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FINAL MUNITIONS RESPONSE PROGRAM PHASE 2 SITE INSPECTION REPORT FOR FIVE SMALL ARMS/SKEET RANGES STUMP NECK ANNEX NSWC INDIAN HEAD MD

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TETRA TECH

FINAL

Munitions Response Program

Phase 2 Site Inspection Report

Five Small Arms / Skeet Ranges
Stump Neck Annex

Naval Support Facility Indian Head

Indian Head, Maryland

Naval Facilities Engineering Command
Washington

Contract Number N62467-04-D-0055
Contract Task Order 423

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FINAL

MUNITIONS RESPONSE PROGRAM

PHASE 2 SITE INSPECTION REPORT
FIVE SMALL ARMS/SKEET RANGES
STUMP NECK ANNEX

NAVAL SUPPORT FACILITY INDIAN HEAD
INDIAN HEAD, MARYLAND

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

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ACRONYMS AND ABBREVIATIONS

%Rs	percent recoveries
APPL	APPL, Inc.
bgs	below ground surface
CCV	Continuing Calibration Verification
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CLEAN	Comprehensive Long-Term Environmental Action Navy
CLP	Contract Laboratory Program
C_{max}	maximum detected site concentration
COC	Chemical of Concern
COPC	Chemical of Potential Concern
cPAH	carcinogenic polycyclic aromatic hydrocarbon
CSF	cancer slope factor
CSM	conceptual site model
CWAP	Comprehensive Work Approval Process
CTO	Contract Task Order
DI	Deionized
DL	detection limit
DMM	discarded military munitions
DoD	Department of Defense
DPT	Direct-Push Technology
DQI	data quality indicator
DQO	data quality objective
DQR	data quality review
ELAP	Environmental Laboratory Accreditation Program
EOD	Explosive Ordnance Disposal
EPA	U.S. Environmental Protection Agency
EPC	exposure point concentration
FBL	fixed-base laboratory
ft^2/day	square feet per day
GIS	Geographic Information System
GPR	ground-penetrating radar
GPS	Global Positioning System
GRC	GeoReadiness Center
HASP	Health and Safety Plan
HI	Hazard Index
HQ	Hazard Quotient

ACRONYMS AND ABBREVIATIONS (Continued)

IAS	Initial Assessment Study
ID	inner diameter
IDW	investigation-derived waste
IED	Improvised Explosive Device
ILCR	Incremental Lifetime Cancer Risk
IS	Internal Standard
IUR	Inhalation Unit Risk
kg	kilogram
L	liter
LOD	Limit of Detection
LOQ	Limit of Quantitation
µg	microgram
MC	munitions constituent
MCL	Maximum Contaminant Level
MEC	munitions and explosives of concern
mg	milligram
mHz	megahertz
MRA	Munitions Response Area
MRP	Munitions Response Program
MRR	Marine Rifle Range
MRS	Munitions Response Site
MS/MSD	Matrix Spike/Matrix Spike Duplicate
msl	mean sea level
NAD	North American Datum
NAVFAC	Naval Facilities Engineering Command
Navy	Department of Navy
NG	nitroglycerin
NSF-IH	Naval Support Facility Indian Head
NSWC	Naval Surface Warfare Center
NTU	nephelometric turbidity unit
OD	outer diameter
ORP	oxidation-reduction potential
OSTR	Old Skeet and Trap Range
PA	Preliminary Assessment
PAH	polycyclic aromatic hydrocarbon
PAL	Project Action Limit

ACRONYMS AND ABBREVIATIONS (Continued)

PARCCS	Precision, Accuracy, Representativeness, Completeness, Comparability, and Sensitivity
POC	Point of Contact
PQO	Project Quality Objective
PVC	polyvinyl chloride
QAPP	Quality Assurance Project Plan
QC	quality control
QSM	Quality Systems Manual
RBC	Risk-Based Concentration
RBSL	Risk-Based Screening Level
RCRA	Resource Conservation and Recovery Act
RfC	Reference Concentration
RfD	Reference Dose
RPD	Relative Percent Difference
RPSR	Rum Point Skeet Range
RRRR	Roach Road Rifle Range
RSL	[EPA] Regional Screening Level
RSLc	tap water regional screening level for cancer effects
RSLn	tap water regional screening level for noncancer effects
SAP	Sampling and Analysis Plan
SAPR	Small Arms (Pistol) Range
SASR	Small Arms/Skeet Range
SDG	Sample Delivery Group
SDWA	Safe Drinking Water Act
SI	Site Inspection
SIM	Selected Ion Monitoring
THQ	target hazard quotient
TRL	target risk level
U.S.	United States
USDA	U.S. Department of Agriculture
UXO	unexploded ordnance
WMA	Wildlife Management Area

EXECUTIVE SUMMARY

This report documents the Phase 2 Site Inspection (SI) for five small arms/skeet ranges (SASRs) located on the Stump Neck Annex at Naval Support Facility Indian Head (NSF-IH) in Indian Head, Maryland. Tetra Tech has prepared this report for Naval Facilities Engineering Command (NAVFAC) Washington under Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract No. N62467-04-D-0055, Contract Task Order 423.

This Phase 2 SI Report summarizes the investigation and evaluation of munitions constituents (MC) in groundwater at the SASRs. This report is presented as a companion report to the Site Inspection Report for Munitions Response Site Inspections at Five Small Arms/Skeet Ranges (i.e., the Phase 1 SI Report) (Tetra Tech, 2010), which addressed the soil and sediment media at the subject sites. The results of both phases of the SI will be used to determine whether further investigations and/or response actions are necessary at any of the SASRs.

LOCATION AND DESCRIPTION

The locations of the Main Area and Stump Neck Annex of NSF-IH are shown on Figure ES-1. Stump Neck Annex covers approximately 1,100 acres on the Stump Neck peninsula at the confluence of the Potomac River and Chicamuxen Creek in Charles County, Maryland. The Main Area covers approximately 2,300 acres and is situated northeast of Stump Neck Annex, across Mattawoman Creek. Much of the Stump Neck peninsula lies within the Valley Firing Fan, which received fire from the Valley Gun Proving Site at the Main Area from 1891 through 1921 (Figure ES-2).

BACKGROUND AND PHYSICAL SETTING

The five SASRs are being managed under the Navy's Munitions Response Program (MRP). The purpose of the MRP is to investigate and remediate (if necessary) closed military ranges for munitions and explosives of concern (MEC), which consist of discarded military munitions (DMM), unexploded ordnance (UXO), and high concentrations of explosives in soil presenting an explosive hazard, as well as the associated MC (e.g., metals, explosive compounds, etc.) that are released into the environment. MEC is not a concern at small arms ranges as a result of operations; however, MC may be of concern. This MRP work is being performed in accordance with the Comprehensive Environmental Remediation and Liability Act (CERCLA) regulatory framework.

The initial phase of the CERCLA process, the Preliminary Assessment (PA), was completed in September 2005. It identified five small arms ranges at the Stump Neck Annex, classified as "other than operational range" sites, and designated them Munitions Response Areas (MRAs) or Munitions Response

Sites (MRSs) in need of further investigation. The five MRA/Ss, which are shown on Figure ES-3, are identified by the following descriptive names and MRP Site numbers:

- Marine Rifle Range (MRR) – UXO 14
- Old Skeet and Trap Range (OSTR) – UXO 15
- Rum Point Skeet Range (RPSR) – UXO 16
- Small Arms (Pistol) Range (SAPR) – UXO 17
- Roach Road Rifle Range (RRRR) – UXO 25

PHASE 2 SI FIELD ACTIVITIES

Phase 2 SI field activities were conducted at the five SASRs in accordance with the project-specific Sampling and Analysis Plan (SAP) (Tetra Tech, 2011), and included the following:

- Installation and development of temporary groundwater wells (and associated utility clearance, UXO avoidance, well abandonment, etc.).

- Groundwater level gauging.

- Groundwater sample collection and offsite analysis for polycyclic aromatic hydrocarbons (PAHs), nitroglycerin (NG), and/or total and dissolved metals, as specified in the SAP.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Based on the data collected during the Phase 2 SI at the SASRs, the following site-specific conclusions were reached.

MRR – UXO 14

Three of the four temporary wells yielded sufficient groundwater for sample collection at UXO 14. No Project Action Limits (PALs), as defined in the SAP (Tetra Tech, 2011), were exceeded. No Chemicals of Potential Concern (COPCs) were identified by the screening-level human health risk evaluation.

OSTR – UXO 15

Three groundwater samples were collected from temporary wells X15GW001, X15GW002, and X16GW003 at UXO 15. There were several PAL exceedances that triggered a risk evaluation. Antimony, lead, and six PAHs (benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, dibenzo[a,h]anthracene and indeno[1,2,3-cd]pyrene) were retained as COPCs. The calculated Hazard Index (HI) for antimony was less than 1.0 (an HI less than unity suggests no unacceptable noncarcinogenic risk per the U.S. Environmental Protection Agency [EPA]). The maximum total lead detection (from the unfiltered sample) of 21.7 micrograms per liter (µg/L) exceeded the Safe Drinking Water Act (SDWA) Action Level for lead (15 µg/L); however, no dissolved lead concentrations (from the filtered sample) exceeded this level. The Incremental Lifetime Cancer Risk (ILCR) calculated for the PAHs exceeded EPA's acceptable risk range of 1×10^{-4} to 1×10^{-6}. Therefore, the six PAHs and lead were selected as Chemicals of Concern (COCs) for UXO 15 for further evaluation or action. There is risk uncertainty associated with high turbidity in some of the groundwater samples. Consequently, concentrations detected in the unfiltered groundwater samples may or may not reflect the actual impact of site-related contamination.

RPSR – UXO 16

Two groundwater samples were collected from temporary wells X16GW001 and X16GW002 at UXO 16. No PALs were exceeded, and no COPCs were identified by the screening-level human health risk evaluation.

SAPR – UXO 17

One groundwater sample was collected from temporary well X17GW001 at UXO 17. PALs were exceeded for antimony and arsenic, which triggered a risk evaluation. The HI calculated for these COPCs was less than 1.0, and the ILCR calculated for arsenic was less than the EPA target cancer risk range. Therefore, no COCs were identified for this site.

RRRR – UXO 25

The planned temporary groundwater well could not be installed at UXO 25 due to unexpected site conditions. A Field Task Modification Request Form was completed to document this change.

Recommendations

Based on the results of the Phase 2 SI, no further evaluations or actions are recommended for the groundwater medium at MRR (UXO 14), RPSR (UXO 16), and SAPR (UXO 17). However, further groundwater investigation is recommended for OSTR (UXO 15) and RRRR (UXO 25). Possible impacts of turbidity on lead and PAH concentrations should be evaluated at UXO 15, and groundwater sampling for antimony, copper, and lead is still needed at UXO 25.

1.0 INTRODUCTION

This report documents the Phase 2 Site Inspection (SI) for five small arms/skeet ranges (SASRs) located on the Stump Neck Annex at Naval Support Facility Indian Head (NSF-IH) in Indian Head, Maryland. Tetra Tech has prepared this report for Naval Facilities Engineering Command (NAVFAC) Washington under Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract No. N62467-04-D-0055, Contract Task Order 423. These sites are being managed under the Navy's Munitions Response Program (MRP).

1.1 PURPOSE

This Phase 2 SI Report summarizes the investigation and evaluation of munitions constituents (MC) in groundwater at the following SASRs.

- Marine Rifle Range (MRR) – UXO 14
- Old Skeet and Trap Range (OSTR) – UXO 15
- Rum Point Skeet Range (RPSR) – UXO 16
- Small Arms (Pistol) Range (SAPR) – UXO 17
- Roach Road Rifle Range (RRRR) – UXO 25

The groundwater investigation was recommended in the Site Inspection Report for Munitions Response Site Inspections at Five Small Arms/Skeet Ranges (i.e., the Phase 1 SI Report) (Tetra Tech, 2010), which addressed the soil and sediment media at each site. The results of both Phases 1 and 2 of the SI will be used to determine whether further investigations and/or response actions are necessary at any of the SASRs.

The Department of Defense (DoD) has established a program to address closed military ranges known as the Military Munitions Response Program. The Department of Navy (Navy) is implementing this program at NSF-IH under the Navy's MRP. For munitions response sites, DoD and the Navy are following the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process, which is similar to the Resource Conservation and Recovery Act (RCRA) corrective action process. The initial stage of the CERCLA process, the Preliminary Assessment (PA), was completed in September 2005 for sites on the Stump Neck Annex portion of NSF-IH where historical activities included the use of munitions (Malcolm Pirnie, 2005). The PA identified five SASRs, classified as "other than operational range" sites, as Munitions Response Areas (MRAs) or Munitions Response Sites (MRSs) that required further investigation. The five SASRs are summarized in Table 1-1.

Information contained in the PA provided the basis for the field investigation conducted under the next stage of the CERCLA process, the SI. The first phase of the SI focused on the collection and evaluation of MC data associated with surface soil, subsurface soil, and sediment samples from each site for the purpose of developing site-specific Conceptual Site Models (CSMs), performing risk screening evaluations, and identifying Chemicals of Potential Concern (COPCs). Results of the first phase of the SI, which are documented in the Phase 1 SI Report (Tetra Tech, 2010), indicated potentially unacceptable human health risks associated with exposure to MC in soil at some of the SASRs. Consequently, this Phase 2 SI was recommended and performed to determine whether shallow groundwater underlying the sites has been impacted by the downward migration of soil MC and, if so, whether MC concentrations in the groundwater present a potential human health risk under conservative exposure assumptions.

1.2 SCOPE OF WORK

In accordance with the project-specific Sampling and Analysis Plan (SAP) (Tetra Tech, 2011), the Phase 2 SI included the following activities:

- Collection of groundwater samples from the five SASRs, including the associated utility clearance, unexploded ordnance (UXO) avoidance, cultural resource coordination, temporary well installation, well development and purging, and well abandonment.

- Offsite analytical testing of groundwater samples at a fixed-base laboratory (FBL) and data validation.

- Use of analytical data for preparing screening-level risk evaluations, updated CSMs, and recommendations for each site.

1.3 OBJECTIVE

The objective of the Phase 2 SI was to determine whether further investigations or response actions with respect to groundwater are appropriate for any of the five SASRs. As described in this report, this objective has been achieved at four of the five SASRs through the collection and evaluation of groundwater samples from biased locations where soil COPC concentrations were among the highest reported for individual exposure units at each site.

1.4 REPORT ORGANIZATION

For ease of reference, this Phase 2 SI Report is structured similarly to the Phase 1 SI Report (Tetra Tech, 2010). However, the Phase 1 SI Report contains detailed descriptions of facility background, historical use, physical setting, environmental characteristics, and regional ecology, whereas

the Phase 2 SI Report contains only summaries of these elements. The focus of the Phase 2 Report is on describing the fieldwork, data collection, and risk evaluation associated with the groundwater investigation performed at the SASRs. This report is organized as shown in the Table of Contents, and appendices are provided on CD.

2.0 FACILITY BACKGROUND AND PHYSICAL SETTING

This section contains a brief summary of the NSF-IH facility background and descriptions of the physical characteristics of the five SASRs. Additional details are provided in the PA (Malcolm Pirnie, 2005) and the Phase 1 SI Report (Tetra Tech, 2010).

2.1 GENERAL FACILITY BACKGROUND

The Navy has conducted various testing, training, and disposal activities related to military munitions at the NSF-IH since it was established in 1890 as a Naval Ordnance Station. Throughout its long and distinguished history, the facility has proved guns, armor, and propellants; developed and manufactured powder and propellants; and has been recognized as a leader in energetics research and development.

Shortly after operations commenced, additional property was acquired by the Navy to increase the size of the installation. The most notable acquisition was of the Stump Neck Annex as an impact area and safety buffer in 1901. The Stump Neck Annex is also home to the Improvised Explosive Device (IED) School and the Explosive Ordnance Disposal (EOD) Technology Division.

2.2 LOCATION AND SETTING

The locations of the NSF-IH Main Area and Stump Neck Annex are shown on Figure ES-1. The Stump Neck Annex covers approximately 1,100 acres on the Stump Neck peninsula at the confluence of the Potomac River and Chicamuxen Creek in Charles County, Maryland. The Main Area covers approximately 2,300 acres and is situated northeast of the Stump Neck Annex, across Mattawoman Creek. Much of the Stump Neck peninsula lies within the Valley Firing Fan (Figure ES-2), which received fire from the Valley Gun Proving Site at the Main Area from 1891 through 1921. General Smallwood State Park and private property parcels lie east and southeast, respectively, of Stump Neck Annex, and the Chicamuxen Wildlife Management Area (WMA) is to the south, across Chicamuxen Creek.

2.3 GENERAL ENVIRONMENTAL CHARACTERISTICS

2.3.1 Climate

The Stump Neck Annex is situated along the eastern shore of the Potomac River in Charles County, Maryland. Located in the middle latitudes of North America, it has continental-type climate with four well defined seasons, and atmospheric flow is from west to east. The Potomac River and its tributaries significantly affect the climate, moderating extreme temperatures and causing higher humidity in the region.

2.3.2 Topography

The Stump Neck Annex has a relatively low topographic profile. The highest point is the northeastern portion of the peninsula, which has an elevation of approximately 140 feet above mean sea level (msl). The lowest points lie along the shorelines of the Stump Neck Annex adjacent to Mattawoman Creek and Chicamuxen Creek. These areas are mostly flat, tidal marsh areas, although several 50- to 60-foot bluffs exist along Mattawoman Creek.

2.3.3 Regional Geology

The Stump Neck Annex lies within the Atlantic Coastal Plain Physiographic Province 8 to 10 miles east of the Fall Line that marks the western extent of the physiographic province. The regional geology consists of a sedimentary wedge of Cretaceous to Quaternary fluvial and marine deposits overlying crystalline Precambrian metamorphic and igneous bedrock. The sedimentary wedge ranges in thickness from 550 to 900 feet in the vicinity of the Stump Neck Annex, and it dips and thickens to the east. It lies non-conformably on the crystalline basement rock surface, which also dips to the east. The geologic units underlying NSF-IH, in stratigraphically ascending order, are the Lower Cretaceous Potomac Group, Tertiary Aquia Formation of the Pamunkey Group, fluvial-estuarine deposits of Tertiary to early Quaternary age, and undivided Quaternary deposits.

The lithology of the Potomac Group consists of interbedded clay, silt, sand, and gravel deposited in fluviodeltaic environments. The Potomac Group ranges in thickness from 650 to 750 feet in the vicinity of the Stump Neck Annex. The Aquia Formation (Upper Paleocene) consists of marine deposits of olive black to olive gray, micaceous, glauconitic quartz sand interbedded with sand, silt, and clay. The formation is 0 to 80 feet thick in the NSF-IH peninsula area. Overlying the Aquia Formation are fluvial-sedimentary deposits consisting of gravel, sand, and loam. These sediments are referred to as “upland deposits” and range in age from Pliocene to early Pleistocene. The upland deposits crop out at the surface in the northern portion of NSF-IH where surface elevations exceed 40 feet above msl. However, beneath most of the study area, the surficial sediments consist of Pleistocene paleochannel deposits and Holocene alluvial and paludal deposits. These deposits consist of gravel, sand, silt, clay, and peat mixtures with irregular bedding and with an aggregate thickness of 0 to approximately 40 feet.

2.3.4 Soil and Vegetation

Charles County, Maryland, is located in the inner Potomac Coastal Plain geologic province. The soils in this area are derived from unconsolidated marine sediments that vary from sandy to clayey in texture and from excessively well drained to poorly drained. Hydric and erodible soils are prevalent. High water tables, severe erosion, earthslides, and hardpans are common.

The main soil series in the NSF-IH area are the Beltsville, Keyport, and Elkton silt loams (U.S. Department of Agriculture [USDA], 1974). Some additional soil types found at Stump Neck Annex are cut-and-fill land, gravelly land, tidal marsh, and Mattawan soil. The eastern area of Stump Neck Annex is composed primarily of the Beltsville silt loam, with a small area of gravelly land. Beltsville series soils consist of silt and sand with moderate amounts of clay. They are nearly level to moderately sloping, moderately deep, strongly acidic, slowly permeable, and well drained. Gravelly land is composed of gravelly deposits with soil types that are unidentifiable because of severe erosion.

2.3.5 Hydrology

The three primary waterways in the vicinity of NSF-IH are the Potomac River, Mattawoman Creek, and Chicamuxen Creek. All three waterways border the Stump Neck Annex. The Potomac River is a continuous, slow-moving, slightly brackish, tidal tributary to the Chesapeake Bay. Mattawoman Creek and Chicamuxen Creek are tributaries to the Potomac River and are also tidally influenced. Both have large floodplains and contain large expanses of tidal wetlands and swamps. Many small streams cross the area, most of which drain directly into one of the three major waterways.

The Stump Neck Annex is bordered by and contains large tracts of both tidal and non-tidal wetlands. The drainage divides presented in the 1983 Initial Assessment Study (IAS) indicate that the majority of the natural drainage within Stump Neck Annex flows to the Mattawoman and Chicamuxen Creeks (Fred C. Hart Associates, Inc. [Hart], 1983). Treated wastewater effluent is discharged directly to the Potomac River or Mattawoman Creek and is also discharged from outfalls to tributaries of these two waterways. The wastewater consists of industrial, sanitary, and storm effluents, or combinations thereof.

2.3.6 Regional Hydrogeology

The hydrogeologic framework of the Indian Head area consists of a surficial aquifer (described below) and three major underlying confined aquifers: the Lower Patapsco Aquifer (which is the principal water-supply aquifer at NSF-IH), the Upper Patuxent Aquifer, and the Lower Patuxent Aquifer. Although underlying the surficial aquifer, the Upper Patapsco Aquifer is considered a poor producer of groundwater in the area and is not considered to be a major aquifer at NSF-IH. Rather than continuous bodies of sands, the individual confined aquifers consist of multiple sand layers interbedded with lower permeability layers. The aquifers are described in detail below.

Shallow, unconfined to semi-confined groundwater at NSF-IH occurs in the surficial aquifer from near surface to approximately 45 feet bgs, with water table elevations ranging from sea level to approximately 65 feet above msl. Depending on location, the surficial aquifer is composed of Quaternary paleochannel deposits, Tertiary to Quaternary upland deposits, the Aquia Formation, or sediments of Patapsco Formation. Typically, shallow groundwater occurs in perched water-bearing zones and is recharged from

infiltration (Hart, 1983). In some lowland areas, surface water intrusion may be an additional source of recharge of the shallow aquifer along the edges of water bodies and during periods of high tide. Shallow groundwater flow follows the topography and discharges to local surface water bodies.

The Lower Patapsco Aquifer is the principal water-supply aquifer at NSF-IH, and its potable water wells are typically screened in multiple sand layers within this aquifer at an average depth of 200 to 300 feet below msl. These potable water wells serve approximately 4,050 people, including civilian and enlisted Navy employees and contractor employees. According to the installation, there are two potable wells located on Stump Neck Annex. Well #42 SN was installed in 1945 and currently has minimal output. The other well, #2012 SN, was installed in 1953. NSF-IH is considering several rehabilitation options including closing #42 SN and using #2012 SN as the main well, or installing an additional well on Stump Neck Annex. There are also several private wells near Rum Point. These wells are tested quarterly (or monthly, if used regularly). Although none of the NSF-IH wells supply reserves or residences beyond the facility boundaries, the lower Patapsco aquifer is used extensively for domestic and municipal water supplies in northwestern Charles County. Several production wells are screened in this aquifer northeast of NSF-IH, in and near the towns of Indian Head and Potomac Heights.

The Upper Patuxent Aquifer lies at 400 to 600 feet below msl in the study area and is about 50 to 70 feet thick. The transmissivity of the Upper Patuxent Aquifer ranges from about 150 to 2,600 square feet per day (ft^2/day) in northwestern Charles County. Relatively low-permeability sediments of the Patuxent Formation underlie this aquifer.

The top of the Lower Patuxent Aquifer lies at 800 to 1,000 feet below msl in the study area and is about 100 feet thick. Few potable water wells are screened in the Lower Patuxent Aquifer because of the availability of water from the overlying confined aquifers. The Lower Patuxent Aquifer is underlain by crystalline basement rock. Water levels in the Upper and Lower Patuxent Aquifers are generally similar because of the leaky nature of the intervening confining unit.

2.4 REGIONAL ECOLOGY SUMMARY

2.4.1 Endangered/Threatened Species

According to the 1997 Wildlife Management Plan, three endangered species are reported to reside within Stump Neck Annex. Two of these three species, the rainbow snake and joint-vetch (flowering plant of the pea family), are federally endangered. The third species, the scaly blazing-star (perennial herb), is a species of special concern in the State of Maryland. In the July 2001 Threatened and Endangered Plant/Animal Species of Charles County, Maryland Report, the Maryland Department of Natural

Resources Wildlife and Heritage Service listed these three species as federally and state endangered for Charles County. Table 2-1 summarizes the Known or Protected Species.

2.4.2 Wetlands

Of the five SASRs, only UXO 14 and UXO 16 contain wetlands. There are wetlands located in the central portion of UXO 14 surrounding an unnamed tributary, and in the eastern portion of the site. These wetlands are classified as Palustrine forested broad-leaved deciduous wetlands. A portion of UXO 14 is also located within the 100-year floodplain that surrounds the wetlands. UXO 16 has two small unnamed tributaries, and a wetland area on the western portion of the site. At both sites, surface water runoff flows in the general direction of the wetlands.

2.4.3 Cultural and Archaeological Resources

Charles County, Maryland, has a population of 146,551, according to the 2010 U.S. Census. NSF-IH and its tenant commands employ approximately 3,600 military and civilian personnel, which makes NSF-IH the county's largest employer. More than 76 percent of the employees at the base live in Charles County. Approximately 500 military and family members live on the installation; however, no military or family members live on Stump Neck Annex. Recreational activities on and around the installation include hunting and fishing by permit. The Chicamuxen WMA is located approximately 245 feet downstream of UXO 14, and is used by recreational hikers, hunters, and fishers. Residential properties are located two miles south of the site.

A Phase I Cultural Resources Survey and Supplemental Architectural Investigation were conducted at Stump Neck in 1996. As a result, 33 sites were identified and investigated. Only 17 of 33 were recommended for Phase 2 evaluations to determine their eligibility for listing on the National Register of Historic Places. Five of these 17 sites are considered to potentially overlap with the boundaries of the former SASRs:

- Site 18CH388 – overlaps with the MRR (UXO 14) and OSTR (UXO 15)
- Sites 18CH391, 18CH628, and 18CH630 – overlap with the RPSR (UXO 16)
- Site 18CH644 – overlaps with the SAPR (UXO 17)

The architectural evaluation verified three National Register-eligible historic districts and identified one additional district: the Indian Head Residential Historic District containing 64 contributing resources; the Naval Powder Factory District containing 124 contributing resources; the Naval Proving Ground Historic District containing no contributing resources; and the Extrusion Plant Historic District containing 63 contributing resources. An additional area of the base, the Polaris facility, was recommended for further

research, as it was considered potentially eligible for the National Register as an exceptionally significant area. The exact locations of the contributing resources within these districts were not reported in the PA.

2.4.4 Water Resources

Fishing is permitted in the waterways surrounding the Stump Neck Annex.

2.4.5 Coastal Zones

The Coastal Zone of Maryland includes all land and water lying within coastal counties, one of which is Charles County. Within the Coastal Zone, Maryland has defined an area within which strict land use management is required to protect the Chesapeake Bay. The critical area is defined as a 1,000-foot wide strip of land surrounding the bay and its tidal tributaries. Most construction within 100 feet of the Mean High Water Line (buffer) is prohibited. A substantial portion of UXO 15 lies within this 100-foot buffer area.

3.0 GENERAL METHODOLOGY

This section discusses the general methodology for the field investigation, analytical testing, and risk screening evaluation performed as part of the Phase 2 SI groundwater investigation at the five SASRs.

3.1 FIELD INVESTIGATION APPROACH

Fieldwork was conducted at UXO Sites 14, 15, 16, 17, and 25 from September 26 to October 1, 2011. The field methodology included the following elements:

- Site preparation
- Well location
- Utility clearance
- Cultural resources escort
- UXO avoidance escort
- Well installation, development, and abandonment
- Water level measurements
- Groundwater sampling
- Quality control samples
- Equipment decontamination
- Investigation-derived waste management
- Documentation and record keeping

The field activities were performed in accordance with the SAP and Health and Safety Plan (HASP) for the Phase 2 Site Inspection of Five Small Arms/Skeet Ranges (Tetra Tech, 2011). Deviations from the SAP that were necessary due to site-specific conditions are described within the applicable sections of this report. This section describes the general field methodologies used to complete the groundwater investigation at each site.

3.1.1 Site Preparation

Site preparations conducted prior to the field investigation included: completion of the Comprehensive Work Approval Process (CWAP), compliance with site access approval procedures, performance of geophysical utility clearance activities, implementation of UXO avoidance procedures, and mobilization of and coordination with the drilling subcontractor. The field crew coordinated all site activities through the designated NSF-IH Point of Contact (POC), Mr. Nick Carros. Mr. Carros held a pre-work safety meeting, during which he provided instructions to the crew regarding site access procedures and applicable NSF-IH protocols, and conveyed the conditions set forth in the approved CWAP permit (see Appendix A).

The project necessitated coordination with two subcontractors in preparation for fieldwork, one to perform drilling and well installation operations and another to provide analytical laboratory services. Vironex Inc. of Bowie, MD performed the drilling operations, and APPL, Inc. (APPL) of Clovis, California, provided analytical services. The utilities clearance and UXO avoidance operations were self-performed by Tetra Tech.

3.1.2 Well Location

The well locations specified in the SAP (Tetra Tech, 2011) were marked in the field during the first two days of fieldwork. Horizontal coordinates of the planned well locations were uploaded into a Trimble hand-held Global Positioning System (GPS) unit. Coordinates were specified as North American Datum of 1983 (NAD 83) Maryland State Plane Coordinates in US survey feet. The GPS instrument accuracy was checked relative to an existing monitoring well (S38MW05) located at the Rum Point Landfill on Rum Point Road. Well coordinates were reacquired in the field using the GPS unit and verified through comparisons with existing site features such as street outlines and building footprints, as depicted on the GPS background file derived from base maps provided by the Navy GeoReadiness Center (GRC). Difficulty was encountered during placement of one well (X17GW001) due to poor satellite reception the day of the initial survey, and this well had to be placed using a tape measure and compass to mark off distances and directions relative to physical site features. With the assistance of the UXO Avoidance Escort (see Section 3.1.5), the GPS operator marked the preliminary well locations in the field using pin flags. Once the utility clearance and UXO avoidance surveys were complete in the vicinity of each location, wooden stakes with orange flagging were set to provide more visible markers for the drilling subcontractor.

Each of the installed wells was resurveyed upon completion. Horizontal coordinates of the completed wells were obtained using the GPS unit and uploaded to the project Geographic Information Systems (GIS) data base. Well risers were measured using a standard tape measure to determine their heights in feet above ground surface.

3.1.3 Utility Clearance

A utility clearance survey was conducted within a 10-foot radius of each marked well location. The field geophysicist used a pipe and cable locator (Subsurface Instruments PL-2000 unit) in passive search mode to search for potential underground “live” electric lines. The transmitter and receiver were used together in active mode to trace potential underground utilities within the survey radius by applying a surface trace (signal) on accessible aboveground utility access points (i.e., valves, hydrants, etc.) in the vicinities of the proposed well locations. Ground-penetrating radar (GPR) was used where necessary and accessible, using a Sensors and Software Noggin Smart Cart unit equipped with a 250-megahertz (MHz) antenna. GPR surveys were conducted along lines spaced 2.5 feet apart in two mutually perpendicular

directions. The data were interpreted in the field, and locations where possible utilities were indicated (i.e., based on both the pipe and cable locator and GPR surveys) were marked using spray paint and, where possible, pin flags. In addition, a Schonstedt GA-52CX magnetic locator was used to search for possible ferrous utilities within the survey radius. Utility finds were located in relation to the proposed sample locations by tape measurements, and this information was documented in field notes.

3.1.4 Cultural Resources Escort

The CWAP permit highlighted portions of UXO 14 and 15 as Cultural Resources Protection Areas, where items of cultural significance have been identified previously in subsurface materials. Thus, the NSF-IH Cultural Resources Manager, Mr. Tommy Wright, was on-site to observe drilling operations at these two sites to ensure that any archeological artifacts encountered within the subsurface were properly addressed. There were no cultural items or archeological artifacts identified within the lithologic samples collected during the site investigation.

3.1.5 UXO Avoidance Escort

At UXO 14 and 15, surface and down-hole UXO avoidance procedures were required because these sites are located within the estimated range fan of the Valley Firing Fan and, therefore, may contain subsurface munitions and explosives of concern (MEC). As a precaution, the planned well locations at all five sites (UXO 14, 15, 16, 17 and 25) were subject to a surface magnetometer sweep by the UXO Escort prior to marking the drilling locations in the field. No intrusive activities were conducted until the UXO Escort confirmed that the surface and shallow subsurface were free of potential MEC.

During drilling operations at UXO 14 and 15, the boreholes were scanned using a down-hole magnetometer at two-foot intervals to the terminal depth. There were no subsurface anomalies encountered during drilling operations; therefore, the well borings were completed at the originally marked locations.

3.1.6 Well Installation, Development, and Abandonment

A total of ten temporary wells were installed by means of Direct Push Technology (DPT) during the field investigation. The temporary wells were constructed using pre-packed well screens attached to 1-inch inner diameter (ID) polyvinylchloride (PVC) risers. The pre-packed screens consisted of a 65-mesh stainless steel outer screen with an outer diameter (OD) of 1.7 inches, which was packed with sieve size 20/30 silica sand. Additional filter pack sand was added to approximately two or three feet above the pre-packed screen to ensure that the surface seal material (bentonite) did not fall within the screened interval. Individual boring logs and well construction details are provided in Appendix A and discussed in the site-specific sections of this report.

Prior to sampling, the wells were developed by low-flow pumping until the water became visibly clear or until the well went dry. Nine of the ten wells were successfully developed, as indicated on the Well Development Records in Appendix A. One well (14GW003) did not produce enough water to complete the development process and, thus, was unable to be sampled (see Section 4.1.2).

Following sample collection at the nine viable wells, all ten wells were abandoned using a grout sealant consisting of a cement/bentonite mixture.

3.1.7 Water Level Measurements

Static water levels were measured at each sampling location prior to well development and/or sampling. Measurements were collected separately for each well over the course of the fieldwork, and not as a combined synoptic event. Groundwater levels were measured with an electronic water level indicator using the top of the PVC riser as the reference point for determining depths to water. The height of the top of the riser pipe, relative to the ground, was measured so that depths to water could be calculated in feet below ground surface (bgs). Water level measurements were recorded to the nearest 0.01 foot on the Groundwater Level Measurement Sheet provided in Appendix A.

3.1.8 Groundwater Sampling

Groundwater sampling locations were selected based on a bias toward the areas believed to be most likely contaminated by historical range operations, based on the analytical results from the Phase 1 SI soil investigation. Figures 3-1 to 3-5 show the planned groundwater sampling locations relative to the soil sampling locations where MC concentrations were the found to be the highest in each exposure area.

Groundwater samples were collected from the temporary wells using a peristaltic or bladder pump following low-flow sampling procedures, in accordance with the SAP (Tetra Tech, 2011). Water quality parameters [e.g., temperature, pH, specific conductance, turbidity, dissolved oxygen, and oxidation-reduction potential (ORP)] were monitored during the purging process and recorded on Groundwater Sample Log Sheets (see Appendix A). Upon stabilization of water quality parameters, groundwater samples were collected and containerized for laboratory analysis, as summarized in the site-specific sections of this report.

3.1.9 Quality Control Samples

Field quality control (QC) samples including field duplicates and a rinsate blank were collected during the groundwater sampling event, in accordance with the SAP (Tetra Tech, 2011). Field duplicate samples were collected for analysis from three locations, as discussed in the site-specific sections of this report. One rinsate blank was collected by passing distilled water through an unused groundwater filter, of the

same type used to filter the samples for dissolved metals analysis. In addition, extra sample volume was collected at three locations to provide the analytical laboratory with sufficient volume to perform matrix spike and matrix spike duplicate (MS/MSD) analyses for laboratory QC purposes. The Sample Log Sheets generated for the field QC samples are included in Appendix A.

3.1.10 Equipment Decontamination

Non-dedicated, non-disposable equipment (e.g., DPT drill tip, submersible bladder pump) involved in field sampling activities was decontaminated prior to use, between sampling locations, and at the completion of fieldwork. The following decontamination steps were implemented:

- Wash with potable water and phosphate-free detergent (scrub if necessary)
- Rinse with potable water
- Rinse with deionized (DI) water
- Air dry (weather permitting)
- Wrap in aluminum foil (if not used immediately)

Decontamination fluids were collected and containerized, as described in Section 3.1.11.

3.1.11 Investigation-Derived Waste Management

Investigation-derived waste (IDW) consisting of decontamination fluids and well purge water was collected and containerized in a 55-gallon drum during the field investigation, in accordance with the SAP (Tetra Tech, 2011). One drum of IDW was generated during the field investigation and staged at UXO 14 on a wooden pallet on an asphalt surface adjacent to a parking area, as directed by the NSF-IH POC. The drum will be disposed appropriately based on analytical results.

3.1.12 Documentation and Record Keeping

Appendix A contains the field records generated during well installation and groundwater sampling activities. This includes Boring Logs and Well Construction Sheets completed during well installation; and Development Records, Purge Data Sheets, and Sample Logs generated during well development and sampling. Well locations and site-specific conditions were documented through photographs, which are included in Appendix B. Chain-of-Custody forms that accompanied the shipment of samples to the laboratory are included in the Sample Data Packages presented in Appendix C.

3.2 ANALYTICAL METHODOLOGY

Groundwater samples collected during the Phase 2 SI fieldwork were shipped to a subcontracted laboratory, APPL, for analytical testing. APPL is currently accredited by the DoD Environmental

Laboratory Accreditation Program (ELAP) to perform the analyses specified in the SAP (Tetra Tech, 2011).

3.2.1 Data Methods

Chemical analyses for polycyclic aromatic hydrocarbons (PAHs), nitroglycerin (NG), and select total and dissolved metals (including antimony, arsenic, copper, and lead) were performed by APPL, as discussed in the site-specific sections of this report. Sample-specific analyses were requested and performed by the laboratory in accordance with the analytical methods and QC requirements identified in the SAP (Tetra Tech, 2011). The data packages generated by APPL, which are included in Appendix C, describe the data methods followed at the laboratory and present the results obtained.

3.2.2 Data Evaluation

The analytical results were reviewed to ensure that the data were of acceptable quality for decision-making purposes. The review process included validation of all reported data, as well as a comparison of data quality indicators (DQIs) against the prescribed acceptance criteria specified in the SAP (Tetra Tech, 2011).

3.2.2.1 Data Validation

All of the results from analytical laboratory samples were validated according to multiple specifications. Sample data validation generally followed U.S. Environmental Protection Agency (EPA) Region III Modifications to the National Functional Guidelines for Organic Data Review (EPA, 1994) for the PAHs and nitroglycerin results, and EPA Region III Modifications to the National Functional Guidelines for Inorganic Data Validation (EPA, 1993) for metals results.

Data validation specifications require the assignment of data qualifiers in response to various data deficiencies. Validation specifications also require that data qualifiers be applied to results that are reported as being less than the detection limit. The flags used for data qualification are as follows:

- 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 (e.g., holding time missed by a factor of two times the specified time limit, severe calibration non-compliance, and extremely low QC analyte recovery).

- 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.

These 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 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" 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. 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.

During the data validation process, individual sample results were evaluated. If the results reported by the laboratory were acceptable, no validation flag was assigned; otherwise, a flag indicating the type of QC deficiency was assigned. Data validation reports (in the form of technical memoranda) presenting the list of non-conforming data and the corresponding data qualifiers assigned during the data validation process are provided in Appendix D.

3.2.2.2 Data Usability Assessment

The usability of the data generated during the Phase 2 SI directly affects whether project objectives have been achieved. All of the results from samples that were submitted to the analytical laboratory were validated according to multiple specifications. A description of the data review processes used to determine whether analytical laboratory data are of acceptable technical quality for use in decision making and summary tables that support the review of the data collected are presented in the Data Quality Review (DQR) in Appendix E.

The DQR includes data verification and data validation processes. Verification is a process used to ensure that contractual requirements were satisfied. Validation is a comparison of DQIs against prescribed acceptance criteria to assess analytical method performance. The DQIs include measures to assess the bias and precision of the analytical calibrations and sample analyses. Together, verification and validation are the first steps in evaluating the DQIs of precision, accuracy, representativeness, completeness, comparability, and sensitivity (PARCCS). Each of the PARCCS DQIs is discussed in greater detail in the DQR.

Assignment of data qualification flags conformed to rules established in the Region III Modifications to the National Functional Guidelines for Organic Data Review (EPA, 1994) for the PAHs and nitroglycerin results, and EPA Region III Modifications to the National Functional Guidelines for Inorganic Data Validation (EPA, 1993) for metals results, and the DoD guidance document "Quality Systems Manual (QSM) for Environmental Laboratories", Version 4.1 (DoD, April 2009), to the greatest extent practicable for non-contract laboratory program (non-CLP) data. Numerical criteria used in conjunction with these rules were specified in the SAP (Tetra Tech, 2011). A complete printout of the analytical data with validation flags, data validation summary narrative reports, and data validation qualifications and discussions can be found in the reports in Appendix D. A detailed description of the data qualification flags can be found in the DQR.

The data collected during the Phase 2 SI were determined to be of sufficient quality to be used for determining whether the COPCs that were identified in overlying surface and/or surface soil during the original SI have migrated into the groundwater at potentially unacceptable levels. QC samples collected during the September 26 to October 1, 2011 sampling event included three field duplicate samples, one MS/MSD sample, and one filtered equipment rinsate blank, which met or exceeded the minimum frequencies and/or quantities defined in the SAP. EPA SW-846 methods were used to analyze the samples for low level PAHs, nitroglycerin, and site-related select metals (antimony, arsenic, copper, and lead).

PARCCS Summary

Details of the project PARCCS DQI evaluation are presented in the DQR in Appendix E. A summary of the DQI findings is presented below. Details that are specific to each site are also addressed in the applicable site-specific section of this report.

Precision - Field duplicate precision measurements exceeded the acceptance criteria of 50 percent relative percent difference (RPD) for aqueous samples (or two times the laboratory reporting limit for non-

metals and four times the laboratory reporting limit for metals) for total lead and dissolved antimony in Sample Delivery Group (SDG) 65895.

Accuracy - No accuracy measurements exceeded the acceptance criteria for surrogate, internal standard (IS), or continuing calibration verification (CCV) percent recoveries (%Rs) for detected and non-detected analytes. These data were qualified as estimated (J or UJ) and are considered usable.

Representativeness - The SAP (Tetra Tech, 2011) and the use of standardized sample collection, sample handling, sample analysis, and data reporting procedures were designed so that the final data would be accurate representations of actual site conditions. Based on field logs indicating the conditions during sample collection and the use of a DoD ELAP accredited laboratory, all reported data are adequately representative of site conditions and intended populations. No problems were associated with data representativeness with the exception of a grossly exceeded holding time for the extraction of one nitroglycerin sample, which was qualified as rejected (UR) and is considered unusable.

Completeness - Sampling issues or field or laboratory conditions were identified that caused a rejection (R or UR) of 1 out of the 116 total data points (0.86 percent) from the September 26 to October 1, 2011 sampling event; therefore, 99.14 percent of the results are considered usable, which exceeds the project goal of 95 percent completeness.

Comparability - No comparability issues were noted during the data validation process.

Sensitivity - Some results were flagged with the qualifiers J, U, or UJ because the data were outside QC acceptance criteria and some results were flagged with a J qualifier due to inherent uncertainty near detection limits. For all detected target analytes in groundwater, the Limits of Quantitation (LOQs) were sufficiently sensitive [i.e., below the corresponding Project Action Limits (PALs) for human health exposure, as originally identified in Worksheet #15 of the SAP and as revised according to current EPA risk-based criteria identified in Table E-3] to meet the project quality objectives (PQOs), with the exception previously noted in this summary. Any positive detection between the LOQ and the laboratory detection limit (DL) were qualified as estimated (“J”) and are considered usable.

3.3 HUMAN HEALTH RISK SCREENING METHODOLOGY

This subsection describes the methodology used to perform the human health risk screening. The purpose of the human health risk screening evaluation is to conservatively estimate risks posed to potential human receptors from chemicals present in groundwater at each of the five SASRs. The risk screening methodology includes the following general steps involved in a baseline human health risk evaluation:

- Identification of COPCs
- Exposure Assessment
- Risk Characterization
- Uncertainty Analysis

3.3.1 Identification of Chemicals of Potential Concern

For each site, Tetra Tech considered the following in determining COPCs:

- Occurrence and distribution of chemicals in groundwater
- Chemical toxicity
- Occurrence of chemical in background samples

3.3.1.1 Identification of Chemicals of Potential Concern in Groundwater

For Tetra Tech to designate a chemical as a COPC in groundwater for a particular area of interest, the chemical had to satisfy the following three criteria:

- The chemical had to be detected at least once in the area of interest.

- If the chemical was detected at least once in the area of interest, then the maximum detected concentration had to exceed at least one human health risk-based screening level (RBSL).

- If the maximum detected concentration exceeded at least one human health RBSL, then the chemical had to also be present above background concentrations.

3.3.1.1.1 Human Health Risk-Based Screening Levels

Tetra Tech defined human health RBSLs to address direct contact exposure to COPCs in groundwater. Direct contact exposures include incidental ingestion of groundwater and dermal contact with groundwater. (Note: inhalation of chemicals emitted from the groundwater was not evaluated because volatile organic compounds were not COPCs at these sites). For residential direct contact RBSLs in groundwater, Tetra Tech used EPA's Regional Screening Levels (RSLs) for tap water, where EPA assumed child and adult direct contact exposures to groundwater 350 days per year for a total of 30 years (EPA, 2011). If all concentrations in groundwater are below tap water RSLs, then the site groundwater should be suitable for any purpose; therefore, using tap water RSLs to identify COPCs is a conservative approach. To account for additive effects that may result from exposure to multiple non-carcinogenic compounds, Tetra Tech used one-tenth of the tap water RSL as the RBSL to identify COPCs for non-carcinogens.

Table F-1 in Appendix F presents the RBSLs for chemicals analyzed in groundwater samples. For each chemical, there are up to three RBSLs: two based on the tap water RSLs (one based on cancer risks, the other based on noncancer health effects), and one based on the Safe Drinking Water Act (SDWA) Maximum Contaminant Level (MCL). If a chemical exceeded any human health RBSL, Tetra Tech designated the chemical a possible COPC in groundwater.

The tap water RSL values listed in Appendix F are based on the most recently published values which, in some cases, are lower than the PALs presented in the SAP (Tetra Tech, 2011). This is because EPA modified its approach for deriving tap water RSLs, as reflected on the November 2011 RSL Tables (EPA, 2011), which were published several months after the SAP was finalized.

Three chemicals do not have toxicity data to calculate human health RBSLs: acenaphthylene, benzo(g,h,i)perylene and phenanthrene. For these chemicals, the RBSLs for other chemicals with similar chemical properties were used as surrogates. The surrogate for acenaphthylene was acenaphthene, while the surrogate for both benzo(g,h,i)perylene and phenanthrene was pyrene.

3.3.1.1.2 Evaluation of Background

While a formal background soil investigation has been conducted for Indian Head and Stump Neck Annex at the Naval Surface Warfare Center (NSWC), a formal background groundwater investigation has not been conducted for the facility. However, at the request of the Indian Head Partnering Team, available background information for groundwater was evaluated and presented in Appendix A of the Navy's October 2002 Background Soil Investigation Report for Indian Head and Stump Neck Annex (Tetra Tech, 2002). The data presented in Appendix A, Table A-8 (*Statistical Summary of Analytical Results for Non-Turbid Unfiltered Groundwater Samples, Background Investigation Report, Indian Head Division, NSWC Indian Head, Maryland*) are used in this report as points of reference for comparison to the groundwater data from the five SASRs. Appendix A is included in its entirety as Appendix G of this report.

3.3.2 Exposure Assessment

In the exposure assessment for each site, Tetra Tech described current and potential future uses for the site and identified potential receptors and exposure pathways for groundwater. Tetra Tech also conservatively estimated an exposure point concentration (EPC) for each area of interest. In general, Tetra Tech used the maximum detected groundwater concentration as the EPC.

3.3.3 Risk Characterization

The risk characterization component of the human health risk screening evaluation involved the evaluation of groundwater exposure pathway in more detail for chemicals that were identified as COPCs

and the development of conservative estimates of cancer risks and noncancer HIs for the COPCs. For evaluating direct contact exposures to lead in groundwater, the concentrations of lead in groundwater were compared directly to the tap water RSLs.

In this human health risk screening evaluation, Tetra Tech used 10^{-4} as the initial risk management benchmark for evaluating cumulative incremental lifetime cancer risk (ILCR) and 1 as the initial risk management benchmark for evaluating the cumulative noncancer hazard index (HI). These values are specified in an EPA memorandum issued in 1991 entitled "Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions." One purpose of the memorandum was to identify situations where remediation was or was not required. The memorandum states: "Where the cumulative carcinogenic site risk to an individual based on reasonable maximum exposure for both current and future land use is less than 10(-4) (i.e., 10^{-4}) and the non-carcinogenic hazard quotient (HQ) is less than 1, action generally is not warranted unless there are adverse environmental impacts." The memorandum indicates that remedial action can be taken when risks are below 10^{-4} based on site-specific circumstances (such as the exceedance of MCLs or the requirements of state or federal law), but such actions must be justified. Thus, for this evaluation, a risk of 10^{-4} and HI of 1 were used as the points of departure for managing cancer risks and noncancer HIs.

3.3.3.1 Calculation of Risks and Hazard Indices

The risk characterization involved developing conservative estimates of cancer risks and noncancer HIs by comparing EPCs of COPCs to applicable EPA tap water RSLs. (Note: In spring 2008, EPA Region III began to rely on the RSLs for use in updating its Risk-Based Concentration [RBC] Tables. The RSL table should be used in the same way that the Region III RBC Table has been used in the past.) In effect, this assumes that the groundwater is used as a domestic water supply (i.e., is routinely used for drinking, bathing, etc.). For cases in which a chemical exhibits both carcinogenic and non-carcinogenic human health effects, Tetra Tech used tap water RSLs based on cancer and noncancer effects.

3.3.3.1.1 Human Health Effects – Carcinogens

Tetra Tech estimated the risk presented by carcinogenic COPCs by calculating the ILCR according to the following equation:

$$ILCR = \Sigma (C_{max}/RSLc) \times TRL$$

where:

ILCR	=	Incremental lifetime cancer risk (unitless)
C_{max}	=	Maximum detected site concentration (µg/L)

RSLc = Tap water regional screening level for cancer effects (µg/L)
TRL = Target risk level used to calculate the RSLcs (unitless)

The target risk level for calculating the tap water RSLs is 10^{-6}. Table F-2 in Appendix F provides the cancer-based residential RSLs for tap water (EPA, 2011).

Tetra Tech compared the calculated ILCR to the EPA target range for carcinogenic risks of 10^{-4} to 10^{-6}, wherein a result greater than 10^{-4}, which corresponds with one individual developing cancer in their lifetime out of an exposed population of 10,000 people, is typically deemed an unacceptable risk. The calculated ILCR serves as a conservative risk estimate because the calculation presumes that an individual is exposed to the maximum concentration of each COPC present in an area of interest over a lifetime of exposure.

3.3.3.1.2 Human Health Effects – Non-Carcinogens

Tetra Tech estimated the health hazard presented by non-carcinogens by calculating the HQ and then calculating the HI by summing the individual HQs. The equations for HQs and the HI are as follows:

$$HQ = (C_{max}/RSLn) \times THQ$$
$$HI = \Sigma HQs$$

where:

HQ = Hazard quotient (unitless)
C_{max} = Maximum detected site concentration (µg/L)
RSLn = Tap water regional screening level for noncancer effects (µg/L)
THQ = Target hazard quotient used to calculate RSLns (unitless)
HI = Hazard index (unitless)

The target HQ for calculating the tap water RSLs is 1. Table F-2 in Appendix F provides the noncancer-based residential RSLs for tap water (EPA, 2011).

In general, EPA regards HIs greater than 1 as unacceptable in terms of exposure risk. However, because various chemicals can have different mechanisms of action and affect different organs of the human body, a HI greater than 1 is not necessarily an unacceptable risk for non-carcinogenic effects. If the HI is greater than 1, the chemicals are separated into categories according to the human organ that each primarily targets. HIs greater than 1 for any target organ are generally considered to represent unacceptable risk.

3.3.3.2 Human Health Effects from Exposures to Lead

EPA typically uses pharmaco-kinetic models to evaluate concentrations of lead in the environment. Therefore, lead cannot be evaluated using the cancer risk and noncancer HI methodology described above. Instead, Tetra Tech evaluated lead concentrations in groundwater by comparing maximum lead concentrations to the SDWA Action Level of 15 µg/L (EPA, 2011).

3.3.4 Uncertainty Analysis

Various uncertainties are associated with each step of the human health risk screening evaluation. Uncertainty in the selection of COPCs is related to the current status of the predictive databases, the grouping of samples taken from the site, and the procedures used to include or exclude constituents as COPCs. Uncertainty associated with the exposure assessment includes the values used as input variables, the determination of EPCs, and the predictions regarding future land use and potential receptors. Uncertainty in the toxicity assessment includes evidence for determining the carcinogenicity of COPCs. Uncertainty in risk characterization includes that associated with exposure to multiple chemicals and the cumulative uncertainty from combining conservative assumptions made in earlier steps of the risk screening process.

Although uncertainty exists from multiple sources, the direction of uncertainty can be influenced by decisions made throughout the risk screening evaluation; in general, assumptions are made so that the risk estimates are overestimated rather than underestimated. This is done in an effort to ensure that no unacceptable risk to potential receptors goes unrecognized.

Generally, risk evaluations include two types of uncertainty: measurement and informational uncertainty. Measurement uncertainty refers to the usual variance that accompanies scientific measurements (e.g., uncertainty associated with sample collection and analysis). The resulting risk screening evaluation reflects the accumulated variances of the individual values used. Informational uncertainty is due to unavailability of information needed to complete the toxicity and exposure assessments. Examples include the absence of information on the effects of human exposure to low doses of a chemical, on the biological mechanism of action of a chemical, or on the behavior of a chemical in a particular medium.

After the risk screening evaluation is complete, the uncertainty involved must be assessed to interpret the results. Reliance on results from a risk screening evaluation without consideration of uncertainties, limitations, and assumptions inherent in the process can be misleading. For example, to account for uncertainties in the development of exposure assumptions, conservative estimates must be made to ensure that the particular assumptions made are protective of sensitive subpopulations or maximum exposed individuals. If a number of conservative assumptions are combined in an exposure model, the

resulting calculations can propagate the uncertainties associated with those assumptions, thereby producing a much larger uncertainty for the final results. This uncertainty is biased toward overpredicting both carcinogenic risks and non-carcinogenic HIs. Thus, the results of the risk screening evaluation and the uncertainties associated with those estimates must be considered when making risk management decisions.

This interpretation is especially relevant when the risk estimates exceed the risk management benchmarks for defining "acceptable" risk. For example, when risks calculated using conservative assumptions to account for a high degree of uncertainty are less than an "acceptable" risk level, the interpretation of no significant risk is typically straightforward. However, when risks calculated using conservative assumptions to account for a high degree of uncertainty exceed an "acceptable" risk level, a conclusion can be difficult unless uncertainty is considered.

3.3.4.1 Uncertainty in Selection of COPCs

The issues that contribute to uncertainty in COPC selection for the five SASRs are the existing database and the RSLs used. These issues are discussed below.

3.3.4.1.1 Existing Database

All laboratory groundwater data used in this risk screening evaluation were validated according to EPA Region 3 data validation guidelines. Therefore, uncertainties associated with the quality of the data are considered to be minimal because no data were deemed unreliable due to laboratory non-compliances. Uncertainty attributed to sample collection is also considered to be minimal because a site sampling plan designed with site characteristics in mind was used in an attempt to ensure adequate sample collection, and to incorporate known and likely sources of contaminants.

3.3.4.1.2 COPC Screening Levels

Tetra Tech chose conservative tap water RSLs for this evaluation. Using tap water RSLs for direct contact exposures to groundwater is conservative because the shallow groundwater resource underlying these sites is unlikely to be developed for domestic purposes.

The tap water RSLs used to select COPCs correspond to an ILCR of 10^{-6} and a HQ of 0.1. The use of these values ensures that all chemicals that could possibly contribute to site risk have been retained as COPCs. The elimination of chemicals present at concentrations equal to or less than an ILCR of 10^{-6} and a HQ less than 0.1 should not affect the final conclusions of the risk screening evaluation because these chemicals are not expected to contribute significantly to the total cumulative risk or total cumulative HI.

These RSLs should result in the retention as COPCs of all chemicals that could contribute significantly to the cumulative risk or cumulative HI.

3.3.4.2 Uncertainty in the Exposure Assessment

Uncertainty in the exposure assessment arises because of assumptions made about current and future land use, selection of potential human receptors, the methods used to calculate EPCs, and selection of exposure parameters.

3.3.4.2.1 Potential Receptors and Land Use

The current and future land uses at the sites vary. For this evaluation, residential land use was assumed when developing RBSLs. Also, for chemicals retained as COPCs, risks and HIs were calculated for a residential use scenario, which is conservative because it is unlikely that the shallow groundwater underlying the five sites will be developed for domestic purposes.

3.3.4.2.2 Exposure Point Concentrations

The maximum detected concentration of each COPC was used as the EPC to quantify potential risks. It is extremely unlikely that a receptor would be exposed to the maximum concentration of each COPC over the entire site area and the entire time spent at a site. Thus, the use of the maximum concentration likely results in overestimation of potential risks and HIs.

3.3.4.2.3 Exposure Parameters

The tap water RSLs were used as the basis for calculating risks and HIs for direct contact exposures to groundwater. These RSLs are calculated using default exposure assumptions for residential scenarios, which are designed to conservatively estimate risks. Using these assumptions is expected to provide an overestimation of potential risks to hypothetical future residents who would be more likely to use the deeper groundwater aquifer rather than the shallow zone as a drinking water supply if they were to inhabit the sites.

3.3.4.3 Uncertainty in the Toxicological Evaluation

Uncertainties in the toxicity assessment of COPCs arise from the determination of the oral cancer slope factors (CSFs), inhalation unit risks (IURs), oral reference doses (RfDs), and inhalation reference concentrations (RfCs) used to calculate RSLs. CSFs and IURs are upper-bound estimates of the probability of a response per unit of exposure to an individual. RfDs and RfCs are estimates of daily exposure to particular chemicals that are unlikely to result in harmful non-carcinogenic health effects even to members of sensitive populations. CSFs, IURs, RfDs, and RfCs are estimated by EPA from available animal or human toxicological data. These toxicity parameters are estimated so as to overestimate

potential health effects and thus be conservative. Because EPA accounts for uncertainty in toxicology by conservatively estimating CSFs, IURs, RfDs, and RfCs, the use of these toxicity parameters should result in an overestimation of risk in this human health risk screening evaluation.

3.3.4.4 Uncertainty in the Risk Characterization

Uncertainty in risk characterization results primarily from assumptions made regarding additivity of effects from exposure to multiple COPCs from various exposure routes. High uncertainty exists when summing cancer risks for several substances across different exposure pathways. This assumes that each substance has a similar effect and/or mode of action. Often compounds affect different organs, have different mechanisms of action, and differ in their fate in the human body. Therefore, it may be inappropriate to assume that all effects are additive. However, the assumption of additivity is made to provide conservative estimates of cancer risks and noncancer HIs.

Finally, the risk characterization does not consider antagonistic or synergistic effects. Little or no information is available to determine the potential for antagonism or synergism for the COPCs. Therefore, the impact of this uncertainty on the risk screening evaluation cannot be determined because the uncertainty may result in either an underestimation or overestimation of potential human health risks.

4.0 MARINE RIFLE RANGE – UXO 14

The section presents results of the Phase 2 SI groundwater investigation and risk screening evaluation for the MRR (UXO 14). This site, shown on Figure 4-1, is a former rifle range that covers a total area of 30.4 acres. The site is divided into nine Firing Lines, two Target Berms, and the Hillside Impact Area. The nine Firing Lines are each approximately 200 linear feet across. Target Berm No. 1 covers approximately 0.4 acre, Target Berm No. 2 covers approximately 0.3 acre, and the Hillside Impact Area covers approximately 2.7 acres. Elevations at the site range from 5 to 30 feet above msl. The central and eastern portions of the MRR are relatively flat at approximately 10 feet above msl, whereas the western portion slopes from 10 to 30 feet above msl.

4.1 SITE FIELDWORK

Four soil borings were completed and converted into temporary wells (X14GW001, X14GW002, X14GW003, and X14GW004) at UXO 14. Of these, only three wells (X14GW001, X14GW002, and X14GW004) produced enough water to allow for completion of well development and sample collection. The temporary well locations are shown on Figures 3-1 and 4-1.

4.1.1 Field Activities

Documentation of soil boring, well installation, well development, and sample collection activities are presented in Appendix A. As indicated on the site Boring Logs, subsurface materials at UXO 14 consisted of mixtures of gravel, sand, silt and clay, and varied across the site. Specific materials encountered at each well location are as follows:

- At X14GW001 (Firing Line Area), the water-bearing zone consisted of greyish green fine-grain sand, which was encountered at 6 to 7 feet bgs. The static water level was measured at approximately 5 feet bgs, suggesting slightly confining conditions.

- At X14GW002 (Target Berm No. 1), wet gravel and sand were encountered at 7 feet bgs. The well was initially installed at 5 to 15 feet bgs but did not yield any appreciable water. Therefore, the well was drilled deeper to intersect a more significant water-bearing zone. Wet clayey sand with minor clay layers was encountered at 16 feet bgs. The static water level was measured at approximately 7 feet bgs, suggesting confining aquifer conditions.

- At X14GW003 (northern portion of Hillside Impact Area), a wet clayey sand layer was encountered at 16 to 18 feet bgs. The well was initially installed across this interval with a 10-foot screen set at 12 to 22 feet bgs; however, the well was dry the day following installation. Thus, the well was reinstalled

using a 15-foot screen set at 7 to 22 feet bgs. The next day the well contained approximately 2 feet of standing water, so development was initiated. However, the well was pumped dry during development. After being allowed to recover for six hours, the well still did not yield water and could not be sampled. Beneath the wet material at 18 feet bgs, there is at least 4 feet of very hard dry clay believed to coincide with the top of the Potomac Group, which is considered to be a confining unit that mitigates downward migration of any overlying groundwater.

- At X14GW004 (southern portion of Hillside Impact Area), a distinct water-bearing zone consisting of sand and gravel was encountered at approximately 4 to 5 feet bgs. This zone was overlying a very stiff clay starting at 8 feet bgs. The underlying clay unit is believed to coincide with the top of the Potomac Group, similar to the clay encountered at X14GW003, which extended down to at least 22 feet bgs with minor sandy layers. The static water level was measured at approximately 4 feet bgs, suggesting unconfined conditions.

Bullets and bullet casings were found on the ground surface along Roach Road approximately 50 feet south of X14GW004 during the UXO surface sweep. The general location of these items was recorded by GPS and is shown on Figure 3-1.

4.1.2 Work Plan Deviations

The SAP called for each temporary well to be constructed using 10-foot screens. However, site-specific conditions dictated the need to alter the screen lengths at two well locations. Due to the poorly yielding nature of the subsurface materials encountered at X14GW03, a 15-foot screen was used in the second well installation attempt at that location to maximize yield. Conversely, a 5-foot screen was used at X14GW004 because a distinct water-bearing zone consisting of sand and gravel was encountered at 5 feet bgs overlying a very stiff and hard clay at 8 feet bgs.

4.1.3 Field Data Collection

A summary of temporary well construction details and groundwater level measurements for UXO 14 is provided in Table 4-1. This table includes the GPS survey coordinates for each well, which were uploaded to the project GIS data base and used to generate temporary well locations for Figure 3-1. Table 4-2 presents a summary of the samples collected for analysis, which includes the sample-specific depth intervals, requested analyses, and locations where field duplicate samples were collected.

4.2 ANALYTICAL RESULTS

4.2.1 Groundwater Sample Collection and Analysis

Three groundwater samples were collected from temporary wells at UXO 14. The locations of the wells were determined based on the Phase 1 SI results. Wells were placed in locations where the presence of target analytes in the soil indicated the greatest potential for release of those target analytes into the underlying groundwater at unacceptable levels. Groundwater samples were analyzed for low level PAHs (SW-846 Method 8270D Selected Ion Monitoring [SIM]), nitroglycerin (SW-846 Method 8330B) and/or select total and dissolved metals (SW-846 Method 6020A). The groundwater samples were filtered through a 0.45-micron filter if low-flow sample collection did not result in turbidity of less than 10 nephelometric turbidity units (NTUs) to obtain data on dissolved metals in addition to the total metals.

One duplicate groundwater sample was collected for QC purposes. Anomaly avoidance techniques were practiced during all sampling operations. Groundwater sample log sheets are included in Appendix A.

4.2.2 Groundwater Sample Results

All groundwater samples collected were analyzed and the analytical results were compared to the PALs. The data validation reports and database of validated results are presented in Appendix D. The DQR and associated summary tables are presented in Appendix E. Table 4-3 presents the target analytes measured in each sample and summarizes the results as compared to the respective PALs for PAHs, nitroglycerin, and total and dissolved metals in groundwater. In Table 4-3, if a target parameter exceeded the associated PAL at any sampling point, that parameter is highlighted; individual sample exceedances are also highlighted.

Figure 4-1 identifies the target analyte detections in groundwater at UXO 14. Three groundwater samples were collected from depths of 2.80 to 24.85 feet bgs. Screening values used for PAL limits in groundwater were the MCL values for target analytes with MCLs, or the EPA RSL for tapwater criteria for target analytes that do not have an MCL.

No PAL was exceeded in any groundwater sample at UXO 14. The Human Health Risk Screening Evaluation is discussed in Section 4.4.

4.3 DATA QUALITY REVIEW/USABILITY

Three groundwater samples from temporary wells at UXO 14 were sent to APPL for select analyses including PAHs using SW-846 Method 8270D SIM, nitroglycerin using SW-846 Method 8330B, and/or

total and dissolved metals using SW-846 Method 6020A. The groundwater samples were labeled sequentially as follows for the temporary well locations:

Well Location	Groundwater Sample Identification
X14GW001	X14GW001
X14GW002	X14GW002
X14GW004	X14GW004

Table 4-3 summarizes the results for PAHs, nitroglycerin, and total and dissolved metals in groundwater. Figure 4-1 illustrates the locations from which groundwater samples were collected and the analytes detected in each sample. Below is a summary of the data review findings.

Completeness - Table E-4 in Appendix E presents the rejected data for UXO 14 samples. The holding time for extraction of nitroglycerin was grossly exceeded in one sample. This resulted in the rejection of 1 out of 34 analytical results at UXO 14. This one nitroglycerin result is considered unusable. Table E-4 presents all of the qualified data and the reason for the data qualification. All data for samples collected at UXO 14, except for the one nitroglycerin result, are considered valid for their intended purpose. One out of 34 results from UXO 14 samples were rejected, yielding a laboratory completeness of 97.06 percent. The sample collection completeness was 100 percent.

Sensitivity - The original PALs and the anticipated laboratory detection limits (DLs), limits of detection (LODs), and LOQs are listed in Worksheet #15 in the SAP (Tetra Tech, 2011). Analytical sensitivity was generally satisfactory to meet data quality objectives (DQOs) presented in the SAP. The inability to quantify select analytes to PALs with confidence is addressed in the Human Health Risk Screening Evaluation uncertainty analysis in Section 4.4.

Accuracy - Appendix E, Table E-4 shows that one nitroglycerin result was rejected due to a gross holding time exceedance. The noncompliances listed in Table E-4 identify that one dissolved antimony result was qualified as estimated due to field blank contamination. There were no QC deficiencies noted for field accuracy.

Precision - No results were qualified because of a laboratory duplicate precision noncompliance or a field duplicate precision noncompliance. Overall, the field and laboratory precision was acceptable, and other than the rejected nitroglycerin result, the data are acceptable for use in risk assessment.

4.4 HUMAN HEALTH RISK SCREENING EVALUATION

The purpose of the human health risk screening evaluation is to conservatively estimate risks posed to potential human receptors from chemicals present in the groundwater at the MRR (UXO 14). The human health risk screening evaluation followed the methodology described in Section 3.3, which identified the following steps:

- Identification of COPCs
- Exposure Assessment
- Risk Characterization
- Uncertainty Analysis

4.4.1 Identification of Chemicals of Potential Concern in Groundwater

Human health COPCs in groundwater were identified based on the following considerations:

- Occurrence and distribution of chemicals in the environmental media
- Chemical toxicity
- Occurrence of chemical in background samples

Using the methodology described in Section 3.3, the maximum concentration of each chemical in groundwater was compared to risk-based screening levels and the federal SDWA MCL. The results of those comparisons are presented in Table 4-4. Antimony, copper, and lead were detected in both filtered and unfiltered groundwater samples collected at UXO 14. However, none of the concentrations reported exceeded the risk-based screening levels or federal SDWA MCLs. Consequently, no comparison of site concentrations to background concentrations was necessary. No chemicals were selected as COPCs for the groundwater underlying UXO 14, although it is noted that the “non-detect” result for nitroglycerin in sample X14GW001 was rejected due to holding time exceedance.

4.4.2 Exposure Assessment

This section discusses the potential for exposure to groundwater at UXO 14. The narrative is provided for informational purposes only. A more formal exposure assessment of the groundwater is not necessary because no COPCs were selected for the groundwater. Therefore, no estimation of exposure point concentrations is necessary.

The MRR was used for small arms training during World War I. The western portion of the range is developed with buildings situated in the former Firing Line Area. The central portion is partially developed with a few buildings and an area used to store construction equipment. The eastern portion, which

includes the two Target Berms and the Hillside Impact Area, is undeveloped. There are marshy areas within the central and eastern portions of the Marine Rifle Range. The remaining undeveloped parts are wooded. According to installation personnel, there are no planned changes to current activities at the Marine Rifle Range.

No public access is authorized at NSF-IH Stump Neck Annex. Signs, partial fencing, locked/secured gates, login book/office check-in, and vehicle security patrols are used to control the entire facility. There are no access control features specific to UXO 14. Portions of the site are classified as wetlands and portions lie within the 100-year flood plain. These features restrict future redevelopment options at the MRR. Hunting is allowed on parts of the site.

Under the current and predicted future land use patterns for this site, potential human receptors include authorized Navy personnel (military and civilian), visitors, contractors, maintenance workers, recreational users, and trespassers. The shallow groundwater underlying the site is not used for domestic or other purposes, and there are no plans to use this groundwater resource in the future.

In this human health risk screening evaluation, direct contact exposures to groundwater (via ingestion of groundwater and dermal contact with groundwater) were evaluated. However, as noted above, no COPCs were identified for the groundwater underlying UXO 14.

4.4.3 Risk Characterization

A formal risk characterization of COPCs in the groundwater underlying UXO 14 is not necessary because no COPCs were selected for the groundwater. Therefore, no estimations of HI or cancer risk are necessary.

4.4.4 Uncertainty Analysis

Section 3.3.4 provides a detailed discussion of the general sources of uncertainty in the human health risk screening evaluation. In addition, there is uncertainty regarding the result for nitroglycerin in sample X14GW001 because the specified holding time for that sample was exceeded. However, the following evidence suggests that the uncertainty is low and that no additional groundwater sampling for nitroglycerin in the Firing Line Area is necessary:

- The results for nitroglycerin in groundwater at UXO 17 were also “non-detect” (see Section 7.2), even though the soil concentrations measured during the SI were 28 times higher at UXO 17 than at UXO 14.

- Of 20 soil samples collected during 2010 SI at UXO 28, which overlaps the UXO 14 Firing Line Area, none exceeded the PAL or warranted a groundwater investigation.

4.4.5 Human Health Risk Screening Evaluation Summary

No COPCs were identified for the groundwater underlying UXO 14. Therefore, no estimation of HI or cancer risk was necessary.

4.5 UPDATED CSM

The CSMs previously presented for UXO 14 considered potential exposure to groundwater (Tetra Tech, 2010), which is a complete pathway only for human receptors because ecological receptors would not normally be expected to encounter groundwater. Although groundwater is not currently used at UXO 14, possible future land use may include residential and/or construction worker scenarios.

With respect to groundwater, contaminants in surface and subsurface soil at UXO 14 may migrate into the shallow aquifer via infiltration of precipitation and then flow toward local surface water bodies. Based on a review of hydrogeological data, it is unlikely that contaminants in shallow groundwater would migrate to the deeper aquifers that are used as drinking water supplies, although shallow groundwater is considered a potential localized exposure medium to individuals who may encounter it in an open excavation or use it for irrigation purposes.

No receptors are currently exposed to groundwater at UXO 14. However, unforeseen changes in land use (e.g., base closure and redevelopment) may result in the hypothetical future exposure of certain types of individuals. For this evaluation, construction workers and residents were selected to represent the plausible range of future receptor sensitivities and exposures. These receptors may be exposed to groundwater by means of ingestion (either intentional or incidental) and/or dermal contact.

4.5.1 Human Health Risk Exposure Summary

The human health CSM summary table is presented as Table 4-5.

4.5.2 CSM Summary

Potentially complete exposure pathways exist should the groundwater resource be used or should a construction project be conducted at some point in the future (e.g., leaching of chemicals from soil to groundwater and contact by a receptor). However, these pathways are not currently complete and, as noted above, no COPCs were identified in the groundwater underlying UXO 14.

4.6 CONCLUSIONS

4.6.1 Conclusions Based on Sampling Results

No COPCs were identified for the groundwater underlying UXO 14. Therefore, based on the available data, it is concluded that federal and State risk management benchmarks would not be exceeded if human receptors were to contact the groundwater.

4.6.2 Data Gaps

There were no data gaps.

4.7 RECOMMENDATIONS

No further action is recommended for the groundwater underlying UXO 14.

5.0 OLD SKEET AND TRAP RANGE – UXO 15

The section presents results of the Phase 2 SI groundwater investigation and risk screening evaluation for the OSTR (UXO 15). This site, shown on Figure 5-1, is a former sheet and trap range that covers a total area of 29.3 acres. The site is divided into the Range Area (4.4 acres), Open Water Area (18 acres), and Near Shore Area (750 linear feet of shoreline). The elevation of the entire range is approximately 16 feet above msl.

5.1 SITE FIELDWORK

Three soil borings were completed and converted into temporary wells (X15GW001, X15GW002, and X16GW003) at UXO 15, as shown on Figures 3-2 and 5-1.

5.1.1 Field Activities

Documentation of soil boring, well installation, well development, and sample collection activities are presented in Appendix A. As indicated on the site boring logs, subsurface materials encountered at all three well boring locations consisted of silty loam in the upper 1 to 2 feet bgs. There was no evidence of fill material and no cultural or archeological artifacts were encountered. Beneath the loamy top soil, a clayey sand or silty sand was encountered throughout the site down to approximately 3 to 6 feet bgs. This sand was underlain by coarser yellow-brown or greenish grey sand and gravel. The sand and gravel unit extended to the total depth of the well borings except at X15GW002, where a grey silty fine sand was observed at 11 feet bgs. The water bearing zones were encountered at approximately 3 to 4 feet bgs at all three locations, and the static water levels were at similar depths, indicating unconfined conditions. The wells were installed with the screen intervals extending from 2 to 12 feet bgs.

5.1.2 Work Plan Deviations

There were no deviations from the SAP.

5.1.3 Field Data Collection

A summary of temporary well construction details and groundwater level measurements for UXO 15 is provided in Table 5-1. This table includes the GPS survey coordinates for each well, which were uploaded to the project GIS data base and used to generate temporary well locations for Figure 3-2. Table 5-2 presents a summary of the samples collected for analysis, which includes the sample-specific depth intervals, requested analyses, and locations where field duplicate samples were collected.

5.2 ANALYTICAL RESULTS

5.2.1 Groundwater Sample Collection and Analysis

Three groundwater samples were collected from temporary wells at UXO 15. The locations of the wells were determined based on the Phase 1 SI results. Wells were placed in locations where the presence of target analytes in the soil indicated the greatest potential for release of those target analytes into the underlying groundwater at unacceptable levels. Groundwater samples were analyzed for low level PAHs, nitroglycerin, and/or select total and dissolved metals. The groundwater samples were filtered through a 0.45-micron filter if low-flow sample collection did not result in turbidity of less than 10 NTUs to obtain data on dissolved metals in addition to the total metals.

One duplicate groundwater sample was collected for QC purposes. Anomaly avoidance techniques were practiced during all sampling operations. Groundwater sample log sheets are included in Appendix A.

5.2.2 Groundwater Sample Results

All groundwater samples collected were analyzed, and the analytical results were compared to the PALs. The data validation reports and database of validated results are presented in Appendix D. The DQR and associated summary tables are presented in Appendix E. Table 5-3 presents the target analytes measured in each sample and summarizes the results as compared to the respective PALs for PAHs, nitroglycerin, and total and dissolved metals in groundwater. In Table 5-3, if a target parameter exceeded the associated PAL at any sampling point, that parameter is highlighted; individual sample exceedances are also highlighted.

Figure 5-1 identifies the target analyte detections in groundwater at UXO 15. Three groundwater samples were collected from depths of 1.65 to 12.00 feet bgs. Screening values used for PAL limits in groundwater were the MCL values for target analytes with MCLs, or the EPA RSL for tapwater criteria for target analytes that do not have an MCL.

Six PAH PALs were exceeded at one groundwater sampling location at UXO 15 (X15GW001) and the total lead PAL was exceeded at one groundwater sampling location at UXO 15 (X15GW002). The Human Health Risk Screening Evaluation is discussed in Section 5.4.

5.3 DATA QUALITY REVIEW/USABILITY

Three groundwater samples from temporary wells at UXO 15 were sent to APPL for select analyses including PAHs using SW-846 Method 8270D SIM, nitroglycerin using SW-846 Method 8330B, and/or

total and dissolved metals using SW-846 Method 6020A. The groundwater samples were labeled sequentially as follows for the temporary well locations:

Well Location	Groundwater Sample Identification
X15GW001	X15GW001
X15GW002	X15GW002
X15GW003	X15GW003

Table 5-3 summarizes the results for PAHs, nitroglycerin, and total and dissolved metals in groundwater. Figure 5-1 illustrates the locations from which groundwater samples were collected and the analytes detected in each sample. Below is a summary of the data review findings.

Completeness - Table E-4 in Appendix E presents all the qualified data and the reason for the data qualification. Zero out of 46 UXO 15 results were rejected. The rejection of data was not necessary for samples collected at UXO 15, and all data are considered valid for their intended purpose. The sample collection and laboratory analytical completeness were 100 percent.

Sensitivity - The original PALs and the anticipated laboratory DLs, LODs, and LOQs are listed in Worksheet #15 in the SAP (Tetra Tech, 2011). Analytical sensitivity was generally satisfactory to meet DQOs presented in the SAP. The inability to quantify select analytes to PALs with confidence is addressed in the Human Health Risk Screening Evaluation uncertainty analysis in Section 5.4.

Accuracy - Appendix E, Table E-4 shows that four results were qualified as estimated due to field blank contamination and four results were qualified as estimated due to uncertainty near the DL. The noncompliances in general do not show any directional bias with the data. Overall, the laboratory accuracy was acceptable and no data were rejected. There were no QC deficiencies noted for field accuracy.

Precision - No results were qualified because of a laboratory duplicate precision noncompliance or a field duplicate precision noncompliance. Overall, the field and laboratory precision was acceptable, and no data were rejected. The data are acceptable for use in risk assessment.

5.4 HUMAN HEALTH RISK SCREENING EVALUATION

The purpose of the human health risk screening evaluation is to conservatively estimate risks posed to potential human receptors from chemicals present in the groundwater at the OSTR (UXO 15). The human health risk screening evaluation followed the methodology described in Section 3.3, which identified the following steps:

- Identification of COPCs
- Exposure Assessment
- Risk Characterization
- Uncertainty Analysis

5.4.1 Identification of Chemicals of Potential Concern in Groundwater

Human health COPCs in groundwater were identified based on the following considerations:

- Occurrence and distribution of chemicals in the environmental media
- Chemical toxicity
- Occurrence of chemical in background samples

Using the methodology described in Section 3.3, the maximum concentration of each chemical in groundwater was compared to risk-based screening levels and the federal SDWA MCL. If the maximum concentration exceeded the risk-based screening levels or the MCL, the chemical was classified as a possible COPC. These chemicals were then subjected to a comparison to background groundwater data to determine if the groundwater concentrations in the area of interest are consistent with background groundwater concentrations. Section 3.3 presents the approach used to determine if the chemicals are present in groundwater at concentrations consistent with background concentrations. For chemicals identified as possible COPCs, Tetra Tech retained the chemical as a COPC for the human health risk screening only if the chemical was present in groundwater in the area of interest at concentrations above background.

The results of the COPC selection for groundwater at UXO 15 are presented in Table 5-4. The following chemicals were initially selected as COPCs because maximum detected concentrations exceeded risk-based screening levels and/or federal SDWA MCLs:

- Antimony and Lead (based on data for unfiltered groundwater samples).

- Six carcinogenic polycyclic aromatic hydrocarbons (cPAHs) (benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, dibenzo[ah]anthracene, and indeno[1,2,3-CD]pyrene).

The maximum detected concentrations reported also exceed the range of background groundwater concentrations discussed in Section 3. Consequently, all of these chemicals are selected as COPCs. However, the turbidity levels reported for the groundwater samples with PAHs and inorganics (unfiltered sample) exceeding COPC screening levels were 69.4 and 710 NTUs, respectively. Additionally, metals concentrations reported for the filtered groundwater samples do not exceed COPC screening levels.

These observations suggest that sample turbidity may be contributing to the target analyte concentrations detected in the unfiltered UXO 15 groundwater samples. The monitoring wells advanced at UXO 15 were screened in a very shallow interval (i.e., from 2 to 12 feet bgs), and the well locations were close to the Mattawoman Creek, both of which may contribute to highly turbid conditions in the groundwater.

5.4.2 Exposure Assessment

This section discusses the potential for exposure to groundwater at UXO 15. This site, which was previously used for small arms recreational activities, is currently a grass field that is now used as a helicopter landing pad and for recreational activities. The shallow groundwater underlying the site is not used for any purpose. According to the NSF Indian Head Master Plan, future land or groundwater use is not anticipated to change.

No public access is authorized at NSF-IH Stump Neck Annex. Signs, partial fencing, locked/secured gates, login book/office check-in, and vehicle security patrols are used to control the entire facility. There are no access control features specific to the OSTR. Access from the Potomac River is not controlled. There are no known land use/development restrictions for the range.

The Coastal Zone of Maryland includes all land and water lying within coastal counties, one of which is Charles County. Within the Coastal Zone, Maryland has defined an area within which strict land use management is needed to protect the Chesapeake Bay. The critical area is defined as a 1,000-foot-wide strip of land surrounding the bay and its tidal tributaries. Most construction within 100 feet of the Mean High Water Line (buffer) is prohibited. Most of the area of OSTR falls within the 100-foot buffer.

Under the current land/groundwater use patterns for this site, there are no human receptors currently exposed to the shallow groundwater underlying UXO 15. However, conservatively, this risk assessment does evaluate the use of the groundwater as a domestic water supply source and assumes that a hypothetical future resident may be exposed to COPCs via ingestion (i.e., drinking) and dermal contact (e.g., showering, bathing) routes of exposure. This analysis is presented to assist risk managers tasked with making risk management decisions for the site. It is assumed that if risk estimates for a hypothetical future resident are acceptable, risk estimates for all other receptors contacting the COPC in the groundwater would also be acceptable. However, as noted above, there are no plans to develop the groundwater underlying UXO 15 for domestic purposes.

The maximum detected concentrations of the COPCs in groundwater (see Table 5-4) were used as the EPCs in the risk characterization.

5.4.3 Risk Characterization

Table 5-5 presents the calculated risks and HI for direct contact exposures to the COPCs in groundwater. The risk estimates were calculated per the methodology presented in Section 3.3.

The HI presented in Table 5-5 for antimony does not exceed 1. This indicates that adverse non-carcinogenic health effects would not be expected based on the antimony concentrations detected in the unfiltered or filtered groundwater samples collected at UXO 15. However, the maximum lead concentration detected in the unfiltered groundwater samples (21.8 µg/L) does exceed the SDWA Action Level for lead in tap water (15 µg/L); lead concentrations reported for filtered groundwater samples do not. Additionally, the cumulative cancer risk estimate developed based on the PAH concentrations detected in the one unfiltered groundwater sample collected and analyzed for PAHs does exceed the EPA target cancer risk range. Consequently, the cPAHs and lead are selected as chemicals of concern for UXO 15 and, thus, warrant further evaluation. However, as noted above, the elevated lead and PAH concentrations detected in the unfiltered groundwater samples collected at UXO 15 may be a consequence, in part, of sample turbidity.

5.4.4 Uncertainty Analysis

Section 3.3.4 provides a detailed discussion of the sources of uncertainty in the human health risk screening evaluation. However, the most significant source of uncertainty is the fact that the turbidity levels for the unfiltered groundwater samples with PAHs and inorganics exceeding COPC screening levels were 69.4 and 710 NTUs, respectively. Consequently, COPC concentrations detected in the unfiltered groundwater samples may or may not reflect the impact of site-related contamination. Alternatively, COPC concentrations may reflect sample turbidity. This possibility is further supported by the fact that the cPAHs selected as COPCs have relatively low solubility in water and tend to have much higher affinity for soil solids than for soil water.

5.4.5 Human Health Risk Screening Evaluation Summary

In the human health risk screening evaluation, groundwater data for the Old Skeet and Trap Range was evaluated. Antimony, lead, and six cPAHs were selected as COPCs. The HI developed for antimony did not exceed 1. However, the maximum lead concentration detected in the unfiltered groundwater samples did exceed the SDWA Action Level for lead. Additionally, the cumulative cancer risk estimate developed for cPAHs exceeds the EPA target cancer risk range. Consequently, the cPAHs and lead are selected as chemicals of concern (COCs) for UXO 15 and, thus, warrant further evaluation. However, a significant source of uncertainty is the fact that the turbidity levels in the unfiltered groundwater samples were elevated. Consequently, COPC concentrations detected in the unfiltered groundwater samples may or may not reflect the impact of site-related contamination.

5.5 UPDATED CSM

The CSMs previously presented for UXO 15 considered potential exposure to groundwater (Tetra Tech, 2010), which is a complete pathway only for human receptors because ecological receptors would not normally be expected to encounter groundwater. Although groundwater is not currently used at UXO 15, possible future land use may include residential and/or construction worker scenarios.

With respect to groundwater, contaminants in surface and subsurface soil at UXO 15 may migrate into the shallow aquifer via infiltration of precipitation and then flow toward local surface water bodies. Based on a review of hydrogeological data, it is unlikely that contaminants in shallow groundwater would migrate to the deeper aquifers that are used as drinking water supplies, although shallow groundwater is considered a potential localized exposure medium to individuals who may encounter it in an open excavation or use it for irrigation purposes.

No receptors are currently exposed to groundwater at UXO 15. However, unforeseen changes in land use (e.g., base closure and redevelopment) may result in the hypothetical future exposure of certain types of individuals. For this evaluation, construction workers and residents were selected to represent the plausible range of future receptor sensitivities and exposures. These receptors may be exposed to groundwater by means of ingestion (either intentional or incidental) and/or dermal contact.

Figure 3-2 shows the site layout and maximum COPC groundwater concentrations at the Old Skeet and Trap Range. As reflected on this figure, sources of groundwater contamination at the site include: antimony near the Firing Points, PAHs in the vicinity of the Firing Points, collocated with clay target remains, and antimony and lead in the Target Areas, collocated with accumulations of lead shot.

A three-dimensional CSM illustration for this site is included as Figure 5-2, and an Exposure Pathway Analysis diagram is presented as Figure 5-3.

5.5.1 Human Health Risk Exposure Summary

The human health CSM summary table is presented as Table 5-6.

5.5.2 CSM Summary

The updated CSM is shown on Figure 5-2 and details the potential exposure sources, pathways, and receptors associated with groundwater use. Potentially complete exposure pathways exist should the groundwater resource be used or should a construction project be conducted at some point in the future (e.g., through leaching of chemicals from soil to groundwater and contact by a receptor). However, these

pathways are not currently complete. Additionally, as noted above, the COC concentrations detected in the groundwater at UXO 15 may be a function, in part, of groundwater sample turbidity.

5.6 CONCLUSIONS

5.6.1 Conclusions Based on Sampling Results

Based on groundwater sampling results, the maximum lead concentration detected in the unfiltered groundwater samples exceeds the SDWA Action Level for lead, and the cumulative cancer risk estimate developed for cPAHs exceeds the EPA target cancer risk range. Therefore, the cPAHs and lead are selected as COCs for UXO 15. However, a significant source of uncertainty is the fact that the turbidity levels in the unfiltered groundwater samples were elevated. Consequently, COPC concentrations detected in the unfiltered groundwater samples may or may not reflect the actual impact of site-related contamination.

The updated CSM (Figure 5-2) indicates that potentially complete exposure pathways exist should the groundwater resource be used or should a construction project be conducted at some point in the future (e.g., through leaching of chemicals from soil to groundwater and contact by a receptor). Unacceptable levels of human risk may exist. However, groundwater is not currently used at the site.

5.6.2 Data Gaps

More data are needed to resolve the question of whether groundwater contamination is truly site-related.

5.7 RECOMMENDATIONS

Based on the results of the Phase 2 SI, additional groundwater monitoring is recommended to determine whether the elevated lead and cPAH concentrations detected in the groundwater at UXO 15 are site-related or rather a function of sample turbidity.

6.0 RUM POINT SKEET RANGE – UXO 16

The section presents results of the Phase 2 SI groundwater investigation and risk screening evaluation for the RPSR (UXO 16). This site, shown on Figure 6-1, is a former skeet range that covers a total area of 33.5 acres. The cleared portion of the range measures approximately 6 acres. The topography of the RPSR is gently sloping from southeast to northwest. Over 94 percent of the range is located on upland terrain. Approximately 90 percent of the RPSR is located at or above an elevation of 30 feet above msl.

6.1 SITE FIELDWORK

Two soil borings were completed and converted into temporary wells (X16GW001 and X16GW002) at UXO 16, as shown on Figures 3-3 and 6-1.

6.1.1 Field Activities

Documentation of soil boring, well installation, well development, and sample collection activities are presented in Appendix A. As indicated on the site Boring Logs, subsurface materials at UXO 16 consisted of mixtures of gravel, sand, silt and clay, and varied across the site. Specific materials encountered at each well location are as follows:

- At X16GW001 (Firing Point/Target Area), a moist to wet gravel and sand was encountered at 7 to 8 feet bgs. However, little to no water was draining into the well boring, so the well was drilled deeper to intersect a more significant water-bearing zone. Wet expansive sandy and silty clay was encountered at 15 feet bgs. The lithologic sample material collected from 15 to 25 feet bgs came out of the boring wet suggesting that the water bearing zone was within the 15 to 25 feet bgs depth interval, and was likely due to sand layers within the clay. These samples expanded to such a degree that the plastic liners within the macro-core sampler could not be retrieved; therefore, the driller had to wash out the soil core using a high pressure water sprayer. Because of the uncertainty regarding the precise location and depth of the water bearing zone, a 15-foot screen was installed from 12 to 27 feet bgs. The static water level was measured at approximately 3 feet bgs, suggesting confining aquifer conditions.

- At X16GW002 (northwestern portion of Shot Fall Area), the water bearing zone was encountered at approximately 9 feet bgs. It consisted of yellow-brown clayey sand, changing downward to a greenish grey clayey sand at 16.5 feet bgs, and extending down to the terminal depth of the well. The static water level in the well was measured at 9.31 feet bgs, suggesting unconfined aquifer conditions.

6.1.2 Work Plan Deviations

The SAP called for each temporary well to be constructed using 10-foot screens. However, due to the poorly yielding nature of the subsurface materials encountered at X16GW001, a 15-foot screen was used to maximize yield.

6.1.3 Field Data Collection

A summary of temporary well construction details and groundwater level measurements for UXO 16 is provided in Table 6-1. This table includes the GPS survey coordinates for each well, which were uploaded to the project GIS data base and used to generate temporary well locations for Figure 3-3. Table 6-2 presents a summary of the samples collected for analysis, which includes the sample-specific depth intervals, requested analyses, and locations where field duplicate samples were collected.

6.2 ANALYTICAL RESULTS

6.2.1 Groundwater Sample Collection and Analysis

Two groundwater samples were collected from temporary wells at UXO 16. The locations of the wells were determined based on the Phase 1 SI results. Wells were placed in locations where the presence of target analytes in the soil indicated the greatest potential for release of those target analytes into the underlying groundwater at unacceptable levels. Groundwater samples were analyzed for low level PAHs and/or select total and dissolved metals. The groundwater samples were filtered through a 0.45-micron filter if low-flow sample collection did not result in turbidity of less than 10 NTUs to obtain data on dissolved metals in addition to the total metals.

No duplicate groundwater samples were collected for QC purposes. Anomaly avoidance techniques were practiced during all sampling operations. Groundwater sample log sheets are included in Appendix A.

6.2.2 Groundwater Sample Results

All groundwater samples collected were analyzed, and the analytical results were compared to the PALs. The data validation reports and database of validated results are presented in Appendix D. The DQR and associated summary tables are presented in Appendix E. Table 6-3 presents the target analytes measured in each sample and summarizes the results as compared to the respective PALs for PAHs and total and dissolved metals in groundwater. In Table 6-3, if a target parameter exceeded the associated PAL at any sampling point, that parameter is highlighted; individual sample exceedances are also highlighted.

Figure 6-1 identifies the target analyte detections in groundwater at UXO 16. Two groundwater samples were collected from depths of 8.05 to 27.00 feet bgs. Screening values used for PAL limits in groundwater were the MCL values for target analytes with MCLs, or the EPA RSL for tapwater criteria for target analytes that do not have an MCL.

No PAL was exceeded in any groundwater sample at UXO 16. The Human Health Risk Screening Evaluation is discussed in Section 6.4.

6.3 DATA QUALITY REVIEW/USABILITY

Two groundwater samples from temporary wells at UXO 16 were sent to APPL for select analyses including PAHs using SW-846 Method 8270D SIM and/or total and dissolved metals using SW-846 Method 6020A. The groundwater samples were labeled sequentially as follows for the temporary well locations:

Well Location	Groundwater Sample Identification
X16GW001	X16GW001
X16GW002	X16GW002

Table 6-3 summarizes the results for PAHs and total and dissolved metals in groundwater. Figure 6-1 illustrates the locations from which groundwater samples were collected and the analytes detected in each sample. Below is a summary of the data review findings.

Completeness - Table E-4 in Appendix E presents all of the qualified data and the reason for the data qualification. The rejection of data was not necessary for samples collected at UXO 16, and all data are considered valid for their intended purpose. Zero out of 23 results from UXO 16 samples were rejected. The sample collection and laboratory analytical completeness were 100 percent.

Sensitivity - The original PALs and the anticipated laboratory DLs, LODs, and LOQs are listed in Worksheet #15 in the SAP (Tetra Tech, 2011). Analytical sensitivity was generally satisfactory to meet DQOs presented in the SAP. The inability to quantify select analytes to PALs with confidence is addressed in the Human Health Risk Screening Evaluation uncertainty analysis in Section 6.4.

Accuracy - Appendix E, Table E-4 shows that one total antimony and one dissolved antimony result were qualified as estimated due to uncertainty near the DL. The noncompliances in general do not show any directional bias with the data. Overall, the laboratory accuracy was acceptable and no data were rejected. There were no QC deficiencies noted for field accuracy.

Precision - No results were qualified because of a laboratory duplicate precision noncompliance. Field duplicate imprecision was noted for one total lead result and one dissolved antimony result. Despite the data qualifications, the data are acceptable for use in risk assessment.

6.4 HUMAN HEALTH RISK SCREENING EVALUATION

The purpose of the human health risk screening evaluation is to conservatively estimate risks posed to potential human receptors from chemicals present in the groundwater at the RPSR (UXO 16). The human health risk screening evaluation followed the methodology described in Section 3.3, which identified the following steps:

- Identification of COPCs
- Exposure Assessment
- Risk Characterization
- Uncertainty Analysis

6.4.1 Identification of Chemicals of Potential Concern in Groundwater

Human health COPCs in groundwater were identified based on the following considerations:

- Occurrence and distribution of chemicals in the environmental media
- Chemical toxicity
- Occurrence of chemical in background samples

Using the methodology described in Section 3.3 the maximum concentration of each chemical in groundwater was compared to risk-based screening levels and the federal SDWA MCL. The results of those comparisons are presented in Table 6-4. Antimony and lead were detected in both filtered and unfiltered groundwater samples collected at UXO 16. However, none of the concentrations reported exceeded the risk-based screening levels or federal SDWA MCLs. Consequently, no comparison of site concentrations to background concentrations was necessary. In addition, no PAHs were detected. Thus, no chemicals were selected as COPCs for the groundwater underlying UXO 16.

6.4.2 Exposure Assessment

This section discusses the potential for exposure to groundwater at UXO 16. The narrative is provided for informational purposes only. A more formal exposure assessment of the groundwater is not necessary because no COPCs were selected for the groundwater. Therefore, no estimation of exposure point concentrations is necessary.

The RPSR was a skeet and trap range operated by the Potomac River Gun Club from 1991 to 2001, but the site currently is not used. Portions of the range are grass covered and the remainder is forested or wetland. The wetland is along the western part of the range and water in the wetland eventually drains through an unnamed tributary to Mattawoman Creek to the north. The range has a building on it that the Potomac River Gun Club used as their headquarters.

A locked gate at the east end of Skeet Range Way limits access to the range; however, the site is not within the Stump Neck secured perimeter fence. Hunting is permitted on the range. The existing building has water supplied to it. There is a drinking water well located about 1,200 feet north of the site on Rum Point. This well is screened from 231 to 246 feet below msl in the Patapsco aquifer. As noted above, the site and the shallow groundwater underlying the site currently is not used. Future use of the range and the groundwater underlying the site is not specified at this time. The presence of wetlands and a high water table could restrict or limit future development efforts on parts of the range.

Under the current and possible future land use patterns for this site, potential human receptors include authorized Navy personnel (military and civilian), visitors, contractors, maintenance workers, recreational users, and trespassers.

In the human health risk screening evaluation, direct contact exposures to groundwater (ingestion of groundwater and dermal contact with groundwater) were evaluated. However, as noted above, no COPCs were identified for the groundwater underlying UXO 16.

6.4.3 Risk Characterization

A formal risk characterization of COPCs in the groundwater underlying UXO 16 is not necessary because no COPCs were selected for the groundwater. Therefore, no estimations of HI or cancer risk are necessary.

6.4.4 Uncertainty Analysis

Section 3.3.4 provides a detailed discussion of the sources of uncertainty in the human health risk screening evaluation.

6.4.5 Human Health Risk Screening Evaluation Summary

No COPCs were identified for the groundwater underlying UXO 16. Therefore, no estimation of HI or cancer risk was necessary.

6.5 UPDATED CSM

The CSMs previously presented for UXO 16 considered potential exposure to groundwater (Tetra Tech, 2010), which is a complete pathway only for human receptors because ecological receptors would not normally be expected to encounter groundwater. Although groundwater is not currently used at UXO 16, possible future land use may include residential and/or construction worker scenarios.

With respect to groundwater, contaminants in surface and subsurface soil at UXO 16 may migrate into the shallow aquifer via infiltration of precipitation and then flow toward local surface water bodies. Based on a review of hydrogeological data, it is unlikely that contaminants in shallow groundwater would migrate to the deeper aquifers that are used as drinking water supplies, although shallow groundwater is considered a potential localized exposure medium to individuals who may encounter it in an open excavation or use it for irrigation purposes.

No receptors are currently exposed to groundwater at UXO 16. However, unforeseen changes in land use (e.g., base closure and redevelopment) may result in the hypothetical future exposure of certain types of individuals. For this evaluation, construction workers and residents were selected to represent the plausible range of future receptor sensitivities and exposures. These receptors may be exposed to groundwater by means of ingestion (either intentional or incidental) and/or dermal contact.

6.5.1 Human Health Risk Exposure Summary

The human health CSM summary table is presented as Table 6-5.

6.5.2 CSM Summary

Potentially complete exposure pathways exist should the groundwater resource be used or should a construction project be conducted at some point in the future (e.g., leaching of chemicals from soil to groundwater and contact by a receptor). However, these pathways are not currently complete and, as noted above, no COPCs were identified in the groundwater underlying UXO 16.

6.6 CONCLUSIONS

6.6.1 Conclusions Based on Sampling Results

No COPCs were identified for the groundwater underlying UXO 16. Therefore, based on the available data, it is concluded that federal and State risk management benchmarks would not be exceeded if the groundwater were to be used as a domestic water supply source.

6.6.2 Data Gaps

There were no data gaps.

6.7 RECOMMENDATIONS

No further action is recommended for the groundwater underlying UXO 16.

7.0 SMALL ARMS (PISTOL) RANGE – UXO 17

The section presents results of the Phase 2 SI groundwater investigation and risk screening evaluation for the SAPR (UXO 17). This site, shown on Figure 7-1, is a former pistol range that covers a total area of 2.4 acres. The site is divided into the three Firing Lines and the Target Area. The Target Area covers approximately 0.3 acre. Each Firing Line extends approximately 140 linear feet across the range. The highest elevation of the SAPR is in the northeastern corner at approximately 100 feet above msl.

7.1 SITE FIELDWORK

One soil boring was completed and converted into a temporary well (X17GW001) at UXO 17, as shown on Figures 3-4 and 7-1.

7.1.1 Field Activities

Documentation of soil boring, well installation, well development, and sample collection activities are presented in Appendix A. As indicated on the site Boring Logs, the water bearing zone was encountered at approximately 9 feet bgs. This zone consisted of yellow-orange sand and gravel. Underlying the sand and gravel, at 13 feet bgs, was a sand and silt unit that extended down to the terminal depth of the well. The static water level in the well was measured at 6.9 feet bgs, suggesting slightly confined aquifer conditions. However, the lithology (e.g., sand and gravel from the land surface down to the water bearing zone) would suggest unconfined conditions.

7.1.2 Work Plan Deviations

The planned location of X17GW001 specified in the SAP was unable to be reacquired using GPS due to poor satellite reception the day of the survey. Thus, the well location was established in the field using a tape measure and compass to mark off distances and directions relative to physical site features. After installation, the well location was surveyed using GPS (with improved satellite reception), and the resulting coordinates were approximately 30 feet southwest of the planned location, on the western (downgradient) side of the Firing Line Area.

7.1.3 Field Data Collection

A summary of temporary well construction details and groundwater level measurements for UXO 17 is provided in Table 7-1. This table includes the GPS survey coordinates for each well, which were uploaded to the project GIS data base and used to generate temporary well locations for Figure 3-4. Table 7-2 presents a summary of the samples collected for analysis, which includes the sample-specific depth intervals, requested analyses, and locations where field duplicate samples were collected.

7.2 ANALYTICAL RESULTS

7.2.1 Groundwater Sample Collection and Analysis

One groundwater sample was collected from a temporary well at UXO 17. The location of the well was determined based on the Phase 1 SI results. The well was placed in the location where the presence of target analytes in the soil indicated the greatest potential for release of those target analytes into the underlying groundwater at unacceptable levels. The groundwater sample was analyzed for nitroglycerin and select total and dissolved metals. The groundwater sample was filtered through a 0.45-micron filter if low-flow sample collection did not result in turbidity of less than 10 NTUs to obtain data on dissolved metals in addition to the total metals.

One duplicate groundwater sample was collected for QC purposes. Anomaly avoidance techniques were practiced during all sampling operations. Groundwater sample log sheets are included in Appendix A.

7.2.2 Groundwater Sample Results

All groundwater samples collected were analyzed, and the analytical results were compared to the PALs. The data validation reports and database of validated results are presented in Appendix D. The DQR and associated summary tables are presented in Appendix E. Table 7-3 presents the target analytes measured in the sample and summarizes the results as compared to the respective PALs for nitroglycerin and total and dissolved metals in groundwater. In Table 7-3, if a target parameter exceeded a PAL at any sampling point, that parameter is highlighted; individual sample exceedances are also highlighted.

Figure 7-1 identifies the target analyte detections in groundwater at UXO 17. One groundwater sample was collected from a depth of 9.40 to 19.40 feet bgs. Screening values used for PAL limits in groundwater were the MCL values for target analytes with MCLs, or the EPA RSL for tapwater criteria for target analytes that do not have an MCL.

Only arsenic exceeded the PAL in the groundwater sample at UXO 17. The Human Health Risk Screening Evaluation is discussed in Section 7.4.

7.3 DATA QUALITY REVIEW/USABILITY

One groundwater sample from a temporary well at UXO 17 was sent to APPL for select analyses including nitroglycerin using SW-846 Method 8330B and total and dissolved metals using SW-846 Method 6020A. The groundwater sample was labeled as follows for the temporary well location:

Well Location	Groundwater Sample Identification
X17GW001	X17GW001

Table 7-3 summarizes the results for nitroglycerin and total and dissolved metals in groundwater. Figure 7-1 illustrates the location from which the groundwater sample was collected and the analytes detected in the sample. Below is a summary of the data review findings.

Completeness - Table E-4 in Appendix E presents all the qualified data and the reason for the data qualification. The rejection of data was not necessary for samples collected at UXO 17 and all data are considered valid for their intended purpose. Zero out of 13 results from the UXO 17 sample were rejected. The sample collection and laboratory analytical completeness were 100 percent.

Sensitivity - The original PALs and the anticipated laboratory DLs, LODs, and LODs are listed in Worksheet #15 in the SAP (Tetra Tech, 2011). Table 7-3 highlights all PAL exceedances. Analytical sensitivity was generally satisfactory to meet DQOs presented in the SAP. The inability to quantify select analytes to PALs with confidence is addressed in the Human Health Risk Screening Evaluation uncertainty analysis in Section 7.4.

Accuracy - Appendix E, Table E-4 shows that one dissolved lead result was qualified as estimated due to uncertainty near the DL. The noncompliance in general does not show any directional bias with the data. Overall, the laboratory accuracy was acceptable and no data were rejected. There were no QC deficiencies noted for field accuracy.

Precision - No results were qualified because of a laboratory duplicate precision noncompliance. Field duplicate imprecision was noted for one total lead result and one dissolved antimony result. Despite the data qualifications, the data are acceptable for use in risk assessment.

7.4 HUMAN HEALTH RISK SCREENING EVALUATION

The purpose of the human health risk screening evaluation is to conservatively estimate risks posed to potential human receptors from chemicals present in the groundwater at the SAPR (UXO 17). The human health risk screening evaluation followed the methodology described in Section 3.3, which identified the following steps:

- Identification of COPCs
- Exposure Assessment
- Risk Characterization
- Uncertainty Analysis

7.4.1 Identification of Chemicals of Potential Concern in Groundwater

Human health COPCs in groundwater were identified based on the following considerations:

- Occurrence and distribution of chemicals in the environmental media
- Chemical toxicity
- Occurrence of chemical in background samples

Using the methodology described in Section 3.3, the maximum concentration of each chemical in groundwater was compared to risk-based screening levels and the federal SDWA MCL. If the maximum concentration exceeded the risk-based screening levels or the MCL, the chemical was classified as a possible COPC. These chemicals were then subjected to a comparison to background groundwater data to determine if the groundwater concentrations in the area of interest are consistent with background groundwater concentrations. Section 3.3 presents the approach used to determine if the chemicals are present in groundwater at concentrations consistent with background concentrations. For chemicals identified as possible COPCs, Tetra Tech retained the chemical as a COPC for the human health risk screening only if the chemical was present in groundwater in the area of interest at concentrations above background.

The results of the COPC selection for groundwater at UXO 17 are presented in Table 7-4. The following chemicals were initially selected as COPCs because maximum detected concentrations exceeded risk-based screening levels:

- Arsenic (based on data for unfiltered groundwater samples)
- Antimony and arsenic (based on data for filtered groundwater samples)

The maximum detected concentrations reported also exceed the range of background groundwater concentrations discussed in Section 3. Consequently, arsenic and antimony are selected as COPCs. However, neither antimony nor arsenic were detected at maximum concentrations that exceeded federal SDWA MCLs. Additionally, it should be noted that the turbidity level of the unfiltered sample was 30 NTUs; the field sampling crew reported that the sample was brown in coloration.

7.4.2 Exposure Assessment

This section discusses the potential for exposure to groundwater at UXO 17. This range was used for pistol training and qualifying until 1991. Subsequently, the range was used for bow qualification. It is not known when bow qualification was discontinued at the SAPR; however, the site is currently an unused open field.

No public access is authorized at NSF-IH Stump Neck Annex. Signs, partial fencing, locked/secured gates, login book/office check-in, and vehicle security patrols are used to control the entire facility. There are no access control features specific to the SAPR, and hunting is allowed at the site.

Under the current and predicted future land use patterns for this site, potential human receptors include authorized Navy personnel (military and civilian), visitors, contractors, maintenance workers, recreational users, and trespassers. The shallow groundwater underlying the site is not used for domestic or other purposes and there are no plans to use the groundwater resource in the future.

In this human health risk screening evaluation, direct contact exposures to COPCs in groundwater (e.g., ingestion of groundwater and dermal contact with groundwater) were evaluated. The maximum detected concentrations of the COPCs in groundwater (see Table 7-4) were used as the EPCs in the risk characterization.

7.4.3 Risk Characterization

Table 7-5 presents the calculated risks and HIs for direct contact exposures to the COPCs in groundwater. The risk estimates were calculated per the methodology presented in Section 3.3.

The sum of the HIs presented in Table 7-5 for antimony and arsenic do not exceed 1. This indicates that adverse non-carcinogenic health effects would not be expected based on the arsenic and antimony concentrations detected in the unfiltered or filtered groundwater samples collected at UXO 17. The cumulative cancer risk estimate developed based on the arsenic concentrations detected in the one unfiltered and one filtered groundwater sample collected and analyzed for select metals does not exceed 1E-05 and is within the EPA target cancer risk range.

7.4.4 Uncertainty Analysis

Section 3.3.4 provides a detailed discussion of the sources of uncertainty in the human health risk screening evaluation.

7.4.5 Human Health Risk Screening Evaluation Summary

In the human health risk screening evaluation, groundwater data for the Small Arms (Pistol) Range was evaluated. Arsenic and antimony were selected as COPCs. However, neither of these COPCs was detected at concentrations exceeding SDWA MCLs. The HI developed for these COPCs did not exceed 1, indicating that adverse non-carcinogenic health effects are not anticipated under the conditions established in the exposure assessment. The cumulative cancer risk estimate developed for arsenic

does not exceed the EPA target cancer risk range. Consequently, risk management benchmarks established for the site have not been exceeded.

7.5 UPDATED CSM

The CSMs previously presented for UXO 17 considered potential exposure to groundwater (Tetra Tech, 2010), which is a complete pathway only for human receptors because ecological receptors would not normally be expected to encounter groundwater. Although groundwater is not currently used at UXO 17, possible future land use may include residential and/or construction worker scenarios.

With respect to groundwater, contaminants in surface and subsurface soil at UXO 17 may migrate into the shallow aquifer via infiltration of precipitation and then flow toward local surface water bodies. Based on a review of hydrogeological data, it is unlikely that contaminants in shallow groundwater would migrate to the deeper aquifers that are used as drinking water supplies, although shallow groundwater is considered a potential localized exposure medium to individuals who may encounter it in an open excavation or use it for irrigation purposes.

No receptors are currently exposed to groundwater at UXO 17. However, unforeseen changes in land use (e.g., base closure and redevelopment) may result in the hypothetical future exposure of certain types of individuals. For this evaluation, construction workers and residents were selected to represent the plausible range of future receptor sensitivities and exposures. These receptors may be exposed to groundwater by means of ingestion (either intentional or incidental) and/or dermal contact.

7.5.1 Human Health Risk Exposure Summary

The human health CSM summary table is presented as Table 7-6.

7.5.2 CSM Summary

Potentially complete exposure pathways exist should the groundwater resource be used or should a construction project be conducted at some point in the future (e.g., leaching of chemicals from soils to groundwater and contact by a receptor). However, these pathways are not currently complete, and as noted above risk estimates developed for the COPC concentrations detected in the UXO 17 groundwater do not exceed risk management benchmarks.

7.6 CONCLUSIONS

7.6.1 Conclusions Based on Sampling Results

Based on the groundwater sampling results, arsenic and antimony were selected as COPCs. However, neither of these COPCs was detected at concentrations exceeding SDWA MCLs. The HI developed for

these COPCs did not exceed 1 indicating that adverse non-carcinogenic health effects are not anticipated under the current and hypothetical future exposure scenarios. The cumulative cancer risk estimate developed for arsenic does not exceed the EPA target cancer risk range. Consequently, risk management benchmarks established for the site have not been exceeded.

7.6.2 Data Gaps

There were no data gaps.

7.7 RECOMMENDATIONS

No further action is recommended for the groundwater underlying UXO 17.

8.0 ROACH ROAD RIFLE RANGE – UXO 25

The section presents the field activities of Phase 2 SI groundwater investigation for the RRRR (UXO 25). This site is a former rifle range that covers a total area of 0.3 acre. The terrain is relatively flat at an elevation of approximately 50 feet above msl.

8.1 SITE FIELDWORK

The proposed soil boring and well were not installed; therefore, no groundwater samples were collected.

8.1.1 Field Activities

The planned location of X25GW001 specified in the SAP (see Figure 3-5) was reacquired and marked in the field. However, unexpected site conditions made access to the location difficult by foot and impossible by drill rig. As depicted in the site photographs presented in Appendix B, the area between Roach Road and the planned well location was littered with heavy vegetation and downed trees, standing surface water, and rough terrain that included steep embankments and large piles of soil and debris. The field crew was able to remove obstacles to clear a path for the drill rig to advance approximately 50 feet into the woods, but standing water and rough terrain made further progress impossible without the use of heavy equipment (e.g., to re-grade the path and construct a temporary gravel access road).

Pursuant to discussions among the Tetra Tech Field Operations Leader, Tetra Tech Project Manager, and Navy Remedial Project Manager, further attempts to install this well were abandoned and a decision was made to defer the groundwater investigation at this site to a later date.

8.1.2 Work Plan Deviations

The planned well (X25GW001) was not installed due to unexpected site conditions. A Field Task Modification Request Form was completed to document this change, as provided in Appendix A.

8.1.3 Field Data Collection

No data was collected during the field event at this site.

8.2 RECOMMENDATIONS

Completion of the planned groundwater investigation is recommended to determine whether response actions with respect to groundwater are necessary for UXO 25.

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TABLES

TABLE 1-1

SUMMARY OF OTHER THAN OPERATIONAL RANGES
PHASE 2 SITE INSPECTION
FIVE SMALL ARMS/SKEET RANGES ON STUMP NECK ANNEX
NAVAL SUPPORT FACILITY INDIAN HEAD, MARYLAND

Site Name	MRP Site No.	Site Size (Acres)	Use	Dates of Use
Marine Rifle Range (MRR)	UXO 14	30.44	Rifle Range	1911-1918
Old Skeet and Trap Range (OSTR)	UXO 15	29.33	Skeet and Trap Range	1966-1991
Rum Point Skeet Range (RPSR)	UXO 16	33.45	Skeet and Trap Range	1991-2001
Small Arms (Pistol) Range (SAPR)	UXO 17	2.41	Pistol Range	Mid-1980s-1991
Roach Road Rifle Range (RRRR)	UXO 25	0.27	Rifle Range	1967-1980s

TABLE 2-1

SUMMARY OF KNOWN OR POTENTIAL PROTECTED SPECIES
PHASE 2 SITE INSPECTION
FIVE SMALL ARMS/SKEET RANGES ON STUMP NECK ANNEX
NAVAL SUPPORT FACILITY INDIAN HEAD, MARYLAND

Ecological Receptor	Species
Federal Endangered	Rainbow snake
	Joint-vetch
Federal Threatened	None reported
State Endangered	Scaly blazing-star
State Threatened	Non reported

Sources of data include:

1. NSF-IH Wildlife Management Plan, 1997.
2. Threatened and Endangered Plant/Animal Species of Charles County, Maryland, July 2001, Maryland Department of Natural Resources.

TABLE 4-1

UXO 14 - MARINE RIFLE RANGE
TEMPORARY WELL CONSTRUCTION AND WATER LEVEL DATA
PHASE 2 SITE INSPECTION
FIVE SMALL ARMS/SKEET RANGES ON STUMP NECK ANNEX
NAVAL SUPPORT FACILITY INDIAN HEAD, MARYLAND

Well Number	GPS Survey Coordinates		Riser Stick Up (ft)	Depth to Water (ft below tor)	Depth to Water (ft bgs)	Total Well Depth (ft bgs)	Screen Interval (ft bgs)	Screen Length (ft)	Date Installed	Date Abandoned
	Easting	Northing								
X14GW001	1249232.275	323081.2345	1.20	6.31	5.11	14	3.80 - 13.80	10	09/28/11	09/30/11
X14GW002	1249731.396	323086.4173	0.15	7.32	7.17	25	14.85 - 24.85	10	09/28/11	09/30/11
X14GW003	1250598.921	323133.0211	3.50	dry	dry	22	6.50 - 21.50	15	09/30/11	10/01/11
X14GW004	1250707.237	322899.7402	2.20	5.97	3.77	7.5	2.80 - 7.80	5	09/29/11	10/01/11

GPS = Global Positioning System
tor = top of riser
ft = feet
bgs = below ground surface

TABLE 4-2

UXO 14 – MARINE RIFLE RANGE
SUMMARY OF GROUNDWATER SAMPLES COLLECTED
PHASE 2 SITE INSPECTION
FIVE SMALL ARMS/SKEET RANGES ON STUMP NECK ANNEX
NAVAL SUPPORT FACILITY INDIAN HEAD, MARYLAND

Location	Sample Number	Date Collected	Depth[(1)] Collected (feet)	Analyses
X14GW001	X14GW0010911	09/29/11	3.8 - 13.8	Nitroglycerin, total and dissolved: antimony and copper
X14GW002	X14GW0020911	09/30/11	14.85 - 24.85	Total and dissolved: lead and copper
X14GW004	X14GW0040911	09/30/11	2.8 - 7.8	
	DUP02093011	09/30/11	2.8 - 7.8	

[(1)] Top and bottom of the screen interval, as measured below the ground surface.

TABLE 4-3

UXO 14 - MARINE RIFLE RANGE
ANALYTICAL RESULTS
PHASE 2 SITE INSPECTION
FIVE SMALL ARMS/SKEET RANGES ON STUMP NECK ANNEX
NAVAL SUPPORT FACILITY INDIAN HEAD, MARYLAND

LOCATION	X14GW001	X14GW002	X14GW004
SAMPLE ID	X14GW0010911	X14GW0020911	X14GW0040911
SAMPLE DATE	9/29/2011	9/30/2011	9/30/2011
Total Metals (µg/L)			
Antimony	**0.55**	--	--
Arsenic	--	--	--
Copper	**5.1**	**1.5**	**8.4**
Lead	--	**0.67**	**14.8**
Dissolved Metals (µg/L)			
Antimony	0.1 B	--	--
Arsenic	--	--	--
Copper	**5.6**	**0.54**	**5.4**
Lead	--	0.022 U	**7.7**
Explosives (µg/L)			
Nitroglycerin	0.26 UR	--	--
Polycyclic Aromatic Hydrocarbons (µg/L)			
2-Methylnaphthalene	0.12 U	--	--
Acenaphthene	0.12 U	--	--
Acenaphthylene	0.12 U	--	--
Anthracene	0.1 U	--	--
Benzo(a)anthracene	0.14 U	--	--
Benzo(a)pyrene	0.12 U	--	--
Benzo(b)fluoranthene	0.12 U	--	--
Benzo(g,h,i)perylene	0.16 U	--	--
Benzo(k)fluoranthene	0.14 U	--	--
Chrysene	0.1 U	--	--
Dibenzo(a,h)anthracene	0.1 U	--	--
Fluoranthene	0.16 U	--	--
Fluorene	0.12 U	--	--
Indeno(1,2,3-c,d)pyrene	0.14 U	--	--
Naphthalene	0.1 U	--	--
Phenanthrene	0.14 U	--	--
Pyrene	0.16 U	--	--

µg/L = micrograms per liter

-- = The chemical was not analyzed or no value was available.

Data Qualifiers:

Blank (i.e., no qualifier) = the chemical was detected.

B = The chemical was detected in a corresponding blank and the result is considered not detected at the concentration indicated.

R = The result was rejected.

U = The chemical was not detected.

Bold values are detected target analytes

TABLE 4-4

UXO 14 - MARINE RIFLE RANGE
IDENTIFICATION OF HUMAN HEALTH COPCs IN GROUNDWATER SAMPLES
PHASE 2 SITE INSPECTION
FIVE SMALL ARMS/SKEET RANGES ON STUMP NECK ANNEX
NAVAL SUPPORT FACILITY INDIAN HEAD, MARYLAND

Chemical	Frequency of Detection	Minimum NonDetect Concentration	Maximum NonDetect Concentration	Minimum Detected Concentration	Average of Detected Samples	Maximum Detected Concentration	Sample with Maximum Detected Concentration	Risk-Based Screening Levels for Tapwater		USEPA Maximum Contaminant Level	Lowest Risk-Based Screening Level	Human Health COPC?
								Cancer Risk (10^{-6})	Noncancer Hazard Index (0.1)			
Total Inorganics (µg/L)												
ANTIMONY	1/1	-	-	0.55	NA	0.55	X14GW0010911	NA	6.0E-01	6.0E+00	6.0E-01	NO
COPPER	3/3	-	-	1.5	5.00	8.4	X14GW0040911	NA	6.2E+01	1.3E+03	6.2E+01	NO
LEAD	2/2	-	-	0.67	7.74	14.8	X14GW0040911	NA	NA	1.5E+01	1.5E+01	NO
Dissolved Inorganics (µg/L)												
ANTIMONY	1/1	-	-	0.1 J	NA	0.1 J	X14GW0010911-F	NA	6.0E-01	6.0E+00	6.0E-01	NO
COPPER	3/3	-	-	0.54	3.85	5.6	X14GW0010911-F	NA	6.2E+01	1.3E+03	6.2E+01	NO
LEAD	1/2	0.022	0.022	7.7	NA	7.7	X14GW0040911-F	NA	NA	1.5E+01	1.5E+01	NO

Abbreviations:
COPC - Chemical of Potential Concern
J - Estimated value
NA - Not applicable
µg/L = micrograms per liter

TABLE 4-5

UXO 14 - MARINE RIFLE RANGE
HUMAN HEALTH CSM SUMMARY
PHASE 2 SITE INSPECTION
FIVE SMALL ARMS/SKEET RANGES ON STUMP NECK ANNEX
NAVAL SUPPORT FACILITY INDIAN HEAD, MARYLAND

Pathways Associated with Groundwater at Marine Rifle Range (UXO 14)

	Are Direct Contact Exposures to Groundwater Acceptable?						
	Residential			Non-Residential (e.g., Construction Worker)			
Area of Interest	Risk	Haz. Index	Lead	Risk	Haz. Index	Lead	Comment
Groundwater Underlying UXO 14	Yes	Yes	Yes	Yes	Yes	Yes	No Chemicals of Potential Concern identified in groundwater.

TABLE 5-1

UXO 15 - OLD SKEET AND TRAP RANGE
TEMPORARY WELL CONSTRUCTION AND WATER LEVEL DATA
PHASE 2 SITE INSPECTION
FIVE SMALL ARMS/SKEET RANGES ON STUMP NECK ANNEX
NAVAL SUPPORT FACILITY INDIAN HEAD, MARYLAND

Well Number	GPS Survey Coordinates		Riser Stick Up (ft)	Depth to Water (ft below tor)	Depth to Water (ft bgs)	Total Well Depth (ft bgs)	Screen Interval (ft bgs)	Screen Length (ft)	Date Installed	Date Abandoned
	Easting	Northing								
X15GW001	1249003.572	323379.3947	3.00	7.78	4.78	12	2 - 12	10	09/27/11	09/30/11
X15GW002	1248799.381	323398.2226	3.00	6.33	3.33	12	2 - 12	10	09/27/11	09/30/11
X15GW003	1249343.39	323448.8794	3.35	7.51	4.16	12	1.65 - 11.65	10	09/27/11	09/30/11

GPS = Global Positioning System
tor = top of riser
ft = feet
bgs = below ground surface

TABLE 5-2

UXO 15 – OLD SKEET AND TRAP RANGE
SUMMARY OF GROUNDWATER SAMPLES COLLECTED
PHASE 2 SITE INSPECTION
FIVE SMALL ARMS/SKEET RANGES ON STUMP NECK ANNEX
NAVAL SUPPORT FACILITY INDIAN HEAD, MARYLAND

Location	Sample Number	Date Collected	Depth[(1)] Collected (feet)	Analyses
X15GW001	X15GW0010911	09/28/11	2 - 12	Nitroglycerin, low level PAHs, and antimony (total and dissolved)
	DUP01092811	09/28/11	2 - 12	Nitroglycerin, low level PAHs
X15GW002	X15GW0020911	09/28/11	2 - 12	Total and dissolved: antimony and lead
X15GW003	X15GW0030911	09/29/11	1.65 - 11.65	

PAH = Polycyclic aromatic hydrocarbon.
(1) Top and bottom of the screen interval, as measured below the ground surface.

TABLE 5-3

UXO 15 - OLD SKEET AND TRAP RANGE
ANALYTICAL RESULTS
PHASE 2 SITE INSPECTION
FIVE SMALL ARMS/SKEET RANGES ON STUMP NECK ANNEX
NAVAL SUPPORT FACILITY INDIAN HEAD, MARYLAND

	X15GW001	X15GW002	X15GW003
SAMPLE ID	**X15GW0010911**	**X15GW0020911**	**X15GW0030911**
SAMPLE DATE	**9/28/2011**	**9/28/2011**	**9/29/2011**
Total Metals (µg/L)			
Antimony	0.16 B	**0.91**	0.16 B
Arsenic	--	--	--
Copper	--	--	--
Lead	--	**21.8**	**10.4**
Dissolved Metals (µg/L)			
Antimony	0.17 B	**0.58**	0.25 B
Arsenic	--	--	--
Copper	--	--	--
Lead	--	**0.17 J**	**0.48 J**
Explosives (µg/L)			
Nitroglycerin	0.26 U	--	--
Polycyclic Aromatic Hydrocarbons (µg/L)			
2-Methylnaphthalene	0.12 U	--	--
Acenaphthene	0.12 U	--	--
Acenaphthylene	0.12 U	--	--
Anthracene	0.1 U	--	--
Benzo(a)anthracene	**0.25**	--	--
Benzo(a)pyrene	**0.31**	--	--
Benzo(b)fluoranthene	**0.49**	--	--
Benzo(g,h,i)perylene	**0.26**	--	--
Benzo(k)fluoranthene	**0.36**	--	--
Chrysene	**0.25**	--	--
Dibenzo(a,h)anthracene	**0.14 J**	--	--
Fluoranthene	**0.24**	--	--
Fluorene	0.12 U	--	--
Indeno(1,2,3-c,d)pyrene	**0.24**	--	--
Naphthalene	0.1 U	--	--
Phenanthrene	**0.16 J**	--	--
Pyrene	**0.22**	--	--

µg/L = micrograms per liter

-- = The chemical was not analyzed or no value was available.

Data Qualifiers:

Blank (i.e., no qualifier) = the chemical was detected.

B = The chemical was detected in a corresponding blank and the result is considered not detected at the concentration indicated.

J = The chemical was detected but the concentration reported is an estimated value.

U = The chemical was not detected.

Bold values are detected target analytes

TABLE 5-4

UXO 15 - OLD SKEET AND TRAP RANGE
IDENTIFICATION OF HUMAN HEALTH COPCs IN GROUNDWATER SAMPLES
PHASE 2 SITE INSPECTION
FIVE SMALL ARMS/SKEET RANGES ON STUMP NECK ANNEX
NAVAL SUPPORT FACILITY INDIAN HEAD, MARYLAND

Chemical	Frequency of Detection	Minimum NonDetect Concentration	Maximum NonDetect Concentration	Minimum Detected Concentration	Average of Detected Samples	Maximum Detected Concentration	Sample with Maximum Detected Concentration	Risk-Based Screening Levels for Tapwater		USEPA Maximum Contaminant Level	Lowest Risk-Based Screening Level	Human Health COPC?
								Cancer Risk (10^{-6})	Noncancer Hazard Index (0.1)			
Total Inorganics (µg/L)												
ANTIMONY	3/3	-	-	0.16 J	0.410	0.91	X15GW0020911	NA	**6.0E-01**	6.0E+00	**6.0E-01**	YES
LEAD	2/2	-	-	10.4	16.1	21.8	X15GW0020911	NA	NA	**1.5E+01**	**1.5E+01**	YES
Dissolved Inorganics (µg/L)												
ANTIMONY	3/3	-	-	0.17 J	0.333	0.58	X15GW0020911-F	NA	6.0E-01	6.0E+00	6.0E-01	NO
LEAD	2/2	-	-	0.17 J	0.325	0.48 J	X15GW0030911-F	NA	NA	1.5E+01	1.5E+01	NO
Polycylic Aromatic Hydrocarbons (µg/L)												
BENZO(A)ANTHRACENE	1/1	-	-	0.25	NA	0.25	X15GW0010911	**2.9E-02**	NA	NA	**2.9E-02**	YES
BENZO(A)PYRENE	1/1	-	-	0.31	NA	0.31	X15GW0010911	**2.9E-03**	NA	**2.0E-01**	**2.9E-03**	YES
BENZO(B)FLUORANTHENE	1/1	-	-	0.49	NA	0.49	X15GW0010911	**2.9E-02**	NA	NA	**2.9E-02**	YES
BENZO(G,H,I)PERYLENE	1/1	-	-	0.26	NA	0.26	X15GW0010911	NA	8.7E+00	NA	8.7E+00	NO
BENZO(K)FLUORANTHENE	1/1	-	-	0.36	NA	0.36	X15GW0010911	**2.9E-01**	NA	NA	**2.9E-01**	YES
CHRYSENE	1/1	-	-	0.25	NA	0.25	X15GW0010911	2.9E+00	NA	NA	2.9E+00	NO
DIBENZO(A,H)ANTHRACENE	1/1	-	-	0.14 J	NA	0.14 J	X15GW0010911	**2.9E-03**	NA	NA	**2.9E-03**	YES
FLUORANTHENE	1/1	-	-	0.24	NA	0.24	X15GW0010911	NA	6.3E+01	NA	6.3E+01	NO
INDENO(1,2,3-CD)PYRENE	1/1	-	-	0.24	NA	0.24	X15GW0010911	**2.9E-02**	NA	NA	**2.9E-02**	YES
PHENANTHRENE	1/1	-	-	0.16 J	NA	0.16 J	X15GW0010911	NA	8.7E+00	NA	8.7E+00	NO
PYRENE	1/1	-	-	0.22	NA	0.22	X15GW0010911	NA	8.7E+00	NA	8.7E+00	NO

Shaded criterion indicates that the maximum detected concentration exceeds one or more screening criteria. Shaded chemical name indicates that the chemical was retained as a COPC.

Abbreviations:
COPC - Chemical of Potential Concern
J - Estimated value
NA - Not applicable
µg/L = micrograms per liter

TABLE 5-5

UXO 15 - OLD SKEET AND TRAP RANGE
RISKS AND HAZARD INDICES FOR DIRECT CONTACT EXPOSURE TO GROUNDWATER
PHASE 2 SITE INSPECTION
FIVE SMALL ARMS/SKEET RANGES ON STUMP NECK ANNEX
NAVAL SUPPORT FACILITY INDIAN HEAD, MARYLAND

Chemical	Exposure Point Concentration [1]	Cancer Risk		Noncancer Risk		
		USEPA RSL[2]	Estimated ILCR	USEPA RSL[2]	Target Organ	Estimated HQ
Total Inorganics (µg/L)						
ANTIMONY	0.91	NA	NA	6.0E+00	Blood	0.2
LEAD	21.8	NA	NA	NA	NA	NA
Polycylic Aromatic Hydrocarbons (µg/L)						
BENZO(A)ANTHRACENE	0.25	2.9E-02	9E-06	NA	NA	NA
BENZO(A)PYRENE	0.31	2.9E-03	1E-04	NA	NA	NA
BENZO(B)FLUORANTHENE	0.49	2.9E-02	2E-05	NA	NA	NA
BENZO(K)FLUORANTHENE	0.36	2.9E-01	1E-06	NA	NA	NA
DIBENZO(A,H)ANTHRACENE	0.14 J	2.9E-03	5E-05	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	0.24	2.9E-02	8E-06	NA	NA	NA
		Total ILCR =	2.E-04		**Total HI =**	0.2

[1] - Maximum concentration was used as the exposure point concentration.
[2] - Source: USEPA, November 2011. Tapwater Screening Values. Values correspond to cancer risk level of 1x10-6 or hazard quotient of 1.

HI - Hazard Index
HQ - Hazard Quotient
ILCR - Incremental Lifetime Cancer Risk
J - Estimated Value
NA - Not available/Not applicable
RSL - Regional Screening Level
µg/L - micrograms per liter

TABLE 5-6

UXO 15 - OLD SKEET AND TRAP RANGE
HUMAN HEALTH CSM SUMMARY
PHASE 2 SITE INSPECTION
FIVE SMALL ARMS/SKEET RANGES ON STUMP NECK ANNEX
NAVAL SUPPORT FACILITY INDIAN HEAD, MARYLAND

Pathways Associated with Groundwater at Old Skeet and Trap Range (UXO 15)

	Are Direct Contact Exposures to Groundwater Acceptable?						
	Residential			Non-Residential (e.g., Construction Worker)			
Area of Interest	Risk	Haz. Index	Lead	Risk	Haz. Index	Lead	Comment
Groundwater Underlying UXO 15	No (PAHs)	Yes	No	Yes	Yes	Yes	Sample turbidity may be impacting chemical concentrations in groundwater.

Notes:

Chemicals in parentheses are responsible for unacceptable risks or hazard indices.

PAHs = polycyclic aromatic hydrocarbons

TABLE 6-1

UXO 16 - RUM POINT SKEET RANGE
TEMPORARY WELL CONSTRUCTION AND WATER LEVEL DATA
PHASE 2 SITE INSPECTION
FIVE SMALL ARMS/SKEET RANGES ON STUMP NECK ANNEX
NAVAL SUPPORT FACILITY INDIAN HEAD, MARYLAND

Well Number	GPS Survey Coordinates		Riser Stick Up (ft)	Depth to Water (ft below tor)	Depth to Water (ft bgs)	Total Well Depth (ft bgs)	Screen Interval (ft bgs)	Screen Length (ft)	Date Installed	Date Abandoned
	Easting	Northing								
X16GW001	1256856.157	323047.645	3.00	5.7	2.70	27	12 - 27	15	09/29/11	10/01/11
X16GW002	1256508.042	323093.7885	1.95	7.41	5.46	18	8.05 - 18.05	10	09/30/11	10/01/11

GPS = Global Positioning System
tor = top of riser
ft = feet
bgs = below ground surface

TABLE 6-2

UXO 16 – RUM POINT SKEET RANGE
SUMMARY OF GROUNDWATER SAMPLES COLLECTED
PHASE 2 SITE INSPECTION
FIVE SMALL ARMS/SKEET RANGES ON STUMP NECK ANNEX
NAVAL SUPPORT FACILITY INDIAN HEAD, MARYLAND

Location	Sample Number	Date Collected	Depth[(1)] Collected (feet)	Analyses
X16GW001	X16GW0011011	10/01/11	12 - 27	Low level PAHs, and antimony (total and dissolved)
X16GW002	X16GW0021011	10/01/11	8.05 - 18.05	Lead and antimony (total and dissolved)

PAH = Polycyclic aromatic hydrocarbon.
(1) Top and bottom of the screen interval, as measured below the ground surface.

TABLE 6-3

UXO 16 - RUM POINT SKEET RANGE
ANALYTICAL RESULTS
PHASE 2 SITE INSPECTION
FIVE SMALL ARMS/SKEET RANGES ON STUMP NECK ANNEX
NAVAL SUPPORT FACILITY INDIAN HEAD, MARYLAND

LOCATION	X16GW001	X16GW002
SAMPLE ID	X16GW0011011	X16GW0021011
SAMPLE DATE	10/1/2011	10/1/2011
Total Metals (µg/L)		
Antimony	**0.097 J**	**0.28**
Arsenic	--	--
Copper	--	--
Lead	--	**3.9 J**
Dissolved Metals (µg/L)		
Antimony	**0.066 J**	**0.44 J**
Arsenic	--	--
Copper	--	--
Lead	--	**1.7**
Explosives (µg/L)		
Nitroglycerin	--	--
Polycyclic Aromatic Hydrocarbons (µg/L)		
2-Methylnaphthalene	0.12 U	--
Acenaphthene	0.12 U	--
Acenaphthylene	0.12 U	--
Anthracene	0.1 U	--
Benzo(a)anthracene	0.14 U	--
Benzo(a)pyrene	0.14 U	--
Benzo(b)fluoranthene	0.12 U	--
Benzo(g,h,i)perylene	0.16 U	--
Benzo(k)fluoranthene	0.14 U	--
Chrysene	0.1 U	--
Dibenzo(a,h)anthracene	0.1 U	--
Fluoranthene	0.16 U	--
Fluorene	0.12 U	--
Indeno(1,2,3-c,d)pyrene	0.14 U	--
Naphthalene	0.1 U	--
Phenanthrene	0.14 U	--
Pyrene	0.16 U	--

µg/L = micrograms per liter

-- = The chemical was not analyzed or no value was available.

Data Qualifiers:

Blank (i.e., no qualifier) = the chemical was detected.

J = The chemical was detected but the concentration reported is an estimated value.

U = The chemical was not detected.

Bold values are detected target analytes

TABLE 6-4

UXO 16 - RUM POINT SKEET RANGE
IDENTIFICATION OF HUMAN HEALTH COPCs IN GROUNDWATER SAMPLES
PHASE 2 SITE INSPECTION
FIVE SMALL ARMS/SKEET RANGES ON STUMP NECK ANNEX
NAVAL SUPPORT FACILITY INDIAN HEAD, MARYLAND

Chemical	Frequency of Detection	Minimum NonDetect Concentration	Maximum NonDetect Concentration	Minimum Detected Concentration	Average of Detected Samples	Maximum Detected Concentration	Sample with Maximum Detected Concentration	Risk-Based Screening Levels for Tapwater		USEPA Maximum Contaminant Level	Lowest Risk-Based Screening Level	Human Health COPC?
								Cancer Risk (10^{-6})	Noncancer Hazard Index (0.1)			
Total Inorganics (µg/L)												
ANTIMONY	2/2	-	-	0.097 J	0.189	0.28	X16GW0021011	NA	6.0E-01	6.0E+00	6.0E-01	NO
LEAD	1/1	-	-	3.9	NA	3.9	X16GW0021011	NA	NA	1.5E+01	1.5E+01	NO
Dissolved Inorganics (µg/L)												
ANTIMONY	2/2	-	-	0.066 J	0.253	0.44	X16GW0021011-F	NA	6.0E-01	6.0E+00	6.0E-01	NO
LEAD	1/1	-	-	1.7	NA	1.7	X16GW0021011-F	NA	NA	1.5E+01	1.5E+01	NO

Abbreviations:
COPC - Chemical of Potential Concern
J - Estimated value
NA - Not applicable
µg/L = micrograms per liter

TABLE 6-5

UXO 16 - RUM POINT SKEET RANGE
HUMAN HEALTH CSM SUMMARY
PHASE 2 SITE INSPECTION
FIVE SMALL ARMS/SKEET RANGES ON STUMP NECK ANNEX
NAVAL SUPPORT FACILITY INDIAN HEAD, MARYLAND

Pathways Associated with Groundwater at Rum Point Skeet Range (UXO 16)

	Are Direct Contact Exposures to Groundwater Acceptable?						
	Residential			Non-Residential (e.g., Construction Worker)			
Area of Interest	Risk	Haz. Index	Lead	Risk	Haz. Index	Lead	Comment
Groundwater underlying UXO 16	Yes	Yes	Yes	Yes	Yes	Yes	No Chemicals of Potential Concern identified in groundwater.

TABLE 7-1

UXO 17 - SMALL ARMS (PISTOL) RANGE
TEMPORARY WELL CONSTRUCTION AND WATER LEVEL DATA
PHASE 2 SITE INSPECTION
FIVE SMALL ARMS/SKEET RANGES ON STUMP NECK ANNEX
NAVAL SUPPORT FACILITY INDIAN HEAD, MARYLAND

Well Number	GPS Survey Coordinates		Riser Stick Up (ft)	Depth to Water (ft below tor)	Depth to Water (ft bgs)	Total Well Depth (ft bgs)	Screen Interval (ft bgs)	Screen Length (ft)	Date Installed	Date Abandoned
	Easting	Northing								
X17GW001	1256725.567	321493.5246	0.60	7.5	6.90	20	9.4 - 19.4	10	09/29/11	10/01/11

GPS = Global Positioning System
tor = top of riser
ft = feet
bgs = below ground surface

TABLE 7-2

UXO 17 – SMALL ARMS (PISTOL) RANGE
SUMMARY OF GROUNDWATER SAMPLES COLLECTED
PHASE 2 SITE INSPECTION
FIVE SMALL ARMS/SKEET RANGES ON STUMP NECK ANNEX
NAVAL SUPPORT FACILITY INDIAN HEAD, MARYLAND

Location	Sample Number	Date Collected	Depth[(1)] Collected (feet)	Analyses
X17GW001	X17GW0011011	10/01/11	9.4 - 19.4	Nitroglycerin, and total and dissolved: antimony, arsenic, and lead.
	DUP03100111	10/01/11	9.4 - 19.4	Total and dissolved: antimony, arsenic, and lead.

[(1)] Top and bottom of the screen interval, as measured below the ground surface.

TABLE 7-3

UXO 17 - SMALL ARMS (PISTOL) RANGE
ANALYTICAL RESULTS
PHASE 2 SITE INSPECTION
FIVE SMALL ARMS/SKEET RANGES ON STUMP NECK ANNEX
NAVAL SUPPORT FACILITY INDIAN HEAD, MARYLAND

LOCATION	**X17GW001**
SAMPLE ID	**X17GW0011011**
SAMPLE DATE	**10/1/2011**
Total Metals (µg/L)	
Antimony	**0.29**
Arsenic	**0.41**
Copper	--
Lead	**4.2 J**
Dissolved Metals (µg/L)	
Antimony	**0.92 J**
Arsenic	**0.26**
Copper	--
Lead	**0.45 J**
Explosives (µg/L)	
Nitroglycerin	0.26 U
Polycyclic Aromatic Hydrocarbons (µg/L)	
2-Methylnaphthalene	--
Acenaphthene	--
Acenaphthylene	--
Anthracene	--
Benzo(a)anthracene	--
Benzo(a)pyrene	--
Benzo(b)fluoranthene	--
Benzo(g,h,i)perylene	--
Benzo(k)fluoranthene	--
Chrysene	--
Dibenzo(a,h)anthracene	--
Fluoranthene	--
Fluorene	--
Indeno(1,2,3-c,d)pyrene	--
Naphthalene	--
Phenanthrene	--
Pyrene	--

µg/L = micrograms per liter

-- = The chemical was not analyzed or no value was available.

Data Qualifiers:

Blank (i.e., no qualifier) = the chemical was detected.

J = The chemical was detected but the concentration reported is an estimated value.

U = The chemical was not detected.

Bold values are detected target analytes

TABLE 7-4

UXO 17 - SMALL ARMS (PISTOL) RANGE
IDENTIFICATION OF HUMAN HEALTH COPCs IN GROUNDWATER SAMPLES
PHASE 2 SITE INSPECTION
FIVE SMALL ARMS/SKEET RANGES ON STUMP NECK ANNEX
NAVAL SUPPORT FACILITY INDIAN HEAD, MARYLAND

Chemical	Frequency of Detection	Minimum NonDetect Concentration	Maximum NonDetect Concentration	Minimum Detected Concentration	Average of Detected Samples	Maximum Detected Concentration	Sample with Maximum Detected Concentration	Risk-Based Screening Levels for Tapwater		USEPA Maximum Contaminant Level	Lowest Risk-Based Screening Level	Human Health COPC?
								Cancer Risk (10^{-6})	Noncancer Hazard Index (0.1)			
Total Inorganics (µg/L)												
ANTIMONY	1/1	-	-	0.29	NA	0.29	X17GW0011011	NA	6.0E-01	6.0E+00	6.0E-01	NO
ARSENIC	1/1	-	-	0.41	NA	0.41	X17GW0011011	**4.5E-02**	4.7E-01	1.0E+01	**4.5E-02**	YES
LEAD	1/1	-	-	4.2	NA	4.2	X17GW0011011	NA	NA	1.5E+01	1.5E+01	NO
Dissolved Inorganics (µg/L)												
ANTIMONY	1/1	-	-	0.92	NA	0.92	X17GW0011011-F	NA	**6.0E-01**	6.0E+00	**6.0E-01**	YES
ARSENIC	1/1	-	-	0.26	NA	0.26	X17GW0011011-F	**4.5E-02**	4.7E-01	1.0E+01	**4.5E-02**	YES
LEAD	1/1	-	-	0.45 J	NA	0.45 J	X17GW0011011-F	NA	NA	1.5E+01	1.5E+01	NO

Shaded criterion indicates that the maximum detected concentration exceeds one or more screening criteria. Shaded chemical name indicates that the chemical was retained as a COPC.

Abbreviations:
COPC - Chemical of Potential Concern
J - Estimated value
NA - Not applicable
µg/L = micrograms per liter

TABLE 7-5

UXO 17 - SMALL ARMS (PISTOL) RANGE
RISKS AND HAZARD INDICES FOR DIRECT CONTACT EXPOSURE TO GROUNDWATER
PHASE 2 SITE INSPECTION
FIVE SMALL ARMS/SKEET RANGES ON STUMP NECK ANNEX
NAVAL SUPPORT FACILITY INDIAN HEAD, MARYLAND

Chemical	Exposure Point Concentration [1]	Cancer Risk		Noncancer Risk		
		USEPA RSL[2]	Estimated ILCR	USEPA RSL[2]	Target Organ	Estimated HQ
Total Inorganics (µg/L)						
ARSENIC	0.41	4.5E-02	9E-06	4.7E+00	Cardiovascular, Skin	0.09
		Total ILCR =	9.E-06		**Total HI =**	0.1
Dissolved Inorganics (µg/L)						
ANTIMONY	0.92	NA	NA	6.0E+00	Blood	0.2
ARSENIC	0.26	4.5E-02	6E-06	4.7E+00	Cardiovascular, Skin	0.06
		Total ILCR =	6.E-06		**Total HI =**	0.2

[1] - Maximum concentration was used as the exposure point concentration.

[2] - Source: USEPA, November 2011. Tapwater Screening Values. Values correspond to cancer risk level of 1x10-6 or hazard quotient of 1.

HI - Hazard Index
HQ - Hazard Quotient
ILCR - Incremental Lifetime Cancer Risk
NA - Not available/Not applicable
RSL - Regional Screening Level
µg/L - micrograms per liter

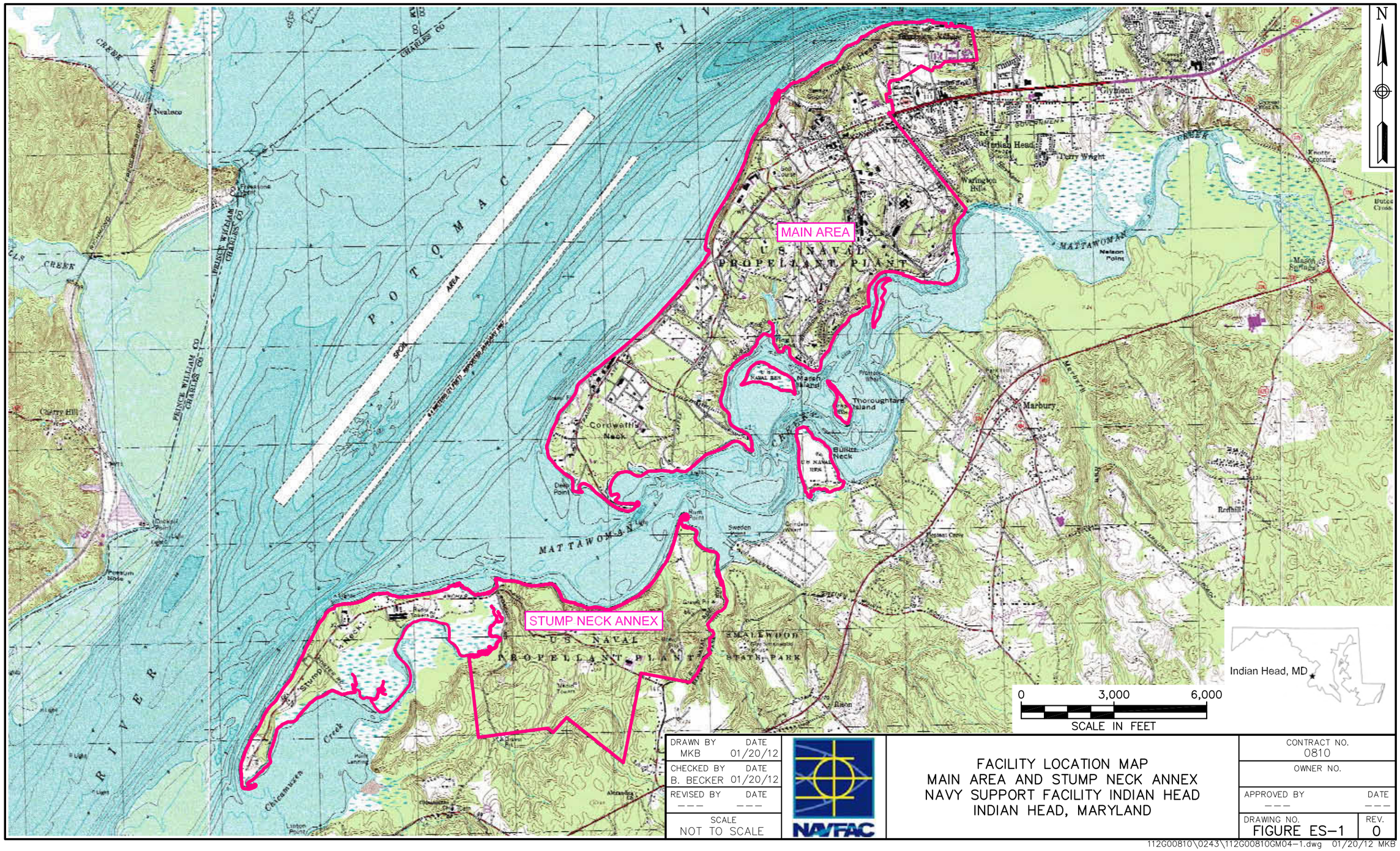
TABLE 7-6

UXO 17 - SMALL ARMS (PISTOL) RANGE
HUMAN HEALTH CSM SUMMARY
PHASE 2 SITE INSPECTION
FIVE SMALL ARMS/SKEET RANGES ON STUMP NECK ANNEX
NAVAL SUPPORT FACILITY INDIAN HEAD, MARYLAND

Pathways Associated with Groundwater at Small Arms Range (UXO 17)

	Are Direct Contact Exposures to Groundwater Acceptable?						
	Residential			Non-Residential (e.g., Construction Worker)			
Area of Interest	**Risk**	**Haz. Index**	**Lead**	**Risk**	**Haz. Index**	**Lead**	**Comment**
Groundwater Underlying UXO 17	Yes	Yes	Yes	Yes	Yes	Yes	Arsenic and antimony selected as Chemicals of Potential Concern. However, no exceedances of risk management benchmarks.

FIGURES



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CHECKED BY B. BECKER	DATE 01/20/12
REVISED BY ---	DATE ---
SCALE NOT TO SCALE	

NAVFAC

FACILITY LOCATION MAP
MAIN AREA AND STUMP NECK ANNEX
NAVY SUPPORT FACILITY INDIAN HEAD
INDIAN HEAD, MARYLAND

CONTRACT NO. 0810	
OWNER NO.	
APPROVED BY ---	DATE ---
DRAWING NO. FIGURE ES-1	REV. 0

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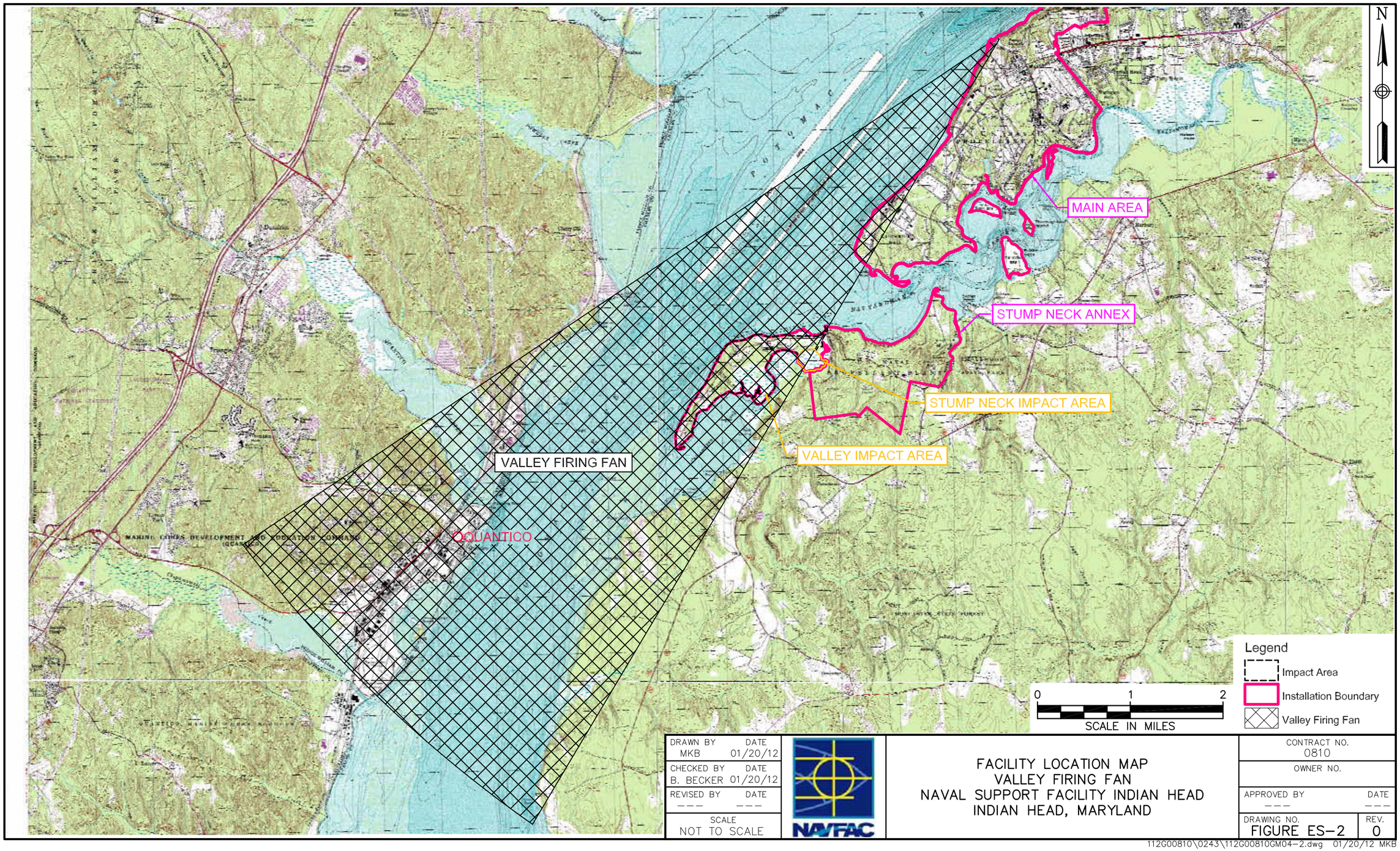

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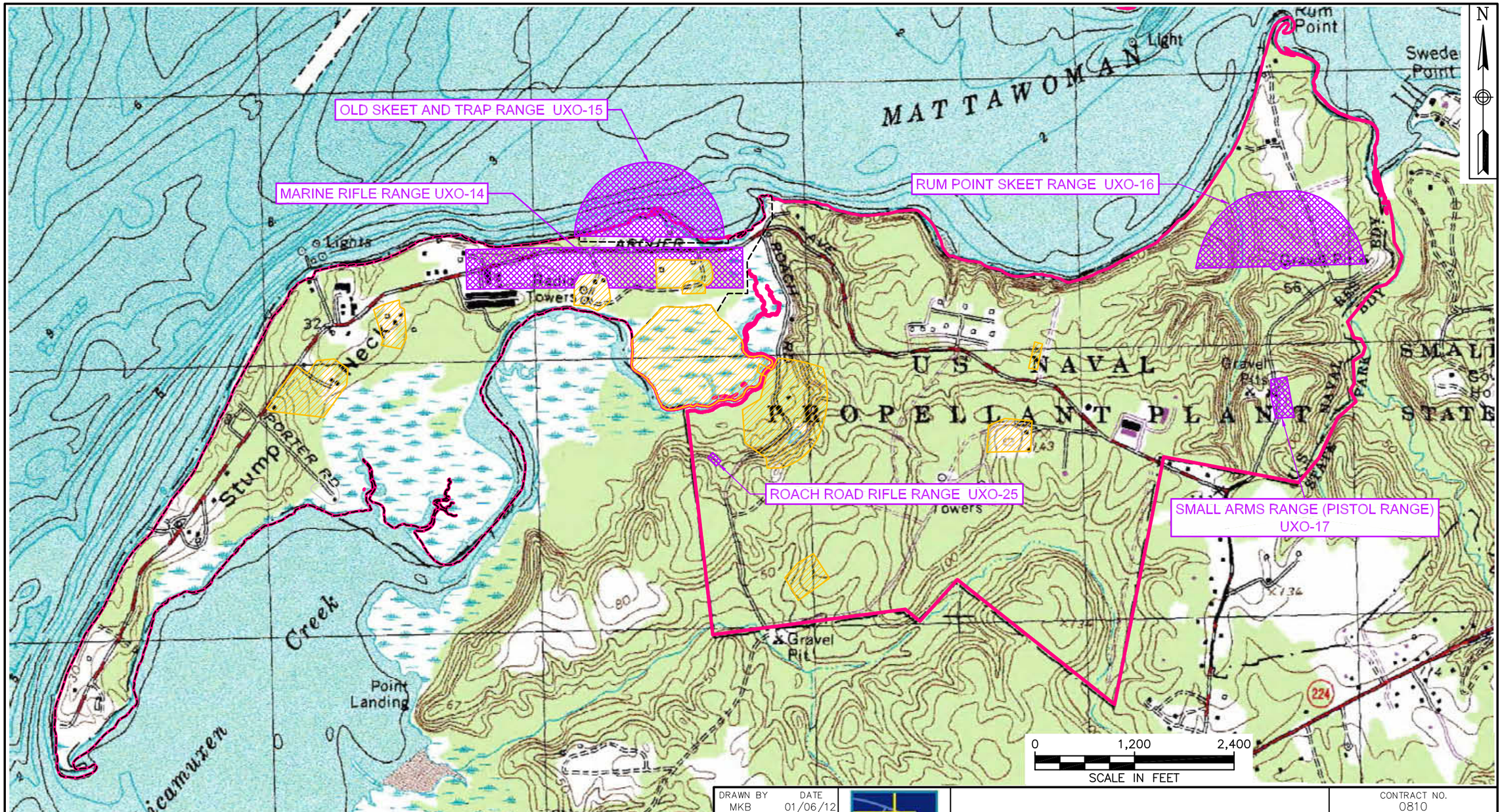
CHECKED BY B. BECKER	DATE 01/20/12	
REVISED BY ---	DATE ---	
SCALE NOT TO SCALE		

NAVFAC

FACILITY LOCATION MAP
VALLEY FIRING FAN
NAVAL SUPPORT FACILITY INDIAN HEAD
INDIAN HEAD, MARYLAND

CONTRACT NO. 0810	
OWNER NO.	
APPROVED BY ---	DATE ---
DRAWING NO. FIGURE ES-2	REV. 0

112G00810\0243\112G00810GM04-2.dwg 01/20/12 MKB



Legend

- MRP Site Boundary - Small Arms/Skeet Range
- MRP Site Boundary - MEC Site Not Included In This Investigation
- Boundary Of Site Within Valley Firing Fan
- Installation Boundary

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CHECKED BY / DATE	B. BECKER 01/06/12
REVISED BY / DATE	--- ---
SCALE	NOT TO SCALE

NAVFAC

SMALL ARMS/SKEET RANGE LOCATION MAP
NAVAL SUPPORT FACILITY INDIAN HEAD
INDIAN HEAD, MARYLAND

CONTRACT NO.	0810
OWNER NO.	
APPROVED BY / DATE	--- ---
DRAWING NO.	FIGURE ES-3
REV.	0

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Legend

- Actual Groundwater Sampling Location
- Proposed Monitoring Well Location (Sample for Nitroglycerin, Antimony, Copper)
- Proposed Monitoring Well Location (Sample for Copper, Lead)

Soil XRF or Predicted Lab Value (Lead)

- < 400 mg/kg
- 400 - 800 mg/kg
- > 800 mg/kg

Soil Lab Results (Lead)

- < 400 mg/kg
- 400 - 800 mg/kg
- > 800 mg/kg
- MRP Area Boundary Identified during PA
- MRP Area Boundary from Inventory
- Topographic Contour (5-ft)
- Wetland

Aerial Photo: 2004, Charles County
NAD 1983 SP Maryland (coordinates in feet)

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MK BOND	01/20/12
CHECKED BY	DATE
B. BECKER	01/20/12
REVISED BY	DATE
SCALE	AS NOTED

NAVFAC

MARINE RIFLE RANGE (UXO 14)
GROUNDWATER SAMPLING LOCATIONS
NAVAL SUPPORT FACILITY INDIAN HEAD
STUMP HEAD ANNEX
INDIAN HEAD, MARYLAND

CONTRACT NUMBER	0810
OWNER NO.	—
APPROVED BY	DATE
FIGURE NO.	FIGURE 3-1
REV	0

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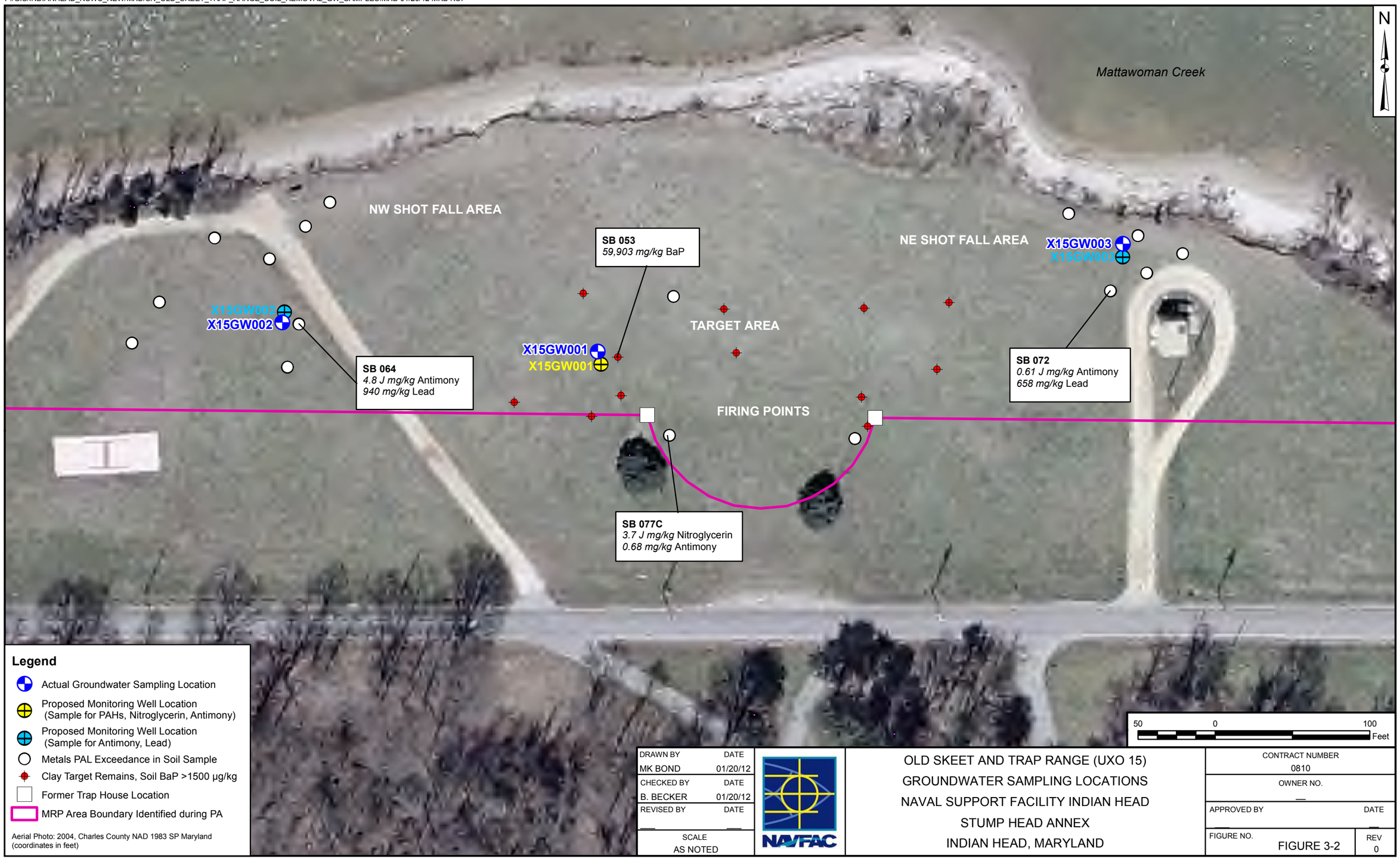

Legend

- Actual Groundwater Sampling Location
- Proposed Monitoring Well Location (Sample for PAHs, Nitroglycerin, Antimony)
- Proposed Monitoring Well Location (Sample for Antimony, Lead)
- Metals PAL Exceedance in Soil Sample
- Clay Target Remains, Soil BaP >1500 µg/kg
- Former Trap House Location
- MRP Area Boundary Identified during PA

Aerial Photo: 2004, Charles County NAD 1983 SP Maryland (coordinates in feet)

DRAWN BY	DATE
MK BOND	01/20/12
CHECKED BY	DATE
B. BECKER	01/20/12
REVISED BY	DATE
—	—
SCALE	
AS NOTED	

NAVFAC

OLD SKEET AND TRAP RANGE (UXO 15)
GROUNDWATER SAMPLING LOCATIONS
NAVAL SUPPORT FACILITY INDIAN HEAD
STUMP HEAD ANNEX
INDIAN HEAD, MARYLAND

CONTRACT NUMBER	0810
OWNER NO.	—
APPROVED BY	DATE
—	—
FIGURE NO.	REV
FIGURE 3-2	0

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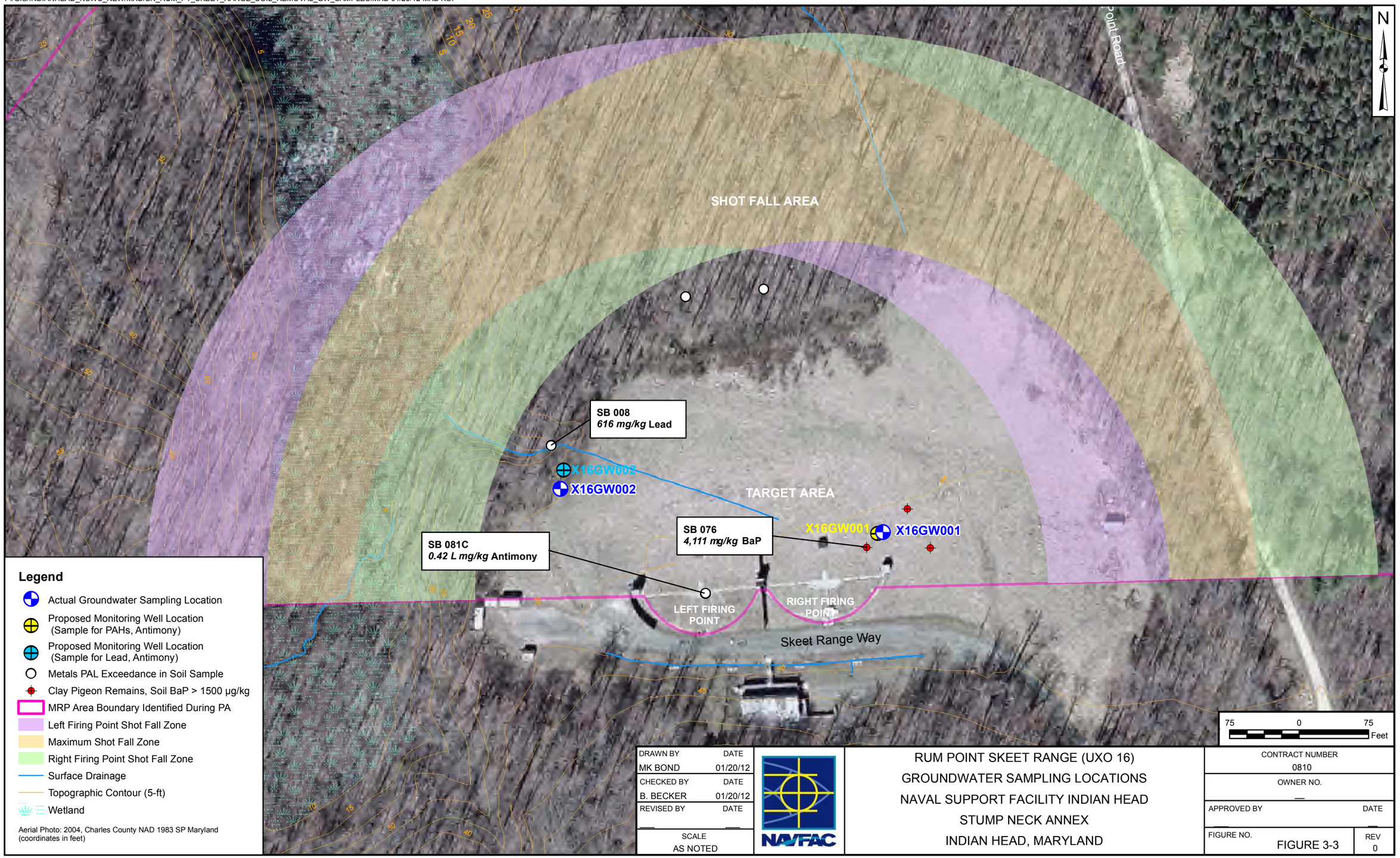

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MK BOND	01/20/12
CHECKED BY	DATE
B. BECKER	01/20/12
REVISED BY	DATE
SCALE	AS NOTED

NAVFAC

RUM POINT SKEET RANGE (UXO 16)
GROUNDWATER SAMPLING LOCATIONS
NAVAL SUPPORT FACILITY INDIAN HEAD
STUMP NECK ANNEX
INDIAN HEAD, MARYLAND

CONTRACT NUMBER	0810
OWNER NO.	—
APPROVED BY	DATE
FIGURE NO.	FIGURE 3-3
REV	0

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Legend

- Actual Groundwater Sampling Location
- Proposed Monitoring Well Location (Sample for Nitroglycerin, Antimony, Arsenic, Lead)

Soil XRF Results (Lead)

- < 400
- 400 - 800 mg/kg
- > 800 mg/kg

Soil Lab Results (Lead)

- < 400 mg/kg
- 400 - 800 mg/kg
- Firing Line
- MRP Area Boundary Identified during PA
- Surface Drainage
- Topographic Contour (5-ft)
- Firing Direction

Aerial Photo: 2004, Charles County NAD 1983 SP Maryland (coordinates in feet)

DRAWN BY	DATE
MK BOND	01/17/12
CHECKED BY	DATE
B. BECKER	01/17/12
REVISED BY	DATE
—	—
SCALE	
AS NOTED	

NAVFAC

SMALL ARMS (PISTOL) RANGE (UXO 17)
GROUNDWATER SAMPLING LOCATION
NAVAL SUPPORT FACILITY INDIAN HEAD
STUMP NECK ANNEX
INDIAN HEAD, MARYLAND

CONTRACT NUMBER	0810
OWNER NO.	—
APPROVED BY	DATE —
FIGURE NO.	FIGURE 3-4
REV	0

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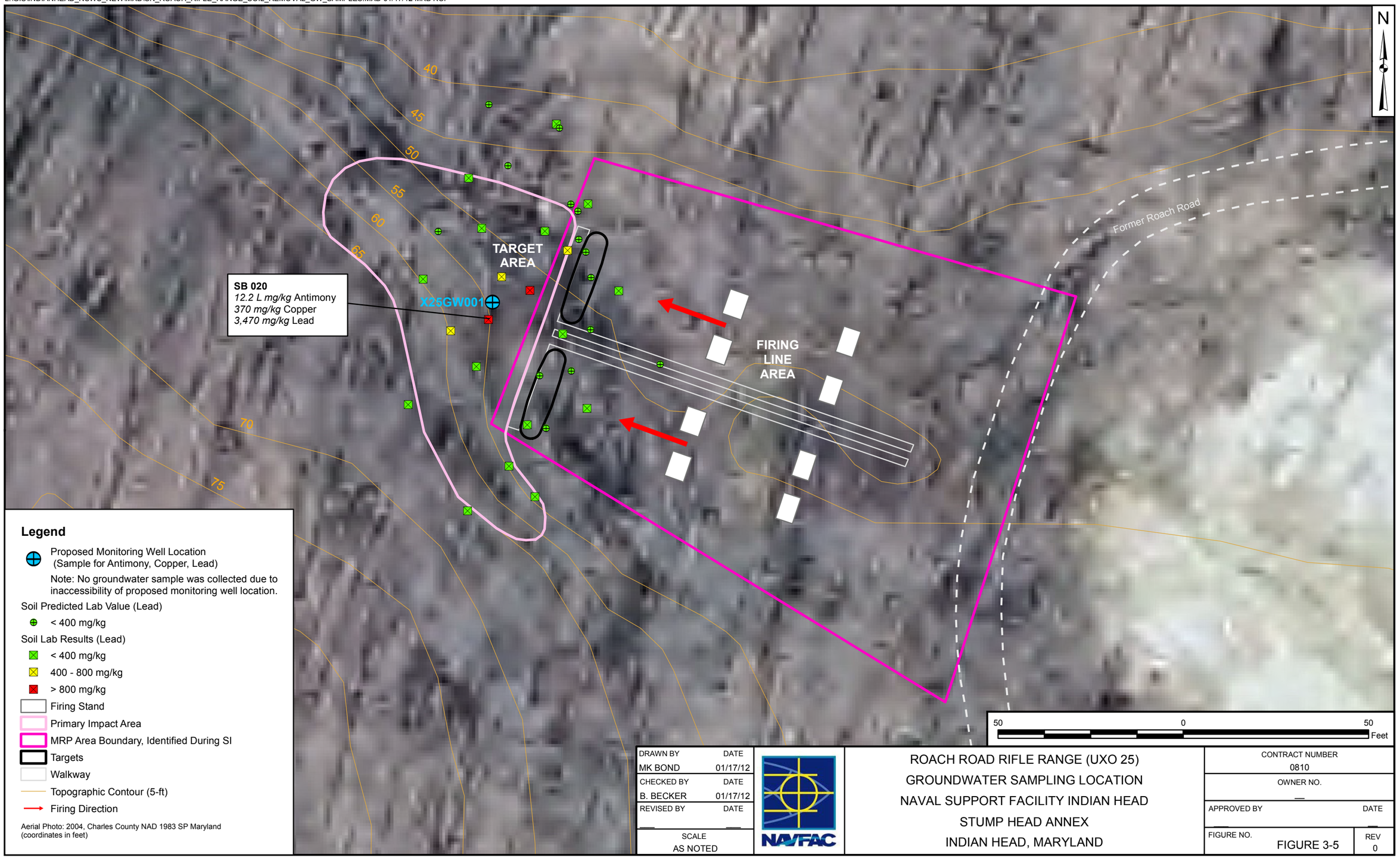

Legend

- Proposed Monitoring Well Location (Sample for Antimony, Copper, Lead)
  Note: No groundwater sample was collected due to inaccessibility of proposed monitoring well location.

Soil Predicted Lab Value (Lead)
- < 400 mg/kg

Soil Lab Results (Lead)
- < 400 mg/kg
- 400 - 800 mg/kg
- > 800 mg/kg
- Firing Stand
- Primary Impact Area
- MRP Area Boundary, Identified During SI
- Targets
- Walkway
- Topographic Contour (5-ft)
- Firing Direction

Aerial Photo: 2004, Charles County NAD 1983 SP Maryland (coordinates in feet)

DRAWN BY	DATE
MK BOND	01/17/12
CHECKED BY	DATE
B. BECKER	01/17/12
REVISED BY	DATE
SCALE	AS NOTED

NAVFAC

ROACH ROAD RIFLE RANGE (UXO 25)
GROUNDWATER SAMPLING LOCATION
NAVAL SUPPORT FACILITY INDIAN HEAD
STUMP HEAD ANNEX
INDIAN HEAD, MARYLAND

CONTRACT NUMBER	0810
OWNER NO.	—
APPROVED BY	DATE
FIGURE NO.	FIGURE 3-5
REV	0

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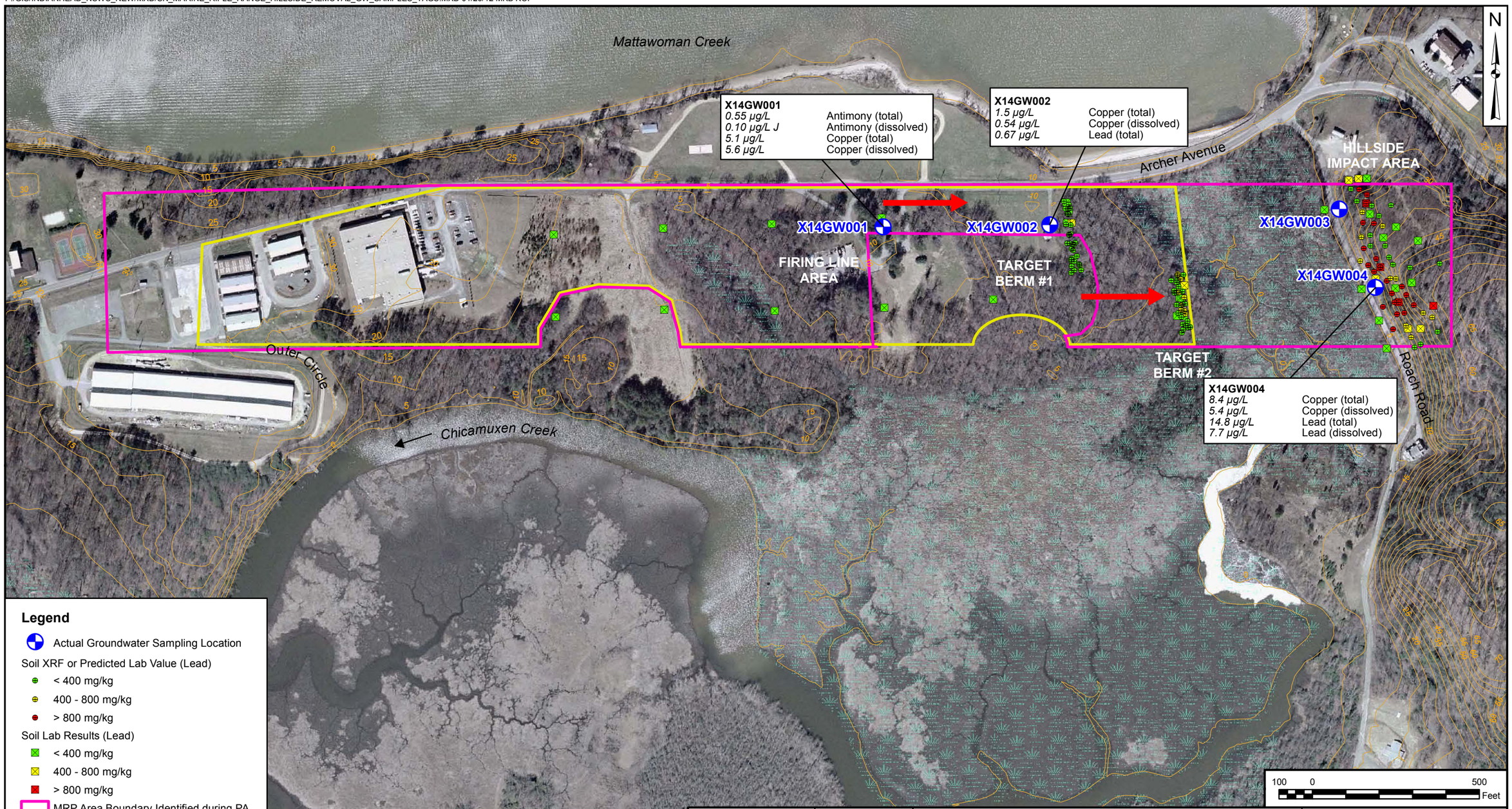

Legend

- Actual Groundwater Sampling Location

Soil XRF or Predicted Lab Value (Lead)

- < 400 mg/kg
- 400 - 800 mg/kg
- > 800 mg/kg

Soil Lab Results (Lead)

- < 400 mg/kg
- 400 - 800 mg/kg
- > 800 mg/kg
- MRP Area Boundary Identified during PA
- MRP Area Boundary from Inventory
- Topographic Contour (5-ft)
- Wetland

Aerial Photo: 2004, Charles County
NAD 1983 SP Maryland (coordinates in feet)

DRAWN BY	DATE
MK BOND	01/20/12
CHECKED BY	DATE
B. BECKER	01/20/12
REVISED BY	DATE
___	___
SCALE	
AS NOTED	

NAVFAC

MARINE RIFLE RANGE (UXO 14)
GROUNDWATER ANALYTICAL RESULTS
NAVAL SUPPORT FACILITY INDIAN HEAD
STUMP HEAD ANNEX
INDIAN HEAD, MARYLAND

CONTRACT NUMBER	
0810	
OWNER NO.	
___	
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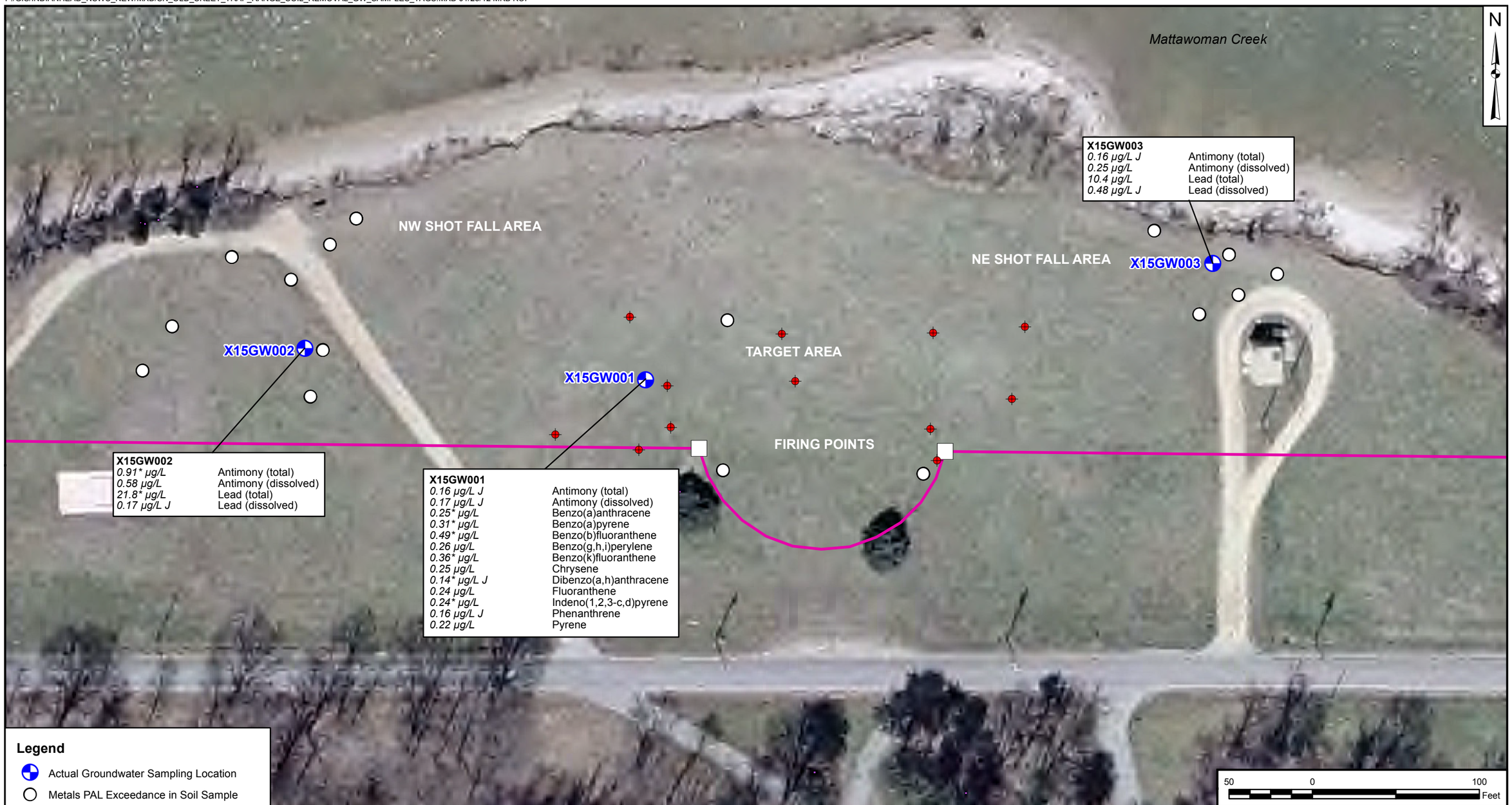
___	___
FIGURE NO. FIGURE 4-1	REV 0

P:/GIS/INDIANHEAD_NSWC_NEW/MXD/SN_OLD_SKEET_TRAP_RANGE_SOIL_REMOVAL_GW_SAMPLES_TAGS.MXD 01/23/12 MKB KOP



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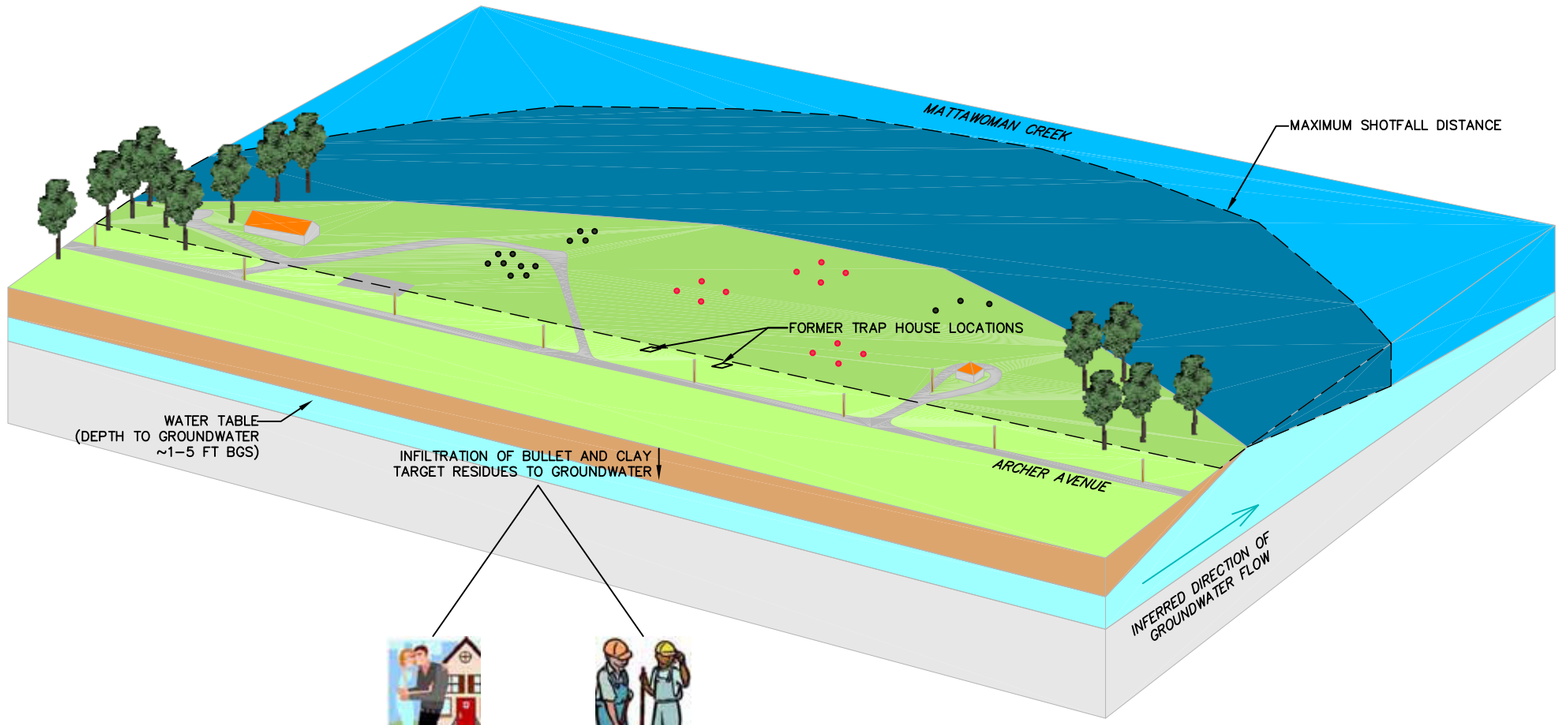
MK BOND	01/23/12
CHECKED BY	DATE
B. BECKER	01/23/12
REVISED BY	DATE
—	—
SCALE	
AS NOTED	

NAVFAC

OLD SKEET AND TRAP RANGE (UXO 15)
GROUNDWATER ANALYTICAL RESULTS
NAVAL SUPPORT FACILITY INDIAN HEAD
STUMP HEAD ANNEX
INDIAN HEAD, MARYLAND

CONTRACT NUMBER	0810
OWNER NO.	—
APPROVED BY	DATE
—	—
FIGURE NO.	REV
FIGURE 5-1	0

PRECIPITATION



FUTURE RESIDENT
INGESTION OF AND
DERMAL CONTACT WITH
GROUNDWATER

CONSTRUCTION WORKER
INGESTION OF AND
DERMAL CONTACT WITH
GROUNDWATER

LEGEND

AREA OF LEAD SHOT ACCUMULATION

CLAY TARGET ACCUMULATIONS

DRAWN BY MKB	DATE 01/20/12
CHECKED BY B. BECKER	DATE 01/20/12
REVISED BY ---	DATE ---
SCALE NOT TO SCALE	

OLD SKEET AND TRAP RANGE (UXO 15)
CONCEPTUAL SITE MODEL
NAVAL SUPPORT FACILITY INDIAN HEAD
STUMP NECK ANNEX
INDIAN HEAD, MARYLAND

CONTRACT NO. 0810	
OWNER NO.	
APPROVED BY ---	DATE ---
DRAWING NO. FIGURE 5–2	REV. 0

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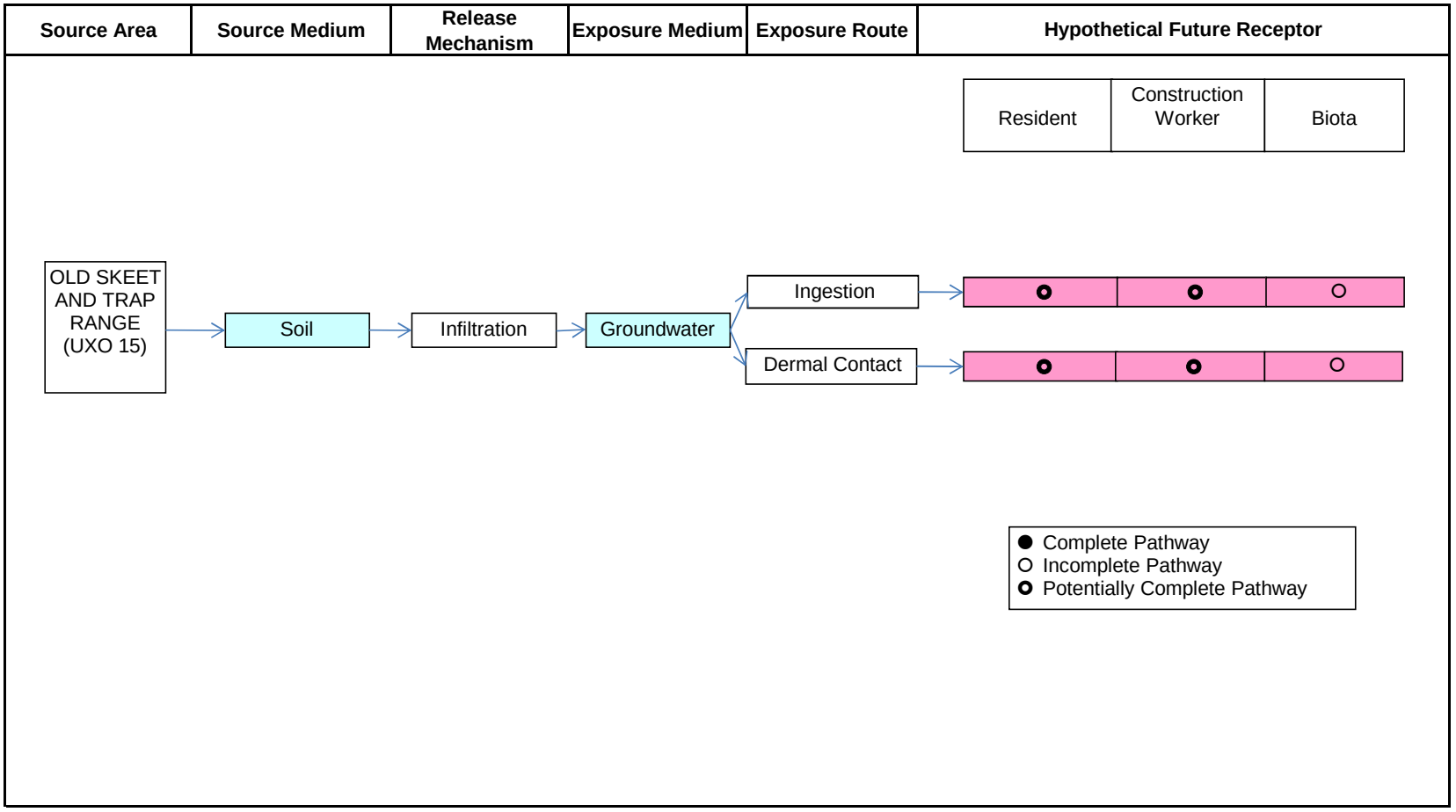
FIGURE 5-3

OLD SKEET AND TRAP RANGE (UXO 15)
EXPOSURE PATHWAY ANALYSIS (GROUNDWATER)
NAVAL SUPPORT FACILITY INDIAN HEAD
INDIAN HEAD, MARYLAND



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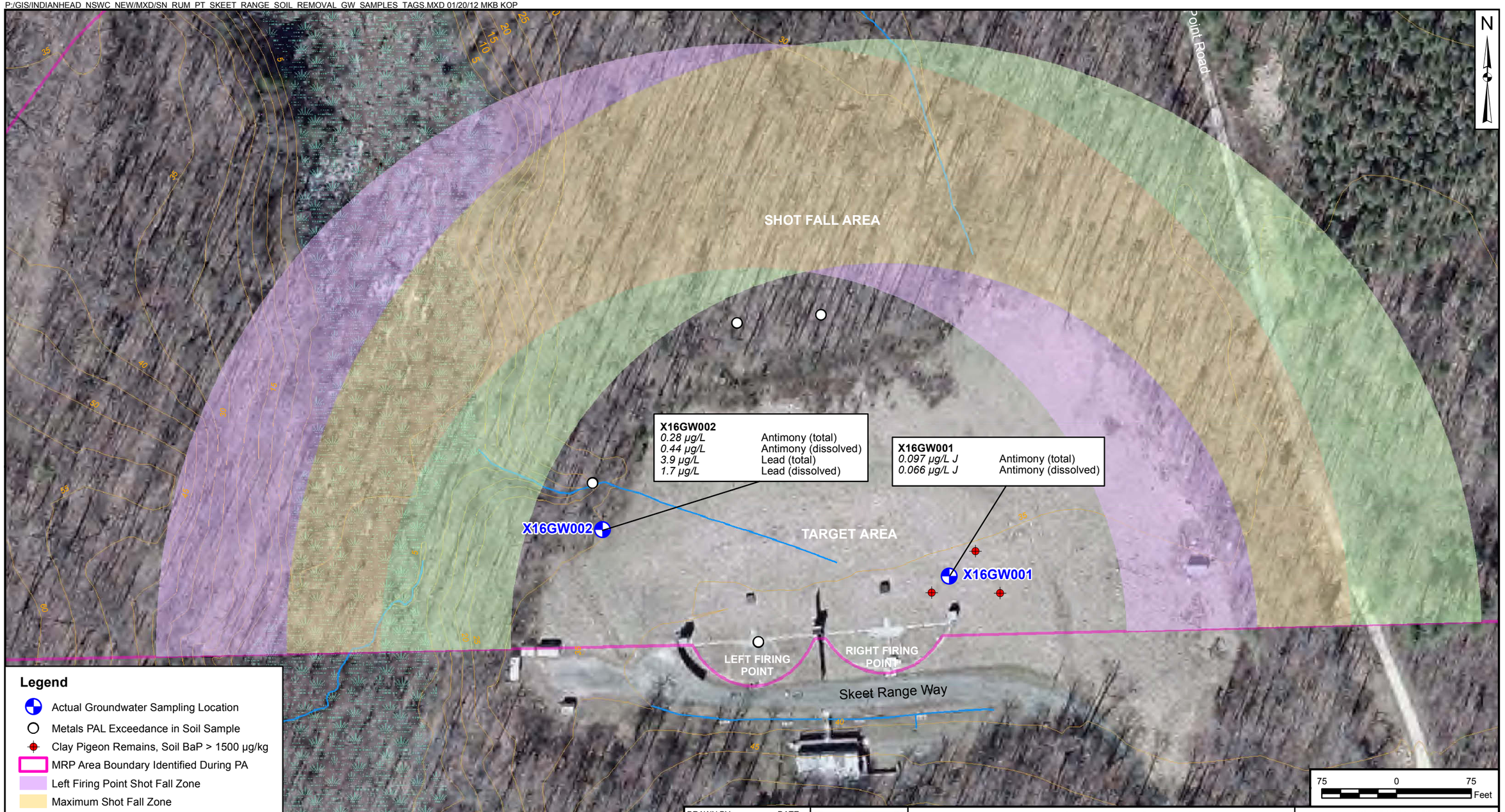

Legend

- Actual Groundwater Sampling Location
- Metals PAL Exceedance in Soil Sample
- Clay Pigeon Remains, Soil BaP > 1500 µg/kg
- MRP Area Boundary Identified During PA
- Left Firing Point Shot Fall Zone
- Maximum Shot Fall Zone
- Right Firing Point Shot Fall Zone
- Surface Drainage
- Topographic Contour (5-ft)
- Wetland

Aerial Photo: 2004, Charles County NAD 1983 SP Maryland (coordinates in feet)

DRAWN BY	DATE
MK BOND	01/20/12
CHECKED BY	DATE
B. BECKER	01/120/12
REVISED BY	DATE
—	—
SCALE	
AS NOTED	

NAVFAC

RUM POINT SKEET RANGE (UXO 16)
GROUNDWATER ANALYTICAL RESULTS
NAVAL SUPPORT FACILITY INDIAN HEAD
STUMP NECK ANNEX
INDIAN HEAD, MARYLAND

CONTRACT NUMBER	
0810	
OWNER NO.	
—	
APPROVED BY	DATE
—	—
FIGURE NO. FIGURE 6-1	REV 0

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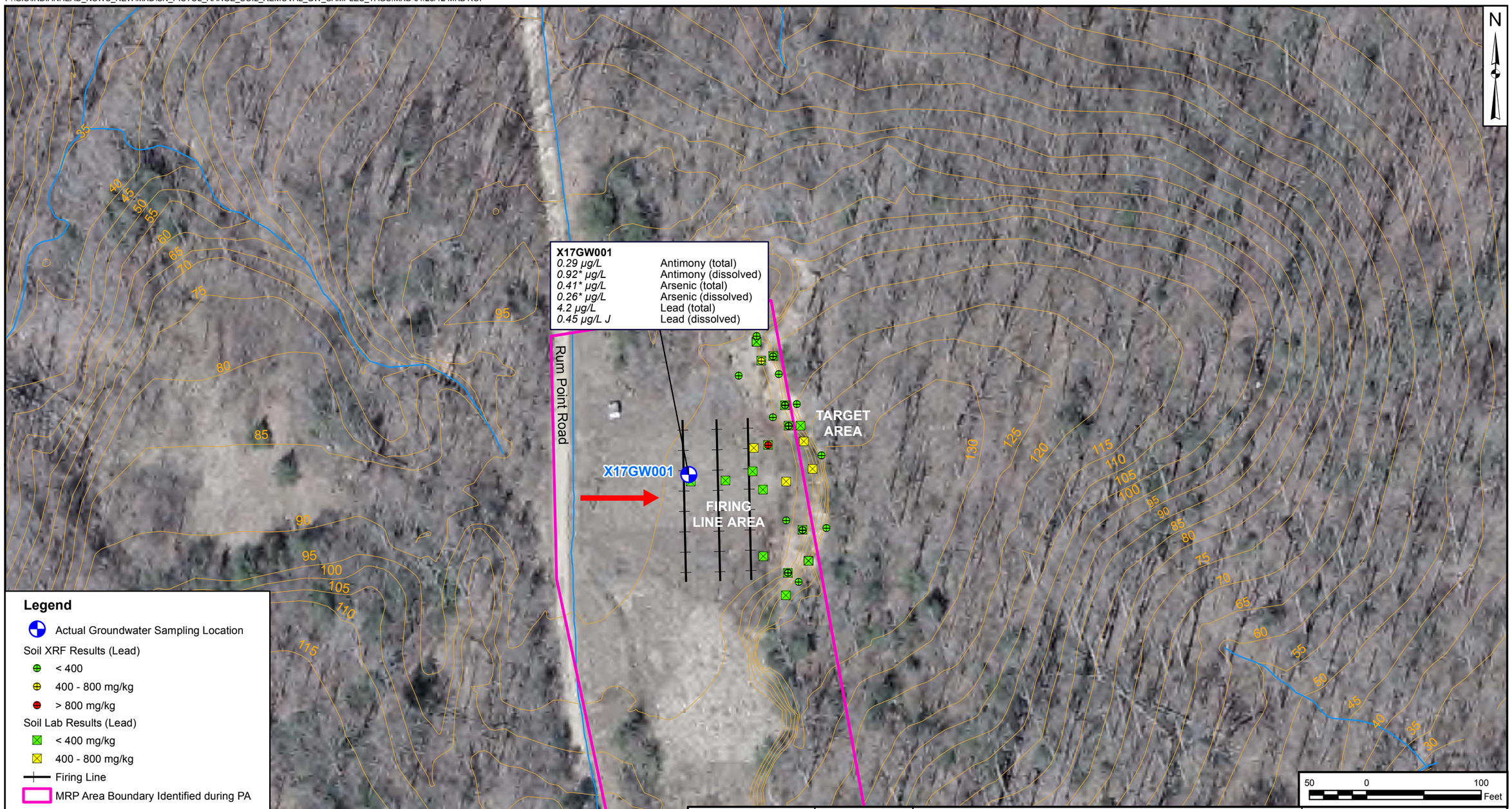


Legend

- Actual Groundwater Sampling Location

Soil XRF Results (Lead)

- < 400
- 400 - 800 mg/kg
- > 800 mg/kg

Soil Lab Results (Lead)

- < 400 mg/kg
- 400 - 800 mg/kg
- Firing Line
- MRP Area Boundary Identified during PA
- Surface Drainage
- Topographic Contour (5-ft)
- Firing Direction
- * Analytical results exceed risk-based PAL

Aerial Photo: 2004, Charles County NAD 1983 SP Maryland (coordinates in feet)

DRAWN BY	DATE
MK BOND	01/23/12
CHECKED BY	DATE
B. BECKER	01/23/12
REVISED BY	DATE
—	—
SCALE	
AS NOTED	

NAVFAC

SMALL ARMS (PISTOL) RANGE (UXO 17)
GROUNDWATER ANALYTICAL RESULTS
NAVAL SUPPORT FACILITY INDIAN HEAD
STUMP NECK ANNEX
INDIAN HEAD, MARYLAND

CONTRACT NUMBER	0810
OWNER NO.	—
APPROVED BY	DATE —
FIGURE NO. FIGURE 7-1	REV 0

APPENDIX A

FIELD FORMS

IR Work Approval Permit
NSASP CWAP – NSF Indian Head

1/24/2011 Revision

Section A. Customer Information

Real Estate Package Required? Yes ● No

IMG/RMIG Review Required? Yes ● No

Tracking Number: NDW-11-010

Project Cost: Greater than $500,000

Project Name: Phase 2 Site Investigation of Five Small Arms/Skeet Ranges (UXO 14, 15, 16, 17, 25)

Application Date: 5/4/2011 **Building Number(s):** N/A

Organization Submitting Application: NAVFAC **Organization Funding Proposed Action:** NDW

Name of Applicant: Nick Carros **POC from Funding Organization:** Joe Rail

Phone Ext: x2263 **POC Phone Ext:** 202-685-3105

Email: nicholas.carros@navy.mil **POC Email:** joseph.rail@navy.mil

Contract Number: N/A

Anticipated Dates of Work: Start: 8/22/2011 **Completion:** 10/31/2011 **Expiration Date:** 180 Days from Date of Approval

Section B. Site Issues

Checked Issues must be approved by the appropriate Resource Manager.

