3	110	118	118	*

Surrogate Recovery Control Limits (%)

Sur1 =	Dibromofluoromethane	73-122
Sur2 =	Toluene-d8	65-144
Sur3 =	4-Bromofluorobenzene	68-117

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1110800
Date Analyzed: 10/25/2011
Time Analyzed: 14:01

Tune Summary
Volatile Organic Compounds

File ID: J:\MS04\DATA\102511\1025F003.D
Instrument ID: MS04
Column:

Analysis Method: 8260C
Analysis Lot: KWG1111743

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	15.8	21351	PASS
75	95	30	60	41.3	55829	PASS
95	95	100	100	100.0	135152	PASS
96	95	5	9	6.9	9291	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	93.4	126194	PASS
175	174	5	9	7.9	9912	PASS
176	174	95	101	97.0	122434	PASS
177	176	5	9	6.6	8024	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Initial Calibration	KWG1111743-2	J:\MS04\DATA\102511\1025F006.D	10/25/2011	15:40	
Initial Calibration	KWG1111743-3	J:\MS04\DATA\102511\1025F007.D	10/25/2011	16:15	
Initial Calibration	KWG1111743-4	J:\MS04\DATA\102511\1025F008.D	10/25/2011	16:48	
Initial Calibration	KWG1111743-5	J:\MS04\DATA\102511\1025F009.D	10/25/2011	17:21	
Initial Calibration	KWG1111743-6	J:\MS04\DATA\102511\1025F010.D	10/25/2011	17:54	
Initial Calibration	KWG1111743-7	J:\MS04\DATA\102511\1025F011.D	10/25/2011	18:28	
Initial Calibration	KWG1111743-8	J:\MS04\DATA\102511\1025F012.D	10/25/2011	19:01	
Initial Calibration	KWG1111743-9	J:\MS04\DATA\102511\1025F013.D	10/25/2011	19:34	
Initial Calibration	KWG1111743-10	J:\MS04\DATA\102511\1025F014.D	10/25/2011	20:07	
Initial Calibration	KWG1111743-11	J:\MS04\DATA\102511\1025F015.D	10/25/2011	20:40	
Initial Calibration	KWG1111743-12	J:\MS04\DATA\102511\1025F016.D	10/25/2011	21:13	
Initial Calibration Verification	KWG1111743-13	J:\MS04\DATA\102511\1025F019.D	10/25/2011	22:51	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1110800
Calibration Date: 10/25/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL11002
Instrument ID: MS04

Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS04\DATA\102511\1025F006.D	G	J:\MS04\DATA\102511\1025F012.D
B	J:\MS04\DATA\102511\1025F007.D	H	J:\MS04\DATA\102511\1025F013.D
C	J:\MS04\DATA\102511\1025F008.D	I	J:\MS04\DATA\102511\1025F014.D
D	J:\MS04\DATA\102511\1025F009.D	J	J:\MS04\DATA\102511\1025F015.D
E	J:\MS04\DATA\102511\1025F010.D	K	J:\MS04\DATA\102511\1025F016.D
F	J:\MS04\DATA\102511\1025F011.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Vinyl Chloride	A	0.10	0.431	B	0.20	0.336	C	0.50	0.347	D	1.0	0.350	E	2.0	0.397
	F	5.0	0.381	G	10	0.370	H	20	0.358	I	40	0.394	J	60	0.347
	K	70	0.338												
1,1-Dichloroethene				B	0.20	0.242	C	0.50	0.223	D	1.0	0.239	E	2.0	0.266
	F	5.0	0.264	G	10	0.261	H	20	0.248	I	40	0.272	J	60	0.240
	K	70	0.231												
trans-1,2-Dichloroethene	A	0.10	0.311	B	0.20	0.257	C	0.50	0.283	D	1.0	0.292	E	2.0	0.323
	F	5.0	0.328	G	10	0.314	H	20	0.305	I	40	0.323	J	60	0.295
	K	70	0.287												
1,1-Dichloroethane	A	0.10	0.449	B	0.20	0.451	C	0.50	0.417	D	1.0	0.457	E	2.0	0.483
	F	5.0	0.483	G	10	0.465	H	20	0.459	I	40	0.470	J	60	0.444
	K	70	0.431												
cis-1,2-Dichloroethene	A	0.10	0.279	B	0.20	0.282	C	0.50	0.281	D	1.0	0.299	E	2.0	0.331
	F	5.0	0.325	G	10	0.321	H	20	0.319	I	40	0.329	J	60	0.312
	K	70	0.303												
1,1,1-Trichloroethane (TCA)				B	0.20	0.311	C	0.50	0.307	D	1.0	0.326	E	2.0	0.354
	F	5.0	0.347	G	10	0.339	H	20	0.326	I	40	0.345	J	60	0.302
	K	70	0.283												
Trichloroethene (TCE)	A	0.10	0.191	B	0.20	0.217	C	0.50	0.229	D	1.0	0.242	E	2.0	0.265
	F	5.0	0.269	G	10	0.261	H	20	0.257	I	40	0.272	J	60	0.250
	K	70	0.245												
Tetrachloroethene (PCE)	A	0.10	0.330	B	0.20	0.294	C	0.50	0.287	D	1.0	0.322	E	2.0	0.365
	F	5.0	0.355	G	10	0.343	H	20	0.328	I	40	0.338	J	60	0.297
	K	70	0.282												
Dibromofluoromethane										D	6.0	0.248	E	7.0	0.238
	F	8.0	0.250	G	10	0.258	H	20	0.241	I	40	0.232	J	50	0.240
Toluene-d8										D	6.0	0.741	E	7.0	0.691
	F	8.0	0.719	G	10	0.808	H	20	0.756	I	40	0.722	J	50	0.761

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1110800
Calibration Date: 10/25/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL11002
Instrument ID: MS04

Column: MS

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
4-Bromofluorobenzene				B	4.0	0.329	C	5.0	0.287	D	6.0	0.366	E	7.0	0.354
	F	8.0	0.375	G	10	0.396	H	20	0.374	I	40	0.362	J	50	0.388

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1110800
Calibration Date: 10/25/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL11002
Instrument ID: MS04

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Vinyl Chloride	MS	AverageRF	% RSD	8.1		≤ 20	0.368		0.100
1,1-Dichloroethene	MS	AverageRF	% RSD	6.5		≤ 20	0.249		0.100
trans-1,2-Dichloroethene	MS	AverageRF	% RSD	7.0		≤ 20	0.302		0.100
1,1-Dichloroethane	MS	AverageRF	% RSD	4.5		≤ 20	0.455		0.200
cis-1,2-Dichloroethene	MS	AverageRF	% RSD	6.4		≤ 20	0.308		0.100
1,1,1-Trichloroethane (TCA)	MS	AverageRF	% RSD	7.0		≤ 20	0.324		0.100
Trichloroethene (TCE)	MS	AverageRF	% RSD	10.1		≤ 20	0.245		0.200
Tetrachloroethene (PCE)	MS	AverageRF	% RSD	8.7		≤ 20	0.322		0.200
Dibromofluoromethane	SURR	AverageRF	% RSD	3.6		≤ 20	0.244		0.01
Toluene-d8	SURR	AverageRF	% RSD	5.0		≤ 20	0.743		0.01
4-Bromofluorobenzene	SURR	AverageRF	% RSD	9.3		≤ 20	0.359		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1110800
Calibration Date: 10/25/2011
Date Analyzed: 10/25/2011

Second Source Calibration Verification
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration ID: CAL11002
Units: PPB

File ID: J:\MS04\DATA\102511\1025F019.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	8.1	0.368	0.299	-19	NA	± 30 %	AverageRF
1,1-Dichloroethene	10	9.8	0.249	0.244	-2	NA	± 30 %	AverageRF
trans-1,2-Dichloroethene	10	10	0.302	0.309	2	NA	± 30 %	AverageRF
1,1-Dichloroethane	10	9.9	0.455	0.451	-1	NA	± 30 %	AverageRF
cis-1,2-Dichloroethene	10	10	0.308	0.319	4	NA	± 30 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	9.7	0.324	0.315	-3	NA	± 30 %	AverageRF
Trichloroethene (TCE)	10	10	0.245	0.253	3	NA	± 30 %	AverageRF
Tetrachloroethene (PCE)	10	9.8	0.322	0.315	-2	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1110800
Date Analyzed: 11/11/2011
Time Analyzed: 09:31

Tune Summary
Volatile Organic Compounds

File ID: J:\MS04\DATA\111111\1111F002.D
Instrument ID: MS04
Column:

Analysis Method: 8260C
Analysis Lot: KWG1111528

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	16.5	13488	PASS
75	95	30	60	41.9	34282	PASS
95	95	100	100	100.0	81845	PASS
96	95	5	9	7.2	5890	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	87.0	71170	PASS
175	174	5	9	7.3	5223	PASS
176	174	95	101	95.8	68181	PASS
177	176	5	9	6.1	4188	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1111528-2	J:\MS04\DATA\111111\1111F003.D	11/11/2011	10:04	
Lab Control Sample	KWG1111531-3	J:\MS04\DATA\111111\1111F004.D	11/11/2011	10:37	
Method Blank	KWG1111531-4	J:\MS04\DATA\111111\1111F009.D	11/11/2011	13:24	
MS06S	K1110800-005	J:\MS04\DATA\111111\1111F013.D	11/11/2011	15:37	
USGS10	K1110800-008	J:\MS04\DATA\111111\1111F014.D	11/11/2011	16:10	
MS35S	K1110800-010	J:\MS04\DATA\111111\1111F015.D	11/11/2011	16:43	
MS43D	K1110800-023	J:\MS04\DATA\111111\1111F016.D	11/11/2011	17:16	
MS51I	K1110800-024	J:\MS04\DATA\111111\1111F017.D	11/11/2011	17:49	
MS07D	K1110800-025	J:\MS04\DATA\111111\1111F018.D	11/11/2011	18:23	
QCD03	K1110800-009	J:\MS04\DATA\111111\1111F019.D	11/11/2011	18:55	
MS24S	K1110800-007	J:\MS04\DATA\111111\1111F020.D	11/11/2011	19:29	
MS34SDL	K1110800-006	J:\MS04\DATA\111111\1111F021.D	11/11/2011	20:02	
MS34S	K1110800-006	J:\MS04\DATA\111111\1111F022.D	11/11/2011	20:36	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1110800
Date Analyzed: 11/11/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration Date: 10/25/2011
Calibration ID: CAL11002
Analysis Lot: KWG1111528
Units: PPB

File ID: J:\MS04\DATA\111111\1111F003.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	10	0.100	0.368	0.375	2	NA	± 20 %	AverageRF
1,1-Dichloroethene	10	11	0.100	0.249	0.273	10	NA	± 20 %	AverageRF
trans-1,2-Dichloroethene	10	11	0.100	0.302	0.338	12	NA	± 20 %	AverageRF
1,1-Dichloroethane	10	11	0.200	0.455	0.508	12	NA	± 20 %	AverageRF
cis-1,2-Dichloroethene	10	11	0.100	0.308	0.351	14	NA	± 20 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	12	0.100	0.324	0.384	19	NA	± 20 %	AverageRF
Trichloroethene (TCE)	10	11	0.200	0.245	0.275	12	NA	± 20 %	AverageRF
Tetrachloroethene (PCE)	10	11	0.200	0.322	0.351	9	NA	± 20 %	AverageRF
Dibromofluoromethane	10	11	0.01	0.244	0.268	10	NA	± 20 %	AverageRF
Toluene-d8	10	12	0.01	0.743	0.879	18	NA	± 20 %	AverageRF
4-Bromofluorobenzene	10	12	0.01	0.359	0.421	17	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1110800

Analysis Run Log
Volatile Organic Compounds

Analysis Method: 8260C

Analysis Lot: KWG1111528
Instrument ID: MS04

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1111F002.D	GC/MS Tuning - Bromofluorobenzene	KWG1111528-1	11/11/2011	09:31		11/11/2011	09:57
1111F003.D	Continuing Calibration Verification	KWG1111528-2	11/11/2011	10:04		11/11/2011	10:30
1111F004.D	Lab Control Sample	KWG1111531-3	11/11/2011	10:37		11/11/2011	11:03
1111F005.D	ZZZZZZ	ZZZZZZ	11/11/2011	11:12		11/11/2011	11:38
1111F006.D	ZZZZZZ	ZZZZZZ	11/11/2011	11:44		11/11/2011	12:10
1111F009.D	Method Blank	KWG1111531-4	11/11/2011	13:24		11/11/2011	13:50
1111F010.D	ZZZZZZ	ZZZZZZ	11/11/2011	13:57		11/11/2011	14:23
1111F011.D	ZZZZZZ	ZZZZZZ	11/11/2011	14:31		11/11/2011	14:57
1111F012.D	ZZZZZZ	ZZZZZZ	11/11/2011	15:04		11/11/2011	15:30
1111F013.D	MS06S	K1110800-005	11/11/2011	15:37		11/11/2011	16:03
1111F014.D	USGS10	K1110800-008	11/11/2011	16:10		11/11/2011	16:36
1111F015.D	MS35S	K1110800-010	11/11/2011	16:43		11/11/2011	17:09
1111F016.D	MS43D	K1110800-023	11/11/2011	17:16		11/11/2011	17:42
1111F017.D	MS51I	K1110800-024	11/11/2011	17:49		11/11/2011	18:15
1111F018.D	MS07D	K1110800-025	11/11/2011	18:23		11/11/2011	18:49
1111F019.D	QCD03	K1110800-009	11/11/2011	18:55		11/11/2011	19:21
1111F020.D	MS24S	K1110800-007	11/11/2011	19:29		11/11/2011	19:55
1111F021.D	MS34SDL	K1110800-006	11/11/2011	20:02		11/11/2011	20:28
1111F022.D	MS34S	K1110800-006	11/11/2011	20:36		11/11/2011	21:02

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1110800
Project:	NIROP/J070047	**Date Extracted:**	11/11/2011
Sample Matrix:	Water	**Date Analyzed:**	11/11/2011
		Time Analyzed:	13:24

Method Blank Summary
Volatile Organic Compounds

Sample Name:	Method Blank	**Instrument ID:**	MS04
Lab Code:	KWG1111531-4	**File ID:**	J:\MS04\DATA\111111\1111F009.D
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C	**Extraction Lot:**	KWG1111531

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1111531-3	J:\MS04\DATA\111111\1111F004.D	11/11/11	10:37
MS06S	K1110800-005	J:\MS04\DATA\111111\1111F013.D	11/11/11	15:37
USGS10	K1110800-008	J:\MS04\DATA\111111\1111F014.D	11/11/11	16:10
MS35S	K1110800-010	J:\MS04\DATA\111111\1111F015.D	11/11/11	16:43
MS43D	K1110800-023	J:\MS04\DATA\111111\1111F016.D	11/11/11	17:16
MS51I	K1110800-024	J:\MS04\DATA\111111\1111F017.D	11/11/11	17:49
MS07D	K1110800-025	J:\MS04\DATA\111111\1111F018.D	11/11/11	18:23
QCD03	K1110800-009	J:\MS04\DATA\111111\1111F019.D	11/11/11	18:55
MS24S	K1110800-007	J:\MS04\DATA\111111\1111F020.D	11/11/11	19:29
MS34SDL	K1110800-006	J:\MS04\DATA\111111\1111F021.D	11/11/11	20:02
MS34S	K1110800-006	J:\MS04\DATA\111111\1111F022.D	11/11/11	20:36

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1110800
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	11/11/2011
		Date Analyzed:	11/11/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1111531-4	**Basis:**	NA
File ID:	J:\MS04\DATA\111111\1111F009.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111531
Analysis Method:	8260C	**Calibration ID:**	CAL11002

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	108	73-122	11/11/11	Acceptable
Toluene-d8	116	65-144	11/11/11	Acceptable
4-Bromofluorobenzene	110	68-117	11/11/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1110800
Project:	NIROP/J070047	**Date Extracted:**	11/11/2011
Sample Matrix:	Water	**Date Analyzed:**	11/11/2011

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	EPA 5030B	**Units:**	ug/L
Analysis Method:	8260C	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1111531

	Lab Control Sample KWG1111531-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Vinyl Chloride	9.29	10.0	93	55-123
1,1-Dichloroethene	11.3	10.0	113	66-129
trans-1,2-Dichloroethene	11.7	10.0	117	67-125
1,1-Dichloroethane	11.3	10.0	113	68-132
cis-1,2-Dichloroethene	11.4	10.0	114	71-118
1,1,1-Trichloroethane (TCA)	11.7	10.0	117	59-136
Trichloroethene (TCE)	11.5	10.0	115	67-128
Tetrachloroethene (PCE)	11.0	10.0	110	62-126

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1110800
Date Analyzed: 11/14/2011
Time Analyzed: 10:40

Tune Summary
Volatile Organic Compounds

File ID: J:\MS04\DATA\111411\1114F004.D
Instrument ID: MS04
Column:

Analysis Method: 8260C
Analysis Lot: KWG1111591

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	17.2	17488	PASS
75	95	30	60	41.4	42176	PASS
95	95	100	100	100.0	101808	PASS
96	95	5	9	8.1	8272	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	94.1	95832	PASS
175	174	5	9	8.4	8050	PASS
176	174	95	101	95.4	91440	PASS
177	176	5	9	7.1	6518	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1111591-2	J:\MS04\DATA\111411\1114F005.D	11/14/2011	11:16	
Lab Control Sample	KWG1111595-3	J:\MS04\DATA\111411\1114F006.D	11/14/2011	12:09	
Method Blank	KWG1111595-4	J:\MS04\DATA\111411\1114F010.D	11/14/2011	14:22	
MS48PC	K1110800-021	J:\MS04\DATA\111411\1114F013.D	11/14/2011	16:02	
MS49D	K1110800-022	J:\MS04\DATA\111411\1114F014.D	11/14/2011	16:35	
MS15D	K1110800-026	J:\MS04\DATA\111411\1114F015.D	11/14/2011	17:08	
QCR03	K1110800-027	J:\MS04\DATA\111411\1114F016.D	11/14/2011	17:42	
AT09	K1110800-030	J:\MS04\DATA\111411\1114F017.D	11/14/2011	18:15	
MS44D	K1110800-028	J:\MS04\DATA\111411\1114F024.D	11/14/2011	22:06	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1110800
Date Analyzed: 11/14/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration Date: 10/25/2011
Calibration ID: CAL11002
Analysis Lot: KWG1111591
Units: PPB

File ID: J:\MS04\DATA\111411\1114F005.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D		%Drift	Criteria	Curve Fit
Vinyl Chloride	10	8.5	0.100	0.368	0.314	-15		NA	± 20 %	AverageRF
1,1-Dichloroethene	10	11	0.100	0.249	0.272	9		NA	± 20 %	AverageRF
trans-1,2-Dichloroethene	10	11	0.100	0.302	0.341	13		NA	± 20 %	AverageRF
1,1-Dichloroethane	10	11	0.200	0.455	0.512	12		NA	± 20 %	AverageRF
cis-1,2-Dichloroethene	10	11	0.100	0.308	0.347	13		NA	± 20 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	12	0.100	0.324	0.392	21	*	NA	± 20 %	AverageRF
Trichloroethene (TCE)	10	11	0.200	0.245	0.275	12		NA	± 20 %	AverageRF
Tetrachloroethene (PCE)	10	11	0.200	0.322	0.355	10		NA	± 20 %	AverageRF
Dibromofluoromethane	10	11	0.01	0.244	0.274	12		NA	± 20 %	AverageRF
Toluene-d8	10	12	0.01	0.743	0.884	19		NA	± 20 %	AverageRF
4-Bromofluorobenzene	10	12	0.01	0.359	0.424	18		NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1110800

Analysis Run Log
Volatile Organic Compounds

Analysis Method: 8260C

Analysis Lot: KWG1111591
Instrument ID: MS04

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1114F004.D	GC/MS Tuning - Bromofluorobenzene	KWG1111591-1	11/14/2011	10:40		11/14/2011	11:06
1114F005.D	Continuing Calibration Verification	KWG1111591-2	11/14/2011	11:16		11/14/2011	11:42
1114F006.D	Lab Control Sample	KWG1111595-3	11/14/2011	12:09		11/14/2011	12:35
1114F007.D	ZZZZZZ	ZZZZZZ	11/14/2011	12:42		11/14/2011	13:08
1114F008.D	ZZZZZZ	ZZZZZZ	11/14/2011	13:15		11/14/2011	13:41
1114F010.D	Method Blank	KWG1111595-4	11/14/2011	14:22		11/14/2011	14:48
1114F011.D	ZZZZZZ	ZZZZZZ	11/14/2011	14:56		11/14/2011	15:22
1114F012.D	ZZZZZZ	ZZZZZZ	11/14/2011	15:29		11/14/2011	15:55
1114F013.D	MS48PC	K1110800-021	11/14/2011	16:02		11/14/2011	16:28
1114F014.D	MS49D	K1110800-022	11/14/2011	16:35		11/14/2011	17:01
1114F015.D	MS15D	K1110800-026	11/14/2011	17:08		11/14/2011	17:34
1114F016.D	QCR03	K1110800-027	11/14/2011	17:42		11/14/2011	18:08
1114F017.D	AT09	K1110800-030	11/14/2011	18:15		11/14/2011	18:41
1114F018.D	ZZZZZZ	ZZZZZZ	11/14/2011	18:48		11/14/2011	19:14
1114F019.D	ZZZZZZ	ZZZZZZ	11/14/2011	19:21		11/14/2011	19:47
1114F020.D	ZZZZZZ	ZZZZZZ	11/14/2011	19:54		11/14/2011	20:20
1114F021.D	ZZZZZZ	ZZZZZZ	11/14/2011	20:27		11/14/2011	20:53
1114F022.D	ZZZZZZ	ZZZZZZ	11/14/2011	21:00		11/14/2011	21:26
1114F023.D	ZZZZZZ	ZZZZZZ	11/14/2011	21:33		11/14/2011	21:59
1114F024.D	MS44D	K1110800-028	11/14/2011	22:06		11/14/2011	22:32

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1110800
Project:	NIROP/J070047	**Date Extracted:**	11/14/2011
Sample Matrix:	Water	**Date Analyzed:**	11/14/2011
		Time Analyzed:	14:22

Method Blank Summary
Volatile Organic Compounds

Sample Name:	Method Blank	**Instrument ID:**	MS04
Lab Code:	KWG1111595-4	**File ID:**	J:\MS04\DATA\111411\1114F010.D
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C	**Extraction Lot:**	KWG1111595

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1111595-3	J:\MS04\DATA\111411\1114F006.D	11/14/11	12:09
MS48PC	K1110800-021	J:\MS04\DATA\111411\1114F013.D	11/14/11	16:02
MS49D	K1110800-022	J:\MS04\DATA\111411\1114F014.D	11/14/11	16:35
MS15D	K1110800-026	J:\MS04\DATA\111411\1114F015.D	11/14/11	17:08
QCR03	K1110800-027	J:\MS04\DATA\111411\1114F016.D	11/14/11	17:42
AT09	K1110800-030	J:\MS04\DATA\111411\1114F017.D	11/14/11	18:15
MS44D	K1110800-028	J:\MS04\DATA\111411\1114F024.D	11/14/11	22:06

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1110800
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	11/14/2011
		Date Analyzed:	11/14/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1111595-4	**Basis:**	NA
File ID:	J:\MS04\DATA\111411\1114F010.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111595
Analysis Method:	8260C	**Calibration ID:**	CAL11002

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	107	73-122	11/14/11	Acceptable
Toluene-d8	116	65-144	11/14/11	Acceptable
4-Bromofluorobenzene	112	68-117	11/14/11	Acceptable

Comments

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1110800
Project:	NIROP/J070047	**Date Extracted:**	11/14/2011
Sample Matrix:	Water	**Date Analyzed:**	11/14/2011

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	EPA 5030B	**Units:**	ug/L
Analysis Method:	8260C	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1111595

	Lab Control Sample KWG1111595-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Vinyl Chloride	8.12	10.0	81	55-123
1,1-Dichloroethene	9.98	10.0	100	66-129
trans-1,2-Dichloroethene	10.8	10.0	108	67-125
1,1-Dichloroethane	10.6	10.0	106	68-132
cis-1,2-Dichloroethene	11.0	10.0	110	71-118
1,1,1-Trichloroethane (TCA)	10.8	10.0	108	59-136
Trichloroethene (TCE)	10.8	10.0	108	67-128
Tetrachloroethene (PCE)	10.1	10.0	101	62-126

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1110800
Date Analyzed: 11/15/2011
Time Analyzed: 10:13

Tune Summary
Volatile Organic Compounds

File ID: J:\MS04\DATA\111511\1115F003.D
Instrument ID: MS04
Column:

Analysis Method: 8260C
Analysis Lot: KWG1111636

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	16.1	14839	PASS
75	95	30	60	41.9	38722	PASS
95	95	100	100	100.0	92440	PASS
96	95	5	9	6.6	6090	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	93.1	86104	PASS
175	174	5	9	8.2	7093	PASS
176	174	95	101	95.3	82024	PASS
177	176	5	9	7.0	5744	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1111636-2	J:\MS04\DATA\111511\1115F004.D	11/15/2011	10:46	
Lab Control Sample	KWG1111643-3	J:\MS04\DATA\111511\1115F005.D	11/15/2011	11:20	
Method Blank	KWG1111643-4	J:\MS04\DATA\111511\1115F009.D	11/15/2011	13:32	
MS44DDL	K1110800-028	J:\MS04\DATA\111511\1115F012.D	11/15/2011	15:13	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1110800
Date Analyzed: 11/15/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration Date: 10/25/2011
Calibration ID: CAL11002
Analysis Lot: KWG1111636
Units: PPB

File ID: J:\MS04\DATA\111511\1115F004.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	8.3	0.100	0.368	0.304	-17	NA	± 20 %	AverageRF
1,1-Dichloroethene	10	10	0.100	0.249	0.258	4	NA	± 20 %	AverageRF
trans-1,2-Dichloroethene	10	11	0.100	0.302	0.333	11	NA	± 20 %	AverageRF
1,1-Dichloroethane	10	11	0.200	0.455	0.502	10	NA	± 20 %	AverageRF
cis-1,2-Dichloroethene	10	11	0.100	0.308	0.339	10	NA	± 20 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	12	0.100	0.324	0.378	17	NA	± 20 %	AverageRF
Trichloroethene (TCE)	10	10	0.200	0.245	0.257	5	NA	± 20 %	AverageRF
Tetrachloroethene (PCE)	10	11	0.200	0.322	0.342	6	NA	± 20 %	AverageRF
Dibromofluoromethane	10	11	0.01	0.244	0.279	14	NA	± 20 %	AverageRF
Toluene-d8	10	12	0.01	0.743	0.889	20	NA	± 20 %	AverageRF
4-Bromofluorobenzene	10	12	0.01	0.359	0.416	16	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1110800

Analysis Run Log
Volatile Organic Compounds

Analysis Method: 8260C

Analysis Lot: KWG1111636
Instrument ID: MS04

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1115F003.D	GC/MS Tuning - Bromofluorobenzene	KWG1111636-1	11/15/2011	10:13		11/15/2011	10:39
1115F004.D	Continuing Calibration Verification	KWG1111636-2	11/15/2011	10:46		11/15/2011	11:12
1115F005.D	Lab Control Sample	KWG1111643-3	11/15/2011	11:20		11/15/2011	11:46
1115F006.D	ZZZZZZ	ZZZZZZ	11/15/2011	11:52		11/15/2011	12:18
1115F007.D	ZZZZZZ	ZZZZZZ	11/15/2011	12:25		11/15/2011	12:51
1115F009.D	Method Blank	KWG1111643-4	11/15/2011	13:32		11/15/2011	13:58
1115F010.D	ZZZZZZ	ZZZZZZ	11/15/2011	14:06		11/15/2011	14:32
1115F011.D	ZZZZZZ	ZZZZZZ	11/15/2011	14:39		11/15/2011	15:05
1115F012.D	MS44DDL	K1110800-028	11/15/2011	15:13		11/15/2011	15:39
1115F013.D	ZZZZZZ	ZZZZZZ	11/15/2011	15:46		11/15/2011	16:12
1115F014.D	ZZZZZZ	ZZZZZZ	11/15/2011	16:19		11/15/2011	16:45
1115F015.D	ZZZZZZ	ZZZZZZ	11/15/2011	16:53		11/15/2011	17:19
1115F016.D	ZZZZZZ	ZZZZZZ	11/15/2011	17:25		11/15/2011	17:51
1115F017.D	ZZZZZZ	ZZZZZZ	11/15/2011	17:59		11/15/2011	18:25
1115F018.D	ZZZZZZ	ZZZZZZ	11/15/2011	18:32		11/15/2011	18:58
1115F019.D	ZZZZZZ	ZZZZZZ	11/15/2011	19:06		11/15/2011	19:32
1115F020.D	ZZZZZZ	ZZZZZZ	11/15/2011	19:38		11/15/2011	20:04
1115F021.D	ZZZZZZ	ZZZZZZ	11/15/2011	20:12		11/15/2011	20:38
1115F022.D	ZZZZZZ	ZZZZZZ	11/15/2011	20:44		11/15/2011	21:10
1115F023.D	ZZZZZZ	ZZZZZZ	11/15/2011	21:17		11/15/2011	21:43
1115F024.D	ZZZZZZ	ZZZZZZ	11/15/2011	21:50		11/15/2011	22:16

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1110800
Date Extracted: 11/15/2011
Date Analyzed: 11/15/2011
Time Analyzed: 13:32

Method Blank Summary
Volatile Organic Compounds

Sample Name: Method Blank
Lab Code: KWG1111643-4
Extraction Method: EPA 5030B
Analysis Method: 8260C

Instrument ID: MS04
File ID: J:\MS04\DATA\111511\1115F009.D
Level: Low
Extraction Lot: KWG1111643

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1111643-3	J:\MS04\DATA\111511\1115F005.D	11/15/11	11:20
MS44DDL	K1110800-028	J:\MS04\DATA\111511\1115F012.D	11/15/11	15:13

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1110800
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	11/15/2011
		Date Analyzed:	11/15/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1111643-4	**Basis:**	NA
File ID:	J:\MS04\DATA\111511\1115F009.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111643
Analysis Method:	8260C	**Calibration ID:**	CAL11002

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	110	73-122	11/15/11	Acceptable
Toluene-d8	117	65-144	11/15/11	Acceptable
4-Bromofluorobenzene	109	68-117	11/15/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1110800
Project:	NIROP/J070047	**Date Extracted:**	11/15/2011
Sample Matrix:	Water	**Date Analyzed:**	11/15/2011

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	EPA 5030B	**Units:**	ug/L
Analysis Method:	8260C	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1111643

	Lab Control Sample KWG1111643-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Vinyl Chloride	8.26	10.0	83	55-123
1,1-Dichloroethene	10.3	10.0	103	66-129
trans-1,2-Dichloroethene	11.1	10.0	111	67-125
1,1-Dichloroethane	10.8	10.0	108	68-132
cis-1,2-Dichloroethene	11.1	10.0	111	71-118
1,1,1-Trichloroethane (TCA)	11.2	10.0	112	59-136
Trichloroethene (TCE)	10.9	10.0	109	67-128
Tetrachloroethene (PCE)	10.4	10.0	104	62-126

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1110800
Date Analyzed: 10/31/2011
Time Analyzed: 11:40

Tune Summary
Volatile Organic Compounds

File ID: J:\MS13\DATA\103111\1031F003.D
Instrument ID: MS13
Column:

Analysis Method: 8260C
Analysis Lot: KWG1111931

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	16.6	36602	PASS
75	95	30	60	47.9	105360	PASS
95	95	100	100	100.0	219861	PASS
96	95	5	9	6.8	14963	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	96.8	212842	PASS
175	174	5	9	8.0	17036	PASS
176	174	95	101	98.8	210240	PASS
177	176	5	9	6.6	13941	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Initial Calibration	KWG1111931-2	J:\MS13\DATA\103111\1031F005.D	10/31/2011	12:50	
Initial Calibration	KWG1111931-3	J:\MS13\DATA\103111\1031F006.D	10/31/2011	13:18	
Initial Calibration	KWG1111931-4	J:\MS13\DATA\103111\1031F007.D	10/31/2011	13:47	
Initial Calibration	KWG1111931-5	J:\MS13\DATA\103111\1031F008.D	10/31/2011	14:15	
Initial Calibration	KWG1111931-6	J:\MS13\DATA\103111\1031F009.D	10/31/2011	14:44	
Initial Calibration	KWG1111931-7	J:\MS13\DATA\103111\1031F010.D	10/31/2011	15:12	
Initial Calibration	KWG1111931-8	J:\MS13\DATA\103111\1031F011.D	10/31/2011	15:41	
Initial Calibration	KWG1111931-9	J:\MS13\DATA\103111\1031F012.D	10/31/2011	16:09	
Initial Calibration	KWG1111931-10	J:\MS13\DATA\103111\1031F013.D	10/31/2011	16:38	
Initial Calibration	KWG1111931-11	J:\MS13\DATA\103111\1031F014.D	10/31/2011	17:07	
Initial Calibration	KWG1111931-12	J:\MS13\DATA\103111\1031F015.D	10/31/2011	17:35	
Initial Calibration Verification	KWG1111931-13	J:\MS13\DATA\103111\1031F019.D	10/31/2011	19:29	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1110800
Calibration Date: 10/31/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL11020
Instrument ID: MS13

Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS13\DATA\103111\1031F005.D	G	J:\MS13\DATA\103111\1031F011.D
B	J:\MS13\DATA\103111\1031F006.D	H	J:\MS13\DATA\103111\1031F012.D
C	J:\MS13\DATA\103111\1031F007.D	I	J:\MS13\DATA\103111\1031F013.D
D	J:\MS13\DATA\103111\1031F008.D	J	J:\MS13\DATA\103111\1031F014.D
E	J:\MS13\DATA\103111\1031F009.D	K	J:\MS13\DATA\103111\1031F015.D
F	J:\MS13\DATA\103111\1031F010.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Vinyl Chloride	A	0.10	0.303	B	0.20	0.328	C	0.50	0.275	D	1.0	0.290	E	2.0	0.309
	F	5.0	0.318	G	10	0.281	H	20	0.257	I	40	0.280	J	60	0.286
	K	80	0.268												
1,1-Dichloroethene				B	0.20	0.260	C	0.50	0.207	D	1.0	0.227	E	2.0	0.236
	F	5.0	0.246	G	10	0.218	H	20	0.200	I	40	0.215	J	60	0.220
	K	80	0.204												
trans-1,2-Dichloroethene				B	0.20	0.263	C	0.50	0.238	D	1.0	0.271	E	2.0	0.265
	F	5.0	0.283	G	10	0.247	H	20	0.230	I	40	0.248	J	60	0.254
	K	80	0.238												
1,1-Dichloroethane	A	0.10	0.442	B	0.20	0.475	C	0.50	0.383	D	1.0	0.410	E	2.0	0.428
	F	5.0	0.442	G	10	0.403	H	20	0.375	I	40	0.416	J	60	0.419
	K	80	0.404												
cis-1,2-Dichloroethene				B	0.20	0.286	C	0.50	0.249	D	1.0	0.282	E	2.0	0.279
	F	5.0	0.283	G	10	0.264	H	20	0.245	I	40	0.273	J	60	0.272
	K	80	0.264												
1,1,1-Trichloroethane (TCA)	A	0.10	0.379	B	0.20	0.386	C	0.50	0.313	D	1.0	0.353	E	2.0	0.353
	F	5.0	0.377	G	10	0.346	H	20	0.330	I	40	0.365	J	60	0.383
	K	80	0.364												
Trichloroethene (TCE)				B	0.20	0.290	C	0.50	0.254	D	1.0	0.262	E	2.0	0.271
	F	5.0	0.283	G	10	0.254	H	20	0.238	I	40	0.262	J	60	0.267
	K	80	0.255												
Tetrachloroethene (PCE)				B	0.20	0.797	C	0.50	0.682	D	1.0	0.690	E	2.0	0.741
	F	5.0	0.761	G	10	0.681	H	20	0.624	I	40	0.679	J	60	0.709
	K	80	0.672												
Dibromofluoromethane				B	4.0	0.192	C	5.0	0.197	D	6.0	0.212	E	7.0	0.197
	F	8.0	0.166	G	10	0.198	H	20	0.212	I	40	0.205	J	50	0.210
	K	60	0.211												
Toluene-d8							C	5.0	0.842	D	6.0	0.890	E	7.0	0.823
	F	8.0	0.647	G	10	0.864	H	20	0.893	I	40	0.816	J	50	0.826
	K	60	0.837												

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1110800
Calibration Date: 10/31/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL11020
Instrument ID: MS13

Column: MS

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
4-Bromofluorobenzene				B	4.0	0.825	C	5.0	0.841	D	6.0	0.882	E	7.0	0.837
	F	8.0	0.699	G	10	0.832	H	20	0.868	I	40	0.819	J	50	0.821
	K	60	0.829												

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1110800
Calibration Date: 10/31/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL11020
Instrument ID: MS13

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Vinyl Chloride	MS	AverageRF	% RSD	7.6		≤ 20	0.290		0.100
1,1-Dichloroethene	MS	AverageRF	% RSD	8.6		≤ 20	0.223		0.100
trans-1,2-Dichloroethene	MS	AverageRF	% RSD	6.6		≤ 20	0.254		0.100
1,1-Dichloroethane	MS	AverageRF	% RSD	6.8		≤ 20	0.418		0.200
cis-1,2-Dichloroethene	MS	AverageRF	% RSD	5.3		≤ 20	0.270		0.100
1,1,1-Trichloroethane (TCA)	MS	AverageRF	% RSD	6.5		≤ 20	0.359		0.100
Trichloroethene (TCE)	MS	AverageRF	% RSD	5.7		≤ 20	0.264		0.200
Tetrachloroethene (PCE)	MS	AverageRF	% RSD	7.1		≤ 20	0.704		0.200
Dibromofluoromethane	SURR	AverageRF	% RSD	7.0		≤ 20	0.200		0.01
Toluene-d8	SURR	AverageRF	% RSD	8.8		≤ 20	0.826		0.01
4-Bromofluorobenzene	SURR	AverageRF	% RSD	5.9		≤ 20	0.825		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1110800
Calibration Date: 10/31/2011
Date Analyzed: 10/31/2011

Second Source Calibration Verification
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration ID: CAL11020
Units: PPB

File ID: J:\MS13\DATA\103111\1031F019.D
J:\MS13\DATA\103111\1031F020.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	8.9	0.290	0.260	-11	NA	± 30 %	AverageRF
1,1-Dichloroethene	10	11	0.223	0.239	7	NA	± 30 %	AverageRF
trans-1,2-Dichloroethene	10	11	0.254	0.275	8	NA	± 30 %	AverageRF
1,1-Dichloroethane	10	10	0.418	0.429	3	NA	± 30 %	AverageRF
cis-1,2-Dichloroethene	10	11	0.270	0.285	5	NA	± 30 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	11	0.359	0.388	8	NA	± 30 %	AverageRF
Trichloroethene (TCE)	10	11	0.264	0.282	7	NA	± 30 %	AverageRF
Tetrachloroethene (PCE)	10	11	0.704	0.739	5	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1110800
Date Analyzed: 11/09/2011
Time Analyzed: 12:51

Tune Summary
Volatile Organic Compounds

File ID: J:\MS13\DATA\110911\1109F006.D
Instrument ID: MS13
Column:

Analysis Method: 8260C
Analysis Lot: KWG1111440

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	16.7	33188	PASS
75	95	30	60	47.2	94037	PASS
95	95	100	100	100.0	199040	PASS
96	95	5	9	6.7	13431	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	97.9	194944	PASS
175	174	5	9	7.6	14776	PASS
176	174	95	101	95.4	186048	PASS
177	176	5	9	7.0	12961	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1111440-2	J:\MS13\DATA\110911\1109F007.D	11/09/2011	13:20	
Lab Control Sample	KWG1111444-3	J:\MS13\DATA\110911\1109F008.D	11/09/2011	14:09	
MS05DMS	KWG1111444-1	J:\MS13\DATA\110911\1109F009.D	11/09/2011	14:38	
MS05DDMS	KWG1111444-2	J:\MS13\DATA\110911\1109F010.D	11/09/2011	15:07	
Method Blank	KWG1111444-4	J:\MS13\DATA\110911\1109F013.D	11/09/2011	16:33	
QCT01	K1110800-011	J:\MS13\DATA\110911\1109F014.D	11/09/2011	17:02	
QCT02	K1110800-029	J:\MS13\DATA\110911\1109F015.D	11/09/2011	17:31	
MS05D	K1110800-001	J:\MS13\DATA\110911\1109F018.D	11/09/2011	18:57	
MS10IS	K1110800-002	J:\MS13\DATA\110911\1109F019.D	11/09/2011	19:25	
USGS05	K1110800-012	J:\MS13\DATA\110911\1109F020.D	11/09/2011	19:54	
MS17S	K1110800-013	J:\MS13\DATA\110911\1109F021.D	11/09/2011	20:23	
MS16S	K1110800-014	J:\MS13\DATA\110911\1109F022.D	11/09/2011	20:51	
MS52D	K1110800-015	J:\MS13\DATA\110911\1109F023.D	11/09/2011	21:20	
MS42I	K1110800-016	J:\MS13\DATA\110911\1109F024.D	11/09/2011	21:48	
QCR01	K1110800-017	J:\MS13\DATA\110911\1109F025.D	11/09/2011	22:17	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1110800
Date Analyzed: 11/09/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration Date: 10/31/2011
Calibration ID: CAL11020
Analysis Lot: KWG1111440
Units: PPB

File ID: J:\MS13\DATA\110911\1109F007.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D		%Drift	Criteria	Curve Fit
Vinyl Chloride	10	8.3	0.100	0.290	0.239	-18		NA	± 20 %	AverageRF
1,1-Dichloroethene	10	8.4	0.100	0.223	0.187	-16		NA	± 20 %	AverageRF
trans-1,2-Dichloroethene	10	8.7	0.100	0.254	0.220	-13		NA	± 20 %	AverageRF
1,1-Dichloroethane	10	8.7	0.200	0.418	0.365	-13		NA	± 20 %	AverageRF
cis-1,2-Dichloroethene	10	9.0	0.100	0.270	0.242	-10		NA	± 20 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	8.6	0.100	0.359	0.309	-14		NA	± 20 %	AverageRF
Trichloroethene (TCE)	10	8.5	0.200	0.264	0.224	-15		NA	± 20 %	AverageRF
Tetrachloroethene (PCE)	10	7.9	0.200	0.704	0.553	-21	*	NA	± 20 %	AverageRF
Dibromofluoromethane	10	11	0.01	0.200	0.216	8		NA	± 20 %	AverageRF
Toluene-d8	10	12	0.01	0.826	0.984	19		NA	± 20 %	AverageRF
4-Bromofluorobenzene	10	11	0.01	0.825	0.908	10		NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1110800

Analysis Run Log
Volatile Organic Compounds

Analysis Method: 8260C

Analysis Lot: KWG1111440
Instrument ID: MS13

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1109F006.D	GC/MS Tuning - Bromofluorobenzene	KWG1111440-1	11/9/2011	12:51		11/9/2011	13:10
1109F007.D	Continuing Calibration Verification	KWG1111440-2	11/9/2011	13:20		11/9/2011	13:39
1109F008.D	Lab Control Sample	KWG1111444-3	11/9/2011	14:09		11/9/2011	14:28
1109F009.D	MS05DMS	KWG1111444-1	11/9/2011	14:38		11/9/2011	14:57
1109F010.D	MS05DDMS	KWG1111444-2	11/9/2011	15:07		11/9/2011	15:26
1109F013.D	Method Blank	KWG1111444-4	11/9/2011	16:33		11/9/2011	16:52
1109F014.D	QCT01	K1110800-011	11/9/2011	17:02		11/9/2011	17:21
1109F015.D	QCT02	K1110800-029	11/9/2011	17:31		11/9/2011	17:50
1109F016.D	ZZZZZZ	ZZZZZZ	11/9/2011	17:59		11/9/2011	18:18
1109F017.D	ZZZZZZ	ZZZZZZ	11/9/2011	18:28		11/9/2011	18:47
1109F018.D	MS05D	K1110800-001	11/9/2011	18:57		11/9/2011	19:16
1109F019.D	MS10IS	K1110800-002	11/9/2011	19:25		11/9/2011	19:44
1109F020.D	USGS05	K1110800-012	11/9/2011	19:54		11/9/2011	20:13
1109F021.D	MS17S	K1110800-013	11/9/2011	20:23		11/9/2011	20:42
1109F022.D	MS16S	K1110800-014	11/9/2011	20:51		11/9/2011	21:10
1109F023.D	MS52D	K1110800-015	11/9/2011	21:20		11/9/2011	21:39
1109F024.D	MS42I	K1110800-016	11/9/2011	21:48		11/9/2011	22:07
1109F025.D	QCR01	K1110800-017	11/9/2011	22:17		11/9/2011	22:36
1109F026.D	ZZZZZZ	ZZZZZZ	11/9/2011	22:45		11/9/2011	23:04
1109F027.D	ZZZZZZ	ZZZZZZ	11/9/2011	23:14		11/9/2011	23:33

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1110800
Project:	NIROP/J070047	**Date Extracted:**	11/09/2011
Sample Matrix:	Water	**Date Analyzed:**	11/09/2011
		Time Analyzed:	16:33

Method Blank Summary
Volatile Organic Compounds

Sample Name:	Method Blank	**Instrument ID:**	MS13
Lab Code:	KWG1111444-4	**File ID:**	J:\MS13\DATA\110911\1109F013.D
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C	**Extraction Lot:**	KWG1111444

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1111444-3	J:\MS13\DATA\110911\1109F008.D	11/09/11	14:09
MS05DMS	KWG1111444-1	J:\MS13\DATA\110911\1109F009.D	11/09/11	14:38
MS05DDMS	KWG1111444-2	J:\MS13\DATA\110911\1109F010.D	11/09/11	15:07
QCT01	K1110800-011	J:\MS13\DATA\110911\1109F014.D	11/09/11	17:02
QCT02	K1110800-029	J:\MS13\DATA\110911\1109F015.D	11/09/11	17:31
MS05D	K1110800-001	J:\MS13\DATA\110911\1109F018.D	11/09/11	18:57
MS10IS	K1110800-002	J:\MS13\DATA\110911\1109F019.D	11/09/11	19:25
USGS05	K1110800-012	J:\MS13\DATA\110911\1109F020.D	11/09/11	19:54
MS17S	K1110800-013	J:\MS13\DATA\110911\1109F021.D	11/09/11	20:23
MS16S	K1110800-014	J:\MS13\DATA\110911\1109F022.D	11/09/11	20:51
MS52D	K1110800-015	J:\MS13\DATA\110911\1109F023.D	11/09/11	21:20
MS42I	K1110800-016	J:\MS13\DATA\110911\1109F024.D	11/09/11	21:48
QCR01	K1110800-017	J:\MS13\DATA\110911\1109F025.D	11/09/11	22:17

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1110800
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	11/09/2011
		Date Analyzed:	11/09/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1111444-4	**Basis:**	NA
File ID:	J:\MS13\DATA\110911\1109F013.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111444
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	107	73-122	11/09/11	Acceptable
Toluene-d8	119	65-144	11/09/11	Acceptable
4-Bromofluorobenzene	109	68-117	11/09/11	Acceptable

Comments:

Client:	Bay West, Incorporated	**Service Request:**	K1110800
Project:	NIROP/J070047	**Date Extracted:**	11/09/2011
Sample Matrix:	Water	**Date Analyzed:**	11/09/2011

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	EPA 5030B	**Units:**	ug/L
Analysis Method:	8260C	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1111444

	Lab Control Sample KWG1111444-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Vinyl Chloride	7.21	10.0	72	55-123
1,1-Dichloroethene	8.83	10.0	88	66-129
trans-1,2-Dichloroethene	9.06	10.0	91	67-125
1,1-Dichloroethane	8.96	10.0	90	68-132
cis-1,2-Dichloroethene	9.35	10.0	94	71-118
1,1,1-Trichloroethane (TCA)	8.61	10.0	86	59-136
Trichloroethene (TCE)	8.89	10.0	89	67-128
Tetrachloroethene (PCE)	8.36	10.0	84	62-126

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1110800
Date Extracted: 11/09/2011
Date Analyzed: 11/09/2011

Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organic Compounds

Sample Name: MS05D
Lab Code: K1110800-001

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260C

Level: Low
Extraction Lot: KWG1111444

Analyte Name	Sample Result	MS05DMS KWG1111444-1 Matrix Spike			MS05DDMS KWG1111444-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
Vinyl Chloride	ND	7.71	10.0	77	7.25	10.0	73	49-136	6	30
1,1-Dichloroethene	ND	9.67	10.0	97	9.38	10.0	94	59-171	3	30
trans-1,2-Dichloroethene	ND	9.79	10.0	98	9.29	10.0	93	65-143	5	30
1,1-Dichloroethane	ND	9.20	10.0	92	8.76	10.0	88	69-141	5	30
cis-1,2-Dichloroethene	0.34	9.74	10.0	94	9.26	10.0	89	61-139	5	30
1,1,1-Trichloroethane (TCA)	ND	9.28	10.0	93	8.97	10.0	90	57-151	3	30
Trichloroethene (TCE)	0.15	9.60	10.0	95	9.16	10.0	90	53-139	5	30
Tetrachloroethene (PCE)	1.4	10.0	10.0	87	9.46	10.0	81	61-131	6	30

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.
Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1110800
Date Analyzed: 11/10/2011
Time Analyzed: 11:19

Tune Summary
Volatile Organic Compounds

File ID: J:\MS13\DATA\111011\1110F002.D
Instrument ID: MS13
Column:

Analysis Method: 8260C
Analysis Lot: KWG1111497

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	17.7	35024	PASS
75	95	30	60	47.2	93266	PASS
95	95	100	100	100.0	197717	PASS
96	95	5	9	6.4	12732	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	95.9	189568	PASS
175	174	5	9	7.6	14486	PASS
176	174	95	101	100.4	190293	PASS
177	176	5	9	6.7	12790	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1111497-2	J:\MS13\DATA\111011\1110F003.D	11/10/2011	11:56	
Lab Control Sample	KWG1111499-3	J:\MS13\DATA\111011\1110F004.D	11/10/2011	12:46	
MS03PCMS	KWG1111499-1	J:\MS13\DATA\111011\1110F006.D	11/10/2011	14:10	
MS03PCDMS	KWG1111499-2	J:\MS13\DATA\111011\1110F007.D	11/10/2011	14:39	
Method Blank	KWG1111499-4	J:\MS13\DATA\111011\1110F010.D	11/10/2011	16:05	
MS03PC	K1110800-003	J:\MS13\DATA\111011\1110F015.D	11/10/2011	18:29	
QCR02	K1110800-004	J:\MS13\DATA\111011\1110F016.D	11/10/2011	18:58	
MS05PC	K1110800-018	J:\MS13\DATA\111011\1110F017.D	11/10/2011	19:26	
MS53PC	K1110800-019	J:\MS13\DATA\111011\1110F018.D	11/10/2011	19:55	
QCD02	K1110800-020	J:\MS13\DATA\111011\1110F019.D	11/10/2011	20:23	
AT08DL	K1110800-031	J:\MS13\DATA\111011\1110F020.D	11/10/2011	20:52	
AT07DL	K1110800-032	J:\MS13\DATA\111011\1110F021.D	11/10/2011	21:20	
AT05ADL	K1110800-033	J:\MS13\DATA\111011\1110F022.D	11/10/2011	21:49	
AT10DL	K1110800-034	J:\MS13\DATA\111011\1110F023.D	11/10/2011	22:17	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1110800
Date Analyzed: 11/10/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration Date: 10/31/2011
Calibration ID: CAL11020
Analysis Lot: KWG1111497
Units: PPB

File ID: J:\MS13\DATA\111011\1110F003.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	9.6	0.100	0.290	0.278	-4	NA	± 20 %	AverageRF
1,1-Dichloroethene	10	9.2	0.100	0.223	0.204	-8	NA	± 20 %	AverageRF
trans-1,2-Dichloroethene	10	9.4	0.100	0.254	0.240	-6	NA	± 20 %	AverageRF
1,1-Dichloroethane	10	9.3	0.200	0.418	0.389	-7	NA	± 20 %	AverageRF
cis-1,2-Dichloroethene	10	9.4	0.100	0.270	0.253	-6	NA	± 20 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	9.2	0.100	0.359	0.331	-8	NA	± 20 %	AverageRF
Trichloroethene (TCE)	10	9.3	0.200	0.264	0.244	-7	NA	± 20 %	AverageRF
Tetrachloroethene (PCE)	10	8.6	0.200	0.704	0.603	-14	NA	± 20 %	AverageRF
Dibromofluoromethane	10	11	0.01	0.200	0.213	6	NA	± 20 %	AverageRF
Toluene-d8	10	12	0.01	0.826	0.980	19	NA	± 20 %	AverageRF
4-Bromofluorobenzene	10	11	0.01	0.825	0.895	8	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1110800

Analysis Run Log
Volatile Organic Compounds

Analysis Method: 8260C

Analysis Lot: KWG1111497
Instrument ID: MS13

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1110F002.D	GC/MS Tuning - Bromofluorobenzene	KWG1111497-1	11/10/2011	11:19		11/10/2011	11:38
1110F003.D	Continuing Calibration Verification	KWG1111497-2	11/10/2011	11:56		11/10/2011	12:15
1110F004.D	Lab Control Sample	KWG1111499-3	11/10/2011	12:46		11/10/2011	13:05
1110F006.D	MS03PCMS	KWG1111499-1	11/10/2011	14:10		11/10/2011	14:29
1110F007.D	MS03PCDMS	KWG1111499-2	11/10/2011	14:39		11/10/2011	14:58
1110F010.D	Method Blank	KWG1111499-4	11/10/2011	16:05		11/10/2011	16:24
1110F011.D	ZZZZZZ	ZZZZZZ	11/10/2011	16:34		11/10/2011	16:53
1110F012.D	ZZZZZZ	ZZZZZZ	11/10/2011	17:03		11/10/2011	17:22
1110F013.D	ZZZZZZ	ZZZZZZ	11/10/2011	17:31		11/10/2011	17:50
1110F014.D	ZZZZZZ	ZZZZZZ	11/10/2011	18:00		11/10/2011	18:19
1110F015.D	MS03PC	K1110800-003	11/10/2011	18:29		11/10/2011	18:48
1110F016.D	QCR02	K1110800-004	11/10/2011	18:58		11/10/2011	19:17
1110F017.D	MS05PC	K1110800-018	11/10/2011	19:26		11/10/2011	19:45
1110F018.D	MS53PC	K1110800-019	11/10/2011	19:55		11/10/2011	20:14
1110F019.D	QCD02	K1110800-020	11/10/2011	20:23		11/10/2011	20:42
1110F020.D	AT08DL	K1110800-031	11/10/2011	20:52		11/10/2011	21:11
1110F021.D	AT07DL	K1110800-032	11/10/2011	21:20		11/10/2011	21:39
1110F022.D	AT05ADL	K1110800-033	11/10/2011	21:49		11/10/2011	22:08
1110F023.D	AT10DL	K1110800-034	11/10/2011	22:17		11/10/2011	22:36

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1110800
Project:	NIROP/J070047	**Date Extracted:**	11/10/2011
Sample Matrix:	Water	**Date Analyzed:**	11/10/2011
		Time Analyzed:	16:05

Method Blank Summary
Volatile Organic Compounds

Sample Name:	Method Blank	**Instrument ID:**	MS13
Lab Code:	KWG1111499-4	**File ID:**	J:\MS13\DATA\111011\1110F010.D
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C	**Extraction Lot:**	KWG1111499

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1111499-3	J:\MS13\DATA\111011\1110F004.D	11/10/11	12:46
MS03PCMS	KWG1111499-1	J:\MS13\DATA\111011\1110F006.D	11/10/11	14:10
MS03PCDMS	KWG1111499-2	J:\MS13\DATA\111011\1110F007.D	11/10/11	14:39
MS03PC	K1110800-003	J:\MS13\DATA\111011\1110F015.D	11/10/11	18:29
QCR02	K1110800-004	J:\MS13\DATA\111011\1110F016.D	11/10/11	18:58
MS05PC	K1110800-018	J:\MS13\DATA\111011\1110F017.D	11/10/11	19:26
MS53PC	K1110800-019	J:\MS13\DATA\111011\1110F018.D	11/10/11	19:55
QCD02	K1110800-020	J:\MS13\DATA\111011\1110F019.D	11/10/11	20:23
AT08DL	K1110800-031	J:\MS13\DATA\111011\1110F020.D	11/10/11	20:52
AT07DL	K1110800-032	J:\MS13\DATA\111011\1110F021.D	11/10/11	21:20
AT05ADL	K1110800-033	J:\MS13\DATA\111011\1110F022.D	11/10/11	21:49
AT10DL	K1110800-034	J:\MS13\DATA\111011\1110F023.D	11/10/11	22:17

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1110800
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	11/10/2011
		Date Analyzed:	11/10/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1111499-4	**Basis:**	NA
File ID:	J:\MS13\DATA\111011\1110F010.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111499
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	107	73-122	11/10/11	Acceptable
Toluene-d8	121	65-144	11/10/11	Acceptable
4-Bromofluorobenzene	109	68-117	11/10/11	Acceptable

Comments

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1110800
Date Extracted: 11/10/2011
Date Analyzed: 11/10/2011

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1111499

	Lab Control Sample KWG1111499-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Vinyl Chloride	7.58	10.0	76	55-123
1,1-Dichloroethene	9.56	10.0	96	66-129
trans-1,2-Dichloroethene	9.46	10.0	95	67-125
1,1-Dichloroethane	9.24	10.0	92	68-132
cis-1,2-Dichloroethene	9.34	10.0	93	71-118
1,1,1-Trichloroethane (TCA)	9.05	10.0	91	59-136
Trichloroethene (TCE)	9.37	10.0	94	67-128
Tetrachloroethene (PCE)	8.51	10.0	85	62-126

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1110800
Project:	NIROP/J070047	**Date Extracted:**	11/10/2011
Sample Matrix:	Water	**Date Analyzed:**	11/10/2011

Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organic Compounds

Sample Name:	MS03PC	**Units:**	ug/L
Lab Code:	K1110800-003	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C	**Extraction Lot:**	KWG1111499

		MS03PCMS KWG1111499-1 Matrix Spike			MS03PCDMS KWG1111499-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Vinyl Chloride	ND	8.03	10.0	80	7.34	10.0	73	49-136	9	30
1,1-Dichloroethene	ND	9.49	10.0	95	8.77	10.0	88	59-171	8	30
trans-1,2-Dichloroethene	ND	9.88	10.0	99	8.93	10.0	89	65-143	10	30
1,1-Dichloroethane	ND	9.37	10.0	94	8.78	10.0	88	69-141	7	30
cis-1,2-Dichloroethene	ND	9.66	10.0	97	9.16	10.0	92	61-139	5	30
1,1,1-Trichloroethane (TCA)	ND	9.32	10.0	93	8.63	10.0	86	57-151	8	30
Trichloroethene (TCE)	0.51	9.79	10.0	93	9.12	10.0	86	53-139	7	30
Tetrachloroethene (PCE)	1.1	9.80	10.0	87	8.98	10.0	79	61-131	9	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1110800
Date Analyzed: 11/11/2011
Time Analyzed: 10:17

Tune Summary
Volatile Organic Compounds

File ID: J:\MS13\DATA\111111\1111F004.D
Instrument ID: MS13
Column:

Analysis Method: 8260C
Analysis Lot: KWG1111532

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	16.3	32605	PASS
75	95	30	60	47.2	94442	PASS
95	95	100	100	100.0	200234	PASS
96	95	5	9	6.7	13467	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	93.3	186880	PASS
175	174	5	9	7.9	14776	PASS
176	174	95	101	97.8	182805	PASS
177	176	5	9	6.4	11656	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1111532-2	J:\MS13\DATA\111111\1111F005.D	11/11/2011	10:53	
Lab Control Sample	KWG1111535-3	J:\MS13\DATA\111111\1111F006.D	11/11/2011	11:43	
Method Blank	KWG1111535-4	J:\MS13\DATA\111111\1111F011.D	11/11/2011	14:25	
AT08	K1110800-031	J:\MS13\DATA\111111\1111F023.D	11/11/2011	20:09	
AT07	K1110800-032	J:\MS13\DATA\111111\1111F024.D	11/11/2011	20:38	
AT05A	K1110800-033	J:\MS13\DATA\111111\1111F025.D	11/11/2011	21:06	
AT10	K1110800-034	J:\MS13\DATA\111111\1111F026.D	11/11/2011	21:35	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1110800
Date Analyzed: 11/11/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration Date: 10/31/2011
Calibration ID: CAL11020
Analysis Lot: KWG1111532
Units: PPB

File ID: J:\MS13\DATA\111111\1111F005.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	9.9	0.100	0.290	0.288	-1	NA	± 20 %	AverageRF
1,1-Dichloroethene	10	9.6	0.100	0.223	0.214	-4	NA	± 20 %	AverageRF
trans-1,2-Dichloroethene	10	9.5	0.100	0.254	0.242	-5	NA	± 20 %	AverageRF
1,1-Dichloroethane	10	9.5	0.200	0.418	0.396	-5	NA	± 20 %	AverageRF
cis-1,2-Dichloroethene	10	9.6	0.100	0.270	0.260	-4	NA	± 20 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	9.4	0.100	0.359	0.338	-6	NA	± 20 %	AverageRF
Trichloroethene (TCE)	10	9.5	0.200	0.264	0.249	-5	NA	± 20 %	AverageRF
Tetrachloroethene (PCE)	10	8.9	0.200	0.704	0.625	-11	NA	± 20 %	AverageRF
Dibromofluoromethane	10	11	0.01	0.200	0.216	8	NA	± 20 %	AverageRF
Toluene-d8	10	12	0.01	0.826	0.983	19	NA	± 20 %	AverageRF
4-Bromofluorobenzene	10	11	0.01	0.825	0.899	9	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1110800

Analysis Run Log
Volatile Organic Compounds

Analysis Method: 8260C

Analysis Lot: KWG1111532
Instrument ID: MS13

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1111F004.D	GC/MS Tuning - Bromofluorobenzene	KWG1111532-1	11/11/2011	10:17		11/11/2011	10:36
1111F005.D	Continuing Calibration Verification	KWG1111532-2	11/11/2011	10:53		11/11/2011	11:12
1111F006.D	Lab Control Sample	KWG1111535-3	11/11/2011	11:43		11/11/2011	12:02
1111F007.D	ZZZZZZ	ZZZZZZ	11/11/2011	12:31		11/11/2011	12:50
1111F008.D	ZZZZZZ	ZZZZZZ	11/11/2011	12:59		11/11/2011	13:18
1111F011.D	Method Blank	KWG1111535-4	11/11/2011	14:25		11/11/2011	14:44
1111F012.D	ZZZZZZ	ZZZZZZ	11/11/2011	14:54		11/11/2011	15:13
1111F013.D	ZZZZZZ	ZZZZZZ	11/11/2011	15:23		11/11/2011	15:42
1111F014.D	ZZZZZZ	ZZZZZZ	11/11/2011	15:51		11/11/2011	16:10
1111F015.D	ZZZZZZ	ZZZZZZ	11/11/2011	16:20		11/11/2011	16:39
1111F016.D	ZZZZZZ	ZZZZZZ	11/11/2011	16:49		11/11/2011	17:08
1111F017.D	ZZZZZZ	ZZZZZZ	11/11/2011	17:17		11/11/2011	17:36
1111F018.D	ZZZZZZ	ZZZZZZ	11/11/2011	17:46		11/11/2011	18:05
1111F019.D	ZZZZZZ	ZZZZZZ	11/11/2011	18:15		11/11/2011	18:34
1111F020.D	ZZZZZZ	ZZZZZZ	11/11/2011	18:43		11/11/2011	19:02
1111F021.D	ZZZZZZ	ZZZZZZ	11/11/2011	19:12		11/11/2011	19:31
1111F022.D	ZZZZZZ	ZZZZZZ	11/11/2011	19:41		11/11/2011	20:00
1111F023.D	AT08	K1110800-031	11/11/2011	20:09		11/11/2011	20:28
1111F024.D	AT07	K1110800-032	11/11/2011	20:38		11/11/2011	20:57
1111F025.D	AT05A	K1110800-033	11/11/2011	21:06		11/11/2011	21:25
1111F026.D	AT10	K1110800-034	11/11/2011	21:35		11/11/2011	21:54

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1110800
Project:	NIROP/J070047	**Date Extracted:**	11/11/2011
Sample Matrix:	Water	**Date Analyzed:**	11/11/2011
		Time Analyzed:	14:25

Method Blank Summary
Volatile Organic Compounds

Sample Name:	Method Blank	**Instrument ID:**	MS13
Lab Code:	KWG1111535-4	**File ID:**	J:\MS13\DATA\111111\1111F011.D
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C	**Extraction Lot:**	KWG1111535

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1111535-3	J:\MS13\DATA\111111\1111F006.D	11/11/11	11:43
AT08	K1110800-031	J:\MS13\DATA\111111\1111F023.D	11/11/11	20:09
AT07	K1110800-032	J:\MS13\DATA\111111\1111F024.D	11/11/11	20:38
AT05A	K1110800-033	J:\MS13\DATA\111111\1111F025.D	11/11/11	21:06
AT10	K1110800-034	J:\MS13\DATA\111111\1111F026.D	11/11/11	21:35

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1110800
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	11/11/2011
		Date Analyzed:	11/11/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1111535-4	**Basis:**	NA
File ID:	J:\MS13\DATA\111111\1111F011.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111535
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	106	73-122	11/11/11	Acceptable
Toluene-d8	120	65-144	11/11/11	Acceptable
4-Bromofluorobenzene	109	68-117	11/11/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1110800
Project:	NIROP/J070047	**Date Extracted:**	11/11/2011
Sample Matrix:	Water	**Date Analyzed:**	11/11/2011

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	EPA 5030B	**Units:**	ug/L
Analysis Method:	8260C	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1111535

	Lab Control Sample KWG1111535-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Vinyl Chloride	8.70	10.0	87	55-123
1,1-Dichloroethene	10.1	10.0	101	66-129
trans-1,2-Dichloroethene	10.5	10.0	105	67-125
1,1-Dichloroethane	9.93	10.0	99	68-132
cis-1,2-Dichloroethene	10.2	10.0	102	71-118
1,1,1-Trichloroethane (TCA)	9.72	10.0	97	59-136
Trichloroethene (TCE)	9.95	10.0	100	67-128
Tetrachloroethene (PCE)	9.25	10.0	93	62-126

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1110800
Date Analyzed: 11/14/2011
Time Analyzed: 11:30

Tune Summary
Volatile Organic Compounds

File ID: J:\MS13\DATA\111411\1114F003.D
Instrument ID: MS13
Column:

Analysis Method: 8260C
Analysis Lot: KWG1111594

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	15.6	32374	PASS
75	95	30	60	46.1	95664	PASS
95	95	100	100	100.0	207616	PASS
96	95	5	9	6.7	13956	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	94.8	196800	PASS
175	174	5	9	7.7	15060	PASS
176	174	95	101	97.4	191744	PASS
177	176	5	9	6.4	12238	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Lab Control Sample	KWG1111607-3	J:\MS13\DATA\111411A\1114F006A.D	11/14/2011	14:21	
Continuing Calibration Verification	KWG1111594-2	J:\MS13\DATA\111411\1114F006.D	11/14/2011	14:21	
Method Blank	KWG1111607-4	J:\MS13\DATA\111411\1114F011.D	11/14/2011	17:04	
QCT03	K1110800-036	J:\MS13\DATA\111411\1114F012.D	11/14/2011	17:33	
AT05BDL	K1110800-035	J:\MS13\DATA\111411\1114F018.D	11/14/2011	20:24	
AT05B	K1110800-035	J:\MS13\DATA\111411\1114F019.D	11/14/2011	20:53	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1110800
Date Analyzed: 11/14/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration Date: 10/31/2011
Calibration ID: CAL11020
Analysis Lot: KWG1111594
Units: PPB

File ID: J:\MS13\DATA\111411\1114F006.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D		%Drift	Criteria	Curve Fit
Vinyl Chloride	10	9.0	0.100	0.290	0.260	-10		NA	± 20 %	AverageRF
1,1-Dichloroethene	10	11	0.100	0.223	0.239	7		NA	± 20 %	AverageRF
trans-1,2-Dichloroethene	10	11	0.100	0.254	0.273	8		NA	± 20 %	AverageRF
1,1-Dichloroethane	10	10	0.200	0.418	0.437	5		NA	± 20 %	AverageRF
cis-1,2-Dichloroethene	10	10	0.100	0.270	0.280	4		NA	± 20 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	10	0.100	0.359	0.373	4		NA	± 20 %	AverageRF
Trichloroethene (TCE)	10	10	0.200	0.264	0.276	5		NA	± 20 %	AverageRF
Tetrachloroethene (PCE)	10	9.5	0.200	0.704	0.670	-5		NA	± 20 %	AverageRF
Dibromofluoromethane	10	11	0.01	0.200	0.222	11		NA	± 20 %	AverageRF
Toluene-d8	10	12	0.01	0.826	1.00	21	*	NA	± 20 %	AverageRF
4-Bromofluorobenzene	10	11	0.01	0.825	0.881	7		NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1110800

Analysis Run Log
Volatile Organic Compounds

Analysis Method: 8260C

Analysis Lot: KWG1111594
Instrument ID: MS13

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1114F003.D	GC/MS Tuning - Bromofluorobenzene	KWG1111594-1	11/14/2011	11:30		11/14/2011	11:49
1114F006.D	ZZZZZZ	ZZZZZZ	11/14/2011	14:21		11/14/2011	14:40
1114F006.D	Continuing Calibration Verification	KWG1111594-2	11/14/2011	14:21		11/14/2011	14:40
114F006A.D	Lab Control Sample	KWG1111607-3	11/14/2011	14:21		11/14/2011	14:40
1114F007.D	ZZZZZZ	ZZZZZZ	11/14/2011	15:10		11/14/2011	15:29
1114F008.D	ZZZZZZ	ZZZZZZ	11/14/2011	15:38		11/14/2011	15:57
1114F011.D	Method Blank	KWG1111607-4	11/14/2011	17:04		11/14/2011	17:23
1114F012.D	QCT03	K1110800-036	11/14/2011	17:33		11/14/2011	17:52
1114F013.D	ZZZZZZ	ZZZZZZ	11/14/2011	18:02		11/14/2011	18:21
1114F014.D	ZZZZZZ	ZZZZZZ	11/14/2011	18:30		11/14/2011	18:49
1114F015.D	ZZZZZZ	ZZZZZZ	11/14/2011	18:59		11/14/2011	19:18
1114F016.D	ZZZZZZ	ZZZZZZ	11/14/2011	19:27		11/14/2011	19:46
1114F017.D	ZZZZZZ	ZZZZZZ	11/14/2011	19:56		11/14/2011	20:15
1114F018.D	AT05BDL	K1110800-035	11/14/2011	20:24		11/14/2011	20:43
1114F019.D	AT05B	K1110800-035	11/14/2011	20:53		11/14/2011	21:12
1114F020.D	ZZZZZZ	ZZZZZZ	11/14/2011	21:21		11/14/2011	21:40
1114F021.D	ZZZZZZ	ZZZZZZ	11/14/2011	21:50		11/14/2011	22:09
1114F022.D	ZZZZZZ	ZZZZZZ	11/14/2011	22:18		11/14/2011	22:37
1114F023.D	ZZZZZZ	ZZZZZZ	11/14/2011	22:47		11/14/2011	23:06

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1110800
Project:	NIROP/J070047	**Date Extracted:**	11/14/2011
Sample Matrix:	Water	**Date Analyzed:**	11/14/2011
		Time Analyzed:	17:04

Method Blank Summary
Volatile Organic Compounds

Sample Name:	Method Blank	**Instrument ID:**	MS13
Lab Code:	KWG1111607-4	**File ID:**	J:\MS13\DATA\111411\1114F011.D
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C	**Extraction Lot:**	KWG1111607

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1111607-3	J:\MS13\DATA\111411A\1114F006A.D	11/14/11	14:21
Continuing Calibration Verification	KWG1111594-2	J:\MS13\DATA\111411\1114F006.D	11/14/11	14:21
QCT03	K1110800-036	J:\MS13\DATA\111411\1114F012.D	11/14/11	17:33
AT05BDL	K1110800-035	J:\MS13\DATA\111411\1114F018.D	11/14/11	20:24
AT05B	K1110800-035	J:\MS13\DATA\111411\1114F019.D	11/14/11	20:53

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1110800
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	11/14/2011
		Date Analyzed:	11/14/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1111607-4	**Basis:**	NA
File ID:	J:\MS13\DATA\111411\1114F011.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111607
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	109	73-122	11/14/11	Acceptable
Toluene-d8	121	65-144	11/14/11	Acceptable
4-Bromofluorobenzene	108	68-117	11/14/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1110800
Project:	NIROP/J070047	**Date Extracted:**	11/14/2011
Sample Matrix:	Water	**Date Analyzed:**	11/14/2011

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	EPA 5030B	**Units:**	ug/L
Analysis Method:	8260C	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1111607

	Lab Control Sample KWG1111607-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Vinyl Chloride	8.96	10.0	90	55-123
1,1-Dichloroethene	10.7	10.0	107	66-129
trans-1,2-Dichloroethene	10.8	10.0	108	67-125
1,1-Dichloroethane	10.5	10.0	105	68-132
cis-1,2-Dichloroethene	10.4	10.0	104	71-118
1,1,1-Trichloroethane (TCA)	10.4	10.0	104	59-136
Trichloroethene (TCE)	10.5	10.0	105	67-128
Tetrachloroethene (PCE)	9.52	10.0	95	62-126

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1110800
Date Extracted: 11/09/2011

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1111444
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
MS05D	K1110800-001	11/01/11	11/04/11	10ml	10ml	NA	
MS10IS	K1110800-002	11/01/11	11/04/11	10ml	10ml	NA	
QCT01	K1110800-011	11/01/11	11/04/11	10ml	10ml	NA	
USGS05	K1110800-012	11/01/11	11/04/11	10ml	10ml	NA	
MS17S	K1110800-013	11/01/11	11/04/11	10ml	10ml	NA	
MS16S	K1110800-014	11/01/11	11/04/11	10ml	10ml	NA	
MS52D	K1110800-015	11/01/11	11/04/11	10ml	10ml	NA	
MS42I	K1110800-016	11/01/11	11/04/11	10ml	10ml	NA	
QCR01	K1110800-017	11/01/11	11/04/11	10ml	10ml	NA	
QCT02	K1110800-029	11/01/11	11/04/11	10ml	10ml	NA	
Method Blank	KWG1111444-4	NA	NA	10ml	10ml	NA	
MS05DMS	KWG1111444-1	11/01/11	11/04/11	10ml	10ml	NA	
MS05DDMS	KWG1111444-2	11/01/11	11/04/11	10ml	10ml	NA	
Lab Control Sample	KWG1111444-3	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1110800
Date Extracted: 11/10/2011

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1111499
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
MS03PC	K1110800-003	11/02/11	11/04/11	10ml	10ml	NA	
QCR02	K1110800-004	11/02/11	11/04/11	10ml	10ml	NA	
MS05PC	K1110800-018	11/02/11	11/04/11	10ml	10ml	NA	
MS53PC	K1110800-019	11/02/11	11/04/11	10ml	10ml	NA	
QCD02	K1110800-020	11/02/11	11/04/11	10ml	10ml	NA	
AT08DL	K1110800-031	11/02/11	11/04/11	10ml	10ml	NA	
AT07DL	K1110800-032	11/02/11	11/04/11	10ml	10ml	NA	
AT05ADL	K1110800-033	11/02/11	11/04/11	10ml	10ml	NA	
AT10DL	K1110800-034	11/02/11	11/04/11	10ml	10ml	NA	
Method Blank	KWG1111499-4	NA	NA	10ml	10ml	NA	
MS03PCMS	KWG1111499-1	11/02/11	11/04/11	10ml	10ml	NA	
MS03PCDMS	KWG1111499-2	11/02/11	11/04/11	10ml	10ml	NA	
Lab Control Sample	KWG1111499-3	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1110800
Date Extracted: 11/11/2011

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1111531
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
MS06S	K1110800-005	11/03/11	11/04/11	10ml	10ml	NA	
MS34S	K1110800-006	11/03/11	11/04/11	10ml	10ml	NA	
MS34SDL	K1110800-006	11/03/11	11/04/11	10ml	10ml	NA	
MS24S	K1110800-007	11/03/11	11/04/11	10ml	10ml	NA	
USGS10	K1110800-008	11/03/11	11/04/11	10ml	10ml	NA	
QCD03	K1110800-009	11/03/11	11/04/11	10ml	10ml	NA	
MS35S	K1110800-010	11/03/11	11/04/11	10ml	10ml	NA	
MS43D	K1110800-023	11/03/11	11/04/11	10ml	10ml	NA	
MS51I	K1110800-024	11/03/11	11/04/11	10ml	10ml	NA	
MS07D	K1110800-025	11/03/11	11/04/11	10ml	10ml	NA	
Method Blank	KWG1111531-4	NA	NA	10ml	10ml	NA	
Lab Control Sample	KWG1111531-3	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1110800
Date Extracted: 11/11/2011

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1111535
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
AT08	K1110800-031	11/02/11	11/04/11	10ml	10ml	NA	
AT07	K1110800-032	11/02/11	11/04/11	10ml	10ml	NA	
AT05A	K1110800-033	11/02/11	11/04/11	10ml	10ml	NA	
AT10	K1110800-034	11/02/11	11/04/11	10ml	10ml	NA	
Method Blank	KWG1111535-4	NA	NA	10ml	10ml	NA	
Lab Control Sample	KWG1111535-3	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1110800
Date Extracted: 11/14/2011

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1111595
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
MS48PC	K1110800-021	11/02/11	11/04/11	10ml	10ml	NA	
MS49D	K1110800-022	11/02/11	11/04/11	10ml	10ml	NA	
MS15D	K1110800-026	11/03/11	11/04/11	10ml	10ml	NA	
QCR03	K1110800-027	11/03/11	11/04/11	10ml	10ml	NA	
MS44D	K1110800-028	11/03/11	11/04/11	10ml	10ml	NA	
AT09	K1110800-030	11/02/11	11/04/11	10ml	10ml	NA	
Method Blank	KWG1111595-4	NA	NA	10ml	10ml	NA	
Lab Control Sample	KWG1111595-3	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1110800
Date Extracted: 11/14/2011

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1111607
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
AT05B	K1110800-035	11/02/11	11/04/11	10ml	10ml	NA	
AT05BDL	K1110800-035	11/02/11	11/04/11	10ml	10ml	NA	
QCT03	K1110800-036	11/02/11	11/04/11	10ml	10ml	NA	
Method Blank	KWG1111607-4	NA	NA	10ml	10ml	NA	
Lab Control Sample	KWG1111607-3	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1110800
Date Extracted: 11/15/2011

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1111643
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
MS44DDL	K1110800-028	11/03/11	11/04/11	10ml	10ml	NA	
Method Blank	KWG1111643-4	NA	NA	10ml	10ml	NA	
Lab Control Sample	KWG1111643-3	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1110800
Date Analyzed: 11/09/2011
Time Analyzed: 13:20

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID: J:\MS13\DATA\110911\1109F007.D
Instrument ID: MS13
Analysis Method: 8260C

Lab Code: KWG1111440-2
Analysis Lot: KWG1111440

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	1,233,572	6.12	468,442	12.02	519,968	15.07
	Upper Limit ==>	2,467,144	6.62	936,884	12.52	1,039,936	15.57
	Lower Limit ==>	616,786	5.62	234,221	11.52	259,984	14.57
	ICAL Result ==>	1,209,248	6.12	435,763	12.02	482,755	15.07
Associated Analyses							
Lab Control Sample	KWG1111444-3	1,252,655	6.12	466,838	12.03	517,757	15.07
MS05DMS	KWG1111444-1	1,246,034	6.12	474,299	12.02	519,402	15.07
MS05DDMS	KWG1111444-2	1,242,894	6.12	481,718	12.03	527,100	15.07
Method Blank	KWG1111444-4	1,221,262	6.12	464,386	12.03	513,668	15.07
QCT01	K1110800-011	1,239,812	6.12	465,534	12.02	515,880	15.07
QCT02	K1110800-029	1,249,688	6.12	477,548	12.03	525,185	15.07
MS05D	K1110800-001	1,236,105	6.12	466,902	12.02	504,108	15.07
MS10IS	K1110800-002	1,216,707	6.12	458,974	12.02	512,406	15.07
USGS05	K1110800-012	1,235,968	6.12	468,992	12.02	504,298	15.07
MS17S	K1110800-013	1,233,371	6.12	462,462	12.03	508,959	15.07
MS16S	K1110800-014	1,220,989	6.12	470,064	12.03	502,932	15.07
MS52D	K1110800-015	1,212,888	6.12	463,509	12.02	499,569	15.07
MS42I	K1110800-016	1,214,264	6.12	456,707	12.02	502,424	15.07
QCR01	K1110800-017	1,212,541	6.12	455,724	12.02	503,724	15.07

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1110800
Date Analyzed: 11/10/2011
Time Analyzed: 11:56

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID: J:\MS13\DATA\111011\1110F003.D
Instrument ID: MS13
Analysis Method: 8260C

Lab Code: KWG1111497-2
Analysis Lot: KWG1111497

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	1,211,096	6.12	458,000	12.02	500,140	15.07
	Upper Limit ==>	2,422,192	6.62	916,000	12.52	1,000,280	15.57
	Lower Limit ==>	605,548	5.62	229,000	11.52	250,070	14.57
	ICAL Result ==>	1,209,248	6.12	435,763	12.02	482,755	15.07
Associated Analyses							
Lab Control Sample	KWG1111499-3	1,235,946	6.12	469,124	12.02	507,421	15.07
MS03PCMS	KWG1111499-1	1,228,746	6.12	471,877	12.03	513,123	15.07
MS03PCDMS	KWG1111499-2	1,213,715	6.12	461,927	12.03	510,584	15.07
Method Blank	KWG1111499-4	1,200,814	6.12	462,722	12.03	508,682	15.07
MS03PC	K1110800-003	1,206,258	6.12	463,252	12.03	512,590	15.07
QCR02	K1110800-004	1,204,346	6.12	463,834	12.02	498,008	15.07
MS05PC	K1110800-018	1,204,533	6.12	464,907	12.03	505,444	15.07
MS53PC	K1110800-019	1,197,504	6.12	452,749	12.03	500,600	15.07
QCD02	K1110800-020	1,203,619	6.12	457,726	12.03	492,756	15.07
AT08DL	K1110800-031	1,198,265	6.12	455,772	12.03	497,438	15.07
AT07DL	K1110800-032	1,199,442	6.12	460,376	12.03	494,956	15.07
AT05ADL	K1110800-033	1,196,496	6.12	462,163	12.03	498,051	15.07
AT10DL	K1110800-034	1,202,393	6.12	459,736	12.03	501,120	15.07

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1110800
Date Analyzed: 11/11/2011
Time Analyzed: 10:04

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID: J:\MS04\DATA\111111\1111F003.D
Instrument ID: MS04
Analysis Method: 8260C

Lab Code: KWG1111528-2
Analysis Lot: KWG1111528

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	1,430,145	13.15	1,078,785	17.43	545,817	20.08
	Upper Limit ==>	2,860,290	13.65	2,157,570	17.93	1,091,634	20.58
	Lower Limit ==>	715,073	12.65	539,393	16.93	272,909	19.58
	ICAL Result ==>	1,106,367	13.09	799,828	17.38	400,256	20.03
Associated Analyses							
Lab Control Sample	KWG1111531-3	1,492,310	13.15	1,099,629	17.43	554,347	20.08
Method Blank	KWG1111531-4	1,437,625	13.17	1,036,733	17.43	491,618	20.08
MS06S	K1110800-005	1,394,706	13.16	1,007,844	17.44	472,656	20.09
USGS10	K1110800-008	1,380,303	13.16	989,074	17.43	466,799	20.09
MS35S	K1110800-010	1,356,215	13.16	989,948	17.43	460,412	20.08
MS43D	K1110800-023	1,348,060	13.16	966,045	17.43	455,904	20.08
MS51I	K1110800-024	1,324,161	13.16	955,981	17.43	443,721	20.09
MS07D	K1110800-025	1,277,332	13.16	938,360	17.43	440,151	20.08
QCD03	K1110800-009	1,279,879	13.16	929,078	17.43	433,781	20.08
MS24S	K1110800-007	1,247,233	13.16	913,977	17.43	428,561	20.08
MS34SDL	K1110800-006	1,258,093	13.16	911,634	17.43	419,743	20.08
MS34S	K1110800-006	1,262,183	13.16	910,511	17.43	417,265	20.08

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1110800
Project:	NIROP/J070047	**Date Analyzed:**	11/11/2011
		Time Analyzed:	10:53

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID:	J:\MS13\DATA\111111\1111F005.D	**Lab Code:**	KWG1111532-2
Instrument ID:	MS13	**Analysis Lot:**	KWG1111532
Analysis Method:	8260C		

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	1,195,941	6.12	455,601	12.03	494,370	15.07
	Upper Limit ==>	2,391,882	6.62	911,202	12.53	988,740	15.57
	Lower Limit ==>	597,971	5.62	227,801	11.53	247,185	14.57
	ICAL Result ==>	1,209,248	6.12	435,763	12.02	482,755	15.07
Associated Analyses							
Lab Control Sample	KWG1111535-3	1,203,592	6.12	456,411	12.03	492,808	15.07
Method Blank	KWG1111535-4	1,178,355	6.12	448,756	12.03	493,389	15.07
AT08	K1110800-031	1,195,760	6.12	456,109	12.03	495,408	15.07
AT07	K1110800-032	1,184,943	6.12	453,623	12.03	491,167	15.07
AT05A	K1110800-033	1,189,309	6.12	466,063	12.03	496,939	15.07
AT10	K1110800-034	1,169,192	6.12	449,638	12.03	486,922	15.07

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1110800
Date Analyzed: 11/14/2011
Time Analyzed: 11:16

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID: J:\MS04\DATA\111411\1114F005.D
Instrument ID: MS04
Analysis Method: 8260C

Lab Code: KWG1111591-2
Analysis Lot: KWG1111591

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	1,490,831	13.13	1,139,487	17.40	595,182	20.05
	Upper Limit ==>	2,981,662	13.63	2,278,974	17.90	1,190,364	20.55
	Lower Limit ==>	745,416	12.63	569,744	16.90	297,591	19.55
	ICAL Result ==>	1,106,367	13.09	799,828	17.38	400,256	20.03
Associated Analyses							
Lab Control Sample	KWG1111595-3	1,535,190	13.12	1,155,897	17.40	593,317	20.05
Method Blank	KWG1111595-4	1,523,521	13.12	1,100,644	17.40	531,901	20.05
MS48PC	K1110800-021	1,476,166	13.12	1,092,433	17.40	518,333	20.05
MS49D	K1110800-022	1,442,215	13.12	1,073,499	17.40	510,186	20.05
MS15D	K1110800-026	1,468,020	13.12	1,070,581	17.40	505,180	20.05
QCR03	K1110800-027	1,400,148	13.12	1,045,740	17.39	496,182	20.05
AT09	K1110800-030	1,409,474	13.12	1,031,340	17.40	492,402	20.05
MS44D	K1110800-028	1,283,874	13.12	945,055	17.40	436,724	20.05

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1110800
Project:	NIROP/J070047	**Date Analyzed:**	11/14/2011
		Time Analyzed:	14:21

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID:	J:\MS13\DATA\111411\1114F006.D	**Lab Code:**	KWG1111594-2
Instrument ID:	MS13	**Analysis Lot:**	KWG1111594
Analysis Method:	8260C		

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	1,200,086	6.12	470,776	12.03	509,292	15.07
	Upper Limit ==>	2,400,172	6.62	941,552	12.53	1,018,584	15.57
	Lower Limit ==>	600,043	5.62	235,388	11.53	254,646	14.57
	ICAL Result ==>	1,209,248	6.12	435,763	12.02	482,755	15.07
Associated Analyses							
Lab Control Sample	KWG1111607-3	1,200,086	6.12	470,776	12.03	509,292	15.07
Method Blank	KWG1111607-4	1,174,118	6.12	464,243	12.03	501,156	15.07
QCT03	K1110800-036	1,190,753	6.12	464,026	12.03	510,339	15.07
AT05BDL	K1110800-035	1,177,186	6.12	458,740	12.03	502,049	15.07
AT05B	K1110800-035	1,164,416	6.12	459,798	12.02	493,257	15.07

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1110800
Date Analyzed: 11/15/2011
Time Analyzed: 10:46

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID: J:\MS04\DATA\111511\1115F004.D
Instrument ID: MS04
Analysis Method: 8260C

Lab Code: KWG1111636-2
Analysis Lot: KWG1111636

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	1,758,592	13.10	1,372,023	17.38	711,804	20.04
	Upper Limit ==>	3,517,184	13.60	2,744,046	17.88	1,423,608	20.54
	Lower Limit ==>	879,296	12.60	686,012	16.88	355,902	19.54
	ICAL Result ==>	1,106,367	13.09	799,828	17.38	400,256	20.03
Associated Analyses							
Lab Control Sample	KWG1111643-3	1,811,517	13.10	1,369,050	17.38	708,315	20.04
Method Blank	KWG1111643-4	1,763,293	13.10	1,297,936	17.38	619,360	20.04
MS44DDL	K1110800-028	1,716,739	13.10	1,267,175	17.38	596,563	20.04

Results flagged with an asterisk (*) indicate values outside control criteria.

SDG K1110800

SAMPLE CALC	SAMPLE ID MS34S					
IS AREA	DILUTION	COMPOUND OF INTEREST AREA	IS AMOUNT (NG)	PURGE VOLUME (ML)	AVE RRF	CONCENTRATION PPB
1258093	10	916587	100	10	0.3080	236.5431

cis-1,2-dichloroethene = 240 ug/L

Quantitation Report

Data File:	J:\MS04\DATA\111111\1111F021.D			**Instrument:**	MS04
Acqu Date:	11/11/2011 20:02	**Quant Date:**	11/14/2011 08:09	**Vial:**	20
Run Type:	DL			**Dilution:**	10.0
Lab ID:	K1110800-006	MS 345		**Soln Conc. Units:**	PPB

Bottle ID:		**Tier:**	IV	**Matrix:**	WATER
Prod Code:	8260B VOC_FP	**Collect Date:**	11/03/2011	**Receive Date:**	11/04/2011

Analysis Lot:	KWG1111528	**Prep Lot:**	KWG1111531	**Report Group:**	K1110800
Analysis Method:	8260C	**Prep Method:**	EPA 5030B		
Prep Ref:	1075291	**Prep Date:**	11/11/2011		

Quant Method:	J:\MS04\METHODS\102511MS04.M	**Calibration ID:**	CAL11002
Title:	Volatile Organic Compounds	**Report List ID:**	LJ8154
Tune Ref:	J:\MS04\DATA\111111\1111F002.D	**Method ID:**	MJ119
MB Ref:	J:\MS04\DATA\111111\1111F009.D	**Quant based on Report List**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	Fluorobenzene	13.16	0.01	96	1258093	10.00	OK
2	Chlorobenzene-d5	17.43	0.00	117	911634	10.00	OK
3	1,4-Dichlorobenzene-d4	20.08	0.00	152	419743	10.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	Dibromofluoromethane	12.03	0.01	0.00	113	371406	12.11	121	73-122	OK	NR
1	Toluene-d8	15.51	0.01	0.00	98	1076881	11.53	115	65-144	OK	NR
2	4-Bromofluorobenzene	18.78	0.00	0.00	95	333249	10.18	102	68-117	OK	NR

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	Vinyl Chloride				62	0		0.75	U	NR
1	1,1-Dichloroethene				96	0		0.74	U	NR
1	trans-1,2-Dichloroethene	9.46		0.00	96	66903	1.76	18	D	NR
1	1,1-Dichloroethane	10.21	0.01	0.00	63	32332	0.5600	5.6	D	NR
1	cis-1,2-Dichloroethene	11.24		0.00	96	916587	23.69	240	D	
1	1,1,1-Trichloroethane (TCA)				97	0		0.75	U	NR
1	Trichloroethene (TCE)	13.73		0.00	95	35997	1.17	12	D	NR
2	Tetrachloroethene (PCE)				164	0		0.99	U	NR

Prep Amount:	10 ml	**Dilution:**	10.0
Prep Final Vol:	10 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**M. SLADIC**	**DATE:**	**MAY 25, 2011**
FROM:	**A. COGNETTI**	**COPIES:**	**DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION- VOC**
NIROP FRIDLEY
SAMPLE DELIVERY GROUP – K1011307

SAMPLES: 21/Aqueous

AT03A	AT05B	AT10	MS15IS	MS18S
MS34I	MS35D	MS35I	MS37S	MS43I
MS44I	MS45I	MS45S	MS46S	QCD01
QCD02	QCD03	QCR01	QCR02	QCT01
QCT02				

Overview

The sample set for NIROP FRIDLEY SDG K1011307 consists of twenty one (21) aqueous samples. These twenty one aqueous samples were analyzed for the following volatile organic compounds (VOCs): 1,1,1-trichloroethane, 1,1-dichloroethane, 1,1-dichloroethene, cis-1,2-dichloroethene, methylene chloride, tetrachloroethene, trans-1,2-dichloroethene, trichloroethene and vinyl chloride. Sample QCR01 and QCR02 are rinse blanks. Samples QCT01 and QCT02 are trip blanks. There are three field duplicate pairs contained within this SDG: MS45I/QCD01, MS34I/QCD02 and MS15IS/QCD03.

The samples were collected by Bay West on February 14-15, 2011 and analyzed by Columbia Analytical Services. All analyses were conducted in accordance with SW-846 Method 8260C analysis and reporting protocols. The data contained in this SDG were validated with regard to the following parameters:

*	•	Data completeness
*	•	Holding times
*	•	GC/MS Tuning and System Performance
	•	Initial/continuing calibrations
	•	Laboratory method blank results
*	•	Surrogate Recoveries
*	•	Internal Standard Recoveries
*	•	Blank Spike/Blank Spike Duplicate Results
	•	Matrix Spike/Matrix Spike Duplicate Results
*	•	Field Duplicate Precision
*	•	Compound Identification
*	•	Compound Quantitation
*	•	Detection Limits

The symbol (*) indicates that quality control criteria were met for this parameter. Areas of concern are listed below; documentation supporting these findings is presented in Appendix C. Qualified analytical results are presented in Appendix A. Results as reported by the laboratory are presented in Appendix B.

Volatile

Methylene chloride was detected in laboratory method blank associated with batch KWG1101763 analyzed on February 25, 2011.

Contaminant	Maximum Concentration (ug/L)	Action Level (ug/L)
Methylene chloride	0.10	1.0

An action level of 10X the maximum concentration of methylene chloride was established in order to evaluate samples for blank contamination. Sample aliquot and dilution factors were taken into account when applying the action level. Positive methylene chloride results in affected samples MS18S and MS35I were qualified as (U).

The continuing calibration percent difference (%D) for 1,1,1-trichloroethane was greater than 20% quality control limit on February 25, 2011 @ 9:35 on instrument GC-MS18. The nondetected 1,1,1-trichloroethane results in the affected samples were qualified as estimated (UJ). The affected samples were QCT01, MS43I, QCR02, MS15IS, QCD03, MS18S, MS35I, MS34I, QCD02, MS45S and MS44I.

In the rinse blank collected on February 15, 2011, QCR02, concentrations of trichloroethene and cis-1,2-dichloroethene were detected above the method detection limit (MDL) but less than the method reporting limit (MRL). No action was taken on the environmental samples based upon this detection.

In the trip blank collected on February 14, 2011, QCT01, a concentration of methylene chloride was detected above the MDL and less MRL. No action was taken on the environmental samples based upon this detection.

Additional Comments:

The Electronic Data Deliverable (EDD) from the laboratory had several significant errors in the reporting of the results in this SDG. Several samples had positive results which were qualified as nondetect and vice versa. There was even positive detections which exceeded instrument calibration range qualified as a nondetect on the EDD. Each target analyte result for every sample had to be checked by the data reviewer for accuracy. Corrections were manually made to the database by the data reviewer.

The matrix spike duplicate (MSD) percent recoveries (%Rs) of trans-1,2-dichloroethene and cis-1,2-dichloroethene were less than the lower quality control limit in spiked sample MS37S. The %Rs of trans-1,2-dichloroethene and cis-1,2-dichloroethene in the matrix spike (MS) and the relative percent differences (RPDs) for these compounds were within quality control limits. The laboratory control sample (LCS) %Rs for the referenced compounds were acceptable. No action was taken on the trans-1,2-dichloroethene and cis-1,2-dichloroethene results in sample MS37S.

The MS %Rs of cis-1,2-dichloroethene and trichloroethene were less than the lower quality control limit in spiked sample MS43I. The %Rs of cis-1,2-dichloroethene and trichloroethene in the MSD and the RPDs for these compounds were within quality control limits. The LCS %Rs for the referenced compounds were acceptable. No action was taken on the cis-1,2-dichloroethene and trichloroethene results in sample MS43I.

Positive results less than the MRL were qualified as estimated (J) due to uncertainty near the detection limit.

Dilutions were performed on several samples in this SDG. Some samples were diluted in the original analysis and therefore have elevated reporting limits. Several samples had concentrations of either trichloroethene, cis-1,2-dichloroethene or trans-1,2-dichloroethene above the calibration level of 80 ug/L. Dilutions were made to obtain concentrations within the calibration range. Data was only accepted for the targeted compounds in the diluted samples that exceeded calibration levels in the original samples.

Sample	Dilution Factor
AT03A	5X, 50X for trichloroethene
AT05B	2X, 20X for trichloroethene
AT10	10X for trichloroethene
MS18S	2X, 20X for trichloroethene
MS34I	5X, 50X for trichloroethene
MS35I	2.5X, 50X for trichloroethene
MS37S	5X for trans-1,2-dichloroethene
MS44I	20X for cis-1,2-dichloroethene and trichloroethene
MS45I	5X for trichloroethene
MS45S	10X for cis-1,2-dichloroethene and trichloroethene
MS46S	2X, 20X for trichloroethene
QCD01	5X for trichloroethene
QCD02	5x, 50X for trichloroethene

Executive Summary

Laboratory Performance: Continuing calibration percent difference for 1,1,1,-trichloroethane exceeded quality control limits resulting in the qualification of data.

Other Factors Affecting Data Quality: Cis-1,2-dichloroethene and trichloroethene was detected in a rinsate blank. Methylene chloride was detected in a laboratory method blank and a trip blank.

The data for these analyses were reviewed with reference to USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) and the Department of Defense (DoD) document entitled"Quality Systems Manual (QSM) for Environmental Laboratories" (April 2009). The text of this report has been formulated to address only those problem areas affecting data quality.

Ann Cognetti

Tetra Tech NUS
Ann Cognetti
Chemist/Data Validator

Tetra Tech NUS
Joseph A. Samchuck
Quality Assurance Officer

Attachments:
Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

Appendix A

Qualified Analytical Results

Data Validation Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (e.g. base-line drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can be any number of issues; e.g. poor chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = % Difference between columns/detectors >25% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient $r < 0.995$
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 02583	NSAMPLE	AT03A			AT03ADL			AT05B			AT05BDL		
SDG: K1101307	LAB_ID	K1101307-005			K1101307-005DL			K1101307-004			K1101307-004DL		
FRACTION: OV	SAMP_DATE	2/14/2011			2/14/2011			2/14/2011			2/14/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.38	U					0.15	U				
1,1-DICHLOROETHANE		0.39	U					0.56	J	P			
1,1-DICHLOROETHENE		1.6	J	P				0.74	J	P			
CIS-1,2-DICHLOROETHENE		190						13					
METHYLENE CHLORIDE		0.75	J	P				0.28	J	P			
TETRACHLOROETHENE		5.6						2					
TRANS-1,2-DICHLOROETHENE		20						14					
TRICHLOROETHENE					1000						420		
VINYL CHLORIDE		0.38	U					0.28	J	P			

PROJ_NO: 02583	NSAMPLE	AT10			AT10DL			MS15IS			MS18S		
SDG: K1101307	LAB_ID	K1101307-003			K1101307-003DL			K1101307-019			K1101307-015		
FRACTION: OV	SAMP_DATE	2/14/2011			2/14/2011			2/15/2011			2/14/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.075	U					0.075	UJ	C	0.15	UJ	C
1,1-DICHLOROETHANE		0.57						0.22	J	P	1.2		
1,1-DICHLOROETHENE		0.57						0.15	J	P	1.6		
CIS-1,2-DICHLOROETHENE		25						1.8			99		
METHYLENE CHLORIDE		0.1	U					0.1	U		0.2	U	A
TETRACHLOROETHENE		0.099	U					3.5			0.2	U	
TRANS-1,2-DICHLOROETHENE		44						0.23	J	P	17		
TRICHLOROETHENE					240			21					
VINYL CHLORIDE		0.68						0.075	U		0.26	J	P

PROJ_NO: 02583	NSAMPLE	MS18SDL			MS34I			MS34IDL			MS35D		
SDG: K1101307	LAB_ID	K1101307-015DL			K1101307-009			K1101307-009DL			K1101307-002		
FRACTION: OV	SAMP_DATE	2/14/2011			2/15/2011			2/15/2011			2/14/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE					0.38	UJ	C				0.075	U	
1,1-DICHLOROETHANE					5.7						0.077	U	
1,1-DICHLOROETHENE					3.5						0.12	J	P
CIS-1,2-DICHLOROETHENE					360						8.9		
METHYLENE CHLORIDE					0.5	U					0.1	U	
TETRACHLOROETHENE					0.5	U					0.31	J	P
TRANS-1,2-DICHLOROETHENE					47						0.62		
TRICHLOROETHENE		470						1200			37		
VINYL CHLORIDE					0.8	J	P				0.08	J	P

PROJ_NO: 02583	NSAMPLE	MS35I			MS35IDL			MS37S			MS37SDL		
SDG: K1101307	LAB_ID	K1101307-008			K1101307-008DL			K1101307-001			K1101307-001DL		
FRACTION: OV	SAMP_DATE	2/15/2011			2/15/2011			2/14/2011			2/14/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.19	UJ	C				0.075	U				
1,1-DICHLOROETHANE		9.6						1.4					
1,1-DICHLOROETHENE		3.7						2.7					
CIS-1,2-DICHLOROETHENE		180						46					
METHYLENE CHLORIDE		0.28	U	A				0.1	U				
TETRACHLOROETHENE		0.28	J	P				0.099	U				
TRANS-1,2-DICHLOROETHENE		36									93		
TRICHLOROETHENE					840			23					
VINYL CHLORIDE		0.63						0.67					

PROJ_NO: 02583	NSAMPLE	MS43I			MS44I			MS44IDL			MS45I		
SDG: K1101307	LAB_ID	K1101307-012			K1101307-020			K1101307-020DL			K1101307-013		
FRACTION: OV	SAMP_DATE	2/14/2011			2/15/2011			2/15/2011			2/14/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.075	UJ	C	0.075	UJ	C				0.075	U	
1,1-DICHLOROETHANE		1			7.9						0.12	J	P
1,1-DICHLOROETHENE		0.37	J	P	2.6						0.26	J	P
CIS-1,2-DICHLOROETHENE		30						300			16		
METHYLENE CHLORIDE		0.1	U		0.1	U					0.1	U	
TETRACHLOROETHENE		0.099	U		0.099	U					3.5		
TRANS-1,2-DICHLOROETHENE		1			22						0.91		
TRICHLOROETHENE		36						380					
VINYL CHLORIDE		0.08	J	P	0.63						0.075	U	

PROJ_NO: 02583	NSAMPLE	MS45IDL			MS45S			MS45SDL			MS46S		
SDG: K1101307	LAB_ID	K1101307-013DL			K1101307-018			K1101307-018DL			K1101307-014		
FRACTION: OV	SAMP_DATE	2/14/2011			2/15/2011			2/15/2011			2/14/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE					0.075	UJ	C				0.15	U	
1,1-DICHLOROETHANE					2.1						1.1		
1,1-DICHLOROETHENE					1.6						1.2		
CIS-1,2-DICHLOROETHENE								180			44		
METHYLENE CHLORIDE					0.1	U					0.26	J	P
TETRACHLOROETHENE					0.099	U					0.2	U	
TRANS-1,2-DICHLOROETHENE					30						22		
TRICHLOROETHENE		68						250					
VINYL CHLORIDE					0.35						0.24	J	P

PROJ_NO: 02583	NSAMPLE	MS46SDL			QCD01			QCD01DL			QCD02		
SDG: K1101307	LAB_ID	K1101307-014DL			K1101307-016			K1101307-016DL			K1101307-010		
FRACTION: OV	SAMP_DATE	2/14/2011			2/14/2011			2/14/2011			2/15/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF				MS-45I			MS-45I			MS34I		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE					0.075	U					0.38	UJ	C
1,1-DICHLOROETHANE					0.12	J	P				5.7		
1,1-DICHLOROETHENE					0.27	J	P				3.5		
CIS-1,2-DICHLOROETHENE					16						350		
METHYLENE CHLORIDE					0.1	U					0.5	U	
TETRACHLOROETHENE					3.6						0.5	U	
TRANS-1,2-DICHLOROETHENE					0.93						47		
TRICHLOROETHENE		480						67					
VINYL CHLORIDE					0.075	U					0.8	J	P

PROJ_NO: 02583	NSAMPLE	QCD02DL			QCD03			QCR01			QCR02		
SDG: K1101307	LAB_ID	K1101307-010DL			K1101307-021			K1101307-006			K1101307-011		
FRACTION: OV	SAMP_DATE	2/15/2011			2/15/2011			2/14/2011			2/15/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF	MS34I			MS15IS								
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE					0.075	UJ	C	0.075	U		0.075	UJ	C
1,1-DICHLOROETHANE					0.22	J	P	0.077	U		0.077	U	
1,1-DICHLOROETHENE					0.15	J	P	0.074	U		0.074	U	
CIS-1,2-DICHLOROETHENE					2			0.067	U		0.09	J	P
METHYLENE CHLORIDE					0.1	U		0.1	U		0.1	U	
TETRACHLOROETHENE					3.5			0.099	U		0.099	U	
TRANS-1,2-DICHLOROETHENE					0.26	J	P	0.057	U		0.057	U	
TRICHLOROETHENE		1300			21			0.1	U		0.39	J	P
VINYL CHLORIDE					0.075	U		0.075	U		0.075	U	

PROJ_NO: 02583	NSAMPLE	QCT01			QCT02		
SDG: K1101307	LAB_ID	K1101307-017			K1101307-007		
FRACTION: OV	SAMP_DATE	2/14/2011			2/14/2011		
MEDIA: WATER	QC_TYPE	NM			NM		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.075	UJ	C	0.075	U	
1,1-DICHLOROETHANE		0.077	U		0.077	U	
1,1-DICHLOROETHENE		0.074	U		0.074	U	
CIS-1,2-DICHLOROETHENE		0.067	U		0.067	U	
METHYLENE CHLORIDE		0.11	J	P	0.1	U	
TETRACHLOROETHENE		0.099	U		0.099	U	
TRANS-1,2-DICHLOROETHENE		0.057	U		0.057	U	
TRICHLOROETHENE		0.1	U		0.1	U	
VINYL CHLORIDE		0.075	U		0.075	U	

Appendix B

Results as Reported by the Laboratory

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101307
Project:	NIROP/J070047	**Date Collected:**	02/14/2011
Sample Matrix:	Water	**Date Received:**	02/16/2011
		Date Extracted:	02/25/2011
		Date Analyzed:	02/25/2011

Volatile Organic Compounds

Sample Name:	AT03A	**Units:**	ug/L
Lab Code:	K1101307-005	**Basis:**	NA
File ID:	J:\MS04\DATA\022411\0224F030.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101734
Analysis Method:	8260C	**Calibration ID:**	CAL10195

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 5

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.38	U	1.0	0.38	
75-35-4	1,1-Dichloroethene	**1.6**	JD	2.5	0.37	
75-09-2	Methylene Chloride	**0.75**	JD	10	0.50	
156-60-5	trans-1,2-Dichloroethene	**20**	D	2.5	0.29	
75-34-3	1,1-Dichloroethane	0.39	U	2.5	0.39	
156-59-2	cis-1,2-Dichloroethene	**190**	D	2.5	0.34	
71-55-6	1,1,1-Trichloroethane (TCA)	0.38	U	2.5	0.38	
79-01-6	Trichloroethene (TCE)	**990**	ED	2.5	0.50	
127-18-4	Tetrachloroethene (PCE)	**5.6**	D	2.5	0.50	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	110	73-122	02/25/11	Acceptable
Toluene-d8	127	78-129	02/25/11	Acceptable
4-Bromofluorobenzene	99	68-117	02/25/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101307
Project:	NIROP/J070047	**Date Collected:**	02/14/2011
Sample Matrix:	Water	**Date Received:**	02/16/2011
		Date Extracted:	02/24/2011
		Date Analyzed:	02/24/2011

Volatile Organic Compounds

Sample Name:	AT03ADL	**Units:**	ug/L
Lab Code:	K1101307-005	**Basis:**	NA
File ID:	J:\MS04\DATA\022411\0224F024.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101734
Analysis Method:	8260C	**Calibration ID:**	CAL10195

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 50

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	3.8	U	10	3.8	
75-35-4	1,1-Dichloroethene	3.7	U	25	3.7	
75-09-2	Methylene Chloride	**7.5**	JD	100	5.0	
156-60-5	trans-1,2-Dichloroethene	**24**	JD	25	2.9	
75-34-3	1,1-Dichloroethane	3.9	U	25	3.9	
156-59-2	cis-1,2-Dichloroethene	**200**	D	25	3.4	
71-55-6	1,1,1-Trichloroethane (TCA)	3.8	U	25	3.8	
79-01-6	Trichloroethene (TCE)	**1000**	D	25	5.0	
127-18-4	Tetrachloroethene (PCE)	**5.0**	JD	25	5.0	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	109	73-122	02/24/11	Acceptable
Toluene-d8	121	78-129	02/24/11	Acceptable
4-Bromofluorobenzene	100	68-117	02/24/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101307
Project:	NIROP/J070047	**Date Collected:**	02/14/2011
Sample Matrix:	Water	**Date Received:**	02/16/2011
		Date Extracted:	02/25/2011
		Date Analyzed:	02/25/2011

Volatile Organic Compounds

Sample Name:	AT05B	**Units:**	ug/L
Lab Code:	K1101307-004	**Basis:**	NA
File ID:	J:\MS04\DATA\022411\0224F029.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101734
Analysis Method:	8260C	**Calibration ID:**	CAL10195

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 2

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.28**	JD	0.40	0.15	
75-35-4	1,1-Dichloroethene	**0.74**	JD	1.0	0.15	
75-09-2	Methylene Chloride	**0.28**	JD	4.0	0.20	
156-60-5	trans-1,2-Dichloroethene	**14**	D	1.0	0.12	
75-34-3	1,1-Dichloroethane	**0.56**	JD	1.0	0.16	
156-59-2	cis-1,2-Dichloroethene	**13**	D	1.0	0.14	
71-55-6	1,1,1-Trichloroethane (TCA)	0.15	U	1.0	0.15	
79-01-6	Trichloroethene (TCE)	**450**	ED	1.0	0.20	
127-18-4	Tetrachloroethene (PCE)	**2.0**	D	1.0	0.20	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	110	73-122	02/25/11	Acceptable
Toluene-d8	122	78-129	02/25/11	Acceptable
4-Bromofluorobenzene	101	68-117	02/25/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101307
Project:	NIROP/J070047	**Date Collected:**	02/14/2011
Sample Matrix:	Water	**Date Received:**	02/16/2011
		Date Extracted:	02/24/2011
		Date Analyzed:	02/24/2011

Volatile Organic Compounds

Sample Name:	AT05BDL	**Units:**	ug/L
Lab Code:	K1101307-004	**Basis:**	NA
File ID:	J:\MS04\DATA\022411\0224F023.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101734
Analysis Method:	8260C	**Calibration ID:**	CAL10195

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 20

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	1.5	U	4.0	1.5	
75-35-4	1,1-Dichloroethene	1.5	U	10	1.5	
75-09-2	Methylene Chloride	**2.8**	JD	40	2.0	
156-60-5	trans-1,2-Dichloroethene	**14**	D	10	1.2	
75-34-3	1,1-Dichloroethane	1.6	U	10	1.6	
156-59-2	cis-1,2-Dichloroethene	**13**	D	10	1.4	
71-55-6	1,1,1-Trichloroethane (TCA)	1.5	U	10	1.5	
79-01-6	Trichloroethene (TCE)	**420**	D	10	2.0	
127-18-4	Tetrachloroethene (PCE)	2.0	U	10	2.0	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	114	73-122	02/24/11	Acceptable
Toluene-d8	123	78-129	02/24/11	Acceptable
4-Bromofluorobenzene	99	68-117	02/24/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101307
Project:	NIROP/J070047	**Date Collected:**	02/14/2011
Sample Matrix:	Water	**Date Received:**	02/16/2011
		Date Extracted:	02/25/2011
		Date Analyzed:	02/25/2011

Volatile Organic Compounds

Sample Name:	AT10	**Units:**	ug/L
Lab Code:	K1101307-003	**Basis:**	NA
File ID:	J:\MS04\DATA\022411\0224F028.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101734
Analysis Method:	8260C	**Calibration ID:**	CAL10195

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.68**		0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.57**		0.50	0.074	
75-09-2	Methylene Chloride	0.10	U	2.0	0.10	
156-60-5	trans-1,2-Dichloroethene	**44**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.57**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**25**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**270**	E	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	110	73-122	02/25/11	Acceptable
Toluene-d8	116	78-129	02/25/11	Acceptable
4-Bromofluorobenzene	98	68-117	02/25/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101307
Project:	NIROP/J070047	**Date Collected:**	02/14/2011
Sample Matrix:	Water	**Date Received:**	02/16/2011
		Date Extracted:	02/24/2011
		Date Analyzed:	02/24/2011

Volatile Organic Compounds

Sample Name:	AT10DL	**Units:**	ug/L
Lab Code:	K1101307-003	**Basis:**	NA
File ID:	J:\MS04\DATA\022411\0224F022.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101734
Analysis Method:	8260C	**Calibration ID:**	CAL10195

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 10

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.75	U	2.0	0.75	
75-35-4	1,1-Dichloroethene	0.74	U	5.0	0.74	
75-09-2	Methylene Chloride	**1.6**	JD	20	1.0	
156-60-5	trans-1,2-Dichloroethene	**40**	D	5.0	0.57	
75-34-3	1,1-Dichloroethane	0.77	U	5.0	0.77	
156-59-2	cis-1,2-Dichloroethene	**22**	D	5.0	0.67	
71-55-6	1,1,1-Trichloroethane (TCA)	0.75	U	5.0	0.75	
79-01-6	Trichloroethene (TCE)	**240**	D	5.0	1.0	
127-18-4	Tetrachloroethene (PCE)	0.99	U	5.0	0.99	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	111	73-122	02/24/11	Acceptable
Toluene-d8	124	78-129	02/24/11	Acceptable
4-Bromofluorobenzene	110	68-117	02/24/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101307
Project:	NIROP/J070047	**Date Collected:**	02/15/2011
Sample Matrix:	Water	**Date Received:**	02/16/2011
		Date Extracted:	02/25/2011
		Date Analyzed:	02/25/2011

Volatile Organic Compounds

Sample Name:	MS15IS	**Units:**	ug/L
Lab Code:	K1101307-019	**Basis:**	NA
File ID:	J:\MS18\DATA\022511\0225F014.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101763
Analysis Method:	8260C	**Calibration ID:**	CAL10226

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.15**	J	0.50	0.074	
75-09-2	Methylene Chloride	0.10	U	2.0	0.10	
156-60-5	trans-1,2-Dichloroethene	**0.23**	J	0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.22**	J	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**1.8**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	*
79-01-6	Trichloroethene (TCE)	**21**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**3.5**		0.50	0.099	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	83	73-122	02/25/11	Acceptable
Toluene-d8	89	78-129	02/25/11	Acceptable
4-Bromofluorobenzene	80	68-117	02/25/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101307
Project:	NIROP/J070047	**Date Collected:**	02/14/2011
Sample Matrix:	Water	**Date Received:**	02/16/2011
		Date Extracted:	02/25/2011
		Date Analyzed:	02/25/2011

Volatile Organic Compounds

Sample Name:	MS18S	**Units:**	ug/L
Lab Code:	K1101307-015	**Basis:**	NA
File ID:	J:\MS18\DATA\022511\0225F029.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101763
Analysis Method:	8260C	**Calibration ID:**	CAL10226

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 2

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.26**	JD	0.40	0.15	
75-35-4	1,1-Dichloroethene	**1.6**	D	1.0	0.15	
75-09-2	Methylene Chloride	**0.20**	JD	4.0	0.20	
156-60-5	trans-1,2-Dichloroethene	**17**	D	1.0	0.12	
75-34-3	1,1-Dichloroethane	**1.2**	D	1.0	0.16	
156-59-2	cis-1,2-Dichloroethene	**99**	D	1.0	0.14	
71-55-6	1,1,1-Trichloroethane (TCA)	0.15	U	1.0	0.15	*
79-01-6	Trichloroethene (TCE)	**530**	ED	1.0	0.20	
127-18-4	Tetrachloroethene (PCE)	0.20	U	1.0	0.20	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	86	73-122	02/25/11	Acceptable
Toluene-d8	89	78-129	02/25/11	Acceptable
4-Bromofluorobenzene	78	68-117	02/25/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101307
Project:	NIROP/J070047	**Date Collected:**	02/14/2011
Sample Matrix:	Water	**Date Received:**	02/16/2011
		Date Extracted:	02/25/2011
		Date Analyzed:	02/25/2011

Volatile Organic Compounds

Sample Name:	MS18SDL	**Units:**	ug/L
Lab Code:	K1101307-015	**Basis:**	NA
File ID:	J:\MS18\DATA\022511\0225F022.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101763
Analysis Method:	8260C	**Calibration ID:**	CAL10226

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 20

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	1.5	U	4.0	1.5	
75-35-4	1,1-Dichloroethene	**1.6**	JD	10	1.5	
75-09-2	Methylene Chloride	2.0	U	40	2.0	
156-60-5	trans-1,2-Dichloroethene	**16**	D	10	1.2	
75-34-3	1,1-Dichloroethane	1.6	U	10	1.6	
156-59-2	cis-1,2-Dichloroethene	**86**	D	10	1.4	
71-55-6	1,1,1-Trichloroethane (TCA)	1.5	U	10	1.5	*
79-01-6	Trichloroethene (TCE)	**470**	D	10	2.0	
127-18-4	Tetrachloroethene (PCE)	2.0	U	10	2.0	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	84	73-122	02/25/11	Acceptable
Toluene-d8	89	78-129	02/25/11	Acceptable
4-Bromofluorobenzene	79	68-117	02/25/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101307
Project:	NIROP/J070047	**Date Collected:**	02/15/2011
Sample Matrix:	Water	**Date Received:**	02/16/2011
		Date Extracted:	02/25/2011
		Date Analyzed:	02/25/2011

Volatile Organic Compounds

Sample Name:	MS34I	**Units:**	ug/L
Lab Code:	K1101307-009	**Basis:**	NA
File ID:	J:\MS18\DATA\022511\0225F031.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101763
Analysis Method:	8260C	**Calibration ID:**	CAL10226

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 5

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.80**	JD	1.0	0.38	
75-35-4	1,1-Dichloroethene	**3.5**	D	2.5	0.37	
75-09-2	Methylene Chloride	0.50	U	10	0.50	
156-60-5	trans-1,2-Dichloroethene	**47**	D	2.5	0.29	
75-34-3	1,1-Dichloroethane	**5.7**	D	2.5	0.39	
156-59-2	cis-1,2-Dichloroethene	**360**	D	2.5	0.34	
71-55-6	1,1,1-Trichloroethane (TCA)	0.38	U	2.5	0.38	*
79-01-6	Trichloroethene (TCE)	**1500**	ED	2.5	0.50	
127-18-4	Tetrachloroethene (PCE)	0.50	U	2.5	0.50	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	86	73-122	02/25/11	Acceptable
Toluene-d8	88	78-129	02/25/11	Acceptable
4-Bromofluorobenzene	77	68-117	02/25/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101307
Project:	NIROP/J070047	**Date Collected:**	02/15/2011
Sample Matrix:	Water	**Date Received:**	02/16/2011
		Date Extracted:	02/25/2011
		Date Analyzed:	02/25/2011

Volatile Organic Compounds

Sample Name:	MS34IDL	**Units:**	ug/L
Lab Code:	K1101307-009	**Basis:**	NA
File ID:	J:\MS18\DATA\022511\0225F024.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101763
Analysis Method:	8260C	**Calibration ID:**	CAL10226

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 50

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	3.8	U	10	3.8	
75-35-4	1,1-Dichloroethene	3.7	U	25	3.7	
75-09-2	Methylene Chloride	5.0	U	100	5.0	
156-60-5	trans-1,2-Dichloroethene	**43**	D	25	2.9	
75-34-3	1,1-Dichloroethane	**5.5**	JD	25	3.9	
156-59-2	cis-1,2-Dichloroethene	**290**	D	25	3.4	
71-55-6	1,1,1-Trichloroethane (TCA)	3.8	U	25	3.8	*
79-01-6	Trichloroethene (TCE)	**1200**	D	25	5.0	
127-18-4	Tetrachloroethene (PCE)	5.0	U	25	5.0	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	85	73-122	02/25/11	Acceptable
Toluene-d8	89	78-129	02/25/11	Acceptable
4-Bromofluorobenzene	79	68-117	02/25/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101307
Project:	NIROP/J070047	**Date Collected:**	02/14/2011
Sample Matrix:	Water	**Date Received:**	02/16/2011
		Date Extracted:	02/24/2011
		Date Analyzed:	02/24/2011

Volatile Organic Compounds

Sample Name:	MS35D	**Units:**	ug/L
Lab Code:	K1101307-002	**Basis:**	NA
File ID:	J:\MS04\DATA\022411\0224F018.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101734
Analysis Method:	8260C	**Calibration ID:**	CAL10195

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.080**	J	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.12**	J	0.50	0.074	
75-09-2	Methylene Chloride	0.10	U	2.0	0.10	
156-60-5	trans-1,2-Dichloroethene	**0.62**		0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**8.9**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**37**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**0.31**	J	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	107	73-122	02/24/11	Acceptable
Toluene-d8	122	78-129	02/24/11	Acceptable
4-Bromofluorobenzene	103	68-117	02/24/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101307
Project:	NIROP/J070047	**Date Collected:**	02/15/2011
Sample Matrix:	Water	**Date Received:**	02/16/2011
		Date Extracted:	02/25/2011
		Date Analyzed:	02/25/2011

Volatile Organic Compounds

Sample Name:	MS35I	**Units:**	ug/L
Lab Code:	K1101307-008	**Basis:**	NA
File ID:	J:\MS18\DATA\022511\0225F030.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101763
Analysis Method:	8260C	**Calibration ID:**	CAL10226

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 2.5

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.63**	D	0.50	0.19	
75-35-4	1,1-Dichloroethene	**3.7**	D	1.3	0.19	
75-09-2	Methylene Chloride	**0.28**	JD	5.0	0.25	
156-60-5	trans-1,2-Dichloroethene	**36**	D	1.3	0.15	
75-34-3	1,1-Dichloroethane	**9.6**	D	1.3	0.20	
156-59-2	cis-1,2-Dichloroethene	**180**	D	1.3	0.17	
71-55-6	1,1,1-Trichloroethane (TCA)	0.19	U	1.3	0.19	*
79-01-6	Trichloroethene (TCE)	**950**	ED	1.3	0.25	
127-18-4	Tetrachloroethene (PCE)	**0.28**	JD	1.3	0.25	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	87	73-122	02/25/11	Acceptable
Toluene-d8	89	78-129	02/25/11	Acceptable
4-Bromofluorobenzene	79	68-117	02/25/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101307
Project:	NIROP/J070047	**Date Collected:**	02/15/2011
Sample Matrix:	Water	**Date Received:**	02/16/2011
		Date Extracted:	02/25/2011
		Date Analyzed:	02/25/2011

Volatile Organic Compounds

Sample Name:	MS35IDL	**Units:**	ug/L
Lab Code:	K1101307-008	**Basis:**	NA
File ID:	J:\MS18\DATA\022511\0225F023.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101763
Analysis Method:	8260C	**Calibration ID:**	CAL10226

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 50

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	3.8	U	10	3.8	
75-35-4	1,1-Dichloroethene	3.7	U	25	3.7	
75-09-2	Methylene Chloride	5.0	U	100	5.0	
156-60-5	trans-1,2-Dichloroethene	**32**	D	25	2.9	
75-34-3	1,1-Dichloroethane	**9.0**	JD	25	3.9	
156-59-2	cis-1,2-Dichloroethene	**160**	D	25	3.4	
71-55-6	1,1,1-Trichloroethane (TCA)	3.8	U	25	3.8	*
79-01-6	Trichloroethene (TCE)	**840**	D	25	5.0	
127-18-4	Tetrachloroethene (PCE)	5.0	U	25	5.0	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	84	73-122	02/25/11	Acceptable
Toluene-d8	88	78-129	02/25/11	Acceptable
4-Bromofluorobenzene	78	68-117	02/25/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101307
Project:	NIROP/J070047	**Date Collected:**	02/14/2011
Sample Matrix:	Water	**Date Received:**	02/16/2011
		Date Extracted:	02/24/2011
		Date Analyzed:	02/24/2011

Volatile Organic Compounds

Sample Name:	MS37S	**Units:**	ug/L
Lab Code:	K1101307-001	**Basis:**	NA
File ID:	J:\MS04\DATA\022411\0224F021.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101734
Analysis Method:	8260C	**Calibration ID:**	CAL10195

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.67**		0.20	0.075	
75-35-4	1,1-Dichloroethene	**2.7**		0.50	0.074	
75-09-2	Methylene Chloride	0.10	U	2.0	0.10	
156-60-5	trans-1,2-Dichloroethene	**110**	E	0.50	0.057	
75-34-3	1,1-Dichloroethane	**1.4**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**46**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**23**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	109	73-122	02/24/11	Acceptable
Toluene-d8	125	78-129	02/24/11	Acceptable
4-Bromofluorobenzene	100	68-117	02/24/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101307
Project:	NIROP/J070047	**Date Collected:**	02/14/2011
Sample Matrix:	Water	**Date Received:**	02/16/2011
		Date Extracted:	02/24/2011
		Date Analyzed:	02/24/2011

Volatile Organic Compounds

Sample Name:	MS37SDL	**Units:**	ug/L
Lab Code:	K1101307-001	**Basis:**	NA
File ID:	J:\MS04\DATA\022411\0224F020.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101734
Analysis Method:	8260C	**Calibration ID:**	CAL10195

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 5

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.55**	JD	1.0	0.38	
75-35-4	1,1-Dichloroethene	**2.3**	JD	2.5	0.37	
75-09-2	Methylene Chloride	**0.55**	JD	10	0.50	
156-60-5	trans-1,2-Dichloroethene	**93**	D	2.5	0.29	
75-34-3	1,1-Dichloroethane	**1.4**	JD	2.5	0.39	
156-59-2	cis-1,2-Dichloroethene	**40**	D	2.5	0.34	
71-55-6	1,1,1-Trichloroethane (TCA)	0.38	U	2.5	0.38	
79-01-6	Trichloroethene (TCE)	**20**	D	2.5	0.50	
127-18-4	Tetrachloroethene (PCE)	0.50	U	2.5	0.50	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	109	73-122	02/24/11	Acceptable
Toluene-d8	121	78-129	02/24/11	Acceptable
4-Bromofluorobenzene	102	68-117	02/24/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101307
Project:	NIROP/J070047	**Date Collected:**	02/14/2011
Sample Matrix:	Water	**Date Received:**	02/16/2011
		Date Extracted:	02/25/2011
		Date Analyzed:	02/25/2011

Volatile Organic Compounds

Sample Name:	MS43I	**Units:**	ug/L
Lab Code:	K1101307-012	**Basis:**	NA
File ID:	J:\MS18\DATA\022511\0225F012.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101763
Analysis Method:	8260C	**Calibration ID:**	CAL10226

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.080**	J	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.37**	J	0.50	0.074	
75-09-2	Methylene Chloride	0.10	U	2.0	0.10	
156-60-5	trans-1,2-Dichloroethene	**1.0**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**1.0**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**30**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	*
79-01-6	Trichloroethene (TCE)	**36**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	82	73-122	02/25/11	Acceptable
Toluene-d8	88	78-129	02/25/11	Acceptable
4-Bromofluorobenzene	79	68-117	02/25/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101307
Project:	NIROP/J070047	**Date Collected:**	02/15/2011
Sample Matrix:	Water	**Date Received:**	02/16/2011
		Date Extracted:	02/25/2011
		Date Analyzed:	02/25/2011

Volatile Organic Compounds

Sample Name:	MS44I	**Units:**	ug/L
Lab Code:	K1101307-020	**Basis:**	NA
File ID:	J:\MS18\DATA\022511\0225F034.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101763
Analysis Method:	8260C	**Calibration ID:**	CAL10226

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.63**		0.20	0.075	
75-35-4	1,1-Dichloroethene	**2.6**		0.50	0.074	
75-09-2	Methylene Chloride	0.10	U	2.0	0.10	
156-60-5	trans-1,2-Dichloroethene	**22**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**7.9**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**390**	E	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	*
79-01-6	Trichloroethene (TCE)	**490**	E	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	89	73-122	02/25/11	Acceptable
Toluene-d8	89	78-129	02/25/11	Acceptable
4-Bromofluorobenzene	76	68-117	02/25/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101307
Project:	NIROP/J070047	**Date Collected:**	02/15/2011
Sample Matrix:	Water	**Date Received:**	02/16/2011
		Date Extracted:	02/25/2011
		Date Analyzed:	02/25/2011

Volatile Organic Compounds

Sample Name:	MS44IDL	**Units:**	ug/L
Lab Code:	K1101307-020	**Basis:**	NA
File ID:	J:\MS18\DATA\022511\0225F027.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101763
Analysis Method:	8260C	**Calibration ID:**	CAL10226

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 20

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	1.5	U	4.0	1.5	
75-35-4	1,1-Dichloroethene	**2.2**	JD	10	1.5	
75-09-2	Methylene Chloride	**2.6**	JD	40	2.0	
156-60-5	trans-1,2-Dichloroethene	**16**	D	10	1.2	
75-34-3	1,1-Dichloroethane	**6.2**	JD	10	1.6	
156-59-2	cis-1,2-Dichloroethene	**300**	D	10	1.4	
71-55-6	1,1,1-Trichloroethane (TCA)	1.5	U	10	1.5	*
79-01-6	Trichloroethene (TCE)	**380**	D	10	2.0	
127-18-4	Tetrachloroethene (PCE)	2.0	U	10	2.0	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	85	73-122	02/25/11	Acceptable
Toluene-d8	88	78-129	02/25/11	Acceptable
4-Bromofluorobenzene	77	68-117	02/25/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101307
Project:	NIROP/J070047	**Date Collected:**	02/14/2011
Sample Matrix:	Water	**Date Received:**	02/16/2011
		Date Extracted:	02/25/2011
		Date Analyzed:	02/25/2011

Volatile Organic Compounds

Sample Name:	MS45I	**Units:**	ug/L
Lab Code:	K1101307-013	**Basis:**	NA
File ID:	J:\MS04\DATA\022411\0224F027.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101734
Analysis Method:	8260C	**Calibration ID:**	CAL10195

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.26**	J	0.50	0.074	
75-09-2	Methylene Chloride	0.10	U	2.0	0.10	
156-60-5	trans-1,2-Dichloroethene	**0.91**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.12**	J	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**16**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**81**	E	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**3.5**		0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	109	73-122	02/25/11	Acceptable
Toluene-d8	119	78-129	02/25/11	Acceptable
4-Bromofluorobenzene	96	68-117	02/25/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101307
Project:	NIROP/J070047	**Date Collected:**	02/14/2011
Sample Matrix:	Water	**Date Received:**	02/16/2011
		Date Extracted:	02/25/2011
		Date Analyzed:	02/25/2011

Volatile Organic Compounds

Sample Name:	MS45IDL	**Units:**	ug/L
Lab Code:	K1101307-013	**Basis:**	NA
File ID:	J:\MS18\DATA\022511\0225F020.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101763
Analysis Method:	8260C	**Calibration ID:**	CAL10226

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 5

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.38	U	1.0	0.38	
75-35-4	1,1-Dichloroethene	0.37	U	2.5	0.37	
75-09-2	Methylene Chloride	**0.55**	JD	10	0.50	
156-60-5	trans-1,2-Dichloroethene	**0.70**	JD	2.5	0.29	
75-34-3	1,1-Dichloroethane	0.39	U	2.5	0.39	
156-59-2	cis-1,2-Dichloroethene	**14**	D	2.5	0.34	
71-55-6	1,1,1-Trichloroethane (TCA)	0.38	U	2.5	0.38	*
79-01-6	Trichloroethene (TCE)	**68**	D	2.5	0.50	
127-18-4	Tetrachloroethene (PCE)	**2.8**	D	2.5	0.50	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	84	73-122	02/25/11	Acceptable
Toluene-d8	89	78-129	02/25/11	Acceptable
4-Bromofluorobenzene	78	68-117	02/25/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101307
Project:	NIROP/J070047	**Date Collected:**	02/15/2011
Sample Matrix:	Water	**Date Received:**	02/16/2011
		Date Extracted:	02/25/2011
		Date Analyzed:	02/25/2011

Volatile Organic Compounds

Sample Name:	MS45S	**Units:**	ug/L
Lab Code:	K1101307-018	**Basis:**	NA
File ID:	J:\MS18\DATA\022511\0225F033.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101763
Analysis Method:	8260C	**Calibration ID:**	CAL10226

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.35**		0.20	0.075	
75-35-4	1,1-Dichloroethene	**1.6**		0.50	0.074	
75-09-2	Methylene Chloride	0.10	U	2.0	0.10	
156-60-5	trans-1,2-Dichloroethene	**30**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**2.1**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**200**	E	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	*
79-01-6	Trichloroethene (TCE)	**280**	E	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	86	73-122	02/25/11	Acceptable
Toluene-d8	89	78-129	02/25/11	Acceptable
4-Bromofluorobenzene	78	68-117	02/25/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101307
Project:	NIROP/J070047	**Date Collected:**	02/15/2011
Sample Matrix:	Water	**Date Received:**	02/16/2011
		Date Extracted:	02/25/2011
		Date Analyzed:	02/25/2011

Volatile Organic Compounds

Sample Name:	MS45SDL	**Units:**	ug/L
Lab Code:	K1101307-018	**Basis:**	NA
File ID:	J:\MS18\DATA\022511\0225F026.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101763
Analysis Method:	8260C	**Calibration ID:**	CAL10226

Sample Amount:	10 ml
% Solids:	NA
Dilution Factor:	10

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.75	U	2.0	0.75	
75-35-4	1,1-Dichloroethene	**1.5**	JD	5.0	0.74	
75-09-2	Methylene Chloride	**1.4**	JD	20	1.0	
156-60-5	trans-1,2-Dichloroethene	**27**	D	5.0	0.57	
75-34-3	1,1-Dichloroethane	**1.8**	JD	5.0	0.77	
156-59-2	cis-1,2-Dichloroethene	**180**	D	5.0	0.67	
71-55-6	1,1,1-Trichloroethane (TCA)	0.75	U	5.0	0.75	*
79-01-6	Trichloroethene (TCE)	**250**	D	5.0	1.0	
127-18-4	Tetrachloroethene (PCE)	0.99	U	5.0	0.99	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	85	73-122	02/25/11	Acceptable
Toluene-d8	89	78-129	02/25/11	Acceptable
4-Bromofluorobenzene	78	68-117	02/25/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101307
Project:	NIROP/J070047	**Date Collected:**	02/14/2011
Sample Matrix:	Water	**Date Received:**	02/16/2011
		Date Extracted:	02/25/2011
		Date Analyzed:	02/25/2011

Volatile Organic Compounds

Sample Name:	MS46S	**Units:**	ug/L
Lab Code:	K1101307-014	**Basis:**	NA
File ID:	J:\MS04\DATA\022411\0224F031.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101734
Analysis Method:	8260C	**Calibration ID:**	CAL10195

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 2

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.24**	JD	0.40	0.15	
75-35-4	1,1-Dichloroethene	**1.2**	D	1.0	0.15	
75-09-2	Methylene Chloride	**0.26**	JD	4.0	0.20	
156-60-5	trans-1,2-Dichloroethene	**22**	D	1.0	0.12	
75-34-3	1,1-Dichloroethane	**1.1**	D	1.0	0.16	
156-59-2	cis-1,2-Dichloroethene	**44**	D	1.0	0.14	
71-55-6	1,1,1-Trichloroethane (TCA)	0.15	U	1.0	0.15	
79-01-6	Trichloroethene (TCE)	**500**	ED	1.0	0.20	
127-18-4	Tetrachloroethene (PCE)	0.20	U	1.0	0.20	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	107	73-122	02/25/11	Acceptable
Toluene-d8	121	78-129	02/25/11	Acceptable
4-Bromofluorobenzene	96	68-117	02/25/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101307
Project:	NIROP/J070047	**Date Collected:**	02/14/2011
Sample Matrix:	Water	**Date Received:**	02/16/2011
		Date Extracted:	02/24/2011
		Date Analyzed:	02/24/2011

Volatile Organic Compounds

Sample Name:	MS46SDL	**Units:**	ug/L
Lab Code:	K1101307-014	**Basis:**	NA
File ID:	J:\MS04\DATA\022411\0224F025.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101734
Analysis Method:	8260C	**Calibration ID:**	CAL10195

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 20

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	1.5	U	4.0	1.5	
75-35-4	1,1-Dichloroethene	1.5	U	10	1.5	
75-09-2	Methylene Chloride	**2.8**	JD	40	2.0	
156-60-5	trans-1,2-Dichloroethene	**22**	D	10	1.2	
75-34-3	1,1-Dichloroethane	1.6	U	10	1.6	
156-59-2	cis-1,2-Dichloroethene	**42**	D	10	1.4	
71-55-6	1,1,1-Trichloroethane (TCA)	1.5	U	10	1.5	
79-01-6	Trichloroethene (TCE)	**480**	D	10	2.0	
127-18-4	Tetrachloroethene (PCE)	2.0	U	10	2.0	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	109	73-122	02/24/11	Acceptable
Toluene-d8	121	78-129	02/24/11	Acceptable
4-Bromofluorobenzene	100	68-117	02/24/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101307
Project:	NIROP/J070047	**Date Collected:**	02/14/2011
Sample Matrix:	Water	**Date Received:**	02/16/2011
		Date Extracted:	02/25/2011
		Date Analyzed:	02/25/2011

Volatile Organic Compounds

Sample Name:	QCD01	**Units:**	ug/L
Lab Code:	K1101307-016	**Basis:**	NA
File ID:	J:\MS04\DATA\022411\0224F026.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101734
Analysis Method:	8260C	**Calibration ID:**	CAL10195

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.27**	J	0.50	0.074	
75-09-2	Methylene Chloride	0.10	U	2.0	0.10	
156-60-5	trans-1,2-Dichloroethene	**0.93**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.12**	J	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**16**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**81**	E	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**3.6**		0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	110	73-122	02/25/11	Acceptable
Toluene-d8	127	78-129	02/25/11	Acceptable
4-Bromofluorobenzene	96	68-117	02/25/11	Acceptable

Comments

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101307
Project:	NIROP/J070047	**Date Collected:**	02/14/2011
Sample Matrix:	Water	**Date Received:**	02/16/2011
		Date Extracted:	02/25/2011
		Date Analyzed:	02/25/2011

Volatile Organic Compounds

Sample Name:	QCD01DL	**Units:**	ug/L
Lab Code:	K1101307-016	**Basis:**	NA
File ID:	J:\MS18\DATA\022511\0225F021.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101763
Analysis Method:	8260C	**Calibration ID:**	CAL10226

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 5

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.38	U	1.0	0.38	
75-35-4	1,1-Dichloroethene	0.37	U	2.5	0.37	
75-09-2	Methylene Chloride	**0.65**	JD	10	0.50	
156-60-5	trans-1,2-Dichloroethene	**0.65**	JD	2.5	0.29	
75-34-3	1,1-Dichloroethane	0.39	U	2.5	0.39	
156-59-2	cis-1,2-Dichloroethene	**13**	D	2.5	0.34	
71-55-6	1,1,1-Trichloroethane (TCA)	0.38	U	2.5	0.38	*
79-01-6	Trichloroethene (TCE)	**67**	D	2.5	0.50	
127-18-4	Tetrachloroethene (PCE)	**3.0**	D	2.5	0.50	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	85	73-122	02/25/11	Acceptable
Toluene-d8	89	78-129	02/25/11	Acceptable
4-Bromofluorobenzene	79	68-117	02/25/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101307
Project:	NIROP/J070047	**Date Collected:**	02/15/2011
Sample Matrix:	Water	**Date Received:**	02/16/2011
		Date Extracted:	02/25/2011
		Date Analyzed:	02/25/2011

Volatile Organic Compounds

Sample Name:	QCD02	**Units:**	ug/L
Lab Code:	K1101307-010	**Basis:**	NA
File ID:	J:\MS18\DATA\022511\0225F032.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101763
Analysis Method:	8260C	**Calibration ID:**	CAL10226

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 5

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.80**	JD	1.0	0.38	
75-35-4	1,1-Dichloroethene	**3.5**	D	2.5	0.37	
75-09-2	Methylene Chloride	0.50	U	10	0.50	
156-60-5	trans-1,2-Dichloroethene	**47**	D	2.5	0.29	
75-34-3	1,1-Dichloroethane	**5.7**	D	2.5	0.39	
156-59-2	cis-1,2-Dichloroethene	**350**	D	2.5	0.34	
71-55-6	1,1,1-Trichloroethane (TCA)	0.38	U	2.5	0.38	*
79-01-6	Trichloroethene (TCE)	**1500**	ED	2.5	0.50	
127-18-4	Tetrachloroethene (PCE)	0.50	U	2.5	0.50	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	86	73-122	02/25/11	Acceptable
Toluene-d8	90	78-129	02/25/11	Acceptable
4-Bromofluorobenzene	78	68-117	02/25/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101307
Project:	NIROP/J070047	**Date Collected:**	02/15/2011
Sample Matrix:	Water	**Date Received:**	02/16/2011
		Date Extracted:	02/25/2011
		Date Analyzed:	02/25/2011

Volatile Organic Compounds

Sample Name:	QCD02DL	**Units:**	ug/L
Lab Code:	K1101307-010	**Basis:**	NA
File ID:	J:\MS18\DATA\022511\0225F025.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101763
Analysis Method:	8260C	**Calibration ID:**	CAL10226

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 50

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	3.8	U	10	3.8	
75-35-4	1,1-Dichloroethene	3.7	U	25	3.7	
75-09-2	Methylene Chloride	5.0	U	100	5.0	
156-60-5	trans-1,2-Dichloroethene	**44**	D	25	2.9	
75-34-3	1,1-Dichloroethane	**5.0**	JD	25	3.9	
156-59-2	cis-1,2-Dichloroethene	**300**	D	25	3.4	
71-55-6	1,1,1-Trichloroethane (TCA)	3.8	U	25	3.8	*
79-01-6	Trichloroethene (TCE)	**1300**	D	25	5.0	
127-18-4	Tetrachloroethene (PCE)	5.0	U	25	5.0	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	85	73-122	02/25/11	Acceptable
Toluene-d8	89	78-129	02/25/11	Acceptable
4-Bromofluorobenzene	79	68-117	02/25/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101307
Project:	NIROP/J070047	**Date Collected:**	02/15/2011
Sample Matrix:	Water	**Date Received:**	02/16/2011
		Date Extracted:	02/25/2011
		Date Analyzed:	02/25/2011

Volatile Organic Compounds

Sample Name:	QCD03	**Units:**	ug/L
Lab Code:	K1101307-021	**Basis:**	NA
File ID:	J:\MS18\DATA\022511\0225F015.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101763
Analysis Method:	8260C	**Calibration ID:**	CAL10226

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.15**	J	0.50	0.074	
75-09-2	Methylene Chloride	0.10	U	2.0	0.10	
156-60-5	trans-1,2-Dichloroethene	**0.26**	J	0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.22**	J	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**2.0**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	*
79-01-6	Trichloroethene (TCE)	**21**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**3.5**		0.50	0.099	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	83	73-122	02/25/11	Acceptable
Toluene-d8	90	78-129	02/25/11	Acceptable
4-Bromofluorobenzene	79	68-117	02/25/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101307
Project:	NIROP/J070047	**Date Collected:**	02/14/2011
Sample Matrix:	Water	**Date Received:**	02/16/2011
		Date Extracted:	02/24/2011
		Date Analyzed:	02/24/2011

Volatile Organic Compounds

Sample Name:	QCR01	**Units:**	ug/L
Lab Code:	K1101307-006	**Basis:**	NA
File ID:	J:\MS04\DATA\022411\0224F019.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101734
Analysis Method:	8260C	**Calibration ID:**	CAL10195

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
75-09-2	Methylene Chloride	0.10	U	2.0	0.10	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	113	73-122	02/24/11	Acceptable
Toluene-d8	119	78-129	02/24/11	Acceptable
4-Bromofluorobenzene	103	68-117	02/24/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101307
Project:	NIROP/J070047	**Date Collected:**	02/15/2011
Sample Matrix:	Water	**Date Received:**	02/16/2011
		Date Extracted:	02/25/2011
		Date Analyzed:	02/25/2011

Volatile Organic Compounds

Sample Name:	QCR02	**Units:**	ug/L
Lab Code:	K1101307-011	**Basis:**	NA
File ID:	J:\MS18\DATA\022511\0225F013.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101763
Analysis Method:	8260C	**Calibration ID:**	CAL10226

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
75-09-2	Methylene Chloride	0.10	U	2.0	0.10	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**0.090**	J	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	*
79-01-6	Trichloroethene (TCE)	**0.39**	J	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	82	73-122	02/25/11	Acceptable
Toluene-d8	88	78-129	02/25/11	Acceptable
4-Bromofluorobenzene	80	68-117	02/25/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101307
Project:	NIROP/J070047	**Date Collected:**	02/14/2011
Sample Matrix:	Water	**Date Received:**	02/16/2011
		Date Extracted:	02/25/2011
		Date Analyzed:	02/25/2011

Volatile Organic Compounds

Sample Name:	QCT01	**Units:**	ug/L
Lab Code:	K1101307-017	**Basis:**	NA
File ID:	J:\MS18\DATA\022511\0225F010.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101763
Analysis Method:	8260C	**Calibration ID:**	CAL10226

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
75-09-2	Methylene Chloride	**0.11**	J	2.0	0.10	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	*
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	82	73-122	02/25/11	Acceptable
Toluene-d8	87	78-129	02/25/11	Acceptable
4-Bromofluorobenzene	79	68-117	02/25/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101307
Project:	NIROP/J070047	**Date Collected:**	02/14/2011
Sample Matrix:	Water	**Date Received:**	02/16/2011
		Date Extracted:	02/24/2011
		Date Analyzed:	02/24/2011

Volatile Organic Compounds

Sample Name:	QCT02	**Units:**	ug/L
Lab Code:	K1101307-007	**Basis:**	NA
File ID:	J:\MS04\DATA\022411\0224F017.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101734
Analysis Method:	8260C	**Calibration ID:**	CAL10195

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
75-09-2	Methylene Chloride	0.10	U	2.0	0.10	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	107	73-122	02/24/11	Acceptable
Toluene-d8	124	78-129	02/24/11	Acceptable
4-Bromofluorobenzene	104	68-117	02/24/11	Acceptable

Comments:

Appendix C

Support Documentation

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	Bay West	**Service Request No.:**	K1101307
Project:	NIROP	**Date Received:**	2/16/11
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Twenty one water samples were received for analysis at Columbia Analytical Services on 2/16/11. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Volatile Organic Compounds by EPA Method 8260B

Calibration Verification Exceptions:
The following analyte was incorrectly flagged as being outside the control criterion for Continuing Calibration Verification (CCV) J:\MS04\0224F011.D: Toluene-d8. On the day of anlysis, the analyte in question passed the required 8260B method control criteria. Prior to reporting, CAS switched to 8260C method requirements, causing the final report to flag the analyte as out of control. The data quality was not affected. No further corrective action was appropriate.

The following analyte was incorrectly flagged as being outside the control criterion for Continuing Calibration Verification (CCV) J:\MS18\0225F003.D: 1,1,1-Trichloroethane (TCA). On the day of anlysis, the analyte in question passed the required 8260B method control criteria. Prior to reporting, CAS switched to 8260C method requirements, causing the final report to flag the analyte as out of control. The data quality was not affected. No further corrective action was appropriate.

Matrix Spike Recovery Exceptions:
The duplicate matrix spike recovery of trans-1,2-Dichloroethene and cis-1,2-Dichloroethene for sample MS37SDMS KWG1101734-2 was outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicated the analytical batch was in control. The duplicate matrix spike outlier suggested a potential low bias in this matrix. No further corrective action was appropriate.

The matrix spike recovery of cis-1,2-Dichloroethene and Trichloroethene (TCE) for sample MS43IMS KWG1101763-1 was outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicated the analytical batch was in control. The matrix spike outlier suggested a potential low bias in this matrix. No further corrective action was appropriate.

Elevated Detection Limits:
Sample AT05B, AT03A, MS35I, MS34I, QCD02, MS46S, and MS18S required dilution due to the presence of elevated levels of target analyte. The reporting limits were adjusted to reflect the dilution.

No other anomalies associated with the analysis of these samples were observed.

Approved by Mike Shelton **Date** 3/8/11

Columbia Analytical Services™

CHAIN OF CUSTODY

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

SR#: ~~021411-01~~ K1101307 PAR

PAGE 1 OF 3 COC # 021411-01

PROJECT NAME: NIRP
PROJECT NUMBER: 507097
PROJECT MANAGER: Paul Walz
COMPANY ADDRESS: BayWest, 5 Empire Drive
CITY STATE ZIP: St. Paul, MN
E-MAIL ADDRESS: paulw@baywest.com
PHONE #: 651-291-3491 FAX #: 651-291-0099
SAMPLER'S SIGNATURE: [signature]

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625 ☐ 8270 ☐ 8270LL ☐	Volatile Organics 624 ☐ 8260 ☐ 8260DX 8021 ☐ BTEX ☐	Hydrocarbons (*see below) Gas ☐ Diesel ☐ Oil ☐	Fuel Fingerprint (FIQ) NW-HCID Screen	Oil & Grease/TRPH 1664 HEM ☐ 1664 SGT ☐	PCB's Aroclors ☐ Congeners ☐	Pesticides/Herbicides 608 ☐ 8081A ☐ 8141A ☐ 8151A ☐	Chlorophenolics - 8151M Tri ☐ Tetra ☐ PCP ☐	PAHS 8310 ☐ SIM ☐	Metals, Total or Dissolved (See list below)	Cyanide ☐ Hex-Chrom ☐	pH, Cond., Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS (circle)	NH_3-N, COD, Total-P, TKN, TOC, DOC (circle) NO_2+NO_3	TOX 9020 ☐ AOX 1650 ☐ 506 ☐					REMARKS
MS37S	2-14-11	1229		water	9		X																		MS/MSD
MS35D		1352			3		X																		
AT10		1425			3		X																		
AT05B ✓		1430			3		X																		
AT03A ✓		1438			3		X																		
QCR01		1543			3		X																		
QCT02		—			2		X																		
MS35T	2/15/11	0932			3		X																		
MS34I		1221			3		X																		
QCD02		—			3		X																		

REPORT REQUIREMENTS

I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
X III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
V. EDD

INVOICE INFORMATION

P.O. # 34003
Bill To: Account Payable, 5 Empire Drive, St Paul MN 55103

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:

for 8 specific compounds

TN# 12A198R9019743634 3

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature] Date/Time: 2/15/11 1600	Signature: [signature] Date/Time: 2/16/11 1050	Signature: Date/Time:	Signature: Date/Time:
Printed Name: Mandi Mahony Firm: Baywest	Printed Name: J HOPKINS Firm: CAS	Printed Name: Firm:	Printed Name: Firm:

RCOC #1 02/10

Columbia Analytical Services™

CHAIN OF CUSTODY

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

SR#: _____

PAGE 2 OF 3 COC #02141102

PROJECT NAME: NiROP
PROJECT NUMBER: J070047
PROJECT MANAGER: Paul Walz
COMPANY ADDRESS: BayWest, 5 Empire Dr
CITY STATE ZIP: St Paul MN 55103
E-MAIL ADDRESS: PaulW@baywest.com
PHONE #: 651-291-3491 FAX #: 651-291-0099
SAMPLER'S SIGNATURE: Amanda Mahaney

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐ 8270LL☐	Volatile Organics 624☐ 8260X☑ 8021☐ BTEX☐	Hydrocarbons (*see below) Gas☐ Diesel☐ Oil☐	Fuel Fingerprint (FIQ) NW-HCID Screen	Oil & Grease/TRPH 1664 HEM☐ 1664 SGT☐	PCB's Aroclors☐ Congeners☐	Pesticides/Herbicides 608☐ 8081A☐ 8141A☐ 8151A☐	Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐	PAHS 8310☐ SIM☐	Metals, Total or Dissolved (See list below)	Cyanide☐ Hex-Chrom☐	pH, Cond., Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS (circle)	NH_3-N, COD, Total-P, TKN, TOC, DOC (circle) NO_2+NO_3	TOX 9020☐ AOX 1650☐ 506☐						REMARKS
MS43I	02/14/11	1125		WT	9		X (MS)	X																		MS/MSD
MS45I	↓	1243			3		X	X																		
MS46S	✓	1355			3		X	X																		
MS18S	↓	1457			3		X	X																		
QCD01	↓	—			3		X	X																		
QCT01	02/14/11	—			2		X	X																		
MS45S	02/15/11	1013			3			X																		
MS15IS	↓	1233			3			X																		
MS44I	↓	1424			3			X																		
QCD03	↓	—			3			X																		

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. # 24003
Bill To: Accts Payable, 5 Empire Dr, St Paul, MN 55103

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:

for 8 specific compounds

TN# 1ZA198R90195613959

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: Amanda Mahaney — Date/Time: 2/15/11 1600	Signature: [illegible] — Date/Time: 2/16/11 1030	Signature: — Date/Time:	Signature: — Date/Time:
Printed Name: Amanda Mahaney — Firm: BayWest	Printed Name: SHORKINS — Firm: CAS	Printed Name: — Firm:	Printed Name: — Firm:

RCOC #1 03/10

10

Columbia Analytical Services™

CHAIN OF CUSTODY

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

SR#: _____

PAGE 3 OF 3 COC # 021411-03

PROJECT NAME: NRCC
PROJECT NUMBER: 0700417
PROJECT MANAGER: Paul Walz
COMPANY ADDRESS: BayWest, Empire D
CITY STATE ZIP: St. Paul, MN 55103
E MAIL ADDRESS: paulw@baywest.com
PHONE #: 651-291-3491 FAX #: 651-291-0096
SAMPLER'S SIGNATURE: [signature]

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐ 8270LL☐	Volatile Organics 624☐ 8260☒ 8021☐ BTEX☐	Hydrocarbons (*see below) Gas☐ Diesel☐ Oil☐	Fuel Fingerprint (FIQ) NW-HCID Screen	Oil & Grease/TRPH 1664 HEM☐ 1664 SGT☐	PCB's Aroclors☐ Congeners☐	Pesticides/Herbicides 608☐ 8081A☐ 8141A☐ 8151A☐	Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐	PAHS 8310☐ SIM☐	Metals, Total or Dissolved (See list below)	Cyanide☐ Hex-Chrom☐	pH, Cond., Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS (circle)	NH_3-N, COD, Total-P, TKN, TOC, DOC (circle) NO_2+NO_3	TOX 9020☐ AOX 1650☐ 506☐						REMARKS
RCB02	2/15/11	1445		WT	3			X																	

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION
P.O. # 3400.3
Bill To: Accts Payable

TURNAROUND REQUIREMENTS
___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results
Requested Report Date

Circle which metals are to be analyzed:
Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg
Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:
for 8 Specific Compounds
TN # 17A198R901974363 42

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature] Date/Time: 2/15/11 1500	Signature: [signature] Date/Time: 2/16/11 1050	Signature: Date/Time:	Signature: Date/Time:
Printed Name: Amanda Mahney Firm: BayWest	Printed Name: S Hopkins Firm: CAS	Printed Name: Firm:	Printed Name: Firm:

RCOC #1 03/10

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

PC Mike

Client / Project: Baywest Service Request *K11* 1305

Received: 2/16/11 Opened: 2/16/11 By: SM Unloaded: 2/16/11 By: SM

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? 2 front 1 back
   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Cooler Temp °C	Temp Blank °C	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
-0.5	-0.3	259		12 A19 5P4 01 1341 3759	

7. Packing material used. *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Sleeves* *Other* _____
8. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
9. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
10. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
11. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
12. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
13. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
14. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
15. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

PC_____

Client / Project: Bayway Service Request *K11*

Received: 2/16/11 Opened: 2/16/11 By: SAJ Unloaded: 2/16/11 By: SAJ

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other*_____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where?_____

   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Cooler Temp °C	Temp Blank °C	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
-0.5	0.5	302		1Z K17 8K7 01 9745 0543	

7. Packing material used. *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Sleeves* *Other*_____
8. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
9. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
10. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
11. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
12. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
13. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
14. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
15. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:
QCR01	QCR02	time sampled

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

*Notes, Discrepancies, & Resolutions:*_____

Page 1 *of*_____

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1101307

Cover Page - Organic Analysis Data Package
Volatile Organic Compounds

Sample Name	Lab Code	Date Collected	Date Received
MS37SDL	K1101307-001	02/14/2011	02/16/2011
MS37S	K1101307-001	02/14/2011	02/16/2011
MS35D	K1101307-002	02/14/2011	02/16/2011
AT10	K1101307-003	02/14/2011	02/16/2011
AT10DL	K1101307-003	02/14/2011	02/16/2011
AT05B	K1101307-004	02/14/2011	02/16/2011
AT05BDL	K1101307-004	02/14/2011	02/16/2011
AT03ADL	K1101307-005	02/14/2011	02/16/2011
AT03A	K1101307-005	02/14/2011	02/16/2011
QCR01	K1101307-006	02/14/2011	02/16/2011
QCT02	K1101307-007	02/14/2011	02/16/2011
MS35I	K1101307-008	02/15/2011	02/16/2011
MS35IDL	K1101307-008	02/15/2011	02/16/2011
MS34I	K1101307-009	02/15/2011	02/16/2011
MS34IDL	K1101307-009	02/15/2011	02/16/2011
QCD02	K1101307-010	02/15/2011	02/16/2011
QCD02DL	K1101307-010	02/15/2011	02/16/2011
QCR02	K1101307-011	02/15/2011	02/16/2011
MS43I	K1101307-012	02/14/2011	02/16/2011
MS45IDL	K1101307-013	02/14/2011	02/16/2011
MS45I	K1101307-013	02/14/2011	02/16/2011
MS46S	K1101307-014	02/14/2011	02/16/2011
MS46SDL	K1101307-014	02/14/2011	02/16/2011
MS18S	K1101307-015	02/14/2011	02/16/2011
MS18SDL	K1101307-015	02/14/2011	02/16/2011
QCD01	K1101307-016	02/14/2011	02/16/2011
QCD01DL	K1101307-016	02/14/2011	02/16/2011
QCT01	K1101307-017	02/14/2011	02/16/2011
MS45S	K1101307-018	02/15/2011	02/16/2011
MS45SDL	K1101307-018	02/15/2011	02/16/2011
MS15IS	K1101307-019	02/15/2011	02/16/2011
MS44I	K1101307-020	02/15/2011	02/16/2011
MS44IDL	K1101307-020	02/15/2011	02/16/2011
QCD03	K1101307-021	02/15/2011	02/16/2011
MS37SMS	KWG1101734-1	02/14/2011	02/16/2011
MS37SDMS	KWG1101734-2	02/14/2011	02/16/2011
MS43IMS	KWG1101763-1	02/14/2011	02/16/2011
MS43IDMS	KWG1101763-2	02/14/2011	02/16/2011

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Holly Butcher Name: Holly Butcher

Date: 03-07-2011 Title: Scientist

SDG K1101307

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
OV	%	MS45I	K1101307-013DL	NM	02/14/2011	02/25/2011	02/25/2011	11	0	11
OV	%	AT03A	K1101307-005	NM	02/14/2011	02/25/2011	02/25/2011	11	0	11
OV	%	QCT02	K1101307-007	NM	02/14/2011	02/24/2011	02/24/2011	10	0	10
OV	%	QCT01	K1101307-017	NM	02/14/2011	02/25/2011	02/25/2011	11	0	11
OV	%	QCR02	K1101307-011	NM	02/15/2011	02/25/2011	02/25/2011	10	0	10
OV	%	QCR01	K1101307-006	NM	02/14/2011	02/24/2011	02/24/2011	10	0	10
OV	%	QCD03	K1101307-021	NM	02/15/2011	02/25/2011	02/25/2011	10	0	10
OV	%	QCD02	K1101307-010DL	NM	02/15/2011	02/25/2011	02/25/2011	10	0	10
OV	%	QCD02	K1101307-010	NM	02/15/2011	02/25/2011	02/25/2011	10	0	10
OV	%	QCD01	K1101307-016DL	NM	02/14/2011	02/25/2011	02/25/2011	11	0	11
OV	%	QCD01	K1101307-016	NM	02/14/2011	02/25/2011	02/25/2011	11	0	11
OV	%	MS46S	K1101307-014DL	NM	02/14/2011	02/24/2011	02/24/2011	10	0	10
OV	%	MS46S	K1101307-014	NM	02/14/2011	02/25/2011	02/25/2011	11	0	11
OV	%	MS45S	K1101307-018	NM	02/15/2011	02/25/2011	02/25/2011	10	0	10
OV	%	MS35I	K1101307-008	NM	02/15/2011	02/25/2011	02/25/2011	10	0	10

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
OV	%	AT05B	K1101307-004	NM	02/14/2011	02/25/2011	02/25/2011	11	0	11
OV	%	AT10	K1101307-003	NM	02/14/2011	02/25/2011	02/25/2011	11	0	11
OV	%	MS15IS	K1101307-019	NM	02/15/2011	02/25/2011	02/25/2011	10	0	10
OV	%	MS18S	K1101307-015	NM	02/14/2011	02/25/2011	02/25/2011	11	0	11
OV	%	MS18S	K1101307-015DL	NM	02/14/2011	02/25/2011	02/25/2011	11	0	11
OV	%	MS45S	K1101307-018DL	NM	02/15/2011	02/25/2011	02/25/2011	10	0	10
OV	%	MS35D	K1101307-002	NM	02/14/2011	02/24/2011	02/24/2011	10	0	10
OV	%	MS37S	K1101307-001	NM	02/14/2011	02/24/2011	02/24/2011	10	0	10
OV	%	MS37S	K1101307-001DL	NM	02/14/2011	02/24/2011	02/24/2011	10	0	10
OV	%	MS43I	K1101307-012	NM	02/14/2011	02/25/2011	02/25/2011	11	0	11
OV	%	MS44I	K1101307-020	NM	02/15/2011	02/25/2011	02/25/2011	10	0	10
OV	%	MS45I	K1101307-013	NM	02/14/2011	02/25/2011	02/25/2011	11	0	11
OV	%	MS34I	K1101307-009	NM	02/15/2011	02/25/2011	02/25/2011	10	0	10
OV	ug/L	AT05B	K1101307-004DL	NM	02/14/2011	02/24/2011	02/24/2011	10	0	10
OV	ug/L	AT05B	K1101307-004	NM	02/14/2011	02/25/2011	02/25/2011	11	0	11
OV	ug/L	AT03A	K1101307-005	NM	02/14/2011	02/25/2011	02/25/2011	11	0	11
OV	ug/L	MS44I	K1101307-020	NM	02/15/2011	02/25/2011	02/25/2011	10	0	10
OV	ug/L	QCT01	K1101307-017	NM	02/14/2011	02/25/2011	02/25/2011	11	0	11

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
OV	ug/L	QCR02	K1101307-011	NM	02/15/2011	02/25/2011	02/25/2011	10	0	10
OV	ug/L	QCR01	K1101307-006	NM	02/14/2011	02/24/2011	02/24/2011	10	0	10
OV	ug/L	QCD03	K1101307-021	NM	02/15/2011	02/25/2011	02/25/2011	10	0	10
OV	ug/L	QCD02	K1101307-010DL	NM	02/15/2011	02/25/2011	02/25/2011	10	0	10
OV	ug/L	QCD02	K1101307-010	NM	02/15/2011	02/25/2011	02/25/2011	10	0	10
OV	ug/L	QCD01	K1101307-016DL	NM	02/14/2011	02/25/2011	02/25/2011	11	0	11
OV	ug/L	QCD01	K1101307-016	NM	02/14/2011	02/25/2011	02/25/2011	11	0	11
OV	ug/L	MS46S	K1101307-014DL	NM	02/14/2011	02/24/2011	02/24/2011	10	0	10
OV	ug/L	MS46S	K1101307-014	NM	02/14/2011	02/25/2011	02/25/2011	11	0	11
OV	ug/L	MS45S	K1101307-018DL	NM	02/15/2011	02/25/2011	02/25/2011	10	0	10
OV	ug/L	MS45S	K1101307-018	NM	02/15/2011	02/25/2011	02/25/2011	10	0	10
OV	ug/L	MS45I	K1101307-013DL	NM	02/14/2011	02/25/2011	02/25/2011	11	0	11
OV	ug/L	AT03A	K1101307-005DL	NM	02/14/2011	02/24/2011	02/24/2011	10	0	10
OV	ug/L	MS35D	K1101307-002	NM	02/14/2011	02/24/2011	02/24/2011	10	0	10
OV	ug/L	AT10	K1101307-003	NM	02/14/2011	02/25/2011	02/25/2011	11	0	11
OV	ug/L	AT10	K1101307-003DL	NM	02/14/2011	02/24/2011	02/24/2011	10	0	10
OV	ug/L	MS15IS	K1101307-019	NM	02/15/2011	02/25/2011	02/25/2011	10	0	10
OV	ug/L	MS18S	K1101307-015	NM	02/14/2011	02/25/2011	02/25/2011	11	0	11

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
OV	ug/L	MS18S	K1101307-015DL	NM	02/14/2011	02/25/2011	02/25/2011	11	0	11
OV	ug/L	MS45I	K1101307-013	NM	02/14/2011	02/25/2011	02/25/2011	11	0	11
OV	ug/L	MS34I	K1101307-009DL	NM	02/15/2011	02/25/2011	02/25/2011	10	0	10
OV	ug/L	MS44I	K1101307-020DL	NM	02/15/2011	02/25/2011	02/25/2011	10	0	10
OV	ug/L	MS35I	K1101307-008	NM	02/15/2011	02/25/2011	02/25/2011	10	0	10
OV	ug/L	MS35I	K1101307-008DL	NM	02/15/2011	02/25/2011	02/25/2011	10	0	10
OV	ug/L	MS37S	K1101307-001	NM	02/14/2011	02/24/2011	02/24/2011	10	0	10
OV	ug/L	MS37S	K1101307-001DL	NM	02/14/2011	02/24/2011	02/24/2011	10	0	10
OV	ug/L	MS43I	K1101307-012	NM	02/14/2011	02/25/2011	02/25/2011	11	0	11
OV	ug/L	QCT02	K1101307-007	NM	02/14/2011	02/24/2011	02/24/2011	10	0	10
OV	ug/L	MS34I	K1101307-009	NM	02/15/2011	02/25/2011	02/25/2011	10	0	10

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1101307
Date Analyzed: 01/03/2011
Time Analyzed: 18:06

Tune Summary
Volatile Organic Compounds

File ID: J:\MS04\DATA\010311\0103F012.D
Instrument ID: MS04
Column:

Analysis Method: 8260C
Analysis Lot: KWG1101984

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	19.9	13795	PASS
75	95	30	60	45.3	31480	PASS
95	95	100	100	100.0	69477	PASS
96	95	5	9	7.2	4969	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	84.3	58570	PASS
175	174	5	9	7.6	4466	PASS
176	174	95	101	95.1	55725	PASS
177	176	5	9	6.7	3726	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Initial Calibration	KWG1101984-2	J:\MS04\DATA\010311\0103F015.D	01/03/2011	19:47	
Initial Calibration	KWG1101984-3	J:\MS04\DATA\010311\0103F017.D	01/03/2011	20:53	
Initial Calibration	KWG1101984-4	J:\MS04\DATA\010311\0103F018.D	01/03/2011	21:26	
Initial Calibration	KWG1101984-5	J:\MS04\DATA\010311\0103F019.D	01/03/2011	21:59	
Initial Calibration	KWG1101984-6	J:\MS04\DATA\010311\0103F020.D	01/03/2011	22:32	
Initial Calibration	KWG1101984-7	J:\MS04\DATA\010311\0103F021.D	01/03/2011	23:05	
Initial Calibration	KWG1101984-8	J:\MS04\DATA\010311\0103F022.D	01/03/2011	23:38	
Initial Calibration	KWG1101984-9	J:\MS04\DATA\010311\0103F023.D	01/04/2011	00:10	
Initial Calibration	KWG1101984-10	J:\MS04\DATA\010311\0103F024.D	01/04/2011	00:43	
Initial Calibration	KWG1101984-11	J:\MS04\DATA\010311\0103F025.D	01/04/2011	01:16	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1101307
Date Analyzed: 01/04/2011
Time Analyzed: 09:01

Tune Summary
Volatile Organic Compounds

File ID: J:\MS04\DATA\010411\0104F002.D
Instrument ID: MS04
Column:

Analysis Method: 8260C
Analysis Lot: KWG1101984

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	19.3	12296	PASS
75	95	30	60	44.8	28549	PASS
95	95	100	100	100.0	63784	PASS
96	95	5	9	7.3	4668	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	85.2	54322	PASS
175	174	5	9	7.7	4200	PASS
176	174	95	101	95.7	52000	PASS
177	176	5	9	6.7	3461	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Initial Calibration	KWG1101984-13	J:\MS04\DATA\010411\0104F009.D	01/04/2011	14:44	
Initial Calibration	KWG1101984-15	J:\MS04\DATA\010411\0104F013.D	01/04/2011	16:58	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1101307
Calibration Date: 01/03/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10195
Instrument ID: MS04

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Vinyl Chloride	MS	AverageRF	% RSD	13.7		≤ 20	0.347		0.100
1,1-Dichloroethene	MS	AverageRF	% RSD	13.4		≤ 20	0.218		0.100
Methylene Chloride	MS	AverageRF	% RSD	12.4		≤ 20	0.329		0.100
trans-1,2-Dichloroethene	MS	AverageRF	% RSD	10.2		≤ 20	0.287		0.100
1,1-Dichloroethane	MS	AverageRF	% RSD	6.5		≤ 20	0.519		0.200
cis-1,2-Dichloroethene	MS	AverageRF	% RSD	6.7		≤ 20	0.315		0.100
1,1,1-Trichloroethane (TCA)	MS	AverageRF	% RSD	11.0		≤ 20	0.309		0.100
Trichloroethene (TCE)	MS	AverageRF	% RSD	9.8		≤ 20	0.249		0.200
Tetrachloroethene (PCE)	MS	AverageRF	% RSD	11.8		≤ 20	0.294		0.200
Dibromofluoromethane	SURR	AverageRF	% RSD	5.0		≤ 20	0.247		0.01
Toluene-d8	SURR	AverageRF	% RSD	7.5		≤ 20	0.749		0.01
4-Bromofluorobenzene	SURR	AverageRF	% RSD	5.7		≤ 20	0.397		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1101307
Calibration Date: 01/03/2011
Date Analyzed: 01/04/2011

Second Source Calibration Verification
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration ID: CAL10195
Units: PPB

File ID: J:\MS04\DATA\010411\0104F012.D
J:\MS04\DATA\010411\0104F013.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	9.5	0.347	0.330	-5	NA	± 30 %	AverageRF
1,1-Dichloroethene	10	11	0.218	0.230	6	NA	± 30 %	AverageRF
Methylene Chloride	10	9.3	0.329	0.305	-7	NA	± 30 %	AverageRF
trans-1,2-Dichloroethene	10	10	0.287	0.289	1	NA	± 30 %	AverageRF
1,1-Dichloroethane	10	9.8	0.519	0.509	-2	NA	± 30 %	AverageRF
cis-1,2-Dichloroethene	10	9.4	0.315	0.298	-6	NA	± 30 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	10	0.309	0.322	4	NA	± 30 %	AverageRF
Trichloroethene (TCE)	10	11	0.249	0.263	5	NA	± 30 %	AverageRF
Tetrachloroethene (PCE)	10	11	0.294	0.311	6	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1101307
Date Analyzed: 02/24/2011
Time Analyzed: 15:14

Tune Summary
Volatile Organic Compounds

File ID: J:\MS04\DATA\022411\0224F010.D
Instrument ID: MS04
Column:

Analysis Method: 8260C
Analysis Lot: KWG1101731

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	17.4	11400	PASS
75	95	30	60	43.2	28378	PASS
95	95	100	100	100.0	65698	PASS
96	95	5	9	6.8	4445	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	91.6	60168	PASS
175	174	5	9	7.8	4719	PASS
176	174	95	101	97.2	58461	PASS
177	176	5	9	6.5	3810	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1101731-2	J:\MS04\DATA\022411\0224F011.D	02/24/2011	15:50	
Lab Control Sample	KWG1101734-3	J:\MS04\DATA\022411\0224F012.D	02/24/2011	16:23	
MS37SMS	KWG1101734-1	J:\MS04\DATA\022411\0224F013.D	02/24/2011	16:56	
MS37SDMS	KWG1101734-2	J:\MS04\DATA\022411\0224F014.D	02/24/2011	17:29	
Method Blank	KWG1101734-4	J:\MS04\DATA\022411\0224F016.D	02/24/2011	18:35	
QCT02	K1101307-007	J:\MS04\DATA\022411\0224F017.D	02/24/2011	19:09	
MS35D	K1101307-002	J:\MS04\DATA\022411\0224F018.D	02/24/2011	19:41	
QCR01	K1101307-006	J:\MS04\DATA\022411\0224F019.D	02/24/2011	20:15	
MS37SDL	K1101307-001	J:\MS04\DATA\022411\0224F020.D	02/24/2011	20:48	
MS37S	K1101307-001	J:\MS04\DATA\022411\0224F021.D	02/24/2011	21:21	
AT10DL	K1101307-003	J:\MS04\DATA\022411\0224F022.D	02/24/2011	21:54	
AT05BDL	K1101307-004	J:\MS04\DATA\022411\0224F023.D	02/24/2011	22:26	
AT03ADL	K1101307-005	J:\MS04\DATA\022411\0224F024.D	02/24/2011	22:59	
MS46SDL	K1101307-014	J:\MS04\DATA\022411\0224F025.D	02/24/2011	23:32	
QCD01	K1101307-016	J:\MS04\DATA\022411\0224F026.D	02/25/2011	00:05	
MS45I	K1101307-013	J:\MS04\DATA\022411\0224F027.D	02/25/2011	00:38	
AT10	K1101307-003	J:\MS04\DATA\022411\0224F028.D	02/25/2011	01:10	
AT05B	K1101307-004	J:\MS04\DATA\022411\0224F029.D	02/25/2011	01:43	
AT03A	K1101307-005	J:\MS04\DATA\022411\0224F030.D	02/25/2011	02:16	
MS46S	K1101307-014	J:\MS04\DATA\022411\0224F031.D	02/25/2011	02:48	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1101307
Date Analyzed: 02/24/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration Date: 01/03/2011
Calibration ID: CAL10195
Analysis Lot: KWG1101731
Units: PPB

File ID: J:\MS04\DATA\022411\0224F011.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	11	0.100	0.347	0.387	12	NA	± 20 %	AverageRF
1,1-Dichloroethene	10	11	0.100	0.218	0.239	10	NA	± 20 %	AverageRF
Methylene Chloride	10	8.8	0.100	0.329	0.290	-12	NA	± 20 %	AverageRF
trans-1,2-Dichloroethene	10	9.9	0.100	0.287	0.283	-1	NA	± 20 %	AverageRF
1,1-Dichloroethane	10	9.2	0.200	0.519	0.478	-8	NA	± 20 %	AverageRF
cis-1,2-Dichloroethene	10	9.6	0.100	0.315	0.302	-4	NA	± 20 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	11	0.100	0.309	0.328	6	NA	± 20 %	AverageRF
Trichloroethene (TCE)	10	11	0.200	0.249	0.266	6	NA	± 20 %	AverageRF
Tetrachloroethene (PCE)	10	11	0.200	0.294	0.326	11	NA	± 20 %	AverageRF
Dibromofluoromethane	10	10	0.01	0.247	0.259	5	NA	± 20 %	AverageRF
Toluene-d8	10	12	0.01	0.749	0.910	22 *	NA	± 20 %	AverageRF
4-Bromofluorobenzene	10	10	0.01	0.397	0.414	4	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1101307
Project:	NIROP/J070047	**Date Extracted:**	02/24/2011
Sample Matrix:	Water	**Date Analyzed:**	02/24/2011
		Time Analyzed:	18:35

Method Blank Summary
Volatile Organic Compounds

Sample Name:	Method Blank	**File ID:**	J:\MS04\DATA\022411\0224F016.D
Lab Code:	KWG1101734-4	**Instrument ID:**	MS04
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C	**Extraction Lot:**	KWG1101734

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1101734-3	J:\MS04\DATA\022411\0224F012.D	02/24/11	16:23
MS37SMS	KWG1101734-1	J:\MS04\DATA\022411\0224F013.D	02/24/11	16:56
MS37SDMS	KWG1101734-2	J:\MS04\DATA\022411\0224F014.D	02/24/11	17:29
QCT02	K1101307-007	J:\MS04\DATA\022411\0224F017.D	02/24/11	19:09
MS35D	K1101307-002	J:\MS04\DATA\022411\0224F018.D	02/24/11	19:41
QCR01	K1101307-006	J:\MS04\DATA\022411\0224F019.D	02/24/11	20:15
MS37SDL	K1101307-001	J:\MS04\DATA\022411\0224F020.D	02/24/11	20:48
MS37S	K1101307-001	J:\MS04\DATA\022411\0224F021.D	02/24/11	21:21
AT10DL	K1101307-003	J:\MS04\DATA\022411\0224F022.D	02/24/11	21:54
AT05BDL	K1101307-004	J:\MS04\DATA\022411\0224F023.D	02/24/11	22:26
AT03ADL	K1101307-005	J:\MS04\DATA\022411\0224F024.D	02/24/11	22:59
MS46SDL	K1101307-014	J:\MS04\DATA\022411\0224F025.D	02/24/11	23:32
QCD01	K1101307-016	J:\MS04\DATA\022411\0224F026.D	02/25/11	00:05
MS45I	K1101307-013	J:\MS04\DATA\022411\0224F027.D	02/25/11	00:38
AT10	K1101307-003	J:\MS04\DATA\022411\0224F028.D	02/25/11	01:10
AT05B	K1101307-004	J:\MS04\DATA\022411\0224F029.D	02/25/11	01:43
AT03A	K1101307-005	J:\MS04\DATA\022411\0224F030.D	02/25/11	02:16
MS46S	K1101307-014	J:\MS04\DATA\022411\0224F031.D	02/25/11	02:48

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101307
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	02/24/2011
		Date Analyzed:	02/24/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1101734-4	**Basis:**	NA
File ID:	J:\MS04\DATA\022411\0224F016.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101734
Analysis Method:	8260C	**Calibration ID:**	CAL10195

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
75-09-2	Methylene Chloride	0.10	U	2.0	0.10	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	110	73-122	02/24/11	Acceptable
Toluene-d8	121	78-129	02/24/11	Acceptable
4-Bromofluorobenzene	106	68-117	02/24/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1101307
Project:	NIROP/J070047	**Date Extracted:**	02/24/2011
Sample Matrix:	Water	**Date Analyzed:**	02/24/2011

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	EPA 5030B	**Units:**	ug/L
Analysis Method:	8260C	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1101734

	Lab Control Sample KWG1101734-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Vinyl Chloride	11.2	10.0	112	59-135
1,1-Dichloroethene	11.1	10.0	111	70-136
Methylene Chloride	9.49	10.0	95	64-137
trans-1,2-Dichloroethene	10.6	10.0	106	70-121
1,1-Dichloroethane	9.93	10.0	99	72-122
cis-1,2-Dichloroethene	10.0	10.0	100	76-125
1,1,1-Trichloroethane (TCA)	10.7	10.0	107	65-126
Trichloroethene (TCE)	11.8	10.0	118	71-122
Tetrachloroethene (PCE)	11.2	10.0	112	65-121

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1101307
Date Analyzed: 01/13/2011
Time Analyzed: 10:20

Tune Summary
Volatile Organic Compounds

File ID: J:\MS18\DATA\011311\0113F008.D
Instrument ID: GC-MS 18
Column:

Analysis Method: 8260C
Analysis Lot: KWG1101987

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	18.1	9157	PASS
75	95	30	60	48.3	24488	PASS
95	95	100	100	100.0	50714	PASS
96	95	5	9	7.1	3580	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	87.1	44160	PASS
175	174	5	9	8.0	3546	PASS
176	174	95	101	95.5	42160	PASS
177	176	5	9	6.9	2891	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Initial Calibration	KWG1101987-2	J:\MS18\DATA\011311\0113F011.D	01/13/2011	11:27	
Initial Calibration	KWG1101987-3	J:\MS18\DATA\011311\0113F012.D	01/13/2011	11:48	
Initial Calibration	KWG1101987-4	J:\MS18\DATA\011311\0113F013.D	01/13/2011	12:09	
Initial Calibration	KWG1101987-5	J:\MS18\DATA\011311\0113F014.D	01/13/2011	12:30	
Initial Calibration	KWG1101987-6	J:\MS18\DATA\011311\0113F015.D	01/13/2011	12:51	
Initial Calibration	KWG1101987-7	J:\MS18\DATA\011311\0113F016.D	01/13/2011	13:13	
Initial Calibration	KWG1101987-8	J:\MS18\DATA\011311\0113F017.D	01/13/2011	13:34	
Initial Calibration	KWG1101987-9	J:\MS18\DATA\011311\0113F018.D	01/13/2011	13:55	
Initial Calibration	KWG1101987-10	J:\MS18\DATA\011311\0113F019.D	01/13/2011	14:16	
Initial Calibration	KWG1101987-11	J:\MS18\DATA\011311\0113F020.D	01/13/2011	14:37	
Initial Calibration	KWG1101987-12	J:\MS18\DATA\011311\0113F021.D	01/13/2011	14:58	
Initial Calibration Verification	KWG1101987-13	J:\MS18\DATA\011311\0113F025.D	01/13/2011	16:23	
Initial Calibration	KWG1101987-14	J:\MS18\DATA\011311\0113F031.D	01/13/2011	18:29	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1101307
Calibration Date: 01/13/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10226
Instrument ID: GC-MS 18

Column: MS

		Calibration Evaluation					RRF Evaluation		
Analyte Name	Compound Type	Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Vinyl Chloride	MS	AverageRF	% RSD	10.5		≤ 20	0.356		0.100
1,1-Dichloroethene	MS	AverageRF	% RSD	8.4		≤ 20	0.219		0.100
Methylene Chloride	MS	AverageRF	% RSD	9.3		≤ 20	0.287		0.100
trans-1,2-Dichloroethene	MS	AverageRF	% RSD	6.1		≤ 20	0.266		0.100
1,1-Dichloroethane	MS	AverageRF	% RSD	5.2		≤ 20	0.461		0.200
cis-1,2-Dichloroethene	MS	AverageRF	% RSD	4.8		≤ 20	0.295		0.100
1,1,1-Trichloroethane (TCA)	MS	AverageRF	% RSD	10.8		≤ 20	0.366		0.100
Trichloroethene (TCE)	MS	AverageRF	% RSD	6.8		≤ 20	0.264		0.200
Tetrachloroethene (PCE)	MS	AverageRF	% RSD	6.5		≤ 20	0.553		0.200
Dibromofluoromethane	SURR	AverageRF	% RSD	4.8		≤ 20	0.245		0.01
Toluene-d8	SURR	AverageRF	% RSD	5.9		≤ 20	1.06		0.01
4-Bromofluorobenzene	SURR	AverageRF	% RSD	3.9		≤ 20	1.04		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1101307
Calibration Date: 01/13/2011
Date Analyzed: 01/13/2011

Second Source Calibration Verification
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration ID: CAL10226
Units: PPB

File ID: J:\MS18\DATA\011311\0113F025.D
J:\MS18\DATA\011311\0113F031.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	10	0.356	0.364	2	NA	± 30 %	AverageRF
1,1-Dichloroethene	10	11	0.219	0.245	12	NA	± 30 %	AverageRF
Methylene Chloride	10	10	0.287	0.298	4	NA	± 30 %	AverageRF
trans-1,2-Dichloroethene	10	11	0.266	0.283	6	NA	± 30 %	AverageRF
1,1-Dichloroethane	10	11	0.461	0.486	5	NA	± 30 %	AverageRF
cis-1,2-Dichloroethene	10	11	0.295	0.309	5	NA	± 30 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	11	0.366	0.410	12	NA	± 30 %	AverageRF
Trichloroethene (TCE)	10	11	0.264	0.295	12	NA	± 30 %	AverageRF
Tetrachloroethene (PCE)	10	11	0.553	0.601	9	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1101307
Date Analyzed: 02/25/2011
Time Analyzed: 09:10

Tune Summary
Volatile Organic Compounds

File ID: J:\MS18\DATA\022511\0225F002.D
Instrument ID: GC-MS 18
Column:

Analysis Method: 8260C
Analysis Lot: KWG1101744

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	16.5	6650	PASS
75	95	30	60	45.1	18186	PASS
95	95	100	100	100.0	40285	PASS
96	95	5	9	6.8	2751	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	83.2	33498	PASS
175	174	5	9	7.3	2457	PASS
176	174	95	101	95.4	31949	PASS
177	176	5	9	6.3	2019	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1101744-2	J:\MS18\DATA\022511\0225F003.D	02/25/2011	09:35	
Lab Control Sample	KWG1101763-3	J:\MS18\DATA\022511\0225F004.D	02/25/2011	10:09	
MS43IMS	KWG1101763-1	J:\MS18\DATA\022511\0225F005.D	02/25/2011	10:48	
MS43IDMS	KWG1101763-2	J:\MS18\DATA\022511\0225F006.D	02/25/2011	11:08	
Method Blank	KWG1101763-4	J:\MS18\DATA\022511\0225F009.D	02/25/2011	12:11	
QCT01	K1101307-017	J:\MS18\DATA\022511\0225F010.D	02/25/2011	12:32	
MS43I	K1101307-012	J:\MS18\DATA\022511\0225F012.D	02/25/2011	13:14	
QCR02	K1101307-011	J:\MS18\DATA\022511\0225F013.D	02/25/2011	13:35	
MS15IS	K1101307-019	J:\MS18\DATA\022511\0225F014.D	02/25/2011	13:56	
QCD03	K1101307-021	J:\MS18\DATA\022511\0225F015.D	02/25/2011	14:17	
MS45IDL	K1101307-013	J:\MS18\DATA\022511\0225F020.D	02/25/2011	16:02	
QCD01DL	K1101307-016	J:\MS18\DATA\022511\0225F021.D	02/25/2011	16:23	
MS18SDL	K1101307-015	J:\MS18\DATA\022511\0225F022.D	02/25/2011	16:44	
MS35IDL	K1101307-008	J:\MS18\DATA\022511\0225F023.D	02/25/2011	17:05	
MS34IDL	K1101307-009	J:\MS18\DATA\022511\0225F024.D	02/25/2011	17:26	
QCD02DL	K1101307-010	J:\MS18\DATA\022511\0225F025.D	02/25/2011	17:47	
MS45SDL	K1101307-018	J:\MS18\DATA\022511\0225F026.D	02/25/2011	18:08	
MS44IDL	K1101307-020	J:\MS18\DATA\022511\0225F027.D	02/25/2011	18:29	
MS18S	K1101307-015	J:\MS18\DATA\022511\0225F029.D	02/25/2011	19:11	
MS35I	K1101307-008	J:\MS18\DATA\022511\0225F030.D	02/25/2011	19:32	
MS34I	K1101307-009	J:\MS18\DATA\022511\0225F031.D	02/25/2011	19:53	
QCD02	K1101307-010	J:\MS18\DATA\022511\0225F032.D	02/25/2011	20:13	
MS45S	K1101307-018	J:\MS18\DATA\022511\0225F033.D	02/25/2011	20:34	
MS44I	K1101307-020	J:\MS18\DATA\022511\0225F034.D	02/25/2011	20:55	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1101307
Date Analyzed: 02/25/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration Date: 01/13/2011
Calibration ID: CAL10226
Analysis Lot: KWG1101744
Units: PPB

File ID: J:\MS18\DATA\022511\0225F003.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	8.8	0.100	0.356	0.312	-12	NA	± 20 %	AverageRF
1,1-Dichloroethene	10	8.6	0.100	0.219	0.188	-14	NA	± 20 %	AverageRF
Methylene Chloride	10	9.9	0.100	0.287	0.285	-1	NA	± 20 %	AverageRF
trans-1,2-Dichloroethene	10	9.4	0.100	0.266	0.248	-7	NA	± 20 %	AverageRF
1,1-Dichloroethane	10	9.4	0.200	0.461	0.431	-7	NA	± 20 %	AverageRF
cis-1,2-Dichloroethene	10	10	0.100	0.295	0.297	1	NA	± 20 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	7.8	0.100	0.366	0.286	-22 *	NA	± 20 %	AverageRF
Trichloroethene (TCE)	10	9.3	0.200	0.264	0.246	-7	NA	± 20 %	AverageRF
Tetrachloroethene (PCE)	10	9.7	0.200	0.553	0.539	-3	NA	± 20 %	AverageRF
Dibromofluoromethane	10	8.4	0.01	0.245	0.206	-16	NA	± 20 %	AverageRF
Toluene-d8	10	9.4	0.01	1.06	0.993	-6	NA	± 20 %	AverageRF
4-Bromofluorobenzene	10	9.0	0.01	1.04	0.936	-10	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1101307
Date Extracted: 02/25/2011
Date Analyzed: 02/25/2011

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1101763

Analyte Name	Lab Control Sample KWG1101763-3 Lab Control Spike Result	Expected	%Rec	%Rec Limits
Vinyl Chloride	9.72	10.0	97	59-135
1,1-Dichloroethene	10.5	10.0	105	70-136
Methylene Chloride	11.1	10.0	111	64-137
trans-1,2-Dichloroethene	10.8	10.0	108	70-121
1,1-Dichloroethane	10.5	10.0	105	72-122
cis-1,2-Dichloroethene	10.7	10.0	107	76-125
1,1,1-Trichloroethane (TCA)	8.50	10.0	85	65-126
Trichloroethene (TCE)	10.6	10.0	106	71-122
Tetrachloroethene (PCE)	10.6	10.0	106	65-121

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1101307
Date Extracted: 02/25/2011
Date Analyzed: 02/25/2011
Time Analyzed: 12:11

Method Blank Summary
Volatile Organic Compounds

Sample Name: Method Blank
Lab Code: KWG1101763-4

Extraction Method: EPA 5030B
Analysis Method: 8260C

File ID: J:\MS18\DATA\022511\0225F009.D
Instrument ID: GC-MS 18

Level: Low
Extraction Lot: KWG1101763

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1101763-3	J:\MS18\DATA\022511\0225F004.D	02/25/11	10:09
MS43IMS	KWG1101763-1	J:\MS18\DATA\022511\0225F005.D	02/25/11	10:48
MS43IDMS	KWG1101763-2	J:\MS18\DATA\022511\0225F006.D	02/25/11	11:08
QCT01	K1101307-017	J:\MS18\DATA\022511\0225F010.D	02/25/11	12:32
MS43I	K1101307-012	J:\MS18\DATA\022511\0225F012.D	02/25/11	13:14
QCR02	K1101307-011	J:\MS18\DATA\022511\0225F013.D	02/25/11	13:35
MS15IS	K1101307-019	J:\MS18\DATA\022511\0225F014.D	02/25/11	13:56
QCD03	K1101307-021	J:\MS18\DATA\022511\0225F015.D	02/25/11	14:17
MS45IDL	K1101307-013	J:\MS18\DATA\022511\0225F020.D	02/25/11	16:02
QCD01DL	K1101307-016	J:\MS18\DATA\022511\0225F021.D	02/25/11	16:23
MS18SDL	K1101307-015	J:\MS18\DATA\022511\0225F022.D	02/25/11	16:44
MS35IDL	K1101307-008	J:\MS18\DATA\022511\0225F023.D	02/25/11	17:05
MS34IDL	K1101307-009	J:\MS18\DATA\022511\0225F024.D	02/25/11	17:26
QCD02DL	K1101307-010	J:\MS18\DATA\022511\0225F025.D	02/25/11	17:47
MS45SDL	K1101307-018	J:\MS18\DATA\022511\0225F026.D	02/25/11	18:08
MS44IDL	K1101307-020	J:\MS18\DATA\022511\0225F027.D	02/25/11	18:29
MS18S	K1101307-015	J:\MS18\DATA\022511\0225F029.D	02/25/11	19:11
MS35I	K1101307-008	J:\MS18\DATA\022511\0225F030.D	02/25/11	19:32
MS34I	K1101307-009	J:\MS18\DATA\022511\0225F031.D	02/25/11	19:53
QCD02	K1101307-010	J:\MS18\DATA\022511\0225F032.D	02/25/11	20:13
MS45S	K1101307-018	J:\MS18\DATA\022511\0225F033.D	02/25/11	20:34
MS44I	K1101307-020	J:\MS18\DATA\022511\0225F034.D	02/25/11	20:55

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101307
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	02/25/2011
		Date Analyzed:	02/25/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1101763-4	**Basis:**	NA
File ID:	J:\MS18\DATA\022511\0225F009.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101763
Analysis Method:	8260C	**Calibration ID:**	CAL10226

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
75-09-2	Methylene Chloride	**0.10**	J	2.0	0.10	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	*
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	81	73-122	02/25/11	Acceptable
Toluene-d8	87	78-129	02/25/11	Acceptable
4-Bromofluorobenzene	79	68-117	02/25/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1101307

Surrogate Recovery Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
MS37S	K1101307-001	109	125	100
MS37SDL	K1101307-001	109	121	102
MS35D	K1101307-002	107	122	103
AT10DL	K1101307-003	111	124	110
AT10	K1101307-003	110	116	98
AT05BDL	K1101307-004	114	123	99
AT05B	K1101307-004	110	122	101
AT03ADL	K1101307-005	109	121	100
AT03A	K1101307-005	110	127	99
QCR01	K1101307-006	113	119	103
QCT02	K1101307-007	107	124	104
MS35IDL	K1101307-008	84	88	78
MS35I	K1101307-008	87	89	79
MS34IDL	K1101307-009	85	89	79
MS34I	K1101307-009	86	88	77
QCD02DL	K1101307-010	85	89	79
QCD02	K1101307-010	86	90	78
QCR02	K1101307-011	82	88	80
MS43I	K1101307-012	82	88	79
MS45IDL	K1101307-013	84	89	78
MS45I	K1101307-013	109	119	96
MS46S	K1101307-014	107	121	96
MS46SDL	K1101307-014	109	121	100
MS18SDL	K1101307-015	84	89	79
MS18S	K1101307-015	86	89	78
QCD01DL	K1101307-016	85	89	79
QCD01	K1101307-016	110	127	96
QCT01	K1101307-017	82	87	79
MS45SDL	K1101307-018	85	89	78
MS45S	K1101307-018	86	89	78
MS15IS	K1101307-019	83	89	80
MS44I	K1101307-020	89	89	76
MS44IDL	K1101307-020	85	88	77
QCD03	K1101307-021	83	90	79
Method Blank	KWG1101734-4	110	121	106

Surrogate Recovery Control Limits (%)

Sur1 =	Dibromofluoromethane	73-122
Sur2 =	Toluene-d8	78-129
Sur3 =	4-Bromofluorobenzene	68-117

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1101307

Surrogate Recovery Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
Method Blank	KWG1101763-4	81	87	79
MS37SMS	KWG1101734-1	109	121	104
MS37SDMS	KWG1101734-2	105	122	104
MS43IMS	KWG1101763-1	85	93	86
MS43IDMS	KWG1101763-2	85	92	88
Lab Control Sample	KWG1101734-3	105	119	107
Lab Control Sample	KWG1101763-3	85	94	86

Surrogate Recovery Control Limits (%)

Sur1 =	Dibromofluoromethane	73-122
Sur2 =	Toluene-d8	78-129
Sur3 =	4-Bromofluorobenzene	68-117

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1101307
Project:	NIROP/J070047	**Date Extracted:**	02/24/2011
Sample Matrix:	Water	**Date Analyzed:**	02/24/2011

Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organic Compounds

Sample Name:	MS37S	**Units:**	ug/L
Lab Code:	K1101307-001	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C	**Extraction Lot:**	KWG1101734

		MS37SMS KWG1101734-1 Matrix Spike			MS37SDMS KWG1101734-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Vinyl Chloride	0.67	47.1	50.0	93	41.8	50.0	82	52-151	12	30
1,1-Dichloroethene	2.7	47.7	50.0	90	43.5	50.0	82	67-147	9	30
Methylene Chloride	ND	43.9	50.0	88	40.8	50.0	82	62-136	7	30
trans-1,2-Dichloroethene	93	132	50.0	78	119	50.0	51 *	69-128	11	30
1,1-Dichloroethane	1.4	44.6	50.0	86	40.1	50.0	77	67-130	11	30
cis-1,2-Dichloroethene	46	88.7	50.0	86	79.1	50.0	67 *	68-134	11	30
1,1,1-Trichloroethane (TCA)	ND	46.4	50.0	93	40.9	50.0	82	63-137	12	30
Trichloroethene (TCE)	23	69.1	50.0	91	64.5	50.0	82	56-137	7	30
Tetrachloroethene (PCE)	ND	46.8	50.0	94	44.1	50.0	88	60-128	6	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1101307
Date Extracted: 02/25/2011
Date Analyzed: 02/25/2011

Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organic Compounds

Sample Name: MS43I
Lab Code: K1101307-012

Extraction Method: EPA 5030B
Analysis Method: 8260C

Units: ug/L
Basis: NA

Level: Low
Extraction Lot: KWG1101763

Analyte Name	Sample Result	MS43IMS KWG1101763-1 Matrix Spike			MS43IDMS KWG1101763-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
Vinyl Chloride	0.080	9.16	10.0	91	9.60	10.0	95	52-151	5	30
1,1-Dichloroethene	0.37	9.96	10.0	96	10.5	10.0	101	67-147	5	30
Methylene Chloride	ND	10.0	10.0	100	10.6	10.0	106	62-136	6	30
trans-1,2-Dichloroethene	1.0	10.8	10.0	98	11.4	10.0	104	69-128	6	30
1,1-Dichloroethane	1.0	10.5	10.0	94	11.2	10.0	102	67-130	7	30
cis-1,2-Dichloroethene	30	35.2	10.0	52 *	38.2	10.0	82	68-134	8	30
1,1,1-Trichloroethane (TCA)	ND	7.83	10.0	78	8.43	10.0	84	63-137	7	30
Trichloroethene (TCE)	36	38.7	10.0	26 *	41.7	10.0	57	56-137	8	30
Tetrachloroethene (PCE)	ND	9.66	10.0	97	10.9	10.0	109	60-128	12	30

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.
Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1101307
Date Analyzed: 02/24/2011
Time Analyzed: 15:50

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID: J:\MS04\DATA\022411\0224F011.D
Instrument ID: MS04
Analysis Method: 8260C

Lab Code: KWG1101731-2
Analysis Lot: KWG1101731

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	1,084,673	12.83	786,023	17.16	374,970	19.82
	Upper Limit ==>	2,169,346	13.33	1,572,046	17.66	749,940	20.32
	Lower Limit ==>	542,337	12.33	393,012	16.66	187,485	19.32
	ICAL Result ==>	1,168,807	12.81	775,603	17.14	367,028	19.80
Associated Analyses							
Lab Control Sample	KWG1101734-3	1,103,459	12.83	801,019	17.15	379,544	19.82
MS37SMS	KWG1101734-1	1,072,417	12.83	787,280	17.15	374,517	19.81
MS37SDMS	KWG1101734-2	1,086,120	12.82	791,788	17.15	380,891	19.81
Method Blank	KWG1101734-4	996,340	12.82	736,033	17.15	353,970	19.81
QCT02	K1101307-007	1,013,475	12.82	750,434	17.15	353,250	19.81
MS35D	K1101307-002	1,039,751	12.83	756,154	17.15	358,568	19.82
QCR01	K1101307-006	1,012,299	12.82	729,760	17.15	346,461	19.81
MS37SDL	K1101307-001	984,318	12.83	730,456	17.15	352,251	19.81
MS37S	K1101307-001	1,011,938	12.82	761,873	17.15	349,341	19.81
AT10DL	K1101307-003	1,033,704	12.82	692,187	17.14	344,854	19.81
AT05BDL	K1101307-004	1,037,049	12.82	761,976	17.15	361,120	19.81
AT03ADL	K1101307-005	984,202	12.82	732,148	17.15	348,268	19.81
MS46SDL	K1101307-014	1,048,651	12.82	760,420	17.15	349,185	19.81
QCD01	K1101307-016	975,093	12.82	741,150	17.15	337,418	19.81
MS45I	K1101307-013	1,018,858	12.82	714,495	17.15	332,691	19.81
AT10	K1101307-003	1,023,143	12.82	718,321	17.16	339,080	19.81
AT05B	K1101307-004	980,294	12.82	749,870	17.15	344,675	19.81
AT03A	K1101307-005	979,518	12.82	740,634	17.15	341,069	19.81
MS46S	K1101307-014	1,010,584	12.83	731,559	17.15	337,102	19.81

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1101307
Date Analyzed: 02/25/2011
Time Analyzed: 09:35

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID: J:\MS18\DATA\022511\0225F003.D
Instrument ID: GC-MS 18
Analysis Method: 8260C

Lab Code: KWG1101744-2
Analysis Lot: KWG1101744

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	401,867	5.87	159,633	9.29	162,910	11.70
	Upper Limit ==>	803,734	6.37	319,266	9.79	325,820	12.20
	Lower Limit ==>	200,934	5.37	79,817	8.79	81,455	11.20
	ICAL Result ==>	387,339	5.87	157,373	9.28	159,933	11.69
Associated Analyses							
Lab Control Sample	KWG1101763-3	364,512	5.87	148,111	9.29	150,737	11.70
MS43IMS	KWG1101763-1	411,132	5.87	169,223	9.29	169,954	11.70
MS43IDMS	KWG1101763-2	381,147	5.87	154,852	9.29	156,856	11.70
Method Blank	KWG1101763-4	362,212	5.87	144,955	9.29	141,439	11.70
QCT01	K1101307-017	365,519	5.87	145,715	9.28	143,330	11.70
MS43I	K1101307-012	353,528	5.87	142,401	9.29	137,409	11.70
QCR02	K1101307-011	352,607	5.87	143,938	9.29	144,068	11.70
MS15IS	K1101307-019	372,493	5.87	152,086	9.29	149,151	11.70
QCD03	K1101307-021	366,700	5.87	150,144	9.29	148,062	11.70
MS45IDL	K1101307-013	347,645	5.87	143,420	9.29	140,441	11.70
QCD01DL	K1101307-016	358,778	5.87	145,898	9.28	143,789	11.70
MS18SDL	K1101307-015	354,886	5.87	142,851	9.29	142,314	11.70
MS35IDL	K1101307-008	358,292	5.87	146,155	9.29	142,510	11.70
MS34IDL	K1101307-009	355,265	5.87	143,479	9.29	140,842	11.70
QCD02DL	K1101307-010	358,351	5.87	145,037	9.29	141,165	11.70
MS45SDL	K1101307-018	329,457	5.87	134,506	9.29	129,680	11.70
MS44IDL	K1101307-020	356,943	5.87	145,123	9.29	141,329	11.70
MS18S	K1101307-015	348,626	5.87	140,373	9.29	135,046	11.70
MS35I	K1101307-008	350,928	5.87	142,464	9.28	138,760	11.70
MS34I	K1101307-009	355,431	5.87	142,470	9.29	138,719	11.70
QCD02	K1101307-010	345,250	5.87	140,663	9.29	137,375	11.70
MS45S	K1101307-018	355,067	5.87	144,165	9.29	139,209	11.70
MS44I	K1101307-020	337,332	5.87	136,287	9.29	129,398	11.70

Results flagged with an asterisk (*) indicate values outside control criteria.