Work Restriction Area	Approval Date	Work Restriction Area	Approval Date
✔ Explosives Safety	8/11/2011	Air Emissions	
Survey Control/Property Points		✔ Waste (Hazard and Non-Hazard)	7/15/2011
✔ Earth Disturbance	7/18/2011	✔ Archeological Area	8/29/2011
✔ Installation Restoration (IR) Site	7/19/2011	Historic Building	
Worker Safety		✔ Buried Utilities	7/19/2011
Surface Water/Wetlands/Floodplain		✔ Munitions Response (MRP) Site	7/19/2011
Stormwater Management		Other Pipe Work	
✔ Eagle Nest Buffer	7/15/2011	✔ Other Work Restriction Area	7/19/2011
Natural Resources/Species Protection		No Work Restriction Areas	

See next page for Conditions Identified for Work Execution

IRT Approval Date: 8/29/2011

Signature of Environmental Division Director or Designee: POTTER.WILLIAM.Y.13945662 72 Digitally signed by POTTER.WILLIAM.Y.13945662 DN: cn=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USN, cn=POTTER.WILLIAM.Y.13945662 Date: 2011.09.16 13:59:00 -04'00' Date:

Signature of Facilities Management Division Director or Designee: Date: 09/20/2011

This IR Work Approval Permit identifies the conditions that must be satisfied in order to proceed with project execution.
Note: Signed Work Approval Permit must be on site while all work is being performed.

IR Work Approval Permit
NSASP CWAP – NSF Indian Head

1/24/2011 Revision

Eagle Nest Buffer Conditions

Work should be completed before the eagle nesting season. Contact NRO (x2273)

Earth Disturbance Conditions

Seed and straw all disturbed areas.

Archeological Conditions

The SHPO was consulted for this project. The cultural resources manager must be on site for well drilling at IR sites 14 and 15.

IR Site Conditions

Work must occur in accordance with the work plan.

MRP Site Conditions

Work must be conducted in accordance with the ESS-DR.

Explosives Safety Conditions

Work must be conducted in accordance with the ESS-DR.

Waste (Hazard and Non-Hazard) Conditions

Coordinate disposal of IDW with IH Environmental (Stacey Davidson, x2257 or John Smallhorn, x2268).

Buried Utilities Conditions

Utility location is requried prior to any earth disturbance.

Other Work Restrictions

Prior to any water discharge, if any is anticipated (either to environment or to the sewage treatment plant), the customer must contact the Industrial Wastewater Media Manager, Brooke Shaffer (x2254) for additional information and restrictions. For further clarification water discharges include but are not limited to decontamination wastewater, building wash down water, water discharges due to operational changes, non-contact cooling water, etc.

IR Work Approval Permit
NSASP CWAP – NSF Indian Head

1/24/2011 Revision

Section C. Project Details

Project Description:

The purpose of the project is to sample the groundwater at 5 small arms / skeet ranges.

Work at each of the UXO sites will involve the following steps:
-Site mark-out
-Minimal site clearing of well locations and access ways to the locations
-Utility Clearance
-Installation of temporary wells
-Sampling of wells
-GPS location of the wells
-Removal of temporary wells
-Industrial Derived Waste Management

Work will be performed by roughly 5 contractors over the course of two weeks. Equipment includes, motorized vegetation removal equipment, SchonstedtGA-52Cx, White's XLT all-metal detector and a Drill Rig

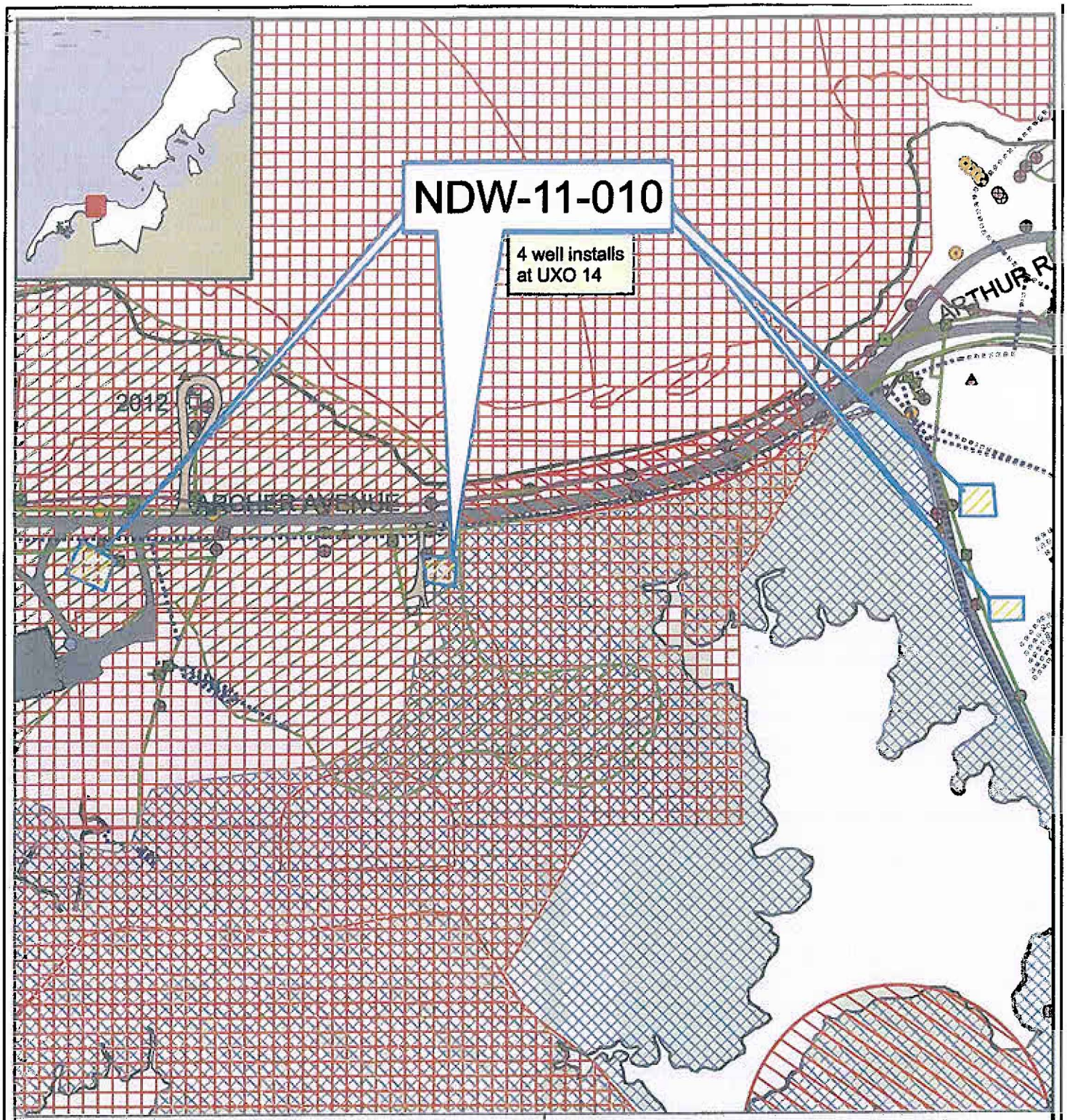
Location Description:

various locations at stump neck

Will this project involve removing, breaking or opening any piping, tubing or hoses? Yes • No

Section D. IRT Contact Information

Tommy Wright	NEPA and Cultural Resources	thomas.a.wright@navy.mil	x2260	Bldg. 554
Seth Berry	Natural Resources	seth.m.berry@navy.mil	x2273	Bldg. 554
Billy Fabey	Stormwater	william.fabey@navy.mil	x2275	Bldg. 554
Nick Carros	IR and MRP	nicholas.carros@navy.mil	x2263	Bldg. 554
Matt Kilmoski	PWD Environmental Compliance Manager	matthew.kilmoski@navy.mil	x2274	Bldg. 289
Diana Rose	Sanitary Wastewater	diana.rose@navy.mil	x2267	Bldg. 289
Brooke Shaffer	Industrial Wastewater	brooke.shaffer@navy.mil	x2254	Bldg. 289
Kathy Frey	Potable Water	mary.frey@navy.mil	x2258	Bldg. 289
Mike Schultz	Air	michael.j.schultz4@navy.mil	x2280	Bldg. 289
Stacey Davidson	Solid and Hazardous Waste	stacey.davidson@navy.mil	x2257	Bldg. 289
David Hartnett	Tank Management	david.j.hartnett@navy.mil	x2259	Bldg. 289
Jason Claxton	Facilities Planning	jason.claxton@navy.mil	x1451	Bldg. 351
Dianne Newton	NSWC Explosives Safety Officer	dianne.newton@navy.mil	x2375	Bldg. 482
Larry Kijek	EODTECHDIV Explosives Safety Officer	lawrence.kijek@navy.mil	x6871	Bldg. 2151
Dennis Tomlinson	NSASP Safety	dennis.tomlinson@navy.mil	x2469	Bldg. D-339
Jim Cole	PWD Safety	james.a.cole@navy.mil	540-653-3281	Bldg. 182
Kay Knott	Force Protection and Physical Security	charlotte.knott@navy.mil	x4849	Bldg. D-328
Joe Piepoli	NDW Fire Prevention	joseph.piepoli@navy.mil	x4229	
Ray Geckle	NSWC Safety	raymond.geckle@navy.mil	x6799	Bldg. 482
Bob Wetherald	PWD Constructability and Design	bob.wetherald@navy.mil	x2168	Bldg. 551



NSF-IH Work Approval Permit Layout

80 40 0 80 160 240 320 400 480 Feet

N

- Work Area
- Buildings
- Trailers
- Cargo Boxes
- Railcars
- Temporary
- Pet Boxes
- Sidewalks
- IR Sites
- Recreation Areas
- Wetlands
- Historic Buildings
- Survey Control Points
- Eagle Protection Areas (Active)
- Eagle Protection Areas (Inactive)
- Worker Notification Area
- Species Protection Areas
- Cultural Resources Protection Area
- Munitions Response Area
- Surface Water Bodies
- K24 Remote Operations
- Intraline (K18) Work Restriction
- Inhabited Building ESQD

Streams
- Dry
- Intermittent
- Permanent

Roads, Parking Lots
- Paved
- Unpaved
- Fences

Utilities
- Fire Hydrants
- Potable Valve
- River Water Valve
- Stormwater
- Sanitary Sewer
- Potable Water
- Steam
- Compressed Air
- River Water
- Industrial
- Industrial Valve/Pump

Telephone
- Aboveground
- Underground
- Fiber Optic

Electric
- ABOVEGROUND
- UNDERGROUND

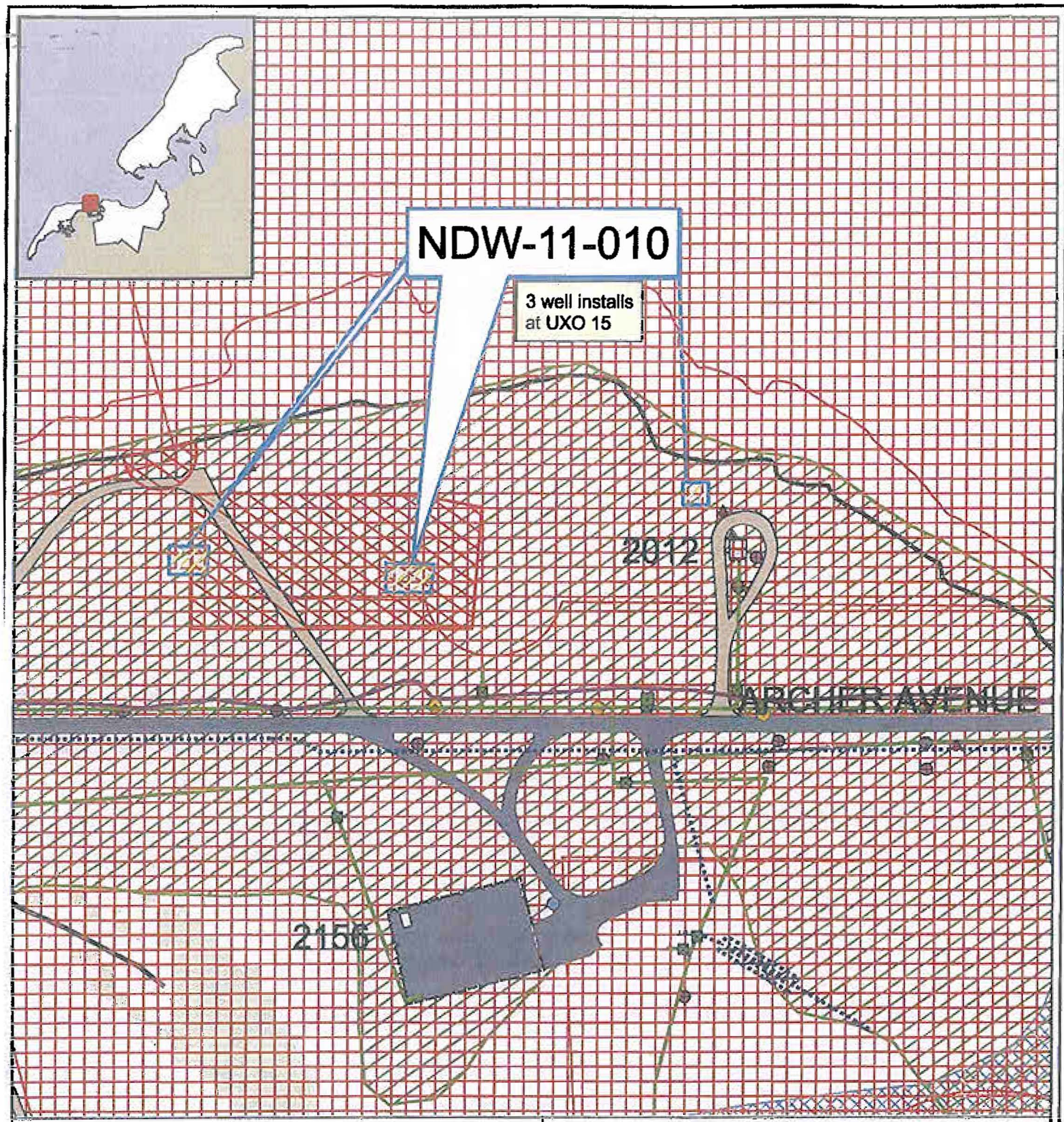
Wells
- Potable Water
- Monitoring

Utility Poles
- Other
- Light
- Transformer

DISCLAIMER: Utilities depicted are believed to be accurate to +/- 15 feet. See disclaimer within the Dig Permit Policy.

NOTE: While performing work, if any underground utilities or item(s) are detected and are not shown on this plan, please detail at approximate location and give description of item(s) on attached data sheet. Please return copy of both sheets to CWAP Coordinator.

This map was created using data from the NSA Souda Bay map GeoDatabase database



NSF-IH Work Approval Permit Layout

50 25 0 50 100 150 200 250 300 Feet

Work Area
Buildings
Trailers
Cargo Boxes
Railcars
Temporary
Pet Boxes
Sidewalks
IR Sites
Recreation Areas
Wetlands

Historic Buildings
Survey Control Points
Eagle Protection Areas (Active)
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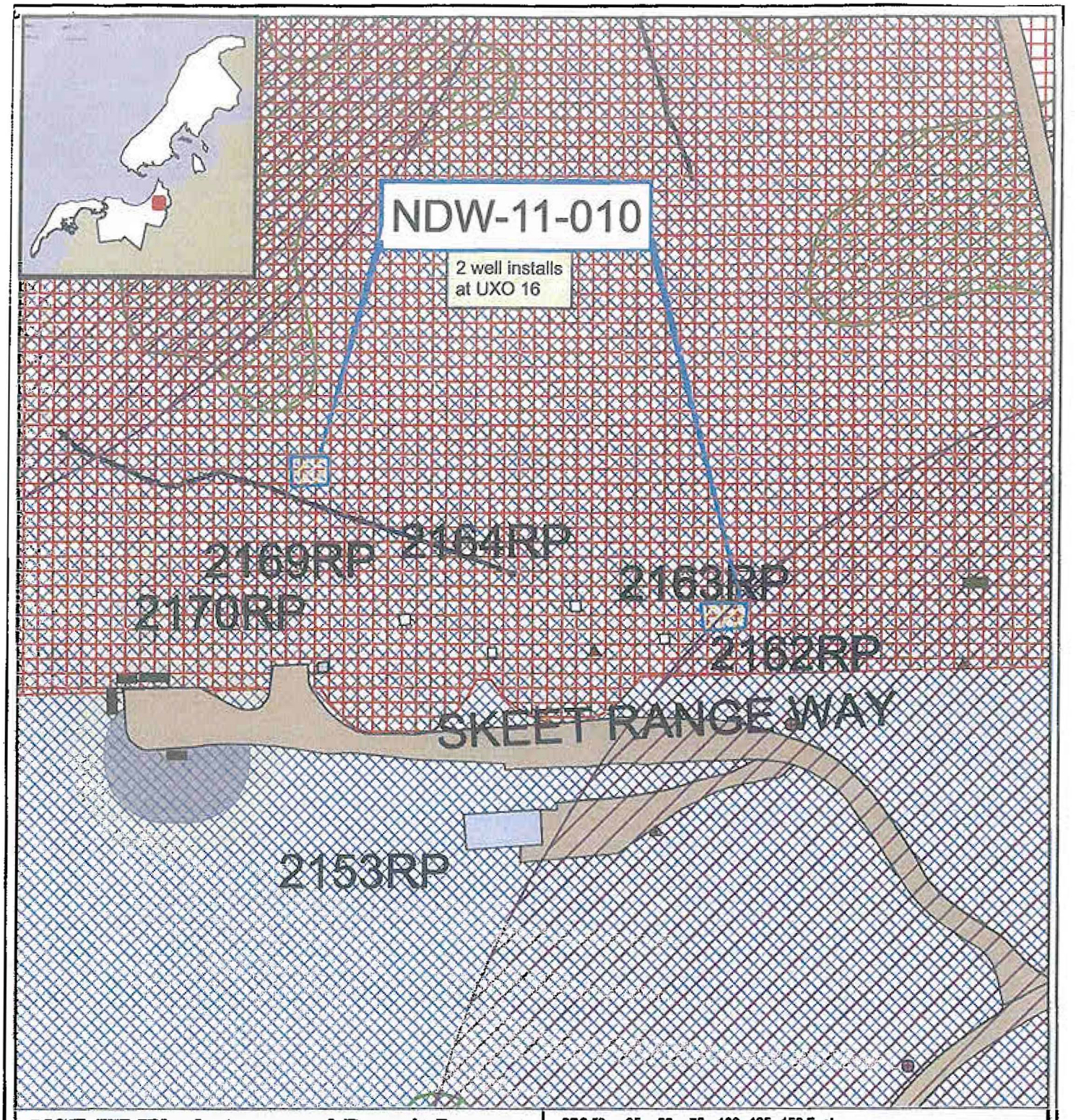

NSF-IH Work Approval Permit Layout

2 1 2.50 25 50 75 100 125 150 Feet

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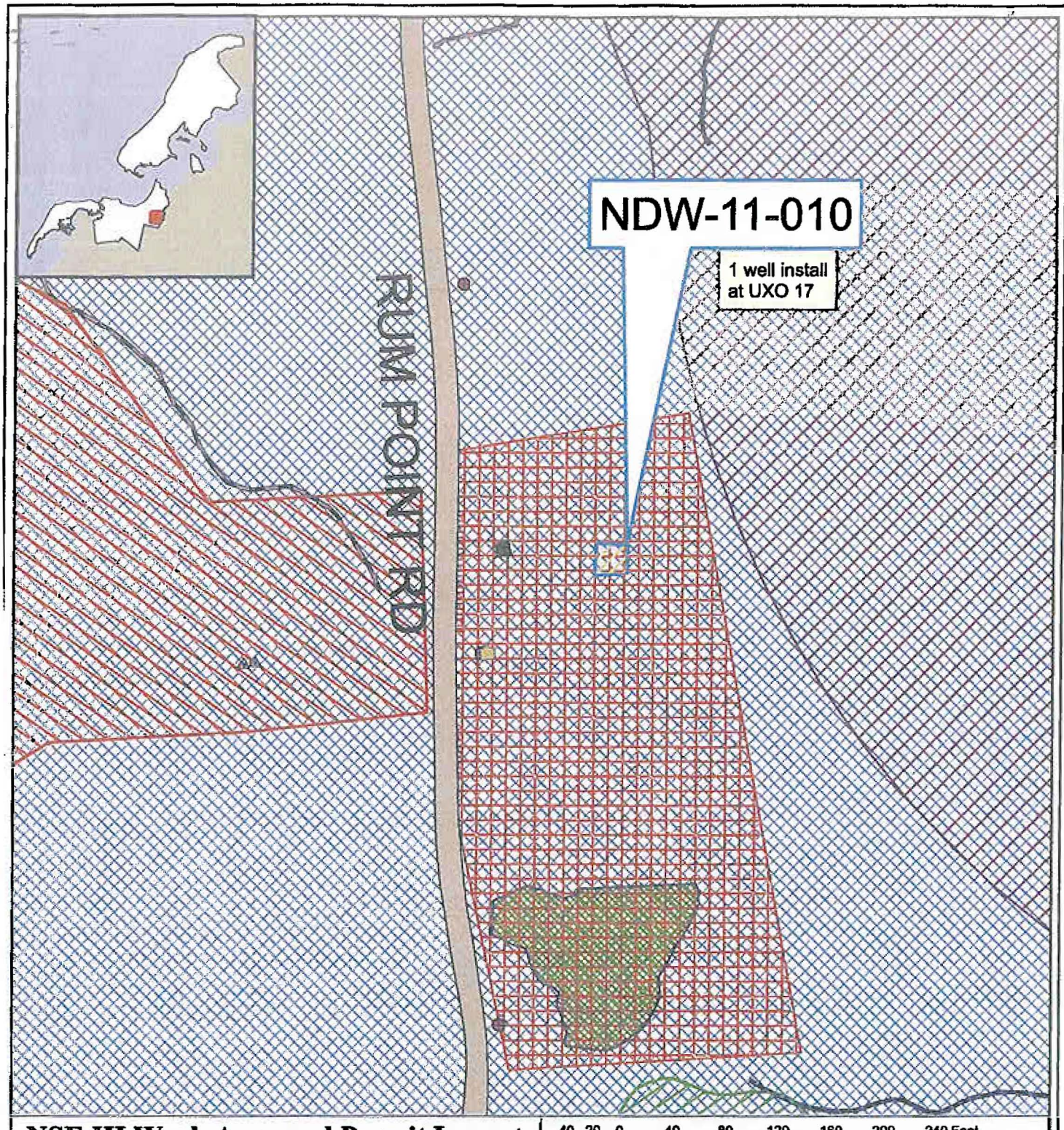

NSF-IH Work Approval Permit Layout

40 20 0 40 80 120 160 200 240 Feet

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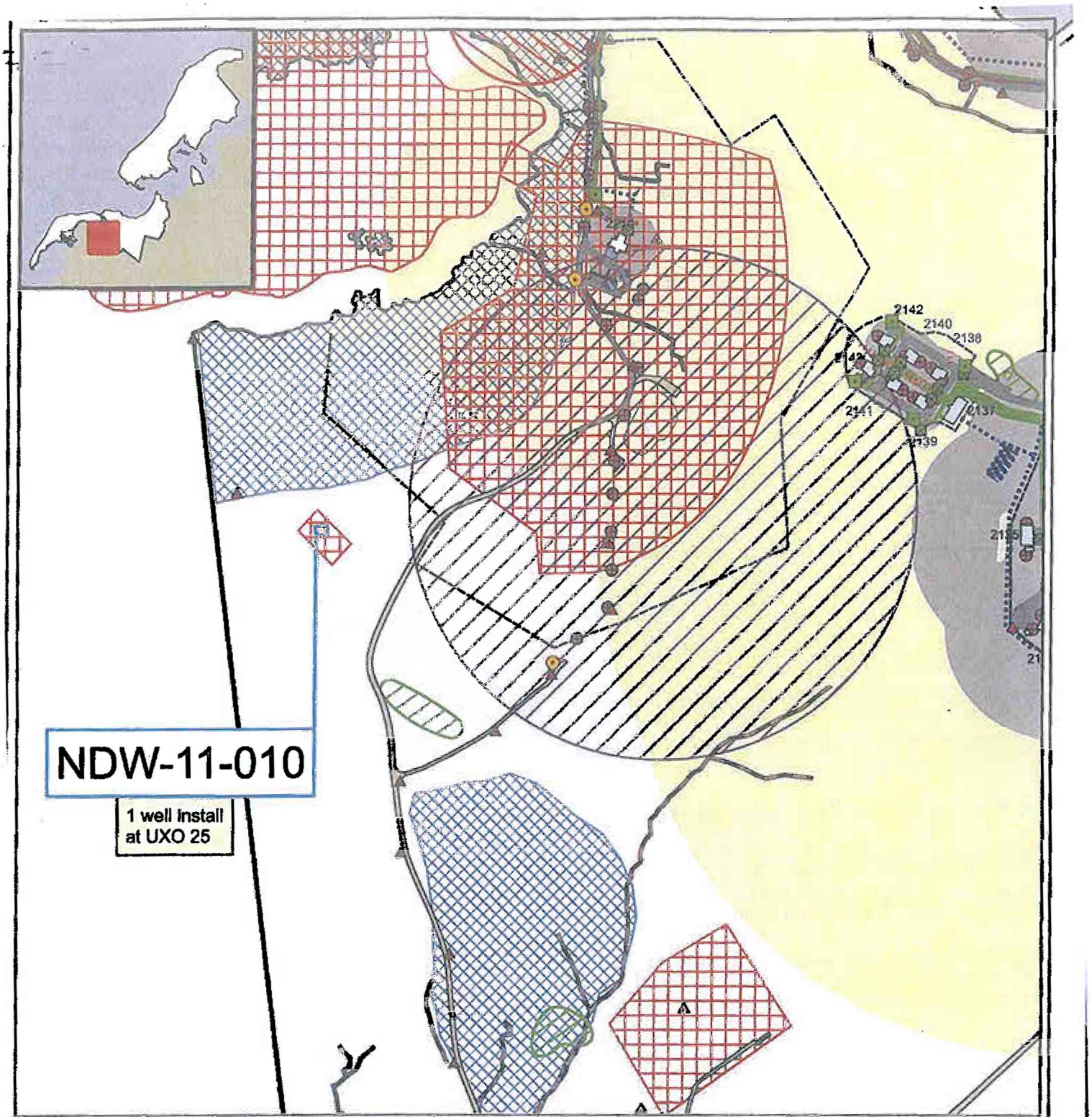

NSF-IH Work Approval Permit Layout

160 80 0 160 320 480 640 800 960 Feet

N

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Explosive Safety Review Memo

8/26/2010 Revision

To: ☐ IHDIV ESO ☑ TECHDIV ESO ☐ NSASP ESO ☐ RECORD

Tracking Number: NDW-11-010 Project Name: Phase 2 Site Investigation of Five Small Arms/Skeet Ranges (UXO 14, 15, 16, 17, 25)

Project Description:

The purpose of the project is to sample the groundwater at 5 small arms / skeet ranges.

Work at each of the UXO sites will involve the following steps:
-Site mark-out
-Minimal site clearing of well locations and access ways to the locations
-Utility Clearance
-Installation of temporary wells
-Sampling of wells
-GPS location of the wells
-Removal of temporary wells
-Industrial Derived Waste Management

Work will be performed by roughly 5 contractors over the course of two weeks. Equipment includes, motorized vegetation removal equipment, SchonstedtGA-52Cx, White's XLT all-metal detector and a Drill Rig

(a) The project is subject to the following requirements:

☐ Explosive Site Approval is not required. Project is outside of any ESQD Arc (including 110% of Inhabited Building Distance).

☐ Explosive Site Approval is not required. Project is within ESQD Arcs, but falls under one of the categories listed in Section (b).

☐ Explosive Site Approval is required. An approval letter from NOSSA or DDESB must be received before work may begin.

☐ Explosive Safety Submission is required. An approval letter from NOSSA or DDESB must be received before work may begin.

☑ Explosive Safety Submission Determination Request (ESS-DR) is required. Approval of the ESS-DR must be received from NOSSA before work may begin.

☑ Operational requirements must be met as follows:

Work must be conducted in accordance with the ESS-DR.

☐ Additional requirements must be met as follows:

Comments:

(b) The project falls under NAVSEA OP5, Vol. 1, Seventh Revision w/change 8, Sec 8-1.2.1.b. Explosive safety site approval is not normally required in the following instances:

☑ (1) Routine maintenance or repair work which is performed on a regular basis where workers will be present for a short time. Examples include grass mowing, tree pruning, or underbrush removal in magazine areas; minor road maintenance/repair; routine track maintenance; utility line servicing; floor and roof repairs; and painting of facilities.

☐ (2) Casualty/emergency situations requiring minor repairs to restore the facility to its original condition.

☐ (3) Maintenance and repair projects (other than routine) located outside the K18 intraline distance from any potential explosion site (PES), provided there is no increase in the number of personnel exposed to an explosives hazard after project completion. Examples include road repairs and repaving; railroad track and bridge repairs; utilities repairs/replacement; roof repairs/replacement, etc.

☐ (4) Maintenance and repair (other than routine) and minor facility improvements to magazines, explosive operating buildings or other facilities involving explosives and ammunition when the following conditions are met:

(a) All explosives are removed from the facility.

(b) There is no change in the explosive or personnel limit of any portion of the facility as a result of the work performed.

(c) The facility or work site is not encumbered by K18 intraline distance arcs from surrounding facilities.

(d) The planned work does not involve facility elements covered by explosive safety criteria (that is, lightning protection, grounding, emergency exits, sprinkler systems) or affect the inherent safety of the structure.

(e) A work plan is reviewed by the station explosives safety officer prior to beginning work, followed by an inspection and final certification by a member of the safety office after completion.

(f) The conditions of paragraph 8-1.2.2 are observed.

☐ (5) Minor facility improvements outside K18 intraline arcs that do not introduce additional personnel to an explosive hazard or do not involve items covered by explosive safety criteria. Examples include: installation of fencing, sidewalks, lighting and utilities (that is, pipelines, powerlines, transformers, pumping stations).

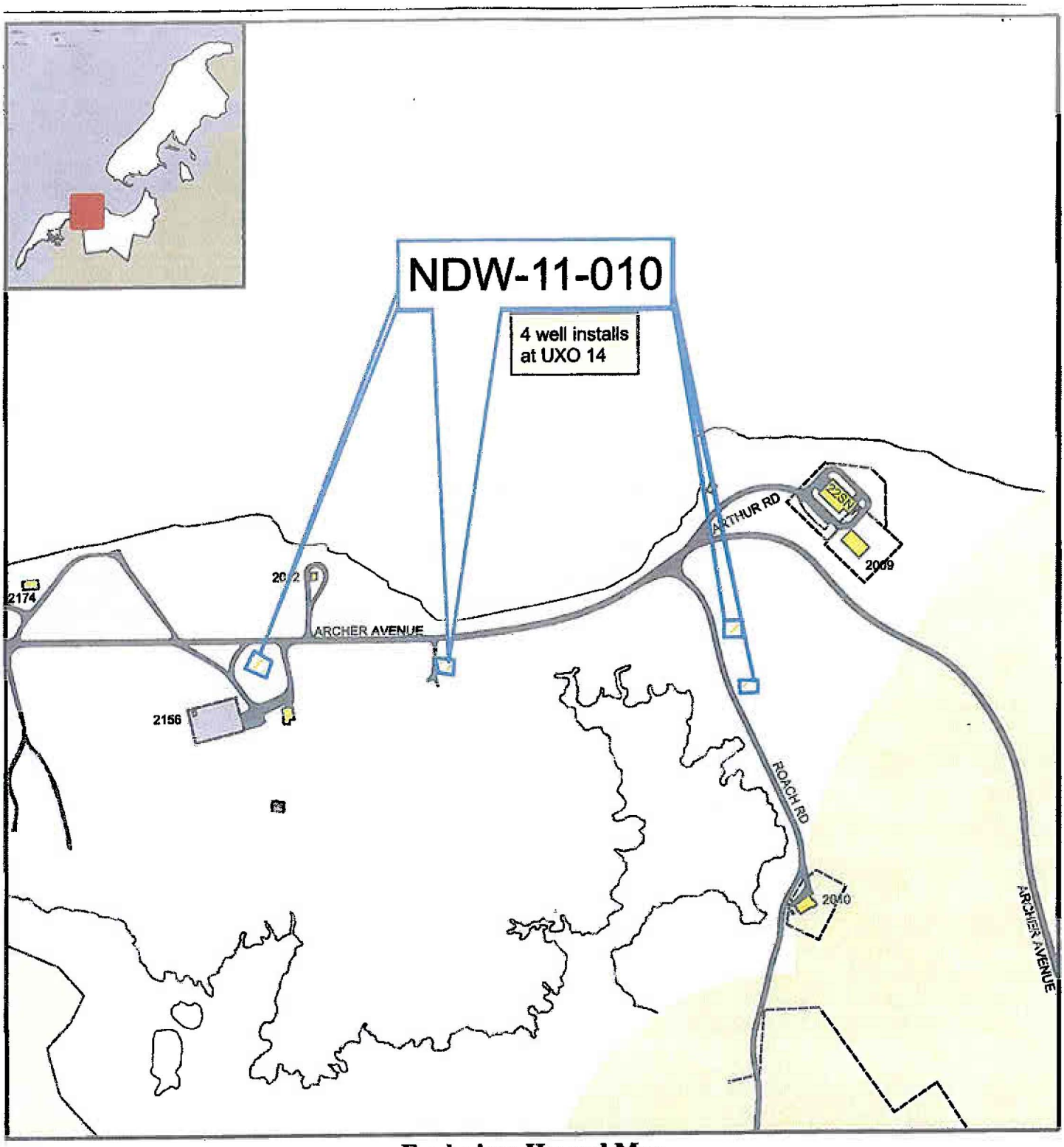
(c) The examples in paragraphs a and b above are not all inclusive.

Good judgement must be used to determine when explosive site approval or explosive safety submission is necessary. Any situation that is questionable to the originating activity or a reviewing agent shall be forwarded to the next review level for further clarification.

If there are any questions, contact Larry Kijek, Code 051, at ext. 6871.

KIJEK.LAWRENCE.ARTHUR.1013976070

Digitally signed by KIJEK.LAWRENCE.ARTHUR.1013976070
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USN, cn=KIJEK.LAWRENCE.ARTHUR.1013976070
Date: 2011.08.11 05:56:57 -04'00'



Explosives Hazard Map

Naval Support Facility, Indian Head
Indian Head Division, Naval Surface Warefare Center

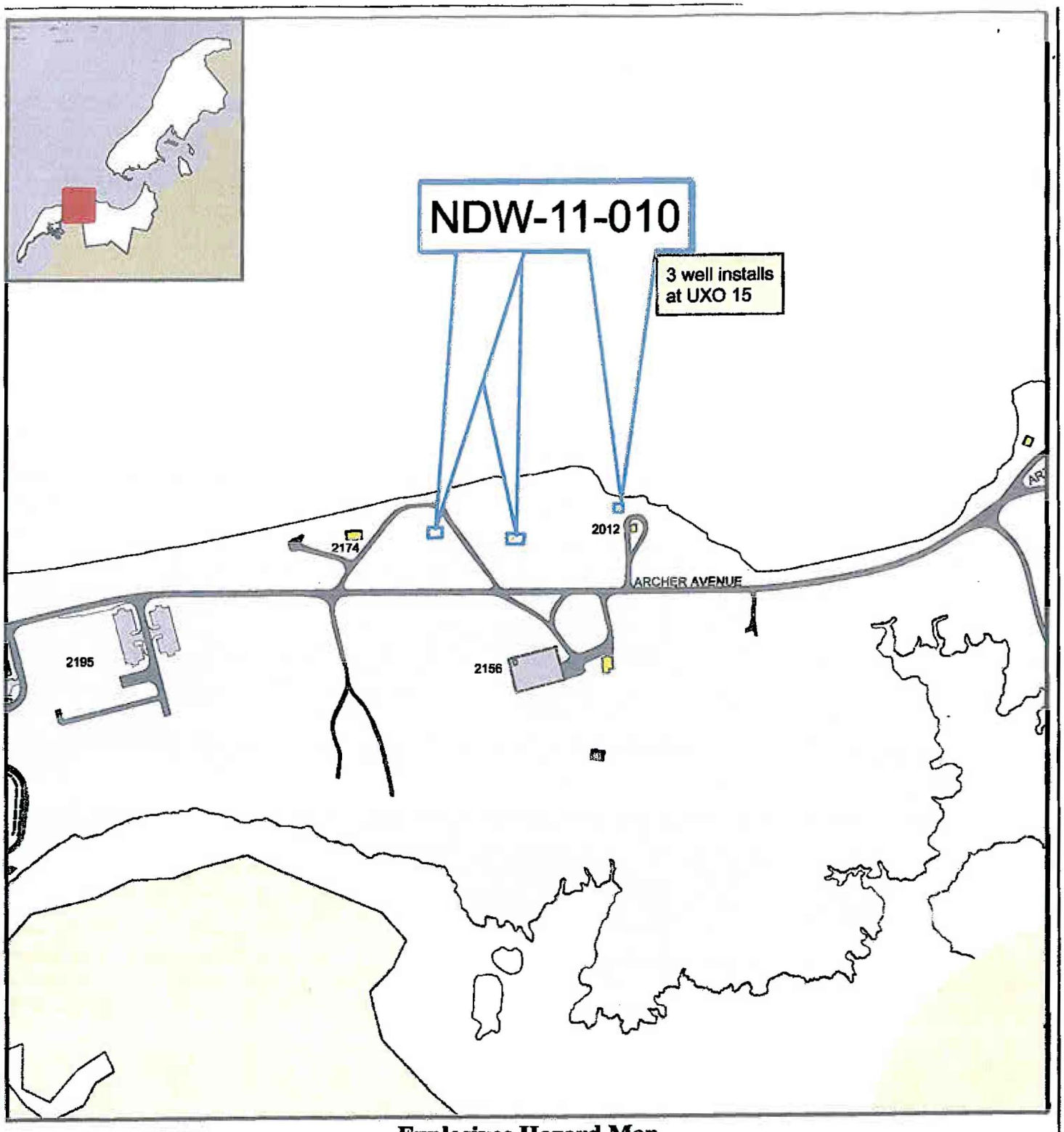
N

Buildings
- Inert
- Earth Covered Magazine
- Above Ground Magazine
- Explosives Operating Location

ESQD Arcs
- K24 Remote Operations
- Intraline (K18) Work Restriction
- Inhabited Building ESQD

Other Features
- Work Area
- Fences
- Roads
- Parking Lots

190 95 0 190 380 570 760 950 1,140 Feet



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Naval Support Facility, Indian Head
Indian Head Division, Naval Surface Warefare Center

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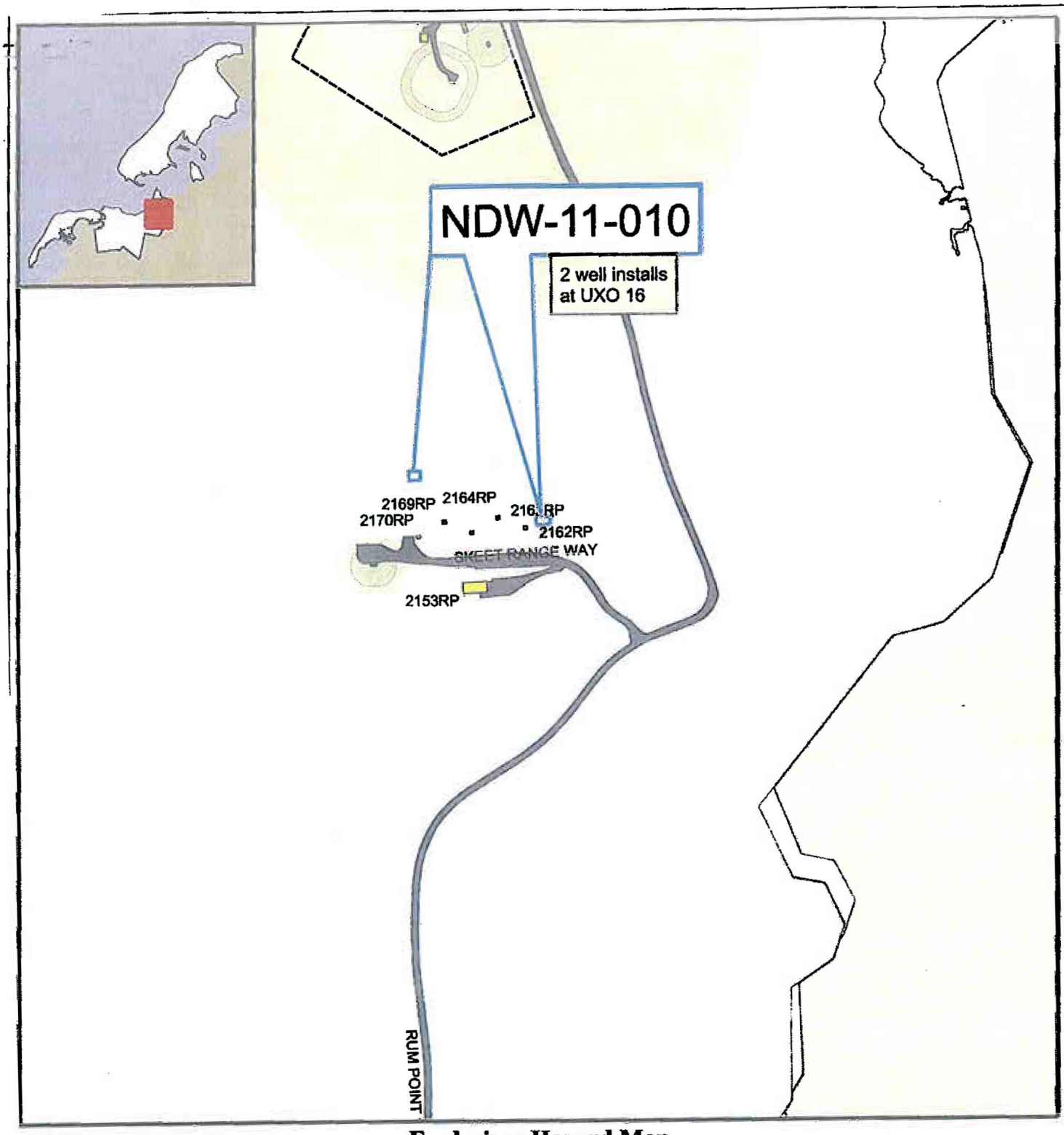

Explosives Hazard Map

Naval Support Facility, Indian Head

Indian Head Division, Naval Surface Warefare Center

N

Buildings

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- Above Ground Magazine
- Explosives Operating Location

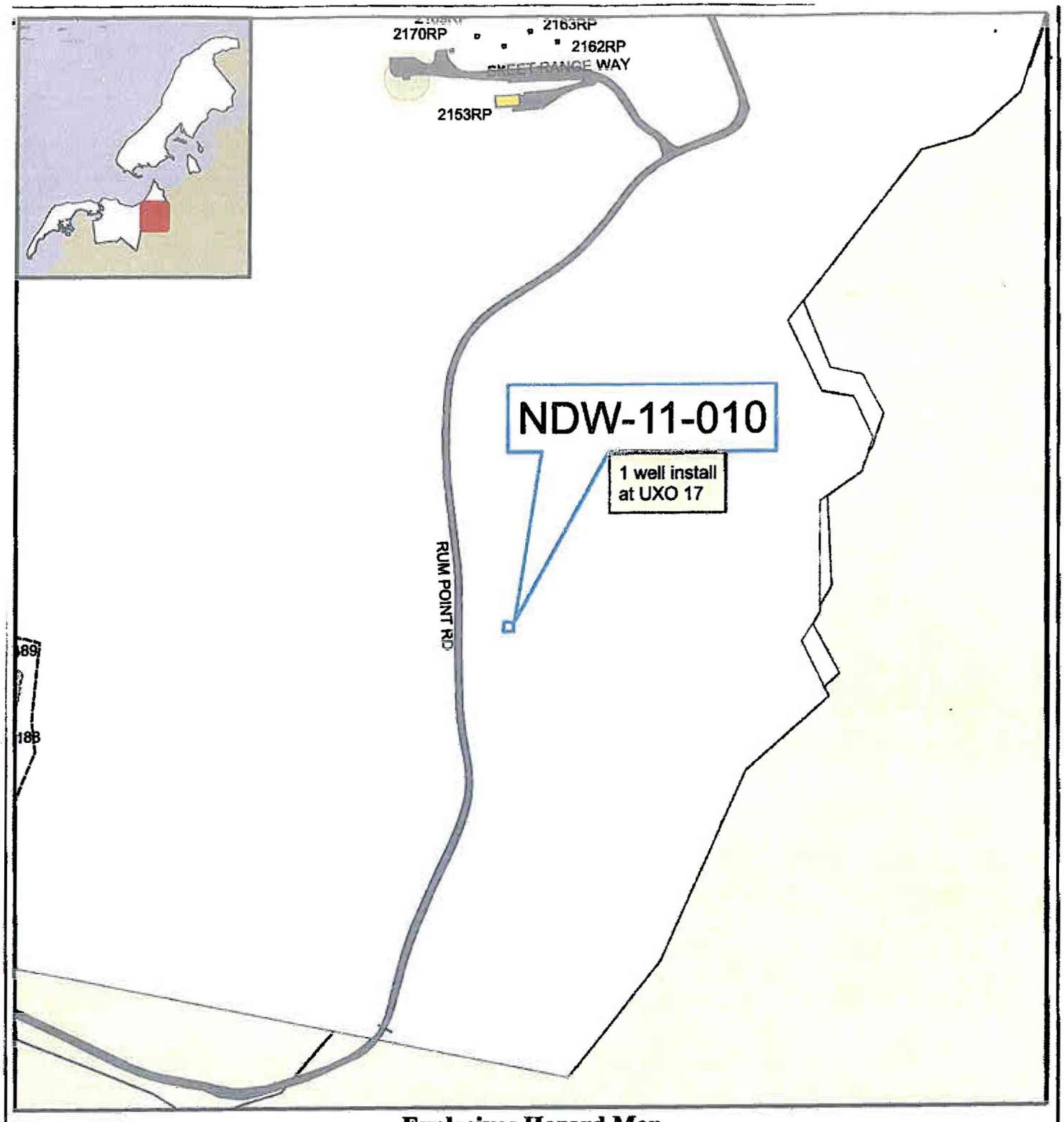
ESQD Arcs

- K24 Remote Operations
- Intraline (K18) Work Restriction
- Inhabited Building ESQD

Other Features

- Work Area
- Fences
- Roads
- Parking Lots

160 80 0 160 320 480 640 800 960 Feet



Explosives Hazard Map

Naval Support Facility, Indian Head
Indian Head Division, Naval Surface Warefare Center

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Buildings
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ESQD Arcs
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Other Features
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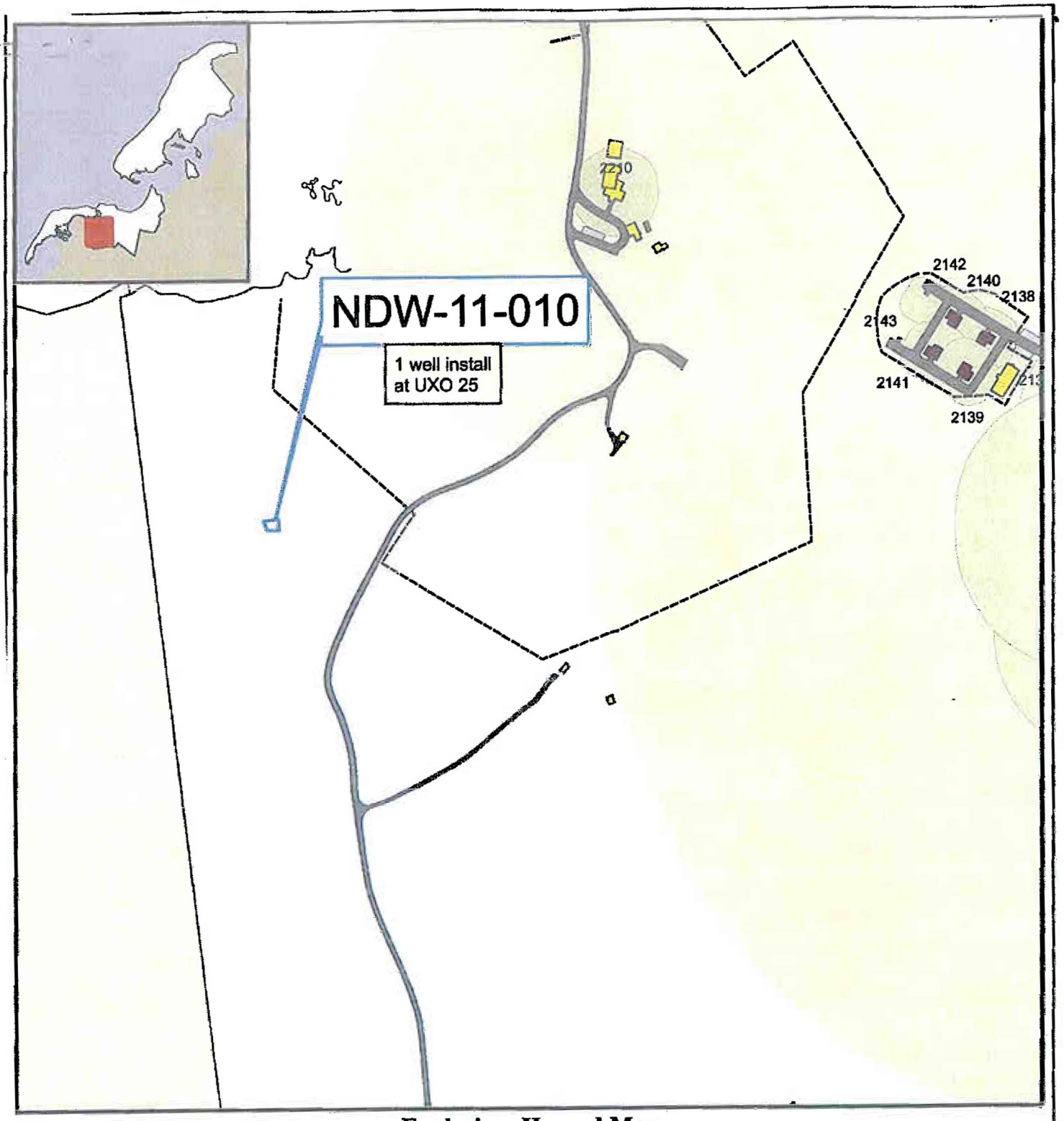
160 80 0 160 320 480 640 800 960 Feet



Explosives Hazard Map

Naval Support Facility, Indian Head

Indian Head Division, Naval Surface Warefare Center

N

Buildings

- Inert
- Earth Covered Magazine
- Above Ground Magazine
- Explosives Operating Location

ESQD Arcs

- K24 Remote Operations
- Intraline (K18) Work Restriction
- Inhabited Building ESQD

Other Features

- Work Area
- Fences
- Roads
- Parking Lots

160 80 0 160 320 480 640 800 960 Feet

DEPARTMENT OF THE NAVY
NAVAL ORDNANCE SAFETY AND SECURITY ACTIVITY
FARRAGUT HALL
3817 STRAUSS AVENUE, SUITE 108
INDIAN HEAD, MD 20640-5151

8020
Ser N537/1215
03 Aug 11

From: Commanding Officer, Naval Ordnance Safety and Security Activity
To: Commanding Officer, Naval Support Facility South Potomac (PRDH40)

Subj: EXPLOSIVES SAFETY SUBMISSION DETERMINATION REQUEST FOR WELL INSTALLATION AT FORMER SMALL ARMS/SKEET RANGE UXO SITES 14, 15, 16, 17 AND 25, NAVAL SUPPORT FACILITY INDIAN HEAD, INDIAN HEAD, MARYLAND

Ref: (a) E-mail NAVFAC Washington (PRDH40) Mr. J. Bossart/ NOSSA (N537) Ms. K. Garcia of 27 Jul 11 (w/encl)
(b) NOSSAINST 8020.15C
(c) NAVSEA OP 5, Volume 1, Seventh Revision, Change 9

1. As requested by reference (a), the Naval Ordnance Safety and Security Activity (NOSSA) reviewed the subject Explosives Safety Submission (ESS) Determination Request (DR) in accordance with references (b) and (c). Based on the information provided, NOSSA has determined that an ESS is not required to install monitoring wells at Unexploded Ordnance (UXO) 14 (former Marine Rifle Range), UXO 15 (Old Skeet and Trap Range), UXO 16 (former Rum Point Skeet Range), UXO 17 (former Small Arms Pistol Range), and UXO 25 (former Roach Road Rifle Range) which are all located at Naval Support Facility Indian Head, Indian Head, Maryland.

2. As outlined in your request, we understand that the likelihood of encountering Munitions and Explosives of Concern (MEC) and/or Material Potentially Presenting an Explosive Hazard (MPPEH) during the proposed project has been determined to be low and that the following conditions apply:

a. UXO 14 and 15 are located inside the Valley Impact Area and are suspected to contain MEC but no MEC was observed during a 2010 Site Investigation. UXO 16, 17, and 25 are not located inside the Valley Impact Area and are not suspected to contain MEC.

b. Using hollow-stem auger techniques contractors will install wells to the following maximum depths: UXO Site 14,

twenty feet; UXO Site 15, fifteen feet; UXO Site 16, thirty-five feet; UXO Site 17, forty feet; and UXO Site 25, forty feet.

c. During well installation, a Department of Defense Explosives Safety Board Technical Paper 18 qualified UXO technician will perform surface sweeps with a Schonstedt or equivalent magnetometer and down-hole anomaly avoidance techniques with a subsurface Instruments Borehole Gradiometer (BHG-1) or equivalent. Should a subsurface ferrous anomaly be detected, the sampling location will be moved in order to avoid the anomaly.

d. The site is outside of all existing explosives safety quantity distance arcs.

3. If surface MEC or MPPEH is discovered on the site while employing anomaly avoidance techniques, the item will be avoided and its location and description will be reported to the cognizant Explosive Safety Officer and the Navy Project Manager. An emergency response from the cognizant Explosive Ordnance Disposal detachment will be requested, if appropriate.

4. The NOSSA point of contact for this ESS determination is Ms. Kathy Garcia, who can be contacted at DSN 354-5636 or commercial at 301-744-5636.

TAMMY K. SCHIRF
By direction

Copy to:
CNO (N411C2, N453, N453C)
COMNAVFACENGCOM (ENV3)
NAVFAC WASHINGTON (PRSPI21MR, PRSI42NC)
NAVSURFWARCENDIV INDIAN HEAD (ESO)
NOSSA ESSOLANT (N5L)

EXPLOSIVES SAFETY SUBMISSION DETERMINATION REQUEST

Instructions: Project managers shall complete all blocks of this ESS DR and attach it to a digitally-signed e-mail sent to either:

NOSSA (N53) E-mail: inhdnossa-ess@navy.mil	COMMARSYSCOM (PM Ammo) E-mail: explosivessafety@usmc.mil

Site name/number, Activity, City, State and ZIP code:	Small Arms/Skeet Range UXO # 14, 15, 16, 17, and 25 NSF Indian Head Indian Head, MD 20640	Date submitted:	July 26, 2011
Project manager and ESO: Names and contact information	Joseph Rail NAVFAC Washington (202) 685-3105 joseph.rail@navy.mil Jerry Payne Naval Support Activity (NSA) South Potomac (540) 284-4363 jerry.payne@navy.mil	EOD Det/UXO contractor: Name(s) and contact information	Ralph Brooks UXO Program Manager Tetra Tech NUS, Inc. (770) 413-0965 ext. 231 ralph.brooks@tetratech.com EOD Mobile Unit XII Dahlgren Detachment (540) 653-7425

Site history: Briefly describe past MEC or MPPEH use at the site

The Navy has conducted various testing, training, and disposal activities related to military munitions at the Naval Support Facility located in Indian Head, MD, since it was established in 1890 as a Naval Ordnance Station. The Stump Neck Annex covers approximately 1,100 acres on the Stump Neck peninsula at the confluence of the Potomac River and Chicamuxen Creek in Charles County, Maryland.

UXO 14: (Marine Rifle Range) The Marine Rifle Range was used for small arms training from approximately 1911 to 1918. The rifle range was used by Marine recruits from the Norfolk and Philadelphia depots for small arms training with rifles. The range is located within the estimated firing fan of the Valley Impact Area. Historical information indicates that projectiles were fired into The Valley Impact Area both before and after the limited small arms training activities performed at the Marine Rifle Range. The Valley Impact Area also received ordnance from a firing range set up by units from the Quantico Marine Corps Base (on the Stump Neck Annex near Rum Point—the exact location is unknown) for 75mm guns and howitzers. Historical documentation also indicated that The Marine Corps Base Quantico was permitted to fire large artillery at the Stump Neck Annex for several years until 1934. Therefore the entire Marine Rifle Range is suspected to contain MEC fired into The Valley Impact Area. No ordnance, MEC, or related debris was observed during recent visual surveys.

UXO 15: (Old Skeet and Trap Range) The Old Skeet and Trap Range was reportedly used for small arms recreational activities. The range was constructed between 1967 and 1972. The closure date was June 1991. Based on historical documents, the general location of the Old Skeet and Trap Range is within the estimated firing fan of The Valley Impact Area. The Valley Impact Area also received ordnance from a firing range set up by units from the Quantico Marine Corps Base (on the Stump Neck Annex near Rum Point—the exact location is unknown) for 75mm guns and howitzers. Historical documentation also indicated that The Marine Corps Base Quantico was permitted to fire large artillery at the Stump Neck Annex for several years until 1934. Therefore the entire Old Skeet and Trap Range is suspected to contain MEC fired into The Valley Impact Area. No ordnance, MEC, or related debris was reported during recent visual surveys.

UXO 16: (Rum Point Skeet Range) The former Rum Point Skeet Range is a 900-foot wide fan-shaped area that covers approximately 33 acres in the northeastern section of Stump Neck Annex. This site was used for small-arms (shotgun) recreational activities from 1991 until 2001.

UXO 17: (Small Arms Pistol Range) The former Small Arms (Pistol) Range was also previously known as the Old Pistol Range. It consists of approximately 2 acres located near the eastern perimeter of the Stump Neck peninsula and was used for small-arms training from the mid-1980s to 1991.

UXO 25: (Roach Road Rifle Range) The former Roach Road Rifle Range, is located on a 0.3-acre site that was used for small-arms (rifle and pistol) training from 1967 to 1986. The site is located in the central portion of Stump Neck Annex, directly west of Roach Road.

These sites recently underwent a Site Investigation Phase I (2010), which included surface sweeps and surface soil sampling. While the locations for this phase of the SI requires a certain degree of freedom for expected locations, all sample locations will be in the same general areas as previously cleared locations. See figures 3 through 7.

UXO 16, UXO 17, and UXO 25 are not located inside the Valley Impact Area therefore are not suspect to contain MEC. See Figures 1 and 2.

MEC or MPPEH known or suspected to be present: Identify quantity, type/ nomenclature, and condition

UXO 14: (Marine Rifle Range) Anticipated to contain evidence of small arms usage. The range is located within the estimated range fan of the Valley Impact Area and there may be unknown quantities of projectiles and Munitions Debris (MD) within the area. From 1944 through 1949, an area of the former Marine Rifle Range was also used as the EOD School Demolition Area. The entire range is considered a suspected MEC area.

UXO 15: (Old Skeet and Trap Range) Anticipated to contain evidence of small arms usage. There is a potential for munitions fired into The Valley Impact Area (which includes the Old Skeet and Trap Range) to be present in the subsurface, and therefore the entire Old Skeet and Trap Range is suspected to contain MEC.

UXO 16: (Rum Point Skeet Range) Anticipated to contain evidence of small arms usage.

UXO 17: (Small Arms Pistol Range) Anticipated to contain evidence of small arms usage (.22cal., .45cal., .50cal. and 9mm).

UXO 25: (Roach Road Rifle Range) Anticipated to contain evidence of small arms usage.

Work task/project being proposed: Briefly describe proposed work; identify encumbering ESQD arcs

Proposed operation: Anomaly Avoidance Activities at all 5 sites. Detector aided surface survey and down-hole magnetometer survey of each sample/well location prior to marking with stakes or any intrusive sampling activities followed by Unexploded Ordnance (UXO) escort during activities at the sample locations and the remainder of the site.

- Temporary Well Installation employing direct push technology.
- Groundwater sampling
- All anomaly avoidance and surface survey activities will be conducted by a UXO-qualified technician, as defined in DDESB TP 18.

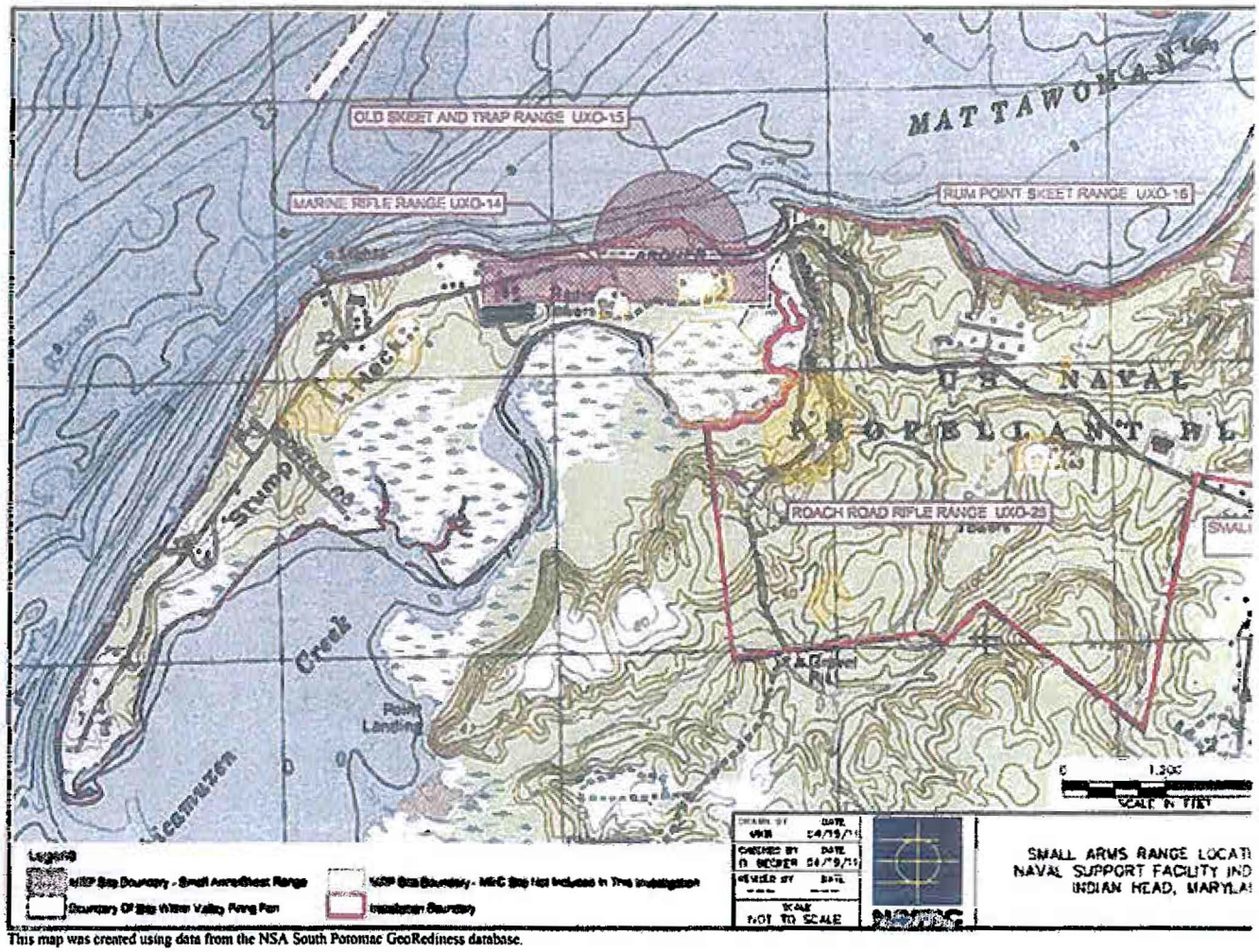
None of the soil samples or anomaly avoidance activities will take place within an existing ESQD arc.

Likelihood of encountering MEC or MPPEH: Low, Medium or High; include rationale for selected likelihood

Likelihood: Low

Rationale: By employing anomaly avoidance techniques, there is no anticipated contact with MEC.

N



This map was created using data from the NSA South Potomac GeoRediness database.

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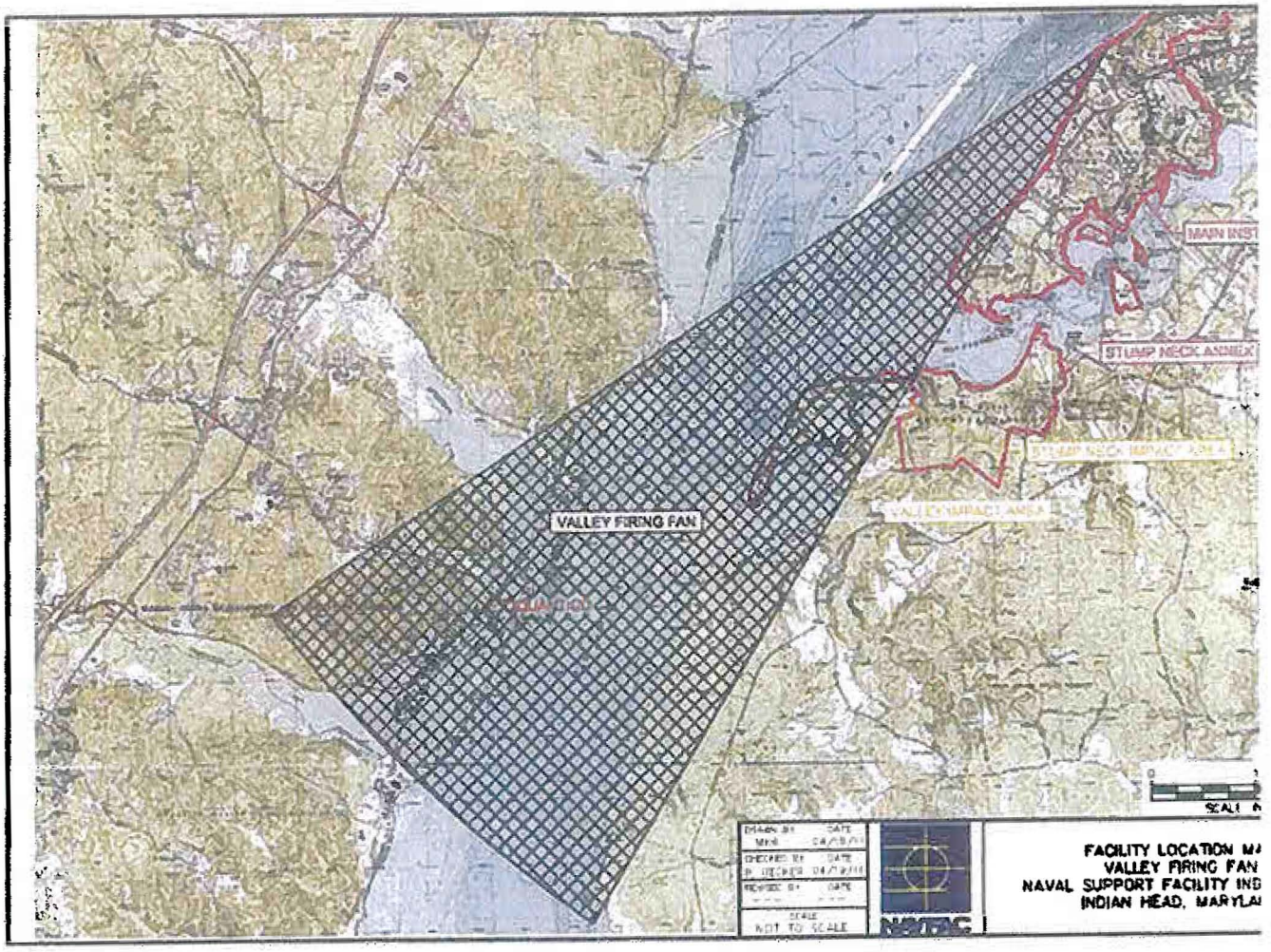

VALLEY FIRING FAN
STUMP NECK ANNEX
FACILITY LOCATION MA
VALLEY FIRING FAN
NAVAL SUPPORT FACILITY IND
INDIAN HEAD, MARYLA

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Phase 2 SI NSFIH Stump Neck
PROJECT NUMBER: 112G00810 CTO 423
DRILLING COMPANY: Vironex Inc.
DRILLING RIG: GEOPROBE 7822DT

BORING No.: X14GW001
DATE: 9-28-11
GEOLOGIST: FRED WRAMSAR
DRILLER: JACOB HALDIMAN

Sample No. and Type or RQD (DEPTH (ft))	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
					MED DENSE		GRAVEL + f-g SAND + SILT LOAM		GRASS SURFACE	—	—	—	—
2													
						YEL BRN	f-g SAND AND SILT	SM			—		
4			3.5/4										
							BECOMING SANDIER DOWNWARD						
6											—	—	
8			4/4		DENSE	GRAYISH GREEN	SAND (f-g)	SP	WET @ 7'		—		
10							PALE OLIVE						
											—		
12			4/4		VERY STIFF	PALE OLIVE	SANDY CLAY + SILT	SM/CL	4.2 tons/ft²				
14													
				TD = 14'									
									MEASURED				
							INSTALLED		WATER @ 6.5'				
							WELL 4-14		BGS				
							ADDED SAND TO	2'	BGS				
							BENT 0-2'						
									WATER LEVEL				
									@ 9.3' BGS				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): —

Remarks: - PRE PAK SCREEN 1.2' STICK UP
- FILL PRO SILICA SAND W6#2
- PDS BENT CHIPS

Converted to Well: Yes X No ____ Well I.D. #: X14GW001

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Phase 2 SI NSFIH Stump Neck
PROJECT NUMBER: 112G00810 CTO 423
DRILLING COMPANY: Vironex Inc.
DRILLING RIG: GEOPROBE

BORING No.: X146W002
DATE: 9-28-11
GEOLOGIST: FRED W RAMSER
DRILLER: JACOB HALDIMAN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
						MOD BRN	3" DK BRN SILTY LOAM 9" MOD BRN SLTY LOAM	OL SM	3".				
	2					MOD BRN	SILTY f-g SAND	SM					
							↓	↓					
	4		4/4		MED DENSE	DK YEL BRN	SAND m-c	SP					
							COARSENING						
	6						DOWNWARD						
							↓	↓					
	8		4/4		DENSE	YEL	SAND + GRAVEL	SW	MOIST TO				
						ORN BRN	VERIEGATED	GW	WET.?				
	10						↓	↓					
	12		4/4				↓	↓					
					MED DENSE	YEL BRN	+ GREY CLAYEY SAND	SC					
	14						PALE YEL BRN CLAY 14.2-14.7		2.5 tons/ft²				
			3/3				↓						
	16				MED	PALE YEL BRN	CLAYEY SAND	SC	2.75 tons/ft²				
					DENSE		SLIGHTY PASTIC		LOOKS WET				
	18						↓	↓	LOOKS WET				
							CLAY @ 18.5'-19'	CL	MOTTLING PLASTIC				
	20		5/5				↓	↓					
					VERY		AS ABOVE	SC	SLIGHT				
	22				DENSE		COHESIVE SAND		MOTTLING				
							CLAY STRINGERS		LOOKS WET				
	24						@ 22' & 22.5'		3.50 tons/ft²				
			5/5				↓	↓					

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): —

Remarks: INSTALLED WELL 5-15' (DRY), CONTINUED DEEPER
INSTALLED WELL 15-25', WATER LEVEL @ 10.1 @ 1350 HRS

Converted to Well: Yes X No _____ Well I.D. #: X146W002

SS-12

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Phase 2 SI NSFIH Stump Neck
PROJECT NUMBER: 112G00810 CTO 423
DRILLING COMPANY: Vironex Inc.
DRILLING RIG: GEOPROBE 7822 DT
BORING No.: X14GW003
DATE: 9-28-11
GEOLOGIST: FRED WRAMSER
DRILLER: JACOB HALDIMAN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1						DK BRN	SILTY LOAM			—			
	2					YEL BRN	SILTY SAND	ML		—			
					STIFF		(f-g)		2.2 TONS/FT²	—			
	4		4/4				↓		MOIST	—			
S-2							AS ABOVE						
	6				VERY STIFF	PALE YELLOW BRN		ML	TR GRA.				
							SANDY CLAY		WELL RANGED				
	8		4/4				↓ (f-g) 3.5 TONS/FT²		POROUS				
S-3							SILT + CLAY		LOW PLASTICS				
	10						TR f-g SAND						
							CLAY TR SILT	CL	3.75 TON/FT²				
	12		4/4				SILT + CLAY TR fg		MOTTLED				
S-4					↓		SAND	↓					
	14		2/2		VERY STIFF	LT OLIVE	SANDY CLAY	CL	3.0 TON/FT²				
S-5							↓ (f-g) SAND TR SILT	↓	MOIST TO WET MOTTLED				
	16		2/2			GREENISH GREY	CLAYEY SAND WET						
S-6							CLAY LAYER 3" THICK	SC	WET				
	18		2/2				AS ABOVE						
					HARD		SANDY CLAY	CL	DRY				
	20						(f-g)						
	22							↓	DRY				
				TD @ 22'			TD @ 22' 25'		FRIABLE >4.5 TONS/FT²				

* When rock coring, enter rock brokeness. DRIVE 5' SPL JUST 2' HAD ~4' REC.? USED Depth spec SAMPLE.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): —

Remarks: INSTALL SCREEN 15-25 | 12-22 (9-28) 9-29
MEASURED 4.0 16.5 IN HOLE @ 1527
INSTALLED WELL 9-29-11, DRY REINSTALLED WELL 7'-22' 15' SCREEN 9-30-11

Converted to Well: Yes X No ____ Well I.D. #: X14GW003

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Phase 2 SI NSFIH Stump Neck
PROJECT NUMBER: 112G00810 CTO 423
DRILLING COMPANY: Vironex Inc.
DRILLING RIG: GEOPROBE 7822DT

BORING No.: X14GW004
DATE: 9-29-11
GEOLOGIST: FRED V. RAMSAR
DRILLER: JACOB HALDIMAN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1						MOD ORE BRN	SILT + CLAY	OL	TR GRAVELS				
	2				MED DENSE		CLAYEY SAND	SC					
						MOD YEL	(f-g)		SLIGHTLY				
	4		4-4			DRY			MOTTLED DK YEL MOIST TO BRN WET @ 5'				
S-2				▽									
	6					PALE YEL BRN	CLAYEY SAND WET						
							TR GRAVEL						
	8		4 4		VERY STIFF		CLAY + SILT	CL	4.5 tons/ft²				
						LEAN							
	10					GREENISH GREY			LOOKS LIKE THE MARLBORO				
							W/ MOD REDDISH						
							BRN MOTTLING		CLAY?				
	12								→ TOP OF THE POTOMAC GROUP				
	14												
	16												
	18												
	20												
	22												
	24												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): —

Remarks: SCREEN 2.5 - 7.5'

Converted to Well: Yes X No _____ Well I.D. #: X14GW004

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Phase 2 SI NSFIH Stump Neck
PROJECT NUMBER: 112G00810 CTO 423
DRILLING COMPANY: Vironex Inc.
DRILLING RIG: GEOPROBE 7822DT

BORING No.: X15GW001
DATE: 9-27-11
GEOLOGIST: FRED W RAMSER
DRILLER: JACOB HALDIMAN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1 (3'05)						BRN	SILTY LOAM	OL					
	2					YEL BRN	CLAYEY SAND	SC					
					MED DENSE		SAND TR CLAY		1.75 tons/ft²				
	4		3.3/4				TR SILT	SP	MOIST				
S-2 (13'15)							AS ABOVE		WATER IN HOLE @ 23'				
	6												
	8		3.5/4		DENSE	YEL ORG BRN	SAND AND GRAVEL	GW/SW	WET				
S-3							VARIEGATED		ROCK FRAGS.				
	10												
	12		3/4										
							12 Ft TD						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): ____

Remarks: FILPRO SILICA SAND W6#2 PDS BENT. CHIPS BERKELEY SPRINGS WV

Converted to Well: Yes X No ____ Well I.D. #: X15GW001

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Phase 2 SI NSFIH Stump Neck
PROJECT NUMBER: 112G00810 CTO 423
DRILLING COMPANY: Vironex Inc.
DRILLING RIG: GEOPROBE 7822DT

BORING No.: X156W002
DATE: 9-27-11
GEOLOGIST: FRED WRAMSER
DRILLER: JACOB HALDIMAN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1						DK BRN	SANDY SILT & CLAY	SM/SW	GRASS SURFACE				
	2				STIFF	YELL BRN	SAND & SILT	SM	1.7 ton/ft²				
					↓		f-g SAND	↓					
	4		4/4		MED DENSE	GREEN GRY	LESS SILT @ 3.8'	SP	WET @ 4'				
S-2						GREEN	f-g SAND						
	6					GREY	COARSENING DOWNWARD						
	8		4/4			MOD BRN	m-g SAND	SP	TR GRAVEL				
S-3								↓					
	10						GRAVEL & SAND	GW					
					↓		↓	↓					
	12		4/4		DENSE	GREY	SILTY f-g SAND	SM	TR BLK STAINING				
							CLAYEY STRINGER @ 11.5		PLASTIC				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): —

Converted to Well: Yes X No ____ Well I.D. #: X156W002

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Phase 2 SI NSFIH Stump Neck
PROJECT NUMBER: 112G00810 CTO 423
DRILLING COMPANY: Vironex Inc.
DRILLING RIG: GEOPROBE 7822DT

BORING No.: X15GW003
DATE: 9-27-11
GEOLOGIST: FRED W RAMSEY
DRILLER: JACOB HALDIMAN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1						DK	BROWN SANDY LOAM		TOP SOIL GRASS SURFACE				
	2												
					MED DENSE	MOD YEL BRN	f-g SAND TR SILT	SP/SM	MOIST				
	4		3.9 / 4'				SOME SILT.		1.75 TONS/ WET @ 4'				
S-2													
	6						CLAYEY STRINGER @ 7'						
	8		3 / 4		DENSE	MOD YEL BRN TO GREY	SAND m-g	SP	TR GRAVEL				
S-3									WET @ 6'				
	10					BRN ORG	GRAVEL AND	SW					
						YEL	SAND VARIEGATED		WATER MEAS. TOP				
	12		3 / 4				TD 12'		IN HOLE @				
				TD @ 12'					4' @ 1205				
	14						TD @ 12'		TIDE LOOKS				
							INSTALL		LOW/LOW				
							WELL 2-12'		TIDE PRIOR,				
									@ 1300 HR				
							SCREEN		-Add SILICA	FILTER			
							1" ID		SAND AROUND	PACK			
							1.7" OD		PRE PAK				
							STAINLESS STEEL		WG #2 10/20 SAND				
							MESH OUTER		SCREEN TO 1' BGS				
									TOP OFF w/				
									BENTONITE CHIPS	PELL			

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): —

Remarks: 5' by 2" MACRO CORE PRACTICE VOC AVOIDANCE PROCEDURES

Converted to Well: Yes X No _____ Well I.D. #: X15GW003

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Phase 2 SI NSFIH Stump Neck
PROJECT NUMBER: 112G00810 CTO 423
DRILLING COMPANY: Vironex Inc.
DRILLING RIG: GEOPROBE 7822DT

BORING No.: X16GW001
DATE: 9-29-11
GEOLOGIST: FRED W RAMSEUR
DRILLER: JACOB HALDIMAN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1 1400						MOD BRN	SILTY LOAM		GRASS SURFACE MOIST TO WET				
						BRN	SAND + SILT (F-g)						
					MED DENSE	YEL BRN	F-g SAND TR GRA TR SILT	SW	3.0 tons/ft²				
	5		5/5		DENSE		GRAVELLY SAND	GW	DRY				
S-2							VARIEGATED MOD BRN YEL BRN ORG. BRN		DRY MOIST/WET				
					VERY STIFF	GREEN GREY	CLAY + SILT MOIST MOTTLED	CL	3.2 tons/ft² MED PLASTIC				
	10		5/5										
S-3							AS ABOVE YEL BRN						
							LESS MOTTLING		4.2 TONS/ft²				
	15		5/5										
S-4							AS ABOVE?	CL	CAN NOT GET SPL OUT OF MACRO CORE				
	20		5/5										
S-5					HARD	LT OLIVE GREY	CLAY +SILT FRIABLE	CL	4.5 tons/ft² DRY CRUMBLY				
			5?/2.5				AS ABOVE						
S-6									4.5 tons/ft²				
	25												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): [ ]

Remarks: WRT SAMPLERS, NOT SURE WHERE WATER ZONE IS, TOP OF THE CLAY? ??

Converted to Well: Yes X No ____ Well I.D. #: X16GW001

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Phase 2 SI NSFIH Stump Neck
PROJECT NUMBER: 112G00810 CTO 423
DRILLING COMPANY: Vironex Inc.
DRILLING RIG: GEOPROBE 7822DT

BORING No.: X166GW001
DATE: 9-29-11
GEOLOGIST: FREDW RAMSER
DRILLER: JACOB HALDIMAN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
					HARD		AS ABOVE	CL	4.5 tons/ft²				
	27		4 2.5				↓ GREENISH GREY		MOD BRN MOTTLED				
							TD @ 27'						
							INSTALLED SCREEN 12'-27'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): —

Converted to Well: Yes X No _____ Well I.D. #: X166GW001

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Phase 2 SI NSFIH Stump Neck
PROJECT NUMBER: 112G00810 CTO 423
DRILLING COMPANY: Vironex Inc.
DRILLING RIG: GEOPROBE 7822DT

BORING No.: X16GW002
DATE: 9-30-11
GEOLOGIST: FRED W RANSER
DRILLER: JACOB HALDIMAN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1						DK BRN	SILTY LOAM	OL					
					DENSE	YEL BRN	SAND + GRAVEL	GW	DRY ROCK FRAGS				
	5		4/5				↓						
S-2							AS ABOVE LESS GRAVELS						
					VERY STIFF	DK YEL	ORG SILT + CLAY MOTTLED GREY	CL	3.75 tons/ft²				
					↓		↓ DRY						
	10		5	▽	WET	DK YEL BRN	TR GRVL. SANDY CLAY	SC/CL	1.5 tons/ft² WET @ 8.5'				
S-3							SANDY CLAY						
					SOFT	YEL BRN	~~CLAYEY SILT~~		SATURATED				
					LOOSE		SAND CONT. INC. DOWNWARD	SC					
	15		5		↓		↓ SAND W/SILT CLAY SILT	SC	↓				
S-4							AS ABOVE						
					SOFT / LOOSE	GREENISH GREY	CLAYEY SAND (f-g)						
	18		3				↓						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): [ ]

Remarks: SCREEN: 8-18, STICK UP = 1.95'

Converted to Well: Yes X No ____ Well I.D. #: X16GW002

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Phase 2 SI NSFIH Stump Neck
PROJECT NUMBER: 112G00810 CTO 423
DRILLING COMPANY: Vironex Inc.
DRILLING RIG: GEOPROB 7822DT

BORING No.: X17GW001
DATE: 9-29-11
GEOLOGIST: FRED W RAMSER
DRILLER: JACOB HALDIMAN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1 1305						BLK	ASPHALT		ROCK FRAG?				
					MED DENSE	MOD BRN	SAND + GRAVEL	GW					
						YEL BRN	CLAYEY LAYER		2.5 tons/ft²				
						CRFT	@ 2'						
	5		4/5			BRN							
S-2					DENSE	DRK YEL ORG		SW					
							GRAVELLY SAND						
							WELL RA GRA.						
							ROCK FRAGS.		MOIST TO				
	10		4/5				@ 9.5'		WET				
S-3							GRAVEL +	GW	SATURATED				
							SAND (C-G)		@ ~~10'~~ 12.5'				
					LOOSE	YEL BRN	SAND (f-g)	SM	WET				
	15		4/5				W/SOME SILT						
S-4													
					MED DENSE	GR BRNISH BLK	f-g SAND W/SOME SILT	SM	WET 2.2 TONS/ft²				
	20		4/5										
							TD @ 20'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm):

Remarks: INSTALLED SCREEN 9.5 - 19.5

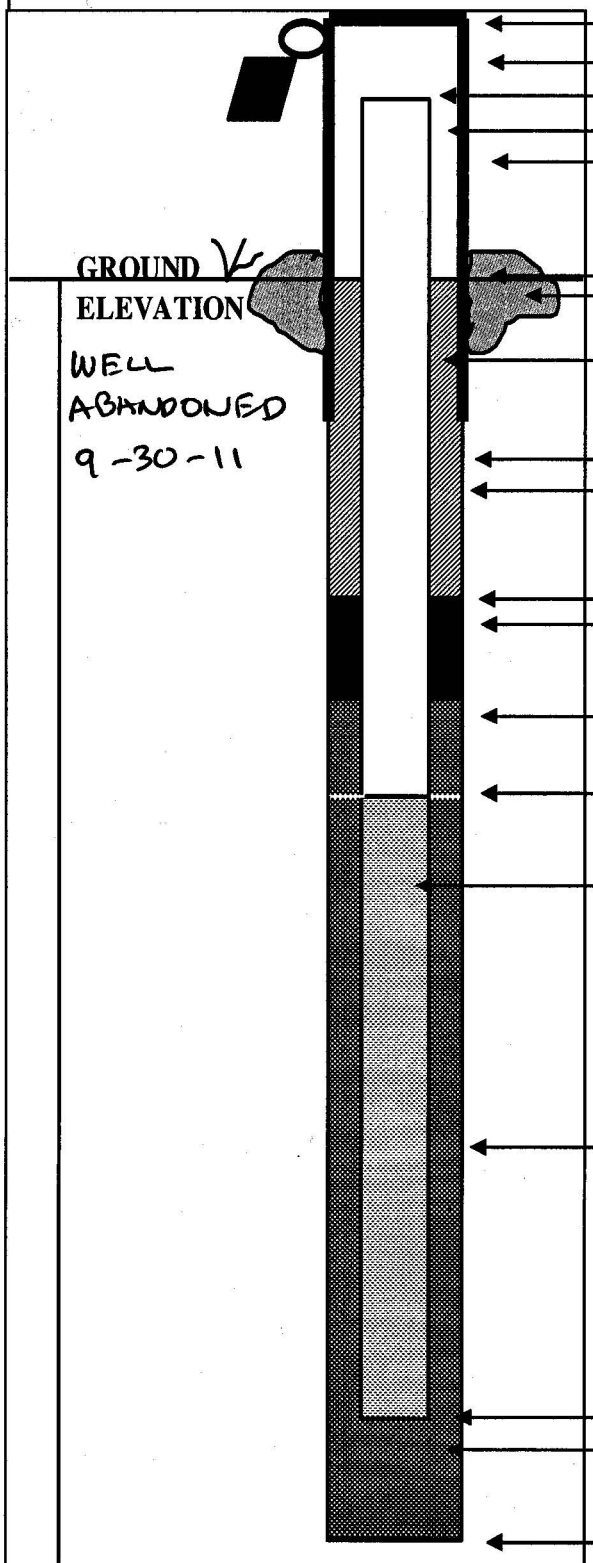
Converted to Well: Yes X No Well I.D. #: X17GW001

BORING NO. X14GW001

Tetra Tech NUS, Inc. **TEMPORARY OVERBURDEN MONITORING WELL SHEET**

PROJECT:	Phase 2 SI NSFIH Stump Neck	DRILLING Co.:	Vironex Inc.	BORING No.:	X14GW001
PROJECT No.:	112G00810 CTO 423	DRILLER:	JACOB HALDIMAN	DATE COMPLETED:	9-28-11
SITE:	UXO 14	DRILLING METHOD:	DPT	NORTHING:	323079.10 *
GEOLOGIST:	Fred W.Ramser	DEV. METHOD:	PUMP	EASTING:	1249235.42 *

* RAW DATA FROM GPS HANDSET



ELEVATION OF TOP OF SURFACE CASING: NA

STICK -UP TOP OF SURFACE CASING: NA

ELEVATION OF TOP OF RISER PIPE: NA

RISER STICK-UP ABOVE GROUND SURFACE: 1.2'

I.D. OF SURFACE CASING: NA

TYPE OF SURFACE CASI: NA

GROUND ELEVATION: ~9'

TYPE OF SURFACE SEAL: NA

RISER PIPE I.D.: 1"

TYPE OF RISER PIPE: PVC

BOREHOLE DIAMETER: ~3.75"

TYPE OF SEAL: BENTONITE CHIPS PDS BRAND

ELEVATION / DEPTH OF SEAL: / 0'

TYPE OF SEAL: BENTONITE CHIPS

ELEVATION / DEPTH TOP OF FILTER PACK: / 2'

ELEVATION / DEPTH TOP OF SCREEN: / 3.8'

TYPE OF SCREEN: PVC INNER / OUTER STAINLESS STEEL 65 MESH

SLOT SIZE X LENGTH: 0.010 w/ 20/30 SAND

I.D. OF SCREEN: 1" ID 1.7" OD

TYPE OF FILTER PACK: WG #2 SILICA SAND FIL PRO BRAND

ELEVATION / DEPTH BOTTOM OF SCREEN: / 13.8'

ELEVATION / DEPTH BOTTOM OF FILTER PACK: / 14'

TYPE OF BACKFILL BELOW WELL: —

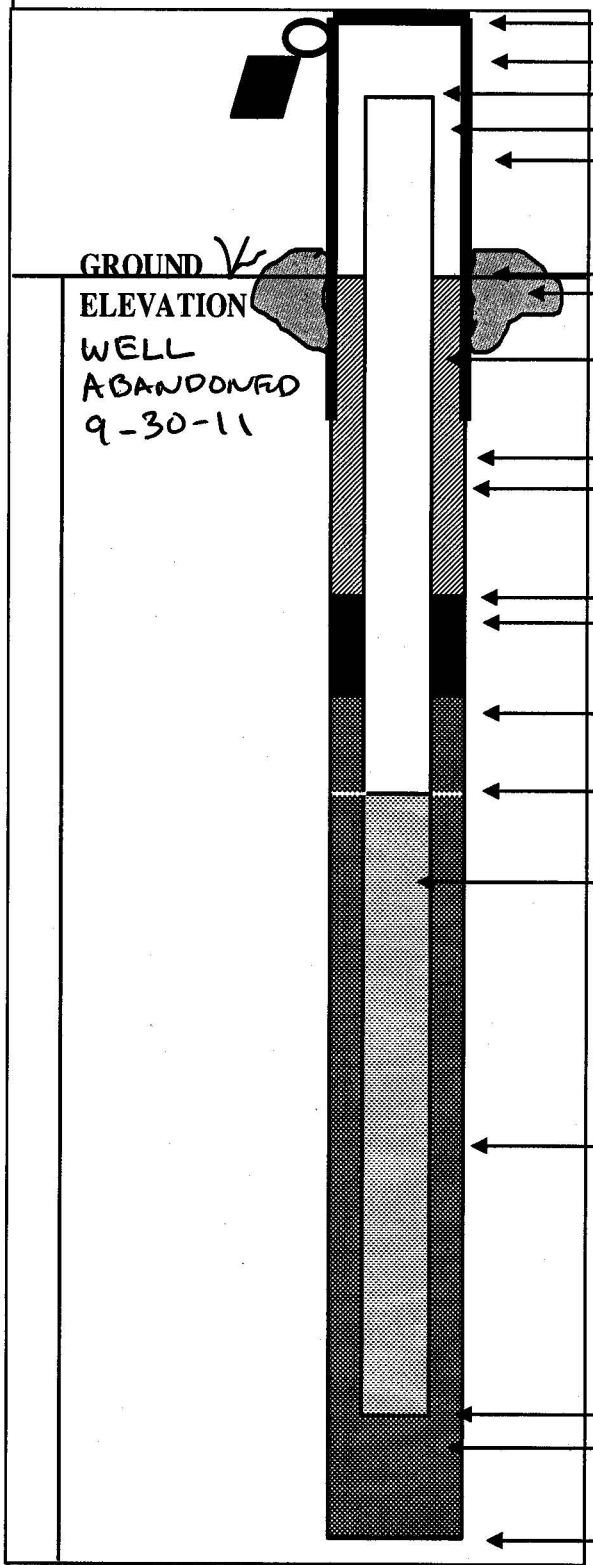
ELEVATION / DEPTH OF BOREHOLE: / 14'

BORING NO. X14GW002

Tetra Tech NUS, Inc. **TEMPORARY OVERBURDEN MONITORING WELL SHEET**

PROJECT:	Phase 2 SI NSFIH Stump Neck	DRILLING Co.:	Vironex Inc.	BORING No.:	X14GW002
PROJECT No.:	112G00810 CTO 423	DRILLER:	JACOB HALDIMAN	DATE COMPLETED:	9-28-11
SITE:	UXO 14	DRILLING METHOD:	DPT	NORTHING:	323084.3 *
GEOLOGIST:	Fred W.Ramser	DEV. METHOD:	PUMP	EASTING:	1249734.6 *

* RAW DATA FROM GPS HANDSET



ELEVATION OF TOP OF SURFACE CASING: NA

STICK -UP TOP OF SURFACE CASING: NA

ELEVATION OF TOP OF RISER PIPE:

RISER STICK-UP ABOVE GROUND SURFACE: 0.15

I.D. OF SURFACE CASING: NA

TYPE OF SURFACE CASI: NA

GROUND ELEVATION: ~7'

TYPE OF SURFACE SEAL: NA

RISER PIPE I.D.: 1"

TYPE OF RISER PIPE: PVC

BOREHOLE DIAMETER: ~3.75"

TYPE OF SEAL: BENTONITE CHIPS P.D.S BRAND

ELEVATION / DEPTH OF SEAL: / 0'

TYPE OF SEAL: BENTONITE CHIPS

ELEVATION / DEPTH TOP OF FILTER PACK: / 11'

ELEVATION / DEPTH TOP OF SCREEN: / 14.85'

PRE-PAK PVC

TYPE OF SCREEN: STAINLESS STEEL OUTER 65 MESH

SLOT SIZE X LENGTH: 0.010 w/ 20/30 SAND

I.D. OF SCREEN: 1" ID 1.7" OD

TYPE OF FILTER PACK: WG #2 SILICA SAND FILPRO BRAND

ELEVATION / DEPTH BOTTOM OF SCREEN: / 24.85

ELEVATION / DEPTH BOTTOM OF FILTER PACK: / 25

TYPE OF BACKFILL BELOW WELL:

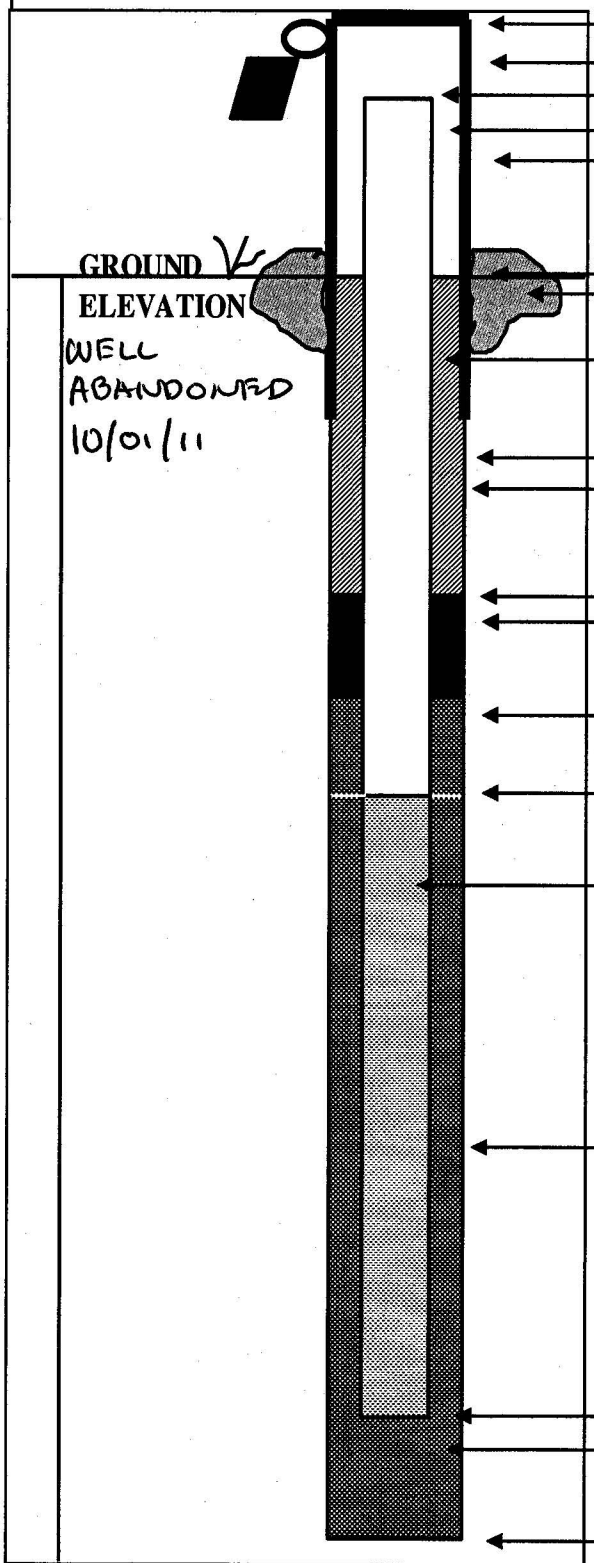
ELEVATION / DEPTH OF BOREHOLE: / 25

BORING NO. X14GW003

Tetra Tech NUS, Inc. **TEMPORARY OVERBURDEN MONITORING WELL SHEET**

PROJECT:	Phase 2 SI NSFIH Stump Neck	DRILLING Co.:	Vironex Inc.	BORING No.:	X14GW003
PROJECT No.:	112G00810 CTO 423	DRILLER:	JACOB HALDIMAN	DATE COMPLETED:	9-30-11
SITE:	UXO 14	DRILLING METHOD:	DPT	NORTHING:	* 323130.85
GEOLOGIST:	Fred W.Ramser	DEV. METHOD:	PUMP	EASTING:	* 1250602.04

* RAW DATA FROM GPS HANDSET



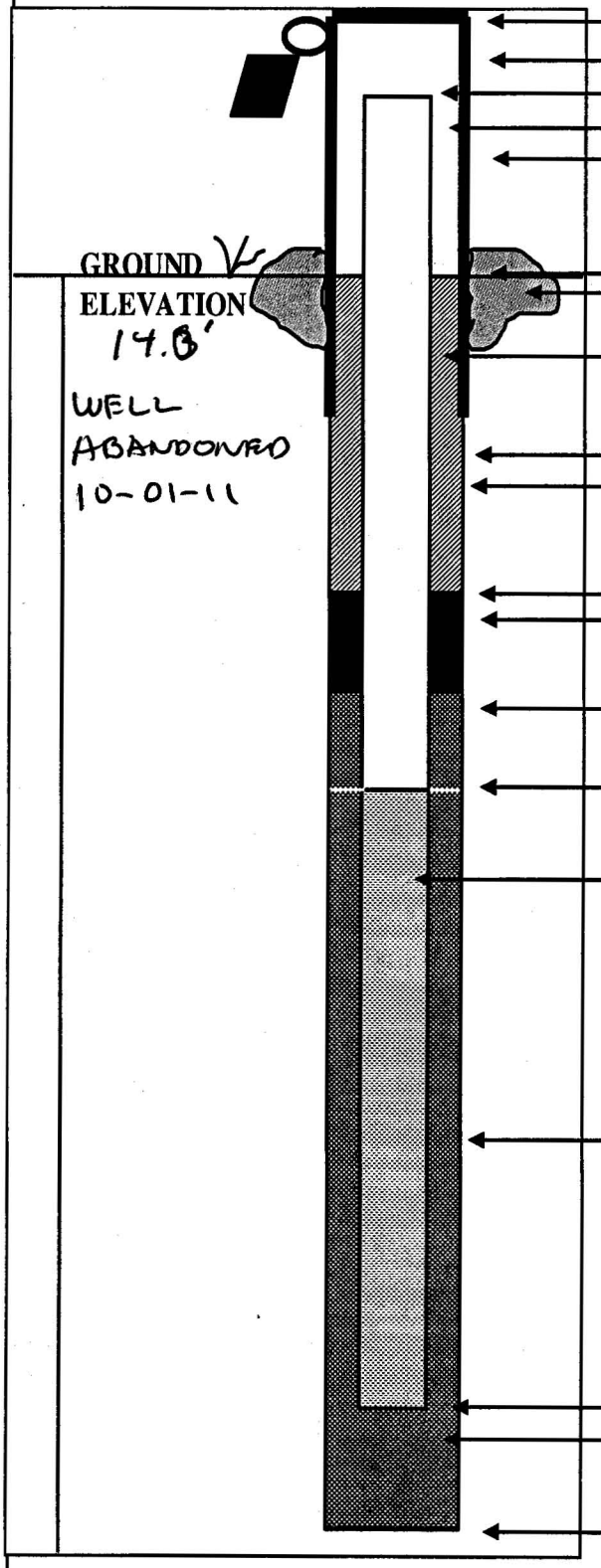
- ELEVATION OF TOP OF SURFACE CASING: NA
- STICK -UP TOP OF SURFACE CASING: NA
- ELEVATION OF TOP OF RISER PIPE:
- RISER STICK-UP ABOVE GROUND SURFACE: 3.5'
- I.D. OF SURFACE CASING: NA
- TYPE OF SURFACE CASI: NA
- GROUND ELEVATION: ~12
- TYPE OF SURFACE SEAL: NA
- RISER PIPE I.D.: 1"
- TYPE OF RISER PIPE: PVC
- BOREHOLE DIAMETER: ~3.25"
- TYPE OF SEAL: BENTONITE CHIPS P.D.S BRAND
- ELEVATION / DEPTH OF SEAL: / 10'
- TYPE OF SEAL: BENTONITE CHIPS
- ELEVATION / DEPTH TOP OF FILTER PACK: / 14.5'
- ELEVATION / DEPTH TOP OF SCREEN: /16.5
- TYPE OF SCREEN: PRE-PAK PVC + STAINLESS STEEL OUTER 65 MESH
- SLOT SIZE X LENGTH: 0.010 w/ 20/30 SAND
- I.D. OF SCREEN: 1" ID 1.7" OD
- TYPE OF FILTER PACK: WG #2 SILICA SAND FIL PRO BRAND
- ELEVATION / DEPTH BOTTOM OF SCREEN: / 21.5
- ELEVATION / DEPTH BOTTOM OF FILTER PACK: / 22
- TYPE OF BACKFILL BELOW WELL:
- ELEVATION / DEPTH OF BOREHOLE: / 22

BORING NO. X14GW004

Tetra Tech NUS, Inc. **TEMPORARY OVERBURDEN MONITORING WELL SHEET**

PROJECT:	Phase 2 SI NSFIH Stump Neck	DRILLING Co.:	Vironex Inc.	BORING No.:	X14GW004
PROJECT No.:	112G00810 CTO 423	DRILLER:	JACOB H.	DATE COMPLETED:	9-29-11
SITE:	UXO 14	DRILLING METHOD:	DPT	NORTHING:	322897.59 *
GEOLOGIST:	Fred W.Ramser	DEV. METHOD:	PUMP	EASTING:	1250710.41 *

*RAW DATA FROM GPS HANDSET



ELEVATION OF TOP OF SURFACE CASING: NA

STICK -UP TOP OF SURFACE CASING: NA

ELEVATION OF TOP OF RISER PIPE:

RISER STICK-UP ABOVE GROUND SURFACE: 2.2

I.D. OF SURFACE CASING NA

TYPE OF SURFACE CASI NA

GROUND ELEVATION: ~14.8'

TYPE OF SURFACE SEAL: NA

RISER PIPE I.D.: 1"

TYPE OF RISER PIPE: PVC

BOREHOLE DIAMETER: ~3.25

TYPE OF SEAL: BENTONITE CHIPS P.D.S BRAND

ELEVATION / DEPTH OF SEAL: / 0

TYPE OF SEAL: BENTONITE CHIPS

ELEVATION / DEPTH TOP OF FILTER PACK: / 1'

ELEVATION / DEPTH TOP OF SCREEN: / 2.8'

TYPE OF SCREEN: OTTER STAINLESS STEEL PRE-PAK MESH 65 INNER, PVC

SLOT SIZE X LENGTH: 0.010" x 5' w/ 20/30 SAND

I.D. OF SCREEN: 1" ID, CUTTER DIA. 1.7" OD

TYPE OF FILTER PACK: ADDED WG ~~Lab~~ #2 SILICA SAND

ELEVATION / DEPTH BOTTOM OF SCREEN: / 7.8'

ELEVATION / DEPTH BOTTOM OF FILTER PACK: / 8'

TYPE OF BACKFILL BELOW WELL:

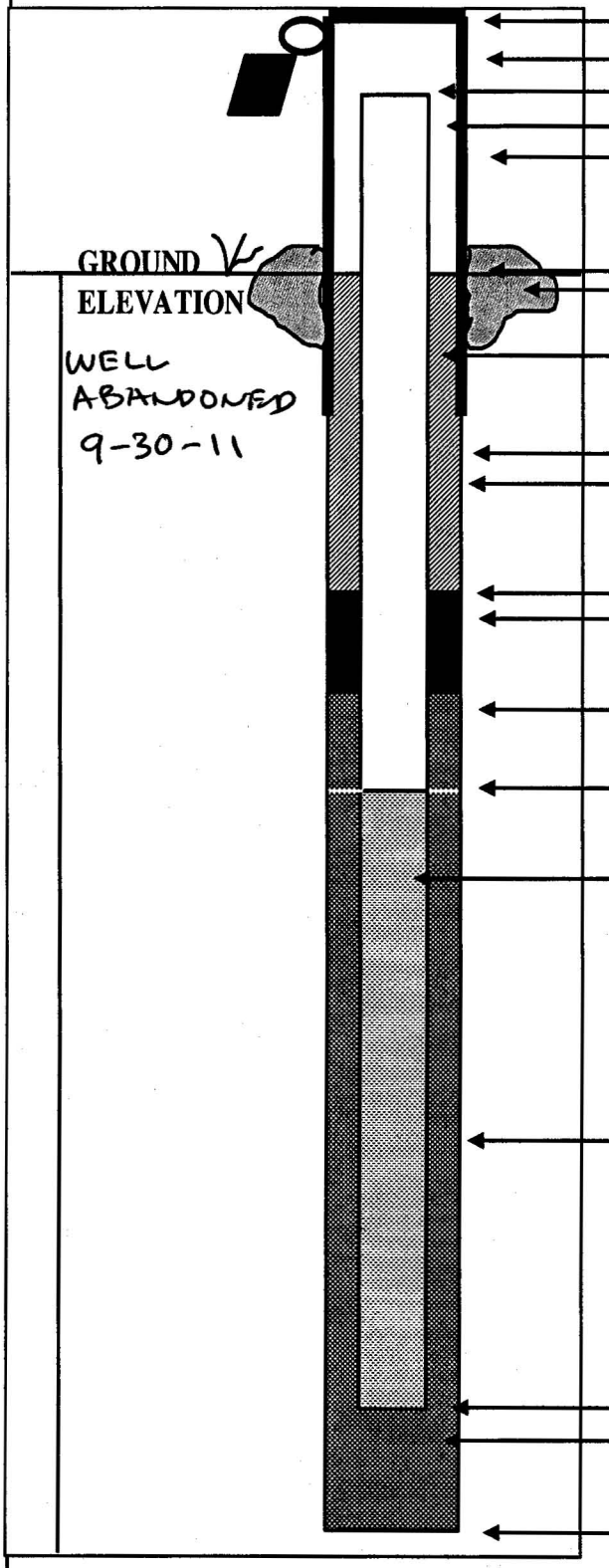
ELEVATION / DEPTH OF BOREHOLE: / 8'

BORING NO. X15GW001

Tetra Tech NUS, Inc. **TEMPORARY OVERBURDEN MONITORING WELL SHEET**

PROJECT:	Phase 2 SI NSFIH Stump Neck	DRILLING Co.:	Vironex Inc.	BORING No.:	X15GW001
PROJECT No.:	112G00810 CTO 423	DRILLER:	JACOB HALDIMAN	DATE COMPLETED:	9-27-11
SITE:	UXO 15	DRILLING METHOD:	DPT	NORTHING:	323377.23 *
GEOLOGIST:	Fred W.Ramser	DEV. METHOD:	PUMP	EASTING:	1249006.73 *

* RAW DATA FROM GPS HANDSET



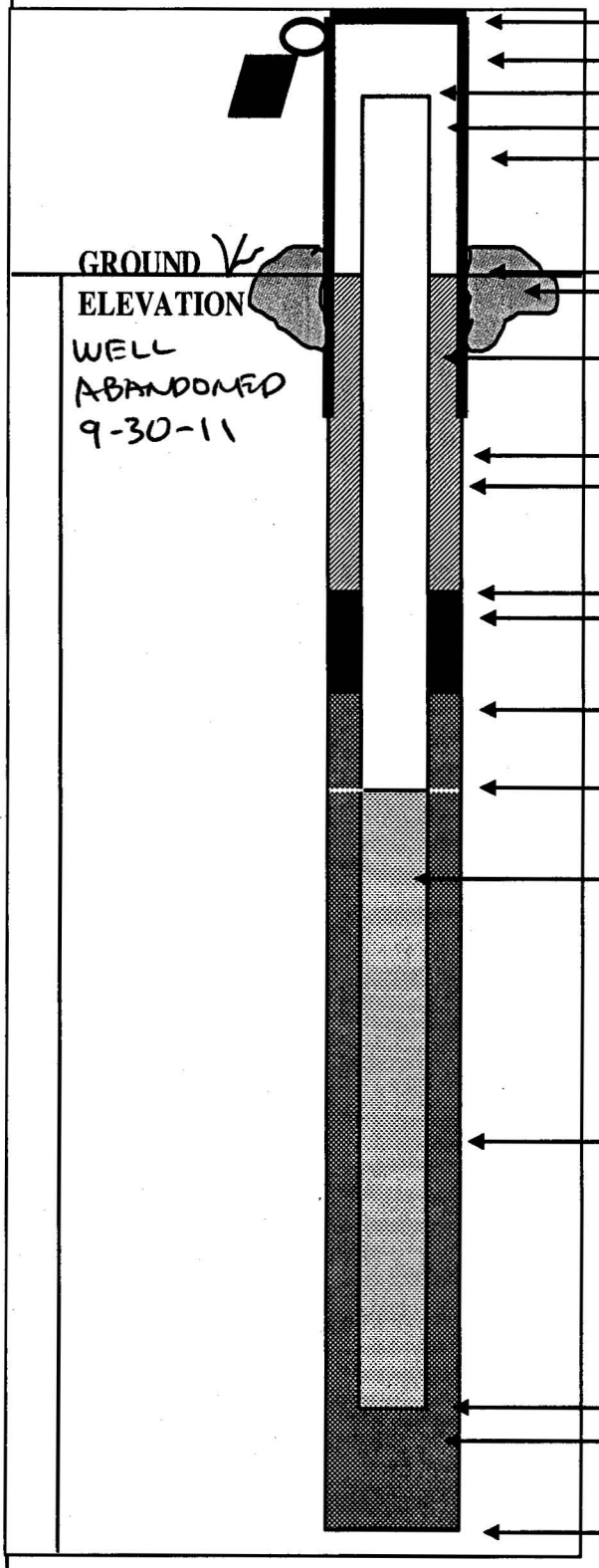
- ELEVATION OF TOP OF SURFACE CASING: NA
- STICK -UP TOP OF SURFACE CASING: NA
- ELEVATION OF TOP OF RISER PIPE:
- RISER STICK-UP ABOVE GROUND SURFACE: 3'
- I.D. OF SURFACE CASING: NA
- TYPE OF SURFACE CASI: NA
- GROUND ELEVATION: ~6'
- TYPE OF SURFACE SEAL: NA
- RISER PIPE I.D.: 1"
- TYPE OF RISER PIPE: PVC
- BOREHOLE DIAMETER: ~3.75"
- TYPE OF SEAL: BENTONITE CHIPS P.D.S. BRAND
- ELEVATION / DEPTH OF SEAL: / 10'
- TYPE OF SEAL: BENTONITE CHIPS
- ELEVATION / DEPTH TOP OF FILTER PACK: / 1'
- ELEVATION / DEPTH TOP OF SCREEN: / 2'
- TYPE OF SCREEN: PRE-PAK STAINLESS STEEL OTTER-MESH G5 INNER PVC
- SLOT SIZE X LENGTH: 0.010" x 10', w/ 20-30 SAND
- I.D. OF SCREEN: 1" ID, 1.7" OD
- TYPE OF FILTER PACK: SILICA SAND WG#2 FIL PRO BRAND
- ELEVATION / DEPTH BOTTOM OF SCREEN: / 12
- ELEVATION / DEPTH BOTTOM OF FILTER PACK: / 12
- TYPE OF BACKFILL BELOW WELL:
- ELEVATION / DEPTH OF BOREHOLE: / 12

BORING NO. X15GW002

Tetra Tech NUS, Inc. **TEMPORARY OVERBURDEN MONITORING WELL SHEET**

PROJECT:	Phase 2 SI NSFIH Stump Neck	DRILLING Co.:	Vironex Inc.	BORING No.:	X15GW002
PROJECT No.:	112G00810 CTO 423	DRILLER:	JACOB HALPIMAN	DATE COMPLETED:	9-30-11
SITE:	UXO 15	DRILLING METHOD:	DPT	NORTHING:	323396.1 *
GEOLOGIST:	Fred W.Ramser	DEV. METHOD:	Pump	EASTING:	1248802.54*

*RAW DATA FROM GPS HANDSET



ELEVATION OF TOP OF SURFACE CASING: NA

STICK -UP TOP OF SURFACE CASING: NA

ELEVATION OF TOP OF RISER PIPE:

RISER STICK-UP ABOVE GROUND SURFACE: 3'

I.D. OF SURFACE CASING: NA

TYPE OF SURFACE CASI: NA

GROUND ELEVATION: ~5'

TYPE OF SURFACE SEAL: NA

RISER PIPE I.D.: 1"

TYPE OF RISER PIPE: PVC

BOREHOLE DIAMETER: ~3.75"

TYPE OF SEAL: BENTONITE CHIPS P.D.S BRAND

ELEVATION / DEPTH OF SEAL: / 0'

TYPE OF SEAL: BENTONITE CHIPS

ELEVATION / DEPTH TOP OF FILTER PACK: / 1'

ELEVATION / DEPTH TOP OF SCREEN: / 2'

TYPE OF SCREEN: PRE-PAC STAINLESS STEEL OTTER MESH 65 INNER PVC

SLOT SIZE X LENGTH: 0.010" x 10', w/ 20-30 SAND

I.D. OF SCREEN: 1" ID, 1.7" OD

TYPE OF FILTER PACK: SILICA SAND WG#2 FIL PRO BRAND

ELEVATION / DEPTH BOTTOM OF SCREEN: / 12'

ELEVATION / DEPTH BOTTOM OF FILTER PACK: / 12'

TYPE OF BACKFILL BELOW WELL:

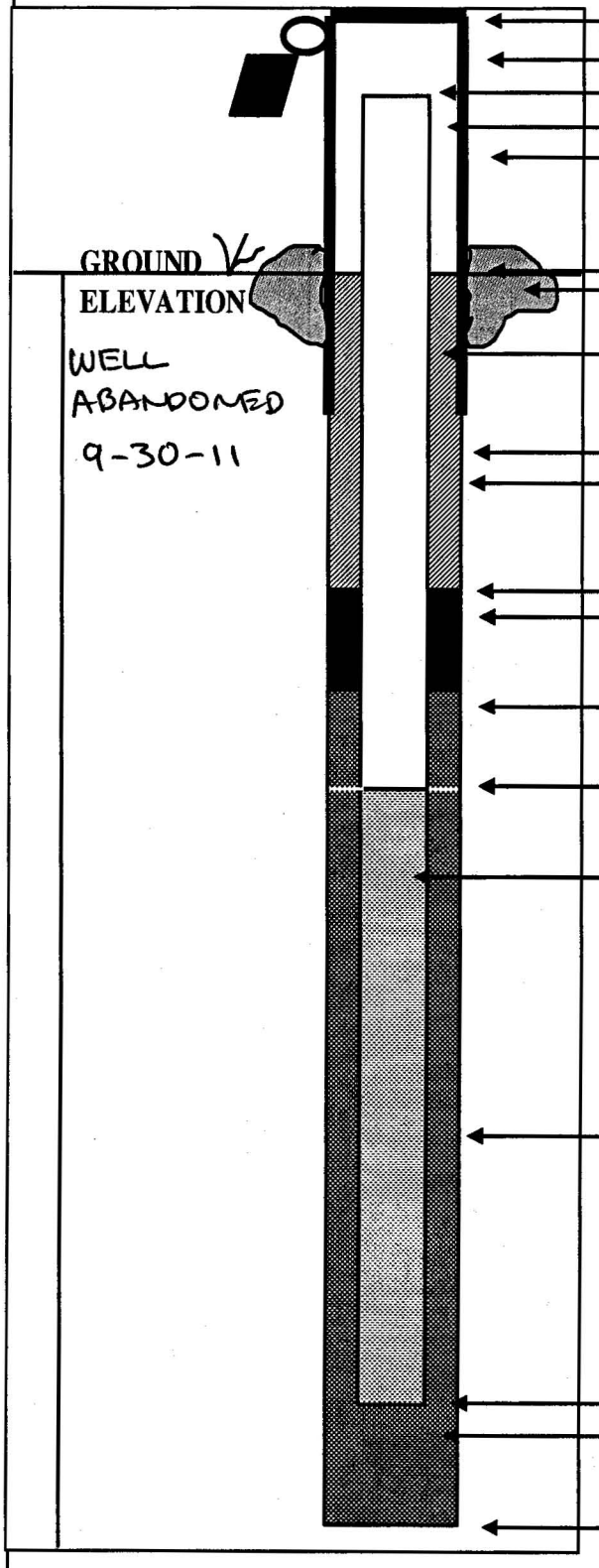
ELEVATION / DEPTH OF BOREHOLE: / 12'

BORING NO. X15GW003

Tetra Tech NUS, Inc. **TEMPORARY OVERBURDEN MONITORING WELL SHEET**

PROJECT:	Phase 2 SI NSFIH Stump Neck	DRILLING Co.:	Vironex Inc.	BORING No.:	X15GW003
PROJECT No.:	112G00810 CTO 423	DRILLER:	JACOB HALDIMAN	DATE COMPLETED:	9-27-11
SITE:	UXO 15	DRILLING METHOD:	DPT	NORTHING:	323446.72 *
GEOLOGIST:	Fred W.Ramser	DEV. METHOD:	PUMP	EASTING:	1249346.55 *

* RAW DATA FROM GPS HANDSET



ELEVATION OF TOP OF SURFACE CASING: NA

STICK -UP TOP OF SURFACE CASING: NA

ELEVATION OF TOP OF RISER PIPE:

RISER STICK-UP ABOVE GROUND SURFACE: 3.35'

I.D. OF SURFACE CASING: NA

TYPE OF SURFACE CASI: NA

GROUND ELEVATION: ~5'

TYPE OF SURFACE SEAL: NA

RISER PIPE I.D.: 1"

TYPE OF RISER PIPE: PVC

BOREHOLE DIAMETER: ~3.75"

TYPE OF SEAL: BENTONITE CHIPS P.D.S BRAND

ELEVATION / DEPTH OF SEAL: 10'

TYPE OF SEAL: BENTONITE CHIPS P.D.S BRAND

ELEVATION / DEPTH TOP OF FILTER PACK: 11'

ELEVATION / DEPTH TOP OF SCREEN: 11.65'

TYPE OF SCREEN: PRE-PAC STAINLESS STEEL OTTER MESH 65 INNER PVC

SLOT SIZE X LENGTH: 0.010 x 10', W 20-30 SAND

I.D. OF SCREEN: 1" ID 1.7" OD

TYPE OF FILTER PACK: SILICA SAND WGH2 FILL PRO BRAND

ELEVATION / DEPTH BOTTOM OF SCREEN: 111.65'

ELEVATION / DEPTH BOTTOM OF FILTER PACK: 12'

TYPE OF BACKFILL BELOW WELL:

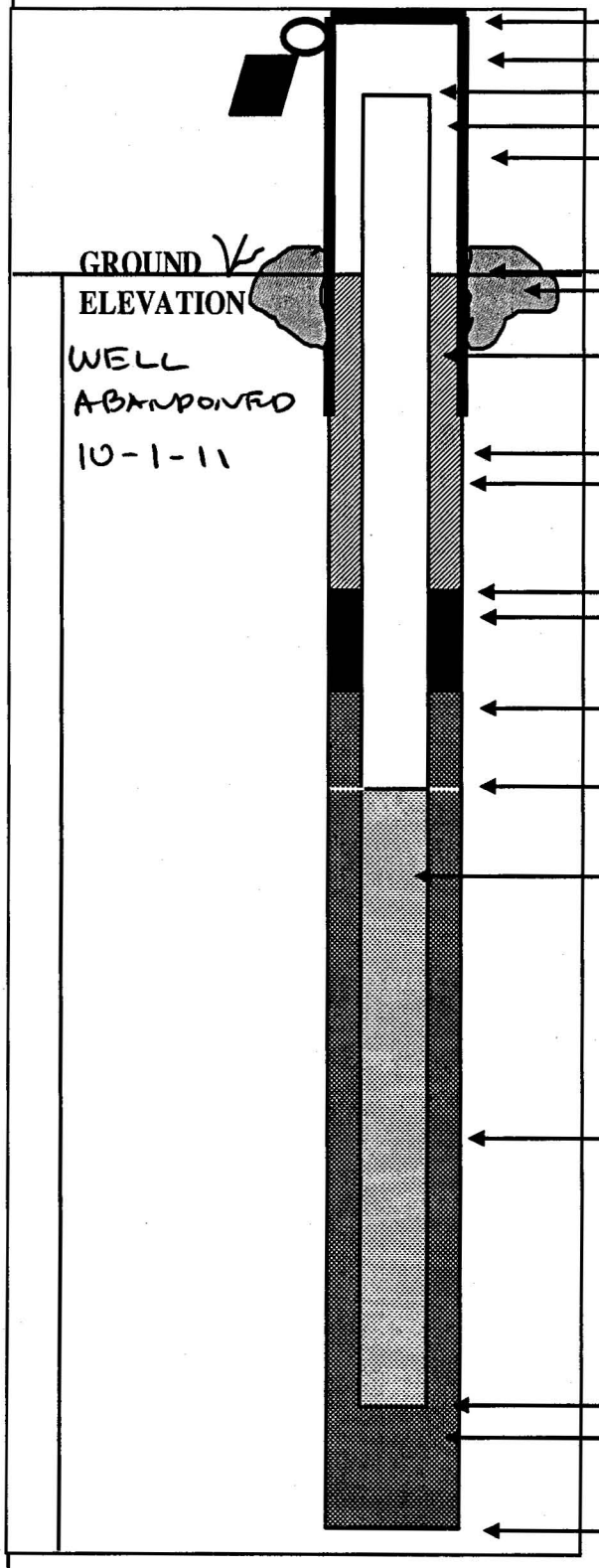
ELEVATION / DEPTH OF BOREHOLE: 12'

BORING NO. X16GW001

Tetra Tech NUS, Inc. **TEMPORARY OVERBURDEN MONITORING WELL SHEET**

PROJECT:	Phase 2 SI NSFIH Stump Neck	DRILLING Co.:	Vironex Inc.	BORING No.:	X16GW001
PROJECT No.:	112G00810 CTO 423	DRILLER:	JACOB HALDIMAN	DATE COMPLETED:	9-29-11
SITE:	UXO 16	DRILLING METHOD:	DPT	NORTHING:	323045.48 *
GEOLOGIST:	Fred W.Ramser	DEV. METHOD:	PUMP	EASTING:	1256859.33 *

* RAW DATA FROM GPS HANDSET



ELEVATION OF TOP OF SURFACE CASING: NA

STICK -UP TOP OF SURFACE CASING: NA

ELEVATION OF TOP OF RISER PIPE:

RISER STICK-UP ABOVE GROUND SURFACE: 3'

I.D. OF SURFACE CASING NA

TYPE OF SURFACE CASI NA

GROUND ELEVATION: ~36'

TYPE OF SURFACE SEAL: NA

RISER PIPE I.D.: 1"

TYPE OF RISER PIPE: PVC

BOREHOLE DIAMETER: ~3.25"

TYPE OF SEAL: BENTONITE CHIPS P.D.S BRAND

ELEVATION / DEPTH OF SEAL: / 0'

TYPE OF SEAL: BENTONITE CHIPS

ELEVATION / DEPTH TOP OF FILTER PACK: / 8'

ELEVATION / DEPTH TOP OF SCREEN: / 12

TYPE OF SCREEN: PRE-PAK STAINLESS STEEL OTTER MESH 65

SLOT SIZE X LENGTH: 0.010 x 15, W INNER PVC 20-30 SAND

I.D. OF SCREEN: 1" ID 1.7" OD

TYPE OF FILTER PACK: SILICA SAND WGH2 FIL PRO BRAND

ELEVATION / DEPTH BOTTOM OF SCREEN: / 27

ELEVATION / DEPTH BOTTOM OF FILTER PACK: / 27

TYPE OF BACKFILL BELOW WELL:

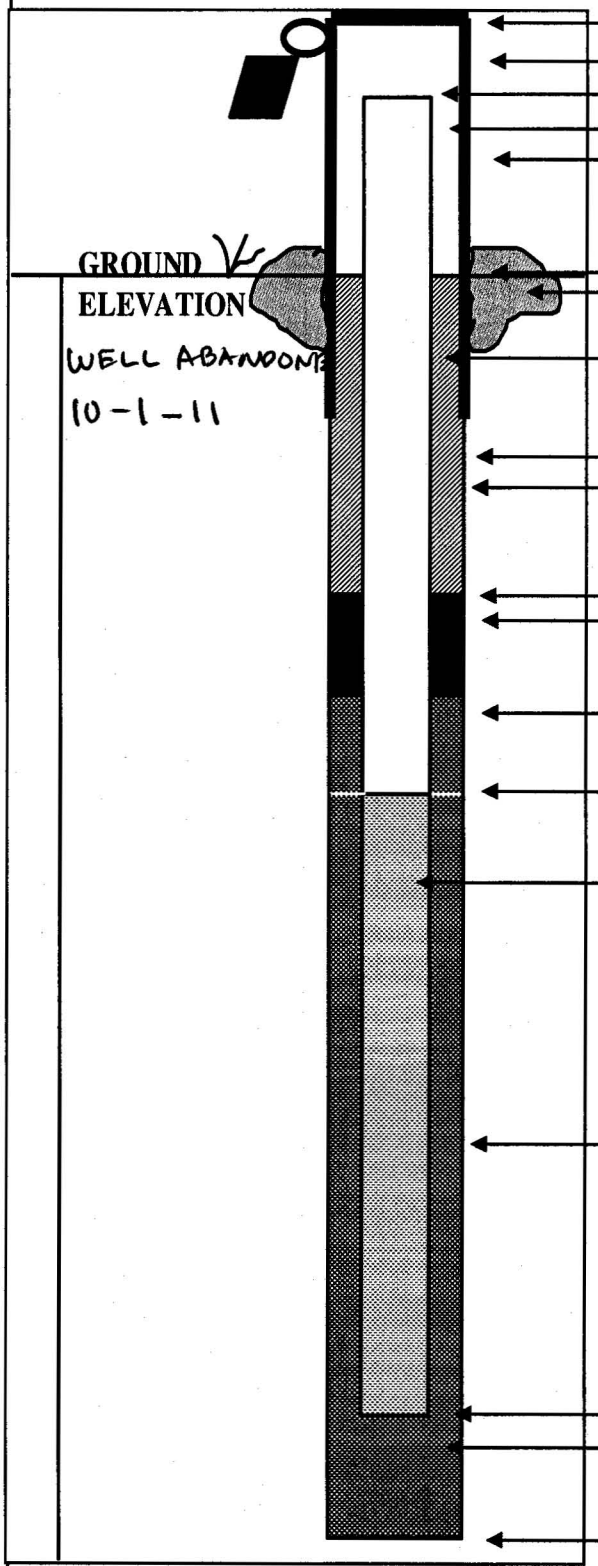
ELEVATION / DEPTH OF BOREHOLE: / 27

BORING NO. X16GW002

Tetra Tech NUS, Inc. **TEMPORARY OVERBURDEN MONITORING WELL SHEET**

PROJECT:	Phase 2 SI NSFIH Stump Neck	DRILLING Co.:	Vironex Inc.	BORING No.:	X16GW002
PROJECT No.:	112G00810 CTO 423	DRILLER:	JACOB HALDIMAN	DATE COMPLETED:	9-30-11
SITE:	UXO 16	DRILLING METHOD:	DPT	NORTHING:	323091.30 *
GEOLOGIST:	Fred W.Ramser	DEV. METHOD:	PUMP	EASTING:	1256510.99 *

*RAW DATA FROM GPS HAND SET



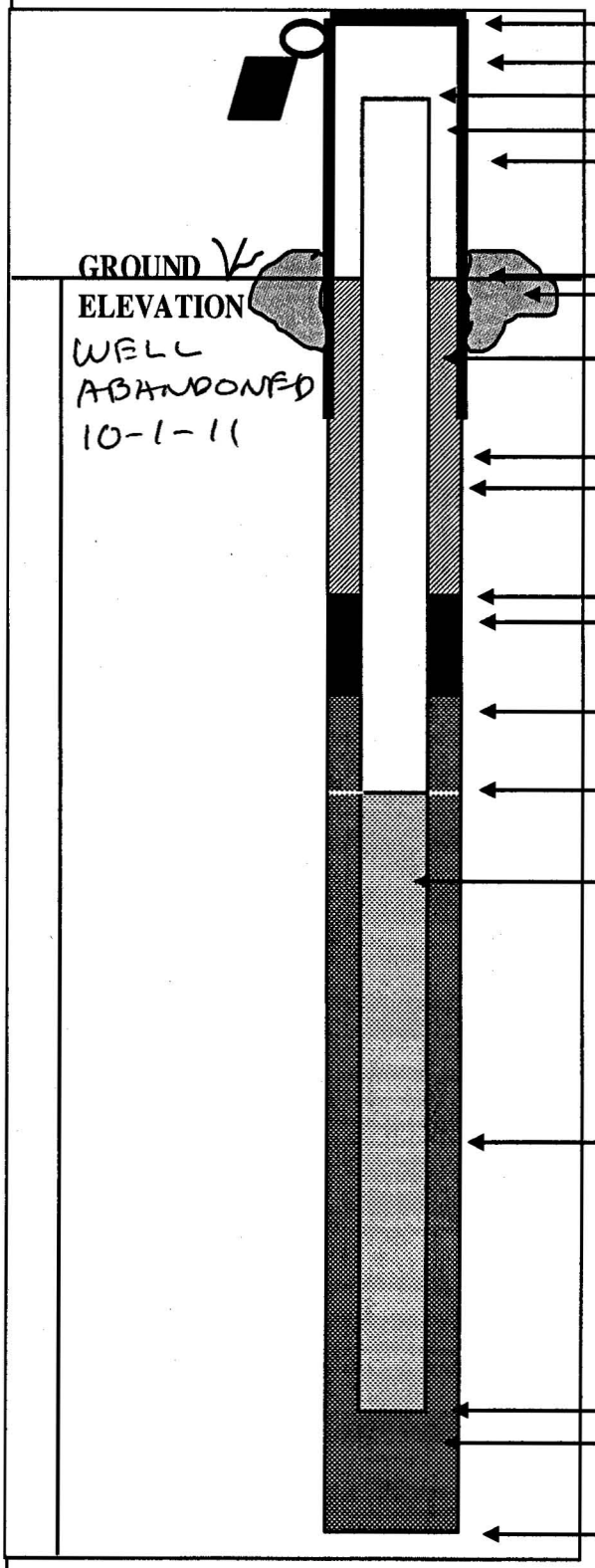
- ELEVATION OF TOP OF SURFACE CASING: NA
- STICK -UP TOP OF SURFACE CASING: NA
- ELEVATION OF TOP OF RISER PIPE:
- RISER STICK-UP ABOVE GROUND SURFACE: 1.95'
- I.D. OF SURFACE CASING: NA
- TYPE OF SURFACE CASI: NA
- GROUND ELEVATION: ~30'
- TYPE OF SURFACE SEAL: NA
- RISER PIPE I.D.: 1"
- TYPE OF RISER PIPE: PVC
- BOREHOLE DIAMETER: ~3.25"
- TYPE OF SEAL: BENTONITE CHIPS P.D.S. BRAND
- ELEVATION / DEPTH OF SEAL: 10'
- TYPE OF SEAL: BENTONITE CHIPS
- ELEVATION / DEPTH TOP OF FILTER PACK: 16'
- ELEVATION / DEPTH TOP OF SCREEN: 18.05
- TYPE OF SCREEN: PRE-PAK STAINLESS STEEL OTTER MESH 65
- SLOT SIZE X LENGTH: INNER PVC 0.010 x 10', w 20-30 SAND
- I.D. OF SCREEN: 1" ID 1.7" OD
- TYPE OF FILTER PACK: SILICA SAND WGFF2 FIL PRO BRAND
- ELEVATION / DEPTH BOTTOM OF SCREEN: 118.05
- ELEVATION / DEPTH BOTTOM OF FILTER PACK: 118.05
- TYPE OF BACKFILL BELOW WELL:
- ELEVATION / DEPTH OF BOREHOLE: 118.05

BORING NO. X17GW001

Tetra Tech NUS, Inc. **TEMPORARY OVERBURDEN MONITORING WELL SHEET**

PROJECT:	Phase 2 SI NSFIH Stump Neck	DRILLING Co.:	Vironex Inc.	BORING No.:	X17GW001
PROJECT No.:	112G00810 CTO 423	DRILLER:	JACOB HARDIMAN	DATE COMPLETED:	9-29-11
SITE:	UXO 17	DRILLING METHOD:	DPT	NORTHING:	321491.36 *
GEOLOGIST:	Fred W.Ramser	DEV. METHOD:	PUMP	EASTING:	1256728.74 *

* RAW DATA FROM GPS HANDSET



ELEVATION OF TOP OF SURFACE CASING: NA

STICK -UP TOP OF SURFACE CASING: NA

ELEVATION OF TOP OF RISER PIPE:

RISER STICK-UP ABOVE GROUND SURFACE: 0.60

I.D. OF SURFACE CASING: NA

TYPE OF SURFACE CASI: NA

GROUND ELEVATION: ~85'

TYPE OF SURFACE SEAL: NA

RISER PIPE I.D.: 1"

TYPE OF RISER PIPE: PVC

BOREHOLE DIAMETER: ~3.25"

TYPE OF SEAL: BENTONITE CHIPS P.D.S BRAND

ELEVATION / DEPTH OF SEAL: / 0'

TYPE OF SEAL: BENTONITE CHIPS

ELEVATION / DEPTH TOP OF FILTER PACK: / 7'

ELEVATION / DEPTH TOP OF SCREEN: / 9.4'

TYPE OF SCREEN: PRE-PAK STAINLESS STEEL OTTER MESH G5 INNER PVC

SLOT SIZE X LENGTH: 0.010 x 10', w/ 20-30 SAND

I.D. OF SCREEN: 1" ID 1.7" OD

TYPE OF FILTER PACK: SILICA SAND W6 #2 FIL PRO BRAND

ELEVATION / DEPTH BOTTOM OF SCREEN: / 19.4

ELEVATION / DEPTH BOTTOM OF FILTER PACK: / 20

TYPE OF BACKFILL BELOW WELL:

ELEVATION / DEPTH OF BOREHOLE: / 20

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Page ___ of _____

Well: X146W0001
Site: UXO 14
Date Installed: 9-28-11
Date Developed: 9-29-11
Dev. Method: PUMP
Pump Type: BLADDER

Depth to Bottom (ft.): 14.9 TPVC
Static Water Level Before (ft.): 6.31
Static Water Level After (ft.): —
Screen Length (ft.): 10'
Specific Capacity: NA
Casing ID (in.): 1"

Responsible Personnel: CHARLES MEYER
Drilling Co.: VIRONEX INC.
Project Name: PHASE 2 SITE INSPECTION
Project Number: 112600810

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
0930	—	—	—	—	—	—	1454	
1125	—	1.5	7.69	22.13	5.09	0.731	100	
1130	0	1.6	7.83	22.18	5.06	0.699	33	SEE PURGE DATA SHEET
								FOR ADDITIONAL INFO.

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Page ___ of _____

Well: X14GW002
Site: UXO 14
Date Installed: 9-28-11 ~~9/28~~
Date Developed: ~~9-30-11~~ 9/28
Dev. Method: PUMP
Pump Type: BLADDER

Depth to Bottom (ft.): 25' TPVC
Static Water Level Before (ft.): 7.32
Static Water Level After (ft.): —
Screen Length (ft.): 10'
Specific Capacity: NA
Casing ID (in.): 1"

Responsible Personnel: CHARLES MEYER / FRED W. PAMSTER
Drilling Co.: VIRONEX INC
Project Name: PHASE 2 SITE INSPECTION
Project Number: 112600810

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units MS/CM)	Turbidity (NTU)	Remarks (odor, color, etc.)
1650	0	—	7.32	—	—	—	—	LGT GREY
1705	—	2	—	—	—	—	—	WELL WENT DRY
								AFTER REMOVING
								2 gals. SEE
								PURGE DATA SHEET
								FOR WATER PARAMETERS

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Page ___ of _____

Well: X14GW003 Depth to Bottom (ft.): 25' TPVC Responsible Personnel: CHARLES MEYER / FRED W. RAMSEY
Site: UXO 14 Static Water Level Before (ft.): 22.1 TPVC Drilling Co.: VIRONEX INC.
Date Installed: 9-30-11 Static Water Level After (ft.): DRY Project Name: PHASE 2 SITE INSPECTION
Date Developed: 10-01-11 Screen Length (ft.): 15' Project Number: 112G00810
Dev. Method: PUMP Specific Capacity: NA
Pump Type: PERISTALTIC Casing ID (in.): 1"

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume ~~(Gal.)~~	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units _____)	Turbidity (NTU)	Remarks (odor, color, etc.)
0900	—	~1/2 L.	22.1	—	—	—	—	WITHDREW ~ 1/2 liter
1300	—	—	DRY WELL	—	—	—	—	WELL WENT DRY

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Page ___ of _____

Well: X14GW004
Site: UXO 14
Date Installed: 9-29-11
Date Developed: 9-30-11
Dev. Method: PUMP
Pump Type: BLADDER

Depth to Bottom (ft.): 9.89 TPVC
Static Water Level Before (ft.): 5.97
Static Water Level After (ft.): DRY
Screen Length (ft.): 5'
Specific Capacity: NA
Casing ID (in.): 1"

Responsible Personnel: CHARLES MEYER
Drilling Co.: VIRONEX INC.
Project Name: PHASE 2 SITE INSPECTION
Project Number: 112600810

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units MS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
0935	0	—						
0940	—	~0.75	DRY	—	—	—	—	WELL PUMPED DRY
								SEE PURGE DATA
								SHEET

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Page ___ of _____

Well: X15GW001 Depth to Bottom (ft.): 14.91 TPVC Responsible Personnel: CHARLES MEYER
Site: UXO 15 Static Water Level Before (ft.): 7.78 Drilling Co.: VIRONEX INC.
Date Installed: 9-27-11 Static Water Level After (ft.): — Project Name: PHASE 2 SITE INSPECTION
Date Developed: 9-28-11 Screen Length (ft.): 10 Project Number: 112G00810
Dev. Method: PUMP Specific Capacity: NA
Pump Type: _____ Casing ID (in.): 1"

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1330	0	—	7.78	—	—	0.527	—	
1415	0	1 GAL	7.91	25.98	6.19	~~6.28~~	628	LGT BRN CLEARING
								BEGIN PURGE, SEE
								PURGE DATA SHEET

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Page ___ of _____

Well: X15GW002 Depth to Bottom (ft.): 14.91 TPVC Responsible Personnel: CHARLES MEYER
Site: UXO 15 Static Water Level Before (ft.): 6.33 Drilling Co.: VIRONEX INC.
Date Installed: 9-27-11 Static Water Level After (ft.): — Project Name: PHASE 2 SITE INSPECTION
Date Developed: 9-28-11 Screen Length (ft.): 10' Project Number: 112600810
Dev. Method: PUMP Specific Capacity: NA
Pump Type: BLADDER Casing ID (in.): 1"

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1030	0	—	6.33	—	—	—	—	
1120	0	1/2 GAL	6.59	24.87	5.66	0.279	1491	LGT BRN
								BEGIN PURGE, SEE
								PURGE DATA

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: X15GW003
Site: UXO 15
Date Installed: 9-27-11
Date Developed: 9-29-11
Dev. Method: PUMP
Pump Type: PERISTALTIC

Depth to Bottom (ft.): 14.90' TPVC
Static Water Level Before (ft.): 7.51
Static Water Level After (ft.): —
Screen Length (ft.): 10
Specific Capacity: NA
Casing ID (in.): 1"

Responsible Personnel: CHARLES MEYER
Drilling Co.: VIRONEX INC.
Project Name: PHASE 2 SITE INSPECTION
Project Number: 112600810

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1415	0							BRN
1435	0	4	7.58	24.76	5.51	0.231	1479	BECOMING CLEAR
								BEGIN PURGE PROCESS
								SEE PURGE DATA SHEET

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: X16GW001
Site: UXO 16
Date Installed: 9-29-11
Date Developed: 9-30-11
Dev. Method: PUMP
Pump Type: PERISTALTIC

Depth to Bottom (ft.): 29.95' TPVC
Static Water Level Before (ft.): 5.70
Static Water Level After (ft.): -DRY-
Screen Length (ft.): 15
Specific Capacity: NA
Casing ID (in.): 1"

Responsible Personnel: CHARLES MEYER
Drilling Co.: VIRONEX INC.
Project Name: PHASE 2 SITE INSPECTION
Project Number: 112G00810

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units MS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1100	0	—	5.70	—	—	—	—	LGT BROWN
1110	0	1.5	DRY	—	—	—	—	BECOMING CLEAR

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: X16GW002 Depth to Bottom (ft.): 19.96 TPVC Responsible Personnel: CHARLES MEYER
Site: UXO 16 Static Water Level Before (ft.): 11.26 Drilling Co.: VIRONEX INC
Date Installed: 9-30-11 Static Water Level After (ft.): 7.41 (10/1/11) Project Name: PHASE 2 SITE INVEST.
Date Developed: 9-30-11 Screen Length (ft.): 10 Ft Project Number: 112600810
Dev. Method: PUMP Specific Capacity: NA
Pump Type: PERISTALTIC Casing ID (in.): 1"

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units _____)	Turbidity (NTU)	Remarks (odor, color, etc.)
1215	0	—	—	—	—	—	—	LGT BRN, NO ODOR
1220	0	1 GAL	DRY	—	—	—	—	SEE PURGE DATA - SAMPLED NEXT DAY

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Page ___ of _____

Well: X17GW001 Depth to Bottom (ft.): 19.94 TPVC Responsible Personnel: CHARLES MEYER
Site: UXO 17 Static Water Level Before (ft.): 7.50 Drilling Co.: VIRONEX
Date Installed: 9-29-11 Static Water Level After (ft.): 7.59 Project Name: PHASE 2 SITE INSPECTION
Date Developed: ~~10-4-11~~ 9-30-11 Screen Length (ft.): 10' Project Number: 112600810
Dev. Method: PUMP Specific Capacity: ~~N/A~~
Pump Type: PERISTALTIC Casing ID (in.): 1"

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units _____)	Turbidity (NTU)	Remarks (odor, color, etc.)
1135	0	—	—	—	—	—	—	BROWN
1145	0	2 GALS	7.59					BECOMING CLEAR
								SEE PURGE DATA
								SHEET.

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name: Phase 2 SI NSFIH Stump Neck
Project No.: 112G00810 CTO 423
Location: Indian Head Md
Personnel: Chuck Meyer / FRED W. RAMSER
Weather Conditions: DRY
Measuring Device: Herron T-dipper
Tidally Influenced: ? Yes ___ No ___
Remarks: Non Synoptic water levels

Well or Piezometer Number	Date 2011	Time	Stick-up of Reference Point (feet above ground surface)*	Total Well Depth (feet)*	Water Level Indicator Reading (feet)*	Groundwater Depth Below Ground Surface (ft)	Comments
X156W002	9/28	1025	3.0'	12	6.33	3.33	
X156W001	9/28	1325	3'	12	7.78	4.78	
X146W001	9/29	0925	1.2	14	6.31	5.11	
X156W003	9/29	1410	3.35	12	7.51	4.16	
X146W002	9/29	1645	0.15	25	7.32	7.17	
X146W004	9/30	0930	2.20	7.5	5.97	3.77	
X166W001	9/30	1055	3	27	5.70	2.70	
X176W001	9/30	1130	0.6	20	7.50	6.90	
X166W002	9/30	1210	1.95	18	11.26 7.41*	9.31 5.46*	* MEASURED 10/1 AFTER DEVELOPMENT

* All measurements to the nearest 0.01 foot

NOTE: GW LEVELS MEASURED PRIOR TO DEVELOPMENT

TETRA TECH NUS, INC.

HORIBA U-22 WATER QUALITY CHECKER

Serial No.: 3KEY83VH Model No.: Horiba U-52 Decal No.: N/A

Site Name: Indian Head Stump Neck Annex Job No.: Buffer Lot No.:

Instrument is calibrated in accordance with Manufacturer's Instructions

Calibration Date	Initial Readings						Final Readings						Signature	Comments
	pH = 4.0	Cond. mS/cm	Turbidity NTUs	D.O. mg/l	Temp. (°C)	ORP	pH = 4.0	Cond. m/cm	Turbidity NTUs	D.O. mg/l	Temp. (°C)	ORP		
9/28/11	3.78	4.59	0.0	9.38	21.12	286	4.00	4.48	0.0	9.31	21.07	293		
9/29/11	4.05	4.30	2.3	9.81	22.38	274	4.00	4.48	0.0	9.04	22.39	280		
9/30/11	3.95	4.44	6.5	9.42	19.64	264	4.00	4.49	0.0	9.13	19.60	271		
10/1/11	3.99	4.53	0.0	9.63	18.49	285	4.00	4.49	0.0	9.13	18.32	288		

Tt NUS Form 0023

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: UXO 14 Phase 2 SI NSFIH Stump Neck
Project No.: 112G00810 CTO 423

[] Domestic Well Data
[] Monitoring Well Data
[x] Other Well Type: Temporary
[] QA Sample Type:

Sample ID No.: X14GW0010911
Sample Location: X14GW001
Sampled By: CHUCK MEYER
C.O.C. No.: 35628
Type of Sample:
[x] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 9/29/11	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Sal
Time: 1215	Visual	Standard	mS/cm	°C	NTU	mg/l	mV	%
Method: Low Flow	Clear	4.79	0.676	21.77	5.19	3.51	125	—

PURGE DATA:

Date: 9/29/11	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	TDS
Method: Bladder pump								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 1-inch PVC								
Total Well Depth (TD): 1490								
Static Water Level (WL): 6.31								
One Casing Volume(gal/L):								
Start Purge (hrs): 1125			See Low Flow purge Data sheet					
End Purge (hrs): 1210								
Total Purge Time (min): 45								
Total Vol. Purged (gal/L): 0.5								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Metals; antimony and copper (total)	HNO3 4°	0.5 L HDPE plastic container	yes
Metals; antimony and copper (dissolved)(1)	HNO3 4°	0.5 L HDPE plastic container	yes
Nitroglycerin	4°	(2) 1 L Glass amber glass	yes

OBSERVATIONS / NOTES:

(1) Samples field filtered with 0.45 um filter.

Stick up from ground surface is 1.2 feet
0930 Development of the well was began Turbidity 1454
1115 Development was completed after removing 1.5 gallons Turbidity 100
began filling Flow Through Cell
1125 cell filled parameter readings were began
Pump set at 10.5 Feet 0.5 in the screen zone

Circle if Applicable:

MS/MSD	Duplicate ID No.:
NO	NO

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Phase 2 Site Investigation IH NSF
PROJECT NUMBER: 112G00810 CTO 423
WELL ID.: X14GW001
DATE: 9/29/11

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	Salinity (%)	ORP (mV)	Comments
1125	7.69	85	5.09	0.731	100	6.93	22.13	—	129	
1130	7.83	85	5.06	0.699	33	5.68	22.18	—	129	
1135	7.94	85	5.05	0.688	21.5	5.02	22.21	—	130	
1140	7.96	60	5.00	0.687	16.8	4.57	22.05	—	131	
1145	7.96	60	4.93	0.690	10.93	4.48	21.92	—	131	
1150	7.96	60	4.89	0.681	8.42	3.88	21.74	—	130	
1155	7.96	60	4.86	0.679	6.36	3.89	21.80	—	128	
1200	7.96	60	4.84	0.682	6.19	3.69	21.73	—	127	
1205	7.96	60	4.80	0.676	5.42	3.57	21.81	—	126	
1210	7.96	60	4.79	0.676	5.19	3.51	21.77	—	125	
1215	Sample X14GW001 0911 was collected by GW from the discharge line of the pump									

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: UXO 14 Phase 2 SI NSFIH Stump Neck
Project No.: 112G00810 CTO 423

[] Domestic Well Data
[] Monitoring Well Data
[x] Other Well Type: Temporary
[] QA Sample Type:

Sample ID No.: X14GW0020911
Sample Location: X14GW002
Sampled By: CHUCK M.
C.O.C. No.:
Type of Sample:
[x] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 9/30/11	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Sal
Time: 0835	Visual	Standard	mS/cm	°C	NTU	mg/l	mV	%
Method: Low Flow	Lt Gray	6.17	0.077	16.92	47.2	1.30	-64	—

PURGE DATA:

Date: 9/29/11	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	TDS
Method: Bladder pump								
Monitor Reading (ppm):								
Well Casing Diameter & Material								
Type: 1-inch PVC								
Total Well Depth (TD): 25.00								
Static Water Level (WL): 7.32								
One Casing Volume(gal/L):								
Start Purge (hrs): 0750								
End Purge (hrs): 0835								
Total Purge Time (min): 45								
Total Vol. Purged (gal/L): 0.75								

See Low Flow purge data sheet

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Metals; lead and copper (total)	HNO3 4°	0.5 L HDPE plastic container	yes 1
Metals; lead and copper (dissolved)(1)	HNO3 4°	0.5 L HDPE plastic container	yes 1

OBSERVATIONS / NOTES:

(1) Samples field filtered with 0.45 um filter.

stick up is 0.2 feet above ground surface
1650 Development was began water light gray no odor or sheen water level dropped at 225 ml min would not hold level dropped into screen will purge dry wait for recovery and sample removed total of 2 gallons from the well
1705 well dry after removing 2 gallons

Circle if Applicable:

MS/MSD	Duplicate ID No.:
NO	NO

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Phase 2 Site Investigation IH NSF
PROJECT NUMBER: 112G00810 CTO 423
WELL ID.: X146W002
DATE: 9/30/11

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	Salinity (%)	ORP (mV)	Comments
0750	7.26	Water	level	prior	to purge	beginning	Filling	Flow	through	Cell
0755	9.94	60	5.27	0.147	93.7	3.87	17.11	—	10	Initial
0800	10.75	60	5.75	0.136	70.1	1.76	17.11	—	-43	
0805	11.71	60	6.03	0.118	65.3	1.48	17.15	—	-54	
0810	12.48	60	6.13	0.099	72.0	1.40	17.17	—	-64	
0815	13.28	60	6.14	0.090	66.7	1.30	17.07	—	-66	
0820	13.79	60	6.16	0.083	62.9	1.34	17.02	—	-68	
0825	14.27	60	6.18	0.076	51.1	1.28	16.97	—	-65	
0830	14.82	60	6.17	0.077	47.2	1.30	16.92	—	-64	
0835	Sample X146W002 0911 was collected by grab from the discharge line of the pump									
			water slightly turbid light brown							

SIGNATURE(S): _____

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: UXO 14 Phase 2 SI NSFIH Stump Neck
Project No.: 112G00810 CTO 423

[] Domestic Well Data
[] Monitoring Well Data
[x] Other Well Type: Temporary
[] QA Sample Type:

Sample ID No.: X14GW0040911
Sample Location: X14GW004
Sampled By: CHUCK MEYER
C.O.C. No.:
Type of Sample:
[x] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 9/30/11	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Sal
Time: 1430	Visual	Standard	mS/cm	°C	NTU	mg/l	mV	%
Method: Low Flow	Lt Brown	5.59	0.092	22.99	51.7	3.28	157	—

PURGE DATA:

Date: 9/30/11	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	TDS
Method: Bladder pump								
Monitor Reading (ppm):								
Well Casing Diameter & Material								
Type: 1-inch PVC								
Total Well Depth (TD): 9.89								
Static Water Level (WL): 5.97								
One Casing Volume(gal/L):								
Start Purge (hrs): 1345								
End Purge (hrs): 1425								
Total Purge Time (min): 40								
Total Vol. Purged (gal/L): 0.75								

See Low Flow purge data sheet

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Metals; lead and copper (total)	HNO3 4°	0.5 L HDPE plastic container	2 yes
Metals; lead and copper (dissolved)(1)	HNO3 4°	0.5 L HDPE plastic container	2 yes

OBSERVATIONS / NOTES:

(1) Samples field filtered with 0.45 um filter.

0935 Began development of the well water brown sandy no odor or sheen
0940 well purged dry will wait for recovery
0945 well recovered 1.5 feet purged dry again will come back this afternoon to collect parameters and sample
Stick up = 2.72 feet above ground surface

Circle if Applicable:

MS/MSD	Duplicate ID No.: Assigned time 0100 Duplicate DUP02093011

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Phase 2 Site Investigation IH NSF
PROJECT NUMBER: 112G00810 CTO 423
WELL ID.: X14GW004
DATE: 9/30/11

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	Salinity (%)	ORP (mV)	Comments
1335	Began Filling Flow Through Cell									
1345	6.55	75	6.25	0.091	6.25	5.95	21.31	—	121	
1350	6.55	75	5.87	0.105	203	4.14	21.82	—	96	
1355	6.55	75	5.53	0.101	141	3.31	22.22	—	98	
1400	6.55	75	5.58	0.096	171	3.04	22.03	—	103	
1405	6.55	75	5.16	0.088	102	3.21	22.29	—	129	
1410	6.55	75	5.59	0.086	70.4	3.21	22.45	—	128	
1415	6.55	75	5.56	0.082	61.2	3.36	22.68	—	159	
1420	6.55	75	5.57	0.084	56.5	3.21	22.90	—	160	
1425	6.55	75	5.59	0.082	51.7	3.28	22.99	—	167	
1430	Sample X14GW004/911 was collected by CW From the discharge line of the pump									

SIGNATURE(S): _____

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: UXO 15 Phase 2 SI NSFIH Stump Neck
Project No.: 112G00810 CTO 423

[] Domestic Well Data
[] Monitoring Well Data
[x] Other Well Type: Temporary
[] QA Sample Type:

Sample ID No.: X15GW0010911
Sample Location: X15GW001
Sampled By: CHUCK MEYER
C.O.C. No.:
Type of Sample:
[x] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 9/28/11	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Sal
Time: 1535	Visual	Standard	mS/cm	°C	NTU	mg/l	mV	%
Method: Low Flow	Lt Brown	5.50	0.1577	24.68	69.4	3.14	96	—

PURGE DATA:

Date: 9/28/11	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	TDS
Method: Bladder pump								
Monitor Reading (ppm):								
Well Casing Diameter & Material								
Type: 1-inch PVC								
Total Well Depth (TD): 14.91								
Static Water Level (WL): 3.38								
One Casing Volume(gal/L):								
Start Purge (hrs): 1425								
End Purge (hrs): 1530								
Total Purge Time (min): 65								
Total Vol. Purged (gal/L): 1.5								

SEE LOW FLOW Purge Data Sheet

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Metals; antimony (total)	HNO3 4°	0.5 L HDPE plastic container	yes 1
Metals; antimony (dissolved)(1)	HNO3 4°	0.5 L HDPE plastic container	yes 1
Nitroglycerin	4°	(2) 1 L Glass amber glass	yes 8
Low Level PAHs	4°	(2) 1 L Glass amber glass	yes 8

OBSERVATIONS / NOTES:

(1) Samples field filtered with 0.45 um filter.

Ground suface to Top of Stickup = 2.94 feet
1330 Development was begun Water is Brown sand in discharge line at 75 ml/min
Total volume developed 1gallon water light brown and clearing
1415 begin Filling Flow Through Cell
1425 Cell was full parameter readings started Pump set at 11.25 feet

Circle if Applicable:

(MS/MSD)

Duplicate ID No.: Analysis for Nitroglycerine Low Level PAH's
DUP01092811 assigned Time = 0000

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Phase 2 Site Investigation IH NSF
PROJECT NUMBER: 112G00810 CTO 423
WELL ID.: X15GW001
DATE: 9/28/11

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	Salinity (%)	ORP (mV)	Comments
1425	7.91	75	6.19	0.527	628	2.85	25.99	—	84	
1430	7.89	75	5.96	0.529	2425	2.93	25.70	—	86	
1435	7.89	75	5.78	0.529	1991	3.05	25.23	—	87	
1440	7.89	75	5.96	0.524	1442	3.10	26.62	—	87	
1445	7.89	75	5.71	0.525	974	3.20	25.32	—	88	
1450	7.89	75	5.58	2.526	610	3.24	24.84	—	88	
1455	7.89	75	6.56	0.522	185	3.15	28.83	—	91	
1500	7.89	75	5.54	0.519	155	3.01	25.36	—	94	
1505	7.89	75	5.55	0.519	137	2.96	25.75	—	92	
1510	7.89	75	5.51	0.527	121	3.05	25.13	—	95	
1515	7.89	75	5.51	0.529	102.1	3.11	24.97	—	97	
1520	7.89	75	5.51	0.525	89.2	3.15	25.46	—	97	
1525	7.89	75	5.50	0.527	80.2	3.12	24.95	—	96	
1530	7.89	75	5.50	0.527	69.4	3.14	24.68	—	96	
1535	Sample X15GW001092811 and MS/MSD and Dup01092811 for Nitroglycerin and Low Level PA 4									

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: UXO 15 Phase 2 SI NSFIH Stump Neck
Project No.: 112G00810 CTO 423

[] Domestic Well Data
[] Monitoring Well Data
[x] Other Well Type: Temporary
[] QA Sample Type:

Sample ID No.: X15GW0020911
Sample Location: X15GW002
Sampled By: CHUCK MEYER
C.O.C. No.:
Type of Sample:
[x] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 9/28/11	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Sal
Time: 1230	Visual	Standard	mS/cm	°C	NTU	mg/l	mV	%
Method: Low Flow	Brown	6.00	0.199	26.45	710	2.34	-3	—

PURGE DATA:

Date: 9/28/11	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	TDS
Method: Bladder pump								
Monitor Reading (ppm):								
Well Casing Diameter & Material								
Type: 1-inch PVC								
Total Well Depth (TD): 14.91								
Static Water Level (WL): 6.33								
One Casing Volume(gal/L):								
Start Purge (hrs): 1120								
End Purge (hrs): 1225								
Total Purge Time (min): 65								
Total Vol. Purged (gal/L): 1.0								

See Low Flow purge Data Sheet

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Metals; antimony and lead (total)	HNO3 4°	0.5 L HDPE plastic container	yes 1
Metals; antimony and lead (dissolved)(1)	HNO3 4°	0.5 L HDPE plastic container	yes 1

OBSERVATIONS / NOTES:

(1) Samples field filtered with 0.45 um filter.

2) Ground surface to Top of Stick up = 2.94 feet

1030 began development using bladder pump brown in color 60 ml/min pump intake located 10.50 feet BTOC

1120 Development completed after removing 0.5 gallons water Lt Brown

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Phase 2 Site Investigation IH NSF
PROJECT NUMBER: 112G00810 CTO 423
WELL ID.: X15GW002
DATE: 9/28/11

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	Salinity (%)	ORP (mV)	Comments
1120	6.59	60	5.65	0.279	1491	3.65	24.87	—	75	
1125	6.59	60	6.00	0.231	1625	2.94	26.12	—	35	
1130	6.60	60	6.09	0.224	1639	2.56	26.37	—	28	
1135	6.60	60	6.06	0.219	1768	2.58	26.60	—	17	
1140	6.60	60	6.08	0.209	1714	2.39	26.66	—	13	
1145	6.61	60	6.06	0.202	1620	2.35	26.73	—	7	
1150	6.61	60	6.00	0.186	1445	2.23	26.38	—	1	
1155	6.61	60	6.03	0.184	1342	2.19	26.18	—	-2	
1200	6.62	60	6.05	0.184	1239	2.23	26.46	—	-4	
1205	6.63	60	6.02	0.189	1104	2.26	26.42	—	-6	
1210	6.65	60	6.01	0.188	998	2.30	26.37	—	-6	
1215	6.68	60	6.03	0.189	864	2.31	26.69	—	-4	
1220	6.70	60	6.01	0.189	793	2.30	26.70	—	-2	
1225	6.73	60	6.00	0.189	710	2.34	26.95	—	-3	
1230	Sample X15GW00209 11 was collected by cut from the Discharge line									

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: UXO 15 Phase 2 SI NSFIH Stump Neck
Project No.: 112G00810 CTO 423

[] Domestic Well Data
[] Monitoring Well Data
[x] Other Well Type: Temporary
[] QA Sample Type:

Sample ID No.: X15GW0030911
Sample Location: X15GW003
Sampled By: CHUCK MEYER
C.O.C. No.:
Type of Sample:
[x] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 9/29/11	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Sal
Time: 1605	Visual	Standard	mS/cm	°C	NTU	mg/l	mV	%
Method: Low Flow	lt Brown	5.54	0.1250	24.42	12.7	0.75	104	—

PURGE DATA:

Date: 9/29/11	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	TDS
Method: Bladder pump								
Monitor Reading (ppm):								
Well Casing Diameter & Material								
Type: 1-inch PVC								
Total Well Depth (TD): 14.90								
Static Water Level (WL): 7.51								
One Casing Volume(gal/L):								
Start Purge (hrs): 1505								
End Purge (hrs): 1600								
Total Purge Time (min): 55								
Total Vol. Purged (gal/L): 1.0								

See Low Flow Purge Data sheet

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Metals; antimony and lead (total)	HNO3 4°	0.5 L HDPE plastic container	1 yes
Metals; antimony and lead (dissolved)(1)	HNO3 4°	0.5 L HDPE plastic container	1 yes

OBSERVATIONS / NOTES:

(1) Samples field filtered with 0.45 um filter.

Stick up is 3.38 feet above ground surface
1415 Development was began using the peristaltic pump water brown no odor or sheen
1435 Development was completed after removing 4 gallons from the well water clear no odor or sheen Pump set at 11.5 feet
1455 Fill Flow Through Cell

Circle If Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Phase 2 Site Investigation IH NSF
PROJECT NUMBER: 112G00810 CTO 423
WELL ID.: X156W003
DATE: 9/29/11

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	Salinity (%)	ORP (mV)	Comments
1505	7.58	70	5.51	0.231	1479	4.78	24.76	—	172	
1510	7.60	70	5.55	0.233	982	1.64	25.30	—	153	
1515	7.60	70	5.55	0.238	631	1.32	24.50	—	144	
1520	7.60	70	5.55	0.244	497	1.14	25.04	—	131	
1525	7.60	70	5.59	0.244	251	1.03	25.11	—	120	
1530	7.60	70	5.59	0.246	163	0.95	25.03	—	114	
1535	7.60	70	5.58	0.246	131	0.75	25.48	—	108	
1540	7.60	70	5.56	0.248	133	0.85	24.91	—	105	
1545	7.60	70	5.55	0.248	135	0.74	24.51	—	106	
1550	7.60	70	5.54	0.249	139	0.79	24.44	—	107	
1555	7.60	70	5.56	0.249	130	0.76	24.39	—	105	
1600	7.60	70	5.54	0.250	187	0.75	24.42	—	104	
1605	Sample X156W003 0911 was collected by CM From the discharge line of the pump									

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Page 1 of 1

Project Site Name:	UXO 16 Phase 2 SI NSFIH Stump Neck	Sample ID No.:	X16GW0010944 1011 cw 10/11/11
Project No.:	112G00810 CTO 423	Sample Location:	X16GW001
		Sampled By:	CHUCK MEYER
[] Domestic Well Data		C.O.C. No.:	
[] Monitoring Well Data		Type of Sample:	
[x] Other Well Type:	Temporary	[x] Low Concentration	
[] QA Sample Type:		[] High Concentration	

SAMPLING DATA:

Date: 10/11/11	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Sal
Time: 1045	Visual	Standard	mS/cm	°C	NTU	mg/l	mV	%
Method: Low Flow	clear	6.17	0.109	13.05	8.28	3.21	116	—

PURGE DATA:

Date: ~~9/30/11~~ 10/11/11	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	TDS
Method: Bladder pump								
Monitor Reading (ppm):								
Well Casing Diameter & Material								
Type: 1-inch PVC								
Total Well Depth (TD): 29.95								
Static Water Level (WL): 5.70								
One Casing Volume(gal/L):								
Start Purge (hrs): 0935								
End Purge (hrs): 1045								
Total Purge Time (min): 70								
Total Vol. Purged (gal/L): 1.5								

See Low Flow purge Data sheet

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Metals; antimony (total)	HNO3 4°	0.5 L HDPE plastic container	1 yes
Metals; antimony (dissolved)(1)	HNO3 4°	0.5 L HDPE plastic container	1 yes
Low Level PAHs	4°	(2) 1 L Glass amber glass	2 yes

OBSERVATIONS / NOTES:

(1) Samples field filtered with 0.45 um filter.

Stick up is 3.54 feet above ground surface

1100 Development of the well was begun water slightly turbid light brown no odor or sheen

1110 Development completed after purging the well dry will come back to sample this afternoon removed 1.5 gallons

Circle if Applicable:		Signature(s):
MS/MSD	Duplicate ID No.:	[signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Phase 2 Site Investigation IH NSF
PROJECT NUMBER: 112G00810 CTO 423
WELL ID.: X16GW001
DATE: 10/1/11

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	Salinity (%)	ORP (mV)	Comments
0935	5.89	Water	Level	Prior	to Pu	rging		—		
0945	7.52	70	6.55	0.172	52.1	5.09	12.70	—	51	
0950	8.36	70	6.91	0.171	42.6	4.73	13.09	—	46	
0955	8.79	70	6.97	0.167	35.8	3.95	13.47	—	53	
1000	9.12	70	6.88	0.165	33.9	4.03	13.50	—	62	
1005	9.75	70	6.81	0.156	27.3	3.78	13.90	—	80	
1010	10.23	70	6.71	0.151	24.6	3.86	13.67	—	89	
1015	10.85	70	6.59	0.139	18.8	3.59	13.72	—	109	
1020	11.36	70	6.47	0.126	13.8	3.47	13.47	—	120	
1025	11.79	70	6.25	0.120	10.29	3.32	13.51	—	124	
1030	12.21	70	6.30	0.122	10.53	3.28	13.25	—	117	
1035	12.59	70	6.25	0.117	10.11	3.25	13.29	—	114	
1040	12.97	70	6.21	0.109	9.76	3.22	13.05	—	119	
1045	13.42	70	6.17	0.107	8.29	3.21	13.05	—	116	
1045	Sample X16GW001	1011	was	collected	from	the	discharge	line	of	the pump

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: UXO 16 Phase 2 SI NSFIH Stump Neck
Project No.: 112G00810 CTO 423

[] Domestic Well Data
[] Monitoring Well Data
[x] Other Well Type: Temporary
[] QA Sample Type:

Sample ID No.: X16GW002~~0011~~ 1011 CMW 10/11/11
Sample Location: X16GW002
Sampled By: CHUCK MCKEE
C.O.C. No.:
Type of Sample:
[x] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 10/1/11	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Sal
Time: 0845	Visual	Standard	mS/cm	°C	NTU	mg/l	mV	%
Method: Low Flow	Lt Brown	6.24	0.145	15.16	100	3.27	47	—

PURGE DATA:

Date: 10/1/11	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	TDS
Method: Bladder pump								
Monitor Reading (ppm):								
Well Casing Diameter & Material								
Type: 1-inch PVC								
Total Well Depth (TD): 19.96								
Static Water Level (WL): ~~4.66~~ 7.41 BTOR								
One Casing Volume(gal/L):								
Start Purge (hrs): 0800								
End Purge (hrs): 0840		see	Low Flow purge Data sheet					
Total Purge Time (min): 40								
Total Vol. Purged (gal/L): 0.75								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Metals; antimony and lead (total)	HNO3 4°	0.5 L HDPE plastic container	yes
Metals; antimony and lead (dissolved)(1)	HNO3 4°	0.5 L HDPE plastic container	yes

OBSERVATIONS / NOTES:

(1) Samples field filtered with 0.45 um filter.

stick up below ground surface = 2.81' feet

1215 Development of the well was begun water a light brown with sandy silt

1220 Development was completed after removing 1 gallon from the well water light brown no odor or sheen

Circle if Applicable:

MS/MSD	Duplicate ID No.:
NO	NO

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Phase 2 Site Investigation IH NSF
PROJECT NUMBER: 112G00810 CTO 423
WELL ID.: X166W002
DATE: 10/1/11

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	Salinity (%)	ORP (mV)	Comments
0775	7.41	Water	Level	Prior	to	set	up			
0800	8.35	60	5.71	0.179	1880	4.17	14.05	~~13~~	73	
0805	8.75	60	6.02	0.161	1613	3.93	14.93	—	39	
0810	9.20	60	6.12	0.156	1009	2.69	15.30	—	38	
0815	9.63	60	6.22	0.152	748	2.78	15.26	—	37	
0820	10.05	60	6.24	0.151	526	2.84	15.32	—	38	
0825	10.70	60	6.26	0.149	297	2.98	15.25	—	42	
0830	11.09	60	6.28	0.145	125	3.04	15.17	—	42	
0835	11.58	60	6.26	0.149	117	3.19	15.34	—	45	
0840	12.05	60	6.24	0.145	100	3.27	15.16	—	47	
0945	Sample	X166W002	2 vail	was	collected	from	the	discharge	line	of bag pump

SIGNATURE(S): [signature]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: UXO 17 Phase 2 SI NSFIH Stump Neck
Project No.: 112G00810 CTO 423

[] Domestic Well Data
[] Monitoring Well Data
[x] Other Well Type: Temporary
[] QA Sample Type:

Sample ID No.: X17GW001~~0911~~ 1011 CM 10/11/11
Sample Location: X17GW001
Sampled By: CHUCK MEYER
C.O.C. No.:
Type of Sample:
[x] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 10/1/11	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Sal
Time: 1340	Visual	Standard	mS/cm	°C	NTU	mg/l	mV	%
Method: Low Flow	Tint Brn	6.78	0.144	17.70	30.1	3.39	33	—

PURGE DATA:

Date: 10/1/11	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	TDS
Method: Bladder pump								
Monitor Reading (ppm):								
Well Casing Diameter & Material								
Type: 1-inch PVC								
Total Well Depth (TD): 19.94								
Static Water Level (WL): 7.50								
One Casing Volume(gal/L):								
Start Purge (hrs): 1240								
End Purge (hrs): 1335		See Low Flow purge Data sheet						
Total Purge Time (min): 55								
Total Vol. Purged (gal/L): 1.0								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Metals; antimony, arsenic, and lead (total)	HNO3 4°	0.5 L HDPE plastic container	yes 4
Metals; antimony, arsenic, and lead (dissolved)(1)	HNO3 4°	0.5 L HDPE plastic container	yes 4
Nitroglycerin	4°	(2) 1 L Glass amber glass	yes 2

OBSERVATIONS / NOTES:

(1) Samples field filtered with 0.45 um filter.

Stick up is 0.75 feet Below Ground surface

1135 Development of the well was begun water brown silty sand clearing to brown no odor or sheen present

1145 Development was completed after removing 2 gallons from the well water brown very turbid will come back for parameter and sample collection

Circle if Applicable:

(MS/MSD) metals Analysis

Duplicate ID No.: Assigned Time 0000
DUP03100111 Metals Analysis only
As Per Work Plan

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Phase 2 Site Investigation IH NSF
PROJECT NUMBER: 112G00810 CTO 423
WELL ID.: X17GW001
DATE: 10/1/11

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	Salinity (%)	ORP (mV)	Comments
1225	7.59	Water level prior to begin purge [illegible]								
1240	7.76	70	6.36	0.143	347	6.57	14.52	—	73	
1245	7.76	70	6.53	0.145	49.1	6.60	15.35	—	57	
1250	7.76	70	6.65	0.131	124	4.50	15.73	—	52	
1255	7.76	70	6.68	0.139	136	3.82	16.09	—	47	
1300	7.76	70	6.70	0.143	128	3.70	16.38	—	39	
1305	7.76	70	6.79	0.146	112	3.67	16.61	—	39	
1310	7.76	70	6.83	0.142	81.5	3.35	16.86	—	34	
1315	7.76	70	6.74	0.150	69.3	3.38	17.04	—	30	
1320	7.76	70	6.80	0.149	55.7	3.43	17.28	—	32	
1325	7.76	70	6.81	0.149	43.6	3.35	17.51	—	35	
1330	7.76	70	6.80	0.148	34.2	3.31	17.59	—	30	
1335	7.76	70	6.78	0.144	30.1	3.39	17.70	—	33	
1340	Sample X17GW001 1011 was collected along with DUP03 for Arsenic Antimony and Lead and MS/MSD for the same parameters									

SIGNATURE(S): [signature]

PAGE 1 OF 1

Tetra Tech NUS, Inc.

QA SAMPLE LOG SHEET

Project Site Name: Indian Head Stump Neck
Sample ID Number: FB01-100111
Project Number: 112600810
Sampled By: Chuck Mayer
Sample Location: FB01
C.O.C. Number:
QA Sample Type:

[] Trip Blank
[] Rinsate Blank
[] Source Water Blank
[✓] Other Blank Field Blank 45 micron Filter

SAMPLING DATA:

Date: 10/11/11
Time: 1520
Method: peristaltic Pump

WATER SOURCE:

[] Laboratory Prepared
[] Tap
[✓] Purchased
[] Fire Hydrant
[] Other

PURCHASED WATER INFORMATION (If Applicable as Source or Rinsate Water):

Product Name: Great Value Distilled Water
Supplier: Walmart
Manufacturer:
Order Number:
Lot Number: 1355082911
Expiration Date: 082912

RINSATE INFORMATION (If Applicable):

Media Type:
Equipment Used:
Equipment Type:
[] Dedicated
[] Reusable

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles	Cool 4°C & HCl		YES / NO
Semivolatiles	Cool 4°C		YES / NO
Pesticide / PCB	Cool 4°C		YES / NO
Metals	Cool 4°C & HNO_3	Copper Antimony Arsenic Lead	(YES) NO
Cyanide	Cool 4°C & NaOH		YES / NO

OBSERVATIONS / NOTES:

Signature(s):

TETRA TECH NUS
FIELD TASK MODIFICATION REQUEST FORM

Ph 2 SI at 5 SASRs - NSFIH	CTO 423	
Project/Installation Name	Project Number	Project Mod. Number
Sampling and Analysis Plan	UXO 25 - X25GW001	9/30/2011
Modification To (e.g. Work Plan)	Site/Sample Location	Date

Activity Description:
Installation of temporary well at UXO 25 was halted due to unexpected field conditions (e.g., heavy vegetation, downed trees, rough terrain, saturated ground,standing water, debris piles, etc.).

Reason for Change:
Field crew spent several hours clearing brush/small trees and navigating around debris piles and gulleys, but the drill rig was unable to access the planned well location.

Recommended Disposition:
Defer installation of this well to a future date.

Field Operations Leader (Signature) Fred W Ramser Date 10-3-11

Approved Disposition:
This issue was discussed with the Navy RPM on 9/30/11. He approved defernal of this well installation until a later date, possibly in conjunction with soil removal activities.

Project Manager (Signature) Barb Becker Date 9/30/11

Distribution:

Program/Project File – ✓
Project Manager – ✓
Field Operations Leader – ✓

Other:

APPENDIX B

SITE PHOTOS

Well Installation
Marine Rifle Range (UXO 14)

X14GW001
(looking north)

X14GW002
(looking south)

Well Installation
Marine Rifle Range (UXO 14)

X14GW003
(looking east)

X14GW004
(looking east)

Well Installation
Old Skeet and Trap Range (UXO 15)

X15GW002
(looking west)

X15GW001
(looking north)

X15GW003
(looking north)

Well Installation
Rum Point Skeet Range (UXO 16)

X16GW001
(looking northeast)

X16GW002
(looking northwest)

Well Installation
Small Arms (Pistol) Range (UXO 17)

X17GW001
(looking east)

Planned Well Location
Roach Road Rifle Range (UXO 25)

X25GW001
(looking northwest)

Well Installation Deferred
Due to Heavy Vegetation and Uneven Terrain
Roach Road Rifle Range (UXO 25)

APPENDIX C

ANALYTICAL RESULTS

908 North Temperance Ave. V Clovis, CA 93611 V Phone 559-275-2175 V Fax 559-275-4422

Certification Number: CA1312
NELAP Certification number: 05233CA
DoD-ELAP Certificate number: ADE-1410

Data Validatable Report

November 16, 2011

Tetra Tech NUS, Inc.
234 Mall Boulevard, Suite 260
King of Prussia, Pennsylvania 19406

Attn: Barbara Becker

Title: Report of Data: Case 65882

Project: 112G00810 Indian Head CTO423, RI

Contract #: Prime contract # for DoD: N62467-04-D-0055, CTO 0423
Subcontract: MSA # 1045497, WR # 06-423

Dear Ms. Becker:

Samples were received October 1, 2011, in good condition. On November 11, 2011, Nitroglycerin analysis was added to sample X14GW0010911, which will be reported separately, as an addendum to this report. Written results for the requested analyses are provided on this November 16, 2011.

Results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

If you have any questions or require further information, please contact your APPL Project Manager, Cynthia Clark, at your convenience. Thank you for choosing APPL, Inc.

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 above. These test results meet all requirements of NELAC and DoD QSM. Release of the hard copy has been authorized by the Laboratory Manager or her designee, as verified by the following signature.

Sharon Dehmlow, Laboratory Director
APPL, Inc.

SD/sf
Enclosure
cc: File

Number of pages in this report: 412

Data Validation Package
for
112G00810 Indian Head CTO423, RI
ARF 65882

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SAMPLE RECEIPT INFORMATION

Sample receipt information

ARF: 65882

Project: 112G00810 Indian Head CTO423, RI

Sample Receipt Information:

The samples were received on October 1, 2011, at 3.0°C and 3.0°C. The samples were assigned Analytical Request Form (ARF) number 65882. The sample numbers and requested analyses were compared to the chain of custody and email communication. A container count discrepancy was noted and reported to the client. On November 11, 2011, Nitroglycerin analysis was added to sample X14GW0010911, which will be reported separately, as an addendum to this report. No other exception was encountered.

Sample Table

CLIENT ID	APPL ID	Matrix	Date Sampled	Date Received
X15GW0020911	AY47772	WATER	09/28/11	10/01/11
X15GW0010911	AY47773	WATER	09/28/11	10/01/11
X14GW0010911	AY47774	WATER	09/29/11	10/01/11
X15GW0020911-F	AY47775	WATER	09/28/11	10/01/11
X15GW0010911-F	AY47776	WATER	09/28/11	10/01/11
X14GW0010911-F	AY47777	WATER	09/29/11	10/01/11
X15GW0030911	AY47778	WATER	09/29/11	10/01/11
X15GW0030911-F	AY47779	WATER	09/29/11	10/01/11
DUP01092811	AY47780	WATER	09/28/11	10/01/11
X14GW0020911	AY47781	WATER	09/30/11	10/01/11
X14GW0020911-F	AY47782	WATER	09/30/11	10/01/11
X14GW0040911	AY47783	WATER	09/30/11	10/01/11
X14GW0040911-F	AY47784	WATER	09/30/11	10/01/11
DUP02093011	AY47785	WATER	09/30/11	10/01/11
DUP02093011-F	AY47786	WATER	09/30/11	10/01/11

Samples and blanks were screened for J-value responses between the detection limit (DL) and limit of quantitation (LOQ).

Laboratory control limits generated in house do not meet the control limits listed in DoD QSM 4.2 for all analytes. Laboratory control limits generated for this project meet all control limits listed in the DoD QSM 4.2 except where noted. A copy of our in house generated control limits is available upon request. In addition, a copy of our LOQ control limits, established using 7 data points, are also available upon request.

Only the portion of the injection log relative to these samples is included. A full sequence log is available upon request.

Measurement uncertainty can be reported upon request.

CASE NARRATIVE

EPA Method 8270 SIM
Semi-Volatile Organic Analysis

Sample Preparation:

The water samples were extracted according to EPA method 3510C. All holding times were met.

Sample Analysis Information:

The samples were analyzed according to the method using a Hewlett Packard Gas Chromatograph with a mass spectrometer detector in selective ion monitoring mode. Benzo(b)fluoranthene and Benzo(k)fluoranthene could not be chromatographically separated in samples X15GW0010911 and DUP01092811 due to the matrix. As a result, each of these is reported from the sum of the two area counts and may be biased high.

Quality Control/Assurance

Calibrations:

Initial and continuing calibrations were performed according to the method and the DoD QSM.

Blanks:

No target analyte was detected at or above the detection limit.

Spikes:

A Laboratory Control Spike (LCS) was used for quality assurance. All spike acceptance criteria was met.

Sample X15GW0010911 was designated by the laboratory for MS/MSD analysis. For the MS/MSD, Benzo(a)pyrene recovered below the 55% lower control limit at 52.3% in the MSD, Chrysene below the 55% lower control limit in the MS, and Fluoranthene below the 55% lower control limit in the MS. All other recoveries met acceptance criteria.

Surrogates

Surrogate recoveries are summarized on form 2 & 8. All surrogate recoveries were within control limits.

Tuning:

The instrument was tuned using DFTPP. All method criteria were met.

Internal Standards

The internal standard area counts were compared to the mid-point of the initial calibration according to method 8270. All recoveries met acceptance criteria.

Summary:

No other problem was encountered.

EPA Method 8330B
Energetics

Sample Preparation:

Two water samples were extracted according to EPA method 3535A. All holding times were met.

Analysis:

The samples were analyzed according to EPA Method 8330B using an Agilent 1290 HPLC with DA detector. Manual integrations were performed in accordance to APPL's SOP. Manual integrations were performed on the following: For Statler: Tetryl in data file 1002_000012, 2,6-Dinitrotoluene in data files 1002_000011 and 1002_000013, 2,4-Dinitrotoluene in data files 1002_000011 and 1002_000013, 4-Amino-2,6-Dinitrotoluene in data files 1002_000011, 1002_000013, 1012_0000068 and 1012_0000072, 2-Amino-4,6-Dinitrotoluene in data files 1002_000011, 1002_000013 and 1002_000015, Nitroglycerin in data files 1002_000012, 1002_000016, 1002_000018, 1002_000020, 1002_000022, 1002_000024, 1002_000026, 1012_0000068 and 1012_0000072, 2-Nitrotoluene in data file 1002_000013, 3-Nitrotoluene in data files 1002_000015, 1002_000019, 1012_0000068 and 1012_0000072, 3,5-Dinitroaniline in data files 1002_000014, 1002_000018, 1002_000020 and 1002_000022, and PETN in data files 1002_000018, 1002_000020, 1002_000022, 1002_000024, 1002_000026, 1002_000028, 1002_000030, 1012_0000068 and 1012_0000072. For Waldorf: HMX in data file 1013_0000003. Chromatograms of prior to and after manual integrations are enclosed.

Quality Control/Assurance:

Spike Recovery:

A Laboratory Control Spike (LCS) was used for quality assurance. All spike acceptance criteria was met.

Sample X15GW0010911 was designated by the laboratory for MS/MSD analysis. All recoveries met acceptance criteria.

Method blanks:

No target analyte was detected at or above the detection limit.

Surrogates:

Surrogate recoveries are summarized on the Form 2 & 8. All surrogates had acceptable recoveries.

Calibration:

The initial and continuing calibrations and second source were analyzed according to the method. All calibration criteria were met.

Summary:

No other analytical problem was encountered. The data generated are acceptable.

EPA Method 6020A
Metals

Digestion Information:

The water samples were digested according to EPA method 3015. All holding times were met.

Analysis Information:

Samples:

The samples were analyzed according to EPA method 6020A using an Agilent 7500CX ICP-MS.

Calibrations:

The initial and continuing calibrations were analyzed according to the method and DoD QSMv.4.2. The initial calibration verification is prepared from a second source standard.

Blanks:

No target analyte was detected above one-half the limit of quantitation (LOQ) in the method blank. In the continuing calibration blanks (CCBs) on 11-8-11, at 11:37, 12:14, 13:39, and 15:10, antimony was detected above the LOD of 0.20ug/L. Antimony was reported in the blank and LCS bracketed by these CCBs. Additionally, on 11-9-11, at 11:31 and 12:14, antimony was detected above the LOD. No associated samples are bracketed by these CCBs.

Spikes:

Laboratory control spikes (LCS), matrix spikes (MS/MSD), post-digestion spike (PDS), and dilution test (DT) were used for quality assurance. All LCS acceptance criteria were met.

Sample X15GW0010911 was selected by the laboratory for QC analysis. All acceptance criteria were met in the MS/MSD, PDS, and DT.

Summary:

No other analytical exception is noted.

Abbreviations and Flags

FLAG	DESCRIPTION
#	Recovery or RPD outside control limits
*	Recovery or RPD outside control limits
B	Analyte detected in associated method blank
C1	Reason for correction: wrote incorrect response
C2	Reason for correction: calculated incorrectly
C3	Reason for correction: needs to be rechecked
C4	Reason for correction: data not usable
DO	Diluted out
E	Exceeds linear range
F	Estimated value
G1	Includes a wide range of hydrocarbons which does not match our gasoline standard
G10	Includes a match to hydrocarbon profiles within the range of mineral spirits
G11	Includes a match to hydrocarbon profiles within the range of JP-4
G12	Pattern does not match the gasoline standard; the carbon range for this sample is consistent with JP8
G13	Closely resembles the hydrocarbon profile of aviation gasoline
G14	Analyte concentration may be biased due to carry over
G2	Closely resembles the boiling point hydrocarbon profile consistent with weathered gasoline
G3	Includes higher boiling hydrocarbons
G4	Includes dominant peak(s) not indicative of petroleum hydrocarbons
G5	Is mainly dominant peak(s) not indicative of petroleum hydrocarbons
G6	Contains recognizable contaminant peak(s) which has been removed from quantitation
G7	Is mainly a match to hydrocarbons within the range of gasoline
G8	Closely resembles the boiling point hydrocarbon profile consistent with weathered gasoline
G9	Includes hydrocarbons within the range of kerosene
J	Estimated value
M	Matrix effect
M1	Manual integration: integration does not follow baseline
M2	Manual integration: non-target peak interference
M3	Manual integration: to split a peak that was integrated as one peak by the computer
M4	Manual integration: to integrate a split peak
M5	Manual integration: the whole peak or part of the peak was not integrated
M6	Manual integration: computer integrated wrong peak
M7	Manual integration: other - explain
MDL	Method detection limit
ND	Not detected
NT	Non-target
Q	Acceptance criteria not met
T1 I	Includes wide range of hydrocarbons not indicative of diesel
T1 M	Is mainly wide range of hydrocarbons not necessarily indicative of diesel
T2 I	Includes lower boiling hydrocarbons, i.e. mineral spirits, kerosene, stoddard solvent, white gas
T2 M	Is mainly lower boiling hydrocarbons, i.e. mineral spirits, kerosene, stoddard solvent, white gas
T3 I	Includes higher boiling hydrocarbons, i.e. asphaltene, waster oil, motor oil, or weathered diesel fuel
T3 M	Is mainly higher boiling hydrocarbons, i.e. asphaltene, waster oil, motor oil, or weathered diesel fuel
T4 I	Includes dominant peak(s) not indicative of hydrocarbons
T4 M	Is mainly dominant peak(s) not indicative of hydrocarbons
T5	Contains recognizable contaminant peak(s) which has been removed from quantitation
T6	Is mainly a match to hydrocarbons within range of diesel fuel
T7	Closely resembles the boiling point hydrocarbon profile consistent with diesel fuel
T8	Includes a match to hydrocarbon profiles within range of diesel and kerosene fuel
T9 I	Includes non-diesel hydrocarbons within boiling point range of diesel fuel
T9 M	Is mainly non-diesel hydrocarbons within boiling point range of diesel fuel.
Y	Percent difference between primary and confirmation column > 40%

CHAIN OF CUSTODY,
ARF, CRF, AND
CLIENT COMMUNICATION

APPL - Analysis Request Form 65882

Client: Tetra Tech NUS, Inc.
Address: 234 Mall Blvd, suite 260
King of Prussia, PA 19406
Attn: Barbra Becker
Phone: 610-491-9688 Fax: 610-491-9645
Job: 112G00810 Indian Head CTO423
PO #: MSA# 1045497 WR#06-423
Chain of Custody (Y/N): Y # 35628,35604
RAD Screen (Y/N): Y pH (Y/N): Y
Turn Around Type: STD

Received by: TBV
Date Received: 10/01/11 Time: 11:05
Delivered by: FED EX
Shuttle Custody Seals (Y/N): Y
Chest Temp(s): 3.0,3.0°C
Color: I-PURRED,R-ORGYE
Samples Chilled until Placed in Refrig/Freezer: Y
Project Manager: Cynthia Clark
QC Report Type: DVP4/LEDD/RI
Due Date: 10/24/11

Comments:
send 1 hard copy and 2 BOOKMARKED CDs of report and Summary report on CD
Assemble report and summary package according to attached document, in same order as attached, special
EDD: LEDD to Tobrena Sedlmyer barb.becker@tetratech.com
guidance: DoD QSMv4.2, LOQ/LOD-calc/DL forms
8330 = Nitroglycerin only
invoice in triplicate per PO
NAVY (CLEAN) CONTRACT N62467-04-D-0055, CTO 423
Please see attached email for container count discrepancy

Sample Distribution:
GC: 3-$SIMDDODW
Extractions: 2-_MWE3535, 3-_SEP004
LCMS: 2-$833BW
Metals: 2-$62ADODW(Sb), 1-$62ADODW(Sb,Cu), 1-$62ADODW(Sb,Pb), 3-$62ADODW(Cu,Pb), 2-$62ADODDW(Sb,Pb), 1-$62ADODDW(Sb), 1-$62ADODDW(Sb,Cu), 3-$62ADODDW(Cu,Pb)
Other: 14-_M3015

Charges:

Invoice To:
TETRA TECH NUS
Accounts Payable
661 Anderson Drive, Foster Plaz
Pittsburgh, PA 15220

	Client ID		APPL ID	Sampled		Analyses Requested
1.	X15GW0020911		AY47772W	09/28/11	12:30	$62ADODW(Sb)
2.	X15GW0010911	MS/MSD	AY47773W	09/28/11	15:35	$62ADODW(Sb), $833BW, $SIMDDODW -- Nitroglycerin only, ms/msd on 8330 & PAH
3.	X14GW0010911		AY47774W	09/29/11	12:15	$62ADODW(Sb,Cu), $SIMDDODW
4.	X15GW0020911-F		AY47775W	09/28/11	12:30	$62ADODDW(Sb,Pb)
5.	X15GW0010911-F		AY47776W	09/28/11	15:35	$62ADODDW(Sb)
6.	X14GW0010911-F		AY47777W	09/29/11	12:15	$62ADODDW(Sb,Cu)

7.	X15GW0030911	AY47778W	09/29/11	16:05	$62ADODW(Sb,Pb)
8.	X15GW0030911-F	AY47779W	09/29/11	16:05	$62ADODDW(Sb,Pb)
9.	DUP01092811	AY47780W	09/28/11	00:00	$833BW, $SIMDDODW -- Nitroglycerin only
10.	X14GW0020911	AY47781W	09/30/11	08:35	$62ADODW(Cu,Pb)
11.	X14GW0020911-F	AY47782W	09/30/11	08:35	$62ADODDW(Cu,Pb)
12.	X14GW0040911	AY47783W	09/30/11	14:30	$62ADODW(Cu,Pb)
13.	X14GW0040911-F	AY47784W	09/30/11	14:30	$62ADODDW(Cu,Pb)
14.	DUP02093011	AY47785W	09/30/11	00:00	$62ADODW(Cu,Pb)
15.	DUO02093011-F	AY47786W	09/30/11	00:00	$62ADODDW(Cu,Pb)

APPL Sample Receipt Form

ARF# **65882**

Sample	Container Type	Count	pH
AY47772	[6] PL 500mL - HNO3	1	1.7
AY47773	[6] PL 500mL - HNO3	1	1.7
	[17] Amber Liter	12	NA
AY47774	[6] PL 500mL - HNO3	1	1.7
	[17] Amber Liter	2	NA
AY47775	[6] PL 500mL - HNO3	1	1.7
AY47776	[6] PL 500mL - HNO3	1	1.7
AY47777	[6] PL 500mL - HNO3	1	1.7
AY47778	[6] PL 500mL - HNO3	1	1.7
AY47779	[6] PL 500mL - HNO3	1	1.7
AY47780	[17] Amber Liter	4	NA
AY47781	[6] PL 500mL - HNO3	1	1.7
AY47782	[6] PL 500mL - HNO3	1	1.7
AY47783	[6] PL 500mL - HNO3	1	1.7
AY47784	[6] PL 500mL - HNO3	1	1.7
AY47785	[6] PL 500mL - HNO3	1	1.7
AY47786	[6] PL 500mL - HNO3	1	1.7

Sample	Container Type	Count	pH

65892

3°C

APPL LABS

CHAIN OF CUSTODY RECORD

APPL, Inc.
908 N Temperance Ave
Clovis, CA 93611
Phone: (559) 275-2175
Fax: (559) 275-4422

C.O.C. 35628

Report to: PLEASE PRINT	Invoice to: PLEASE PRINT
Company Name: Tetra Tech NUS Phone: 610 491 9688	Company Name: Tetra Tech NUS Phone: 412 921 7090
Address: 234 Mall Boulevard Suite 260 Fax: 610 491 9645	Address: 661 Andersen Drive Fax: 412 921 4040
King of Prussia PA 19406	Pittsburgh, PA 15220
Attn: Barbra Becker	Attn:

Project Name/Number	Sampler (Print)
112G00810	Charles Meyer
Purchase Order Number	Sampler (Signature)
	Charles Meyer

Sample Identification	Location	Date Collected	Time Collected	No. of Containers	Matrix: Aq	Sed.	Soil	Analysis Requested/Method Number														Date Shipped: 9/30/11
								Total Lead Antimony	Dissolved Lead Antimony	Low Level PAH	Nitroglycerin	Total Antimony	Dissolved Antimony	Total Copper Antimony	Dissolved Copper Antimony	Total Lead Copper	Dissolved Lead Copper					Carrier: Federal Express
X15GW00209 11	X 15	9/28/11	1230	1	✓			1	+	cm	9/29/11											Waybill No.: 8744 5964 0350
X15GW00109 11	X 15	9/28/11	1535	13	✓					6	6	1	+	cm	9/29/11							Comments: Low Level PAH Do MS/MSD on Nitroglycerin
X14GW00109 11	X 14	9/29/11	1215	1	✓					2				1	+	cm	9/29/11					
X15GW00209 11-F	X 15	9/28/11	1230	1	✓				1													
X15GW00109 11-F	X 15	9/28/11	1535	1	✓								1									
X14GW00109 11-F	X 14	9/29/11	1215	1	✓										1							
X15GW00309 11	X 15	9/29/11	1605	1	✓			1														
X15GW00309 11-F	X 15	9/29/11	1605	1	✓				1													
Dup01 092811	DUP	9/28/11	0000	4	✓					2	2											
X14GW00209 11	X 14	9/30/11	0835	1												1						
X14GW002 09 11-F	X 14	9/30/11	0835	1													1					

Shuttle Temperature:

Turnaround Requested: MUST CHECK ONE
☐ Standard (2-3 week) ☐ One week ☐ 24-48 hour

Sample Disposal:
☐ Return to client ☐ Disposal by Lab (30-day retention)

Relinquished by sampler:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
Charles Meyer	9/30/11	1730					
Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received at lab by:
					10/01/11	11:05	Alicia Lofton

White: Return to client with report Yellow: Laboratory Copy Pink: Sampler

See reverse side for Container Preservative and Sampling Information

CHAIN OF CUSTODY RECORD

APPL, Inc.
908 N Temperance Ave
Clovis, CA 93611
Phone: (559) 275-2175
Fax: (559) 275-4422

C.O.C. 35604

Report to: PLEASE PRINT	Invoice to: PLEASE PRINT
Company Name: Tetra Tech NUS Phone: 610 491 9688	Company Name: Tetra Tech NUS Phone: 412 921 7090
Address: 334 Mall Boulevard Suite 260 Fax: 610 491 9645	Address: 661 Anderson Drive Fax: 412 921 4040
King of Prussia, PA 19344	Pittsburgh, PA 15220
Attn: Barbara Backer	Attn: Accounts Payable

Project Name/Number	Sampler (Print)
112G00810	Charles Meyer
Purchase Order Number	Sampler (Signature)
	Charles Meyer

Sample Identification	Location	Date Collected	Time Collected	No. of Containers	Matrix: Aq	Sed.	Soil		Analysis Requested/Method Number: Total Lead copper	Dissolved Lead copper	Date Shipped: 9/30/11
X146W0040911	X14	9/30/11	1430	1	✓				1		Carrier: Federal Express
X146W0040911-F	X14	9/30/11	1430	1	✓					1	Waybill No.: 8744 5954 0350
DUP02093011	DUP02	9/30/11	0000	1	✓				1		Comments:
DUP02093011-F	DUP02	9/30/11	0000	1	✓					1	

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Shuttle Temperature:

Turnaround Requested: MUST CHECK ONE
☐ Standard (2-3 week) ☐ One week ☐ 24-48 hour

Sample Disposal:
☐ Return to client ☐ Disposal by Lab (30-day retention)

Relinquished by sampler:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
Charles Meyer	9/30/11	1730					
Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received at lab by:
					10/01/11	10:05	Alicia Alston

White: Return to client with report Yellow: Laboratory Copy Pink: Sampler

See reverse side for Container Preservative and Sampling Information

COOLER RECEIPT FORM

1) Project: CTO 423, 112G00810 Indian Head Date Received: 10/1/11

2) Coolers: Number of Coolers: 2

3) YES NO Were coolers and samples screened for radioactivity?

4) YES NO Were custody seals on outside of cooler? How many? 4 Date on seal? 9/30/11

5) Name on seal? See Label

6) YES NO NA Were custody seals unbroken and intact at the time of arrival?

7) YES NO Did the cooler come with a shipping slip (air bill, etc.)? Carrier name: Fed Ex

8) Shipping slip numbers: 1) MASTER 8744 5964 0250 2) 3)

9) YES NO NA Was the shipping slip scanned into the database?

10) YES NO NA If cooler belongs to APPL, has it been logged into the ice chest database?

11) Describe type of packing in cooler (bubble wrap, popcorn, type of ice, etc.): bubble bag in Ziploc, Ziploc in wet ice

12) YES NO NA For hand delivered samples was sufficient ice present to start the cooling process?

13) YES NO Was a temperature blank included in the cooler?

14) Serial number of certified NIST thermometer used: A39267 Correction factor: 0

15) Cooler temp(s): 1) 3.0°C 2) 3.0°C 3) 4) 5) 6) 7) 8)

Chain of custody:

16) YES NO Was a chain of custody received?

17) YES NO Were the custody papers signed in the appropriate places?

18) YES NO Was the project identifiable from custody papers?

19) YES NO Did the chain of custody include date and time of sampling?

20) YES NO Is location where sample was taken listed on the chain of custody?

Sample Labels:

21) YES NO Were container labels in good condition?

22) YES NO Was the client ID on the label?

23) YES NO Was the date of sampling on the label?

24) YES NO Was the time of sampling on the label?

25) YES NO Did all container labels agree with custody papers?

Sample Containers:

26) YES NO Were all containers sealed in separate bags?

27) YES NO Did all containers arrive unbroken?

28) YES NO Was there any leakage from samples?

29) YES NO Were any of the lids cracked or broken?

30) YES NO Were correct containers used for the tests indicated?

31) YES NO Was a sufficient amount of sample sent for tests indicated?

32) YES NO NA Were bubbles present in volatile samples? If yes, the following were received with air bubbles:

Larger than a pea:

Smaller than a pea:

Preservation & Hold time:

33) YES NO NA Was a sufficient amount of holding time remaining to analyze the samples?

34) YES NO NA Do the sample containers contain the same preservative as what is stated on the COC?

35) YES NO NA Was the pH taken of all non-VOA preserved samples and written on the sample container?

36) YES NO NA Was the pH of acid preserved non-VOA samples < 2 & sodium hydroxide preserved samples > 12?

37) YES NO NA Unpreserved VOA Vials received?

38) YES NO NA Are unpreserved VOA vials noted in the ADD TEST FIELD on the ARF?

Lab notified if pH was not adequate: YZ 10/1/11

Deficiencies: Sample X14GW0010911 - COC listed 1 container but received received total of 3 container (2 Amber liter, 1 500mL plastic (HNO3))

Signature of personnel receiving samples: Hangler Second reviewer:

Signature of project manager notified: Renée Date and Time of notification: 10-4-11

Name of client notified: Date and Time of notification:

Information given to client:

by whom (Initials):

Initials

APPL, Inc. (559) 275-2175

CUSTODY SEAL

EPA METHOD 8270
Polynuclear Aromatic Hydrocarbons

APPL, INC.

EPA METHOD 8270
Polynuclear Aromatic Hydrocarbons
Summary

APPL, INC.

EPA 8270D LL WATER DODv3

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker

Project: 112G00810 Indian Head CTO423

ARF: 65882

Sample ID: X15GW0010911

APPL ID: AY47773

Sample Collection Date: 09/28/11

QCG: #SIMDD-111005A-160276

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
8270D-LL	2-METHYLNAPHTHALENE	0.12 U	0.2	0.12	0.06	ug/L	10/05/11	10/06/11
8270D-LL	ACENAPHTHENE	0.12 U	0.2	0.12	0.06	ug/L	10/05/11	10/06/11
8270D-LL	ACENAPHTHYLENE	0.12 U	0.2	0.12	0.06	ug/L	10/05/11	10/06/11
8270D-LL	ANTHRACENE	0.10 U	0.2	0.10	0.05	ug/L	10/05/11	10/06/11
8270D-LL	BENZ (A) ANTHRACENE	0.25	0.2	0.14	0.07	ug/L	10/05/11	10/06/11
8270D-LL	BENZO (A) PYRENE	0.31	0.2	0.14	0.07	ug/L	10/05/11	10/06/11
8270D-LL	BENZO (B) FLUORANTHENE	0.49	0.2	0.12	0.06	ug/L	10/05/11	10/06/11
8270D-LL	BENZO (G,H,I) PERYLENE	0.26	0.2	0.16	0.08	ug/L	10/05/11	10/06/11
8270D-LL	BENZO (K) FLUORANTHENE	0.36	0.2	0.14	0.07	ug/L	10/05/11	10/06/11
8270D-LL	CHRYSENE	0.25	0.2	0.10	0.05	ug/L	10/05/11	10/06/11
8270D-LL	DIBENZ (A,H) ANTHRACENE	0.14 J	0.2	0.10	0.05	ug/L	10/05/11	10/06/11
8270D-LL	FLUORANTHENE	0.24	0.2	0.16	0.08	ug/L	10/05/11	10/06/11
8270D-LL	FLUORENE	0.12 U	0.2	0.12	0.06	ug/L	10/05/11	10/06/11
8270D-LL	INDENO (1,2,3-CD) PYRENE	0.24	0.2	0.14	0.07	ug/L	10/05/11	10/06/11
8270D-LL	NAPHTHALENE	0.10 U	0.2	0.10	0.05	ug/L	10/05/11	10/06/11
8270D-LL	PHENANTHRENE	0.16 J	0.2	0.14	0.07	ug/L	10/05/11	10/06/11
8270D-LL	PYRENE	0.22	0.2	0.16	0.08	ug/L	10/05/11	10/06/11
8270D-LL	SURROGATE: 2-FLUORBIPHENYL (S)	55.2	50-110			%	10/05/11	10/06/11
8270D-LL	SURROGATE: NITROBENZENE-D5 (S)	53.9	40-110			%	10/05/11	10/06/11
8270D-LL	SURROGATE: TERPHENYL-D14 (S)	64.1	50-135			%	10/05/11	10/06/11

J = Estimated value.

Quant Method: SIM2.M
Run #: 1006L018
Instrument: Linus
Sequence: L110921
Dilution Factor: 1
Initials: LF

Printed: 10/19/11 12:27:54 PM
APPL-F1-SC-NoMC-REG MDLs

EPA 8270D LL WATER DODv3

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker

Project: 112G00810 Indian Head CTO423

ARF: 65882

Sample ID: X14GW0010911

APPL ID: AY47774

Sample Collection Date: 09/29/11

QCG: #SIMDD-111005A-160276

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
8270D-LL	2-METHYLNAPHTHALENE	0.12 U	0.2	0.12	0.06	ug/L	10/05/11	10/06/11
8270D-LL	ACENAPHTHENE	0.12 U	0.2	0.12	0.06	ug/L	10/05/11	10/06/11
8270D-LL	ACENAPHTHYLENE	0.12 U	0.2	0.12	0.06	ug/L	10/05/11	10/06/11
8270D-LL	ANTHRACENE	0.10 U	0.2	0.10	0.05	ug/L	10/05/11	10/06/11
8270D-LL	BENZ (A) ANTHRACENE	0.14 U	0.2	0.14	0.07	ug/L	10/05/11	10/06/11
8270D-LL	BENZO (A) PYRENE	0.14 U	0.2	0.14	0.07	ug/L	10/05/11	10/06/11
8270D-LL	BENZO (B) FLUORANTHENE	0.12 U	0.2	0.12	0.06	ug/L	10/05/11	10/06/11
8270D-LL	BENZO (G,H,I) PERYLENE	0.16 U	0.2	0.16	0.08	ug/L	10/05/11	10/06/11
8270D-LL	BENZO (K) FLUORANTHENE	0.14 U	0.2	0.14	0.07	ug/L	10/05/11	10/06/11
8270D-LL	CHRYSENE	0.10 U	0.2	0.10	0.05	ug/L	10/05/11	10/06/11
8270D-LL	DIBENZ (A,H) ANTHRACENE	0.10 U	0.2	0.10	0.05	ug/L	10/05/11	10/06/11
8270D-LL	FLUORANTHENE	0.16 U	0.2	0.16	0.08	ug/L	10/05/11	10/06/11
8270D-LL	FLUORENE	0.12 U	0.2	0.12	0.06	ug/L	10/05/11	10/06/11
8270D-LL	INDENO (1,2,3-CD) PYRENE	0.14 U	0.2	0.14	0.07	ug/L	10/05/11	10/06/11
8270D-LL	NAPHTHALENE	0.10 U	0.2	0.10	0.05	ug/L	10/05/11	10/06/11
8270D-LL	PHENANTHRENE	0.14 U	0.2	0.14	0.07	ug/L	10/05/11	10/06/11
8270D-LL	PYRENE	0.16 U	0.2	0.16	0.08	ug/L	10/05/11	10/06/11
8270D-LL	SURROGATE: 2-FLUORBIPHENYL (S)	53.2	50-110			%	10/05/11	10/06/11
8270D-LL	SURROGATE: NITROBENZENE-D5 (S)	67.3	40-110			%	10/05/11	10/06/11
8270D-LL	SURROGATE: TERPHENYL-D14 (S)	73.4	50-135			%	10/05/11	10/06/11

Quant Method: SIM2.M
Run #: 1006L019
Instrument: Linus
Sequence: L110921
Dilution Factor: 1
Initials: LF

Printed: 10/19/11 12:27:54 PM
APPL-F1-SC-NoMC-REG MDLs

EPA 8270D LL WATER DODv3

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker

Project: 112G00810 Indian Head CTO423

ARF: 65882

Sample ID: DUP01092811

APPL ID: AY47780

Sample Collection Date: 09/28/11

QCG: #SIMDD-111005A-160276

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
8270D-LL	2-METHYLNAPHTHALENE	0.12 U	0.2	0.12	0.06	ug/L	10/05/11	10/06/11
8270D-LL	ACENAPHTHENE	0.12 U	0.2	0.12	0.06	ug/L	10/05/11	10/06/11
8270D-LL	ACENAPHTHYLENE	0.12 U	0.2	0.12	0.06	ug/L	10/05/11	10/06/11
8270D-LL	ANTHRACENE	0.10 U	0.2	0.10	0.05	ug/L	10/05/11	10/06/11
8270D-LL	BENZ (A) ANTHRACENE	0.089 J	0.2	0.14	0.07	ug/L	10/05/11	10/06/11
8270D-LL	BENZO (A) PYRENE	0.10 J	0.2	0.14	0.07	ug/L	10/05/11	10/06/11
8270D-LL	BENZO (B) FLUORANTHENE	0.15 J	0.2	0.12	0.06	ug/L	10/05/11	10/06/11
8270D-LL	BENZO (G,H,I) PERYLENE	0.16 U	0.2	0.16	0.08	ug/L	10/05/11	10/06/11
8270D-LL	BENZO (K) FLUORANTHENE	0.11 J	0.2	0.14	0.07	ug/L	10/05/11	10/06/11
8270D-LL	CHRYSENE	0.072 J	0.2	0.10	0.05	ug/L	10/05/11	10/06/11
8270D-LL	DIBENZ (A,H) ANTHRACENE	0.10 U	0.2	0.10	0.05	ug/L	10/05/11	10/06/11
8270D-LL	FLUORANTHENE	0.10 J	0.2	0.16	0.08	ug/L	10/05/11	10/06/11
8270D-LL	FLUORENE	0.12 U	0.2	0.12	0.06	ug/L	10/05/11	10/06/11
8270D-LL	INDENO (1,2,3-CD) PYRENE	0.14 U	0.2	0.14	0.07	ug/L	10/05/11	10/06/11
8270D-LL	NAPHTHALENE	0.10 U	0.2	0.10	0.05	ug/L	10/05/11	10/06/11
8270D-LL	PHENANTHRENE	0.077 J	0.2	0.14	0.07	ug/L	10/05/11	10/06/11
8270D-LL	PYRENE	0.092 J	0.2	0.16	0.08	ug/L	10/05/11	10/06/11
8270D-LL	SURROGATE: 2-FLUORBIPHENYL (S)	59.8	50-110			%	10/05/11	10/06/11
8270D-LL	SURROGATE: NITROBENZENE-D5 (S)	66.8	40-110			%	10/05/11	10/06/11
8270D-LL	SURROGATE: TERPHENYL-D14 (S)	72.6	50-135			%	10/05/11	10/06/11

J = Estimated value.

Quant Method: SIM2.M
Run #: 1006L020
Instrument: Linus
Sequence: L110921
Dilution Factor: 1
Initials: LF

Printed: 10/19/11 12:27:54 PM
APPL-F1-SC-NoMC-REG MDLs

Form 2 & 8

Surrogate Recovery

Lab Name: APPL, Inc. SDG No: 65882

Case No: 65882 Date Analyzed: 10/06/11

Matrix: WATER Instrument: Linus

APPL ID.	Client Sample No.	SURROGATE: 2-FLUORBIPHENYL (S)			SURROGATE: NITROBENZENE-D5 (S)		
		Limits	Result	Qualifier	Limits	Result	Qualifier
111005A-BLK	Blank	50-110	56.9		40-110	67.2	
111005A-LCS	Lab Control Spike	50-110	53.5		40-110	82.0	
AY47773-MS	Matrix Spike	50-110	69.9		40-110	80.6	
AY47773-MSD	Matrix SpikeD	50-110	61.7		40-110	86.7	
AY47773	X15GW0010911	50-110	55.2		40-110	53.9	
AY47774	X14GW0010911	50-110	53.2		40-110	67.3	
AY47780	DUP01092811	50-110	59.8		40-110	66.8	

Comments: Batch: #SIMDD-111005A

Form 2 & 8

Surrogate Recovery

Lab Name: APPL, Inc. SDG No: 65882

Case No: 65882 Date Analyzed: 10/06/11

Matrix: WATER Instrument: Linus

APPL ID.	Client Sample No.	SURROGATE: TERPHENYL-D14 (S)					
		Limits	Result	Qualifier	Limits	Result	Qualifier
111005A-BLK	Blank	50-135	69.9				
111005A-LCS	Lab Control Spike	50-135	80.5				
AY47773-MS	Matrix Spike	50-135	78.6				
AY47773-MSD	Matrix SpikeD	50-135	83.7				
AY47773	X15GW0010911	50-135	64.1				
AY47774	X14GW0010911	50-135	73.4				
AY47780	DUP01092811	50-135	72.6				

Comments: Batch: #SIMDD-111005A

Matrix Spike Recoveries

EPA 8270D LL WATER DODv3

APPL ID: **111005W-47773 MS - 160276**
Batch ID: #SIMDD-111005A
Sample ID: AY47773
Client ID: X15GW0010911

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Lvl ug/L	Matrix Result ug/L	SPK Result ug/L	DUP Result ug/L	SPK % Recovery	DUP % Recovery	Recovery Limits	RPD %	RPD Limits
2-METHYLNAPHTHALENE	3.92	ND	2.42	2.49	61.7	63.5	45-105	2.9	30
ACENAPHTHENE	3.92	ND	2.41	2.45	61.5	62.5	45-110	1.6	30
ACENAPHTHYLENE	3.92	ND	2.25	2.47	57.4	63.0	50-105	9.3	30
ANTHRACENE	3.92	ND	2.36	2.85	60.2	72.7	55-110	18.8	30
BENZ (A) ANTHRACENE	3.92	0.25	2.58	2.52	59.4	57.9	55-110	2.4	30
BENZO (A) PYRENE	3.92	0.31	2.51	2.36	56.1	52.3 #	55-110	6.2	30
BENZO (B) FLUORANTHENE	3.92	0.49	2.46	2.49	50.3	51.0	45-120	1.2	30
BENZO (G,H,I) PERYLENE	3.92	0.26	2.59	2.65	59.4	61.0	40-125	2.3	30
BENZO (K) FLUORANTHENE	3.92	0.36	2.65	2.54	58.4	55.6	45-125	4.2	30
CHRYSENE	3.92	0.25	2.40	2.50	54.8 #	57.4	55-110	4.1	30
DIBENZ (A,H) ANTHRACENE	3.92	0.14	2.71	2.93	65.6	71.2	40-125	7.8	30
FLUORANTHENE	3.92	0.24	2.36	2.82	54.1 #	65.8	55-115	17.8	30
FLUORENE	3.92	ND	2.53	2.60	64.5	66.3	50-110	2.7	30
INDENO (1,2,3-CD) PYRENE	3.92	0.24	2.45	2.59	56.4	59.9	45-125	5.6	30
NAPHTHALENE	3.92	ND	2.56	2.54	65.3	64.8	40-100	0.78	30
PHENANTHRENE	3.92	0.16	2.35	2.89	55.9	69.6	50-115	20.6	30
PYRENE	3.92	0.22	2.26	2.38	52.0	55.1	50-130	5.2	30
SURROGATE: 2-FLUORBIPHENYL (S)	1.96	NA	1.37	1.21	69.9	61.7	50-110		
SURROGATE: NITROBENZENE-D5 (S)	1.96	NA	1.58	1.70	80.6	86.7	40-110		
SURROGATE: TERPHENYL-D14 (S)	1.96	NA	1.54	1.64	78.6	83.7	50-135		

= Recovery is outside QC limits.

Comments:

Primary	SPK	DUP
Quant Method :	SIM2.M	SIM2.M
Extraction Date :	10/05/11	10/05/11
Analysis Date :	10/06/11	10/06/11
Instrument :	Linus	Linus
Run :	1006L016	1006L017
Initials :	LF	

Printed: 10/19/11 12:27:45 PM
APPL MSD SCII

Laboratory Control Spike Recovery

EPA 8270D LL WATER DODv3

APPL ID: **111005W-47773 LCS - 160276**
Batch ID: #SIMDD-111005A

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Level ug/L	SPK Result ug/L	SPK % Recovery	Recovery Limits
2-METHYLNAPHTHALENE	4.00	2.19	54.8	45-105
ACENAPHTHENE	4.00	2.27	56.8	45-110
ACENAPHTHYLENE	4.00	2.26	56.5	50-105
ANTHRACENE	4.00	2.23	55.8	55-110
BENZ (A) ANTHRACENE	4.00	2.57	64.3	55-110
BENZO (A) PYRENE	4.00	2.39	59.8	55-110
BENZO (B) FLUORANTHENE	4.00	2.44	61.0	45-120
BENZO (G,H,I) PERYLENE	4.00	2.72	68.0	40-125
BENZO (K) FLUORANTHENE	4.00	2.46	61.5	45-125
CHRYSENE	4.00	2.65	66.3	55-110
DIBENZ (A,H) ANTHRACENE	4.00	2.59	64.8	40-125
FLUORANTHENE	4.00	2.45	61.3	55-115
FLUORENE	4.00	2.28	57.0	50-110
INDENO (1,2,3-CD) PYRENE	4.00	2.81	70.3	45-125
NAPHTHALENE	4.00	2.19	54.8	40-100
PHENANTHRENE	4.00	2.38	59.5	50-115
PYRENE	4.00	2.37	59.3	50-130
SURROGATE: 2-FLUORBIPHENYL (S)	2.00	1.07	53.5	50-110
SURROGATE: NITROBENZENE-D5 (S)	2.00	1.64	82.0	40-110
SURROGATE: TERPHENYL-D14 (S)	2.00	1.61	80.5	50-135

Comments:

Primary	SPK
Quant Method :	SIM2.M
Extraction Date :	10/05/11
Analysis Date :	10/06/11
Instrument :	Linus
Run :	1006L013
Initials :	LF

Printed: 10/19/11 12:27:41 PM

APPL Standard LCS

8270D-LL

Form 4

Blank Summary

Lab Name: APPL, Inc. SDG No: 65882

Case No: 65882 Date Analyzed: 10/06/11

Matrix: WATER Instrument: Linus

Blank ID: 111005A-BLK Time Analyzed: 1634

APPL ID.	Client Sample No.	File ID.	Date Analyzed
111005A-BLK	Blank	1006L012	10/06/11 1634
111005A-LCS	Lab Control Spike	1006L013	10/06/11 1659
111005A-MS	Matrix Spike	1006L016	10/06/11 1815
111005A-MSD	Matrix SpikeD	1006L017	10/06/11 1841
AY47773	X15GW0010911	1006L018	10/06/11 1907
AY47774	X14GW0010911	1006L019	10/06/11 1932
AY47780	DUP01092811	1006L020	10/06/11 1958

Comments: Batch: #SIMDD-111005A

Printed: 11/16/11 2:12:54 PM
Form 4, Blank Summary

Method Blank
EPA 8270D LL WATER DODv3

APPL Inc.
908 North Temperance Avenu
Clovis, CA 93611

Blank Name/QCG: **111005W-47773 - 160276**
Batch ID: #SIMDD-111005A

Sample Type	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
BLANK	2-METHYLNAPHTHALENE	0.12 U	0.2	0.12	0.06	ug/L	10/05/11	10/06/11
BLANK	ACENAPHTHENE	0.12 U	0.2	0.12	0.06	ug/L	10/05/11	10/06/11
BLANK	ACENAPHTHYLENE	0.12 U	0.2	0.12	0.06	ug/L	10/05/11	10/06/11
BLANK	ANTHRACENE	0.10 U	0.2	0.10	0.05	ug/L	10/05/11	10/06/11
BLANK	BENZ (A) ANTHRACENE	0.14 U	0.2	0.14	0.07	ug/L	10/05/11	10/06/11
BLANK	BENZO (A) PYRENE	0.14 U	0.2	0.14	0.07	ug/L	10/05/11	10/06/11
BLANK	BENZO (B) FLUORANTHENE	0.12 U	0.2	0.12	0.06	ug/L	10/05/11	10/06/11
BLANK	BENZO (G,H,I) PERYLENE	0.16 U	0.2	0.16	0.08	ug/L	10/05/11	10/06/11
BLANK	BENZO (K) FLUORANTHENE	0.14 U	0.2	0.14	0.07	ug/L	10/05/11	10/06/11
BLANK	CHRYSENE	0.10 U	0.2	0.10	0.05	ug/L	10/05/11	10/06/11
BLANK	DIBENZ (A,H) ANTHRACENE	0.10 U	0.2	0.10	0.05	ug/L	10/05/11	10/06/11
BLANK	FLUORANTHENE	0.16 U	0.2	0.16	0.08	ug/L	10/05/11	10/06/11
BLANK	FLUORENE	0.12 U	0.2	0.12	0.06	ug/L	10/05/11	10/06/11
BLANK	INDENO (1,2,3-CD) PYRENE	0.14 U	0.2	0.14	0.07	ug/L	10/05/11	10/06/11
BLANK	NAPHTHALENE	0.10 U	0.2	0.10	0.05	ug/L	10/05/11	10/06/11
BLANK	PHENANTHRENE	0.14 U	0.2	0.14	0.07	ug/L	10/05/11	10/06/11
BLANK	PYRENE	0.16 U	0.2	0.16	0.08	ug/L	10/05/11	10/06/11
BLANK	SURROGATE: 2-FLUORBIPHENY	56.9	50-110			%	10/05/11	10/06/11
BLANK	SURROGATE: NITROBENZENE-	67.2	40-110			%	10/05/11	10/06/11
BLANK	SURROGATE: TERPHENYL-D14 (	69.9	50-135			%	10/05/11	10/06/11

Quant Method:SIM2.M
Run #:1006L012
Instrument:Linus
Sequence:L110921
Initials:LF

GC SC-Blank-REG MDLs
Printed: 10/19/11 12:21:26 PM

Form 5
Tune Summary

Lab Name: APPL Inc.
Case No: 65882
Matrix: Water
ID: SVTUNE 04-14-11

SDG No: 65882
Date Analyzed: 10/06/11
Instrument: Linus
Time Analyzed: 12:01

	Client Sample No.	APPL ID.	File ID.	Date Analyzed
1	Blank	111005A BLK 1/1000	1006L012.D	10/06/11 16:34
2	Lab Control Spike	111005A LCS-1 1/1000	1006L013.D	10/06/11 16:59
3	Matrix Spike	AY47773W01 MS-1 1/10	1006L016.D	10/06/11 18:15
4	Matrix Spike Dup	AY47773W04 MSD-1 1/1	1006L017.D	10/06/11 18:41
5	X15GW0010911	AY47773W06 1/1020	1006L018.D	10/06/11 19:07
6	X14GW0010911	AY47774W02 1/1000	1006L019.D	10/06/11 19:32
7	DUP01092811	AY47780W03 1/1010	1006L020.D	10/06/11 19:58
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				

m/e		
51	29.95 - 60% of mass 198	46.2
68	0 - 2.05% of mass 69	0.0
70	0 - 2% of mass 69	0.4
127	40 - 60% of mass 198	51.4
197	0 - 1% of mass 198	0.2
198	100 - 100% of mass 198	100.0
199	5 - 9% of mass 198	7.3
275	10 - 30% of mass 198	24.6
365	1 - 100% of mass 198	2.4
441	0.01 - 100% of mass 443	75.0
442	40 - 150% of mass 198	90.5
443	17 - 23% of mass 442	19.9

EPA 8270C SIM

Form 6
Initial Calibration

Lab Name: APPL, Inc. SDG No: 65882
Case No: Initial Cal. Date: 09/21/11
Matrix: Instrument: Linus
Initials:

			0921L003.D	0921L004.D	0921L005.D	0921L006.D	0921L007.D	0921L008.D	0921L009.D	0921L010.D							
		Compound	0.1	0.2	0.5	1	5	10	50	100			Avg	%RSD			
1	I	Napthalene-D8(IS)															
2	SL	Surrogate Recovery (NBZ)		0.4008	0.2280	0.1787	0.2494	0.2725	0.2789	0.2813			0.27	25	SL	1.00	
3	TM	Naphthalene	2.157	2.196	1.897	2.278	2.037	2.122	1.776	1.762			2.0	9.6	TM		
4	TM	2-Methylnaphthalene	1.111	1.086	1.147	1.238	1.255	1.318	1.165	1.219			1.2	6.6	TM		
5	TM	1-Methylnaphthalene	1.145	1.420	1.381	1.525	1.311	1.237	1.091	1.116			1.3	12	TM		
6	I	Acenaphthene-D10(IS)															
7	S	Surrogate Recovery (FBP)	1.573	1.778	1.585	1.603	1.583	1.653	1.407	1.325			1.6	9.0	S		
8	TM	Acenaphthylene	3.997	4.505	4.045	4.103	4.057	4.137	3.556	3.302			4.0	9.4	TM		
9	*TM	Acenaphthene	2.523	2.456	2.447	2.439	2.408	2.336	2.022	2.045			2.3	8.3	*TM		
10	TM	Fluorene	2.720	2.846	2.812	2.692	2.744	2.805	2.357	2.356			2.7	7.4	TM		
11	I	Phenanthrene-D10(IS)															
12	TM	Phenanthrene	2.316	2.199	2.240	2.141	2.575	2.546	2.112	2.143			2.3	8.0	TM		
13	TM	Anthracene	3.119	2.495	2.570	2.468	2.679	2.601	2.018	2.132			2.5	13	TM		
14	*TM	Fluoranthene	4.608	4.262	4.190	4.040	4.429	4.410	3.783	3.528			4.2	8.6	*TM		
15	I	Chrysene-D12(IS)															
16	TM	Pyrene	3.512	3.742	3.547	3.417	2.998	2.950	2.375				3.2	15	TM		
17	S	Surrogate Recovery (TPH)	1.020	0.8327	0.8506	0.8574	0.7514	0.7758	0.6975	0.6333			0.80	15	S		
18	TM	Benz (a) anthracene	1.926	1.723	1.797	1.530	1.865	1.886	1.850	1.920			1.8	7.3	TM		
19	TM	Chrysene	2.738	2.422	2.629	2.750	2.191	2.296	1.941	1.922			2.4	14	TM		
20	TM	Indeno (1,2,3-cd) pyrene	1.284	1.618	1.350	1.389	1.287	1.346	1.483	1.608			1.4	9.4	TM		
21	I	Perylene-D12(IS)															
22	TM	Benzo (b) fluoranthene	1.846	1.842	1.732	1.803	1.666	1.787	2.067	2.307			1.9	11	TM		
23	TM	Benzo (k) fluoranthene	2.818	2.636	2.555	2.673	2.620	2.834	2.006	2.049			2.5	13	TM		
24	*TM	Benzo (a) pyrene	1.944	1.930	2.046	2.093	2.014	2.082	1.924	1.861			2.0	4.2	*TM		
25	TM	Dibenz (a,h) anthracene	1.288	1.261	1.238	1.249	1.153	1.205	1.340	1.406			1.3	6.2	TM		
26	TM	Benzo (g,h,i) perylene	1.555	1.842	1.766	1.700	1.366	1.515	1.530	1.570			1.6	9.6	TM		
27																	
28																	
29																	
30																	
31																	
32																	
33																	
34																	
35																	

Form 7

Second Source Calibration

Lab Name: APPL, Inc.
Case No:
Matrix:

SDG No: 65882
Date Analyzed: 09/21/11
Instrument: Linus
Initial Cal. Date: 09/21/11
Data File: 0921L011.D

		Compound	MEAN	CCRF	%D		%Drift
1	I	Napthalene-D8(IS)	ISTD			I	
2	TM	Naphthalene	2.028	1.972	2.8	TM	
3	TM	2-Methylnaphthalene	1.192	1.215	1.9	TM	
4	TM	1-Methylnaphthalene	1.278	1.303	1.9	TM	
5	I	Acenaphthene-D10(IS)	ISTD			I	
6	TM	Acenaphthylene	3.963	3.853	2.8	TM	
7	*TM	Acenaphthene	2.335	2.286	2.1	*TM	
8	TM	Fluorene	2.666	2.612	2.0	TM	
9	I	Phenanthrene-D10(IS)	ISTD			I	
10	TM	Phenanthrene	2.284	2.251	1.4	TM	
11	TM	Anthracene	2.510	2.363	5.9	TM	
12	*TM	Fluoranthene	4.156	3.841	7.6	*TM	
13	I	Chrysene-D12(IS)	ISTD			I	
14	TM	Pyrene	3.220	2.914	9.5	TM	
15	TM	Benz (a) anthracene	1.812	1.952	7.7	TM	
16	TM	Chrysene	2.361	2.253	4.6	TM	
17	TM	Indeno (1,2,3-cd) pyrene	1.421	1.590	12	TM	
18	I	Perylene-D12(IS)	ISTD			I	
19	TM	Benzo (b) fluoranthene	1.881	1.865	0.87	TM	
20	TM	Benzo (k) fluoranthene	2.524	2.659	5.3	TM	
21	*TM	Benzo (a) pyrene	1.987	2.244	13	*TM	
22	TM	Dibenz (a,h) anthracene	1.267	1.424	12	TM	
23	TM	Benzo (g,h,i) perylene	1.606	1.687	5.1	TM	
24							
25							
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							
		Average			5.5		

Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix:

SDG No: 65982
Date Analyzed: 6 Oct 11 12:19
Instrument: Linus
Initial Cal. Date: 09/21/11
Data File: 1006L002.D

		Compound	MEAN	CCRF	%D		%Drift
1	I	Napthalene-D8(IS)	ISTD			I	
2	SL	Surrogate Recovery (NBZ)	0.2699	0.2692	0.29	SL	1.0
3	TM	Naphthalene	2.028	1.878	7.4	TM	
4	TM	2-Methylnaphthalene	1.192	1.220	2.3	TM	
5	TM	1-Methylnaphthalene	1.278	1.159	9.3	TM	
6	I	Acenaphthene-D10(IS)	ISTD			I	
7	S	Surrogate Recovery (FBP)	1.563	1.670	6.9	S	
8	TM	Acenaphthylene	3.963	3.567	10.0	TM	
9	*TM	Acenaphthene	2.335	2.191	6.1	*TM	
10	TM	Fluorene	2.666	2.557	4.1	TM	
11	I	Phenanthrene-D10(IS)	ISTD			I	
12	TM	Phenanthrene	2.284	2.306	0.97	TM	
13	TM	Anthracene	2.510	2.322	7.5	TM	
14	*TM	Fluoranthene	4.156	3.823	8.0	*TM	
15	I	Chrysene-D12(IS)	ISTD			I	
16	TM	Pyrene	3.220	2.718	16	TM	
17	S	Surrogate Recovery (TPH)	0.8023	0.8602	7.2	S	
18	TM	Benz (a) anthracene	1.812	1.897	4.7	TM	
19	TM	Chrysene	2.361	2.064	13	TM	
20	TM	Indeno (1,2,3-cd) pyrene	1.421	1.618	14	TM	
21	I	Perylene-D12(IS)	ISTD			I	
22	TM	Benzo (b) fluoranthene	1.881	2.191	16	TM	
23	TM	Benzo (k) fluoranthene	2.524	2.114	16	TM	
24	*TM	Benzo (a) pyrene	1.987	1.947	2.0	*TM	
25	TM	Dibenz (a,h) anthracene	1.267	1.465	16	TM	
26	TM	Benzo (g,h,i) perylene	1.606	1.594	0.71	TM	
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							
		Average			8.0		

8A
INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: APPL Inc. Contract: Review

Lab Code: SDG No.: 65882

Lab File ID (Standard): 0921L007.D Date Analyzed: 09/21/11

Instrument ID: Linus Time Analyzed: 21:51

GC Column: ID: Heated Purge: (Y/N)

		Napthalene-D8(IS)		Acenaphthene-D10(IS)		Phenanthrene-D10(IS)	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	1616	6.12	743	8.13	1026	9.87
	UPPER LIMIT	3232	6.62	1486	8.63	2052	10.37
	LOWER LIMIT	808	5.62	372	7.63	513	9.37
	SAMPLE NO.						
01	111005A BLK 1/1000	2023	6.12	864	8.13	1462	9.87
02	111005A LCS-1 1/1000	1715	6.12	808	8.12	1302	9.86
03	AY47773W01 MS-1 1/1	1663	6.12	822	8.12	1280	9.86
04	AY47773W04 MSD-1 1/	1649	6.12	814	8.12	1201	9.87
05	AY47773W06 1/1020	1610	6.12	653	8.13	1158	9.88
06	AY47774W02 1/1000	1773	6.12	968	8.13	1487	9.87
07	AY47780W03 1/1010	1988	6.12	926	8.13	1495	9.88
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = -50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

8A
INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: APPL Inc. Contract: Review

Lab Code: SDG No.: 65882

Lab File ID (Standard): 0921L007.D Date Analyzed: 09/21/11

Instrument ID: Linus Time Analyzed: 21:51

GC Column: ID: Heated Purge: (Y/N)

		Chrysene-D12(IS)		Perylene-D12(IS)			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	1571	12.96	1247	14.59		
	UPPER LIMIT	3142	13.46	2494	15.09		
	LOWER LIMIT	786	12.46	624	14.09		
	SAMPLE NO.						
01	111005A BLK 1/1000	2367	12.96	1950	14.61		
02	111005A LCS-1 1/1000	2044	12.96	1719	14.59		
03	AY47773W01 MS-1 1/1(	2050	12.96	1647	14.59		
04	AY47773W04 MSD-1 1/	1900	12.96	1546	14.59		
05	AY47773W06 1/1020	1830	12.96	1502	14.61		
06	AY47774W02 1/1000	2311	12.97	1892	14.61		
07	AY47780W03 1/1010	2309	12.97	1868	14.61		
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = -50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Injection Log

Directory: M:\LINUS\DATA\L110921\

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1	1	0921L001.D	1	SVTUNE 04-14-11		21 Sep 11 19:23
2	3	0921L003.D	1	0.1ug/ml PAH 09-21-11		21 Sep 11 20:07
3	4	0921L004.D	1	0.2ug/ml PAH		21 Sep 11 20:33
4	5	0921L005.D	1	0.5ug/ml PAH		21 Sep 11 20:59
5	6	0921L006.D	1	1.0ug/ml PAH		21 Sep 11 21:25
6	7	0921L007.D	1	5.0ug/ml PAH		21 Sep 11 21:51
7	8	0921L008.D	1	10ug/ml PAH		21 Sep 11 22:17
8	9	0921L009.D	1	50ug/ml PAH		21 Sep 11 22:43
9	10	0921L010.D	1	100ug/ml PAH		21 Sep 11 23:09
10	11	0921L011.D	1	5.0ug/ml PAH SS 9-21-11		21 Sep 11 23:35
11	1	1006L001.D	1	SVTUNE 04-14-11		6 Oct 11 12:01
12	2	1006L002.D	1	10ug/ml PAH 09-29-11		6 Oct 11 12:19
13	12	1006L012.D	1	111005A BLK 1/1000		6 Oct 11 16:34
14	13	1006L013.D	1	111005A LCS-1 1/1000		6 Oct 11 16:59
15	16	1006L016.D	0.98039	AY47773W01 MS-1 1/1020		6 Oct 11 18:15
16	17	1006L017.D	0.98039	AY47773W04 MSD-1 1/1020		6 Oct 11 18:41
17	18	1006L018.D	0.98039	AY47773W06 1/1020		6 Oct 11 19:07
18	19	1006L019.D	1	AY47774W02 1/1000		6 Oct 11 19:32
19	20	1006L020.D	0.9901	AY47780W03 1/1010		6 Oct 11 19:58

EPA METHOD 8270
Polynuclear Aromatic Hydrocarbons
Raw Sample Data

APPL, INC.

Quantitation Report (QT Reviewed)

Data File : M:\LINUS\DATA\L110921\1006L018.D Vial: 18
Acq On : 6 Oct 11 19:07 Operator: LF
Sample : AY47773W06 1/1020 Inst : Linus
Misc : Multiplr: 0.98

Quant Time: Oct 7 9:15 2011 Quant Results File: SIM2.RES

Quant Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Wed Oct 05 18:18:09 2011
Response via : Initial Calibration
DataAcq Meth : 87SIMAQ

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Napthalene-D8(IS)	6.12	136	1610	2.50000 ppb	0.00
6) Acenaphthene-D10(IS)	8.13	164	653	2.50000 ppb	0.01
11) Phenanthrene-D10(IS)	9.88	188	1158	2.50000 ppb	0.02
15) Chrysene-D12(IS)	12.96	240	1830	2.50000 ppb	0.01
21) Perylene-D12(IS)	14.61	264	1502	2.50000 ppb	0.02
System Monitoring Compounds					
2) Surrogate Recovery (NBZ)	5.37	82	146	1.05750 ppb	0.02
Spiked Amount 1.961			Recovery	= 53.907%	
7) Surrogate Recovery (FBP)	7.39	172	451	1.08291 ppb	0.02
Spiked Amount 1.961			Recovery	= 55.233%	
17) Surrogate Recovery (TPH)	11.75	244	753	1.25705 ppb	0.00
Spiked Amount 1.961			Recovery	= 64.107%	
Target Compounds					Qvalue
12) Phenanthrene	9.91	178	172	0.15938 ppb	98
14) Fluoranthene	11.29	202	475	0.24189 ppb	98
16) Pyrene	11.55	202	522	0.21711 ppb	99
18) Benz (a) anthracene	12.96	228	337	0.24907 ppb	98
19) Chrysene	13.00	228	447	0.25354 ppb	97
20) Indeno (1,2,3-cd) pyrene	16.16	276	258	0.24324 ppb #	100
22) Benzo (b) fluoranthene	14.16	252	561	0.48663 ppb	98
23) Benzo (k) fluoranthene	14.16	252	561	0.36272 ppb	98
24) Benzo (a) pyrene	14.54	252	377	0.30967 ppb	95
25) Dibenz (a,h) anthracene	16.18	278	111	0.14292 ppb	95
26) Benzo (g,h,i) perylene	16.61	276	260	0.26425 ppb	96

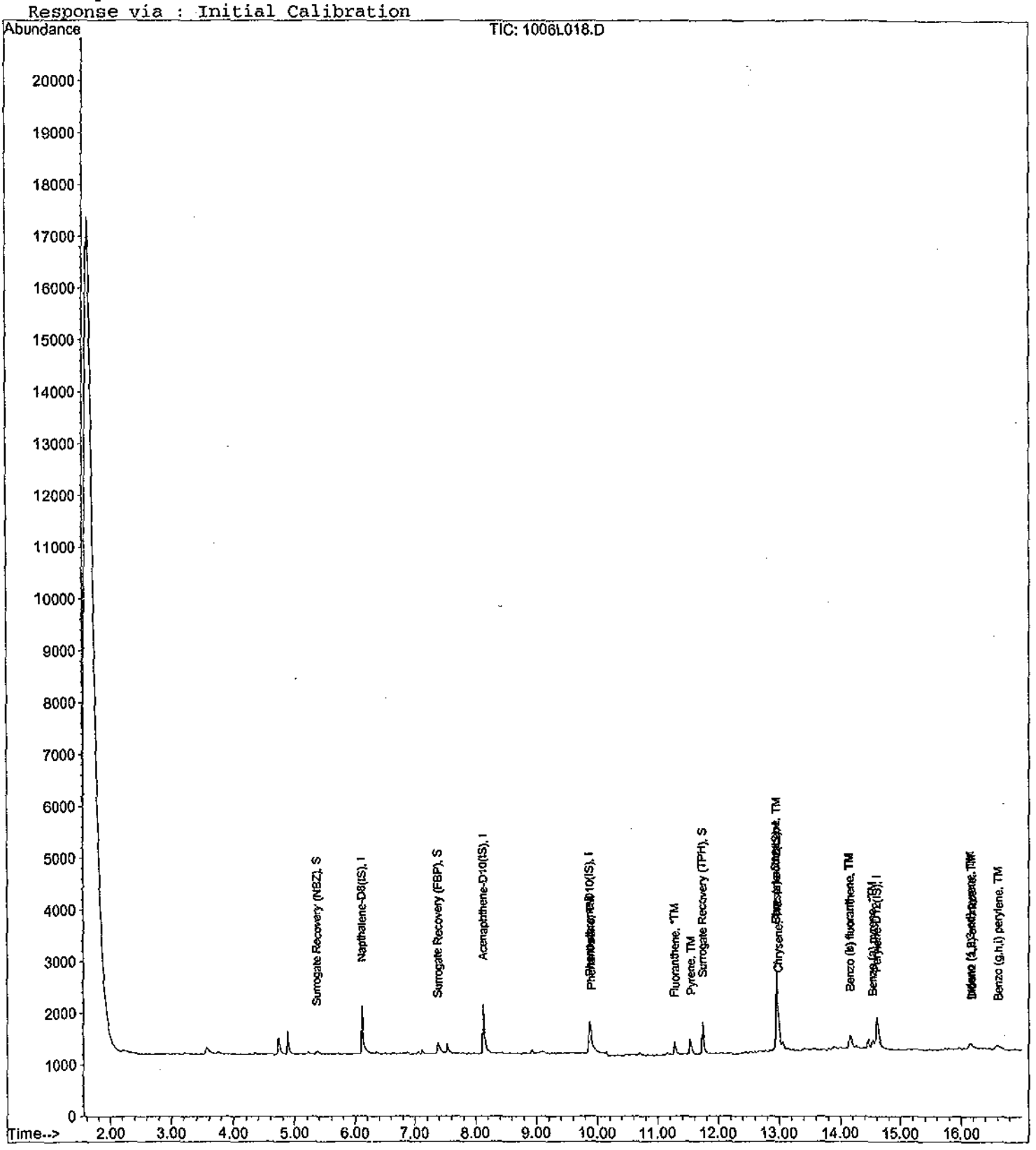
(#) = qualifier out of range (m) = manual integration

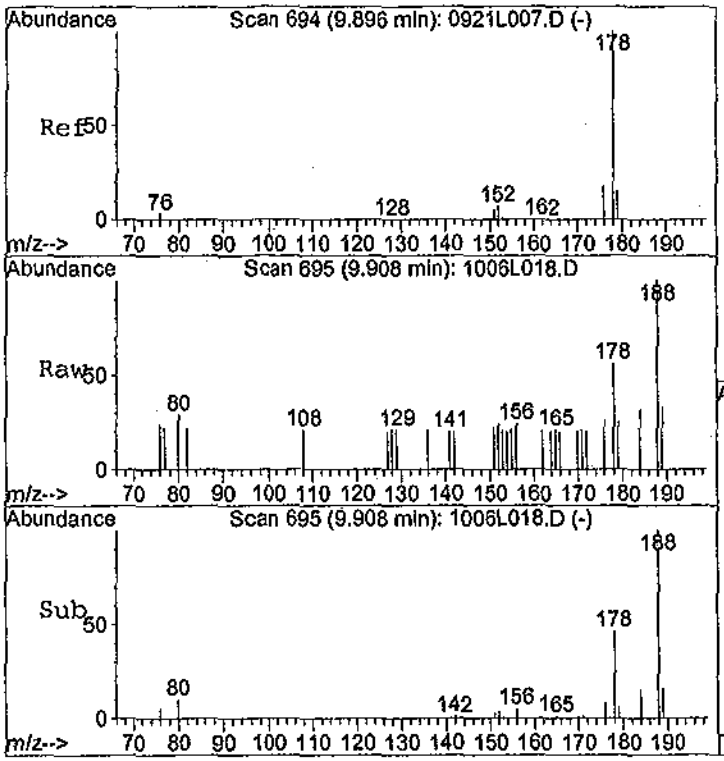
Quantitation Report

Data File : M:\LINUS\DATA\L110921\1006L018.D Vial: 18
Acq On : 6 Oct 11 19:07 Operator: LF
Sample : AY47773W06 1/1020 Inst : Linus
Misc : Multiplr: 0.98

Quant Time: Oct 7 9:15 2011 Quant Results File: SIM2.RES

Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Wed Oct 05 18:18:09 2011
Response via : Initial Calibration

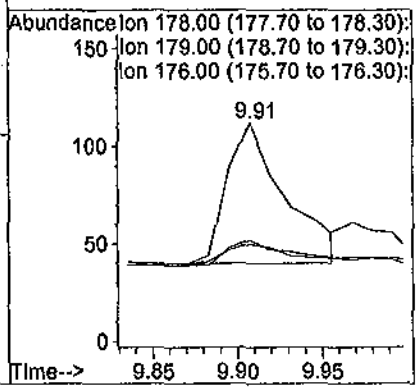


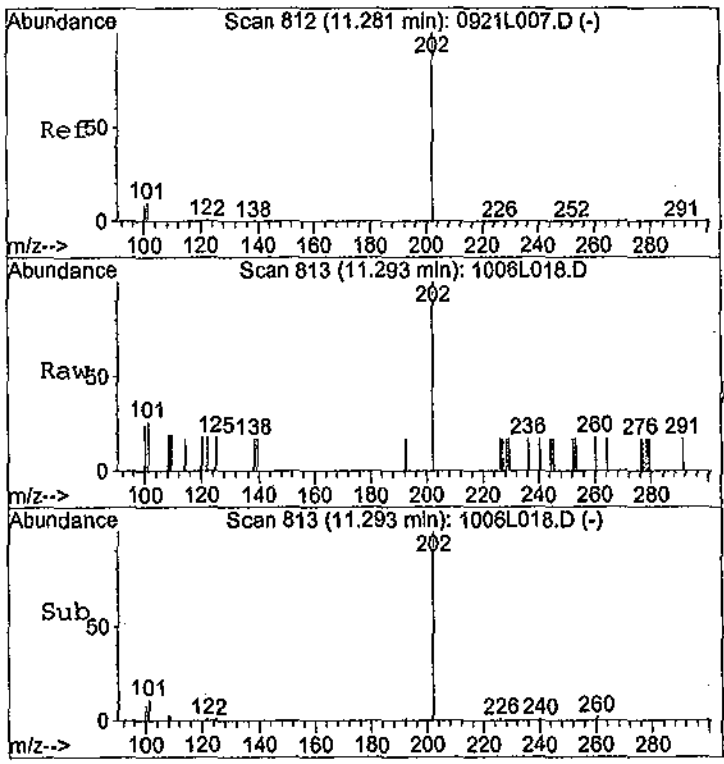


#12
Phenanthrene
Concen: 0.15938 ppb
RT: 9.91 min Scan# 695
Delta R.T. 0.02 min
Lab File: 1006L018.D
Acq: 6 Oct 11 19:07

Tgt Ion:178 Resp: 172

Ion	Ratio	Lower	Upper
178	100		
179	13.9	10.6	19.8
176	18.1	12.9	23.9

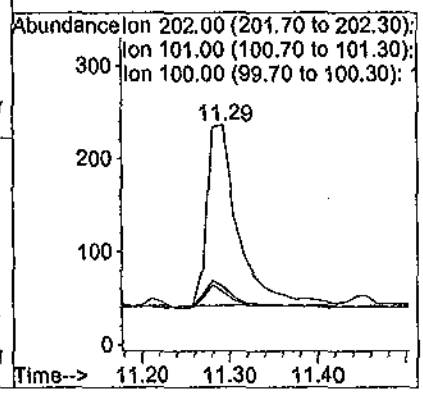


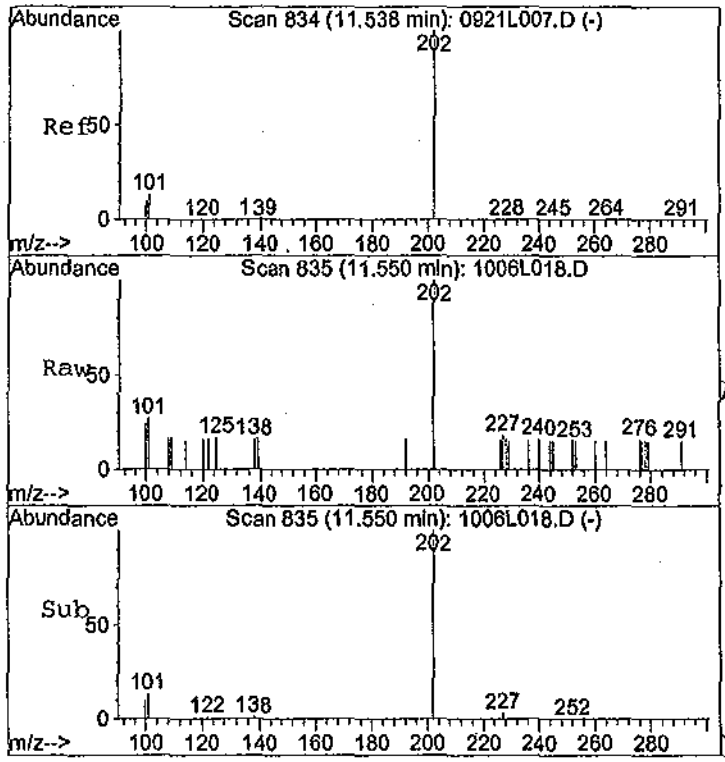


#14
Fluoranthene
Concen: 0.24189 ppb
RT: 11.29 min Scan# 813
Delta R.T. 0.02 min
Lab File: 1006L018.D
Acq: 6 Oct 11 19:07

Tgt Ion:202 Resp: 475

Ion	Ratio	Lower	Upper
202	100		
101	10.8	6.9	12.9
100	8.2	5.3	9.9

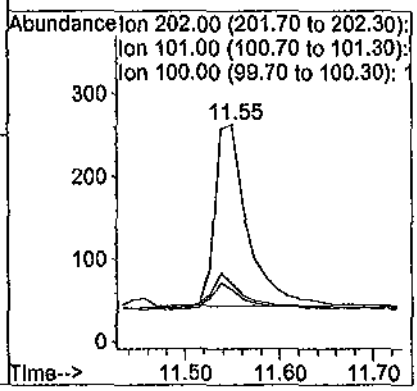


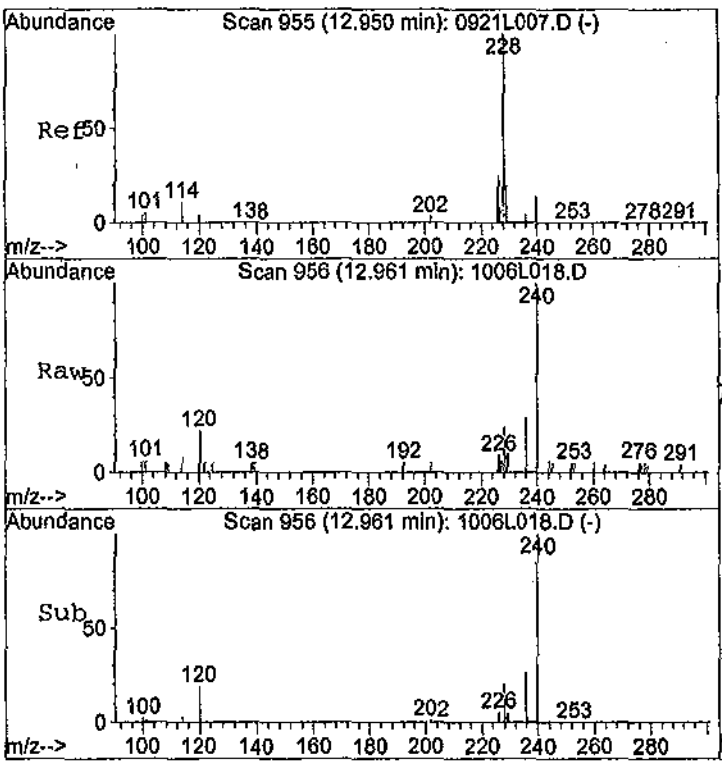


#16
Pyrene
Concen: 0.21711 ppb
RT: 11.55 min Scan# 835
Delta R.T. 0.01 min
Lab File: 1006L018.D
Acq: 6 Oct 11 19:07

Tgt Ion:202 Resp: 522

Ion	Ratio	Lower	Upper
202	100		
101	12.3	8.8	16.4
100	10.0	7.1	13.3

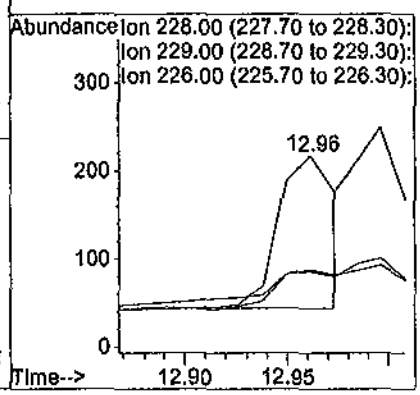


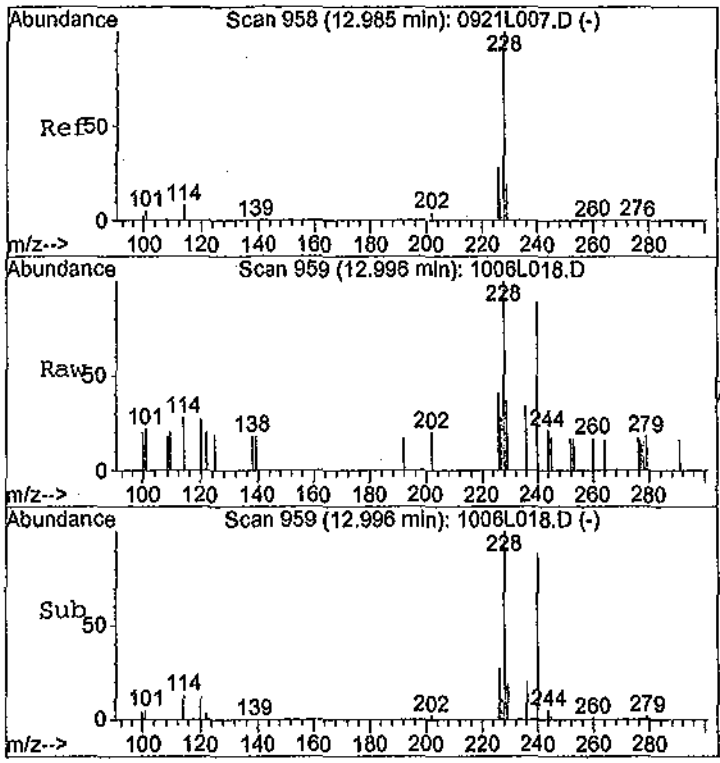


#18
Benz (a) anthracene
Concen: 0.24907 ppb
RT: 12.96 min Scan# 956
Delta R.T. 0.01 min
Lab File: 1006L018.D
Acq: 6 Oct 11 19:07

Tgt Ion:228 Resp: 337

Ion	Ratio	Lower	Upper
228	100		
229	20.8	13.8	25.6
226	24.3	17.5	32.5

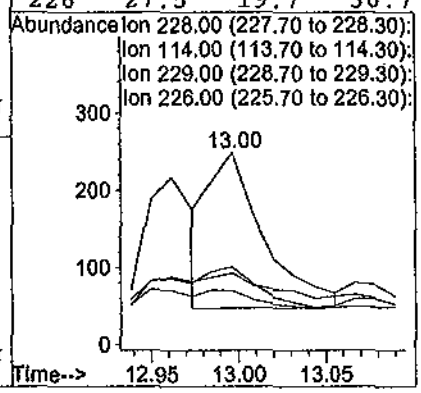


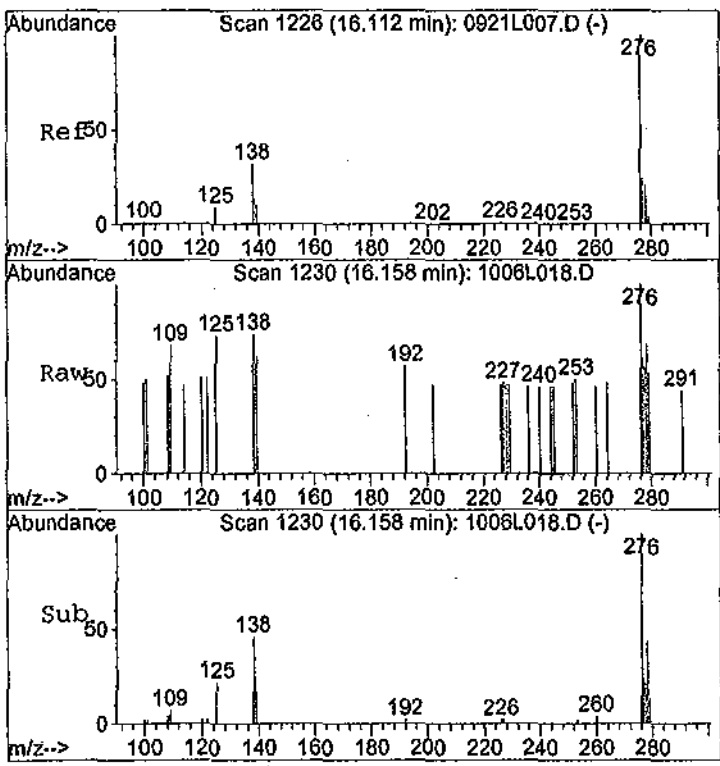


#19
Chrysene
Concen: 0.25354 ppb
RT: 13.00 min Scan# 959
Delta R.T. 0.01 min
Lab File: 1006L018.D
Acq: 6 Oct 11 19:07

Tgt Ion:228 Resp: 447

Ion	Ratio	Lower	Upper
228	100		
114	11.5	8.5	15.7
229	16.5	13.4	24.8
226	27.5	19.7	36.7

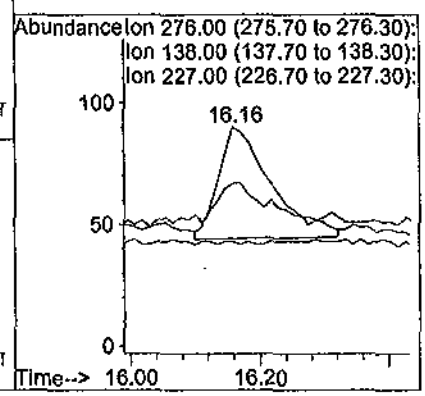


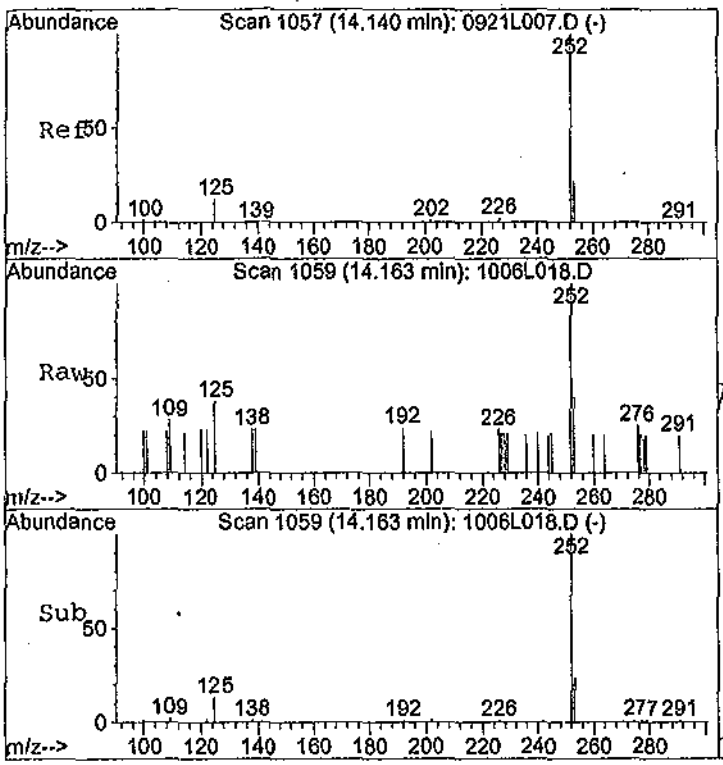


#20
Indeno (1,2,3-cd) pyrene
Concen: 0.24324 ppb
RT: 16.16 min Scan# 1230
Delta R.T. 0.04 min
Lab File: 1006L018.D
Acq: 6 Oct 11 19:07

Tgt Ion:276 Resp: 258

Ion	Ratio	Lower	Upper
276	100		
138	32.6	22.6	42.0
227	2.3	0.2	0.2#

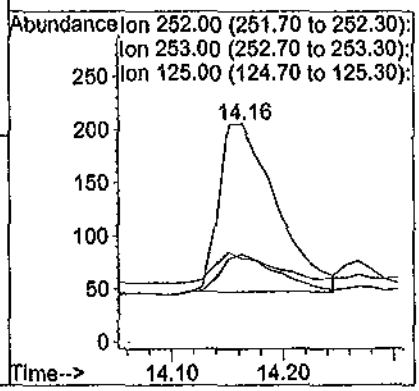


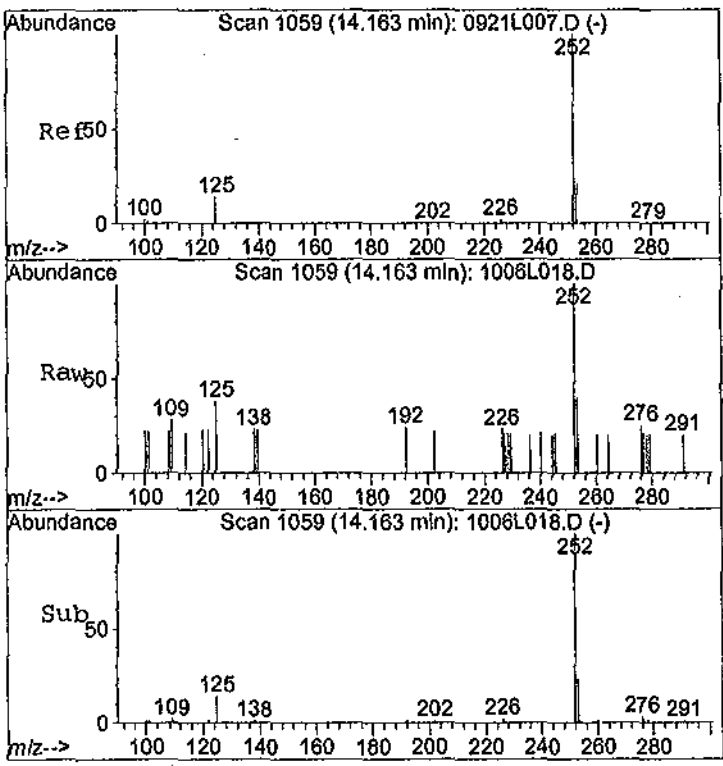


#22
Benzo (b) fluoranthene
Concen: 0.48663 ppb
RT: 14.16 min Scan# 1059
Delta R.T. 0.02 min
Lab File: 1006L018.D
Acq: 6 Oct 11 19:07

Tgt Ion:252 Resp: 561

Ion	Ratio	Lower	Upper
252	100		
253	22.2	15.4	28.6
125	13.9	8.1	15.1

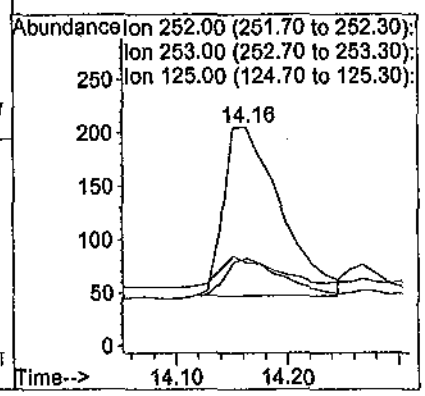


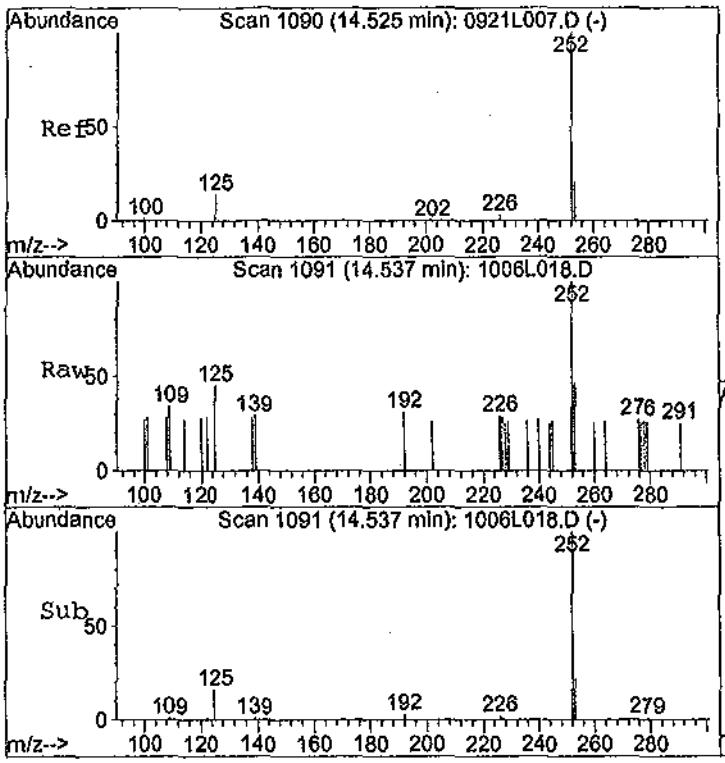


#23
Benzo (k) fluoranthene
Concen: 0.36272 ppb
RT: 14.16 min Scan# 1059
Delta R.T. 0.00 min
Lab File: 1006L018.D
Acq: 6 Oct 11 19:07

Tgt Ion:252 Resp: 561

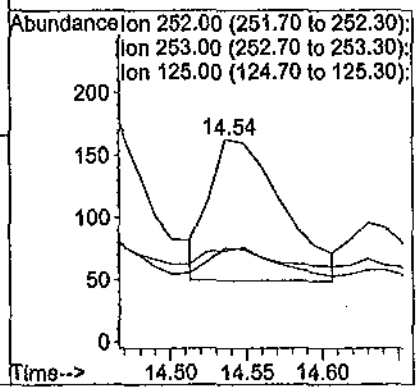
Ion	Ratio	Lower	Upper
252	100		
253	22.2	15.7	29.1
125	13.9	8.7	16.1

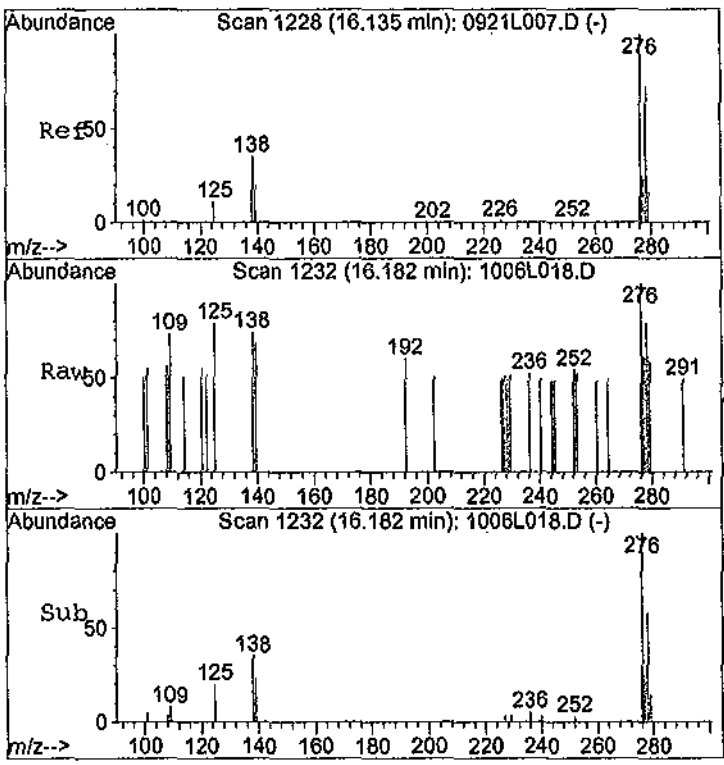




#24
Benzo (a) pyrene
Concen: 0.30967 ppb
RT: 14.54 min Scan# 1091
Delta R.T. 0.01 min
Lab File: 1006L018.D
Acq: 6 Oct 11 19:07

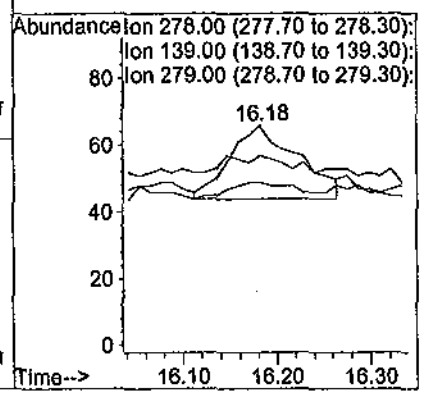
Tgt Ion:252	Resp:	377	
Ion	Ratio	Lower	Upper
252	100		
253	25.3	15.1	28.1
125	14.3	10.4	19.2

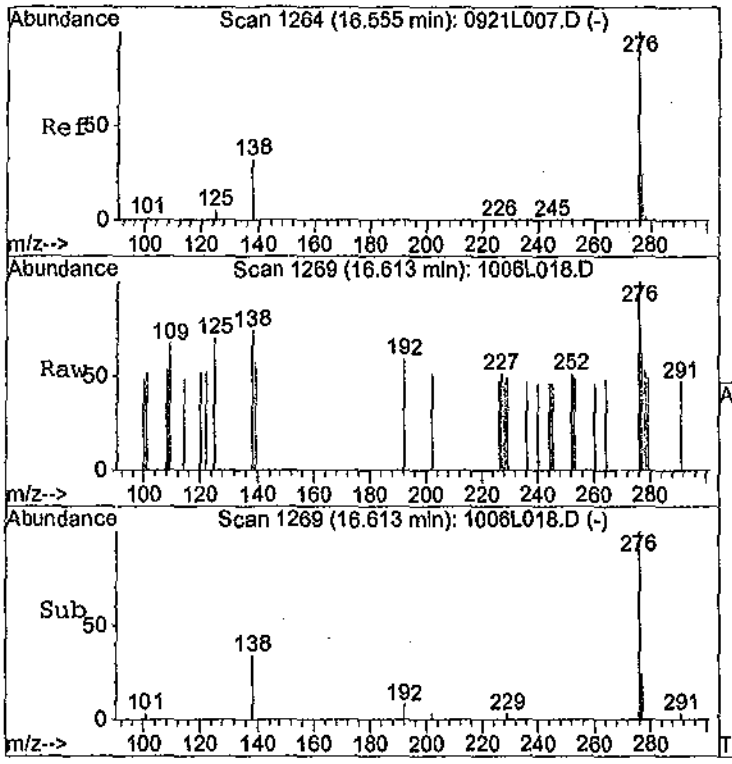




#25
Dibenz (a,h) anthracene
Concen: 0.14292 ppb
RT: 16.18 min Scan# 1232
Delta R.T. 0.04 min
Lab File: 1006L018.D
Acq: 6 Oct 11 19:07

Tgt Ion:278	Resp:	111	
Ion	Ratio	Lower	Upper
278	100		
139	25.0	19.3	35.8
279	25.0	15.8	29.3

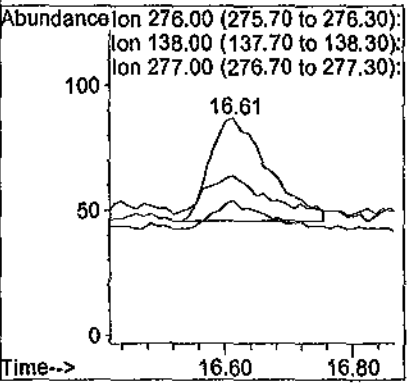




#26
Benzo (g,h,i) perylene
Concen: 0.26425 ppb
RT: 16.61 min Scan# 1269
Delta R.T. 0.05 min
Lab File: 1006L018.D
Acq: 6 Oct 11 19:07

Tgt Ion:276 Resp: 260

Ion	Ratio	Lower	Upper
276	100		
138	34.1	22.4	41.6
277	26.8	16.9	31.5



Quantitation Report (QT Reviewed)

Data File : M:\LINUS\DATA\L110921\1006L019.D Vial: 19
Acq On : 6 Oct 11 19:32 Operator: LF
Sample : AY47774W02 1/1000 Inst : Linus
Misc : Multiplr: 1.00

Quant Time: Oct 7 9:14 2011 Quant Results File: SIM2.RES

Quant Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Wed Oct 05 18:18:09 2011
Response via : Initial Calibration
DataAcq Meth : 87SIMAQ

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Napthalene-D8(IS)	6.12	136	1773	2.50000 ppb	0.00
6) Acenaphthene-D10(IS)	8.13	164	968	2.50000 ppb	0.01
11) Phenanthrene-D10(IS)	9.87	188	1487	2.50000 ppb	0.01
15) Chrysene-D12(IS)	12.97	240	2311	2.50000 ppb	0.02
21) Perylene-D12(IS)	14.61	264	1892	2.50000 ppb	0.02
System Monitoring Compounds					
2) Surrogate Recovery (NBZ)	5.36	82	214	1.34502 ppb	0.01
Spiked Amount 2.000			Recovery	= 67.250%	
7) Surrogate Recovery (FBP)	7.37	172	644	1.06400 ppb	0.01
Spiked Amount 2.000			Recovery	= 53.200%	
17) Surrogate Recovery (TPH)	11.75	244	1089	1.46837 ppb	0.00
Spiked Amount 2.000			Recovery	= 73.400%	

Target Compounds Qvalue

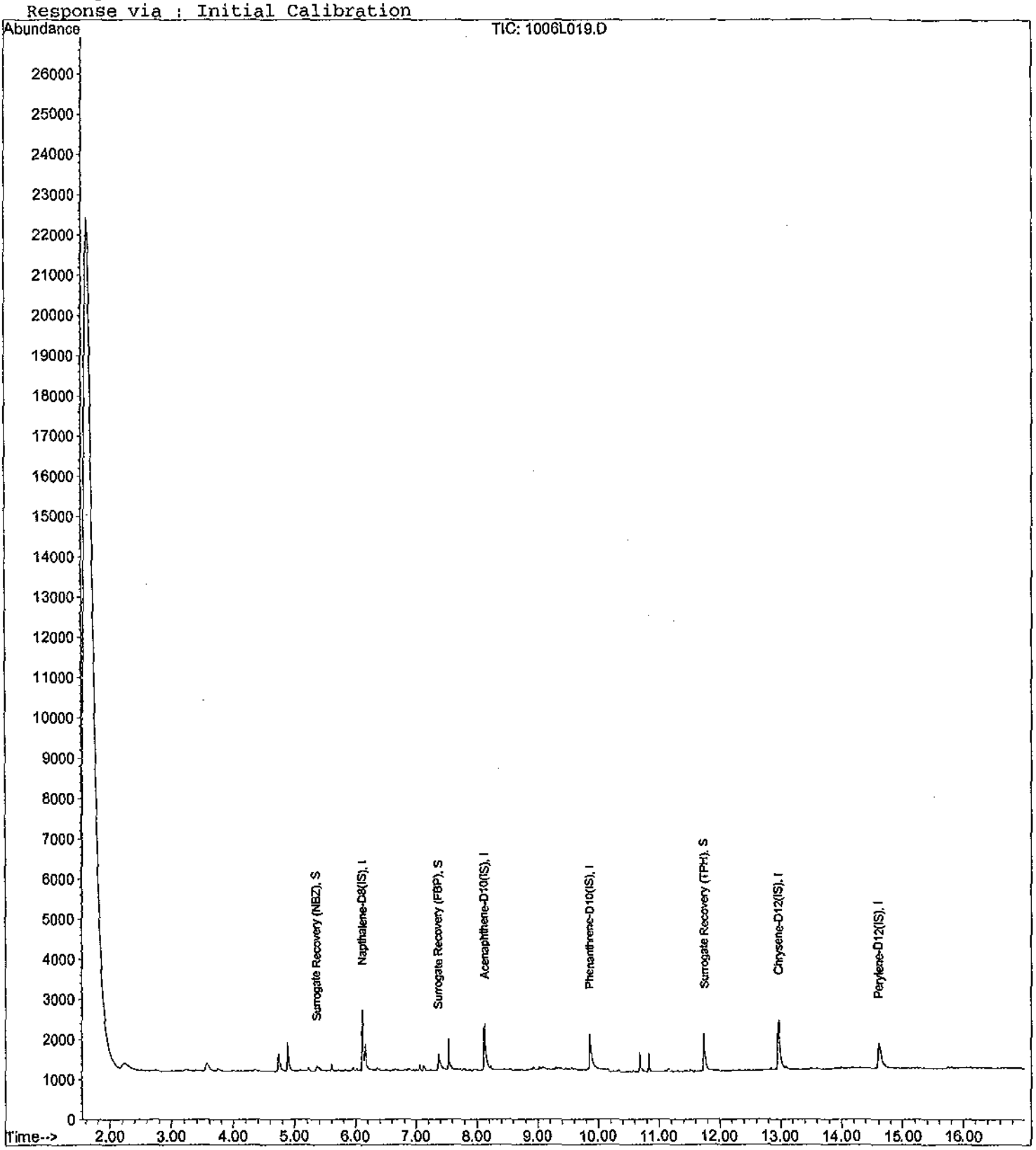
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : M:\LINUS\DATA\L110921\1006L019.D Vial: 19
Acq On : 6 Oct 11 19:32 Operator: LF
Sample : AY47774W02 1/1000 Inst : Linus
Misc : Multiplr: 1.00

Quant Time: Oct 7 9:14 2011 Quant Results File: SIM2.RES

Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Wed Oct 05 18:18:09 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : M:\LINUS\DATA\L110921\1006L020.D Vial: 20
Acq On : 6 Oct 11 19:58 Operator: LF
Sample : AY47780W03 1/1010 Inst : Linus
Misc : Multiplr: 0.99

Quant Time: Oct 7 9:14 2011 Quant Results File: SIM2.RES

Quant Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Wed Oct 05 18:18:09 2011
Response via : Initial Calibration
DataAcq Meth : 87SIMAQ

Internal Standards	R.T.	QIon	Response	Conc Units		Dev(Min)
1) Napthalene-D8(IS)	6.12	136	1988	2.50000 ppb		0.00
6) Acenaphthene-D10(IS)	8.13	164	926	2.50000 ppb		0.01
11) Phenanthrene-D10(IS)	9.88	188	1495	2.50000 ppb		0.02
15) Chrysene-D12(IS)	12.97	240	2309	2.50000 ppb		0.02
21) Perylene-D12(IS)	14.61	264	1868	2.50000 ppb		0.02
System Monitoring Compounds						
2) Surrogate Recovery (NBZ)	5.36	82	238	1.32309 ppb		0.01
Spiked Amount 1.980			Recovery	= 66.812%		
7) Surrogate Recovery (FBP)	7.39	172	693	1.18504 ppb		0.02
Spiked Amount 1.980			Recovery	= 59.843%		
17) Surrogate Recovery (TPH)	11.75	244	1076	1.43772 ppb		0.00
Spiked Amount 1.980			Recovery	= 72.619%		
Target Compounds						Qvalue
12) Phenanthrene	9.91	178	106	0.07684 ppb		93
14) Fluoranthene	11.29	202	255	0.10158 ppb		97
16) Pyrene	11.55	202	277	0.09221 ppb		97
18) Benz (a) anthracene	12.96	228	150	0.08874 ppb		94
19) Chrysene	13.00	228	158	0.07173 ppb	#	92
22) Benzo (b) fluoranthene	14.16	252	212	0.14933 ppb	#	91
23) Benzo (k) fluoranthene	14.16	252	212	0.11131 ppb	#	91
24) Benzo (a) pyrene	14.55	252	156	0.10405 ppb	#	85

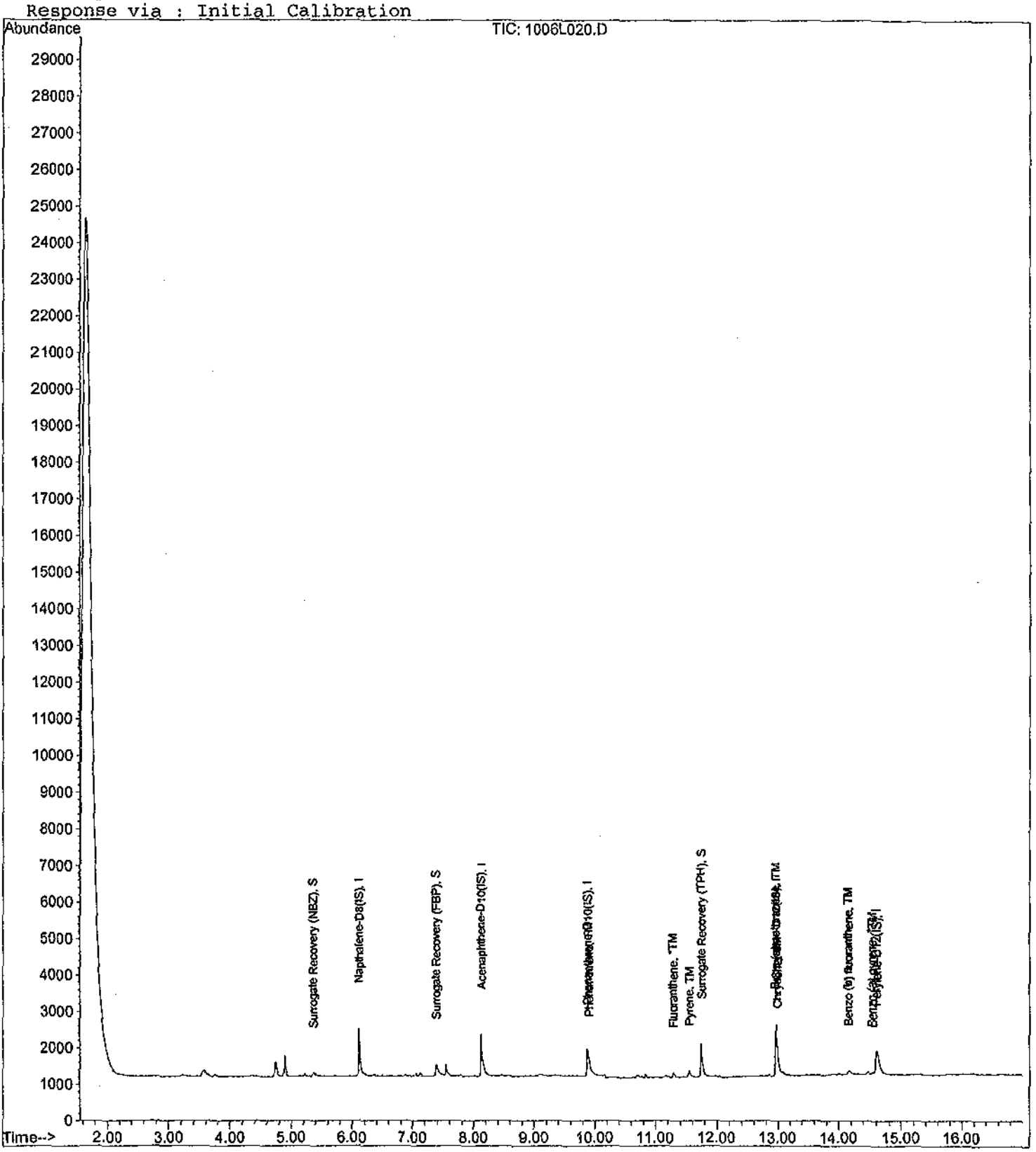
(#) = qualifier out of range (m) = manual integration

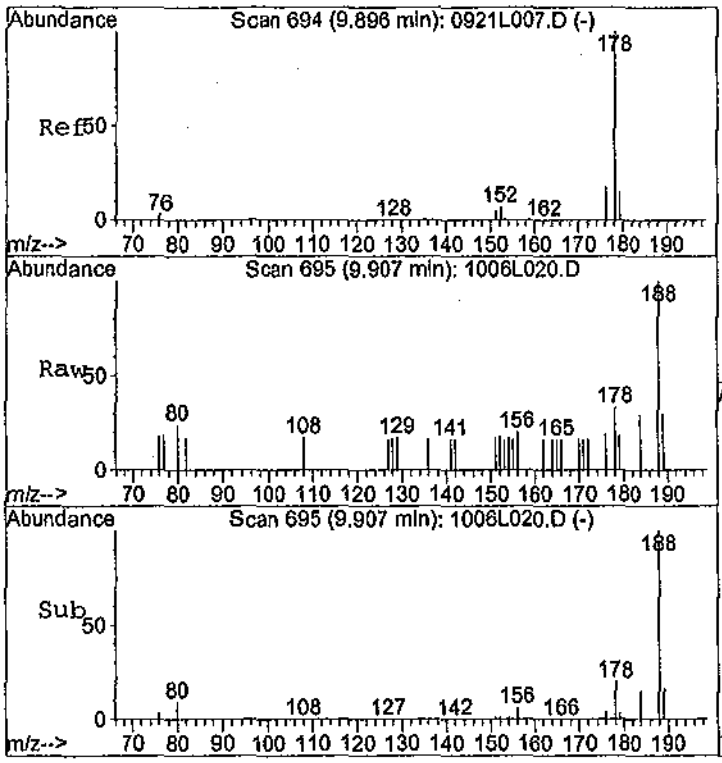
Quantitation Report

Data File : M:\LINUS\DATA\L110921\1006L020.D Vial: 20
Acq On : 6 Oct 11 19:58 Operator: LF
Sample : AY47780W03 1/1010 Inst : Linus
Misc : Multiplr: 0.99

Quant Time: Oct 7 9:14 2011 Quant Results File: SIM2.RES

Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Wed Oct 05 18:18:09 2011
Response via : Initial Calibration

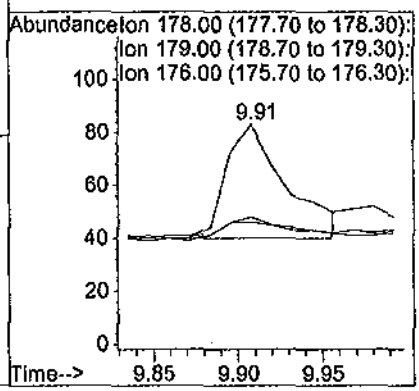


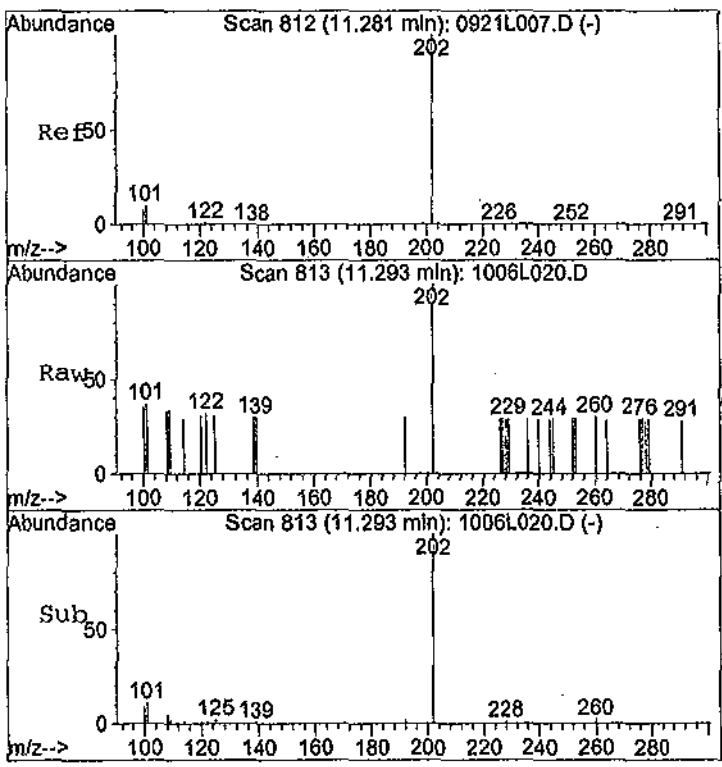


#12
Phenanthrene
Concen: 0.07684 ppb
RT: 9.91 min Scan# 695
Delta R.T. 0.02 min
Lab File: 1006L020.D
Acq: 6 Oct 11 19:58

Tgt Ion:178 Resp: 106

Ion	Ratio	Lower	Upper
178	100		
179	11.6	10.6	19.8
176	20.9	12.9	23.9

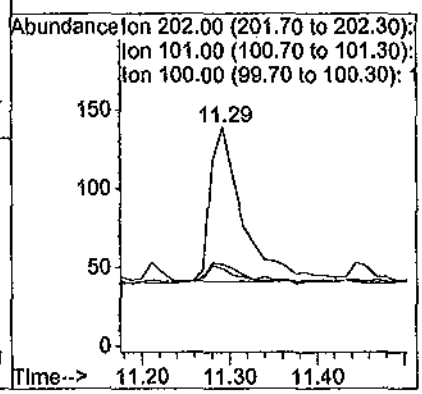


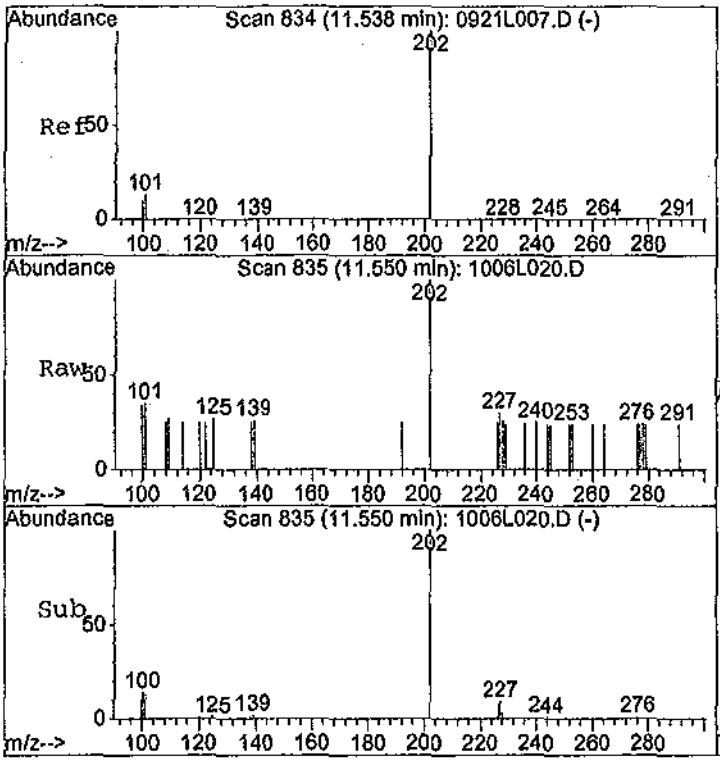


#14
Fluoranthene
Concen: 0.10158 ppb
RT: 11.29 min Scan# 813
Delta R.T. 0.02 min
Lab File: 1006L020.D
Acq: 6 Oct 11 19:58

Tgt Ion:202 Resp: 255

Ion	Ratio	Lower	Upper
202	100		
101	11.2	6.9	12.9
100	8.2	5.3	9.9

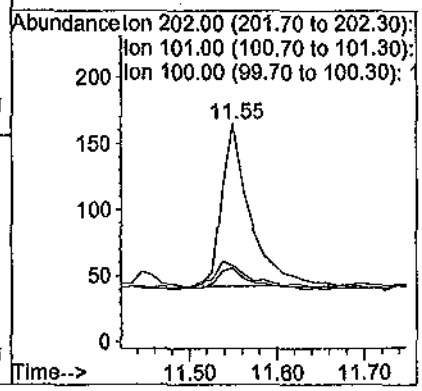


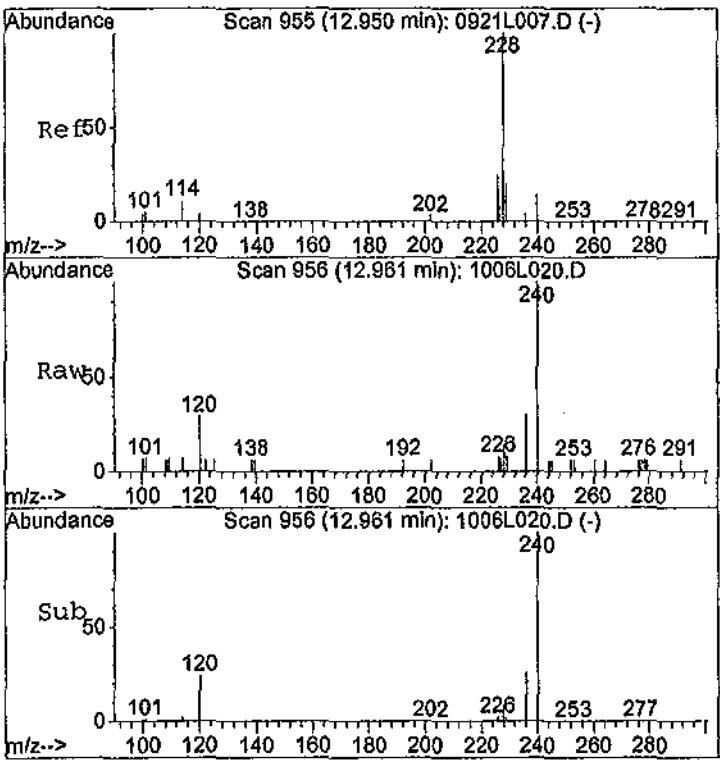


#16
Pyrene
Concen: 0.09221 ppb
RT: 11.55 min Scan# 835
Delta R.T. 0.01 min
Lab File: 1006L020.D
Acq: 6 Oct 11 19:58

Tgt Ion:202 Resp: 277

Ion	Ratio	Lower	Upper
202	100		
101	13.0	8.8	16.4
100	12.2	7.1	13.3

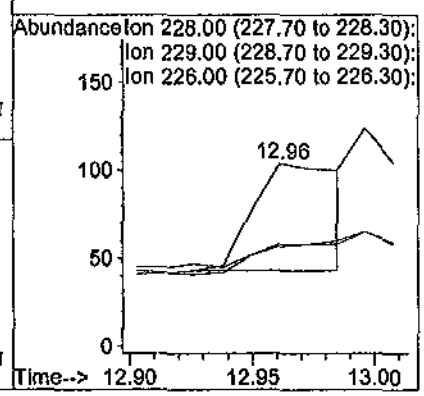


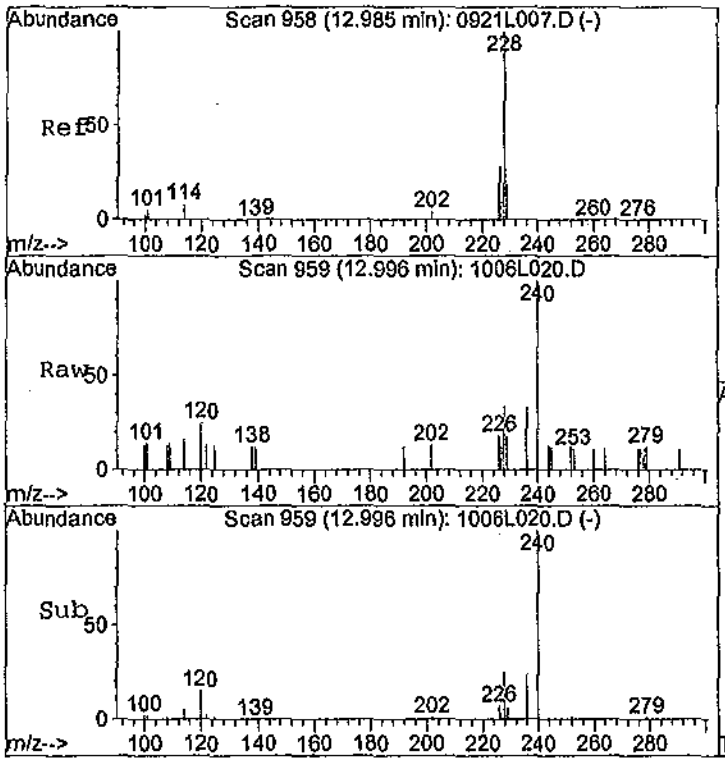


#18
Benz (a) anthracene
Concen: 0.08874 ppb
RT: 12.96 min Scan# 956
Delta R.T. 0.01 min
Lab File: 1006L020.D
Acq: 6 Oct 11 19:58

Tgt Ion:228 Resp: 150

Ion	Ratio	Lower	Upper
228	100		
229	16.4	13.8	25.6
226	27.9	17.5	32.5

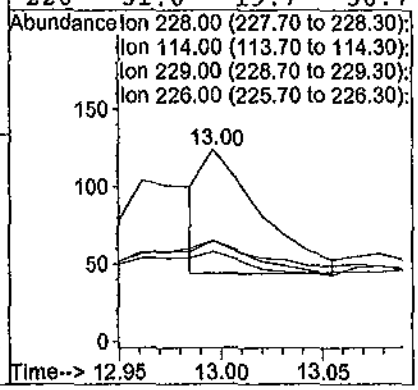


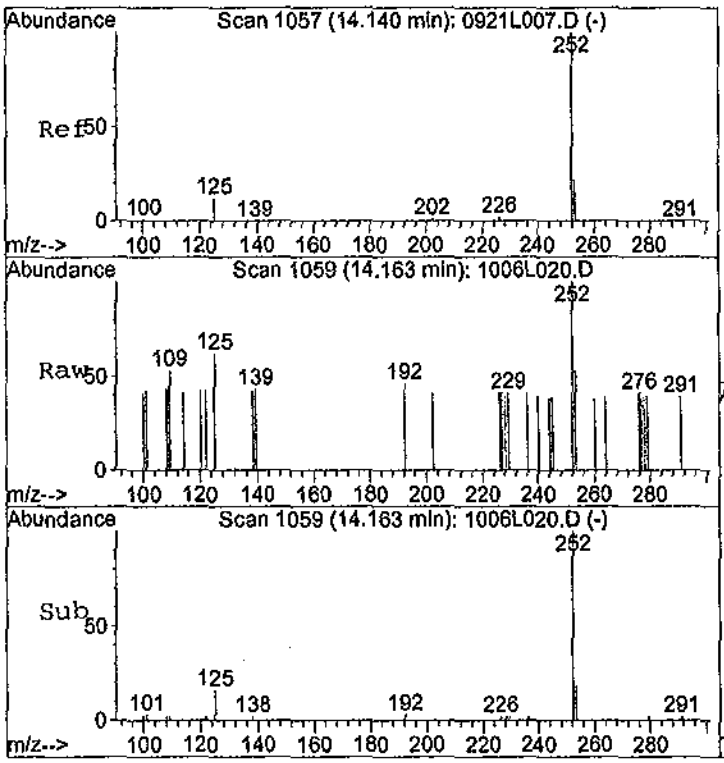


#19
Chrysene
Concen: 0.07173 ppb
RT: 13.00 min Scan# 959
Delta R.T. 0.01 min
Lab File: 1006L020.D
Acq: 6 Oct 11 19:58

Tgt Ion:228 Resp: 158

Ion	Ratio	Lower	Upper
228	100		
114	18.3	8.5	15.7#
229	22.5	13.4	24.8
226	31.0	19.7	36.7

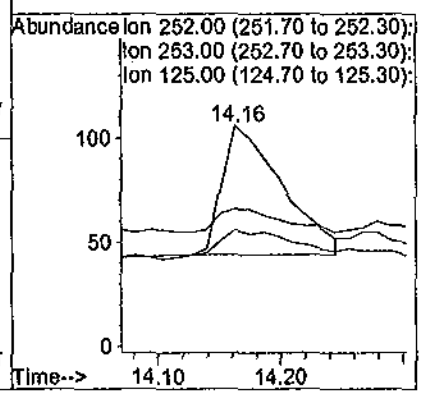


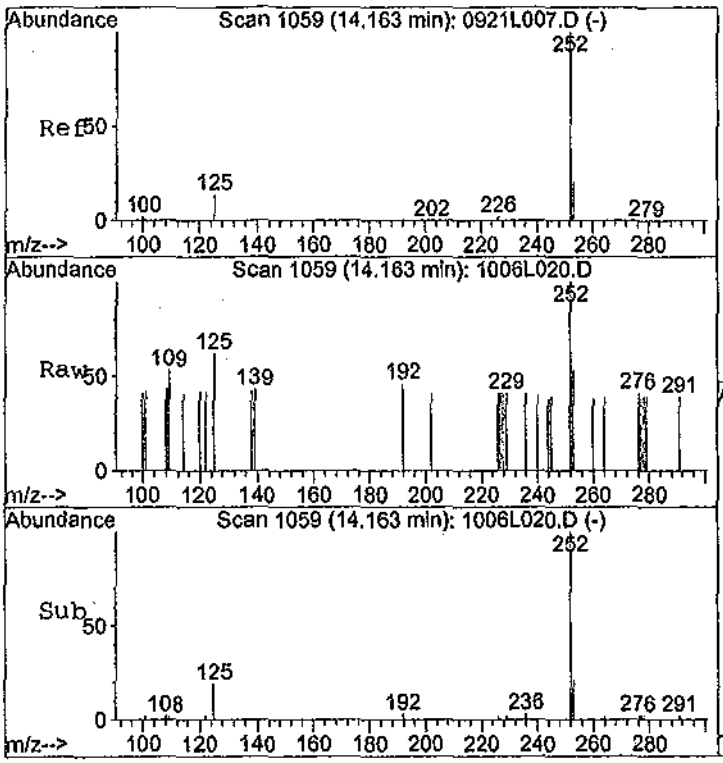


#22
Benzo (b) fluoranthene
Concen: 0.14933 ppb
RT: 14.16 min Scan# 1059
Delta R.T. 0.02 min
Lab File: 1006L020.D
Acq: 6 Oct 11 19:58

Tgt Ion:252 Resp: 212

Ion	Ratio	Lower	Upper
252	100		
253	19.4	15.4	28.6
125	17.7	8.1	15.1#

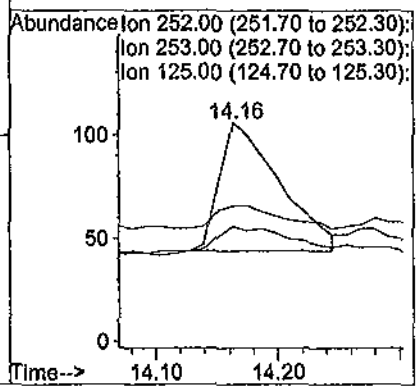


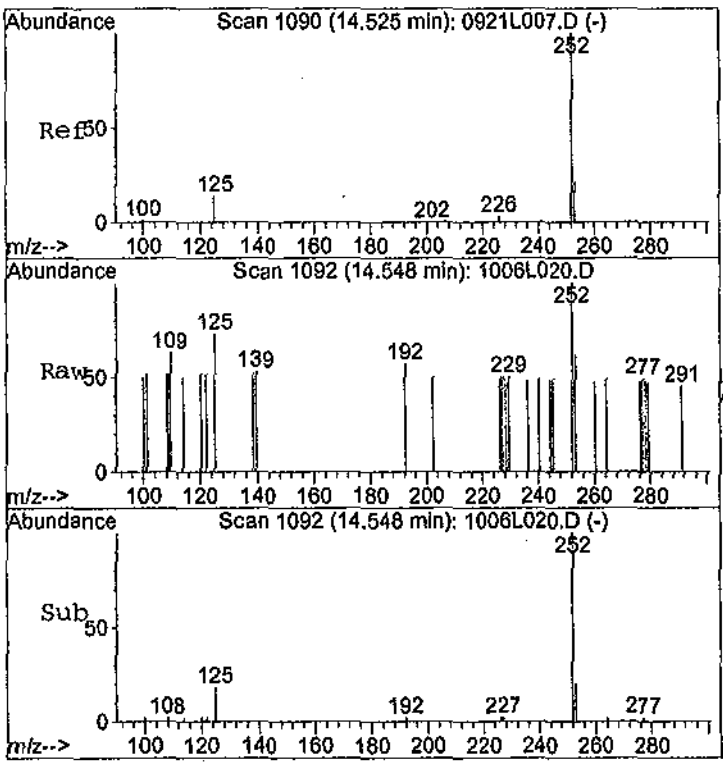


#23
Benzo (k) fluoranthene
Concen: 0.11131 ppb
RT: 14.16 min Scan# 1059
Delta R.T. 0.00 min
Lab File: 1006L020.D
Acq: 6 Oct 11 19:58

Tgt Ion:252 Resp: 212

Ion	Ratio	Lower	Upper
252	100		
253	19.4	15.7	29.1
125	17.7	8.7	16.1#

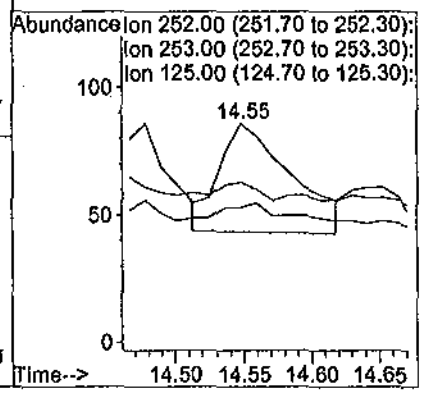




#24
Benzo (a) pyrene
Concen: 0.10405 ppb
RT: 14.55 min Scan# 1092
Delta R.T. 0.02 min
Lab File: 1006L020.D
Acq: 6 Oct 11 19:58

Tgt Ion:252 Resp: 156

Ion	Ratio	Lower	Upper
252	100		
253	16.1	15.1	28.1
125	22.6	10.4	19.2#



EPA METHOD 8270
Polynuclear Aromatic Hydrocarbons
Calibration Data

APPL, INC.

Quantitation Report (QT Reviewed)

Data File : M:\LINUS\DATA\L110921\0921L003.D Vial: 3
Acq On : 21 Sep 11 20:07 Operator: LF
Sample : 0.1ug/ml PAH 09-21-11 Inst : Linus
Misc : Multiplr: 1.00

Quant Time: Sep 22 14:33 2011 Quant Results File: SIM2.RES

Quant Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Thu Sep 22 08:59:40 2011
Response via : Initial Calibration
DataAcq Meth : 87SIMAQ

Internal Standards	R.T.	QIon	Response	Conc Units		Dev(Min)
1) Napthalene-D8(IS)	6.12	136	1507	2.50000 ppb		0.00
6) Acenaphthene-D10(IS)	8.15	164	763	2.50000 ppb		0.01
11) Phenanthrene-D10(IS)	9.90	188	1058	2.50000 ppb		0.02
15) Chrysene-D12(IS)	12.98	240	1324	2.50000 ppb		0.02
21) Perylene-D12(IS)	14.62	264	1029	2.50000 ppb		0.02
System Monitoring Compounds						
2) Surrogate Recovery (NBZ)	5.38	82	8	0.02857 ppb		0.04
Spiked Amount 2.000			Recovery =	1.450%		
7) Surrogate Recovery (FBP)	7.41	172	48	0.06396 ppb		0.04
Spiked Amount 2.000			Recovery =	3.200%		
17) Surrogate Recovery (TPH)	11.78	244	54	0.07986 ppb		0.02
Spiked Amount 2.000			Recovery =	4.000%		
Target Compounds						Qvalue
3) Naphthalene	6.14	128	130	0.11178 ppb		98
4) 2-Methylnaphthalene	6.96	142	67	0.09429 ppb		84
5) 1-Methylnaphthalene	7.06	142	69	0.09382 ppb		96
8) Acenaphthylene	7.99	152	122	0.10312 ppb		99
9) Acenaphthene	8.18	154	77	0.11336 ppb		100
10) Fluorene	8.81	166	83	0.10619 ppb		97
12) Phenanthrene	9.92	178	98	0.11228 ppb		96
13) Anthracene	9.99	178	132	0.13378 ppb		93
14) Fluoranthene	11.32	202	195	0.12314 ppb	#	95
16) Pyrene	11.56	202	186	0.12874 ppb		95
18) Benz (a) anthracene	12.97	228	102	0.11324 ppb		94
19) Chrysene	13.01	228	145	0.12369 ppb		96
20) Indeno (1,2,3-cd) pyrene	16.18	276	68	0.08485 ppb		69
22) Benzo (b) fluoranthene	14.17	252	76	0.09935 ppb		93
23) Benzo (k) fluoranthene	14.21	252	116	0.11565 ppb		92
24) Benzo (a) pyrene	14.56	252	80	0.09415 ppb	#	90
25) Dibenz (a,h) anthracene	16.20	278	53	0.09174 ppb		3
26) Benzo (g,h,i) perylene	16.64	276	64	0.09044 ppb		84

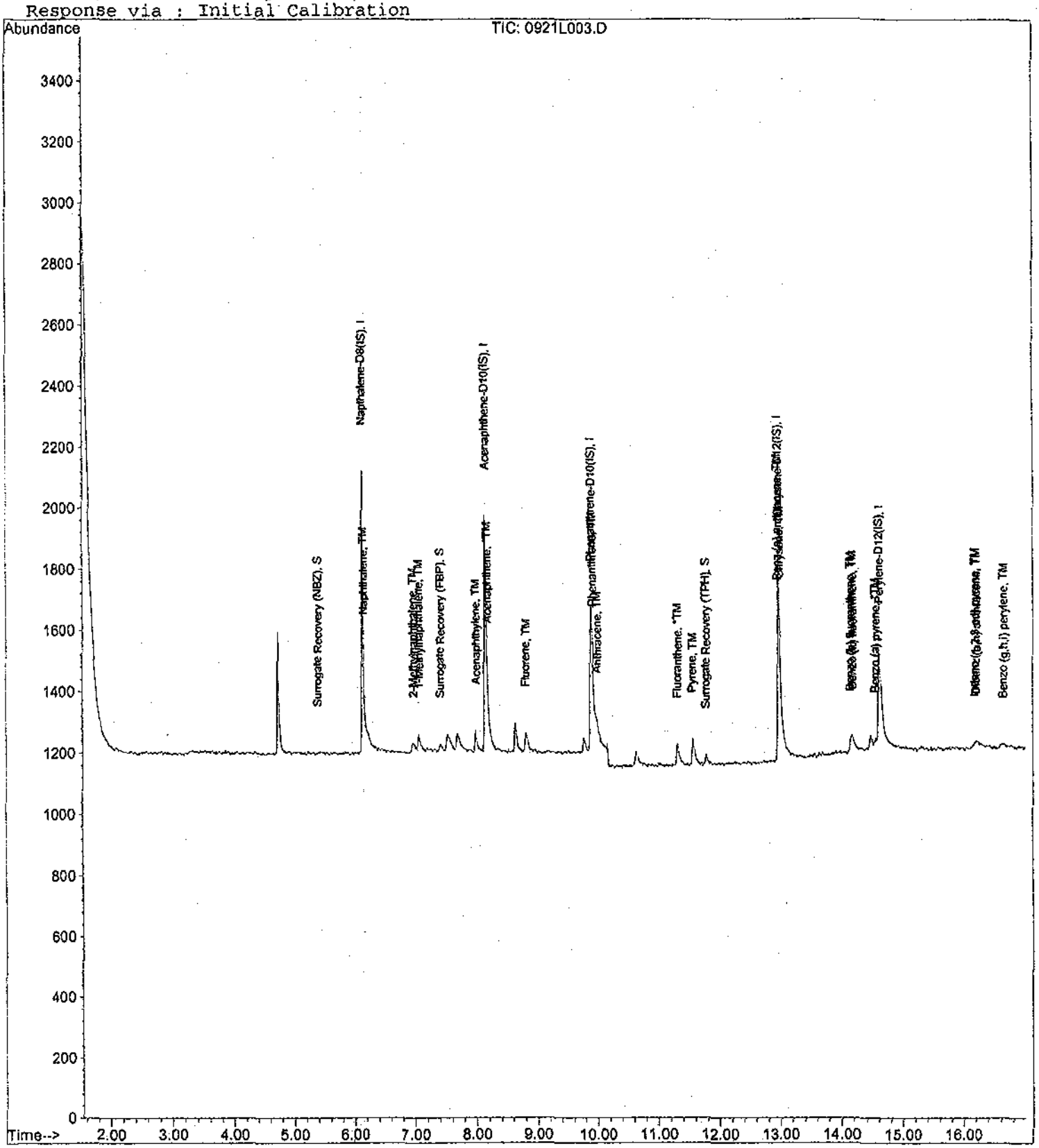
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : M:\LINUS\DATA\L110921\0921L003.D Vial: 3
Acq On : 21 Sep 11 20:07 Operator: LF
Sample : 0.1ug/ml PAH 09-21-11 Inst : Linus
Misc : Multiplr: 1.00

Quant Time: Sep 22 14:33 2011 Quant Results File: SIM2.RES

Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Thu Sep 22 14:50:13 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : M:\LINUS\DATA\L110921\0921L004.D Vial: 4
Acq On : 21 Sep 11 20:33 Operator: LF
Sample : 0.2ug/ml PAH Inst : Linus
Misc : Multiplr: 1.00

Quant Time: Sep 22 14:36 2011 Quant Results File: SIM2.RES

Quant Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Thu Sep 22 08:59:40 2011
Response via : Initial Calibration
DataAcq Meth : 87SIMAQ

Internal Standards	R.T.	QIon	Response	Conc Units		Dev(Min)
1) Napthalene-D8(IS)	6.12	136	1497	2.50000 ppb		0.00
6) Acenaphthene-D10(IS)	8.15	164	738	2.50000 ppb		0.01
11) Phenanthrene-D10(IS)	9.90	188	1097	2.50000 ppb		0.02
15) Chrysene-D12(IS)	12.98	240	1306	2.50000 ppb		0.02
21) Perylene-D12(IS)	14.62	264	991	2.50000 ppb		0.02
System Monitoring Compounds						
2) Surrogate Recovery (NBZ)	5.41	82	48	0.17256 ppb		0.06
Spiked Amount 2.000			Recovery	= 8.650%		
7) Surrogate Recovery (FBP)	7.40	172	105	0.14464 ppb		0.02
Spiked Amount 2.000			Recovery	= 7.250%		
17) Surrogate Recovery (TPH)	11.78	244	87	0.13043 ppb		0.02
Spiked Amount 2.000			Recovery	= 6.500%		
Target Compounds						Qvalue
3) Naphthalene	6.14	128	263	0.22766 ppb		97
4) 2-Methylnaphthalene	6.96	142	130	0.18418 ppb		99
5) 1-Methylnaphthalene	7.06	142	170	0.23270 ppb		92
8) Acenaphthylene	7.99	152	266	0.23246 ppb		98
9) Acenaphthene	8.18	154	145	0.22071 ppb		95
10) Fluorene	8.81	166	168	0.22222 ppb		97
12) Phenanthrene	9.92	178	193	0.21326 ppb		97
13) Anthracene	9.99	178	219	0.21406 ppb		95
14) Fluoranthene	11.30	202	374	0.22778 ppb	#	94
16) Pyrene	11.57	202	391	0.27435 ppb		97
18) Benz (a) anthracene	12.97	228	180	0.20258 ppb		94
19) Chrysene	13.01	228	253	0.21878 ppb		96
20) Indeno (1,2,3-cd) pyrene	16.18	276	169	0.21379 ppb		95
22) Benzo (b) fluoranthene	14.17	252	146	0.19817 ppb		98
23) Benzo (k) fluoranthene	14.20	252	209	0.21636 ppb		97
24) Benzo (a) pyrene	14.56	252	153	0.18696 ppb		96
25) Dibenz (a,h) anthracene	16.19	278	100	0.17974 ppb		88
26) Benzo (g,h,i) perylene	16.60	276	146	0.21423 ppb		77

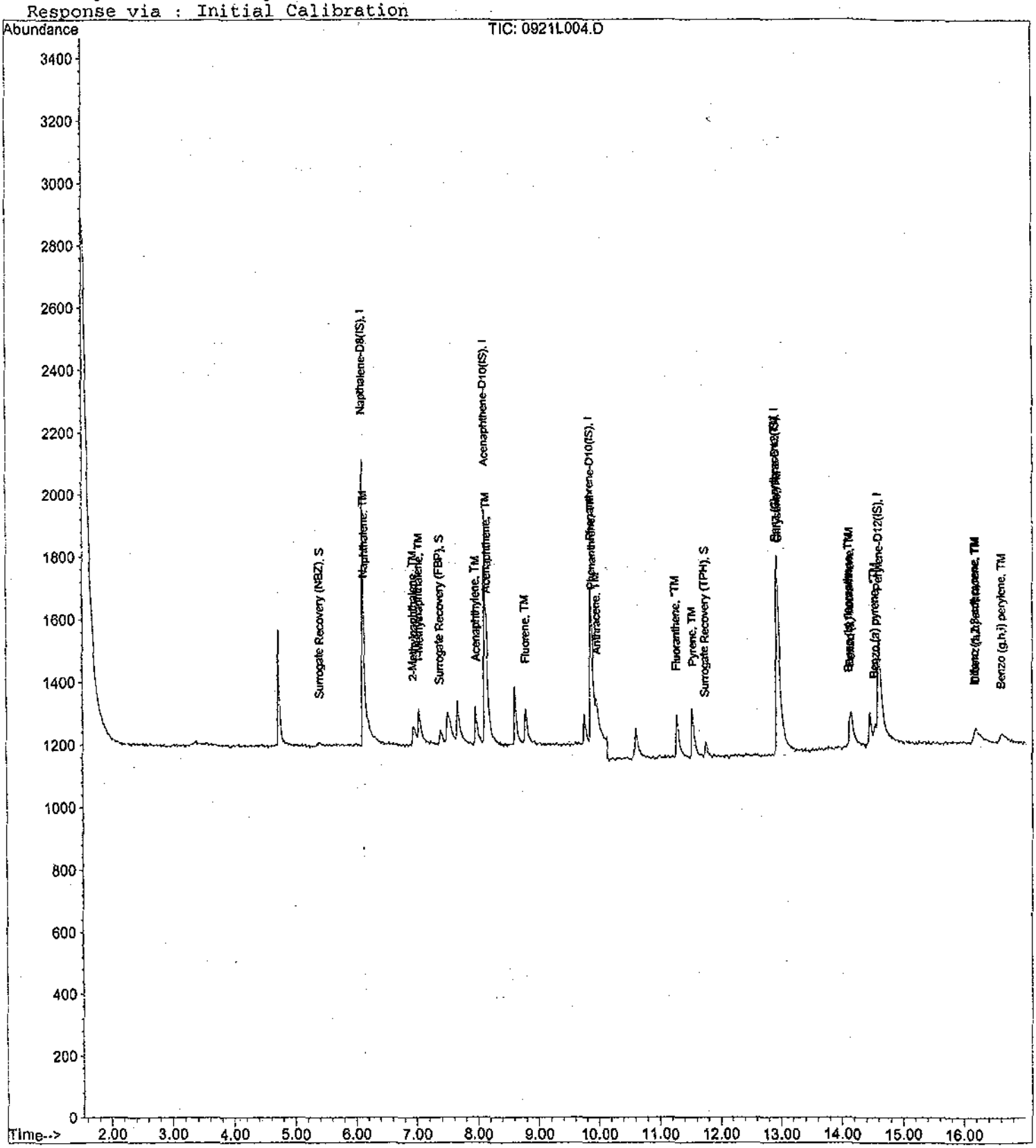
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : M:\LINUS\DATA\L110921\0921L004.D Vial: 4
Acq On : 21 Sep 11 20:33 Operator: LF
Sample : 0.2ug/ml PAH Inst : Linus
Misc : Multiplr: 1.00

Quant Time: Sep 22 14:36 2011 Quant Results File: SIM2.RES

Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Thu Sep 22 14:50:13 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : M:\LINUS\DATA\L110921\0921L005.D Vial: 5
Acq On : 21 Sep 11 20:59 Operator: LF
Sample : 0.5ug/ml PAH Inst : Linus
Misc : Multiplr: 1.00

Quant Time: Sep 22 14:38 2011 Quant Results File: SIM2.RES

Quant Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Thu Sep 22 08:59:40 2011
Response via : Initial Calibration
DataAcq Meth : 87SIMAQ

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Napthalene-D8(IS)	6.12	136	1513	2.50000 ppb	0.00
6) Acenaphthene-D10(IS)	8.13	164	754	2.50000 ppb	0.00
11) Phenanthrene-D10(IS)	9.88	188	1105	2.50000 ppb	0.01
15) Chrysene-D12(IS)	12.98	240	1352	2.50000 ppb	0.02
21) Perylene-D12(IS)	14.61	264	1002	2.50000 ppb	0.01
System Monitoring Compounds					
2) Surrogate Recovery (NBZ)	5.37	82	69	0.24543 ppb	0.02
Spiked Amount 2.000			Recovery	= 12.250%	
7) Surrogate Recovery (FBP)	7.40	172	239	0.32225 ppb	0.02
Spiked Amount 2.000			Recovery	= 16.100%	
17) Surrogate Recovery (TPH)	11.78	244	230	0.33308 ppb	0.02
Spiked Amount 2.000			Recovery	= 16.650%	
Target Compounds					Qvalue
3) Naphthalene	6.14	128	574	0.49161 ppb	99
4) 2-Methylnaphthalene	6.95	142	347	0.48642 ppb	96
5) 1-Methylnaphthalene	7.05	142	418	0.56613 ppb	93
8) Acenaphthylene	7.98	152	610	0.52178 ppb	99
9) Acenaphthene	8.17	154	369	0.54975 ppb	91
10) Fluorene	8.80	166	424	0.54894 ppb	95
12) Phenanthrene	9.92	178	495	0.54301 ppb	98
13) Anthracene	9.98	178	568	0.55117 ppb	98
14) Fluoranthene	11.30	202	926	0.55988 ppb	98
16) Pyrene	11.56	202	959	0.65001 ppb	98
18) Benz (a) anthracene	12.97	228	486	0.52837 ppb	97
19) Chrysene	13.01	228	711	0.59392 ppb	97
20) Indeno (1,2,3-cd) pyrene	16.16	276	365	0.44602 ppb	95
22) Benzo (b) fluoranthene	14.16	252	347	0.46582 ppb	95
23) Benzo (k) fluoranthene	14.20	252	512	0.52421 ppb	94
24) Benzo (a) pyrene	14.55	252	410	0.49550 ppb	99
25) Dibenz (a,h) anthracene	16.19	278	248	0.44085 ppb	94
26) Benzo (g,h,i) perylene	16.60	276	354	0.51372 ppb	97

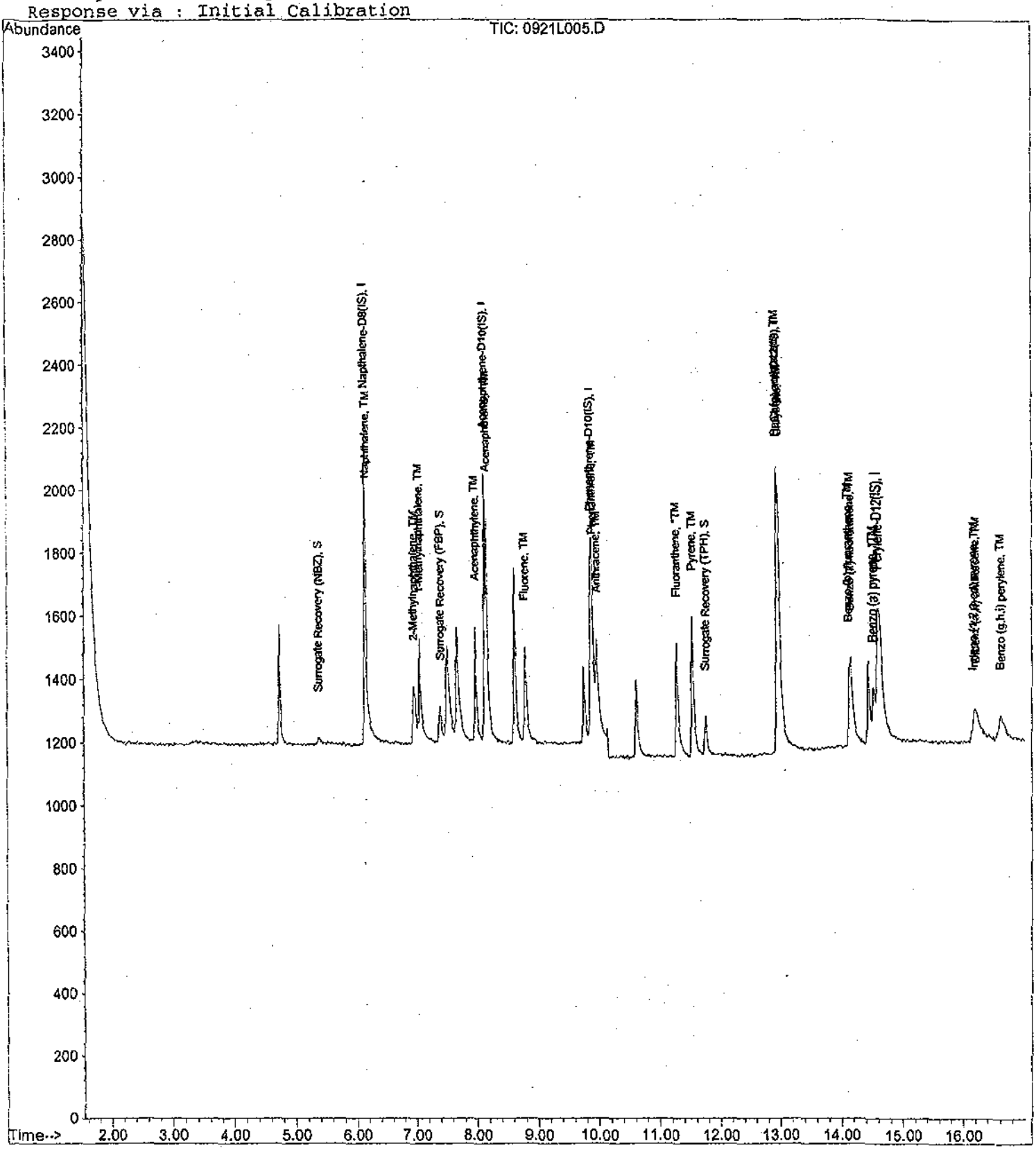
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : M:\LINUS\DATA\L110921\0921L005.D Vial: 5
Acq On : 21 Sep 11 20:59 Operator: LF
Sample : 0.5ug/ml PAH Inst : Linus
Misc : Multiplr: 1.00

Quant Time: Sep 22 14:38 2011 Quant Results File: SIM2.RES

Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Thu Sep 22 14:50:13 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : M:\LINUS\DATA\L110921\0921L006.D Vial: 6
Acq On : 21 Sep 11 21:25 Operator: LF
Sample : 1.0ug/ml PAH Inst : Linus
Misc : Multiplr: 1.00

Quant Time: Sep 22 14:45 2011 Quant Results File: SIM2.RES

Quant Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Thu Sep 22 08:59:40 2011
Response via : Initial Calibration
DataAcq Meth : 87SIMAQ

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Napthalene-D8(IS)	6.12	136	1511	2.50000 ppb	0.00
6) Acenaphthene-D10(IS)	8.13	164	741	2.50000 ppb	0.00
11) Phenanthrene-D10(IS)	9.88	188	1107	2.50000 ppb	0.01
15) Chrysene-D12(IS)	12.97	240	1350	2.50000 ppb	0.01
21) Perylene-D12(IS)	14.61	264	1069	2.50000 ppb	0.01
System Monitoring Compounds					
2) Surrogate Recovery (NBZ)	5.37	82	108	0.38466 ppb	0.02
Spiked Amount 2.000			Recovery	= 19.250%	
7) Surrogate Recovery (FBP)	7.39	172	475	0.65169 ppb	0.01
Spiked Amount 2.000			Recovery	= 32.600%	
17) Surrogate Recovery (TPH)	11.77	244	463	0.67150 ppb	0.01
Spiked Amount 2.000			Recovery	= 33.600%	
Target Compounds					Qvalue
3) Naphthalene	6.14	128	1377	1.18091 ppb	99
4) 2-Methylnaphthalene	6.94	142	748	1.04992 ppb	96
5) 1-Methylnaphthalene	7.05	142	922	1.25039 ppb	96
8) Acenaphthylene	7.98	152	1216	1.05839 ppb	99
9) Acenaphthene	8.17	154	723	1.09605 ppb	94
10) Fluorene	8.80	166	798	1.05128 ppb	99
12) Phenanthrene	9.91	178	948	1.03807 ppb	99
13) Anthracene	9.98	178	1093	1.05870 ppb	99
14) Fluoranthene	11.29	202	1789	1.07972 ppb	95
16) Pyrene	11.55	202	1845	1.25240 ppb	97
18) Benz (a) anthracene	12.96	228	826	0.89934 ppb	98
19) Chrysene	13.01	228	1485	1.24231 ppb	98
20) Indeno (1,2,3-cd) pyrene	16.16	276	750	0.91783 ppb	99
22) Benzo (b) fluoranthene	14.16	252	771	0.97014 ppb	99
23) Benzo (k) fluoranthene	14.19	252	1143	1.09690 ppb	97
24) Benzo (a) pyrene	14.55	252	895	1.01384 ppb	96
25) Dibenz (a,h) anthracene	16.18	278	534	0.88976 ppb	97
26) Benzo (g,h,i) perylene	16.59	276	727	0.98889 ppb	98

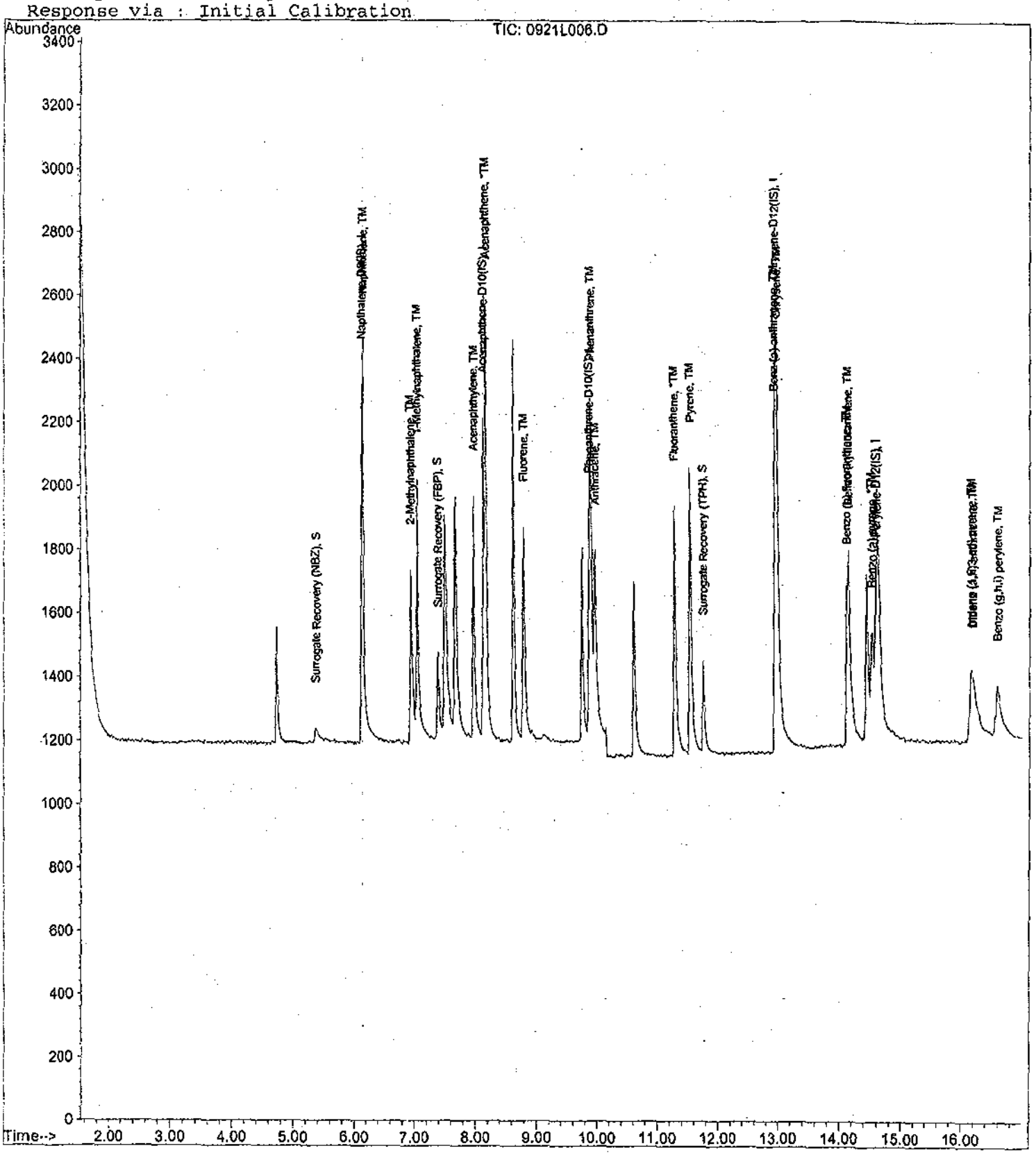
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : M:\LINUS\DATA\L110921\0921L006.D Vial: 6
Acq On : 21 Sep 11 21:25 Operator: LF
Sample : 1.0ug/ml PAH Inst : Linus
Misc : Multiplr: 1.00

Quant Time: Sep 22 14:45 2011 Quant Results File: SIM2.RES

Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Thu Sep 22 14:50:13 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : M:\LINUS\DATA\L110921\0921L007.D Vial: 7
Acq On : 21 Sep 11 21:51 Operator: LF
Sample : 5.0ug/ml PAH Inst : Linus
Misc : Multiplr: 1.00

Quant Time: Sep 22 9:00 2011 Quant Results File: SIM2.RES

Quant Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Thu Sep 22 08:59:40 2011
Response via : Initial Calibration
DataAcq Meth : 87SIMAQ

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Napthalene-D8(IS)	6.12	136	1616	2.50000 ppb	0.00
6) Acenaphthene-D10(IS)	8.13	164	743	2.50000 ppb	0.00
11) Phenanthrene-D10(IS)	9.87	188	1026	2.50000 ppb	0.00
15) Chrysene-D12(IS)	12.96	240	1571	2.50000 ppb	0.00
21) Perylene-D12(IS)	14.59	264	1247	2.50000 ppb	0.00
System Monitoring Compounds					
2) Surrogate Recovery (NBZ)	5.35	82	806	2.68419 ppb	0.00
Spiked Amount 2.000			Recovery	= 134.200%	
7) Surrogate Recovery (FBP)	7.37	172	2352	3.21822 ppb	0.00
Spiked Amount 2.000			Recovery	= 160.900%	
17) Surrogate Recovery (TPH)	11.76	244	2361	2.94252 ppb	0.00
Spiked Amount 2.000			Recovery	= 147.150%	
Target Compounds					Qvalue
3) Naphthalene	6.14	128	6582	5.27794 ppb	100
4) 2-Methylnaphthalene	6.93	142	4057	5.32453 ppb	100
5) 1-Methylnaphthalene	7.05	142	4236	5.37147 ppb	100
8) Acenaphthylene	7.97	152	6029	5.23341 ppb	100
9) Acenaphthene	8.17	154	3579	5.41109 ppb	100
10) Fluorene	8.77	166	4078	5.35785 ppb	100
12) Phenanthrene	9.90	178	5284	6.24280 ppb	100
13) Anthracene	9.96	178	5497	5.74485 ppb	100
14) Fluoranthene	11.28	202	9088	5.91793 ppb	100
16) Pyrene	11.54	202	9420	5.49482 ppb	100
18) Benz (a) anthracene	12.95	228	5859	5.48182 ppb	100
19) Chrysene	12.98	228	6885	4.94954 ppb	100
20) Indeno (1,2,3-cd) pyrene	16.11	276	4045	4.25382 ppb	100
22) Benzo (b) fluoranthene	14.14	252	4155	4.48191 ppb	100
23) Benzo (k) fluoranthene	14.16	252	6535	5.37625 ppb	100
24) Benzo (a) pyrene	14.52	252	5023	4.87777 ppb	100
25) Dibenz (a,h) anthracene	16.14	278	2875	4.10660 ppb	100
26) Benzo (g,h,i) perylene	16.56	276	3406	3.97165 ppb	100

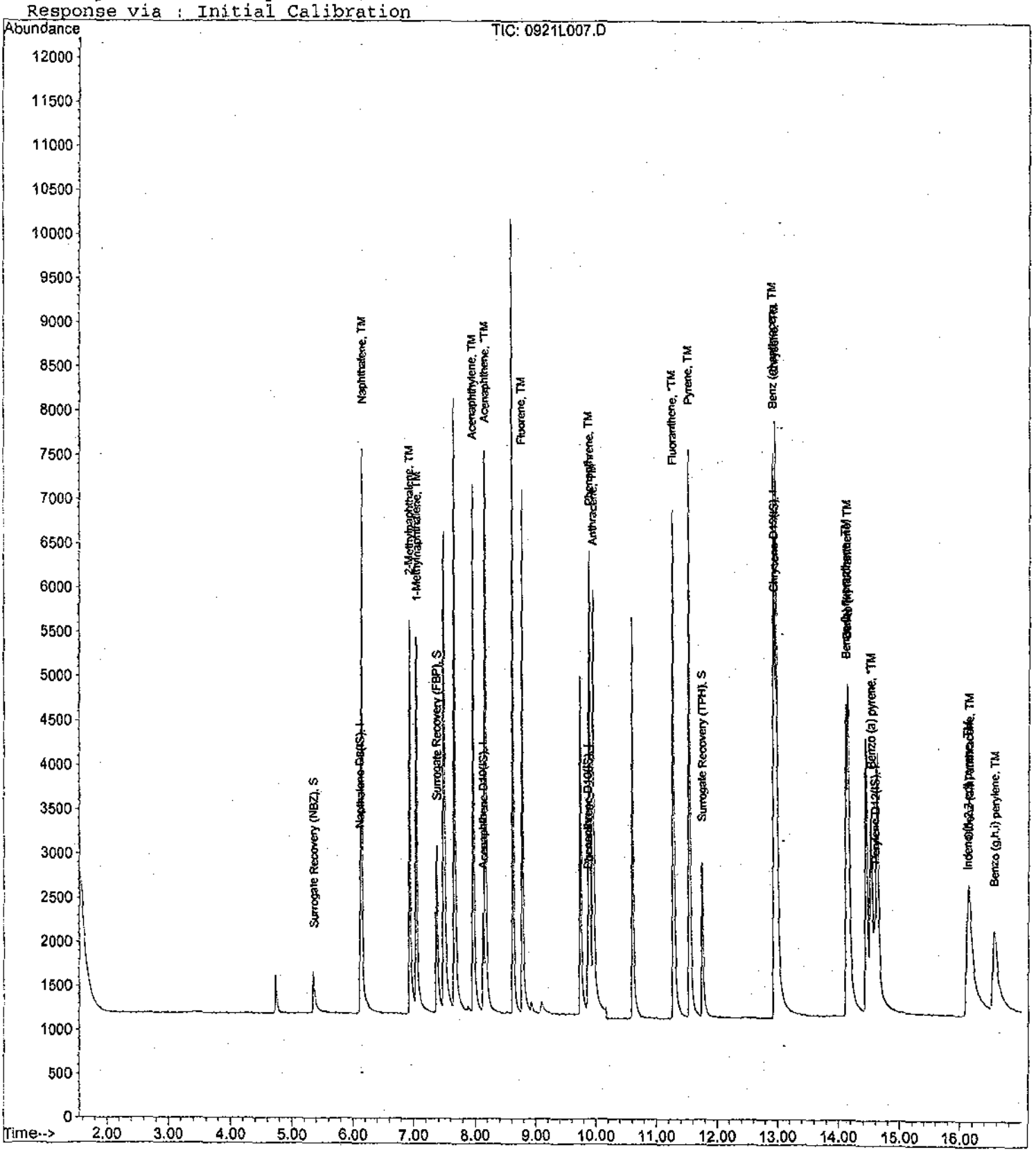
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : M:\LINUS\DATA\L110921\0921L007.D Vial: 7
Acq On : 21 Sep 11 21:51 Operator: LF
Sample : 5.0ug/ml PAH Inst : Linus
Misc : Multiplr: 1.00

Quant Time: Sep 22 9:00 2011 Quant Results File: SIM2.RES

Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Thu Sep 22 14:50:13 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : M:\LINUS\DATA\L110921\0921L008.D Vial: 8
Acq On : 21 Sep 11 22:17 Operator: LF
Sample : 10ug/ml PAH Inst : Linus
Misc : Multiplr: 1.00

Quant Time: Sep 22 14:46 2011 Quant Results File: SIM2.RES

Quant Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Thu Sep 22 08:59:40 2011
Response via : Initial Calibration
DataAcq Meth : 87SIMAQ

Internal Standards	R.T.	QIon	Response	Conc Units		Dev(Min)
1) Napthalene-D8(IS)	6.12	136	1554	2.50000 ppb		0.00
6) Acenaphthene-D10(IS)	8.12	164	757	2.50000 ppb		-0.01
11) Phenanthrene-D10(IS)	9.86	188	1107	2.50000 ppb		-0.01
15) Chrysene-D12(IS)	12.95	240	1689	2.50000 ppb		-0.01
21) Perylene-D12(IS)	14.57	264	1364	2.50000 ppb		-0.02
System Monitoring Compounds						
2) Surrogate Recovery (NBZ)	5.34	82	1694	5.86655 ppb		-0.01
Spiked Amount 2.000			Recovery	= 293.350%		
7) Surrogate Recovery (FBP)	7.36	172	5005	6.72164 ppb		-0.01
Spiked Amount 2.000			Recovery	= 336.100%		
17) Surrogate Recovery (TPH)	11.75	244	5241	6.07553 ppb		-0.01
Spiked Amount 2.000			Recovery	= 303.800%		
Target Compounds						Qvalue
3) Naphthalene	6.14	128	13190	10.99871 ppb		100
4) 2-Methylnaphthalene	6.93	142	8193	11.18175 ppb		98
5) 1-Methylnaphthalene	7.04	142	7690	10.14037 ppb		92
8) Acenaphthylene	7.97	152	12528	10.67368 ppb		99
9) Acenaphthene	8.16	154	7074	10.49738 ppb		91
10) Fluorene	8.77	166	8493	10.95211 ppb		95
12) Phenanthrene	9.88	178	11275	12.34619 ppb		99
13) Anthracene	9.94	178	11519	11.15752 ppb		99
14) Fluoranthene	11.27	202	19528	11.78579 ppb		96
16) Pyrene	11.53	202	19932	10.81434 ppb	#	89
18) Benz (a) anthracene	12.94	228	12744	11.09057 ppb		98
19) Chrysene	12.98	228	15514	10.37364 ppb		97
20) Indeno (1,2,3-cd) pyrene	16.10	276	9093	8.89436 ppb		99
22) Benzo (b) fluoranthene	14.13	252	9751	9.61599 ppb		100
23) Benzo (k) fluoranthene	14.16	252	15461	11.62849 ppb		97
24) Benzo (a) pyrene	14.51	252	11359	10.08440 ppb		99
25) Dibenz (a,h) anthracene	16.12	278	6576	8.58735 ppb		97
26) Benzo (g,h,i) perylene	16.53	276	8267	8.81304 ppb		99

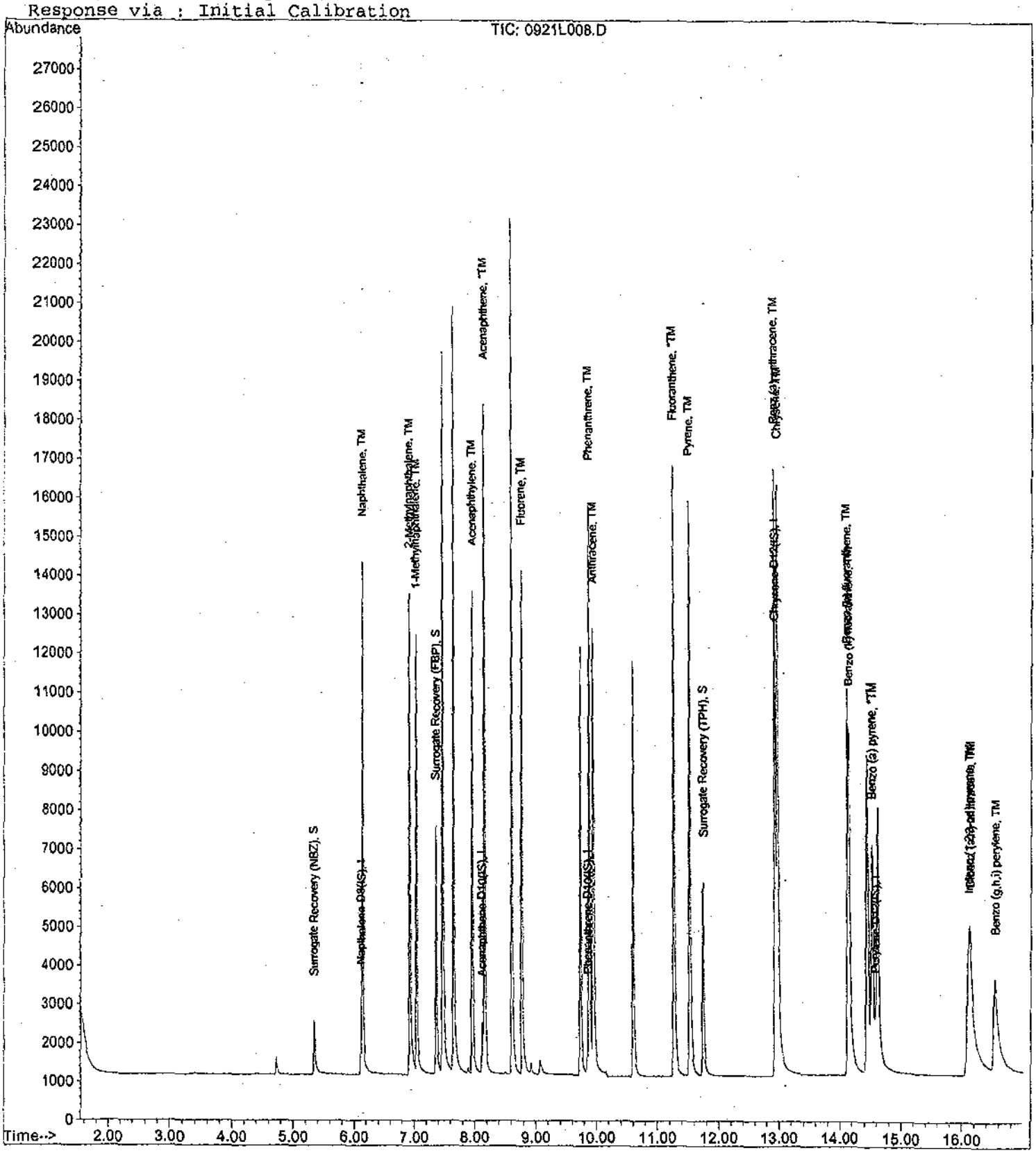
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : M:\LINUS\DATA\L110921\0921L008.D Vial: 8
Acq On : 21 Sep 11 22:17 Operator: LF
Sample : 10ug/ml PAH Inst : Linus
Misc : Multiplr: 1.00

Quant Time: Sep 22 14:46 2011 Quant Results File: SIM2.RES

Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Thu Sep 22 14:50:13 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : M:\LINUS\DATA\L110921\0921L009.D Vial: 9
Acq On : 21 Sep 11 22:43 Operator: LF
Sample : 50ug/ml PAH Inst : Linus
Misc : Multiplr: 1.00

Quant Time: Sep 22 14:47 2011 Quant Results File: SIM2.RES

Quant Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Thu Sep 22 08:59:40 2011
Response via : Initial Calibration
DataAcq Meth : 87SIMAQ

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Napthalene-D8(IS)	6.12	136	1616	2.50000 ppb	0.00
6) Acenaphthene-D10(IS)	8.12	164	771	2.50000 ppb	-0.01
11) Phenanthrene-D10(IS)	9.86	188	1191	2.50000 ppb	-0.01
15) Chrysene-D12(IS)	12.94	240	1864	2.50000 ppb	-0.02
21) Perylene-D12(IS)	14.56	264	1557	2.50000 ppb	-0.04
System Monitoring Compounds					
2) Surrogate Recovery (NBZ)	5.34	82	9014	30.01901 ppb	-0.01
Spiked Amount 2.000			Recovery	= 1500.950%	
7) Surrogate Recovery (FBP)	7.36	172	21689	28.59907 ppb	-0.01
Spiked Amount 2.000			Recovery	= 1429.950%	
17) Surrogate Recovery (TPH)	11.74	244	26004	27.31455 ppb	-0.02
Spiked Amount 2.000			Recovery	= 1365.750%	
Target Compounds					Qvalue
3) Naphthalene	6.14	128	57403	46.03002 ppb	99
4) 2-Methylnaphthalene	6.93	142	37645	49.40647 ppb	98
5) 1-Methylnaphthalene	7.05	142	35250	44.69884 ppb	99
8) Acenaphthylene	7.97	152	54835	45.87033 ppb	99
9) Acenaphthene	8.17	154	31177	45.42466 ppb	96
10) Fluorene	8.77	166	36340	46.01113 ppb	94
12) Phenanthrene	9.88	178	50317	51.21145 ppb	99
13) Anthracene	9.94	178	48068	43.27577 ppb	99
14) Fluoranthene	11.27	202	90121	50.55486 ppb	96
16) Pyrene	11.53	202	88550	43.53329 ppb	96
18) Benz (a) anthracene	12.94	228	68965	54.38267 ppb	98
19) Chrysene	12.97	228	72364	43.84437 ppb	98
20) Indeno (1,2,3-cd) pyrene	16.06	276	55292	49.00648 ppb #	100
22) Benzo (b) fluoranthene	14.13	252	64368	55.60840 ppb	97
23) Benzo (k) fluoranthene	14.15	252	62455	41.15083 ppb	93
24) Benzo (a) pyrene	14.50	252	59910	46.59454 ppb	98
25) Dibenz (a,h) anthracene	16.09	278	41716	47.72276 ppb	98
26) Benzo (g,h,i) perylene	16.50	276	47657	44.50722 ppb	97

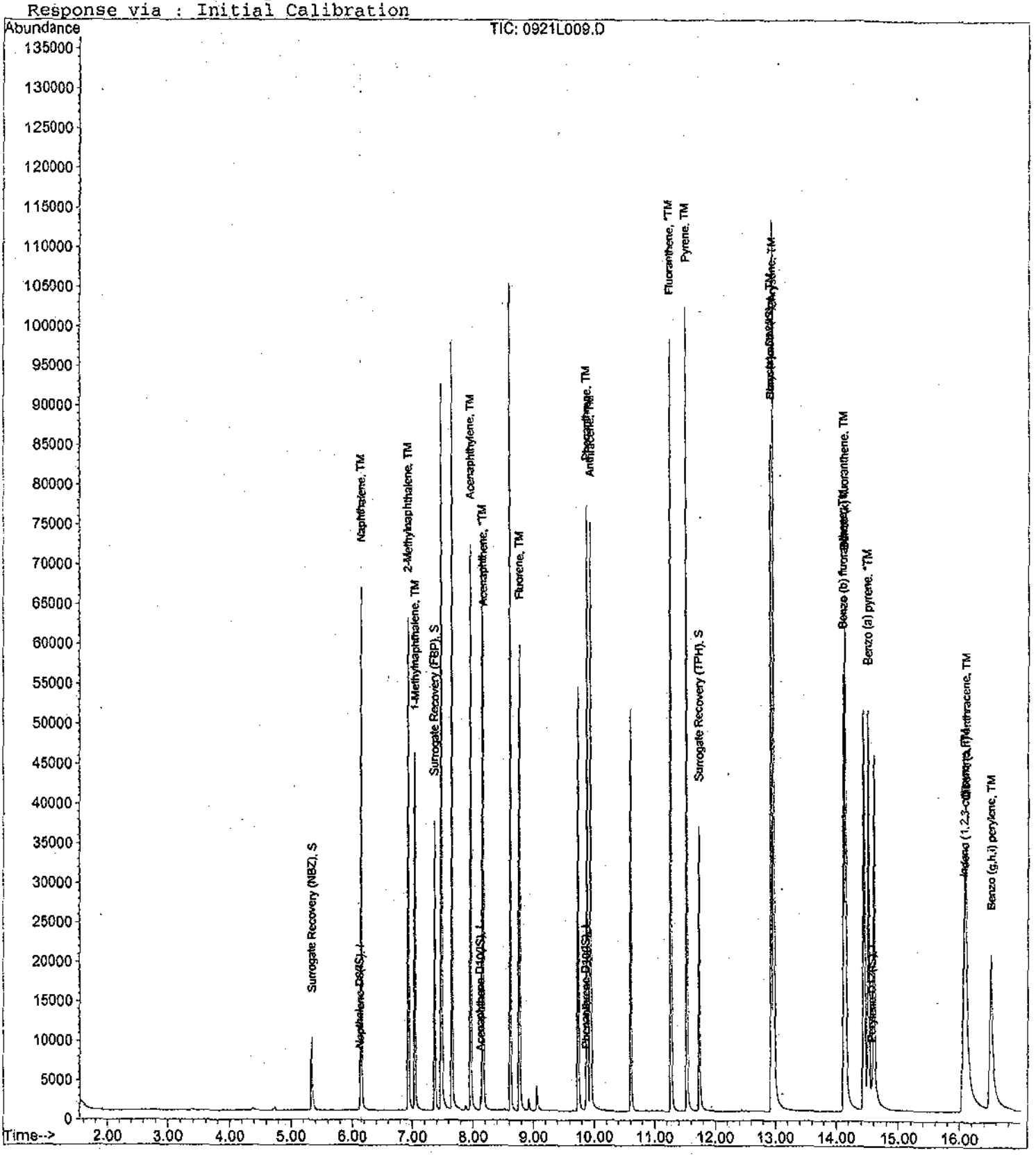
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : M:\LINUS\DATA\L110921\0921L009.D Vial: 9
Acq On : 21 Sep 11 22:43 Operator: LF
Sample : 50ug/ml PAH Inst : Linus
Misc : Multiplr: 1.00

Quant Time: Sep 22 14:47 2011 Quant Results File: SIM2.RES

Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Thu Sep 22 14:50:13 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : M:\LINUS\DATA\L110921\0921L010.D Vial: 10
Acq On : 21 Sep 11 23:09 Operator: LF
Sample : 100ug/ml PAH Inst : Linus
Misc : Multiplr: 1.00

Quant Time: Sep 22 14:48 2011 Quant Results File: SIM2.RES

Quant Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Thu Sep 22 08:59:40 2011
Response via : Initial Calibration
DataAcq Meth : 87SIMAQ

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Napthalene-D8(IS)	6.12	136	1529	2.50000	ppb		0.00
6) Acenaphthene-D10(IS)	8.12	164	734	2.50000	ppb		-0.01
11) Phenanthrene-D10(IS)	9.86	188	1151	2.50000	ppb		-0.01
15) Chrysene-D12(IS)	12.95	240	1900	2.50000	ppb		-0.01
21) Perylene-D12(IS)	14.57	264	1664	2.50000	ppb		-0.02
System Monitoring Compounds							
2) Surrogate Recovery (NBZ)	5.34	82	17205	60.55743	ppb		-0.01
Spiked Amount 2.000			Recovery = 3027.850%				
7) Surrogate Recovery (FBP)	7.36	172	38889	53.86387	ppb		-0.01
Spiked Amount 2.000			Recovery = 2693.200%				
17) Surrogate Recovery (TPH)	11.74	244	48129	49.59673	ppb		-0.02
Spiked Amount 2.000			Recovery = 2479.850%				
Target Compounds							Qvalue
3) Naphthalene	6.14	128	107792	91.35388	ppb		98
4) 2-Methylnaphthalene	6.94	142	74563	103.42696	ppb		90
5) 1-Methylnaphthalene	7.05	142	68267	91.49173	ppb		98
8) Acenaphthylene	7.97	152	96958	85.19538	ppb		99
9) Acenaphthene	8.17	154	60040	91.88749	ppb		98
10) Fluorene	8.77	166	69180	92.00615	ppb		99
12) Phenanthrene	9.88	178	98682	103.92660	ppb		98
13) Anthracene	9.96	178	98141	91.42724	ppb		99
14) Fluoranthene	11.27	202	162450	94.29595	ppb	#	89
16) Pyrene	11.54	202	177233	85.48104	ppb	#	86
18) Benz (a) anthracene	12.94	228	145938	112.89962	ppb		98
19) Chrysene	12.98	228	146103	86.84458	ppb		94
20) Indeno (1,2,3-cd) pyrene	16.08	276	122204	106.25978	ppb	#	97
22) Benzo (b) fluoranthene	14.13	252	153523	124.10211	ppb	#	96
23) Benzo (k) fluoranthene	14.16	252	136359	84.06796	ppb		98
24) Benzo (a) pyrene	14.51	252	123845	90.12588	ppb		95
25) Dibenz (a,h) anthracene	16.10	278	93587	100.17831	ppb		97
26) Benzo (g,h,i) perylene	16.51	276	104490	91.30904	ppb		96

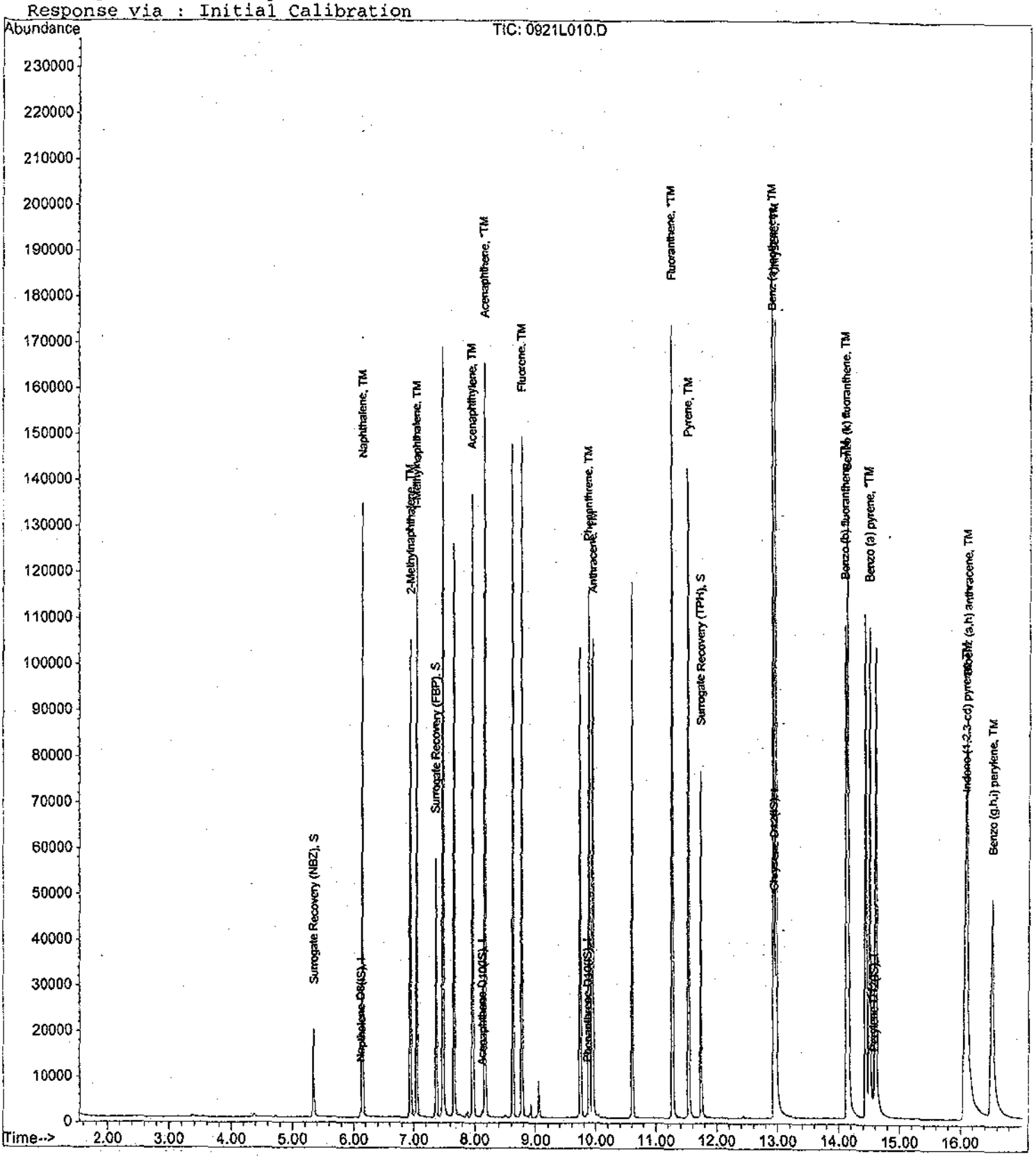
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : M:\LINUS\DATA\L110921\0921L010.D Vial: 10
Acq On : 21 Sep 11 23:09 Operator: LF
Sample : 100ug/ml PAH Inst : Linus
Misc : Multiplr: 1.00

Quant Time: Sep 22 14:48 2011 Quant Results File: SIM2.RES

Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Thu Sep 22 14:50:13 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : M:\LINUS\DATA\L110921\0921L011.D Vial: 11
Acq On : 21 Sep 11 23:35 Operator: LF
Sample : 5.0ug/ml PAH SS 9-21-11 Inst : Linus
Misc : Multiplr: 1.00

Quant Time: Sep 23 13:04 2011 Quant Results File: SIM2.RES

Quant Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Thu Sep 22 14:50:13 2011
Response via : Initial Calibration
DataAcq Meth : 87SIMAQ

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Napthalene-D8(IS)	6.12	136	1563	2.50000 ppb	0.00
6) Acenaphthene-D10(IS)	8.13	164	747	2.50000 ppb	0.00
11) Phenanthrene-D10(IS)	9.87	188	1146	2.50000 ppb	0.00
15) Chrysene-D12(IS)	12.96	240	1578	2.50000 ppb	0.00
21) Perylene-D12(IS)	14.58	264	1246	2.50000 ppb	-0.01
System Monitoring Compounds					
2) Surrogate Recovery (NBZ)	0.00	82	0d	0.27390 ppb	
Spiked Amount 2.000			Recovery	= 13.700%	
7) Surrogate Recovery (FBP)	0.00	172	0d	0.00000 ppb	
Spiked Amount 2.000			Recovery	= 0.000%	
17) Surrogate Recovery (TPH)	0.00	244	0d	0.00000 ppb	
Spiked Amount 2.000			Recovery	= 0.000%	
Target Compounds					Qvalue
3) Naphthalene	6.14	128	6164	4.86131 ppb	100
4) 2-Methylnaphthalene	6.93	142	3799	5.09635 ppb	100
5) 1-Methylnaphthalene	7.04	142	4072	5.09552 ppb	91
8) Acenaphthylene	7.97	152	5757	4.86181 ppb	100
9) Acenaphthene	8.17	154	3415	4.89556 ppb	99
10) Fluorene	8.77	166	3903	4.89886 ppb	100
12) Phenanthrene	9.90	178	5160	4.92824 ppb	99
13) Anthracene	9.96	178	5416	4.70649 ppb	100
14) Fluoranthene	11.28	202	8803	4.62039 ppb	100
16) Pyrene	11.54	202	9195	4.52380 ppb	99
18) Benz (a) anthracene	12.95	228	6161	5.38638 ppb	99
19) Chrysene	12.98	228	7109	4.76980 ppb	100
20) Indeno (1,2,3-cd) pyrene	16.11	276	5017	5.59513 ppb	93
22) Benzo (b) fluoranthene	14.14	252	4647	4.95638 ppb	99
23) Benzo (k) fluoranthene	14.16	252	6625	5.26678 ppb	99
24) Benzo (a) pyrene	14.52	252	5593	5.64873 ppb	98
25) Dibenz (a,h) anthracene	16.13	278	3549	5.61848 ppb	97
26) Benzo (g,h,i) perylene	16.54	276	4205	5.25494 ppb	97

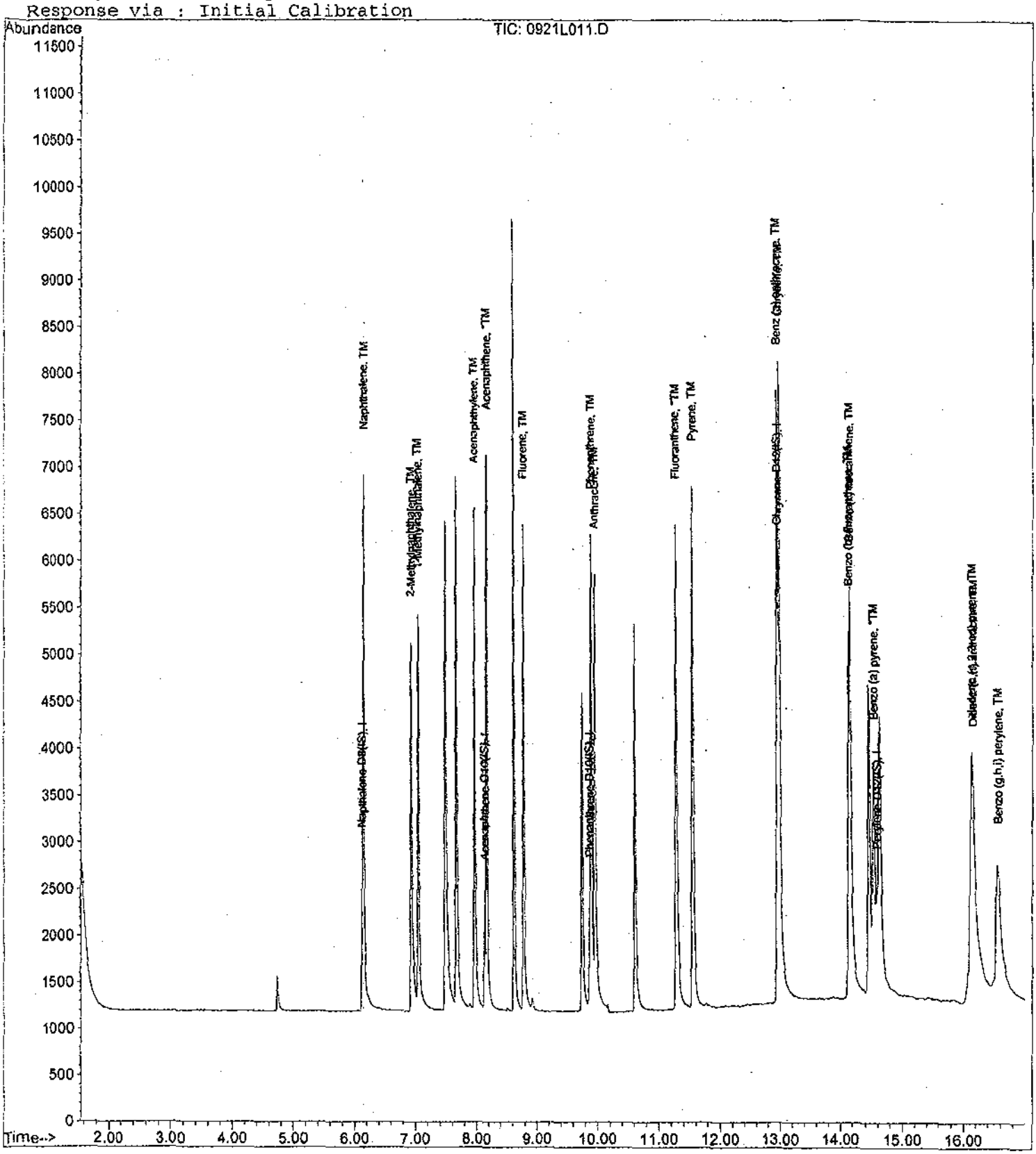
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : M:\LINUS\DATA\L110921\0921L011.D Vial: 11
Acq On : 21 Sep 11 23:35 Operator: LF
Sample : 5.0ug/ml PAH SS 9-21-11 Inst : Linus
Misc : Multiplr: 1.00

Quant Time: Sep 23 13:04 2011 Quant Results File: SIM2.RES

Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Thu Sep 22 14:50:13 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : M:\LINUS\DATA\L110921\1006L002.D Vial: 2
Acq On : 6 Oct 11 12:19 Operator: LF
Sample : 10ug/ml PAH 09-29-11 Inst : Linus
Misc : Multiplr: 1.00

Quant Time: Oct 7 9:33 2011 Quant Results File: SIM2.RES

Quant Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Wed Oct 05 18:18:09 2011
Response via : Initial Calibration
DataAcq Meth : 87SIMAQ

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Napthalene-D8(IS)	6.12	136	2517	2.50000 ppb	0.00
6) Acenaphthene-D10(IS)	8.12	164	1189	2.50000 ppb	0.00
11) Phenanthrene-D10(IS)	9.85	188	1766	2.50000 ppb	-0.01
15) Chrysene-D12(IS)	12.94	240	2840	2.50000 ppb	-0.01
21) Perylene-D12(IS)	14.57	264	2392	2.50000 ppb	-0.01
System Monitoring Compounds					
2) Surrogate Recovery (NBZ)	5.34	82	1355	5.05131 ppb	-0.01
Spiked Amount 2.000			Recovery	= 252.550%	
7) Surrogate Recovery (FBP)	7.36	172	3972	5.34268 ppb	0.00
Spiked Amount 2.000			Recovery	= 267.150%	
17) Surrogate Recovery (TPH)	11.74	244	4886	5.36097 ppb	-0.01
Spiked Amount 2.000			Recovery	= 268.050%	
Target Compounds					Qvalue
3) Naphthalene	6.13	128	18911	9.26149 ppb	98
4) 2-Methylnaphthalene	6.93	142	12278	10.22806 ppb	92
5) 1-Methylnaphthalene	7.04	142	11668	9.06677 ppb	96
8) Acenaphthylene	7.95	152	16967	9.00214 ppb	99
9) Acenaphthene	8.16	154	10422	9.38645 ppb	97
10) Fluorene	8.76	166	12163	9.59127 ppb	98
12) Phenanthrene	9.88	178	16292	10.09741 ppb	99
13) Anthracene	9.94	178	16405	9.25100 ppb	99
14) Fluoranthene	11.26	202	27004	9.19750 ppb #	88
16) Pyrene	11.53	202	30873	8.43955 ppb	93
18) Benz (a) anthracene	12.93	228	21545	10.46600 ppb	98
19) Chrysene	12.97	228	23446	8.74075 ppb	97
20) Indeno (1,2,3-cd) pyrene	16.08	276	18379	11.38876 ppb #	90
22) Benzo (b) fluoranthene	14.12	252	20959	11.64445 ppb #	94
23) Benzo (k) fluoranthene	14.15	252	20231	8.37786 ppb	98
24) Benzo (a) pyrene	14.50	252	18632	9.80218 ppb	99
25) Dibenz (a,h) anthracene	16.10	278	14013	11.55582 ppb	99
26) Benzo (g,h,i) perylene	16.52	276	15252	9.92854 ppb	98

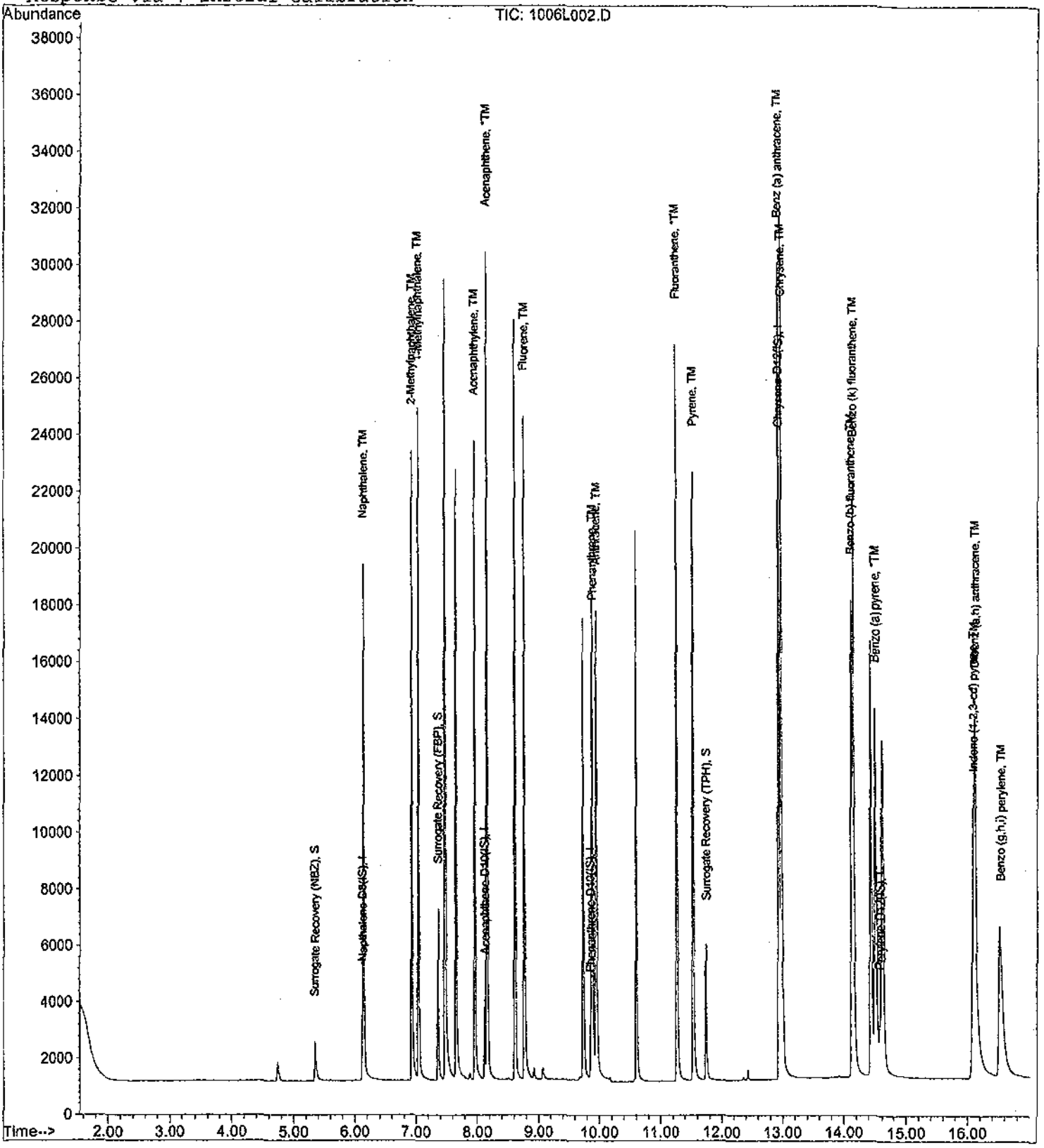
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : M:\LINUS\DATA\L110921\1006L002.D Vial: 2
Acq On : 6 Oct 11 12:19 Operator: LF
Sample : 10ug/ml PAH 09-29-11 Inst : Linus
Misc : Multiplr: 1.00

Quant Time: Oct 7 9:33 2011 Quant Results File: SIM2.RES

Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Wed Oct 05 18:18:09 2011
Response via : Initial Calibration



EPA METHOD 8270
Polynuclear Aromatic Hydrocarbons
Miscellaneous

APPL, INC.

Quantitation Report (QT Reviewed)

Data File : M:\LINUS\DATA\L110921\1006L012.D Vial: 12
Acq On : 6 Oct 11 16:34 Operator: LF
Sample : 111005A BLK 1/1000 Inst : Linus
Misc : Multiplr: 1.00

Quant Time: Oct 7 9:00 2011 Quant Results File: SIM2.RES

Quant Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Wed Oct 05 18:18:09 2011
Response via : Initial Calibration
DataAcq Meth : 87SIMAQ

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Napthalene-D8(IS)	6.12	136	2023	2.50000 ppb	0.00
6) Acenaphthene-D10(IS)	8.13	164	864	2.50000 ppb	0.01
11) Phenanthrene-D10(IS)	9.87	188	1462	2.50000 ppb	0.01
15) Chrysene-D12(IS)	12.96	240	2367	2.50000 ppb	0.01
21) Perylene-D12(IS)	14.61	264	1950	2.50000 ppb	0.02
System Monitoring Compounds					
2) Surrogate Recovery (NBZ)	5.36	82	244	1.34426 ppb	0.01
Spiked Amount 2.000			Recovery =	67.200%	
7) Surrogate Recovery (FBP)	7.37	172	615	1.13839 ppb	0.01
Spiked Amount 2.000			Recovery =	56.900%	
17) Surrogate Recovery (TPH)	11.74	244	1062	1.39809 ppb	-0.01
Spiked Amount 2.000			Recovery =	69.900%	
Target Compounds					Qvalue

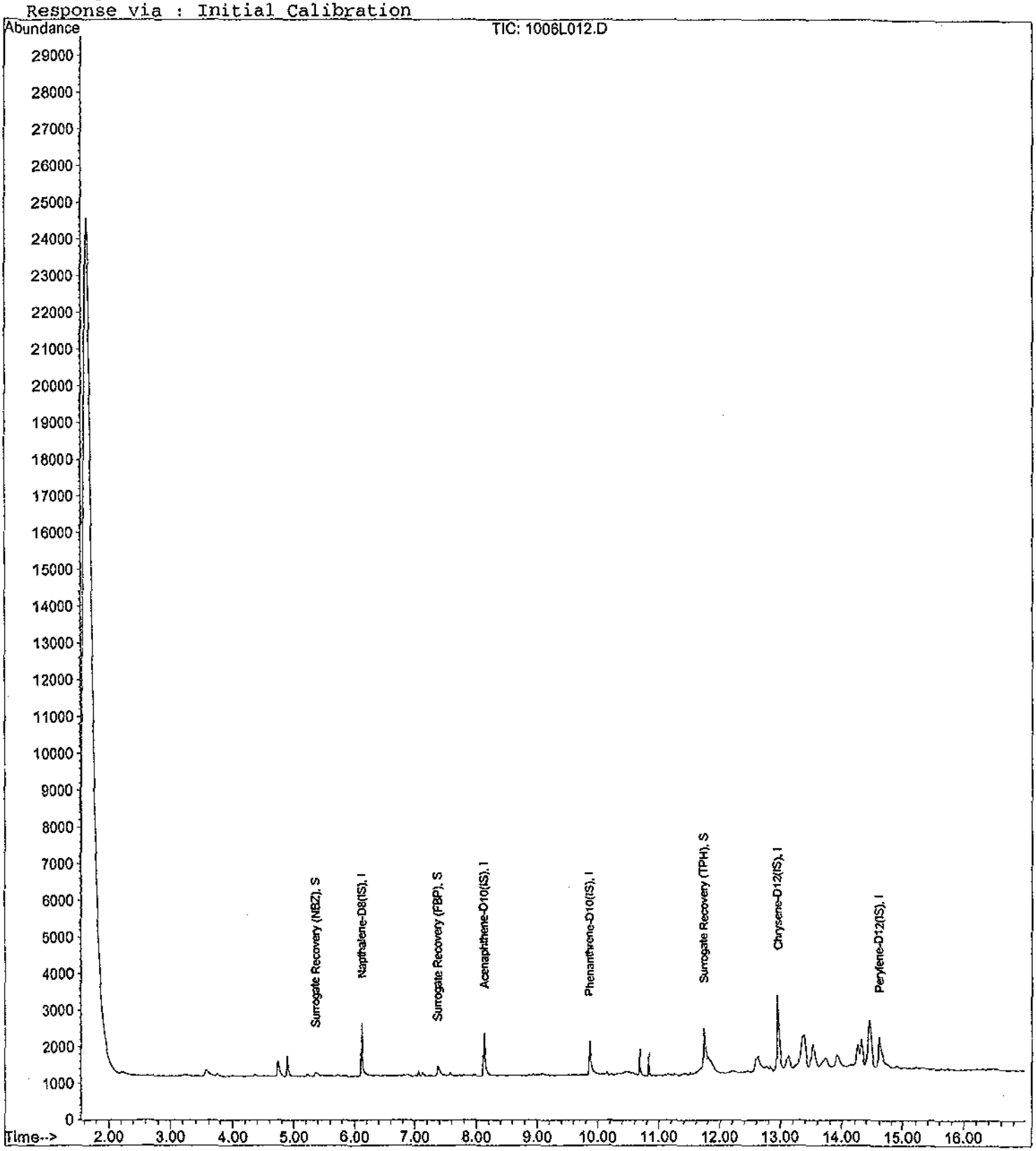
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : M:\LINUS\DATA\L110921\1006L012.D Vial: 12
Acq On : 6 Oct 11 16:34 Operator: LF
Sample : 111005A BLK 1/1000 Inst : Linus
Misc : Multiplr: 1.00

Quant Time: Oct 7 9:00 2011 Quant Results File: SIM2.RES

Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Wed Oct 05 18:18:09 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : M:\LINUS\DATA\L110921\1006L013.D Vial: 13
Acq On : 6 Oct 11 16:59 Operator: LF
Sample : 111005A LCS-1 1/1000 Inst : Linus
Misc : Multiplr: 1.00

Quant Time: Oct 7 9:06 2011 Quant Results File: SIM2.RES

Quant Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Wed Oct 05 18:18:09 2011
Response via : Initial Calibration
DataAcq Meth : 87SIMAQ

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Napthalene-D8(IS)	6.12	136	1715	2.50000 ppb	0.00
6) Acenaphthene-D10(IS)	8.12	164	808	2.50000 ppb	0.00
11) Phenanthrene-D10(IS)	9.86	188	1302	2.50000 ppb	0.00
15) Chrysene-D12(IS)	12.96	240	2044	2.50000 ppb	0.01
21) Perylene-D12(IS)	14.59	264	1719	2.50000 ppb	0.01
System Monitoring Compounds					
2) Surrogate Recovery (NBZ)	5.36	82	264	1.63998 ppb	0.01
Spiked Amount 2.000			Recovery	= 82.000%	
7) Surrogate Recovery (FBP)	7.37	172	541	1.07082 ppb	0.01
Spiked Amount 2.000			Recovery	= 53.550%	
17) Surrogate Recovery (TPH)	11.75	244	1056	1.60987 ppb	0.00
Spiked Amount 2.000			Recovery	= 80.500%	
Target Compounds					Qvalue
3) Naphthalene	6.14	128	3044	2.18791 ppb	99
4) 2-Methylnaphthalene	6.94	142	1791	2.18968 ppb	92
5) 1-Methylnaphthalene	7.04	142	1934	2.20563 ppb	90
8) Acenaphthylene	7.97	152	2889	2.25558 ppb	98
9) Acenaphthene	8.16	154	1710	2.26630 ppb	92
10) Fluorene	8.77	166	1963	2.27785 ppb	99
12) Phenanthrene	9.90	178	2833	2.38156 ppb	99
13) Anthracene	9.96	178	2913	2.22809 ppb	100
14) Fluoranthene	11.27	202	5308	2.45218 ppb	88
16) Pyrene	11.54	202	6235	2.36818 ppb	97
18) Benz (a) anthracene	12.95	228	3808	2.57021 ppb	98
19) Chrysene	12.98	228	5116	2.65001 ppb	99
20) Indeno (1,2,3-cd) pyrene	16.14	276	3259	2.80593 ppb	91
22) Benzo (b) fluoranthene	14.14	252	3150	2.43525 ppb	98
23) Benzo (k) fluoranthene	14.17	252	4271	2.46111 ppb	99
24) Benzo (a) pyrene	14.52	252	3258	2.38506 ppb	99
25) Dibenz (a,h) anthracene	16.15	278	2254	2.58648 ppb	96
26) Benzo (g,h,i) perylene	16.57	276	3000	2.71747 ppb	95

$\frac{3044 \times 2.5}{1715 \times 2.024} = 2.188$

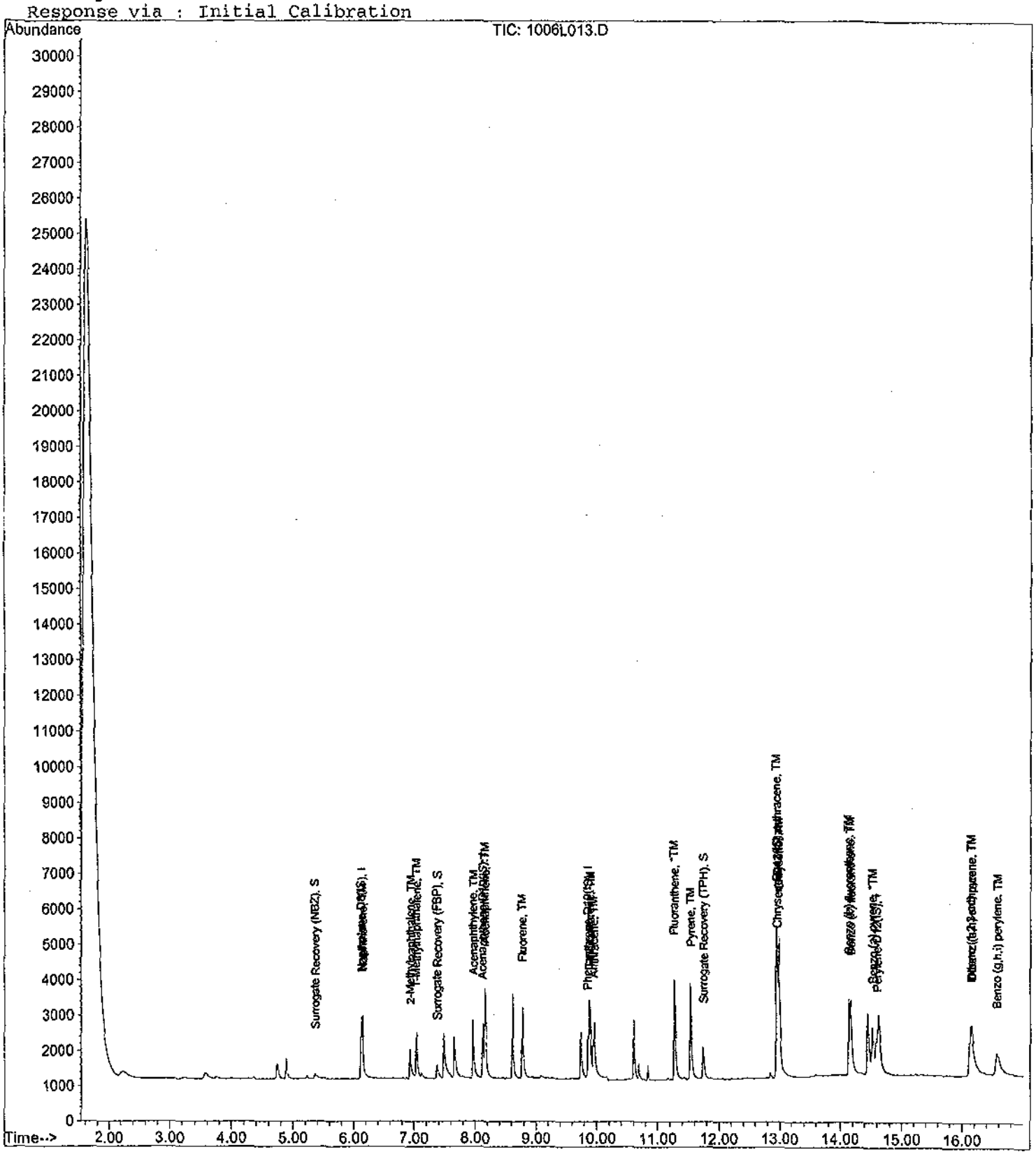
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : M:\LINUS\DATA\L110921\1006L013.D Vial: 13
Acq On : 6 Oct 11 16:59 Operator: LF
Sample : 111005A LCS-1 1/1000 Inst : Linus
Misc : Multiplr: 1.00

Quant Time: Oct 7 9:06 2011 Quant Results File: SIM2.RES

Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Wed Oct 05 18:18:09 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : M:\LINUS\DATA\L110921\1006L016.D Vial: 16
Acq On : 6 Oct 11 18:15 Operator: LF
Sample : AY47773W01 MS-1 1/1020 Inst : Linus
Misc : Multiplr: 0.98

Quant Time: Oct 7 9:10 2011 Quant Results File: SIM2.RES

Quant Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Wed Oct 05 18:18:09 2011
Response via : Initial Calibration
DataAcq Meth : 87SIMAQ

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Napthalene-D8(IS)	6.12	136	1663	2.50000 ppb	0.00
6) Acenaphthene-D10(IS)	8.12	164	822	2.50000 ppb	0.00
11) Phenanthrene-D10(IS)	9.86	188	1280	2.50000 ppb	0.00
15) Chrysene-D12(IS)	12.96	240	2050	2.50000 ppb	0.01
21) Perylene-D12(IS)	14.59	264	1647	2.50000 ppb	0.01
System Monitoring Compounds					
2) Surrogate Recovery (NBZ)	5.36	82	250	1.57645 ppb	0.01
Spiked Amount 1.961			Recovery = 80.376%		
7) Surrogate Recovery (FBP)	7.37	172	719	1.37147 ppb	0.01
Spiked Amount 1.961			Recovery = 69.921%		
17) Surrogate Recovery (TPH)	11.75	244	1036	1.54388 ppb	0.00
Spiked Amount 1.961			Recovery = 78.744%		
Target Compounds					Qvalue
3) Naphthalene	6.14	128	3519	2.55726 ppb	100
4) 2-Methylnaphthalene	6.94	142	1956	2.41782 ppb	92
5) 1-Methylnaphthalene	7.04	142	2059	2.37412 ppb	90
8) Acenaphthylene	7.97	152	2992	2.25118 ppb	100
9) Acenaphthene	8.16	154	1884	2.40625 ppb	95
10) Fluorene	8.77	166	2262	2.52951 ppb	99
12) Phenanthrene	9.90	178	2799	2.34649 ppb	100
13) Anthracene	9.96	178	3091	2.35771 ppb	99
14) Fluoranthene	11.27	202	5117	2.35742 ppb	87
16) Pyrene	11.54	202	6078	2.25665 ppb	98
18) Benz (a) anthracene	12.95	228	3907	2.57775 ppb	98
19) Chrysene	12.98	228	4741	2.40056 ppb	99
20) Indeno (1,2,3-cd) pyrene	16.15	276	2909	2.44828 ppb	88
22) Benzo (b) fluoranthene	14.14	252	3105	2.45627 ppb	97
23) Benzo (k) fluoranthene	14.17	252	4491	2.64804 ppb	100
24) Benzo (a) pyrene	14.52	252	3345	2.50568 ppb	99
25) Dibenz (a,h) anthracene	16.16	278	2309	2.71119 ppb	99
26) Benzo (g,h,i) perylene	16.58	276	2789	2.58508 ppb	96

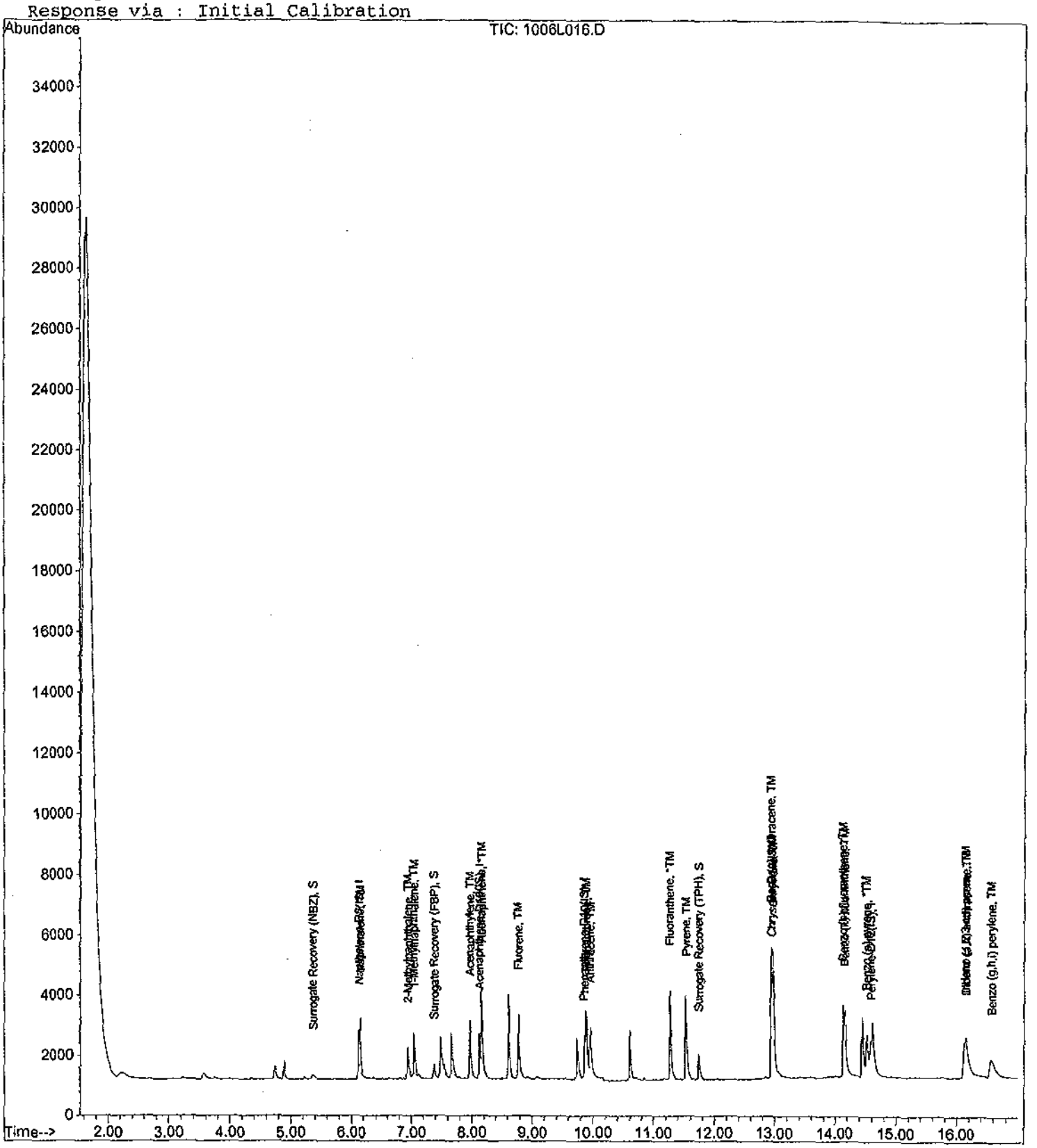
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : M:\LINUS\DATA\L110921\1006L016.D Vial: 16
Acq On : 6 Oct 11 18:15 Operator: LF
Sample : AY47773W01 MS-1 1/1020 Inst : Linus
Misc : Multiplr: 0.98

Quant Time: Oct 7 9:10 2011 Quant Results File: SIM2.RES

Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Wed Oct 05 18:18:09 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : M:\LINUS\DATA\L110921\1006L017.D Vial: 17
Acq On : 6 Oct 11 18:41 Operator: LF
Sample : AY47773W04 MSD-1 1/1020 Inst : Linus
Misc : Multiplr: 0.98

Quant Time: Oct 7 9:13 2011 Quant Results File: SIM2.RES

Quant Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Wed Oct 05 18:18:09 2011
Response via : Initial Calibration
DataAcq Meth : 87SIMAQ

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Napthalene-D8(IS)	6.12	136	1649	2.50000 ppb	0.00
6) Acenaphthene-D10(IS)	8.12	164	814	2.50000 ppb	0.00
11) Phenanthrene-D10(IS)	9.87	188	1201	2.50000 ppb	0.01
15) Chrysene-D12(IS)	12.96	240	1900	2.50000 ppb	0.01
21) Perylene-D12(IS)	14.59	264	1546	2.50000 ppb	0.01
System Monitoring Compounds					
2) Surrogate Recovery (NBZ)	5.36	82	272	1.70363 ppb	0.01
Spiked Amount 1.961			Recovery	= 86.904%	
7) Surrogate Recovery (FBP)	7.37	172	627	1.20774 ppb	0.01
Spiked Amount 1.961			Recovery	= 61.608%	
17) Surrogate Recovery (TPH)	11.75	244	1021	1.64164 ppb	0.00
Spiked Amount 1.961			Recovery	= 83.742%	
Target Compounds					Qvalue
3) Naphthalene	6.14	128	3463	2.53793 ppb	100
4) 2-Methylnaphthalene	6.94	142	1999	2.49195 ppb	88
5) 1-Methylnaphthalene	7.04	142	2116	2.46056 ppb	88
8) Acenaphthylene	7.96	152	3246	2.46630 ppb	100
9) Acenaphthene	8.16	154	1903	2.45440 ppb	92
10) Fluorene	8.77	166	2302	2.59954 ppb	99
12) Phenanthrene	9.89	178	3230	2.88592 ppb	99
13) Anthracene	9.96	178	3502	2.84692 ppb	99
14) Fluoranthene	11.28	202	5752	2.82428 ppb	100
16) Pyrene	11.54	202	5943	2.38073 ppb	99
18) Benz (a) anthracene	12.95	228	3540	2.52000 ppb	99
19) Chrysene	12.98	228	4576	2.49994 ppb	98
20) Indeno (1,2,3-cd) pyrene	16.15	276	2855	2.59253 ppb	88
22) Benzo (b) fluoranthene	14.14	252	2960	2.49454 ppb	94
23) Benzo (k) fluoranthene	14.17	252	4037	2.53586 ppb	98
24) Benzo (a) pyrene	14.52	252	2958	2.36054 ppb	97
25) Dibenz (a,h) anthracene	16.16	278	2345	2.93334 ppb	100
26) Benzo (g,h,i) perylene	16.59	276	2685	2.65127 ppb	97

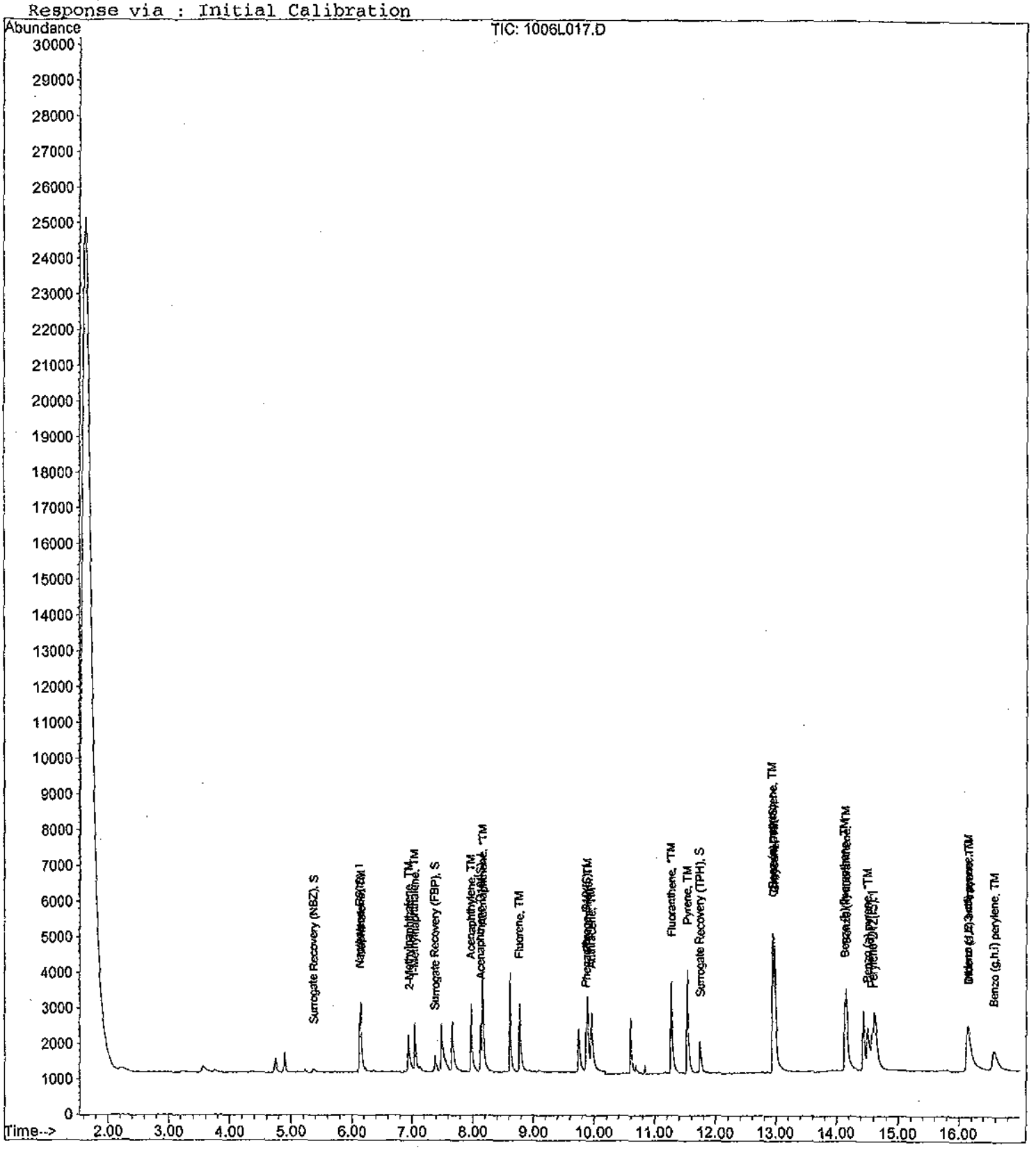
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : M:\LINUS\DATA\L110921\1006L017.D Vial: 17
Acq On : 6 Oct 11 18:41 Operator: LF
Sample : AY47773W04 MSD-1 1/1020 Inst : Linus
Misc : Multiplr: 0.98

Quant Time: Oct 7 9:13 2011 Quant Results File: SIM2.RES

Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Wed Oct 05 18:18:09 2011
Response via : Initial Calibration

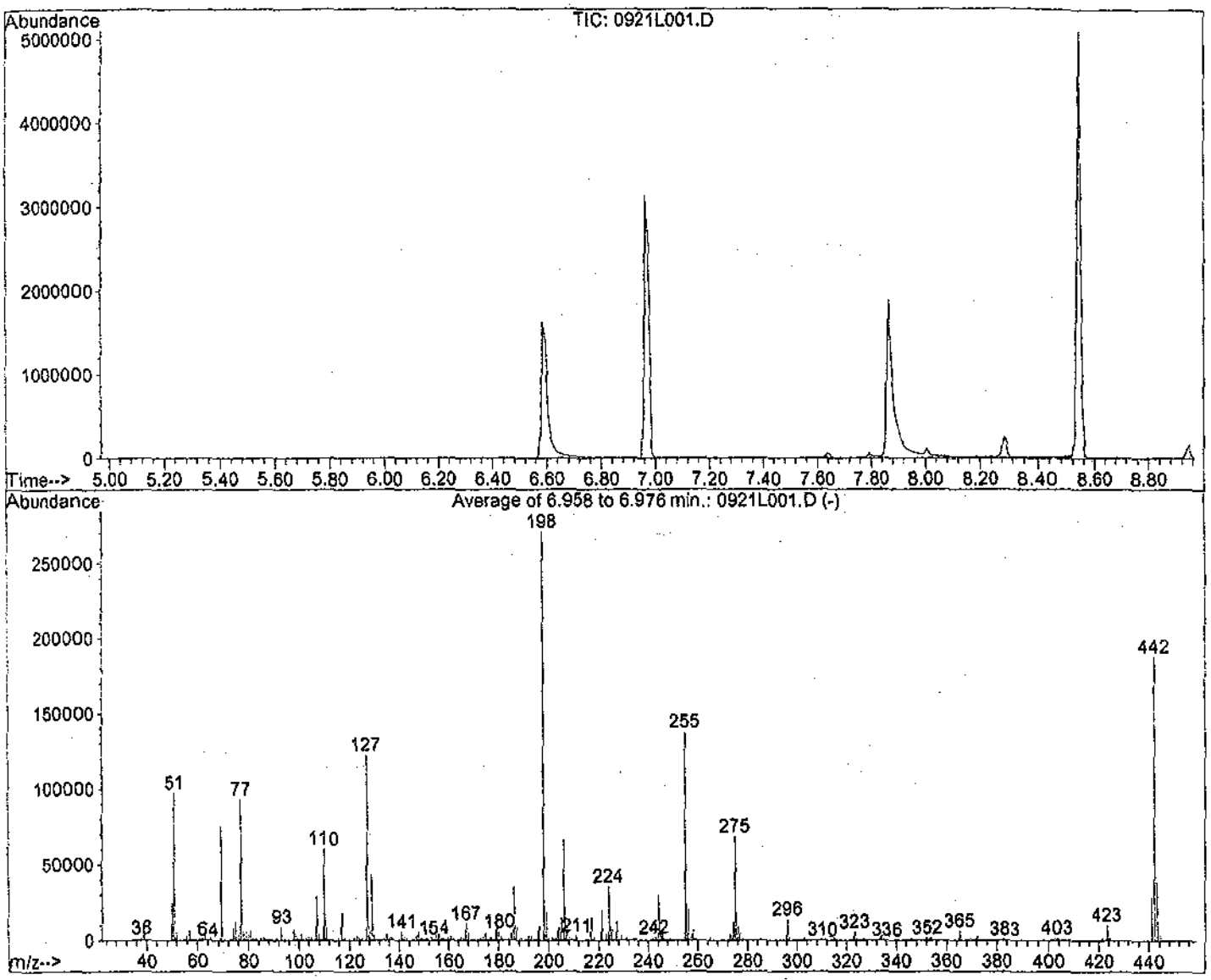


DFTPP

Data File : M:\LINUS\DATA\L110921\0921L001.D
Acq On : 21 Sep 11 19:23
Sample : SVTUNE 04-14-11
Misc :

Vial: 1
Operator: LF
Inst : Linus
Multiplr: 1.00

Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C



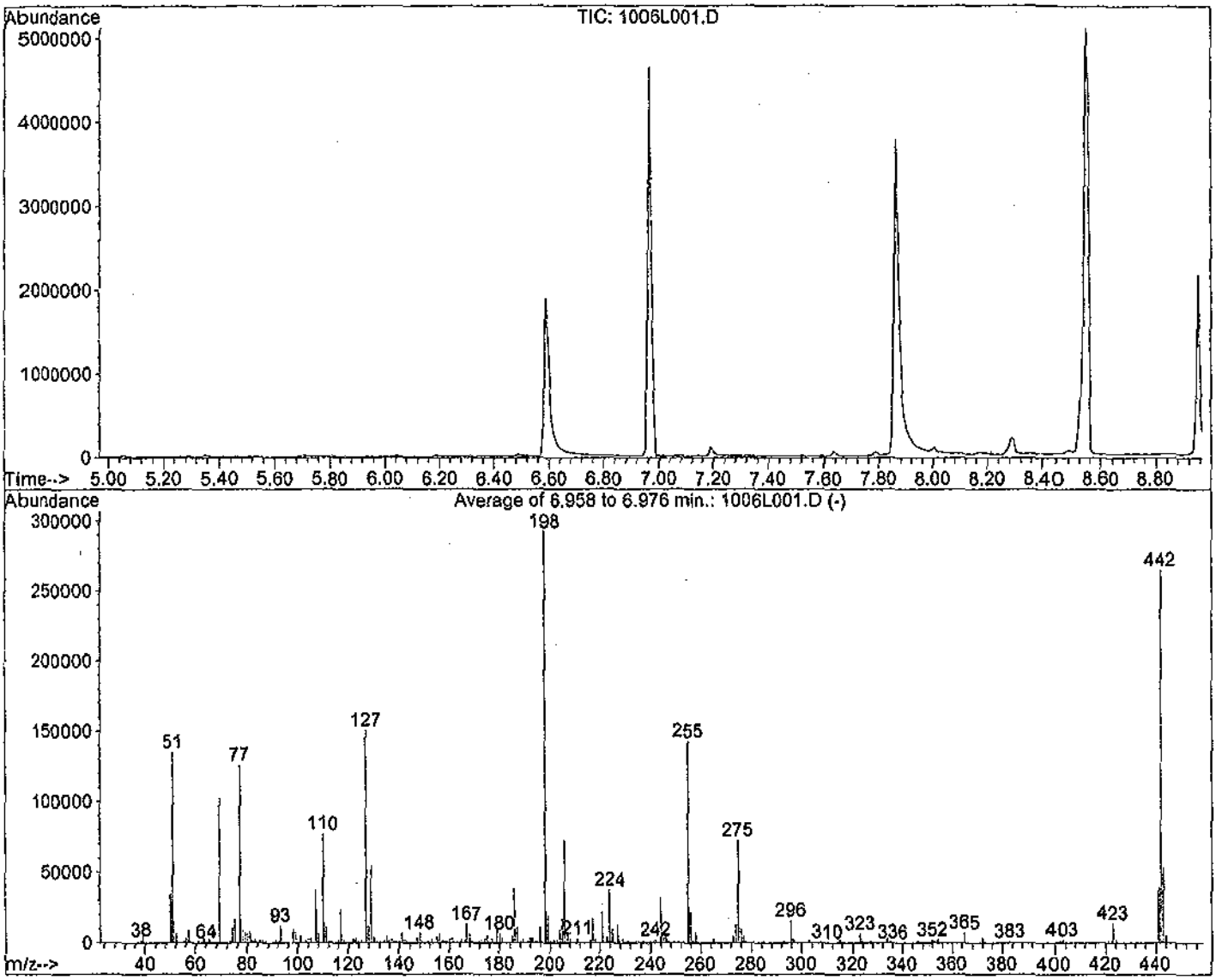
AutoFind: Scans 472, 473, 474; Background Corrected with Scan 469

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	30	60	35.9	97319	PASS
68	69	0.00	2	0.0	0	PASS
70	69	0.00	2	0.3	204	PASS
127	198	40	60	45.2	122512	PASS
197	198	0.00	1	0.1	138	PASS
198	198	100	100	100.0	271139	PASS
199	198	5	9	6.9	18702	PASS
275	198	10	30	25.2	68403	PASS
365	198	1	100	2.3	6146	PASS
441	443	0.01	100	72.7	27844	PASS
442	198	40	150	69.2	187686	PASS
443	442	17	23	20.4	38313	PASS

DFTPP

Data File : M:\LINUS\DATA\L110921\1006L001.D Vial: 1
Acq On : 6 Oct 11 12:01 Operator: LF
Sample : SVTUNE 04-14-11 Inst : Linus
Misc : Multiplr: 1.00

Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C



Spectrum Information: Average of 6.958 to 6.976 min.