TETRA TECH NUS, INC. **CALCULATION WORKSHEET** PAGE 1 OF 1

CLIENT NIROP Fridley		JOB NUMBER SDG K1011307	
SUBJECT Sample Calculation			
BASED ON		DRAWING NUMBER	
BY John Cognetti	CHECKED BY	APPROVED BY	DATE May 6, 2011

Sample MS34I; trichloroethene

$$\frac{231306}{355265} * 50 * \frac{10\ ppb}{0.264} = 1233.1\ ug/L$$

Sample Calculation

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101307
Project:	NIROP/J070047	**Date Collected:**	02/15/2011
Sample Matrix:	Water	**Date Received:**	02/16/2011
		Date Extracted:	02/25/2011
		Date Analyzed:	02/25/2011

Volatile Organic Compounds

Sample Name:	MS34IDL	**Units:**	ug/L
Lab Code:	K1101307-009	**Basis:**	NA
File ID:	J:\MS18\DATA\022511\0225F024.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101763
Analysis Method:	8260C	**Calibration ID:**	CAL10226

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 50

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	3.8	U	10	3.8	
75-35-4	1,1-Dichloroethene	3.7	U	25	3.7	
75-09-2	Methylene Chloride	5.0	U	100	5.0	
156-60-5	trans-1,2-Dichloroethene	**43**	D	25	2.9	
75-34-3	1,1-Dichloroethane	**5.5**	JD	25	3.9	
156-59-2	cis-1,2-Dichloroethene	**290**	D	25	3.4	
71-55-6	1,1,1-Trichloroethane (TCA)	3.8	U	25	3.8	*
79-01-6	Trichloroethene (TCE)	**1200**	D	25	5.0	
127-18-4	Tetrachloroethene (PCE)	5.0	U	25	5.0	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	85	73-122	02/25/11	Acceptable
Toluene-d8	89	78-129	02/25/11	Acceptable
4-Bromofluorobenzene	79	68-117	02/25/11	Acceptable

Comments:

Sample Calculation

Quantitation Report (QT Reviewed)

Data File : J:\MS18\DATA\022511\0225F024.D
Acq On : 25 Feb 2011 5:26 pm
Sample : K1307-9 50X DIL
Misc : MS34D
MS Integration Params: rteint.p
Quant Time: Feb 25 17:56:33 2011

Vial: 23
Operator: HB
Inst : GC-MS 18
Multiplr: 1.00
Quant Results File: 011311MS18_8260

Quant Method : J:\MS18\METHODS\011311MS18_8260.M (RTE Integrator)
Title : VOA MS18 EPA Method 8260B
Last Update : Wed Feb 23 12:02:23 2011
Response via : Initial Calibration
DataAcq Meth : 8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	5.87	96	355265	10.00	PPB	0.00
61) Chlorobenzene-d5	9.29	82	143479	10.00	PPB	0.00
82) 1,4-Dichlorobenzene-d4	11.70	152	140842	10.00	PPB	0.00
System Monitoring Compounds						
41) Dibromofluoromethane	5.05	113	73999	8.51	PPB	0.00
Spiked Amount 10.000			Recovery	=	85.10%	
45) 1,2-Dichloroethane-d4	5.52	65	88209	8.13	PPB	0.00
Spiked Amount 10.000			Recovery	=	81.30%	
59) Toluene-d8	7.71	98	335062	8.89	PPB	0.00
Spiked Amount 10.000			Recovery	=	88.90%	
81) 4-Bromofluorobenzene	10.52	95	117126	7.87	PPB	0.00
Spiked Amount 10.000			Recovery	=	78.70%	

Target Compounds							Qvalue
12) 1,1-Dichloroethene	2.41	96	447m	0.06	PPB		
13) Acetone	2.53	43	2250	1.28	PPB		80
19) Methylene Chloride	2.93	84	823	0.08	PPB	#	65
22) Methyl tert-Butyl Ether	3.14	73	2766	0.11	PPB		91
23) trans-1,2-Dichloroethene	3.16	96	8039	0.85	PPB		95
26) 1,1-Dichloroethane	3.68	63	1782	0.11	PPB		76
31) cis-1,2-Dichloroethene	4.39	96	60503	5.78	PPB		98
49) Trichloroethene	6.30	95	231306	24.64	PPB		98

(#) = qualifier out of range (m) = manual integration

Sample Calculation

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1101307
Calibration Date: 01/13/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10226
Instrument ID: GC-MS 18

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Vinyl Chloride	MS	AverageRF	% RSD	10.5		≤ 20	0.356		0.100
1,1-Dichloroethene	MS	AverageRF	% RSD	8.4		≤ 20	0.219		0.100
Methylene Chloride	MS	AverageRF	% RSD	9.3		≤ 20	0.287		0.100
trans-1,2-Dichloroethene	MS	AverageRF	% RSD	6.1		≤ 20	0.266		0.100
1,1-Dichloroethane	MS	AverageRF	% RSD	5.2		≤ 20	0.461		0.200
cis-1,2-Dichloroethene	MS	AverageRF	% RSD	4.8		≤ 20	0.295		0.100
1,1,1-Trichloroethane (TCA)	MS	AverageRF	% RSD	10.8		≤ 20	0.366		0.100
Trichloroethene (TCE)	MS	AverageRF	% RSD	6.8		≤ 20	0.264		0.200
Tetrachloroethene (PCE)	MS	AverageRF	% RSD	6.5		≤ 20	0.553		0.200
Dibromofluoromethane	SURR	AverageRF	% RSD	4.8		≤ 20	0.245		0.01
Toluene-d8	SURR	AverageRF	% RSD	5.9		≤ 20	1.06		0.01
4-Bromofluorobenzene	SURR	AverageRF	% RSD	3.9		≤ 20	1.04		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

NIROP FRIDLEY
WATER DATA
K1101307

FRACTION	CHEMICAL	MS45I	UNITS	QCD01	RPD	D
OV	1,1-DICHLOROETHANE	0.12 J	UG/L	0.12 J	0.00	0.00
OV	1,1-DICHLOROETHENE	0.26 J	UG/L	0.27 J	3.77	0.01
OV	CIS-1,2-DICHLOROETHENE	16	UG/L	16	0.00	0.00
OV	TETRACHLOROETHENE	3.5	UG/L	3.6	2.82	0.10
OV	TRANS-1,2-DICHLOROETHENE	0.91	UG/L	0.93	2.17	0.02

Current RPD Quality Control Limit: 30 %.
Shaded cells indicate RPDs that exceed the applicable quality control limit.

NIROP FRIDLEY
WATER DATA
K1101307

FRACTION	CHEMICAL	MS45IDL	UNITS	QCD01DL	RPD	D
OV	TRICHLOROETHENE	68	UG/L	67	1.48	1.00

Current RPD Quality Control Limit: 30 %.
Shaded cells indicate RPDs that exceed the applicable quality control limit.

NIROP FRIDLEY
WATER DATA
K1101307

FRACTION	CHEMICAL	MS34I	UNITS	QCD02	RPD	D
OV	1,1-DICHLOROETHANE	5.7	UG/L	5.7	0.00	0.00
OV	1,1-DICHLOROETHENE	3.5	UG/L	3.5	0.00	0.00
OV	CIS-1,2-DICHLOROETHENE	360	UG/L	350	2.82	10.00
OV	TRANS-1,2-DICHLOROETHENE	47	UG/L	47	0.00	0.00
OV	VINYL CHLORIDE	0.8 J	UG/L	0.8 J	0.00	0.00

Current RPD Quality Control Limit: 30 %.
Shaded cells indicate RPDs that exceed the applicable quality control limit.

NIROP FRIDLEY
WATER DATA
K1101307

FRACTION	CHEMICAL	MS34IDL	UNITS	QCD02DL	RPD	D
OV	TRICHLOROETHENE	1200	UG/L	1300	8.00	100.00

Current RPD Quality Control Limit: 30 %.
Shaded cells indicate RPDs that exceed the applicable quality control limit.

NIROP FRIDLEY
WATER DATA
K1101307

FRACTION	CHEMICAL	MS15IS	UNITS	QCD03	RPD	D
OV	1,1-DICHLOROETHANE	0.22 J	UG/L	0.22 J	0.00	0.00
OV	1,1-DICHLOROETHENE	0.15 J	UG/L	0.15 J	0.00	0.00
OV	CIS-1,2-DICHLOROETHENE	1.8	UG/L	2	10.53	0.20
OV	TETRACHLOROETHENE	3.5	UG/L	3.5	0.00	0.00
OV	TRANS-1,2-DICHLOROETHENE	0.23 J	UG/L	0.26 J	12.24	0.03
OV	TRICHLOROETHENE	21	UG/L	21	0.00	0.00

Current RPD Quality Control Limit: 30 %.
Shaded cells indicate RPDs that exceed the applicable quality control limit.

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**M. SLADIC**	**DATE:**	**MAY 25, 2011**
FROM:	**ANN COGNETTI**	**COPIES:**	**DV FILE**
SUBJECT:	**ORGANIC DATA VALIDATION- VOC NIROP FRIDLEY SAMPLE DELIVERY GROUP – K1011425**		
SAMPLES:	10/Aqueous		

MS33I	MS36S	MS41I	MS54I	MS54S
MS55I	MS56I	QCR03	QCR04	QCT03

Overview

The sample set for NIROP FRIDLEY SDG K1011425 consists of ten (10) aqueous samples. These ten aqueous samples were analyzed for the following volatile organic compounds (VOCs): 1,1,1-trichloroethane, 1,1-dichloroethane, 1,1-dichloroethene, cis-1,2-dichloroethene, methylene chloride, tetrachloroethene, trans-1,2-dichloroethene, trichloroethene and vinyl chloride. Sample QCR03 and QCR04 are rinse blanks. Sample QCT03 is a trip blank. There are no field duplicate pairs contained within this SDG.

The samples were collected by Bay West on February 16-17, 2011 and analyzed by Columbia Analytical Services. All analyses were conducted in accordance with SW-846 Method 8260C analysis and reporting protocols. The data contained in this SDG were validated with regard to the following parameters:

* • Data completeness
* • Holding times
* • GC/MS Tuning and System Performance
* • Initial/continuing calibrations
* • Laboratory method blank results
* • Surrogate Recoveries
* • Internal Standard Recoveries
* • Blank Spike/Blank Spike Duplicate Results
* • Matrix Spike/Matrix Spike Duplicate Results
* • Compound Identification
* • Compound Quantitation
* • Detection Limits

The symbol (*) indicates that quality control criteria were met for this parameter. Areas of concern are listed below; documentation supporting these findings is presented in Appendix C. Qualified analytical results are presented in Appendix A. Results as reported by the laboratory are presented in Appendix B.

Volatile

In the rinse blank collected on February 16, 2011, QCR03, a concentration of trichloroethene was detected above the method detection limit (MDL) but less than the method reporting limit (MRL). No action was taken on the environmental samples based upon this detection.

In the rinse blank collected on February 17, 2011, QCR04, concentrations of trans-1,2-dichloroethene and cis-1,2-dichloroethene were detected above the MDL and less than the MRL. A positive concentration of trichloroethene was detected above the MRL. No action was taken on the environmental

In the trip blank collected on February 16, 2011, QCT03, a concentration of methylene chloride was detected above the MDL and less MRL. No action was taken on the environmental samples based upon this detection.

Additional Comments:

The Electronic Data Deliverable (EDD) from the laboratory had several significant errors in the reporting of the results in this SDG. Several samples had positive results which were qualified as nondetect and vice versa. There was even positive detections which exceeded instrument calibration range qualified as a nondetect on the EDD. Each target analyte result for every sample had to be checked by the data reviewer for accuracy. Corrections were manually made to the database by the data reviewer.

Positive results less than the MRL were qualified as estimated (J) due to uncertainty near the detection limit.

Dilutions were performed on several samples in this SDG. Some samples were diluted in the original analysis and therefore have elevated reporting limits. Several samples had concentrations of either trichloroethene, cis-1,2-dichloroethene or trans-1,2-dichloroethene above the calibration level of 80 ug/L. Dilutions were made to obtain concentrations within the calibration range. Data was only accepted for the targeted compounds in the diluted samples that exceeded calibration levels in the original samples.

Sample	Dilution Factor
MS33I	10X, 100X for trichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroethene
MS36S	10X for trichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroethene
MS54I	5X, 50X for trichloroethene
MS 54S	5X, 50X for trichloroethene
MS56I	20X for trichloroethene, cis-1,2-dichloroethene

Executive Summary

Laboratory Performance: None.

Other Factors Affecting Data Quality: Trans-1,2-dichloroethene, cis-1,2-dichloroethene and/or trichloroethene was detected in the rinsate blanks. Methylene chloride was detected in the trip blank.

The data for these analyses were reviewed with reference to USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) and the Department of Defense (DoD) document entitled"Quality Systems Manual (QSM) for Environmental Laboratories" (April 2009). The text of this report has been formulated to address only those problem areas affecting data quality.

Ann Cognetti

Tetra Tech NUS
Ann Cognetti
Chemist/Data Validator

Tetra Tech NUS
Joseph A. Samchuck
Quality Assurance Officer

Attachments:
Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

Appendix A

Qualified Analytical Results

Data Validation Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (e.g. base-line drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can be any number of issues; e.g. poor chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = % Difference between columns/detectors >25% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient $r < 0.995$
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 02583	NSAMPLE	MS33I			MS33IDL			MS36S			MS36SDL		
SDG: K1101425	LAB_ID	K1101425-009			K1101425-009DL			K1101425-004			K1101425-004DL		
FRACTION: OV	SAMP_DATE	2/17/2011			2/17/2011			2/16/2011			2/16/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.75	U					0.075	U				
1,1-DICHLOROETHANE		3.6	J	P				1.7					
1,1-DICHLOROETHENE		10						0.68					
CIS-1,2-DICHLOROETHENE					2000						220		
METHYLENE CHLORIDE		1.2	J	P				0.1	U				
TETRACHLOROETHENE		0.99	U					0.099	U				
TRANS-1,2-DICHLOROETHENE					1900						78		
TRICHLOROETHENE					2600						190		
VINYL CHLORIDE		33						2.3					

PROJ_NO: 02583 SDG: K1101425 FRACTION: OV MEDIA: WATER	NSAMPLE	MS41I			MS54I			MS54IDL			MS54S		
	LAB_ID	K1101425-002			K1101425-006			K1101425-006DL			K1101425-007		
	SAMP_DATE	2/16/2011			2/16/2011			2/16/2011			2/16/2011		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.075	U		0.38	U					0.38	U	
1,1-DICHLOROETHANE		0.28	J	P	1.4	J	P				2.5		
1,1-DICHLOROETHENE		0.29	J	P	3.4						2.5	J	P
CIS-1,2-DICHLOROETHENE		19			310						160		
METHYLENE CHLORIDE		0.1	U		0.55	J	P				0.55	J	P
TETRACHLOROETHENE		3.9			0.5	U					0.5	U	
TRANS-1,2-DICHLOROETHENE		0.7			23						46		
TRICHLOROETHENE		24						1100					
VINYL CHLORIDE		0.075	U		0.38	U					0.38	U	

PROJ_NO: 02583	NSAMPLE	MS54SDL			MS55I			MS56I			MS56IDL		
SDG: K1101425	LAB_ID	K1101425-007DL			K1101425-003			K1101425-005			K1101425-005DL		
FRACTION: OV	SAMP_DATE	2/16/2011			2/16/2011			2/16/2011			2/16/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE					0.075	U		0.075	U				
1,1-DICHLOROETHANE					0.98			7.9					
1,1-DICHLOROETHENE					0.39	J	P	1.3					
CIS-1,2-DICHLOROETHENE					50						300		
METHYLENE CHLORIDE					0.1	U		0.1	U				
TETRACHLOROETHENE					0.099	U		0.099	U				
TRANS-1,2-DICHLOROETHENE					2.7			27					
TRICHLOROETHENE		1100			73						290		
VINYL CHLORIDE					0.075	U		0.14	J	P			

PROJ_NO: 02583	NSAMPLE	QCR03			QCR04			QCT03		
SDG: K1101425	LAB_ID	K1101425-010			K1101425-008			K1101425-001		
FRACTION: OV	SAMP_DATE	2/16/2011			2/17/2011			2/16/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0		
	DUP_OF									
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.075	U		0.075	U		0.075	U	
1,1-DICHLOROETHANE		0.077	U		0.077	U		0.077	U	
1,1-DICHLOROETHENE		0.074	U		0.074	U		0.074	U	
CIS-1,2-DICHLOROETHENE		0.067	U		0.38	J	P	0.067	U	
METHYLENE CHLORIDE		0.1	U		0.1	U		0.12	J	P
TETRACHLOROETHENE		0.099	U		0.099	U		0.099	U	
TRANS-1,2-DICHLOROETHENE		0.057	U		0.32	J	P	0.057	U	
TRICHLOROETHENE		0.43	J	P	0.93			0.1	U	
VINYL CHLORIDE		0.075	U		0.075	U		0.075	U	

Appendix B

Results as Reported by the Laboratory

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101425
Project:	NIROP/J070047	**Date Collected:**	02/17/2011
Sample Matrix:	Water	**Date Received:**	02/18/2011
		Date Extracted:	02/28/2011
		Date Analyzed:	02/28/2011

Volatile Organic Compounds

Sample Name:	MS33I	**Units:**	ug/L
Lab Code:	K1101425-009	**Basis:**	NA
File ID:	J:\MS18\DATA\022811\0228F025.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101813
Analysis Method:	8260C	**Calibration ID:**	CAL10226

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 10

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**33**	D	2.0	0.75	
75-35-4	1,1-Dichloroethene	**10**	D	5.0	0.74	
75-09-2	Methylene Chloride	**1.2**	JD	20	1.0	
156-60-5	trans-1,2-Dichloroethene	**2000**	ED	5.0	0.57	
75-34-3	1,1-Dichloroethane	**3.6**	JD	5.0	0.77	
156-59-2	cis-1,2-Dichloroethene	**2100**	ED	5.0	0.67	
71-55-6	1,1,1-Trichloroethane (TCA)	0.75	U	5.0	0.75	
79-01-6	Trichloroethene (TCE)	**2600**	ED	5.0	1.0	
127-18-4	Tetrachloroethene (PCE)	0.99	U	5.0	0.99	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	87	73-122	02/28/11	Acceptable
Toluene-d8	89	78-129	02/28/11	Acceptable
4-Bromofluorobenzene	78	68-117	02/28/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101425
Project:	NIROP/J070047	**Date Collected:**	02/17/2011
Sample Matrix:	Water	**Date Received:**	02/18/2011
		Date Extracted:	02/28/2011
		Date Analyzed:	02/28/2011

Volatile Organic Compounds

Sample Name:	MS33IDL	**Units:**	ug/L
Lab Code:	K1101425-009	**Basis:**	NA
File ID:	J:\MS18\DATA\022811\0228F018.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101813
Analysis Method:	8260C	**Calibration ID:**	CAL10226

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 100

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**34**	D	20	7.5	
75-35-4	1,1-Dichloroethene	**8.0**	JD	50	7.4	
75-09-2	Methylene Chloride	**12**	JD	200	10	
156-60-5	trans-1,2-Dichloroethene	**1900**	D	50	5.7	
75-34-3	1,1-Dichloroethane	7.7	U	50	7.7	
156-59-2	cis-1,2-Dichloroethene	**2000**	D	50	6.7	
71-55-6	1,1,1-Trichloroethane (TCA)	7.5	U	50	7.5	
79-01-6	Trichloroethene (TCE)	**2600**	D	50	10	
127-18-4	Tetrachloroethene (PCE)	9.9	U	50	9.9	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	86	73-122	02/28/11	Acceptable
Toluene-d8	89	78-129	02/28/11	Acceptable
4-Bromofluorobenzene	77	68-117	02/28/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101425
Project:	NIROP/J070047	**Date Collected:**	02/16/2011
Sample Matrix:	Water	**Date Received:**	02/18/2011
		Date Extracted:	02/28/2011
		Date Analyzed:	02/28/2011

Volatile Organic Compounds

Sample Name:	MS36S	**Units:**	ug/L
Lab Code:	K1101425-004	**Basis:**	NA
File ID:	J:\MS18\DATA\022811\0228F026.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101813
Analysis Method:	8260C	**Calibration ID:**	CAL10226

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**2.3**		0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.68**		0.50	0.074	
75-09-2	Methylene Chloride	0.10	U	2.0	0.10	
156-60-5	trans-1,2-Dichloroethene	**92**	E	0.50	0.057	
75-34-3	1,1-Dichloroethane	**1.7**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**260**	E	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**220**	E	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	90	73-122	02/28/11	Acceptable
Toluene-d8	89	78-129	02/28/11	Acceptable
4-Bromofluorobenzene	78	68-117	02/28/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101425
Project:	NIROP/J070047	**Date Collected:**	02/16/2011
Sample Matrix:	Water	**Date Received:**	02/18/2011
		Date Extracted:	02/28/2011
		Date Analyzed:	02/28/2011

Volatile Organic Compounds

Sample Name:	MS36SDL	**Units:**	ug/L
Lab Code:	K1101425-004	**Basis:**	NA
File ID:	J:\MS18\DATA\022811\0228F019.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101813
Analysis Method:	8260C	**Calibration ID:**	CAL10226

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 10

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**2.1**	D	2.0	0.75	
75-35-4	1,1-Dichloroethene	0.74	U	5.0	0.74	
75-09-2	Methylene Chloride	**1.4**	JD	20	1.0	
156-60-5	trans-1,2-Dichloroethene	**78**	D	5.0	0.57	
75-34-3	1,1-Dichloroethane	**1.6**	JD	5.0	0.77	
156-59-2	cis-1,2-Dichloroethene	**220**	D	5.0	0.67	
71-55-6	1,1,1-Trichloroethane (TCA)	0.75	U	5.0	0.75	
79-01-6	Trichloroethene (TCE)	**190**	D	5.0	1.0	
127-18-4	Tetrachloroethene (PCE)	0.99	U	5.0	0.99	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	87	73-122	02/28/11	Acceptable
Toluene-d8	88	78-129	02/28/11	Acceptable
4-Bromofluorobenzene	78	68-117	02/28/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101425
Project:	NIROP/J070047	**Date Collected:**	02/16/2011
Sample Matrix:	Water	**Date Received:**	02/18/2011
		Date Extracted:	02/28/2011
		Date Analyzed:	02/28/2011

Volatile Organic Compounds

Sample Name:	MS41I	**Units:**	ug/L
Lab Code:	K1101425-002	**Basis:**	NA
File ID:	J:\MS18\DATA\022811\0228F013.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101813
Analysis Method:	8260C	**Calibration ID:**	CAL10226

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.29**	J	0.50	0.074	
75-09-2	Methylene Chloride	0.10	U	2.0	0.10	
156-60-5	trans-1,2-Dichloroethene	**0.70**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.28**	J	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**19**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**24**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**3.9**		0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	85	73-122	02/28/11	Acceptable
Toluene-d8	89	78-129	02/28/11	Acceptable
4-Bromofluorobenzene	79	68-117	02/28/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101425
Project:	NIROP/J070047	**Date Collected:**	02/16/2011
Sample Matrix:	Water	**Date Received:**	02/18/2011
		Date Extracted:	02/28/2011
		Date Analyzed:	02/28/2011

Volatile Organic Compounds

Sample Name:	MS54I	**Units:**	ug/L
Lab Code:	K1101425-006	**Basis:**	NA
File ID:	J:\MS18\DATA\022811\0228F022.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101813
Analysis Method:	8260C	**Calibration ID:**	CAL10226

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 5

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.38	U	1.0	0.38	
75-35-4	1,1-Dichloroethene	**3.4**	D	2.5	0.37	
75-09-2	Methylene Chloride	**0.55**	JD	10	0.50	
156-60-5	trans-1,2-Dichloroethene	**23**	D	2.5	0.29	
75-34-3	1,1-Dichloroethane	**1.4**	JD	2.5	0.39	
156-59-2	cis-1,2-Dichloroethene	**310**	D	2.5	0.34	
71-55-6	1,1,1-Trichloroethane (TCA)	0.38	U	2.5	0.38	
79-01-6	Trichloroethene (TCE)	**1200**	ED	2.5	0.50	
127-18-4	Tetrachloroethene (PCE)	0.50	U	2.5	0.50	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	86	73-122	02/28/11	Acceptable
Toluene-d8	88	78-129	02/28/11	Acceptable
4-Bromofluorobenzene	77	68-117	02/28/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101425
Project:	NIROP/J070047	**Date Collected:**	02/16/2011
Sample Matrix:	Water	**Date Received:**	02/18/2011
		Date Extracted:	02/28/2011
		Date Analyzed:	02/28/2011

Volatile Organic Compounds

Sample Name:	MS54IDL	**Units:**	ug/L
Lab Code:	K1101425-006	**Basis:**	NA
File ID:	J:\MS18\DATA\022811\0228F017.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101813
Analysis Method:	8260C	**Calibration ID:**	CAL10226

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 50

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	3.8	U	10	3.8	
75-35-4	1,1-Dichloroethene	3.7	U	25	3.7	
75-09-2	Methylene Chloride	**7.5**	JD	100	5.0	
156-60-5	trans-1,2-Dichloroethene	**22**	JD	25	2.9	
75-34-3	1,1-Dichloroethane	3.9	U	25	3.9	
156-59-2	cis-1,2-Dichloroethene	**270**	D	25	3.4	
71-55-6	1,1,1-Trichloroethane (TCA)	3.8	U	25	3.8	
79-01-6	Trichloroethene (TCE)	**1100**	D	25	5.0	
127-18-4	Tetrachloroethene (PCE)	5.0	U	25	5.0	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	86	73-122	02/28/11	Acceptable
Toluene-d8	90	78-129	02/28/11	Acceptable
4-Bromofluorobenzene	78	68-117	02/28/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101425
Project:	NIROP/J070047	**Date Collected:**	02/16/2011
Sample Matrix:	Water	**Date Received:**	02/18/2011
		Date Extracted:	02/28/2011
		Date Analyzed:	02/28/2011

Volatile Organic Compounds

Sample Name:	MS54S	**Units:**	ug/L
Lab Code:	K1101425-007	**Basis:**	NA
File ID:	J:\MS18\DATA\022811\0228F021.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101813
Analysis Method:	8260C	**Calibration ID:**	CAL10226

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 5

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.38	U	1.0	0.38	
75-35-4	1,1-Dichloroethene	**2.5**	JD	2.5	0.37	
75-09-2	Methylene Chloride	**0.55**	JD	10	0.50	
156-60-5	trans-1,2-Dichloroethene	**46**	D	2.5	0.29	
75-34-3	1,1-Dichloroethane	**2.5**	D	2.5	0.39	
156-59-2	cis-1,2-Dichloroethene	**160**	D	2.5	0.34	
71-55-6	1,1,1-Trichloroethane (TCA)	0.38	U	2.5	0.38	
79-01-6	Trichloroethene (TCE)	**1300**	ED	2.5	0.50	
127-18-4	Tetrachloroethene (PCE)	0.50	U	2.5	0.50	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	86	73-122	02/28/11	Acceptable
Toluene-d8	90	78-129	02/28/11	Acceptable
4-Bromofluorobenzene	79	68-117	02/28/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101425
Project:	NIROP/J070047	**Date Collected:**	02/16/2011
Sample Matrix:	Water	**Date Received:**	02/18/2011
		Date Extracted:	02/28/2011
		Date Analyzed:	02/28/2011

Volatile Organic Compounds

Sample Name:	MS54SDL	**Units:**	ug/L
Lab Code:	K1101425-007	**Basis:**	NA
File ID:	J:\MS18\DATA\022811\0228F016.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101813
Analysis Method:	8260C	**Calibration ID:**	CAL10226

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 50

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	3.8	U	10	3.8	
75-35-4	1,1-Dichloroethene	3.7	U	25	3.7	
75-09-2	Methylene Chloride	**5.5**	JD	100	5.0	
156-60-5	trans-1,2-Dichloroethene	**42**	D	25	2.9	
75-34-3	1,1-Dichloroethane	3.9	U	25	3.9	
156-59-2	cis-1,2-Dichloroethene	**140**	D	25	3.4	
71-55-6	1,1,1-Trichloroethane (TCA)	3.8	U	25	3.8	
79-01-6	Trichloroethene (TCE)	**1100**	D	25	5.0	
127-18-4	Tetrachloroethene (PCE)	5.0	U	25	5.0	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	85	73-122	02/28/11	Acceptable
Toluene-d8	88	78-129	02/28/11	Acceptable
4-Bromofluorobenzene	78	68-117	02/28/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101425
Project:	NIROP/J070047	**Date Collected:**	02/16/2011
Sample Matrix:	Water	**Date Received:**	02/18/2011
		Date Extracted:	02/28/2011
		Date Analyzed:	02/28/2011

Volatile Organic Compounds

Sample Name:	MS55I	**Units:**	ug/L
Lab Code:	K1101425-003	**Basis:**	NA
File ID:	J:\MS18\DATA\022811\0228F020.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101813
Analysis Method:	8260C	**Calibration ID:**	CAL10226

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.39**	J	0.50	0.074	
75-09-2	Methylene Chloride	0.10	U	2.0	0.10	
156-60-5	trans-1,2-Dichloroethene	**2.7**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.98**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**50**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**73**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	87	73-122	02/28/11	Acceptable
Toluene-d8	89	78-129	02/28/11	Acceptable
4-Bromofluorobenzene	78	68-117	02/28/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101425
Project:	NIROP/J070047	**Date Collected:**	02/16/2011
Sample Matrix:	Water	**Date Received:**	02/18/2011
		Date Extracted:	02/28/2011
		Date Analyzed:	02/28/2011

Volatile Organic Compounds

Sample Name:	MS56I	**Units:**	ug/L
Lab Code:	K1101425-005	**Basis:**	NA
File ID:	J:\MS18\DATA\022811\0228F023.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101813
Analysis Method:	8260C	**Calibration ID:**	CAL10226

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.14**	J	0.20	0.075	
75-35-4	1,1-Dichloroethene	**1.3**		0.50	0.074	
75-09-2	Methylene Chloride	0.10	U	2.0	0.10	
156-60-5	trans-1,2-Dichloroethene	**27**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**7.9**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**360**	E	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**350**	E	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	88	73-122	02/28/11	Acceptable
Toluene-d8	88	78-129	02/28/11	Acceptable
4-Bromofluorobenzene	78	68-117	02/28/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101425
Project:	NIROP/J070047	**Date Collected:**	02/16/2011
Sample Matrix:	Water	**Date Received:**	02/18/2011
		Date Extracted:	02/28/2011
		Date Analyzed:	02/28/2011

Volatile Organic Compounds

Sample Name:	MS56IDL	**Units:**	ug/L
Lab Code:	K1101425-005	**Basis:**	NA
File ID:	J:\MS18\DATA\022811\0228F012.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101813
Analysis Method:	8260C	**Calibration ID:**	CAL10226

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 20

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	1.5	U	4.0	1.5	
75-35-4	1,1-Dichloroethene	1.5	U	10	1.5	
75-09-2	Methylene Chloride	**3.2**	JD	40	2.0	
156-60-5	trans-1,2-Dichloroethene	**22**	D	10	1.2	
75-34-3	1,1-Dichloroethane	**6.6**	JD	10	1.6	
156-59-2	cis-1,2-Dichloroethene	**300**	D	10	1.4	
71-55-6	1,1,1-Trichloroethane (TCA)	1.5	U	10	1.5	
79-01-6	Trichloroethene (TCE)	**290**	D	10	2.0	
127-18-4	Tetrachloroethene (PCE)	2.0	U	10	2.0	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	84	73-122	02/28/11	Acceptable
Toluene-d8	88	78-129	02/28/11	Acceptable
4-Bromofluorobenzene	78	68-117	02/28/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101425
Project:	NIROP/J070047	**Date Collected:**	02/16/2011
Sample Matrix:	Water	**Date Received:**	02/18/2011
		Date Extracted:	02/28/2011
		Date Analyzed:	02/28/2011

Volatile Organic Compounds

Sample Name:	QCR03	**Units:**	ug/L
Lab Code:	K1101425-010	**Basis:**	NA
File ID:	J:\MS18\DATA\022811\0228F015.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101813
Analysis Method:	8260C	**Calibration ID:**	CAL10226

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
75-09-2	Methylene Chloride	0.10	U	2.0	0.10	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**0.43**	J	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	86	73-122	02/28/11	Acceptable
Toluene-d8	89	78-129	02/28/11	Acceptable
4-Bromofluorobenzene	79	68-117	02/28/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101425
Project:	NIROP/J070047	**Date Collected:**	02/17/2011
Sample Matrix:	Water	**Date Received:**	02/18/2011
		Date Extracted:	02/28/2011
		Date Analyzed:	02/28/2011

Volatile Organic Compounds

Sample Name:	QCR04	**Units:**	ug/L
Lab Code:	K1101425-008	**Basis:**	NA
File ID:	J:\MS18\DATA\022811\0228F014.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101813
Analysis Method:	8260C	**Calibration ID:**	CAL10226

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
75-09-2	Methylene Chloride	0.10	U	2.0	0.10	
156-60-5	trans-1,2-Dichloroethene	**0.32**	J	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**0.38**	J	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**0.93**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	85	73-122	02/28/11	Acceptable
Toluene-d8	89	78-129	02/28/11	Acceptable
4-Bromofluorobenzene	78	68-117	02/28/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101425
Project:	NIROP/J070047	**Date Collected:**	02/16/2011
Sample Matrix:	Water	**Date Received:**	02/18/2011
		Date Extracted:	02/28/2011
		Date Analyzed:	02/28/2011

Volatile Organic Compounds

Sample Name:	QCT03	**Units:**	ug/L
Lab Code:	K1101425-001	**Basis:**	NA
File ID:	J:\MS18\DATA\022811\0228F011.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101813
Analysis Method:	8260C	**Calibration ID:**	CAL10226

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
75-09-2	Methylene Chloride	**0.12**	J	2.0	0.10	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	85	73-122	02/28/11	Acceptable
Toluene-d8	88	78-129	02/28/11	Acceptable
4-Bromofluorobenzene	77	68-117	02/28/11	Acceptable

Comments:

Appendix C

Support Documentation

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	Bay West	**Service Request No.:**	K1101425
Project:	NIROP	**Date Received:**	2/18/11
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Ten water samples were received for analysis at Columbia Analytical Services on 2/18/11. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Volatile Organic Compounds by EPA Method 8260B

Elevated Detection Limits:
Sample MS54I, MS54S, and MS33I required dilution due to the presence of elevated levels of target analyte. The reporting limits were adjusted to reflect the dilution.

No other anomalies associated with the analysis of these samples were observed.

Approved by Mike Theda **Date** 3/8/11

Columbia Analytical Services

CHAIN OF CUSTODY

SR#: K1101425

1317 South 13th Ave. Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

PAGE 1 OF 1 COC # 021711-01

PROJECT NAME: NIROP
PROJECT NUMBER: 5070047
PROJECT MANAGER: Paul Walz
COMPANY/ADDRESS: BayWest, 5 Empire Drive
CITY STATE ZIP: St. Paul, MN 55103
E MAIL ADDRESS: paulw@baywest.com
PHONE #: 651-291-3491 FAX #: 651-291-0099
SAMPLER'S SIGNATURE: Shawn Lyman

SAMPLE ID.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐ 8270LL☐	Volatile Organics 624☐ 8260 8021☐ BTEX☐	Hydrocarbons (*see below) Gas☐ Diesel☐ Oil☐ ☐ Fuel Fingerprint (FIQ) ☐ NW-HCID Screen	Oil & Grease/TRPH 1664 HEM☐ 1664 SGT☐	PCB's Aroclors☐ Congeners☐	Pesticides/Herbicides 608☐ 8081A☐ 8141A☐ 8151A☐	Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐	PAHS 8310☐ SIM☐	Metals, Total or Dissolved (See list below)	Cyanide☐ Hex-Chrom☐	pH, Cond., Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS (circle)	NH_3-N, COD, Total-P, TKN, TOC, DOC (circle) NO_2+NO_3	TOX 9020☐ AOX 1650☐ 506☐	REMARKS
~~MS50S~~ QCT03	2/16/11	—		Water	2		X												
MS41I	2/16/11	1100			3		X												
MS55I	2/16/11	1150			3		X												
MS36S		1152			3		X												
MS56I		1236			3		X												
MS54I		1245			3		X												
MS54S		1333			3		X												
QCR04	2/17/11	1310			3		X												
MS33I		1142			3		X												
QCR03	2/17/11	1411			3		X												

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. # 54003
Bill To: Accts Payable

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:
For 8 specific Compounds

TN# 12A198R9019344 1700

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: Shawn Lyman — Date/Time: 2/17/11 1415	Signature: [illegible] — Date/Time: 2/18/11 1010	Signature: — Date/Time:	Signature: — Date/Time:
Printed Name: Miranda Maiman — Firm: BayWest	Printed Name: S. HOPKINS — Firm: CAS	Printed Name: — Firm:	Printed Name: — Firm:

RCOC #1 03/10

8

PC MIKE

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

Client / Project: Baywas | Service Request *K11* 1425

Received: 2/18/11 Opened: 2/18/11 By: SAN Unloaded: 2/18/11 By: SAN

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? 2 front + back

   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Cooler Temp °C	Temp Blank °C	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
-0.5	0.8	281		1ZA198R 9019344 1700	

7. Packing material used. *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Sleeves* *Other* _____
8. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
9. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
10. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
11. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
12. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
13. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
14. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
15. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

Page 1 *of* _____

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1101425

Cover Page - Organic Analysis Data Package
Volatile Organic Compounds

Sample Name	Lab Code	Date Collected	Date Received
QCT03	K1101425-001	02/16/2011	02/18/2011
MS41I	K1101425-002	02/16/2011	02/18/2011
MS55I	K1101425-003	02/16/2011	02/18/2011
MS36S	K1101425-004	02/16/2011	02/18/2011
MS36SDL	K1101425-004	02/16/2011	02/18/2011
MS56I	K1101425-005	02/16/2011	02/18/2011
MS56IDL	K1101425-005	02/16/2011	02/18/2011
MS54IDL	K1101425-006	02/16/2011	02/18/2011
MS54I	K1101425-006	02/16/2011	02/18/2011
MS54SDL	K1101425-007	02/16/2011	02/18/2011
MS54S	K1101425-007	02/16/2011	02/18/2011
QCR04	K1101425-008	02/17/2011	02/18/2011
MS33I	K1101425-009	02/17/2011	02/18/2011
MS33IDL	K1101425-009	02/17/2011	02/18/2011
QCR03	K1101425-010	02/16/2011	02/18/2011
MS56IMS	KWG1101813-1	02/16/2011	02/18/2011
MS56IDMS	KWG1101813-2	02/16/2011	02/18/2011

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Holly Butcher Name: Holly Butcher

Date: 03-07-2011 Title: Scientist

SDG K1101425

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
OV	PERCE	MS36S	K1101425-004	NM	02/16/2011	02/28/2011	02/28/2011	12	0	12
OV	PERCE	MS41I	K1101425-002	NM	02/16/2011	02/28/2011	02/28/2011	12	0	12
OV	PERCE	MS54I	K1101425-006	NM	02/16/2011	02/28/2011	02/28/2011	12	0	12
OV	PERCE	MS54S	K1101425-007	NM	02/16/2011	02/28/2011	02/28/2011	12	0	12
OV	PERCE	MS55I	K1101425-003	NM	02/16/2011	02/28/2011	02/28/2011	12	0	12
OV	PERCE	MS56I	K1101425-005	NM	02/16/2011	02/28/2011	02/28/2011	12	0	12
OV	PERCE	QCR03	K1101425-010	NM	02/16/2011	02/28/2011	02/28/2011	12	0	12
OV	PERCE	QCR04	K1101425-008	NM	02/17/2011	02/28/2011	02/28/2011	11	0	11
OV	PERCE	QCT03	K1101425-001	NM	02/16/2011	02/28/2011	02/28/2011	12	0	12
OV	PERCE	MS33I	K1101425-009	NM	02/17/2011	02/28/2011	02/28/2011	11	0	11
OV	UG/L	MS36S	K1101425-004DL	NM	02/16/2011	02/28/2011	02/28/2011	12	0	12
OV	UG/L	MS33I	K1101425-009	NM	02/17/2011	02/28/2011	02/28/2011	11	0	11
OV	UG/L	MS36S	K1101425-004	NM	02/16/2011	02/28/2011	02/28/2011	12	0	12
OV	UG/L	QCT03	K1101425-001	NM	02/16/2011	02/28/2011	02/28/2011	12	0	12
OV	UG/L	MS41I	K1101425-002	NM	02/16/2011	02/28/2011	02/28/2011	12	0	12

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
OV	UG/L	MS54I	K1101425-006	NM	02/16/2011	02/28/2011	02/28/2011	12	0	12
OV	UG/L	MS54I	K1101425-006DL	NM	02/16/2011	02/28/2011	02/28/2011	12	0	12
OV	UG/L	MS54S	K1101425-007	NM	02/16/2011	02/28/2011	02/28/2011	12	0	12
OV	UG/L	MS54S	K1101425-007DL	NM	02/16/2011	02/28/2011	02/28/2011	12	0	12
OV	UG/L	MS55I	K1101425-003	NM	02/16/2011	02/28/2011	02/28/2011	12	0	12
OV	UG/L	MS56I	K1101425-005	NM	02/16/2011	02/28/2011	02/28/2011	12	0	12
OV	UG/L	MS56I	K1101425-005DL	NM	02/16/2011	02/28/2011	02/28/2011	12	0	12
OV	UG/L	QCR03	K1101425-010	NM	02/16/2011	02/28/2011	02/28/2011	12	0	12
OV	UG/L	QCR04	K1101425-008	NM	02/17/2011	02/28/2011	02/28/2011	11	0	11
OV	UG/L	MS33I	K1101425-009DL	NM	02/17/2011	02/28/2011	02/28/2011	11	0	11

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1101425
Date Analyzed: 01/13/2011
Time Analyzed: 10:20

Tune Summary
Volatile Organic Compounds

File ID: J:\MS18\DATA\011311\0113F008.D
Instrument ID: GC-MS 18
Column:

Analysis Method: 8260C
Analysis Lot: KWG1101987

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	18.1	9157	PASS
75	95	30	60	48.3	24488	PASS
95	95	100	100	100.0	50714	PASS
96	95	5	9	7.1	3580	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	87.1	44160	PASS
175	174	5	9	8.0	3546	PASS
176	174	95	101	95.5	42160	PASS
177	176	5	9	6.9	2891	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Initial Calibration	KWG1101987-2	J:\MS18\DATA\011311\0113F011.D	01/13/2011	11:27	
Initial Calibration	KWG1101987-3	J:\MS18\DATA\011311\0113F012.D	01/13/2011	11:48	
Initial Calibration	KWG1101987-4	J:\MS18\DATA\011311\0113F013.D	01/13/2011	12:09	
Initial Calibration	KWG1101987-5	J:\MS18\DATA\011311\0113F014.D	01/13/2011	12:30	
Initial Calibration	KWG1101987-6	J:\MS18\DATA\011311\0113F015.D	01/13/2011	12:51	
Initial Calibration	KWG1101987-7	J:\MS18\DATA\011311\0113F016.D	01/13/2011	13:13	
Initial Calibration	KWG1101987-8	J:\MS18\DATA\011311\0113F017.D	01/13/2011	13:34	
Initial Calibration	KWG1101987-9	J:\MS18\DATA\011311\0113F018.D	01/13/2011	13:55	
Initial Calibration	KWG1101987-10	J:\MS18\DATA\011311\0113F019.D	01/13/2011	14:16	
Initial Calibration	KWG1101987-11	J:\MS18\DATA\011311\0113F020.D	01/13/2011	14:37	
Initial Calibration	KWG1101987-12	J:\MS18\DATA\011311\0113F021.D	01/13/2011	14:58	
Initial Calibration Verification	KWG1101987-13	J:\MS18\DATA\011311\0113F025.D	01/13/2011	16:23	
Initial Calibration	KWG1101987-14	J:\MS18\DATA\011311\0113F031.D	01/13/2011	18:29	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1101425
Calibration Date: 01/13/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10226
Instrument ID: GC-MS 18

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Vinyl Chloride	MS	AverageRF	% RSD	10.5		≤ 20	0.356		0.100
1,1-Dichloroethene	MS	AverageRF	% RSD	8.4		≤ 20	0.219		0.100
Methylene Chloride	MS	AverageRF	% RSD	9.3		≤ 20	0.287		0.100
trans-1,2-Dichloroethene	MS	AverageRF	% RSD	6.1		≤ 20	0.266		0.100
1,1-Dichloroethane	MS	AverageRF	% RSD	5.2		≤ 20	0.461		0.200
cis-1,2-Dichloroethene	MS	AverageRF	% RSD	4.8		≤ 20	0.295		0.100
1,1,1-Trichloroethane (TCA)	MS	AverageRF	% RSD	10.8		≤ 20	0.366		0.100
Trichloroethene (TCE)	MS	AverageRF	% RSD	6.8		≤ 20	0.264		0.200
Tetrachloroethene (PCE)	MS	AverageRF	% RSD	6.5		≤ 20	0.553		0.200
Dibromofluoromethane	SURR	AverageRF	% RSD	4.8		≤ 20	0.245		0.01
Toluene-d8	SURR	AverageRF	% RSD	5.9		≤ 20	1.06		0.01
4-Bromofluorobenzene	SURR	AverageRF	% RSD	3.9		≤ 20	1.04		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound**

‡ **CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1101425
Calibration Date: 01/13/2011
Date Analyzed: 01/13/2011

Second Source Calibration Verification
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration ID: CAL10226
Units: PPB

File ID: J:\MS18\DATA\011311\0113F025.D
J:\MS18\DATA\011311\0113F031.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	10	0.356	0.364	2	NA	± 30 %	AverageRF
1,1-Dichloroethene	10	11	0.219	0.245	12	NA	± 30 %	AverageRF
Methylene Chloride	10	10	0.287	0.298	4	NA	± 30 %	AverageRF
trans-1,2-Dichloroethene	10	11	0.266	0.283	6	NA	± 30 %	AverageRF
1,1-Dichloroethane	10	11	0.461	0.486	5	NA	± 30 %	AverageRF
cis-1,2-Dichloroethene	10	11	0.295	0.309	5	NA	± 30 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	11	0.366	0.410	12	NA	± 30 %	AverageRF
Trichloroethene (TCE)	10	11	0.264	0.295	12	NA	± 30 %	AverageRF
Tetrachloroethene (PCE)	10	11	0.553	0.601	9	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1101425
Date Analyzed: 02/28/2011
Time Analyzed: 09:07

Tune Summary
Volatile Organic Compounds

File ID: J:\MS18\DATA\022811\0228F002.D
Instrument ID: GC-MS 18
Column:

Analysis Method: 8260C
Analysis Lot: KWG1101801

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	16.6	3107	PASS
75	95	30	60	44.9	8418	PASS
95	95	100	100	100.0	18744	PASS
96	95	5	9	6.9	1284	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	84.8	15903	PASS
175	174	5	9	8.6	1361	PASS
176	174	95	101	96.0	15259	PASS
177	176	5	9	5.8	880	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1101801-2	J:\MS18\DATA\022811\0228F004.D	02/28/2011	10:03	
Lab Control Sample	KWG1101813-3	J:\MS18\DATA\022811\0228F005.D	02/28/2011	10:25	
MS56IMS	KWG1101813-1	J:\MS18\DATA\022811\0228F006.D	02/28/2011	11:15	
MS56IDMS	KWG1101813-2	J:\MS18\DATA\022811\0228F007.D	02/28/2011	11:36	
Method Blank	KWG1101813-4	J:\MS18\DATA\022811\0228F010.D	02/28/2011	12:39	
QCT03	K1101425-001	J:\MS18\DATA\022811\0228F011.D	02/28/2011	13:00	
MS56IDL	K1101425-005	J:\MS18\DATA\022811\0228F012.D	02/28/2011	13:21	
MS41I	K1101425-002	J:\MS18\DATA\022811\0228F013.D	02/28/2011	13:42	
QCR04	K1101425-008	J:\MS18\DATA\022811\0228F014.D	02/28/2011	14:03	
QCR03	K1101425-010	J:\MS18\DATA\022811\0228F015.D	02/28/2011	14:24	
MS54SDL	K1101425-007	J:\MS18\DATA\022811\0228F016.D	02/28/2011	14:45	
MS54IDL	K1101425-006	J:\MS18\DATA\022811\0228F017.D	02/28/2011	15:06	
MS33IDL	K1101425-009	J:\MS18\DATA\022811\0228F018.D	02/28/2011	15:27	
MS36SDL	K1101425-004	J:\MS18\DATA\022811\0228F019.D	02/28/2011	15:48	
MS55I	K1101425-003	J:\MS18\DATA\022811\0228F020.D	02/28/2011	16:09	
MS54S	K1101425-007	J:\MS18\DATA\022811\0228F021.D	02/28/2011	16:30	
MS54I	K1101425-006	J:\MS18\DATA\022811\0228F022.D	02/28/2011	16:52	
MS56I	K1101425-005	J:\MS18\DATA\022811\0228F023.D	02/28/2011	17:13	
MS33I	K1101425-009	J:\MS18\DATA\022811\0228F025.D	02/28/2011	17:55	
MS36S	K1101425-004	J:\MS18\DATA\022811\0228F026.D	02/28/2011	18:16	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1101425
Date Analyzed: 02/28/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration Date: 01/13/2011
Calibration ID: CAL10226
Analysis Lot: KWG1101801
Units: PPB

File ID: J:\MS18\DATA\022811\0228F004.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	10	0.100	0.356	0.363	2	NA	± 20 %	AverageRF
1,1-Dichloroethene	10	11	0.100	0.219	0.230	5	NA	± 20 %	AverageRF
Methylene Chloride	10	11	0.100	0.287	0.304	6	NA	± 20 %	AverageRF
trans-1,2-Dichloroethene	10	10	0.100	0.266	0.274	3	NA	± 20 %	AverageRF
1,1-Dichloroethane	10	10	0.200	0.461	0.474	3	NA	± 20 %	AverageRF
cis-1,2-Dichloroethene	10	11	0.100	0.295	0.315	7	NA	± 20 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	9.0	0.100	0.366	0.329	-10	NA	± 20 %	AverageRF
Trichloroethene (TCE)	10	11	0.200	0.264	0.280	6	NA	± 20 %	AverageRF
Tetrachloroethene (PCE)	10	11	0.200	0.553	0.590	7	NA	± 20 %	AverageRF
Dibromofluoromethane	10	8.7	0.01	0.245	0.213	-13	NA	± 20 %	AverageRF
Toluene-d8	10	9.6	0.01	1.06	1.02	-4	NA	± 20 %	AverageRF
4-Bromofluorobenzene	10	8.9	0.01	1.04	0.924	-11	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1101425
Project:	NIROP/J070047	**Date Extracted:**	02/28/2011
Sample Matrix:	Water	**Date Analyzed:**	02/28/2011
		Time Analyzed:	12:39

Method Blank Summary
Volatile Organic Compounds

Sample Name:	Method Blank	**File ID:**	J:\MS18\DATA\022811\0228F010.D
Lab Code:	KWG1101813-4	**Instrument ID:**	GC-MS 18
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C	**Extraction Lot:**	KWG1101813

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1101813-3	J:\MS18\DATA\022811\0228F005.D	02/28/11	10:25
MS56IMS	KWG1101813-1	J:\MS18\DATA\022811\0228F006.D	02/28/11	11:15
MS56IDMS	KWG1101813-2	J:\MS18\DATA\022811\0228F007.D	02/28/11	11:36
QCT03	K1101425-001	J:\MS18\DATA\022811\0228F011.D	02/28/11	13:00
MS56IDL	K1101425-005	J:\MS18\DATA\022811\0228F012.D	02/28/11	13:21
MS41I	K1101425-002	J:\MS18\DATA\022811\0228F013.D	02/28/11	13:42
QCR04	K1101425-008	J:\MS18\DATA\022811\0228F014.D	02/28/11	14:03
QCR03	K1101425-010	J:\MS18\DATA\022811\0228F015.D	02/28/11	14:24
MS54SDL	K1101425-007	J:\MS18\DATA\022811\0228F016.D	02/28/11	14:45
MS54IDL	K1101425-006	J:\MS18\DATA\022811\0228F017.D	02/28/11	15:06
MS33IDL	K1101425-009	J:\MS18\DATA\022811\0228F018.D	02/28/11	15:27
MS36SDL	K1101425-004	J:\MS18\DATA\022811\0228F019.D	02/28/11	15:48
MS55I	K1101425-003	J:\MS18\DATA\022811\0228F020.D	02/28/11	16:09
MS54S	K1101425-007	J:\MS18\DATA\022811\0228F021.D	02/28/11	16:30
MS54I	K1101425-006	J:\MS18\DATA\022811\0228F022.D	02/28/11	16:52
MS56I	K1101425-005	J:\MS18\DATA\022811\0228F023.D	02/28/11	17:13
MS33I	K1101425-009	J:\MS18\DATA\022811\0228F025.D	02/28/11	17:55
MS36S	K1101425-004	J:\MS18\DATA\022811\0228F026.D	02/28/11	18:16

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101425
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	02/28/2011
		Date Analyzed:	02/28/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1101813-4	**Basis:**	NA
File ID:	J:\MS18\DATA\022811\0228F010.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101813
Analysis Method:	8260C	**Calibration ID:**	CAL10226

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
75-09-2	Methylene Chloride	0.10	U	2.0	0.10	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	81	73-122	02/28/11	Acceptable
Toluene-d8	87	78-129	02/28/11	Acceptable
4-Bromofluorobenzene	80	68-117	02/28/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1101425

Surrogate Recovery Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
QCT03	K1101425-001	85	88	77
MS41I	K1101425-002	85	89	79
MS55I	K1101425-003	87	89	78
MS36S	K1101425-004	90	89	78
MS36SDL	K1101425-004	87	88	78
MS56I	K1101425-005	88	88	78
MS56IDL	K1101425-005	84	88	78
MS54I	K1101425-006	86	88	77
MS54IDL	K1101425-006	86	90	78
MS54SDL	K1101425-007	85	88	78
MS54S	K1101425-007	86	90	79
QCR04	K1101425-008	85	89	78
MS33I	K1101425-009	87	89	78
MS33IDL	K1101425-009	86	89	77
QCR03	K1101425-010	86	89	79
Method Blank	KWG1101813-4	81	87	80
MS56IMS	KWG1101813-1	87	93	86
MS56IDMS	KWG1101813-2	85	94	87
Lab Control Sample	KWG1101813-3	88	94	87

Surrogate Recovery Control Limits (%)

Sur1 =	Dibromofluoromethane	73-122
Sur2 =	Toluene-d8	78-129
Sur3 =	4-Bromofluorobenzene	68-117

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1101425
Project:	NIROP/J070047	**Date Extracted:**	02/28/2011
Sample Matrix:	Water	**Date Analyzed:**	02/28/2011

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	EPA 5030B	**Units:**	ug/L
Analysis Method:	8260C	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1101813

	Lab Control Sample KWG1101813-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Vinyl Chloride	7.71	10.0	77	59-135
1,1-Dichloroethene	8.77	10.0	88	70-136
Methylene Chloride	9.01	10.0	90	64-137
trans-1,2-Dichloroethene	8.87	10.0	89	70-121
1,1-Dichloroethane	8.64	10.0	86	72-122
cis-1,2-Dichloroethene	8.66	10.0	87	76-125
1,1,1-Trichloroethane (TCA)	7.03	10.0	70	65-126
Trichloroethene (TCE)	8.98	10.0	90	71-122
Tetrachloroethene (PCE)	8.88	10.0	89	65-121

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1101425
Project:	NIROP/J070047	**Date Extracted:**	02/28/2011
Sample Matrix:	Water	**Date Analyzed:**	02/28/2011

Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organic Compounds

Sample Name:	MS56I	**Units:**	ug/L
Lab Code:	K1101425-005	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C	**Extraction Lot:**	KWG1101813

		MS56IMS KWG1101813-1 Matrix Spike			MS56IDMS KWG1101813-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Vinyl Chloride	0.14	154	200	77	138	200	69	52-151	12	30
1,1-Dichloroethene	1.3	177	200	88	163	200	81	67-147	8	30
Methylene Chloride	ND	200	200	100	188	200	94	62-136	6	30
trans-1,2-Dichloroethene	27	210	200	92	194	200	83	69-128	8	30
1,1-Dichloroethane	7.9	191	200	92	179	200	85	67-130	7	30
cis-1,2-Dichloroethene	300	488	200	96	460	200	81	68-134	6	30
1,1,1-Trichloroethane (TCA)	ND	142	200	71	133	200	66	63-137	7	30
Trichloroethene (TCE)	290	456	200	83	424	200	67	56-137	7	30
Tetrachloroethene (PCE)	ND	179	200	89	168	200	84	60-128	6	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1101425
Date Analyzed: 02/28/2011
Time Analyzed: 10:03

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID: J:\MS18\DATA\022811\0228F004.D
Instrument ID: GC-MS 18
Analysis Method: 8260C

Lab Code: KWG1101801-2
Analysis Lot: KWG1101801

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	377,970	5.87	155,553	9.29	158,917	11.70
	Upper Limit ==>	755,940	6.37	311,106	9.79	317,834	12.20
	Lower Limit ==>	188,985	5.37	77,777	8.79	79,459	11.20
	ICAL Result ==>	387,339	5.87	157,373	9.28	159,933	11.69
Associated Analyses							
Lab Control Sample	KWG1101813-3	377,417	5.87	156,407	9.29	160,007	11.70
MS56IMS	KWG1101813-1	365,481	5.87	150,959	9.29	152,769	11.70
MS56IDMS	KWG1101813-2	383,517	5.87	157,633	9.29	160,420	11.70
Method Blank	KWG1101813-4	359,161	5.87	143,479	9.29	141,018	11.70
QCT03	K1101425-001	349,952	5.87	143,412	9.29	138,588	11.70
MS56IDL	K1101425-005	341,756	5.87	139,115	9.29	137,916	11.70
MS41I	K1101425-002	344,785	5.87	142,425	9.29	139,568	11.70
QCR04	K1101425-008	339,268	5.87	141,411	9.29	139,353	11.70
QCR03	K1101425-010	337,294	5.87	138,911	9.28	137,724	11.70
MS54SDL	K1101425-007	340,438	5.87	139,981	9.29	136,319	11.70
MS54IDL	K1101425-006	330,944	5.87	136,957	9.29	135,814	11.70
MS33IDL	K1101425-009	337,024	5.87	139,048	9.29	135,260	11.70
MS36SDL	K1101425-004	337,333	5.87	138,481	9.29	135,612	11.70
MS55I	K1101425-003	344,253	5.87	138,923	9.29	137,040	11.70
MS54S	K1101425-007	338,102	5.87	138,413	9.29	136,602	11.70
MS54I	K1101425-006	342,754	5.87	139,173	9.29	136,307	11.70
MS56I	K1101425-005	342,275	5.87	137,980	9.29	136,398	11.70
MS33I	K1101425-009	332,708	5.87	134,791	9.29	133,474	11.70
MS36S	K1101425-004	341,109	5.87	139,584	9.29	136,923	11.70

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1101425
Date Extracted: 02/28/2011

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1101813
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
QCT03	K1101425-001	02/16/11	02/18/11	10ml	10ml	NA	
MS41I	K1101425-002	02/16/11	02/18/11	10ml	10ml	NA	
MS55I	K1101425-003	02/16/11	02/18/11	10ml	10ml	NA	
MS36SDL	K1101425-004	02/16/11	02/18/11	10ml	10ml	NA	
MS36S	K1101425-004	02/16/11	02/18/11	10ml	10ml	NA	
MS56IDL	K1101425-005	02/16/11	02/18/11	10ml	10ml	NA	
MS56I	K1101425-005	02/16/11	02/18/11	10ml	10ml	NA	
MS54I	K1101425-006	02/16/11	02/18/11	10ml	10ml	NA	
MS54IDL	K1101425-006	02/16/11	02/18/11	10ml	10ml	NA	
MS54S	K1101425-007	02/16/11	02/18/11	10ml	10ml	NA	
MS54SDL	K1101425-007	02/16/11	02/18/11	10ml	10ml	NA	
QCR04	K1101425-008	02/17/11	02/18/11	10ml	10ml	NA	
MS33IDL	K1101425-009	02/17/11	02/18/11	10ml	10ml	NA	
MS33I	K1101425-009	02/17/11	02/18/11	10ml	10ml	NA	
QCR03	K1101425-010	02/16/11	02/18/11	10ml	10ml	NA	
Method Blank	KWG1101813-4	NA	NA	10ml	10ml	NA	
MS56IMS	KWG1101813-1	02/16/11	02/18/11	10ml	10ml	NA	
MS56IDMS	KWG1101813-2	02/16/11	02/18/11	10ml	10ml	NA	
Lab Control Sample	KWG1101813-3	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

TETRA TECH NUS, INC. **CALCULATION WORKSHEET** PAGE 1 OF 1

CLIENT NIROP Fridley		JOB NUMBER SDG K1011425	
SUBJECT Sample Calculation			
BASED ON		DRAWING NUMBER	
BY Ann Cognetti	CHECKED BY	APPROVED BY JAd	DATE May 6, 2011

Sample MS365; (cis 1,2- dichloroethene)

$$\frac{218202}{337333} * 10 * \frac{10\ ppb}{0.295} = 219.3\ ug/L$$ ✓

Sample Calculation

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1101425
Project:	NIROP/J070047	**Date Collected:**	02/16/2011
Sample Matrix:	Water	**Date Received:**	02/18/2011
		Date Extracted:	02/28/2011
		Date Analyzed:	02/28/2011

Volatile Organic Compounds

Sample Name:	MS36SDL	**Units:**	ug/L
Lab Code:	K1101425-004	**Basis:**	NA
File ID:	J:\MS18\DATA\022811\0228F019.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1101813
Analysis Method:	8260C	**Calibration ID:**	CAL10226

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 10

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**2.1**	D	2.0	0.75	
75-35-4	1,1-Dichloroethene	0.74	U	5.0	0.74	
75-09-2	Methylene Chloride	**1.4**	JD	20	1.0	
156-60-5	trans-1,2-Dichloroethene	**78**	D	5.0	0.57	
75-34-3	1,1-Dichloroethane	**1.6**	JD	5.0	0.77	
156-59-2	cis-1,2-Dichloroethene	**220**	D	5.0	0.67	
71-55-6	1,1,1-Trichloroethane (TCA)	0.75	U	5.0	0.75	
79-01-6	Trichloroethene (TCE)	**190**	D	5.0	1.0	
127-18-4	Tetrachloroethene (PCE)	0.99	U	5.0	0.99	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	87	73-122	02/28/11	Acceptable
Toluene-d8	88	78-129	02/28/11	Acceptable
4-Bromofluorobenzene	78	68-117	02/28/11	Acceptable

Comments:

Sample Calculation

Quantitation Report (QT Reviewed)

Data File : J:\MS18\DATA\022811\0228F019.D
Acq On : 28 Feb 2011 3:48 pm
Sample : K1101425-004 10X
Misc : MS36S
MS Integration Params: rteint.p
Quant Time: Mar 01 09:50:12 2011

Vial: 18
Operator: RA
Inst : GC-MS 18
Multiplr: 1.00
Quant Results File: 011311MS18_8260

Quant Method : J:\MS18\METHODS\011311MS18_8260.M (RTE Integrator)
Title : VOA MS18 EPA Method 8260B
Last Update : Wed Feb 23 12:02:23 2011
Response via : Initial Calibration
DataAcq Meth : 8260

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	5.87	96	337333	10.00	PPB	0.00
61) Chlorobenzene-d5	9.29	82	138481	10.00	PPB	0.00
82) 1,4-Dichlorobenzene-d4	11.70	152	135612	10.00	PPB	0.00
System Monitoring Compounds						
41) Dibromofluoromethane	5.05	113	71462	8.66	PPB	0.00
Spiked Amount 10.000			Recovery	=	86.60%	
45) 1,2-Dichloroethane-d4	5.52	65	83256	8.08	PPB	0.00
Spiked Amount 10.000			Recovery	=	80.80%	
59) Toluene-d8	7.71	98	316200	8.83	PPB	0.00
Spiked Amount 10.000			Recovery	=	88.30%	
81) 4-Bromofluorobenzene	10.52	95	111825	7.79	PPB	0.00
Spiked Amount 10.000			Recovery	=	77.90%	
Target Compounds						Qvalue
4) Vinyl Chloride	1.42	62	2521m	0.21	PPB	
13) Acetone	2.53	43	2288	1.37	PPB	92
15) Carbon Disulfide	2.59	76	2171	0.08	PPB	79
19) Methylene Chloride	2.93	84	1318	0.14	PPB	87
23) trans-1,2-Dichloroethene	3.16	96	69615	7.77	PPB	98
26) 1,1-Dichloroethane	3.68	63	2521	0.16	PPB	90
31) cis-1,2-Dichloroethene	4.40	96	218202	21.95	PPB	99
49) Trichloroethene	6.30	95	168551	18.91	PPB	98
60) Toluene	7.79	92	502	0.02	PPB	93

(#) = qualifier out of range (m) = manual integration

Sample Calculation

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1101425
Calibration Date: 01/13/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10226
Instrument ID: GC-MS 18

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Vinyl Chloride	MS	AverageRF	% RSD	10.5		≤ 20	0.356		0.100
1,1-Dichloroethene	MS	AverageRF	% RSD	8.4		≤ 20	0.219		0.100
Methylene Chloride	MS	AverageRF	% RSD	9.3		≤ 20	0.287		0.100
trans-1,2-Dichloroethene	MS	AverageRF	% RSD	6.1		≤ 20	0.266		0.100
1,1-Dichloroethane	MS	AverageRF	% RSD	5.2		≤ 20	0.461		0.200
cis-1,2-Dichloroethene	MS	AverageRF	% RSD	4.8		≤ 20	0.295		0.100
1,1,1-Trichloroethane (TCA)	MS	AverageRF	% RSD	10.8		≤ 20	0.366		0.100
Trichloroethene (TCE)	MS	AverageRF	% RSD	6.8		≤ 20	0.264		0.200
Tetrachloroethene (PCE)	MS	AverageRF	% RSD	6.5		≤ 20	0.553		0.200
Dibromofluoromethane	SURR	AverageRF	% RSD	4.8		≤ 20	0.245		0.01
Toluene-d8	SURR	AverageRF	% RSD	5.9		≤ 20	1.06		0.01
4-Bromofluorobenzene	SURR	AverageRF	% RSD	3.9		≤ 20	1.04		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**M. SLADIC**	**DATE:**	**AUGUST 25, 2011**
FROM:	**EDWARD SEDLMYER**	**COPIES:**	**DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – SELECT VOCs**
CTO F27C NIROP FRIDLEY
SAMPLE DELIVERY GROUPS (SDGs) – K1104246 and K1105242

SAMPLES: 32/Aqueous

MS131S	MS15IS	MS18S	MS33I
MS34I	MS35D	MS35I	MS36S
MS37S	MS38S	MS41I	MS43I
MS44I	MS45I	MS45S	MS46S
MS54I	MS54S	MS55I	MS56I
QCD01	QCD02	QCR01	QCR02
QCR03	QCT02	QCT02-A	AT03A
AT05B	AT10	QCD03	QCT03

Overview

The sample set for NIROP Fridley, CTO F27C, SDGs K1104246 and K1105242 consists of twenty-five (25) aqueous environmental samples, three (3) rinse blanks (QCR01, QCR02, and QCR03), and three (3) trip blanks (QCT02, QCT02-A, and QCT03). Three field duplicate pairs were associated with this SDG: MS37S / QCD01, MS33I / QCD02, and AT05B / QCD03.

All samples were analyzed for select volatile organic compounds (VOCs) including vinyl chloride, 1,1-dichloroethene, trans-1,2-dichloroethene, 1,1-dichloroethane, cis-1,2-dichloroethene, 1,1,1-trichloroethane, trichloroethene and tetrachloroethene. The samples were collected by Bay West on May 9, 10, 11. and June, 9, 2011 and analyzed by Columbia Analytical Services, Inc. VOC analyses were conducted using SW-846 method 8260B.

These data were evaluated based on the following parameters:

* • Data Completeness
* • Holding Times
* • GC/MS Tuning and System Performance
* • Initial and Continuing Calibrations
* • Laboratory Method and Field Quality Control Blank Analyses
* • Surrogate Recoveries
* • Laboratory Control Sample / Laboratory Control Sample Duplicate Results
• Matrix Spike / Matrix Spike Duplicate Results
* • Internal Standard Recoveries
* • Compound Quantitation
* • Compound Identification
* • Detection Limits

* - All quality control criteria were met for this parameter.

VOC

The matrix spike / matrix spike duplicate performed on sample MS151S had a percent recovery less than the lower control limit for trichloroethene in the MSD. No qualification of the data was necessary because the MS and LCS had acceptable recoveries for trichloroethene.

Notes

Positive results reported below the reporting limit (RL) but above the method detection limit (MDL) for the organic analyses were qualified as estimated, "J".

The rinse blanks QCR01 and QCR02 had detections for trichloroethene and rinse blank QCR3 had detections for cis-1,2-dichloroethene, trans-1,2-dichloroethene, and trichloroethene. No qualification of results were taken due to rinse blank contamination. Associated samples collected on the same date as each referenced rinse blank contained concentrations that exceeded the levels of the rinse blanks.

Samples MS18S, MS33I, MS34I, MS35I, MS36S, MS37S, MS38S, MS44I, MS45S, MS46S, MS54I, MS54S, MS55I, MS56I, QCD01, QCD02, AT03A, AT05B, AT10, and QCD03 were diluted due to concentrations greater than the linear range of the instrument. The laboratory submitted multiple runs of the samples. The lowest detection limit from the reported runs were used to report the nondetected compounds.

Executive Summary

Laboratory Performance: No qualification of the data was necessary.

Other Factors Affecting Data Quality: Positive results reported below the reporting limit (RL) but above the method detection limit (MDL) for the organic analyses were qualified as estimated, "J".

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Organic Review", October 1999, and the Department of Defense (DoD) document entitled "Quality Systems Manual (QSM) for Environmental Laboratories", April 2009.

The text of this report has been formulated to address only those problem areas affecting data quality.

Tetra Tech NUS
Edward Sedlmyer
Chemist/Data Validator

Tetra Tech NUS
Joseph A. Samchuck
Quality Assurance Officer

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Data Validation Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$ / ICP PDS Recovery Noncompliance
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (e.g. base-line drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; e.g. chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = % Difference between columns/detectors >25% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient $r < 0.995$
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 02583 SDG: K1104246 FRACTION: OV MEDIA: WATER	NSAMPLE	MS131S			MS15IS			MS18S			MS18SDL		
	LAB_ID	K1104246-002			K1104246-016			K1104246-025			K1104246-025DL		
	SAMP_DATE	5/9/2011			5/9/2011			5/10/2011			5/10/2011		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			98.0			80.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.075	U		0.075	U		0.15	U				
1,1-DICHLOROETHANE		0.14	J	P	0.24	J	P	0.94	J	P			
1,1-DICHLOROETHENE		0.2	J	P	0.19	J	P	1.3					
CIS-1,2-DICHLOROETHENE		3.8			1.6			57					
TETRACHLOROETHENE		0.099	U		3.7			0.2	U				
TRANS-1,2-DICHLOROETHENE		0.66			0.3	J	P	17					
TRICHLOROETHENE		21			23						490		
VINYL CHLORIDE		0.075	U		0.075	U		0.15	U				

PROJ_NO: 02583	NSAMPLE	MS33I			MS33IDL			MS34I			MS34IDL		
SDG: K1104246	LAB_ID	K1104246-012			K1104246-012DL			K1104246-011			K1104246-011DL		
FRACTION: OV	SAMP_DATE	5/11/2011			5/11/2011			5/11/2011			5/11/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	-900.0			-9900.0			95.0			50.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.75	U					0.38	U				
1,1-DICHLOROETHANE		2.9	J	P				7.9					
1,1-DICHLOROETHENE		12						4.9					
CIS-1,2-DICHLOROETHENE					2600						420		
TETRACHLOROETHENE		0.99	U					0.5	U				
TRANS-1,2-DICHLOROETHENE					2200			66					
TRICHLOROETHENE					1500						1700		
VINYL CHLORIDE		34						1.6					

PROJ_NO: 02583	NSAMPLE	MS35D			MS35I			MS35IDL			MS36S		
SDG: K1104246	LAB_ID	K1104246-001			K1104246-005			K1104246-005DL			K1104246-008		
FRACTION: OV	SAMP_DATE	5/9/2011			5/9/2011			5/9/2011			5/10/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			97.5			50.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.075	U		0.19	U					0.075	U	
1,1-DICHLOROETHANE		0.077	U		11						0.95		
1,1-DICHLOROETHENE		0.17	J	P	4.3						0.53		
CIS-1,2-DICHLOROETHENE		12						210					
TETRACHLOROETHENE		0.21	J	P	0.35	J	P				0.099	U	
TRANS-1,2-DICHLOROETHENE		0.7			43						48		
TRICHLOROETHENE		28						900					
VINYL CHLORIDE		0.075	U		0.73						3.6		

PROJ_NO: 02583	NSAMPLE	MS36SDL			MS37S			MS37SDL			MS38S		
SDG: K1104246	LAB_ID	K1104246-008DL			K1104246-003			K1104246-003DL			K1104246-010		
FRACTION: OV	SAMP_DATE	5/10/2011			5/9/2011			5/9/2011			5/10/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	95.0			0.0			95.0			95.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE					0.075	U					0.38	U	
1,1-DICHLOROETHANE					1.4						3.4		
1,1-DICHLOROETHENE					3.4						2.9		
CIS-1,2-DICHLOROETHENE		160			45						120		
TETRACHLOROETHENE					0.099	U					0.5	U	
TRANS-1,2-DICHLOROETHENE								85			91		
TRICHLOROETHENE		72			15								
VINYL CHLORIDE					0.42						0.38	U	

PROJ_NO: 02583	NSAMPLE	MS38SDL			MS41I			MS43I			MS44I		
SDG: K1104246	LAB_ID	K1104246-010DL			K1104246-022			K1104246-017			K1104246-023		
FRACTION: OV	SAMP_DATE	5/10/2011			5/10/2011			5/9/2011			5/10/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	50.0			0.0			0.0			98.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE					0.075	U		0.075	U		0.15	U	
1,1-DICHLOROETHANE					0.26	J	P	0.79			8.3		
1,1-DICHLOROETHENE					0.34	J	P	0.33	J	P	2.7		
CIS-1,2-DICHLOROETHENE					17			22					
TETRACHLOROETHENE					4.3			0.099	U		0.2	U	
TRANS-1,2-DICHLOROETHENE					0.96			0.87			24		
TRICHLOROETHENE		1400			28			29					
VINYL CHLORIDE					0.075	U		0.075	U		0.86		

PROJ_NO: 02583	NSAMPLE	MS44IDL			MS45I			MS45S			MS45SDL		
SDG: K1104246	LAB_ID	K1104246-023DL			K1104246-018			K1104246-019			K1104246-019DL		
FRACTION: OV	SAMP_DATE	5/10/2011			5/9/2011			5/9/2011			5/9/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	80.0			0.0			0.0			-900.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE					0.075	U		0.075	U				
1,1-DICHLOROETHANE					0.077	U		2.1					
1,1-DICHLOROETHENE					0.17	J	P	1.7					
CIS-1,2-DICHLOROETHENE		350			11						140		
TETRACHLOROETHENE					3.3			0.099	U				
TRANS-1,2-DICHLOROETHENE					0.58			27					
TRICHLOROETHENE		500			57						280		
VINYL CHLORIDE					0.075	U		0.28					

PROJ_NO: 02583	NSAMPLE	MS46S			MS46SDL			MS54I			MS54IDL		
SDG: K1104246	LAB_ID	K1104246-024			K1104246-024DL			K1104246-020			K1104246-020DL		
FRACTION: OV	SAMP_DATE	5/10/2011			5/10/2011			5/10/2011			5/10/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	98.0			98.0			95.0			50.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.15	U					0.38	U				
1,1-DICHLOROETHANE		0.86	J	P				1.8	J	P			
1,1-DICHLOROETHENE		1.3						4.3					
CIS-1,2-DICHLOROETHENE		40						300					
TETRACHLOROETHENE		0.2	U					1.3	J	P			
TRANS-1,2-DICHLOROETHENE		21						31					
TRICHLOROETHENE					430						1600		
VINYL CHLORIDE		0.18	J	P				0.38	U				

PROJ_NO: 02583	NSAMPLE	MS54S			MS54SDL			MS55I			MS55IDL		
SDG: K1104246	LAB_ID	K1104246-021			K1104246-021DL			K1104246-007			K1104246-007DL		
FRACTION: OV	SAMP_DATE	5/10/2011			5/10/2011			5/10/2011			5/10/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	95.0			50.0			0.0			95.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.38	U					0.075	U				
1,1-DICHLOROETHANE		1.7	J	P				1					
1,1-DICHLOROETHENE		2.6						0.42	J	P			
CIS-1,2-DICHLOROETHENE		150						41					
TETRACHLOROETHENE		0.5	U					0.099	U				
TRANS-1,2-DICHLOROETHENE		35						3					
TRICHLOROETHENE					1000						75		
VINYL CHLORIDE		0.38	U					0.075	U				

PROJ_NO: 02583	NSAMPLE	MS56I			MS56IDL			QCD01			QCD01DL		
SDG: K1104246	LAB_ID	K1104246-009			K1104246-009DL			K1104246-004			K1104246-004DL		
FRACTION: OV	SAMP_DATE	5/10/2011			5/10/2011			5/9/2011			5/9/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			-900.0			0.0			95.0		
	DUP_OF							MS37S			MS37S		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.075	U					0.075	U				
1,1-DICHLOROETHANE		8.3						1.4					
1,1-DICHLOROETHENE		1.3						3.4					
CIS-1,2-DICHLOROETHENE					300			45					
TETRACHLOROETHENE		0.099	U					0.099	U				
TRANS-1,2-DICHLOROETHENE		28									87		
TRICHLOROETHENE					330			16					
VINYL CHLORIDE		0.16	J	P				0.44					

PROJ_NO: 02583	NSAMPLE	QCD02			QCD02DL			QCR01			QCR02		
SDG: K1104246	LAB_ID	K1104246-013			K1104246-013DL			K1104246-006			K1104246-026		
FRACTION: OV	SAMP_DATE	5/11/2011			5/11/2011			5/9/2011			5/10/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	-900.0			-9900.0			0.0			0.0		
	DUP_OF	MS33I			MS33I								
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.75	U					0.075	U		0.075	U	
1,1-DICHLOROETHANE		3.3	J	P				0.077	U		0.077	U	
1,1-DICHLOROETHENE		13						0.074	U		0.074	U	
CIS-1,2-DICHLOROETHENE					2700			0.067	U		0.067	U	
TETRACHLOROETHENE		0.99	U					0.099	U		0.099	U	
TRANS-1,2-DICHLOROETHENE					2000			0.057	U		0.057	U	
TRICHLOROETHENE					1400			0.16	J	P	0.26	J	P
VINYL CHLORIDE		35						0.075	U		0.075	U	

PROJ_NO: 02583	NSAMPLE	QCR03			QCT02			QCT02-A		
SDG: K1104246	LAB_ID	K1104246-015			K1104246-014			K1104246-027		
FRACTION: OV	SAMP_DATE	5/11/2011			5/9/2011			5/9/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0		
	DUP_OF									
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.075	U		0.075	U		0.075	U	
1,1-DICHLOROETHANE		0.077	U		0.077	U		0.077	U	
1,1-DICHLOROETHENE		0.074	U		0.074	U		0.074	U	
CIS-1,2-DICHLOROETHENE		0.41	J	P	0.067	U		0.067	U	
TETRACHLOROETHENE		0.099	U		0.099	U		0.099	U	
TRANS-1,2-DICHLOROETHENE		0.61			0.057	U		0.057	U	
TRICHLOROETHENE		0.66			0.1	U		0.1	U	
VINYL CHLORIDE		0.075	U		0.075	U		0.075	U	

PROJ_NO: 02583 SDG: K1105242 FRACTION: OV MEDIA: WATER	NSAMPLE	AT03A			AT03ADL			AT05B			AT05BDL		
	LAB_ID	K1105242-004			K1105242-004DL			K1105242-002			K1105242-002DL		
	SAMP_DATE	6/9/2011			6/9/2011			6/9/2011			6/9/2011		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	100.0			100.0			100.0			100.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.19	U					0.075	U				
1,1-DICHLOROETHANE		0.43	J	P				0.6					
1,1-DICHLOROETHENE		1.3	J	P				0.69					
CIS-1,2-DICHLOROETHENE		100						12					
TETRACHLOROETHENE		5.4						2.1					
TRANS-1,2-DICHLOROETHENE		23						13					
TRICHLOROETHENE					1100						330		
VINYL CHLORIDE		0.28	J	P				0.24					

PROJ_NO: 02583	NSAMPLE	AT10			AT10DL			QCD03			QCD03DL		
SDG: K1105242	LAB_ID	K1105242-001			K1105242-001DL			K1105242-003			K1105242-003DL		
FRACTION: OV	SAMP_DATE	6/9/2011			6/9/2011			6/9/2011			6/9/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	100.0			100.0			100.0			100.0		
	DUP_OF							AT05B			AT05B		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.075	U					0.075	U				
1,1-DICHLOROETHANE		0.63						0.61					
1,1-DICHLOROETHENE		0.53						0.69					
CIS-1,2-DICHLOROETHENE		25						12					
TETRACHLOROETHENE		0.099	U					2.2					
TRANS-1,2-DICHLOROETHENE		43						13					
TRICHLOROETHENE					220						320		
VINYL CHLORIDE		0.58						0.24					

PROJ_NO: 02583	NSAMPLE	QCT03		
SDG: K1105242	LAB_ID	K1105242-005		
FRACTION: OV	SAMP_DATE	6/9/2011		
MEDIA: WATER	QC_TYPE	NM		
	UNITS	UG/L		
	PCT_SOLIDS	100.0		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.075	U	
1,1-DICHLOROETHANE		0.077	U	
1,1-DICHLOROETHENE		0.074	U	
CIS-1,2-DICHLOROETHENE		0.067	U	
TETRACHLOROETHENE		0.099	U	
TRANS-1,2-DICHLOROETHENE		0.057	U	
TRICHLOROETHENE		0.1	U	
VINYL CHLORIDE		0.075	U	

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Collected:**	05/09/2011
Sample Matrix:	Water	**Date Received:**	05/12/2011
		Date Extracted:	05/17/2011
		Date Analyzed:	05/17/2011

Volatile Organic Compounds

Sample Name:	MS131S	**Units:**	ug/L
Lab Code:	K1104246-002	**Basis:**	NA
File ID:	J:\MS13\DATA\051711\0517F019.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1104399
Analysis Method:	8260C	**Calibration ID:**	CAL10462

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.20**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.66**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.14**	J	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**3.8**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**21**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	100	73-122	05/17/11	Acceptable
Toluene-d8	104	78-129	05/17/11	Acceptable
4-Bromofluorobenzene	97	68-117	05/17/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Collected:**	05/09/2011
Sample Matrix:	Water	**Date Received:**	05/12/2011
		Date Extracted:	05/17/2011
		Date Analyzed:	05/17/2011

Volatile Organic Compounds

Sample Name:	MS15IS	**Units:**	ug/L
Lab Code:	K1104246-016	**Basis:**	NA
File ID:	J:\MS04\DATA\051711\0517F011.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1104421
Analysis Method:	8260C	**Calibration ID:**	CAL10409

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.19**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.30**	J	0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.24**	J	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**1.6**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**23**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**3.7**		0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	116	73-122	05/17/11	Acceptable
Toluene-d8	120	78-129	05/17/11	Acceptable
4-Bromofluorobenzene	101	68-117	05/17/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Collected:**	05/10/2011
Sample Matrix:	Water	**Date Received:**	05/12/2011
		Date Extracted:	05/18/2011
		Date Analyzed:	05/18/2011

Volatile Organic Compounds

Sample Name:	MS18S	**Units:**	ug/L
Lab Code:	K1104246-025	**Basis:**	NA
File ID:	J:\MS13\DATA\051811\0518F022.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1104437
Analysis Method:	8260C	**Calibration ID:**	CAL10462

Sample Amount:	10 ml
% Solids:	NA
Dilution Factor:	2

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.15	U	0.40	0.15	
75-35-4	1,1-Dichloroethene	**1.3**	D	1.0	0.15	
156-60-5	trans-1,2-Dichloroethene	**17**	D	1.0	0.12	
75-34-3	1,1-Dichloroethane	**0.94**	JD	1.0	0.16	
156-59-2	cis-1,2-Dichloroethene	**57**	D	1.0	0.14	
71-55-6	1,1,1-Trichloroethane (TCA)	0.15	U	1.0	0.15	
79-01-6	Trichloroethene (TCE)	**510**	ED	1.0	0.20	
127-18-4	Tetrachloroethene (PCE)	0.20	U	1.0	0.20	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	102	73-122	05/18/11	Acceptable
Toluene-d8	104	78-129	05/18/11	Acceptable
4-Bromofluorobenzene	95	68-117	05/18/11	Acceptable

Comments

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Collected:**	05/10/2011
Sample Matrix:	Water	**Date Received:**	05/12/2011
		Date Extracted:	05/18/2011
		Date Analyzed:	05/18/2011

Volatile Organic Compounds

Sample Name:	MS18SDL	**Units:**	ug/L
Lab Code:	K1104246-025	**Basis:**	NA
File ID:	J:\MS13\DATA\051811\0518F016.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1104437
Analysis Method:	8260C	**Calibration ID:**	CAL10462

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 20

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	1.5	U	4.0	1.5	
75-35-4	1,1-Dichloroethene	1.5	U	10	1.5	
156-60-5	trans-1,2-Dichloroethene	**17**	D	10	1.2	
75-34-3	1,1-Dichloroethane	1.6	U	10	1.6	
156-59-2	cis-1,2-Dichloroethene	**57**	D	10	1.4	
71-55-6	1,1,1-Trichloroethane (TCA)	1.5	U	10	1.5	
79-01-6	Trichloroethene (TCE)	**490**	D	10	2.0	
127-18-4	Tetrachloroethene (PCE)	2.0	U	10	2.0	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	101	73-122	05/18/11	Acceptable
Toluene-d8	105	78-129	05/18/11	Acceptable
4-Bromofluorobenzene	95	68-117	05/18/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Collected:**	05/11/2011
Sample Matrix:	Water	**Date Received:**	05/12/2011
		Date Extracted:	05/18/2011
		Date Analyzed:	05/18/2011

Volatile Organic Compounds

Sample Name:	MS33I	**Units:**	ug/L
Lab Code:	K1104246-012	**Basis:**	NA
File ID:	J:\MS04\DATA\051811\0518F018.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1104463
Analysis Method:	8260C	**Calibration ID:**	CAL10409

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 10

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**34**	D	2.0	0.75	
75-35-4	1,1-Dichloroethene	**12**	D	5.0	0.74	
156-60-5	trans-1,2-Dichloroethene	**2100**	ED	5.0	0.57	
75-34-3	1,1-Dichloroethane	**2.9**	JD	5.0	0.77	
156-59-2	cis-1,2-Dichloroethene	**2600**	ED	5.0	0.67	
71-55-6	1,1,1-Trichloroethane (TCA)	0.75	U	5.0	0.75	
79-01-6	Trichloroethene (TCE)	**1500**	ED	5.0	1.0	
127-18-4	Tetrachloroethene (PCE)	0.99	U	5.0	0.99	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	117	73-122	05/18/11	Acceptable
Toluene-d8	121	78-129	05/18/11	Acceptable
4-Bromofluorobenzene	101	68-117	05/18/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Collected:**	05/11/2011
Sample Matrix:	Water	**Date Received:**	05/12/2011
		Date Extracted:	05/18/2011
		Date Analyzed:	05/18/2011

Volatile Organic Compounds

Sample Name:	MS33IDL	**Units:**	ug/L
Lab Code:	K1104246-012	**Basis:**	NA
File ID:	J:\MS04\DATA\051811\0518F015.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1104463
Analysis Method:	8260C	**Calibration ID:**	CAL10409

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 100

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**34**	D	20	7.5	
75-35-4	1,1-Dichloroethene	**15**	JD	50	7.4	
156-60-5	trans-1,2-Dichloroethene	**2200**	D	50	5.7	
75-34-3	1,1-Dichloroethane	7.7	U	50	7.7	
156-59-2	cis-1,2-Dichloroethene	**2600**	D	50	6.7	
71-55-6	1,1,1-Trichloroethane (TCA)	7.5	U	50	7.5	
79-01-6	Trichloroethene (TCE)	**1500**	D	50	10	
127-18-4	Tetrachloroethene (PCE)	9.9	U	50	9.9	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	116	73-122	05/18/11	Acceptable
Toluene-d8	119	78-129	05/18/11	Acceptable
4-Bromofluorobenzene	101	68-117	05/18/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Collected:**	05/11/2011
Sample Matrix:	Water	**Date Received:**	05/12/2011
		Date Extracted:	05/18/2011
		Date Analyzed:	05/18/2011

Volatile Organic Compounds

Sample Name:	MS34I	**Units:**	ug/L
Lab Code:	K1104246-011	**Basis:**	NA
File ID:	J:\MS04\DATA\051811\0518F017.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1104463
Analysis Method:	8260C	**Calibration ID:**	CAL10409

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 5

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**1.6**	D	1.0	0.38	
75-35-4	1,1-Dichloroethene	**4.9**	D	2.5	0.37	
156-60-5	trans-1,2-Dichloroethene	**66**	D	2.5	0.29	
75-34-3	1,1-Dichloroethane	**7.9**	D	2.5	0.39	
156-59-2	cis-1,2-Dichloroethene	**450**	ED	2.5	0.34	
71-55-6	1,1,1-Trichloroethane (TCA)	0.38	U	2.5	0.38	
79-01-6	Trichloroethene (TCE)	**1800**	ED	2.5	0.50	
127-18-4	Tetrachloroethene (PCE)	0.50	U	2.5	0.50	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	116	73-122	05/18/11	Acceptable
Toluene-d8	122	78-129	05/18/11	Acceptable
4-Bromofluorobenzene	101	68-117	05/18/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Collected:**	05/11/2011
Sample Matrix:	Water	**Date Received:**	05/12/2011
		Date Extracted:	05/18/2011
		Date Analyzed:	05/18/2011

Volatile Organic Compounds

Sample Name:	MS34IDL	**Units:**	ug/L
Lab Code:	K1104246-011	**Basis:**	NA
File ID:	J:\MS04\DATA\051811\0518F014.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1104463
Analysis Method:	8260C	**Calibration ID:**	CAL10409

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 50

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	3.8	U	10	3.8	
75-35-4	1,1-Dichloroethene	**5.5**	JD	25	3.7	
156-60-5	trans-1,2-Dichloroethene	**65**	D	25	2.9	
75-34-3	1,1-Dichloroethane	**7.5**	JD	25	3.9	
156-59-2	cis-1,2-Dichloroethene	**420**	D	25	3.4	
71-55-6	1,1,1-Trichloroethane (TCA)	3.8	U	25	3.8	
79-01-6	Trichloroethene (TCE)	**1700**	D	25	5.0	
127-18-4	Tetrachloroethene (PCE)	5.0	U	25	5.0	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	117	73-122	05/18/11	Acceptable
Toluene-d8	121	78-129	05/18/11	Acceptable
4-Bromofluorobenzene	102	68-117	05/18/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Collected:**	05/09/2011
Sample Matrix:	Water	**Date Received:**	05/12/2011
		Date Extracted:	05/18/2011
		Date Analyzed:	05/18/2011

Volatile Organic Compounds

Sample Name:	MS35D	**Units:**	ug/L
Lab Code:	K1104246-001	**Basis:**	NA
File ID:	J:\MS13\DATA\051811\0518F009.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1104437
Analysis Method:	8260C	**Calibration ID:**	CAL10462

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.17**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.70**		0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**12**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**28**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**0.21**	J	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	99	73-122	05/18/11	Acceptable
Toluene-d8	103	78-129	05/18/11	Acceptable
4-Bromofluorobenzene	95	68-117	05/18/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Collected:**	05/09/2011
Sample Matrix:	Water	**Date Received:**	05/12/2011
		Date Extracted:	05/18/2011
		Date Analyzed:	05/18/2011

Volatile Organic Compounds

Sample Name:	MS35I	**Units:**	ug/L
Lab Code:	K1104246-005	**Basis:**	NA
File ID:	J:\MS13\DATA\051811\0518F025.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1104437
Analysis Method:	8260C	**Calibration ID:**	CAL10462

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 2.5

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.73**	D	0.50	0.19	
75-35-4	1,1-Dichloroethene	**4.3**	D	1.3	0.19	
156-60-5	trans-1,2-Dichloroethene	**43**	D	1.3	0.15	
75-34-3	1,1-Dichloroethane	**11**	D	1.3	0.20	
156-59-2	cis-1,2-Dichloroethene	**210**	ED	1.3	0.17	
71-55-6	1,1,1-Trichloroethane (TCA)	0.19	U	1.3	0.19	
79-01-6	Trichloroethene (TCE)	**910**	ED	1.3	0.25	
127-18-4	Tetrachloroethene (PCE)	**0.35**	JD	1.3	0.25	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	100	73-122	05/18/11	Acceptable
Toluene-d8	103	78-129	05/18/11	Acceptable
4-Bromofluorobenzene	96	68-117	05/18/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Collected:**	05/09/2011
Sample Matrix:	Water	**Date Received:**	05/12/2011
		Date Extracted:	05/18/2011
		Date Analyzed:	05/18/2011

Volatile Organic Compounds

Sample Name:	MS35IDL	**Units:**	ug/L
Lab Code:	K1104246-005	**Basis:**	NA
File ID:	J:\MS13\DATA\051811\0518F019.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1104437
Analysis Method:	8260C	**Calibration ID:**	CAL10462

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 50

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	3.8	U	10	3.8	
75-35-4	1,1-Dichloroethene	**5.5**	JD	25	3.7	
156-60-5	trans-1,2-Dichloroethene	**45**	D	25	2.9	
75-34-3	1,1-Dichloroethane	**11**	JD	25	3.9	
156-59-2	cis-1,2-Dichloroethene	**210**	D	25	3.4	
71-55-6	1,1,1-Trichloroethane (TCA)	3.8	U	25	3.8	
79-01-6	Trichloroethene (TCE)	**900**	D	25	5.0	
127-18-4	Tetrachloroethene (PCE)	5.0	U	25	5.0	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	100	73-122	05/18/11	Acceptable
Toluene-d8	104	78-129	05/18/11	Acceptable
4-Bromofluorobenzene	96	68-117	05/18/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Collected:**	05/10/2011
Sample Matrix:	Water	**Date Received:**	05/12/2011
		Date Extracted:	05/18/2011
		Date Analyzed:	05/18/2011

Volatile Organic Compounds

Sample Name:	MS36S	**Units:**	ug/L
Lab Code:	K1104246-008	**Basis:**	NA
File ID:	J:\MS04\DATA\051711\0517F021.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1104421
Analysis Method:	8260C	**Calibration ID:**	CAL10409

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**3.6**		0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.53**		0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**48**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.95**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**170**	E	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**81**	E	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	117	73-122	05/18/11	Acceptable
Toluene-d8	121	78-129	05/18/11	Acceptable
4-Bromofluorobenzene	99	68-117	05/18/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Collected:**	05/10/2011
Sample Matrix:	Water	**Date Received:**	05/12/2011
		Date Extracted:	05/17/2011
		Date Analyzed:	05/17/2011

Volatile Organic Compounds

Sample Name:	MS36SDL	**Units:**	ug/L
Lab Code:	K1104246-008	**Basis:**	NA
File ID:	J:\MS04\DATA\051711\0517F016.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1104421
Analysis Method:	8260C	**Calibration ID:**	CAL10409

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 5

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**3.4**	D	1.0	0.38	
75-35-4	1,1-Dichloroethene	**0.50**	JD	2.5	0.37	
156-60-5	trans-1,2-Dichloroethene	**44**	D	2.5	0.29	
75-34-3	1,1-Dichloroethane	**0.85**	JD	2.5	0.39	
156-59-2	cis-1,2-Dichloroethene	**160**	D	2.5	0.34	
71-55-6	1,1,1-Trichloroethane (TCA)	0.38	U	2.5	0.38	
79-01-6	Trichloroethene (TCE)	**72**	D	2.5	0.50	
127-18-4	Tetrachloroethene (PCE)	0.50	U	2.5	0.50	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	118	73-122	05/17/11	Acceptable
Toluene-d8	121	78-129	05/17/11	Acceptable
4-Bromofluorobenzene	102	68-117	05/17/11	Acceptable

Comments

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Collected:**	05/09/2011
Sample Matrix:	Water	**Date Received:**	05/12/2011
		Date Extracted:	05/17/2011
		Date Analyzed:	05/17/2011

Volatile Organic Compounds

Sample Name:	MS37S	**Units:**	ug/L
Lab Code:	K1104246-003	**Basis:**	NA
File ID:	J:\MS13\DATA\051711\0517F024.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1104399
Analysis Method:	8260C	**Calibration ID:**	CAL10462

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.42**		0.20	0.075	
75-35-4	1,1-Dichloroethene	**3.4**		0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**96**	E	0.50	0.057	
75-34-3	1,1-Dichloroethane	**1.4**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**45**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**15**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	99	73-122	05/17/11	Acceptable
Toluene-d8	103	78-129	05/17/11	Acceptable
4-Bromofluorobenzene	97	68-117	05/17/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Collected:**	05/09/2011
Sample Matrix:	Water	**Date Received:**	05/12/2011
		Date Extracted:	05/17/2011
		Date Analyzed:	05/17/2011

Volatile Organic Compounds

Sample Name:	MS37SDL	**Units:**	ug/L
Lab Code:	K1104246-003	**Basis:**	NA
File ID:	J:\MS13\DATA\051711\0517F022.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1104399
Analysis Method:	8260C	**Calibration ID:**	CAL10462

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 5

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.38	U	1.0	0.38	
75-35-4	1,1-Dichloroethene	**3.2**	D	2.5	0.37	
156-60-5	trans-1,2-Dichloroethene	**85**	D	2.5	0.29	
75-34-3	1,1-Dichloroethane	**1.4**	JD	2.5	0.39	
156-59-2	cis-1,2-Dichloroethene	**40**	D	2.5	0.34	
71-55-6	1,1,1-Trichloroethane (TCA)	0.38	U	2.5	0.38	
79-01-6	Trichloroethene (TCE)	**13**	D	2.5	0.50	
127-18-4	Tetrachloroethene (PCE)	0.50	U	2.5	0.50	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	99	73-122	05/17/11	Acceptable
Toluene-d8	104	78-129	05/17/11	Acceptable
4-Bromofluorobenzene	97	68-117	05/17/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Collected:**	05/10/2011
Sample Matrix:	Water	**Date Received:**	05/12/2011
		Date Extracted:	05/18/2011
		Date Analyzed:	05/18/2011

Volatile Organic Compounds

Sample Name:	MS38S	**Units:**	ug/L
Lab Code:	K1104246-010	**Basis:**	NA
File ID:	J:\MS04\DATA\051711\0517F020.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1104421
Analysis Method:	8260C	**Calibration ID:**	CAL10409

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 5

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.38	U	1.0	0.38	
75-35-4	1,1-Dichloroethene	**2.9**	D	2.5	0.37	
156-60-5	trans-1,2-Dichloroethene	**91**	D	2.5	0.29	
75-34-3	1,1-Dichloroethane	**3.4**	D	2.5	0.39	
156-59-2	cis-1,2-Dichloroethene	**120**	D	2.5	0.34	
71-55-6	1,1,1-Trichloroethane (TCA)	0.38	U	2.5	0.38	
79-01-6	Trichloroethene (TCE)	**1400**	ED	2.5	0.50	
127-18-4	Tetrachloroethene (PCE)	0.50	U	2.5	0.50	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	116	73-122	05/18/11	Acceptable
Toluene-d8	120	78-129	05/18/11	Acceptable
4-Bromofluorobenzene	100	68-117	05/18/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Collected:**	05/10/2011
Sample Matrix:	Water	**Date Received:**	05/12/2011
		Date Extracted:	05/17/2011
		Date Analyzed:	05/17/2011

Volatile Organic Compounds

Sample Name:	MS38SDL	**Units:**	ug/L
Lab Code:	K1104246-010	**Basis:**	NA
File ID:	J:\MS04\DATA\051711\0517F015.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1104421
Analysis Method:	8260C	**Calibration ID:**	CAL10409

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 50

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	3.8	U	10	3.8	
75-35-4	1,1-Dichloroethene	3.7	U	25	3.7	
156-60-5	trans-1,2-Dichloroethene	**89**	D	25	2.9	
75-34-3	1,1-Dichloroethane	3.9	U	25	3.9	
156-59-2	cis-1,2-Dichloroethene	**120**	D	25	3.4	
71-55-6	1,1,1-Trichloroethane (TCA)	3.8	U	25	3.8	
79-01-6	Trichloroethene (TCE)	**1400**	D	25	5.0	
127-18-4	Tetrachloroethene (PCE)	5.0	U	25	5.0	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	116	73-122	05/17/11	Acceptable
Toluene-d8	121	78-129	05/17/11	Acceptable
4-Bromofluorobenzene	102	68-117	05/17/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Collected:**	05/10/2011
Sample Matrix:	Water	**Date Received:**	05/12/2011
		Date Extracted:	05/18/2011
		Date Analyzed:	05/18/2011

Volatile Organic Compounds

Sample Name:	MS41I	**Units:**	ug/L
Lab Code:	K1104246-022	**Basis:**	NA
File ID:	J:\MS13\DATA\051811\0518F010.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1104437
Analysis Method:	8260C	**Calibration ID:**	CAL10462

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.34**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.96**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.26**	J	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**17**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**28**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**4.3**		0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	98	73-122	05/18/11	Acceptable
Toluene-d8	104	78-129	05/18/11	Acceptable
4-Bromofluorobenzene	97	68-117	05/18/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Collected:**	05/09/2011
Sample Matrix:	Water	**Date Received:**	05/12/2011
		Date Extracted:	05/17/2011
		Date Analyzed:	05/17/2011

Volatile Organic Compounds

Sample Name:	MS43I	**Units:**	ug/L
Lab Code:	K1104246-017	**Basis:**	NA
File ID:	J:\MS13\DATA\051711\0517F021.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1104399
Analysis Method:	8260C	**Calibration ID:**	CAL10462

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.33**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.87**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.79**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**22**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**29**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	98	73-122	05/17/11	Acceptable
Toluene-d8	104	78-129	05/17/11	Acceptable
4-Bromofluorobenzene	98	68-117	05/17/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Collected:**	05/10/2011
Sample Matrix:	Water	**Date Received:**	05/12/2011
		Date Extracted:	05/18/2011
		Date Analyzed:	05/18/2011

Volatile Organic Compounds

Sample Name:	MS44I	**Units:**	ug/L
Lab Code:	K1104246-023	**Basis:**	NA
File ID:	J:\MS13\DATA\051811\0518F024.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1104437
Analysis Method:	8260C	**Calibration ID:**	CAL10462

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 2

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.86**	D	0.40	0.15	
75-35-4	1,1-Dichloroethene	**2.7**	D	1.0	0.15	
156-60-5	trans-1,2-Dichloroethene	**24**	D	1.0	0.12	
75-34-3	1,1-Dichloroethane	**8.3**	D	1.0	0.16	
156-59-2	cis-1,2-Dichloroethene	**370**	ED	1.0	0.14	
71-55-6	1,1,1-Trichloroethane (TCA)	0.15	U	1.0	0.15	
79-01-6	Trichloroethene (TCE)	**530**	ED	1.0	0.20	
127-18-4	Tetrachloroethene (PCE)	0.20	U	1.0	0.20	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	99	73-122	05/18/11	Acceptable
Toluene-d8	104	78-129	05/18/11	Acceptable
4-Bromofluorobenzene	97	68-117	05/18/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Collected:**	05/10/2011
Sample Matrix:	Water	**Date Received:**	05/12/2011
		Date Extracted:	05/18/2011
		Date Analyzed:	05/18/2011

Volatile Organic Compounds

Sample Name:	MS44IDL	**Units:**	ug/L
Lab Code:	K1104246-023	**Basis:**	NA
File ID:	J:\MS13\DATA\051811\0518F014.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1104437
Analysis Method:	8260C	**Calibration ID:**	CAL10462

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 20

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	1.5	U	4.0	1.5	
75-35-4	1,1-Dichloroethene	**3.0**	JD	10	1.5	
156-60-5	trans-1,2-Dichloroethene	**23**	D	10	1.2	
75-34-3	1,1-Dichloroethane	**7.8**	JD	10	1.6	
156-59-2	cis-1,2-Dichloroethene	**350**	D	10	1.4	
71-55-6	1,1,1-Trichloroethane (TCA)	1.5	U	10	1.5	
79-01-6	Trichloroethene (TCE)	**500**	D	10	2.0	
127-18-4	Tetrachloroethene (PCE)	2.0	U	10	2.0	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	99	73-122	05/18/11	Acceptable
Toluene-d8	103	78-129	05/18/11	Acceptable
4-Bromofluorobenzene	95	68-117	05/18/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Collected:**	05/09/2011
Sample Matrix:	Water	**Date Received:**	05/12/2011
		Date Extracted:	05/17/2011
		Date Analyzed:	05/17/2011

Volatile Organic Compounds

Sample Name:	MS45I	**Units:**	ug/L
Lab Code:	K1104246-018	**Basis:**	NA
File ID:	J:\MS04\DATA\051711\0517F013.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1104421
Analysis Method:	8260C	**Calibration ID:**	CAL10409

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.17**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.58**		0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**11**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**57**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**3.3**		0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	115	73-122	05/17/11	Acceptable
Toluene-d8	120	78-129	05/17/11	Acceptable
4-Bromofluorobenzene	101	68-117	05/17/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Collected:**	05/09/2011
Sample Matrix:	Water	**Date Received:**	05/12/2011
		Date Extracted:	05/18/2011
		Date Analyzed:	05/18/2011

Volatile Organic Compounds

Sample Name:	MS45S	**Units:**	ug/L
Lab Code:	K1104246-019	**Basis:**	NA
File ID:	J:\MS04\DATA\051711\0517F023.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1104421
Analysis Method:	8260C	**Calibration ID:**	CAL10409

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.28**		0.20	0.075	
75-35-4	1,1-Dichloroethene	**1.7**		0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**27**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**2.1**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**160**	E	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**310**	E	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	118	73-122	05/18/11	Acceptable
Toluene-d8	122	78-129	05/18/11	Acceptable
4-Bromofluorobenzene	100	68-117	05/18/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Collected:**	05/09/2011
Sample Matrix:	Water	**Date Received:**	05/12/2011
		Date Extracted:	05/17/2011
		Date Analyzed:	05/17/2011

Volatile Organic Compounds

Sample Name:	MS45SDL	**Units:**	ug/L
Lab Code:	K1104246-019	**Basis:**	NA
File ID:	J:\MS04\DATA\051711\0517F018.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1104421
Analysis Method:	8260C	**Calibration ID:**	CAL10409

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 10

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.75	U	2.0	0.75	
75-35-4	1,1-Dichloroethene	**1.6**	JD	5.0	0.74	
156-60-5	trans-1,2-Dichloroethene	**24**	D	5.0	0.57	
75-34-3	1,1-Dichloroethane	**1.8**	JD	5.0	0.77	
156-59-2	cis-1,2-Dichloroethene	**140**	D	5.0	0.67	
71-55-6	1,1,1-Trichloroethane (TCA)	0.75	U	5.0	0.75	
79-01-6	Trichloroethene (TCE)	**280**	D	5.0	1.0	
127-18-4	Tetrachloroethene (PCE)	0.99	U	5.0	0.99	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	115	73-122	05/17/11	Acceptable
Toluene-d8	120	78-129	05/17/11	Acceptable
4-Bromofluorobenzene	100	68-117	05/17/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Collected:**	05/10/2011
Sample Matrix:	Water	**Date Received:**	05/12/2011
		Date Extracted:	05/18/2011
		Date Analyzed:	05/18/2011

Volatile Organic Compounds

Sample Name:	MS46S	**Units:**	ug/L
Lab Code:	K1104246-024	**Basis:**	NA
File ID:	J:\MS13\DATA\051811\0518F021.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1104437
Analysis Method:	8260C	**Calibration ID:**	CAL10462

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 2

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.18**	JD	0.40	0.15	
75-35-4	1,1-Dichloroethene	**1.3**	D	1.0	0.15	
156-60-5	trans-1,2-Dichloroethene	**21**	D	1.0	0.12	
75-34-3	1,1-Dichloroethane	**0.86**	JD	1.0	0.16	
156-59-2	cis-1,2-Dichloroethene	**40**	D	1.0	0.14	
71-55-6	1,1,1-Trichloroethane (TCA)	0.15	U	1.0	0.15	
79-01-6	Trichloroethene (TCE)	**450**	ED	1.0	0.20	
127-18-4	Tetrachloroethene (PCE)	0.20	U	1.0	0.20	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	101	73-122	05/18/11	Acceptable
Toluene-d8	104	78-129	05/18/11	Acceptable
4-Bromofluorobenzene	96	68-117	05/18/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Collected:**	05/10/2011
Sample Matrix:	Water	**Date Received:**	05/12/2011
		Date Extracted:	05/18/2011
		Date Analyzed:	05/18/2011

Volatile Organic Compounds

Sample Name:	MS46SDL	**Units:**	ug/L
Lab Code:	K1104246-024	**Basis:**	NA
File ID:	J:\MS13\DATA\051811\0518F015.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1104437
Analysis Method:	8260C	**Calibration ID:**	CAL10462

Sample Amount:	10 ml
% Solids:	NA
Dilution Factor:	20

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	1.5	U	4.0	1.5	
75-35-4	1,1-Dichloroethene	1.5	U	10	1.5	
156-60-5	trans-1,2-Dichloroethene	**22**	D	10	1.2	
75-34-3	1,1-Dichloroethane	1.6	U	10	1.6	
156-59-2	cis-1,2-Dichloroethene	**38**	D	10	1.4	
71-55-6	1,1,1-Trichloroethane (TCA)	1.5	U	10	1.5	
79-01-6	Trichloroethene (TCE)	**430**	D	10	2.0	
127-18-4	Tetrachloroethene (PCE)	2.0	U	10	2.0	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	98	73-122	05/18/11	Acceptable
Toluene-d8	103	78-129	05/18/11	Acceptable
4-Bromofluorobenzene	95	68-117	05/18/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Collected:**	05/10/2011
Sample Matrix:	Water	**Date Received:**	05/12/2011
		Date Extracted:	05/18/2011
		Date Analyzed:	05/18/2011

Volatile Organic Compounds

Sample Name:	MS54I	**Units:**	ug/L
Lab Code:	K1104246-020	**Basis:**	NA
File ID:	J:\MS13\DATA\051811\0518F023.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1104437
Analysis Method:	8260C	**Calibration ID:**	CAL10462

Sample Amount:	10 ml
% Solids:	NA
Dilution Factor:	5

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.38	U	1.0	0.38	
75-35-4	1,1-Dichloroethene	**4.3**	D	2.5	0.37	
156-60-5	trans-1,2-Dichloroethene	**31**	D	2.5	0.29	
75-34-3	1,1-Dichloroethane	**1.8**	JD	2.5	0.39	
156-59-2	cis-1,2-Dichloroethene	**300**	D	2.5	0.34	
71-55-6	1,1,1-Trichloroethane (TCA)	0.38	U	2.5	0.38	
79-01-6	Trichloroethene (TCE)	**1600**	ED	2.5	0.50	
127-18-4	Tetrachloroethene (PCE)	**1.3**	JD	2.5	0.50	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	99	73-122	05/18/11	Acceptable
Toluene-d8	103	78-129	05/18/11	Acceptable
4-Bromofluorobenzene	95	68-117	05/18/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Collected:**	05/10/2011
Sample Matrix:	Water	**Date Received:**	05/12/2011
		Date Extracted:	05/18/2011
		Date Analyzed:	05/18/2011

Volatile Organic Compounds

Sample Name:	MS54IDL	**Units:**	ug/L
Lab Code:	K1104246-020	**Basis:**	NA
File ID:	J:\MS13\DATA\051811\0518F017.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1104437
Analysis Method:	8260C	**Calibration ID:**	CAL10462

Sample Amount:	10 ml
% Solids:	NA
Dilution Factor:	50

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	3.8	U	10	3.8	
75-35-4	1,1-Dichloroethene	**5.5**	JD	25	3.7	
156-60-5	trans-1,2-Dichloroethene	**31**	D	25	2.9	
75-34-3	1,1-Dichloroethane	3.9	U	25	3.9	
156-59-2	cis-1,2-Dichloroethene	**290**	D	25	3.4	
71-55-6	1,1,1-Trichloroethane (TCA)	3.8	U	25	3.8	
79-01-6	Trichloroethene (TCE)	**1600**	D	25	5.0	
127-18-4	Tetrachloroethene (PCE)	5.0	U	25	5.0	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	99	73-122	05/18/11	Acceptable
Toluene-d8	103	78-129	05/18/11	Acceptable
4-Bromofluorobenzene	96	68-117	05/18/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Collected:**	05/10/2011
Sample Matrix:	Water	**Date Received:**	05/12/2011
		Date Extracted:	05/18/2011
		Date Analyzed:	05/18/2011

Volatile Organic Compounds

Sample Name:	MS54S	**Units:**	ug/L
Lab Code:	K1104246-021	**Basis:**	NA
File ID:	J:\MS13\DATA\051811\0518F020.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1104437
Analysis Method:	8260C	**Calibration ID:**	CAL10462

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 5

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.38	U	1.0	0.38	
75-35-4	1,1-Dichloroethene	**2.6**	D	2.5	0.37	
156-60-5	trans-1,2-Dichloroethene	**35**	D	2.5	0.29	
75-34-3	1,1-Dichloroethane	**1.7**	JD	2.5	0.39	
156-59-2	cis-1,2-Dichloroethene	**150**	D	2.5	0.34	
71-55-6	1,1,1-Trichloroethane (TCA)	0.38	U	2.5	0.38	
79-01-6	Trichloroethene (TCE)	**1100**	ED	2.5	0.50	
127-18-4	Tetrachloroethene (PCE)	0.50	U	2.5	0.50	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	100	73-122	05/18/11	Acceptable
Toluene-d8	104	78-129	05/18/11	Acceptable
4-Bromofluorobenzene	96	68-117	05/18/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Collected:**	05/10/2011
Sample Matrix:	Water	**Date Received:**	05/12/2011
		Date Extracted:	05/18/2011
		Date Analyzed:	05/18/2011

Volatile Organic Compounds

Sample Name:	MS54SDL	**Units:**	ug/L
Lab Code:	K1104246-021	**Basis:**	NA
File ID:	J:\MS13\DATA\051811\0518F018.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1104437
Analysis Method:	8260C	**Calibration ID:**	CAL10462

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 50

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	3.8	U	10	3.8	
75-35-4	1,1-Dichloroethene	3.7	U	25	3.7	
156-60-5	trans-1,2-Dichloroethene	**36**	D	25	2.9	
75-34-3	1,1-Dichloroethane	3.9	U	25	3.9	
156-59-2	cis-1,2-Dichloroethene	**140**	D	25	3.4	
71-55-6	1,1,1-Trichloroethane (TCA)	3.8	U	25	3.8	
79-01-6	Trichloroethene (TCE)	**1000**	D	25	5.0	
127-18-4	Tetrachloroethene (PCE)	5.0	U	25	5.0	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	99	73-122	05/18/11	Acceptable
Toluene-d8	103	78-129	05/18/11	Acceptable
4-Bromofluorobenzene	97	68-117	05/18/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Collected:**	05/10/2011
Sample Matrix:	Water	**Date Received:**	05/12/2011
		Date Extracted:	05/17/2011
		Date Analyzed:	05/17/2011

Volatile Organic Compounds

Sample Name:	MS55I	**Units:**	ug/L
Lab Code:	K1104246-007	**Basis:**	NA
File ID:	J:\MS04\DATA\051711\0517F019.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1104421
Analysis Method:	8260C	**Calibration ID:**	CAL10409

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.42**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**3.0**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**1.0**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**41**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**84**	E	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	116	73-122	05/17/11	Acceptable
Toluene-d8	121	78-129	05/17/11	Acceptable
4-Bromofluorobenzene	101	68-117	05/17/11	Acceptable

Comments

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Collected:**	05/10/2011
Sample Matrix:	Water	**Date Received:**	05/12/2011
		Date Extracted:	05/17/2011
		Date Analyzed:	05/17/2011

Volatile Organic Compounds

Sample Name:	MS55IDL	**Units:**	ug/L
Lab Code:	K1104246-007	**Basis:**	NA
File ID:	J:\MS04\DATA\051711\0517F014.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1104421
Analysis Method:	8260C	**Calibration ID:**	CAL10409

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 5

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.38	U	1.0	0.38	
75-35-4	1,1-Dichloroethene	0.37	U	2.5	0.37	
156-60-5	trans-1,2-Dichloroethene	**3.0**	D	2.5	0.29	
75-34-3	1,1-Dichloroethane	**0.85**	JD	2.5	0.39	
156-59-2	cis-1,2-Dichloroethene	**38**	D	2.5	0.34	
71-55-6	1,1,1-Trichloroethane (TCA)	0.38	U	2.5	0.38	
79-01-6	Trichloroethene (TCE)	**75**	D	2.5	0.50	
127-18-4	Tetrachloroethene (PCE)	0.50	U	2.5	0.50	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	116	73-122	05/17/11	Acceptable
Toluene-d8	121	78-129	05/17/11	Acceptable
4-Bromofluorobenzene	101	68-117	05/17/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Collected:**	05/10/2011
Sample Matrix:	Water	**Date Received:**	05/12/2011
		Date Extracted:	05/18/2011
		Date Analyzed:	05/18/2011

Volatile Organic Compounds

Sample Name:	MS56I	**Units:**	ug/L
Lab Code:	K1104246-009	**Basis:**	NA
File ID:	J:\MS04\DATA\051711\0517F022.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1104421
Analysis Method:	8260C	**Calibration ID:**	CAL10409

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.16**	J	0.20	0.075	
75-35-4	1,1-Dichloroethene	**1.3**		0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**28**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**8.3**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**340**	E	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**360**	E	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	118	73-122	05/18/11	Acceptable
Toluene-d8	122	78-129	05/18/11	Acceptable
4-Bromofluorobenzene	101	68-117	05/18/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Collected:**	05/10/2011
Sample Matrix:	Water	**Date Received:**	05/12/2011
		Date Extracted:	05/17/2011
		Date Analyzed:	05/17/2011

Volatile Organic Compounds

Sample Name:	MS56IDL	**Units:**	ug/L
Lab Code:	K1104246-009	**Basis:**	NA
File ID:	J:\MS04\DATA\051711\0517F017.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1104421
Analysis Method:	8260C	**Calibration ID:**	CAL10409

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 10

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.75	U	2.0	0.75	
75-35-4	1,1-Dichloroethene	**1.4**	JD	5.0	0.74	
156-60-5	trans-1,2-Dichloroethene	**25**	D	5.0	0.57	
75-34-3	1,1-Dichloroethane	**7.5**	D	5.0	0.77	
156-59-2	cis-1,2-Dichloroethene	**300**	D	5.0	0.67	
71-55-6	1,1,1-Trichloroethane (TCA)	0.75	U	5.0	0.75	
79-01-6	Trichloroethene (TCE)	**330**	D	5.0	1.0	
127-18-4	Tetrachloroethene (PCE)	0.99	U	5.0	0.99	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	117	73-122	05/17/11	Acceptable
Toluene-d8	118	78-129	05/17/11	Acceptable
4-Bromofluorobenzene	102	68-117	05/17/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Collected:**	05/09/2011
Sample Matrix:	Water	**Date Received:**	05/12/2011
		Date Extracted:	05/17/2011
		Date Analyzed:	05/17/2011

Volatile Organic Compounds

Sample Name:	QCD01	**Units:**	ug/L
Lab Code:	K1104246-004	**Basis:**	NA
File ID:	J:\MS13\DATA\051711\0517F025.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1104399
Analysis Method:	8260C	**Calibration ID:**	CAL10462

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.44**		0.20	0.075	
75-35-4	1,1-Dichloroethene	**3.4**		0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**99**	E	0.50	0.057	
75-34-3	1,1-Dichloroethane	**1.4**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**45**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**16**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	100	73-122	05/17/11	Acceptable
Toluene-d8	103	78-129	05/17/11	Acceptable
4-Bromofluorobenzene	97	68-117	05/17/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Collected:**	05/09/2011
Sample Matrix:	Water	**Date Received:**	05/12/2011
		Date Extracted:	05/17/2011
		Date Analyzed:	05/17/2011

Volatile Organic Compounds

Sample Name:	QCD01DL	**Units:**	ug/L
Lab Code:	K1104246-004	**Basis:**	NA
File ID:	J:\MS13\DATA\051711\0517F023.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1104399
Analysis Method:	8260C	**Calibration ID:**	CAL10462

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 5

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.38	U	1.0	0.38	
75-35-4	1,1-Dichloroethene	**3.3**	D	2.5	0.37	
156-60-5	trans-1,2-Dichloroethene	**87**	D	2.5	0.29	
75-34-3	1,1-Dichloroethane	**1.3**	JD	2.5	0.39	
156-59-2	cis-1,2-Dichloroethene	**41**	D	2.5	0.34	
71-55-6	1,1,1-Trichloroethane (TCA)	0.38	U	2.5	0.38	
79-01-6	Trichloroethene (TCE)	**15**	D	2.5	0.50	
127-18-4	Tetrachloroethene (PCE)	0.50	U	2.5	0.50	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	98	73-122	05/17/11	Acceptable
Toluene-d8	104	78-129	05/17/11	Acceptable
4-Bromofluorobenzene	95	68-117	05/17/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Collected:**	05/11/2011
Sample Matrix:	Water	**Date Received:**	05/12/2011
		Date Extracted:	05/18/2011
		Date Analyzed:	05/19/2011

Volatile Organic Compounds

Sample Name:	QCD02	**Units:**	ug/L
Lab Code:	K1104246-013	**Basis:**	NA
File ID:	J:\MS04\DATA\051811\0518F019.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1104463
Analysis Method:	8260C	**Calibration ID:**	CAL10409

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 10

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**35**	D	2.0	0.75	
75-35-4	1,1-Dichloroethene	**13**	D	5.0	0.74	
156-60-5	trans-1,2-Dichloroethene	**2000**	ED	5.0	0.57	
75-34-3	1,1-Dichloroethane	**3.3**	JD	5.0	0.77	
156-59-2	cis-1,2-Dichloroethene	**2700**	ED	5.0	0.67	
71-55-6	1,1,1-Trichloroethane (TCA)	0.75	U	5.0	0.75	
79-01-6	Trichloroethene (TCE)	**1400**	ED	5.0	1.0	
127-18-4	Tetrachloroethene (PCE)	0.99	U	5.0	0.99	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	117	73-122	05/19/11	Acceptable
Toluene-d8	122	78-129	05/19/11	Acceptable
4-Bromofluorobenzene	102	68-117	05/19/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Collected:**	05/11/2011
Sample Matrix:	Water	**Date Received:**	05/12/2011
		Date Extracted:	05/18/2011
		Date Analyzed:	05/18/2011

Volatile Organic Compounds

Sample Name:	QCD02DL	**Units:**	ug/L
Lab Code:	K1104246-013	**Basis:**	NA
File ID:	J:\MS04\DATA\051811\0518F016.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1104463
Analysis Method:	8260C	**Calibration ID:**	CAL10409

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 100

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**36**	D	20	7.5	
75-35-4	1,1-Dichloroethene	**12**	JD	50	7.4	
156-60-5	trans-1,2-Dichloroethene	**2000**	D	50	5.7	
75-34-3	1,1-Dichloroethane	7.7	U	50	7.7	
156-59-2	cis-1,2-Dichloroethene	**2700**	D	50	6.7	
71-55-6	1,1,1-Trichloroethane (TCA)	7.5	U	50	7.5	
79-01-6	Trichloroethene (TCE)	**1400**	D	50	10	
127-18-4	Tetrachloroethene (PCE)	9.9	U	50	9.9	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	117	73-122	05/18/11	Acceptable
Toluene-d8	121	78-129	05/18/11	Acceptable
4-Bromofluorobenzene	101	68-117	05/18/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Collected:**	05/09/2011
Sample Matrix:	Water	**Date Received:**	05/12/2011
		Date Extracted:	05/17/2011
		Date Analyzed:	05/17/2011

Volatile Organic Compounds

Sample Name:	QCR01	**Units:**	ug/L
Lab Code:	K1104246-006	**Basis:**	NA
File ID:	J:\MS13\DATA\051711\0517F020.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1104399
Analysis Method:	8260C	**Calibration ID:**	CAL10462

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**0.16**	J	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	99	73-122	05/17/11	Acceptable
Toluene-d8	104	78-129	05/17/11	Acceptable
4-Bromofluorobenzene	97	68-117	05/17/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Collected:**	05/10/2011
Sample Matrix:	Water	**Date Received:**	05/12/2011
		Date Extracted:	05/18/2011
		Date Analyzed:	05/18/2011

Volatile Organic Compounds

Sample Name:	QCR02	**Units:**	ug/L
Lab Code:	K1104246-026	**Basis:**	NA
File ID:	J:\MS04\DATA\051811\0518F013.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1104463
Analysis Method:	8260C	**Calibration ID:**	CAL10409

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**0.26**	J	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	114	73-122	05/18/11	Acceptable
Toluene-d8	118	78-129	05/18/11	Acceptable
4-Bromofluorobenzene	103	68-117	05/18/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Collected:**	05/11/2011
Sample Matrix:	Water	**Date Received:**	05/12/2011
		Date Extracted:	05/17/2011
		Date Analyzed:	05/17/2011

Volatile Organic Compounds

Sample Name:	QCR03	**Units:**	ug/L
Lab Code:	K1104246-015	**Basis:**	NA
File ID:	J:\MS04\DATA\051711\0517F012.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1104421
Analysis Method:	8260C	**Calibration ID:**	CAL10409

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.61**		0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**0.41**	J	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**0.66**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	115	73-122	05/17/11	Acceptable
Toluene-d8	120	78-129	05/17/11	Acceptable
4-Bromofluorobenzene	101	68-117	05/17/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Collected:**	05/09/2011
Sample Matrix:	Water	**Date Received:**	05/12/2011
		Date Extracted:	05/17/2011
		Date Analyzed:	05/17/2011

Volatile Organic Compounds

Sample Name:	QCT02	**Units:**	ug/L
Lab Code:	K1104246-014	**Basis:**	NA
File ID:	J:\MS13\DATA\051711\0517F009.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1104399
Analysis Method:	8260C	**Calibration ID:**	CAL10462

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	97	73-122	05/17/11	Acceptable
Toluene-d8	103	78-129	05/17/11	Acceptable
4-Bromofluorobenzene	97	68-117	05/17/11	Acceptable

Comments

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Collected:**	05/09/2011
Sample Matrix:	Water	**Date Received:**	05/12/2011
		Date Extracted:	05/17/2011
		Date Analyzed:	05/17/2011

Volatile Organic Compounds

Sample Name:	QCT02	**Units:**	ug/L
Lab Code:	K1104246-027	**Basis:**	NA
File ID:	J:\MS13\DATA\051711\0517F010.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1104399
Analysis Method:	8260C	**Calibration ID:**	CAL10462

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	98	73-122	05/17/11	Acceptable
Toluene-d8	103	78-129	05/17/11	Acceptable
4-Bromofluorobenzene	97	68-117	05/17/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1105242
Project:	NIROP/J070047	**Date Collected:**	06/09/2011
Sample Matrix:	Water	**Date Received:**	06/10/2011
		Date Extracted:	06/15/2011
		Date Analyzed:	06/15/2011

Volatile Organic Compounds

Sample Name:	AT03A	**Units:**	ug/L
Lab Code:	K1105242-004	**Basis:**	NA
File ID:	J:\MS13\DATA\061511\0615F024.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1105432
Analysis Method:	8260C	**Calibration ID:**	CAL10462

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 2.5

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.28**	JD	0.50	0.19	
75-35-4	1,1-Dichloroethene	**1.3**	JD	1.3	0.19	
156-60-5	trans-1,2-Dichloroethene	**23**	D	1.3	0.15	
75-34-3	1,1-Dichloroethane	**0.43**	JD	1.3	0.20	
156-59-2	cis-1,2-Dichloroethene	**100**	D	1.3	0.17	
71-55-6	1,1,1-Trichloroethane (TCA)	0.19	U	1.3	0.19	
79-01-6	Trichloroethene (TCE)	**1300**	ED	1.3	0.25	
127-18-4	Tetrachloroethene (PCE)	**5.4**	D	1.3	0.25	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	96	73-122	06/15/11	Acceptable
Toluene-d8	102	78-129	06/15/11	Acceptable
4-Bromofluorobenzene	92	68-117	06/15/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1105242
Project:	NIROP/J070047	**Date Collected:**	06/09/2011
Sample Matrix:	Water	**Date Received:**	06/10/2011
		Date Extracted:	06/15/2011
		Date Analyzed:	06/15/2011

Volatile Organic Compounds

Sample Name:	AT03ADL	**Units:**	ug/L
Lab Code:	K1105242-004	**Basis:**	NA
File ID:	J:\MS13\DATA\061511\0615F020.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1105432
Analysis Method:	8260C	**Calibration ID:**	CAL10462

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 50

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	3.8	U	10	3.8	
75-35-4	1,1-Dichloroethene	3.7	U	25	3.7	
156-60-5	trans-1,2-Dichloroethene	**22**	JD	25	2.9	
75-34-3	1,1-Dichloroethane	3.9	U	25	3.9	
156-59-2	cis-1,2-Dichloroethene	**94**	D	25	3.4	
71-55-6	1,1,1-Trichloroethane (TCA)	3.8	U	25	3.8	
79-01-6	Trichloroethene (TCE)	**1100**	D	25	5.0	
127-18-4	Tetrachloroethene (PCE)	**5.0**	JD	25	5.0	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	95	73-122	06/15/11	Acceptable
Toluene-d8	101	78-129	06/15/11	Acceptable
4-Bromofluorobenzene	92	68-117	06/15/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1105242
Project:	NIROP/J070047	**Date Collected:**	06/09/2011
Sample Matrix:	Water	**Date Received:**	06/10/2011
		Date Extracted:	06/15/2011
		Date Analyzed:	06/15/2011

Volatile Organic Compounds

Sample Name:	AT05B	**Units:**	ug/L
Lab Code:	K1105242-002	**Basis:**	NA
File ID:	J:\MS13\DATA\061511\0615F022.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1105432
Analysis Method:	8260C	**Calibration ID:**	CAL10462

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.24**		0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.69**		0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**13**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.60**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**12**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**390**	E	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**2.1**		0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	96	73-122	06/15/11	Acceptable
Toluene-d8	104	78-129	06/15/11	Acceptable
4-Bromofluorobenzene	91	68-117	06/15/11	Acceptable

Comments

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1105242
Project:	NIROP/J070047	**Date Collected:**	06/09/2011
Sample Matrix:	Water	**Date Received:**	06/10/2011
		Date Extracted:	06/15/2011
		Date Analyzed:	06/15/2011

Volatile Organic Compounds

Sample Name:	AT05BDL	**Units:**	ug/L
Lab Code:	K1105242-002	**Basis:**	NA
File ID:	J:\MS13\DATA\061511\0615F018.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1105432
Analysis Method:	8260C	**Calibration ID:**	CAL10462

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 10

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.75	U	2.0	0.75	
75-35-4	1,1-Dichloroethene	0.74	U	5.0	0.74	
156-60-5	trans-1,2-Dichloroethene	**12**	D	5.0	0.57	
75-34-3	1,1-Dichloroethane	0.77	U	5.0	0.77	
156-59-2	cis-1,2-Dichloroethene	**11**	D	5.0	0.67	
71-55-6	1,1,1-Trichloroethane (TCA)	0.75	U	5.0	0.75	
79-01-6	Trichloroethene (TCE)	**330**	D	5.0	1.0	
127-18-4	Tetrachloroethene (PCE)	**2.0**	JD	5.0	0.99	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	95	73-122	06/15/11	Acceptable
Toluene-d8	102	78-129	06/15/11	Acceptable
4-Bromofluorobenzene	90	68-117	06/15/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1105242
Project:	NIROP/J070047	**Date Collected:**	06/09/2011
Sample Matrix:	Water	**Date Received:**	06/10/2011
		Date Extracted:	06/15/2011
		Date Analyzed:	06/15/2011

Volatile Organic Compounds

Sample Name:	AT10	**Units:**	ug/L
Lab Code:	K1105242-001	**Basis:**	NA
File ID:	J:\MS13\DATA\061511\0615F021.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1105432
Analysis Method:	8260C	**Calibration ID:**	CAL10462

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.58**		0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.53**		0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**43**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.63**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**25**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**270**	E	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	95	73-122	06/15/11	Acceptable
Toluene-d8	101	78-129	06/15/11	Acceptable
4-Bromofluorobenzene	92	68-117	06/15/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1105242
Project:	NIROP/J070047	**Date Collected:**	06/09/2011
Sample Matrix:	Water	**Date Received:**	06/10/2011
		Date Extracted:	06/15/2011
		Date Analyzed:	06/15/2011

Volatile Organic Compounds

Sample Name:	AT10DL	**Units:**	ug/L
Lab Code:	K1105242-001	**Basis:**	NA
File ID:	J:\MS13\DATA\061511\0615F017.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1105432
Analysis Method:	8260C	**Calibration ID:**	CAL10462

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 10

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.75	U	2.0	0.75	
75-35-4	1,1-Dichloroethene	0.74	U	5.0	0.74	
156-60-5	trans-1,2-Dichloroethene	**38**	D	5.0	0.57	
75-34-3	1,1-Dichloroethane	0.77	U	5.0	0.77	
156-59-2	cis-1,2-Dichloroethene	**22**	D	5.0	0.67	
71-55-6	1,1,1-Trichloroethane (TCA)	0.75	U	5.0	0.75	
79-01-6	Trichloroethene (TCE)	**220**	D	5.0	1.0	
127-18-4	Tetrachloroethene (PCE)	0.99	U	5.0	0.99	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	94	73-122	06/15/11	Acceptable
Toluene-d8	102	78-129	06/15/11	Acceptable
4-Bromofluorobenzene	92	68-117	06/15/11	Acceptable

Comments

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1105242
Project:	NIROP/J070047	**Date Collected:**	06/09/2011
Sample Matrix:	Water	**Date Received:**	06/10/2011
		Date Extracted:	06/15/2011
		Date Analyzed:	06/15/2011

Volatile Organic Compounds

Sample Name:	QCD03	**Units:**	ug/L
Lab Code:	K1105242-003	**Basis:**	NA
File ID:	J:\MS13\DATA\061511\0615F023.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1105432
Analysis Method:	8260C	**Calibration ID:**	CAL10462

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.24**		0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.69**		0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**13**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.61**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**12**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**400**	E	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**2.2**		0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	98	73-122	06/15/11	Acceptable
Toluene-d8	103	78-129	06/15/11	Acceptable
4-Bromofluorobenzene	90	68-117	06/15/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1105242
Project:	NIROP/J070047	**Date Collected:**	06/09/2011
Sample Matrix:	Water	**Date Received:**	06/10/2011
		Date Extracted:	06/15/2011
		Date Analyzed:	06/15/2011

Volatile Organic Compounds

Sample Name:	QCD03DL	**Units:**	ug/L
Lab Code:	K1105242-003	**Basis:**	NA
File ID:	J:\MS13\DATA\061511\0615F019.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1105432
Analysis Method:	8260C	**Calibration ID:**	CAL10462

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 10

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.75	U	2.0	0.75	
75-35-4	1,1-Dichloroethene	0.74	U	5.0	0.74	
156-60-5	trans-1,2-Dichloroethene	**12**	D	5.0	0.57	
75-34-3	1,1-Dichloroethane	0.77	U	5.0	0.77	
156-59-2	cis-1,2-Dichloroethene	**11**	D	5.0	0.67	
71-55-6	1,1,1-Trichloroethane (TCA)	0.75	U	5.0	0.75	
79-01-6	Trichloroethene (TCE)	**320**	D	5.0	1.0	
127-18-4	Tetrachloroethene (PCE)	**2.1**	JD	5.0	0.99	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	95	73-122	06/15/11	Acceptable
Toluene-d8	102	78-129	06/15/11	Acceptable
4-Bromofluorobenzene	92	68-117	06/15/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1105242
Project:	NIROP/J070047	**Date Collected:**	06/09/2011
Sample Matrix:	Water	**Date Received:**	06/10/2011
		Date Extracted:	06/17/2011
		Date Analyzed:	06/17/2011

Volatile Organic Compounds

Sample Name:	QCT03	**Units:**	ug/L
Lab Code:	K1105242-005	**Basis:**	NA
File ID:	J:\MS18\DATA\061711\0617F017.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1105531
Analysis Method:	8260C	**Calibration ID:**	CAL10510

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	79	73-122	06/17/11	Acceptable
Toluene-d8	88	78-129	06/17/11	Acceptable
4-Bromofluorobenzene	79	68-117	06/17/11	Acceptable

Comments:

APPENDIX C

SUPPORT DOCUMENTATION

HOLDTIM

SDG K1104246

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
OV	%	MS56I	K1104246-009	NM	05/10/2011	05/18/2011	05/18/2011	8	0	8
OV	%	MS131S	K1104246-002	NM	05/09/2011	05/17/2011	05/17/2011	8	0	8
OV	%	MS45I	K1104246-018	NM	05/09/2011	05/17/2011	05/17/2011	8	0	8
OV	%	MS45S	K1104246-019	NM	05/09/2011	05/18/2011	05/18/2011	9	0	9
OV	%	MS45SDL	K1104246-019DL	NM	05/09/2011	05/17/2011	05/17/2011	8	0	8
OV	%	MS46S	K1104246-024	NM	05/10/2011	05/18/2011	05/18/2011	8	0	8
OV	%	MS54I	K1104246-020	NM	05/10/2011	05/18/2011	05/18/2011	8	0	8
OV	%	MS54IDL	K1104246-020DL	NM	05/10/2011	05/18/2011	05/18/2011	8	0	8
OV	%	MS54S	K1104246-021	NM	05/10/2011	05/18/2011	05/18/2011	8	0	8
OV	%	MS54SDL	K1104246-021DL	NM	05/10/2011	05/18/2011	05/18/2011	8	0	8
OV	%	MS44I	K1104246-023	NM	05/10/2011	05/18/2011	05/18/2011	8	0	8
OV	%	MS55IDL	K1104246-007DL	NM	05/10/2011	05/17/2011	05/17/2011	7	0	7
OV	%	MS43I	K1104246-017	NM	05/09/2011	05/17/2011	05/17/2011	8	0	8
OV	%	MS56IDL	K1104246-009DL	NM	05/10/2011	05/17/2011	05/17/2011	7	0	7
OV	%	QCD01	K1104246-004	NM	05/09/2011	05/17/2011	05/17/2011	8	0	8

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
OV	%	QCD01DL	K1104246-004DL	NM	05/09/2011	05/17/2011	05/17/2011	8	0	8
OV	%	QCD02	K1104246-013	NM	05/11/2011	05/18/2011	05/19/2011	7	1	8
OV	%	QCD02DL	K1104246-013DL	NM	05/11/2011	05/18/2011	05/18/2011	7	0	7
OV	%	QCR01	K1104246-006	NM	05/09/2011	05/17/2011	05/17/2011	8	0	8
OV	%	QCR02	K1104246-026	NM	05/10/2011	05/18/2011	05/18/2011	8	0	8
OV	%	QCR03	K1104246-015	NM	05/11/2011	05/17/2011	05/17/2011	6	0	6
OV	%	QCT02	K1104246-014	NM	05/09/2011	05/17/2011	05/17/2011	8	0	8
OV	%	MS55I	K1104246-007	NM	05/10/2011	05/17/2011	05/17/2011	7	0	7
OV	%	MS35D	KWG1104437-2	NM	05/09/2011	05/18/2011	05/18/2011	9	0	9
OV	%	MS15IS	K1104246-016	NM	05/09/2011	05/17/2011	05/17/2011	8	0	8
OV	%	MS15IS	KWG1104421-1	NM	05/09/2011	05/17/2011	05/17/2011	8	0	8
OV	%	MS15IS	KWG1104421-2	NM	05/09/2011	05/17/2011	05/17/2011	8	0	8
OV	%	MS18S	K1104246-025	NM	05/10/2011	05/18/2011	05/18/2011	8	0	8
OV	%	MS18SDL	K1104246-025DL	NM	05/10/2011	05/18/2011	05/18/2011	8	0	8
OV	%	MS33I	K1104246-012	NM	05/11/2011	05/18/2011	05/18/2011	7	0	7
OV	%	MS33IDL	K1104246-012DL	NM	05/11/2011	05/18/2011	05/18/2011	7	0	7
OV	%	MS34I	K1104246-011	NM	05/11/2011	05/18/2011	05/18/2011	7	0	7
OV	%	MS34IDL	K1104246-011DL	NM	05/11/2011	05/18/2011	05/18/2011	7	0	7

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
OV	%	MS44IDL	K1104246-023DL	NM	05/10/2011	05/18/2011	05/18/2011	8	0	8
OV	%	MS35D	KWG1104437-1	NM	05/09/2011	05/18/2011	05/18/2011	9	0	9
OV	%	QCT02-A	K1104246-027	NM	05/09/2011	05/17/2011	05/17/2011	8	0	8
OV	%	MS35I	K1104246-005	NM	05/09/2011	05/18/2011	05/18/2011	9	0	9
OV	%	MS35IDL	K1104246-005DL	NM	05/09/2011	05/18/2011	05/18/2011	9	0	9
OV	%	MS36S	K1104246-008	NM	05/10/2011	05/18/2011	05/18/2011	8	0	8
OV	%	MS36SDL	K1104246-008DL	NM	05/10/2011	05/17/2011	05/17/2011	7	0	7
OV	%	MS37S	K1104246-003	NM	05/09/2011	05/17/2011	05/17/2011	8	0	8
OV	%	MS37SDL	K1104246-003DL	NM	05/09/2011	05/17/2011	05/17/2011	8	0	8
OV	%	MS38S	K1104246-010	NM	05/10/2011	05/18/2011	05/18/2011	8	0	8
OV	%	MS38SDL	K1104246-010DL	NM	05/10/2011	05/17/2011	05/17/2011	7	0	7
OV	%	MS41I	K1104246-022	NM	05/10/2011	05/18/2011	05/18/2011	8	0	8
OV	%	MS35D	K1104246-001	NM	05/09/2011	05/18/2011	05/18/2011	9	0	9
OV	UG/L	MS56I	K1104246-009	NM	05/10/2011	05/18/2011	05/18/2011	8	0	8
OV	UG/L	MS45I	K1104246-018	NM	05/09/2011	05/17/2011	05/17/2011	8	0	8
OV	UG/L	MS45S	K1104246-019	NM	05/09/2011	05/18/2011	05/18/2011	9	0	9
OV	UG/L	MS45SDL	K1104246-019DL	NM	05/09/2011	05/17/2011	05/17/2011	8	0	8
OV	UG/L	MS46S	K1104246-024	NM	05/10/2011	05/18/2011	05/18/2011	8	0	8

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
OV	UG/L	MS46SDL	K1104246-024DL	NM	05/10/2011	05/18/2011	05/18/2011	8	0	8
OV	UG/L	MS54I	K1104246-020	NM	05/10/2011	05/18/2011	05/18/2011	8	0	8
OV	UG/L	MS54IDL	K1104246-020DL	NM	05/10/2011	05/18/2011	05/18/2011	8	0	8
OV	UG/L	MS54S	K1104246-021	NM	05/10/2011	05/18/2011	05/18/2011	8	0	8
OV	UG/L	MS54SDL	K1104246-021DL	NM	05/10/2011	05/18/2011	05/18/2011	8	0	8
OV	UG/L	MS131S	K1104246-002	NM	05/09/2011	05/17/2011	05/17/2011	8	0	8
OV	UG/L	MS55IDL	K1104246-007DL	NM	05/10/2011	05/17/2011	05/17/2011	7	0	7
OV	UG/L	MS43I	K1104246-017	NM	05/09/2011	05/17/2011	05/17/2011	8	0	8
OV	UG/L	MS56IDL	K1104246-009DL	NM	05/10/2011	05/17/2011	05/17/2011	7	0	7
OV	UG/L	QCD01	K1104246-004	NM	05/09/2011	05/17/2011	05/17/2011	8	0	8
OV	UG/L	QCD01DL	K1104246-004DL	NM	05/09/2011	05/17/2011	05/17/2011	8	0	8
OV	UG/L	QCD02	K1104246-013	NM	05/11/2011	05/18/2011	05/19/2011	7	1	8
OV	UG/L	QCD02DL	K1104246-013DL	NM	05/11/2011	05/18/2011	05/18/2011	7	0	7
OV	UG/L	QCR01	K1104246-006	NM	05/09/2011	05/17/2011	05/17/2011	8	0	8
OV	UG/L	QCR02	K1104246-026	NM	05/10/2011	05/18/2011	05/18/2011	8	0	8
OV	UG/L	QCR03	K1104246-015	NM	05/11/2011	05/17/2011	05/17/2011	6	0	6
OV	UG/L	QCT02	K1104246-014	NM	05/09/2011	05/17/2011	05/17/2011	8	0	8
OV	UG/L	MS55I	K1104246-007	NM	05/10/2011	05/17/2011	05/17/2011	7	0	7

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
OV	UG/L	MS35D	KWG1104437-2	NM	05/09/2011	05/18/2011	05/18/2011	9	0	9
OV	UG/L	QCT02-A	K1104246-027	NM	05/09/2011	05/17/2011	05/17/2011	8	0	8
OV	UG/L	MS15IS	KWG1104421-1	NM	05/09/2011	05/17/2011	05/17/2011	8	0	8
OV	UG/L	MS15IS	KWG1104421-2	NM	05/09/2011	05/17/2011	05/17/2011	8	0	8
OV	UG/L	MS18S	K1104246-025	NM	05/10/2011	05/18/2011	05/18/2011	8	0	8
OV	UG/L	MS18SDL	K1104246-025DL	NM	05/10/2011	05/18/2011	05/18/2011	8	0	8
OV	UG/L	MS33I	K1104246-012	NM	05/11/2011	05/18/2011	05/18/2011	7	0	7
OV	UG/L	MS33IDL	K1104246-012DL	NM	05/11/2011	05/18/2011	05/18/2011	7	0	7
OV	UG/L	MS34I	K1104246-011	NM	05/11/2011	05/18/2011	05/18/2011	7	0	7
OV	UG/L	MS34IDL	K1104246-011DL	NM	05/11/2011	05/18/2011	05/18/2011	7	0	7
OV	UG/L	MS44IDL	K1104246-023DL	NM	05/10/2011	05/18/2011	05/18/2011	8	0	8
OV	UG/L	MS35D	KWG1104437-1	NM	05/09/2011	05/18/2011	05/18/2011	9	0	9
OV	UG/L	MS44I	K1104246-023	NM	05/10/2011	05/18/2011	05/18/2011	8	0	8
OV	UG/L	MS35I	K1104246-005	NM	05/09/2011	05/18/2011	05/18/2011	9	0	9
OV	UG/L	MS35IDL	K1104246-005DL	NM	05/09/2011	05/18/2011	05/18/2011	9	0	9
OV	UG/L	MS36S	K1104246-008	NM	05/10/2011	05/18/2011	05/18/2011	8	0	8
OV	UG/L	MS36SDL	K1104246-008DL	NM	05/10/2011	05/17/2011	05/17/2011	7	0	7
OV	UG/L	MS37S	K1104246-003	NM	05/09/2011	05/17/2011	05/17/2011	8	0	8

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
OV	UG/L	MS37SDL	K1104246-003DL	NM	05/09/2011	05/17/2011	05/17/2011	8	0	8
OV	UG/L	MS38S	K1104246-010	NM	05/10/2011	05/18/2011	05/18/2011	8	0	8
OV	UG/L	MS38SDL	K1104246-010DL	NM	05/10/2011	05/17/2011	05/17/2011	7	0	7
OV	UG/L	MS41I	K1104246-022	NM	05/10/2011	05/18/2011	05/18/2011	8	0	8
OV	UG/L	MS15IS	K1104246-016	NM	05/09/2011	05/17/2011	05/17/2011	8	0	8
OV	UG/L	MS35D	K1104246-001	NM	05/09/2011	05/18/2011	05/18/2011	9	0	9

HOLDTIM

SDG: K1105242

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
OV	ug/L	QCT03	K1105242-005	NM	06/09/2011	06/17/2011	06/17/2011	8	0	8
OV	ug/L	QCD03DL	K1105242-003DL	NM	06/09/2011	06/15/2011	06/15/2011	6	0	6
OV	ug/L	QCD03	K1105242-003	NM	06/09/2011	06/15/2011	06/15/2011	6	0	6
OV	ug/L	AT10DL	K1105242-001DL	NM	06/09/2011	06/15/2011	06/15/2011	6	0	6
OV	ug/L	AT10	K1105242-001	NM	06/09/2011	06/15/2011	06/15/2011	6	0	6
OV	ug/L	AT05BDL	K1105242-002DL	NM	06/09/2011	06/15/2011	06/15/2011	6	0	6
OV	ug/L	AT05B	K1105242-002	NM	06/09/2011	06/15/2011	06/15/2011	6	0	6
OV	ug/L	AT03ADL	K1105242-004DL	NM	06/09/2011	06/15/2011	06/15/2011	6	0	6
OV	ug/L	AT03A	K1105242-004	NM	06/09/2011	06/15/2011	06/15/2011	6	0	6

NIROP FRIDLEY
WATER DATA
K1104246

FRACTION	CHEMICAL	MS37S	UNITS	QCD01	RPD	D
OV	1,1-DICHLOROETHANE	1.4	UG/L	1.4	0.00	0.00
OV	1,1-DICHLOROETHENE	3.4	UG/L	3.4	0.00	0.00
OV	CIS-1,2-DICHLOROETHENE	45	UG/L	45	0.00	0.00
OV	TRICHLOROETHENE	15	UG/L	16	6.45	1.00
OV	VINYL CHLORIDE	0.42	UG/L	0.44	4.65	0.02

Current RPD Quality Control Limit: 30 %.
Shaded cells indicate RPDs that exceed the applicable quality control limit.

NIROP FRIDLEY
WATER DATA
K1104246

FRACTION	CHEMICAL	MS37SDL	UNITS	QCD01DL	RPD	D
OV	TRANS-1,2-DICHLOROETHENE	85	UG/L	87	2.33	2.00

Current RPD Quality Control Limit: 30 %.
Shaded cells indicate RPDs that exceed the applicable quality control limit.

NIROP FRIDLEY
WATER DATA
K1104246

FRACTION	CHEMICAL	MS33I	UNITS	QCD02	RPD	D
OV	1,1-DICHLOROETHANE	2.9 J	UG/L	3.3 J	12.90	0.40
OV	1,1-DICHLOROETHENE	12	UG/L	13	8.00	1.00
OV	VINYL CHLORIDE	34	UG/L	35	2.90	1.00

Current RPD Quality Control Limit: 30 %.
Shaded cells indicate RPDs that exceed the applicable quality control limit.

NIROP FRIDLEY
WATER DATA
K1104246

FRACTION	CHEMICAL	MS33IDL	UNITS	QCD02DL	RPD	D
OV	CIS-1,2-DICHLOROETHENE	2600	UG/L	2700	3.77	100.00
OV	TRANS-1,2-DICHLOROETHENE	2200	UG/L	2000	9.52	200.00
OV	TRICHLOROETHENE	1500	UG/L	1400	6.90	100.00

Current RPD Quality Control Limit: 30 %.
Shaded cells indicate RPDs that exceed the applicable quality control limit.

NIROP FRIDLEY
WATER DATA
K1105242

FRACTION	CHEMICAL	AT05B	UNITS	QCD03	RPD	D
OV	1,1-DICHLOROETHANE	0.6	UG/L	0.61	1.65	0.01
OV	1,1-DICHLOROETHENE	0.69	UG/L	0.69	0.00	0.00
OV	CIS-1,2-DICHLOROETHENE	12	UG/L	12	0.00	0.00
OV	TETRACHLOROETHENE	2.1	UG/L	2.2	4.65	0.10
OV	TRANS-1,2-DICHLOROETHENE	13	UG/L	13	0.00	0.00
OV	VINYL CHLORIDE	0.24	UG/L	0.24	0.00	0.00

Current RPD Quality Control Limit: 30 %.
Shaded cells indicate RPDs that exceed the applicable quality control limit.

NIROP FRIDLEY
WATER DATA
K1105242

FRACTION	CHEMICAL	AT05BDL	UNITS	QCD03DL	RPD	D
OV	TRICHLOROETHENE	330	UG/L	320	3.08	10.00

Current RPD Quality Control Limit: 30 %.
Shaded cells indicate RPDs that exceed the applicable quality control limit.

May 31, 2011 Analytical Report for Service Request No: K1104246

Paul Walz
Bay West, Incorporated
5 Empire Dr.
St. Paul, MN 55103-1867

RE: NIROP/J070047

Dear Paul:

Enclosed are the results of the samples submitted to our laboratory on May 12, 2011. For your reference, these analyses have been assigned our service request number K1104246.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3281. You may also contact me via Email at MShelton@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.

Mike Shelton

Mike Shelton
Project Chemist

MS/jw

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	Bay West, Incorporated	**Service Request No.:**	k1104246
Project:	NIROP	**Date Received:**	5/12/11
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Twenty seven water samples were received for analysis at Columbia Analytical Services on 5/12/11. The following discrepancies were noted upon initial sample inspection. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Volatile Organic Compounds by EPA Method 8260B

Calibration Verification Exceptions:
The following analytes were flagged as outside the upper control criterion for Continuing Calibration Verification (CCV) J:\MS04\0517F004.D: Toluene-d8. In accordance with the EPA Method, 80% or more of the CCV analytes must pass within 20% of the true value. The CAS SOP allows for 40% difference for the remaining analytes. The CCV met these criteria. The quality of the sample data was not significantly affected. No further corrective action was required.

Matrix Spike Recovery Exceptions:
The matrix spike recovery of Trichloroethene (TCE) for sample MS15ISMS was outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicated the analytical batch was in control. The matrix spike outlier suggested a potential low/high bias in this matrix. No further corrective action was appropriate.

Elevated Detection Limits:
Samples MS35I, MS38S, MS34I, MS33I, QCD02, MS54I, MS54S, MS44I, MS46S, and MS18S required dilution due to the presence of elevated levels of target analyte. The reporting limits were adjusted to reflect the dilution.

No other anomalies associated with the analysis of these samples were observed.

Approved by Mike Shelton **Date** 6/2/11

Columbia Analytical Services™

CHAIN OF CUSTODY

1317 South 13th Ave. Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

K1104246

SR#: ~~050911-1~~ RW

PAGE 1 OF 2 COC # 050911-1

PROJECT NAME: NIROP
PROJECT NUMBER: J070047
PROJECT MANAGER: Paul Walz
COMPANY ADDRESS: 5 Empire Drive
CITY STATE ZIP: St. Paul MN 55103
E-MAIL ADDRESS: Paul@baywest.com
PHONE #: 651-291-3491 FAX #: 651-291-0099
SAMPLER'S SIGNATURE:

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625 ☐ 8270 ☐ 8270LL ☐	Volatile Organics 624 ☐ 8260 ☐ 8021 ☐ BTEX ☐	Hydrocarbons (*see below) Gas ☐ Diesel ☐ Oil ☐	Fuel Fingerprint (FIQ) NW-HCID Screen	Oil & Grease/TRPH 1664 HEM ☐ 1664 SGT ☐	PCB's Aroclors ☐ Congeners ☐	Pesticides/Herbicides 608 ☐ 8081A ☐ 8141A ☐ 8151A ☐	Chlorophenolics - 8151M Tri ☐ Tetra ☐ PCP ☐	PAHS 8310 ☐ SIM ☐	Metals, Total or Dissolved (See list below)	Cyanide ☐ Hex-Chrom ☐	pH, Cond., Cl, SO4, PO4, F, NO2, NO3, BOD, TSS, TDS (circle)	NH3-N, COD, Total-P, TKN, TOC, DOC (circle) NO2+NO3	TOX 9020 ☐ AOX 1650 ☐ 506 ☐						REMARKS
MS35D	5-9-11	1130		water	9		X																			
MS13IS		1246			3		X																			
MS37S		1430			3		X																			
QCD01		1510			3		X																			
MS35I		1520			3		X																			
QCR01		1625			3		X																			
MS55I	5-10-11	937			3		X																			
MS36S		1303			3		X																			
MS56I		1306			3		X																			
MS39S		1411			3		X																			

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. # 34003
Bill To: Account Payable
BayWest, 5 Empire Dr.
St. Paul MN 55103

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:
for 8 specific compounds

Tracking # 1Z A19 6R9 01 9559 3507

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature] Date/Time: 5-11-11 1535	Signature: [signature] Date/Time: 5/12/11 1030	Signature: Date/Time:	Signature: Date/Time:
Printed Name: Ryan Riley Firm: BayWest	Printed Name: Brad Erickson Firm: CAS	Printed Name: Firm:	Printed Name: Firm:

RCOC #1 03/10

Columbia Analytical Services™

CHAIN OF CUSTODY

SR#: K1104246

1317 South 13th Ave. Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

PAGE 2 OF 2 COC # 050911-3

PROJECT NAME: NiRoP
PROJECT NUMBER: JDI 0097
PROJECT MANAGER: Paul Walz
COMPANY ADDRESS: Bay West, 5 Empire Drive
CITY/STATE/ZIP: St. Paul MN 55103
E-MAIL ADDRESS: paulw@baywest.com
PHONE #: 651-291-3491 FAX#: 651-291-0099
SAMPLER'S SIGNATURE: Ryan Riley

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐ 8270LL☐	Volatile Organics 624☐ 8260☒ 8021☐ BTEX☐	Hydrocarbons (* see below) Gas☐ Diesel☐ Oil☐ ☐ Fuel Fingerprint (FIQ) ☐ NW-HCID Screen	Oil & Grease/TRPH 1664 HEM☐ 1664 SGT☐	PCB's Aroclors☐ Congeners☐	Pesticides/Herbicides 608☐ 8081A☐ 8141A☐ 8151A☐	Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐	PAHS 8310☐ SIM☐	Metals, Total or Dissolved (See list below)	Cyanide☐ Hex-Chrom☐	pH, Cond., Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS (circle)	NH_3-N, COD, Total-P, TKN, TOC, DOC (circle) NO_2+NO_3	TOX 9020☐ AOX 1650☐ 506☐	REMARKS
MS34I	5-11-11	1028		water	3		X												
MS33I	↓	1409		↓	3		X												
QCD02	↓	1510		↓	3		X												
QCT02	5-9-11	—		↓	2		X												
QCR03	5-11-11	1455		↓	3		X												

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. # 34003
Bill To: Account Payable

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:
for B specific compounds

Tracking # 1Z A19 8R9 01 9559 3507

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature] Date/Time: 5-11-11 15:15	Signature: [signature] Date/Time: 5/12/11 1030	Signature: Date/Time:	Signature: Date/Time:
Printed Name: Ryan Riley Firm: Bay West	Printed Name: Brad Rhin Firm: CAS	Printed Name: Firm:	Printed Name: Firm:

RCOC #1 03/10

8

Columbia Analytical Services™

CHAIN OF CUSTODY

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SR#: K1104246

PAGE 1 OF 2 COC # 050911-2

PROJECT NAME: NIROP
PROJECT NUMBER: J070047
PROJECT MANAGER: Paul Walz
COMPANY ADDRESS: Bay West, 5 Empire Drive
CITY STATE ZIP: St Paul MN 55103
E MAIL ADDRESS: paulw@baywest.com
PHONE: 651-293-3491 FAX: 651-291-0099
SAMPLER'S SIGNATURE:

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625 ☐ 8270 ☐ 8270LL ☐	Volatile Organics 624 ☐ 8260 ☐ 8021 ☐ BTEX ☐	Hydrocarbons (* see below) Gas ☐ Diesel ☐ Oil ☐	Fuel Fingerprint (FIQ) NW-HCID Screen	Oil & Grease/TRPH 1664 HEM ☐ 1664 SGT ☐	PCB's Aroclors ☐ Congeners ☐	Pesticides/Herbicides 608 ☐ 8081A ☐ 8141A ☐ 8151A ☐	Chlorophenolics - 8151M Tri ☐ Tetra ☐ PCP ☐	PAHS 8310 ☐ SIM ☐	Metals, Total or Dissolved (See list below)	Cyanide ☐ Hex-Chrom ☐	pH, Cond., Cl, SO4, PO4, F, NO2, NO3, BOD, TSS, TDS (circle)	NH3-N, COD, Total-P, TKN, TOC, DOC (circle) NO2+NO3	TOX 9020 ☐ AOX 1650 ☐ 506 ☐	REMARKS
MS15IS	5-9-11	1219		water	9		X													MS/MSD
MS43I	↓	1328		↓	3		X													
MS45I		1428			3		X													
MS45S		1532			3		X													
MS54I	5/10/11	1119			3		X													
MS54S		1032			3		X													
MS41I		935			3		X													
MS44I		1234			3		X													
MS46S	↓	1357			3		X													
MS18S		1455		↓	3		X													

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. # 34003
Bill To: Account Payable

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:
for 8 specific compounds

Tracking # 1Z A19 8R9 01 9735 1112

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature] Date/Time: 5/11/11 13:15	Signature: [signature] Date/Time: 5/12/11 1030	Signature: Date/Time:	Signature: Date/Time:
Printed Name: Jon Stabeck Firm: Baywest	Printed Name: Brad Tilson Firm: CAS	Printed Name: Firm:	Printed Name: Firm:

RCOC #1 03/10

10

Columbia Analytical Services

CHAIN OF CUSTODY

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

SR#: K1104246

PAGE 2 OF 2 COC # 050911-2

PROJECT NAME: NIPOP
PROJECT NUMBER: J070017
PROJECT MANAGER: Paul Walz
COMPANY ADDRESS: Bay West, 5 Empire Drive
CITY STATE/ZIP: St Paul MN 55103
E MAIL ADDRESS: paul.walz@baywest.com
PHONE #: 651-291-0491 FAX: 651-291-0099
SAMPLER'S SIGNATURE:

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625 ☐ 8270 ☐ 8270LL ☐	Volatile Organics 624 ☐ 8260 ☐ 8021 ☐ BTEX ☐	Hydrocarbons (*see below) Gas ☐ Diesel ☐ Oil ☐	Fuel Fingerprint (FIQ) NW-HCID Screen	Oil & Grease/TRPH 1664 HEM ☐ 1664 SGT ☐	PCB's Aroclors ☐ Congeners ☐	Pesticides/Herbicides 608 ☐ 8081A ☐ 8141A ☐ 8151A ☐	Chlorophenolics - 8151M Tri ☐ Tetra ☐ PCP ☐	PAHS 8310 ☐ SIM ☐	Metals, Total or Dissolved (See list below)	Cyanide ☐ Hex-Chrom ☐	pH, Cond, Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS (circle)	NH_3-N, COD, Total-P, TKN, TOC, DOC (circle) NO_2+NO_3	TOX 9020 ☐ AOX 1650 ☐ 506 ☐					REMARKS
QCR02	5-10-11	1135		water	3			X																	
QCT02	5-9-11	—		water	2			X																	

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. # 39003
Bill To: Accounts Payable

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:

for 8 specific compounds

Tracking # 1Z A19 6R9 01 9735 1112

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature] Date/Time: 5/11/11 13:15	Signature: [signature] Date/Time: 5/12/11 1030	Signature: Date/Time:	Signature: Date/Time:
Printed Name: Joe Stalcly Firm: Bay West	Printed Name: Brad Rubin Firm: CAS	Printed Name: Firm:	Printed Name: Firm:

RCOC #1 03/10

11

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

PC Mike

Client / Project: BayWest Service Request *K11* 7246

Received: 5/12/11 Opened: 5/12/11 By: BT Unloaded: 5/12/11 By: BT

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? 1 Front
   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Cooler Temp °C	Temp Blank °C	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
0.4	0.3	281			x
-0.3	1.0	297			x

7. Packing material used. *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Sleeves* *Other* _____
8. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
9. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
10. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
11. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
12. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
13. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
14. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
15. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time
MS 35D	1 x 40ml		x						BT	

Notes, Discrepancies, & Resolutions: _____

Page 1 *of* _____

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1104246

Cover Page - Organic Analysis Data Package
Volatile Organic Compounds

Sample Name	Lab Code	Date Collected	Date Received
MS35D	K1104246-001	05/09/2011	05/12/2011
MS131S	K1104246-002	05/09/2011	05/12/2011
MS37S	K1104246-003	05/09/2011	05/12/2011
MS37SDL	K1104246-003	05/09/2011	05/12/2011
QCD01	K1104246-004	05/09/2011	05/12/2011
QCD01DL	K1104246-004	05/09/2011	05/12/2011
MS35I	K1104246-005	05/09/2011	05/12/2011
MS35IDL	K1104246-005	05/09/2011	05/12/2011
QCR01	K1104246-006	05/09/2011	05/12/2011
MS55IDL	K1104246-007	05/10/2011	05/12/2011
MS55I	K1104246-007	05/10/2011	05/12/2011
MS36S	K1104246-008	05/10/2011	05/12/2011
MS36SDL	K1104246-008	05/10/2011	05/12/2011
MS56I	K1104246-009	05/10/2011	05/12/2011
MS56IDL	K1104246-009	05/10/2011	05/12/2011
MS38S	K1104246-010	05/10/2011	05/12/2011
MS38SDL	K1104246-010	05/10/2011	05/12/2011
MS34I	K1104246-011	05/11/2011	05/12/2011
MS34IDL	K1104246-011	05/11/2011	05/12/2011
MS33I	K1104246-012	05/11/2011	05/12/2011
MS33IDL	K1104246-012	05/11/2011	05/12/2011
QCD02DL	K1104246-013	05/11/2011	05/12/2011
QCD02	K1104246-013	05/11/2011	05/12/2011
QCT02	K1104246-014	05/09/2011	05/12/2011
QCR03	K1104246-015	05/11/2011	05/12/2011
MS15IS	K1104246-016	05/09/2011	05/12/2011
MS43I	K1104246-017	05/09/2011	05/12/2011
MS45I	K1104246-018	05/09/2011	05/12/2011
MS45S	K1104246-019	05/09/2011	05/12/2011
MS45SDL	K1104246-019	05/09/2011	05/12/2011
MS54I	K1104246-020	05/10/2011	05/12/2011
MS54IDL	K1104246-020	05/10/2011	05/12/2011
MS54S	K1104246-021	05/10/2011	05/12/2011
MS54SDL	K1104246-021	05/10/2011	05/12/2011
MS41I	K1104246-022	05/10/2011	05/12/2011
MS44I	K1104246-023	05/10/2011	05/12/2011
MS44IDL	K1104246-023	05/10/2011	05/12/2011
MS46S	K1104246-024	05/10/2011	05/12/2011

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: K Mason

Name: K Mason

Date: 5/17/11

Title: Sampler

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1104246

Cover Page - Organic Analysis Data Package
Volatile Organic Compounds

Sample Name	Lab Code	Date Collected	Date Received
MS46SDL	K1104246-024	05/10/2011	05/12/2011
MS18S	K1104246-025	05/10/2011	05/12/2011
MS18SDL	K1104246-025	05/10/2011	05/12/2011
QCR02	K1104246-026	05/10/2011	05/12/2011
QCT02	K1104246-027	05/09/2011	05/12/2011
MS15ISMS	KWG1104421-1	05/09/2011	05/12/2011
MS15ISDMS	KWG1104421-2	05/09/2011	05/12/2011
MS35DMS	KWG1104437-1	05/09/2011	05/12/2011
MS35DDMS	KWG1104437-2	05/09/2011	05/12/2011

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: K Masoner Name: K Masoner

Date: 5/17/11 Title: Scientist

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1104246

Surrogate Recovery Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
MS35D	K1104246-001	99	103	95
MS131S	K1104246-002	100	104	97
MS37SDL	K1104246-003	99	104	97
MS37S	K1104246-003	99	103	97
QCD01DL	K1104246-004	98	104	95
QCD01	K1104246-004	100	103	97
MS35I	K1104246-005	100	103	96
MS35IDL	K1104246-005	100	104	96
QCR01	K1104246-006	99	104	97
MS55IDL	K1104246-007	116	121	101
MS55I	K1104246-007	116	121	101
MS36SDL	K1104246-008	118	121	102
MS36S	K1104246-008	117	121	99
MS56IDL	K1104246-009	117	118	102
MS56I	K1104246-009	118	122	101
MS38SDL	K1104246-010	116	121	102
MS38S	K1104246-010	116	120	100
MS34IDL	K1104246-011	117	121	102
MS34I	K1104246-011	116	122	101
MS33IDL	K1104246-012	116	119	101
MS33I	K1104246-012	117	121	101
QCD02DL	K1104246-013	117	121	101
QCD02	K1104246-013	117	122	102
QCT02	K1104246-014	97	103	97
QCR03	K1104246-015	115	120	101
MS15IS	K1104246-016	116	120	101
MS43I	K1104246-017	98	104	98
MS45I	K1104246-018	115	120	101
MS45SDL	K1104246-019	115	120	100
MS45S	K1104246-019	118	122	100
MS54IDL	K1104246-020	99	103	96
MS54I	K1104246-020	99	103	95
MS54S	K1104246-021	100	104	96
MS54SDL	K1104246-021	99	103	97
MS41I	K1104246-022	98	104	97

Surrogate Recovery Control Limits (%)

Sur1 =	Dibromofluoromethane	73-122
Sur2 =	Toluene-d8	78-129
Sur3 =	4-Bromofluorobenzene	68-117

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1104246

Surrogate Recovery Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
MS44IDL	K1104246-023	99	103	95
MS44I	K1104246-023	99	104	97
MS46SDL	K1104246-024	98	103	95
MS46S	K1104246-024	101	104	96
MS18SDL	K1104246-025	101	105	95
MS18S	K1104246-025	102	104	95
QCR02	K1104246-026	114	118	103
QCT02	K1104246-027	98	103	97
Method Blank	KWG1104399-4	98	104	98
Method Blank	KWG1104421-4	115	120	101
Method Blank	KWG1104437-4	97	102	96
Method Blank	KWG1104463-4	115	120	102
MS15ISMS	KWG1104421-1	115	119	108
MS15ISDMS	KWG1104421-2	114	120	110
MS35DMS	KWG1104437-1	99	106	100
MS35DDMS	KWG1104437-2	101	106	100
Lab Control Sample	KWG1104399-3	100	107	100
Lab Control Sample	KWG1104421-3	114	119	107
Lab Control Sample	KWG1104437-3	100	107	99
Lab Control Sample	KWG1104463-3	114	120	105

Surrogate Recovery Control Limits (%)

Sur1 =	Dibromofluoromethane	73-122
Sur2 =	Toluene-d8	78-129
Sur3 =	4-Bromofluorobenzene	68-117

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1104246
Date Analyzed: 03/31/2011
Time Analyzed: 12:37

Tune Summary
Volatile Organic Compounds

File ID: J:\MS04\DATA\033111\0331F006.D
Instrument ID: MS04
Column:

Analysis Method: 8260C
Analysis Lot: KWG1104632

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	17.0	10825	PASS
75	95	30	60	41.0	26181	PASS
95	95	100	100	100.0	63810	PASS
96	95	5	9	6.6	4239	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	81.0	51661	PASS
175	174	5	9	7.8	4007	PASS
176	174	95	101	95.5	49357	PASS
177	176	5	9	6.6	3276	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Initial Calibration	KWG1104632-2	J:\MS04\DATA\033111\0331F009.D	03/31/2011	14:19	
Initial Calibration	KWG1104632-3	J:\MS04\DATA\033111\0331F010.D	03/31/2011	14:52	
Initial Calibration	KWG1104632-4	J:\MS04\DATA\033111\0331F011.D	03/31/2011	15:25	
Initial Calibration	KWG1104632-5	J:\MS04\DATA\033111\0331F012.D	03/31/2011	15:58	
Initial Calibration	KWG1104632-6	J:\MS04\DATA\033111\0331F013.D	03/31/2011	16:31	
Initial Calibration	KWG1104632-7	J:\MS04\DATA\033111\0331F014.D	03/31/2011	17:04	
Initial Calibration	KWG1104632-8	J:\MS04\DATA\033111\0331F015.D	03/31/2011	17:37	
Initial Calibration	KWG1104632-9	J:\MS04\DATA\033111\0331F016.D	03/31/2011	18:10	
Initial Calibration	KWG1104632-10	J:\MS04\DATA\033111\0331F017.D	03/31/2011	18:43	
Initial Calibration	KWG1104632-11	J:\MS04\DATA\033111\0331F018.D	03/31/2011	19:16	
Initial Calibration	KWG1104632-12	J:\MS04\DATA\033111\0331F019.D	03/31/2011	19:49	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1104246
Calibration Date: 03/31/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10409
Instrument ID: MS04

Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS04\DATA\033111\0331F009.D	G	J:\MS04\DATA\033111\0331F015.D
B	J:\MS04\DATA\033111\0331F010.D	H	J:\MS04\DATA\033111\0331F016.D
C	J:\MS04\DATA\033111\0331F011.D	I	J:\MS04\DATA\033111\0331F017.D
D	J:\MS04\DATA\033111\0331F012.D	J	J:\MS04\DATA\033111\0331F018.D
E	J:\MS04\DATA\033111\0331F013.D	K	J:\MS04\DATA\033111\0331F019.D
F	J:\MS04\DATA\033111\0331F014.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Vinyl Chloride				B	0.20	0.314	C	0.50	0.354	D	1.0	0.349	E	2.0	0.297
	F	5.0	0.324	G	10	0.352	H	20	0.324	I	40	0.343	J	60	0.347
	K	70	0.341												
1,1-Dichloroethene				B	0.20	0.240	C	0.50	0.248	D	1.0	0.237	E	2.0	0.199
	F	5.0	0.228	G	10	0.241	H	20	0.223	I	40	0.236	J	60	0.237
	K	70	0.232												
trans-1,2-Dichloroethene	A	0.10	0.224	B	0.20	0.298	C	0.50	0.319	D	1.0	0.305	E	2.0	0.262
	F	5.0	0.282	G	10	0.296	H	20	0.281	I	40	0.288	J	60	0.290
	K	70	0.285												
1,1-Dichloroethane				B	0.20	0.487	C	0.50	0.500	D	1.0	0.510	E	2.0	0.452
	F	5.0	0.503	G	10	0.509	H	20	0.482	I	40	0.491	J	60	0.497
	K	70	0.488												
cis-1,2-Dichloroethene	A	0.10	0.282	B	0.20	0.343	C	0.50	0.330	D	1.0	0.325	E	2.0	0.293
	F	5.0	0.310	G	10	0.317	H	20	0.306	I	40	0.310	J	60	0.313
	K	70	0.305												
1,1,1-Trichloroethane (TCA)				B	0.20	0.262	C	0.50	0.318	D	1.0	0.308	E	2.0	0.253
	F	5.0	0.287	G	10	0.310	H	20	0.287	I	40	0.298	J	60	0.302
	K	70	0.301												
Trichloroethene (TCE)	A	0.10	0.188	B	0.20	0.226	C	0.50	0.253	D	1.0	0.262	E	2.0	0.229
	F	5.0	0.246	G	10	0.267	H	20	0.255	I	40	0.264	J	60	0.267
	K	70	0.264												
Tetrachloroethene (PCE)				B	0.20	0.261	C	0.50	0.300	D	1.0	0.296	E	2.0	0.252
	F	5.0	0.281	G	10	0.307	H	20	0.287	I	40	0.291	J	60	0.290
	K	70	0.283												
Dibromofluoromethane				B	4.0	0.204	C	5.0	0.226	D	6.0	0.238	E	7.0	0.218
	F	8.0	0.227	G	10	0.243	H	20	0.226	I	40	0.239	J	50	0.245
Toluene-d8				B	4.0	0.656	C	5.0	0.741	D	6.0	0.810	E	7.0	0.737
	F	8.0	0.741	G	10	0.840	H	20	0.765	I	40	0.834	J	50	0.859

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1104246
Calibration Date: 03/31/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10409
Instrument ID: MS04

Column: MS

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
4-Bromofluorobenzene				B	4.0	0.348	C	5.0	0.387	D	6.0	0.397	E	7.0	0.373
	F	8.0	0.394	G	10	0.420	H	20	0.391	I	40	0.413	J	50	0.423

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1104246
Calibration Date: 03/31/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10409
Instrument ID: MS04

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Vinyl Chloride	MS	AverageRF	% RSD	5.6		≤ 20	0.335		0.100
1,1-Dichloroethene	MS	AverageRF	% RSD	5.9		≤ 20	0.232		0.100
trans-1,2-Dichloroethene	MS	AverageRF	% RSD	8.8		≤ 20	0.284		0.100
1,1-Dichloroethane	MS	AverageRF	% RSD	3.4		≤ 20	0.492		0.200
cis-1,2-Dichloroethene	MS	AverageRF	% RSD	5.4		≤ 20	0.312		0.100
1,1,1-Trichloroethane (TCA)	MS	AverageRF	% RSD	7.1		≤ 20	0.293		0.100
Trichloroethene (TCE)	MS	AverageRF	% RSD	9.9		≤ 20	0.247		0.200
Tetrachloroethene (PCE)	MS	AverageRF	% RSD	5.9		≤ 20	0.285		0.200
Dibromofluoromethane	SURR	AverageRF	% RSD	5.7		≤ 20	0.229		0.01
Toluene-d8	SURR	AverageRF	% RSD	8.4		≤ 20	0.776		0.01
4-Bromofluorobenzene	SURR	AverageRF	% RSD	6.1		≤ 20	0.394		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1104246
Date Analyzed: 04/01/2011
Time Analyzed: 08:41

Tune Summary
Volatile Organic Compounds

File ID: J:\MS04\DATA\040111\0401F002.D
Instrument ID: MS04
Column:

Analysis Method: 8260C
Analysis Lot: KWG1104633

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	17.8	11451	PASS
75	95	30	60	41.6	26733	PASS
95	95	100	100	100.0	64186	PASS
96	95	5	9	7.0	4501	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	81.6	52381	PASS
175	174	5	9	7.7	4057	PASS
176	174	95	101	96.4	50517	PASS
177	176	5	9	6.7	3390	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Initial Calibration Verification	KWG1104633-2	J:\MS04\DATA\040111\0401F003.D	04/01/2011	09:16	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1104246
Calibration Date: 03/31/2011
Date Analyzed: 04/01/2011

Second Source Calibration Verification
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration ID: CAL10409
Units: PPB

File ID: J:\MS04\DATA\040111\0401F003.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	9.7	0.335	0.325	-3	NA	± 30 %	AverageRF
1,1-Dichloroethene	10	11	0.232	0.252	8	NA	± 30 %	AverageRF
trans-1,2-Dichloroethene	10	10	0.284	0.296	4	NA	± 30 %	AverageRF
1,1-Dichloroethane	10	10	0.492	0.494	0	NA	± 30 %	AverageRF
cis-1,2-Dichloroethene	10	9.7	0.312	0.303	-3	NA	± 30 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	10	0.293	0.297	2	NA	± 30 %	AverageRF
Trichloroethene (TCE)	10	11	0.247	0.268	8	NA	± 30 %	AverageRF
Tetrachloroethene (PCE)	10	11	0.285	0.302	6	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1104246
Date Analyzed: 05/17/2011
Time Analyzed: 14:37

Tune Summary
Volatile Organic Compounds

File ID: J:\MS04\DATA\051711\0517F003.D
Instrument ID: MS04
Column:

Analysis Method: 8260C
Analysis Lot: KWG1104414

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	17.2	7147	PASS
75	95	30	60	41.6	17276	PASS
95	95	100	100	100.0	41532	PASS
96	95	5	9	7.3	3042	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	92.5	38414	PASS
175	174	5	9	7.3	2809	PASS
176	174	95	101	95.2	36582	PASS
177	176	5	9	6.8	2483	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1104414-2	J:\MS04\DATA\051711\0517F004.D	05/17/2011	15:16	
Lab Control Sample	KWG1104421-3	J:\MS04\DATA\051711\0517F005.D	05/17/2011	16:06	
MS15ISMS	KWG1104421-1	J:\MS04\DATA\051711\0517F006.D	05/17/2011	16:39	
MS15ISDMS	KWG1104421-2	J:\MS04\DATA\051711\0517F007.D	05/17/2011	17:12	
Method Blank	KWG1104421-4	J:\MS04\DATA\051711\0517F010.D	05/17/2011	18:52	
MS15IS	K1104246-016	J:\MS04\DATA\051711\0517F011.D	05/17/2011	19:26	
QCR03	K1104246-015	J:\MS04\DATA\051711\0517F012.D	05/17/2011	19:59	
MS45I	K1104246-018	J:\MS04\DATA\051711\0517F013.D	05/17/2011	20:32	
MS55IDL	K1104246-007	J:\MS04\DATA\051711\0517F014.D	05/17/2011	21:05	
MS38SDL	K1104246-010	J:\MS04\DATA\051711\0517F015.D	05/17/2011	21:39	
MS36SDL	K1104246-008	J:\MS04\DATA\051711\0517F016.D	05/17/2011	22:12	
MS56IDL	K1104246-009	J:\MS04\DATA\051711\0517F017.D	05/17/2011	22:45	
MS45SDL	K1104246-019	J:\MS04\DATA\051711\0517F018.D	05/17/2011	23:18	
MS55I	K1104246-007	J:\MS04\DATA\051711\0517F019.D	05/17/2011	23:51	
MS38S	K1104246-010	J:\MS04\DATA\051711\0517F020.D	05/18/2011	00:25	
MS36S	K1104246-008	J:\MS04\DATA\051711\0517F021.D	05/18/2011	00:58	
MS56I	K1104246-009	J:\MS04\DATA\051711\0517F022.D	05/18/2011	01:31	
MS45S	K1104246-019	J:\MS04\DATA\051711\0517F023.D	05/18/2011	02:04	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Analyzed:**	05/17/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type:	Internal Standard	**Calibration Date:**	03/31/2011
Analysis Method:	8260C	**Calibration ID:**	CAL10409
		Analysis Lot:	KWG1104414
		Units:	PPB

File ID: J:\MS04\DATA\051711\0517F004.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	9.9	0.100	0.335	0.329	-2	NA	± 20 %	AverageRF
1,1-Dichloroethene	10	8.6	0.100	0.232	0.199	-14	NA	± 20 %	AverageRF
trans-1,2-Dichloroethene	10	9.2	0.100	0.284	0.261	-8	NA	± 20 %	AverageRF
1,1-Dichloroethane	10	9.2	0.200	0.492	0.451	-8	NA	± 20 %	AverageRF
cis-1,2-Dichloroethene	10	9.8	0.100	0.312	0.307	-2	NA	± 20 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	8.7	0.100	0.293	0.255	-13	NA	± 20 %	AverageRF
Trichloroethene (TCE)	10	9.3	0.200	0.247	0.230	-7	NA	± 20 %	AverageRF
Tetrachloroethene (PCE)	10	8.7	0.200	0.285	0.248	-13	NA	± 20 %	AverageRF
Dibromofluoromethane	10	12	0.01	0.229	0.265	15	NA	± 20 %	AverageRF
Toluene-d8	10	12	0.01	0.776	0.940	21 *	NA	± 20 %	AverageRF
4-Bromofluorobenzene	10	11	0.01	0.394	0.416	6	NA	± 20 %	AverageRF

Surrogate - QC

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Extracted:**	05/17/2011
Sample Matrix:	Water	**Date Analyzed:**	05/17/2011
		Time Analyzed:	18:52

Method Blank Summary
Volatile Organic Compounds

Sample Name:	Method Blank	**File ID:**	J:\MS04\DATA\051711\0517F010.D
Lab Code:	KWG1104421-4	**Instrument ID:**	MS04
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C	**Extraction Lot:**	KWG1104421

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1104421-3	J:\MS04\DATA\051711\0517F005.D	05/17/11	16:06
MS15ISMS	KWG1104421-1	J:\MS04\DATA\051711\0517F006.D	05/17/11	16:39
MS15ISDMS	KWG1104421-2	J:\MS04\DATA\051711\0517F007.D	05/17/11	17:12
MS15IS	K1104246-016	J:\MS04\DATA\051711\0517F011.D	05/17/11	19:26
QCR03	K1104246-015	J:\MS04\DATA\051711\0517F012.D	05/17/11	19:59
MS45I	K1104246-018	J:\MS04\DATA\051711\0517F013.D	05/17/11	20:32
MS55IDL	K1104246-007	J:\MS04\DATA\051711\0517F014.D	05/17/11	21:05
MS38SDL	K1104246-010	J:\MS04\DATA\051711\0517F015.D	05/17/11	21:39
MS36SDL	K1104246-008	J:\MS04\DATA\051711\0517F016.D	05/17/11	22:12
MS56IDL	K1104246-009	J:\MS04\DATA\051711\0517F017.D	05/17/11	22:45
MS45SDL	K1104246-019	J:\MS04\DATA\051711\0517F018.D	05/17/11	23:18
MS55I	K1104246-007	J:\MS04\DATA\051711\0517F019.D	05/17/11	23:51
MS38S	K1104246-010	J:\MS04\DATA\051711\0517F020.D	05/18/11	00:25
MS36S	K1104246-008	J:\MS04\DATA\051711\0517F021.D	05/18/11	00:58
MS56I	K1104246-009	J:\MS04\DATA\051711\0517F022.D	05/18/11	01:31
MS45S	K1104246-019	J:\MS04\DATA\051711\0517F023.D	05/18/11	02:04

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	05/17/2011
		Date Analyzed:	05/17/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1104421-4	**Basis:**	NA
File ID:	J:\MS04\DATA\051711\0517F010.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1104421
Analysis Method:	8260C	**Calibration ID:**	CAL10409

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	115	73-122	05/17/11	Acceptable
Toluene-d8	120	78-129	05/17/11	Acceptable
4-Bromofluorobenzene	101	68-117	05/17/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Extracted:**	05/17/2011
Sample Matrix:	Water	**Date Analyzed:**	05/17/2011

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	EPA 5030B	**Units:**	ug/L
Analysis Method:	8260C	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1104421

	Lab Control Sample KWG1104421-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Vinyl Chloride	9.05	10.0	91	59-135
1,1-Dichloroethene	8.46	10.0	85	70-136
trans-1,2-Dichloroethene	9.04	10.0	90	70-121
1,1-Dichloroethane	8.71	10.0	87	72-122
cis-1,2-Dichloroethene	9.04	10.0	90	76-125
1,1,1-Trichloroethane (TCA)	8.33	10.0	83	65-126
Trichloroethene (TCE)	9.19	10.0	92	71-122
Tetrachloroethene (PCE)	8.65	10.0	87	65-121

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Extracted:**	05/17/2011
Sample Matrix:	Water	**Date Analyzed:**	05/17/2011

Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organic Compounds

Sample Name:	MS15IS	**Units:**	ug/L
Lab Code:	K1104246-016	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C	**Extraction Lot:**	KWG1104421

		MS15ISMS KWG1104421-1 Matrix Spike			MS15ISDMS KWG1104421-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Vinyl Chloride	ND	8.41	10.0	84	7.87	10.0	79	52-151	7	30
1,1-Dichloroethene	0.19	8.20	10.0	80	7.47	10.0	73	67-147	9	30
trans-1,2-Dichloroethene	0.30	9.13	10.0	88	8.43	10.0	81	69-128	8	30
1,1-Dichloroethane	0.24	8.85	10.0	86	8.25	10.0	80	67-130	7	30
cis-1,2-Dichloroethene	1.6	10.6	10.0	90	10.1	10.0	84	68-134	6	30
1,1,1-Trichloroethane (TCA)	ND	7.90	10.0	79	7.48	10.0	75	63-137	5	30
Trichloroethene (TCE)	23	29.0	10.0	61	27.5	10.0	46 *	56-137	5	30
Tetrachloroethene (PCE)	3.7	11.4	10.0	78	10.5	10.0	69	60-128	8	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1104246
Date Analyzed: 04/26/2011
Time Analyzed: 15:58

Tune Summary
Volatile Organic Compounds

File ID: J:\MS13\DATA\042611\0426F011.D
Instrument ID: MS13
Column:

Analysis Method: 8260C
Analysis Lot: KWG1104634

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	15.7	14671	PASS
75	95	30	60	46.9	43712	PASS
95	95	100	100	100.0	93157	PASS
96	95	5	9	7.2	6690	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	97.7	91045	PASS
175	174	5	9	7.0	6418	PASS
176	174	95	101	95.4	86848	PASS
177	176	5	9	6.9	5970	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Initial Calibration	KWG1104634-2	J:\MS13\DATA\042611\0426F014.D	04/26/2011	17:33	
Initial Calibration	KWG1104634-3	J:\MS13\DATA\042611\0426F015.D	04/26/2011	18:02	
Initial Calibration	KWG1104634-4	J:\MS13\DATA\042611\0426F016.D	04/26/2011	18:31	
Initial Calibration	KWG1104634-5	J:\MS13\DATA\042611\0426F017.D	04/26/2011	19:00	
Initial Calibration	KWG1104634-6	J:\MS13\DATA\042611\0426F018.D	04/26/2011	19:29	
Initial Calibration	KWG1104634-7	J:\MS13\DATA\042611\0426F019.D	04/26/2011	19:59	
Initial Calibration	KWG1104634-8	J:\MS13\DATA\042611\0426F020.D	04/26/2011	20:28	
Initial Calibration	KWG1104634-9	J:\MS13\DATA\042611\0426F021.D	04/26/2011	20:57	
Initial Calibration	KWG1104634-10	J:\MS13\DATA\042611\0426F022.D	04/26/2011	21:26	
Initial Calibration	KWG1104634-11	J:\MS13\DATA\042611\0426F023.D	04/26/2011	21:55	
Initial Calibration	KWG1104634-12	J:\MS13\DATA\042611\0426F024.D	04/26/2011	22:24	
Initial Calibration Verification	KWG1104634-13	J:\MS13\DATA\042611\0426F027.D	04/26/2011	23:51	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1104246
Calibration Date: 04/26/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10462
Instrument ID: MS13

Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS13\DATA\042611\0426F014.D	G	J:\MS13\DATA\042611\0426F020.D
B	J:\MS13\DATA\042611\0426F015.D	H	J:\MS13\DATA\042611\0426F021.D
C	J:\MS13\DATA\042611\0426F016.D	I	J:\MS13\DATA\042611\0426F022.D
D	J:\MS13\DATA\042611\0426F017.D	J	J:\MS13\DATA\042611\0426F023.D
E	J:\MS13\DATA\042611\0426F018.D	K	J:\MS13\DATA\042611\0426F024.D
F	J:\MS13\DATA\042611\0426F019.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Vinyl Chloride	A	0.10	0.368	B	0.20	0.357	C	0.50	0.405	D	1.0	0.355	E	2.0	0.354
	F	5.0	0.415	G	10	0.390	H	20	0.324	I	40	0.367	J	60	0.379
	K	80	0.385												
1,1-Dichloroethene	A	0.10	0.237	B	0.20	0.208	C	0.50	0.221	D	1.0	0.190	E	2.0	0.188
	F	5.0	0.227	G	10	0.210	H	20	0.176	I	40	0.200	J	60	0.207
	K	80	0.213												
trans-1,2-Dichloroethene	A	0.10	0.279	B	0.20	0.250	C	0.50	0.248	D	1.0	0.247	E	2.0	0.226
	F	5.0	0.260	G	10	0.249	H	20	0.227	I	40	0.244	J	60	0.251
	K	80	0.257												
1,1-Dichloroethane	A	0.10	0.432	B	0.20	0.372	C	0.50	0.412	D	1.0	0.376	E	2.0	0.362
	F	5.0	0.402	G	10	0.384	H	20	0.369	I	40	0.387	J	60	0.402
	K	80	0.407												
cis-1,2-Dichloroethene	A	0.10	0.320	B	0.20	0.266	C	0.50	0.289	D	1.0	0.263	E	2.0	0.265
	F	5.0	0.287	G	10	0.270	H	20	0.269	I	40	0.271	J	60	0.278
	K	80	0.283												
1,1,1-Trichloroethane (TCA)	A	0.10	0.353	B	0.20	0.319	C	0.50	0.346	D	1.0	0.306	E	2.0	0.314
	F	5.0	0.366	G	10	0.348	H	20	0.307	I	40	0.349	J	60	0.368
	K	80	0.379												
Trichloroethene (TCE)	A	0.10	0.318	B	0.20	0.245	C	0.50	0.276	D	1.0	0.237	E	2.0	0.239
	F	5.0	0.272	G	10	0.256	H	20	0.230	I	40	0.250	J	60	0.260
	K	80	0.265												
Tetrachloroethene (PCE)	A	0.10	0.686	B	0.20	0.627	C	0.50	0.683	D	1.0	0.609	E	2.0	0.575
	F	5.0	0.684	G	10	0.640	H	20	0.555	I	40	0.619	J	60	0.643
	K	80	0.652												
Dibromofluoromethane				B	4.0	0.229	C	5.0	0.222	D	6.0	0.196	E	7.0	0.223
	F	8.0	0.217	G	10	0.217	H	20	0.220	I	40	0.216	J	50	0.231
	K	60	0.217												
Toluene-d8				B	4.0	0.943	C	5.0	0.963	D	6.0	0.814	E	7.0	0.941
	F	8.0	0.920	G	10	0.951	H	20	0.942	I	40	0.906	J	50	0.990
	K	60	0.953												

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1104246
Calibration Date: 04/26/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10462
Instrument ID: MS13

Column: MS

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
4-Bromofluorobenzene				B	4.0	0.918	C	5.0	0.919	D	6.0	0.801	E	7.0	0.905
	F	8.0	0.900	G	10	0.882	H	20	0.898	I	40	0.876	J	50	0.971
	K	60	0.908												

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1104246
Calibration Date: 04/26/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10462
Instrument ID: MS13

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Vinyl Chloride	MS	AverageRF	% RSD	6.9		≤ 20	0.373		0.100
1,1-Dichloroethene	MS	AverageRF	% RSD	8.6		≤ 20	0.207		0.100
trans-1,2-Dichloroethene	MS	AverageRF	% RSD	5.8		≤ 20	0.249		0.100
1,1-Dichloroethane	MS	AverageRF	% RSD	5.5		≤ 20	0.392		0.200
cis-1,2-Dichloroethene	MS	AverageRF	% RSD	5.9		≤ 20	0.278		0.100
1,1,1-Trichloroethane (TCA)	MS	AverageRF	% RSD	7.6		≤ 20	0.341		0.100
Trichloroethene (TCE)	MS	AverageRF	% RSD	9.4		≤ 20	0.259		0.200
Tetrachloroethene (PCE)	MS	AverageRF	% RSD	6.8		≤ 20	0.634		0.200
Dibromofluoromethane	SURR	AverageRF	% RSD	4.3		≤ 20	0.219		0.01
Toluene-d8	SURR	AverageRF	% RSD	5.1		≤ 20	0.932		0.01
4-Bromofluorobenzene	SURR	AverageRF	% RSD	4.8		≤ 20	0.898		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1104246
Calibration Date: 04/26/2011
Date Analyzed: 04/26/2011

Second Source Calibration Verification
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration ID: CAL10462
Units: PPB

File ID: J:\MS13\DATA\042611\0426F027.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	8.8	0.373	0.330	-12	NA	± 30 %	AverageRF
1,1-Dichloroethene	10	11	0.207	0.235	14	NA	± 30 %	AverageRF
trans-1,2-Dichloroethene	10	11	0.249	0.273	10	NA	± 30 %	AverageRF
1,1-Dichloroethane	10	10	0.392	0.406	4	NA	± 30 %	AverageRF
cis-1,2-Dichloroethene	10	10	0.278	0.279	0	NA	± 30 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	11	0.341	0.368	8	NA	± 30 %	AverageRF
Trichloroethene (TCE)	10	11	0.259	0.273	6	NA	± 30 %	AverageRF
Tetrachloroethene (PCE)	10	11	0.634	0.686	8	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1104246
Date Analyzed: 05/17/2011
Time Analyzed: 09:51

Tune Summary
Volatile Organic Compounds

File ID: J:\MS13\DATA\051711\0517F002.D
Instrument ID: MS13
Column:

Analysis Method: 8260C
Analysis Lot: KWG1104380

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	15.8	7752	PASS
75	95	30	60	47.0	23087	PASS
95	95	100	100	100.0	49136	PASS
96	95	5	9	7.2	3549	PASS
173	174	0	2	0.2	81	PASS
174	95	50	120	103.6	50907	PASS
175	174	5	9	5.8	2930	PASS
176	174	95	101	96.3	49044	PASS
177	176	5	9	6.5	3211	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1104380-2	J:\MS13\DATA\051711\0517F003.D	05/17/2011	10:28	
Lab Control Sample	KWG1104399-3	J:\MS13\DATA\051711\0517F004.D	05/17/2011	11:09	
Method Blank	KWG1104399-4	J:\MS13\DATA\051711\0517F008.D	05/17/2011	13:06	
QCT02	K1104246-014	J:\MS13\DATA\051711\0517F009.D	05/17/2011	13:38	
QCT02	K1104246-027	J:\MS13\DATA\051711\0517F010.D	05/17/2011	14:07	
MS131S	K1104246-002	J:\MS13\DATA\051711\0517F019.D	05/17/2011	18:33	
QCR01	K1104246-006	J:\MS13\DATA\051711\0517F020.D	05/17/2011	19:02	
MS43I	K1104246-017	J:\MS13\DATA\051711\0517F021.D	05/17/2011	19:32	
MS37SDL	K1104246-003	J:\MS13\DATA\051711\0517F022.D	05/17/2011	20:01	
QCD01DL	K1104246-004	J:\MS13\DATA\051711\0517F023.D	05/17/2011	20:31	
MS37S	K1104246-003	J:\MS13\DATA\051711\0517F024.D	05/17/2011	21:00	
QCD01	K1104246-004	J:\MS13\DATA\051711\0517F025.D	05/17/2011	21:30	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1104246
Date Analyzed: 05/17/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration Date: 04/26/2011
Calibration ID: CAL10462
Analysis Lot: KWG1104380
Units: PPB

File ID: J:\MS13\DATA\051711\0517F003.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	10	0.100	0.373	0.381	2	NA	± 20 %	AverageRF
1,1-Dichloroethene	10	11	0.100	0.207	0.231	12	NA	± 20 %	AverageRF
trans-1,2-Dichloroethene	10	11	0.100	0.249	0.266	7	NA	± 20 %	AverageRF
1,1-Dichloroethane	10	10	0.200	0.392	0.395	1	NA	± 20 %	AverageRF
cis-1,2-Dichloroethene	10	10	0.100	0.278	0.291	4	NA	± 20 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	10	0.100	0.341	0.347	2	NA	± 20 %	AverageRF
Trichloroethene (TCE)	10	11	0.200	0.259	0.272	5	NA	± 20 %	AverageRF
Tetrachloroethene (PCE)	10	12	0.200	0.634	0.753	19	NA	± 20 %	AverageRF
Dibromofluoromethane	10	9.9	0.01	0.219	0.217	-1	NA	± 20 %	AverageRF
Toluene-d8	10	11	0.01	0.932	0.984	6	NA	± 20 %	AverageRF
4-Bromofluorobenzene	10	10	0.01	0.898	0.929	3	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Extracted:**	05/17/2011
Sample Matrix:	Water	**Date Analyzed:**	05/17/2011
		Time Analyzed:	13:06

Method Blank Summary
Volatile Organic Compounds

Sample Name:	Method Blank	**File ID:**	J:\MS13\DATA\051711\0517F008.D
Lab Code:	KWG1104399-4	**Instrument ID:**	MS13
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C	**Extraction Lot:**	KWG1104399

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1104399-3	J:\MS13\DATA\051711\0517F004.D	05/17/11	11:09
QCT02	K1104246-014	J:\MS13\DATA\051711\0517F009.D	05/17/11	13:38
QCT02	K1104246-027	J:\MS13\DATA\051711\0517F010.D	05/17/11	14:07
MS131S	K1104246-002	J:\MS13\DATA\051711\0517F019.D	05/17/11	18:33
QCR01	K1104246-006	J:\MS13\DATA\051711\0517F020.D	05/17/11	19:02
MS43I	K1104246-017	J:\MS13\DATA\051711\0517F021.D	05/17/11	19:32
MS37SDL	K1104246-003	J:\MS13\DATA\051711\0517F022.D	05/17/11	20:01
QCD01DL	K1104246-004	J:\MS13\DATA\051711\0517F023.D	05/17/11	20:31
MS37S	K1104246-003	J:\MS13\DATA\051711\0517F024.D	05/17/11	21:00
QCD01	K1104246-004	J:\MS13\DATA\051711\0517F025.D	05/17/11	21:30

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	05/17/2011
		Date Analyzed:	05/17/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1104399-4	**Basis:**	NA
File ID:	J:\MS13\DATA\051711\0517F008.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1104399
Analysis Method:	8260C	**Calibration ID:**	CAL10462

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	98	73-122	05/17/11	Acceptable
Toluene-d8	104	78-129	05/17/11	Acceptable
4-Bromofluorobenzene	98	68-117	05/17/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Extracted:**	05/17/2011
Sample Matrix:	Water	**Date Analyzed:**	05/17/2011

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	EPA 5030B	**Units:**	ug/L
Analysis Method:	8260C	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1104399

	Lab Control Sample KWG1104399-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Vinyl Chloride	7.21	10.0	72	59-135
1,1-Dichloroethene	8.88	10.0	89	70-136
trans-1,2-Dichloroethene	9.39	10.0	94	70-121
1,1-Dichloroethane	9.12	10.0	91	72-122
cis-1,2-Dichloroethene	9.41	10.0	94	76-125
1,1,1-Trichloroethane (TCA)	8.60	10.0	86	65-126
Trichloroethene (TCE)	9.40	10.0	94	71-122
Tetrachloroethene (PCE)	10.1	10.0	101	65-121

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1104246
Date Analyzed: 05/18/2011
Time Analyzed: 10:06

Tune Summary
Volatile Organic Compounds

File ID: J:\MS13\DATA\051811\0518F002.D
Instrument ID: MS13
Column:

Analysis Method: 8260C
Analysis Lot: KWG1104433

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	15.4	8748	PASS
75	95	30	60	45.2	25720	PASS
95	95	100	100	100.0	56896	PASS
96	95	5	9	6.7	3827	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	97.3	55357	PASS
175	174	5	9	7.8	4305	PASS
176	174	95	101	99.5	55074	PASS
177	176	5	9	6.2	3419	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1104433-2	J:\MS13\DATA\051811\0518F003.D	05/18/2011	10:42	
Lab Control Sample	KWG1104437-3	J:\MS13\DATA\051811\0518F004.D	05/18/2011	11:21	
MS35DMS	KWG1104437-1	J:\MS13\DATA\051811\0518F005.D	05/18/2011	11:50	
MS35DDMS	KWG1104437-2	J:\MS13\DATA\051811\0518F006.D	05/18/2011	12:19	
Method Blank	KWG1104437-4	J:\MS13\DATA\051811\0518F008.D	05/18/2011	13:18	
MS35D	K1104246-001	J:\MS13\DATA\051811\0518F009.D	05/18/2011	13:48	
MS41I	K1104246-022	J:\MS13\DATA\051811\0518F010.D	05/18/2011	14:18	
MS44IDL	K1104246-023	J:\MS13\DATA\051811\0518F014.D	05/18/2011	16:16	
MS46SDL	K1104246-024	J:\MS13\DATA\051811\0518F015.D	05/18/2011	16:46	
MS18SDL	K1104246-025	J:\MS13\DATA\051811\0518F016.D	05/18/2011	17:16	
MS54IDL	K1104246-020	J:\MS13\DATA\051811\0518F017.D	05/18/2011	17:46	
MS54SDL	K1104246-021	J:\MS13\DATA\051811\0518F018.D	05/18/2011	18:16	
MS35IDL	K1104246-005	J:\MS13\DATA\051811\0518F019.D	05/18/2011	18:46	
MS54S	K1104246-021	J:\MS13\DATA\051811\0518F020.D	05/18/2011	19:15	
MS46S	K1104246-024	J:\MS13\DATA\051811\0518F021.D	05/18/2011	19:45	
MS18S	K1104246-025	J:\MS13\DATA\051811\0518F022.D	05/18/2011	20:15	
MS54I	K1104246-020	J:\MS13\DATA\051811\0518F023.D	05/18/2011	20:44	
MS44I	K1104246-023	J:\MS13\DATA\051811\0518F024.D	05/18/2011	21:14	
MS35I	K1104246-005	J:\MS13\DATA\051811\0518F025.D	05/18/2011	21:43	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1104246
Date Analyzed: 05/18/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration Date: 04/26/2011
Calibration ID: CAL10462
Analysis Lot: KWG1104433
Units: PPB

File ID: J:\MS13\DATA\051811\0518F003.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	9.1	0.100	0.373	0.339	-9	NA	± 20 %	AverageRF
1,1-Dichloroethene	10	10	0.100	0.207	0.207	0	NA	± 20 %	AverageRF
trans-1,2-Dichloroethene	10	9.8	0.100	0.249	0.245	-2	NA	± 20 %	AverageRF
1,1-Dichloroethane	10	9.1	0.200	0.392	0.356	-9	NA	± 20 %	AverageRF
cis-1,2-Dichloroethene	10	9.7	0.100	0.278	0.269	-3	NA	± 20 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	9.1	0.100	0.341	0.311	-9	NA	± 20 %	AverageRF
Trichloroethene (TCE)	10	9.6	0.200	0.259	0.248	-4	NA	± 20 %	AverageRF
Tetrachloroethene (PCE)	10	11	0.200	0.634	0.694	10	NA	± 20 %	AverageRF
Dibromofluoromethane	10	10	0.01	0.219	0.220	0	NA	± 20 %	AverageRF
Toluene-d8	10	11	0.01	0.932	0.998	7	NA	± 20 %	AverageRF
4-Bromofluorobenzene	10	10	0.01	0.898	0.913	2	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Extracted:**	05/18/2011
Sample Matrix:	Water	**Date Analyzed:**	05/18/2011
		Time Analyzed:	13:18

Method Blank Summary
Volatile Organic Compounds

Sample Name:	Method Blank	**File ID:**	J:\MS13\DATA\051811\0518F008.D
Lab Code:	KWG1104437-4	**Instrument ID:**	MS13
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C	**Extraction Lot:**	KWG1104437

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1104437-3	J:\MS13\DATA\051811\0518F004.D	05/18/11	11:21
MS35DMS	KWG1104437-1	J:\MS13\DATA\051811\0518F005.D	05/18/11	11:50
MS35DDMS	KWG1104437-2	J:\MS13\DATA\051811\0518F006.D	05/18/11	12:19
MS35D	K1104246-001	J:\MS13\DATA\051811\0518F009.D	05/18/11	13:48
MS41I	K1104246-022	J:\MS13\DATA\051811\0518F010.D	05/18/11	14:18
MS44IDL	K1104246-023	J:\MS13\DATA\051811\0518F014.D	05/18/11	16:16
MS46SDL	K1104246-024	J:\MS13\DATA\051811\0518F015.D	05/18/11	16:46
MS18SDL	K1104246-025	J:\MS13\DATA\051811\0518F016.D	05/18/11	17:16
MS54IDL	K1104246-020	J:\MS13\DATA\051811\0518F017.D	05/18/11	17:46
MS54SDL	K1104246-021	J:\MS13\DATA\051811\0518F018.D	05/18/11	18:16
MS35IDL	K1104246-005	J:\MS13\DATA\051811\0518F019.D	05/18/11	18:46
MS54S	K1104246-021	J:\MS13\DATA\051811\0518F020.D	05/18/11	19:15
MS46S	K1104246-024	J:\MS13\DATA\051811\0518F021.D	05/18/11	19:45
MS18S	K1104246-025	J:\MS13\DATA\051811\0518F022.D	05/18/11	20:15
MS54I	K1104246-020	J:\MS13\DATA\051811\0518F023.D	05/18/11	20:44
MS44I	K1104246-023	J:\MS13\DATA\051811\0518F024.D	05/18/11	21:14
MS35I	K1104246-005	J:\MS13\DATA\051811\0518F025.D	05/18/11	21:43

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	05/18/2011
		Date Analyzed:	05/18/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1104437-4	**Basis:**	NA
File ID:	J:\MS13\DATA\051811\0518F008.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1104437
Analysis Method:	8260C	**Calibration ID:**	CAL10462

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	97	73-122	05/18/11	Acceptable
Toluene-d8	102	78-129	05/18/11	Acceptable
4-Bromofluorobenzene	96	68-117	05/18/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Extracted:**	05/18/2011
Sample Matrix:	Water	**Date Analyzed:**	05/18/2011

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	EPA 5030B	**Units:**	ug/L
Analysis Method:	8260C	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1104437

	Lab Control Sample KWG1104437-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Vinyl Chloride	7.14	10.0	71	59-135
1,1-Dichloroethene	9.01	10.0	90	70-136
trans-1,2-Dichloroethene	9.66	10.0	97	70-121
1,1-Dichloroethane	9.38	10.0	94	72-122
cis-1,2-Dichloroethene	9.63	10.0	96	76-125
1,1,1-Trichloroethane (TCA)	8.36	10.0	84	65-126
Trichloroethene (TCE)	9.49	10.0	95	71-122
Tetrachloroethene (PCE)	9.99	10.0	100	65-121

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Extracted:**	05/18/2011
Sample Matrix:	Water	**Date Analyzed:**	05/18/2011

Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organic Compounds

Sample Name:	MS35D	**Units:**	ug/L
Lab Code:	K1104246-001	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C	**Extraction Lot:**	KWG1104437

		MS35DMS KWG1104437-1 Matrix Spike			MS35DDMS KWG1104437-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Vinyl Chloride	ND	8.92	10.0	89	8.62	10.0	86	52-151	3	30
1,1-Dichloroethene	0.17	11.3	10.0	111	10.7	10.0	106	67-147	5	30
trans-1,2-Dichloroethene	0.70	11.9	10.0	112	11.4	10.0	107	69-128	4	30
1,1-Dichloroethane	ND	10.5	10.0	105	10.1	10.0	101	67-130	4	30
cis-1,2-Dichloroethene	12	22.1	10.0	105	21.8	10.0	102	68-134	1	30
1,1,1-Trichloroethane (TCA)	ND	10.3	10.0	103	9.90	10.0	99	63-137	4	30
Trichloroethene (TCE)	28	39.1	10.0	109	37.9	10.0	97	56-137	3	30
Tetrachloroethene (PCE)	0.21	12.5	10.0	123	11.9	10.0	117	60-128	5	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1104246
Date Analyzed: 05/18/2011
Time Analyzed: 14:16

Tune Summary
Volatile Organic Compounds

File ID: J:\MS04\DATA\051811\0518F002.D
Instrument ID: MS04
Column:

Analysis Method: 8260C
Analysis Lot: KWG1104450

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	18.2	8595	PASS
75	95	30	60	43.0	20298	PASS
95	95	100	100	100.0	47178	PASS
96	95	5	9	7.3	3421	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	102.8	48477	PASS
175	174	5	9	7.3	3535	PASS
176	174	95	101	98.0	47522	PASS
177	176	5	9	6.5	3101	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1104450-2	J:\MS04\DATA\051811\0518F004.D	05/18/2011	15:43	
Lab Control Sample	KWG1104463-3	J:\MS04\DATA\051811\0518F005.D	05/18/2011	16:40	
Method Blank	KWG1104463-4	J:\MS04\DATA\051811\0518F010.D	05/18/2011	19:28	
QCR02	K1104246-026	J:\MS04\DATA\051811\0518F013.D	05/18/2011	21:08	
MS34IDL	K1104246-011	J:\MS04\DATA\051811\0518F014.D	05/18/2011	21:41	
MS33IDL	K1104246-012	J:\MS04\DATA\051811\0518F015.D	05/18/2011	22:14	
QCD02DL	K1104246-013	J:\MS04\DATA\051811\0518F016.D	05/18/2011	22:47	
MS34I	K1104246-011	J:\MS04\DATA\051811\0518F017.D	05/18/2011	23:20	
MS33I	K1104246-012	J:\MS04\DATA\051811\0518F018.D	05/18/2011	23:53	
QCD02	K1104246-013	J:\MS04\DATA\051811\0518F019.D	05/19/2011	00:27	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1104246
Date Analyzed: 05/18/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration Date: 03/31/2011
Calibration ID: CAL10409
Analysis Lot: KWG1104450
Units: PPB

File ID: J:\MS04\DATA\051811\0518F004.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	11	0.100	0.335	0.366	9	NA	± 20 %	AverageRF
1,1-Dichloroethene	10	9.4	0.100	0.232	0.218	-6	NA	± 20 %	AverageRF
trans-1,2-Dichloroethene	10	10	0.100	0.284	0.286	1	NA	± 20 %	AverageRF
1,1-Dichloroethane	10	9.4	0.200	0.492	0.463	-6	NA	± 20 %	AverageRF
cis-1,2-Dichloroethene	10	10	0.100	0.312	0.312	0	NA	± 20 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	9.4	0.100	0.293	0.276	-6	NA	± 20 %	AverageRF
Trichloroethene (TCE)	10	9.9	0.200	0.247	0.245	-1	NA	± 20 %	AverageRF
Tetrachloroethene (PCE)	10	9.5	0.200	0.285	0.269	-5	NA	± 20 %	AverageRF
Dibromofluoromethane	10	11	0.01	0.229	0.263	15	NA	± 20 %	AverageRF
Toluene-d8	10	12	0.01	0.776	0.925	19	NA	± 20 %	AverageRF
4-Bromofluorobenzene	10	10	0.01	0.394	0.413	5	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Extracted:**	05/18/2011
Sample Matrix:	Water	**Date Analyzed:**	05/18/2011
		Time Analyzed:	19:28

Method Blank Summary
Volatile Organic Compounds

Sample Name:	Method Blank	**File ID:**	J:\MS04\DATA\051811\0518F010.D
Lab Code:	KWG1104463-4	**Instrument ID:**	MS04
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C	**Extraction Lot:**	KWG1104463

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1104463-3	J:\MS04\DATA\051811\0518F005.D	05/18/11	16:40
QCR02	K1104246-026	J:\MS04\DATA\051811\0518F013.D	05/18/11	21:08
MS34IDL	K1104246-011	J:\MS04\DATA\051811\0518F014.D	05/18/11	21:41
MS33IDL	K1104246-012	J:\MS04\DATA\051811\0518F015.D	05/18/11	22:14
QCD02DL	K1104246-013	J:\MS04\DATA\051811\0518F016.D	05/18/11	22:47
MS34I	K1104246-011	J:\MS04\DATA\051811\0518F017.D	05/18/11	23:20
MS33I	K1104246-012	J:\MS04\DATA\051811\0518F018.D	05/18/11	23:53
QCD02	K1104246-013	J:\MS04\DATA\051811\0518F019.D	05/19/11	00:27

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	05/18/2011
		Date Analyzed:	05/18/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1104463-4	**Basis:**	NA
File ID:	J:\MS04\DATA\051811\0518F010.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1104463
Analysis Method:	8260C	**Calibration ID:**	CAL10409

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	115	73-122	05/18/11	Acceptable
Toluene-d8	120	78-129	05/18/11	Acceptable
4-Bromofluorobenzene	102	68-117	05/18/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Extracted:**	05/18/2011
Sample Matrix:	Water	**Date Analyzed:**	05/18/2011

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	EPA 5030B	**Units:**	ug/L
Analysis Method:	8260C	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1104463

	Lab Control Sample KWG1104463-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Vinyl Chloride	9.95	10.0	100	59-135
1,1-Dichloroethene	9.54	10.0	95	70-136
trans-1,2-Dichloroethene	9.87	10.0	99	70-121
1,1-Dichloroethane	9.34	10.0	93	72-122
cis-1,2-Dichloroethene	9.66	10.0	97	76-125
1,1,1-Trichloroethane (TCA)	9.36	10.0	94	65-126
Trichloroethene (TCE)	10.4	10.0	104	71-122
Tetrachloroethene (PCE)	9.35	10.0	94	65-121

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Analyzed:**	05/17/2011
		Time Analyzed:	10:28

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID:	J:\MS13\DATA\051711\0517F003.D	**Lab Code:**	KWG1104380-2
Instrument ID:	MS13	**Analysis Lot:**	KWG1104380
Analysis Method:	8260C		

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	745,824	6.46	274,135	12.30	327,433	15.28
	Upper Limit ==>	1,491,648	6.96	548,270	12.80	654,866	15.78
	Lower Limit ==>	372,912	5.96	137,068	11.80	163,717	14.78
	ICAL Result ==>	808,145	6.46	308,004	12.30	339,230	15.28
Associated Analyses							
Lab Control Sample	KWG1104399-3	758,922	6.45	283,407	12.30	331,261	15.28
Method Blank	KWG1104399-4	746,893	6.45	271,586	12.30	319,578	15.28
QCT02	K1104246-014	743,484	6.45	267,911	12.30	313,364	15.28
QCT02	K1104246-027	741,460	6.45	270,925	12.30	313,323	15.28
MS131S	K1104246-002	736,409	6.45	273,224	12.30	316,286	15.28
QCR01	K1104246-006	728,561	6.45	268,402	12.30	315,026	15.28
MS43I	K1104246-017	738,489	6.45	269,817	12.30	317,503	15.28
MS37SDL	K1104246-003	734,712	6.45	265,307	12.30	316,508	15.28
QCD01DL	K1104246-004	732,111	6.45	268,494	12.30	309,314	15.28
MS37S	K1104246-003	732,834	6.45	270,711	12.30	314,278	15.28
QCD01	K1104246-004	745,295	6.45	271,015	12.30	317,244	15.28

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Analyzed:**	05/17/2011
		Time Analyzed:	15:16

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID:	J:\MS04\DATA\051711\0517F004.D	**Lab Code:**	KWG1104414-2
Instrument ID:	MS04	**Analysis Lot:**	KWG1104414
Analysis Method:	8260C		

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	937,931	12.85	723,272	17.17	350,844	19.83
	Upper Limit ==>	1,875,862	13.35	1,446,544	17.67	701,688	20.33
	Lower Limit ==>	468,966	12.35	361,636	16.67	175,422	19.33
	ICAL Result ==>	1,083,304	12.81	704,099	17.14	310,589	19.80
Associated Analyses							
Lab Control Sample	KWG1104421-3	972,898	12.85	739,945	17.18	355,490	19.83
MS15ISMS	KWG1104421-1	972,495	12.85	739,988	17.17	351,618	19.83
MS15ISDMS	KWG1104421-2	940,954	12.85	730,172	17.17	353,436	19.83
Method Blank	KWG1104421-4	918,489	12.84	702,560	17.17	327,607	19.82
MS15IS	K1104246-016	908,010	12.85	694,958	17.17	325,649	19.83
QCR03	K1104246-015	878,009	12.85	667,982	17.17	312,739	19.83
MS45I	K1104246-018	909,653	12.85	704,248	17.17	325,911	19.83
MS55IDL	K1104246-007	932,804	12.84	715,992	17.17	326,631	19.83
MS38SDL	K1104246-010	883,278	12.84	682,324	17.17	323,668	19.82
MS36SDL	K1104246-008	869,509	12.85	681,195	17.17	319,708	19.83
MS56IDL	K1104246-009	904,597	12.85	675,473	17.17	318,601	19.83
MS45SDL	K1104246-019	918,536	12.84	702,846	17.17	323,082	19.83
MS55I	K1104246-007	901,063	12.85	695,005	17.17	321,116	19.83
MS38S	K1104246-010	877,456	12.85	672,154	17.17	313,707	19.83
MS36S	K1104246-008	891,754	12.84	692,602	17.16	314,901	19.82
MS56I	K1104246-009	886,106	12.84	687,195	17.16	319,778	19.82
MS45S	K1104246-019	894,175	12.84	689,779	17.17	315,939	19.83

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Analyzed:**	05/18/2011
		Time Analyzed:	10:42

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID:	J:\MS13\DATA\051811\0518F003.D	**Lab Code:**	KWG1104433-2
Instrument ID:	MS13	**Analysis Lot:**	KWG1104433
Analysis Method:	8260C		

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	751,974	6.45	276,107	12.30	324,899	15.28
	Upper Limit ==>	1,503,948	6.95	552,214	12.80	649,798	15.78
	Lower Limit ==>	375,987	5.95	138,054	11.80	162,450	14.78
	ICAL Result ==>	808,145	6.46	308,004	12.30	339,230	15.28
Associated Analyses							
Lab Control Sample	KWG1104437-3	746,095	6.45	281,689	12.30	326,592	15.28
MS35DMS	KWG1104437-1	752,432	6.45	279,237	12.30	325,016	15.28
MS35DDMS	KWG1104437-2	754,933	6.45	283,663	12.30	331,582	15.28
Method Blank	KWG1104437-4	757,675	6.45	277,295	12.30	318,287	15.28
MS35D	K1104246-001	753,577	6.45	277,114	12.30	323,333	15.28
MS41I	K1104246-022	749,122	6.45	276,173	12.30	323,889	15.28
MS44IDL	K1104246-023	739,004	6.45	273,197	12.30	315,645	15.28
MS46SDL	K1104246-024	730,901	6.45	271,498	12.30	311,373	15.28
MS18SDL	K1104246-025	722,443	6.45	269,631	12.30	312,500	15.28
MS54IDL	K1104246-020	739,636	6.45	270,605	12.30	310,680	15.28
MS54SDL	K1104246-021	735,597	6.45	270,793	12.30	310,196	15.28
MS35IDL	K1104246-005	727,601	6.45	271,176	12.30	312,970	15.28
MS54S	K1104246-021	731,529	6.45	272,949	12.30	314,777	15.28
MS46S	K1104246-024	730,762	6.45	272,431	12.30	315,796	15.28
MS18S	K1104246-025	736,465	6.45	274,262	12.30	313,351	15.28
MS54I	K1104246-020	741,309	6.45	273,319	12.30	311,256	15.28
MS44I	K1104246-023	737,591	6.45	271,401	12.30	314,806	15.28
MS35I	K1104246-005	741,291	6.45	272,136	12.30	311,616	15.28

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1104246
Date Analyzed: 05/18/2011
Time Analyzed: 15:43

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID: J:\MS04\DATA\051811\0518F004.D
Instrument ID: MS04
Analysis Method: 8260C

Lab Code: KWG1104450-2
Analysis Lot: KWG1104450

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	926,257	12.83	717,905	17.15	349,080	19.81
	Upper Limit ==>	1,852,514	13.33	1,435,810	17.65	698,160	20.31
	Lower Limit ==>	463,129	12.33	358,953	16.65	174,540	19.31
	ICAL Result ==>	1,083,304	12.81	704,099	17.14	310,589	19.80
Associated Analyses							
Lab Control Sample	KWG1104463-3	925,029	12.83	726,561	17.15	350,395	19.82
Method Blank	KWG1104463-4	884,471	12.82	677,186	17.15	315,871	19.81
QCR02	K1104246-026	870,075	12.82	664,382	17.15	313,487	19.81
MS34IDL	K1104246-011	858,274	12.82	676,821	17.15	314,340	19.81
MS33IDL	K1104246-012	858,028	12.81	656,142	17.14	311,933	19.80
QCD02DL	K1104246-013	845,862	12.82	655,159	17.15	306,523	19.81
MS34I	K1104246-011	866,325	12.82	674,605	17.15	318,088	19.81
MS33I	K1104246-012	842,629	12.81	658,666	17.14	310,449	19.80
QCD02	K1104246-013	833,377	12.81	658,943	17.14	312,194	19.80

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1104246
Date Extracted: 05/17/2011

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1104399
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
MS131S	K1104246-002	05/09/11	05/12/11	10ml	10ml	NA	
MS37S	K1104246-003	05/09/11	05/12/11	10ml	10ml	NA	
MS37SDL	K1104246-003	05/09/11	05/12/11	10ml	10ml	NA	
QCD01	K1104246-004	05/09/11	05/12/11	10ml	10ml	NA	
QCD01DL	K1104246-004	05/09/11	05/12/11	10ml	10ml	NA	
QCR01	K1104246-006	05/09/11	05/12/11	10ml	10ml	NA	
QCT02	K1104246-014	05/09/11	05/12/11	10ml	10ml	NA	
MS43I	K1104246-017	05/09/11	05/12/11	10ml	10ml	NA	
QCT02	K1104246-027	05/09/11	05/12/11	10ml	10ml	NA	
Method Blank	KWG1104399-4	NA	NA	10ml	10ml	NA	
Lab Control Sample	KWG1104399-3	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1104246
Date Extracted: 05/17/2011

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1104421
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
MS55I	K1104246-007	05/10/11	05/12/11	10ml	10ml	NA	
MS55IDL	K1104246-007	05/10/11	05/12/11	10ml	10ml	NA	
MS36SDL	K1104246-008	05/10/11	05/12/11	10ml	10ml	NA	
MS36S	K1104246-008	05/10/11	05/12/11	10ml	10ml	NA	
MS56IDL	K1104246-009	05/10/11	05/12/11	10ml	10ml	NA	
MS56I	K1104246-009	05/10/11	05/12/11	10ml	10ml	NA	
MS38S	K1104246-010	05/10/11	05/12/11	10ml	10ml	NA	
MS38SDL	K1104246-010	05/10/11	05/12/11	10ml	10ml	NA	
QCR03	K1104246-015	05/11/11	05/12/11	10ml	10ml	NA	
MS15IS	K1104246-016	05/09/11	05/12/11	10ml	10ml	NA	
MS45I	K1104246-018	05/09/11	05/12/11	10ml	10ml	NA	
MS45SDL	K1104246-019	05/09/11	05/12/11	10ml	10ml	NA	
MS45S	K1104246-019	05/09/11	05/12/11	10ml	10ml	NA	
Method Blank	KWG1104421-4	NA	NA	10ml	10ml	NA	
MS15ISMS	KWG1104421-1	05/09/11	05/12/11	10ml	10ml	NA	
MS15ISDMS	KWG1104421-2	05/09/11	05/12/11	10ml	10ml	NA	
Lab Control Sample	KWG1104421-3	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1104246
Date Extracted: 05/18/2011

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1104437
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
MS35D	K1104246-001	05/09/11	05/12/11	10ml	10ml	NA	
MS35IDL	K1104246-005	05/09/11	05/12/11	10ml	10ml	NA	
MS35I	K1104246-005	05/09/11	05/12/11	10ml	10ml	NA	
MS54IDL	K1104246-020	05/10/11	05/12/11	10ml	10ml	NA	
MS54I	K1104246-020	05/10/11	05/12/11	10ml	10ml	NA	
MS54SDL	K1104246-021	05/10/11	05/12/11	10ml	10ml	NA	
MS54S	K1104246-021	05/10/11	05/12/11	10ml	10ml	NA	
MS41I	K1104246-022	05/10/11	05/12/11	10ml	10ml	NA	
MS44I	K1104246-023	05/10/11	05/12/11	10ml	10ml	NA	
MS44IDL	K1104246-023	05/10/11	05/12/11	10ml	10ml	NA	
MS46SDL	K1104246-024	05/10/11	05/12/11	10ml	10ml	NA	
MS46S	K1104246-024	05/10/11	05/12/11	10ml	10ml	NA	
MS18SDL	K1104246-025	05/10/11	05/12/11	10ml	10ml	NA	
MS18S	K1104246-025	05/10/11	05/12/11	10ml	10ml	NA	
Method Blank	KWG1104437-4	NA	NA	10ml	10ml	NA	
MS35DMS	KWG1104437-1	05/09/11	05/12/11	10ml	10ml	NA	
MS35DDMS	KWG1104437-2	05/09/11	05/12/11	10ml	10ml	NA	
Lab Control Sample	KWG1104437-3	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1104246
Date Extracted: 05/18/2011

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1104463
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
MS34I	K1104246-011	05/11/11	05/12/11	10ml	10ml	NA	
MS34IDL	K1104246-011	05/11/11	05/12/11	10ml	10ml	NA	
MS33I	K1104246-012	05/11/11	05/12/11	10ml	10ml	NA	
MS33IDL	K1104246-012	05/11/11	05/12/11	10ml	10ml	NA	
QCD02	K1104246-013	05/11/11	05/12/11	10ml	10ml	NA	
QCD02DL	K1104246-013	05/11/11	05/12/11	10ml	10ml	NA	
QCR02	K1104246-026	05/10/11	05/12/11	10ml	10ml	NA	
Method Blank	KWG1104463-4	NA	NA	10ml	10ml	NA	
Lab Control Sample	KWG1104463-3	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

June 24, 2011 Analytical Report for Service Request No: K1105242

Paul Walz
Bay West, Incorporated
5 Empire Dr.
St. Paul, MN 55103-1867

RE: NIROP/J070047

Dear Paul:

Enclosed are the results of the samples submitted to our laboratory on June 10, 2011. For your reference, these analyses have been assigned our service request number K1105242.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3281. You may also contact me via Email at MShelton@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.

Lisa A Domenighini for
Mike Shelton
Project Chemist

MS/lg

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	Bay West, Incorporated	**Service Request No.:**	K1105242
Project:	NIROP/J070047	**Date Received:**	06/10/2011
Sample Matrix:	Liquid		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Five water samples were received for analysis at Columbia Analytical Services on 06/10/2011. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Volatile Organic Compounds by EPA Method 8260B

Elevated Detection Limits:
Sample "AT03A" required dilution due to the presence of elevated levels of target analyte. The reporting limits were adjusted to reflect the dilution.

No other anomalies associated with the analysis of these samples were observed.

Approved by Lisa A Domenighini **Date** 6/27/11

Columbia Analytical Services

CHAIN OF CUSTODY

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

SR#: K1105242

PAGE 1 OF 1 COC # 060911

PROJECT NAME: NIROP
PROJECT NUMBER: J070047
PROJECT MANAGER: Paul Waltz
COMPANY ADDRESS: Bay West, 5 Empire Drive
CITY STATE ZIP: St. Paul MN 55103
E-MAIL ADDRESS: paulw@baywest.com
PHONE #: 651-291-3491 FAX #: 651-291-0099
SAMPLER'S SIGNATURE:

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625 ☐ 8270 ☐ 8270LL ☐	Volatile Organics 624 ☐ 8260 ☐ 8021 ☐ BTEX ☐	Hydrocarbons (*see below) Gas ☐ Diesel ☐ Oil ☐	Fuel Fingerprint (FIQ) ☐ NW-HCID Screen	Oil & Grease/TRPH 1664 HEM ☐ 1664 SGT ☐	PCB's Aroclors ☐ Congeners ☐	Pesticides/Herbicides 608 ☐ 8081A ☐ 8141A ☐ 8151A ☐	Chlorophenolics - 8151M Tri ☐ Tetra ☐ PCP ☐	PAHS 8310 ☐ SIM ☐	Metals, Total or Dissolved (See list below)	Cyanide ☐	pH, Cond., Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS (circle)	Hex-Chrom ☐	NH_3-N, COD, Total-P, TKN, TOC, DOC (circle) NO_2+NO_3	TOX 9020 ☐ AOX 1650 ☐ 506 ☐						REMARKS
AT10	09-11	1352		water	3		X																			
AT05B	↓	1403		↓	3		X																			
QCD03		1451			3		X																			
AT03A		1417			3		X																			
QCT03	↓	—		↓	2		X																			

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. # 34003
Bill To: Accounts Payable, Bay West, 5 Empire Dr, St. Paul MN 55103

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:
for 8 specific Compounds.
UPS # 1ZA19 8R9 01 9118 3449

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature] Date/Time: 09-11 / 1445	Signature: [signature] Date/Time: 9/10/11 1000	Signature: Date/Time:	Signature: Date/Time:
Printed Name: Logan Petrey Firm: Bay West	Printed Name: [illegible] Firm: CAS	Printed Name: Firm:	Printed Name: Firm:

RCOC #1 03/10

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

PC Duke

Client / Project: Bayquest Service Request *K11* 5942

Received: 6/10/11 Opened: 6/10/11 By: AJ Unloaded: 6/10/11 By: AJ

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? 1A, 1B
   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Cooler Temp °C	Temp Blank °C	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
0.0	0.9	300			Y

7. Packing material used. *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Sleeves* *Other* _____
8. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
9. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
10. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
11. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
12. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
13. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
14. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
15. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1105242

Cover Page - Organic Analysis Data Package
Volatile Organic Compounds

Sample Name	Lab Code	Date Collected	Date Received
AT10DL	K1105242-001	06/09/2011	06/10/2011
AT10	K1105242-001	06/09/2011	06/10/2011
AT05BDL	K1105242-002	06/09/2011	06/10/2011
AT05B	K1105242-002	06/09/2011	06/10/2011
QCD03DL	K1105242-003	06/09/2011	06/10/2011
QCD03	K1105242-003	06/09/2011	06/10/2011
AT03ADL	K1105242-004	06/09/2011	06/10/2011
AT03A	K1105242-004	06/09/2011	06/10/2011
QCT03	K1105242-005	06/09/2011	06/10/2011

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Holly Butcher
Name: Holly Butcher
Date: 06-24-11
Title: Scientist

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1105242

Surrogate Recovery Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
Batch QC	K1105174-002	95	102	92
AT10DL	K1105242-001	94	102	92
AT10	K1105242-001	95	101	92
AT05B	K1105242-002	96	104	91
AT05BDL	K1105242-002	95	102	90
QCD03	K1105242-003	98	103	90
QCD03DL	K1105242-003	95	102	92
AT03A	K1105242-004	96	102	92
AT03ADL	K1105242-004	95	101	92
QCT03	K1105242-005	79	88	79
Method Blank	KWG1105432-4	94	101	93
Method Blank	KWG1105531-5	81	89	78
Batch QCMS	KWG1105432-1	96	105	95
Batch QCDMS	KWG1105432-2	95	104	95
Lab Control Sample	KWG1105432-3	96	105	97
Lab Control Sample	KWG1105531-3	90	97	86
Duplicate Lab Control Sample	KWG1105531-4	91	96	84

Surrogate Recovery Control Limits (%)

Sur1 =	Dibromofluoromethane	73-122
Sur2 =	Toluene-d8	78-129
Sur3 =	4-Bromofluorobenzene	68-117

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1105242
Date Analyzed: 04/26/2011
Time Analyzed: 15:58

Tune Summary
Volatile Organic Compounds

File ID: J:\MS13\DATA\042611\0426F011.D
Instrument ID: MS13
Column:

Analysis Method: 8260C
Analysis Lot: KWG1105700

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	15.7	14671	PASS
75	95	30	60	46.9	43712	PASS
95	95	100	100	100.0	93157	PASS
96	95	5	9	7.2	6690	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	97.7	91045	PASS
175	174	5	9	7.0	6418	PASS
176	174	95	101	95.4	86848	PASS
177	176	5	9	6.9	5970	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Initial Calibration	KWG1105700-2	J:\MS13\DATA\042611ICALL\0426F014.D	04/26/2011	17:33	
Initial Calibration	KWG1105700-3	J:\MS13\DATA\042611ICALL\0426F015.D	04/26/2011	18:02	
Initial Calibration	KWG1105700-4	J:\MS13\DATA\042611ICALL\0426F016.D	04/26/2011	18:31	
Initial Calibration	KWG1105700-5	J:\MS13\DATA\042611ICALL\0426F017.D	04/26/2011	19:00	
Initial Calibration	KWG1105700-6	J:\MS13\DATA\042611ICALL\0426F018.D	04/26/2011	19:29	
Initial Calibration	KWG1105700-7	J:\MS13\DATA\042611ICALL\0426F019.D	04/26/2011	19:59	
Initial Calibration	KWG1105700-8	J:\MS13\DATA\042611ICALL\0426F020.D	04/26/2011	20:28	
Initial Calibration	KWG1105700-9	J:\MS13\DATA\042611ICALL\0426F021.D	04/26/2011	20:57	
Initial Calibration	KWG1105700-10	J:\MS13\DATA\042611ICALL\0426F022.D	04/26/2011	21:26	
Initial Calibration	KWG1105700-11	J:\MS13\DATA\042611ICALL\0426F023.D	04/26/2011	21:55	
Initial Calibration	KWG1105700-12	J:\MS13\DATA\042611ICALL\0426F024.D	04/26/2011	22:24	
Initial Calibration Verification	KWG1105700-13	J:\MS13\DATA\042611ICALL\0426F027.D	04/26/2011	23:51	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1105242
Calibration Date: 05/16/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10510
Instrument ID: GC-MS 18

Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS18\DATA\051611\0516F006.D	G	J:\MS18\DATA\051611\0516F012.D
B	J:\MS18\DATA\051611\0516F007.D	H	J:\MS18\DATA\051611\0516F013.D
C	J:\MS18\DATA\051611\0516F008.D	I	J:\MS18\DATA\051611\0516F014.D
D	J:\MS18\DATA\051611\0516F009.D	J	J:\MS18\DATA\051611\0516F015.D
E	J:\MS18\DATA\051611\0516F010.D	K	J:\MS18\DATA\051611\0516F016.D
F	J:\MS18\DATA\051611\0516F011.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Vinyl Chloride	A	0.10	0.358	B	0.20	0.436	C	0.50	0.427	D	1.0	0.420	E	2.0	0.441
	F	5.0	0.396	G	10	0.468	H	20	0.419	I	40	0.467	J	60	0.440
	K	80	0.446												
1,1-Dichloroethene	A	0.10	0.178	B	0.20	0.225	C	0.50	0.232	D	1.0	0.222	E	2.0	0.222
	F	5.0	0.200	G	10	0.234	H	20	0.212	I	40	0.242	J	60	0.227
	K	80	0.231												
trans-1,2-Dichloroethene	A	0.10	0.225	B	0.20	0.265	C	0.50	0.272	D	1.0	0.268	E	2.0	0.264
	F	5.0	0.262	G	10	0.285	H	20	0.269	I	40	0.295	J	60	0.281
	K	80	0.288												
1,1-Dichloroethane	A	0.10	0.453	B	0.20	0.479	C	0.50	0.484	D	1.0	0.481	E	2.0	0.460
	F	5.0	0.468	G	10	0.508	H	20	0.485	I	40	0.525	J	60	0.498
	K	80	0.511												
cis-1,2-Dichloroethene	A	0.10	0.287	B	0.20	0.257	C	0.50	0.315	D	1.0	0.300	E	2.0	0.300
	F	5.0	0.297	G	10	0.317	H	20	0.309	I	40	0.328	J	60	0.310
	K	80	0.319												
1,1,1-Trichloroethane (TCA)							C	0.50	0.300	D	1.0	0.304	E	2.0	0.314
	F	5.0	0.302	G	10	0.372	H	20	0.354	I	40	0.416	J	60	0.402
	K	80	0.416												
Trichloroethene (TCE)	A	0.10	0.244	B	0.20	0.293	C	0.50	0.267	D	1.0	0.264	E	2.0	0.267
	F	5.0	0.259	G	10	0.288	H	20	0.272	I	40	0.299	J	60	0.285
	K	80	0.293												
Tetrachloroethene (PCE)	A	0.10	0.617	B	0.20	0.644	C	0.50	0.618	D	1.0	0.625	E	2.0	0.614
	F	5.0	0.571	G	10	0.655	H	20	0.602	I	40	0.665	J	60	0.622
	K	80	0.656												
Dibromofluoromethane				B	4.0	0.212	C	5.0	0.251	D	6.0	0.216	E	7.0	0.222
	F	8.0	0.222	G	10	0.277	H	20	0.249	I	40	0.280	J	50	0.272
	K	60	0.273												
Toluene-d8							C	5.0	1.05	D	6.0	0.827	E	7.0	0.946
	F	8.0	0.902	G	10	1.17	H	20	1.01	I	40	1.15	J	50	1.12
	K	60	1.12												

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1105242
Calibration Date: 05/16/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10510
Instrument ID: GC-MS 18

Column: MS

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
4-Bromofluorobenzene							C	5.0	1.07	D	6.0	0.898	E	7.0	0.962
	F	8.0	0.920	G	10	1.11	H	20	0.973	I	40	1.10	J	50	1.06
	K	60	1.09												

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1105242
Calibration Date: 05/16/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10510
Instrument ID: GC-MS 18

Column: MS

		Calibration Evaluation					RRF Evaluation		
Analyte Name	Compound Type	Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Vinyl Chloride	MS	AverageRF	% RSD	7.3		≤ 20	0.429		0.100
1,1-Dichloroethene	MS	AverageRF	% RSD	8.2		≤ 20	0.221		0.100
trans-1,2-Dichloroethene	MS	AverageRF	% RSD	6.8		≤ 20	0.270		0.100
1,1-Dichloroethane	MS	AverageRF	% RSD	4.5		≤ 20	0.486		0.200
cis-1,2-Dichloroethene	MS	AverageRF	% RSD	6.4		≤ 20	0.304		0.100
1,1,1-Trichloroethane (TCA)	MS	AverageRF	% RSD	14.2		≤ 20	0.353		0.100
Trichloroethene (TCE)	MS	AverageRF	% RSD	6.3		≤ 20	0.276		0.200
Tetrachloroethene (PCE)	MS	AverageRF	% RSD	4.4		≤ 20	0.626		0.200
Dibromofluoromethane	SURR	AverageRF	% RSD	11.1		≤ 20	0.247		0.01
Toluene-d8	SURR	AverageRF	% RSD	11.7		≤ 20	1.03		0.01
4-Bromofluorobenzene	SURR	AverageRF	% RSD	8.1		≤ 20	1.02		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1105242
Calibration Date: 05/16/2011
Date Analyzed: 05/16/2011

Second Source Calibration Verification
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration ID: CAL10510
Units: PPB

File ID: J:\MS18\DATA\051611\0516F021.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	7.6	0.429	0.327	-24	NA	± 30 %	AverageRF
1,1-Dichloroethene	10	9.2	0.221	0.203	-8	NA	± 30 %	AverageRF
trans-1,2-Dichloroethene	10	9.8	0.270	0.264	-2	NA	± 30 %	AverageRF
1,1-Dichloroethane	10	9.6	0.486	0.467	-4	NA	± 30 %	AverageRF
cis-1,2-Dichloroethene	10	9.6	0.304	0.291	-4	NA	± 30 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	9.1	0.353	0.321	-9	NA	± 30 %	AverageRF
Trichloroethene (TCE)	10	9.3	0.276	0.257	-7	NA	± 30 %	AverageRF
Tetrachloroethene (PCE)	10	9.7	0.626	0.606	-3	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1105242
Date Analyzed: 06/15/2011
Time Analyzed: 09:47

Tune Summary
Volatile Organic Compounds

File ID: J:\MS13\DATA\061511\0615F002.D
Instrument ID: MS13
Column:

Analysis Method: 8260C
Analysis Lot: KWG1105419

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	17.5	10736	PASS
75	95	30	60	48.8	29936	PASS
95	95	100	100	100.0	61357	PASS
96	95	5	9	7.5	4627	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	95.6	58632	PASS
175	174	5	9	7.2	4223	PASS
176	174	95	101	97.0	56858	PASS
177	176	5	9	6.6	3742	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1105419-2	J:\MS13\DATA\061511\0615F004.D	06/15/2011	11:00	
Lab Control Sample	KWG1105432-3	J:\MS13\DATA\061511\0615F005.D	06/15/2011	11:29	
Batch QCMS	KWG1105432-1	J:\MS13\DATA\061511\0615F006.D	06/15/2011	12:00	
Batch QCDMS	KWG1105432-2	J:\MS13\DATA\061511\0615F007.D	06/15/2011	12:29	
Method Blank	KWG1105432-4	J:\MS13\DATA\061511\0615F010.D	06/15/2011	13:57	
Batch QC	K1105174-002	J:\MS13\DATA\061511\0615F012.D	06/15/2011	14:56	
AT10DL	K1105242-001	J:\MS13\DATA\061511\0615F017.D	06/15/2011	17:22	
AT05BDL	K1105242-002	J:\MS13\DATA\061511\0615F018.D	06/15/2011	17:51	
QCD03DL	K1105242-003	J:\MS13\DATA\061511\0615F019.D	06/15/2011	18:21	
AT03ADL	K1105242-004	J:\MS13\DATA\061511\0615F020.D	06/15/2011	18:50	
AT10	K1105242-001	J:\MS13\DATA\061511\0615F021.D	06/15/2011	19:20	
AT05B	K1105242-002	J:\MS13\DATA\061511\0615F022.D	06/15/2011	19:49	
QCD03	K1105242-003	J:\MS13\DATA\061511\0615F023.D	06/15/2011	20:18	
AT03A	K1105242-004	J:\MS13\DATA\061511\0615F024.D	06/15/2011	20:47	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1105242
Date Analyzed: 06/15/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration Date: 04/26/2011
Calibration ID: CAL10462
Analysis Lot: KWG1105419
Units: PPB

File ID: J:\MS13\DATA\061511\0615F004.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	10	0.100	0.373	0.389	4	NA	± 20 %	AverageRF
1,1-Dichloroethene	10	9.3	0.100	0.207	0.191	-7	NA	± 20 %	AverageRF
trans-1,2-Dichloroethene	10	9.3	0.100	0.249	0.231	-7	NA	± 20 %	AverageRF
1,1-Dichloroethane	10	9.5	0.200	0.392	0.370	-5	NA	± 20 %	AverageRF
cis-1,2-Dichloroethene	10	9.3	0.100	0.278	0.259	-7	NA	± 20 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	8.6	0.100	0.341	0.292	-14	NA	± 20 %	AverageRF
Trichloroethene (TCE)	10	9.3	0.200	0.259	0.241	-7	NA	± 20 %	AverageRF
Tetrachloroethene (PCE)	10	9.2	0.200	0.634	0.585	-8	NA	± 20 %	AverageRF
Dibromofluoromethane	10	9.6	0.01	0.219	0.209	-4	NA	± 20 %	AverageRF
Toluene-d8	10	11	0.01	0.932	0.993	7	NA	± 20 %	AverageRF
4-Bromofluorobenzene	10	9.8	0.01	0.898	0.879	-2	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1105242
Project:	NIROP/J070047	**Date Extracted:**	06/15/2011
Sample Matrix:	Water	**Date Analyzed:**	06/15/2011
		Time Analyzed:	13:57

Method Blank Summary
Volatile Organic Compounds

Sample Name:	Method Blank	**Instrument ID:**	MS13
Lab Code:	KWG1105432-4	**File ID:**	J:\MS13\DATA\061511\0615F010.D
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C	**Extraction Lot:**	KWG1105432

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1105432-3	J:\MS13\DATA\061511\0615F005.D	06/15/11	11:29
Batch QCMS	KWG1105432-1	J:\MS13\DATA\061511\0615F006.D	06/15/11	12:00
Batch QCDMS	KWG1105432-2	J:\MS13\DATA\061511\0615F007.D	06/15/11	12:29
Batch QC	K1105174-002	J:\MS13\DATA\061511\0615F012.D	06/15/11	14:56
AT10DL	K1105242-001	J:\MS13\DATA\061511\0615F017.D	06/15/11	17:22
AT05BDL	K1105242-002	J:\MS13\DATA\061511\0615F018.D	06/15/11	17:51
QCD03DL	K1105242-003	J:\MS13\DATA\061511\0615F019.D	06/15/11	18:21
AT03ADL	K1105242-004	J:\MS13\DATA\061511\0615F020.D	06/15/11	18:50
AT10	K1105242-001	J:\MS13\DATA\061511\0615F021.D	06/15/11	19:20
AT05B	K1105242-002	J:\MS13\DATA\061511\0615F022.D	06/15/11	19:49
QCD03	K1105242-003	J:\MS13\DATA\061511\0615F023.D	06/15/11	20:18
AT03A	K1105242-004	J:\MS13\DATA\061511\0615F024.D	06/15/11	20:47

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1105242
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	06/15/2011
		Date Analyzed:	06/15/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1105432-4	**Basis:**	NA
File ID:	J:\MS13\DATA\061511\0615F010.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1105432
Analysis Method:	8260C	**Calibration ID:**	CAL10462

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	94	73-122	06/15/11	Acceptable
Toluene-d8	101	78-129	06/15/11	Acceptable
4-Bromofluorobenzene	93	68-117	06/15/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1105242
Project:	NIROP/J070047	**Date Extracted:**	06/15/2011
Sample Matrix:	Water	**Date Analyzed:**	06/15/2011

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	EPA 5030B	**Units:**	ug/L
Analysis Method:	8260C	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1105432

	Lab Control Sample KWG1105432-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Vinyl Chloride	8.07	10.0	81	59-135
1,1-Dichloroethene	8.16	10.0	82	70-136
trans-1,2-Dichloroethene	9.22	10.0	92	70-121
1,1-Dichloroethane	9.58	10.0	96	72-122
cis-1,2-Dichloroethene	9.36	10.0	94	76-125
1,1,1-Trichloroethane (TCA)	8.46	10.0	85	65-126
Trichloroethene (TCE)	9.32	10.0	93	71-122
Tetrachloroethene (PCE)	9.16	10.0	92	65-121

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1105242
Project:	NIROP/J070047	**Date Extracted:**	06/15/2011
Sample Matrix:	Water	**Date Analyzed:**	06/15/2011

Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organic Compounds

Sample Name:	Batch QC	**Units:**	ug/L
Lab Code:	K1105174-002	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C	**Extraction Lot:**	KWG1105432

		Batch QCMS KWG1105432-1 Matrix Spike			Batch QCDMS KWG1105432-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Vinyl Chloride	ND	8.27	10.0	83	7.73	10.0	77	52-151	7	30
1,1-Dichloroethene	ND	8.38	10.0	84	7.94	10.0	79	67-147	5	30
trans-1,2-Dichloroethene	ND	9.16	10.0	92	8.87	10.0	89	69-128	3	30
1,1-Dichloroethane	ND	9.66	10.0	97	9.15	10.0	92	67-130	5	30
cis-1,2-Dichloroethene	ND	9.25	10.0	93	8.89	10.0	89	68-134	4	30
1,1,1-Trichloroethane (TCA)	ND	8.42	10.0	84	7.98	10.0	80	63-137	5	30
Trichloroethene (TCE)	ND	9.34	10.0	93	8.91	10.0	89	56-137	5	30
Tetrachloroethene (PCE)	ND	9.20	10.0	92	8.82	10.0	88	60-128	4	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1105242
Date Analyzed: 05/16/2011
Time Analyzed: 09:08

Tune Summary
Volatile Organic Compounds

File ID: J:\MS18\DATA\051611\0516F003.D
Instrument ID: GC-MS 18
Column:

Analysis Method: 8260C
Analysis Lot: KWG1105701

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	18.6	6670	PASS
75	95	30	60	48.4	17346	PASS
95	95	100	100	100.0	35824	PASS
96	95	5	9	6.8	2443	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	93.9	33634	PASS
175	174	5	9	7.4	2487	PASS
176	174	95	101	96.2	32354	PASS
177	176	5	9	6.8	2202	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Initial Calibration	KWG1105701-2	J:\MS18\DATA\051611\0516F006.D	05/16/2011	10:31	
Initial Calibration	KWG1105701-3	J:\MS18\DATA\051611\0516F007.D	05/16/2011	10:52	
Initial Calibration	KWG1105701-4	J:\MS18\DATA\051611\0516F008.D	05/16/2011	11:13	
Initial Calibration	KWG1105701-5	J:\MS18\DATA\051611\0516F009.D	05/16/2011	11:34	
Initial Calibration	KWG1105701-6	J:\MS18\DATA\051611\0516F010.D	05/16/2011	11:55	
Initial Calibration	KWG1105701-7	J:\MS18\DATA\051611\0516F011.D	05/16/2011	12:16	
Initial Calibration	KWG1105701-8	J:\MS18\DATA\051611\0516F012.D	05/16/2011	12:37	
Initial Calibration	KWG1105701-9	J:\MS18\DATA\051611\0516F013.D	05/16/2011	12:58	
Initial Calibration	KWG1105701-10	J:\MS18\DATA\051611\0516F014.D	05/16/2011	13:19	
Initial Calibration	KWG1105701-11	J:\MS18\DATA\051611\0516F015.D	05/16/2011	13:40	
Initial Calibration	KWG1105701-12	J:\MS18\DATA\051611\0516F016.D	05/16/2011	14:02	
Initial Calibration Verification	KWG1105701-13	J:\MS18\DATA\051611\0516F021.D	05/16/2011	15:48	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1105242
Calibration Date: 04/26/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10462
Instrument ID: MS13

Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS13\DATA\042611\0426F014.D	G	J:\MS13\DATA\042611\0426F020.D
B	J:\MS13\DATA\042611\0426F015.D	H	J:\MS13\DATA\042611\0426F021.D
C	J:\MS13\DATA\042611\0426F016.D	I	J:\MS13\DATA\042611\0426F022.D
D	J:\MS13\DATA\042611\0426F017.D	J	J:\MS13\DATA\042611\0426F023.D
E	J:\MS13\DATA\042611\0426F018.D	K	J:\MS13\DATA\042611\0426F024.D
F	J:\MS13\DATA\042611\0426F019.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Vinyl Chloride	A	0.10	0.368	B	0.20	0.357	C	0.50	0.405	D	1.0	0.355	E	2.0	0.354
	F	5.0	0.415	G	10	0.390	H	20	0.324	I	40	0.367	J	60	0.379
	K	80	0.385												
1,1-Dichloroethene	A	0.10	0.237	B	0.20	0.208	C	0.50	0.221	D	1.0	0.190	E	2.0	0.188
	F	5.0	0.227	G	10	0.210	H	20	0.176	I	40	0.200	J	60	0.207
	K	80	0.213												
trans-1,2-Dichloroethene	A	0.10	0.279	B	0.20	0.250	C	0.50	0.248	D	1.0	0.247	E	2.0	0.226
	F	5.0	0.260	G	10	0.249	H	20	0.227	I	40	0.244	J	60	0.251
	K	80	0.257												
1,1-Dichloroethane	A	0.10	0.432	B	0.20	0.372	C	0.50	0.412	D	1.0	0.376	E	2.0	0.362
	F	5.0	0.402	G	10	0.384	H	20	0.369	I	40	0.387	J	60	0.402
	K	80	0.407												
cis-1,2-Dichloroethene	A	0.10	0.320	B	0.20	0.266	C	0.50	0.289	D	1.0	0.263	E	2.0	0.265
	F	5.0	0.287	G	10	0.270	H	20	0.269	I	40	0.271	J	60	0.278
	K	80	0.283												
1,1,1-Trichloroethane (TCA)	A	0.10	0.353	B	0.20	0.319	C	0.50	0.346	D	1.0	0.306	E	2.0	0.314
	F	5.0	0.366	G	10	0.348	H	20	0.307	I	40	0.349	J	60	0.368
	K	80	0.379												
Trichloroethene (TCE)	A	0.10	0.318	B	0.20	0.245	C	0.50	0.276	D	1.0	0.237	E	2.0	0.239
	F	5.0	0.272	G	10	0.256	H	20	0.230	I	40	0.250	J	60	0.260
	K	80	0.265												
Tetrachloroethene (PCE)	A	0.10	0.686	B	0.20	0.627	C	0.50	0.683	D	1.0	0.609	E	2.0	0.575
	F	5.0	0.684	G	10	0.640	H	20	0.555	I	40	0.619	J	60	0.643
	K	80	0.652												
Dibromofluoromethane				B	4.0	0.229	C	5.0	0.222	D	6.0	0.196	E	7.0	0.223
	F	8.0	0.217	G	10	0.217	H	20	0.220	I	40	0.216	J	50	0.231
	K	60	0.217												
Toluene-d8				B	4.0	0.943	C	5.0	0.963	D	6.0	0.814	E	7.0	0.941
	F	8.0	0.920	G	10	0.951	H	20	0.942	I	40	0.906	J	50	0.990
	K	60	0.953												

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1105242
Calibration Date: 04/26/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10462
Instrument ID: MS13

Column: MS

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
4-Bromofluorobenzene				B	4.0	0.918	C	5.0	0.919	D	6.0	0.801	E	7.0	0.905
	F	8.0	0.900	G	10	0.882	H	20	0.898	I	40	0.876	J	50	0.971
	K	60	0.908												

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1105242
Calibration Date: 04/26/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10462
Instrument ID: MS13

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Vinyl Chloride	MS	AverageRF	% RSD	6.9		≤ 20	0.373		0.100
1,1-Dichloroethene	MS	AverageRF	% RSD	8.6		≤ 20	0.207		0.100
trans-1,2-Dichloroethene	MS	AverageRF	% RSD	5.8		≤ 20	0.249		0.100
1,1-Dichloroethane	MS	AverageRF	% RSD	5.5		≤ 20	0.392		0.200
cis-1,2-Dichloroethene	MS	AverageRF	% RSD	5.9		≤ 20	0.278		0.100
1,1,1-Trichloroethane (TCA)	MS	AverageRF	% RSD	7.6		≤ 20	0.341		0.100
Trichloroethene (TCE)	MS	AverageRF	% RSD	9.4		≤ 20	0.259		0.200
Tetrachloroethene (PCE)	MS	AverageRF	% RSD	6.8		≤ 20	0.634		0.200
Dibromofluoromethane	SURR	AverageRF	% RSD	4.3		≤ 20	0.219		0.01
Toluene-d8	SURR	AverageRF	% RSD	5.1		≤ 20	0.932		0.01
4-Bromofluorobenzene	SURR	AverageRF	% RSD	4.8		≤ 20	0.898		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1105242
Calibration Date: 04/26/2011
Date Analyzed: 04/26/2011

Second Source Calibration Verification
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration ID: CAL10462
Units: PPB

File ID: J:\MS13\DATA\042611\0426F027.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	8.8	0.373	0.330	-12	NA	± 30 %	AverageRF
1,1-Dichloroethene	10	11	0.207	0.235	14	NA	± 30 %	AverageRF
trans-1,2-Dichloroethene	10	11	0.249	0.273	10	NA	± 30 %	AverageRF
1,1-Dichloroethane	10	10	0.392	0.406	4	NA	± 30 %	AverageRF
cis-1,2-Dichloroethene	10	10	0.278	0.279	0	NA	± 30 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	11	0.341	0.368	8	NA	± 30 %	AverageRF
Trichloroethene (TCE)	10	11	0.259	0.273	6	NA	± 30 %	AverageRF
Tetrachloroethene (PCE)	10	11	0.634	0.686	8	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1105242
Date Analyzed: 06/17/2011
Time Analyzed: 08:37

Tune Summary
Volatile Organic Compounds

File ID: J:\MS18\DATA\061711\0617F003.D
Instrument ID: GC-MS 18
Column:

Analysis Method: 8260C
Analysis Lot: KWG1105522

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	17.4	5459	PASS
75	95	30	60	48.5	15193	PASS
95	95	100	100	100.0	31336	PASS
96	95	5	9	6.5	2043	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	92.7	29053	PASS
175	174	5	9	9.0	2606	PASS
176	174	95	101	98.9	28728	PASS
177	176	5	9	6.5	1867	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1105522-2	J:\MS18\DATA\061711\0617F005.D	06/17/2011	09:31	
Lab Control Sample	KWG1105531-3	J:\MS18\DATA\061711\0617F006.D	06/17/2011	09:54	
Duplicate Lab Control Sample	KWG1105531-4	J:\MS18\DATA\061711\0617F007.D	06/17/2011	10:15	
Method Blank	KWG1105531-5	J:\MS18\DATA\061711\0617F015.D	06/17/2011	13:04	
QCT03	K1105242-005	J:\MS18\DATA\061711\0617F017.D	06/17/2011	13:46	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1105242
Date Analyzed: 06/17/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration Date: 05/16/2011
Calibration ID: CAL10510
Analysis Lot: KWG1105522
Units: PPB

File ID: J:\MS18\DATA\061711\0617F005.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	9.8	0.100	0.429	0.420	-2	NA	± 20 %	AverageRF
1,1-Dichloroethene	10	9.6	0.100	0.221	0.211	-4	NA	± 20 %	AverageRF
trans-1,2-Dichloroethene	10	9.7	0.100	0.270	0.261	-4	NA	± 20 %	AverageRF
1,1-Dichloroethane	10	9.5	0.200	0.486	0.464	-5	NA	± 20 %	AverageRF
cis-1,2-Dichloroethene	10	9.6	0.100	0.304	0.292	-4	NA	± 20 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	9.5	0.100	0.353	0.335	-5	NA	± 20 %	AverageRF
Trichloroethene (TCE)	10	9.2	0.200	0.276	0.254	-8	NA	± 20 %	AverageRF
Tetrachloroethene (PCE)	10	9.2	0.200	0.626	0.576	-8	NA	± 20 %	AverageRF
Dibromofluoromethane	10	9.0	0.01	0.247	0.222	-10	NA	± 20 %	AverageRF
Toluene-d8	10	9.7	0.01	1.03	0.999	-3	NA	± 20 %	AverageRF
4-Bromofluorobenzene	10	8.9	0.01	1.02	0.906	-11	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1105242
Project:	NIROP/J070047	**Date Extracted:**	06/17/2011
Sample Matrix:	Water	**Date Analyzed:**	06/17/2011
		Time Analyzed:	13:04

Method Blank Summary
Volatile Organic Compounds

Sample Name:	Method Blank	**Instrument ID:**	GC-MS 18
Lab Code:	KWG1105531-5	**File ID:**	J:\MS18\DATA\061711\0617F015.D
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C	**Extraction Lot:**	KWG1105531

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1105531-3	J:\MS18\DATA\061711\0617F006.D	06/17/11	09:54
Duplicate Lab Control Sample	KWG1105531-4	J:\MS18\DATA\061711\0617F007.D	06/17/11	10:15
QCT03	K1105242-005	J:\MS18\DATA\061711\0617F017.D	06/17/11	13:46

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1105242
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	06/17/2011
		Date Analyzed:	06/17/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1105531-5	**Basis:**	NA
File ID:	J:\MS18\DATA\061711\0617F015.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1105531
Analysis Method:	8260C	**Calibration ID:**	CAL10510

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	81	73-122	06/17/11	Acceptable
Toluene-d8	89	78-129	06/17/11	Acceptable
4-Bromofluorobenzene	78	68-117	06/17/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1105242
Date Extracted: 06/17/2011
Date Analyzed: 06/17/2011

Lab Control Spike/Duplicate Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1105531

	Lab Control Sample KWG1105531-3 Lab Control Spike			Duplicate Lab Control Sample KWG1105531-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Vinyl Chloride	8.94	10.0	89	8.59	10.0	86	59-135	4	30
1,1-Dichloroethene	11.4	10.0	114	11.2	10.0	112	70-136	2	30
trans-1,2-Dichloroethene	11.1	10.0	111	10.8	10.0	108	70-121	3	30
1,1-Dichloroethane	10.7	10.0	107	10.5	10.0	105	72-122	2	30
cis-1,2-Dichloroethene	10.5	10.0	105	10.1	10.0	101	76-125	4	30
1,1,1-Trichloroethane (TCA)	10.6	10.0	106	10.4	10.0	104	65-126	2	30
Trichloroethene (TCE)	10.6	10.0	106	10.3	10.0	103	71-122	2	30
Tetrachloroethene (PCE)	10.5	10.0	105	10.3	10.0	103	65-121	2	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1105242
Date Analyzed: 06/15/2011
Time Analyzed: 11:00

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID: J:\MS13\DATA\061511\0615F004.D
Instrument ID: MS13
Analysis Method: 8260C

Lab Code: KWG1105419-2
Analysis Lot: KWG1105419

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	763,150	6.45	291,002	12.30	313,195	15.28
	Upper Limit ==>	1,526,300	6.95	582,004	12.80	626,390	15.78
	Lower Limit ==>	381,575	5.95	145,501	11.80	156,598	14.78
	ICAL Result ==>	808,145	6.46	308,004	12.30	339,230	15.28
Associated Analyses							
Lab Control Sample	KWG1105432-3	774,443	6.45	299,218	12.30	318,193	15.28
Batch QCMS	KWG1105432-1	777,359	6.45	299,651	12.30	319,716	15.28
Batch QCDMS	KWG1105432-2	791,379	6.45	302,556	12.30	323,903	15.28
Method Blank	KWG1105432-4	741,757	6.45	273,217	12.30	293,581	15.28
Batch QC	K1105174-002	721,998	6.45	271,552	12.30	289,060	15.28
AT10DL	K1105242-001	727,958	6.45	269,777	12.30	288,442	15.28
AT05BDL	K1105242-002	721,490	6.45	271,643	12.30	288,216	15.28
QCD03DL	K1105242-003	721,337	6.45	270,035	12.30	286,947	15.28
AT03ADL	K1105242-004	713,572	6.45	265,411	12.30	285,722	15.28
AT10	K1105242-001	721,274	6.45	267,907	12.30	285,159	15.28
AT05B	K1105242-002	712,105	6.46	271,959	12.30	288,298	15.28
QCD03	K1105242-003	702,167	6.45	267,526	12.30	285,492	15.28
AT03A	K1105242-004	713,838	6.45	267,142	12.30	287,566	15.28

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1105242
Project:	NIROP/J070047	**Date Analyzed:**	06/17/2011
		Time Analyzed:	09:31

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID:	J:\MS18\DATA\061711\0617F005.D	**Lab Code:**	KWG1105522-2
Instrument ID:	GC-MS 18	**Analysis Lot:**	KWG1105522
Analysis Method:	8260C		

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	339,137	5.76	136,766	9.19	148,954	11.60
	Upper Limit ==>	678,274	6.26	273,532	9.69	297,908	12.10
	Lower Limit ==>	169,569	5.26	68,383	8.69	74,477	11.10
	ICAL Result ==>	351,232	5.76	136,845	9.19	146,496	11.60
Associated Analyses							
Lab Control Sample	KWG1105531-3	341,850	5.76	136,715	9.19	148,923	11.60
Duplicate Lab Control Sample	KWG1105531-4	348,205	5.76	138,209	9.19	148,798	11.60
Method Blank	KWG1105531-5	384,966	5.76	148,069	9.19	148,317	11.60
QCT03	K1105242-005	381,838	5.76	142,501	9.19	147,589	11.60

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1105242
Date Extracted: 06/15/2011

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1105432
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
AT10	K1105242-001	06/09/11	06/10/11	10ml	10ml	NA	
AT10DL	K1105242-001	06/09/11	06/10/11	10ml	10ml	NA	
AT05B	K1105242-002	06/09/11	06/10/11	10ml	10ml	NA	
AT05BDL	K1105242-002	06/09/11	06/10/11	10ml	10ml	NA	
QCD03	K1105242-003	06/09/11	06/10/11	10ml	10ml	NA	
QCD03DL	K1105242-003	06/09/11	06/10/11	10ml	10ml	NA	
AT03A	K1105242-004	06/09/11	06/10/11	10ml	10ml	NA	
AT03ADL	K1105242-004	06/09/11	06/10/11	10ml	10ml	NA	
Method Blank	KWG1105432-4	NA	NA	10ml	10ml	NA	
Batch QC	K1105174-002	NA	NA	10ml	10ml	NA	
Batch QCMS	KWG1105432-1	NA	NA	10ml	10ml	NA	
Batch QCDMS	KWG1105432-2	NA	NA	10ml	10ml	NA	
Lab Control Sample	KWG1105432-3	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1105242
Date Extracted: 06/17/2011

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1105531
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
QCT03	K1105242-005	06/09/11	06/10/11	10ml	10ml	NA	
Method Blank	KWG1105531-5	NA	NA	10ml	10ml	NA	
Lab Control Sample	KWG1105531-3	NA	NA	10ml	10ml	NA	
Duplicate Lab Control Sample	KWG1105531-4	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

SDG K1104246

SAMPLE CALC	SAMPLE ID MS38S					
IS AREA	DILUTION	COMPOUND OF INTEREST AREA	IS AMOUNT (NG)	PURGE VOLUME (ML)	AVE RRF	CONCENTRATION PPB
883278	50	594483	100	10	0.2470	1362.4328

Trichloroethene = 1,400 ug/L

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1104246
Project:	NIROP/J070047	**Date Collected:**	05/10/2011
Sample Matrix:	Water	**Date Received:**	05/12/2011
		Date Extracted:	05/17/2011
		Date Analyzed:	05/17/2011

Volatile Organic Compounds

Sample Name:	MS38SDL	**Units:**	ug/L
Lab Code:	K1104246-010	**Basis:**	NA
File ID:	J:\MS04\DATA\051711\0517F015.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1104421
Analysis Method:	8260C	**Calibration ID:**	CAL10409

Sample Amount:	10 ml
% Solids:	NA
Dilution Factor:	50

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	3.8	U	10	3.8	
75-35-4	1,1-Dichloroethene	3.7	U	25	3.7	
156-60-5	trans-1,2-Dichloroethene	**89**	D	25	2.9	
75-34-3	1,1-Dichloroethane	3.9	U	25	3.9	
156-59-2	cis-1,2-Dichloroethene	**120**	D	25	3.4	
71-55-6	1,1,1-Trichloroethane (TCA)	3.8	U	25	3.8	
79-01-6	Trichloroethene (TCE)	**1400**	D	25	5.0	
127-18-4	Tetrachloroethene (PCE)	5.0	U	25	5.0	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	116	73-122	05/17/11	Acceptable
Toluene-d8	121	78-129	05/17/11	Acceptable
4-Bromofluorobenzene	102	68-117	05/17/11	Acceptable

Comments:

Quantitation Report

Bottle ID:		**Tier:**	V	**Matrix:**	WATER
Prod Code:	8260B VOC_FP	**Collect Date:**	05/10/2011	**Receive Date:**	05/12/2011

Analysis Lot:	KWG1104414	**Prep Lot:**	KWG1104421	**Report Group:**	K1104246
Analysis Method:	8260C	**Prep Method:**	EPA 5030B		
Prep Ref:	1019368	**Prep Date:**	05/17/2011		

Quant Method:	J:\MS04\METHODS\033111MS04.M	**Calibration ID:**	CAL10409
Title:	Volatile Organic Compounds	**Report List ID:**	LJ8154
Tune Ref:	J:\MS04\DATA\051711\0517F003.D	**Method ID:**	MJ119
MB Ref:	J:\MS04\DATA\051711\0517F010.D	**Quant based on Report List**	

Data File:	J:\MS04\DATA\051711\0517F015.D			**Instrument:**	MS04
Acqu Date:	05/17/2011 21:39	**Quant Date:**	05/18/2011 10:13	**Vial:**	14
Run Type:	DL			**Dilution:**	50.0
Lab ID:	K1104246-010			**Soln Conc. Units:**	PPB

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	Fluorobenzene	12.84	-0.01	96	883278	10.00	OK
2	Chlorobenzene-d5	17.17	0.00	117	682324	10.00	OK
3	1,4-Dichlorobenzene-d4	19.82	-0.01	152	323668	10.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	Dibromofluoromethane	11.71	-0.01	0.00	113	234277	11.56	116	73-122	OK	NR
1	Toluene-d8	15.21	-0.01	0.00	98	831986	12.14	121	78-129	OK	NR
2	4-Bromofluorobenzene	18.54	0.00	0.00	95	274767	10.22	102	68-117	OK	NR

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	Final Conc	Q	Rpt?
1	Vinyl Chloride				62	0		3.8	U	NR
1	1,1-Dichloroethene				96	0		3.7	U	NR
1	trans-1,2-Dichloroethene	9.16		0.00	96	44400	1.77	89	D	NR
1	1,1-Dichloroethane	9.88	-0.01	0.00	63	2572	0.0600	3.9	U	NR
1	cis-1,2-Dichloroethene	10.91		0.00	96	65572	2.38	120	D	NR
1	1,1,1-Trichloroethane (TCA)				97	0		3.8	U	NR
1	Trichloroethene (TCE)	13.42		0.00	95	594483	27.21	1400	D	
2	Tetrachloroethene (PCE)				164	0		5.0	U	NR

Prep Amount:	10 ml	**Dilution:**	50.0
Prep Final Vol:	10 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**S. WARINO**	**DATE:**	**JANUARY 24, 2012**
FROM:	**EDWARD SEDLMYER**	**COPIES:**	**DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – SELECT VOCs**
CTO F27C NIROP FRIDLEY
SAMPLE DELIVERY GROUP (SDG) – K1106869

SAMPLES: 5/Aqueous

Frideff Air 86A_20110727	Fridin Air 84A	Fridout 173A_20110727
Fridout 173B_20110727	Trip Blank_20110727	

Overview

The sample set for NIROP Fridley, CTO F27C, SDG K1106869 consists of four (4) aqueous environmental samples and one (1) trip blank (Trip Blank_20110727). No field duplicates were associated with this SDG.

All samples were analyzed for select volatile organic compounds (VOCs) including vinyl chloride, 1,1-dichloroethene, trans-1,2-dichloroethene, 1,1-dichloroethane, cis-1,2-dichloroethene, 1,1,1-trichloroethane, trichloroethene, tetrachloroethene, and methylene chloride. The samples were collected by Bay West on July 27, 2011 and analyzed by Columbia Analytical Services, Inc. VOC analyses were conducted using EPA method 624.

These data were evaluated based on the following parameters:

* • Data Completeness
* • Holding Times
* • GC/MS Tuning and System Performance
* • Initial and Continuing Calibrations
• Laboratory Method and Field Quality Control Blank Analyses
* • Surrogate Recoveries
* • Laboratory Control Sample / Laboratory Control Sample Duplicate Results
* • Matrix Spike / Matrix Spike Duplicate Results
* • Field Duplicate Precision
* • Internal Standard Recoveries
* • Compound Quantitation
* • Compound Identification
* • Detection Limits

* - All quality control criteria were met for this parameter.

VOC

Trichloroethene was detected in the trip blank. No action was taken on this basis because all trichloroethene results were 5 times greater than the concentration in the trip blank.

Notes

All results were reported to the method detection limit (MDL) by the laboratory.

Positive results reported below the reporting limit (RL) but above the method detection limit (MDL) for the organic analyses were qualified as estimated, "J".

Sample Fridin Air 84A was diluted due to a trichloroethene concentration greater than the linear range of the instrument. All other results were reported from the undiluted run.

Executive Summary

Laboratory Performance: Trichloroethene was detected in the trip blank but did not result in the qualification of data.

Other Factors Affecting Data Quality: Positive results reported below the reporting limit (RL) but above the method detection limit (MDL) for the organic analyses were qualified as estimated, (J).

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Organic Review", October 1999, and the Department of Defense (DoD) document entitled "Quality Systems Manual (QSM) for Environmental Laboratories", April 2009.

The text of this report has been formulated to address only those problem areas affecting data quality.

Tetra Tech NUS
Edward Sedlmyer
Chemist/Data Validator

Tetra Tech NUS
Joseph A. Samchuck
Quality Assurance Officer

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = ICP PDS Recovery Noncompliance; MSA's $r < 0.995$
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = RPD between columns/detectors >40% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient $r < 0.995$
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is less than sample activity
Z1 = Tentatively Identified Compound considered presumptively present
Z2 = Tentatively Identified Compound column bleed

PROJ_NO: 02583	NSAMPLE	Frideff Air 86A_20110727			Fridin Air 84A			Fridin Air 84ADL			Fridout 173A_20110727		
SDG: K1106869	LAB_ID	K1106869-004			K1106869-003			K1106869-003DL			K1106869-001		
FRACTION: OV	SAMP_DATE	7/27/2011			7/27/2011			7/27/2011			7/27/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.051	U		0.051	U					0.051	U	
1,1-DICHLOROETHANE		0.12	J	P	1.2						0.051	U	
1,1-DICHLOROETHENE		0.37	U		0.68						0.37	U	
CIS-1,2-DICHLOROETHENE		8.9			60						0.5		
METHYLENE CHLORIDE		0.11	U		0.11	U					0.11	U	
TETRACHLOROETHENE		0.09	J	P	2.1						0.085	U	
TRANS-1,2-DICHLOROETHENE		1.6			27						0.09	J	P
TRICHLOROETHENE		29						390			1.4		

PROJ_NO: 02583	NSAMPLE	Fridout 173B_20110727			Trip Blank_20110727		
SDG: K1106869	LAB_ID	K1106869-002			K1106869-005		
FRACTION: OV	SAMP_DATE	7/27/2011			7/27/2011		
MEDIA: WATER	QC_TYPE	NM			NM		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.051	U		0.051	U	
1,1-DICHLOROETHANE		0.051	U		0.051	U	
1,1-DICHLOROETHENE		0.37	U		0.37	U	
CIS-1,2-DICHLOROETHENE		0.55			0.052	U	
METHYLENE CHLORIDE		0.11	U		0.11	U	
TETRACHLOROETHENE		0.085	U		0.085	U	
TRANS-1,2-DICHLOROETHENE		0.1	J	P	0.05	U	
TRICHLOROETHENE		1.4			0.12	J	P

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1106869
Project:	NIROP/J070047	**Date Collected:**	07/27/2011
Sample Matrix:	Water	**Date Received:**	07/28/2011
		Date Extracted:	08/01/2011
		Date Analyzed:	08/01/2011

Volatile Organic Compounds

Sample Name:	Frideff Air 86A	**Units:**	ug/L
Lab Code:	K1106869-004	**Basis:**	NA
File ID:	J:\MS23\DATA\080111BAYW\0801F016.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1107316
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-35-4	1,1-Dichloroethene	0.37	U	0.50	0.37	
75-09-2	Methylene Chloride	0.11	U	5.0	0.11	
156-60-5	trans-1,2-Dichloroethene	**1.6**		0.50	0.050	
75-34-3	1,1-Dichloroethane	**0.12**	J	0.50	0.051	
156-59-2	cis-1,2-Dichloroethene	**8.9**		0.50	0.052	
71-55-6	1,1,1-Trichloroethane (TCA)	0.051	U	0.50	0.051	
79-01-6	Trichloroethene (TCE)	**29**		0.50	0.072	
127-18-4	Tetrachloroethene (PCE)	**0.090**	J	0.50	0.085	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	111	61-121	08/01/11	Acceptable
Toluene-d8	101	72-122	08/01/11	Acceptable
4-Bromofluorobenzene	89	70-120	08/01/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1106869
Project:	NIROP/J070047	**Date Collected:**	07/27/2011
Sample Matrix:	Water	**Date Received:**	07/28/2011
		Date Extracted:	08/01/2011
		Date Analyzed:	08/01/2011

Volatile Organic Compounds

Sample Name:	Fridin Air 84A	**Units:**	ug/L
Lab Code:	K1106869-003	**Basis:**	NA
File ID:	J:\MS23\DATA\080111BAYW\0801F015.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1107316
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-35-4	1,1-Dichloroethene	**0.68**		0.50	0.37	
75-09-2	Methylene Chloride	0.11	U	5.0	0.11	
156-60-5	trans-1,2-Dichloroethene	**27**		0.50	0.050	
75-34-3	1,1-Dichloroethane	**1.2**		0.50	0.051	
156-59-2	cis-1,2-Dichloroethene	**60**		0.50	0.052	
71-55-6	1,1,1-Trichloroethane (TCA)	0.051	U	0.50	0.051	
79-01-6	Trichloroethene (TCE)	**450**	E	0.50	0.072	
127-18-4	Tetrachloroethene (PCE)	**2.1**		0.50	0.085	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	110	61-121	08/01/11	Acceptable
Toluene-d8	101	72-122	08/01/11	Acceptable
4-Bromofluorobenzene	91	70-120	08/01/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1106869
Project:	NIROP/J070047	**Date Collected:**	07/27/2011
Sample Matrix:	Water	**Date Received:**	07/28/2011
		Date Extracted:	08/05/2011
		Date Analyzed:	08/05/2011

Volatile Organic Compounds

Sample Name:	Fridin Air 84ADL	**Units:**	ug/L
Lab Code:	K1106869-003	**Basis:**	NA
File ID:	J:\MS23\DATA\080511BAYW\0805F017.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1107578
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 10

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-35-4	1,1-Dichloroethene	3.7	U	5.0	3.7	
75-09-2	Methylene Chloride	1.1	U	50	1.1	
156-60-5	trans-1,2-Dichloroethene	**24**	D	5.0	0.50	
75-34-3	1,1-Dichloroethane	**1.0**	JD	5.0	0.51	
156-59-2	cis-1,2-Dichloroethene	**52**	D	5.0	0.52	
71-55-6	1,1,1-Trichloroethane (TCA)	0.51	U	5.0	0.51	
79-01-6	Trichloroethene (TCE)	**390**	D	5.0	0.72	
127-18-4	Tetrachloroethene (PCE)	**1.7**	JD	5.0	0.85	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	109	61-121	08/05/11	Acceptable
Toluene-d8	100	72-122	08/05/11	Acceptable
4-Bromofluorobenzene	91	70-120	08/05/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1106869
Project:	NIROP/J070047	**Date Collected:**	07/27/2011
Sample Matrix:	Water	**Date Received:**	07/28/2011
		Date Extracted:	08/01/2011
		Date Analyzed:	08/01/2011

Volatile Organic Compounds

Sample Name:	Fridout 173A	**Units:**	ug/L
Lab Code:	K1106869-001	**Basis:**	NA
File ID:	J:\MS23\DATA\080111BAYW\0801F011.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1107316
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-35-4	1,1-Dichloroethene	0.37	U	0.50	0.37	
75-09-2	Methylene Chloride	0.11	U	5.0	0.11	
156-60-5	trans-1,2-Dichloroethene	**0.090**	J	0.50	0.050	
75-34-3	1,1-Dichloroethane	0.051	U	0.50	0.051	
156-59-2	cis-1,2-Dichloroethene	**0.50**		0.50	0.052	
71-55-6	1,1,1-Trichloroethane (TCA)	0.051	U	0.50	0.051	
79-01-6	Trichloroethene (TCE)	**1.4**		0.50	0.072	
127-18-4	Tetrachloroethene (PCE)	0.085	U	0.50	0.085	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	108	61-121	08/01/11	Acceptable
Toluene-d8	99	72-122	08/01/11	Acceptable
4-Bromofluorobenzene	90	70-120	08/01/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1106869
Project:	NIROP/J070047	**Date Collected:**	07/27/2011
Sample Matrix:	Water	**Date Received:**	07/28/2011
		Date Extracted:	08/01/2011
		Date Analyzed:	08/01/2011

Volatile Organic Compounds

Sample Name:	Fridout 173B	**Units:**	ug/L
Lab Code:	K1106869-002	**Basis:**	NA
File ID:	J:\MS23\DATA\080111BAYW\0801F014.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1107316
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-35-4	1,1-Dichloroethene	0.37	U	0.50	0.37	
75-09-2	Methylene Chloride	0.11	U	5.0	0.11	
156-60-5	trans-1,2-Dichloroethene	**0.10**	J	0.50	0.050	
75-34-3	1,1-Dichloroethane	0.051	U	0.50	0.051	
156-59-2	cis-1,2-Dichloroethene	**0.55**		0.50	0.052	
71-55-6	1,1,1-Trichloroethane (TCA)	0.051	U	0.50	0.051	
79-01-6	Trichloroethene (TCE)	**1.4**		0.50	0.072	
127-18-4	Tetrachloroethene (PCE)	0.085	U	0.50	0.085	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	111	61-121	08/01/11	Acceptable
Toluene-d8	99	72-122	08/01/11	Acceptable
4-Bromofluorobenzene	91	70-120	08/01/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1106869
Project:	NIROP/J070047	**Date Collected:**	07/27/2011
Sample Matrix:	Water	**Date Received:**	07/28/2011
		Date Extracted:	08/01/2011
		Date Analyzed:	08/01/2011

Volatile Organic Compounds

Sample Name:	Trip Blank	**Units:**	ug/L
Lab Code:	K1106869-005	**Basis:**	NA
File ID:	J:\MS23\DATA\080111BAYW\0801F017.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1107316
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-35-4	1,1-Dichloroethene	0.37	U	0.50	0.37	
75-09-2	Methylene Chloride	0.11	U	5.0	0.11	
156-60-5	trans-1,2-Dichloroethene	0.050	U	0.50	0.050	
75-34-3	1,1-Dichloroethane	0.051	U	0.50	0.051	
156-59-2	cis-1,2-Dichloroethene	0.052	U	0.50	0.052	
71-55-6	1,1,1-Trichloroethane (TCA)	0.051	U	0.50	0.051	
79-01-6	Trichloroethene (TCE)	**0.12**	J	0.50	0.072	
127-18-4	Tetrachloroethene (PCE)	0.085	U	0.50	0.085	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	111	61-121	08/01/11	Acceptable
Toluene-d8	98	72-122	08/01/11	Acceptable
4-Bromofluorobenzene	90	70-120	08/01/11	Acceptable

Comments:

APPENDIX C

SUPPORT DOCUMENTATION

Columbia Analytical Services™ 1317 S. 13th Avenue, Kelso, WA 98626 360.577.7222 360.636.1068 (fax) www.caslab.com

November 30, 2011

Analytical Report for Service Request No: K1106869
Revised Service Request No: K1106869.01

Paul Walz
Bay West, Incorporated
5 Empire Dr.
St. Paul, MN 55103-1867

RE: NIROP/J070047

Dear Paul:

Enclosed is the additional page for the samples submitted to our laboratory on July 28, 2011. For your reference, these analyses have been assigned our service request number K1106869.

Report revised to include the Methylene Chloride analyte.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3363. You may also contact me via Email at LDomenighini@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.

Lisa Domenighini
Project Chemist

LD/lg

REVISED
9:39 am, Dec 01, 2011

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	Bay West, Incorporated	**Service Request No.:**	K1106869
Project:	NIROP/J070047	**Date Received:**	07/28/11
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Four water samples and a trip blank were received for analysis at Columbia Analytical Services on 07/28/11. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

General Chemistry Parameters

No anomalies associated with the analysis of these samples were observed.

Volatiles by EPA Method 624

Elevated Detection Limits:
The client specified Method Reporting Limit (MRL) of 0.20ug/L could not be achieved. The MRL was raised to the lowest level of the calibration at 0.25ug/L.

No other anomalies associated with the analysis of these samples were observed.

Approved by Lera D Yumenghin **Date** 8/12/11

Columbia Analytical Services™

CHAIN OF CUSTODY

SR#: K1106869

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

PAGE 1 OF 1 COC # 07271-01

PROJECT NAME: NIROP
PROJECT NUMBER: J070047
PROJECT MANAGER: Paul Walz
COMPANY ADDRESS: 5 Empire Dr
CITY/STATE/ZIP: St. Paul MN 55103-1867
E-MAIL ADDRESS: paulw@baywest.com
PHONE #: 651 291 3490 FAX #: 651 291 0099
SAMPLER'S SIGNATURE:

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625 ☐ 8270 ☐ 8270LL ☐	Volatile Organics 624 ☐ 8260 ☐ 8021 ☐ BTEX ☐	Hydrocarbons (*see below) Gas ☐ Diesel ☐ Oil ☐	Fuel Fingerprint (FIQ) NW-HCID Screen	Oil & Grease/TRPH 1664 HEM ☐ 1664 SGT ☐	PCB's Aroclors ☐ Congeners ☐	Pesticides/Herbicides 608 ☐ 8081A ☐ 8141A ☐ 8151A ☐	Chlorophenolics - 8151M Tri ☐ Tetra ☐ PCP ☐	PAHS 8310 ☐ SIM ☐	Metals, Total or Dissolved (See list below)	Cyanide ☐ Hex-Chrom ☐	pH, Cond., Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS (circle)	NH_3-N, COD, Total-P, TKN, TOC, DOC (circle) NO_2+NO_3	TOX 9020 ☐ AOX 1650 ☐ 506 ☐					REMARKS
Fridout 173A	7/27/11	1000		water	7		6										1								MS/MSD
Fridout 173B		1000			3		3																		
Fridin Air 84A		0945			3		3																		
Frideff Air 86A		0950			3		3																		
Trip Blank					2		2																		

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
___ IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. # _____
Bill To: _____

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
___ Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:

VOC by EPA 624 - 8 specific compounds

UPS # 1ZA198R9019952 8464

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature] Date/Time: 7/27/11	Signature: [signature] Date/Time: 7/28/11 1000	Signature: Date/Time:	Signature: Date/Time:
Printed Name: Steven Head Firm: Bay West, Inc	Printed Name: Brad Tabin Firm: CAS	Printed Name: Firm:	Printed Name: Firm:

RCOC #1 03/10

8

PC Lisa

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

Client / Project: BayWest Service Request *K11* 10869

Received: 7/28/11 Opened: 7/28/11 By: BT Unloaded: 7/28/11 By: BT

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other*_____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? 1 front 1 Back

   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Cooler Temp °C	Temp Blank °C BT 7/28/11	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
1.6	~~NA~~ 2.1	24			X

7. Packing material used. *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Sleeves* *Other*_____
8. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
9. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
10. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
11. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
12. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
13. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
14. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
15. Was C12/Res negative? NA Y N

SHORT HOLD TIME

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

*Notes, Discrepancies, & Resolutions:*_____

Page 1 *of* ____

Organic Analysis:
Volatile Organic Compounds

Summary Package

Sample and QC Results

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1106869

Cover Page - Organic Analysis Data Package
Volatile Organic Compounds

Sample Name	Lab Code	Date Collected	Date Received
Fridout 173A	K1106869-001	07/27/2011	07/28/2011
Fridout 173B	K1106869-002	07/27/2011	07/28/2011
Fridin Air 84ADL	K1106869-003	07/27/2011	07/28/2011
Fridin Air 84A	K1106869-003	07/27/2011	07/28/2011
Frideff Air 86A	K1106869-004	07/27/2011	07/28/2011
Trip Blank	K1106869-005	07/27/2011	07/28/2011
Fridout 173AMS	KWG1107316-1	07/27/2011	07/28/2011
Fridout 173ADMS	KWG1107316-2	07/27/2011	07/28/2011

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Holly Butcher
Date: 08-12-2011

Name: Holly Butcher
Title: Scientist

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1106869

Surrogate Recovery Summary
Volatile Organic Compounds

Extraction Method: METHOD
Analysis Method: 624

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
Fridout 173A	K1106869-001	108	99	90
Fridout 173B	K1106869-002	111	99	91
Fridin Air 84ADL	K1106869-003	109	100	91
Fridin Air 84A	K1106869-003	110	101	91
Frideff Air 86A	K1106869-004	111	101	89
Trip Blank	K1106869-005	111	98	90
Method Blank	KWG1107316-4	108	99	91
Method Blank	KWG1107578-4	106	99	92
Fridout 173AMS	KWG1107316-1	105	105	97
Fridout 173ADMS	KWG1107316-2	107	105	96
Lab Control Sample	KWG1107316-3	107	107	100
Lab Control Sample	KWG1107578-3	106	107	98

Surrogate Recovery Control Limits (%)

Sur1 =	Dibromofluoromethane	61-121
Sur2 =	Toluene-d8	72-122
Sur3 =	4-Bromofluorobenzene	70-120

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1106869
Date Analyzed: 03/29/2011
Time Analyzed: 13:21

Tune Summary
Volatile Organic Compounds

File ID: J:\MS23\DATA\032911\0329F013.D
Instrument ID: MS23
Column:

Analysis Method: 624
Analysis Lot: KWG1103676

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	24.6	16321	PASS
75	95	30	60	53.6	35557	PASS
95	95	100	100	100.0	66330	PASS
96	95	5	9	6.9	4574	PASS
173	174	0	2	0.7	334	PASS
174	95	50	120	68.8	45626	PASS
175	174	5	9	7.6	3488	PASS
176	174	95	101	98.5	44920	PASS
177	176	5	9	6.8	3050	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Initial Calibration	KWG1103676-2	J:\MS23\DATA\032911BAYW\0329F016.D	03/29/2011	14:27	
Initial Calibration	KWG1103676-3	J:\MS23\DATA\032911BAYW\0329F019.D	03/29/2011	16:02	
Initial Calibration	KWG1103676-4	J:\MS23\DATA\032911BAYW\0329F020.D	03/29/2011	16:32	
Initial Calibration	KWG1103676-5	J:\MS23\DATA\032911BAYW\0329F021.D	03/29/2011	17:02	
Initial Calibration	KWG1103676-6	J:\MS23\DATA\032911BAYW\0329F022.D	03/29/2011	17:31	
Initial Calibration	KWG1103676-7	J:\MS23\DATA\032911BAYW\0329F023.D	03/29/2011	18:01	
Initial Calibration	KWG1103676-8	J:\MS23\DATA\032911BAYW\0329F026.D	03/29/2011	19:31	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1106869
Calibration Date: 03/29/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10443
Instrument ID: MS23

Column: MS

Level ID	File ID
A	J:\MS23\DATA\032911\0329F019.D
B	J:\MS23\DATA\032911\0329F020.D
C	J:\MS23\DATA\032911\0329F021.D
D	J:\MS23\DATA\032911\0329F022.D
E	J:\MS23\DATA\032911\0329F023.D
F	J:\MS23\DATA\032911\0329F026.D
G	J:\MS23\DATA\032911\0329F029.D
H	J:\MS23\DATA\032911BAYW\0329F016.D

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
1,1-Dichloroethene	A	5.0	0.247	B	10	0.247	C	40	0.250	D	80	0.250	E	120	0.250
	F	0.50	0.257	G	1.0	0.190									
Methylene Chloride	A	5.0	0.242	B	10	0.233	C	40	0.229	D	80	0.235	E	120	0.233
	F	0.50	0.336	G	1.0	0.214									
trans-1,2-Dichloroethene	A	5.0	0.253	B	10	0.244	C	40	0.253	D	80	0.257	E	120	0.257
	F	0.50	0.292	G	1.0	0.194									
1,1-Dichloroethane	A	5.0	0.511	B	10	0.494	C	40	0.511	D	80	0.516	E	120	0.512
	F	0.50	0.535	G	1.0	0.384									
cis-1,2-Dichloroethene	A	5.0	0.266	B	10	0.262	C	40	0.269	D	80	0.274	E	120	0.273
	F	0.50	0.326	G	1.0	0.208									
1,1,1-Trichloroethane (TCA)	A	5.0	0.431	B	10	0.416	C	40	0.433	D	80	0.433	E	120	0.436
	F	0.50	0.430	G	1.0	0.310									
Trichloroethene (TCE)	A	5.0	0.268	B	10	0.259	C	40	0.267	D	80	0.272	E	120	0.272
	F	0.50	0.303	G	1.0	0.218									
Tetrachloroethene (PCE)	A	5.0	0.489	B	10	0.472	C	40	0.484	D	80	0.505	E	120	0.516
	F	0.50	0.493	G	1.0	0.358									
Dibromofluoromethane	A	8.0	0.216	B	10	0.222	C	20	0.228	D	40	0.204	E	60	0.227
				G	6.0	0.201									
Toluene-d8	A	8.0	0.934	B	10	0.959	C	20	1.01	D	40	0.876	E	60	1.00
				G	6.0	0.888									
4-Bromofluorobenzene	A	8.0	0.813	B	10	0.829	C	20	0.859	D	40	0.791	E	60	0.870
				G	6.0	0.776									

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1106869
Calibration Date: 03/29/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10443
Instrument ID: MS23

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
1,1-Dichloroethene	MS	AverageRF	% RSD	9.5		≤ 35	0.241		0.01
Methylene Chloride	MS	AverageRF	% RSD	16.6		≤ 35	0.246		0.01
trans-1,2-Dichloroethene	MS	AverageRF	% RSD	11.6		≤ 35	0.250		0.01
1,1-Dichloroethane	MS	AverageRF	% RSD	10.1		≤ 35	0.495		0.01
cis-1,2-Dichloroethene	MS	AverageRF	% RSD	12.8		≤ 35	0.268		0.01
1,1,1-Trichloroethane (TCA)	MS	AverageRF	% RSD	11.1		≤ 35	0.413		0.01
Trichloroethene (TCE)	MS	AverageRF	% RSD	9.4		≤ 35	0.266		0.01
Tetrachloroethene (PCE)	MS	AverageRF	% RSD	11.2		≤ 35	0.474		0.01
Dibromofluoromethane	SURR	AverageRF	% RSD	5.3		≤ 35	0.216		0.01
Toluene-d8	SURR	AverageRF	% RSD	6.0		≤ 35	0.945		0.01
4-Bromofluorobenzene	SURR	AverageRF	% RSD	4.5		≤ 35	0.823		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1106869
Date Analyzed: 03/30/2011
Time Analyzed: 08:48

Tune Summary
Volatile Organic Compounds

File ID: J:\MS23\DATA\032911BAYW\0329F027.D
Instrument ID: MS23
Column:

Analysis Method: 624
Analysis Lot: KWG1103677

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	26.3	15893	PASS
75	95	30	60	59.3	35786	PASS
95	95	100	100	100.0	60389	PASS
96	95	5	9	7.4	4443	PASS
173	174	0	2	0.6	265	PASS
174	95	50	120	68.3	41240	PASS
175	174	5	9	7.7	3196	PASS
176	174	95	101	97.0	39994	PASS
177	176	5	9	6.8	2712	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Initial Calibration	KWG1103677-2	J:\MS23\DATA\032911BAYW\0329F029.D	03/30/2011	09:48	
Initial Calibration Verification	KWG1103677-3	J:\MS23\DATA\032911BAYW\0329F032.D	03/30/2011	12:58	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1106869
Calibration Date: 03/29/2011
Date Analyzed: 03/30/2011

Second Source Calibration Verification
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 624

Calibration ID: CAL10443
Units: PPB

File ID: J:\MS23\DATA\032911\0329F032.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
1,1-Dichloroethene	10	12	0.241	0.292	21	NA	± 49 %	AverageRF
Methylene Chloride	10	11	0.246	0.275	12	NA	± 39 %	AverageRF
trans-1,2-Dichloroethene	10	12	0.250	0.290	16	NA	± 30 %	AverageRF
1,1-Dichloroethane	10	12	0.495	0.571	15	NA	± 27 %	AverageRF
cis-1,2-Dichloroethene	10	11	0.268	0.292	9	NA	± 30 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	11	0.413	0.463	12	NA	± 25 %	AverageRF
Trichloroethene (TCE)	10	11	0.266	0.298	12	NA	± 33 %	AverageRF
Tetrachloroethene (PCE)	10	11	0.474	0.533	12	NA	± 26 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1106869

Analysis Run Log
Volatile Organic Compounds

Analysis Method: 624

Analysis Lot: KWG1107315
Instrument ID: MS23

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0801F003.D	GC/MS Tuning - Bromofluorobenzene	KWG1107315-1	8/1/2011	11:27		8/1/2011	11:42
0801F004.D	Continuing Calibration Verification	KWG1107315-2	8/1/2011	11:57		8/1/2011	12:12
0801F006.D	Lab Control Sample	KWG1107316-3	8/1/2011	13:28		8/1/2011	13:43
0801F007.D	Fridout 173AMS	KWG1107316-1	8/1/2011	14:02		8/1/2011	14:17
0801F008.D	Fridout 173ADMS	KWG1107316-2	8/1/2011	14:33		8/1/2011	14:48
0801F010.D	Method Blank	KWG1107316-4	8/1/2011	15:34		8/1/2011	15:49
0801F011.D	Fridout 173A	K1106869-001	8/1/2011	16:05		8/1/2011	16:20
0801F014.D	Fridout 173B	K1106869-002	8/1/2011	17:37		8/1/2011	17:52
0801F015.D	Fridin Air 84A	K1106869-003	8/1/2011	18:08		8/1/2011	18:23
0801F016.D	Frideff Air 86A	K1106869-004	8/1/2011	18:38		8/1/2011	18:53
0801F017.D	Trip Blank	K1106869-005	8/1/2011	19:09		8/1/2011	19:24

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1106869
Date Analyzed: 08/01/2011
Time Analyzed: 11:27

Tune Summary
Volatile Organic Compounds

File ID: J:\MS23\DATA\080111BAYW\0801F003.D
Instrument ID: MS23
Column:

Analysis Method: 624
Analysis Lot: KWG1107315

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	21.3	10172	PASS
75	95	30	60	49.7	23711	PASS
95	95	100	100	100.0	47737	PASS
96	95	5	9	6.6	3127	PASS
173	174	0	2	0.5	202	PASS
174	95	50	120	76.9	36732	PASS
175	174	5	9	7.1	2608	PASS
176	174	95	101	95.1	34926	PASS
177	176	5	9	7.1	2496	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1107315-2	J:\MS23\DATA\080111BAYW\0801F004.D	08/01/2011	11:57	
Lab Control Sample	KWG1107316-3	J:\MS23\DATA\080111BAYW\0801F006.D	08/01/2011	13:28	
Fridout 173AMS	KWG1107316-1	J:\MS23\DATA\080111BAYW\0801F007.D	08/01/2011	14:02	
Fridout 173ADMS	KWG1107316-2	J:\MS23\DATA\080111BAYW\0801F008.D	08/01/2011	14:33	
Method Blank	KWG1107316-4	J:\MS23\DATA\080111BAYW\0801F010.D	08/01/2011	15:34	
Fridout 173A	K1106869-001	J:\MS23\DATA\080111BAYW\0801F011.D	08/01/2011	16:05	
Fridout 173B	K1106869-002	J:\MS23\DATA\080111BAYW\0801F014.D	08/01/2011	17:37	
Fridin Air 84A	K1106869-003	J:\MS23\DATA\080111BAYW\0801F015.D	08/01/2011	18:08	
Frideff Air 86A	K1106869-004	J:\MS23\DATA\080111BAYW\0801F016.D	08/01/2011	18:38	
Trip Blank	K1106869-005	J:\MS23\DATA\080111BAYW\0801F017.D	08/01/2011	19:09	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1106869
Date Analyzed: 08/01/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 624

Calibration Date: 03/29/2011
Calibration ID: CAL10443
Analysis Lot: KWG1107315
Units: PPB

File ID: J:\MS23\DATA\080111BAYW\0801F004.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
1,1-Dichloroethene	10	8.5	0.01	0.241	0.206	-15	NA	± 49 %	AverageRF
Methylene Chloride	10	9.6	0.01	0.246	0.236	-4	NA	± 39 %	AverageRF
trans-1,2-Dichloroethene	10	10	0.01	0.250	0.250	0	NA	± 30 %	AverageRF
1,1-Dichloroethane	10	9.5	0.01	0.495	0.469	-5	NA	± 27 %	AverageRF
cis-1,2-Dichloroethene	10	9.8	0.01	0.268	0.263	-2	NA	± 30 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	9.2	0.01	0.413	0.380	-8	NA	± 25 %	AverageRF
Trichloroethene (TCE)	10	10	0.01	0.266	0.268	1	NA	± 33 %	AverageRF
Tetrachloroethene (PCE)	10	12	0.01	0.474	0.574	21	NA	± 26 %	AverageRF
Dibromofluoromethane	10	10	0.01	0.216	0.226	4	NA	± 30 %	AverageRF
Toluene-d8	10	11	0.01	0.945	1.03	9	NA	± 30 %	AverageRF
4-Bromofluorobenzene	10	11	0.01	0.823	0.886	8	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1106869
Project:	NIROP/J070047	**Date Extracted:**	08/01/2011
Sample Matrix:	Water	**Date Analyzed:**	08/01/2011
		Time Analyzed:	15:34

Method Blank Summary
Volatile Organic Compounds

Sample Name:	Method Blank	**Instrument ID:**	MS23
Lab Code:	KWG1107316-4	**File ID:**	J:\MS23\DATA\080111BAYW\0801F010.D
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	624	**Extraction Lot:**	KWG1107316

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1107316-3	J:\MS23\DATA\080111BAYW\0801F006.D	08/01/11	13:28
Fridout 173AMS	KWG1107316-1	J:\MS23\DATA\080111BAYW\0801F007.D	08/01/11	14:02
Fridout 173ADMS	KWG1107316-2	J:\MS23\DATA\080111BAYW\0801F008.D	08/01/11	14:33
Fridout 173A	K1106869-001	J:\MS23\DATA\080111BAYW\0801F011.D	08/01/11	16:05
Fridout 173B	K1106869-002	J:\MS23\DATA\080111BAYW\0801F014.D	08/01/11	17:37
Fridin Air 84A	K1106869-003	J:\MS23\DATA\080111BAYW\0801F015.D	08/01/11	18:08
Frideff Air 86A	K1106869-004	J:\MS23\DATA\080111BAYW\0801F016.D	08/01/11	18:38
Trip Blank	K1106869-005	J:\MS23\DATA\080111BAYW\0801F017.D	08/01/11	19:09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1106869
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	08/01/2011
		Date Analyzed:	08/01/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1107316-4	**Basis:**	NA
File ID:	J:\MS23\DATA\080111BAYW\0801F010.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1107316
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-35-4	1,1-Dichloroethene	0.37	U	0.50	0.37	
75-09-2	Methylene Chloride	0.11	U	5.0	0.11	
156-60-5	trans-1,2-Dichloroethene	0.050	U	0.50	0.050	
75-34-3	1,1-Dichloroethane	0.051	U	0.50	0.051	
156-59-2	cis-1,2-Dichloroethene	0.052	U	0.50	0.052	
71-55-6	1,1,1-Trichloroethane (TCA)	0.051	U	0.50	0.051	
79-01-6	Trichloroethene (TCE)	0.072	U	0.50	0.072	
127-18-4	Tetrachloroethene (PCE)	0.085	U	0.50	0.085	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	108	61-121	08/01/11	Acceptable
Toluene-d8	99	72-122	08/01/11	Acceptable
4-Bromofluorobenzene	91	70-120	08/01/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1106869
Project:	NIROP/J070047	**Date Extracted:**	08/01/2011
Sample Matrix:	Water	**Date Analyzed:**	08/01/2011

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	METHOD	**Units:**	ug/L
Analysis Method:	624	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1107316

	Lab Control Sample KWG1107316-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
1,1-Dichloroethene	10.0	10.0	100	79-147
Methylene Chloride	11.4	10.0	114	67-144
trans-1,2-Dichloroethene	11.4	10.0	114	78-140
1,1-Dichloroethane	10.7	10.0	107	79-135
cis-1,2-Dichloroethene	10.6	10.0	106	80-134
1,1,1-Trichloroethane (TCA)	9.83	10.0	98	77-139
Trichloroethene (TCE)	10.6	10.0	106	81-133
Tetrachloroethene (PCE)	11.9	10.0	119	82-129

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1106869
Date Extracted: 08/01/2011
Date Analyzed: 08/01/2011

Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organic Compounds

Sample Name: Fridout 173A
Lab Code: K1106869-001

Units: ug/L
Basis: NA

Extraction Method: METHOD
Analysis Method: 624

Level: Low
Extraction Lot: KWG1107316

Analyte Name	Sample Result	Fridout 173AMS KWG1107316-1 Matrix Spike			Fridout 173ADMS KWG1107316-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
1,1-Dichloroethene	ND	9.28	10.0	93	8.72	10.0	87	64-151	6	30
Methylene Chloride	ND	10.8	10.0	108	10.5	10.0	105	69-132	3	30
trans-1,2-Dichloroethene	0.090	11.0	10.0	109	10.3	10.0	102	58-146	7	30
1,1-Dichloroethane	ND	10.3	10.0	103	9.68	10.0	97	61-141	6	30
cis-1,2-Dichloroethene	0.50	10.6	10.0	101	9.87	10.0	94	73-130	7	30
1,1,1-Trichloroethane (TCA)	ND	9.61	10.0	96	8.87	10.0	89	67-139	8	30
Trichloroethene (TCE)	1.4	11.4	10.0	101	10.6	10.0	92	23-193	8	30
Tetrachloroethene (PCE)	ND	11.4	10.0	114	10.3	10.0	103	70-132	10	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1106869

Analysis Run Log
Volatile Organic Compounds

Analysis Method: 624

Analysis Lot: KWG1107577
Instrument ID: MS23

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0805F003.D	GC/MS Tuning - Bromofluorobenzene	KWG1107577-1	8/5/2011	09:39		8/5/2011	09:54
0805F004.D	Continuing Calibration Verification	KWG1107577-2	8/5/2011	10:09		8/5/2011	10:24
0805F005.D	Lab Control Sample	KWG1107578-3	8/5/2011	10:40		8/5/2011	10:55
0805F006.D	ZZZZZZ	ZZZZZZ	8/5/2011	11:31		8/5/2011	11:46
0805F007.D	ZZZZZZ	ZZZZZZ	8/5/2011	12:02		8/5/2011	12:17
0805F009.D	Method Blank	KWG1107578-4	8/5/2011	13:03		8/5/2011	13:18
0805F011.D	ZZZZZZ	ZZZZZZ	8/5/2011	14:03		8/5/2011	14:18
0805F017.D	Fridin Air 84ADL	K1106869-003	8/5/2011	17:10		8/5/2011	17:25

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1106869
Date Analyzed: 08/05/2011
Time Analyzed: 09:39

Tune Summary
Volatile Organic Compounds

File ID: J:\MS23\DATA\080511BAYW\0805F003.D
Instrument ID: MS23
Column:

Analysis Method: 624
Analysis Lot: KWG1107577

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	22.9	3605	PASS
75	95	30	60	52.6	8281	PASS
95	95	100	100	100.0	15745	PASS
96	95	5	9	6.9	1086	PASS
173	174	0	2	0.4	55	PASS
174	95	50	120	81.5	12835	PASS
175	174	5	9	7.4	953	PASS
176	174	95	101	95.5	12256	PASS
177	176	5	9	6.3	773	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1107577-2	J:\MS23\DATA\080511BAYW\0805F004.D	08/05/2011	10:09	
Lab Control Sample	KWG1107578-3	J:\MS23\DATA\080511BAYW\0805F005.D	08/05/2011	10:40	
Method Blank	KWG1107578-4	J:\MS23\DATA\080511BAYW\0805F009.D	08/05/2011	13:03	
Fridin Air 84ADL	K1106869-003	J:\MS23\DATA\080511BAYW\0805F017.D	08/05/2011	17:10	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1106869
Date Analyzed: 08/05/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 624

Calibration Date: 03/29/2011
Calibration ID: CAL10443
Analysis Lot: KWG1107577
Units: PPB

File ID: J:\MS23\DATA\080511BAYW\0805F004.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
1,1-Dichloroethene	10	7.4	0.01	0.241	0.179	-26	NA	± 49 %	AverageRF
Methylene Chloride	10	8.7	0.01	0.246	0.215	-13	NA	± 39 %	AverageRF
trans-1,2-Dichloroethene	10	9.0	0.01	0.250	0.224	-10	NA	± 30 %	AverageRF
1,1-Dichloroethane	10	9.1	0.01	0.495	0.449	-9	NA	± 27 %	AverageRF
cis-1,2-Dichloroethene	10	9.5	0.01	0.268	0.255	-5	NA	± 30 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	8.9	0.01	0.413	0.368	-11	NA	± 25 %	AverageRF
Trichloroethene (TCE)	10	9.9	0.01	0.266	0.264	-1	NA	± 33 %	AverageRF
Tetrachloroethene (PCE)	10	12	0.01	0.474	0.580	22	NA	± 26 %	AverageRF
Dibromofluoromethane	10	10	0.01	0.216	0.224	4	NA	± 30 %	AverageRF
Toluene-d8	10	11	0.01	0.945	1.03	9	NA	± 30 %	AverageRF
4-Bromofluorobenzene	10	11	0.01	0.823	0.871	6	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1106869
Project:	NIROP/J070047	**Date Extracted:**	08/05/2011
Sample Matrix:	Water	**Date Analyzed:**	08/05/2011
		Time Analyzed:	13:03

Method Blank Summary
Volatile Organic Compounds

Sample Name:	Method Blank	**Instrument ID:**	MS23
Lab Code:	KWG1107578-4	**File ID:**	J:\MS23\DATA\080511BAYW\0805F009.D
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	624	**Extraction Lot:**	KWG1107578

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1107578-3	J:\MS23\DATA\080511BAYW\0805F005.D	08/05/11	10:40
Fridin Air 84ADL	K1106869-003	J:\MS23\DATA\080511BAYW\0805F017.D	08/05/11	17:10

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1106869
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	08/05/2011
		Date Analyzed:	08/05/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1107578-4	**Basis:**	NA
File ID:	J:\MS23\DATA\080511BAYW\0805F009.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1107578
Analysis Method:	624	**Calibration ID:**	CAL10443

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-35-4	1,1-Dichloroethene	0.37	U	0.50	0.37	
75-09-2	Methylene Chloride	0.11	U	5.0	0.11	
156-60-5	trans-1,2-Dichloroethene	0.050	U	0.50	0.050	
75-34-3	1,1-Dichloroethane	0.051	U	0.50	0.051	
156-59-2	cis-1,2-Dichloroethene	0.052	U	0.50	0.052	
71-55-6	1,1,1-Trichloroethane (TCA)	0.051	U	0.50	0.051	
79-01-6	Trichloroethene (TCE)	0.072	U	0.50	0.072	
127-18-4	Tetrachloroethene (PCE)	0.085	U	0.50	0.085	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	106	61-121	08/05/11	Acceptable
Toluene-d8	99	72-122	08/05/11	Acceptable
4-Bromofluorobenzene	92	70-120	08/05/11	Acceptable

Comments:

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1106869
Date Extracted: 08/05/2011
Date Analyzed: 08/05/2011

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method: METHOD
Analysis Method: 624

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1107578

	Lab Control Sample KWG1107578-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
1,1-Dichloroethene	9.71	10.0	97	79-147
Methylene Chloride	11.2	10.0	112	67-144
trans-1,2-Dichloroethene	11.4	10.0	114	78-140
1,1-Dichloroethane	10.8	10.0	108	79-135
cis-1,2-Dichloroethene	10.5	10.0	105	80-134
1,1,1-Trichloroethane (TCA)	9.93	10.0	99	77-139
Trichloroethene (TCE)	10.8	10.0	108	81-133
Tetrachloroethene (PCE)	11.7	10.0	117	82-129

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1106869
Date Analyzed: 08/01/2011
Time Analyzed: 11:57

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID: J:\MS23\DATA\080111BAYW\0801F004.D
Instrument ID: MS23
Analysis Method: 624

Lab Code: KWG1107315-2
Analysis Lot: KWG1107315

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	702,745	5.94	284,052	9.34	274,192	11.75
	Upper Limit ==>	1,405,490	6.44	568,104	9.84	548,384	12.25
	Lower Limit ==>	351,373	5.44	142,026	8.84	137,096	11.25
	ICAL Result ==>	555,419	5.94	228,350	9.34	192,069	11.75
Associated Analyses							
Lab Control Sample	KWG1107316-3	719,288	5.94	307,110	9.34	290,861	11.75
Fridout 173AMS	KWG1107316-1	715,670	5.94	304,844	9.35	282,913	11.75
Fridout 173ADMS	KWG1107316-2	709,349	5.94	304,313	9.35	283,207	11.75
Method Blank	KWG1107316-4	664,643	5.95	275,953	9.35	235,068	11.76
Fridout 173A	K1106869-001	657,022	5.94	269,874	9.35	228,131	11.75
Fridout 173B	K1106869-002	656,106	5.94	273,687	9.34	239,722	11.75
Fridin Air 84A	K1106869-003	658,228	5.94	271,427	9.35	233,266	11.75
Frideff Air 86A	K1106869-004	649,968	5.94	272,689	9.35	233,553	11.76
Trip Blank	K1106869-005	653,221	5.94	266,386	9.35	226,381	11.75

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1106869
Date Analyzed: 08/05/2011
Time Analyzed: 10:09

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID: J:\MS23\DATA\080511BAYW\0805F004.D
Instrument ID: MS23
Analysis Method: 624

Lab Code: KWG1107577-2
Analysis Lot: KWG1107577

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	687,014	5.94	282,036	9.35	273,289	11.75
	Upper Limit ==>	1,374,028	6.44	564,072	9.85	546,578	12.25
	Lower Limit ==>	343,507	5.44	141,018	8.85	136,645	11.25
	ICAL Result ==>	555,419	5.94	228,350	9.34	192,069	11.75
Associated Analyses							
Lab Control Sample	KWG1107578-3	692,443	5.94	298,386	9.34	279,748	11.75
Method Blank	KWG1107578-4	678,122	5.94	279,311	9.34	244,046	11.76
Fridin Air 84ADL	K1106869-003	648,802	5.94	271,896	9.35	232,005	11.75

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1106869
Date Extracted: 08/01/2011

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: METHOD
Analysis Method: 624

Extraction Lot: KWG1107316
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
Fridout 173A	K1106869-001	07/27/11	07/28/11	10ml	10ml	NA	
Fridout 173B	K1106869-002	07/27/11	07/28/11	10ml	10ml	NA	
Fridin Air 84A	K1106869-003	07/27/11	07/28/11	10ml	10ml	NA	
Frideff Air 86A	K1106869-004	07/27/11	07/28/11	10ml	10ml	NA	
Trip Blank	K1106869-005	07/27/11	07/28/11	10ml	10ml	NA	
Method Blank	KWG1107316-4	NA	NA	10ml	10ml	NA	
Fridout 173AMS	KWG1107316-1	07/27/11	07/28/11	10ml	10ml	NA	
Fridout 173ADMS	KWG1107316-2	07/27/11	07/28/11	10ml	10ml	NA	
Lab Control Sample	KWG1107316-3	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1106869
Date Extracted: 08/05/2011

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: METHOD
Analysis Method: 624

Extraction Lot: KWG1107578
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
Fridin Air 84ADL	K1106869-003	07/27/11	07/28/11	10ml	10ml	NA	
Method Blank	KWG1107578-4	NA	NA	10ml	10ml	NA	
Lab Control Sample	KWG1107578-3	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

SDG K1106869

SAMPLE CALC	SAMPLE ID Fridin Air 84A					
IS AREA	DILUTION	COMPOUND OF INTEREST AREA	IS AMOUNT (NG)	PURGE VOLUME (ML)	AVE RRF	CONCENTRATION PPB
648802	10	676898	100	10	0.2660	392.2197

Trichloroethene = 390 ug/L

Quantitation Report

Data File:	J:\MS23\DATA\080511BAYW\0805F017.D			**Instrument:**	MS23
Acqu Date:	08/05/2011 17:10	**Quant Date:**	08/08/2011 15:26	**Vial:**	14
Run Type:	DL			**Dilution:**	10.0
Lab ID:	K1106869-003 Fridin Air 8 4/A			**Soln Conc. Units:**	PPB

Bottle ID:		**Tier:**	V	**Matrix:**	WATER
Prod Code:	624 Modified VO	**Collect Date:**	07/27/2011	**Receive Date:**	07/28/2011

Analysis Lot:	KWG1107577	**Prep Lot:**	KWG1107578	**Report Group:**	K1106869
Analysis Method:	624	**Prep Method:**	METHOD		
Prep Ref:	1043649	**Prep Date:**	08/05/2011		

Quant Method:	J:\MS23\METHODS\032911624.M	**Calibration ID:**	CAL10443
Title:	Volatile Organic Compounds	**Report List ID:**	LJ12964
Tune Ref:	J:\MS23\DATA\080511BAYW\0805F003.D	**Method ID:**	MJ158
MB Ref:	J:\MS23\DATA\080511BAYW\0805F009.D	**Quant based on Report List**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	Fluorobenzene	5.94	0.00	96	648802	10.00	OK
2	Chlorobenzene-d5	9.35	0.00	82	271896	10.00	OK
3	1,4-Dichlorobenzene-d4	11.75	0.00	152	232005	10.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	Dibromofluoromethane	5.12	0.00	0.00	113	152666	10.88	109	61-121	OK	NR
1	Toluene-d8	7.77	0.00	0.00	98	614124	10.02	100	72-122	OK	NR
2	4-Bromofluorobenzene	10.58	0.00	0.00	95	204608	9.14	91	70-120	OK	NR

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	Vinyl Chloride				62	0		0.53	U	NR
1	1,1-Dichloroethene	2.44		0.00	96	1735	0.1100	3.7	U	NR
1	trans-1,2-Dichloroethene	3.20		0.00	96	38529	2.38	24	D	NR
1	1,1-Dichloroethane	3.73		0.00	63	3162	0.1000	1.0	JD	NR
1	cis-1,2-Dichloroethene	4.46		0.00	96	90713	5.21	52	D	NR
1	1,1,1-Trichloroethane (TCA)				97	0		0.44	U	NR
1	Trichloroethene (TCE)	6.37		0.00	95	676898	39.27	390	D	
2	Tetrachloroethene (PCE)	8.40		0.00	164	2185	0.1700	1.7	JD	NR

Prep Amount:	10 ml	**Dilution:**	10.0
Prep Final Vol:	10 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**M. SLADIC**	**DATE:**	**OCTOBER 4, 2011**
FROM:	**EDWARD SEDLMYER**	**COPIES:**	**DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – SELECT VOCs**
CTO F27C NIROP FRIDLEY
SAMPLE DELIVERY GROUPS (SDGs) – K1107601

SAMPLES: 12/Aqueous

MS15IS	MS18S	MS35D	MS35I
MS43I	MS44I	MS45I	MS45S
MS46S	QCD01	QCR01	QCR02

Overview

The sample set for NIROP Fridley, CTO F27C, SDG K1107601 consists of ten (10) aqueous environmental samples and two (2) rinse blanks (QCR01 and QCR02). One field duplicate pair was associated with this SDG: MS45S / QCD01.

All samples were analyzed for select volatile organic compounds (VOCs) including vinyl chloride, 1,1-dichloroethene, trans-1,2-dichloroethene, 1,1-dichloroethane, cis-1,2-dichloroethene, 1,1,1-trichloroethane, trichloroethene and tetrachloroethene. The samples were collected by Bay West on August 15, 2011 and analyzed by Columbia Analytical Services, Inc. VOC analyses were conducted using SW-846 method 8260B.

These data were evaluated based on the following parameters:

* • Data Completeness
* • Holding Times
* • GC/MS Tuning and System Performance
* • Initial and Continuing Calibrations
* • Laboratory Method and Field Quality Control Blank Analyses
* • Surrogate Recoveries
* • Laboratory Control Sample / Laboratory Control Sample Duplicate Results
* • Matrix Spike / Matrix Spike Duplicate Results
* • Field Duplicate Precision
* • Internal Standard Recoveries
* • Compound Quantitation
* • Compound Identification
* • Detection Limits

* - All quality control criteria were met for this parameter.

VOC

Calibration verification percent differences (%Ds) exceeded the 20% quality control limit for the surrogate compound toluene-d8 on instrument MS04, on 8/18/11 and 8/19/11. No action was taken on the calibration noncompliance because all surrogate recoveries were acceptable.

Notes

All results were reported to the method detection limit (MDL) by the laboratory.

Positive results reported below the reporting limit (RL) but above the method detection limit (MDL) for the organic analyses were qualified as estimated, (J).

Samples MS18S, MS35I, MS44I, MS45S, MS46S, and QCD01 were diluted due to concentrations greater than the linear range of the instrument for several compounds. The laboratory submitted multiple runs of the samples. The lowest detection limits were used to report the nondetected compounds.

Executive Summary

Laboratory Performance: Continuing calibration noncompliance for toluene-d8 did not result in the qualification of data.

Other Factors Affecting Data Quality: Positive results reported below the reporting limit (RL) but above the method detection limit (MDL) for the organic analyses were qualified as estimated, (J).

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Organic Review", October 1999, and the Department of Defense (DoD) document entitled "Quality Systems Manual (QSM) for Environmental Laboratories", April 2009.

The text of this report has been formulated to address only those problem areas affecting data quality.

Tetra Tech NUS
Edward Sedlmyer
Chemist/Data Validator

Tetra Tech NUS
Joseph A. Samchuck
Quality Assurance Officer

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Data Validation Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$ / ICP PDS Recovery Noncompliance
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (e.g. base-line drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; e.g. chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = % Difference between columns/detectors >25% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient $r < 0.995$
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 02583 SDG: K1107601 FRACTION: OV MEDIA: WATER	NSAMPLE	MS15IS			MS18S			MS18SDL			MS35D		
	LAB_ID	K1107601-001			K1107601-007			K1107601-007DL			K1107601-008		
	SAMP_DATE	8/15/2011			8/16/2011			8/16/2011			8/16/2011		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE			U			U						U	
1,1-DICHLOROETHANE			U		1.2							U	
1,1-DICHLOROETHENE			U		1.9							U	
CIS-1,2-DICHLOROETHENE		2			58						13		
TETRACHLOROETHENE		3.8				U						U	
TRANS-1,2-DICHLOROETHENE			U		18						0.99		
TRICHLOROETHENE		24						640			77		
VINYL CHLORIDE			U			U						U	

PROJ_NO: 02583 SDG: K1107601 FRACTION: OV MEDIA: WATER	NSAMPLE	MS35I			MS35IDL			MS43I			MS44I		
	LAB_ID	K1107601-009			K1107601-009DL			K1107601-002			K1107601-012		
	SAMP_DATE	8/16/2011			8/16/2011			8/15/2011			8/16/2011		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE			U						U			U	
1,1-DICHLOROETHANE		11						0.62			8.7		
1,1-DICHLOROETHENE		4.6							U		2.5		
CIS-1,2-DICHLOROETHENE					230			14					
TETRACHLOROETHENE			U						U			U	
TRANS-1,2-DICHLOROETHENE		58						0.88			24		
TRICHLOROETHENE					850			25					
VINYL CHLORIDE		0.6							U		0.68		

PROJ_NO: 02583	NSAMPLE	MS44IDL			MS45I			MS45S			MS45SDL		
SDG: K1107601	LAB_ID	K1107601-012DL			K1107601-003			K1107601-004			K1107601-004DL		
FRACTION: OV	SAMP_DATE	8/16/2011			8/15/2011			8/15/2011			8/15/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE						U			U				
1,1-DICHLOROETHANE						U		1.7					
1,1-DICHLOROETHENE						U		1.8					
CIS-1,2-DICHLOROETHENE		260			14						120		
TETRACHLOROETHENE					2.7				U				
TRANS-1,2-DICHLOROETHENE					0.66			24					
TRICHLOROETHENE		430			48						280		
VINYL CHLORIDE						U			U				

PROJ_NO: 02583 SDG: K1107601 FRACTION: OV MEDIA: WATER	NSAMPLE	MS46S			MS46SDL			QCD01			QCD01DL		
	LAB_ID	K1107601-006			K1107601-006DL			K1107601-005			K1107601-005DL		
	SAMP_DATE	8/16/2011			8/16/2011			8/15/2011			8/15/2011		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF							MS45S			MS45S		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE			U						U				
1,1-DICHLOROETHANE		0.75						1.7					
1,1-DICHLOROETHENE		1.6						1.7					
CIS-1,2-DICHLOROETHENE		31									120		
TETRACHLOROETHENE			U						U				
TRANS-1,2-DICHLOROETHENE		20						24					
TRICHLOROETHENE					380						280		
VINYL CHLORIDE			U						U				

PROJ_NO: 02583 SDG: K1107601 FRACTION: OV MEDIA: WATER	NSAMPLE	QCR01			QCR02		
	LAB_ID	K1107601-011			K1107601-010		
	SAMP_DATE	8/15/2011			8/16/2011		
	QC_TYPE	NM			NM		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS						
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE			U			U	
1,1-DICHLOROETHANE			U			U	
1,1-DICHLOROETHENE			U			U	
CIS-1,2-DICHLOROETHENE			U			U	
TETRACHLOROETHENE			U			U	
TRANS-1,2-DICHLOROETHENE			U			U	
TRICHLOROETHENE			U			U	
VINYL CHLORIDE			U			U	

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107601
Project:	NIROP/J070047	**Date Collected:**	08/15/2011
Sample Matrix:	Water	**Date Received:**	08/17/2011
		Date Extracted:	08/18/2011
		Date Analyzed:	08/18/2011

Volatile Organic Compounds

Sample Name:	MS15IS	**Units:**	ug/L
Lab Code:	K1107601-001	**Basis:**	NA
File ID:	J:\MS04\DATA\081811\0818F010.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108033
Analysis Method:	8260C	**Calibration ID:**	CAL10780

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	Note
75-01-4	Vinyl Chloride	0.20	U	0.20	
75-35-4	1,1-Dichloroethene	0.50	U	0.50	
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.50	
75-34-3	1,1-Dichloroethane	0.50	U	0.50	
156-59-2	cis-1,2-Dichloroethene	**2.0**		0.50	
71-55-6	1,1,1-Trichloroethane (TCA)	0.50	U	0.50	
79-01-6	Trichloroethene (TCE)	**24**		0.50	
127-18-4	Tetrachloroethene (PCE)	**3.8**		0.50	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	111	73-122	08/18/11	Acceptable
Toluene-d8	124	65-144	08/18/11	Acceptable
4-Bromofluorobenzene	107	68-117	08/18/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107601
Project:	NIROP/J070047	**Date Collected:**	08/16/2011
Sample Matrix:	Water	**Date Received:**	08/17/2011
		Date Extracted:	08/19/2011
		Date Analyzed:	08/19/2011

Volatile Organic Compounds

Sample Name:	MS18S	**Units:**	ug/L
Lab Code:	K1107601-007	**Basis:**	NA
File ID:	J:\MS04\DATA\081911\0819F020.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108080
Analysis Method:	8260C	**Calibration ID:**	CAL10780

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 2

CAS No.	Analyte Name	Result	Q	MRL	Note
75-01-4	Vinyl Chloride	0.40	U	0.40	
75-35-4	1,1-Dichloroethene	**1.9**	D	1.0	
156-60-5	trans-1,2-Dichloroethene	**18**	D	1.0	
75-34-3	1,1-Dichloroethane	**1.2**	D	1.0	
156-59-2	cis-1,2-Dichloroethene	**58**	D	1.0	
71-55-6	1,1,1-Trichloroethane (TCA)	1.0	U	1.0	
79-01-6	Trichloroethene (TCE)	**640**	ED	1.0	
127-18-4	Tetrachloroethene (PCE)	1.0	U	1.0	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	111	73-122	08/19/11	Acceptable
Toluene-d8	125	65-144	08/19/11	Acceptable
4-Bromofluorobenzene	108	68-117	08/19/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107601
Project:	NIROP/J070047	**Date Collected:**	08/16/2011
Sample Matrix:	Water	**Date Received:**	08/17/2011
		Date Extracted:	08/19/2011
		Date Analyzed:	08/19/2011

Volatile Organic Compounds

Sample Name:	MS18SDL	**Units:**	ug/L
Lab Code:	K1107601-007	**Basis:**	NA
File ID:	J:\MS04\DATA\081911\0819F019.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108080
Analysis Method:	8260C	**Calibration ID:**	CAL10780

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 20

CAS No.	Analyte Name	Result	Q	MRL	Note
75-01-4	Vinyl Chloride	4.0	U	4.0	
75-35-4	1,1-Dichloroethene	10	U	10	
156-60-5	trans-1,2-Dichloroethene	**21**	D	10	
75-34-3	1,1-Dichloroethane	10	U	10	
156-59-2	cis-1,2-Dichloroethene	**60**	D	10	
71-55-6	1,1,1-Trichloroethane (TCA)	10	U	10	
79-01-6	Trichloroethene (TCE)	**640**	D	10	
127-18-4	Tetrachloroethene (PCE)	10	U	10	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	110	73-122	08/19/11	Acceptable
Toluene-d8	124	65-144	08/19/11	Acceptable
4-Bromofluorobenzene	107	68-117	08/19/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107601
Project:	NIROP/J070047	**Date Collected:**	08/16/2011
Sample Matrix:	Water	**Date Received:**	08/17/2011
		Date Extracted:	08/24/2011
		Date Analyzed:	08/24/2011

Volatile Organic Compounds

Sample Name:	MS35D	**Units:**	ug/L
Lab Code:	K1107601-008	**Basis:**	NA
File ID:	J:\MS18\DATA\082411\0824F031.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108255
Analysis Method:	8260C	**Calibration ID:**	CAL10800

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	Note
75-01-4	Vinyl Chloride	0.20	U	0.20	
75-35-4	1,1-Dichloroethene	0.50	U	0.50	
156-60-5	trans-1,2-Dichloroethene	**0.99**		0.50	
75-34-3	1,1-Dichloroethane	0.50	U	0.50	
156-59-2	cis-1,2-Dichloroethene	**13**		0.50	
71-55-6	1,1,1-Trichloroethane (TCA)	0.50	U	0.50	
79-01-6	Trichloroethene (TCE)	**77**		0.50	
127-18-4	Tetrachloroethene (PCE)	0.50	U	0.50	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	82	73-122	08/24/11	Acceptable
Toluene-d8	91	65-144	08/24/11	Acceptable
4-Bromofluorobenzene	88	68-117	08/24/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107601
Project:	NIROP/J070047	**Date Collected:**	08/16/2011
Sample Matrix:	Water	**Date Received:**	08/17/2011
		Date Extracted:	08/24/2011
		Date Analyzed:	08/24/2011

Volatile Organic Compounds

Sample Name:	MS35I	**Units:**	ug/L
Lab Code:	K1107601-009	**Basis:**	NA
File ID:	J:\MS18\DATA\082411\0824F032.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108255
Analysis Method:	8260C	**Calibration ID:**	CAL10800

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 2.5

CAS No.	Analyte Name	Result	Q	MRL	Note
75-01-4	Vinyl Chloride	**0.60**	D	0.50	
75-35-4	1,1-Dichloroethene	**4.6**	D	1.3	
156-60-5	trans-1,2-Dichloroethene	**58**	D	1.3	
75-34-3	1,1-Dichloroethane	**11**	D	1.3	
156-59-2	cis-1,2-Dichloroethene	**240**	ED	1.3	
71-55-6	1,1,1-Trichloroethane (TCA)	1.3	U	1.3	
79-01-6	Trichloroethene (TCE)	**880**	ED	1.3	
127-18-4	Tetrachloroethene (PCE)	1.3	U	1.3	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	84	73-122	08/24/11	Acceptable
Toluene-d8	93	65-144	08/24/11	Acceptable
4-Bromofluorobenzene	87	68-117	08/24/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107601
Project:	NIROP/J070047	**Date Collected:**	08/16/2011
Sample Matrix:	Water	**Date Received:**	08/17/2011
		Date Extracted:	08/24/2011
		Date Analyzed:	08/24/2011

Volatile Organic Compounds

Sample Name:	MS35IDL	**Units:**	ug/L
Lab Code:	K1107601-009	**Basis:**	NA
File ID:	J:\MS18\DATA\082411\0824F022.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108255
Analysis Method:	8260C	**Calibration ID:**	CAL10800

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 50

CAS No.	Analyte Name	Result	Q	MRL	Note
75-01-4	Vinyl Chloride	10	U	10	
75-35-4	1,1-Dichloroethene	25	U	25	
156-60-5	trans-1,2-Dichloroethene	**52**	D	25	
75-34-3	1,1-Dichloroethane	25	U	25	
156-59-2	cis-1,2-Dichloroethene	**230**	D	25	
71-55-6	1,1,1-Trichloroethane (TCA)	25	U	25	
79-01-6	Trichloroethene (TCE)	**850**	D	25	
127-18-4	Tetrachloroethene (PCE)	25	U	25	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	83	73-122	08/24/11	Acceptable
Toluene-d8	93	65-144	08/24/11	Acceptable
4-Bromofluorobenzene	88	68-117	08/24/11	Acceptable

Comments

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107601
Project:	NIROP/J070047	**Date Collected:**	08/15/2011
Sample Matrix:	Water	**Date Received:**	08/17/2011
		Date Extracted:	08/18/2011
		Date Analyzed:	08/18/2011

Volatile Organic Compounds

Sample Name:	MS43I	**Units:**	ug/L
Lab Code:	K1107601-002	**Basis:**	NA
File ID:	J:\MS04\DATA\081811\0818F019.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108033
Analysis Method:	8260C	**Calibration ID:**	CAL10780

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	Note
75-01-4	Vinyl Chloride	0.20	U	0.20	
75-35-4	1,1-Dichloroethene	0.50	U	0.50	
156-60-5	trans-1,2-Dichloroethene	**0.88**		0.50	
75-34-3	1,1-Dichloroethane	**0.62**		0.50	
156-59-2	cis-1,2-Dichloroethene	**14**		0.50	
71-55-6	1,1,1-Trichloroethane (TCA)	0.50	U	0.50	
79-01-6	Trichloroethene (TCE)	**25**		0.50	
127-18-4	Tetrachloroethene (PCE)	0.50	U	0.50	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	111	73-122	08/18/11	Acceptable
Toluene-d8	123	65-144	08/18/11	Acceptable
4-Bromofluorobenzene	108	68-117	08/18/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107601
Project:	NIROP/J070047	**Date Collected:**	08/16/2011
Sample Matrix:	Water	**Date Received:**	08/17/2011
		Date Extracted:	08/24/2011
		Date Analyzed:	08/24/2011

Volatile Organic Compounds

Sample Name:	MS44I	**Units:**	ug/L
Lab Code:	K1107601-012	**Basis:**	NA
File ID:	J:\MS18\DATA\082411\0824F033.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108255
Analysis Method:	8260C	**Calibration ID:**	CAL10800

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	Note
75-01-4	Vinyl Chloride	**0.68**		0.20	
75-35-4	1,1-Dichloroethene	**2.5**		0.50	
156-60-5	trans-1,2-Dichloroethene	**24**		0.50	
75-34-3	1,1-Dichloroethane	**8.7**		0.50	
156-59-2	cis-1,2-Dichloroethene	**310**	E	0.50	
71-55-6	1,1,1-Trichloroethane (TCA)	0.50	U	0.50	
79-01-6	Trichloroethene (TCE)	**510**	E	0.50	
127-18-4	Tetrachloroethene (PCE)	0.50	U	0.50	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	85	73-122	08/24/11	Acceptable
Toluene-d8	93	65-144	08/24/11	Acceptable
4-Bromofluorobenzene	89	68-117	08/24/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107601
Project:	NIROP/J070047	**Date Collected:**	08/16/2011
Sample Matrix:	Water	**Date Received:**	08/17/2011
		Date Extracted:	08/24/2011
		Date Analyzed:	08/24/2011

Volatile Organic Compounds

Sample Name:	MS44IDL	**Units:**	ug/L
Lab Code:	K1107601-012	**Basis:**	NA
File ID:	J:\MS18\DATA\082411\0824F023.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108255
Analysis Method:	8260C	**Calibration ID:**	CAL10800

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 20

CAS No.	Analyte Name	Result	Q	MRL	Note
75-01-4	Vinyl Chloride	4.0	U	4.0	
75-35-4	1,1-Dichloroethene	10	U	10	
156-60-5	trans-1,2-Dichloroethene	**19**	D	10	
75-34-3	1,1-Dichloroethane	10	U	10	
156-59-2	cis-1,2-Dichloroethene	**260**	D	10	
71-55-6	1,1,1-Trichloroethane (TCA)	10	U	10	
79-01-6	Trichloroethene (TCE)	**430**	D	10	
127-18-4	Tetrachloroethene (PCE)	10	U	10	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	83	73-122	08/24/11	Acceptable
Toluene-d8	93	65-144	08/24/11	Acceptable
4-Bromofluorobenzene	88	68-117	08/24/11	Acceptable

Comments

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107601
Project:	NIROP/J070047	**Date Collected:**	08/15/2011
Sample Matrix:	Water	**Date Received:**	08/17/2011
		Date Extracted:	08/18/2011
		Date Analyzed:	08/18/2011

Volatile Organic Compounds

Sample Name:	MS45I	**Units:**	ug/L
Lab Code:	K1107601-003	**Basis:**	NA
File ID:	J:\MS04\DATA\081811\0818F020.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108033
Analysis Method:	8260C	**Calibration ID:**	CAL10780

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	Note
75-01-4	Vinyl Chloride	0.20	U	0.20	
75-35-4	1,1-Dichloroethene	0.50	U	0.50	
156-60-5	trans-1,2-Dichloroethene	**0.66**		0.50	
75-34-3	1,1-Dichloroethane	0.50	U	0.50	
156-59-2	cis-1,2-Dichloroethene	**14**		0.50	
71-55-6	1,1,1-Trichloroethane (TCA)	0.50	U	0.50	
79-01-6	Trichloroethene (TCE)	**48**		0.50	
127-18-4	Tetrachloroethene (PCE)	**2.7**		0.50	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	110	73-122	08/18/11	Acceptable
Toluene-d8	124	65-144	08/18/11	Acceptable
4-Bromofluorobenzene	107	68-117	08/18/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107601
Project:	NIROP/J070047	**Date Collected:**	08/15/2011
Sample Matrix:	Water	**Date Received:**	08/17/2011
		Date Extracted:	08/18/2011
		Date Analyzed:	08/18/2011

Volatile Organic Compounds

Sample Name:	MS45S	**Units:**	ug/L
Lab Code:	K1107601-004	**Basis:**	NA
File ID:	J:\MS04\DATA\081811\0818F022.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108033
Analysis Method:	8260C	**Calibration ID:**	CAL10780

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	Note
75-01-4	Vinyl Chloride	0.20	U	0.20	
75-35-4	1,1-Dichloroethene	**1.8**		0.50	
156-60-5	trans-1,2-Dichloroethene	**24**		0.50	
75-34-3	1,1-Dichloroethane	**1.7**		0.50	
156-59-2	cis-1,2-Dichloroethene	**130**	E	0.50	
71-55-6	1,1,1-Trichloroethane (TCA)	0.50	U	0.50	
79-01-6	Trichloroethene (TCE)	**320**	E	0.50	
127-18-4	Tetrachloroethene (PCE)	0.50	U	0.50	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	109	73-122	08/18/11	Acceptable
Toluene-d8	124	65-144	08/18/11	Acceptable
4-Bromofluorobenzene	108	68-117	08/18/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107601
Project:	NIROP/J070047	**Date Collected:**	08/15/2011
Sample Matrix:	Water	**Date Received:**	08/17/2011
		Date Extracted:	08/18/2011
		Date Analyzed:	08/18/2011

Volatile Organic Compounds

Sample Name:	MS45SDL	**Units:**	ug/L
Lab Code:	K1107601-004	**Basis:**	NA
File ID:	J:\MS04\DATA\081811\0818F021.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108033
Analysis Method:	8260C	**Calibration ID:**	CAL10780

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 10

CAS No.	Analyte Name	Result	Q	MRL	Note
75-01-4	Vinyl Chloride	2.0	U	2.0	
75-35-4	1,1-Dichloroethene	5.0	U	5.0	
156-60-5	trans-1,2-Dichloroethene	**23**	D	5.0	
75-34-3	1,1-Dichloroethane	5.0	U	5.0	
156-59-2	cis-1,2-Dichloroethene	**120**	D	5.0	
71-55-6	1,1,1-Trichloroethane (TCA)	5.0	U	5.0	
79-01-6	Trichloroethene (TCE)	**280**	D	5.0	
127-18-4	Tetrachloroethene (PCE)	5.0	U	5.0	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	111	73-122	08/18/11	Acceptable
Toluene-d8	123	65-144	08/18/11	Acceptable
4-Bromofluorobenzene	106	68-117	08/18/11	Acceptable

Comments

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107601
Project:	NIROP/J070047	**Date Collected:**	08/16/2011
Sample Matrix:	Water	**Date Received:**	08/17/2011
		Date Extracted:	08/19/2011
		Date Analyzed:	08/19/2011

Volatile Organic Compounds

Sample Name:	MS46S	**Units:**	ug/L
Lab Code:	K1107601-006	**Basis:**	NA
File ID:	J:\MS04\DATA\081911\0819F021.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108080
Analysis Method:	8260C	**Calibration ID:**	CAL10780

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	Note
75-01-4	Vinyl Chloride	0.20	U	0.20	
75-35-4	1,1-Dichloroethene	**1.6**		0.50	
156-60-5	trans-1,2-Dichloroethene	**20**		0.50	
75-34-3	1,1-Dichloroethane	**0.75**		0.50	
156-59-2	cis-1,2-Dichloroethene	**31**		0.50	
71-55-6	1,1,1-Trichloroethane (TCA)	0.50	U	0.50	
79-01-6	Trichloroethene (TCE)	**440**	E	0.50	
127-18-4	Tetrachloroethene (PCE)	0.50	U	0.50	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	111	73-122	08/19/11	Acceptable
Toluene-d8	125	65-144	08/19/11	Acceptable
4-Bromofluorobenzene	108	68-117	08/19/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107601
Project:	NIROP/J070047	**Date Collected:**	08/16/2011
Sample Matrix:	Water	**Date Received:**	08/17/2011
		Date Extracted:	08/19/2011
		Date Analyzed:	08/19/2011

Volatile Organic Compounds

Sample Name:	MS46SDL	**Units:**	ug/L
Lab Code:	K1107601-006	**Basis:**	NA
File ID:	J:\MS04\DATA\081911\0819F018.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108080
Analysis Method:	8260C	**Calibration ID:**	CAL10780

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 10

CAS No.	Analyte Name	Result	Q	MRL	Note
75-01-4	Vinyl Chloride	2.0	U	2.0	
75-35-4	1,1-Dichloroethene	5.0	U	5.0	
156-60-5	trans-1,2-Dichloroethene	**19**	D	5.0	
75-34-3	1,1-Dichloroethane	5.0	U	5.0	
156-59-2	cis-1,2-Dichloroethene	**29**	D	5.0	
71-55-6	1,1,1-Trichloroethane (TCA)	5.0	U	5.0	
79-01-6	Trichloroethene (TCE)	**380**	D	5.0	
127-18-4	Tetrachloroethene (PCE)	5.0	U	5.0	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	111	73-122	08/19/11	Acceptable
Toluene-d8	125	65-144	08/19/11	Acceptable
4-Bromofluorobenzene	108	68-117	08/19/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107601
Project:	NIROP/J070047	**Date Collected:**	08/15/2011
Sample Matrix:	Water	**Date Received:**	08/17/2011
		Date Extracted:	08/19/2011
		Date Analyzed:	08/19/2011

Volatile Organic Compounds

Sample Name:	QCD01	**Units:**	ug/L
Lab Code:	K1107601-005	**Basis:**	NA
File ID:	J:\MS04\DATA\081911\0819F022.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108080
Analysis Method:	8260C	**Calibration ID:**	CAL10780

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	Note
75-01-4	Vinyl Chloride	0.20	U	0.20	
75-35-4	1,1-Dichloroethene	**1.7**		0.50	
156-60-5	trans-1,2-Dichloroethene	**24**		0.50	
75-34-3	1,1-Dichloroethane	**1.7**		0.50	
156-59-2	cis-1,2-Dichloroethene	**130**	E	0.50	
71-55-6	1,1,1-Trichloroethane (TCA)	0.50	U	0.50	
79-01-6	Trichloroethene (TCE)	**320**	E	0.50	
127-18-4	Tetrachloroethene (PCE)	0.50	U	0.50	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	111	73-122	08/19/11	Acceptable
Toluene-d8	124	65-144	08/19/11	Acceptable
4-Bromofluorobenzene	107	68-117	08/19/11	Acceptable

Comments

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107601
Project:	NIROP/J070047	**Date Collected:**	08/15/2011
Sample Matrix:	Water	**Date Received:**	08/17/2011
		Date Extracted:	08/19/2011
		Date Analyzed:	08/19/2011

Volatile Organic Compounds

Sample Name:	QCD01DL	**Units:**	ug/L
Lab Code:	K1107601-005	**Basis:**	NA
File ID:	J:\MS04\DATA\081911\0819F017.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108080
Analysis Method:	8260C	**Calibration ID:**	CAL10780

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 10

CAS No.	Analyte Name	Result	Q	MRL	Note
75-01-4	Vinyl Chloride	2.0	U	2.0	
75-35-4	1,1-Dichloroethene	5.0	U	5.0	
156-60-5	trans-1,2-Dichloroethene	**23**	D	5.0	
75-34-3	1,1-Dichloroethane	5.0	U	5.0	
156-59-2	cis-1,2-Dichloroethene	**120**	D	5.0	
71-55-6	1,1,1-Trichloroethane (TCA)	5.0	U	5.0	
79-01-6	Trichloroethene (TCE)	**280**	D	5.0	
127-18-4	Tetrachloroethene (PCE)	5.0	U	5.0	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	111	73-122	08/19/11	Acceptable
Toluene-d8	124	65-144	08/19/11	Acceptable
4-Bromofluorobenzene	107	68-117	08/19/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107601
Project:	NIROP/J070047	**Date Collected:**	08/15/2011
Sample Matrix:	Water	**Date Received:**	08/17/2011
		Date Extracted:	08/18/2011
		Date Analyzed:	08/18/2011

Volatile Organic Compounds

Sample Name:	QCR01	**Units:**	ug/L
Lab Code:	K1107601-011	**Basis:**	NA
File ID:	J:\MS04\DATA\081811\0818F018.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108033
Analysis Method:	8260C	**Calibration ID:**	CAL10780

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	Note
75-01-4	Vinyl Chloride	0.20	U	0.20	
75-35-4	1,1-Dichloroethene	0.50	U	0.50	
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.50	
75-34-3	1,1-Dichloroethane	0.50	U	0.50	
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.50	
71-55-6	1,1,1-Trichloroethane (TCA)	0.50	U	0.50	
79-01-6	Trichloroethene (TCE)	0.50	U	0.50	
127-18-4	Tetrachloroethene (PCE)	0.50	U	0.50	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	109	73-122	08/18/11	Acceptable
Toluene-d8	123	65-144	08/18/11	Acceptable
4-Bromofluorobenzene	106	68-117	08/18/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107601
Project:	NIROP/J070047	**Date Collected:**	08/16/2011
Sample Matrix:	Water	**Date Received:**	08/17/2011
		Date Extracted:	08/19/2011
		Date Analyzed:	08/19/2011

Volatile Organic Compounds

Sample Name:	QCR02	**Units:**	ug/L
Lab Code:	K1107601-010	**Basis:**	NA
File ID:	J:\MS04\DATA\081911\0819F016.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108080
Analysis Method:	8260C	**Calibration ID:**	CAL10780

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	Note
75-01-4	Vinyl Chloride	0.20	U	0.20	
75-35-4	1,1-Dichloroethene	0.50	U	0.50	
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.50	
75-34-3	1,1-Dichloroethane	0.50	U	0.50	
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.50	
71-55-6	1,1,1-Trichloroethane (TCA)	0.50	U	0.50	
79-01-6	Trichloroethene (TCE)	0.50	U	0.50	
127-18-4	Tetrachloroethene (PCE)	0.50	U	0.50	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	111	73-122	08/19/11	Acceptable
Toluene-d8	125	65-144	08/19/11	Acceptable
4-Bromofluorobenzene	107	68-117	08/19/11	Acceptable

Comments:

APPENDIX C

SUPPORT DOCUMENTATION

NIROP FRIDLEY
WATER DATA
K1107601

FRACTION	CHEMICAL	MS15S	UNITS	QCD01	RPD	D
OV	1,1-DICHLOROETHANE	1.7	UG/L	1.7	0.00	0.00
OV	1,1-DICHLOROETHENE	1.8	UG/L	1.7	5.71	0.10
OV	TRANS-1,2-DICHLOROETHENE	24	UG/L	24	0.00	0.00

Current RPD Quality Control Limit: 30 %.
Shaded cells indicate RPDs that exceed the applicable quality control limit.