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	30	60	46.2	135018	PASS
68	69	0.00	2	0.0	0	PASS
70	69	0.00	2	0.4	423	PASS
127	198	40	60	51.4	150340	PASS
197	198	0.00	1	0.2	443	PASS
198	198	100	100	100.0	292408	PASS
199	198	5	9	7.3	21317	PASS
275	198	10	30	24.6	71989	PASS
365	198	1	100	2.4	6959	PASS
441	443	0.01	100	75.0	39439	PASS
442	198	40	150	90.5	264632	PASS
443	442	17	23	19.9	52609	PASS

VF 1/17/11

PREP DATE:	01-17-11					
8270C Stock/Spike Standard						
Exp:	05-29-11					
		Conc.		Date	CODE:	F
Supplier	ID #	µg/mL	Lot #	Code	Exp.Date	µL
Absolute	10001	2000	032009-28092	01/17/11	03-20-12	1000
Absolute	10001	2000	032009-28091	01/17/11	03-20-12	1000
Absolute	10002	2000	073109-27974	01/17/11	07-31-12	1000
Absolute	10002	2000	073109-27973	01/17/11	07-31-12	1000
Absolute	10004	2000	101509-27979	01/17/11	10-15-14	1000
Absolute	10004	2000	101509-27978	01/17/11	10-15-14	1000
Absolute	10005	2000	061209-27984	01/17/11	06-12-14	1000
Absolute	10005	2000	061209-27983	01/17/11	06-12-14	1000
Absolute	10006	2000	120810-27989	01/17/11	12-08-13	1000
Absolute	10006	2000	120810-27988	01/17/11	12-08-13	1000
Absolute	10007	2000	100909-28010	01/17/11	10-09-14	1000
Absolute	10007	2000	100909-28013	01/17/11	10-09-14	1000
Absolute	10018	2000	073109-27994	01/17/11	07-31-14	1000
Absolute	10018	2000	073109-27993	01/17/11	07-31-14	1000
Absolute	70023	1000	080310-28008	01/17/11	08-03-15	1000
Absolute	70023	1000	080310-28009	01/17/11	08-03-15	1000
Absolute	82705	2000	121010-27999	01/17/11	12-10-13	1000
Absolute	82705	2000	121010-27998	01/17/11	12-10-13	1000
Absolute	94552	2000	052908-28004	01/17/11	05-29-11	1000
Absolute	94552	2000	052908-28003	01/17/11	05-29-11	1000
					Final Vol	20000

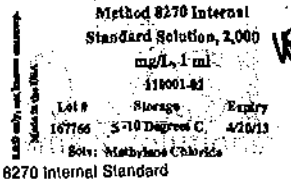
VF 1/25/11

PREP DATE:	01-25-11																
8270T STANDARD CURVE																	
Exp:	02-24-11					0.1	0.2	1	5	10	20	40	50	60	80	100	
		Conc.		Date													
Supplier	ID #	µg/mL	Lot #	Code	Exp.Date			µL	µL	µL	µL	µL	µL	µL	µL	µL	
	8270T Stock	200		12/17/10	05-29-11	0	0	0	5	5	10	20	25	30	40	50	
	5.0ug/mL			01/25/11		0	0	20	0	0	0	0	0	0	0	0	
	1.0ug/mL			01/25/11		10	20	0	0	0	0	0	0	0	0	0	
	Surrogate Stock	VAR	160538-27570	11/11/10	11-11-11	0	0	0	5	5	10	20	25	30	40	50	
EM Science	Methylene Chloride		47080			90	80	80	190	90	80	60	50	40	20	0	
					Final Vol.			100	200	100	100	100	100	100	100	100	

VF 1/25/11

PREP DATE:	01-25-11					
8270 Second Source (SS) 50ug/mL						
						50
		Conc.		Date	CODE:	
Supplier	ID #	µg/mL	Lot #	Code	Exp.Date	µL
	8270C SS	200		10/06/10	10-06-11	25
EM Science	Methylene Chloride		47080			75
					Final Vol.	100

VF 1/25/11



VF

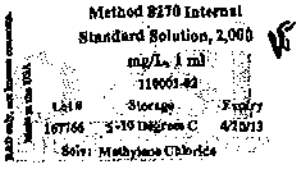
exp 1/25/12

8270 Internal Standard

Lot #: 167766 - 28148

Rec: 1/20/11 MFR exp. 04/20/13

VF 1/25/11



VF

exp 1/25/12

8270 Internal Standard

Lot #: 167766 - 28147

LF 3/23/11

Part #: 94552 Laboratory Use Only-See MSDS
Lot #: 052908 Exp: 052911 1 mL
Semi-Volatile Standard
11 componente
Varied ug/mL ir
ABSOLUTE STANDA
Semi-Volatile Standard
Lot #: 052908 - 28001
Rec: 12/16/10 MFR exp. 05/29/11

LF

exp 5/29/11

LF 3/23/11

Part #: 94552 Laboratory Use Only-See MSDS
Lot #: 052908 Exp: 052911 1 mL
Semi-Volatile Standard
11 componente
Varied ug/mL in
ABSOLUTE STANDAI
Semi-Volatile Standard
Lot #: 052908 - 28002
Rec: 12/16/10 MFR exp. 05/29/11

LF

exp 5/29/11

LF 3/23/11

Part #: 82705 Laboratory Use Only - See MSDS
Lot #: 121010 Exp: 121013 Storage 4 °C
EPA Method 8270A
4 components
2000 ug/mL in ace
ABSOLUTE STANDARDS, INC.
EPA Method 8270A-Mix#11
Lot #: 121010 - 27996
Rec: 12/16/10 MFR exp. 12/10/13

LF

exp 5/29/11

LF 3/23/11

Part #: 82705 Laboratory Use Only - See MSDS
Lot #: 121010 Exp: 121013 Storage 4 °C
EPA Method 8270A - Mix #11
4 components
2000 ug/mL in ace
ABSOLUTE STANDAI
EPA Method 8270A-Mix#11
Lot #: 121010 - 27997
Rec: 12/16/10 MFR exp. 12/10/13

LF

exp 5/29/11

LF 3/23/11

PREP DATE:	03-23-11					
8270C Stock/Spike Standard						
Exp:	05-29-11					
		Conc.		Date	CODE:	P
Supplier	ID #	µg/mL	Lot #	Code	Exp.Date	µL
Absolute	10001	2000	032009-28089	03/23/11	03-20-12	1000
Absolute	10001	2000	320009-28090	03/23/11	03-20-12	1000
Absolute	10002	2000	073109-27971	03/23/11	07-31-12	1000
Absolute	10002	2000	073109-27972	03/23/11	07-31-12	1000
Absolute	10004	2000	101509-27976	03/23/11	10-15-14	1000
Absolute	10004	2000	101509-27977	03/23/11	10-15-14	1000
Absolute	10005	2000	061209-27981	03/23/11	06-12-14	1000
Absolute	10005	2000	061209-27982	03/23/11	06-12-14	1000
Absolute	10006	2000	120810-27986	03/23/11	12-08-13	1000
Absolute	10006	2000	120810-27987	03/23/11	12-08-13	1000
Absolute	10007	2000	100909-28015	03/23/11	10-09-14	1000
Absolute	10007	2000	100909-28014	03/23/11	10-09-14	1000
Absolute	10018	2000	073109-27991	03/23/11	07-31-14	1000
Absolute	10018	2000	073109-27992	03/23/11	07-31-14	1000
Absolute	70023	1000	080310-28006	03/23/11	08-03-15	1000
Absolute	70023	1000	080310-28007	03/23/11	08-03-15	1000
Absolute	82705	2000	052908-28001	03/23/11	05-29-11	1000
Absolute	82705	2000	052908-28002	03/23/11	05-29-11	1000
Absolute	94552	2000	121010-27996	03/23/11	12-10-13	1000
Absolute	94552	2000	121010-27997	03/23/11	12-10-13	1000
					Final Vol	20000

LF 3/23/11

SIM IS exp 1/25/12
1500µL EM Science MC Lot #47080
100µL 8270 IS opened 1/25/11 OBS 1/24/12

IF 3/28/11

O2si smart solutions — 8270 BN:A (100:400) Surrogate Solution, 1 ml
H0004-17 Storage: </= -10 Degrees C
Made in USA Lot No: 160538 Solvent: Methylene Chloride
Exp: 6/10/2012
Date Opened: 8270 BN:A (200:400) Surrogate Solution
Lot #: 160538 - 27574
Rec: 10/18/10 MFR exp. 06/10/12

IF exp 3/28/12

IF 3/28/11

PREP DATE:	03-28-11															
8270T STANDARD CURVE																
Exp:	06-27-11					0.1	0.2	1	5	10	20	40	50	60	80	100
Supplier	ID #	Conc. µg/mL	Lot #	Date Code	Exp.Date			µL	µL	µL	µL	µL	µL	µL	µL	µL
	8270T Stock	200		03/23/11	05-29-11	0	0	0	5	5	10	20	25	30	40	50
	5.0ug/mL			03/28/11		0	0	20	0	0	0	0	0	0	0	0
	1.0ug/mL			03/28/11		10	20	0	0	0	0	0	0	0	0	0
	Surrogate Stock	VAR	160538-27574	03/28/11	03-28-12	0	0	0	5	5	10	20	25	30	40	50
EM Science	Methylene Chloride		47080			90	80	80	190	90	80	60	50	40	20	0
					Final Vol.			100	200	100	100	100	100	100	100	100

IF 3/28/11

PREP DATE:	03-28-11					
8270 Second Source (SS) 50ug/mL						50 IF
		Conc.		Date	CODE:	
Supplier	ID #	µg/mL	Lot #	Code	Exp.Date	µL
	8270C SS	200		10/06/10	10-06-11	25
EM Science	Methylene Chloride		47080			75
					Final Vol.	100

IF 4/18/11

GCM-150-1 ULTRA 1 mL
Lot: CF-2995
Exp: 08/31/2011
Semi-Volatiles GC/MS Tuning Standard
4 analyte(s) at 1000 µg/mL in dichloromethane
260 Smith St, No Kingstown, RI 02852 USA

Semi-volatiles GC/MS Tuning Standard
Lot #: CF-2995 - 26131
Rec: 2/17/10 MFR exp. 08/31/11

IF exp 8/31/11

IF 4/13/11

PREP DATE:	04-13-11					
SV Tune Mix 50ug/ml						IF
Exp:	08-31-11					
		Conc.		Date	CODE:	B
Supplier	ID #	µg/mL	Lot #	Code	Exp.Date	µL
U. Scientific	GCM-150	1000	CF-2995-26131	04/13/11	08-31-11	1000
EM Science	MeCl2		47080			19000
					Final Vol	20000

exp 8/31/11

IF 4/20/11

8270D PAH SIM Solution, 200 mg/L, 1 ml
110780-01
Lot # 170253 Storage ≤-10 Degrees C Expiry 3/3/13
Solv: Methylene Chloride

IF exp 4/20/12

8270D PAH SIM
Lot #: 170253 - 28485
Rec: 3/10/11 MFR exp. 3/3/2013

IF 4/20/11

8270D PAH SIM Solution, Second Source, 200 mg/L, 1 ml
110780-01-SS
Lot # 170256 Storage ≤-10 Degrees C Expiry 3/3/13
Solv: Methylene Chloride

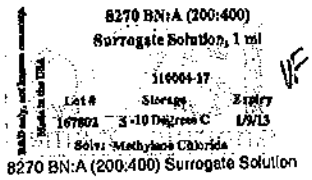
IF exp 4/20/12

8270D PAH SIM (SS)
Lot #: 170256 - 28487
Rec: 3/10/11 MFR exp. 3/3/2013

VF 8/16/11

PREP DATE:	08/16/11		exp:	08/23/11			
10ug/mL 1,2,3-TCP							
	50uL of 1000ug/mL 1,2,3 TCP into a final volume of 5mL of P&T Methanol						
	1000ug/mL 1,2,3 TCP date code:				05/27/11		
	P & T Methonal Lot #				9077-02		
PREP DATE:	08/16/11		exp:	08/23/11			
1ug/mL 1,2,3-TCP							
	5uL of 1000ug/mL 1,2,3 TCP into a final volume of 5mL of P&T Methanol						
	1000ug/mL 1,2,3 TCP date code:				05/27/11		
	P & T Methanol Lot #			JT Baker H46E44			
PREP DATE:	08/16/11		exp:	08/23/11			
2ug/mL 1,2,3-TCPd5							
	10uL of 2000ug/mL 1,2,3 TCP into a final volume of 10mL of P&T Methanol						
	2000ug/mL 1,2,3 TCP-d5 date code:				05/27/11		
	P & T Methanol Lot #				9077-02		

VF 8/22/11



VF

exp 8/22/12

8270 BN:A (200:400) Surrogate Solution
Lot #: 167802 - 29313
Rec: 8/8/11 MFR exp. 01/09/13

VF 8/22/11

PREP DATE:	08-22-11												
8270 STANDARD CURVE													
Exp:	08-29-11						5	10	20	40	50	60	80	100
		Conc.			Date									
Supplier	ID #	µg/mL	Lot #		Code	Exp.Date	µL	µL	µL	µL	µL	µL	µL	µL
	8270T Stock	200			07/26/11	01-26-12	5	5	10	20	25	30	40	50
	Surrogate Stock	VAR	167802-29313		08/22/11	08-22-12	5	5	10	20	25	30	40	50
EM Science	Methylene Chloride		47186				190	90	80	60	50	40	20	0
						Final Vol.	200	100	100	100	100	100	100	100

VF 8/22/11

PREP DATE:	08-22-11					
8270 Second Source (BB) 50ug/mL						
						50
		Conc.		Date	CODE:	
Supplier	ID #	µg/mL	Lot #	Code	Exp.Date	µL
	8270C SS	200		10/06/10	10-06-11	25
EM Science	Methylene Chloride		47186			75
					Final Vol.	100

VF 8/31/11

PREP DATE:	09-21-11													
8270 SIM STANDARD CURVE														
							0.10	0.20	0.50	1.00	5.00	10.00	50.00	100.
		Conc.		Date	CODE:		A	A	C	D	E	F	G	H
Supplier	ID #	µg/mL	Lot #	Code	Exp.Date		µL	µL	µL	µL	µL	µL	µL	µL
	8270D PAH SIM	200	170253-28485	04/20/11	04-20-12		0	0	0	0	5	5	25	50
	5.0ug/mL	5		09/21/11			0	0	10	20	0	0	0	0
	1.0ug/mL	1		09/21/11			10	20	0	0	0	0	0	0
	Surrogate Stock	VAR	167802-29313	08/22/11	08-23-11		0	0	0	0	5	5	25	50
EM Science	Methylene Chloride		47186				90	80	90	80	190	90	50	0
						Final Vol.	100	100	100	100	200	100	100	100

PREP DATE:	09-21-11						
SIM 8270 Second Source (5µg/mL)							
Exp:	10-05-11						
				Conc.	Date	CODE:	
Supplier	ID #		Lot #	µg/mL	Code	Exp. Date	µL
	8270D PAH SIM (SS)		170255-28487	200	04/20/11	04-20-12	5
	MeCl2			Lot#47186			195
					Final Volume		200

8270 BN Solution 14-4, 2,000 mg/L, 1 ml

Cat. No: 110391-01
Lot No: 158119
8270BN Solution 14-4
Lot #: 158119 - 28021
Rec: 12/16/10 MFR exp. 04/17/13

Exp: 4/17/2013
Storage: </= -10 Degrees C
Solvent: Methylene Chloride
For Research Use Only

8270 BN Solution 14-3, 2,000 mg/L, 1 ml

Cat. No: 110392-01
Lot No: 158120
8270BN Solution 14-3
Lot #: 158120 - 28023
Rec: 12/16/10 MFR exp. 04/17/13

Exp: 4/17/2013
Storage: </= -10 Degrees C
Solvent: Methylene Chloride
For Research Use Only

8270 Acid Solution 4-6, 2,000 mg/L, 1 ml

Cat. No: 110393-01
Lot No: 158121
8270B Acid Solution 4-6
Lot #: 158121 - 28025
Rec: 12/16/10 MFR exp. 04/17/13

Exp: 4/17/2013
Storage: </= -10 Degrees C
Solvent: Methylene Chloride
For Research Use Only

TCL Hazardous Substances Solution 2, 2,000 mg/L, 1 ml

Cat. No: 110394-01
Lot No: 158122
TCL Hzd. Soln. 2
Lot #: 158122 - 28018
Rec: 12/16/10 MFR exp. 04/17/13

Exp: 4/17/2013
Storage: </= -10 Degrees C
Solvent: Methylene Chloride
For Research Use Only

PAH Solution 17-3, 2,000 mg/L, 1 ml

Cat. No: 116070-02
Lot No: 158123
PAH Solution
Lot #: 158123 - 28027
Rec: 12/16/10 MFR exp. 07/17/13

Exp: 4/17/2013
Storage: </= -10 Degrees C
Solvent: Methylene Chloride
For Research Use Only

8270 Acid Solution 13-4, 2,000 mg/L, 1 ml

Cat. No: 110396-01
Lot No: 158124
8270 Acid Solution 13-4
Lot #: 158124 - 28029
Rec: 12/16/10 MFR exp. 04/17/13

Exp: 4/17/2013
Storage: </= -10 Degrees C
Solvent: Methylene Chloride
For Research Use Only

_SEP004S

Organic Extraction Worksheet

Method	SIM Separatory Funnel Extra 3510C	Extraction Set	111005A	Extraction Method	SEP004S	Units	mL

Spiked ID 1	SIM Spike 178987-29581		Surrogate ID 1	8270 SIM Surrogate 164394-27491	
Spiked ID 2			Surrogate ID 2		
Spiked ID 3			Surrogate ID 3		
Spiked ID 4			Surrogate ID 4		
Spiked ID 5			Surrogate ID 5		
Spiked ID 6			Sufficient Vol for Matrix QC:	YES	
Spiked ID 7			Ext. Start Time:		
Spiked ID 8			Ext. End Time:		
			GC Requires Extract By:	10/24/11 0:00	

pH1	2	10/05/11 1:50:00 PM	Water Bath Temp Criteria	80 °C
pH2	14	10/05/11 2:50:00 PM		
pH3				

Spiked By: DL **Date** 10/05/11 **Witnessed By:** CC **Date** 10/05/11

	Sample	Sample Container	Spike Amount	Spike ID	Surrogate Amount	Surrogate ID	Extract Amount	Final Volume	pH	Extract Date/Time	Comments
1	111005A Blk				0.025	1 equip	1000 E-WB7	1	2/1	10/05/11 13:45	
2	111005A LCS-1		0.025	1	0.025	1 equip	1000 E-WB7	1	2/1	10/05/11 13:45	
3	AY47773 MS-1	AY47773W01	0.025	1	0.025	1 equip	1020 E-WB7	1	2/1	10/05/11 13:45	65882 -- Amber Liter
4	AY47773 MSD-1	AY47773W04	0.025	1	0.025	1 equip	1020 E-WB7	1	2/1	10/05/11 13:45	65882 -- Amber Liter
5	AY47773	AY47773W06			0.025	1 equip	1020 E-WB7	1	2/1	10/05/11 13:45	65882 -- Amber Liter
6	AY47774	AY47774W02			0.025	1 equip	1000 E-WB7	1	2/1	10/05/11 13:45	65882 -- Amber Liter
7	AY47780	AY47780W03			0.025	1 equip	1010 E-WB7	1	2/1	10/05/11 13:45	65882 -- Amber Liter

thes 10/16/11

Solvent and Lot#	
MC	EMD 51137
Na2SO4	3581C501
10N NaOH	09/14/11
1+1 Acid	09/15/11

Extraction COC Transfer	
Extraction lab employee Initials	HW
GC analyst's initials	
Date	10/6/11
Time	800
Refrigerator	Work

	Technician's Initials
Scanned By	DL
Sample Preparation	DL
Extraction	DL/CC
Concentration	DL

Modified	10/05/11 12:44:24 PM

Reviewed By: HW **Date** 10/06/11

Method 8330B

Data Summary Package

EPA 8330B EXPLOSIVES-WATER

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker

Project: 112G00810 Indian Head CTO423

ARF: 65882

Sample ID: X15GW0010911

APPL ID: AY47773

Sample Collection Date: 9/28/2011

QCG: #833BW-111005AA-160735

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
EPA 8330B	NITROGLYCERIN	0.260 U	0.50	0.260	0.130	ug/L	10/5/2011	10/14/2011
EPA 8330B	SURROGATE: 1,2-DINITROBENZENE (	96.5	70-130			%	10/5/2011	10/14/2011

Quant Method: STE2_X02.M
Run #: 1012_0000070
Instrument: Statler
Sequence: 111012
Dilution Factor: 1
Initials: RSM

Printed: 11/2/2011 2:00:10 PM
APPL-F1-SC-NoMC-REG MDLs

EPA 8330B EXPLOSIVES-WATER

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker

Project: 112G00810 Indian Head CTO423

ARF: 65882

Sample ID: DUP01092811

APPL ID: AY47780

Sample Collection Date: 9/28/2011

QCG: #833BW-111005AA-160735

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
EPA 8330B	NITROGLYCERIN	0.260 U	0.50	0.260	0.130	ug/L	10/5/2011	10/14/2011
EPA 8330B	SURROGATE: 1,2-DINITROBENZENE (	101	70-130			%	10/5/2011	10/14/2011

Quant Method: STE2_X02.M
Run #: 1012_0000071
Instrument: Statler
Sequence: 111012
Dilution Factor: 1
Initials: RSM

Printed: 11/2/2011 2:00:10 PM
APPL-F1-SC-NoMC-REG MDLs

Form 2 & 8

Surrogate Recovery

Lab Name: APPL, Inc. SDG No: 65882

Case No: 65882 Date Analyzed: 10/14/2011

Matrix: WATER Instrument: Statler

APPL ID.	Client Sample No.	SURROGATE: 1,2-DINITROBENZENE (S)					
		Limits	Result	Qualifier	Limits	Result	Qualifier
AY47773	X15GW0010911	70-130	96.5				
AY47780	DUP01092811	70-130	101				
111005AA-LCS	Lab Control Spike	70-130	91.5				
AY47773-MS	Matrix Spike	70-130	96.3				
AY47773-MSD	Matrix SpikeD	70-130	95.6				
111005AA-BLK	Blank	70-130	102				

Comments: Batch: #833BW-111005AA

Matrix Spike Recoveries

EPA 8330B EXPLOSIVES-WATER

APPL ID: **111005W-47773 MS - 160735**
Batch ID: #833BW-111005AA
Sample ID: AY47773
Client ID: X15GW0010911

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Lvl ug/L	Matrix Result ug/L	SPK Result ug/L	DUP Result ug/L	SPK % Recovery	DUP % Recovery	Recovery Limits	RPD %	RPD Limits
NITROGLYCERIN	8.00	ND	9.67	9.52	121	119	70-130	1.6	20
SURROGATE: 1,2-DINITROBENZENE (S)	8.00	NA	7.70	7.65	96.3	95.6	70-130		

Comments: _____

Primary	SPK	DUP
Quant Method :	W110907.M	W110907.M
Extraction Date :	10/5/2011	10/5/2011
Analysis Date :	10/18/2011	10/18/2011
Instrument :	Waldorf	Waldorf
Run :	1017_0000062	1017_0000063
Initials :	RSM	

Printed: 11/2/2011 2:00:13 PM
APPL MSD SCII

Laboratory Control Spike Recovery
EPA 8330B EXPLOSIVES-WATER

APPL ID: **111005W-47773 LCS - 160735**
Batch ID: #833BW-111005AA

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Level ug/L	SPK Result ug/L	SPK % Recovery	Recovery Limits
NITROGLYCERIN	8.00	9.04	113	70-130
SURROGATE: 1,2-DINITROBENZENE (S)	8.00	7.32	91.5	70-130

Comments: _____

Primary	SPK
Quant Method :	W110907.M
Extraction Date :	10/5/2011
Analysis Date :	10/18/2011
Instrument :	Waldorf
Run :	1017_0000059
Initials :	RSM

Printed: 11/2/2011 2:00:11 PM

APPL Standard LCS

Method Blank

EPA 8330B EXPLOSIVES-WATER

Blank Name/QCG: **111005W-47773 - 160735**
Batch ID: #833BW-111005AA

APPL Inc.
908 North Temperance Avenu
Clovis, CA 93611

Sample Type	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
BLANK	NITROGLYCERIN	0.260 U	0.50	0.260	0.130	ug/L	10/5/2011	10/19/2011
BLANK	SURROGATE: 1,2-DINITROBENZ	102	70-130			%	10/5/2011	10/19/2011

Quant Method:W110907.M
Run #:1017_000006
Instrument:Waldorf
Sequence:111017
Initials:RSM

GC SC-Blank-REG MDLs
Printed: 11/2/2011 2:00:09 PM

EPA 8330B

Form 4

Blank Summary

Lab Name: APPL, Inc. SDG No: 65882

Case No: 65882 Date Analyzed: 10/19/2011

Matrix: WATER Instrument: Statler

Blank ID: 111005AA-BLK Time Analyzed: 0048

APPL ID.	Client Sample No.	File ID.	Date Analyzed
AY47773	X15GW0010911	1012_0000070	10/14/2011 1214
AY47780	DUP01092811	1012_0000071	10/14/2011 1255
111005AA-LCS	Lab Control Spike	1017_0000059	10/18/2011 2113
111005AA-MS	Matrix Spike	1017_0000062	10/18/2011 2305
111005AA-MSD	Matrix SpikeD	1017_0000063	10/18/2011 2343
111005AA-BLK	Blank	1017_0000065	10/19/2011 0048

Comments: Batch: #833BW-111005AA

Waldorf-8330B
W110907.M

Form 6
Initial Calibration

Lab Name: APPL, Inc. SDG No: 65882
Case No: Initial Cal. Date: 10/13/2011
Matrix: Instrument: Waldorf
Initials: HM

1013_0000003.D 1013_0000004.D 1013_0000005.D 1013_0000006.D 1013_0000007.D 1013_0000008.D 1013_0000009.D 1013_0000010.D 1013_0000012.D

		Compound	1	2	3	4	5	6	7	8	9		Avg	%RSD		
1	TM	NITROGLYCERIN	145	137	147	119	138	138	142	139	137		138	5.8	TM	
2	TM	PETN			93.1	96.7	114	119	125	123	123		113	12	TM	
		Signal #2														
1	TM	HMX #2	601	677	575	614	705	641	726	707	685		659	8.1	TM	
2	TM	RDX #2	408	459	376	401	462	413	478	470	463		437	8.5	TM	
3	TM	1,3,5-TRINITROBENZENE #2	703	782	648	687	789	716	819	807	803		750	8.3	TM	
4	S	1,2-DINITROBENZENE #2	315	341	283	294	339	308	351	351	355		326	8.2	S	
5	TM	1,3-DINITROBENZENE #2	671	756	626	651	757	686	780	780	781		721	8.6	TM	
6	TM	3,5-DINITROANILINE #2	524	584	546	531	605	602	632	624	622		586	7.1	TM	
7	TM	NITROBENZENE #2	302	343	301	293	347	314	352	357	357		329	8.1	TM	
8	TM	TETRYL #2	225	245	206	220	251	232	264	261	263		241	8.7	TM	
9	TM	2,4,6-TRINITROTOLUENE #2	310	338	281	298	339	312	353	348	348		325	7.9	TM	
10	TM	2-AMINO-4,6-DINITROTOLUENE	284	310	261	276	315	290	330	325	325		302	8.2	TM	
11	TM	4-AMINO-2,6-DINITROTOLUENE	227	247	207	220	250	230	261	256	254		239	7.8	TM	
12	TM	2,4-DINITROTOLUENE #2	288	324	270	282	324	299	337	336	336		311	8.4	TM	
13	TM	2,6-DINITROTOLUENE #2	169	181	153	158	182	168	188	188	187		175	7.7	TM	
14	TM	2-NITROTOLUENE #2	117	124	104	108	125	115	128	129	129		120	8.6	TM	
15	TM	4-NITROTOLUENE #2	111	121	103	106	123	113	126	128	127		118	8.2	TM	
16	TM	3-NITROTOLUENE #2	137	147	123	128	149	137	152	154	154		142	8.2	TM	

Form 7

Second Source Calibration

Lab Name: APPL, Inc.
Case No:
Matrix:

SDG No: G5882
Date Analyzed: 13-Oct-2011, 22:49:00
Instrument: Waldorf
Initial Cal. Date: 10/13/2011
Data File: 1013_0000014.D

		Compound	MEAN	CCRF	%D		%Drift
1	TM	NITROGLYCERIN	138	134	2.8	TM	
2	TM	TETRYL	0.0000	0.0000		TM	
3	TM	2,4,6-TRINITROTOLUENE	0.0000	0.0000		TM	
4	TM	2-AMINO-4,6-DINITROTOLUENE	0.0000	0.0000		TM	
5	TM	4-AMINO-2,6-DINITROTOLUENE	0.0000	0.0000		TM	
6	TM	2,4-DINITROTOLUENE	0.0000	0.0000		TM	
7	TM	2,6-DINITROTOLUENE	0.0000	0.0000		TM	
8	TM	PETN	113	120	6.3	TM	
	Signal #2						
1	TM	HMX	659	642	2.5	TM	
2	TM	RDX	437	423	3.2	TM	
3	TM	1,3,5-TRINITROBENZENE	750	668	11	TM	
4	S	1,2-DINITROBENZENE	326	309	5.2	S	
5	TM	1,3-DINITROBENZENE	721	722	0.16	TM	
6	TM	3,5-DINITROANILINE	586	611	4.3	TM	
7	TM	NITROBENZENE	329	324	1.5	TM	
8	TM	NITROGLYCERIN	0.0000	0.0000		TM	
9	TM	TETRYL	241	205	15	TM	
10	TM	2,4,6-TRINITROTOLUENE	325	285	12	TM	
11	TM	2-AMINO-4,6-DINITROTOLUEN	302	266	12	TM	
12	TM	4-AMINO-2,6-DINITROTOLUEN	239	252	5.4	TM	
13	TM	2,4-DINITROTOLUENE	311	320	3.0	TM	
14	TM	2,6-DINITROTOLUENE	175	163	6.6	TM	
15	TM	2-NITROTOLUENE	120	115	3.8	TM	
16	TM	4-NITROTOLUENE	118	108	8.1	TM	
17	TM	3-NITROTOLUENE	142	143	0.65	TM	
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							
31							

Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix:

SDG No: G5882
Date Analyzed: 18-Oct-2011, 16:03:13
Instrument: Waldorf
Initial Cal. Date: 10/13/2011
Data File: 1017_0000050.D

		Compound	MEAN	CCRF	%D		%Drift
1	TM	NITROGLYCERIN	137	132	3.6	TM	
2	TM	TETRYL	0.0000	0.0000		TM	
3	TM	2,4,6-TRINITROTOLUENE	0.0000	0.0000		TM	
4	TM	2-AMINO-4,6-DINITROTOLUENE	0.0000	0.0000		TM	
5	TM	4-AMINO-2,6-DINITROTOLUENE	0.0000	0.0000		TM	
6	TM	2,4-DINITROTOLUENE	0.0000	0.0000		TM	
7	TM	2,6-DINITROTOLUENE	0.0000	0.0000		TM	
8	TM	PETN	111	115	4.0	TM	
	Signal #2						
1	TM	HMX	671	683	1.9	TM	
2	TM	RDX	449	458	2.0	TM	
3	TM	1,3,5-TRINITROBENZENE	775	800	3.2	TM	
4	S	1,2-DINITROBENZENE	348	350	0.49	S	
5	TM	1,3-DINITROBENZENE	747	761	1.8	TM	
6	TM	3,5-DINITROANILINE	573	589	2.8	TM	
7	TM	NITROBENZENE	323	339	5.0	TM	
8	TM	NITROGLYCERIN	0.0000	0.0000		TM	
9	TM	TETRYL	250	260	4.0	TM	
10	TM	2,4,6-TRINITROTOLUENE	335	340	1.5	TM	
11	TM	2-AMINO-4,6-DINITROTOLUEN	310	312	0.77	TM	
12	TM	4-AMINO-2,6-DINITROTOLUEN	245	246	0.26	TM	
13	TM	2,4-DINITROTOLUENE	321	325	1.2	TM	
14	TM	2,6-DINITROTOLUENE	181	181	0.49	TM	
15	TM	2-NITROTOLUENE	116	122	4.5	TM	
16	TM	4-NITROTOLUENE	118	122	3.4	TM	
17	TM	3-NITROTOLUENE	139	145	4.5	TM	
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Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix:

SDG No: G5682
Date Analyzed: 19-Oct-2011, 00:20:34
Instrument: Waldorf
Initial Cal. Date: 10/13/2011
Data File: 1017_0000064.D

		Compound	MEAN	CCRF	%D		%Drift
1	TM	NITROGLYCERIN	137	132	3.6	TM	
2	TM	TETRYL	0.0000	0.0000		TM	
3	TM	2,4,6-TRINITROTOLUENE	0.0000	0.0000		TM	
4	TM	2-AMINO-4,6-DINITROTOLUENE	0.0000	0.0000		TM	
5	TM	4-AMINO-2,6-DINITROTOLUENE	0.0000	0.0000		TM	
6	TM	2,4-DINITROTOLUENE	0.0000	0.0000		TM	
7	TM	2,6-DINITROTOLUENE	0.0000	0.0000		TM	
8	TM	PETN	111	116	4.8	TM	
	Signal #2						
1	TM	HMX	671	687	2.5	TM	
2	TM	RDX	449	458	2.0	TM	
3	TM	1,3,5-TRINITROBENZENE	775	798	2.9	TM	
4	S	1,2-DINITROBENZENE	348	351	0.88	S	
5	TM	1,3-DINITROBENZENE	747	760	1.7	TM	
6	TM	3,5-DINITROANILINE	573	590	3.0	TM	
7	TM	NITROBENZENE	323	334	3.3	TM	
8	TM	NITROGLYCERIN	0.0000	0.0000		TM	
9	TM	TETRYL	250	261	4.4	TM	
10	TM	2,4,6-TRINITROTOLUENE	335	341	1.6	TM	
11	TM	2-AMINO-4,6-DINITROTOLUEN	310	314	1.3	TM	
12	TM	4-AMINO-2,6-DINITROTOLUEN	246	247	0.82	TM	
13	TM	2,4-DINITROTOLUENE	321	326	1.4	TM	
14	TM	2,6-DINITROTOLUENE	181	182	0.73	TM	
15	TM	2-NITROTOLUENE	116	119	2.3	TM	
16	TM	4-NITROTOLUENE	118	120	2.2	TM	
17	TM	3-NITROTOLUENE	139	143	2.6	TM	
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Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix:

SDG No: G5882
Date Analyzed: 19-Oct-2011, 07:40:00
Instrument: Waldorf
Initial Cal. Date: 10/13/2011
Data File: 1017_0000076.D

		Compound	MEAN	CCRF	%D		%Drift
1	TM	NITROGLYCERIN	137	131	3.8	TM	
2	TM	TETRYL	0.0000	0.0000		TM	
3	TM	2,4,6-TRINITROTOLUENE	0.0000	0.0000		TM	
4	TM	2-AMINO-4,6-DINITROTOLUENE	0.0000	0.0000		TM	
5	TM	4-AMINO-2,6-DINITROTOLUENE	0.0000	0.0000		TM	
6	TM	2,4-DINITROTOLUENE	0.0000	0.0000		TM	
7	TM	2,6-DINITROTOLUENE	0.0000	0.0000		TM	
8	TM	PETN	111	116	3.8	TM	
	Signal #2						
1	TM	HMX	671	684	2.0	TM	
2	TM	RDX	449	454	1.1	TM	
3	TM	1,3,5-TRINITROBENZENE	775	796	2.7	TM	
4	S	1,2-DINITROBENZENE	348	351	1.0	S	
5	TM	1,3-DINITROBENZENE	747	759	1.5	TM	
6	TM	3,5-DINITROANILINE	573	586	2.3	TM	
7	TM	NITROBENZENE	323	328	1.4	TM	
8	TM	NITROGLYCERIN	0.0000	0.0000		TM	
9	TM	TETRYL	250	260	4.1	TM	
10	TM	2,4,6-TRINITROTOLUENE	335	340	1.4	TM	
11	TM	2-AMINO-4,6-DINITROTOLUEN	310	312	0.67	TM	
12	TM	4-AMINO-2,6-DINITROTOLUEN	245	246	0.16	TM	
13	TM	2,4-DINITROTOLUENE	321	326	1.3	TM	
14	TM	2,6-DINITROTOLUENE	181	182	0.81	TM	
15	TM	2-NITROTOLUENE	116	116	0.23	TM	
16	TM	4-NITROTOLUENE	118	118	0.36	TM	
17	TM	3-NITROTOLUENE	139	140	0.52	TM	
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Form 6
Initial Calibration

Lab Name: APPL, Inc. SDG No: 65882
Case No: Initial Cal. Date: 10/2/2011
Matrix: Instrument: Statler
Initials:

			1002_000012.D 1002_000011.D	1002_000014.D 1002_000013.D	1002_000016.D 1002_000015.D	1002_000018.D 1002_000017.D	1002_000020.D 1002_000019.D	1002_000022.D 1002_000021.D	1002_000024.D 1002_000023.D	1002_000026.D 1002_000025.D	1002_000028.D 1002_000027.D					
		Compound	1	2	3	4	5	6	7	8	9		Avg	%RSD		
	TM	NITROGLYCERIN #1	19.9	19.0	18.1	17.2	17.2	16.9	17.2	17.0	17.0		18	6.1	TM	
	TM	3,5-DINITROANILINE #1	77.4	50.5	57.4	55.8	56.4	55.9	57.7	56.7	55.8		58	13	TM	
	TM	PETN #1					18.3	17.9	18.9	18.5	18.5		18	2.0	TM	
		Signal #2														
	TM	HMX #2		68.9	56.8	50.7	48.0	46.7	46.8	46.3	46.6		51	15	TM	
	TM	RDX #2	45.4	42.3	39.7	38.6	38.0	37.5	37.9	37.7	37.8		39	6.8	TM	
	TM	1,3,5-TRINITROBENZENE #2	95.3	92.0	91.0	90.8	90.7	90.3	91.9	91.8	92.7		92	1.6	TM	
	S	1,2-DINITROBENZENE #2	44.4	42.3	42.8	41.4	41.0	41.0	41.5	41.6	41.7		42	2.6	S	
	TM	1,3-DINITROBENZENE #2	97.2	93.7	94.5	93.5	93.5	93.0	94.5	94.7	95.2		94	1.3	TM	
	TM	NITROBENZENE #2	53.9	48.6	48.5	47.1	46.6	46.3	46.9	47.1	47.5		48	4.9	TM	
	TM	2,4,6-TRINITROTOLUENE #2	54.2	50.9	49.2	48.2	48.2	47.6	48.2	48.2	48.5		49	4.2	TM	
	TM	TETRYL #2	36.4	39.6	36.5	35.0	35.2	34.5	35.0	34.9	35.3		36	4.4	TM	
	TM	2,6-DINITROTOLUENE #2	32.6	29.6	30.9	28.1	28.6	27.6	27.9	28.0	28.2		29	5.8	TM	
	TM	2,4-DINITROTOLUENE #2	52.4	50.3	53.2	49.3	49.8	48.8	49.5	49.7	50.0		50	2.9	TM	
	TM	2-NITROTOLUENE #2	12.7	19.9	22.0	17.6	18.2	17.2	17.5	17.5	17.7		18	14	TM	
	TM	4-NITROTOLUENE #2	21.7	16.3	14.8	16.0	16.0	15.5	15.5	15.6	16.0		16	12	TM	
	TM	3-NITROTOLUENE #2			18.9	19.4	19.2	18.9	19.5	19.4	19.7		19	1.6	TM	
	TM	4-AMINO-2,6-DINITROTOLUENE	33.0	38.7	36.9	32.4	32.8	31.3	32.0	31.7	32.2		33	7.7	TM	
	TM	2-AMINO-4,6-DINITROTOLUENE	33.5	36.8	36.4	36.7	37.1	35.6	36.2	35.7	35.9		36	2.9	TM	

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Form 7

Second Source Calibration

Lab Name: APPL, Inc.
Case No:
Matrix:

SDG No: L5882
Date Analyzed: 03-Oct-2011, 10:11:37
Instrument: STATLER
Initial Cal. Date: 10/2/2011
Data File: 1002_000029-30.D

		Compound	MEAN	CCRF	%D		%Drift
1	TM	NITROGLYCERIN #1	17.7	17.7	0.00	TM	
2	TM	3,5-DINITROANILINE #1	58.2	61.1	5.0	TM	
3	TM	PETN #1	18.4	18.2	1.3	TM	
4							
5	TM	HMX #2	51.4	47.0	8.5	TM	
6	TM	RDX #2	39.5	38.1	3.3	TM	
7	TM	1,3,5-TRINITROBENZENE #2	91.8	88.6	3.5	TM	
8	S	1,2-DINITROBENZENE #2	42.0	41.5	1.1	S	
9	TM	1,3-DINITROBENZENE #2	94.4	90.2	4.5	TM	
10	TM	NITROBENZENE #2	48.0	47.6	0.83	TM	
11	TM	2,4,6-TRINITROTOLUENE #2	49.2	45.4	7.9	TM	
12	TM	TETRYL #2	35.8	32.0	11	TM	
13	TM	2,6-DINITROTOLUENE #2	29.1	28.7	1.4	TM	
14	TM	2,4-DINITROTOLUENE #2	50.3	50.1	0.55	TM	
15	TM	2-NITROTOLUENE #2	17.8	18.2	2.0	TM	
16	TM	4-NITROTOLUENE #2	16.4	15.6	5.5	TM	
17	TM	3-NITROTOLUENE #2	19.3	20.1	4.5	TM	
18	TM	4-AMINO-2,6-DINITROTOLUENE #2	33.5	34.3	2.6	TM	
19	TM	2-AMINO-4,6-DINITROTOLUENE #2	36.0	33.7	6.2	TM	
20							
21							
22							
23							
24							
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32							
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40							
		Average			4.2		

Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix:

SDG No: L6882-
Date Analyzed: 14-Oct-2011, 11:31:10
Instrument: Statler
Initial Cal. Date: 10/2/2011
Data File: 1012_0000068-69.D

		Compound	MEAN	CCRF	%D		%Drift
1	TM	RDX #1	0.0000	0.0000		TM	
2	TM	1,3,5-TRINITROBENZENE #1	0.0000	0.0000		TM	
3	S	1,2-DINITROBENZENE #1	0.0000	0.0000		S	
4	TM	1,3-DINITROBENZENE #1	0.0000	0.0000		TM	
5	TM	NITROBENZENE #1	0.0000	0.0000		TM	
6	TM	2,4,6-TRINITROTOLUENE #1	0.0000	0.0000		TM	
7	TM	TETRYL #1	0.0000	0.0000		TM	
8	TM	**NITROGLYCERIN #1**	17.7	15.4	13	TM	
9	TM	2,6-DINITROTOLUENE #1	0.0000	0.0000		TM	
10	TM	2,4-DINITROTOLUENE #1	0.0000	0.0000		TM	
11	TM	2-NITROTOLUENE #1	0.0000	0.0000		TM	
12	TM	3,5-DINITROANILINE #1	58.2	52.3	10	TM	
13	TM	4-NITROTOLUENE #1	0.0000	0.0000		TM	
14	TM	**PETN #1**	18.4	16.5	10	TM	
	Signal #2						
1	TM	HMX #2	51.4	47.8	6.8	TM	
2	TM	RDX #2	39.5	38.9	1.4	TM	
3	TM	1,3,5-TRINITROBENZENE #2	91.8	94.4	2.8	TM	
4	S	1,2-DINITROBENZENE #2	42.0	42.4	1.1	S	
5	TM	1,3-DINITROBENZENE #2	94.4	95.9	1.6	TM	
6	TM	NITROBENZENE #2	48.0	46.4	3.3	TM	
7	TM	2,4,6-TRINITROTOLUENE #2	49.2	49.6	0.62	TM	
8	TM	TETRYL #2	35.8	36.4	1.7	TM	
9	TM	NITROGLYCERIN #2	0.0000	0.0000		TM	
10	TM	2,6-DINITROTOLUENE #2	29.1	28.5	2.0	TM	
11	TM	2,4-DINITROTOLUENE #2	50.3	50.9	1.2	TM	
12	TM	2-NITROTOLUENE #2	17.8	17.2	3.7	TM	
13	TM	4-NITROTOLUENE #2	16.4	15.5	5.1	TM	
14	TM	**3-NITROTOLUENE #2**	19.3	20.0	3.9	TM	
15	TM	**4-AMINO-2,6-DINITROTOLUENE #2**	33.5	34.1	1.8	TM	
16	TM	2-AMINO-4,6-DINITROTOLUENE #2	36.0	36.6	1.6	TM	
17	TM	PETN #2	0.0000	0.0000		TM	
18							
19							
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Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix:

SDG No: L5882
Date Analyzed: 14-Oct-2011, 14:18:42
Instrument: Statler
Initial Cal. Date: 10/2/2011
Data File: 1012_0000072-73.D

		Compound	MEAN	CCRF	%D		%Drift
1	TM	RDX #1	0.0000	0.0000		TM	
2	TM	1,3,5-TRINITROBENZENE #1	0.0000	0.0000		TM	
3	S	1,2-DINITROBENZENE #1	0.0000	0.0000		S	
4	TM	1,3-DINITROBENZENE #1	0.0000	0.0000		TM	
5	TM	NITROBENZENE #1	0.0000	0.0000		TM	
6	TM	2,4,6-TRINITROTOLUENE #1	0.0000	0.0000		TM	
7	TM	TETRYL #1	0.0000	0.0000		TM	
8	TM	NITROGLYCERIN #1	17.7	15.5	13	TM	
9	TM	2,6-DINITROTOLUENE #1	0.0000	0.0000		TM	
10	TM	2,4-DINITROTOLUENE #1	0.0000	0.0000		TM	
11	TM	2-NITROTOLUENE #1	0.0000	0.0000		TM	
12	TM	3,5-DINITROANILINE #1	58.2	52.5	9.8	TM	
13	TM	PETN #1	18.4	16.6	9.9	TM	
	Signal #2						
1	TM	HMX #2	51.4	47.9	6.7	TM	
2	TM	RDX #2	39.5	39.0	1.1	TM	
3	TM	1,3,5-TRINITROBENZENE #2	91.8	94.6	3.0	TM	
4	S	1,2-DINITROBENZENE #2	42.0	42.6	1.4	S	
5	TM	1,3-DINITROBENZENE #2	94.4	96.0	1.7	TM	
6	TM	NITROBENZENE #2	48.0	46.3	3.6	TM	
7	TM	2,4,6-TRINITROTOLUENE #2	49.2	49.6	0.74	TM	
8	TM	TETRYL #2	35.8	36.6	2.3	TM	
9	TM	NITROGLYCERIN #2	0.0000	0.0000		TM	
10	TM	2,6-DINITROTOLUENE #2	29.1	28.4	2.1	TM	
11	TM	2,4-DINITROTOLUENE #2	50.3	51.0	1.3	TM	
12	TM	2-NITROTOLUENE #2	17.8	17.0	4.6	TM	
13	TM	4-NITROTOLUENE #2	16.4	15.4	5.7	TM	
14	TM	3-NITROTOLUENE #2	19.3	19.8	2.5	TM	
15	TM	4-AMINO-2,6-DINITROTOLUENE #2	33.5	34.2	2.1	TM	
16	TM	2-AMINO-4,6-DINITROTOLUENE #2	36.0	36.5	1.4	TM	
17							
18							
19							
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23							
24							
25							
26							

Injection Log

Directory: H:\WALDORF\CHEM32\1\DATA\111013

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1	0	1013_0000003.D		8830B_CB 0.005 PPM 10/13/11		10/13/2011 15:57
2	0	1013_0000004.D		8830B_CB 0.01 PPM 10/13/11		10/13/2011 16:34
3	0	1013_0000005.D		8830B_CB 0.02 PPM 10/13/11		10/13/2011 17:12
4	0	1013_0000006.D		8830B_CB 0.05 PPM 10/13/11		10/13/2011 17:49
5	0	1013_0000007.D		8830B_CB 0.1 PPM 10/13/11		10/13/2011 18:26
6	0	1013_0000008.D		8830B_CB 0.2 PPM 10/13/11		10/13/2011 19:04
7	0	1013_0000009.D		8830B_CB 0.5 PPM 10/13/11		10/13/2011 19:41
8	0	1013_0000010.D		8830B_CB 1.0 PPM 10/13/11		10/13/2011 20:19
9	0	1013_0000011.D		8830B_MX-A 2.0 PPM 10/13/11		10/13/2011 20:56
10	0	1013_0000012.D		8830B_MX-B 2.0 PPM 10/13/11		10/13/2011 21:34
11	0	1013_0000014.D		8830B_SS 1.0 PPM 10/13/11		10/13/2011 22:49
12	0	1017_0000050.D		8330_CCV 1.0 PPM 10/17/11		10/18/2011 16:03
13	0	1017_0000059.D	0.016	111005WLCS1A 0.016 DF 10/05/11	water	10/18/2011 21:13
14	0	1017_0000062.D	0.016	AY47773W10_MS-1 0.016 DF 10/05/11	water	10/18/2011 23:05
15	0	1017_0000063.D	0.016	AY47773W10_MSD-1 0.016 DF 10/05/11	water	10/18/2011 23:43
16	0	1017_0000064.D		8330_CCV 1.0 PPM 10/17/11		10/19/2011 00:20
17	0	1017_0000065.D	0.016	111005WBLK1A 0.016 DF 10/05/11	water	10/19/2011 00:48
18	0	1017_0000076.D		8330_CCV 1.0 PPM 10/17/11		10/19/2011 07:40

Injection Log

Directory: H:\STATLER\CHEM32\1\DATA\111002

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1	0	1002_000011.D		8330MXA_CB 0.005 PPM 10/01/11		10/02/2011 21:44
2	0	1002_000012.D		8330MXB_CB 0.005 PPM 10/01/11		10/02/2011 22:26
3	0	1002_000013.D		8330MXA_CB 0.010 PPM 10/01/11		10/02/2011 23:07
4	0	1002_000014.D		8330MXB_CB 0.010 PPM 10/01/11		10/02/2011 23:49
5	0	1002_000015.D		8330MXA_CB 0.020 PPM 10/01/11		10/03/2011 00:30
6	0	1002_000016.D		8330MXB_CB 0.020 PPM 10/01/11		10/03/2011 01:12
7	0	1002_000017.D		8330MXA_CB 0.050 PPM 10/01/11		10/03/2011 01:53
8	0	1002_000018.D		8330MXB_CB 0.050 PPM 10/01/11		10/03/2011 02:35
9	0	1002_000019.D		8330MXA_CB 0.10 PPM 10/01/11		10/03/2011 03:16
10	0	1002_000020.D		8330MXB_CB 0.10 PPM 10/01/11		10/03/2011 03:58
11	0	1002_000021.D		8330MXA_CB 0.20 PPM 10/01/11		10/03/2011 04:39
12	0	1002_000022.D		8330MXB_CB 0.20 PPM 10/01/11		10/03/2011 05:21
13	0	1002_000023.D		8330MXA_CB 0.50 PPM 10/01/11		10/03/2011 06:02
14	0	1002_000024.D		8330MXB_CB 0.50 PPM 10/01/11		10/03/2011 06:44
15	0	1002_000025.D		8330MXA_CB 1.0 PPM 10/01/11		10/03/2011 07:25
16	0	1002_000026.D		8330MXB_CB 1.0 PPM 10/01/11		10/03/2011 08:07
17	0	1002_000027.D		8330MXA_CB 2.0 PPM 10/01/11		10/03/2011 08:48
18	0	1002_000028.D		8330MXB_CB 2.0 PPM 10/01/11		10/03/2011 09:30
19	0	1002_000029.D		8330MXA_SS 1.0 PPM 10/01/11		10/03/2011 10:11
20	0	1002_000030.D		8330MXB_SS 1.0 PPM 10/01/11		10/03/2011 10:53
21	0	1012_0000068.D		8330MXA_CCV 1.0 PPM 10/12/11		10/14/2011 10:49
22	0	1012_0000069.D		8330MXB_CCV 1.0 PPM 10/12/11		10/14/2011 11:31
23	0	1012_0000070.D	0.016	AY47773W11 0.016 DF 10/05/11	water	10/14/2011 12:14
24	0	1012_0000071.D	0.016	AY47780W01 0.016 DF 10/05/11	water	10/14/2011 12:55
25	0	1012_0000072.D		8330MXA_CCV 1.0 PPM 10/12/11		10/14/2011 13:37
26	0	1012_0000073.D		8330MXB_CCV 1.0 PPM 10/12/11		10/14/2011 14:18

Raw Sample Data

Quantitation Report (QT Reviewed)

Data Path : H:\STATLER\CHEM32\1\DATA\111012\
Data File : 1012_0000070.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 14-Oct-2011, 12:14:12
Operator : MP
Sample : AY47773W11 0.016 DF 10/05/11
Misc : water
ALS Vial : 8322 Sample Multiplier: 0.016

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 14 13:59:18 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111012\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Oct 13 16:09:25 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	R.T.	Response	Conc	Units	
	System Monitoring Compounds					
4) S	1,2-DINITROBENZENE #1	0.000	0	N.D.	ppb	
23) S	1,2-DINITROBENZENE #2	7.870	101191	0.965	ppb	
	Target Compounds					
1) TM	HMX #1	3.906	336557	NoCal	ppb	
2) TM	RDX #1	6.062	25161	NoCal	ppb	
3) TM	1,3,5-TRINITROBENZENE #1	6.589	12086	NoCal	ppb	
5) TM	1,3-DINITROBENZENE #1	8.343	360	NoCal	ppb	
6) TM	NITROBENZENE #1	8.932	7296	NoCal	ppb	
7) TM	2,4,6-TRINITROTOLUENE #1	11.379	8824	NoCal	ppb	
8) TM	TETRYL #1	11.947	11438	NoCal	ppb	
9) TM	NITROGLYCERIN #1	0.000	0	N.D.	ppb	d<3.5/N
10) TM	2,6-DINITROTOLUENE #1	13.457	24500	NoCal	ppb	
11) TM	2,4-DINITROTOLUENE #1	13.974	28884	NoCal	ppb	
12) TM	2-NITROTOLUENE #1	15.599	34546	NoCal	ppb	
13) TM	3,5-DINITROANILINE #1	0.000	0	N.D.	ppb	d NT
14) TM	4-NITROTOLUENE #1	16.746f	42310	NoCal	ppb	
15) TM	3-NITROTOLUENE #1	18.563f	224509	NoCal	ppb	
16) TM	4-AMINO-2,6-DINITROTO...	18.563	224509	NoCal	ppb	
17) TM	2-AMINO-4,6-DINITROTO...	0.000	0	N.D.	ppb	
18) TM	PETN #1	0.000	0	N.D.	ppb	d
20) TM	HMX #2	0.000	0	N.D.	ppb	d
21) TM	RDX #2	0.000	0	N.D.	ppb	d
22) TM	1,3,5-TRINITROBENZENE #2	0.000	0	N.D.	ppb	d
24) TM	1,3-DINITROBENZENE #2	0.000	0	N.D.	ppb	
25) TM	NITROBENZENE #2	0.000	0	N.D.	ppb	d
26) TM	2,4,6-TRINITROTOLUENE #2	0.000	0	N.D.	ppb	d
27) TM	TETRYL #2	0.000	0	N.D.	ppb	d
28) TM	NITROGLYCERIN #2	12.011	577	NoCal	ppb	
29) TM	2,6-DINITROTOLUENE #2	0.000	0	N.D.	ppb	d
30) TM	2,4-DINITROTOLUENE #2	0.000	0	N.D.	ppb	d
31) TM	2-NITROTOLUENE #2	0.000	0	N.D.	ppb	d
32) TM	3,5-DINITROANILINE #2	16.528	1551	NoCal	ppb	
33) TM	4-NITROTOLUENE #2	0.000	0	N.D.	ppb	d
34) TM	3-NITROTOLUENE #2	0.000	0	N.D.	ppb	d
35) TM	4-AMINO-2,6-DINITROTO...	0.000	0	N.D.	ppb	d
36) TM	2-AMINO-4,6-DINITROTO...	0.000	0	N.D.	ppb	d
37) TM	PETN #2	23.068	193862	NoCal	ppb	

HM 10/14/11

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\STATLER\CHEM32\1\DATA\111012\
Data File : 1012_0000070.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 14-Oct-2011, 12:14:12
Operator : MP
Sample : AY47773W11 0.016 DF 10/05/11
Misc : water
ALS Vial : 8322 Sample Multiplier: 0.016

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 14 13:59:18 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111012\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Oct 13 16:09:25 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

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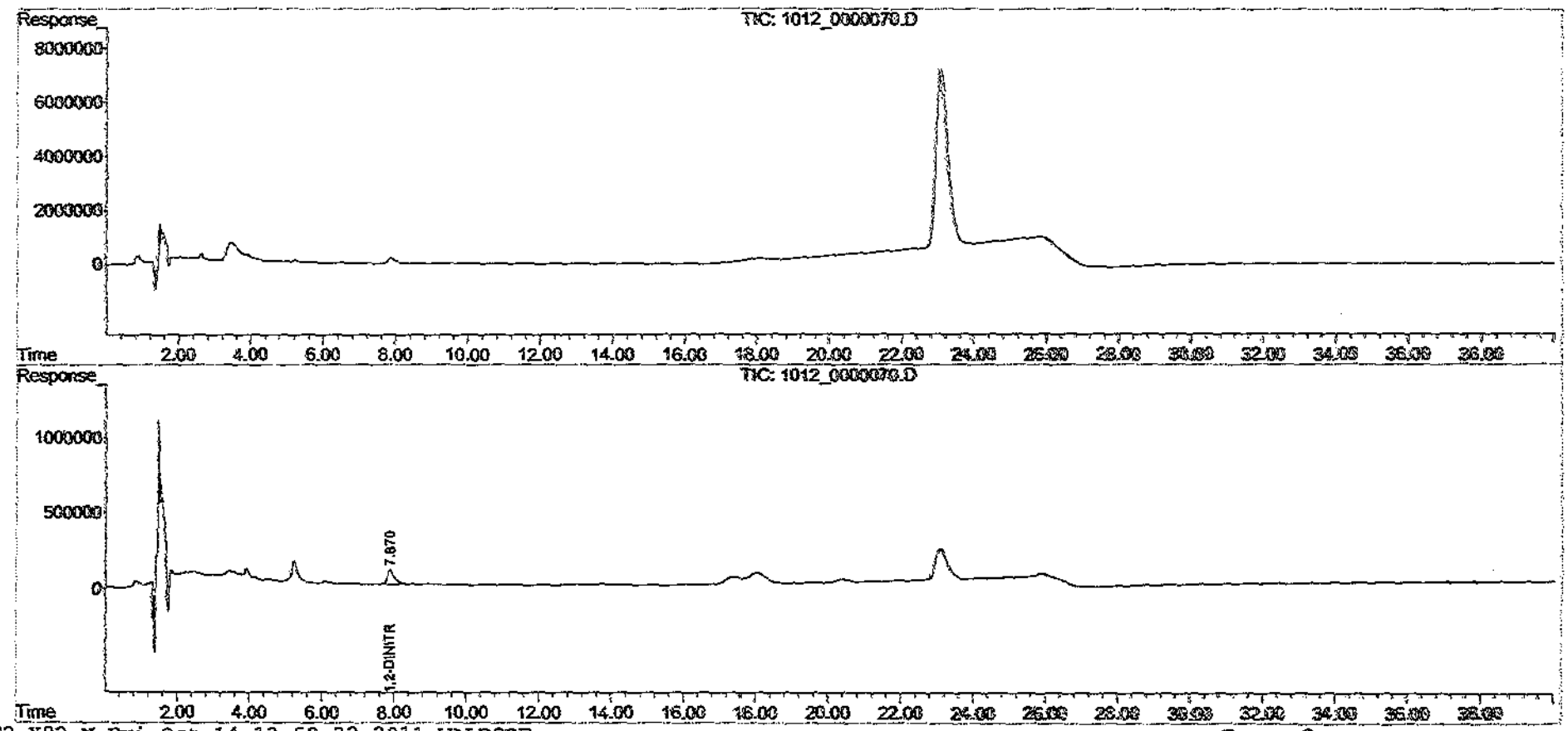


Quantitation Report (QT Reviewed)

Data Path : H:\STATLER\CHEM32\1\DATA\111012\
Data File : 1012_0000071.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 14-Oct-2011, 12:55:43
Operator : MP
Sample : AY47780W01 0.016 DF 10/05/11
Misc : water
ALS Vial : 8323 Sample Multiplier: 0.016

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 14 14:00:13 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111012\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Oct 13 16:09:25 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	R.T.	Response	Conc	Units	
	System Monitoring Compounds					
4)	S 1,2-DINITROBENZENE #1	0.000	0	N.D.	ppb	
23)	S 1,2-DINITROBENZENE #2	7.876	106108	1.012	ppb	
	Target Compounds					
1)	TM HMX #1	3.912	465666	NoCal	ppb	
2)	TM RDX #1	6.063	58776	NoCal	ppb	
3)	TM 1,3,5-TRINITROBENZENE #1	6.643	32403	NoCal	ppb	
5)	TM 1,3-DINITROBENZENE #1	0.000	0	N.D.	ppb	
6)	TM NITROBENZENE #1	8.904	8901	NoCal	ppb	
7)	TM 2,4,6-TRINITROTOLUENE #1	11.401	1107	NoCal	ppb	
8)	TM TETRYL #1	11.975	1964	NoCal	ppb	
9)	TM NITROGLYCERIN #1	0.000	0	N.D.	ppb	d<3.5/N
10)	TM 2,6-DINITROTOLUENE #1	13.413	6792	NoCal	ppb	
11)	TM 2,4-DINITROTOLUENE #1	13.994	7870	NoCal	ppb	
12)	TM 2-NITROTOLUENE #1	15.658	863	NoCal	ppb	
13)	TM 3,5-DINITROANILINE #1	0.000	0	N.D.	ppb	d NT
14)	TM 4-NITROTOLUENE #1	16.723f	450	NoCal	ppb	
15)	TM 3-NITROTOLUENE #1	18.539f	3313	NoCal	ppb	
16)	TM 4-AMINO-2,6-DINITROTO...	18.539	3313	NoCal	ppb	
17)	TM 2-AMINO-4,6-DINITROTO...	0.000	0	N.D.	ppb	
18)	TM PETN #1	0.000	0	N.D.	ppb	d
20)	TM HMX #2	0.000	0	N.D.	ppb	d
21)	TM RDX #2	0.000	0	N.D.	ppb	d
22)	TM 1,3,5-TRINITROBENZENE #2	0.000	0	N.D.	ppb	
24)	TM 1,3-DINITROBENZENE #2	0.000	0	N.D.	ppb	
25)	TM NITROBENZENE #2	0.000	0	N.D.	ppb	d
26)	TM 2,4,6-TRINITROTOLUENE #2	0.000	0	N.D.	ppb	d
27)	TM TETRYL #2	0.000	0	N.D.	ppb	d
28)	TM NITROGLYCERIN #2	12.000	425	NoCal	ppb	
29)	TM 2,6-DINITROTOLUENE #2	0.000	0	N.D.	ppb	d
30)	TM 2,4-DINITROTOLUENE #2	0.000	0	N.D.	ppb	d
31)	TM 2-NITROTOLUENE #2	0.000	0	N.D.	ppb	d
32)	TM 3,5-DINITROANILINE #2	16.223	6493	NoCal	ppb	
33)	TM 4-NITROTOLUENE #2	0.000	0	N.D.	ppb	d
34)	TM 3-NITROTOLUENE #2	0.000	0	N.D.	ppb	d
35)	TM 4-AMINO-2,6-DINITROTO...	0.000	0	N.D.	ppb	d
36)	TM 2-AMINO-4,6-DINITROTO...	0.000	0	N.D.	ppb	d
37)	TM PETN #2	23.069	394078	NoCal	ppb	

HM 10/14/11

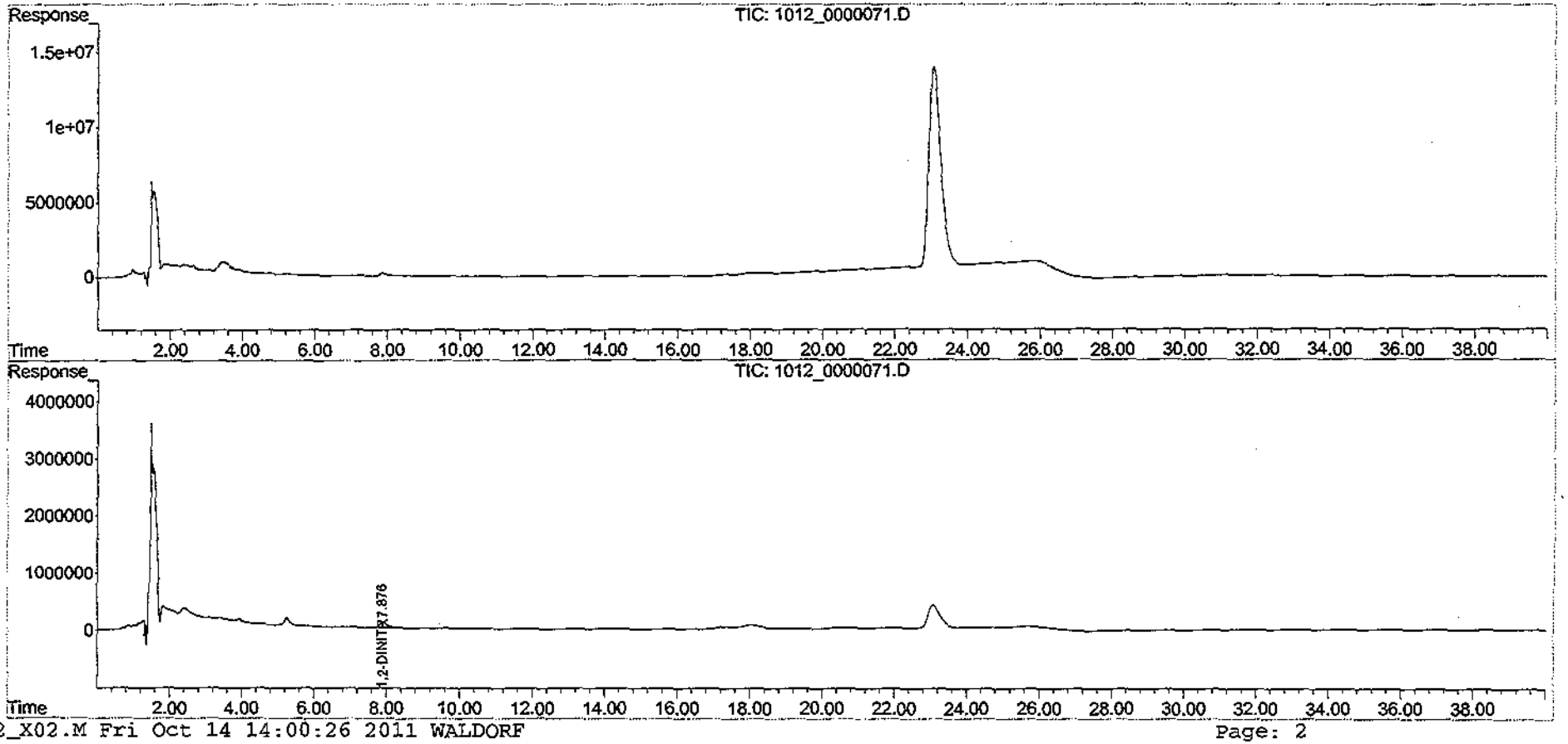
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT

Data Path : H:\STATLER\CHEM32\1\DATA\111012\
Data File : 1012_0000071.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 14-Oct-2011, 12:55:43
Operator : MP
Sample : AY47780W01 0.016 DF 10/05/11
Misc : water
ALS Vial : 8323 Sample Multiplier: 0.016

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 14 14:00:13 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111012\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Oct 13 16:09:25 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111017\
Data File : 1017_0000065.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 19-Oct-2011, 00:48:05
Operator : mp
Sample : 111005WBLK1A 0.016 DF 10/05/11
Misc : water
ALS Vial : 8448 Sample Multiplier: 0.016

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 19 16:29:37 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111017\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Fri Oct 14 10:08:44 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppb	ppb
	System Monitoring Compounds						
4) S	1,2-DINIT...	0.000	3.712	0	889705	N.D.	1.023 #
Spiked Amount	1.000			Recovery	=	0.00%	102.30%
	Target Compounds						
1) TM	HMX	0.000	0.000	0	0	N.D.	N.D.
2) TM	RDX	0.000	0.000	0	0	N.D.	N.D.
3) TM	1,3,5-TRI...	0.000	0.000	0	0	N.D.	N.D.
5) TM	1,3-DINIT...	0.000	0.000	0	0	N.D.	N.D.
6) TM	3,5-DINIT...	0.000	0.000	0	0	N.D.	N.D.
7) TM	NITROBENZENE	0.000	0.000	0	0	N.D.	N.D.
8) TM	NITROGLYC...	0.000	0.000	0	0	N.D. d	N.D.<MDL
9) TM	TETRYL	6.768	0.000	4050	0	NoCal	N.D.
10) TM	2,4,6-TRI...	7.172	0.000	6369	0	NoCal	N.D.
11) TM	2-AMINO-4...	7.550	0.000	9803	0	NoCal	N.D.
12) TM	4-AMINO-2...	7.790	0.000	12579	0	NoCal	N.D. d<MDL
13) TM	2,4-DINIT...	8.854	0.000	4512	0	NoCal	N.D.
14) TM	2,6-DINIT...	9.273	0.000	6743	0	NoCal	N.D.
15) TM	2-NITROTO...	0.000	0.000	0	0	N.D.	N.D.
16) TM	4-NITROTO...	0.000	0.000	0	0	N.D.	N.D.
17) TM	3-NITROTO...	0.000	0.000	0	0	N.D.	N.D.
18) TM	PETN	0.000	0.000	0	0	N.D.	N.D.

HM 10/28/11

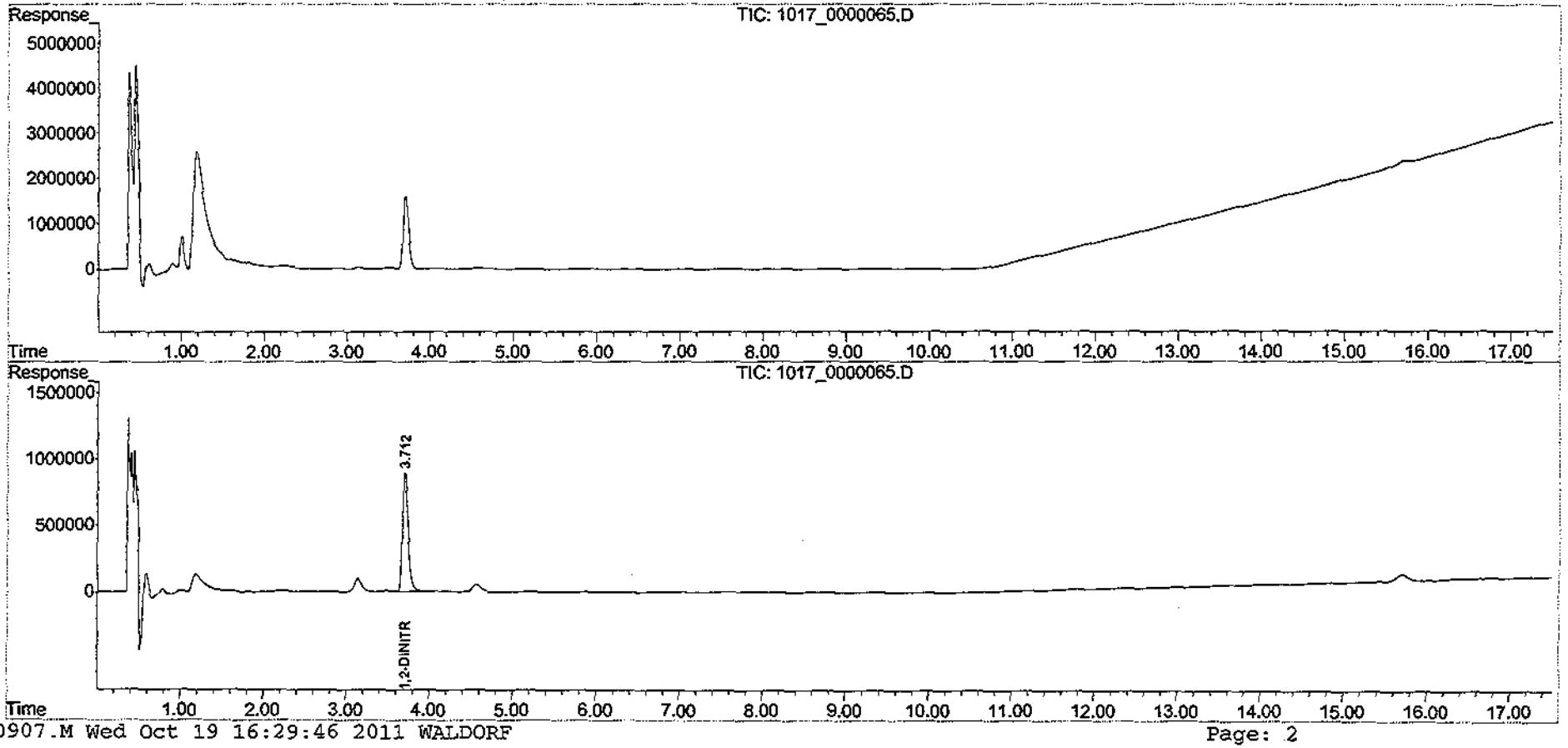
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111017\
Data File : 1017_0000065.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 19-Oct-2011, 00:48:05
Operator : mp
Sample : 111005WBLK1A 0.016 DF 10/05/11
Misc : water
ALS Vial : 8448 Sample Multiplier: 0.016

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 19 16:29:37 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111017\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Fri Oct 14 10:08:44 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



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Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111017\
Data File : 1017_0000059.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 18-Oct-2011, 21:13:21
Operator : mp
Sample : 111005WLCS1A 0.016 DF 10/05/11
Misc : water
ALS Vial : 8388 Sample Multiplier: 0.016

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 19 12:40:53 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111017\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Fri Oct 14 10:08:44 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppb	ppb	
	System Monitoring Compounds							
4)	S 1,2-DINIT...	0.000	3.711	0	6364499	N.D.	7.318	#
	Spiked Amount 1.000			Recovery	=	0.00%	731.80%	
	Target Compounds							
1)	TM HMX	0.000	0.960	0	14242325	N.D.	8.495	#
2)	TM RDX	0.000	1.813	→ 0	9202390	N.D.	8.199	#
3)	TM 1,3,5-TRI...	0.000	2.923	0	16111827	N.D.	8.317	#
5)	TM 1,3-DINIT...	0.000	3.860	0	15373590	N.D.	8.229	#
6)	TM 3,5-DINIT...	0.000	0.000	0	0	N.D.	N.D.	
7)	TM NITROBENZENE	0.000	5.201	0	5404106	N.D.	6.690	#
8)	TM NITROGLYC...	6.234	6.226	3088796	86322	9.041	NoCal	#
9)	TM TETRYL	6.754	6.754	6755971	4146884	NoCal	6.637	#
10)	TM 2,4,6-TRI...	7.164	7.164	8457824	6675642	NoCal	7.963	#
11)	TM 2-AMINO-4...	7.538	7.538	8699345	5904813	NoCal	7.625	#
12)	TM 4-AMINO-2...	7.846	7.846	8377214	4616902	NoCal	7.532	#
13)	TM 2,4-DINIT...	8.954	8.953	4636613	6442102	NoCal	8.017	#
14)	TM 2,6-DINIT...	9.311	9.311	4920013	3585442	NoCal	7.942	#
15)	TM 2-NITROTO...	0.000	12.618	0	1848774	N.D.	6.358	#
16)	TM 4-NITROTO...	0.000	13.226	0	2023452	N.D.	6.887	#
17)	TM 3-NITROTO...	0.000	14.093	0	2284249	N.D.	6.566	#
18)	TM PETN	16.227	0.000	2284457	0	8.251	N.D.	#

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

HM 10/29/11

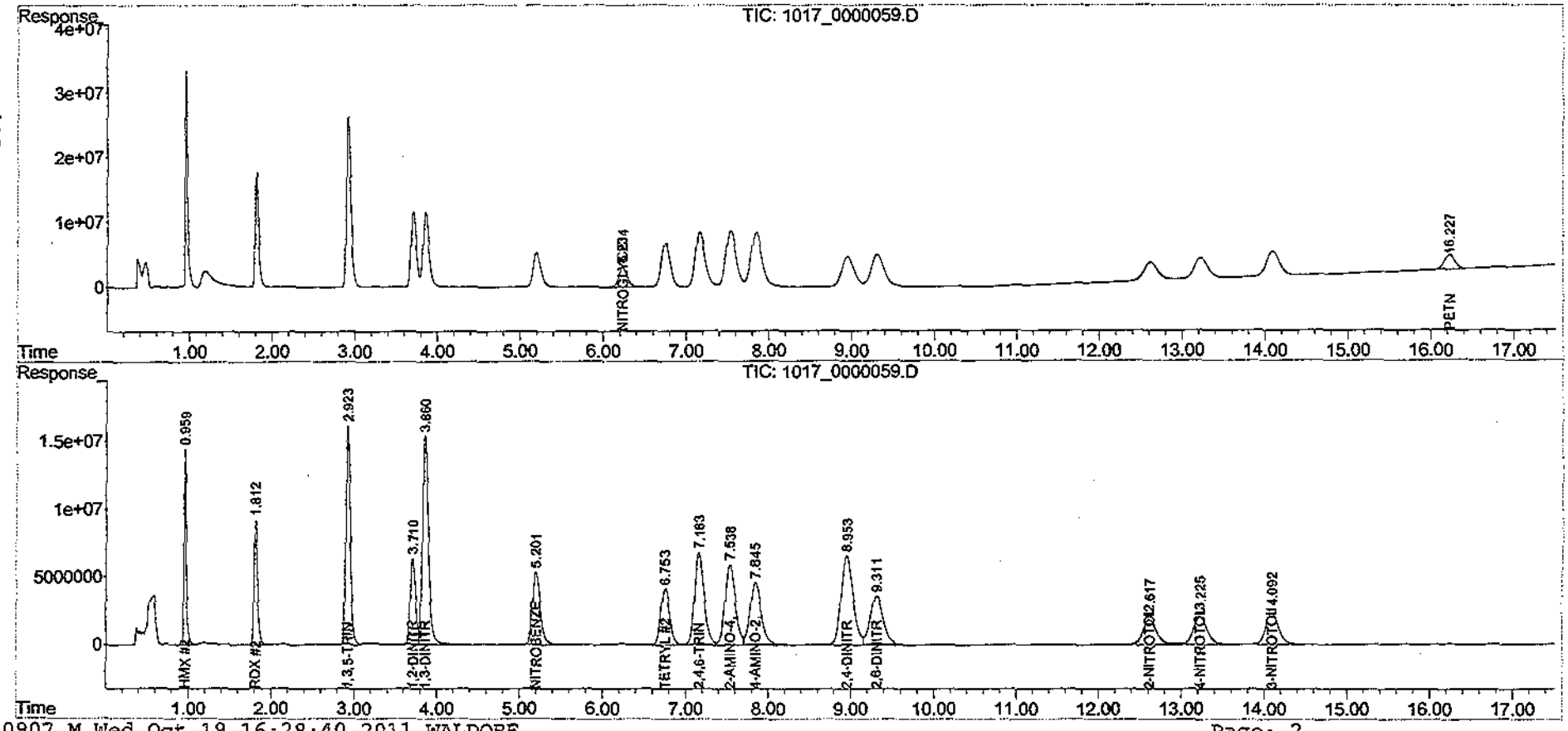
$$\text{Algo}\surd = \frac{(9202390)(2.0)(4)}{(500)(40)(437)} = 8.423$$

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111017\
Data File : 1017_0000059.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 18-Oct-2011, 21:13:21
Operator : mp
Sample : 111005WLCS1A 0.016 DF 10/05/11
Misc : water
ALS Vial : 8388 Sample Multiplier: 0.016

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 19 12:40:53 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111017\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Fri Oct 14 10:08:44 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



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Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111017\
Data File : 1017_0000062.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 18-Oct-2011, 23:05:40
Operator : mp
Sample : AY47773W10_MS-1 0.016 DF 10/05/11
Misc : water
ALS Vial : 8391 Sample Multiplier: 0.016

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 19 12:40:59 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111017\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Fri Oct 14 10:08:44 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppb	ppb	
	System Monitoring Compounds							
4)	S 1,2-DINIT...	0.000	3.708	0	6696145	N.D.	7.699	#
	Spiked Amount 1.000			Recovery	=	0.00%	769.90%	
	Target Compounds							
1)	TM HMX	0.000	0.959	0	14794224	N.D.	8.824	#
2)	TM RDX	0.000	1.810	0	9208113	N.D.	8.204	#
3)	TM 1,3,5-TRI...	0.000	2.921	0	16653354	N.D.	8.596	#
5)	TM 1,3-DINIT...	0.000	3.856	0	16146273	N.D.	8.643	#
6)	TM 3,5-DINIT...	0.000	0.000	0	0	N.D.	N.D.	
7)	TM NITROBENZENE	0.000	5.197	0	6428372	N.D.	7.957	#
8)	TM NITROGLYC...	6.233	6.227	3301848	77658	9.665	NoCal	#
9)	TM TETRYL	6.752	6.751	5802308	3565401	NoCal	5.706	#
10)	TM 2,4,6-TRI...	7.165	7.164	8501250	6655911	NoCal	7.940	#
11)	TM 2-AMINO-4...	7.534	7.535	9526858	6468849	NoCal	8.354	#
12)	TM 4-AMINO-2...	7.842	7.842	9184510	5063948	NoCal	8.261	#
13)	TM 2,4-DINIT...	8.950	8.950	5053487	7036179	NoCal	8.756	#
14)	TM 2,6-DINIT...	9.308	9.308	5387492	3924012	NoCal	8.692	#
15)	TM 2-NITROTO...	0.000	12.614	0	2339163	N.D.	8.044	#
16)	TM 4-NITROTO...	0.000	13.223	0	2513344	N.D.	8.555	#
17)	TM 3-NITROTO...	0.000	14.092	0	2859943	N.D.	8.221	#
18)	TM PETN	16.231	0.000	2392982	0	8.643	N.D.	#

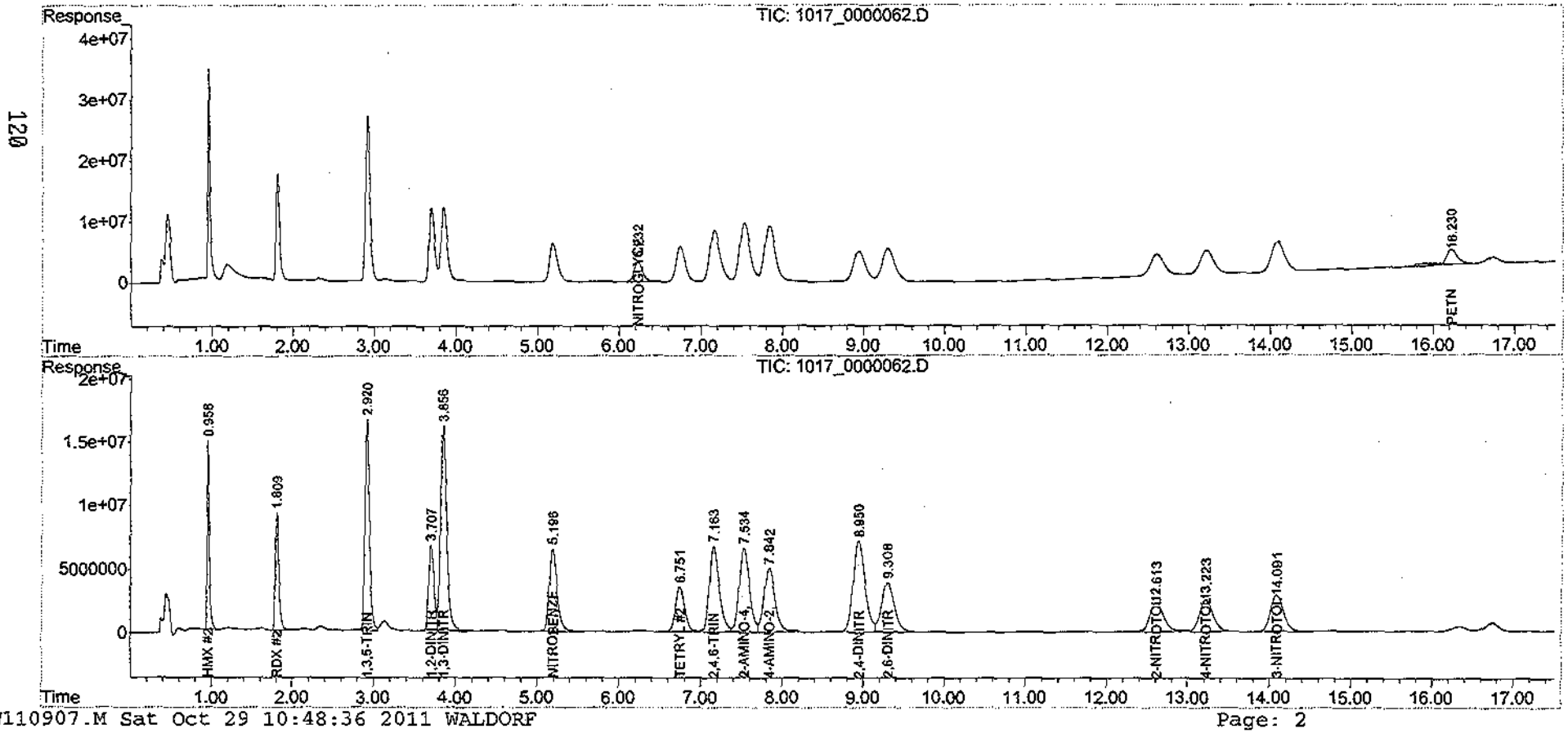
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111017\
Data File : 1017_0000062.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 18-Oct-2011, 23:05:40
Operator : mp
Sample : AY47773W10_MS-1 0.016 DF 10/05/11
Misc : water
ALS Vial : 8391 Sample Multiplier: 0.016

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 19 12:40:59 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111017\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Fri Oct 14 10:08:44 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111017\
Data File : 1017_0000063.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 18-Oct-2011, 23:43:06
Operator : mp
Sample : AY47773W10_MSD-1 0.016 DF 10/05/11
Misc : water
ALS Vial : 8392 Sample Multiplier: 0.016

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 19 12:41:01 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111017\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Fri Oct 14 10:08:44 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppb	ppb	
	System Monitoring Compounds							
4)	S 1,2-DINIT...	0.000	3.708	0	6652687	N.D.	7.649	#
	Spiked Amount 1.000			Recovery	=	0.00%	764.90%	
	Target Compounds							
1)	TM HMX	0.000	0.959	0	14870565	N.D.	8.870	#
2)	TM RDX	0.000	1.810	0	9285841	N.D.	8.273	#
3)	TM 1,3,5-TRI...	0.000	2.921	0	16537798	N.D.	8.537	#
5)	TM 1,3-DINIT...	0.000	3.857	0	16082177	N.D.	8.609	#
6)	TM 3,5-DINIT...	0.000	0.000	0	0	N.D.	N.D.	
7)	TM NITROBENZENE	0.000	5.198	0	6160570	N.D.	7.626	#
8)	TM NITROGLYC...	6.233	6.226	3252924	76112	9.522	NoCal	#
9)	TM TETRYL	6.752	6.752	5871658	3612041	NoCal	5.781	#
10)	TM 2,4,6-TRI...	7.164	7.163	8524378	6687835	NoCal	7.978	#
11)	TM 2-AMINO-4...	7.535	7.535	9452030	6417745	NoCal	8.288	#
12)	TM 4-AMINO-2...	7.842	7.842	9126242	5031920	NoCal	8.209	#
13)	TM 2,4-DINIT...	8.949	8.949	5014661	6974770	NoCal	8.679	#
14)	TM 2,6-DINIT...	9.307	9.307	5344342	3892701	NoCal	8.622	#
15)	TM 2-NITROTO...	0.000	12.613	0	2234846	N.D.	7.685	#
16)	TM 4-NITROTO...	0.000	13.222	0	2454638	N.D.	8.355	#
17)	TM 3-NITROTO...	0.000	14.090	0	2748390	N.D.	7.900	#
18)	TM PETN	16.230	0.000	2321341	0	8.384	N.D.	#

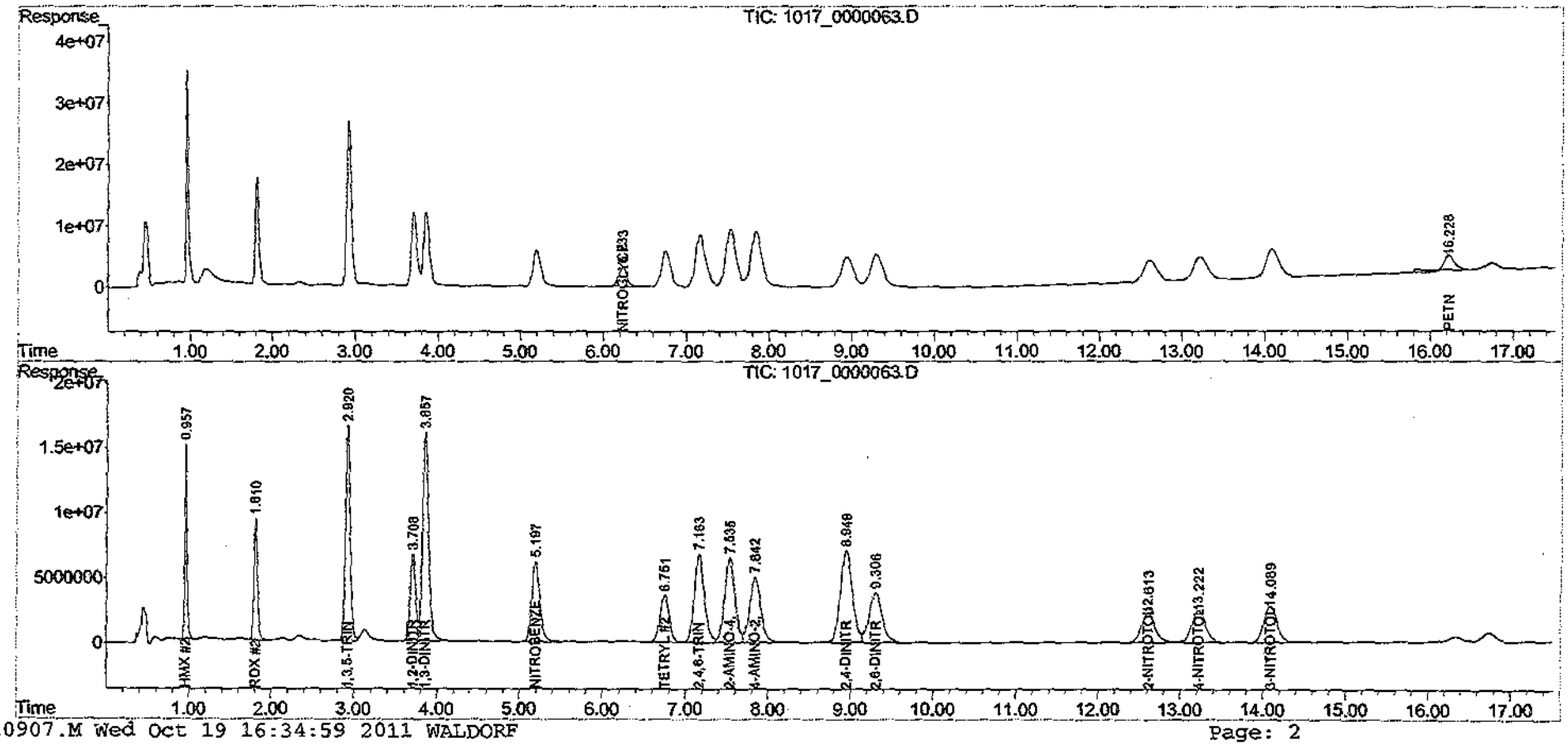
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111017\
Data File : 1017_0000063.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 18-Oct-2011, 23:43:06
Operator : mp
Sample : AY47773W10_MSD-1 0.016 DF 10/05/11
Misc : water
ALS Vial : 8392 Sample Multiplier: 0.016

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 19 12:41:01 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111017\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Fri Oct 14 10:08:44 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



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Calibration Data

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000003.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 15:57:10
Operator : mp
Sample : 8830B_CB 0.005 PPM 10/13/11
Misc :
ALS Vial : 8448 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:41:11 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppb	ppb
	System Monitoring Compounds						
4) S	1,2-DINIT...	0.000	3.708	0	62925	N.D.	4.522 #
	Spiked Amount 62.500			Recovery	=	0.00%	7.24%
	Target Compounds						
1) TM	HMX	0.000	0.952	0	120168	N.D.	4.480m#
2) TM	RDX	0.000	1.807	0	81578	N.D.	4.542 #
3) TM	1,3,5-TRI...	0.000	2.918	0	140621	N.D.	4.537 #
5) TM	1,3-DINIT...	0.000	3.858	0	134292	N.D.	4.493 #
6) TM	3,5-DINIT...	0.000	4.151	0	104706	N.D.	4.568 #
7) TM	NITROBENZENE	0.000	5.206	0	60321	N.D.	4.667 #
8) TM	NITROGLYC...	6.231	0.000	28922	0	5.291	N.D. #
9) TM	TETRYL	6.745	6.752	75015	45045	NoCal	4.506 #
10) TM	2,4,6-TRI...	7.150	7.160	80118	61946	NoCal	4.619 #
11) TM	2-AMINO-4...	7.537	7.540	95298	56805	NoCal	4.585 #
12) TM	4-AMINO-2...	7.851	7.846	88758	45473	NoCal	4.636 #
13) TM	2,4-DINIT...	8.967	8.955	49305	57573	NoCal	4.478 #
14) TM	2,6-DINIT...	9.312	9.310	51056	33820	NoCal	4.682 #
15) TM	2-NITROTO...	0.000	12.635	0	23381	N.D.	5.025 #
16) TM	4-NITROTO...	0.000	13.243	0	22218	N.D.	4.726 #
17) TM	3-NITROTO...	0.000	14.112	0	27318	N.D.	4.908 #
18) TM	PETN	0.000	0.000	0	0	N.D. d	N.D.

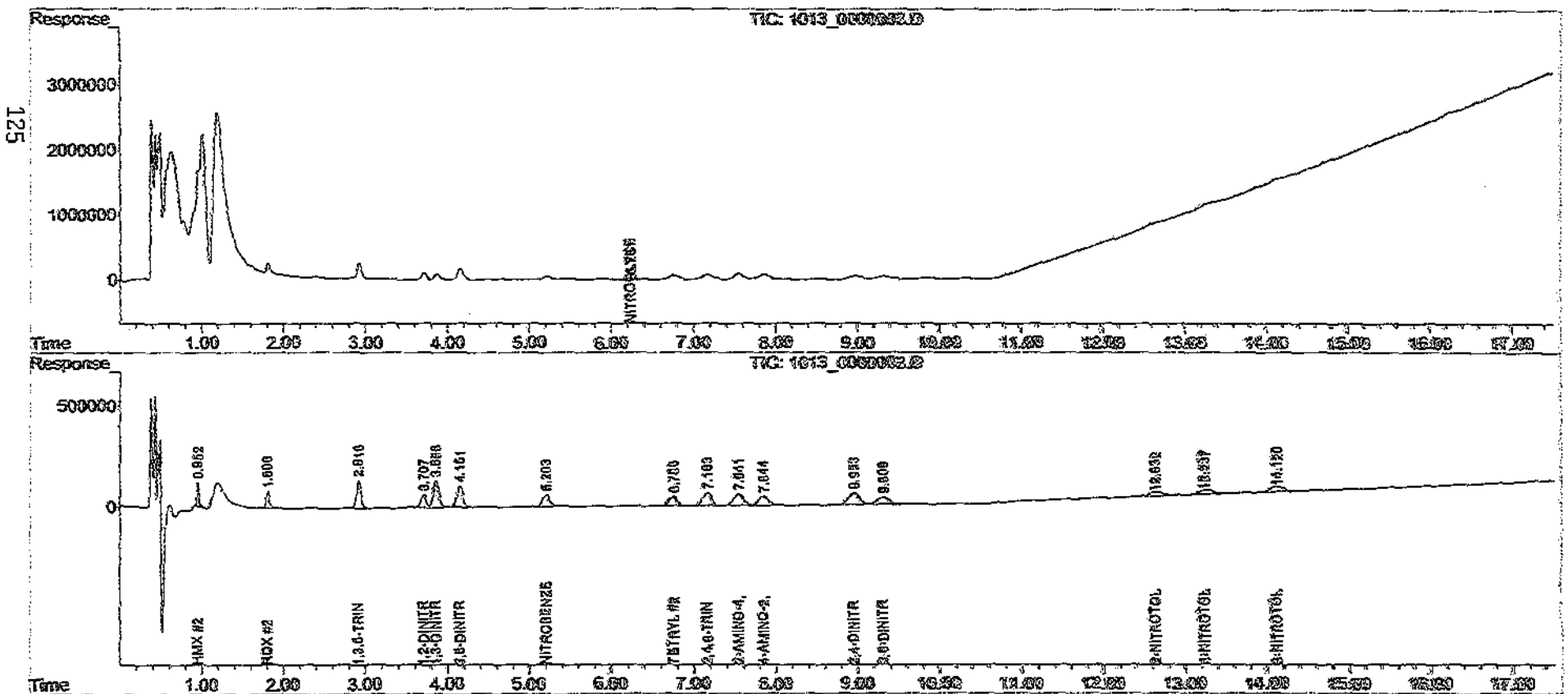
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000003.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 15:57:10
Operator : mp
Sample : 8830B_CB 0.005 PPM 10/13/11
Misc :
ALS Vial : 8448 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:41:11 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

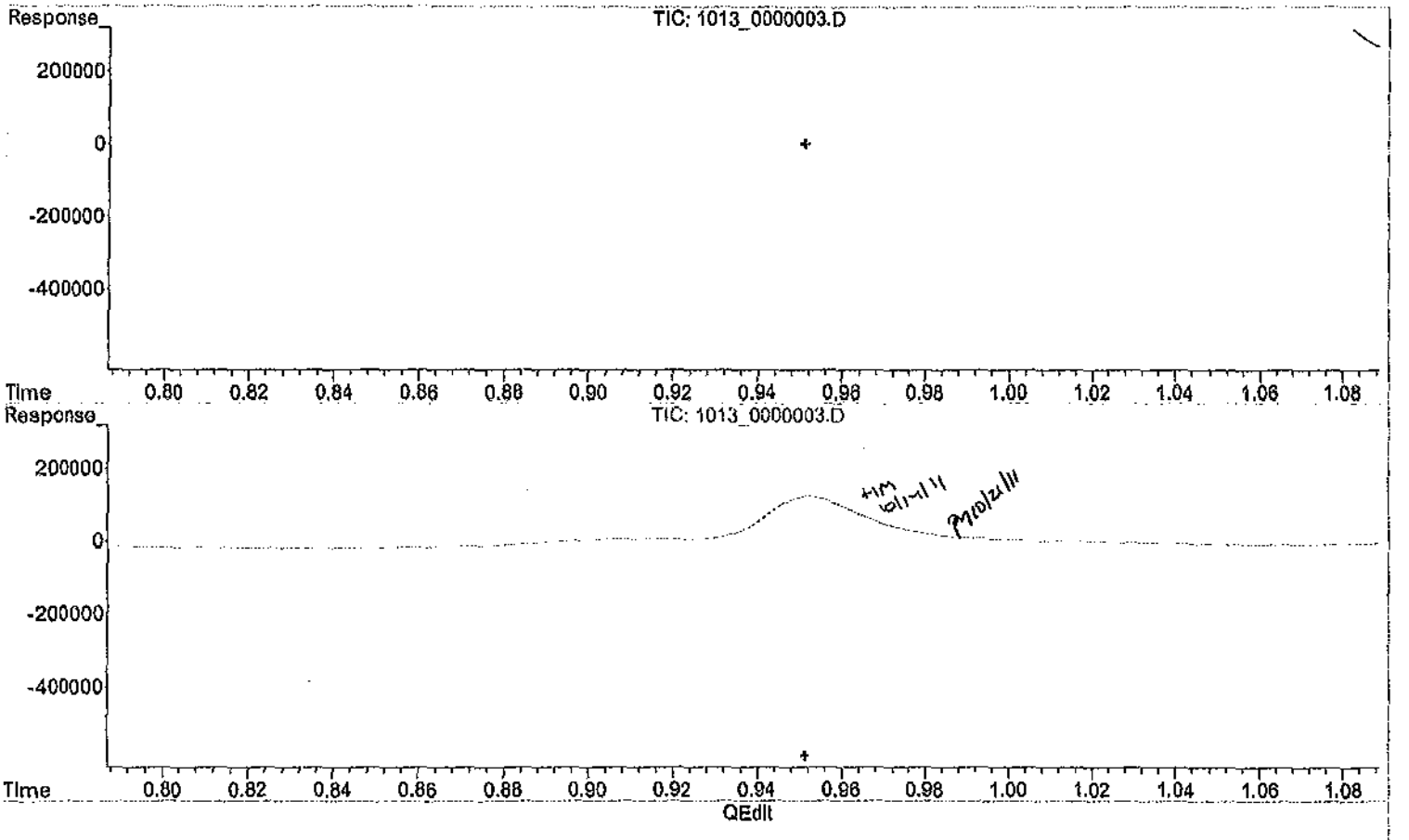


Quantitation Report (Qedit)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000003.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 15:57:10
Operator : mp
Sample : 8830B_CB 0.005 PPM 10/13/11
Misc :
ALS Vial : 8448 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:38:57 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(1) HMX (TM)

0.000min 0.000 ppb

response 0

(1) HMX #2 (TM)

0.000min 0.000 ppb

response 0

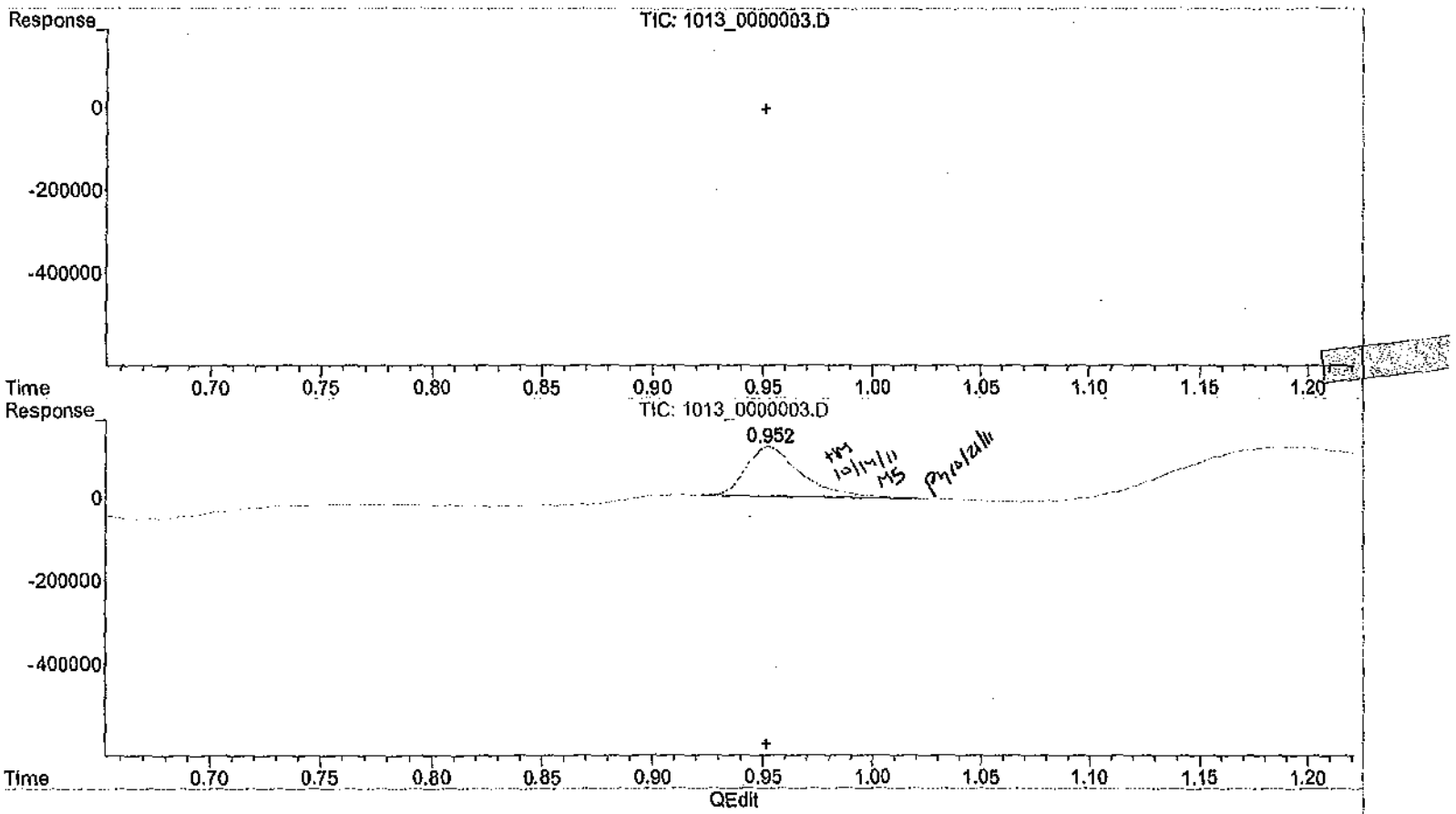
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000003.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 15:57:10
Operator : mp
Sample : 8830B_CB 0.005 PPM 10/13/11
Misc :
ALS Vial : 8448 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:38:57 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(1) HMX (TM)

0.000min 0.000 ppb

response 0

(1) HMX #2 (TM)

0.952min 4.480 ppb m

response 120168

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000004.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 16:34:38
Operator : mp
Sample : 8830B_CB 0.01 PPM 10/13/11
Misc :
ALS Vial : 8449 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:38:59 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppb	ppb	
	System Monitoring Compounds							
4)	S 1,2-DINIT...	0.000	3.710	0	136498	N.D.	9.809	#
	Spiked Amount 62.500			Recovery	=	0.00%	15.69%	
	Target Compounds							
1)	TM HMX	0.000	0.953	0	270661	N.D.	10.090	#
2)	TM RDX	0.000	1.807	0	183456	N.D.	10.215	#
3)	TM 1,3,5-TRI...	0.000	2.919	0	312870	N.D.	10.094	#
5)	TM 1,3-DINIT...	0.000	3.859	0	302414	N.D.	10.118	#
6)	TM 3,5-DINIT...	0.000	4.152	0	233670	N.D.	10.195	#
7)	TM NITROBENZENE	0.000	5.209	0	137283	N.D.	10.621	#
8)	TM NITROGLYC...	6.223	0.000	54980	0	10.058	N.D.	#
9)	TM TETRYL	6.758	6.755	162189	97986	NoCal	9.802	#
10)	TM 2,4,6-TRI...	7.164	7.163	171963	135345	NoCal	10.091	#
11)	TM 2-AMINO-4...	7.544	7.543	194717	124072	NoCal	10.014	#
12)	TM 4-AMINO-2...	7.853	7.852	176976	98871	NoCal	10.081	#
13)	TM 2,4-DINIT...	8.953	8.961	98693	129453	NoCal	10.068	#
14)	TM 2,6-DINIT...	9.309	9.315	105835	72294	NoCal	10.008	#
15)	TM 2-NITROTO...	0.000	12.635	0	49534	N.D.	10.646	#
16)	TM 4-NITROTO...	0.000	13.247	0	48376	N.D.	10.291	#
17)	TM 3-NITROTO...	0.000	14.111	0	58649	N.D.	10.537	#
18)	TM PETN	0.000	0.000	0	0	N.D.	N.D.	

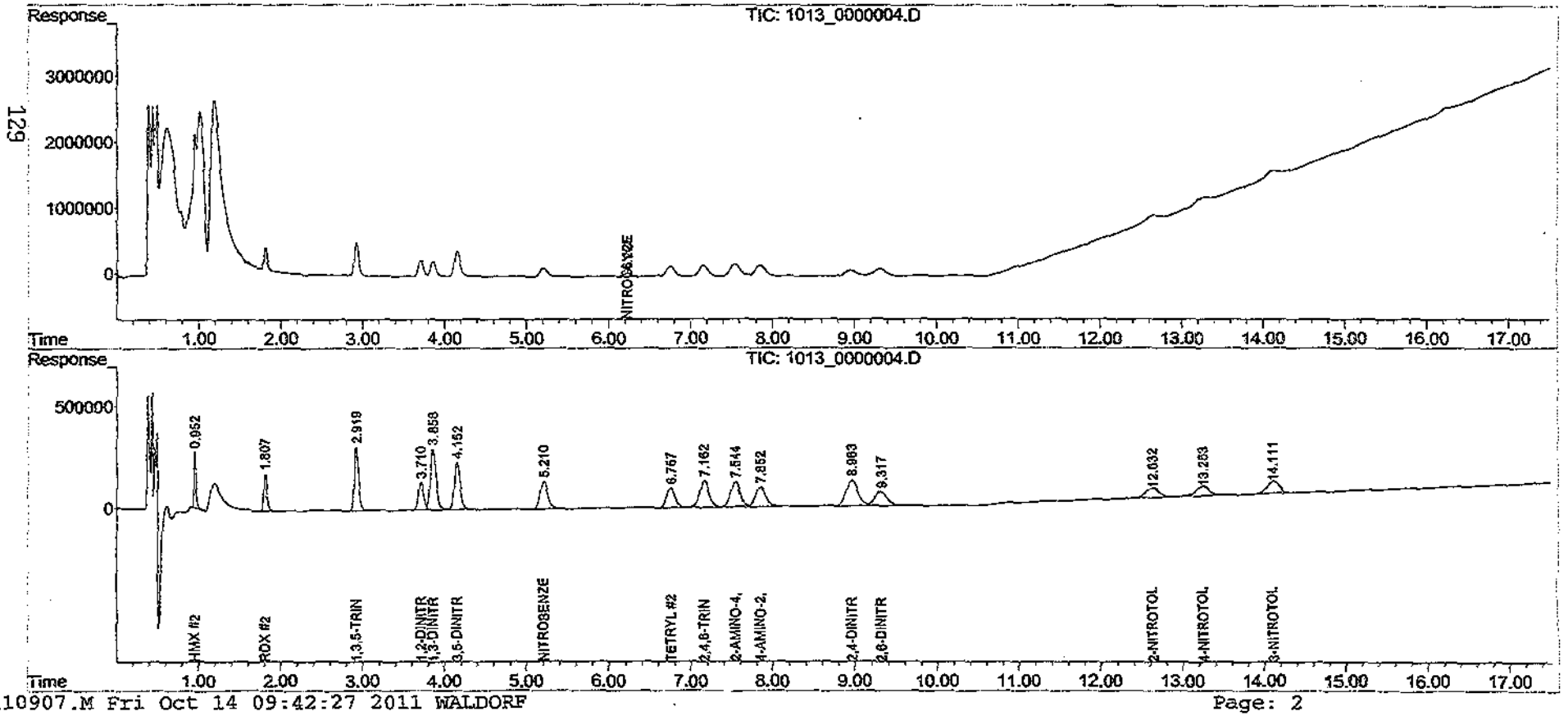
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000004.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 16:34:38
Operator : mp
Sample : 8830B_CB 0.01 PPM 10/13/11
Misc :
ALS Vial : 8449 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:38:59 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000005.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 17:12:05
Operator : mp
Sample : 8830B_CB 0.02 PPM 10/13/11
Misc :
ALS Vial : 8450 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:39:01 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppb	ppb	
	System Monitoring Compounds							
4)	S 1,2-DINIT...	0.000	3.707	0	226760	N.D.	16.296	#
	Spiked Amount 62.500			Recovery	=	0.00%	26.07%	
	Target Compounds							
1)	TM HMX	0.000	0.953	0	459683	N.D.	17.137	#
2)	TM RDX	0.000	1.806	0	301062	N.D.	16.764	#
3)	TM 1,3,5-TRI...	0.000	2.917	0	518154	N.D.	16.716	#
5)	TM 1,3-DINIT...	0.000	3.857	0	500498	N.D.	16.745	#
6)	TM 3,5-DINIT...	0.000	4.149	0	436976	N.D.	19.065	#
7)	TM NITROBENZENE	0.000	5.203	0	240728	N.D.	18.624	#
8)	TM NITROGLYC...	6.224	0.000	117884	0	21.567	N.D.	#
9)	TM TETRYL	6.752	6.750	278279	164884	NoCal	16.493	#
10)	TM 2,4,6-TRI...	7.160	7.158	290893	224816	NoCal	16.762	#
11)	TM 2-AMINO-4...	7.535	7.537	315950	208632	NoCal	16.839	#
12)	TM 4-AMINO-2...	7.845	7.846	309703	165218	NoCal	16.845	#
13)	TM 2,4-DINIT...	8.955	8.953	171302	216083	NoCal	16.806	#
14)	TM 2,6-DINIT...	9.308	9.309	187240	122050	NoCal	16.897	#
15)	TM 2-NITROTO...	0.000	12.626	0	82933	N.D.	17.825	#
16)	TM 4-NITROTO...	0.000	13.240	0	82244	N.D.	17.496	#
17)	TM 3-NITROTO...	0.000	14.102	0	98247	N.D.	17.651	#
18)	TM PETN	16.231	0.000	74476	0	16.811	N.D.	#

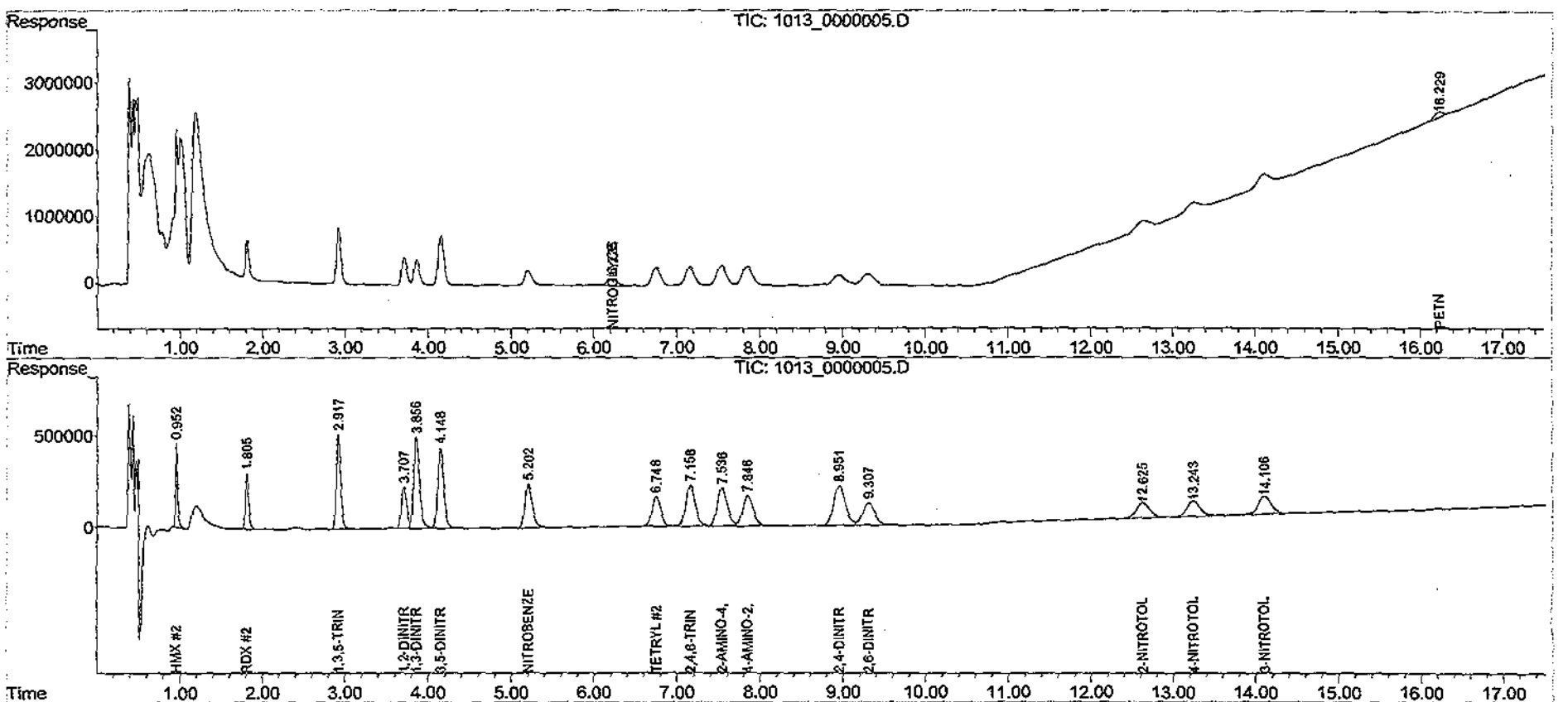
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000005.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 17:12:05
Operator : mp
Sample : 8830B_CB 0.02 PPM 10/13/11
Misc :
ALS Vial : 8450 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:39:01 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000006.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 17:49:31
Operator : mp
Sample : 8330B_CB 0.05 PPM 10/13/11
Misc :
ALS Vial : 8451 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:39:03 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppb	ppb	
	System Monitoring Compounds							
4)	S 1,2-DINIT...	0.000	3.705	0	588248	N.D.	42.274	#
	Spiked Amount 62.500			Recovery	=	0.00%	67.64%	
	Target Compounds							
1)	TM HMX	0.000	0.952	0	1227958	N.D.	45.777	#
2)	TM RDX	0.000	1.805	0	802162	N.D.	44.666	#
3)	TM 1,3,5-TRI...	0.000	2.915	0	1374225	N.D.	44.335	#
5)	TM 1,3-DINIT...	0.000	3.855	0	1301267	N.D.	43.535	#
6)	TM 3,5-DINIT...	0.000	4.147	0	1062050	N.D.	46.337	#
7)	TM NITROBENZENE	0.000	5.203	0	586622	N.D.	45.385	#
8)	TM NITROGLYC...	6.224	0.000	237705	0	43.488	N.D.	#
9)	TM TETRYL	6.749	6.749	728481	439849	NoCal	43.998	#
10)	TM 2,4,6-TRI...	7.157	7.157	757832	596170	NoCal	44.449	#
11)	TM 2-AMINO-4...	7.536	7.536	819645	552851	NoCal	44.622	#
12)	TM 4-AMINO-2...	7.844	7.845	794093	439844	NoCal	44.845	#
13)	TM 2,4-DINIT...	8.951	8.952	412927	564281	NoCal	43.887	#
14)	TM 2,6-DINIT...	9.309	9.309	447984	316346	NoCal	43.795	#
15)	TM 2-NITROTO...	0.000	12.625	0	215429	N.D.	46.302	#
16)	TM 4-NITROTO...	0.000	13.236	0	211198	N.D.	44.929	#
17)	TM 3-NITROTO...	0.000	14.100	0	255405	N.D.	45.887	#
18)	TM PETN	16.221	0.000	193389	0	43.653	N.D.	#

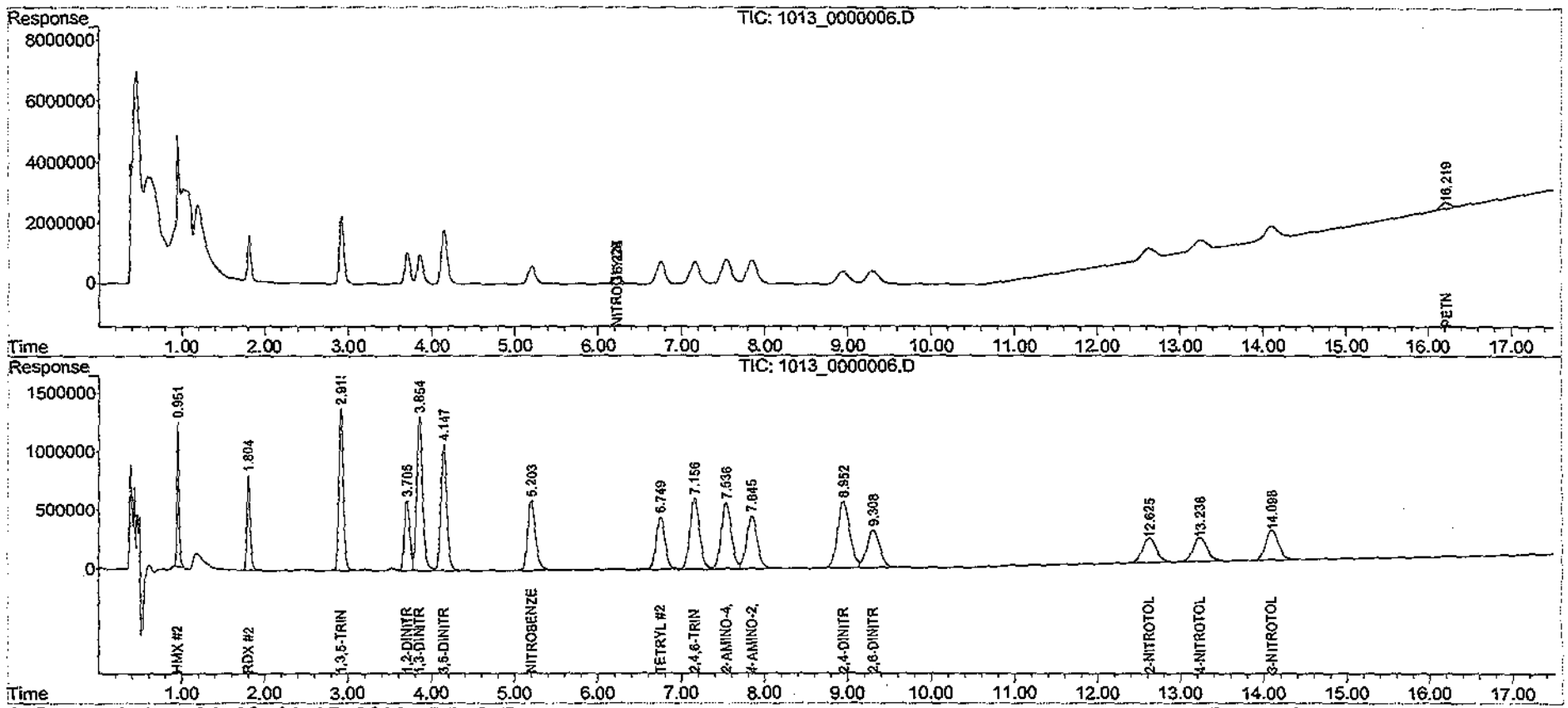
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000006.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 17:49:31
Operator : mp
Sample : 8830B_CB 0.05 PPM 10/13/11
Misc :
ALS Vial : 8451 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:39:03 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000007.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 18:26:57
Operator : mp
Sample : 8830B_CB 0.1 PPM 10/13/11
Misc :
ALS Vial : 8452 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:39:05 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

		Compound	RT#1	RT#2	Resp#1	Resp#2	ppb	ppb	
System Monitoring Compounds									
4)	S	1,2-DINIT...	0.000	3.703	0	1354221	N.D.	97.320	#
Spiked Amount		62.500			Recovery	=	0.00%	155.71%	
Target Compounds									
1)	TM	HMX	0.000	0.951	0	2818294	N.D.	105.063	#
2)	TM	RDX	0.000	1.804	0	1847067	N.D.	102.848	#
3)	TM	1,3,5-TRI...	0.000	2.914	0	3156895	N.D.	101.846	#
5)	TM	1,3-DINIT...	0.000	3.853	0	3026896	N.D.	101.268	#
6)	TM	3,5-DINIT...	0.000	4.145	0	2418382	N.D.	105.514	#
7)	TM	NITROBENZENE	0.000	5.199	0	1386680	N.D.	107.282	#
8)	TM	NITROGLYC...	6.218	6.221	552116	15463	101.008	NoCal	#
9)	TM	TETRYL	6.742	6.741	1655833	1004882	NoCal	100.518	#
10)	TM	2,4,6-TRI...	7.150	7.151	1728448	1357860	NoCal	101.238	#
11)	TM	2-AMINO-4...	7.529	7.529	1865535	1259568	NoCal	101.663	#
12)	TM	4-AMINO-2...	7.837	7.837	1821139	998380	NoCal	101.791	#
13)	TM	2,4-DINIT...	8.945	8.945	948347	1297154	NoCal	100.887	#
14)	TM	2,6-DINIT...	9.301	9.302	1019423	728960	NoCal	100.917	#
15)	TM	2-NITROTO...	0.000	12.622	0	500925	N.D.	107.664	#
16)	TM	4-NITROTO...	0.000	13.234	0	492287	N.D.	104.726	#
17)	TM	3-NITROTO...	0.000	14.099	0	595187	N.D.	106.932	#
18)	TM	PETN	16.214	0.000	454205	0	102.526	N.D.	#

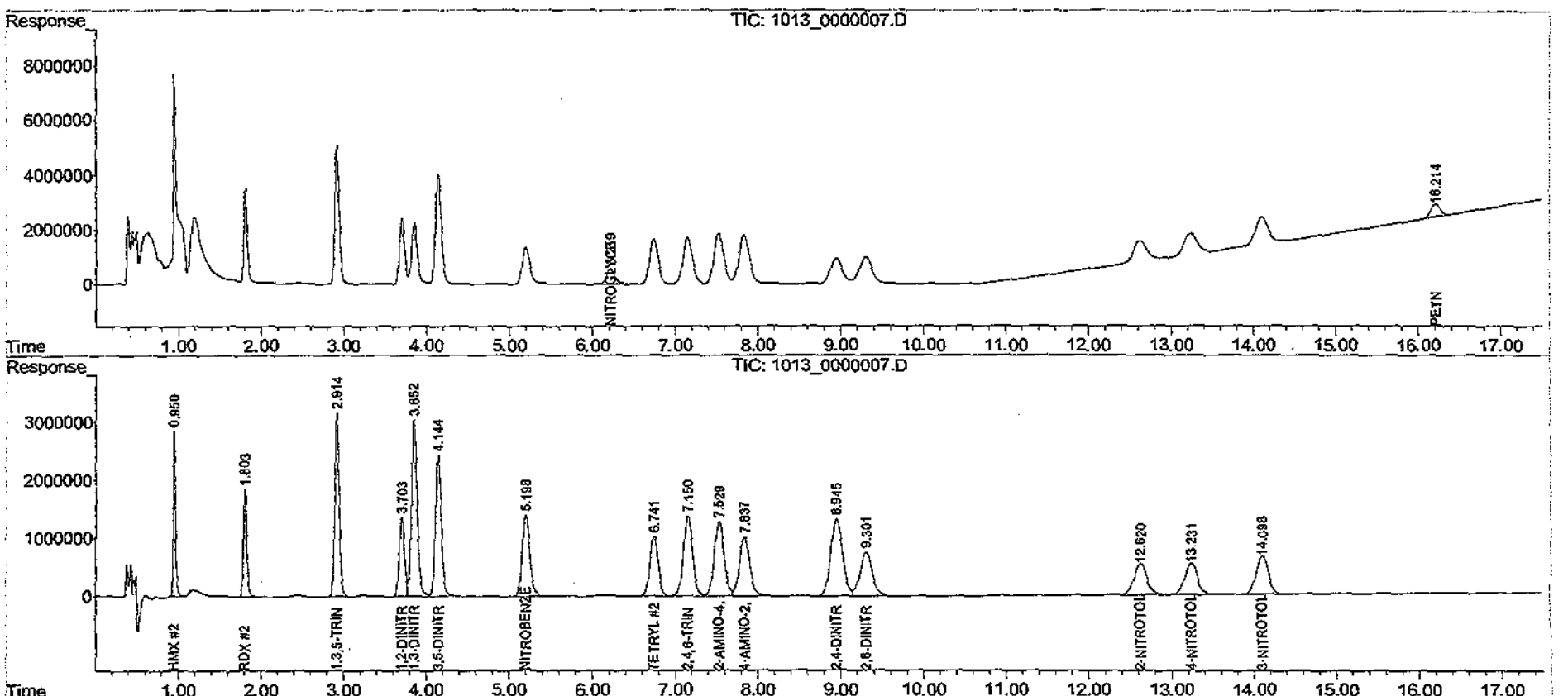
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000007.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 18:26:57
Operator : mp
Sample : 8830B_CB 0.1 PPM 10/13/11
Misc :
ALS Vial : 8452 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:39:05 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000009.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 19:41:50
Operator : mp
Sample : 8830B_CB 0.5 PPM 10/13/11
Misc :
ALS Vial : 8454 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:39:09 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppb	ppb	
	System Monitoring Compounds							
4)	S 1,2-DINIT...	0.000	3.704	0	7029439	N.D.	505.162	#
	Spiked Amount 62.500			Recovery	=	0.00%	808.26%	
	Target Compounds							
1)	TM HMX	0.000	0.953	0	14511006	N.D.	540.957	#
2)	TM RDX	0.000	1.805	0	9551736	N.D.	531.860	#
3)	TM 1,3,5-TRI...	0.000	2.916	0	16381715	N.D.	528.499	#
5)	TM 1,3-DINIT...	0.000	3.854	0	15601804	N.D.	521.975	#
6)	TM 3,5-DINIT...	0.000	4.147	0	12649400	N.D.	551.892	#
7)	TM NITROBENZENE	0.000	5.202	0	7033495	N.D.	544.154	#
8)	TM NITROGLYC...	6.223	6.220	2836995	89325	519.022	NoCal	#
9)	TM TETRYL	6.749	6.749	8686009	5288304	NoCal	528.986	#
10)	TM 2,4,6-TRI...	7.158	7.158	8929887	7061912	NoCal	526.515	#
11)	TM 2-AMINO-4...	7.535	7.535	9720568	6601099	NoCal	532.791	#
12)	TM 4-AMINO-2...	7.844	7.844	9469097	5215327	NoCal	531.735	#
13)	TM 2,4-DINIT...	8.951	8.951	4860211	6739888	NoCal	524.199	#
14)	TM 2,6-DINIT...	9.309	9.309	5211410	3763261	NoCal	520.986	#
15)	TM 2-NITROTO...	0.000	12.624	0	2553237	N.D.	548.770	#
16)	TM 4-NITROTO...	0.000	13.233	0	2521518	N.D.	536.412	#
17)	TM 3-NITROTO...	0.000	14.099	0	3037512	N.D.	545.725	#
18)	TM PETN	16.214	0.000	2492447	0	562.611	N.D.	#

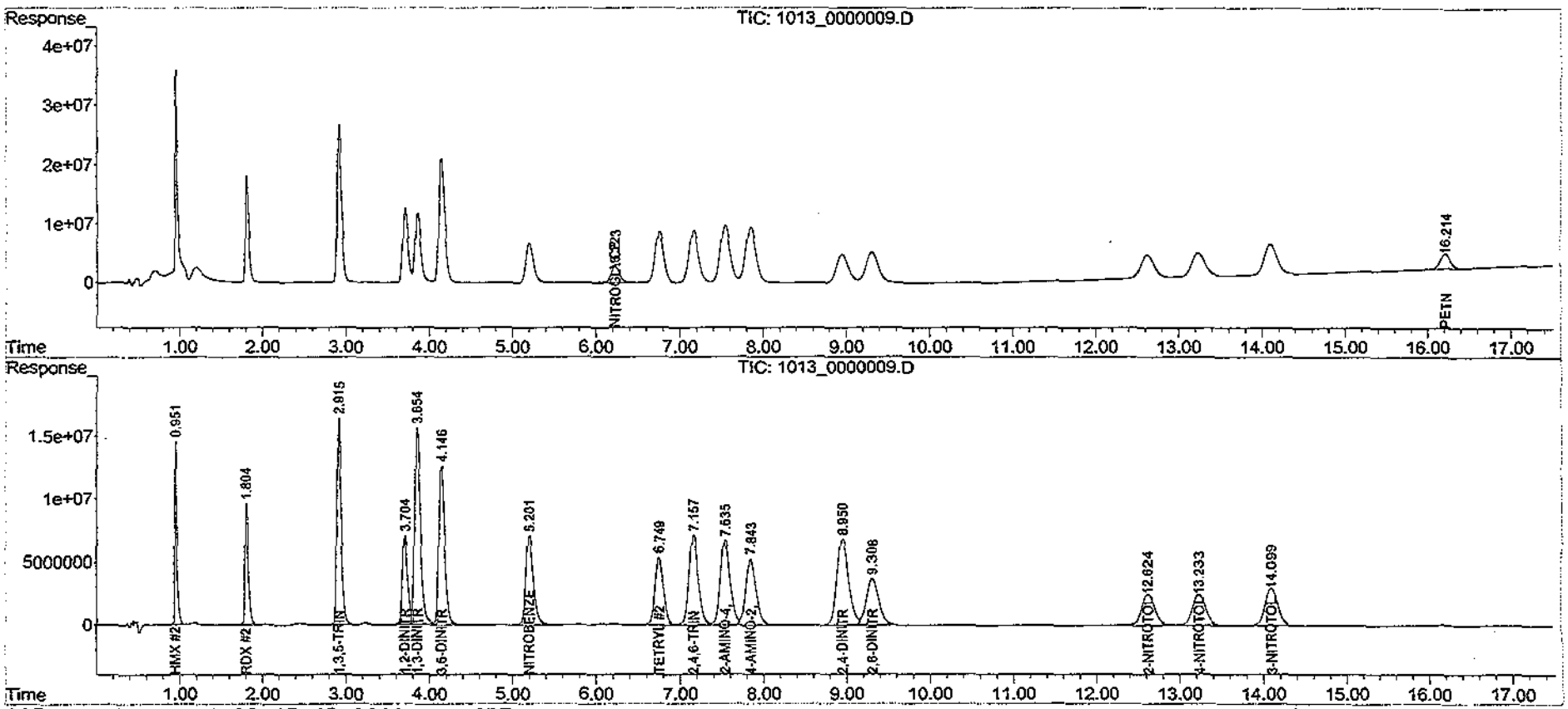
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000009.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 19:41:50
Operator : mp
Sample : 8830B_CB 0.5 PPM 10/13/11
Misc :
ALS Vial : 8454 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:39:09 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000010.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 20:19:16
Operator : mp
Sample : 8330B_CB 1.0 PPM 10/13/11
Misc :
ALS Vial : 8455 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:39:11 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppb	ppb	
	System Monitoring Compounds							
4)	S 1,2-DINIT...	0.000	9.703	0	14039224	N.D.	1008.912	#
	Spiked Amount 62.500			Recovery =		0.00%	1614.26%	
	Target Compounds							
1)	TM HMX	0.000	0.953	0	28273892	N.D.	1054.025	#
2)	TM RDX	0.000	1.805	0	18805099	N.D.	1047.106	#
3)	TM 1,3,5-TRI...	0.000	2.916	0	32262420	N.D.	1040.835	#
5)	TM 1,3-DINIT...	0.000	3.853	0	31191269	N.D.	1043.537	#
6)	TM 3,5-DINIT...	0.000	4.145	0	24953790	N.D.	1088.731	#
7)	TM NITROBENZENE	0.000	5.199	0	14290109	N.D.	1105.571	#
8)	TM NITROGLYC...	6.220	6.214	5558592	177295	1016.932	NoCal	#
9)	TM TETRYL	6.746	6.746	17123212	10447939	NoCal	1045.102	#
10)	TM 2,4,6-TRI...	7.156	7.156	17565872	13913388	NoCal	1037.340	#
11)	TM 2-AMINO-4...	7.531	7.531	19082544	12999019	NoCal	1049.182	#
12)	TM 4-AMINO-2...	7.840	7.840	18564419	10235662	NoCal	1043.590	#
13)	TM 2,4-DINIT...	8.948	8.948	9664329	13430382	NoCal	1044.556	#
14)	TM 2,6-DINIT...	9.306	9.306	10365744	7512336	NoCal	1040.009	#
15)	TM 2-NITROTO...	0.000	12.620	0	5176865	N.D.	1112.669	#
16)	TM 4-NITROTO...	0.000	13.228	0	5106236	N.D.	1086.270	#
17)	TM 3-NITROTO...	0.000	14.096	0	6163153	N.D.	1107.284	#
18)	TM PETN	16.210	0.000	4912900	0	1108.971	N.D.	#

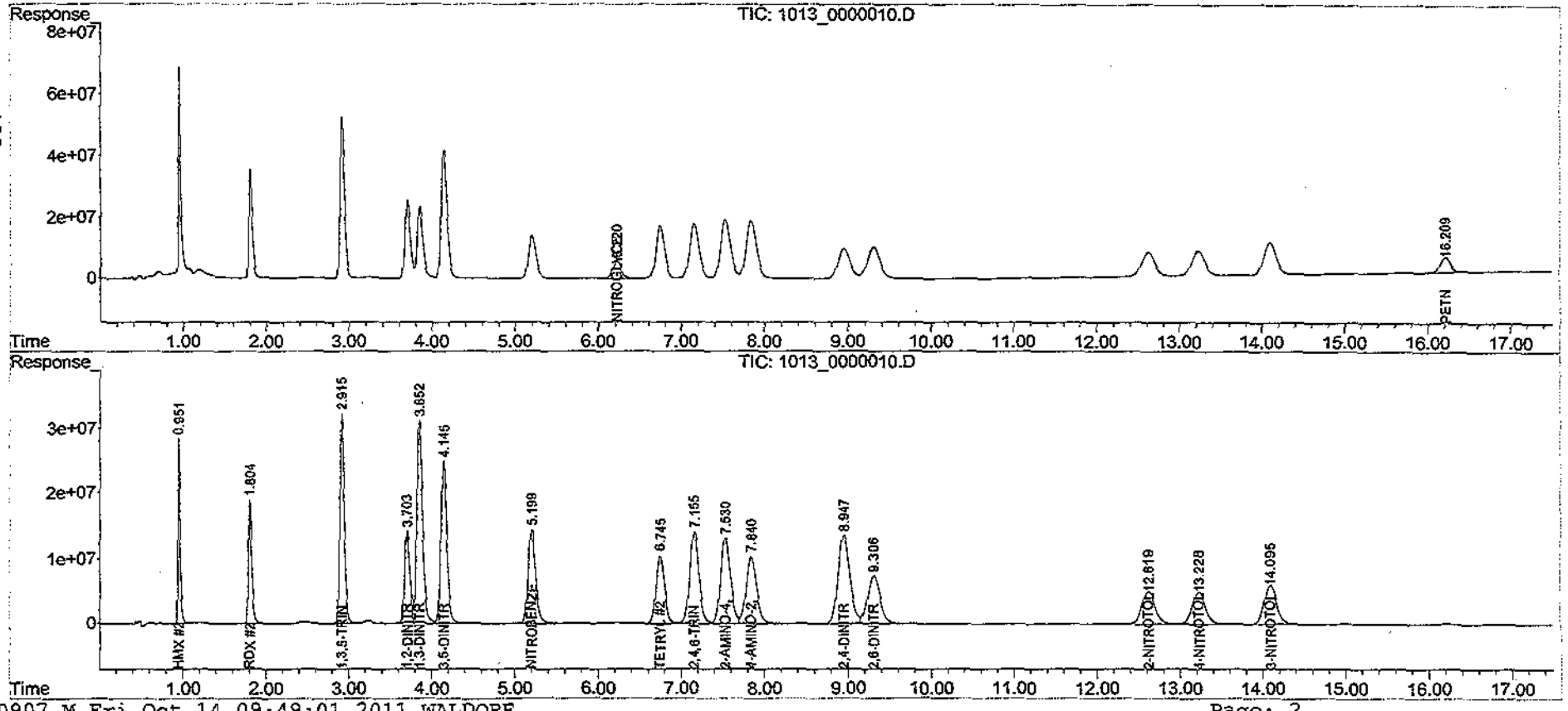
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000010.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 20:19:16
Operator : mp
Sample : 8830B_CB 1.0 PPM 10/13/11
Misc :
ALS Vial : 8455 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:39:11 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000011.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 20:56:43
Operator : mp
Sample : 8830B_MX-A 2.0 PPM 10/13/11
Misc :
ALS Vial : 8456 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:50:35 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppb	ppb	
	System Monitoring Compounds							
4)	S 1,2-DINIT...	0.000	3.706	0	28403384	N.D.	2041.176	#
	Spiked Amount 62.500			Recovery	=	0.00%	3265.88%	
	Target Compounds							
1)	TM HMX	0.000	0.954	0	54794188	N.D.	2042.678	#
2)	TM RDX	0.000	1.807	0	37079110	N.D.	2064.640	#
3)	TM 1,3,5-TRI...	0.000	2.918	0	64233589	N.D.	2072.274	#
5)	TM 1,3-DINIT...	0.000	3.855	0	62451373	N.D.	2089.378	#
6)	TM 3,5-DINIT...	0.000	0.000	0	0	N.D.	N.D.	
7)	TM NITROBENZENE	0.000	5.200	0	28546078	N.D.	2208.500	#
8)	TM NITROGLYC...	0.000	6.077	0	369798	N.D. d	NoCal	
9)	TM TETRYL	6.750	6.749	34401585	21039140	NoCal	2104.534	#
10)	TM 2,4,6-TRI...	7.160	7.160	35097578	27804550	NoCal	2073.023	#
11)	TM 2-AMINO-4...	7.532	7.532	38062907	25962348	NoCal	2095.484	#
12)	TM 4-AMINO-2...	7.843	7.843	36894157	20303859	NoCal	2070.106	#
13)	TM 2,4-DINIT...	8.951	8.951	19341844	26912491	NoCal	2093.135	#
14)	TM 2,6-DINIT...	9.311	9.311	20559554	14955505	NoCal	2070.442	#
15)	TM 2-NITROTO...	0.000	12.621	0	10332837	N.D.	2220.846	#
16)	TM 4-NITROTO...	0.000	13.228	0	10194101	N.D.	2168.631	#
17)	TM 3-NITROTO...	0.000	14.097	0	12291070	N.D.	2208.238	#
18)	TM PETN	0.000	0.000	0	0	N.D.	N.D.	

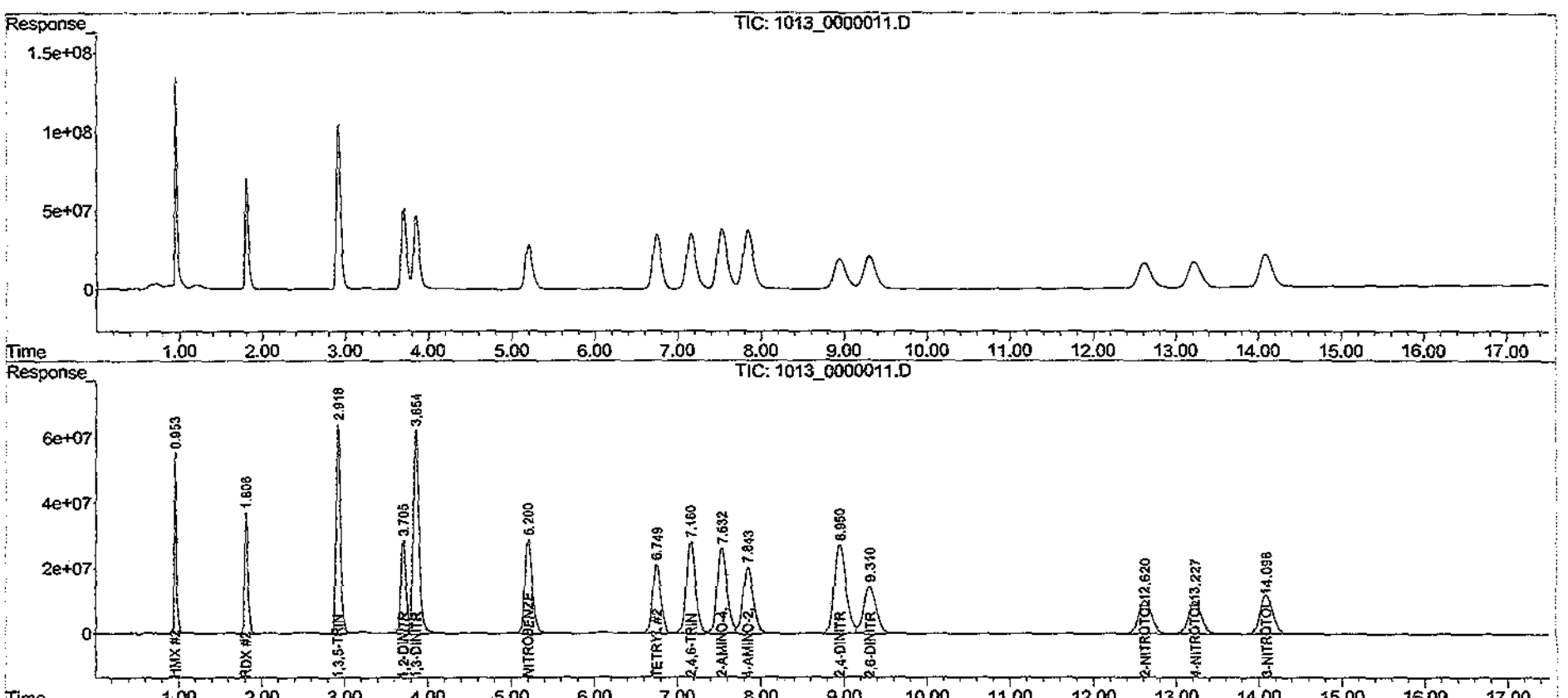
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000011.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 20:56:43
Operator : mp
Sample : 8830B_MX-A 2.0 PPM 10/13/11
Misc :
ALS Vial : 8456 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:50:35 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



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Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000012.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 21:34:10
Operator : mp
Sample : 8830B_MX-B 2.0 PPM 10/13/11
Misc :
ALS Vial : 8512 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:51:59 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppb	ppb	
	System Monitoring Compounds							
4)	S 1,2-DINIT...	0.000	0.000	0	0	N.D.	N.D.	d
	Spiked Amount 62.500			Recovery	=	0.00%	0.00%	
	Target Compounds							
1)	TM HMX	0.000	0.000	0	0	N.D.	N.D.	
2)	TM RDX	0.000	0.000	0	0	N.D.	N.D.	d
3)	TM 1,3,5-TRI...	0.000	0.000	0	0	N.D.	N.D.	d
5)	TM 1,3-DINIT...	0.000	0.000	0	0	N.D.	N.D.	d
6)	TM 3,5-DINIT...	0.000	4.143	0	49772961	N.D.	2171.588	#
7)	TM NITROBENZENE	0.000	0.000	0	0	N.D.	N.D.	
8)	TM NITROGLYC...	6.215	6.215	10957188	224918	2004.593	NoCal	#
9)	TM TETRYL	6.755	0.000	17012	0	NoCal	N.D.	
10)	TM 2,4,6-TRI...	7.182	0.000	45961	0	NoCal	N.D.	
11)	TM 2-AMINO-4...	7.524	0.000	24451	0	NoCal	N.D.	
12)	TM 4-AMINO-2...	7.830	0.000	22124	0	NoCal	N.D.	
13)	TM 2,4-DINIT...	8.937	0.000	16586	0	NoCal	N.D.	
14)	TM 2,6-DINIT...	9.289	0.000	146218	0	NoCal	N.D.	d
15)	TM 2-NITROTO...	0.000	0.000	0	0	N.D.	N.D.	d
16)	TM 4-NITROTO...	0.000	0.000	0	0	N.D.	N.D.	
17)	TM 3-NITROTO...	0.000	0.000	0	0	N.D.	N.D.	d
18)	TM PETN	16.207	0.000	9848327	0	2223.026	N.D.	#

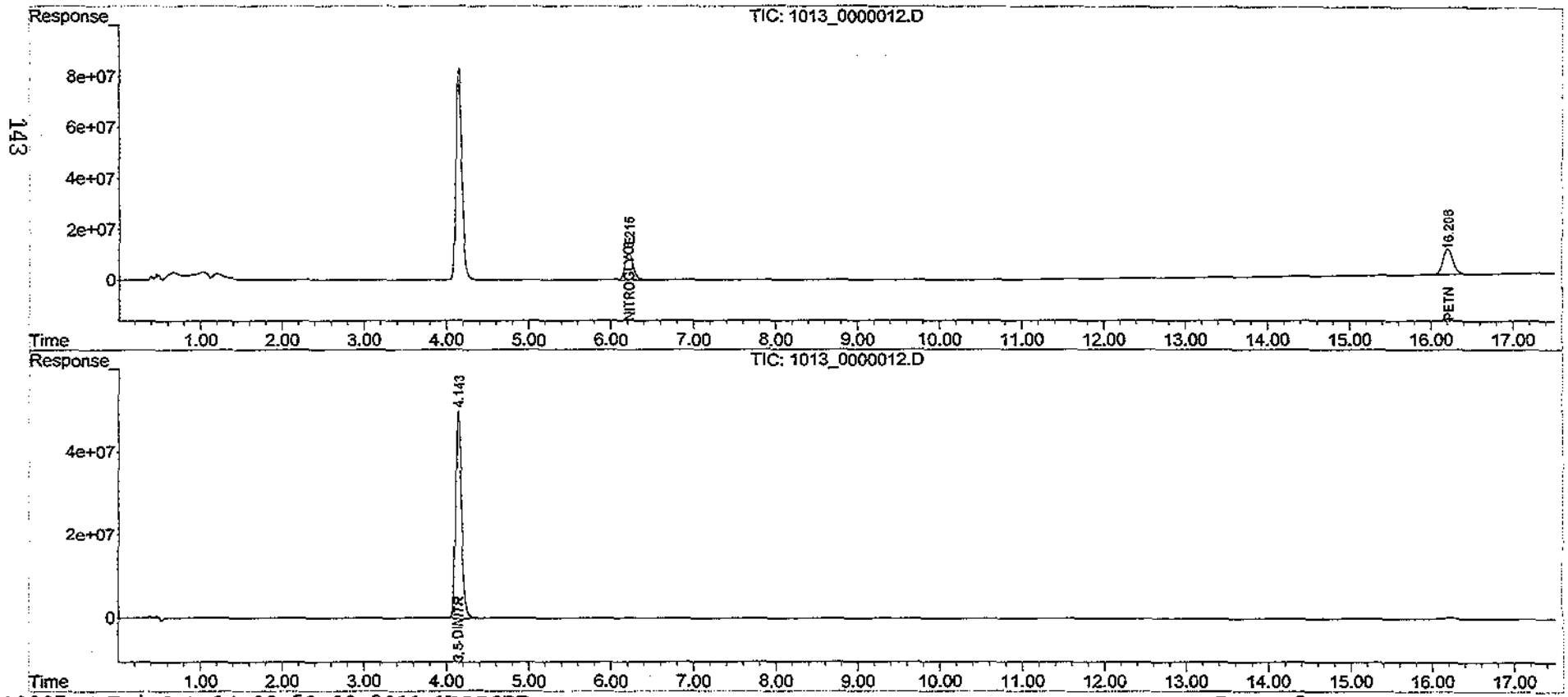
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000012.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 21:34:10
Operator : mp
Sample : 8830B_MX-B 2.0 PPM 10/13/11
Misc :
ALS Vial : 8512 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:51:59 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000014.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 22:49:00
Operator : mp
Sample : 8830B_SS 1.0 PPM 10/13/11
Misc :
ALS Vial : 8513 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:39:17 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppb	ppb	
	System Monitoring Compounds							
4)	S 1,2-DINIT...	0.000	3.703	0	12373961	N.D.	889.240	#
	Spiked Amount 62.500			Recovery	=	0.00%	1422.78%	
	Target Compounds							
1)	TM HMX	0.000	0.953	0	25690467	N.D.	957.717	#
2)	TM RDX	0.000	1.805	0	16902522	N.D.	941.167	#
3)	TM 1,3,5-TRI...	0.000	2.916	0	26708321	N.D.	861.651	#
5)	TM 1,3-DINIT...	0.000	3.853	0	28876263	N.D.	966.086	#
6)	TM 3,5-DINIT...	0.000	4.145	0	24434039	N.D.	1066.054	#
7)	TM NITROBENZENE	0.000	5.197	0	12975953	N.D.	1003.899	#
8)	TM NITROGLYC...	6.219	6.217	5365962	146865	981.691	NoCal	#
9)	TM TETRYL	6.744	6.744	13454322	8211419	NoCal	821.384	#
10)	TM 2,4,6-TRI...	7.153	7.153	14427334	11413209	NoCal	850.934	#
11)	TM 2-AMINO-4...	7.529	7.529	15617391	10632728	NoCal	858.193	#
12)	TM 4-AMINO-2...	7.838	7.838	18203670	10070897	NoCal	1026.791	#
13)	TM 2,4-DINIT...	8.944	8.944	9215643	12803366	NoCal	995.789	#
14)	TM 2,6-DINIT...	9.303	9.303	8963667	6532882	NoCal	904.413	#
15)	TM 2-NITROTO...	0.000	12.616	0	4611432	N.D.	991.139	#
16)	TM 4-NITROTO...	0.000	13.225	0	4317943	N.D.	918.573	#
17)	TM 3-NITROTO...	0.000	14.092	0	5721670	N.D.	1027.966	#
18)	TM PETN	16.208	0.000	4816054	0	1087.110	N.D.	#

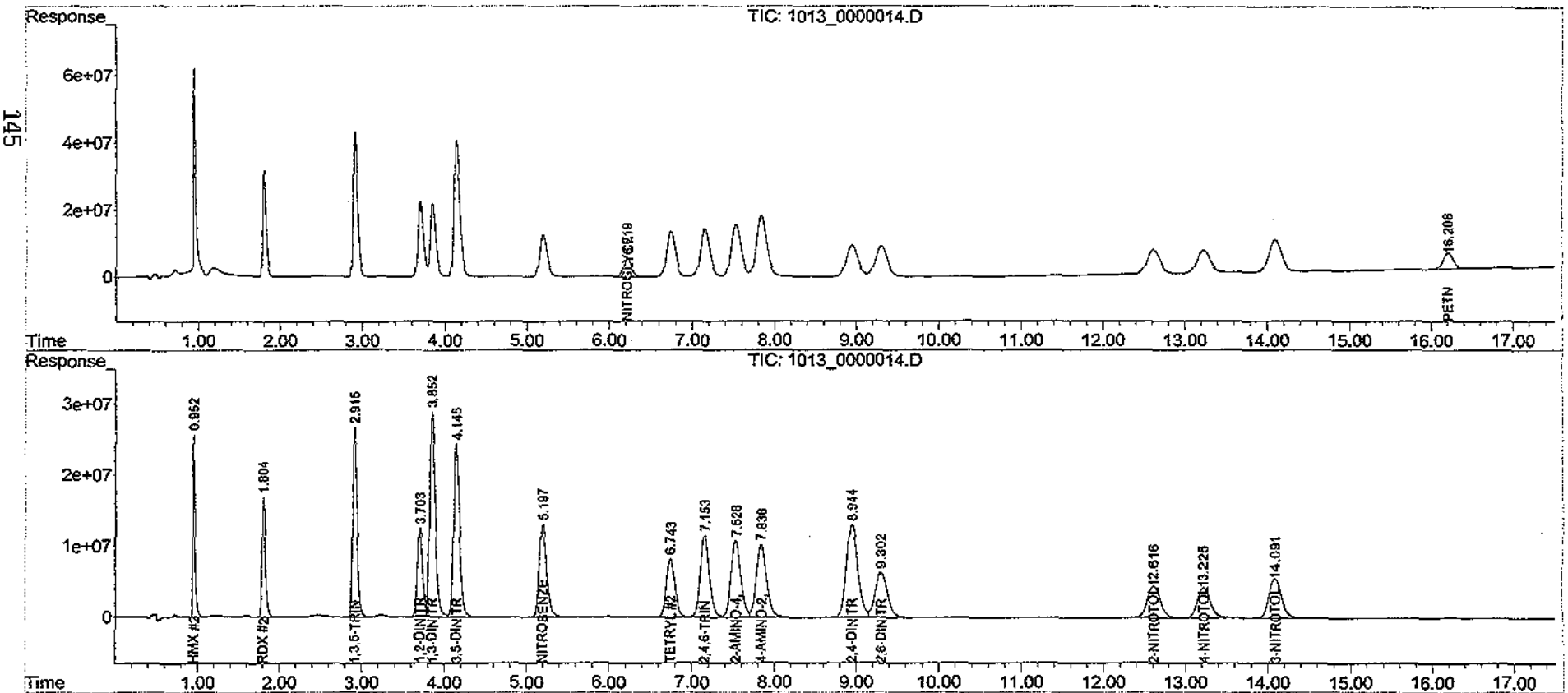
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000014.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 22:49:00
Operator : mp
Sample : 8830B_SS 1.0 PPM 10/13/11
Misc :
ALS Vial : 8513 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:39:17 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111017\
Data File : 1017_0000050.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 18-Oct-2011, 16:03:13
Operator : mp
Sample : 8330_CCV 1.0 PPM 10/17/11
Misc :
ALS Vial : 4360 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 18 16:53:27 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111017\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Fri Oct 14 10:08:44 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppb	ppb	
	System Monitoring Compounds							
4)	S 1,2-DINIT...	0.000	3.709	0	13984084	N.D.	1004.950	#
	Spiked Amount 62.500			Recovery	=	0.00%	1607.92%	
	Target Compounds							
1)	TM HMX	0.000	0.953	0	27328152	N.D.	1018.769	#
2)	TM RDX	0.000	1.808	0	18312993	N.D.	1019.705	#
3)	TM 1,3,5-TRI...	0.000	2.920	0	31997644	N.D.	1032.293	#
5)	TM 1,3-DINIT...	0.000	3.859	0	30420053	N.D.	1017.736	#
6)	TM 3,5-DINIT...	0.000	4.153	0	23565844	N.D.	1028.175	#
7)	TM NITROBENZENE	0.000	5.203	0	13572521	N.D.	1050.053	#
8)	TM NITROGLYC...	6.232	6.221	5268055	167089	963.779	NoCal	#
9)	TM TETRYL	6.757	6.757	17035863	10400285	NoCal	1040.335	#
10)	TM 2,4,6-TRI...	7.166	7.166	17202366	13615924	NoCal	1015.162	#
11)	TM 2-AMINO-4...	7.543	7.543	18356279	12485549	NoCal	1007.739	#
12)	TM 4-AMINO-2...	7.851	7.851	17848925	9833615	NoCal	1002.599	#
13)	TM 2,4-DINIT...	8.959	8.959	9356704	13006651	NoCal	1011.600	#
14)	TM 2,6-DINIT...	9.318	9.318	9997604	7258394	NoCal	1004.853	#
15)	TM 2-NITROTO...	0.000	12.625	0	4861093	N.D.	1044.799	#
16)	TM 4-NITROTO...	0.000	13.232	0	4862391	N.D.	1034.396	#
17)	TM 3-NITROTO...	0.000	14.099	0	5818981	N.D.	1045.449	#
18)	TM PETN	16.229	0.000	4608390	0	1040.235	N.D.	#

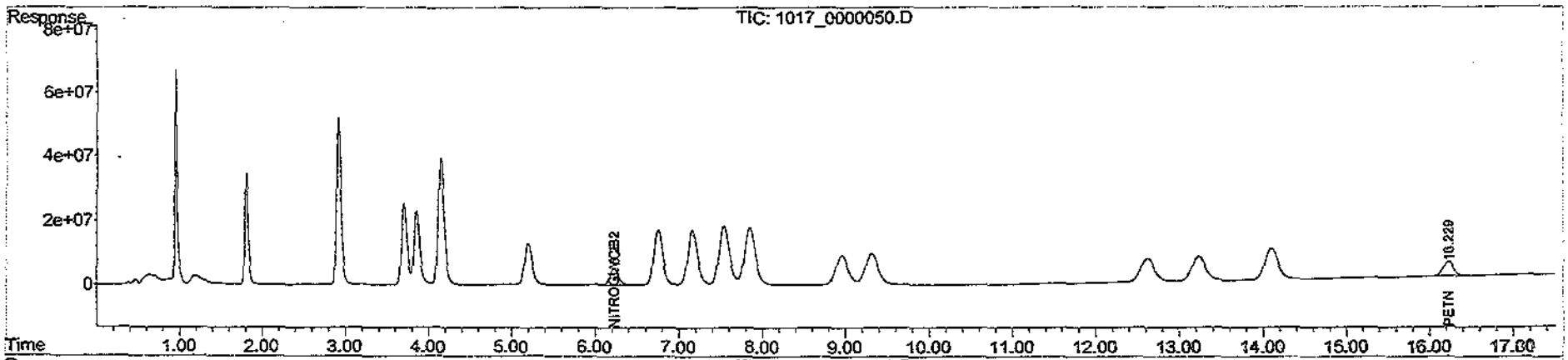
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

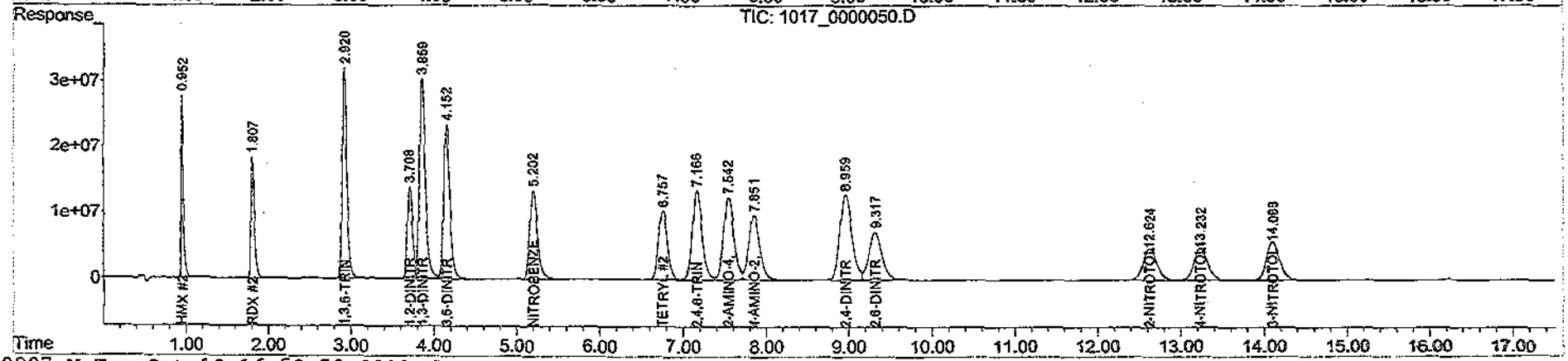
Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111017\
Data File : 1017_0000050.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 18-Oct-2011, 16:03:13
Operator : mp
Sample : 8330_CCV 1.0 PPM 10/17/11
Misc :
ALS Vial : 4360 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 18 16:53:27 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111017\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Fri Oct 14 10:08:44 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron





Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111017\
Data File : 1017_0000064.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 19-Oct-2011, 00:20:34
Operator : mp
Sample : 8330_CCV 1.0 PPM 10/17/11
Misc :
ALS Vial : 4424 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 19 08:43:39 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111017\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Fri Oct 14 10:08:44 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppb	ppb	
	System Monitoring Compounds							
4)	S 1,2-DINIT...	0.000	3.709	0	14038150	N.D.	1008.835	#
	Spiked Amount 62.500			Recovery	=	0.00%	1614.14%	
	Target Compounds							
1)	TM HMX	0.000	0.955	0	27491154	N.D.	1024.845	#
2)	TM RDX	0.000	1.809	0	18311601	N.D.	1019.627	#
3)	TM 1,3,5-TRI...	0.000	2.921	0	31902375	N.D.	1029.220	#
5)	TM 1,3-DINIT...	0.000	3.859	0	30402189	N.D.	1017.138	#
6)	TM 3,5-DINIT...	0.000	4.154	0	23600425	N.D.	1029.684	#
7)	TM NITROBENZENE	0.000	5.203	0	13350317	N.D.	1032.862	#
8)	TM NITROGLYC...	6.232	6.221	5270595	177932	964.244	NoCal	#
9)	TM TETRYL	6.756	6.756	17064074	10433882	NoCal	1043.696	#
10)	TM 2,4,6-TRI...	7.165	7.165	17214898	13627854	NoCal	1016.052	#
11)	TM 2-AMINO-4...	7.543	7.543	18453665	12551111	NoCal	1013.030	#
12)	TM 4-AMINO-2...	7.851	7.851	17947679	9888659	NoCal	1008.211	#
13)	TM 2,4-DINIT...	8.958	8.958	9384810	13036969	NoCal	1013.958	#
14)	TM 2,6-DINIT...	9.316	9.316	10037423	7276098	NoCal	1007.304	#
15)	TM 2-NITROTO...	0.000	12.620	0	4758164	N.D.	1022.677	#
16)	TM 4-NITROTO...	0.000	13.227	0	4803175	N.D.	1021.798	#
17)	TM 3-NITROTO...	0.000	14.095	0	5711067	N.D.	1026.061	#
18)	TM PETN	16.224	0.000	4640955	0	1047.585	N.D.	#

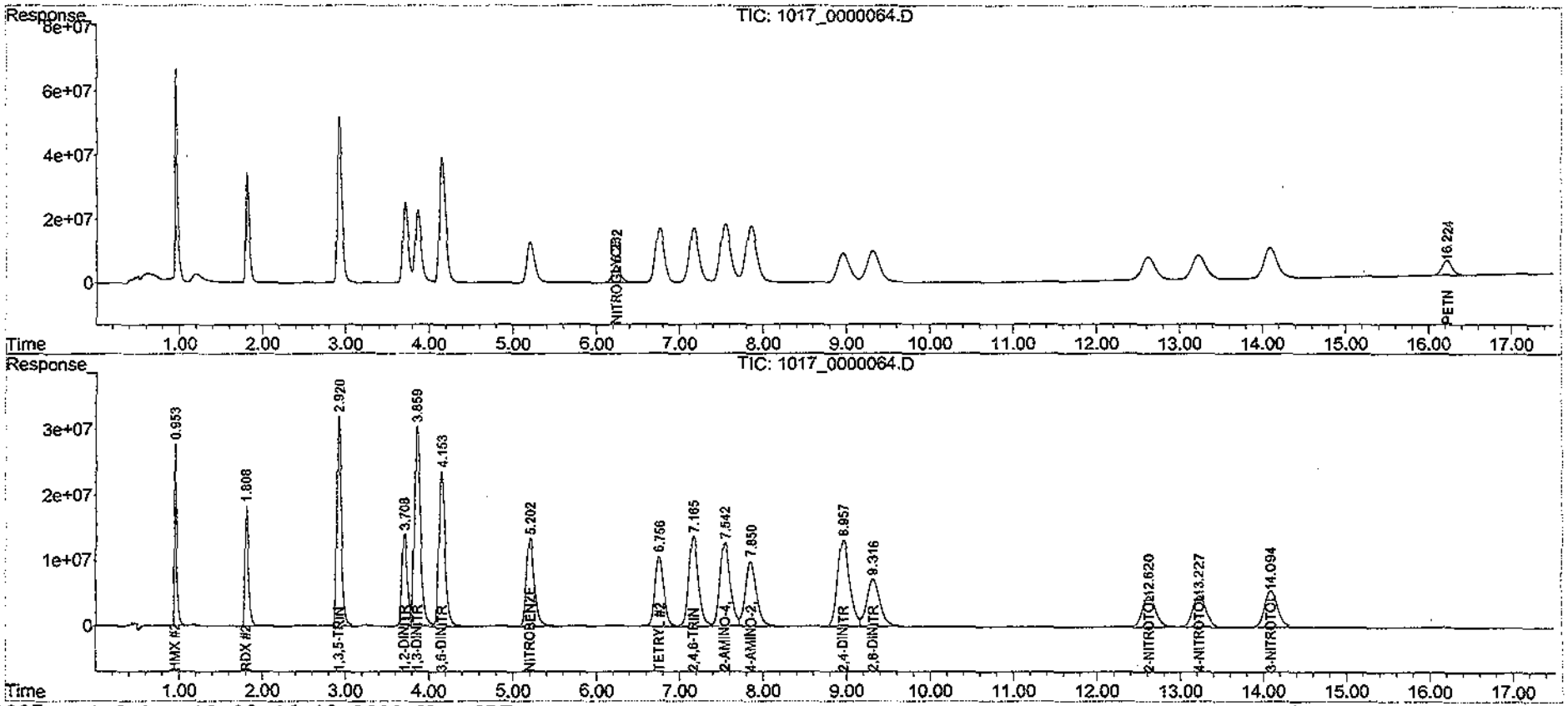
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111017\
Data File : 1017_0000064.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 19-Oct-2011, 00:20:34
Operator : mp
Sample : 8330_CCV 1.0 PPM 10/17/11
Misc :
ALS Vial : 4424 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 19 08:43:39 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111017\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Fri Oct 14 10:08:44 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111017\
Data File : 1017_0000076.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 19-Oct-2011, 07:40:00
Operator : mp
Sample : 8330_CCV 1.0 PPM 10/17/11
Misc :
ALS Vial : 4424 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 19 08:43:41 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111017\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Fri Oct 14 10:08:44 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppb	ppb	
	System Monitoring Compounds							
4)	S 1,2-DINIT...	0.000	3.702	0	14057914	N.D.	1010.255	#
	Spiked Amount 62.500			Recovery	=	0.00%	1616.41%	
	Target Compounds							
1)	TM HMX	0.000	0.953	0	27364983	N.D.	1020.142	#
2)	TM RDX	0.000	1.806	0	18156197	N.D.	1010.974	#
3)	TM 1,3,5-TRI...	0.000	2.915	0	31820184	N.D.	1026.568	#
5)	TM 1,3-DINIT...	0.000	3.852	0	30344291	N.D.	1015.201	#
6)	TM 3,5-DINIT...	0.000	4.147	0	23448858	N.D.	1023.071	#
7)	TM NITROBENZENE	0.000	5.194	0	13109053	N.D.	1014.197	#
8)	TM NITROGLYC...	6.220	6.208	5256369	162515	961.641	NoCal	#
9)	TM TETRYL	6.744	6.744	17002266	10403082	NoCal	1040.615	#
10)	TM 2,4,6-TRI...	7.152	7.152	17186951	13606534	NoCal	1014.462	#
11)	TM 2-AMINO-4...	7.532	7.532	18362630	12472491	NoCal	1006.685	#
12)	TM 4-AMINO-2...	7.839	7.839	17865557	9823678	NoCal	1001.586	#
13)	TM 2,4-DINIT...	8.945	8.945	9364745	13029831	NoCal	1013.403	#
14)	TM 2,6-DINIT...	9.302	9.302	10041318	7282192	NoCal	1008.147	#
15)	TM 2-NITROTO...	0.000	12.610	0	4641842	N.D.	997.676	#
16)	TM 4-NITROTO...	0.000	13.218	0	4717824	N.D.	1003.641	#
17)	TM 3-NITROTO...	0.000	14.087	0	5594871	N.D.	1005.185	#
18)	TM PETN	16.214	0.000	4598245	0	1037.945	N.D.	#

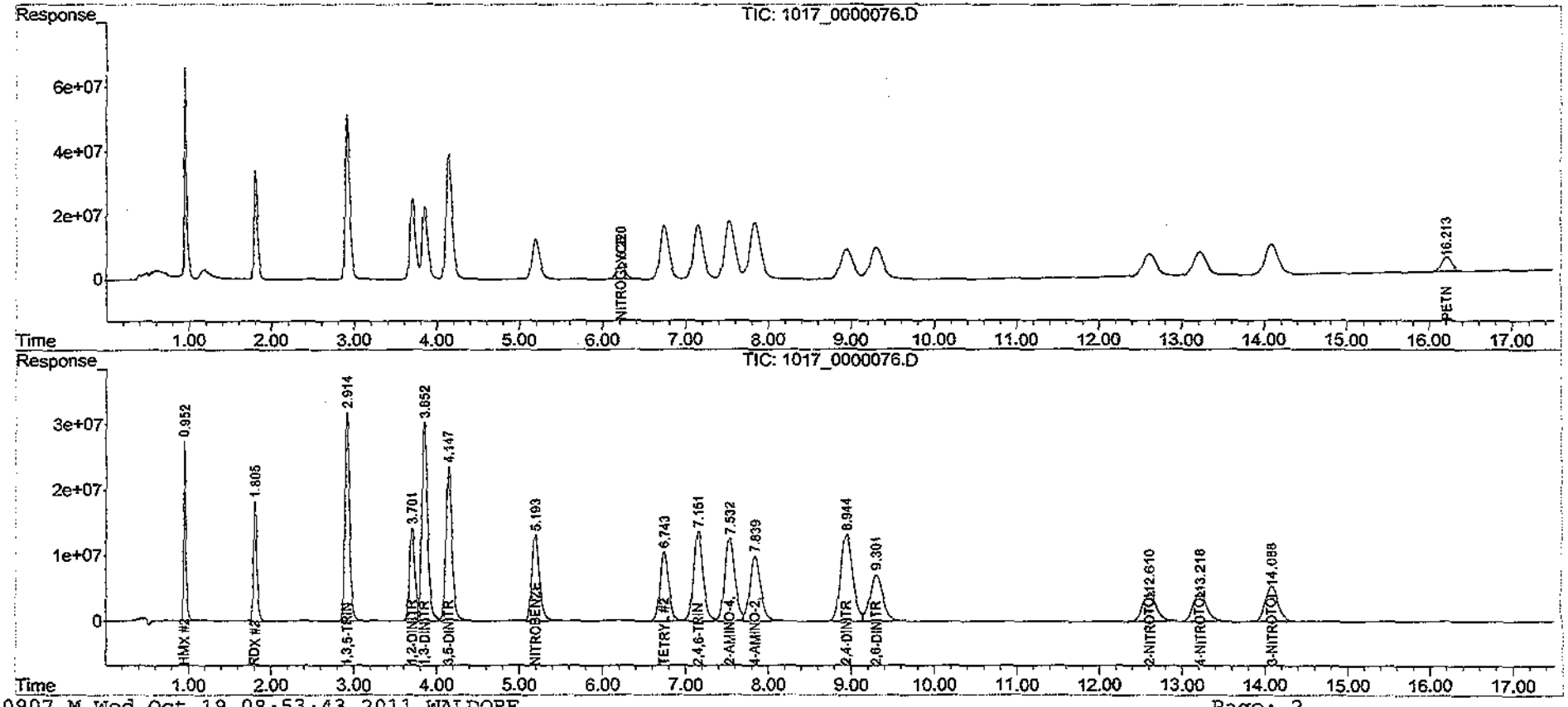
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111017\
Data File : 1017_0000076.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 19-Oct-2011, 07:40:00
Operator : mp
Sample : 8330_CCV 1.0 PPM 10/17/11
Misc :
ALS Vial : 4424 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 19 08:43:41 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111017\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Fri Oct 14 10:08:44 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



Quantitation Report (QT Reviewed)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000011.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 02-Oct-2011, 21:44:41
Operator : MP
Sample : 8330MXA_CB 0.005 PPM 10/01/11
Misc :
ALS Vial : 4096 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 08:44:10 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	R.T.	Response	Conc	Units	
	System Monitoring Compounds					
4) S	1,2-DINITROBENZENE #1	0.000	0	N.D.	ppb	d
23) S	1,2-DINITROBENZENE #2	7.936	8874	4.475	ppb	
	Target Compounds					
1) TM	HMX #1	0.000	0	N.D.	ppb	d
2) TM	RDX #1	0.000	0	N.D.	ppb	d
3) TM	1,3,5-TRINITROBENZENE #1	0.000	0	N.D.	ppb	d
5) TM	1,3-DINITROBENZENE #1	0.000	0	N.D.	ppb	d
6) TM	NITROBENZENE #1	0.000	0	N.D.	ppb	d
7) TM	2,4,6-TRINITROTOLUENE #1	0.000	0	N.D.	ppb	d
8) TM	TETRYL #1	0.000	0	N.D.	ppb	d
9) TM	NITROGLYCERIN #1	0.000	0	N.D.	ppb	d
10) TM	2,6-DINITROTOLUENE #1	0.000	0	N.D.	ppb	d
11) TM	2,4-DINITROTOLUENE #1	0.000	0	N.D.	ppb	d
12) TM	2-NITROTOLUENE #1	0.000	0	N.D.	ppb	d
13) TM	3,5-DINITROANILINE #1	0.000	0	N.D.	ppb	d
14) TM	4-NITROTOLUENE #1	0.000	0	N.D.	ppb	d
15) TM	3-NITROTOLUENE #1	0.000	0	N.D.	ppb	d
16) TM	4-AMINO-2,6-DINITROTO...	0.000	0	N.D.	ppb	d
17) TM	2-AMINO-4,6-DINITROTO...	0.000	0	N.D.	ppb	d
18) TM	PETN #1	0.000	0	N.D.	ppb	d
20) TM	HMX #2	3.861	17952	7.963	ppb	
21) TM	RDX #2	6.118	9083	5.064	ppb	
22) TM	1,3,5-TRINITROBENZENE #2	6.560	19063	4.504	ppb	
24) TM	1,3-DINITROBENZENE #2	8.185	19440	4.578	ppb	
25) TM	NITROBENZENE #2	9.016	10782	4.518	ppb	
26) TM	2,4,6-TRINITROTOLUENE #2	11.445	10843	4.756	ppb	
27) TM	TETRYL #2	11.979	7283	4.372	ppb	m
28) TM	NITROGLYCERIN #2	11.992	8265	NoCal	ppb	
29) TM	2,6-DINITROTOLUENE #2	13.443	6513	4.787	ppb	m
30) TM	2,4-DINITROTOLUENE #2	14.012	10478	4.551	ppb	m
31) TM	2-NITROTOLUENE #2	15.617	2549	2.690	ppb	
32) TM	3,5-DINITROANILINE #2	16.485	444	NoCal	ppb	
33) TM	4-NITROTOLUENE #2	17.124	4336	5.277	ppb	
34) TM	3-NITROTOLUENE #2	18.365	6075	5.718	ppb	
35) TM	4-AMINO-2,6-DINITROTO...	18.707	6604	4.639	ppb	m
36) TM	2-AMINO-4,6-DINITROTO...	19.481	6697	3.841	ppb	m
37) TM	PETN #2	23.310	3520	NoCal	ppb	

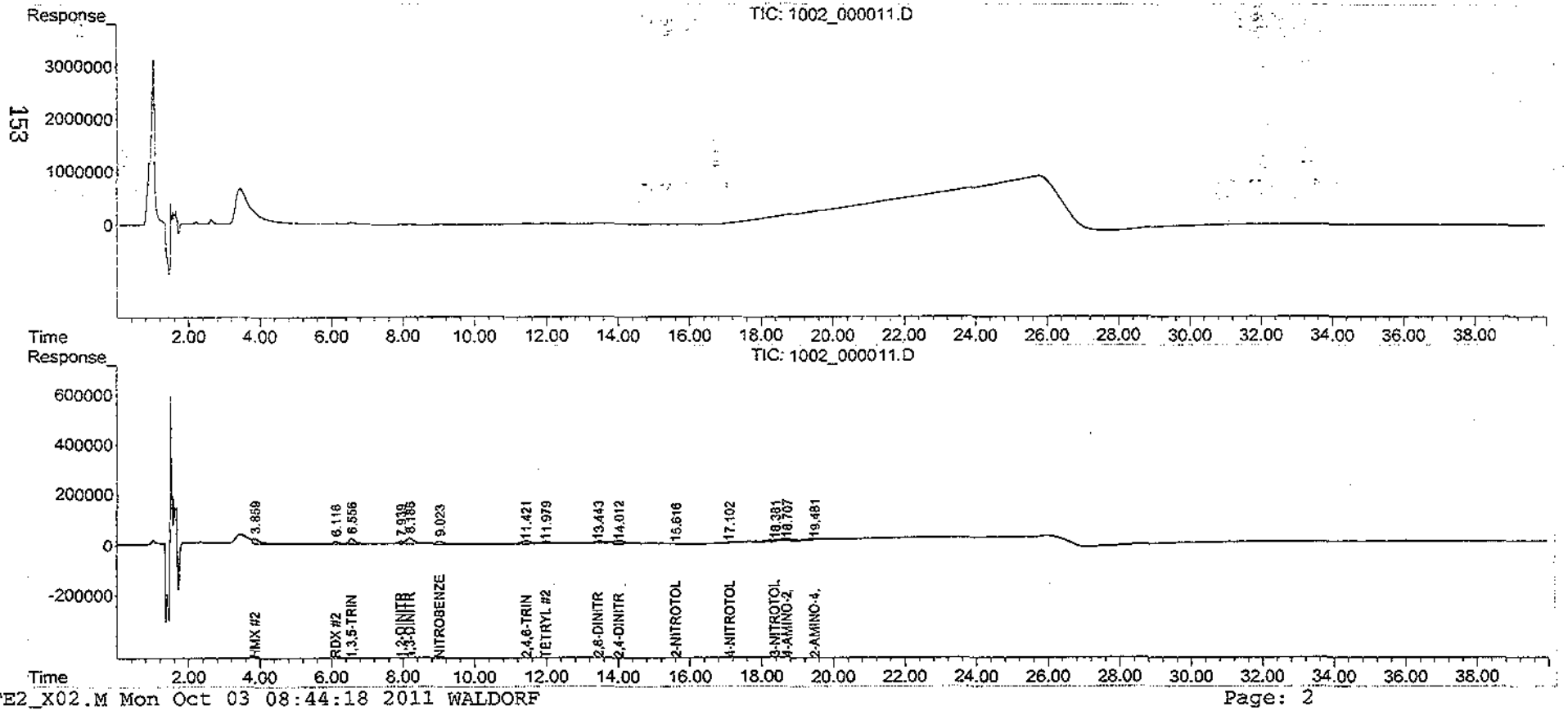
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000011.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 02-Oct-2011, 21:44:41
Operator : MP
Sample : 8330MXA_CB 0.005 PPM 10/01/11
Misc :
ALS Vial : 4096 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 08:44:10 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

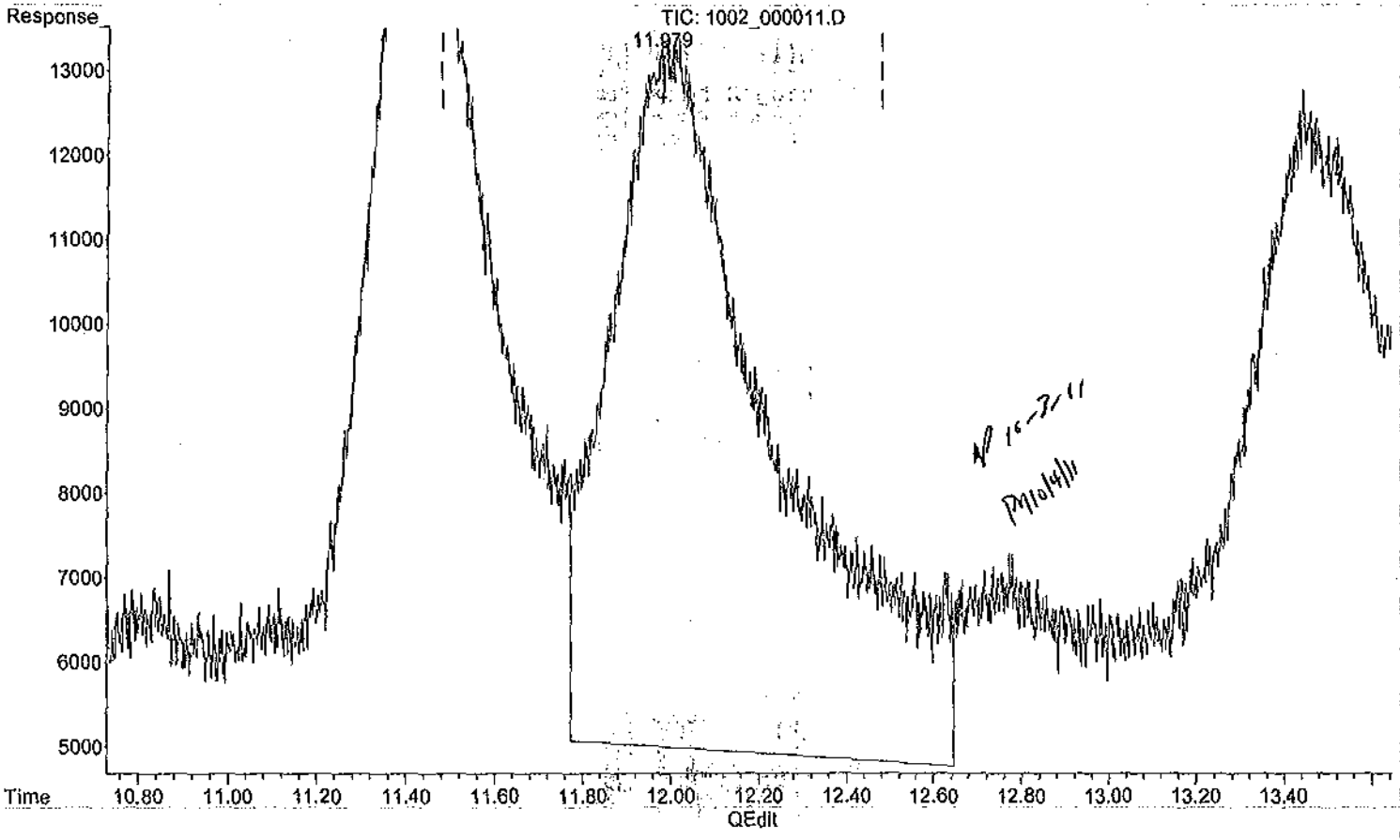


Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000011.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 02-Oct-2011, 21:44:41
Operator : MP
Sample : 8330MXA_CB 0.005 PPM 10/01/11
Misc :
ALS Vial : 4096 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:41:40 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(27) TETRYL #2 (TM)

11.992min 4.961 ppb

response 8265

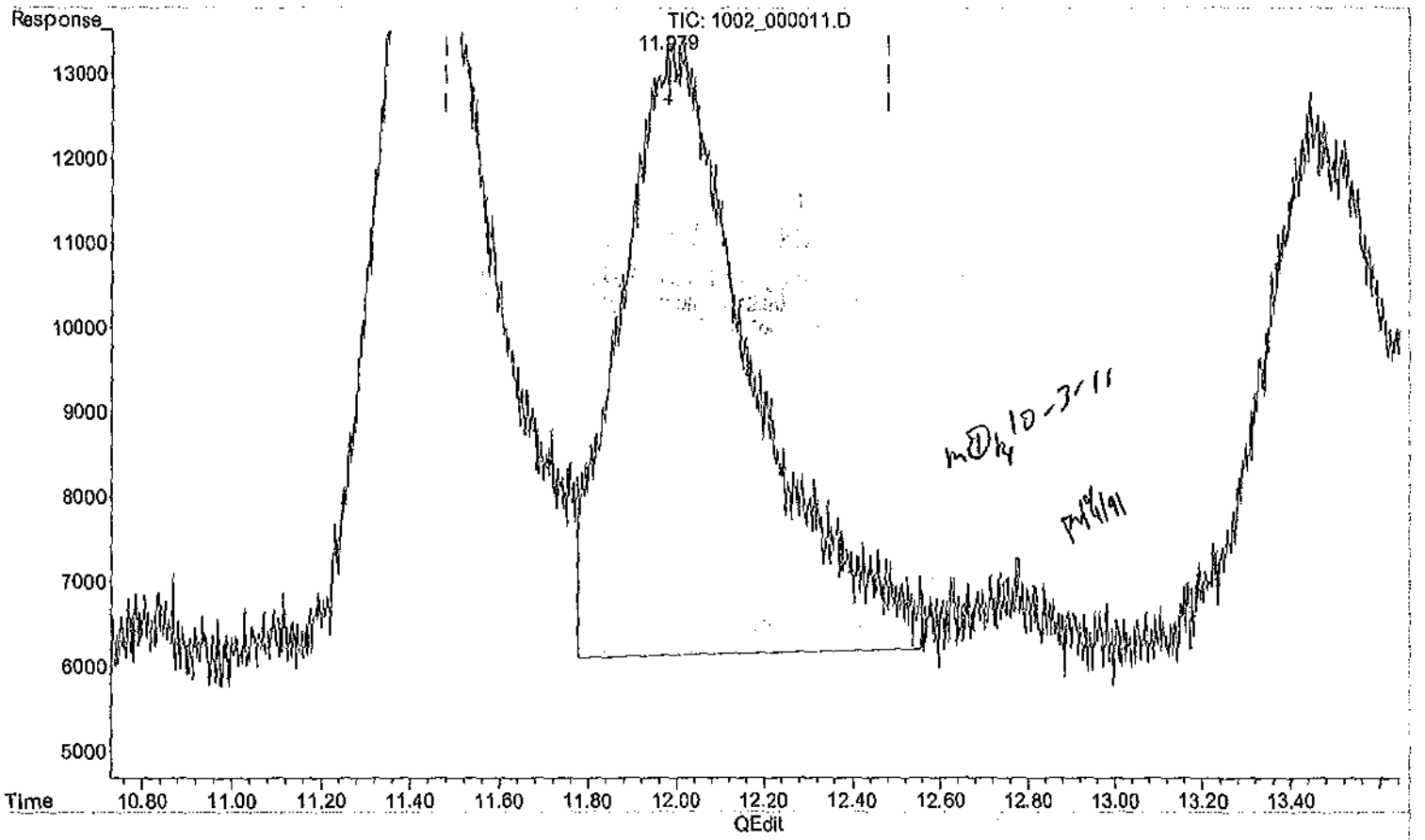
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000011.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 02-Oct-2011, 21:44:41
Operator : MP
Sample : 8330MXA_CB 0.005 PPM 10/01/11
Misc :
ALS Vial : 4096 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:41:40 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(27) TETRYL #2 (TM)

11.979min 4.372 ppb m

response 7283

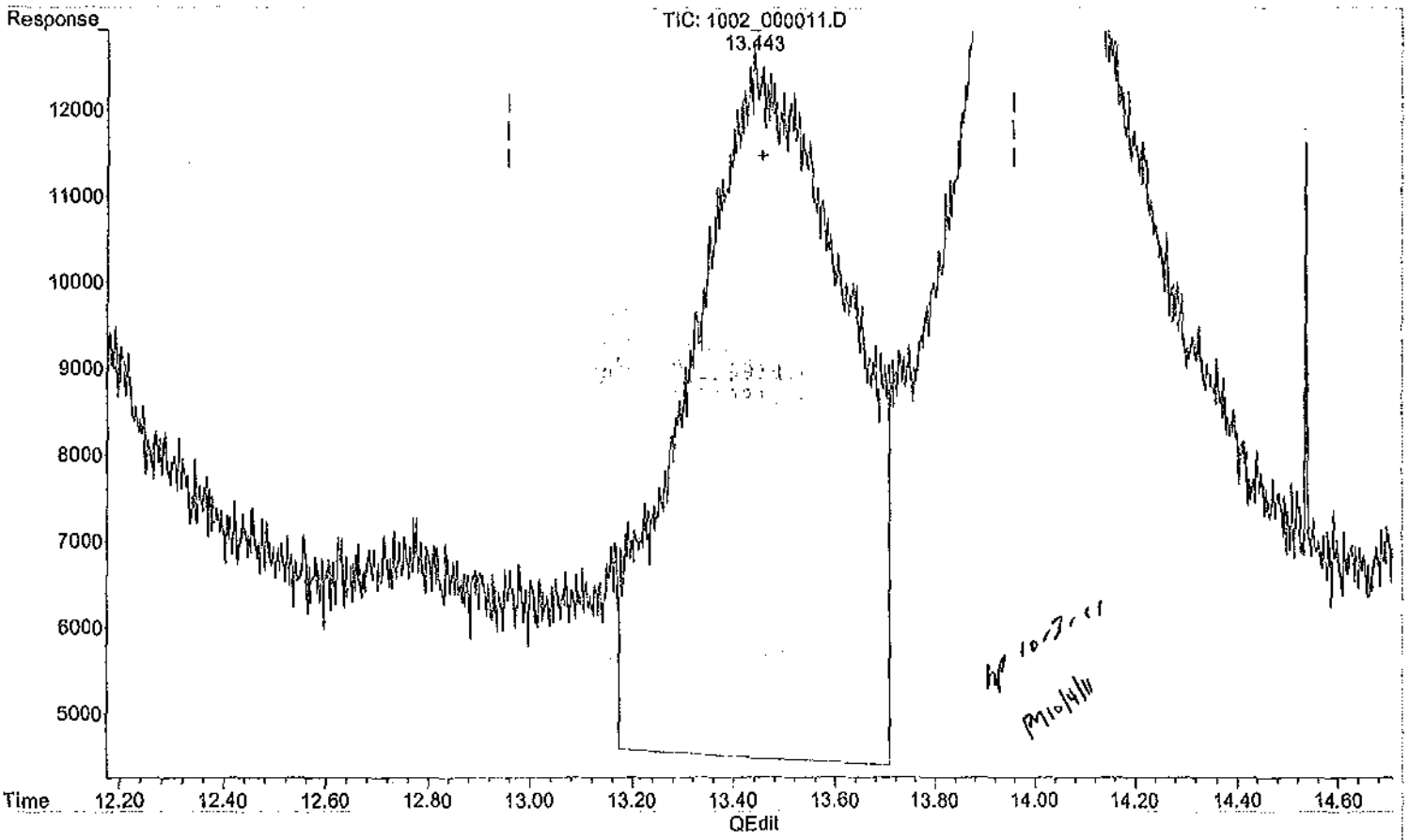
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000011.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 02-Oct-2011, 21:44:41
Operator : MP
Sample : 8330MXA_CB 0.005 PPM 10/01/11
Misc :
ALS Vial : 4096 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:41:40 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(29) 2,6-DINITROTOLUENE #2 (TM)

13.444min 5.931 ppb

response 8070

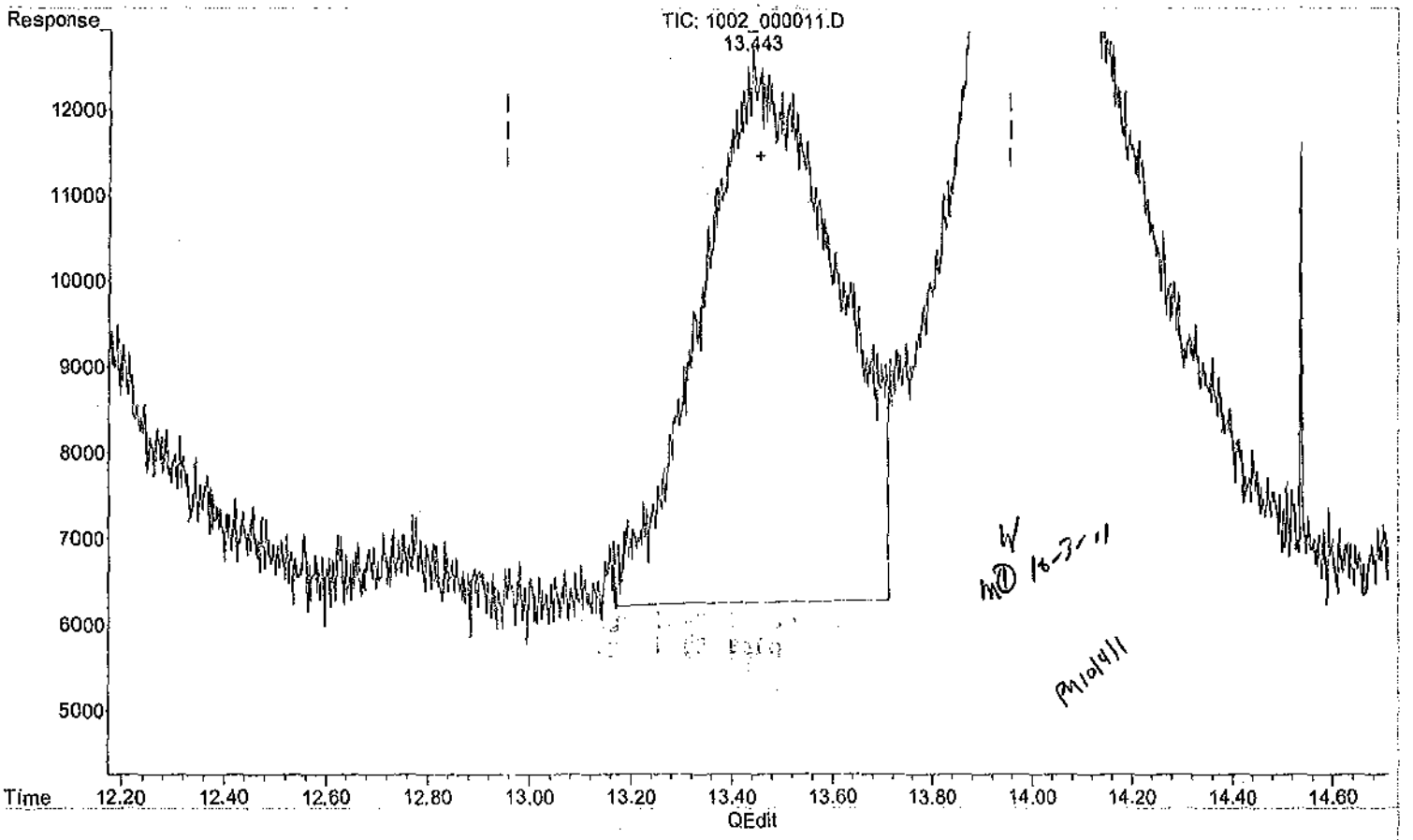
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000011.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 02-Oct-2011, 21:44:41
Operator : MP
Sample : 8330MXA_CB 0.005 PPM 10/01/11
Misc :
ALS Vial : 4096 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:41:40 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(29) 2,6-DINITROTOLUENE #2 (TM)

13.443min 4.787 ppb m

response 6513

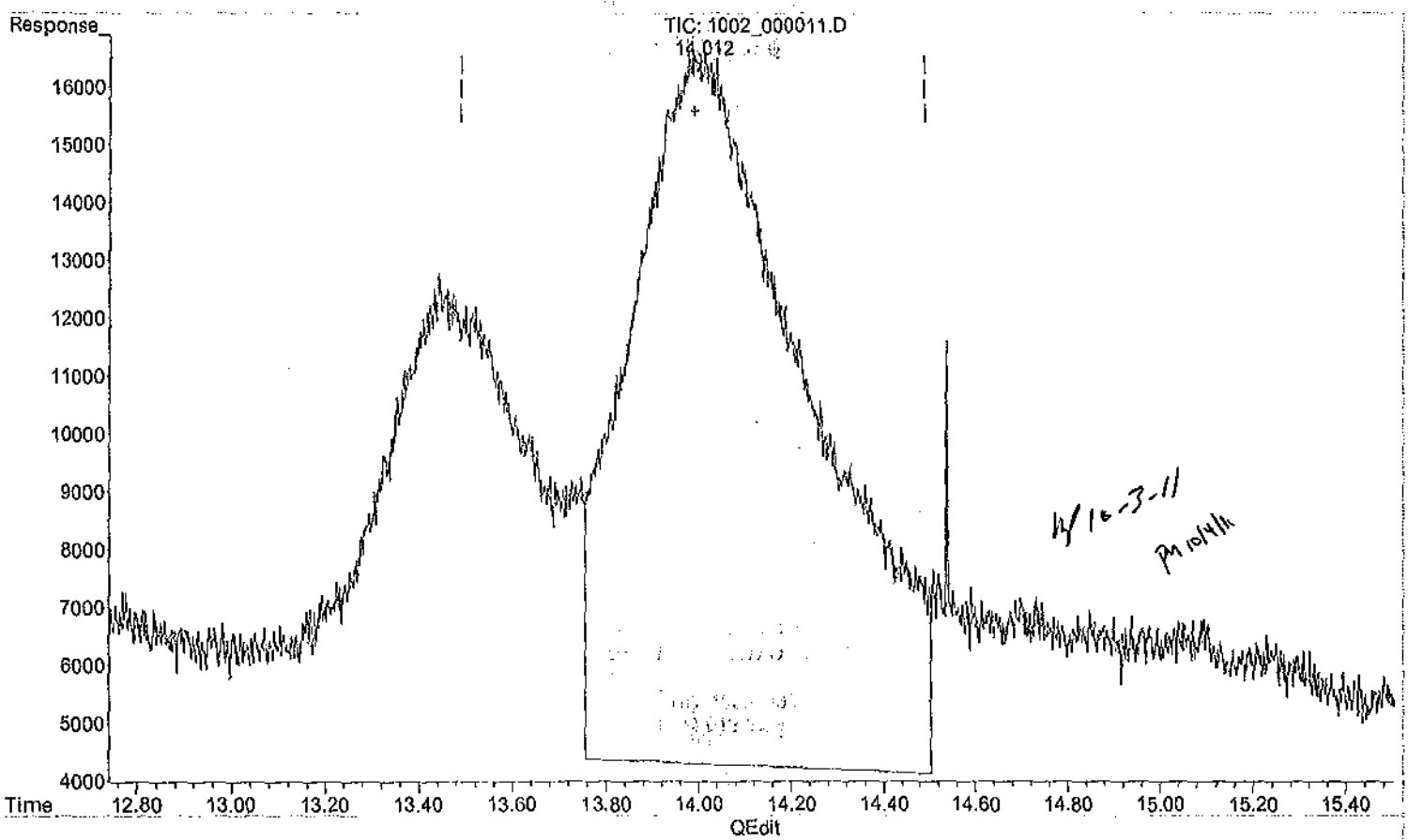
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000011.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 02-Oct-2011, 21:44:41
Operator : MP
Sample : 8330MXA_CB 0.005 PPM 10/01/11
Misc :
ALS Vial : 4096 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:41:40 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(30) 2,4-DINITROTOLUENE #2 (TM)

13.990min 5.250 ppb

response 12088

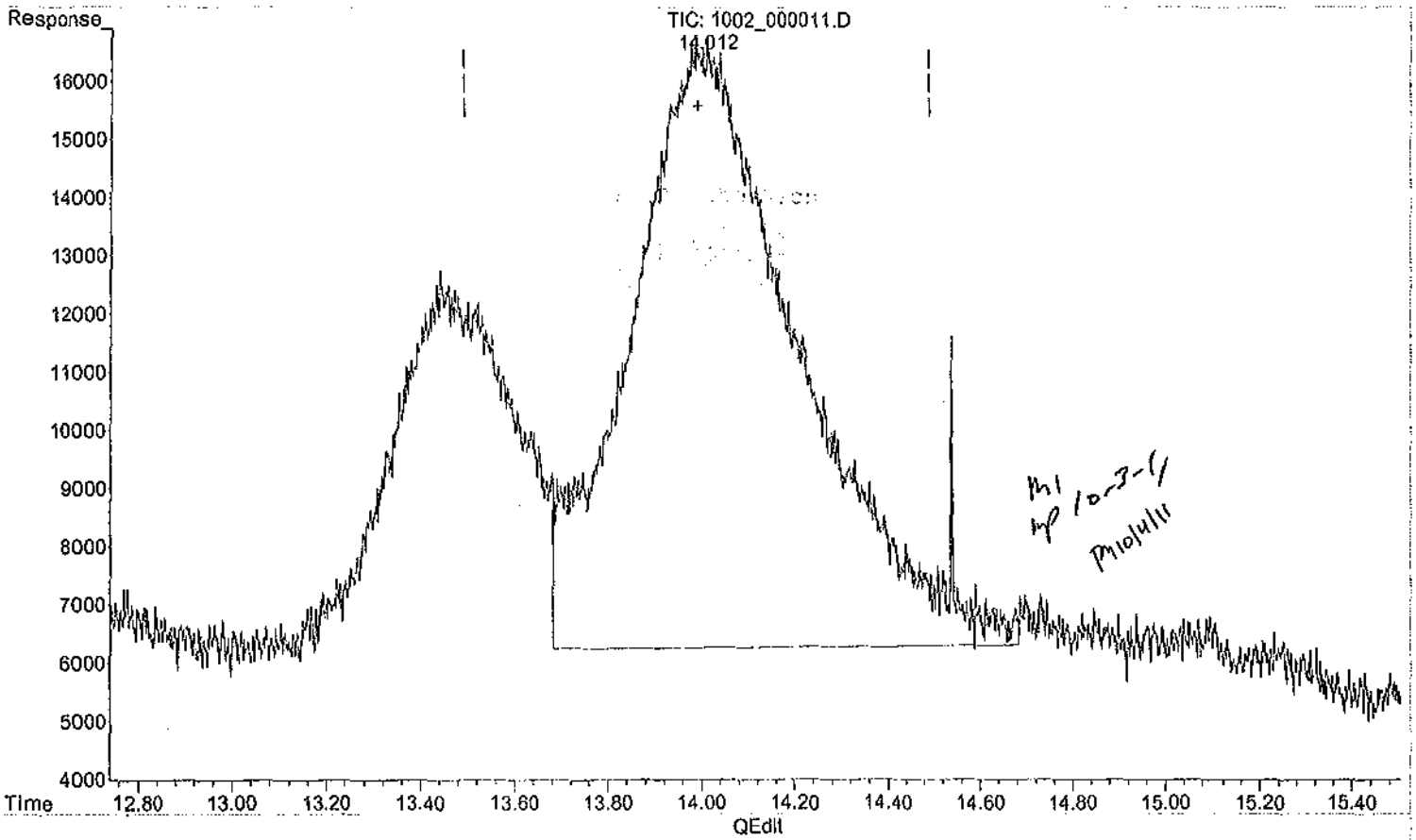
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000011.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 02-Oct-2011, 21:44:41
Operator : MP
Sample : 8330MXA_CB 0.005 PPM 10/01/11
Misc :
ALS Vial : 4096 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:41:40 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(30) 2,4-DINITROTOLUENE #2 (TM)

14.012min 4.551 ppb m

response 10478

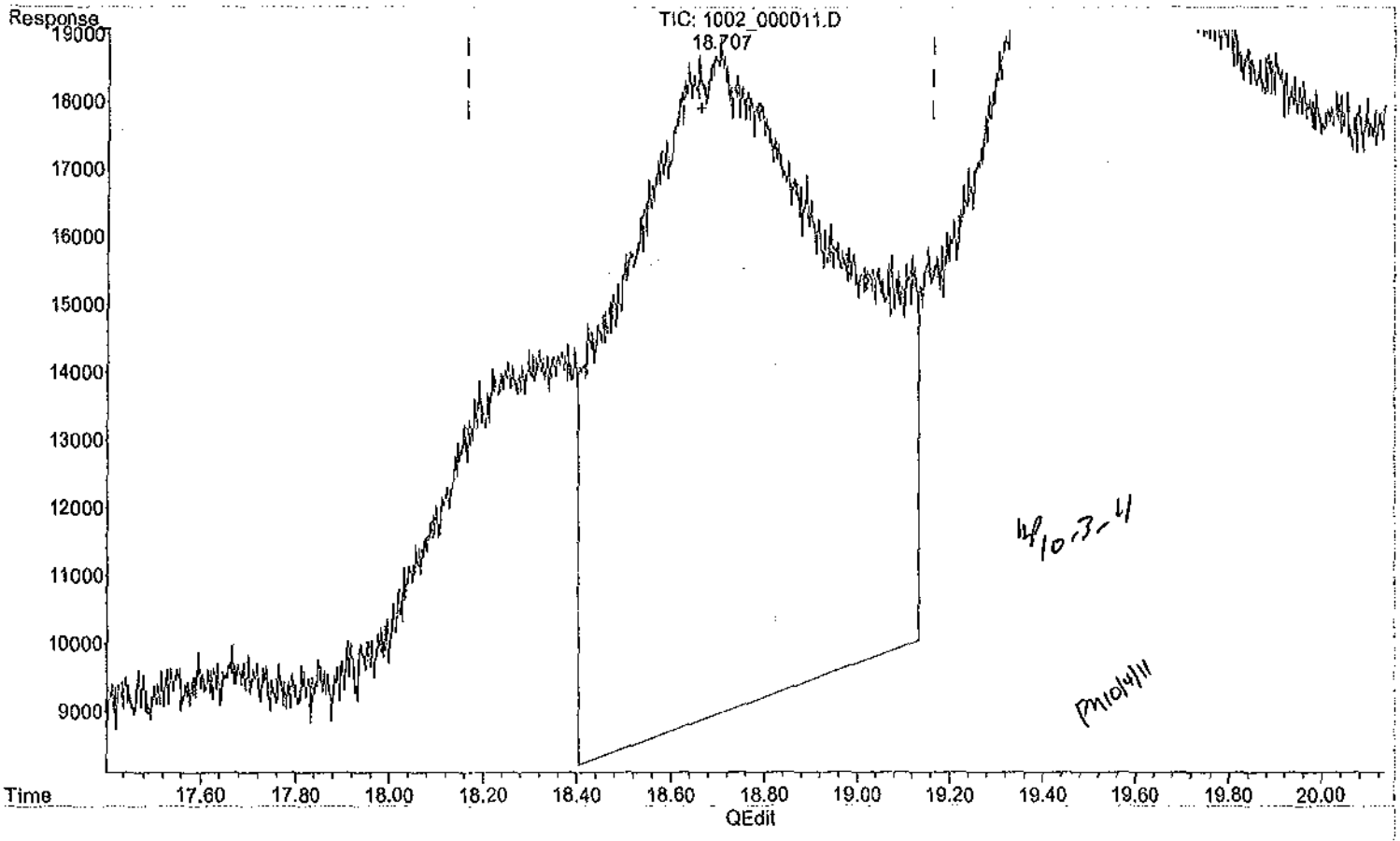
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000011.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 02-Oct-2011, 21:44:41
Operator : MP
Sample : 8330MXA_CB 0.005 PPM 10/01/11
Misc :
ALS Vial : 4096 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:41:40 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(35) 4-AMINO-2,6-DINITROTOLUENE #2 (TM)

18.704min 6.773 ppb

response 9642

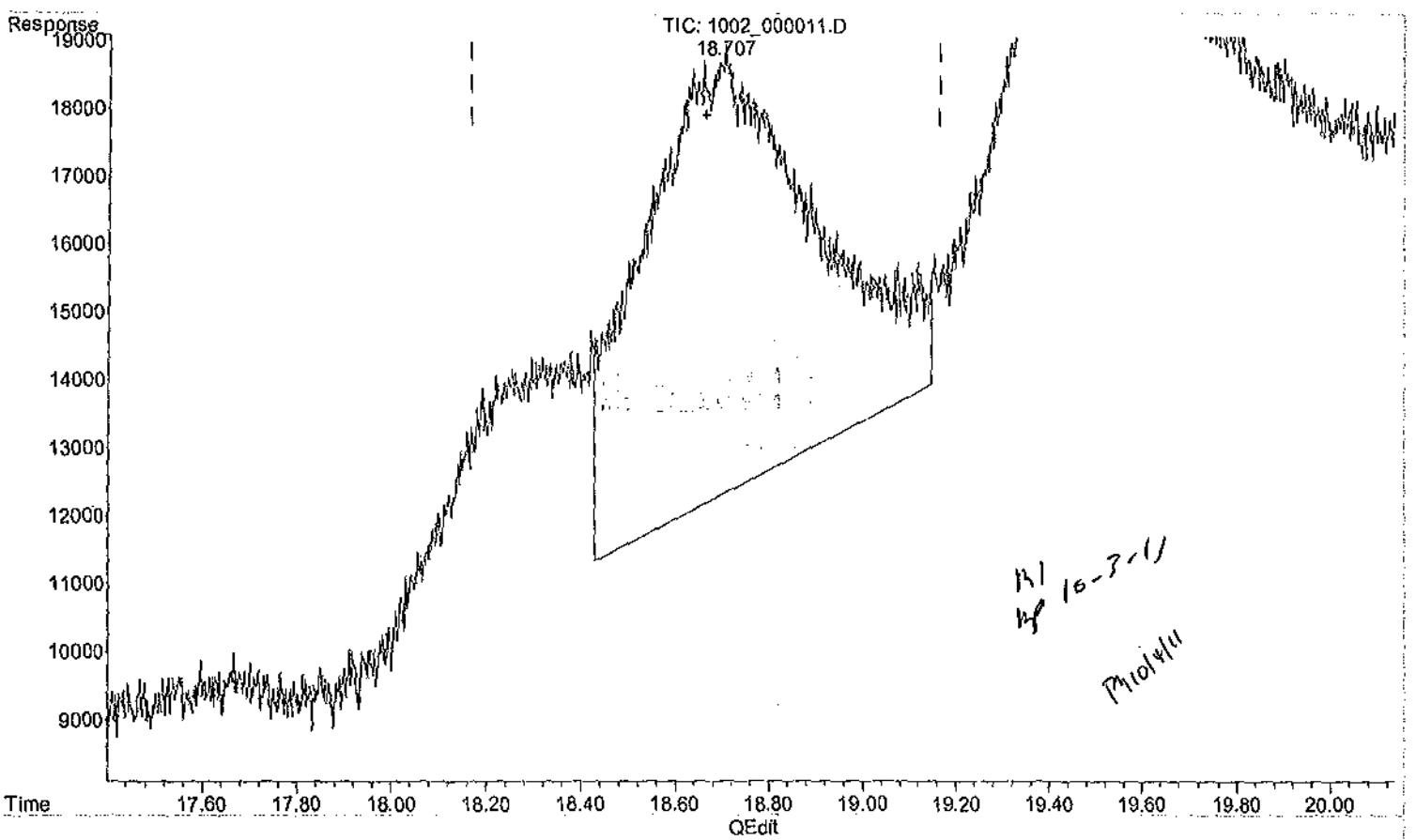
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000011.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 02-Oct-2011, 21:44:41
Operator : MP
Sample : 8330MXA_CB 0.005 PPM 10/01/11
Misc :
ALS Vial : 4096 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:41:40 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(35) 4-AMINO-2,6-DINITROTOLUENE #2 (TM)

18.707min 4.639 ppb m

response 6604

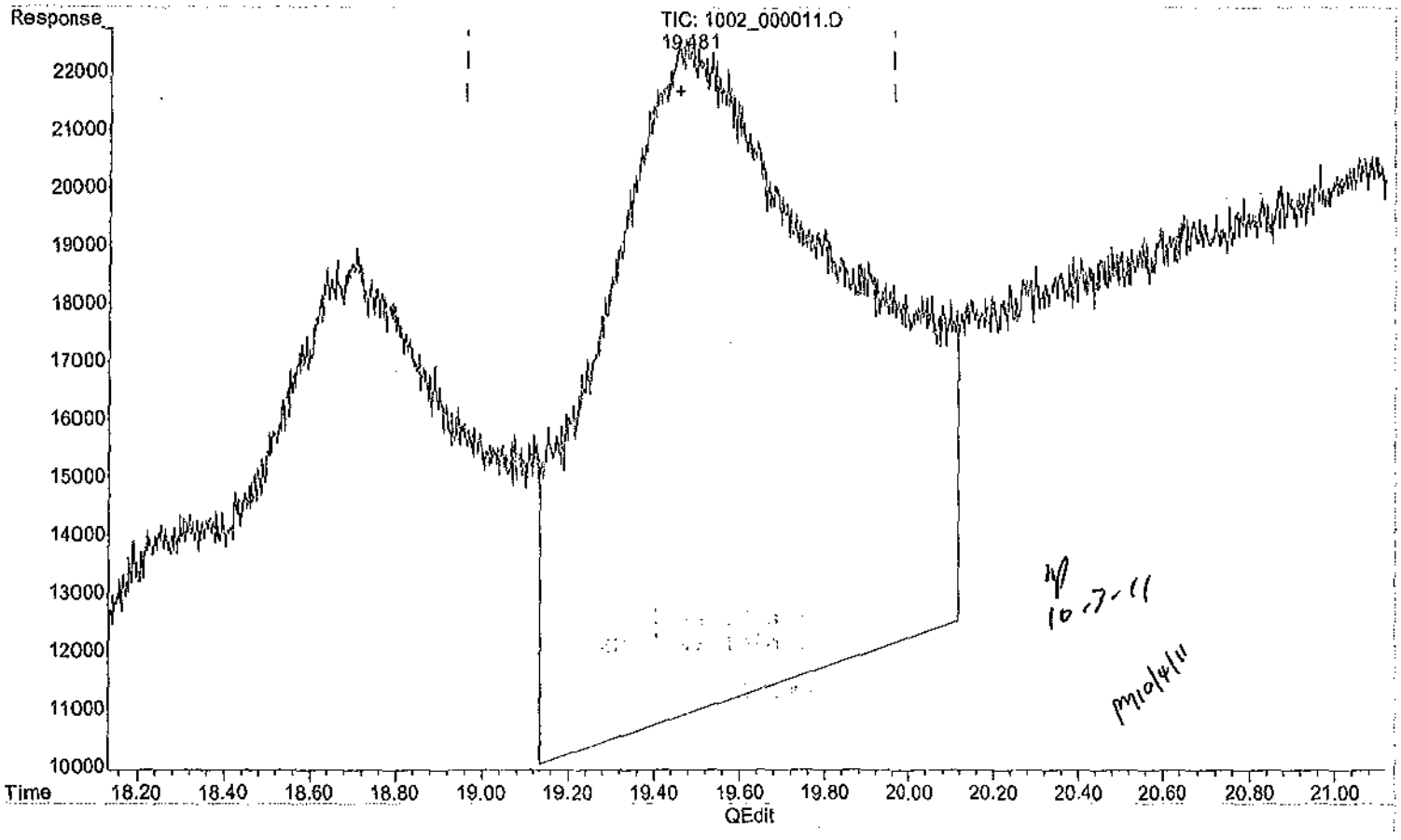
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000011.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 02-Oct-2011, 21:44:41
Operator : MP
Sample : 8330MXA_CB 0.005 PPM 10/01/11
Misc :
ALS Vial : 4096 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:41:40 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(36) 2-AMINO-4,6-DINITROTOLUENE #2 (TM)

19.476min 6.651 ppb

response 11596

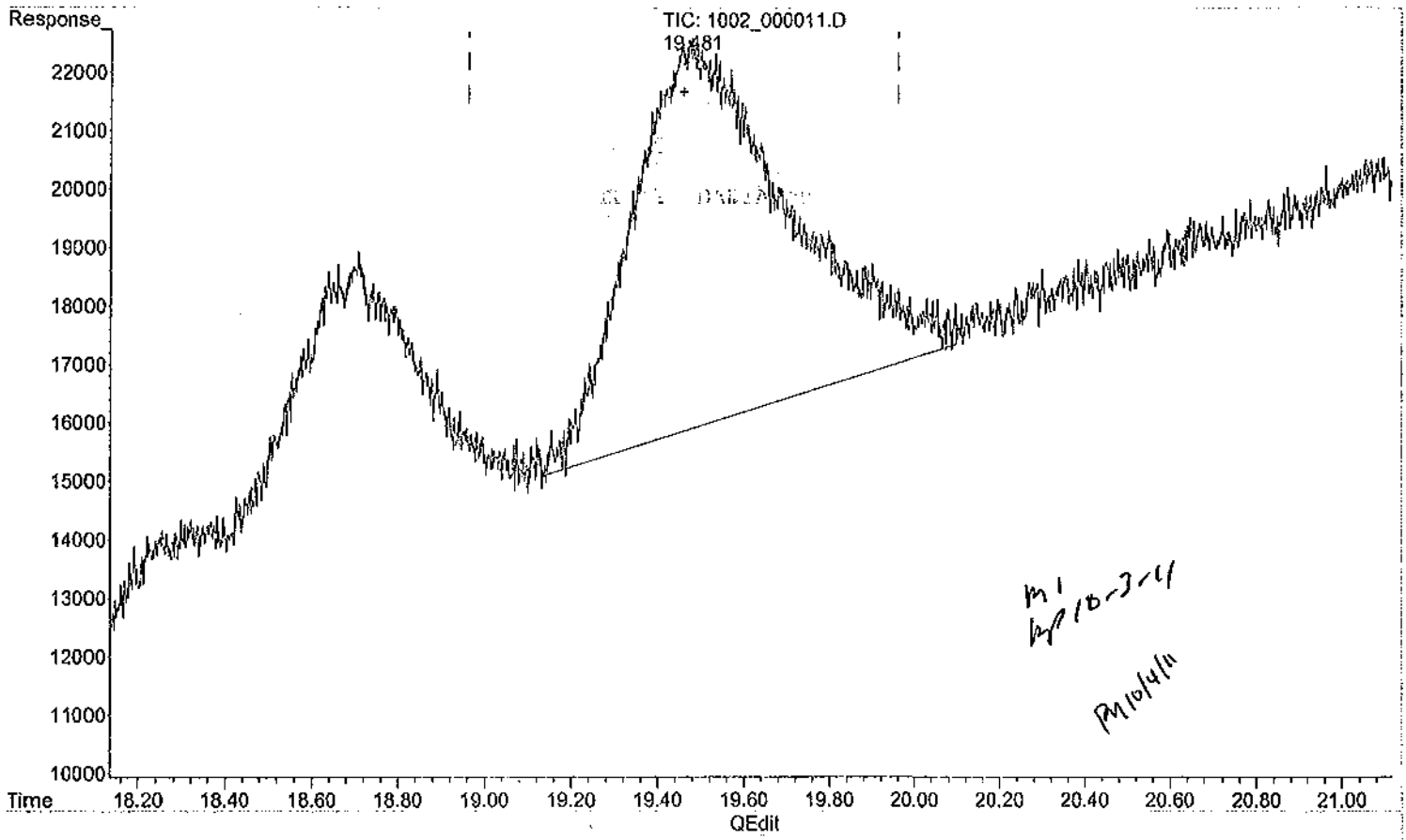
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000011.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 02-Oct-2011, 21:44:41
Operator : MP
Sample : 8330MXA_CB 0.005 PPM 10/01/11
Misc :
ALS Vial : 4096 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:41:40 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(36) 2-AMINO-4,6-DINITROTOLUENE #2 (TM)

19.481min 3.841 ppb m

response 6697

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000012.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 02-Oct-2011, 22:26:11
Operator : MP
Sample : 8330MXB_CB 0.005 PPM 10/01/11
Misc :
ALS Vial : 4097 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 08:45:03 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	R.T.	Response	Conc	Units	
	System Monitoring Compounds					
4) S	1,2-DINITROBENZENE #1	7.929	2458	NoCal	ppb	
23) S	1,2-DINITROBENZENE #2	0.000	0	N.D.	ppb	d
	Target Compounds					
1) TM	HMX #1	0.000	0	N.D.	ppb	
2) TM	RDX #1	6.553	1369	NoCal	ppb	
3) TM	1,3,5-TRINITROBENZENE #1	6.553	1369	NoCal	ppb	
5) TM	1,3-DINITROBENZENE #1	8.162	1591	NoCal	ppb	
6) TM	NITROBENZENE #1	9.038	1071	NoCal	ppb	
7) TM	2,4,6-TRINITROTOLUENE #1	11.435	4388	NoCal	ppb	
8) TM	TETRYL #1	12.003	7851	NoCal	ppb	
9) TM	NITROGLYCERIN #1	12.010	3986	4.745	ppb	m
10) TM	2,6-DINITROTOLUENE #1	13.448	4908	NoCal	ppb	
11) TM	2,4-DINITROTOLUENE #1	13.965	5399	NoCal	ppb	
12) TM	2-NITROTOLUENE #1	15.545	4799	20.313	ppb	
13) TM	3,5-DINITROANILINE #1	16.235	15476	5.809	ppb	
14) TM	4-NITROTOLUENE #1	0.000	0	N.D.	ppb	
15) TM	3-NITROTOLUENE #1	0.000	0	N.D.	ppb	
16) TM	4-AMINO-2,6-DINITROTO...	0.000	0	N.D.	ppb	
17) TM	2-AMINO-4,6-DINITROTO...	0.000	0	N.D.	ppb	
18) TM	PETN #1	0.000	0	N.D.	ppb	
20) TM	HMX #2	0.000	0	N.D.	ppb	d
21) TM	RDX #2	0.000	0	N.D.	ppb	d
22) TM	1,3,5-TRINITROBENZENE #2	0.000	0	N.D.	ppb	d
24) TM	1,3-DINITROBENZENE #2	0.000	0	N.D.	ppb	d
25) TM	NITROBENZENE #2	0.000	0	N.D.	ppb	d
26) TM	2,4,6-TRINITROTOLUENE #2	0.000	0	N.D.	ppb	d
27) TM	TETRYL #2	0.000	0	N.D.	ppb	d
28) TM	NITROGLYCERIN #2	0.000	0	N.D.	ppb	d
29) TM	2,6-DINITROTOLUENE #2	0.000	0	N.D.	ppb	d
30) TM	2,4-DINITROTOLUENE #2	0.000	0	N.D.	ppb	d
31) TM	2-NITROTOLUENE #2	0.000	0	N.D.	ppb	d
32) TM	3,5-DINITROANILINE #2	0.000	0	N.D.	ppb	d
33) TM	4-NITROTOLUENE #2	0.000	0	N.D.	ppb	d
34) TM	3-NITROTOLUENE #2	0.000	0	N.D.	ppb	d
35) TM	4-AMINO-2,6-DINITROTO...	0.000	0	N.D.	ppb	d
36) TM	2-AMINO-4,6-DINITROTO...	0.000	0	N.D.	ppb	d
37) TM	PETN #2	0.000	0	N.D.	ppb	d

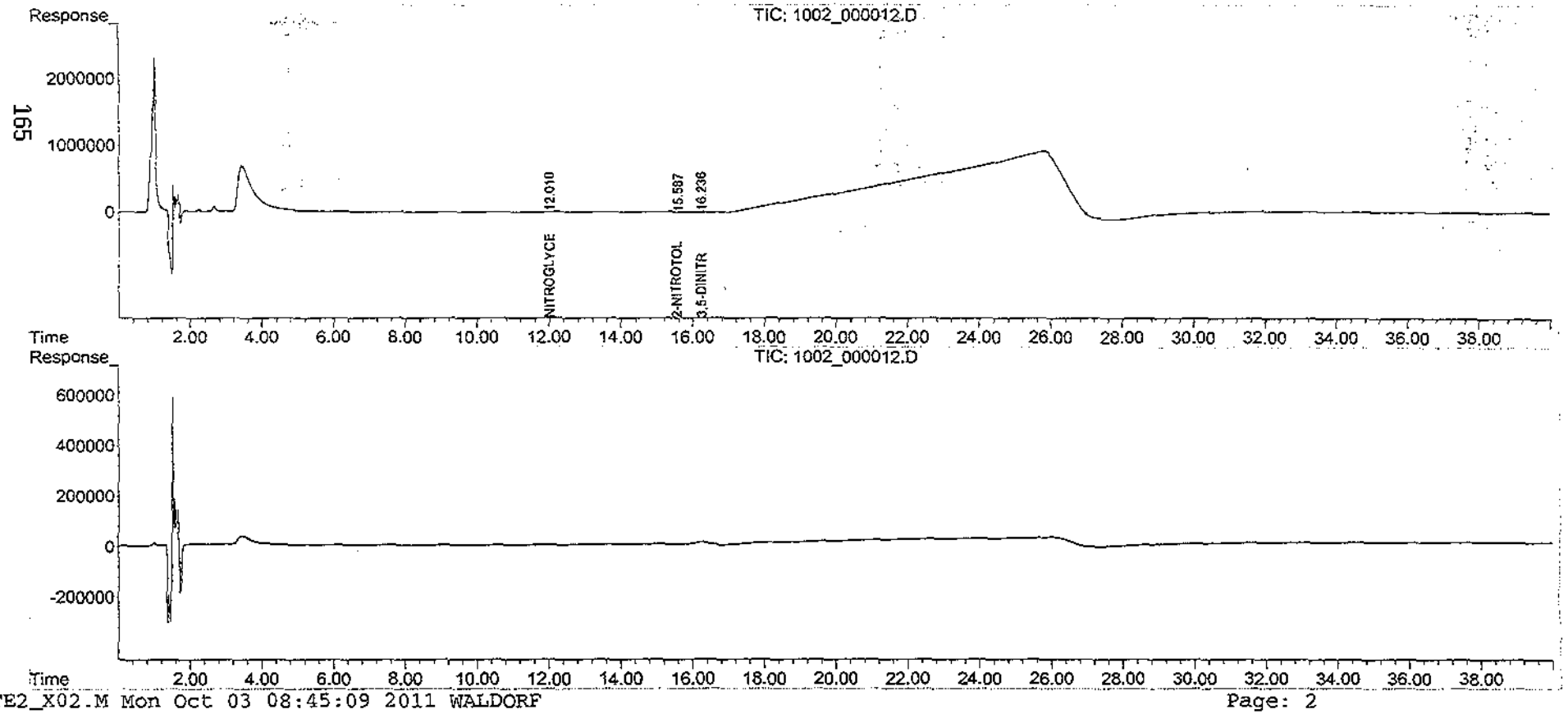
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000012.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 02-Oct-2011, 22:26:11
Operator : MP
Sample : 8330MXB_CB 0.005 PPM 10/01/11
Misc :
ALS Vial : 4097 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 08:45:03 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

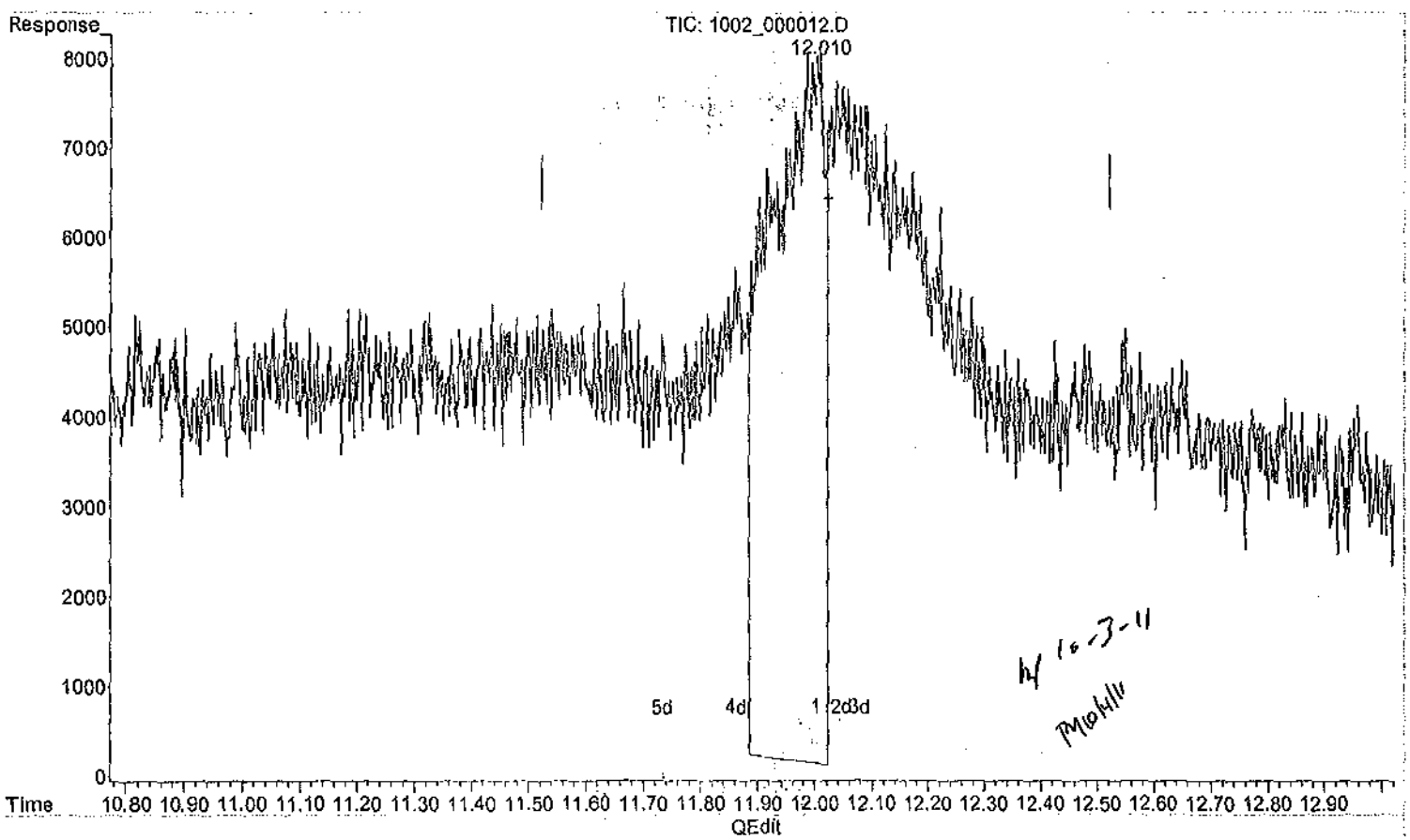


Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000012.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 02-Oct-2011, 22:26:11
Operator : MP
Sample : 8330MXB_CB 0.005 PPM 10/01/11
Misc :
ALS Vial : 4097 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:41:42 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(9) NITROGLYCERIN #1 (TM)

12.003min 9.347 ppb

response 7851

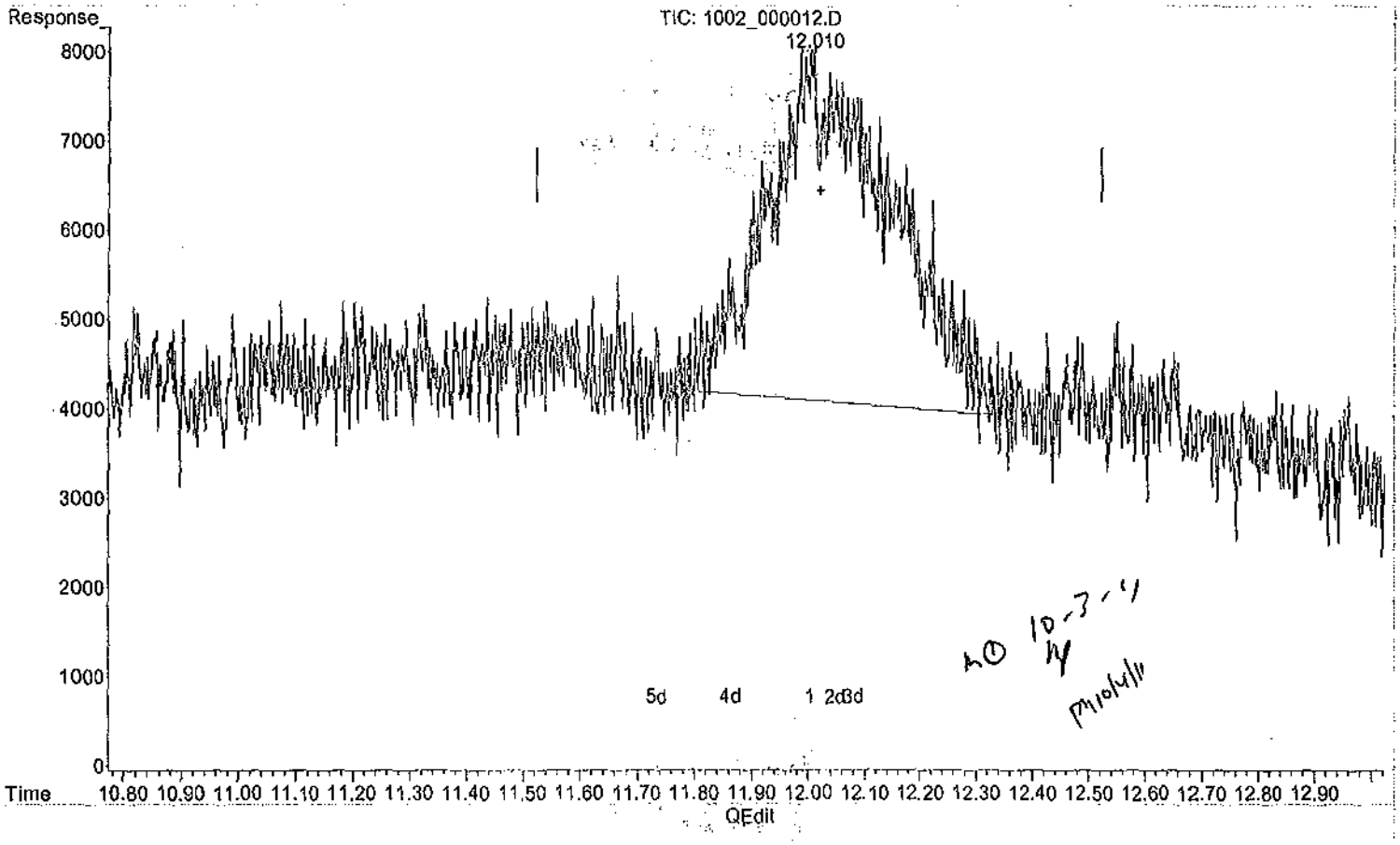
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000012.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 02-Oct-2011, 22:26:11
Operator : MP
Sample : 8330MXB_CB 0.005 PPM 10/01/11
Misc :
ALS Vial : 4097 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:41:42 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(9) NITROGLYCERIN #1 (TM)

12.010min 4.745 ppb m

response 3986

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000013.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 02-Oct-2011, 23:07:41
Operator : MP
Sample : 8330MXA_CB 0.010 PPM 10/01/11
Misc :
ALS Vial : 4098 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 08:48:57 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

		Compound	R.T.	Response	Conc	Units	
System Monitoring Compounds							
4)	S	1,2-DINITROBENZENE #1	0.000	0	N.D.	ppb	d
23)	S	1,2-DINITROBENZENE #2	7.947	16908	8.526	ppb	
Target Compounds							
1)	TM	HMX #1	0.000	0	N.D.	ppb	d
2)	TM	RDX #1	0.000	0	N.D.	ppb	d
3)	TM	1,3,5-TRINITROBENZENE #1	0.000	0	N.D.	ppb	d
5)	TM	1,3-DINITROBENZENE #1	0.000	0	N.D.	ppb	d
6)	TM	NITROBENZENE #1	0.000	0	N.D.	ppb	d
7)	TM	2,4,6-TRINITROTOLUENE #1	0.000	0	N.D.	ppb	d
8)	TM	TETRYL #1	0.000	0	N.D.	ppb	d
9)	TM	NITROGLYCERIN #1	0.000	0	N.D.	ppb	d
10)	TM	2,6-DINITROTOLUENE #1	0.000	0	N.D.	ppb	d
11)	TM	2,4-DINITROTOLUENE #1	0.000	0	N.D.	ppb	d
12)	TM	2-NITROTOLUENE #1	0.000	0	N.D.	ppb	d
13)	TM	3,5-DINITROANILINE #1	0.000	0	N.D.	ppb	d
14)	TM	4-NITROTOLUENE #1	0.000	0	N.D.	ppb	d
15)	TM	3-NITROTOLUENE #1	0.000	0	N.D.	ppb	d
16)	TM	4-AMINO-2,6-DINITROTO...	0.000	0	N.D.	ppb	d
17)	TM	2-AMINO-4,6-DINITROTO...	0.000	0	N.D.	ppb	d
18)	TM	PETN #1	0.000	0	N.D.	ppb	d
20)	TM	HMX #2	3.869	27549	12.220	ppb	
21)	TM	RDX #2	6.128	16932	9.440	ppb	
22)	TM	1,3,5-TRINITROBENZENE #2	6.569	36796	8.693	ppb	
24)	TM	1,3-DINITROBENZENE #2	8.195	37493	8.829	ppb	
25)	TM	NITROBENZENE #2	9.022	19421	8.137	ppb	
26)	TM	2,4,6-TRINITROTOLUENE #2	11.432	20343	8.923	ppb	
27)	TM	TETRYL #2	11.998	15856	9.518	ppb	
28)	TM	NITROGLYCERIN #2	11.998	15856	NoCal	ppb	
29)	TM	2,6-DINITROTOLUENE #2	13.484	11839	8.702	ppb	m
30)	TM	2,4-DINITROTOLUENE #2	14.007	20137	8.747	ppb	m
31)	TM	2-NITROTOLUENE #2	15.641	7975	8.414	ppb	m
32)	TM	3,5-DINITROANILINE #2	16.380	4439	NoCal	ppb	
33)	TM	4-NITROTOLUENE #2	17.126	6507	7.919	ppb	
34)	TM	3-NITROTOLUENE #2	18.317	12194	11.477	ppb	
35)	TM	4-AMINO-2,6-DINITROTO...	18.692	15487	10.879	ppb	m
36)	TM	2-AMINO-4,6-DINITROTO...	19.477	14718	8.441	ppb	m
37)	TM	PETN #2	22.950	4037	NoCal	ppb	

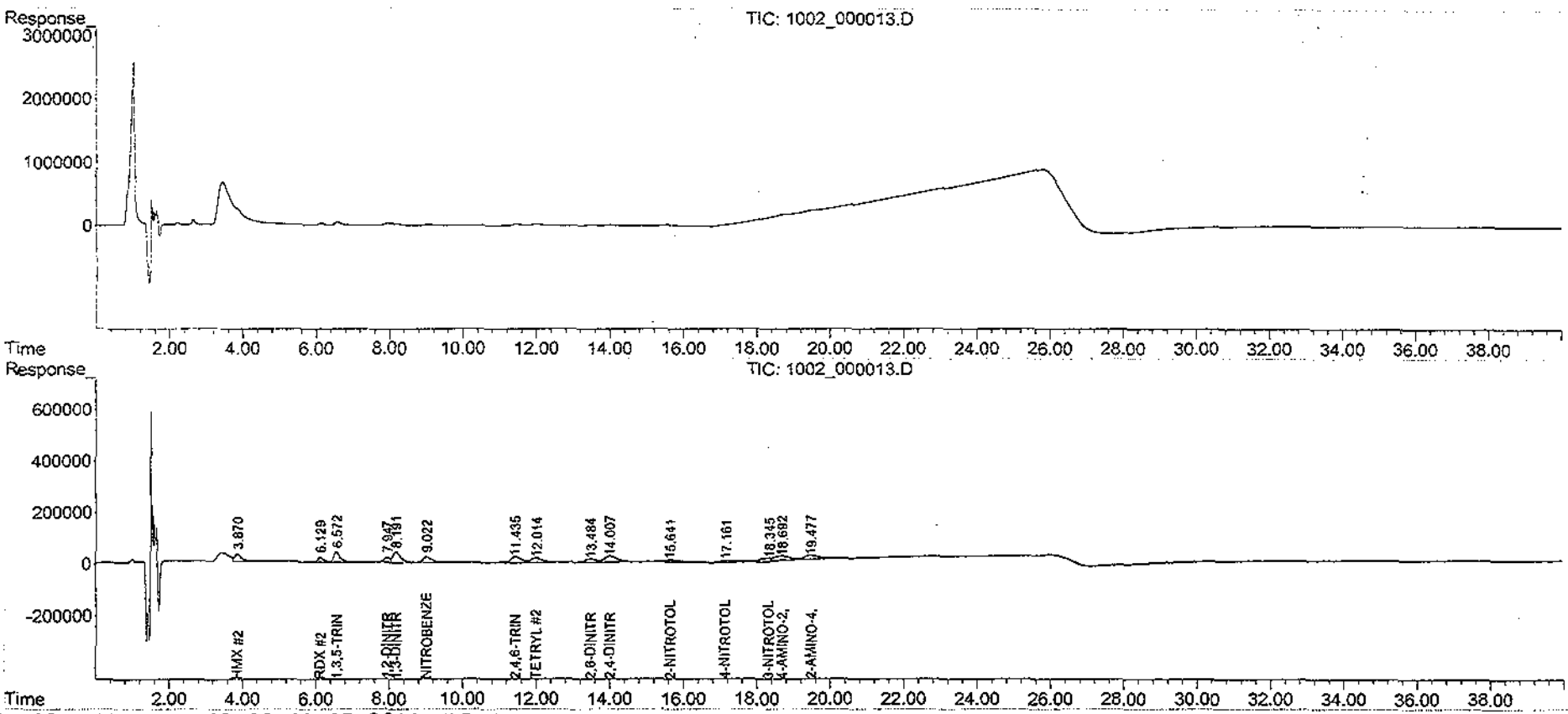
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000013.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 02-Oct-2011, 23:07:41
Operator : MP
Sample : 8330MXA_CB 0.010 PPM 10/01/11
Misc :
ALS Vial : 4098 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 08:48:57 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



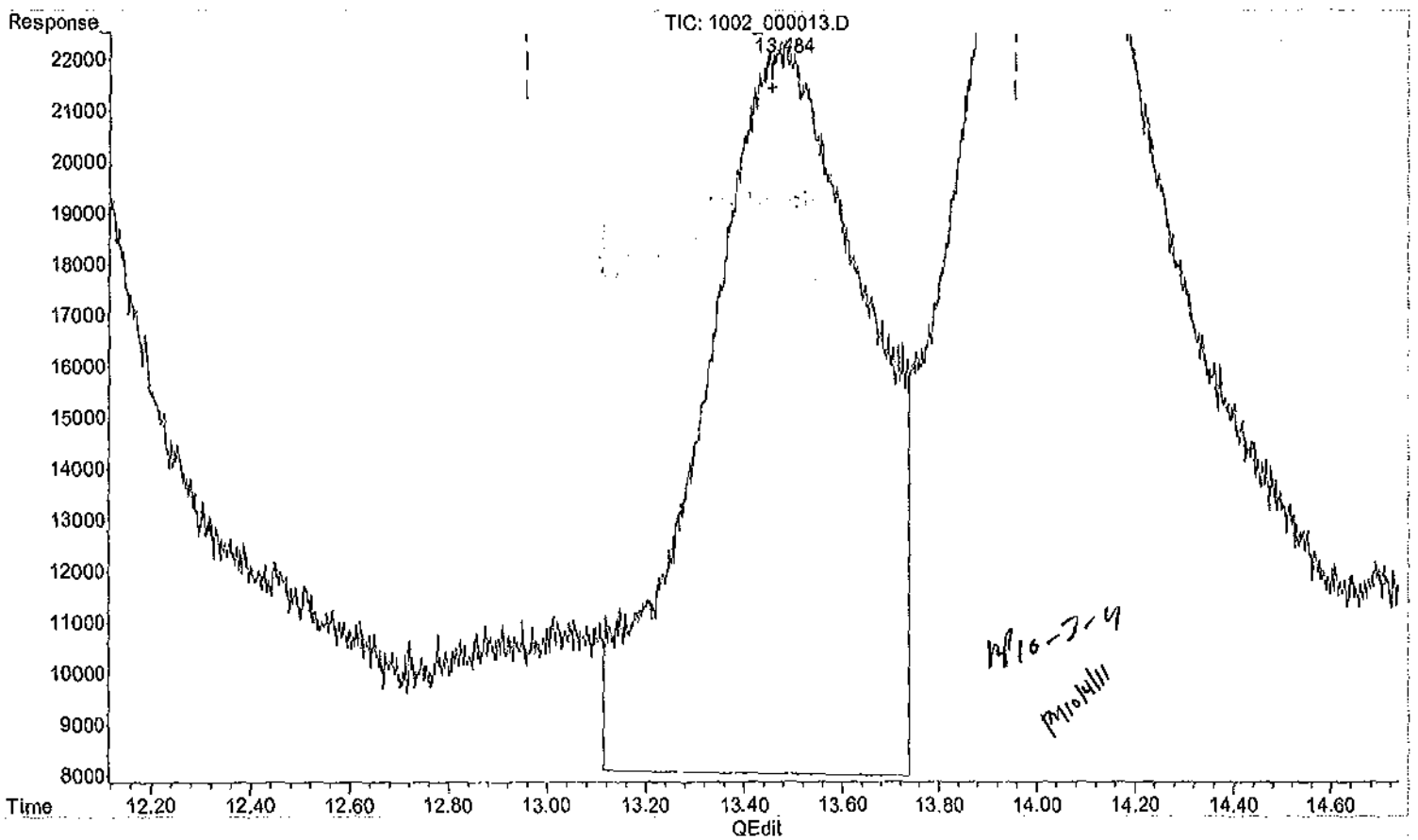
169

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000013.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 02-Oct-2011, 23:07:41
Operator : MP
Sample : 8330MXA_CB 0.010 PPM 10/01/11
Misc :
ALS Vial : 4098 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:41:44 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(29) 2,6-DINITROTOLUENE #2 (TM)

13.482min 10.450 ppb

response 14218

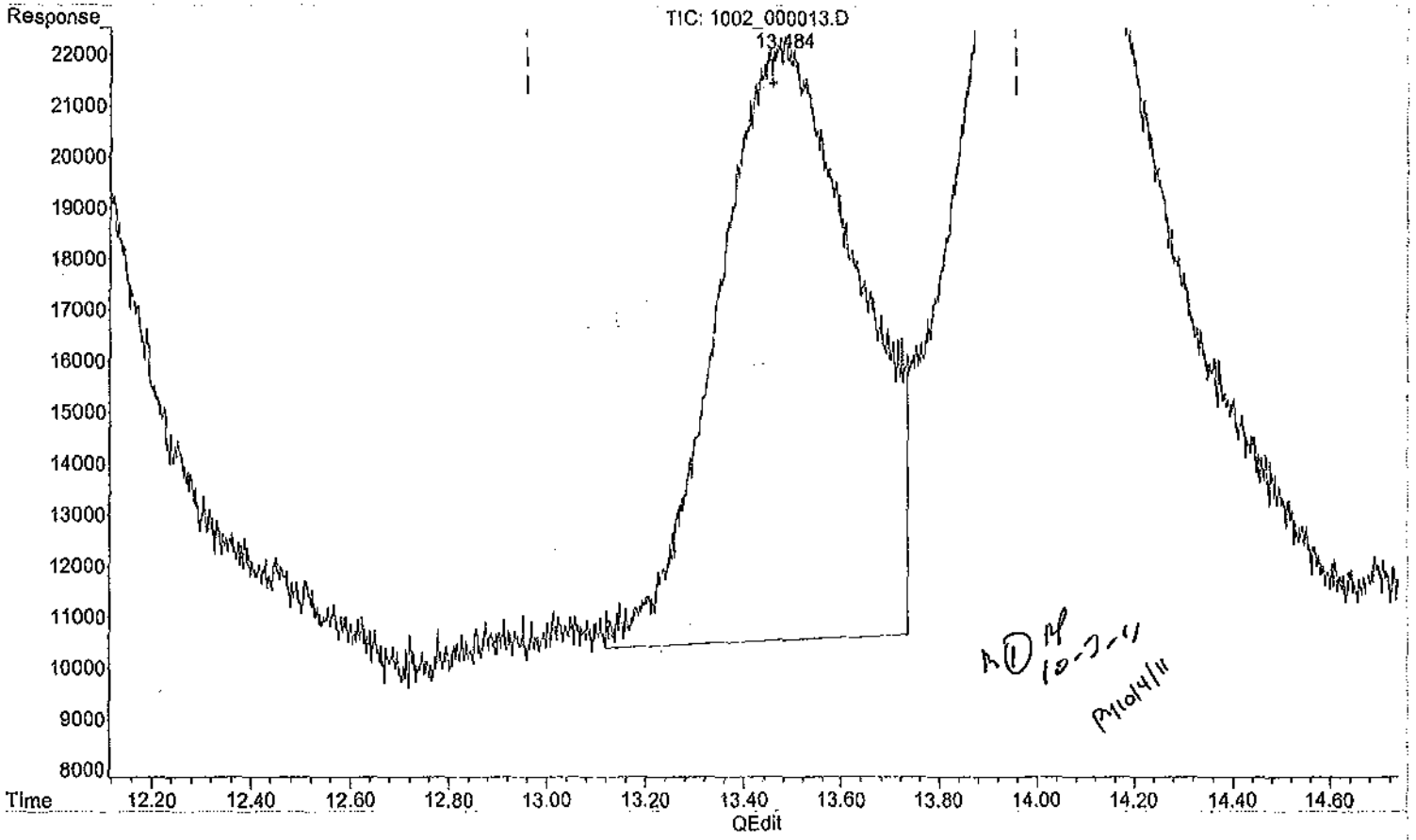
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000013.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 02-Oct-2011, 23:07:41
Operator : MP
Sample : 8330MXA_CB 0.010 PPM 10/01/11
Misc :
ALS Vial : 4098 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:41:44 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(29) 2,6-DINITROTOLUENE #2 (TM)

13.484min 8.702 ppb m

response 11839

(+) = Expected Retention Time

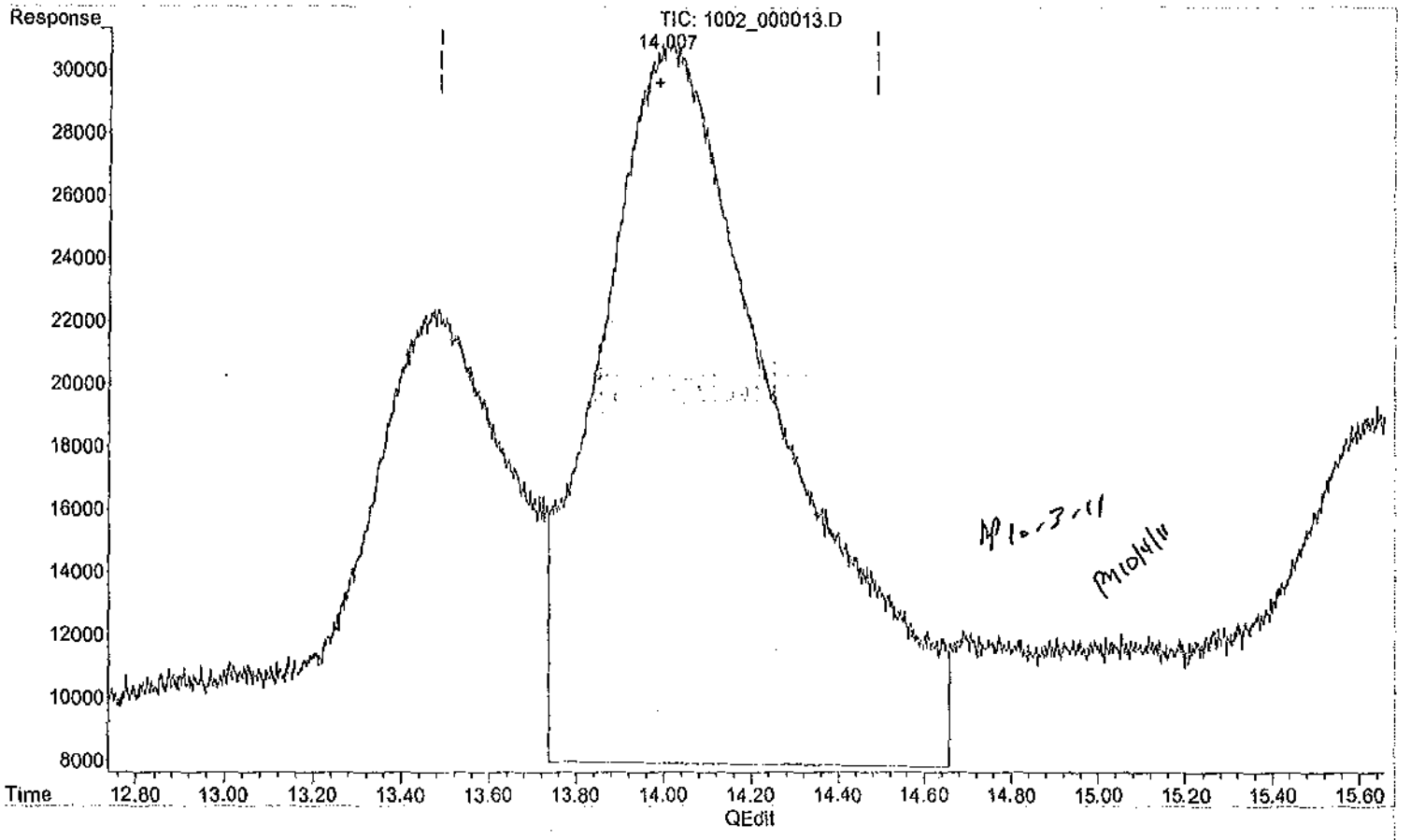
STE2_X02.M Mon Oct 03 08:46:09 2011 WALDORF

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000013.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 02-Oct-2011, 23:07:41
Operator : MP
Sample : 8330MXA_CB 0.010 PPM 10/01/11
Misc :
ALS Vial : 4098 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:41:44 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(30) 2,4-DINITROTOLUENE #2 (TM)

14.013min 9.907 ppb

response 22808

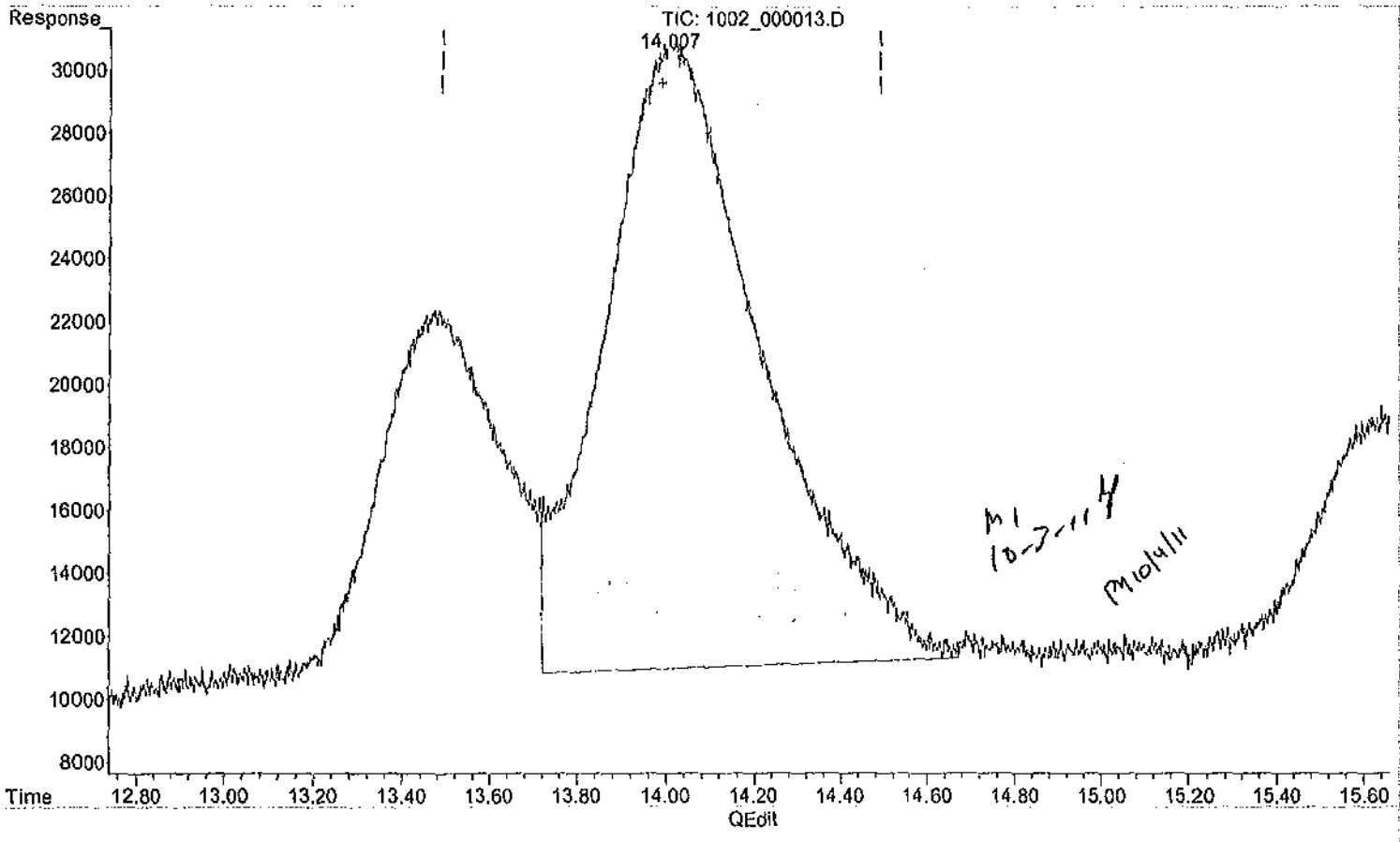
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000013.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 02-Oct-2011, 23:07:41
Operator : MP
Sample : 8330MXA_CB 0.010 PPM 10/01/11
Misc :
ALS Vial : 4098 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:41:44 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(30) 2,4-DINITROTOLUENE #2 (TM)

14.007min 8.747 ppb m

response 20137

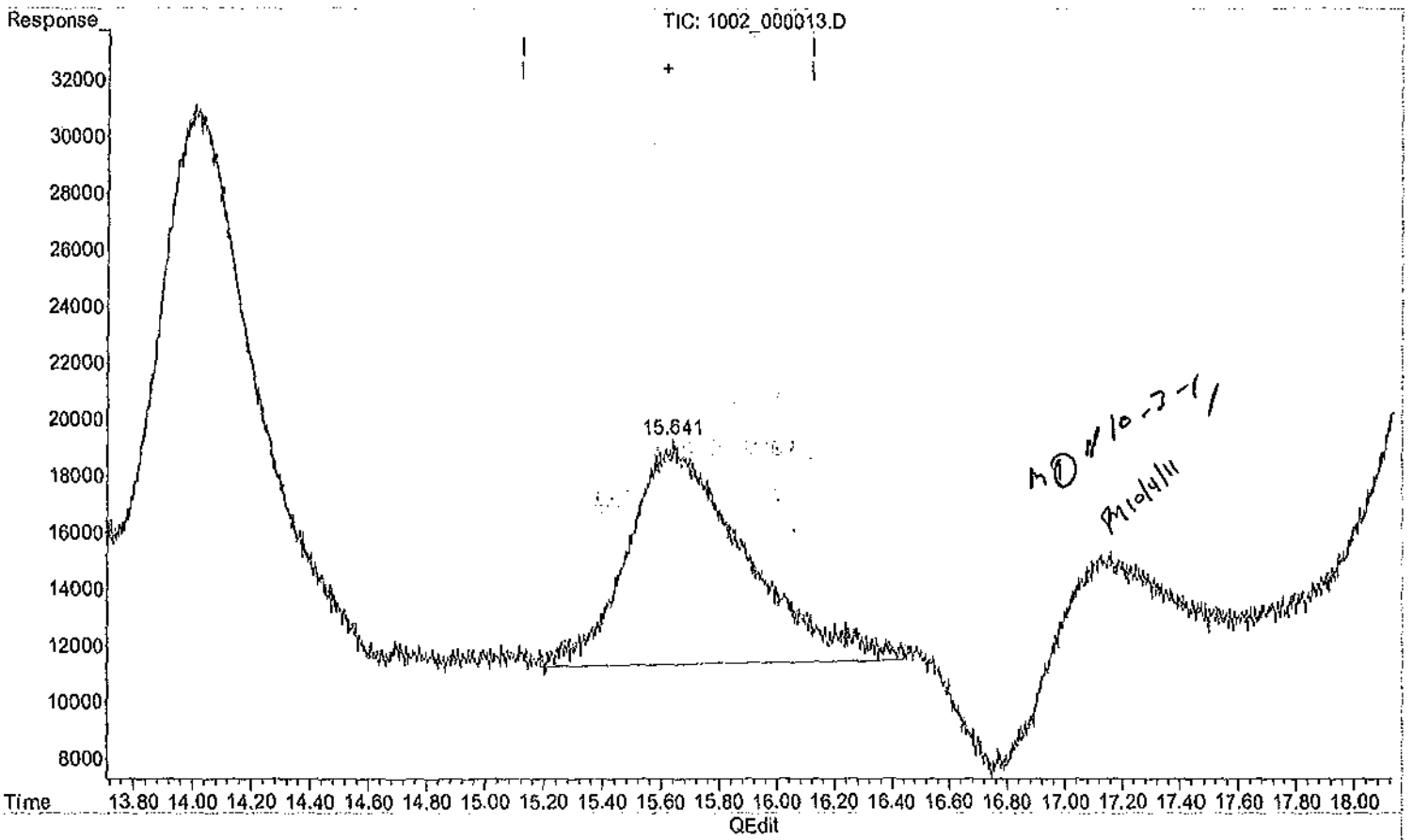
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000013.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 02-Oct-2011, 23:07:41
Operator : MP
Sample : 8330MXA_CB 0.010 PPM 10/01/11
Misc :
ALS Vial : 4098 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:41:44 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(31) 2-NITROTOLUENE #2 (TM)

15.641min 8.414 ppb m

response 7975

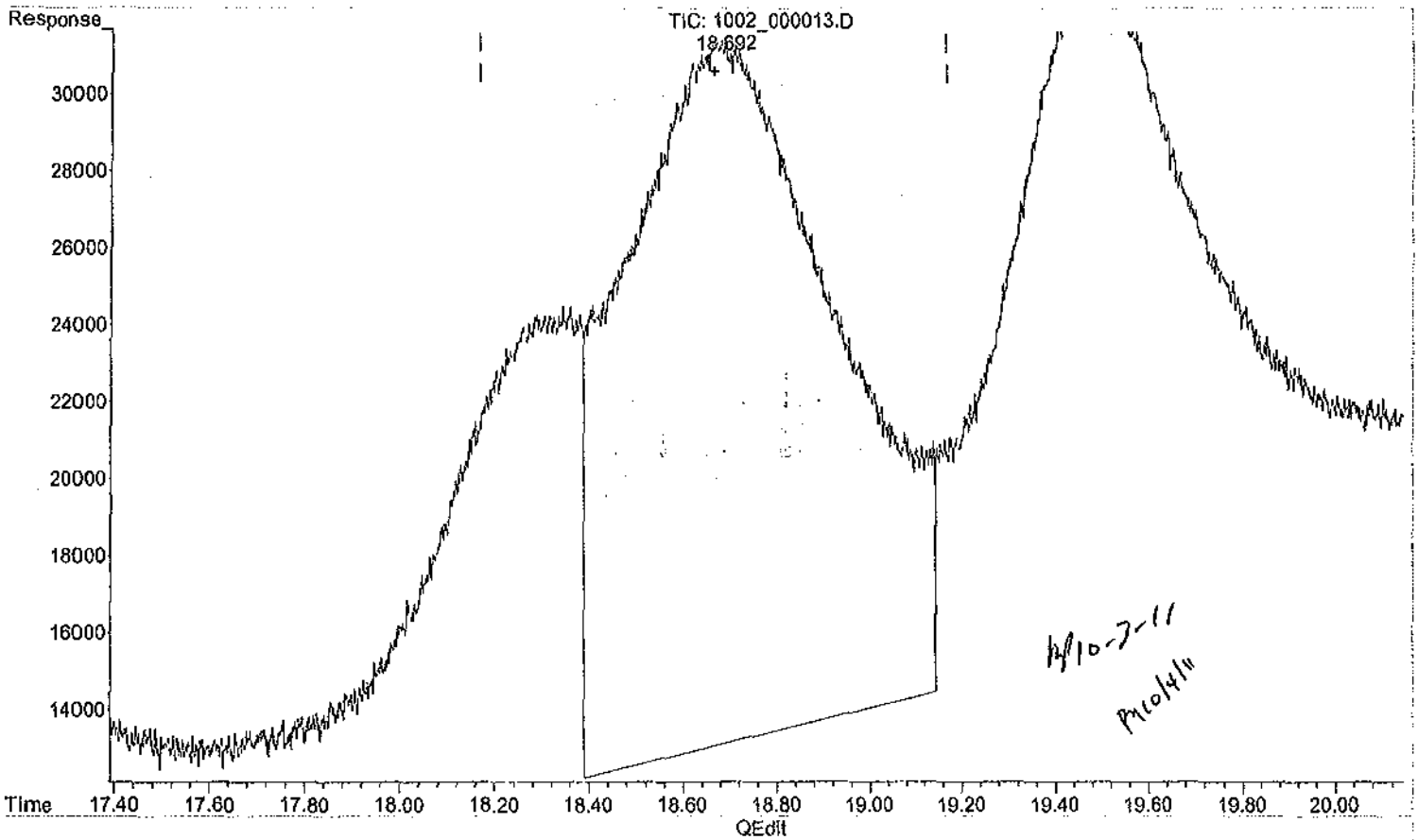
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000013.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 02-Oct-2011, 23:07:41
Operator : MP
Sample : 8330MXA_CB 0.010 PPM 10/01/11
Misc :
ALS Vial : 4098 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:41:44 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(35) 4-AMINO-2,6-DINITROTOLUENE #2 (TM)

18.673min 12.805 ppb

response 18229

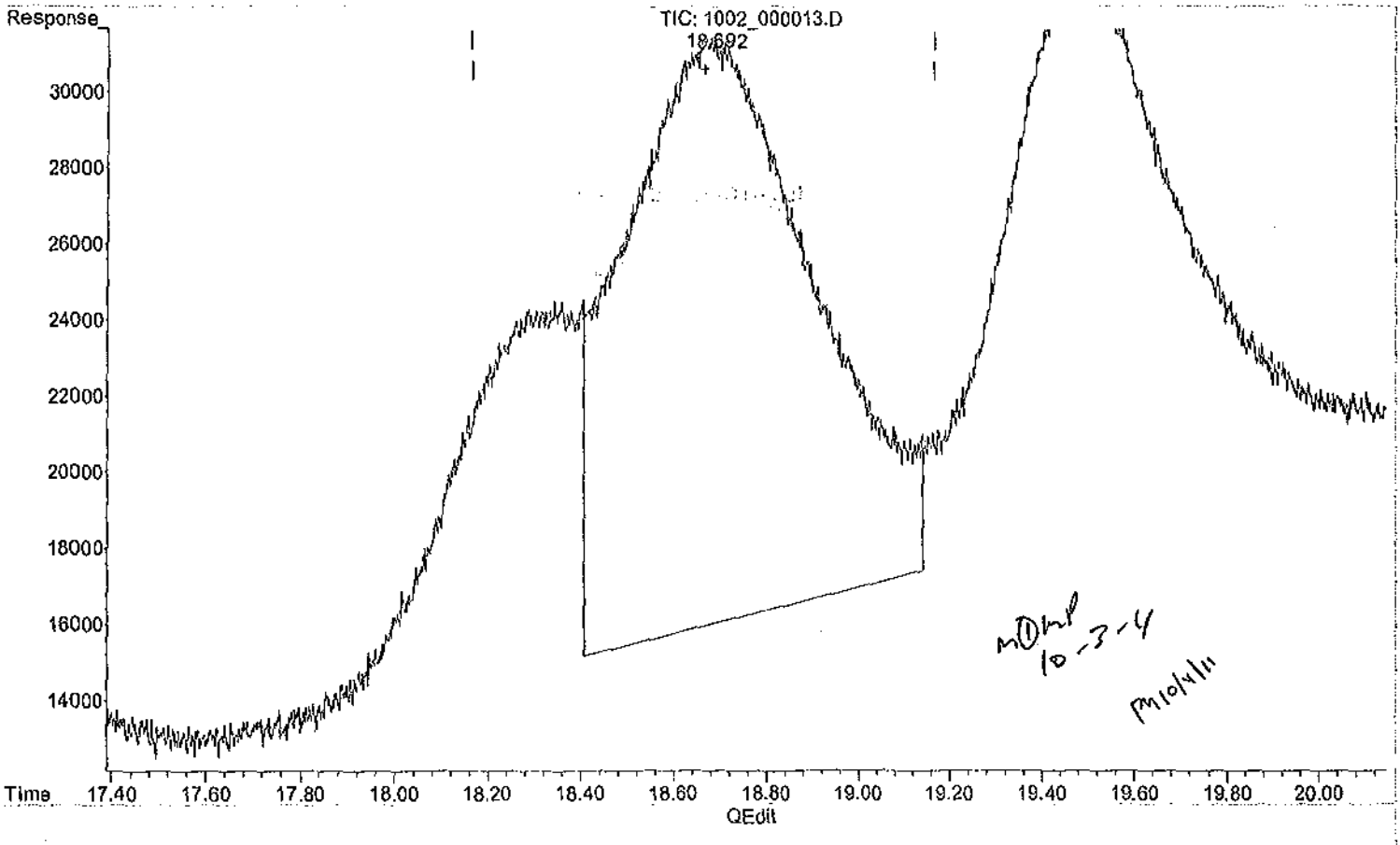
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000013.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 02-Oct-2011, 23:07:41
Operator : MP
Sample : 8330MXA_CB 0.010 PPM 10/01/11
Misc :
ALS Vial : 4098 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:41:44 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(35) 4-AMINO-2,6-DINITROTOLUENE #2 (TM)

18.692min 10.879 ppb m

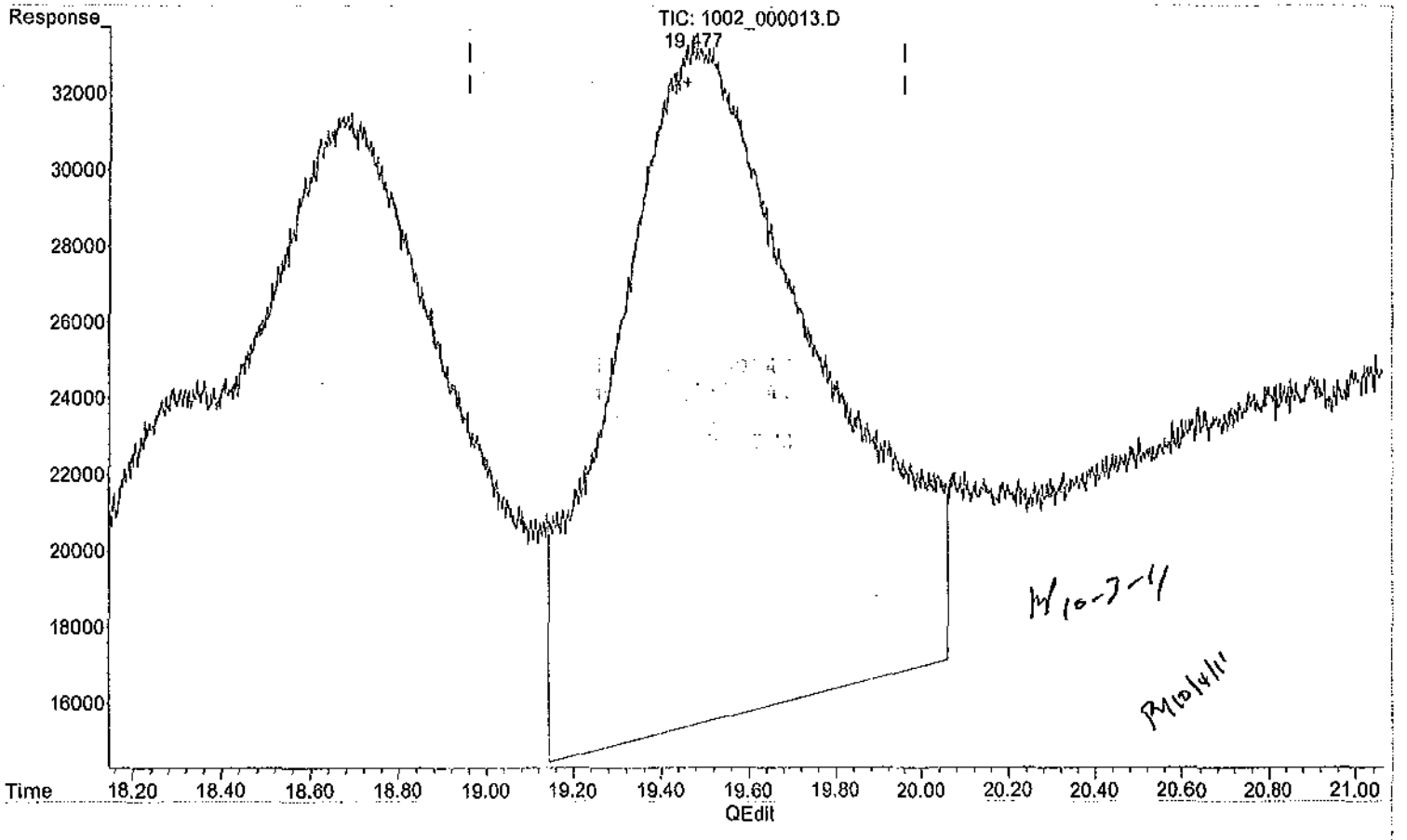
response 15487

(+) = Expected Retention Time

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000013.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 02-Oct-2011, 23:07:41
Operator : MP
Sample : 8330MXA_CB 0.010 PPM 10/01/11
Misc :
ALS Vial : 4098 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:41:44 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(36) 2-AMINO-4,6-DINITROTOLUENE #2 (TM)

19.477min 10.327 ppb

response 18007

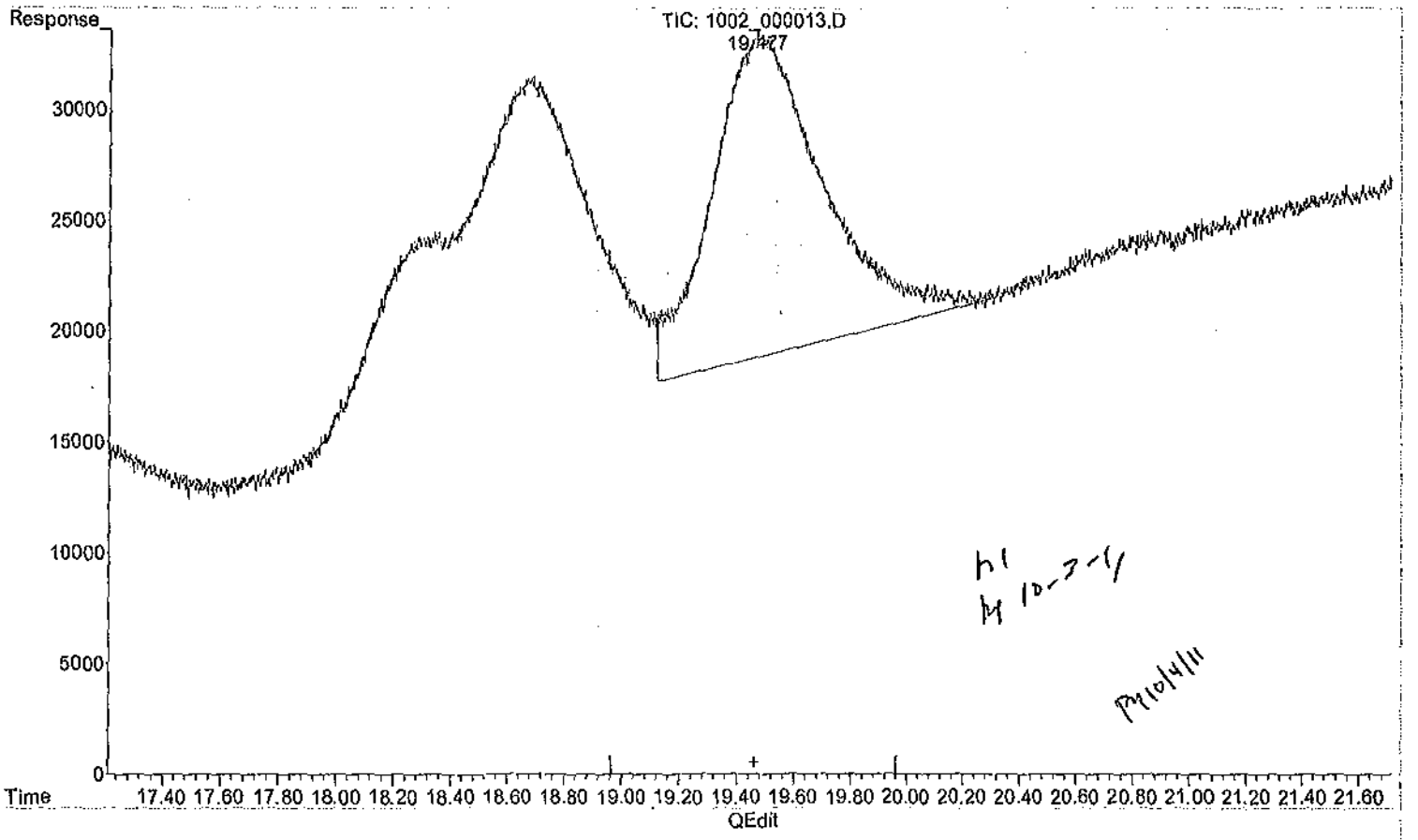
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000013.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 02-Oct-2011, 23:07:41
Operator : MP
Sample : 8330MXA_CB 0.010 PPM 10/01/11
Misc :
ALS Vial : 4098 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:41:44 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(36) 2-AMINO-4,6-DINITROTOLUENE #2 (TM)

19.477min 8.441 ppb m

response 14718

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000014.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 02-Oct-2011, 23:49:11
Operator : MP
Sample : 8330MXB_CB 0.010 PPM 10/01/11
Misc :
ALS Vial : 4099 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 08:51:42 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	R.T.	Response	Conc	Units	
	System Monitoring Compounds					
4) S	1,2-DINITROBENZENE #1	7.925	1542	NoCal	ppb	
23) S	1,2-DINITROBENZENE #2	0.000	0	N.D.	ppb	d
	Target Compounds					
1) TM	HMX #1	0.000	0	N.D.	ppb	
2) TM	RDX #1	6.535	1832	NoCal	ppb	
3) TM	1,3,5-TRINITROBENZENE #1	6.535	1832	NoCal	ppb	
5) TM	1,3-DINITROBENZENE #1	8.137	1671	NoCal	ppb	
6) TM	NITROBENZENE #1	8.997	1336	NoCal	ppb	
7) TM	2,4,6-TRINITROTOLUENE #1	11.445	809	NoCal	ppb	
8) TM	TETRYL #1	12.005	7613	NoCal	ppb	
9) TM	NITROGLYCERIN #1	12.005	7613	9.063	ppb	
10) TM	2,6-DINITROTOLUENE #1	13.488	2134	NoCal	ppb	
11) TM	2,4-DINITROTOLUENE #1	13.992	1710	NoCal	ppb	
12) TM	2-NITROTOLUENE #1	15.539	971	4.110	ppb	
13) TM	3,5-DINITROANILINE #1	16.247	20202	7.583	ppb	m
14) TM	4-NITROTOLUENE #1	0.000	0	N.D.	ppb	
15) TM	3-NITROTOLUENE #1	0.000	0	N.D.	ppb	
16) TM	4-AMINO-2,6-DINITROTO...	0.000	0	N.D.	ppb	
17) TM	2-AMINO-4,6-DINITROTO...	0.000	0	N.D.	ppb	
18) TM	PETN #1	23.451f	1385	1.561	ppb	m
20) TM	HMX #2	0.000	0	N.D.	ppb	d
21) TM	RDX #2	0.000	0	N.D.	ppb	d
22) TM	1,3,5-TRINITROBENZENE #2	0.000	0	N.D.	ppb	d
24) TM	1,3-DINITROBENZENE #2	0.000	0	N.D.	ppb	d
25) TM	NITROBENZENE #2	0.000	0	N.D.	ppb	d
26) TM	2,4,6-TRINITROTOLUENE #2	0.000	0	N.D.	ppb	d
27) TM	TETRYL #2	0.000	0	N.D.	ppb	d
28) TM	NITROGLYCERIN #2	0.000	0	N.D.	ppb	d
29) TM	2,6-DINITROTOLUENE #2	0.000	0	N.D.	ppb	d
30) TM	2,4-DINITROTOLUENE #2	0.000	0	N.D.	ppb	d
31) TM	2-NITROTOLUENE #2	0.000	0	N.D.	ppb	d
32) TM	3,5-DINITROANILINE #2	0.000	0	N.D.	ppb	d
33) TM	4-NITROTOLUENE #2	0.000	0	N.D.	ppb	d
34) TM	3-NITROTOLUENE #2	0.000	0	N.D.	ppb	d
35) TM	4-AMINO-2,6-DINITROTO...	0.000	0	N.D.	ppb	d
36) TM	2-AMINO-4,6-DINITROTO...	0.000	0	N.D.	ppb	d
37) TM	PETN #2	0.000	0	N.D.	ppb	d

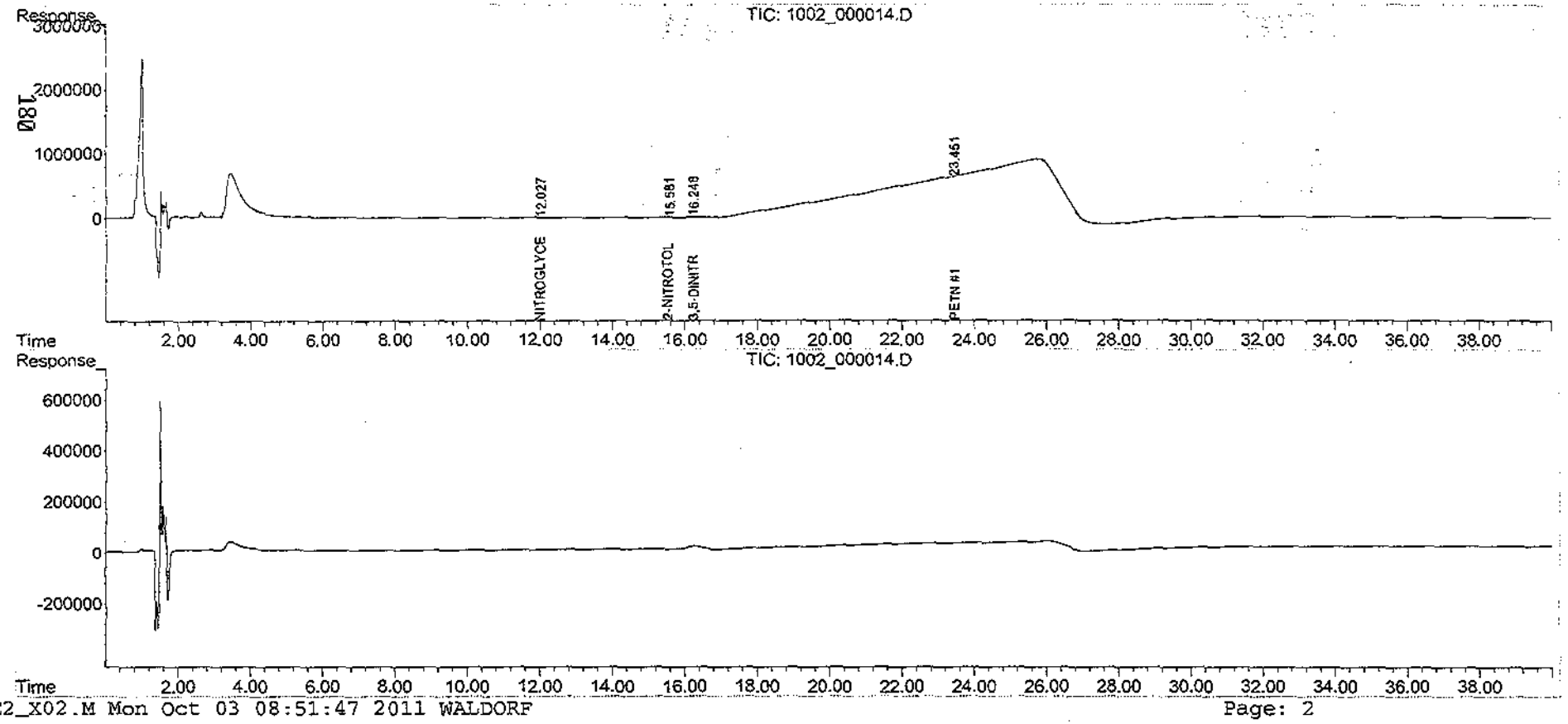
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

ata Path : H:\STATLER\CHEM32\1\DATA\111002\
ata File : 1002_000014.D
ignal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
cq On : 02-Oct-2011, 23:49:11
perator : MP
ample : 8330MXB_CB 0.010 PPM 10/01/11
isc :
LS Vial : 4099 Sample Multiplier: 1

ntegration File signal 1: Statler_Signal_1_110914.e
ntegration File signal 2: Statler_Signal_2_110914.e
uant Time: Oct 03 08:51:42 2011
uant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
uant Title : 8330B - STATLER
Last Update : Thu Sep 15 14:57:47 2011
esponse via : Initial Calibration
ntegrator: ChemStation

olume Inj. : 40uL
ignal #1 Phase : 214nm Signal #2 Phase: 254nm
ignal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

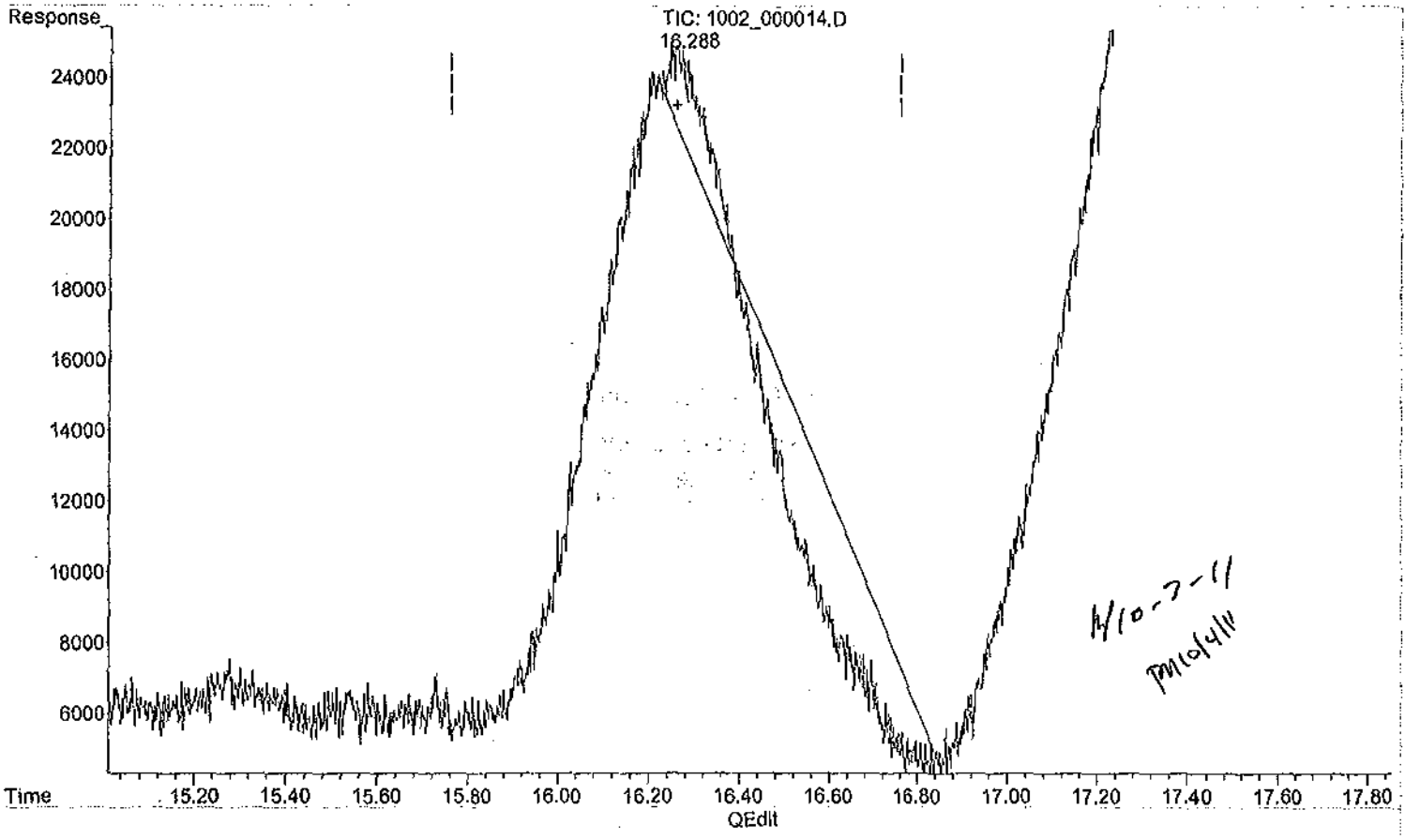


Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000014.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 02-Oct-2011, 23:49:11
Operator : MP
Sample : 8330MXB_CB 0.010 PPM 10/01/11
Misc :
ALS Vial : 4099 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:41:46 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(13) 3,5-DINITROANILINE #1 (TM)

16.259min 0.841 ppb

response 2240

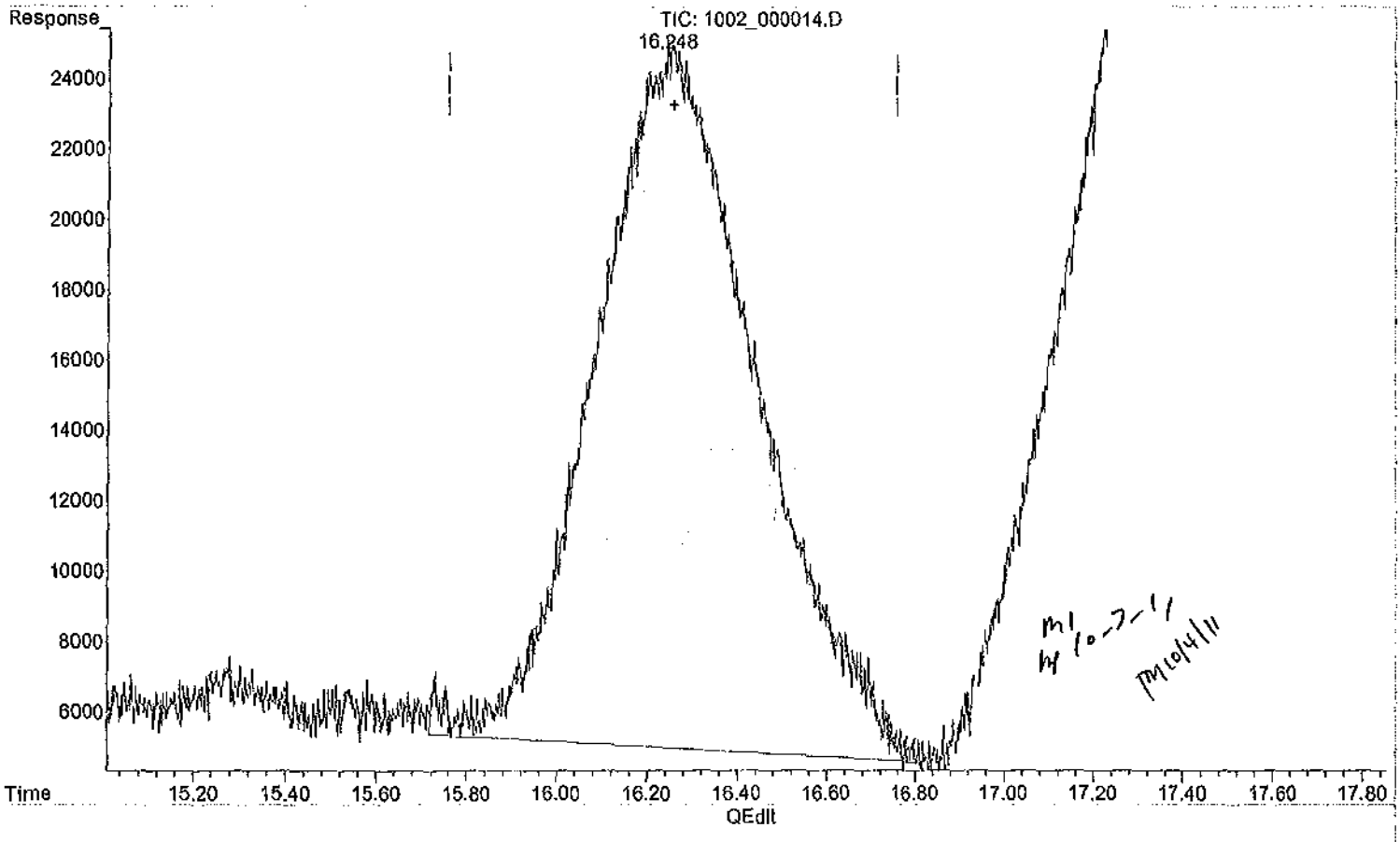
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000014.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 02-Oct-2011, 23:49:11
Operator : MP
Sample : 8330MXB_CB 0.010 PPM 10/01/11
Misc :
ALS Vial : 4099 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:41:46 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(13) 3,5-DINITROANILINE #1 (TM)

16.247min 7.583 ppb m

response 20202

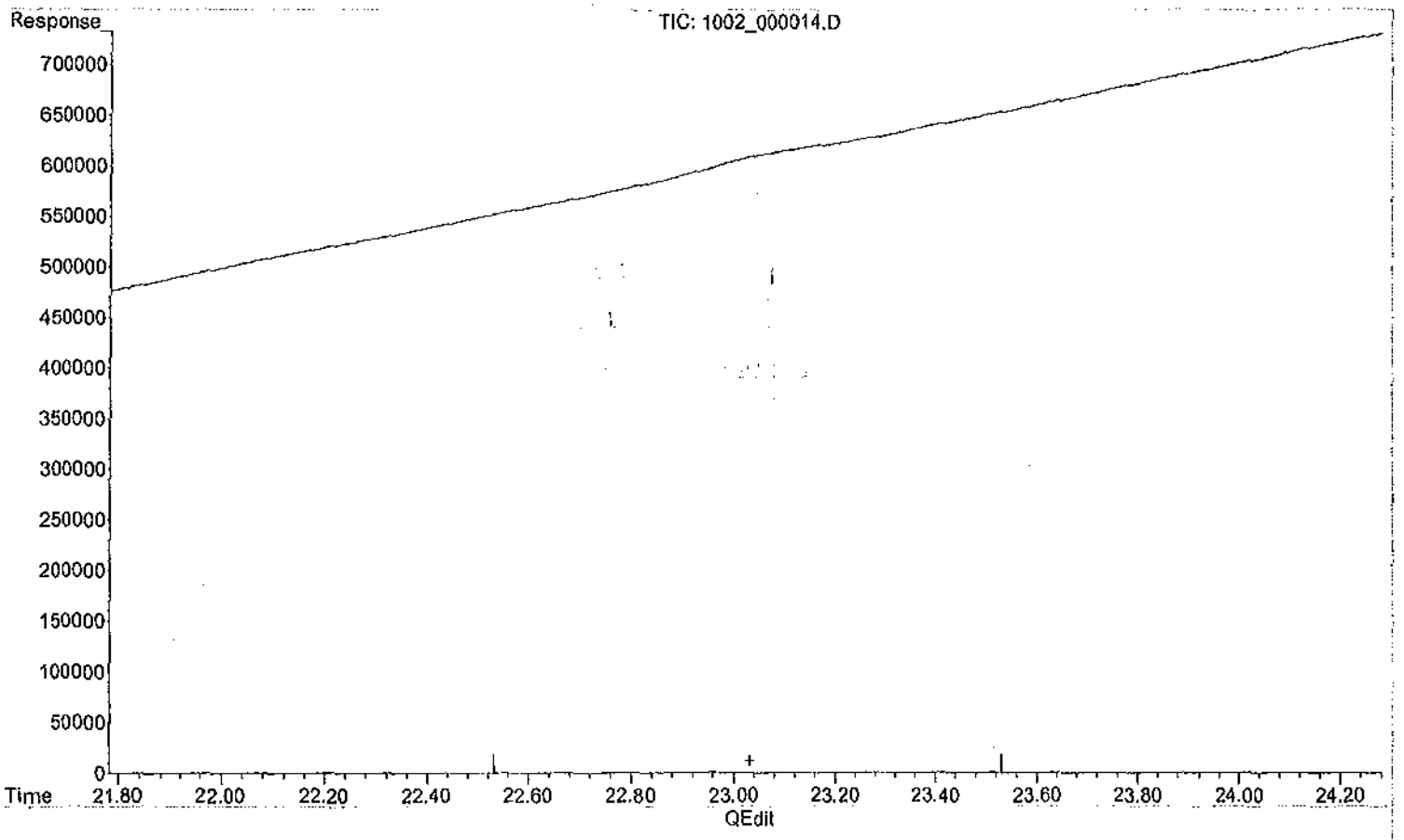
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000014.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 02-Oct-2011, 23:49:11
Operator : MP
Sample : 8330MXB_CB 0.010 PPM 10/01/11
Misc :
ALS Vial : 4099 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:41:46 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(18) PETN #1 (TM)

23.032min 0.000 ppb

response 0

MP 10-3-11

MP10/4/11

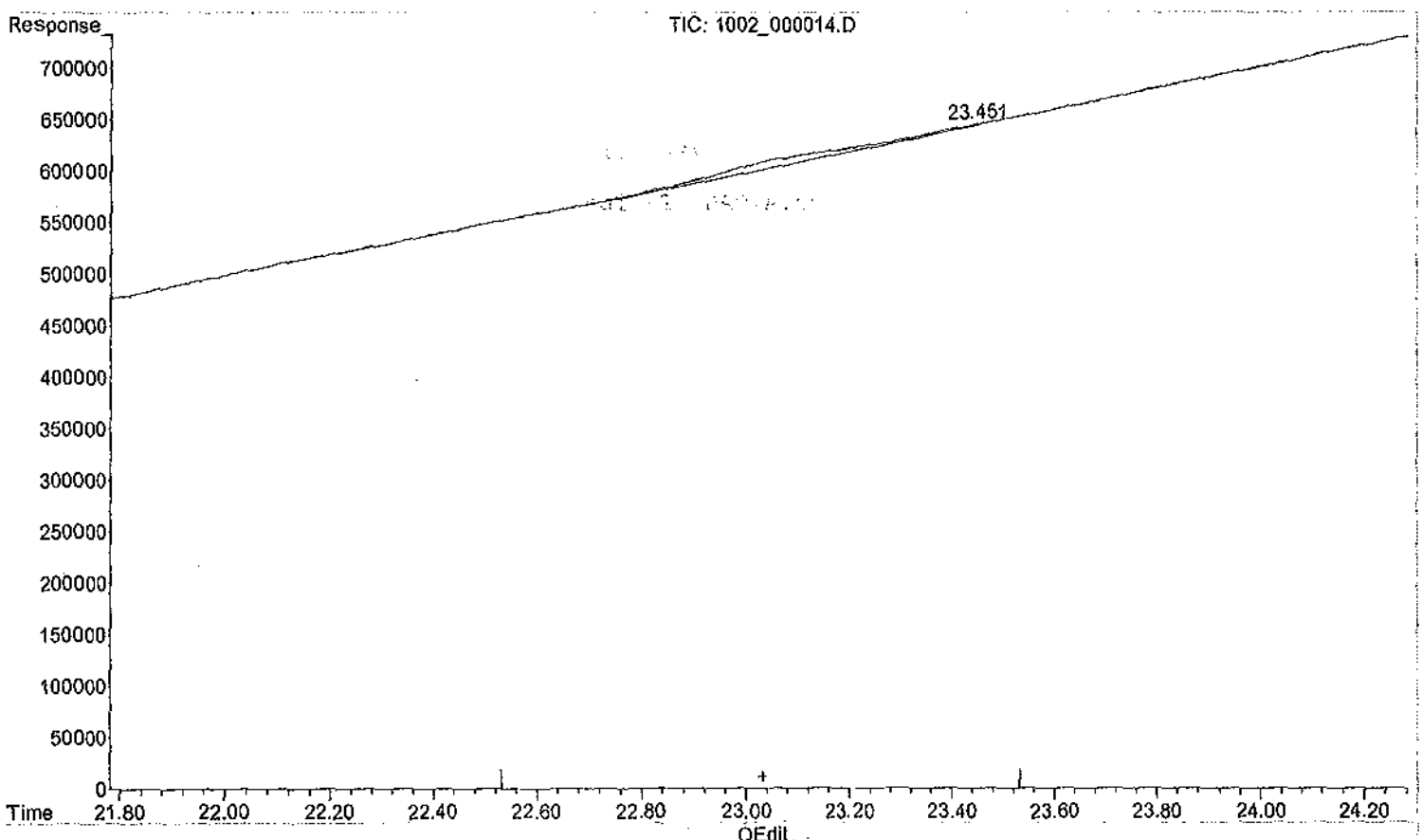
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000014.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 02-Oct-2011, 23:49:11
Operator : MP
Sample : 8330MXB_CB 0.010 PPM 10/01/11
Misc :
ALS Vial : 4099 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:41:46 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(18) PETN #1 (TM)

23.451min 1.561 ppb m

response 1385

m (5) W
10-3-11

PM 10/4/11

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000015.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 00:30:40
Operator : MP
Sample : 8330MXA_CB 0.020 PPM 10/01/11
Misc :
ALS Vial : 4100 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 08:54:49 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

		Compound	R.T.	Response	Conc	Units	
System Monitoring Compounds							
4)	S	1,2-DINITROBENZENE #1	7.939	62362	NoCal	ppb	
23)	S	1,2-DINITROBENZENE #2	7.941	34257	17.275	ppb	
Target Compounds							
1)	TM	HMX #1	3.852	281897	NoCal	ppb	
2)	TM	RDX #1	6.561	119394	NoCal	ppb	
3)	TM	1,3,5-TRINITROBENZENE #1	6.561	119394	NoCal	ppb	
5)	TM	1,3-DINITROBENZENE #1	8.188	63159	NoCal	ppb	
6)	TM	NITROBENZENE #1	9.020	36390	NoCal	ppb	
7)	TM	2,4,6-TRINITROTOLUENE #1	11.435	50911	NoCal	ppb	
8)	TM	TETRYL #1	12.005	46828	NoCal	ppb	
9)	TM	NITROGLYCERIN #1	0.000	0	N.D.	ppb	d
10)	TM	2,6-DINITROTOLUENE #1	0.000	0	N.D.	ppb	
11)	TM	2,4-DINITROTOLUENE #1	13.985	20733	NoCal	ppb	
12)	TM	2-NITROTOLUENE #1	0.000	0	N.D.	ppb	d
13)	TM	3,5-DINITROANILINE #1	0.000	0	N.D.	ppb	d
14)	TM	4-NITROTOLUENE #1	0.000	0	N.D.	ppb	
15)	TM	3-NITROTOLUENE #1	0.000	0	N.D.	ppb	
16)	TM	4-AMINO-2,6-DINITROTO...	0.000	0	N.D.	ppb	d
17)	TM	2-AMINO-4,6-DINITROTO...	0.000	0	N.D.	ppb	d
18)	TM	PETN #1	0.000	0	N.D.	ppb	
20)	TM	HMX #2	3.870	45428	20.151	ppb	
21)	TM	RDX #2	6.123	31794	17.726	ppb	
22)	TM	1,3,5-TRINITROBENZENE #2	6.561	72803	17.200	ppb	
24)	TM	1,3-DINITROBENZENE #2	8.189	75560	17.793	ppb	
25)	TM	NITROBENZENE #2	9.015	38766	16.242	ppb	
26)	TM	2,4,6-TRINITROTOLUENE #2	11.430	39342	17.256	ppb	
27)	TM	TETRYL #2	11.998	29186	17.520	ppb	
28)	TM	NITROGLYCERIN #2	11.998	29186	NoCal	ppb	
29)	TM	2,6-DINITROTOLUENE #2	13.470	24749	18.190	ppb	
30)	TM	2,4-DINITROTOLUENE #2	14.002	42562	18.487	ppb	
31)	TM	2-NITROTOLUENE #2	15.635	17611	18.581	ppb	
32)	TM	3,5-DINITROANILINE #2	0.000	0	N.D.	ppb	
33)	TM	4-NITROTOLUENE #2	17.157	11820	14.385	ppb	
34)	TM	3-NITROTOLUENE #2	18.280	15086	14.199	ppb	m
35)	TM	4-AMINO-2,6-DINITROTO...	18.682	29543	20.752	ppb	
36)	TM	2-AMINO-4,6-DINITROTO...	19.472	29081	16.679	ppb	m
37)	TM	PETN #2	23.051	3408	NoCal	ppb	

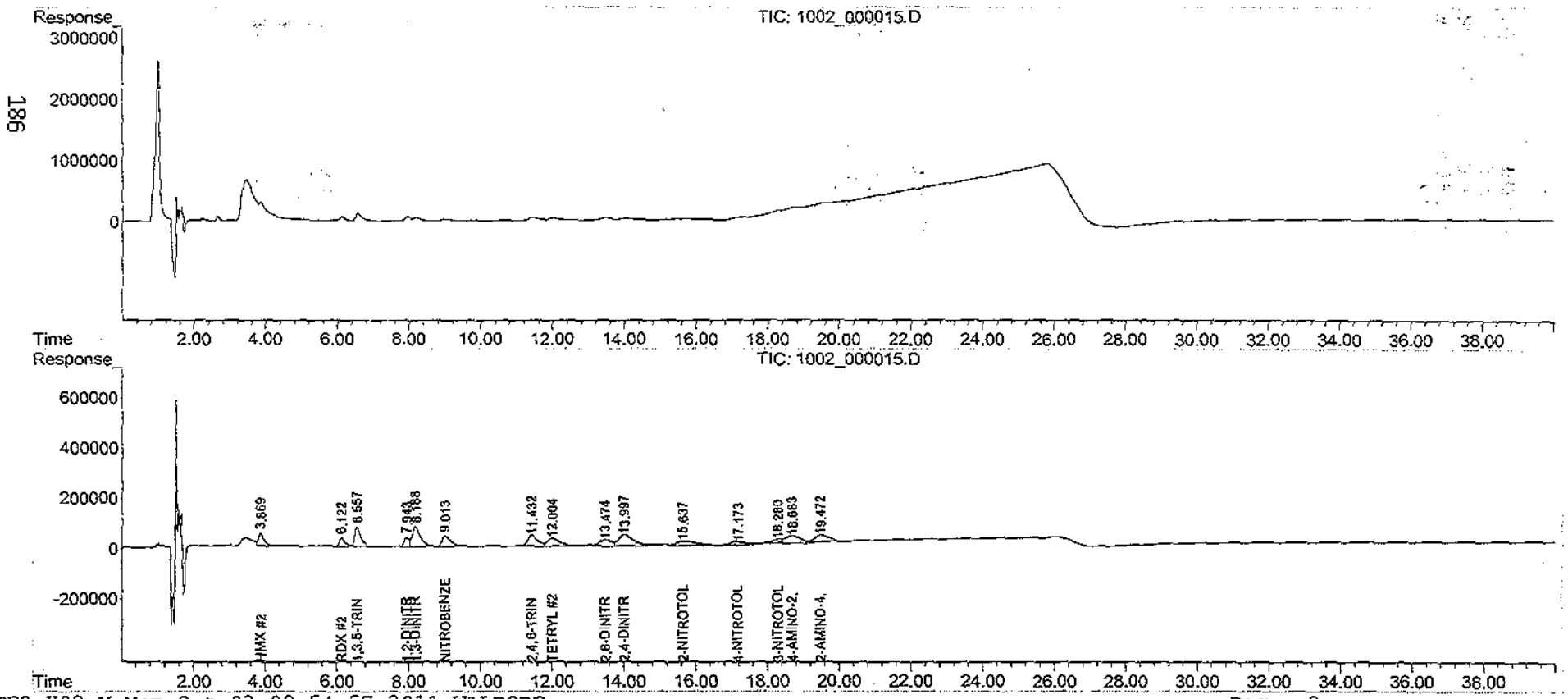
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000015.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 00:30:40
Operator : MP
Sample : 8330MXA_CB 0.020 PPM 10/01/11
Misc :
ALS Vial : 4100 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 08:54:49 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

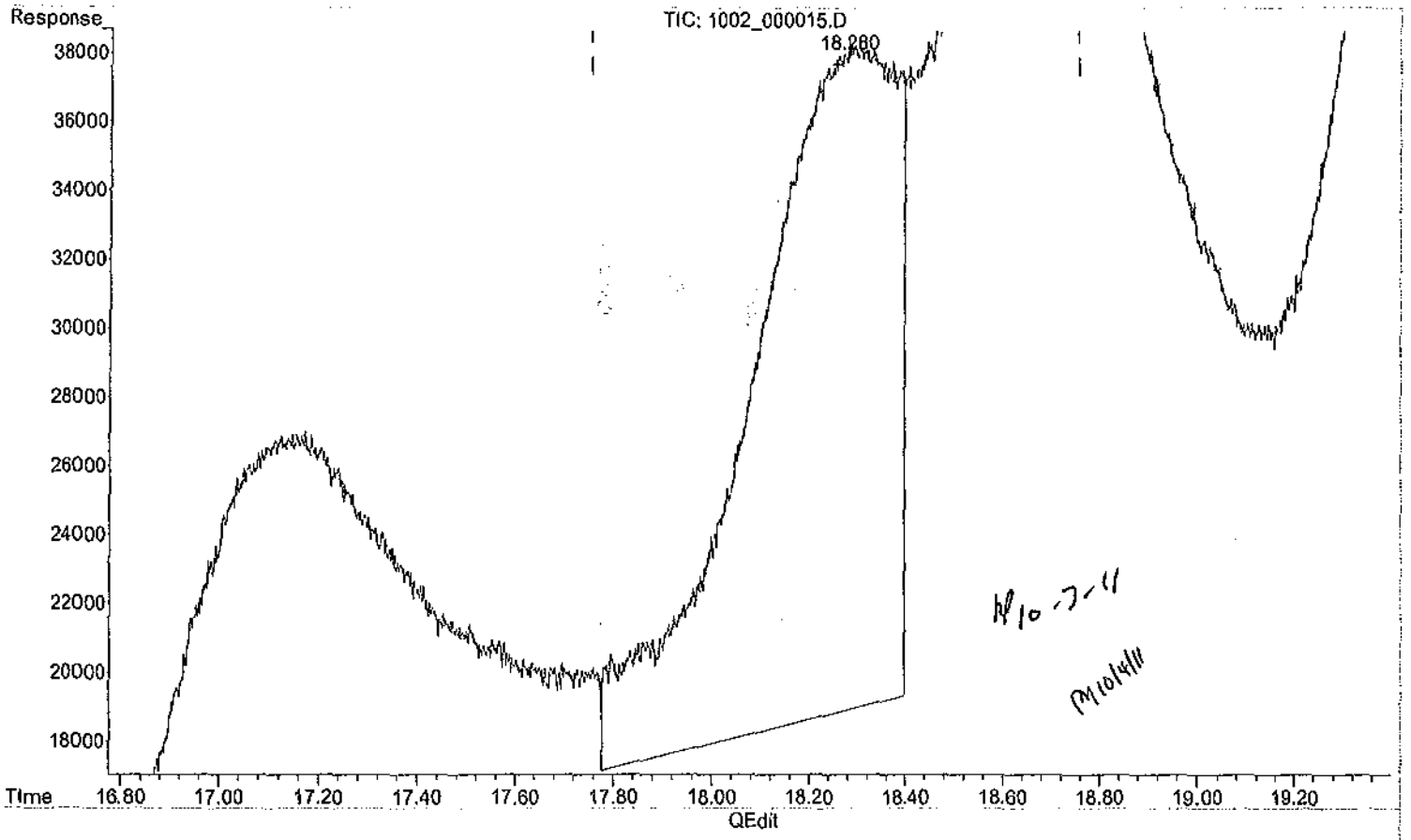


Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000015.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 00:30:40
Operator : MP
Sample : 8330MXA_CB 0.020 PPM 10/01/11
Misc :
ALS Vial : 4100 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:41:48 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(34) 3-NITROTOLUENE #2 (TM)

18.294min 17.885 ppb

response 19002

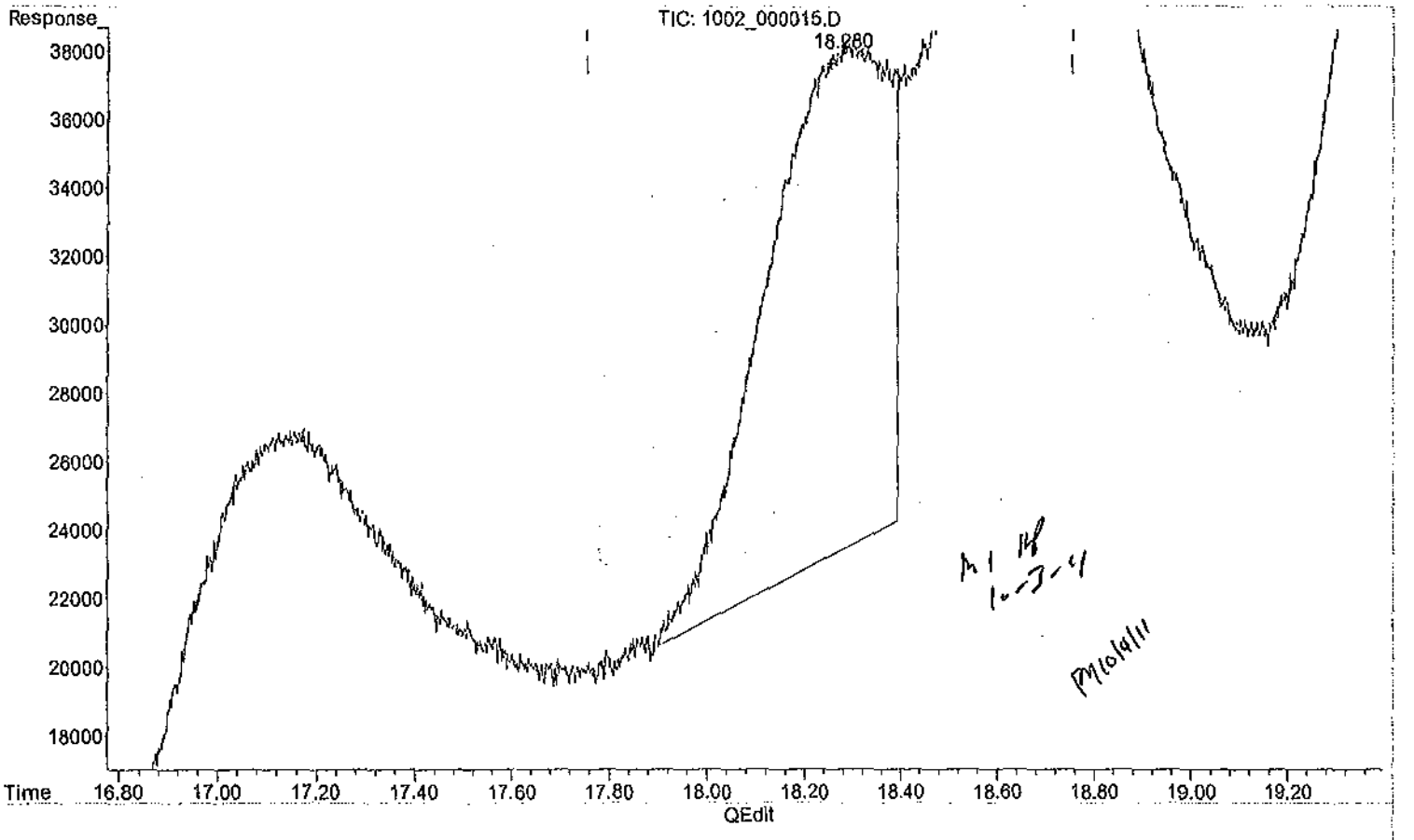
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000015.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 00:30:40
Operator : MP
Sample : 8330MXA_CB 0.020 PPM 10/01/11
Misc :
ALS Vial : 4100 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:41:48 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(34) 3-NITROTOLUENE #2 (TM)

18.280min 14.199 ppb m

response 15086

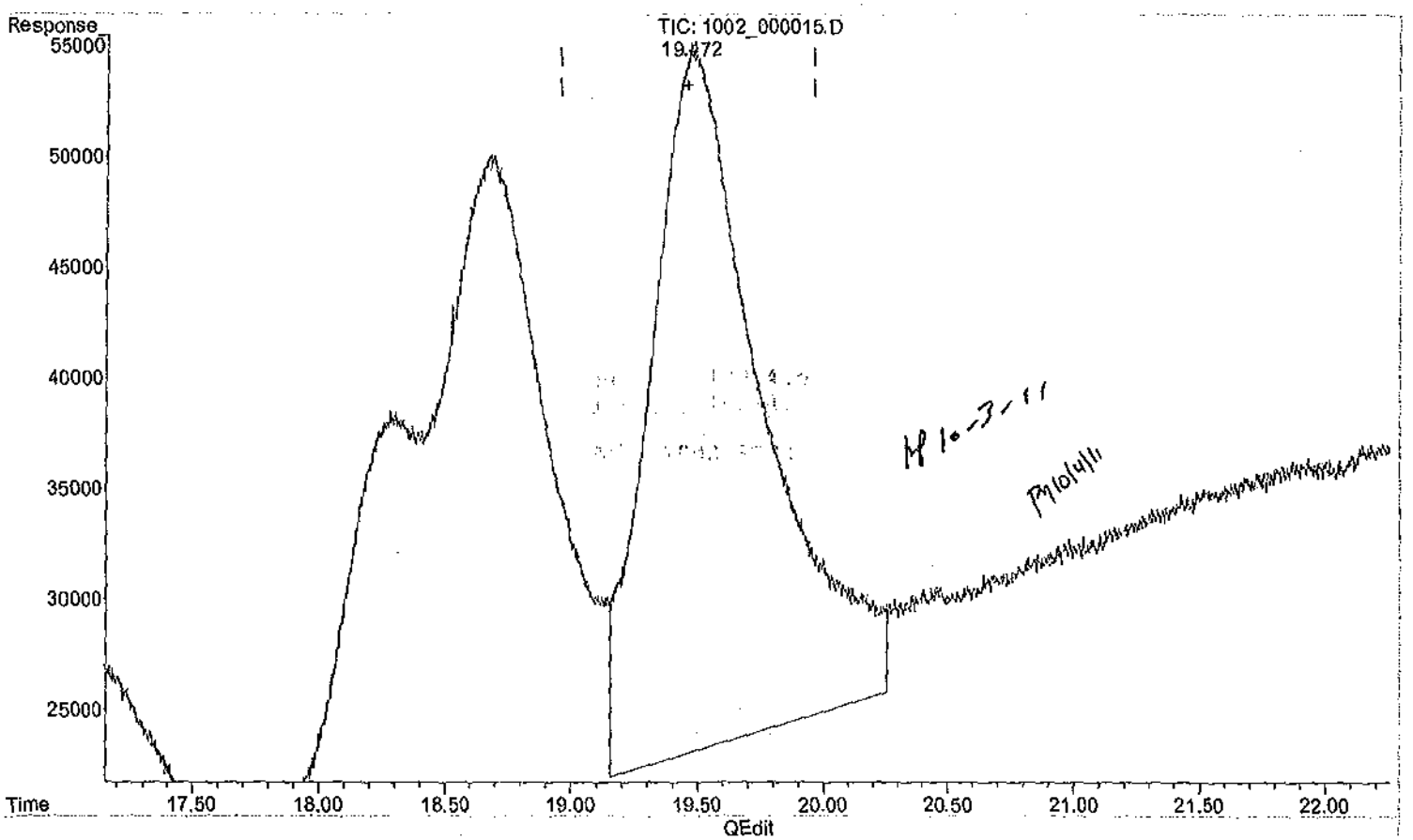
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000015.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 00:30:40
Operator : MP
Sample : 8330MKA_CB 0.020 PPM 10/01/11
Misc :
ALS Vial : 4100 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:41:48 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(36) 2-AMINO-4,6-DINITROTOLUENE #2 (TM)

19.481min 18.048 ppb

response 31470

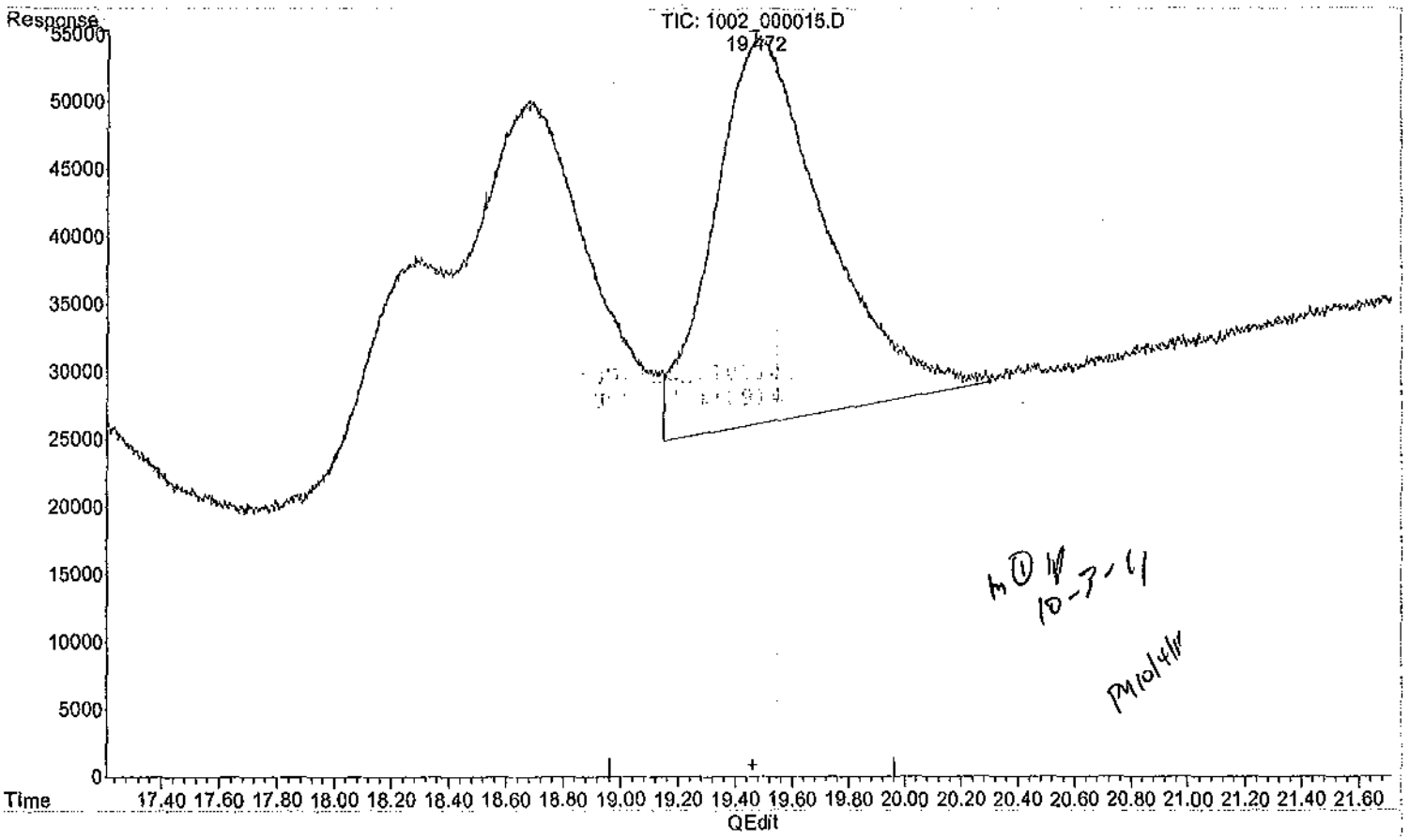
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000015.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 00:30:40
Operator : MP
Sample : 8330MXA_CB 0.020 PPM 10/01/11
Misc :
ALS Vial : 4100 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:41:48 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(36) 2-AMINO-4,6-DINITROTOLUENE #2 (TM)

19.472min 16.679 ppb m

response 29081

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000016.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 01:12:10
Operator : MP
Sample : 8330MXB_CB 0.020 PPM 10/01/11
Misc :
ALS Vial : 4101 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 08:55:45 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

		Compound	R.T.	Response	Conc	Units	
System Monitoring Compounds							
4)	S	1,2-DINITROBENZENE #1	7.938	1951	NoCal	ppb	
23)	S	1,2-DINITROBENZENE #2	0.000	0	N.D.	ppb	d
Target Compounds							
1)	TM	HMX #1	0.000	0	N.D.	ppb	
2)	TM	RDX #1	6.525	2282	NoCal	ppb	
3)	TM	1,3,5-TRINITROBENZENE #1	6.525	2282	NoCal	ppb	
5)	TM	1,3-DINITROBENZENE #1	8.167	2150	NoCal	ppb	
6)	TM	NITROBENZENE #1	9.012	1369	NoCal	ppb	
7)	TM	2,4,6-TRINITROTOLUENE #1	11.423	549	NoCal	ppb	
8)	TM	TETRYL #1	12.228	13	NoCal	ppb	
9)	TM	NITROGLYCERIN #1	12.003	14441	17.193	ppb	m
10)	TM	2,6-DINITROTOLUENE #1	13.465	1681	NoCal	ppb	
11)	TM	2,4-DINITROTOLUENE #1	13.962	1424	NoCal	ppb	
12)	TM	2-NITROTOLUENE #1	0.000	0	N.D.	ppb	d
13)	TM	3,5-DINITROANILINE #1	16.285	45949	17.248	ppb	
14)	TM	4-NITROTOLUENE #1	0.000	0	N.D.	ppb	
15)	TM	3-NITROTOLUENE #1	0.000	0	N.D.	ppb	
16)	TM	4-AMINO-2,6-DINITROTO...	0.000	0	N.D.	ppb	
17)	TM	2-AMINO-4,6-DINITROTO...	0.000	0	N.D.	ppb	
18)	TM	PETN #1	23.502f	528	0.595	ppb	m
20)	TM	HMX #2	0.000	0	N.D.	ppb	d
21)	TM	RDX #2	0.000	0	N.D.	ppb	d
22)	TM	1,3,5-TRINITROBENZENE #2	0.000	0	N.D.	ppb	d
24)	TM	1,3-DINITROBENZENE #2	0.000	0	N.D.	ppb	d
25)	TM	NITROBENZENE #2	0.000	0	N.D.	ppb	d
26)	TM	2,4,6-TRINITROTOLUENE #2	0.000	0	N.D.	ppb	d
27)	TM	TETRYL #2	0.000	0	N.D.	ppb	d
28)	TM	NITROGLYCERIN #2	0.000	0	N.D.	ppb	d
29)	TM	2,6-DINITROTOLUENE #2	0.000	0	N.D.	ppb	d
30)	TM	2,4-DINITROTOLUENE #2	0.000	0	N.D.	ppb	d
31)	TM	2-NITROTOLUENE #2	0.000	0	N.D.	ppb	d
32)	TM	3,5-DINITROANILINE #2	0.000	0	N.D.	ppb	d
33)	TM	4-NITROTOLUENE #2	0.000	0	N.D.	ppb	d
34)	TM	3-NITROTOLUENE #2	0.000	0	N.D.	ppb	d
35)	TM	4-AMINO-2,6-DINITROTO...	0.000	0	N.D.	ppb	d
36)	TM	2-AMINO-4,6-DINITROTO...	0.000	0	N.D.	ppb	d
37)	TM	PETN #2	0.000	0	N.D.	ppb	d

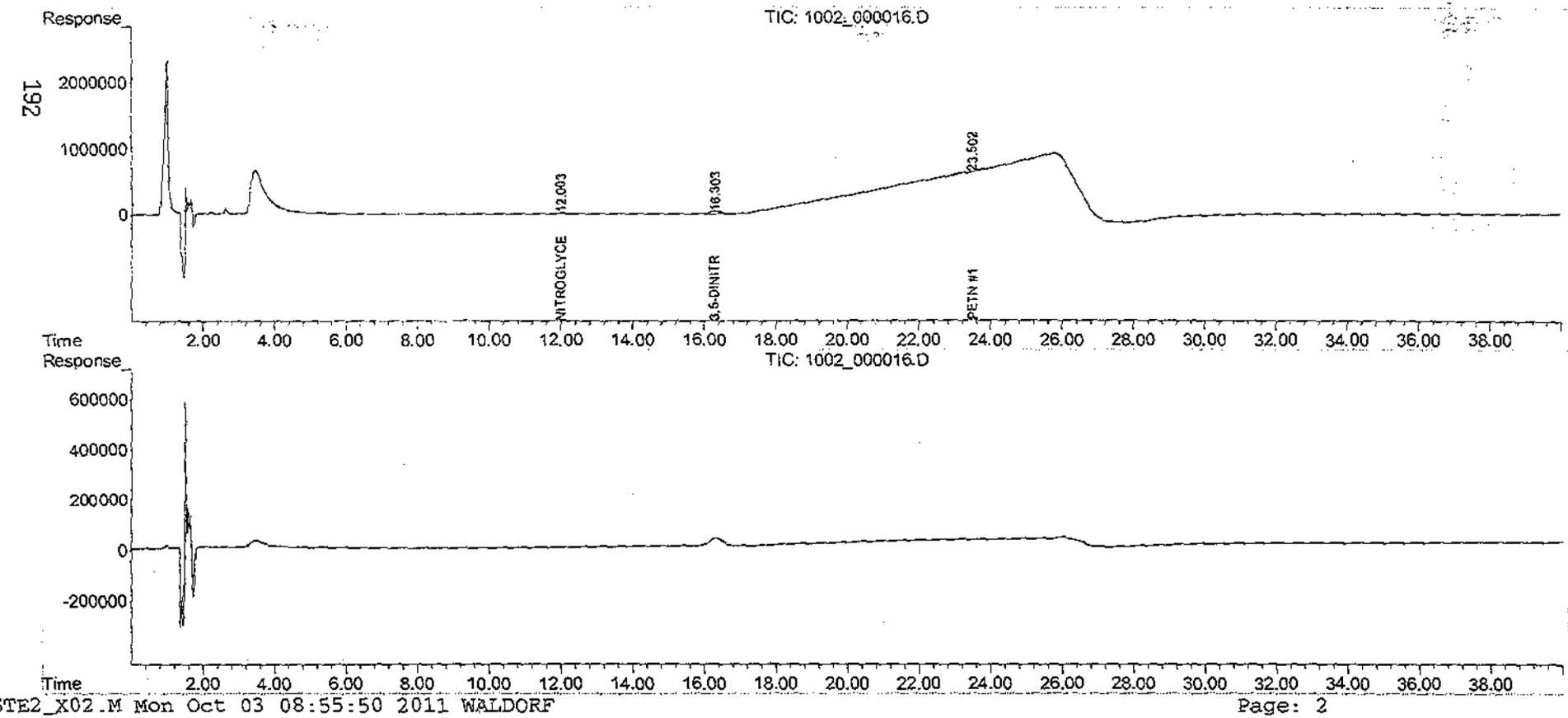
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

ata Path : H:\STATLER\CHEM32\1\DATA\111002\
ata File : 1002_000016.D
ignal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
cq On : 03-Oct-2011, 01:12:10
perator : MP
ample : 8330MXB_CB 0.020 PPM 10/01/11
isc :
LS Vial : 4101 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 08:55:45 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

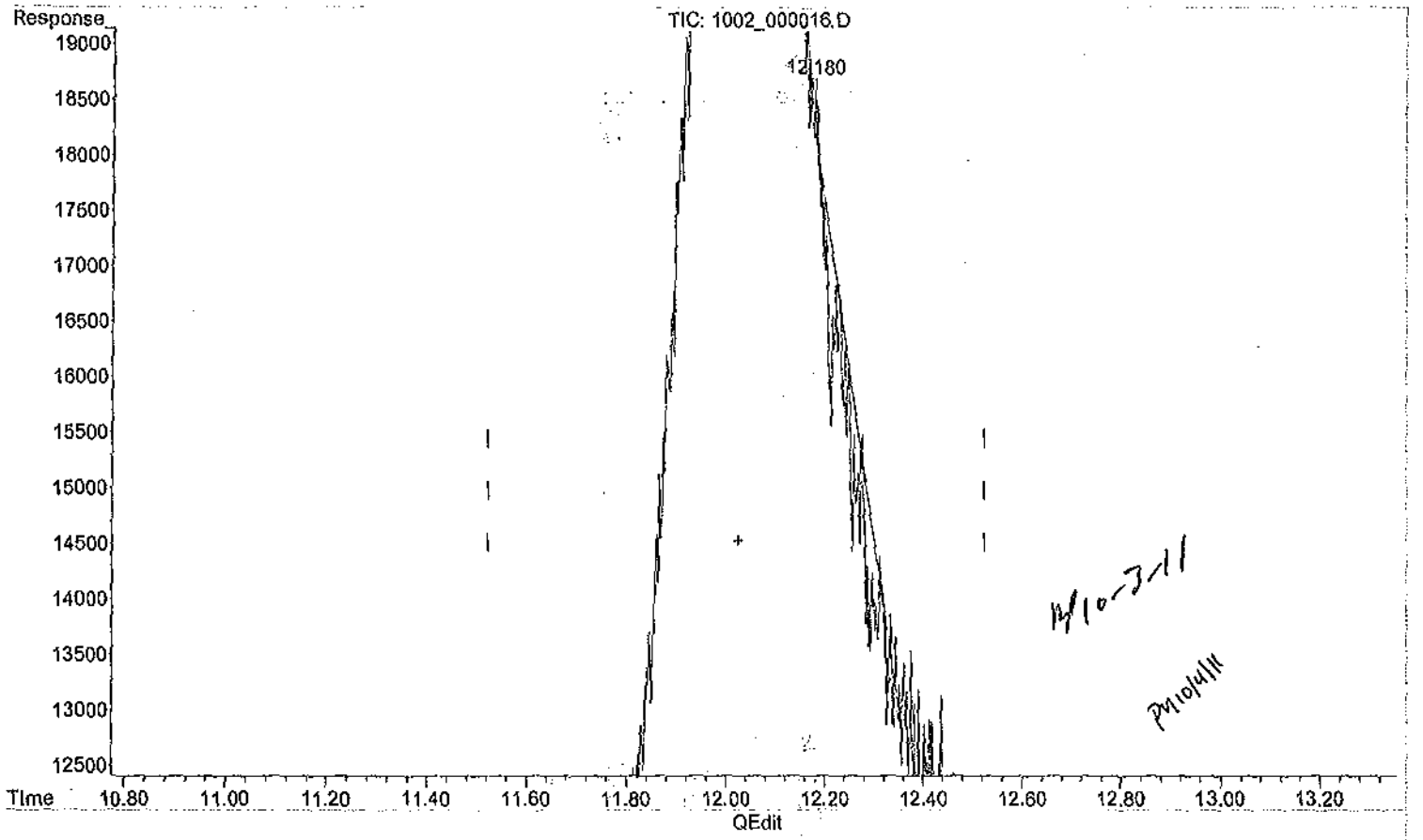


Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000016.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 01:12:10
Operator : MP
Sample : 8330MXB_CB 0.020 PPM 10/01/11
Misc :
ALS Vial : 4101 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:41:50 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation .

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(9) NITROGLYCERIN #1 (TM)

12.228min 0.016 ppb

response 13

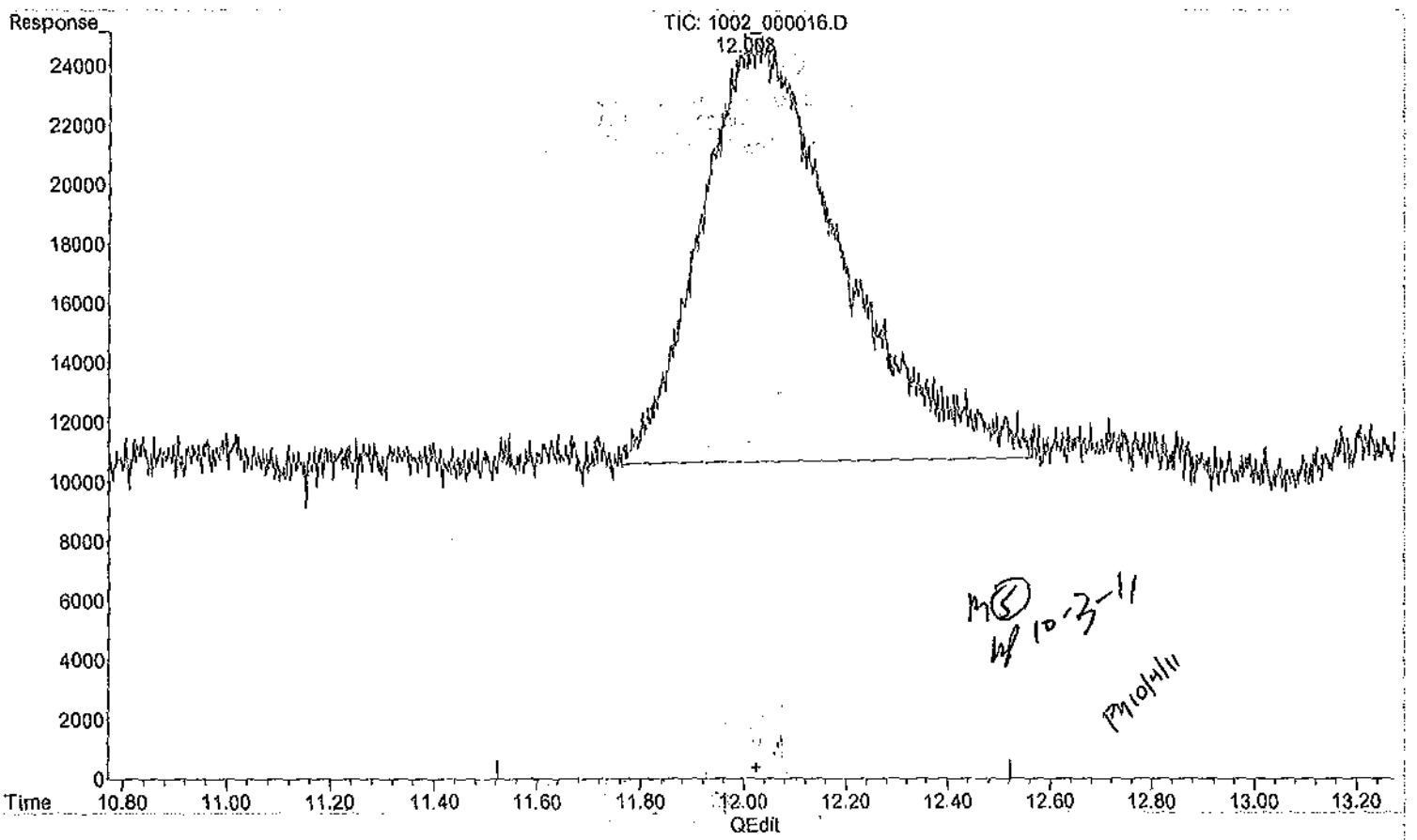
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000016.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 01:12:10
Operator : MP
Sample : 8330MXB_CB 0.020 PPM 10/01/11
Misc :
ALS Vial : 4101 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:41:50 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(9) NITROGLYCERIN #1 (TM)

12.003min 17.193 ppb m

response 14441

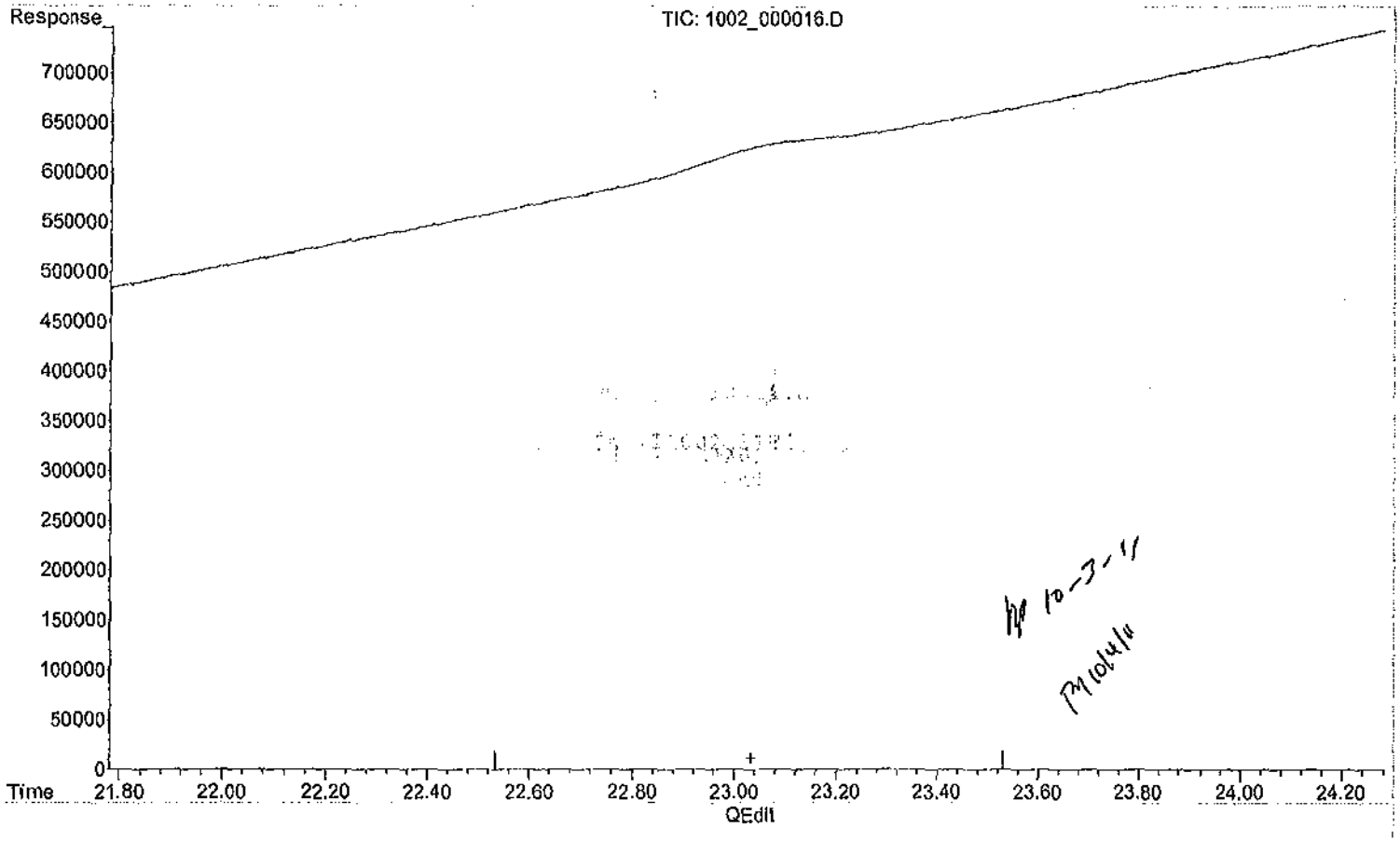
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000016.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 01:12:10
Operator : MP
Sample : 8330MXB_CB 0.020 PPM 10/01/11
Misc :
ALS Vial : 4101 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:41:50 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(18) PETN #1 (TM)

23.032min 0.000 ppb

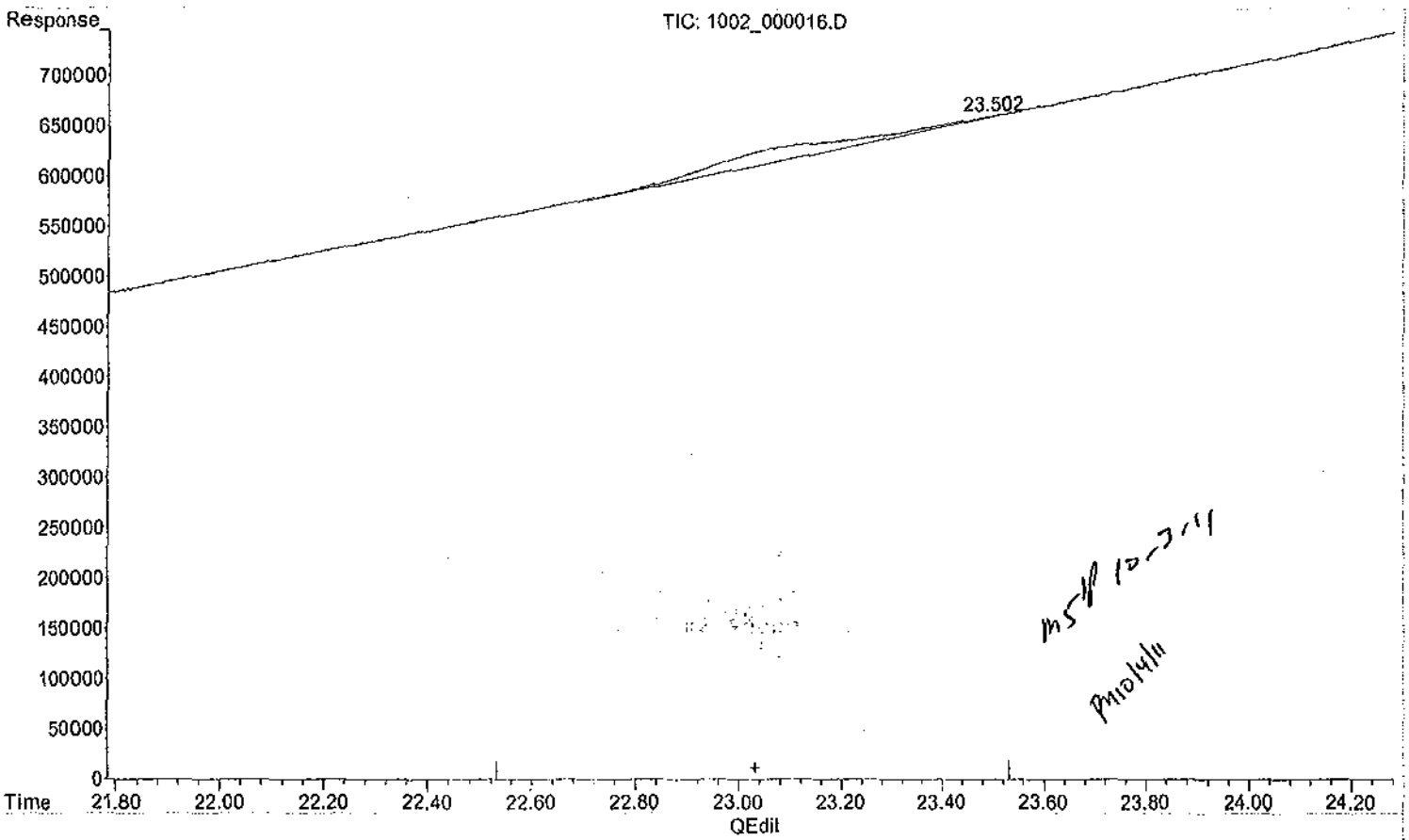
response 0

(+) = Expected Retention Time

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000016.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 01:12:10
Operator : MP
Sample : 8330MXB_CB 0.020 PPM 10/01/11
Misc :
ALS Vial : 4101 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:41:50 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(18) PETN #1 (TM)

23.502min 0.595 ppb m

response 528

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000017.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 01:53:40
Operator : MP
Sample : 8330MXA_CB 0.050 PPM 10/01/11
Misc :
ALS Vial : 4102 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 08:56:15 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	R.T.	Response	Conc	Units	
	System Monitoring Compounds					
4)	S 1,2-DINITROBENZENE #1	0.000	0	N.D.	ppb	d
23)	S 1,2-DINITROBENZENE #2	7.941	82789	41.747	ppb	
	Target Compounds					
1)	TM HMX #1	0.000	0	N.D.	ppb	d
2)	TM RDX #1	0.000	0	N.D.	ppb	d
3)	TM 1,3,5-TRINITROBENZENE #1	0.000	0	N.D.	ppb	d
5)	TM 1,3-DINITROBENZENE #1	0.000	0	N.D.	ppb	d
6)	TM NITROBENZENE #1	0.000	0	N.D.	ppb	d
7)	TM 2,4,6-TRINITROTOLUENE #1	0.000	0	N.D.	ppb	d
8)	TM TETRYL #1	0.000	0	N.D.	ppb	d
9)	TM NITROGLYCERIN #1	0.000	0	N.D.	ppb	d
10)	TM 2,6-DINITROTOLUENE #1	0.000	0	N.D.	ppb	d
11)	TM 2,4-DINITROTOLUENE #1	0.000	0	N.D.	ppb	d
12)	TM 2-NITROTOLUENE #1	0.000	0	N.D.	ppb	d
13)	TM 3,5-DINITROANILINE #1	0.000	0	N.D.	ppb	d
14)	TM 4-NITROTOLUENE #1	0.000	0	N.D.	ppb	d
15)	TM 3-NITROTOLUENE #1	0.000	0	N.D.	ppb	d
16)	TM 4-AMINO-2,6-DINITROTO...	0.000	0	N.D.	ppb	d
17)	TM 2-AMINO-4,6-DINITROTO...	0.000	0	N.D.	ppb	d
18)	TM PETN #1	0.000	0	N.D.	ppb	d
20)	TM HMX #2	3.872	101335	44.950	ppb	
21)	TM RDX #2	6.125	77277	43.083	ppb	
22)	TM 1,3,5-TRINITROBENZENE #2	6.560	181656	42.918	ppb	
24)	TM 1,3-DINITROBENZENE #2	8.190	186922	44.017	ppb	
25)	TM NITROBENZENE #2	9.015	94181	39.460	ppb	
26)	TM 2,4,6-TRINITROTOLUENE #2	11.429	96454	42.307	ppb	
27)	TM TETRYL #2	12.001	69971	42.002	ppb	
28)	TM NITROGLYCERIN #2	12.001	69971	NoCal	ppb	
29)	TM 2,6-DINITROTOLUENE #2	13.473	56146	41.266	ppb	
30)	TM 2,4-DINITROTOLUENE #2	14.005	98648	42.849	ppb	
31)	TM 2-NITROTOLUENE #2	15.641	35224	37.164	ppb	
32)	TM 3,5-DINITROANILINE #2	16.509	791	NoCal	ppb	
33)	TM 4-NITROTOLUENE #2	17.109	31955	38.891	ppb	
34)	TM 3-NITROTOLUENE #2	18.283	38714	36.438	ppb	
35)	TM 4-AMINO-2,6-DINITROTO...	18.685	64886	45.578	ppb	
36)	TM 2-AMINO-4,6-DINITROTO...	19.477	73350	42.068	ppb	
37)	TM PETN #2	22.980	2240	NoCal	ppb	

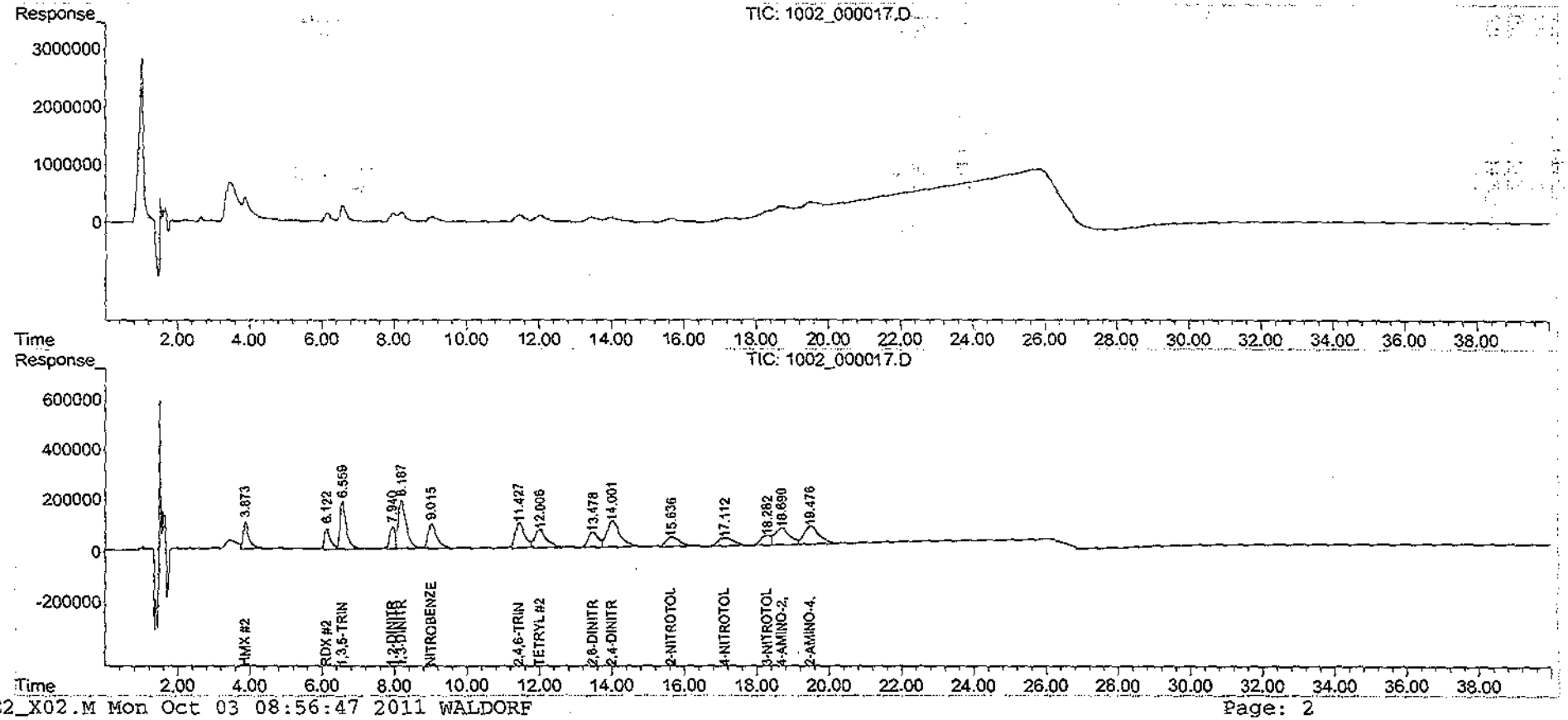
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000017.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 01:53:40
Operator : MP
Sample : 8330MXA_CB 0.050 PPM 10/01/11
Misc :
ALS Vial : 4102 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 08:56:15 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



Quantitation Report (QT Reviewed)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000018.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 02:35:10
Operator : MP
Sample : 8330MXB_CB 0.050 PPM 10/01/11
Misc :
ALS Vial : 4103 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 08:57:45 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

		Compound	R.T.	Response	Conc	Units	
System Monitoring Compounds							
4)	S	1,2-DINITROBENZENE #1	7.921	1821	NoCal	ppb	
23)	S	1,2-DINITROBENZENE #2	0.000	0	N.D.	ppb	d
Target Compounds							
1)	TM	HMX #1	0.000	0	N.D.	ppb	
2)	TM	RDX #1	6.561	2016	NoCal	ppb	
3)	TM	1,3,5-TRINITROBENZENE #1	6.561	2016	NoCal	ppb	
5)	TM	1,3-DINITROBENZENE #1	8.147	1797	NoCal	ppb	
6)	TM	NITROBENZENE #1	8.998	2254	NoCal	ppb	
7)	TM	2,4,6-TRINITROTOLUENE #1	11.427	4092	NoCal	ppb	
8)	TM	TETRYL #1	12.028	37280	NoCal	ppb	
9)	TM	NITROGLYCERIN #1	12.020	34302	40.839	ppb	m
10)	TM	2,6-DINITROTOLUENE #1	13.481	2534	NoCal	ppb	
11)	TM	2,4-DINITROTOLUENE #1	13.994	1703	NoCal	ppb	
12)	TM	2-NITROTOLUENE #1	0.000	0	N.D.	ppb	d
13)	TM	3,5-DINITROANILINE #1	16.287	111504	41.856	ppb	m
14)	TM	4-NITROTOLUENE #1	0.000	0	N.D.	ppb	
15)	TM	3-NITROTOLUENE #1	0.000	0	N.D.	ppb	
16)	TM	4-AMINO-2,6-DINITROTO...	0.000	0	N.D.	ppb	
17)	TM	2-AMINO-4,6-DINITROTO...	0.000	0	N.D.	ppb	
18)	TM	PETN #1	23.521f	878	0.990	ppb	m
20)	TM	HMX #2	0.000	0	N.D.	ppb	d
21)	TM	RDX #2	0.000	0	N.D.	ppb	d
22)	TM	1,3,5-TRINITROBENZENE #2	0.000	0	N.D.	ppb	d
24)	TM	1,3-DINITROBENZENE #2	0.000	0	N.D.	ppb	d
25)	TM	NITROBENZENE #2	0.000	0	N.D.	ppb	d
26)	TM	2,4,6-TRINITROTOLUENE #2	0.000	0	N.D.	ppb	d
27)	TM	TETRYL #2	0.000	0	N.D.	ppb	d
28)	TM	NITROGLYCERIN #2	0.000	0	N.D.	ppb	d
29)	TM	2,6-DINITROTOLUENE #2	0.000	0	N.D.	ppb	d
30)	TM	2,4-DINITROTOLUENE #2	0.000	0	N.D.	ppb	d
31)	TM	2-NITROTOLUENE #2	0.000	0	N.D.	ppb	d
32)	TM	3,5-DINITROANILINE #2	0.000	0	N.D.	ppb	d
33)	TM	4-NITROTOLUENE #2	0.000	0	N.D.	ppb	d
34)	TM	3-NITROTOLUENE #2	0.000	0	N.D.	ppb	d
35)	TM	4-AMINO-2,6-DINITROTO...	0.000	0	N.D.	ppb	d
36)	TM	2-AMINO-4,6-DINITROTO...	0.000	0	N.D.	ppb	d
37)	TM	PETN #2	0.000	0	N.D.	ppb	d

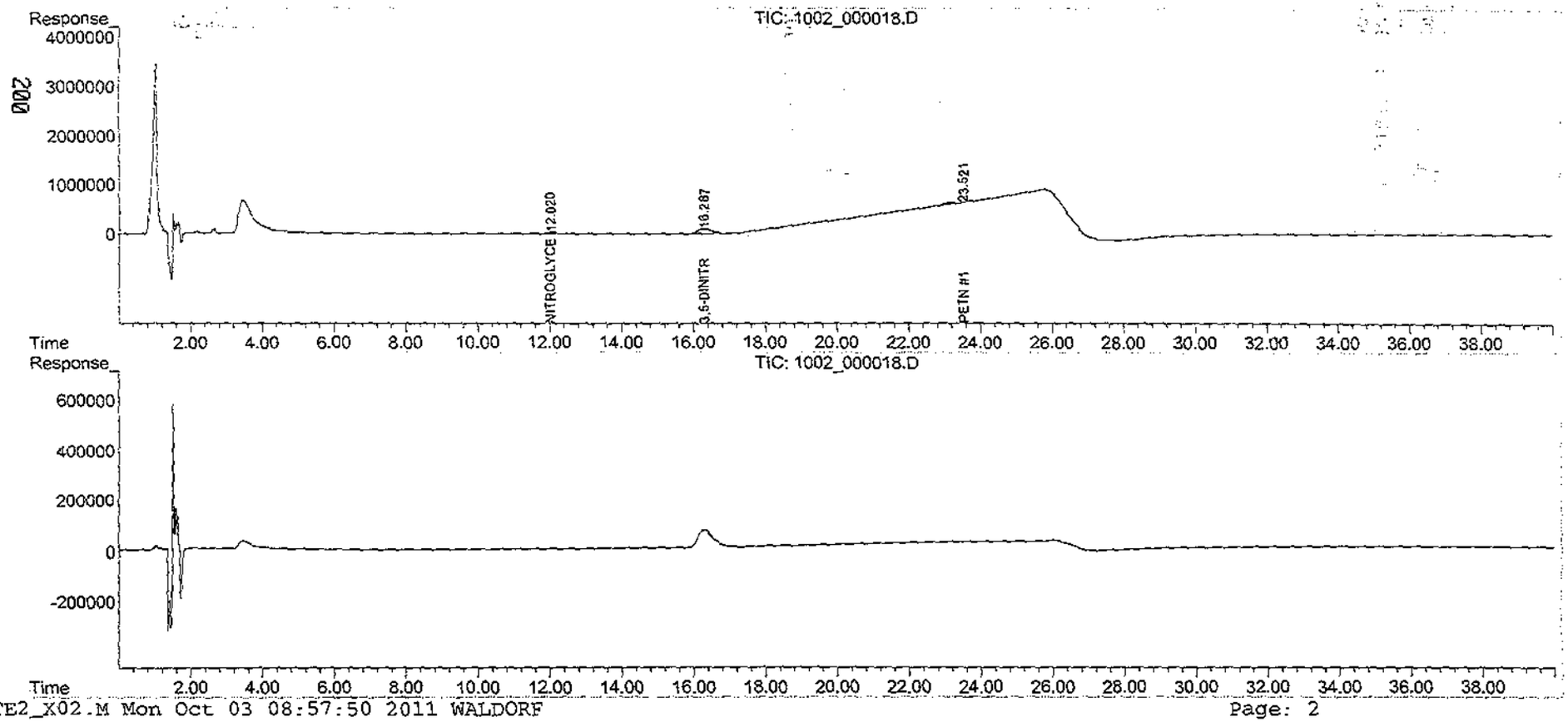
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

ata Path : H:\STATLER\CHEM32\1\DATA\111002\
ata File : 1002_000018.D
ignal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
cq On : 03-Oct-2011, 02:35:10
perator : MP
ample : 8330MXB_CB 0.050 PPM 10/01/11
isc :
ALS Vial : 4103 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 08:57:45 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

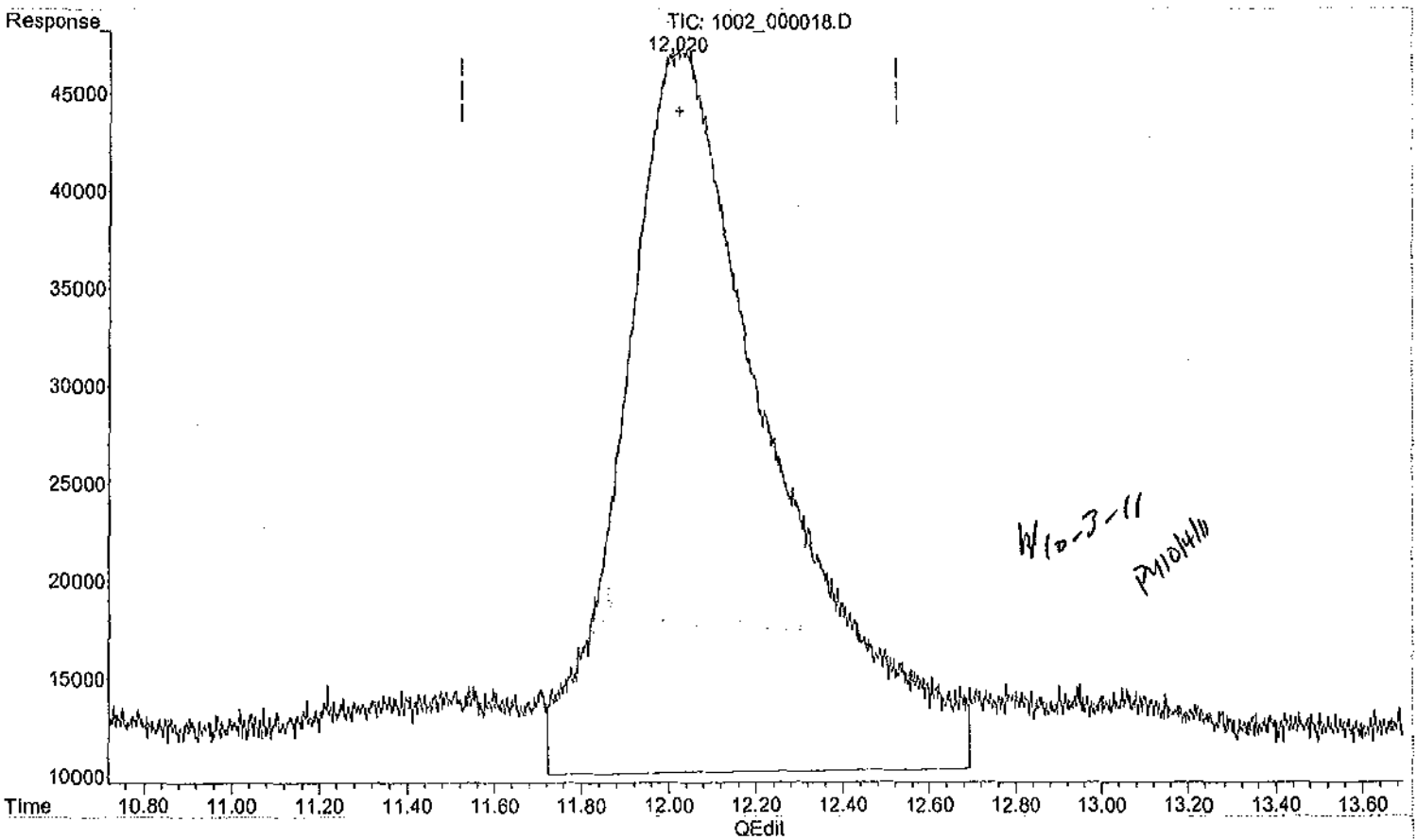
Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000018.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 02:35:10
Operator : MP
Sample : 8330MXB_CB 0.050 PPM 10/01/11
Misc :
ALS Vial : 4103 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:41:54 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(9) NITROGLYCERIN #1 (TM)

12.028min 44.384 ppb

response 37280

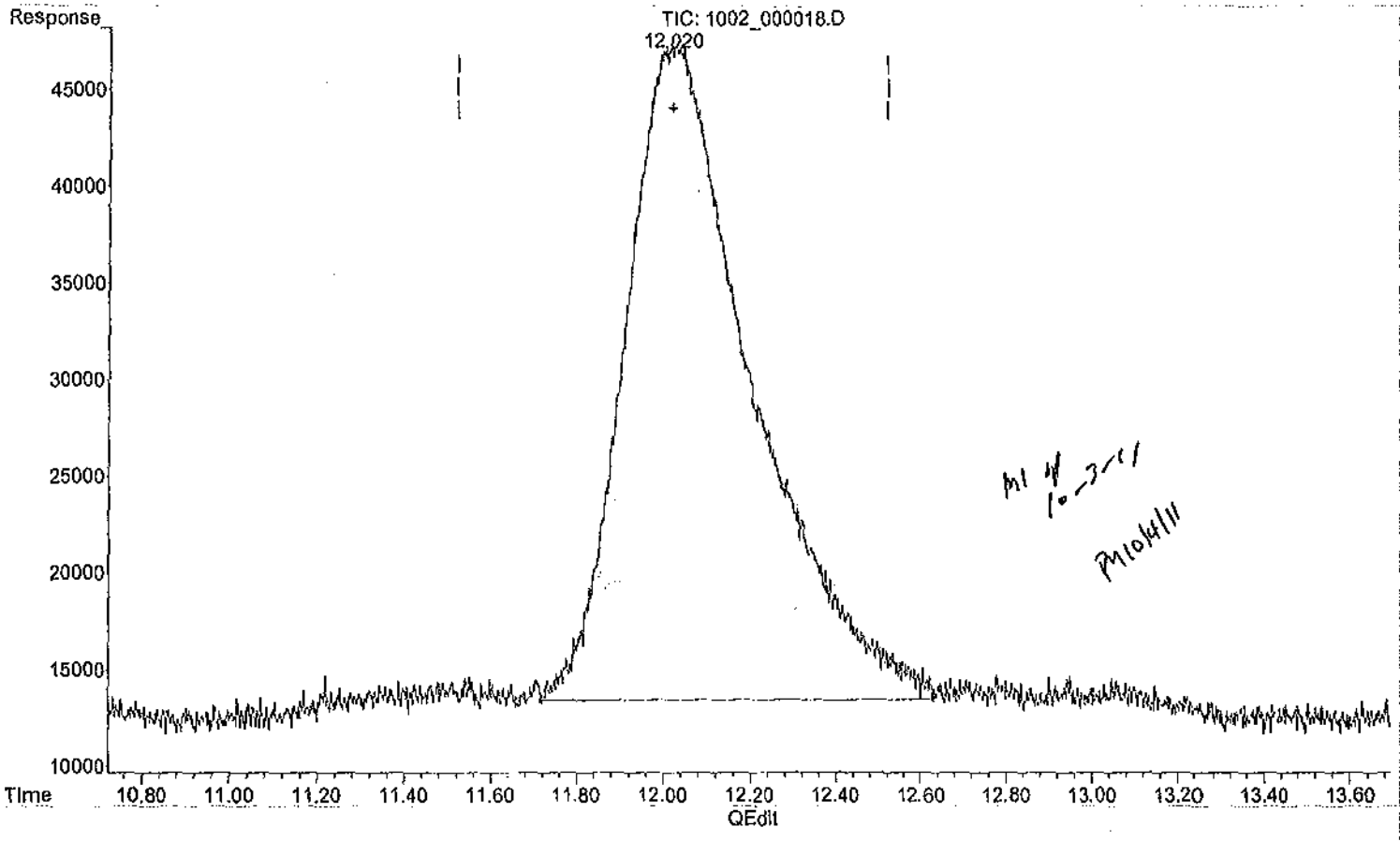
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000018.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 02:35:10
Operator : MP
Sample : 8330MXB_CB 0.050 PPM 10/01/11
Misc :
ALS Vial : 4103 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:41:54 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(9) NITROGLYCERIN #1 (TM)

12.020min 40.839 ppb m

response 34302

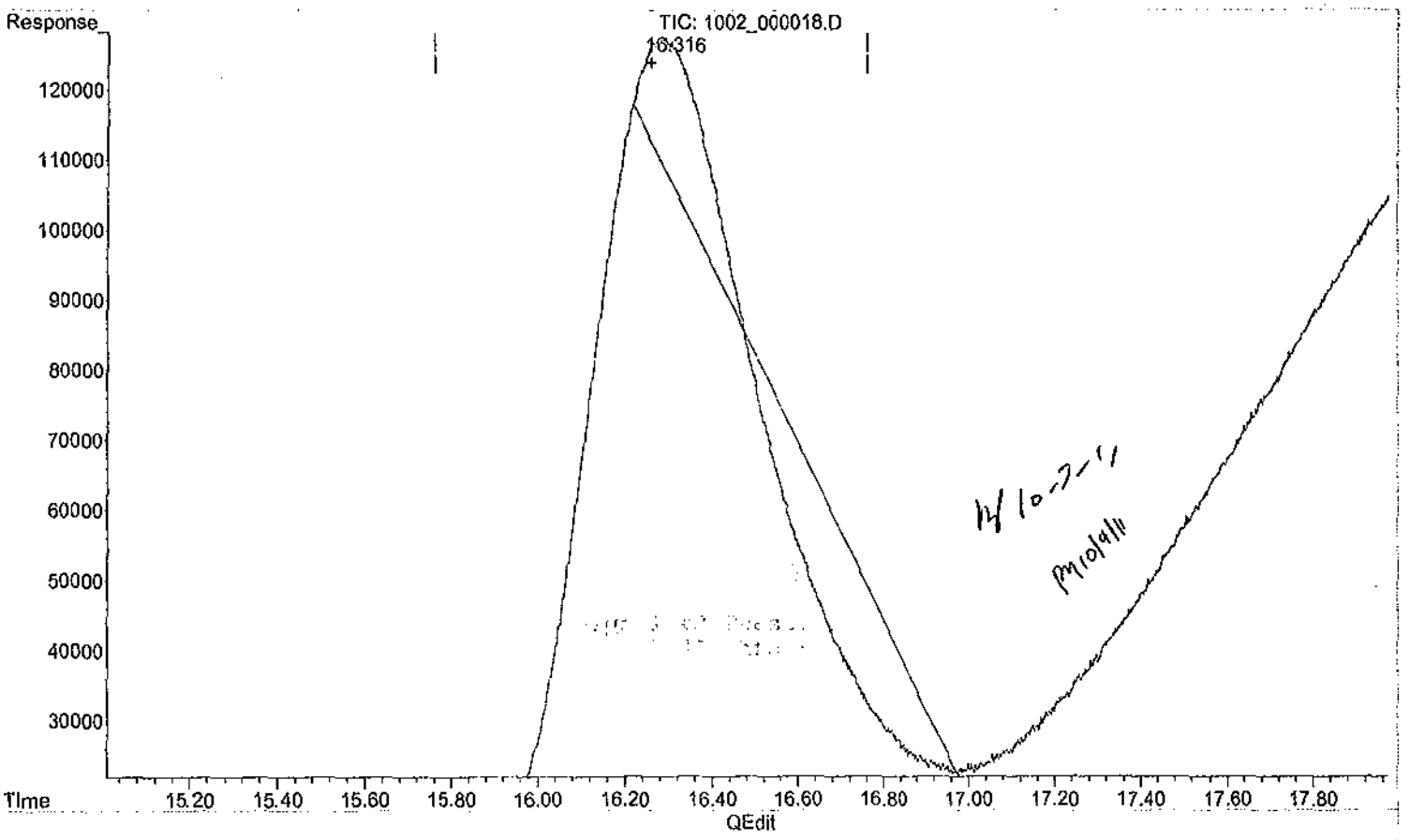
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000018.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 02:35:10
Operator : MP
Sample : 8330MXB_CB 0.050 PPM 10/01/11
Misc :
ALS Vial : 4103 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:41:54 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(13) 3,5-DINITROANILINE #1 (TM)

16.286min 6.630 ppb

response 17663

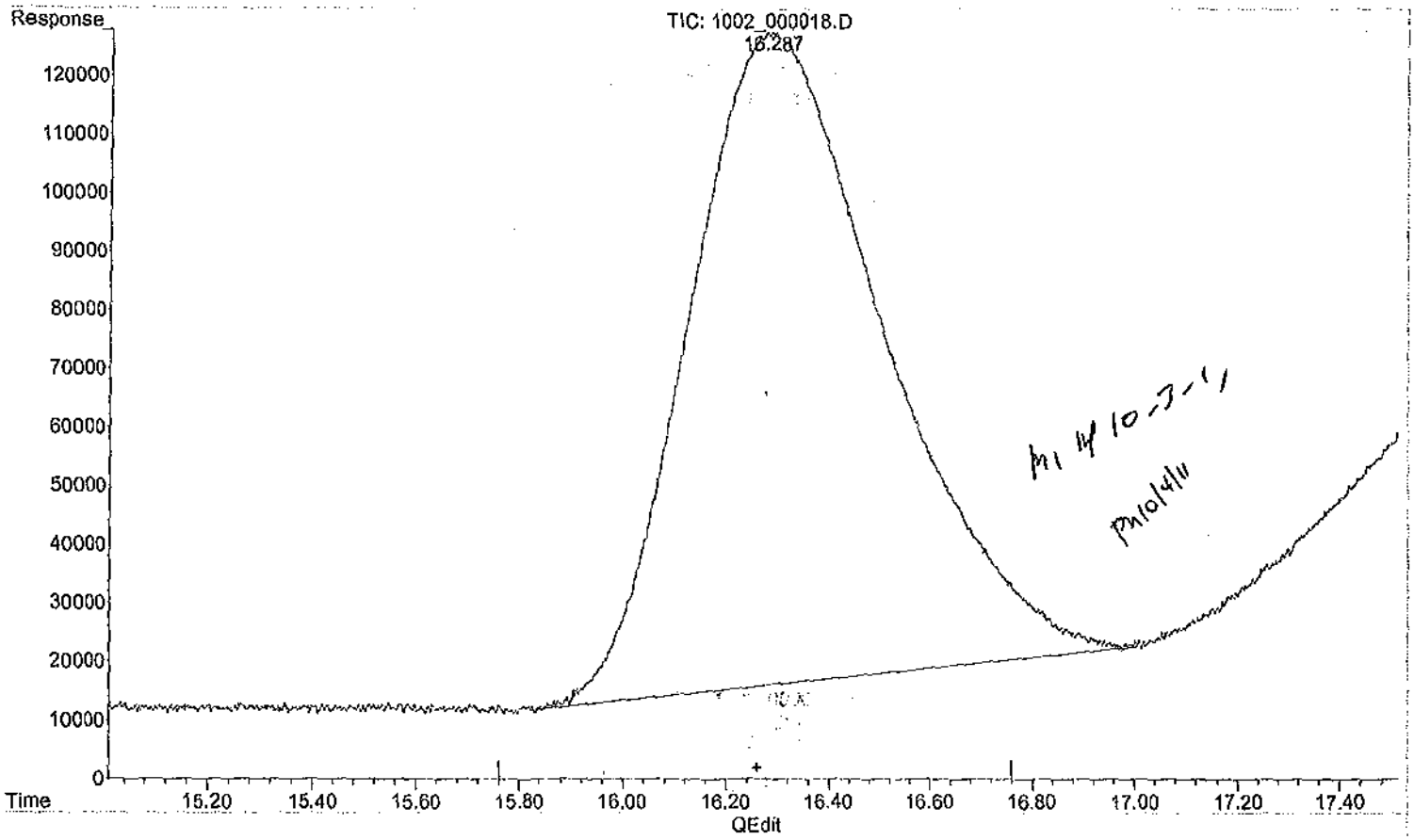
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000018.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 02:35:10
Operator : MP
Sample : 8330MXB_CB 0.050 PPM 10/01/11
Misc :
ALS Vial : 4103 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:41:54 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(13) 3,5-DINITROANILINE #1 (TM)

16.287min 41.856 ppb m

response 111504

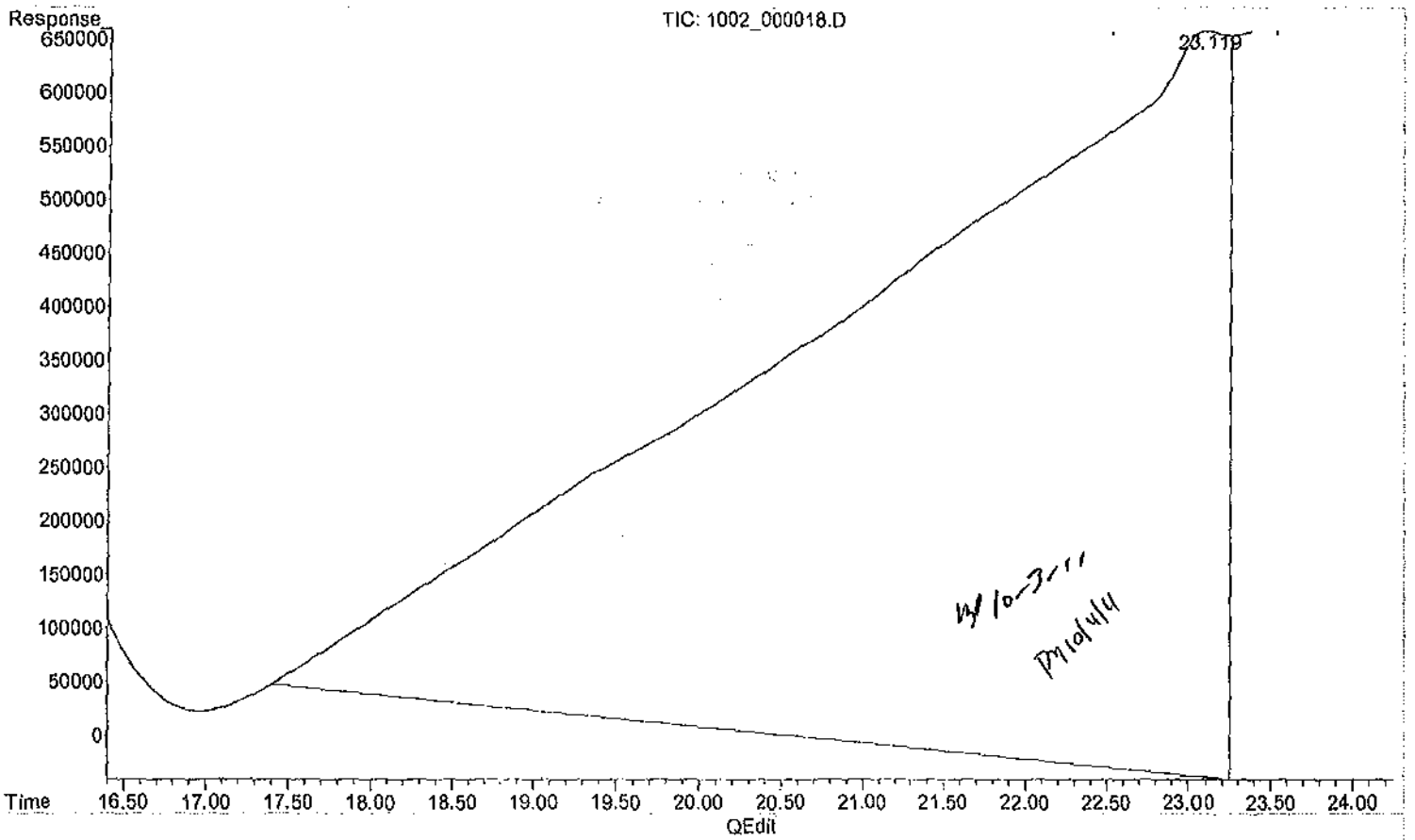
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000018.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 02:35:10
Operator : MP
Sample : 8330MXB_CB 0.050 PPM 10/01/11
Misc :
ALS Vial : 4103 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:41:54 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(18) PETN #1 (TM)

23.092min 784.284 ppb

response 695637

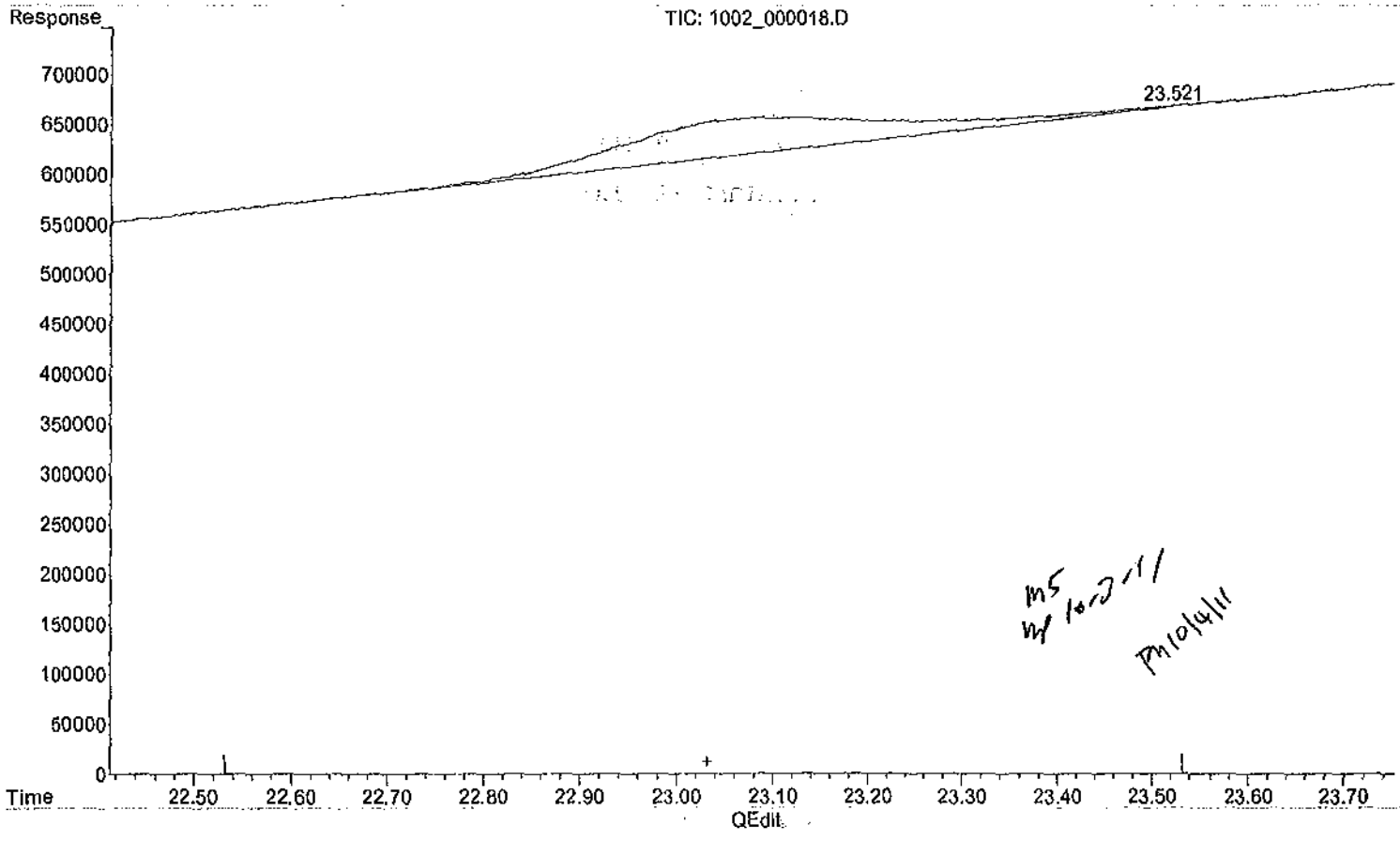
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000018.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 02:35:10
Operator : MP
Sample : 8330MXB_CB 0.050 PPM 10/01/11
Misc :
ALS Vial : 4103 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:41:54 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



ms 10-3-11
MP 10/4/11

(18) PETN #1 (TM)

23.521min 0.990 ppb m

response 878

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000019.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 03:16:38
Operator : MP
Sample : 8330MXA_CB 0.10 PPM 10/01/11
Misc :
ALS Vial : 4104 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 08:58:56 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