NIROP FRIDLEY
WATER DATA
K1107601

FRACTION	CHEMICAL	MS45SDL	UNITS	QCD01DL	RPD	D
OV	CIS-1,2-DICHLOROETHENE	120	UG/L	120	0.00	0.00
OV	TRICHLOROETHENE	280	UG/L	280	0.00	0.00

Current RPD Quality Control Limit: 30 %.
Shaded cells indicate RPDs that exceed the applicable quality control limit.

HOLDTIME

SDG K1107601

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
OV	UG/L	MS45I	K1107601-003	NM	08/15/2011	08/18/2011	08/18/2011	3	0	3
OV	UG/L	MS18S	K1107601-007	NM	08/16/2011	08/19/2011	08/19/2011	3	0	3
OV	UG/L	MS18S	K1107601-007DL	NM	08/16/2011	08/19/2011	08/19/2011	3	0	3
OV	UG/L	MS35D	K1107601-008	NM	08/16/2011	08/24/2011	08/24/2011	8	0	8
OV	UG/L	MS35I	K1107601-009	NM	08/16/2011	08/24/2011	08/24/2011	8	0	8
OV	UG/L	MS35I	K1107601-009DL	NM	08/16/2011	08/24/2011	08/24/2011	8	0	8
OV	UG/L	MS43I	K1107601-002	NM	08/15/2011	08/18/2011	08/18/2011	3	0	3
OV	UG/L	MS15IS	K1107601-001	NM	08/15/2011	08/18/2011	08/18/2011	3	0	3
OV	UG/L	MS44I	K1107601-012DL	NM	08/16/2011	08/24/2011	08/24/2011	8	0	8
OV	UG/L	QCR02	K1107601-010	NM	08/16/2011	08/19/2011	08/19/2011	3	0	3
OV	UG/L	MS45S	K1107601-004	NM	08/15/2011	08/18/2011	08/18/2011	3	0	3
OV	UG/L	MS45S	K1107601-004DL	NM	08/15/2011	08/18/2011	08/18/2011	3	0	3
OV	UG/L	MS46S	K1107601-006	NM	08/16/2011	08/19/2011	08/19/2011	3	0	3
OV	UG/L	MS46S	K1107601-006DL	NM	08/16/2011	08/19/2011	08/19/2011	3	0	3
OV	UG/L	QCD01	K1107601-005	NM	08/15/2011	08/19/2011	08/19/2011	4	0	4

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
OV	UG/L	QCD01	K1107601-005DL	NM	08/15/2011	08/19/2011	08/19/2011	4	0	4
OV	UG/L	QCR01	K1107601-011	NM	08/15/2011	08/18/2011	08/18/2011	3	0	3
OV	UG/L	MS44I	K1107601-012	NM	08/16/2011	08/24/2011	08/24/2011	8	0	8

Columbia Analytical Services™ 1317 S. 13th Avenue, Kelso, WA 98626 360.577.7222 360.636.1068 (fax) www.caslab.com

August 31, 2011 Analytical Report for Service Request No: K1107601

Paul Walz
Bay West, Incorporated
5 Empire Dr.
St. Paul, MN 55103-1867

RE: NIROP/J070047

Dear Paul:

Enclosed are the results of the samples submitted to our laboratory on August 17, 2011. For your reference, these analyses have been assigned our service request number K1107601.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3363. You may also contact me via Email at LDomenighini@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.

Lisa A Domenighini

Lisa Domenighini
Project Chemist

LD/jw

100% Recycled Paper

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

Columbia Analytical Services, Inc.
Kelso, WA
State Certifications, Accreditations, and Licenses

Agency	Number
Alaska DEC UST	UST-040
Arizona DHS	AZ0339
Arkansas - DEQ	88-0637
California DHS	2286
Florida DOH	E87412
Hawaii DOH	-
Idaho DHW	-
Indiana DOH	C-WA-01
Louisiana DEQ	3016
Louisiana DHH	LA050010
Maine DHS	WA0035
Michigan DEQ	9949
Minnesota DOH	053-999-368
Montana DPHHS	CERT0047
Nevada DEP	WA35
New Jersey DEP	WA005
New Mexico ED	-
North Carolina DWQ	605
Oklahoma DEQ	9801
Oregon - DEQ	WA100010
South Carolina DHEC	61002
Washington DOE	C1203
Wisconsin DNR	998386840
Wyoming (EPA Region 8)	-

Case Narrative

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	Bay West, Incorporated	**Service Request No.:**	K1107601
Project:	NIROP/J070047	**Date Received:**	08/17/11
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Twelve water samples were received for analysis at Columbia Analytical Services on 08/17/11. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Volatile Organic Compounds by EPA Method 8260

Calibration Verification Exceptions:
The following analytes were flagged as outside the upper control criterion for Continuing Calibration Verification (CCV) J:\MS04\0818F003.D and J:\MS4\0819F003.D: Toluene-d8. In accordance with the EPA Method, 80% or more of the CCV analytes must pass within 20% of the true value. The CAS SOP allows for 40% difference for the remaining analytes. The CCV met these criteria. The quality of the sample data was not significantly affected. No further corrective action was required.

Elevated Detection Limits:
Samples MS18S and MS35I, required dilution due to the presence of elevated levels of target analyte. The reporting limits were adjusted to reflect the dilution.

No other anomalies associated with the analysis of these samples were observed.

Approved by Lisa A Yamenughin Date 9/1/11

Chain of Custody

Columbia Analytical Services™

CHAIN OF CUSTODY

1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222x07 • FAX (360) 636-1068

SR#: K1107601

PAGE 1 OF 2 COC # 08151F03

PROJECT NAME: NIROP
PROJECT NUMBER: J070047
PROJECT MANAGER: Paul Walz
COMPANY/ADDRESS: Bay West, 5 Empire Drive
CITY/STATE/ZIP: St. Paul, MN 55103
E-MAIL ADDRESS: paulw@baywest.com
PHONE #: 651-291-3491 FAX #: 651-291-0099
SAMPLER'S SIGNATURE:

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625 ☐ 8270 ☐ 8270LL ☐	Volatile Organics 624 ☐ 8260B ☐	Hydrocarbons (*see below) Gas ☐ Diesel ☐ Oil ☐	BTEX ☐ 8021 ☐	Fuel Fingerprint (FIQ) NW-HCID Screen	Oil & Grease/TRPH 1664 HEM ☐ 1664 SGT ☐	PCB's Aroclors ☐ Congeners ☐	Pesticides/Herbicides 608 ☐ 8081A ☐ 8141A ☐ 8151A ☐	Chlorophenolics - 8151M Tri ☐ Tetra ☐ PCP ☐	PAHS 8310 ☐ SIM ☐	Metals, Total or Dissolved (See list below)	Cyanide ☐ Hex-Chrom ☐	pH, Cond., Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS (circle) NH_3-N, COD, Total-P, TKN, TOC, DOC (circle) NO_2+NO_3	TOX 9020 ☐ AOX 1650 ☐ 506 ☐					REMARKS
MS15IS	8-15-11	1213		WT	9		X																		MS/MSD
MS43I	↓	1315		↓	3		X																		
MS45I		1424			3		X																		
MS45S		1523			3		X																		
QCD01	↓	0800			3		X																		
MS46S	8-16-11	1005			3		X																		
MS18S		1109			3		X																		
MS35D		1245			3		X																		
MS35I		1318			3		X																		
QCR02	↓	1140		↓	3		X																		

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. # 34003
Bill To: Account Payable Bay West

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:
for 8 specific compounds

UPS Tracking # 1Z A198R9 01 9880 3337

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature] Date/Time: 8-16-11 1530	Signature: [signature] Date/Time: 8/17/11 945	Signature: Date/Time:	Signature: Date/Time:
Printed Name: Joe Sulak Firm: Bay West	Printed Name: Rachel Moore Firm:	Printed Name: Firm:	Printed Name: Firm:

Columbia Analytical Services™

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SR#: K1107601

PAGE 2 OF 2 COC # 081511-03

PROJECT NAME: NIRDP
PROJECT NUMBER: J070047
PROJECT MANAGER: Paul Wolz
COMPANY/ADDRESS: Bay West, 5 Empire Drive
CITY/STATE/ZIP: St. Paul MN 55103
E-MAIL ADDRESS: paul.w@baywest.com
PHONE #: 651-291-3491 FAX #: 651-291-0099
SAMPLER'S SIGNATURE: [signature]

SAMPLE ID.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625 ☐ 8270 ☐ 8270LL ☐	Volatile Organics 624 ☐ 8260 ☐	Hydrocarbons (see below) Gas ☐ Diesel ☐ Oil ☐ ☐ Fuel Fingerprint (FIQ) ☐ NW-HCID Screen	BTEX ☐ 8021 ☐	Oil & Grease/TRPH 1664 HEM ☐ 1664 SGT ☐	PCB's Aroclors ☐ Congeners ☐	Pesticides/Herbicides 608 ☐ 8081A ☐ 8141A ☐ 8151A ☐	Chlorophenolics - 8151M Tri ☐ Tetra ☐ PCP ☐	PAHS 8310 ☐ SIM ☐	Metals, Total or Dissolved (See list below)	Cyanide ☐ Hex-Chrom ☐	pH, Cond, Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS (circle)	NH_3-N, COD, Total-P, TKN, TOC, DOC (circle) NO_2+NO_3	TOX 9020 ☐ AOX 1650 ☐ 506 ☐	REMARKS
QCR01	8-15-11	1559		WT	3		X													
MS44I	8-16-11	1430		↓	3		X													
~~QCT02~~	~~8-15-11~~	—		↓	~~2~~		X	omit RR												

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. # 34003
Bill To: Account Payable Bay West

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:
for 8 specific compounds

UPS Track# 1Z A19 8R9 01 9880 3337

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature] Date/Time: 8-16-11 15:30	Signature: [signature] Date/Time: 8/17/11 945	Signature: Date/Time:	Signature: Date/Time:
Printed Name: Lynn Riley Firm: Bay West	Printed Name: Rachel Moor Firm:	Printed Name: Firm:	Printed Name: Firm:

RCOC #1 06/08

PC ~~Greg~~ Mike

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

Client / Project: NIROP Service Request *K11* 7601

Received: 8/17/11 Opened: 8/17/11 By: RM Unloaded: 8/17/11 By: RM

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? 2 - front & back

   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Cooler Temp °C	Temp Blank °C	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
-.5	.2			1Z A19 8R9 01 9880 3337	

7. Packing material used. *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Sleeves* *Other* _____
8. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
9. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
10. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
11. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
12. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
13. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
14. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
15. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions:

~~received 2 trip blank vials, not on COC~~ 8/17/11 EE

Page 1 *of* _____

Volatile Organic Compounds

Organic Analysis:
Volatile Organic Compounds

Summary Package

Sample and QC Results

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1107601

Cover Page - Organic Analysis Data Package
Volatile Organic Compounds

Sample Name	Lab Code	Date Collected	Date Received
MS15IS	K1107601-001	08/15/2011	08/17/2011
MS43I	K1107601-002	08/15/2011	08/17/2011
MS45I	K1107601-003	08/15/2011	08/17/2011
MS45S	K1107601-004	08/15/2011	08/17/2011
MS45SDL	K1107601-004	08/15/2011	08/17/2011
QCD01	K1107601-005	08/15/2011	08/17/2011
QCD01DL	K1107601-005	08/15/2011	08/17/2011
MS46SDL	K1107601-006	08/16/2011	08/17/2011
MS46S	K1107601-006	08/16/2011	08/17/2011
MS18SDL	K1107601-007	08/16/2011	08/17/2011
MS18S	K1107601-007	08/16/2011	08/17/2011
MS35D	K1107601-008	08/16/2011	08/17/2011
MS35I	K1107601-009	08/16/2011	08/17/2011
MS35IDL	K1107601-009	08/16/2011	08/17/2011
QCR02	K1107601-010	08/16/2011	08/17/2011
QCR01	K1107601-011	08/15/2011	08/17/2011
MS44I	K1107601-012	08/16/2011	08/17/2011
MS44IDL	K1107601-012	08/16/2011	08/17/2011
MS15ISMS	KWG1108033-1	08/15/2011	08/17/2011
MS15ISDMS	KWG1108033-2	08/15/2011	08/17/2011

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: KHeasom Name: KHeasom

Date: 8/31/11 Title: Scientist

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1107601

Surrogate Recovery Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
MS15IS	K1107601-001	111	124	107
MS43I	K1107601-002	111	123	108
MS45I	K1107601-003	110	124	107
MS45S	K1107601-004	109	124	108
MS45SDL	K1107601-004	111	123	106
QCD01	K1107601-005	111	124	107
QCD01DL	K1107601-005	111	124	107
MS46S	K1107601-006	111	125	108
MS46SDL	K1107601-006	111	125	108
MS18S	K1107601-007	111	125	108
MS18SDL	K1107601-007	110	124	107
MS35D	K1107601-008	82	91	88
MS35IDL	K1107601-009	83	93	88
MS35I	K1107601-009	84	93	87
QCR02	K1107601-010	111	125	107
QCR01	K1107601-011	109	123	106
MS44I	K1107601-012	85	93	89
MS44IDL	K1107601-012	83	93	88
Method Blank	KWG1108033-4	111	124	108
Method Blank	KWG1108080-4	110	124	108
Method Blank	KWG1108255-4	82	92	89
MS15ISMS	KWG1108033-1	105	122	109
MS15ISDMS	KWG1108033-2	108	124	109
Lab Control Sample	KWG1108033-3	106	122	109
Lab Control Sample	KWG1108080-3	107	122	109
Lab Control Sample	KWG1108255-3	87	95	90

Surrogate Recovery Control Limits (%)

Sur1 =	Dibromofluoromethane	73-122
Sur2 =	Toluene-d8	65-144
Sur3 =	4-Bromofluorobenzene	68-117

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1107601
Date Analyzed: 08/10/2011
Time Analyzed: 15:27

Tune Summary
Volatile Organic Compounds

File ID: J:\MS04\DATA\081011\0810F005.D
Instrument ID: MS04
Column:

Analysis Method: 8260C
Analysis Lot: KWG1108580

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	20.1	13033	PASS
75	95	30	60	44.4	28771	PASS
95	95	100	100	100.0	64869	PASS
96	95	5	9	6.8	4418	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	85.8	55642	PASS
175	174	5	9	7.3	4038	PASS
176	174	95	101	97.0	53957	PASS
177	176	5	9	6.4	3479	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Initial Calibration	KWG1108580-2	J:\MS04\DATA\081011\0810F011.D	08/10/2011	19:02	
Initial Calibration	KWG1108580-3	J:\MS04\DATA\081011\0810F012.D	08/10/2011	19:38	
Initial Calibration	KWG1108580-4	J:\MS04\DATA\081011\0810F013.D	08/10/2011	20:12	
Initial Calibration	KWG1108580-5	J:\MS04\DATA\081011\0810F014.D	08/10/2011	20:47	
Initial Calibration	KWG1108580-6	J:\MS04\DATA\081011\0810F015.D	08/10/2011	21:21	
Initial Calibration	KWG1108580-7	J:\MS04\DATA\081011\0810F016.D	08/10/2011	21:56	
Initial Calibration	KWG1108580-8	J:\MS04\DATA\081011\0810F017.D	08/10/2011	22:30	
Initial Calibration	KWG1108580-9	J:\MS04\DATA\081011\0810F018.D	08/10/2011	23:03	
Initial Calibration	KWG1108580-10	J:\MS04\DATA\081011\0810F019.D	08/10/2011	23:37	
Initial Calibration	KWG1108580-11	J:\MS04\DATA\081011\0810F020.D	08/11/2011	00:11	
Initial Calibration	KWG1108580-12	J:\MS04\DATA\081011\0810F021.D	08/11/2011	00:44	
Initial Calibration Verification	KWG1108580-13	J:\MS04\DATA\081011\0810F025.D	08/11/2011	02:58	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1107601
Calibration Date: 08/10/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10780
Instrument ID: MS04

Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS04\DATA\081011\0810F013.D	G	J:\MS04\DATA\081011\0810F019.D
B	J:\MS04\DATA\081011\0810F014.D	H	J:\MS04\DATA\081011\0810F020.D
C	J:\MS04\DATA\081011\0810F015.D	I	J:\MS04\DATA\081011\0810F021.D
D	J:\MS04\DATA\081011\0810F016.D	J	J:\MS04\DATA\081011\0810F011.D
E	J:\MS04\DATA\081011\0810F017.D	K	J:\MS04\DATA\081011\0810F012.D
F	J:\MS04\DATA\081011\0810F018.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Vinyl Chloride	A	0.50	0.382	B	1.0	0.408	C	2.0	0.376	D	5.0	0.354	E	10	0.424
	F	20	0.426	G	40	0.433	H	60	0.467	I	70	0.452			
	K	0.20	0.434												
1,1-Dichloroethene	A	0.50	0.188	B	1.0	0.246	C	2.0	0.185	D	5.0	0.171	E	10	0.207
	F	20	0.206	G	40	0.213	H	60	0.229	I	70	0.221			
trans-1,2-Dichloroethene	A	0.50	0.255	B	1.0	0.303	C	2.0	0.228	D	5.0	0.239	E	10	0.263
	F	20	0.258	G	40	0.267	H	60	0.280	I	70	0.272			
1,1-Dichloroethane	A	0.50	0.437	B	1.0	0.468	C	2.0	0.406	D	5.0	0.414	E	10	0.462
	F	20	0.450	G	40	0.466	H	60	0.481	I	70	0.474	J	0.10	0.381
	K	0.20	0.437												
cis-1,2-Dichloroethene	A	0.50	0.340	B	1.0	0.326	C	2.0	0.280	D	5.0	0.272	E	10	0.290
	F	20	0.288	G	40	0.294	H	60	0.302	I	70	0.300			
	K	0.20	0.397												
1,1,1-Trichloroethane (TCA)	A	0.50	0.277	B	1.0	0.311	C	2.0	0.272	D	5.0	0.262	E	10	0.313
	F	20	0.306	G	40	0.311	H	60	0.324	I	70	0.311	J	0.10	0.255
	K	0.20	0.294												
Trichloroethene (TCE)	A	0.50	0.215	B	1.0	0.234	C	2.0	0.203	D	5.0	0.202	E	10	0.233
	F	20	0.232	G	40	0.238	H	60	0.246	I	70	0.243	J	0.10	0.186
	K	0.20	0.215												
Tetrachloroethene (PCE)	A	0.50	0.237	B	1.0	0.279	C	2.0	0.250	D	5.0	0.244	E	10	0.289
	F	20	0.287	G	40	0.313	H	60	0.318	I	70	0.308			
	K	0.20	0.251												
Dibromofluoromethane	A	5.0	0.244	B	6.0	0.226	C	7.0	0.255	D	8.0	0.246	E	10	0.249
	F	20	0.274	G	40	0.254	H	50	0.251						
	K	4.0	0.218												
Toluene-d8	A	5.0	0.691	B	6.0	0.606	C	7.0	0.717	D	8.0	0.676	E	10	0.706
	F	20	0.816	G	40	0.736	H	50	0.723						
	K	4.0	0.583												

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1107601
Calibration Date: 08/10/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10780
Instrument ID: MS04

Column: MS

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
4-Bromofluorobenzene	A	5.0	0.375	B	6.0	0.352	C	7.0	0.399	D	8.0	0.380	E	10	0.394
	F	20	0.428	G	40	0.427	H	50	0.396						
	K	4.0	0.339												

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1107601
Calibration Date: 08/10/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10780
Instrument ID: MS04

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Vinyl Chloride	MS	AverageRF	% RSD	8.5		≤ 20	0.416		0.100
1,1-Dichloroethene	MS	AverageRF	% RSD	11.2		≤ 20	0.207		0.100
trans-1,2-Dichloroethene	MS	AverageRF	% RSD	8.4		≤ 20	0.263		0.100
1,1-Dichloroethane	MS	AverageRF	% RSD	7.2		≤ 20	0.443		0.200
cis-1,2-Dichloroethene	MS	AverageRF	% RSD	12.0		≤ 20	0.309		0.100
1,1,1-Trichloroethane (TCA)	MS	AverageRF	% RSD	8.0		≤ 20	0.294		0.100
Trichloroethene (TCE)	MS	AverageRF	% RSD	8.8		≤ 20	0.222		0.200
Tetrachloroethene (PCE)	MS	AverageRF	% RSD	11.0		≤ 20	0.278		0.200
Dibromofluoromethane	SURR	AverageRF	% RSD	6.7		≤ 20	0.246		0.01
Toluene-d8	SURR	AverageRF	% RSD	10.0		≤ 20	0.695		0.01
4-Bromofluorobenzene	SURR	AverageRF	% RSD	7.8		≤ 20	0.388		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1107601
Calibration Date: 08/10/2011
Date Analyzed: 08/11/2011

Second Source Calibration Verification
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration ID: CAL10780
Units: PPB

File ID: J:\MS04\DATA\081011\0810F025.D
J:\MS04\DATA\081111\0811F004.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	8.8	0.416	0.364	-12	NA	± 30 %	AverageRF
1,1-Dichloroethene	10	11	0.207	0.226	9	NA	± 30 %	AverageRF
trans-1,2-Dichloroethene	10	11	0.263	0.278	6	NA	± 30 %	AverageRF
1,1-Dichloroethane	10	11	0.443	0.477	8	NA	± 30 %	AverageRF
cis-1,2-Dichloroethene	10	9.6	0.309	0.298	-4	NA	± 30 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	11	0.294	0.320	9	NA	± 30 %	AverageRF
Trichloroethene (TCE)	10	11	0.222	0.248	11	NA	± 30 %	AverageRF
Tetrachloroethene (PCE)	10	11	0.278	0.303	9	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1107601

Analysis Run Log
Volatile Organic Compounds

Analysis Method: 8260C

Analysis Lot: KWG1108030
Instrument ID: MS04

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0818F002.D	GC/MS Tuning - Bromofluorobenzene	KWG1108030-1	8/18/2011	10:19		8/18/2011	10:45
0818F003.D	Continuing Calibration Verification	KWG1108030-2	8/18/2011	10:56		8/18/2011	11:22
0818F004.D	Lab Control Sample	KWG1108033-3	8/18/2011	11:44		8/18/2011	12:10
0818F005.D	MS15ISMS	KWG1108033-1	8/18/2011	12:21		8/18/2011	12:47
0818F006.D	MS15ISDMS	KWG1108033-2	8/18/2011	12:56		8/18/2011	13:22
0818F009.D	Method Blank	KWG1108033-4	8/18/2011	14:39		8/18/2011	15:05
0818F010.D	MS15IS	K1107601-001	8/18/2011	15:15		8/18/2011	15:41
0818F011.D	ZZZZZZ	ZZZZZZ	8/18/2011	15:49		8/18/2011	16:15
0818F012.D	ZZZZZZ	ZZZZZZ	8/18/2011	16:24		8/18/2011	16:50
0818F013.D	ZZZZZZ	ZZZZZZ	8/18/2011	17:00		8/18/2011	17:26
0818F014.D	ZZZZZZ	ZZZZZZ	8/18/2011	17:34		8/18/2011	18:00
0818F015.D	ZZZZZZ	ZZZZZZ	8/18/2011	18:09		8/18/2011	18:35
0818F016.D	ZZZZZZ	ZZZZZZ	8/18/2011	18:44		8/18/2011	19:10
0818F017.D	ZZZZZZ	ZZZZZZ	8/18/2011	19:19		8/18/2011	19:45
0818F018.D	QCR01	K1107601-011	8/18/2011	19:54		8/18/2011	20:20
0818F019.D	MS43I	K1107601-002	8/18/2011	20:28		8/18/2011	20:54
0818F020.D	MS45I	K1107601-003	8/18/2011	21:02		8/18/2011	21:28
0818F021.D	MS45SDL	K1107601-004	8/18/2011	21:36		8/18/2011	22:02
0818F022.D	MS45S	K1107601-004	8/18/2011	22:10		8/18/2011	22:36

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1107601
Project:	NIROP/J070047	**Date Extracted:**	08/18/2011
Sample Matrix:	Water	**Date Analyzed:**	08/18/2011
		Time Analyzed:	14:39

Method Blank Summary
Volatile Organic Compounds

Sample Name:	Method Blank	**Instrument ID:**	MS04
Lab Code:	KWG1108033-4	**File ID:**	J:\MS04\DATA\081811\0818F009.D
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C	**Extraction Lot:**	KWG1108033

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1108033-3	J:\MS04\DATA\081811\0818F004.D	08/18/11	11:44
MS15ISMS	KWG1108033-1	J:\MS04\DATA\081811\0818F005.D	08/18/11	12:21
MS15ISDMS	KWG1108033-2	J:\MS04\DATA\081811\0818F006.D	08/18/11	12:56
MS15IS	K1107601-001	J:\MS04\DATA\081811\0818F010.D	08/18/11	15:15
QCR01	K1107601-011	J:\MS04\DATA\081811\0818F018.D	08/18/11	19:54
MS43I	K1107601-002	J:\MS04\DATA\081811\0818F019.D	08/18/11	20:28
MS45I	K1107601-003	J:\MS04\DATA\081811\0818F020.D	08/18/11	21:02
MS45SDL	K1107601-004	J:\MS04\DATA\081811\0818F021.D	08/18/11	21:36
MS45S	K1107601-004	J:\MS04\DATA\081811\0818F022.D	08/18/11	22:10

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107601
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	08/18/2011
		Date Analyzed:	08/18/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1108033-4	**Basis:**	NA
File ID:	J:\MS04\DATA\081811\0818F009.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108033
Analysis Method:	8260C	**Calibration ID:**	CAL10780

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	Note
75-01-4	Vinyl Chloride	0.20	U	0.20	
75-35-4	1,1-Dichloroethene	0.50	U	0.50	
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.50	
75-34-3	1,1-Dichloroethane	0.50	U	0.50	
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.50	
71-55-6	1,1,1-Trichloroethane (TCA)	0.50	U	0.50	
79-01-6	Trichloroethene (TCE)	0.50	U	0.50	
127-18-4	Tetrachloroethene (PCE)	0.50	U	0.50	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	111	73-122	08/18/11	Acceptable
Toluene-d8	124	65-144	08/18/11	Acceptable
4-Bromofluorobenzene	108	68-117	08/18/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1107601
Project:	NIROP/J070047	**Date Extracted:**	08/18/2011
Sample Matrix:	Water	**Date Analyzed:**	08/18/2011

Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organic Compounds

Sample Name:	MS15IS	**Units:**	ug/L
Lab Code:	K1107601-001	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C	**Extraction Lot:**	KWG1108033

		MS15ISMS KWG1108033-1 Matrix Spike			MS15ISDMS KWG1108033-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Vinyl Chloride	ND	9.03	10.0	90	8.47	10.0	85	49-136	6	30
1,1-Dichloroethene	ND	12.8	10.0	128	11.7	10.0	117	59-171	9	30
trans-1,2-Dichloroethene	ND	11.7	10.0	117	11.2	10.0	112	65-143	5	30
1,1-Dichloroethane	ND	11.2	10.0	112	10.8	10.0	108	69-141	3	30
cis-1,2-Dichloroethene	2.0	11.5	10.0	95	10.9	10.0	90	61-139	5	30
1,1,1-Trichloroethane (TCA)	ND	10.8	10.0	108	10.3	10.0	103	57-151	5	30
Trichloroethene (TCE)	24	32.4	10.0	89	31.2	10.0	76	53-139	4	30
Tetrachloroethene (PCE)	3.8	14.5	10.0	107	13.7	10.0	99	61-131	6	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1107601
Project:	NIROP/J070047	**Date Extracted:**	08/18/2011
Sample Matrix:	Water	**Date Analyzed:**	08/18/2011

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	EPA 5030B	**Units:**	ug/L
Analysis Method:	8260C	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1108033

	Lab Control Sample KWG1108033-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Vinyl Chloride	9.32	10.0	93	55-123
1,1-Dichloroethene	12.8	10.0	128	66-129
trans-1,2-Dichloroethene	11.9	10.0	119	67-125
1,1-Dichloroethane	11.3	10.0	113	68-132
cis-1,2-Dichloroethene	10.0	10.0	100	71-118
1,1,1-Trichloroethane (TCA)	11.0	10.0	110	59-136
Trichloroethene (TCE)	11.7	10.0	117	67-128
Tetrachloroethene (PCE)	11.2	10.0	112	62-126

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1107601
Date Analyzed: 08/18/2011
Time Analyzed: 10:19

Tune Summary
Volatile Organic Compounds

File ID: J:\MS04\DATA\081811\0818F002.D
Instrument ID: MS04
Column:

Analysis Method: 8260C
Analysis Lot: KWG1108030

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	17.8	13862	PASS
75	95	30	60	41.5	32285	PASS
95	95	100	100	100.0	77866	PASS
96	95	5	9	6.5	5092	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	83.7	65200	PASS
175	174	5	9	7.4	4850	PASS
176	174	95	101	98.3	64074	PASS
177	176	5	9	6.7	4287	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1108030-2	J:\MS04\DATA\081811\0818F003.D	08/18/2011	10:56	
Lab Control Sample	KWG1108033-3	J:\MS04\DATA\081811\0818F004.D	08/18/2011	11:44	
MS15ISMS	KWG1108033-1	J:\MS04\DATA\081811\0818F005.D	08/18/2011	12:21	
MS15ISDMS	KWG1108033-2	J:\MS04\DATA\081811\0818F006.D	08/18/2011	12:56	
Method Blank	KWG1108033-4	J:\MS04\DATA\081811\0818F009.D	08/18/2011	14:39	
MS15IS	K1107601-001	J:\MS04\DATA\081811\0818F010.D	08/18/2011	15:15	
QCR01	K1107601-011	J:\MS04\DATA\081811\0818F018.D	08/18/2011	19:54	
MS43I	K1107601-002	J:\MS04\DATA\081811\0818F019.D	08/18/2011	20:28	
MS45I	K1107601-003	J:\MS04\DATA\081811\0818F020.D	08/18/2011	21:02	
MS45SDL	K1107601-004	J:\MS04\DATA\081811\0818F021.D	08/18/2011	21:36	
MS45S	K1107601-004	J:\MS04\DATA\081811\0818F022.D	08/18/2011	22:10	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1107601
Date Analyzed: 08/18/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration Date: 08/10/2011
Calibration ID: CAL10780
Analysis Lot: KWG1108030
Units: PPB

File ID: J:\MS04\DATA\081811\0818F003.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D		%Drift	Criteria	Curve Fit
Vinyl Chloride	10	8.5	0.100	0.416	0.355	-15		NA	± 20 %	AverageRF
1,1-Dichloroethene	10	8.3	0.100	0.207	0.172	-17		NA	± 20 %	AverageRF
trans-1,2-Dichloroethene	10	8.7	0.100	0.263	0.230	-13		NA	± 20 %	AverageRF
1,1-Dichloroethane	10	9.3	0.200	0.443	0.414	-7		NA	± 20 %	AverageRF
cis-1,2-Dichloroethene	10	8.9	0.100	0.309	0.275	-11		NA	± 20 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	8.8	0.100	0.294	0.258	-12		NA	± 20 %	AverageRF
Trichloroethene (TCE)	10	9.5	0.200	0.222	0.212	-5		NA	± 20 %	AverageRF
Tetrachloroethene (PCE)	10	9.3	0.200	0.278	0.258	-7		NA	± 20 %	AverageRF
Dibromofluoromethane	10	11	0.01	0.246	0.263	7		NA	± 20 %	AverageRF
Toluene-d8	10	12	0.01	0.695	0.841	21	*	NA	± 20 %	AverageRF
4-Bromofluorobenzene	10	11	0.01	0.388	0.417	8		NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1107601

Analysis Run Log
Volatile Organic Compounds

Analysis Method: 8260C

Analysis Lot: KWG1108073
Instrument ID: MS04

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0819F002.D	GC/MS Tuning - Bromofluorobenzene	KWG1108073-1	8/19/2011	10:27		8/19/2011	10:53
0819F003.D	Continuing Calibration Verification	KWG1108073-2	8/19/2011	11:06		8/19/2011	11:32
0819F004.D	Lab Control Sample	KWG1108080-3	8/19/2011	11:55		8/19/2011	12:21
0819F005.D	ZZZZZZ	ZZZZZZ	8/19/2011	12:29		8/19/2011	12:55
0819F006.D	ZZZZZZ	ZZZZZZ	8/19/2011	13:03		8/19/2011	13:29
0819F010.D	Method Blank	KWG1108080-4	8/19/2011	15:24		8/19/2011	15:50
0819F013.D	ZZZZZZ	ZZZZZZ	8/19/2011	17:09		8/19/2011	17:35
0819F014.D	ZZZZZZ	ZZZZZZ	8/19/2011	17:45		8/19/2011	18:11
0819F015.D	ZZZZZZ	ZZZZZZ	8/19/2011	18:19		8/19/2011	18:45
0819F016.D	QCR02	K1107601-010	8/19/2011	18:55		8/19/2011	19:21
0819F017.D	QCD01DL	K1107601-005	8/19/2011	19:29		8/19/2011	19:55
0819F018.D	MS46SDL	K1107601-006	8/19/2011	20:04		8/19/2011	20:30
0819F019.D	MS18SDL	K1107601-007	8/19/2011	20:39		8/19/2011	21:05
0819F020.D	MS18S	K1107601-007	8/19/2011	21:13		8/19/2011	21:39
0819F021.D	MS46S	K1107601-006	8/19/2011	21:47		8/19/2011	22:13
0819F022.D	QCD01	K1107601-005	8/19/2011	22:21		8/19/2011	22:47

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1107601
Project:	NIROP/J070047	**Date Extracted:**	08/19/2011
Sample Matrix:	Water	**Date Analyzed:**	08/19/2011
		Time Analyzed:	15:24

Method Blank Summary
Volatile Organic Compounds

Sample Name:	Method Blank	**Instrument ID:**	MS04
Lab Code:	KWG1108080-4	**File ID:**	J:\MS04\DATA\081911\0819F010.D
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C	**Extraction Lot:**	KWG1108080

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1108080-3	J:\MS04\DATA\081911\0819F004.D	08/19/11	11:55
QCR02	K1107601-010	J:\MS04\DATA\081911\0819F016.D	08/19/11	18:55
QCD01DL	K1107601-005	J:\MS04\DATA\081911\0819F017.D	08/19/11	19:29
MS46SDL	K1107601-006	J:\MS04\DATA\081911\0819F018.D	08/19/11	20:04
MS18SDL	K1107601-007	J:\MS04\DATA\081911\0819F019.D	08/19/11	20:39
MS18S	K1107601-007	J:\MS04\DATA\081911\0819F020.D	08/19/11	21:13
MS46S	K1107601-006	J:\MS04\DATA\081911\0819F021.D	08/19/11	21:47
QCD01	K1107601-005	J:\MS04\DATA\081911\0819F022.D	08/19/11	22:21

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107601
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	08/19/2011
		Date Analyzed:	08/19/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1108080-4	**Basis:**	NA
File ID:	J:\MS04\DATA\081911\0819F010.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108080
Analysis Method:	8260C	**Calibration ID:**	CAL10780

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	Note
75-01-4	Vinyl Chloride	0.20	U	0.20	
75-35-4	1,1-Dichloroethene	0.50	U	0.50	
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.50	
75-34-3	1,1-Dichloroethane	0.50	U	0.50	
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.50	
71-55-6	1,1,1-Trichloroethane (TCA)	0.50	U	0.50	
79-01-6	Trichloroethene (TCE)	0.50	U	0.50	
127-18-4	Tetrachloroethene (PCE)	0.50	U	0.50	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	110	73-122	08/19/11	Acceptable
Toluene-d8	124	65-144	08/19/11	Acceptable
4-Bromofluorobenzene	108	68-117	08/19/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1107601
Project:	NIROP/J070047	**Date Extracted:**	08/19/2011
Sample Matrix:	Water	**Date Analyzed:**	08/19/2011

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	EPA 5030B	**Units:**	ug/L
Analysis Method:	8260C	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1108080

	Lab Control Sample KWG1108080-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Vinyl Chloride	9.24	10.0	92	55-123
1,1-Dichloroethene	12.8	10.0	128	66-129
trans-1,2-Dichloroethene	11.9	10.0	119	67-125
1,1-Dichloroethane	11.3	10.0	113	68-132
cis-1,2-Dichloroethene	10.0	10.0	100	71-118
1,1,1-Trichloroethane (TCA)	11.1	10.0	111	59-136
Trichloroethene (TCE)	11.8	10.0	118	67-128
Tetrachloroethene (PCE)	11.3	10.0	113	62-126

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1107601
Date Analyzed: 08/19/2011
Time Analyzed: 10:27

Tune Summary
Volatile Organic Compounds

File ID: J:\MS04\DATA\081911\0819F002.D
Instrument ID: MS04
Column:

Analysis Method: 8260C
Analysis Lot: KWG1108073

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	18.5	13717	PASS
75	95	30	60	42.2	31270	PASS
95	95	100	100	100.0	74106	PASS
96	95	5	9	6.9	5117	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	86.9	64429	PASS
175	174	5	9	7.0	4533	PASS
176	174	95	101	96.9	62450	PASS
177	176	5	9	6.5	4057	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1108073-2	J:\MS04\DATA\081911\0819F003.D	08/19/2011	11:06	
Lab Control Sample	KWG1108080-3	J:\MS04\DATA\081911\0819F004.D	08/19/2011	11:55	
Method Blank	KWG1108080-4	J:\MS04\DATA\081911\0819F010.D	08/19/2011	15:24	
QCR02	K1107601-010	J:\MS04\DATA\081911\0819F016.D	08/19/2011	18:55	
QCD01DL	K1107601-005	J:\MS04\DATA\081911\0819F017.D	08/19/2011	19:29	
MS46SDL	K1107601-006	J:\MS04\DATA\081911\0819F018.D	08/19/2011	20:04	
MS18SDL	K1107601-007	J:\MS04\DATA\081911\0819F019.D	08/19/2011	20:39	
MS18S	K1107601-007	J:\MS04\DATA\081911\0819F020.D	08/19/2011	21:13	
MS46S	K1107601-006	J:\MS04\DATA\081911\0819F021.D	08/19/2011	21:47	
QCD01	K1107601-005	J:\MS04\DATA\081911\0819F022.D	08/19/2011	22:21	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1107601
Date Analyzed: 08/19/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration Date: 08/10/2011
Calibration ID: CAL10780
Analysis Lot: KWG1108073
Units: PPB

File ID: J:\MS04\DATA\081911\0819F003.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D		%Drift	Criteria	Curve Fit
Vinyl Chloride	10	9.9	0.100	0.416	0.413	-1		NA	± 20 %	AverageRF
1,1-Dichloroethene	10	9.8	0.100	0.207	0.203	-2		NA	± 20 %	AverageRF
trans-1,2-Dichloroethene	10	9.9	0.100	0.263	0.259	-1		NA	± 20 %	AverageRF
1,1-Dichloroethane	10	10	0.200	0.443	0.454	2		NA	± 20 %	AverageRF
cis-1,2-Dichloroethene	10	9.5	0.100	0.309	0.292	-6		NA	± 20 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	10	0.100	0.294	0.300	2		NA	± 20 %	AverageRF
Trichloroethene (TCE)	10	11	0.200	0.222	0.240	8		NA	± 20 %	AverageRF
Tetrachloroethene (PCE)	10	11	0.200	0.278	0.299	8		NA	± 20 %	AverageRF
Dibromofluoromethane	10	11	0.01	0.246	0.266	8		NA	± 20 %	AverageRF
Toluene-d8	10	12	0.01	0.695	0.844	21	*	NA	± 20 %	AverageRF
4-Bromofluorobenzene	10	11	0.01	0.388	0.425	10		NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1107601
Date Analyzed: 08/19/2011
Time Analyzed: 09:17

Tune Summary
Volatile Organic Compounds

File ID: J:\MS18\DATA\081911\0819F006.D
Instrument ID: GC-MS 18
Column:

Analysis Method: 8260C
Analysis Lot: KWG1108470

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	15.8	6320	PASS
75	95	30	60	42.2	16885	PASS
95	95	100	100	100.0	40018	PASS
96	95	5	9	6.7	2665	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	90.3	36128	PASS
175	174	5	9	7.3	2653	PASS
176	174	95	101	97.0	35040	PASS
177	176	5	9	6.8	2373	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Initial Calibration	KWG1108470-2	J:\MS18\DATA\081911\0819F009.D	08/19/2011	10:26	
Initial Calibration	KWG1108470-3	J:\MS18\DATA\081911\0819F010.D	08/19/2011	10:47	
Initial Calibration	KWG1108470-4	J:\MS18\DATA\081911\0819F011.D	08/19/2011	11:08	
Initial Calibration	KWG1108470-5	J:\MS18\DATA\081911\0819F012.D	08/19/2011	11:30	
Initial Calibration	KWG1108470-6	J:\MS18\DATA\081911\0819F013.D	08/19/2011	11:51	
Initial Calibration	KWG1108470-7	J:\MS18\DATA\081911\0819F014.D	08/19/2011	12:13	
Initial Calibration	KWG1108470-8	J:\MS18\DATA\081911\0819F015.D	08/19/2011	12:35	
Initial Calibration	KWG1108470-9	J:\MS18\DATA\081911\0819F016.D	08/19/2011	12:56	
Initial Calibration	KWG1108470-10	J:\MS18\DATA\081911\0819F017.D	08/19/2011	13:18	
Initial Calibration	KWG1108470-11	J:\MS18\DATA\081911\0819F018.D	08/19/2011	13:40	
Initial Calibration	KWG1108470-12	J:\MS18\DATA\081911\0819F019.D	08/19/2011	14:02	
Initial Calibration Verification	KWG1108470-13	J:\MS18\DATA\081911\0819F023.D	08/19/2011	15:49	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1107601
Calibration Date: 08/19/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10800
Instrument ID: GC-MS 18

Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS18\DATA\081911\0819F009.D	G	J:\MS18\DATA\081911\0819F015.D
B	J:\MS18\DATA\081911\0819F010.D	H	J:\MS18\DATA\081911\0819F016.D
C	J:\MS18\DATA\081911\0819F011.D	I	J:\MS18\DATA\081911\0819F017.D
D	J:\MS18\DATA\081911\0819F012.D	J	J:\MS18\DATA\081911\0819F018.D
E	J:\MS18\DATA\081911\0819F013.D	K	J:\MS18\DATA\081911\0819F019.D
F	J:\MS18\DATA\081911\0819F014.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Vinyl Chloride	A	0.10	0.361	B	0.20	0.375	C	0.50	0.355	D	1.0	0.414	E	2.0	0.421
	F	5.0	0.388	G	10	0.411	H	20	0.456	I	40	0.451	J	60	0.449
	K	80	0.418												
1,1-Dichloroethene				B	0.20	0.210	C	0.50	0.183	D	1.0	0.207	E	2.0	0.201
	F	5.0	0.185	G	10	0.200	H	20	0.222	I	40	0.216	J	60	0.213
	K	80	0.199												
trans-1,2-Dichloroethene	A	0.10	0.261	B	0.20	0.231	C	0.50	0.242	D	1.0	0.262	E	2.0	0.261
	F	5.0	0.249	G	10	0.253	H	20	0.287	I	40	0.281	J	60	0.282
	K	80	0.265												
1,1-Dichloroethane				B	0.20	0.407	C	0.50	0.435	D	1.0	0.451	E	2.0	0.457
	F	5.0	0.430	G	10	0.430	H	20	0.481	I	40	0.470	J	60	0.467
	K	80	0.442												
cis-1,2-Dichloroethene				B	0.20	0.277	C	0.50	0.274	D	1.0	0.289	E	2.0	0.315
	F	5.0	0.280	G	10	0.296	H	20	0.330	I	40	0.324	J	60	0.330
	K	80	0.309												
1,1,1-Trichloroethane (TCA)				B	0.20	0.316	C	0.50	0.287	D	1.0	0.364	E	2.0	0.348
	F	5.0	0.343	G	10	0.360	H	20	0.399	I	40	0.395	J	60	0.398
	K	80	0.376												
Trichloroethene (TCE)	A	0.10	0.242	B	0.20	0.234	C	0.50	0.240	D	1.0	0.263	E	2.0	0.280
	F	5.0	0.253	G	10	0.262	H	20	0.293	I	40	0.294	J	60	0.297
	K	80	0.277												
Tetrachloroethene (PCE)				B	0.20	0.537	C	0.50	0.614	D	1.0	0.703	E	2.0	0.676
	F	5.0	0.641	G	10	0.667	H	20	0.734	I	40	0.726	J	60	0.720
	K	80	0.685												
Dibromofluoromethane				B	4.0	0.227	C	5.0	0.229	D	6.0	0.244	E	7.0	0.247
	F	8.0	0.212	G	10	0.241	H	20	0.268						
Toluene-d8				B	4.0	0.968	C	5.0	1.01	D	6.0	1.05	E	7.0	1.10
	F	8.0	0.881	G	10	1.03	H	20	1.13						

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1107601
Calibration Date: 08/19/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10800
Instrument ID: GC-MS 18

Column: MS

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
4-Bromofluorobenzene				B	4.0	0.966	C	5.0	1.03	D	6.0	1.05	E	7.0	1.09
	F	8.0	0.910	G	10	1.05	H	20	1.13	I	40	1.04			

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1107601
Calibration Date: 08/19/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10800
Instrument ID: GC-MS 18

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Vinyl Chloride	MS	AverageRF	% RSD	8.8		≤ 20	0.409		0.100
1,1-Dichloroethene	MS	AverageRF	% RSD	6.2		≤ 20	0.204		0.100
trans-1,2-Dichloroethene	MS	AverageRF	% RSD	6.6		≤ 20	0.261		0.100
1,1-Dichloroethane	MS	AverageRF	% RSD	5.0		≤ 20	0.447		0.200
cis-1,2-Dichloroethene	MS	AverageRF	% RSD	7.3		≤ 20	0.302		0.100
1,1,1-Trichloroethane (TCA)	MS	AverageRF	% RSD	10.3		≤ 20	0.359		0.100
Trichloroethene (TCE)	MS	AverageRF	% RSD	8.6		≤ 20	0.267		0.200
Tetrachloroethene (PCE)	MS	AverageRF	% RSD	9.0		≤ 20	0.670		0.200
Dibromofluoromethane	SURR	AverageRF	% RSD	7.4		≤ 20	0.238		0.01
Toluene-d8	SURR	AverageRF	% RSD	8.1		≤ 20	1.02		0.01
4-Bromofluorobenzene	SURR	AverageRF	% RSD	6.6		≤ 20	1.03		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1107601
Calibration Date: 08/19/2011
Date Analyzed: 08/19/2011

Second Source Calibration Verification
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration ID: CAL10800
Units: PPB

File ID: J:\MS18\DATA\081911\0819F023.D
J:\MS18\DATA\081911\0819F024.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	8.3	0.409	0.341	-17	NA	± 30 %	AverageRF
1,1-Dichloroethene	10	12	0.204	0.242	19	NA	± 30 %	AverageRF
trans-1,2-Dichloroethene	10	12	0.261	0.303	16	NA	± 30 %	AverageRF
1,1-Dichloroethane	10	11	0.447	0.480	7	NA	± 30 %	AverageRF
cis-1,2-Dichloroethene	10	10	0.302	0.317	5	NA	± 30 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	11	0.359	0.381	6	NA	± 30 %	AverageRF
Trichloroethene (TCE)	10	10	0.267	0.280	5	NA	± 30 %	AverageRF
Tetrachloroethene (PCE)	10	10	0.670	0.687	3	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1107601

Analysis Run Log
Volatile Organic Compounds

Analysis Method: 8260C

Analysis Lot: KWG1108253
Instrument ID: GC-MS 18

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0824F002.D	GC/MS Tuning - Generic	KWG1108253-1	8/24/2011	08:35		8/24/2011	08:51
0824F004.D	Continuing Calibration Verification	KWG1108253-2	8/24/2011	09:24		8/24/2011	09:40
0824F005.D	Lab Control Sample	KWG1108255-3	8/24/2011	09:46		8/24/2011	10:02
0824F006.D	ZZZZZZ	ZZZZZZ	8/24/2011	10:07		8/24/2011	10:23
0824F007.D	ZZZZZZ	ZZZZZZ	8/24/2011	10:29		8/24/2011	10:45
0824F012.D	Method Blank	KWG1108255-4	8/24/2011	12:18		8/24/2011	12:34
0824F017.D	ZZZZZZ	ZZZZZZ	8/24/2011	14:08		8/24/2011	14:24
0824F018.D	ZZZZZZ	ZZZZZZ	8/24/2011	14:31		8/24/2011	14:47
0824F019.D	ZZZZZZ	ZZZZZZ	8/24/2011	14:53		8/24/2011	15:09
0824F020.D	ZZZZZZ	ZZZZZZ	8/24/2011	15:16		8/24/2011	15:32
0824F021.D	ZZZZZZ	ZZZZZZ	8/24/2011	15:38		8/24/2011	15:54
0824F022.D	MS35IDL	K1107601-009	8/24/2011	16:00		8/24/2011	16:16
0824F023.D	MS44IDL	K1107601-012	8/24/2011	16:23		8/24/2011	16:39
0824F024.D	ZZZZZZ	ZZZZZZ	8/24/2011	16:46		8/24/2011	17:02
0824F025.D	ZZZZZZ	ZZZZZZ	8/24/2011	17:08		8/24/2011	17:24
0824F026.D	ZZZZZZ	ZZZZZZ	8/24/2011	17:31		8/24/2011	17:47
0824F027.D	ZZZZZZ	ZZZZZZ	8/24/2011	17:54		8/24/2011	18:10
0824F028.D	ZZZZZZ	ZZZZZZ	8/24/2011	18:16		8/24/2011	18:32
0824F029.D	ZZZZZZ	ZZZZZZ	8/24/2011	18:39		8/24/2011	18:55
0824F030.D	ZZZZZZ	ZZZZZZ	8/24/2011	19:01		8/24/2011	19:17
0824F100.D	ZZZZZZ	ZZZZZZ	8/24/2011	19:24		8/24/2011	19:40
0824F031.D	MS35D	K1107601-008	8/24/2011	19:46		8/24/2011	20:02
0824F032.D	MS35I	K1107601-009	8/24/2011	20:08		8/24/2011	20:24
0824F033.D	MS44I	K1107601-012	8/24/2011	20:31		8/24/2011	20:47

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1107601
Project:	NIROP/J070047	**Date Extracted:**	08/24/2011
Sample Matrix:	Water	**Date Analyzed:**	08/24/2011
		Time Analyzed:	12:18

Method Blank Summary
Volatile Organic Compounds

Sample Name:	Method Blank	**Instrument ID:**	GC-MS 18
Lab Code:	KWG1108255-4	**File ID:**	J:\MS18\DATA\082411\0824F012.D
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C	**Extraction Lot:**	KWG1108255

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1108255-3	J:\MS18\DATA\082411\0824F005.D	08/24/11	09:46
MS35IDL	K1107601-009	J:\MS18\DATA\082411\0824F022.D	08/24/11	16:00
MS44IDL	K1107601-012	J:\MS18\DATA\082411\0824F023.D	08/24/11	16:23
MS35D	K1107601-008	J:\MS18\DATA\082411\0824F031.D	08/24/11	19:46
MS35I	K1107601-009	J:\MS18\DATA\082411\0824F032.D	08/24/11	20:08
MS44I	K1107601-012	J:\MS18\DATA\082411\0824F033.D	08/24/11	20:31

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107601
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	08/24/2011
		Date Analyzed:	08/24/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1108255-4	**Basis:**	NA
File ID:	J:\MS18\DATA\082411\0824F012.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108255
Analysis Method:	8260C	**Calibration ID:**	CAL10800

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	Note
75-01-4	Vinyl Chloride	0.20	U	0.20	
75-35-4	1,1-Dichloroethene	0.50	U	0.50	
156-60-5	trans-1,2-Dichloroethene	0.50	U	0.50	
75-34-3	1,1-Dichloroethane	0.50	U	0.50	
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.50	
71-55-6	1,1,1-Trichloroethane (TCA)	0.50	U	0.50	
79-01-6	Trichloroethene (TCE)	0.50	U	0.50	
127-18-4	Tetrachloroethene (PCE)	0.50	U	0.50	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	82	73-122	08/24/11	Acceptable
Toluene-d8	92	65-144	08/24/11	Acceptable
4-Bromofluorobenzene	89	68-117	08/24/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1107601
Project:	NIROP/J070047	**Date Extracted:**	08/24/2011
Sample Matrix:	Water	**Date Analyzed:**	08/24/2011

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	EPA 5030B	**Units:**	ug/L
Analysis Method:	8260C	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1108255

	Lab Control Sample KWG1108255-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Vinyl Chloride	7.56	10.0	76	55-123
1,1-Dichloroethene	11.3	10.0	113	66-129
trans-1,2-Dichloroethene	11.0	10.0	110	67-125
1,1-Dichloroethane	9.69	10.0	97	68-132
cis-1,2-Dichloroethene	9.89	10.0	99	71-118
1,1,1-Trichloroethane (TCA)	9.55	10.0	96	59-136
Trichloroethene (TCE)	10.1	10.0	101	67-128
Tetrachloroethene (PCE)	9.95	10.0	100	62-126

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1107601
Date Analyzed: 08/24/2011
Time Analyzed: 08:35

Tune Summary
Volatile Organic Compounds

File ID: J:\MS18\DATA\082411\0824F002.D
Instrument ID: GC-MS 18
Column:

Analysis Method: 8260C
Analysis Lot: KWG1108253

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	15.9	4858	PASS
75	95	30	60	42.5	13005	PASS
95	95	100	100	100.0	30610	PASS
96	95	5	9	7.7	2372	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	96.9	29658	PASS
175	174	5	9	7.3	2155	PASS
176	174	95	101	95.6	28341	PASS
177	176	5	9	6.4	1800	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1108253-2	J:\MS18\DATA\082411\0824F004.D	08/24/2011	09:24	
Lab Control Sample	KWG1108255-3	J:\MS18\DATA\082411\0824F005.D	08/24/2011	09:46	
Method Blank	KWG1108255-4	J:\MS18\DATA\082411\0824F012.D	08/24/2011	12:18	
MS35IDL	K1107601-009	J:\MS18\DATA\082411\0824F022.D	08/24/2011	16:00	
MS44IDL	K1107601-012	J:\MS18\DATA\082411\0824F023.D	08/24/2011	16:23	
MS35D	K1107601-008	J:\MS18\DATA\082411\0824F031.D	08/24/2011	19:46	
MS35I	K1107601-009	J:\MS18\DATA\082411\0824F032.D	08/24/2011	20:08	
MS44I	K1107601-012	J:\MS18\DATA\082411\0824F033.D	08/24/2011	20:31	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1107601
Date Analyzed: 08/24/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration Date: 08/19/2011
Calibration ID: CAL10800
Analysis Lot: KWG1108253
Units: PPB

File ID: J:\MS18\DATA\082411\0824F004.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	11	0.100	0.409	0.435	6	NA	± 20 %	AverageRF
1,1-Dichloroethene	10	10	0.100	0.204	0.209	3	NA	± 20 %	AverageRF
trans-1,2-Dichloroethene	10	11	0.100	0.261	0.279	7	NA	± 20 %	AverageRF
1,1-Dichloroethane	10	10	0.200	0.447	0.466	4	NA	± 20 %	AverageRF
cis-1,2-Dichloroethene	10	11	0.100	0.302	0.326	8	NA	± 20 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	10	0.100	0.359	0.370	3	NA	± 20 %	AverageRF
Trichloroethene (TCE)	10	11	0.200	0.267	0.295	10	NA	± 20 %	AverageRF
Tetrachloroethene (PCE)	10	11	0.200	0.670	0.765	14	NA	± 20 %	AverageRF
Dibromofluoromethane	10	8.8	0.01	0.238	0.210	-12	NA	± 20 %	AverageRF
Toluene-d8	10	9.5	0.01	1.02	0.976	-5	NA	± 20 %	AverageRF
4-Bromofluorobenzene	10	8.9	0.01	1.03	0.919	-11	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1107601
Date Analyzed: 08/18/2011
Time Analyzed: 10:56

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID: J:\MS04\DATA\081811\0818F003.D
Instrument ID: MS04
Analysis Method: 8260C

Lab Code: KWG1108030-2
Analysis Lot: KWG1108030

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	1,313,285	13.36	891,129	17.61	400,207	20.27
	Upper Limit ==>	2,626,570	13.86	1,782,258	18.11	800,414	20.77
	Lower Limit ==>	656,643	12.86	445,565	17.11	200,104	19.77
	ICAL Result ==>	1,121,641	13.38	738,906	17.62	339,730	20.28
Associated Analyses							
Lab Control Sample	KWG1108033-3	1,326,665	13.36	898,897	17.61	400,688	20.27
MS15ISMS	KWG1108033-1	1,306,940	13.36	888,356	17.61	399,495	20.27
MS15ISDMS	KWG1108033-2	1,304,151	13.36	893,976	17.61	400,461	20.26
Method Blank	KWG1108033-4	1,277,295	13.36	880,125	17.61	394,467	20.27
MS15IS	K1107601-001	1,268,271	13.35	875,889	17.61	388,345	20.26
QCR01	K1107601-011	1,265,015	13.36	863,598	17.61	382,468	20.27
MS43I	K1107601-002	1,254,879	13.36	854,766	17.61	384,002	20.27
MS45I	K1107601-003	1,265,112	13.37	872,449	17.61	385,995	20.27
MS45SDL	K1107601-004	1,283,214	13.37	882,279	17.61	387,941	20.28
MS45S	K1107601-004	1,227,758	13.37	854,845	17.61	386,440	20.27

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1107601
Date Analyzed: 08/19/2011
Time Analyzed: 11:06

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID: J:\MS04\DATA\081911\0819F003.D
Instrument ID: MS04
Analysis Method: 8260C

Lab Code: KWG1108073-2
Analysis Lot: KWG1108073

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	1,303,975	13.37	887,239	17.62	397,767	20.28
	Upper Limit ==>	2,607,950	13.87	1,774,478	18.12	795,534	20.78
	Lower Limit ==>	651,988	12.87	443,620	17.12	198,884	19.78
	ICAL Result ==>	1,121,641	13.38	738,906	17.62	339,730	20.28
Associated Analyses							
Lab Control Sample	KWG1108080-3	1,309,451	13.37	894,993	17.62	403,982	20.28
Method Blank	KWG1108080-4	1,288,689	13.37	892,911	17.62	402,665	20.28
QCR02	K1107601-010	1,250,388	13.37	870,016	17.61	387,224	20.28
QCD01DL	K1107601-005	1,271,883	13.37	868,221	17.61	387,997	20.28
MS46SDL	K1107601-006	1,276,327	13.38	878,982	17.62	390,201	20.28
MS18SDL	K1107601-007	1,276,949	13.38	883,563	17.62	391,431	20.28
MS18S	K1107601-007	1,256,432	13.38	873,713	17.62	389,156	20.28
MS46S	K1107601-006	1,281,463	13.38	888,361	17.62	390,405	20.28
QCD01	K1107601-005	1,279,210	13.38	885,946	17.62	384,511	20.28

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1107601
Date Analyzed: 08/24/2011
Time Analyzed: 09:24

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID: J:\MS18\DATA\082411\0824F004.D
Instrument ID: GC-MS 18
Analysis Method: 8260C

Lab Code: KWG1108253-2
Analysis Lot: KWG1108253

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	273,176	5.66	100,339	9.11	106,996	11.53
	Upper Limit ==>	546,352	6.16	200,678	9.61	213,992	12.03
	Lower Limit ==>	136,588	5.16	50,170	8.61	53,498	11.03
	ICAL Result ==>	352,797	5.66	131,134	9.11	136,374	11.53
Associated Analyses							
Lab Control Sample	KWG1108255-3	302,829	5.66	112,364	9.11	121,268	11.53
Method Blank	KWG1108255-4	299,691	5.66	108,728	9.11	120,642	11.53
MS35IDL	K1107601-009	276,227	5.66	101,083	9.11	110,660	11.53
MS44IDL	K1107601-012	293,335	5.66	107,461	9.11	120,124	11.53
MS35D	K1107601-008	300,405	5.66	108,684	9.11	119,758	11.53
MS35I	K1107601-009	294,404	5.66	108,553	9.11	117,695	11.53
MS44I	K1107601-012	285,254	5.66	104,495	9.11	113,528	11.53

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1107601
Date Extracted: 08/18/2011

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1108033
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
MS15IS	K1107601-001	08/15/11	08/17/11	10ml	10ml	NA	
MS43I	K1107601-002	08/15/11	08/17/11	10ml	10ml	NA	
MS45I	K1107601-003	08/15/11	08/17/11	10ml	10ml	NA	
MS45S	K1107601-004	08/15/11	08/17/11	10ml	10ml	NA	
MS45SDL	K1107601-004	08/15/11	08/17/11	10ml	10ml	NA	
QCR01	K1107601-011	08/15/11	08/17/11	10ml	10ml	NA	
Method Blank	KWG1108033-4	NA	NA	10ml	10ml	NA	
MS15ISMS	KWG1108033-1	08/15/11	08/17/11	10ml	10ml	NA	
MS15ISDMS	KWG1108033-2	08/15/11	08/17/11	10ml	10ml	NA	
Lab Control Sample	KWG1108033-3	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1107601
Date Extracted: 08/19/2011

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1108080
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
QCD01	K1107601-005	08/15/11	08/17/11	10ml	10ml	NA	
QCD01DL	K1107601-005	08/15/11	08/17/11	10ml	10ml	NA	
MS46S	K1107601-006	08/16/11	08/17/11	10ml	10ml	NA	
MS46SDL	K1107601-006	08/16/11	08/17/11	10ml	10ml	NA	
MS18S	K1107601-007	08/16/11	08/17/11	10ml	10ml	NA	
MS18SDL	K1107601-007	08/16/11	08/17/11	10ml	10ml	NA	
QCR02	K1107601-010	08/16/11	08/17/11	10ml	10ml	NA	
Method Blank	KWG1108080-4	NA	NA	10ml	10ml	NA	
Lab Control Sample	KWG1108080-3	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1107601
Date Extracted: 08/24/2011

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1108255
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
MS35D	K1107601-008	08/16/11	08/17/11	10ml	10ml	NA	
MS35I	K1107601-009	08/16/11	08/17/11	10ml	10ml	NA	
MS35IDL	K1107601-009	08/16/11	08/17/11	10ml	10ml	NA	
MS44I	K1107601-012	08/16/11	08/17/11	10ml	10ml	NA	
MS44IDL	K1107601-012	08/16/11	08/17/11	10ml	10ml	NA	
Method Blank	KWG1108255-4	NA	NA	10ml	10ml	NA	
Lab Control Sample	KWG1108255-3	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

SDG K1107601

SAMPLE CALC	SAMPLE ID MS18S					
IS AREA	DILUTION	COMPOUND OF INTEREST AREA	IS AMOUNT (NG)	PURGE VOLUME (ML)	AVE RRF	CONCENTRATION PPB
1276949	20	913119	100	10	0.2220	644.2150

Trichloroethene = 640 ug/L

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107601
Project:	NIROP/J070047	**Date Collected:**	08/16/2011
Sample Matrix:	Water	**Date Received:**	08/17/2011
		Date Extracted:	08/19/2011
		Date Analyzed:	08/19/2011

Volatile Organic Compounds

Sample Name:	MS18SDL	**Units:**	ug/L
Lab Code:	K1107601-007	**Basis:**	NA
File ID:	J:\MS04\DATA\081911\0819F019.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108080
Analysis Method:	8260C	**Calibration ID:**	CAL10780

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 20

CAS No.	Analyte Name	Result	Q	MRL	Note
75-01-4	Vinyl Chloride	4.0	U	4.0	
75-35-4	1,1-Dichloroethene	10	U	10	
156-60-5	trans-1,2-Dichloroethene	**21**	D	10	
75-34-3	1,1-Dichloroethane	10	U	10	
156-59-2	cis-1,2-Dichloroethene	**60**	D	10	
71-55-6	1,1,1-Trichloroethane (TCA)	10	U	10	
79-01-6	Trichloroethene (TCE)	**640**	D	10	
127-18-4	Tetrachloroethene (PCE)	10	U	10	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	110	73-122	08/19/11	Acceptable
Toluene-d8	124	65-144	08/19/11	Acceptable
4-Bromofluorobenzene	107	68-117	08/19/11	Acceptable

Comments

Quantitation Report

Data File:	J:\MS04\DATA\081911\0819F019.D			**Instrument:**	MS04
Acqu Date:	08/19/2011 20:39	**Quant Date:**	08/22/2011 15:17	**Vial:**	18
Run Type:	DL			**Dilution:**	20.0
Lab ID:	K1107601-007			**Soln Conc. Units:**	PPB

Bottle ID:		**Tier:**	IV	**Matrix:**	WATER
Prod Code:	8260B VOC_FP	**Collect Date:**	08/16/2011	**Receive Date:**	08/17/2011

Analysis Lot:	KWG1108073	**Prep Lot:**	KWG1108080	**Report Group:**	K1107601
Analysis Method:	8260C	**Prep Method:**	EPA 5030B		
Prep Ref:	1048244	**Prep Date:**	08/19/2011		

Quant Method:	J:\MS04\METHODS\081011AMS04.	**Calibration ID:**	CAL10780
Title:	Volatile Organic Compounds	**Report List ID:**	LJ8154
Tune Ref:	J:\MS04\DATA\081911\0819F002.D	**Method ID:**	MJ119
MB Ref:	J:\MS04\DATA\081911\0819F010.D	**Quant based on Report List**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	Fluorobenzene	13.38	0.01	96	1276949	10.00	OK
2	Chlorobenzene-d5	17.62	0.00	117	883563	10.00	OK
3	1,4-Dichlorobenzene-d4	20.28	0.00	152	391431	10.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	Dibromofluoromethane	12.26	0.00	0.00	113	345284	10.98	110	73-122	OK	NR
1	Toluene-d8	15.70	0.00	0.00	98	1102778	12.43	124	65-144	OK	NR
2	4-Bromofluorobenzene	18.97	0.01	0.00	95	365750	10.67	107	68-117	OK	NR

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	Vinyl Chloride				62	0		1.5	U	NR
1	1,1-Dichloroethene				96	0d		1.5	U	NR
1	trans-1,2-Dichloroethene	9.68	0.01	0.00	96	35547	1.06	21	D	NR
1	1,1-Dichloroethane	10.43		0.00	63	3241	0.0600	1.6	U	NR
1	cis-1,2-Dichloroethene	11.48		0.00	96	119217	3.02	60	D	NR
1	1,1,1-Trichloroethane (TCA)				97	0		1.5	U	NR
1	Trichloroethene (TCE)	13.94	0.01	0.00	95	913119	32.16	640	D	
2	Tetrachloroethene (PCE)				164	0		2.0	U	NR

Prep Amount:	10 ml	**Dilution:**	20.0
Prep Final Vol:	10 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**M. SLADIC**	**DATE:**	**OCTOBER 4, 2011**
FROM:	**EDWARD SEDLMYER**	**COPIES:**	**DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – SELECT VOCs**
CTO F27C NIROP FRIDLEY
SAMPLE DELIVERY GROUPS (SDGs) – K1107603

SAMPLES: 7/Aqueous

AT03A	AT05B	AT10	MS13IS
MS37S	QCD03	QCT01	

Overview

The sample set for NIROP Fridley, CTO F27C, SDG K1107603 consists of six (6) aqueous environmental samples and one (1) trip blank (QCT01). One field duplicate pair was associated with this SDG: AT05B / QCD03.

All samples were analyzed for select volatile organic compounds (VOCs) including vinyl chloride, 1,1-dichloroethene, trans-1,2-dichloroethene, 1,1-dichloroethane, cis-1,2-dichloroethene, 1,1,1-trichloroethane, trichloroethene and tetrachloroethene. The samples were collected by Bay West on August 15, 2011 and analyzed by Columbia Analytical Services, Inc. VOC analyses were conducted using SW-846 method 8260B.

These data were evaluated based on the following parameters:

* • Data Completeness
* • Holding Times
* • GC/MS Tuning and System Performance
* • Initial and Continuing Calibrations
* • Laboratory Method and Field Quality Control Blank Analyses
* • Surrogate Recoveries
* • Laboratory Control Sample / Laboratory Control Sample Duplicate Results
* • Matrix Spike / Matrix Spike Duplicate Results
* • Field Duplicate Precision
* • Internal Standard Recoveries
* • Compound Quantitation
* • Compound Identification
* • Detection Limits

* - All quality control criteria were met for this parameter.

VOC

No qualification of the data was necessary.

Notes

All results were reported to the method detection limit (MDL) by the laboratory.

Positive results reported below the reporting limit (RL) but above the method detection limit (MDL) for the organic analyses were qualified as estimated, (J).

Samples AT03A, AT05B, AT10, MS37S, and QCD03 were diluted due to concentrations greater than the linear range of the instrument for several compounds. The laboratory submitted multiple runs of the samples. The lowest detection limits were used to report the nondetected compounds.

Executive Summary

Laboratory Performance: None.

Other Factors Affecting Data Quality: Positive results reported below the reporting limit (RL) but above the method detection limit (MDL) for the organic analyses were qualified as estimated, (J).

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Organic Review", October 1999, and the Department of Defense (DoD) document entitled "Quality Systems Manual (QSM) for Environmental Laboratories", April 2009.

The text of this report has been formulated to address only those problem areas affecting data quality.

Tetra Tech NUS
Edward Sedlmyer
Chemist/Data Validator

Tetra Tech NUS
Joseph A. Samchuck
Quality Assurance Officer

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Data Validation Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$ / ICP PDS Recovery Noncompliance
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (e.g. base-line drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; e.g. chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = % Difference between columns/detectors >25% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient $r < 0.995$
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 02583	NSAMPLE	AT03A			AT03A-DL			AT05B			AT05B-DL		
SDG: K1107603	LAB_ID	K1107603-005			K1107603-005DL			K1107603-004			K1107603-004DL		
FRACTION: OV	SAMP_DATE	8/15/2011			8/15/2011			8/15/2011			8/15/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.19	U					0.075	U				
1,1-DICHLOROETHANE		0.33	J	P				0.59					
1,1-DICHLOROETHENE		0.93	J	P				0.68					
CIS-1,2-DICHLOROETHENE		62						11					
TETRACHLOROETHENE		4.6						2					
TRANS-1,2-DICHLOROETHENE		19						13					
TRICHLOROETHENE					800						300		
VINYL CHLORIDE		0.19	U					0.18	J	P			

PROJ_NO: 02583 SDG: K1107603 FRACTION: OV MEDIA: WATER	NSAMPLE	AT10			AT10-DL			MS13IS			MS37S		
	LAB_ID	K1107603-003			K1107603-003DL			K1107603-002			K1107603-001		
	SAMP_DATE	8/15/2011			8/15/2011			8/15/2011			8/15/2011		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.075	U					0.075	U		0.075	U	
1,1-DICHLOROETHANE		0.71						0.12	J	P	1.6		
1,1-DICHLOROETHENE		0.56						0.2	J	P	2.8		
CIS-1,2-DICHLOROETHENE		23						2.1			46		
TETRACHLOROETHENE		0.099	U					0.099	U		0.099	U	
TRANS-1,2-DICHLOROETHENE		46						0.59					
TRICHLOROETHENE					190			22			20		
VINYL CHLORIDE		0.43						0.075	U		0.52		

PROJ_NO: 02583 SDG: K1107603 FRACTION: OV MEDIA: WATER	NSAMPLE	MS37S-DL			QCD03			QCD03-DL			QCT01		
	LAB_ID	K1107603-001DL			K1107603-006			K1107603-006DL			K1107603-007		
	SAMP_DATE	8/15/2011			8/15/2011			8/15/2011			8/15/2011		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF				AT05B			AT05B					
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE					0.075	U					0.075	U	
1,1-DICHLOROETHANE					0.6						0.077	U	
1,1-DICHLOROETHENE					0.72						0.074	U	
CIS-1,2-DICHLOROETHENE					12						0.067	U	
TETRACHLOROETHENE					2.1						0.099	U	
TRANS-1,2-DICHLOROETHENE		83			13						0.057	U	
TRICHLOROETHENE								330			0.1	U	
VINYL CHLORIDE					0.16	J	P				0.075	U	

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107603
Project:	NIROP/J070047	**Date Collected:**	08/15/2011
Sample Matrix:	Water	**Date Received:**	08/17/2011
		Date Extracted:	08/24/2011
		Date Analyzed:	08/24/2011

Volatile Organic Compounds

Sample Name:	AT03A	**Units:**	ug/L
Lab Code:	K1107603-005	**Basis:**	NA
File ID:	J:\MS18\DATA\082311\0823F067.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108220
Analysis Method:	8260C	**Calibration ID:**	CAL10800

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 2.5

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.19	U	0.50	0.19	
75-35-4	1,1-Dichloroethene	**0.93**	JD	1.3	0.19	
156-60-5	trans-1,2-Dichloroethene	**19**	D	1.3	0.15	
75-34-3	1,1-Dichloroethane	**0.33**	JD	1.3	0.20	
156-59-2	cis-1,2-Dichloroethene	**62**	D	1.3	0.17	
71-55-6	1,1,1-Trichloroethane (TCA)	0.19	U	1.3	0.19	
79-01-6	Trichloroethene (TCE)	**900**	ED	1.3	0.25	
127-18-4	Tetrachloroethene (PCE)	**4.6**	D	1.3	0.25	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	83	73-122	08/24/11	Acceptable
Toluene-d8	93	65-144	08/24/11	Acceptable
4-Bromofluorobenzene	88	68-117	08/24/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107603
Project:	NIROP/J070047	**Date Collected:**	08/15/2011
Sample Matrix:	Water	**Date Received:**	08/17/2011
		Date Extracted:	08/24/2011
		Date Analyzed:	08/24/2011

Volatile Organic Compounds

Sample Name:	AT03ADL	**Units:**	ug/L
Lab Code:	K1107603-005	**Basis:**	NA
File ID:	J:\MS18\DATA\082311\0823F051.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108220
Analysis Method:	8260C	**Calibration ID:**	CAL10800

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 50

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	3.8	U	10	3.8	
75-35-4	1,1-Dichloroethene	3.7	U	25	3.7	
156-60-5	trans-1,2-Dichloroethene	**18**	JD	25	2.9	
75-34-3	1,1-Dichloroethane	3.9	U	25	3.9	
156-59-2	cis-1,2-Dichloroethene	**55**	D	25	3.4	
71-55-6	1,1,1-Trichloroethane (TCA)	3.8	U	25	3.8	
79-01-6	Trichloroethene (TCE)	**800**	D	25	5.0	
127-18-4	Tetrachloroethene (PCE)	5.0	U	25	5.0	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	85	73-122	08/24/11	Acceptable
Toluene-d8	94	65-144	08/24/11	Acceptable
4-Bromofluorobenzene	89	68-117	08/24/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107603
Project:	NIROP/J070047	**Date Collected:**	08/15/2011
Sample Matrix:	Water	**Date Received:**	08/17/2011
		Date Extracted:	08/24/2011
		Date Analyzed:	08/24/2011

Volatile Organic Compounds

Sample Name:	AT05B	**Units:**	ug/L
Lab Code:	K1107603-004	**Basis:**	NA
File ID:	J:\MS18\DATA\082311\0823F066.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108220
Analysis Method:	8260C	**Calibration ID:**	CAL10800

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.18**	J	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.68**		0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**13**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.59**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**11**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**370**	E	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**2.0**		0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	86	73-122	08/24/11	Acceptable
Toluene-d8	95	65-144	08/24/11	Acceptable
4-Bromofluorobenzene	87	68-117	08/24/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107603
Project:	NIROP/J070047	**Date Collected:**	08/15/2011
Sample Matrix:	Water	**Date Received:**	08/17/2011
		Date Extracted:	08/24/2011
		Date Analyzed:	08/24/2011

Volatile Organic Compounds

Sample Name:	AT05BDL	**Units:**	ug/L
Lab Code:	K1107603-004	**Basis:**	NA
File ID:	J:\MS18\DATA\082311\0823F050.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108220
Analysis Method:	8260C	**Calibration ID:**	CAL10800

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 20

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	1.5	U	4.0	1.5	
75-35-4	1,1-Dichloroethene	1.5	U	10	1.5	
156-60-5	trans-1,2-Dichloroethene	**12**	D	10	1.2	
75-34-3	1,1-Dichloroethane	1.6	U	10	1.6	
156-59-2	cis-1,2-Dichloroethene	**10**	D	10	1.4	
71-55-6	1,1,1-Trichloroethane (TCA)	1.5	U	10	1.5	
79-01-6	Trichloroethene (TCE)	**300**	D	10	2.0	
127-18-4	Tetrachloroethene (PCE)	2.0	U	10	2.0	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	80	73-122	08/24/11	Acceptable
Toluene-d8	92	65-144	08/24/11	Acceptable
4-Bromofluorobenzene	87	68-117	08/24/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107603
Project:	NIROP/J070047	**Date Collected:**	08/15/2011
Sample Matrix:	Water	**Date Received:**	08/17/2011
		Date Extracted:	08/24/2011
		Date Analyzed:	08/24/2011

Volatile Organic Compounds

Sample Name:	AT10	**Units:**	ug/L
Lab Code:	K1107603-003	**Basis:**	NA
File ID:	J:\MS18\DATA\082311\0823F065.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108220
Analysis Method:	8260C	**Calibration ID:**	CAL10800

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.43**		0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.56**		0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**46**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.71**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**23**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**240**	E	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	82	73-122	08/24/11	Acceptable
Toluene-d8	93	65-144	08/24/11	Acceptable
4-Bromofluorobenzene	88	68-117	08/24/11	Acceptable

Comments

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107603
Project:	NIROP/J070047	**Date Collected:**	08/15/2011
Sample Matrix:	Water	**Date Received:**	08/17/2011
		Date Extracted:	08/24/2011
		Date Analyzed:	08/24/2011

Volatile Organic Compounds

Sample Name:	AT10DL	**Units:**	ug/L
Lab Code:	K1107603-003	**Basis:**	NA
File ID:	J:\MS18\DATA\082311\0823F049.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108220
Analysis Method:	8260C	**Calibration ID:**	CAL10800

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 10

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.75	U	2.0	0.75	
75-35-4	1,1-Dichloroethene	0.74	U	5.0	0.74	
156-60-5	trans-1,2-Dichloroethene	**38**	D	5.0	0.57	
75-34-3	1,1-Dichloroethane	0.77	U	5.0	0.77	
156-59-2	cis-1,2-Dichloroethene	**20**	D	5.0	0.67	
71-55-6	1,1,1-Trichloroethane (TCA)	0.75	U	5.0	0.75	
79-01-6	Trichloroethene (TCE)	**190**	D	5.0	1.0	
127-18-4	Tetrachloroethene (PCE)	0.99	U	5.0	0.99	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	82	73-122	08/24/11	Acceptable
Toluene-d8	92	65-144	08/24/11	Acceptable
4-Bromofluorobenzene	87	68-117	08/24/11	Acceptable

Comments

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107603
Project:	NIROP/J070047	**Date Collected:**	08/15/2011
Sample Matrix:	Water	**Date Received:**	08/17/2011
		Date Extracted:	08/24/2011
		Date Analyzed:	08/24/2011

Volatile Organic Compounds

Sample Name:	MS13IS	**Units:**	ug/L
Lab Code:	K1107603-002	**Basis:**	NA
File ID:	J:\MS18\DATA\082311\0823F064.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108220
Analysis Method:	8260C	**Calibration ID:**	CAL10800

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.20**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.59**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.12**	J	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**2.1**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**22**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	83	73-122	08/24/11	Acceptable
Toluene-d8	93	65-144	08/24/11	Acceptable
4-Bromofluorobenzene	88	68-117	08/24/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107603
Project:	NIROP/J070047	**Date Collected:**	08/15/2011
Sample Matrix:	Water	**Date Received:**	08/17/2011
		Date Extracted:	08/24/2011
		Date Analyzed:	08/24/2011

Volatile Organic Compounds

Sample Name:	MS37S	**Units:**	ug/L
Lab Code:	K1107603-001	**Basis:**	NA
File ID:	J:\MS18\DATA\082311\0823F048.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108220
Analysis Method:	8260C	**Calibration ID:**	CAL10800

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.52**		0.20	0.075	
75-35-4	1,1-Dichloroethene	**2.8**		0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**110**	E	0.50	0.057	
75-34-3	1,1-Dichloroethane	**1.6**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**46**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**20**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	86	73-122	08/24/11	Acceptable
Toluene-d8	94	65-144	08/24/11	Acceptable
4-Bromofluorobenzene	86	68-117	08/24/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107603
Project:	NIROP/J070047	**Date Collected:**	08/15/2011
Sample Matrix:	Water	**Date Received:**	08/17/2011
		Date Extracted:	08/24/2011
		Date Analyzed:	08/24/2011

Volatile Organic Compounds

Sample Name:	MS37SDL	**Units:**	ug/L
Lab Code:	K1107603-001	**Basis:**	NA
File ID:	J:\MS18\DATA\082311\0823F047.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108220
Analysis Method:	8260C	**Calibration ID:**	CAL10800

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 10

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.75	U	2.0	0.75	
75-35-4	1,1-Dichloroethene	**2.7**	JD	5.0	0.74	
156-60-5	trans-1,2-Dichloroethene	**83**	D	5.0	0.57	
75-34-3	1,1-Dichloroethane	**1.3**	JD	5.0	0.77	
156-59-2	cis-1,2-Dichloroethene	**39**	D	5.0	0.67	
71-55-6	1,1,1-Trichloroethane (TCA)	0.75	U	5.0	0.75	
79-01-6	Trichloroethene (TCE)	**17**	D	5.0	1.0	
127-18-4	Tetrachloroethene (PCE)	0.99	U	5.0	0.99	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	84	73-122	08/24/11	Acceptable
Toluene-d8	94	65-144	08/24/11	Acceptable
4-Bromofluorobenzene	88	68-117	08/24/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107603
Project:	NIROP/J070047	**Date Collected:**	08/15/2011
Sample Matrix:	Water	**Date Received:**	08/17/2011
		Date Extracted:	08/24/2011
		Date Analyzed:	08/24/2011

Volatile Organic Compounds

Sample Name:	QCD03	**Units:**	ug/L
Lab Code:	K1107603-006	**Basis:**	NA
File ID:	J:\MS18\DATA\082311\0823F068.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108220
Analysis Method:	8260C	**Calibration ID:**	CAL10800

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.16**	J	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.72**		0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**13**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.60**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**12**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**400**	E	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**2.1**		0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	84	73-122	08/24/11	Acceptable
Toluene-d8	91	65-144	08/24/11	Acceptable
4-Bromofluorobenzene	88	68-117	08/24/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107603
Project:	NIROP/J070047	**Date Collected:**	08/15/2011
Sample Matrix:	Water	**Date Received:**	08/17/2011
		Date Extracted:	08/24/2011
		Date Analyzed:	08/24/2011

Volatile Organic Compounds

Sample Name:	QCD03DL	**Units:**	ug/L
Lab Code:	K1107603-006	**Basis:**	NA
File ID:	J:\MS18\DATA\082311\0823F052.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108220
Analysis Method:	8260C	**Calibration ID:**	CAL10800

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 10

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.75	U	2.0	0.75	
75-35-4	1,1-Dichloroethene	0.74	U	5.0	0.74	
156-60-5	trans-1,2-Dichloroethene	**10**	D	5.0	0.57	
75-34-3	1,1-Dichloroethane	0.77	U	5.0	0.77	
156-59-2	cis-1,2-Dichloroethene	**11**	D	5.0	0.67	
71-55-6	1,1,1-Trichloroethane (TCA)	0.75	U	5.0	0.75	
79-01-6	Trichloroethene (TCE)	**330**	D	5.0	1.0	
127-18-4	Tetrachloroethene (PCE)	**1.7**	JD	5.0	0.99	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	82	73-122	08/24/11	Acceptable
Toluene-d8	92	65-144	08/24/11	Acceptable
4-Bromofluorobenzene	89	68-117	08/24/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107603
Project:	NIROP/J070047	**Date Collected:**	08/15/2011
Sample Matrix:	Water	**Date Received:**	08/17/2011
		Date Extracted:	08/23/2011
		Date Analyzed:	08/23/2011

Volatile Organic Compounds

Sample Name:	QCT01	**Units:**	ug/L
Lab Code:	K1107603-007	**Basis:**	NA
File ID:	J:\MS18\DATA\082311\0823F045.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108220
Analysis Method:	8260C	**Calibration ID:**	CAL10800

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	83	73-122	08/23/11	Acceptable
Toluene-d8	95	65-144	08/23/11	Acceptable
4-Bromofluorobenzene	89	68-117	08/23/11	Acceptable

Comments:

APPENDIX C

SUPPORT DOCUMENTATION

HOLDTIME

SDG K1107603

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
	UG/L	QCT01	K1107603-007	NM	08/15/2011	08/23/2011	08/23/2011	8	0	8
	UG/L	QCD03	K1107603-006DL	NM	08/15/2011	08/24/2011	08/24/2011	9	0	9
	UG/L	QCD03	K1107603-006	NM	08/15/2011	08/24/2011	08/24/2011	9	0	9
	UG/L	MS37S	K1107603-001DL	NM	08/15/2011	08/24/2011	08/24/2011	9	0	9
	UG/L	MS37S	K1107603-001	NM	08/15/2011	08/24/2011	08/24/2011	9	0	9
	UG/L	MS13IS	K1107603-002	NM	08/15/2011	08/24/2011	08/24/2011	9	0	9
	UG/L	AT10	K1107603-003DL	NM	08/15/2011	08/24/2011	08/24/2011	9	0	9
	UG/L	AT10	K1107603-003	NM	08/15/2011	08/24/2011	08/24/2011	9	0	9
	UG/L	AT05B	K1107603-004DL	NM	08/15/2011	08/24/2011	08/24/2011	9	0	9
	UG/L	AT05B	K1107603-004	NM	08/15/2011	08/24/2011	08/24/2011	9	0	9
	UG/L	AT03A	K1107603-005DL	NM	08/15/2011	08/24/2011	08/24/2011	9	0	9
	UG/L	AT03A	K1107603-005	NM	08/15/2011	08/24/2011	08/24/2011	9	0	9

NIROP FRIDLEY
WATER DATA
K1107603

FRACTION	CHEMICAL	AT05B	UNITS	QCD03	RPD	D
OV	1,1-DICHLOROETHANE	0.59	UG/L	0.6	1.68	0.01
OV	1,1-DICHLOROETHENE	0.68	UG/L	0.72	5.71	0.04
OV	CIS-1,2-DICHLOROETHENE	11	UG/L	12	8.70	1.00
OV	TETRACHLOROETHENE	2	UG/L	2.1	4.88	0.10
OV	TRANS-1,2-DICHLOROETHENE	13	UG/L	13	0.00	0.00
OV	VINYL CHLORIDE	0.18 J	UG/L	0.16 J	11.76	0.02

Current RPD Quality Control Limit: 30 %.
Shaded cells indicate RPDs that exceed the applicable quality control limit.

NIROP FRIDLEY
WATER DATA
K1107603

FRACTION	CHEMICAL	[illegible]5B-DL	UNITS	QCD03-DL	RPD	D
OV	TRICHLOROETHENE	300	UG/L	330	9.52	30.00

Current RPD Quality Control Limit: 30 %.
Shaded cells indicate RPDs that exceed the applicable quality control limit.

Columbia Analytical Services™ 1317 S. 13th Avenue, Kelso, WA 98626 360.577.7222 360.636.1068 (fax) www.caslab.com

August 31, 2011 Analytical Report for Service Request No: K1107603

Paul Walz
Bay West, Incorporated
5 Empire Dr.
St. Paul, MN 55103-1867

RE: NIROP/J070047

Dear Paul:

Enclosed are the results of the samples submitted to our laboratory on August 17, 2011. For your reference, these analyses have been assigned our service request number K1107603.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3363. You may also contact me via Email at LDomenighini@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.

Lisa A Domenighini

Lisa Domenighini
Project Chemist

LD/lg

100% Recycled Paper

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

Columbia Analytical Services, Inc.
Kelso, WA
State Certifications, Accreditations, and Licenses

Agency	Number
Alaska DEC UST	UST-040
Arizona DHS	AZ0339
Arkansas - DEQ	88-0637
California DHS	2286
Florida DOH	E87412
Hawaii DOH	-
Idaho DHW	-
Indiana DOH	C-WA-01
Louisiana DEQ	3016
Louisiana DHH	LA050010
Maine DHS	WA0035
Michigan DEQ	9949
Minnesota DOH	053-999-368
Montana DPHHS	CERT0047
Nevada DEP	WA35
New Jersey DEP	WA005
New Mexico ED	-
North Carolina DWQ	605
Oklahoma DEQ	9801
Oregon - DEQ	WA100010
South Carolina DHEC	61002
Washington DOE	C1203
Wisconsin DNR	998386840
Wyoming (EPA Region 8)	-

Case Narrative

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	Bay West, Incoporated	**Service Request No.:**	K1107603
Project:	NIROP/J70047	**Date Received:**	08/17/11
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Seven water samples were received for analysis at Columbia Analytical Services on 08/17/11. . The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Volatile Organic Compounds by EPA Method 8260

No anomalies associated with the analysis of these samples were observed.

Approved by Lisa A Jonesyshin **Date** 8/31/11

Chain of Custody

Columbia Analytical Services™

CHAIN OF CUSTODY

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

SR#: K1107403

PAGE 1 OF 1 COC # 08151-02

PROJECT NAME: NIROP
PROJECT NUMBER: J070047
PROJECT MANAGER: Paul Walz
COMPANY/ADDRESS: Bay West, 5 Empire Drive
CITY/STATE/ZIP: St. Paul MN 55103
E-MAIL ADDRESS: paul.w@baywest.com
PHONE #: 651-291-3491 FAX #: 651-291-0094
SAMPLER'S SIGNATURE: [signature]

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐ 8270LL☐	Volatile Organics 624☐ 8260☐ 8260B☐	Hydrocarbons Gas☐ Diesel☐ (*see below) BTEX☐ 8021☐ ☐ Fuel Fingerprint (FIQ) ☐ NW-HCID Screen Oil☐	Oil & Grease/TRPH 1664 HEM☐ 1664 SGT☐	PCB's Aroclors☐ Congeners☐	Pesticides/Herbicides 608☐ 8081A☐ 8141A☐ 8151A☐	Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐	PAHS 8310☐ SIM☐	Metals, Total or Dissolved (See list below)	Cyanide☐ Hex-Chrom☐	pH, Cond, Cl, SO4, PO4, F, NO2, NO3, BOD, TSS, TDS (circle)	NH3-N, COD, Total-P, TKN, TOC, DOC (circle) NO2+NO3	TOX 9020☐ AOX 1650☐ 506☐	REMARKS
MS37S	8-15-11	1259		water	9		X												MS/MSD
MS13IS		1415			3		X												
AT1D		1518			3		X												
AT05B		1525			3		X												
AT03A		1545			3		X												
QCD03		1600			3		X												
QCT01		—			2		X												

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. # 34003
Bill To: Account Payable, Bay West, 5 Empire Dr. St. Paul MN

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:

for 8 specific compounds

UPS Track# 1Z A19 8R9 01 9880 3337

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature] Date/Time: 8-15-11 15:30	Signature: [signature] Date/Time: 8/17/11 945	Signature / Date/Time	Signature / Date/Time
Printed Name: Ryan Riley Firm: Bay West	Printed Name: Rachel Marx Firm	Printed Name / Firm	Printed Name / Firm

RCOC #1 03/10

8

PC Mike

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

Client / Project: NIROP Service Request K11 7403

Received: 8/17/11 Opened: 8/17/11 By: TRM Unloaded: 8/17/11 By: TRM

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? 2 - front & back

   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Cooler Temp °C	Temp Blank °C	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
-.5	.2			1Z A19 8R9 01 9880 3337	

7. Packing material used. *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Sleeves* *Other* _____
8. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
9. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
10. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
11. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA ~~Y~~ N
12. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
13. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
14. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
15. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions:

~~recieved 2 trip blank vials, not on COC~~ of 8/17/11

~~Did not rec. sample~~ ACF EE 8/17/11

Volatile Organic Compounds

Organic Analysis:
Volatile Organic Compounds

Summary Package

Sample and QC Results

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1107603

Cover Page - Organic Analysis Data Package
Volatile Organic Compounds

Sample Name	Lab Code	Date Collected	Date Received
MS37SDL	K1107603-001	08/15/2011	08/17/2011
MS37S	K1107603-001	08/15/2011	08/17/2011
MS13IS	K1107603-002	08/15/2011	08/17/2011
AT10DL	K1107603-003	08/15/2011	08/17/2011
AT10	K1107603-003	08/15/2011	08/17/2011
AT05BDL	K1107603-004	08/15/2011	08/17/2011
AT05B	K1107603-004	08/15/2011	08/17/2011
AT03ADL	K1107603-005	08/15/2011	08/17/2011
AT03A	K1107603-005	08/15/2011	08/17/2011
QCD03DL	K1107603-006	08/15/2011	08/17/2011
QCD03	K1107603-006	08/15/2011	08/17/2011
QCT01	K1107603-007	08/15/2011	08/17/2011
MS37SMS	KWG1108220-1	08/15/2011	08/17/2011
MS37SDMS	KWG1108220-2	08/15/2011	08/17/2011

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: KReasoner

Name: KReasoner

Date: 8/31/11

Title: Scientist

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1107603

Surrogate Recovery Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
MS37SDL	K1107603-001	84	94	88
MS37S	K1107603-001	86	94	86
MS13IS	K1107603-002	83	93	88
AT10	K1107603-003	82	93	88
AT10DL	K1107603-003	82	92	87
AT05B	K1107603-004	86	95	87
AT05BDL	K1107603-004	80	92	87
AT03ADL	K1107603-005	85	94	89
AT03A	K1107603-005	83	93	88
QCD03	K1107603-006	84	91	88
QCD03DL	K1107603-006	82	92	89
QCT01	K1107603-007	83	95	89
Method Blank	KWG1108220-5	82	92	89
MS37SMS	KWG1108220-1	89	93	90
MS37SDMS	KWG1108220-2	88	94	89
Lab Control Sample	KWG1108220-3	87	94	89
Duplicate Lab Control Sample	KWG1108220-4	88	94	88

Surrogate Recovery Control Limits (%)

Sur1 =	Dibromofluoromethane	73-122
Sur2 =	Toluene-d8	65-144
Sur3 =	4-Bromofluorobenzene	68-117

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1107603
Date Analyzed: 08/19/2011
Time Analyzed: 09:17

Tune Summary
Volatile Organic Compounds

File ID: J:\MS18\DATA\081911\0819F006.D
Instrument ID: GC-MS 18
Column:

Analysis Method: 8260C
Analysis Lot: KWG1108470

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	15.8	6320	PASS
75	95	30	60	42.2	16885	PASS
95	95	100	100	100.0	40018	PASS
96	95	5	9	6.7	2665	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	90.3	36128	PASS
175	174	5	9	7.3	2653	PASS
176	174	95	101	97.0	35040	PASS
177	176	5	9	6.8	2373	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Initial Calibration	KWG1108470-2	J:\MS18\DATA\081911\0819F009.D	08/19/2011	10:26	
Initial Calibration	KWG1108470-3	J:\MS18\DATA\081911\0819F010.D	08/19/2011	10:47	
Initial Calibration	KWG1108470-4	J:\MS18\DATA\081911\0819F011.D	08/19/2011	11:08	
Initial Calibration	KWG1108470-5	J:\MS18\DATA\081911\0819F012.D	08/19/2011	11:30	
Initial Calibration	KWG1108470-6	J:\MS18\DATA\081911\0819F013.D	08/19/2011	11:51	
Initial Calibration	KWG1108470-7	J:\MS18\DATA\081911\0819F014.D	08/19/2011	12:13	
Initial Calibration	KWG1108470-8	J:\MS18\DATA\081911\0819F015.D	08/19/2011	12:35	
Initial Calibration	KWG1108470-9	J:\MS18\DATA\081911\0819F016.D	08/19/2011	12:56	
Initial Calibration	KWG1108470-10	J:\MS18\DATA\081911\0819F017.D	08/19/2011	13:18	
Initial Calibration	KWG1108470-11	J:\MS18\DATA\081911\0819F018.D	08/19/2011	13:40	
Initial Calibration	KWG1108470-12	J:\MS18\DATA\081911\0819F019.D	08/19/2011	14:02	
Initial Calibration Verification	KWG1108470-13	J:\MS18\DATA\081911\0819F023.D	08/19/2011	15:49	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1107603
Calibration Date: 08/19/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10800
Instrument ID: GC-MS 18

Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS18\DATA\081911\0819F009.D	G	J:\MS18\DATA\081911\0819F015.D
B	J:\MS18\DATA\081911\0819F010.D	H	J:\MS18\DATA\081911\0819F016.D
C	J:\MS18\DATA\081911\0819F011.D	I	J:\MS18\DATA\081911\0819F017.D
D	J:\MS18\DATA\081911\0819F012.D	J	J:\MS18\DATA\081911\0819F018.D
E	J:\MS18\DATA\081911\0819F013.D	K	J:\MS18\DATA\081911\0819F019.D
F	J:\MS18\DATA\081911\0819F014.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Vinyl Chloride	A	0.10	0.361	B	0.20	0.375	C	0.50	0.355	D	1.0	0.414	E	2.0	0.421
	F	5.0	0.388	G	10	0.411	H	20	0.456	I	40	0.451	J	60	0.449
	K	80	0.418												
1,1-Dichloroethene				B	0.20	0.210	C	0.50	0.183	D	1.0	0.207	E	2.0	0.201
	F	5.0	0.185	G	10	0.200	H	20	0.222	I	40	0.216	J	60	0.213
	K	80	0.199												
trans-1,2-Dichloroethene	A	0.10	0.261	B	0.20	0.231	C	0.50	0.242	D	1.0	0.262	E	2.0	0.261
	F	5.0	0.249	G	10	0.253	H	20	0.287	I	40	0.281	J	60	0.282
	K	80	0.265												
1,1-Dichloroethane				B	0.20	0.407	C	0.50	0.435	D	1.0	0.451	E	2.0	0.457
	F	5.0	0.430	G	10	0.430	H	20	0.481	I	40	0.470	J	60	0.467
	K	80	0.442												
cis-1,2-Dichloroethene				B	0.20	0.277	C	0.50	0.274	D	1.0	0.289	E	2.0	0.315
	F	5.0	0.280	G	10	0.296	H	20	0.330	I	40	0.324	J	60	0.330
	K	80	0.309												
1,1,1-Trichloroethane (TCA)				B	0.20	0.316	C	0.50	0.287	D	1.0	0.364	E	2.0	0.348
	F	5.0	0.343	G	10	0.360	H	20	0.399	I	40	0.395	J	60	0.398
	K	80	0.376												
Trichloroethene (TCE)	A	0.10	0.242	B	0.20	0.234	C	0.50	0.240	D	1.0	0.263	E	2.0	0.280
	F	5.0	0.253	G	10	0.262	H	20	0.293	I	40	0.294	J	60	0.297
	K	80	0.277												
Tetrachloroethene (PCE)				B	0.20	0.537	C	0.50	0.614	D	1.0	0.703	E	2.0	0.676
	F	5.0	0.641	G	10	0.667	H	20	0.734	I	40	0.726	J	60	0.720
	K	80	0.685												
Dibromofluoromethane				B	4.0	0.227	C	5.0	0.229	D	6.0	0.244	E	7.0	0.247
	F	8.0	0.212	G	10	0.241	H	20	0.268						
Toluene-d8				B	4.0	0.968	C	5.0	1.01	D	6.0	1.05	E	7.0	1.10
	F	8.0	0.881	G	10	1.03	H	20	1.13						

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1107603
Calibration Date: 08/19/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10800
Instrument ID: GC-MS 18

Column: MS

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
4-Bromofluorobenzene				B	4.0	0.966	C	5.0	1.03	D	6.0	1.05	E	7.0	1.09
	F	8.0	0.910	G	10	1.05	H	20	1.13	I	40	1.04			

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1107603
Calibration Date: 08/19/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10800
Instrument ID: GC-MS 18

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Vinyl Chloride	MS	AverageRF	% RSD	8.8		≤ 20	0.409		0.100
1,1-Dichloroethene	MS	AverageRF	% RSD	6.2		≤ 20	0.204		0.100
trans-1,2-Dichloroethene	MS	AverageRF	% RSD	6.6		≤ 20	0.261		0.100
1,1-Dichloroethane	MS	AverageRF	% RSD	5.0		≤ 20	0.447		0.200
cis-1,2-Dichloroethene	MS	AverageRF	% RSD	7.3		≤ 20	0.302		0.100
1,1,1-Trichloroethane (TCA)	MS	AverageRF	% RSD	10.3		≤ 20	0.359		0.100
Trichloroethene (TCE)	MS	AverageRF	% RSD	8.6		≤ 20	0.267		0.200
Tetrachloroethene (PCE)	MS	AverageRF	% RSD	9.0		≤ 20	0.670		0.200
Dibromofluoromethane	SURR	AverageRF	% RSD	7.4		≤ 20	0.238		0.01
Toluene-d8	SURR	AverageRF	% RSD	8.1		≤ 20	1.02		0.01
4-Bromofluorobenzene	SURR	AverageRF	% RSD	6.6		≤ 20	1.03		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1107603
Calibration Date: 08/19/2011
Date Analyzed: 08/19/2011

Second Source Calibration Verification
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration ID: CAL10800
Units: PPB

File ID: J:\MS18\DATA\081911\0819F023.D
J:\MS18\DATA\081911\0819F024.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	8.3	0.409	0.341	-17	NA	± 30 %	AverageRF
1,1-Dichloroethene	10	12	0.204	0.242	19	NA	± 30 %	AverageRF
trans-1,2-Dichloroethene	10	12	0.261	0.303	16	NA	± 30 %	AverageRF
1,1-Dichloroethane	10	11	0.447	0.480	7	NA	± 30 %	AverageRF
cis-1,2-Dichloroethene	10	10	0.302	0.317	5	NA	± 30 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	11	0.359	0.381	6	NA	± 30 %	AverageRF
Trichloroethene (TCE)	10	10	0.267	0.280	5	NA	± 30 %	AverageRF
Tetrachloroethene (PCE)	10	10	0.670	0.687	3	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1107603
Date Analyzed: 08/23/2011
Time Analyzed: 20:01

Tune Summary
Volatile Organic Compounds

File ID: J:\MS18\DATA\082311\0823F036.D
Instrument ID: GC-MS 18
Column:

Analysis Method: 8260C
Analysis Lot: KWG1108219

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	17.0	5462	PASS
75	95	30	60	45.5	14601	PASS
95	95	100	100	100.0	32101	PASS
96	95	5	9	7.7	2459	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	88.8	28496	PASS
175	174	5	9	8.1	2294	PASS
176	174	95	101	100.1	28525	PASS
177	176	5	9	6.4	1831	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1108219-2	J:\MS18\DATA\082311\0823F037.D	08/23/2011	20:23	
Lab Control Sample	KWG1108220-3	J:\MS18\DATA\082311\0823F038.D	08/23/2011	20:45	
Duplicate Lab Control Sample	KWG1108220-4	J:\MS18\DATA\082311\0823F039.D	08/23/2011	21:07	
MS37SMS	KWG1108220-1	J:\MS18\DATA\082311\0823F040.D	08/23/2011	21:29	
MS37SDMS	KWG1108220-2	J:\MS18\DATA\082311\0823F041.D	08/23/2011	21:51	
Method Blank	KWG1108220-5	J:\MS18\DATA\082311\0823F044.D	08/23/2011	22:56	
QCT01	K1107603-007	J:\MS18\DATA\082311\0823F045.D	08/23/2011	23:18	
MS37SDL	K1107603-001	J:\MS18\DATA\082311\0823F047.D	08/24/2011	00:02	
MS37S	K1107603-001	J:\MS18\DATA\082311\0823F048.D	08/24/2011	00:24	
AT10DL	K1107603-003	J:\MS18\DATA\082311\0823F049.D	08/24/2011	00:45	
AT05BDL	K1107603-004	J:\MS18\DATA\082311\0823F050.D	08/24/2011	01:07	
AT03ADL	K1107603-005	J:\MS18\DATA\082311\0823F051.D	08/24/2011	01:29	
QCD03DL	K1107603-006	J:\MS18\DATA\082311\0823F052.D	08/24/2011	01:50	
MS13IS	K1107603-002	J:\MS18\DATA\082311\0823F064.D	08/24/2011	06:08	
AT10	K1107603-003	J:\MS18\DATA\082311\0823F065.D	08/24/2011	06:30	
AT05B	K1107603-004	J:\MS18\DATA\082311\0823F066.D	08/24/2011	06:51	
AT03A	K1107603-005	J:\MS18\DATA\082311\0823F067.D	08/24/2011	07:12	
QCD03	K1107603-006	J:\MS18\DATA\082311\0823F068.D	08/24/2011	07:34	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1107603
Date Analyzed: 08/23/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration Date: 08/19/2011
Calibration ID: CAL10800
Analysis Lot: KWG1108219
Units: PPB

File ID: J:\MS18\DATA\082311\0823F037.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	8.6	0.100	0.409	0.350	-15	NA	± 20 %	AverageRF
1,1-Dichloroethene	10	8.4	0.100	0.204	0.171	-16	NA	± 20 %	AverageRF
trans-1,2-Dichloroethene	10	9.2	0.100	0.261	0.241	-8	NA	± 20 %	AverageRF
1,1-Dichloroethane	10	9.4	0.200	0.447	0.420	-6	NA	± 20 %	AverageRF
cis-1,2-Dichloroethene	10	9.7	0.100	0.302	0.294	-3	NA	± 20 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	8.9	0.100	0.359	0.317	-11	NA	± 20 %	AverageRF
Trichloroethene (TCE)	10	9.8	0.200	0.267	0.262	-2	NA	± 20 %	AverageRF
Tetrachloroethene (PCE)	10	9.7	0.200	0.670	0.652	-3	NA	± 20 %	AverageRF
Dibromofluoromethane	10	9.0	0.01	0.238	0.215	-10	NA	± 20 %	AverageRF
Toluene-d8	10	9.5	0.01	1.02	0.975	-5	NA	± 20 %	AverageRF
4-Bromofluorobenzene	10	9.0	0.01	1.03	0.930	-10	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1107603

Analysis Run Log
Volatile Organic Compounds

Analysis Method: 8260C

Analysis Lot: KWG1108219
Instrument ID: GC-MS 18

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0823F036.D	GC/MS Tuning - Generic	KWG1108219-1	8/23/2011	20:01		8/23/2011	20:17
0823F037.D	Continuing Calibration Verification	KWG1108219-2	8/23/2011	20:23		8/23/2011	20:39
0823F038.D	Lab Control Sample	KWG1108220-3	8/23/2011	20:45		8/23/2011	21:01
0823F039.D	Duplicate Lab Control Sample	KWG1108220-4	8/23/2011	21:07		8/23/2011	21:23
0823F040.D	MS37SMS	KWG1108220-1	8/23/2011	21:29		8/23/2011	21:45
0823F041.D	MS37SDMS	KWG1108220-2	8/23/2011	21:51		8/23/2011	22:07
0823F044.D	Method Blank	KWG1108220-5	8/23/2011	22:56		8/23/2011	23:12
0823F045.D	QCT01	K1107603-007	8/23/2011	23:18		8/23/2011	23:34
0823F046.D	ZZZZZZ	ZZZZZZ	8/23/2011	23:40		8/23/2011	23:56
0823F047.D	MS37SDL	K1107603-001	8/24/2011	00:02		8/24/2011	00:18
0823F048.D	MS37S	K1107603-001	8/24/2011	00:24		8/24/2011	00:40
0823F049.D	AT10DL	K1107603-003	8/24/2011	00:45		8/24/2011	01:01
0823F050.D	AT05BDL	K1107603-004	8/24/2011	01:07		8/24/2011	01:23
0823F051.D	AT03ADL	K1107603-005	8/24/2011	01:29		8/24/2011	01:45
0823F052.D	QCD03DL	K1107603-006	8/24/2011	01:50		8/24/2011	02:06
0823F053.D	ZZZZZZ	ZZZZZZ	8/24/2011	02:12		8/24/2011	02:28
0823F054.D	ZZZZZZ	ZZZZZZ	8/24/2011	02:33		8/24/2011	02:49
0823F055.D	ZZZZZZ	ZZZZZZ	8/24/2011	02:55		8/24/2011	03:11
0823F056.D	ZZZZZZ	ZZZZZZ	8/24/2011	03:17		8/24/2011	03:33
0823F057.D	ZZZZZZ	ZZZZZZ	8/24/2011	03:38		8/24/2011	03:54
0823F058.D	ZZZZZZ	ZZZZZZ	8/24/2011	04:00		8/24/2011	04:16
0823F059.D	ZZZZZZ	ZZZZZZ	8/24/2011	04:21		8/24/2011	04:37
0823F060.D	ZZZZZZ	ZZZZZZ	8/24/2011	04:43		8/24/2011	04:59
0823F061.D	ZZZZZZ	ZZZZZZ	8/24/2011	05:04		8/24/2011	05:20
0823F062.D	ZZZZZZ	ZZZZZZ	8/24/2011	05:25		8/24/2011	05:41
0823F063.D	ZZZZZZ	ZZZZZZ	8/24/2011	05:47		8/24/2011	06:03
0823F064.D	MS13IS	K1107603-002	8/24/2011	06:08		8/24/2011	06:24
0823F065.D	AT10	K1107603-003	8/24/2011	06:30		8/24/2011	06:46
0823F066.D	AT05B	K1107603-004	8/24/2011	06:51		8/24/2011	07:07
0823F067.D	AT03A	K1107603-005	8/24/2011	07:12		8/24/2011	07:28
0823F068.D	QCD03	K1107603-006	8/24/2011	07:34		8/24/2011	07:50

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1107603
Project:	NIROP/J070047	**Date Extracted:**	08/23/2011
Sample Matrix:	Water	**Date Analyzed:**	08/23/2011
		Time Analyzed:	22:56

Method Blank Summary
Volatile Organic Compounds

Sample Name:	Method Blank	**Instrument ID:**	GC-MS 18
Lab Code:	KWG1108220-5	**File ID:**	J:\MS18\DATA\082311\0823F044.D
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C	**Extraction Lot:**	KWG1108220

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1108220-3	J:\MS18\DATA\082311\0823F038.D	08/23/11	20:45
Duplicate Lab Control Sample	KWG1108220-4	J:\MS18\DATA\082311\0823F039.D	08/23/11	21:07
MS37SMS	KWG1108220-1	J:\MS18\DATA\082311\0823F040.D	08/23/11	21:29
MS37SDMS	KWG1108220-2	J:\MS18\DATA\082311\0823F041.D	08/23/11	21:51
QCT01	K1107603-007	J:\MS18\DATA\082311\0823F045.D	08/23/11	23:18
MS37SDL	K1107603-001	J:\MS18\DATA\082311\0823F047.D	08/24/11	00:02
MS37S	K1107603-001	J:\MS18\DATA\082311\0823F048.D	08/24/11	00:24
AT10DL	K1107603-003	J:\MS18\DATA\082311\0823F049.D	08/24/11	00:45
AT05BDL	K1107603-004	J:\MS18\DATA\082311\0823F050.D	08/24/11	01:07
AT03ADL	K1107603-005	J:\MS18\DATA\082311\0823F051.D	08/24/11	01:29
QCD03DL	K1107603-006	J:\MS18\DATA\082311\0823F052.D	08/24/11	01:50
MS13IS	K1107603-002	J:\MS18\DATA\082311\0823F064.D	08/24/11	06:08
AT10	K1107603-003	J:\MS18\DATA\082311\0823F065.D	08/24/11	06:30
AT05B	K1107603-004	J:\MS18\DATA\082311\0823F066.D	08/24/11	06:51
AT03A	K1107603-005	J:\MS18\DATA\082311\0823F067.D	08/24/11	07:12
QCD03	K1107603-006	J:\MS18\DATA\082311\0823F068.D	08/24/11	07:34

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107603
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	08/23/2011
		Date Analyzed:	08/23/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1108220-5	**Basis:**	NA
File ID:	J:\MS18\DATA\082311\0823F044.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108220
Analysis Method:	8260C	**Calibration ID:**	CAL10800

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	82	73-122	08/23/11	Acceptable
Toluene-d8	92	65-144	08/23/11	Acceptable
4-Bromofluorobenzene	89	68-117	08/23/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1107603
Project:	NIROP/J070047	**Date Extracted:**	08/23/2011
Sample Matrix:	Water	**Date Analyzed:**	08/23/2011

Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organic Compounds

Sample Name:	MS37S	**Units:**	ug/L
Lab Code:	K1107603-001	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C	**Extraction Lot:**	KWG1108220

		MS37SMS KWG1108220-1 Matrix Spike			MS37SDMS KWG1108220-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Vinyl Chloride	0.52	71.2	100	71	67.1	100	67	49-136	6	30
1,1-Dichloroethene	2.8	106	100	103	103	100	101	59-171	2	30
trans-1,2-Dichloroethene	83	187	100	103	185	100	102	65-143	1	30
1,1-Dichloroethane	1.6	97.6	100	96	95.4	100	94	69-141	2	30
cis-1,2-Dichloroethene	46	132	100	86	133	100	87	61-139	1	30
1,1,1-Trichloroethane (TCA)	ND	89.5	100	90	87.9	100	88	57-151	2	30
Trichloroethene (TCE)	20	112	100	92	108	100	88	53-139	4	30
Tetrachloroethene (PCE)	ND	91.6	100	92	90.0	100	90	61-131	2	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1107603
Date Extracted: 08/23/2011
Date Analyzed: 08/23/2011

Lab Control Spike/Duplicate Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1108220

	Lab Control Sample KWG1108220-3 Lab Control Spike			Duplicate Lab Control Sample KWG1108220-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Vinyl Chloride	7.42	10.0	74	7.16	10.0	72	55-123	4	30
1,1-Dichloroethene	11.1	10.0	111	10.7	10.0	107	66-129	4	30
trans-1,2-Dichloroethene	11.1	10.0	111	10.7	10.0	107	67-125	4	30
1,1-Dichloroethane	10.1	10.0	101	9.83	10.0	98	68-132	3	30
cis-1,2-Dichloroethene	10.5	10.0	105	9.91	10.0	99	71-118	5	30
1,1,1-Trichloroethane (TCA)	9.53	10.0	95	9.15	10.0	92	59-136	4	30
Trichloroethene (TCE)	10.3	10.0	103	10.1	10.0	101	67-128	2	30
Tetrachloroethene (PCE)	9.94	10.0	99	9.52	10.0	95	62-126	4	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1107603
Date Analyzed: 08/23/2011
Time Analyzed: 20:23

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID: J:\MS18\DATA\082311\0823F037.D
Instrument ID: GC-MS 18
Analysis Method: 8260C

Lab Code: KWG1108219-2
Analysis Lot: KWG1108219

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	300,268	5.66	110,506	9.11	118,407	11.53
	Upper Limit ==>	600,536	6.16	221,012	9.61	236,814	12.03
	Lower Limit ==>	150,134	5.16	55,253	8.61	59,204	11.03
	ICAL Result ==>	352,797	5.66	131,134	9.11	136,374	11.53
Associated Analyses							
Lab Control Sample	KWG1108220-3	294,947	5.66	107,916	9.11	119,001	11.53
Duplicate Lab Control Sample	KWG1108220-4	300,510	5.66	111,677	9.11	122,093	11.53
MS37SMS	KWG1108220-1	312,008	5.66	116,083	9.11	126,554	11.53
MS37SDMS	KWG1108220-2	310,942	5.66	115,237	9.11	124,785	11.53
Method Blank	KWG1108220-5	314,868	5.66	112,437	9.11	127,502	11.53
QCT01	K1107603-007	292,595	5.66	107,550	9.11	119,807	11.53
MS37SDL	K1107603-001	303,083	5.66	112,209	9.11	122,813	11.53
MS37S	K1107603-001	279,328	5.66	102,190	9.11	110,691	11.53
AT10DL	K1107603-003	312,728	5.66	114,546	9.11	125,575	11.53
AT05BDL	K1107603-004	311,997	5.66	113,610	9.11	125,440	11.53
AT03ADL	K1107603-005	308,568	5.66	113,692	9.11	126,647	11.53
QCD03DL	K1107603-006	304,970	5.66	111,313	9.11	121,675	11.53
MS13IS	K1107603-002	299,113	5.66	110,519	9.11	121,925	11.53
AT10	K1107603-003	281,031	5.66	100,275	9.11	110,810	11.53
AT05B	K1107603-004	296,342	5.66	111,593	9.11	119,944	11.53
AT03A	K1107603-005	298,302	5.66	110,398	9.11	119,273	11.53
QCD03	K1107603-006	275,483	5.66	99,933	9.11	107,586	11.53

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1107603
Date Extracted: 08/24/2011

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1108220
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
MS37S	K1107603-001	08/15/11	08/17/11	10ml	10ml	NA	
MS37SDL	K1107603-001	08/15/11	08/17/11	10ml	10ml	NA	
MS13IS	K1107603-002	08/15/11	08/17/11	10ml	10ml	NA	
AT10DL	K1107603-003	08/15/11	08/17/11	10ml	10ml	NA	
AT10	K1107603-003	08/15/11	08/17/11	10ml	10ml	NA	
AT05BDL	K1107603-004	08/15/11	08/17/11	10ml	10ml	NA	
AT05B	K1107603-004	08/15/11	08/17/11	10ml	10ml	NA	
AT03A	K1107603-005	08/15/11	08/17/11	10ml	10ml	NA	
AT03ADL	K1107603-005	08/15/11	08/17/11	10ml	10ml	NA	
QCD03	K1107603-006	08/15/11	08/17/11	10ml	10ml	NA	
QCD03DL	K1107603-006	08/15/11	08/17/11	10ml	10ml	NA	
QCT01	K1107603-007	08/15/11	08/17/11	10ml	10ml	NA	
Method Blank	KWG1108220-5	NA	NA	10ml	10ml	NA	
MS37SMS	KWG1108220-1	08/15/11	08/17/11	10ml	10ml	NA	
MS37SDMS	KWG1108220-2	08/15/11	08/17/11	10ml	10ml	NA	
Lab Control Sample	KWG1108220-3	NA	NA	10ml	10ml	NA	
Duplicate Lab Control Sample	KWG1108220-4	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

SDG K1107603

SAMPLE CALC IS AREA	SAMPLE ID AT10 DILUTION	COMPOUND OF INTEREST AREA	IS AMOUNT (NG)	PURGE VOLUME (ML)	AVE RRF	CONCENTRATION PPB
312728	10	161415	100	10	0.2670	193.3151

Trichloroethene = 190 ug/L

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107603
Project:	NIROP/J070047	**Date Collected:**	08/15/2011
Sample Matrix:	Water	**Date Received:**	08/17/2011
		Date Extracted:	08/24/2011
		Date Analyzed:	08/24/2011

Volatile Organic Compounds

Sample Name:	AT10DL	**Units:**	ug/L
Lab Code:	K1107603-003	**Basis:**	NA
File ID:	J:\MS18\DATA\082311\0823F049.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108220
Analysis Method:	8260C	**Calibration ID:**	CAL10800

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 10

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.75	U	2.0	0.75	
75-35-4	1,1-Dichloroethene	0.74	U	5.0	0.74	
156-60-5	trans-1,2-Dichloroethene	**38**	D	5.0	0.57	
75-34-3	1,1-Dichloroethane	0.77	U	5.0	0.77	
156-59-2	cis-1,2-Dichloroethene	**20**	D	5.0	0.67	
71-55-6	1,1,1-Trichloroethane (TCA)	0.75	U	5.0	0.75	
79-01-6	Trichloroethene (TCE)	**190**	D	5.0	1.0	
127-18-4	Tetrachloroethene (PCE)	0.99	U	5.0	0.99	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	82	73-122	08/24/11	Acceptable
Toluene-d8	92	65-144	08/24/11	Acceptable
4-Bromofluorobenzene	87	68-117	08/24/11	Acceptable

Comments:

Quantitation Report

Data File:	J:\MS18\DATA\082311\0823F049.D			**Instrument:**	GC-MS 18
Acqu Date:	08/24/2011 00:45	**Quant Date:**	08/24/2011 11:28	**Vial:**	44
Run Type:	DL			**Dilution:**	10.0
Lab ID:	K1107603-003			**Soln Conc. Units:**	PPB

Bottle ID:		**Tier:**	IV	**Matrix:**	WATER
Prod Code:	8260B VOC_FP	**Collect Date:**	08/15/2011	**Receive Date:**	08/17/2011

Analysis Lot:	KWG1108219	**Prep Lot:**	KWG1108220	**Report Group:**	K1107603
Analysis Method:	8260C	**Prep Method:**	EPA 5030B		
Prep Ref:	1049275	**Prep Date:**	08/24/2011		

Quant Method:	J:\MS18\METHODS\081911MS18_8	**Calibration ID:**	CAL10800
Title:	Volatile Organic Compounds	**Report List ID:**	LJ8154
Tune Ref:	J:\MS18\DATA\082311\0823F036.D	**Method ID:**	MJ119
MB Ref:	J:\MS18\DATA\082311\0823F044.D	**Quant based on Report List**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	Fluorobenzene	5.66	0.00	96	312728	10.00	OK
2	Chlorobenzene-d5	9.11	0.00	82	114546	10.00	OK
3	1,4-Dichlorobenzene-d4	11.53	0.00	152	125575	10.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	Dibromofluoromethane	4.82	0.00	0.00	113	60933	8.17	82	73-122	OK	NR
1	Toluene-d8	7.53	0.00	0.00	98	293318	9.16	92	65-144	OK	NR
2	4-Bromofluorobenzene	10.35	0.00	0.00	95	102970	8.70	87	68-117	OK	NR

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	Vinyl Chloride				62	0		0.75	U	NR
1	1,1-Dichloroethene				96	0		0.74	U	NR
1	trans-1,2-Dichloroethene	3.02		0.00	96	30710	3.76	38	D	NR
1	1,1-Dichloroethane	3.51		0.00	63	792	0.0600	0.77	U	NR
1	cis-1,2-Dichloroethene	4.19		0.00	96	18949	2.00	20	D	NR
1	1,1,1-Trichloroethane (TCA)				97	0		0.75	U	NR
1	Trichloroethene (TCE)	6.10		0.00	95	161415	19.34	190	D	
2	Tetrachloroethene (PCE)				164	0		0.99	U	NR

Prep Amount:	10 ml	**Dilution:**	10.0
Prep Final Vol:	10 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

DATA VALIDATION TRACKING FORM

Site Name : NIROP FRIDLEY

Region: 05

Project Manager: SLADIC,M.

CTO: F27C

Charge No.: 112G02583.AMR

Validation:

Validator: EO

QA:

- [x] **Full**
- [ ] **Limited**
- [ ] **Cursory**

Sample Delivery Group: K1107603

Fraction:		AQUEOUS	SOLID	AIR
[x]	**VOA**	7		
[ ]	**OVG**			
[ ]	**SVOA**			
[ ]	**PAH**			
[ ]	**PEST/PCB**			
[ ]	**PCBH**			
[ ]	**HERB**			
[ ]	**PET**			
[ ]	**EXP**			
[ ]	**DIOX**			
[ ]	**OPEST**			
[ ]	**MISCO**			
[ ]	**OTHER**			

Date Assigned: 9-30-11

Due Date:

Date Valid Complete:

Date QA Complete:

LOE Allotted: _____ hrs

LOE Expended:

Validation _____ hrs

Corrections _____ hrs

QA _____ hrs

Total LOE Expended _____ hrs

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**M. SLADIC**	**DATE:**	**OCTOBER 3, 2011**
FROM:	**EDWARD SEDLMYER**	**COPIES:**	**DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – SELECT VOCs**
CTO F27C NIROP FRIDLEY
SAMPLE DELIVERY GROUPS (SDGs) – K1107770

SAMPLES: 14/Aqueous

MS33I	MS34I	MS36S	MS38S
MS41I	MS54I	MS54S	MS55I
MS56I	MS56S	QCD02	QCR03
QCR04	QCT02		

Overview

The sample set for NIROP Fridley, CTO F27C, SDG K1107770 consists of eleven (11) aqueous environmental samples, two (2) rinse blanks (QCR03 and QCR04), and one (1) trip blank (QCT02). One field duplicate pair was associated with this SDG: MS33I / QCD02.

All samples were analyzed for select volatile organic compounds (VOCs) including vinyl chloride, 1,1-dichloroethene, trans-1,2-dichloroethene, 1,1-dichloroethane, cis-1,2-dichloroethene, 1,1,1-trichloroethane, trichloroethene and tetrachloroethene. The samples were collected by Bay West on August 17 and 18, 2011 and analyzed by Columbia Analytical Services, Inc. VOC analyses were conducted using SW-846 method 8260B.

These data were evaluated based on the following parameters:

* • Data Completeness
* • Holding Times
* • GC/MS Tuning and System Performance
• Initial and Continuing Calibrations
* • Laboratory Method and Field Quality Control Blank Analyses
* • Surrogate Recoveries
* • Laboratory Control Sample / Laboratory Control Sample Duplicate Results
* • Matrix Spike / Matrix Spike Duplicate Results
* • Field Duplicate Precision
* • Internal Standard Recoveries
* • Compound Quantitation
* • Compound Identification
* • Detection Limits

* - All quality control criteria were met for this parameter.

VOC

Calibration verification percent difference (%D) exceeded the 20% quality control limit for vinyl chloride on instrument MS18, on 8/25/11, at 20:56. The positive and nondetected vinyl chloride results for all samples have been qualified as estimated (J) and (UJ), respectively.

Notes

All results were reported to the method detection limit (MDL) by the laboratory.

Positive results reported below the reporting limit (RL) but above the method detection limit (MDL) for the organic analyses were qualified as estimated, "J".

The rinse blanks QCR03 and QCR04 had detections for cis-1,2-dichloroethene, trans-1,2-dichloroethene, and trichloroethene. Associated samples collected on the same date as each referenced rinse blank contained concentrations that exceeded five times the concentration of the rinse blanks, except for trans-1,2-dichloroethene in sample MS41I. No action was taken on the basis of the rinse blanks because all detections are compounds of concern and will be considered as originating from the well.

The laboratory reported the cis-1,2-dichloroethene results for samples MS34I and MS54I from the higher of the two dilutions due to possible carry-over in the lower dilution. No action was taken on this basis.

Samples MS33I, MS34I, MS36S, MS38S, MS54I, MS54S, MS56I, MS56S, and QCD02 were diluted due to concentrations greater than the linear range of the instrument for several compounds. The laboratory submitted multiple runs of the samples. The lowest detection limits were used to report the nondetected compounds.

Executive Summary

Laboratory Performance: Continuing calibration noncompliance for vinyl chloride resulted in the qualification of data.

Other Factors Affecting Data Quality: Positive results reported below the reporting limit (RL) but above the method detection limit (MDL) for the organic analyses were qualified as estimated, (J).

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Organic Review", October 1999, and the Department of Defense (DoD) document entitled "Quality Systems Manual (QSM) for Environmental Laboratories", April 2009.

The text of this report has been formulated to address only those problem areas affecting data quality.

Tetra Tech NUS
Edward Sedlmyer
Chemist/Data Validator

Tetra Tech NUS
Joseph A. Samchuck
Quality Assurance Officer

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Data Validation Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$ / ICP PDS Recovery Noncompliance
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (e.g. base-line drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; e.g. chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = % Difference between columns/detectors >25% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient $r < 0.995$
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 02583 SDG: K1107770 FRACTION: OV MEDIA: WATER	NSAMPLE	MS33I			MS33I-DL			MS34I			MS34I-DL		
	LAB_ID	K1107770-006			K1107770-006DL			K1107770-004			K1107770-004DL		
	SAMP_DATE	8/18/2011			8/18/2011			8/17/2011			8/17/2011		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.38	U					0.38	U				
1,1-DICHLOROETHANE		5.7						7.6					
1,1-DICHLOROETHENE		7.5						3.8					
CIS-1,2-DICHLOROETHENE					1200						280		
TETRACHLOROETHENE		0.5	U					0.5	U				
TRANS-1,2-DICHLOROETHENE					1600			57					
TRICHLOROETHENE					2100						1200		
VINYL CHLORIDE		27	J	C	28	J	C	0.9	J	CP			

PROJ_NO: 02583 SDG: K1107770 FRACTION: OV MEDIA: WATER	NSAMPLE	MS36S			MS36S-DL			MS38S			MS38S-DL		
	LAB_ID	K1107770-001			K1107770-001DL			K1107770-014			K1107770-014DL		
	SAMP_DATE	8/17/2011			8/17/2011			8/17/2011			8/17/2011		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.075	U					0.15	U				
1,1-DICHLOROETHANE		1.4						4.4					
1,1-DICHLOROETHENE		0.73						0.38	J	P			
CIS-1,2-DICHLOROETHENE					200						160		
TETRACHLOROETHENE		0.099	U					0.22	J	P			
TRANS-1,2-DICHLOROETHENE		73						55					
TRICHLOROETHENE					120						720		
VINYL CHLORIDE		2.5	J	C				0.15	UJ	C			

PROJ_NO: 02583	NSAMPLE	MS41I			MS54I			MS54I-DL			MS54S		
SDG: K1107770	LAB_ID	K1107770-010			K1107770-012			K1107770-012DL			K1107770-011		
FRACTION: OV	SAMP_DATE	8/17/2011			8/17/2011			8/17/2011			8/17/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.075	U		0.38	U					0.19	U	
1,1-DICHLOROETHANE		0.26	J	P	1.6	J	P				3.2		
1,1-DICHLOROETHENE		0.23	J	P	3.5						2.7		
CIS-1,2-DICHLOROETHENE		17						220					
TETRACHLOROETHENE		3.4			0.5	U					0.25	U	
TRANS-1,2-DICHLOROETHENE		0.65			30						58		
TRICHLOROETHENE		22						1100					
VINYL CHLORIDE		0.075	UJ	C	0.38	UJ	C				0.43	J	CP

PROJ_NO: 02583 SDG: K1107770 FRACTION: OV MEDIA: WATER	NSAMPLE	MS54S-DL			MS55I			MS56I			MS56I-DL		
	LAB_ID	K1107770-011DL			K1107770-002			K1107770-003			K1107770-003		
	SAMP_DATE	8/17/2011			8/17/2011			8/17/2011			8/17/2011		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE					0.075	U		0.075	U				
1,1-DICHLOROETHANE					0.67			6.3					
1,1-DICHLOROETHENE					0.31	J	P	1					
CIS-1,2-DICHLOROETHENE		160			31						250		
TETRACHLOROETHENE					0.099	U		0.099	U				
TRANS-1,2-DICHLOROETHENE					2.3			23					
TRICHLOROETHENE		850			71						240		
VINYL CHLORIDE					0.075	UJ	C	0.13	J	CP			

PROJ_NO: 02583 SDG: K1107770 FRACTION: OV MEDIA: WATER	NSAMPLE	MS56S			MS56S-DL			QCD02			QCD02-DL		
	LAB_ID	K1107770-013			K1107770-013DL			K1107770-007			K1107770-007DL		
	SAMP_DATE	8/17/2011			8/17/2011			8/18/2011			8/18/2011		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF							MS33I			MS33I		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.075	U					0.38	U				
1,1-DICHLOROETHANE		9.6						5.5					
1,1-DICHLOROETHENE		1.4						6.9					
CIS-1,2-DICHLOROETHENE					430						1200		
TETRACHLOROETHENE		0.099	U					0.5	U				
TRANS-1,2-DICHLOROETHENE		66									1600		
TRICHLOROETHENE		28									2100		
VINYL CHLORIDE		0.34	J	C				27	J	C			

PROJ_NO: 02583 SDG: K1107770 FRACTION: OV MEDIA: WATER	NSAMPLE	QCR03			QCR04			QCT02		
	LAB_ID	K1107770-005			K1107770-008			K1107770-009		
	SAMP_DATE	8/17/2011			8/18/2011			8/17/2011		
	QC_TYPE	NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L		
	PCT_SOLIDS									
	DUP_OF									
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.075	U		0.075	U		0.075	U	
1,1-DICHLOROETHANE		0.077	U		0.077	U		0.077	U	
1,1-DICHLOROETHENE		0.074	U		0.074	U		0.074	U	
CIS-1,2-DICHLOROETHENE		0.19	J	P	0.12	J	P	0.067	U	
TETRACHLOROETHENE		0.099	U		0.099	U		0.099	U	
TRANS-1,2-DICHLOROETHENE		0.07	J	P	0.19	J	P	0.057	U	
TRICHLOROETHENE		1.2			0.37	J	P	0.1	U	
VINYL CHLORIDE		0.075	UJ	C	0.075	UJ	C	0.075	UJ	C

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107770
Project:	NIROP/J070047	**Date Collected:**	08/18/2011
Sample Matrix:	Water	**Date Received:**	08/20/2011
		Date Extracted:	08/26/2011
		Date Analyzed:	08/26/2011

Volatile Organic Compounds

Sample Name:	MS33I	**Units:**	ug/L
Lab Code:	K1107770-006	**Basis:**	NA
File ID:	J:\MS18\DATA\082511\0825F064.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108335
Analysis Method:	8260C	**Calibration ID:**	CAL10800

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 5

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**27**	D	1.0	0.38	*
75-35-4	1,1-Dichloroethene	**7.5**	D	2.5	0.37	
156-60-5	trans-1,2-Dichloroethene	**1700**	ED	2.5	0.29	
75-34-3	1,1-Dichloroethane	**5.7**	D	2.5	0.39	
156-59-2	cis-1,2-Dichloroethene	**1200**	ED	2.5	0.34	
71-55-6	1,1,1-Trichloroethane (TCA)	0.38	U	2.5	0.38	
79-01-6	Trichloroethene (TCE)	**2100**	ED	2.5	0.50	
127-18-4	Tetrachloroethene (PCE)	0.50	U	2.5	0.50	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	85	73-122	08/26/11	Acceptable
Toluene-d8	94	65-144	08/26/11	Acceptable
4-Bromofluorobenzene	88	68-117	08/26/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107770
Project:	NIROP/J070047	**Date Collected:**	08/18/2011
Sample Matrix:	Water	**Date Received:**	08/20/2011
		Date Extracted:	08/26/2011
		Date Analyzed:	08/26/2011

Volatile Organic Compounds

Sample Name:	MS33IDL	**Units:**	ug/L
Lab Code:	K1107770-006	**Basis:**	NA
File ID:	J:\MS18\DATA\082511\0825F055.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108335
Analysis Method:	8260C	**Calibration ID:**	CAL10800

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 100

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**28**	D	20	7.5	*
75-35-4	1,1-Dichloroethene	7.4	U	50	7.4	
156-60-5	trans-1,2-Dichloroethene	**1600**	D	50	5.7	
75-34-3	1,1-Dichloroethane	7.7	U	50	7.7	
156-59-2	cis-1,2-Dichloroethene	**1200**	D	50	6.7	
71-55-6	1,1,1-Trichloroethane (TCA)	7.5	U	50	7.5	
79-01-6	Trichloroethene (TCE)	**2100**	D	50	10	
127-18-4	Tetrachloroethene (PCE)	9.9	U	50	9.9	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	81	73-122	08/26/11	Acceptable
Toluene-d8	93	65-144	08/26/11	Acceptable
4-Bromofluorobenzene	85	68-117	08/26/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107770
Project:	NIROP/J070047	**Date Collected:**	08/17/2011
Sample Matrix:	Water	**Date Received:**	08/20/2011
		Date Extracted:	08/26/2011
		Date Analyzed:	08/26/2011

Volatile Organic Compounds

Sample Name:	MS34I	**Units:**	ug/L
Lab Code:	K1107770-004	**Basis:**	NA
File ID:	J:\MS18\DATA\082511\0825F060.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108335
Analysis Method:	8260C	**Calibration ID:**	CAL10800

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 5

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.90**	JD	1.0	0.38	*
75-35-4	1,1-Dichloroethene	**3.8**	D	2.5	0.37	
156-60-5	trans-1,2-Dichloroethene	**57**	D	2.5	0.29	
75-34-3	1,1-Dichloroethane	**7.6**	D	2.5	0.39	
156-59-2	cis-1,2-Dichloroethene	**360**	D	2.5	0.34	
71-55-6	1,1,1-Trichloroethane (TCA)	0.38	U	2.5	0.38	
79-01-6	Trichloroethene (TCE)	**1400**	ED	2.5	0.50	
127-18-4	Tetrachloroethene (PCE)	0.50	U	2.5	0.50	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	80	73-122	08/26/11	Acceptable
Toluene-d8	92	65-144	08/26/11	Acceptable
4-Bromofluorobenzene	85	68-117	08/26/11	Acceptable

Comments

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107770
Project:	NIROP/J070047	**Date Collected:**	08/17/2011
Sample Matrix:	Water	**Date Received:**	08/20/2011
		Date Extracted:	08/26/2011
		Date Analyzed:	08/26/2011

Volatile Organic Compounds

Sample Name:	MS34IDL	**Units:**	ug/L
Lab Code:	K1107770-004	**Basis:**	NA
File ID:	J:\MS18\DATA\082511\0825F051.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108335
Analysis Method:	8260C	**Calibration ID:**	CAL10800

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 50

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	3.8	U	10	3.8	*
75-35-4	1,1-Dichloroethene	3.7	U	25	3.7	
156-60-5	trans-1,2-Dichloroethene	**44**	D	25	2.9	
75-34-3	1,1-Dichloroethane	**5.5**	JD	25	3.9	
156-59-2	cis-1,2-Dichloroethene	**280**	D	25	3.4	
71-55-6	1,1,1-Trichloroethane (TCA)	3.8	U	25	3.8	
79-01-6	Trichloroethene (TCE)	**1200**	D	25	5.0	
127-18-4	Tetrachloroethene (PCE)	5.0	U	25	5.0	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	79	73-122	08/26/11	Acceptable
Toluene-d8	92	65-144	08/26/11	Acceptable
4-Bromofluorobenzene	86	68-117	08/26/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107770
Project:	NIROP/J070047	**Date Collected:**	08/17/2011
Sample Matrix:	Water	**Date Received:**	08/20/2011
		Date Extracted:	08/26/2011
		Date Analyzed:	08/26/2011

Volatile Organic Compounds

Sample Name:	MS36S	**Units:**	ug/L
Lab Code:	K1107770-001	**Basis:**	NA
File ID:	J:\MS18\DATA\082511\0825F058.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108335
Analysis Method:	8260C	**Calibration ID:**	CAL10800

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**2.5**		0.20	0.075	*
75-35-4	1,1-Dichloroethene	**0.73**		0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**73**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**1.4**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**210**	E	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**130**	E	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	82	73-122	08/26/11	Acceptable
Toluene-d8	93	65-144	08/26/11	Acceptable
4-Bromofluorobenzene	85	68-117	08/26/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107770
Project:	NIROP/J070047	**Date Collected:**	08/17/2011
Sample Matrix:	Water	**Date Received:**	08/20/2011
		Date Extracted:	08/26/2011
		Date Analyzed:	08/26/2011

Volatile Organic Compounds

Sample Name:	MS36SDL	**Units:**	ug/L
Lab Code:	K1107770-001	**Basis:**	NA
File ID:	J:\MS18\DATA\082511\0825F049.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108335
Analysis Method:	8260C	**Calibration ID:**	CAL10800

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 10

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**2.3**	D	2.0	0.75	*
75-35-4	1,1-Dichloroethene	0.74	U	5.0	0.74	
156-60-5	trans-1,2-Dichloroethene	**68**	D	5.0	0.57	
75-34-3	1,1-Dichloroethane	**1.2**	JD	5.0	0.77	
156-59-2	cis-1,2-Dichloroethene	**200**	D	5.0	0.67	
71-55-6	1,1,1-Trichloroethane (TCA)	0.75	U	5.0	0.75	
79-01-6	Trichloroethene (TCE)	**120**	D	5.0	1.0	
127-18-4	Tetrachloroethene (PCE)	0.99	U	5.0	0.99	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	83	73-122	08/26/11	Acceptable
Toluene-d8	93	65-144	08/26/11	Acceptable
4-Bromofluorobenzene	85	68-117	08/26/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107770
Project:	NIROP/J070047	**Date Collected:**	08/17/2011
Sample Matrix:	Water	**Date Received:**	08/20/2011
		Date Extracted:	08/26/2011
		Date Analyzed:	08/26/2011

Volatile Organic Compounds

Sample Name:	MS38S	**Units:**	ug/L
Lab Code:	K1107770-014	**Basis:**	NA
File ID:	J:\MS18\DATA\082511\0825F063.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108335
Analysis Method:	8260C	**Calibration ID:**	CAL10800

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 2

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.15	U	0.40	0.15	*
75-35-4	1,1-Dichloroethene	**0.38**	JD	1.0	0.15	
156-60-5	trans-1,2-Dichloroethene	**55**	D	1.0	0.12	
75-34-3	1,1-Dichloroethane	**4.4**	D	1.0	0.16	
156-59-2	cis-1,2-Dichloroethene	**170**	ED	1.0	0.14	
71-55-6	1,1,1-Trichloroethane (TCA)	0.15	U	1.0	0.15	
79-01-6	Trichloroethene (TCE)	**760**	ED	1.0	0.20	
127-18-4	Tetrachloroethene (PCE)	**0.22**	JD	1.0	0.20	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	82	73-122	08/26/11	Acceptable
Toluene-d8	92	65-144	08/26/11	Acceptable
4-Bromofluorobenzene	85	68-117	08/26/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107770
Project:	NIROP/J070047	**Date Collected:**	08/17/2011
Sample Matrix:	Water	**Date Received:**	08/20/2011
		Date Extracted:	08/26/2011
		Date Analyzed:	08/26/2011

Volatile Organic Compounds

Sample Name:	MS38SDL	**Units:**	ug/L
Lab Code:	K1107770-014	**Basis:**	NA
File ID:	J:\MS18\DATA\082511\0825F054.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108335
Analysis Method:	8260C	**Calibration ID:**	CAL10800

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 50

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	3.8	U	10	3.8	*
75-35-4	1,1-Dichloroethene	3.7	U	25	3.7	
156-60-5	trans-1,2-Dichloroethene	**50**	D	25	2.9	
75-34-3	1,1-Dichloroethane	**4.0**	JD	25	3.9	
156-59-2	cis-1,2-Dichloroethene	**160**	D	25	3.4	
71-55-6	1,1,1-Trichloroethane (TCA)	3.8	U	25	3.8	
79-01-6	Trichloroethene (TCE)	**720**	D	25	5.0	
127-18-4	Tetrachloroethene (PCE)	5.0	U	25	5.0	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	80	73-122	08/26/11	Acceptable
Toluene-d8	92	65-144	08/26/11	Acceptable
4-Bromofluorobenzene	87	68-117	08/26/11	Acceptable

Comments

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107770
Project:	NIROP/J070047	**Date Collected:**	08/17/2011
Sample Matrix:	Water	**Date Received:**	08/20/2011
		Date Extracted:	08/26/2011
		Date Analyzed:	08/26/2011

Volatile Organic Compounds

Sample Name:	MS41I	**Units:**	ug/L
Lab Code:	K1107770-010	**Basis:**	NA
File ID:	J:\MS18\DATA\082511\0825F046.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108335
Analysis Method:	8260C	**Calibration ID:**	CAL10800

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	*
75-35-4	1,1-Dichloroethene	**0.23**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.65**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.26**	J	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**17**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**22**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**3.4**		0.50	0.099	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	82	73-122	08/26/11	Acceptable
Toluene-d8	92	65-144	08/26/11	Acceptable
4-Bromofluorobenzene	87	68-117	08/26/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107770
Project:	NIROP/J070047	**Date Collected:**	08/17/2011
Sample Matrix:	Water	**Date Received:**	08/20/2011
		Date Extracted:	08/26/2011
		Date Analyzed:	08/26/2011

Volatile Organic Compounds

Sample Name:	MS54I	**Units:**	ug/L
Lab Code:	K1107770-012	**Basis:**	NA
File ID:	J:\MS18\DATA\082511\0825F062.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108335
Analysis Method:	8260C	**Calibration ID:**	CAL10800

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 5

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.38	U	1.0	0.38	*
75-35-4	1,1-Dichloroethene	**3.5**	D	2.5	0.37	
156-60-5	trans-1,2-Dichloroethene	**30**	D	2.5	0.29	
75-34-3	1,1-Dichloroethane	**1.6**	JD	2.5	0.39	
156-59-2	cis-1,2-Dichloroethene	**280**	D	2.5	0.34	
71-55-6	1,1,1-Trichloroethane (TCA)	0.38	U	2.5	0.38	
79-01-6	Trichloroethene (TCE)	**1400**	ED	2.5	0.50	
127-18-4	Tetrachloroethene (PCE)	0.50	U	2.5	0.50	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	81	73-122	08/26/11	Acceptable
Toluene-d8	94	65-144	08/26/11	Acceptable
4-Bromofluorobenzene	84	68-117	08/26/11	Acceptable

Comments

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107770
Project:	NIROP/J070047	**Date Collected:**	08/17/2011
Sample Matrix:	Water	**Date Received:**	08/20/2011
		Date Extracted:	08/26/2011
		Date Analyzed:	08/26/2011

Volatile Organic Compounds

Sample Name:	MS54IDL	**Units:**	ug/L
Lab Code:	K1107770-012	**Basis:**	NA
File ID:	J:\MS18\DATA\082511\0825F053.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108335
Analysis Method:	8260C	**Calibration ID:**	CAL10800

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 50

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	3.8	U	10	3.8	*
75-35-4	1,1-Dichloroethene	3.7	U	25	3.7	
156-60-5	trans-1,2-Dichloroethene	**24**	JD	25	2.9	
75-34-3	1,1-Dichloroethane	3.9	U	25	3.9	
156-59-2	cis-1,2-Dichloroethene	**220**	D	25	3.4	
71-55-6	1,1,1-Trichloroethane (TCA)	3.8	U	25	3.8	
79-01-6	Trichloroethene (TCE)	**1100**	D	25	5.0	
127-18-4	Tetrachloroethene (PCE)	5.0	U	25	5.0	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	81	73-122	08/26/11	Acceptable
Toluene-d8	92	65-144	08/26/11	Acceptable
4-Bromofluorobenzene	86	68-117	08/26/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107770
Project:	NIROP/J070047	**Date Collected:**	08/17/2011
Sample Matrix:	Water	**Date Received:**	08/20/2011
		Date Extracted:	08/26/2011
		Date Analyzed:	08/26/2011

Volatile Organic Compounds

Sample Name:	MS54S	**Units:**	ug/L
Lab Code:	K1107770-011	**Basis:**	NA
File ID:	J:\MS18\DATA\082511\0825F061.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108335
Analysis Method:	8260C	**Calibration ID:**	CAL10800

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 2.5

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.43**	JD	0.50	0.19	*
75-35-4	1,1-Dichloroethene	**2.7**	D	1.3	0.19	
156-60-5	trans-1,2-Dichloroethene	**58**	D	1.3	0.15	
75-34-3	1,1-Dichloroethane	**3.2**	D	1.3	0.20	
156-59-2	cis-1,2-Dichloroethene	**210**	ED	1.3	0.17	
71-55-6	1,1,1-Trichloroethane (TCA)	0.19	U	1.3	0.19	
79-01-6	Trichloroethene (TCE)	**1100**	ED	1.3	0.25	
127-18-4	Tetrachloroethene (PCE)	0.25	U	1.3	0.25	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	83	73-122	08/26/11	Acceptable
Toluene-d8	93	65-144	08/26/11	Acceptable
4-Bromofluorobenzene	86	68-117	08/26/11	Acceptable

Comments

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107770
Project:	NIROP/J070047	**Date Collected:**	08/17/2011
Sample Matrix:	Water	**Date Received:**	08/20/2011
		Date Extracted:	08/26/2011
		Date Analyzed:	08/26/2011

Volatile Organic Compounds

Sample Name:	MS54SDL	**Units:**	ug/L
Lab Code:	K1107770-011	**Basis:**	NA
File ID:	J:\MS18\DATA\082511\0825F052.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108335
Analysis Method:	8260C	**Calibration ID:**	CAL10800

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 50

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	3.8	U	10	3.8	*
75-35-4	1,1-Dichloroethene	3.7	U	25	3.7	
156-60-5	trans-1,2-Dichloroethene	**45**	D	25	2.9	
75-34-3	1,1-Dichloroethane	3.9	U	25	3.9	
156-59-2	cis-1,2-Dichloroethene	**160**	D	25	3.4	
71-55-6	1,1,1-Trichloroethane (TCA)	3.8	U	25	3.8	
79-01-6	Trichloroethene (TCE)	**850**	D	25	5.0	
127-18-4	Tetrachloroethene (PCE)	5.0	U	25	5.0	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	80	73-122	08/26/11	Acceptable
Toluene-d8	93	65-144	08/26/11	Acceptable
4-Bromofluorobenzene	89	68-117	08/26/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107770
Project:	NIROP/J070047	**Date Collected:**	08/17/2011
Sample Matrix:	Water	**Date Received:**	08/20/2011
		Date Extracted:	08/26/2011
		Date Analyzed:	08/26/2011

Volatile Organic Compounds

Sample Name:	MS55I	**Units:**	ug/L
Lab Code:	K1107770-002	**Basis:**	NA
File ID:	J:\MS18\DATA\082511\0825F047.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108335
Analysis Method:	8260C	**Calibration ID:**	CAL10800

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	*
75-35-4	1,1-Dichloroethene	**0.31**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**2.3**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.67**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**31**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**71**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	81	73-122	08/26/11	Acceptable
Toluene-d8	93	65-144	08/26/11	Acceptable
4-Bromofluorobenzene	87	68-117	08/26/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107770
Project:	NIROP/J070047	**Date Collected:**	08/17/2011
Sample Matrix:	Water	**Date Received:**	08/20/2011
		Date Extracted:	08/26/2011
		Date Analyzed:	08/26/2011

Volatile Organic Compounds

Sample Name:	MS56I	**Units:**	ug/L
Lab Code:	K1107770-003	**Basis:**	NA
File ID:	J:\MS18\DATA\082511\0825F059.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108335
Analysis Method:	8260C	**Calibration ID:**	CAL10800

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.13**	J	0.20	0.075	*
75-35-4	1,1-Dichloroethene	**1.0**		0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**23**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**6.3**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**280**	E	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**280**	E	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	83	73-122	08/26/11	Acceptable
Toluene-d8	93	65-144	08/26/11	Acceptable
4-Bromofluorobenzene	87	68-117	08/26/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107770
Project:	NIROP/J070047	**Date Collected:**	08/17/2011
Sample Matrix:	Water	**Date Received:**	08/20/2011
		Date Extracted:	08/26/2011
		Date Analyzed:	08/26/2011

Volatile Organic Compounds

Sample Name:	MS56IDL	**Units:**	ug/L
Lab Code:	K1107770-003	**Basis:**	NA
File ID:	J:\MS18\DATA\082511\0825F050.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108335
Analysis Method:	8260C	**Calibration ID:**	CAL10800

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 10

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.75	U	2.0	0.75	*
75-35-4	1,1-Dichloroethene	0.74	U	5.0	0.74	
156-60-5	trans-1,2-Dichloroethene	**21**	D	5.0	0.57	
75-34-3	1,1-Dichloroethane	**5.1**	D	5.0	0.77	
156-59-2	cis-1,2-Dichloroethene	**250**	D	5.0	0.67	
71-55-6	1,1,1-Trichloroethane (TCA)	0.75	U	5.0	0.75	
79-01-6	Trichloroethene (TCE)	**240**	D	5.0	1.0	
127-18-4	Tetrachloroethene (PCE)	0.99	U	5.0	0.99	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	82	73-122	08/26/11	Acceptable
Toluene-d8	93	65-144	08/26/11	Acceptable
4-Bromofluorobenzene	86	68-117	08/26/11	Acceptable

Comments

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107770
Project:	NIROP/J070047	**Date Collected:**	08/17/2011
Sample Matrix:	Water	**Date Received:**	08/20/2011
		Date Extracted:	08/26/2011
		Date Analyzed:	08/26/2011

Volatile Organic Compounds

Sample Name:	MS56S	**Units:**	ug/L
Lab Code:	K1107770-013	**Basis:**	NA
File ID:	J:\MS18\DATA\082511\0825F057.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108335
Analysis Method:	8260C	**Calibration ID:**	CAL10800

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.34**		0.20	0.075	*
75-35-4	1,1-Dichloroethene	**1.4**		0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**66**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**9.6**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**520**	E	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**28**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	83	73-122	08/26/11	Acceptable
Toluene-d8	92	65-144	08/26/11	Acceptable
4-Bromofluorobenzene	86	68-117	08/26/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107770
Project:	NIROP/J070047	**Date Collected:**	08/17/2011
Sample Matrix:	Water	**Date Received:**	08/20/2011
		Date Extracted:	08/26/2011
		Date Analyzed:	08/26/2011

Volatile Organic Compounds

Sample Name:	MS56SDL	**Units:**	ug/L
Lab Code:	K1107770-013	**Basis:**	NA
File ID:	J:\MS18\DATA\082511\0825F048.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108335
Analysis Method:	8260C	**Calibration ID:**	CAL10800

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 20

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	1.5	U	4.0	1.5	*
75-35-4	1,1-Dichloroethene	1.5	U	10	1.5	
156-60-5	trans-1,2-Dichloroethene	**51**	D	10	1.2	
75-34-3	1,1-Dichloroethane	**7.0**	JD	10	1.6	
156-59-2	cis-1,2-Dichloroethene	**430**	D	10	1.4	
71-55-6	1,1,1-Trichloroethane (TCA)	1.5	U	10	1.5	
79-01-6	Trichloroethene (TCE)	**25**	D	10	2.0	
127-18-4	Tetrachloroethene (PCE)	2.0	U	10	2.0	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	80	73-122	08/26/11	Acceptable
Toluene-d8	92	65-144	08/26/11	Acceptable
4-Bromofluorobenzene	88	68-117	08/26/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107770
Project:	NIROP/J070047	**Date Collected:**	08/18/2011
Sample Matrix:	Water	**Date Received:**	08/20/2011
		Date Extracted:	08/26/2011
		Date Analyzed:	08/26/2011

Volatile Organic Compounds

Sample Name:	QCD02	**Units:**	ug/L
Lab Code:	K1107770-007	**Basis:**	NA
File ID:	J:\MS18\DATA\082511\0825F065.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108335
Analysis Method:	8260C	**Calibration ID:**	CAL10800

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 5

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**27**	D	1.0	0.38	*
75-35-4	1,1-Dichloroethene	**6.9**	D	2.5	0.37	
156-60-5	trans-1,2-Dichloroethene	**1600**	ED	2.5	0.29	
75-34-3	1,1-Dichloroethane	**5.5**	D	2.5	0.39	
156-59-2	cis-1,2-Dichloroethene	**1200**	ED	2.5	0.34	
71-55-6	1,1,1-Trichloroethane (TCA)	0.38	U	2.5	0.38	
79-01-6	Trichloroethene (TCE)	**2100**	ED	2.5	0.50	
127-18-4	Tetrachloroethene (PCE)	0.50	U	2.5	0.50	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	85	73-122	08/26/11	Acceptable
Toluene-d8	93	65-144	08/26/11	Acceptable
4-Bromofluorobenzene	85	68-117	08/26/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107770
Project:	NIROP/J070047	**Date Collected:**	08/18/2011
Sample Matrix:	Water	**Date Received:**	08/20/2011
		Date Extracted:	08/26/2011
		Date Analyzed:	08/26/2011

Volatile Organic Compounds

Sample Name:	QCD02DL	**Units:**	ug/L
Lab Code:	K1107770-007	**Basis:**	NA
File ID:	J:\MS18\DATA\082511\0825F056.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108335
Analysis Method:	8260C	**Calibration ID:**	CAL10800

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 100

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**25**	D	20	7.5	*
75-35-4	1,1-Dichloroethene	7.4	U	50	7.4	
156-60-5	trans-1,2-Dichloroethene	**1600**	D	50	5.7	
75-34-3	1,1-Dichloroethane	7.7	U	50	7.7	
156-59-2	cis-1,2-Dichloroethene	**1200**	D	50	6.7	
71-55-6	1,1,1-Trichloroethane (TCA)	7.5	U	50	7.5	
79-01-6	Trichloroethene (TCE)	**2100**	D	50	10	
127-18-4	Tetrachloroethene (PCE)	9.9	U	50	9.9	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	80	73-122	08/26/11	Acceptable
Toluene-d8	93	65-144	08/26/11	Acceptable
4-Bromofluorobenzene	88	68-117	08/26/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107770
Project:	NIROP/J070047	**Date Collected:**	08/17/2011
Sample Matrix:	Water	**Date Received:**	08/20/2011
		Date Extracted:	08/26/2011
		Date Analyzed:	08/26/2011

Volatile Organic Compounds

Sample Name:	QCR03	**Units:**	ug/L
Lab Code:	K1107770-005	**Basis:**	NA
File ID:	J:\MS18\DATA\082511\0825F044.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108335
Analysis Method:	8260C	**Calibration ID:**	CAL10800

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	*
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.070**	J	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**0.19**	J	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**1.2**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	80	73-122	08/26/11	Acceptable
Toluene-d8	91	65-144	08/26/11	Acceptable
4-Bromofluorobenzene	87	68-117	08/26/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107770
Project:	NIROP/J070047	**Date Collected:**	08/18/2011
Sample Matrix:	Water	**Date Received:**	08/20/2011
		Date Extracted:	08/26/2011
		Date Analyzed:	08/26/2011

Volatile Organic Compounds

Sample Name:	QCR04	**Units:**	ug/L
Lab Code:	K1107770-008	**Basis:**	NA
File ID:	J:\MS18\DATA\082511\0825F045.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108335
Analysis Method:	8260C	**Calibration ID:**	CAL10800

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	*
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.19**	J	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**0.12**	J	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**0.37**	J	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	81	73-122	08/26/11	Acceptable
Toluene-d8	93	65-144	08/26/11	Acceptable
4-Bromofluorobenzene	87	68-117	08/26/11	Acceptable

Comments

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107770
Project:	NIROP/J070047	**Date Collected:**	08/17/2011
Sample Matrix:	Water	**Date Received:**	08/20/2011
		Date Extracted:	08/25/2011
		Date Analyzed:	08/25/2011

Volatile Organic Compounds

Sample Name:	QCT02	**Units:**	ug/L
Lab Code:	K1107770-009	**Basis:**	NA
File ID:	J:\MS18\DATA\082511\0825F043.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108335
Analysis Method:	8260C	**Calibration ID:**	CAL10800

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	*
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	81	73-122	08/25/11	Acceptable
Toluene-d8	90	65-144	08/25/11	Acceptable
4-Bromofluorobenzene	87	68-117	08/25/11	Acceptable

Comments:

APPENDIX C

SUPPORT DOCUMENTATION

HOLDTIME

SDG K1107770

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
OV	UG/L	MS54S	K1107770-011	NM	08/17/2011	08/26/2011	08/26/2011	9	0	9
OV	UG/L	MS33I	K1107770-006DL	NM	08/18/2011	08/26/2011	08/26/2011	8	0	8
OV	UG/L	MS34I	K1107770-004	NM	08/17/2011	08/26/2011	08/26/2011	9	0	9
OV	UG/L	MS34I	K1107770-004DL	NM	08/17/2011	08/26/2011	08/26/2011	9	0	9
OV	UG/L	MS36S	K1107770-001	NM	08/17/2011	08/26/2011	08/26/2011	9	0	9
OV	UG/L	MS36S	K1107770-001DL	NM	08/17/2011	08/26/2011	08/26/2011	9	0	9
OV	UG/L	MS38S	K1107770-014	NM	08/17/2011	08/26/2011	08/26/2011	9	0	9
OV	UG/L	MS38S	K1107770-014DL	NM	08/17/2011	08/26/2011	08/26/2011	9	0	9
OV	UG/L	MS41I	K1107770-010	NM	08/17/2011	08/26/2011	08/26/2011	9	0	9
OV	UG/L	MS33I	K1107770-006	NM	08/18/2011	08/26/2011	08/26/2011	8	0	8
OV	UG/L	MS54I	K1107770-012DL	NM	08/17/2011	08/26/2011	08/26/2011	9	0	9
OV	UG/L	QCT02	K1107770-009	NM	08/17/2011	08/25/2011	08/25/2011	8	0	8
OV	UG/L	MS54S	K1107770-011DL	NM	08/17/2011	08/26/2011	08/26/2011	9	0	9
OV	UG/L	MS55I	K1107770-002	NM	08/17/2011	08/26/2011	08/26/2011	9	0	9
OV	UG/L	MS56I	K1107770-003	NM	08/17/2011	08/26/2011	08/26/2011	9	0	9

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
OV	UG/L	MS56S	K1107770-013	NM	08/17/2011	08/26/2011	08/26/2011	9	0	9
OV	UG/L	MS56S	K1107770-013DL	NM	08/17/2011	08/26/2011	08/26/2011	9	0	9
OV	UG/L	QCD02	K1107770-007	NM	08/18/2011	08/26/2011	08/26/2011	8	0	8
OV	UG/L	QCD02	K1107770-007DL	NM	08/18/2011	08/26/2011	08/26/2011	8	0	8
OV	UG/L	QCR03	K1107770-005	NM	08/17/2011	08/26/2011	08/26/2011	9	0	9
OV	UG/L	QCR04	K1107770-008	NM	08/18/2011	08/26/2011	08/26/2011	8	0	8
OV	UG/L	MS54I	K1107770-012	NM	08/17/2011	08/26/2011	08/26/2011	9	0	9

NIROP FRIDLEY
WATER DATA
K1107770

FRACTION	CHEMICAL	MS331	UNITS	QCD02	RPD	D
OV	1,1-DICHLOROETHANE	5.7	UG/L	5.5	3.57	0.20
OV	1,1-DICHLOROETHENE	7.5	UG/L	6.9	8.33	0.60
OV	VINYL CHLORIDE	27 J	UG/L	27 J	0.00	0.00

Current RPD Quality Control Limit: 30 %.
Shaded cells indicate RPDs that exceed the applicable quality control limit.

NIROP FRIDLEY
WATER DATA
K1107770

FRACTION	CHEMICAL	MS331-DL	UNITS	QCD02-DL	RPD	D
OV	CIS-1,2-DICHLOROETHENE	1200	UG/L	1200	0.00	0.00
OV	TRANS-1,2-DICHLOROETHENE	1600	UG/L	1600	0.00	0.00
OV	TRICHLOROETHENE	2100	UG/L	2100	0.00	0.00

Current RPD Quality Control Limit: 30 %.
Shaded cells indicate RPDs that exceed the applicable quality control limit.

Columbia Analytical Services™ 1317 S. 13th Avenue, Kelso, WA 98626 360.577.7222 360.636.1068 (fax) www.caslab.com

August 31, 2011 Analytical Report for Service Request No: K1107770

Paul Walz
Bay West, Incorporated
5 Empire Dr.
St. Paul, MN 55103-1867

RE: NIROP/J070047

Dear Paul:

Enclosed are the results of the samples submitted to our laboratory on August 20, 2011. For your reference, these analyses have been assigned our service request number K1107770.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3363. You may also contact me via Email at LDomenighini@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.

Lisa A Domenighini

Lisa Domenighini
Project Chemist

LD/jw

100% Recycled Paper

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

Columbia Analytical Services, Inc.
Kelso, WA
State Certifications, Accreditations, and Licenses

Agency	Number
Alaska DEC UST	UST-040
Arizona DHS	AZ0339
Arkansas - DEQ	88-0637
California DHS	2286
Florida DOH	E87412
Hawaii DOH	-
Idaho DHW	-
Indiana DOH	C-WA-01
Louisiana DEQ	3016
Louisiana DHH	LA050010
Maine DHS	WA0035
Michigan DEQ	9949
Minnesota DOH	053-999-368
Montana DPHHS	CERT0047
Nevada DEP	WA35
New Jersey DEP	WA005
New Mexico ED	-
North Carolina DWQ	605
Oklahoma DEQ	9801
Oregon - DEQ	WA100010
South Carolina DHEC	61002
Washington DOE	C1203
Wisconsin DNR	998386840
Wyoming (EPA Region 8)	-

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	Bay West, Incorporated	**Service Request No.:**	K1107770
Project:	NIROP/J070047	**Date Received:**	08/20/11
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Fourteen water samples were received for analysis at Columbia Analytical Services on 08/20/11. . The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Volatile Organic Compounds by EPA Method 8260

Calibration Verification Exceptions:
The following analytes were flagged as outside the lower control criterion for Continuing Calibration Verification (CCV) J:\MS18\0825F035.D: Vinyl Chloride. In accordance with the EPA Method, 80% or more of the CCV analytes must pass within 20% of the true value. The CAS SOP allows for 40% difference for the remaining analytes. The CCV met these criteria. The quality of the sample data was not significantly affected. No further corrective action was required.

Sample Notes and Discussion:
Samples MS34I, MS33I, QCD02, and MS54S, required dilution due to the presence of elevated levels of target analyte. The reporting limits were adjusted to reflect the dilution.

Sample MS34I has a result for cis-1,2-Dichloroethene in the initial run at a concentration of 360 ug/L. This is potential carryover from the previous sample and the result of 280 ug/L should be reported from the dilution analysis. Due to the unmerged reporting style both results are reported.

Sample MS54I has a result for cis-1,2-Dichloroethene in the initial run at a concentration of 280 ug/L. This is potential carryover from the previous sample and the result of 220 ug/L should be reported from the dilution analysis. Due to the unmerged reporting style both results are reported.

No other anomalies associated with the analysis of these samples were observed.

Approved by Dina A. Domenighini Date 9/1/11

Chain of Custody

Columbia Analytical Services

CHAIN OF CUSTODY

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

SR#: K1107770

PAGE 1 OF 1 COC # 081511-04

PROJECT NAME: NIROP
PROJECT NUMBER: 5072047
PROJECT MANAGER: Paul Walz
COMPANY ADDRESS: Bay West, 5 Empire Drive
CITY/STATE/ZIP: St. Paul MN 55103
E-MAIL ADDRESS: paulw@baywest.com
PHONE #: 651-291-0491 FAX #: 651-291-0099
SAMPLER'S SIGNATURE:

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625 ☐ 8270 ☐ 8270LL ☐	Volatile Organics 624 ☐ 8260B	Hydrocarbons (*See below) Gas ☐ 8021 ☐ BTEX ☐ Diesel ☐ Oil ☐ ☐ Fuel Fingerprint (FIQ) ☐ NW-HCID Screen	Oil & Grease/TRPH 1664 HEM ☐ 1664 SGT ☐	PCB's Aroclors ☐ Congeners ☐	Pesticides/Herbicides 608 ☐ 8081A ☐ 8141A ☐ 8151A ☐	Chlorophenolics - 8151M Tri ☐ Tetra ☐ PCP ☐	PAHS 8310 ☐ SIM ☐	Metals: Total or Dissolved (See list below)	Cyanide ☐ Hex-Chrom ☐	pH, Cond., Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS (circle)	NH_3-N, COD, Total-P, TKN, TOC, DOC (circle) NO_2+NO_3	TOX 9020 ☐ AOX 1650 ☐ 506 ☐					REMARKS
MS36S	8-17-11	1135		WT	3			X	~~X~~ CAR																
MS55I	↓	1235		↓	3			X																	
MS56I		1340			3			X																	
MS34I		1438			3			X																	
QCR03	↓	1550			3			X																	
MS33I	8-18-11	1245			3			X																	
QCD02	↓	1330			3			X																	
QCR04	↓	1335			3			X																	
QCT02	8-17-11	—		↓	2			X																	

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. # 34003
Bill To: Account Payable, Bay West, 5 Empire Dr., St. Paul MN 55103

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:
for 8 specific compounds. VOC 8260B

UPS Track# 1Z A19 8R9 01 9215 3229

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature] Date/Time: 8-18-11 1530	Signature: [signature] Date/Time: 8/20/11 0830	Signature: Date/Time:	Signature: Date/Time:
Printed Name: Ryan Riley Firm: Bay West	Printed Name: Les Kennedy Firm: CAS	Printed Name: Firm:	Printed Name: Firm:

RCOC #1 03/10

8

Columbia Analytical Services

CHAIN OF CUSTODY

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

SR#: K1107770

PAGE 1 OF 1 COC # 081511-05

PROJECT NAME: NIROP
PROJECT NUMBER: J070047
PROJECT MANAGER: Paul Walz
COMPANY/ADDRESS: Bay West, 5 Empire Drive
CITY/STATE/ZIP: St. Paul MN 55103
E-MAIL ADDRESS: paulw@baywest.com
PHONE #: 651-291-3491 FAX#: 651-291-0099
SAMPLER'S SIGNATURE: [signature]

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐ 8270LL☐	Volatile Organics 624☐ 8260B	Hydrocarbons (see below) Gas☐ Diesel☐ Oil☐ ☐ Fuel Fingerprint (FIQ) ☐ NW-HCID Screen	Oil & Grease/TRPH 1664 HEM☐ 1664 SGT☐	PCB's Aroclors☐ Congeners☐	Pesticides/Herbicides 608☐ 8081A☐ 8141A☐ 8151A☐	Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐	PAHS 8310☐ SIM☐	Metals, Total or Dissolved (See list below)	Cyanide☐ Hex-Chrom☐	pH, Cond., Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS, (circle) NH_3-N, COD, Total-P, TKN, TOC, DOC (circle) NO_2+NO_3	TOX 9020☐ AOX 1650☐ 506☐	REMARKS
MS41I	8-17-11	9:48		WT	3		X											
MS54S	↓	1056		↓	3		X											
MS54I		1155			3		X											
MS56S		1344			3		X											
MS36S		1520			3		X											

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. # 34203
Bill To: Account Payable, BayWest 5 Empire Dr. St. Paul MN 55103

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:
For 8 specific compounds VOC 8260B
UPS Track # 1Z A19 8R9 01 9215 3229

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature] Date/Time: 8-18-11 1530	Signature: [signature] Date/Time: 8/20/11 0830	Signature: Date/Time:	Signature: Date/Time:
Printed Name: Joe Stalnaker Firm: BayWest	Printed Name: Les Kennedy Firm: CAS	Printed Name: Firm:	Printed Name: Firm:

RCOC #1 03/10

PC 7152

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

Client / Project: Bay West Service Request K11 7770

Received: 8/20/11 Opened: 8/20/11 By: LL Unloaded: 8/22/11 By: SN

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? 1 front 1 Back

   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Cooler Temp °C	Temp Blank °C	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
0.9	1.7	265		1ZA198R0194253233	

7. Packing material used. *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Sleeves* *Other* _____
8. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
9. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
10. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
11. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
12. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
13. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
14. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
15. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

Volatile Organic Compounds

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1107770

Cover Page - Organic Analysis Data Package
Volatile Organic Compounds

Sample Name	Lab Code	Date Collected	Date Received
MS36SDL	K1107770-001	08/17/2011	08/20/2011
MS36S	K1107770-001	08/17/2011	08/20/2011
MS55I	K1107770-002	08/17/2011	08/20/2011
MS56I	K1107770-003	08/17/2011	08/20/2011
MS56IDL	K1107770-003	08/17/2011	08/20/2011
MS34I	K1107770-004	08/17/2011	08/20/2011
MS34IDL	K1107770-004	08/17/2011	08/20/2011
QCR03	K1107770-005	08/17/2011	08/20/2011
MS33I	K1107770-006	08/18/2011	08/20/2011
MS33IDL	K1107770-006	08/18/2011	08/20/2011
QCD02DL	K1107770-007	08/18/2011	08/20/2011
QCD02	K1107770-007	08/18/2011	08/20/2011
QCR04	K1107770-008	08/18/2011	08/20/2011
QCT02	K1107770-009	08/17/2011	08/20/2011
MS41I	K1107770-010	08/17/2011	08/20/2011
MS54S	K1107770-011	08/17/2011	08/20/2011
MS54SDL	K1107770-011	08/17/2011	08/20/2011
MS54I	K1107770-012	08/17/2011	08/20/2011
MS54IDL	K1107770-012	08/17/2011	08/20/2011
MS56S	K1107770-013	08/17/2011	08/20/2011
MS56SDL	K1107770-013	08/17/2011	08/20/2011
MS38S	K1107770-014	08/17/2011	08/20/2011
MS38SDL	K1107770-014	08/17/2011	08/20/2011
MS34IMS	KWG1108335-1	08/17/2011	08/20/2011
MS34IDMS	KWG1108335-2	08/17/2011	08/20/2011

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: KLeason

Name: KLeason

Date: 8/31/11

Title: Scientist

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1107770

Analysis Run Log
Volatile Organic Compounds

Analysis Method: 8260C

Analysis Lot: KWG1108334
Instrument ID: GC-MS 18

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0825F034.D	GC/MS Tuning - Generic	KWG1108334-1	8/25/2011	20:34		8/25/2011	20:50
0825F035.D	Continuing Calibration Verification	KWG1108334-2	8/25/2011	20:56		8/25/2011	21:12
0825F036.D	Lab Control Sample	KWG1108335-3	8/25/2011	21:20		8/25/2011	21:36
0825F037.D	Duplicate Lab Control Sample	KWG1108335-4	8/25/2011	21:42		8/25/2011	21:58
0825F038.D	MS34IMS	KWG1108335-1	8/25/2011	22:04		8/25/2011	22:20
0825F039.D	MS34IDMS	KWG1108335-2	8/25/2011	22:27		8/25/2011	22:43
0825F042.D	Method Blank	KWG1108335-5	8/25/2011	23:34		8/25/2011	23:50
0825F043.D	QCT02	K1107770-009	8/25/2011	23:56		8/26/2011	00:12
0825F044.D	QCR03	K1107770-005	8/26/2011	00:18		8/26/2011	00:34
0825F045.D	QCR04	K1107770-008	8/26/2011	00:40		8/26/2011	00:56
0825F046.D	MS41I	K1107770-010	8/26/2011	01:02		8/26/2011	01:18
0825F047.D	MS55I	K1107770-002	8/26/2011	01:24		8/26/2011	01:40
0825F048.D	MS56SDL	K1107770-013	8/26/2011	01:46		8/26/2011	02:02
0825F049.D	MS36SDL	K1107770-001	8/26/2011	02:08		8/26/2011	02:24
0825F050.D	MS56IDL	K1107770-003	8/26/2011	02:30		8/26/2011	02:46
0825F051.D	MS34IDL	K1107770-004	8/26/2011	02:52		8/26/2011	03:08
0825F052.D	MS54SDL	K1107770-011	8/26/2011	03:14		8/26/2011	03:30
0825F053.D	MS54IDL	K1107770-012	8/26/2011	03:36		8/26/2011	03:52
0825F054.D	MS38SDL	K1107770-014	8/26/2011	03:58		8/26/2011	04:14
0825F055.D	MS33IDL	K1107770-006	8/26/2011	04:19		8/26/2011	04:35
0825F056.D	QCD02DL	K1107770-007	8/26/2011	04:41		8/26/2011	04:57
0825F057.D	MS56S	K1107770-013	8/26/2011	05:03		8/26/2011	05:19
0825F058.D	MS36S	K1107770-001	8/26/2011	05:25		8/26/2011	05:41
0825F059.D	MS56I	K1107770-003	8/26/2011	05:46		8/26/2011	06:02
0825F060.D	MS34I	K1107770-004	8/26/2011	06:08		8/26/2011	06:24
0825F061.D	MS54S	K1107770-011	8/26/2011	06:30		8/26/2011	06:46
0825F062.D	MS54I	K1107770-012	8/26/2011	06:51		8/26/2011	07:07
0825F063.D	MS38S	K1107770-014	8/26/2011	07:13		8/26/2011	07:29
0825F064.D	MS33I	K1107770-006	8/26/2011	07:34		8/26/2011	07:50
0825F065.D	QCD02	K1107770-007	8/26/2011	07:55		8/26/2011	08:11

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1107770

Surrogate Recovery Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
MS36SDL	K1107770-001	83	93	85
MS36S	K1107770-001	82	93	85
MS55I	K1107770-002	81	93	87
MS56I	K1107770-003	83	93	87
MS56IDL	K1107770-003	82	93	86
MS34I	K1107770-004	80	92	85
MS34IDL	K1107770-004	79	92	86
QCR03	K1107770-005	80	91	87
MS33I	K1107770-006	85	94	88
MS33IDL	K1107770-006	81	93	85
QCD02	K1107770-007	85	93	85
QCD02DL	K1107770-007	80	93	88
QCR04	K1107770-008	81	93	87
QCT02	K1107770-009	81	90	87
MS41I	K1107770-010	82	92	87
MS54S	K1107770-011	83	93	86
MS54SDL	K1107770-011	80	93	89
MS54I	K1107770-012	81	94	84
MS54IDL	K1107770-012	81	92	86
MS56S	K1107770-013	83	92	86
MS56SDL	K1107770-013	80	92	88
MS38S	K1107770-014	82	92	85
MS38SDL	K1107770-014	80	92	87
Method Blank	KWG1108335-5	83	92	86
MS34IMS	KWG1108335-1	90	95	90
MS34IDMS	KWG1108335-2	89	96	89
Lab Control Sample	KWG1108335-3	88	95	88
Duplicate Lab Control Sample	KWG1108335-4	88	94	89

Surrogate Recovery Control Limits (%)

Sur1 =	Dibromofluoromethane	73-122
Sur2 =	Toluene-d8	65-144
Sur3 =	4-Bromofluorobenzene	68-117

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1107770
Project:	NIROP/J070047	**Date Extracted:**	08/25/2011
Sample Matrix:	Water	**Date Analyzed:**	08/25/2011
		Time Analyzed:	23:34

Method Blank Summary
Volatile Organic Compounds

Sample Name:	Method Blank	**Instrument ID:**	GC-MS 18
Lab Code:	KWG1108335-5	**File ID:**	J:\MS18\DATA\082511\0825F042.D
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C	**Extraction Lot:**	KWG1108335

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1108335-3	J:\MS18\DATA\082511\0825F036.D	08/25/11	21:20
Duplicate Lab Control Sample	KWG1108335-4	J:\MS18\DATA\082511\0825F037.D	08/25/11	21:42
MS34IMS	KWG1108335-1	J:\MS18\DATA\082511\0825F038.D	08/25/11	22:04
MS34IDMS	KWG1108335-2	J:\MS18\DATA\082511\0825F039.D	08/25/11	22:27
QCT02	K1107770-009	J:\MS18\DATA\082511\0825F043.D	08/25/11	23:56
QCR03	K1107770-005	J:\MS18\DATA\082511\0825F044.D	08/26/11	00:18
QCR04	K1107770-008	J:\MS18\DATA\082511\0825F045.D	08/26/11	00:40
MS41I	K1107770-010	J:\MS18\DATA\082511\0825F046.D	08/26/11	01:02
MS55I	K1107770-002	J:\MS18\DATA\082511\0825F047.D	08/26/11	01:24
MS56SDL	K1107770-013	J:\MS18\DATA\082511\0825F048.D	08/26/11	01:46
MS36SDL	K1107770-001	J:\MS18\DATA\082511\0825F049.D	08/26/11	02:08
MS56IDL	K1107770-003	J:\MS18\DATA\082511\0825F050.D	08/26/11	02:30
MS34IDL	K1107770-004	J:\MS18\DATA\082511\0825F051.D	08/26/11	02:52
MS54SDL	K1107770-011	J:\MS18\DATA\082511\0825F052.D	08/26/11	03:14
MS54IDL	K1107770-012	J:\MS18\DATA\082511\0825F053.D	08/26/11	03:36
MS38SDL	K1107770-014	J:\MS18\DATA\082511\0825F054.D	08/26/11	03:58
MS33IDL	K1107770-006	J:\MS18\DATA\082511\0825F055.D	08/26/11	04:19
QCD02DL	K1107770-007	J:\MS18\DATA\082511\0825F056.D	08/26/11	04:41
MS56S	K1107770-013	J:\MS18\DATA\082511\0825F057.D	08/26/11	05:03
MS36S	K1107770-001	J:\MS18\DATA\082511\0825F058.D	08/26/11	05:25
MS56I	K1107770-003	J:\MS18\DATA\082511\0825F059.D	08/26/11	05:46
MS34I	K1107770-004	J:\MS18\DATA\082511\0825F060.D	08/26/11	06:08
MS54S	K1107770-011	J:\MS18\DATA\082511\0825F061.D	08/26/11	06:30
MS54I	K1107770-012	J:\MS18\DATA\082511\0825F062.D	08/26/11	06:51
MS38S	K1107770-014	J:\MS18\DATA\082511\0825F063.D	08/26/11	07:13
MS33I	K1107770-006	J:\MS18\DATA\082511\0825F064.D	08/26/11	07:34
QCD02	K1107770-007	J:\MS18\DATA\082511\0825F065.D	08/26/11	07:55

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107770
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	08/25/2011
		Date Analyzed:	08/25/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1108335-5	**Basis:**	NA
File ID:	J:\MS18\DATA\082511\0825F042.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108335
Analysis Method:	8260C	**Calibration ID:**	CAL10800

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	*
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	83	73-122	08/25/11	Acceptable
Toluene-d8	92	65-144	08/25/11	Acceptable
4-Bromofluorobenzene	86	68-117	08/25/11	Acceptable

Comments

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1107770
Project:	NIROP/J070047	**Date Extracted:**	08/25/2011
Sample Matrix:	Water	**Date Analyzed:**	08/25/2011

Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organic Compounds

Sample Name:	MS34I	**Units:**	ug/L
Lab Code:	K1107770-004	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C	**Extraction Lot:**	KWG1108335

		MS34IMS KWG1108335-1 Matrix Spike			MS34IDMS KWG1108335-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Vinyl Chloride	0.90	293	500	58	287	500	57	49-136	2	30
1,1-Dichloroethene	3.8	449	500	89	429	500	85	59-171	5	30
trans-1,2-Dichloroethene	57	512	500	91	500	500	89	65-143	2	30
1,1-Dichloroethane	7.6	445	500	87	441	500	87	69-141	1	30
cis-1,2-Dichloroethene	280	752	500	94	748	500	93	61-139	1	30
1,1,1-Trichloroethane (TCA)	ND	383	500	77	381	500	76	57-151	1	30
Trichloroethene (TCE)	1200	1630	500	94	1580	500	84	53-139	3	30
Tetrachloroethene (PCE)	ND	406	500	81	414	500	83	61-131	2	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1107770
Date Extracted: 08/25/2011
Date Analyzed: 08/25/2011

Lab Control Spike/Duplicate Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1108335

	Lab Control Sample KWG1108335-3 Lab Control Spike			Duplicate Lab Control Sample KWG1108335-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Vinyl Chloride	5.50	10.0	55	5.54	10.0	55	55-123	1	30
1,1-Dichloroethene	8.56	10.0	86	8.27	10.0	83	66-129	3	30
trans-1,2-Dichloroethene	9.20	10.0	92	8.93	10.0	89	67-125	3	30
1,1-Dichloroethane	8.48	10.0	85	8.38	10.0	84	68-132	1	30
cis-1,2-Dichloroethene	9.08	10.0	91	9.04	10.0	90	71-118	0	30
1,1,1-Trichloroethane (TCA)	7.27	10.0	73	7.40	10.0	74	59-136	2	30
Trichloroethene (TCE)	9.17	10.0	92	9.28	10.0	93	67-128	1	30
Tetrachloroethene (PCE)	8.06	10.0	81	8.07	10.0	81	62-126	0	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1107770
Date Analyzed: 08/19/2011
Time Analyzed: 09:17

Tune Summary
Volatile Organic Compounds

File ID: J:\MS18\DATA\081911\0819F006.D
Instrument ID: GC-MS 18
Column:

Analysis Method: 8260C
Analysis Lot: KWG1108470

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	15.8	6320	PASS
75	95	30	60	42.2	16885	PASS
95	95	100	100	100.0	40018	PASS
96	95	5	9	6.7	2665	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	90.3	36128	PASS
175	174	5	9	7.3	2653	PASS
176	174	95	101	97.0	35040	PASS
177	176	5	9	6.8	2373	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Initial Calibration	KWG1108470-2	J:\MS18\DATA\081911\0819F009.D	08/19/2011	10:26	
Initial Calibration	KWG1108470-3	J:\MS18\DATA\081911\0819F010.D	08/19/2011	10:47	
Initial Calibration	KWG1108470-4	J:\MS18\DATA\081911\0819F011.D	08/19/2011	11:08	
Initial Calibration	KWG1108470-5	J:\MS18\DATA\081911\0819F012.D	08/19/2011	11:30	
Initial Calibration	KWG1108470-6	J:\MS18\DATA\081911\0819F013.D	08/19/2011	11:51	
Initial Calibration	KWG1108470-7	J:\MS18\DATA\081911\0819F014.D	08/19/2011	12:13	
Initial Calibration	KWG1108470-8	J:\MS18\DATA\081911\0819F015.D	08/19/2011	12:35	
Initial Calibration	KWG1108470-9	J:\MS18\DATA\081911\0819F016.D	08/19/2011	12:56	
Initial Calibration	KWG1108470-10	J:\MS18\DATA\081911\0819F017.D	08/19/2011	13:18	
Initial Calibration	KWG1108470-11	J:\MS18\DATA\081911\0819F018.D	08/19/2011	13:40	
Initial Calibration	KWG1108470-12	J:\MS18\DATA\081911\0819F019.D	08/19/2011	14:02	
Initial Calibration Verification	KWG1108470-13	J:\MS18\DATA\081911\0819F023.D	08/19/2011	15:49	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1107770
Calibration Date: 08/19/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10800
Instrument ID: GC-MS 18

Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS18\DATA\081911\0819F009.D	G	J:\MS18\DATA\081911\0819F015.D
B	J:\MS18\DATA\081911\0819F010.D	H	J:\MS18\DATA\081911\0819F016.D
C	J:\MS18\DATA\081911\0819F011.D	I	J:\MS18\DATA\081911\0819F017.D
D	J:\MS18\DATA\081911\0819F012.D	J	J:\MS18\DATA\081911\0819F018.D
E	J:\MS18\DATA\081911\0819F013.D	K	J:\MS18\DATA\081911\0819F019.D
F	J:\MS18\DATA\081911\0819F014.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Vinyl Chloride	A	0.10	0.361	B	0.20	0.375	C	0.50	0.355	D	1.0	0.414	E	2.0	0.421
	F	5.0	0.388	G	10	0.411	H	20	0.456	I	40	0.451	J	60	0.449
	K	80	0.418												
1,1-Dichloroethene				B	0.20	0.210	C	0.50	0.183	D	1.0	0.207	E	2.0	0.201
	F	5.0	0.185	G	10	0.200	H	20	0.222	I	40	0.216	J	60	0.213
	K	80	0.199												
trans-1,2-Dichloroethene	A	0.10	0.261	B	0.20	0.231	C	0.50	0.242	D	1.0	0.262	E	2.0	0.261
	F	5.0	0.249	G	10	0.253	H	20	0.287	I	40	0.281	J	60	0.282
	K	80	0.265												
1,1-Dichloroethane				B	0.20	0.407	C	0.50	0.435	D	1.0	0.451	E	2.0	0.457
	F	5.0	0.430	G	10	0.430	H	20	0.481	I	40	0.470	J	60	0.467
	K	80	0.442												
cis-1,2-Dichloroethene				B	0.20	0.277	C	0.50	0.274	D	1.0	0.289	E	2.0	0.315
	F	5.0	0.280	G	10	0.296	H	20	0.330	I	40	0.324	J	60	0.330
	K	80	0.309												
1,1,1-Trichloroethane (TCA)				B	0.20	0.316	C	0.50	0.287	D	1.0	0.364	E	2.0	0.348
	F	5.0	0.343	G	10	0.360	H	20	0.399	I	40	0.395	J	60	0.398
	K	80	0.376												
Trichloroethene (TCE)	A	0.10	0.242	B	0.20	0.234	C	0.50	0.240	D	1.0	0.263	E	2.0	0.280
	F	5.0	0.253	G	10	0.262	H	20	0.293	I	40	0.294	J	60	0.297
	K	80	0.277												
Tetrachloroethene (PCE)				B	0.20	0.537	C	0.50	0.614	D	1.0	0.703	E	2.0	0.676
	F	5.0	0.641	G	10	0.667	H	20	0.734	I	40	0.726	J	60	0.720
	K	80	0.685												
Dibromofluoromethane				B	4.0	0.227	C	5.0	0.229	D	6.0	0.244	E	7.0	0.247
	F	8.0	0.212	G	10	0.241	H	20	0.268						
Toluene-d8				B	4.0	0.968	C	5.0	1.01	D	6.0	1.05	E	7.0	1.10
	F	8.0	0.881	G	10	1.03	H	20	1.13						

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1107770
Calibration Date: 08/19/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10800
Instrument ID: GC-MS 18

Column: MS

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
4-Bromofluorobenzene				B	4.0	0.966	C	5.0	1.03	D	6.0	1.05	E	7.0	1.09
	F	8.0	0.910	G	10	1.05	H	20	1.13	I	40	1.04			

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1107770
Calibration Date: 08/19/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10800
Instrument ID: GC-MS 18

Column: MS

		Calibration Evaluation					RRF Evaluation		
Analyte Name	Compound Type	Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Vinyl Chloride	MS	AverageRF	% RSD	8.8		≤ 20	0.409		0.100
1,1-Dichloroethene	MS	AverageRF	% RSD	6.2		≤ 20	0.204		0.100
trans-1,2-Dichloroethene	MS	AverageRF	% RSD	6.6		≤ 20	0.261		0.100
1,1-Dichloroethane	MS	AverageRF	% RSD	5.0		≤ 20	0.447		0.200
cis-1,2-Dichloroethene	MS	AverageRF	% RSD	7.3		≤ 20	0.302		0.100
1,1,1-Trichloroethane (TCA)	MS	AverageRF	% RSD	10.3		≤ 20	0.359		0.100
Trichloroethene (TCE)	MS	AverageRF	% RSD	8.6		≤ 20	0.267		0.200
Tetrachloroethene (PCE)	MS	AverageRF	% RSD	9.0		≤ 20	0.670		0.200
Dibromofluoromethane	SURR	AverageRF	% RSD	7.4		≤ 20	0.238		0.01
Toluene-d8	SURR	AverageRF	% RSD	8.1		≤ 20	1.02		0.01
4-Bromofluorobenzene	SURR	AverageRF	% RSD	6.6		≤ 20	1.03		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1107770
Date Analyzed: 08/25/2011
Time Analyzed: 20:34

Tune Summary
Volatile Organic Compounds

File ID: J:\MS18\DATA\082511\0825F034.D
Instrument ID: GC-MS 18
Column:

Analysis Method: 8260C
Analysis Lot: KWG1108334

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1108334-2	J:\MS18\DATA\082511\0825F035.D	08/25/2011	20:56	
Lab Control Sample	KWG1108335-3	J:\MS18\DATA\082511\0825F036.D	08/25/2011	21:20	
Duplicate Lab Control Sample	KWG1108335-4	J:\MS18\DATA\082511\0825F037.D	08/25/2011	21:42	
MS34IMS	KWG1108335-1	J:\MS18\DATA\082511\0825F038.D	08/25/2011	22:04	
MS34IDMS	KWG1108335-2	J:\MS18\DATA\082511\0825F039.D	08/25/2011	22:27	
Method Blank	KWG1108335-5	J:\MS18\DATA\082511\0825F042.D	08/25/2011	23:34	
QCT02	K1107770-009	J:\MS18\DATA\082511\0825F043.D	08/25/2011	23:56	
QCR03	K1107770-005	J:\MS18\DATA\082511\0825F044.D	08/26/2011	00:18	
QCR04	K1107770-008	J:\MS18\DATA\082511\0825F045.D	08/26/2011	00:40	
MS41I	K1107770-010	J:\MS18\DATA\082511\0825F046.D	08/26/2011	01:02	
MS55I	K1107770-002	J:\MS18\DATA\082511\0825F047.D	08/26/2011	01:24	
MS56SDL	K1107770-013	J:\MS18\DATA\082511\0825F048.D	08/26/2011	01:46	
MS36SDL	K1107770-001	J:\MS18\DATA\082511\0825F049.D	08/26/2011	02:08	
MS56IDL	K1107770-003	J:\MS18\DATA\082511\0825F050.D	08/26/2011	02:30	
MS34IDL	K1107770-004	J:\MS18\DATA\082511\0825F051.D	08/26/2011	02:52	
MS54SDL	K1107770-011	J:\MS18\DATA\082511\0825F052.D	08/26/2011	03:14	
MS54IDL	K1107770-012	J:\MS18\DATA\082511\0825F053.D	08/26/2011	03:36	
MS38SDL	K1107770-014	J:\MS18\DATA\082511\0825F054.D	08/26/2011	03:58	
MS33IDL	K1107770-006	J:\MS18\DATA\082511\0825F055.D	08/26/2011	04:19	
QCD02DL	K1107770-007	J:\MS18\DATA\082511\0825F056.D	08/26/2011	04:41	
MS56S	K1107770-013	J:\MS18\DATA\082511\0825F057.D	08/26/2011	05:03	
MS36S	K1107770-001	J:\MS18\DATA\082511\0825F058.D	08/26/2011	05:25	
MS56I	K1107770-003	J:\MS18\DATA\082511\0825F059.D	08/26/2011	05:46	
MS34I	K1107770-004	J:\MS18\DATA\082511\0825F060.D	08/26/2011	06:08	
MS54S	K1107770-011	J:\MS18\DATA\082511\0825F061.D	08/26/2011	06:30	
MS54I	K1107770-012	J:\MS18\DATA\082511\0825F062.D	08/26/2011	06:51	
MS38S	K1107770-014	J:\MS18\DATA\082511\0825F063.D	08/26/2011	07:13	
MS33I	K1107770-006	J:\MS18\DATA\082511\0825F064.D	08/26/2011	07:34	
QCD02	K1107770-007	J:\MS18\DATA\082511\0825F065.D	08/26/2011	07:55	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1107770
Date Analyzed: 08/25/2011
Time Analyzed: 20:34

Tune Summary
Volatile Organic Compounds

File ID: J:\MS18\DATA\082511\0825F034.D
Instrument ID: GC-MS 18
Column:

Analysis Method: 8260C
Analysis Lot: KWG1108334

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	15.4	4290	PASS
75	95	30	60	44.9	12487	PASS
95	95	100	100	100.0	27837	PASS
96	95	5	9	6.4	1793	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	95.3	26517	PASS
175	174	5	9	7.6	2015	PASS
176	174	95	101	100.6	26682	PASS
177	176	5	9	6.5	1743	PASS

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1107770
Date Analyzed: 08/25/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration Date: 08/19/2011
Calibration ID: CAL10800
Analysis Lot: KWG1108334
Units: PPB

File ID: J:\MS18\DATA\082511\0825F035.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	7.9	0.100	0.409	0.324	-21 *	NA	± 20 %	AverageRF
1,1-Dichloroethene	10	9.9	0.100	0.204	0.201	-1	NA	± 20 %	AverageRF
trans-1,2-Dichloroethene	10	10	0.100	0.261	0.270	4	NA	± 20 %	AverageRF
1,1-Dichloroethane	10	10	0.200	0.447	0.445	0	NA	± 20 %	AverageRF
cis-1,2-Dichloroethene	10	10	0.100	0.302	0.317	5	NA	± 20 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	9.0	0.100	0.359	0.322	-10	NA	± 20 %	AverageRF
Trichloroethene (TCE)	10	10	0.200	0.267	0.274	3	NA	± 20 %	AverageRF
Tetrachloroethene (PCE)	10	9.7	0.200	0.670	0.651	-3	NA	± 20 %	AverageRF
Dibromofluoromethane	10	8.7	0.01	0.238	0.207	-13	NA	± 20 %	AverageRF
Toluene-d8	10	9.4	0.01	1.02	0.960	-6	NA	± 20 %	AverageRF
4-Bromofluorobenzene	10	8.9	0.01	1.03	0.924	-11	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1107770
Calibration Date: 08/19/2011
Date Analyzed: 08/19/2011

Second Source Calibration Verification
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration ID: CAL10800
Units: PPB

File ID: J:\MS18\DATA\081911\0819F023.D
J:\MS18\DATA\081911\0819F024.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	8.3	0.409	0.341	-17	NA	± 30 %	AverageRF
1,1-Dichloroethene	10	12	0.204	0.242	19	NA	± 30 %	AverageRF
trans-1,2-Dichloroethene	10	12	0.261	0.303	16	NA	± 30 %	AverageRF
1,1-Dichloroethane	10	11	0.447	0.480	7	NA	± 30 %	AverageRF
cis-1,2-Dichloroethene	10	10	0.302	0.317	5	NA	± 30 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	11	0.359	0.381	6	NA	± 30 %	AverageRF
Trichloroethene (TCE)	10	10	0.267	0.280	5	NA	± 30 %	AverageRF
Tetrachloroethene (PCE)	10	10	0.670	0.687	3	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1107770
Date Analyzed: 08/25/2011
Time Analyzed: 20:56

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID: J:\MS18\DATA\082511\0825F035.D
Instrument ID: GC-MS 18
Analysis Method: 8260C

Lab Code: KWG1108334-2
Analysis Lot: KWG1108334

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	269,663	5.66	98,821	9.11	108,057	11.53
	Upper Limit ==>	539,326	6.16	197,642	9.61	216,114	12.03
	Lower Limit ==>	134,832	5.16	49,411	8.61	54,029	11.03
	ICAL Result ==>	352,797	5.66	131,134	9.11	136,374	11.53
Associated Analyses							
Lab Control Sample	KWG1108335-3	278,132	5.66	104,017	9.11	113,431	11.53
Duplicate Lab Control Sample	KWG1108335-4	269,489	5.66	100,564	9.11	109,924	11.53
MS34IMS	KWG1108335-1	271,549	5.66	102,843	9.10	113,823	11.53
MS34IDMS	KWG1108335-2	271,715	5.66	101,662	9.11	113,027	11.53
Method Blank	KWG1108335-5	250,167	5.66	91,369	9.11	99,380	11.53
QCT02	K1107770-009	270,735	5.66	98,550	9.11	110,211	11.53
QCR03	K1107770-005	272,876	5.66	98,403	9.11	107,826	11.53
QCR04	K1107770-008	258,100	5.66	95,064	9.11	102,586	11.53
MS41I	K1107770-010	270,778	5.66	98,897	9.11	108,488	11.53
MS55I	K1107770-002	275,433	5.66	102,020	9.11	111,162	11.53
MS56SDL	K1107770-013	274,890	5.66	100,015	9.11	111,079	11.53
MS36SDL	K1107770-001	250,736	5.66	92,447	9.11	100,399	11.53
MS56IDL	K1107770-003	267,430	5.66	99,416	9.11	108,082	11.53
MS34IDL	K1107770-004	270,706	5.66	98,010	9.11	108,308	11.53
MS54SDL	K1107770-011	271,006	5.66	98,034	9.11	112,138	11.53
MS54IDL	K1107770-012	269,750	5.66	98,397	9.11	106,997	11.53
MS38SDL	K1107770-014	239,234	5.66	87,730	9.11	96,059	11.53
MS33IDL	K1107770-006	272,712	5.66	99,635	9.11	107,147	11.53
QCD02DL	K1107770-007	263,323	5.66	97,352	9.11	106,663	11.53
MS56S	K1107770-013	258,527	5.66	93,607	9.11	102,495	11.53
MS36S	K1107770-001	270,771	5.66	100,082	9.11	106,702	11.53
MS56I	K1107770-003	268,141	5.66	97,998	9.11	104,588	11.53
MS34I	K1107770-004	242,385	5.66	87,989	9.11	94,161	11.53
MS54S	K1107770-011	263,406	5.66	98,073	9.11	105,734	11.53
MS54I	K1107770-012	239,342	5.66	88,733	9.11	95,860	11.53
MS38S	K1107770-014	250,598	5.66	91,770	9.11	98,108	11.53
MS33I	K1107770-006	269,036	5.66	100,205	9.11	107,680	11.53
QCD02	K1107770-007	267,736	5.66	98,995	9.11	106,176	11.53

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1107770
Date Extracted: 08/26/2011

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1108335
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
MS36S	K1107770-001	08/17/11	08/20/11	10ml	10ml	NA	
MS36SDL	K1107770-001	08/17/11	08/20/11	10ml	10ml	NA	
MS55I	K1107770-002	08/17/11	08/20/11	10ml	10ml	NA	
MS56IDL	K1107770-003	08/17/11	08/20/11	10ml	10ml	NA	
MS56I	K1107770-003	08/17/11	08/20/11	10ml	10ml	NA	
MS34IDL	K1107770-004	08/17/11	08/20/11	10ml	10ml	NA	
MS34I	K1107770-004	08/17/11	08/20/11	10ml	10ml	NA	
QCR03	K1107770-005	08/17/11	08/20/11	10ml	10ml	NA	
MS33IDL	K1107770-006	08/18/11	08/20/11	10ml	10ml	NA	
MS33I	K1107770-006	08/18/11	08/20/11	10ml	10ml	NA	
QCD02DL	K1107770-007	08/18/11	08/20/11	10ml	10ml	NA	
QCD02	K1107770-007	08/18/11	08/20/11	10ml	10ml	NA	
QCR04	K1107770-008	08/18/11	08/20/11	10ml	10ml	NA	
QCT02	K1107770-009	08/17/11	08/20/11	10ml	10ml	NA	
MS41I	K1107770-010	08/17/11	08/20/11	10ml	10ml	NA	
MS54SDL	K1107770-011	08/17/11	08/20/11	10ml	10ml	NA	
MS54S	K1107770-011	08/17/11	08/20/11	10ml	10ml	NA	
MS54IDL	K1107770-012	08/17/11	08/20/11	10ml	10ml	NA	
MS54I	K1107770-012	08/17/11	08/20/11	10ml	10ml	NA	
MS56SDL	K1107770-013	08/17/11	08/20/11	10ml	10ml	NA	
MS56S	K1107770-013	08/17/11	08/20/11	10ml	10ml	NA	
MS38SDL	K1107770-014	08/17/11	08/20/11	10ml	10ml	NA	
MS38S	K1107770-014	08/17/11	08/20/11	10ml	10ml	NA	
Method Blank	KWG1108335-5	NA	NA	10ml	10ml	NA	
MS34IMS	KWG1108335-1	08/17/11	08/20/11	10ml	10ml	NA	
MS34IDMS	KWG1108335-2	08/17/11	08/20/11	10ml	10ml	NA	
Lab Control Sample	KWG1108335-3	NA	NA	10ml	10ml	NA	
Duplicate Lab Control Sample	KWG1108335-4	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

SDG K1107770

SAMPLE CALC IS AREA	SAMPLE ID MS33I DILUTION	COMPOUND OF INTEREST AREA	IS AMOUNT (NG)	PURGE VOLUME (ML)	AVE RRF	CONCENTRATION PPB
272712	100	151742	100	10	0.2670	2083.9644

Trichloroethene = 2,100 ug/L

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1107770
Project:	NIROP/J070047	**Date Collected:**	08/18/2011
Sample Matrix:	Water	**Date Received:**	08/20/2011
		Date Extracted:	08/26/2011
		Date Analyzed:	08/26/2011

Volatile Organic Compounds

Sample Name:	MS33IDL	**Units:**	ug/L
Lab Code:	K1107770-006	**Basis:**	NA
File ID:	J:\MS18\DATA\082511\0825F055.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1108335
Analysis Method:	8260C	**Calibration ID:**	CAL10800

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 100

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**28**	D	20	7.5	*
75-35-4	1,1-Dichloroethene	7.4	U	50	7.4	
156-60-5	trans-1,2-Dichloroethene	**1600**	D	50	5.7	
75-34-3	1,1-Dichloroethane	7.7	U	50	7.7	
156-59-2	cis-1,2-Dichloroethene	**1200**	D	50	6.7	
71-55-6	1,1,1-Trichloroethane (TCA)	7.5	U	50	7.5	
79-01-6	Trichloroethene (TCE)	**2100**	D	50	10	
127-18-4	Tetrachloroethene (PCE)	9.9	U	50	9.9	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	81	73-122	08/26/11	Acceptable
Toluene-d8	93	65-144	08/26/11	Acceptable
4-Bromofluorobenzene	85	68-117	08/26/11	Acceptable

Comments:

Quantitation Report

Data File:	J:\MS18\DATA\082511\0825F055.D			**Instrument:**	GC-MS 18
Acqu Date:	08/26/2011 04:19	**Quant Date:**	08/26/2011 12:33	**Vial:**	51
Run Type:	DL			**Dilution:**	100.0
Lab ID:	K1107770-006			**Soln Conc. Units:**	PPB

Bottle ID:		**Tier:**	V	**Matrix:**	WATER
Prod Code:	8260B VOC_FP	**Collect Date:**	08/18/2011	**Receive Date:**	08/20/2011

Analysis Lot:	KWG1108334	**Prep Lot:**	KWG1108335	**Report Group:**	K1107770
Analysis Method:	8260C	**Prep Method:**	EPA 5030B		
Prep Ref:	1050299	**Prep Date:**	08/26/2011		

Quant Method:	J:\MS18\METHODS\081911MS18_8	**Calibration ID:**	CAL10800
Title:	Volatile Organic Compounds	**Report List ID:**	LJ8154
Tune Ref:	J:\MS18\DATA\082511\0825F034.D	**Method ID:**	MJ119
MB Ref:	J:\MS18\DATA\082511\0825F042.D	**Quant based on Report List**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	Fluorobenzene	5.66	0.00	96	272712	10.00	OK
2	Chlorobenzene-d5	9.11	0.00	82	99635	10.00	OK
3	1,4-Dichlorobenzene-d4	11.53	0.00	152	107147	10.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	Dibromofluoromethane	4.82	0.00	0.00	113	52621	8.09	81	73-122	OK	NR
1	Toluene-d8	7.53	0.00	0.00	98	258609	9.26	93	65-144	OK	NR
2	4-Bromofluorobenzene	10.36	0.01	0.00	95	87860	8.53	85	68-117	OK	NR

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	Vinyl Chloride	1.40		0.00	62	3110	0.2800	28	D	NR
1	1,1-Dichloroethene				96	0		7.4	U	NR
1	trans-1,2-Dichloroethene	3.02		0.00	96	115492	16.21	1600	D	
1	1,1-Dichloroethane	3.51		0.00	63	634	0.0500	7.7	U	NR
1	cis-1,2-Dichloroethene	4.19		0.00	96	95322	11.56	1200	D	
1	1,1,1-Trichloroethane (TCA)				97	0		7.5	U	NR
1	Trichloroethene (TCE)	6.09	-0.01	0.00	95	151742	20.85	2100	D	
2	Tetrachloroethene (PCE)				164	0		9.9	U	NR

Prep Amount:	10 ml	**Dilution:**	100.0
Prep Final Vol:	10 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**S. WARINO**	**DATE:**	**JANUARY 24, 2012**
FROM:	**EDWARD SEDLMYER**	**COPIES:**	**DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – SELECT VOCs**
CTO F27C NIROP FRIDLEY
SAMPLE DELIVERY GROUP (SDG) – K1111079

SAMPLES: 24/Aqueous

MS02IS	MS07S	MS08S	MS14IS
MS18S	MS26S	MS28D	MS28S
MS31S	MS33D	MS33S	MS35I
MS38S	MS40D	MS44I	MS46S
QCD05	QCD06	QCD10	QCR08
QCR09	QCT07	QCT08	USGS02

Overview

The sample set for NIROP Fridley, CTO F27C, SDG K1111079 consists of twenty (20) aqueous environmental samples, two (2) rinse blanks (QCR08 and QCR09), and two (2) trip blanks (QCT07 and QCT08). Three field duplicate pairs were associated with these SDG: MS28D / QCD05, MS28S / QCD06, and MS18S / QCD10.

All samples were analyzed for select volatile organic compounds (VOCs) including vinyl chloride, 1,1-dichloroethene, trans-1,2-dichloroethene, 1,1-dichloroethane, cis-1,2-dichloroethene, 1,1,1-trichloroethane, trichloroethene and tetrachloroethene. The samples were collected by Bay West on November 10 and 11, 2011 and analyzed by Columbia Analytical Services, Inc. VOC analyses were conducted using SW846 method 8260B.

These data were evaluated based on the following parameters:

* • Data Completeness
* • Holding Times
* • GC/MS Tuning and System Performance
• Initial and Continuing Calibrations
* • Laboratory Method and Field Quality Control Blank Analyses
* • Surrogate Recoveries
* • Laboratory Control Sample / Laboratory Control Sample Duplicate Results
* • Matrix Spike / Matrix Spike Duplicate Results
* • Field Duplicate Precision
* • Internal Standard Recoveries
* • Compound Quantitation
* • Compound Identification
* • Detection Limits

* - All quality control criteria were met for this parameter.

VOC

Calibration verification percent difference (%D) exceeded the 20% quality control limit for vinyl chloride on instrument MS04, on 11/17/11, at 11:52. The positive and nondetected vinyl chloride results for samples MS33D and MS26S have been qualified as estimated (J) and (UJ), respectively.

Notes

All results were reported to the method detection limit (MDL) by the laboratory.

Positive results reported below the reporting limit (RL) but above the method detection limit (MDL) for the organic analyses were qualified as estimated, "J".

The rinse blank (QCR08) had a detection for trichloroethene at 0.42 ug/L. No action was taken on this basis because all trichloroethene results in the associated samples had concentrations greater than 5 times the concentration present in the rinse blank.

Samples MS08S, MS14IS, MS18S, MS26S, MS28S, MS35I, MS38S, MS44I, MS46S, QCD06, and QCD10 were diluted due to concentrations greater than the linear range of the instrument for several compounds. The laboratory submitted multiple runs of the samples. The lowest detection limits were used to report the nondetected compounds.

Executive Summary

Laboratory Performance: Continuing calibration noncompliance for vinyl chloride resulted in the qualification of data.

Other Factors Affecting Data Quality: Positive results reported below the reporting limit (RL) but above the method detection limit (MDL) for the organic analyses were qualified as estimated, (J).

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Organic Review", October 1999, and the Department of Defense (DoD) document entitled "Quality Systems Manual (QSM) for Environmental Laboratories", April 2009.

The text of this report has been formulated to address only those problem areas affecting data quality.

Tetra Tech NUS
Edward Sedlmyer
Chemist/Data Validator

Tetra Tech NUS
Joseph A. Samchuck
Quality Assurance Officer

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = ICP PDS Recovery Noncompliance; MSA's $r < 0.995$
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = RPD between columns/detectors >40% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient $r < 0.995$
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is less than sample activity
Z1 = Tentatively Identified Compound considered presumptively present
Z2 = Tentatively Identified Compound column bleed

PROJ_NO: 02583	NSAMPLE	MS02IS			MS07S			MS08S			MS08SDL		
SDG: K1111079	LAB_ID	K1111079-010			K1111079-015			K1111079-011			K1111079-011DL		
FRACTION: OV	SAMP_DATE	11/11/2011			11/10/2011			11/11/2011			11/11/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.075	U		0.075	U		0.075	U				
1,1-DICHLOROETHANE		0.077	U		0.077	U		0.48	J	P			
1,1-DICHLOROETHENE		0.074	U		0.074	U		0.2	J	P			
CIS-1,2-DICHLOROETHENE		3.5			10						210		
TETRACHLOROETHENE		0.099	U		0.61			1.7					
TRANS-1,2-DICHLOROETHENE		0.057	U		1.2			7.2					
TRICHLOROETHENE		7.5			4.1			68					
VINYL CHLORIDE		0.075	U		0.075	U		0.075	U				

PROJ_NO: 02583	NSAMPLE	MS14IS			MS14ISDL			MS18S			MS18SDL		
SDG: K1111079	LAB_ID	K1111079-005			K1111079-005DL			K1111079-004			K1111079-004DL		
FRACTION: OV	SAMP_DATE	11/10/2011			11/10/2011			11/10/2011			11/10/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.075	U					0.19	U				
1,1-DICHLOROETHANE		2.6						1.2	J	P			
1,1-DICHLOROETHENE		1.1						1.8					
CIS-1,2-DICHLOROETHENE					90			69					
TETRACHLOROETHENE		0.28	J	P				0.25	U				
TRANS-1,2-DICHLOROETHENE		38						17					
TRICHLOROETHENE					440						690		
VINYL CHLORIDE		0.11	J	P				0.2	J	P			

PROJ_NO: 02583	NSAMPLE	MS26S			MS26SDL			MS28D			MS28S		
SDG: K1111079	LAB_ID	K1111079-001			K1111079-001DL			K1111079-019			K1111079-023		
FRACTION: OV	SAMP_DATE	11/10/2011			11/10/2011			11/11/2011			11/11/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.075	U					0.075	U		0.075	U	
1,1-DICHLOROETHANE		0.54						0.21	J	P	0.42	J	P
1,1-DICHLOROETHENE		0.52						0.14	J	P	1.4		
CIS-1,2-DICHLOROETHENE		36						3.8					
TETRACHLOROETHENE		2.2						21			0.099	U	
TRANS-1,2-DICHLOROETHENE		6						0.19	J	P	6.1		
TRICHLOROETHENE					220			22			27		
VINYL CHLORIDE		0.1	J	CP				0.075	U		0.075	U	

PROJ_NO: 02583	NSAMPLE	MS28SDL			MS31S			MS33D			MS33S		
SDG: K1111079	LAB_ID	K1111079-023DL			K1111079-018			K1111079-014			K1111079-017		
FRACTION: OV	SAMP_DATE	11/11/2011			11/11/2011			11/10/2011			11/11/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE					0.075	U		0.075	U		1.6		
1,1-DICHLOROETHANE					0.22	J	P	0.077	U		2.1		
1,1-DICHLOROETHENE					0.12	J	P	0.074	U		0.3	J	P
CIS-1,2-DICHLOROETHENE		100			25			1.1			21		
TETRACHLOROETHENE					0.099	U		2.3			0.099	U	
TRANS-1,2-DICHLOROETHENE					5.8			0.15	J	P	0.65		
TRICHLOROETHENE					18			2.7			40		
VINYL CHLORIDE					0.075	U		0.075	UJ	C	0.075	U	

PROJ_NO: 02583	NSAMPLE	MS35I			MS35IDL			MS38S			MS38SDL		
SDG: K1111079	LAB_ID	K1111079-006			K1111079-006DL			K1111079-007			K1111079-007DL		
FRACTION: OV	SAMP_DATE	11/10/2011			11/10/2011			11/10/2011			11/10/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.15	U					0.15	U				
1,1-DICHLOROETHANE		6.4						3.6					
1,1-DICHLOROETHENE		4.1						0.9	J	P			
CIS-1,2-DICHLOROETHENE					270			130					
TETRACHLOROETHENE		0.22	J	P				0.2	U				
TRANS-1,2-DICHLOROETHENE		66						64					
TRICHLOROETHENE					830						760		
VINYL CHLORIDE		0.58						0.15	U				

PROJ_NO: 02583	NSAMPLE	MS40D			MS44I			MS44IDL			MS46S		
SDG: K1111079	LAB_ID	K1111079-012			K1111079-002			K1111079-002DL			K1111079-003		
FRACTION: OV	SAMP_DATE	11/11/2011			11/10/2011			11/10/2011			11/10/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.075	U		0.15	U					0.075	U	
1,1-DICHLOROETHANE		0.19	J	P	8.5						0.52		
1,1-DICHLOROETHENE		0.12	J	P	2.4						1.2		
CIS-1,2-DICHLOROETHENE		1.1						340			26		
TETRACHLOROETHENE		0.56			0.2	U					0.099	U	
TRANS-1,2-DICHLOROETHENE		0.46	J	P	23						15		
TRICHLOROETHENE		15						530					
VINYL CHLORIDE		0.075	U		0.48						0.15	J	P

PROJ_NO: 02583	NSAMPLE	MS46SDL			QCD05			QCD06			QCD06DL		
SDG: K1111079	LAB_ID	K1111079-003DL			K1111079-020			K1111079-022			K1111079-022DL		
FRACTION: OV	SAMP_DATE	11/10/2011			11/11/2011			11/11/2011			11/11/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF				MS28D			MS28S			MS28S		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE					0.075	U		0.075	U				
1,1-DICHLOROETHANE					0.24	J	P	0.46	J	P			
1,1-DICHLOROETHENE					0.17	J	P	1.6					
CIS-1,2-DICHLOROETHENE					3.9						120		
TETRACHLOROETHENE					22			0.099	U				
TRANS-1,2-DICHLOROETHENE					0.15	J	P	6.8					
TRICHLOROETHENE		320			23			30					
VINYL CHLORIDE					0.075	U		0.075	U				

PROJ_NO: 02583	NSAMPLE	QCD10			QCD10DL			QCR08			QCR09		
SDG: K1111079	LAB_ID	K1111079-008			K1111079-008DL			K1111079-009			K1111079-024		
FRACTION: OV	SAMP_DATE	11/10/2011			11/10/2011			11/10/2011			11/11/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF	MS18S			MS18S								
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.15	U					0.075	U		0.075	U	
1,1-DICHLOROETHANE		1.2						0.077	U		0.077	U	
1,1-DICHLOROETHENE		1.6						0.074	U		0.074	U	
CIS-1,2-DICHLOROETHENE		69						0.067	U		0.067	U	
TETRACHLOROETHENE		0.2	U					0.099	U		0.099	U	
TRANS-1,2-DICHLOROETHENE		17						0.057	U		0.057	U	
TRICHLOROETHENE					690			0.42	J	P	0.1	U	
VINYL CHLORIDE		0.2	J	P				0.075	U		0.075	U	

PROJ_NO: 02583	NSAMPLE	QCT07			QCT08			USGS02		
SDG: K1111079	LAB_ID	K1111079-013			K1111079-021			K1111079-016		
FRACTION: OV	SAMP_DATE	11/10/2011			11/10/2011			11/10/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0		
	DUP_OF									
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.075	U		0.075	U		0.075	U	
1,1-DICHLOROETHANE		0.077	U		0.077	U		0.077	U	
1,1-DICHLOROETHENE		0.074	U		0.074	U		0.074	U	
CIS-1,2-DICHLOROETHENE		0.067	U		0.067	U		2.7		
TETRACHLOROETHENE		0.099	U		0.099	U		0.099	U	
TRANS-1,2-DICHLOROETHENE		0.057	U		0.057	U		0.25	J	P
TRICHLOROETHENE		0.1	U		0.1	U		7.3		
VINYL CHLORIDE		0.075	U		0.075	U		0.075	U	

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111079
Project:	NIROP/J070047	**Date Collected:**	11/11/2011
Sample Matrix:	Water	**Date Received:**	11/12/2011
		Date Extracted:	11/21/2011
		Date Analyzed:	11/21/2011

Volatile Organic Compounds

Sample Name:	MS02IS	**Units:**	ug/L
Lab Code:	K1111079-010	**Basis:**	NA
File ID:	J:\MS13\DATA\112111\1121F015.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111871
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**3.5**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**7.5**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	109	73-122	11/21/11	Acceptable
Toluene-d8	130	65-144	11/21/11	Acceptable
4-Bromofluorobenzene	112	68-117	11/21/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111079
Project:	NIROP/J070047	**Date Collected:**	11/10/2011
Sample Matrix:	Water	**Date Received:**	11/12/2011
		Date Extracted:	11/21/2011
		Date Analyzed:	11/21/2011

Volatile Organic Compounds

Sample Name:	MS07S	**Units:**	ug/L
Lab Code:	K1111079-015	**Basis:**	NA
File ID:	J:\MS13\DATA\112111\1121F013.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111871
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**1.2**		0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**10**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**4.1**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**0.61**		0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	108	73-122	11/21/11	Acceptable
Toluene-d8	129	65-144	11/21/11	Acceptable
4-Bromofluorobenzene	114	68-117	11/21/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111079
Project:	NIROP/J070047	**Date Collected:**	11/11/2011
Sample Matrix:	Water	**Date Received:**	11/12/2011
		Date Extracted:	11/21/2011
		Date Analyzed:	11/21/2011

Volatile Organic Compounds

Sample Name:	MS08S	**Units:**	ug/L
Lab Code:	K1111079-011	**Basis:**	NA
File ID:	J:\MS13\DATA\112111\1121F024.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111871
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.20**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**7.2**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.48**	J	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**220**	E	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**68**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**1.7**		0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	111	73-122	11/21/11	Acceptable
Toluene-d8	129	65-144	11/21/11	Acceptable
4-Bromofluorobenzene	113	68-117	11/21/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111079
Project:	NIROP/J070047	**Date Collected:**	11/11/2011
Sample Matrix:	Water	**Date Received:**	11/12/2011
		Date Extracted:	11/21/2011
		Date Analyzed:	11/21/2011

Volatile Organic Compounds

Sample Name:	MS08SDL	**Units:**	ug/L
Lab Code:	K1111079-011	**Basis:**	NA
File ID:	J:\MS13\DATA\112111\1121F022.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111871
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 5

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.38	U	1.0	0.38	
75-35-4	1,1-Dichloroethene	0.37	U	2.5	0.37	
156-60-5	trans-1,2-Dichloroethene	**6.6**	D	2.5	0.29	
75-34-3	1,1-Dichloroethane	0.39	U	2.5	0.39	
156-59-2	cis-1,2-Dichloroethene	**210**	D	2.5	0.34	
71-55-6	1,1,1-Trichloroethane (TCA)	0.38	U	2.5	0.38	
79-01-6	Trichloroethene (TCE)	**62**	D	2.5	0.50	
127-18-4	Tetrachloroethene (PCE)	**1.6**	JD	2.5	0.50	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	109	73-122	11/21/11	Acceptable
Toluene-d8	129	65-144	11/21/11	Acceptable
4-Bromofluorobenzene	112	68-117	11/21/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111079
Project:	NIROP/J070047	**Date Collected:**	11/10/2011
Sample Matrix:	Water	**Date Received:**	11/12/2011
		Date Extracted:	11/21/2011
		Date Analyzed:	11/21/2011

Volatile Organic Compounds

Sample Name:	MS14IS	**Units:**	ug/L
Lab Code:	K1111079-005	**Basis:**	NA
File ID:	J:\MS18\DATA\112111\1121F034.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111867
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.11**	J	0.20	0.075	
75-35-4	1,1-Dichloroethene	**1.1**		0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**38**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**2.6**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**110**	E	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**510**	E	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**0.28**	J	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	85	73-122	11/21/11	Acceptable
Toluene-d8	87	65-144	11/21/11	Acceptable
4-Bromofluorobenzene	78	68-117	11/21/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111079
Project:	NIROP/J070047	**Date Collected:**	11/10/2011
Sample Matrix:	Water	**Date Received:**	11/12/2011
		Date Extracted:	11/21/2011
		Date Analyzed:	11/21/2011

Volatile Organic Compounds

Sample Name:	MS14ISDL	**Units:**	ug/L
Lab Code:	K1111079-005	**Basis:**	NA
File ID:	J:\MS18\DATA\112111\1121F016.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111867
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 20

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	1.5	U	4.0	1.5	
75-35-4	1,1-Dichloroethene	1.5	U	10	1.5	
156-60-5	trans-1,2-Dichloroethene	**32**	D	10	1.2	
75-34-3	1,1-Dichloroethane	**2.4**	JD	10	1.6	
156-59-2	cis-1,2-Dichloroethene	**90**	D	10	1.4	
71-55-6	1,1,1-Trichloroethane (TCA)	1.5	U	10	1.5	
79-01-6	Trichloroethene (TCE)	**440**	D	10	2.0	
127-18-4	Tetrachloroethene (PCE)	2.0	U	10	2.0	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	81	73-122	11/21/11	Acceptable
Toluene-d8	88	65-144	11/21/11	Acceptable
4-Bromofluorobenzene	78	68-117	11/21/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111079
Project:	NIROP/J070047	**Date Collected:**	11/10/2011
Sample Matrix:	Water	**Date Received:**	11/12/2011
		Date Extracted:	11/21/2011
		Date Analyzed:	11/21/2011

Volatile Organic Compounds

Sample Name:	MS18S	**Units:**	ug/L
Lab Code:	K1111079-004	**Basis:**	NA
File ID:	J:\MS18\DATA\112111\1121F029.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111867
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 2.5

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.20**	JD	0.50	0.19	
75-35-4	1,1-Dichloroethene	**1.8**	D	1.3	0.19	
156-60-5	trans-1,2-Dichloroethene	**17**	D	1.3	0.15	
75-34-3	1,1-Dichloroethane	**1.2**	JD	1.3	0.20	
156-59-2	cis-1,2-Dichloroethene	**69**	D	1.3	0.17	
71-55-6	1,1,1-Trichloroethane (TCA)	0.19	U	1.3	0.19	
79-01-6	Trichloroethene (TCE)	**720**	ED	1.3	0.25	
127-18-4	Tetrachloroethene (PCE)	0.25	U	1.3	0.25	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	80	73-122	11/21/11	Acceptable
Toluene-d8	88	65-144	11/21/11	Acceptable
4-Bromofluorobenzene	77	68-117	11/21/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111079
Project:	NIROP/J070047	**Date Collected:**	11/10/2011
Sample Matrix:	Water	**Date Received:**	11/12/2011
		Date Extracted:	11/17/2011
		Date Analyzed:	11/17/2011

Volatile Organic Compounds

Sample Name:	MS18SDL	**Units:**	ug/L
Lab Code:	K1111079-004	**Basis:**	NA
File ID:	J:\MS04\DATA\111711\1117F016.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111741
Analysis Method:	8260C	**Calibration ID:**	CAL11002

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 25

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	1.9	U	5.0	1.9	*
75-35-4	1,1-Dichloroethene	1.9	U	13	1.9	
156-60-5	trans-1,2-Dichloroethene	**17**	D	13	1.5	
75-34-3	1,1-Dichloroethane	2.0	U	13	2.0	
156-59-2	cis-1,2-Dichloroethene	**69**	D	13	1.7	
71-55-6	1,1,1-Trichloroethane (TCA)	1.9	U	13	1.9	
79-01-6	Trichloroethene (TCE)	**690**	D	13	2.5	
127-18-4	Tetrachloroethene (PCE)	2.5	U	13	2.5	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	117	73-122	11/17/11	Acceptable
Toluene-d8	117	65-144	11/17/11	Acceptable
4-Bromofluorobenzene	107	68-117	11/17/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111079
Project:	NIROP/J070047	**Date Collected:**	11/10/2011
Sample Matrix:	Water	**Date Received:**	11/12/2011
		Date Extracted:	11/17/2011
		Date Analyzed:	11/17/2011

Volatile Organic Compounds

Sample Name:	MS26S	**Units:**	ug/L
Lab Code:	K1111079-001	**Basis:**	NA
File ID:	J:\MS04\DATA\111711\1117F020.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111741
Analysis Method:	8260C	**Calibration ID:**	CAL11002

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.10**	J	0.20	0.075	*
75-35-4	1,1-Dichloroethene	**0.52**		0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**6.0**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.54**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**36**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**280**	E	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**2.2**		0.50	0.099	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	121	73-122	11/17/11	Acceptable
Toluene-d8	118	65-144	11/17/11	Acceptable
4-Bromofluorobenzene	102	68-117	11/17/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111079
Project:	NIROP/J070047	**Date Collected:**	11/10/2011
Sample Matrix:	Water	**Date Received:**	11/12/2011
		Date Extracted:	11/17/2011
		Date Analyzed:	11/17/2011

Volatile Organic Compounds

Sample Name:	MS26SDL	**Units:**	ug/L
Lab Code:	K1111079-001	**Basis:**	NA
File ID:	J:\MS04\DATA\111711\1117F014.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111741
Analysis Method:	8260C	**Calibration ID:**	CAL11002

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 10

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.75	U	2.0	0.75	*
75-35-4	1,1-Dichloroethene	0.74	U	5.0	0.74	
156-60-5	trans-1,2-Dichloroethene	**5.2**	D	5.0	0.57	
75-34-3	1,1-Dichloroethane	0.77	U	5.0	0.77	
156-59-2	cis-1,2-Dichloroethene	**30**	D	5.0	0.67	
71-55-6	1,1,1-Trichloroethane (TCA)	0.75	U	5.0	0.75	
79-01-6	Trichloroethene (TCE)	**220**	D	5.0	1.0	
127-18-4	Tetrachloroethene (PCE)	**1.9**	JD	5.0	0.99	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	116	73-122	11/17/11	Acceptable
Toluene-d8	119	65-144	11/17/11	Acceptable
4-Bromofluorobenzene	105	68-117	11/17/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111079
Project:	NIROP/J070047	**Date Collected:**	11/11/2011
Sample Matrix:	Water	**Date Received:**	11/12/2011
		Date Extracted:	11/21/2011
		Date Analyzed:	11/21/2011

Volatile Organic Compounds

Sample Name:	MS28D	**Units:**	ug/L
Lab Code:	K1111079-019	**Basis:**	NA
File ID:	J:\MS13\DATA\112111\1121F019.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111871
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.14**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.19**	J	0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.21**	J	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**3.8**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**22**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**21**		0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	109	73-122	11/21/11	Acceptable
Toluene-d8	129	65-144	11/21/11	Acceptable
4-Bromofluorobenzene	113	68-117	11/21/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111079
Project:	NIROP/J070047	**Date Collected:**	11/11/2011
Sample Matrix:	Water	**Date Received:**	11/12/2011
		Date Extracted:	11/23/2011
		Date Analyzed:	11/23/2011

Volatile Organic Compounds

Sample Name:	MS28S	**Units:**	ug/L
Lab Code:	K1111079-023	**Basis:**	NA
File ID:	J:\MS13\DATA\112311\1123F014.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111981
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**1.4**		0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**6.1**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.42**	J	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**110**	E	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**27**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	104	73-122	11/23/11	Acceptable
Toluene-d8	118	65-144	11/23/11	Acceptable
4-Bromofluorobenzene	111	68-117	11/23/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111079
Project:	NIROP/J070047	**Date Collected:**	11/11/2011
Sample Matrix:	Water	**Date Received:**	11/12/2011
		Date Extracted:	11/23/2011
		Date Analyzed:	11/23/2011

Volatile Organic Compounds

Sample Name:	MS28SDL	**Units:**	ug/L
Lab Code:	K1111079-023	**Basis:**	NA
File ID:	J:\MS13\DATA\112311\1123F013.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111981
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 5

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.38	U	1.0	0.38	
75-35-4	1,1-Dichloroethene	**1.4**	JD	2.5	0.37	
156-60-5	trans-1,2-Dichloroethene	**5.8**	D	2.5	0.29	
75-34-3	1,1-Dichloroethane	0.39	U	2.5	0.39	
156-59-2	cis-1,2-Dichloroethene	**100**	D	2.5	0.34	
71-55-6	1,1,1-Trichloroethane (TCA)	0.38	U	2.5	0.38	
79-01-6	Trichloroethene (TCE)	**25**	D	2.5	0.50	
127-18-4	Tetrachloroethene (PCE)	0.50	U	2.5	0.50	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	104	73-122	11/23/11	Acceptable
Toluene-d8	120	65-144	11/23/11	Acceptable
4-Bromofluorobenzene	108	68-117	11/23/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111079
Project:	NIROP/J070047	**Date Collected:**	11/11/2011
Sample Matrix:	Water	**Date Received:**	11/12/2011
		Date Extracted:	11/21/2011
		Date Analyzed:	11/21/2011

Volatile Organic Compounds

Sample Name:	MS31S	**Units:**	ug/L
Lab Code:	K1111079-018	**Basis:**	NA
File ID:	J:\MS13\DATA\112111\1121F018.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111871
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.12**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**5.8**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.22**	J	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**25**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**18**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	110	73-122	11/21/11	Acceptable
Toluene-d8	130	65-144	11/21/11	Acceptable
4-Bromofluorobenzene	114	68-117	11/21/11	Acceptable

Comments:

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1111079
Date Collected: 11/10/2011
Date Received: 11/12/2011
Date Extracted: 11/17/2011
Date Analyzed: 11/17/2011

Volatile Organic Compounds

Sample Name: MS33D
Lab Code: K1111079-014
File ID: J:\MS04\DATA\111711\1117F011.D
Instrument ID: MS04

Units: ug/L
Basis: NA
Level: Low

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1111741
Calibration ID: CAL11002

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	*
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.15**	J	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**1.1**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**2.7**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**2.3**		0.50	0.099	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	113	73-122	11/17/11	Acceptable
Toluene-d8	117	65-144	11/17/11	Acceptable
4-Bromofluorobenzene	109	68-117	11/17/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111079
Project:	NIROP/J070047	**Date Collected:**	11/11/2011
Sample Matrix:	Water	**Date Received:**	11/12/2011
		Date Extracted:	11/21/2011
		Date Analyzed:	11/21/2011

Volatile Organic Compounds

Sample Name:	MS33S	**Units:**	ug/L
Lab Code:	K1111079-017	**Basis:**	NA
File ID:	J:\MS13\DATA\112111\1121F017.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111871
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.30**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.65**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**2.1**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**21**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	**1.6**		0.50	0.075	
79-01-6	Trichloroethene (TCE)	**40**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	109	73-122	11/21/11	Acceptable
Toluene-d8	130	65-144	11/21/11	Acceptable
4-Bromofluorobenzene	112	68-117	11/21/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111079
Project:	NIROP/J070047	**Date Collected:**	11/10/2011
Sample Matrix:	Water	**Date Received:**	11/12/2011
		Date Extracted:	11/21/2011
		Date Analyzed:	11/21/2011

Volatile Organic Compounds

Sample Name:	MS35I	**Units:**	ug/L
Lab Code:	K1111079-006	**Basis:**	NA
File ID:	J:\MS18\DATA\112111\1121F035.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111867
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 2

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.58**	D	0.40	0.15	
75-35-4	1,1-Dichloroethene	**4.1**	D	1.0	0.15	
156-60-5	trans-1,2-Dichloroethene	**66**	D	1.0	0.12	
75-34-3	1,1-Dichloroethane	**6.4**	D	1.0	0.16	
156-59-2	cis-1,2-Dichloroethene	**290**	ED	1.0	0.14	
71-55-6	1,1,1-Trichloroethane (TCA)	0.15	U	1.0	0.15	
79-01-6	Trichloroethene (TCE)	**870**	ED	1.0	0.20	
127-18-4	Tetrachloroethene (PCE)	**0.22**	JD	1.0	0.20	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	83	73-122	11/21/11	Acceptable
Toluene-d8	89	65-144	11/21/11	Acceptable
4-Bromofluorobenzene	78	68-117	11/21/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111079
Project:	NIROP/J070047	**Date Collected:**	11/10/2011
Sample Matrix:	Water	**Date Received:**	11/12/2011
		Date Extracted:	11/21/2011
		Date Analyzed:	11/21/2011

Volatile Organic Compounds

Sample Name:	MS35IDL	**Units:**	ug/L
Lab Code:	K1111079-006	**Basis:**	NA
File ID:	J:\MS18\DATA\112111\1121F017.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111867
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 25

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	1.9	U	5.0	1.9	
75-35-4	1,1-Dichloroethene	**4.0**	JD	13	1.9	
156-60-5	trans-1,2-Dichloroethene	**62**	D	13	1.5	
75-34-3	1,1-Dichloroethane	**5.8**	JD	13	2.0	
156-59-2	cis-1,2-Dichloroethene	**270**	D	13	1.7	
71-55-6	1,1,1-Trichloroethane (TCA)	1.9	U	13	1.9	
79-01-6	Trichloroethene (TCE)	**830**	D	13	2.5	
127-18-4	Tetrachloroethene (PCE)	2.5	U	13	2.5	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	79	73-122	11/21/11	Acceptable
Toluene-d8	89	65-144	11/21/11	Acceptable
4-Bromofluorobenzene	78	68-117	11/21/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111079
Project:	NIROP/J070047	**Date Collected:**	11/10/2011
Sample Matrix:	Water	**Date Received:**	11/12/2011
		Date Extracted:	11/21/2011
		Date Analyzed:	11/21/2011

Volatile Organic Compounds

Sample Name:	MS38S	**Units:**	ug/L
Lab Code:	K1111079-007	**Basis:**	NA
File ID:	J:\MS18\DATA\112111\1121F030.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111867
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 2

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.15	U	0.40	0.15	
75-35-4	1,1-Dichloroethene	**0.90**	JD	1.0	0.15	
156-60-5	trans-1,2-Dichloroethene	**64**	D	1.0	0.12	
75-34-3	1,1-Dichloroethane	**3.6**	D	1.0	0.16	
156-59-2	cis-1,2-Dichloroethene	**130**	D	1.0	0.14	
71-55-6	1,1,1-Trichloroethane (TCA)	0.15	U	1.0	0.15	
79-01-6	Trichloroethene (TCE)	**780**	ED	1.0	0.20	
127-18-4	Tetrachloroethene (PCE)	0.20	U	1.0	0.20	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	82	73-122	11/21/11	Acceptable
Toluene-d8	88	65-144	11/21/11	Acceptable
4-Bromofluorobenzene	78	68-117	11/21/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111079
Project:	NIROP/J070047	**Date Collected:**	11/10/2011
Sample Matrix:	Water	**Date Received:**	11/12/2011
		Date Extracted:	11/21/2011
		Date Analyzed:	11/21/2011

Volatile Organic Compounds

Sample Name:	MS38SDL	**Units:**	ug/L
Lab Code:	K1111079-007	**Basis:**	NA
File ID:	J:\MS18\DATA\112111\1121F026.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111867
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 20

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	1.5	U	4.0	1.5	
75-35-4	1,1-Dichloroethene	1.5	U	10	1.5	
156-60-5	trans-1,2-Dichloroethene	**63**	D	10	1.2	
75-34-3	1,1-Dichloroethane	**3.6**	JD	10	1.6	
156-59-2	cis-1,2-Dichloroethene	**120**	D	10	1.4	
71-55-6	1,1,1-Trichloroethane (TCA)	1.5	U	10	1.5	
79-01-6	Trichloroethene (TCE)	**760**	D	10	2.0	
127-18-4	Tetrachloroethene (PCE)	2.0	U	10	2.0	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	81	73-122	11/21/11	Acceptable
Toluene-d8	87	65-144	11/21/11	Acceptable
4-Bromofluorobenzene	79	68-117	11/21/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111079
Project:	NIROP/J070047	**Date Collected:**	11/11/2011
Sample Matrix:	Water	**Date Received:**	11/12/2011
		Date Extracted:	11/21/2011
		Date Analyzed:	11/21/2011

Volatile Organic Compounds

Sample Name:	MS40D	**Units:**	ug/L
Lab Code:	K1111079-012	**Basis:**	NA
File ID:	J:\MS13\DATA\112111\1121F016.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111871
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.12**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.46**	J	0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.19**	J	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**1.1**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**15**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**0.56**		0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	108	73-122	11/21/11	Acceptable
Toluene-d8	129	65-144	11/21/11	Acceptable
4-Bromofluorobenzene	113	68-117	11/21/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111079
Project:	NIROP/J070047	**Date Collected:**	11/10/2011
Sample Matrix:	Water	**Date Received:**	11/12/2011
		Date Extracted:	11/21/2011
		Date Analyzed:	11/21/2011

Volatile Organic Compounds

Sample Name:	MS44I	**Units:**	ug/L
Lab Code:	K1111079-002	**Basis:**	NA
File ID:	J:\MS18\DATA\112111\1121F033.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111867
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 2

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.48**	D	0.40	0.15	
75-35-4	1,1-Dichloroethene	**2.4**	D	1.0	0.15	
156-60-5	trans-1,2-Dichloroethene	**23**	D	1.0	0.12	
75-34-3	1,1-Dichloroethane	**8.5**	D	1.0	0.16	
156-59-2	cis-1,2-Dichloroethene	**340**	ED	1.0	0.14	
71-55-6	1,1,1-Trichloroethane (TCA)	0.15	U	1.0	0.15	
79-01-6	Trichloroethene (TCE)	**520**	ED	1.0	0.20	
127-18-4	Tetrachloroethene (PCE)	0.20	U	1.0	0.20	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	84	73-122	11/21/11	Acceptable
Toluene-d8	89	65-144	11/21/11	Acceptable
4-Bromofluorobenzene	79	68-117	11/21/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111079
Project:	NIROP/J070047	**Date Collected:**	11/10/2011
Sample Matrix:	Water	**Date Received:**	11/12/2011
		Date Extracted:	11/17/2011
		Date Analyzed:	11/17/2011

Volatile Organic Compounds

Sample Name:	MS44IDL	**Units:**	ug/L
Lab Code:	K1111079-002	**Basis:**	NA
File ID:	J:\MS04\DATA\111711\1117F017.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111741
Analysis Method:	8260C	**Calibration ID:**	CAL11002

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 25

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	1.9	U	5.0	1.9	*
75-35-4	1,1-Dichloroethene	**2.0**	JD	13	1.9	
156-60-5	trans-1,2-Dichloroethene	**22**	D	13	1.5	
75-34-3	1,1-Dichloroethane	**8.8**	JD	13	2.0	
156-59-2	cis-1,2-Dichloroethene	**340**	D	13	1.7	
71-55-6	1,1,1-Trichloroethane (TCA)	1.9	U	13	1.9	
79-01-6	Trichloroethene (TCE)	**530**	D	13	2.5	
127-18-4	Tetrachloroethene (PCE)	2.5	U	13	2.5	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	119	73-122	11/17/11	Acceptable
Toluene-d8	120	65-144	11/17/11	Acceptable
4-Bromofluorobenzene	106	68-117	11/17/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111079
Project:	NIROP/J070047	**Date Collected:**	11/10/2011
Sample Matrix:	Water	**Date Received:**	11/12/2011
		Date Extracted:	11/21/2011
		Date Analyzed:	11/21/2011

Volatile Organic Compounds

Sample Name:	MS46S	**Units:**	ug/L
Lab Code:	K1111079-003	**Basis:**	NA
File ID:	J:\MS18\DATA\112111\1121F028.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111867
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.15**	J	0.20	0.075	
75-35-4	1,1-Dichloroethene	**1.2**		0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**15**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.52**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**26**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**360**	E	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	83	73-122	11/21/11	Acceptable
Toluene-d8	89	65-144	11/21/11	Acceptable
4-Bromofluorobenzene	79	68-117	11/21/11	Acceptable

Comments:

Client:	Bay West, Incorporated	**Service Request:**	K1111079
Project:	NIROP/J070047	**Date Collected:**	11/10/2011
Sample Matrix:	Water	**Date Received:**	11/12/2011
		Date Extracted:	11/17/2011
		Date Analyzed:	11/17/2011

Volatile Organic Compounds

Sample Name:	MS46SDL	**Units:**	ug/L
Lab Code:	K1111079-003	**Basis:**	NA
File ID:	J:\MS04\DATA\111711\1117F015.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111741
Analysis Method:	8260C	**Calibration ID:**	CAL11002

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 20

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	1.5	U	4.0	1.5	*
75-35-4	1,1-Dichloroethene	1.5	U	10	1.5	
156-60-5	trans-1,2-Dichloroethene	**13**	D	10	1.2	
75-34-3	1,1-Dichloroethane	1.6	U	10	1.6	
156-59-2	cis-1,2-Dichloroethene	**20**	D	10	1.4	
71-55-6	1,1,1-Trichloroethane (TCA)	1.5	U	10	1.5	
79-01-6	Trichloroethene (TCE)	**320**	D	10	2.0	
127-18-4	Tetrachloroethene (PCE)	2.0	U	10	2.0	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	114	73-122	11/17/11	Acceptable
Toluene-d8	118	65-144	11/17/11	Acceptable
4-Bromofluorobenzene	105	68-117	11/17/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111079
Project:	NIROP/J070047	**Date Collected:**	11/11/2011
Sample Matrix:	Water	**Date Received:**	11/12/2011
		Date Extracted:	11/21/2011
		Date Analyzed:	11/21/2011

Volatile Organic Compounds

Sample Name:	QCD05	**Units:**	ug/L
Lab Code:	K1111079-020	**Basis:**	NA
File ID:	J:\MS13\DATA\112111\1121F020.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111871
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.17**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.15**	J	0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.24**	J	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**3.9**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**23**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**22**		0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	108	73-122	11/21/11	Acceptable
Toluene-d8	130	65-144	11/21/11	Acceptable
4-Bromofluorobenzene	112	68-117	11/21/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111079
Project:	NIROP/J070047	**Date Collected:**	11/11/2011
Sample Matrix:	Water	**Date Received:**	11/12/2011
		Date Extracted:	11/21/2011
		Date Analyzed:	11/21/2011

Volatile Organic Compounds

Sample Name:	QCD06	**Units:**	ug/L
Lab Code:	K1111079-022	**Basis:**	NA
File ID:	J:\MS13\DATA\112111\1121F025.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111871
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**1.6**		0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**6.8**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.46**	J	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**130**	E	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**30**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	111	73-122	11/21/11	Acceptable
Toluene-d8	131	65-144	11/21/11	Acceptable
4-Bromofluorobenzene	114	68-117	11/21/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111079
Project:	NIROP/J070047	**Date Collected:**	11/11/2011
Sample Matrix:	Water	**Date Received:**	11/12/2011
		Date Extracted:	11/21/2011
		Date Analyzed:	11/21/2011

Volatile Organic Compounds

Sample Name:	QCD06DL	**Units:**	ug/L
Lab Code:	K1111079-022	**Basis:**	NA
File ID:	J:\MS13\DATA\112111\1121F023.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111871
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 5

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.38	U	1.0	0.38	
75-35-4	1,1-Dichloroethene	**1.5**	JD	2.5	0.37	
156-60-5	trans-1,2-Dichloroethene	**6.3**	D	2.5	0.29	
75-34-3	1,1-Dichloroethane	**0.50**	JD	2.5	0.39	
156-59-2	cis-1,2-Dichloroethene	**120**	D	2.5	0.34	
71-55-6	1,1,1-Trichloroethane (TCA)	0.38	U	2.5	0.38	
79-01-6	Trichloroethene (TCE)	**28**	D	2.5	0.50	
127-18-4	Tetrachloroethene (PCE)	0.50	U	2.5	0.50	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	109	73-122	11/21/11	Acceptable
Toluene-d8	129	65-144	11/21/11	Acceptable
4-Bromofluorobenzene	112	68-117	11/21/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111079
Project:	NIROP/J070047	**Date Collected:**	11/10/2011
Sample Matrix:	Water	**Date Received:**	11/12/2011
		Date Extracted:	11/21/2011
		Date Analyzed:	11/21/2011

Volatile Organic Compounds

Sample Name:	QCD10	**Units:**	ug/L
Lab Code:	K1111079-008	**Basis:**	NA
File ID:	J:\MS18\DATA\112111\1121F031.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111867
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 2

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.20**	JD	0.40	0.15	
75-35-4	1,1-Dichloroethene	**1.6**	D	1.0	0.15	
156-60-5	trans-1,2-Dichloroethene	**17**	D	1.0	0.12	
75-34-3	1,1-Dichloroethane	**1.2**	D	1.0	0.16	
156-59-2	cis-1,2-Dichloroethene	**69**	D	1.0	0.14	
71-55-6	1,1,1-Trichloroethane (TCA)	0.15	U	1.0	0.15	
79-01-6	Trichloroethene (TCE)	**710**	ED	1.0	0.20	
127-18-4	Tetrachloroethene (PCE)	0.20	U	1.0	0.20	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	81	73-122	11/21/11	Acceptable
Toluene-d8	88	65-144	11/21/11	Acceptable
4-Bromofluorobenzene	78	68-117	11/21/11	Acceptable

Comments:

Client:	Bay West, Incorporated	**Service Request:**	K1111079
Project:	NIROP/J070047	**Date Collected:**	11/10/2011
Sample Matrix:	Water	**Date Received:**	11/12/2011
		Date Extracted:	11/21/2011
		Date Analyzed:	11/21/2011

Volatile Organic Compounds

Sample Name:	QCD10DL	**Units:**	ug/L
Lab Code:	K1111079-008	**Basis:**	NA
File ID:	J:\MS18\DATA\112111\1121F027.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111867
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 25

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	1.9	U	5.0	1.9	
75-35-4	1,1-Dichloroethene	**2.0**	JD	13	1.9	
156-60-5	trans-1,2-Dichloroethene	**17**	D	13	1.5	
75-34-3	1,1-Dichloroethane	2.0	U	13	2.0	
156-59-2	cis-1,2-Dichloroethene	**66**	D	13	1.7	
71-55-6	1,1,1-Trichloroethane (TCA)	1.9	U	13	1.9	
79-01-6	Trichloroethene (TCE)	**690**	D	13	2.5	
127-18-4	Tetrachloroethene (PCE)	2.5	U	13	2.5	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	83	73-122	11/21/11	Acceptable
Toluene-d8	89	65-144	11/21/11	Acceptable
4-Bromofluorobenzene	77	68-117	11/21/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111079
Project:	NIROP/J070047	**Date Collected:**	11/10/2011
Sample Matrix:	Water	**Date Received:**	11/12/2011
		Date Extracted:	11/21/2011
		Date Analyzed:	11/21/2011

Volatile Organic Compounds

Sample Name:	QCR08	**Units:**	ug/L
Lab Code:	K1111079-009	**Basis:**	NA
File ID:	J:\MS13\DATA\112111\1121F010.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111871
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**0.42**	J	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	109	73-122	11/21/11	Acceptable
Toluene-d8	130	65-144	11/21/11	Acceptable
4-Bromofluorobenzene	110	68-117	11/21/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111079
Project:	NIROP/J070047	**Date Collected:**	11/11/2011
Sample Matrix:	Water	**Date Received:**	11/12/2011
		Date Extracted:	11/21/2011
		Date Analyzed:	11/21/2011

Volatile Organic Compounds

Sample Name:	QCR09	**Units:**	ug/L
Lab Code:	K1111079-024	**Basis:**	NA
File ID:	J:\MS13\DATA\112111\1121F021.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111871
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	108	73-122	11/21/11	Acceptable
Toluene-d8	130	65-144	11/21/11	Acceptable
4-Bromofluorobenzene	114	68-117	11/21/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111079
Project:	NIROP/J070047	**Date Collected:**	11/10/2011
Sample Matrix:	Water	**Date Received:**	11/12/2011
		Date Extracted:	11/21/2011
		Date Analyzed:	11/21/2011

Volatile Organic Compounds

Sample Name:	QCT07	**Units:**	ug/L
Lab Code:	K1111079-013	**Basis:**	NA
File ID:	J:\MS13\DATA\112111\1121F011.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111871
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	108	73-122	11/21/11	Acceptable
Toluene-d8	131	65-144	11/21/11	Acceptable
4-Bromofluorobenzene	114	68-117	11/21/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111079
Project:	NIROP/J070047	**Date Collected:**	11/10/2011
Sample Matrix:	Water	**Date Received:**	11/12/2011
		Date Extracted:	11/21/2011
		Date Analyzed:	11/21/2011

Volatile Organic Compounds

Sample Name:	QCT08	**Units:**	ug/L
Lab Code:	K1111079-021	**Basis:**	NA
File ID:	J:\MS13\DATA\112111\1121F012.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111871
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	109	73-122	11/21/11	Acceptable
Toluene-d8	129	65-144	11/21/11	Acceptable
4-Bromofluorobenzene	114	68-117	11/21/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111079
Project:	NIROP/J070047	**Date Collected:**	11/10/2011
Sample Matrix:	Water	**Date Received:**	11/12/2011
		Date Extracted:	11/21/2011
		Date Analyzed:	11/21/2011

Volatile Organic Compounds

Sample Name:	USGS02	**Units:**	ug/L
Lab Code:	K1111079-016	**Basis:**	NA
File ID:	J:\MS13\DATA\112111\1121F014.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111871
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.25**	J	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**2.7**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**7.3**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	108	73-122	11/21/11	Acceptable
Toluene-d8	130	65-144	11/21/11	Acceptable
4-Bromofluorobenzene	110	68-117	11/21/11	Acceptable

Comments:

APPENDIX C

SUPPORT DOCUMENTATION

NIROP FRIDLEY
WATER DATA
K1111079

FRACTION	CHEMICAL	MS28D	UNITS	QCD05	RPD	D
OV	1,1-DICHLOROETHANE	0.21 J	UG/L	0.24 J	13.33	0.03
OV	1,1-DICHLOROETHENE	0.14 J	UG/L	0.17 J	19.35	0.03
OV	CIS-1,2-DICHLOROETHENE	3.8	UG/L	3.9	2.60	0.10
OV	TETRACHLOROETHENE	21	UG/L	22	4.65	1.00
OV	TRANS-1,2-DICHLOROETHENE	0.19 J	UG/L	0.15 J	23.53	0.04
OV	TRICHLOROETHENE	22	UG/L	23	4.44	1.00

Current RPD Quality Control Limit: 30 %.
Shaded cells indicate RPDs that exceed the applicable quality control limit.

NIROP FRIDLEY
WATER DATA
K1111079

FRACTION	CHEMICAL	MS28S	UNITS	QCD06	RPD	D
OV	1,1-DICHLOROETHANE	0.42 J	UG/L	0.46 J	9.09	0.04
OV	1,1-DICHLOROETHENE	1.4	UG/L	1.6	13.33	0.20
OV	TRANS-1,2-DICHLOROETHENE	6.1	UG/L	6.8	10.85	0.70
OV	TRICHLOROETHENE	27	UG/L	30	10.53	3.00

Current RPD Quality Control Limit: 30 %.
Shaded cells indicate RPDs that exceed the applicable quality control limit.

NIROP FRIDLEY
WATER DATA
K1111079

FRACTION	CHEMICAL	MS28SDL	UNITS	QCD06DL	RPD	D
OV	CIS-1,2-DICHLOROETHENE	100	UG/L	120	18.18	20.00

Current RPD Quality Control Limit: 30 %.
Shaded cells indicate RPDs that exceed the applicable quality control limit.

Columbia Analytical Services™ 1317 S. 13th Avenue, Kelso, WA 98626 360.577.7222 360.636.1068 (fax) www.caslab.com

November 29, 2011 Analytical Report for Service Request No: K1111079

Paul Walz
Bay West, Incorporated
5 Empire Dr.
St. Paul, MN 55103-1867

RE: NIROP/J070047

Dear Paul:

Enclosed are the results of the samples submitted to our laboratory on November 12, 2011. For your reference, these analyses have been assigned our service request number K1111079.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3363. You may also contact me via Email at LDomenighini@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.

Lisa S Domenighini

Lisa Domenighini
Project Chemist

LD/ln

Recycled Paper

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

Columbia Analytical Services, Inc.
Kelso, WA
State Certifications, Accreditations, and Licenses

Agency	Number
Alaska DEC UST	UST-040
Arizona DHS	AZ0339
Arkansas - DEQ	88-0637
California DHS	2286
DOD ELAP	L11-119
Florida DOH	E87412
Georgia DNR	881
Hawaii DOH	-
Idaho DHW	-
Indiana DOH	C-WA-01
ISO 17025	L11-118
Louisiana DEQ	3016
Louisiana DHH	LA080001
Maine DHS	WA0035
Michigan DEQ	9949
Minnesota DOH	053-999-368
Montana DPHHS	CERT0047
Nevada DEP	WA35
New Jersey DEP	WA005
New Mexico ED	-
North Carolina DWQ	605
Oklahoma DEQ	9801
Oregon – DEQ (NELAP)	WA100010
South Carolina DHEC	61002
Texas CEQ	04704427-08-TX
Washington DOE	C1203
Wisconsin DNR	998386840
Wyoming (EPA Region 8)	-

Case Narrative

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	Bay West, Incorporated	**Service Request No.:**	K1111079
Project:	NIROP/J070047	**Date Received:**	11/12/11
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Twenty four water samples were received for analysis at Columbia Analytical Services on 11/12/11. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Volatile Organic Compounds by EPA Method 8260

Calibration Verification Exceptions:
The following analyte was flagged as outside the lower control criterion for Continuing Calibration Verification (CCV) J:\MS04\1117F004.D: Vinyl Chloride. In accordance with the EPA Method, 80% or more of the CCV analytes must pass within 20% of the true value. The CAS SOP allows for 40% difference for the remaining analytes. The CCV met these criteria. The quality of the sample data was not significantly affected. No further corrective action was required.

The following analyte was flagged as outside the upper control criterion for Continuing Calibration Verification (CCV) J:\MS13\1121F004.D: Toluene-d8. In accordance with the EPA Method, 80% or more of the CCV analytes must pass within 20% of the true value. The CAS SOP allows for 40% difference for the remaining analytes. The CCV met these criteria. The quality of the sample data was not significantly affected. No further corrective action was required.

Elevated Detection Limits:
Samples MS44I, MS18S, MS35I, MS38S, and QCD10 required dilution due to the presence of elevated levels of target analyte. The reporting limits were adjusted to reflect the dilution.

No other anomalies associated with the analysis of these samples were observed.

Approved by Gina A Domenighini **Date** 11/29/11

Chain of Custody

Columbia Analytical Services

027601 CHAIN OF CUSTODY

SR# K111079

COC Set____of____

Page 1 OF 1 COC# 110111-10

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

Project Name: NFROP
Project Number: J070047
Project Manager: Paul Walz
Company Name: Bay West
Comany Address: 5 Empire drive
City/State/Zip: Saint Paul, MN, 55103
E-Mail Address: Paulw@baywest.com
Phone #: 651-291-3491 FAX #: 651-291-0039
Sampler Signature: Joe Sabach

	Sample ID	Date	Time	Lab ID	Matrix	Number of Containers	8260B / VOC_FP	14D			Remarks
1	MS26S	11.10.11	0952		Wt	3	X				1
2	MS44I		1041			3	X				2
3	MS46S		1142			3	X				3
4	MS18S		1246			3	X				4
5	MS14IS		1455			3	X				5
6	MS35I		1618			3	X				6
7	MS38S		1717			3	X				7
8	QCD10		1100			3	X				8
9	QCR08		1745			3	X				9
10	MS02IS	11.11.11	0956			3	X				10
11	MS08S		1102			3	X				11

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

Invoice Information

P.O.# 27400
Bill To: Accounts Payable
Baywest 5 Empire Dr
Saint Paul MN, 55103

Turnaround Requirements

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide Fax Results

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments:

*Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other_____(Circle One)

Analyze for 8 specific chemicals of concern via method 8260B
UPS Tracking# 1Z A19 8R9 41 9161 8430

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

Relinquished By:		Received By:		Relinquished By:		Received By:	
Signature: Joe Sabach	Date/Time: 11.11.11 1630	Signature: [illegible]	Date/Time: 11/12/11 0930	Signature	Date/Time	Signature	Date/Time
Printed Name: Joe Sabach	Firm: Baywest	Printed Name: [illegible]	Firm: CAS	Printed Name	Firm	Printed Name	Firm

Columbia Analytical Services™

CHAIN OF CUSTODY

SR#: 1611107 9

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

PAGE 1 OF 1 COC # 110111-12

PROJECT NAME: NIROP
PROJECT NUMBER: J070047
PROJECT MANAGER: Paul Walz
COMPANY/ADDRESS: Baywest 5 Empire Drive
CITY/STATE/ZIP: Saint Paul, MN, 55103
E-MAIL ADDRESS: Paulw@baywest
PHONE #: 651-291-3491 FAX: 651-291-0099
SAMPLER'S SIGNATURE: [signature]

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625 ☐ 8270 ☐ 8270LL ☐	Volatile Organics 624 ☐ 8260 ☐	Hydrocarbons (*see below) Gas ☐ 8021 ☐ BTEX ☐ Diesel ☐ Oil ☐	Fuel Fingerprint (FIQ) ☐ NW-HCID Screen	Oil & Grease/TRPH 1664 HEM ☐ 1664 SGT ☐	PCB's Aroclors ☐ Congeners ☐	Pesticides/Herbicides 608 ☐ 8081A ☐ 8141A ☐ 8151A ☐	Chlorophenolics - 8151M Tri ☐ Tetra ☐ PCP ☐	PAHS 8310 ☐ SIM ☐	Metals, Total or Dissolved (See list below)	Cyanide ☐ Hex-Chrom ☐	pH, Cond., Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS (circle)	NH_3-N, COD, Total-P, TKN, TOC, DOC (circle) NO_2+NO_3	TOX 9020 ☐ AOX 1650 ☐ 506 ☐					REMARKS
MS40D	11.11.11	1241		Wt	3		X																		
~~QCT07~~	~~11.11.1~~																								
QCT07	11.10.11	—		Wt	2		X																		

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. # 27488
Bill To: Accounts Payable, Baywest 5 Empire Dr, Saint Paul, MN 55103

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:

Analyze for 8 Specific Chemicals of concern via Method 8260B

UPS Tracking # 1Z A19 8R9 41 9161 8430

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature] Date/Time: 11.11.11 1630	Signature: [signature] Date/Time: 11/11/11 1630	Signature: Date/Time:	Signature: Date/Time:
Printed Name: Joe Stalock Firm: Baywest	Printed Name: Firm:	Printed Name: Firm:	Printed Name: Firm:

RCOC #1 03/10

Columbia Analytical Services

027601 CHAIN OF CUSTODY

SR# 161111079

COC Set____of____

Page 1 OF 2 COC# 110111-11

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

Project Name: NIROP
Project Number: J070077
Project Manager: Paul Walz
Company Name: Bay West Inc.
Comany Address: 5 Empire Drive
City/State/Zip: St Paul / MN / 55103
E-Mail Address: paulw@baywest.com
Phone #: 651-291-3491 FAX #: 651-291-0099
Sampler Signature:

	Sample ID	Date	Time	Lab ID	Matrix	Number of Containers	8260B / VOC_FP (14D)				Remarks
1	MS33D	11-10-11	1148		WT	9	X				1
2	MS07S	↓	1514			3	X				2
3	US6S02	↓	1631			3	X				3
4	MS33S	11-11-11	1017			3	X				4
5	MS31S	↓	1138			3	X				5
6	MS28D	↓	1322			3	X				6
7	QCD05	↓	1355			3	X				7
8	QCT08	11-10-11	—			2	Y				8
9	~~QCD06~~	~~11-11-11~~	~~—~~								9 (RJR)
10	QCD06	11.11.11	1530			3	X				10
11	MS28S	11.11.11	1456			3	X				11

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

Invoice Information

P.O.# 27488
Bill To: Account Payable
Bay West 5 Empire Dr.
St Paul MN 55103

Turnaround Requirements

___ 24 hr. ___ 48 hr. ___ 5 Day
X Standard (10-15 working days)
___ Provide Fax Results

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments: analyze for 8 specific chemicals of concern via method 8260B

UPS # 1Z A19 8R9 41 9367 0473

*Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other_____(Circle One)

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

Relinquished By:	Received By:	Relinquished By:	Received By:
Signature: [signature]	Signature: [signature]	Signature:	Signature:
Date/Time: 11-11-11 / 1630	Date/Time: 11/12/11 0930	Date/Time:	Date/Time:
Printed Name: Ryan Riley	Printed Name:	Printed Name:	Printed Name:
Firm: Bay West	Firm:	Firm:	Firm:

10

Columbia Analytical Services

CHAIN OF CUSTODY

SR#: 1C111079

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

PAGE 2 OF 2 COC # 110411-13

PROJECT NAME: NIRDP
PROJECT NUMBER: J072047
PROJECT MANAGER: Paul Walz
COMPANY/ADDRESS: Bay West, 5 Empire Drive
CITY/STATE/ZIP: St. Paul MN 55103
E-MAIL ADDRESS: paulw@baywest.com
PHONE #: 651-291-3491 FAX #: 651-291-0099
SAMPLER & SIGNATURE:

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625 ☐ 8270 ☐ 8270LL ☐	Volatile Organics 624 ☐ 8260B ☐	Hydrocarbons (*see below) Gas ☐ Diesel ☐ Oil ☐ ☐ Fuel Fingerprint (FIQ) ☐ NW-HCID Screen	Oil & Grease/TRPH 1664 HEM ☐ 1664 SGT ☐	PCB's Aroclors ☐ Congeners ☐	Pesticides/Herbicides 608 ☐ 8081A ☐ 8141A ☐ 8151A ☐	Chlorophenolics - 8151M Tri ☐ Tetra ☐ PCP ☐	PAHS 8310 ☐ SIM ☐	Metals, Total or Dissolved (See list below)	Cyanide ☐ Hex-Chrom ☐	pH, Cond, Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS (circle)	NH_3-N, COD, Total-P, TKN, TOC, DOC (circle) NO_2+NO_3	TOX 9020 ☐ AOX 1650 ☐ 506 ☐	REMARKS
QCR09	11-4-11	1545		WT	3		X												

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. # 27488
Bill To: Accounts Payable, BayWest, 5 Empire Drive, St. Paul MN 55103

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:

analyze for 8 specific chemicals of concern via method 8260B

UPS # 1Z A19 8R9 41 9367 0423

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature] Date/Time: 11-4-11/1630	Signature: [signature] Date/Time: 11/4/11 0930	Signature: Date/Time:	Signature: Date/Time:
Printed Name: Kevin Riley Firm: BayWest	Printed Name: JWC11 Firm: CAS	Printed Name: Firm:	Printed Name: Firm:

RCOC #1 03/10

11

PC Lesie

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

Client / Project: Baywest Service Request K11 10079

Received: 11/12/11 Opened: 11/12/11 By: af Unloaded: 11/12/11 By: af

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? 1F, 1B
   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Cooler Temp °C	Temp Blank °C	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
-0.1	1.5	290		1ZAA3R941936704 23	
-0.4	0.6	300		1ZA198R941916184 30	

7. Packing material used. *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Sleeves* *Other* _____
8. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
9. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
10. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
11. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
12. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
13. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
14. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
15. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

Volatile Organic Compounds

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111079

Cover Page - Organic Analysis Data Package
Volatile Organic Compounds

Sample Name	Lab Code	Date Collected	Date Received
MS26SDL	K1111079-001	11/10/2011	11/12/2011
MS26S	K1111079-001	11/10/2011	11/12/2011
MS44I	K1111079-002	11/10/2011	11/12/2011
MS44IDL	K1111079-002	11/10/2011	11/12/2011
MS46S	K1111079-003	11/10/2011	11/12/2011
MS46SDL	K1111079-003	11/10/2011	11/12/2011
MS18S	K1111079-004	11/10/2011	11/12/2011
MS18SDL	K1111079-004	11/10/2011	11/12/2011
MS14IS	K1111079-005	11/10/2011	11/12/2011
MS14ISDL	K1111079-005	11/10/2011	11/12/2011
MS35IDL	K1111079-006	11/10/2011	11/12/2011
MS35I	K1111079-006	11/10/2011	11/12/2011
MS38S	K1111079-007	11/10/2011	11/12/2011
MS38SDL	K1111079-007	11/10/2011	11/12/2011
QCD10	K1111079-008	11/10/2011	11/12/2011
QCD10DL	K1111079-008	11/10/2011	11/12/2011
QCR08	K1111079-009	11/10/2011	11/12/2011
MS02IS	K1111079-010	11/11/2011	11/12/2011
MS08SDL	K1111079-011	11/11/2011	11/12/2011
MS08S	K1111079-011	11/11/2011	11/12/2011
MS40D	K1111079-012	11/11/2011	11/12/2011
QCT07	K1111079-013	11/10/2011	11/12/2011
MS33D	K1111079-014	11/10/2011	11/12/2011
MS07S	K1111079-015	11/10/2011	11/12/2011
USGS02	K1111079-016	11/10/2011	11/12/2011
MS33S	K1111079-017	11/11/2011	11/12/2011
MS31S	K1111079-018	11/11/2011	11/12/2011
MS28D	K1111079-019	11/11/2011	11/12/2011
QCD05	K1111079-020	11/11/2011	11/12/2011
QCT08	K1111079-021	11/10/2011	11/12/2011
QCD06DL	K1111079-022	11/11/2011	11/12/2011
QCD06	K1111079-022	11/11/2011	11/12/2011
MS28S	K1111079-023	11/11/2011	11/12/2011
MS28SDL	K1111079-023	11/11/2011	11/12/2011
QCR09	K1111079-024	11/11/2011	11/12/2011
MS33DMS	KWG1111741-1	11/10/2011	11/12/2011
MS33DDMS	KWG1111741-2	11/10/2011	11/12/2011
QCR08MS	KWG1111871-1	11/10/2011	11/12/2011

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Holly Butcher

Name: Holly Butcher

Date: 11-29-2011

Title: Scientist

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111079

Cover Page - Organic Analysis Data Package
Volatile Organic Compounds

Sample Name	Lab Code	Date Collected	Date Received
QCR08DMS	KWG1111871-2	11/10/2011	11/12/2011

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Holly Butcher

Name: Holly Butcher

Date: 11-29-2011

Title: Scientist

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1111079

Surrogate Recovery Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
MS26S	K1111079-001	121	118	102
MS26SDL	K1111079-001	116	119	105
MS44IDL	K1111079-002	119	120	106
MS44I	K1111079-002	84	89	79
MS46SDL	K1111079-003	114	118	105
MS46S	K1111079-003	83	89	79
MS18SDL	K1111079-004	117	117	107
MS18S	K1111079-004	80	88	77
MS14ISDL	K1111079-005	81	88	78
MS14IS	K1111079-005	85	87	78
MS35IDL	K1111079-006	79	89	78
MS35I	K1111079-006	83	89	78
MS38S	K1111079-007	82	88	78
MS38SDL	K1111079-007	81	87	79
QCD10DL	K1111079-008	83	89	77
QCD10	K1111079-008	81	88	78
QCR08	K1111079-009	109	130	110
MS02IS	K1111079-010	109	130	112
MS08SDL	K1111079-011	109	129	112
MS08S	K1111079-011	111	129	113
MS40D	K1111079-012	108	129	113
QCT07	K1111079-013	108	131	114
MS33D	K1111079-014	113	117	109
MS07S	K1111079-015	108	129	114
USGS02	K1111079-016	108	130	110
MS33S	K1111079-017	109	130	112
MS31S	K1111079-018	110	130	114
MS28D	K1111079-019	109	129	113
QCD05	K1111079-020	108	130	112
QCT08	K1111079-021	109	129	114
QCD06DL	K1111079-022	109	129	112
QCD06	K1111079-022	111	131	114
MS28SDL	K1111079-023	104	120	108
MS28S	K1111079-023	104	118	111
QCR09	K1111079-024	108	130	114

Surrogate Recovery Control Limits (%)

Sur1 =	Dibromofluoromethane	73-122
Sur2 =	Toluene-d8	65-144
Sur3 =	4-Bromofluorobenzene	68-117

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1111079

Surrogate Recovery Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
Method Blank	KWG1111741-4	112	118	109
Method Blank	KWG1111867-5	77	87	78
Method Blank	KWG1111871-4	108	129	113
Method Blank	KWG1111981-4	103	120	108
MS33DMS	KWG1111741-1	109	117	111
MS33DDMS	KWG1111741-2	109	118	112
QCR08MS	KWG1111871-1	107	129	111
QCR08DMS	KWG1111871-2	108	131	111
Lab Control Sample	KWG1111741-3	109	117	112
Lab Control Sample	KWG1111867-3	85	91	83
Duplicate Lab Control Sample	KWG1111867-4	87	90	82
Lab Control Sample	KWG1111871-3	109	128	111
Lab Control Sample	KWG1111981-3	103	120	108

Surrogate Recovery Control Limits (%)

Sur1 =	Dibromofluoromethane	73-122
Sur2 =	Toluene-d8	65-144
Sur3 =	4-Bromofluorobenzene	68-117

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111079
Date Analyzed: 10/25/2011
Time Analyzed: 14:01

Tune Summary
Volatile Organic Compounds

File ID: J:\MS04\DATA\102511\1025F003.D
Instrument ID: MS04
Column:

Analysis Method: 8260C
Analysis Lot: KWG1111743

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	15.8	21351	PASS
75	95	30	60	41.3	55829	PASS
95	95	100	100	100.0	135152	PASS
96	95	5	9	6.9	9291	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	93.4	126194	PASS
175	174	5	9	7.9	9912	PASS
176	174	95	101	97.0	122434	PASS
177	176	5	9	6.6	8024	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Initial Calibration	KWG1111743-2	J:\MS04\DATA\102511\1025F006.D	10/25/2011	15:40	
Initial Calibration	KWG1111743-3	J:\MS04\DATA\102511\1025F007.D	10/25/2011	16:15	
Initial Calibration	KWG1111743-4	J:\MS04\DATA\102511\1025F008.D	10/25/2011	16:48	
Initial Calibration	KWG1111743-5	J:\MS04\DATA\102511\1025F009.D	10/25/2011	17:21	
Initial Calibration	KWG1111743-6	J:\MS04\DATA\102511\1025F010.D	10/25/2011	17:54	
Initial Calibration	KWG1111743-7	J:\MS04\DATA\102511\1025F011.D	10/25/2011	18:28	
Initial Calibration	KWG1111743-8	J:\MS04\DATA\102511\1025F012.D	10/25/2011	19:01	
Initial Calibration	KWG1111743-9	J:\MS04\DATA\102511\1025F013.D	10/25/2011	19:34	
Initial Calibration	KWG1111743-10	J:\MS04\DATA\102511\1025F014.D	10/25/2011	20:07	
Initial Calibration	KWG1111743-11	J:\MS04\DATA\102511\1025F015.D	10/25/2011	20:40	
Initial Calibration	KWG1111743-12	J:\MS04\DATA\102511\1025F016.D	10/25/2011	21:13	
Initial Calibration Verification	KWG1111743-13	J:\MS04\DATA\102511\1025F019.D	10/25/2011	22:51	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111079
Calibration Date: 10/25/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL11002
Instrument ID: MS04

Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS04\DATA\102511\1025F006.D	G	J:\MS04\DATA\102511\1025F012.D
B	J:\MS04\DATA\102511\1025F007.D	H	J:\MS04\DATA\102511\1025F013.D
C	J:\MS04\DATA\102511\1025F008.D	I	J:\MS04\DATA\102511\1025F014.D
D	J:\MS04\DATA\102511\1025F009.D	J	J:\MS04\DATA\102511\1025F015.D
E	J:\MS04\DATA\102511\1025F010.D	K	J:\MS04\DATA\102511\1025F016.D
F	J:\MS04\DATA\102511\1025F011.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Vinyl Chloride	A	0.10	0.431	B	0.20	0.336	C	0.50	0.347	D	1.0	0.350	E	2.0	0.397
	F	5.0	0.381	G	10	0.370	H	20	0.358	I	40	0.394	J	60	0.347
	K	70	0.338												
1,1-Dichloroethene				B	0.20	0.242	C	0.50	0.223	D	1.0	0.239	E	2.0	0.266
	F	5.0	0.264	G	10	0.261	H	20	0.248	I	40	0.272	J	60	0.240
	K	70	0.231												
trans-1,2-Dichloroethene	A	0.10	0.311	B	0.20	0.257	C	0.50	0.283	D	1.0	0.292	E	2.0	0.323
	F	5.0	0.328	G	10	0.314	H	20	0.305	I	40	0.323	J	60	0.295
	K	70	0.287												
1,1-Dichloroethane	A	0.10	0.449	B	0.20	0.451	C	0.50	0.417	D	1.0	0.457	E	2.0	0.483
	F	5.0	0.483	G	10	0.465	H	20	0.459	I	40	0.470	J	60	0.444
	K	70	0.431												
cis-1,2-Dichloroethene	A	0.10	0.279	B	0.20	0.282	C	0.50	0.281	D	1.0	0.299	E	2.0	0.331
	F	5.0	0.325	G	10	0.321	H	20	0.319	I	40	0.329	J	60	0.312
	K	70	0.303												
1,1,1-Trichloroethane (TCA)				B	0.20	0.311	C	0.50	0.307	D	1.0	0.326	E	2.0	0.354
	F	5.0	0.347	G	10	0.339	H	20	0.326	I	40	0.345	J	60	0.302
	K	70	0.283												
Trichloroethene (TCE)	A	0.10	0.191	B	0.20	0.217	C	0.50	0.229	D	1.0	0.242	E	2.0	0.265
	F	5.0	0.269	G	10	0.261	H	20	0.257	I	40	0.272	J	60	0.250
	K	70	0.245												
Tetrachloroethene (PCE)	A	0.10	0.330	B	0.20	0.294	C	0.50	0.287	D	1.0	0.322	E	2.0	0.365
	F	5.0	0.355	G	10	0.343	H	20	0.328	I	40	0.338	J	60	0.297
	K	70	0.282												
Dibromofluoromethane										D	6.0	0.248	E	7.0	0.238
	F	8.0	0.250	G	10	0.258	H	20	0.241	I	40	0.232	J	50	0.240
Toluene-d8										D	6.0	0.741	E	7.0	0.691
	F	8.0	0.719	G	10	0.808	H	20	0.756	I	40	0.722	J	50	0.761

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111079
Calibration Date: 10/25/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL11002
Instrument ID: MS04

Column: MS

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
4-Bromofluorobenzene				B	4.0	0.329	C	5.0	0.287	D	6.0	0.366	E	7.0	0.354
	F	8.0	0.375	G	10	0.396	H	20	0.374	I	40	0.362	J	50	0.388

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111079
Calibration Date: 10/25/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL11002
Instrument ID: MS04

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Vinyl Chloride	MS	AverageRF	% RSD	8.1		≤ 20	0.368		0.100
1,1-Dichloroethene	MS	AverageRF	% RSD	6.5		≤ 20	0.249		0.100
trans-1,2-Dichloroethene	MS	AverageRF	% RSD	7.0		≤ 20	0.302		0.100
1,1-Dichloroethane	MS	AverageRF	% RSD	4.5		≤ 20	0.455		0.200
cis-1,2-Dichloroethene	MS	AverageRF	% RSD	6.4		≤ 20	0.308		0.100
1,1,1-Trichloroethane (TCA)	MS	AverageRF	% RSD	7.0		≤ 20	0.324		0.100
Trichloroethene (TCE)	MS	AverageRF	% RSD	10.1		≤ 20	0.245		0.200
Tetrachloroethene (PCE)	MS	AverageRF	% RSD	8.7		≤ 20	0.322		0.200
Dibromofluoromethane	SURR	AverageRF	% RSD	3.6		≤ 20	0.244		0.01
Toluene-d8	SURR	AverageRF	% RSD	5.0		≤ 20	0.743		0.01
4-Bromofluorobenzene	SURR	AverageRF	% RSD	9.3		≤ 20	0.359		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111079
Calibration Date: 10/25/2011
Date Analyzed: 10/25/2011

Second Source Calibration Verification
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration ID: CAL11002
Units: PPB

File ID: J:\MS04\DATA\102511\1025F019.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	8.1	0.368	0.299	-19	NA	± 30 %	AverageRF
1,1-Dichloroethene	10	9.8	0.249	0.244	-2	NA	± 30 %	AverageRF
trans-1,2-Dichloroethene	10	10	0.302	0.309	2	NA	± 30 %	AverageRF
1,1-Dichloroethane	10	9.9	0.455	0.451	-1	NA	± 30 %	AverageRF
cis-1,2-Dichloroethene	10	10	0.308	0.319	4	NA	± 30 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	9.7	0.324	0.315	-3	NA	± 30 %	AverageRF
Trichloroethene (TCE)	10	10	0.245	0.253	3	NA	± 30 %	AverageRF
Tetrachloroethene (PCE)	10	9.8	0.322	0.315	-2	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111079
Date Analyzed: 11/17/2011
Time Analyzed: 11:15

Tune Summary
Volatile Organic Compounds

File ID: J:\MS04\DATA\111711\1117F003.D
Instrument ID: MS04
Column:

Analysis Method: 8260C
Analysis Lot: KWG1111736

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	16.0	16892	PASS
75	95	30	60	43.3	45786	PASS
95	95	100	100	100.0	105720	PASS
96	95	5	9	7.2	7624	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	89.5	94661	PASS
175	174	5	9	8.0	7560	PASS
176	174	95	101	99.6	94312	PASS
177	176	5	9	6.2	5867	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1111736-2	J:\MS04\DATA\111711\1117F004.D	11/17/2011	11:52	
Lab Control Sample	KWG1111741-3	J:\MS04\DATA\111711\1117F005.D	11/17/2011	12:25	
MS33DMS	KWG1111741-1	J:\MS04\DATA\111711\1117F006.D	11/17/2011	12:59	
MS33DDMS	KWG1111741-2	J:\MS04\DATA\111711\1117F007.D	11/17/2011	13:31	
Method Blank	KWG1111741-4	J:\MS04\DATA\111711\1117F010.D	11/17/2011	15:12	
MS33D	K1111079-014	J:\MS04\DATA\111711\1117F011.D	11/17/2011	15:45	
MS26SDL	K1111079-001	J:\MS04\DATA\111711\1117F014.D	11/17/2011	17:25	
MS46SDL	K1111079-003	J:\MS04\DATA\111711\1117F015.D	11/17/2011	17:58	
MS18SDL	K1111079-004	J:\MS04\DATA\111711\1117F016.D	11/17/2011	18:31	
MS44IDL	K1111079-002	J:\MS04\DATA\111711\1117F017.D	11/17/2011	19:05	
MS26S	K1111079-001	J:\MS04\DATA\111711\1117F020.D	11/17/2011	20:44	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111079
Date Analyzed: 11/17/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration Date: 10/25/2011
Calibration ID: CAL11002
Analysis Lot: KWG1111736
Units: PPB

File ID: J:\MS04\DATA\111711\1117F004.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	7.8	0.100	0.368	0.286	-22 *	NA	± 20 %	AverageRF
1,1-Dichloroethene	10	9.6	0.100	0.249	0.239	-4	NA	± 20 %	AverageRF
trans-1,2-Dichloroethene	10	9.7	0.100	0.302	0.292	-3	NA	± 20 %	AverageRF
1,1-Dichloroethane	10	9.7	0.200	0.455	0.439	-3	NA	± 20 %	AverageRF
cis-1,2-Dichloroethene	10	9.9	0.100	0.308	0.305	-1	NA	± 20 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	11	0.100	0.324	0.350	8	NA	± 20 %	AverageRF
Trichloroethene (TCE)	10	10	0.200	0.245	0.246	0	NA	± 20 %	AverageRF
Tetrachloroethene (PCE)	10	10	0.200	0.322	0.332	3	NA	± 20 %	AverageRF
Dibromofluoromethane	10	11	0.01	0.244	0.270	11	NA	± 20 %	AverageRF
Toluene-d8	10	12	0.01	0.743	0.878	18	NA	± 20 %	AverageRF
4-Bromofluorobenzene	10	11	0.01	0.359	0.406	13	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111079

Analysis Run Log
Volatile Organic Compounds

Analysis Method: 8260C

Analysis Lot: KWG1111736
Instrument ID: MS04

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1117F003.D	GC/MS Tuning - Bromofluorobenzene	KWG1111736-1	11/17/2011	11:15		11/17/2011	11:41
1117F004.D	Continuing Calibration Verification	KWG1111736-2	11/17/2011	11:52		11/17/2011	12:18
1117F005.D	Lab Control Sample	KWG1111741-3	11/17/2011	12:25		11/17/2011	12:51
1117F006.D	MS33DMS	KWG1111741-1	11/17/2011	12:59		11/17/2011	13:25
1117F007.D	MS33DDMS	KWG1111741-2	11/17/2011	13:31		11/17/2011	13:57
1117F010.D	Method Blank	KWG1111741-4	11/17/2011	15:12		11/17/2011	15:38
1117F011.D	MS33D	K1111079-014	11/17/2011	15:45		11/17/2011	16:11
1117F012.D	ZZZZZZ	ZZZZZZ	11/17/2011	16:19		11/17/2011	16:45
1117F013.D	ZZZZZZ	ZZZZZZ	11/17/2011	16:51		11/17/2011	17:17
1117F014.D	MS26SDL	K1111079-001	11/17/2011	17:25		11/17/2011	17:51
1117F015.D	MS46SDL	K1111079-003	11/17/2011	17:58		11/17/2011	18:24
1117F016.D	MS18SDL	K1111079-004	11/17/2011	18:31		11/17/2011	18:57
1117F017.D	MS44IDL	K1111079-002	11/17/2011	19:05		11/17/2011	19:31
1117F018.D	ZZZZZZ	ZZZZZZ	11/17/2011	19:38		11/17/2011	20:04
1117F019.D	ZZZZZZ	ZZZZZZ	11/17/2011	20:12		11/17/2011	20:38
1117F020.D	MS26S	K1111079-001	11/17/2011	20:44		11/17/2011	21:10
1117F021.D	ZZZZZZ	ZZZZZZ	11/17/2011	21:18		11/17/2011	21:44
1117F022.D	ZZZZZZ	ZZZZZZ	11/17/2011	21:51		11/17/2011	22:17
1117F023.D	ZZZZZZ	ZZZZZZ	11/17/2011	22:23		11/17/2011	22:49
1117F024.D	ZZZZZZ	ZZZZZZ	11/17/2011	22:57		11/17/2011	23:23

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1111079
Date Extracted: 11/17/2011
Date Analyzed: 11/17/2011
Time Analyzed: 15:12

Method Blank Summary
Volatile Organic Compounds

Sample Name: Method Blank
Lab Code: KWG1111741-4

Instrument ID: MS04
File ID: J:\MS04\DATA\111711\1117F010.D

Extraction Method: EPA 5030B
Analysis Method: 8260C

Level: Low
Extraction Lot: KWG1111741

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1111741-3	J:\MS04\DATA\111711\1117F005.D	11/17/11	12:25
MS33DMS	KWG1111741-1	J:\MS04\DATA\111711\1117F006.D	11/17/11	12:59
MS33DDMS	KWG1111741-2	J:\MS04\DATA\111711\1117F007.D	11/17/11	13:31
MS33D	K1111079-014	J:\MS04\DATA\111711\1117F011.D	11/17/11	15:45
MS26SDL	K1111079-001	J:\MS04\DATA\111711\1117F014.D	11/17/11	17:25
MS46SDL	K1111079-003	J:\MS04\DATA\111711\1117F015.D	11/17/11	17:58
MS18SDL	K1111079-004	J:\MS04\DATA\111711\1117F016.D	11/17/11	18:31
MS44IDL	K1111079-002	J:\MS04\DATA\111711\1117F017.D	11/17/11	19:05
MS26S	K1111079-001	J:\MS04\DATA\111711\1117F020.D	11/17/11	20:44

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111079
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	11/17/2011
		Date Analyzed:	11/17/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1111741-4	**Basis:**	NA
File ID:	J:\MS04\DATA\111711\1117F010.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111741
Analysis Method:	8260C	**Calibration ID:**	CAL11002

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	*
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	112	73-122	11/17/11	Acceptable
Toluene-d8	118	65-144	11/17/11	Acceptable
4-Bromofluorobenzene	109	68-117	11/17/11	Acceptable

Comments:

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1111079
Date Extracted: 11/17/2011
Date Analyzed: 11/17/2011

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1111741

	Lab Control Sample KWG1111741-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Vinyl Chloride	7.37	10.0	74	55-123
1,1-Dichloroethene	9.48	10.0	95	66-129
trans-1,2-Dichloroethene	9.76	10.0	98	67-125
1,1-Dichloroethane	9.35	10.0	94	68-132
cis-1,2-Dichloroethene	9.76	10.0	98	71-118
1,1,1-Trichloroethane (TCA)	10.3	10.0	103	59-136
Trichloroethene (TCE)	9.94	10.0	99	67-128
Tetrachloroethene (PCE)	9.93	10.0	99	62-126

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1111079
Date Extracted: 11/17/2011
Date Analyzed: 11/17/2011

Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organic Compounds

Sample Name: MS33D
Lab Code: K1111079-014

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260C

Level: Low
Extraction Lot: KWG1111741

Analyte Name	Sample Result	MS33DMS KWG1111741-1 Matrix Spike			MS33DDMS KWG1111741-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
Vinyl Chloride	ND	7.39	10.0	74	6.99	10.0	70	49-136	6	30
1,1-Dichloroethene	ND	9.41	10.0	94	8.56	10.0	86	59-171	9	30
trans-1,2-Dichloroethene	0.15	9.64	10.0	95	8.96	10.0	88	65-143	7	30
1,1-Dichloroethane	ND	9.06	10.0	91	8.56	10.0	86	69-141	6	30
cis-1,2-Dichloroethene	1.1	10.4	10.0	94	9.94	10.0	89	61-139	5	30
1,1,1-Trichloroethane (TCA)	ND	9.97	10.0	100	9.36	10.0	94	57-151	6	30
Trichloroethene (TCE)	2.7	12.3	10.0	96	11.7	10.0	90	53-139	5	30
Tetrachloroethene (PCE)	2.3	12.0	10.0	97	11.3	10.0	90	61-131	6	30

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.
Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111079
Date Analyzed: 10/31/2011
Time Analyzed: 11:40

Tune Summary
Volatile Organic Compounds

File ID: J:\MS13\DATA\103111\1031F003.D
Instrument ID: MS13
Column:

Analysis Method: 8260C
Analysis Lot: KWG1111931

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	16.6	36602	PASS
75	95	30	60	47.9	105360	PASS
95	95	100	100	100.0	219861	PASS
96	95	5	9	6.8	14963	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	96.8	212842	PASS
175	174	5	9	8.0	17036	PASS
176	174	95	101	98.8	210240	PASS
177	176	5	9	6.6	13941	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Initial Calibration	KWG1111931-2	J:\MS13\DATA\103111\1031F005.D	10/31/2011	12:50	
Initial Calibration	KWG1111931-3	J:\MS13\DATA\103111\1031F006.D	10/31/2011	13:18	
Initial Calibration	KWG1111931-4	J:\MS13\DATA\103111\1031F007.D	10/31/2011	13:47	
Initial Calibration	KWG1111931-5	J:\MS13\DATA\103111\1031F008.D	10/31/2011	14:15	
Initial Calibration	KWG1111931-6	J:\MS13\DATA\103111\1031F009.D	10/31/2011	14:44	
Initial Calibration	KWG1111931-7	J:\MS13\DATA\103111\1031F010.D	10/31/2011	15:12	
Initial Calibration	KWG1111931-8	J:\MS13\DATA\103111\1031F011.D	10/31/2011	15:41	
Initial Calibration	KWG1111931-9	J:\MS13\DATA\103111\1031F012.D	10/31/2011	16:09	
Initial Calibration	KWG1111931-10	J:\MS13\DATA\103111\1031F013.D	10/31/2011	16:38	
Initial Calibration	KWG1111931-11	J:\MS13\DATA\103111\1031F014.D	10/31/2011	17:07	
Initial Calibration	KWG1111931-12	J:\MS13\DATA\103111\1031F015.D	10/31/2011	17:35	
Initial Calibration Verification	KWG1111931-13	J:\MS13\DATA\103111\1031F019.D	10/31/2011	19:29	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111079
Calibration Date: 10/31/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL11020
Instrument ID: MS13

Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS13\DATA\103111\1031F005.D	G	J:\MS13\DATA\103111\1031F011.D
B	J:\MS13\DATA\103111\1031F006.D	H	J:\MS13\DATA\103111\1031F012.D
C	J:\MS13\DATA\103111\1031F007.D	I	J:\MS13\DATA\103111\1031F013.D
D	J:\MS13\DATA\103111\1031F008.D	J	J:\MS13\DATA\103111\1031F014.D
E	J:\MS13\DATA\103111\1031F009.D	K	J:\MS13\DATA\103111\1031F015.D
F	J:\MS13\DATA\103111\1031F010.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Vinyl Chloride	A	0.10	0.303	B	0.20	0.328	C	0.50	0.275	D	1.0	0.290	E	2.0	0.309
	F	5.0	0.318	G	10	0.281	H	20	0.257	I	40	0.280	J	60	0.286
	K	80	0.268												
1,1-Dichloroethene				B	0.20	0.260	C	0.50	0.207	D	1.0	0.227	E	2.0	0.236
	F	5.0	0.246	G	10	0.218	H	20	0.200	I	40	0.215	J	60	0.220
	K	80	0.204												
trans-1,2-Dichloroethene				B	0.20	0.263	C	0.50	0.238	D	1.0	0.271	E	2.0	0.265
	F	5.0	0.283	G	10	0.247	H	20	0.230	I	40	0.248	J	60	0.254
	K	80	0.238												
1,1-Dichloroethane	A	0.10	0.442	B	0.20	0.475	C	0.50	0.383	D	1.0	0.410	E	2.0	0.428
	F	5.0	0.442	G	10	0.403	H	20	0.375	I	40	0.416	J	60	0.419
	K	80	0.404												
cis-1,2-Dichloroethene				B	0.20	0.286	C	0.50	0.249	D	1.0	0.282	E	2.0	0.279
	F	5.0	0.283	G	10	0.264	H	20	0.245	I	40	0.273	J	60	0.272
	K	80	0.264												
1,1,1-Trichloroethane (TCA)	A	0.10	0.379	B	0.20	0.386	C	0.50	0.313	D	1.0	0.353	E	2.0	0.353
	F	5.0	0.377	G	10	0.346	H	20	0.330	I	40	0.365	J	60	0.383
	K	80	0.364												
Trichloroethene (TCE)				B	0.20	0.290	C	0.50	0.254	D	1.0	0.262	E	2.0	0.271
	F	5.0	0.283	G	10	0.254	H	20	0.238	I	40	0.262	J	60	0.267
	K	80	0.255												
Tetrachloroethene (PCE)				B	0.20	0.797	C	0.50	0.682	D	1.0	0.690	E	2.0	0.741
	F	5.0	0.761	G	10	0.681	H	20	0.624	I	40	0.679	J	60	0.709
	K	80	0.672												
Dibromofluoromethane				B	4.0	0.192	C	5.0	0.197	D	6.0	0.212	E	7.0	0.197
	F	8.0	0.166	G	10	0.198	H	20	0.212	I	40	0.205	J	50	0.210
	K	60	0.211												
Toluene-d8							C	5.0	0.842	D	6.0	0.890	E	7.0	0.823
	F	8.0	0.647	G	10	0.864	H	20	0.893	I	40	0.816	J	50	0.826
	K	60	0.837												

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111079
Calibration Date: 10/31/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL11020
Instrument ID: MS13

Column: MS

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
4-Bromofluorobenzene				B	4.0	0.825	C	5.0	0.841	D	6.0	0.882	E	7.0	0.837
	F	8.0	0.699	G	10	0.832	H	20	0.868	I	40	0.819	J	50	0.821
	K	60	0.829												

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111079
Calibration Date: 10/31/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL11020
Instrument ID: MS13

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Vinyl Chloride	MS	AverageRF	% RSD	7.6		≤ 20	0.290		0.100
1,1-Dichloroethene	MS	AverageRF	% RSD	8.6		≤ 20	0.223		0.100
trans-1,2-Dichloroethene	MS	AverageRF	% RSD	6.6		≤ 20	0.254		0.100
1,1-Dichloroethane	MS	AverageRF	% RSD	6.8		≤ 20	0.418		0.200
cis-1,2-Dichloroethene	MS	AverageRF	% RSD	5.3		≤ 20	0.270		0.100
1,1,1-Trichloroethane (TCA)	MS	AverageRF	% RSD	6.5		≤ 20	0.359		0.100
Trichloroethene (TCE)	MS	AverageRF	% RSD	5.7		≤ 20	0.264		0.200
Tetrachloroethene (PCE)	MS	AverageRF	% RSD	7.1		≤ 20	0.704		0.200
Dibromofluoromethane	SURR	AverageRF	% RSD	7.0		≤ 20	0.200		0.01
Toluene-d8	SURR	AverageRF	% RSD	8.8		≤ 20	0.826		0.01
4-Bromofluorobenzene	SURR	AverageRF	% RSD	5.9		≤ 20	0.825		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111079
Calibration Date: 10/31/2011
Date Analyzed: 10/31/2011

Second Source Calibration Verification
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration ID: CAL11020
Units: PPB

File ID: J:\MS13\DATA\103111\1031F019.D
J:\MS13\DATA\103111\1031F020.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	8.9	0.290	0.260	-11	NA	± 30 %	AverageRF
1,1-Dichloroethene	10	11	0.223	0.239	7	NA	± 30 %	AverageRF
trans-1,2-Dichloroethene	10	11	0.254	0.275	8	NA	± 30 %	AverageRF
1,1-Dichloroethane	10	10	0.418	0.429	3	NA	± 30 %	AverageRF
cis-1,2-Dichloroethene	10	11	0.270	0.285	5	NA	± 30 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	11	0.359	0.388	8	NA	± 30 %	AverageRF
Trichloroethene (TCE)	10	11	0.264	0.282	7	NA	± 30 %	AverageRF
Tetrachloroethene (PCE)	10	11	0.704	0.739	5	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111079

Analysis Run Log
Volatile Organic Compounds

Analysis Method: 8260C

Analysis Lot: KWG1111870
Instrument ID: MS13

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1121F003.D	GC/MS Tuning - Bromofluorobenzene	KWG1111870-1	11/21/2011	09:32		11/21/2011	09:51
1121F004.D	Continuing Calibration Verification	KWG1111870-2	11/21/2011	10:00		11/21/2011	10:19
1121F005.D	Lab Control Sample	KWG1111871-3	11/21/2011	10:29		11/21/2011	10:48
1121F006.D	QCR08MS	KWG1111871-1	11/21/2011	11:40		11/21/2011	11:59
1121F007.D	QCR08DMS	KWG1111871-2	11/21/2011	12:08		11/21/2011	12:27
1121F009.D	Method Blank	KWG1111871-4	11/21/2011	13:05		11/21/2011	13:24
1121F010.D	QCR08	K1111079-009	11/21/2011	13:34		11/21/2011	13:53
1121F011.D	QCT07	K1111079-013	11/21/2011	14:02		11/21/2011	14:21
1121F012.D	QCT08	K1111079-021	11/21/2011	14:31		11/21/2011	14:50
1121F013.D	MS07S	K1111079-015	11/21/2011	14:59		11/21/2011	15:18
1121F014.D	USGS02	K1111079-016	11/21/2011	15:28		11/21/2011	15:47
1121F015.D	MS02IS	K1111079-010	11/21/2011	15:56		11/21/2011	16:15
1121F016.D	MS40D	K1111079-012	11/21/2011	16:25		11/21/2011	16:44
1121F017.D	MS33S	K1111079-017	11/21/2011	16:53		11/21/2011	17:12
1121F018.D	MS31S	K1111079-018	11/21/2011	17:22		11/21/2011	17:41
1121F019.D	MS28D	K1111079-019	11/21/2011	17:50		11/21/2011	18:09
1121F020.D	QCD05	K1111079-020	11/21/2011	18:19		11/21/2011	18:38
1121F021.D	QCR09	K1111079-024	11/21/2011	18:47		11/21/2011	19:06
1121F022.D	MS08SDL	K1111079-011	11/21/2011	19:16		11/21/2011	19:35
1121F023.D	QCD06DL	K1111079-022	11/21/2011	19:44		11/21/2011	20:03
1121F024.D	MS08S	K1111079-011	11/21/2011	20:13		11/21/2011	20:32
1121F025.D	QCD06	K1111079-022	11/21/2011	20:41		11/21/2011	21:00

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111079
Date Analyzed: 11/21/2011
Time Analyzed: 09:32

Tune Summary
Volatile Organic Compounds

File ID: J:\MS13\DATA\112111\1121F003.D
Instrument ID: MS13
Column:

Analysis Method: 8260C
Analysis Lot: KWG1111870

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	16.5	17972	PASS
75	95	30	60	45.7	49642	PASS
95	95	100	100	100.0	108685	PASS
96	95	5	9	7.0	7659	PASS
173	174	0	2	0.3	288	PASS
174	95	50	120	93.6	101688	PASS
175	174	5	9	7.0	7122	PASS
176	174	95	101	98.3	100008	PASS
177	176	5	9	5.9	5912	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1111870-2	J:\MS13\DATA\112111\1121F004.D	11/21/2011	10:00	
Lab Control Sample	KWG1111871-3	J:\MS13\DATA\112111\1121F005.D	11/21/2011	10:29	
QCR08MS	KWG1111871-1	J:\MS13\DATA\112111\1121F006.D	11/21/2011	11:40	
QCR08DMS	KWG1111871-2	J:\MS13\DATA\112111\1121F007.D	11/21/2011	12:08	
Method Blank	KWG1111871-4	J:\MS13\DATA\112111\1121F009.D	11/21/2011	13:05	
QCR08	K1111079-009	J:\MS13\DATA\112111\1121F010.D	11/21/2011	13:34	
QCT07	K1111079-013	J:\MS13\DATA\112111\1121F011.D	11/21/2011	14:02	
QCT08	K1111079-021	J:\MS13\DATA\112111\1121F012.D	11/21/2011	14:31	
MS07S	K1111079-015	J:\MS13\DATA\112111\1121F013.D	11/21/2011	14:59	
USGS02	K1111079-016	J:\MS13\DATA\112111\1121F014.D	11/21/2011	15:28	
MS02IS	K1111079-010	J:\MS13\DATA\112111\1121F015.D	11/21/2011	15:56	
MS40D	K1111079-012	J:\MS13\DATA\112111\1121F016.D	11/21/2011	16:25	
MS33S	K1111079-017	J:\MS13\DATA\112111\1121F017.D	11/21/2011	16:53	
MS31S	K1111079-018	J:\MS13\DATA\112111\1121F018.D	11/21/2011	17:22	
MS28D	K1111079-019	J:\MS13\DATA\112111\1121F019.D	11/21/2011	17:50	
QCD05	K1111079-020	J:\MS13\DATA\112111\1121F020.D	11/21/2011	18:19	
QCR09	K1111079-024	J:\MS13\DATA\112111\1121F021.D	11/21/2011	18:47	
MS08SDL	K1111079-011	J:\MS13\DATA\112111\1121F022.D	11/21/2011	19:16	
QCD06DL	K1111079-022	J:\MS13\DATA\112111\1121F023.D	11/21/2011	19:44	
MS08S	K1111079-011	J:\MS13\DATA\112111\1121F024.D	11/21/2011	20:13	
QCD06	K1111079-022	J:\MS13\DATA\112111\1121F025.D	11/21/2011	20:41	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111079
Date Analyzed: 11/21/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration Date: 10/31/2011
Calibration ID: CAL11020
Analysis Lot: KWG1111870
Units: PPB

File ID: J:\MS13\DATA\112111\1121F004.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D		%Drift	Criteria	Curve Fit
Vinyl Chloride	10	11	0.100	0.290	0.320	10		NA	± 20 %	AverageRF
1,1-Dichloroethene	10	11	0.100	0.223	0.237	6		NA	± 20 %	AverageRF
trans-1,2-Dichloroethene	10	10	0.100	0.254	0.261	3		NA	± 20 %	AverageRF
1,1-Dichloroethane	10	10	0.200	0.418	0.430	3		NA	± 20 %	AverageRF
cis-1,2-Dichloroethene	10	10	0.100	0.270	0.273	1		NA	± 20 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	11	0.100	0.359	0.381	6		NA	± 20 %	AverageRF
Trichloroethene (TCE)	10	11	0.200	0.264	0.277	5		NA	± 20 %	AverageRF
Tetrachloroethene (PCE)	10	8.7	0.200	0.704	0.615	-13		NA	± 20 %	AverageRF
Dibromofluoromethane	10	11	0.01	0.200	0.217	9		NA	± 20 %	AverageRF
Toluene-d8	10	13	0.01	0.826	1.06	28	*	NA	± 20 %	AverageRF
4-Bromofluorobenzene	10	11	0.01	0.825	0.934	13		NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1111079
Date Extracted: 11/21/2011
Date Analyzed: 11/21/2011
Time Analyzed: 13:05

Method Blank Summary
Volatile Organic Compounds

Sample Name: Method Blank
Lab Code: KWG1111871-4

Extraction Method: EPA 5030B
Analysis Method: 8260C

Instrument ID: MS13
File ID: J:\MS13\DATA\112111\1121F009.D

Level: Low
Extraction Lot: KWG1111871

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1111871-3	J:\MS13\DATA\112111\1121F005.D	11/21/11	10:29
QCR08MS	KWG1111871-1	J:\MS13\DATA\112111\1121F006.D	11/21/11	11:40
QCR08DMS	KWG1111871-2	J:\MS13\DATA\112111\1121F007.D	11/21/11	12:08
QCR08	K1111079-009	J:\MS13\DATA\112111\1121F010.D	11/21/11	13:34
QCT07	K1111079-013	J:\MS13\DATA\112111\1121F011.D	11/21/11	14:02
QCT08	K1111079-021	J:\MS13\DATA\112111\1121F012.D	11/21/11	14:31
MS07S	K1111079-015	J:\MS13\DATA\112111\1121F013.D	11/21/11	14:59
USGS02	K1111079-016	J:\MS13\DATA\112111\1121F014.D	11/21/11	15:28
MS02IS	K1111079-010	J:\MS13\DATA\112111\1121F015.D	11/21/11	15:56
MS40D	K1111079-012	J:\MS13\DATA\112111\1121F016.D	11/21/11	16:25
MS33S	K1111079-017	J:\MS13\DATA\112111\1121F017.D	11/21/11	16:53
MS31S	K1111079-018	J:\MS13\DATA\112111\1121F018.D	11/21/11	17:22
MS28D	K1111079-019	J:\MS13\DATA\112111\1121F019.D	11/21/11	17:50
QCD05	K1111079-020	J:\MS13\DATA\112111\1121F020.D	11/21/11	18:19
QCR09	K1111079-024	J:\MS13\DATA\112111\1121F021.D	11/21/11	18:47
MS08SDL	K1111079-011	J:\MS13\DATA\112111\1121F022.D	11/21/11	19:16
QCD06DL	K1111079-022	J:\MS13\DATA\112111\1121F023.D	11/21/11	19:44
MS08S	K1111079-011	J:\MS13\DATA\112111\1121F024.D	11/21/11	20:13
QCD06	K1111079-022	J:\MS13\DATA\112111\1121F025.D	11/21/11	20:41

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111079
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	11/21/2011
		Date Analyzed:	11/21/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1111871-4	**Basis:**	NA
File ID:	J:\MS13\DATA\112111\1121F009.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111871
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	108	73-122	11/21/11	Acceptable
Toluene-d8	129	65-144	11/21/11	Acceptable
4-Bromofluorobenzene	113	68-117	11/21/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1111079
Project:	NIROP/J070047	**Date Extracted:**	11/21/2011
Sample Matrix:	Water	**Date Analyzed:**	11/21/2011

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	EPA 5030B	**Units:**	ug/L
Analysis Method:	8260C	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1111871

	Lab Control Sample KWG1111871-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Vinyl Chloride	10.2	10.0	102	55-123
1,1-Dichloroethene	11.0	10.0	110	66-129
trans-1,2-Dichloroethene	10.9	10.0	109	67-125
1,1-Dichloroethane	10.5	10.0	105	68-132
cis-1,2-Dichloroethene	10.4	10.0	104	71-118
1,1,1-Trichloroethane (TCA)	10.9	10.0	109	59-136
Trichloroethene (TCE)	10.8	10.0	108	67-128
Tetrachloroethene (PCE)	8.98	10.0	90	62-126

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1111079
Date Extracted: 11/21/2011
Date Analyzed: 11/21/2011

Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organic Compounds

Sample Name: QCR08
Lab Code: K1111079-009

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260C

Level: Low
Extraction Lot: KWG1111871

Analyte Name	Sample Result	QCR08MS KWG1111871-1 Matrix Spike			QCR08DMS KWG1111871-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
Vinyl Chloride	ND	10.2	10.0	102	9.27	10.0	93	49-136	9	30
1,1-Dichloroethene	ND	10.9	10.0	109	10.1	10.0	101	59-171	8	30
trans-1,2-Dichloroethene	ND	10.6	10.0	106	10.1	10.0	101	65-143	5	30
1,1-Dichloroethane	ND	9.98	10.0	100	9.54	10.0	95	69-141	5	30
cis-1,2-Dichloroethene	ND	9.98	10.0	100	9.54	10.0	95	61-139	5	30
1,1,1-Trichloroethane (TCA)	ND	10.6	10.0	106	9.84	10.0	98	57-151	7	30
Trichloroethene (TCE)	0.42	10.6	10.0	102	10.1	10.0	96	53-139	5	30
Tetrachloroethene (PCE)	ND	8.90	10.0	89	8.33	10.0	83	61-131	7	30

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.
Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111079

Analysis Run Log
Volatile Organic Compounds

Analysis Method: 8260C

Analysis Lot: KWG1111980
Instrument ID: MS13

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1123F003.D	GC/MS Tuning - Bromofluorobenzene	KWG1111980-1	11/23/2011	09:42		11/23/2011	10:01
1123F004.D	Continuing Calibration Verification	KWG1111980-2	11/23/2011	10:11		11/23/2011	10:30
1123F005.D	Lab Control Sample	KWG1111981-3	11/23/2011	10:39		11/23/2011	10:58
1123F006.D	ZZZZZZ	ZZZZZZ	11/23/2011	11:31		11/23/2011	11:50
1123F007.D	ZZZZZZ	ZZZZZZ	11/23/2011	12:00		11/23/2011	12:19
1123F009.D	Method Blank	KWG1111981-4	11/23/2011	12:57		11/23/2011	13:16
1123F010.D	ZZZZZZ	ZZZZZZ	11/23/2011	13:25		11/23/2011	13:44
1123F011.D	ZZZZZZ	ZZZZZZ	11/23/2011	13:54		11/23/2011	14:13
1123F012.D	ZZZZZZ	ZZZZZZ	11/23/2011	14:22		11/23/2011	14:41
1123F013.D	MS28SDL	K1111079-023	11/23/2011	14:51		11/23/2011	15:10
1123F014.D	MS28S	K1111079-023	11/23/2011	15:20		11/23/2011	15:39
1123F015.D	ZZZZZZ	ZZZZZZ	11/23/2011	15:48		11/23/2011	16:07
1123F016.D	ZZZZZZ	ZZZZZZ	11/23/2011	16:17		11/23/2011	16:36
1123F017.D	ZZZZZZ	ZZZZZZ	11/23/2011	16:45		11/23/2011	17:04
1123F018.D	ZZZZZZ	ZZZZZZ	11/23/2011	17:14		11/23/2011	17:33
1123F019.D	ZZZZZZ	ZZZZZZ	11/23/2011	17:42		11/23/2011	18:01
1123F020.D	ZZZZZZ	ZZZZZZ	11/23/2011	18:11		11/23/2011	18:30
1123F021.D	ZZZZZZ	ZZZZZZ	11/23/2011	18:40		11/23/2011	18:59
1123F022.D	ZZZZZZ	ZZZZZZ	11/23/2011	19:08		11/23/2011	19:27
1123F023.D	ZZZZZZ	ZZZZZZ	11/23/2011	19:37		11/23/2011	19:56
1123F024.D	ZZZZZZ	ZZZZZZ	11/23/2011	20:05		11/23/2011	20:24
1123F025.D	ZZZZZZ	ZZZZZZ	11/23/2011	20:33		11/23/2011	20:52
1123F026.D	ZZZZZZ	ZZZZZZ	11/23/2011	21:02		11/23/2011	21:21

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111079
Date Analyzed: 11/23/2011
Time Analyzed: 09:42

Tune Summary
Volatile Organic Compounds

File ID: J:\MS13\DATA\112311\1123F003.D
Instrument ID: MS13
Column:

Analysis Method: 8260C
Analysis Lot: KWG1111980

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	17.0	18720	PASS
75	95	30	60	46.6	51349	PASS
95	95	100	100	100.0	110210	PASS
96	95	5	9	7.0	7751	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	91.1	100400	PASS
175	174	5	9	6.2	6185	PASS
176	174	95	101	99.6	100045	PASS
177	176	5	9	7.1	7114	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1111980-2	J:\MS13\DATA\112311\1123F004.D	11/23/2011	10:11	
Lab Control Sample	KWG1111981-3	J:\MS13\DATA\112311\1123F005.D	11/23/2011	10:39	
Method Blank	KWG1111981-4	J:\MS13\DATA\112311\1123F009.D	11/23/2011	12:57	
MS28SDL	K1111079-023	J:\MS13\DATA\112311\1123F013.D	11/23/2011	14:51	
MS28S	K1111079-023	J:\MS13\DATA\112311\1123F014.D	11/23/2011	15:20	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111079
Date Analyzed: 11/23/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration Date: 10/31/2011
Calibration ID: CAL11020
Analysis Lot: KWG1111980
Units: PPB

File ID: J:\MS13\DATA\112311\1123F004.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	11	0.100	0.290	0.306	5	NA	± 20 %	AverageRF
1,1-Dichloroethene	10	10	0.100	0.223	0.224	0	NA	± 20 %	AverageRF
trans-1,2-Dichloroethene	10	9.8	0.100	0.254	0.248	-2	NA	± 20 %	AverageRF
1,1-Dichloroethane	10	9.6	0.200	0.418	0.401	-4	NA	± 20 %	AverageRF
cis-1,2-Dichloroethene	10	9.5	0.100	0.270	0.256	-5	NA	± 20 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	9.9	0.100	0.359	0.355	-1	NA	± 20 %	AverageRF
Trichloroethene (TCE)	10	9.6	0.200	0.264	0.253	-4	NA	± 20 %	AverageRF
Tetrachloroethene (PCE)	10	9.3	0.200	0.704	0.656	-7	NA	± 20 %	AverageRF
Dibromofluoromethane	10	10	0.01	0.200	0.209	4	NA	± 20 %	AverageRF
Toluene-d8	10	12	0.01	0.826	0.991	20	NA	± 20 %	AverageRF
4-Bromofluorobenzene	10	11	0.01	0.825	0.908	10	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1111079
Date Extracted: 11/23/2011
Date Analyzed: 11/23/2011
Time Analyzed: 12:57

Method Blank Summary
Volatile Organic Compounds

Sample Name: Method Blank
Lab Code: KWG1111981-4

Instrument ID: MS13
File ID: J:\MS13\DATA\112311\1123F009.D

Extraction Method: EPA 5030B
Analysis Method: 8260C

Level: Low
Extraction Lot: KWG1111981

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1111981-3	J:\MS13\DATA\112311\1123F005.D	11/23/11	10:39
MS28SDL	K1111079-023	J:\MS13\DATA\112311\1123F013.D	11/23/11	14:51
MS28S	K1111079-023	J:\MS13\DATA\112311\1123F014.D	11/23/11	15:20

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111079
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	11/23/2011
		Date Analyzed:	11/23/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1111981-4	**Basis:**	NA
File ID:	J:\MS13\DATA\112311\1123F009.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111981
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	103	73-122	11/23/11	Acceptable
Toluene-d8	120	65-144	11/23/11	Acceptable
4-Bromofluorobenzene	108	68-117	11/23/11	Acceptable

Comments:

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1111079
Date Extracted: 11/23/2011
Date Analyzed: 11/23/2011

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1111981

	Lab Control Sample KWG1111981-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Vinyl Chloride	8.31	10.0	83	55-123
1,1-Dichloroethene	9.54	10.0	95	66-129
trans-1,2-Dichloroethene	9.15	10.0	92	67-125
1,1-Dichloroethane	8.85	10.0	89	68-132
cis-1,2-Dichloroethene	8.82	10.0	88	71-118
1,1,1-Trichloroethane (TCA)	8.83	10.0	88	59-136
Trichloroethene (TCE)	9.08	10.0	91	67-128
Tetrachloroethene (PCE)	8.82	10.0	88	62-126

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111079
Date Analyzed: 09/20/2011
Time Analyzed: 09:36

Tune Summary
Volatile Organic Compounds

File ID: J:\MS18\DATA\092011\0920F004.D
Instrument ID: GC-MS 18
Column:

Analysis Method: 8260C
Analysis Lot: KWG1111946

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	15.8	7258	PASS
75	95	30	60	44.2	20312	PASS
95	95	100	100	100.0	45909	PASS
96	95	5	9	7.5	3456	PASS
173	174	0	2	0.3	119	PASS
174	95	50	120	89.3	40981	PASS
175	174	5	9	7.3	2982	PASS
176	174	95	101	96.3	39453	PASS
177	176	5	9	6.4	2511	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Initial Calibration	KWG1111946-2	J:\MS18\DATA\092011\0920F007.D	09/20/2011	10:43	
Initial Calibration	KWG1111946-3	J:\MS18\DATA\092011\0920F008.D	09/20/2011	11:06	
Initial Calibration	KWG1111946-4	J:\MS18\DATA\092011\0920F009.D	09/20/2011	11:27	
Initial Calibration	KWG1111946-5	J:\MS18\DATA\092011\0920F010.D	09/20/2011	11:49	
Initial Calibration	KWG1111946-6	J:\MS18\DATA\092011\0920F011.D	09/20/2011	12:10	
Initial Calibration	KWG1111946-7	J:\MS18\DATA\092011\0920F012.D	09/20/2011	12:32	
Initial Calibration	KWG1111946-8	J:\MS18\DATA\092011\0920F013.D	09/20/2011	12:54	
Initial Calibration	KWG1111946-9	J:\MS18\DATA\092011\0920F014.D	09/20/2011	13:15	
Initial Calibration	KWG1111946-10	J:\MS18\DATA\092011\0920F015.D	09/20/2011	13:37	
Initial Calibration	KWG1111946-11	J:\MS18\DATA\092011\0920F016.D	09/20/2011	13:59	
Initial Calibration	KWG1111946-12	J:\MS18\DATA\092011\0920F017.D	09/20/2011	14:21	
Initial Calibration Verification	KWG1111946-13	J:\MS18\DATA\092011\0920F022.D	09/20/2011	16:11	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111079
Calibration Date: 09/20/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10920
Instrument ID: GC-MS 18

Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS18\DATA\092011\0920F007.D	G	J:\MS18\DATA\092011\0920F013.D
B	J:\MS18\DATA\092011\0920F008.D	H	J:\MS18\DATA\092011\0920F014.D
C	J:\MS18\DATA\092011\0920F009.D	I	J:\MS18\DATA\092011\0920F015.D
D	J:\MS18\DATA\092011\0920F010.D	J	J:\MS18\DATA\092011\0920F016.D
E	J:\MS18\DATA\092011\0920F011.D	K	J:\MS18\DATA\092011\0920F017.D
F	J:\MS18\DATA\092011\0920F012.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Vinyl Chloride	A	0.10	0.439	B	0.20	0.460	C	0.50	0.449	D	1.0	0.498	E	2.0	0.444
	F	5.0	0.453	G	10	0.457	H	20	0.429	I	40	0.479	J	60	0.442
	K	80	0.429												
1,1-Dichloroethene	A	0.10	0.213	B	0.20	0.229	C	0.50	0.237	D	1.0	0.261	E	2.0	0.225
	F	5.0	0.229	G	10	0.234	H	20	0.220	I	40	0.247	J	60	0.227
	K	80	0.226												
trans-1,2-Dichloroethene	A	0.10	0.283	B	0.20	0.225	C	0.50	0.287	D	1.0	0.294	E	2.0	0.279
	F	5.0	0.288	G	10	0.294	H	20	0.278	I	40	0.314	J	60	0.289
	K	80	0.284												
1,1-Dichloroethane				B	0.20	0.415	C	0.50	0.457	D	1.0	0.501	E	2.0	0.445
	F	5.0	0.460	G	10	0.475	H	20	0.458	I	40	0.515	J	60	0.483
	K	80	0.480												
cis-1,2-Dichloroethene	A	0.10	0.291	B	0.20	0.324	C	0.50	0.292	D	1.0	0.320	E	2.0	0.324
	F	5.0	0.325	G	10	0.323	H	20	0.315	I	40	0.351	J	60	0.326
	K	80	0.320												
1,1,1-Trichloroethane (TCA)							C	0.50	0.227	D	1.0	0.261	E	2.0	0.255
	F	5.0	0.290	G	10	0.320	H	20	0.325	I	40	0.387	J	60	0.371
	K	80	0.373												
Trichloroethene (TCE)	A	0.10	0.245	B	0.20	0.264	C	0.50	0.265	D	1.0	0.299	E	2.0	0.269
	F	5.0	0.278	G	10	0.285	H	20	0.264	I	40	0.305	J	60	0.282
	K	80	0.280												
Tetrachloroethene (PCE)	A	0.10	0.539	B	0.20	0.622	C	0.50	0.691	D	1.0	0.768	E	2.0	0.675
	F	5.0	0.720	G	10	0.698	H	20	0.655	I	40	0.752	J	60	0.683
	K	80	0.683												
Dibromofluoromethane	A	3.0	0.210	B	4.0	0.217	C	5.0	0.219	D	6.0	0.252	E	7.0	0.254
	F	8.0	0.240	G	10	0.261	H	15	0.240	I	20	0.255	J	30	0.248
	K	40	0.254												
Toluene-d8	A	3.0	0.973	B	4.0	1.04	C	5.0	1.04	D	6.0	1.21	E	7.0	1.22
	F	8.0	1.10	G	10	1.17	H	15	1.02	I	20	1.06	J	30	1.05
	K	40	1.07												

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111079
Calibration Date: 09/20/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10920
Instrument ID: GC-MS 18

Column: MS

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
4-Bromofluorobenzene	A	3.0	0.922	B	4.0	0.919	C	5.0	0.999	D	6.0	1.18	E	7.0	1.25
	F	8.0	1.04	G	10	1.11	H	15	1.01	I	20	1.06	J	30	0.998
	K	40	1.03												

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111079
Calibration Date: 09/20/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10920
Instrument ID: GC-MS 18

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Vinyl Chloride	MS	AverageRF	% RSD	4.6		≤ 20	0.453		0.100
1,1-Dichloroethene	MS	AverageRF	% RSD	5.6		≤ 20	0.232		0.100
trans-1,2-Dichloroethene	MS	AverageRF	% RSD	7.7		≤ 20	0.283		0.100
1,1-Dichloroethane	MS	AverageRF	% RSD	6.1		≤ 20	0.469		0.200
cis-1,2-Dichloroethene	MS	AverageRF	% RSD	5.2		≤ 20	0.319		0.100
1,1,1-Trichloroethane (TCA)	MS	AverageRF	% RSD	18.4		≤ 20	0.312		0.100
Trichloroethene (TCE)	MS	AverageRF	% RSD	6.2		≤ 20	0.276		0.200
Tetrachloroethene (PCE)	MS	AverageRF	% RSD	9.2		≤ 20	0.681		0.200
Dibromofluoromethane	SURR	AverageRF	% RSD	7.4		≤ 20	0.241		0.01
Toluene-d8	SURR	AverageRF	% RSD	7.2		≤ 20	1.09		0.01
4-Bromofluorobenzene	SURR	AverageRF	% RSD	9.5		≤ 20	1.05		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111079
Calibration Date: 09/20/2011
Date Analyzed: 09/20/2011

Second Source Calibration Verification
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration ID: CAL10920
Units: PPB

File ID: J:\MS18\DATA\092011\0920F024.D
J:\MS18\DATA\092011\0920F022.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	7.8	0.453	0.353	-22	NA	± 30 %	AverageRF
1,1-Dichloroethene	10	10	0.232	0.237	2	NA	± 30 %	AverageRF
trans-1,2-Dichloroethene	10	10	0.283	0.292	3	NA	± 30 %	AverageRF
1,1-Dichloroethane	10	9.8	0.469	0.459	-2	NA	± 30 %	AverageRF
cis-1,2-Dichloroethene	10	9.9	0.319	0.315	-1	NA	± 30 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	9.7	0.312	0.302	-3	NA	± 30 %	AverageRF
Trichloroethene (TCE)	10	10	0.276	0.281	2	NA	± 30 %	AverageRF
Tetrachloroethene (PCE)	10	9.9	0.681	0.675	-1	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111079
Date Analyzed: 11/21/2011
Time Analyzed: 08:00

Tune Summary
Volatile Organic Compounds

File ID: J:\MS18\DATA\112111\1121F002.D
Instrument ID: GC-MS 18
Column:

Analysis Method: 8260C
Analysis Lot: KWG1111866

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	17.7	8181	PASS
75	95	30	60	46.8	21581	PASS
95	95	100	100	100.0	46096	PASS
96	95	5	9	6.7	3083	PASS
173	174	0	2	0.7	297	PASS
174	95	50	120	94.3	43461	PASS
175	174	5	9	6.5	2834	PASS
176	174	95	101	95.7	41610	PASS
177	176	5	9	6.4	2667	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1111886-2	J:\MS18\DATA\112111\1121F003.D	11/21/2011	08:24	
Lab Control Sample	KWG1111867-3	J:\MS18\DATA\112111\1121F004.D	11/21/2011	08:49	
Duplicate Lab Control Sample	KWG1111867-4	J:\MS18\DATA\112111\1121F005.D	11/21/2011	09:10	
Method Blank	KWG1111867-5	J:\MS18\DATA\112111\1121F012.D	11/21/2011	11:38	
MS14ISDL	K1111079-005	J:\MS18\DATA\112111\1121F016.D	11/21/2011	13:04	
MS35IDL	K1111079-006	J:\MS18\DATA\112111\1121F017.D	11/21/2011	13:25	
MS38SDL	K1111079-007	J:\MS18\DATA\112111\1121F026.D	11/21/2011	16:37	
QCD10DL	K1111079-008	J:\MS18\DATA\112111\1121F027.D	11/21/2011	16:58	
MS46S	K1111079-003	J:\MS18\DATA\112111\1121F028.D	11/21/2011	17:20	
MS18S	K1111079-004	J:\MS18\DATA\112111\1121F029.D	11/21/2011	17:41	
MS38S	K1111079-007	J:\MS18\DATA\112111\1121F030.D	11/21/2011	18:02	
QCD10	K1111079-008	J:\MS18\DATA\112111\1121F031.D	11/21/2011	18:24	
MS44I	K1111079-002	J:\MS18\DATA\112111\1121F033.D	11/21/2011	19:06	
MS14IS	K1111079-005	J:\MS18\DATA\112111\1121F034.D	11/21/2011	19:28	
MS35I	K1111079-006	J:\MS18\DATA\112111\1121F035.D	11/21/2011	19:49	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111079
Date Analyzed: 11/21/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration Date: 09/20/2011
Calibration ID: CAL10920
Analysis Lot: KWG1111866
Units: PPB

File ID: J:\MS18\DATA\112111\1121F003.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	8.0	0.100	0.453	0.362	-20	NA	± 20 %	AverageRF
1,1-Dichloroethene	10	11	0.100	0.232	0.244	5	NA	± 20 %	AverageRF
trans-1,2-Dichloroethene	10	10	0.100	0.283	0.291	3	NA	± 20 %	AverageRF
1,1-Dichloroethane	10	11	0.200	0.469	0.498	6	NA	± 20 %	AverageRF
cis-1,2-Dichloroethene	10	9.8	0.100	0.319	0.314	-2	NA	± 20 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	11	0.100	0.312	0.331	6	NA	± 20 %	AverageRF
Trichloroethene (TCE)	10	10	0.200	0.276	0.276	0	NA	± 20 %	AverageRF
Tetrachloroethene (PCE)	10	9.3	0.200	0.681	0.631	-7	NA	± 20 %	AverageRF
Dibromofluoromethane	10	8.7	0.01	0.241	0.209	-13	NA	± 20 %	AverageRF
Toluene-d8	10	9.2	0.01	1.09	1.00	-8	NA	± 20 %	AverageRF
4-Bromofluorobenzene	10	8.3	0.01	1.05	0.872	-17	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111079

Analysis Run Log
Volatile Organic Compounds

Analysis Method: 8260C

Analysis Lot: KWG1111866
Instrument ID: GC-MS 18

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1121F002.D	GC/MS Tuning - Generic	KWG1111866-1	11/21/2011	08:00		11/21/2011	08:16
1121F003.D	Continuing Calibration Verification	KWG1111886-2	11/21/2011	08:24		11/21/2011	08:40
1121F004.D	Lab Control Sample	KWG1111867-3	11/21/2011	08:49		11/21/2011	09:05
1121F005.D	Duplicate Lab Control Sample	KWG1111867-4	11/21/2011	09:10		11/21/2011	09:26
1121F007.D	ZZZZZZ	ZZZZZZ	11/21/2011	09:53		11/21/2011	10:09
1121F008.D	ZZZZZZ	ZZZZZZ	11/21/2011	10:14		11/21/2011	10:30
1121F009.D	ZZZZZZ	ZZZZZZ	11/21/2011	10:35		11/21/2011	10:51
1121F012.D	Method Blank	KWG1111867-5	11/21/2011	11:38		11/21/2011	11:54
1121F013.D	ZZZZZZ	ZZZZZZ	11/21/2011	12:00		11/21/2011	12:16
1121F014.D	ZZZZZZ	ZZZZZZ	11/21/2011	12:21		11/21/2011	12:37
1121F016.D	MS14ISDL	K1111079-005	11/21/2011	13:04		11/21/2011	13:20
1121F017.D	MS35IDL	K1111079-006	11/21/2011	13:25		11/21/2011	13:41
1121F018.D	ZZZZZZ	ZZZZZZ	11/21/2011	13:46		11/21/2011	14:02
1121F019.D	ZZZZZZ	ZZZZZZ	11/21/2011	14:08		11/21/2011	14:24
1121F020.D	ZZZZZZ	ZZZZZZ	11/21/2011	14:29		11/21/2011	14:45
1121F021.D	ZZZZZZ	ZZZZZZ	11/21/2011	14:50		11/21/2011	15:06
1121F022.D	ZZZZZZ	ZZZZZZ	11/21/2011	15:12		11/21/2011	15:28
1121F023.D	ZZZZZZ	ZZZZZZ	11/21/2011	15:33		11/21/2011	15:49
1121F024.D	ZZZZZZ	ZZZZZZ	11/21/2011	15:54		11/21/2011	16:10
1121F025.D	ZZZZZZ	ZZZZZZ	11/21/2011	16:16		11/21/2011	16:32
1121F026.D	MS38SDL	K1111079-007	11/21/2011	16:37		11/21/2011	16:53
1121F027.D	QCD10DL	K1111079-008	11/21/2011	16:58		11/21/2011	17:14
1121F028.D	MS46S	K1111079-003	11/21/2011	17:20		11/21/2011	17:36
1121F029.D	MS18S	K1111079-004	11/21/2011	17:41		11/21/2011	17:57
1121F030.D	MS38S	K1111079-007	11/21/2011	18:02		11/21/2011	18:18
1121F031.D	QCD10	K1111079-008	11/21/2011	18:24		11/21/2011	18:40
1121F032.D	ZZZZZZ	ZZZZZZ	11/21/2011	18:45		11/21/2011	19:01
1121F033.D	MS44I	K1111079-002	11/21/2011	19:06		11/21/2011	19:22
1121F034.D	MS14IS	K1111079-005	11/21/2011	19:28		11/21/2011	19:44
1121F035.D	MS35I	K1111079-006	11/21/2011	19:49		11/21/2011	20:05

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1111079
Date Extracted: 11/21/2011
Date Analyzed: 11/21/2011
Time Analyzed: 11:38

Method Blank Summary
Volatile Organic Compounds

Sample Name: Method Blank
Lab Code: KWG1111867-5

Instrument ID: GC-MS 18
File ID: J:\MS18\DATA\112111\1121F012.D

Extraction Method: EPA 5030B
Analysis Method: 8260C

Level: Low
Extraction Lot: KWG1111867

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1111867-3	J:\MS18\DATA\112111\1121F004.D	11/21/11	08:49
Duplicate Lab Control Sample	KWG1111867-4	J:\MS18\DATA\112111\1121F005.D	11/21/11	09:10
MS14ISDL	K1111079-005	J:\MS18\DATA\112111\1121F016.D	11/21/11	13:04
MS35IDL	K1111079-006	J:\MS18\DATA\112111\1121F017.D	11/21/11	13:25
MS38SDL	K1111079-007	J:\MS18\DATA\112111\1121F026.D	11/21/11	16:37
QCD10DL	K1111079-008	J:\MS18\DATA\112111\1121F027.D	11/21/11	16:58
MS46S	K1111079-003	J:\MS18\DATA\112111\1121F028.D	11/21/11	17:20
MS18S	K1111079-004	J:\MS18\DATA\112111\1121F029.D	11/21/11	17:41
MS38S	K1111079-007	J:\MS18\DATA\112111\1121F030.D	11/21/11	18:02
QCD10	K1111079-008	J:\MS18\DATA\112111\1121F031.D	11/21/11	18:24
MS44I	K1111079-002	J:\MS18\DATA\112111\1121F033.D	11/21/11	19:06
MS14IS	K1111079-005	J:\MS18\DATA\112111\1121F034.D	11/21/11	19:28
MS35I	K1111079-006	J:\MS18\DATA\112111\1121F035.D	11/21/11	19:49

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111079
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	11/21/2011
		Date Analyzed:	11/21/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1111867-5	**Basis:**	NA
File ID:	J:\MS18\DATA\112111\1121F012.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111867
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	77	73-122	11/21/11	Acceptable
Toluene-d8	87	65-144	11/21/11	Acceptable
4-Bromofluorobenzene	78	68-117	11/21/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1111079
Project:	NIROP/J070047	**Date Extracted:**	11/21/2011
Sample Matrix:	Water	**Date Analyzed:**	11/21/2011

Lab Control Spike/Duplicate Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	EPA 5030B	**Units:**	ug/L
Analysis Method:	8260C	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1111867

	Lab Control Sample KWG1111867-3 Lab Control Spike			Duplicate Lab Control Sample KWG1111867-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Vinyl Chloride	8.26	10.0	83	8.20	10.0	82	55-123	1	30
1,1-Dichloroethene	10.2	10.0	102	10.2	10.0	102	66-129	0	30
trans-1,2-Dichloroethene	10.1	10.0	101	10.3	10.0	103	67-125	2	30
1,1-Dichloroethane	10.4	10.0	104	10.2	10.0	102	68-132	1	30
cis-1,2-Dichloroethene	9.73	10.0	97	9.82	10.0	98	71-118	1	30
1,1,1-Trichloroethane (TCA)	10.6	10.0	106	10.4	10.0	104	59-136	2	30
Trichloroethene (TCE)	9.77	10.0	98	9.68	10.0	97	67-128	1	30
Tetrachloroethene (PCE)	8.78	10.0	88	9.32	10.0	93	62-126	6	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111079
Date Analyzed: 11/17/2011
Time Analyzed: 11:52

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID: J:\MS04\DATA\111711\1117F004.D
Instrument ID: MS04
Analysis Method: 8260C

Lab Code: KWG1111736-2
Analysis Lot: KWG1111736

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	1,579,268	13.14	1,181,086	17.42	608,728	20.07
	Upper Limit ==>	3,158,536	13.64	2,362,172	17.92	1,217,456	20.57
	Lower Limit ==>	789,634	12.64	590,543	16.92	304,364	19.57
	ICAL Result ==>	1,106,367	13.09	799,828	17.38	400,256	20.03
Associated Analyses							
Lab Control Sample	KWG1111741-3	1,624,761	13.14	1,198,856	17.42	610,721	20.07
MS33DMS	KWG1111741-1	1,647,358	13.15	1,195,225	17.42	603,955	20.07
MS33DDMS	KWG1111741-2	1,677,519	13.15	1,223,586	17.42	621,394	20.07
Method Blank	KWG1111741-4	1,637,224	13.15	1,195,114	17.42	590,300	20.07
MS33D	K1111079-014	1,616,027	13.15	1,169,514	17.42	578,477	20.07
MS26SDL	K1111079-001	1,589,362	13.15	1,169,713	17.43	572,213	20.08
MS46SDL	K1111079-003	1,622,616	13.15	1,178,454	17.43	579,360	20.08
MS18SDL	K1111079-004	1,556,710	13.16	1,120,527	17.42	552,309	20.07
MS44IDL	K1111079-002	1,475,064	13.15	1,097,307	17.43	536,666	20.08
MS26S	K1111079-001	1,447,080	13.16	1,065,728	17.43	509,383	20.08

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111079
Date Analyzed: 11/21/2011
Time Analyzed: 08:24

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID: J:\MS18\DATA\112111\1121F003.D
Instrument ID: GC-MS 18
Analysis Method: 8260C

Lab Code: KWG1111886-2
Analysis Lot: KWG1111866

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	458,139	5.65	180,370	9.10	181,992	11.53
	Upper Limit ==>	916,278	6.15	360,740	9.60	363,984	12.03
	Lower Limit ==>	229,070	5.15	90,185	8.60	90,996	11.03
	ICAL Result ==>	568,244	5.66	218,169	9.10	233,259	11.53
Associated Analyses							
Lab Control Sample	KWG1111867-3	454,895	5.65	179,314	9.10	188,793	11.52
Duplicate Lab Control Sample	KWG1111867-4	457,875	5.66	180,757	9.10	187,080	11.52
Method Blank	KWG1111867-5	466,348	5.66	181,217	9.10	181,990	11.53
MS14ISDL	K1111079-005	455,456	5.66	174,955	9.10	178,089	11.52
MS35IDL	K1111079-006	449,414	5.66	174,025	9.10	176,404	11.52
MS38SDL	K1111079-007	439,635	5.66	172,052	9.10	176,319	11.52
QCD10DL	K1111079-008	418,717	5.66	164,862	9.10	166,962	11.53
MS46S	K1111079-003	443,595	5.66	173,071	9.10	175,751	11.53
MS18S	K1111079-004	434,933	5.66	170,591	9.10	167,880	11.52
MS38S	K1111079-007	443,306	5.66	171,807	9.10	173,895	11.53
QCD10	K1111079-008	437,989	5.66	170,446	9.10	171,849	11.52
MS44I	K1111079-002	442,737	5.66	169,284	9.10	172,170	11.53
MS14IS	K1111079-005	443,489	5.66	170,890	9.10	171,787	11.53
MS35I	K1111079-006	437,464	5.66	170,792	9.10	171,255	11.53

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111079
Date Analyzed: 11/21/2011
Time Analyzed: 10:00

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID: J:\MS13\DATA\112111\1121F004.D
Instrument ID: MS13
Analysis Method: 8260C

Lab Code: KWG1111870-2
Analysis Lot: KWG1111870

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	978,363	6.12	426,027	12.03	483,090	15.07
	Upper Limit ==>	1,956,726	6.62	852,054	12.53	966,180	15.57
	Lower Limit ==>	489,182	5.62	213,014	11.53	241,545	14.57
	ICAL Result ==>	1,209,248	6.12	435,763	12.02	482,755	15.07
Associated Analyses							
Lab Control Sample	KWG1111871-3	999,570	6.12	438,218	12.03	491,252	15.07
QCR08MS	KWG1111871-1	978,705	6.13	425,415	12.03	479,014	15.07
QCR08DMS	KWG1111871-2	950,819	6.12	420,477	12.03	469,243	15.07
Method Blank	KWG1111871-4	956,876	6.12	416,503	12.03	483,663	15.07
QCR08	K1111079-009	943,529	6.12	419,939	12.03	479,692	15.07
QCT07	K1111079-013	948,158	6.12	422,545	12.03	493,850	15.07
QCT08	K1111079-021	964,270	6.12	425,222	12.03	489,680	15.07
MS07S	K1111079-015	956,073	6.12	426,263	12.03	487,913	15.07
USGS02	K1111079-016	966,973	6.12	428,939	12.03	486,269	15.07
MS02IS	K1111079-010	960,393	6.12	426,518	12.03	484,377	15.07
MS40D	K1111079-012	964,958	6.12	423,526	12.03	490,476	15.07
MS33S	K1111079-017	964,803	6.12	429,607	12.03	482,432	15.07
MS31S	K1111079-018	958,920	6.12	425,461	12.03	489,104	15.07
MS28D	K1111079-019	968,786	6.12	430,649	12.03	485,029	15.07
QCD05	K1111079-020	954,133	6.12	424,785	12.03	486,332	15.07
QCR09	K1111079-024	947,563	6.12	421,030	12.03	485,340	15.07
MS08SDL	K1111079-011	962,891	6.12	431,598	12.03	489,704	15.07
QCD06DL	K1111079-022	954,644	6.12	426,474	12.03	487,210	15.07
MS08S	K1111079-011	969,000	6.12	429,399	12.03	493,424	15.07
QCD06	K1111079-022	954,452	6.12	427,053	12.03	496,094	15.07

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111079
Date Analyzed: 11/23/2011
Time Analyzed: 10:11

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID: J:\MS13\DATA\112311\1123F004.D
Instrument ID: MS13
Analysis Method: 8260C

Lab Code: KWG1111980-2
Analysis Lot: KWG1111980

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	1,089,589	6.12	409,907	12.03	445,749	15.07
	Upper Limit ==>	2,179,178	6.62	819,814	12.53	891,498	15.57
	Lower Limit ==>	544,795	5.62	204,954	11.53	222,875	14.57
	ICAL Result ==>	1,209,248	6.12	435,763	12.02	482,755	15.07
Associated Analyses							
Lab Control Sample	KWG1111981-3	1,093,908	6.12	413,516	12.03	445,385	15.07
Method Blank	KWG1111981-4	1,067,006	6.12	403,704	12.03	444,379	15.07
MS28SDL	K1111079-023	1,078,980	6.12	408,943	12.03	447,224	15.07
MS28S	K1111079-023	1,097,041	6.12	405,073	12.03	443,882	15.07

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1111079
Date Extracted: 11/17/2011

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1111741
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
MS26S	K1111079-001	11/10/11	11/12/11	10ml	10ml	NA	
MS26SDL	K1111079-001	11/10/11	11/12/11	10ml	10ml	NA	
MS44IDL	K1111079-002	11/10/11	11/12/11	10ml	10ml	NA	
MS46SDL	K1111079-003	11/10/11	11/12/11	10ml	10ml	NA	
MS18SDL	K1111079-004	11/10/11	11/12/11	10ml	10ml	NA	
MS33D	K1111079-014	11/10/11	11/12/11	10ml	10ml	NA	
Method Blank	KWG1111741-4	NA	NA	10ml	10ml	NA	
MS33DMS	KWG1111741-1	11/10/11	11/12/11	10ml	10ml	NA	
MS33DDMS	KWG1111741-2	11/10/11	11/12/11	10ml	10ml	NA	
Lab Control Sample	KWG1111741-3	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1111079
Date Extracted: 11/21/2011

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1111867
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
MS44I	K1111079-002	11/10/11	11/12/11	10ml	10ml	NA	
MS46S	K1111079-003	11/10/11	11/12/11	10ml	10ml	NA	
MS18S	K1111079-004	11/10/11	11/12/11	10ml	10ml	NA	
MS14IS	K1111079-005	11/10/11	11/12/11	10ml	10ml	NA	
MS14ISDL	K1111079-005	11/10/11	11/12/11	10ml	10ml	NA	
MS35I	K1111079-006	11/10/11	11/12/11	10ml	10ml	NA	
MS35IDL	K1111079-006	11/10/11	11/12/11	10ml	10ml	NA	
MS38S	K1111079-007	11/10/11	11/12/11	10ml	10ml	NA	
MS38SDL	K1111079-007	11/10/11	11/12/11	10ml	10ml	NA	
QCD10	K1111079-008	11/10/11	11/12/11	10ml	10ml	NA	
QCD10DL	K1111079-008	11/10/11	11/12/11	10ml	10ml	NA	
Method Blank	KWG1111867-5	NA	NA	10ml	10ml	NA	
Lab Control Sample	KWG1111867-3	NA	NA	10ml	10ml	NA	
Duplicate Lab Control Sample	KWG1111867-4	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1111079
Date Extracted: 11/21/2011

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1111871
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
QCR08	K1111079-009	11/10/11	11/12/11	10ml	10ml	NA	
MS02IS	K1111079-010	11/11/11	11/12/11	10ml	10ml	NA	
MS08SDL	K1111079-011	11/11/11	11/12/11	10ml	10ml	NA	
MS08S	K1111079-011	11/11/11	11/12/11	10ml	10ml	NA	
MS40D	K1111079-012	11/11/11	11/12/11	10ml	10ml	NA	
QCT07	K1111079-013	11/10/11	11/12/11	10ml	10ml	NA	
MS07S	K1111079-015	11/10/11	11/12/11	10ml	10ml	NA	
USGS02	K1111079-016	11/10/11	11/12/11	10ml	10ml	NA	
MS33S	K1111079-017	11/11/11	11/12/11	10ml	10ml	NA	
MS31S	K1111079-018	11/11/11	11/12/11	10ml	10ml	NA	
MS28D	K1111079-019	11/11/11	11/12/11	10ml	10ml	NA	
QCD05	K1111079-020	11/11/11	11/12/11	10ml	10ml	NA	
QCT08	K1111079-021	11/10/11	11/12/11	10ml	10ml	NA	
QCD06DL	K1111079-022	11/11/11	11/12/11	10ml	10ml	NA	
QCD06	K1111079-022	11/11/11	11/12/11	10ml	10ml	NA	
QCR09	K1111079-024	11/11/11	11/12/11	10ml	10ml	NA	
Method Blank	KWG1111871-4	NA	NA	10ml	10ml	NA	
QCR08MS	KWG1111871-1	11/10/11	11/12/11	10ml	10ml	NA	
QCR08DMS	KWG1111871-2	11/10/11	11/12/11	10ml	10ml	NA	
Lab Control Sample	KWG1111871-3	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1111079
Date Extracted: 11/23/2011

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1111981
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
MS28S	K1111079-023	11/11/11	11/12/11	10ml	10ml	NA	
MS28SDL	K1111079-023	11/11/11	11/12/11	10ml	10ml	NA	
Method Blank	KWG1111981-4	NA	NA	10ml	10ml	NA	
Lab Control Sample	KWG1111981-3	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

SDG K1110800

SAMPLE CALC	SAMPLE ID MS26S					
IS AREA	DILUTION	COMPOUND OF INTEREST AREA	IS AMOUNT (NG)	PURGE VOLUME (ML)	AVE RRF	CONCENTRATION PPB
1589362	10	869657	100	10	0.2450	223.3362

Trichloroethene = 220 ug/L

Quantitation Report

Data File:	J:\MS04\DATA\111711\1117F014.D			**Instrument:**	MS04
Acqu Date:	11/17/2011 17:25	**Quant Date:**	11/18/2011 10:34	**Vial:**	12
Run Type:	DL			**Dilution:**	10.0
Lab ID:	K1111079-001 M5265			**Soln Conc. Units:**	PPB

Bottle ID:		**Tier:**	V	**Matrix:**	WATER
Prod Code:	8260B VOC_FP	**Collect Date:**	11/10/2011	**Receive Date:**	11/12/2011

Analysis Lot:	KWG1111736	**Prep Lot:**	KWG1111741	**Report Group:**	K1111079
Analysis Method:	8260C	**Prep Method:**	EPA 5030B		
Prep Ref:	1076758	**Prep Date:**	11/17/2011		

Quant Method:	J:\MS04\METHODS\102511MS04.M	**Calibration ID:**	CAL11002
Title:	Volatile Organic Compounds	**Report List ID:**	LJ8154
Tune Ref:	J:\MS04\DATA\111711\1117F003.D	**Method ID:**	MJ119
MB Ref:	J:\MS04\DATA\111711\1117F010.D	**Quant based on Report List**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	Fluorobenzene	13.15	0.01	96	1589362	10.00	OK
2	Chlorobenzene-d5	17.43	0.01	117	1169713	10.00	OK
3	1,4-Dichlorobenzene-d4	20.08	0.01	152	572213	10.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	Dibromofluoromethane	12.02	0.01	0.00	113	448595	11.58	116	73-122	OK	NR
1	Toluene-d8	15.50	0.01	0.00	98	1401739	11.88	119	65-144	OK	NR
2	4-Bromofluorobenzene	18.78	0.01	0.00	95	441799	10.52	105	68-117	OK	NR

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	Vinyl Chloride				62	0		0.75	U	NR
1	1,1-Dichloroethene				96	0		0.74	U	NR
1	trans-1,2-Dichloroethene	9.46	0.02	0.00	96	24799	0.5200	5.2	D	NR
1	1,1-Dichloroethane	10.19	0.01	0.00	63	3373	0.0500	0.77	U	NR
1	cis-1,2-Dichloroethene	11.24	0.01	0.00	96	144942	2.97	30	D	NR
1	1,1,1-Trichloroethane (TCA)				97	0		0.75	U	NR
1	Trichloroethene (TCE)	13.72		0.00	95	869657	22.32	220	D	
2	Tetrachloroethene (PCE)	16.37	0.02	0.00	164	7280	0.1900	1.9	JD	NR

Prep Amount:	10 ml	**Dilution:**	10.0
Prep Final Vol:	10 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**S. WARINO**	**DATE:**	**JANUARY 24, 2012**
FROM:	**EDWARD SEDLMYER**	**COPIES:**	**DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – SELECT VOCs**
CTO F27C NIROP FRIDLEY
SAMPLE DELIVERY GROUP (SDG) – K1111233

SAMPLES: 31/Aqueous

MS02D	MS03IS	MS09S	MS11S
MS12D	MS12IS	MS13IS	MS20S
MS29S	MS30D	MS30I	MS32S
MS35D	MS36D	MS36I	MS37S
MS40S	MS41D	MS41I	MS41S
MS54I	MS55I	MS56I	MS56S
QCD07	QCD11	QCR10	QCR11
QCR12	QCT09	QCT10	

Overview

The sample set for NIROP Fridley, CTO F27C, SDG K1111233 consists of twenty-six (26) aqueous environmental samples, three (3) rinse blanks (QCR10, QCR11, and QCR12), and two (2) trip blanks (QCT09 and QCT10). Two field duplicate pairs were associated with these SDG: MS12IS / QCD07 and MS36I / QCD11.

All samples were analyzed for select volatile organic compounds (VOCs) including vinyl chloride, 1,1-dichloroethene, trans-1,2-dichloroethene, 1,1-dichloroethane, cis-1,2-dichloroethene, 1,1,1-trichloroethane, trichloroethene and tetrachloroethene. The samples were collected by Bay West on November 14, 15, and 16, 2011 and analyzed by Columbia Analytical Services, Inc. VOC analyses were conducted using SW846 method 8260B.