		Compound	R.T.	Response	Conc	Units	
System Monitoring Compounds							
4)	S	1,2-DINITROBENZENE #1	0.000	0	N.D.	ppb	d
23)	S	1,2-DINITROBENZENE #2	7.943	164080	82.739	ppb	
Target Compounds							
1)	TM	HMX #1	0.000	0	N.D.	ppb	d
2)	TM	RDX #1	0.000	0	N.D.	ppb	d
3)	TM	1,3,5-TRINITROBENZENE #1	0.000	0	N.D.	ppb	d
5)	TM	1,3-DINITROBENZENE #1	0.000	0	N.D.	ppb	d
6)	TM	NITROBENZENE #1	0.000	0	N.D.	ppb	d
7)	TM	2,4,6-TRINITROTOLUENE #1	0.000	0	N.D.	ppb	d
8)	TM	TETRYL #1	0.000	0	N.D.	ppb	d
9)	TM	NITROGLYCERIN #1	0.000	0	N.D.	ppb	d
10)	TM	2,6-DINITROTOLUENE #1	0.000	0	N.D.	ppb	d
11)	TM	2,4-DINITROTOLUENE #1	0.000	0	N.D.	ppb	d
12)	TM	2-NITROTOLUENE #1	0.000	0	N.D.	ppb	d
13)	TM	3,5-DINITROANILINE #1	0.000	0	N.D.	ppb	d
14)	TM	4-NITROTOLUENE #1	0.000	0	N.D.	ppb	d
15)	TM	3-NITROTOLUENE #1	0.000	0	N.D.	ppb	d
16)	TM	4-AMINO-2,6-DINITROTO...	0.000	0	N.D.	ppb	d
17)	TM	2-AMINO-4,6-DINITROTO...	0.000	0	N.D.	ppb	d
18)	TM	PETN #1	0.000	0	N.D.	ppb	d
20)	TM	HMX #2	3.873	191961	85.149	ppb	
21)	TM	RDX #2	6.127	152180	84.843	ppb	
22)	TM	1,3,5-TRINITROBENZENE #2	6.559	362781	85.710	ppb	
24)	TM	1,3-DINITROBENZENE #2	8.191	373912	88.050	ppb	
25)	TM	NITROBENZENE #2	9.017	186453	78.120	ppb	
26)	TM	2,4,6-TRINITROTOLUENE #2	11.432	192852	84.589	ppb	
27)	TM	TETRYL #2	12.003	140799	84.518	ppb	
28)	TM	NITROGLYCERIN #2	12.003	140799	NoCal	ppb	
29)	TM	2,6-DINITROTOLUENE #2	13.479	114237	83.962	ppb	
30)	TM	2,4-DINITROTOLUENE #2	14.009	199191	86.521	ppb	
31)	TM	2-NITROTOLUENE #2	15.640	72643	76.645	ppb	
32)	TM	3,5-DINITROANILINE #2	0.000	0	N.D.	ppb	
33)	TM	4-NITROTOLUENE #2	17.110	63890	77.758	ppb	
34)	TM	3-NITROTOLUENE #2	18.271	76603	72.100	ppb	m
35)	TM	4-AMINO-2,6-DINITROTO...	18.690	131127	92.108	ppb	
36)	TM	2-AMINO-4,6-DINITROTO...	19.488	148386	85.102	ppb	
37)	TM	PETN #2	22.934	3424	NoCal	ppb	

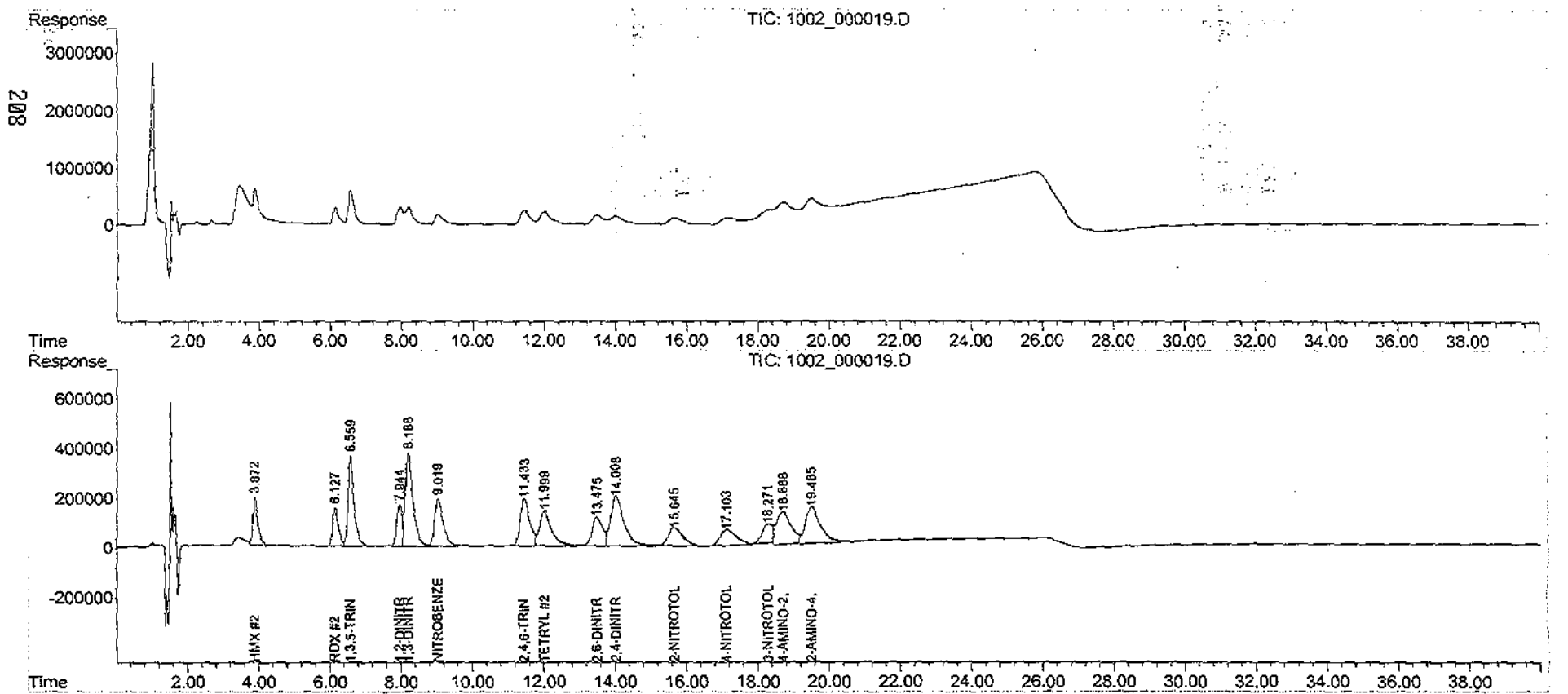
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000019.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 03:16:38
Operator : MP
Sample : 8330MXA_CB 0.10 PPM 10/01/11
Misc :
ALS Vial : 4104 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 08:58:56 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

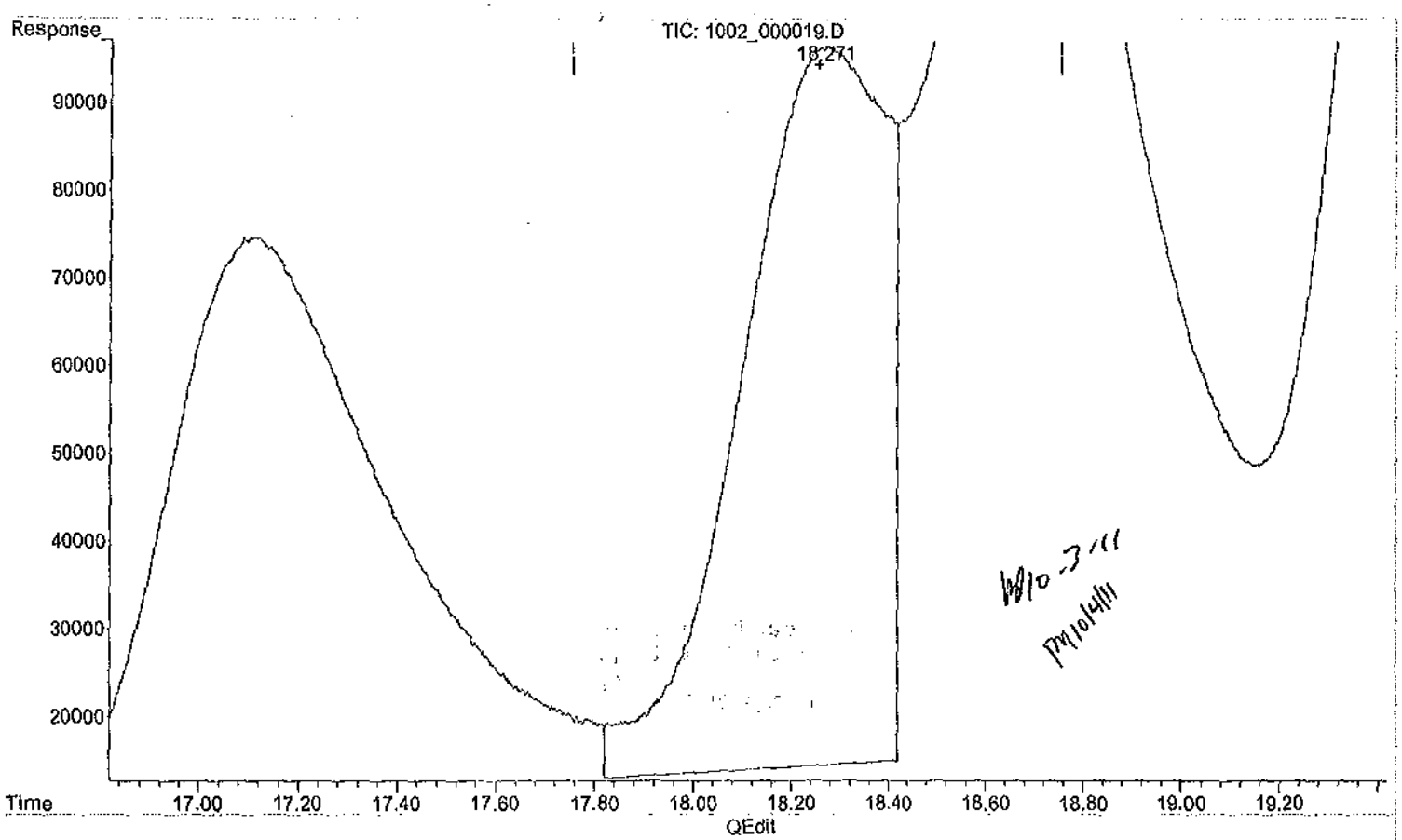


Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000019.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 03:16:38
Operator : MP
Sample : 8330MXA_CB 0.10 PPM 10/01/11
Misc :
ALS Vial : 4104 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:41:56 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(34) 3-NITROTOLUENE #2 (TM)

18.272min 77.032 ppb

response 81842

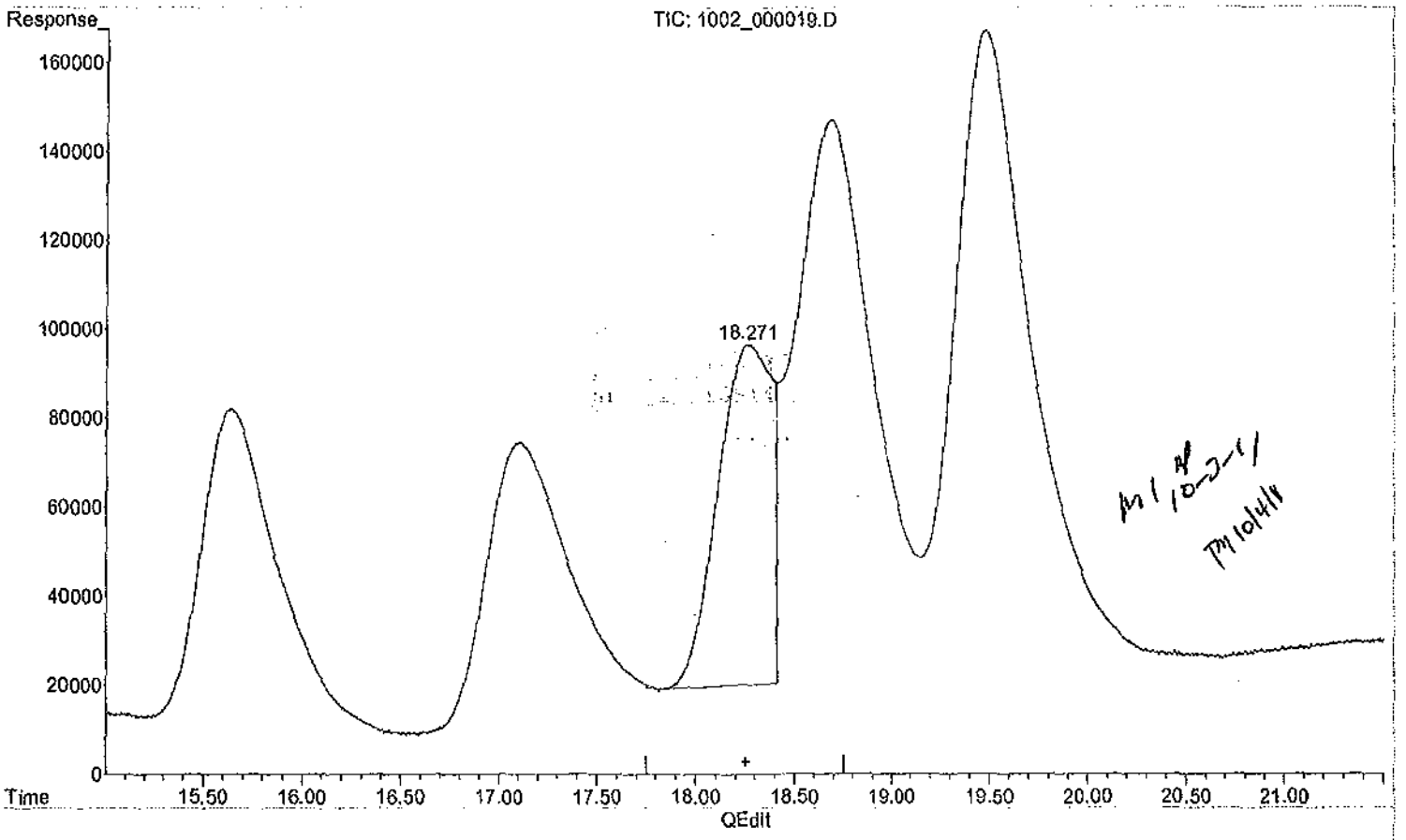
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000019.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 03:16:38
Operator : MP
Sample : 8330MXA_CB 0.10 PPM 10/01/11
Misc :
ALS Vial : 4104 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:41:56 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(34) 3-NITROTOLUENE #2 (TM)

18.271min 72.100 ppb m

response 76603

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000020.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 03:58:07
Operator : MP
Sample : 8330MXB_CB 0.10 PPM 10/01/11
Misc :
ALS Vial : 4160 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 09:00:08 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	R.T.	Response	Conc	Units	
	System Monitoring Compounds					
4)	S 1,2-DINITROBENZENE #1	7.930	2366	NoCal	ppb	
23)	S 1,2-DINITROBENZENE #2	0.000	0	N.D.	ppb	d
	Target Compounds					
1)	TM HMX #1	0.000	0	N.D.	ppb	
2)	TM RDX #1	6.517	6334	NoCal	ppb	
3)	TM 1,3,5-TRINITROBENZENE #1	6.517	6334	NoCal	ppb	
5)	TM 1,3-DINITROBENZENE #1	8.168	1278	NoCal	ppb	
6)	TM NITROBENZENE #1	9.001	1006	NoCal	ppb	
7)	TM 2,4,6-TRINITROTOLUENE #1	11.394	1388	NoCal	ppb	
8)	TM TETRYL #1	0.000	0	N.D.	ppb	
9)	TM NITROGLYCERIN #1	12.015	68733	81.831	ppb	m
10)	TM 2,6-DINITROTOLUENE #1	13.384	5461	NoCal	ppb	
11)	TM 2,4-DINITROTOLUENE #1	13.982	10853	NoCal	ppb	
12)	TM 2-NITROTOLUENE #1	0.000	0	N.D.	ppb	d
13)	TM 3,5-DINITROANILINE #1	16.276	225714	84.727	ppb	m
14)	TM 4-NITROTOLUENE #1	0.000	0	N.D.	ppb	
15)	TM 3-NITROTOLUENE #1	0.000	0	N.D.	ppb	
16)	TM 4-AMINO-2,6-DINITROTO...	0.000	0	N.D.	ppb	
17)	TM 2-AMINO-4,6-DINITROTO...	0.000	0	N.D.	ppb	
18)	TM PETN #1	23.063	73131	82.450	ppb	m
20)	TM HMX #2	0.000	0	N.D.	ppb	d
21)	TM RDX #2	0.000	0	N.D.	ppb	d
22)	TM 1,3,5-TRINITROBENZENE #2	0.000	0	N.D.	ppb	d
24)	TM 1,3-DINITROBENZENE #2	0.000	0	N.D.	ppb	d
25)	TM NITROBENZENE #2	0.000	0	N.D.	ppb	d
26)	TM 2,4,6-TRINITROTOLUENE #2	0.000	0	N.D.	ppb	d
27)	TM TETRYL #2	0.000	0	N.D.	ppb	d
28)	TM NITROGLYCERIN #2	0.000	0	N.D.	ppb	d
29)	TM 2,6-DINITROTOLUENE #2	0.000	0	N.D.	ppb	d
30)	TM 2,4-DINITROTOLUENE #2	0.000	0	N.D.	ppb	d
31)	TM 2-NITROTOLUENE #2	0.000	0	N.D.	ppb	d
32)	TM 3,5-DINITROANILINE #2	0.000	0	N.D.	ppb	d
33)	TM 4-NITROTOLUENE #2	0.000	0	N.D.	ppb	d
34)	TM 3-NITROTOLUENE #2	0.000	0	N.D.	ppb	d
35)	TM 4-AMINO-2,6-DINITROTO...	0.000	0	N.D.	ppb	d
36)	TM 2-AMINO-4,6-DINITROTO...	0.000	0	N.D.	ppb	d
37)	TM PETN #2	0.000	0	N.D.	ppb	d

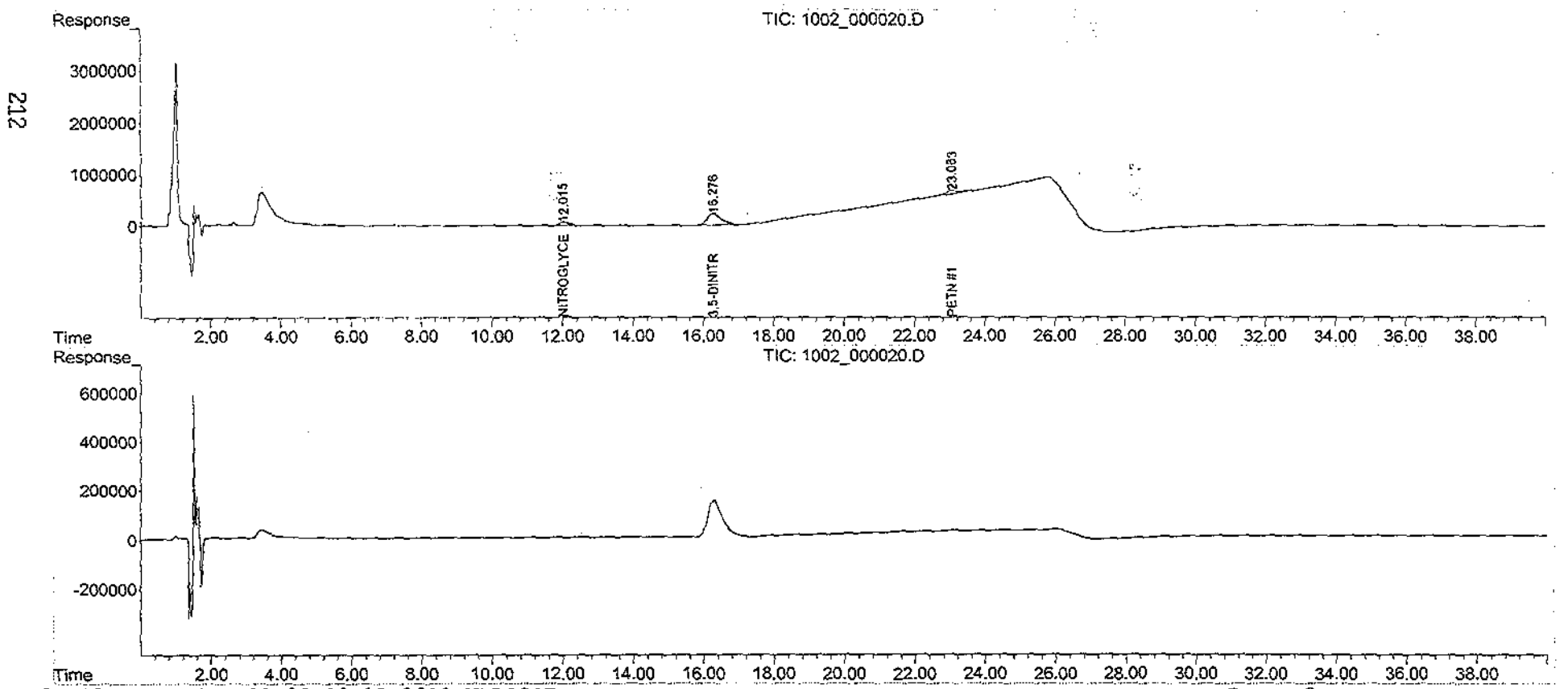
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000020.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 03:58:07
Operator : MP
Sample : 8330MXB_CB 0.10 PPM 10/01/11
Misc :
ALS Vial : 4160 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 09:00:08 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

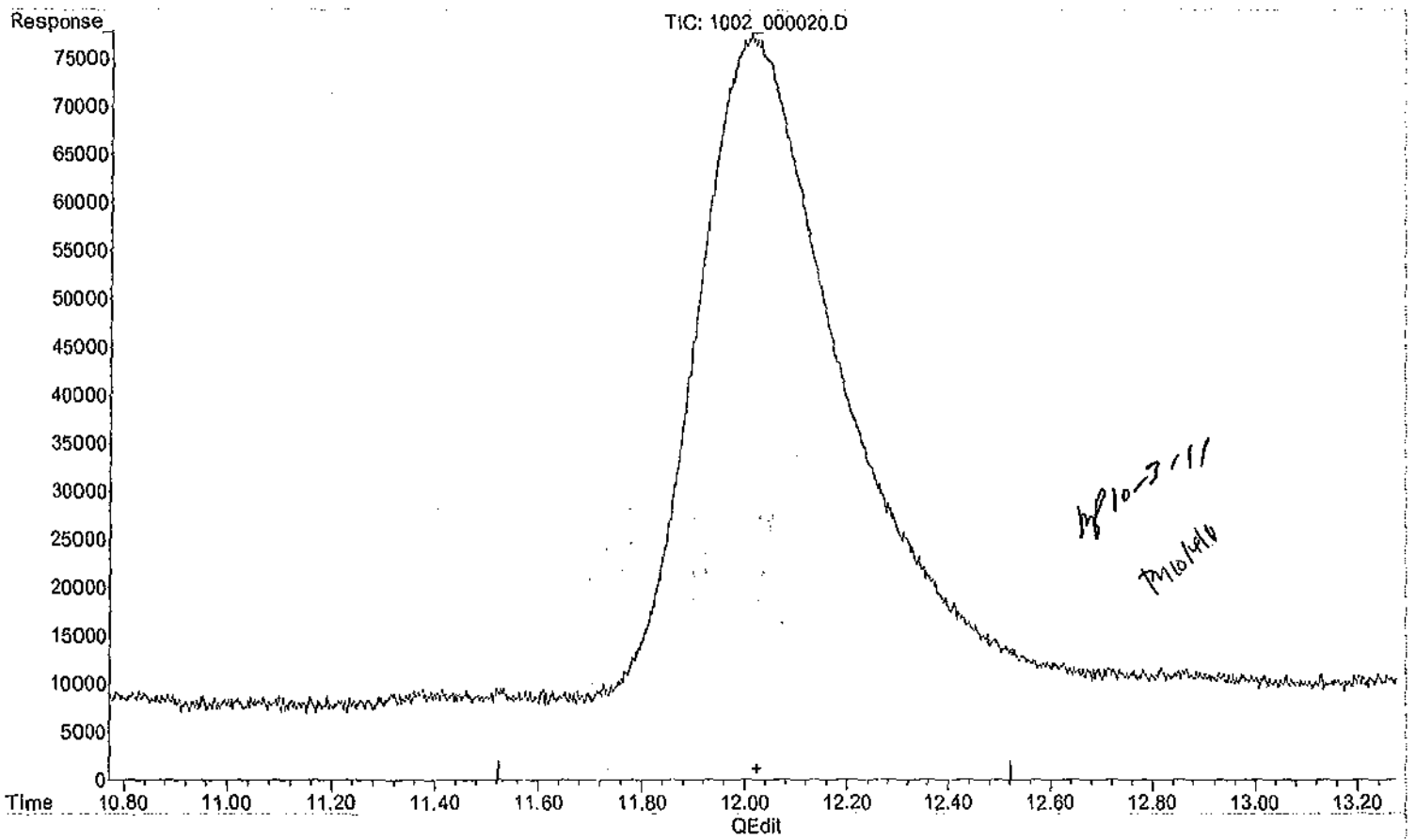


Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000020.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 03:58:07
Operator : MP
Sample : 8330MXB_CB 0.10 PPM 10/01/11
Misc :
ALS Vial : 4160 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:41:58 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(9) NITROGLYCERIN #1 (TM)

12.023min 0.000 ppb

response 0

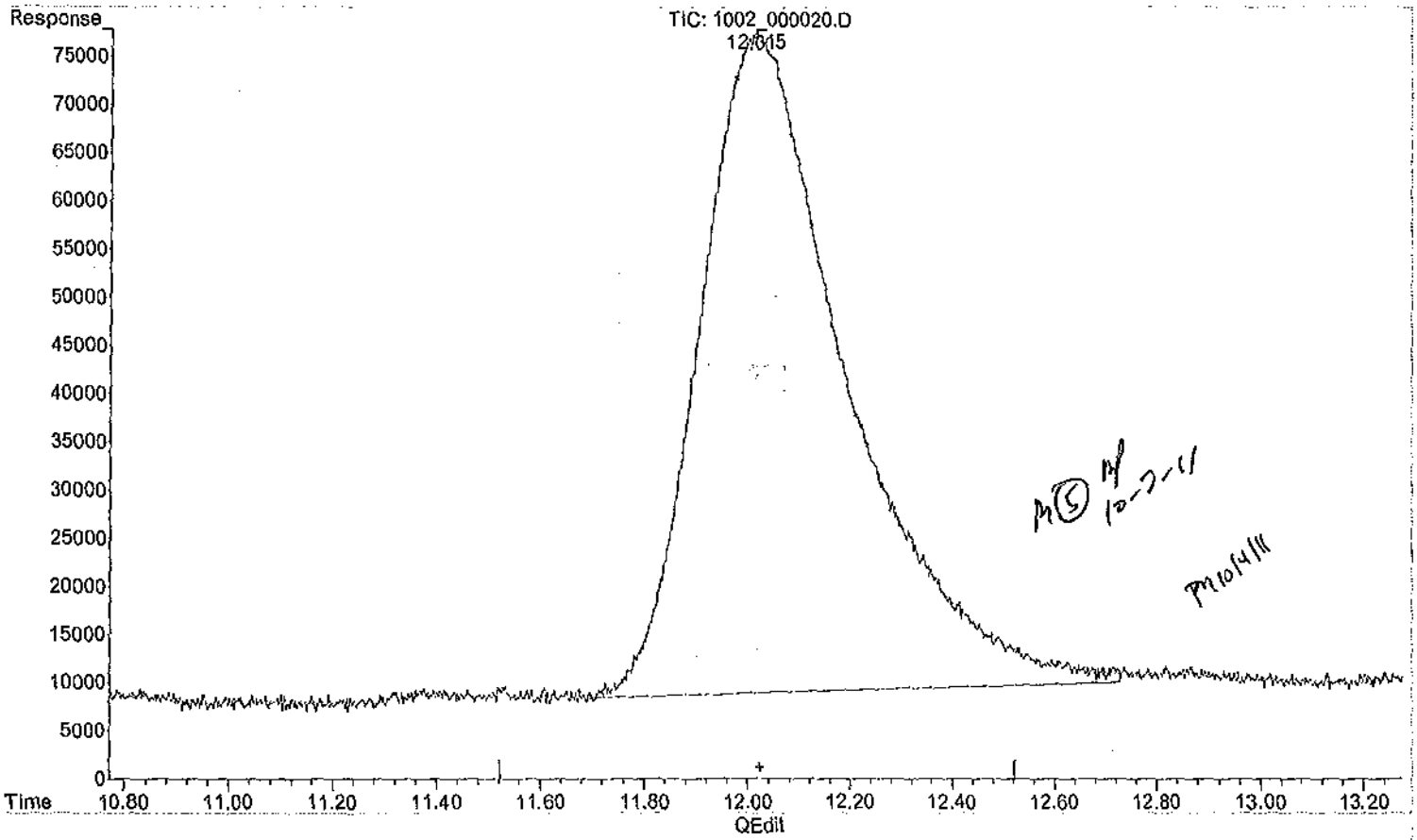
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000020.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 03:58:07
Operator : MP
Sample : 8330MXB_CB 0.10 PPM 10/01/11
Misc :
ALS Vial : 4160 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:41:58 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(9) NITROGLYCERIN #1 (TM)

12.015min 81.831 ppb m

response 68733

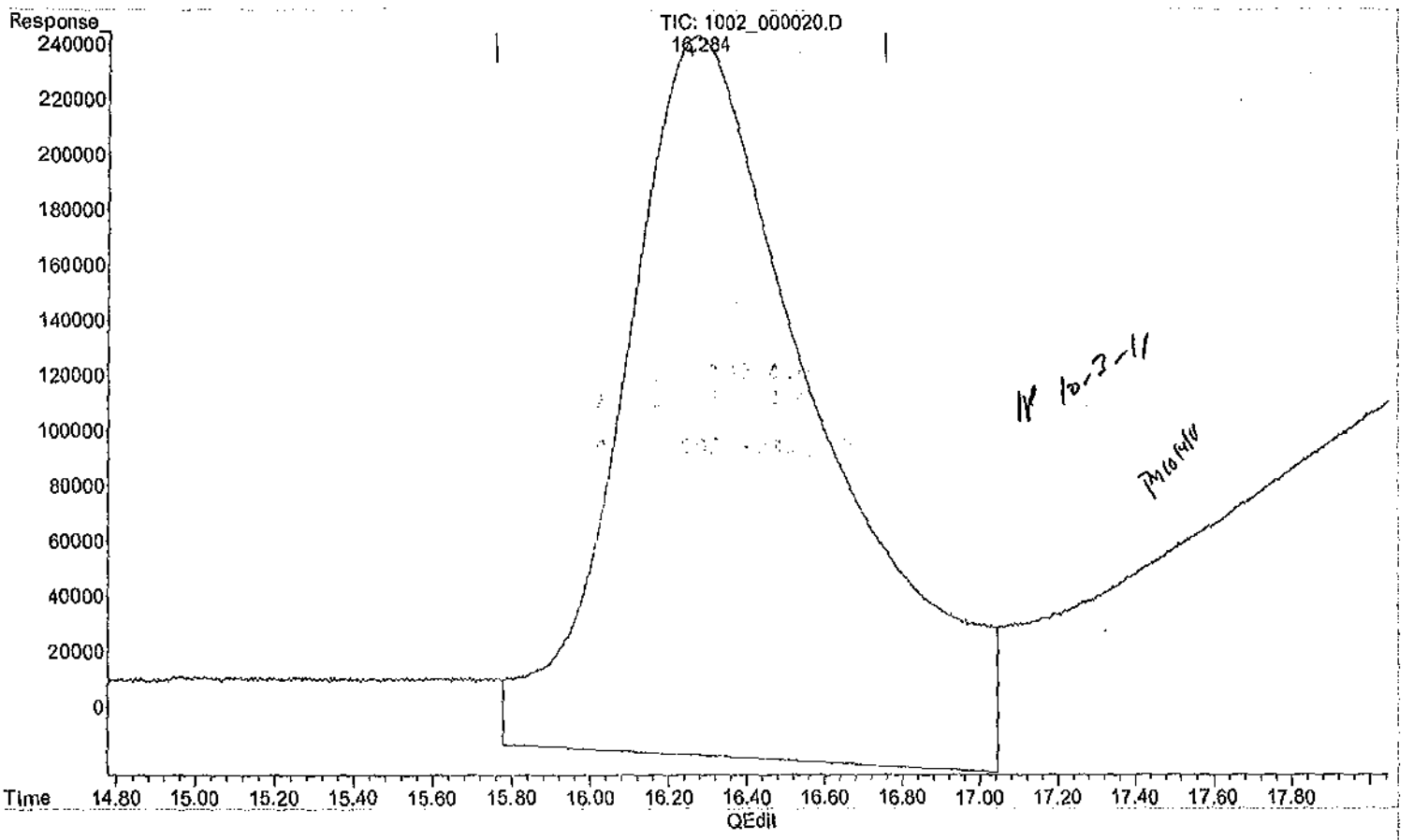
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000020.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 03:58:07
Operator : MP
Sample : 8330MXB_CB 0.10 PPM 10/01/11
Misc :
ALS Vial : 4160 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:41:58 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(13) 3,5-DINITROANILINE #1 (TM)

16.279min 97.831 ppb

response 260623

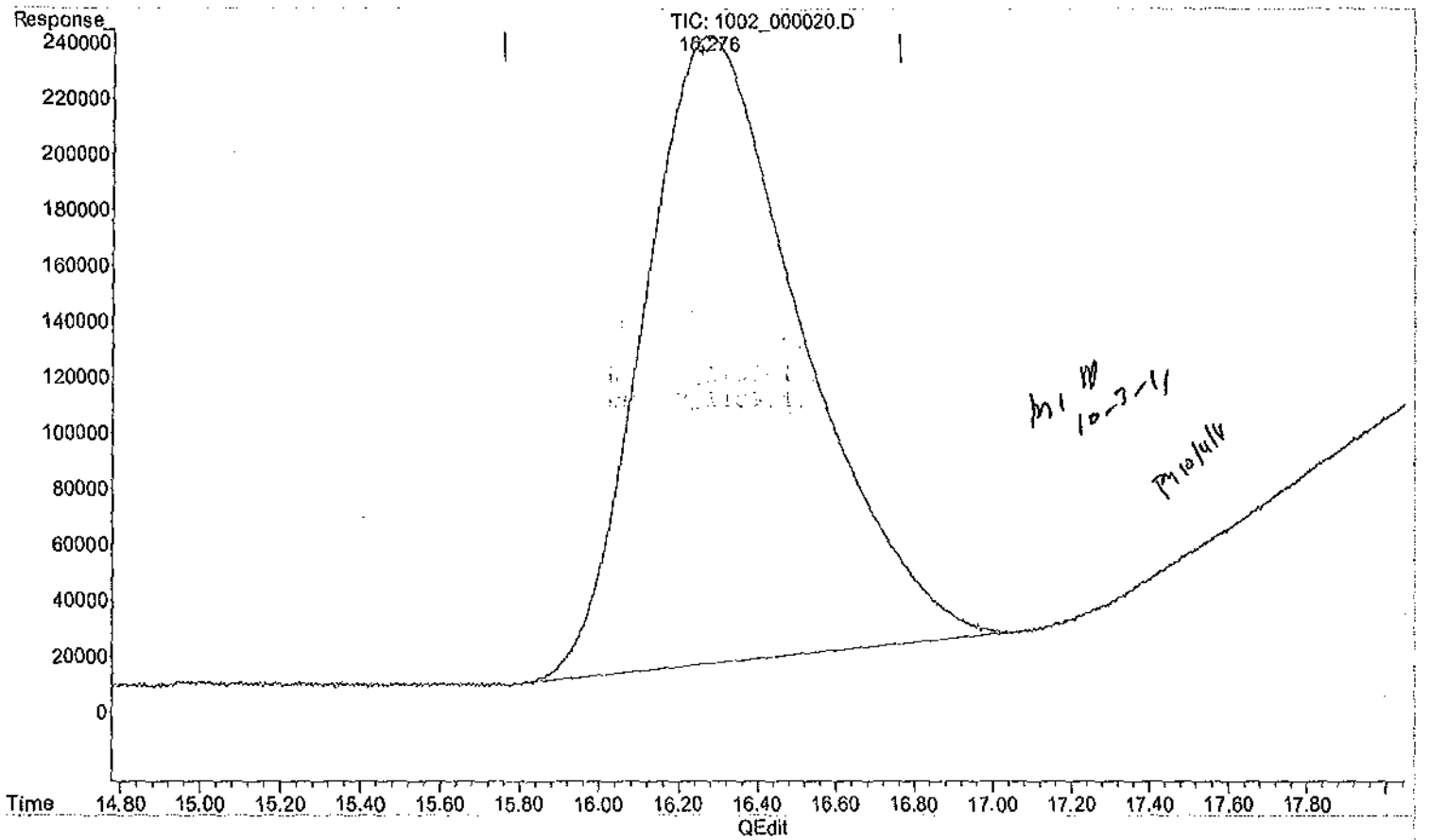
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000020.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 03:58:07
Operator : MP
Sample : 8330MXB_CB 0.10 PPM 10/01/11
Misc :
ALS Vial : 4160 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:41:58 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(13) 3,5-DINITROANILINE #1 (TM)

16.276min 84.727 ppb m

response 225714

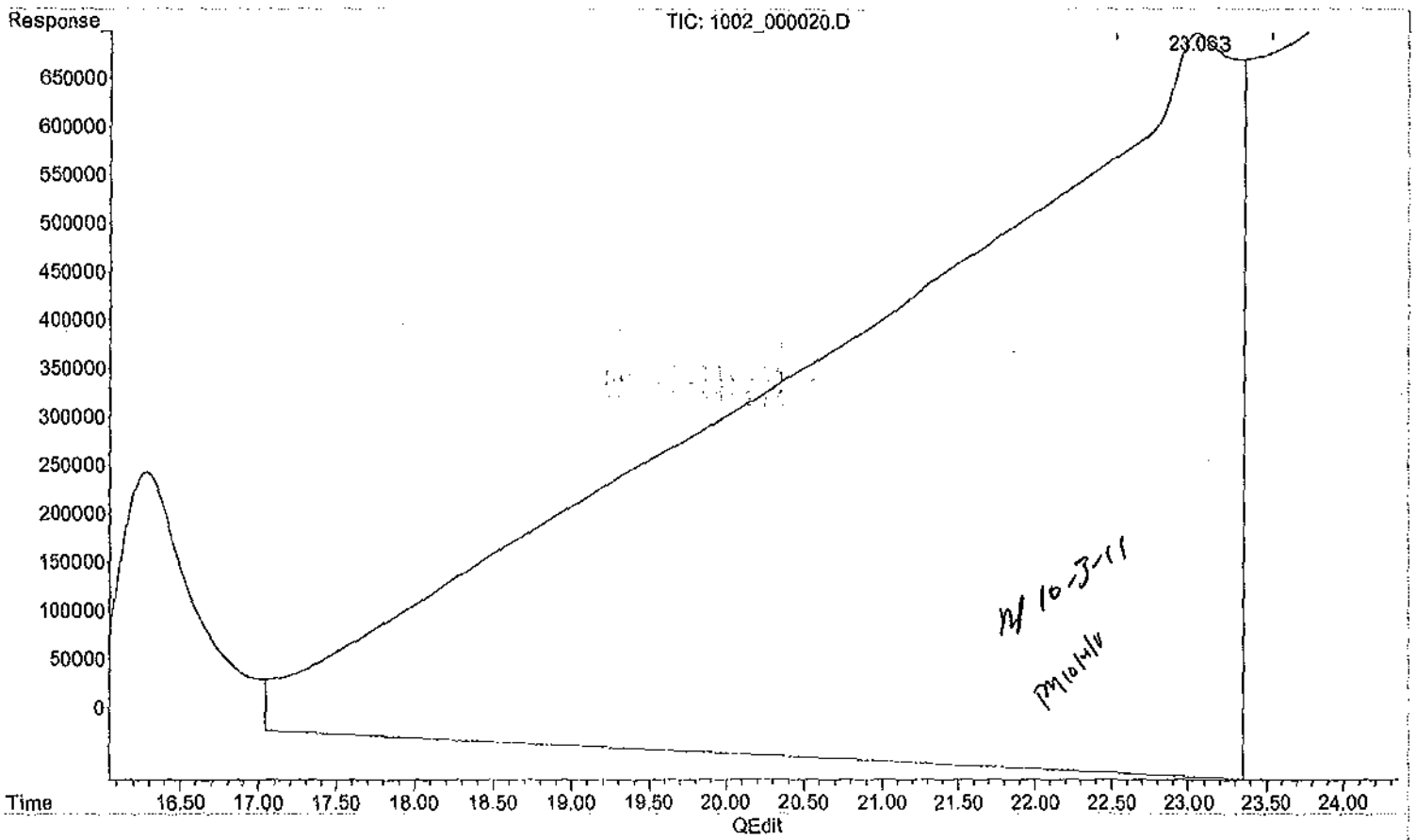
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000020.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 03:58:07
Operator : MP
Sample : 8330MXB_CB 0.10 PPM 10/01/11
Misc :
ALS Vial : 4160 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:41:58 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(18) PETN #1 (TM)

23.058min 866.548 ppb

response 768603

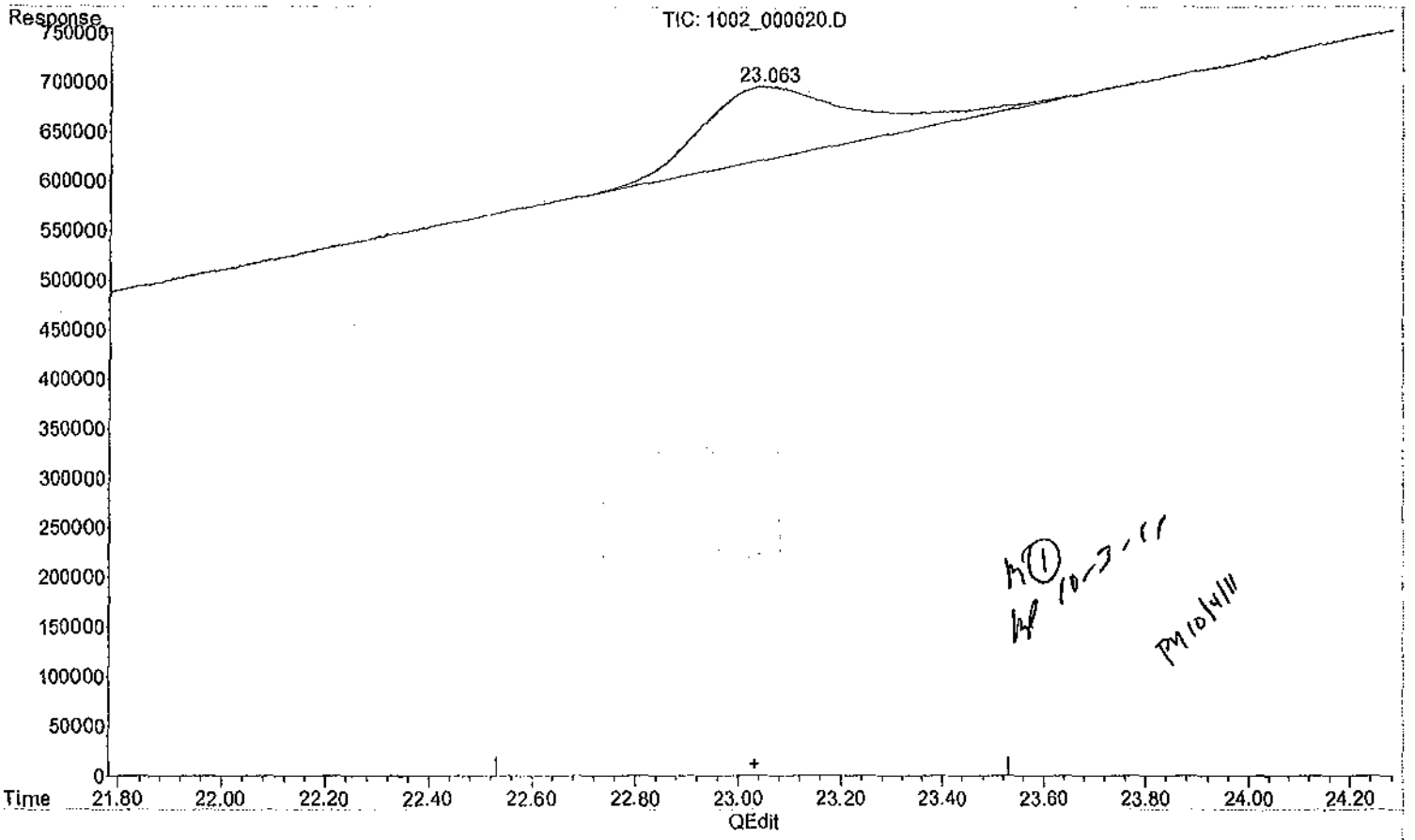
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000020.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 03:58:07
Operator : MP
Sample : 8330MXB_CB 0.10 PPM 10/01/11
Misc :
ALS Vial : 4160 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:41:58 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(18) PETN #1 (TM)

23.063min 82.450 ppb m

response 73131

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000021.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 04:39:37
Operator : MP
Sample : 8330MXA_CB 0.20 PPM 10/01/11
Misc :
ALS Vial : 4161 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 09:00:29 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

		Compound	R.T.	Response	Conc	Units	
System Monitoring Compounds							
4)	S	1,2-DINITROBENZENE #1	0.000	0	N.D.	ppb	d
23)	S	1,2-DINITROBENZENE #2	7.935	327617	165.203	ppb	
Target Compounds							
1)	TM	HMX #1	0.000	0	N.D.	ppb	d
2)	TM	RDX #1	0.000	0	N.D.	ppb	d
3)	TM	1,3,5-TRINITROBENZENE #1	0.000	0	N.D.	ppb	d
5)	TM	1,3-DINITROBENZENE #1	0.000	0	N.D.	ppb	d
6)	TM	NITROBENZENE #1	0.000	0	N.D.	ppb	d
7)	TM	2,4,6-TRINITROTOLUENE #1	0.000	0	N.D.	ppb	d
8)	TM	TETRYL #1	0.000	0	N.D.	ppb	d
9)	TM	NITROGLYCERIN #1	0.000	0	N.D.	ppb	d
10)	TM	2,6-DINITROTOLUENE #1	0.000	0	N.D.	ppb	d
11)	TM	2,4-DINITROTOLUENE #1	0.000	0	N.D.	ppb	d
12)	TM	2-NITROTOLUENE #1	0.000	0	N.D.	ppb	d
13)	TM	3,5-DINITROANILINE #1	0.000	0	N.D.	ppb	d
14)	TM	4-NITROTOLUENE #1	0.000	0	N.D.	ppb	d
15)	TM	3-NITROTOLUENE #1	0.000	0	N.D.	ppb	d
16)	TM	4-AMINO-2,6-DINITROTO...	0.000	0	N.D.	ppb	d
17)	TM	2-AMINO-4,6-DINITROTO...	0.000	0	N.D.	ppb	d
18)	TM	PETN #1	0.000	0	N.D.	ppb	d
20)	TM	HMX #2	3.866	373840	165.826	ppb	
21)	TM	RDX #2	6.121	300326	167.437	ppb	
22)	TM	1,3,5-TRINITROBENZENE #2	6.552	722512	170.699	ppb	
24)	TM	1,3-DINITROBENZENE #2	8.183	744152	175.236	ppb	
25)	TM	NITROBENZENE #2	9.008	370259	155.131	ppb	
26)	TM	2,4,6-TRINITROTOLUENE #2	11.418	381078	167.150	ppb	
27)	TM	TETRYL #2	11.988	275837	165.578	ppb	
28)	TM	NITROGLYCERIN #2	11.988	275837	NoCal	ppb	
29)	TM	2,6-DINITROTOLUENE #2	13.463	221114	162.515	ppb	
30)	TM	2,4-DINITROTOLUENE #2	13.994	390471	169.605	ppb	
31)	TM	2-NITROTOLUENE #2	15.626	137973	145.573	ppb	
32)	TM	3,5-DINITROANILINE #2	0.000	0	N.D.	ppb	
33)	TM	4-NITROTOLUENE #2	17.090	123926	150.825	ppb	
34)	TM	3-NITROTOLUENE #2	18.259	151494	142.589	ppb	
35)	TM	4-AMINO-2,6-DINITROTO...	18.678	250556	176.000	ppb	
36)	TM	2-AMINO-4,6-DINITROTO...	19.476	285163	163.547	ppb	
37)	TM	PETN #2	22.827f	1933	NoCal	ppb	

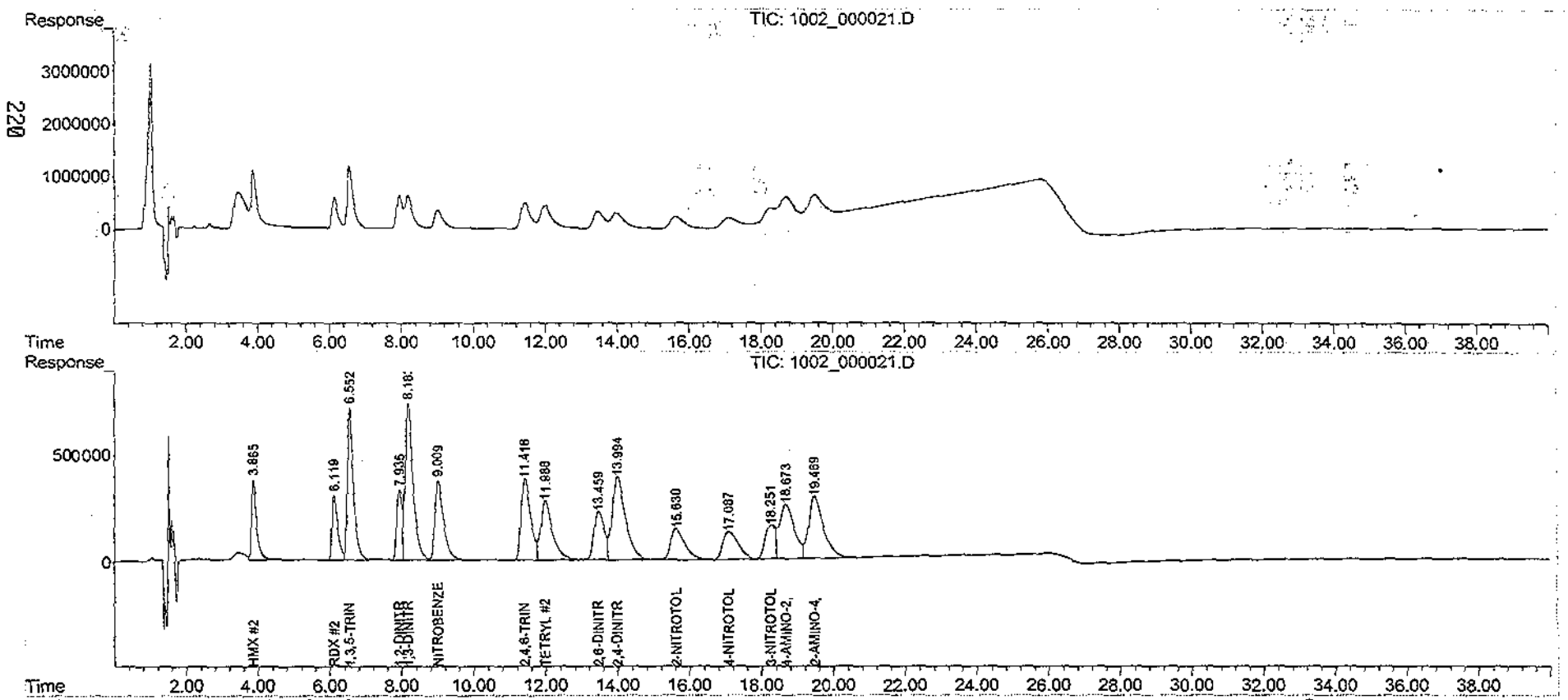
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000021.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 04:39:37
Operator : MP
Sample : 8330MXA_CB 0.20 PPM 10/01/11
Misc :
ALS Vial : 4161 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 09:00:29 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



Quantitation Report (QT Reviewed)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000022.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 05:21:06
Operator : MP
Sample : 8330MXB_CB 0.20 PPM 10/01/11
Misc :
ALS Vial : 4162 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 09:01:52 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	R.T.	Response	Conc	Units	
	System Monitoring Compounds					
4) S	1,2-DINITROBENZENE #1	7.932	1145	NoCal	ppb	
23) S	1,2-DINITROBENZENE #2	0.000	0	N.D.	ppb	d
	Target Compounds					
1) TM	HMX #1	0.000	0	N.D.	ppb	
2) TM	RDX #1	6.547	1689	NoCal	ppb	
3) TM	1,3,5-TRINITROBENZENE #1	6.547	1689	NoCal	ppb	
5) TM	1,3-DINITROBENZENE #1	8.179	1110	NoCal	ppb	
6) TM	NITROBENZENE #1	9.022	1344	NoCal	ppb	
7) TM	2,4,6-TRINITROTOLUENE #1	11.455	993	NoCal	ppb	
8) TM	TETRYL #1	12.020	108233	NoCal	ppb	
9) TM	NITROGLYCERIN #1	12.024	134838	160.535	ppb	m
10) TM	2,6-DINITROTOLUENE #1	13.448	4374	NoCal	ppb	
11) TM	2,4-DINITROTOLUENE #1	14.015	8758	NoCal	ppb	
12) TM	2-NITROTOLUENE #1	15.564	19681	83.300	ppb	
13) TM	3,5-DINITROANILINE #1	16.269	446823	167.726	ppb	m
14) TM	4-NITROTOLUENE #1	0.000	0	N.D.	ppb	
15) TM	3-NITROTOLUENE #1	0.000	0	N.D.	ppb	
16) TM	4-AMINO-2,6-DINITROTO...	0.000	0	N.D.	ppb	
17) TM	2-AMINO-4,6-DINITROTO...	0.000	0	N.D.	ppb	
18) TM	PETN #1	23.046	143390	161.662	ppb	m
20) TM	HMX #2	0.000	0	N.D.	ppb	d
21) TM	RDX #2	0.000	0	N.D.	ppb	d
22) TM	1,3,5-TRINITROBENZENE #2	0.000	0	N.D.	ppb	d
24) TM	1,3-DINITROBENZENE #2	0.000	0	N.D.	ppb	d
25) TM	NITROBENZENE #2	0.000	0	N.D.	ppb	d
26) TM	2,4,6-TRINITROTOLUENE #2	0.000	0	N.D.	ppb	d
27) TM	TETRYL #2	0.000	0	N.D.	ppb	d
28) TM	NITROGLYCERIN #2	0.000	0	N.D.	ppb	d
29) TM	2,6-DINITROTOLUENE #2	0.000	0	N.D.	ppb	d
30) TM	2,4-DINITROTOLUENE #2	0.000	0	N.D.	ppb	d
31) TM	2-NITROTOLUENE #2	0.000	0	N.D.	ppb	d
32) TM	3,5-DINITROANILINE #2	0.000	0	N.D.	ppb	d
33) TM	4-NITROTOLUENE #2	0.000	0	N.D.	ppb	d
34) TM	3-NITROTOLUENE #2	0.000	0	N.D.	ppb	d
35) TM	4-AMINO-2,6-DINITROTO...	0.000	0	N.D.	ppb	d
36) TM	2-AMINO-4,6-DINITROTO...	0.000	0	N.D.	ppb	d
37) TM	PETN #2	0.000	0	N.D.	ppb	d

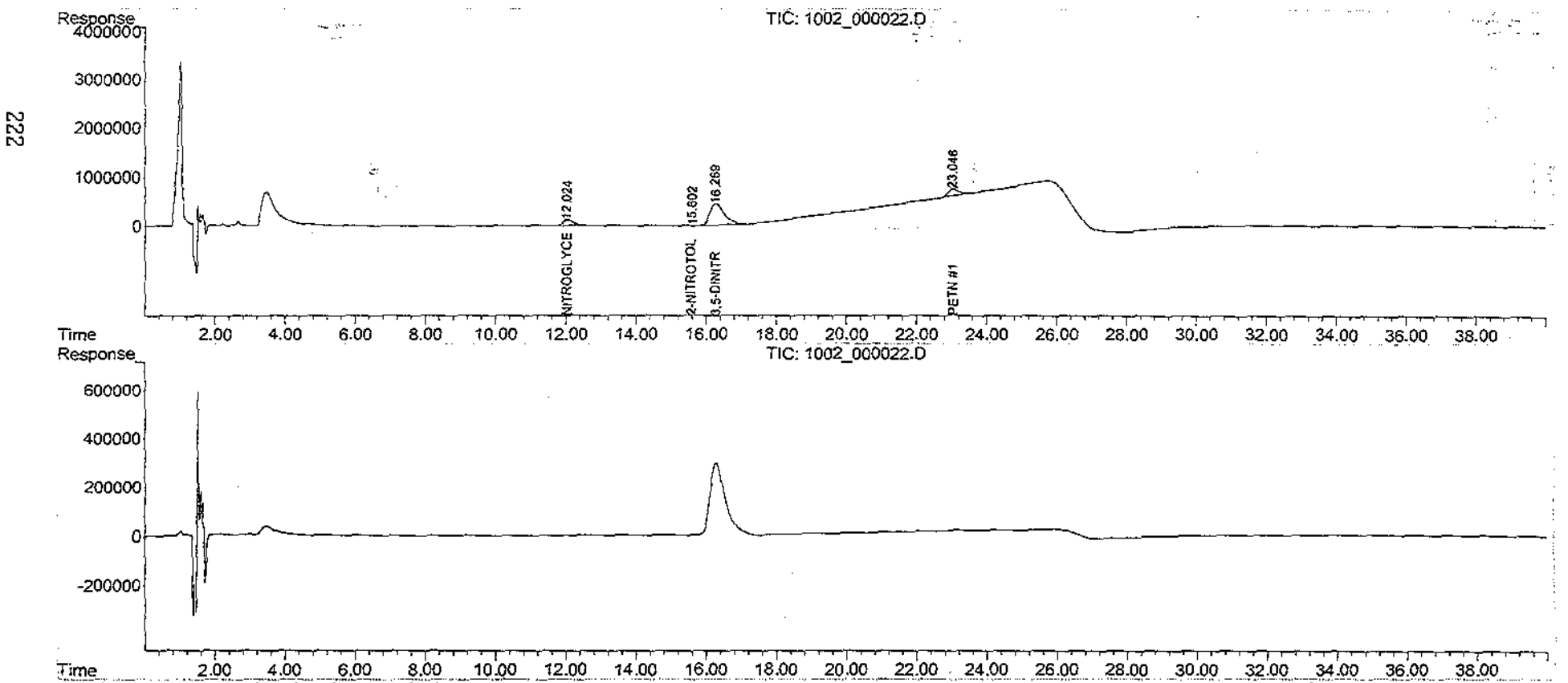
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000022.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 05:21:06
Operator : MP
Sample : 8330MXB_CB 0.20 PPM 10/01/11
Misc :
ALS Vial : 4162 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 09:01:52 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



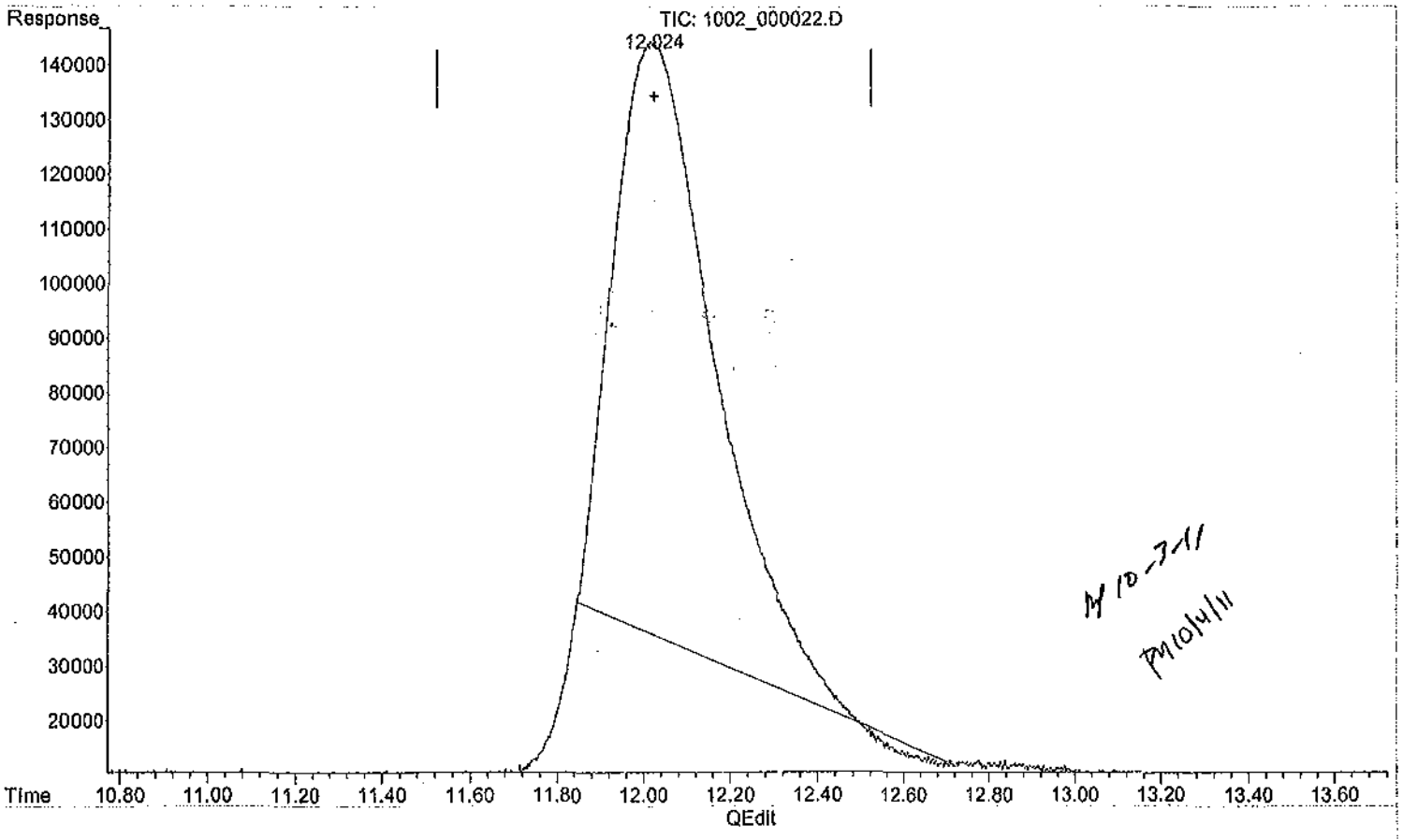
222

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000022.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 05:21:06
Operator : MP
Sample : 8330MXB_CB 0.20 PPM 10/01/11
Misc :
ALS Vial : 4162 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:42:02 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(9) NITROGLYCERIN #1 (TM)

12.020min 128.860 ppb

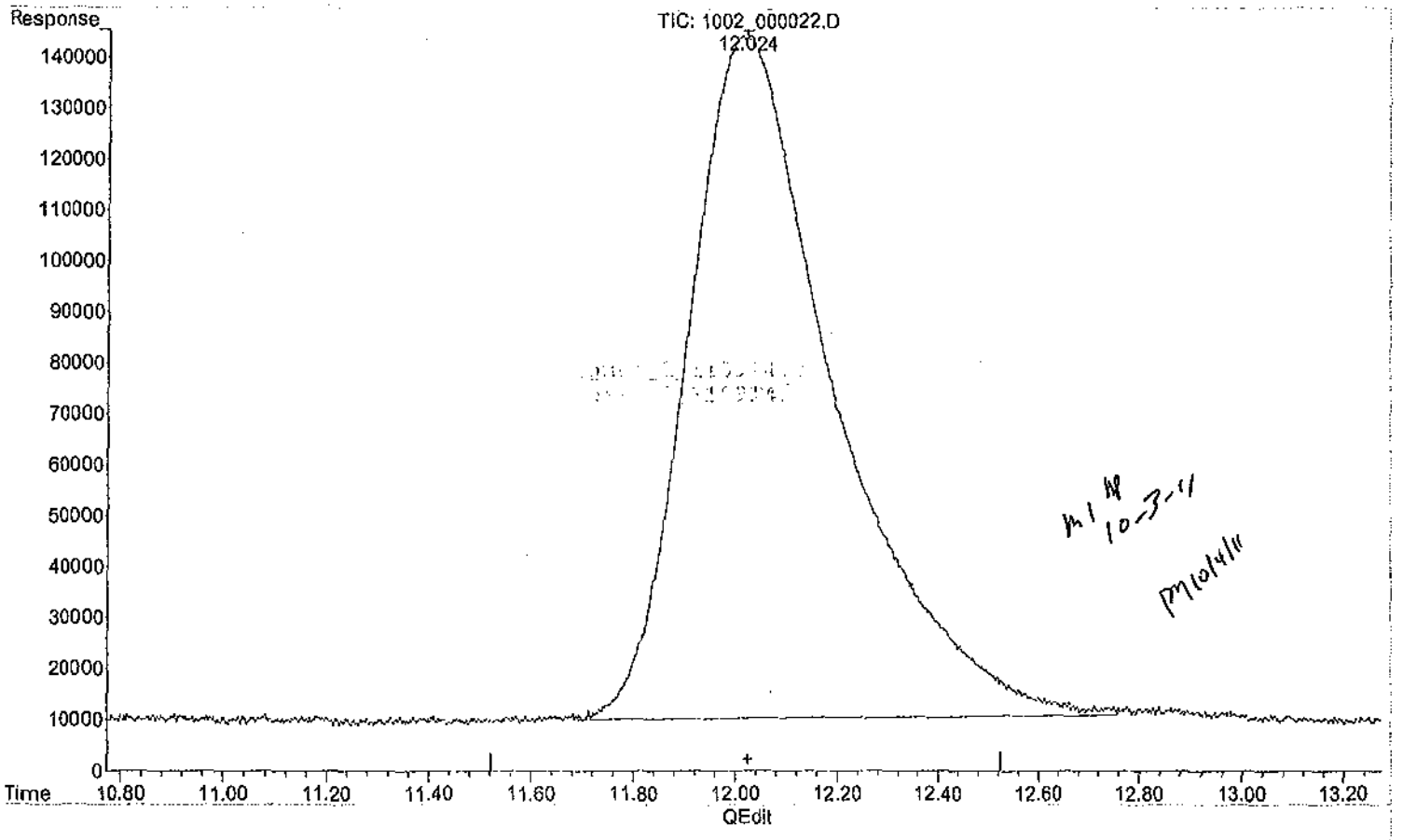
response 108233

(+) = Expected Retention Time

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000022.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 05:21:06
Operator : MP
Sample : 8330MXB_CB 0.20 PPM 10/01/11
Misc :
ALS Vial : 4162 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:42:02 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(9) NITROGLYCERIN #1 (TM)

12.024min 160.535 ppb m

response 134838

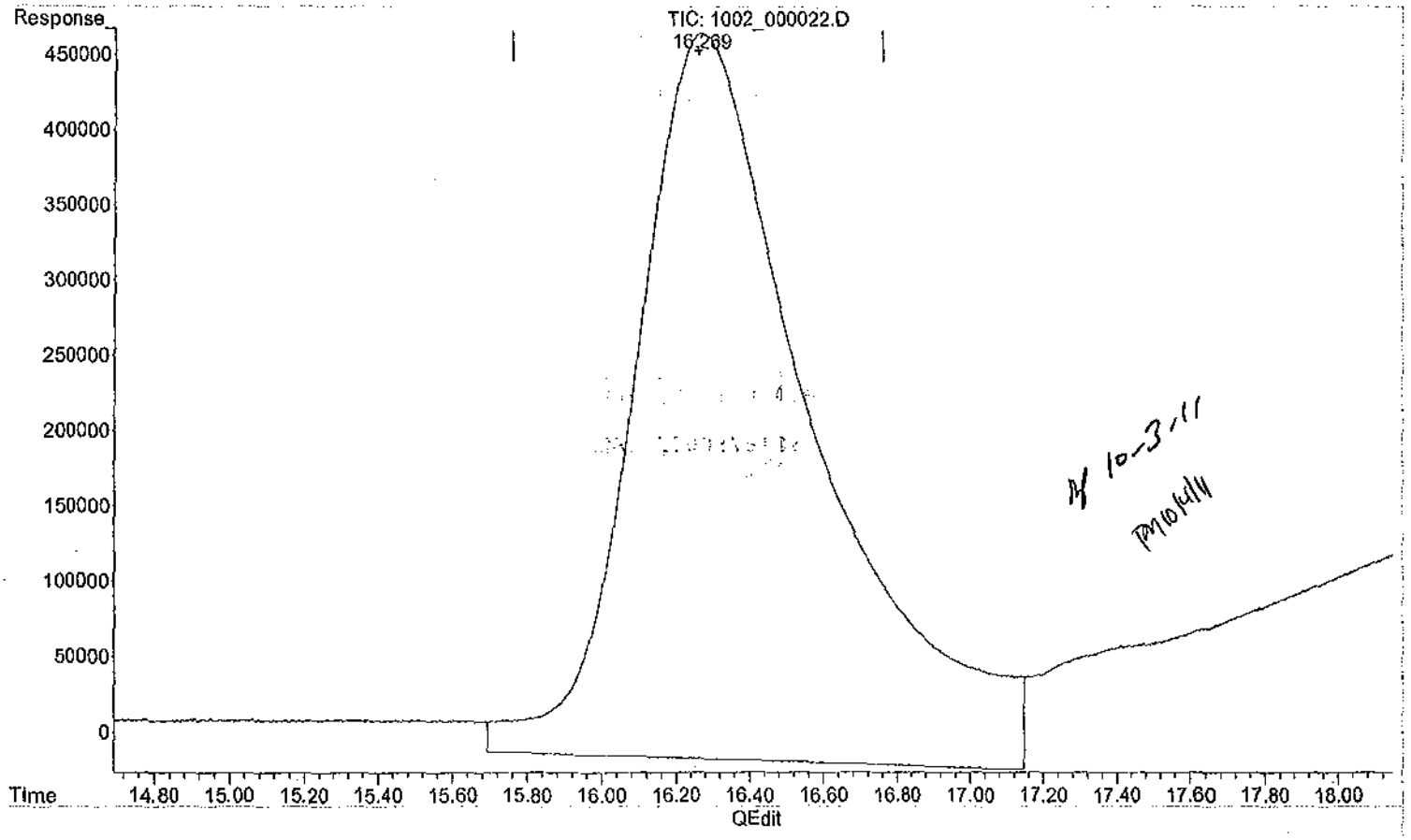
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000022.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 05:21:06
Operator : MP
Sample : 8330MXB_CB 0.20 PPM 10/01/11
Misc :
ALS Vial : 4162 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:42:02 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(13) 3,5-DINITROANILINE #1 (TM)

16.272min 180.997 ppb

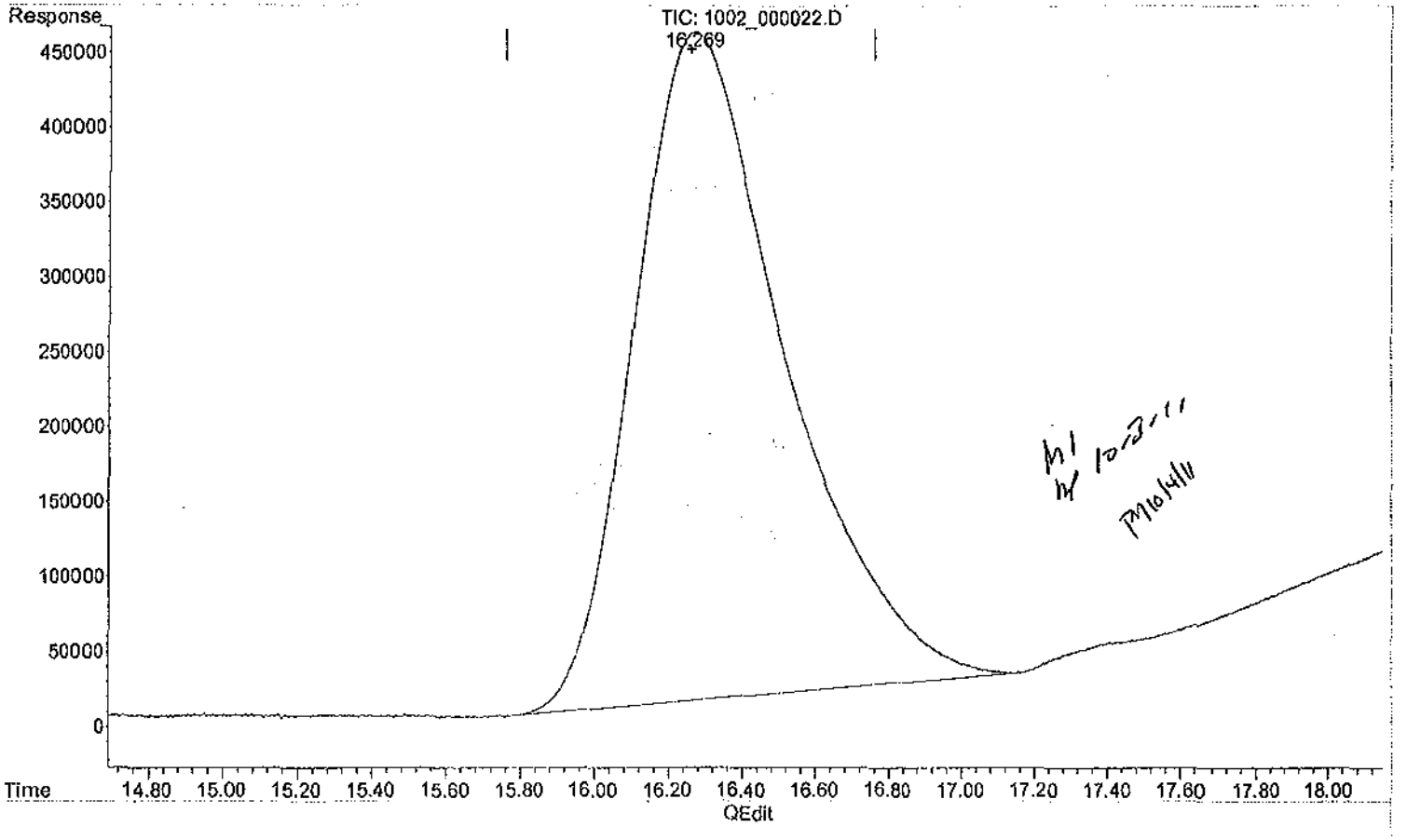
response 482178

(+) = Expected Retention Time

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000022.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 05:21:06
Operator : MP
Sample : 8330MXB_CB 0.20 PPM 10/01/11
Misc :
ALS Vial : 4162 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:42:02 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(13) 3,5-DINITROANILINE #1 (TM)

16.269min 167.726 ppb m

response 446823

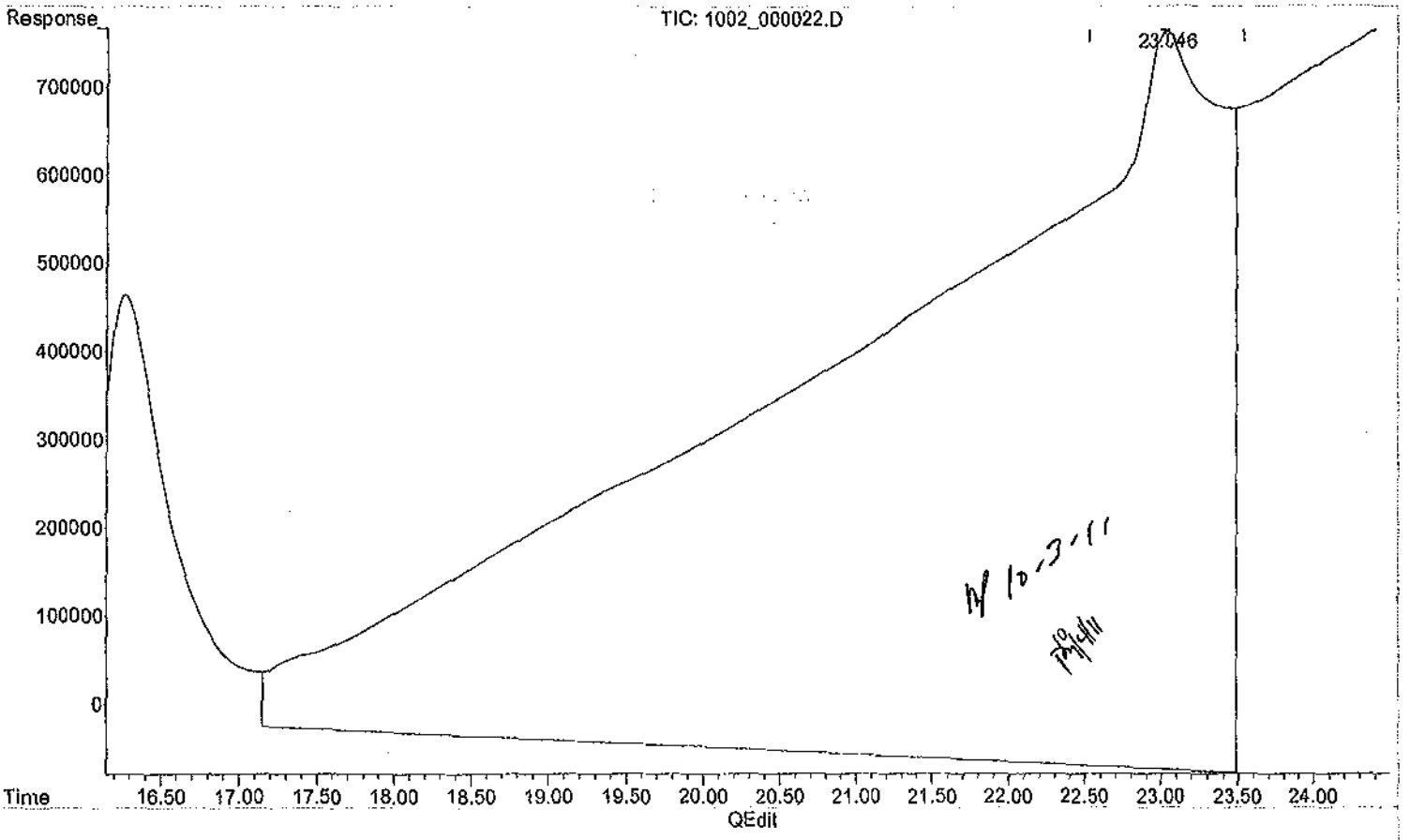
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000022.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 05:21:06
Operator : MP
Sample : 8330MXB_CB 0.20 PPM 10/01/11
Misc :
ALS Vial : 4162 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:42:02 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(18) PETN #1 (TM)

23.042min 945.028 ppb

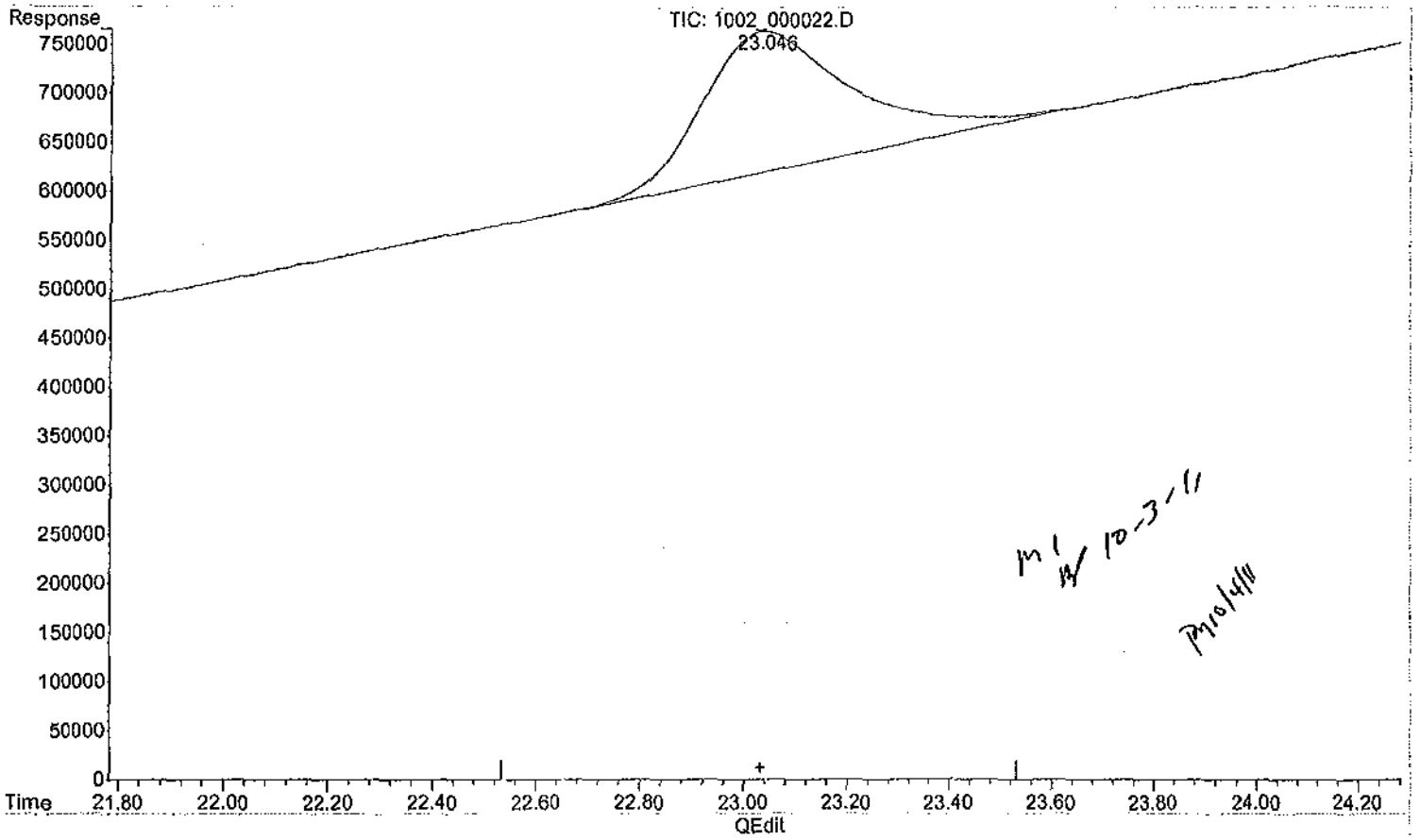
response 838213

(+) = Expected Retention Time

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000022.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 05:21:06
Operator : MP
Sample : 8330MXB_CB 0.20 PPM 10/01/11
Misc :
ALS Vial : 4162 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:42:02 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



m1 10-3-11

PM10/4/11

(18) PETN #1 (TM)

23.046min 161.662 ppb m

response 143390

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000023.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 06:02:37
Operator : MP
Sample : 8330MXA_CB 0.50 PPM 10/01/11
Misc :
ALS Vial : 4163 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 09:02:10 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	R.T.	Response	Conc	Units	
	System Monitoring Compounds					
4)	S 1,2-DINITROBENZENE #1	0.000	0	N.D.	ppb	d
23)	S 1,2-DINITROBENZENE #2	7.931	830339	418.705	ppb	
	Target Compounds					
1)	TM HMX #1	0.000	0	N.D.	ppb	d
2)	TM RDX #1	0.000	0	N.D.	ppb	d
3)	TM 1,3,5-TRINITROBENZENE #1	0.000	0	N.D.	ppb	d
5)	TM 1,3-DINITROBENZENE #1	0.000	0	N.D.	ppb	d
6)	TM NITROBENZENE #1	0.000	0	N.D.	ppb	d
7)	TM 2,4,6-TRINITROTOLUENE #1	0.000	0	N.D.	ppb	d
8)	TM TETRYL #1	0.000	0	N.D.	ppb	d
9)	TM NITROGLYCERIN #1	0.000	0	N.D.	ppb	d
10)	TM 2,6-DINITROTOLUENE #1	0.000	0	N.D.	ppb	d
11)	TM 2,4-DINITROTOLUENE #1	0.000	0	N.D.	ppb	d
12)	TM 2-NITROTOLUENE #1	0.000	0	N.D.	ppb	d
13)	TM 3,5-DINITROANILINE #1	0.000	0	N.D.	ppb	d
14)	TM 4-NITROTOLUENE #1	0.000	0	N.D.	ppb	d
15)	TM 3-NITROTOLUENE #1	0.000	0	N.D.	ppb	d
16)	TM 4-AMINO-2,6-DINITROTO...	0.000	0	N.D.	ppb	d
17)	TM 2-AMINO-4,6-DINITROTO...	0.000	0	N.D.	ppb	d
18)	TM PETN #1	0.000	0	N.D.	ppb	d
20)	TM HMX #2	3.865	936646	415.474	ppb	
21)	TM RDX #2	6.118	758490	422.872	ppb	
22)	TM 1,3,5-TRINITROBENZENE #2	6.550	1837974	434.237	ppb	
24)	TM 1,3-DINITROBENZENE #2	8.179	1889194	444.876	ppb	
25)	TM NITROBENZENE #2	9.005	937875	392.952	ppb	
26)	TM 2,4,6-TRINITROTOLUENE #2	11.415	964122	422.886	ppb	
27)	TM TETRYL #2	11.983	700800	420.673	ppb	
28)	TM NITROGLYCERIN #2	11.983	700800	NoCal	ppb	
29)	TM 2,6-DINITROTOLUENE #2	13.461	558667	410.612	ppb	
30)	TM 2,4-DINITROTOLUENE #2	13.991	990704	430.323	ppb	
31)	TM 2-NITROTOLUENE #2	15.625	349242	368.480	ppb	
32)	TM 3,5-DINITROANILINE #2	0.000	0	N.D.	ppb	
33)	TM 4-NITROTOLUENE #2	17.083	310708	378.150	ppb	
34)	TM 3-NITROTOLUENE #2	18.255	390318	367.374	ppb	
35)	TM 4-AMINO-2,6-DINITROTO...	18.669	639202	448.999	ppb	
36)	TM 2-AMINO-4,6-DINITROTO...	19.468	723422	414.898	ppb	
37)	TM PETN #2	23.038	1449	NoCal	ppb	

(f)=RT Delta > 1/2 Window (m)=manual int.

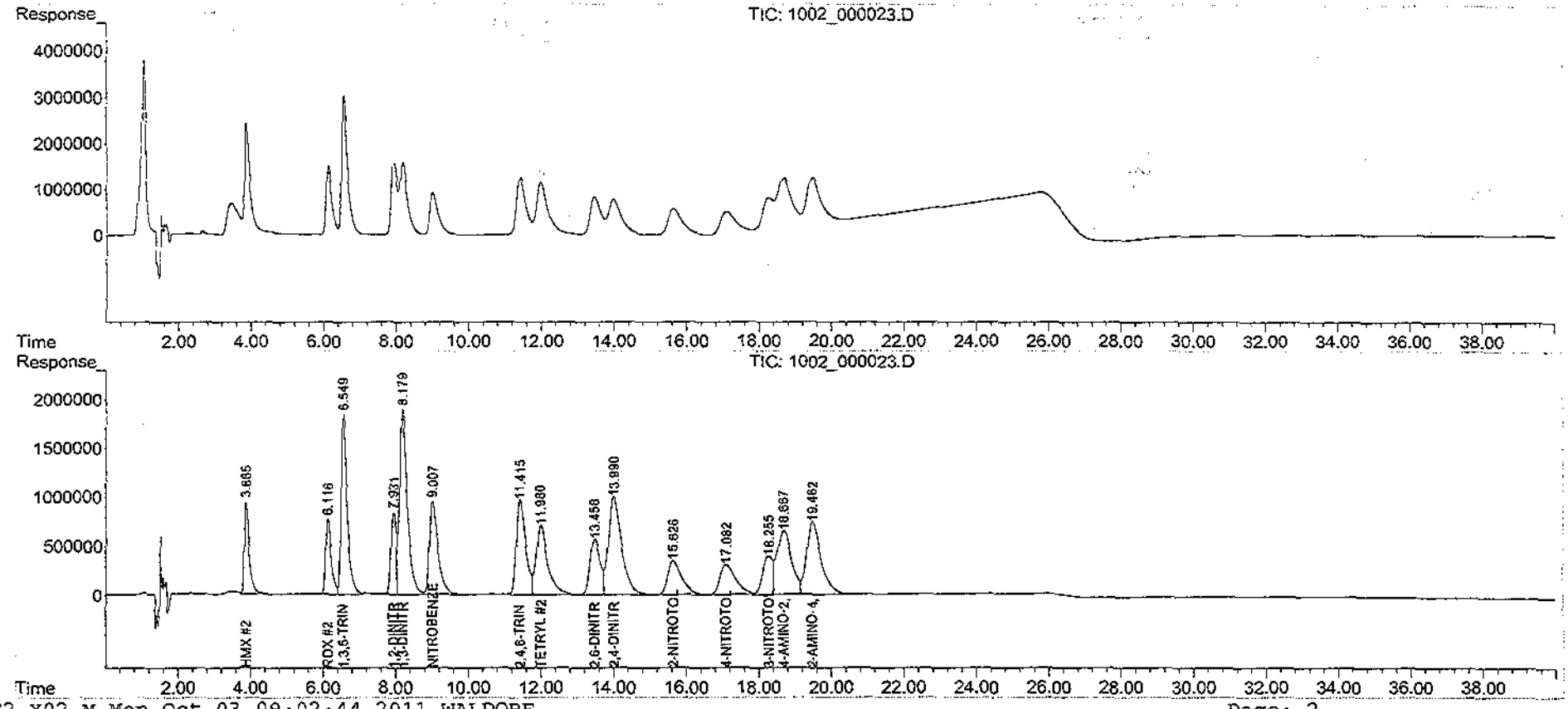
Quantitation Report (QT Reviewed)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000023.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 06:02:37
Operator : MP
Sample : 8330MXA_CB 0.50 PPM 10/01/11
Misc :
ALS Vial : 4163 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 09:02:10 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

230



Quantitation Report (QT Reviewed)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000024.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 06:44:07
Operator : MP
Sample : 8330MXB_CB 0.50 PPM 10/01/11
Misc :
ALS Vial : 4164 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 09:03:42 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	R.T.	Response	Conc	Units	
	System Monitoring Compounds					
4) S	1,2-DINITROBENZENE #1	7.925	2112	NoCal	ppb	
23) S	1,2-DINITROBENZENE #2	0.000	0	N.D.	ppb	d
	Target Compounds					
1) TM	HMX #1	0.000	0	N.D.	ppb	
2) TM	RDX #1	6.555	2011	NoCal	ppb	
3) TM	1,3,5-TRINITROBENZENE #1	6.555	2011	NoCal	ppb	
5) TM	1,3-DINITROBENZENE #1	8.183	1457	NoCal	ppb	
6) TM	NITROBENZENE #1	9.008	1742	NoCal	ppb	
7) TM	2,4,6-TRINITROTOLUENE #1	11.442	1516	NoCal	ppb	
8) TM	TETRYL #1	12.023	27395	NoCal	ppb	
9) TM	NITROGLYCERIN #1	12.023	344103	409.680	ppb	m
10) TM	2,6-DINITROTOLUENE #1	13.455	2137	NoCal	ppb	
11) TM	2,4-DINITROTOLUENE #1	13.965	1380	NoCal	ppb	
12) TM	2-NITROTOLUENE #1	0.000	0	N.D.	ppb	d
13) TM	3,5-DINITROANILINE #1	16.262	1154291	433.291	ppb	
14) TM	4-NITROTOLUENE #1	17.262	880	0.727	ppb	
15) TM	3-NITROTOLUENE #1	0.000	0	N.D.	ppb	
16) TM	4-AMINO-2,6-DINITROTO...	0.000	0	N.D.	ppb	
17) TM	2-AMINO-4,6-DINITROTO...	0.000	0	N.D.	ppb	
18) TM	PETN #1	23.032	378826	427.100	ppb	m
20) TM	HMX #2	0.000	0	N.D.	ppb	d
21) TM	RDX #2	0.000	0	N.D.	ppb	d
22) TM	1,3,5-TRINITROBENZENE #2	0.000	0	N.D.	ppb	d
24) TM	1,3-DINITROBENZENE #2	0.000	0	N.D.	ppb	d
25) TM	NITROBENZENE #2	0.000	0	N.D.	ppb	d
26) TM	2,4,6-TRINITROTOLUENE #2	0.000	0	N.D.	ppb	d
27) TM	TETRYL #2	0.000	0	N.D.	ppb	d
28) TM	NITROGLYCERIN #2	0.000	0	N.D.	ppb	d
29) TM	2,6-DINITROTOLUENE #2	0.000	0	N.D.	ppb	d
30) TM	2,4-DINITROTOLUENE #2	0.000	0	N.D.	ppb	d
31) TM	2-NITROTOLUENE #2	0.000	0	N.D.	ppb	d
32) TM	3,5-DINITROANILINE #2	0.000	0	N.D.	ppb	d
33) TM	4-NITROTOLUENE #2	0.000	0	N.D.	ppb	d
34) TM	3-NITROTOLUENE #2	0.000	0	N.D.	ppb	d
35) TM	4-AMINO-2,6-DINITROTO...	0.000	0	N.D.	ppb	d
36) TM	2-AMINO-4,6-DINITROTO...	0.000	0	N.D.	ppb	d
37) TM	PETN #2	0.000	0	N.D.	ppb	d

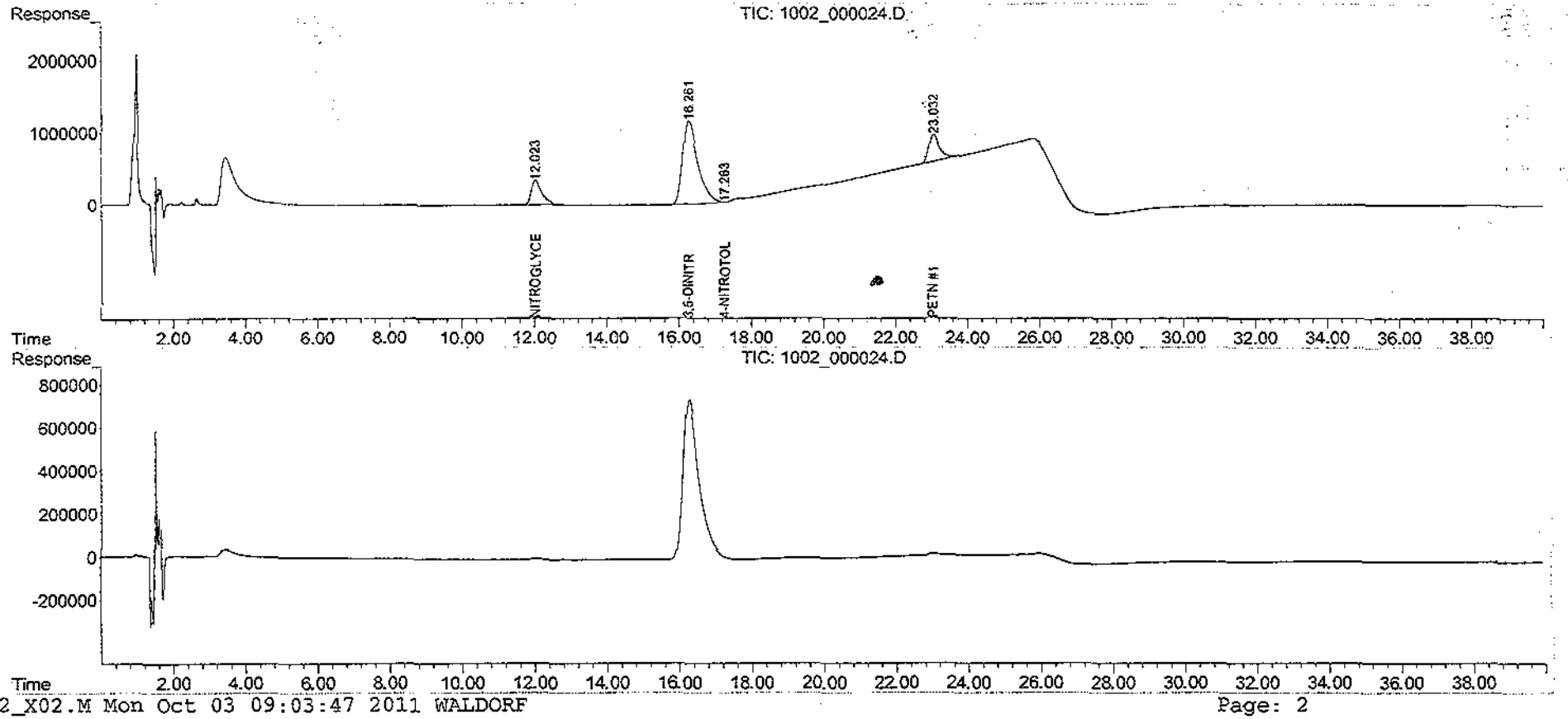
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000024.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 06:44:07
Operator : MP
Sample : 8330MXB_CB 0.50 PPM 10/01/11
Misc :
ALS Vial : 4164 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 09:03:42 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

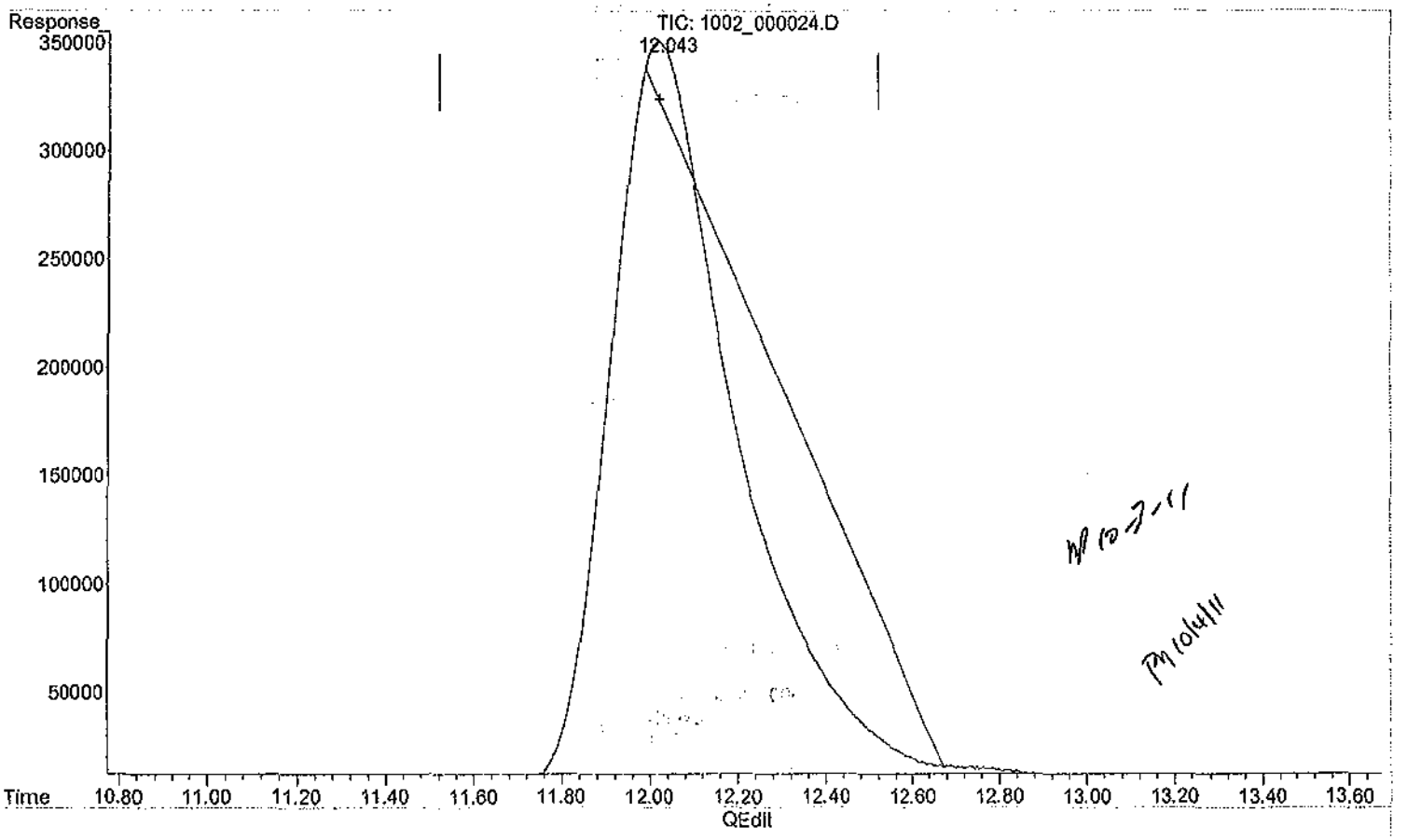
Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000024.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 06:44:07
Operator : MP
Sample : 8330MXB_CB 0.50 PPM 10/01/11
Misc :
ALS Vial : 4164 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:42:06 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(9) NITROGLYCERIN #1 (TM)

12.023min 32.615 ppb

response 27395

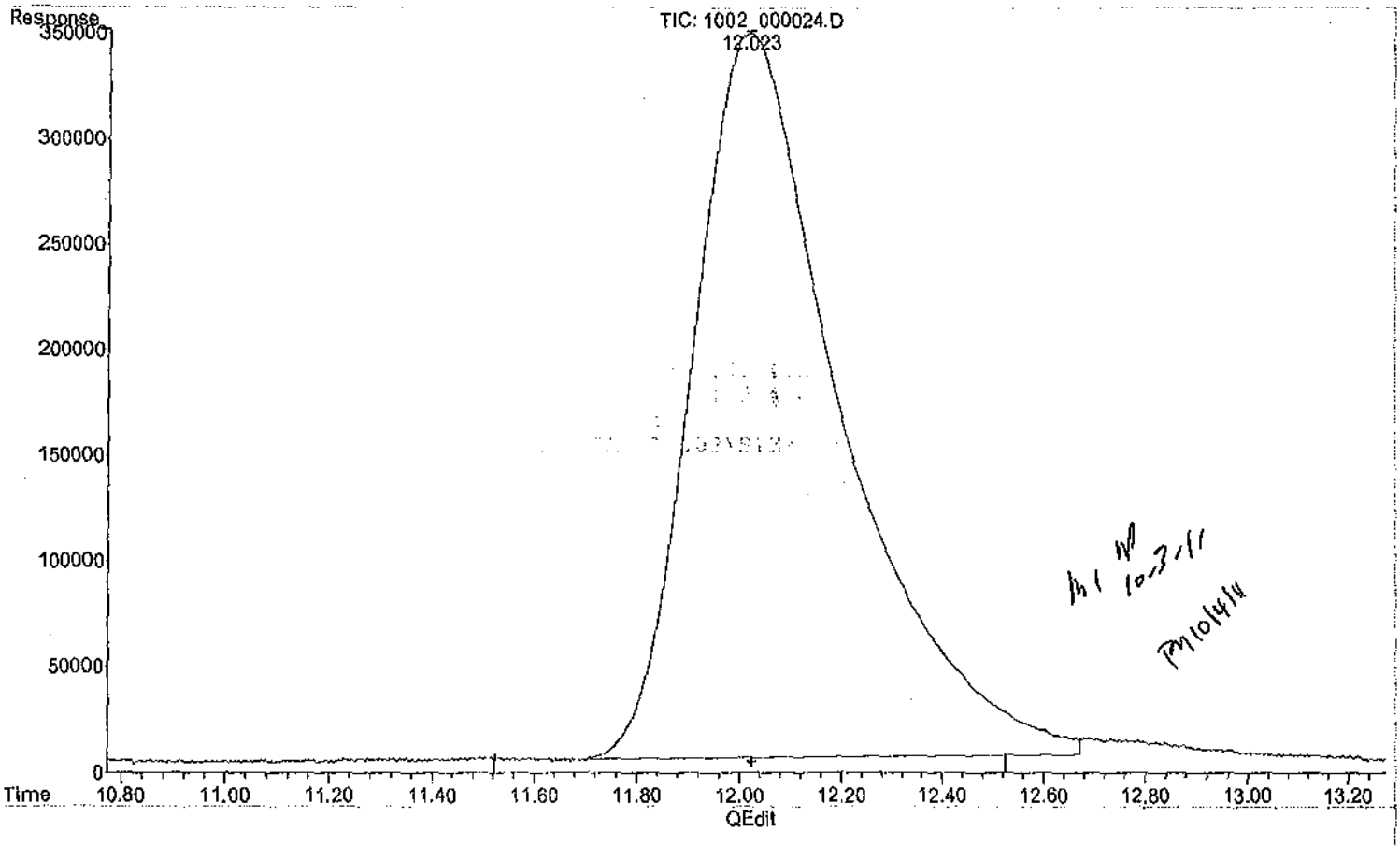
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000024.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 06:44:07
Operator : MP
Sample : 8330MXB_CB 0.50 PPM 10/01/11
Misc :
ALS Vial : 4164 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:42:06 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(9) NITROGLYCERIN #1 (TM)

12.023min 409.680 ppb m

response 344103

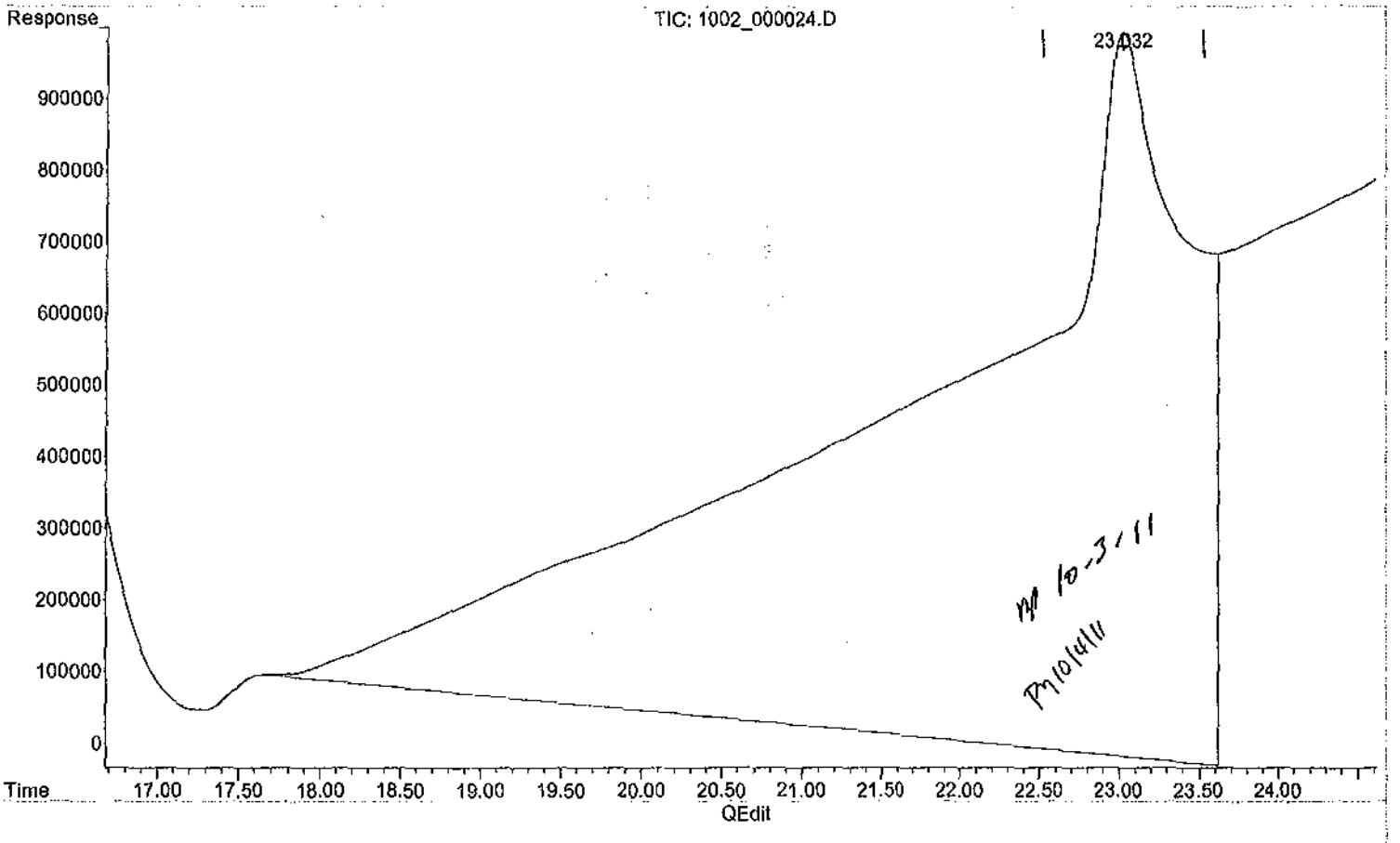
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000024.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 06:44:07
Operator : MP
Sample : 8330MXB_CB 0.50 PPM 10/01/11
Misc :
ALS Vial : 4164 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:42:06 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(18) PETN #1 (TM)

23.035min 1140.435 ppb

response 1011533

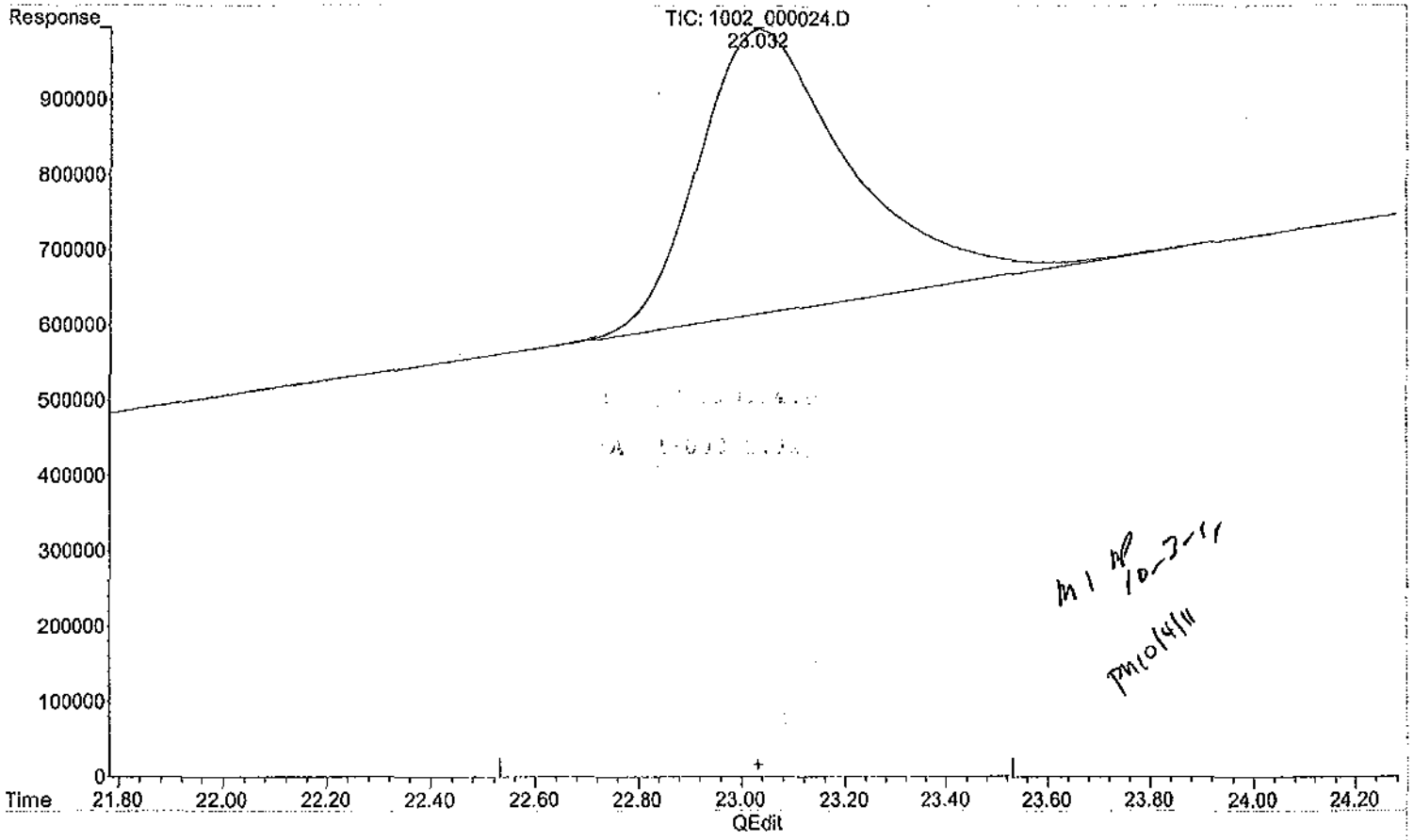
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000024.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 06:44:07
Operator : MP
Sample : 8330MXB_CB 0.50 PPM 10/01/11
Misc :
ALS Vial : 4164 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 07:42:06 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(18) PETN #1 (TM)

23.032min 427.100 ppb m

response 378826

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000025.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 07:25:37
Operator : MP
Sample : 8330MXA_CB 1.0 PPM 10/01/11
Misc :
ALS Vial : 4165 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 09:06:47 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Mon Oct 03 09:06:10 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	R.T.	Response	Conc	Units	
	System Monitoring Compounds					
4)	S 1,2-DINITROBENZENE #1	0.000	0	N.D.	ppb	d
23)	S 1,2-DINITROBENZENE #2	7.923	1663144	838.653	ppb	
	Target Compounds					
1)	TM HMX #1	0.000	0	N.D.	ppb	d
2)	TM RDX #1	0.000	0	N.D.	ppb	d
3)	TM 1,3,5-TRINITROBENZENE #1	0.000	0	N.D.	ppb	d
5)	TM 1,3-DINITROBENZENE #1	0.000	0	N.D.	ppb	d
6)	TM NITROBENZENE #1	0.000	0	N.D.	ppb	d
7)	TM 2,4,6-TRINITROTOLUENE #1	0.000	0	N.D.	ppb	d
8)	TM TETRYL #1	0.000	0	N.D.	ppb	d
9)	TM NITROGLYCERIN #1	0.000	0	N.D.	ppb	d
10)	TM 2,6-DINITROTOLUENE #1	0.000	0	N.D.	ppb	d
11)	TM 2,4-DINITROTOLUENE #1	0.000	0	N.D.	ppb	d
12)	TM 2-NITROTOLUENE #1	0.000	0	N.D.	ppb	d
13)	TM 3,5-DINITROANILINE #1	0.000	0	N.D.	ppb	d
14)	TM 4-NITROTOLUENE #1	0.000	0	N.D.	ppb	d
15)	TM 3-NITROTOLUENE #1	0.000	0	N.D.	ppb	d
16)	TM 4-AMINO-2,6-DINITROTO...	0.000	0	N.D.	ppb	d
17)	TM 2-AMINO-4,6-DINITROTO...	0.000	0	N.D.	ppb	d
18)	TM PETN #1	0.000	0	N.D.	ppb	
20)	TM HMX #2	3.860	1853933	822.360	ppb	
21)	TM RDX #2	6.113	1506330	839.806	ppb	
22)	TM 1,3,5-TRINITROBENZENE #2	6.546	3672799	867.730	ppb	
24)	TM 1,3-DINITROBENZENE #2	8.172	3789637	892.401	ppb	
25)	TM NITROBENZENE #2	8.997	1882203	788.607	ppb	
26)	TM 2,4,6-TRINITROTOLUENE #2	11.403	1927113	845.276	ppb	
27)	TM TETRYL #2	11.966	1397185	838.695	ppb	
28)	TM NITROGLYCERIN #2	11.966	1397185	NoCal	ppb	
29)	TM 2,6-DINITROTOLUENE #2	13.445	1120711	823.705	ppb	
30)	TM 2,4-DINITROTOLUENE #2	13.973	1988158	863.577	ppb	
31)	TM 2-NITROTOLUENE #2	15.605	701930	740.595	ppb	
32)	TM 3,5-DINITROANILINE #2	0.000	0	N.D.	ppb	
33)	TM 4-NITROTOLUENE #2	17.059	625788	761.622	ppb	
34)	TM 3-NITROTOLUENE #2	18.238	777821	732.099	ppb	
35)	TM 4-AMINO-2,6-DINITROTO...	18.640	1267381	890.255	ppb	
36)	TM 2-AMINO-4,6-DINITROTO...	19.444	1427010	818.421	ppb	
37)	TM PETN #2	23.026	1917	NoCal	ppb	

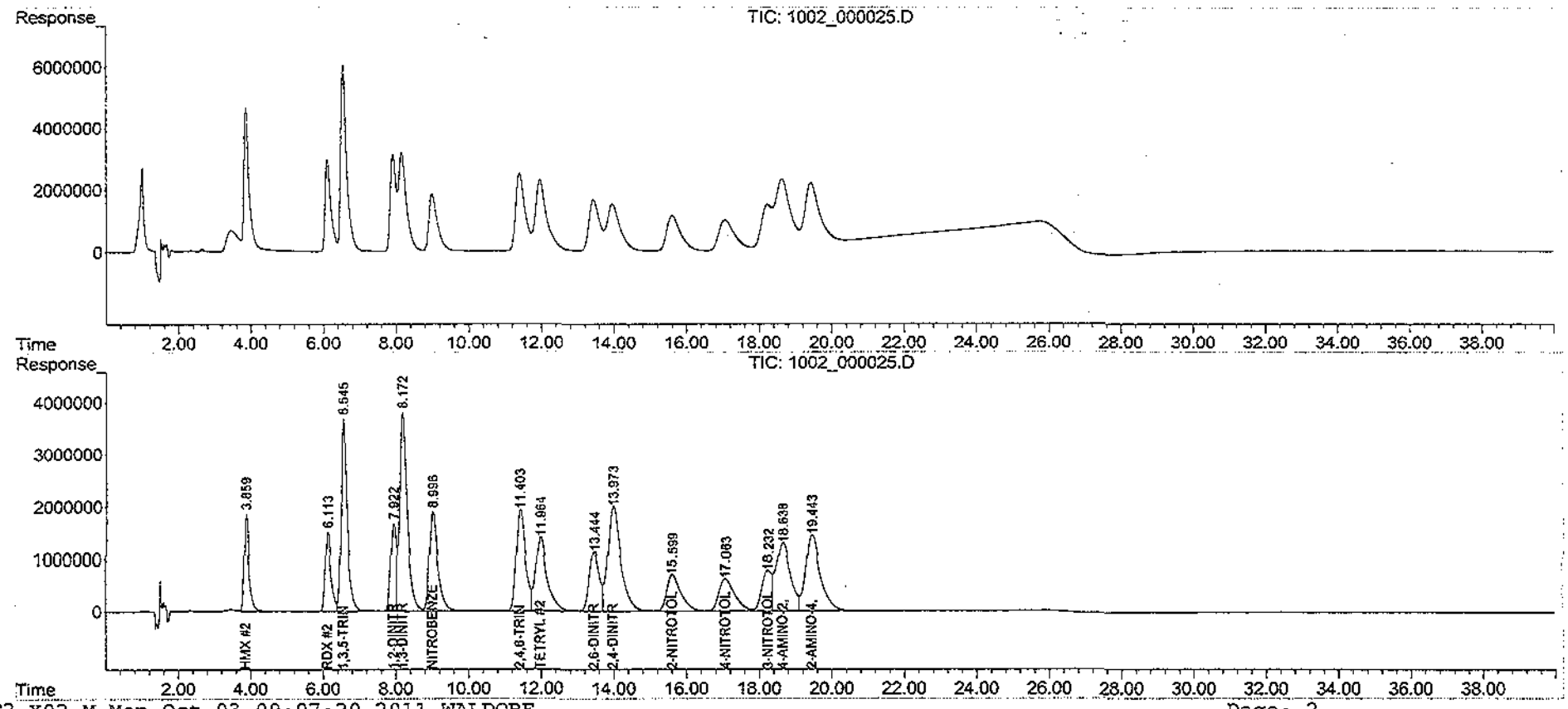
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000025.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 07:25:37
Operator : MP
Sample : 8330MXA_CB 1.0 PPM 10/01/11
Misc :
ALS Vial : 4165 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 09:06:47 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Mon Oct 03 09:06:10 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



Quantitation Report (QT Reviewed)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000026.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 08:07:08
Operator : MP
Sample : 8330MXB_CB 1.0 PPM 10/01/11
Misc :
ALS Vial : 4166 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 09:08:07 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	R.T.	Response	Conc	Units	
	System Monitoring Compounds					
4) S	1,2-DINITROBENZENE #1	7.912	1467	NoCal	ppb	
23) S	1,2-DINITROBENZENE #2	0.000	0	N.D.	ppb	d
	Target Compounds					
1) TM	HMX #1	0.000	0	N.D.	ppb	
2) TM	RDX #1	6.122	2180	NoCal	ppb	
3) TM	1,3,5-TRINITROBENZENE #1	6.554	3110	NoCal	ppb	
5) TM	1,3-DINITROBENZENE #1	8.156	1371	NoCal	ppb	
6) TM	NITROBENZENE #1	9.032	1665	NoCal	ppb	
7) TM	2,4,6-TRINITROTOLUENE #1	11.464	962	NoCal	ppb	
8) TM	TETRYL #1	12.007	110513	NoCal	ppb	
9) TM	NITROGLYCERIN #1	12.006	680243	809.878	ppb	m
10) TM	2,6-DINITROTOLUENE #1	13.448	893	NoCal	ppb	
11) TM	2,4-DINITROTOLUENE #1	13.959	2440	NoCal	ppb	
12) TM	2-NITROTOLUENE #1	0.000	0	N.D.	ppb	d
13) TM	3,5-DINITROANILINE #1	16.228	2269401	851.874	ppb	
14) TM	4-NITROTOLUENE #1	0.000	0	N.D.	ppb	
15) TM	3-NITROTOLUENE #1	0.000	0	N.D.	ppb	
16) TM	4-AMINO-2,6-DINITROTO...	0.000	0	N.D.	ppb	
17) TM	2-AMINO-4,6-DINITROTO...	0.000	0	N.D.	ppb	
18) TM	PETN #1	23.023	741503	835.994	ppb	m
20) TM	HMX #2	0.000	0	N.D.	ppb	d
21) TM	RDX #2	0.000	0	N.D.	ppb	d
22) TM	1,3,5-TRINITROBENZENE #2	0.000	0	N.D.	ppb	d
24) TM	1,3-DINITROBENZENE #2	0.000	0	N.D.	ppb	d
25) TM	NITROBENZENE #2	0.000	0	N.D.	ppb	d
26) TM	2,4,6-TRINITROTOLUENE #2	0.000	0	N.D.	ppb	d
27) TM	TETRYL #2	0.000	0	N.D.	ppb	d
28) TM	NITROGLYCERIN #2	0.000	0	N.D.	ppb	d
29) TM	2,6-DINITROTOLUENE #2	0.000	0	N.D.	ppb	d
30) TM	2,4-DINITROTOLUENE #2	0.000	0	N.D.	ppb	d
31) TM	2-NITROTOLUENE #2	0.000	0	N.D.	ppb	d
32) TM	3,5-DINITROANILINE #2	0.000	0	N.D.	ppb	d
33) TM	4-NITROTOLUENE #2	0.000	0	N.D.	ppb	d
34) TM	3-NITROTOLUENE #2	0.000	0	N.D.	ppb	d
35) TM	4-AMINO-2,6-DINITROTO...	0.000	0	N.D.	ppb	d
36) TM	2-AMINO-4,6-DINITROTO...	0.000	0	N.D.	ppb	d
37) TM	PETN #2	0.000	0	N.D.	ppb	d

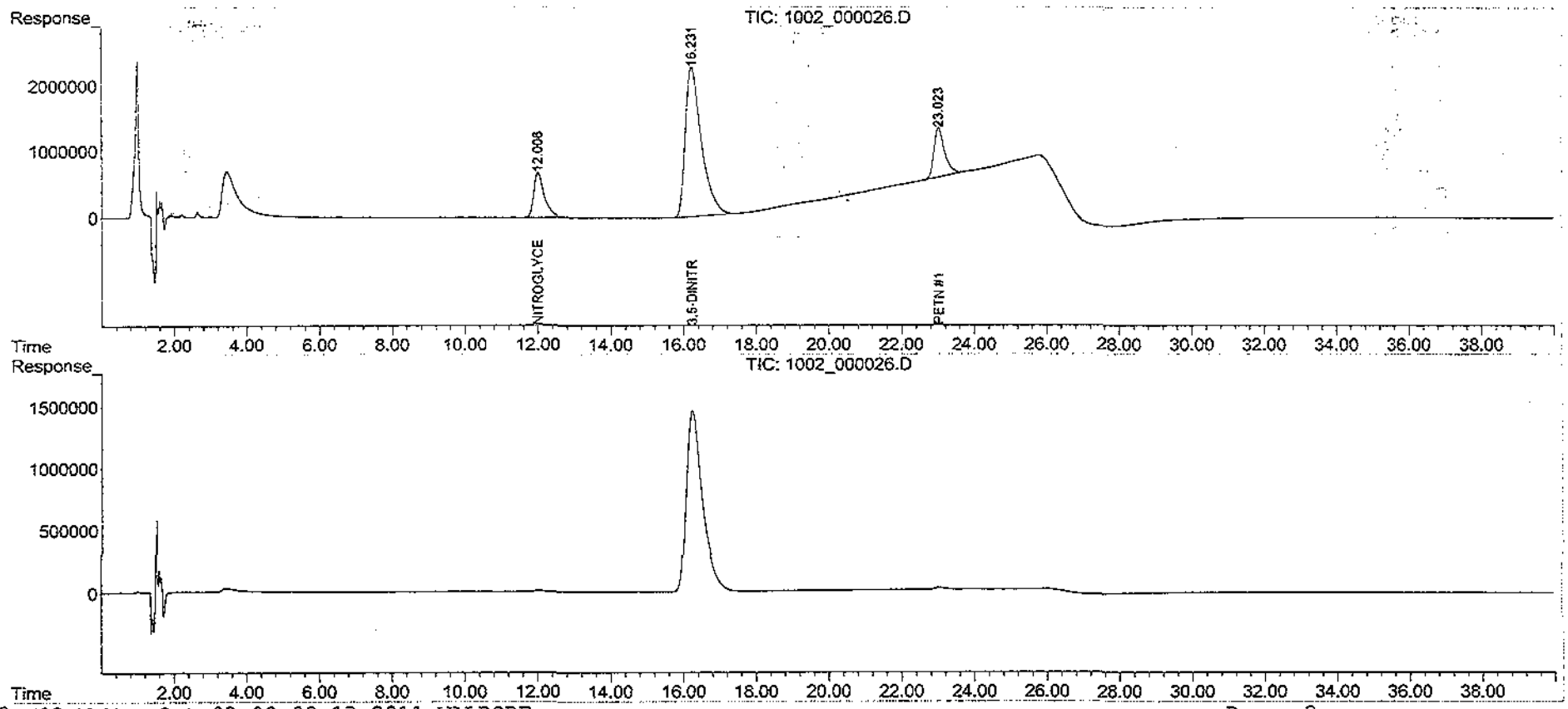
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000026.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 08:07:08
Operator : MP
Sample : 8330MXB_CB 1.0 PPM 10/01/11
Misc :
ALS Vial : 4166 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 09:08:07 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



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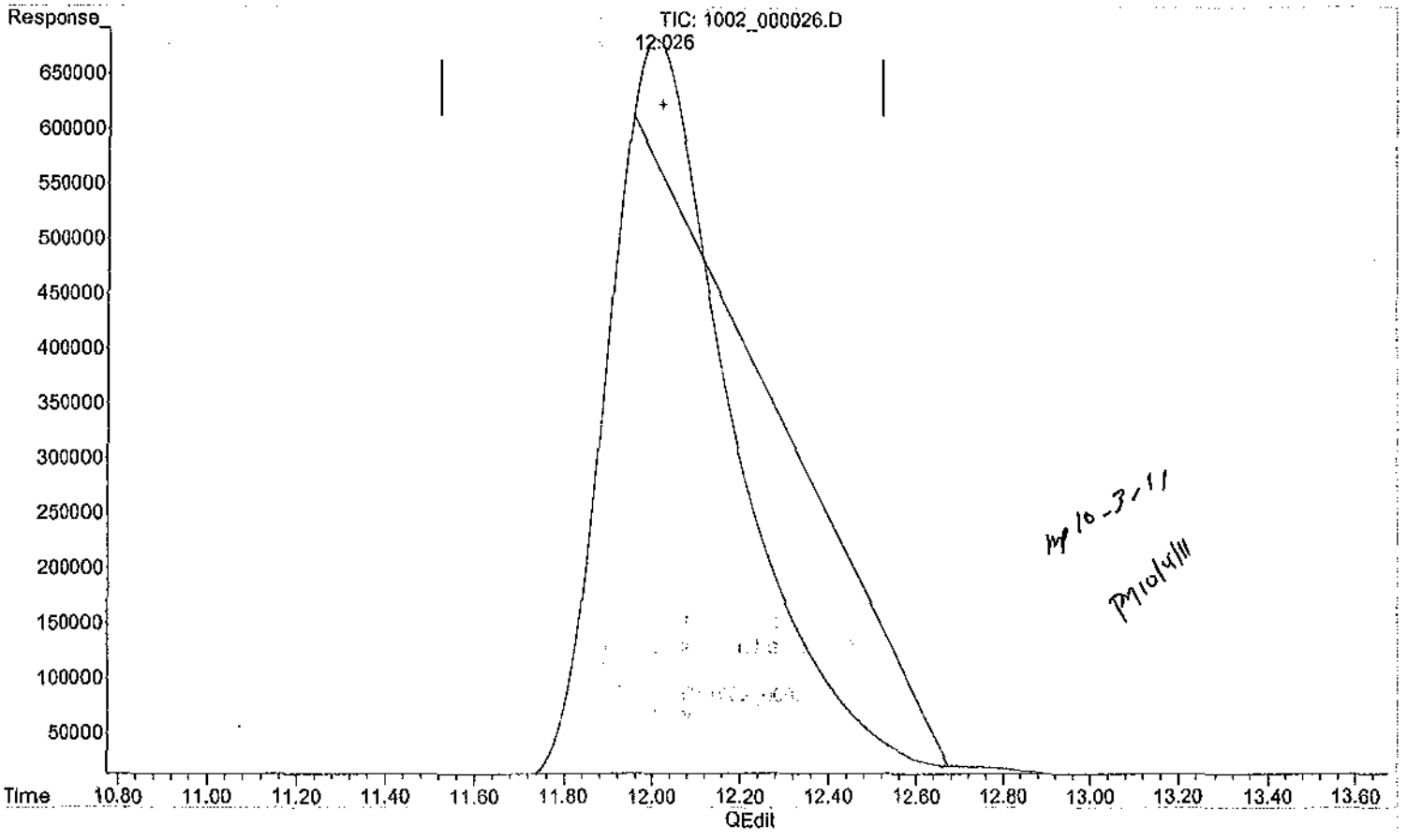
Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000026.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 08:07:08
Operator : MP
Sample : 8330MXB_CB 1.0 PPM 10/01/11
Misc :
ALS Vial : 4166 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 09:06:28 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(9) NITROGLYCERIN #1 (TM)

12.007min 131.574 ppb

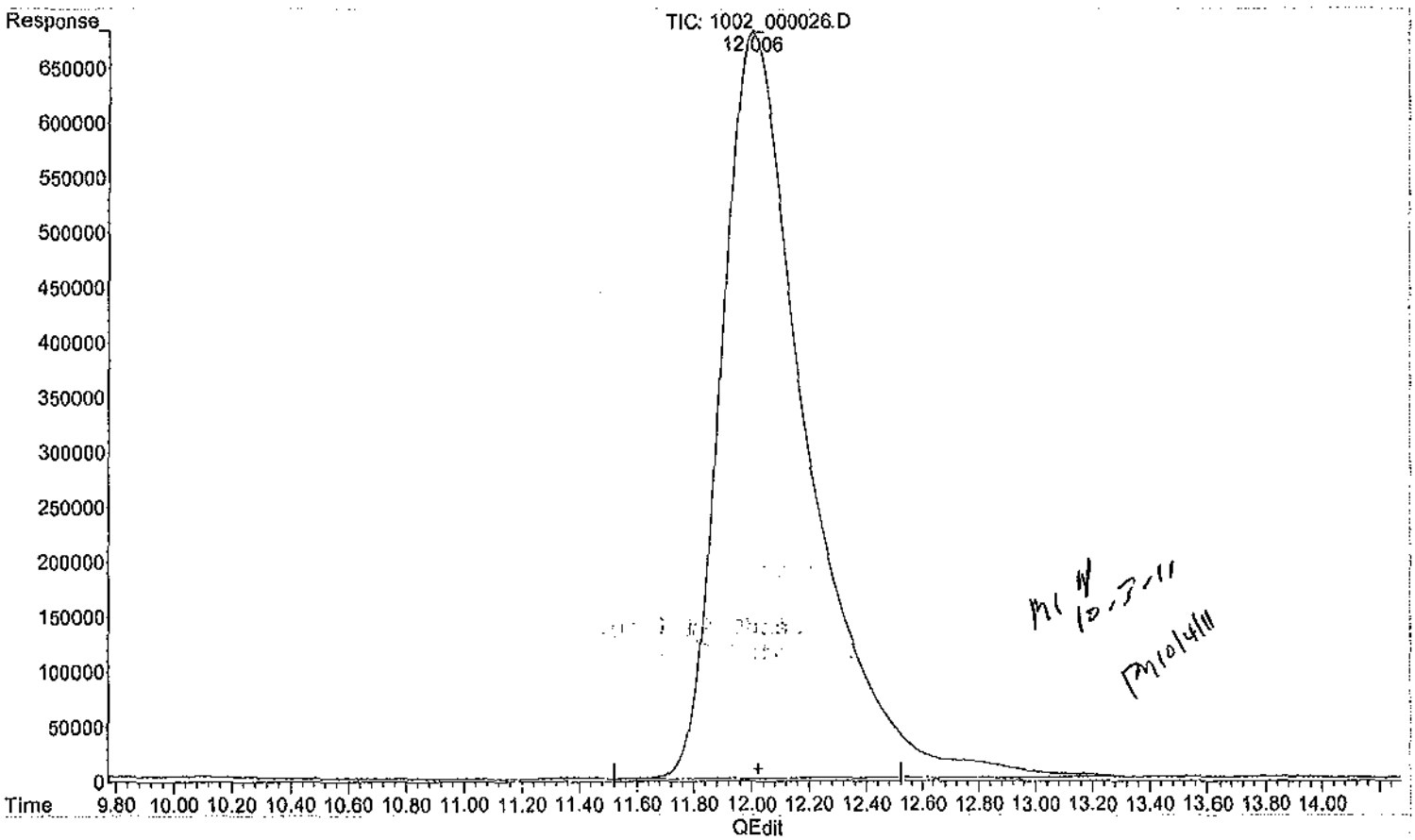
response 110513

(+) = Expected Retention Time

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000026.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 08:07:08
Operator : MP
Sample : 8330MXB_CB 1.0 PPM 10/01/11
Misc :
ALS Vial : 4166 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 09:06:28 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(9) NITROGLYCERIN #1 (TM)

12.006min 809.878 ppb m

response 680243

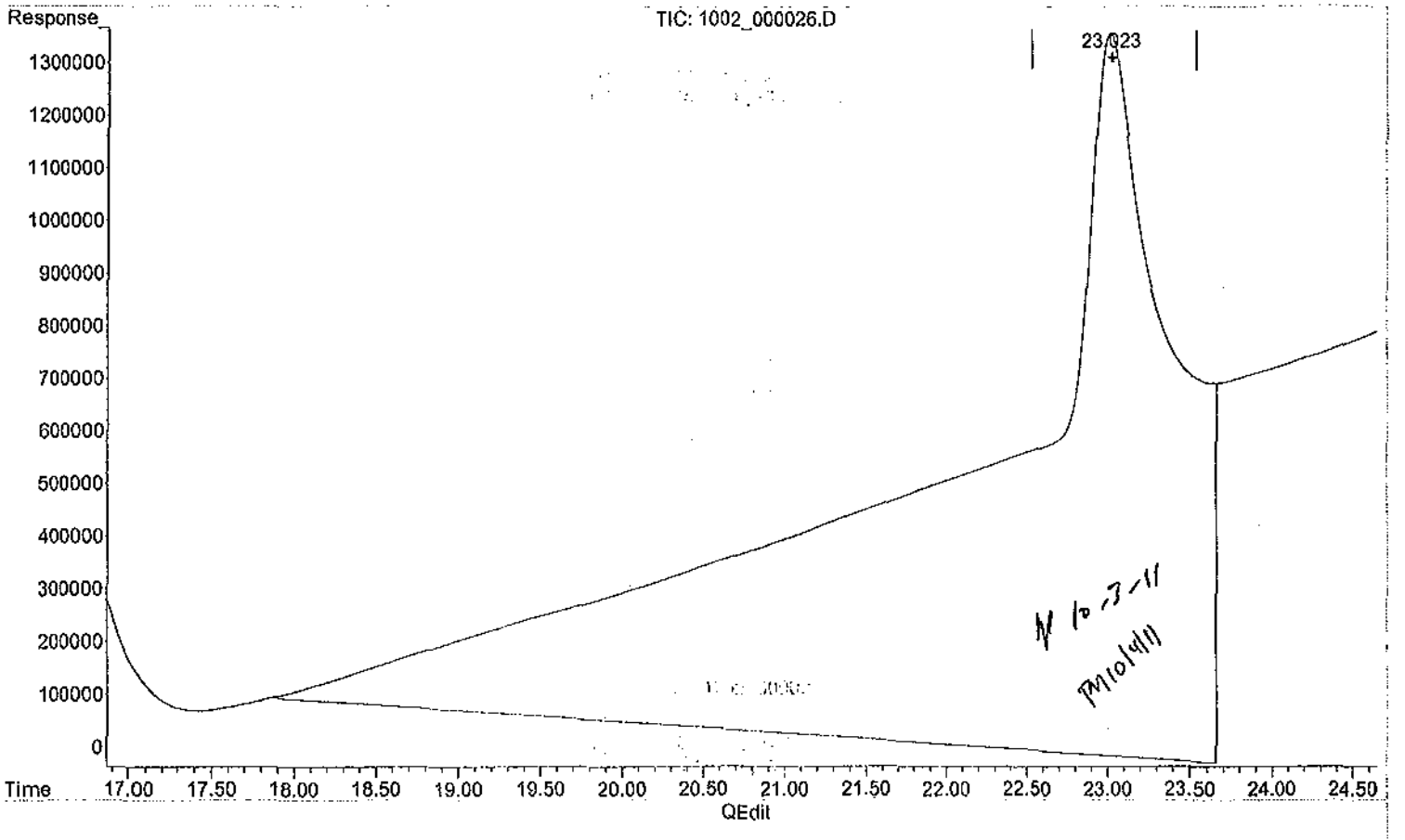
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000026.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 08:07:08
Operator : MP
Sample : 8330MXB_CB 1.0 PPM 10/01/11
Misc :
ALS Vial : 4166 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 09:06:28 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(18) PETN #1 (TM)

23.021min 1548.140 ppb

response 1373156

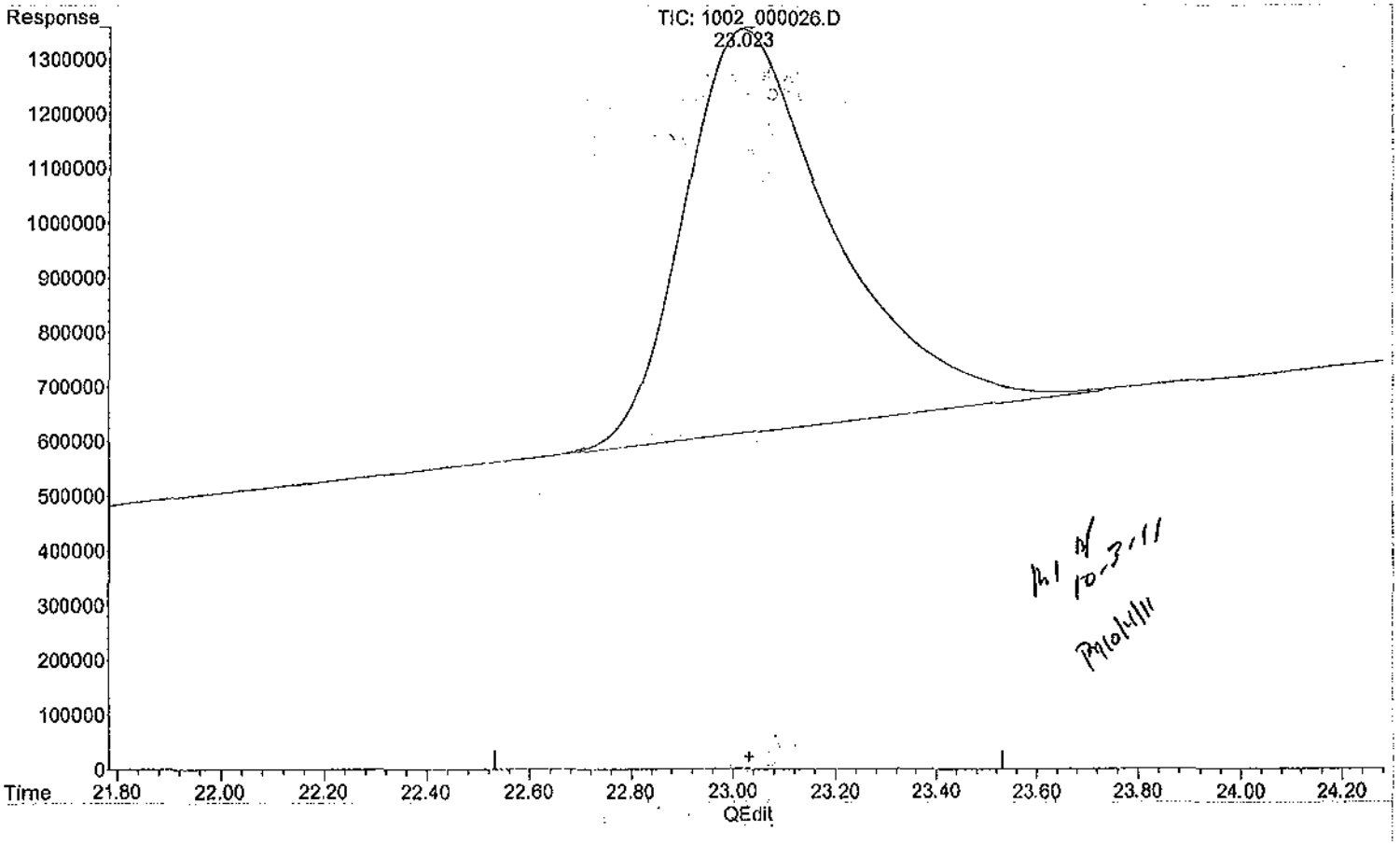
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000026.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 08:07:08
Operator : MP
Sample : 8330MXB_CB 1.0 PPM 10/01/11
Misc :
ALS Vial : 4166 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 09:06:28 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(18) PETN #1 (TM)

23.023min 835.994 ppb m

response 741503

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000027.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 08:48:38
Operator : MP
Sample : 8330MXA_CB 2.0 PPM 10/01/11
Misc :
ALS Vial : 4167 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 11:22:53 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	R.T.	Response	Conc	Units	
	System Monitoring Compounds					
4) S	1,2-DINITROBENZENE #1	0.000	0	N.D.	ppb	d
23) S	1,2-DINITROBENZENE #2	7.927	3336113	1682.259	ppb	
	Target Compounds					
1) TM	HMX #1	0.000	0	N.D.	ppb	d
2) TM	RDX #1	0.000	0	N.D.	ppb	d
3) TM	1,3,5-TRINITROBENZENE #1	0.000	0	N.D.	ppb	d
5) TM	1,3-DINITROBENZENE #1	0.000	0	N.D.	ppb	d
6) TM	NITROBENZENE #1	0.000	0	N.D.	ppb	d
7) TM	2,4,6-TRINITROTOLUENE #1	0.000	0	N.D.	ppb	d
8) TM	TETRYL #1	0.000	0	N.D.	ppb	d
9) TM	NITROGLYCERIN #1	0.000	0	N.D.	ppb	d
10) TM	2,6-DINITROTOLUENE #1	0.000	0	N.D.	ppb	d
11) TM	2,4-DINITROTOLUENE #1	0.000	0	N.D.	ppb	d
12) TM	2-NITROTOLUENE #1	0.000	0	N.D.	ppb	d
13) TM	3,5-DINITROANILINE #1	0.000	0	N.D.	ppb	d
14) TM	4-NITROTOLUENE #1	0.000	0	N.D.	ppb	d
15) TM	3-NITROTOLUENE #1	0.000	0	N.D.	ppb	d
16) TM	4-AMINO-2,6-DINITROTO...	0.000	0	N.D.	ppb	d
17) TM	2-AMINO-4,6-DINITROTO...	0.000	0	N.D.	ppb	d
18) TM	PETN #1	0.000	0	N.D.	ppb	d
20) TM	HMX #2	3.855	3726010	1652.768	ppb	
21) TM	RDX #2	6.111	3027002	1687.608	ppb	
22) TM	1,3,5-TRINITROBENZENE #2	6.548	7412190	1751.192	ppb	
24) TM	1,3-DINITROBENZENE #2	8.177	7617333	1793.764	ppb	
25) TM	NITROBENZENE #2	9.003	3797212	1590.960	ppb	
26) TM	2,4,6-TRINITROTOLUENE #2	11.416	3882419	1702.918	ppb	
27) TM	TETRYL #2	11.976	2824578	1695.523	ppb	
28) TM	NITROGLYCERIN #2	11.976	2824578	NoCal	ppb	
29) TM	2,6-DINITROTOLUENE #2	13.460	2252560	1655.596	ppb	
30) TM	2,4-DINITROTOLUENE #2	13.985	4002737	1738.631	ppb	
31) TM	2-NITROTOLUENE #2	15.619	1418072	1496.187	ppb	
32) TM	3,5-DINITROANILINE #2	0.000	0	N.D.	ppb	
33) TM	4-NITROTOLUENE #2	17.069	1278929	1556.532	ppb	
34) TM	3-NITROTOLUENE #2	18.253	1575769	1483.142	ppb	
35) TM	4-AMINO-2,6-DINITROTO...	18.636	2576187	1809.608	ppb	
36) TM	2-AMINO-4,6-DINITROTO...	19.441	2874802	1648.761	ppb	
37) TM	PETN #2	22.629f	3925	NoCal	ppb	

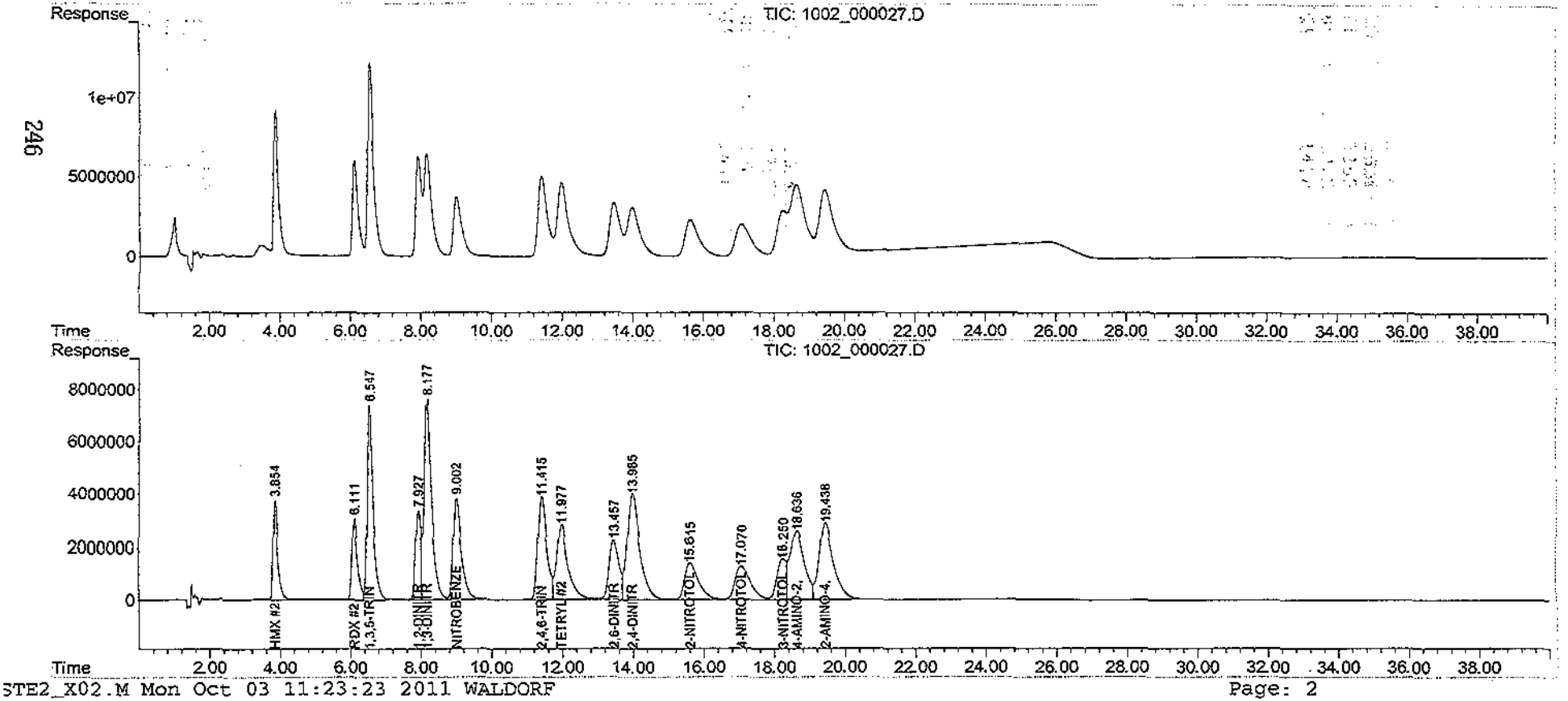
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000027.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 08:48:38
Operator : MP
Sample : 8330MXA_CB 2.0 PPM 10/01/11
Misc :
ALS Vial : 4167 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 11:22:53 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



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Quantitation Report (QT Reviewed)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000028.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 09:30:07
Operator : MP
Sample : 8330MXB_CB 2.0 PPM 10/01/11
Misc :
ALS Vial : 4168 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 11:36:05 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	R.T.	Response	Conc	Units	
	System Monitoring Compounds					
4) S	1,2-DINITROBENZENE #1	7.904	1389	NoCal	ppb	
23) S	1,2-DINITROBENZENE #2	0.000	0	N.D.	ppb	d
	Target Compounds					
1) TM	HMX #1	0.000	0	N.D.	ppb	
2) TM	RDX #1	6.103	2411	NoCal	ppb	
3) TM	1,3,5-TRINITROBENZENE #1	6.531	3751	NoCal	ppb	
5) TM	1,3-DINITROBENZENE #1	8.166	2767	NoCal	ppb	
6) TM	NITROBENZENE #1	9.011	2139	NoCal	ppb	
7) TM	2,4,6-TRINITROTOLUENE #1	11.395	2861	NoCal	ppb	
8) TM	TETRYL #1	12.003	1361493	NoCal	ppb	
9) TM	NITROGLYCERIN #1	12.003	1361493	1620.954	ppb	
10) TM	2,6-DINITROTOLUENE #1	13.553	4778	NoCal	ppb	
11) TM	2,4-DINITROTOLUENE #1	13.938	3466	NoCal	ppb	
12) TM	2-NITROTOLUENE #1	0.000	0	N.D.	ppb	d
13) TM	3,5-DINITROANILINE #1	16.177	4464308	1675.786	ppb	
14) TM	4-NITROTOLUENE #1	0.000	0	N.D.	ppb	
15) TM	3-NITROTOLUENE #1	0.000	0	N.D.	ppb	
16) TM	4-AMINO-2,6-DINITROTO...	0.000	0	N.D.	ppb	
17) TM	2-AMINO-4,6-DINITROTO...	0.000	0	N.D.	ppb	
18) TM	PETN #1	23.013	1482899	1671.868	ppb	m
20) TM	HMX #2	0.000	0	N.D.	ppb	d
21) TM	RDX #2	0.000	0	N.D.	ppb	d
22) TM	1,3,5-TRINITROBENZENE #2	0.000	0	N.D.	ppb	d
24) TM	1,3-DINITROBENZENE #2	0.000	0	N.D.	ppb	d
25) TM	NITROBENZENE #2	0.000	0	N.D.	ppb	d
26) TM	2,4,6-TRINITROTOLUENE #2	0.000	0	N.D.	ppb	d
27) TM	TETRYL #2	0.000	0	N.D.	ppb	d
28) TM	NITROGLYCERIN #2	0.000	0	N.D.	ppb	d
29) TM	2,6-DINITROTOLUENE #2	0.000	0	N.D.	ppb	d
30) TM	2,4-DINITROTOLUENE #2	0.000	0	N.D.	ppb	d
31) TM	2-NITROTOLUENE #2	0.000	0	N.D.	ppb	d
32) TM	3,5-DINITROANILINE #2	0.000	0	N.D.	ppb	d
33) TM	4-NITROTOLUENE #2	0.000	0	N.D.	ppb	d
34) TM	3-NITROTOLUENE #2	0.000	0	N.D.	ppb	d
35) TM	4-AMINO-2,6-DINITROTO...	0.000	0	N.D.	ppb	d
36) TM	2-AMINO-4,6-DINITROTO...	0.000	0	N.D.	ppb	d
37) TM	PETN #2	0.000	0	N.D.	ppb	d

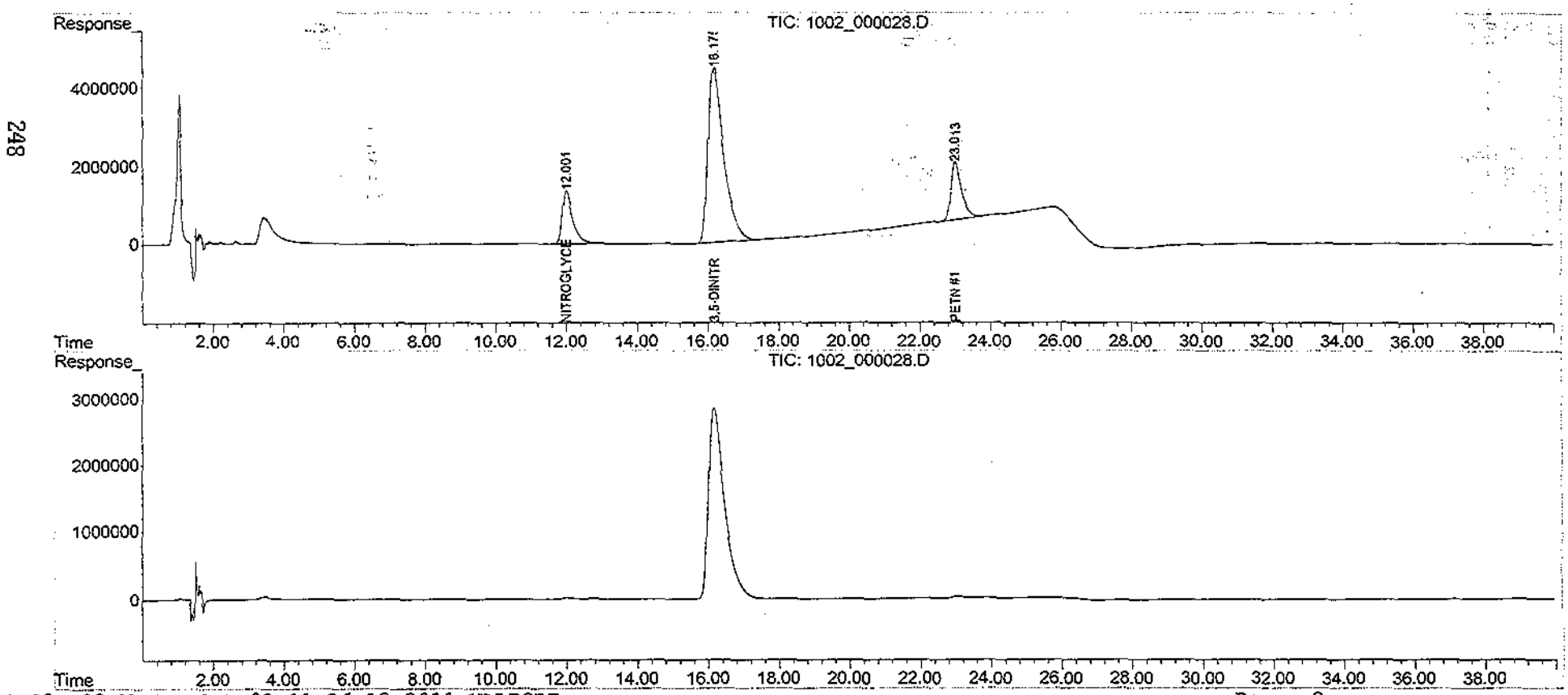
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000028.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 09:30:07
Operator : MP
Sample : 8330MXB_CB 2.0 PPM 10/01/11
Misc :
ALS Vial : 4168 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 11:36:05 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

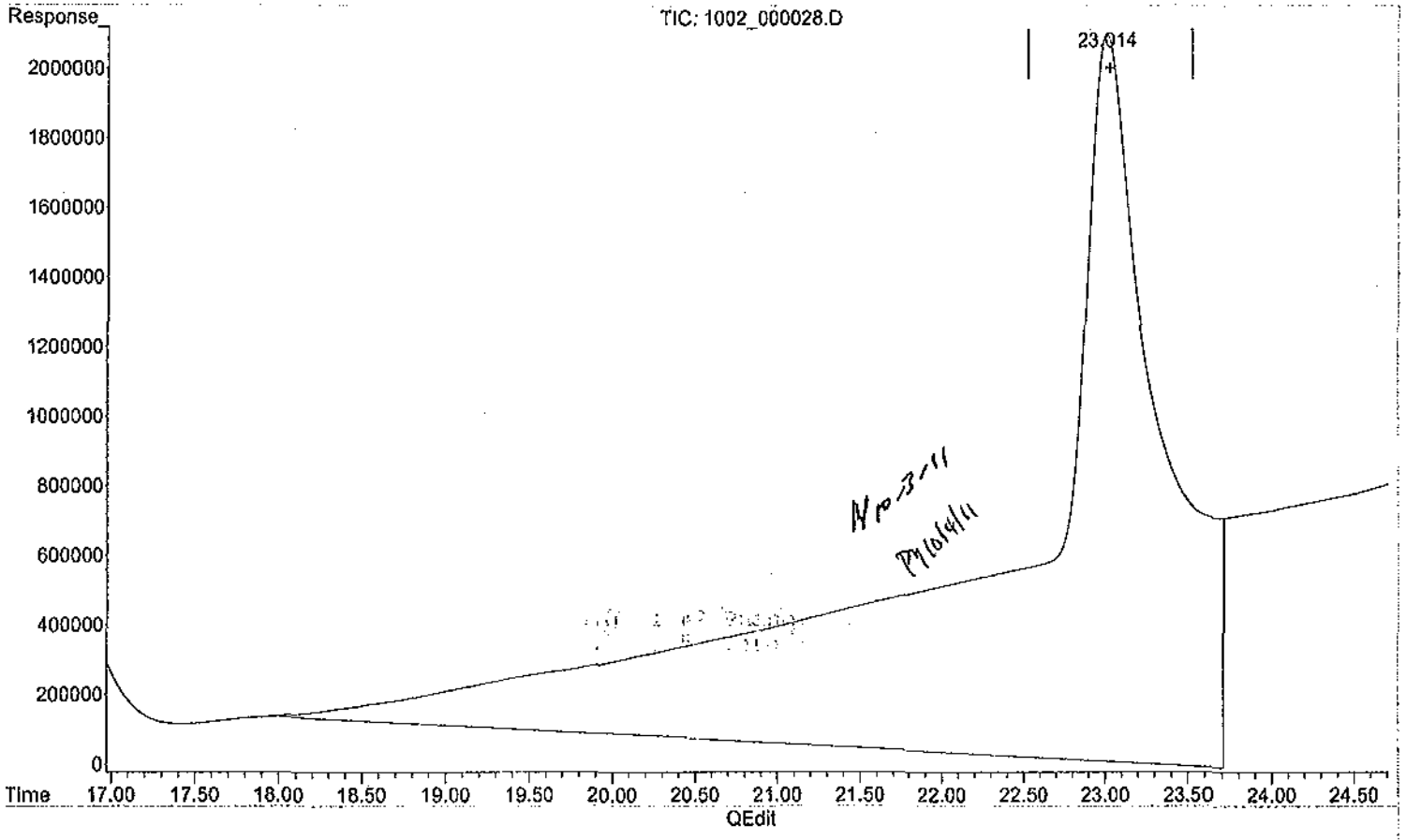
Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000028.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 09:30:07
Operator : MP
Sample : 8330MXB_CB 2.0 PPM 10/01/11
Misc :
ALS Vial : 4168 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 11:23:30 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(18) PETN #1 (TM)

23.014min 2359.162 ppb

response 2092509

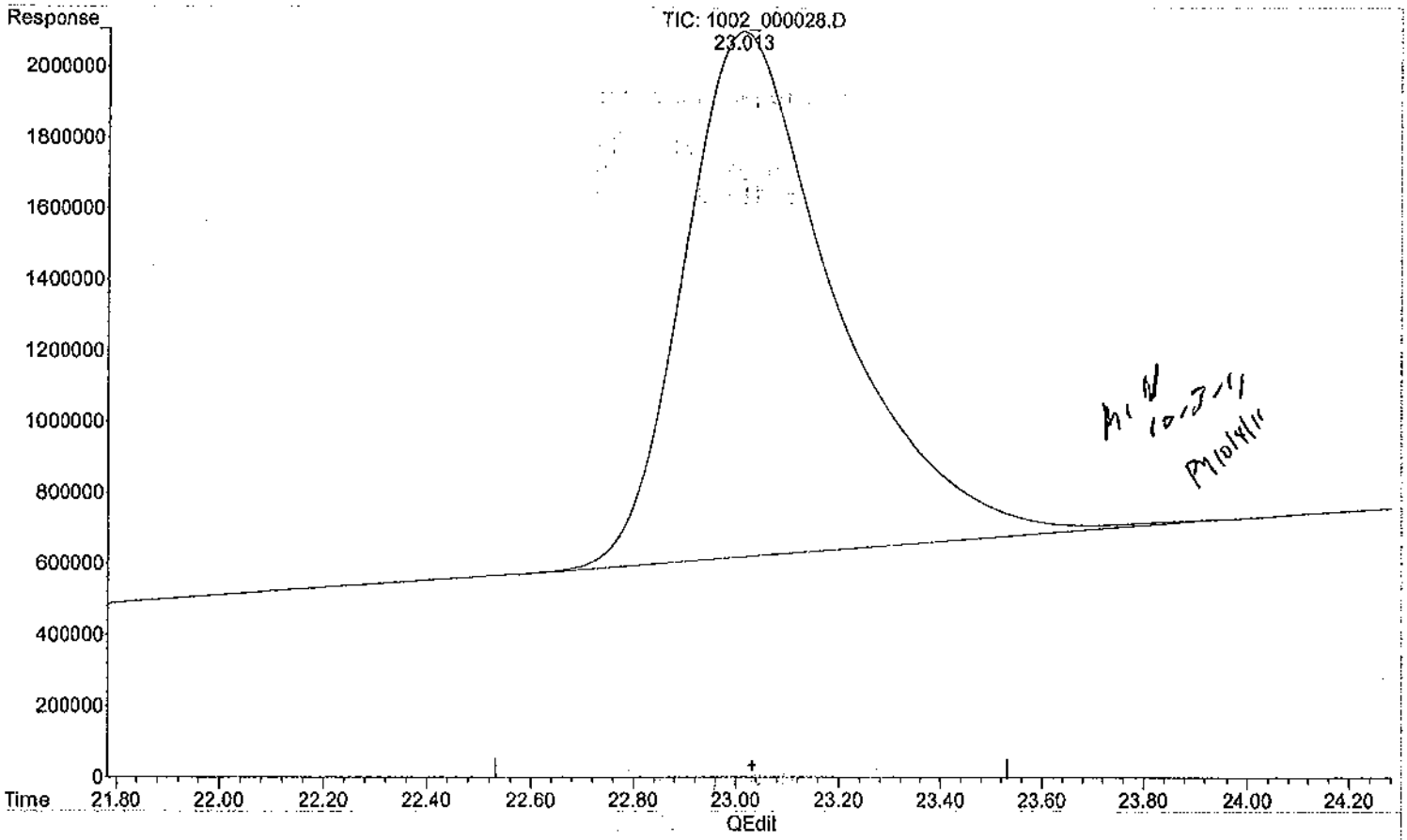
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000028.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 09:30:07
Operator : MP
Sample : 8330MXB_CB 2.0 PPM 10/01/11
Misc :
ALS Vial : 4168 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 11:23:30 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Sep 15 14:57:47 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(18) PETN #1 (TM)

23.013min 1671.868 ppb m

response 1482899

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000029.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 10:11:37
Operator : MP
Sample : 8330MXA_SS 1.0 PPM 10/01/11
Misc :
ALS Vial : 4224 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 11:50:10 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Mon Oct 03 11:43:43 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	R.T.	Response	Conc	Units	
	System Monitoring Compounds					
4) S	1,2-DINITROBENZENE #1	0.000	0	N.D.	ppb	
23) S	1,2-DINITROBENZENE #2	0.000	0	N.D.	ppb	
	Target Compounds					
1) TM	HMX #1	0.000	0	N.D.	ppb	d
2) TM	RDX #1	6.107	3018307	NoCal	ppb	
3) TM	1,3,5-TRINITROBENZENE #1	0.000	0	N.D.	ppb	
5) TM	1,3-DINITROBENZENE #1	8.175	2712430	NoCal	ppb	
6) TM	NITROBENZENE #1	8.997	1850504	NoCal	ppb	
7) TM	2,4,6-TRINITROTOLUENE #1	11.421	5740	NoCal	ppb	
8) TM	TETRYL #1	12.004	708546	NoCal	ppb	
9) TM	NITROGLYCERIN #1	12.004	708546	999.956	ppb	
10) TM	2,6-DINITROTOLUENE #1	0.000	0	N.D.	ppb	
11) TM	2,4-DINITROTOLUENE #1	13.970	1513754	NoCal	ppb	
12) TM	2-NITROTOLUENE #1	0.000	0	N.D.	ppb	
13) TM	3,5-DINITROANILINE #1	16.185	2443185	1049.866	ppb	
14) TM	4-NITROTOLUENE #1	0.000	0	N.D.	ppb	
15) TM	3-NITROTOLUENE #1	18.611f	2530713	NoCal	ppb	
16) TM	4-AMINO-2,6-DINITROTO...	18.611	2530713	NoCal	ppb	
17) TM	2-AMINO-4,6-DINITROTO...	0.000	0	N.D.	ppb	
18) TM	PETN #1	0.000	0	N.D.	ppb	
20) TM	HMX #2	3.855	1878719	914.664	ppb	
21) TM	RDX #2	6.107	1525635	966.599	ppb	
22) TM	1,3,5-TRINITROBENZENE #2	0.000	0	N.D.	ppb	
24) TM	1,3-DINITROBENZENE #2	8.175	3607154	955.110	ppb	
25) TM	NITROBENZENE #2	8.997	1905456	991.684	ppb	
26) TM	2,4,6-TRINITROTOLUENE #2	0.000	0	N.D.	ppb	d
27) TM	TETRYL #2	0.000	0	N.D.	ppb	d
28) TM	NITROGLYCERIN #2	12.005	12238	NoCal	ppb	
29) TM	2,6-DINITROTOLUENE #2	0.000	0	N.D.	ppb	d
30) TM	2,4-DINITROTOLUENE #2	13.970	2002951	994.543	ppb	
31) TM	2-NITROTOLUENE #2	0.000	0	N.D.	ppb	d
32) TM	3,5-DINITROANILINE #2	16.185	1519815	NoCal	ppb	
33) TM	4-NITROTOLUENE #2	0.000	0	N.D.	ppb	
34) TM	3-NITROTOLUENE #2	18.235	805998	1045.118	ppb	
35) TM	4-AMINO-2,6-DINITROTO...	18.612	1372841	1026.005	ppb	
36) TM	2-AMINO-4,6-DINITROTO...	0.000	0	N.D.	ppb	
37) TM	PETN #2	23.481f	2945	NoCal	ppb	

(f)=RT Delta > 1/2 Window (m)=manual int.

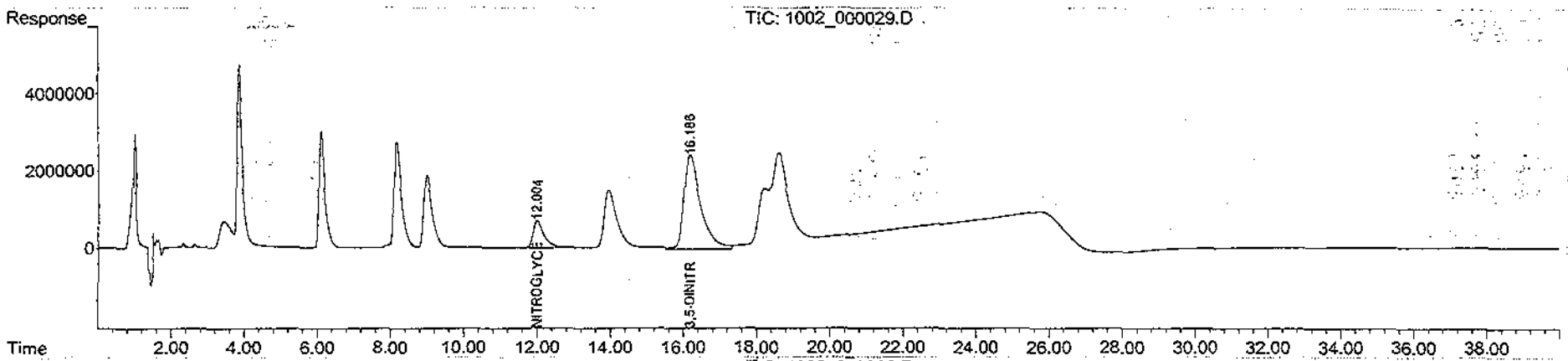
Quantitation Report (QT Reviewed)

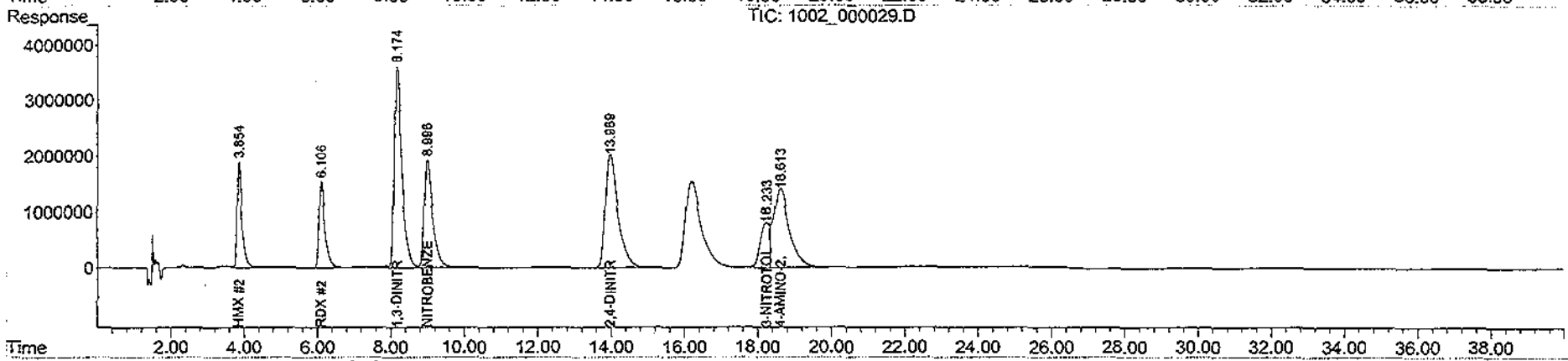
Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000029.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 10:11:37
Operator : MP
Sample : 8330MXA_SS 1.0 PPM 10/01/11
Misc :
ALS Vial : 4224 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 11:50:10 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Mon Oct 03 11:43:43 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

252





Quantitation Report (QT Reviewed)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000030.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 10:53:06
Operator : MP
Sample : 8330MXB_SS 1.0 PPM 10/01/11
Misc :
ALS Vial : 4225 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 11:51:52 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Mon Oct 03 11:43:43 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	R.T.	Response	Conc	Units	
	System Monitoring Compounds					
4) S	1,2-DINITROBENZENE #1	7.918	3112016	NoCal	ppb	
23) S	1,2-DINITROBENZENE #2	7.918	1659914	989.027	ppb	
	Target Compounds					
1) TM	HMX #1	0.000	0	N.D.	ppb	
2) TM	RDX #1	6.108	1983	NoCal	ppb	
3) TM	1,3,5-TRINITROBENZENE #1	6.544	5836112	NoCal	ppb	
5) TM	1,3-DINITROBENZENE #1	0.000	0	N.D.	ppb	
6) TM	NITROBENZENE #1	8.995	2417	NoCal	ppb	
7) TM	2,4,6-TRINITROTOLUENE #1	11.404	2360702	NoCal	ppb	
8) TM	TETRYL #1	11.961	2086447	NoCal	ppb	
9) TM	NITROGLYCERIN #1	0.000	0	N.D.	ppb	d
10) TM	2,6-DINITROTOLUENE #1	13.446	1703141	NoCal	ppb	
11) TM	2,4-DINITROTOLUENE #1	0.000	0	N.D.	ppb	
12) TM	2-NITROTOLUENE #1	15.610	1181694	NoCal	ppb	
13) TM	3,5-DINITROANILINE #1	0.000	0	N.D.	ppb	
14) TM	4-NITROTOLUENE #1	17.064	943444	NoCal	ppb	
15) TM	3-NITROTOLUENE #1	0.000	0	N.D.	ppb	
16) TM	4-AMINO-2,6-DINITROTO...	0.000	0	N.D.	ppb	
17) TM	2-AMINO-4,6-DINITROTO...	19.424	1927240	NoCal	ppb	
18) TM	PETN #1	23.015	728357	987.239	ppb	m
20) TM	HMX #2	0.000	0	N.D.	ppb	
21) TM	RDX #2	0.000	0	N.D.	ppb	d
22) TM	1,3,5-TRINITROBENZENE #2	6.544	3545223	965.105	ppb	
24) TM	1,3-DINITROBENZENE #2	0.000	0	N.D.	ppb	
25) TM	NITROBENZENE #2	0.000	0	N.D.	ppb	d
26) TM	2,4,6-TRINITROTOLUENE #2	11.404	1814351	921.013	ppb	
27) TM	TETRYL #2	11.960	1279644	892.831	ppb	
28) TM	NITROGLYCERIN #2	11.960	1279644	NoCal	ppb	
29) TM	2,6-DINITROTOLUENE #2	13.446	1146430	986.491	ppb	
30) TM	2,4-DINITROTOLUENE #2	0.000	0	N.D.	ppb	
31) TM	2-NITROTOLUENE #2	15.610	727207	1019.752	ppb	
32) TM	3,5-DINITROANILINE #2	0.000	0	N.D.	ppb	
33) TM	4-NITROTOLUENE #2	17.062	619054	945.418	ppb	
34) TM	3-NITROTOLUENE #2	0.000	0	N.D.	ppb	d
35) TM	4-AMINO-2,6-DINITROTO...	0.000	0	N.D.	ppb	d
36) TM	2-AMINO-4,6-DINITROTO...	19.423	1349806	937.855	ppb	
37) TM	PETN #2	23.018	23239	NoCal	ppb	

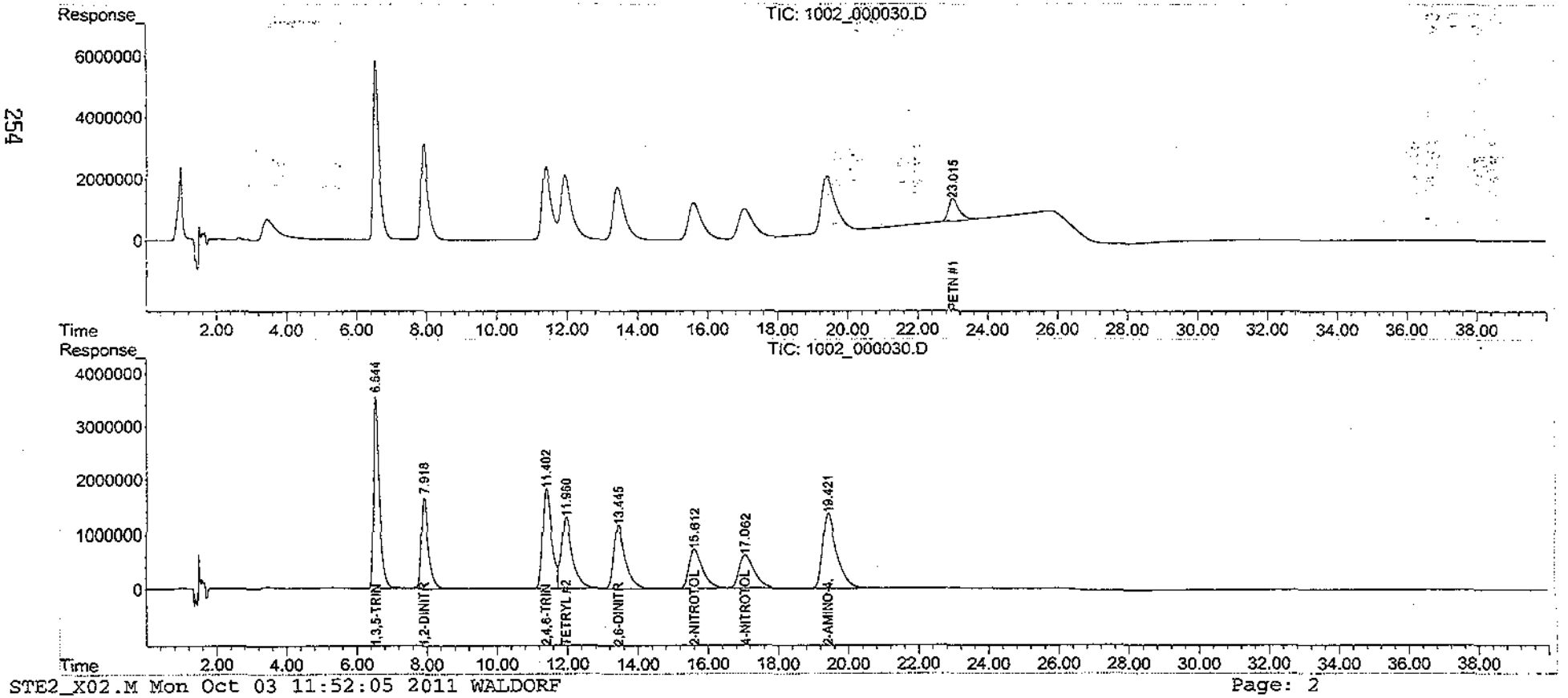
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000030.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 10:53:06
Operator : MP
Sample : 8330MXB_SS 1.0 PPM 10/01/11
Misc :
ALS Vial : 4225 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 11:51:52 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Mon Oct 03 11:43:43 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

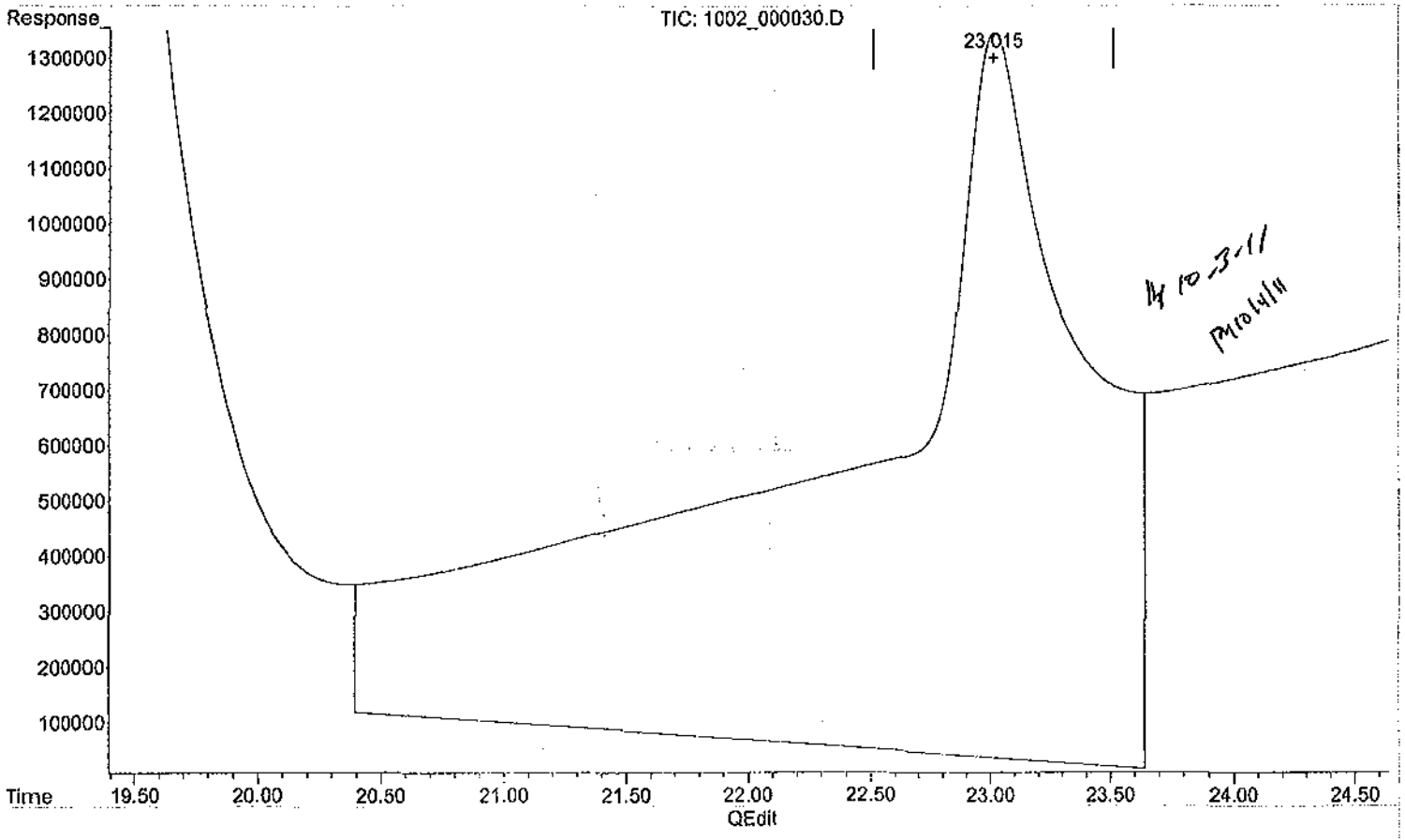


Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000030.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 10:53:06
Operator : MP
Sample : 8330MXB_SS 1.0 PPM 10/01/11
Misc :
ALS Vial : 4225 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 11:49:14 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Mon Oct 03 11:43:43 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(18) PETN #1 (TM)

23.019min 1775.146 ppb

response 1309653

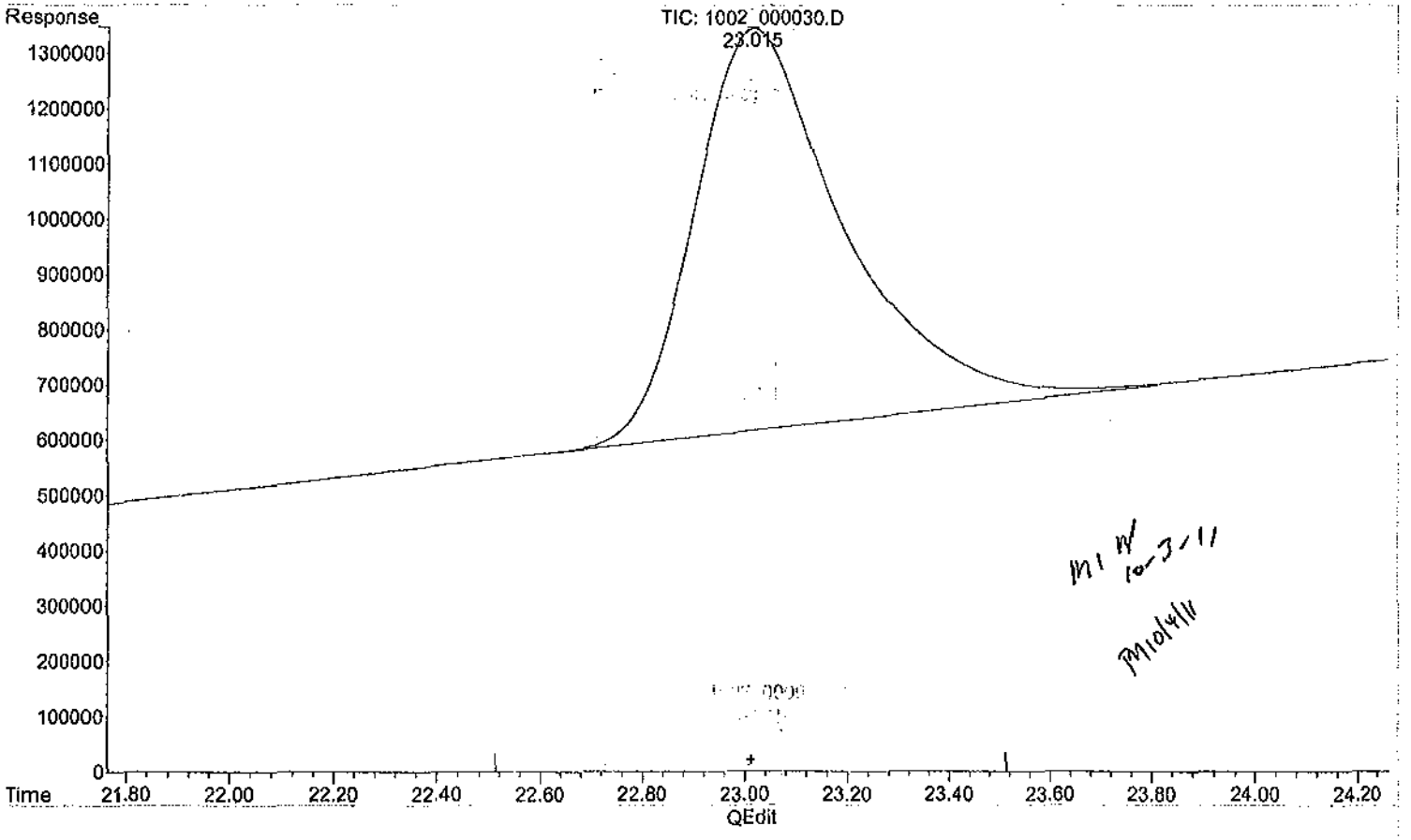
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111002\
Data File : 1002_000030.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 03-Oct-2011, 10:53:06
Operator : MP
Sample : 8330MXB_SS 1.0 PPM 10/01/11
Misc :
ALS Vial : 4225 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 03 11:49:14 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111002\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Mon Oct 03 11:43:43 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(18) PETN #1 (TM)

23.015min 987.239 ppb m

response 728357

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : H:\STATLER\CHEM32\1\DATA\111012\
Data File : 1012_0000068.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 14-Oct-2011, 10:49:40
Operator : MP
Sample : 8330MXA_CCV 1.0 PPM 10/12/11
Misc :
ALS Vial : 4226 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 14 11:35:30 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111012\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Oct 13 16:09:25 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	R.T.	Response	Conc	Units	
	System Monitoring Compounds					
4)	S 1,2-DINITROBENZENE #1	7.868	3186030	NoCal	ppb	
23)	S 1,2-DINITROBENZENE #2	7.868	1697035	1011.145	ppb	
	Target Compounds					
1)	TM HMX #1	3.828	4470746	NoCal	ppb	
2)	TM RDX #1	6.068	3083135	NoCal	ppb	
3)	TM 1,3,5-TRINITROBENZENE #1	6.507	6243008	NoCal	ppb	
5)	TM 1,3-DINITROBENZENE #1	8.119	3219704	NoCal	ppb	
6)	TM NITROBENZENE #1	8.954	1819757	NoCal	ppb	
7)	TM 2,4,6-TRINITROTOLUENE #1	11.320	2578359	NoCal	ppb	
8)	TM TETRYL #1	11.848	2370886	NoCal	ppb	
9)	TM NITROGLYCERIN #1	0.000	0	N.D.	ppb	d
10)	TM 2,6-DINITROTOLUENE #1	13.355	1691548	NoCal	ppb	
11)	TM 2,4-DINITROTOLUENE #1	13.863	1578428	NoCal	ppb	
12)	TM 2-NITROTOLUENE #1	15.519	1114876	NoCal	ppb	
13)	TM 3,5-DINITROANILINE #1	0.000	0	N.D.	ppb	
14)	TM 4-NITROTOLUENE #1	16.952	942269	NoCal	ppb	
15)	TM 3-NITROTOLUENE #1	18.466f	2286969	NoCal	ppb	
16)	TM 4-AMINO-2,6-DINITROTO...	18.466	2286969	NoCal	ppb	
17)	TM 2-AMINO-4,6-DINITROTO...	19.271	1988627	NoCal	ppb	
18)	TM PETN #1	0.000	0	N.D.	ppb	
20)	TM HMX #2	3.829	1913393	931.545	ppb	
21)	TM RDX #2	6.068	1556403	986.093	ppb	
22)	TM 1,3,5-TRINITROBENZENE #2	6.507	3777970	1028.465	ppb	
24)	TM 1,3-DINITROBENZENE #2	8.125	3837667	1016.145	ppb	
25)	TM NITROBENZENE #2	8.954	1857697	966.828	ppb	
26)	TM 2,4,6-TRINITROTOLUENE #2	11.320	1982103	1006.169	ppb	
27)	TM TETRYL #2	11.847	1457085	1016.634	ppb	
28)	TM NITROGLYCERIN #2	11.847	1457085	NoCal	ppb	
29)	TM 2,6-DINITROTOLUENE #2	13.355	1139327	980.378	ppb	
30)	TM 2,4-DINITROTOLUENE #2	13.869	2037910	1011.901	ppb	
31)	TM 2-NITROTOLUENE #2	15.519	686877	963.199	ppb	
32)	TM 3,5-DINITROANILINE #2	0.000	0	N.D.	ppb	
33)	TM 4-NITROTOLUENE #2	16.951	621296	948.842	ppb	
34)	TM 3-NITROTOLUENE #2	18.194	801360	1039.104	ppb	m
35)	TM 4-AMINO-2,6-DINITROTO...	18.469	1362145	1018.011	ppb	m
36)	TM 2-AMINO-4,6-DINITROTO...	19.271	1462855	1016.402	ppb	
37)	TM PETN #2	23.506f	2174	NoCal	ppb	

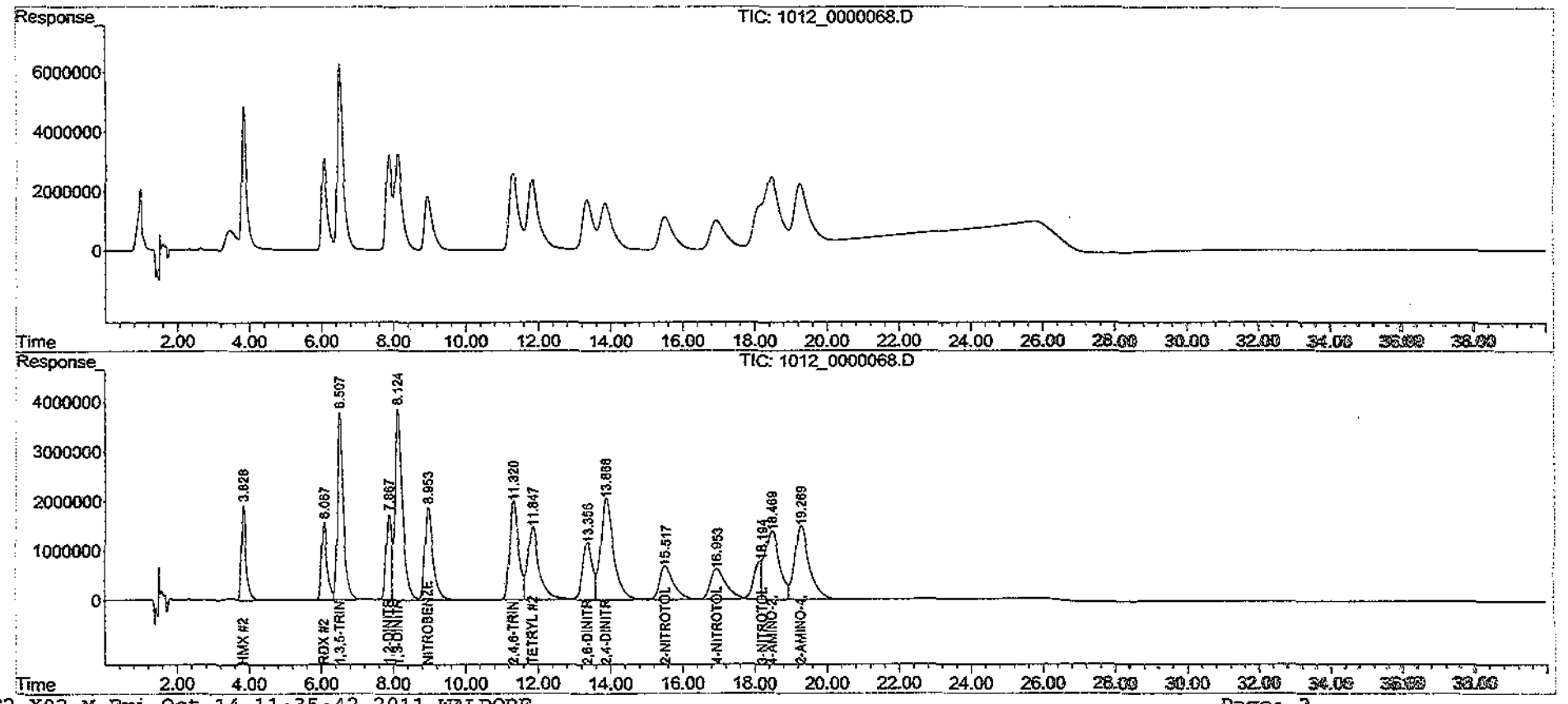
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\STATLER\CHEM32\1\DATA\111012\
Data File : 1012_0000068.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 14-Oct-2011, 10:49:40
Operator : MP
Sample : 8330MXA_CCV 1.0 PPM 10/12/11
Misc :
ALS Vial : 4226 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 14 11:35:30 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111012\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Oct 13 16:09:25 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

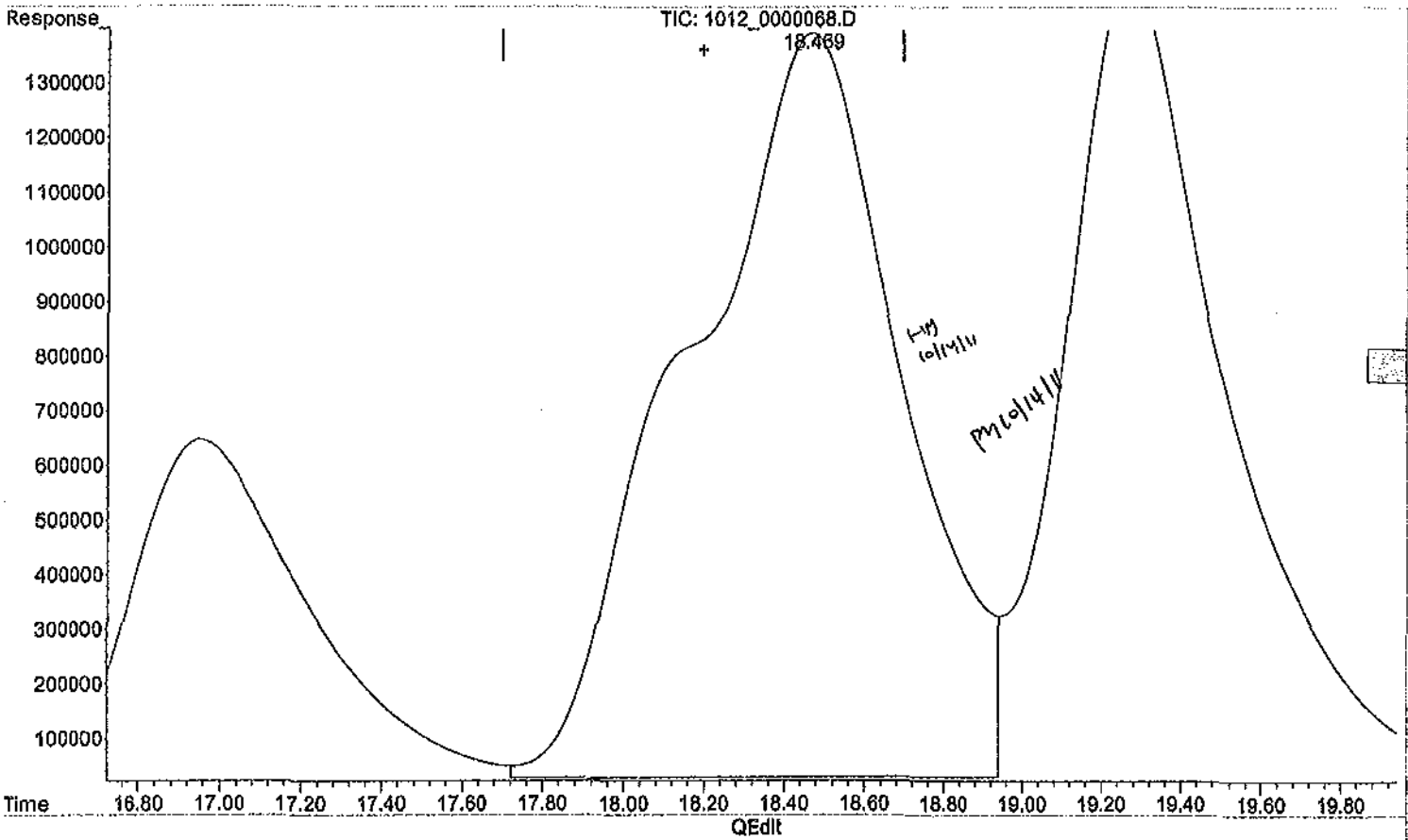


Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111012\
Data File : 1012_0000068.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 14-Oct-2011, 10:49:40
Operator : MP
Sample : 8330MXA_CCV 1.0 PPM 10/12/11
Misc :
ALS Vial : 4226 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 14 11:33:36 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111012\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Oct 13 16:09:25 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(34) 3-NITROTOLUENE #2 (TM)

18.467min 1766.951 ppb

response 1362678

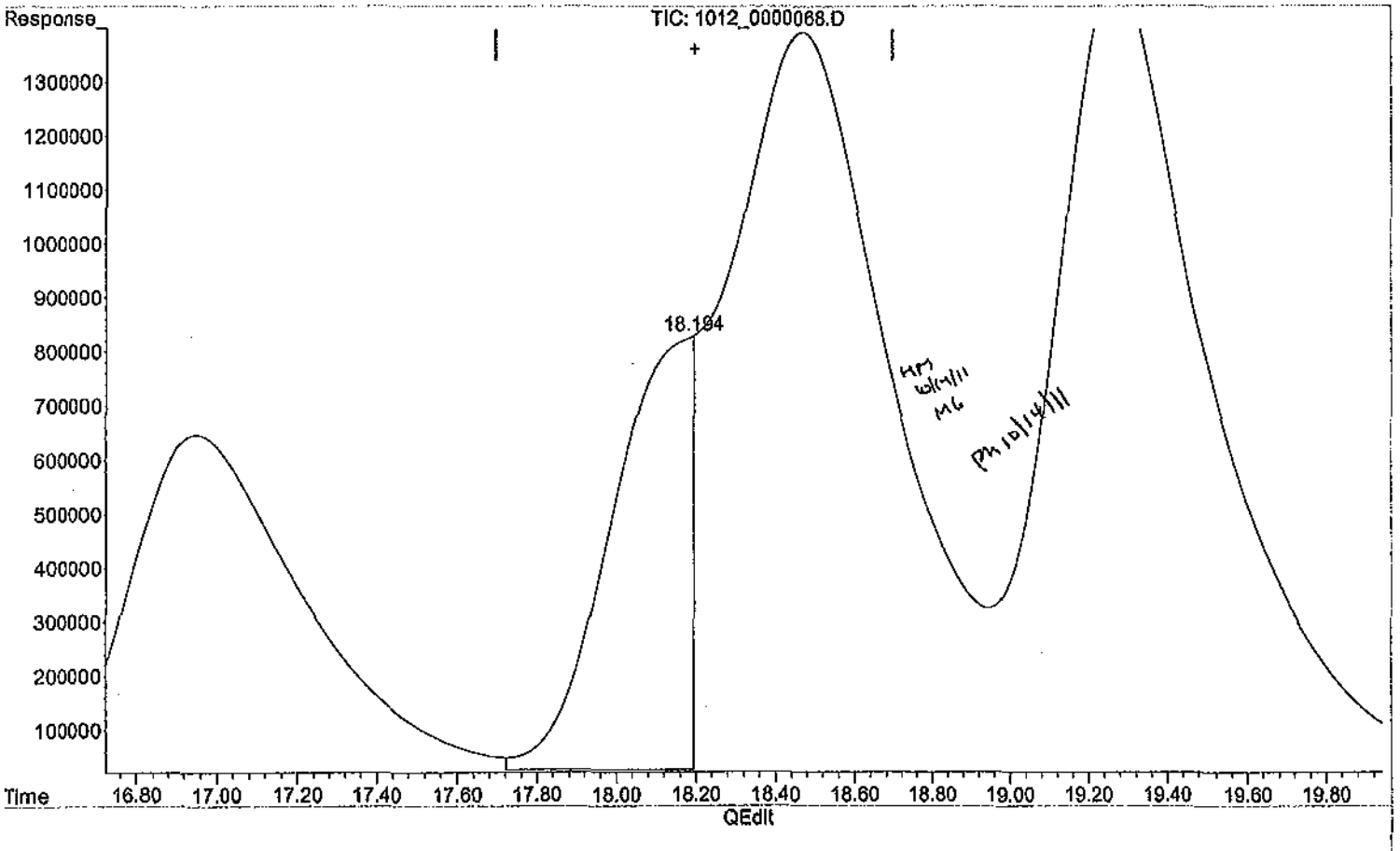
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111012\
Data File : 1012_0000068.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 14-Oct-2011, 10:49:40
Operator : MP
Sample : 8330MXA_CCV 1.0 PPM 10/12/11
Misc :
ALS Vial : 4226 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 14 11:33:36 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111012\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Oct 13 16:09:25 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(34) 3-NITROTOLUENE #2 (TM)