These data were evaluated based on the following parameters:

* • Data Completeness
* • Holding Times
* • GC/MS Tuning and System Performance
* • Initial and Continuing Calibrations
* • Laboratory Method and Field Quality Control Blank Analyses
* • Surrogate Recoveries
* • Laboratory Control Sample / Laboratory Control Sample Duplicate Results
* • Matrix Spike / Matrix Spike Duplicate Results
* • Field Duplicate Precision
* • Internal Standard Recoveries
* • Compound Quantitation
* • Compound Identification
* • Detection Limits

* - All quality control criteria were met for this parameter.

VOC

No qualification of the data was necessary.

Notes

All results were reported to the method detection limit (MDL) by the laboratory.

Positive results reported below the reporting limit (RL) but above the method detection limit (MDL) for the organic analyses were qualified as estimated, "J".

The rinse blank (QCR12) had a detection for trichloroethene at 0.16 ug/L. No action was taken on this basis because all trichloroethene results in the associated samples had concentrations greater than 5 times the concentration present in the rinse blank, except MS20S.

Samples MS11S, MS12IS, MS29S, MS30I, MS32S, MS36I, MS41I, MS54I, MS56I, MS56S, QCD07, and QCD11 were diluted due to concentrations greater than the linear range of the instrument for several compounds. The laboratory submitted multiple runs of the samples. The lowest detection limits were used to report the nondetected compounds.

Executive Summary

Laboratory Performance: None.

Other Factors Affecting Data Quality: Positive results reported below the reporting limit (RL) but above the method detection limit (MDL) for the organic analyses were qualified as estimated, (J).

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Organic Review", October 1999, and the Department of Defense (DoD) document entitled "Quality Systems Manual (QSM) for Environmental Laboratories", April 2009.

The text of this report has been formulated to address only those problem areas affecting data quality.

Tetra Tech NUS
Edward Sedlmyer
Chemist/Data Validator

Tetra Tech NUS
Joseph A. Samchuck
Quality Assurance Officer

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = ICP PDS Recovery Noncompliance; MSA's $r < 0.995$
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = RPD between columns/detectors >40% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient $r < 0.995$
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is less than sample activity
Z1 = Tentatively Identified Compound considered presumptively present
Z2 = Tentatively Identified Compound column bleed

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Collected:**	11/15/2011
Sample Matrix:	Water	**Date Received:**	11/17/2011
		Date Extracted:	11/29/2011
		Date Analyzed:	11/29/2011

Volatile Organic Compounds

Sample Name:	MS02D	**Units:**	ug/L
Lab Code:	K1111233-019	**Basis:**	NA
File ID:	J:\MS18\DATA\112911\1129F014.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112075
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.11**	J	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.62**		0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**3.2**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**3.7**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**0.62**		0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	85	73-122	11/29/11	Acceptable
Toluene-d8	87	65-144	11/29/11	Acceptable
4-Bromofluorobenzene	77	68-117	11/29/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Collected:**	11/14/2011
Sample Matrix:	Water	**Date Received:**	11/17/2011
		Date Extracted:	11/23/2011
		Date Analyzed:	11/23/2011

Volatile Organic Compounds

Sample Name:	MS03IS	**Units:**	ug/L
Lab Code:	K1111233-017	**Basis:**	NA
File ID:	J:\MS13\DATA\112311\1123F019.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111981
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.23**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.26**	J	0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.13**	J	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**14**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**28**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**15**		0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	103	73-122	11/23/11	Acceptable
Toluene-d8	118	65-144	11/23/11	Acceptable
4-Bromofluorobenzene	108	68-117	11/23/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Collected:**	11/15/2011
Sample Matrix:	Water	**Date Received:**	11/17/2011
		Date Extracted:	11/28/2011
		Date Analyzed:	11/28/2011

Volatile Organic Compounds

Sample Name:	MS09S	**Units:**	ug/L
Lab Code:	K1111233-021	**Basis:**	NA
File ID:	J:\MS18\DATA\112811\1128F031.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112033
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.070**	J	0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.090**	J	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**2.0**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	**0.55**		0.50	0.075	
79-01-6	Trichloroethene (TCE)	**40**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**7.0**		0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	86	73-122	11/28/11	Acceptable
Toluene-d8	91	65-144	11/28/11	Acceptable
4-Bromofluorobenzene	76	68-117	11/28/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Collected:**	11/15/2011
Sample Matrix:	Water	**Date Received:**	11/17/2011
		Date Extracted:	11/28/2011
		Date Analyzed:	11/28/2011

Volatile Organic Compounds

Sample Name:	MS11S	**Units:**	ug/L
Lab Code:	K1111233-031	**Basis:**	NA
File ID:	J:\MS18\DATA\112811\1128F034.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112033
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.28**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**8.5**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.64**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**150**	E	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**33**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	85	73-122	11/28/11	Acceptable
Toluene-d8	88	65-144	11/28/11	Acceptable
4-Bromofluorobenzene	76	68-117	11/28/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Collected:**	11/15/2011
Sample Matrix:	Water	**Date Received:**	11/17/2011
		Date Extracted:	11/28/2011
		Date Analyzed:	11/28/2011

Volatile Organic Compounds

Sample Name:	MS11SDL	**Units:**	ug/L
Lab Code:	K1111233-031	**Basis:**	NA
File ID:	J:\MS18\DATA\112811\1128F023.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112033
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 10

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.75	U	2.0	0.75	
75-35-4	1,1-Dichloroethene	0.74	U	5.0	0.74	
156-60-5	trans-1,2-Dichloroethene	**8.1**	D	5.0	0.57	
75-34-3	1,1-Dichloroethane	0.77	U	5.0	0.77	
156-59-2	cis-1,2-Dichloroethene	**130**	D	5.0	0.67	
71-55-6	1,1,1-Trichloroethane (TCA)	0.75	U	5.0	0.75	
79-01-6	Trichloroethene (TCE)	**29**	D	5.0	1.0	
127-18-4	Tetrachloroethene (PCE)	0.99	U	5.0	0.99	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	84	73-122	11/28/11	Acceptable
Toluene-d8	87	65-144	11/28/11	Acceptable
4-Bromofluorobenzene	78	68-117	11/28/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Collected:**	11/14/2011
Sample Matrix:	Water	**Date Received:**	11/17/2011
		Date Extracted:	11/23/2011
		Date Analyzed:	11/23/2011

Volatile Organic Compounds

Sample Name:	MS12D	**Units:**	ug/L
Lab Code:	K1111233-002	**Basis:**	NA
File ID:	J:\MS13\DATA\112311\1123F016.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111981
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.12**	J	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.20**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.18**	J	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**4.1**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**27**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**35**		0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	101	73-122	11/23/11	Acceptable
Toluene-d8	118	65-144	11/23/11	Acceptable
4-Bromofluorobenzene	109	68-117	11/23/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Collected:**	11/15/2011
Sample Matrix:	Water	**Date Received:**	11/17/2011
		Date Extracted:	11/28/2011
		Date Analyzed:	11/28/2011

Volatile Organic Compounds

Sample Name:	MS12IS	**Units:**	ug/L
Lab Code:	K1111233-007	**Basis:**	NA
File ID:	J:\MS18\DATA\112811\1128F028.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112033
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.52**		0.20	0.075	
75-35-4	1,1-Dichloroethene	**1.1**		0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**82**	E	0.50	0.057	
75-34-3	1,1-Dichloroethane	**1.3**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**34**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**44**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	84	73-122	11/28/11	Acceptable
Toluene-d8	88	65-144	11/28/11	Acceptable
4-Bromofluorobenzene	79	68-117	11/28/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Collected:**	11/15/2011
Sample Matrix:	Water	**Date Received:**	11/17/2011
		Date Extracted:	11/29/2011
		Date Analyzed:	11/29/2011

Volatile Organic Compounds

Sample Name:	MS12ISDL	**Units:**	ug/L
Lab Code:	K1111233-007	**Basis:**	NA
File ID:	J:\MS18\DATA\112911\1129F018.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112075
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 5

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.45**	JD	1.0	0.38	
75-35-4	1,1-Dichloroethene	**1.2**	JD	2.5	0.37	
156-60-5	trans-1,2-Dichloroethene	**72**	D	2.5	0.29	
75-34-3	1,1-Dichloroethane	**1.3**	JD	2.5	0.39	
156-59-2	cis-1,2-Dichloroethene	**30**	D	2.5	0.34	
71-55-6	1,1,1-Trichloroethane (TCA)	0.38	U	2.5	0.38	
79-01-6	Trichloroethene (TCE)	**43**	D	2.5	0.50	
127-18-4	Tetrachloroethene (PCE)	0.50	U	2.5	0.50	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	85	73-122	11/29/11	Acceptable
Toluene-d8	88	65-144	11/29/11	Acceptable
4-Bromofluorobenzene	78	68-117	11/29/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Collected:**	11/15/2011
Sample Matrix:	Water	**Date Received:**	11/17/2011
		Date Extracted:	11/23/2011
		Date Analyzed:	11/23/2011

Volatile Organic Compounds

Sample Name:	MS13IS	**Units:**	ug/L
Lab Code:	K1111233-006	**Basis:**	NA
File ID:	J:\MS13\DATA\112311\1123F021.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111981
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.17**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.53**		0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**1.8**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**19**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	103	73-122	11/23/11	Acceptable
Toluene-d8	120	65-144	11/23/11	Acceptable
4-Bromofluorobenzene	109	68-117	11/23/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Collected:**	11/15/2011
Sample Matrix:	Water	**Date Received:**	11/17/2011
		Date Extracted:	11/28/2011
		Date Analyzed:	11/28/2011

Volatile Organic Compounds

Sample Name:	MS20S	**Units:**	ug/L
Lab Code:	K1111233-018	**Basis:**	NA
File ID:	J:\MS18\DATA\112811\1128F013.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112033
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**0.37**	J	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	82	73-122	11/28/11	Acceptable
Toluene-d8	88	65-144	11/28/11	Acceptable
4-Bromofluorobenzene	77	68-117	11/28/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Collected:**	11/15/2011
Sample Matrix:	Water	**Date Received:**	11/17/2011
		Date Extracted:	11/23/2011
		Date Analyzed:	11/23/2011

Volatile Organic Compounds

Sample Name:	MS29S	**Units:**	ug/L
Lab Code:	K1111233-004	**Basis:**	NA
File ID:	J:\MS13\DATA\112311\1123F025.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111981
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.14**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**3.1**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.25**	J	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**85**	E	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**22**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**0.44**	J	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	104	73-122	11/23/11	Acceptable
Toluene-d8	118	65-144	11/23/11	Acceptable
4-Bromofluorobenzene	110	68-117	11/23/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Collected:**	11/15/2011
Sample Matrix:	Water	**Date Received:**	11/17/2011
		Date Extracted:	11/23/2011
		Date Analyzed:	11/23/2011

Volatile Organic Compounds

Sample Name:	MS29SDL	**Units:**	ug/L
Lab Code:	K1111233-004	**Basis:**	NA
File ID:	J:\MS13\DATA\112311\1123F023.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111981
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 5

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.38	U	1.0	0.38	
75-35-4	1,1-Dichloroethene	0.37	U	2.5	0.37	
156-60-5	trans-1,2-Dichloroethene	**2.9**	D	2.5	0.29	
75-34-3	1,1-Dichloroethane	0.39	U	2.5	0.39	
156-59-2	cis-1,2-Dichloroethene	**79**	D	2.5	0.34	
71-55-6	1,1,1-Trichloroethane (TCA)	0.38	U	2.5	0.38	
79-01-6	Trichloroethene (TCE)	**20**	D	2.5	0.50	
127-18-4	Tetrachloroethene (PCE)	0.50	U	2.5	0.50	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	102	73-122	11/23/11	Acceptable
Toluene-d8	118	65-144	11/23/11	Acceptable
4-Bromofluorobenzene	108	68-117	11/23/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Collected:**	11/14/2011
Sample Matrix:	Water	**Date Received:**	11/17/2011
		Date Extracted:	11/23/2011
		Date Analyzed:	11/23/2011

Volatile Organic Compounds

Sample Name:	MS30D	**Units:**	ug/L
Lab Code:	K1111233-016	**Basis:**	NA
File ID:	J:\MS13\DATA\112311\1123F012.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111981
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.17**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.46**	J	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**3.5**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**18**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**2.1**		0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	103	73-122	11/23/11	Acceptable
Toluene-d8	118	65-144	11/23/11	Acceptable
4-Bromofluorobenzene	109	68-117	11/23/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Collected:**	11/15/2011
Sample Matrix:	Water	**Date Received:**	11/17/2011
		Date Extracted:	11/28/2011
		Date Analyzed:	11/28/2011

Volatile Organic Compounds

Sample Name:	MS30I	**Units:**	ug/L
Lab Code:	K1111233-020	**Basis:**	NA
File ID:	J:\MS18\DATA\112811\1128F021.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112033
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.54**		0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.93**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.82**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**4.5**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**100**	E	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**1.7**		0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	86	73-122	11/28/11	Acceptable
Toluene-d8	89	65-144	11/28/11	Acceptable
4-Bromofluorobenzene	77	68-117	11/28/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Collected:**	11/15/2011
Sample Matrix:	Water	**Date Received:**	11/17/2011
		Date Extracted:	11/28/2011
		Date Analyzed:	11/28/2011

Volatile Organic Compounds

Sample Name:	MS30IDL	**Units:**	ug/L
Lab Code:	K1111233-020	**Basis:**	NA
File ID:	J:\MS18\DATA\112811\1128F020.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112033
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 10

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.75	U	2.0	0.75	
75-35-4	1,1-Dichloroethene	0.74	U	5.0	0.74	
156-60-5	trans-1,2-Dichloroethene	**0.90**	JD	5.0	0.57	
75-34-3	1,1-Dichloroethane	**1.2**	JD	5.0	0.77	
156-59-2	cis-1,2-Dichloroethene	**5.1**	D	5.0	0.67	
71-55-6	1,1,1-Trichloroethane (TCA)	0.75	U	5.0	0.75	
79-01-6	Trichloroethene (TCE)	**91**	D	5.0	1.0	
127-18-4	Tetrachloroethene (PCE)	**2.2**	JD	5.0	0.99	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	82	73-122	11/28/11	Acceptable
Toluene-d8	88	65-144	11/28/11	Acceptable
4-Bromofluorobenzene	79	68-117	11/28/11	Acceptable

Comments

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Collected:**	11/15/2011
Sample Matrix:	Water	**Date Received:**	11/17/2011
		Date Extracted:	11/23/2011
		Date Analyzed:	11/23/2011

Volatile Organic Compounds

Sample Name:	MS32S	**Units:**	ug/L
Lab Code:	K1111233-005	**Basis:**	NA
File ID:	J:\MS13\DATA\112311\1123F026.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111981
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.11**	J	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.66**		0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**24**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.48**	J	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**92**	E	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**19**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	103	73-122	11/23/11	Acceptable
Toluene-d8	119	65-144	11/23/11	Acceptable
4-Bromofluorobenzene	109	68-117	11/23/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Collected:**	11/15/2011
Sample Matrix:	Water	**Date Received:**	11/17/2011
		Date Extracted:	11/23/2011
		Date Analyzed:	11/23/2011

Volatile Organic Compounds

Sample Name:	MS32SDL	**Units:**	ug/L
Lab Code:	K1111233-005	**Basis:**	NA
File ID:	J:\MS13\DATA\112311\1123F024.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111981
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 5

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.38	U	1.0	0.38	
75-35-4	1,1-Dichloroethene	**0.55**	JD	2.5	0.37	
156-60-5	trans-1,2-Dichloroethene	**21**	D	2.5	0.29	
75-34-3	1,1-Dichloroethane	**0.50**	JD	2.5	0.39	
156-59-2	cis-1,2-Dichloroethene	**83**	D	2.5	0.34	
71-55-6	1,1,1-Trichloroethane (TCA)	0.38	U	2.5	0.38	
79-01-6	Trichloroethene (TCE)	**17**	D	2.5	0.50	
127-18-4	Tetrachloroethene (PCE)	0.50	U	2.5	0.50	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	102	73-122	11/23/11	Acceptable
Toluene-d8	119	65-144	11/23/11	Acceptable
4-Bromofluorobenzene	109	68-117	11/23/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Collected:**	11/14/2011
Sample Matrix:	Water	**Date Received:**	11/17/2011
		Date Extracted:	11/23/2011
		Date Analyzed:	11/23/2011

Volatile Organic Compounds

Sample Name:	MS35D	**Units:**	ug/L
Lab Code:	K1111233-003	**Basis:**	NA
File ID:	J:\MS13\DATA\112311\1123F017.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111981
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.10**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.58**		0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**8.4**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**20**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**0.22**	J	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	101	73-122	11/23/11	Acceptable
Toluene-d8	118	65-144	11/23/11	Acceptable
4-Bromofluorobenzene	112	68-117	11/23/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Collected:**	11/16/2011
Sample Matrix:	Water	**Date Received:**	11/17/2011
		Date Extracted:	11/28/2011
		Date Analyzed:	11/28/2011

Volatile Organic Compounds

Sample Name:	MS36D	**Units:**	ug/L
Lab Code:	K1111233-024	**Basis:**	NA
File ID:	J:\MS13\DATA\112811\1128F012.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112036
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.60**		0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**11**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**37**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**0.91**		0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	102	73-122	11/28/11	Acceptable
Toluene-d8	119	65-144	11/28/11	Acceptable
4-Bromofluorobenzene	109	68-117	11/28/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Collected:**	11/16/2011
Sample Matrix:	Water	**Date Received:**	11/17/2011
		Date Extracted:	11/28/2011
		Date Analyzed:	11/28/2011

Volatile Organic Compounds

Sample Name:	MS36I	**Units:**	ug/L
Lab Code:	K1111233-026	**Basis:**	NA
File ID:	J:\MS13\DATA\112811\1128F024.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112036
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.12**	J	0.20	0.075	
75-35-4	1,1-Dichloroethene	**1.1**		0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**4.7**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.69**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**130**	E	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**130**	E	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**0.17**	J	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	104	73-122	11/28/11	Acceptable
Toluene-d8	120	65-144	11/28/11	Acceptable
4-Bromofluorobenzene	108	68-117	11/28/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Collected:**	11/16/2011
Sample Matrix:	Water	**Date Received:**	11/17/2011
		Date Extracted:	11/28/2011
		Date Analyzed:	11/28/2011

Volatile Organic Compounds

Sample Name:	MS36IDL	**Units:**	ug/L
Lab Code:	K1111233-026	**Basis:**	NA
File ID:	J:\MS13\DATA\112811\1128F023.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112036
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 5

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.38	U	1.0	0.38	
75-35-4	1,1-Dichloroethene	**1.1**	JD	2.5	0.37	
156-60-5	trans-1,2-Dichloroethene	**4.3**	D	2.5	0.29	
75-34-3	1,1-Dichloroethane	**0.70**	JD	2.5	0.39	
156-59-2	cis-1,2-Dichloroethene	**120**	D	2.5	0.34	
71-55-6	1,1,1-Trichloroethane (TCA)	0.38	U	2.5	0.38	
79-01-6	Trichloroethene (TCE)	**120**	D	2.5	0.50	
127-18-4	Tetrachloroethene (PCE)	0.50	U	2.5	0.50	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	102	73-122	11/28/11	Acceptable
Toluene-d8	118	65-144	11/28/11	Acceptable
4-Bromofluorobenzene	109	68-117	11/28/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Collected:**	11/14/2011
Sample Matrix:	Water	**Date Received:**	11/17/2011
		Date Extracted:	11/23/2011
		Date Analyzed:	11/23/2011

Volatile Organic Compounds

Sample Name:	MS37S	**Units:**	ug/L
Lab Code:	K1111233-015	**Basis:**	NA
File ID:	J:\MS13\DATA\112311\1123F018.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111981
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.42**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**24**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.20**	J	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**21**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**18**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	102	73-122	11/23/11	Acceptable
Toluene-d8	117	65-144	11/23/11	Acceptable
4-Bromofluorobenzene	107	68-117	11/23/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Collected:**	11/14/2011
Sample Matrix:	Water	**Date Received:**	11/17/2011
		Date Extracted:	11/23/2011
		Date Analyzed:	11/28/2011

Volatile Organic Compounds

Sample Name:	MS40S	**Units:**	ug/L
Lab Code:	K1111233-001	**Basis:**	NA
File ID:	J:\MS13\DATA\112811\1128F017.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111981
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.16**	J	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**0.68**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**11**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**0.43**	J	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	101	73-122	11/28/11	Acceptable
Toluene-d8	118	65-144	11/28/11	Acceptable
4-Bromofluorobenzene	109	68-117	11/28/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Collected:**	11/16/2011
Sample Matrix:	Water	**Date Received:**	11/17/2011
		Date Extracted:	11/28/2011
		Date Analyzed:	11/28/2011

Volatile Organic Compounds

Sample Name:	MS41D	**Units:**	ug/L
Lab Code:	K1111233-010	**Basis:**	NA
File ID:	J:\MS13\DATA\112811\1128F010.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112036
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.20**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.57**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.26**	J	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**2.2**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**22**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**6.2**		0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	102	73-122	11/28/11	Acceptable
Toluene-d8	120	65-144	11/28/11	Acceptable
4-Bromofluorobenzene	107	68-117	11/28/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Collected:**	11/16/2011
Sample Matrix:	Water	**Date Received:**	11/17/2011
		Date Extracted:	11/28/2011
		Date Analyzed:	11/28/2011

Volatile Organic Compounds

Sample Name:	MS41I	**Units:**	ug/L
Lab Code:	K1111233-011	**Basis:**	NA
File ID:	J:\MS13\DATA\112811\1128F018.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112036
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.090**	J	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.64**		0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**6.2**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.49**	J	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**27**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**110**	E	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**3.1**		0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	104	73-122	11/28/11	Acceptable
Toluene-d8	119	65-144	11/28/11	Acceptable
4-Bromofluorobenzene	107	68-117	11/28/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Collected:**	11/16/2011
Sample Matrix:	Water	**Date Received:**	11/17/2011
		Date Extracted:	11/28/2011
		Date Analyzed:	11/28/2011

Volatile Organic Compounds

Sample Name:	MS41IDL	**Units:**	ug/L
Lab Code:	K1111233-011	**Basis:**	NA
File ID:	J:\MS13\DATA\112811\1128F016.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112036
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 5

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.38	U	1.0	0.38	
75-35-4	1,1-Dichloroethene	**0.70**	JD	2.5	0.37	
156-60-5	trans-1,2-Dichloroethene	**5.6**	D	2.5	0.29	
75-34-3	1,1-Dichloroethane	**0.45**	JD	2.5	0.39	
156-59-2	cis-1,2-Dichloroethene	**26**	D	2.5	0.34	
71-55-6	1,1,1-Trichloroethane (TCA)	0.38	U	2.5	0.38	
79-01-6	Trichloroethene (TCE)	**110**	D	2.5	0.50	
127-18-4	Tetrachloroethene (PCE)	**3.0**	D	2.5	0.50	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	104	73-122	11/28/11	Acceptable
Toluene-d8	119	65-144	11/28/11	Acceptable
4-Bromofluorobenzene	108	68-117	11/28/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Collected:**	11/16/2011
Sample Matrix:	Water	**Date Received:**	11/17/2011
		Date Extracted:	11/28/2011
		Date Analyzed:	11/28/2011

Volatile Organic Compounds

Sample Name:	MS41S	**Units:**	ug/L
Lab Code:	K1111233-012	**Basis:**	NA
File ID:	J:\MS13\DATA\112811\1128F011.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112036
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.71**		0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**3.5**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**17**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	104	73-122	11/28/11	Acceptable
Toluene-d8	118	65-144	11/28/11	Acceptable
4-Bromofluorobenzene	106	68-117	11/28/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Collected:**	11/16/2011
Sample Matrix:	Water	**Date Received:**	11/17/2011
		Date Extracted:	11/28/2011
		Date Analyzed:	11/28/2011

Volatile Organic Compounds

Sample Name:	MS54I	**Units:**	ug/L
Lab Code:	K1111233-013	**Basis:**	NA
File ID:	J:\MS13\DATA\112811\1128F015.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112036
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.70**		0.20	0.075	
75-35-4	1,1-Dichloroethene	**3.0**		0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**20**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**2.6**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**170**	E	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**880**	E	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**0.19**	J	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	104	73-122	11/28/11	Acceptable
Toluene-d8	119	65-144	11/28/11	Acceptable
4-Bromofluorobenzene	111	68-117	11/28/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Collected:**	11/16/2011
Sample Matrix:	Water	**Date Received:**	11/17/2011
		Date Extracted:	11/28/2011
		Date Analyzed:	11/28/2011

Volatile Organic Compounds

Sample Name:	MS54IDL	**Units:**	ug/L
Lab Code:	K1111233-013	**Basis:**	NA
File ID:	J:\MS13\DATA\112811\1128F014.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112036
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 5

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.65**	JD	1.0	0.38	
75-35-4	1,1-Dichloroethene	**2.6**	D	2.5	0.37	
156-60-5	trans-1,2-Dichloroethene	**17**	D	2.5	0.29	
75-34-3	1,1-Dichloroethane	**2.5**	JD	2.5	0.39	
156-59-2	cis-1,2-Dichloroethene	**150**	D	2.5	0.34	
71-55-6	1,1,1-Trichloroethane (TCA)	0.38	U	2.5	0.38	
79-01-6	Trichloroethene (TCE)	**800**	ED	2.5	0.50	
127-18-4	Tetrachloroethene (PCE)	0.50	U	2.5	0.50	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	104	73-122	11/28/11	Acceptable
Toluene-d8	119	65-144	11/28/11	Acceptable
4-Bromofluorobenzene	109	68-117	11/28/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Collected:**	11/16/2011
Sample Matrix:	Water	**Date Received:**	11/17/2011
		Date Extracted:	11/28/2011
		Date Analyzed:	11/28/2011

Volatile Organic Compounds

Sample Name:	MS54IDL	**Units:**	ug/L
Lab Code:	K1111233-013	**Basis:**	NA
File ID:	J:\MS13\DATA\112811\1128F013.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112036
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 25

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	1.9	U	5.0	1.9	
75-35-4	1,1-Dichloroethene	**2.3**	JD	13	1.9	
156-60-5	trans-1,2-Dichloroethene	**17**	D	13	1.5	
75-34-3	1,1-Dichloroethane	**2.8**	JD	13	2.0	
156-59-2	cis-1,2-Dichloroethene	**150**	D	13	1.7	
71-55-6	1,1,1-Trichloroethane (TCA)	1.9	U	13	1.9	
79-01-6	Trichloroethene (TCE)	**780**	D	13	2.5	
127-18-4	Tetrachloroethene (PCE)	2.5	U	13	2.5	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	102	73-122	11/28/11	Acceptable
Toluene-d8	120	65-144	11/28/11	Acceptable
4-Bromofluorobenzene	108	68-117	11/28/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Collected:**	11/16/2011
Sample Matrix:	Water	**Date Received:**	11/17/2011
		Date Extracted:	11/28/2011
		Date Analyzed:	11/28/2011

Volatile Organic Compounds

Sample Name:	MS55I	**Units:**	ug/L
Lab Code:	K1111233-025	**Basis:**	NA
File ID:	J:\MS13\DATA\112811\1128F022.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112036
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.24**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**1.7**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.45**	J	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**22**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**59**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	102	73-122	11/28/11	Acceptable
Toluene-d8	120	65-144	11/28/11	Acceptable
4-Bromofluorobenzene	107	68-117	11/28/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Collected:**	11/16/2011
Sample Matrix:	Water	**Date Received:**	11/17/2011
		Date Extracted:	11/30/2011
		Date Analyzed:	11/30/2011

Volatile Organic Compounds

Sample Name:	MS56I	**Units:**	ug/L
Lab Code:	K1111233-028	**Basis:**	NA
File ID:	J:\MS18\DATA\113011\1130F014.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112135
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.32**		0.20	0.075	
75-35-4	1,1-Dichloroethene	**2.1**		0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**33**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**9.5**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**330**	E	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**350**	E	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	89	73-122	11/30/11	Acceptable
Toluene-d8	89	65-144	11/30/11	Acceptable
4-Bromofluorobenzene	75	68-117	11/30/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Collected:**	11/16/2011
Sample Matrix:	Water	**Date Received:**	11/17/2011
		Date Extracted:	11/29/2011
		Date Analyzed:	11/29/2011

Volatile Organic Compounds

Sample Name:	MS56IDL	**Units:**	ug/L
Lab Code:	K1111233-028	**Basis:**	NA
File ID:	J:\MS18\DATA\112911\1129F026.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112075
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 10

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.75	U	2.0	0.75	
75-35-4	1,1-Dichloroethene	**1.6**	JD	5.0	0.74	
156-60-5	trans-1,2-Dichloroethene	**27**	D	5.0	0.57	
75-34-3	1,1-Dichloroethane	**7.4**	D	5.0	0.77	
156-59-2	cis-1,2-Dichloroethene	**260**	D	5.0	0.67	
71-55-6	1,1,1-Trichloroethane (TCA)	0.75	U	5.0	0.75	
79-01-6	Trichloroethene (TCE)	**280**	D	5.0	1.0	
127-18-4	Tetrachloroethene (PCE)	**18**	D	5.0	0.99	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	86	73-122	11/29/11	Acceptable
Toluene-d8	89	65-144	11/29/11	Acceptable
4-Bromofluorobenzene	76	68-117	11/29/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Collected:**	11/16/2011
Sample Matrix:	Water	**Date Received:**	11/17/2011
		Date Extracted:	11/28/2011
		Date Analyzed:	11/28/2011

Volatile Organic Compounds

Sample Name:	MS56S	**Units:**	ug/L
Lab Code:	K1111233-023	**Basis:**	NA
File ID:	J:\MS13\DATA\112811\1128F020.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112036
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.43**		0.20	0.075	
75-35-4	1,1-Dichloroethene	**1.4**		0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**63**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**7.5**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**440**	E	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**58**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	106	73-122	11/28/11	Acceptable
Toluene-d8	118	65-144	11/28/11	Acceptable
4-Bromofluorobenzene	108	68-117	11/28/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Collected:**	11/16/2011
Sample Matrix:	Water	**Date Received:**	11/17/2011
		Date Extracted:	11/28/2011
		Date Analyzed:	11/28/2011

Volatile Organic Compounds

Sample Name:	MS56SDL	**Units:**	ug/L
Lab Code:	K1111233-023	**Basis:**	NA
File ID:	J:\MS13\DATA\112811\1128F019.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112036
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 10

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.75	U	2.0	0.75	
75-35-4	1,1-Dichloroethene	**1.7**	JD	5.0	0.74	
156-60-5	trans-1,2-Dichloroethene	**56**	D	5.0	0.57	
75-34-3	1,1-Dichloroethane	**7.0**	D	5.0	0.77	
156-59-2	cis-1,2-Dichloroethene	**420**	D	5.0	0.67	
71-55-6	1,1,1-Trichloroethane (TCA)	0.75	U	5.0	0.75	
79-01-6	Trichloroethene (TCE)	**53**	D	5.0	1.0	
127-18-4	Tetrachloroethene (PCE)	0.99	U	5.0	0.99	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	102	73-122	11/28/11	Acceptable
Toluene-d8	118	65-144	11/28/11	Acceptable
4-Bromofluorobenzene	108	68-117	11/28/11	Acceptable

Comments

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Collected:**	11/15/2011
Sample Matrix:	Water	**Date Received:**	11/17/2011
		Date Extracted:	11/28/2011
		Date Analyzed:	11/28/2011

Volatile Organic Compounds

Sample Name:	QCD07	**Units:**	ug/L
Lab Code:	K1111233-008	**Basis:**	NA
File ID:	J:\MS18\DATA\112811\1128F029.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112033
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.51**		0.20	0.075	
75-35-4	1,1-Dichloroethene	**1.1**		0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**83**	E	0.50	0.057	
75-34-3	1,1-Dichloroethane	**1.3**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**35**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**45**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	88	73-122	11/28/11	Acceptable
Toluene-d8	89	65-144	11/28/11	Acceptable
4-Bromofluorobenzene	76	68-117	11/28/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Collected:**	11/15/2011
Sample Matrix:	Water	**Date Received:**	11/17/2011
		Date Extracted:	11/29/2011
		Date Analyzed:	11/29/2011

Volatile Organic Compounds

Sample Name:	QCD07DL	**Units:**	ug/L
Lab Code:	K1111233-008	**Basis:**	NA
File ID:	J:\MS18\DATA\112911\1129F019.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112075
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 5

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.55**	JD	1.0	0.38	
75-35-4	1,1-Dichloroethene	**1.2**	JD	2.5	0.37	
156-60-5	trans-1,2-Dichloroethene	**82**	D	2.5	0.29	
75-34-3	1,1-Dichloroethane	**1.4**	JD	2.5	0.39	
156-59-2	cis-1,2-Dichloroethene	**35**	D	2.5	0.34	
71-55-6	1,1,1-Trichloroethane (TCA)	0.38	U	2.5	0.38	
79-01-6	Trichloroethene (TCE)	**46**	D	2.5	0.50	
127-18-4	Tetrachloroethene (PCE)	0.50	U	2.5	0.50	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	85	73-122	11/29/11	Acceptable
Toluene-d8	89	65-144	11/29/11	Acceptable
4-Bromofluorobenzene	75	68-117	11/29/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Collected:**	11/16/2011
Sample Matrix:	Water	**Date Received:**	11/17/2011
		Date Extracted:	11/28/2011
		Date Analyzed:	11/28/2011

Volatile Organic Compounds

Sample Name:	QCD11	**Units:**	ug/L
Lab Code:	K1111233-027	**Basis:**	NA
File ID:	J:\MS13\DATA\112811\1128F026.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112036
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.11**	J	0.20	0.075	
75-35-4	1,1-Dichloroethene	**1.1**		0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**4.6**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.66**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**130**	E	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**130**	E	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**0.16**	J	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	102	73-122	11/28/11	Acceptable
Toluene-d8	117	65-144	11/28/11	Acceptable
4-Bromofluorobenzene	107	68-117	11/28/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Collected:**	11/16/2011
Sample Matrix:	Water	**Date Received:**	11/17/2011
		Date Extracted:	11/28/2011
		Date Analyzed:	11/28/2011

Volatile Organic Compounds

Sample Name:	QCD11DL	**Units:**	ug/L
Lab Code:	K1111233-027	**Basis:**	NA
File ID:	J:\MS13\DATA\112811\1128F025.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112036
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 5

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.38	U	1.0	0.38	
75-35-4	1,1-Dichloroethene	**1.0**	JD	2.5	0.37	
156-60-5	trans-1,2-Dichloroethene	**4.5**	D	2.5	0.29	
75-34-3	1,1-Dichloroethane	**0.70**	JD	2.5	0.39	
156-59-2	cis-1,2-Dichloroethene	**120**	D	2.5	0.34	
71-55-6	1,1,1-Trichloroethane (TCA)	0.38	U	2.5	0.38	
79-01-6	Trichloroethene (TCE)	**120**	D	2.5	0.50	
127-18-4	Tetrachloroethene (PCE)	0.50	U	2.5	0.50	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	101	73-122	11/28/11	Acceptable
Toluene-d8	120	65-144	11/28/11	Acceptable
4-Bromofluorobenzene	107	68-117	11/28/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Collected:**	11/14/2011
Sample Matrix:	Water	**Date Received:**	11/17/2011
		Date Extracted:	11/23/2011
		Date Analyzed:	11/23/2011

Volatile Organic Compounds

Sample Name:	QCR10	**Units:**	ug/L
Lab Code:	K1111233-030	**Basis:**	NA
File ID:	J:\MS13\DATA\112311\1123F020.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111981
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	102	73-122	11/23/11	Acceptable
Toluene-d8	120	65-144	11/23/11	Acceptable
4-Bromofluorobenzene	109	68-117	11/23/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Collected:**	11/15/2011
Sample Matrix:	Water	**Date Received:**	11/17/2011
		Date Extracted:	11/23/2011
		Date Analyzed:	11/23/2011

Volatile Organic Compounds

Sample Name:	QCR11	**Units:**	ug/L
Lab Code:	K1111233-009	**Basis:**	NA
File ID:	J:\MS13\DATA\112311\1123F022.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111981
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	103	73-122	11/23/11	Acceptable
Toluene-d8	118	65-144	11/23/11	Acceptable
4-Bromofluorobenzene	109	68-117	11/23/11	Acceptable

Comments

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Collected:**	11/15/2011
Sample Matrix:	Water	**Date Received:**	11/17/2011
		Date Extracted:	11/28/2011
		Date Analyzed:	11/28/2011

Volatile Organic Compounds

Sample Name:	QCR12	**Units:**	ug/L
Lab Code:	K1111233-022	**Basis:**	NA
File ID:	J:\MS18\DATA\112811\1128F032.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112033
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**0.16**	J	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	84	73-122	11/28/11	Acceptable
Toluene-d8	88	65-144	11/28/11	Acceptable
4-Bromofluorobenzene	77	68-117	11/28/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Collected:**	11/14/2011
Sample Matrix:	Water	**Date Received:**	11/17/2011
		Date Extracted:	11/23/2011
		Date Analyzed:	11/23/2011

Volatile Organic Compounds

Sample Name:	QCT09	**Units:**	ug/L
Lab Code:	K1111233-014	**Basis:**	NA
File ID:	J:\MS13\DATA\112311\1123F010.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111981
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	102	73-122	11/23/11	Acceptable
Toluene-d8	118	65-144	11/23/11	Acceptable
4-Bromofluorobenzene	111	68-117	11/23/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Collected:**	11/14/2011
Sample Matrix:	Water	**Date Received:**	11/17/2011
		Date Extracted:	11/23/2011
		Date Analyzed:	11/23/2011

Volatile Organic Compounds

Sample Name:	QCT10	**Units:**	ug/L
Lab Code:	K1111233-029	**Basis:**	NA
File ID:	J:\MS13\DATA\112311\1123F011.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111981
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	104	73-122	11/23/11	Acceptable
Toluene-d8	118	65-144	11/23/11	Acceptable
4-Bromofluorobenzene	108	68-117	11/23/11	Acceptable

Comments:

APPENDIX C

SUPPORT DOCUMENTATION

NIROP FRIDLEY
WATER DATA
K1111233

FRACTION	CHEMICAL	MS12IS	UNITS	QCD07	RPD	D
OV	1,1-DICHLOROETHANE	1.3	UG/L	1.3	0.00	0.00
OV	1,1-DICHLOROETHENE	1.1	UG/L	1.1	0.00	0.00
OV	CIS-1,2-DICHLOROETHENE	34	UG/L	35	2.90	1.00
OV	TRICHLOROETHENE	44	UG/L	45	2.25	1.00
OV	VINYL CHLORIDE	0.52	UG/L	0.51	1.94	0.01

Current RPD Quality Control Limit: 30 %.
Shaded cells indicate RPDs that exceed the applicable quality control limit.

NIROP FRIDLEY
WATER DATA
K1111233

FRACTION	CHEMICAL	MS12ISDL	UNITS	QCD07DL	RPD	D
OV	TRANS-1,2-DICHLOROETHENE	72	UG/L	82	12.99	10.00

Current RPD Quality Control Limit: 30 %.
Shaded cells indicate RPDs that exceed the applicable quality control limit.

NIROP FRIDLEY
WATER DATA
K1111233

FRACTION	CHEMICAL	MS36I	UNITS	QCD11	RPD	D
OV	1,1-DICHLOROETHANE	0.69	UG/L	0.66	4.44	0.03
OV	1,1-DICHLOROETHENE	1.1	UG/L	1.1	0.00	0.00
OV	TETRACHLOROETHENE	0.17 J	UG/L	0.16 J	6.06	0.01
OV	TRANS-1,2-DICHLOROETHENE	4.7	UG/L	4.6	2.15	0.10
OV	VINYL CHLORIDE	0.12 J	UG/L	0.11 J	8.70	0.01

Current RPD Quality Control Limit: 30 %.
Shaded cells indicate RPDs that exceed the applicable quality control limit.

NIROP FRIDLEY
WATER DATA
K1111233

FRACTION	CHEMICAL	MS36IDL	UNITS	QCD11DL	RPD	D
OV	CIS-1,2-DICHLOROETHENE	120	UG/L	120	0.00	0.00
OV	TRICHLOROETHENE	120	UG/L	120	0.00	0.00

Current RPD Quality Control Limit: 30 %.
Shaded cells indicate RPDs that exceed the applicable quality control limit.

Columbia Analytical Services™ 1317 S. 13th Avenue, Kelso, WA 98626 360.577.7222 360.636.1068 (fax) www.caslab.com

December 7, 2011 Analytical Report for Service Request No: K1111233

Paul Walz
Bay West, Incorporated
5 Empire Dr.
St. Paul, MN 55103-1867

RE: NIROP/J070047

Dear Paul:

Enclosed are the results of the samples submitted to our laboratory on November 17, 2011. For your reference, these analyses have been assigned our service request number K1111233.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3363. You may also contact me via Email at LDomenighini@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.

Lisa Domenighini
Project Chemist

LD/jw

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

Columbia Analytical Services, Inc.
Kelso, WA
State Certifications, Accreditations, and Licenses

Agency	Number
Alaska DEC UST	UST-040
Arizona DHS	AZ0339
Arkansas - DEQ	88-0637
California DHS	2286
DOD ELAP	L11-119
Florida DOH	E87412
Georgia DNR	881
Hawaii DOH	-
Idaho DHW	-
Indiana DOH	C-WA-01
ISO 17025	L11-118
Louisiana DEQ	3016
Louisiana DHH	LA080001
Maine DHS	WA0035
Michigan DEQ	9949
Minnesota DOH	053-999-368
Montana DPHHS	CERT0047
Nevada DEP	WA35
New Jersey DEP	WA005
New Mexico ED	-
North Carolina DWQ	605
Oklahoma DEQ	9801
Oregon – DEQ (NELAP)	WA100010
South Carolina DHEC	61002
Texas CEQ	04704427-08-TX
Washington DOE	C1203
Wisconsin DNR	998386840
Wyoming (EPA Region 8)	-

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	Bay West, Incorporated	**Service Request No.:**	K1111233
Project:	NIROP/J070047	**Date Received:**	11/17/11
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Thirty one water samples were received for analysis at Columbia Analytical Services on 11/17/11. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Volatile Organic Compounds by EPA Method 8260

No anomalies associated with the analysis of these samples were observed.

Approved by Lisa A. Jemenghe **Date** 12/9/11

Columbia Analytical Services

027601 CHAIN OF CUSTODY

SR# K111233

COC Set____of____

Page 1 OF 1 COC# 11011-15

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

Project Name: NIROP
Project Number: J070047
Project Manager: Paul Walz
Company Name: BayWest
Comany Address: 5 Empire Drive
City/State/Zip: St. Paul, MN 55103
E-Mail Address: paulw@baywest.com
Phone #: 651-291-3491 FAX #: 651-291-0099
Sampler Signature:

	Sample ID	Date	Time	Lab ID	Matrix	Number of Containers	8260B / VOC_FP (14D)				Remarks
1	MS40S	11/14/11	1138		WT	3	X				1
2	MS12D	↓	1440		↓	3	X				2
3	MS35D	↓	1708		↓	3	X				3
4	MS29S	11/15/11	1019		↓	3	X				4
5	MS32S	↓	1222		↓	3	X				5
6	MS13IS	↓	1355		↓	3	X				6
7	MS12IS	↓	1518		↓	3	X				7
8	QCDB7	↓	1430		↓	3	X				8
9	QCR11	↓	1610		↓	3	X				9
10	MS41D	11/16/11	1027		WT	3	X				10
11	MS41I	↓	1137		↓	3	X				11

Report Requirements

___ I. Routine Report, Method Blank, Surrogate, as required
___ II. Report Dup, MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

Invoice Information

P.O.# 27458
Bill To: Accts Payable
BayWest, 5 Empire Dr.
St. Paul MN 55103

Turnaround Requirements

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide Fax Results

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments: *Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other____(Circle One)

8 specific chemicals of concern via 8260B
UPS Tracking # 1Z A19 8R9 15 9478 8916

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

Relinquished By:		Received By:		Relinquished By:		Received By:	
Signature	Date/Time 11/16/11 1700	Signature	Date/Time 11/17/11 0840	Signature	Date/Time	Signature	Date/Time
Printed Name Shawn Lyman	Firm BayWest	Printed Name SWLF	Firm CAS	Printed Name	Firm	Printed Name	Firm

Columbia Analytical Services

027601 CHAIN OF CUSTODY

SR# K1111233

COC Set____of____

Page 1 OF 1 COC# 110111-17

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

Project Name: NIROP
Project Number: J070047
Project Manager: Paul Walz
Company Name: BayWest
Comany Address: 5 Empire Drive
City/State/Zip: St. Paul, MN 55103
E-Mail Address: paulw@baywest.com
Phone #: 651-291-3491 FAX #: 651-291-0099
Sampler Signature: [signature]

	Sample ID	Date	Time	Lab ID	Matrix	Number of Containers	8260B / VOC_FP	14D			Remarks
1	MS41S	11/16/11	1256		WT	3	X				
2	MS54I	"	1503		"	9	X				MS/MSD
3	~~QCR12~~	"	~~1610~~		"	~~3~~	~~X~~				~~VOID~~ BAR
4	QCT09	11-14-11	—		"	2	X				SJL
5											
6											
7											
8											
9											
10											
11											

Report Requirements

___ I. Routine Report, Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

Invoice Information

P.O.# 27488
Bill To: Accts Payable
BayWest, 5 Empire Dr.
St. Paul MN 55103

Turnaround Requirements

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide Fax Results

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments: *Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other_____(Circle One)

8 Specific Chemicals of concern via 8260B
UPS Tracking # 1Z A19 8R9 15 9478 8916

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

Relinquished By:		Received By:		Relinquished By:		Received By:	
Signature: [signature]	Date/Time: 11/16/11 1700	Signature: SW	Date/Time: 11/17/11 0840	Signature	Date/Time	Signature	Date/Time
Printed Name: Shawn Lyman	Firm: BayWest	Printed Name: SWLF	Firm: CAS	Printed Name	Firm	Printed Name	Firm

Columbia Analytical Services

027601 CHAIN OF CUSTODY

SR# K111233

COC Set____of____

Page 1 OF 1 COC# 110111-14

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

Project Name: NIROP
Project Number: J070047
Project Manager: Paul Walz
Company Name: Bay West
Comany Address: 5 Empire Drive
City/State/Zip: St. Paul MN 55103
E-Mail Address: paulw@baywest.com
Phone #: 651-291-3491 FAX #: 651-291-0249
Sampler Signature: [signature]

	Sample ID	Date	Time	Lab ID	Matrix	Number of Containers	8260B / VOC_FP (14D)				Remarks
1	MS37S	11-14-11	1316		WT	3	X				
2	MS30D	↓	1459		↓	9	X				MS/MSD
3	MS03IS	↓	1610		↓	3	X				
4	MS20S	11-15-11	1012		↓	3	X				
5	MS02D	↓	1106		↓	3	X				
6	~~MS14IS~~	↓	~~1221~~		↓	~~3~~	~~X~~				VOID
7	MS30I	↓	1413		↓	3	X				
8	MS09S	↓	1509		↓	3	X				
9	QCR12	↓	1610		↓	3	X				
10	MS56S	11-16-11	1146		↓	3	X				
11	MS36D	↓	1243		↓	3	X				

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

Invoice Information

P.O.# 27408
Bill To: Account Payable
Bay West, 5 Empire Dr.
St. Paul MN 55103

Turnaround Requirements

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide Fax Results

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments: *Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other____(Circle One)

Analyze for 8 specific chemicals of concern via 8260B
UPS Tracking # 1Z A19 8R9 15 9102 5530

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

Relinquished By:		Received By:		Relinquished By:		Received By:	
Signature: [signature]	Date/Time: 11-16-11/17:00	Signature: [signature]	Date/Time: 11/17/11 0840	Signature:	Date/Time:	Signature:	Date/Time:
Printed Name: Ryan Pelley	Firm: Bay West	Printed Name: [signature]	Firm: CAS	Printed Name:	Firm:	Printed Name:	Firm:

10

Columbia Analytical Services

027601 CHAIN OF CUSTODY

SR# K1111233

COC Set____of____

Page 1 OF 1 COC# 110111-16

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

Project Name: NIROP
Project Number: 5070047
Project Manager: Paul Walz
Company Name: Bay West
Comany Address: 5 Empire Drive
City/State/Zip: St. Paul MN 55103
E-Mail Address: paulw@baywest.com
Phone #: 651-291-3491 FAX#: 651-291-0099
Sampler Signature: [signature]

	Sample ID	Date	Time	Lab ID	Matrix	Number of Containers	8260B / VOC_FP	14D			Remarks
1	MS55I	11-16-11	1328		WT	3	X				1
2	MS36I		1420			3	X				2
3	QCD11		1445			3	X				3
4	MS56I		1511			3	X				4
5	QCT10	11-14-11	—			2	X				5
6	QCR10	11-14-11	1750			3	X				6
7	MS11S	11-15-11	1221			3	X				7
8											8
9											9
10											10
11											11

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

Invoice Information

P.O.# 77488
Bill To: Account Payable
Bay West, 5 Empire Dr.
St. Paul MN 55103

Turnaround Requirements

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide Fax Results

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments: *Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other____(Circle One)

Analyze for 8 specific chemicals of concern via method 8260B
UPS Tracking # 1Z A19 8R9 15 9102 5530

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

Relinquished By:		Received By:		Relinquished By:		Received By:	
Signature: [signature]	Date/Time: 11-16-11 / 17:00	Signature: [signature]	Date/Time: 11/17/11 0840	Signature:	Date/Time:	Signature:	Date/Time:
Printed Name: Bryan Raley	Firm: Bay West	Printed Name: [signature]	Firm: CAS	Printed Name:	Firm:	Printed Name:	Firm:

11

PC Lisa

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

Client / Project: Baywest Service Request K11 11233

Received: 11/17/11 Opened: 11/17/11 By: [illegible] Unloaded: 11/17/11 By: [illegible]

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? 2 front + back

   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Cooler Temp °C	Temp Blank °C	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
-0.5	0.1	290		1ZA19 8R9 15 9478 8916	
-0.3	0.3	318		1ZA19 8R9 15 9102 5530	

7. Packing material used: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Sleeves* *Other* _____
8. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
9. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
10. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
11. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
12. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
13. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
14. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
15. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

Page 1 *of* _____

Volatile Organic Compounds

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111233

Cover Page - Organic Analysis Data Package
Volatile Organic Compounds

Sample Name	Lab Code	Date Collected	Date Received
MS40S	K1111233-001	11/14/2011	11/17/2011
MS12D	K1111233-002	11/14/2011	11/17/2011
MS35D	K1111233-003	11/14/2011	11/17/2011
MS29S	K1111233-004	11/15/2011	11/17/2011
MS29SDL	K1111233-004	11/15/2011	11/17/2011
MS32S	K1111233-005	11/15/2011	11/17/2011
MS32SDL	K1111233-005	11/15/2011	11/17/2011
MS13IS	K1111233-006	11/15/2011	11/17/2011
MS12IS	K1111233-007	11/15/2011	11/17/2011
MS12ISDL	K1111233-007	11/15/2011	11/17/2011
QCD07	K1111233-008	11/15/2011	11/17/2011
QCD07DL	K1111233-008	11/15/2011	11/17/2011
QCR11	K1111233-009	11/15/2011	11/17/2011
MS41D	K1111233-010	11/16/2011	11/17/2011
MS41I	K1111233-011	11/16/2011	11/17/2011
MS41IDL	K1111233-011	11/16/2011	11/17/2011
MS41S	K1111233-012	11/16/2011	11/17/2011
MS54I	K1111233-013	11/16/2011	11/17/2011
MS54IDL	K1111233-013	11/16/2011	11/17/2011
QCT09	K1111233-014	11/14/2011	11/17/2011
MS37S	K1111233-015	11/14/2011	11/17/2011
MS30D	K1111233-016	11/14/2011	11/17/2011
MS03IS	K1111233-017	11/14/2011	11/17/2011
MS20S	K1111233-018	11/15/2011	11/17/2011
MS02D	K1111233-019	11/15/2011	11/17/2011
MS30I	K1111233-020	11/15/2011	11/17/2011
MS30IDL	K1111233-020	11/15/2011	11/17/2011
MS09S	K1111233-021	11/15/2011	11/17/2011
QCR12	K1111233-022	11/15/2011	11/17/2011
MS56S	K1111233-023	11/16/2011	11/17/2011
MS56SDL	K1111233-023	11/16/2011	11/17/2011
MS36D	K1111233-024	11/16/2011	11/17/2011
MS55I	K1111233-025	11/16/2011	11/17/2011
MS36IDL	K1111233-026	11/16/2011	11/17/2011
MS36I	K1111233-026	11/16/2011	11/17/2011
QCD11	K1111233-027	11/16/2011	11/17/2011
QCD11DL	K1111233-027	11/16/2011	11/17/2011
MS56I	K1111233-028	11/16/2011	11/17/2011

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: KMasoner

Name: KMasoner

Date: 12/6/11

Title: Scientist

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111233

Cover Page - Organic Analysis Data Package
Volatile Organic Compounds

Sample Name	Lab Code	Date Collected	Date Received
MS56IDL	K1111233-028	11/16/2011	11/17/2011
QCT10	K1111233-029	11/14/2011	11/17/2011
QCR10	K1111233-030	11/14/2011	11/17/2011
MS11S	K1111233-031	11/15/2011	11/17/2011
MS11SDL	K1111233-031	11/15/2011	11/17/2011
MS30DMS	KWG1111981-1	11/14/2011	11/17/2011
MS30DDMS	KWG1111981-2	11/14/2011	11/17/2011
MS54IMS	KWG1112036-1	11/16/2011	11/17/2011
MS54IDMS	KWG1112036-2	11/16/2011	11/17/2011

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: KReasoner

Name: KReasoner

Date: 12/6/11

Title: Scientist

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1111233

Surrogate Recovery Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
MS40S	K1111233-001	101	118	109
MS12D	K1111233-002	101	118	109
MS35D	K1111233-003	101	118	112
MS29SDL	K1111233-004	102	118	108
MS29S	K1111233-004	104	118	110
MS32SDL	K1111233-005	102	119	109
MS32S	K1111233-005	103	119	109
MS13IS	K1111233-006	103	120	109
MS12ISDL	K1111233-007	85	88	78
MS12IS	K1111233-007	84	88	79
QCD07DL	K1111233-008	85	89	75
QCD07	K1111233-008	88	89	76
QCR11	K1111233-009	103	118	109
MS41D	K1111233-010	102	120	107
MS41I	K1111233-011	104	119	107
MS41IDL	K1111233-011	104	119	108
MS41S	K1111233-012	104	118	106
MS54IDL	K1111233-013	102	120	108
MS54IDL	K1111233-013	104	119	109
MS54I	K1111233-013	104	119	111
QCT09	K1111233-014	102	118	111
MS37S	K1111233-015	102	117	107
MS30D	K1111233-016	103	118	109
MS03IS	K1111233-017	103	118	108
MS20S	K1111233-018	82	88	77
MS02D	K1111233-019	85	87	77
MS30IDL	K1111233-020	82	88	79
MS30I	K1111233-020	86	89	77
MS09S	K1111233-021	86	91	76
QCR12	K1111233-022	84	88	77
MS56S	K1111233-023	106	118	108
MS56SDL	K1111233-023	102	118	108
MS36D	K1111233-024	102	119	109
MS55I	K1111233-025	102	120	107
MS36IDL	K1111233-026	102	118	109

Surrogate Recovery Control Limits (%)

Sur1 =	Dibromofluoromethane	73-122
Sur2 =	Toluene-d8	65-144
Sur3 =	4-Bromofluorobenzene	68-117

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1111233

Surrogate Recovery Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
MS36I	K1111233-026	104	120	108
QCD11DL	K1111233-027	101	120	107
QCD11	K1111233-027	102	117	107
MS56IDL	K1111233-028	86	89	76
MS56I	K1111233-028	89	89	75
QCT10	K1111233-029	104	118	108
QCR10	K1111233-030	102	120	109
MS11SDL	K1111233-031	84	87	78
MS11S	K1111233-031	85	88	76
Method Blank	KWG1111981-4	103	120	108
Method Blank	KWG1112033-5	82	89	78
Method Blank	KWG1112036-4	101	119	107
Method Blank	KWG1112075-4	81	87	79
Method Blank	KWG1112135-4	82	88	77
MS30DMS	KWG1111981-1	103	118	107
MS30DDMS	KWG1111981-2	104	119	106
MS54IMS	KWG1112036-1	104	118	106
MS54IDMS	KWG1112036-2	103	119	106
Lab Control Sample	KWG1111981-3	103	120	108
Lab Control Sample	KWG1112033-3	86	93	83
Duplicate Lab Control Sample	KWG1112033-4	88	92	83
Lab Control Sample	KWG1112036-3	103	120	108
Lab Control Sample	KWG1112075-3	88	93	83
Duplicate Lab Control Sample	KWG1112075-5	88	93	83
Lab Control Sample	KWG1112135-3	91	94	83

Surrogate Recovery Control Limits (%)

Sur1 =	Dibromofluoromethane	73-122
Sur2 =	Toluene-d8	65-144
Sur3 =	4-Bromofluorobenzene	68-117

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111233
Date Analyzed: 10/31/2011
Time Analyzed: 11:40

Tune Summary
Volatile Organic Compounds

File ID: J:\MS13\DATA\103111\1031F003.D
Instrument ID: MS13
Column:

Analysis Method: 8260C
Analysis Lot: KWG1111931

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	16.6	36602	PASS
75	95	30	60	47.9	105360	PASS
95	95	100	100	100.0	219861	PASS
96	95	5	9	6.8	14963	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	96.8	212842	PASS
175	174	5	9	8.0	17036	PASS
176	174	95	101	98.8	210240	PASS
177	176	5	9	6.6	13941	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Initial Calibration	KWG1111931-2	J:\MS13\DATA\103111\1031F005.D	10/31/2011	12:50	
Initial Calibration	KWG1111931-3	J:\MS13\DATA\103111\1031F006.D	10/31/2011	13:18	
Initial Calibration	KWG1111931-4	J:\MS13\DATA\103111\1031F007.D	10/31/2011	13:47	
Initial Calibration	KWG1111931-5	J:\MS13\DATA\103111\1031F008.D	10/31/2011	14:15	
Initial Calibration	KWG1111931-6	J:\MS13\DATA\103111\1031F009.D	10/31/2011	14:44	
Initial Calibration	KWG1111931-7	J:\MS13\DATA\103111\1031F010.D	10/31/2011	15:12	
Initial Calibration	KWG1111931-8	J:\MS13\DATA\103111\1031F011.D	10/31/2011	15:41	
Initial Calibration	KWG1111931-9	J:\MS13\DATA\103111\1031F012.D	10/31/2011	16:09	
Initial Calibration	KWG1111931-10	J:\MS13\DATA\103111\1031F013.D	10/31/2011	16:38	
Initial Calibration	KWG1111931-11	J:\MS13\DATA\103111\1031F014.D	10/31/2011	17:07	
Initial Calibration	KWG1111931-12	J:\MS13\DATA\103111\1031F015.D	10/31/2011	17:35	
Initial Calibration Verification	KWG1111931-13	J:\MS13\DATA\103111\1031F019.D	10/31/2011	19:29	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111233
Calibration Date: 10/31/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL11020
Instrument ID: MS13

Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS13\DATA\103111\1031F005.D	G	J:\MS13\DATA\103111\1031F011.D
B	J:\MS13\DATA\103111\1031F006.D	H	J:\MS13\DATA\103111\1031F012.D
C	J:\MS13\DATA\103111\1031F007.D	I	J:\MS13\DATA\103111\1031F013.D
D	J:\MS13\DATA\103111\1031F008.D	J	J:\MS13\DATA\103111\1031F014.D
E	J:\MS13\DATA\103111\1031F009.D	K	J:\MS13\DATA\103111\1031F015.D
F	J:\MS13\DATA\103111\1031F010.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Vinyl Chloride	A	0.10	0.303	B	0.20	0.328	C	0.50	0.275	D	1.0	0.290	E	2.0	0.309
	F	5.0	0.318	G	10	0.281	H	20	0.257	I	40	0.280	J	60	0.286
	K	80	0.268												
1,1-Dichloroethene				B	0.20	0.260	C	0.50	0.207	D	1.0	0.227	E	2.0	0.236
	F	5.0	0.246	G	10	0.218	H	20	0.200	I	40	0.215	J	60	0.220
	K	80	0.204												
trans-1,2-Dichloroethene				B	0.20	0.263	C	0.50	0.238	D	1.0	0.271	E	2.0	0.265
	F	5.0	0.283	G	10	0.247	H	20	0.230	I	40	0.248	J	60	0.254
	K	80	0.238												
1,1-Dichloroethane	A	0.10	0.442	B	0.20	0.475	C	0.50	0.383	D	1.0	0.410	E	2.0	0.428
	F	5.0	0.442	G	10	0.403	H	20	0.375	I	40	0.416	J	60	0.419
	K	80	0.404												
cis-1,2-Dichloroethene				B	0.20	0.286	C	0.50	0.249	D	1.0	0.282	E	2.0	0.279
	F	5.0	0.283	G	10	0.264	H	20	0.245	I	40	0.273	J	60	0.272
	K	80	0.264												
1,1,1-Trichloroethane (TCA)	A	0.10	0.379	B	0.20	0.386	C	0.50	0.313	D	1.0	0.353	E	2.0	0.353
	F	5.0	0.377	G	10	0.346	H	20	0.330	I	40	0.365	J	60	0.383
	K	80	0.364												
Trichloroethene (TCE)				B	0.20	0.290	C	0.50	0.254	D	1.0	0.262	E	2.0	0.271
	F	5.0	0.283	G	10	0.254	H	20	0.238	I	40	0.262	J	60	0.267
	K	80	0.255												
Tetrachloroethene (PCE)				B	0.20	0.797	C	0.50	0.682	D	1.0	0.690	E	2.0	0.741
	F	5.0	0.761	G	10	0.681	H	20	0.624	I	40	0.679	J	60	0.709
	K	80	0.672												
Dibromofluoromethane				B	4.0	0.192	C	5.0	0.197	D	6.0	0.212	E	7.0	0.197
	F	8.0	0.166	G	10	0.198	H	20	0.212	I	40	0.205	J	50	0.210
	K	60	0.211												
Toluene-d8							C	5.0	0.842	D	6.0	0.890	E	7.0	0.823
	F	8.0	0.647	G	10	0.864	H	20	0.893	I	40	0.816	J	50	0.826
	K	60	0.837												

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111233
Calibration Date: 10/31/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL11020
Instrument ID: MS13

Column: MS

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
4-Bromofluorobenzene				B	4.0	0.825	C	5.0	0.841	D	6.0	0.882	E	7.0	0.837
	F	8.0	0.699	G	10	0.832	H	20	0.868	I	40	0.819	J	50	0.821
	K	60	0.829												

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111233
Calibration Date: 10/31/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL11020
Instrument ID: MS13

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Vinyl Chloride	MS	AverageRF	% RSD	7.6		≤ 20	0.290		0.100
1,1-Dichloroethene	MS	AverageRF	% RSD	8.6		≤ 20	0.223		0.100
trans-1,2-Dichloroethene	MS	AverageRF	% RSD	6.6		≤ 20	0.254		0.100
1,1-Dichloroethane	MS	AverageRF	% RSD	6.8		≤ 20	0.418		0.200
cis-1,2-Dichloroethene	MS	AverageRF	% RSD	5.3		≤ 20	0.270		0.100
1,1,1-Trichloroethane (TCA)	MS	AverageRF	% RSD	6.5		≤ 20	0.359		0.100
Trichloroethene (TCE)	MS	AverageRF	% RSD	5.7		≤ 20	0.264		0.200
Tetrachloroethene (PCE)	MS	AverageRF	% RSD	7.1		≤ 20	0.704		0.200
Dibromofluoromethane	SURR	AverageRF	% RSD	7.0		≤ 20	0.200		0.01
Toluene-d8	SURR	AverageRF	% RSD	8.8		≤ 20	0.826		0.01
4-Bromofluorobenzene	SURR	AverageRF	% RSD	5.9		≤ 20	0.825		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111233
Calibration Date: 10/31/2011
Date Analyzed: 10/31/2011

Second Source Calibration Verification
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration ID: CAL11020
Units: PPB

File ID: J:\MS13\DATA\103111\1031F019.D
J:\MS13\DATA\103111\1031F020.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	8.9	0.290	0.260	-11	NA	± 30 %	AverageRF
1,1-Dichloroethene	10	11	0.223	0.239	7	NA	± 30 %	AverageRF
trans-1,2-Dichloroethene	10	11	0.254	0.275	8	NA	± 30 %	AverageRF
1,1-Dichloroethane	10	10	0.418	0.429	3	NA	± 30 %	AverageRF
cis-1,2-Dichloroethene	10	11	0.270	0.285	5	NA	± 30 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	11	0.359	0.388	8	NA	± 30 %	AverageRF
Trichloroethene (TCE)	10	11	0.264	0.282	7	NA	± 30 %	AverageRF
Tetrachloroethene (PCE)	10	11	0.704	0.739	5	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111233

Analysis Run Log
Volatile Organic Compounds

Analysis Method: 8260C

Analysis Lot: KWG1111980
Instrument ID: MS13

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1123F003.D	GC/MS Tuning - Bromofluorobenzene	KWG1111980-1	11/23/2011	09:42		11/23/2011	10:01
1123F004.D	Continuing Calibration Verification	KWG1111980-2	11/23/2011	10:11		11/23/2011	10:30
1123F005.D	Lab Control Sample	KWG1111981-3	11/23/2011	10:39		11/23/2011	10:58
1123F006.D	MS30DMS	KWG1111981-1	11/23/2011	11:31		11/23/2011	11:50
1123F007.D	MS30DDMS	KWG1111981-2	11/23/2011	12:00		11/23/2011	12:19
1123F009.D	Method Blank	KWG1111981-4	11/23/2011	12:57		11/23/2011	13:16
1123F010.D	QCT09	K1111233-014	11/23/2011	13:25		11/23/2011	13:44
1123F011.D	QCT10	K1111233-029	11/23/2011	13:54		11/23/2011	14:13
1123F012.D	MS30D	K1111233-016	11/23/2011	14:22		11/23/2011	14:41
1123F013.D	ZZZZZZ	ZZZZZZ	11/23/2011	14:51		11/23/2011	15:10
1123F014.D	ZZZZZZ	ZZZZZZ	11/23/2011	15:20		11/23/2011	15:39
1123F015.D	ZZZZZZ	ZZZZZZ	11/23/2011	15:48		11/23/2011	16:07
1123F016.D	MS12D	K1111233-002	11/23/2011	16:17		11/23/2011	16:36
1123F017.D	MS35D	K1111233-003	11/23/2011	16:45		11/23/2011	17:04
1123F018.D	MS37S	K1111233-015	11/23/2011	17:14		11/23/2011	17:33
1123F019.D	MS03IS	K1111233-017	11/23/2011	17:42		11/23/2011	18:01
1123F020.D	QCR10	K1111233-030	11/23/2011	18:11		11/23/2011	18:30
1123F021.D	MS13IS	K1111233-006	11/23/2011	18:40		11/23/2011	18:59
1123F022.D	QCR11	K1111233-009	11/23/2011	19:08		11/23/2011	19:27
1123F023.D	MS29SDL	K1111233-004	11/23/2011	19:37		11/23/2011	19:56
1123F024.D	MS32SDL	K1111233-005	11/23/2011	20:05		11/23/2011	20:24
1123F025.D	MS29S	K1111233-004	11/23/2011	20:33		11/23/2011	20:52
1123F026.D	MS32S	K1111233-005	11/23/2011	21:02		11/23/2011	21:21

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111233
Date Analyzed: 11/23/2011
Time Analyzed: 09:42

Tune Summary
Volatile Organic Compounds

File ID: J:\MS13\DATA\112311\1123F003.D
Instrument ID: MS13
Column:

Analysis Method: 8260C
Analysis Lot: KWG1111980

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	17.0	18720	PASS
75	95	30	60	46.6	51349	PASS
95	95	100	100	100.0	110210	PASS
96	95	5	9	7.0	7751	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	91.1	100400	PASS
175	174	5	9	6.2	6185	PASS
176	174	95	101	99.6	100045	PASS
177	176	5	9	7.1	7114	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1111980-2	J:\MS13\DATA\112311\1123F004.D	11/23/2011	10:11	
Lab Control Sample	KWG1111981-3	J:\MS13\DATA\112311\1123F005.D	11/23/2011	10:39	
MS30DMS	KWG1111981-1	J:\MS13\DATA\112311\1123F006.D	11/23/2011	11:31	
MS30DDMS	KWG1111981-2	J:\MS13\DATA\112311\1123F007.D	11/23/2011	12:00	
Method Blank	KWG1111981-4	J:\MS13\DATA\112311\1123F009.D	11/23/2011	12:57	
QCT09	K1111233-014	J:\MS13\DATA\112311\1123F010.D	11/23/2011	13:25	
QCT10	K1111233-029	J:\MS13\DATA\112311\1123F011.D	11/23/2011	13:54	
MS30D	K1111233-016	J:\MS13\DATA\112311\1123F012.D	11/23/2011	14:22	
MS12D	K1111233-002	J:\MS13\DATA\112311\1123F016.D	11/23/2011	16:17	
MS35D	K1111233-003	J:\MS13\DATA\112311\1123F017.D	11/23/2011	16:45	
MS37S	K1111233-015	J:\MS13\DATA\112311\1123F018.D	11/23/2011	17:14	
MS03IS	K1111233-017	J:\MS13\DATA\112311\1123F019.D	11/23/2011	17:42	
QCR10	K1111233-030	J:\MS13\DATA\112311\1123F020.D	11/23/2011	18:11	
MS13IS	K1111233-006	J:\MS13\DATA\112311\1123F021.D	11/23/2011	18:40	
QCR11	K1111233-009	J:\MS13\DATA\112311\1123F022.D	11/23/2011	19:08	
MS29SDL	K1111233-004	J:\MS13\DATA\112311\1123F023.D	11/23/2011	19:37	
MS32SDL	K1111233-005	J:\MS13\DATA\112311\1123F024.D	11/23/2011	20:05	
MS29S	K1111233-004	J:\MS13\DATA\112311\1123F025.D	11/23/2011	20:33	
MS32S	K1111233-005	J:\MS13\DATA\112311\1123F026.D	11/23/2011	21:02	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111233
Date Analyzed: 11/23/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration Date: 10/31/2011
Calibration ID: CAL11020
Analysis Lot: KWG1111980
Units: PPB

File ID: J:\MS13\DATA\112311\1123F004.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	11	0.100	0.290	0.306	5	NA	± 20 %	AverageRF
1,1-Dichloroethene	10	10	0.100	0.223	0.224	0	NA	± 20 %	AverageRF
trans-1,2-Dichloroethene	10	9.8	0.100	0.254	0.248	-2	NA	± 20 %	AverageRF
1,1-Dichloroethane	10	9.6	0.200	0.418	0.401	-4	NA	± 20 %	AverageRF
cis-1,2-Dichloroethene	10	9.5	0.100	0.270	0.256	-5	NA	± 20 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	9.9	0.100	0.359	0.355	-1	NA	± 20 %	AverageRF
Trichloroethene (TCE)	10	9.6	0.200	0.264	0.253	-4	NA	± 20 %	AverageRF
Tetrachloroethene (PCE)	10	9.3	0.200	0.704	0.656	-7	NA	± 20 %	AverageRF
Dibromofluoromethane	10	10	0.01	0.200	0.209	4	NA	± 20 %	AverageRF
Toluene-d8	10	12	0.01	0.826	0.991	20	NA	± 20 %	AverageRF
4-Bromofluorobenzene	10	11	0.01	0.825	0.908	10	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Extracted:**	11/23/2011
Sample Matrix:	Water	**Date Analyzed:**	11/23/2011
		Time Analyzed:	12:57

Method Blank Summary
Volatile Organic Compounds

Sample Name:	Method Blank	**Instrument ID:**	MS13
Lab Code:	KWG1111981-4	**File ID:**	J:\MS13\DATA\112311\1123F009.D
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C	**Extraction Lot:**	KWG1111981

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1111981-3	J:\MS13\DATA\112311\1123F005.D	11/23/11	10:39
MS30DMS	KWG1111981-1	J:\MS13\DATA\112311\1123F006.D	11/23/11	11:31
MS30DDMS	KWG1111981-2	J:\MS13\DATA\112311\1123F007.D	11/23/11	12:00
QCT09	K1111233-014	J:\MS13\DATA\112311\1123F010.D	11/23/11	13:25
QCT10	K1111233-029	J:\MS13\DATA\112311\1123F011.D	11/23/11	13:54
MS30D	K1111233-016	J:\MS13\DATA\112311\1123F012.D	11/23/11	14:22
MS12D	K1111233-002	J:\MS13\DATA\112311\1123F016.D	11/23/11	16:17
MS35D	K1111233-003	J:\MS13\DATA\112311\1123F017.D	11/23/11	16:45
MS37S	K1111233-015	J:\MS13\DATA\112311\1123F018.D	11/23/11	17:14
MS03IS	K1111233-017	J:\MS13\DATA\112311\1123F019.D	11/23/11	17:42
QCR10	K1111233-030	J:\MS13\DATA\112311\1123F020.D	11/23/11	18:11
MS13IS	K1111233-006	J:\MS13\DATA\112311\1123F021.D	11/23/11	18:40
QCR11	K1111233-009	J:\MS13\DATA\112311\1123F022.D	11/23/11	19:08
MS29SDL	K1111233-004	J:\MS13\DATA\112311\1123F023.D	11/23/11	19:37
MS32SDL	K1111233-005	J:\MS13\DATA\112311\1123F024.D	11/23/11	20:05
MS29S	K1111233-004	J:\MS13\DATA\112311\1123F025.D	11/23/11	20:33
MS32S	K1111233-005	J:\MS13\DATA\112311\1123F026.D	11/23/11	21:02
MS40S	K1111233-001	J:\MS13\DATA\112811\1128F017.D	11/28/11	16:39

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	11/23/2011
		Date Analyzed:	11/23/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1111981-4	**Basis:**	NA
File ID:	J:\MS13\DATA\112311\1123F009.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111981
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	103	73-122	11/23/11	Acceptable
Toluene-d8	120	65-144	11/23/11	Acceptable
4-Bromofluorobenzene	108	68-117	11/23/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Extracted:**	11/23/2011
Sample Matrix:	Water	**Date Analyzed:**	11/23/2011

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	EPA 5030B	**Units:**	ug/L
Analysis Method:	8260C	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1111981

	Lab Control Sample KWG1111981-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Vinyl Chloride	8.31	10.0	83	55-123
1,1-Dichloroethene	9.54	10.0	95	66-129
trans-1,2-Dichloroethene	9.15	10.0	92	67-125
1,1-Dichloroethane	8.85	10.0	89	68-132
cis-1,2-Dichloroethene	8.82	10.0	88	71-118
1,1,1-Trichloroethane (TCA)	8.83	10.0	88	59-136
Trichloroethene (TCE)	9.08	10.0	91	67-128
Tetrachloroethene (PCE)	8.82	10.0	88	62-126

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Extracted:**	11/23/2011
Sample Matrix:	Water	**Date Analyzed:**	11/23/2011

Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organic Compounds

Sample Name:	MS30D	**Units:**	ug/L
Lab Code:	K1111233-016	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C	**Extraction Lot:**	KWG1111981

		MS30DMS KWG1111981-1 Matrix Spike			MS30DDMS KWG1111981-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Vinyl Chloride	ND	8.45	10.0	85	7.69	10.0	77	49-136	9	30
1,1-Dichloroethene	0.17	9.88	10.0	97	9.08	10.0	89	59-171	8	30
trans-1,2-Dichloroethene	0.46	9.91	10.0	95	9.10	10.0	86	65-143	9	30
1,1-Dichloroethane	ND	9.02	10.0	90	8.39	10.0	84	69-141	7	30
cis-1,2-Dichloroethene	3.5	12.4	10.0	90	11.4	10.0	80	61-139	8	30
1,1,1-Trichloroethane (TCA)	ND	9.09	10.0	91	8.36	10.0	84	57-151	8	30
Trichloroethene (TCE)	18	25.1	10.0	73	23.3	10.0	55	53-139	7	30
Tetrachloroethene (PCE)	2.1	10.7	10.0	86	9.84	10.0	78	61-131	8	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111233

Analysis Run Log
Volatile Organic Compounds

Analysis Method: 8260C

Analysis Lot: KWG1112035
Instrument ID: MS13

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1128F003.D	GC/MS Tuning - Bromofluorobenzene	KWG1112035-1	11/28/2011	09:44		11/28/2011	10:03
1128F004.D	Continuing Calibration Verification	KWG1112035-2	11/28/2011	10:12		11/28/2011	10:31
1128F005.D	Lab Control Sample	KWG1112036-3	11/28/2011	10:40		11/28/2011	10:59
1128F006.D	MS54IMS	KWG1112036-1	11/28/2011	11:21		11/28/2011	11:40
1128F007.D	MS54IDMS	KWG1112036-2	11/28/2011	11:49		11/28/2011	12:08
1128F009.D	Method Blank	KWG1112036-4	11/28/2011	12:46		11/28/2011	13:05
1128F010.D	MS41D	K1111233-010	11/28/2011	13:14		11/28/2011	13:33
1128F011.D	MS41S	K1111233-012	11/28/2011	13:43		11/28/2011	14:02
1128F012.D	MS36D	K1111233-024	11/28/2011	14:11		11/28/2011	14:30
1128F013.D	MS54IDL	K1111233-013	11/28/2011	14:40		11/28/2011	14:59
1128F014.D	MS54IDL	K1111233-013	11/28/2011	15:08		11/28/2011	15:27
1128F015.D	MS54I	K1111233-013	11/28/2011	15:37		11/28/2011	15:56
1128F016.D	MS41IDL	K1111233-011	11/28/2011	16:05		11/28/2011	16:24
1128F017.D	MS40S	K1111233-001	11/28/2011	16:39		11/28/2011	16:58
1128F018.D	MS41I	K1111233-011	11/28/2011	17:07		11/28/2011	17:26
1128F019.D	MS56SDL	K1111233-023	11/28/2011	17:36		11/28/2011	17:55
1128F020.D	MS56S	K1111233-023	11/28/2011	18:04		11/28/2011	18:23
1128F021.D	ZZZZZZ	ZZZZZZ	11/28/2011	18:32		11/28/2011	18:51
1128F022.D	MS55I	K1111233-025	11/28/2011	19:01		11/28/2011	19:20
1128F023.D	MS36IDL	K1111233-026	11/28/2011	19:29		11/28/2011	19:48
1128F024.D	MS36I	K1111233-026	11/28/2011	19:58		11/28/2011	20:17
1128F025.D	QCD11DL	K1111233-027	11/28/2011	20:26		11/28/2011	20:45
1128F026.D	QCD11	K1111233-027	11/28/2011	20:54		11/28/2011	21:13

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111233
Date Analyzed: 11/28/2011
Time Analyzed: 09:44

Tune Summary
Volatile Organic Compounds

File ID: J:\MS13\DATA\112811\1128F003.D
Instrument ID: MS13
Column:

Analysis Method: 8260C
Analysis Lot: KWG1112035

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
96	95	5	9	6.4	6889	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	98.7	105501	PASS
175	174	5	9	7.3	7650	PASS
176	174	95	101	95.9	101189	PASS
177	176	5	9	6.7	6763	PASS
50	95	15	40	17.5	18674	PASS
75	95	30	60	45.6	48733	PASS
95	95	100	100	100.0	106840	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1112035-2	J:\MS13\DATA\112811\1128F004.D	11/28/2011	10:12	
Lab Control Sample	KWG1112036-3	J:\MS13\DATA\112811\1128F005.D	11/28/2011	10:40	
MS54IMS	KWG1112036-1	J:\MS13\DATA\112811\1128F006.D	11/28/2011	11:21	
MS54IDMS	KWG1112036-2	J:\MS13\DATA\112811\1128F007.D	11/28/2011	11:49	
Method Blank	KWG1112036-4	J:\MS13\DATA\112811\1128F009.D	11/28/2011	12:46	
MS41D	K1111233-010	J:\MS13\DATA\112811\1128F010.D	11/28/2011	13:14	
MS41S	K1111233-012	J:\MS13\DATA\112811\1128F011.D	11/28/2011	13:43	
MS36D	K1111233-024	J:\MS13\DATA\112811\1128F012.D	11/28/2011	14:11	
MS54IDL	K1111233-013	J:\MS13\DATA\112811\1128F013.D	11/28/2011	14:40	
MS54IDL	K1111233-013	J:\MS13\DATA\112811\1128F014.D	11/28/2011	15:08	
MS54I	K1111233-013	J:\MS13\DATA\112811\1128F015.D	11/28/2011	15:37	
MS41IDL	K1111233-011	J:\MS13\DATA\112811\1128F016.D	11/28/2011	16:05	
MS40S	K1111233-001	J:\MS13\DATA\112811\1128F017.D	11/28/2011	16:39	
MS41I	K1111233-011	J:\MS13\DATA\112811\1128F018.D	11/28/2011	17:07	
MS56SDL	K1111233-023	J:\MS13\DATA\112811\1128F019.D	11/28/2011	17:36	
MS56S	K1111233-023	J:\MS13\DATA\112811\1128F020.D	11/28/2011	18:04	
MS55I	K1111233-025	J:\MS13\DATA\112811\1128F022.D	11/28/2011	19:01	
MS36IDL	K1111233-026	J:\MS13\DATA\112811\1128F023.D	11/28/2011	19:29	
MS36I	K1111233-026	J:\MS13\DATA\112811\1128F024.D	11/28/2011	19:58	
QCD11DL	K1111233-027	J:\MS13\DATA\112811\1128F025.D	11/28/2011	20:26	
QCD11	K1111233-027	J:\MS13\DATA\112811\1128F026.D	11/28/2011	20:54	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111233
Date Analyzed: 11/28/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration Date: 10/31/2011
Calibration ID: CAL11020
Analysis Lot: KWG1112035
Units: PPB

File ID: J:\MS13\DATA\112811\1128F004.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	10	0.100	0.290	0.302	4	NA	± 20 %	AverageRF
1,1-Dichloroethene	10	10	0.100	0.223	0.223	0	NA	± 20 %	AverageRF
trans-1,2-Dichloroethene	10	9.6	0.100	0.254	0.242	-5	NA	± 20 %	AverageRF
1,1-Dichloroethane	10	9.5	0.200	0.418	0.398	-5	NA	± 20 %	AverageRF
cis-1,2-Dichloroethene	10	9.3	0.100	0.270	0.250	-7	NA	± 20 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	9.5	0.100	0.359	0.340	-5	NA	± 20 %	AverageRF
Trichloroethene (TCE)	10	9.6	0.200	0.264	0.252	-4	NA	± 20 %	AverageRF
Tetrachloroethene (PCE)	10	9.3	0.200	0.704	0.651	-8	NA	± 20 %	AverageRF
Dibromofluoromethane	10	10	0.01	0.200	0.209	5	NA	± 20 %	AverageRF
Toluene-d8	10	12	0.01	0.826	0.976	18	NA	± 20 %	AverageRF
4-Bromofluorobenzene	10	11	0.01	0.825	0.885	7	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Extracted:**	11/28/2011
Sample Matrix:	Water	**Date Analyzed:**	11/28/2011
		Time Analyzed:	12:46

Method Blank Summary
Volatile Organic Compounds

Sample Name:	Method Blank	**Instrument ID:**	MS13
Lab Code:	KWG1112036-4	**File ID:**	J:\MS13\DATA\112811\1128F009.D
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C	**Extraction Lot:**	KWG1112036

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1112036-3	J:\MS13\DATA\112811\1128F005.D	11/28/11	10:40
MS54IMS	KWG1112036-1	J:\MS13\DATA\112811\1128F006.D	11/28/11	11:21
MS54IDMS	KWG1112036-2	J:\MS13\DATA\112811\1128F007.D	11/28/11	11:49
MS41D	K1111233-010	J:\MS13\DATA\112811\1128F010.D	11/28/11	13:14
MS41S	K1111233-012	J:\MS13\DATA\112811\1128F011.D	11/28/11	13:43
MS36D	K1111233-024	J:\MS13\DATA\112811\1128F012.D	11/28/11	14:11
MS54IDL	K1111233-013	J:\MS13\DATA\112811\1128F013.D	11/28/11	14:40
MS54IDL	K1111233-013	J:\MS13\DATA\112811\1128F014.D	11/28/11	15:08
MS54I	K1111233-013	J:\MS13\DATA\112811\1128F015.D	11/28/11	15:37
MS41IDL	K1111233-011	J:\MS13\DATA\112811\1128F016.D	11/28/11	16:05
MS41I	K1111233-011	J:\MS13\DATA\112811\1128F018.D	11/28/11	17:07
MS56SDL	K1111233-023	J:\MS13\DATA\112811\1128F019.D	11/28/11	17:36
MS56S	K1111233-023	J:\MS13\DATA\112811\1128F020.D	11/28/11	18:04
MS55I	K1111233-025	J:\MS13\DATA\112811\1128F022.D	11/28/11	19:01
MS36IDL	K1111233-026	J:\MS13\DATA\112811\1128F023.D	11/28/11	19:29
MS36I	K1111233-026	J:\MS13\DATA\112811\1128F024.D	11/28/11	19:58
QCD11DL	K1111233-027	J:\MS13\DATA\112811\1128F025.D	11/28/11	20:26
QCD11	K1111233-027	J:\MS13\DATA\112811\1128F026.D	11/28/11	20:54

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	11/28/2011
		Date Analyzed:	11/28/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1112036-4	**Basis:**	NA
File ID:	J:\MS13\DATA\112811\1128F009.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112036
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	101	73-122	11/28/11	Acceptable
Toluene-d8	119	65-144	11/28/11	Acceptable
4-Bromofluorobenzene	107	68-117	11/28/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Extracted:**	11/28/2011
Sample Matrix:	Water	**Date Analyzed:**	11/28/2011

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	EPA 5030B	**Units:**	ug/L
Analysis Method:	8260C	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1112036

	Lab Control Sample KWG1112036-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Vinyl Chloride	8.27	10.0	83	55-123
1,1-Dichloroethene	9.69	10.0	97	66-129
trans-1,2-Dichloroethene	9.45	10.0	95	67-125
1,1-Dichloroethane	8.99	10.0	90	68-132
cis-1,2-Dichloroethene	8.92	10.0	89	71-118
1,1,1-Trichloroethane (TCA)	8.97	10.0	90	59-136
Trichloroethene (TCE)	9.09	10.0	91	67-128
Tetrachloroethene (PCE)	8.80	10.0	88	62-126

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1111233
Date Extracted: 11/28/2011
Date Analyzed: 11/28/2011

Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organic Compounds

Sample Name: MS54I
Lab Code: K1111233-013

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260C

Level: Low
Extraction Lot: KWG1112036

Analyte Name	Sample Result	MS54IMS KWG1112036-1 Matrix Spike			MS54IDMS KWG1112036-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
Vinyl Chloride	0.70	215	250	86	199	250	79	49-136	8	30
1,1-Dichloroethene	3.0	248	250	98	233	250	92	59-171	6	30
trans-1,2-Dichloroethene	20	254	250	94	240	250	88	65-143	5	30
1,1-Dichloroethane	2.6	228	250	90	219	250	87	69-141	4	30
cis-1,2-Dichloroethene	150	365	250	87	348	250	80	61-139	5	30
1,1,1-Trichloroethane (TCA)	ND	229	250	92	222	250	89	57-151	3	30
Trichloroethene (TCE)	780	971	250	78	921	250	58	53-139	5	30
Tetrachloroethene (PCE)	0.19	224	250	89	215	250	86	61-131	4	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111233
Date Analyzed: 09/20/2011
Time Analyzed: 09:36

Tune Summary
Volatile Organic Compounds

File ID: J:\MS18\DATA\092011\0920F004.D
Instrument ID: GC-MS 18
Column:

Analysis Method: 8260C
Analysis Lot: KWG1111946

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	15.8	7258	PASS
75	95	30	60	44.2	20312	PASS
95	95	100	100	100.0	45909	PASS
96	95	5	9	7.5	3456	PASS
173	174	0	2	0.3	119	PASS
174	95	50	120	89.3	40981	PASS
175	174	5	9	7.3	2982	PASS
176	174	95	101	96.3	39453	PASS
177	176	5	9	6.4	2511	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Initial Calibration	KWG1111946-2	J:\MS18\DATA\092011\0920F007.D	09/20/2011	10:43	
Initial Calibration	KWG1111946-3	J:\MS18\DATA\092011\0920F008.D	09/20/2011	11:06	
Initial Calibration	KWG1111946-4	J:\MS18\DATA\092011\0920F009.D	09/20/2011	11:27	
Initial Calibration	KWG1111946-5	J:\MS18\DATA\092011\0920F010.D	09/20/2011	11:49	
Initial Calibration	KWG1111946-6	J:\MS18\DATA\092011\0920F011.D	09/20/2011	12:10	
Initial Calibration	KWG1111946-7	J:\MS18\DATA\092011\0920F012.D	09/20/2011	12:32	
Initial Calibration	KWG1111946-8	J:\MS18\DATA\092011\0920F013.D	09/20/2011	12:54	
Initial Calibration	KWG1111946-9	J:\MS18\DATA\092011\0920F014.D	09/20/2011	13:15	
Initial Calibration	KWG1111946-10	J:\MS18\DATA\092011\0920F015.D	09/20/2011	13:37	
Initial Calibration	KWG1111946-11	J:\MS18\DATA\092011\0920F016.D	09/20/2011	13:59	
Initial Calibration	KWG1111946-12	J:\MS18\DATA\092011\0920F017.D	09/20/2011	14:21	
Initial Calibration Verification	KWG1111946-13	J:\MS18\DATA\092011\0920F022.D	09/20/2011	16:11	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111233
Calibration Date: 09/20/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10920
Instrument ID: GC-MS 18

Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS18\DATA\092011\0920F007.D	G	J:\MS18\DATA\092011\0920F013.D
B	J:\MS18\DATA\092011\0920F008.D	H	J:\MS18\DATA\092011\0920F014.D
C	J:\MS18\DATA\092011\0920F009.D	I	J:\MS18\DATA\092011\0920F015.D
D	J:\MS18\DATA\092011\0920F010.D	J	J:\MS18\DATA\092011\0920F016.D
E	J:\MS18\DATA\092011\0920F011.D	K	J:\MS18\DATA\092011\0920F017.D
F	J:\MS18\DATA\092011\0920F012.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Vinyl Chloride	A	0.10	0.439	B	0.20	0.460	C	0.50	0.449	D	1.0	0.498	E	2.0	0.444
	F	5.0	0.453	G	10	0.457	H	20	0.429	I	40	0.479	J	60	0.442
	K	80	0.429												
1,1-Dichloroethene	A	0.10	0.213	B	0.20	0.229	C	0.50	0.237	D	1.0	0.261	E	2.0	0.225
	F	5.0	0.229	G	10	0.234	H	20	0.220	I	40	0.247	J	60	0.227
	K	80	0.226												
trans-1,2-Dichloroethene	A	0.10	0.283	B	0.20	0.225	C	0.50	0.287	D	1.0	0.294	E	2.0	0.279
	F	5.0	0.288	G	10	0.294	H	20	0.278	I	40	0.314	J	60	0.289
	K	80	0.284												
1,1-Dichloroethane				B	0.20	0.415	C	0.50	0.457	D	1.0	0.501	E	2.0	0.445
	F	5.0	0.460	G	10	0.475	H	20	0.458	I	40	0.515	J	60	0.483
	K	80	0.480												
cis-1,2-Dichloroethene	A	0.10	0.291	B	0.20	0.324	C	0.50	0.292	D	1.0	0.320	E	2.0	0.324
	F	5.0	0.325	G	10	0.323	H	20	0.315	I	40	0.351	J	60	0.326
	K	80	0.320												
1,1,1-Trichloroethane (TCA)							C	0.50	0.227	D	1.0	0.261	E	2.0	0.255
	F	5.0	0.290	G	10	0.320	H	20	0.325	I	40	0.387	J	60	0.371
	K	80	0.373												
Trichloroethene (TCE)	A	0.10	0.245	B	0.20	0.264	C	0.50	0.265	D	1.0	0.299	E	2.0	0.269
	F	5.0	0.278	G	10	0.285	H	20	0.264	I	40	0.305	J	60	0.282
	K	80	0.280												
Tetrachloroethene (PCE)	A	0.10	0.539	B	0.20	0.622	C	0.50	0.691	D	1.0	0.768	E	2.0	0.675
	F	5.0	0.720	G	10	0.698	H	20	0.655	I	40	0.752	J	60	0.683
	K	80	0.683												
Dibromofluoromethane	A	3.0	0.210	B	4.0	0.217	C	5.0	0.219	D	6.0	0.252	E	7.0	0.254
	F	8.0	0.240	G	10	0.261	H	15	0.240	I	20	0.255	J	30	0.248
	K	40	0.254												
Toluene-d8	A	3.0	0.973	B	4.0	1.04	C	5.0	1.04	D	6.0	1.21	E	7.0	1.22
	F	8.0	1.10	G	10	1.17	H	15	1.02	I	20	1.06	J	30	1.05
	K	40	1.07												

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111233
Calibration Date: 09/20/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10920
Instrument ID: GC-MS 18

Column: MS

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
4-Bromofluorobenzene	A	3.0	0.922	B	4.0	0.919	C	5.0	0.999	D	6.0	1.18	E	7.0	1.25
	F	8.0	1.04	G	10	1.11	H	15	1.01	I	20	1.06	J	30	0.998
	K	40	1.03												

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111233
Calibration Date: 09/20/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10920
Instrument ID: GC-MS 18

Column: MS

		Calibration Evaluation					RRF Evaluation		
Analyte Name	Compound Type	Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Vinyl Chloride	MS	AverageRF	% RSD	4.6		≤ 20	0.453		0.100
1,1-Dichloroethene	MS	AverageRF	% RSD	5.6		≤ 20	0.232		0.100
trans-1,2-Dichloroethene	MS	AverageRF	% RSD	7.7		≤ 20	0.283		0.100
1,1-Dichloroethane	MS	AverageRF	% RSD	6.1		≤ 20	0.469		0.200
cis-1,2-Dichloroethene	MS	AverageRF	% RSD	5.2		≤ 20	0.319		0.100
1,1,1-Trichloroethane (TCA)	MS	AverageRF	% RSD	18.4		≤ 20	0.312		0.100
Trichloroethene (TCE)	MS	AverageRF	% RSD	6.2		≤ 20	0.276		0.200
Tetrachloroethene (PCE)	MS	AverageRF	% RSD	9.2		≤ 20	0.681		0.200
Dibromofluoromethane	SURR	AverageRF	% RSD	7.4		≤ 20	0.241		0.01
Toluene-d8	SURR	AverageRF	% RSD	7.2		≤ 20	1.09		0.01
4-Bromofluorobenzene	SURR	AverageRF	% RSD	9.5		≤ 20	1.05		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111233
Calibration Date: 09/20/2011
Date Analyzed: 09/20/2011

Second Source Calibration Verification
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration ID: CAL10920
Units: PPB

File ID: J:\MS18\DATA\092011\0920F024.D
J:\MS18\DATA\092011\0920F022.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	7.8	0.453	0.353	-22	NA	± 30 %	AverageRF
1,1-Dichloroethene	10	10	0.232	0.237	2	NA	± 30 %	AverageRF
trans-1,2-Dichloroethene	10	10	0.283	0.292	3	NA	± 30 %	AverageRF
1,1-Dichloroethane	10	9.8	0.469	0.459	-2	NA	± 30 %	AverageRF
cis-1,2-Dichloroethene	10	9.9	0.319	0.315	-1	NA	± 30 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	9.7	0.312	0.302	-3	NA	± 30 %	AverageRF
Trichloroethene (TCE)	10	10	0.276	0.281	2	NA	± 30 %	AverageRF
Tetrachloroethene (PCE)	10	9.9	0.681	0.675	-1	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111233

Analysis Run Log
Volatile Organic Compounds

Analysis Method: 8260C

Analysis Lot: KWG1112032
Instrument ID: GC-MS 18

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1128F003.D	GC/MS Tuning - Generic	KWG1112032-1	11/28/2011	08:39		11/28/2011	08:55
1128F004.D	Continuing Calibration Verification	KWG1112032-2	11/28/2011	09:04		11/28/2011	09:20
1128F005.D	Lab Control Sample	KWG1112033-3	11/28/2011	09:29		11/28/2011	09:45
1128F006.D	Duplicate Lab Control Sample	KWG1112033-4	11/28/2011	09:50		11/28/2011	10:06
1128F007.D	ZZZZZZ	ZZZZZZ	11/28/2011	10:11		11/28/2011	10:27
1128F008.D	ZZZZZZ	ZZZZZZ	11/28/2011	10:32		11/28/2011	10:48
1128F011.D	Method Blank	KWG1112033-5	11/28/2011	11:35		11/28/2011	11:51
1128F012.D	ZZZZZZ	ZZZZZZ	11/28/2011	11:56		11/28/2011	12:12
1128F013.D	MS20S	K1111233-018	11/28/2011	12:17		11/28/2011	12:33
1128F014.D	ZZZZZZ	ZZZZZZ	11/28/2011	12:39		11/28/2011	12:55
1128F015.D	ZZZZZZ	ZZZZZZ	11/28/2011	13:00		11/28/2011	13:16
1128F016.D	ZZZZZZ	ZZZZZZ	11/28/2011	13:21		11/28/2011	13:37
1128F017.D	ZZZZZZ	ZZZZZZ	11/28/2011	13:42		11/28/2011	13:58
1128F018.D	ZZZZZZ	ZZZZZZ	11/28/2011	14:03		11/28/2011	14:19
1128F019.D	ZZZZZZ	ZZZZZZ	11/28/2011	14:24		11/28/2011	14:40
1128F020.D	MS30IDL	K1111233-020	11/28/2011	14:45		11/28/2011	15:01
1128F021.D	MS30I	K1111233-020	11/28/2011	15:06		11/28/2011	15:22
1128F022.D	ZZZZZZ	ZZZZZZ	11/28/2011	15:28		11/28/2011	15:44
1128F023.D	MS11SDL	K1111233-031	11/28/2011	15:49		11/28/2011	16:05
1128F024.D	ZZZZZZ	ZZZZZZ	11/28/2011	16:10		11/28/2011	16:26
1128F025.D	ZZZZZZ	ZZZZZZ	11/28/2011	16:31		11/28/2011	16:47
1128F026.D	ZZZZZZ	ZZZZZZ	11/28/2011	16:52		11/28/2011	17:08
1128F028.D	MS12IS	K1111233-007	11/28/2011	17:35		11/28/2011	17:51
1128F029.D	QCD07	K1111233-008	11/28/2011	17:56		11/28/2011	18:12
1128F030.D	ZZZZZZ	ZZZZZZ	11/28/2011	18:17		11/28/2011	18:33
1128F031.D	MS09S	K1111233-021	11/28/2011	18:38		11/28/2011	18:54
1128F032.D	QCR12	K1111233-022	11/28/2011	18:59		11/28/2011	19:15
1128F033.D	ZZZZZZ	ZZZZZZ	11/28/2011	19:20		11/28/2011	19:36
1128F034.D	MS11S	K1111233-031	11/28/2011	19:41		11/28/2011	19:57
1128F035.D	ZZZZZZ	ZZZZZZ	11/28/2011	20:02		11/28/2011	20:18
1128F036.D	ZZZZZZ	ZZZZZZ	11/28/2011	20:23		11/28/2011	20:39

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111233
Date Analyzed: 11/28/2011
Time Analyzed: 08:39

Tune Summary
Volatile Organic Compounds

File ID: J:\MS18\DATA\112811\1128F003.D
Instrument ID: GC-MS 18
Column:

Analysis Method: 8260C
Analysis Lot: KWG1112032

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	17.1	7200	PASS
75	95	30	60	46.8	19728	PASS
95	95	100	100	100.0	42160	PASS
96	95	5	9	7.5	3151	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	98.7	41608	PASS
175	174	5	9	7.6	3153	PASS
176	174	95	101	97.8	40704	PASS
177	176	5	9	7.2	2912	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1112032-2	J:\MS18\DATA\112811\1128F004.D	11/28/2011	09:04	
Lab Control Sample	KWG1112033-3	J:\MS18\DATA\112811\1128F005.D	11/28/2011	09:29	
Duplicate Lab Control Sample	KWG1112033-4	J:\MS18\DATA\112811\1128F006.D	11/28/2011	09:50	
Method Blank	KWG1112033-5	J:\MS18\DATA\112811\1128F011.D	11/28/2011	11:35	
MS20S	K1111233-018	J:\MS18\DATA\112811\1128F013.D	11/28/2011	12:17	
MS30IDL	K1111233-020	J:\MS18\DATA\112811\1128F020.D	11/28/2011	14:45	
MS30I	K1111233-020	J:\MS18\DATA\112811\1128F021.D	11/28/2011	15:06	
MS11SDL	K1111233-031	J:\MS18\DATA\112811\1128F023.D	11/28/2011	15:49	
MS12IS	K1111233-007	J:\MS18\DATA\112811\1128F028.D	11/28/2011	17:35	
QCD07	K1111233-008	J:\MS18\DATA\112811\1128F029.D	11/28/2011	17:56	
MS09S	K1111233-021	J:\MS18\DATA\112811\1128F031.D	11/28/2011	18:38	
QCR12	K1111233-022	J:\MS18\DATA\112811\1128F032.D	11/28/2011	18:59	
MS11S	K1111233-031	J:\MS18\DATA\112811\1128F034.D	11/28/2011	19:41	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111233
Date Analyzed: 11/28/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration Date: 09/20/2011
Calibration ID: CAL10920
Analysis Lot: KWG1112032
Units: PPB

File ID: J:\MS18\DATA\112811\1128F004.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	9.0	0.100	0.453	0.407	-10	NA	± 20 %	AverageRF
1,1-Dichloroethene	10	10	0.100	0.232	0.231	-1	NA	± 20 %	AverageRF
trans-1,2-Dichloroethene	10	10	0.100	0.283	0.284	0	NA	± 20 %	AverageRF
1,1-Dichloroethane	10	10	0.200	0.469	0.491	5	NA	± 20 %	AverageRF
cis-1,2-Dichloroethene	10	10	0.100	0.319	0.325	2	NA	± 20 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	11	0.100	0.312	0.333	7	NA	± 20 %	AverageRF
Trichloroethene (TCE)	10	9.7	0.200	0.276	0.269	-3	NA	± 20 %	AverageRF
Tetrachloroethene (PCE)	10	9.1	0.200	0.681	0.619	-9	NA	± 20 %	AverageRF
Dibromofluoromethane	10	8.9	0.01	0.241	0.214	-11	NA	± 20 %	AverageRF
Toluene-d8	10	9.2	0.01	1.09	1.00	-8	NA	± 20 %	AverageRF
4-Bromofluorobenzene	10	8.5	0.01	1.05	0.885	-15	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Extracted:**	11/28/2011
Sample Matrix:	Water	**Date Analyzed:**	11/28/2011
		Time Analyzed:	11:35

Method Blank Summary
Volatile Organic Compounds

Sample Name:	Method Blank	**Instrument ID:**	GC-MS 18
Lab Code:	KWG1112033-5	**File ID:**	J:\MS18\DATA\112811\1128F011.D
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C	**Extraction Lot:**	KWG1112033

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1112033-3	J:\MS18\DATA\112811\1128F005.D	11/28/11	09:29
Duplicate Lab Control Sample	KWG1112033-4	J:\MS18\DATA\112811\1128F006.D	11/28/11	09:50
MS20S	K1111233-018	J:\MS18\DATA\112811\1128F013.D	11/28/11	12:17
MS30IDL	K1111233-020	J:\MS18\DATA\112811\1128F020.D	11/28/11	14:45
MS30I	K1111233-020	J:\MS18\DATA\112811\1128F021.D	11/28/11	15:06
MS11SDL	K1111233-031	J:\MS18\DATA\112811\1128F023.D	11/28/11	15:49
MS12IS	K1111233-007	J:\MS18\DATA\112811\1128F028.D	11/28/11	17:35
QCD07	K1111233-008	J:\MS18\DATA\112811\1128F029.D	11/28/11	17:56
MS09S	K1111233-021	J:\MS18\DATA\112811\1128F031.D	11/28/11	18:38
QCR12	K1111233-022	J:\MS18\DATA\112811\1128F032.D	11/28/11	18:59
MS11S	K1111233-031	J:\MS18\DATA\112811\1128F034.D	11/28/11	19:41

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	11/28/2011
		Date Analyzed:	11/28/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1112033-5	**Basis:**	NA
File ID:	J:\MS18\DATA\112811\1128F011.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112033
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	82	73-122	11/28/11	Acceptable
Toluene-d8	89	65-144	11/28/11	Acceptable
4-Bromofluorobenzene	78	68-117	11/28/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1111233
Date Extracted: 11/28/2011
Date Analyzed: 11/28/2011

Lab Control Spike/Duplicate Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1112033

	Lab Control Sample KWG1112033-3 Lab Control Spike			Duplicate Lab Control Sample KWG1112033-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Vinyl Chloride	7.70	10.0	77	7.29	10.0	73	55-123	5	30
1,1-Dichloroethene	10.1	10.0	101	9.86	10.0	99	66-129	3	30
trans-1,2-Dichloroethene	10.1	10.0	101	9.62	10.0	96	67-125	5	30
1,1-Dichloroethane	10.1	10.0	101	9.74	10.0	97	68-132	3	30
cis-1,2-Dichloroethene	9.53	10.0	95	9.38	10.0	94	71-118	2	30
1,1,1-Trichloroethane (TCA)	10.3	10.0	103	9.95	10.0	100	59-136	3	30
Trichloroethene (TCE)	9.41	10.0	94	9.29	10.0	93	67-128	1	30
Tetrachloroethene (PCE)	8.91	10.0	89	8.52	10.0	85	62-126	4	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111233

Analysis Run Log
Volatile Organic Compounds

Analysis Method: 8260C

Analysis Lot: KWG1112065
Instrument ID: GC-MS 18

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1129F002.D	GC/MS Tuning - Generic	KWG1112065-1	11/29/2011	08:05		11/29/2011	08:21
1129F003.D	Continuing Calibration Verification	KWG1112065-2	11/29/2011	08:31		11/29/2011	08:47
1129F005.D	ZZZZZZ	ZZZZZZ	11/29/2011	09:21		11/29/2011	09:37
1129F006.D	ZZZZZZ	ZZZZZZ	11/29/2011	09:42		11/29/2011	09:58
1129F007.D	Lab Control Sample	KWG1112075-3	11/29/2011	10:03		11/29/2011	10:19
1129F008.D	Duplicate Lab Control Sample	KWG1112075-5	11/29/2011	10:24		11/29/2011	10:40
1129F011.D	Method Blank	KWG1112075-4	11/29/2011	11:27		11/29/2011	11:43
1129F012.D	ZZZZZZ	ZZZZZZ	11/29/2011	11:49		11/29/2011	12:05
1129F013.D	ZZZZZZ	ZZZZZZ	11/29/2011	12:10		11/29/2011	12:26
1129F014.D	MS02D	K1111233-019	11/29/2011	12:31		11/29/2011	12:47
1129F015.D	ZZZZZZ	ZZZZZZ	11/29/2011	12:52		11/29/2011	13:08
1129F016.D	ZZZZZZ	ZZZZZZ	11/29/2011	13:13		11/29/2011	13:29
1129F017.D	ZZZZZZ	ZZZZZZ	11/29/2011	13:34		11/29/2011	13:50
1129F018.D	MS12ISDL	K1111233-007	11/29/2011	13:55		11/29/2011	14:11
1129F019.D	QCD07DL	K1111233-008	11/29/2011	14:16		11/29/2011	14:32
1129F020.D	ZZZZZZ	ZZZZZZ	11/29/2011	14:38		11/29/2011	14:54
1129F023.D	ZZZZZZ	ZZZZZZ	11/29/2011	15:41		11/29/2011	15:57
1129F024.D	ZZZZZZ	ZZZZZZ	11/29/2011	16:02		11/29/2011	16:18
1129F025.D	ZZZZZZ	ZZZZZZ	11/29/2011	16:23		11/29/2011	16:39
1129F026.D	MS56IDL	K1111233-028	11/29/2011	16:45		11/29/2011	17:01
1129F027.D	ZZZZZZ	ZZZZZZ	11/29/2011	17:06		11/29/2011	17:22
1129F030.D	ZZZZZZ	ZZZZZZ	11/29/2011	18:09		11/29/2011	18:25
1129F031.D	ZZZZZZ	ZZZZZZ	11/29/2011	18:30		11/29/2011	18:46
1129F032.D	ZZZZZZ	ZZZZZZ	11/29/2011	18:51		11/29/2011	19:07
1129F033.D	ZZZZZZ	ZZZZZZ	11/29/2011	19:12		11/29/2011	19:28
1129F034.D	ZZZZZZ	ZZZZZZ	11/29/2011	19:34		11/29/2011	19:50
1129F035.D	ZZZZZZ	ZZZZZZ	11/29/2011	19:55		11/29/2011	20:11

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111233
Date Analyzed: 11/29/2011
Time Analyzed: 08:05

Tune Summary
Volatile Organic Compounds

File ID: J:\MS18\DATA\112911\1129F002.D
Instrument ID: GC-MS 18
Column:

Analysis Method: 8260C
Analysis Lot: KWG1112065

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	17.4	6833	PASS
75	95	30	60	45.1	17699	PASS
95	95	100	100	100.0	39202	PASS
96	95	5	9	7.0	2759	PASS
173	174	0	2	0.8	312	PASS
174	95	50	120	95.2	37325	PASS
175	174	5	9	7.5	2800	PASS
176	174	95	101	98.2	36669	PASS
177	176	5	9	6.5	2382	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1112065-2	J:\MS18\DATA\112911\1129F003.D	11/29/2011	08:31	
Lab Control Sample	KWG1112075-3	J:\MS18\DATA\112911\1129F007.D	11/29/2011	10:03	
Duplicate Lab Control Sample	KWG1112075-5	J:\MS18\DATA\112911\1129F008.D	11/29/2011	10:24	
Method Blank	KWG1112075-4	J:\MS18\DATA\112911\1129F011.D	11/29/2011	11:27	
MS02D	K1111233-019	J:\MS18\DATA\112911\1129F014.D	11/29/2011	12:31	
MS12ISDL	K1111233-007	J:\MS18\DATA\112911\1129F018.D	11/29/2011	13:55	
QCD07DL	K1111233-008	J:\MS18\DATA\112911\1129F019.D	11/29/2011	14:16	
MS56IDL	K1111233-028	J:\MS18\DATA\112911\1129F026.D	11/29/2011	16:45	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111233
Date Analyzed: 11/29/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration Date: 09/20/2011
Calibration ID: CAL10920
Analysis Lot: KWG1112065
Units: PPB

File ID: J:\MS18\DATA\112911\1129F003.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	9.3	0.100	0.453	0.419	-7	NA	± 20 %	AverageRF
1,1-Dichloroethene	10	10	0.100	0.232	0.231	0	NA	± 20 %	AverageRF
trans-1,2-Dichloroethene	10	10	0.100	0.283	0.282	0	NA	± 20 %	AverageRF
1,1-Dichloroethane	10	10	0.200	0.469	0.487	4	NA	± 20 %	AverageRF
cis-1,2-Dichloroethene	10	9.9	0.100	0.319	0.315	-1	NA	± 20 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	11	0.100	0.312	0.335	7	NA	± 20 %	AverageRF
Trichloroethene (TCE)	10	9.8	0.200	0.276	0.269	-3	NA	± 20 %	AverageRF
Tetrachloroethene (PCE)	10	9.4	0.200	0.681	0.637	-6	NA	± 20 %	AverageRF
Dibromofluoromethane	10	8.8	0.01	0.241	0.211	-12	NA	± 20 %	AverageRF
Toluene-d8	10	9.3	0.01	1.09	1.01	-7	NA	± 20 %	AverageRF
4-Bromofluorobenzene	10	8.6	0.01	1.05	0.899	-14	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Extracted:**	11/29/2011
Sample Matrix:	Water	**Date Analyzed:**	11/29/2011
		Time Analyzed:	11:27

Method Blank Summary
Volatile Organic Compounds

Sample Name:	Method Blank	**Instrument ID:**	GC-MS 18
Lab Code:	KWG1112075-4	**File ID:**	J:\MS18\DATA\112911\1129F011.D
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C	**Extraction Lot:**	KWG1112075

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1112075-3	J:\MS18\DATA\112911\1129F007.D	11/29/11	10:03
Duplicate Lab Control Sample	KWG1112075-5	J:\MS18\DATA\112911\1129F008.D	11/29/11	10:24
MS02D	K1111233-019	J:\MS18\DATA\112911\1129F014.D	11/29/11	12:31
MS12ISDL	K1111233-007	J:\MS18\DATA\112911\1129F018.D	11/29/11	13:55
QCD07DL	K1111233-008	J:\MS18\DATA\112911\1129F019.D	11/29/11	14:16
MS56IDL	K1111233-028	J:\MS18\DATA\112911\1129F026.D	11/29/11	16:45

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	11/29/2011
		Date Analyzed:	11/29/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1112075-4	**Basis:**	NA
File ID:	J:\MS18\DATA\112911\1129F011.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112075
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	81	73-122	11/29/11	Acceptable
Toluene-d8	87	65-144	11/29/11	Acceptable
4-Bromofluorobenzene	79	68-117	11/29/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Extracted:**	11/29/2011
Sample Matrix:	Water	**Date Analyzed:**	11/29/2011

Lab Control Spike/Duplicate Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	EPA 5030B	**Units:**	ug/L
Analysis Method:	8260C	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1112075

	Lab Control Sample KWG1112075-3 Lab Control Spike			Duplicate Lab Control Sample KWG1112075-5 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Vinyl Chloride	7.69	10.0	77	7.43	10.0	74	55-123	3	30
1,1-Dichloroethene	10.1	10.0	101	9.96	10.0	100	66-129	2	30
trans-1,2-Dichloroethene	10.3	10.0	103	9.95	10.0	100	67-125	3	30
1,1-Dichloroethane	10.3	10.0	103	10.2	10.0	102	68-132	1	30
cis-1,2-Dichloroethene	10.2	10.0	102	9.91	10.0	99	71-118	3	30
1,1,1-Trichloroethane (TCA)	10.1	10.0	101	9.68	10.0	97	59-136	4	30
Trichloroethene (TCE)	9.52	10.0	95	9.68	10.0	97	67-128	2	30
Tetrachloroethene (PCE)	8.70	10.0	87	8.61	10.0	86	62-126	1	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111233

Analysis Run Log
Volatile Organic Compounds

Analysis Method: 8260C

Analysis Lot: KWG1112134
Instrument ID: GC-MS 18

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1130F002.D	GC/MS Tuning - Generic	KWG1112134-1	11/30/2011	08:15		11/30/2011	08:31
1130F003.D	Continuing Calibration Verification	KWG1112134-2	11/30/2011	08:41		11/30/2011	08:57
1130F004.D	Lab Control Sample	KWG1112135-3	11/30/2011	09:13		11/30/2011	09:29
1130F005.D	ZZZZZZ	ZZZZZZ	11/30/2011	09:34		11/30/2011	09:50
1130F006.D	ZZZZZZ	ZZZZZZ	11/30/2011	09:55		11/30/2011	10:11
1130F009.D	Method Blank	KWG1112135-4	11/30/2011	10:59		11/30/2011	11:15
1130F010.D	ZZZZZZ	ZZZZZZ	11/30/2011	11:19		11/30/2011	11:35
1130F011.D	ZZZZZZ	ZZZZZZ	11/30/2011	11:41		11/30/2011	11:57
1130F012.D	ZZZZZZ	ZZZZZZ	11/30/2011	12:02		11/30/2011	12:18
1130F013.D	ZZZZZZ	ZZZZZZ	11/30/2011	12:23		11/30/2011	12:39
1130F014.D	MS56I	K1111233-028	11/30/2011	12:45		11/30/2011	13:01
1130F015.D	ZZZZZZ	ZZZZZZ	11/30/2011	13:06		11/30/2011	13:22
1130F016.D	ZZZZZZ	ZZZZZZ	11/30/2011	13:27		11/30/2011	13:43
1130F018.D	ZZZZZZ	ZZZZZZ	11/30/2011	14:09		11/30/2011	14:25
1130F019.D	ZZZZZZ	ZZZZZZ	11/30/2011	14:31		11/30/2011	14:47
1130F020.D	ZZZZZZ	ZZZZZZ	11/30/2011	14:52		11/30/2011	15:08
1130F021.D	ZZZZZZ	ZZZZZZ	11/30/2011	15:13		11/30/2011	15:29
1130F022.D	ZZZZZZ	ZZZZZZ	11/30/2011	15:34		11/30/2011	15:50
1130F023.D	ZZZZZZ	ZZZZZZ	11/30/2011	15:55		11/30/2011	16:11
1130F024.D	ZZZZZZ	ZZZZZZ	11/30/2011	16:16		11/30/2011	16:32
1130F025.D	ZZZZZZ	ZZZZZZ	11/30/2011	16:38		11/30/2011	16:54
1130F026.D	ZZZZZZ	ZZZZZZ	11/30/2011	16:59		11/30/2011	17:15
1130F027.D	ZZZZZZ	ZZZZZZ	11/30/2011	17:20		11/30/2011	17:36
1130F028.D	ZZZZZZ	ZZZZZZ	11/30/2011	17:42		11/30/2011	17:58
1130F029.D	ZZZZZZ	ZZZZZZ	11/30/2011	18:03		11/30/2011	18:19
1130F030.D	ZZZZZZ	ZZZZZZ	11/30/2011	18:24		11/30/2011	18:40
1130F031.D	ZZZZZZ	ZZZZZZ	11/30/2011	18:45		11/30/2011	19:01
1130F032.D	ZZZZZZ	ZZZZZZ	11/30/2011	19:06		11/30/2011	19:22
1130F033.D	ZZZZZZ	ZZZZZZ	11/30/2011	19:27		11/30/2011	19:43
1130F034.D	ZZZZZZ	ZZZZZZ	11/30/2011	19:48		11/30/2011	20:04
1130F035.D	ZZZZZZ	ZZZZZZ	11/30/2011	20:09		11/30/2011	20:25

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111233
Date Analyzed: 11/30/2011
Time Analyzed: 08:15

Tune Summary
Volatile Organic Compounds

File ID: J:\MS18\DATA\113011\1130F002.D
Instrument ID: GC-MS 18
Column:

Analysis Method: 8260C
Analysis Lot: KWG1112134

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	15.9	6449	PASS
75	95	30	60	45.5	18506	PASS
95	95	100	100	100.0	40661	PASS
96	95	5	9	6.6	2666	PASS
173	174	0	2	0.6	236	PASS
174	95	50	120	96.4	39184	PASS
175	174	5	9	8.1	3189	PASS
176	174	95	101	96.1	37664	PASS
177	176	5	9	6.8	2554	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1112134-2	J:\MS18\DATA\113011\1130F003.D	11/30/2011	08:41	
Lab Control Sample	KWG1112135-3	J:\MS18\DATA\113011\1130F004.D	11/30/2011	09:13	
Method Blank	KWG1112135-4	J:\MS18\DATA\113011\1130F009.D	11/30/2011	10:59	
MS56I	K1111233-028	J:\MS18\DATA\113011\1130F014.D	11/30/2011	12:45	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111233
Date Analyzed: 11/30/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration Date: 09/20/2011
Calibration ID: CAL10920
Analysis Lot: KWG1112134
Units: PPB

File ID: J:\MS18\DATA\113011\1130F003.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	9.6	0.100	0.453	0.435	-4	NA	± 20 %	AverageRF
1,1-Dichloroethene	10	11	0.100	0.232	0.245	6	NA	± 20 %	AverageRF
trans-1,2-Dichloroethene	10	10	0.100	0.283	0.295	4	NA	± 20 %	AverageRF
1,1-Dichloroethane	10	11	0.200	0.469	0.494	5	NA	± 20 %	AverageRF
cis-1,2-Dichloroethene	10	10	0.100	0.319	0.320	0	NA	± 20 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	11	0.100	0.312	0.347	11	NA	± 20 %	AverageRF
Trichloroethene (TCE)	10	9.9	0.200	0.276	0.274	-1	NA	± 20 %	AverageRF
Tetrachloroethene (PCE)	10	9.5	0.200	0.681	0.643	-6	NA	± 20 %	AverageRF
Dibromofluoromethane	10	8.8	0.01	0.241	0.212	-12	NA	± 20 %	AverageRF
Toluene-d8	10	9.3	0.01	1.09	1.01	-7	NA	± 20 %	AverageRF
4-Bromofluorobenzene	10	8.4	0.01	1.05	0.877	-16	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Extracted:**	11/30/2011
Sample Matrix:	Water	**Date Analyzed:**	11/30/2011
		Time Analyzed:	10:59

Method Blank Summary
Volatile Organic Compounds

Sample Name:	Method Blank	**Instrument ID:**	GC-MS 18
Lab Code:	KWG1112135-4	**File ID:**	J:\MS18\DATA\113011\1130F009.D
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C	**Extraction Lot:**	KWG1112135

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1112135-3	J:\MS18\DATA\113011\1130F004.D	11/30/11	09:13
MS56I	K1111233-028	J:\MS18\DATA\113011\1130F014.D	11/30/11	12:45

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	11/30/2011
		Date Analyzed:	11/30/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1112135-4	**Basis:**	NA
File ID:	J:\MS18\DATA\113011\1130F009.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112135
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	82	73-122	11/30/11	Acceptable
Toluene-d8	88	65-144	11/30/11	Acceptable
4-Bromofluorobenzene	77	68-117	11/30/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Extracted:**	11/30/2011
Sample Matrix:	Water	**Date Analyzed:**	11/30/2011

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	EPA 5030B	**Units:**	ug/L
Analysis Method:	8260C	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1112135

	Lab Control Sample KWG1112135-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Vinyl Chloride	8.53	10.0	85	55-123
1,1-Dichloroethene	11.1	10.0	111	66-129
trans-1,2-Dichloroethene	11.0	10.0	110	67-125
1,1-Dichloroethane	10.7	10.0	107	68-132
cis-1,2-Dichloroethene	10.4	10.0	104	71-118
1,1,1-Trichloroethane (TCA)	11.0	10.0	110	59-136
Trichloroethene (TCE)	10.2	10.0	102	67-128
Tetrachloroethene (PCE)	9.57	10.0	96	62-126

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Analyzed:**	11/23/2011
		Time Analyzed:	10:11

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID:	J:\MS13\DATA\112311\1123F004.D	**Lab Code:**	KWG1111980-2
Instrument ID:	MS13	**Analysis Lot:**	KWG1111980
Analysis Method:	8260C		

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	1,089,589	6.12	409,907	12.03	445,749	15.07
	Upper Limit ==>	2,179,178	6.62	819,814	12.53	891,498	15.57
	Lower Limit ==>	544,795	5.62	204,954	11.53	222,875	14.57
	ICAL Result ==>	1,209,248	6.12	435,763	12.02	482,755	15.07
Associated Analyses							
Lab Control Sample	KWG1111981-3	1,093,908	6.12	413,516	12.03	445,385	15.07
MS30DMS	KWG1111981-1	1,126,332	6.12	415,088	12.03	446,393	15.07
MS30DDMS	KWG1111981-2	1,116,508	6.12	421,349	12.03	450,659	15.07
Method Blank	KWG1111981-4	1,067,006	6.12	403,704	12.03	444,379	15.07
QCT09	K1111233-014	1,076,826	6.12	404,026	12.02	450,830	15.07
QCT10	K1111233-029	1,076,626	6.12	408,901	12.03	445,698	15.07
MS30D	K1111233-016	1,083,420	6.12	409,025	12.03	446,852	15.07
MS12D	K1111233-002	1,084,034	6.12	409,267	12.03	446,897	15.07
MS35D	K1111233-003	1,091,600	6.12	400,796	12.03	441,353	15.07
MS37S	K1111233-015	1,094,577	6.12	407,223	12.03	440,511	15.07
MS03IS	K1111233-017	1,090,053	6.12	410,696	12.03	447,405	15.07
QCR10	K1111233-030	1,070,900	6.12	400,707	12.03	440,045	15.07
MS13IS	K1111233-006	1,058,475	6.12	405,351	12.03	440,906	15.07
QCR11	K1111233-009	1,078,560	6.12	406,174	12.03	439,694	15.07
MS29SDL	K1111233-004	1,081,460	6.12	406,034	12.03	442,498	15.07
MS32SDL	K1111233-005	1,073,393	6.12	400,780	12.03	434,071	15.07
MS29S	K1111233-004	1,071,342	6.12	402,036	12.03	437,926	15.07
MS32S	K1111233-005	1,077,238	6.12	399,747	12.03	434,010	15.07

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111233
Date Analyzed: 11/28/2011
Time Analyzed: 09:04

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID: J:\MS18\DATA\112811\1128F004.D
Instrument ID: GC-MS 18
Analysis Method: 8260C

Lab Code: KWG1112032-2
Analysis Lot: KWG1112032

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	440,701	5.65	172,514	9.10	180,349	11.52
	Upper Limit ==>	881,402	6.15	345,028	9.60	360,698	12.02
	Lower Limit ==>	220,351	5.15	86,257	8.60	90,175	11.02
	ICAL Result ==>	568,244	5.66	218,169	9.10	233,259	11.53
Associated Analyses							
Lab Control Sample	KWG1112033-3	433,895	5.65	172,563	9.10	182,003	11.52
Duplicate Lab Control Sample	KWG1112033-4	443,954	5.66	177,544	9.10	183,596	11.52
Method Blank	KWG1112033-5	419,909	5.66	164,215	9.10	167,182	11.52
MS20S	K1111233-018	422,449	5.66	166,339	9.10	168,642	11.52
MS30IDL	K1111233-020	421,517	5.65	166,848	9.10	171,291	11.52
MS30I	K1111233-020	426,255	5.66	170,202	9.10	171,802	11.52
MS11SDL	K1111233-031	421,019	5.65	165,695	9.10	169,346	11.52
MS12IS	K1111233-007	418,408	5.65	161,674	9.10	167,754	11.52
QCD07	K1111233-008	412,536	5.65	162,815	9.10	166,009	11.52
MS09S	K1111233-021	386,680	5.66	157,618	9.10	160,710	11.52
QCR12	K1111233-022	405,206	5.66	159,483	9.10	165,738	11.52
MS11S	K1111233-031	415,589	5.66	162,394	9.10	163,463	11.52

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Analyzed:**	11/28/2011
		Time Analyzed:	10:12

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID:	J:\MS13\DATA\112811\1128F004.D	**Lab Code:**	KWG1112035-2
Instrument ID:	MS13	**Analysis Lot:**	KWG1112035
Analysis Method:	8260C		

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	1,092,678	6.12	408,329	12.02	439,191	15.07
	Upper Limit ==>	2,185,356	6.62	816,658	12.52	878,382	15.57
	Lower Limit ==>	546,339	5.62	204,165	11.52	219,596	14.57
	ICAL Result ==>	1,209,248	6.12	435,763	12.02	482,755	15.07
Associated Analyses							
Lab Control Sample	KWG1112036-3	1,107,092	6.12	414,126	12.03	440,262	15.07
MS54IMS	KWG1112036-1	1,120,940	6.12	415,637	12.03	445,795	15.07
MS54IDMS	KWG1112036-2	1,113,692	6.12	415,201	12.03	446,035	15.07
Method Blank	KWG1112036-4	1,076,476	6.12	405,630	12.02	435,301	15.07
MS41D	K1111233-010	1,060,402	6.12	404,334	12.03	432,000	15.07
MS41S	K1111233-012	1,075,510	6.12	412,686	12.02	438,305	15.07
MS36D	K1111233-024	1,079,880	6.12	404,278	12.03	438,758	15.07
MS54IDL	K1111233-013	1,062,521	6.12	408,581	12.02	437,789	15.07
MS54IDL	K1111233-013	1,073,831	6.12	404,762	12.02	441,332	15.07
MS54I	K1111233-013	1,101,243	6.12	413,372	12.02	453,830	15.07
MS41IDL	K1111233-011	1,062,014	6.12	400,206	12.03	435,715	15.07
MS40S	K1111233-001	1,085,701	6.12	407,246	12.02	441,551	15.07
MS41I	K1111233-011	1,083,004	6.12	408,432	12.02	442,952	15.07
MS56SDL	K1111233-023	1,074,496	6.12	407,355	12.02	435,897	15.07
MS56S	K1111233-023	1,096,993	6.12	411,001	12.02	431,150	15.07
MS55I	K1111233-025	1,081,605	6.12	411,431	12.02	442,230	15.07
MS36IDL	K1111233-026	1,065,669	6.12	398,984	12.02	420,653	15.07
MS36I	K1111233-026	1,062,537	6.12	401,061	12.02	433,937	15.07
QCD11DL	K1111233-027	1,056,697	6.12	399,200	12.03	428,227	15.07
QCD11	K1111233-027	1,085,891	6.12	412,801	12.02	434,944	15.07

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111233
Date Analyzed: 11/29/2011
Time Analyzed: 08:31

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID: J:\MS18\DATA\112911\1129F003.D
Instrument ID: GC-MS 18
Analysis Method: 8260C

Lab Code: KWG1112065-2
Analysis Lot: KWG1112065

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	440,696	5.65	173,577	9.10	183,971	11.52
	Upper Limit ==>	881,392	6.15	347,154	9.60	367,942	12.02
	Lower Limit ==>	220,348	5.15	86,789	8.60	91,986	11.02
	ICAL Result ==>	568,244	5.66	218,169	9.10	233,259	11.53
Associated Analyses							
Lab Control Sample	KWG1112075-3	432,896	5.65	176,234	9.10	187,834	11.52
Duplicate Lab Control Sample	KWG1112075-5	439,653	5.66	175,727	9.10	189,686	11.52
Method Blank	KWG1112075-4	412,843	5.66	162,320	9.10	166,110	11.52
MS02D	K1111233-019	413,048	5.66	164,965	9.10	167,564	11.52
MS12ISDL	K1111233-007	402,293	5.66	159,156	9.10	162,184	11.52
QCD07DL	K1111233-008	357,030	5.66	143,742	9.10	145,299	11.52
MS56IDL	K1111233-028	397,885	5.66	160,999	9.10	163,696	11.52

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1111233
Project:	NIROP/J070047	**Date Analyzed:**	11/30/2011
		Time Analyzed:	08:41

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID:	J:\MS18\DATA\113011\1130F003.D	**Lab Code:**	KWG1112134-2
Instrument ID:	GC-MS 18	**Analysis Lot:**	KWG1112134
Analysis Method:	8260C		

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	431,846	5.65	172,244	9.10	180,301	11.52
	Upper Limit ==>	863,692	6.15	344,488	9.60	360,602	12.02
	Lower Limit ==>	215,923	5.15	86,122	8.60	90,151	11.02
	ICAL Result ==>	568,244	5.66	218,169	9.10	233,259	11.53
Associated Analyses							
Lab Control Sample	KWG1112135-3	417,388	5.65	169,941	9.10	179,157	11.52
Method Blank	KWG1112135-4	382,040	5.65	152,592	9.10	155,756	11.52
MS56I	K1111233-028	360,333	5.65	145,174	9.10	143,354	11.52

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1111233
Date Extracted: 11/23/2011

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1111981
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
MS40S	K1111233-001	11/14/11	11/17/11	10ml	10ml	NA	
MS12D	K1111233-002	11/14/11	11/17/11	10ml	10ml	NA	
MS35D	K1111233-003	11/14/11	11/17/11	10ml	10ml	NA	
MS29SDL	K1111233-004	11/15/11	11/17/11	10ml	10ml	NA	
MS29S	K1111233-004	11/15/11	11/17/11	10ml	10ml	NA	
MS32SDL	K1111233-005	11/15/11	11/17/11	10ml	10ml	NA	
MS32S	K1111233-005	11/15/11	11/17/11	10ml	10ml	NA	
MS13IS	K1111233-006	11/15/11	11/17/11	10ml	10ml	NA	
QCR11	K1111233-009	11/15/11	11/17/11	10ml	10ml	NA	
QCT09	K1111233-014	11/14/11	11/17/11	10ml	10ml	NA	
MS37S	K1111233-015	11/14/11	11/17/11	10ml	10ml	NA	
MS30D	K1111233-016	11/14/11	11/17/11	10ml	10ml	NA	
MS03IS	K1111233-017	11/14/11	11/17/11	10ml	10ml	NA	
QCT10	K1111233-029	11/14/11	11/17/11	10ml	10ml	NA	
QCR10	K1111233-030	11/14/11	11/17/11	10ml	10ml	NA	
Method Blank	KWG1111981-4	NA	NA	10ml	10ml	NA	
MS30DMS	KWG1111981-1	11/14/11	11/17/11	10ml	10ml	NA	
MS30DDMS	KWG1111981-2	11/14/11	11/17/11	10ml	10ml	NA	
Lab Control Sample	KWG1111981-3	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1111233
Date Extracted: 11/28/2011

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1112033
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
MS12IS	K1111233-007	11/15/11	11/17/11	10ml	10ml	NA	
QCD07	K1111233-008	11/15/11	11/17/11	10ml	10ml	NA	
MS20S	K1111233-018	11/15/11	11/17/11	10ml	10ml	NA	
MS30I	K1111233-020	11/15/11	11/17/11	10ml	10ml	NA	
MS30IDL	K1111233-020	11/15/11	11/17/11	10ml	10ml	NA	
MS09S	K1111233-021	11/15/11	11/17/11	10ml	10ml	NA	
QCR12	K1111233-022	11/15/11	11/17/11	10ml	10ml	NA	
MS11S	K1111233-031	11/15/11	11/17/11	10ml	10ml	NA	
MS11SDL	K1111233-031	11/15/11	11/17/11	10ml	10ml	NA	
Method Blank	KWG1112033-5	NA	NA	10ml	10ml	NA	
Lab Control Sample	KWG1112033-3	NA	NA	10ml	10ml	NA	
Duplicate Lab Control Sample	KWG1112033-4	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1111233
Date Extracted: 11/28/2011

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1112036
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
MS41D	K1111233-010	11/16/11	11/17/11	10ml	10ml	NA	
MS41IDL	K1111233-011	11/16/11	11/17/11	10ml	10ml	NA	
MS41I	K1111233-011	11/16/11	11/17/11	10ml	10ml	NA	
MS41S	K1111233-012	11/16/11	11/17/11	10ml	10ml	NA	
MS54IDL	K1111233-013	11/16/11	11/17/11	10ml	10ml	NA	
MS54I	K1111233-013	11/16/11	11/17/11	10ml	10ml	NA	
MS56S	K1111233-023	11/16/11	11/17/11	10ml	10ml	NA	
MS56SDL	K1111233-023	11/16/11	11/17/11	10ml	10ml	NA	
MS36D	K1111233-024	11/16/11	11/17/11	10ml	10ml	NA	
MS55I	K1111233-025	11/16/11	11/17/11	10ml	10ml	NA	
MS36IDL	K1111233-026	11/16/11	11/17/11	10ml	10ml	NA	
MS36I	K1111233-026	11/16/11	11/17/11	10ml	10ml	NA	
QCD11DL	K1111233-027	11/16/11	11/17/11	10ml	10ml	NA	
QCD11	K1111233-027	11/16/11	11/17/11	10ml	10ml	NA	
Method Blank	KWG1112036-4	NA	NA	10ml	10ml	NA	
MS54IMS	KWG1112036-1	11/16/11	11/17/11	10ml	10ml	NA	
MS54IDMS	KWG1112036-2	11/16/11	11/17/11	10ml	10ml	NA	
Lab Control Sample	KWG1112036-3	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1111233
Date Extracted: 11/29/2011

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1112075
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
MS12ISDL	K1111233-007	11/15/11	11/17/11	10ml	10ml	NA	
QCD07DL	K1111233-008	11/15/11	11/17/11	10ml	10ml	NA	
MS02D	K1111233-019	11/15/11	11/17/11	10ml	10ml	NA	
MS56IDL	K1111233-028	11/16/11	11/17/11	10ml	10ml	NA	
Method Blank	KWG1112075-4	NA	NA	10ml	10ml	NA	
Lab Control Sample	KWG1112075-3	NA	NA	10ml	10ml	NA	
Duplicate Lab Control Sample	KWG1112075-5	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1111233
Date Extracted: 11/30/2011

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1112135
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
MS56I	K1111233-028	11/16/11	11/17/11	10ml	10ml	NA	
Method Blank	KWG1112135-4	NA	NA	10ml	10ml	NA	
Lab Control Sample	KWG1112135-3	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

SDG K1110800

SAMPLE CALC	SAMPLE ID MS29S					
IS AREA	DILUTION	COMPOUND OF INTEREST AREA	IS AMOUNT (NG)	PURGE VOLUME (ML)	AVE RRF	CONCENTRATION PPB
1081460	5	458715	100	10	0.2700	78.5486

cis-1,2-Dichloroethene = 79 ug/L

Quantitation Report

Data File:	J:\MS13\DATA\112311\1123F023.D			**Instrument:**	MS13
Acqu Date:	11/23/2011 19:37	**Quant Date:**	11/28/2011 13:31	**Vial:**	22
Run Type:	DL			**Dilution:**	5.0
Lab ID:	K1111233-004	M5295		**Soln Conc. Units:**	PPB

Bottle ID:		**Tier:**	V	**Matrix:**	WATER
Prod Code:	8260B VOC_FP	**Collect Date:**	11/15/2011	**Receive Date:**	11/17/2011

Analysis Lot:	KWG1111980	**Prep Lot:**	KWG1111981	**Report Group:**	K1111233
Analysis Method:	8260C	**Prep Method:**	EPA 5030B		
Prep Ref:	1078948	**Prep Date:**	11/23/2011		

Quant Method:	J:\MS13\METHODS\103111MS13_8	**Calibration ID:**	CAL11020
Title:	Volatile Organic Compounds	**Report List ID:**	LJ8154
Tune Ref:	J:\MS13\DATA\112311\1123F003.D	**Method ID:**	MJ119
MB Ref:	J:\MS13\DATA\112311\1123F009.D	**Quant based on Report List**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	Fluorobenzene	6.12	0.00	96	1081460	10.00	OK
2	Chlorobenzene-d5	12.03	0.00	82	406034	10.00	OK
3	1,4-Dichlorobenzene-d4	15.07	0.00	152	442498	10.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	Dibromofluoromethane	5.12	0.00	0.00	113	221041	10.22	102	73-122	OK	NR
1	Toluene-d8	9.31	0.01	0.00	98	1055187	11.81	118	65-144	OK	NR
2	4-Bromofluorobenzene	13.69	0.00	0.00	95	361619	10.79	108	68-117	OK	NR

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	Vinyl Chloride				62	0		0.38	U	NR
1	1,1-Dichloroethene				96	0d		0.37	U	NR
1	trans-1,2-Dichloroethene	3.15	-0.01	0.00	96	15650	0.5700	2.9	D	NR
1	1,1-Dichloroethane	3.68		0.00	63	2368	0.0500	0.39	U	NR
1	cis-1,2-Dichloroethene	4.42		0.00	96	458715	15.73	79	D	
1	1,1,1-Trichloroethane (TCA)				97	0		0.38	U	NR
1	Trichloroethene (TCE)	6.74		0.00	95	113811	3.99	20	D	NR
2	Tetrachloroethene (PCE)	10.54	0.01	0.00	164	2602m	0.0900	0.50	U	NR

Prep Amount:	10 ml	**Dilution:**	5.0
Prep Final Vol:	10 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**S. WARINO**	**DATE:**	**JANUARY 24, 2012**
FROM:	**EDWARD SEDLMYER**	**COPIES:**	**DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – SELECT VOCs**
CTO F27C NIROP FRIDLEY
SAMPLE DELIVERY GROUP (SDGs) – K1111349

SAMPLES: 15/Aqueous

FW13	MS03S	MS07IS	MS08IS
MS28I	MS29I	MS32I	MS33I
MS34I	MS36S	MS54S	QCD01
QCR13	QCR14	QCT11	

Overview

The sample set for NIROP Fridley, CTO F27C, SDG K1111349 consists of twelve (12) aqueous environmental samples, two (2) rinse blanks (QCR13 and QCR14), and one (1) trip blank (QCT11). One field duplicate pair was associated with this SDG: FW13 / QCD01.

All samples were analyzed for select volatile organic compounds (VOCs) including vinyl chloride, 1,1-dichloroethene, trans-1,2-dichloroethene, 1,1-dichloroethane, cis-1,2-dichloroethene, 1,1,1-trichloroethane, trichloroethene and tetrachloroethene. The samples were collected by Bay West on November 17 and 18, 2011 and analyzed by Columbia Analytical Services, Inc. VOC analyses were conducted using SW846 method 8260B.

These data were evaluated based on the following parameters:

* • Data Completeness
* • Holding Times
* • GC/MS Tuning and System Performance
• Initial and Continuing Calibrations
* • Laboratory Method and Field Quality Control Blank Analyses
* • Surrogate Recoveries
* • Laboratory Control Sample / Laboratory Control Sample Duplicate Results
* • Matrix Spike / Matrix Spike Duplicate Results
* • Field Duplicate Precision
* • Internal Standard Recoveries
* • Compound Quantitation
* • Compound Identification
* • Detection Limits

* - All quality control criteria were met for this parameter.

VOC

Calibration verification percent difference (%D) exceeded the 20% quality control limit for 1,1,1-trichloroethane on instrument MS18, on 12/01/11, at 09:26. The nondetected 1,1,1-trichloroethane results for samples QCR14 and QCD01 have been qualified as estimated (UJ).

Notes

All results were reported to the method detection limit (MDL) by the laboratory.

Positive results reported below the reporting limit (RL) but above the method detection limit (MDL) for the organic analyses were qualified as estimated, "J".

The rinse blanks QCR13, QCR14, and trip blank QCT11 had detections for cis-1,2-dichloroethene, trans-1,2-dichloroethene, and trichloroethene. Associated samples collected on the same date as each referenced rinse blank contained concentrations that exceeded five times the concentration of the rinse blanks, except for trichloroethene in sample FW13. No action was taken on the basis of the rinse blanks because all detections are compounds of concern and will be considered as originating from the well.

Samples MS34I, MS54S, MS03S, MS08IS, MS29I, MS32I, MS33I, MS36S, MS07IS, MS34I, and MS54S were diluted due to concentrations greater than the linear range of the instrument for several compounds. The laboratory submitted multiple runs of the samples. The lowest detection limits were used to report the nondetected compounds.

Executive Summary

Laboratory Performance: Continuing calibration noncompliance for 1,1,1-trichloroethane resulted in the qualification of data.

Other Factors Affecting Data Quality: Positive results reported below the reporting limit (RL) but above the method detection limit (MDL) for the organic analyses were qualified as estimated, (J).

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Organic Review", October 1999, and the Department of Defense (DoD) document entitled "Quality Systems Manual (QSM) for Environmental Laboratories", April 2009.

The text of this report has been formulated to address only those problem areas affecting data quality.

Tetra Tech NUS
Edward Sedlmyer
Chemist/Data Validator

Tetra Tech NUS
Joseph A. Samchuck
Quality Assurance Officer

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = ICP PDS Recovery Noncompliance; MSA's $r < 0.995$
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = RPD between columns/detectors >40% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient $r < 0.995$
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is less than sample activity
Z1 = Tentatively Identified Compound considered presumptively present
Z2 = Tentatively Identified Compound column bleed

PROJ_NO: 02583	NSAMPLE	FW13			MS03S			MS03SDL			MS07IS		
SDG: K1111349	LAB_ID	K1111349-011			K1111349-002			K1111349-002DL			K1111349-010		
FRACTION: OV	SAMP_DATE	11/18/2011			11/17/2011			11/17/2011			11/17/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.075	U		1.1						1.9	U	
1,1-DICHLOROETHANE		0.077	U		3.2						2	U	
1,1-DICHLOROETHENE		0.074	U		0.38	J	P				9.3	J	P
CIS-1,2-DICHLOROETHENE		0.067	U					130			360		
TETRACHLOROETHENE		0.099	U		1.5						2.5	U	
TRANS-1,2-DICHLOROETHENE		0.057	U		5.9						180		
TRICHLOROETHENE		0.13	J	P				91					
VINYL CHLORIDE		0.075	U		0.09	J	P				2	J	P

PROJ_NO: 02583	NSAMPLE	MS07ISDL			MS08IS			MS08ISDL			MS28I		
SDG: K1111349	LAB_ID	K1111349-010DL			K1111349-003			K1111349-003DL			K1111349-006		
FRACTION: OV	SAMP_DATE	11/17/2011			11/17/2011			11/17/2011			11/18/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE					0.075	U					0.075	U	
1,1-DICHLOROETHANE					2.2						4.9		
1,1-DICHLOROETHENE					2.3						1.7		
CIS-1,2-DICHLOROETHENE					58								
TETRACHLOROETHENE					0.099	U					0.099	U	
TRANS-1,2-DICHLOROETHENE								98			5.2		
TRICHLOROETHENE		15000						83					
VINYL CHLORIDE					1.5						0.38		

PROJ_NO: 02583	NSAMPLE	MS28IDL			MS29I			MS29IDL			MS32I		
SDG: K1111349	LAB_ID	K1111349-006DL			K1111349-012			K1111349-012DL			K1111349-005		
FRACTION: OV	SAMP_DATE	11/18/2011			11/18/2011			11/18/2011			11/18/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE					0.075	U					0.075	U	
1,1-DICHLOROETHANE					0.92						0.61		
1,1-DICHLOROETHENE					0.84						1.9		
CIS-1,2-DICHLOROETHENE		76						260					
TETRACHLOROETHENE					0.57						0.099	U	
TRANS-1,2-DICHLOROETHENE					2.8								
TRICHLOROETHENE		240						73					
VINYL CHLORIDE					0.09	J	P				0.67		

PROJ_NO: 02583	NSAMPLE	MS32IDL			MS33I			MS33IDL			MS34I		
SDG: K1111349	LAB_ID	K1111349-005DL			K1111349-013			K1111349-013DL			K1111349-007		
FRACTION: OV	SAMP_DATE	11/18/2011			11/18/2011			11/18/2011			11/18/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE					0.75	U					0.19	U	
1,1-DICHLOROETHANE					7.7						11		
1,1-DICHLOROETHENE					7.9						2.7		
CIS-1,2-DICHLOROETHENE		180						1400					
TETRACHLOROETHENE					0.99	U					0.25	U	
TRANS-1,2-DICHLOROETHENE		240						1700			51		
TRICHLOROETHENE		130						7000					
VINYL CHLORIDE					38						0.43	J	P

PROJ_NO: 02583	NSAMPLE	MS34IDL			MS36S			MS36SDL			MS54S		
SDG: K1111349	LAB_ID	K1111349-007DL			K1111349-009			K1111349-009DL			K1111349-001		
FRACTION: OV	SAMP_DATE	11/18/2011			11/17/2011			11/17/2011			11/17/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE					0.075	U					0.38	U	
1,1-DICHLOROETHANE					1.9						7.9		
1,1-DICHLOROETHENE					0.86						4.5		
CIS-1,2-DICHLOROETHENE		390						220					
TETRACHLOROETHENE					0.099	U					0.55	J	P
TRANS-1,2-DICHLOROETHENE								79			170		
TRICHLOROETHENE		840						180					
VINYL CHLORIDE					2.6						1.4		

PROJ_NO: 02583	NSAMPLE	MS54SDL			QCD01			QCR13			QCR14		
SDG: K1111349	LAB_ID	K1111349-001DL			K1111349-015			K1111349-004			K1111349-014		
FRACTION: OV	SAMP_DATE	11/17/2011			11/18/2011			11/17/2011			11/18/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF				FW13								
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE					0.075	UJ	C	0.075	U		0.075	UJ	C
1,1-DICHLOROETHANE					0.077	U		0.077	U		0.077	U	
1,1-DICHLOROETHENE					0.074	U		0.074	U		0.074	U	
CIS-1,2-DICHLOROETHENE		440			0.067	U		0.08	J	P	0.08	J	P
TETRACHLOROETHENE					0.099	U		0.099	U		0.099	U	
TRANS-1,2-DICHLOROETHENE					0.057	U		0.057	U		0.19	J	P
TRICHLOROETHENE		1800			0.1	U		0.2	J	P	1.6		
VINYL CHLORIDE					0.075	U		0.075	U		0.075	U	

PROJ_NO: 02583	NSAMPLE	QCT11		
SDG: K1111349	LAB_ID	K1111349-008		
FRACTION: OV	SAMP_DATE	11/17/2011		
MEDIA: WATER	QC_TYPE	NM		
	UNITS	UG/L		
	PCT_SOLIDS	0.0		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.075	U	
1,1-DICHLOROETHANE		0.077	U	
1,1-DICHLOROETHENE		0.074	U	
CIS-1,2-DICHLOROETHENE		0.13	J	P
TETRACHLOROETHENE		0.099	U	
TRANS-1,2-DICHLOROETHENE		0.057	U	
TRICHLOROETHENE		0.3	J	P
VINYL CHLORIDE		0.075	U	

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111349
Project:	NIROP/J070047	**Date Collected:**	11/18/2011
Sample Matrix:	Water	**Date Received:**	11/19/2011
		Date Extracted:	11/30/2011
		Date Analyzed:	11/30/2011

Volatile Organic Compounds

Sample Name:	FW13	**Units:**	ug/L
Lab Code:	K1111349-011	**Basis:**	NA
File ID:	J:\MS18\DATA\113011\1130F020.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112135
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**0.13**	J	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	84	73-122	11/30/11	Acceptable
Toluene-d8	88	65-144	11/30/11	Acceptable
4-Bromofluorobenzene	76	68-117	11/30/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111349
Project:	NIROP/J070047	**Date Collected:**	11/17/2011
Sample Matrix:	Water	**Date Received:**	11/19/2011
		Date Extracted:	11/30/2011
		Date Analyzed:	11/30/2011

Volatile Organic Compounds

Sample Name:	MS03S	**Units:**	ug/L
Lab Code:	K1111349-002	**Basis:**	NA
File ID:	J:\MS18\DATA\113011\1130F015.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112135
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.090**	J	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.38**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**5.9**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**3.2**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**140**	E	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	**1.1**		0.50	0.075	
79-01-6	Trichloroethene (TCE)	**100**	E	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**1.5**		0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	88	73-122	11/30/11	Acceptable
Toluene-d8	88	65-144	11/30/11	Acceptable
4-Bromofluorobenzene	77	68-117	11/30/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111349
Project:	NIROP/J070047	**Date Collected:**	11/17/2011
Sample Matrix:	Water	**Date Received:**	11/19/2011
		Date Extracted:	11/30/2011
		Date Analyzed:	11/30/2011

Volatile Organic Compounds

Sample Name:	MS03SDL	**Units:**	ug/L
Lab Code:	K1111349-002	**Basis:**	NA
File ID:	J:\MS18\DATA\113011\1130F023.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112135
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 10

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.75	U	2.0	0.75	
75-35-4	1,1-Dichloroethene	0.74	U	5.0	0.74	
156-60-5	trans-1,2-Dichloroethene	**5.8**	D	5.0	0.57	
75-34-3	1,1-Dichloroethane	**2.9**	JD	5.0	0.77	
156-59-2	cis-1,2-Dichloroethene	**130**	D	5.0	0.67	
71-55-6	1,1,1-Trichloroethane (TCA)	**0.90**	JD	5.0	0.75	
79-01-6	Trichloroethene (TCE)	**91**	D	5.0	1.0	
127-18-4	Tetrachloroethene (PCE)	**1.6**	JD	5.0	0.99	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	87	73-122	11/30/11	Acceptable
Toluene-d8	88	65-144	11/30/11	Acceptable
4-Bromofluorobenzene	77	68-117	11/30/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111349
Project:	NIROP/J070047	**Date Collected:**	11/17/2011
Sample Matrix:	Water	**Date Received:**	11/19/2011
		Date Extracted:	11/30/2011
		Date Analyzed:	11/30/2011

Volatile Organic Compounds

Sample Name:	MS07IS	**Units:**	ug/L
Lab Code:	K1111349-010	**Basis:**	NA
File ID:	J:\MS18\DATA\113011\1130F031.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112135
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 25

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**2.0**	JD	5.0	1.9	
75-35-4	1,1-Dichloroethene	**9.3**	JD	13	1.9	
156-60-5	trans-1,2-Dichloroethene	**180**	D	13	1.5	
75-34-3	1,1-Dichloroethane	2.0	U	13	2.0	
156-59-2	cis-1,2-Dichloroethene	**360**	D	13	1.7	
71-55-6	1,1,1-Trichloroethane (TCA)	1.9	U	13	1.9	
79-01-6	Trichloroethene (TCE)	**18000**	ED	13	2.5	
127-18-4	Tetrachloroethene (PCE)	2.5	U	13	2.5	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	88	73-122	11/30/11	Acceptable
Toluene-d8	91	65-144	11/30/11	Acceptable
4-Bromofluorobenzene	75	68-117	11/30/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111349
Project:	NIROP/J070047	**Date Collected:**	11/17/2011
Sample Matrix:	Water	**Date Received:**	11/19/2011
		Date Extracted:	11/30/2011
		Date Analyzed:	11/30/2011

Volatile Organic Compounds

Sample Name:	MS07ISDL	**Units:**	ug/L
Lab Code:	K1111349-010	**Basis:**	NA
File ID:	J:\MS18\DATA\113011\1130F028.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112135
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 500

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	38	U	100	38	
75-35-4	1,1-Dichloroethene	37	U	250	37	
156-60-5	trans-1,2-Dichloroethene	**160**	JD	250	29	
75-34-3	1,1-Dichloroethane	39	U	250	39	
156-59-2	cis-1,2-Dichloroethene	**360**	D	250	34	
71-55-6	1,1,1-Trichloroethane (TCA)	38	U	250	38	
79-01-6	Trichloroethene (TCE)	**15000**	D	250	50	
127-18-4	Tetrachloroethene (PCE)	50	U	250	50	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	86	73-122	11/30/11	Acceptable
Toluene-d8	87	65-144	11/30/11	Acceptable
4-Bromofluorobenzene	76	68-117	11/30/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111349
Project:	NIROP/J070047	**Date Collected:**	11/17/2011
Sample Matrix:	Water	**Date Received:**	11/19/2011
		Date Extracted:	11/30/2011
		Date Analyzed:	11/30/2011

Volatile Organic Compounds

Sample Name:	MS08IS	**Units:**	ug/L
Lab Code:	K1111349-003	**Basis:**	NA
File ID:	J:\MS18\DATA\113011\1130F011.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112135
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**1.5**		0.20	0.075	
75-35-4	1,1-Dichloroethene	**2.3**		0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**120**	E	0.50	0.057	
75-34-3	1,1-Dichloroethane	**2.2**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**58**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**110**	E	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	85	73-122	11/30/11	Acceptable
Toluene-d8	88	65-144	11/30/11	Acceptable
4-Bromofluorobenzene	77	68-117	11/30/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111349
Project:	NIROP/J070047	**Date Collected:**	11/17/2011
Sample Matrix:	Water	**Date Received:**	11/19/2011
		Date Extracted:	11/30/2011
		Date Analyzed:	11/30/2011

Volatile Organic Compounds

Sample Name:	MS08ISDL	**Units:**	ug/L
Lab Code:	K1111349-003	**Basis:**	NA
File ID:	J:\MS18\DATA\113011\1130F010.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112135
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 10

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**1.3**	JD	2.0	0.75	
75-35-4	1,1-Dichloroethene	**1.9**	JD	5.0	0.74	
156-60-5	trans-1,2-Dichloroethene	**98**	D	5.0	0.57	
75-34-3	1,1-Dichloroethane	**1.9**	JD	5.0	0.77	
156-59-2	cis-1,2-Dichloroethene	**45**	D	5.0	0.67	
71-55-6	1,1,1-Trichloroethane (TCA)	0.75	U	5.0	0.75	
79-01-6	Trichloroethene (TCE)	**83**	D	5.0	1.0	
127-18-4	Tetrachloroethene (PCE)	0.99	U	5.0	0.99	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	83	73-122	11/30/11	Acceptable
Toluene-d8	87	65-144	11/30/11	Acceptable
4-Bromofluorobenzene	78	68-117	11/30/11	Acceptable

Comments

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111349
Project:	NIROP/J070047	**Date Collected:**	11/18/2011
Sample Matrix:	Water	**Date Received:**	11/19/2011
		Date Extracted:	11/30/2011
		Date Analyzed:	11/30/2011

Volatile Organic Compounds

Sample Name:	MS28I	**Units:**	ug/L
Lab Code:	K1111349-006	**Basis:**	NA
File ID:	J:\MS18\DATA\113011\1130F030.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112135
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.38**		0.20	0.075	
75-35-4	1,1-Dichloroethene	**1.7**		0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**5.2**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**4.9**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**86**	E	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**270**	E	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	87	73-122	11/30/11	Acceptable
Toluene-d8	90	65-144	11/30/11	Acceptable
4-Bromofluorobenzene	74	68-117	11/30/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111349
Project:	NIROP/J070047	**Date Collected:**	11/18/2011
Sample Matrix:	Water	**Date Received:**	11/19/2011
		Date Extracted:	11/30/2011
		Date Analyzed:	11/30/2011

Volatile Organic Compounds

Sample Name:	MS28IDL	**Units:**	ug/L
Lab Code:	K1111349-006	**Basis:**	NA
File ID:	J:\MS18\DATA\113011\1130F025.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112135
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 10

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.75	U	2.0	0.75	
75-35-4	1,1-Dichloroethene	**1.4**	JD	5.0	0.74	
156-60-5	trans-1,2-Dichloroethene	**5.0**	D	5.0	0.57	
75-34-3	1,1-Dichloroethane	**4.3**	JD	5.0	0.77	
156-59-2	cis-1,2-Dichloroethene	**76**	D	5.0	0.67	
71-55-6	1,1,1-Trichloroethane (TCA)	0.75	U	5.0	0.75	
79-01-6	Trichloroethene (TCE)	**240**	D	5.0	1.0	
127-18-4	Tetrachloroethene (PCE)	0.99	U	5.0	0.99	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	85	73-122	11/30/11	Acceptable
Toluene-d8	86	65-144	11/30/11	Acceptable
4-Bromofluorobenzene	75	68-117	11/30/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111349
Project:	NIROP/J070047	**Date Collected:**	11/18/2011
Sample Matrix:	Water	**Date Received:**	11/19/2011
		Date Extracted:	11/30/2011
		Date Analyzed:	11/30/2011

Volatile Organic Compounds

Sample Name:	MS29I	**Units:**	ug/L
Lab Code:	K1111349-012	**Basis:**	NA
File ID:	J:\MS18\DATA\113011\1130F032.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112135
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.090**	J	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.84**		0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**2.8**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.92**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**300**	E	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**85**	E	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**0.57**		0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	87	73-122	11/30/11	Acceptable
Toluene-d8	89	65-144	11/30/11	Acceptable
4-Bromofluorobenzene	76	68-117	11/30/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111349
Project:	NIROP/J070047	**Date Collected:**	11/18/2011
Sample Matrix:	Water	**Date Received:**	11/19/2011
		Date Extracted:	11/30/2011
		Date Analyzed:	11/30/2011

Volatile Organic Compounds

Sample Name:	MS29IDL	**Units:**	ug/L
Lab Code:	K1111349-012	**Basis:**	NA
File ID:	J:\MS18\DATA\113011\1130F021.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112135
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 10

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.75	U	2.0	0.75	
75-35-4	1,1-Dichloroethene	**0.80**	JD	5.0	0.74	
156-60-5	trans-1,2-Dichloroethene	**2.8**	JD	5.0	0.57	
75-34-3	1,1-Dichloroethane	**0.80**	JD	5.0	0.77	
156-59-2	cis-1,2-Dichloroethene	**260**	D	5.0	0.67	
71-55-6	1,1,1-Trichloroethane (TCA)	0.75	U	5.0	0.75	
79-01-6	Trichloroethene (TCE)	**73**	D	5.0	1.0	
127-18-4	Tetrachloroethene (PCE)	0.99	U	5.0	0.99	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	83	73-122	11/30/11	Acceptable
Toluene-d8	87	65-144	11/30/11	Acceptable
4-Bromofluorobenzene	75	68-117	11/30/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111349
Project:	NIROP/J070047	**Date Collected:**	11/18/2011
Sample Matrix:	Water	**Date Received:**	11/19/2011
		Date Extracted:	11/30/2011
		Date Analyzed:	11/30/2011

Volatile Organic Compounds

Sample Name:	MS32I	**Units:**	ug/L
Lab Code:	K1111349-005	**Basis:**	NA
File ID:	J:\MS18\DATA\113011\1130F034.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112135
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.67**		0.20	0.075	
75-35-4	1,1-Dichloroethene	**1.9**		0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**290**	E	0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.61**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**220**	E	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**160**	E	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	90	73-122	11/30/11	Acceptable
Toluene-d8	89	65-144	11/30/11	Acceptable
4-Bromofluorobenzene	75	68-117	11/30/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111349
Project:	NIROP/J070047	**Date Collected:**	11/18/2011
Sample Matrix:	Water	**Date Received:**	11/19/2011
		Date Extracted:	11/30/2011
		Date Analyzed:	11/30/2011

Volatile Organic Compounds

Sample Name:	MS32IDL	**Units:**	ug/L
Lab Code:	K1111349-005	**Basis:**	NA
File ID:	J:\MS18\DATA\113011\1130F024.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112135
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 10

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.75	U	2.0	0.75	
75-35-4	1,1-Dichloroethene	**1.6**	JD	5.0	0.74	
156-60-5	trans-1,2-Dichloroethene	**240**	D	5.0	0.57	
75-34-3	1,1-Dichloroethane	0.77	U	5.0	0.77	
156-59-2	cis-1,2-Dichloroethene	**180**	D	5.0	0.67	
71-55-6	1,1,1-Trichloroethane (TCA)	0.75	U	5.0	0.75	
79-01-6	Trichloroethene (TCE)	**130**	D	5.0	1.0	
127-18-4	Tetrachloroethene (PCE)	0.99	U	5.0	0.99	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	86	73-122	11/30/11	Acceptable
Toluene-d8	88	65-144	11/30/11	Acceptable
4-Bromofluorobenzene	75	68-117	11/30/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111349
Project:	NIROP/J070047	**Date Collected:**	11/18/2011
Sample Matrix:	Water	**Date Received:**	11/19/2011
		Date Extracted:	11/30/2011
		Date Analyzed:	11/30/2011

Volatile Organic Compounds

Sample Name:	MS33I	**Units:**	ug/L
Lab Code:	K1111349-013	**Basis:**	NA
File ID:	J:\MS18\DATA\113011\1130F035.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112135
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 10

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**38**	D	2.0	0.75	
75-35-4	1,1-Dichloroethene	**7.9**	D	5.0	0.74	
156-60-5	trans-1,2-Dichloroethene	**1600**	ED	5.0	0.57	
75-34-3	1,1-Dichloroethane	**7.7**	D	5.0	0.77	
156-59-2	cis-1,2-Dichloroethene	**1300**	ED	5.0	0.67	
71-55-6	1,1,1-Trichloroethane (TCA)	0.75	U	5.0	0.75	
79-01-6	Trichloroethene (TCE)	**6500**	ED	5.0	1.0	
127-18-4	Tetrachloroethene (PCE)	0.99	U	5.0	0.99	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	88	73-122	11/30/11	Acceptable
Toluene-d8	89	65-144	11/30/11	Acceptable
4-Bromofluorobenzene	76	68-117	11/30/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111349
Project:	NIROP/J070047	**Date Collected:**	11/18/2011
Sample Matrix:	Water	**Date Received:**	11/19/2011
		Date Extracted:	11/30/2011
		Date Analyzed:	11/30/2011

Volatile Organic Compounds

Sample Name:	MS33IDL	**Units:**	ug/L
Lab Code:	K1111349-013	**Basis:**	NA
File ID:	J:\MS18\DATA\113011\1130F029.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112135
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 200

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**44**	D	40	15	
75-35-4	1,1-Dichloroethene	15	U	100	15	
156-60-5	trans-1,2-Dichloroethene	**1700**	D	100	12	
75-34-3	1,1-Dichloroethane	16	U	100	16	
156-59-2	cis-1,2-Dichloroethene	**1400**	D	100	14	
71-55-6	1,1,1-Trichloroethane (TCA)	15	U	100	15	
79-01-6	Trichloroethene (TCE)	**7000**	D	100	20	
127-18-4	Tetrachloroethene (PCE)	20	U	100	20	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	86	73-122	11/30/11	Acceptable
Toluene-d8	88	65-144	11/30/11	Acceptable
4-Bromofluorobenzene	76	68-117	11/30/11	Acceptable

Comments

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111349
Project:	NIROP/J070047	**Date Collected:**	11/18/2011
Sample Matrix:	Water	**Date Received:**	11/19/2011
		Date Extracted:	11/30/2011
		Date Analyzed:	11/30/2011

Volatile Organic Compounds

Sample Name:	MS34I	**Units:**	ug/L
Lab Code:	K1111349-007	**Basis:**	NA
File ID:	J:\MS18\DATA\113011\1130F016.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112135
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 2.5

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.43**	JD	0.50	0.19	
75-35-4	1,1-Dichloroethene	**2.7**	D	1.3	0.19	
156-60-5	trans-1,2-Dichloroethene	**51**	D	1.3	0.15	
75-34-3	1,1-Dichloroethane	**11**	D	1.3	0.20	
156-59-2	cis-1,2-Dichloroethene	**410**	ED	1.3	0.17	
71-55-6	1,1,1-Trichloroethane (TCA)	0.19	U	1.3	0.19	
79-01-6	Trichloroethene (TCE)	**870**	ED	1.3	0.25	
127-18-4	Tetrachloroethene (PCE)	0.25	U	1.3	0.25	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	87	73-122	11/30/11	Acceptable
Toluene-d8	89	65-144	11/30/11	Acceptable
4-Bromofluorobenzene	77	68-117	11/30/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111349
Project:	NIROP/J070047	**Date Collected:**	11/18/2011
Sample Matrix:	Water	**Date Received:**	11/19/2011
		Date Extracted:	11/30/2011
		Date Analyzed:	11/30/2011

Volatile Organic Compounds

Sample Name:	MS34IDL	**Units:**	ug/L
Lab Code:	K1111349-007	**Basis:**	NA
File ID:	J:\MS18\DATA\113011\1130F026.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112135
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 25

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	1.9	U	5.0	1.9	
75-35-4	1,1-Dichloroethene	**3.0**	JD	13	1.9	
156-60-5	trans-1,2-Dichloroethene	**49**	D	13	1.5	
75-34-3	1,1-Dichloroethane	**10**	JD	13	2.0	
156-59-2	cis-1,2-Dichloroethene	**390**	D	13	1.7	
71-55-6	1,1,1-Trichloroethane (TCA)	1.9	U	13	1.9	
79-01-6	Trichloroethene (TCE)	**840**	D	13	2.5	
127-18-4	Tetrachloroethene (PCE)	2.5	U	13	2.5	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	88	73-122	11/30/11	Acceptable
Toluene-d8	90	65-144	11/30/11	Acceptable
4-Bromofluorobenzene	74	68-117	11/30/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111349
Project:	NIROP/J070047	**Date Collected:**	11/17/2011
Sample Matrix:	Water	**Date Received:**	11/19/2011
		Date Extracted:	11/30/2011
		Date Analyzed:	11/30/2011

Volatile Organic Compounds

Sample Name:	MS36S	**Units:**	ug/L
Lab Code:	K1111349-009	**Basis:**	NA
File ID:	J:\MS18\DATA\113011\1130F033.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112135
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**2.6**		0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.86**		0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**91**	E	0.50	0.057	
75-34-3	1,1-Dichloroethane	**1.9**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**240**	E	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**200**	E	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	89	73-122	11/30/11	Acceptable
Toluene-d8	89	65-144	11/30/11	Acceptable
4-Bromofluorobenzene	75	68-117	11/30/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111349
Project:	NIROP/J070047	**Date Collected:**	11/17/2011
Sample Matrix:	Water	**Date Received:**	11/19/2011
		Date Extracted:	11/30/2011
		Date Analyzed:	11/30/2011

Volatile Organic Compounds

Sample Name:	MS36SDL	**Units:**	ug/L
Lab Code:	K1111349-009	**Basis:**	NA
File ID:	J:\MS18\DATA\113011\1130F027.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112135
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 10

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**2.3**	D	2.0	0.75	
75-35-4	1,1-Dichloroethene	**0.80**	JD	5.0	0.74	
156-60-5	trans-1,2-Dichloroethene	**79**	D	5.0	0.57	
75-34-3	1,1-Dichloroethane	**1.5**	JD	5.0	0.77	
156-59-2	cis-1,2-Dichloroethene	**220**	D	5.0	0.67	
71-55-6	1,1,1-Trichloroethane (TCA)	0.75	U	5.0	0.75	
79-01-6	Trichloroethene (TCE)	**180**	D	5.0	1.0	
127-18-4	Tetrachloroethene (PCE)	0.99	U	5.0	0.99	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	87	73-122	11/30/11	Acceptable
Toluene-d8	88	65-144	11/30/11	Acceptable
4-Bromofluorobenzene	76	68-117	11/30/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111349
Project:	NIROP/J070047	**Date Collected:**	11/17/2011
Sample Matrix:	Water	**Date Received:**	11/19/2011
		Date Extracted:	11/30/2011
		Date Analyzed:	11/30/2011

Volatile Organic Compounds

Sample Name:	MS54S	**Units:**	ug/L
Lab Code:	K1111349-001	**Basis:**	NA
File ID:	J:\MS18\DATA\113011\1130F013.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112135
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 5

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**1.4**	D	1.0	0.38	
75-35-4	1,1-Dichloroethene	**4.5**	D	2.5	0.37	
156-60-5	trans-1,2-Dichloroethene	**170**	D	2.5	0.29	
75-34-3	1,1-Dichloroethane	**7.9**	D	2.5	0.39	
156-59-2	cis-1,2-Dichloroethene	**490**	ED	2.5	0.34	
71-55-6	1,1,1-Trichloroethane (TCA)	0.38	U	2.5	0.38	
79-01-6	Trichloroethene (TCE)	**1900**	ED	2.5	0.50	
127-18-4	Tetrachloroethene (PCE)	**0.55**	JD	2.5	0.50	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	86	73-122	11/30/11	Acceptable
Toluene-d8	90	65-144	11/30/11	Acceptable
4-Bromofluorobenzene	75	68-117	11/30/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111349
Project:	NIROP/J070047	**Date Collected:**	11/17/2011
Sample Matrix:	Water	**Date Received:**	11/19/2011
		Date Extracted:	11/30/2011
		Date Analyzed:	11/30/2011

Volatile Organic Compounds

Sample Name:	MS54SDL	**Units:**	ug/L
Lab Code:	K1111349-001	**Basis:**	NA
File ID:	J:\MS18\DATA\113011\1130F022.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112135
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 50

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	3.8	U	10	3.8	
75-35-4	1,1-Dichloroethene	**5.0**	JD	25	3.7	
156-60-5	trans-1,2-Dichloroethene	**150**	D	25	2.9	
75-34-3	1,1-Dichloroethane	**8.5**	JD	25	3.9	
156-59-2	cis-1,2-Dichloroethene	**440**	D	25	3.4	
71-55-6	1,1,1-Trichloroethane (TCA)	3.8	U	25	3.8	
79-01-6	Trichloroethene (TCE)	**1800**	D	25	5.0	
127-18-4	Tetrachloroethene (PCE)	5.0	U	25	5.0	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	87	73-122	11/30/11	Acceptable
Toluene-d8	89	65-144	11/30/11	Acceptable
4-Bromofluorobenzene	76	68-117	11/30/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111349
Project:	NIROP/J070047	**Date Collected:**	11/18/2011
Sample Matrix:	Water	**Date Received:**	11/19/2011
		Date Extracted:	12/01/2011
		Date Analyzed:	12/01/2011

Volatile Organic Compounds

Sample Name:	QCD01	**Units:**	ug/L
Lab Code:	K1111349-015	**Basis:**	NA
File ID:	J:\MS18\DATA\120111\1201F016.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112186
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	86	73-122	12/01/11	Acceptable
Toluene-d8	89	65-144	12/01/11	Acceptable
4-Bromofluorobenzene	76	68-117	12/01/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111349
Project:	NIROP/J070047	**Date Collected:**	11/17/2011
Sample Matrix:	Water	**Date Received:**	11/19/2011
		Date Extracted:	11/30/2011
		Date Analyzed:	11/30/2011

Volatile Organic Compounds

Sample Name:	QCR13	**Units:**	ug/L
Lab Code:	K1111349-004	**Basis:**	NA
File ID:	J:\MS18\DATA\113011\1130F019.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112135
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**0.080**	J	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**0.20**	J	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	86	73-122	11/30/11	Acceptable
Toluene-d8	87	65-144	11/30/11	Acceptable
4-Bromofluorobenzene	76	68-117	11/30/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111349
Project:	NIROP/J070047	**Date Collected:**	11/18/2011
Sample Matrix:	Water	**Date Received:**	11/19/2011
		Date Extracted:	12/01/2011
		Date Analyzed:	12/01/2011

Volatile Organic Compounds

Sample Name:	QCR14	**Units:**	ug/L
Lab Code:	K1111349-014	**Basis:**	NA
File ID:	J:\MS18\DATA\120111\1201F015.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112186
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.19**	J	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**0.080**	J	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**1.6**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	88	73-122	12/01/11	Acceptable
Toluene-d8	88	65-144	12/01/11	Acceptable
4-Bromofluorobenzene	77	68-117	12/01/11	Acceptable

Comments

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111349
Project:	NIROP/J070047	**Date Collected:**	11/17/2011
Sample Matrix:	Water	**Date Received:**	11/19/2011
		Date Extracted:	11/30/2011
		Date Analyzed:	11/30/2011

Volatile Organic Compounds

Sample Name:	QCT11	**Units:**	ug/L
Lab Code:	K1111349-008	**Basis:**	NA
File ID:	J:\MS18\DATA\113011\1130F018.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112135
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**0.13**	J	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**0.30**	J	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	84	73-122	11/30/11	Acceptable
Toluene-d8	88	65-144	11/30/11	Acceptable
4-Bromofluorobenzene	76	68-117	11/30/11	Acceptable

Comments:

APPENDIX C

SUPPORT DOCUMENTATION

NIROP FRIDLEY
WATER DATA
K1111349

FRACTION	CHEMICAL	FW13	UNITS	QCD01	RPD	D
OV	TRICHLOROETHENE	0.13 J	UG/L	ND	200.00	0.13

Current RPD Quality Control Limit: 30 %.
Shaded cells indicate RPDs that exceed the applicable quality control limit.

Columbia Analytical Services™ 1317 S. 13th Avenue, Kelso, WA 98626 360.577.7222 360.636.1068 (fax) www.caslab.com

December 6, 2011 Analytical Report for Service Request No: K1111349

Paul Walz
Bay West, Incorporated
5 Empire Dr.
St. Paul, MN 55103-1867

RE: NIROP/J070047

Dear Paul:

Enclosed are the results of the samples submitted to our laboratory on November 19, 2011. For your reference, these analyses have been assigned our service request number K1111349.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3363. You may also contact me via Email at LDomenighini@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.

Lisa Domenighini
Project Chemist

LD/ln

Printed on Recycled Paper

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

Columbia Analytical Services, Inc.
Kelso, WA
State Certifications, Accreditations, and Licenses

Agency	Number
Alaska DEC UST	UST-040
Arizona DHS	AZ0339
Arkansas - DEQ	88-0637
California DHS	2286
DOD ELAP	L11-119
Florida DOH	E87412
Georgia DNR	881
Hawaii DOH	-
Idaho DHW	-
Indiana DOH	C-WA-01
ISO 17025	L11-118
Louisiana DEQ	3016
Louisiana DHH	LA080001
Maine DHS	WA0035
Michigan DEQ	9949
Minnesota DOH	053-999-368
Montana DPHHS	CERT0047
Nevada DEP	WA35
New Jersey DEP	WA005
New Mexico ED	-
North Carolina DWQ	605
Oklahoma DEQ	9801
Oregon – DEQ (NELAP)	WA100010
South Carolina DHEC	61002
Texas CEQ	04704427-08-TX
Washington DOE	C1203
Wisconsin DNR	998386840
Wyoming (EPA Region 8)	-

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	Bay West Incorporated	**Service Request No.:**	K1111349
Project:	NIROP/J070047	**Date Received:**	11/19/11
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Fifteen water samples were received for analysis at Columbia Analytical Services on 11/19/11. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Volatile Organic Compounds by EPA Method 8260

Calibration Verification Exceptions:
The following analytes were flagged as outside the upper control criterion for Continuing Calibration Verification (CCV) J:\MS18\1201F004.D: 1,1,1-Trichloroethane (TCA). In accordance with the EPA Method, 80% or more of the CCV analytes must pass within 20% of the true value. The CAS SOP allows for 40% difference for the remaining analytes. The CCV met these criteria. The quality of the sample data was not significantly affected. No further corrective action was required.

Elevated Detection Limits:
Samples MS54S, MS34I, and MS33I required dilution due to the presence of elevated levels of target analyte. The reporting limits were adjusted to reflect the dilution.

No other anomalies associated with the analysis of these samples were observed.

Approved by Lisa A Jamesughue **Date** 12/6/11

Columbia Analytical Services

027601 CHAIN OF CUSTODY

SR# K1111349

COC Set____of____

Page 1 OF 1 COC# 110111-19

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

Project Name	NIROP
Project Number	J070047
Project Manager	Paul Weiz
Company Name	Bay West
Comany Address	5 Empire Drive
City/State/Zip	St. Paul MN 55103
E-Mail Address	paulw@baywest.com
Phone #	651-291-3491
FAX #	651-291-0099
Sampler Signature	

	Sample ID	Date	Time	Lab ID	Matrix	Number of Containers	8260B / VOC_FP	14D			Remarks
1	MS54S	11/17/11	1000		WT	3	X				1
2	MS03S	↓	1217		↓	3	X				2
3	MS08IS		1555			9	X				3
4	QCR13		1710			3	X				4
5	MS32I	11/18/11	1050			3	X				5
6	MS28I	↓	1415			3	X				6
7	MS34I		1544			3	X				7
8	QCT11	11/17/11	—		↓	2	X				8
9											9
10											10
11											11

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required

___ II. Report Dup., MS, MSD as required

___ III. Data Validation Report (includes all raw data)

X IV. CLP Deliverable Report

___ V. EDD

Invoice Information

P.O.# 27488

Bill To: Accounts Payable BayWest, 5 Empire Dr. St. Paul MN 55103

Turnaround Requirements

___ 24 hr. ___ 48 hr.

___ 5 Day

X Standard (10-15 working days)

___ Provide Fax Results

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments: *Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other_____(Circle One)

Analyze for 8 specific chemicals of concern via method 8260B

UPS Tracking # 1Z A19 0R9 41 9919 2911

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

Relinquished By:		Received By:		Relinquished By:		Received By:	
Signature	11/18/11 1735	Signature	11/19/11 845	Signature	Date/Time	Signature	Date/Time
Printed Name	Firm: BayWest	Printed Name	Firm: CAS	Printed Name	Firm	Printed Name	Firm

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Columbia Analytical Services

027601 CHAIN OF CUSTODY

SR# _____

COC Set ____ of ____

Page 1 OF 1 COC# 110111-19

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

Project Name: NIROP
Project Number: J070047
Project Manager: Paul Walz
Company Name: Bay West
Comany Address: 5 Empire Drive
City/State/Zip: St. Paul MN 55103
E-Mail Address: paulw@baywest.com
Phone #: 651-291-3491 FAX #: 651-291-0099
Sampler Signature: [signature]

	Sample ID	Date	Time	Lab ID	Matrix	Number of Containers	8260B / VOC_FP (14D)				Remarks
1	MS36S	11-17-11	1233		WT	3	X				
2	MS07IS	↓	1515		↓	3	X				
3	FW13	11-18-11	1316			3	X				
4	MS29I		1330			3	X				
5	MS33I		1639			3	X				
6	QCR14		1730			3	X				
7	~~QCTH~~										VOID
8	QCD01	↓	1340		↓	3	X				
9											
10											
11											

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

Invoice Information

P.O.# 27488
Bill To: Account Payable
Bay West, 5 Empire Dr
St. Paul MN 55103

Turnaround Requirements

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide Fax Results

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments: *Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other_____(Circle One)

analyze for 8 specific chemicals of concern via method 8260B

UPS Tracking# 1Z A19 8R9 41 9919 2911

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

Relinquished By:		Received By:		Relinquished By:		Received By:	
Signature: [signature]	Date/Time: 11-18-11 1735	Signature: [signature]	Date/Time: 11/19/11 845	Signature:	Date/Time:	Signature:	Date/Time:
Printed Name: Ryan Raley	Firm: Bay West	Printed Name: Brian Erickson	Firm: CAS	Printed Name:	Firm:	Printed Name:	Firm:

6

PC Lisa

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

Client / Project: BayWest Service Request K11 11349

Received: 11/19/11 Opened: 11/19/11 By: BT Unloaded: 11/19/11 By: BT

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? 1 front 1 back

   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Cooler Temp °C	Temp Blank °C	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
1.0	~~NA~~ 11/19/11	302		1Z A19 8R9 41 9919 2911	
	0.6				

7. Packing material used. *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Sleeves* *Other* _____
8. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
9. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
10. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
11. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
12. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
13. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
14. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
15. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

Page 1 *of* _____

Volatile Organic Compounds

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111349

Cover Page - Organic Analysis Data Package
Volatile Organic Compounds

Sample Name	Lab Code	Date Collected	Date Received
MS54SDL	K1111349-001	11/17/2011	11/19/2011
MS54S	K1111349-001	11/17/2011	11/19/2011
MS03S	K1111349-002	11/17/2011	11/19/2011
MS03SDL	K1111349-002	11/17/2011	11/19/2011
MS08IS	K1111349-003	11/17/2011	11/19/2011
MS08ISDL	K1111349-003	11/17/2011	11/19/2011
QCR13	K1111349-004	11/17/2011	11/19/2011
MS32I	K1111349-005	11/18/2011	11/19/2011
MS32IDL	K1111349-005	11/18/2011	11/19/2011
MS28I	K1111349-006	11/18/2011	11/19/2011
MS28IDL	K1111349-006	11/18/2011	11/19/2011
MS34IDL	K1111349-007	11/18/2011	11/19/2011
MS34I	K1111349-007	11/18/2011	11/19/2011
QCT11	K1111349-008	11/17/2011	11/19/2011
MS36SDL	K1111349-009	11/17/2011	11/19/2011
MS36S	K1111349-009	11/17/2011	11/19/2011
MS07IS	K1111349-010	11/17/2011	11/19/2011
MS07ISDL	K1111349-010	11/17/2011	11/19/2011
FW13	K1111349-011	11/18/2011	11/19/2011
MS29I	K1111349-012	11/18/2011	11/19/2011
MS29IDL	K1111349-012	11/18/2011	11/19/2011
MS33I	K1111349-013	11/18/2011	11/19/2011
MS33IDL	K1111349-013	11/18/2011	11/19/2011
QCR14	K1111349-014	11/18/2011	11/19/2011
QCD01	K1111349-015	11/18/2011	11/19/2011
MS08ISMS	KWG1112135-1	11/17/2011	11/19/2011
MS08ISDMS	KWG1112135-2	11/17/2011	11/19/2011

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: KRussow

Name: KRussow

Date: 12/6/11

Title: Scientist

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1111349

Surrogate Recovery Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
MS54S	K1111349-001	86	90	75
MS54SDL	K1111349-001	87	89	76
MS03SDL	K1111349-002	87	88	77
MS03S	K1111349-002	88	88	77
MS08ISDL	K1111349-003	83	87	78
MS08IS	K1111349-003	85	88	77
QCR13	K1111349-004	86	87	76
MS32I	K1111349-005	90	89	75
MS32IDL	K1111349-005	86	88	75
MS28IDL	K1111349-006	85	86	75
MS28I	K1111349-006	87	90	74
MS34IDL	K1111349-007	88	90	74
MS34I	K1111349-007	87	89	77
QCT11	K1111349-008	84	88	76
MS36SDL	K1111349-009	87	88	76
MS36S	K1111349-009	89	89	75
MS07IS	K1111349-010	88	91	75
MS07ISDL	K1111349-010	86	87	76
FW13	K1111349-011	84	88	76
MS29IDL	K1111349-012	83	87	75
MS29I	K1111349-012	87	89	76
MS33IDL	K1111349-013	86	88	76
MS33I	K1111349-013	88	89	76
QCR14	K1111349-014	88	88	77
QCD01	K1111349-015	86	89	76
Method Blank	KWG1112135-4	82	88	77
Method Blank	KWG1112186-5	81	87	77
MS08ISMS	KWG1112135-1	89	93	85
MS08ISDMS	KWG1112135-2	85	92	83
Lab Control Sample	KWG1112135-3	91	94	83
Lab Control Sample	KWG1112186-3	91	94	85
Duplicate Lab Control Sample	KWG1112186-4	89	93	87

Surrogate Recovery Control Limits (%)

Sur1 =	Dibromofluoromethane	73-122
Sur2 =	Toluene-d8	65-144
Sur3 =	4-Bromofluorobenzene	68-117

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111349
Date Analyzed: 09/20/2011
Time Analyzed: 09:36

Tune Summary
Volatile Organic Compounds

File ID: J:\MS18\DATA\092011\0920F004.D
Instrument ID: GC-MS 18
Column:

Analysis Method: 8260C
Analysis Lot: KWG1111946

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	15.8	7258	PASS
75	95	30	60	44.2	20312	PASS
95	95	100	100	100.0	45909	PASS
96	95	5	9	7.5	3456	PASS
173	174	0	2	0.3	119	PASS
174	95	50	120	89.3	40981	PASS
175	174	5	9	7.3	2982	PASS
176	174	95	101	96.3	39453	PASS
177	176	5	9	6.4	2511	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Initial Calibration	KWG1111946-2	J:\MS18\DATA\092011\0920F007.D	09/20/2011	10:43	
Initial Calibration	KWG1111946-3	J:\MS18\DATA\092011\0920F008.D	09/20/2011	11:06	
Initial Calibration	KWG1111946-4	J:\MS18\DATA\092011\0920F009.D	09/20/2011	11:27	
Initial Calibration	KWG1111946-5	J:\MS18\DATA\092011\0920F010.D	09/20/2011	11:49	
Initial Calibration	KWG1111946-6	J:\MS18\DATA\092011\0920F011.D	09/20/2011	12:10	
Initial Calibration	KWG1111946-7	J:\MS18\DATA\092011\0920F012.D	09/20/2011	12:32	
Initial Calibration	KWG1111946-8	J:\MS18\DATA\092011\0920F013.D	09/20/2011	12:54	
Initial Calibration	KWG1111946-9	J:\MS18\DATA\092011\0920F014.D	09/20/2011	13:15	
Initial Calibration	KWG1111946-10	J:\MS18\DATA\092011\0920F015.D	09/20/2011	13:37	
Initial Calibration	KWG1111946-11	J:\MS18\DATA\092011\0920F016.D	09/20/2011	13:59	
Initial Calibration	KWG1111946-12	J:\MS18\DATA\092011\0920F017.D	09/20/2011	14:21	
Initial Calibration Verification	KWG1111946-13	J:\MS18\DATA\092011\0920F022.D	09/20/2011	16:11	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111349
Calibration Date: 09/20/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10920
Instrument ID: GC-MS 18

Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS18\DATA\092011\0920F007.D	G	J:\MS18\DATA\092011\0920F013.D
B	J:\MS18\DATA\092011\0920F008.D	H	J:\MS18\DATA\092011\0920F014.D
C	J:\MS18\DATA\092011\0920F009.D	I	J:\MS18\DATA\092011\0920F015.D
D	J:\MS18\DATA\092011\0920F010.D	J	J:\MS18\DATA\092011\0920F016.D
E	J:\MS18\DATA\092011\0920F011.D	K	J:\MS18\DATA\092011\0920F017.D
F	J:\MS18\DATA\092011\0920F012.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Vinyl Chloride	A	0.10	0.439	B	0.20	0.460	C	0.50	0.449	D	1.0	0.498	E	2.0	0.444
	F	5.0	0.453	G	10	0.457	H	20	0.429	I	40	0.479	J	60	0.442
	K	80	0.429												
1,1-Dichloroethene	A	0.10	0.213	B	0.20	0.229	C	0.50	0.237	D	1.0	0.261	E	2.0	0.225
	F	5.0	0.229	G	10	0.234	H	20	0.220	I	40	0.247	J	60	0.227
	K	80	0.226												
trans-1,2-Dichloroethene	A	0.10	0.283	B	0.20	0.225	C	0.50	0.287	D	1.0	0.294	E	2.0	0.279
	F	5.0	0.288	G	10	0.294	H	20	0.278	I	40	0.314	J	60	0.289
	K	80	0.284												
1,1-Dichloroethane				B	0.20	0.415	C	0.50	0.457	D	1.0	0.501	E	2.0	0.445
	F	5.0	0.460	G	10	0.475	H	20	0.458	I	40	0.515	J	60	0.483
	K	80	0.480												
cis-1,2-Dichloroethene	A	0.10	0.291	B	0.20	0.324	C	0.50	0.292	D	1.0	0.320	E	2.0	0.324
	F	5.0	0.325	G	10	0.323	H	20	0.315	I	40	0.351	J	60	0.326
	K	80	0.320												
1,1,1-Trichloroethane (TCA)							C	0.50	0.227	D	1.0	0.261	E	2.0	0.255
	F	5.0	0.290	G	10	0.320	H	20	0.325	I	40	0.387	J	60	0.371
	K	80	0.373												
Trichloroethene (TCE)	A	0.10	0.245	B	0.20	0.264	C	0.50	0.265	D	1.0	0.299	E	2.0	0.269
	F	5.0	0.278	G	10	0.285	H	20	0.264	I	40	0.305	J	60	0.282
	K	80	0.280												
Tetrachloroethene (PCE)	A	0.10	0.539	B	0.20	0.622	C	0.50	0.691	D	1.0	0.768	E	2.0	0.675
	F	5.0	0.720	G	10	0.698	H	20	0.655	I	40	0.752	J	60	0.683
	K	80	0.683												
Dibromofluoromethane	A	3.0	0.210	B	4.0	0.217	C	5.0	0.219	D	6.0	0.252	E	7.0	0.254
	F	8.0	0.240	G	10	0.261	H	15	0.240	I	20	0.255	J	30	0.248
	K	40	0.254												
Toluene-d8	A	3.0	0.973	B	4.0	1.04	C	5.0	1.04	D	6.0	1.21	E	7.0	1.22
	F	8.0	1.10	G	10	1.17	H	15	1.02	I	20	1.06	J	30	1.05
	K	40	1.07												

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111349
Calibration Date: 09/20/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10920
Instrument ID: GC-MS 18

Column: MS

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
4-Bromofluorobenzene	A	3.0	0.922	B	4.0	0.919	C	5.0	0.999	D	6.0	1.18	E	7.0	1.25
	F	8.0	1.04	G	10	1.11	H	15	1.01	I	20	1.06	J	30	0.998
	K	40	1.03												

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111349
Calibration Date: 09/20/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10920
Instrument ID: GC-MS 18

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Vinyl Chloride	MS	AverageRF	% RSD	4.6		≤ 20	0.453		0.100
1,1-Dichloroethene	MS	AverageRF	% RSD	5.6		≤ 20	0.232		0.100
trans-1,2-Dichloroethene	MS	AverageRF	% RSD	7.7		≤ 20	0.283		0.100
1,1-Dichloroethane	MS	AverageRF	% RSD	6.1		≤ 20	0.469		0.200
cis-1,2-Dichloroethene	MS	AverageRF	% RSD	5.2		≤ 20	0.319		0.100
1,1,1-Trichloroethane (TCA)	MS	AverageRF	% RSD	18.4		≤ 20	0.312		0.100
Trichloroethene (TCE)	MS	AverageRF	% RSD	6.2		≤ 20	0.276		0.200
Tetrachloroethene (PCE)	MS	AverageRF	% RSD	9.2		≤ 20	0.681		0.200
Dibromofluoromethane	SURR	AverageRF	% RSD	7.4		≤ 20	0.241		0.01
Toluene-d8	SURR	AverageRF	% RSD	7.2		≤ 20	1.09		0.01
4-Bromofluorobenzene	SURR	AverageRF	% RSD	9.5		≤ 20	1.05		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111349
Calibration Date: 09/20/2011
Date Analyzed: 09/20/2011

Second Source Calibration Verification
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration ID: CAL10920
Units: PPB

File ID: J:\MS18\DATA\092011\0920F024.D
J:\MS18\DATA\092011\0920F022.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	7.8	0.453	0.353	-22	NA	± 30 %	AverageRF
1,1-Dichloroethene	10	10	0.232	0.237	2	NA	± 30 %	AverageRF
trans-1,2-Dichloroethene	10	10	0.283	0.292	3	NA	± 30 %	AverageRF
1,1-Dichloroethane	10	9.8	0.469	0.459	-2	NA	± 30 %	AverageRF
cis-1,2-Dichloroethene	10	9.9	0.319	0.315	-1	NA	± 30 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	9.7	0.312	0.302	-3	NA	± 30 %	AverageRF
Trichloroethene (TCE)	10	10	0.276	0.281	2	NA	± 30 %	AverageRF
Tetrachloroethene (PCE)	10	9.9	0.681	0.675	-1	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111349

Analysis Run Log
Volatile Organic Compounds

Analysis Method: 8260C

Analysis Lot: KWG1112134
Instrument ID: GC-MS 18

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1130F002.D	GC/MS Tuning - Generic	KWG1112134-1	11/30/2011	08:15		11/30/2011	08:31
1130F003.D	Continuing Calibration Verification	KWG1112134-2	11/30/2011	08:41		11/30/2011	08:57
1130F004.D	Lab Control Sample	KWG1112135-3	11/30/2011	09:13		11/30/2011	09:29
1130F005.D	MS08ISMS	KWG1112135-1	11/30/2011	09:34		11/30/2011	09:50
1130F006.D	MS08ISDMS	KWG1112135-2	11/30/2011	09:55		11/30/2011	10:11
1130F009.D	Method Blank	KWG1112135-4	11/30/2011	10:59		11/30/2011	11:15
1130F010.D	MS08ISDL	K1111349-003	11/30/2011	11:19		11/30/2011	11:35
1130F011.D	MS08IS	K1111349-003	11/30/2011	11:41		11/30/2011	11:57
1130F012.D	ZZZZZZ	ZZZZZZ	11/30/2011	12:02		11/30/2011	12:18
1130F013.D	MS54S	K1111349-001	11/30/2011	12:23		11/30/2011	12:39
1130F014.D	ZZZZZZ	ZZZZZZ	11/30/2011	12:45		11/30/2011	13:01
1130F015.D	MS03S	K1111349-002	11/30/2011	13:06		11/30/2011	13:22
1130F016.D	MS34I	K1111349-007	11/30/2011	13:27		11/30/2011	13:43
1130F018.D	QCT11	K1111349-008	11/30/2011	14:09		11/30/2011	14:25
1130F019.D	QCR13	K1111349-004	11/30/2011	14:31		11/30/2011	14:47
1130F020.D	FW13	K1111349-011	11/30/2011	14:52		11/30/2011	15:08
1130F021.D	MS29IDL	K1111349-012	11/30/2011	15:13		11/30/2011	15:29
1130F022.D	MS54SDL	K1111349-001	11/30/2011	15:34		11/30/2011	15:50
1130F023.D	MS03SDL	K1111349-002	11/30/2011	15:55		11/30/2011	16:11
1130F024.D	MS32IDL	K1111349-005	11/30/2011	16:16		11/30/2011	16:32
1130F025.D	MS28IDL	K1111349-006	11/30/2011	16:38		11/30/2011	16:54
1130F026.D	MS34IDL	K1111349-007	11/30/2011	16:59		11/30/2011	17:15
1130F027.D	MS36SDL	K1111349-009	11/30/2011	17:20		11/30/2011	17:36
1130F028.D	MS07ISDL	K1111349-010	11/30/2011	17:42		11/30/2011	17:58
1130F029.D	MS33IDL	K1111349-013	11/30/2011	18:03		11/30/2011	18:19
1130F030.D	MS28I	K1111349-006	11/30/2011	18:24		11/30/2011	18:40
1130F031.D	MS07IS	K1111349-010	11/30/2011	18:45		11/30/2011	19:01
1130F032.D	MS29I	K1111349-012	11/30/2011	19:06		11/30/2011	19:22
1130F033.D	MS36S	K1111349-009	11/30/2011	19:27		11/30/2011	19:43
1130F034.D	MS32I	K1111349-005	11/30/2011	19:48		11/30/2011	20:04
1130F035.D	MS33I	K1111349-013	11/30/2011	20:09		11/30/2011	20:25

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111349
Date Analyzed: 11/30/2011
Time Analyzed: 08:15

Tune Summary
Volatile Organic Compounds

File ID: J:\MS18\DATA\113011\1130F002.D
Instrument ID: GC-MS 18
Column:

Analysis Method: 8260C
Analysis Lot: KWG1112134

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	15.9	6449	PASS
75	95	30	60	45.5	18506	PASS
95	95	100	100	100.0	40661	PASS
96	95	5	9	6.6	2666	PASS
173	174	0	2	0.6	236	PASS
174	95	50	120	96.4	39184	PASS
175	174	5	9	8.1	3189	PASS
176	174	95	101	96.1	37664	PASS
177	176	5	9	6.8	2554	PASS

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111349
Date Analyzed: 11/30/2011
Time Analyzed: 08:15

Tune Summary
Volatile Organic Compounds

File ID: J:\MS18\DATA\113011\1130F002.D
Instrument ID: GC-MS 18
Column:

Analysis Method: 8260C
Analysis Lot: KWG1112134

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1112134-2	J:\MS18\DATA\113011\1130F003.D	11/30/2011	08:41	
Lab Control Sample	KWG1112135-3	J:\MS18\DATA\113011\1130F004.D	11/30/2011	09:13	
MS08ISMS	KWG1112135-1	J:\MS18\DATA\113011\1130F005.D	11/30/2011	09:34	
MS08ISDMS	KWG1112135-2	J:\MS18\DATA\113011\1130F006.D	11/30/2011	09:55	
Method Blank	KWG1112135-4	J:\MS18\DATA\113011\1130F009.D	11/30/2011	10:59	
MS08ISDL	K1111349-003	J:\MS18\DATA\113011\1130F010.D	11/30/2011	11:19	
MS08IS	K1111349-003	J:\MS18\DATA\113011\1130F011.D	11/30/2011	11:41	
MS54S	K1111349-001	J:\MS18\DATA\113011\1130F013.D	11/30/2011	12:23	
MS03S	K1111349-002	J:\MS18\DATA\113011\1130F015.D	11/30/2011	13:06	
MS34I	K1111349-007	J:\MS18\DATA\113011\1130F016.D	11/30/2011	13:27	
QCT11	K1111349-008	J:\MS18\DATA\113011\1130F018.D	11/30/2011	14:09	
QCR13	K1111349-004	J:\MS18\DATA\113011\1130F019.D	11/30/2011	14:31	
FW13	K1111349-011	J:\MS18\DATA\113011\1130F020.D	11/30/2011	14:52	
MS29IDL	K1111349-012	J:\MS18\DATA\113011\1130F021.D	11/30/2011	15:13	
MS54SDL	K1111349-001	J:\MS18\DATA\113011\1130F022.D	11/30/2011	15:34	
MS03SDL	K1111349-002	J:\MS18\DATA\113011\1130F023.D	11/30/2011	15:55	
MS32IDL	K1111349-005	J:\MS18\DATA\113011\1130F024.D	11/30/2011	16:16	
MS28IDL	K1111349-006	J:\MS18\DATA\113011\1130F025.D	11/30/2011	16:38	
MS34IDL	K1111349-007	J:\MS18\DATA\113011\1130F026.D	11/30/2011	16:59	
MS36SDL	K1111349-009	J:\MS18\DATA\113011\1130F027.D	11/30/2011	17:20	
MS07ISDL	K1111349-010	J:\MS18\DATA\113011\1130F028.D	11/30/2011	17:42	
MS33IDL	K1111349-013	J:\MS18\DATA\113011\1130F029.D	11/30/2011	18:03	
MS28I	K1111349-006	J:\MS18\DATA\113011\1130F030.D	11/30/2011	18:24	
MS07IS	K1111349-010	J:\MS18\DATA\113011\1130F031.D	11/30/2011	18:45	
MS29I	K1111349-012	J:\MS18\DATA\113011\1130F032.D	11/30/2011	19:06	
MS36S	K1111349-009	J:\MS18\DATA\113011\1130F033.D	11/30/2011	19:27	
MS32I	K1111349-005	J:\MS18\DATA\113011\1130F034.D	11/30/2011	19:48	
MS33I	K1111349-013	J:\MS18\DATA\113011\1130F035.D	11/30/2011	20:09	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111349
Date Analyzed: 11/30/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration Date: 09/20/2011
Calibration ID: CAL10920
Analysis Lot: KWG1112134
Units: PPB

File ID: J:\MS18\DATA\113011\1130F003.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	9.6	0.100	0.453	0.435	-4	NA	± 20 %	AverageRF
1,1-Dichloroethene	10	11	0.100	0.232	0.245	6	NA	± 20 %	AverageRF
trans-1,2-Dichloroethene	10	10	0.100	0.283	0.295	4	NA	± 20 %	AverageRF
1,1-Dichloroethane	10	11	0.200	0.469	0.494	5	NA	± 20 %	AverageRF
cis-1,2-Dichloroethene	10	10	0.100	0.319	0.320	0	NA	± 20 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	11	0.100	0.312	0.347	11	NA	± 20 %	AverageRF
Trichloroethene (TCE)	10	9.9	0.200	0.276	0.274	-1	NA	± 20 %	AverageRF
Tetrachloroethene (PCE)	10	9.5	0.200	0.681	0.643	-6	NA	± 20 %	AverageRF
Dibromofluoromethane	10	8.8	0.01	0.241	0.212	-12	NA	± 20 %	AverageRF
Toluene-d8	10	9.3	0.01	1.09	1.01	-7	NA	± 20 %	AverageRF
4-Bromofluorobenzene	10	8.4	0.01	1.05	0.877	-16	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1111349
Project:	NIROP/J070047	**Date Extracted:**	11/30/2011
Sample Matrix:	Water	**Date Analyzed:**	11/30/2011
		Time Analyzed:	10:59

Method Blank Summary
Volatile Organic Compounds

Sample Name:	Method Blank	**Instrument ID:**	GC-MS 18
Lab Code:	KWG1112135-4	**File ID:**	J:\MS18\DATA\113011\1130F009.D
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C	**Extraction Lot:**	KWG1112135

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1112135-3	J:\MS18\DATA\113011\1130F004.D	11/30/11	09:13
MS08ISMS	KWG1112135-1	J:\MS18\DATA\113011\1130F005.D	11/30/11	09:34
MS08ISDMS	KWG1112135-2	J:\MS18\DATA\113011\1130F006.D	11/30/11	09:55
MS08ISDL	K1111349-003	J:\MS18\DATA\113011\1130F010.D	11/30/11	11:19
MS08IS	K1111349-003	J:\MS18\DATA\113011\1130F011.D	11/30/11	11:41
MS54S	K1111349-001	J:\MS18\DATA\113011\1130F013.D	11/30/11	12:23
MS03S	K1111349-002	J:\MS18\DATA\113011\1130F015.D	11/30/11	13:06
MS34I	K1111349-007	J:\MS18\DATA\113011\1130F016.D	11/30/11	13:27
QCT11	K1111349-008	J:\MS18\DATA\113011\1130F018.D	11/30/11	14:09
QCR13	K1111349-004	J:\MS18\DATA\113011\1130F019.D	11/30/11	14:31
FW13	K1111349-011	J:\MS18\DATA\113011\1130F020.D	11/30/11	14:52
MS29IDL	K1111349-012	J:\MS18\DATA\113011\1130F021.D	11/30/11	15:13
MS54SDL	K1111349-001	J:\MS18\DATA\113011\1130F022.D	11/30/11	15:34
MS03SDL	K1111349-002	J:\MS18\DATA\113011\1130F023.D	11/30/11	15:55
MS32IDL	K1111349-005	J:\MS18\DATA\113011\1130F024.D	11/30/11	16:16
MS28IDL	K1111349-006	J:\MS18\DATA\113011\1130F025.D	11/30/11	16:38
MS34IDL	K1111349-007	J:\MS18\DATA\113011\1130F026.D	11/30/11	16:59
MS36SDL	K1111349-009	J:\MS18\DATA\113011\1130F027.D	11/30/11	17:20
MS07ISDL	K1111349-010	J:\MS18\DATA\113011\1130F028.D	11/30/11	17:42
MS33IDL	K1111349-013	J:\MS18\DATA\113011\1130F029.D	11/30/11	18:03
MS28I	K1111349-006	J:\MS18\DATA\113011\1130F030.D	11/30/11	18:24
MS07IS	K1111349-010	J:\MS18\DATA\113011\1130F031.D	11/30/11	18:45
MS29I	K1111349-012	J:\MS18\DATA\113011\1130F032.D	11/30/11	19:06
MS36S	K1111349-009	J:\MS18\DATA\113011\1130F033.D	11/30/11	19:27
MS32I	K1111349-005	J:\MS18\DATA\113011\1130F034.D	11/30/11	19:48
MS33I	K1111349-013	J:\MS18\DATA\113011\1130F035.D	11/30/11	20:09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111349
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	11/30/2011
		Date Analyzed:	11/30/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1112135-4	**Basis:**	NA
File ID:	J:\MS18\DATA\113011\1130F009.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112135
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	82	73-122	11/30/11	Acceptable
Toluene-d8	88	65-144	11/30/11	Acceptable
4-Bromofluorobenzene	77	68-117	11/30/11	Acceptable

Comments:

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1111349
Date Extracted: 11/30/2011
Date Analyzed: 11/30/2011

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1112135

	Lab Control Sample KWG1112135-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Vinyl Chloride	8.53	10.0	85	55-123
1,1-Dichloroethene	11.1	10.0	111	66-129
trans-1,2-Dichloroethene	11.0	10.0	110	67-125
1,1-Dichloroethane	10.7	10.0	107	68-132
cis-1,2-Dichloroethene	10.4	10.0	104	71-118
1,1,1-Trichloroethane (TCA)	11.0	10.0	110	59-136
Trichloroethene (TCE)	10.2	10.0	102	67-128
Tetrachloroethene (PCE)	9.57	10.0	96	62-126

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1111349
Date Extracted: 11/30/2011
Date Analyzed: 11/30/2011

Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organic Compounds

Sample Name: MS08IS
Lab Code: K1111349-003

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260C

Level: Low
Extraction Lot: KWG1112135

Analyte Name	Sample Result	MS08ISMS KWG1112135-1 Matrix Spike			MS08ISDMS KWG1112135-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
Vinyl Chloride	1.5	90.0	100	88	95.4	100	94	49-136	6	30
1,1-Dichloroethene	2.3	119	100	116	128	100	126	59-171	8	30
trans-1,2-Dichloroethene	98	213	100	115	228	100	130	65-143	7	30
1,1-Dichloroethane	2.2	113	100	111	121	100	118	69-141	6	30
cis-1,2-Dichloroethene	58	155	100	97	164	100	106	61-139	6	30
1,1,1-Trichloroethane (TCA)	ND	117	100	117	122	100	122	57-151	4	30
Trichloroethene (TCE)	83	193	100	110	210	100	127	53-139	8	30
Tetrachloroethene (PCE)	ND	101	100	101	107	100	107	61-131	6	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111349

Analysis Run Log
Volatile Organic Compounds

Analysis Method: 8260C

Analysis Lot: KWG1112185
Instrument ID: GC-MS 18

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1201F002.D	GC/MS Tuning - Generic	KWG1112185-1	12/1/2011	08:26		12/1/2011	08:42
1201F004.D	Continuing Calibration Verification	KWG1112185-2	12/1/2011	09:26		12/1/2011	09:42
1201F005.D	Lab Control Sample	KWG1112186-3	12/1/2011	09:50		12/1/2011	10:06
1201F006.D	Duplicate Lab Control Sample	KWG1112186-4	12/1/2011	10:11		12/1/2011	10:27
1201F007.D	ZZZZZZ	ZZZZZZ	12/1/2011	10:32		12/1/2011	10:48
1201F008.D	ZZZZZZ	ZZZZZZ	12/1/2011	10:53		12/1/2011	11:09
1201F011.D	Method Blank	KWG1112186-5	12/1/2011	11:56		12/1/2011	12:12
1201F012.D	ZZZZZZ	ZZZZZZ	12/1/2011	12:18		12/1/2011	12:34
1201F013.D	ZZZZZZ	ZZZZZZ	12/1/2011	12:38		12/1/2011	12:54
1201F014.D	ZZZZZZ	ZZZZZZ	12/1/2011	12:59		12/1/2011	13:15
1201F015.D	QCR14	K1111349-014	12/1/2011	13:21		12/1/2011	13:37
1201F016.D	QCD01	K1111349-015	12/1/2011	13:42		12/1/2011	13:58
1201F017.D	ZZZZZZ	ZZZZZZ	12/1/2011	14:03		12/1/2011	14:19
1201F018.D	ZZZZZZ	ZZZZZZ	12/1/2011	14:24		12/1/2011	14:40

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111349
Date Analyzed: 12/01/2011
Time Analyzed: 08:26

Tune Summary
Volatile Organic Compounds

File ID: J:\MS18\DATA\120111\1201F002.D
Instrument ID: GC-MS 18
Column:

Analysis Method: 8260C
Analysis Lot: KWG1112185

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	18.1	6199	PASS
75	95	30	60	49.2	16829	PASS
95	95	100	100	100.0	34240	PASS
96	95	5	9	6.9	2356	PASS
173	174	0	2	0.5	164	PASS
174	95	50	120	92.0	31512	PASS
175	174	5	9	6.9	2164	PASS
176	174	95	101	97.7	30797	PASS
177	176	5	9	7.5	2307	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1112185-2	J:\MS18\DATA\120111\1201F004.D	12/01/2011	09:26	
Lab Control Sample	KWG1112186-3	J:\MS18\DATA\120111\1201F005.D	12/01/2011	09:50	
Duplicate Lab Control Sample	KWG1112186-4	J:\MS18\DATA\120111\1201F006.D	12/01/2011	10:11	
Method Blank	KWG1112186-5	J:\MS18\DATA\120111\1201F011.D	12/01/2011	11:56	
QCR14	K1111349-014	J:\MS18\DATA\120111\1201F015.D	12/01/2011	13:21	
QCD01	K1111349-015	J:\MS18\DATA\120111\1201F016.D	12/01/2011	13:42	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111349
Date Analyzed: 12/01/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration Date: 09/20/2011
Calibration ID: CAL10920
Analysis Lot: KWG1112185
Units: PPB

File ID: J:\MS18\DATA\120111\1201F004.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D		%Drift	Criteria	Curve Fit
Vinyl Chloride	10	10	0.100	0.453	0.467	3		NA	± 20 %	AverageRF
1,1-Dichloroethene	10	12	0.100	0.232	0.272	17		NA	± 20 %	AverageRF
trans-1,2-Dichloroethene	10	11	0.100	0.283	0.311	10		NA	± 20 %	AverageRF
1,1-Dichloroethane	10	11	0.200	0.469	0.531	13		NA	± 20 %	AverageRF
cis-1,2-Dichloroethene	10	11	0.100	0.319	0.341	7		NA	± 20 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	12	0.100	0.312	0.376	20	*	NA	± 20 %	AverageRF
Trichloroethene (TCE)	10	11	0.200	0.276	0.305	10		NA	± 20 %	AverageRF
Tetrachloroethene (PCE)	10	10	0.200	0.681	0.698	3		NA	± 20 %	AverageRF
Dibromofluoromethane	10	8.9	0.01	0.241	0.215	-11		NA	± 20 %	AverageRF
Toluene-d8	10	9.3	0.01	1.09	1.01	-7		NA	± 20 %	AverageRF
4-Bromofluorobenzene	10	8.5	0.01	1.05	0.891	-15		NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1111349
Date Extracted: 12/01/2011
Date Analyzed: 12/01/2011
Time Analyzed: 11:56

Method Blank Summary
Volatile Organic Compounds

Sample Name: Method Blank
Lab Code: KWG1112186-5

Extraction Method: EPA 5030B
Analysis Method: 8260C

Instrument ID: GC-MS 18
File ID: J:\MS18\DATA\120111\1201F011.D

Level: Low
Extraction Lot: KWG1112186

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1112186-3	J:\MS18\DATA\120111\1201F005.D	12/01/11	09:50
Duplicate Lab Control Sample	KWG1112186-4	J:\MS18\DATA\120111\1201F006.D	12/01/11	10:11
QCR14	K1111349-014	J:\MS18\DATA\120111\1201F015.D	12/01/11	13:21
QCD01	K1111349-015	J:\MS18\DATA\120111\1201F016.D	12/01/11	13:42

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111349
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	12/01/2011
		Date Analyzed:	12/01/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1112186-5	**Basis:**	NA
File ID:	J:\MS18\DATA\120111\1201F011.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1112186
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	81	73-122	12/01/11	Acceptable
Toluene-d8	87	65-144	12/01/11	Acceptable
4-Bromofluorobenzene	77	68-117	12/01/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1111349
Project:	NIROP/J070047	**Date Extracted:**	12/01/2011
Sample Matrix:	Water	**Date Analyzed:**	12/01/2011

Lab Control Spike/Duplicate Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	EPA 5030B	**Units:**	ug/L
Analysis Method:	8260C	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1112186

	Lab Control Sample KWG1112186-3 Lab Control Spike			Duplicate Lab Control Sample KWG1112186-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Vinyl Chloride	8.88	10.0	89	8.72	10.0	87	55-123	2	30
1,1-Dichloroethene	12.1	10.0	121	11.9	10.0	119	66-129	2	30
trans-1,2-Dichloroethene	11.7	10.0	117	11.5	10.0	115	67-125	2	30
1,1-Dichloroethane	11.5	10.0	115	11.1	10.0	111	68-132	3	30
cis-1,2-Dichloroethene	10.7	10.0	107	10.5	10.0	105	71-118	2	30
1,1,1-Trichloroethane (TCA)	11.8	10.0	118	11.8	10.0	118	59-136	0	30
Trichloroethene (TCE)	11.0	10.0	110	10.8	10.0	108	67-128	2	30
Tetrachloroethene (PCE)	9.88	10.0	99	10.2	10.0	102	62-126	3	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111349
Date Analyzed: 11/30/2011
Time Analyzed: 08:41

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID: J:\MS18\DATA\113011\1130F003.D
Instrument ID: GC-MS 18
Analysis Method: 8260C

Lab Code: KWG1112134-2
Analysis Lot: KWG1112134

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	431,846	5.65	172,244	9.10	180,301	11.52
	Upper Limit ==>	863,692	6.15	344,488	9.60	360,602	12.02
	Lower Limit ==>	215,923	5.15	86,122	8.60	90,151	11.02
	ICAL Result ==>	568,244	5.66	218,169	9.10	233,259	11.53
Associated Analyses							
Lab Control Sample	KWG1112135-3	417,388	5.65	169,941	9.10	179,157	11.52
MS08ISMS	KWG1112135-1	416,259	5.66	171,048	9.10	182,512	11.52
MS08ISDMS	KWG1112135-2	387,834	5.65	156,785	9.10	163,436	11.52
Method Blank	KWG1112135-4	382,040	5.65	152,592	9.10	155,756	11.52
MS08ISDL	K1111349-003	408,892	5.65	161,798	9.10	164,865	11.52
MS08IS	K1111349-003	368,717	5.65	144,524	9.10	144,766	11.52
MS54S	K1111349-001	401,456	5.65	161,993	9.10	161,474	11.52
MS03S	K1111349-002	406,847	5.66	161,741	9.10	163,287	11.52
MS34I	K1111349-007	401,777	5.65	158,168	9.10	162,100	11.52
QCT11	K1111349-008	388,156	5.65	156,682	9.10	157,468	11.52
QCR13	K1111349-004	394,161	5.65	159,125	9.10	163,502	11.52
FW13	K1111349-011	375,207	5.66	152,294	9.10	156,460	11.52
MS29IDL	K1111349-012	389,408	5.65	154,915	9.10	155,437	11.52
MS54SDL	K1111349-001	375,166	5.65	151,611	9.10	152,596	11.52
MS03SDL	K1111349-002	388,567	5.65	154,356	9.10	156,911	11.52
MS32IDL	K1111349-005	382,716	5.65	152,560	9.10	153,171	11.52
MS28IDL	K1111349-006	347,903	5.65	138,265	9.10	138,476	11.52
MS34IDL	K1111349-007	378,261	5.65	153,378	9.10	153,139	11.52
MS36SDL	K1111349-009	375,782	5.66	148,771	9.10	152,229	11.52
MS07ISDL	K1111349-010	375,613	5.65	150,384	9.10	153,787	11.52
MS33IDL	K1111349-013	354,586	5.65	142,253	9.10	144,955	11.52
MS28I	K1111349-006	350,580	5.65	140,431	9.10	139,971	11.52
MS07IS	K1111349-010	337,329	5.66	136,733	9.10	134,380	11.52
MS29I	K1111349-012	392,560	5.65	155,405	9.10	156,263	11.52
MS36S	K1111349-009	387,664	5.65	154,441	9.10	153,746	11.52
MS32I	K1111349-005	357,227	5.65	141,018	9.10	140,001	11.52
MS33I	K1111349-013	384,892	5.66	152,630	9.10	152,033	11.52

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111349
Date Analyzed: 12/01/2011
Time Analyzed: 09:26

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID: J:\MS18\DATA\120111\1201F004.D
Instrument ID: GC-MS 18
Analysis Method: 8260C

Lab Code: KWG1112185-2
Analysis Lot: KWG1112185

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	405,653	5.65	161,611	9.10	172,282	11.52
	Upper Limit ==>	811,306	6.15	323,222	9.60	344,564	12.02
	Lower Limit ==>	202,827	5.15	80,806	8.60	86,141	11.02
	ICAL Result ==>	568,244	5.66	218,169	9.10	233,259	11.53
Associated Analyses							
Lab Control Sample	KWG1112186-3	397,419	5.65	163,728	9.10	176,923	11.52
Duplicate Lab Control Sample	KWG1112186-4	402,785	5.65	162,297	9.10	175,959	11.52
Method Blank	KWG1112186-5	387,289	5.65	151,930	9.10	156,699	11.52
QCR14	K1111349-014	381,500	5.65	153,695	9.10	158,100	11.52
QCD01	K1111349-015	382,004	5.65	155,560	9.10	158,592	11.52

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1111349
Date Extracted: 11/30/2011

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1112135
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
MS54S	K1111349-001	11/17/11	11/19/11	10ml	10ml	NA	
MS54SDL	K1111349-001	11/17/11	11/19/11	10ml	10ml	NA	
MS03SDL	K1111349-002	11/17/11	11/19/11	10ml	10ml	NA	
MS03S	K1111349-002	11/17/11	11/19/11	10ml	10ml	NA	
MS08ISDL	K1111349-003	11/17/11	11/19/11	10ml	10ml	NA	
MS08IS	K1111349-003	11/17/11	11/19/11	10ml	10ml	NA	
QCR13	K1111349-004	11/17/11	11/19/11	10ml	10ml	NA	
MS32IDL	K1111349-005	11/18/11	11/19/11	10ml	10ml	NA	
MS32I	K1111349-005	11/18/11	11/19/11	10ml	10ml	NA	
MS28IDL	K1111349-006	11/18/11	11/19/11	10ml	10ml	NA	
MS28I	K1111349-006	11/18/11	11/19/11	10ml	10ml	NA	
MS34I	K1111349-007	11/18/11	11/19/11	10ml	10ml	NA	
MS34IDL	K1111349-007	11/18/11	11/19/11	10ml	10ml	NA	
QCT11	K1111349-008	11/17/11	11/19/11	10ml	10ml	NA	
MS36S	K1111349-009	11/17/11	11/19/11	10ml	10ml	NA	
MS36SDL	K1111349-009	11/17/11	11/19/11	10ml	10ml	NA	
MS07ISDL	K1111349-010	11/17/11	11/19/11	10ml	10ml	NA	
MS07IS	K1111349-010	11/17/11	11/19/11	10ml	10ml	NA	
FW13	K1111349-011	11/18/11	11/19/11	10ml	10ml	NA	
MS29IDL	K1111349-012	11/18/11	11/19/11	10ml	10ml	NA	
MS29I	K1111349-012	11/18/11	11/19/11	10ml	10ml	NA	
MS33IDL	K1111349-013	11/18/11	11/19/11	10ml	10ml	NA	
MS33I	K1111349-013	11/18/11	11/19/11	10ml	10ml	NA	
Method Blank	KWG1112135-4	NA	NA	10ml	10ml	NA	
MS08ISMS	KWG1112135-1	11/17/11	11/19/11	10ml	10ml	NA	
MS08ISDMS	KWG1112135-2	11/17/11	11/19/11	10ml	10ml	NA	
Lab Control Sample	KWG1112135-3	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1111349
Date Extracted: 12/01/2011

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1112186
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
QCR14	K1111349-014	11/18/11	11/19/11	10ml	10ml	NA	
QCD01	K1111349-015	11/18/11	11/19/11	10ml	10ml	NA	
Method Blank	KWG1112186-5	NA	NA	10ml	10ml	NA	
Lab Control Sample	KWG1112186-3	NA	NA	10ml	10ml	NA	
Duplicate Lab Control Sample	KWG1112186-4	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

SDG K1110800

SAMPLE CALC IS AREA	SAMPLE ID MS54S DILUTION	COMPOUND OF INTEREST AREA	IS AMOUNT (NG)	PURGE VOLUME (ML)	AVE RRF	CONCENTRATION PPB
375166	50	370056	100	10	0.2760	1786.9191

Trichloroethene = 1,800 ug/L

Quantitation Report

Data File:	J:\MS18\DATA\113011\1130F022.D			**Instrument:**	GC-MS 18
Acqu Date:	11/30/2011 15:34	**Quant Date:**	12/01/2011 08:01	**Vial:**	21
Run Type:	DL			**Dilution:**	50.0
Lab ID:	K1111349-001 MS545			**Soln Conc. Units:**	PPB

Bottle ID:		**Tier:**	V	**Matrix:**	WATER
Prod Code:	8260B VOC_FP	**Collect Date:**	11/17/2011	**Receive Date:**	11/19/2011

Analysis Lot:	KWG1112134	**Prep Lot:**	KWG1112135	**Report Group:**	K1111349
Analysis Method:	8260C	**Prep Method:**	EPA 5030B		
Prep Ref:	1080004	**Prep Date:**	11/30/2011		

Quant Method:	J:\MS18\METHODS\092011MS18_8	**Calibration ID:**	CAL10920
Title:	Volatile Organic Compounds	**Report List ID:**	LJ8154
Tune Ref:	J:\MS18\DATA\113011\1130F002.D	**Method ID:**	MJ119
MB Ref:	J:\MS18\DATA\113011\1130F009.D	**Quant based on Report List**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	Fluorobenzene	5.65	0.00	96	375166	10.00	OK
2	Chlorobenzene-d5	9.10	0.00	82	151611	10.00	OK
3	1,4-Dichlorobenzene-d4	11.52	0.00	152	152596	10.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	Dibromofluoromethane	4.81	0.00	0.00	113	78971	8.74	87	73-122	OK	NR
1	Toluene-d8	7.52	0.00	0.00	98	362748	8.89	89	65-144	OK	NR
2	4-Bromofluorobenzene	10.35	0.00	0.00	95	120091	7.57	76	68-117	OK	NR

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	Vinyl Chloride				62	0		3.8	U	NR
1	1,1-Dichloroethene	2.31		0.00	96	854	0.1000	5.0	JD	NR
1	trans-1,2-Dichloroethene	3.02		0.00	96	31395	2.95	150	D	NR
1	1,1-Dichloroethane	3.51	0.01	0.00	63	2906	0.1700	8.5	JD	NR
1	cis-1,2-Dichloroethene	4.19		0.00	96	104442	8.72	440	D	
1	1,1,1-Trichloroethane (TCA)				97	0		3.8	U	NR
1	Trichloroethene (TCE)	6.09		0.00	95	370056	35.74	1800	D	
2	Tetrachloroethene (PCE)				164	0		5.0	U	NR

Prep Amount:	10 ml	**Dilution:**	50.0
Prep Final Vol:	10 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**S. WARINO**	**DATE:**	**JANUARY 12, 2012**
FROM:	**EDWARD SEDLMYER**	**COPIES:**	**DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – SELECT VOCs**
CTO F27C NIROP FRIDLEY
SAMPLE DELIVERY GROUP (SDG) – K1111663

SAMPLES: 5/Aqueous

FRIDEFF AIR 86A	FRIDIN AIR 84_20111129A
FRIDOUT 173A	FRIDOUT 173B
Trip Blank_20111129	

Overview

The sample set for NIROP Fridley, CTO F27C, SDG K1111663 consists of four (4) aqueous environmental samples and one (1) trip blank (Trip Blank_20111129). No field duplicates were associated with this SDG.

All samples were analyzed for select volatile organic compounds (VOCs) including 1,1-dichloroethene, trans-1,2-dichloroethene, 1,1-dichloroethane, cis-1,2-dichloroethene, 1,1,1-trichloroethane, trichloroethene, tetrachloroethene, and methylene chloride. The samples were collected by Bay West on November 29, 2011 and analyzed by Columbia Analytical Services, Inc. VOC analyses were conducted using EPA method 624.

These data were evaluated based on the following parameters:

* • Data Completeness
* • Holding Times
* • GC/MS Tuning and System Performance
* • Initial and Continuing Calibrations
* • Laboratory Method and Field Quality Control Blank Analyses
* • Surrogate Recoveries
* • Laboratory Control Sample / Laboratory Control Sample Duplicate Results
* • Matrix Spike / Matrix Spike Duplicate Results
* • Field Duplicate Precision
* • Internal Standard Recoveries
* • Compound Quantitation
* • Compound Identification
* • Detection Limits

* - All quality control criteria were met for this parameter.

VOC

No qualification of the data was necessary.

Notes

All results were reported to the method detection limit (MDL) by the laboratory.

Positive results reported below the reporting limit (RL) but above the method detection limit (MDL) for the organic analyses were qualified as estimated, "J".

Sample FRIDIN AIR 84_20111129A was diluted due to a trichloroethene concentration greater than the linear range of the instrument. All other results were reported from the undiluted run.

Executive Summary

Laboratory Performance: None.

Other Factors Affecting Data Quality: Positive results reported below the reporting limit (RL) but above the method detection limit (MDL) for the organic analyses were qualified as estimated, (J).

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Organic Review", October 1999, and the Department of Defense (DoD) document entitled "Quality Systems Manual (QSM) for Environmental Laboratories", April 2009.

The text of this report has been formulated to address only those problem areas affecting data quality.

Tetra Tech NUS
Edward Sedlmyer
Chemist/Data Validator

Tetra Tech NUS
Joseph A. Samchuck
Quality Assurance Officer

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = ICP PDS Recovery Noncompliance; MSA's $r < 0.995$
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = RPD between columns/detectors >40% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient $r < 0.995$
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is less than sample activity
Z1 = Tentatively Identified Compound considered presumptively present
Z2 = Tentatively Identified Compound column bleed

PROJ_NO: 02583	NSAMPLE	FRIDEFF AIR 86A			FRIDIN AIR 84_20111129A			Fridin Air 84A_20111129DL			FRIDOUT 173A		
SDG: K1111663	LAB_ID	K1111663-004			K1111663-003			K1111663-003DL			K1111663-001		
FRACTION: OV	SAMP_DATE	11/29/2011			11/29/2011			11/29/2011			11/29/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.051	U		0.051	U					0.051	U	
1,1-DICHLOROETHANE		0.051	U		1.2						0.051	U	
1,1-DICHLOROETHENE		0.37	U		0.84						0.37	U	
CIS-1,2-DICHLOROETHENE		0.052	U		73						0.052	U	
METHYLENE CHLORIDE		0.11	U		0.11	U					0.11	U	
TETRACHLOROETHENE		0.085	U		1.4						0.085	U	
TRANS-1,2-DICHLOROETHENE		0.05	U		32						0.05	U	
TRICHLOROETHENE		0.2	J	P				610			0.14	J	P

PROJ_NO: 02583	NSAMPLE	FRIDOUT 173B			Trip Blank_20111129		
SDG: K1111663	LAB_ID	K1111663-002			K1111663-005		
FRACTION: OV	SAMP_DATE	11/29/2011			11/29/2011		
MEDIA: WATER	QC_TYPE	NM			NM		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.051	U		0.051	U	
1,1-DICHLOROETHANE		0.051	U		0.051	U	
1,1-DICHLOROETHENE		0.37	U		0.37	U	
CIS-1,2-DICHLOROETHENE		0.052	U		0.052	U	
METHYLENE CHLORIDE		0.11	U		0.11	U	
TETRACHLOROETHENE		0.085	U		0.085	U	
TRANS-1,2-DICHLOROETHENE		0.05	U		0.05	U	
TRICHLOROETHENE		0.14	J	P	0.072	U	

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111663
Project:	NIROP/J070047	**Date Collected:**	11/29/2011
Sample Matrix:	Water	**Date Received:**	12/01/2011
		Date Extracted:	12/07/2011
		Date Analyzed:	12/07/2011

Volatile Organic Compounds

Sample Name:	FRIDEFF AIR 86A	**Units:**	ug/L
Lab Code:	K1111663-004	**Basis:**	NA
File ID:	J:\MS23\DATA\120711\1207F013.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1112415
Analysis Method:	624	**Calibration ID:**	CAL10403

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-35-4	1,1-Dichloroethene	0.37	U	0.50	0.37	
75-09-2	Methylene Chloride	0.11	U	5.0	0.11	
156-60-5	trans-1,2-Dichloroethene	0.050	U	0.50	0.050	
75-34-3	1,1-Dichloroethane	0.051	U	0.50	0.051	
156-59-2	cis-1,2-Dichloroethene	0.052	U	0.50	0.052	
71-55-6	1,1,1-Trichloroethane (TCA)	0.051	U	0.50	0.051	
79-01-6	Trichloroethene (TCE)	**0.20**	J	0.50	0.072	
127-18-4	Tetrachloroethene (PCE)	0.085	U	0.50	0.085	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	106	61-121	12/07/11	Acceptable
Toluene-d8	103	72-122	12/07/11	Acceptable
4-Bromofluorobenzene	84	70-120	12/07/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111663
Project:	NIROP/J070047	**Date Collected:**	11/29/2011
Sample Matrix:	Water	**Date Received:**	12/01/2011
		Date Extracted:	12/06/2011
		Date Analyzed:	12/06/2011

Volatile Organic Compounds

Sample Name:	FRIDIN AIR 84A	**Units:**	ug/L
Lab Code:	K1111663-003	**Basis:**	NA
File ID:	J:\MS23\DATA\120611\1206F016.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1112361
Analysis Method:	624	**Calibration ID:**	CAL10403

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-35-4	1,1-Dichloroethene	**0.84**		0.50	0.37	
75-09-2	Methylene Chloride	0.11	U	5.0	0.11	
156-60-5	trans-1,2-Dichloroethene	**32**		0.50	0.050	
75-34-3	1,1-Dichloroethane	**1.2**		0.50	0.051	
156-59-2	cis-1,2-Dichloroethene	**73**		0.50	0.052	
71-55-6	1,1,1-Trichloroethane (TCA)	0.051	U	0.50	0.051	
79-01-6	Trichloroethene (TCE)	**880**	E	0.50	0.072	
127-18-4	Tetrachloroethene (PCE)	**1.4**		0.50	0.085	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	106	61-121	12/06/11	Acceptable
Toluene-d8	105	72-122	12/06/11	Acceptable
4-Bromofluorobenzene	85	70-120	12/06/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111663
Project:	NIROP/J070047	**Date Collected:**	11/29/2011
Sample Matrix:	Water	**Date Received:**	12/01/2011
		Date Extracted:	12/07/2011
		Date Analyzed:	12/07/2011

Volatile Organic Compounds

Sample Name:	FRIDIN AIR 84ADL	**Units:**	ug/L
Lab Code:	K1111663-003	**Basis:**	NA
File ID:	J:\MS23\DATA\120711\1207F014.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1112415
Analysis Method:	624	**Calibration ID:**	CAL10403

Sample Amount:	10 ml
% Solids:	NA
Dilution Factor:	25

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-35-4	1,1-Dichloroethene	9.3	U	13	9.3	
75-09-2	Methylene Chloride	2.8	U	130	2.8	
156-60-5	trans-1,2-Dichloroethene	**26**	D	13	1.3	
75-34-3	1,1-Dichloroethane	**1.5**	JD	13	1.3	
156-59-2	cis-1,2-Dichloroethene	**57**	D	13	1.3	
71-55-6	1,1,1-Trichloroethane (TCA)	1.3	U	13	1.3	
79-01-6	Trichloroethene (TCE)	**610**	D	13	1.8	
127-18-4	Tetrachloroethene (PCE)	2.2	U	13	2.2	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	105	61-121	12/07/11	Acceptable
Toluene-d8	103	72-122	12/07/11	Acceptable
4-Bromofluorobenzene	86	70-120	12/07/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111663
Project:	NIROP/J070047	**Date Collected:**	11/29/2011
Sample Matrix:	Water	**Date Received:**	12/01/2011
		Date Extracted:	12/06/2011
		Date Analyzed:	12/06/2011

Volatile Organic Compounds

Sample Name:	FRIDOUT 173A	**Units:**	ug/L
Lab Code:	K1111663-001	**Basis:**	NA
File ID:	J:\MS23\DATA\120611\1206F014.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1112361
Analysis Method:	624	**Calibration ID:**	CAL10403

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-35-4	1,1-Dichloroethene	0.37	U	0.50	0.37	
75-09-2	Methylene Chloride	0.11	U	5.0	0.11	
156-60-5	trans-1,2-Dichloroethene	0.050	U	0.50	0.050	
75-34-3	1,1-Dichloroethane	0.051	U	0.50	0.051	
156-59-2	cis-1,2-Dichloroethene	0.052	U	0.50	0.052	
71-55-6	1,1,1-Trichloroethane (TCA)	0.051	U	0.50	0.051	
79-01-6	Trichloroethene (TCE)	**0.14**	J	0.50	0.072	
127-18-4	Tetrachloroethene (PCE)	0.085	U	0.50	0.085	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	104	61-121	12/06/11	Acceptable
Toluene-d8	103	72-122	12/06/11	Acceptable
4-Bromofluorobenzene	87	70-120	12/06/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111663
Project:	NIROP/J070047	**Date Collected:**	11/29/2011
Sample Matrix:	Water	**Date Received:**	12/01/2011
		Date Extracted:	12/06/2011
		Date Analyzed:	12/06/2011

Volatile Organic Compounds

Sample Name:	FRIDOUT 173B	**Units:**	ug/L
Lab Code:	K1111663-002	**Basis:**	NA
File ID:	J:\MS23\DATA\120611\1206F015.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1112361
Analysis Method:	624	**Calibration ID:**	CAL10403

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-35-4	1,1-Dichloroethene	0.37	U	0.50	0.37	
75-09-2	Methylene Chloride	0.11	U	5.0	0.11	
156-60-5	trans-1,2-Dichloroethene	0.050	U	0.50	0.050	
75-34-3	1,1-Dichloroethane	0.051	U	0.50	0.051	
156-59-2	cis-1,2-Dichloroethene	0.052	U	0.50	0.052	
71-55-6	1,1,1-Trichloroethane (TCA)	0.051	U	0.50	0.051	
79-01-6	Trichloroethene (TCE)	**0.14**	J	0.50	0.072	
127-18-4	Tetrachloroethene (PCE)	0.085	U	0.50	0.085	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	106	61-121	12/06/11	Acceptable
Toluene-d8	104	72-122	12/06/11	Acceptable
4-Bromofluorobenzene	85	70-120	12/06/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111663
Project:	NIROP/J070047	**Date Collected:**	11/29/2011
Sample Matrix:	Water	**Date Received:**	12/01/2011
		Date Extracted:	12/06/2011
		Date Analyzed:	12/06/2011

Volatile Organic Compounds

Sample Name:	Trip Blank	**Units:**	ug/L
Lab Code:	K1111663-005	**Basis:**	NA
File ID:	J:\MS23\DATA\120611\1206F013.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1112361
Analysis Method:	624	**Calibration ID:**	CAL10403

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-35-4	1,1-Dichloroethene	0.37	U	0.50	0.37	
75-09-2	Methylene Chloride	0.11	U	5.0	0.11	
156-60-5	trans-1,2-Dichloroethene	0.050	U	0.50	0.050	
75-34-3	1,1-Dichloroethane	0.051	U	0.50	0.051	
156-59-2	cis-1,2-Dichloroethene	0.052	U	0.50	0.052	
71-55-6	1,1,1-Trichloroethane (TCA)	0.051	U	0.50	0.051	
79-01-6	Trichloroethene (TCE)	0.072	U	0.50	0.072	
127-18-4	Tetrachloroethene (PCE)	0.085	U	0.50	0.085	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	106	61-121	12/06/11	Acceptable
Toluene-d8	103	72-122	12/06/11	Acceptable
4-Bromofluorobenzene	86	70-120	12/06/11	Acceptable

Comments:

APPENDIX C

SUPPORT DOCUMENTATION

Columbia Analytical Services™ 1317 S. 13th Avenue, Kelso, WA 98626 360.577.7222 360.636.1068 (fax) www.caslab.com

December 20, 2011 Analytical Report for Service Request No: K1111663

Paul Walz
Bay West, Incorporated
5 Empire Dr.
St. Paul, MN 55103-1867

RE: NIROP/J070047

Dear Paul:

Enclosed are the results of the samples submitted to our laboratory on December 01, 2011. For your reference, these analyses have been assigned our service request number K1111663.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3363. You may also contact me via Email at LDomenighini@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.

Lisa Domenighini
Project Chemist

LD/jw

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

Columbia Analytical Services, Inc.
Kelso, WA
State Certifications, Accreditations, and Licenses

Agency	Number
Alaska DEC UST	UST-040
Arizona DHS	AZ0339
Arkansas - DEQ	88-0637
California DHS	2286
DOD ELAP	L11-119
Florida DOH	E87412
Georgia DNR	881
Hawaii DOH	-
Idaho DHW	-
Indiana DOH	C-WA-01
ISO 17025	L11-118
Louisiana DEQ	3016
Louisiana DHH	LA080001
Maine DHS	WA0035
Michigan DEQ	9949
Minnesota DOH	053-999-368
Montana DPHHS	CERT0047
Nevada DEP	WA35
New Jersey DEP	WA005
New Mexico ED	-
North Carolina DWQ	605
Oklahoma DEQ	9801
Oregon – DEQ (NELAP)	WA100010
South Carolina DHEC	61002
Texas CEQ	04704427-08-TX
Washington DOE	C1203
Wisconsin DNR	998386840
Wyoming (EPA Region 8)	-

Case Narrative

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	Bay West, Incorporated	**Service Request No.:**	K1111663
Project:	NIROP/J070047	**Date Received:**	12/01/11
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Four water samples and a trip blank sample were received for analysis at Columbia Analytical Services on 12/01/11. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Volatile Organic Compounds by EPA Method 624

No anomalies associated with the analysis of these samples were observed.

Approved by Lisa A. Yonnenghan **Date** 12/19/11

Chain of Custody

Columbia Analytical Services

CHAIN OF CUSTODY

SR#: K111643

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

PAGE 1 OF 1 COC # 112811-01

PROJECT NAME: NIROP
PROJECT NUMBER: J070047
PROJECT MANAGER: PAUL WALZ
COMPANY ADDRESS: 5 EMPIRE DR
CITY STATE ZIP: ST. PAUL, MN 55103-1867
E MAIL ADDRESS: PAULW@BAYWEST.COM
PHONE #: 651 291 3491 FAX #: 651 291 0099
SAMPLER'S SIGNATURE:

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625 ☐ 8270 ☐ 8270LL ☐	Volatile Organics 624 ☐ 8260 ☐	Hydrocarbons (*see below) Gas ☐ Diesel ☐ Oil ☐	BTEX ☐ 8021 ☐	Fuel Fingerprint (FIQ) NW-HCID Screen	Oil & Grease/TRPH 1664 SGT ☐ 1664 HEM ☐	PCB's Aroclors ☐ Congeners ☐	Pesticides/Herbicides 608 ☐ 8081A ☐ 8141A ☐ 8151A ☐	Chlorophenolics - 8151M Tri ☐ Tetra ☐ PCP ☐	PAHS 8310 ☐ SIM ☐	Metals, Total or Dissolved (See list below)	Cyanide ☐	Hex-Chrom ☐	pH, Cond., Cl, SO4, PO4, F, NO2, NO3, BOD, TSS, TDS (circle)	NH3-N, COD, Total-P, TKN, TOC, DOC (circle) NO2+NO3	TOX 9020 ☐ AOX 1650 ☐ 506 ☐					REMARKS
FRIDOUT 173A	11/29/11	13:20		WATER	6		6																			MS / MSD
FRIDOUT 173B	11/29/11	13:10		WATER	3		3																			
FRIDIN AIR 84A	11/29/11	12:30		WATER	3		3																			
FRIDEFF AIR 86A	11/29/11	12:40		WATER	3		3																			
TRIP BLANK	11/29/11	-		WATER	2		2																			

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
___ IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. # 27488
Bill To: Accounts Payable
5 Empire Dr
St. Paul, MN 55103

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:

VOC BY EPA 624

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature] Date/Time: 11/29/11 1445	Signature: [signature] Date/Time: 12/1/11 0900	Signature: Date/Time:	Signature: Date/Time:
Printed Name: Matthew Martins Firm: BAYWEST	Printed Name: RSmith Firm: CAS	Printed Name: Firm:	Printed Name: Firm:

RCOC #1 03/10

8

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

PC LD

Client / Project: BayWest Service Request K11 (1 6063

Received: 12/1/11 Opened: 12/1/11 By: KD Unloaded: 12/1/11 By: KD

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? 1, front 1, back
   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Cooler Temp °C	Temp Blank °C	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
1.1	.0	315		1ZA19 8R9 15 9923 8386	

7. Packing material used. *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Sleeves* *Other* _____
8. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
9. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
10. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
11. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
12. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
13. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
14. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
15. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

Page 1 *of* _____

Volatile Organic Compounds

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111663

Cover Page - Organic Analysis Data Package
Volatile Organic Compounds

Sample Name	Lab Code	Date Collected	Date Received
FRIDOUT 173A	K1111663-001	11/29/2011	12/01/2011
FRIDOUT 173B	K1111663-002	11/29/2011	12/01/2011
FRIDIN AIR 84ADL	K1111663-003	11/29/2011	12/01/2011
FRIDIN AIR 84A	K1111663-003	11/29/2011	12/01/2011
FRIDEFF AIR 86A	K1111663-004	11/29/2011	12/01/2011
Trip Blank	K1111663-005	11/29/2011	12/01/2011
FRIDOUT 173AMS	KWG1112361-1	11/29/2011	12/01/2011
FRIDOUT 173ADMS	KWG1112361-2	11/29/2011	12/01/2011

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: [illegible] Name: [illegible]

Date: 12/19/11 Title: Finalist

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1111663

Surrogate Recovery Summary
Volatile Organic Compounds

Extraction Method: METHOD
Analysis Method: 624

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
FRIDOUT 173A	K1111663-001	104	103	87
FRIDOUT 173B	K1111663-002	106	104	85
FRIDIN AIR 84ADL	K1111663-003	105	103	86
FRIDIN AIR 84A	K1111663-003	106	105	85
FRIDEFF AIR 86A	K1111663-004	106	103	84
Trip Blank	K1111663-005	106	103	86
Method Blank	KWG1112361-4	100	102	87
Method Blank	KWG1112415-4	105	103	86
FRIDOUT 173AMS	KWG1112361-1	103	106	92
FRIDOUT 173ADMS	KWG1112361-2	104	107	92
Lab Control Sample	KWG1112361-3	102	107	94
Lab Control Sample	KWG1112415-3	106	109	95

Surrogate Recovery Control Limits (%)

Sur1 =	Dibromofluoromethane	61-121
Sur2 =	Toluene-d8	72-122
Sur3 =	4-Bromofluorobenzene	70-120

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111663
Date Analyzed: 03/29/2011
Time Analyzed: 13:21

Tune Summary
Volatile Organic Compounds

File ID: J:\MS23\DATA\032911\0329F013.D
Instrument ID: MS23
Column:

Analysis Method: 624
Analysis Lot: KWG1112751

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	24.6	16321	PASS
75	95	30	60	53.6	35557	PASS
95	95	100	100	100.0	66330	PASS
96	95	5	9	6.9	4574	PASS
173	174	0	2	0.7	334	PASS
174	95	50	120	68.8	45626	PASS
175	174	5	9	7.6	3488	PASS
176	174	95	101	98.5	44920	PASS
177	176	5	9	6.8	3050	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Initial Calibration	KWG1112751-2	J:\MS23\DATA\032911BAYW\0329F019.D	03/29/2011	16:02	
Initial Calibration	KWG1112751-3	J:\MS23\DATA\032911BAYW\0329F020.D	03/29/2011	16:32	
Initial Calibration	KWG1112751-4	J:\MS23\DATA\032911BAYW\0329F021.D	03/29/2011	17:02	
Initial Calibration	KWG1112751-5	J:\MS23\DATA\032911BAYW\0329F022.D	03/29/2011	17:31	
Initial Calibration	KWG1112751-6	J:\MS23\DATA\032911BAYW\0329F023.D	03/29/2011	18:01	
Initial Calibration	KWG1112751-7	J:\MS23\DATA\032911BAYW\0329F026.D	03/29/2011	19:31	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111663
Calibration Date: 03/29/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10403
Instrument ID: MS23

Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS23\DATA\032911\0329F016.D	F	J:\MS23\DATA\032911\0329F023.D
B	J:\MS23\DATA\032911\0329F019.D	G	J:\MS23\DATA\032911\0329F026.D
C	J:\MS23\DATA\032911\0329F020.D	H	J:\MS23\DATA\032911\0329F029.D
D	J:\MS23\DATA\032911\0329F021.D		
E	J:\MS23\DATA\032911\0329F022.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
1,1-Dichloroethene				B	5.0	0.247	C	10	0.247	D	40	0.250	E	80	0.250
	F	120	0.250	G	0.50	0.257	H	1.0	0.190						
Methylene Chloride				B	5.0	0.242	C	10	0.233	D	40	0.229	E	80	0.235
	F	120	0.233	G	0.50	0.336	H	1.0	0.214						
trans-1,2-Dichloroethene				B	5.0	0.253	C	10	0.244	D	40	0.253	E	80	0.257
	F	120	0.257	G	0.50	0.292	H	1.0	0.194						
1,1-Dichloroethane				B	5.0	0.511	C	10	0.494	D	40	0.511	E	80	0.516
	F	120	0.512	G	0.50	0.535	H	1.0	0.384						
cis-1,2-Dichloroethene				B	5.0	0.266	C	10	0.262	D	40	0.269	E	80	0.274
	F	120	0.273	G	0.50	0.326	H	1.0	0.208						
1,1,1-Trichloroethane (TCA)				B	5.0	0.431	C	10	0.416	D	40	0.433	E	80	0.433
	F	120	0.436	G	0.50	0.430	H	1.0	0.310						
Trichloroethene (TCE)				B	5.0	0.268	C	10	0.259	D	40	0.267	E	80	0.272
	F	120	0.272	G	0.50	0.303	H	1.0	0.218						
Tetrachloroethene (PCE)				B	5.0	0.489	C	10	0.472	D	40	0.484	E	80	0.505
	F	120	0.516	G	0.50	0.493	H	1.0	0.358						
Dibromofluoromethane				B	8.0	0.216	C	10	0.222	D	20	0.228	E	40	0.204
	F	60	0.227				H	6.0	0.201						
Toluene-d8				B	8.0	0.934	C	10	0.959	D	20	1.01	E	40	0.876
	F	60	1.00				H	6.0	0.888						
4-Bromofluorobenzene				B	8.0	0.813	C	10	0.829	D	20	0.859	E	40	0.791
	F	60	0.870				H	6.0	0.776						

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111663
Calibration Date: 03/29/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10403
Instrument ID: MS23

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
1,1-Dichloroethene	MS	AverageRF	% RSD	9.5		≤35	0.241		0.01
Methylene Chloride	MS	AverageRF	% RSD	16.6		≤35	0.246		0.01
trans-1,2-Dichloroethene	MS	AverageRF	% RSD	11.6		≤35	0.250		0.01
1,1-Dichloroethane	MS	AverageRF	% RSD	10.1		≤35	0.495		0.01
cis-1,2-Dichloroethene	MS	AverageRF	% RSD	12.8		≤35	0.268		0.01
1,1,1-Trichloroethane (TCA)	MS	AverageRF	% RSD	11.1		≤35	0.413		0.01
Trichloroethene (TCE)	MS	AverageRF	% RSD	9.4		≤35	0.266		0.01
Tetrachloroethene (PCE)	MS	AverageRF	% RSD	11.2		≤35	0.474		0.01
Dibromofluoromethane	SURR	AverageRF	% RSD	5.3		≤35	0.216		0.01
Toluene-d8	SURR	AverageRF	% RSD	6.0		≤35	0.945		0.01
4-Bromofluorobenzene	SURR	AverageRF	% RSD	4.5		≤35	0.823		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111663
Date Analyzed: 03/30/2011
Time Analyzed: 08:48

Tune Summary
Volatile Organic Compounds

File ID: J:\MS23\DATA\032911BAYW\0329F027.D
Instrument ID: MS23
Column:

Analysis Method: 624
Analysis Lot: KWG1112752

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	26.3	15893	PASS
75	95	30	60	59.3	35786	PASS
95	95	100	100	100.0	60389	PASS
96	95	5	9	7.4	4443	PASS
173	174	0	2	0.6	265	PASS
174	95	50	120	68.3	41240	PASS
175	174	5	9	7.7	3196	PASS
176	174	95	101	97.0	39994	PASS
177	176	5	9	6.8	2712	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Initial Calibration	KWG1112752-2	J:\MS23\DATA\032911BAYW\0329F029.D	03/30/2011	09:48	
Initial Calibration Verification	KWG1112752-3	J:\MS23\DATA\032911BAYW\0329F032.D	03/30/2011	12:58	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111663
Calibration Date: 03/29/2011
Date Analyzed: 03/30/2011

Second Source Calibration Verification
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 624

Calibration ID: CAL10403
Units: PPB

File ID: J:\MS23\DATA\032911\0329F032.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
1,1-Dichloroethene	10	12	0.241	0.292	21	NA	± 49 %	AverageRF
Methylene Chloride	10	11	0.246	0.275	12	NA	± 39 %	AverageRF
trans-1,2-Dichloroethene	10	12	0.250	0.290	16	NA	± 30 %	AverageRF
1,1-Dichloroethane	10	12	0.495	0.571	15	NA	± 27 %	AverageRF
cis-1,2-Dichloroethene	10	11	0.268	0.292	9	NA	± 30 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	11	0.413	0.463	12	NA	± 25 %	AverageRF
Trichloroethene (TCE)	10	11	0.266	0.298	12	NA	± 33 %	AverageRF
Tetrachloroethene (PCE)	10	11	0.474	0.533	12	NA	± 26 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111663

Analysis Run Log
Volatile Organic Compounds

Analysis Method: 624

Analysis Lot: KWG1112359
Instrument ID: MS23

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1206F003.D	GC/MS Tuning - Bromofluorobenzene	KWG1112359-1	12/6/2011	09:32		12/6/2011	09:47
1206F004.D	Continuing Calibration Verification	KWG1112359-2	12/6/2011	10:11		12/6/2011	10:26
1206F005.D	Lab Control Sample	KWG1112361-3	12/6/2011	10:54		12/6/2011	11:09
1206F006.D	FRIDOUT 173AMS	KWG1112361-1	12/6/2011	11:50		12/6/2011	12:05
1206F007.D	FRIDOUT 173ADMS	KWG1112361-2	12/6/2011	12:18		12/6/2011	12:33
1206F009.D	Method Blank	KWG1112361-4	12/6/2011	13:16		12/6/2011	13:31
1206F013.D	Trip Blank	K1111663-005	12/6/2011	15:16		12/6/2011	15:31
1206F014.D	FRIDOUT 173A	K1111663-001	12/6/2011	15:45		12/6/2011	16:00
1206F015.D	FRIDOUT 173B	K1111663-002	12/6/2011	16:14		12/6/2011	16:29
1206F016.D	FRIDIN AIR 84A	K1111663-003	12/6/2011	16:42		12/6/2011	16:57
1206F017.D	ZZZZZZ	ZZZZZZ	12/6/2011	17:11		12/6/2011	17:26
1206F018.D	ZZZZZZ	ZZZZZZ	12/6/2011	17:40		12/6/2011	17:55
1206F019.D	ZZZZZZ	ZZZZZZ	12/6/2011	18:09		12/6/2011	18:24
1206F020.D	ZZZZZZ	ZZZZZZ	12/6/2011	18:37		12/6/2011	18:52
1206F021.D	ZZZZZZ	ZZZZZZ	12/6/2011	19:06		12/6/2011	19:21
1206F022.D	ZZZZZZ	ZZZZZZ	12/6/2011	19:35		12/6/2011	19:50
1206F023.D	ZZZZZZ	ZZZZZZ	12/6/2011	20:04		12/6/2011	20:19
1206F024.D	ZZZZZZ	ZZZZZZ	12/6/2011	20:32		12/6/2011	20:47

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111663
Date Analyzed: 12/06/2011
Time Analyzed: 09:32

Tune Summary
Volatile Organic Compounds

File ID: J:\MS23\DATA\120611\1206F003.D
Instrument ID: MS23
Column:

Analysis Method: 624
Analysis Lot: KWG1112359

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	23.9	16253	PASS
75	95	30	60	56.3	38298	PASS
95	95	100	100	100.0	67970	PASS
96	95	5	9	7.4	5063	PASS
173	174	0	2	0.2	109	PASS
174	95	50	120	83.8	56973	PASS
175	174	5	9	7.4	4212	PASS
176	174	95	101	95.4	54370	PASS
177	176	5	9	6.7	3666	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1112359-2	J:\MS23\DATA\120611\1206F004.D	12/06/2011	10:11	
Lab Control Sample	KWG1112361-3	J:\MS23\DATA\120611\1206F005.D	12/06/2011	10:54	
FRIDOUT 173AMS	KWG1112361-1	J:\MS23\DATA\120611\1206F006.D	12/06/2011	11:50	
FRIDOUT 173ADMS	KWG1112361-2	J:\MS23\DATA\120611\1206F007.D	12/06/2011	12:18	
Method Blank	KWG1112361-4	J:\MS23\DATA\120611\1206F009.D	12/06/2011	13:16	
Trip Blank	K1111663-005	J:\MS23\DATA\120611\1206F013.D	12/06/2011	15:16	
FRIDOUT 173A	K1111663-001	J:\MS23\DATA\120611\1206F014.D	12/06/2011	15:45	
FRIDOUT 173B	K1111663-002	J:\MS23\DATA\120611\1206F015.D	12/06/2011	16:14	
FRIDIN AIR 84A	K1111663-003	J:\MS23\DATA\120611\1206F016.D	12/06/2011	16:42	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111663
Date Analyzed: 12/06/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 624

Calibration Date: 03/29/2011
Calibration ID: CAL10403
Analysis Lot: KWG1112359
Units: PPB

File ID: J:\MS23\DATA\120611\1206F004.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
1,1-Dichloroethene	10	10	0.01	0.241	0.243	1	NA	± 49 %	AverageRF
Methylene Chloride	10	10	0.01	0.246	0.250	2	NA	± 39 %	AverageRF
trans-1,2-Dichloroethene	10	11	0.01	0.250	0.275	10	NA	± 30 %	AverageRF
1,1-Dichloroethane	10	11	0.01	0.495	0.520	5	NA	± 27 %	AverageRF
cis-1,2-Dichloroethene	10	10	0.01	0.268	0.274	2	NA	± 30 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	11	0.01	0.413	0.442	7	NA	± 25 %	AverageRF
Trichloroethene (TCE)	10	11	0.01	0.266	0.285	7	NA	± 33 %	AverageRF
Tetrachloroethene (PCE)	10	12	0.01	0.474	0.589	24	NA	± 26 %	AverageRF
Dibromofluoromethane	10	10	0.01	0.216	0.225	4	NA	± 30 %	AverageRF
Toluene-d8	10	11	0.01	0.945	1.04	10	NA	± 30 %	AverageRF
4-Bromofluorobenzene	10	9.6	0.01	0.823	0.791	-4	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1111663
Project:	NIROP/J070047	**Date Extracted:**	12/06/2011
Sample Matrix:	Water	**Date Analyzed:**	12/06/2011
		Time Analyzed:	13:16

Method Blank Summary
Volatile Organic Compounds

Sample Name:	Method Blank	**Instrument ID:**	MS23
Lab Code:	KWG1112361-4	**File ID:**	J:\MS23\DATA\120611\1206F009.D
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	624	**Extraction Lot:**	KWG1112361

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1112361-3	J:\MS23\DATA\120611\1206F005.D	12/06/11	10:54
FRIDOUT 173AMS	KWG1112361-1	J:\MS23\DATA\120611\1206F006.D	12/06/11	11:50
FRIDOUT 173ADMS	KWG1112361-2	J:\MS23\DATA\120611\1206F007.D	12/06/11	12:18
Trip Blank	K1111663-005	J:\MS23\DATA\120611\1206F013.D	12/06/11	15:16
FRIDOUT 173A	K1111663-001	J:\MS23\DATA\120611\1206F014.D	12/06/11	15:45
FRIDOUT 173B	K1111663-002	J:\MS23\DATA\120611\1206F015.D	12/06/11	16:14
FRIDIN AIR 84A	K1111663-003	J:\MS23\DATA\120611\1206F016.D	12/06/11	16:42

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111663
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	12/06/2011
		Date Analyzed:	12/06/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1112361-4	**Basis:**	NA
File ID:	J:\MS23\DATA\120611\1206F009.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1112361
Analysis Method:	624	**Calibration ID:**	CAL10403

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-35-4	1,1-Dichloroethene	0.37	U	0.50	0.37	
75-09-2	Methylene Chloride	0.11	U	5.0	0.11	
156-60-5	trans-1,2-Dichloroethene	0.050	U	0.50	0.050	
75-34-3	1,1-Dichloroethane	0.051	U	0.50	0.051	
156-59-2	cis-1,2-Dichloroethene	0.052	U	0.50	0.052	
71-55-6	1,1,1-Trichloroethane (TCA)	0.051	U	0.50	0.051	
79-01-6	Trichloroethene (TCE)	0.072	U	0.50	0.072	
127-18-4	Tetrachloroethene (PCE)	0.085	U	0.50	0.085	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	100	61-121	12/06/11	Acceptable
Toluene-d8	102	72-122	12/06/11	Acceptable
4-Bromofluorobenzene	87	70-120	12/06/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1111663
Project:	NIROP/J070047	**Date Extracted:**	12/06/2011
Sample Matrix:	Water	**Date Analyzed:**	12/06/2011

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	METHOD	**Units:**	ug/L
Analysis Method:	624	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1112361

	Lab Control Sample KWG1112361-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
1,1-Dichloroethene	10.4	10.0	104	79-147
Methylene Chloride	10.3	10.0	103	67-144
trans-1,2-Dichloroethene	11.1	10.0	111	78-140
1,1-Dichloroethane	10.1	10.0	101	79-135
cis-1,2-Dichloroethene	9.93	10.0	99	80-134
1,1,1-Trichloroethane (TCA)	10.3	10.0	103	77-139
Trichloroethene (TCE)	10.5	10.0	105	81-133
Tetrachloroethene (PCE)	11.6	10.0	116	82-129

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1111663
Project:	NIROP/J070047	**Date Extracted:**	12/06/2011
Sample Matrix:	Water	**Date Analyzed:**	12/06/2011

Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organic Compounds

Sample Name:	FRIDOUT 173A	**Units:**	ug/L
Lab Code:	K1111663-001	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	624	**Extraction Lot:**	KWG1112361

		FRIDOUT 173AMS KWG1112361-1 Matrix Spike			FRIDOUT 173ADMS KWG1112361-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
1,1-Dichloroethene	ND	10.3	10.0	103	9.57	10.0	96	64-151	7	30
Methylene Chloride	ND	10.2	10.0	102	9.47	10.0	95	69-132	8	30
trans-1,2-Dichloroethene	ND	11.2	10.0	112	10.2	10.0	102	58-146	9	30
1,1-Dichloroethane	ND	10.3	10.0	103	9.46	10.0	95	61-141	8	30
cis-1,2-Dichloroethene	ND	9.95	10.0	100	9.55	10.0	96	73-130	4	30
1,1,1-Trichloroethane (TCA)	ND	10.2	10.0	102	9.38	10.0	94	67-139	9	30
Trichloroethene (TCE)	0.14	10.5	10.0	103	9.83	10.0	97	23-193	6	30
Tetrachloroethene (PCE)	ND	11.8	10.0	118	11.1	10.0	111	70-132	7	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111663

Analysis Run Log
Volatile Organic Compounds

Analysis Method: 624

Analysis Lot: KWG1112414
Instrument ID: MS23

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1207F004.D	GC/MS Tuning - Bromofluorobenzene	KWG1112414-1	12/7/2011	10:01		12/7/2011	10:16
1207F006.D	Continuing Calibration Verification	KWG1112414-2	12/7/2011	13:46		12/7/2011	14:01
1207F007.D	Lab Control Sample	KWG1112415-3	12/7/2011	14:33		12/7/2011	14:48
1207F008.D	ZZZZZZ	ZZZZZZ	12/7/2011	15:21		12/7/2011	15:36
1207F009.D	ZZZZZZ	ZZZZZZ	12/7/2011	15:49		12/7/2011	16:04
1207F011.D	Method Blank	KWG1112415-4	12/7/2011	16:47		12/7/2011	17:02
1207F012.D	ZZZZZZ	ZZZZZZ	12/7/2011	17:16		12/7/2011	17:31
1207F013.D	FRIDEFF AIR 86A	K1111663-004	12/7/2011	17:45		12/7/2011	18:00
1207F014.D	FRIDIN AIR 84ADL	K1111663-003	12/7/2011	18:14		12/7/2011	18:29
1207F015.D	ZZZZZZ	ZZZZZZ	12/7/2011	18:43		12/7/2011	18:58

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111663
Date Analyzed: 12/07/2011
Time Analyzed: 10:01

Tune Summary
Volatile Organic Compounds

File ID: J:\MS23\DATA\120711\1207F004.D
Instrument ID: MS23
Column:

Analysis Method: 624
Analysis Lot: KWG1112414

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	25.1	12584	PASS
75	95	30	60	56.5	28284	PASS
95	95	100	100	100.0	50089	PASS
96	95	5	9	6.5	3240	PASS
173	174	0	2	0.7	291	PASS
174	95	50	120	80.4	40294	PASS
175	174	5	9	8.0	3223	PASS
176	174	95	101	95.6	38524	PASS
177	176	5	9	7.2	2762	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1112414-2	J:\MS23\DATA\120711\1207F006.D	12/07/2011	13:46	
Lab Control Sample	KWG1112415-3	J:\MS23\DATA\120711\1207F007.D	12/07/2011	14:33	
Method Blank	KWG1112415-4	J:\MS23\DATA\120711\1207F011.D	12/07/2011	16:47	
FRIDEFF AIR 86A	K1111663-004	J:\MS23\DATA\120711\1207F013.D	12/07/2011	17:45	
FRIDIN AIR 84ADL	K1111663-003	J:\MS23\DATA\120711\1207F014.D	12/07/2011	18:14	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111663
Date Analyzed: 12/07/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 624

Calibration Date: 03/29/2011
Calibration ID: CAL10403
Analysis Lot: KWG1112414
Units: PPB

File ID: J:\MS23\DATA\120711\1207F006.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
1,1-Dichloroethene	10	13	0.01	0.241	0.317	31	NA	± 49 %	AverageRF
Methylene Chloride	10	10	0.01	0.246	0.254	3	NA	± 39 %	AverageRF
trans-1,2-Dichloroethene	10	11	0.01	0.250	0.282	13	NA	± 30 %	AverageRF
1,1-Dichloroethane	10	11	0.01	0.495	0.541	9	NA	± 27 %	AverageRF
cis-1,2-Dichloroethene	10	10	0.01	0.268	0.280	4	NA	± 30 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	11	0.01	0.413	0.438	6	NA	± 25 %	AverageRF
Trichloroethene (TCE)	10	11	0.01	0.266	0.281	6	NA	± 33 %	AverageRF
Tetrachloroethene (PCE)	10	12	0.01	0.474	0.578	22	NA	± 26 %	AverageRF
Dibromofluoromethane	10	11	0.01	0.216	0.229	6	NA	± 30 %	AverageRF
Toluene-d8	10	11	0.01	0.945	1.05	11	NA	± 30 %	AverageRF
4-Bromofluorobenzene	10	10	0.01	0.823	0.825	0	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1111663
Project:	NIROP/J070047	**Date Extracted:**	12/07/2011
Sample Matrix:	Water	**Date Analyzed:**	12/07/2011
		Time Analyzed:	16:47

Method Blank Summary
Volatile Organic Compounds

Sample Name:	Method Blank	**Instrument ID:**	MS23
Lab Code:	KWG1112415-4	**File ID:**	J:\MS23\DATA\120711\1207F011.D
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	624	**Extraction Lot:**	KWG1112415

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1112415-3	J:\MS23\DATA\120711\1207F007.D	12/07/11	14:33
FRIDEFF AIR 86A	K1111663-004	J:\MS23\DATA\120711\1207F013.D	12/07/11	17:45
FRIDIN AIR 84ADL	K1111663-003	J:\MS23\DATA\120711\1207F014.D	12/07/11	18:14

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111663
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	12/07/2011
		Date Analyzed:	12/07/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1112415-4	**Basis:**	NA
File ID:	J:\MS23\DATA\120711\1207F011.D	**Level:**	Low
Instrument ID:	MS23		
Extraction Method:	METHOD	**Extraction Lot:**	KWG1112415
Analysis Method:	624	**Calibration ID:**	CAL10403

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-35-4	1,1-Dichloroethene	0.37	U	0.50	0.37	
75-09-2	Methylene Chloride	0.11	U	5.0	0.11	
156-60-5	trans-1,2-Dichloroethene	0.050	U	0.50	0.050	
75-34-3	1,1-Dichloroethane	0.051	U	0.50	0.051	
156-59-2	cis-1,2-Dichloroethene	0.052	U	0.50	0.052	
71-55-6	1,1,1-Trichloroethane (TCA)	0.051	U	0.50	0.051	
79-01-6	Trichloroethene (TCE)	0.072	U	0.50	0.072	
127-18-4	Tetrachloroethene (PCE)	0.085	U	0.50	0.085	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	105	61-121	12/07/11	Acceptable
Toluene-d8	103	72-122	12/07/11	Acceptable
4-Bromofluorobenzene	86	70-120	12/07/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1111663
Project:	NIROP/J070047	**Date Extracted:**	12/07/2011
Sample Matrix:	Water	**Date Analyzed:**	12/07/2011

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	METHOD	**Units:**	ug/L
Analysis Method:	624	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1112415

	Lab Control Sample KWG1112415-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
1,1-Dichloroethene	13.3	10.0	133	79-147
Methylene Chloride	12.3	10.0	123	67-144
trans-1,2-Dichloroethene	11.7	10.0	117	78-140
1,1-Dichloroethane	10.8	10.0	108	79-135
cis-1,2-Dichloroethene	10.4	10.0	104	80-134
1,1,1-Trichloroethane (TCA)	10.7	10.0	107	77-139
Trichloroethene (TCE)	10.9	10.0	109	81-133
Tetrachloroethene (PCE)	12.3	10.0	123	82-129

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111663
Date Analyzed: 12/06/2011
Time Analyzed: 10:11

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID: J:\MS23\DATA\120611\1206F004.D
Instrument ID: MS23
Analysis Method: 624

Lab Code: KWG1112359-2
Analysis Lot: KWG1112359

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	834,828	5.75	333,768	9.18	284,740	11.59
	Upper Limit ==>	1,669,656	6.25	667,536	9.68	569,480	12.09
	Lower Limit ==>	417,414	5.25	166,884	8.68	142,370	11.09
	ICAL Result ==>	555,419	5.94	228,350	9.34	192,069	11.75
Associated Analyses							
Lab Control Sample	KWG1112361-3	831,970	5.74	339,218	9.18	283,880	11.59
FRIDOUT 173AMS	KWG1112361-1	800,109	5.75	327,666	9.18	273,579	11.59
FRIDOUT 173ADMS	KWG1112361-2	846,589	5.75	340,274	9.18	288,936	11.59
Method Blank	KWG1112361-4	806,945	5.74	320,330	9.18	248,176	11.59
Trip Blank	K1111663-005	763,672	5.75	309,347	9.18	239,737	11.59
FRIDOUT 173A	K1111663-001	776,519	5.75	310,077	9.18	241,310	11.59
FRIDOUT 173B	K1111663-002	761,360	5.75	312,619	9.18	240,083	11.59
FRIDIN AIR 84A	K1111663-003	765,048	5.75	311,531	9.18	239,531	11.59

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111663
Date Analyzed: 12/07/2011
Time Analyzed: 13:46

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID: J:\MS23\DATA\120711\1207F006.D
Instrument ID: MS23
Analysis Method: 624

Lab Code: KWG1112414-2
Analysis Lot: KWG1112414

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	786,049	5.75	319,194	9.18	270,870	11.59
	Upper Limit ==>	1,572,098	6.25	638,388	9.68	541,740	12.09
	Lower Limit ==>	393,025	5.25	159,597	8.68	135,435	11.09
	ICAL Result ==>	555,419	5.94	228,350	9.34	192,069	11.75
Associated Analyses							
Lab Control Sample	KWG1112415-3	793,708	5.74	327,947	9.18	273,731	11.59
Method Blank	KWG1112415-4	759,941	5.75	301,992	9.18	229,573	11.59
FRIDEFF AIR 86A	K1111663-004	736,017	5.75	299,976	9.18	229,597	11.59
FRIDIN AIR 84ADL	K1111663-003	731,525	5.75	292,986	9.18	223,306	11.59

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1111663
Date Extracted: 12/06/2011

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: METHOD
Analysis Method: 624

Extraction Lot: KWG1112361
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
FRIDOUT 173A	K1111663-001	11/29/11	12/01/11	10ml	10ml	NA	
FRIDOUT 173B	K1111663-002	11/29/11	12/01/11	10ml	10ml	NA	
FRIDIN AIR 84A	K1111663-003	11/29/11	12/01/11	10ml	10ml	NA	
Trip Blank	K1111663-005	11/29/11	12/01/11	10ml	10ml	NA	
Method Blank	KWG1112361-4	NA	NA	10ml	10ml	NA	
FRIDOUT 173AMS	KWG1112361-1	11/29/11	12/01/11	10ml	10ml	NA	
FRIDOUT 173ADMS	KWG1112361-2	11/29/11	12/01/11	10ml	10ml	NA	
Lab Control Sample	KWG1112361-3	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1111663
Date Extracted: 12/07/2011

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: METHOD
Analysis Method: 624

Extraction Lot: KWG1112415
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
FRIDIN AIR 84ADL	K1111663-003	11/29/11	12/01/11	10ml	10ml	NA	
FRIDEFF AIR 86A	K1111663-004	11/29/11	12/01/11	10ml	10ml	NA	
Method Blank	KWG1112415-4	NA	NA	10ml	10ml	NA	
Lab Control Sample	KWG1112415-3	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

SDG K1110800

SAMPLE CALC	SAMPLE ID MS54S					
IS AREA	DILUTION	COMPOUND OF INTEREST AREA	IS AMOUNT (NG)	PURGE VOLUME (ML)	AVE RRF	CONCENTRATION PPB
731525	25	477164	100	10	0.2660	613.0514

Trichloroethene = 610 ug/L

Quantitation Report

Data File:	J:\MS23\DATA\120711\1207F014.D			**Instrument:**	MS23
Acqu Date:	12/07/2011 18:14	**Quant Date:**	12/08/2011 08:28	**Vial:**	13
Run Type:	DL			**Dilution:**	25.0
Lab ID:	K1111663-003			**Soln Conc. Units:**	PPB

Bottle ID:		**Tier:**	V	**Matrix:**	WATER
Prod Code:	624 Modified VO	**Collect Date:**	11/29/2011	**Receive Date:**	12/01/2011

Analysis Lot:	KWG1112414	**Prep Lot:**	KWG1112415	**Report Group:**	K1111663
Analysis Method:	624	**Prep Method:**	METHOD		
Prep Ref:	1083406	**Prep Date:**	12/07/2011		

Quant Method:	J:\MS23\METHODS\032911624.M	**Calibration ID:**	CAL10403
Title:	Volatile Organic Compounds	**Report List ID:**	LJ13271
Tune Ref:	J:\MS23\DATA\120711\1207F004.D	**Method ID:**	MJ158
MB Ref:	J:\MS23\DATA\120711\1207F011.D	**Quant based on Report List**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	Fluorobenzene	5.75	0.00	96	731525	10.00	OK
2	Chlorobenzene-d5	9.18	0.00	82	292986	10.00	OK
3	1,4-Dichlorobenzene-d4	11.59	0.00	152	223306	10.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	Dibromofluoromethane	4.91	0.01	0.00	113	165799	10.48	105	61-121	OK	NR
1	Toluene-d8	7.60	0.00	0.00	98	714832	10.34	103	72-122	OK	NR
2	4-Bromofluorobenzene	10.42	0.00	0.00	95	207019	8.58	86	70-120	OK	NR

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,1-Dichloroethene				96	0d		9.3	U	NR
1	Methylene Chloride				84	0d		2.8	U	NR
1	trans-1,2-Dichloroethene	3.04		0.00	96	18963	1.04	26	D	NR
1	1,1-Dichloroethane	3.55		0.00	63	2063	0.0600	1.5	JD	NR
1	cis-1,2-Dichloroethene	4.26		0.00	96	44830	2.28	57	D	NR
1	1,1,1-Trichloroethane (TCA)				97	0		1.3	U	NR
1	Trichloroethene (TCE)	6.18		0.00	95	477164	24.55	610	D	
2	Tetrachloroethene (PCE)	8.23		0.00	164	535	0.0400	2.2	U	NR

Prep Amount:	10 ml	**Dilution:**	25.0
Prep Final Vol:	10 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**S. WARINO**	**DATE:**	**JANUARY 11, 2012**
FROM:	**EDWARD SEDLMYER**	**COPIES:**	**DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – SELECT VOCs**
CTO F27C NIROP FRIDLEY
SAMPLE DELIVERY GROUPS (SDGs) – K110838 and K1111019

SAMPLES: 36/Aqueous

MS09D	MS17D	MS49I	QCD04
QCR04	QCT05	MS01PC	MS02PC
MS02S	MS04D	MS04IS	MS04PC
MS05IS	MS06D	MS08D	MS15IS
MS16D	MS16IS	MS19S	MS27S
MS29D	MS31D	MS32D	MS43I
MS43S	MS44S	MS45I	MS45S
MS47D	MS47I	MS47S	MS49S
MS52I	MS52S	PESCW02	QCD08
QCD09	QCR05	QCR06	QCR07
QCT06	QCT05_20111107		

Overview

The sample set for NIROP Fridley, CTO F27C, SDG K1110838 and K1111019 consists of twenty-nine (29) aqueous environmental samples, four (4) rinse blanks (QCR04, QCR05, QCR06, and QCR07), and three (3) trip blanks (QCT05, QCT05_20111107 and QCT06). Three field duplicate pairs were associated with these SDGs: MS49I / QCD04, MS49S / QCD08, and MS45S / QCD09.

All samples were analyzed for select volatile organic compounds (VOCs) including vinyl chloride, 1,1-dichloroethene, trans-1,2-dichloroethene, 1,1-dichloroethane, cis-1,2-dichloroethene, 1,1,1-trichloroethane, trichloroethene and tetrachloroethene. The samples were collected by Bay West on November 4, 7, 8, and 9, 2011 and analyzed by Columbia Analytical Services, Inc. VOC analyses were conducted using SW846 method 8260B.

These data were evaluated based on the following parameters:

* • Data Completeness
* • Holding Times
* • GC/MS Tuning and System Performance
  • Initial and Continuing Calibrations
* • Laboratory Method and Field Quality Control Blank Analyses
* • Surrogate Recoveries
* • Laboratory Control Sample / Laboratory Control Sample Duplicate Results
* • Matrix Spike / Matrix Spike Duplicate Results
* • Field Duplicate Precision
* • Internal Standard Recoveries

* • Compound Identification
* • Detection Limits

* - All quality control criteria were met for this parameter.

VOC

Calibration verification percent difference (%D) exceeded the 20% quality control limit for 1,1,1-trichloroethane on instrument MS04, on 11/14/11, at 11:16. The positive and nondetected 1,1,1-trichloroethane results for samples MS09D, MS17D, MS49I, QCD04, QCR04, QCT05, MS04PC, and MS01PC have been qualified as estimated (J) and (UJ), respectively.

Calibration verification percent difference (%D) exceeded the 20% quality control limit for vinyl chloride on instrument MS04, on 11/17/11, at 11:52. The positive and nondetected vinyl chloride results for samples QCR07 and MS04IS have been qualified as estimated (J) and (UJ), respectively.

Calibration verification %D exceeded the 20% quality control limit for tetrachloroethene on instrument MS13, on 11/16/11, at 104:09. The positive and nondetected tetrachloroethene results for samples MS29D, MS47S, MS08D, MS16IS, MS16D, MS47D, MS52S, MS43I, MS02PC, MS05IS, MS45I, MS15IS, MS43S, and MS45S have been qualified as estimated (J) and (UJ), respectively.

Notes

All results were reported to the method detection limit (MDL) by the laboratory.

Positive results reported below the reporting limit (RL) but above the method detection limit (MDL) for the organic analyses were qualified as estimated, "J".

Sample K1111019-008 (QCR05) sampled on 11/8/11 should actually be QCR06. The Form I has been corrected by the data validator to reflect this change.

Sample K1111019-034 (QCT05) sampled on 11/7/11 was changed to QCT05_20111107 because a previous trip blank was already named QCT05. The Form I has been corrected by the data validator to reflect this change.

Sample K1111019-032 (MS041S) sampled on 11/9/11 should actually be MS04IS. The Form I has been corrected by the data validator to reflect this change.

The surrogate dibromofluoromethane had a percent recovery greater than the quality control limit for sample QCR05. No action was taken on this basis because all results for sample QCR05 were nondetect.

The surrogate 4-bromofluorobenzene had a percent recovery greater than the quality control limit for the laboratory control sample associated with QC batch 1111643. No action was taken on this basis because QC samples are not qualified.

The matrix spike / matrix spike duplicate (MS/MSD) performed on sample MS19S had a percent recovery less than the lower quality control limit for trichloroethene in the MSD. No action was taken on this basis because the MS had an acceptable recovery.

Samples MS04IS, MS27S, MS43S, MS45S, MS49S, QCD08, and QCD09 were diluted due to concentrations greater than the linear range of the instrument for several compounds. The

laboratory submitted multiple runs of the samples. The lowest detection limits were used to report the nondetected compounds.

Executive Summary

Laboratory Performance: Continuing calibration noncompliance for three compounds resulted in the qualification of data.

Other Factors Affecting Data Quality: Positive results reported below the reporting limit (RL) but above the method detection limit (MDL) for the organic analyses were qualified as estimated, (J).

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Organic Review", October 1999, and the Department of Defense (DoD) document entitled "Quality Systems Manual (QSM) for Environmental Laboratories", April 2009.

The text of this report has been formulated to address only those problem areas affecting data quality.

Tetra Tech NUS
Edward Sedlmyer
Chemist/Data Validator

Tetra Tech NUS
Joseph A. Samchuck
Quality Assurance Officer

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = ICP PDS Recovery Noncompliance; MSA's $r < 0.995$
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = RPD between columns/detectors >40% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient $r < 0.995$
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is less than sample activity
Z1 = Tentatively Identified Compound considered presumptively present
Z2 = Tentatively Identified Compound column bleed

PROJ_NO: 02583	NSAMPLE	MS09D			MS17D			MS49I			QCD04		
SDG: K1110838	LAB_ID	K1110838-001			K1110838-004			K1110838-002			K1110838-006		
FRACTION: OV	SAMP_DATE	11/4/2011			11/4/2011			11/4/2011			11/4/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF										MS49I		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.2	J	CP	0.075	UJ	C	0.075	UJ	C	0.075	UJ	C
1,1-DICHLOROETHANE		0.33	J	P	0.28	J	P	0.26	J	P	0.27	J	P
1,1-DICHLOROETHENE		0.12	J	P	0.24	J	P	0.16	J	P	0.15	J	P
CIS-1,2-DICHLOROETHENE		0.65			12			1.7			1.6		
TETRACHLOROETHENE		0.72			0.099	U		2.6			2.6		
TRANS-1,2-DICHLOROETHENE		0.057	U		1.4			0.38	J	P	0.38	J	P
TRICHLOROETHENE		9.9			36			24			25		
VINYL CHLORIDE		0.075	U		0.075	U		0.075	U		0.075	U	

PROJ_NO: 02583	NSAMPLE	QCR04			QCT05		
SDG: K1110838	LAB_ID	K1110838-005			K1110838-003		
FRACTION: OV	SAMP_DATE	11/4/2011			11/4/2011		
MEDIA: WATER	QC_TYPE	NM			NM		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.075	UJ	C	0.075	UJ	C
1,1-DICHLOROETHANE		0.077	U		0.077	U	
1,1-DICHLOROETHENE		0.074	U		0.074	U	
CIS-1,2-DICHLOROETHENE		0.067	U		0.067	U	
TETRACHLOROETHENE		0.099	U		0.099	U	
TRANS-1,2-DICHLOROETHENE		0.057	U		0.057	U	
TRICHLOROETHENE		0.1	U		0.1	U	
VINYL CHLORIDE		0.075	U		0.075	U	

PROJ_NO: 02583	NSAMPLE	MS01PC			MS02PC			MS02S			MS04D		
SDG: K1111019	LAB_ID	K1111019-002			K1111019-010			K1111019-007			K1111019-003		
FRACTION: OV	SAMP_DATE	11/7/2011			11/9/2011			11/8/2011			11/7/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.075	UJ	C	0.075	U		0.075	U		0.075	U	
1,1-DICHLOROETHANE		0.077	U		0.077	U		0.077	U		0.077	U	
1,1-DICHLOROETHENE		0.074	U		0.074	U		0.074	U		0.074	U	
CIS-1,2-DICHLOROETHENE		2.6			0.17	J	P	1.7			2.4		
TETRACHLOROETHENE		0.099	U		13	J	C	0.1	J	P	1.2		
TRANS-1,2-DICHLOROETHENE		0.62			0.057	U		0.26	J	P	0.57		
TRICHLOROETHENE		0.49	J	P	2.1			2.5			1.4		
VINYL CHLORIDE		0.1	J	P	0.075	U		0.075	U		0.075	U	

PROJ_NO: 02583	NSAMPLE	MS04IS			MS04ISDL			MS04PC			MS05IS		
SDG: K1111019	LAB_ID	K1111019-032			K1111019-032DL			K1111019-001			K1111019-011		
FRACTION: OV	SAMP_DATE	11/9/2011			11/9/2011			11/7/2011			11/9/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.075	U					0.075	UJ	C	0.075	U	
1,1-DICHLOROETHANE		0.38	J	P				0.077	U		0.077	U	
1,1-DICHLOROETHENE		0.73						0.074	U		0.074	U	
CIS-1,2-DICHLOROETHENE		40						3.3			0.41	J	P
TETRACHLOROETHENE		0.099	U					1.5			0.14	J	CP
TRANS-1,2-DICHLOROETHENE		4.9						0.82			0.057	U	
TRICHLOROETHENE					250			0.62			2.8		
VINYL CHLORIDE		0.1	J	CP				0.1	J	P	0.075	U	

PROJ_NO: 02583	NSAMPLE	MS06D			MS08D			MS15IS			MS16D		
SDG: K1111019	LAB_ID	K1111019-005			K1111019-016			K1111019-033			K1111019-022		
FRACTION: OV	SAMP_DATE	11/8/2011			11/8/2011			11/9/2011			11/7/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.075	U		0.075	U		0.075	U		0.075	U	
1,1-DICHLOROETHANE		0.077	U		0.077	U		0.25	J	P	0.22	J	P
1,1-DICHLOROETHENE		0.074	U		0.12	J	P	0.18	J	P	0.18	J	P
CIS-1,2-DICHLOROETHENE		2.4			4.8			2.1			4.3		
TETRACHLOROETHENE		0.51			3.7	J	C	2.9	J	C	4	J	C
TRANS-1,2-DICHLOROETHENE		0.52			0.56			0.38	J	P	0.48	J	P
TRICHLOROETHENE		5.9			43			21			24		
VINYL CHLORIDE		0.08	J	P	0.075	U		0.075	U		0.075	U	

PROJ_NO: 02583	NSAMPLE	MS16IS			MS19S			MS27S			MS27SDL		
SDG: K1111019	LAB_ID	K1111019-021			K1111019-025			K1111019-013			K1111019-013DL		
FRACTION: OV	SAMP_DATE	11/7/2011			11/7/2011			11/8/2011			11/8/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.075	U		0.24	J	P	0.075	U				
1,1-DICHLOROETHANE		0.18	J	P	0.74			2.2					
1,1-DICHLOROETHENE		0.21	J	P	0.19	J	P	0.83					
CIS-1,2-DICHLOROETHENE		15			3.8						120		
TETRACHLOROETHENE		1	J	C	0.93			0.099	U				
TRANS-1,2-DICHLOROETHENE		0.59			0.42	J	P	5.7					
TRICHLOROETHENE		26			38			54					
VINYL CHLORIDE		0.075	U		0.075	U		0.14	J	P			

PROJ_NO: 02583	NSAMPLE	MS29D			MS31D			MS32D			MS43I		
SDG: K1111019	LAB_ID	K1111019-009			K1111019-004			K1111019-006			K1111019-026		
FRACTION: OV	SAMP_DATE	11/9/2011			11/8/2011			11/8/2011			11/7/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			100.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.075	U		0.075	U		0.075	U		0.075	U	
1,1-DICHLOROETHANE		0.077	U		0.077	U		0.077	U		0.55		
1,1-DICHLOROETHENE		0.074	U		0.074	U		0.074	U		0.23	J	P
CIS-1,2-DICHLOROETHENE		2.5			1.6			4.7			15		
TETRACHLOROETHENE		0.96	J	C	1.7			0.79			0.099	UJ	C
TRANS-1,2-DICHLOROETHENE		0.6			0.26	J	P	1.6			0.77		
TRICHLOROETHENE		0.72			1.1			4.7			22		
VINYL CHLORIDE		0.075	U		0.075	U		0.11	J	P	0.075	U	

PROJ_NO: 02583	NSAMPLE	MS43S			MS43SDL			MS44S			MS45I		
SDG: K1111019	LAB_ID	K1111019-029			K1111019-029DL			K1111019-019			K1111019-028		
FRACTION: OV	SAMP_DATE	11/9/2011			11/9/2011			11/7/2011			11/9/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.075	U					0.075	U		0.075	U	
1,1-DICHLOROETHANE		1.3						0.19	J	P	0.09	J	P
1,1-DICHLOROETHENE		0.43	J	P				0.08	J	P	0.16	J	P
CIS-1,2-DICHLOROETHENE		36						9.3			11		
TETRACHLOROETHENE		0.099	UJ	C				0.099	U		1.9	J	C
TRANS-1,2-DICHLOROETHENE		2.7						0.85			0.52		
TRICHLOROETHENE					140			17			46		
VINYL CHLORIDE		0.08	J	P				0.075	U		0.075	U	

PROJ_NO: 02583	NSAMPLE	MS45S			MS45SDL			MS47D			MS47I		
SDG: K1111019	LAB_ID	K1111019-030			K1111019-030DL			K1111019-023			K1111019-014		
FRACTION: OV	SAMP_DATE	11/9/2011			11/9/2011			11/7/2011			11/8/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.075	U					0.075	U		0.075	U	
1,1-DICHLOROETHANE		1.5						0.25	J	P	0.32	J	P
1,1-DICHLOROETHENE		1.6						0.16	J	P	0.3	J	P
CIS-1,2-DICHLOROETHENE					180			2.3			16		
TETRACHLOROETHENE		0.099	UJ	C				6.6	J	C	1.9		
TRANS-1,2-DICHLOROETHENE		26						0.52			1.3		
TRICHLOROETHENE					230			29			51		
VINYL CHLORIDE		0.14	J	P				0.075	U		0.075	U	

PROJ_NO: 02583	NSAMPLE	MS47S			MS49S			MS49SDL			MS52I		
SDG: K1111019	LAB_ID	K1111019-012			K1111019-015			K1111019-015DL			K1111019-018		
FRACTION: OV	SAMP_DATE	11/8/2011			11/8/2011			11/8/2011			11/7/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.075	U		0.075	U					0.14	J	P
1,1-DICHLOROETHANE		0.12	J	P	1.2						0.32	J	P
1,1-DICHLOROETHENE		0.074	U		0.37	J	P				0.15	J	P
CIS-1,2-DICHLOROETHENE		7.3			38						3.2		
TETRACHLOROETHENE		0.28	J	CP	0.16	J	P				1.1		
TRANS-1,2-DICHLOROETHENE		0.69			8.1						0.54		
TRICHLOROETHENE		18						160			16		
VINYL CHLORIDE		0.075	U		0.075	U					0.075	U	

PROJ_NO: 02583	NSAMPLE	MS52S			PESCW02			QCD08			QCD08DL		
SDG: K1111019	LAB_ID	K1111019-024			K1111019-020			K1111019-036			K1111019-036DL		
FRACTION: OV	SAMP_DATE	11/7/2011			11/7/2011			11/8/2011			11/8/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF							MS49S			MS49S		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.075	U		0.075	U		0.075	U				
1,1-DICHLOROETHANE		0.077	U		0.077	U		1.1					
1,1-DICHLOROETHENE		0.074	U		0.074	U		0.36	J	P			
CIS-1,2-DICHLOROETHENE		0.29	J	P	3.8			37					
TETRACHLOROETHENE		0.76	J	C	0.29	J	P	0.15	J	P			
TRANS-1,2-DICHLOROETHENE		0.06	J	P	0.32	J	P	7.8					
TRICHLOROETHENE		8.4			17						160		
VINYL CHLORIDE		0.075	U		0.075	U		0.075	U				

PROJ_NO: 02583	NSAMPLE	QCD09			QCD09DL			QCR05			QCR06		
SDG: K1111019	LAB_ID	K1111019-031			K1111019-031DL			K1111019-027			K1111019-008		
FRACTION: OV	SAMP_DATE	11/9/2011			11/9/2011			11/7/2011			11/8/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF	MS45S			MS45S								
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.075	U					0.075	U		0.075	U	
1,1-DICHLOROETHANE		1.5						0.077	U		0.077	U	
1,1-DICHLOROETHENE		1.7						0.074	U		0.074	U	
CIS-1,2-DICHLOROETHENE					200			0.067	U		0.067	U	
TETRACHLOROETHENE		0.099	U					0.099	U		0.099	U	
TRANS-1,2-DICHLOROETHENE		26						0.057	U		0.057	U	
TRICHLOROETHENE					270			0.1	U		0.1	U	
VINYL CHLORIDE		0.13	J	P				0.075	U		0.075	U	

PROJ_NO: 02583	NSAMPLE	QCR07			QCT05_20111107			QCT06		
SDG: K1111019	LAB_ID	K1111019-035			K1111019-034			K1111019-017		
FRACTION: OV	SAMP_DATE	11/9/2011			11/7/2011			11/7/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0		
	DUP_OF									
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.075	U		0.075	U		0.075	U	
1,1-DICHLOROETHANE		0.077	U		0.077	U		0.077	U	
1,1-DICHLOROETHENE		0.074	U		0.074	U		0.074	U	
CIS-1,2-DICHLOROETHENE		0.067	U		0.067	U		0.067	U	
TETRACHLOROETHENE		0.099	U		0.099	U		0.099	U	
TRANS-1,2-DICHLOROETHENE		0.057	U		0.057	U		0.057	U	
TRICHLOROETHENE		0.1	U		0.1	U		0.1	U	
VINYL CHLORIDE		0.075	UJ	C	0.075	U		0.075	U	

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1110838
Project:	NIROP/J070047	**Date Collected:**	11/04/2011
Sample Matrix:	Water	**Date Received:**	11/05/2011
		Date Extracted:	11/14/2011
		Date Analyzed:	11/14/2011

Volatile Organic Compounds

Sample Name:	MS09D	**Units:**	ug/L
Lab Code:	K1110838-001	**Basis:**	NA
File ID:	J:\MS04\DATA\111411\1114F018.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111595
Analysis Method:	8260C	**Calibration ID:**	CAL11002

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.12**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.33**	J	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**0.65**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	**0.20**	J	0.50	0.075	*
79-01-6	Trichloroethene (TCE)	**9.9**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**0.72**		0.50	0.099	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	118	73-122	11/14/11	Acceptable
Toluene-d8	116	65-144	11/14/11	Acceptable
4-Bromofluorobenzene	105	68-117	11/14/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1110838
Project:	NIROP/J070047	**Date Collected:**	11/04/2011
Sample Matrix:	Water	**Date Received:**	11/05/2011
		Date Extracted:	11/14/2011
		Date Analyzed:	11/14/2011

Volatile Organic Compounds

Sample Name:	MS17D	**Units:**	ug/L
Lab Code:	K1110838-004	**Basis:**	NA
File ID:	J:\MS04\DATA\111411\1114F019.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111595
Analysis Method:	8260C	**Calibration ID:**	CAL11002

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.24**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**1.4**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.28**	J	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**12**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**36**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	118	73-122	11/14/11	Acceptable
Toluene-d8	117	65-144	11/14/11	Acceptable
4-Bromofluorobenzene	102	68-117	11/14/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1110838
Project:	NIROP/J070047	**Date Collected:**	11/04/2011
Sample Matrix:	Water	**Date Received:**	11/05/2011
		Date Extracted:	11/14/2011
		Date Analyzed:	11/14/2011

Volatile Organic Compounds

Sample Name:	MS49I	**Units:**	ug/L
Lab Code:	K1110838-002	**Basis:**	NA
File ID:	J:\MS04\DATA\111411\1114F012.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111595
Analysis Method:	8260C	**Calibration ID:**	CAL11002

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.16**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.38**	J	0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.26**	J	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**1.7**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**24**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**2.6**		0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	112	73-122	11/14/11	Acceptable
Toluene-d8	118	65-144	11/14/11	Acceptable
4-Bromofluorobenzene	107	68-117	11/14/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1110838
Project:	NIROP/J070047	**Date Collected:**	11/04/2011
Sample Matrix:	Water	**Date Received:**	11/05/2011
		Date Extracted:	11/14/2011
		Date Analyzed:	11/14/2011

Volatile Organic Compounds

Sample Name:	QCD04	**Units:**	ug/L
Lab Code:	K1110838-006	**Basis:**	NA
File ID:	J:\MS04\DATA\111411\1114F021.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111595
Analysis Method:	8260C	**Calibration ID:**	CAL11002

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.15**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.38**	J	0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.27**	J	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**1.6**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**25**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**2.6**		0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	119	73-122	11/14/11	Acceptable
Toluene-d8	117	65-144	11/14/11	Acceptable
4-Bromofluorobenzene	105	68-117	11/14/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1110838
Project:	NIROP/J070047	**Date Collected:**	11/04/2011
Sample Matrix:	Water	**Date Received:**	11/05/2011
		Date Extracted:	11/14/2011
		Date Analyzed:	11/14/2011

Volatile Organic Compounds

Sample Name:	QCR04	**Units:**	ug/L
Lab Code:	K1110838-005	**Basis:**	NA
File ID:	J:\MS04\DATA\111411\1114F020.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111595
Analysis Method:	8260C	**Calibration ID:**	CAL11002

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	120	73-122	11/14/11	Acceptable
Toluene-d8	117	65-144	11/14/11	Acceptable
4-Bromofluorobenzene	106	68-117	11/14/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1110838
Project:	NIROP/J070047	**Date Collected:**	11/04/2011
Sample Matrix:	Water	**Date Received:**	11/05/2011
		Date Extracted:	11/14/2011
		Date Analyzed:	11/14/2011

Volatile Organic Compounds

Sample Name:	QCT05	**Units:**	ug/L
Lab Code:	K1110838-003	**Basis:**	NA
File ID:	J:\MS04\DATA\111411\1114F011.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111595
Analysis Method:	8260C	**Calibration ID:**	CAL11002

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	110	73-122	11/14/11	Acceptable
Toluene-d8	117	65-144	11/14/11	Acceptable
4-Bromofluorobenzene	107	68-117	11/14/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Collected:**	11/07/2011
Sample Matrix:	Water	**Date Received:**	11/10/2011
		Date Extracted:	11/14/2011
		Date Analyzed:	11/14/2011

Volatile Organic Compounds

Sample Name:	MS01PC	**Units:**	ug/L
Lab Code:	K1111019-002	**Basis:**	NA
File ID:	J:\MS04\DATA\111411\1114F023.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111595
Analysis Method:	8260C	**Calibration ID:**	CAL11002

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.10**	J	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.62**		0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**2.6**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**0.49**	J	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	121	73-122	11/14/11	Acceptable
Toluene-d8	116	65-144	11/14/11	Acceptable
4-Bromofluorobenzene	101	68-117	11/14/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Collected:**	11/09/2011
Sample Matrix:	Water	**Date Received:**	11/10/2011
		Date Extracted:	11/16/2011
		Date Analyzed:	11/16/2011

Volatile Organic Compounds

Sample Name:	MS02PC	**Units:**	ug/L
Lab Code:	K1111019-010	**Basis:**	NA
File ID:	J:\MS13\DATA\111611\1116F019.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111676
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**0.17**	J	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**2.1**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**13**		0.50	0.099	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	108	73-122	11/16/11	Acceptable
Toluene-d8	121	65-144	11/16/11	Acceptable
4-Bromofluorobenzene	108	68-117	11/16/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Collected:**	11/08/2011
Sample Matrix:	Water	**Date Received:**	11/10/2011
		Date Extracted:	11/15/2011
		Date Analyzed:	11/15/2011

Volatile Organic Compounds

Sample Name:	MS02S	**Units:**	ug/L
Lab Code:	K1111019-007	**Basis:**	NA
File ID:	J:\MS04\DATA\111511\1115F015.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111643
Analysis Method:	8260C	**Calibration ID:**	CAL11002

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.26**	J	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**1.7**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**2.5**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**0.10**	J	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	122	73-122	11/15/11	Acceptable
Toluene-d8	119	65-144	11/15/11	Acceptable
4-Bromofluorobenzene	104	68-117	11/15/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Collected:**	11/07/2011
Sample Matrix:	Water	**Date Received:**	11/10/2011
		Date Extracted:	11/14/2011
		Date Analyzed:	11/14/2011

Volatile Organic Compounds

Sample Name:	MS04D	**Units:**	ug/L
Lab Code:	K1111019-003	**Basis:**	NA
File ID:	J:\MS13\DATA\111411\1114F020.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111607
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.57**		0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**2.4**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**1.4**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**1.2**		0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	107	73-122	11/14/11	Acceptable
Toluene-d8	120	65-144	11/14/11	Acceptable
4-Bromofluorobenzene	107	68-117	11/14/11	Acceptable

Comments

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Collected:**	11/09/2011
Sample Matrix:	Water	**Date Received:**	11/10/2011
		Date Extracted:	11/17/2011
		Date Analyzed:	11/17/2011

EWS 11/12/12

Volatile Organic Compounds

Sample Name:	MS04~~/~~S I	**Units:**	ug/L
Lab Code:	K1111019-032	**Basis:**	NA
File ID:	J:\MS04\DATA\111711\1117F019.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111741
Analysis Method:	8260C	**Calibration ID:**	CAL11002

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.10**	J	0.20	0.075	*
75-35-4	1,1-Dichloroethene	**0.73**		0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**4.9**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.38**	J	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**40**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**300**	E	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	121	73-122	11/17/11	Acceptable
Toluene-d8	118	65-144	11/17/11	Acceptable
4-Bromofluorobenzene	103	68-117	11/17/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Collected:**	11/09/2011
Sample Matrix:	Water	**Date Received:**	11/10/2011
		Date Extracted:	11/17/2011
		Date Analyzed:	11/17/2011

EWS 1/12/12

Volatile Organic Compounds

Sample Name:	MS04~~X~~I SDL	**Units:**	ug/L
Lab Code:	K1111019-032	**Basis:**	NA
File ID:	J:\MS04\DATA\111711\1117F013.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111741
Analysis Method:	8260C	**Calibration ID:**	CAL11002

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 10

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.75	U	2.0	0.75	*
75-35-4	1,1-Dichloroethene	0.74	U	5.0	0.74	
156-60-5	trans-1,2-Dichloroethene	**4.4**	JD	5.0	0.57	
75-34-3	1,1-Dichloroethane	0.77	U	5.0	0.77	
156-59-2	cis-1,2-Dichloroethene	**34**	D	5.0	0.67	
71-55-6	1,1,1-Trichloroethane (TCA)	0.75	U	5.0	0.75	
79-01-6	Trichloroethene (TCE)	**250**	D	5.0	1.0	
127-18-4	Tetrachloroethene (PCE)	0.99	U	5.0	0.99	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	113	73-122	11/17/11	Acceptable
Toluene-d8	117	65-144	11/17/11	Acceptable
4-Bromofluorobenzene	106	68-117	11/17/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Collected:**	11/07/2011
Sample Matrix:	Water	**Date Received:**	11/10/2011
		Date Extracted:	11/14/2011
		Date Analyzed:	11/14/2011

Volatile Organic Compounds

Sample Name:	MS04PC	**Units:**	ug/L
Lab Code:	K1111019-001	**Basis:**	NA
File ID:	J:\MS04\DATA\111411\1114F022.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111595
Analysis Method:	8260C	**Calibration ID:**	CAL11002

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.10**	J	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.82**		0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**3.3**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**0.62**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**1.5**		0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	119	73-122	11/14/11	Acceptable
Toluene-d8	115	65-144	11/14/11	Acceptable
4-Bromofluorobenzene	104	68-117	11/14/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Collected:**	11/09/2011
Sample Matrix:	Water	**Date Received:**	11/10/2011
		Date Extracted:	11/16/2011
		Date Analyzed:	11/16/2011

Volatile Organic Compounds

Sample Name:	MS05IS	**Units:**	ug/L
Lab Code:	K1111019-011	**Basis:**	NA
File ID:	J:\MS13\DATA\111611\1116F020.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111676
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**0.41**	J	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**2.8**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**0.14**	J	0.50	0.099	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	106	73-122	11/16/11	Acceptable
Toluene-d8	121	65-144	11/16/11	Acceptable
4-Bromofluorobenzene	109	68-117	11/16/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Collected:**	11/08/2011
Sample Matrix:	Water	**Date Received:**	11/10/2011
		Date Extracted:	11/15/2011
		Date Analyzed:	11/15/2011

Volatile Organic Compounds

Sample Name:	MS06D	**Units:**	ug/L
Lab Code:	K1111019-005	**Basis:**	NA
File ID:	J:\MS04\DATA\111511\1115F013.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111643
Analysis Method:	8260C	**Calibration ID:**	CAL11002

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.080**	J	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.52**		0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**2.4**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**5.9**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**0.51**		0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	117	73-122	11/15/11	Acceptable
Toluene-d8	117	65-144	11/15/11	Acceptable
4-Bromofluorobenzene	106	68-117	11/15/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Collected:**	11/08/2011
Sample Matrix:	Water	**Date Received:**	11/10/2011
		Date Extracted:	11/16/2011
		Date Analyzed:	11/16/2011

Volatile Organic Compounds

Sample Name:	MS08D	**Units:**	ug/L
Lab Code:	K1111019-016	**Basis:**	NA
File ID:	J:\MS13\DATA\111611\1116F013.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111676
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.12**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.56**		0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**4.8**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**43**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**3.7**		0.50	0.099	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	107	73-122	11/16/11	Acceptable
Toluene-d8	122	65-144	11/16/11	Acceptable
4-Bromofluorobenzene	111	68-117	11/16/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Collected:**	11/09/2011
Sample Matrix:	Water	**Date Received:**	11/10/2011
		Date Extracted:	11/16/2011
		Date Analyzed:	11/16/2011

Volatile Organic Compounds

Sample Name:	MS15IS	**Units:**	ug/L
Lab Code:	K1111019-033	**Basis:**	NA
File ID:	J:\MS13\DATA\111611\1116F022.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111676
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.18**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.38**	J	0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.25**	J	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**2.1**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**21**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**2.9**		0.50	0.099	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	109	73-122	11/16/11	Acceptable
Toluene-d8	122	65-144	11/16/11	Acceptable
4-Bromofluorobenzene	107	68-117	11/16/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Collected:**	11/07/2011
Sample Matrix:	Water	**Date Received:**	11/10/2011
		Date Extracted:	11/16/2011
		Date Analyzed:	11/16/2011

Volatile Organic Compounds

Sample Name:	MS16D	**Units:**	ug/L
Lab Code:	K1111019-022	**Basis:**	NA
File ID:	J:\MS13\DATA\111611\1116F015.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111676
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.18**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.48**	J	0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.22**	J	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**4.3**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**24**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**4.0**		0.50	0.099	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	106	73-122	11/16/11	Acceptable
Toluene-d8	123	65-144	11/16/11	Acceptable
4-Bromofluorobenzene	110	68-117	11/16/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Collected:**	11/07/2011
Sample Matrix:	Water	**Date Received:**	11/10/2011
		Date Extracted:	11/16/2011
		Date Analyzed:	11/16/2011

Volatile Organic Compounds

Sample Name:	MS16IS	**Units:**	ug/L
Lab Code:	K1111019-021	**Basis:**	NA
File ID:	J:\MS13\DATA\111611\1116F014.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111676
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.21**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.59**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.18**	J	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**15**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**26**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**1.0**		0.50	0.099	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	108	73-122	11/16/11	Acceptable
Toluene-d8	123	65-144	11/16/11	Acceptable
4-Bromofluorobenzene	111	68-117	11/16/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Collected:**	11/07/2011
Sample Matrix:	Water	**Date Received:**	11/10/2011
		Date Extracted:	11/15/2011
		Date Analyzed:	11/15/2011

Volatile Organic Compounds

Sample Name:	MS19S	**Units:**	ug/L
Lab Code:	K1111019-025	**Basis:**	NA
File ID:	J:\MS13\DATA\111511\1115F014.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111649
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.19**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.42**	J	0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.74**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**3.8**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	**0.24**	J	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**38**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**0.93**		0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	109	73-122	11/15/11	Acceptable
Toluene-d8	122	65-144	11/15/11	Acceptable
4-Bromofluorobenzene	110	68-117	11/15/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Collected:**	11/08/2011
Sample Matrix:	Water	**Date Received:**	11/10/2011
		Date Extracted:	11/15/2011
		Date Analyzed:	11/15/2011

Volatile Organic Compounds

Sample Name:	MS27S	**Units:**	ug/L
Lab Code:	K1111019-013	**Basis:**	NA
File ID:	J:\MS13\DATA\111511\1115F023.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111649
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.14**	J	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.83**		0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**5.7**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**2.2**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**130**	E	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**54**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	107	73-122	11/15/11	Acceptable
Toluene-d8	121	65-144	11/15/11	Acceptable
4-Bromofluorobenzene	110	68-117	11/15/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Collected:**	11/08/2011
Sample Matrix:	Water	**Date Received:**	11/10/2011
		Date Extracted:	11/15/2011
		Date Analyzed:	11/15/2011

Volatile Organic Compounds

Sample Name:	MS27SDL	**Units:**	ug/L
Lab Code:	K1111019-013	**Basis:**	NA
File ID:	J:\MS13\DATA\111511\1115F020.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111649
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 5

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.38	U	1.0	0.38	
75-35-4	1,1-Dichloroethene	**0.85**	JD	2.5	0.37	
156-60-5	trans-1,2-Dichloroethene	**5.0**	D	2.5	0.29	
75-34-3	1,1-Dichloroethane	**2.1**	JD	2.5	0.39	
156-59-2	cis-1,2-Dichloroethene	**120**	D	2.5	0.34	
71-55-6	1,1,1-Trichloroethane (TCA)	0.38	U	2.5	0.38	
79-01-6	Trichloroethene (TCE)	**49**	D	2.5	0.50	
127-18-4	Tetrachloroethene (PCE)	0.50	U	2.5	0.50	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	105	73-122	11/15/11	Acceptable
Toluene-d8	121	65-144	11/15/11	Acceptable
4-Bromofluorobenzene	109	68-117	11/15/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Collected:**	11/09/2011
Sample Matrix:	Water	**Date Received:**	11/10/2011
		Date Extracted:	11/16/2011
		Date Analyzed:	11/16/2011

Volatile Organic Compounds

Sample Name:	MS29D	**Units:**	ug/L
Lab Code:	K1111019-009	**Basis:**	NA
File ID:	J:\MS13\DATA\111611\1116F011.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111676
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.60**		0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**2.5**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**0.72**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**0.96**		0.50	0.099	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	106	73-122	11/16/11	Acceptable
Toluene-d8	122	65-144	11/16/11	Acceptable
4-Bromofluorobenzene	111	68-117	11/16/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Collected:**	11/08/2011
Sample Matrix:	Water	**Date Received:**	11/10/2011
		Date Extracted:	11/15/2011
		Date Analyzed:	11/15/2011

Volatile Organic Compounds

Sample Name:	MS31D	**Units:**	ug/L
Lab Code:	K1111019-004	**Basis:**	NA
File ID:	J:\MS04\DATA\111511\1115F011.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111643
Analysis Method:	8260C	**Calibration ID:**	CAL11002

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.26**	J	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**1.6**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**1.1**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**1.7**		0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	115	73-122	11/15/11	Acceptable
Toluene-d8	117	65-144	11/15/11	Acceptable
4-Bromofluorobenzene	107	68-117	11/15/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Collected:**	11/08/2011
Sample Matrix:	Water	**Date Received:**	11/10/2011
		Date Extracted:	11/15/2011
		Date Analyzed:	11/15/2011

Volatile Organic Compounds

Sample Name:	MS32D	**Units:**	ug/L
Lab Code:	K1111019-006	**Basis:**	NA
File ID:	J:\MS04\DATA\111511\1115F014.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111643
Analysis Method:	8260C	**Calibration ID:**	CAL11002

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.11**	J	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**1.6**		0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**4.7**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**4.7**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**0.79**		0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	119	73-122	11/15/11	Acceptable
Toluene-d8	118	65-144	11/15/11	Acceptable
4-Bromofluorobenzene	105	68-117	11/15/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Collected:**	11/07/2011
Sample Matrix:	Water	**Date Received:**	11/10/2011
		Date Extracted:	11/16/2011
		Date Analyzed:	11/16/2011

Volatile Organic Compounds

Sample Name:	MS43I	**Units:**	ug/L
Lab Code:	K1111019-026	**Basis:**	NA
File ID:	J:\MS13\DATA\111611\1116F018.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111676
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.23**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.77**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.55**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**15**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**22**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	109	73-122	11/16/11	Acceptable
Toluene-d8	122	65-144	11/16/11	Acceptable
4-Bromofluorobenzene	111	68-117	11/16/11	Acceptable

Comments

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Collected:**	11/09/2011
Sample Matrix:	Water	**Date Received:**	11/10/2011
		Date Extracted:	11/16/2011
		Date Analyzed:	11/16/2011

Volatile Organic Compounds

Sample Name:	MS43S	**Units:**	ug/L
Lab Code:	K1111019-029	**Basis:**	NA
File ID:	J:\MS13\DATA\111611\1116F025.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111676
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.080**	J	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.43**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**2.7**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**1.3**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**36**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**150**	E	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	105	73-122	11/16/11	Acceptable
Toluene-d8	120	65-144	11/16/11	Acceptable
4-Bromofluorobenzene	108	68-117	11/16/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Collected:**	11/09/2011
Sample Matrix:	Water	**Date Received:**	11/10/2011
		Date Extracted:	11/16/2011
		Date Analyzed:	11/16/2011

Volatile Organic Compounds

Sample Name:	MS43SDL	**Units:**	ug/L
Lab Code:	K1111019-029	**Basis:**	NA
File ID:	J:\MS13\DATA\111611\1116F023.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111676
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 5

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.38	U	1.0	0.38	
75-35-4	1,1-Dichloroethene	0.37	U	2.5	0.37	
156-60-5	trans-1,2-Dichloroethene	**2.4**	JD	2.5	0.29	
75-34-3	1,1-Dichloroethane	**1.2**	JD	2.5	0.39	
156-59-2	cis-1,2-Dichloroethene	**34**	D	2.5	0.34	
71-55-6	1,1,1-Trichloroethane (TCA)	0.38	U	2.5	0.38	
79-01-6	Trichloroethene (TCE)	**140**	D	2.5	0.50	
127-18-4	Tetrachloroethene (PCE)	0.50	U	2.5	0.50	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	107	73-122	11/16/11	Acceptable
Toluene-d8	123	65-144	11/16/11	Acceptable
4-Bromofluorobenzene	110	68-117	11/16/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Collected:**	11/07/2011
Sample Matrix:	Water	**Date Received:**	11/10/2011
		Date Extracted:	11/14/2011
		Date Analyzed:	11/14/2011

Volatile Organic Compounds

Sample Name:	MS44S	**Units:**	ug/L
Lab Code:	K1111019-019	**Basis:**	NA
File ID:	J:\MS13\DATA\111411\1114F022.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111607
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.080**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.85**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.19**	J	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**9.3**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**17**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	107	73-122	11/14/11	Acceptable
Toluene-d8	120	65-144	11/14/11	Acceptable
4-Bromofluorobenzene	109	68-117	11/14/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Collected:**	11/09/2011
Sample Matrix:	Water	**Date Received:**	11/10/2011
		Date Extracted:	11/16/2011
		Date Analyzed:	11/16/2011

Volatile Organic Compounds

Sample Name:	MS45I	**Units:**	ug/L
Lab Code:	K1111019-028	**Basis:**	NA
File ID:	J:\MS13\DATA\111611\1116F021.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111676
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.16**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.52**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.090**	J	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**11**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**46**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**1.9**		0.50	0.099	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	107	73-122	11/16/11	Acceptable
Toluene-d8	121	65-144	11/16/11	Acceptable
4-Bromofluorobenzene	112	68-117	11/16/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Collected:**	11/09/2011
Sample Matrix:	Water	**Date Received:**	11/10/2011
		Date Extracted:	11/16/2011
		Date Analyzed:	11/16/2011

Volatile Organic Compounds

Sample Name:	MS45S	**Units:**	ug/L
Lab Code:	K1111019-030	**Basis:**	NA
File ID:	J:\MS13\DATA\111611\1116F026.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111676
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.14**	J	0.20	0.075	
75-35-4	1,1-Dichloroethene	**1.6**		0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**26**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**1.5**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**200**	E	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**250**	E	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	108	73-122	11/16/11	Acceptable
Toluene-d8	122	65-144	11/16/11	Acceptable
4-Bromofluorobenzene	111	68-117	11/16/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Collected:**	11/09/2011
Sample Matrix:	Water	**Date Received:**	11/10/2011
		Date Extracted:	11/16/2011
		Date Analyzed:	11/16/2011

Volatile Organic Compounds

Sample Name:	MS45SDL	**Units:**	ug/L
Lab Code:	K1111019-030	**Basis:**	NA
File ID:	J:\MS13\DATA\111611\1116F024.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111676
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 5

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.38	U	1.0	0.38	
75-35-4	1,1-Dichloroethene	**1.5**	JD	2.5	0.37	
156-60-5	trans-1,2-Dichloroethene	**24**	D	2.5	0.29	
75-34-3	1,1-Dichloroethane	**1.4**	JD	2.5	0.39	
156-59-2	cis-1,2-Dichloroethene	**180**	D	2.5	0.34	
71-55-6	1,1,1-Trichloroethane (TCA)	0.38	U	2.5	0.38	
79-01-6	Trichloroethene (TCE)	**230**	D	2.5	0.50	
127-18-4	Tetrachloroethene (PCE)	0.50	U	2.5	0.50	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	107	73-122	11/16/11	Acceptable
Toluene-d8	122	65-144	11/16/11	Acceptable
4-Bromofluorobenzene	109	68-117	11/16/11	Acceptable

Comments

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Collected:**	11/07/2011
Sample Matrix:	Water	**Date Received:**	11/10/2011
		Date Extracted:	11/16/2011
		Date Analyzed:	11/16/2011

Volatile Organic Compounds

Sample Name:	MS47D	**Units:**	ug/L
Lab Code:	K1111019-023	**Basis:**	NA
File ID:	J:\MS13\DATA\111611\1116F016.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111676
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.16**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.52**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.25**	J	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**2.3**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**29**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**6.6**		0.50	0.099	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	108	73-122	11/16/11	Acceptable
Toluene-d8	122	65-144	11/16/11	Acceptable
4-Bromofluorobenzene	109	68-117	11/16/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Collected:**	11/08/2011
Sample Matrix:	Water	**Date Received:**	11/10/2011
		Date Extracted:	11/15/2011
		Date Analyzed:	11/15/2011

Volatile Organic Compounds

Sample Name:	MS47I	**Units:**	ug/L
Lab Code:	K1111019-014	**Basis:**	NA
File ID:	J:\MS13\DATA\111511\1115F019.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111649
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.30**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**1.3**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.32**	J	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**16**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**51**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**1.9**		0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	106	73-122	11/15/11	Acceptable
Toluene-d8	121	65-144	11/15/11	Acceptable
4-Bromofluorobenzene	108	68-117	11/15/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Collected:**	11/08/2011
Sample Matrix:	Water	**Date Received:**	11/10/2011
		Date Extracted:	11/16/2011
		Date Analyzed:	11/16/2011

Volatile Organic Compounds

Sample Name:	MS47S	**Units:**	ug/L
Lab Code:	K1111019-012	**Basis:**	NA
File ID:	J:\MS13\DATA\111611\1116F012.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111676
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.69**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.12**	J	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**7.3**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**18**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**0.28**	J	0.50	0.099	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	108	73-122	11/16/11	Acceptable
Toluene-d8	121	65-144	11/16/11	Acceptable
4-Bromofluorobenzene	112	68-117	11/16/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Collected:**	11/08/2011
Sample Matrix:	Water	**Date Received:**	11/10/2011
		Date Extracted:	11/15/2011
		Date Analyzed:	11/15/2011

Volatile Organic Compounds

Sample Name:	MS49S	**Units:**	ug/L
Lab Code:	K1111019-015	**Basis:**	NA
File ID:	J:\MS13\DATA\111511\1115F024.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111649
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.37**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**8.1**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**1.2**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**38**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**180**	E	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**0.16**	J	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	108	73-122	11/15/11	Acceptable
Toluene-d8	122	65-144	11/15/11	Acceptable
4-Bromofluorobenzene	109	68-117	11/15/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Collected:**	11/08/2011
Sample Matrix:	Water	**Date Received:**	11/10/2011
		Date Extracted:	11/15/2011
		Date Analyzed:	11/15/2011

Volatile Organic Compounds

Sample Name:	MS49SDL	**Units:**	ug/L
Lab Code:	K1111019-015	**Basis:**	NA
File ID:	J:\MS13\DATA\111511\1115F021.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111649
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 5

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.38	U	1.0	0.38	
75-35-4	1,1-Dichloroethene	0.37	U	2.5	0.37	
156-60-5	trans-1,2-Dichloroethene	**7.3**	D	2.5	0.29	
75-34-3	1,1-Dichloroethane	**1.0**	JD	2.5	0.39	
156-59-2	cis-1,2-Dichloroethene	**35**	D	2.5	0.34	
71-55-6	1,1,1-Trichloroethane (TCA)	0.38	U	2.5	0.38	
79-01-6	Trichloroethene (TCE)	**160**	D	2.5	0.50	
127-18-4	Tetrachloroethene (PCE)	0.50	U	2.5	0.50	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	106	73-122	11/15/11	Acceptable
Toluene-d8	122	65-144	11/15/11	Acceptable
4-Bromofluorobenzene	110	68-117	11/15/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Collected:**	11/07/2011
Sample Matrix:	Water	**Date Received:**	11/10/2011
		Date Extracted:	11/14/2011
		Date Analyzed:	11/14/2011

Volatile Organic Compounds

Sample Name:	MS52I	**Units:**	ug/L
Lab Code:	K1111019-018	**Basis:**	NA
File ID:	J:\MS13\DATA\111411\1114F021.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111607
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.15**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.54**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**0.32**	J	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**3.2**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	**0.14**	J	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**16**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**1.1**		0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	105	73-122	11/14/11	Acceptable
Toluene-d8	120	65-144	11/14/11	Acceptable
4-Bromofluorobenzene	110	68-117	11/14/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Collected:**	11/07/2011
Sample Matrix:	Water	**Date Received:**	11/10/2011
		Date Extracted:	11/16/2011
		Date Analyzed:	11/16/2011

Volatile Organic Compounds

Sample Name:	MS52S	**Units:**	ug/L
Lab Code:	K1111019-024	**Basis:**	NA
File ID:	J:\MS13\DATA\111611\1116F017.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111676
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.060**	J	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**0.29**	J	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**8.4**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**0.76**		0.50	0.099	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	109	73-122	11/16/11	Acceptable
Toluene-d8	124	65-144	11/16/11	Acceptable
4-Bromofluorobenzene	110	68-117	11/16/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Collected:**	11/07/2011
Sample Matrix:	Water	**Date Received:**	11/10/2011
		Date Extracted:	11/14/2011
		Date Analyzed:	11/14/2011

Volatile Organic Compounds

Sample Name:	PESCW02	**Units:**	ug/L
Lab Code:	K1111019-020	**Basis:**	NA
File ID:	J:\MS13\DATA\111411\1114F023.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111607
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**0.32**	J	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**3.8**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**17**		0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**0.29**	J	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	105	73-122	11/14/11	Acceptable
Toluene-d8	121	65-144	11/14/11	Acceptable
4-Bromofluorobenzene	106	68-117	11/14/11	Acceptable

Comments

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Collected:**	11/08/2011
Sample Matrix:	Water	**Date Received:**	11/10/2011
		Date Extracted:	11/15/2011
		Date Analyzed:	11/15/2011

Volatile Organic Compounds

Sample Name:	QCD08	**Units:**	ug/L
Lab Code:	K1111019-036	**Basis:**	NA
File ID:	J:\MS13\DATA\111511\1115F025.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111649
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	**0.36**	J	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**7.8**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**1.1**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**37**		0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**180**	E	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	**0.15**	J	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	106	73-122	11/15/11	Acceptable
Toluene-d8	123	65-144	11/15/11	Acceptable
4-Bromofluorobenzene	110	68-117	11/15/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Collected:**	11/08/2011
Sample Matrix:	Water	**Date Received:**	11/10/2011
		Date Extracted:	11/15/2011
		Date Analyzed:	11/15/2011

Volatile Organic Compounds

Sample Name:	QCD08DL	**Units:**	ug/L
Lab Code:	K1111019-036	**Basis:**	NA
File ID:	J:\MS13\DATA\111511\1115F022.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111649
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 5

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.38	U	1.0	0.38	
75-35-4	1,1-Dichloroethene	0.37	U	2.5	0.37	
156-60-5	trans-1,2-Dichloroethene	**7.1**	D	2.5	0.29	
75-34-3	1,1-Dichloroethane	**1.2**	JD	2.5	0.39	
156-59-2	cis-1,2-Dichloroethene	**34**	D	2.5	0.34	
71-55-6	1,1,1-Trichloroethane (TCA)	0.38	U	2.5	0.38	
79-01-6	Trichloroethene (TCE)	**160**	D	2.5	0.50	
127-18-4	Tetrachloroethene (PCE)	0.50	U	2.5	0.50	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	109	73-122	11/15/11	Acceptable
Toluene-d8	122	65-144	11/15/11	Acceptable
4-Bromofluorobenzene	109	68-117	11/15/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1111019
Date Collected: 11/09/2011
Date Received: 11/10/2011
Date Extracted: 11/21/2011
Date Analyzed: 11/21/2011

Volatile Organic Compounds

Sample Name: QCD09
Lab Code: K1111019-031
File ID: J:\MS18\DATA\112111\1121F032.D
Instrument ID: GC-MS 18

Units: ug/L
Basis: NA
Level: Low

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1111867
Calibration ID: CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	**0.13**	J	0.20	0.075	
75-35-4	1,1-Dichloroethene	**1.7**		0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	**26**		0.50	0.057	
75-34-3	1,1-Dichloroethane	**1.5**		0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	**200**	E	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	**280**	E	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	84	73-122	11/21/11	Acceptable
Toluene-d8	87	65-144	11/21/11	Acceptable
4-Bromofluorobenzene	78	68-117	11/21/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Collected:**	11/09/2011
Sample Matrix:	Water	**Date Received:**	11/10/2011
		Date Extracted:	11/17/2011
		Date Analyzed:	11/17/2011

Volatile Organic Compounds

Sample Name:	QCD09DL	**Units:**	ug/L
Lab Code:	K1111019-031	**Basis:**	NA
File ID:	J:\MS04\DATA\111711\1117F018.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111741
Analysis Method:	8260C	**Calibration ID:**	CAL11002

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 10

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.75	U	2.0	0.75	*
75-35-4	1,1-Dichloroethene	**1.5**	JD	5.0	0.74	
156-60-5	trans-1,2-Dichloroethene	**24**	D	5.0	0.57	
75-34-3	1,1-Dichloroethane	**1.4**	JD	5.0	0.77	
156-59-2	cis-1,2-Dichloroethene	**200**	D	5.0	0.67	
71-55-6	1,1,1-Trichloroethane (TCA)	0.75	U	5.0	0.75	
79-01-6	Trichloroethene (TCE)	**270**	D	5.0	1.0	
127-18-4	Tetrachloroethene (PCE)	0.99	U	5.0	0.99	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	120	73-122	11/17/11	Acceptable
Toluene-d8	119	65-144	11/17/11	Acceptable
4-Bromofluorobenzene	104	68-117	11/17/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Collected:**	11/07/2011
Sample Matrix:	Water	**Date Received:**	11/10/2011
		Date Extracted:	11/15/2011
		Date Analyzed:	11/15/2011

Volatile Organic Compounds

Sample Name:	QCR05	**Units:**	ug/L
Lab Code:	K1111019-027	**Basis:**	NA
File ID:	J:\MS04\DATA\111511\1115F019.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111643
Analysis Method:	8260C	**Calibration ID:**	CAL11002

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	125	73-122	11/15/11	Outside Control Limits
Toluene-d8	117	65-144	11/15/11	Acceptable
4-Bromofluorobenzene	103	68-117	11/15/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Collected:**	11/08/2011
Sample Matrix:	Water	**Date Received:**	11/10/2011
		Date Extracted:	11/15/2011
		Date Analyzed:	11/15/2011

Volatile Organic Compounds

Sample Name:	QCR0~~8~~ 6 EWS 11/12/12	**Units:**	ug/L
Lab Code:	K1111019-008	**Basis:**	NA
File ID:	J:\MS04\DATA\111511\1115F016.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111643
Analysis Method:	8260C	**Calibration ID:**	CAL11002

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	122	73-122	11/15/11	Acceptable
Toluene-d8	118	65-144	11/15/11	Acceptable
4-Bromofluorobenzene	106	68-117	11/15/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Collected:**	11/09/2011
Sample Matrix:	Water	**Date Received:**	11/10/2011
		Date Extracted:	11/17/2011
		Date Analyzed:	11/17/2011

Volatile Organic Compounds

Sample Name:	QCR07	**Units:**	ug/L
Lab Code:	K1111019-035	**Basis:**	NA
File ID:	J:\MS04\DATA\111711\1117F012.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111741
Analysis Method:	8260C	**Calibration ID:**	CAL11002

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	*
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	114	73-122	11/17/11	Acceptable
Toluene-d8	118	65-144	11/17/11	Acceptable
4-Bromofluorobenzene	107	68-117	11/17/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Collected:**	11/07/2011
Sample Matrix:	Water	**Date Received:**	11/10/2011
		Date Extracted:	11/14/2011
		Date Analyzed:	11/14/2011

Volatile Organic Compounds

Sample Name:	QCT06	**Units:**	ug/L
Lab Code:	K1111019-017	**Basis:**	NA
File ID:	J:\MS13\DATA\111411\1114F013.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111607
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	106	73-122	11/14/11	Acceptable
Toluene-d8	120	65-144	11/14/11	Acceptable
4-Bromofluorobenzene	109	68-117	11/14/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Collected:**	11/07/2011
Sample Matrix:	Water	**Date Received:**	11/10/2011
		Date Extracted:	11/15/2011
		Date Analyzed:	11/15/2011

Volatile Organic Compounds

Sample Name:	QCT05_20111107 EWS 11/12/12	**Units:**	ug/L
Lab Code:	K1111019-034	**Basis:**	NA
File ID:	J:\MS04\DATA\111511\1115F010.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111643
Analysis Method:	8260C	**Calibration ID:**	CAL11002

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	113	73-122	11/15/11	Acceptable
Toluene-d8	116	65-144	11/15/11	Acceptable
4-Bromofluorobenzene	107	68-117	11/15/11	Acceptable

Comments:

APPENDIX C

SUPPORT DOCUMENTATION

NIROP FRIDLEY
WATER DATA
K1110838

FRACTION	CHEMICAL	MS49I	UNITS	QCD04	RPD	D
OV	1,1-DICHLOROETHANE	0.26 J	UG/L	0.27 J	3.77	0.01
OV	1,1-DICHLOROETHENE	0.16 J	UG/L	0.15 J	6.45	0.01
OV	CIS-1,2-DICHLOROETHENE	1.7	UG/L	1.6	6.06	0.10
OV	TETRACHLOROETHENE	2.6	UG/L	2.6	0.00	0.00
OV	TRANS-1,2-DICHLOROETHENE	0.38 J	UG/L	0.38 J	0.00	0.00
OV	TRICHLOROETHENE	24	UG/L	25	4.08	1.00

Current RPD Quality Control Limit: 30 %.
Shaded cells indicate RPDs that exceed the applicable quality control limit.

NIROP FRIDLEY
WATER DATA
K1111019

FRACTION	CHEMICAL	MS49S	UNITS	QCD08	RPD	D
OV	1,1-DICHLOROETHANE	1.2	UG/L	1.1	8.70	0.10
OV	1,1-DICHLOROETHENE	0.37 J	UG/L	0.36 J	2.74	0.01
OV	CIS-1,2-DICHLOROETHENE	38	UG/L	37	2.67	1.00
OV	TETRACHLOROETHENE	0.16 J	UG/L	0.15 J	6.45	0.01
OV	TRANS-1,2-DICHLOROETHENE	8.1	UG/L	7.8	3.77	0.30

Current RPD Quality Control Limit: 30 %.
Shaded cells indicate RPDs that exceed the applicable quality control limit.

NIROP FRIDLEY
WATER DATA
K1111019

FRACTION	CHEMICAL	MS49SDL	UNITS	QCD08DL	RPD	D
OV	TRICHLOROETHENE	160	UG/L	160	0.00	0.00

Current RPD Quality Control Limit: 30 %.
Shaded cells indicate RPDs that exceed the applicable quality control limit.

NIROP FRIDLEY
WATER DATA
K1111019

FRACTION	CHEMICAL	MS45S	UNITS	QCD09	RPD	D
OV	1,1-DICHLOROETHANE	1.5	UG/L	1.5	0.00	0.00
OV	1,1-DICHLOROETHENE	1.6	UG/L	1.7	6.06	0.10
OV	TRANS-1,2-DICHLOROETHENE	26	UG/L	26	0.00	0.00
OV	VINYL CHLORIDE	0.14 J	UG/L	0.13 J	7.41	0.01

Current RPD Quality Control Limit: 30 %.
Shaded cells indicate RPDs that exceed the applicable quality control limit.

NIROP FRIDLEY
WATER DATA
K1111019

FRACTION	CHEMICAL	MS45SDL	UNITS	QCD09DL	RPD	D
OV	CIS-1,2-DICHLOROETHENE	180	UG/L	200	10.53	20.00
OV	TRICHLOROETHENE	230	UG/L	270	16.00	40.00

Current RPD Quality Control Limit: 30 %.
Shaded cells indicate RPDs that exceed the applicable quality control limit.

Columbia Analytical Services™ 1317 S. 13th Avenue, Kelso, WA 98626 360.577.7222 360.636.1068 (fax) www.caslab.com

November 21, 2011 Analytical Report for Service Request No: K1110838

Paul Walz
Bay West, Incorporated
5 Empire Dr.
St. Paul, MN 55103-1867

RE: NIROP/J070047

Dear Paul:

Enclosed are the results of the samples submitted to our laboratory on November 05, 2011. For your reference, these analyses have been assigned our service request number K1110838.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3363. You may also contact me via Email at LDomenighini@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.

Lisa Domenighini
Project Chemist

LD/jw

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

Columbia Analytical Services, Inc.
Kelso, WA
State Certifications, Accreditations, and Licenses

Agency	Number
Alaska DEC UST	UST-040
Arizona DHS	AZ0339
Arkansas - DEQ	88-0637
California DHS	2286
DOD ELAP	L11-119
Florida DOH	E87412
Georgia DNR	881
Hawaii DOH	-
Idaho DHW	-
Indiana DOH	C-WA-01
ISO 17025	L11-118
Louisiana DEQ	3016
Louisiana DHH	LA080001
Maine DHS	WA0035
Michigan DEQ	9949
Minnesota DOH	053-999-368
Montana DPHHS	CERT0047
Nevada DEP	WA35
New Jersey DEP	WA005
New Mexico ED	-
North Carolina DWQ	605
Oklahoma DEQ	9801
Oregon – DEQ (NELAP)	WA100010
South Carolina DHEC	61002
Texas CEQ	04704427-08-TX
Washington DOE	C1203
Wisconsin DNR	998386840
Wyoming (EPA Region 8)	-

Case Narrative

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	Bay West, Incorporated	**Service Request No.:**	K1110838
Project:	NIROP/J070047	**Date Received:**	11/05/11
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Six water samples were received for analysis at Columbia Analytical Services on 11/05/11. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Volatile Organic Compounds by EPA Method 8260

Calibration Verification Exceptions:
The following analytes were flagged as outside the upper control criterion for Continuing Calibration Verification (CCV) J:\MS04\1114F005.D: 1,1,1-Trichloroethane (TCA). In accordance with the EPA Method, 80% or more of the CCV analytes must pass within 20% of the true value. The CAS SOP allows for 40% difference for the remaining analytes. The CCV met these criteria. The quality of the sample data was not significantly affected. No further corrective action was required.

No other anomalies associated with the analysis of these samples were observed.

Approved by Lisa A Jonemeghini **Date** 11/21/11

Chain of Custody

Columbia Analytical Services

027601 CHAIN OF CUSTODY

SR# K1110838

COC Set____of____

Page 1 OF 1 COC# 110111-05

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

Project Name: NIROP
Project Number: J0170047
Project Manager: Paul Walz
Company Name: Baywest
Comany Address: 5 Empire Drive
City/State/Zip: Saint Paul, MN
E-Mail Address: PaulW@baywest
Phone #: 651-291-3491 FAX #:
Sampler Signature: Joe Stabach

	Sample ID	Date	Time	Lab ID	Matrix	Number of Containers	8260B / VOC_FP	14D			Remarks
1	MS09D	11.04.11	1345		WT	3	X				
2	MS49I	11.04.11	1423		WT	3	X				
3	~~QCB04~~	~~11.04.11~~	~~0830~~		~~WT~~	~~3~~	~~X~~				
4	QCT05	11.04.11	—		WT	2	X				
5	MS17D	11-04-11	1413		WT	3	X				
6	QCR04	11-04-11	1505		WT	3	X				
7	QCD04	11-04-11	0830		WT	3	X				
8											
9											
10											
11											

JBS

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

Invoice Information

P.O.# 27488
Bill To: Account Payable
Baywest, 5 Empire Dr.
St. Paul MN 55103

Turnaround Requirements

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide Fax Results

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments: *Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other____(Circle One)

Analyze for 8 specific chemicals of concern via method 8260B

UPS Tracking # 1Z A19 8R9 41 9179 2386

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

Relinquished By:		Received By:		Relinquished By:		Received By:	
Signature: Joe Stabach	Date/Time: 11.04.11 1600	Signature: [illegible]	Date/Time: 11/5/11 0900	Signature	Date/Time	Signature	Date/Time
Printed Name: Joe Stabach	Firm: Baywest	Printed Name: [illegible]	Firm: CAS	Printed Name	Firm	Printed Name	Firm

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

PC Tisa

Client / Project: Baywest Service Request *K11* 10838

Received: 11/5/11 Opened: 11/5/11 By: JA Unloaded: 11/5/11 By: JA

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ NA
3. Were custody seals on coolers? NA Y N If yes, how many and where? 1 Front / Back
   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Cooler Temp °C	Temp Blank °C	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
1.1	0.5	294			✓

7. Packing material used. *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Sleeves* *Other* _____
8. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
9. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
10. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
11. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
12. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
13. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
14. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
15. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

Page 1 *of* _____

Volatile Organic Compounds

Organic Analysis:
Volatile Organic Compounds

Summary Package

Sample and QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1110838

Cover Page - Organic Analysis Data Package
Volatile Organic Compounds

Sample Name	Lab Code	Date Collected	Date Received
MS09D	K1110838-001	11/04/2011	11/05/2011
MS49I	K1110838-002	11/04/2011	11/05/2011
QCT05	K1110838-003	11/04/2011	11/05/2011
MS17D	K1110838-004	11/04/2011	11/05/2011
QCR04	K1110838-005	11/04/2011	11/05/2011
QCD04	K1110838-006	11/04/2011	11/05/2011
MS49IMS	KWG1111595-1	11/04/2011	11/05/2011
MS49IDMS	KWG1111595-2	11/04/2011	11/05/2011

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: K Kleessner Name: K Kleessner

Date: 11/20/11 Title: Scientist

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1110838

Surrogate Recovery Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
MS09D	K1110838-001	118	116	105
MS49I	K1110838-002	112	118	107
QCT05	K1110838-003	110	117	107
MS17D	K1110838-004	118	117	102
QCR04	K1110838-005	120	117	106
QCD04	K1110838-006	119	117	105
Method Blank	KWG1111595-4	107	116	112
MS49IMS	KWG1111595-1	109	121	117
MS49IDMS	KWG1111595-2	109	120	116
Lab Control Sample	KWG1111595-3	108	117	116

Surrogate Recovery Control Limits (%)

Sur1 =	Dibromofluoromethane	73-122
Sur2 =	Toluene-d8	65-144
Sur3 =	4-Bromofluorobenzene	68-117

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1110838
Date Analyzed: 10/25/2011
Time Analyzed: 14:01

Tune Summary
Volatile Organic Compounds

File ID: J:\MS04\DATA\102511\1025F003.D
Instrument ID: MS04
Column:

Analysis Method: 8260C
Analysis Lot: KWG1111743

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	15.8	21351	PASS
75	95	30	60	41.3	55829	PASS
95	95	100	100	100.0	135152	PASS
96	95	5	9	6.9	9291	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	93.4	126194	PASS
175	174	5	9	7.9	9912	PASS
176	174	95	101	97.0	122434	PASS
177	176	5	9	6.6	8024	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Initial Calibration	KWG1111743-2	J:\MS04\DATA\102511\1025F006.D	10/25/2011	15:40	
Initial Calibration	KWG1111743-3	J:\MS04\DATA\102511\1025F007.D	10/25/2011	16:15	
Initial Calibration	KWG1111743-4	J:\MS04\DATA\102511\1025F008.D	10/25/2011	16:48	
Initial Calibration	KWG1111743-5	J:\MS04\DATA\102511\1025F009.D	10/25/2011	17:21	
Initial Calibration	KWG1111743-6	J:\MS04\DATA\102511\1025F010.D	10/25/2011	17:54	
Initial Calibration	KWG1111743-7	J:\MS04\DATA\102511\1025F011.D	10/25/2011	18:28	
Initial Calibration	KWG1111743-8	J:\MS04\DATA\102511\1025F012.D	10/25/2011	19:01	
Initial Calibration	KWG1111743-9	J:\MS04\DATA\102511\1025F013.D	10/25/2011	19:34	
Initial Calibration	KWG1111743-10	J:\MS04\DATA\102511\1025F014.D	10/25/2011	20:07	
Initial Calibration	KWG1111743-11	J:\MS04\DATA\102511\1025F015.D	10/25/2011	20:40	
Initial Calibration	KWG1111743-12	J:\MS04\DATA\102511\1025F016.D	10/25/2011	21:13	
Initial Calibration Verification	KWG1111743-13	J:\MS04\DATA\102511\1025F019.D	10/25/2011	22:51	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1110838
Calibration Date: 10/25/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL11002
Instrument ID: MS04

Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS04\DATA\102511\1025F006.D	G	J:\MS04\DATA\102511\1025F012.D
B	J:\MS04\DATA\102511\1025F007.D	H	J:\MS04\DATA\102511\1025F013.D
C	J:\MS04\DATA\102511\1025F008.D	I	J:\MS04\DATA\102511\1025F014.D
D	J:\MS04\DATA\102511\1025F009.D	J	J:\MS04\DATA\102511\1025F015.D
E	J:\MS04\DATA\102511\1025F010.D	K	J:\MS04\DATA\102511\1025F016.D
F	J:\MS04\DATA\102511\1025F011.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Vinyl Chloride	A	0.10	0.431	B	0.20	0.336	C	0.50	0.347	D	1.0	0.350	E	2.0	0.397
	F	5.0	0.381	G	10	0.370	H	20	0.358	I	40	0.394	J	60	0.347
	K	70	0.338												
1,1-Dichloroethene				B	0.20	0.242	C	0.50	0.223	D	1.0	0.239	E	2.0	0.266
	F	5.0	0.264	G	10	0.261	H	20	0.248	I	40	0.272	J	60	0.240
	K	70	0.231												
trans-1,2-Dichloroethene	A	0.10	0.311	B	0.20	0.257	C	0.50	0.283	D	1.0	0.292	E	2.0	0.323
	F	5.0	0.328	G	10	0.314	H	20	0.305	I	40	0.323	J	60	0.295
	K	70	0.287												
1,1-Dichloroethane	A	0.10	0.449	B	0.20	0.451	C	0.50	0.417	D	1.0	0.457	E	2.0	0.483
	F	5.0	0.483	G	10	0.465	H	20	0.459	I	40	0.470	J	60	0.444
	K	70	0.431												
cis-1,2-Dichloroethene	A	0.10	0.279	B	0.20	0.282	C	0.50	0.281	D	1.0	0.299	E	2.0	0.331
	F	5.0	0.325	G	10	0.321	H	20	0.319	I	40	0.329	J	60	0.312
	K	70	0.303												
1,1,1-Trichloroethane (TCA)				B	0.20	0.311	C	0.50	0.307	D	1.0	0.326	E	2.0	0.354
	F	5.0	0.347	G	10	0.339	H	20	0.326	I	40	0.345	J	60	0.302
	K	70	0.283												
Trichloroethene (TCE)	A	0.10	0.191	B	0.20	0.217	C	0.50	0.229	D	1.0	0.242	E	2.0	0.265
	F	5.0	0.269	G	10	0.261	H	20	0.257	I	40	0.272	J	60	0.250
	K	70	0.245												
Tetrachloroethene (PCE)	A	0.10	0.330	B	0.20	0.294	C	0.50	0.287	D	1.0	0.322	E	2.0	0.365
	F	5.0	0.355	G	10	0.343	H	20	0.328	I	40	0.338	J	60	0.297
	K	70	0.282												
Dibromofluoromethane										D	6.0	0.248	E	7.0	0.238
	F	8.0	0.250	G	10	0.258	H	20	0.241	I	40	0.232	J	50	0.240
Toluene-d8										D	6.0	0.741	E	7.0	0.691
	F	8.0	0.719	G	10	0.808	H	20	0.756	I	40	0.722	J	50	0.761

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1110838
Calibration Date: 10/25/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL11002
Instrument ID: MS04

Column: MS

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
4-Bromofluorobenzene				B	4.0	0.329	C	5.0	0.287	D	6.0	0.366	E	7.0	0.354
	F	8.0	0.375	G	10	0.396	H	20	0.374	I	40	0.362	J	50	0.388

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1110838
Calibration Date: 10/25/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL11002
Instrument ID: MS04

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Vinyl Chloride	MS	AverageRF	% RSD	8.1		≤ 20	0.368		0.100
1,1-Dichloroethene	MS	AverageRF	% RSD	6.5		≤ 20	0.249		0.100
trans-1,2-Dichloroethene	MS	AverageRF	% RSD	7.0		≤ 20	0.302		0.100
1,1-Dichloroethane	MS	AverageRF	% RSD	4.5		≤ 20	0.455		0.200
cis-1,2-Dichloroethene	MS	AverageRF	% RSD	6.4		≤ 20	0.308		0.100
1,1,1-Trichloroethane (TCA)	MS	AverageRF	% RSD	7.0		≤ 20	0.324		0.100
Trichloroethene (TCE)	MS	AverageRF	% RSD	10.1		≤ 20	0.245		0.200
Tetrachloroethene (PCE)	MS	AverageRF	% RSD	8.7		≤ 20	0.322		0.200
Dibromofluoromethane	SURR	AverageRF	% RSD	3.6		≤ 20	0.244		0.01
Toluene-d8	SURR	AverageRF	% RSD	5.0		≤ 20	0.743		0.01
4-Bromofluorobenzene	SURR	AverageRF	% RSD	9.3		≤ 20	0.359		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1110838
Calibration Date: 10/25/2011
Date Analyzed: 10/25/2011

Second Source Calibration Verification
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration ID: CAL11002
Units: PPB

File ID: J:\MS04\DATA\102511\1025F019.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	8.1	0.368	0.299	-19	NA	± 30 %	AverageRF
1,1-Dichloroethene	10	9.8	0.249	0.244	-2	NA	± 30 %	AverageRF
trans-1,2-Dichloroethene	10	10	0.302	0.309	2	NA	± 30 %	AverageRF
1,1-Dichloroethane	10	9.9	0.455	0.451	-1	NA	± 30 %	AverageRF
cis-1,2-Dichloroethene	10	10	0.308	0.319	4	NA	± 30 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	9.7	0.324	0.315	-3	NA	± 30 %	AverageRF
Trichloroethene (TCE)	10	10	0.245	0.253	3	NA	± 30 %	AverageRF
Tetrachloroethene (PCE)	10	9.8	0.322	0.315	-2	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1110838
Date Analyzed: 11/14/2011
Time Analyzed: 10:40

Tune Summary
Volatile Organic Compounds

File ID: J:\MS04\DATA\111411\1114F004.D
Instrument ID: MS04
Column:

Analysis Method: 8260C
Analysis Lot: KWG1111591

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	17.2	17488	PASS
75	95	30	60	41.4	42176	PASS
95	95	100	100	100.0	101808	PASS
96	95	5	9	8.1	8272	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	94.1	95832	PASS
175	174	5	9	8.4	8050	PASS
176	174	95	101	95.4	91440	PASS
177	176	5	9	7.1	6518	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1111591-2	J:\MS04\DATA\111411\1114F005.D	11/14/2011	11:16	
Lab Control Sample	KWG1111595-3	J:\MS04\DATA\111411\1114F006.D	11/14/2011	12:09	
MS49IMS	KWG1111595-1	J:\MS04\DATA\111411\1114F007.D	11/14/2011	12:42	
MS49IDMS	KWG1111595-2	J:\MS04\DATA\111411\1114F008.D	11/14/2011	13:15	
Method Blank	KWG1111595-4	J:\MS04\DATA\111411\1114F010.D	11/14/2011	14:22	
QCT05	K1110838-003	J:\MS04\DATA\111411\1114F011.D	11/14/2011	14:56	
MS49I	K1110838-002	J:\MS04\DATA\111411\1114F012.D	11/14/2011	15:29	
MS09D	K1110838-001	J:\MS04\DATA\111411\1114F018.D	11/14/2011	18:48	
MS17D	K1110838-004	J:\MS04\DATA\111411\1114F019.D	11/14/2011	19:21	
QCR04	K1110838-005	J:\MS04\DATA\111411\1114F020.D	11/14/2011	19:54	
QCD04	K1110838-006	J:\MS04\DATA\111411\1114F021.D	11/14/2011	20:27	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1110838
Date Analyzed: 11/14/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration Date: 10/25/2011
Calibration ID: CAL11002
Analysis Lot: KWG1111591
Units: PPB

File ID: J:\MS04\DATA\111411\1114F005.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D		%Drift	Criteria	Curve Fit
Vinyl Chloride	10	8.5	0.100	0.368	0.314	-15		NA	± 20 %	AverageRF
1,1-Dichloroethene	10	11	0.100	0.249	0.272	9		NA	± 20 %	AverageRF
trans-1,2-Dichloroethene	10	11	0.100	0.302	0.341	13		NA	± 20 %	AverageRF
1,1-Dichloroethane	10	11	0.200	0.455	0.512	12		NA	± 20 %	AverageRF
cis-1,2-Dichloroethene	10	11	0.100	0.308	0.347	13		NA	± 20 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	12	0.100	0.324	0.392	21	*	NA	± 20 %	AverageRF
Trichloroethene (TCE)	10	11	0.200	0.245	0.275	12		NA	± 20 %	AverageRF
Tetrachloroethene (PCE)	10	11	0.200	0.322	0.355	10		NA	± 20 %	AverageRF
Dibromofluoromethane	10	11	0.01	0.244	0.274	12		NA	± 20 %	AverageRF
Toluene-d8	10	12	0.01	0.743	0.884	19		NA	± 20 %	AverageRF
4-Bromofluorobenzene	10	12	0.01	0.359	0.424	18		NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1110838

Analysis Run Log
Volatile Organic Compounds

Analysis Method: 8260C

Analysis Lot: KWG1111591
Instrument ID: MS04

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1114F004.D	GC/MS Tuning - Bromofluorobenzene	KWG1111591-1	11/14/2011	10:40		11/14/2011	11:06
1114F005.D	Continuing Calibration Verification	KWG1111591-2	11/14/2011	11:16		11/14/2011	11:42
1114F006.D	Lab Control Sample	KWG1111595-3	11/14/2011	12:09		11/14/2011	12:35
1114F007.D	MS49IMS	KWG1111595-1	11/14/2011	12:42		11/14/2011	13:08
1114F008.D	MS49IDMS	KWG1111595-2	11/14/2011	13:15		11/14/2011	13:41
1114F010.D	Method Blank	KWG1111595-4	11/14/2011	14:22		11/14/2011	14:48
1114F011.D	QCT05	K1110838-003	11/14/2011	14:56		11/14/2011	15:22
1114F012.D	MS49I	K1110838-002	11/14/2011	15:29		11/14/2011	15:55
1114F013.D	ZZZZZZ	ZZZZZZ	11/14/2011	16:02		11/14/2011	16:28
1114F014.D	ZZZZZZ	ZZZZZZ	11/14/2011	16:35		11/14/2011	17:01
1114F015.D	ZZZZZZ	ZZZZZZ	11/14/2011	17:08		11/14/2011	17:34
1114F016.D	ZZZZZZ	ZZZZZZ	11/14/2011	17:42		11/14/2011	18:08
1114F017.D	ZZZZZZ	ZZZZZZ	11/14/2011	18:15		11/14/2011	18:41
1114F018.D	MS09D	K1110838-001	11/14/2011	18:48		11/14/2011	19:14
1114F019.D	MS17D	K1110838-004	11/14/2011	19:21		11/14/2011	19:47
1114F020.D	QCR04	K1110838-005	11/14/2011	19:54		11/14/2011	20:20
1114F021.D	QCD04	K1110838-006	11/14/2011	20:27		11/14/2011	20:53
1114F022.D	ZZZZZZ	ZZZZZZ	11/14/2011	21:00		11/14/2011	21:26
1114F023.D	ZZZZZZ	ZZZZZZ	11/14/2011	21:33		11/14/2011	21:59
1114F024.D	ZZZZZZ	ZZZZZZ	11/14/2011	22:06		11/14/2011	22:32

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1110838
Date Extracted: 11/14/2011
Date Analyzed: 11/14/2011
Time Analyzed: 14:22

Method Blank Summary
Volatile Organic Compounds

Sample Name: Method Blank
Lab Code: KWG1111595-4

Instrument ID: MS04
File ID: J:\MS04\DATA\111411\1114F010.D

Extraction Method: EPA 5030B
Analysis Method: 8260C

Level: Low
Extraction Lot: KWG1111595

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1111595-3	J:\MS04\DATA\111411\1114F006.D	11/14/11	12:09
MS49IMS	KWG1111595-1	J:\MS04\DATA\111411\1114F007.D	11/14/11	12:42
MS49IDMS	KWG1111595-2	J:\MS04\DATA\111411\1114F008.D	11/14/11	13:15
QCT05	K1110838-003	J:\MS04\DATA\111411\1114F011.D	11/14/11	14:56
MS49I	K1110838-002	J:\MS04\DATA\111411\1114F012.D	11/14/11	15:29
MS09D	K1110838-001	J:\MS04\DATA\111411\1114F018.D	11/14/11	18:48
MS17D	K1110838-004	J:\MS04\DATA\111411\1114F019.D	11/14/11	19:21
QCR04	K1110838-005	J:\MS04\DATA\111411\1114F020.D	11/14/11	19:54
QCD04	K1110838-006	J:\MS04\DATA\111411\1114F021.D	11/14/11	20:27

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1110838
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	11/14/2011
		Date Analyzed:	11/14/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1111595-4	**Basis:**	NA
File ID:	J:\MS04\DATA\111411\1114F010.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111595
Analysis Method:	8260C	**Calibration ID:**	CAL11002

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	107	73-122	11/14/11	Acceptable
Toluene-d8	116	65-144	11/14/11	Acceptable
4-Bromofluorobenzene	112	68-117	11/14/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1110838
Project:	NIROP/J070047	**Date Extracted:**	11/14/2011
Sample Matrix:	Water	**Date Analyzed:**	11/14/2011

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	EPA 5030B	**Units:**	ug/L
Analysis Method:	8260C	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1111595

	Lab Control Sample KWG1111595-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Vinyl Chloride	8.12	10.0	81	55-123
1,1-Dichloroethene	9.98	10.0	100	66-129
trans-1,2-Dichloroethene	10.8	10.0	108	67-125
1,1-Dichloroethane	10.6	10.0	106	68-132
cis-1,2-Dichloroethene	11.0	10.0	110	71-118
1,1,1-Trichloroethane (TCA)	10.8	10.0	108	59-136
Trichloroethene (TCE)	10.8	10.0	108	67-128
Tetrachloroethene (PCE)	10.1	10.0	101	62-126

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1110838
Date Extracted: 11/14/2011
Date Analyzed: 11/14/2011

Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organic Compounds

Sample Name: MS49I
Lab Code: K1110838-002

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260C

Level: Low
Extraction Lot: KWG1111595

Analyte Name	Sample Result	MS49IMS KWG1111595-1 Matrix Spike			MS49IDMS KWG1111595-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
Vinyl Chloride	ND	9.11	10.0	91	8.59	10.0	86	49-136	6	30
1,1-Dichloroethene	0.16	11.4	10.0	112	10.8	10.0	106	59-171	6	30
trans-1,2-Dichloroethene	0.38	11.9	10.0	115	11.4	10.0	110	65-143	4	30
1,1-Dichloroethane	0.26	11.2	10.0	109	10.7	10.0	105	69-141	4	30
cis-1,2-Dichloroethene	1.7	13.1	10.0	113	12.6	10.0	109	61-139	3	30
1,1,1-Trichloroethane (TCA)	ND	11.9	10.0	119	11.3	10.0	113	57-151	5	30
Trichloroethene (TCE)	24	35.7	10.0	113	33.8	10.0	94	53-139	6	30
Tetrachloroethene (PCE)	2.6	13.8	10.0	112	12.9	10.0	102	61-131	7	30

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.
Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1110838
Date Analyzed: 11/14/2011
Time Analyzed: 11:16

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID: J:\MS04\DATA\111411\1114F005.D
Instrument ID: MS04
Analysis Method: 8260C

Lab Code: KWG1111591-2
Analysis Lot: KWG1111591

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	1,490,831	13.13	1,139,487	17.40	595,182	20.05
	Upper Limit ==>	2,981,662	13.63	2,278,974	17.90	1,190,364	20.55
	Lower Limit ==>	745,416	12.63	569,744	16.90	297,591	19.55
	ICAL Result ==>	1,106,367	13.09	799,828	17.38	400,256	20.03
Associated Analyses							
Lab Control Sample	KWG1111595-3	1,535,190	13.12	1,155,897	17.40	593,317	20.05
MS49IMS	KWG1111595-1	1,540,211	13.13	1,146,761	17.40	586,796	20.05
MS49IDMS	KWG1111595-2	1,608,425	13.12	1,199,243	17.40	594,391	20.05
Method Blank	KWG1111595-4	1,523,521	13.12	1,100,644	17.40	531,901	20.05
QCT05	K1110838-003	1,499,656	13.12	1,109,822	17.40	526,543	20.05
MS49I	K1110838-002	1,493,866	13.13	1,094,445	17.40	515,653	20.05
MS09D	K1110838-001	1,395,569	13.12	1,022,345	17.40	485,871	20.05
MS17D	K1110838-004	1,369,501	13.13	1,016,782	17.40	469,030	20.05
QCR04	K1110838-005	1,331,683	13.12	975,108	17.40	460,135	20.05
QCD04	K1110838-006	1,327,141	13.12	981,195	17.40	456,784	20.05

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1110838
Date Extracted: 11/14/2011

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1111595
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
MS09D	K1110838-001	11/04/11	11/05/11	10ml	10ml	NA	
MS49I	K1110838-002	11/04/11	11/05/11	10ml	10ml	NA	
QCT05	K1110838-003	11/04/11	11/05/11	10ml	10ml	NA	
MS17D	K1110838-004	11/04/11	11/05/11	10ml	10ml	NA	
QCR04	K1110838-005	11/04/11	11/05/11	10ml	10ml	NA	
QCD04	K1110838-006	11/04/11	11/05/11	10ml	10ml	NA	
Method Blank	KWG1111595-4	NA	NA	10ml	10ml	NA	
MS49IMS	KWG1111595-1	11/04/11	11/05/11	10ml	10ml	NA	
MS49IDMS	KWG1111595-2	11/04/11	11/05/11	10ml	10ml	NA	
Lab Control Sample	KWG1111595-3	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Columbia Analytical Services™ 1317 S. 13th Avenue, Kelso, WA 98626 360.636.1068 (fax) www.caslab.com

November 29, 2011 Analytical Report for Service Request No: K1111019

Paul Walz
Bay West, Incorporated
5 Empire Dr.
St. Paul, MN 55103-1867

RE: NIROP/J070047

Dear Paul:

Enclosed are the results of the samples submitted to our laboratory on November 10, 2011. For your reference, these analyses have been assigned our service request number K1111019.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3363. You may also contact me via Email at LDomenighini@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.

Lisa Domenighini
Project Chemist

LD/ln

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

Columbia Analytical Services, Inc.
Kelso, WA
State Certifications, Accreditations, and Licenses

Agency	Number
Alaska DEC UST	UST-040
Arizona DHS	AZ0339
Arkansas - DEQ	88-0637
California DHS	2286
DOD ELAP	L11-119
Florida DOH	E87412
Georgia DNR	881
Hawaii DOH	-
Idaho DHW	-
Indiana DOH	C-WA-01
ISO 17025	L11-118
Louisiana DEQ	3016
Louisiana DHH	LA080001
Maine DHS	WA0035
Michigan DEQ	9949
Minnesota DOH	053-999-368
Montana DPHHS	CERT0047
Nevada DEP	WA35
New Jersey DEP	WA005
New Mexico ED	-
North Carolina DWQ	605
Oklahoma DEQ	9801
Oregon – DEQ (NELAP)	WA100010
South Carolina DHEC	61002
Texas CEQ	04704427-08-TX
Washington DOE	C1203
Wisconsin DNR	998386840
Wyoming (EPA Region 8)	-

Case Narrative

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	Bay West, Incorporated	**Service Request No.:**	K1111019
Project:	NIROP/J070047	**Date Received:**	11/10/11
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Thirty six water samples were received for analysis at Columbia Analytical Services on 11/10/11. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Volatile Organic Compounds by EPA Method 8260

Calibration Verification Exceptions:
The following analyte was flagged as outside the upper control criterion for Continuing Calibration Verification (CCV) J:\MS04\1114F005.D: 1,1,1-Trichloroethane (TCA). In accordance with the EPA Method, 80% or more of the CCV analytes must pass within 20% of the true value. The CAS SOP allows for 40% difference for the remaining analytes. The CCV met these criteria. The quality of the sample data was not significantly affected. No further corrective action was required.

The following analyte was flagged as outside the upper control criterion for Continuing Calibration Verifications (CCV) J:\MS13\1114F006.D, J:\MS13\1115F007.D and J:\MS13\1116F004.D: Toluene-d8. In accordance with the EPA Method, 80% or more of the CCV analytes must pass within 20% of the true value. The CAS SOP allows for 40% difference for the remaining analytes. The CCV met these criteria. The quality of the sample data was not significantly affected. No further corrective action was required.

The following analyte was flagged as outside the lower control criterion for Continuing Calibration Verification (CCV) J:\MS13\1116F004.D: Tetrachloroethane (PCE). In accordance with the EPA Method, 80% or more of the CCV analytes must pass within 20% of the true value. The CAS SOP allows for 40% difference for the remaining analytes. The CCV met these criteria. The quality of the sample data was not significantly affected. No further corrective action was required.

The following analyte was flagged as outside the lower control criterion for Continuing Calibration Verification (CCV) J:\MS04\1117F004.D: Vinyl Chloride. In accordance with the EPA Method, 80% or more of the CCV analytes must pass within 20% of the true value. The CAS SOP allows for 40% difference for the remaining analytes. The CCV met these criteria. The quality of the sample data was not significantly affected. No further corrective action was required.