18.194min 1039.104 ppb m

response 801360

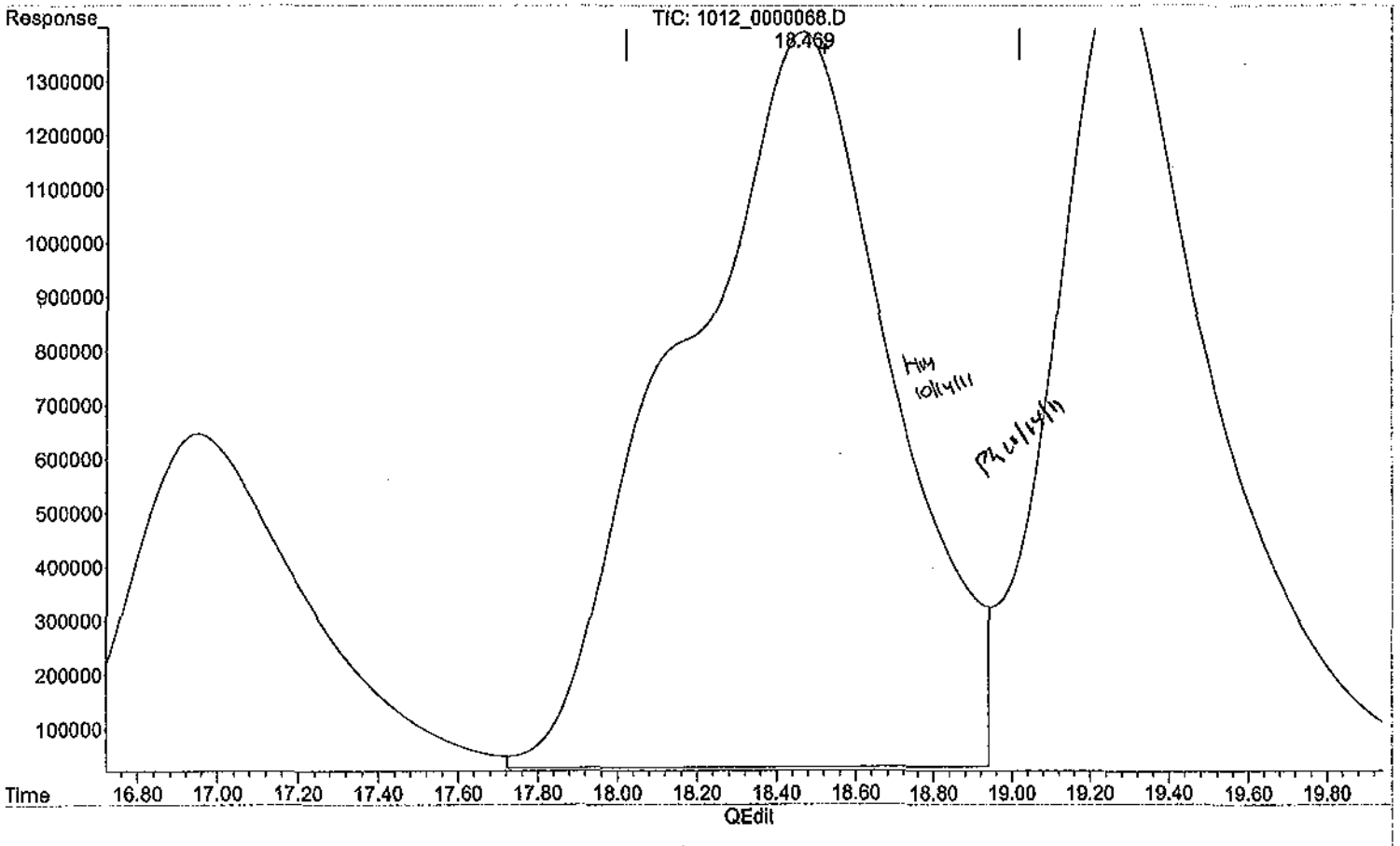
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111012\
Data File : 1012_0000068.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 14-Oct-2011, 10:49:40
Operator : MP
Sample : 8330MXA_CCV 1.0 PPM 10/12/11
Misc :
ALS Vial : 4226 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 14 11:33:36 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111012\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Oct 13 16:09:25 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(35) 4-AMINO-2,6-DINITROTOLUENE #2 (TM)

18.467min 1018.409 ppb

response 1362678

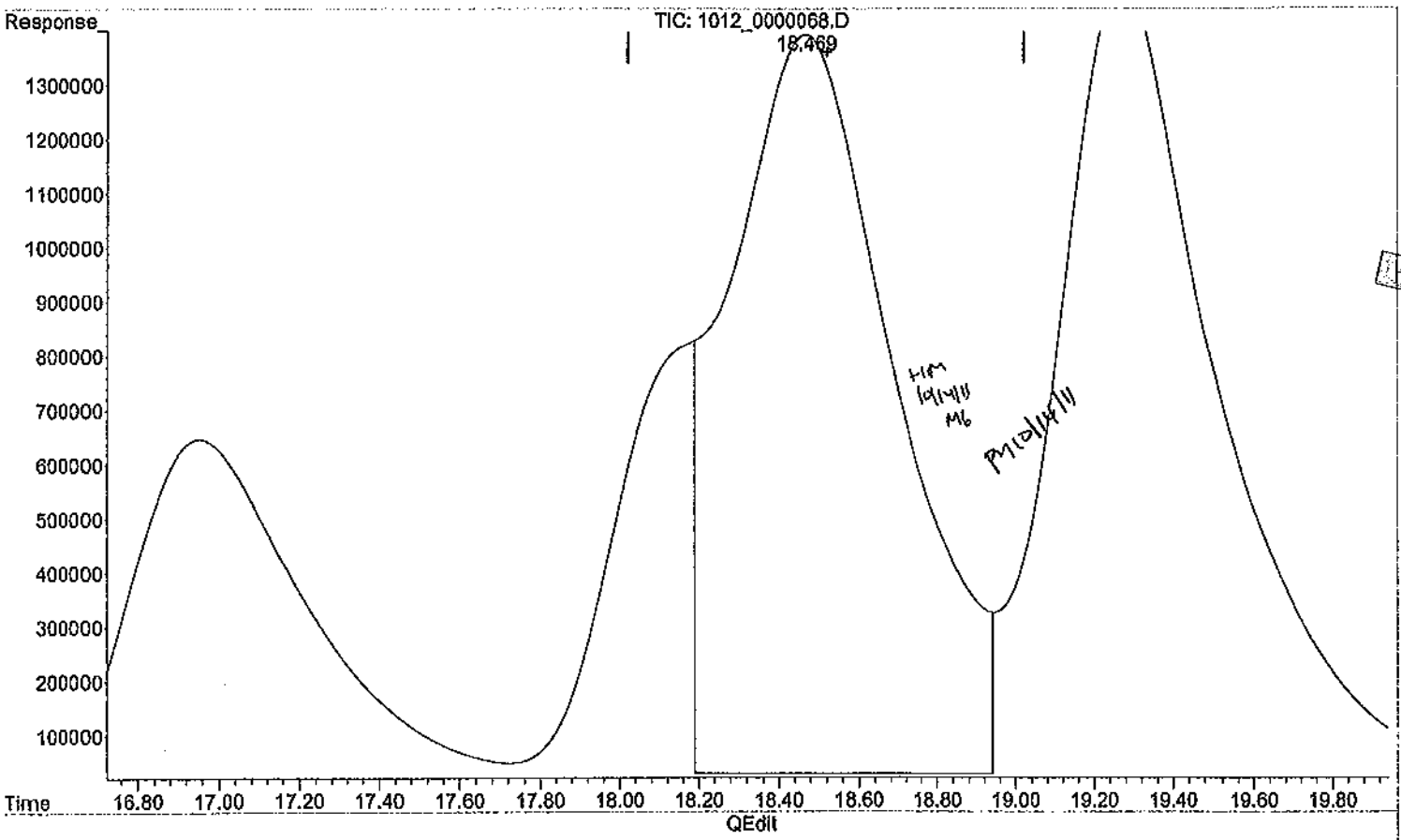
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111012\
Data File : 1012_0000068.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 14-Oct-2011, 10:49:40
Operator : MP
Sample : 8330MXA_CCV 1.0 PPM 10/12/11
Misc :
ALS Vial : 4226 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 14 11:33:36 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111012\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Oct 13 16:09:25 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(35) 4-AMINO-2,6-DINITROTOLUENE #2 (TM)

18.469min 1018.011 ppb m

response 1362145

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : H:\STATLER\CHEM32\1\DATA\111012\
Data File : 1012_0000069.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 14-Oct-2011, 11:31:10
Operator : MP
Sample : 8330MXB_CCV 1.0 PPM 10/12/11
Misc :
ALS Vial : 4227 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 14 12:12:15 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111012\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Oct 13 16:09:25 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	R.T.	Response	Conc	Units	
	System Monitoring Compounds					
4)	S 1,2-DINITROBENZENE #1	7.942	1023	NoCal	ppb	
23)	S 1,2-DINITROBENZENE #2	0.000	0	N.D.	ppb	d
	Target Compounds					
1)	TM HMX #1	0.000	0	N.D.	ppb	
2)	TM RDX #1	6.093	2902	NoCal	ppb	
3)	TM 1,3,5-TRINITROBENZENE #1	6.539	2944	NoCal	ppb	
5)	TM 1,3-DINITROBENZENE #1	8.191	2517	NoCal	ppb	
6)	TM NITROBENZENE #1	9.002	1556	NoCal	ppb	
7)	TM 2,4,6-TRINITROTOLUENE #1	11.406	1442	NoCal	ppb	
8)	TM TETRYL #1	11.928	297091	NoCal	ppb	
9)	TM NITROGLYCERIN #1	11.930	617623	871.638	ppb	m
10)	TM 2,6-DINITROTOLUENE #1	13.400	1147	NoCal	ppb	
11)	TM 2,4-DINITROTOLUENE #1	14.002	1372	NoCal	ppb	
12)	TM 2-NITROTOLUENE #1	15.330f	1663	NoCal	ppb	
13)	TM 3,5-DINITROANILINE #1	16.038	2090424	898.280	ppb	
14)	TM 4-NITROTOLUENE #1	17.178	1050	NoCal	ppb	
15)	TM 3-NITROTOLUENE #1	0.000	0	N.D.	ppb	
16)	TM 4-AMINO-2,6-DINITROTO...	0.000	0	N.D.	ppb	
17)	TM 2-AMINO-4,6-DINITROTO...	0.000	0	N.D.	ppb	
18)	TM PETN #1	22.904	660759	895.615	ppb	m
20)	TM HMX #2	0.000	0	N.D.	ppb	
21)	TM RDX #2	0.000	0	N.D.	ppb	d
22)	TM 1,3,5-TRINITROBENZENE #2	0.000	0	N.D.	ppb	d
24)	TM 1,3-DINITROBENZENE #2	0.000	0	N.D.	ppb	d
25)	TM NITROBENZENE #2	0.000	0	N.D.	ppb	d
26)	TM 2,4,6-TRINITROTOLUENE #2	0.000	0	N.D.	ppb	d
27)	TM TETRYL #2	0.000	0	N.D.	ppb	d
28)	TM NITROGLYCERIN #2	11.915	10430	NoCal	ppb	
29)	TM 2,6-DINITROTOLUENE #2	0.000	0	N.D.	ppb	d
30)	TM 2,4-DINITROTOLUENE #2	0.000	0	N.D.	ppb	d
31)	TM 2-NITROTOLUENE #2	0.000	0	N.D.	ppb	
32)	TM 3,5-DINITROANILINE #2	16.038f	1330126	NoCal	ppb	
33)	TM 4-NITROTOLUENE #2	0.000	0	N.D.	ppb	
34)	TM 3-NITROTOLUENE #2	0.000	0	N.D.	ppb	d
35)	TM 4-AMINO-2,6-DINITROTO...	0.000	0	N.D.	ppb	d
36)	TM 2-AMINO-4,6-DINITROTO...	0.000	0	N.D.	ppb	d
37)	TM PETN #2	22.908	13840	NoCal	ppb	

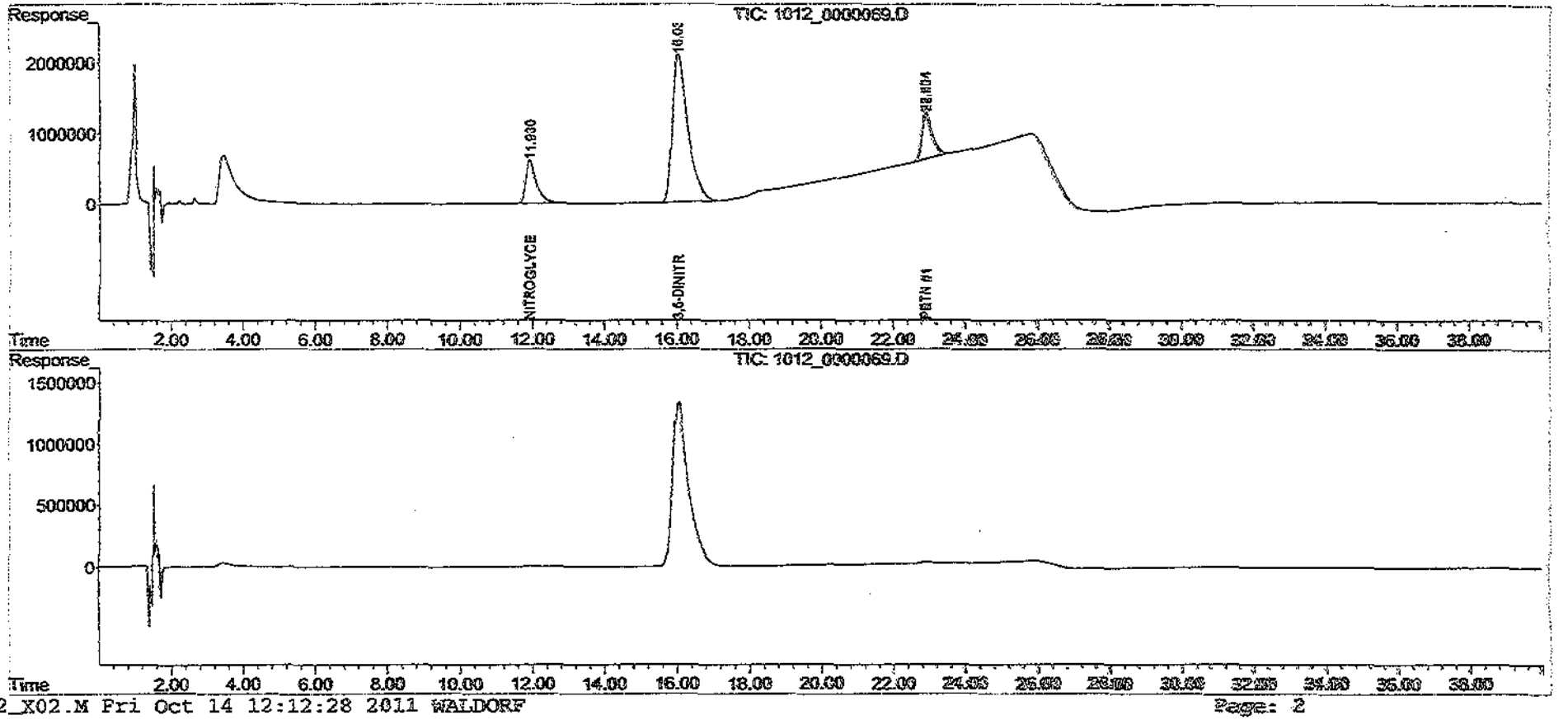
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\STATLER\CHEM32\1\DATA\111012\
Data File : 1012_0000069.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 14-Oct-2011, 11:31:10
Operator : MP
Sample : 8330MXB_CCV 1.0 PPM 10/12/11
Misc :
ALS Vial : 4227 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 14 12:12:15 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111012\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Oct 13 16:09:25 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

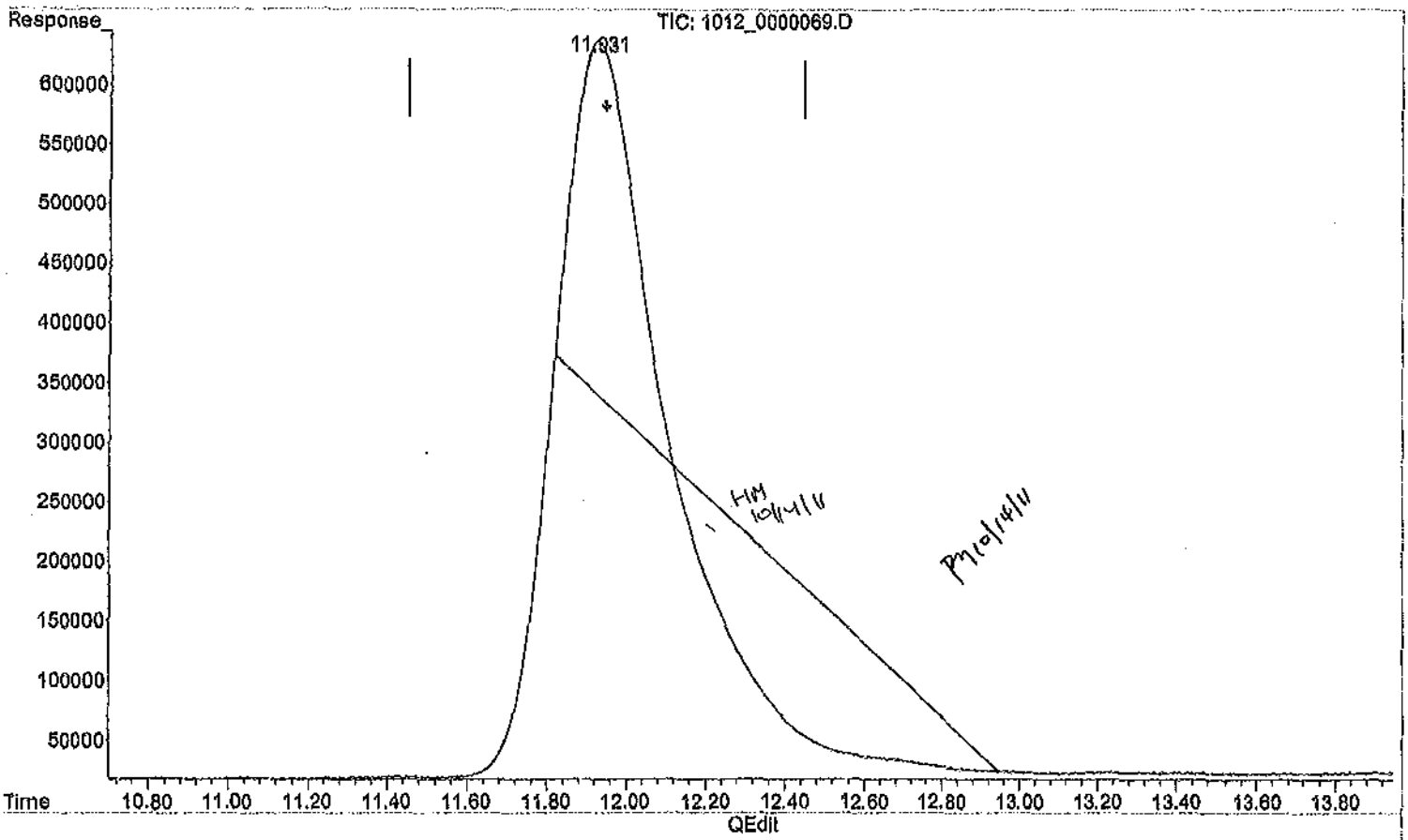


Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111012\
Data File : 1012_0000069.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 14-Oct-2011, 11:31:10
Operator : MP
Sample : 8330MXB_CCV 1.0 PPM 10/12/11
Misc :
ALS Vial : 4227 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 14 12:11:35 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111012\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Oct 13 16:09:25 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(9) NITROGLYCERIN #1 (TM)

11.928min 419.278 ppb

response 297091

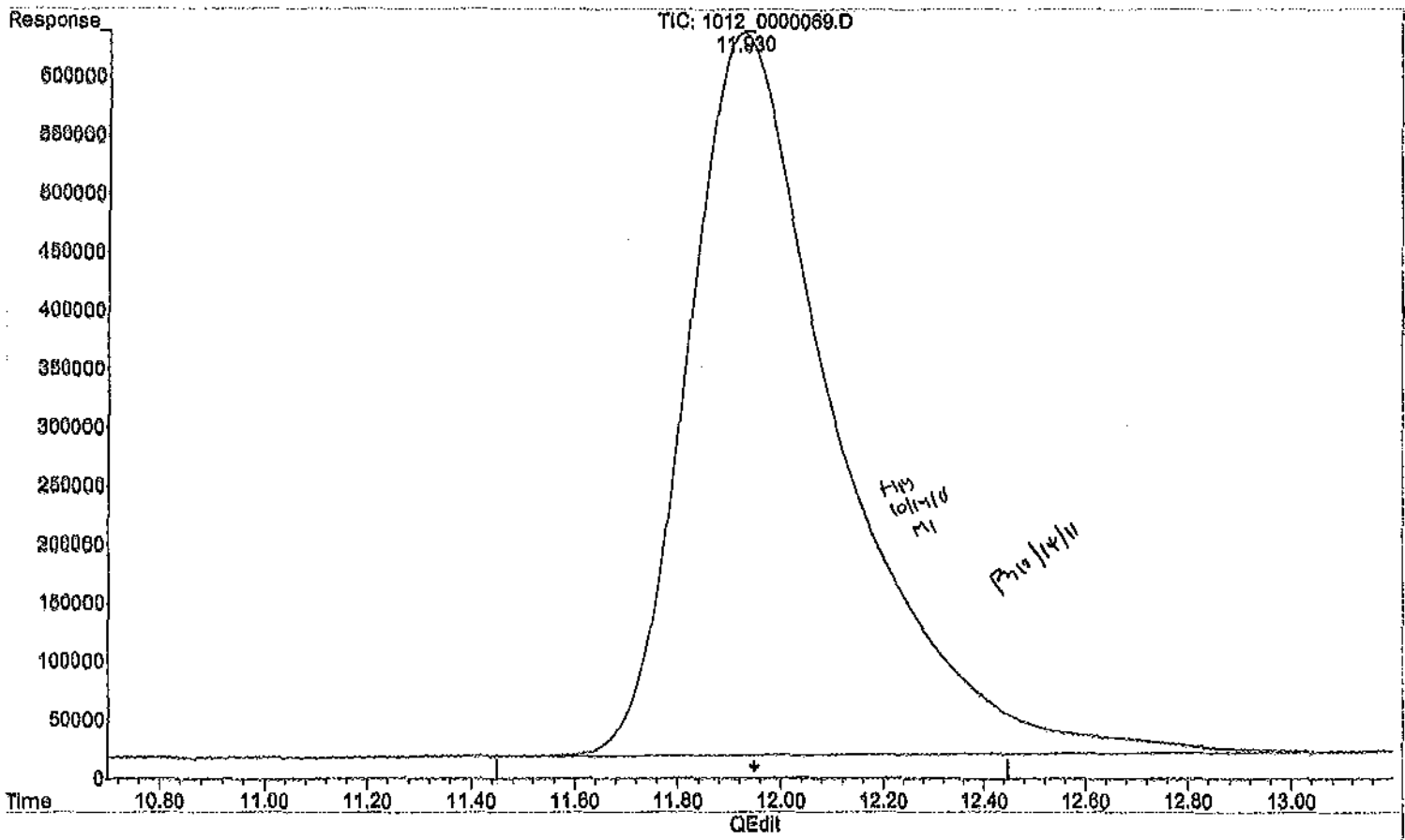
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111012\
Data File : 1012_0000069.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 14-Oct-2011, 11:31:10
Operator : MP
Sample : 8330MXB_CCV 1.0 PPM 10/12/11
Misc :
ALS Vial : 4227 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 14 12:11:35 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111012\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Oct 13 16:09:25 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(9) NITROGLYCERIN #1 (TM)

11.930min 871.638 ppb m

response 617623

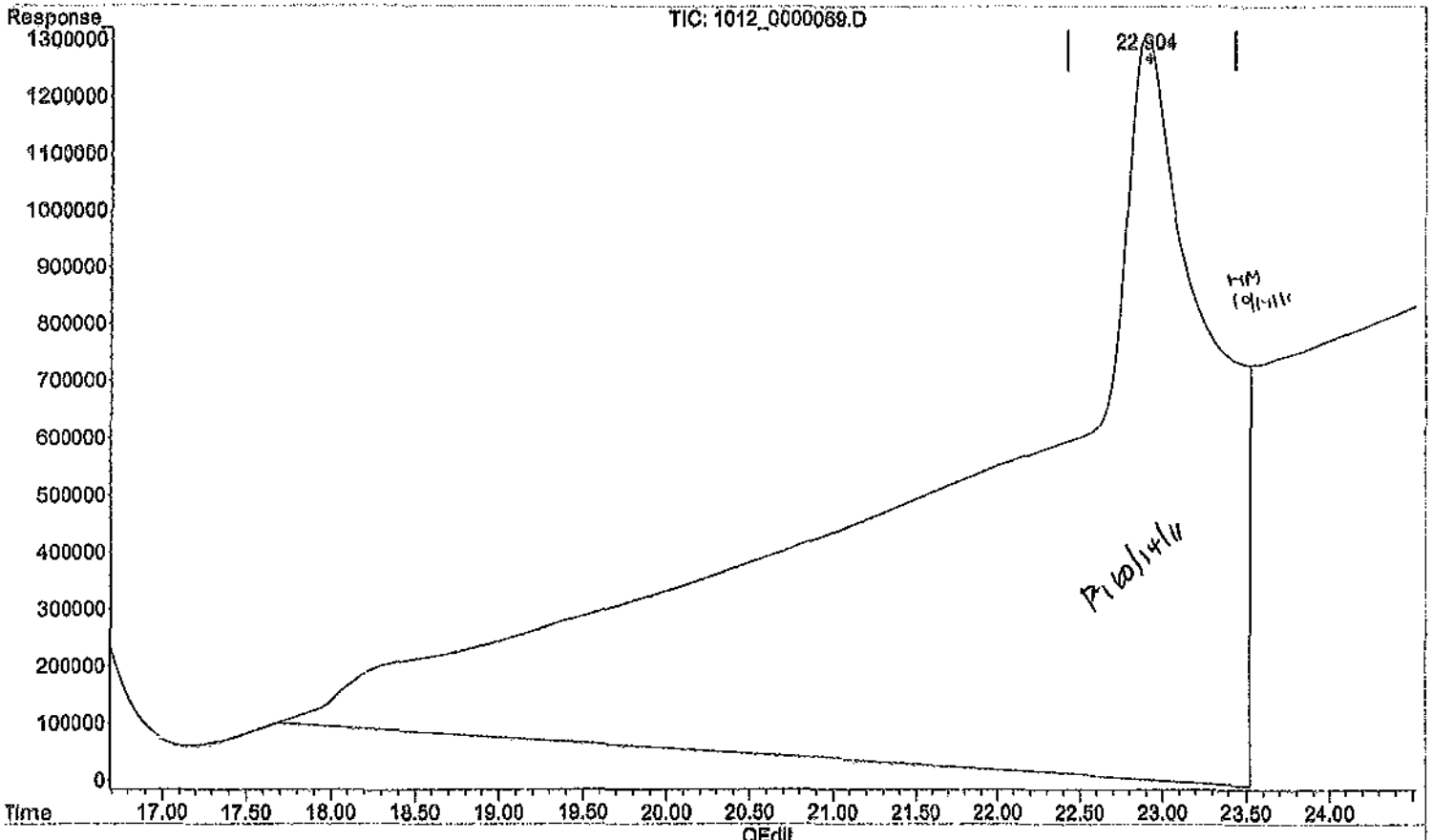
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111012\
Data File : 1012_0000069.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 14-Oct-2011, 11:31:10
Operator : MP
Sample : 8330MXB_CCV 1.0 PPM 10/12/11
Misc :
ALS Vial : 4227 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 14 12:11:35 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111012\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Oct 13 16:09:25 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(18) PETN #1 (TM)

22.910min 1773.577 ppb

response 1308495

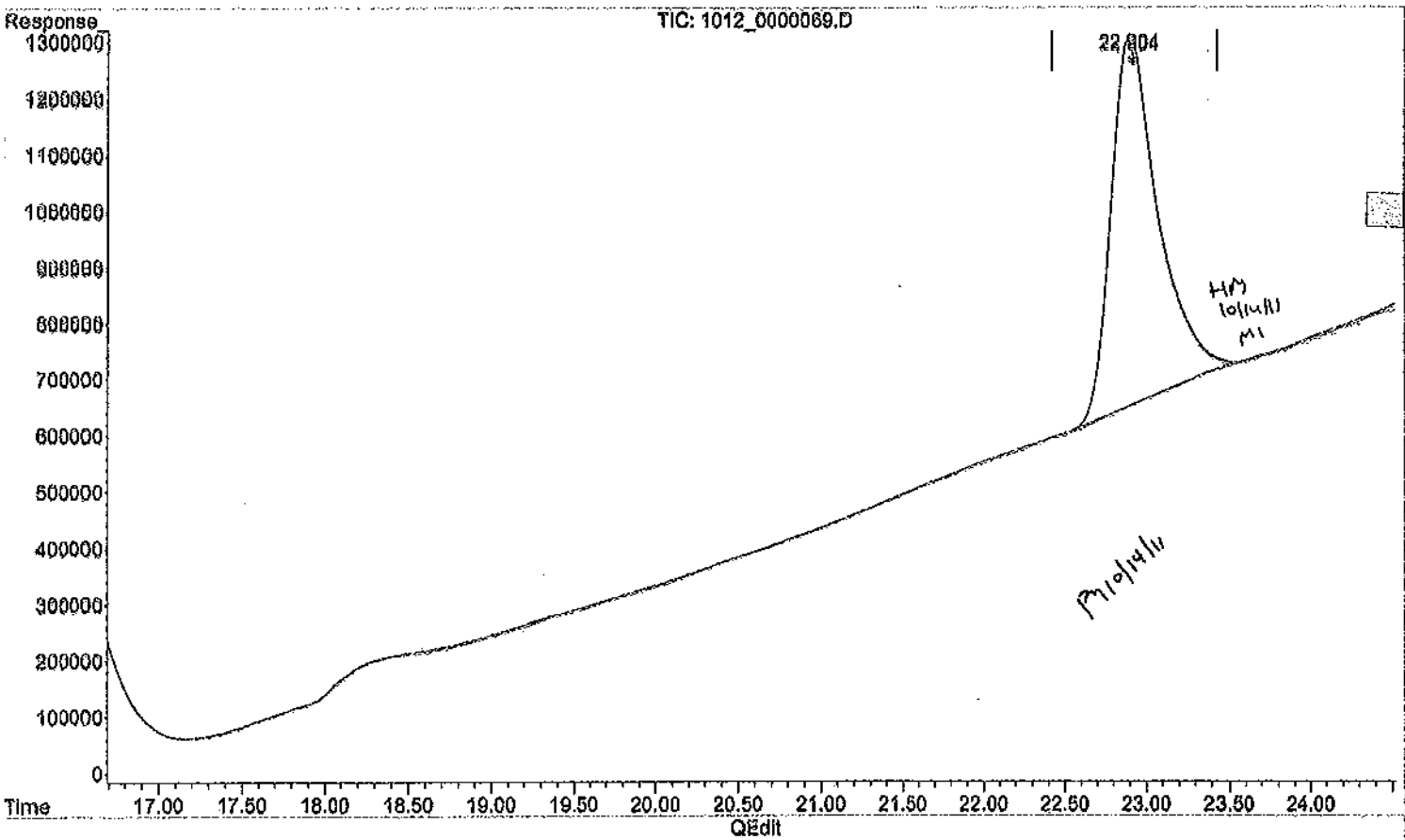
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111012\
Data File : 1012_0000069.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 14-Oct-2011, 11:31:10
Operator : MP
Sample : 8330MXB_CCV 1.0 PPM 10/12/11
Misc :
ALS Vial : 4227 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 14 12:11:35 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111012\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Oct 13 16:09:25 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 314nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(18) PETN #1 (TM)

22.904min 895.615 ppb m

response 660759

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : H:\STATLER\CHEM32\1\DATA\111012\
Data File : 1012_0000072.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 14-Oct-2011, 13:37:12
Operator : MP
Sample : 8330MXA_CCV 1.0 PPM 10/12/11
Misc :
ALS Vial : 4226 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 14 14:35:38 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111012\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Oct 13 16:09:25 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	R.T.	Response	Conc	Units	
	System Monitoring Compounds					
4) S	1,2-DINITROBENZENE #1	7.857	3193272	NoCal	ppb	
23) S	1,2-DINITROBENZENE #2	7.857	1701480	1013.794	ppb	
	Target Compounds					
1) TM	HMX #1	3.825	4514233	NoCal	ppb	
2) TM	RDX #1	6.062	3087920	NoCal	ppb	
3) TM	1,3,5-TRINITROBENZENE #1	6.502	6251556	NoCal	ppb	
5) TM	1,3-DINITROBENZENE #1	8.109	3225277	NoCal	ppb	
6) TM	NITROBENZENE #1	8.943	1821428	NoCal	ppb	
7) TM	2,4,6-TRINITROTOLUENE #1	11.300	2585240	NoCal	ppb	
8) TM	TETRYL #1	11.823	2381072	NoCal	ppb	
9) TM	NITROGLYCERIN #1	0.000	0	N.D.	ppb	d
10) TM	2,6-DINITROTOLUENE #1	13.334	1690010	NoCal	ppb	
11) TM	2,4-DINITROTOLUENE #1	13.840	1579371	NoCal	ppb	
12) TM	2-NITROTOLUENE #1	15.499	1107503	NoCal	ppb	
13) TM	3,5-DINITROANILINE #1	0.000	0	N.D.	ppb	
14) TM	4-NITROTOLUENE #1	16.931	938864	NoCal	ppb	
15) TM	3-NITROTOLUENE #1	18.442f	2300423	NoCal	ppb	
16) TM	4-AMINO-2,6-DINITROTO...	18.442	2300423	NoCal	ppb	
17) TM	2-AMINO-4,6-DINITROTO...	19.248	1987773	NoCal	ppb	
18) TM	PETN #1	0.000	0	N.D.	ppb	
20) TM	HMX #2	3.825	1916621	933.117	ppb	
21) TM	RDX #2	6.062	1561143	989.096	ppb	
22) TM	1,3,5-TRINITROBENZENE #2	6.502	3785366	1030.479	ppb	
24) TM	1,3-DINITROBENZENE #2	8.115	3841210	1017.083	ppb	
25) TM	NITROBENZENE #2	8.943	1851532	963.620	ppb	
26) TM	2,4,6-TRINITROTOLUENE #2	11.301	1984456	1007.363	ppb	
27) TM	TETRYL #2	11.822	1465732	1022.667	ppb	
28) TM	NITROGLYCERIN #2	11.822	1465732	NoCal	ppb	
29) TM	2,6-DINITROTOLUENE #2	13.334	1137652	978.938	ppb	
30) TM	2,4-DINITROTOLUENE #2	13.846	2039189	1012.536	ppb	
31) TM	2-NITROTOLUENE #2	15.499	680229	953.877	ppb	
32) TM	3,5-DINITROANILINE #2	0.000	0	N.D.	ppb	
33) TM	4-NITROTOLUENE #2	16.930	617743	943.415	ppb	
34) TM	3-NITROTOLUENE #2	18.157	790869	1025.500	ppb	m
35) TM	4-AMINO-2,6-DINITROTO...	18.443	1366540	1021.296	ppb	m
36) TM	2-AMINO-4,6-DINITROTO...	19.249	1459657	1014.180	ppb	
37) TM	PETN #2	0.000	0	N.D.	ppb	

(f)=RT Delta > 1/2 Window (m)=manual int.

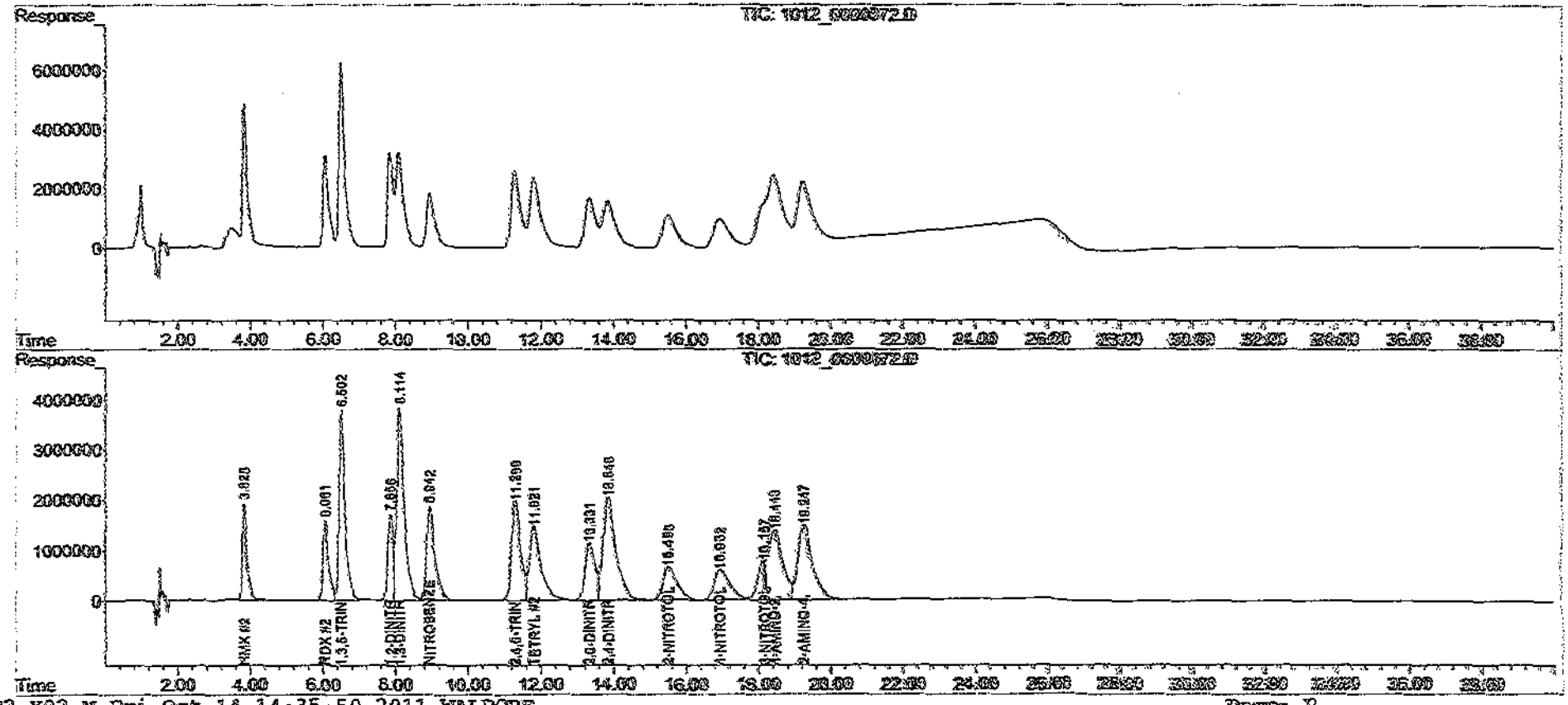
Quantitation Report (QT Reviewed)

Data Path : H:\STATLER\CHEM32\1\DATA\111012\
Data File : 1012_0000072.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 14-Oct-2011, 13:37:12
Operator : MP
Sample : 8330MXA_CCV 1.0 PPM 10/12/11
Misc :
ALS Vial : 4226 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 14 14:35:38 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111012\STE2_X02.M
Quant Title : 8330S - STATLER
QLast Update : Thu Oct 13 16:09:25 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

270

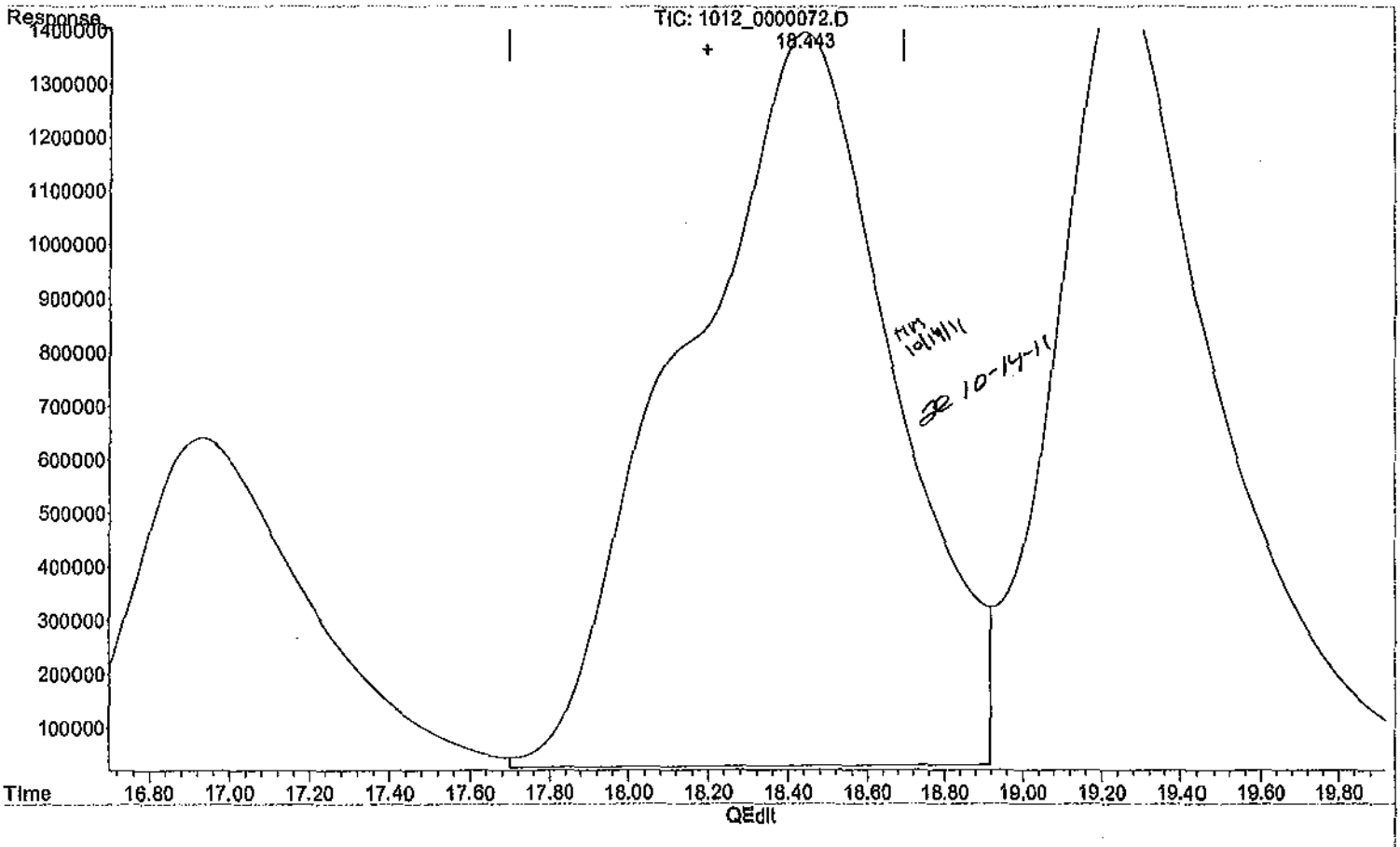


Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111012\
Data File : 1012_0000072.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 14-Oct-2011, 13:37:12
Operator : MP
Sample : 8330MXA_CCV 1.0 PPM 10/12/11
Misc :
ALS Vial : 4226 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 14 14:28:38 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111012\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Oct 13 16:09:25 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(34) 3-NITROTOLUENE #2 (TM)

18.443min 1773.927 ppb

response 1368058

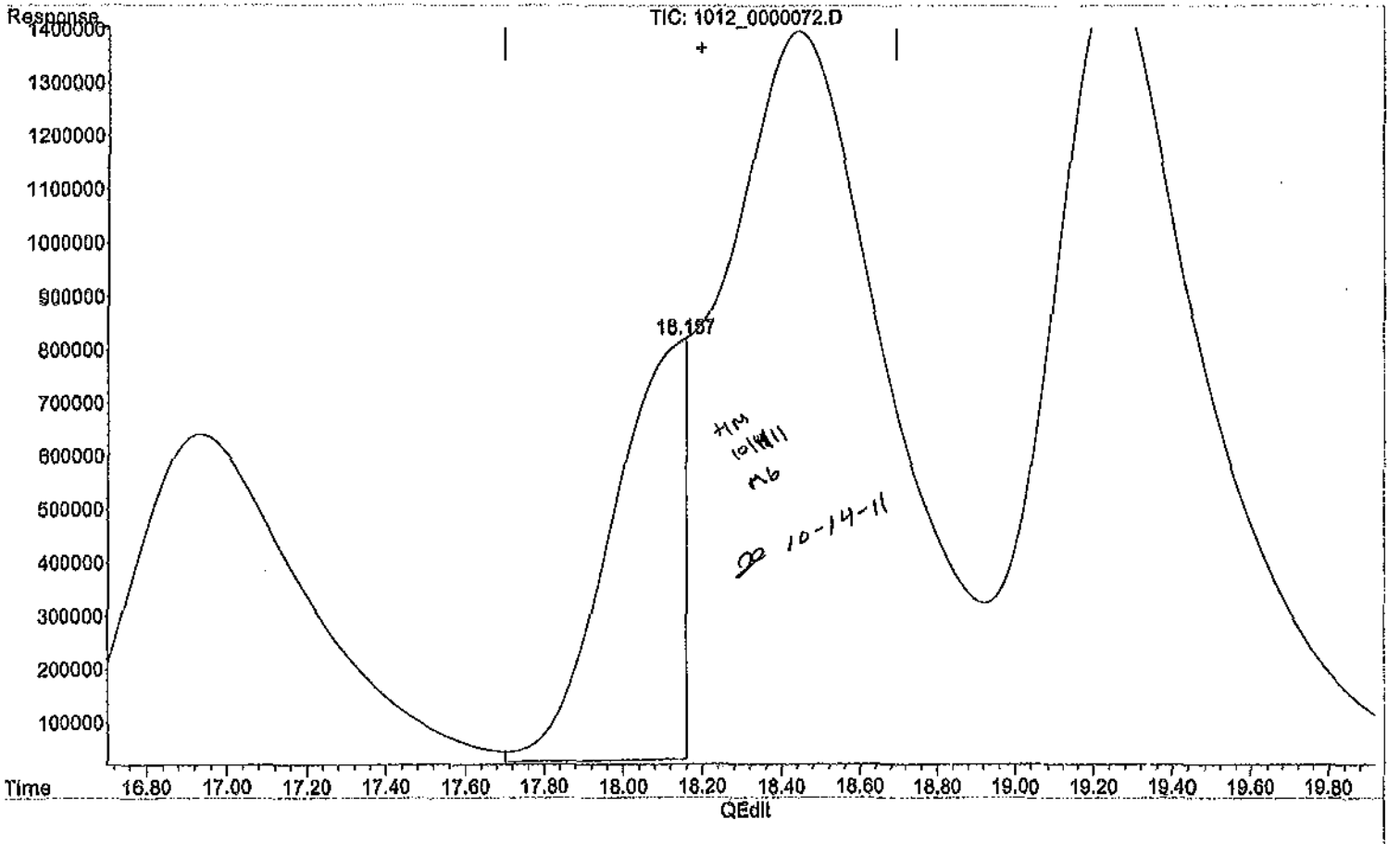
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111012\
Data File : 1012_0000072.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 14-Oct-2011, 13:37:12
Operator : MP
Sample : 8330MXA_CCV 1.0 PPM 10/12/11
Misc :
ALS Vial : 4226 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 14 14:28:38 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111012\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Oct 13 16:09:25 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(34) 3-NITROTOLUENE #2 (TM)

18.157min 1025.500 ppb m

response 790869

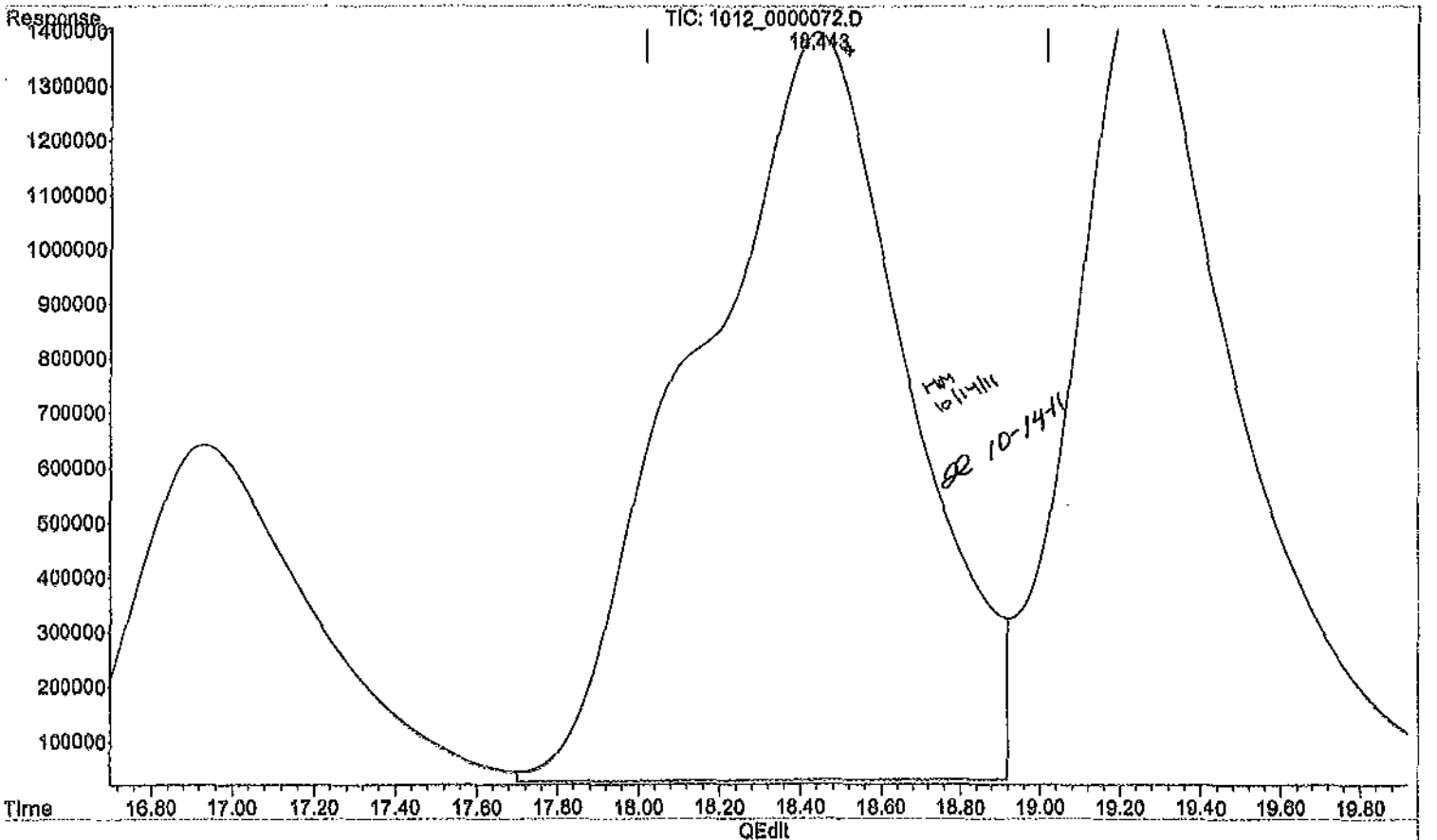
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111012\
Data File : 1012_0000072.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 14-Oct-2011, 13:37:12
Operator : MP
Sample : 8330MXA_CCV 1.0 PPM 10/12/11
Misc :
ALS Vial : 4226 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 14 14:28:38 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111012\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Oct 13 16:09:25 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(35) 4-AMINO-2,6-DINITROTOLUENE #2 (TM)

18.443min 1022.430 ppb

response 1368058

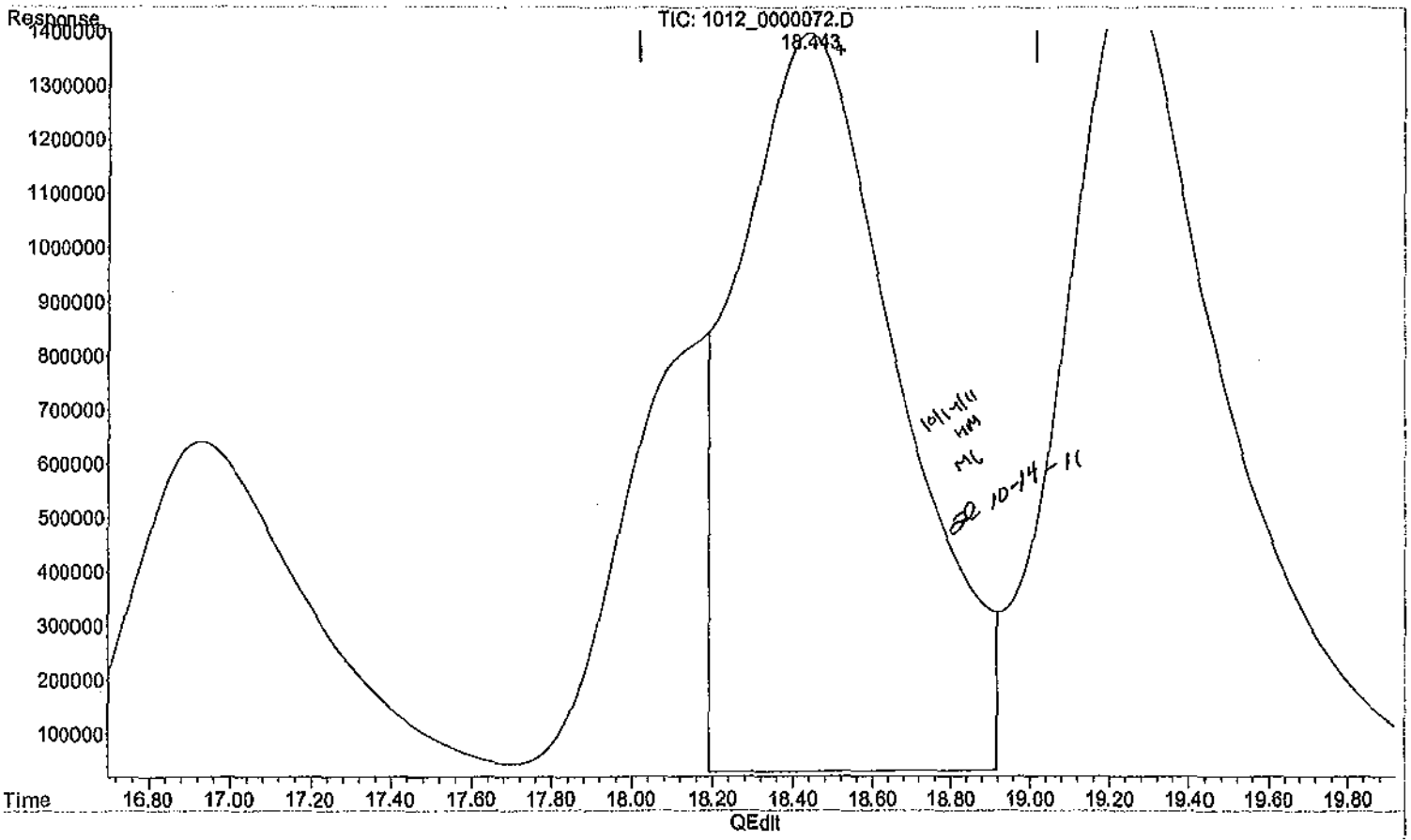
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111012\
Data File : 1012_0000072.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 14-Oct-2011, 13:37:12
Operator : MP
Sample : 8330MXA_CCV 1.0 PPM 10/12/11
Misc :
ALS Vial : 4226 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 14 14:28:38 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111012\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Oct 13 16:09:25 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(35) 4-AMINO-2,6-DINITROTOLUENE #2 (TM)

18.443min 1021.296 ppb m

response 1366540

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : H:\STATLER\CHEM32\1\DATA\111012\
Data File : 1012_0000073.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 14-Oct-2011, 14:18:42
Operator : MP
Sample : 8330MXB_CCV 1.0 PPM 10/12/11
Misc :
ALS Vial : 4227 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 14 15:00:05 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111012\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Oct 13 16:09:25 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	R.T.	Response	Conc	Units	
	System Monitoring Compounds					
4)	S 1,2-DINITROBENZENE #1	7.938	1430	NoCal	ppb	
23)	S 1,2-DINITROBENZENE #2	0.000	0	N.D.	ppb	d
	Target Compounds					
1)	TM HMX #1	0.000	0	N.D.	ppb	
2)	TM RDX #1	6.073	4433	NoCal	ppb	
3)	TM 1,3,5-TRINITROBENZENE #1	6.512	4384	NoCal	ppb	
5)	TM 1,3-DINITROBENZENE #1	8.165	2025	NoCal	ppb	
6)	TM NITROBENZENE #1	8.941	1725	NoCal	ppb	
7)	TM 2,4,6-TRINITROTOLUENE #1	11.436	1802	NoCal	ppb	
8)	TM TETRYL #1	11.915	619872	NoCal	ppb	
9)	TM NITROGLYCERIN #1	11.915	619872	874.812	ppb	
10)	TM 2,6-DINITROTOLUENE #1	13.388	2449	NoCal	ppb	
11)	TM 2,4-DINITROTOLUENE #1	14.110	1551	NoCal	ppb	
12)	TM 2-NITROTOLUENE #1	15.327f	998	NoCal	ppb	
13)	TM 3,5-DINITROANILINE #1	16.011	2099288	902.089	ppb	
14)	TM 4-NITROTOLUENE #1	0.000	0	N.D.	ppb	
15)	TM 3-NITROTOLUENE #1	0.000	0	N.D.	ppb	
16)	TM 4-AMINO-2,6-DINITROTO...	0.000	0	N.D.	ppb	
17)	TM 2-AMINO-4,6-DINITROTO...	0.000	0	N.D.	ppb	
18)	TM PETN #1	22.890	664897	901.223	ppb	m
20)	TM HMX #2	0.000	0	N.D.	ppb	
21)	TM RDX #2	0.000	0	N.D.	ppb	d
22)	TM 1,3,5-TRINITROBENZENE #2	0.000	0	N.D.	ppb	d
24)	TM 1,3-DINITROBENZENE #2	0.000	0	N.D.	ppb	d
25)	TM NITROBENZENE #2	0.000	0	N.D.	ppb	d
26)	TM 2,4,6-TRINITROTOLUENE #2	0.000	0	N.D.	ppb	d
27)	TM TETRYL #2	0.000	0	N.D.	ppb	d
28)	TM NITROGLYCERIN #2	11.919	10429	NoCal	ppb	
29)	TM 2,6-DINITROTOLUENE #2	0.000	0	N.D.	ppb	d
30)	TM 2,4-DINITROTOLUENE #2	0.000	0	N.D.	ppb	d
31)	TM 2-NITROTOLUENE #2	0.000	0	N.D.	ppb	d
32)	TM 3,5-DINITROANILINE #2	16.011f	1333444	NoCal	ppb	
33)	TM 4-NITROTOLUENE #2	0.000	0	N.D.	ppb	
34)	TM 3-NITROTOLUENE #2	0.000	0	N.D.	ppb	
35)	TM 4-AMINO-2,6-DINITROTO...	0.000	0	N.D.	ppb	d
36)	TM 2-AMINO-4,6-DINITROTO...	0.000	0	N.D.	ppb	
37)	TM PETN #2	22.896	15847	NoCal	ppb	

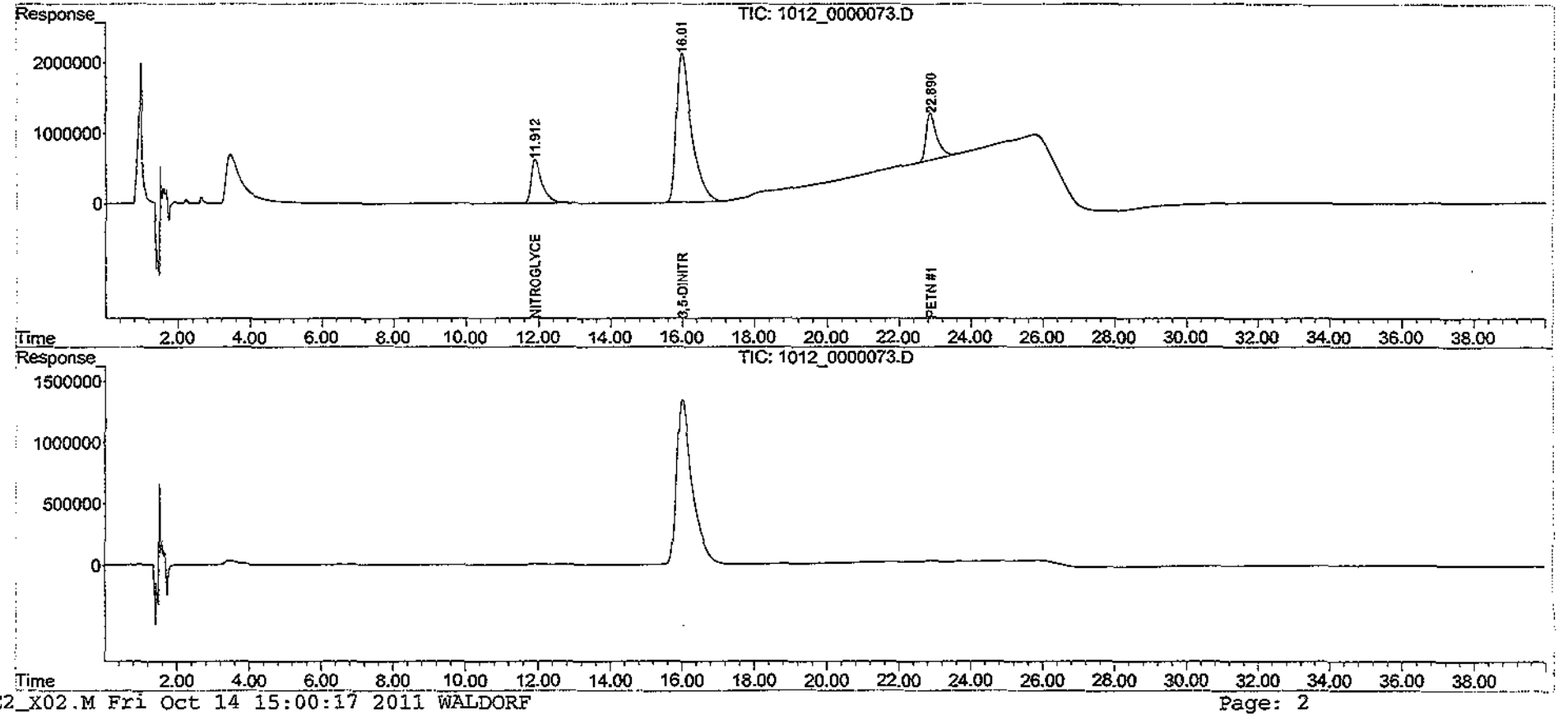
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\STATLER\CHEM32\1\DATA\111012\
Data File : 1012_0000073.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 14-Oct-2011, 14:18:42
Operator : MP
Sample : 8330MXB_CCV 1.0 PPM 10/12/11
Misc :
ALS Vial : 4227 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 14 15:00:05 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111012\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Oct 13 16:09:25 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

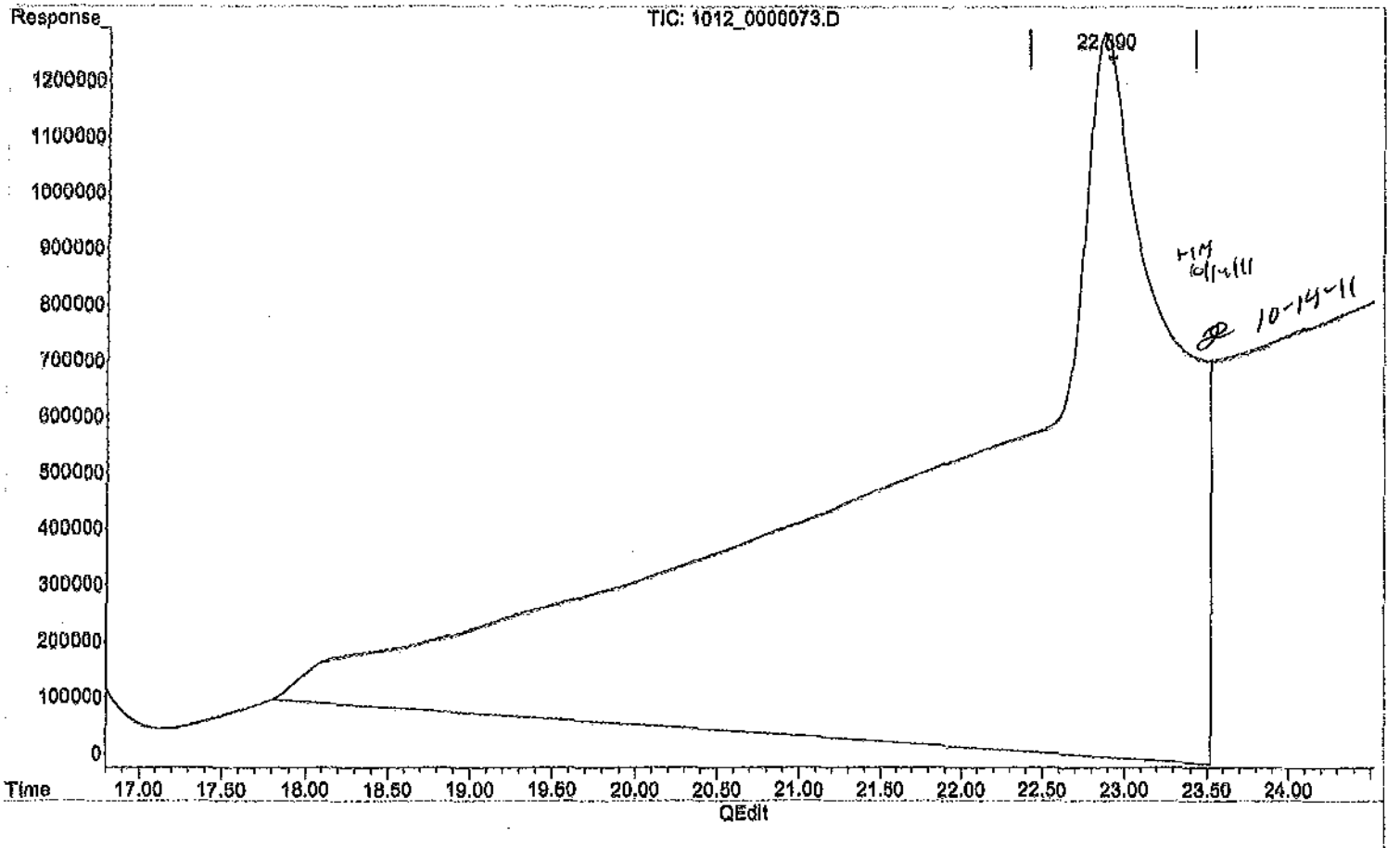


Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111012\
Data File : 1012_0000073.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 14-Oct-2011, 14:18:42
Operator : MP
Sample : 8330MXB_CCV 1.0 PPM 10/12/11
Misc :
ALS Vial : 4227 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 14 14:59:30 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111012\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Oct 13 16:09:25 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(18) PETN #1 (TM)

22.890min 1749.417 ppb

response 1290671

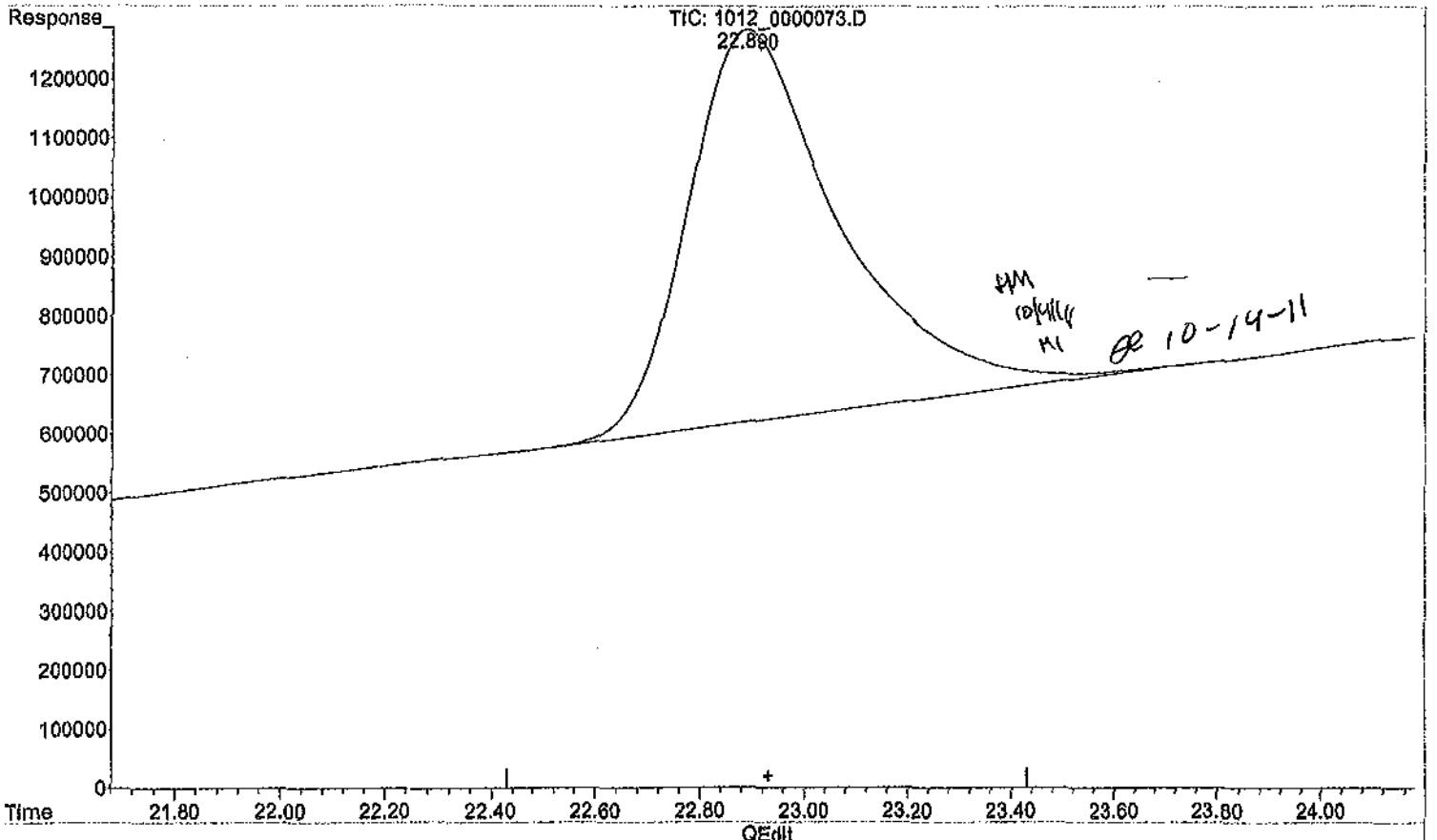
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\STATLER\CHEM32\1\DATA\111012\
Data File : 1012_0000073.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 14-Oct-2011, 14:18:42
Operator : MP
Sample : 8330MXB_CCV 1.0 PPM 10/12/11
Misc :
ALS Vial : 4227 Sample Multiplier: 1

Integration File signal 1: Statler_Signal_1_110914.e
Integration File signal 2: Statler_Signal_2_110914.e
Quant Time: Oct 14 14:59:30 2011
Quant Method : H:\STATLER\CHEM32\1\DATA\111012\STE2_X02.M
Quant Title : 8330B - STATLER
QLast Update : Thu Oct 13 16:09:25 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(18) PETN #1 (TM)

22.890min 901.223 ppb m

response 664897

(+) = Expected Retention Time

Miscellaneous

125 Market Street
New Haven, CT 06513
USA

Explosive by HPLC
Lot#: [illegible]
Rev. [illegible] exp. 12/09/10

AccuStandard®, Inc.

CERTIFICATE OF ANALYSIS

CATALOG NO: M-8330B-R-10X

EXPIRATION: Dec 9, 2010

DESCRIPTION: Explosive by HPLC

LOT: B6120095

See reverse for additional certification information.

SOLVENT: MeOH:AcCN (1:1)

This product is guaranteed to be within ±0.5% of the Certified Analyte concentration through the Expiration Date on the Label.

Component	CAS #	Purity % (HPLC)	Prepared Concentration[1] (µg/mL)	Certified Analyte Concentration[2] (µg/mL)
Tetryl	479-45-8	99.4	1002	996
2,6-Dinitrotoluene	606-20-2	100	1005	1005
2-Nitrotoluene	88-72-2	99.0	1002	992
3-Nitrotoluene	99-08-1	98.7	1003	990
4-Nitrotoluene	99-99-0	99.2	1010	1002
2-Amino-4,6-dinitrotoluene	35572-78-2	97.8	1027*	1004
4-Amino-2,6-dinitrotoluene	19406-51-0	98.5	1005	

7 Components

1. All weights are traceable through NIST, Test No. [illegible]

2. Certified Analyte Concentration = Purity x Prepared Concentration. The Uncertainty calculated for this product is ±4% which is the Combined Uncertainty (Uc). It represents an estimated standard deviation equal to the positive square root of the total variance of the uncertainty of components. The Expanded Uncertainty is U which is Uc(y)*K where K is the coverage factor at the 95% confidence level (K=2).

3. A product with a suffix (-1A, -1B, etc) on its lot number has expiration date extended and is identical to the same lot without the suffix.

*Weight compensated to 100% purity

Certified by: R. Cooper

AccuStandard is accredited to ISO/IEC 17025:2005 and certified to ISO 9001:2000

CRC [illegible]
Rev. [illegible]

AccuStandard

125 Market Street
New Haven, CT 06513
USA

Method 8330 - Mix A
Lot: B2120217-SC - 85189
Rec 2/3/09 MFR exp. 10/24/09

Website AccuStandard.com

AccuStandard, Inc.

CERTIFICATE OF ANALYSIS

CATALOG NO: M-8330A-10X

EXPIRATION: Oct 24, 2009

DESCRIPTION: Method 8330 - Mix A

LOT: B2120217-SC See reverse for additional certification information.

SOLVENT: MeOH:AcCN (1:1)

This product is guaranteed accurate to ± 0.5% of the Certified Analyte concentration through the Expiration Date on the Label.

Component	CAS #	Purity % (GC/MS)	Prepared Concentration[1] (µg/mL)	Certified Analyte Concentration[2] (µg/mL)
1,3-Dinitrobenzene	99-65-0	97.0	1031 *	1000
2,4-Dinitrotoluene	121-14-2	100	1001	1001
HMX	2691-41-0	98.7	1001	988
Nitrobenzene	98-95-3	99.8	1002	1000
RDX	121-82-4	98.0	1000	980
1,3,5-Trinitrobenzene	99-35-4	99.8	1001	999
TNT	118-96-7	99.9	1000	

7 Components

1. All weights are traceable through NIST, Test No. [illegible]

2. Certified Analyte Concentration = Purity x Prepared Concentration. The Uncertainty calculated for this product is [illegible] which is the Combined Uncertainty u(y). It represents an estimated standard deviation equal to the positive square root of the total variance of the uncertainty of components. The Expanded Uncertainty is U which is U(y) * K where K is the coverage factor at the 95% confidence level (K=2).

3. A product with a suffix (-1A, -2B, etc) on its lot number is an expiration date extended and is identical to the same lot without the suffix.

Weight compensated to 100% purity

Certified by: R. Cooper

AccuStandard is accredited to ISO/IEC 17025:2005 and certified to ISO 9001:2000

QR-CRO/NO-001
Rev. [illegible]

AccuStandard

125 Market Street
New Haven, CT 06513 USA

PETN
Lot #: B7100198-22434
Rec: 7/24/09 Exp: 10/19/09

AccuStandard, Inc.

CERTIFICATE OF ANALYSIS

CATALOG NO. M-8330-ADD-2-10X

DESCRIPTION: Individual Explosives Solution

EXPIRATION: Oct 19, 2009

LOT: B7100198

SOLVENT: MeOH

This product is guaranteed traceable to SI Units of the Certified Analytical Concentration through its Stated Uncertainty Limit.

See reverse for additional certification information.

Component	CAS #	Purity % (HPLC)	Prepared Concentration[1] (µg/mL)	Certified Analyte Concentration[2] (µg/mL)
PETN	78-11-5	99.3	1003	996

1. All weights are traceable through NIST, Test No. 822/281010-10
2. Certified Analyte Concentration = Purity x Prepared Concentration. The Uncertainty calculated for this product is the Combined Uncertainty (uc). It represents estimated standard deviation equal to the positive square root of the total variance of the uncertainty components. The Expanded Uncertainty (U which is U=kuc) (Coverage Factor k is the numerical factor used as a multiplier of the Combined Uncertainty (uc) in order to obtain an Expanded Uncertainty (U) corresponding to a confidence level of approximately 95%).
3. A product with a suffix (-1A, -2B, etc) on its label has the same concentration as the standard but is diluted to the volume without the suffix.

Please note: AccuStandard follows the U.S. conventions in reporting numerical values, on both certificates and labels.

A comma (,) is used to separate units of one-thousand or greater.
A period (.) is used as a decimal placemarker.

Certified by: R. Cooper

AccuStandard is accredited to ISO/IEC 17025:2005

QP-ORGANIC-021
Rev 12/07

125 Market Street
New Haven, CT 06513 USA

Nitroglycerin
Lot#: B6040088-1A-[illegible]
Rec: 7/24/06 [illegible] exp: 10/18/09

AccuStandard®, Inc.

CERTIFICATE OF ANALYSIS

CATALOG NO. M-8330-ADD-1-10X

DESCRIPTION: Individual Explosives Solution

EXPIRATION: Oct 18, 2009

LOT: B6040088-1A

SOLVENT: EtOH : MeOH (97::3)

This product is guaranteed accurate to ±0.5% of the Certified Analyte concentration through the Expiration Date on the Label.

See reverse for additional certification information.

Component	CAS #	Purity % (HPLC)	Prepared Concentration[1] (µg/mL)	Certified Analyte Concentration[2] (µg/mL)
Nitroglycerin	55-63-0	100	1000	1000

Please note: AccuStandard follows the U.S. conventions in reporting numerical values, on both certificates and labels.

A comma (,) is used to separate units of one-thousand or greater.
A period (.) is used as a decimal place marker.

1. All weights are traceable through NIST, Test No. [illegible]
2. Certified Analyte Concentration = Purity x Prepared Concentration. The Uncertainty calculated for this product is [illegible] which is the Combined Uncertainty u(y). It represents an estimated standard deviation equal to the positive square root of the total variance of the uncertainty components. The Expanded Uncertainty is U which is U(y) * K where K is the coverage factor at the 95% confidence level (K=2).
3. A product with a suffix (-1A, -2B, etc.) are for lot tracking purposes and are identical to the same lot without the suffix.

Certified by: R. Cooper

AccuStandard is accredited to ISO/IEC 17025:2005

CR-ORG-[illegible]
Rev [illegible]

1,2-Dinitrobenzene
Lot#: 142799-99188
Rec: 8/2009 MFR exp. 02/2012

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2030 Savage Road
Charleston, South Carolina 29407
Phone (866) 272-0932
Fax (843) 766-9162
www.o2si.com

Quality System
Audited & Registered
by NSF-ISR to ISO 9001:2000

Date Received: _____

Certificate of Analysis

Catalog No.:	Lot No.:	Storage:	Solvent:	Exp. Date:	Description:
010086-01	142799	<10 Degrees C	Acetonitrile	3-Feb-2012	1,2-Dinitrobenzene Solution, 1,000 mg/L, 1 ml

Compound	CAS No.	Purity (%)	Neat Material Lot No.	Concentration, mg/L
1,2-dinitrobenzene	528-29-0	99	86128P	1002 +/- 14.02

Certified By: Lindsay E Edwards
Lindsay Edwards

All weights are traceable through N. I. S. T. Test No. 822/264157-00.
Concentration (correct for purity) and uncertainty (95% confidence) values listed are determined gravimetrically.

800-368-1131
www.absolutestandards.com

ISO 9001 QS Registered
ISO 17025 Accredited

CERTIFIED WEIGHT REPORT

Part Number:	95093	Lot #: E37816	Solvent(s): Acetonitrile
Lot Number:	051208		
Description:	8330 Mix A		
	9 components		
Expiration Date:	051211		
Nominal Concentration (µg/mL):	100		

Formulated By: Justin Dippold 051208 DATE

Reviewed By: Pedro L. Rentas 051208 DATE

Volume(s) shown below were combined and diluted to: 10.0

5E-05 Balance Uncertainty
0.001 Flask Uncertainty

MSDS Information (Solvent Safety Info. On Attached pg.)

Compound	Part Number	Lot Number	Dil. Factor	Initial Vol. (mL)	Uncertainty Pipette	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty (+/-)	CAS#	OSHA PEL (TWA)	LD50
1. 4-Amino-2,6-dinitrotoluene	79070	062707	0.10	1.00	0.002	1001.6	100.2	0.00444	00000-00-0	N/A	N/A
2. 3,5-Dinitroaniline	71772	101807	0.10	1.00	0.002	1004.3	100.4	0.00581	00618-87-1	N/A	N/A
3. 1,3-Dinitrobenzene	79071	071706	0.10	1.00	0.002	1001.1	100.1	0.00451	00099-65-0	1mg/m3/8H (skin)	orl-rat 83mg/kg
4. 2,4-Dinitrotoluene	79072	110206	0.10	1.00	0.002	1002.8	100.3	0.00451	00121-14-2	1.5mg/m3/8H (skin)	orl-rat 268mg/kg
5. HMX	79074	041806	0.10	1.00	0.002	1000.7	100.1	0.00451	02691-41-0	N/A	N/A
6. Nitrobenzene	79075	100906	0.10	1.00	0.002	1003.4	100.4	0.00416	00098-95-3	1 ppm (5mg/m3/8H)(skin)	orl-rat 780mg/kg
7. 3-Nitrotoluene	79077	100906	0.10	1.00	0.002	1002.6	100.3	0.00417	00099-08-1	2 ppm (11mg/m3/8H)(skin)	orl-rat 1072mg/kg
8. RDX	79079	060904	0.10	1.00	0.002	1000.7	100.1	0.00581	00121-82-4	N/A	N/A
9. Trinitroglycerin	79252	072804	0.10	1.00	0.002	1000.3	100.1	0.00581	00055-63-0	STEL 0.1mg/m3(skin)	N/A
10.											
11.											
12.											
13.											
14.											
15.											
16.											
17.											
18.											
19.											
20.											

8330MixA
Lot#: 051208-81810
Rev: 8/18/08 MFR exp. 05/12/11

Absolute Standards, Inc.
800-368-1131
www.absolutestandards.com

ISO 9001 QS Registered
17025 Accredited

CERTIFIED WEIGHT REPORT

Part Number: 95094
Lot Number: 051208
Description: 8330 Mix B
8 components
Expiration Date: 051211

Lot # E37818
Solvent(s): Acetonitrile

Nominal Concentration (µg/mL): 100

Volume(s) shown below were combined and diluted to: 10.0

5E-05 Balance Uncertainty
0.001 Pipette Uncertainty

Formulated By: Justin Dippold 051208
DATE

Reviewed By: Pedro L. Rentas 051208
DATE

Compound	Part Number	Lot Number	Dil. Factor	Initial Vol. (mL)	Uncertainty Pipette	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty (+/-) (µg/mL)	MSDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50
1. 2-Amino-4,6-dinitrotoluene	79069	062707	0.10	1.00	0.002	1002.3	100.3	0.00417	35572-78-2	N/A	N/A
2. 1,2-Dinitrobenzene	79404	051208	0.10	1.00	0.002	1004.7	100.5	0.00565	00528-29-0	1mg/m3 (skin)	N/A
3. 2,6-Dinitrotoluene	79073	100906	0.10	1.00	0.002	1002.2	100.3	0.00416	00606-20-2	1.5mg/m3 (skin)	orl-rat 177mg/kg
4. 2-Nitrotoluene	79076	100906	0.10	1.00	0.002	1003.1	100.3	0.00416	00088-72-2	2ppm (11mg/m3) (skin)	orl-rat 891mg/kg
5. 4-Nitrotoluene	79078	100906	0.10	1.00	0.002	1001.1	100.1	0.00417	00099-99-0	2 ppm (11mg/m3) (skin)	orl-rat 1960mg/kg
6. Tetryl	79080	120803	0.10	1.00	0.002	1000.7	100.1	0.00581	00479-45-8	N/A	N/A
7. 1,3,5-Trinitrobenzene	79081	010406	0.10	1.00	0.002	1001.5	100.2	0.00417	00099-35-4	N/A	N/A
8. 2,4,6-Trinitrotoluene	79082	011008	0.10	1.00	0.002	1002.0	100.2	0.01015	00118-96-7	0.5mg/m3 (skin)	orl-rat 820mg/kg

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Date Received: _____

Certificate of Analysis

Catalog No.:	Lot No.:	Storage:	Solvent:	Exp. Date:	Description:
010614-04	140802	<= 6 Degrees C	Acetonitrile	31-Oct-2009	PBTN Solution, 1000 mg/L, 1 ml

Compound	CAS No.	Purity (%)	Neat Material Lot No.	Concentration, mg/L
PBTN	78-51-3	99.9	6149.2P	1000 +/- 14

Certified By: _____
Dick Potter

All weights are traceable through N. I. S. T. Test No. 822/264157-00.
Concentration (correct for purity) and uncertainty (95% confidence) values listed are determined gravimetrically.

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Date Received: _____

Certificate of Analysis

Catalog No.:	Lot No.:	Storage:	Solvent:	Exp. Date:	Description:
010612-04	140434	<= -10 Degrees C	Acetonitrile	3-Nov-2011	3,5-Dinitroaniline (3,5-DNA) Solution, 1000 mg/L, 1 ml

Compound	CAS No.	Purity (%)	Neat Material Lot No.	Concentration, mg/L
3,5-dinitroaniline	618-87-1	97	612.1.1	1000 +/- 14

Certified By: _____
Mike Wrigley

All weights are traceable through N. I. S. T. Test No. 822/264157-00.
Concentration (correct for purity) and uncertainty (95% confidence) values listed are determined gravimetrically.

STANDARD	INITIAL CONC	SOURCE DATE	ALIQUOT	FINAL VOLUME	FINAL CONC	SOLVENT LOT #	INITIALS
8330_08/03_MRL					8330_08/03_INT_MRLCHK		
8330_08/03_INT_CCV	1.0µg/mL	8/17/11	100µL	1.0mL	0.1µg/mL	2:1:1 H2O:MeCN DE002 : MeOH 51076	8/17/11
NG_3,5-DNA_PETN_08/03_INT_CCV					Prepped in duplicate		
NG_3,5-DNA_PETN_08/03_INTSTK	10.0µg/mL	8/3/11	100µL	1.0mL	1.0µg/mL	2:1:1 H2O:MeCN DE002 : MeOH 51076	8/17/11
NG_08/18_STK							
Nitroglycerin	1000µg/mL	8/18/11 Lot# 15711	1.0mL	10.0mL	100µg/mL	1:1 ACN:MeOH DE002:51076	8/18/11 Exp. 2/18/12
8330.08/18_STK							
8330 Explosives by HPLC m-8330-R	1000µg/mL	Accustandard 8/18/2011 LOT NO: 209101177-28370	1.0mL	10.0mL	100µg/mL	1:1 ACN:MeOH DE002:51076	8/18/11 Exp. 10-21-11
1,2-Dinitrobenzene #1B486-#1	1000µg/mL	0251 8/18/2011 LOT NO: 175526-29022	1.0mL				

AccuStandard
M-8330-R
Method 8330 - Explosives
1.0 mg/mL in MeOH:AcCN (1:1)
Lot: 209101177
Exp: Oct,21,2011
14 comps.
FLAMMABLE

Method 8330 - Explosives
Lot #: 209101177 - 28370
Rec: 2/28/11 MFR exp. 10/21/11

FOR LABORATORY USE ONLY
WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm
STORAGE Freeze (<-10° C)

1,2-Dinitrobenzene
Solution, 1,000 mg/L, 1 ml
#1N666-01
Lot # 175526 | Storage -10 Degrees C | Expiry 7/2014
Soln: Acetonitrile
1,2-Dinitrobenzene
Lot #: 175526 - 29022
Rec: 7/14/11 MFR exp. 07/10/14

8330_08/19_INTSTK							
8330_08/18_STK	100µg/mL	8/18/11	1.0mL	10.0mL	10.0µg/mL	1:1 ACN:MeOH DE296:51076	8/19/11 Exp 10/19/11
NG_3,5-DNA_PETN_08/19_INTSTK							
NG_08/18_STK	100µg/mL	8/18/11	1.0mL	10.0mL	10.0µg/mL	1:1 ACN:MeOH DE296:51076	8/19/11 Exp 10/19/11
3,5-DNA_07/18_STK		7/13/11					
PETN_08/12_STK		8/12/11					

LC/MS STANDARD PREP LOG# 97 PAGE # 70

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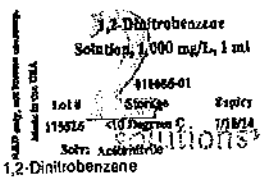
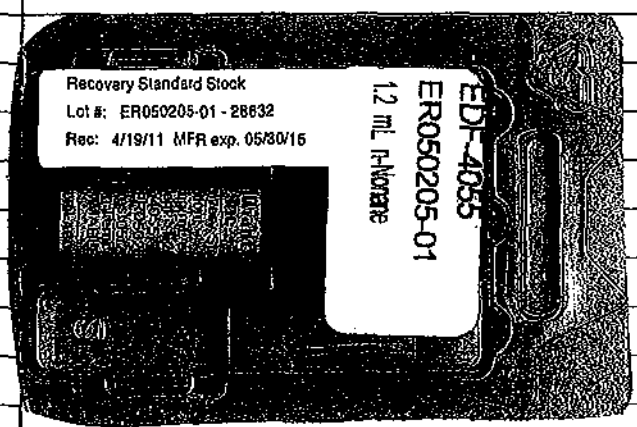
STANDARD	INITIAL CONC	SOURCE / DATE	ALIQUOT	FINAL VOLUME	FINAL CONC	SOLVENT / LOT #	DATE / INITIALS
Perchlorate QA/QC stock 10ug/mL							
Perchlorate 1000 025 / Lot 1026135-2896			0.10mL	10.0mL	10ug/mL	(Millipore water 08-22-11)	8-22-11
Perchlorate 5ppb 0.1ug/mL							
Perchlorate QA/QC 10.0 08-22-11			0.250mL	25.0mL	0.10	(Millipore water 08-22-11)	8-22-11
1,2-DNB-08/22-STK							
1,2-Dinitrobenzene 100ug/mL Part #610006-01		08/22/11 Lot#175526-29023	1.0mL	10.0mL	100ug/mL	(1/3) ACN: MeOH DE226: 51096	8/22/11 exp 2/22/12



EDF-H055 500 ng/mL 08-22-11: 08-22-11



Cracked open the vial in the adjacent photo-copy and delivered contents into an amber injection vial

LC/MS STANDARD PREP LOG# 97 PAGE # 72

072

STANDARD	INITIAL CONC	SOURCE DATE	ALIQUOT	FINAL VOLUME	FINAL CONC	SOLVENT(S) LOT #	DATE / INITIALS
AYH3593_502_3T3.13 DF 08-09-11_8/22;							
AYH3593_502_3T.313 DF 08-09-11_8/22 TOOK 0.005 ML AND ADDED TO 0.045 ML 8290_IL 40 mg/mL 08-22-11							08-22-11
AYH3593_502_3T31.3 DF 08-09-11_8/22; AYH3593_502_3T3.13 DF 08-09-11_8/22 TOOK 0.005 ML AND ADDED TO 0.045 ML 8290_IL 40 mg/mL 08-22-11							
PETN_08/24_STK							
PETN Part# 010614-04	1000 ug/mL	8/24/11 Lot# 173603-28896	1.0 mL	10.0 mL	100 ug/mL	ACN MeOH DE296 51076	COMP Prep 8/24/11 Exp 2/24/12
8330_08/19_INT_CCV							
8330_08/19_INT STK	10.0 ug/mL	8/19/11	10 mL	1.0 mL	1.0 ug/mL	H2O ACN MeOH DE296 51076	COMP 8/24/11
NG_3,5-DNA_PETN_08/19_INT_CCV							
NG_3,5-DNA_PETN_08/19_INT STK	10.0 ug/mL	8/19/11	100 µL	1.0 mL	1.0 ug/mL	H2O MeOH MeOH DE296 51076	COMP 8/24/11
8330_08/19_CCV						2 MeOH 25-11	M
8330 INT STK ID 08-19-11	0.10	1.0		1.0 mL	1:10	H2O ACN MeOH DE296 51076	M 1:10 08-25-11
NG_DNA_PETN SOL ID 08-19-11	0.10	1		1			

PETN Solution, 1000 mg/L, 1 ml
Lot# 010614-04
Storage 4 Degrees C
Expiry 5/24/12
Schri Analytics
PETN
Lot #: 173603 - 28890
Rec: 6/2/11 MFR exp. 05/24/12

LC/MS STANDARD PREP LOG# 97 PAGE# 83

STANDARD	INITIAL CONC	SOURCE DATE	ALIQUOT	FINAL VOLUME	FINAL CONC	SOLVENT LOT #	INITIALS
						083	

AccuStandard
M-8330-R
Method 8330 - Explosives I
1000 µg/mL in MeOH:AcCN (1:1)
Lot: 209101177-01
Exp: Apr 29,2013

Method 8330 - Explosives
Lot #: 209101177-01 - 29423
Rec: 8/29/11 MFR exp. 04/29/13

14 comps.
HIGHLY FLAMMABLE

FOR LABORATORY USE ONLY
WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

STORAGE Freeze (<-10° C)

M 08-31-11

I broke open the vial labelled above to use for 8330_08/31_5th 100µg/mL 08-31-11

1,2-Dinitrobenzene
Solution, 1,000 mg/L, 1 ml
Lot # 175526 Storage <10°C Expiry 7/14/14
Soln: Acetonitrile
1,2-Dinitrobenzene
Lot #: 175526 - 29024
Rec: 7/14/11 MFR exp. 07/10/14

08-31-11 M

I broke open the vial labelled to the left and transferred to an amber 1.8ml injection vial → 1,2-DNB 1000µg/mL 08-31-11

8330_08/31_5th 100µg/mL

M

8330 explosives 1000µg/mL	AccuStandard 08-31-11		1.0	10.0	100µg/mL	1:1 MeOH/ACN	08-31-11	
						50252-DE002		
1,2-DNB	1000µg/mL	08-31-11	1.0					

8330_W_Surr 5.0µg/mL

M

1,2 DNB	1000	08-31-11	0.025	5.0	5.0	1:1 MeOH/ACN	08-31-11	
						50252-DE002		

PER IS 0.005 µg/mL 08-31-11: JL
COMBINED 10.000 ML LABORATORY SOURCE 08-31-11
DI-H2O WITH 10.000 ML BUROICK + JACKSON ACETONITRILE LOT DA355. WITHDREW 1.000 ML AND THEN ADDED 1.000 025I $^{18}O_4$ PERCHLORATE 100 µg/L LOT 1023BBH-28211

LC/MS STANDARD PREP LOG# 91 PAGE # 92

092

STANDARD	INITIAL CONC	SOURCE DATE	ALIQUOT	FINAL VOLUME	FINAL CONC	SOL'N LOT#	DATE/ INITIAL

AccuStandard® 125 Market St. · New Haven, CT 06513 · USA FOR LABORATORY USE ONLY

M-8330-ADD-4
3,5-Dinitroaniline
0.1 mg/mL in AcCN:MeOH
Lot: 209121115
Exp. Dec 8, 2012

3,5-Dinitroaniline
Lot #: 209121116 - 27359
Rec: 9/28/10 MFR exp. 12/08/12

STORAGE Ambient

FLAMMABLE

09-07-11 lp

I broke open the vial labelled above and transferred to an amber 1.8ml injection vial → 3,5-DNA 1000ug/L 09-07-11

PETN Solution, 1000 mg/L, 1 ml

Solutions

PETN
Lot #: 177778 - 29394
Rec: 8/26/11 MFR exp. 10/31/15

09-07-11 lp

I broke open the vial labelled to the left & transferred to an amber 1.8ml injection vial → PETN 1000ug/L 09-07-11

AccuStandard® 125 Market St. · New Haven, CT 06513 · USA FOR LABORATORY USE ONLY

M-8330-ADD-1-10X
Nitroglycerin
1000 µg/mL in EtOH:MeOH (97:3)
Lot: 210031440
Exp. Apr 12, 2012

Nitroglycerin
Lot #: 210031440 - 28374
Rec: 2/28/11 MFR exp. 04/12/12

STORAGE Refrig (0-5°C)

FLAMMABLE

09-07-11 lp

I broke open the vial labelled above and transferred to an amber 1.8ml injection vial → Nitroglycerin 1000ug/L 09-07-11

lp 9-7-11

1,2-Dinitrobenzene Solution, 1,000 mg/L, 1 ml

Solutions

1,2-Dinitrobenzene
Lot #: 175526 - 29025
Rec: 7/14/11 MFR exp. 07/10/14

I broke open the vial labelled to the left and transferred to an amber 1.8ml injection vial → 1,2 DNB 1000ug/L 09-07-11

LC/MS STANDARD PREP LOG# 97 PAGE# 93

STANDARD	INITIAL CONC	SOURCE DATE	ALIQUOT	FINAL VOLUME	FINAL CONC	SOLVENT LOT#	INITIALS
						093	

AccuStandard

M-8330-R
Method 8330 - Explosives L, ...
1.0 mg/mL in MeOH:AcCN (1:1)
Lot: 209101177
Exp: Oct.21,2011

Method 8330 - Explosives
Lot #: 209101177 - 28369
Rec: 2/28/11 MFR exp. 10/21/11

14 comps.

FLAMMABLE

OR LABORATORY USE ONLY

ARNING: This product contains emicals known to the State of lifornia to cause cancer and birth efects or other reproductive harm

STORAGE Freeze (<-10° C)

09-07-11 M

I broke open the vial labelled above and transferred to an amber 1.8ml injection vial → M-8330-R 1000ug/ml 09-07-11

M

8330_MX-A	10.0ug/ml						
M8330-R	1000	09-07-11	0.10	10.0	10.0	1:1 ACN/MeOH	09-07-11
1,2-DNB	1000	09-07-11	0.10	"	"	"	"

M

8330-MX-B	10.0ug/ml						
3,5-DNA	10ug/ml	09-07-11	1.0	10.0	10.0	1:1 ACN/MeOH	09-07-11
Nitroglycerin	1000	09-07-11	0.10	10.0	"	"	"
PETN	1000	09-07-11	0.10	"	"	"	"

8330_MX_A

8330_MX-A	10.0 ppm	08/03/11	200 µL	1.0 mL	2.0 ppm

M 9-7-11

1 : 1 : 6
ACN : MeOH : MILLIPORE
DE002 : 51076 : H2O

8330_MX_B

8330_MX-B	10.0 ppm	08/03/11	200 µL	1.0 mL	2.0 ppm

1 : 1 : 6
ACN : MeOH : MILLIPORE
DE002 : 51076 : H2O

8330B_CB

8330_MX-A	10.0 ppm	08/03/11	100 µL	1.0 mL	1.0 ppm
8330_MX-B	10.0 ppm	08/03/11	100 µL	1.0 mL	1.0 ppm
8330_MX-A	10.0 ppm	08/03/11	50 µL	1.0 mL	0.5 ppm
8330_MX-B	10.0 ppm	08/03/11	50 µL	1.0 mL	0.5 ppm
8330_MX-A	2.0 ppm	08/09/11	100 µL	1.0 mL	0.2 ppm
8330_MX-B	2.0 ppm	08/09/11	100 µL	1.0 mL	0.2 ppm
8330B_CB	1.0 ppm	08/09/11	100 µL	1.0 mL	0.1 ppm
8330B_CB	0.5 ppm	08/09/11	100 µL	1.0 mL	0.05 ppm
8330B_CB	0.2 ppm	08/09/11	100 µL	1.0 mL	0.02 ppm
8330B_CB	0.1 ppm	08/09/11	100 µL	1.0 mL	0.01 ppm
8330B_CB	0.05 ppm	08/09/11	100 µL	1.0 mL	0.005 ppm

1 : 1 : 6
ACN : MeOH : MILLIPORE
DE002 : 51076 : H2O

LC/MS STANDARD PREP LOG# 97 PAGE # 94

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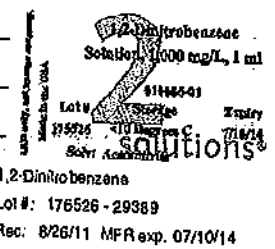
STANDARD	INITIAL CONC	SOURCE DATE	ALIQUOT	FINAL VOLUME	FINAL CONC	SOLVENT(S) LOT #	DATE / INITIALS

8330B_SS — hp 9-7-11

8330_07/13_MixA_SS_STK	100 ppm	07/13/11	10.0 µL	1.0 mL	1.0 ppm	1 : 1 : 6
8330_07/13_MixB_SS_STK	100 ppm	07/13/11	10.0 µL	1.0 mL	1.0 ppm	ACN : MeOH : MILLIPORE
PETN_07/13_SS_INTSTK	100 ppm	07/13/11	10.0 µL	1.0 mL	1.0 ppm	DE002 : 51076 : H2O



09-08-11 hp
I broke open the vial labelled to the left and transferred to an amber 1.8 ml injection vial → 1,2-DNB 1000 ug/L 09-08-11

1,2-DNB 100 ug/L
1,2-DNB | 1000 | 09-08-11 | 1.0 | 10.0 | 100 ug/L | 1:1 MeOH/ACN | 9-8-11 | hp
Lot# 51076 DE296

1,2-DNB 1.0 ug/L
1,2-DNB | 100 | 09-08-11 | 0.10 | 10.0 | 1.0 | 1:1 MeOH/ACN | 9-8-11 | W
51076 DE296

PETN_MDL_STD 5.0 ug/L
PETN STK | 100 | 08-24-11 | 0.250 | 5.0 | 5.0 | 1:1 MeOH/ACN | 09-08-11 | W
51076 DE296

NG_STD (Nitroglycerin) 100 ug/L
Nitroglycerin | 1000 | 09-07-11 | 0.50 | 5.0 | 100 ug/L | 1:1 MeOH/ACN | 09-08-11 | hp
51076 DE296

8330_MDL_STD 1.0 ug/L
8330_MixA | 100 ug/L | 09-07-11 | 0.50 | 5.0 | 1.0 | 1:1 MeOH/ACN | 9-8-11 | W
51076 DE296

LC/MS STANDARD PREP LOG# 97 PAGE # 95

095

STANDARD	INITIAL CONC	SOURCE DATE	ALIQUOT	FINAL VOLUME	FINAL CONC	SOLVENT LOT #	INITIALS
Nitroglycerin	1000	09-07-11	0.100ml	10ml	10ug/L	1:1 MeOH/ACN	9-8-11
						51076	DE256
NG_DNA_MDL STD	1.0 ug/L						
Nitroglycerin	100	09-08-11	0.050	5.0	1.0	1:1 MeOH/ACN	9-8-11
3,5-DNA	100	09-07-11	0.050	1	1	51076	DE256
8330_CCV							
8330_MIX-A	10	09-07-11	100mL	1mL	10ug/L	6:1:1	MM
8330_MIX-B	10	09-07-11	100mL	1	1	H_2O:ACN:MeOH	09/08/11

832_METH 0.8 ug/ml

832_METH	10ug/ml	08/03/11	0.160ml	2.0 ml	0.8 ug/ml	Millipore water 09/09/11	09/09/11
HPLC_IS	100 ug/ml	07/08/11	0.020ml	2	1.0 ug/ml		

832_METH 0.6 ug/ml

832_METH	10ug/ml	08/03/11	0.120ml	2.0 ml	0.6 ug/ml	Millipore water 09/09/11	09/09/11
HPLC_IS	100 ug/ml	07/08/11	0.020ml	2	1.0 ug/ml		

832_METH 0.4 ug/ml

832_METH	10ug/ml	08/03/11	0.080ml	2.0 ml	0.4 ug/ml	Millipore water 09/09/11	09/09/11
HPLC_IS	100 ug/ml	07/08/11	0.020ml	2	1.0 ug/ml		

prepared 3 portions

832_METH 0.2 ug/ml

832_METH	10ug/ml	08/03/11	0.040ml	2.0 ml	0.2 ug/ml	Millipore water 09/09/11	09/09/11
HPLC_IS	100 ug/ml	07/08/11	0.020ml	2	1.0 ug/ml		

832_METH 0.1 ug/ml

832_METH	10ug/ml	08/03/11	0.020ml	2.0 ml	0.1 ug/ml	Millipore water 09/09/11	09/09/11
HPLC_IS	100 ug/ml	07/08/11	0.020ml	2	1.0 ug/ml		

prepared 2 portions

832_METH	10ug/ml	08/03/11	0.10 ml	1.0 ml	1.0ug/ml	Millipore water 09/09/11	09/09/11

832_METH 0.08ug/ml

832_METH	1.0ug/ml	09/09/11	0.160ml	2.0 ml	0.08 ug/ml	Millipore water 09/09/11	09/09/11
HPLC_IS	100 ug/ml	07/08/11	0.020ml	2	1.0 ug/ml		

LC/MS STANDARD PREP LOG# 97 PAGE# 109

STANDARD	INITIAL CONC	SOURCE DATE	ALIQUOT	FINAL VOLUME	FINAL CONC	SOLVENT LOT# 109	INITIALS
Lo/ld Cerb spk 1DP							
8321MX29-8	400	09-6-11	0.20	50.0 ml	1.6	Methanol/51183	9-15-11
8330_CCV_09/14/11							
8330 MIX A	10	9/07/11	100ul	1ml	1.0ug/ml	6:1:1 H2O:ACN:MeOH	HM 9/13/11
8330 MIX B	10	9/07/11	↓	↓	↓		

AccuStandard
M-8330-ADD-1-10X
Nitroglycerin
1000 µg/mL in EtOH:MeOH (97:3)
Lot: 211041387
Exp. Apr 19, 2013
HIGHLY FLAMMABLE
Nitroglycerin
Lot #: 211041387 - 29420
Rec: 8/29/11 MFR exp. 04/19/13
FOR LABORATORY USE ONLY
STORAGE Refrig (0-5° C)

09/20/11 HM

I broke open the vial labelled above and transferred to an amber 1.8ml injection vial → Nitroglycerin 1000 ug/ml 09/20/11

Part #: 79250
Lot #: 071409
Laboratory Use Only - See MSDS
Exp: 071414 Storage 0 °C
EPA Method 8330 Analyte
Pentaerythritol tetra
1000 ug/mL in acet
ABSOLUTE STANDARI
PETN
Lot #: 071409 - 28214
Rec: 2/11/11 MFR exp. 07/14/14

9/20/11 HM

HM 9/20/11

I broke open the vial ~~table~~ labelled above and transferred to an amber 1.8ml injection vial → PETN 1000ug/ml 9/20/11

STANDARD	INITIAL CONC	SOURCE DATE	ALIQUOT	FINAL VOLUME	FINAL CONC	SOLVENT LOT#	INITIALS
8330MXA_CCV 1.0ug/ml							
8330MXA	10ug/ml	09-07-11	0.10	1.0	1.0	2:1:1 Millipore water MeOH/51096 ACN DE256	09-20-11
8330MXB_CCV 1.0ug/ml							
8330MXB	10ug/ml	09-07-11	0.10	1.0	1.0	2:1:1 Millipore water, MeOH/51096, ACN DE256	09-20-11

LC/MS STANDARD PREP LOG# 97 PAGE# 110

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STANDARD	INITIAL CONC	SOURCE DATE	ALIQUOT	FINAL VOLUME	FINAL CONC	SOLVENT LOT #	DATE/ INITIALS
8330MXA_CCV 1.0 ug/L (Ar-Statler)							HM
8330MXA 10	09-07-11	0.10	1.0	1.0	6:1:1	N:I:1 pure water - MeOH/51076, ACN/DE296	09-20-11
8330MXB_CCV 1.0 ug/L (Ar-Statler)							HM
8330MXB 10	09-07-11	0.10	1.0	1.0	6:1:1	N:I:1 pure water - MeOH/51076, ACN DE296	09-20-11
1,2 DNB - 1000 PPM 9/12/11							
1,2 DNB	1000 ug/mL	9/07/11	.5mL	5mL	100 PPM	1:1 ACN:MeOH DE296 51076	HM 9/20/11
8330 STK 100 PPM 9/20/11							
M-8330-B	1000 ug/mL	09/07/11	.5mL	5mL	100 PPM	1:1 ACN:MeOH DE296 51076	HM 9/20/11
PETN 100 PPM 9/12/11							
PETN	1000 ug/mL	9/12/11	.5mL	5mL	100 PPM	1:1 ACN:MeOH DE296 51076	HM 9/20/11
NG - 100 PPM 9/12/11							
Nitroglycerin	1000 ug/mL	9/20/11	.5mL	5mL	100 PPM	1:1 ACN:MeOH DE296 51076	HM 9/20/11
Picric Acid stk 0.2 g/L							
Picric Acid	10	09-09-11	0.10	5.0	0.2	ACN DE296	09-21-11
8321-TS stock 1 DF							HM
PJ21MXL-7	500	8-31-11	0.10	10.0	5.0	MeOH/51133	09-22-11
Fluorobenzene	1127	09-28-11	0.089	10			
8141 Surr	1060	08-29-11	0.10	10			

LC/MS STANDARD PREP LOG# 97 PAGE# 113

STANDARD	INITIAL CONC	SOURCE DATE	ALIQUOT	FINAL VOLUME	FINAL CONC	SOL. MIX / SOL. LOT #	INITIALS
The following CCV was made on 9/22/11 and documented here on 9/23/11 HM							
8330 - CCV 9/22/11							
8330_MIX-A	10 ug/mL	9/07/11	100uL	1mL	1.0 ug/mL	6:1:1 H2O:ACN:MeOH DE256 S1076	HM 9/23/11
8330 MIX-B	I	I	I	I	I		
8330-CCV 9/24/11							
8330_MIX-A	10 ug/mL	9/07/11	100uL	1mL	1.0 ug/mL	6:1:1 H2O:ACN:MeOH DE256:S1076	HM 9/24/11
8330_MIX-B	I	I	I	I	I		

1,2-Dinitrobenzene
Solution, 1,000 mg/L, 1 ml
Lot # 175526 Storage 2-8 Degrees C Expiry 7/2014
Solv: Acetonitrile
1,2-Dinitrobenzene
Lot #: 175526 - 29390
Rec: 8/26/11 MFR exp. 07/10/14

I broke open the vial labelled to the left and transferred to an amber 18mL injection vial.
→ 1,2-DNB 1000mg/L 9-26-11

1,2-DNB 100 mg/L

1,2-DNB	1000 mg/L	9-26-11	1.0mL	10.0mL	100mg/L	1:1 MeOH/ACN S1076 DE246 9-26-11 HM

8330-CCV 9/26/11

8330_MIX-A	10ug/mL	9/07/11	100uL	1mL	1.0ug/mL	6:1:1 H2O ACN MeOH DE246 S1076 9-26-11 HM
8330_MIX-B	I	I	I	I	I	

832_Meth_Surr 0.5ug/mL
Dilution 1000 0715-11 0.10 200 0.5 MeOH/S1173 09-27-11 H

8330-CCV 9/27/11

8330_MIX-A	10ug/mL	9/07/11	100uL	1mL	1.0ug/mL	6:1:1 H2O ACN MeOH DE246 S1076 9-27-11 HM
8330-MIX-B	I	I	I	I	I	

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STANDARD	INITIAL CONC	SOURCE DATE	ALIQUOT	FINAL VOLUME	FINAL CONC	SOL'N LOT #	DATE / INITIALS
NG-3,5-DNB-PETN-09/28-INTSTK							
NG-09/20 STK	100 µg/mL	09/20/11	500 µL	5.0 mL	10.0 µg/mL	1:1 ACN:MeOH DE296 51076	HM 9/28/11 exp 11/28/11
3,5-DNB 6713-STK		6/15/11					
PETN-09/20 STK		09/20/11					
8330-09/28-INTSTK							
M-8330-12	1000 µg/mL	9/07/11	100 mL HM 9/28/11	10.0 mL	100 µg/mL	1:1 ACN:MeOH DE296 51076	HM 9/28/11 exp
1,2-DNB							
8330-WATER SURROGATE							
1,2-DNB-STK-100 PPM	100 µg/mL	09/29/11	500 mL	10.0 mL	5 µg/mL	1:1 ACN:MeOH DE296 51076	HM 9/28/11 exp 01/28/11
8330-CCV 9/28/11							
8330-MIX-A	10 µg/mL	9/07/11	100 mL	1.0 mL	1.0 µg/mL	1:1 ACN:MeOH DE296 51076	HM 9/28/11
8330-MIX-B							

AccuStandard® 125 Market St. · New Haven, CT 06513 · USA

M-8330-ADD-35
Propyleneglycol dinitrate
100 µg/mL in methanol
Lot: B7040118-2B
Exp. Dec 7, 2012

Propyleneglycol dinitrate
Lot #: B7040118-2B - 26756
Rec: 4/25/11 MFR exp. 12/07/10

FLAMMABLE

FOR LABORATORY USE ONLY

STORAGE Freeze (<-10° C)

MP 09-30-11

I broke open the vial labelled above and transferred to an amber 1.8mL injection vial → PGDN ~~1000~~ 100 µg/mL 09-30-11 MP 9-30-11

PGDN 10 µg/mL (Cal stock)

PGDN 100	09-30-11	0.10	1.0	10.0	1:1 ACN/MeOH	08-19-11	9-30-11	MP
1,2-DNB 100	09-26-11	0.10	"	"	"	"	"	"

8321-V IS 1.0 g/L

8321V IS 100 07-27-11 0.250 25.0 1.0 MeOH/5115J 10-4-11

AccuStandard

M-8330-R

Method 8330 - Explosives by 1000 µg/mL in MeOH:AcCN (1:1)

Lot: 209101177-01

Exp: Apr 29,2013

14 comps.

HIGHLY FLAMMABLE

Method 8330 - Explosives

Lot #: 209101177-01 - 29424

Rec: 8/29/11 MFR exp. 04/29/13

LABORATORY USE ONLY

WNG: This product contains ical/s known to the State of nia to cause cancer and birth ts or other reproductive harm

STORAGE Freeze (<-10° C)

I broke open the vial labelled above and transferred to an amber 1.8mL injection vial → M-8330-R 1000ug/mL 10/04/11

1,2-Dinitrobenzene Solution, 1000 mg/L, 1 ml

Lot # 176526 Storage <10 Degrees C Expiry 7/10/14

Solvent Acetonitrile

Solutions

1,2-Dinitrobenzene

Lot #: 176526 - 29393

Rec: 8/26/11 MFR exp. 07/10/14

I broke open the vials labelled ~~above~~ to the left HM 10/04/11 and transferred ~~to~~ an amber 1.8mL injection vial → 1,2 DNB 1000 ug/mL 10/04/11

M-8330-R 100 ug/mL

M-8330-R	1000 ug/mL	10/04/11	1mL	10mL	100 ug/mL	1:1	AcN/MeOH
1,2-DNB	1000 ug/mL	↓	↓	↓	↓		IDE 296 51076 HM 10/4/11

PETN Solution, 1000 mg/L, 1 ml

Lot # 177778 Storage ≤4 Degrees C Expiry 10/31/15

Solvent Acetonitrile

Solutions

PETN

Lot #: 177778 - 29386

Rec: 8/26/11 MFR exp. 10/31/15

HM 10/04/11

I broke open the vial ~~labelled~~ labelled ~~above~~ to the left and transferred to an amber 1.8mL injection vial → PETN 1000 ug/mL 10/04/11

PETN 100 ug/mL

PETN	1000 ug/mL	10/04/11	1mL	10mL	100 ug/mL	1:1	ACN MeOH IDE# 51076 10/4/11

004

1,2-Dinitrobenzene
Solution, 1,000 mg/L, 1 mL
Lot # 175526 Storage <10 Degrees C Expiry 7/8/14
Solvent Acetonitrile
1,2-Dinitrobenzene
Lot #: 175526 - 29392
Rec: 8/26/11 MFR exp. 07/10/14

I broke open the vial HM 10/4/11 labelled to the left and transfered to an amber 1.8 mL injection vial → 1,2-DNB 1000 ug/mL 10/4/11

1,2-DNB - 100 ug/mL

1,2-DNB	1000 ug/mL	10/4/11	1mL	10mL	100 ug/mL	1:1 ACN:MeOH DE96 51076	HM 10/4/11

AccuStandard
M-8330-ADD-1-10X
Nitroglycerin
1000 µg/mL in EtOH:MeOH (97:3)
Lot: 211041387
Exp. Apr 19, 2013
HIGHLY FLAMMABLE

Nitroglycerin
Lot #: 211041387 - 29421
Rec: 8/29/11 MFR exp. 04/19/13

FOR LABORATORY USE ONLY
STORAGE Refrig (0-5° C)

I broke open the vial labelled to the left and transfered to an amber 1.8 mL injection vial → ~~1,2-DNB~~ Nitroglycerin HM 10/4/11

1000 ug/mL 10/4/11

Nitroglycerin - 100 ug/mL

Nitroglycerin	1000 ug/mL	10/4/11	1mL	10mL	~~1000~~ 100 ug/mL HM 10/4/11	1:1 ACN:MeOH DE96 51076	HM 10/4/11

8321 Surr 2.0 mg/L

Fluka	1127	07-28-11	0.355	200 uL	I	MeOH/51173 I	10-6-11 I
8141 Surr	1000	10-3-11	0.400				

HMX 1.0 mg/L

HMX	100	7-8-11	2.0	200	1.0	MeOH/51173	10-6-11

Organic Extraction Worksheet

Method	EPA Method 3535A	Extraction Set	111005A	Extraction Method	MWE3535	Units	mL

Spiked ID 1	8330 100ppm STK 10-04-11 exp 04-04-12		Surrogate ID 1	8330_W_Surrogate 5 ppm 09-28-11 EXP 01-28-12	
Spiked ID 2	Nitroglycerin 100ppm STK 10-04-11 exp 04-04-12		Surrogate ID 2		
Spiked ID 3	PETN 100ppm STK 10-04-11 exp 04-04-12		Surrogate ID 3		
Spiked ID 4			Surrogate ID 4		
Spiked ID 5			Surrogate ID 5		
Spiked ID 6			Sufficient Vol for Matrix QC:	YES	
Spiked ID 7			Ext. Start Time:		
Spiked ID 8			Ext. End Time:		
			GC Requires Extract By:	10/05/11 17:00	

pH1			Water Bath Temp Criteria	
pH2				
pH3				

Spiked By: KY **Date** 10/5/2011 **Witnessed By:** CFM **Date** 10/5/2011

	Sample	Sample Container	Spike Amount	Spike ID	Surrogate Amount	Surrogate ID	Extract Amount	Final Volume	pH	Extract Date/Time	Comments
1	111005A Blk				0.1	1 equip	500	2	NA	10/05/11 12:10	
2	111005A LCS-1		0.040	1,2,3	NA	NA equip	500	2	NA	10/05/11 12:10	
3	AY47591	AY47591W02			0.1	1 equip	500	2	NA	10/05/11 12:10	65862 -- Amber Liter
4	AY47592	AY47592W01			0.1	1 equip	225	2	NA	10/05/11 12:10	65862 -- Amber Liter
5	AY47593	AY47593W01			0.1	1 equip	500	2	NA	10/05/11 12:10	65862 -- Amber Liter
6	AY47594	AY47594W02			0.1	1 equip	500	2	NA	10/05/11 12:10	65862 -- Amber Liter
7	AY47595	AY47595W01			0.1	1 equip	500	2	NA	10/05/11 12:10	65862 -- Amber Liter
8	AY47596	AY47596W01			0.1	1 equip	500	2	NA	10/05/11 12:10	65862 -- Amber Liter
9	AY47597	AY47597W01			0.1	1 equip	500	2	NA	10/05/11 12:10	65862 -- Amber Liter
10	AY47764	AY47764W04			0.1	1 equip	500	2	NA	10/05/11 12:10	65876 -- Amber Liter
11	AY47765	AY47765W04			0.1	1 equip	500	2	NA	10/05/11 12:10	65876 -- Amber Liter
12	AY47766	AY47766W04			0.1	1 equip	500	2	NA	10/05/11 12:10	65876 -- Amber Liter
13	AY47767	AY47767W04			0.1	1 equip	500	2	NA	10/05/11 12:10	65876 -- Amber Liter
14	AY47768	AY47768W04			0.1	1 equip	500	2	NA	10/05/11 12:10	65876 -- Amber Liter
15	AY47769 MS-1	AY47769W06	0.040	1,2,3	NA	NA equip	500	2	NA	10/05/11 12:10	65876 -- Amber Liter
16	AY47769 MSD-1	AY47769W06	0.040	1,2,3	NA	NA equip	500	2	NA	10/05/11 12:10	65876 -- Amber Liter

Solvent and Lot#	
Acetonitrile	DE466
Cartridge Sorbent Lot	S311-12
Serial No	96094

Extraction COC Transfer	
Extraction lab employee Initials	KY
GC analyst's initials	HSM
Date	10-5-11
Time	17:00
Refrigerator	Hobart/Brown

	Technician's Initials
Scanned By	KY
Sample Preparation	KY
Extraction	KY
Concentration	----------

Modified	10/6/2011 9:41:20 AM

Reviewed By: [illegible] **Date** 10-6-11

_MWE3535

Organic Extraction Worksheet

Method	EPA Method 3535A	Extraction Set	111005A	Extraction Method	MWE3535	Units	mL

Spiked ID 1	8330 100ppm STK 10-04-11 exp 04-04-12		Surrogate ID 1	8330_W_Surrogate 5 ppm 09-28-11 EXP 01-28-12	
Spiked ID 2	Nitroglycerin 100ppm STK 10-04-11 exp 04-04-12		Surrogate ID 2		
Spiked ID 3	PETN 100ppm STK 10-04-11 exp 04-04-12		Surrogate ID 3		
Spiked ID 4			Surrogate ID 4		
Spiked ID 5			Surrogate ID 5		
Spiked ID 6			Sufficient Vol for Matrix QC:	YES	
Spiked ID 7			Ext. Start Time:		
Spiked ID 8			Ext. End Time:		
			GC Requires Extract By:	10/05/11 17:00	

pH1			Water Bath Temp Criteria	
pH2				
pH3				

Spiked By: KY **Date** 10/5/2011 **Witnessed By:** CFM **Date** 10/5/2011

	Sample	Sample Container	Spike Amount	Spike ID	Surrogate Amount	Surrogate ID	Extract Amount	Final Volume	pH	Extract Date/Time	Comments
17	AY47769	AY47769W05			0.1	1 equip	500	2	NA	10/05/11 12:10	65876 -- Amber Liter
18	AY47770	AY47770W04			0.1	1 equip	500	2	NA	10/05/11 12:10	65876 -- Amber Liter
19	AY47773 MS-1	AY47773W10	0.040	1,2,3	NA	NA equip	500	2	NA	10/05/11 12:10	65882 -- Amber Liter
20	AY47773 MSD-1	AY47773W10	0.040	1,2,3	NA	NA equip	500	2	NA	10/05/11 12:10	65882 -- Amber Liter
21	AY47773	AY47773W11			0.1	1 equip	500	2	NA	10/05/11 12:10	65882 -- Amber Liter
22	AY47780	AY47780W01			0.1	1 equip	500	2	NA	10/05/11 12:10	65882 -- Amber Liter

15 10-6-11

Solvent and Lot#	
Acetonitrile	DB466
Cartridge Sorbent Lot	S311-12
Serial No	96094

Extraction COC Transfer	
Extraction lab employee Initials	KY
GC analyst's initials	HSM
Date	10-5-11
Time	17:00
Refrigerator	Hobart/Brown

	Technician's Initials
Scanned By	KY
Sample Preparation	KY
Extraction	KY
Concentration	----------

Modified	10/6/2011 9:41:20 AM

Reviewed By: Ky **Date** 10-6-11

METALS

APPL, INC.

Data Package Summary

Metals Analysis

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker

Project: 112G00810 Indian Head CTO423

ARF: 65882

Sample ID: X15GW0020911

APPL ID: AY47772

Sample Collection Date: 9/28/2011

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6020A	ANTIMONY (SB)	0.91	0.20	0.020	0.010	ug/L	1	11/7/2011	11/9/2011

Printed: 11/11/2011 3:12:07 PM

APPL-F1-SC-NoMC-REG MDLs

Metals Analysis

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker
Project: 112G00810 Indian Head CTO423
Sample ID: X15GW0010911
Sample Collection Date: 9/28/2011

ARF: 65882
APPL ID: AY47773

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6020A	ANTIMONY (SB)	0.16J	0.20	0.020	0.010	ug/L	1	11/7/2011	11/9/2011

J = Estimated value.

Printed: 11/11/2011 3:12:07 PM
APPL-F1-SC-NoMC-REG MDLs

Metals Analysis

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker

Project: 112G00810 Indian Head CTO423

ARF: 65882

Sample ID: X14GW0010911

APPL ID: AY47774

Sample Collection Date: 9/29/2011

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6020A	ANTIMONY (SB)	0.55	0.20	0.020	0.010	ug/L	1	11/7/2011	11/9/2011
6020A	COPPER (CU)	5.1	0.50	0.260	0.130	ug/L	1	11/7/2011	11/9/2011

Printed: 11/11/2011 3:12:07 PM

APPL-F1-SC-NoMC-REG MDLs

Metals Analysis

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

Attn: Barbra Becker

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Project: 112G00810 Indian Head CTO423

ARF: 65882

Sample ID: X15GW0020911-F

APPL ID: AY47775

Sample Collection Date: 9/28/2011

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6020A	ANTIMONY (SB) (DISSOLVE	0.58	0.20	0.020	0.010	ug/L	1	11/7/2011	11/9/2011
6020A	LEAD (PB) (DISSOLVED)	0.17 J	0.50	0.220	0.110	ug/L	1	11/7/2011	11/9/2011

J = Estimated value.

Printed: 11/11/2011 3:12:07 PM

APPL-F1-SC-NoMC-REG MDLs

Metals Analysis

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker

Project: 112G00810 Indian Head CTO423

ARF: 65882

Sample ID: X15GW0010911-F

APPL ID: AY47776

Sample Collection Date: 9/28/2011

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6020A	ANTIMONY (SB) (DISSOLVE	0.17 J	0.20	0.020	0.010	ug/L	1	11/7/2011	11/9/2011

J = Estimated value.

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APPL-F1-SC-NoMC-REG MDLs

Metals Analysis

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker

Project: 112G00810 Indian Head CTO423

ARF: 65882

Sample ID: X14GW0010911-F

APPL ID: AY47777

Sample Collection Date: 9/29/2011

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6020A	ANTIMONY (SB) (DISSOLVE	0.10 J	0.20	0.020	0.010	ug/L	1	11/7/2011	11/9/2011
6020A	COPPER (CU) (DISSOLVED)	5.6	0.50	0.260	0.130	ug/L	1	11/7/2011	11/9/2011

J = Estimated value.

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APPL-F1-SC-NoMC-REG MDLs

Metals Analysis

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker
Project: 112G00810 Indian Head CTO423
Sample ID: X15GW0030911
Sample Collection Date: 9/29/2011

ARF: 65882
APPL ID: AY47778

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6020A	ANTIMONY (SB)	0.16J	0.20	0.020	0.010	ug/L	1	11/7/2011	11/9/2011
6020A	LEAD (PB)	10.4	0.50	0.220	0.110	ug/L	1	11/7/2011	11/9/2011

J = Estimated value.

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APPL-F1-SC-NoMC-REG MDLs

Metals Analysis

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker
Project: 112G00810 Indian Head CTO423
Sample ID: X15GW0030911-F
Sample Collection Date: 9/29/2011

ARF: 65882
APPL ID: AY47779

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6020A	ANTIMONY (SB) (DISSOLVE	0.25	0.20	0.020	0.010	ug/L	1	11/7/2011	11/9/2011
6020A	LEAD (PB) (DISSOLVED)	0.48 J	0.50	0.220	0.110	ug/L	1	11/7/2011	11/9/2011

J = Estimated value.

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APPL-F1-SC-NoMC-REG MDLs

Metals Analysis

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker
Project: 112G00810 Indian Head CTO423
Sample ID: X14GW0020911
Sample Collection Date: 9/30/2011

ARF: 65882
APPL ID: AY47781

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6020A	COPPER (CU)	1.5	0.50	0.260	0.130	ug/L	1	11/7/2011	11/8/2011
6020A	LEAD (PB)	0.67	0.50	0.220	0.110	ug/L	1	11/7/2011	11/8/2011

Printed: 11/11/2011 3:12:07 PM

APPL-F1-SC-NoMC-REG MDLs

Metals Analysis

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker

Project: 112G00810 Indian Head CTO423

ARF: 65882

Sample ID: X14GW0020911-F

APPL ID: AY47782

Sample Collection Date: 9/30/2011

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6020A	COPPER (CU) (DISSOLVED)	0.54	0.50	0.260	0.130	ug/L	1	11/7/2011	11/8/2011
6020A	LEAD (PB) (DISSOLVED)	0.220 U	0.50	0.220	0.110	ug/L	1	11/7/2011	11/8/2011

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APPL-F1-SC-NoMC-REG MDLs

Metals Analysis

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

Attn: Barbra Becker

Project: 112G00810 Indian Head CTO423

Sample ID: X14GW0040911

Sample Collection Date: 9/30/2011

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

ARF: 65882

APPL ID: AY47783

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6020A	COPPER (CU)	8.4	0.50	0.260	0.130	ug/L	1	11/7/2011	11/8/2011
6020A	LEAD (PB)	14.8	0.50	0.220	0.110	ug/L	1	11/7/2011	11/8/2011

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APPL-F1-SC-NoMC-REG MDLs

Metals Analysis

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker
Project: 112G00810 Indian Head CTO423
Sample ID: X14GW0040911-F
Sample Collection Date: 9/30/2011

ARF: 65882
APPL ID: AY47784

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6020A	COPPER (CU) (DISSOLVED)	5.4	0.50	0.260	0.130	ug/L	1	11/7/2011	11/8/2011
6020A	LEAD (PB) (DISSOLVED)	7.7	0.50	0.220	0.110	ug/L	1	11/7/2011	11/8/2011

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APPL-F1-SC-NoMC-REG MDLs

Metals Analysis

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker
Project: 112G00810 Indian Head CTO423
Sample ID: DUP02093011
Sample Collection Date: 9/30/2011

ARF: 65882
APPL ID: AY47785

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6020A	COPPER (CU)	8.4	0.50	0.260	0.130	ug/L	1	11/7/2011	11/8/2011
6020A	LEAD (PB)	15.7	0.50	0.220	0.110	ug/L	1	11/7/2011	11/8/2011

Printed: 11/11/2011 3:12:07 PM
APPL-F1-SC-NoMC-REG MDLs

Metals Analysis

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker
Project: 112G00810 Indian Head CTO423
Sample ID: DUP02093011-F
Sample Collection Date: 09/30/11

ARF: 65882
APPL ID: AY47786

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6020A	COPPER (CU) (DISSOLVED)	6.0	0.50	0.260	0.130	ug/L	1	11/07/11	11/08/11
6020A	LEAD (PB) (DISSOLVED)	7.5	0.50	0.220	0.110	ug/L	1	11/07/11	11/08/11

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APPL-F1-SC-NoMC-REG MDLs

A.P.P.L. INC.

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: A.P.P.L. INC. Contract: Tetra Tech NUS, Inc.

ARF No: 65882 SDG: 65882

Initial Calibration Source: CPI

Continuing Calibration Source: Environmental Express

Analysis Date: 11/8/2011 Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration						M
	True	Found 11:06	%R(1)	True CCV1	Found 11:31	%R(1)	True CCV1	Found 12:01	%R(1)	
Copper (Cu)	100	100.1	100	50	50.45	101	50	48.44	96.9	P
Lead (Pb)	100	101.2	101	50	49.08	98.2	50	48.75	97.5	P
Antimony (Sb)	100	103.2	103	50	50.21	100	50	50.72	101	P

(1) Control Limits: Metals 90-110

ILM02.0

A.P.P.L. INC.

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: A.P.P.L. INC. Contract: Tetra Tech NUS, Inc.

ARF No: 65882 SDG: 65882

Initial Calibration Source: CPI

Continuing Calibration Source: Environmental Express

Analysis Date: 11/8/2011 Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration						M
	True	Found 11:06	%R(1)	True CCV1	Found 13:27	%R(1)	True CCV1	Found 14:58	%R(1)	
Copper (Cu)	100	100.1	100	50	48.88	97.8	50	48.41	96.8	P
Lead (Pb)	100	101.2	101	50	48.24	96.5	50	48.43	96.9	P
Antimony (Sb)	100	103.2	103	50	49.6	99.2	50	49.71	99.4	P

(1) Control Limits: Metals 90-110

ILM02.0

A.P.P.L. INC.

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: A.P.P.L. INC. Contract: Tetra Tech NUS, Inc.

ARF No: 65882 SDG: 65882

Initial Calibration Source: CPI

Continuing Calibration Source: Environmental Express

Analysis Date: 11/8/2011 Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration						M
	True	Found 11:06	%R(1)	True CCV1	Found 16:23	%R(1)	True	Found	%R(1)	
Copper (Cu)	100	100.1	100	50	48.65	97.3				P
Lead (Pb)	100	101.2	101	50	48.54	97.1				P
Antimony (Sb)	100	103.2	103	50	49.35	98.7				P

(1) Control Limits: Metals 90-110

ILM02.0

A.P.P.L. INC.
4
ICP INTERFERENCE CHECK SAMPLE

Lab Name:	A.P.P.L. INC.	Contract:	Tetra Tech NUS, Inc.
ARF No.:	65882	SDG:	65882
ICP ID Number:	Optimus	ICS Source:	Environmental Express

Analysis Date: 11/8/2011 Concentration Units: ug/L

Analyte	True		Initial Found		
	Sol A	Sol AB	Sol A 11:43	Sol AB 11:49	%R(1)
Copper (Cu)		250	1.053	206.5	82.6
Lead (Pb)		500	3.253	444.6	88.9
Antimony (Sb)		250	2.152	256.3	103

(1) Control Limits: Metals 80-120

A.P.P.L. INC.

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: A.P.P.L. INC. Contract: Tetra Tech NUS, Inc.

ARF No: 65882 SDG: 65882

Initial Calibration Source: CPI

Continuing Calibration Source: Environmental Express

Analysis Date: 11/9/2011 Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration						M
	True	Found 11:00	%R(1)	True CCV1	Found 11:25	%R(1)	True CCV1	Found 12:02	%R(1)	
Copper (Cu)	100	98.92	98.9	50	49.92	99.8	50	47.99	96.0	P
Lead (Pb)	100	97.06	97.1	50	48.16	96.3	50	48.21	96.4	P
Antimony (Sb)	100	101.5	102	50	48.53	97.1	50	49.95	99.9	P

(1) Control Limits: Metals 90-110

ILM02.0

A.P.P.L. INC.

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: A.P.P.L. INC. Contract: Tetra Tech NUS, Inc.

ARF No: 65882 SDG: 65882

Initial Calibration Source: CPI

Continuing Calibration Source: Environmental Express

Analysis Date: 11/9/2011 Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration						M
	True	Found 11:00	%R(1)	True CCV1	Found 13:32	%R(1)	True CCV1	Found 15:37	%R(1)	
Copper (Cu)	100	98.92	98.9	50	47.08	94.2	50	46.59	93.2	P
Lead (Pb)	100	97.06	97.1	50	48.35	96.7	50	48.22	96.4	P
Antimony (Sb)	100	101.5	102	50	49.44	98.9	50	49.23	98.5	P

(1) Control Limits: Metals 90-110

ILM02.0

A.P.P.L. INC.

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: A.P.P.L. INC. Contract: Tetra Tech NUS, Inc.

ARF No: 65882 SDG: 65882

Initial Calibration Source: CPI

Continuing Calibration Source: Environmental Express

Analysis Date: 11/9/2011 Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration						M
	True	Found 11:00	%R(1)	True CCV1	Found 17:33	%R(1)	True	Found	%R(1)	
Copper (Cu)	100	98.92	98.9	50	46.36	92.7				P
Lead (Pb)	100	97.06	97.1	50	47.86	95.7				P
Antimony (Sb)	100	101.5	102	50	49.76	99.5				P

(1) Control Limits: Metals 90-110

ILM02.0

A.P.P.L. INC.
4
ICP INTERFERENCE CHECK SAMPLE

Lab Name: A.P.P.L. INC. Contract: Tetra Tech NUS, Inc.
ARF No.: 65882 SDG: 65882
ICP ID Number: Optimus ICS Source: Environmental Express

Analysis Date: 11/9/2011 Concentration Units: ug/L

Analyte	True		Initial Found		
	Sol A	Sol AB	Sol A 11:37	Sol AB 11:50	%R(1)
Copper (Cu)		250	1.89	198.9	79.6
Lead (Pb)		500	3.279	449.7	89.9
Antimony (Sb)		250	2.044	256.5	103

(1) Control Limits: Metals 80-120

METALS BLANK

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Method	Analyte	Result	LOQ	LOD	DL	Units	Prep Date	Analysis Date	QC Group
6020A	ANTIMONY (SB)	0.020 U	0.20	0.020	0.010	ug/L	11/07/11	11/08/11	#62ADO-111107A-AY47773
6020A	COPPER (CU)	0.260 U	0.50	0.260	0.130	ug/L	11/07/11	11/08/11	#62ADO-111107A-AY47773
6020A	LEAD (PB)	0.220 U	0.50	0.220	0.110	ug/L	11/07/11	11/08/11	#62ADO-111107A-AY47773
6020A	ANTIMONY (SB) (DI	0.020 U	0.20	0.020	0.010	ug/L	11/07/11	11/08/11	¥62ADO-111107A1-AY47786
6020A	COPPER (CU) (DIS	0.260 U	0.50	0.260	0.130	ug/L	11/07/11	11/08/11	¥62ADO-111107A1-AY47786
6020A	LEAD (PB) (DISSOL	0.220 U	0.50	0.220	0.110	ug/L	11/07/11	11/08/11	¥62ADO-111107A1-AY47786

Metals SC-Blank-REG MDLs
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A.P.P.L. INC.
3
BLANKS

Lab Name: APPL, Inc. Contract #: Tetra Tech NUS, Inc Group

ARF No. 65882
Prep Blank Matrix: Water Concentration Units (ug/L or mg/kg) ug/L

Analysis Date: 11/08/2011

Analyte		Initial Calibration Blank 11:25	Continuing Calibration Blank 11:37	12:14	13:39	Preparation Blank 12:32	M
			1	2	3		
Copper		0.26U	0.26U	0.26U	0.26U	0.50U	
Lead		0.22U	0.22U	0.22U	0.22U	0.50U	
Antimony		0.20U	0.26	0.34	0.2	0.20U	*

*Exceeds LOD

Form III-IN

A.P.P.L. INC.
3
BLANKS

Lab Name: APPL, Inc. Contract #: Tetra Tech NUS, Inc Group

ARF No. 65882
Prep Blank Matrix: Water Concentration Units (ug/L or mg/kg):ug/L

Analysis Date: 11/08/2011

Analyte		Initial Calibration Blank 11:25	Continuing Calibration Blank 15:10 1	16:35 2		Preparation Blank 12:32	M
Copper		0.26U	0.26U	0.26U		0.50U	
Lead		0.22U	0.22U	0.22U		0.50U	
Antimony		0.20U	0.21	0.19J		0.20U	*

*Exceeds LOD

Form III-IN

A.P.P.L. INC.
3
BLANKS

Lab Name: APPL, Inc. Contract #: Tetra Tech NUS, Inc Group

ARF No. 65882
Prep Blank Matrix: Water Concentration Units (ug/L or mg/kg) ug/L

Analysis Date: 11/09/2011

Analyte		Initial Calibration Blank 11:19	Continuing Calibration Blank 11:31	12:14	13:45	Preparation Blank	M
			1	2	3		
Copper		0.26U	0.26U	0.26U	0.26U		
Lead		0.22U	0.22U	0.22U	0.22U		
Antimony		0.17J	0.8	0.32	0.07J		*

*Exceeds LOD

Form III-IN

A.P.P.L. INC.
3
BLANKS

Lab Name: APPL, Inc. Contract #: Tetra Tech NUS, Inc Group

ARF No. 65882
Prep Blank Matrix: Water Concentration Units (ug/L or mg/kg):ug/L

Analysis Date: 11/09/2011

Analyte		Initial Calibration Blank 11:19	Continuing Calibration Blank 15:49	17:45		Preparation Blank	M
			1	2			
Copper		0.26U	0.26U	0.26U			
Lead		0.22U	0.22U	0.22U			
Antimony		0.17J	0.07J	0.08J			

Form III-IN

Matrix Spike Recoveries

METALS

APPL ID: **111107W-47773 MS - 161259**

Sample ID: AY47773

Client ID: X15GW0010911

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Method	Compound Name	Spike Lvl ug/L	Matrix Res ug/L	SPK Res ug/L	DUP Res ug/L	SPK % Recovery	DUP % Recovery	RPD	RPD Max	Recovery Limits	Extract Date-Spk	Analysis Date-Spk	Extract Date-Dup	Analysis Date-Dup	QC Group	QC Sample
6020A	ANTIMONY (SB)	50.0	0.16	48.4	47.6	96.5	94.9	1.7	30-12(	80-120	11/7/2011	11/9/2011	11/7/2011	11/9/2011	161259	AY47773
6020A	COPPER (CU)	50.0	0.65	45.7	45.0	90.1	88.7	1.5	30-12(	80-120	11/7/2011	11/9/2011	11/7/2011	11/9/2011	161259	AY47773
6020A	LEAD (PB)	50.0	0.24	46.8	46.2	93.1	91.9	1.3	30-12(	80-120	11/7/2011	11/9/2011	11/7/2011	11/9/2011	161259	AY47773

Comments: _____

Laboratory Control Spike Recovery

METALS

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Method	Compound Name	Spike Level ug/L	SPK Result ug/L	SPK % Recovery	Recovery Limits	Extract Date	Analysis Date	QC Group
6020A	ANTIMONY (SB)	50.0	48.5	97.0	80-120	11/7/2011	11/8/2011	#62ADO-111107A-AY47773
6020A	COPPER (CU)	50.0	47.3	94.6	80-120	11/7/2011	11/8/2011	#62ADO-111107A-AY47773
6020A	LEAD (PB)	50.0	48.1	96.2	80-120	11/7/2011	11/8/2011	#62ADO-111107A-AY47773

Comments:

Printed: 11/11/2011 3:15:41 PM
APPL Standard LCS

Laboratory Control Spike Recovery

METALS

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Method	Compound Name	Spike Level ug/L	SPK Result ug/L	SPK % Recovery	Recovery Limits	Extract Date	Analysis Date	QC Group
6020A	ANTIMONY (SB) (DISSOLVED)	50.0	48.5	97.0	80-120	11/7/2011	11/8/2011	#62ADO-111107A1-AY47786
6020A	COPPER (CU) (DISSOLVED)	50.0	47.3	94.6	80-120	11/7/2011	11/8/2011	#62ADO-111107A1-AY47786
6020A	LEAD (PB) (DISSOLVED)	50.0	48.1	96.2	80-120	11/7/2011	11/8/2011	#62ADO-111107A1-AY47786

Comments: _____

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APPL Standard LCS

A.P.P.L. INC.

5B

POST DIGEST SPIKE SAMPLE RECOVERY

CLIENT SAMPLE NO.

X15GW0010911

Lab Name: A.P.P.L. INC. Contract: Tetra Tech NUS, Inc.

ARF No.: 65882 SDG: 65882

Analysis Date: 11/9/2011 Concentration Units: ug/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Copper (Cu)	75-125	226.662		0.646353		277.500	81.5		
Lead (Pb)	75-125	246.087		0.239538		277.500	88.6		
Antimony (Sb)	75-125	259.74		0.164391		277.500	93.5		

Comments:

11/9/2011 14:15 AY47773W13

11/9/2011 14:46 AY47773W13-A

A.P.P.L. INC.

9

ICP SERIAL DILUTION

CLIENT SAMPLE NO.

X15GW0010911

Lab Name: A.P.P.L. INC. Contract: Tetra Tech NUS, Inc.

ARF No.: 65882 SDG: 65882

Matrix: water

Analysis Date: 11/9/2011 Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	%D	Q	M
Copper (Cu)	0.646353		0.1622964		NA		
Lead (Pb)	0.239538		-1.494528		NA		
Antimony (Sb)	0.164391		10.59736		NA		

Comments:

11/9/2011 14:15 AY47773W13

11/9/2011 14:52 AY47773W13-1/5

_M3015

Metals Digestion Worksheet

Method Name 3015 Digestion **Prep Method** M3015 **Set** 111107A **Units** mL

Spikes	
Spiked ID 1	LCSW LOT# 1028408-29435
Spiked ID 2	LCSW LOT# 1028416-29433
Spiked ID 3	
Spiked ID 4	
Spiked By	NM Date: 11/07/11 2:26:00 PM
Witnessed By	KWS Date: 11/07/11 2:26:00 PM

Starting Temp:	25 C
Ending Temp:	170 C
Temperature Type:	Microwave
Sufficient Vol for Matrix QC:	YES
End Date/Time	11/07/11 15:30

	Sample	Sample Container	Spike Amount	Spike ID	Digested Amount	Final Volume	Start Date/Time	Comments
1	111107A Blk				45mL	50mL	11/07/11 14:26	equip: Venus
2	111107A LCS		90uL	1+2	45mL	50mL	11/07/11 14:26	equip: Venus
3	AY47772	AY47772W01			45mL	50mL	11/07/11 14:26	equip: Venus
4	AY47773	AY47773W13			45mL	50mL	11/07/11 14:26	equip: Venus
5	AY47773 MS	AY47773W13	90uL	1+2	45mL	50mL	11/07/11 14:26	equip: Venus
6	AY47773 MSD	AY47773W13	90uL	1+2	45mL	50mL	11/07/11 14:26	equip: Venus
7	AY47774	AY47774W03			45mL	50mL	11/07/11 14:26	equip: Venus
8	AY47775	AY47775W01			45mL	50mL	11/07/11 14:26	equip: Venus
9	AY47776	AY47776W01			45mL	50mL	11/07/11 14:26	equip: Venus
10	AY47777	AY47777W01			45mL	50mL	11/07/11 14:26	equip: Venus
11	AY47778	AY47778W01			45mL	50mL	11/07/11 14:26	equip: Venus
12	AY47779	AY47779W01			45mL	50mL	11/07/11 14:26	equip: Venus
13	AY47781	AY47781W01			45mL	50mL	11/07/11 14:26	equip: Venus
14	AY47782	AY47782W01			45mL	50mL	11/07/11 14:26	equip: Venus
15	AY47783	AY47783W01			45mL	50mL	11/07/11 14:26	equip: Venus
16	AY47784	AY47784W01			45mL	50mL	11/07/11 14:26	equip: Venus
17	AY47785	AY47785W01			45mL	50mL	11/07/11 14:26	equip: Venus
18	AY47786	AY47786W01			45mL	50mL	11/07/11 14:26	equip: Venus

Solvent and Lot#
HNO3 J.T.B k19023 0094

Sample COC Transfer	
Sample prep employee Initials	nm
Analyst's initials	NBS
Date	11-7-11
Time	17:20
Moved to	metals

Technician's Initials	
Scanned By	nm
Sample Preparation	lo
Digestion	lo
Bring up to volume	nm
Modified	11/07/11 2:31:09 PM

Reviewed By: EA **Date:** 11-7-11

6020/200.8 Injection Log

Directory: K:\ICP-MS Optimus\raw data output csv\

RunID	Injected		Sample Name	Misc Info	FileName	Multiplier
1	08 Nov 2011	10:35	Calibration Blank		111108A	1.
2	08 Nov 2011	10:41	111108 Standard 1		111108A	1.
3	08 Nov 2011	10:47	111108 Standard 2		111108A	1.
4	08 Nov 2011	10:53	111108 Standard 3		111108A	1.
5	08 Nov 2011	11:00	111108 Standard 4		111108A	1.
6	08 Nov 2011	11:06	ICV 111108		111108A	1.
8	08 Nov 2011	11:25	ICB 111108		111108A	1.
9	08 Nov 2011	11:31	CCV 111108		111108A	1.
10	08 Nov 2011	11:37	CCB 111108		111108A	1.
11	08 Nov 2011	11:43	ICSA 111108		111108A	1.
12	08 Nov 2011	11:49	ICSAB 111108		111108A	1.
13	08 Nov 2011	12:01	CCV 111108		111108A	1.
14	08 Nov 2011	12:14	CCB 111108		111108A	1.
16	08 Nov 2011	12:32	111107A-3015-BLK		111108A	1.
19	08 Nov 2011	12:51	111107A-3015-LCS		111108A	1.
25	08 Nov 2011	13:27	CCV 111108		111108A	1.
26	08 Nov 2011	13:39	CCB 111108		111108A	1.
38	08 Nov 2011	14:58	CCV 111108		111108A	1.
39	08 Nov 2011	15:10	CCB 111108		111108A	1.
42	08 Nov 2011	15:28	AY47781W01		111108A	1.
43	08 Nov 2011	15:34	AY47782W01		111108A	1.
44	08 Nov 2011	15:41	AY47783W01		111108A	1.
45	08 Nov 2011	15:47	AY47784W01		111108A	1.
46	08 Nov 2011	15:53	AY47785W01		111108A	1.
47	08 Nov 2011	15:59	AY47786W01		111108A	1.
51	08 Nov 2011	16:23	CCV 111108		111108A	1.
52	08 Nov 2011	16:35	CCB 111108		111108A	1.

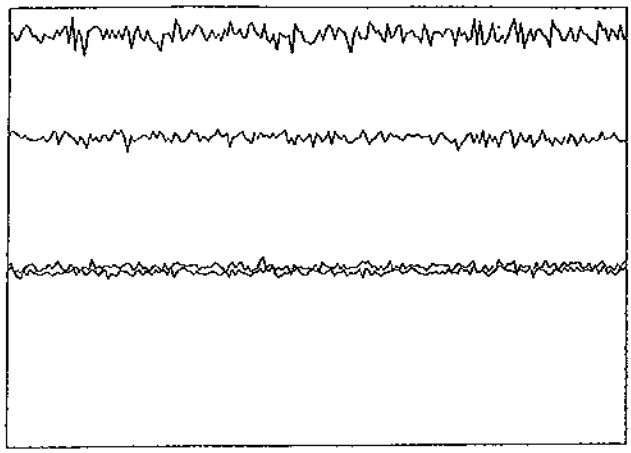
6020/200.8 Injection Log

Directory: K:\ICP-MS Optimus\raw data output csv\

RunID	Injected		Sample Name	Misc Info	FileName	Multiplier
1	09 Nov 2011	10:27	Calibration Blank		111109A	1.
2	09 Nov 2011	10:35	111109 Standard 1		111109A	1.
3	09 Nov 2011	10:41	111109 Standard 2		111109A	1.
4	09 Nov 2011	10:47	111109 Standard 3		111109A	1.
5	09 Nov 2011	10:54	111109 Standard 4		111109A	1.
6	09 Nov 2011	11:00	ICV 111109		111109A	1.
8	09 Nov 2011	11:19	ICB 111109		111109A	1.
9	09 Nov 2011	11:25	CCV 111109		111109A	1.
10	09 Nov 2011	11:31	CCB 111109		111109A	1.
11	09 Nov 2011	11:37	ICSA 111109		111109A	1.
12	09 Nov 2011	11:50	ICSAB 111109		111109A	1.
13	09 Nov 2011	12:02	CCV 111109		111109A	1.
14	09 Nov 2011	12:14	CCB 111109		111109A	1.
25	09 Nov 2011	13:32	CCV 111109		111109A	1.
26	09 Nov 2011	13:45	CCB 111109		111109A	1.
27	09 Nov 2011	14:09	AY47772W01		111109A	1.
28	09 Nov 2011	14:15	AY47773W13		111109A	1.
29	09 Nov 2011	14:31	AY47773W13 MS		111109A	1.
30	09 Nov 2011	14:40	AY47773W13 MSD		111109A	1.
31	09 Nov 2011	14:46	AY47773W13-A		111109A	1.
32	09 Nov 2011	14:52	AY47773W13-1/5		111109A	5.
33	09 Nov 2011	15:00	AY47774W03		111109A	1.
34	09 Nov 2011	15:06	AY47775W01		111109A	1.
35	09 Nov 2011	15:13	AY47776W01		111109A	1.
36	09 Nov 2011	15:19	AY47777W01		111109A	1.
38	09 Nov 2011	15:37	CCV 111109		111109A	1.
39	09 Nov 2011	15:49	CCB 111109		111109A	1.
43	09 Nov 2011	16:14	AY47779W01		111109A	1.
48	09 Nov 2011	17:04	AY47778W01		111109A	1.
51	09 Nov 2011	17:33	CCV 111109		111109A	1.
52	09 Nov 2011	17:45	CCB 111109		111109A	1.

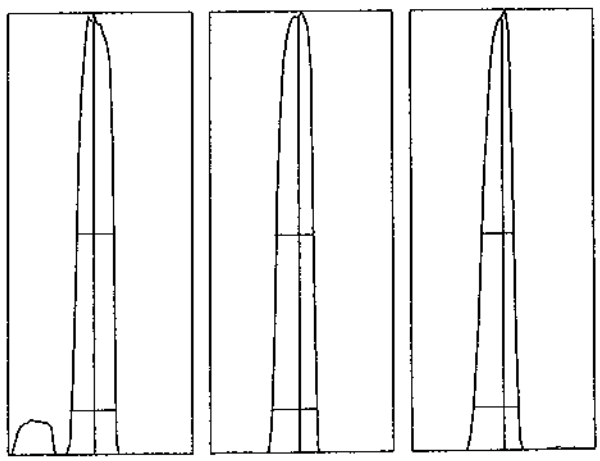
Tune Report

Tune File : nogas.u
Comment : 111108



Integration Time:	0.1000 sec	
Sampling Period:	0.6200 sec	
n:	200	
Oxide:	156/140	1.373%
Doubly Charged:	70/140	1.007%

m/z	Range	Count	Mean	RSD%	Background
7	50,000	34669.0	35101.4	1.44	0.30
89	50,000	20283.0	19793.1	1.51	1.30
205	20,000	18736.0	18754.5	1.76	4.60
156/140	2	1.495%	1.401%	6.36	
70/140	2	0.952%	0.971%	7.85	
140	50,000	21004.0	20403.7	1.73	3.40



m/z:	7	89	205
Height:	35,224	19,750	18,561
Axis:	6.95	89.00	205.05
W-50%:	0.65	0.65	0.55
W-10%:	0.7500	0.7500	0.7500

Integration Time: 0.1000 sec
Acquisition Time: 22.7600 sec

Y axis : Linear

Generated : Nov 08, 2011 09:47:17
Printed : Nov 08, 2011 09:47:20

Tune Report

Tune File : nogas.u
Comment : 111108

Tuning Parameters

===Plasma Condition===			===Ion Lenses===			===Q-Pole Parameters===		
RF Power	:	1600 W	Extract 1	:	0 V	AMU Gain	:	128
RF Matching	:	1.66 V	Extract 2	:	-130 V	AMU Offset	:	127
Smpl Depth	:	9.6 mm	Omega Bias-ce	:	-22 V	Axis Gain	:	1
Torch-H	:	-0.3 mm	Omega Lens-ce	:	-1.2 V	Axis Offset	:	-0.02
Torch-V	:	0.1 mm	Cell Entrance	:	-30 V	QP Bias	:	-3 V
Carrier Gas	:	1.02 L/min	QP Focus	:	5 V			
Makeup Gas	:	0.1 L/min	Cell Exit	:	-30 V	===Detector Parameters===		
Optional Gas	:	--- %				Discriminator	:	8 mV
Nebulizer Pump	:	0.1 rps	===Octopole Parameters===			Analog HV	:	1630 V
Sample Pump	:	--- rps	OctP RF	:	180 V	Pulse HV	:	1440 V
S/C Temp	:	2 degC	OctP Bias	:	-6 V			

===Reaction Cell===								
Reaction Mode	:	OFF						
H2 Gas	:	0 mL/min	He Gas	:	0 mL/min	Optional Gas	:	--- %

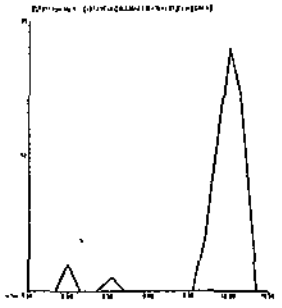
Generated : Nov 08, 2011 09:47:17
Printed : Nov 08, 2011 09:47:22

200.8 QC Tune Report

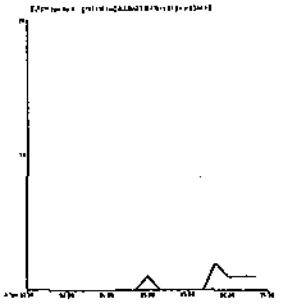
Data File: C:\ICPCHEM\1\DATA\11K08j00.B\001TUNE.D
Date Acquired: Nov 8 2011 09:54 am
Acq. Method: TN200_8.M
Operator: NBS
Sample Name: 100ppb Tune sol
Misc Info:
Vial Number: 1303
Current Method: C:\ICPCHEM\1\METHODS\TN200_8.M

RSD (%)

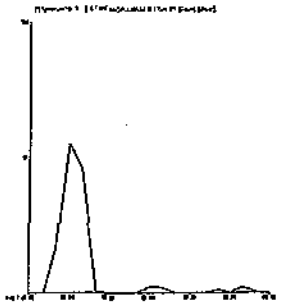
Element	CPS Mean	Rep1	Rep2	Rep3	Rep4	Rep5	%RSD	Required	Flag
9 Be	59673669	59491320	59608068	59407888	59798864	60062204	**0.82**	5.00	
24 Mg	103938978	########	########	########	########	########	**0.95**	5.00	
59 Co	88899605	88848832	89270400	88854864	88675680	88848248	**0.39**	5.00	
115 In	102713896	########	########	########	########	########	**0.62**	5.00	
208 Pb	65508450	65320172	65699020	65733584	65661332	65128140	**1.12**	5.00	



9 Be
Mass Calib.
Actual: 9.00
Required: 8.90 - 9.10
Flag:
Peak Width
Actual: 0.65
Required: 0.90
Flag:



24 Mg
Mass Calib.
Actual: 23.95
Required: 23.90 - 24.10
Flag:
Peak Width
Actual: 0.65
Required: 0.80
Flag:



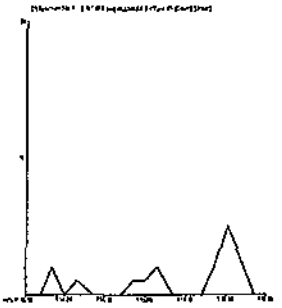
59 Co

Mass Calib.

Actual:	59.00		
Required:	58.90	-	59.10
Flag:			

Peak Width

Actual:	0.65		
Required:	0.90		
Flag:			



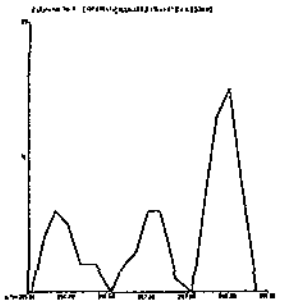
115 In

Mass Calib.

Actual:	115.05		
Required:	114.90	-	115.10
Flag:			

Peak Width

Actual:	0.65		
Required:	0.90		
Flag:			



208 Pb

Mass Calib.

Actual:	208.05		
Required:	207.90	-	208.10
Flag:			

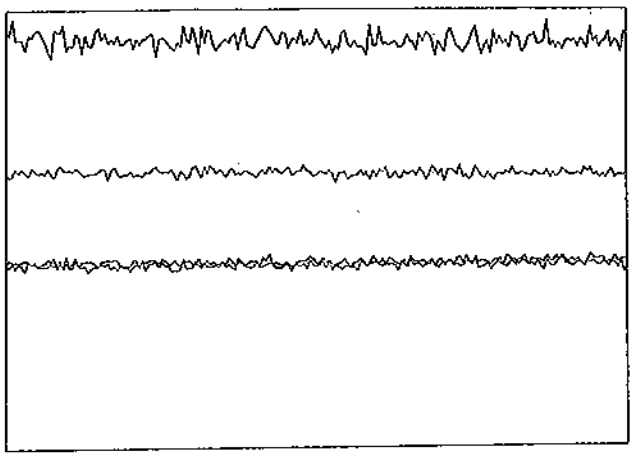
Peak Width

Actual:	0.65		
Required:	0.80		
Flag:			

Tune Result: Pass

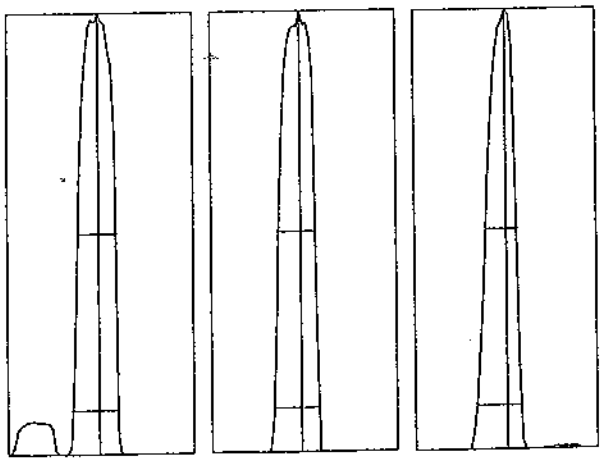
Tune Report

Tune File : nogas.u
Comment : 111109



Integration Time:	0.1000 sec	
Sampling Period:	0.6200 sec	
n:	200	
Oxide:	156/140	1.293%
Doubly Charged:	70/140	1.160%

m/z	Range	Count	Mean	RSD%	Background
7	50,000	31393.0	31328.8	1.33	0.60
89	50,000	20908.0	20823.2	1.58	2.20
205	20,000	18634.0	18575.6	1.85	5.30
156/140	2	1.240%	1.307%	6.61	
70/140	2	1.222%	1.098%	7.44	
140	50,000	21285.0	21188.3	1.50	5.00



m/z:	7	89	205
Height:	31,087	21,094	18,836
Axis:	7.00	89.00	205.05
W-50%:	0.65	0.65	0.55
W-10%:	0.7500	0.7500	0.7500

Integration Time: 0.1000 sec
Acquisition Time: 22.7600 sec

Y axis : Linear

Generated : Nov 09, 2011 10:01:06
Printed : Nov 09, 2011 10:01:08

Tune Report

Tune File : nogas.u
Comment : 111109

Tuning Parameters

===Plasma Condition===			===Ion Lenses===			===Q-Pole Parameters===		
RF Power	:	1600 W	Extract 1	:	0 V	AMU Gain	:	128
RF Matching	:	1.66 V	Extract 2	:	-130 V	AMU Offset	:	127
Smpl Depth	:	9.6 mm	Omega Bias-ce	:	-22 V	Axis Gain	:	1
Torch-H	:	-0.1 mm	Omega Lens-ce	:	-1.2 V	Axis Offset	:	-0.02
Torch-V	:	0.1 mm	Cell Entrance	:	-30 V	QP Bias	:	-3 V
Carrier Gas	:	1.02 L/min	QP Focus	:	5 V			
Makeup Gas	:	0.1 L/min	Cell Exit	:	-30 V	===Detector Parameters===		
Optional Gas	:	--- %				Discriminator	:	8 mV
Nebulizer Pump	:	0.1 rps	===Octopole Parameters===			Analog HV	:	1650 V
Sample Pump	:	--- rps	OctP RF	:	180 V	Pulse HV	:	1450 V
S/C Temp	:	2 degC	OctP Bias	:	-6 V			

===Reaction Cell===

Reaction Mode	:	OFF						
H2 Gas	:	0 mL/min	He Gas	:	0 mL/min	Optional Gas	:	--- %

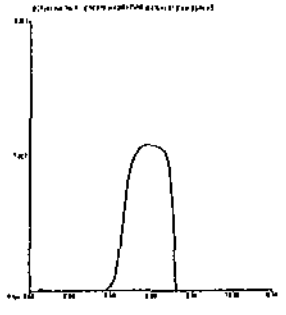
Generated : Nov 09, 2011 10:01:06
Printed : Nov 09, 2011 10:01:10

200.8 QC Tune Report

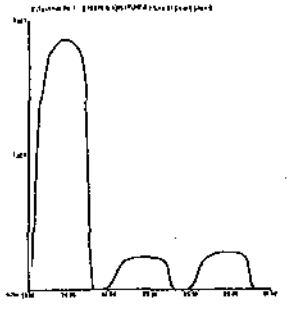
Data File: C:\ICPCHEM\1\DATA\11K09k00.B\001TUNE.D
Date Acquired: Nov 9 2011 10:10 am
Acq. Method: TN200_8.M
Operator: NBS
Sample Name: 100ppb Tune sol
Misc Info:
Vial Number: 1303
Current Method: C:\ICPCHEM\1\METHODS\TN200_8.M

RSD (%)

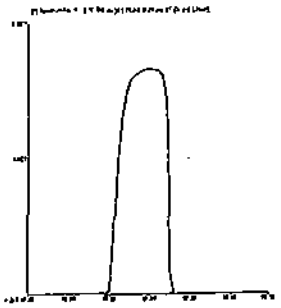
Element	CPS Mean	Rep1	Rep2	Rep3	Rep4	Rep5	%RSD	Required	Flag
9 Be	63186591	61753436	62871384	63490292	63765652	64052192	1.44	5.00	
24 Mg	111752866	########	########	########	########	########	1.78	5.00	
59 Co	102229572	########	########	########	########	########	1.16	5.00	
115 In	111193910	########	########	########	########	########	1.04	5.00	
208 Pb	65257836	64701096	65547852	64818384	65488080	65733768	0.57	5.00	



9 Be
Mass Calib.
Actual: 9.00
Required: 8.90 - 9.10
Flag:
Peak Width
Actual: 0.65
Required: 0.90
Flag:



24 Mg
Mass Calib.
Actual: 23.95
Required: 23.90 - 24.10
Flag:
Peak Width
Actual: 0.65
Required: 0.80
Flag:



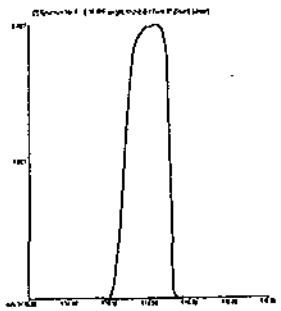
59 Co

Mass Calib.

Actual:	59.00		
Required:	58.90	-	59.10
Flag:			

Peak Width

Actual:	0.65		
Required:	0.90		
Flag:			



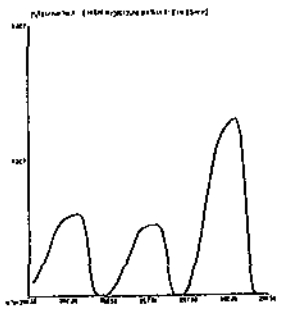
115 In

Mass Calib.

Actual:	115.05		
Required:	114.90	-	115.10
Flag:			

Peak Width

Actual:	0.65		
Required:	0.90		
Flag:			



208 Pb

Mass Calib.

Actual:	208.00		
Required:	207.90	-	208.10
Flag:			

Peak Width

Actual:	0.65		
Required:	0.80		
Flag:			

Tune Result: Pass

Raw Sample Data

Sample QC Report

Data File: C:\ICPCHEM\1\DATA\11K09k00.B\036SMPL.D\036SMPL.D#
Date Acquired: Nov 9 2011 02:09 pm
Operator: NBS
Sample Name: AY47772W01
Misc Info: 111107A-301S
Vial Number: 3110
Current Method: C:\ICPCHEM\1\METHODS\62A1109.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1109.C
Last Cal Update: Nov 09 2011 10:58 am
Sample Type: Sample
Prep Dil Factor: 1.11
Total Dil Factor: 1.11

QC Elements

Element	Conc.	Corr. Conc.	RSD(%)	High Limit	Flag
7 (Li)	-------- ug/l	#VALUE!	--------	0	
9 Be	0.55 ug/l	0.61	2.82	1000	
11 B	36.58 ug/l	40.64	0.81	1000	
23 Na	19180.00 ug/l	21308.98	0.62	25000	
24 Mg	3492.00 ug/l	3879.61	1.40	50000	
27 Al	12420.00 ug/l	13798.62	1.09	20000	
39 K	4372.00 ug/l	4857.29	0.41	20000	
44 Ca	7968.00 ug/l	8852.45	0.29	50000	
47 Ti	162.70 ug/l	180.76	1.26	1000	
51 V	31.81 ug/l	35.34	0.87	1000	
52 Cr	35.64 ug/l	39.60	0.48	1000	
55 Mn	251.90 ug/l	279.86	0.49	1000	
56 Fe	18090.00 ug/l	20097.99	0.95	20000	
59 Co	6.78 ug/l	7.53	1.23	1000	
60 Ni	13.96 ug/l	15.51	1.74	1000	
63 Cu	11.88 ug/l	13.20	0.59	1000	
65 Cu	11.82 ug/l	13.13	0.21	1000	
66 Zn	29.62 ug/l	32.91	0.74	1000	
75 As	3.37 ug/l	3.74	2.01	1000	
78 Se	0.29 ug/l	0.32	7.01	1000	
78 Se	1.13 ug/l	1.25	11.85	1000	
88 Sr	58.16 ug/l	64.62	0.25	1000	
88 Sr	59.22 ug/l	65.79	0.47	1000	
95 Mo	1.88 ug/l	2.09	1.63	1000	
106 (Cd)	-------- ug/l	#VALUE!	--------	########	
107 Ag	0.03 ug/l	0.04	11.03	500	
108 (Cd)	-------- ug/l	#VALUE!	--------	########	
111 Cd	0.26 ug/l	0.28	19.48	1000	
118 Sn	0.60 ug/l	0.67	0.54	1000	
121 Sb	0.82 ug/l	0.92	3.39	1000	
137 Ba	98.43 ug/l	109.36	1.50	1000	
205 Tl	0.18 ug/l	0.20	5.35	1000	
206 (Pb)	-------- ug/l	#VALUE!	--------	########	
207 (Pb)	-------- ug/l	#VALUE!	--------	########	
208 Pb	19.60 ug/l	21.78	0.29	1000	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	2933021.30	0.54	2718933.80	107.9
45 Sc	872307.06	1.48	580246.44	150.3
45 Sc	102845.54	0.25	78449.59	131.1
45 Sc	2087700.90	1.09	1460500.30	142.9
72 Ge	134799.97	0.56	106527.24	126.5
72 Ge	49884.48	0.70	39295.42	126.9
72 Ge	240473.20	0.29	209205.06	114.9
115 In	1546855.60	0.92	1337657.80	115.6
159 Tb	2333481.80	0.58	1942159.60	120.1
165 Ho	2379973.80	0.23	1969815.00	120.8

ISTD Ref File : C:\ICPCHEM\1\DATA\11K09k00.B\004CALB.D\004CALB.D#

0 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Pass

Sample QC Report

Data File: C:\ICPCHEM\1\DATA\11K09k00.B\0378MPL.D\0378MPL.D#
Date Acquired: Nov 9 2011 02:15 pm
Operator: NBS
Sample Name: AY47773W13
Misc Info: 111107A-3015
Vial Number: 3111
Current Method: C:\ICPCHEM\1\METHODS\62A1109.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1109.C
Last Cal Update: Nov 09 2011 10:58 am
Sample Type: Sample
Prep Dil Factor: 1.11
Total Dil Factor: 1.11

QC Elements

Element	Conc.	Corr. Conc.	RSD(%)	High Limit	Flag
7 (Li)	-------- ug/l	#VALUE!	--------	0	
9 Be	0.06 ug/l	0.07	9.70	1000	
11 B	44.22 ug/l	49.13	1.44	1000	
23 Na	64970.00 ug/l	72181.67	1.46	25000	>Cal
24 Mg	7717.00 ug/l	8573.59	1.84	50000	
27 Al	246.10 ug/l	273.42	1.28	20000	
39 K	2694.00 ug/l	2993.03	0.80	20000	
44 Ca	6337.00 ug/l	7040.41	0.46	50000	
47 Ti	4.58 ug/l	5.09	13.25	1000	
51 V	0.26 ug/l	0.29	18.42	1000	
52 Cr	0.93 ug/l	1.03	2.44	1000	
55 Mn	145.60 ug/l	161.76	0.36	1000	
56 Fe	2018.00 ug/l	2242.00	0.99	20000	
59 Co	6.27 ug/l	6.96	0.76	1000	
60 Ni	8.61 ug/l	9.57	1.75	1000	
63 Cu	0.58 ug/l	0.65	4.29	1000	
65 Cu	0.57 ug/l	0.64	5.79	1000	
66 Zn	14.76 ug/l	16.40	1.76	1000	
75 As	-0.20 ug/l	-0.22	11.38	1000	
78 Se	0.10 ug/l	0.11	16.44	1000	
78 Se	0.29 ug/l	0.32	10.39	1000	
88 Sr	50.88 ug/l	56.53	0.79	1000	
88 Sr	50.97 ug/l	56.63	0.66	1000	
95 Mo	0.18 ug/l	0.21	11.96	1000	
106 (Cd)	-------- ug/l	#VALUE!	--------	########	
107 Ag	0.00 ug/l	0.00	99.13	500	
108 (Cd)	-------- ug/l	#VALUE!	--------	########	
111 Cd	0.21 ug/l	0.23	7.18	1000	
118 Sn	0.12 ug/l	0.13	3.02	1000	
121 Sb	0.15 ug/l	0.16	9.78	1000	
137 Ba	52.91 ug/l	58.78	0.99	1000	
205 Tl	0.02 ug/l	0.03	8.76	1000	
206 (Pb)	-------- ug/l	#VALUE!	--------	########	
207 (Pb)	-------- ug/l	#VALUE!	--------	########	
208 Pb	0.22 ug/l	0.24	5.06	1000	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	2961008.30	1.13	2718933.80	108.9
45 Sc	739342.88	0.62	580246.44	127.4
45 Sc	99436.04	0.13	78449.59	126.8
45 Sc	1792574.90	0.86	1460500.30	122.7
72 Ge	133885.64	0.44	106527.24	125.7
72 Ge	49390.93	0.47	39295.42	125.7
72 Ge	245808.97	0.51	209205.06	117.5
115 In	1617708.50	0.63	1337657.80	120.9
159 Tb	2354328.00	1.03	1942159.60	121.2
165 Ho	2414073.00	0.97	1969815.00	122.6

ISTD Ref File : C:\ICPCHEM\1\DATA\11K09k00.B\004CALB.D\004CALB.D#

1 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Fail

Sample QC Report

Data File: C:\ICPCHEM\1\DATA\11K09k00.B\042SMPL.D\042SMPL.D#
Date Acquired: Nov 9 2011 03:00 pm
Operator: NBS
Sample Name: AY47774W03
Misc Info: 111107A-3015
Vial Number: 3204
Current Method: C:\ICPCHEM\1\METHODS\62A1109.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1109.C
Last Cal Update: Nov 09 2011 10:58 am
Sample Type: Sample
Prep Dil Factor: 1.11
Total Dil Factor: 1.11

QC Elements

Element	Conc.	Corr. Conc.	RSD(%)	High Limit	Flag
7 (Li)	-------- ug/l	#VALUE!	--------	0	
9 Be	2.00 ug/l	2.23	1.14	1000	
11 B	27.99 ug/l	31.10	1.88	1000	
23 Na	70920.00 ug/l	78792.12	1.83	25000	>Cal
24 Mg	10400.00 ug/l	11554.40	1.33	50000	
27 Al	509.30 ug/l	565.83	1.36	20000	
39 K	5152.00 ug/l	5723.87	1.36	20000	
44 Ca	9848.00 ug/l	10941.13	1.09	50000	
47 Ti	0.95 ug/l	1.05	20.38	1000	
51 V	-0.34 ug/l	-0.38	18.12	1000	
52 Cr	1.06 ug/l	1.18	2.24	1000	
55 Mn	205.20 ug/l	227.98	1.04	1000	
56 Fe	2614.00 ug/l	2904.15	1.05	20000	
59 Co	17.29 ug/l	19.21	1.08	1000	
60 Ni	29.70 ug/l	33.00	1.19	1000	
63 Cu	4.55 ug/l	5.06	1.30	1000	
65 Cu	4.52 ug/l	5.02	2.29	1000	
66 Zn	69.46 ug/l	77.17	0.73	1000	
75 As	-0.19 ug/l	-0.21	14.25	1000	
78 Se	0.15 ug/l	0.16	2.85	1000	
78 Se	0.36 ug/l	0.40	21.55	1000	
88 Sr	87.77 ug/l	97.51	1.33	1000	
88 Sr	88.40 ug/l	98.21	0.82	1000	
95 Mo	0.11 ug/l	0.13	4.16	1000	
106 (Cd)	-------- ug/l	#VALUE!	--------	########	
107 Ag	0.00 ug/l	0.00	53.20	500	
108 (Cd)	-------- ug/l	#VALUE!	--------	########	
111 Cd	0.30 ug/l	0.33	5.67	1000	
118 Sn	0.34 ug/l	0.38	8.74	1000	
121 Sb	0.50 ug/l	0.55	5.62	1000	
137 Ba	155.70 ug/l	172.98	1.22	1000	
205 Tl	0.06 ug/l	0.07	1.27	1000	
206 (Pb)	-------- ug/l	#VALUE!	--------	########	
207 (Pb)	-------- ug/l	#VALUE!	--------	########	
208 Pb	0.88 ug/l	0.97	2.38	1000	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	2882963.50	0.09	2718933.80	106.0
45 Sc	751975.81	0.73	580246.44	129.6
45 Sc	98137.83	0.35	78449.59	125.1
45 Sc	1840564.60	1.00	1460500.30	126.0
72 Ge	131224.17	0.39	106527.24	123.2
72 Ge	48209.56	1.07	39295.42	122.7
72 Ge	239816.02	0.57	209205.06	114.6
115 In	1568801.60	0.96	1337657.80	117.3
159 Tb	2359670.80	0.40	1942159.60	121.5
165 Ho	2393031.80	0.59	1969815.00	121.5

ISTD Ref File : C:\ICPCHEM\1\DATA\11K09k00.B\004CALB.D\004CALB.D#

1 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Fail

Sample QC Report

Data File: C:\ICPCHEM\1\DATA\11K09k00.B\043SMPL.D\043SMPL.D#
Date Acquired: Nov 9 2011 03:06 pm
Operator: NBS
Sample Name: AY47775W01
Misc Info: 111107A-301S
Vial Number: 3205
Current Method: C:\ICPCHEM\1\METHODS\62A1109.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1109.C
Last Cal Update: Nov 09 2011 10:58 am
Sample Type: Sample
Prep Dil Factor: 1.11
Total Dil Factor: 1.11

QC Elements

Element	Conc.	Corr. Conc.	RSD(%)	High Limit	Flag
7 (Li)	-------- ug/l	#VALUE!	--------	0	
9 Be	-0.05 ug/l	-0.06	2.90	1000	
11 B	28.07 ug/l	31.19	0.59	1000	
23 Na	20520.00 ug/l	22797.72	0.90	25000	
24 Mg	1973.00 ug/l	2192.00	0.46	50000	
27 Al	11.19 ug/l	12.43	6.97	20000	
39 K	1561.00 ug/l	1734.27	0.13	20000	
44 Ca	7921.00 ug/l	8800.23	0.70	50000	
47 Ti	0.25 ug/l	0.27	20.41	1000	
51 V	-0.35 ug/l	-0.38	10.67	1000	
52 Cr	0.28 ug/l	0.32	1.60	1000	
55 Mn	120.30 ug/l	133.65	0.30	1000	
56 Fe	161.70 ug/l	179.65	0.25	20000	
59 Co	2.97 ug/l	3.30	1.46	1000	
60 Ni	7.44 ug/l	8.26	1.25	1000	
63 Cu	0.71 ug/l	0.79	2.42	1000	
65 Cu	0.70 ug/l	0.78	2.69	1000	
66 Zn	24.89 ug/l	27.65	1.22	1000	
75 As	-0.26 ug/l	-0.29	4.36	1000	
78 Se	0.09 ug/l	0.10	9.17	1000	
78 Se	0.15 ug/l	0.17	4.42	1000	
88 Sr	46.56 ug/l	51.73	1.34	1000	
88 Sr	45.07 ug/l	50.07	1.24	1000	
95 Mo	0.23 ug/l	0.26	4.17	1000	
106 (Cd)	-------- ug/l	#VALUE!	--------	########	
107 Ag	0.00 ug/l	0.00	17.45	500	
108 (Cd)	-------- ug/l	#VALUE!	--------	########	
111 Cd	0.04 ug/l	0.04	8.36	1000	
118 Sn	0.43 ug/l	0.48	1.95	1000	
121 Sb	0.52 ug/l	0.58	1.49	1000	
137 Ba	25.66 ug/l	28.51	1.27	1000	
205 Tl	0.01 ug/l	0.01	8.12	1000	
206 (Pb)	-------- ug/l	#VALUE!	--------	########	
207 (Pb)	-------- ug/l	#VALUE!	--------	########	
208 Pb	0.16 ug/l	0.17	1.78	1000	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	2981536.30	1.26	2718933.80	109.7
45 Sc	737706.38	0.97	580246.44	127.1
45 Sc	98689.34	0.63	78449.59	125.8
45 Sc	1742209.60	1.08	1460500.30	119.3
72 Ge	136019.25	0.69	106527.24	127.7
72 Ge	49438.51	0.54	39295.42	125.8
72 Ge	242491.95	1.11	209205.06	115.9
115 In	1603943.30	1.14	1337657.80	119.9
159 Tb	2372719.00	0.31	1942159.60	122.2
165 Ho	2421072.50	1.09	1969815.00	122.9

ISTD Ref File : C:\ICPCHEM\1\DATA\11K09k00.B\004CALB.D\004CALB.D#

0 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Pass

Sample QC Report

Data File: C:\ICPCHEM\1\DATA\11K09k00.B\044SMPL.D\044SMPL.D#
Date Acquired: Nov 9 2011 03:13 pm
Operator: NBS
Sample Name: AY47776W01
Misc Info: 111107A-3015
Vial Number: 3206
Current Method: C:\ICPCHEM\1\METHODS\62A1109.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1109.C
Last Cal Update: Nov 09 2011 10:58 am
Sample Type: Sample
Prep Dil Factor: 1.11
Total Dil Factor: 1.11

QC Elements

Element	Conc.	Corr. Conc.	RSD(%)	High Limit	Flag
7 (Li)	-------- ug/l	#VALUE!	--------	0	
9 Be	0.05 ug/l	0.06	10.43	1000	
11 B	45.22 ug/l	50.24	1.42	1000	
23 Na	64550.00 ug/l	71715.05	0.34	25000	>Cal
24 Mg	7740.00 ug/l	8599.14	0.70	50000	
27 Al	36.88 ug/l	40.97	3.88	20000	
39 K	2663.00 ug/l	2958.59	0.91	20000	
44 Ca	6850.00 ug/l	7610.35	0.24	50000	
47 Ti	0.27 ug/l	0.30	19.60	1000	
51 V	-0.49 ug/l	-0.55	10.26	1000	
52 Cr	0.25 ug/l	0.28	4.27	1000	
55 Mn	143.80 ug/l	159.76	0.63	1000	
56 Fe	1715.00 ug/l	1905.37	0.66	20000	
59 Co	6.24 ug/l	6.93	0.43	1000	
60 Ni	8.51 ug/l	9.45	0.15	1000	
63 Cu	0.84 ug/l	0.93	1.66	1000	
65 Cu	0.88 ug/l	0.97	2.65	1000	
66 Zn	30.78 ug/l	34.20	1.20	1000	
75 As	-0.30 ug/l	-0.33	3.46	1000	
78 Se	0.12 ug/l	0.13	25.03	1000	
78 Se	0.29 ug/l	0.32	17.56	1000	
88 Sr	50.56 ug/l	56.17	0.91	1000	
88 Sr	51.64 ug/l	57.37	1.06	1000	
95 Mo	0.13 ug/l	0.14	10.36	1000	
106 (Cd)	-------- ug/l	#VALUE!	--------	########	
107 Ag	0.00 ug/l	0.00	113.12	500	
108 (Cd)	-------- ug/l	#VALUE!	--------	########	
111 Cd	0.19 ug/l	0.21	3.76	1000	
118 Sn	0.13 ug/l	0.15	2.81	1000	
121 Sb	0.15 ug/l	0.17	5.67	1000	
137 Ba	53.49 ug/l	59.43	1.12	1000	
205 Tl	0.02 ug/l	0.02	6.09	1000	
206 (Pb)	-------- ug/l	#VALUE!	--------	########	
207 (Pb)	-------- ug/l	#VALUE!	--------	########	
208 Pb	-0.08 ug/l	-0.08	8.38	1000	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	2973547.80	0.34	2718933.80	109.4
45 Sc	754335.63	0.94	580246.44	130.0
45 Sc	99355.59	1.24	78449.59	126.6
45 Sc	1799257.80	0.92	1460500.30	123.2
72 Ge	135461.09	1.22	106527.24	127.2
72 Ge	49196.20	1.59	39295.42	125.2
72 Ge	243632.42	0.21	209205.06	116.5
115 In	1587447.80	1.23	1337657.80	118.7
159 Tb	2357210.50	1.11	1942159.60	121.4
165 Ho	2389926.80	1.72	1969815.00	121.3

ISTD Ref File : C:\ICPCHEM\1\DATA\11K09k00.B\004CALB.D\004CALB.D#

1 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Fail

Sample QC Report

Data File: C:\ICPCHEM\1\DATA\11K09k00.B\045SMPL.D\045SMPL.D#
Date Acquired: Nov 9 2011 03:19 pm
Operator: NBS
Sample Name: AY47777W01
Misc Info: 111107A-3015
Vial Number: 3207
Current Method: C:\ICPCHEM\1\METHODS\62A1109.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1109.C
Last Cal Update: Nov 09 2011 10:58 am
Sample Type: Sample
Prep Dil Factor: 1.11
Total Dil Factor: 1.11

QC Elements

Element	Conc.	Corr. Conc.	RSD(%)	High Limit	Flag
7 (Li)	-------- ug/l	#VALUE!	--------	0	
9 Be	2.03 ug/l	2.26	0.78	1000	
11 B	28.59 ug/l	31.76	0.13	1000	
23 Na	72010.00 ug/l	80003.11	0.96	25000	>Cal
24 Mg	10460.00 ug/l	11621.06	1.80	50000	
27 Al	440.30 ug/l	489.17	2.07	20000	
39 K	5151.00 ug/l	5722.76	1.04	20000	
44 Ca	9601.00 ug/l	10666.71	1.99	50000	
47 Ti	0.31 ug/l	0.34	12.04	1000	
51 V	-0.49 ug/l	-0.55	3.47	1000	
52 Cr	0.94 ug/l	1.04	1.48	1000	
55 Mn	206.00 ug/l	228.87	1.16	1000	
56 Fe	2546.00 ug/l	2828.61	1.71	20000	
59 Co	17.52 ug/l	19.46	0.80	1000	
60 Ni	30.29 ug/l	33.65	0.89	1000	
63 Cu	5.01 ug/l	5.57	0.97	1000	
65 Cu	4.92 ug/l	5.47	0.65	1000	
66 Zn	64.60 ug/l	71.77	1.07	1000	
75 As	-0.24 ug/l	-0.27	9.85	1000	
78 Se	0.11 ug/l	0.12	11.80	1000	
78 Se	0.43 ug/l	0.47	27.54	1000	
88 Sr	87.23 ug/l	96.91	0.58	1000	
88 Sr	88.61 ug/l	98.45	0.52	1000	
95 Mo	0.10 ug/l	0.11	4.60	1000	
106 (Cd)	-------- ug/l	#VALUE!	--------	########	
107 Ag	0.00 ug/l	0.00	79.85	500	
108 (Cd)	-------- ug/l	#VALUE!	--------	########	
111 Cd	0.26 ug/l	0.29	1.78	1000	
118 Sn	0.16 ug/l	0.18	7.81	1000	
121 Sb	0.09 ug/l	0.10	3.94	1000	
137 Ba	153.30 ug/l	170.32	0.16	1000	
205 Tl	0.06 ug/l	0.07	4.19	1000	
206 (Pb)	-------- ug/l	#VALUE!	--------	########	
207 (Pb)	-------- ug/l	#VALUE!	--------	########	
208 Pb	1.35 ug/l	1.50	0.82	1000	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	2942201.80	0.03	2718933.80	108.2
45 Sc	780541.13	0.53	580246.44	134.5
45 Sc	99916.93	0.37	78449.59	127.4
45 Sc	1881300.30	0.92	1460500.30	128.8
72 Ge	136126.97	0.49	106527.24	127.8
72 Ge	49232.72	0.83	39295.42	125.3
72 Ge	242611.80	0.85	209205.06	116.0
115 In	1595413.40	0.41	1337657.80	119.3
159 Tb	2355501.50	0.62	1942159.60	121.3
165 Ho	2379109.80	0.39	1969815.00	120.8

ISTD Ref File : C:\ICPCHEM\1\DATA\11K09k00.B\004CALB.D\004CALB.D#

1 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Fail

Sample QC Report

Data File: C:\ICPCHEM\1\DATA\11K09k00.B\059SMPL.D\059SMPL.D#
Date Acquired: Nov 9 2011 05:04 pm
Operator: NBS
Sample Name: AY47778W01
Misc Info: 111107A-3015
Vial Number: 3208
Current Method: C:\ICPCHEM\1\METHODS\62A1109.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1109.C
Last Cal Update: Nov 09 2011 03:29 pm
Sample Type: Sample
Prep Dil Factor: 1.11
Total Dil Factor: 1.11

QC Elements

Element	Conc.	Corr. Conc.	RSD(%)	High Limit	Flag
7 (Li)	-------- ug/l	#VALUE!	--------	0	
9 Be	0.17 ug/l	0.18	1.13	1000	
11 B	20.03 ug/l	22.25	1.13	1000	
23 Na	29080.00 ug/l	32307.88	0.31	25000	>Cal
24 Mg	2362.00 ug/l	2624.18	0.76	50000	
27 Al	3099.00 ug/l	3442.99	0.29	20000	
39 K	1333.00 ug/l	1480.96	0.57	20000	
44 Ca	7263.00 ug/l	8069.19	1.56	50000	
47 Ti	49.93 ug/l	55.47	1.61	1000	
51 V	8.89 ug/l	9.88	0.85	1000	
52 Cr	8.66 ug/l	9.62	1.46	1000	
55 Mn	75.66 ug/l	84.06	1.34	1000	
56 Fe	5026.00 ug/l	5583.89	0.71	20000	
59 Co	3.22 ug/l	3.58	0.90	1000	
60 Ni	5.78 ug/l	6.42	1.40	1000	
63 Cu	3.02 ug/l	3.36	1.28	1000	
65 Cu	3.12 ug/l	3.47	1.43	1000	
66 Zn	27.83 ug/l	30.92	0.23	1000	
75 As	1.19 ug/l	1.32	2.03	1000	
78 Se	0.17 ug/l	0.19	1.00	1000	
78 Se	0.37 ug/l	0.41	12.31	1000	
88 Sr	48.42 ug/l	53.79	0.59	1000	
88 Sr	46.90 ug/l	52.11	4.16	1000	
95 Mo	0.97 ug/l	1.08	1.44	1000	
106 (Cd)	-------- ug/l	#VALUE!	--------	########	
107 Ag	0.00 ug/l	0.00	76.79	500	
108 (Cd)	-------- ug/l	#VALUE!	--------	########	
111 Cd	0.11 ug/l	0.12	13.03	1000	
118 Sn	0.31 ug/l	0.34	4.28	1000	
121 Sb	0.14 ug/l	0.16	4.56	1000	
137 Ba	38.24 ug/l	42.48	0.96	1000	
205 Tl	0.06 ug/l	0.07	8.89	1000	
206 (Pb)	-------- ug/l	#VALUE!	--------	########	
207 (Pb)	-------- ug/l	#VALUE!	--------	########	
208 Pb	9.40 ug/l	10.44	1.69	1000	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3020837.50	2.08	3135320.50	96.3
45 Sc	781198.94	2.92	685414.75	114.0
45 Sc	103681.65	0.31	95214.66	108.9
45 Sc	1892745.40	0.44	1668789.60	113.4
72 Ge	139174.36	2.36	142007.28	98.0
72 Ge	51619.78	0.87	49830.42	103.6
72 Ge	249673.70	0.95	243720.22	102.4
115 In	1637862.90	1.01	1581557.30	103.6
159 Tb	2412848.50	1.61	2281448.30	105.8
165 Ho	2435303.80	0.46	2310384.30	105.4

ISTD Ref File : C:\ICPCHEM\1\DATA\11K09k00.B\046CALB.D\046CALB.D#

1 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Fail

Sample QC Report

Data File: C:\ICPCHEM\1\DATA\11K09k00.B\054SMPL.D\054SMPL.D#
Date Acquired: Nov 9 2011 04:14 pm
Operator: NBS
Sample Name: AY47779W01
Misc Info: 111107A-3015
Vial Number: 3209
Current Method: C:\ICPCHEM\1\METHODS\62A1109.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1109.C
Last Cal Update: Nov 09 2011 03:29 pm
Sample Type: Sample
Prep Dil Factor: 1.11
Total Dil Factor: 1.11

QC Elements

Element	Conc.		Corr. Conc.	RSD(%)	High Limit	Flag
7 (Li)	--------	ug/l	#VALUE!	--------	0	
9 Be	0.03	ug/l	0.03	9.11	1000	
11 B,	21.62	ug/l	24.02	0.68	1000	
23 Na	29770.00	ug/l	33074.47	0.39	25000	>Cal
24 Mg	2091.00	ug/l	2323.10	1.73	50000	
27 Al	11.51	ug/l	12.79	20.90	20000	
39 K	897.60	ug/l	997.23	1.18	20000	
44 Ca	6643.00	ug/l	7380.37	1.07	50000	
47 Ti	0.45	ug/l	0.50	39.29	1000	
51 V	0.28	ug/l	0.31	45.87	1000	
52 Cr	0.28	ug/l	0.31	45.31	1000	
55 Mn	52.16	ug/l	57.95	0.87	1000	
56 Fe	122.10	ug/l	135.65	1.20	20000	
59 Co	2.38	ug/l	2.65	4.86	1000	
60 Ni	4.11	ug/l	4.57	3.45	1000	
63 Cu	0.83	ug/l	0.92	13.18	1000	
65 Cu	0.83	ug/l	0.92	15.41	1000	
66 Zn	4.03	ug/l	4.47	4.52	1000	
75 As	0.16	ug/l	0.18	71.64	1000	
78 Se	1.34	ug/l	1.49	15.15	1000	
78 Se	0.20	ug/l	0.23	62.06	1000	
88 Sr	45.08	ug/l	50.08	0.89	1000	
88 Sr	42.89	ug/l	47.65	0.56	1000	
95 Mo	0.12	ug/l	0.13	20.74	1000	
106 (Cd)	--------	ug/l	#VALUE!	--------	#######	
107 Ag	0.00	ug/l	0.00	84.19	500	
108 (Cd)	--------	ug/l	#VALUE!	--------	#######	
111 Cd	0.03	ug/l	0.03	24.45	1000	
118 Sn	0.81	ug/l	0.90	3.92	1000	
121 Sb	0.22	ug/l	0.25	9.50	1000	
137 Ba	15.52	ug/l	17.24	1.17	1000	
205 Tl	0.02	ug/l	0.02	5.31	1000	
206 (Pb)	--------	ug/l	#VALUE!	--------	#######	
207 (Pb)	--------	ug/l	#VALUE!	--------	#######	
208 Pb	0.44	ug/l	0.49	0.78	1000	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	2980654.50	0.37	3135320.50	95.1
45 Sc	735128.75	1.45	685414.75	107.3
45 Sc	98822.29	0.98	95214.66	103.8
45 Sc	1734284.00	0.27	1668789.60	103.9
72 Ge	137112.83	1.50	142007.28	96.6
72 Ge	49563.42	0.78	49830.42	99.5
72 Ge	242535.53	0.75	243720.22	99.5
115 In	1611200.10	1.38	1581557.30	101.9
159 Tb	2384186.80	1.14	2281448.30	104.5
165 Ho	2426245.80	1.26	2310384.30	105.0

ISTD Ref File : C:\ICPCHEM\1\DATA\11K09k00.B\046CALB.D\046CALB.D#

1 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Fail

Sample QC Report

Data File: C:\ICPCHEM\1\DATA\11K08k00.B\051SMPL.D\051SMPL.D#
Date Acquired: Nov 8 2011 03:28 pm
Operator: NBS
Sample Name: AY47781W01
Misc Info: 111107A-3015
Vial Number: 3203
Current Method: C:\ICPCHEM\1\METHODS\62A1108.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1108.C
Last Cal Update: Nov 08 2011 02:50 pm
Sample Type: Sample
Prep Dil Factor: 1.11
Total Dil Factor: 1.11

QC Elements

Element	Conc.		Corr. Conc.	RSD(%)	High Limit	Flag
7 (Li)	--------	ug/l	#VALUE!	--------	0	
9 Be	0.06	ug/l	0.07	7.63	1000	
11 B	6.83	ug/l	7.59	2.36	1000	
23 Na	3802.00	ug/l	4224.02	0.91	25000	
24 Mg	681.90	ug/l	757.59	0.91	50000	
27 Al	346.70	ug/l	385.18	1.61	20000	
39 K	2633.00	ug/l	2925.26	1.83	20000	
44 Ca	3547.00	ug/l	3940.72	0.25	50000	
47 Ti	5.49	ug/l	6.10	4.92	1000	
51 V	0.95	ug/l	1.06	3.41	1000	
52 Cr	2.22	ug/l	2.47	1.91	1000	
55 Mn	49.61	ug/l	55.12	1.33	1000	
56 Fe	499.80	ug/l	555.28	1.18	20000	
59 Co	4.32	ug/l	4.80	0.63	1000	
60 Ni	4.12	ug/l	4.57	0.26	1000	
63 Cu	1.31	ug/l	1.45	1.46	1000	
65 Cu	1.37	ug/l	1.52	2.01	1000	
66 Zn	-12.69	ug/l	-14.10	3.89	1000	
75 As	0.18	ug/l	0.20	15.26	1000	
78 Se	0.18	ug/l	0.20	23.68	1000	
78 Se	0.28	ug/l	0.31	39.28	1000	
88 Sr	13.61	ug/l	15.12	1.83	1000	
88 Sr	13.36	ug/l	14.84	0.63	1000	
95 Mo	0.51	ug/l	0.56	5.04	1000	
106 (Cd)	--------	ug/l	#VALUE!	--------	#######	
107 Ag	0.01	ug/l	0.02	4.97	500	
108 (Cd)	--------	ug/l	#VALUE!	--------	#######	
111 Cd	0.01	ug/l	0.02	35.30	1000	
118 Sn	0.45	ug/l	0.49	2.39	1000	
121 Sb	0.11	ug/l	0.12	4.47	1000	
137 Ba	20.21	ug/l	22.45	1.08	1000	
205 Tl	0.02	ug/l	0.02	6.54	1000	
206 (Pb)	--------	ug/l	#VALUE!	--------	#######	
207 (Pb)	--------	ug/l	#VALUE!	--------	#######	
208 Pb	0.60	ug/l	0.67	1.67	1000	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3099341.50	1.29	3034543.30	102.1
45 Sc	806906.94	0.49	676375.44	119.3
45 Sc	91718.05	0.33	88171.12	104.0
45 Sc	1901134.30	1.33	1608387.60	118.2
72 Ge	124849.81	0.22	126057.18	99.0
72 Ge	45092.57	1.17	45139.00	99.9
72 Ge	222932.00	0.22	224112.89	99.5
115 In	1423214.30	1.06	1405957.10	101.2
159 Tb	2102598.30	0.08	2021736.10	104.0
165 Ho	2102036.50	0.93	2030057.50	103.5