Surrogate Exceptions:
The upper control criterion was exceeded for Dibromofluoromethane in sample QCR05. No target analytes associated with the surrogate in question were detected in the field sample. The error associated with an elevated recovery equated to a high bias. The quality of the sample data was not significantly affected. No further corrective action was appropriate.

Approved by Lisa A Jonaughin **Date** 11/29/11

The control criteria were exceeded for 4-Bromofluorobenzene in LCS KWG1111643-3. The associated spike recoveries of target compounds were in control, indicating the analysis was in control. The surrogate outlier was flagged accordingly. No further corrective action was appropriate.

Matrix Spike Recovery Exceptions:
The duplicate matrix spike recovery of Trichloroethene (TCE) for sample MS19SDMS KWG1111649-2 was outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicated the analytical batch was in control. The matrix spike outlier suggested a potential low bias in this matrix. No further corrective action was appropriate.

No other anomalies associated with the analysis of these samples were observed.

Approved by Lisa A Jamenghin **Date** 11/29/11

Chain of Custody

Columbia Analytical Services

027601 CHAIN OF CUSTODY

SR# K1111019

COC Set____of____

Page 1 OF 1 COC# 110111-07

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

Project Name: NIROP
Project Number: J070047
Project Manager: Paul Walz
Company Name: Bay West
Comany Address: 5 Empire Drive
City/State/Zip: St. Paul MN 55103
E-Mail Address: paulw@baywest.com
Phone #: 651-291-3491 FAX #: 651-291-0099
Sampler Signature:

Sample ID	Date	Time	Lab ID	Matrix	Number of Containers	8260B / VOC_FP	14D			Remarks
1 MS04PC	11-7-11	1542		water	3	X				1
2 MS01PC	↓	1243		↓	3	X				2
3 MS04D	↓	1640		↓	3	X				3
4 MS31D	11-8-11	1126		↓	3	X				4
5 MS06D	↓	1230		↓	3	X				5
6 MS32D	↓	1358		↓	3	X				6
7 MS02S	↓	1557		↓	3	X				7
8 QCR05	↓	1630		↓	3	X				8
9 MS29D	11-9-11	1024		↓	3	X				9
10 MS02PC	↓	1338		↓	3	X				10
11 MS05IS	↓	1442		↓	3	X				11

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

Invoice Information

P.O.# 27488
Bill To: Account Payable
Bay West 5 Empire Dr.
St. Paul MN 55103

Turnaround Requirements

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide Fax Results

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments: *Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other____(Circle One)

analyze for 8 specific chemicals of concern via method 8260B
UPS Tracking# 1Z A19 8R9 01 9899 0715

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

Relinquished By:	Received By:	Relinquished By:	Received By:
Signature: [signature]	Signature: [signature]	Signature:	Signature:
Date/Time: 11-9-11 1620	Date/Time: 11/10/11 1020	Date/Time:	Date/Time:
Printed Name: Eyan Riley	Printed Name: BWOLF	Printed Name:	Printed Name:
Firm: Bay West	Firm: CAS	Firm:	Firm:

Columbia Analytical Services

027601 CHAIN OF CUSTODY

SR# K111019

COC Set____of____

Page 1 OF 1 COC# 110111-08

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

Project Name: NIROP
Project Number: J070047
Project Manager: Paul Walz
Company Name: Baywest
Comany Address: 5 Empire Drive
City/State/Zip: Saint Paul
E-Mail Address: Paul.w@baywest.com
Phone #: 651-291-3491 FAX #:
Sampler Signature:

	Sample ID	Date	Time	Lab ID	Matrix	Number of Containers	8260B / VOC_FP (14D)				Remarks
1	MS47S	11.08.11	1012		WT	3	X				
2	MS27S		1103		WT	3	X				
3	MS47I		1157		WT	3	X				
4	MS49S		1634		WT	3	X				
5	MS08D		1424		WT	3	X				
6	QCT06	11-7-11	—		WT	2	X				
7											
8											
9											
10											
11											

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

Invoice Information

P.O.# 37488
Bill To: Accounts Payable Baywest 5 Empire Drive Saint Paul MN 55103

Turnaround Requirements

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide Fax Results

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments: analyze for 8 specific chemicals of concern via method 8260B
UPS Tracking # 1Z A19 8R9 01 9899 0715

*Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other____(Circle One)

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

Relinquished By:		Received By:		Relinquished By:		Received By:	
Signature	Date/Time 11.9.11 1020	Signature	Date/Time 11/10/11 1020	Signature	Date/Time	Signature	Date/Time
Printed Name Joe Stalock	Firm Baywest	Printed Name	Firm CAS	Printed Name	Firm	Printed Name	Firm

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Columbia Analytical Services

027601 CHAIN OF CUSTODY

SR#_____

COC Set____of____

Page 1 OF 1 COC# 110111-06

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

Project Name: NTROP
Project Number: J070047
Project Manager: Paul Walz
Company Name: Baywest
Comany Address: 5 Empire Drive
City/State/Zip: Saint Paul / MN / 55103
E-Mail Address: Paulw@baywest.com
Phone #: 651-291-3491 FAX #:
Sampler Signature: Joe S

	Sample ID	Date	Time	Lab ID	Matrix	Number of Containers	8260B / VOC_FP (14D)				Remarks
1	~~MS52I~~	~~0952~~			~~wt~~		~~X~~				
2	MS52I	11.07.11	0952		wt	3	X				
3	MS44S		1051			3	X				
4	PESCW02		1144			3	X				
5	MS16IS		1314			3	X				
6	MS16D		1236			3	X				
7	MS47D		1400			3	X				
8	MS52S		1506		wt	3	X				
9	MS19S	11.07.11	1549		wt	9	X				
10	MS43I	11.07.11	1633		wt	3	X				
11	QCR05	11.07.11	1705		wt	3	X				

Report Requirements

___ I Routine Report Method Blank, Surrogate, as required
___ II Report Dup., MS, MSD as required
___ III Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V EDD

Invoice Information

P.O.# 27488
Bill To: Accounts Payable
Baywest, 5 Empire Dr.
Saint Paul MN, 55103

Turnaround Requirements

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide Fax Results

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments: *Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other_____(Circle One)

analyze for 8 specific chemicals of concern via method 8260B

UPS Tracking # 1Z A19 8R9 01 9743 3104

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

Relinquished By:		Received By:		Relinquished By:		Received By:	
Signature: Joe S	Date/Time: 11.9.11 1600	Signature: [illegible]	Date/Time: 11/10/11 1020	Signature:	Date/Time:	Signature:	Date/Time:
Printed Name: Joe Sulach	Firm: Baywest	Printed Name: [illegible]	Firm: OAS	Printed Name:	Firm:	Printed Name:	Firm:

11

Columbia Analytical Services

027601 CHAIN OF CUSTODY

SR#_____

COC Set____of____

Page 1 OF 1 COC# 110111-09

1317 South 13th Ave, Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

Project Name: NIROP
Project Number: BayWest
Project Manager: Paul Walz
Company Name: BayWest
Comany Address: 5 Empire Drive
City/State/Zip: Saint Paul, MN, 55103
E-Mail Address: paulw@baywest.com
Phone #: 651-291-3991 FAX #:
Sampler Signature:

	Sample ID	Date	Time	Lab ID	Matrix	Number of Containers	8260B / VOC_FP	14D			Remarks
28	1 MS45I	11.09.11	929		wt	3	X				1
29	2 MS43S	↓	~~1123~~		↓	3	X				2
30	3 MS45S		1134			3	X				3
31	4 QCD09		1000			3	X				4
32	5 MS04IS		1424			3	X				5
33	6 MS15IS	↓	1430		↓	3	X				6
34	7 QCT05	11.7.11	—		wt	3	X				7
35	8 QCR07	11.9.11	1510		wt	3	X				8
36	9 QCD08	11.8.11	0930		wt	3	X				9
	10										10
	11										11

Report Requirements

___ I Routine Report, Method Blank, Surrogate, as required

___ II Report Dup., MS, MSD as required

___ III Data Validation Report (includes all raw data)

X IV CLP Deliverable Report

___ V EDD

Invoice Information

P.O.# 27488

Bill To: Accounts Payable
BayWest 5 Empire Drive
Saint Paul MN 55103

Turnaround Requirements

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide Fax Results

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments:

*Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other_____(Circle One)

Analyze for 8 specific chemicals of concern via 8260B

UPS Tracking # 1Z A19 8R9 01 9743 3104

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

Relinquished By:		Received By:		Relinquished By:		Received By:	
Signature	Date/Time 11.9.11 1620	Signature	Date/Time 11/10/11 1020	Signature	Date/Time	Signature	Date/Time
Printed Name Joe Stakun	Firm BayWest	Printed Name Swoz F	Firm CAS	Printed Name	Firm	Printed Name	Firm

12

PC Lisa

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

Client / Project: Baywest Service Request *K11* 11019

Received: 11/10/11 Opened: 11/10/11 By: SMW Unloaded: 11/10/11 By: SMW

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? 2 front + back

   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Cooler Temp °C	Temp Blank °C	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
-0.6	0.0	317		1Z A19 8R9 01 9899 0715	
-0.7	0.1	281		" " " " 9743 3104	

7. Packing material used: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Sleeves* *Other* _____
8. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
9. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
10. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
11. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
12. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
13. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
14. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
15. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions:

Sample QCT Ø5 rec'd 2 vials, not 3

Page 1 of ____

Volatile Organic Compounds

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111019

Cover Page - Organic Analysis Data Package
Volatile Organic Compounds

Sample Name	Lab Code	Date Collected	Date Received
MS04PC	K1111019-001	11/07/2011	11/10/2011
MS01PC	K1111019-002	11/07/2011	11/10/2011
MS04D	K1111019-003	11/07/2011	11/10/2011
MS31D	K1111019-004	11/08/2011	11/10/2011
MS06D	K1111019-005	11/08/2011	11/10/2011
MS32D	K1111019-006	11/08/2011	11/10/2011
MS02S	K1111019-007	11/08/2011	11/10/2011
QCR05	K1111019-008	11/08/2011	11/10/2011
MS29D	K1111019-009	11/09/2011	11/10/2011
MS02PC	K1111019-010	11/09/2011	11/10/2011
MS05IS	K1111019-011	11/09/2011	11/10/2011
MS47S	K1111019-012	11/08/2011	11/10/2011
MS27SDL	K1111019-013	11/08/2011	11/10/2011
MS27S	K1111019-013	11/08/2011	11/10/2011
MS47I	K1111019-014	11/08/2011	11/10/2011
MS49SDL	K1111019-015	11/08/2011	11/10/2011
MS49S	K1111019-015	11/08/2011	11/10/2011
MS08D	K1111019-016	11/08/2011	11/10/2011
QCT06	K1111019-017	11/07/2011	11/10/2011
MS52I	K1111019-018	11/07/2011	11/10/2011
MS44S	K1111019-019	11/07/2011	11/10/2011
PESCW02	K1111019-020	11/07/2011	11/10/2011
MS16IS	K1111019-021	11/07/2011	11/10/2011
MS16D	K1111019-022	11/07/2011	11/10/2011
MS47D	K1111019-023	11/07/2011	11/10/2011
MS52S	K1111019-024	11/07/2011	11/10/2011
MS19S	K1111019-025	11/07/2011	11/10/2011
MS43I	K1111019-026	11/07/2011	11/10/2011
QCR05	K1111019-027	11/07/2011	11/10/2011
MS45I	K1111019-028	11/09/2011	11/10/2011
MS43SDL	K1111019-029	11/09/2011	11/10/2011
MS43S	K1111019-029	11/09/2011	11/10/2011
MS45SDL	K1111019-030	11/09/2011	11/10/2011
MS45S	K1111019-030	11/09/2011	11/10/2011
QCD09	K1111019-031	11/09/2011	11/10/2011
QCD09DL	K1111019-031	11/09/2011	11/10/2011
MS041S	K1111019-032	11/09/2011	11/10/2011
MS041SDL	K1111019-032	11/09/2011	11/10/2011

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Holly Butcher

Name: Holly Butcher

Date: 11-29-2011

Title: Scientist

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111019

Cover Page - Organic Analysis Data Package
Volatile Organic Compounds

Sample Name	Lab Code	Date Collected	Date Received
MS15IS	K1111019-033	11/09/2011	11/10/2011
QCT05	K1111019-034	11/07/2011	11/10/2011
QCR07	K1111019-035	11/09/2011	11/10/2011
QCD08DL	K1111019-036	11/08/2011	11/10/2011
QCD08	K1111019-036	11/08/2011	11/10/2011
MS31DMS	KWG1111643-1	11/08/2011	11/10/2011
MS31DDMS	KWG1111643-2	11/08/2011	11/10/2011
MS19SMS	KWG1111649-1	11/07/2011	11/10/2011
MS19SDMS	KWG1111649-2	11/07/2011	11/10/2011

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Holly Butcher

Name: Holly Butcher

Date: 11-29-2011

Title: Scientist

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1111019

Surrogate Recovery Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1		Sur2	Sur3
MS04PC	K1111019-001	119		115	104
MS01PC	K1111019-002	121		116	101
MS04D	K1111019-003	107		120	107
MS31D	K1111019-004	115		117	107
MS06D	K1111019-005	117		117	106
MS32D	K1111019-006	119		118	105
MS02S	K1111019-007	122		119	104
QCR05	K1111019-008	122		118	106
MS29D	K1111019-009	106		122	111
MS02PC	K1111019-010	108		121	108
MS05IS	K1111019-011	106		121	109
MS47S	K1111019-012	108		121	112
MS27SDL	K1111019-013	105		121	109
MS27S	K1111019-013	107		121	110
MS47I	K1111019-014	106		121	108
MS49SDL	K1111019-015	106		122	110
MS49S	K1111019-015	108		122	109
MS08D	K1111019-016	107		122	111
QCT06	K1111019-017	106		120	109
MS52I	K1111019-018	105		120	110
MS44S	K1111019-019	107		120	109
PESCW02	K1111019-020	105		121	106
MS16IS	K1111019-021	108		123	111
MS16D	K1111019-022	106		123	110
MS47D	K1111019-023	108		122	109
MS52S	K1111019-024	109		124	110
MS19S	K1111019-025	109		122	110
MS43I	K1111019-026	109		122	111
QCR05	K1111019-027	125	*	117	103
MS45I	K1111019-028	107		121	112
MS43S	K1111019-029	105		120	108
MS43SDL	K1111019-029	107		123	110
MS45S	K1111019-030	108		122	111
MS45SDL	K1111019-030	107		122	109
QCD09	K1111019-031	84		87	78

Surrogate Recovery Control Limits(%)

Sur1 =	Dibromofluoromethane	73-122
Sur2 =	Toluene-d8	65-144
Sur3 =	4-Bromofluorobenzene	68-117

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1111019

Surrogate Recovery Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3	
QCD09DL	K1111019-031	120	119	104	
MS041S	K1111019-032	121	118	103	
MS041SDL	K1111019-032	113	117	106	
MS15IS	K1111019-033	109	122	107	
QCT05	K1111019-034	113	116	107	
QCR07	K1111019-035	114	118	107	
QCD08	K1111019-036	106	123	110	
QCD08DL	K1111019-036	109	122	109	
Method Blank	KWG1111595-4	107	116	112	
Method Blank	KWG1111607-4	109	121	108	
Method Blank	KWG1111643-4	110	117	109	
Method Blank	KWG1111649-4	109	122	110	
Method Blank	KWG1111676-4	108	122	110	
Method Blank	KWG1111741-4	112	118	109	
Method Blank	KWG1111867-5	77	87	78	
MS31DMS	KWG1111643-1	107	118	114	
MS31DDMS	KWG1111643-2	107	117	114	
MS19SMS	KWG1111649-1	110	121	110	
MS19SDMS	KWG1111649-2	110	123	108	
Lab Control Sample	KWG1111595-3	108	117	116	
Lab Control Sample	KWG1111607-3	111	121	107	
Lab Control Sample	KWG1111643-3	110	118	118	*
Lab Control Sample	KWG1111649-3	109	123	109	
Lab Control Sample	KWG1111676-3	109	124	107	
Lab Control Sample	KWG1111741-3	109	117	112	
Lab Control Sample	KWG1111867-3	85	91	83	
Duplicate Lab Control Sample	KWG1111867-4	87	90	82	

Surrogate Recovery Control Limits (%)

Sur1 =	Dibromofluoromethane	73-122
Sur2 =	Toluene-d8	65-144
Sur3 =	4-Bromofluorobenzene	68-117

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111019
Date Analyzed: 10/25/2011
Time Analyzed: 14:01

Tune Summary
Volatile Organic Compounds

File ID: J:\MS04\DATA\102511\1025F003.D
Instrument ID: MS04
Column:

Analysis Method: 8260C
Analysis Lot: KWG1111743

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	15.8	21351	PASS
75	95	30	60	41.3	55829	PASS
95	95	100	100	100.0	135152	PASS
96	95	5	9	6.9	9291	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	93.4	126194	PASS
175	174	5	9	7.9	9912	PASS
176	174	95	101	97.0	122434	PASS
177	176	5	9	6.6	8024	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Initial Calibration	KWG1111743-2	J:\MS04\DATA\102511\1025F006.D	10/25/2011	15:40	
Initial Calibration	KWG1111743-3	J:\MS04\DATA\102511\1025F007.D	10/25/2011	16:15	
Initial Calibration	KWG1111743-4	J:\MS04\DATA\102511\1025F008.D	10/25/2011	16:48	
Initial Calibration	KWG1111743-5	J:\MS04\DATA\102511\1025F009.D	10/25/2011	17:21	
Initial Calibration	KWG1111743-6	J:\MS04\DATA\102511\1025F010.D	10/25/2011	17:54	
Initial Calibration	KWG1111743-7	J:\MS04\DATA\102511\1025F011.D	10/25/2011	18:28	
Initial Calibration	KWG1111743-8	J:\MS04\DATA\102511\1025F012.D	10/25/2011	19:01	
Initial Calibration	KWG1111743-9	J:\MS04\DATA\102511\1025F013.D	10/25/2011	19:34	
Initial Calibration	KWG1111743-10	J:\MS04\DATA\102511\1025F014.D	10/25/2011	20:07	
Initial Calibration	KWG1111743-11	J:\MS04\DATA\102511\1025F015.D	10/25/2011	20:40	
Initial Calibration	KWG1111743-12	J:\MS04\DATA\102511\1025F016.D	10/25/2011	21:13	
Initial Calibration Verification	KWG1111743-13	J:\MS04\DATA\102511\1025F019.D	10/25/2011	22:51	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111019
Calibration Date: 10/25/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL11002
Instrument ID: MS04

Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS04\DATA\102511\1025F006.D	G	J:\MS04\DATA\102511\1025F012.D
B	J:\MS04\DATA\102511\1025F007.D	H	J:\MS04\DATA\102511\1025F013.D
C	J:\MS04\DATA\102511\1025F008.D	I	J:\MS04\DATA\102511\1025F014.D
D	J:\MS04\DATA\102511\1025F009.D	J	J:\MS04\DATA\102511\1025F015.D
E	J:\MS04\DATA\102511\1025F010.D	K	J:\MS04\DATA\102511\1025F016.D
F	J:\MS04\DATA\102511\1025F011.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Vinyl Chloride	A	0.10	0.431	B	0.20	0.336	C	0.50	0.347	D	1.0	0.350	E	2.0	0.397
	F	5.0	0.381	G	10	0.370	H	20	0.358	I	40	0.394	J	60	0.347
	K	70	0.338												
1,1-Dichloroethene				B	0.20	0.242	C	0.50	0.223	D	1.0	0.239	E	2.0	0.266
	F	5.0	0.264	G	10	0.261	H	20	0.248	I	40	0.272	J	60	0.240
	K	70	0.231												
trans-1,2-Dichloroethene	A	0.10	0.311	B	0.20	0.257	C	0.50	0.283	D	1.0	0.292	E	2.0	0.323
	F	5.0	0.328	G	10	0.314	H	20	0.305	I	40	0.323	J	60	0.295
	K	70	0.287												
1,1-Dichloroethane	A	0.10	0.449	B	0.20	0.451	C	0.50	0.417	D	1.0	0.457	E	2.0	0.483
	F	5.0	0.483	G	10	0.465	H	20	0.459	I	40	0.470	J	60	0.444
	K	70	0.431												
cis-1,2-Dichloroethene	A	0.10	0.279	B	0.20	0.282	C	0.50	0.281	D	1.0	0.299	E	2.0	0.331
	F	5.0	0.325	G	10	0.321	H	20	0.319	I	40	0.329	J	60	0.312
	K	70	0.303												
1,1,1-Trichloroethane (TCA)				B	0.20	0.311	C	0.50	0.307	D	1.0	0.326	E	2.0	0.354
	F	5.0	0.347	G	10	0.339	H	20	0.326	I	40	0.345	J	60	0.302
	K	70	0.283												
Trichloroethene (TCE)	A	0.10	0.191	B	0.20	0.217	C	0.50	0.229	D	1.0	0.242	E	2.0	0.265
	F	5.0	0.269	G	10	0.261	H	20	0.257	I	40	0.272	J	60	0.250
	K	70	0.245												
Tetrachloroethene (PCE)	A	0.10	0.330	B	0.20	0.294	C	0.50	0.287	D	1.0	0.322	E	2.0	0.365
	F	5.0	0.355	G	10	0.343	H	20	0.328	I	40	0.338	J	60	0.297
	K	70	0.282												
Dibromofluoromethane										D	6.0	0.248	E	7.0	0.238
	F	8.0	0.250	G	10	0.258	H	20	0.241	I	40	0.232	J	50	0.240
Toluene-d8										D	6.0	0.741	E	7.0	0.691
	F	8.0	0.719	G	10	0.808	H	20	0.756	I	40	0.722	J	50	0.761

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111019
Calibration Date: 10/25/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL11002
Instrument ID: MS04

Column: MS

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
4-Bromofluorobenzene				B	4.0	0.329	C	5.0	0.287	D	6.0	0.366	E	7.0	0.354
	F	8.0	0.375	G	10	0.396	H	20	0.374	I	40	0.362	J	50	0.388

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111019
Calibration Date: 10/25/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL11002
Instrument ID: MS04

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Vinyl Chloride	MS	AverageRF	% RSD	8.1		≤ 20	0.368		0.100
1,1-Dichloroethene	MS	AverageRF	% RSD	6.5		≤ 20	0.249		0.100
trans-1,2-Dichloroethene	MS	AverageRF	% RSD	7.0		≤ 20	0.302		0.100
1,1-Dichloroethane	MS	AverageRF	% RSD	4.5		≤ 20	0.455		0.200
cis-1,2-Dichloroethene	MS	AverageRF	% RSD	6.4		≤ 20	0.308		0.100
1,1,1-Trichloroethane (TCA)	MS	AverageRF	% RSD	7.0		≤ 20	0.324		0.100
Trichloroethene (TCE)	MS	AverageRF	% RSD	10.1		≤ 20	0.245		0.200
Tetrachloroethene (PCE)	MS	AverageRF	% RSD	8.7		≤ 20	0.322		0.200
Dibromofluoromethane	SURR	AverageRF	% RSD	3.6		≤ 20	0.244		0.01
Toluene-d8	SURR	AverageRF	% RSD	5.0		≤ 20	0.743		0.01
4-Bromofluorobenzene	SURR	AverageRF	% RSD	9.3		≤ 20	0.359		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111019
Calibration Date: 10/25/2011
Date Analyzed: 10/25/2011

Second Source Calibration Verification
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration ID: CAL11002
Units: PPB

File ID: J:\MS04\DATA\102511\1025F019.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	8.1	0.368	0.299	-19	NA	± 30 %	AverageRF
1,1-Dichloroethene	10	9.8	0.249	0.244	-2	NA	± 30 %	AverageRF
trans-1,2-Dichloroethene	10	10	0.302	0.309	2	NA	± 30 %	AverageRF
1,1-Dichloroethane	10	9.9	0.455	0.451	-1	NA	± 30 %	AverageRF
cis-1,2-Dichloroethene	10	10	0.308	0.319	4	NA	± 30 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	9.7	0.324	0.315	-3	NA	± 30 %	AverageRF
Trichloroethene (TCE)	10	10	0.245	0.253	3	NA	± 30 %	AverageRF
Tetrachloroethene (PCE)	10	9.8	0.322	0.315	-2	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111019
Date Analyzed: 11/14/2011
Time Analyzed: 10:40

Tune Summary
Volatile Organic Compounds

File ID: J:\MS04\DATA\111411\1114F004.D
Instrument ID: MS04
Column:

Analysis Method: 8260C
Analysis Lot: KWG1111591

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	17.2	17488	PASS
75	95	30	60	41.4	42176	PASS
95	95	100	100	100.0	101808	PASS
96	95	5	9	8.1	8272	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	94.1	95832	PASS
175	174	5	9	8.4	8050	PASS
176	174	95	101	95.4	91440	PASS
177	176	5	9	7.1	6518	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1111591-2	J:\MS04\DATA\111411\1114F005.D	11/14/2011	11:16	
Lab Control Sample	KWG1111595-3	J:\MS04\DATA\111411\1114F006.D	11/14/2011	12:09	
Method Blank	KWG1111595-4	J:\MS04\DATA\111411\1114F010.D	11/14/2011	14:22	
MS04PC	K1111019-001	J:\MS04\DATA\111411\1114F022.D	11/14/2011	21:00	
MS01PC	K1111019-002	J:\MS04\DATA\111411\1114F023.D	11/14/2011	21:33	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111019
Date Analyzed: 11/14/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration Date: 10/25/2011
Calibration ID: CAL11002
Analysis Lot: KWG1111591
Units: PPB

File ID: J:\MS04\DATA\111411\1114F005.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	8.5	0.100	0.368	0.314	-15	NA	± 20 %	AverageRF
1,1-Dichloroethene	10	11	0.100	0.249	0.272	9	NA	± 20 %	AverageRF
trans-1,2-Dichloroethene	10	11	0.100	0.302	0.341	13	NA	± 20 %	AverageRF
1,1-Dichloroethane	10	11	0.200	0.455	0.512	12	NA	± 20 %	AverageRF
cis-1,2-Dichloroethene	10	11	0.100	0.308	0.347	13	NA	± 20 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	12	0.100	0.324	0.392	21 *	NA	± 20 %	AverageRF
Trichloroethene (TCE)	10	11	0.200	0.245	0.275	12	NA	± 20 %	AverageRF
Tetrachloroethene (PCE)	10	11	0.200	0.322	0.355	10	NA	± 20 %	AverageRF
Dibromofluoromethane	10	11	0.01	0.244	0.274	12	NA	± 20 %	AverageRF
Toluene-d8	10	12	0.01	0.743	0.884	19	NA	± 20 %	AverageRF
4-Bromofluorobenzene	10	12	0.01	0.359	0.424	18	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111019

Analysis Run Log
Volatile Organic Compounds

Analysis Method: 8260C

Analysis Lot: KWG1111591
Instrument ID: MS04

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1114F004.D	GC/MS Tuning - Bromofluorobenzene	KWG1111591-1	11/14/2011	10:40		11/14/2011	11:06
1114F005.D	Continuing Calibration Verification	KWG1111591-2	11/14/2011	11:16		11/14/2011	11:42
1114F006.D	Lab Control Sample	KWG1111595-3	11/14/2011	12:09		11/14/2011	12:35
1114F007.D	ZZZZZZ	ZZZZZZ	11/14/2011	12:42		11/14/2011	13:08
1114F008.D	ZZZZZZ	ZZZZZZ	11/14/2011	13:15		11/14/2011	13:41
1114F010.D	Method Blank	KWG1111595-4	11/14/2011	14:22		11/14/2011	14:48
1114F011.D	ZZZZZZ	ZZZZZZ	11/14/2011	14:56		11/14/2011	15:22
1114F012.D	ZZZZZZ	ZZZZZZ	11/14/2011	15:29		11/14/2011	15:55
1114F013.D	ZZZZZZ	ZZZZZZ	11/14/2011	16:02		11/14/2011	16:28
1114F014.D	ZZZZZZ	ZZZZZZ	11/14/2011	16:35		11/14/2011	17:01
1114F015.D	ZZZZZZ	ZZZZZZ	11/14/2011	17:08		11/14/2011	17:34
1114F016.D	ZZZZZZ	ZZZZZZ	11/14/2011	17:42		11/14/2011	18:08
1114F017.D	ZZZZZZ	ZZZZZZ	11/14/2011	18:15		11/14/2011	18:41
1114F018.D	ZZZZZZ	ZZZZZZ	11/14/2011	18:48		11/14/2011	19:14
1114F019.D	ZZZZZZ	ZZZZZZ	11/14/2011	19:21		11/14/2011	19:47
1114F020.D	ZZZZZZ	ZZZZZZ	11/14/2011	19:54		11/14/2011	20:20
1114F021.D	ZZZZZZ	ZZZZZZ	11/14/2011	20:27		11/14/2011	20:53
1114F022.D	MS04PC	K1111019-001	11/14/2011	21:00		11/14/2011	21:26
1114F023.D	MS01PC	K1111019-002	11/14/2011	21:33		11/14/2011	21:59
1114F024.D	ZZZZZZ	ZZZZZZ	11/14/2011	22:06		11/14/2011	22:32

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1111019
Date Extracted: 11/14/2011
Date Analyzed: 11/14/2011
Time Analyzed: 14:22

Method Blank Summary
Volatile Organic Compounds

Sample Name: Method Blank
Lab Code: KWG1111595-4

Instrument ID: MS04
File ID: J:\MS04\DATA\111411\1114F010.D

Extraction Method: EPA 5030B
Analysis Method: 8260C

Level: Low
Extraction Lot: KWG1111595

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1111595-3	J:\MS04\DATA\111411\1114F006.D	11/14/11	12:09
MS04PC	K1111019-001	J:\MS04\DATA\111411\1114F022.D	11/14/11	21:00
MS01PC	K1111019-002	J:\MS04\DATA\111411\1114F023.D	11/14/11	21:33

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	11/14/2011
		Date Analyzed:	11/14/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1111595-4	**Basis:**	NA
File ID:	J:\MS04\DATA\111411\1114F010.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111595
Analysis Method:	8260C	**Calibration ID:**	CAL11002

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	107	73-122	11/14/11	Acceptable
Toluene-d8	116	65-144	11/14/11	Acceptable
4-Bromofluorobenzene	112	68-117	11/14/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Extracted:**	11/14/2011
Sample Matrix:	Water	**Date Analyzed:**	11/14/2011

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	EPA 5030B	**Units:**	ug/L
Analysis Method:	8260C	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1111595

	Lab Control Sample KWG1111595-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Vinyl Chloride	8.12	10.0	81	55-123
1,1-Dichloroethene	9.98	10.0	100	66-129
trans-1,2-Dichloroethene	10.8	10.0	108	67-125
1,1-Dichloroethane	10.6	10.0	106	68-132
cis-1,2-Dichloroethene	11.0	10.0	110	71-118
1,1,1-Trichloroethane (TCA)	10.8	10.0	108	59-136
Trichloroethene (TCE)	10.8	10.0	108	67-128
Tetrachloroethene (PCE)	10.1	10.0	101	62-126

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111019
Date Analyzed: 11/15/2011
Time Analyzed: 10:13

Tune Summary
Volatile Organic Compounds

File ID: J:\MS04\DATA\111511\1115F003.D
Instrument ID: MS04
Column:

Analysis Method: 8260C
Analysis Lot: KWG1111636

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	16.1	14839	PASS
75	95	30	60	41.9	38722	PASS
95	95	100	100	100.0	92440	PASS
96	95	5	9	6.6	6090	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	93.1	86104	PASS
175	174	5	9	8.2	7093	PASS
176	174	95	101	95.3	82024	PASS
177	176	5	9	7.0	5744	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1111636-2	J:\MS04\DATA\111511\1115F004.D	11/15/2011	10:46	
Lab Control Sample	KWG1111643-3	J:\MS04\DATA\111511\1115F005.D	11/15/2011	11:20	
MS31DMS	KWG1111643-1	J:\MS04\DATA\111511\1115F006.D	11/15/2011	11:52	
MS31DDMS	KWG1111643-2	J:\MS04\DATA\111511\1115F007.D	11/15/2011	12:25	
Method Blank	KWG1111643-4	J:\MS04\DATA\111511\1115F009.D	11/15/2011	13:32	
QCT05	K1111019-034	J:\MS04\DATA\111511\1115F010.D	11/15/2011	14:06	
MS31D	K1111019-004	J:\MS04\DATA\111511\1115F011.D	11/15/2011	14:39	
MS06D	K1111019-005	J:\MS04\DATA\111511\1115F013.D	11/15/2011	15:46	
MS32D	K1111019-006	J:\MS04\DATA\111511\1115F014.D	11/15/2011	16:19	
MS02S	K1111019-007	J:\MS04\DATA\111511\1115F015.D	11/15/2011	16:53	
QCR05	K1111019-008	J:\MS04\DATA\111511\1115F016.D	11/15/2011	17:25	
QCR05	K1111019-027	J:\MS04\DATA\111511\1115F019.D	11/15/2011	19:06	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111019
Date Analyzed: 11/15/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration Date: 10/25/2011
Calibration ID: CAL11002
Analysis Lot: KWG1111636
Units: PPB

File ID: J:\MS04\DATA\111511\1115F004.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	8.3	0.100	0.368	0.304	-17	NA	± 20 %	AverageRF
1,1-Dichloroethene	10	10	0.100	0.249	0.258	4	NA	± 20 %	AverageRF
trans-1,2-Dichloroethene	10	11	0.100	0.302	0.333	11	NA	± 20 %	AverageRF
1,1-Dichloroethane	10	11	0.200	0.455	0.502	10	NA	± 20 %	AverageRF
cis-1,2-Dichloroethene	10	11	0.100	0.308	0.339	10	NA	± 20 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	12	0.100	0.324	0.378	17	NA	± 20 %	AverageRF
Trichloroethene (TCE)	10	10	0.200	0.245	0.257	5	NA	± 20 %	AverageRF
Tetrachloroethene (PCE)	10	11	0.200	0.322	0.342	6	NA	± 20 %	AverageRF
Dibromofluoromethane	10	11	0.01	0.244	0.279	14	NA	± 20 %	AverageRF
Toluene-d8	10	12	0.01	0.743	0.889	20	NA	± 20 %	AverageRF
4-Bromofluorobenzene	10	12	0.01	0.359	0.416	16	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111019

Analysis Run Log
Volatile Organic Compounds

Analysis Method: 8260C

Analysis Lot: KWG1111636
Instrument ID: MS04

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1115F003.D	GC/MS Tuning - Bromofluorobenzene	KWG1111636-1	11/15/2011	10:13		11/15/2011	10:39
1115F004.D	Continuing Calibration Verification	KWG1111636-2	11/15/2011	10:46		11/15/2011	11:12
1115F005.D	Lab Control Sample	KWG1111643-3	11/15/2011	11:20		11/15/2011	11:46
1115F006.D	MS31DMS	KWG1111643-1	11/15/2011	11:52		11/15/2011	12:18
1115F007.D	MS31DDMS	KWG1111643-2	11/15/2011	12:25		11/15/2011	12:51
1115F009.D	Method Blank	KWG1111643-4	11/15/2011	13:32		11/15/2011	13:58
1115F010.D	QCT05	K1111019-034	11/15/2011	14:06		11/15/2011	14:32
1115F011.D	MS31D	K1111019-004	11/15/2011	14:39		11/15/2011	15:05
1115F012.D	ZZZZZZ	ZZZZZZ	11/15/2011	15:13		11/15/2011	15:39
1115F013.D	MS06D	K1111019-005	11/15/2011	15:46		11/15/2011	16:12
1115F014.D	MS32D	K1111019-006	11/15/2011	16:19		11/15/2011	16:45
1115F015.D	MS02S	K1111019-007	11/15/2011	16:53		11/15/2011	17:19
1115F016.D	QCR05	K1111019-008	11/15/2011	17:25		11/15/2011	17:51
1115F017.D	ZZZZZZ	ZZZZZZ	11/15/2011	17:59		11/15/2011	18:25
1115F018.D	ZZZZZZ	ZZZZZZ	11/15/2011	18:32		11/15/2011	18:58
1115F019.D	QCR05	K1111019-027	11/15/2011	19:06		11/15/2011	19:32
1115F020.D	ZZZZZZ	ZZZZZZ	11/15/2011	19:38		11/15/2011	20:04
1115F021.D	ZZZZZZ	ZZZZZZ	11/15/2011	20:12		11/15/2011	20:38
1115F022.D	ZZZZZZ	ZZZZZZ	11/15/2011	20:44		11/15/2011	21:10
1115F023.D	ZZZZZZ	ZZZZZZ	11/15/2011	21:17		11/15/2011	21:43
1115F024.D	ZZZZZZ	ZZZZZZ	11/15/2011	21:50		11/15/2011	22:16

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Extracted:**	11/15/2011
Sample Matrix:	Water	**Date Analyzed:**	11/15/2011
		Time Analyzed:	13:32

Method Blank Summary
Volatile Organic Compounds

Sample Name:	Method Blank	**Instrument ID:**	MS04
Lab Code:	KWG1111643-4	**File ID:**	J:\MS04\DATA\111511\1115F009.D
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C	**Extraction Lot:**	KWG1111643

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1111643-3	J:\MS04\DATA\111511\1115F005.D	11/15/11	11:20
MS31DMS	KWG1111643-1	J:\MS04\DATA\111511\1115F006.D	11/15/11	11:52
MS31DDMS	KWG1111643-2	J:\MS04\DATA\111511\1115F007.D	11/15/11	12:25
QCT05	K1111019-034	J:\MS04\DATA\111511\1115F010.D	11/15/11	14:06
MS31D	K1111019-004	J:\MS04\DATA\111511\1115F011.D	11/15/11	14:39
MS06D	K1111019-005	J:\MS04\DATA\111511\1115F013.D	11/15/11	15:46
MS32D	K1111019-006	J:\MS04\DATA\111511\1115F014.D	11/15/11	16:19
MS02S	K1111019-007	J:\MS04\DATA\111511\1115F015.D	11/15/11	16:53
QCR05	K1111019-008	J:\MS04\DATA\111511\1115F016.D	11/15/11	17:25
QCR05	K1111019-027	J:\MS04\DATA\111511\1115F019.D	11/15/11	19:06

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	11/15/2011
		Date Analyzed:	11/15/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1111643-4	**Basis:**	NA
File ID:	J:\MS04\DATA\111511\1115F009.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111643
Analysis Method:	8260C	**Calibration ID:**	CAL11002

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	110	73-122	11/15/11	Acceptable
Toluene-d8	117	65-144	11/15/11	Acceptable
4-Bromofluorobenzene	109	68-117	11/15/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Extracted:**	11/15/2011
Sample Matrix:	Water	**Date Analyzed:**	11/15/2011

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	EPA 5030B	**Units:**	ug/L
Analysis Method:	8260C	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1111643

	Lab Control Sample KWG1111643-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Vinyl Chloride	8.26	10.0	83	55-123
1,1-Dichloroethene	10.3	10.0	103	66-129
trans-1,2-Dichloroethene	11.1	10.0	111	67-125
1,1-Dichloroethane	10.8	10.0	108	68-132
cis-1,2-Dichloroethene	11.1	10.0	111	71-118
1,1,1-Trichloroethane (TCA)	11.2	10.0	112	59-136
Trichloroethene (TCE)	10.9	10.0	109	67-128
Tetrachloroethene (PCE)	10.4	10.0	104	62-126

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Extracted:**	11/15/2011
Sample Matrix:	Water	**Date Analyzed:**	11/15/2011

Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organic Compounds

Sample Name:	MS31D	**Units:**	ug/L
Lab Code:	K1111019-004	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C	**Extraction Lot:**	KWG1111643

		MS31DMS KWG1111643-1 Matrix Spike			MS31DDMS KWG1111643-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Vinyl Chloride	ND	7.60	10.0	76	7.01	10.0	70	49-136	8	30
1,1-Dichloroethene	ND	9.34	10.0	93	8.71	10.0	87	59-171	7	30
trans-1,2-Dichloroethene	0.26	10.5	10.0	102	9.82	10.0	96	65-143	6	30
1,1-Dichloroethane	ND	10.2	10.0	102	9.50	10.0	95	69-141	7	30
cis-1,2-Dichloroethene	1.6	12.3	10.0	108	11.8	10.0	102	61-139	5	30
1,1,1-Trichloroethane (TCA)	ND	10.2	10.0	102	9.37	10.0	94	57-151	9	30
Trichloroethene (TCE)	1.1	11.5	10.0	104	10.7	10.0	97	53-139	6	30
Tetrachloroethene (PCE)	1.7	11.4	10.0	97	10.3	10.0	86	61-131	10	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111019
Date Analyzed: 11/17/2011
Time Analyzed: 11:15

Tune Summary
Volatile Organic Compounds

File ID: J:\MS04\DATA\111711\1117F003.D
Instrument ID: MS04
Column:

Analysis Method: 8260C
Analysis Lot: KWG1111736

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	16.0	16892	PASS
75	95	30	60	43.3	45786	PASS
95	95	100	100	100.0	105720	PASS
96	95	5	9	7.2	7624	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	89.5	94661	PASS
175	174	5	9	8.0	7560	PASS
176	174	95	101	99.6	94312	PASS
177	176	5	9	6.2	5867	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1111736-2	J:\MS04\DATA\111711\1117F004.D	11/17/2011	11:52	
Lab Control Sample	KWG1111741-3	J:\MS04\DATA\111711\1117F005.D	11/17/2011	12:25	
Method Blank	KWG1111741-4	J:\MS04\DATA\111711\1117F010.D	11/17/2011	15:12	
QCR07	K1111019-035	J:\MS04\DATA\111711\1117F012.D	11/17/2011	16:19	
MS041SDL	K1111019-032	J:\MS04\DATA\111711\1117F013.D	11/17/2011	16:51	
QCD09DL	K1111019-031	J:\MS04\DATA\111711\1117F018.D	11/17/2011	19:38	
MS041S	K1111019-032	J:\MS04\DATA\111711\1117F019.D	11/17/2011	20:12	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111019
Date Analyzed: 11/17/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration Date: 10/25/2011
Calibration ID: CAL11002
Analysis Lot: KWG1111736
Units: PPB

File ID: J:\MS04\DATA\111711\1117F004.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	7.8	0.100	0.368	0.286	-22 *	NA	± 20 %	AverageRF
1,1-Dichloroethene	10	9.6	0.100	0.249	0.239	-4	NA	± 20 %	AverageRF
trans-1,2-Dichloroethene	10	9.7	0.100	0.302	0.292	-3	NA	± 20 %	AverageRF
1,1-Dichloroethane	10	9.7	0.200	0.455	0.439	-3	NA	± 20 %	AverageRF
cis-1,2-Dichloroethene	10	9.9	0.100	0.308	0.305	-1	NA	± 20 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	11	0.100	0.324	0.350	8	NA	± 20 %	AverageRF
Trichloroethene (TCE)	10	10	0.200	0.245	0.246	0	NA	± 20 %	AverageRF
Tetrachloroethene (PCE)	10	10	0.200	0.322	0.332	3	NA	± 20 %	AverageRF
Dibromofluoromethane	10	11	0.01	0.244	0.270	11	NA	± 20 %	AverageRF
Toluene-d8	10	12	0.01	0.743	0.878	18	NA	± 20 %	AverageRF
4-Bromofluorobenzene	10	11	0.01	0.359	0.406	13	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111019

Analysis Run Log
Volatile Organic Compounds

Analysis Method: 8260C

Analysis Lot: KWG1111736
Instrument ID: MS04

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1117F003.D	GC/MS Tuning - Bromofluorobenzene	KWG1111736-1	11/17/2011	11:15		11/17/2011	11:41
1117F004.D	Continuing Calibration Verification	KWG1111736-2	11/17/2011	11:52		11/17/2011	12:18
1117F005.D	Lab Control Sample	KWG1111741-3	11/17/2011	12:25		11/17/2011	12:51
1117F006.D	ZZZZZZ	ZZZZZZ	11/17/2011	12:59		11/17/2011	13:25
1117F007.D	ZZZZZZ	ZZZZZZ	11/17/2011	13:31		11/17/2011	13:57
1117F010.D	Method Blank	KWG1111741-4	11/17/2011	15:12		11/17/2011	15:38
1117F011.D	ZZZZZZ	ZZZZZZ	11/17/2011	15:45		11/17/2011	16:11
1117F012.D	QCR07	K1111019-035	11/17/2011	16:19		11/17/2011	16:45
1117F013.D	MS041SDL	K1111019-032	11/17/2011	16:51		11/17/2011	17:17
1117F014.D	ZZZZZZ	ZZZZZZ	11/17/2011	17:25		11/17/2011	17:51
1117F015.D	ZZZZZZ	ZZZZZZ	11/17/2011	17:58		11/17/2011	18:24
1117F016.D	ZZZZZZ	ZZZZZZ	11/17/2011	18:31		11/17/2011	18:57
1117F017.D	ZZZZZZ	ZZZZZZ	11/17/2011	19:05		11/17/2011	19:31
1117F018.D	QCD09DL	K1111019-031	11/17/2011	19:38		11/17/2011	20:04
1117F019.D	MS041S	K1111019-032	11/17/2011	20:12		11/17/2011	20:38
1117F020.D	ZZZZZZ	ZZZZZZ	11/17/2011	20:44		11/17/2011	21:10
1117F021.D	ZZZZZZ	ZZZZZZ	11/17/2011	21:18		11/17/2011	21:44
1117F022.D	ZZZZZZ	ZZZZZZ	11/17/2011	21:51		11/17/2011	22:17
1117F023.D	ZZZZZZ	ZZZZZZ	11/17/2011	22:23		11/17/2011	22:49
1117F024.D	ZZZZZZ	ZZZZZZ	11/17/2011	22:57		11/17/2011	23:23

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Extracted:**	11/17/2011
Sample Matrix:	Water	**Date Analyzed:**	11/17/2011
		Time Analyzed:	15:12

Method Blank Summary
Volatile Organic Compounds

Sample Name:	Method Blank	**Instrument ID:**	MS04
Lab Code:	KWG1111741-4	**File ID:**	J:\MS04\DATA\111711\1117F010.D
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C	**Extraction Lot:**	KWG1111741

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1111741-3	J:\MS04\DATA\111711\1117F005.D	11/17/11	12:25
QCR07	K1111019-035	J:\MS04\DATA\111711\1117F012.D	11/17/11	16:19
MS041SDL	K1111019-032	J:\MS04\DATA\111711\1117F013.D	11/17/11	16:51
QCD09DL	K1111019-031	J:\MS04\DATA\111711\1117F018.D	11/17/11	19:38
MS041S	K1111019-032	J:\MS04\DATA\111711\1117F019.D	11/17/11	20:12

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	11/17/2011
		Date Analyzed:	11/17/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1111741-4	**Basis:**	NA
File ID:	J:\MS04\DATA\111711\1117F010.D	**Level:**	Low
Instrument ID:	MS04		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111741
Analysis Method:	8260C	**Calibration ID:**	CAL11002

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	*
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	112	73-122	11/17/11	Acceptable
Toluene-d8	118	65-144	11/17/11	Acceptable
4-Bromofluorobenzene	109	68-117	11/17/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Extracted:**	11/17/2011
Sample Matrix:	Water	**Date Analyzed:**	11/17/2011

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	EPA 5030B	**Units:**	ug/L
Analysis Method:	8260C	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1111741

	Lab Control Sample KWG1111741-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Vinyl Chloride	7.37	10.0	74	55-123
1,1-Dichloroethene	9.48	10.0	95	66-129
trans-1,2-Dichloroethene	9.76	10.0	98	67-125
1,1-Dichloroethane	9.35	10.0	94	68-132
cis-1,2-Dichloroethene	9.76	10.0	98	71-118
1,1,1-Trichloroethane (TCA)	10.3	10.0	103	59-136
Trichloroethene (TCE)	9.94	10.0	99	67-128
Tetrachloroethene (PCE)	9.93	10.0	99	62-126

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111019
Date Analyzed: 10/31/2011
Time Analyzed: 11:40

Tune Summary
Volatile Organic Compounds

File ID: J:\MS13\DATA\103111\1031F003.D
Instrument ID: MS13
Column:

Analysis Method: 8260C
Analysis Lot: KWG1111931

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	16.6	36602	PASS
75	95	30	60	47.9	105360	PASS
95	95	100	100	100.0	219861	PASS
96	95	5	9	6.8	14963	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	96.8	212842	PASS
175	174	5	9	8.0	17036	PASS
176	174	95	101	98.8	210240	PASS
177	176	5	9	6.6	13941	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Initial Calibration	KWG1111931-2	J:\MS13\DATA\103111\1031F005.D	10/31/2011	12:50	
Initial Calibration	KWG1111931-3	J:\MS13\DATA\103111\1031F006.D	10/31/2011	13:18	
Initial Calibration	KWG1111931-4	J:\MS13\DATA\103111\1031F007.D	10/31/2011	13:47	
Initial Calibration	KWG1111931-5	J:\MS13\DATA\103111\1031F008.D	10/31/2011	14:15	
Initial Calibration	KWG1111931-6	J:\MS13\DATA\103111\1031F009.D	10/31/2011	14:44	
Initial Calibration	KWG1111931-7	J:\MS13\DATA\103111\1031F010.D	10/31/2011	15:12	
Initial Calibration	KWG1111931-8	J:\MS13\DATA\103111\1031F011.D	10/31/2011	15:41	
Initial Calibration	KWG1111931-9	J:\MS13\DATA\103111\1031F012.D	10/31/2011	16:09	
Initial Calibration	KWG1111931-10	J:\MS13\DATA\103111\1031F013.D	10/31/2011	16:38	
Initial Calibration	KWG1111931-11	J:\MS13\DATA\103111\1031F014.D	10/31/2011	17:07	
Initial Calibration	KWG1111931-12	J:\MS13\DATA\103111\1031F015.D	10/31/2011	17:35	
Initial Calibration Verification	KWG1111931-13	J:\MS13\DATA\103111\1031F019.D	10/31/2011	19:29	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111019
Calibration Date: 10/31/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL11020
Instrument ID: MS13

Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS13\DATA\103111\1031F005.D	G	J:\MS13\DATA\103111\1031F011.D
B	J:\MS13\DATA\103111\1031F006.D	H	J:\MS13\DATA\103111\1031F012.D
C	J:\MS13\DATA\103111\1031F007.D	I	J:\MS13\DATA\103111\1031F013.D
D	J:\MS13\DATA\103111\1031F008.D	J	J:\MS13\DATA\103111\1031F014.D
E	J:\MS13\DATA\103111\1031F009.D	K	J:\MS13\DATA\103111\1031F015.D
F	J:\MS13\DATA\103111\1031F010.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Vinyl Chloride	A	0.10	0.303	B	0.20	0.328	C	0.50	0.275	D	1.0	0.290	E	2.0	0.309
	F	5.0	0.318	G	10	0.281	H	20	0.257	I	40	0.280	J	60	0.286
	K	80	0.268												
1,1-Dichloroethene				B	0.20	0.260	C	0.50	0.207	D	1.0	0.227	E	2.0	0.236
	F	5.0	0.246	G	10	0.218	H	20	0.200	I	40	0.215	J	60	0.220
	K	80	0.204												
trans-1,2-Dichloroethene				B	0.20	0.263	C	0.50	0.238	D	1.0	0.271	E	2.0	0.265
	F	5.0	0.283	G	10	0.247	H	20	0.230	I	40	0.248	J	60	0.254
	K	80	0.238												
1,1-Dichloroethane	A	0.10	0.442	B	0.20	0.475	C	0.50	0.383	D	1.0	0.410	E	2.0	0.428
	F	5.0	0.442	G	10	0.403	H	20	0.375	I	40	0.416	J	60	0.419
	K	80	0.404												
cis-1,2-Dichloroethene				B	0.20	0.286	C	0.50	0.249	D	1.0	0.282	E	2.0	0.279
	F	5.0	0.283	G	10	0.264	H	20	0.245	I	40	0.273	J	60	0.272
	K	80	0.264												
1,1,1-Trichloroethane (TCA)	A	0.10	0.379	B	0.20	0.386	C	0.50	0.313	D	1.0	0.353	E	2.0	0.353
	F	5.0	0.377	G	10	0.346	H	20	0.330	I	40	0.365	J	60	0.383
	K	80	0.364												
Trichloroethene (TCE)				B	0.20	0.290	C	0.50	0.254	D	1.0	0.262	E	2.0	0.271
	F	5.0	0.283	G	10	0.254	H	20	0.238	I	40	0.262	J	60	0.267
	K	80	0.255												
Tetrachloroethene (PCE)				B	0.20	0.797	C	0.50	0.682	D	1.0	0.690	E	2.0	0.741
	F	5.0	0.761	G	10	0.681	H	20	0.624	I	40	0.679	J	60	0.709
	K	80	0.672												
Dibromofluoromethane				B	4.0	0.192	C	5.0	0.197	D	6.0	0.212	E	7.0	0.197
	F	8.0	0.166	G	10	0.198	H	20	0.212	I	40	0.205	J	50	0.210
	K	60	0.211												
Toluene-d8							C	5.0	0.842	D	6.0	0.890	E	7.0	0.823
	F	8.0	0.647	G	10	0.864	H	20	0.893	I	40	0.816	J	50	0.826
	K	60	0.837												

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111019
Calibration Date: 10/31/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL11020
Instrument ID: MS13

Column: MS

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
4-Bromofluorobenzene				B	4.0	0.825	C	5.0	0.841	D	6.0	0.882	E	7.0	0.837
	F	8.0	0.699	G	10	0.832	H	20	0.868	I	40	0.819	J	50	0.821
	K	60	0.829												

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111019
Calibration Date: 10/31/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL11020
Instrument ID: MS13

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Vinyl Chloride	MS	AverageRF	% RSD	7.6		≤ 20	0.290		0.100
1,1-Dichloroethene	MS	AverageRF	% RSD	8.6		≤ 20	0.223		0.100
trans-1,2-Dichloroethene	MS	AverageRF	% RSD	6.6		≤ 20	0.254		0.100
1,1-Dichloroethane	MS	AverageRF	% RSD	6.8		≤ 20	0.418		0.200
cis-1,2-Dichloroethene	MS	AverageRF	% RSD	5.3		≤ 20	0.270		0.100
1,1,1-Trichloroethane (TCA)	MS	AverageRF	% RSD	6.5		≤ 20	0.359		0.100
Trichloroethene (TCE)	MS	AverageRF	% RSD	5.7		≤ 20	0.264		0.200
Tetrachloroethene (PCE)	MS	AverageRF	% RSD	7.1		≤ 20	0.704		0.200
Dibromofluoromethane	SURR	AverageRF	% RSD	7.0		≤ 20	0.200		0.01
Toluene-d8	SURR	AverageRF	% RSD	8.8		≤ 20	0.826		0.01
4-Bromofluorobenzene	SURR	AverageRF	% RSD	5.9		≤ 20	0.825		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111019
Calibration Date: 10/31/2011
Date Analyzed: 10/31/2011

Second Source Calibration Verification
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration ID: CAL11020
Units: PPB

File ID: J:\MS13\DATA\103111\1031F019.D
J:\MS13\DATA\103111\1031F020.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	8.9	0.290	0.260	-11	NA	± 30 %	AverageRF
1,1-Dichloroethene	10	11	0.223	0.239	7	NA	± 30 %	AverageRF
trans-1,2-Dichloroethene	10	11	0.254	0.275	8	NA	± 30 %	AverageRF
1,1-Dichloroethane	10	10	0.418	0.429	3	NA	± 30 %	AverageRF
cis-1,2-Dichloroethene	10	11	0.270	0.285	5	NA	± 30 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	11	0.359	0.388	8	NA	± 30 %	AverageRF
Trichloroethene (TCE)	10	11	0.264	0.282	7	NA	± 30 %	AverageRF
Tetrachloroethene (PCE)	10	11	0.704	0.739	5	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111019
Date Analyzed: 11/14/2011
Time Analyzed: 11:30

Tune Summary
Volatile Organic Compounds

File ID: J:\MS13\DATA\111411\1114F003.D
Instrument ID: MS13
Column:

Analysis Method: 8260C
Analysis Lot: KWG1111594

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	15.6	32374	PASS
75	95	30	60	46.1	95664	PASS
95	95	100	100	100.0	207616	PASS
96	95	5	9	6.7	13956	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	94.8	196800	PASS
175	174	5	9	7.7	15060	PASS
176	174	95	101	97.4	191744	PASS
177	176	5	9	6.4	12238	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Lab Control Sample	KWG1111607-3	J:\MS13\DATA\111411A\1114F006A.D	11/14/2011	14:21	
Continuing Calibration Verification	KWG1111594-2	J:\MS13\DATA\111411\1114F006.D	11/14/2011	14:21	
Method Blank	KWG1111607-4	J:\MS13\DATA\111411\1114F011.D	11/14/2011	17:04	
QCT06	K1111019-017	J:\MS13\DATA\111411\1114F013.D	11/14/2011	18:02	
MS04D	K1111019-003	J:\MS13\DATA\111411\1114F020.D	11/14/2011	21:21	
MS52I	K1111019-018	J:\MS13\DATA\111411\1114F021.D	11/14/2011	21:50	
MS44S	K1111019-019	J:\MS13\DATA\111411\1114F022.D	11/14/2011	22:18	
PESCW02	K1111019-020	J:\MS13\DATA\111411\1114F023.D	11/14/2011	22:47	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111019
Date Analyzed: 11/14/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration Date: 10/31/2011
Calibration ID: CAL11020
Analysis Lot: KWG1111594
Units: PPB

File ID: J:\MS13\DATA\111411\1114F006.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D		%Drift	Criteria	Curve Fit
Vinyl Chloride	10	9.0	0.100	0.290	0.260	-10		NA	± 20 %	AverageRF
1,1-Dichloroethene	10	11	0.100	0.223	0.239	7		NA	± 20 %	AverageRF
trans-1,2-Dichloroethene	10	11	0.100	0.254	0.273	8		NA	± 20 %	AverageRF
1,1-Dichloroethane	10	10	0.200	0.418	0.437	5		NA	± 20 %	AverageRF
cis-1,2-Dichloroethene	10	10	0.100	0.270	0.280	4		NA	± 20 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	10	0.100	0.359	0.373	4		NA	± 20 %	AverageRF
Trichloroethene (TCE)	10	10	0.200	0.264	0.276	5		NA	± 20 %	AverageRF
Tetrachloroethene (PCE)	10	9.5	0.200	0.704	0.670	-5		NA	± 20 %	AverageRF
Dibromofluoromethane	10	11	0.01	0.200	0.222	11		NA	± 20 %	AverageRF
Toluene-d8	10	12	0.01	0.826	1.00	21	*	NA	± 20 %	AverageRF
4-Bromofluorobenzene	10	11	0.01	0.825	0.881	7		NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111019

Analysis Run Log
Volatile Organic Compounds

Analysis Method: 8260C

Analysis Lot: KWG1111594
Instrument ID: MS13

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1114F003.D	GC/MS Tuning - Bromofluorobenzene	KWG1111594-1	11/14/2011	11:30		11/14/2011	11:49
1114F006.D	ZZZZZZ	ZZZZZZ	11/14/2011	14:21		11/14/2011	14:40
1114F006.D	Continuing Calibration Verification	KWG1111594-2	11/14/2011	14:21		11/14/2011	14:40
114F006A.D	Lab Control Sample	KWG1111607-3	11/14/2011	14:21		11/14/2011	14:40
1114F007.D	ZZZZZZ	ZZZZZZ	11/14/2011	15:10		11/14/2011	15:29
1114F008.D	ZZZZZZ	ZZZZZZ	11/14/2011	15:38		11/14/2011	15:57
1114F011.D	Method Blank	KWG1111607-4	11/14/2011	17:04		11/14/2011	17:23
1114F012.D	ZZZZZZ	ZZZZZZ	11/14/2011	17:33		11/14/2011	17:52
1114F013.D	QCT06	K1111019-017	11/14/2011	18:02		11/14/2011	18:21
1114F014.D	ZZZZZZ	ZZZZZZ	11/14/2011	18:30		11/14/2011	18:49
1114F015.D	ZZZZZZ	ZZZZZZ	11/14/2011	18:59		11/14/2011	19:18
1114F016.D	ZZZZZZ	ZZZZZZ	11/14/2011	19:27		11/14/2011	19:46
1114F017.D	ZZZZZZ	ZZZZZZ	11/14/2011	19:56		11/14/2011	20:15
1114F018.D	ZZZZZZ	ZZZZZZ	11/14/2011	20:24		11/14/2011	20:43
1114F019.D	ZZZZZZ	ZZZZZZ	11/14/2011	20:53		11/14/2011	21:12
1114F020.D	MS04D	K1111019-003	11/14/2011	21:21		11/14/2011	21:40
1114F021.D	MS52I	K1111019-018	11/14/2011	21:50		11/14/2011	22:09
1114F022.D	MS44S	K1111019-019	11/14/2011	22:18		11/14/2011	22:37
1114F023.D	PESCW02	K1111019-020	11/14/2011	22:47		11/14/2011	23:06

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Extracted:**	11/14/2011
Sample Matrix:	Water	**Date Analyzed:**	11/14/2011
		Time Analyzed:	17:04

Method Blank Summary
Volatile Organic Compounds

Sample Name:	Method Blank	**Instrument ID:**	MS13
Lab Code:	KWG1111607-4	**File ID:**	J:\MS13\DATA\111411\1114F011.D
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C	**Extraction Lot:**	KWG1111607

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1111607-3	J:\MS13\DATA\111411A\1114F006A.D	11/14/11	14:21
Continuing Calibration Verification	KWG1111594-2	J:\MS13\DATA\111411\1114F006.D	11/14/11	14:21
QCT06	K1111019-017	J:\MS13\DATA\111411\1114F013.D	11/14/11	18:02
MS04D	K1111019-003	J:\MS13\DATA\111411\1114F020.D	11/14/11	21:21
MS52I	K1111019-018	J:\MS13\DATA\111411\1114F021.D	11/14/11	21:50
MS44S	K1111019-019	J:\MS13\DATA\111411\1114F022.D	11/14/11	22:18
PESCW02	K1111019-020	J:\MS13\DATA\111411\1114F023.D	11/14/11	22:47

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	11/14/2011
		Date Analyzed:	11/14/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1111607-4	**Basis:**	NA
File ID:	J:\MS13\DATA\111411\1114F011.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111607
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	109	73-122	11/14/11	Acceptable
Toluene-d8	121	65-144	11/14/11	Acceptable
4-Bromofluorobenzene	108	68-117	11/14/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1111019
Date Extracted: 11/14/2011
Date Analyzed: 11/14/2011

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1111607

	Lab Control Sample KWG1111607-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Vinyl Chloride	8.96	10.0	90	55-123
1,1-Dichloroethene	10.7	10.0	107	66-129
trans-1,2-Dichloroethene	10.8	10.0	108	67-125
1,1-Dichloroethane	10.5	10.0	105	68-132
cis-1,2-Dichloroethene	10.4	10.0	104	71-118
1,1,1-Trichloroethane (TCA)	10.4	10.0	104	59-136
Trichloroethene (TCE)	10.5	10.0	105	67-128
Tetrachloroethene (PCE)	9.52	10.0	95	62-126

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111019
Date Analyzed: 11/15/2011
Time Analyzed: 12:49

Tune Summary
Volatile Organic Compounds

File ID: J:\MS13\DATA\111511\1115F006.D
Instrument ID: MS13
Column:

Analysis Method: 8260C
Analysis Lot: KWG1111634

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	16.5	32968	PASS
75	95	30	60	47.0	93704	PASS
95	95	100	100	100.0	199488	PASS
96	95	5	9	6.8	13654	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	94.4	188416	PASS
175	174	5	9	7.8	14740	PASS
176	174	95	101	98.5	185536	PASS
177	176	5	9	6.2	11499	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1111634-2	J:\MS13\DATA\111511\1115F007.D	11/15/2011	13:18	
Lab Control Sample	KWG1111649-3	J:\MS13\DATA\111511\1115F008.D	11/15/2011	13:47	
MS19SMS	KWG1111649-1	J:\MS13\DATA\111511\1115F009.D	11/15/2011	15:32	
MS19SDMS	KWG1111649-2	J:\MS13\DATA\111511\1115F010.D	11/15/2011	16:01	
Method Blank	KWG1111649-4	J:\MS13\DATA\111511\1115F013.D	11/15/2011	17:27	
MS19S	K1111019-025	J:\MS13\DATA\111511\1115F014.D	11/15/2011	17:56	
MS47I	K1111019-014	J:\MS13\DATA\111511\1115F019.D	11/15/2011	20:19	
MS27SDL	K1111019-013	J:\MS13\DATA\111511\1115F020.D	11/15/2011	20:47	
MS49SDL	K1111019-015	J:\MS13\DATA\111511\1115F021.D	11/15/2011	21:16	
QCD08DL	K1111019-036	J:\MS13\DATA\111511\1115F022.D	11/15/2011	21:44	
MS27S	K1111019-013	J:\MS13\DATA\111511\1115F023.D	11/15/2011	22:12	
MS49S	K1111019-015	J:\MS13\DATA\111511\1115F024.D	11/15/2011	22:41	
QCD08	K1111019-036	J:\MS13\DATA\111511\1115F025.D	11/15/2011	23:09	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111019
Date Analyzed: 11/15/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration Date: 10/31/2011
Calibration ID: CAL11020
Analysis Lot: KWG1111634
Units: PPB

File ID: J:\MS13\DATA\111511\1115F007.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D		%Drift	Criteria	Curve Fit
Vinyl Chloride	10	9.3	0.100	0.290	0.269	-7		NA	± 20 %	AverageRF
1,1-Dichloroethene	10	9.3	0.100	0.223	0.207	-7		NA	± 20 %	AverageRF
trans-1,2-Dichloroethene	10	9.3	0.100	0.254	0.237	-7		NA	± 20 %	AverageRF
1,1-Dichloroethane	10	9.4	0.200	0.418	0.394	-6		NA	± 20 %	AverageRF
cis-1,2-Dichloroethene	10	9.5	0.100	0.270	0.255	-5		NA	± 20 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	9.3	0.100	0.359	0.334	-7		NA	± 20 %	AverageRF
Trichloroethene (TCE)	10	9.4	0.200	0.264	0.248	-6		NA	± 20 %	AverageRF
Tetrachloroethene (PCE)	10	8.3	0.200	0.704	0.585	-17		NA	± 20 %	AverageRF
Dibromofluoromethane	10	11	0.01	0.200	0.219	10		NA	± 20 %	AverageRF
Toluene-d8	10	12	0.01	0.826	0.997	21	*	NA	± 20 %	AverageRF
4-Bromofluorobenzene	10	11	0.01	0.825	0.912	11		NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111019

Analysis Run Log
Volatile Organic Compounds

Analysis Method: 8260C

Analysis Lot: KWG1111634
Instrument ID: MS13

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1115F006.D	GC/MS Tuning - Bromofluorobenzene	KWG1111634-1	11/15/2011	12:49		11/15/2011	13:08
1115F007.D	Continuing Calibration Verification	KWG1111634-2	11/15/2011	13:18		11/15/2011	13:37
1115F008.D	Lab Control Sample	KWG1111649-3	11/15/2011	13:47		11/15/2011	14:06
1115F009.D	MS19SMS	KWG1111649-1	11/15/2011	15:32		11/15/2011	15:51
1115F010.D	MS19SDMS	KWG1111649-2	11/15/2011	16:01		11/15/2011	16:20
1115F013.D	Method Blank	KWG1111649-4	11/15/2011	17:27		11/15/2011	17:46
1115F014.D	MS19S	K1111019-025	11/15/2011	17:56		11/15/2011	18:15
1115F015.D	ZZZZZZ	ZZZZZZ	11/15/2011	18:24		11/15/2011	18:43
1115F016.D	ZZZZZZ	ZZZZZZ	11/15/2011	18:53		11/15/2011	19:12
1115F017.D	ZZZZZZ	ZZZZZZ	11/15/2011	19:22		11/15/2011	19:41
1115F018.D	ZZZZZZ	ZZZZZZ	11/15/2011	19:50		11/15/2011	20:09
1115F019.D	MS47I	K1111019-014	11/15/2011	20:19		11/15/2011	20:38
1115F020.D	MS27SDL	K1111019-013	11/15/2011	20:47		11/15/2011	21:06
1115F021.D	MS49SDL	K1111019-015	11/15/2011	21:16		11/15/2011	21:35
1115F022.D	QCD08DL	K1111019-036	11/15/2011	21:44		11/15/2011	22:03
1115F023.D	MS27S	K1111019-013	11/15/2011	22:12		11/15/2011	22:31
1115F024.D	MS49S	K1111019-015	11/15/2011	22:41		11/15/2011	23:00
1115F025.D	QCD08	K1111019-036	11/15/2011	23:09		11/15/2011	23:28

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Extracted:**	11/15/2011
Sample Matrix:	Water	**Date Analyzed:**	11/15/2011
		Time Analyzed:	17:27

Method Blank Summary
Volatile Organic Compounds

Sample Name:	Method Blank	**Instrument ID:**	MS13
Lab Code:	KWG1111649-4	**File ID:**	J:\MS13\DATA\111511\1115F013.D
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C	**Extraction Lot:**	KWG1111649

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1111649-3	J:\MS13\DATA\111511\1115F008.D	11/15/11	13:47
MS19SMS	KWG1111649-1	J:\MS13\DATA\111511\1115F009.D	11/15/11	15:32
MS19SDMS	KWG1111649-2	J:\MS13\DATA\111511\1115F010.D	11/15/11	16:01
MS19S	K1111019-025	J:\MS13\DATA\111511\1115F014.D	11/15/11	17:56
MS47I	K1111019-014	J:\MS13\DATA\111511\1115F019.D	11/15/11	20:19
MS27SDL	K1111019-013	J:\MS13\DATA\111511\1115F020.D	11/15/11	20:47
MS49SDL	K1111019-015	J:\MS13\DATA\111511\1115F021.D	11/15/11	21:16
QCD08DL	K1111019-036	J:\MS13\DATA\111511\1115F022.D	11/15/11	21:44
MS27S	K1111019-013	J:\MS13\DATA\111511\1115F023.D	11/15/11	22:12
MS49S	K1111019-015	J:\MS13\DATA\111511\1115F024.D	11/15/11	22:41
QCD08	K1111019-036	J:\MS13\DATA\111511\1115F025.D	11/15/11	23:09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	11/15/2011
		Date Analyzed:	11/15/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1111649-4	**Basis:**	NA
File ID:	J:\MS13\DATA\111511\1115F013.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111649
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	109	73-122	11/15/11	Acceptable
Toluene-d8	122	65-144	11/15/11	Acceptable
4-Bromofluorobenzene	110	68-117	11/15/11	Acceptable

Comments:

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1111019
Date Extracted: 11/15/2011
Date Analyzed: 11/15/2011

Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organic Compounds

Sample Name: MS19S
Lab Code: K1111019-025

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260C

Level: Low
Extraction Lot: KWG1111649

Analyte Name	Sample Result	MS19SMS KWG1111649-1 Matrix Spike			MS19SDMS KWG1111649-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
Vinyl Chloride	ND	10.4	10.0	104	9.21	10.0	92	49-136	12	30
1,1-Dichloroethene	0.19	12.6	10.0	124	11.8	10.0	116	59-171	7	30
trans-1,2-Dichloroethene	0.42	13.1	10.0	127	12.1	10.0	117	65-143	7	30
1,1-Dichloroethane	0.74	12.8	10.0	121	12.2	10.0	114	69-141	5	30
cis-1,2-Dichloroethene	3.8	15.6	10.0	119	15.0	10.0	112	61-139	4	30
1,1,1-Trichloroethane (TCA)	0.24	12.3	10.0	121	11.6	10.0	114	57-151	6	30
Trichloroethene (TCE)	38	45.4	10.0	73	43.3	10.0	52 *	53-139	5	30
Tetrachloroethene (PCE)	0.93	11.5	10.0	106	11.1	10.0	102	61-131	3	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Extracted:**	11/15/2011
Sample Matrix:	Water	**Date Analyzed:**	11/15/2011

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	EPA 5030B	**Units:**	ug/L
Analysis Method:	8260C	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1111649

	Lab Control Sample KWG1111649-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Vinyl Chloride	7.88	10.0	79	55-123
1,1-Dichloroethene	9.96	10.0	100	66-129
trans-1,2-Dichloroethene	10.1	10.0	101	67-125
1,1-Dichloroethane	9.67	10.0	97	68-132
cis-1,2-Dichloroethene	9.92	10.0	99	71-118
1,1,1-Trichloroethane (TCA)	9.41	10.0	94	59-136
Trichloroethene (TCE)	9.71	10.0	97	67-128
Tetrachloroethene (PCE)	8.57	10.0	86	62-126

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111019
Date Analyzed: 11/16/2011
Time Analyzed: 09:41

Tune Summary
Volatile Organic Compounds

File ID: J:\MS13\DATA\111611\1116F003.D
Instrument ID: MS13
Column:

Analysis Method: 8260C
Analysis Lot: KWG1111674

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	16.6	31712	PASS
75	95	30	60	47.4	90781	PASS
95	95	100	100	100.0	191466	PASS
96	95	5	9	6.5	12466	PASS
173	174	0	2	0.0	0	PASS
174	95	50	120	96.0	183850	PASS
175	174	5	9	8.1	14816	PASS
176	174	95	101	99.4	182784	PASS
177	176	5	9	6.7	12252	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1111674-2	J:\MS13\DATA\111611\1116F004.D	11/16/2011	10:09	
Lab Control Sample	KWG1111676-3	J:\MS13\DATA\111611\1116F005.D	11/16/2011	10:38	
Method Blank	KWG1111676-4	J:\MS13\DATA\111611\1116F010.D	11/16/2011	13:33	
MS29D	K1111019-009	J:\MS13\DATA\111611\1116F011.D	11/16/2011	14:01	
MS47S	K1111019-012	J:\MS13\DATA\111611\1116F012.D	11/16/2011	14:30	
MS08D	K1111019-016	J:\MS13\DATA\111611\1116F013.D	11/16/2011	14:59	
MS16IS	K1111019-021	J:\MS13\DATA\111611\1116F014.D	11/16/2011	15:27	
MS16D	K1111019-022	J:\MS13\DATA\111611\1116F015.D	11/16/2011	15:56	
MS47D	K1111019-023	J:\MS13\DATA\111611\1116F016.D	11/16/2011	16:25	
MS52S	K1111019-024	J:\MS13\DATA\111611\1116F017.D	11/16/2011	16:53	
MS43I	K1111019-026	J:\MS13\DATA\111611\1116F018.D	11/16/2011	17:22	
MS02PC	K1111019-010	J:\MS13\DATA\111611\1116F019.D	11/16/2011	17:51	
MS05IS	K1111019-011	J:\MS13\DATA\111611\1116F020.D	11/16/2011	18:20	
MS45I	K1111019-028	J:\MS13\DATA\111611\1116F021.D	11/16/2011	18:48	
MS15IS	K1111019-033	J:\MS13\DATA\111611\1116F022.D	11/16/2011	19:17	
MS43SDL	K1111019-029	J:\MS13\DATA\111611\1116F023.D	11/16/2011	19:46	
MS45SDL	K1111019-030	J:\MS13\DATA\111611\1116F024.D	11/16/2011	20:14	
MS43S	K1111019-029	J:\MS13\DATA\111611\1116F025.D	11/16/2011	20:43	
MS45S	K1111019-030	J:\MS13\DATA\111611\1116F026.D	11/16/2011	21:12	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111019
Date Analyzed: 11/16/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration Date: 10/31/2011
Calibration ID: CAL11020
Analysis Lot: KWG1111674
Units: PPB

File ID: J:\MS13\DATA\111611\1116F004.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D		%Drift	Criteria	Curve Fit
Vinyl Chloride	10	9.1	0.100	0.290	0.265	-9		NA	± 20 %	AverageRF
1,1-Dichloroethene	10	9.0	0.100	0.223	0.201	-10		NA	± 20 %	AverageRF
trans-1,2-Dichloroethene	10	9.2	0.100	0.254	0.233	-8		NA	± 20 %	AverageRF
1,1-Dichloroethane	10	9.5	0.200	0.418	0.396	-5		NA	± 20 %	AverageRF
cis-1,2-Dichloroethene	10	9.5	0.100	0.270	0.256	-5		NA	± 20 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	9.0	0.100	0.359	0.323	-10		NA	± 20 %	AverageRF
Trichloroethene (TCE)	10	9.0	0.200	0.264	0.238	-10		NA	± 20 %	AverageRF
Tetrachloroethene (PCE)	10	7.8	0.200	0.704	0.551	-22	*	NA	± 20 %	AverageRF
Dibromofluoromethane	10	11	0.01	0.200	0.221	11		NA	± 20 %	AverageRF
Toluene-d8	10	12	0.01	0.826	1.01	22	*	NA	± 20 %	AverageRF
4-Bromofluorobenzene	10	11	0.01	0.825	0.884	7		NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111019

Analysis Run Log
Volatile Organic Compounds

Analysis Method: 8260C

Analysis Lot: KWG1111674
Instrument ID: MS13

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1116F003.D	GC/MS Tuning - Bromofluorobenzene	KWG1111674-1	11/16/2011	09:41		11/16/2011	10:00
1116F004.D	Continuing Calibration Verification	KWG1111674-2	11/16/2011	10:09		11/16/2011	10:28
1116F005.D	Lab Control Sample	KWG1111676-3	11/16/2011	10:38		11/16/2011	10:57
1116F006.D	ZZZZZZ	ZZZZZZ	11/16/2011	11:38		11/16/2011	11:57
1116F007.D	ZZZZZZ	ZZZZZZ	11/16/2011	12:07		11/16/2011	12:26
1116F010.D	Method Blank	KWG1111676-4	11/16/2011	13:33		11/16/2011	13:52
1116F011.D	MS29D	K1111019-009	11/16/2011	14:01		11/16/2011	14:20
1116F012.D	MS47S	K1111019-012	11/16/2011	14:30		11/16/2011	14:49
1116F013.D	MS08D	K1111019-016	11/16/2011	14:59		11/16/2011	15:18
1116F014.D	MS16IS	K1111019-021	11/16/2011	15:27		11/16/2011	15:46
1116F015.D	MS16D	K1111019-022	11/16/2011	15:56		11/16/2011	16:15
1116F016.D	MS47D	K1111019-023	11/16/2011	16:25		11/16/2011	16:44
1116F017.D	MS52S	K1111019-024	11/16/2011	16:53		11/16/2011	17:12
1116F018.D	MS43I	K1111019-026	11/16/2011	17:22		11/16/2011	17:41
1116F019.D	MS02PC	K1111019-010	11/16/2011	17:51		11/16/2011	18:10
1116F020.D	MS05IS	K1111019-011	11/16/2011	18:20		11/16/2011	18:39
1116F021.D	MS45I	K1111019-028	11/16/2011	18:48		11/16/2011	19:07
1116F022.D	MS15IS	K1111019-033	11/16/2011	19:17		11/16/2011	19:36
1116F023.D	MS43SDL	K1111019-029	11/16/2011	19:46		11/16/2011	20:05
1116F024.D	MS45SDL	K1111019-030	11/16/2011	20:14		11/16/2011	20:33
1116F025.D	MS43S	K1111019-029	11/16/2011	20:43		11/16/2011	21:02
1116F026.D	MS45S	K1111019-030	11/16/2011	21:12		11/16/2011	21:31

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1111019
Date Extracted: 11/16/2011
Date Analyzed: 11/16/2011
Time Analyzed: 13:33

Method Blank Summary
Volatile Organic Compounds

Sample Name: Method Blank
Lab Code: KWG1111676-4

Instrument ID: MS13
File ID: J:\MS13\DATA\111611\1116F010.D

Extraction Method: EPA 5030B
Analysis Method: 8260C

Level: Low
Extraction Lot: KWG1111676

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1111676-3	J:\MS13\DATA\111611\1116F005.D	11/16/11	10:38
MS29D	K1111019-009	J:\MS13\DATA\111611\1116F011.D	11/16/11	14:01
MS47S	K1111019-012	J:\MS13\DATA\111611\1116F012.D	11/16/11	14:30
MS08D	K1111019-016	J:\MS13\DATA\111611\1116F013.D	11/16/11	14:59
MS16IS	K1111019-021	J:\MS13\DATA\111611\1116F014.D	11/16/11	15:27
MS16D	K1111019-022	J:\MS13\DATA\111611\1116F015.D	11/16/11	15:56
MS47D	K1111019-023	J:\MS13\DATA\111611\1116F016.D	11/16/11	16:25
MS52S	K1111019-024	J:\MS13\DATA\111611\1116F017.D	11/16/11	16:53
MS43I	K1111019-026	J:\MS13\DATA\111611\1116F018.D	11/16/11	17:22
MS02PC	K1111019-010	J:\MS13\DATA\111611\1116F019.D	11/16/11	17:51
MS05IS	K1111019-011	J:\MS13\DATA\111611\1116F020.D	11/16/11	18:20
MS45I	K1111019-028	J:\MS13\DATA\111611\1116F021.D	11/16/11	18:48
MS15IS	K1111019-033	J:\MS13\DATA\111611\1116F022.D	11/16/11	19:17
MS43SDL	K1111019-029	J:\MS13\DATA\111611\1116F023.D	11/16/11	19:46
MS45SDL	K1111019-030	J:\MS13\DATA\111611\1116F024.D	11/16/11	20:14
MS43S	K1111019-029	J:\MS13\DATA\111611\1116F025.D	11/16/11	20:43
MS45S	K1111019-030	J:\MS13\DATA\111611\1116F026.D	11/16/11	21:12

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	11/16/2011
		Date Analyzed:	11/16/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1111676-4	**Basis:**	NA
File ID:	J:\MS13\DATA\111611\1116F010.D	**Level:**	Low
Instrument ID:	MS13		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111676
Analysis Method:	8260C	**Calibration ID:**	CAL11020

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	108	73-122	11/16/11	Acceptable
Toluene-d8	122	65-144	11/16/11	Acceptable
4-Bromofluorobenzene	110	68-117	11/16/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Extracted:**	11/16/2011
Sample Matrix:	Water	**Date Analyzed:**	11/16/2011

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	EPA 5030B	**Units:**	ug/L
Analysis Method:	8260C	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1111676

	Lab Control Sample KWG1111676-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Vinyl Chloride	8.35	10.0	84	55-123
1,1-Dichloroethene	10.2	10.0	102	66-129
trans-1,2-Dichloroethene	10.6	10.0	106	67-125
1,1-Dichloroethane	10.1	10.0	101	68-132
cis-1,2-Dichloroethene	10.1	10.0	101	71-118
1,1,1-Trichloroethane (TCA)	10.1	10.0	101	59-136
Trichloroethene (TCE)	10.3	10.0	103	67-128
Tetrachloroethene (PCE)	8.95	10.0	90	62-126

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111019
Date Analyzed: 09/20/2011
Time Analyzed: 09:36

Tune Summary
Volatile Organic Compounds

File ID: J:\MS18\DATA\092011\0920F004.D
Instrument ID: GC-MS 18
Column:

Analysis Method: 8260C
Analysis Lot: KWG1111946

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	15.8	7258	PASS
75	95	30	60	44.2	20312	PASS
95	95	100	100	100.0	45909	PASS
96	95	5	9	7.5	3456	PASS
173	174	0	2	0.3	119	PASS
174	95	50	120	89.3	40981	PASS
175	174	5	9	7.3	2982	PASS
176	174	95	101	96.3	39453	PASS
177	176	5	9	6.4	2511	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Initial Calibration	KWG1111946-2	J:\MS18\DATA\092011\0920F007.D	09/20/2011	10:43	
Initial Calibration	KWG1111946-3	J:\MS18\DATA\092011\0920F008.D	09/20/2011	11:06	
Initial Calibration	KWG1111946-4	J:\MS18\DATA\092011\0920F009.D	09/20/2011	11:27	
Initial Calibration	KWG1111946-5	J:\MS18\DATA\092011\0920F010.D	09/20/2011	11:49	
Initial Calibration	KWG1111946-6	J:\MS18\DATA\092011\0920F011.D	09/20/2011	12:10	
Initial Calibration	KWG1111946-7	J:\MS18\DATA\092011\0920F012.D	09/20/2011	12:32	
Initial Calibration	KWG1111946-8	J:\MS18\DATA\092011\0920F013.D	09/20/2011	12:54	
Initial Calibration	KWG1111946-9	J:\MS18\DATA\092011\0920F014.D	09/20/2011	13:15	
Initial Calibration	KWG1111946-10	J:\MS18\DATA\092011\0920F015.D	09/20/2011	13:37	
Initial Calibration	KWG1111946-11	J:\MS18\DATA\092011\0920F016.D	09/20/2011	13:59	
Initial Calibration	KWG1111946-12	J:\MS18\DATA\092011\0920F017.D	09/20/2011	14:21	
Initial Calibration Verification	KWG1111946-13	J:\MS18\DATA\092011\0920F022.D	09/20/2011	16:11	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111019
Calibration Date: 09/20/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10920
Instrument ID: GC-MS 18

Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS18\DATA\092011\0920F007.D	G	J:\MS18\DATA\092011\0920F013.D
B	J:\MS18\DATA\092011\0920F008.D	H	J:\MS18\DATA\092011\0920F014.D
C	J:\MS18\DATA\092011\0920F009.D	I	J:\MS18\DATA\092011\0920F015.D
D	J:\MS18\DATA\092011\0920F010.D	J	J:\MS18\DATA\092011\0920F016.D
E	J:\MS18\DATA\092011\0920F011.D	K	J:\MS18\DATA\092011\0920F017.D
F	J:\MS18\DATA\092011\0920F012.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Vinyl Chloride	A	0.10	0.439	B	0.20	0.460	C	0.50	0.449	D	1.0	0.498	E	2.0	0.444
	F	5.0	0.453	G	10	0.457	H	20	0.429	I	40	0.479	J	60	0.442
	K	80	0.429												
1,1-Dichloroethene	A	0.10	0.213	B	0.20	0.229	C	0.50	0.237	D	1.0	0.261	E	2.0	0.225
	F	5.0	0.229	G	10	0.234	H	20	0.220	I	40	0.247	J	60	0.227
	K	80	0.226												
trans-1,2-Dichloroethene	A	0.10	0.283	B	0.20	0.225	C	0.50	0.287	D	1.0	0.294	E	2.0	0.279
	F	5.0	0.288	G	10	0.294	H	20	0.278	I	40	0.314	J	60	0.289
	K	80	0.284												
1,1-Dichloroethane				B	0.20	0.415	C	0.50	0.457	D	1.0	0.501	E	2.0	0.445
	F	5.0	0.460	G	10	0.475	H	20	0.458	I	40	0.515	J	60	0.483
	K	80	0.480												
cis-1,2-Dichloroethene	A	0.10	0.291	B	0.20	0.324	C	0.50	0.292	D	1.0	0.320	E	2.0	0.324
	F	5.0	0.325	G	10	0.323	H	20	0.315	I	40	0.351	J	60	0.326
	K	80	0.320												
1,1,1-Trichloroethane (TCA)							C	0.50	0.227	D	1.0	0.261	E	2.0	0.255
	F	5.0	0.290	G	10	0.320	H	20	0.325	I	40	0.387	J	60	0.371
	K	80	0.373												
Trichloroethene (TCE)	A	0.10	0.245	B	0.20	0.264	C	0.50	0.265	D	1.0	0.299	E	2.0	0.269
	F	5.0	0.278	G	10	0.285	H	20	0.264	I	40	0.305	J	60	0.282
	K	80	0.280												
Tetrachloroethene (PCE)	A	0.10	0.539	B	0.20	0.622	C	0.50	0.691	D	1.0	0.768	E	2.0	0.675
	F	5.0	0.720	G	10	0.698	H	20	0.655	I	40	0.752	J	60	0.683
	K	80	0.683												
Dibromofluoromethane	A	3.0	0.210	B	4.0	0.217	C	5.0	0.219	D	6.0	0.252	E	7.0	0.254
	F	8.0	0.240	G	10	0.261	H	15	0.240	I	20	0.255	J	30	0.248
	K	40	0.254												
Toluene-d8	A	3.0	0.973	B	4.0	1.04	C	5.0	1.04	D	6.0	1.21	E	7.0	1.22
	F	8.0	1.10	G	10	1.17	H	15	1.02	I	20	1.06	J	30	1.05
	K	40	1.07												

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111019
Calibration Date: 09/20/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10920
Instrument ID: GC-MS 18

Column: MS

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
4-Bromofluorobenzene	A	3.0	0.922	B	4.0	0.919	C	5.0	0.999	D	6.0	1.18	E	7.0	1.25
	F	8.0	1.04	G	10	1.11	H	15	1.01	I	20	1.06	J	30	0.998
	K	40	1.03												

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111019
Calibration Date: 09/20/2011

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL10920
Instrument ID: GC-MS 18

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Vinyl Chloride	MS	AverageRF	% RSD	4.6		≤ 20	0.453		0.100
1,1-Dichloroethene	MS	AverageRF	% RSD	5.6		≤ 20	0.232		0.100
trans-1,2-Dichloroethene	MS	AverageRF	% RSD	7.7		≤ 20	0.283		0.100
1,1-Dichloroethane	MS	AverageRF	% RSD	6.1		≤ 20	0.469		0.200
cis-1,2-Dichloroethene	MS	AverageRF	% RSD	5.2		≤ 20	0.319		0.100
1,1,1-Trichloroethane (TCA)	MS	AverageRF	% RSD	18.4		≤ 20	0.312		0.100
Trichloroethene (TCE)	MS	AverageRF	% RSD	6.2		≤ 20	0.276		0.200
Tetrachloroethene (PCE)	MS	AverageRF	% RSD	9.2		≤ 20	0.681		0.200
Dibromofluoromethane	SURR	AverageRF	% RSD	7.4		≤ 20	0.241		0.01
Toluene-d8	SURR	AverageRF	% RSD	7.2		≤ 20	1.09		0.01
4-Bromofluorobenzene	SURR	AverageRF	% RSD	9.5		≤ 20	1.05		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111019
Calibration Date: 09/20/2011
Date Analyzed: 09/20/2011

Second Source Calibration Verification
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration ID: CAL10920
Units: PPB

File ID: J:\MS18\DATA\092011\0920F024.D
J:\MS18\DATA\092011\0920F022.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	7.8	0.453	0.353	-22	NA	± 30 %	AverageRF
1,1-Dichloroethene	10	10	0.232	0.237	2	NA	± 30 %	AverageRF
trans-1,2-Dichloroethene	10	10	0.283	0.292	3	NA	± 30 %	AverageRF
1,1-Dichloroethane	10	9.8	0.469	0.459	-2	NA	± 30 %	AverageRF
cis-1,2-Dichloroethene	10	9.9	0.319	0.315	-1	NA	± 30 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	9.7	0.312	0.302	-3	NA	± 30 %	AverageRF
Trichloroethene (TCE)	10	10	0.276	0.281	2	NA	± 30 %	AverageRF
Tetrachloroethene (PCE)	10	9.9	0.681	0.675	-1	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111019
Date Analyzed: 11/21/2011
Time Analyzed: 08:00

Tune Summary
Volatile Organic Compounds

File ID: J:\MS18\DATA\112111\1121F002.D
Instrument ID: GC-MS 18
Column:

Analysis Method: 8260C
Analysis Lot: KWG1111866

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	17.7	8181	PASS
75	95	30	60	46.8	21581	PASS
95	95	100	100	100.0	46096	PASS
96	95	5	9	6.7	3083	PASS
173	174	0	2	0.7	297	PASS
174	95	50	120	94.3	43461	PASS
175	174	5	9	6.5	2834	PASS
176	174	95	101	95.7	41610	PASS
177	176	5	9	6.4	2667	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1111886-2	J:\MS18\DATA\112111\1121F003.D	11/21/2011	08:24	
Lab Control Sample	KWG1111867-3	J:\MS18\DATA\112111\1121F004.D	11/21/2011	08:49	
Duplicate Lab Control Sample	KWG1111867-4	J:\MS18\DATA\112111\1121F005.D	11/21/2011	09:10	
Method Blank	KWG1111867-5	J:\MS18\DATA\112111\1121F012.D	11/21/2011	11:38	
QCD09	K1111019-031	J:\MS18\DATA\112111\1121F032.D	11/21/2011	18:45	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111019
Date Analyzed: 11/21/2011

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration Date: 09/20/2011
Calibration ID: CAL10920
Analysis Lot: KWG1111866
Units: PPB

File ID: J:\MS18\DATA\112111\1121F003.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Vinyl Chloride	10	8.0	0.100	0.453	0.362	-20	NA	± 20 %	AverageRF
1,1-Dichloroethene	10	11	0.100	0.232	0.244	5	NA	± 20 %	AverageRF
trans-1,2-Dichloroethene	10	10	0.100	0.283	0.291	3	NA	± 20 %	AverageRF
1,1-Dichloroethane	10	11	0.200	0.469	0.498	6	NA	± 20 %	AverageRF
cis-1,2-Dichloroethene	10	9.8	0.100	0.319	0.314	-2	NA	± 20 %	AverageRF
1,1,1-Trichloroethane (TCA)	10	11	0.100	0.312	0.331	6	NA	± 20 %	AverageRF
Trichloroethene (TCE)	10	10	0.200	0.276	0.276	0	NA	± 20 %	AverageRF
Tetrachloroethene (PCE)	10	9.3	0.200	0.681	0.631	-7	NA	± 20 %	AverageRF
Dibromofluoromethane	10	8.7	0.01	0.241	0.209	-13	NA	± 20 %	AverageRF
Toluene-d8	10	9.2	0.01	1.09	1.00	-8	NA	± 20 %	AverageRF
4-Bromofluorobenzene	10	8.3	0.01	1.05	0.872	-17	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111019

Analysis Run Log
Volatile Organic Compounds

Analysis Method: 8260C

Analysis Lot: KWG1111866
Instrument ID: GC-MS 18

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1121F002.D	GC/MS Tuning - Generic	KWG1111866-1	11/21/2011	08:00		11/21/2011	08:16
1121F003.D	Continuing Calibration Verification	KWG1111886-2	11/21/2011	08:24		11/21/2011	08:40
1121F004.D	Lab Control Sample	KWG1111867-3	11/21/2011	08:49		11/21/2011	09:05
1121F005.D	Duplicate Lab Control Sample	KWG1111867-4	11/21/2011	09:10		11/21/2011	09:26
1121F007.D	ZZZZZZ	ZZZZZZ	11/21/2011	09:53		11/21/2011	10:09
1121F008.D	ZZZZZZ	ZZZZZZ	11/21/2011	10:14		11/21/2011	10:30
1121F009.D	ZZZZZZ	ZZZZZZ	11/21/2011	10:35		11/21/2011	10:51
1121F012.D	Method Blank	KWG1111867-5	11/21/2011	11:38		11/21/2011	11:54
1121F013.D	ZZZZZZ	ZZZZZZ	11/21/2011	12:00		11/21/2011	12:16
1121F014.D	ZZZZZZ	ZZZZZZ	11/21/2011	12:21		11/21/2011	12:37
1121F016.D	ZZZZZZ	ZZZZZZ	11/21/2011	13:04		11/21/2011	13:20
1121F017.D	ZZZZZZ	ZZZZZZ	11/21/2011	13:25		11/21/2011	13:41
1121F018.D	ZZZZZZ	ZZZZZZ	11/21/2011	13:46		11/21/2011	14:02
1121F019.D	ZZZZZZ	ZZZZZZ	11/21/2011	14:08		11/21/2011	14:24
1121F020.D	ZZZZZZ	ZZZZZZ	11/21/2011	14:29		11/21/2011	14:45
1121F021.D	ZZZZZZ	ZZZZZZ	11/21/2011	14:50		11/21/2011	15:06
1121F022.D	ZZZZZZ	ZZZZZZ	11/21/2011	15:12		11/21/2011	15:28
1121F023.D	ZZZZZZ	ZZZZZZ	11/21/2011	15:33		11/21/2011	15:49
1121F024.D	ZZZZZZ	ZZZZZZ	11/21/2011	15:54		11/21/2011	16:10
1121F025.D	ZZZZZZ	ZZZZZZ	11/21/2011	16:16		11/21/2011	16:32
1121F026.D	ZZZZZZ	ZZZZZZ	11/21/2011	16:37		11/21/2011	16:53
1121F027.D	ZZZZZZ	ZZZZZZ	11/21/2011	16:58		11/21/2011	17:14
1121F028.D	ZZZZZZ	ZZZZZZ	11/21/2011	17:20		11/21/2011	17:36
1121F029.D	ZZZZZZ	ZZZZZZ	11/21/2011	17:41		11/21/2011	17:57
1121F030.D	ZZZZZZ	ZZZZZZ	11/21/2011	18:02		11/21/2011	18:18
1121F031.D	ZZZZZZ	ZZZZZZ	11/21/2011	18:24		11/21/2011	18:40
1121F032.D	QCD09	K1111019-031	11/21/2011	18:45		11/21/2011	19:01
1121F033.D	ZZZZZZ	ZZZZZZ	11/21/2011	19:06		11/21/2011	19:22
1121F034.D	ZZZZZZ	ZZZZZZ	11/21/2011	19:28		11/21/2011	19:44
1121F035.D	ZZZZZZ	ZZZZZZ	11/21/2011	19:49		11/21/2011	20:05

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1111019
Date Extracted: 11/21/2011
Date Analyzed: 11/21/2011
Time Analyzed: 11:38

Method Blank Summary
Volatile Organic Compounds

Sample Name: Method Blank
Lab Code: KWG1111867-5

Extraction Method: EPA 5030B
Analysis Method: 8260C

Instrument ID: GC-MS 18
File ID: J:\MS18\DATA\112111\1121F012.D

Level: Low
Extraction Lot: KWG1111867

This Method Blank applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1111867-3	J:\MS18\DATA\112111\1121F004.D	11/21/11	08:49
Duplicate Lab Control Sample	KWG1111867-4	J:\MS18\DATA\112111\1121F005.D	11/21/11	09:10
QCD09	K1111019-031	J:\MS18\DATA\112111\1121F032.D	11/21/11	18:45

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	11/21/2011
		Date Analyzed:	11/21/2011

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1111867-5	**Basis:**	NA
File ID:	J:\MS18\DATA\112111\1121F012.D	**Level:**	Low
Instrument ID:	GC-MS 18		
Extraction Method:	EPA 5030B	**Extraction Lot:**	KWG1111867
Analysis Method:	8260C	**Calibration ID:**	CAL10920

Sample Amount: 10 ml
% Solids: NA
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
75-01-4	Vinyl Chloride	0.075	U	0.20	0.075	
75-35-4	1,1-Dichloroethene	0.074	U	0.50	0.074	
156-60-5	trans-1,2-Dichloroethene	0.057	U	0.50	0.057	
75-34-3	1,1-Dichloroethane	0.077	U	0.50	0.077	
156-59-2	cis-1,2-Dichloroethene	0.067	U	0.50	0.067	
71-55-6	1,1,1-Trichloroethane (TCA)	0.075	U	0.50	0.075	
79-01-6	Trichloroethene (TCE)	0.10	U	0.50	0.10	
127-18-4	Tetrachloroethene (PCE)	0.099	U	0.50	0.099	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	77	73-122	11/21/11	Acceptable
Toluene-d8	87	65-144	11/21/11	Acceptable
4-Bromofluorobenzene	78	68-117	11/21/11	Acceptable

Comments

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1111019
Date Extracted: 11/21/2011
Date Analyzed: 11/21/2011

Lab Control Spike/Duplicate Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1111867

	Lab Control Sample KWG1111867-3 Lab Control Spike			Duplicate Lab Control Sample KWG1111867-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Vinyl Chloride	8.26	10.0	83	8.20	10.0	82	55-123	1	30
1,1-Dichloroethene	10.2	10.0	102	10.2	10.0	102	66-129	0	30
trans-1,2-Dichloroethene	10.1	10.0	101	10.3	10.0	103	67-125	2	30
1,1-Dichloroethane	10.4	10.0	104	10.2	10.0	102	68-132	1	30
cis-1,2-Dichloroethene	9.73	10.0	97	9.82	10.0	98	71-118	1	30
1,1,1-Trichloroethane (TCA)	10.6	10.0	106	10.4	10.0	104	59-136	2	30
Trichloroethene (TCE)	9.77	10.0	98	9.68	10.0	97	67-128	1	30
Tetrachloroethene (PCE)	8.78	10.0	88	9.32	10.0	93	62-126	6	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111019
Date Analyzed: 11/14/2011
Time Analyzed: 11:16

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID: J:\MS04\DATA\111411\1114F005.D
Instrument ID: MS04
Analysis Method: 8260C

Lab Code: KWG1111591-2
Analysis Lot: KWG1111591

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	1,490,831	13.13	1,139,487	17.40	595,182	20.05
	Upper Limit ==>	2,981,662	13.63	2,278,974	17.90	1,190,364	20.55
	Lower Limit ==>	745,416	12.63	569,744	16.90	297,591	19.55
	ICAL Result ==>	1,106,367	13.09	799,828	17.38	400,256	20.03
Associated Analyses							
Lab Control Sample	KWG1111595-3	1,535,190	13.12	1,155,897	17.40	593,317	20.05
Method Blank	KWG1111595-4	1,523,521	13.12	1,100,644	17.40	531,901	20.05
MS04PC	K1111019-001	1,323,602	13.12	968,509	17.40	457,890	20.05
MS01PC	K1111019-002	1,314,236	13.12	962,691	17.40	442,434	20.05

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111019
Date Analyzed: 11/14/2011
Time Analyzed: 14:21

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID: J:\MS13\DATA\111411\1114F006.D
Instrument ID: MS13
Analysis Method: 8260C

Lab Code: KWG1111594-2
Analysis Lot: KWG1111594

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	1,200,086	6.12	470,776	12.03	509,292	15.07
	Upper Limit ==>	2,400,172	6.62	941,552	12.53	1,018,584	15.57
	Lower Limit ==>	600,043	5.62	235,388	11.53	254,646	14.57
	ICAL Result ==>	1,209,248	6.12	435,763	12.02	482,755	15.07
Associated Analyses							
Lab Control Sample	KWG1111607-3	1,200,086	6.12	470,776	12.03	509,292	15.07
Method Blank	KWG1111607-4	1,174,118	6.12	464,243	12.03	501,156	15.07
QCT06	K1111019-017	1,185,744	6.12	467,155	12.02	508,027	15.07
MS04D	K1111019-003	1,178,752	6.12	467,297	12.03	500,724	15.07
MS52I	K1111019-018	1,169,128	6.12	456,748	12.03	497,901	15.07
MS44S	K1111019-019	1,175,545	6.12	461,620	12.03	497,720	15.07
PESCW02	K1111019-020	1,177,803	6.12	467,265	12.03	498,397	15.07

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111019
Date Analyzed: 11/15/2011
Time Analyzed: 10:46

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID: J:\MS04\DATA\111511\1115F004.D
Instrument ID: MS04
Analysis Method: 8260C

Lab Code: KWG1111636-2
Analysis Lot: KWG1111636

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	1,758,592	13.10	1,372,023	17.38	711,804	20.04
	Upper Limit ==>	3,517,184	13.60	2,744,046	17.88	1,423,608	20.54
	Lower Limit ==>	879,296	12.60	686,012	16.88	355,902	19.54
	ICAL Result ==>	1,106,367	13.09	799,828	17.38	400,256	20.03
Associated Analyses							
Lab Control Sample	KWG1111643-3	1,811,517	13.10	1,369,050	17.38	708,315	20.04
MS31DMS	KWG1111643-1	1,790,300	13.10	1,339,155	17.39	681,673	20.04
MS31DDMS	KWG1111643-2	1,854,466	13.10	1,398,334	17.39	710,108	20.04
Method Blank	KWG1111643-4	1,763,293	13.10	1,297,936	17.38	619,360	20.04
QCT05	K1111019-034	1,736,182	13.10	1,260,921	17.38	604,383	20.04
MS31D	K1111019-004	1,735,094	13.10	1,274,397	17.38	605,202	20.04
MS06D	K1111019-005	1,662,598	13.10	1,227,864	17.39	577,284	20.04
MS32D	K1111019-006	1,646,848	13.10	1,200,151	17.38	562,894	20.04
MS02S	K1111019-007	1,601,089	13.10	1,171,950	17.39	550,361	20.04
QCR05	K1111019-008	1,576,095	13.10	1,148,708	17.39	547,260	20.04
QCR05	K1111019-027	1,522,028	13.11	1,115,163	17.39	516,190	20.05

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Analyzed:**	11/15/2011
		Time Analyzed:	13:18

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID:	J:\MS13\DATA\111511\1115F007.D	**Lab Code:**	KWG1111634-2
Instrument ID:	MS13	**Analysis Lot:**	KWG1111634
Analysis Method:	8260C		

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	1,145,256	6.12	450,679	12.02	495,328	15.07
	Upper Limit ==>	2,290,512	6.62	901,358	12.52	990,656	15.57
	Lower Limit ==>	572,628	5.62	225,340	11.52	247,664	14.57
	ICAL Result ==>	1,209,248	6.12	435,763	12.02	482,755	15.07
Associated Analyses							
Lab Control Sample	KWG1111649-3	1,162,047	6.12	464,403	12.02	508,971	15.07
MS19SMS	KWG1111649-1	1,183,952	6.12	470,792	12.03	502,619	15.07
MS19SDMS	KWG1111649-2	1,157,658	6.12	464,416	12.02	503,381	15.07
Method Blank	KWG1111649-4	1,158,812	6.12	460,244	12.02	496,302	15.07
MS19S	K1111019-025	1,144,514	6.12	456,824	12.02	500,716	15.07
MS47I	K1111019-014	1,157,978	6.12	459,117	12.02	493,514	15.07
MS27SDL	K1111019-013	1,163,004	6.12	455,867	12.02	496,270	15.07
MS49SDL	K1111019-015	1,149,372	6.12	452,110	12.03	495,673	15.07
QCD08DL	K1111019-036	1,149,814	6.12	456,402	12.03	492,053	15.07
MS27S	K1111019-013	1,158,647	6.12	454,466	12.03	498,969	15.07
MS49S	K1111019-015	1,149,316	6.12	455,849	12.02	488,559	15.07
QCD08	K1111019-036	1,148,751	6.12	449,973	12.02	489,827	15.07

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Bay West, Incorporated	**Service Request:**	K1111019
Project:	NIROP/J070047	**Date Analyzed:**	11/16/2011
		Time Analyzed:	10:09

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID:	J:\MS13\DATA\111611\1116F004.D	**Lab Code:**	KWG1111674-2
Instrument ID:	MS13	**Analysis Lot:**	KWG1111674
Analysis Method:	8260C		

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	1,133,396	6.12	459,685	12.03	488,107	15.07
	Upper Limit ==>	2,266,792	6.62	919,370	12.53	976,214	15.57
	Lower Limit ==>	566,698	5.62	229,843	11.53	244,054	14.57
	ICAL Result ==>	1,209,248	6.12	435,763	12.02	482,755	15.07
Associated Analyses							
Lab Control Sample	KWG1111676-3	1,140,765	6.12	461,561	12.02	498,188	15.07
Method Blank	KWG1111676-4	1,140,735	6.12	449,409	12.02	489,906	15.07
MS29D	K1111019-009	1,146,635	6.12	454,351	12.03	496,540	15.07
MS47S	K1111019-012	1,144,465	6.12	452,474	12.03	504,302	15.07
MS08D	K1111019-016	1,141,217	6.12	456,121	12.03	500,551	15.07
MS16IS	K1111019-021	1,142,555	6.12	458,382	12.03	499,925	15.07
MS16D	K1111019-022	1,133,747	6.12	454,035	12.03	497,080	15.07
MS47D	K1111019-023	1,126,336	6.12	456,202	12.03	491,915	15.07
MS52S	K1111019-024	1,125,519	6.12	459,402	12.03	497,845	15.07
MS43I	K1111019-026	1,143,419	6.12	454,200	12.03	501,923	15.07
MS02PC	K1111019-010	1,148,777	6.12	461,298	12.03	499,895	15.07
MS05IS	K1111019-011	1,134,834	6.12	458,930	12.03	507,544	15.07
MS45I	K1111019-028	1,135,604	6.12	456,536	12.03	496,495	15.07
MS15IS	K1111019-033	1,128,063	6.12	463,203	12.03	499,242	15.07
MS43SDL	K1111019-029	1,150,721	6.12	459,010	12.03	502,597	15.07
MS45SDL	K1111019-030	1,133,016	6.12	461,067	12.03	501,033	15.07
MS43S	K1111019-029	1,157,735	6.12	470,949	12.03	505,715	15.07
MS45S	K1111019-030	1,135,612	6.12	453,028	12.03	500,470	15.07

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111019
Date Analyzed: 11/17/2011
Time Analyzed: 11:52

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID: J:\MS04\DATA\111711\1117F004.D
Instrument ID: MS04
Analysis Method: 8260C

Lab Code: KWG1111736-2
Analysis Lot: KWG1111736

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	1,579,268	13.14	1,181,086	17.42	608,728	20.07
	Upper Limit ==>	3,158,536	13.64	2,362,172	17.92	1,217,456	20.57
	Lower Limit ==>	789,634	12.64	590,543	16.92	304,364	19.57
	ICAL Result ==>	1,106,367	13.09	799,828	17.38	400,256	20.03
Associated Analyses							
Lab Control Sample	KWG1111741-3	1,624,761	13.14	1,198,856	17.42	610,721	20.07
Method Blank	KWG1111741-4	1,637,224	13.15	1,195,114	17.42	590,300	20.07
QCR07	K1111019-035	1,592,442	13.15	1,158,467	17.42	577,612	20.08
MS041SDL	K1111019-032	1,718,805	13.15	1,234,739	17.42	597,414	20.07
QCD09DL	K1111019-031	1,483,967	13.16	1,097,912	17.43	536,271	20.08
MS041S	K1111019-032	1,514,390	13.16	1,108,207	17.43	531,870	20.08

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Bay West, Incorporated
Project: NIROP/J070047

Service Request: K1111019
Date Analyzed: 11/21/2011
Time Analyzed: 08:24

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID: J:\MS18\DATA\112111\1121F003.D
Instrument ID: GC-MS 18
Analysis Method: 8260C

Lab Code: KWG1111886-2
Analysis Lot: KWG1111866

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	RT	Area	RT	Area	RT
	Results ==>	458,139	5.65	180,370	9.10	181,992	11.53
	Upper Limit ==>	916,278	6.15	360,740	9.60	363,984	12.03
	Lower Limit ==>	229,070	5.15	90,185	8.60	90,996	11.03
	ICAL Result ==>	568,244	5.66	218,169	9.10	233,259	11.53
Associated Analyses							
Lab Control Sample	KWG1111867-3	454,895	5.65	179,314	9.10	188,793	11.52
Duplicate Lab Control Sample	KWG1111867-4	457,875	5.66	180,757	9.10	187,080	11.52
Method Blank	KWG1111867-5	466,348	5.66	181,217	9.10	181,990	11.53
QCD09	K1111019-031	445,740	5.66	173,850	9.10	177,171	11.52

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1111019
Date Extracted: 11/14/2011

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1111595
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
MS04PC	K1111019-001	11/07/11	11/10/11	10ml	10ml	NA	
MS01PC	K1111019-002	11/07/11	11/10/11	10ml	10ml	NA	
Method Blank	KWG1111595-4	NA	NA	10ml	10ml	NA	
Lab Control Sample	KWG1111595-3	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1111019
Date Extracted: 11/14/2011

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1111607
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
MS04D	K1111019-003	11/07/11	11/10/11	10ml	10ml	NA	
QCT06	K1111019-017	11/07/11	11/10/11	10ml	10ml	NA	
MS52I	K1111019-018	11/07/11	11/10/11	10ml	10ml	NA	
MS44S	K1111019-019	11/07/11	11/10/11	10ml	10ml	NA	
PESCW02	K1111019-020	11/07/11	11/10/11	10ml	10ml	NA	
Method Blank	KWG1111607-4	NA	NA	10ml	10ml	NA	
Lab Control Sample	KWG1111607-3	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1111019
Date Extracted: 11/15/2011

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1111643
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
MS31D	K1111019-004	11/08/11	11/10/11	10ml	10ml	NA	
MS06D	K1111019-005	11/08/11	11/10/11	10ml	10ml	NA	
MS32D	K1111019-006	11/08/11	11/10/11	10ml	10ml	NA	
MS02S	K1111019-007	11/08/11	11/10/11	10ml	10ml	NA	
QCR05	K1111019-008	11/08/11	11/10/11	10ml	10ml	NA	
QCR05	K1111019-027	11/07/11	11/10/11	10ml	10ml	NA	
QCT05	K1111019-034	11/07/11	11/10/11	10ml	10ml	NA	
Method Blank	KWG1111643-4	NA	NA	10ml	10ml	NA	
MS31DMS	KWG1111643-1	11/08/11	11/10/11	10ml	10ml	NA	
MS31DDMS	KWG1111643-2	11/08/11	11/10/11	10ml	10ml	NA	
Lab Control Sample	KWG1111643-3	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1111019
Date Extracted: 11/15/2011

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1111649
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
MS27S	K1111019-013	11/08/11	11/10/11	10ml	10ml	NA	
MS27SDL	K1111019-013	11/08/11	11/10/11	10ml	10ml	NA	
MS47I	K1111019-014	11/08/11	11/10/11	10ml	10ml	NA	
MS49S	K1111019-015	11/08/11	11/10/11	10ml	10ml	NA	
MS49SDL	K1111019-015	11/08/11	11/10/11	10ml	10ml	NA	
MS19S	K1111019-025	11/07/11	11/10/11	10ml	10ml	NA	
QCD08	K1111019-036	11/08/11	11/10/11	10ml	10ml	NA	
QCD08DL	K1111019-036	11/08/11	11/10/11	10ml	10ml	NA	
Method Blank	KWG1111649-4	NA	NA	10ml	10ml	NA	
MS19SMS	KWG1111649-1	11/07/11	11/10/11	10ml	10ml	NA	
MS19SDMS	KWG1111649-2	11/07/11	11/10/11	10ml	10ml	NA	
Lab Control Sample	KWG1111649-3	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1111019
Date Extracted: 11/16/2011

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1111676
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
MS29D	K1111019-009	11/09/11	11/10/11	10ml	10ml	NA	
MS02PC	K1111019-010	11/09/11	11/10/11	10ml	10ml	NA	
MS05IS	K1111019-011	11/09/11	11/10/11	10ml	10ml	NA	
MS47S	K1111019-012	11/08/11	11/10/11	10ml	10ml	NA	
MS08D	K1111019-016	11/08/11	11/10/11	10ml	10ml	NA	
MS16IS	K1111019-021	11/07/11	11/10/11	10ml	10ml	NA	
MS16D	K1111019-022	11/07/11	11/10/11	10ml	10ml	NA	
MS47D	K1111019-023	11/07/11	11/10/11	10ml	10ml	NA	
MS52S	K1111019-024	11/07/11	11/10/11	10ml	10ml	NA	
MS43I	K1111019-026	11/07/11	11/10/11	10ml	10ml	NA	
MS45I	K1111019-028	11/09/11	11/10/11	10ml	10ml	NA	
MS43SDL	K1111019-029	11/09/11	11/10/11	10ml	10ml	NA	
MS43S	K1111019-029	11/09/11	11/10/11	10ml	10ml	NA	
MS45SDL	K1111019-030	11/09/11	11/10/11	10ml	10ml	NA	
MS45S	K1111019-030	11/09/11	11/10/11	10ml	10ml	NA	
MS15IS	K1111019-033	11/09/11	11/10/11	10ml	10ml	NA	
Method Blank	KWG1111676-4	NA	NA	10ml	10ml	NA	
Lab Control Sample	KWG1111676-3	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1111019
Date Extracted: 11/17/2011

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1111741
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
QCD09DL	K1111019-031	11/09/11	11/10/11	10ml	10ml	NA	
MS041S	K1111019-032	11/09/11	11/10/11	10ml	10ml	NA	
MS041SDL	K1111019-032	11/09/11	11/10/11	10ml	10ml	NA	
QCR07	K1111019-035	11/09/11	11/10/11	10ml	10ml	NA	
Method Blank	KWG1111741-4	NA	NA	10ml	10ml	NA	
Lab Control Sample	KWG1111741-3	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Bay West, Incorporated
Project: NIROP/J070047
Sample Matrix: Water

Service Request: K1111019
Date Extracted: 11/21/2011

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1111867
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
QCD09	K1111019-031	11/09/11	11/10/11	10ml	10ml	NA	
Method Blank	KWG1111867-5	NA	NA	10ml	10ml	NA	
Lab Control Sample	KWG1111867-3	NA	NA	10ml	10ml	NA	
Duplicate Lab Control Sample	KWG1111867-4	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

SDG K1110800

SAMPLE CALC	SAMPLE ID MS45S					
IS AREA	DILUTION	COMPOUND OF INTEREST AREA	IS AMOUNT (NG)	PURGE VOLUME (ML)	AVE RRF	CONCENTRATION PPB
1133016	5	1353697	100	10	0.2640	226.2828

Trichloroethene = 230 ug/L

Quantitation Report

Data File:	J:\MS13\DATA\111611\1116F024.D			**Instrument:**	MS13
Acqu Date:	11/16/2011 20:14	**Quant Date:**	11/18/2011 12:09	**Vial:**	23
Run Type:	DL			**Dilution:**	5.0
Lab ID:	K1111019-030	MS455		**Soln Conc. Units:**	PPB

Bottle ID:		**Tier:**	V	**Matrix:**	WATER
Prod Code:	8260B VOC_FP	**Collect Date:**	11/09/2011	**Receive Date:**	11/10/2011

Analysis Lot:	KWG1111674	**Prep Lot:**	KWG1111676	**Report Group:**	K1111019
Analysis Method:	8260C	**Prep Method:**	EPA 5030B		
Prep Ref:	1077535	**Prep Date:**	11/16/2011		

Quant Method:	J:\MS13\METHODS\103111MS13_8	**Calibration ID:**	CAL11020
Title:	Volatile Organic Compounds	**Report List ID:**	LJ8154
Tune Ref:	J:\MS13\DATA\111611\1116F003.D	**Method ID:**	MJ119
MB Ref:	J:\MS13\DATA\111611\1116F010.D	**Quant based on Report List**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	Fluorobenzene	6.12	0.00	96	1133016	10.00	OK
2	Chlorobenzene-d5	12.03	0.00	82	461067	10.00	OK
3	1,4-Dichlorobenzene-d4	15.07	0.00	152	501033	10.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	Dibromofluoromethane	5.12	0.01	0.00	113	242733	10.71	107	73-122	OK	NR
1	Toluene-d8	9.31	0.01	0.00	98	1144033	12.22	122	65-144	OK	NR
2	4-Bromofluorobenzene	13.69	0.00	0.00	95	412855	10.85	109	68-117	OK	NR

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	Vinyl Chloride	1.44	0.01	0.00	62	1050	0.0300	0.38	U	NR
1	1,1-Dichloroethene	2.40	-0.01	0.00	96	7482	0.3000	1.5	JD	NR
1	trans-1,2-Dichloroethene	3.16	0.01	0.00	96	135330	4.71	24	D	NR
1	1,1-Dichloroethane	3.68		0.00	63	13131	0.2800	1.4	JD	NR
1	cis-1,2-Dichloroethene	4.42		0.00	96	1117201	36.56	180	D	
1	1,1,1-Trichloroethane (TCA)				97	0		0.38	U	NR
1	Trichloroethene (TCE)	6.74	0.01	0.00	95	1353697	45.33	230	D	
2	Tetrachloroethene (PCE)	10.53		0.00	164	502	0.0200	0.50	U	NR

Prep Amount:	10 ml	**Dilution:**	5.0
Prep Final Vol:	10 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

D-4 TAG MAPS - 2011

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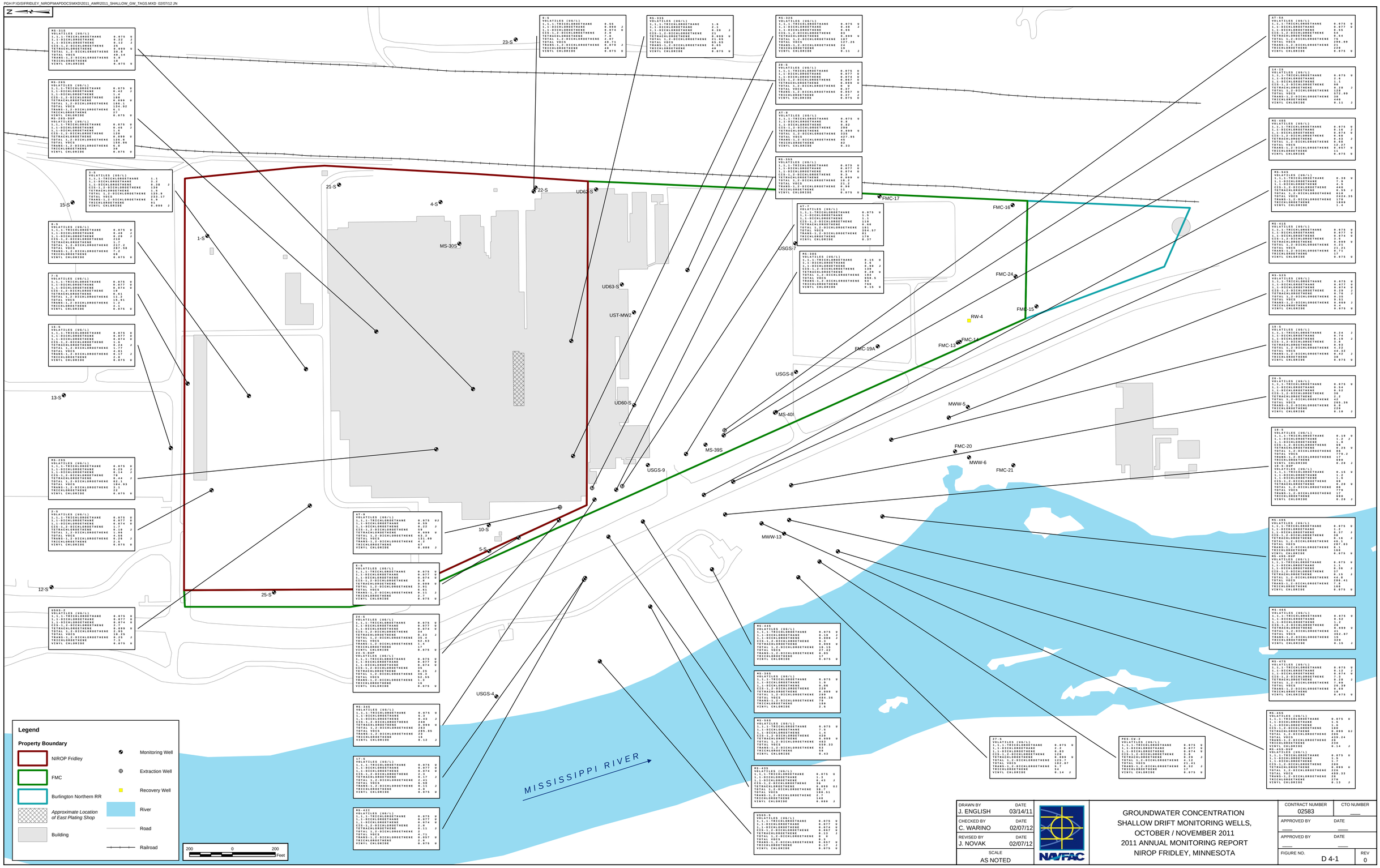

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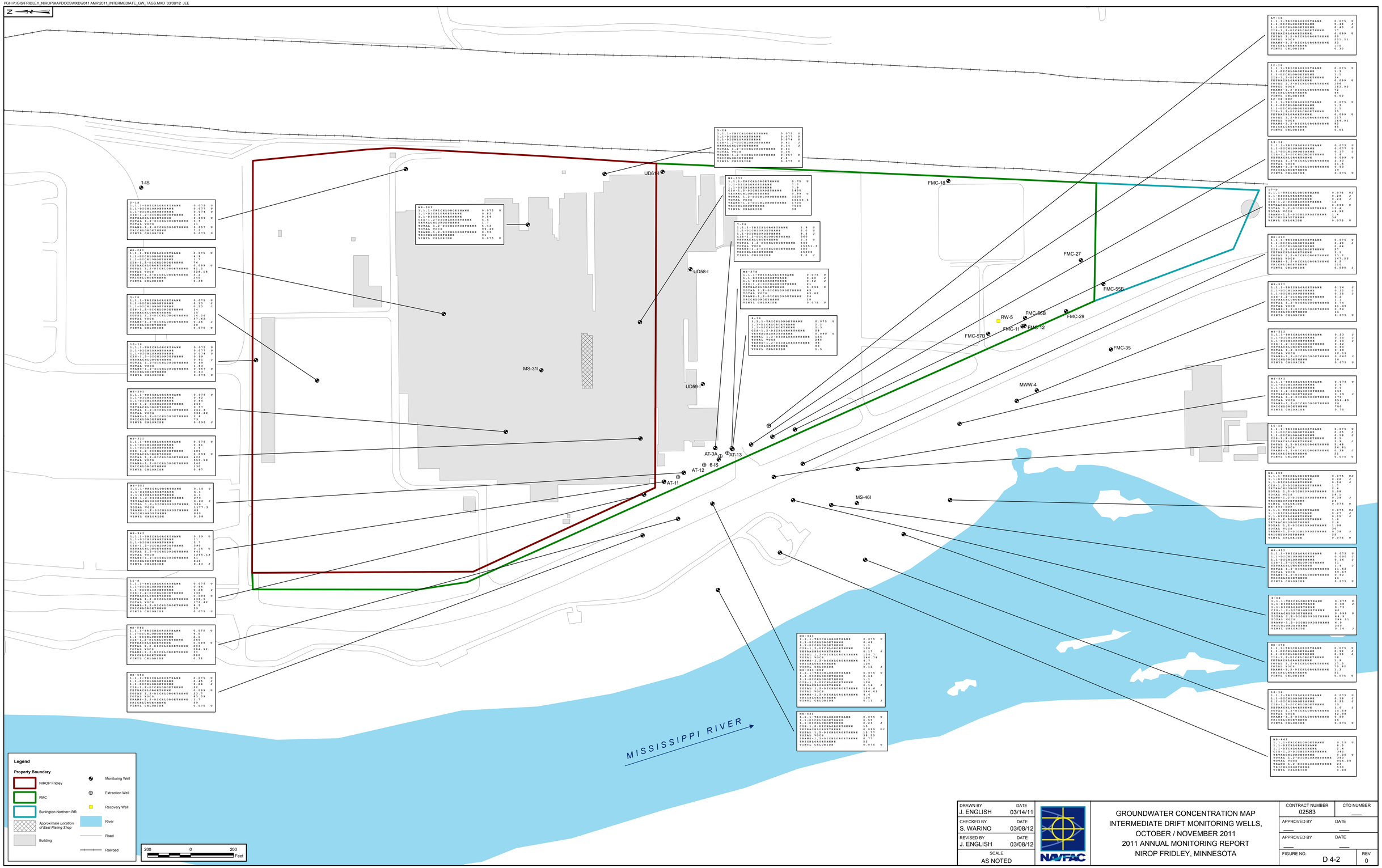
J. ENGLISH	03/14/11
CHECKED BY	DATE
C. WARINO	02/07/12
REVISED BY	DATE
J. NOVAK	02/07/12
SCALE	
AS NOTED	

NAVFAC

GROUNDWATER CONCENTRATION
SHALLOW DRIFT MONITORING WELLS,
OCTOBER / NOVEMBER 2011
2011 ANNUAL MONITORING REPORT
NIROP FRIDLEY, MINNESOTA

CONTRACT NUMBER	CTO NUMBER
02583	____
APPROVED BY	DATE
APPROVED BY	DATE
FIGURE NO. D 4-1	REV 0

PGH P:\GIS\FRIDLEY_NIROP\MAPDOCS\MXD\2011 AMR\2011_INTERMEDIATE_GW_TAGS.MXD 03/08/12 JEE



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J. ENGLISH	03/14/11
CHECKED BY	DATE
S. WARINO	03/08/12
REVISED BY	DATE
J. ENGLISH	03/08/12
SCALE	
AS NOTED	

NAVFAC

GROUNDWATER CONCENTRATION MAP
INTERMEDIATE DRIFT MONITORING WELLS,
OCTOBER / NOVEMBER 2011
2011 ANNUAL MONITORING REPORT
NIROP FRIDLEY, MINNESOTA

CONTRACT NUMBER	CTO NUMBER
02583	___
APPROVED BY	DATE
___	___
APPROVED BY	DATE
___	___
FIGURE NO.	REV
D 4-2	0

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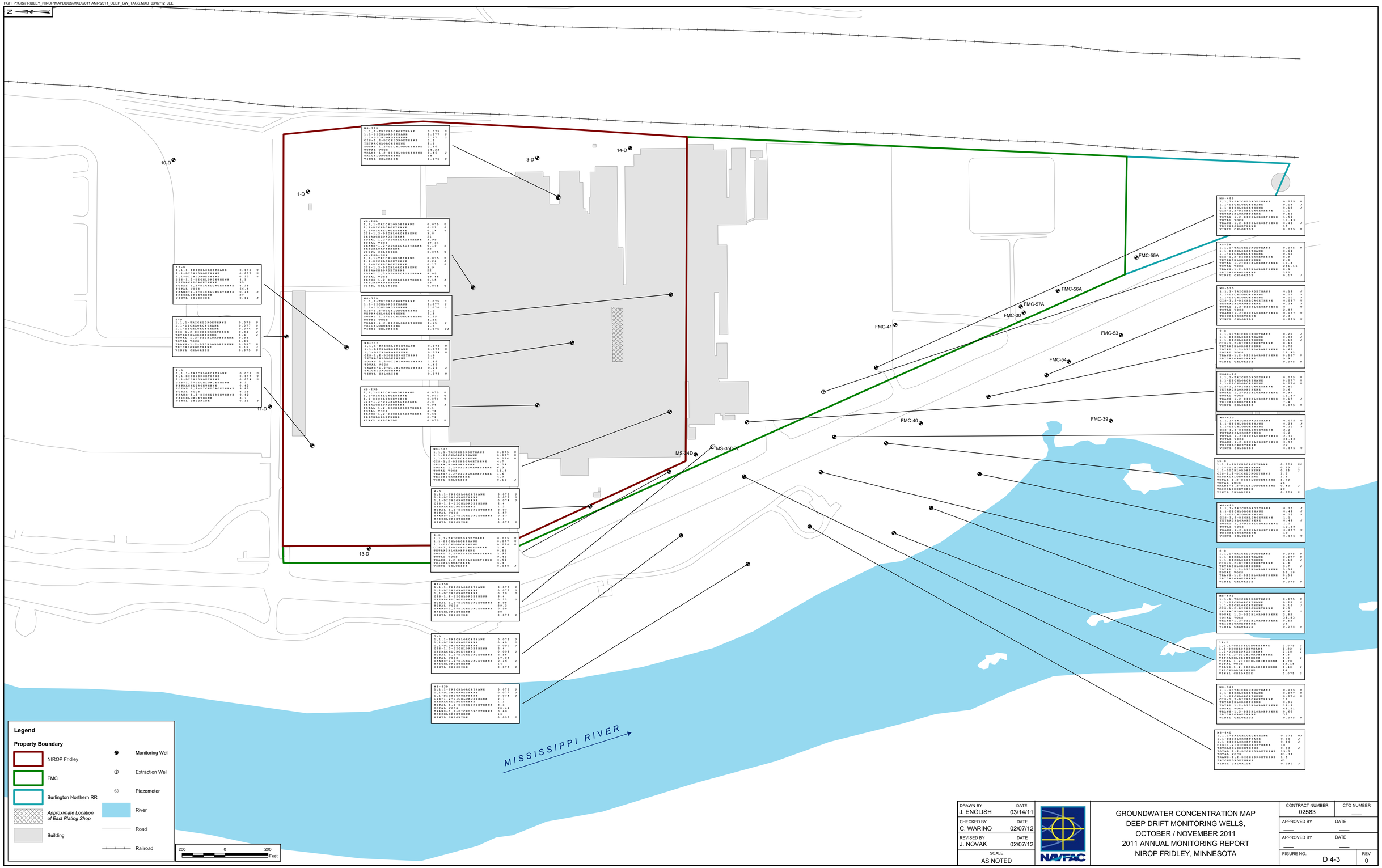

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J. ENGLISH	03/14/11
CHECKED BY	DATE
C. WARINO	02/07/12
REVISED BY	DATE
J. NOVAK	02/07/12
SCALE	
AS NOTED	

NAVFAC

GROUNDWATER CONCENTRATION MAP
DEEP DRIFT MONITORING WELLS,
OCTOBER / NOVEMBER 2011
2011 ANNUAL MONITORING REPORT
NIROP FRIDLEY, MINNESOTA

CONTRACT NUMBER	CTO NUMBER
02583	—
APPROVED BY	DATE
—	—
APPROVED BY	DATE
—	—
FIGURE NO.	REV
D 4-3	0

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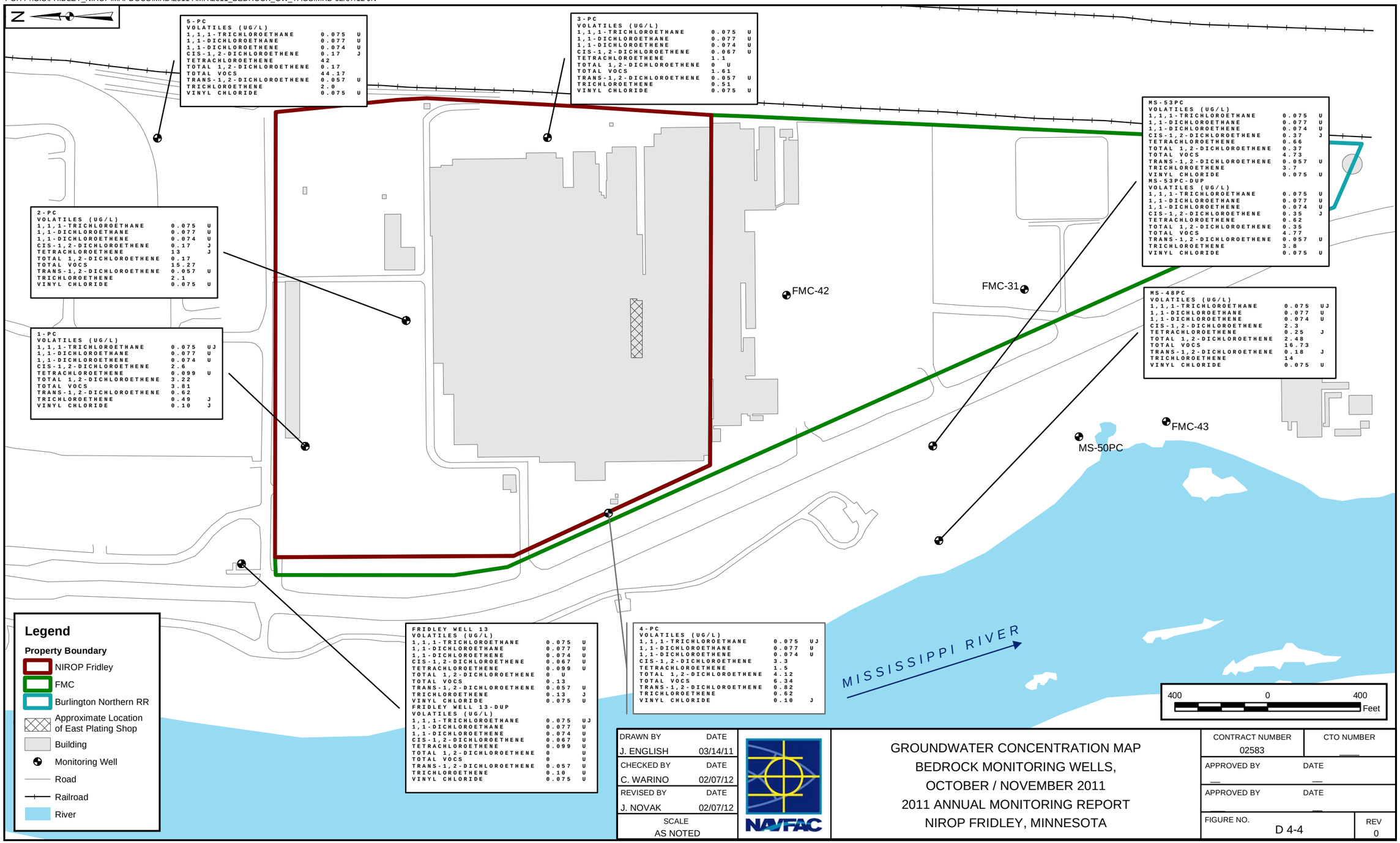

DRAWN BY J. ENGLISH	DATE 03/14/11
CHECKED BY C. WARINO	DATE 02/07/12
REVISED BY J. NOVAK	DATE 02/07/12
SCALE AS NOTED	

NAVFAC

GROUNDWATER CONCENTRATION MAP
BEDROCK MONITORING WELLS,
OCTOBER / NOVEMBER 2011
2011 ANNUAL MONITORING REPORT
NIROP FRIDLEY, MINNESOTA

CONTRACT NUMBER 02583	CTO NUMBER ___
APPROVED BY ___	DATE ___
APPROVED BY ___	DATE ___
FIGURE NO. D 4-4	REV 0

D-5 BAE DATA - JUNE 2011

ARCADIS

Table 1. Groundwater Analytical Results - Volatile Organic Compounds, BAE US Combat Systems, Fridley, Minnesota

Location ID		MW-UD-58I	MW-UD-58I	MW-UD-58I	MW-UD-58I	MW-UD-58I	MW-UD-59I	MW-UD-59I	MW-UD-59I	MW-UD-59I	MW-UD-59I	MW-UD-59I
Sample ID		MW58I (5/21/2009)	58I (10/19/2009)	58I (5/21/2010)	MW-58I (10/14/2010)	MW-58I (6/14/2011)	MW59I (5/21/2009)	59I (10/19/2009)	59I DUP (10/19/2009)	59I (5/21/2010)	59I Dup (5/21/2010)	MW-59I (10/14/2010)
Sample Date	Units	5/21/2009	10/19/2009	5/21/2010	10/14/2010	6/14/2011	5/21/2009	10/19/2009	10/19/2009	5/21/2010	5/21/2010	10/14/2010
1,1,1,2-Tetrachloroethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1,1-Trichloroethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1,2,2-Tetrachloroethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1,2-Trichloroethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1,2-Trichlorotrifluoroethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1-Dichloroethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1-Dichloroethene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1-Dichloropropene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2,3-Trichlorobenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2,3-Trichloropropane	ug/l	< 1	< 1	< 1	< 1	< 4	< 1	< 1	< 1	< 1	< 1	< 1
1,2,4-Trichlorobenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2,4-Trimethylbenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2-Dibromo-3-chloropropane	ug/l	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4
1,2-Dibromoethane (EDB)	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2-Dichlorobenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2-Dichloroethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2-Dichloropropane	ug/l	< 1	< 1	< 1	< 1	< 4	< 1	< 1	< 1	< 1	< 1	< 1
1,3,5-Trimethylbenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,3-Dichlorobenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,3-Dichloropropane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,4-Dichlorobenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
2,2-Dichloropropane	ug/l	< 1	< 1	< 4	< 4	< 4	< 1	< 1	< 1	< 4	< 4	< 4
2-Butanone (MEK)	ug/l	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4
2-Chlorotoluene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
4-Chlorotoluene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
4-Methyl-2-pentanone (MIBK)	ug/l	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4
Acetone	ug/l	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10
Allyl chloride	ug/l	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4
Benzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Bromobenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Bromochloromethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Bromodichloromethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Bromoform	ug/l	< 8	< 8	< 8	< 8	< 4	< 8	< 8	< 8	< 8	< 8	< 8
Bromomethane	ug/l	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4
Carbon tetrachloride	ug/l	< 1	< 1	< 4	< 4	< 1	< 1	< 1	< 1	< 4	< 4	< 4
CFC-11	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
CFC-12	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chlorobenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chloroethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chloroform	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chloromethane	ug/l	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4
cis-1,2-Dichloroethene	ug/l	< 1	< 1	< 1	< 1	< 1	14	16.9	18.7	15.2	16.1	13.2
cis-1,3-Dichloropropene	ug/l	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4
Dibromochloromethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Dibromomethane	ug/l	< 1	< 1	< 4	< 4	< 4	< 1	< 1	< 1	< 4	< 4	< 4
Dichlorofluoromethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Diethyl ether (Ethyl ether)	ug/l	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4

Notes on the following page.

Table 1. Groundwater Analytical Results - Volatile Organic Compounds, BAE US Combat Systems, Fridley, Minnesota

Location ID		MW-UD-58I	MW-UD-58I	MW-UD-58I	MW-UD-58I	MW-UD-58I	MW-UD-59I	MW-UD-59I	MW-UD-59I	MW-UD-59I	MW-UD-59I	MW-UD-59I
Sample ID		MW58I (5/21/2009)	58I (10/19/2009)	58I (5/21/2010)	MW-58I (10/14/2010)	MW-58I (6/14/2011)	MW59I (5/21/2009)	59I (10/19/2009)	59I DUP (10/19/2009)	59I (5/21/2010)	59I Dup (5/21/2010)	MW-59I (10/14/2010)
Sample Date	Units	5/21/2009	10/19/2009	5/21/2010	10/14/2010	6/14/2011	5/21/2009	10/19/2009	10/19/2009	5/21/2010	5/21/2010	10/14/2010
Ethylbenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Hexachloro-1,3-butadiene	ug/l	< 4	< 4	< 4	< 4	< 5	< 4	< 4	< 4	< 4	< 4	< 4
Isopropylbenzene (Cumene)	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
m&p-Xylene	ug/L	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Methylene Chloride	ug/l	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4
Methyl-tert-butyl ether	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Naphthalene	ug/l	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4
n-Butylbenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
n-Propylbenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
o-Xylene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
p-Isopropyltoluene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
sec-Butylbenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Styrene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
tert-Butylbenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Tetrachloroethene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Tetrahydrofuran	ug/l	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Toluene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
trans-1,2-Dichloroethene	ug/l	< 1	< 1	< 1	< 1	< 4	34.8	40.9	43.8	31.3	32.5	29.9
trans-1,3-Dichloropropene	ug/l	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4
Trichloroethene	ug/l	7.1	7.2	8.3	7.9	7.6	47.3	44.9	45.9	33.2	34	37.4
Vinyl chloride	ug/l	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
Xylene (Total)	ug/l	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3

Notes:

Results reported in micrograms per liter (ug/L).

NA Not analyzed.

< Not detected.

ARCADIS

Table 1. Groundwater Analytical Results - Volatile Organic Compounds, BAE US Combat Systems, Fridley, Minnesota

Location ID		MW-UD-60S	MW-UD-60S	MW-UD-61I	MW-UD-61I	MW-UD-61I	MW-UD-62S	MW-UD-62S	MW-UD-62S	MW-UD-62S	MW-UD-62S
Sample ID		MW-60S Dup (10/14/2010)	MW-60S (6/14/2011)	61I (10/19/2009)	MW-61I (10/14/2010)	MW-61I (6/14/2011)	MW62S (5/21/2009)	DUPLICATE (5/21/2009)	62S (10/19/2009)	62S (5/21/2010)	MW-62S (10/14/2010)
Sample Date	Units	10/14/2010	6/14/2011	10/19/2009	10/14/2010	6/14/2011	5/21/2009	5/21/2009	10/19/2009	5/21/2010	10/14/2010
1,1,1,2-Tetrachloroethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 50	< 50	< 25	< 25	< 25
1,1,1-Trichloroethane	ug/l	< 1	< 1	< 1	< 1	< 1	221	256	557	427	655
1,1,2,2-Tetrachloroethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 50	< 50	< 25	< 25	< 25
1,1,2-Trichloroethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 50	< 50	< 25	< 25	< 25
1,1,2-Trichlorotrifluoroethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 50	< 50	< 25	< 25	30
1,1-Dichloroethane	ug/l	< 1	< 1	< 1	< 1	< 1	117	133	212	181	374
1,1-Dichloroethene	ug/l	< 1	< 1	< 1	< 1	< 1	< 50	< 50	< 25	< 25	26.3
1,1-Dichloropropene	ug/l	< 1	< 1	< 1	< 1	< 1	< 50	< 50	< 25	< 25	< 25
1,2,3-Trichlorobenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 50	< 50	< 25	< 25	< 25
1,2,3-Trichloropropane	ug/l	< 1	< 4	< 1	< 1	< 4	< 50	< 50	< 25	< 25	< 25
1,2,4-Trichlorobenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 50	< 50	< 25	< 25	< 25
1,2,4-Trimethylbenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 50	< 50	< 25	< 25	< 25
1,2-Dibromo-3-chloropropane	ug/l	< 4	< 4	< 4	< 4	< 4	< 200	< 200	< 100	< 100	< 100
1,2-Dibromoethane (EDB)	ug/l	< 1	< 1	< 1	< 1	< 1	< 50	< 50	< 25	< 25	< 25
1,2-Dichlorobenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 50	< 50	< 25	< 25	< 25
1,2-Dichloroethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 50	< 50	< 25	< 25	< 25
1,2-Dichloropropane	ug/l	< 1	< 4	< 1	< 1	< 4	< 50	< 50	< 25	< 25	< 25
1,3,5-Trimethylbenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 50	< 50	< 25	< 25	< 25
1,3-Dichlorobenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 50	< 50	< 25	< 25	< 25
1,3-Dichloropropane	ug/l	< 1	< 1	< 1	< 1	< 1	< 50	< 50	< 25	< 25	< 25
1,4-Dichlorobenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 50	< 50	< 25	< 25	< 25
2,2-Dichloropropane	ug/l	< 4	< 4	< 1	< 4	< 4	< 50	< 50	< 25	< 100	< 100
2-Butanone (MEK)	ug/l	< 4	< 4	< 4	< 4	< 4	< 200	< 200	< 100	< 100	< 100
2-Chlorotoluene	ug/l	< 1	< 1	< 1	< 1	< 1	< 50	< 50	< 25	< 25	< 25
4-Chlorotoluene	ug/l	< 1	< 1	< 1	< 1	< 1	< 50	< 50	< 25	< 25	< 25
4-Methyl-2-pentanone (MIBK)	ug/l	< 4	< 4	< 4	< 4	< 4	< 200	< 200	< 100	< 100	< 100
Acetone	ug/l	< 10	< 25	< 10	< 10	< 25	< 500	< 500	< 250	< 250	< 250
Allyl chloride	ug/l	< 4	< 4	< 4	< 4	< 4	< 200	< 200	< 100	< 100	< 100
Benzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 50	< 50	< 25	< 25	< 25
Bromobenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 50	< 50	< 25	< 25	< 25
Bromochloromethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 50	< 50	< 25	< 25	< 25
Bromodichloromethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 50	< 50	< 25	< 25	< 25
Bromoform	ug/l	< 8	< 4	< 8	< 8	< 4	< 400	< 400	< 200	< 200	< 200
Bromomethane	ug/l	< 4	< 4	< 4	< 4	< 4	< 200	< 200	< 100	< 100	< 100
Carbon tetrachloride	ug/l	< 4	< 1	< 1	< 4	< 1	< 50	< 50	< 25	< 100	< 100
CFC-11	ug/l	< 1	< 1	< 1	< 1	< 1	< 50	< 50	< 25	< 25	< 25
CFC-12	ug/l	< 1	< 1	< 1	< 1	< 1	< 50	< 50	< 25	< 25	< 25
Chlorobenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 50	< 50	< 25	< 25	< 25
Chloroethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 50	< 50	< 25	< 25	< 25
Chloroform	ug/l	< 1	< 1	< 1	< 1	< 1	< 50	< 50	< 25	< 25	< 25
Chloromethane	ug/l	< 4	< 4	< 4	< 4	< 4	< 200	< 200	< 100	< 100	< 100
cis-1,2-Dichloroethene	ug/l	< 1	< 1	< 1	< 1	< 1	1500	1660	4260	5020	6840
cis-1,3-Dichloropropene	ug/l	< 4	< 4	< 4	< 4	< 4	< 200	< 200	< 100	< 100	< 100
Dibromochloromethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 50	< 50	< 25	< 25	< 25
Dibromomethane	ug/l	< 4	< 4	< 1	< 4	< 4	< 50	< 50	< 25	< 100	< 100
Dichlorofluoromethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 50	< 50	< 25	< 25	< 25
Diethyl ether (Ethyl ether)	ug/l	< 4	< 4	< 4	< 4	< 4	< 200	< 200	< 100	< 100	< 100

Notes on the following page.

Table 1. Groundwater Analytical Results - Volatile Organic Compounds, BAE US Combat Systems, Fridley, Minnesota

Location ID		MW-UD-60S	MW-UD-60S	MW-UD-61I	MW-UD-61I	MW-UD-61I	MW-UD-62S	MW-UD-62S	MW-UD-62S	MW-UD-62S	MW-UD-62S
Sample ID		MW-60S Dup (10/14/2010)	MW-60S (6/14/2011)	61I (10/19/2009)	MW-61I (10/14/2010)	MW-61I (6/14/2011)	MW62S (5/21/2009)	DUPLICATE (5/21/2009)	62S (10/19/2009)	62S (5/21/2010)	MW-62S (10/14/2010)
Sample Date	Units	10/14/2010	6/14/2011	10/19/2009	10/14/2010	6/14/2011	5/21/2009	5/21/2009	10/19/2009	5/21/2010	10/14/2010
Ethylbenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 50	< 50	< 25	< 25	< 25
Hexachloro-1,3-butadiene	ug/l	< 4	< 5	< 4	< 4	< 5	< 200	< 200	< 100	< 100	< 100
Isopropylbenzene (Cumene)	ug/l	< 1	< 1	< 1	< 1	< 1	< 50	< 50	< 25	< 25	< 25
m&p-Xylene	ug/L	< 2	< 2	< 2	< 2	< 2	< 100	< 100	< 50	< 50	< 50
Methylene Chloride	ug/l	< 4	< 4	< 4	< 4	< 4	< 200	< 200	< 100	< 100	< 100
Methyl-tert-butyl ether	ug/l	< 1	< 1	< 1	< 1	< 1	< 50	< 50	< 25	< 25	< 25
Naphthalene	ug/l	< 4	< 4	< 4	< 4	< 4	< 200	< 200	< 100	< 100	< 100
n-Butylbenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 50	< 50	< 25	< 25	< 25
n-Propylbenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 50	< 50	< 25	< 25	< 25
o-Xylene	ug/l	< 1	< 1	< 1	< 1	< 1	< 50	< 50	< 25	< 25	< 25
p-Isopropyltoluene	ug/l	< 1	< 1	< 1	< 1	< 1	< 50	< 50	< 25	< 25	< 25
sec-Butylbenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 50	< 50	< 25	< 25	< 25
Styrene	ug/l	< 1	< 1	< 1	< 1	< 1	< 50	< 50	< 25	< 25	< 25
tert-Butylbenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 50	< 50	< 25	< 25	< 25
Tetrachloroethene	ug/l	< 1	< 1	< 1	< 1	< 1	236	274	195	202	600
Tetrahydrofuran	ug/l	< 10	< 10	< 10	< 10	< 10	< 500	< 500	< 250	< 250	< 250
Toluene	ug/l	< 1	< 1	< 1	< 1	< 1	< 50	< 50	< 25	< 25	< 25
trans-1,2-Dichloroethene	ug/l	< 1	< 4	< 1	< 1	< 4	< 50	< 50	34.9	39.8	44.8
trans-1,3-Dichloropropene	ug/l	< 4	< 4	< 4	< 4	< 4	< 200	< 200	< 100	< 100	< 100
Trichloroethene	ug/l	< 1	< 1	10.2	16	4.5	3520	3910	3680	3860	8000
Vinyl chloride	ug/l	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 20	< 20	162	148	201
Xylene (Total)	ug/l	< 3	< 3	< 3	< 3	< 3	< 150	< 150	< 75	< 75	< 75

Notes:

Results reported in micrograms per liter (ug/L).

NA Not analyzed.

< Not detected.

Table 1. Groundwater Analytical Results - Volatile Organic Compounds, BAE US Combat Systems, Fridley, Minnesota

Location ID		MW-UD-62S	MW-UD-62S	MW-UD-63S	MW-UD-63S	MW-UD-63S	MW-UD-65S	MW-UD-65S	MW-UD-65S	MW-UD-65S	MW-UD-65S
Sample ID		MW-62S (6/14/2011)	MW-62S Dup (6/14/2011)	63S (10/19/2009)	MW-63S (10/14/2010)	MW-63S (6/14/2011)	MW65S (5/21/2009)	65S (10/20/2009)	65s 9028 (12/7/2009)	65S (5/21/2010)	MW-65S (10/15/2010)
Sample Date	Units	6/14/2011	6/14/2011	10/19/2009	10/14/2010	6/14/2011	5/21/2009	10/20/2009	12/7/2009	5/21/2010	10/15/2010
1,1,1,2-Tetrachloroethane	ug/l	< 50	< 50	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1,1-Trichloroethane	ug/l	408	400	< 1	< 1	< 1	5.6	141	75	5.7	66.6
1,1,2,2-Tetrachloroethane	ug/l	< 50	< 50	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1,2-Trichloroethane	ug/l	< 50	< 50	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1,2-Trichlorotrifluoroethane	ug/l	< 50	< 50	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1-Dichloroethane	ug/l	203	186	< 1	< 1	< 1	5.6	126	72.5	6.4	43.2
1,1-Dichloroethene	ug/l	< 50	< 50	< 1	< 1	< 1	< 1	11.9	4.8	< 1	3.9
1,1-Dichloropropene	ug/l	< 50	< 50	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2,3-Trichlorobenzene	ug/l	< 50	< 50	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2,3-Trichloropropane	ug/l	< 200	< 200	< 1	< 1	< 4	< 1	< 1	< 1	< 1	< 1
1,2,4-Trichlorobenzene	ug/l	< 50	< 50	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2,4-Trimethylbenzene	ug/l	< 50	< 50	51.4	56.3	105	< 1	< 1	< 1	< 1	< 1
1,2-Dibromo-3-chloropropane	ug/l	< 200	< 200	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4
1,2-Dibromoethane (EDB)	ug/l	< 50	< 50	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2-Dichlorobenzene	ug/l	< 50	< 50	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2-Dichloroethane	ug/l	< 50	< 50	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2-Dichloropropane	ug/l	< 200	< 200	< 1	< 1	< 4	< 1	< 1	< 1	< 1	< 1
1,3,5-Trimethylbenzene	ug/l	< 50	< 50	12	10.5	26.5	< 1	< 1	< 1	< 1	< 1
1,3-Dichlorobenzene	ug/l	< 50	< 50	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,3-Dichloropropane	ug/l	< 50	< 50	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,4-Dichlorobenzene	ug/l	< 50	< 50	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
2,2-Dichloropropane	ug/l	< 200	< 200	< 1	< 4	< 4	< 1	< 1	< 4	< 4	< 4
2-Butanone (MEK)	ug/l	< 200	< 200	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4
2-Chlorotoluene	ug/l	< 50	< 50	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
4-Chlorotoluene	ug/l	< 50	< 50	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
4-Methyl-2-pentanone (MIBK)	ug/l	< 200	< 200	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4
Acetone	ug/l	< 1250	< 1250	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10
Allyl chloride	ug/l	< 200	< 200	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4
Benzene	ug/l	< 50	< 50	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Bromobenzene	ug/l	< 50	< 50	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Bromochloromethane	ug/l	< 50	< 50	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Bromodichloromethane	ug/l	< 50	< 50	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Bromoform	ug/l	< 200	< 200	< 8	< 8	< 4	< 8	< 8	< 8	< 8	< 8
Bromomethane	ug/l	< 200	< 200	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4
Carbon tetrachloride	ug/l	< 50	< 50	< 1	< 4	< 1	< 1	< 1	< 4	< 4	< 4
CFC-11	ug/l	< 50	< 50	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
CFC-12	ug/l	< 50	< 50	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chlorobenzene	ug/l	< 50	< 50	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chloroethane	ug/l	< 50	< 50	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chloroform	ug/l	< 50	< 50	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chloromethane	ug/l	< 200	< 200	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4
cis-1,2-Dichloroethene	ug/l	5710	5590	< 1	< 1	< 1	18.5	1490	786	53.2	699
cis-1,3-Dichloropropene	ug/l	< 200	< 200	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4
Dibromochloromethane	ug/l	< 50	< 50	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Dibromomethane	ug/l	< 200	< 200	< 1	< 4	< 4	< 1	< 1	< 4	< 4	< 4
Dichlorofluoromethane	ug/l	< 50	< 50	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Diethyl ether (Ethyl ether)	ug/l	< 200	< 200	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4

Notes on the following page.

Table 1. Groundwater Analytical Results - Volatile Organic Compounds, BAE US Combat Systems, Fridley, Minnesota

Location ID		MW-UD-62S	MW-UD-62S	MW-UD-63S	MW-UD-63S	MW-UD-63S	MW-UD-65S	MW-UD-65S	MW-UD-65S	MW-UD-65S	MW-UD-65S
Sample ID		MW-62S (6/14/2011)	MW-62S Dup (6/14/2011)	63S (10/19/2009)	MW-63S (10/14/2010)	MW-63S (6/14/2011)	MW65S (5/21/2009)	65S (10/20/2009)	65s 9028 (12/7/2009)	65S (5/21/2010)	MW-65S (10/15/2010)
Sample Date	Units	6/14/2011	6/14/2011	10/19/2009	10/14/2010	6/14/2011	5/21/2009	10/20/2009	12/7/2009	5/21/2010	10/15/2010
Ethylbenzene	ug/l	< 50	< 50	2	< 1	1.7	< 1	< 1	< 1	< 1	< 1
Hexachloro-1,3-butadiene	ug/l	< 250	< 250	< 4	< 4	< 5	< 4	< 4	< 4	< 4	< 4
Isopropylbenzene (Cumene)	ug/l	< 50	< 50	1.7	1.2	2.9	< 1	< 1	< 1	< 1	< 1
m&p-Xylene	ug/L	< 100	< 100	4.1	3.6	3.6	< 2	< 2	< 2	< 2	< 2
Methylene Chloride	ug/l	< 200	< 200	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4
Methyl-tert-butyl ether	ug/l	< 50	< 50	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Naphthalene	ug/l	< 200	< 200	13.6	7.8	16.3	< 4	< 4	< 4	< 4	< 4
n-Butylbenzene	ug/l	< 50	< 50	1.7	1.9	1.2	< 1	< 1	< 1	< 1	< 1
n-Propylbenzene	ug/l	< 50	< 50	6	3.6	9.9	< 1	< 1	< 1	< 1	< 1
o-Xylene	ug/l	< 50	< 50	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
p-Isopropyltoluene	ug/l	< 50	< 50	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
sec-Butylbenzene	ug/l	< 50	< 50	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Styrene	ug/l	< 50	< 50	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
tert-Butylbenzene	ug/l	< 50	< 50	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Tetrachloroethene	ug/l	490	452	< 1	< 1	< 1	4.7	83.2	91.7	17.3	74.3
Tetrahydrofuran	ug/l	< 500	< 500	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Toluene	ug/l	< 50	< 50	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
trans-1,2-Dichloroethene	ug/l	< 200	< 200	< 1	< 1	< 4	< 1	17.2	19.5	< 1	6.3
trans-1,3-Dichloropropene	ug/l	< 200	< 200	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4
Trichloroethene	ug/l	5090	4620	< 1	< 1	< 1	102	1780	1090	105	1030
Vinyl chloride	ug/l	140	135	< 0.4	< 0.4	< 0.4	< 0.4	8.6	2.8	< 0.4	1.6
Xylene (Total)	ug/l	< 150	< 150	4.5	3.8	3.6	< 3	< 3	< 3	< 3	< 3

Notes

Results reported in micrograms per liter (ug/L).

NA Not analyzed.

< Not detected.

Table 1. Groundwater Analytical Results - Volatile Organic Compounds, BAE US Combat Systems, Fridley, Minnesota

Location ID		MW-UD-65S	MW-UD-66I	MW-UD-66I	MW-UD-66I	MW-UD-66I	MW-UD-66I	MW-UD-67S	MW-UD-67S	MW-UD-67S	MW-UD-67S
Sample ID		MW-65S (6/15/2011)	MW66I (5/21/2009)	66I MS/MSD (10/20/2009)	66I (5/21/2010)	MW-66I (10/15/2010)	MW-66I (6/15/2011)	MW67S (5/21/2009)	67S (10/20/2009)	67S (5/21/2010)	MW-67S (10/15/2010)
Sample Date	Units	6/15/2011	5/21/2009	10/20/2009	5/21/2010	10/15/2010	6/15/2011	5/21/2009	10/20/2009	5/21/2010	10/15/2010
1,1,1,2-Tetrachloroethane	ug/l	< 1	< 1	< 5	< 5	< 5	< 1	< 1	< 1	< 1	< 1
1,1,1-Trichloroethane	ug/l	1.6	3.3	< 5	< 5	< 5	< 1	< 1	12.9	1.9	7.9
1,1,2,2-Tetrachloroethane	ug/l	< 1	< 1	< 5	< 5	< 5	< 1	< 1	< 1	< 1	< 1
1,1,2-Trichloroethane	ug/l	< 1	< 1	< 5	< 5	< 5	< 1	< 1	< 1	< 1	< 1
1,1,2-Trichlorotrifluoroethane	ug/l	< 1	< 1	< 5	< 5	< 5	< 1	< 1	< 1	< 1	< 1
1,1-Dichloroethane	ug/l	< 1	9.2	14.8	11.1	14.6	1.9	< 1	14.1	6.7	6.8
1,1-Dichloroethene	ug/l	< 1	3.9	6.1	5.8	6.8	< 1	< 1	1.7	< 1	< 1
1,1-Dichloropropene	ug/l	< 1	< 1	< 5	< 5	< 5	< 1	< 1	< 1	< 1	< 1
1,2,3-Trichlorobenzene	ug/l	< 1	< 1	< 5	< 5	< 5	< 1	< 1	< 1	< 1	< 1
1,2,3-Trichloropropane	ug/l	< 4	< 1	< 5	< 5	< 5	< 4	< 1	< 1	< 1	< 1
1,2,4-Trichlorobenzene	ug/l	< 1	< 1	< 5	< 5	< 5	< 1	< 1	< 1	< 1	< 1
1,2,4-Trimethylbenzene	ug/l	< 1	< 1	< 5	< 5	< 5	< 1	< 1	< 1	< 1	< 1
1,2-Dibromo-3-chloropropane	ug/l	< 4	< 4	< 20	< 20	< 20	< 4	< 4	< 4	< 4	< 4
1,2-Dibromoethane (EDB)	ug/l	< 1	< 1	< 5	< 5	< 5	< 1	< 1	< 1	< 1	< 1
1,2-Dichlorobenzene	ug/l	< 1	< 1	< 5	< 5	< 5	< 1	< 1	< 1	< 1	< 1
1,2-Dichloroethane	ug/l	< 1	< 1	< 5	< 5	< 5	< 1	< 1	< 1	< 1	< 1
1,2-Dichloropropane	ug/l	< 4	< 1	< 5	< 5	< 5	< 4	< 1	< 1	< 1	< 1
1,3,5-Trimethylbenzene	ug/l	< 1	< 1	< 5	< 5	< 5	< 1	< 1	< 1	< 1	< 1
1,3-Dichlorobenzene	ug/l	< 1	< 1	< 5	< 5	< 5	< 1	< 1	< 1	< 1	< 1
1,3-Dichloropropane	ug/l	< 1	< 1	< 5	< 5	< 5	< 1	< 1	< 1	< 1	< 1
1,4-Dichlorobenzene	ug/l	< 1	< 1	< 5	< 5	< 5	< 1	< 1	< 1	< 1	< 1
2,2-Dichloropropane	ug/l	< 4	< 1	< 5	< 20	< 20	< 4	< 1	< 1	< 4	< 4
2-Butanone (MEK)	ug/l	< 4	< 4	< 20	< 20	< 20	< 4	< 4	< 4	< 4	< 4
2-Chlorotoluene	ug/l	< 1	< 1	< 5	< 5	< 5	< 1	< 1	< 1	< 1	< 1
4-Chlorotoluene	ug/l	< 1	< 1	< 5	< 5	< 5	< 1	< 1	< 1	< 1	< 1
4-Methyl-2-pentanone (MIBK)	ug/l	< 4	< 4	< 20	< 20	< 20	< 4	< 4	< 4	< 4	< 4
Acetone	ug/l	< 25	< 10	< 50	< 50	< 50	< 25	< 10	< 10	< 10	< 10
Allyl chloride	ug/l	< 4	< 4	< 20	< 20	< 20	< 4	< 4	< 4	< 4	< 4
Benzene	ug/l	< 1	< 1	< 5	< 5	< 5	< 1	< 1	< 1	< 1	< 1
Bromobenzene	ug/l	< 1	< 1	< 5	< 5	< 5	< 1	< 1	< 1	< 1	< 1
Bromochloromethane	ug/l	< 1	< 1	< 5	< 5	< 5	< 1	< 1	< 1	< 1	< 1
Bromodichloromethane	ug/l	< 1	< 1	< 5	< 5	< 5	< 1	< 1	< 1	< 1	< 1
Bromoform	ug/l	< 4	< 8	< 40	< 40	< 40	< 4	< 8	< 8	< 8	< 8
Bromomethane	ug/l	< 4	< 4	< 20	< 20	< 20	< 4	< 4	< 4	< 4	< 4
Carbon tetrachloride	ug/l	< 1	< 1	< 5	< 20	< 20	< 1	< 1	< 1	< 4	< 4
CFC-11	ug/l	< 1	< 1	< 5	< 5	< 5	< 1	< 1	< 1	< 1	< 1
CFC-12	ug/l	< 1	< 1	< 5	< 5	< 5	< 1	< 1	< 1	< 1	< 1
Chlorobenzene	ug/l	< 1	< 1	< 5	< 5	< 5	< 1	< 1	< 1	< 1	< 1
Chloroethane	ug/l	< 1	< 1	< 5	< 5	< 5	< 1	< 1	< 1	< 1	< 1
Chloroform	ug/l	< 1	< 1	< 5	< 5	< 5	< 1	< 1	< 1	< 1	< 1
Chloromethane	ug/l	< 4	< 4	< 20	< 20	< 20	< 4	< 4	< 4	< 4	< 4
cis-1,2-Dichloroethene	ug/l	4.8	59.8	81.9	91.1	110	19.7	3.2	138	63.2	88.7
cis-1,3-Dichloropropene	ug/l	< 4	< 4	< 20	< 20	< 20	< 4	< 4	< 4	< 4	< 4
Dibromochloromethane	ug/l	< 1	< 1	< 5	< 5	< 5	< 1	< 1	< 1	< 1	< 1
Dibromomethane	ug/l	< 4	< 1	< 5	< 20	< 20	< 4	< 1	< 1	< 4	< 4
Dichlorofluoromethane	ug/l	< 1	< 1	< 5	< 5	< 5	< 1	< 1	< 1	< 1	< 1
Diethyl ether (Ethyl ether)	ug/l	< 4	< 4	< 20	< 20	< 20	< 4	< 4	< 4	< 4	< 4

Notes on the following page.

Table 1. Groundwater Analytical Results - Volatile Organic Compounds, BAE US Combat Systems, Fridley, Minnesota

Location ID		MW-UD-65S	MW-UD-66I	MW-UD-66I	MW-UD-66I	MW-UD-66I	MW-UD-66I	MW-UD-67S	MW-UD-67S	MW-UD-67S	MW-UD-67S
Sample ID		MW-65S (6/15/2011)	MW66I (5/21/2009)	66I MS/MSD (10/20/2009)	66I (5/21/2010)	MW-66I (10/15/2010)	MW-66I (6/15/2011)	MW67S (5/21/2009)	67S (10/20/2009)	67S (5/21/2010)	MW-67S (10/15/2010)
Sample Date	Units	6/15/2011	5/21/2009	10/20/2009	5/21/2010	10/15/2010	6/15/2011	5/21/2009	10/20/2009	5/21/2010	10/15/2010
Ethylbenzene	ug/l	< 1	< 1	< 5	< 5	< 5	< 1	< 1	< 1	< 1	< 1
Hexachloro-1,3-butadiene	ug/l	< 5	< 4	< 20	< 20	< 20	< 5	< 4	< 4	< 4	< 4
Isopropylbenzene (Cumene)	ug/l	< 1	< 1	< 5	< 5	< 5	< 1	< 1	< 1	< 1	< 1
m&p-Xylene	ug/L	< 2	< 2	< 10	< 10	< 10	< 2	< 2	< 2	< 2	< 2
Methylene Chloride	ug/l	< 4	< 4	< 20	< 20	< 20	< 4	< 4	< 4	< 4	< 4
Methyl-tert-butyl ether	ug/l	< 1	< 1	< 5	< 5	< 5	< 1	< 1	< 1	< 1	< 1
Naphthalene	ug/l	< 4	< 4	< 20	< 20	< 20	< 4	< 4	< 4	< 4	< 4
n-Butylbenzene	ug/l	< 1	< 1	< 5	< 5	< 5	< 1	< 1	< 1	< 1	< 1
n-Propylbenzene	ug/l	< 1	< 1	< 5	< 5	< 5	< 1	< 1	< 1	< 1	< 1
o-Xylene	ug/l	< 1	< 1	< 5	< 5	< 5	< 1	< 1	< 1	< 1	< 1
p-Isopropyltoluene	ug/l	< 1	< 1	< 5	< 5	< 5	< 1	< 1	< 1	< 1	< 1
sec-Butylbenzene	ug/l	< 1	< 1	< 5	< 5	< 5	< 1	< 1	< 1	< 1	< 1
Styrene	ug/l	< 1	< 1	< 5	< 5	< 5	< 1	< 1	< 1	< 1	< 1
tert-Butylbenzene	ug/l	< 1	< 1	< 5	< 5	< 5	< 1	< 1	< 1	< 1	< 1
Tetrachloroethene	ug/l	3	28	37.3	29.2	36.7	13.3	< 1	7.8	9.1	9.8
Tetrahydrofuran	ug/l	< 10	< 10	< 50	< 50	< 50	< 10	< 10	< 10	< 10	< 10
Toluene	ug/l	< 1	< 1	< 5	< 5	< 5	< 1	< 1	< 1	< 1	< 1
trans-1,2-Dichloroethene	ug/l	< 4	1.8	< 5	< 5	< 5	< 4	< 1	3.2	2.4	2
trans-1,3-Dichloropropene	ug/l	< 4	< 4	< 20	< 20	< 20	< 4	< 4	< 4	< 4	< 4
Trichloroethene	ug/l	23.6	453	855	600	1010	131	14.6	239	167	204
Vinyl chloride	ug/l	< 0.4	< 0.4	< 2	< 2	< 2	< 0.4	< 0.4	0.92	0.41	< 0.4
Xylene (Total)	ug/l	< 3	< 3	< 15	< 15	< 15	< 3	< 3	< 3	< 3	< 3

Notes:

Results reported in micrograms per liter (ug/L).

NA Not analyzed.

< Not detected.

Table 1. Groundwater Analytical Results - Volatile Organic Compounds, BAE US Combat Systems, Fridley, Minnesota

Location ID		MW-UD-67S	MW-UD-68I	MW-UD-68I	MW-UD-68I	MW-UD-68I	MW-UD-68I	MW-UD-69D	MW-UD-69D	MW-UD-69D	MW-UD-69D
Sample ID		MW-67S (6/15/2011)	MW68I (5/21/2009)	68I (10/20/2009)	68I (5/21/2010)	MW-68I (10/15/2010)	MW-68I (6/15/2011)	MW69D (5/21/2009)	69D (10/19/2009)	69D (5/21/2010)	MW-69D (10/14/2010)
Sample Date	Units	6/15/2011	5/21/2009	10/20/2009	5/21/2010	10/15/2010	6/15/2011	5/21/2009	10/19/2009	5/21/2010	10/14/2010
1,1,1,2-Tetrachloroethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1,1-Trichloroethane	ug/l	74	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1,2,2-Tetrachloroethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1,2-Trichloroethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1,2-Trichlorotrifluoroethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1-Dichloroethane	ug/l	80.1	5.8	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1-Dichloroethene	ug/l	10.9	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1-Dichloropropene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2,3-Trichlorobenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2,3-Trichloropropane	ug/l	< 4	< 1	< 1	< 1	< 1	< 4	< 1	< 1	< 1	< 1
1,2,4-Trichlorobenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2,4-Trimethylbenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2-Dibromo-3-chloropropane	ug/l	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4
1,2-Dibromoethane (EDB)	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2-Dichlorobenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2-Dichloroethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2-Dichloropropane	ug/l	< 4	< 1	< 1	< 1	< 1	< 4	< 1	< 1	< 1	< 1
1,3,5-Trimethylbenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,3-Dichlorobenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,3-Dichloropropane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,4-Dichlorobenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
2,2-Dichloropropane	ug/l	< 4	< 1	< 1	< 4	< 4	< 4	< 1	< 1	< 4	< 4
2-Butanone (MEK)	ug/l	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4
2-Chlorotoluene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
4-Chlorotoluene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
4-Methyl-2-pentanone (MIBK)	ug/l	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4
Acetone	ug/l	< 25	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 10	< 10
Allyl chloride	ug/l	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4
Benzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Bromobenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Bromochloromethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Bromodichloromethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Bromoform	ug/l	< 4	< 8	< 8	< 8	< 8	< 4	< 8	< 8	< 8	< 8
Bromomethane	ug/l	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4
Carbon tetrachloride	ug/l	< 1	< 1	< 1	< 4	< 4	< 1	< 1	< 1	< 4	< 4
CFC-11	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
CFC-12	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chlorobenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chloroethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chloroform	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chloromethane	ug/l	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4
cis-1,2-Dichloroethene	ug/l	953	34.3	4.7	5	6.7	5.4	< 1	< 1	< 1	< 1
cis-1,3-Dichloropropene	ug/l	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4
Dibromochloromethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Dibromomethane	ug/l	< 4	< 1	< 1	< 4	< 4	< 4	< 1	< 1	< 4	< 4
Dichlorofluoromethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Diethyl ether (Ethyl ether)	ug/l	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4

Notes on the following page.

Table 1. Groundwater Analytical Results - Volatile Organic Compounds, BAE US Combat Systems, Fridley, Minnesota

Location ID		MW-UD-67S	MW-UD-68I	MW-UD-68I	MW-UD-68I	MW-UD-68I	MW-UD-68I	MW-UD-69D	MW-UD-69D	MW-UD-69D	MW-UD-69D
Sample ID		MW-67S (6/15/2011)	MW68I (5/21/2009)	68I (10/20/2009)	68I (5/21/2010)	MW-68I (10/15/2010)	MW-68I (6/15/2011)	MW69D (5/21/2009)	69D (10/19/2009)	69D (5/21/2010)	MW-69D (10/14/2010)
Sample Date	Units	6/15/2011	5/21/2009	10/20/2009	5/21/2010	10/15/2010	6/15/2011	5/21/2009	10/19/2009	5/21/2010	10/14/2010
Ethylbenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Hexachloro-1,3-butadiene	ug/l	< 5	< 4	< 4	< 4	< 4	< 5	< 4	< 4	< 4	< 4
Isopropylbenzene (Cumene)	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
m&p-Xylene	ug/L	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Methylene Chloride	ug/l	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4
Methyl-tert-butyl ether	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Naphthalene	ug/l	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4
n-Butylbenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
n-Propylbenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
o-Xylene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
p-Isopropyltoluene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
sec-Butylbenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Styrene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
tert-Butylbenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Tetrachloroethene	ug/l	29.1	4.6	< 1	< 1	< 1	< 1	2.6	2.6	2	1.8
Tetrahydrofuran	ug/l	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Toluene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
trans-1,2-Dichloroethene	ug/l	12.1	1.3	< 1	1	< 1	< 4	< 1	< 1	< 1	< 1
trans-1,3-Dichloropropene	ug/l	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4
Trichloroethene	ug/l	1020	98.3	13.9	13.8	17.5	12.8	8.2	9.2	7.4	8.4
Vinyl chloride	ug/l	6.9	0.47	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
Xylene (Total)	ug/l	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3

Notes:

Results reported in micrograms per liter (ug/L).

NA Not analyzed.

< Not detected.

Table 1. Groundwater Analytical Results - Volatile Organic Compounds, BAE US Combat Systems, Fridley, Minnesota

Location ID		MW-UD-69D	UST2	UST2	UST2	UST2	FB	FB	FB	TB
Sample ID		MW-69D (6/14/2011)	UST2 (10/19/2009)	UST MW-2 (5/21/2010)	UST-2 (10/14/2010)	UST-2 (6/14/2011)	Field Blank (5/21/2010)	Field Blank (10/14/2010)	Field Blank (6/15/2011)	TRIP BLANK (5/21/2009)
Sample Date	Units	6/14/2011	10/19/2009	5/21/2010	10/14/2010	6/14/2011	5/21/2010	10/14/2010	6/15/2011	5/21/2009
1,1,1,2-Tetrachloroethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1,1-Trichloroethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1,2,2-Tetrachloroethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1,2-Trichloroethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1,2-Trichlorotrifluoroethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1-Dichloroethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1-Dichloroethene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1-Dichloropropene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2,3-Trichlorobenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2,3-Trichloropropane	ug/l	< 4	< 1	< 1	< 1	< 4	< 1	< 1	< 4	< 1
1,2,4-Trichlorobenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2,4-Trimethylbenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2-Dibromo-3-chloropropane	ug/l	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4
1,2-Dibromoethane (EDB)	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2-Dichlorobenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2-Dichloroethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2-Dichloropropane	ug/l	< 4	< 1	< 1	< 1	< 4	< 1	< 1	< 4	< 1
1,3,5-Trimethylbenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,3-Dichlorobenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,3-Dichloropropane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,4-Dichlorobenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
2,2-Dichloropropane	ug/l	< 4	< 1	< 4	< 4	< 4	< 4	< 4	< 4	< 1
2-Butanone (MEK)	ug/l	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4
2-Chlorotoluene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
4-Chlorotoluene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
4-Methyl-2-pentanone (MIBK)	ug/l	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4
Acetone	ug/l	< 25	< 10	< 10	< 10	< 25	< 10	< 10	< 25	21.3
Allyl chloride	ug/l	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4
Benzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Bromobenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Bromochloromethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Bromodichloromethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Bromoform	ug/l	< 4	< 8	< 8	< 8	< 4	< 8	< 8	< 4	< 8
Bromomethane	ug/l	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4
Carbon tetrachloride	ug/l	< 1	< 1	< 4	< 4	< 1	< 4	< 4	< 1	< 1
CFC-11	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
CFC-12	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chlorobenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chloroethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chloroform	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chloromethane	ug/l	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4
cis-1,2-Dichloroethene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
cis-1,3-Dichloropropene	ug/l	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4
Dibromochloromethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Dibromomethane	ug/l	< 4	< 1	< 4	< 4	< 4	< 4	< 4	< 4	< 1
Dichlorofluoromethane	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Diethyl ether (Ethyl ether)	ug/l	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4

Notes on the following page.

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Table 1. Groundwater Analytical Results - Volatile Organic Compounds, BAE US Combat Systems, Fridley, Minnesota

Location ID		MW-UD-69D	UST2	UST2	UST2	UST2	FB	FB	FB	TB
Sample ID		MW-69D (6/14/2011)	UST2 (10/19/2009)	UST MW-2 (5/21/2010)	UST-2 (10/14/2010)	UST-2 (6/14/2011)	Field Blank (5/21/2010)	Field Blank (10/14/2010)	Field Blank (6/15/2011)	TRIP BLANK (5/21/2009)
Sample Date	Units	6/14/2011	10/19/2009	5/21/2010	10/14/2010	6/14/2011	5/21/2010	10/14/2010	6/15/2011	5/21/2009
Ethylbenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Hexachloro-1,3-butadiene	ug/l	< 5	< 4	< 4	< 4	< 5	< 4	< 4	< 5	< 4
Isopropylbenzene (Cumene)	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
m&p-Xylene	ug/L	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Methylene Chloride	ug/l	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4
Methyl-tert-butyl ether	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Naphthalene	ug/l	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4
n-Butylbenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
n-Propylbenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
o-Xylene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
p-Isopropyltoluene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
sec-Butylbenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Styrene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
tert-Butylbenzene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Tetrachloroethene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Tetrahydrofuran	ug/l	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Toluene	ug/l	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	1.2
trans-1,2-Dichloroethene	ug/l	< 4	< 1	< 1	< 1	< 4	< 1	< 1	< 4	< 1
trans-1,3-Dichloropropene	ug/l	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4
Trichloroethene	ug/l	5.8	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Vinyl chloride	ug/l	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
Xylene (Total)	ug/l	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3

Notes:

Results reported in micrograms per liter (ug/L).

NA Not analyzed.

< Not detected.

Note. Page 12 of 14 was the last page provided to Tetra Tech. STJ