ISTD Ref File : C:\ICPCHEM\1\DATA\11K08k00.B\044CALB.D\044CALB.D#

0 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Pass

Sample QC Report

Data File: C:\ICPCHEM\1\DATA\11K08k00.B\052SMPL.D\052SMPL.D#
Date Acquired: Nov 8 2011 03:34 pm
Operator: NBS
Sample Name: AY47782W01
Misc Info: 111107A-3015
Vial Number: 3204
Current Method: C:\ICPCHEM\1\METHODS\62A1108.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1108.C
Last Cal Update: Nov 08 2011 02:50 pm
Sample Type: Sample
Prep Dil Factor: 1.11
Total Dil Factor: 1.11

QC Elements

Element	Conc.	Corr. Conc.	RSD(%)	High Limit	Flag
7 (Li)	-------- ug/l	#VALUE!	--------	0	
9 Be	0.03 ug/l	0.04	9.06	1000	
11 B	6.16 ug/l	6.85	1.82	1000	
23 Na	3712.00 ug/l	4124.03	1.33	25000	
24 Mg	560.60 ug/l	622.83	0.88	50000	
27 Al	17.28 ug/l	19.20	3.46	20000	
39 K	2283.00 ug/l	2536.41	0.68	20000	
44 Ca	2486.00 ug/l	2761.95	1.61	50000	
47 Ti	0.49 ug/l	0.54	20.12	1000	
51 V	0.09 ug/l	0.10	31.51	1000	
52 Cr	0.98 ug/l	1.09	1.82	1000	
55 Mn	39.44 ug/l	43.82	1.03	1000	
56 Fe	104.90 ug/l	116.54	1.20	20000	
59 Co	3.29 ug/l	3.65	0.43	1000	
60 Ni	3.83 ug/l	4.25	0.62	1000	
63 Cu	0.49 ug/l	0.54	2.76	1000	
65 Cu	0.52 ug/l	0.58	3.86	1000	
66 Zn	-27.63 ug/l	-30.70	0.38	1000	
75 As	0.04 ug/l	0.05	35.80	1000	
78 Se	0.18 ug/l	0.20	5.14	1000	
78 Se	0.10 ug/l	0.11	103.08	1000	
88 Sr	10.67 ug/l	11.85	1.24	1000	
88 Sr	10.45 ug/l	11.61	0.05	1000	
95 Mo	0.47 ug/l	0.52	6.20	1000	
106 (Cd)	-------- ug/l	#VALUE!	--------	########	
107 Ag	0.00 ug/l	0.00	53.41	500	
108 (Cd)	-------- ug/l	#VALUE!	--------	########	
111 Cd	-0.01 ug/l	-0.01	74.62	1000	
118 Sn	0.12 ug/l	0.14	7.65	1000	
121 Sb	0.05 ug/l	0.05	6.99	1000	
137 Ba	13.65 ug/l	15.17	2.95	1000	
205 Tl	0.01 ug/l	0.01	8.93	1000	
206 (Pb)	-------- ug/l	#VALUE!	--------	########	
207 (Pb)	-------- ug/l	#VALUE!	--------	########	
208 Pb	0.07 ug/l	0.08	1.95	1000	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3060903.00	0.13	3034543.30	100.9
45 Sc	785179.69	0.58	676375.44	116.1
45 Sc	89836.38	0.44	88171.12	101.9
45 Sc	1830764.00	1.11	1608387.60	113.8
72 Ge	123702.63	0.53	126057.18	98.1
72 Ge	44721.82	0.10	45139.00	99.1
72 Ge	219325.73	0.34	224112.89	97.9
115 In	1408400.10	1.53	1405957.10	100.2
159 Tb	2083326.10	1.11	2021736.10	103.0
165 Ho	2094459.50	1.14	2030057.50	103.2

ISTD Ref File : C:\ICPCHEM\1\DATA\11K08k00.B\044CALB.D\044CALB.D#

0 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Pass

Sample QC Report

Data File: C:\ICPCHEM\1\DATA\11K08k00.B\053SMPL.D\053SMPL.D#
Date Acquired: Nov 8 2011 03:41 pm
Operator: NBS
Sample Name: AY47783W01
Misc Info: 111107A-3015
Vial Number: 3205
Current Method: C:\ICPCHEM\1\METHODS\62A1108.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1108.C
Last Cal Update: Nov 08 2011 02:50 pm
Sample Type: Sample
Prep Dil Factor: 1.11
Total Dil Factor: 1.11

QC Elements

Element	Conc.		Corr. Conc.	RSD(%)	High Limit	Flag
7 (Li)	--------	ug/l	#VALUE!	--------	0	
9 Be	0.18	ug/l	0.20	5.16	1000	
11 B	19.91	ug/l	22.12	1.16	1000	
23 Na	9455.00	ug/l	10504.51	1.11	25000	
24 Mg	1072.00	ug/l	1190.99	0.72	50000	
27 Al	517.10	ug/l	574.50	0.85	20000	
39 K	1679.00	ug/l	1865.37	0.75	20000	
44 Ca	905.30	ug/l	1005.79	1.64	50000	
47 Ti	11.84	ug/l	13.15	5.81	1000	
51 V	3.01	ug/l	3.34	0.64	1000	
52 Cr	1.36	ug/l	1.51	1.96	1000	
55 Mn	51.11	ug/l	56.78	0.35	1000	
56 Fe	1546.00	ug/l	1717.61	1.80	20000	
59 Co	3.69	ug/l	4.10	0.94	1000	
60 Ni	5.71	ug/l	6.34	3.04	1000	
63 Cu	7.56	ug/l	8.39	1.12	1000	
65 Cu	7.50	ug/l	8.33	1.12	1000	
66 Zn	-24.49	ug/l	-27.21	0.85	1000	
75 As	0.41	ug/l	0.45	3.88	1000	
78 Se	0.06	ug/l	0.06	20.18	1000	
78 Se	0.22	ug/l	0.24	28.46	1000	
88 Sr	9.61	ug/l	10.67	1.44	1000	
88 Sr	9.31	ug/l	10.34	0.64	1000	
95 Mo	0.29	ug/l	0.32	2.00	1000	
106 (Cd)	--------	ug/l	#VALUE!	--------	########	
107 Ag	0.02	ug/l	0.02	22.04	500	
108 (Cd)	--------	ug/l	#VALUE!	--------	########	
111 Cd	0.03	ug/l	0.04	27.33	1000	
118 Sn	2.41	ug/l	2.68	1.10	1000	
121 Sb	0.07	ug/l	0.08	12.33	1000	
137 Ba	19.00	ug/l	21.11	0.77	1000	
205 Tl	0.02	ug/l	0.02	10.44	1000	
206 (Pb)	--------	ug/l	#VALUE!	--------	########	
207 (Pb)	--------	ug/l	#VALUE!	--------	########	
208 Pb	13.36	ug/l	14.84	0.84	1000	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3013724.50	1.31	3034543.30	99.3
45 Sc	774913.81	3.31	676375.44	114.6
45 Sc	89728.57	0.43	88171.12	101.8
45 Sc	1742538.40	1.69	1608387.60	108.3
72 Ge	123713.26	2.81	126057.18	98.1
72 Ge	43756.26	0.25	45139.00	96.9
72 Ge	219185.98	0.89	224112.89	97.8
115 In	1391015.60	1.33	1405957.10	98.9
159 Tb	2074191.10	0.21	2021736.10	102.6
165 Ho	2116505.50	0.83	2030057.50	104.3

ISTD Ref File : C:\ICPCHEM\1\DATA\11K08k00.B\044CALB.D\044CALB.D#

0 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Pass

Sample QC Report

Data File: C:\ICPCHEM\1\DATA\11K08k00.B\054SMPL.D\054SMPL.D#
Date Acquired: Nov 8 2011 03:47 pm
Operator: NBS
Sample Name: AY47784W01
Misc Info: 111107A-3015
Vial Number: 3206
Current Method: C:\ICPCHEM\1\METHODS\62A1108.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1108.C
Last Cal Update: Nov 08 2011 02:50 pm
Sample Type: Sample
Prep Dil Factor: 1.11
Total Dil Factor: 1.11

QC Elements

Element	Conc.		Corr. Conc.	RSD(%)	High Limit	Flag
7 (Li)	--------	ug/l	#VALUE!	--------	0	
9 Be	0.11	ug/l	0.12	3.45	1000	
11 B	20.13	ug/l	22.36	0.63	1000	
23 Na	9620.00	ug/l	10687.82	0.30	25000	
24 Mg	965.30	ug/l	1072.45	0.60	50000	
27 Al	14.36	ug/l	15.95	1.62	20000	
39 K	1613.00	ug/l	1792.04	0.85	20000	
44 Ca	810.20	ug/l	900.13	1.13	50000	
47 Ti	0.29	ug/l	0.33	20.98	1000	
51 V	0.10	ug/l	0.11	35.27	1000	
52 Cr	0.31	ug/l	0.35	2.06	1000	
55 Mn	44.32	ug/l	49.24	1.07	1000	
56 Fe	629.20	ug/l	699.04	1.03	20000	
59 Co	3.16	ug/l	3.51	1.24	1000	
60 Ni	4.86	ug/l	5.39	0.58	1000	
63 Cu	4.88	ug/l	5.43	0.74	1000	
65 Cu	4.92	ug/l	5.47	2.28	1000	
66 Zn	-23.38	ug/l	-25.98	0.50	1000	
75 As	0.14	ug/l	0.16	7.31	1000	
78 Se	0.02	ug/l	0.03	54.42	1000	
78 Se	0.02	ug/l	0.02	178.71	1000	
88 Sr	8.92	ug/l	9.91	1.42	1000	
88 Sr	8.58	ug/l	9.53	1.20	1000	
95 Mo	0.17	ug/l	0.19	5.37	1000	
106 (Cd)	--------	ug/l	#VALUE!	--------	#######	
107 Ag	-0.01	ug/l	-0.01	59.95	500	
108 (Cd)	--------	ug/l	#VALUE!	--------	#######	
111 Cd	0.01	ug/l	0.01	24.96	1000	
118 Sn	0.17	ug/l	0.19	3.83	1000	
121 Sb	0.03	ug/l	0.04	11.40	1000	
137 Ba	16.56	ug/l	18.40	1.36	1000	
205 Tl	0.01	ug/l	0.01	91.89	1000	
206 (Pb)	--------	ug/l	#VALUE!	--------	#######	
207 (Pb)	--------	ug/l	#VALUE!	--------	#######	
208 Pb	6.91	ug/l	7.68	1.25	1000	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	2990894.00	1.02	3034543.30	98.6
45 Sc	737500.25	0.47	676375.44	109.0
45 Sc	87946.22	0.65	88171.12	99.7
45 Sc	1693206.90	0.30	1608387.60	105.3
72 Ge	121372.80	0.52	126057.18	96.3
72 Ge	43627.43	0.43	45139.00	96.7
72 Ge	217585.77	0.33	224112.89	97.1
115 In	1399311.80	1.30	1405957.10	99.5
159 Tb	2078733.80	0.62	2021736.10	102.8
165 Ho	2065054.50	0.97	2030057.50	101.7

ISTD Ref File : C:\ICPCHEM\1\DATA\11K08k00.B\044CALB.D\044CALB.D#

0 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Pass

Sample QC Report

Data File: C:\ICPCHEM\1\DATA\11K08k00.B\055SMPL.D\055SMPL.D#
Date Acquired: Nov 8 2011 03:53 pm
Operator: NBS
Sample Name: AY47785W01
Misc Info: 111107A-3015
Vial Number: 3207
Current Method: C:\ICPCHEM\1\METHODS\62A1108.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1108.C
Last Cal Update: Nov 08 2011 02:50 pm
Sample Type: Sample
Prep Dil Factor: 1.11
Total Dil Factor: 1.11

QC Elements

Element	Conc.		Corr. Conc.	RSD(%)	High Limit	Flag
7 (Li)	--------	ug/l	#VALUE!	--------	0	
9 Be	0.19	ug/l	0.21	3.85	1000	
11 B	19.36	ug/l	21.51	1.78	1000	
23 Na	9416.00	ug/l	10461.18	0.83	25000	
24 Mg	1063.00	ug/l	1180.99	0.27	50000	
27 Al	520.50	ug/l	578.28	1.36	20000	
39 K	1686.00	ug/l	1873.15	0.68	20000	
44 Ca	907.80	ug/l	1008.57	3.13	50000	
47 Ti	12.60	ug/l	14.00	13.26	1000	
51 V	2.92	ug/l	3.25	1.17	1000	
52 Cr	1.35	ug/l	1.49	0.86	1000	
55 Mn	52.03	ug/l	57.81	0.87	1000	
56 Fe	1517.00	ug/l	1685.39	0.77	20000	
59 Co	3.67	ug/l	4.08	0.51	1000	
60 Ni	5.74	ug/l	6.37	0.68	1000	
63 Cu	7.57	ug/l	8.41	1.05	1000	
65 Cu	7.57	ug/l	8.41	0.49	1000	
66 Zn	-24.88	ug/l	-27.64	0.33	1000	
75 As	0.40	ug/l	0.45	3.71	1000	
78 Se	0.06	ug/l	0.06	22.67	1000	
78 Se	0.18	ug/l	0.20	15.30	1000	
88 Sr	9.42	ug/l	10.47	2.31	1000	
88 Sr	9.22	ug/l	10.24	0.43	1000	
95 Mo	0.28	ug/l	0.31	8.99	1000	
106 (Cd)	--------	ug/l	#VALUE!	--------	#######	
107 Ag	0.01	ug/l	0.01	37.60	500	
108 (Cd)	--------	ug/l	#VALUE!	--------	#######	
111 Cd	0.05	ug/l	0.06	28.36	1000	
118 Sn	0.30	ug/l	0.33	1.26	1000	
121 Sb	0.01	ug/l	0.02	58.29	1000	
137 Ba	18.65	ug/l	20.72	0.86	1000	
205 Tl	0.02	ug/l	0.02	14.65	1000	
206 (Pb)	--------	ug/l	#VALUE!	--------	#######	
207 (Pb)	--------	ug/l	#VALUE!	--------	#######	
208 Pb	14.16	ug/l	15.73	1.34	1000	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	2939232.50	1.59	3034543.30	96.9
45 Sc	747166.31	0.04	676375.44	110.5
45 Sc	88620.30	0.61	88171.12	100.5
45 Sc	1705246.50	0.61	1608387.60	106.0
72 Ge	121055.70	0.59	126057.18	96.0
72 Ge	43693.22	0.58	45139.00	96.8
72 Ge	216740.91	0.63	224112.89	96.7
115 In	1395064.10	1.70	1405957.10	99.2
159 Tb	2082183.00	0.61	2021736.10	103.0
165 Ho	2082154.40	0.99	2030057.50	102.6

ISTD Ref File : C:\ICPCHEM\1\DATA\11K08k00.B\044CALB.D\044CALB.D#

0 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Pass

Sample QC Report

Data File: C:\ICPCHEM\1\DATA\11K08k00.B\056SMPL.D\056SMPL.D#
Date Acquired: Nov 8 2011 03:59 pm
Operator: NBS
Sample Name: AY47786W01
Misc Info: 111107A-3015
Vial Number: 3208
Current Method: C:\ICPCHEM\1\METHODS\62A1108.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1108.C
Last Cal Update: Nov 08 2011 02:50 pm
Sample Type: Sample
Prep Dil Factor: 1.11
Total Dil Factor: 1.11

QC Elements

Element	Conc.		Corr. Conc.	RSD(%)	High Limit	Flag
7 (Li)	--------	ug/l	#VALUE!	--------	0	
9 Be	0.10	ug/l	0.11	5.92	1000	
11 B	19.83	ug/l	22.03	1.06	1000	
23 Na	9456.00	ug/l	10505.62	1.44	25000	
24 Mg	941.20	ug/l	1045.67	1.04	50000	
27 Al	37.18	ug/l	41.31	1.14	20000	
39 K	1598.00	ug/l	1775.38	0.72	20000	
44 Ca	805.50	ug/l	894.91	0.39	50000	
47 Ti	1.51	ug/l	1.67	9.63	1000	
51 V	0.21	ug/l	0.23	10.54	1000	
52 Cr	0.31	ug/l	0.34	5.72	1000	
55 Mn	43.64	ug/l	48.48	1.10	1000	
56 Fe	662.70	ug/l	736.26	1.45	20000	
59 Co	3.13	ug/l	3.47	1.13	1000	
60 Ni	4.94	ug/l	5.49	2.69	1000	
63 Cu	5.44	ug/l	6.04	0.39	1000	
65 Cu	5.45	ug/l	6.06	1.39	1000	
66 Zn	-27.69	ug/l	-30.76	0.39	1000	
75 As	0.13	ug/l	0.14	7.54	1000	
78 Se	0.01	ug/l	0.01	110.20	1000	
78 Se	0.00	ug/l	0.00	8539.90	1000	
88 Sr	8.36	ug/l	9.29	1.72	1000	
88 Sr	8.08	ug/l	8.98	2.03	1000	
95 Mo	0.18	ug/l	0.20	10.36	1000	
106 (Cd)	--------	ug/l	#VALUE!	--------	#######	
107 Ag	0.00	ug/l	0.00	45.32	500	
108 (Cd)	--------	ug/l	#VALUE!	--------	#######	
111 Cd	0.01	ug/l	0.01	162.20	1000	
118 Sn	0.13	ug/l	0.14	5.26	1000	
121 Sb	0.01	ug/l	0.01	29.68	1000	
137 Ba	14.50	ug/l	16.11	2.60	1000	
205 Tl	0.01	ug/l	0.01	37.37	1000	
206 (Pb)	--------	ug/l	#VALUE!	--------	#######	
207 (Pb)	--------	ug/l	#VALUE!	--------	#######	
208 Pb	6.74	ug/l	7.49	1.69	1000	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	2957586.80	0.94	3034543.30	97.5
45 Sc	726758.31	0.09	676375.44	107.4
45 Sc	87401.98	0.51	88171.12	99.1
45 Sc	1683741.50	0.38	1608387.60	104.7
72 Ge	120874.02	0.67	126057.18	95.9
72 Ge	43286.74	0.15	45139.00	95.9
72 Ge	217586.36	0.36	224112.89	97.1
115 In	1395524.00	1.86	1405957.10	99.3
159 Tb	2079865.00	1.70	2021736.10	102.9
165 Ho	2082454.40	0.64	2030057.50	102.6

ISTD Ref File : C:\ICPCHEM\1\DATA\11K08k00.B\044CALB.D\044CALB.D#

0 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Pass

Sample QC Report

Data File: C:\ICPCHEM\1\DATA\11K08k00.B\022SMPL.D\022SMPL.D#
Date Acquired: Nov 8 2011 12:32 pm
Operator: NBS
Sample Name: 111107A-3015-BLK
Misc Info: 111107A-3015
Vial Number: 3101
Current Method: C:\ICPCHEM\1\METHODS\62A1108.M
Calibration File: C:\ICPCHEM\1\CALIB\62A110B.C
Last Cal Update: Nov 08 2011 11:03 am
Sample Type: Sample
Prep Dil Factor: 1.11
Total Dil Factor: 1.11

QC Elements

Element	Conc.	Corr. Conc.	RSD(%)	High Limit	Flag
7 (Li)	-------- ug/l	#VALUE!	--------	0	
9 Be	-0.02 ug/l	-0.02	10.46	1000	
11 B	-8.84 ug/l	-9.82	1.72	1000	
23 Na	109.10 ug/l	121.21	5.70	25000	
24 Mg	-1.05 ug/l	-1.17	6.87	50000	
27 Al	-0.38 ug/l	-0.42	68.94	20000	
39 K	-2.68 ug/l	-2.98	213.69	20000	
44 Ca	-71.07 ug/l	-78.96	6.73	50000	
47 Ti	-0.04 ug/l	-0.05	18.73	1000	
51 V	-1.17 ug/l	-1.30	0.91	1000	
52 Cr	-0.10 ug/l	-0.11	3.26	1000	
55 Mn	-0.10 ug/l	-0.11	5.44	1000	
56 Fe	-1.96 ug/l	-2.18	0.62	20000	
59 Co	-0.07 ug/l	-0.08	2.12	1000	
60 Ni	-0.35 ug/l	-0.39	1.07	1000	
63 Cu	-0.81 ug/l	-0.91	1.35	1000	
65 Cu	-0.76 ug/l	-0.85	1.70	1000	
66 Zn	-2.85 ug/l	-3.17	0.87	1000	
75 As	-0.55 ug/l	-0.61	0.93	1000	
78 Se	-0.05 ug/l	-0.06	19.00	1000	
78 Se	0.12 ug/l	0.13	37.48	1000	
88 Sr	-0.04 ug/l	-0.04	7.57	1000	
88 Sr	-0.03 ug/l	-0.03	3.25	1000	
95 Mo	0.02 ug/l	0.02	51.09	1000	
106 (Cd)	-------- ug/l	#VALUE!	--------	#######	
107 Ag	0.01 ug/l	0.01	39.56	500	
108 (Cd)	-------- ug/l	#VALUE!	--------	#######	
111 Cd	0.01 ug/l	0.01	58.30	1000	
118 Sn	-0.18 ug/l	-0.20	2.47	1000	
121 Sb	-0.01 ug/l	-0.01	85.75	1000	
137 Ba	-0.06 ug/l	-0.07	5.68	1000	
205 Tl	-0.01 ug/l	-0.01	10.79	1000	
206 (Pb)	-------- ug/l	#VALUE!	--------	#######	
207 (Pb)	-------- ug/l	#VALUE!	--------	#######	
208 Pb	-0.04 ug/l	-0.05	3.73	1000	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	2877080.00	1.30	2648744.00	108.6
45 Sc	629561.44	1.59	583321.69	107.9
45 Sc	78760.64	0.72	69335.32	113.6
45 Sc	1529212.00	0.58	1427545.30	107.1
72 Ge	112124.13	0.20	93728.30	119.6
72 Ge	41010.20	0.24	34515.22	118.8
72 Ge	203931.83	0.29	186777.47	109.2
115 In	1265825.10	0.93	1188387.10	106.5
159 Tb	1900306.10	0.46	1796319.10	105.8
165 Ho	1888196.80	0.49	1809297.10	104.4

ISTD Ref File : C:\ICPCHEM\1\DATA\11K08k00.B\003CALB.D\003CALB.D#

0 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Pass

Sample QC Report

Data File: C:\ICPCHEM\1\DATA\11K08k00.B\025SMPL.D\025SMPL.D#
Date Acquired: Nov 8 2011 12:51 pm
Operator: NBS
Sample Name: 111107A-3015-LCS
Misc Info: 111107A-3015
Vial Number: 3102
Current Method: C:\ICPCHEM\1\METHODS\62A1108.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1108.C
Last Cal Update: Nov 08 2011 11:03 am
Sample Type: Sample
Prep Dil Factor: 1.11
Total Dil Factor: 1.11

QC Elements

Element	Conc.		Corr. Conc.	RSD(%)	High Limit	Flag
7 (Li)	--------	ug/l	#VALUE!	--------	0	
9 Be	8.02	ug/l	8.90	0.58	1000	
11 B	36.53	ug/l	40.58	1.03	1000	
23 Na	4240.00	ug/l	4710.64	0.63	25000	
24 Mg	4328.00	ug/l	4808.41	1.52	50000	
27 Al	365.10	ug/l	405.63	0.41	20000	
39 K	878.70	ug/l	976.24	2.68	20000	
44 Ca	4610.00	ug/l	5121.71	1.07	50000	
47 Ti	43.13	ug/l	47.92	0.95	1000	
51 V	44.63	ug/l	49.58	0.81	1000	
52 Cr	45.97	ug/l	51.07	0.53	1000	
55 Mn	45.72	ug/l	50.79	0.49	1000	
56 Fe	191.00	ug/l	212.20	0.55	20000	
59 Co	44.93	ug/l	49.92	1.20	1000	
60 Ni	44.23	ug/l	49.14	0.64	1000	
63 Cu	42.60	ug/l	47.33	0.57	1000	
65 Cu	42.66	ug/l	47.40	0.19	1000	
66 Zn	82.54	ug/l	91.70	1.66	1000	
75 As	40.56	ug/l	45.06	0.91	1000	
78 Se	37.35	ug/l	41.50	1.81	1000	
78 Se	37.95	ug/l	42.16	0.77	1000	
88 Sr	45.84	ug/l	50.93	0.96	1000	
88 Sr	45.25	ug/l	50.27	0.31	1000	
95 Mo	45.13	ug/l	50.14	0.98	1000	
106 (Cd)	--------	ug/l	#VALUE!	--------	#######	
107 Ag	15.04	ug/l	16.71	1.19	500	
108 (Cd)	--------	ug/l	#VALUE!	--------	#######	
111 Cd	8.33	ug/l	9.25	1.94	1000	
118 Sn	48.49	ug/l	53.87	1.70	1000	
121 Sb	43.67	ug/l	48.52	1.37	1000	
137 Ba	43.35	ug/l	48.16	1.13	1000	
205 Tl	42.41	ug/l	47.12	0.65	1000	
206 (Pb)	--------	ug/l	#VALUE!	--------	#######	
207 (Pb)	--------	ug/l	#VALUE!	--------	#######	
208 Pb	43.36	ug/l	48.17	0.22	1000	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	2926356.30	1.05	2648744.00	110.5
45 Sc	687854.38	0.85	583321.69	117.9
45 Sc	83385.70	0.73	69335.32	120.3
45 Sc	1586132.00	0.91	1427545.30	111.1
72 Ge	114106.30	0.97	93728.30	121.7
72 Ge	41173.22	0.41	34515.22	119.3
72 Ge	208665.25	0.92	186777.47	111.7
115 In	1317716.50	1.57	1188387.10	110.9
159 Tb	1974965.40	0.56	1796319.10	109.9
165 Ho	1994255.40	0.19	1809297.10	110.2

ISTD Ref File : C:\ICPCHEM\1\DATA\11K08k00.B\003CALB.D\003CALB.D#

0 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Pass

Sample QC Report

Data File: C:\ICPCHEM\1\DATA\11K09k00.B\038SMPL.D\038SMPL.D#
Date Acquired: Nov 9 2011 02:31 pm
Operator: NBS
Sample Name: AY47773W13 MS
Misc Info: 111107A-3015
Vial Number: 3112
Current Method: C:\ICPCHEM\1\METHODS\62A1109.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1109.C
Last Cal Update: Nov 09 2011 10:58 am
Sample Type: Sample
Prep Dil Factor: 1.11
Total Dil Factor: 1.11

QC Elements

Element	Conc.		Corr. Conc.	RSD(%)	High Limit	Flag
7 (Li)	--------	ug/l	#VALUE!	--------	0	
9 Be	6.84	ug/l	7.59	0.56	1000	
11 B	82.88	ug/l	92.08	0.23	1000	
23 Na	68670.00	ug/l	76292.37	0.74	25000	>Cal
24 Mg	11850.00	ug/l	13165.35	0.54	50000	
27 Al	653.40	ug/l	725.93	0.57	20000	
39 K	3635.00	ug/l	4038.49	1.53	20000	
44 Ca	11150.00	ug/l	12387.65	0.18	50000	
47 Ti	47.49	ug/l	52.76	2.75	1000	
51 V	45.56	ug/l	50.62	1.10	1000	
52 Cr	45.38	ug/l	50.42	0.85	1000	
55 Mn	190.60	ug/l	211.76	0.89	1000	
56 Fe	2215.00	ug/l	2460.87	0.99	20000	
59 Co	48.92	ug/l	54.35	0.58	1000	
60 Ni	50.00	ug/l	55.55	1.01	1000	
63 Cu	41.15	ug/l	45.72	0.46	1000	
65 Cu	40.97	ug/l	45.52	0.42	1000	
66 Zn	100.10	ug/l	111.21	0.35	1000	
75 As	40.66	ug/l	45.17	0.60	1000	
78 Se	36.32	ug/l	40.35	0.90	1000	
78 Se	38.97	ug/l	43.30	2.04	1000	
88 Sr	98.56	ug/l	109.50	0.85	1000	
88 Sr	99.66	ug/l	110.72	0.80	1000	
95 Mo	45.63	ug/l	50.69	0.31	1000	
106 (Cd)	--------	ug/l	#VALUE!	--------	########	
107 Ag	14.24	ug/l	15.82	0.17	500	
108 (Cd)	--------	ug/l	#VALUE!	--------	########	
111 Cd	8.41	ug/l	9.34	1.12	1000	
118 Sn	49.62	ug/l	55.13	0.84	1000	
121 Sb	43.62	ug/l	48.46	0.86	1000	
137 Ba	99.28	ug/l	110.30	0.37	1000	
205 Tl	40.83	ug/l	45.36	0.93	1000	
206 (Pb)	--------	ug/l	#VALUE!	--------	########	
207 (Pb)	--------	ug/l	#VALUE!	--------	########	
208 Pb	42.17	ug/l	46.85	1.06	1000	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	2927574.00	0.82	2718933.80	107.7
45 Sc	738121.13	0.94	580246.44	127.2
45 Sc	99132.53	1.36	78449.59	126.4
45 Sc	1767002.60	0.25	1460500.30	121.0
72 Ge	133078.91	0.60	106527.24	124.9
72 Ge	49209.89	0.65	39295.42	125.2
72 Ge	240971.45	0.31	209205.06	115.2
115 In	1567236.60	0.58	1337657.80	117.2
159 Tb	2366069.80	0.72	1942159.60	121.8
165 Ho	2395353.30	0.31	1969815.00	121.6

ISTD Ref File : C:\ICPCHEM\1\DATA\11K09k00.B\004CALB.D\004CALB.D#

1 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Fail

Sample QC Report

Data File: C:\ICPCHEM\1\DATA\11K09k00.B\039SMPL.D\039SMPL.D#
Date Acquired: Nov 9 2011 02:40 pm
Operator: NBS
Sample Name: AY47773W13 MSD
Misc Info: 111107A-3015
Vial Number: 3201
Current Method: C:\ICPCHEM\1\METHODS\62A1109.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1109.C
Last Cal Update: Nov 09 2011 10:58 am
Sample Type: Sample
Prep Dil Factor: 1.11
Total Dil Factor: 1.11

QC Elements

Element	Conc.		Corr. Conc.	RSD(%)	High Limit	Flag
7 (Li)	--------	ug/l	#VALUE!	--------	0	
9 Be	6.73	ug/l	7.48	1.70	1000	
11 B	81.46	ug/l	90.50	0.26	1000	
23 Na	68640.00	ug/l	76259.04	0.47	25000	>Cal
24 Mg	11720.00	ug/l	13020.92	0.80	50000	
27 Al	605.60	ug/l	672.82	1.64	20000	
39 K	3631.00	ug/l	4034.04	0.74	20000	
44 Ca	10920.00	ug/l	12132.12	0.59	50000	
47 Ti	46.53	ug/l	51.69	1.98	1000	
51 V	45.02	ug/l	50.02	0.38	1000	
52 Cr	44.82	ug/l	49.80	1.00	1000	
55 Mn	189.50	ug/l	210.53	0.25	1000	
56 Fe	2177.00	ug/l	2418.65	0.38	20000	
59 Co	48.69	ug/l	54.09	0.27	1000	
60 Ni	49.73	ug/l	55.25	0.63	1000	
63 Cu	40.54	ug/l	45.04	0.44	1000	
65 Cu	40.42	ug/l	44.91	0.82	1000	
66 Zn	89.99	ug/l	99.98	0.66	1000	
75 As	40.02	ug/l	44.46	0.84	1000	
78 Se	35.64	ug/l	39.60	2.90	1000	
78 Se	38.21	ug/l	42.45	1.83	1000	
88 Sr	97.42	ug/l	108.23	1.32	1000	
88 Sr	98.58	ug/l	109.52	0.63	1000	
95 Mo	44.93	ug/l	49.92	0.49	1000	
106 (Cd)	--------	ug/l	#VALUE!	--------	########	
107 Ag	13.88	ug/l	15.42	1.51	500	
108 (Cd)	--------	ug/l	#VALUE!	--------	########	
111 Cd	8.51	ug/l	9.45	2.94	1000	
118 Sn	47.58	ug/l	52.86	0.92	1000	
121 Sb	42.86	ug/l	47.62	1.90	1000	
137 Ba	97.99	ug/l	108.87	2.59	1000	
205 Tl	40.69	ug/l	45.21	0.17	1000	
206 (Pb)	--------	ug/l	#VALUE!	--------	########	
207 (Pb)	--------	ug/l	#VALUE!	--------	########	
208 Pb	41.61	ug/l	46.23	0.13	1000	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	2906426.00	0.90	2718933.80	106.9
45 Sc	743926.56	0.57	580246.44	128.2
45 Sc	98424.91	0.75	78449.59	125.5
45 Sc	1775157.60	0.59	1460500.30	121.5
72 Ge	133043.16	0.46	106527.24	124.9
72 Ge	48846.95	0.64	39295.42	124.3
72 Ge	239924.45	0.21	209205.06	114.7
115 In	1560953.10	1.50	1337657.80	116.7
159 Tb	2354072.30	0.25	1942159.60	121.2
165 Ho	2403819.80	0.63	1969815.00	122.0

ISTD Ref File : C:\ICPCHEM\1\DATA\11K09k00.B\004CALB.D\004CALB.D#

1 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Fail

Sample QC Report

Data File: C:\ICPCHEM\1\DATA\11K09k00.B\040SMPL.D\040SMPL.D#
Date Acquired: Nov 9 2011 02:46 pm
Operator: NBS
Sample Name: AY47773W13-A
Misc Info: 111107A-3015
Vial Number: 3202
Current Method: C:\ICPCHEM\1\METHODS\62A1109.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1109.C
Last Cal Update: Nov 09 2011 10:58 am
Sample Type: Sample
Prep Dil Factor: 1.11
Total Dil Factor: 1.11

QC Elements

Element	Conc.		Corr. Conc.	RSD(%)	High Limit	Flag
7 (Li)	--------	ug/l	#VALUE!	--------	0	
9 Be	34.08	ug/l	37.86	1.01	1000	
11 B	269.70	ug/l	299.64	0.79	1000	
23 Na	83850.00	ug/l	93157.35	0.73	25000	>Cal
24 Mg	28480.00	ug/l	31641.28	0.86	50000	
27 Al	2203.00	ug/l	2447.53	1.13	20000	
39 K	7383.00	ug/l	8202.51	0.49	20000	
44 Ca	29250.00	ug/l	32496.75	0.40	50000	
47 Ti	227.50	ug/l	252.75	1.01	1000	
51 V	230.80	ug/l	256.42	0.56	1000	
52 Cr	226.90	ug/l	252.09	1.29	1000	
55 Mn	368.00	ug/l	408.85	0.87	1000	
56 Fe	2879.00	ug/l	3198.57	1.24	20000	
59 Co	228.60	ug/l	253.97	0.41	1000	
60 Ni	212.90	ug/l	236.53	0.53	1000	
63 Cu	204.20	ug/l	226.87	0.59	1000	
65 Cu	203.40	ug/l	225.98	0.50	1000	
66 Zn	395.80	ug/l	439.73	0.63	1000	
75 As	208.90	ug/l	232.09	0.16	1000	
78 Se	184.70	ug/l	205.20	1.63	1000	
78 Se	196.30	ug/l	218.09	0.38	1000	
88 Sr	292.00	ug/l	324.41	0.51	1000	
88 Sr	287.10	ug/l	318.97	0.43	1000	
95 Mo	237.70	ug/l	264.08	0.26	1000	
106 (Cd)	--------	ug/l	#VALUE!	--------	#######	
107 Ag	80.94	ug/l	89.92	8.26	500	
108 (Cd)	--------	ug/l	#VALUE!	--------	########	
111 Cd	42.17	ug/l	46.85	1.01	1000	
118 Sn	263.40	ug/l	292.64	0.89	1000	
121 Sb	234.00	ug/l	259.97	1.24	1000	
137 Ba	280.60	ug/l	311.75	1.36	1000	
205 Tl	213.70	ug/l	237.42	1.65	1000	
206 (Pb)	--------	ug/l	#VALUE!	--------	########	
207 (Pb)	--------	ug/l	#VALUE!	--------	########	
208 Pb	221.70	ug/l	246.31	1.15	1000	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	2773240.00	0.64	2718933.80	102.0
45 Sc	743398.38	0.74	580246.44	128.1
45 Sc	97534.56	0.15	78449.59	124.3
45 Sc	1739696.80	0.78	1460500.30	119.1
72 Ge	131511.33	0.73	106527.24	123.5
72 Ge	47428.53	0.87	39295.42	120.7
72 Ge	233043.19	0.79	209205.06	111.4
115 In	1535626.90	0.41	1337657.80	114.8
159 Tb	2311797.50	0.80	1942159.60	119.0
165 Ho	2336778.00	0.23	1969815.00	118.6

ISTD Ref File : C:\ICPCHEM\1\DATA\11K09k00.B\004CALB.D\004CALB.D#

1 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Fail

Sample QC Report

Data File: C:\ICPCHEM\1\DATA\11K09k00.B\041SMPL.D\041SMPL.D#
Date Acquired: Nov 9 2011 02:52 pm
Operator: NBS
Sample Name: AY47773W13-1/5
Misc Info: 111107A-3015
Vial Number: 3203
Current Method: C:\ICPCHEM\1\METHODS\62A1109.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1109.C
Last Cal Update: Nov 09 2011 10:58 am
Sample Type: Sample
Prep Dil Factor: 5.56
Total Dil Factor: 5.56

QC Elements

Element	Conc.		Corr. Conc.	RSD(%)	High Limit	Flag
7 (Li)	--------	ug/l	#VALUE!	--------	0	
9 Be	-0.04	ug/l	-0.22	6.86	1000	
11 B	11.39	ug/l	63.28	1.45	1000	
23 Na	13270.00	ug/l	73728.12	2.12	25000	
24 Mg	1509.00	ug/l	8384.00	1.94	50000	
27 Al	67.01	ug/l	372.31	3.94	20000	
39 K	492.30	ug/l	2735.22	2.34	20000	
44 Ca	1241.00	ug/l	6895.00	3.36	50000	
47 Ti	1.54	ug/l	8.53	32.24	1000	
51 V	1.50	ug/l	8.33	5.59	1000	
52 Cr	0.33	ug/l	1.83	3.17	1000	
55 Mn	29.37	ug/l	163.18	1.36	1000	
56 Fe	444.10	ug/l	2467.42	4.19	20000	
59 Co	1.11	ug/l	6.16	2.29	1000	
60 Ni	1.83	ug/l	10.18	3.04	1000	
63 Cu	0.03	ug/l	0.16	39.84	1000	
65 Cu	0.02	ug/l	0.09	89.70	1000	
66 Zn	4.44	ug/l	24.69	3.73	1000	
75 As	0.28	ug/l	1.55	5.69	1000	
78 Se	0.19	ug/l	1.05	7.19	1000	
78 Se	0.38	ug/l	2.13	12.57	1000	
88 Sr	9.87	ug/l	54.85	2.87	1000	
88 Sr	9.26	ug/l	51.45	0.40	1000	
95 Mo	0.13	ug/l	0.74	9.51	1000	
106 (Cd)	--------	ug/l	#VALUE!	--------	########	
107 Ag	0.03	ug/l	0.19	22.20	500	
108 (Cd)	--------	ug/l	#VALUE!	--------	########	
111 Cd	0.05	ug/l	0.27	21.22	1000	
118 Sn	0.28	ug/l	1.53	6.38	1000	
121 Sb	1.91	ug/l	10.59	5.38	1000	
137 Ba	10.82	ug/l	60.12	0.76	1000	
205 Tl	0.01	ug/l	0.06	14.68	1000	
206 (Pb)	--------	ug/l	#VALUE!	--------	########	
207 (Pb)	--------	ug/l	#VALUE!	--------	########	
208 Pb	-0.27	ug/l	-1.49	2.25	1000	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3149330.80	1.06	2718933.80	115.8
45 Sc	757680.38	4.94	580246.44	130.6
45 Sc	97034.75	1.76	78449.59	123.7
45 Sc	1641643.10	0.70	1460500.30	112.4
72 Ge	143962.80	5.27	106527.24	135.1
72 Ge	49239.70	1.70	39295.42	125.3
72 Ge	241055.89	0.77	209205.06	115.2
115 In	1521886.90	0.55	1337657.80	113.8
159 Tb	2248713.80	0.47	1942159.60	115.8
165 Ho	2255027.50	1.10	1969815.00	114.5

ISTD Ref File : C:\ICPCHEM\1\DATA\11K09k00.B\004CALB.D\004CALB.D#

0 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Pass

Calibration Data

Calibration Blank QC Report

Data File: C:\ICPCHEM\1\DATA\11K08k00.B\003CAL
Date Acquired: Nov 8 2011 10:35 am
Operator: NBS
Sample Name: Calibration Blank
Misc Info:
Vial Number: 1102
Current Method: C:\ICPCHEM\1\METHODS\62A1108.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1108.C
Last Cal Update: Nov 08 2011 10:33 am
Sample Type: CalBlk
Total Dil Factor: 1.00

QC&ISTD Elements

Element		CPS Mean		SD	RSD(%)
6	Li	2648744.00	A	120400.00	4.55
7	(Li)	156134.50	P	7552.00	4.84
9	Be	273.35	P	24.04	8.79
11	B	83611.83	P	1118.00	1.34
23	Na	138639.00	P	1140.00	0.82
24	Mg	405.58	P	51.89	12.79
27	Al	85.56	P	11.71	13.69
39	K	37142.83	P	586.20	1.58
44	Ca	2670.05	P	143.30	5.37
45	Sc	583321.69	P	2507.00	0.43
45	Sc	69335.32	P	293.50	0.42
45	Sc	1427545.00	A	91090.00	6.38
47	Ti	4.00	P	3.53	88.20
51	V	3287.08	P	70.33	2.14
52	Cr	411.12	P	5.39	1.31
55	Mn	228.01	P	12.86	5.64
56	Fe	7469.99	P	67.06	0.90
59	Co	296.01	P	8.74	2.95
60	Ni	387.57	P	11.50	2.97
63	Cu	2597.60	P	89.35	3.44
65	Cu	1172.06	P	52.79	4.50
66	Zn	1391.20	P	13.42	0.96
72	Ge	93728.29	P	629.70	0.67
72	Ge	34515.22	P	453.40	1.31
72	Ge	186777.50	P	9962.00	5.33
75	As	197.56	P	5.43	2.75
78	Se	16.44	P	1.93	11.71
78	Se	15.33	P	2.52	16.42
88	Sr	93.34	P	17.64	18.90
88	Sr	602.26	P	51.79	8.60
95	Mo	92.23	P	16.44	17.83
106	(Cd)	43.33	P	6.67	15.39
107	Ag	76.67	P	18.56	24.21
108	(Cd)	40.00	P	15.28	38.20
111	Cd	7.93	P	10.49	132.23
115	In	1188387.00	A	95930.00	8.07
118	Sn	870.06	P	20.00	2.30
121	Sb	356.68	P	17.64	4.95
137	Ba	158.90	P	15.40	9.69
159	Tb	1796319.00	A	140000.00	7.79
165	Ho	1809297.00	A	153300.00	8.47
205	Tl	364.46	P	22.20	6.09
206	(Pb)	572.26	P	58.91	10.29
207	(Pb)	496.70	P	32.83	6.61
208	Pb	2240.16	P	100.20	4.47

Calibration Standard QC Report

Data File: C:\ICPCHEM\1\DATA\11K08k00.B\004CALS.D\004CALS.DB
Date Acquired: Nov 8 2011 10:41 am
Operator: NBS
Sample Name: 111108 Standard 1
Misc Info:
Vial Number: 1103
Current Method: C:\ICPCHEM\1\METHODS\62A1108.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1108.C
Last Cal Update: Nov 08 2011 10:39 am
Sample Type: CalStd
Total Dil Factor: 1.00

QC&ISTD Elements

Element	CPS Mean		SD	RSD(%)	Cal Coef
6 Li	2643496.00	A	3611.00	0.14	0.0000
7 (Li)	156536.80	P	708.90	0.45	0.0000
9 Be	1046.74	P	57.83	5.52	0.0000
11 B	80962.26	P	536.50	0.66	0.0000
23 Na	134489.70	P	792.20	0.59	0.0000
24 Mg	1919.08	P	80.38	4.19	0.0000
27 Al	365.57	P	30.97	8.47	0.0000
39 K	38943.11	P	1014.00	2.60	0.0000
44 Ca	2550.40	P	119.80	4.70	0.0000
45 Sc	578938.13	P	2963.00	0.51	0.0000
45 Sc	69436.83	P	382.70	0.55	0.0000
45 Sc	1401745.00	A	9407.00	0.67	0.0000
47 Ti	13.33	P	2.67	20.00	0.0000
51 V	3616.49	P	107.50	2.97	0.0000
52 Cr	708.03	P	24.04	3.40	0.0000
55 Mn	448.90	P	10.18	2.27	0.0000
56 Fe	17941.39	P	141.30	0.79	0.0000
59 Co	641.80	P	33.77	5.26	0.0000
60 Ni	1253.41	P	27.94	2.23	0.0000
63 Cu	2808.76	P	50.09	1.78	0.0000
65 Cu	1347.64	P	70.43	5.23	0.0000
66 Zn	883.15	P	24.01	2.72	0.0000
72 Ge	93627.87	P	334.40	0.36	0.0000
72 Ge	34609.86	P	396.80	1.15	0.0000
72 Ge	187051.80	P	1159.00	0.62	0.0000
75 As	223.34	P	3.48	1.56	0.0000
78 Se	27.56	P	2.22	8.05	0.0000
78 Se	17.00	P	0.58	3.40	0.0000
88 Sr	291.12	P	33.39	11.47	0.0000
88 Sr	1924.65	P	60.04	3.12	0.0000
95 Mo	355.57	P	19.53	5.49	0.0000
106 (Cd)	33.33	P	12.02	36.06	0.0000
107 Ag	363.35	P	41.64	11.46	0.0000
108 (Cd)	36.67	P	3.33	9.09	0.0000
111 Cd	164.40	P	13.48	8.20	0.0000
115 In	1175528.00	A	12670.00	1.08	0.0000
118 Sn	926.73	P	20.00	2.16	0.0000
121 Sb	826.72	P	25.17	3.04	0.0000
137 Ba	320.02	P	8.82	2.76	0.0000
159 Tb	1764344.00	A	7538.00	0.43	0.0000
165 Ho	1760707.00	A	9725.00	0.55	0.0000
205 Tl	1774.64	P	49.49	2.79	0.0000
206 (Pb)	1191.21	P	83.83	7.04	0.0000
207 (Pb)	1087.87	P	45.26	4.16	0.0000
208 Pb	4808.34	P	223.10	4.64	0.0000

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	2643496.50	0.14	2648744.00	99.8
45 Sc	578938.13	0.51	583321.69	99.2
45 Sc	69436.84	0.55	69335.32	100.1
45 Sc	1401745.30	0.67	1427545.30	98.2
72 Ge	93627.87	0.36	93728.30	99.9
72 Ge	34609.86	1.15	34515.22	100.3
72 Ge	187051.77	0.62	186777.47	100.1
115 In	1175527.90	1.08	1188387.10	98.9
159 Tb	1764343.90	0.43	1796319.10	98.2
165 Ho	1760706.60	0.55	1809297.10	97.3

ISTD Ref File : C:\ICPCHEM\1\DATA\11K08k00.B\003CALB.D\003CALB.DB

--- :Element Failures --- :Max. Number of Failures Allowed

Data Results:
Analytes: Pass

Calibration Standard QC Report

Data File: C:\ICPCHEM\1\DATA\11K08k00.B\005CALS.D\005CALS.D#
Date Acquired: Nov 8 2011 10:47 am
Operator: NBS
Sample Name: 111108 Standard 2
Misc Info:
Vial Number: 1104
Current Method: C:\ICPCHEM\1\METHODS\62A1108.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1108.C
Last Cal Update: Nov 08 2011 10:45 am
Sample Type: CalStd
Total Dil Factor: 1.00

QC&ISTD Elements

Element	CPS Mean		SD	RSD(%)	Cal Coef
6 Li	2662507.00	A	40160.00	1.51	0.0000
7 (Li)	156727.70	P	542.20	0.35	1.0000
9 Be	9842.42	P	261.60	2.66	1.0000
11 B	81195.68	P	1508.00	1.86	-1.0000
23 Na	139758.91	P	796.40	0.57	-1.0000
24 Mg	16509.63	P	234.60	1.42	1.0000
27 Al	2368.10	P	77.37	3.27	1.0000
39 K	42229.99	P	865.70	2.05	1.0000
44 Ca	3093.11	P	125.20	4.05	-1.0000
45 Sc	580658.81	P	7319.00	1.26	0.0000
45 Sc	70210.81	P	358.30	0.51	0.0000
45 Sc	1419470.00	A	4247.00	0.30	0.0000
47 Ti	93.33	P	10.07	10.79	1.0000
51 V	5824.78	P	47.92	0.82	1.0000
52 Cr	3206.62	P	44.12	1.38	1.0000
55 Mn	1974.83	P	35.51	1.80	1.0000
56 Fe	56380.29	P	461.50	0.82	1.0000
59 Co	4348.25	P	117.70	2.71	1.0000
60 Ni	1593.44	P	43.96	2.76	1.0000
63 Cu	4814.18	P	81.56	1.69	1.0000
65 Cu	2297.59	P	56.74	2.47	1.0000
66 Zn	1035.16	P	22.08	2.13	-1.0000
72 Ge	93525.98	P	1194.00	1.28	0.0000
72 Ge	34948.85	P	241.70	0.69	0.0000
72 Ge	187113.59	P	914.20	0.49	0.0000
75 As	510.01	P	0.58	0.11	1.0000
78 Se	161.78	P	8.33	5.15	1.0000
78 Se	46.78	P	0.51	1.09	1.0000
88 Sr	2118.01	P	99.70	4.71	1.0000
88 Sr	15181.85	P	195.50	1.29	1.0000
95 Mo	2788.15	P	54.20	1.94	1.0000
106 (Cd)	178.90	P	21.17	11.83	-1.0000
107 Ag	3631.71	P	93.69	2.58	1.0000
108 (Cd)	148.89	P	22.20	14.91	-1.0000
111 Cd	1575.54	P	141.80	9.00	1.0000
115 In	1164004.00	A	10070.00	0.87	0.0000
118 Sn	4574.23	P	160.10	3.50	1.0000
121 Sb	5292.29	P	185.10	3.50	1.0000
137 Ba	2099.12	P	66.79	3.18	1.0000
159 Tb	1787035.00	A	3646.00	0.20	0.0000
165 Ho	1778022.00	A	28190.00	1.59	0.0000
205 Tl	16328.35	P	401.30	2.46	1.0000
206 (Pb)	6266.17	P	107.90	1.72	1.0000
207 (Pb)	5356.83	P	185.80	3.47	1.0000
208 Pb	25021.32	P	78.91	0.32	1.0000

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	2662506.50	1.51	2648744.00	100.5
45 Sc	580658.75	1.26	583321.69	99.5
45 Sc	70210.81	0.51	69335.32	101.3
45 Sc	1419470.40	0.30	1427545.30	99.4
72 Ge	93525.98	1.28	93728.30	99.8
72 Ge	34948.85	0.69	34515.22	101.3
72 Ge	187113.53	0.49	186777.47	100.2
115 In	1164003.80	0.87	1188387.10	97.9
159 Tb	1787034.50	0.20	1796319.10	99.5
165 Ho	1778022.40	1.59	1809297.10	98.3

ISTD Ref File : C:\ICPCHEM\1\DATA\11K08k00.B\003CALB.D\003CALB.D#

--- :Element Failures --- :Max. Number of Failures Allowed

Data Results:
Analytes: Pass

Calibration Standard QC Report

Data File: C:\ICPCHEM\1\DATA\11K08k00.B\006CALS.D\006CALS.D#
Date Acquired: Nov 8 2011 10:53 am
Operator: NBS
Sample Name: 111108 Standard 3
Misc Info:
Vial Number: 1105
Current Method: C:\ICPCHEM\1\METHODS\62A1108.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1108.C
Last Cal Update: Nov 08 2011 10:51 am
Sample Type: CalStd
Total Dil Factor: 1.00

QC&ISTD Elements

Element	CPS Mean		SD	RSD(%)	Cal Coef
6 Li	2646238.00	A	9680.00	0.37	0.0000
7 (Li)	155579.50	P	411.00	0.26	0.8047
9 Be	481155.91	P	6492.00	1.35	0.9999
11 B	382578.19	P	508.60	0.13	-0.8341
23 Na	997908.81	A	12100.00	1.21	0.2963
24 Mg	802582.00	P	6170.00	0.77	1.0000
27 Al	114661.90	P	114.50	0.10	0.9997
39 K	317820.91	P	1715.00	0.54	0.9562
44 Ca	35529.95	P	347.00	0.98	0.9476
45 Sc	575484.81	P	8903.00	1.55	0.0000
45 Sc	70477.03	P	212.60	0.30	0.0000
45 Sc	1450392.00	A	9580.00	0.66	0.0000
47 Ti	4343.36	P	52.69	1.21	1.0000
51 V	122605.70	P	755.20	0.62	0.9995
52 Cr	141282.59	P	1206.00	0.85	1.0000
55 Mn	89727.98	P	479.20	0.53	0.9996
56 Fe	2474496.00	A	9261.00	0.37	0.9932
59 Co	202369.91	P	848.40	0.42	0.9999
60 Ni	52356.33	P	382.80	0.73	0.7707
63 Cu	136728.80	P	370.90	0.27	1.0000
65 Cu	65821.85	P	469.50	0.71	0.9985
66 Zn	24615.67	P	269.10	1.09	-0.3364
72 Ge	93489.16	P	1055.00	1.13	0.0000
72 Ge	35229.47	P	74.12	0.21	0.0000
72 Ge	189105.59	P	777.80	0.41	0.0000
75 As	15622.53	P	105.30	0.67	0.9999
78 Se	7964.98	P	79.42	1.00	0.9998
78 Se	1700.99	P	11.50	0.68	0.9990
88 Sr	110739.10	P	932.90	0.84	1.0000
88 Sr	754636.13	P	9010.00	1.19	1.0000
95 Mo	135464.00	P	1594.00	1.18	1.0000
106 (Cd)	6956.40	P	209.60	3.01	0.9884
107 Ag	178243.30	P	1393.00	0.78	0.9998
108 (Cd)	5285.62	P	184.40	3.49	0.9932
111 Cd	78532.42	P	823.80	1.05	1.0000
115 In	1181174.00	A	10590.00	0.90	0.0000
118 Sn	208406.09	P	981.30	0.47	0.9971
121 Sb	278620.59	P	563.10	0.20	1.0000
137 Ba	103714.80	P	622.30	0.60	0.9999
159 Tb	1783412.00	A	6608.00	0.37	0.0000
165 Ho	1811036.00	A	18000.00	0.99	0.0000
205 Tl	827475.50	P	6234.00	0.75	1.0000
206 (Pb)	289057.50	P	1236.00	0.43	1.0000
207 (Pb)	251127.00	P	1523.00	0.61	0.9998
208 Pb	1159894.00	P	5387.00	0.46	0.9999

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	2646238.50	0.37	2648744.00	99.9
45 Sc	575484.81	1.55	583321.69	98.7
45 Sc	70477.03	0.30	69335.32	101.6
45 Sc	1450392.00	0.66	1427545.30	101.6
72 Ge	93489.16	1.13	93728.30	99.7
72 Ge	35229.47	0.21	34515.22	102.1
72 Ge	189105.58	0.41	186777.47	101.2
115 In	1181173.60	0.90	1188387.10	99.4
159 Tb	1783412.30	0.37	1796319.10	99.3
165 Ho	1811036.10	0.99	1809297.10	100.1

ISTD Ref File : C:\ICPCHEM\1\DATA\11K08k00.B\003CALB.D\003CALB.D#

--- :Element Failures --- :Max. Number of Failures Allowed

Data Results:
Analytes: Pass

Calibration Standard QC Report

Data File: C:\ICPCHEM\1\DATA\11K08k00.B\007CALS.D\007CALS.D#
Date Acquired: Nov 8 2011 11:00 am
Operator: NBS
Sample Name: 111108 Standard 4
Misc Info:
Vial Number: 1106
Current Method: C:\ICPCHEM\1\METHODS\62A1108.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1108.C
Last Cal Update: Nov 08 2011 10:57 am
Sample Type: CalStd
Total Dil Factor: 1.00

QC&ISTD Elements

Element	CPS Mean		SD	RSD(%)	Cal Coef
6 Li	2618873.00	A	23840.00	0.91	0.0000
7 (Li)	153845.91	P	514.50	0.33	-0.8562
9 Be	990764.69	A	8533.00	0.86	1.0000
11 B	673329.19	P	8245.00	1.22	0.9997
23 Na	1834600.00	A	23080.00	1.26	0.9998
24 Mg	1624897.00	A	11470.00	0.71	1.0000
27 Al	229491.00	P	742.20	0.32	1.0000
39 K	601782.13	P	2793.00	0.46	1.0000
44 Ca	68302.71	P	271.80	0.40	1.0000
45 Sc	589893.31	P	1649.00	0.28	0.0000
45 Sc	70901.60	P	524.10	0.74	0.0000
45 Sc	1442981.00	A	6987.00	0.48	0.0000
47 Ti	8973.49	P	39.31	0.44	1.0000
51 V	245527.30	P	320.50	0.13	1.0000
52 Cr	283832.81	P	1572.00	0.55	1.0000
55 Mn	181585.80	P	1941.00	1.07	1.0000
56 Fe	4829252.00	A	51530.00	1.07	1.0000
59 Co	402863.19	P	1206.00	0.30	1.0000
60 Ni	104559.60	P	311.00	0.30	0.9999
63 Cu	269439.00	P	1203.00	0.45	1.0000
65 Cu	129997.60	P	488.20	0.38	1.0000
66 Zn	48177.04	P	249.70	0.52	0.9995
72 Ge	94999.52	P	328.30	0.35	0.0000
72 Ge	35485.61	P	246.10	0.69	0.0000
72 Ge	189126.70	P	590.50	0.31	0.0000
75 As	31279.94	P	127.30	0.41	1.0000
78 Se	15957.81	P	175.60	1.10	1.0000
78 Se	3452.87	P	29.65	0.86	1.0000
88 Sr	221975.41	P	1979.00	0.89	1.0000
88 Sr	1561068.00	A	12080.00	0.77	1.0000
95 Mo	272684.19	P	1990.00	0.73	1.0000
106 (Cd)	14121.97	P	301.20	2.13	1.0000
107 Ag	353991.59	P	1875.00	0.53	1.0000
108 (Cd)	10739.96	P	168.50	1.57	1.0000
111 Cd	159080.50	P	911.40	0.57	1.0000
115 In	1181927.00	A	8456.00	0.72	0.0000
118 Sn	416750.00	P	3614.00	0.87	1.0000
121 Sb	567346.19	P	1309.00	0.23	1.0000
137 Ba	208979.59	P	1125.00	0.54	1.0000
159 Tb	1802455.00	A	14200.00	0.79	0.0000
165 Ho	1812861.00	A	9765.00	0.54	0.0000
205 Tl	1734819.00	A	1649.00	0.10	1.0000
206 (Pb)	572305.13	P	2941.00	0.51	1.0000
207 (Pb)	498346.81	P	2547.00	0.51	1.0000
208 Pb	2337419.00	A	10610.00	0.45	1.0000

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	2618873.30	0.91	2648744.00	98.9
45 Sc	589893.31	0.28	583321.69	101.1
45 Sc	70901.60	0.74	69335.32	102.3
45 Sc	1442981.50	0.48	1427545.30	101.1
72 Ge	94999.52	0.35	93728.30	101.4
72 Ge	35485.61	0.69	34515.22	102.8
72 Ge	189126.66	0.31	186777.47	101.3
115 In	1181927.50	0.72	1188387.10	99.5
159 Tb	1802455.10	0.79	1796319.10	100.3
165 Ho	1812861.50	0.54	1809297.10	100.2

ISTD Ref File : C:\ICPCHEM\1\DATA\11K08k00.B\003CALB.D\003CALB.D#

--- :Element Failures --- :Max. Number of Failures Allowed

Data Results:
Analytes: Pass

QCS QC Report

Data File: C:\ICPCHEM\1\DATA\11K08k00.B\008_QCS.D\008_QCS.D#
Date Acquired: Nov 8 2011 11:06 am
Operator: NBS
Sample Name: ICV 111108
Misc Info:
Vial Number: 1107
Current Method: C:\ICPCHEM\1\METHODS\62A1108.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1108.C
Last Cal Update: Nov 08 2011 11:03 am
Sample Type: QCS
Total Dil Factor: 1.00

QC Elements

Element	Conc.		RSD(%)	Expected	QC Range(%)		Flag
7 (Li)	--------	ug/l	--------	100.00	90 -	110	
9 Be	97.29	ug/l	0.14	100.00	90 -	110	
11 B	93.39	ug/l	1.03	100.00	90 -	110	
23 Na	2406.00	ug/l	2.00	2500.00	90 -	110	
24 Mg	2419.00	ug/l	1.60	2500.00	90 -	110	
27 Al	2520.00	ug/l	1.71	2500.00	90 -	110	
39 K	2465.00	ug/l	0.41	2500.00	90 -	110	
44 Ca	2540.00	ug/l	0.73	2500.00	90 -	110	
47 Ti	98.26	ug/l	0.61	100.00	90 -	110	
51 V	99.26	ug/l	1.15	100.00	90 -	110	
52 Cr	102.40	ug/l	1.18	100.00	90 -	110	
55 Mn	102.10	ug/l	1.43	100.00	90 -	110	
56 Fe	2480.00	ug/l	1.24	2500.00	90 -	110	
59 Co	100.20	ug/l	1.30	100.00	90 -	110	
60 Ni	100.60	ug/l	0.54	100.00	90 -	110	
63 Cu	100.10	ug/l	0.46	100.00	90 -	110	
65 Cu	99.44	ug/l	0.18	100.00	90 -	110	
66 Zn	100.90	ug/l	0.99	100.00	90 -	110	
75 As	98.06	ug/l	0.40	100.00	90 -	110	
78 Se	101.50	ug/l	1.10	100.00	90 -	110	
78 Se	102.60	ug/l	0.13	100.00	90 -	110	
88 Sr	100.10	ug/l	0.41	100.00	90 -	110	
88 Sr	97.76	ug/l	0.35	100.00	90 -	110	
95 Mo	95.76	ug/l	0.56	100.00	90 -	110	
106 (Cd)	--------	ug/l	--------	100.00	90 -	110	
107 Ag	47.68	ug/l	0.33	50.00	90 -	110	
108 (Cd)	--------	ug/l	--------	100.00	90 -	110	
111 Cd	99.16	ug/l	1.05	100.00	90 -	110	
118 Sn	50.03	ug/l	1.20	50.00	90 -	110	
121 Sb	103.20	ug/l	0.94	100.00	90 -	110	
137 Ba	96.36	ug/l	0.65	100.00	90 -	110	
205 Tl	100.90	ug/l	0.29	100.00	90 -	110	
206 (Pb)	--------	ug/l	--------	100.00	90 -	110	
207 (Pb)	--------	ug/l	--------	100.00	90 -	110	
208 Pb	101.20	ug/l	0.94	100.00	90 -	110	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	2624443.00	0.83	2648744.00	99.1
45 Sc	599692.56	0.19	583321.69	102.8
45 Sc	72303.81	0.82	69335.32	104.3
45 Sc	1495217.80	0.72	1427545.30	104.7
72 Ge	95999.90	0.21	93728.30	102.4
72 Ge	35663.09	0.36	34515.22	103.3
72 Ge	192312.36	0.52	186777.47	103.0
115 In	1210739.30	0.71	1188387.10	101.9
159 Tb	1816136.50	0.20	1796319.10	101.1
165 Ho	1836622.60	0.25	1809297.10	101.5

ISTD Ref File : C:\ICPCHEM\1\DATA\11K08k00.B\003CALB.D\003CALB.D#

0 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:

Analytes: Pass

CCB QC Report

Data File: C:\ICPCHEM\1\DATA\11K08k00.B\011_CCB.D\011_CCB.D#
Date Acquired: Nov 8 2011 11:25 am
Operator: NBS
Sample Name: ICB 111108
Misc Info:
Vial Number: 1102
Current Method: C:\ICPCHEM\1\METHODS\62A1108.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1108.C
Last Cal Update: Nov 08 2011 11:03 am
Sample Type: CCB
Total Dil Factor: 1.00

QC Elements

Element	Conc.	RSD(%)	High Limit	Flag
7 (Li)	-------- ug/l	--------	#VALUE!	
9 Be	-0.02 ug/l	5.29	0.12	
11 B	-6.83 ug/l	2.06	15.00	
23 Na	136.90 ug/l	5.78	77.10	Fail
24 Mg	-1.14 ug/l	2.31	7.50	
27 Al	-0.33 ug/l	29.54	3.96	
39 K	-3.12 ug/l	122.19	19.20	
44 Ca	-35.47 ug/l	7.41	90.00	
47 Ti	-0.02 ug/l	38.09	0.78	
51 V	-1.22 ug/l	0.62	0.21	
52 Cr	-0.11 ug/l	0.88	0.12	
55 Mn	-0.09 ug/l	4.04	0.18	
56 Fe	-2.08 ug/l	1.88	40.80	
59 Co	-0.05 ug/l	7.40	0.09	
60 Ni	-0.33 ug/l	0.84	0.48	
63 Cu	-0.79 ug/l	0.97	0.39	
65 Cu	-0.73 ug/l	0.37	0.39	
66 Zn	-2.86 ug/l	1.27	6.90	
75 As	-0.56 ug/l	3.51	0.27	
78 Se	-0.05 ug/l	30.29	0.30	
78 Se	0.03 ug/l	247.00	0.30	
88 Sr	-0.03 ug/l	7.03	0.03	
88 Sr	-0.03 ug/l	1.23	0.03	
95 Mo	0.01 ug/l	38.20	0.21	
106 (Cd)	-------- ug/l	--------	#VALUE!	
107 Ag	0.00 ug/l	6.17	0.09	
108 (Cd)	-------- ug/l	--------	#VALUE!	
111 Cd	0.00 ug/l	141.36	0.06	
118 Sn	-0.18 ug/l	5.15	0.30	
121 Sb	0.01 ug/l	114.97	0.03	
137 Ba	-0.07 ug/l	1.13	0.12	
205 Tl	-0.01 ug/l	13.88	0.03	
206 (Pb)	-------- ug/l	--------	#VALUE!	
207 (Pb)	-------- ug/l	--------	#VALUE!	
208 Pb	-0.03 ug/l	2.77	0.33	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	2463971.00	0.94	2648744.00	93.0
45 Sc	582302.13	0.59	583321.69	99.8
45 Sc	73586.34	0.12	69335.32	106.1
45 Sc	1501212.60	0.78	1427545.30	105.2
72 Ge	100425.64	0.32	93728.30	107.1
72 Ge	37535.65	0.33	34515.22	108.8
72 Ge	200897.80	0.42	186777.47	107.6
115 In	1281933.00	0.91	1188387.10	107.9
159 Tb	1899909.90	0.27	1796319.10	105.8
165 Ho	1895514.10	0.60	1809297.10	104.8

ISTD Ref File : C:\ICPCHEM\1\DATA\11K08k00.B\003CALB.D\003CALB.D#

1 Element Failures --- 0 Max. Number of Failures Allowed

Data Results:
Analytes: Fail

CCV QC Report

Data File: C:\ICPCHEM\1\DATA\11K08k00.B\012_CCV.D\012_CCV.D#
Date Acquired: Nov 8 2011 11:31 am
Operator: NBS
Sample Name: CCV 111108
Misc Info:
Vial Number: 1105
Current Method: C:\ICPCHEM\1\METHODS\62A1108.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1108.C
Last Cal Update: Nov 08 2011 11:03 am
Sample Type: CCV
Total Dil Factor: 1.00

QC Elements

Element	Conc.		RSD(%)	Expected	QC Range(%)		Flag
7 (Li)	--------	ug/l	--------	50.00	90 -	110	
9 Be	48.02	ug/l	0.17	50.00	90 -	110	
11 B	45.90	ug/l	1.00	50.00	90 -	110	
23 Na	1201.00	ug/l	0.75	1250.00	90 -	110	
24 Mg	2465.00	ug/l	0.93	2500.00	90 -	110	
27 Al	1007.00	ug/l	1.66	1000.00	90 -	110	
39 K	1018.00	ug/l	0.79	1000.00	90 -	110	
44 Ca	2523.00	ug/l	1.49	2500.00	90 -	110	
47 Ti	50.72	ug/l	1.67	50.00	90 -	110	
51 V	50.24	ug/l	0.69	50.00	90 -	110	
52 Cr	49.97	ug/l	0.71	50.00	90 -	110	
55 Mn	50.47	ug/l	0.87	50.00	90 -	110	
56 Fe	1020.00	ug/l	1.12	1000.00	90 -	110	
59 Co	50.24	ug/l	0.22	50.00	90 -	110	
60 Ni	50.39	ug/l	0.87	50.00	90 -	110	
63 Cu	50.45	ug/l	0.63	50.00	90 -	110	
65 Cu	50.25	ug/l	0.29	50.00	90 -	110	
66 Zn	50.35	ug/l	0.70	50.00	90 -	110	
75 As	50.73	ug/l	0.43	50.00	90 -	110	
78 Se	50.19	ug/l	0.93	50.00	90 -	110	
78 Se	50.95	ug/l	0.70	50.00	90 -	110	
88 Sr	50.69	ug/l	0.36	50.00	90 -	110	
88 Sr	48.42	ug/l	0.20	50.00	90 -	110	
95 Mo	49.79	ug/l	0.89	50.00	90 -	110	
106 (Cd)	--------	ug/l	--------	50.00	90 -	110	
107 Ag	25.52	ug/l	1.95	25.00	90 -	110	
108 (Cd)	--------	ug/l	--------	50.00	90 -	110	
111 Cd	50.54	ug/l	0.39	50.00	90 -	110	
118 Sn	50.53	ug/l	0.06	50.00	90 -	110	
121 Sb	50.21	ug/l	0.81	50.00	90 -	110	
137 Ba	50.42	ug/l	1.68	50.00	90 -	110	
205 Tl	47.44	ug/l	0.71	50.00	90 -	110	
206 (Pb)	--------	ug/l	--------	50.00	90 -	110	
207 (Pb)	--------	ug/l	--------	50.00	90 -	110	
208 Pb	49.08	ug/l	0.81	50.00	90 -	110	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	2650998.80	0.51	2648744.00	100.1
45 Sc	615086.63	0.72	583321.69	105.4
45 Sc	74560.59	0.52	69335.32	107.5
45 Sc	1491433.10	0.21	1427545.30	104.5
72 Ge	100342.29	0.54	93728.30	107.1
72 Ge	37120.45	0.33	34515.22	107.5
72 Ge	197949.98	0.49	186777.47	106.0
115 In	1199666.10	1.35	1188387.10	100.9
159 Tb	1825184.40	0.06	1796319.10	101.6
165 Ho	1827788.30	1.21	1809297.10	101.0

ISTD Ref File : C:\ICPCHEM\1\DATA\11K08k00.B\003CALB.D\003CALB.D#

0 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:

Analytes: Pass

CCB QC Report

Data File: C:\ICPCHEM\1\DATA\11K08k00.B\013_CCB.D\013_CCB.D#
Date Acquired: Nov 8 2011 11:37 am
Operator: NBS
Sample Name: CCB 111108
Misc Info:
Vial Number: 1102
Current Method: C:\ICPCHEM\1\METHODS\62A1108.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1108.C
Last Cal Update: Nov 08 2011 11:03 am
Sample Type: CCB
Total Dil Factor: 1.00

QC Elements

Element	Conc.	RSD(%)	High Limit	Flag
7 (Li)	-------- ug/l	--------	#VALUE!	
9 Be	-0.02 ug/l	6.24	0.12	
11 B	-7.12 ug/l	0.60	15.00	
23 Na	95.71 ug/l	6.95	77.10	Fail
24 Mg	-1.08 ug/l	6.27	7.50	
27 Al	-0.38 ug/l	29.02	3.96	
39 K	-5.00 ug/l	89.26	19.20	
44 Ca	-39.25 ug/l	7.72	90.00	
47 Ti	0.01 ug/l	355.62	0.78	
51 V	-1.18 ug/l	0.64	0.21	
52 Cr	-0.11 ug/l	1.50	0.12	
55 Mn	-0.09 ug/l	3.74	0.18	
56 Fe	-2.04 ug/l	1.49	40.80	
59 Co	-0.05 ug/l	6.17	0.09	
60 Ni	-0.34 ug/l	3.12	0.48	
63 Cu	-0.78 ug/l	0.24	0.39	
65 Cu	-0.74 ug/l	2.08	0.39	
66 Zn	-2.85 ug/l	0.87	6.90	
75 As	-0.55 ug/l	2.94	0.27	
78 Se	0.00 ug/l	2137.90	0.30	
78 Se	0.08 ug/l	148.77	0.30	
88 Sr	-0.03 ug/l	21.12	0.03	
88 Sr	-0.03 ug/l	5.94	0.03	
95 Mo	0.06 ug/l	18.60	0.21	
106 (Cd)	-------- ug/l	--------	#VALUE!	
107 Ag	0.00 ug/l	22.38	0.09	
108 (Cd)	-------- ug/l	--------	#VALUE!	
111 Cd	0.01 ug/l	110.21	0.06	
118 Sn	-0.17 ug/l	1.99	0.30	
121 Sb	0.26 ug/l	7.45	0.03	Fail
137 Ba	-0.06 ug/l	8.36	0.12	
205 Tl	0.01 ug/l	56.04	0.03	
206 (Pb)	-------- ug/l	--------	#VALUE!	
207 (Pb)	-------- ug/l	--------	#VALUE!	
208 Pb	-0.03 ug/l	32.88	0.33	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	2455887.80	1.11	2648744.00	92.7
45 Sc	591099.19	0.51	583321.69	101.3
45 Sc	74877.62	0.75	69335.32	108.0
45 Sc	1503655.80	0.42	1427545.30	105.3
72 Ge	102008.09	0.43	93728.30	108.8
72 Ge	37996.07	0.21	34515.22	110.1
72 Ge	201827.94	1.05	186777.47	108.1
115 In	1277194.30	0.66	1188387.10	107.5
159 Tb	1906001.90	1.36	1796319.10	106.1
165 Ho	1901174.30	1.66	1809297.10	105.1

ISTD Ref File : C:\ICPCHEM\1\DATA\11K08k00.B\003CALB.D\003CALB.D#

2 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Fail

ICS-A QC Report

Data File: C:\ICPCHEM\1\DATA\11K08k00.B\014ICSA.D\014ICSA.D#
Date Acquired: Nov 8 2011 11:43 am
Acq. Method: 62A1108.M
Operator: NBS
Sample Name: ICSA 111108
Misc Info:
Vial Number: 2102
Current Method: C:\ICPCHEM\1\METHODS\62A1108.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1108.C
Last Cal. Update: Nov 08 2011 11:03 am
Sample Type: ICSA
Dilution Factor: 1.00

Data Results:
Analytes: Pass
ISTD: Pass

QC Elements

Element	IS Ref	Tune	Conc.		RSD(%)	High Limit ppb	Flag
7 (Li)	---	3	--------	ug/l	--------		
9 Be	45	3	0.84	ug/l	1.20		
11 B	45	3	-2.96	ug/l	3.11		
23 Na	45	2	92310.00	ug/l	0.86		
24 Mg	45	2	89920.00	ug/l	0.71		
27 Al	45	2	96530.00	ug/l	1.19		
39 K	45	2	93840.00	ug/l	0.69		
44 Ca	45	2	97970.00	ug/l	0.75		
47 Ti	45	2	1961.00	ug/l	0.26		
51 V	45	2	1.56	ug/l	4.84		
52 Cr	45	2	2.10	ug/l	1.36		
55 Mn	45	2	5.65	ug/l	1.02		
56 Fe	45	2	91840.00	ug/l	0.13		
59 Co	45	2	20.00	ug/l	0.17		
60 Ni	45	2	3.34	ug/l	0.90		
63 Cu	72	2	1.05	ug/l	1.08		
65 Cu	72	2	1.27	ug/l	4.57		
66 Zn	72	2	1.50	ug/l	5.98		
75 As	72	2	1.43	ug/l	1.96		
78 Se	72	1	0.99	ug/l	3.37		
78 Se	72	2	1.06	ug/l	5.63		
88 Sr	72	2	0.60	ug/l	7.78		
88 Sr	72	3	0.57	ug/l	2.88		
95 Mo	72	3	1719.00	ug/l	0.38		
106 (Cd)	---	3	--------	ug/l	--------		
107 Ag	115	3	1.92	ug/l	0.86		
108 (Cd)	---	3	--------	ug/l	--------		
111 Cd	115	3	2.34	ug/l	4.26		
118 Sn	115	3	1.09	ug/l	2.55		
121 Sb	115	3	2.15	ug/l	1.33		
137 Ba	115	3	3.34	ug/l	4.39		
205 Tl	159	3	1.25	ug/l	0.09		
206 (Pb)	---	3	--------	ug/l	--------		
207 (Pb)	---	3	--------	ug/l	--------		
208 Pb	159	3	3.25	ug/l	0.59		

ISTD Elements

Element	Tune	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3	2668674	0.53	2648744	100.8
45 Sc	1	612422	0.78	583322	105.0
45 Sc	2	75084	0.49	69335	108.3
45 Sc	3	1479549	0.95	1427545	103.6
72 Ge	1	99200	0.57	93728	105.8
72 Ge	2	38834	0.55	34515	112.5
72 Ge	3	205704	0.79	186777	110.1
115 In	3	1104592	1.09	1188387	92.9
159 Tb	3	1748105	0.15	1796319	97.3
165 Ho	3	1756063	0.49	1809297	97.1

Tune File# 1 c:\icpchem\1\7500\h2.u
Tune File# 2 c:\icpchem\1\7500\he.u
Tune File# 3 c:\icpchem\1\7500\nogas.u

ISTD Ref File : C:\ICPCHEM\1\DATA\11K08k00.B\003CALB.D\003CALB.D#

0 :Element Failures 0 :Max. Number of Failures Allowed

ICS-AB QC Report

Data File: C:\ICPCHEM\1\DATA\11K08k00.B\015ICSB.D\015ICSB.D#
Date Acquired: Nov 8 2011 11:49 am
Acq. Method: 62A1108.M
Operator: NBS
Sample Name: ICSAB 111108
Misc Info:
Vial Number: 2103
Current Method: C:\ICPCHEM\1\METHODS\62A1108.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1108.C
Last Cal. Update: Nov 08 2011 11:03 am
Sample Type: ICSAB
Dilution Factor: 1.00

Data Results:
Analytes: Pass
ISTD: Pass

QC Elements

Element	IS Ref	Tune	Conc. ppb	RSD(%)	Expected	%Recovery	QC Range(%)	Flag
7 (Li)	---	3	--------	--------	---		-	
9 Be	45	3	233.30	0.31	250	93.3	80 - 120	
11 B	45	3	-3.52	5.99	---		-	
23 Na	45	2	93750.00	0.85	---		-	
24 Mg	45	2	90290.00	0.19	---		-	
27 Al	45	2	95760.00	0.81	---		-	
39 K	45	2	94210.00	0.54	---		-	
44 Ca	45	2	97950.00	0.90	---		-	
47 Ti	45	2	1952.00	0.06	2000	97.6	80 - 120	
51 V	45	2	245.20	0.46	250	98.1	80 - 120	
52 Cr	45	2	240.60	0.69	250	96.2	80 - 120	
55 Mn	45	2	245.30	0.73	250	98.1	80 - 120	
56 Fe	45	2	91490.00	1.16	---		-	
59 Co	45	2	248.20	0.76	250	99.3	80 - 120	
60 Ni	45	2	438.80	0.13	500	87.8	80 - 120	
63 Cu	72	2	206.50	0.35	250	82.6	80 - 120	
65 Cu	72	2	205.60	0.85	250	82.2	80 - 120	
66 Zn	72	2	491.60	0.89	500	98.3	80 - 120	
75 As	72	2	226.40	0.81	250	90.6	80 - 120	
78 Se	72	1	228.10	0.74	250	91.2	80 - 120	
78 Se	72	2	212.00	1.38	250	84.8	80 - 120	
88 Sr	72	2	0.82	1.97	---		-	
88 Sr	72	3	0.82	1.62	---		-	
95 Mo	72	3	1969.00	1.34	2000	98.5	80 - 120	
106 (Cd)	---	3	--------	--------	---		-	
107 Ag	115	3	414.50	1.71	500	82.9	80 - 120	
108 (Cd)	---	3	--------	--------	---		-	
111 Cd	115	3	469.60	1.22	500	93.9	80 - 120	
118 Sn	115	3	1.32	1.93	---		-	
121 Sb	115	3	256.30	0.52	250	102.5	80 - 120	
137 Ba	115	3	247.40	1.47	250	99.0	80 - 120	
205 Tl	159	3	224.00	0.91	250	89.6	80 - 120	
206 (Pb)	---	3	--------	--------	---		-	
207 (Pb)	---	3	--------	--------	---		-	
208 Pb	159	3	444.60	1.24	500	88.9	80 - 120	

ISTD Elements

Element	Tune	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3	2692979	0.55	2648744	101.7
45 Sc	1	649186	0.30	583322	111.3
45 Sc	2	76383	0.34	69335	110.2
45 Sc	3	1495235	0.41	1427545	104.7
72 Ge	1	102329	0.17	93728	109.2
72 Ge	2	39461	0.96	34515	114.3
72 Ge	3	204013	0.56	186777	109.2
115 In	3	1118866	0.95	1188387	94.1
159 Tb	3	1766659	0.64	1796319	98.3
165 Ho	3	1772185	0.75	1809297	97.9

Tune File# 1 c:\icpchem\1\7500\h2.u
Tune File# 2 c:\icpchem\1\7500\he.u
Tune File# 3 c:\icpchem\1\7500\nogas.u

ISTD Ref File : C:\ICPCHEM\1\DATA\11K08k00.B\003CALB.D\003CALB.D#

0 :Element Failures 0 :Max. Number of Failures Allowed

CCV QC Report

Data File: C:\ICPCHEM\1\DATA\11K08k00.B\017_CCV.D\017_CCV.D#
Date Acquired: Nov 8 2011 12:01 pm
Operator: NBS
Sample Name: CCV 111108
Misc Info:
Vial Number: 1105
Current Method: C:\ICPCHEM\1\METHODS\62A1108.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1108.C
Last Cal Update: Nov 08 2011 11:03 am
Sample Type: CCV
Total Dil Factor: 1.00

QC Elements

Element	Conc.	RSD(%)	Expected	QC Range(%)	Flag
7 (Li)	-------- ug/l	--------	50.00	90 - 110	
9 Be	50.48 ug/l	1.73	50.00	90 - 110	
11 B	49.04 ug/l	1.89	50.00	90 - 110	
23 Na	1159.00 ug/l	1.77	1250.00	90 - 110	
24 Mg	2477.00 ug/l	2.58	2500.00	90 - 110	
27 Al	974.00 ug/l	0.79	1000.00	90 - 110	
39 K	1010.00 ug/l	0.55	1000.00	90 - 110	
44 Ca	2464.00 ug/l	0.95	2500.00	90 - 110	
47 Ti	49.45 ug/l	1.24	50.00	90 - 110	
51 V	50.69 ug/l	0.29	50.00	90 - 110	
52 Cr	49.64 ug/l	0.27	50.00	90 - 110	
55 Mn	50.02 ug/l	0.03	50.00	90 - 110	
56 Fe	1009.00 ug/l	0.68	1000.00	90 - 110	
59 Co	50.23 ug/l	0.20	50.00	90 - 110	
60 Ni	50.55 ug/l	0.20	50.00	90 - 110	
63 Cu	48.44 ug/l	0.07	50.00	90 - 110	
65 Cu	48.39 ug/l	0.32	50.00	90 - 110	
66 Zn	48.12 ug/l	1.29	50.00	90 - 110	
75 As	50.11 ug/l	0.68	50.00	90 - 110	
78 Se	50.34 ug/l	1.06	50.00	90 - 110	
78 Se	50.06 ug/l	0.43	50.00	90 - 110	
88 Sr	48.77 ug/l	0.38	50.00	90 - 110	
88 Sr	49.65 ug/l	0.21	50.00	90 - 110	
95 Mo	50.42 ug/l	0.85	50.00	90 - 110	
106 (Cd)	-------- ug/l	--------	50.00	90 - 110	
107 Ag	25.75 ug/l	1.05	25.00	90 - 110	
108 (Cd)	-------- ug/l	--------	50.00	90 - 110	
111 Cd	50.11 ug/l	0.53	50.00	90 - 110	
118 Sn	50.08 ug/l	0.36	50.00	90 - 110	
121 Sb	50.72 ug/l	0.78	50.00	90 - 110	
137 Ba	49.58 ug/l	0.06	50.00	90 - 110	
205 Tl	47.68 ug/l	0.46	50.00	90 - 110	
206 (Pb)	-------- ug/l	--------	50.00	90 - 110	
207 (Pb)	-------- ug/l	--------	50.00	90 - 110	
208 Pb	48.75 ug/l	0.21	50.00	90 - 110	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	2886701.80	1.26	2648744.00	109.0
45 Sc	660806.00	0.99	583321.69	113.3
45 Sc	78989.38	0.31	69335.32	113.9
45 Sc	1499838.10	0.62	1427545.30	105.1
72 Ge	109634.96	0.47	93728.30	117.0
72 Ge	40423.72	0.19	34515.22	117.1
72 Ge	201330.53	0.27	186777.47	107.8
115 In	1246596.00	0.44	1188387.10	104.9
159 Tb	1856218.10	0.19	1796319.10	103.3
165 Ho	1878345.80	0.35	1809297.10	103.8

ISTD Ref File : C:\ICPCHEM\1\DATA\11K08k00.B\003CALB.D\003CALB.D#

0 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:

Analytes: Pass

CCB QC Report

Data File: C:\ICPCHEM\1\DATA\11K08k00.B\019_CCB.D\019_CCB.D#
Date Acquired: Nov 8 2011 12:14 pm
Operator: NBS
Sample Name: CCB 111108
Misc Info:
Vial Number: 1102
Current Method: C:\ICPCHEM\1\METHODS\62A1108.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1108.C
Last Cal Update: Nov 08 2011 11:03 am
Sample Type: CCB
Total Dil Factor: 1.00

QC Elements

Element	Conc.	RSD(%)	High Limit	Flag
7 (Li)	-------- ug/l	--------	#VALUE!	
9 Be	-0.02 ug/l	5.67	0.12	
11 B	-7.15 ug/l	0.59	15.00	
23 Na	-115.90 ug/l	1.21	77.10	
24 Mg	-0.83 ug/l	5.62	7.50	
27 Al	-0.16 ug/l	83.80	3.96	
39 K	-8.09 ug/l	44.59	19.20	
44 Ca	-76.52 ug/l	9.47	90.00	
47 Ti	0.03 ug/l	52.87	0.78	
51 V	-0.33 ug/l	9.96	0.21	
52 Cr	-0.06 ug/l	7.92	0.12	
55 Mn	-0.10 ug/l	1.80	0.18	
56 Fe	-1.58 ug/l	2.22	40.80	
59 Co	-0.07 ug/l	2.95	0.09	
60 Ni	-0.35 ug/l	1.76	0.48	
63 Cu	-0.75 ug/l	2.46	0.39	
65 Cu	-0.70 ug/l	1.73	0.39	
66 Zn	-2.78 ug/l	0.63	6.90	
75 As	-0.23 ug/l	5.98	0.27	
78 Se	-0.02 ug/l	147.27	0.30	
78 Se	0.18 ug/l	60.18	0.30	
88 Sr	-0.03 ug/l	15.75	0.03	
88 Sr	-0.03 ug/l	1.52	0.03	
95 Mo	0.09 ug/l	12.08	0.21	
106 (Cd)	-------- ug/l	--------	#VALUE!	
107 Ag	0.04 ug/l	13.02	0.09	
108 (Cd)	-------- ug/l	--------	#VALUE!	
111 Cd	0.00 ug/l	148.26	0.06	
118 Sn	-0.14 ug/l	4.41	0.30	
121 Sb	0.34 ug/l	3.22	0.03	Fail
137 Ba	-0.07 ug/l	3.33	0.12	
205 Tl	-0.01 ug/l	36.49	0.03	
206 (Pb)	-------- ug/l	--------	#VALUE!	
207 (Pb)	-------- ug/l	--------	#VALUE!	
208 Pb	-0.07 ug/l	1.30	0.33	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	2903498.80	1.72	2648744.00	109.6
45 Sc	579267.94	9.31	583321.69	99.3
45 Sc	79318.85	0.49	69335.32	114.4
45 Sc	1514410.90	0.45	1427545.30	106.1
72 Ge	96079.93	13.63	93728.30	102.5
72 Ge	39983.20	0.10	34515.22	115.8
72 Ge	203291.20	0.79	186777.47	108.8
115 In	1280972.30	0.25	1188387.10	107.8
159 Tb	1872482.90	0.32	1796319.10	104.2
165 Ho	1867269.10	0.43	1809297.10	103.2

ISTD Ref File : C:\ICPCHEM\1\DATA\11K08k00.B\003CALB.D\003CALB.D#

1 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Fail

CCV QC Report

Data File: C:\ICPCHEM\1\DATA\11K08k00.B\031_CCV.D\031_CCV.D#
Date Acquired: Nov 8 2011 01:27 pm
Operator: NBS
Sample Name: CCV 111108
Misc Info:
Vial Number: 1105
Current Method: C:\ICPCHEM\1\METHODS\62A1108.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1108.C
Last Cal Update: Nov 08 2011 11:03 am
Sample Type: CCV
Total Dil Factor: 1.00

QC Elements

Element	Conc.		RSD(%)	Expected	QC Range(%)	Flag
7 (Li)	--------	ug/l	--------	50.00	90 - 110	
9 Be	52.46	ug/l	0.94	50.00	90 - 110	
11 B	47.26	ug/l	0.39	50.00	90 - 110	
23 Na	1193.00	ug/l	0.44	1250.00	90 - 110	
24 Mg	2514.00	ug/l	0.95	2500.00	90 - 110	
27 Al	982.60	ug/l	1.45	1000.00	90 - 110	
39 K	1028.00	ug/l	0.69	1000.00	90 - 110	
44 Ca	2492.00	ug/l	1.53	2500.00	90 - 110	
47 Ti	49.21	ug/l	2.03	50.00	90 - 110	
51 V	50.98	ug/l	1.43	50.00	90 - 110	
52 Cr	49.89	ug/l	0.33	50.00	90 - 110	
55 Mn	49.90	ug/l	1.15	50.00	90 - 110	
56 Fe	1008.00	ug/l	1.30	1000.00	90 - 110	
59 Co	50.37	ug/l	0.97	50.00	90 - 110	
60 Ni	50.35	ug/l	0.89	50.00	90 - 110	
63 Cu	48.88	ug/l	0.27	50.00	90 - 110	
65 Cu	49.05	ug/l	1.17	50.00	90 - 110	
66 Zn	48.34	ug/l	1.73	50.00	90 - 110	
75 As	50.28	ug/l	1.13	50.00	90 - 110	
78 Se	49.35	ug/l	0.95	50.00	90 - 110	
78 Se	49.97	ug/l	1.65	50.00	90 - 110	
88 Sr	49.80	ug/l	1.65	50.00	90 - 110	
88 Sr	48.42	ug/l	0.74	50.00	90 - 110	
95 Mo	47.93	ug/l	0.66	50.00	90 - 110	
106 (Cd)	--------	ug/l	--------	50.00	90 - 110	
107 Ag	25.22	ug/l	1.15	25.00	90 - 110	
108 (Cd)	--------	ug/l	--------	50.00	90 - 110	
111 Cd	50.16	ug/l	0.57	50.00	90 - 110	
118 Sn	49.79	ug/l	0.58	50.00	90 - 110	
121 Sb	49.60	ug/l	0.81	50.00	90 - 110	
137 Ba	49.29	ug/l	0.07	50.00	90 - 110	
205 Tl	47.24	ug/l	0.68	50.00	90 - 110	
206 (Pb)	--------	ug/l	--------	50.00	90 - 110	
207 (Pb)	--------	ug/l	--------	50.00	90 - 110	
208 Pb	48.24	ug/l	1.26	50.00	90 - 110	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3012150.50	0.93	2648744.00	113.7
45 Sc	688275.25	0.15	583321.69	118.0
45 Sc	80921.88	0.81	69335.32	116.7
45 Sc	1492105.90	1.04	1427545.30	104.5
72 Ge	116158.69	0.49	93728.30	123.9
72 Ge	41055.48	0.53	34515.22	118.9
72 Ge	201735.86	0.27	186777.47	108.0
115 In	1210002.90	0.67	1168387.10	101.8
159 Tb	1824794.50	0.54	1796319.10	101.6
165 Ho	1837938.10	0.25	1809297.10	101.6

ISTD Ref File : C:\ICPCHEM\1\DATA\11K08k00.B\003CALB.D\003CALB.D#

0 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Pass

CCB QC Report

Data File: C:\ICPCHEM\1\DATA\11K08k00.B\033_CCB.D\033_CCB.D#
Date Acquired: Nov 8 2011 01:39 pm
Operator: NBS
Sample Name: CCB 111108
Misc Info:
Vial Number: 1102
Current Method: C:\ICPCHEM\1\METHODS\62A1108.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1108.C
Last Cal Update: Nov 08 2011 11:03 am
Sample Type: CCB
Total Dil Factor: 1.00

QC Elements

Element	Conc.	RSD(%)	High Limit	Flag
7 (Li)	-------- ug/l	--------	#VALUE!	
9 Be	-0.02 ug/l	0.05	0.12	
11 B	-9.63 ug/l	0.40	15.00	
23 Na	-88.83 ug/l	1.05	77.10	
24 Mg	-0.99 ug/l	3.09	7.50	
27 Al	-0.16 ug/l	142.45	3.96	
39 K	-5.47 ug/l	64.85	19.20	
44 Ca	-81.39 ug/l	8.28	90.00	
47 Ti	0.01 ug/l	410.17	0.78	
51 V	-0.35 ug/l	3.25	0.21	
52 Cr	-0.05 ug/l	17.06	0.12	
55 Mn	-0.09 ug/l	6.01	0.18	
56 Fe	-1.58 ug/l	2.45	40.80	
59 Co	-0.06 ug/l	3.50	0.09	
60 Ni	-0.35 ug/l	3.65	0.48	
63 Cu	-0.79 ug/l	0.78	0.39	
65 Cu	-0.74 ug/l	1.36	0.39	
66 Zn	-2.80 ug/l	0.36	6.90	
75 As	-0.26 ug/l	5.10	0.27	
78 Se	-0.04 ug/l	17.32	0.30	
78 Se	0.09 ug/l	89.55	0.30	
88 Sr	-0.03 ug/l	31.52	0.03	
88 Sr	-0.03 ug/l	4.12	0.03	
95 Mo	0.02 ug/l	19.82	0.21	
106 (Cd)	-------- ug/l	--------	#VALUE!	
107 Ag	0.00 ug/l	45.76	0.09	
108 (Cd)	-------- ug/l	--------	#VALUE!	
111 Cd	0.00 ug/l	203.34	0.06	
118 Sn	-0.10 ug/l	5.18	0.30	
121 Sb	0.20 ug/l	8.97	0.03	Fail
137 Ba	-0.06 ug/l	15.01	0.12	
205 Tl	0.05 ug/l	6.34	0.03	Fail
206 (Pb)	-------- ug/l	--------	#VALUE!	
207 (Pb)	-------- ug/l	--------	#VALUE!	
208 Pb	-0.07 ug/l	4.77	0.33	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	2921974.30	1.64	2648744.00	110.3
45 Sc	685587.00	0.52	583321.69	117.5
45 Sc	81321.13	0.48	69335.32	117.3
45 Sc	1514240.10	0.36	1427545.30	106.1
72 Ge	114447.83	0.81	93728.30	122.1
72 Ge	40806.69	0.55	34515.22	118.2
72 Ge	201923.33	0.15	186777.47	108.1
115 In	1247911.50	0.40	1188387.10	105.0
159 Tb	1829186.50	1.28	1796319.10	101.8
165 Ho	1839252.30	1.18	1809297.10	101.7

ISTD Ref File : C:\ICPCHEM\1\DATA\11K08k00.B\003CALB.D\003CALB.D#

2 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Fail

CCV QC Report

Data File: C:\ICPCHEM\1\DATA\11K08k00.B\046_CCV.D\046_CCV.D#
Date Acquired: Nov 8 2011 02:58 pm
Operator: NBS
Sample Name: CCV 111108
Misc Info:
Vial Number: 1105
Current Method: C:\ICPCHEM\1\METHODS\62A1108.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1108.C
Last Cal Update: Nov 08 2011 02:50 pm
Sample Type: CCV
Total Dil Factor: 1.00

QC Elements

Element	Conc.		RSD(%)	Expected QC	Range(%)	Flag
7 (Li)	--------	ug/l	--------	50.00	90 - 110	
9 Be	52.09	ug/l	0.61	50.00	90 - 110	
11 B	49.61	ug/l	0.77	50.00	90 - 110	
23 Na	993.90	ug/l	0.44	1250.00	90 - 110	Fail
24 Mg	2494.00	ug/l	0.74	2500.00	90 - 110	
27 Al	983.10	ug/l	0.24	1000.00	90 - 110	
39 K	990.90	ug/l	1.27	1000.00	90 - 110	
44 Ca	2472.00	ug/l	1.74	2500.00	90 - 110	
47 Ti	49.81	ug/l	0.49	50.00	90 - 110	
51 V	51.89	ug/l	0.20	50.00	90 - 110	
52 Cr	49.38	ug/l	0.70	50.00	90 - 110	
55 Mn	49.73	ug/l	0.39	50.00	90 - 110	
56 Fe	1005.00	ug/l	0.26	1000.00	90 - 110	
59 Co	50.07	ug/l	0.34	50.00	90 - 110	
60 Ni	50.00	ug/l	0.29	50.00	90 - 110	
63 Cu	48.41	ug/l	1.33	50.00	90 - 110	
65 Cu	48.08	ug/l	1.36	50.00	90 - 110	
66 Zn	34.54	ug/l	3.26	50.00	90 - 110	Fail
75 As	50.66	ug/l	0.96	50.00	90 - 110	
78 Se	48.04	ug/l	1.88	50.00	90 - 110	
78 Se	50.45	ug/l	1.13	50.00	90 - 110	
88 Sr	50.31	ug/l	0.97	50.00	90 - 110	
88 Sr	47.56	ug/l	0.72	50.00	90 - 110	
95 Mo	47.75	ug/l	0.30	50.00	90 - 110	
106 (Cd)	--------	ug/l	--------	50.00	90 - 110	
107 Ag	25.06	ug/l	0.55	25.00	90 - 110	
108 (Cd)	--------	ug/l	--------	50.00	90 - 110	
111 Cd	49.98	ug/l	1.08	50.00	90 - 110	
118 Sn	50.44	ug/l	0.14	50.00	90 - 110	
121 Sb	49.71	ug/l	0.65	50.00	90 - 110	
137 Ba	49.39	ug/l	0.70	50.00	90 - 110	
205 Tl	47.10	ug/l	0.33	50.00	90 - 110	
206 (Pb)	--------	ug/l	--------	50.00	90 - 110	
207 (Pb)	--------	ug/l	--------	50.00	90 - 110	
208 Pb	48.43	ug/l	0.82	50.00	90 - 110	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3054486.30	0.17	3034543.30	100.7
45 Sc	688447.56	0.22	676375.44	101.8
45 Sc	84924.18	0.12	88171.12	96.3
45 Sc	1522950.40	0.15	1608387.60	94.7
72 Ge	124407.61	0.50	126057.18	98.7
72 Ge	43379.24	1.00	45139.00	96.1
72 Ge	219115.95	0.49	224112.89	97.8
115 In	1305695.60	0.82	1405957.10	92.9
159 Tb	1943226.10	0.90	2021736.10	96.1
165 Ho	1961880.60	0.54	2030057.50	96.6

ISTD Ref File : C:\ICPCHEM\1\DATA\11K08k00.B\044CALB.D\044CALB.D#

2 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Fail

CCB QC Report

Data File: C:\ICPCHEM\1\DATA\11K08k00.B\048_CCB.D\048_CCB.D#
Date Acquired: Nov 8 2011 03:10 pm
Operator: NBS
Sample Name: CCB 111108
Misc Info:
Vial Number: 1102
Current Method: C:\ICPCHEM\1\METHODS\62A1108.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1108.C
Last Cal Update: Nov 08 2011 02:50 pm
Sample Type: CCB
Total Dil Factor: 1.00

QC Elements

Element	Conc.		RSD(%)	High Limit	Flag
7 (Li)	--------	ug/l	--------	#VALUE!	
9 Be	-0.01	ug/l	25.35	0.12	
11 B	0.12	ug/l	22.02	15.00	
23 Na	-493.40	ug/l	0.43	77.10	
24 Mg	-2.85	ug/l	1.69	7.50	
27 Al	-0.13	ug/l	86.07	3.96	
39 K	-127.60	ug/l	2.63	19.20	
44 Ca	-69.06	ug/l	13.75	90.00	
47 Ti	-0.06	ug/l	76.33	0.78	
51 V	1.08	ug/l	3.96	0.21	Fail
52 Cr	0.06	ug/l	4.27	0.12	
55 Mn	-0.22	ug/l	1.07	0.18	
56 Fe	-0.07	ug/l	34.50	40.80	
59 Co	-0.01	ug/l	51.34	0.09	
60 Ni	-0.28	ug/l	1.33	0.48	
63 Cu	-0.03	ug/l	10.85	0.39	
65 Cu	-0.03	ug/l	25.18	0.39	
66 Zn	-34.90	ug/l	0.14	6.90	
75 As	0.40	ug/l	5.51	0.27	Fail
78 Se	0.02	ug/l	87.13	0.30	
78 Se	0.00	ug/l	2721.60	0.30	
88 Sr	-0.07	ug/l	0.93	0.03	
88 Sr	-0.09	ug/l	0.22	0.03	
95 Mo	0.03	ug/l	10.66	0.21	
106 (Cd)	--------	ug/l	--------	#VALUE!	
107 Ag	0.01	ug/l	37.97	0.09	
108 (Cd)	--------	ug/l	--------	#VALUE!	
111 Cd	-0.01	ug/l	29.38	0.06	
118 Sn	0.08	ug/l	13.39	0.30	
121 Sb	0.21	ug/l	5.48	0.03	Fail
137 Ba	-0.10	ug/l	8.29	0.12	
205 Tl	-0.01	ug/l	12.34	0.03	
206 (Pb)	--------	ug/l	--------	#VALUE!	
207 (Pb)	--------	ug/l	--------	#VALUE!	
208 Pb	-0.04	ug/l	6.23	0.33	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3016290.00	0.57	3034543.30	99.4
45 Sc	679261.88	1.47	676375.44	100.4
45 Sc	85260.43	1.00	88171.12	96.7
45 Sc	1522310.60	1.29	1608387.60	94.6
72 Ge	121073.70	1.02	126057.18	96.0
72 Ge	43153.03	1.09	45139.00	95.6
72 Ge	217063.17	0.37	224112.89	96.9
115 In	1326460.40	1.22	1405957.10	94.3
159 Tb	1941460.80	0.88	2021736.10	96.0
165 Ho	1951646.10	1.11	2030057.50	96.1

ISTD Ref File : C:\ICPCHEM\1\DATA\11K08k00.B\044CALB.D\044CALB.D#

3 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Fail

CCV QC Report

Data File: C:\ICPCHEM\1\DATA\11K08k00.B\060_CCV.D\060_CCV.D#
Date Acquired: Nov 8 2011 04:23 pm
Operator: NBS
Sample Name: CCV 111108
Misc Info:
Vial Number: 1105
Current Method: C:\ICPCHEM\1\METHODS\62A1108.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1108.C
Last Cal Update: Nov 08 2011 02:50 pm
Sample Type: CCV
Total Dil Factor: 1.00

QC Elements

Element	Conc.		RSD(%)	Expected	QC Range(%)		Flag
7 (Li)	--------	ug/l	--------	50.00	90 -	110	
9 Be	52.77	ug/l	1.10	50.00	90 -	110	
11 B	49.55	ug/l	1.39	50.00	90 -	110	
23 Na	991.80	ug/l	2.92	1250.00	90 -	110	Fail
24 Mg	2489.00	ug/l	0.67	2500.00	90 -	110	
27 Al	988.70	ug/l	1.32	1000.00	90 -	110	
39 K	963.20	ug/l	0.21	1000.00	90 -	110	
44 Ca	2452.00	ug/l	1.45	2500.00	90 -	110	
47 Ti	49.48	ug/l	1.40	50.00	90 -	110	
51 V	52.04	ug/l	0.75	50.00	90 -	110	
52 Cr	49.50	ug/l	0.85	50.00	90 -	110	
55 Mn	49.85	ug/l	0.69	50.00	90 -	110	
56 Fe	1002.00	ug/l	0.38	1000.00	90 -	110	
59 Co	49.89	ug/l	0.53	50.00	90 -	110	
60 Ni	50.11	ug/l	0.92	50.00	90 -	110	
63 Cu	48.65	ug/l	0.51	50.00	90 -	110	
65 Cu	48.27	ug/l	0.84	50.00	90 -	110	
66 Zn	34.43	ug/l	0.99	50.00	90 -	110	Fail
75 As	50.87	ug/l	0.53	50.00	90 -	110	
78 Se	48.38	ug/l	1.50	50.00	90 -	110	
78 Se	51.50	ug/l	1.46	50.00	90 -	110	
88 Sr	50.57	ug/l	1.11	50.00	90 -	110	
88 Sr	47.55	ug/l	0.52	50.00	90 -	110	
95 Mo	47.86	ug/l	0.56	50.00	90 -	110	
106 (Cd)	--------	ug/l	--------	50.00	90 -	110	
107 Ag	24.91	ug/l	0.31	25.00	90 -	110	
108 (Cd)	--------	ug/l	--------	50.00	90 -	110	
111 Cd	49.60	ug/l	1.39	50.00	90 -	110	
118 Sn	50.06	ug/l	1.60	50.00	90 -	110	
121 Sb	49.35	ug/l	1.21	50.00	90 -	110	
137 Ba	49.61	ug/l	1.80	50.00	90 -	110	
205 Tl	47.28	ug/l	0.91	50.00	90 -	110	
206 (Pb)	--------	ug/l	--------	50.00	90 -	110	
207 (Pb)	--------	ug/l	--------	50.00	90 -	110	
208 Pb	48.54	ug/l	0.96	50.00	90 -	110	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	2993500.50	1.68	3034543.30	98.6
45 Sc	667032.00	0.28	676375.44	98.6
45 Sc	83648.69	0.57	88171.12	94.9
45 Sc	1470601.90	1.29	1608387.60	91.4
72 Ge	121230.83	0.41	126057.18	96.2
72 Ge	42797.88	0.67	45139.00	94.8
72 Ge	216582.22	0.54	224112.89	96.6
115 In	1296207.30	0.74	1405957.10	92.2
159 Tb	1919384.00	1.04	2021736.10	94.9
165 Ho	1932565.50	0.17	2030057.50	95.2

ISTD Ref File : C:\ICPCHEM\1\DATA\11K08k00.B\044CALB.D\044CALB.D#

2 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Fail

CCB QC Report

Data File: C:\ICPCHEM\1\DATA\11K08k00.B\062_CCB.D\062_CCB.D#
Date Acquired: Nov 8 2011 04:35 pm
Operator: NBS
Sample Name: CCB 111108
Misc Info:
Vial Number: 1102
Current Method: C:\ICPCHEM\1\METHODS\62A1108.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1108.C
Last Cal Update: Nov 08 2011 02:50 pm
Sample Type: CCB
Total Dil Factor: 1.00

QC Elements

Element	Conc.	RSD(%)	High Limit	Flag
7 (Li)	-------- ug/l	--------	#VALUE!	
9 Be	-0.01 ug/l	14.25	0.12	
11 B	-0.77 ug/l	0.92	15.00	
23 Na	-501.30 ug/l	0.45	77.10	
24 Mg	-2.84 ug/l	2.25	7.50	
27 Al	0.06 ug/l	219.54	3.96	
39 K	-140.00 ug/l	2.48	19.20	
44 Ca	-81.73 ug/l	9.66	90.00	
47 Ti	-0.09 ug/l	14.47	0.78	
51 V	1.30 ug/l	1.27	0.21	Fail
52 Cr	0.06 ug/l	13.96	0.12	
55 Mn	-0.21 ug/l	4.36	0.18	
56 Fe	0.04 ug/l	48.56	40.80	
59 Co	-0.01 ug/l	17.29	0.09	
60 Ni	-0.25 ug/l	2.83	0.48	
63 Cu	-0.05 ug/l	14.17	0.39	
65 Cu	-0.03 ug/l	1.97	0.39	
66 Zn	-34.83 ug/l	0.09	6.90	
75 As	0.44 ug/l	1.00	0.27	Fail
78 Se	0.02 ug/l	35.11	0.30	
78 Se	-0.02 ug/l	196.27	0.30	
88 Sr	-0.06 ug/l	3.36	0.03	
88 Sr	-0.09 ug/l	3.42	0.03	
95 Mo	0.03 ug/l	13.86	0.21	
106 (Cd)	-------- ug/l	--------	#VALUE!	
107 Ag	-0.01 ug/l	35.01	0.09	
108 (Cd)	-------- ug/l	--------	#VALUE!	
111 Cd	-0.02 ug/l	70.23	0.06	
118 Sn	0.11 ug/l	7.19	0.30	
121 Sb	0.19 ug/l	4.23	0.03	Fail
137 Ba	-0.09 ug/l	3.26	0.12	
205 Tl	-0.01 ug/l	18.79	0.03	
206 (Pb)	-------- ug/l	--------	#VALUE!	
207 (Pb)	-------- ug/l	--------	#VALUE!	
208 Pb	-0.04 ug/l	1.36	0.33	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	2948915.30	0.85	3034543.30	97.2
45 Sc	663210.81	0.87	676375.44	98.1
45 Sc	83778.18	0.78	88171.12	95.0
45 Sc	1496653.90	0.35	1608387.60	93.1
72 Ge	119010.60	0.51	126057.18	94.4
72 Ge	42889.98	0.47	45139.00	95.0
72 Ge	213760.17	0.63	224112.89	95.4
115 In	1320436.80	0.48	1405957.10	93.9
159 Tb	1940094.80	0.29	2021736.10	96.0
165 Ho	1942242.50	0.37	2030057.50	95.7

ISTD Ref File : C:\ICPCHEM\1\DATA\11K08k00.B\044CALB.D\044CALB.D#

3 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Fail

Calibration Blank QC Report

Data File: C:\ICPCHEM\1\DATA\11K09k00.B\004CAL
Date Acquired: Nov 9 2011 10:27 am
Operator: NBS
Sample Name: Calibration Blank
Misc Info:
Vial Number: 1102
Current Method: C:\ICPCHEM\1\METHODS\62A1109.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1109.C
Last Cal Update: Nov 09 2011 10:25 am
Sample Type: CalBlk
Total Dil Factor: 1.00

QC&ISTD Elements

Element		CPS Mean		SD	RSD(%)
6	Li	2718934.00	A	6007.00	0.22
7	(Li)	154030.91	P	79.42	0.05
9	Be	747.83	P	90.34	12.08
11	B	10261.65	P	172.60	1.68
23	Na	70585.04	P	1369.00	1.94
24	Mg	142.23	P	28.35	19.93
27	Al	32.22	P	22.20	68.89
39	K	41297.44	P	1029.00	2.49
44	Ca	765.25	P	53.57	7.00
45	Sc	580246.38	P	7355.00	1.27
45	Sc	78449.60	P	763.60	0.97
45	Sc	1460500.00	A	9157.00	0.63
47	Ti	3.11	P	2.04	65.47
51	V	2622.94	P	76.83	2.93
52	Cr	409.79	P	36.03	8.79
55	Mn	138.23	P	17.61	12.74
56	Fe	4728.39	P	511.30	10.81
59	Co	980.05	P	32.03	3.27
60	Ni	24.89	P	3.08	12.37
63	Cu	1119.17	P	32.26	2.88
65	Cu	556.46	P	27.34	4.91
66	Zn	229.78	P	10.18	4.43
72	Ge	106527.20	P	439.20	0.41
72	Ge	39295.42	P	169.30	0.43
72	Ge	209205.09	P	1169.00	0.56
75	As	206.00	P	13.17	6.39
78	Se	4.00	P	1.00	25.00
78	Se	14.56	P	1.02	6.99
88	Sr	23.33	P	13.33	57.13
88	Sr	125.56	P	10.18	8.11
95	Mo	75.56	P	6.94	9.18
106	(Cd)	48.89	P	16.44	33.63
107	Ag	40.00	P	5.77	14.43
108	(Cd)	43.33	P	6.67	15.39
111	Cd	-3.91	P	16.29	416.62
115	In	1337658.00	A	11860.00	0.89
118	Sn	226.68	P	21.86	9.64
121	Sb	300.01	P	11.55	3.85
137	Ba	56.67	P	5.77	10.19
159	Tb	1942160.00	A	20570.00	1.06
165	Ho	1969815.00	A	10010.00	0.51
205	Tl	212.23	P	56.80	26.76
206	(Pb)	2903.76	P	21.87	0.75
207	(Pb)	2400.31	P	84.15	3.51
208	Pb	11247.85	P	130.50	1.16

Calibration Standard QC Report

Data File: C:\ICPCHEM\1\DATA\11K09k00.B\005CALS.D\005CALS.D#
Date Acquired: Nov 9 2011 10:35 am
Operator: NBS
Sample Name: 111109 Standard 1
Misc Info:
Vial Number: 1103
Current Method: C:\ICPCHEM\1\METHODS\62A1109.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1109.C
Last Cal Update: Nov 09 2011 10:33 am
Sample Type: CalStd
Total Dil Factor: 1.00

QC&ISTD Elements

Element	CPS Mean		SD	RSD(%)	Cal Coef
6 Li	2724873.00	A	28020.00	1.03	0.0000
7 (Li)	153194.70	P	449.70	0.29	0.0000
9 Be	1142.31	P	89.85	7.87	0.0000
11 B	10780.89	P	140.20	1.30	0.0000
23 Na	61518.40	P	631.20	1.03	0.0000
24 Mg	1862.40	P	50.60	2.72	0.0000
27 Al	297.79	P	42.99	14.44	0.0000
39 K	41489.93	P	857.60	2.07	0.0000
44 Ca	714.85	P	53.83	7.53	0.0000
45 Sc	585524.63	P	6002.00	1.03	0.0000
45 Sc	78985.08	P	725.10	0.92	0.0000
45 Sc	1461014.00	A	27210.00	1.86	0.0000
47 Ti	16.44	P	2.04	12.39	0.0000
51 V	3154.16	P	127.40	4.04	0.0000
52 Cr	752.03	P	23.36	3.11	0.0000
55 Mn	358.23	P	16.46	4.59	0.0000
56 Fe	10222.80	P	515.60	5.04	0.0000
59 Co	1143.17	P	63.34	5.54	0.0000
60 Ni	143.56	P	5.39	3.75	0.0000
63 Cu	1326.75	P	17.34	1.31	0.0000
65 Cu	647.58	P	20.24	3.13	0.0000
66 Zn	185.78	P	20.23	10.89	0.0000
72 Ge	109624.00	P	996.70	0.91	0.0000
72 Ge	39918.27	P	432.90	1.08	0.0000
72 Ge	212451.91	P	530.70	0.25	0.0000
75 As	241.23	P	1.64	0.68	0.0000
78 Se	22.33	P	1.73	7.76	0.0000
78 Se	20.00	P	2.91	14.53	0.0000
88 Sr	272.23	P	49.93	18.34	0.0000
88 Sr	1791.29	P	126.60	7.07	0.0000
95 Mo	361.13	P	26.74	7.40	0.0000
106 (Cd)	62.22	P	15.03	24.15	0.0000
107 Ag	450.02	P	52.92	11.76	0.0000
108 (Cd)	63.34	P	14.53	22.94	0.0000
111 Cd	155.24	P	16.81	10.83	0.0000
115 In	1343219.00	A	4857.00	0.36	0.0000
118 Sn	738.93	P	32.89	4.45	0.0000
121 Sb	827.83	P	26.95	3.26	0.0000
137 Ba	274.46	P	28.35	10.33	0.0000
159 Tb	1939561.00	A	21930.00	1.13	0.0000
165 Ho	1968681.00	A	7427.00	0.38	0.0000
205 Tl	1819.09	P	120.90	6.65	0.0000
206 (Pb)	2251.39	P	131.90	5.86	0.0000
207 (Pb)	1949.10	P	34.05	1.75	0.0000
208 Pb	8928.19	P	104.00	1.16	0.0000

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	2724872.80	1.03	2718933.80	100.2
45 Sc	585524.63	1.03	580246.44	100.9
45 Sc	78985.09	0.92	78449.59	100.7
45 Sc	1461013.90	1.86	1460500.30	100.0
72 Ge	109624.02	0.91	106527.24	102.9
72 Ge	39918.27	1.08	39295.42	101.6
72 Ge	212451.89	0.25	209205.06	101.6
115 In	1343219.00	0.36	1337657.80	100.4
159 Tb	1939560.60	1.13	1942159.60	99.9
165 Ho	1968680.90	0.38	1969815.00	99.9

ISTD Ref File : C:\ICPCHEM\1\DATA\11K09k00.B\004CALB.D\004CALB.D#

--- :Element Failures --- :Max. Number of Failures Allowed

Data Results:
Analytes: Pass

Calibration Standard QC Report

Data File: C:\ICPCHEM\1\DATA\11K09k00.B\006CALS.D\006CALS.D#
Date Acquired: Nov 9 2011 10:41 am
Operator: NBS
Sample Name: 111109 Standard 2
Misc Info:
Vial Number: 1104
Current Method: C:\ICPCHEM\1\METHODS\62A1109.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1109.C
Last Cal Update: Nov 09 2011 10:39 am
Sample Type: CalStd
Total Dil Factor: 1.00

QC&ISTD Elements

Element	CPS Mean		SD	RSD(%)	Cal Coef
6 Li	2731763.00	A	30160.00	1.10	0.0000
7 (Li)	153477.30	P	788.60	0.51	-1.0000
9 Be	9759.02	P	237.20	2.43	1.0000
11 B	16040.22	P	464.20	2.89	1.0000
23 Na	76163.18	P	613.50	0.81	-1.0000
24 Mg	18498.65	P	409.60	2.21	1.0000
27 Al	2835.93	P	81.83	2.89	1.0000
39 K	48582.67	P	835.20	1.72	-1.0000
44 Ca	1431.53	P	78.51	5.48	-1.0000
45 Sc	588010.00	P	2767.00	0.47	0.0000
45 Sc	79975.49	P	676.40	0.85	0.0000
45 Sc	1464127.00	A	11440.00	0.78	0.0000
47 Ti	101.34	P	19.37	19.12	1.0000
51 V	5815.90	P	72.11	1.24	1.0000
52 Cr	3688.97	P	41.12	1.11	1.0000
55 Mn	2273.99	P	81.19	3.57	1.0000
56 Fe	63669.70	P	899.20	1.41	1.0000
59 Co	5364.16	P	132.90	2.48	1.0000
60 Ni	1320.52	P	102.60	7.77	1.0000
63 Cu	4120.64	P	36.98	0.90	1.0000
65 Cu	1957.49	P	10.91	0.56	1.0000
66 Zn	680.03	P	21.33	3.14	-1.0000
72 Ge	109922.90	P	247.70	0.23	0.0000
72 Ge	39920.78	P	149.60	0.37	0.0000
72 Ge	214206.50	P	1464.00	0.68	0.0000
75 As	580.35	P	7.94	1.37	1.0000
78 Se	189.78	P	14.18	7.47	1.0000
78 Se	55.56	P	2.14	3.86	1.0000
88 Sr	2499.20	P	115.50	4.62	1.0000
88 Sr	17266.44	P	69.52	0.40	1.0000
95 Mo	3164.91	P	158.20	5.00	1.0000
106 (Cd)	233.34	P	36.67	15.72	1.0000
107 Ag	4236.33	P	80.66	1.90	1.0000
108 (Cd)	184.45	P	35.64	19.32	1.0000
111 Cd	1783.96	P	127.50	7.15	1.0000
115 In	1352999.00	A	21.28	0.00	0.0000
118 Sn	4702.06	P	62.60	1.33	1.0000
121 Sb	5773.63	P	110.90	1.92	1.0000
137 Ba	2372.51	P	51.78	2.18	1.0000
159 Tb	1961279.00	A	14400.00	0.73	0.0000
165 Ho	1986227.00	A	30980.00	1.56	0.0000
205 Tl	17591.16	P	175.40	1.00	1.0000
206 (Pb)	7491.27	P	91.37	1.22	-1.0000
207 (Pb)	6550.75	P	227.80	3.48	-1.0000
208 Pb	29857.52	P	574.80	1.93	-1.0000

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	2731763.00	1.10	2718933.80	100.5
45 Sc	588010.06	0.47	580246.44	101.3
45 Sc	79975.49	0.85	78449.59	101.9
45 Sc	1464126.60	0.78	1460500.30	100.2
72 Ge	109922.92	0.23	106527.24	103.2
72 Ge	39920.77	0.37	39295.42	101.6
72 Ge	214206.53	0.68	209305.06	102.4
115 In	1352999.00	0.00	1337657.80	101.1
159 Tb	1961278.80	0.73	1942159.60	101.0
165 Ho	1986227.30	1.56	1969815.00	100.8

ISTD Ref File : C:\ICPCHEM\1\DATA\11K09k00.B\004CALB.D\004CALB.D#

--- :Element Failures --- :Max. Number of Failures Allowed

Data Results:
Analytes: Pass

Calibration Standard QC Report

Data File: C:\ICPCHEM\1\DATA\11K09k00.B\007CALS.D\007CALS.D#
Date Acquired: Nov 9 2011 10:47 am
Operator: NBS
Sample Name: 111109 Standard 3
Misc Info:
Vial Number: 1105
Current Method: C:\ICPCHEM\1\METHODS\62A1109.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1109.C
Last Cal Update: Nov 09 2011 10:45 am
Sample Type: CalStd
Total Dil Factor: 1.00

QC&ISTD Elements

Element	CPS Mean		SD	RSD(%)	Cal Coef
6 Li	2687479.00	A	39900.00	1.48	0.0000
7 (Li)	152008.80	P	324.90	0.21	-0.2724
9 Be	492253.69	P	3648.00	0.74	0.9986
11 B	317877.31	P	1793.00	0.56	1.0000
23 Na	1092923.00	A	9548.00	0.87	0.6689
24 Mg	986567.00	A	17260.00	1.75	1.0000
27 Al	133881.30	P	228.40	0.17	1.0000
39 K	368442.00	P	4709.00	1.28	0.9947
44 Ca	39432.65	P	394.60	1.00	0.9858
45 Sc	583350.50	P	7247.00	1.24	0.0000
45 Sc	79802.02	P	295.20	0.37	0.0000
45 Sc	1471331.00	A	17600.00	1.20	0.0000
47 Ti	5219.67	P	50.21	0.96	0.9993
51 V	140447.20	P	278.20	0.20	0.9979
52 Cr	161666.09	P	1176.00	0.73	1.0000
55 Mn	104283.50	P	175.20	0.17	1.0000
56 Fe	2975206.00	A	23330.00	0.78	1.0000
59 Co	233598.50	P	807.40	0.35	0.9983
60 Ni	61526.34	P	118.40	0.19	1.0000
63 Cu	158855.41	P	730.40	0.46	0.9994
65 Cu	76117.14	P	493.40	0.65	0.9993
66 Zn	27609.89	P	177.80	0.64	0.9841
72 Ge	109540.40	P	1209.00	1.10	0.0000
72 Ge	40258.04	P	437.30	1.09	0.0000
72 Ge	213949.91	P	1554.00	0.73	0.0000
75 As	17985.47	P	137.70	0.77	0.9999
78 Se	9151.13	P	124.90	1.36	1.0000
78 Se	1986.25	P	1.35	0.07	0.9996
88 Sr	125590.30	P	395.10	0.31	1.0000
88 Sr	843850.69	P	6765.00	0.80	1.0000
95 Mo	154030.91	P	1588.00	1.03	1.0000
106 (Cd)	8063.70	P	125.30	1.55	0.9997
107 Ag	204928.41	P	1696.00	0.83	1.0000
108 (Cd)	6090.42	P	131.60	2.16	0.9992
111 Cd	87805.04	P	714.30	0.81	1.0000
115 In	1353553.00	A	9798.00	0.72	0.0000
118 Sn	231184.91	P	475.20	0.21	0.9999
121 Sb	303539.69	P	1421.00	0.47	1.0000
137 Ba	114050.50	P	222.20	0.19	1.0000
159 Tb	1977475.00	A	12440.00	0.63	0.0000
165 Ho	1990750.00	A	7102.00	0.36	0.0000
205 Tl	876570.00	P	3672.00	0.42	1.0000
206 (Pb)	307282.81	P	2953.00	0.96	0.9790
207 (Pb)	265492.50	P	1034.00	0.39	0.9838
208 Pb	1225573.00	P	5664.00	0.46	0.9814

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	2687478.80	1.48	2718933.80	98.8
45 Sc	583350.56	1.24	580246.44	100.5
45 Sc	79802.02	0.37	78449.59	101.7
45 Sc	1471331.40	1.20	1460500.30	100.7
72 Ge	109540.40	1.10	105527.24	102.8
72 Ge	40258.04	1.09	39295.42	102.4
72 Ge	213949.92	0.73	209205.06	102.3
115 In	1353553.10	0.72	1337657.80	101.2
159 Tb	1977474.50	0.63	1942159.60	101.8
165 Ho	1990749.60	0.36	1969815.00	101.1

ISTD Ref File : C:\ICPCHEM\1\DATA\11K09k00.B\004CALB.D\004CALB.D#

--- :Element Failures --- :Max. Number of Failures Allowed

Data Results:
Analytes: Pass

Calibration Standard QC Report

Data File: C:\ICPCHEM\1\DATA\11K09k00.B\008CALS.D\008CALS.D#
Date Acquired: Nov 9 2011 10:54 am
Operator: NBS
Sample Name: 111109 Standard 4
Misc Info:
Vial Number: 1106
Current Method: C:\ICPCHEM\1\METHODS\62A1109.M
Calibration File: C:\ICPCHEM\2\CALIB\62A1109.C
Last Cal Update: Nov 09 2011 10:52 am
Sample Type: CalStd
Total Dil Factor: 1.00

QC&ISTD Elements

Element	CPS Mean		SD	RSD(%)	Cal Coef
6 Li	2652760.00	A	34110.00	1.29	0.0000
7 (Li)	149832.59	P	1730.00	1.15	-0.9153
9 Be	1083920.00	A	7690.00	0.70	1.0000
11 B	626776.63	P	1516.00	0.24	1.0000
23 Na	2089845.00	A	12860.00	0.62	0.9999
24 Mg	1952715.00	A	3278.00	0.17	1.0000
27 Al	270183.69	P	1229.00	0.45	1.0000
39 K	698766.50	P	4008.00	0.57	1.0000
44 Ca	79104.05	P	201.10	0.25	1.0000
45 Sc	564480.13	P	25800.00	4.57	0.0000
45 Sc	81037.28	P	158.40	0.20	0.0000
45 Sc	1458471.00	A	26030.00	1.78	0.0000
47 Ti	10575.46	P	113.90	1.08	1.0000
51 V	281193.31	P	888.60	0.32	1.0000
52 Cr	325512.50	P	1946.00	0.60	1.0000
55 Mn	210762.59	P	1203.00	0.57	1.0000
56 Fe	5873599.00	A	36200.00	0.62	1.0000
59 Co	470265.31	P	2307.00	0.49	1.0000
60 Ni	121618.60	P	350.50	0.29	1.0000
63 Cu	317698.59	P	712.10	0.22	1.0000
65 Cu	153165.91	P	325.50	0.21	1.0000
66 Zn	54976.87	P	191.40	0.35	1.0000
72 Ge	108302.00	P	3687.00	3.40	0.0000
72 Ge	41041.71	P	239.80	0.58	0.0000
72 Ge	214495.30	P	2484.00	1.16	0.0000
75 As	36495.91	P	136.10	0.37	1.0000
78 Se	18559.45	P	86.18	0.46	1.0000
78 Se	4029.13	P	26.08	0.65	1.0000
88 Sr	259601.70	P	1290.00	0.50	1.0000
88 Sr	1815117.00	A	12200.00	0.67	1.0000
95 Mo	313468.09	P	2019.00	0.64	1.0000
106 (Cd)	16319.93	P	282.10	1.73	1.0000
107 Ag	411838.31	P	1726.00	0.42	1.0000
108 (Cd)	11968.77	P	140.10	1.17	1.0000
111 Cd	176906.59	P	1162.00	0.66	1.0000
115 In	1348756.00	A	39770.00	2.95	0.0000
118 Sn	466823.81	P	3350.00	0.72	1.0000
121 Sb	624099.00	P	7370.00	1.18	1.0000
137 Ba	230520.30	P	2359.00	1.02	1.0000
159 Tb	1971051.00	A	8867.00	0.45	0.0000
165 Ho	2007748.00	A	21660.00	1.08	0.0000
205 Tl	1882622.00	A	9161.00	0.49	1.0000
206 (Pb)	611086.38	P	4920.00	0.81	1.0000
207 (Pb)	532453.00	P	3086.00	0.58	1.0000
208 Pb	2524237.00	A	6006.00	0.24	1.0000

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	2652760.50	1.29	2716933.80	97.6
45 Sc	564480.06	4.57	580246.44	97.3
45 Sc	81037.28	0.20	78449.59	103.3
45 Sc	1458470.60	1.78	1460500.30	99.9
72 Ge	108301.99	3.40	106527.24	101.7
72 Ge	41041.71	0.58	39295.42	104.4
72 Ge	214495.33	1.16	209205.06	102.5
115 In	1348756.00	2.95	1337657.80	100.8
159 Tb	1971050.60	0.45	1942159.60	101.5
165 Ho	2007747.80	1.08	1969815.00	101.9

ISTD Ref File : C:\ICPCHEM\1\DATA\11K09k00.B\004CALB.D\004CALB.D#

--- :Element Failures --- :Max. Number of Failures Allowed

Data Results:
Analytes: Pass

QCS QC Report

Data File: C:\ICPCHEM\1\DATA\11K09k00.B\009_QCS.D\009_QCS.D#
Date Acquired: Nov 9 2011 11:00 am
Operator: NBS
Sample Name: ICV 111109
Misc Info:
Vial Number: 1107
Current Method: C:\ICPCHEM\1\METHODS\62A1109.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1109.C
Last Cal Update: Nov 09 2011 10:58 am
Sample Type: QCS
Total Dil Factor: 1.00

QC Elements

Element	Conc.		RSD(%)	Expected	QC Range(%)		Flag
7 (Li)	--------	ug/l	--------	100.00	90 -	110	
9 Be	96.68	ug/l	1.08	100.00	90 -	110	
11 B	94.15	ug/l	1.62	100.00	90 -	110	
23 Na	2422.00	ug/l	0.30	2500.00	90 -	110	
24 Mg	2459.00	ug/l	1.83	2500.00	90 -	110	
27 Al	2498.00	ug/l	0.53	2500.00	90 -	110	
39 K	2513.00	ug/l	3.67	2500.00	90 -	110	
44 Ca	2547.00	ug/l	1.11	2500.00	90 -	110	
47 Ti	94.51	ug/l	1.84	100.00	90 -	110	
51 V	98.95	ug/l	0.76	100.00	90 -	110	
52 Cr	101.90	ug/l	0.36	100.00	90 -	110	
55 Mn	101.20	ug/l	0.48	100.00	90 -	110	
56 Fe	2484.00	ug/l	0.42	2500.00	90 -	110	
59 Co	99.95	ug/l	0.29	100.00	90 -	110	
60 Ni	99.82	ug/l	0.36	100.00	90 -	110	
63 Cu	98.92	ug/l	0.23	100.00	90 -	110	
65 Cu	98.41	ug/l	0.98	100.00	90 -	110	
66 Zn	99.65	ug/l	0.69	100.00	90 -	110	
75 As	96.38	ug/l	0.50	100.00	90 -	110	
78 Se	97.35	ug/l	0.62	100.00	90 -	110	
78 Se	101.90	ug/l	1.37	100.00	90 -	110	
88 Sr	97.63	ug/l	0.48	100.00	90 -	110	
88 Sr	97.09	ug/l	0.15	100.00	90 -	110	
95 Mo	93.31	ug/l	1.05	100.00	90 -	110	
106 (Cd)	--------	ug/l	--------	100.00	90 -	110	
107 Ag	45.30	ug/l	1.76	50.00	90 -	110	
108 (Cd)	--------	ug/l	--------	100.00	90 -	110	
111 Cd	97.69	ug/l	1.17	100.00	90 -	110	
118 Sn	43.61	ug/l	2.94	50.00	90 -	110	Fail
121 Sb	101.50	ug/l	1.14	100.00	90 -	110	
137 Ba	95.39	ug/l	1.86	100.00	90 -	110	
205 Tl	97.50	ug/l	1.42	100.00	90 -	110	
206 (Pb)	--------	ug/l	--------	100.00	90 -	110	
207 (Pb)	--------	ug/l	--------	100.00	90 -	110	
208 Pb	97.06	ug/l	1.06	100.00	90 -	110	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	2717570.80	0.83	2718933.80	99.9
45 Sc	606482.88	0.32	580246.44	104.5
45 Sc	81888.91	0.21	78449.59	104.4
45 Sc	1502647.60	0.67	1460500.30	102.9
72 Ge	113307.14	1.09	106527.24	106.4
72 Ge	41124.19	0.37	39295.42	104.7
72 Ge	219827.52	0.14	209205.06	105.1
115 In	1386279.40	1.06	1337657.80	103.6
159 Tb	2053957.90	0.20	1942159.60	105.8
165 Ho	2060886.00	0.29	1969815.00	104.6

ISTD Ref File : C:\ICPCHEM\1\DATA\11K09k00.B\004CALB.D\004CALB.D#

1 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Fail

CCB QC Report

Data File: C:\ICPCHEM\1\DATA\11K09k00.B\012_CCB.D\012_CCB.D#
Date Acquired: Nov 9 2011 11:19 am
Operator: NBS
Sample Name: ICB 111109
Misc Info:
Vial Number: 1102
Current Method: C:\ICPCHEM\1\METHODS\62A1109.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1109.C
Last Cal Update: Nov 09 2011 10:58 am
Sample Type: CCB
Total Dil Factor: 1.00

QC Elements

Element	Conc.	RSD(%)	High Limit	Flag
7 (Li)	-------- ug/l	--------	#VALUE!	
9 Be	-0.02 ug/l	2.09	0.12	
11 B	0.03 ug/l	414.62	15.00	
23 Na	-24.55 ug/l	2.61	77.10	
24 Mg	-0.07 ug/l	10.22	7.50	
27 Al	0.24 ug/l	38.42	3.96	
39 K	-5.06 ug/l	49.93	19.20	
44 Ca	-14.66 ug/l	16.94	90.00	
47 Ti	-0.01 ug/l	202.36	0.78	
51 V	0.57 ug/l	4.49	0.21	Fail
52 Cr	0.01 ug/l	29.95	0.12	
55 Mn	0.00 ug/l	28.05	0.18	
56 Fe	0.45 ug/l	46.85	40.80	
59 Co	-0.14 ug/l	0.66	0.09	
60 Ni	0.00 ug/l	59.72	0.48	
63 Cu	-0.12 ug/l	2.64	0.39	
65 Cu	-0.14 ug/l	2.15	0.39	
66 Zn	0.02 ug/l	85.26	6.90	
75 As	-0.01 ug/l	306.09	0.27	
78 Se	0.02 ug/l	25.51	0.30	
78 Se	-0.03 ug/l	5.33	0.30	
88 Sr	0.00 ug/l	496.73	0.03	
88 Sr	0.00 ug/l	189.13	0.03	
95 Mo	0.04 ug/l	37.52	0.21	
106 (Cd)	-------- ug/l	--------	#VALUE!	
107 Ag	0.00 ug/l	51.05	0.09	
108 (Cd)	-------- ug/l	--------	#VALUE!	
111 Cd	0.00 ug/l	215.84	0.06	
118 Sn	0.04 ug/l	6.03	0.30	
121 Sb	0.17 ug/l	11.03	0.03	Fail
137 Ba	0.01 ug/l	63.02	0.12	
205 Tl	0.00 ug/l	2773.20	0.03	
206 (Pb)	-------- ug/l	--------	#VALUE!	
207 (Pb)	-------- ug/l	--------	#VALUE!	
208 Pb	-0.30 ug/l	0.43	0.33	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	2727825.30	0.37	2718933.80	100.3
45 Sc	609014.06	0.70	580246.44	105.0
45 Sc	83796.25	0.96	78449.59	106.8
45 Sc	1501420.60	1.04	1460500.30	102.8
72 Ge	114901.04	0.60	106527.24	107.9
72 Ge	42184.56	1.40	39295.42	107.4
72 Ge	223936.39	0.08	209205.06	107.0
115 In	1412139.30	0.99	1337657.80	105.6
159 Tb	2061819.30	0.85	1942159.60	106.2
165 Ho	2049804.50	1.11	1969815.00	104.1

ISTD Ref File : C:\ICPCHEM\1\DATA\11K09k00.B\004CALB.D\004CALB.D#

2 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Fail

CCV QC Report

Data File: C:\ICPCHEM\1\DATA\11K09k00.B\013_CCV.D\013_CCV.D#
Date Acquired: Nov 9 2011 11:25 am
Operator: NBS
Sample Name: CCV 111109
Misc Info:
Vial Number: 1105
Current Method: C:\ICPCHEM\1\METHODS\62A1109.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1109.C
Last Cal Update: Nov 09 2011 10:58 am
Sample Type: CCV
Total Dil Factor: 1.00

QC Elements

Element	Conc.	RSD(%)	Expected	QC Range(%)	Flag
7 (Li)	-------- ug/l	--------	50.00	90 - 110	
9 Be	44.71 ug/l	1.45	50.00	90 - 110	Fail
11 B	48.70 ug/l	0.84	50.00	90 - 110	
23 Na	1234.00 ug/l	0.51	1250.00	90 - 110	
24 Mg	2490.00 ug/l	1.65	2500.00	90 - 110	
27 Al	997.50 ug/l	0.70	1000.00	90 - 110	
39 K	1003.00 ug/l	0.20	1000.00	90 - 110	
44 Ca	2515.00 ug/l	0.33	2500.00	90 - 110	
47 Ti	49.34 ug/l	1.49	50.00	90 - 110	
51 V	50.11 ug/l	0.76	50.00	90 - 110	
52 Cr	49.61 ug/l	0.30	50.00	90 - 110	
55 Mn	49.89 ug/l	0.36	50.00	90 - 110	
56 Fe	1015.00 ug/l	1.26	1000.00	90 - 110	
59 Co	49.85 ug/l	1.01	50.00	90 - 110	
60 Ni	49.96 ug/l	1.11	50.00	90 - 110	
63 Cu	49.92 ug/l	1.24	50.00	90 - 110	
65 Cu	49.93 ug/l	0.80	50.00	90 - 110	
66 Zn	50.36 ug/l	0.95	50.00	90 - 110	
75 As	50.19 ug/l	0.46	50.00	90 - 110	
78 Se	48.39 ug/l	0.61	50.00	90 - 110	
78 Se	51.71 ug/l	1.38	50.00	90 - 110	
88 Sr	50.23 ug/l	0.42	50.00	90 - 110	
88 Sr	46.75 ug/l	0.21	50.00	90 - 110	
95 Mo	49.06 ug/l	0.25	50.00	90 - 110	
106 (Cd)	-------- ug/l	--------	50.00	90 - 110	
107 Ag	24.73 ug/l	0.64	25.00	90 - 110	
108 (Cd)	-------- ug/l	--------	50.00	90 - 110	
111 Cd	48.70 ug/l	1.05	50.00	90 - 110	
118 Sn	49.60 ug/l	0.77	50.00	90 - 110	
121 Sb	48.53 ug/l	0.64	50.00	90 - 110	
137 Ba	49.77 ug/l	0.46	50.00	90 - 110	
205 Tl	46.59 ug/l	0.31	50.00	90 - 110	
206 (Pb)	-------- ug/l	--------	50.00	90 - 110	
207 (Pb)	-------- ug/l	--------	50.00	90 - 110	
208 Pb	48.16 ug/l	0.99	50.00	90 - 110	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	2719319.00	0.70	2718933.80	100.0
45 Sc	614346.69	0.36	580246.44	105.9
45 Sc	84059.49	0.24	78449.59	107.2
45 Sc	1513467.90	1.34	1460500.30	103.6
72 Ge	116581.45	0.60	106527.24	109.4
72 Ge	42234.33	0.71	39295.42	107.5
72 Ge	224002.52	0.08	209205.06	107.1
115 In	1409895.30	0.25	1337657.80	105.4
159 Tb	2069572.10	0.62	1942159.60	106.6
165 Ho	2076021.50	1.23	1969815.00	105.4

ISTD Ref File : C:\ICPCHEM\1\DATA\11K09k00.B\004CALB.D\004CALB.D#

1 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Fail

CCB QC Report

Data File: C:\ICPCHEM\1\DATA\11K09k00.B\014_CCB.D\014_CCB.D#
Date Acquired: Nov 9 2011 11:31 am
Operator: NBS
Sample Name: CCB 111109
Misc Info:
Vial Number: 1102
Current Method: C:\ICPCHEM\1\METHODS\62A1109.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1109.C
Last Cal Update: Nov 09 2011 10:58 am
Sample Type: CCB
Total Dil Factor: 1.00

QC Elements

Element	Conc.		RSD(%)	High Limit	Flag
7 (Li)	--------	ug/l	--------	#VALUE!	
9 Be	-0.02	ug/l	16.82	0.12	
11 B	0.14	ug/l	49.21	15.00	
23 Na	-24.69	ug/l	3.39	77.10	
24 Mg	0.03	ug/l	278.48	7.50	
27 Al	0.21	ug/l	82.27	3.96	
39 K	-4.94	ug/l	56.07	19.20	
44 Ca	-16.42	ug/l	21.05	90.00	
47 Ti	0.03	ug/l	53.31	0.78	
51 V	0.69	ug/l	7.93	0.21	Fail
52 Cr	0.02	ug/l	5.25	0.12	
55 Mn	0.00	ug/l	2332.00	0.18	
56 Fe	0.67	ug/l	34.34	40.80	
59 Co	-0.14	ug/l	4.75	0.09	
60 Ni	0.01	ug/l	39.54	0.48	
63 Cu	-0.11	ug/l	1.77	0.39	
65 Cu	-0.14	ug/l	15.44	0.39	
66 Zn	0.03	ug/l	40.46	6.90	
75 As	0.02	ug/l	159.52	0.27	
78 Se	0.10	ug/l	8.63	0.30	
78 Se	0.13	ug/l	84.83	0.30	
88 Sr	0.00	ug/l	878.51	0.03	
88 Sr	0.00	ug/l	106.73	0.03	
95 Mo	0.12	ug/l	18.15	0.21	
106 (Cd)	--------	ug/l	--------	#VALUE!	
107 Ag	0.00	ug/l	237.28	0.09	
108 (Cd)	--------	ug/l	--------	#VALUE!	
111 Cd	0.00	ug/l	845.04	0.06	
118 Sn	0.08	ug/l	12.31	0.30	
121 Sb	0.80	ug/l	2.81	0.03	Fail
137 Ba	0.01	ug/l	43.84	0.12	
205 Tl	0.01	ug/l	5.23	0.03	
206 (Pb)	--------	ug/l	--------	#VALUE!	
207 (Pb)	--------	ug/l	--------	#VALUE!	
208 Pb	-0.26	ug/l	28.70	0.33	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	2764755.30	1.25	2718933.80	101.7
45 Sc	604525.38	1.74	580246.44	104.2
45 Sc	84149.24	0.97	78449.59	107.3
45 Sc	1508034.80	0.88	1460500.30	103.3
72 Ge	115021.63	0.72	106527.24	108.0
72 Ge	42048.33	0.50	39295.42	107.0
72 Ge	223649.44	0.15	209205.06	106.9
115 In	1411669.30	0.52	1337657.80	105.5
159 Tb	2069263.60	1.19	1942159.60	106.5
165 Ho	2107322.50	1.22	1969815.00	107.0

ISTD Ref File : C:\ICPCHEM\1\DATA\11K09k00.B\004CALB.D\004CALB.D#

2 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Fail

ICS-A QC Report

Data File: C:\ICPCHEM\1\DATA\11K09K00.B\015ICSA.D\015ICSA.D#
Date Acquired: Nov 9 2011 11:37 am
Acq. Method: 62A1109.M
Operator: NBS
Sample Name: ICSA 111109
Misc Info:
Vial Number: 2102
Current Method: C:\ICPCHEM\1\METHODS\62A1109.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1109.C
Last Cal. Update: Nov 09 2011 10:58 am
Sample Type: ICSA
Dilution Factor: 1.00

Data Results:
Analytes: Pass
ISTD: Pass

QC Elements

Element	IS Ref	Tune	Conc.		RSD(%)	High Limit ppb	Flag
7 (Li)	---	3	--------	ug/l	--------		
9 Be	45	3	0.85	ug/l	2.49		
11 B	45	3	2.82	ug/l	30.56		
23 Na	45	2	92700.00	ug/l	1.36		
24 Mg	45	2	89480.00	ug/l	0.94		
27 Al	45	2	99720.00	ug/l	0.44		
39 K	45	2	98010.00	ug/l	0.53		
44 Ca	45	2	99660.00	ug/l	0.30		
47 Ti	45	2	1917.00	ug/l	0.88		
51 V	45	2	1.94	ug/l	1.54		
52 Cr	45	2	2.33	ug/l	2.32		
55 Mn	45	2	7.56	ug/l	0.56		
56 Fe	45	2	91700.00	ug/l	0.56		
59 Co	45	2	20.24	ug/l	0.28		
60 Ni	45	2	3.86	ug/l	1.49		
63 Cu	72	2	1.89	ug/l	0.53		
65 Cu	72	2	2.00	ug/l	1.21		
66 Zn	72	2	5.34	ug/l	1.70		
75 As	72	2	1.41	ug/l	2.06		
78 Se	72	1	1.05	ug/l	2.27		
78 Se	72	2	1.09	ug/l	7.31		
88 Sr	72	2	1.58	ug/l	0.58		
88 Sr	72	3	1.52	ug/l	0.65		
95 Mo	72	3	1766.00	ug/l	1.24		
106 (Cd)	---	3	--------	ug/l	--------		
107 Ag	115	3	1.91	ug/l	2.14		
108 (Cd)	---	3	--------	ug/l	--------		
111 Cd	115	3	2.22	ug/l	6.18		
118 Sn	115	3	1.22	ug/l	5.78		
121 Sb	115	3	2.04	ug/l	2.55		
137 Ba	115	3	3.92	ug/l	4.49		
205 Tl	159	3	1.57	ug/l	1.87		
206 (Pb)	---	3	--------	ug/l	--------		
207 (Pb)	---	3	--------	ug/l	--------		
208 Pb	159	3	3.28	ug/l	1.91		

ISTD Elements

Element	Tune	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3	2800454	0.42	2718934	103.0
45 Sc	1	589628	0.63	580246	101.6
45 Sc	2	81516	0.44	78450	103.9
45 Sc	3	1474688	1.01	1460500	101.0
72 Ge	1	111379	0.44	106527	104.6
72 Ge	2	43263	0.20	39295	110.1
72 Ge	3	222030	0.45	209205	106.1
115 In	3	1257150	0.93	1337658	94.0
159 Tb	3	1954577	0.91	1942160	100.6
165 Ho	3	1992008	0.47	1969815	101.1

Tune File# 1 c:\icpchem\1\7500\h2.u
Tune File# 2 c:\icpchem\1\7500\he.u
Tune File# 3 c:\icpchem\1\7500\nogas.u

ISTD Ref File : C:\ICPCHEM\1\DATA\11K09K00.B\004CALB.D\004CALB.D#

0 :Element Failures 0 :Max. Number of Failures Allowed

ICS-AB QC Report

Data File: C:\ICPCHEM\1\DATA\11K09k00.B\016ICSB.D\016ICSB.D#
Date Acquired: Nov 9 2011 11:50 am
Acq. Method: 62A1109.M
Operator: NBS
Sample Name: ICSAB 111109
Misc Info:
Vial Number: 2103
Current Method: C:\ICPCHEM\1\METHODS\62A1109.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1109.C
Last Cal. Update: Nov 09 2011 10:58 am
Sample Type: ICSAB
Dilution Factor: 1.00

Data Results:
Analytes: Fail
ISTD: Pass

QC Elements

Element	IS Ref	Tune	Conc. ppb	RSD(%)	Expected	%Recovery	QC Range(%)	Flag
7 (Li)	---	3	--------	--------	---		-	
9 Be	45	3	230.70	0.51	250	92.3	80 - 120	
11 B	45	3	2.51	2.21	---		-	
23 Na	45	2	92360.00	1.05	---		-	
24 Mg	45	2	89680.00	0.53	---		-	
27 Al	45	2	97230.00	0.68	---		-	
39 K	45	2	97120.00	0.78	---		-	
44 Ca	45	2	98670.00	0.78	---		-	
47 Ti	45	2	1880.00	1.11	2000	94.0	80 - 120	
51 V	45	2	240.20	0.32	250	96.1	80 - 120	
52 Cr	45	2	237.30	0.62	250	94.9	80 - 120	
55 Mn	45	2	239.00	0.65	250	95.6	80 - 120	
56 Fe	45	2	89050.00	0.28	---		-	
59 Co	45	2	252.60	0.67	250	101.0	80 - 120	
60 Ni	45	2	431.10	0.24	500	86.2	80 - 120	
63 Cu	72	2	198.90	1.18	250	79.6	80 - 120	Fail = 80% NBS 11/14/11
65 Cu	72	2	198.50	1.20	250	79.4	80 - 120	Fail
66 Zn	72	2	468.30	1.59	500	93.7	80 - 120	
75 As	72	2	219.70	0.88	250	87.9	80 - 120	
78 Se	72	1	221.60	0.37	250	88.6	80 - 120	
78 Se	72	2	213.20	2.00	250	85.3	80 - 120	
88 Sr	72	2	1.93	0.61	---		-	
88 Sr	72	3	1.86	0.40	---		-	
95 Mo	72	3	1978.00	1.07	2000	98.9	80 - 120	
106 (Cd)	---	3	--------	--------	---		-	
107 Ag	115	3	484.60	1.72	500	96.9	80 - 120	
108 (Cd)	---	3	--------	--------	---		-	
111 Cd	115	3	453.40	0.30	500	90.7	80 - 120	
118 Sn	115	3	1.34	2.40	---		-	
121 Sb	115	3	256.50	0.50	250	102.6	80 - 120	
137 Ba	115	3	244.30	0.89	250	97.7	80 - 120	
205 Tl	159	3	224.50	0.38	250	89.8	80 - 120	
206 (Pb)	---	3	--------	--------	---		-	
207 (Pb)	---	3	--------	--------	---		-	
208 Pb	159	3	449.70	0.09	500	89.9	80 - 120	

ISTD Elements

Element	Tune	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3	2880520	0.66	2718934	105.9
45 Sc	1	612027	1.66	580246	105.5
45 Sc	2	82110	0.49	78450	104.7
45 Sc	3	1464656	0.90	1460500	100.3
72 Ge	1	113766	0.92	106527	106.8
72 Ge	2	43281	0.99	39295	110.1
72 Ge	3	216897	0.63	209205	103.7
115 In	3	1233451	0.85	1337658	92.2
159 Tb	3	1947204	0.38	1942160	100.3
165 Ho	3	1970221	0.27	1969815	100.0

Tune File# 1 c:\icpchem\1\7500\h2.u
Tune File# 2 c:\icpchem\1\7500\he.u
Tune File# 3 c:\icpchem\1\7500\nogas.u

ISTD Ref File : C:\ICPCHEM\1\DATA\11K09k00.B\004CALB.D\004CALB.D#

2 :Element Failures 0 :Max. Number of Failures Allowed

CCV QC Report

Data File: C:\ICPCHEM\1\DATA\11K09k00.B\018_CCV.D\018_CCV.D#
Date Acquired: Nov 9 2011 12:02 pm
Operator: NBS
Sample Name: CCV 111109
Misc Info:
Vial Number: 1105
Current Method: C:\ICPCHEM\1\METHODS\62A1109.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1109.C
Last Cal Update: Nov 09 2011 10:58 am
Sample Type: CCV
Total Dil Factor: 1.00

QC Elements

Element	Conc.	RSD(%)	Expected	QC Range(%)	Flag
7 (Li)	-------- ug/l	--------	50.00	90 - 110	
9 Be	47.59 ug/l	1.46	50.00	90 - 110	
11 B	52.82 ug/l	1.73	50.00	90 - 110	
23 Na	1245.00 ug/l	1.34	1250.00	90 - 110	
24 Mg	2497.00 ug/l	0.96	2500.00	90 - 110	
27 Al	957.80 ug/l	2.08	1000.00	90 - 110	
39 K	979.10 ug/l	1.51	1000.00	90 - 110	
44 Ca	2429.00 ug/l	0.25	2500.00	90 - 110	
47 Ti	48.40 ug/l	1.35	50.00	90 - 110	
51 V	50.40 ug/l	1.00	50.00	90 - 110	
52 Cr	49.71 ug/l	0.28	50.00	90 - 110	
55 Mn	49.61 ug/l	0.75	50.00	90 - 110	
56 Fe	994.10 ug/l	0.76	1000.00	90 - 110	
59 Co	49.76 ug/l	0.88	50.00	90 - 110	
60 Ni	50.00 ug/l	0.92	50.00	90 - 110	
63 Cu	47.99 ug/l	0.25	50.00	90 - 110	
65 Cu	48.17 ug/l	0.49	50.00	90 - 110	
66 Zn	48.85 ug/l	1.31	50.00	90 - 110	
75 As	49.41 ug/l	0.17	50.00	90 - 110	
78 Se	49.01 ug/l	2.07	50.00	90 - 110	
78 Se	49.81 ug/l	0.98	50.00	90 - 110	
88 Sr	49.33 ug/l	0.77	50.00	90 - 110	
88 Sr	47.79 ug/l	1.10	50.00	90 - 110	
95 Mo	48.93 ug/l	1.20	50.00	90 - 110	
106 (Cd)	-------- ug/l	--------	50.00	90 - 110	
107 Ag	24.06 ug/l	1.81	25.00	90 - 110	
108 (Cd)	-------- ug/l	--------	50.00	90 - 110	
111 Cd	49.25 ug/l	0.90	50.00	90 - 110	
118 Sn	49.61 ug/l	0.76	50.00	90 - 110	
121 Sb	49.95 ug/l	0.88	50.00	90 - 110	
137 Ba	49.21 ug/l	1.32	50.00	90 - 110	
205 Tl	47.07 ug/l	0.98	50.00	90 - 110	
206 (Pb)	-------- ug/l	--------	50.00	90 - 110	
207 (Pb)	-------- ug/l	--------	50.00	90 - 110	
208 Pb	48.21 ug/l	0.67	50.00	90 - 110	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3085192.50	1.35	2718933.80	113.5
45 Sc	627336.50	0.27	580246.44	108.1
45 Sc	83854.89	0.93	78449.59	106.9
45 Sc	1474788.50	0.98	1460500.30	101.0
72 Ge	119093.48	0.49	106527.24	111.8
72 Ge	43294.97	0.68	39295.42	110.2
72 Ge	215315.19	0.67	209205.06	102.9
115 In	1381857.80	1.02	1337657.80	103.3
159 Tb	2077615.60	0.22	1942159.60	107.0
165 Ho	2108703.00	1.07	1969815.00	107.1

ISTD Ref File : C:\ICPCHEM\1\DATA\11K09k00.B\004CALB.D\004CALB.D#

0 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Pass

CCB QC Report

Data File: C:\ICPCHEM\1\DATA\11K09k00.B\020_CCB.D\020_CCB.D#
Date Acquired: Nov 9 2011 12:14 pm
Operator: NBS
Sample Name: CCB 111109
Misc Info:
Vial Number: 1102
Current Method: C:\ICPCHEM\1\METHODS\62A1109.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1109.C
Last Cal Update: Nov 09 2011 10:58 am
Sample Type: CCB
Total Dil Factor: 1.00

QC Elements

Element	Conc.	RSD(%)	High Limit	Flag
7 (Li)	-------- ug/l	--------	#VALUE!	
9 Be	-0.02 ug/l	5.81	0.12	
11 B	-0.17 ug/l	11.02	15.00	
23 Na	-27.16 ug/l	14.29	77.10	
24 Mg	0.25 ug/l	22.45	7.50	
27 Al	0.57 ug/l	35.85	3.96	
39 K	-2.25 ug/l	363.86	19.20	
44 Ca	-18.13 ug/l	22.90	90.00	
47 Ti	0.03 ug/l	29.76	0.78	
51 V	1.11 ug/l	11.66	0.21	Fail
52 Cr	0.04 ug/l	48.64	0.12	
55 Mn	-0.01 ug/l	9.22	0.18	
56 Fe	1.11 ug/l	21.58	40.80	
59 Co	-0.15 ug/l	1.64	0.09	
60 Ni	0.01 ug/l	132.60	0.48	
63 Cu	-0.20 ug/l	7.37	0.39	
65 Cu	-0.19 ug/l	7.66	0.39	
66 Zn	0.09 ug/l	25.48	6.90	
75 As	0.05 ug/l	45.74	0.27	
78 Se	0.03 ug/l	21.11	0.30	
78 Se	0.14 ug/l	9.65	0.30	
88 Sr	0.00 ug/l	104.10	0.03	
88 Sr	0.00 ug/l	82.85	0.03	
95 Mo	0.11 ug/l	19.69	0.21	
106 (Cd)	-------- ug/l	--------	#VALUE!	
107 Ag	0.01 ug/l	17.40	0.09	
108 (Cd)	-------- ug/l	--------	#VALUE!	
111 Cd	0.00 ug/l	147.04	0.06	
118 Sn	0.06 ug/l	7.77	0.30	
121 Sb	0.32 ug/l	4.35	0.03	Fail
137 Ba	0.01 ug/l	30.71	0.12	
205 Tl	0.00 ug/l	414.46	0.03	
206 (Pb)	-------- ug/l	--------	#VALUE!	
207 (Pb)	-------- ug/l	--------	#VALUE!	
208 Pb	-0.32 ug/l	0.71	0.33	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3064358.80	2.13	2718933.80	112.7
45 Sc	663848.88	4.52	580246.44	114.4
45 Sc	78237.63	6.56	78449.59	99.7
45 Sc	1481928.40	0.55	1460500.30	101.5
72 Ge	122147.38	3.48	106527.24	114.7
72 Ge	40810.96	6.63	39295.42	103.9
72 Ge	213852.28	0.14	209205.06	102.2
115 In	1388994.00	0.35	1337657.80	103.8
159 Tb	2036071.50	0.49	1942159.60	104.8
165 Ho	2077577.10	1.02	1969815.00	105.5

ISTD Ref File : C:\ICPCHEM\1\DATA\11K09k00.B\004CALB.D\004CALB.D#

2 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Fail

CCV QC Report

Data File: C:\ICPCHEM\1\DATA\11K09k00.B\032_CCV.D\032_CCV.D#
Date Acquired: Nov 9 2011 01:32 pm
Operator: NBS
Sample Name: CCV 111109
Misc Info:
Vial Number: 1105
Current Method: C:\ICPCHEM\1\METHODS\62A1109.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1109.C
Last Cal Update: Nov 09 2011 10:58 am
Sample Type: CCV
Total Dil Factor: 1.00

QC Elements

Element	Conc.	RSD(%)	Expected	QC Range(%)	Flag
7 (Li)	-------- ug/l	--------	50.00	90 - 110	
9 Be	46.16 ug/l	0.43	50.00	90 - 110	
11 B	52.10 ug/l	0.91	50.00	90 - 110	
23 Na	1259.00 ug/l	0.73	1250.00	90 - 110	
24 Mg	2490.00 ug/l	0.85	2500.00	90 - 110	
27 Al	969.30 ug/l	1.93	1000.00	90 - 110	
39 K	985.00 ug/l	1.48	1000.00	90 - 110	
44 Ca	2462.00 ug/l	0.27	2500.00	90 - 110	
47 Ti	48.84 ug/l	3.23	50.00	90 - 110	
51 V	50.07 ug/l	1.31	50.00	90 - 110	
52 Cr	48.65 ug/l	1.33	50.00	90 - 110	
55 Mn	48.72 ug/l	0.91	50.00	90 - 110	
56 Fe	976.40 ug/l	1.01	1000.00	90 - 110	
59 Co	48.51 ug/l	0.84	50.00	90 - 110	
60 Ni	48.52 ug/l	1.49	50.00	90 - 110	
63 Cu	47.08 ug/l	0.92	50.00	90 - 110	
65 Cu	46.94 ug/l	1.36	50.00	90 - 110	
66 Zn	47.77 ug/l	0.62	50.00	90 - 110	
75 As	48.96 ug/l	0.48	50.00	90 - 110	
78 Se	48.54 ug/l	0.66	50.00	90 - 110	
78 Se	49.72 ug/l	0.88	50.00	90 - 110	
88 Sr	49.04 ug/l	0.72	50.00	90 - 110	
88 Sr	46.30 ug/l	0.80	50.00	90 - 110	
95 Mo	47.10 ug/l	0.23	50.00	90 - 110	
106 (Cd)	-------- ug/l	--------	50.00	90 - 110	
107 Ag	23.86 ug/l	1.47	25.00	90 - 110	
108 (Cd)	-------- ug/l	--------	50.00	90 - 110	
111 Cd	48.43 ug/l	0.20	50.00	90 - 110	
118 Sn	49.75 ug/l	1.82	50.00	90 - 110	
121 Sb	49.44 ug/l	1.13	50.00	90 - 110	
137 Ba	49.40 ug/l	1.82	50.00	90 - 110	
205 Tl	46.54 ug/l	0.76	50.00	90 - 110	
206 (Pb)	-------- ug/l	--------	50.00	90 - 110	
207 (Pb)	-------- ug/l	--------	50.00	90 - 110	
208 Pb	48.35 ug/l	0.71	50.00	90 - 110	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3161952.00	0.71	2718933.80	116.3
45 Sc	665889.69	1.74	580246.44	114.8
45 Sc	90420.58	0.84	78449.59	115.3
45 Sc	1558064.00	0.66	1460500.30	106.7
72 Ge	128126.98	0.98	106527.24	120.3
72 Ge	46435.69	1.07	39295.42	118.2
72 Ge	226963.00	0.10	209205.06	108.5
115 In	1425809.60	1.07	1337657.80	106.6
159 Tb	2125836.80	0.81	1942159.60	109.5
165 Ho	2154385.30	1.33	1969815.00	109.4

ISTD Ref File : C:\ICPCHEM\1\DATA\11K09k00.B\004CALB.D\004CALB.D#

0 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Pass

CCB QC Report

Data File: C:\ICPCHEM\1\DATA\11K09k00.B\034_CCB.D\034_CCB.D#
Date Acquired: Nov 9 2011 01:45 pm
Operator: NBS
Sample Name: CCB 111109
Misc Info:
Vial Number: 1102
Current Method: C:\ICPCHEM\1\METHODS\62A1109.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1109.C
Last Cal Update: Nov 09 2011 10:58 am
Sample Type: CCB
Total Dil Factor: 1.00

QC Elements

Element	Conc.		RSD(%)	High Limit	Flag
7 (Li)	--------	ug/l	--------	#VALUE!	
9 Be	-0.07	ug/l	0.62	0.12	
11 B	-0.12	ug/l	91.63	15.00	
23 Na	171.40	ug/l	4.25	77.10	Fail
24 Mg	-0.11	ug/l	55.74	7.50	
27 Al	0.09	ug/l	100.60	3.96	
39 K	-9.22	ug/l	39.28	19.20	
44 Ca	-24.76	ug/l	7.72	90.00	
47 Ti	0.00	ug/l	800.39	0.78	
51 V	-0.75	ug/l	1.57	0.21	
52 Cr	-0.06	ug/l	3.80	0.12	
55 Mn	-0.03	ug/l	19.40	0.18	
56 Fe	-0.23	ug/l	22.66	40.80	
59 Co	-0.21	ug/l	1.37	0.09	
60 Ni	0.00	ug/l	147.16	0.48	
63 Cu	-0.29	ug/l	2.57	0.39	
65 Cu	-0.31	ug/l	0.11	0.39	
66 Zn	-0.28	ug/l	5.81	6.90	
75 As	-0.48	ug/l	2.86	0.27	
78 Se	0.03	ug/l	30.82	0.30	
78 Se	0.23	ug/l	35.92	0.30	
88 Sr	0.00	ug/l	63.34	0.03	
88 Sr	0.00	ug/l	52.02	0.03	
95 Mo	0.05	ug/l	32.21	0.21	
106 (Cd)	--------	ug/l	--------	#VALUE!	
107 Ag	0.01	ug/l	28.55	0.09	
108 (Cd)	--------	ug/l	--------	#VALUE!	
111 Cd	0.02	ug/l	42.70	0.06	
118 Sn	-0.01	ug/l	109.47	0.30	
121 Sb	0.07	ug/l	3.81	0.03	Fail
137 Ba	0.01	ug/l	88.56	0.12	
205 Tl	0.01	ug/l	25.23	0.03	
206 (Pb)	--------	ug/l	--------	#VALUE!	
207 (Pb)	--------	ug/l	--------	#VALUE!	
208 Pb	-0.38	ug/l	0.71	0.33	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3068480.80	0.88	2718933.80	112.9
45 Sc	666098.38	1.17	580246.44	114.8
45 Sc	94521.53	0.78	78449.59	120.5
45 Sc	1634741.80	1.04	1460500.30	111.9
72 Ge	135113.92	1.26	106527.24	126.8
72 Ge	48842.08	0.69	39295.42	124.3
72 Ge	237560.05	0.35	209205.06	113.6
115 In	1532733.30	1.06	1337657.80	114.6
159 Tb	2220701.00	0.73	1942159.60	114.3
165 Ho	2238426.50	0.23	1969815.00	113.6

ISTD Ref File : C:\ICPCHEM\1\DATA\11K09k00.B\004CALB.D\004CALB.D#

2 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Fail

CCV QC Report

Data File: C:\ICPCHEM\1\DATA\11K09k00.B\048_CCV.D\048_CCV.D#
Date Acquired: Nov 9 2011 03:37 pm
Operator: NBS
Sample Name: CCV 111109
Misc Info:
Vial Number: 1105
Current Method: C:\ICPCHEM\1\METHODS\62A1109.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1109.C
Last Cal Update: Nov 09 2011 03:29 pm
Sample Type: CCV
Total Dil Factor: 1.00

QC Elements

Element	Conc.	RSD(%)	Expected	QC Range(%)	Flag
7 (Li)	-------- ug/l	--------	50.00	90 - 110	
9 Be	45.64 ug/l	0.51	50.00	90 - 110	
11 B	50.80 ug/l	0.87	50.00	90 - 110	
23 Na	1133.00 ug/l	1.09	1250.00	90 - 110	
24 Mg	2471.00 ug/l	1.19	2500.00	90 - 110	
27 Al	973.20 ug/l	1.03	1000.00	90 - 110	
39 K	995.00 ug/l	0.93	1000.00	90 - 110	
44 Ca	2478.00 ug/l	1.58	2500.00	90 - 110	
47 Ti	47.70 ug/l	1.06	50.00	90 - 110	
51 V	50.76 ug/l	1.01	50.00	90 - 110	
52 Cr	48.24 ug/l	0.80	50.00	90 - 110	
55 Mn	48.99 ug/l	0.86	50.00	90 - 110	
56 Fe	974.60 ug/l	1.02	1000.00	90 - 110	
59 Co	48.55 ug/l	0.53	50.00	90 - 110	
60 Ni	48.31 ug/l	1.58	50.00	90 - 110	
63 Cu	46.59 ug/l	0.62	50.00	90 - 110	
65 Cu	46.36 ug/l	0.32	50.00	90 - 110	
66 Zn	47.54 ug/l	1.17	50.00	90 - 110	
75 As	48.97 ug/l	0.59	50.00	90 - 110	
78 Se	45.91 ug/l	0.99	50.00	90 - 110	
78 Se	49.83 ug/l	1.36	50.00	90 - 110	
88 Sr	49.72 ug/l	0.39	50.00	90 - 110	
88 Sr	46.90 ug/l	3.86	50.00	90 - 110	
95 Mo	47.02 ug/l	0.95	50.00	90 - 110	
106 (Cd)	-------- ug/l	--------	50.00	90 - 110	
107 Ag	24.01 ug/l	0.57	25.00	90 - 110	
108 (Cd)	-------- ug/l	--------	50.00	90 - 110	
111 Cd	48.10 ug/l	0.46	50.00	90 - 110	
118 Sn	49.60 ug/l	0.32	50.00	90 - 110	
121 Sb	49.23 ug/l	0.58	50.00	90 - 110	
137 Ba	49.45 ug/l	1.29	50.00	90 - 110	
205 Tl	46.36 ug/l	0.88	50.00	90 - 110	
206 (Pb)	-------- ug/l	--------	50.00	90 - 110	
207 (Pb)	-------- ug/l	--------	50.00	90 - 110	
208 Pb	48.22 ug/l	1.41	50.00	90 - 110	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3144814.50	1.40	3135320.50	100.3
45 Sc	703032.13	0.32	685414.75	102.6
45 Sc	93447.08	0.78	95214.66	98.1
45 Sc	1578661.50	0.60	1668789.60	94.6
72 Ge	138883.53	0.27	142007.28	97.8
72 Ge	48222.98	0.15	49830.42	96.8
72 Ge	234655.58	0.96	243720.22	96.3
115 In	1464886.80	0.32	1581557.30	92.6
159 Tb	2179038.00	0.96	2281448.30	95.5
165 Ho	2206501.80	1.50	2310384.30	95.5

ISTD Ref File : C:\ICPCHEM\1\DATA\11K09k00.B\046CALB.D\046CALB.D#

0 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:

Analytes: Pass

CCB QC Report

Data File: C:\ICPCHEM\1\DATA\11K09k00.B\050_CCB.D\050_CCB.D#
Date Acquired: Nov 9 2011 03:49 pm
Operator: NBS
Sample Name: CCB 111109
Misc Info:
Vial Number: 1102
Current Method: C:\ICPCHEM\1\METHODS\62A1109.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1109.C
Last Cal Update: Nov 09 2011 03:29 pm
Sample Type: CCB
Total Dil Factor: 1.00

QC Elements

Element	Conc.		RSD(%)	High Limit	Flag
7 (Li)	--------	ug/l	--------	#VALUE!	
9 Be	0.00	ug/l	342.47	0.12	
11 B	-0.06	ug/l	357.48	15.00	
23 Na	-105.50	ug/l	15.05	77.10	
24 Mg	-0.66	ug/l	13.31	7.50	
27 Al	-0.22	ug/l	66.81	3.96	
39 K	-10.19	ug/l	42.32	19.20	
44 Ca	-2.74	ug/l	69.34	90.00	
47 Ti	-0.01	ug/l	113.41	0.78	
51 V	-0.20	ug/l	10.55	0.21	
52 Cr	-0.01	ug/l	45.41	0.12	
55 Mn	-0.02	ug/l	34.49	0.18	
56 Fe	-0.31	ug/l	9.95	40.80	
59 Co	0.00	ug/l	51.83	0.09	
60 Ni	0.00	ug/l	225.68	0.48	
63 Cu	0.01	ug/l	66.35	0.39	
65 Cu	0.00	ug/l	311.03	0.39	
66 Zn	-0.04	ug/l	50.84	6.90	
75 As	-0.05	ug/l	23.97	0.27	
78 Se	0.01	ug/l	89.93	0.30	
78 Se	-0.02	ug/l	332.87	0.30	
88 Sr	0.00	ug/l	90.05	0.03	
88 Sr	-0.01	ug/l	27.89	0.03	
95 Mo	0.02	ug/l	8.23	0.21	
106 (Cd)	--------	ug/l	--------	#VALUE!	
107 Ag	0.00	ug/l	127.75	0.09	
108 (Cd)	--------	ug/l	--------	#VALUE!	
111 Cd	0.00	ug/l	127.97	0.06	
118 Sn	-0.01	ug/l	84.71	0.30	
121 Sb	0.07	ug/l	1.61	0.03	Fail
137 Ba	-0.01	ug/l	24.77	0.12	
205 Tl	0.01	ug/l	9.63	0.03	
206 (Pb)	--------	ug/l	--------	#VALUE!	
207 (Pb)	--------	ug/l	--------	#VALUE!	
208 Pb	-0.01	ug/l	32.21	0.33	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3091148.00	0.05	3135320.50	98.6
45 Sc	670833.25	1.23	685414.75	97.9
45 Sc	96245.03	0.48	95214.66	101.1
45 Sc	1638299.80	0.73	1668789.60	98.2
72 Ge	139006.75	0.90	142007.28	97.9
72 Ge	50250.59	1.13	49830.42	100.8
72 Ge	239294.63	0.52	243720.22	98.2
115 In	1567395.90	1.13	1581557.30	99.1
159 Tb	2239435.00	0.50	2281448.30	98.2
165 Ho	2271944.50	0.69	2310384.30	98.3

ISTD Ref File : C:\ICPCHEM\1\DATA\11K09k00.B\046CALB.D\046CALB.D#

1 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Fail

CCV QC Report

Data File: C:\ICPCHEM\1\DATA\11K09k00.B\062_CCV.D\062_CCV.D#
Date Acquired: Nov 9 2011 05:33 pm
Operator: NBS
Sample Name: CCV 111109
Misc Info:
Vial Number: 110S
Current Method: C:\ICPCHEM\1\METHODS\62A1109.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1109.C
Last Cal Update: Nov 09 2011 03:29 pm
Sample Type: CCV
Total Dil Factor: 1.00

QC Elements

Element	Conc.		RSD(%)	Expected	QC Range(%)	Flag
7 (Li)	--------	ug/l	--------	50.00	90 - 110	
9 Be	45.34	ug/l	0.65	50.00	90 - 110	
11 B	50.00	ug/l	0.42	50.00	90 - 110	
23 Na	1111.00	ug/l	0.67	1250.00	90 - 110	Fail
24 Mg	2428.00	ug/l	0.39	2500.00	90 - 110	
27 Al	961.80	ug/l	1.47	1000.00	90 - 110	
39 K	991.10	ug/l	0.16	1000.00	90 - 110	
44 Ca	2476.00	ug/l	1.60	2500.00	90 - 110	
47 Ti	47.61	ug/l	0.96	50.00	90 - 110	
51 V	50.52	ug/l	0.94	50.00	90 - 110	
52 Cr	48.07	ug/l	0.12	50.00	90 - 110	
55 Mn	48.78	ug/l	0.76	50.00	90 - 110	
56 Fe	969.20	ug/l	0.43	1000.00	90 - 110	
59 Co	48.29	ug/l	0.21	50.00	90 - 110	
60 Ni	48.07	ug/l	0.90	50.00	90 - 110	
63 Cu	46.36	ug/l	0.68	50.00	90 - 110	
65 Cu	45.98	ug/l	0.92	50.00	90 - 110	
66 Zn	47.25	ug/l	0.64	50.00	90 - 110	
75 As	49.10	ug/l	0.21	50.00	90 - 110	
78 Se	46.16	ug/l	0.57	50.00	90 - 110	
78 Se	50.53	ug/l	1.39	50.00	90 - 110	
88 Sr	50.10	ug/l	1.23	50.00	90 - 110	
88 Sr	46.20	ug/l	0.48	50.00	90 - 110	
95 Mo	47.29	ug/l	0.95	50.00	90 - 110	
106 (Cd)	--------	ug/l	--------	50.00	90 - 110	
107 Ag	24.03	ug/l	0.57	25.00	90 - 110	
108 (Cd)	--------	ug/l	--------	50.00	90 - 110	
111 Cd	48.83	ug/l	0.49	50.00	90 - 110	
118 Sn	49.64	ug/l	1.52	50.00	90 - 110	
121 Sb	49.76	ug/l	1.38	50.00	90 - 110	
137 Ba	49.08	ug/l	0.94	50.00	90 - 110	
205 Tl	46.25	ug/l	0.41	50.00	90 - 110	
206 (Pb)	--------	ug/l	--------	50.00	90 - 110	
207 (Pb)	--------	ug/l	--------	50.00	90 - 110	
208 Pb	47.86	ug/l	1.09	50.00	90 - 110	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3143862.50	0.75	3135320.50	100.3
45 Sc	736035.38	0.53	685414.75	107.4
45 Sc	96513.20	0.46	95214.66	101.4
45 Sc	1617065.90	0.43	1668789.60	96.9
72 Ge	143785.55	0.72	142007.28	101.3
72 Ge	50125.71	0.51	49830.42	100.6
72 Ge	241859.33	0.19	243720.22	99.2
115 In	1500209.50	0.61	1581557.30	94.9
159 Tb	2204594.80	0.88	2281448.30	96.6
165 Ho	2236463.50	0.66	2310384.30	96.8

ISTD Ref File : C:\ICPCHEM\1\DATA\11K09k00.B\046CALB.D\046CALB.D#

1 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Fail

CCB QC Report

Data File: C:\ICPCHEM\1\DATA\11K09k00.B\064_CCB.D\064_CCB.D#
Date Acquired: Nov 9 2011 05:45 pm
Operator: NBS
Sample Name: CCB 111109
Misc Info:
Vial Number: 1102
Current Method: C:\ICPCHEM\1\METHODS\62A1109.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1109.C
Last Cal Update: Nov 09 2011 03:29 pm
Sample Type: CCB
Total Dil Factor: 1.00

QC Elements

Element	Conc.	RSD(%)	High Limit	Flag
7 (Li)	-------- ug/l	--------	#VALUE!	
9 Be	0.00 ug/l	92.32	0.12	
11 B	-0.40 ug/l	9.38	15.00	
23 Na	-119.00 ug/l	6.57	77.10	
24 Mg	-0.58 ug/l	15.94	7.50	
27 Al	-0.21 ug/l	10.08	3.96	
39 K	-11.64 ug/l	51.36	19.20	
44 Ca	-2.97 ug/l	60.82	90.00	
47 Ti	-0.03 ug/l	61.23	0.78	
51 V	-0.22 ug/l	8.21	0.21	
52 Cr	0.00 ug/l	324.99	0.12	
55 Mn	-0.01 ug/l	147.64	0.18	
56 Fe	-0.31 ug/l	2.62	40.80	
59 Co	0.00 ug/l	177.01	0.09	
60 Ni	0.00 ug/l	154.43	0.48	
63 Cu	0.01 ug/l	80.13	0.39	
65 Cu	0.00 ug/l	1012.20	0.39	
66 Zn	-0.02 ug/l	13.07	6.90	
75 As	-0.08 ug/l	15.47	0.27	
78 Se	0.01 ug/l	111.15	0.30	
78 Se	-0.03 ug/l	207.79	0.30	
88 Sr	0.01 ug/l	25.05	0.03	
88 Sr	0.00 ug/l	351.54	0.03	
95 Mo	0.01 ug/l	35.08	0.21	
106 (Cd)	-------- ug/l	--------	#VALUE!	
107 Ag	0.00 ug/l	47.97	0.09	
108 (Cd)	-------- ug/l	--------	#VALUE!	
111 Cd	0.00 ug/l	129.50	0.06	
118 Sn	0.00 ug/l	151.90	0.30	
121 Sb	0.08 ug/l	2.55	0.03	Fail
137 Ba	0.00 ug/l	188.19	0.12	
205 Tl	0.01 ug/l	34.91	0.03	
206 (Pb)	-------- ug/l	--------	#VALUE!	
207 (Pb)	-------- ug/l	--------	#VALUE!	
208 Pb	0.00 ug/l	80.10	0.33	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3129591.50	0.58	3135320.50	99.8
45 Sc	708730.94	1.71	685414.75	103.4
45 Sc	100216.02	0.34	95214.66	105.3
45 Sc	1695174.60	1.03	1668789.60	101.6
72 Ge	143397.95	0.73	142007.28	101.0
72 Ge	51782.93	0.95	49830.42	103.9
72 Ge	248052.70	0.33	243720.22	101.8
115 In	1595187.40	0.46	1581557.30	100.9
159 Tb	2290506.80	0.76	2281448.30	100.4
165 Ho	2311614.80	0.32	2310384.30	100.1

ISTD Ref File : C:\ICPCHEM\1\DATA\11K09k00.B\046CALB.D\046CALB.D#

1 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Fail

Miscellaneous

Metals Standards Log Book # 33 Page # 118

118

NBS 11/08/11

6020/6020A

(A)

NBS 11/08/11

ICP-MS STANDARDS 6020/6020A/3016/3051A

Today's Date: 11/8/2011
Expires: 11/15/2011
Prep Date 1% HNO3/1.0%HCL
20 mL HNO3 / 2000 mL DI Water
Lot # K19023
20mL HCL / 2000mL DI Water
Lot #4110110
Expires: 11/16/2011

Standard 4

Amount	STD	Manufacturer	Lot #
50 uL	CCV-A	Env. Express	1036407-28139
50 uL	CCV-B	Env. Express	1036410-28140
50 uL	CCV-C	Env. Express	1100309-28141

Prepared in 100 mL of 1% HNO3/1.0% HCL 11/8/2011

Standard 3 11/15/2011

Amount	STD	Manufacturer	Lot #
25 uL	CCV-A	Env. Express	1036407-28139
25 uL	CCV-B	Env. Express	1036410-28140
25 uL	CCV-C	Env. Express	1100309-28141

Prepared in 100 mL of 1% HNO3/1.0% HCL 11/8/2011

NBS 11/08/11

Standard 2 11/15/2011

Amount	STD		
500 uL	Standard 4		11/8/2011

Prepared in 50 mL of 1% HNO3/1.0% HCL 11/8/2011

Standard 1 11/15/2011

Amount	STD		
50 uL	Standard 4		11/8/2011

Prepared in 50 mL of 1% HNO3/1.0% HCL 11/8/2011

ICP-MS ICV 11/15/2011

Amount	STD		
50 uL	QCS ICV A	CPI	11C174-28548
50 uL	QCS ICV B	CPI	11C174-28549

Prepared in 50 mL of 1% HNO3/1.0% HCL 11/8/2011

ICSA Prep: 11/15/2011

5 mL	ICSA	CPI	11C068-28529

Prepared in 5 mL of 1% HNO3/1.0% HCL 11/8/2011

ICSAB Prep: 11/15/2011

1mL	ICSA	CPI	11C068-28529
0.025mL	INT	O2SI	1023805-28210

Prepared in 5 mL of 1% HNO3/1.0% HCL 11/8/2011

ICP-LDR 11/15/2011

Amount	STD		
50 uL	CCV-A	Env. Express	1036407-28139
50 uL	CCV-B	Env. Express	1036410-28140
50 uL	CCV-C	Env. Express	1100309-28141

Prepared in 10 mL of 1% HNO3/1.0% HCL 11/8/2011

NBS 11/09/11

6010 B/C

(A)

1%HNO3 / 5%HCl BLK					6010B/6010C ICSA				
AMOUNT	REAGENT	MANUFACTURER	LOT	OPEN DATE	AMOUNT	STD	MANUFACTURER	LOT	EXP DATE
100 mL	HCL	BDH	4110110	10/14/2011	1mL	Al	CPI	10E012-27685	4/20/2012
20 mL	HNO3	JT BAKER	K19023	10/14/2011	1mL	Ca	CPI	11A006-28528	9/15/2012
Prepared in 2000 ml DI Water					1mL	Mg	CPI	10H213-2765	4/20/2012
STD 1 / LDL 6010B/6010C					1mL	Fe	O2SI	1022345-27699	4/22/2012
AMOUNT	STD	MANUFACTURER	LOT	EXP DATE	Prepared in 50 ml 1%HNO3/5%HCl				
0.5 mL	6010 LDL	ABSOLUTE	091409-25205	9/14/2012	6010B/6010C ICSAB				
Prepared in 50 ml 1%HNO3/5%HCl					1mL	Al	CPI	10E012-27685	4/20/2012
STD 3 / MDL 6010B/6010C					1mL	Ca	CPI	11A006-28528	9/15/2012
1ML	CCV-A	ABSOLUTE	091409-25206	9/14/2012	1mL	Mg	CPI	10H213-2765	4/20/2012
1ML	CCV-B	ABSOLUTE	091109-25208	9/14/2012	1mL	Fe	O2SI	1022345-27699	4/22/2012
1ML	CCV-C	ABSOLUTE	091009-25207	9/10/2012	0.5mL	JT SPECIAL M	O2SI	160495-01-01	3/1/2012
Prepared in 100 ml 1%HNO3 / 5%HCl					Prepared in 50 ml 1%HNO3/5%HCl				
STD 2 / CCV1 6010B/6010C/6010C					6010B/6010C ICV				
AMOUNT	STD	PREP DATE	EXP DATE		0.5ML	QCS ICV A	CPI	11C174-28548	9/17/2012
25mL	STD 3	11/8/2011	11/15/2011		0.5ML	QCS ICV B	CPI	11C174-28549	9/17/2012
25mL	1%HNO3/5%HCl	11/8/2011	11/15/2011		Prepared in 50ml 1%HNO3/5%HCl				
CCV2 6010B/6010C									
AMOUNT	STD	PREP DATE	EXP DATE						
25mL	STD 3	11/8/2011	11/15/2011						
25mL	1%HNO3/5%HCl	11/8/2011	11/15/2011						

RBS 11/8/11

RBS 11/8/11

RBS 11/16/11

Hg WORKING STANDARD

1ml X 10ug/ml Hg STOCK STD. (10/25/11RJS)/200ml 1% HNO3 Lot#K19023
1ml X 10ug/ml Hg STOCK ICV (10/25/11RJS)/200ml 1% HNO3 Lot#K19023
Final concentration is 50 ug/L. Expires....11.8.11.....

RBS 11/9/11

Hg WORKING STANDARD

1ml X 10ug/ml Hg STOCK STD. (10/25/11RJS)/200ml 1% HNO3 Lot#K19023
1ml X 10ug/ml Hg STOCK ICV (10/25/11RJS)/200ml 1% HNO3 Lot#K19023
Final concentration is 50 ug/L. Expires.....11/9/11.....

RBS 11/9/11

Metals Standards Log Book # 33 Page # 119

NBS 11/9/11
6010B/C
R

BS 11/9/11

1%HNO3 / 5%HCl BLK				
AMOUNT	REAGENT	MANUFACTURER	LOT	OPEN DATE
100 mL	HCL	BDH	4110110	10/14/2011
20 mL	HNO3	JT BAKER	K19023	10/14/2011
Prepared in 2000 ml DI Water				
STD 1 / LDL 6010B/6010C				
AMOUNT	STD	MANUFACTURER	LOT	EXP DATE
0.5 mL	6010 LDL	ABSOLUTE	091409-25205	9/14/2012
Prepared in 50 ml 1%HNO3/5%HCl				
STD 3 / HOL 6010B/6010C				
2ML	CCV-A	ABSOLUTE	091409-25206	9/14/2012
1ML	CCV-B	ABSOLUTE	091109-25208	9/14/2012
1ML	CCV-C	ABSOLUTE	091009-25207	9/10/2012
Prepared in 100 ml 1%HNO3 / 5%HCl				
STD 2 / CCV1 6010B/6010C/6010C				
AMOUNT	STD	PREP DATE	EXP DATE	
2.5mL	STD 3	11/9/2011	11/16/2011	
25mL	1%HNO3/5%HCl	11/9/2011	11/16/2011	
CCV2 6010B/6010C				
AMOUNT	STD	PREP DATE	EXP DATE	
25mL	STD 3	11/9/2011	11/16/2011	
25mL	1%HNO3/5%HCl	11/9/2011	11/16/2011	

6010B/6010C ICSA				
AMOUNT	STD	MANUFACTURER	LOT	EXP DATE
1mL	Al	CPI	10E012-27585	4/20/2012
1mL	Ca	CPI	11A006-28528	9/15/2012
1mL	Mg	CPI	10H213-27569	4/20/2012
1mL	Fe	O2SI	1022245-27699	4/22/2012
Prepared in 50 ml 1%HNO3/5%HCl				
6010B/6010C ICSAB				
1mL	Al	CPI	10E012-27585	4/20/2012
1mL	Ca	CPI	11A006-28528	9/15/2012
1mL	Mg	CPI	10H213-27569	4/20/2012
1mL	Fe	O2SI	1022245-27699	4/22/2012
0.5mL	IT SPECIAL M	O2SI	160495-01-01	3/1/2012
Prepared in 50 ml 1%HNO3/5%HCl				
6010B/6010C ICV				
0.5ML	QCS ICV A	CPI	11C174-28548	9/17/2012
0.5ML	QCS ICV B	CPI	11C174-28549	9/17/2012
Prepared in 50ml 1%HNO3/5%HCl				

NBS 11/09/11

BS 11/09/11
6020A
R

ICP-MS STANDARDS 6020/6020A/3015/3051A

Today's Date: 11/9/2011
Expires: 11/16/2011
Prep Date 1% HNO3/1.0%HCL
20 mL HNO3 / 2000 mL DI Water
Lot # K19023
20mL HCL / 2000mL DI Water
Lot #4110110
Expires: 11/16/2011

Standard 4

Amount	STD	Manufacturer	Lot #
50 uL	CCV-A	Env. Express	1036407-28139
50 uL	CCV-B	Env. Express	1036410-28140
50 uL	CCV-C	Env. Express	1100309-28141

Prepared in 100 mL of 1% HNO3/1.0% HCL 11/9/2011

Standard 3 11/16/2011

Amount	STD	Manufacturer	Lot #
25 uL	CCV-A	Env. Express	1036407-28139
25 uL	CCV-B	Env. Express	1036410-28140
25 uL	CCV-C	Env. Express	1100309-28141

Prepared in 100 mL of 1% HNO3/1.0% HCL 11/9/2011

Standard 2 11/16/2011

Amount	STD	
500 uL	Standard 4	11/9/2011

Prepared in 50 mL of 1% HNO3/1.0% HCL 11/9/2011

Standard 1 11/16/2011

Amount	STD	
50 uL	Standard 4	11/9/2011

Prepared in 50 mL of 1% HNO3/1.0% HCL 11/9/2011

ICP-MS ICV 11/16/2011

Amount	STD		
50 uL	QCS ICV A	CPI	11C174-28548
50 uL	QCS ICV B	CPI	11C174-28549

Prepared in 50 mL of 1% HNO3/1.0% HCL 11/9/2011

ICSA Prep: 11/16/2011

1 mL	ICSA	CPI	11C068-28529

Prepared in 5 mL of 1% HNO3/1.0% HCL 11/9/2011

ICSAB Prep: 11/16/2011

1mL	ICSA	CPI	11C068-28529
0.025mL	INT	O2SI	1023805-28210

Prepared in 5 mL of 1% HNO3/1.0% HCL 11/9/2011

ICP-LOR 11/16/2011

Amount	STD		
50 uL	CCV-A	Env. Express	1036407-28139
50 uL	CCV-B	Env. Express	1036410-28140
50 uL	CCV-C	Env. Express	1100309-28141

Prepared in 10 mL of 1% HNO3/1.0% HCL 11/9/2011

NBS 11/09/11

Internal Standard Concentration

Amt	STD	Element	Vendor	Lot#	Final Conc. In Std	Expires
50uL	1000 ug/mL	Li	CPI	10L079-27839	0.1ppm	6/10/2012
50uL	1000 ug/mL	In	CPI	10J155-28574	0.1ppm	9/25/2012
50uL	1000 ug/mL	Ho	CPI	10A107-28576	0.1ppm	9/25/2012
50uL	1000 ug/mL	Tb	CPI	11B054-28575	0.1ppm	9/25/2012
50uL	1000 ug/mL	Sc	o2si	1024073-28527	0.1ppm	8/18/2012
50uL	1000 ug/mL	Ge	Environmental Express	1116011-29381	0.1ppm	2/8/2013

Prep:	11/9/2011	SDM	Prep In -	1%HNO3/1.0%HCL:	Lot #1110030/4110060 In 50mL
Expires:	12/9/2011				

BS 11/10/11

Hg WORKING STANDARD

1ml X 10ug/ml Hg STOCK STD. (10/25/11RJS)/200ml 1% HNO3 Lot#K19023
1ml X 10ug/ml Hg STOCK ICV (10/25/11RJS)/200ml 1% HNO3 Lot#K19023
Final concentration is 50 ug/L. Expires.....11/10/11.....

908 North Temperance Ave. ∇ Clovis, CA 93611 ∇ Phone 559-275-2175 ∇ Fax 559-275-4422

Certification Number: CA1312
NELAP Certification number: 05233CA
DoD-ELAP Certificate number: ADE-1410

Data Validatable Report

November 28, 2011

Tetra Tech NUS, Inc.
234 Mall Boulevard, Suite 260
King of Prussia, Pennsylvania 19406

Attn: Barbara Becker

Title: Report of Data: Case 65882 Addendum

Project: 112G00810 Indian Head CTO423, RI

Contract #: Prime contract # for DoD: N62467-04-D-0055, CTO 0423
Subcontract: MSA # 1045497, WR # 06-423

Dear Ms. Becker:

Samples were received October 1, 2011, in good condition. On November 11, 2011, Nitroglycerin analysis was added to sample X14GW0010911. Written results for the added analysis are provided on this November 28, 2011.

Results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

If you have any questions or require further information, please contact your APPL Project Manager, Cynthia Clark, at your convenience. Thank you for choosing APPL, Inc.

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 above. These test results meet all requirements of NELAC and DoD QSM. Release of the hard copy has been authorized by the Laboratory Manager or her designee, as verified by the following signature.

Sharon Dehmlow, Laboratory Director
APPL, Inc.

SD/sf
Enclosure
cc: File

Number of pages in this report: 92

Data Validation Package
for
112G00810 Indian Head CTO423, RI
ARF 65882 Addendum
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SAMPLE RECEIPT INFORMATION

Sample Receipt Information

ARF: 65882 Addendum

Project: 112G00810 Indian Head CTO423, RI

Sample Receipt Information:

The samples were received on October 1, 2011, at 3.0°C and 3.0°C. The samples were assigned Analytical Request Form (ARF) number 65882. The sample numbers and requested analyses were compared to the chain of custody and email communication. A container count discrepancy was noted and reported to the client. On November 11, 2011, Nitroglycerin analysis was added to sample X14GW0010911. No other exception was encountered.

Sample Table

CLIENT ID	APPL ID	Matrix	Date Sampled	Date Received
X15GW0020911	AY47772	WATER	09/28/11	10/01/11
X15GW0010911	AY47773	WATER	09/28/11	10/01/11
X14GW0010911	AY47774	WATER	09/29/11	10/01/11
X15GW0020911-F	AY47775	WATER	09/28/11	10/01/11
X15GW0010911-F	AY47776	WATER	09/28/11	10/01/11
X14GW0010911-F	AY47777	WATER	09/29/11	10/01/11
X15GW0030911	AY47778	WATER	09/29/11	10/01/11
X15GW0030911-F	AY47779	WATER	09/29/11	10/01/11
DUP01092811	AY47780	WATER	09/28/11	10/01/11
X14GW0020911	AY47781	WATER	09/30/11	10/01/11
X14GW0020911-F	AY47782	WATER	09/30/11	10/01/11
X14GW0040911	AY47783	WATER	09/30/11	10/01/11
X14GW0040911-F	AY47784	WATER	09/30/11	10/01/11
DUP02093011	AY47785	WATER	09/30/11	10/01/11
DUP02093011-F	AY47786	WATER	09/30/11	10/01/11

Samples and blanks were screened for J-value responses between the detection limit (DL) and limit of quantitation (LOQ).

Laboratory control limits generated in house do not meet the control limits listed in DoD QSM 4.2 for all analytes. Laboratory control limits generated for this project meet all control limits listed in the DoD QSM 4.2 except where noted. A copy of our in house generated control limits is available upon request. In addition, a copy of our LOQ control limits, established using 7 data points, are also available upon request.

Only the portion of the injection log relative to these samples is included. A full sequence log is available upon request.

Measurement uncertainty can be reported upon request.

CASE NARRATIVE

EPA Method 8330B
Energetics

Sample Preparation:

The water sample was extracted according to EPA method 3535A. The request for analysis was received after the EPA recommended holding time had expired. The sample was extracted 43 days after collection.

Analysis:

The sample was analyzed according to EPA Method 8330B using an Agilent 1290 HPLC with DA detector. Manual integrations were performed in accordance to APPL's SOP. Chromatograms of prior to and after manual integrations are enclosed.

Quality Control/Assurance:

Spike Recovery:

A Laboratory Control Spike (LCS) was used for quality assurance. All spike acceptance criteria was met.

No sample was designated by the client for MS/MSD analysis.

Method blanks:

No target analyte was detected at or above the detection limit.

Surrogates:

Surrogate recoveries are summarized on the Form 2 & 8. All surrogates had acceptable recoveries.

Calibration:

The initial and continuing calibrations and second source were analyzed according to the method. All calibration criteria were met.

Summary:

No other analytical problem was encountered. The data generated are acceptable.

Abbreviations and Flags

FLAG	DESCRIPTION
#	Recovery or RPD outside control limits
*	Recovery or RPD outside control limits
B	Analyte detected in associated method blank
C1	Reason for correction: wrote incorrect response
C2	Reason for correction: calculated incorrectly
C3	Reason for correction: needs to be rechecked
C4	Reason for correction: data not usable
DO	Diluted out
E	Exceeds linear range
F	Estimated value
G1	Includes a wide range of hydrocarbons which does not match our gasoline standard
G10	Includes a match to hydrocarbon profiles within the range of mineral spirits
G11	Includes a match to hydrocarbon profiles within the range of JP-4
G12	Pattern does not match the gasoline standard; the carbon range for this sample is consistent with JP8
G13	Closely resembles the hydrocarbon profile of aviation gasoline
G14	Analyte concentration may be biased due to carry over
G2	Closely resembles the boiling point hydrocarbon profile consistent with weathered gasoline
G3	Includes higher boiling hydrocarbons
G4	Includes dominant peak(s) not indicative of petroleum hydrocarbons
G5	Is mainly dominant peak(s) not indicative of petroleum hydrocarbons
G6	Contains recognizable contaminant peak(s) which has been removed from quantitation
G7	Is mainly a match to hydrocarbons within the range of gasoline
G8	Closely resembles the boiling point hydrocarbon profile consistent with weathered gasoline
G9	Includes hydrocarbons within the range of kerosene
J	Estimated value
M	Matrix effect
M1	Manual integration: integration does not follow baseline
M2	Manual integration: non-target peak interference
M3	Manual integration: to split a peak that was integrated as one peak by the computer
M4	Manual integration: to integrate a split peak
M5	Manual integration: the whole peak or part of the peak was not integrated
M6	Manual integration: computer integrated wrong peak
M7	Manual integration: other - explain
MDL	Method detection limit
ND	Not detected
NT	Non-target
Q	Acceptance criteria not met
T1 I	Includes wide range of hydrocarbons not indicative of diesel
T1 M	Is mainly wide range of hydrocarbons not necessarily indicative of diesel
T2 I	Includes lower boiling hydrocarbons, i.e. mineral spirits, kerosene, stoddard solvent, white gas
T2 M	Is mainly lower boiling hydrocarbons, i.e. mineral spirits, kerosene, stoddard solvent, white gas
T3 I	Includes higher boiling hydrocarbons, i.e. asphaltene, waster oil, motor oil, or weathered diesel fuel
T3 M	Is mainly higher boiling hydrocarbons, i.e. asphaltene, waster oil, motor oil, or weathered diesel fuel
T4 I	Includes dominant peak(s) not indicative of hydrocarbons
T4 M	Is mainly dominant peak(s) not indicative of hydrocarbons
T5	Contains recognizable contaminant peak(s) which has been removed from quantitation
T6	Is mainly a match to hydrocarbons within range of diesel fuel
T7	Closely resembles the boiling point hydrocarbon profile consistent with diesel fuel
T8	Includes a match to hydrocarbon profiles within range of diesel and kerosene fuel
T9 I	Includes non-diesel hydrocarbons within boiling point range of diesel fuel
T9 M	Is mainly non-diesel hydrocarbons within boiling point range of diesel fuel.
Y	Percent difference between primary and confirmation column > 40%

CHAIN OF CUSTODY,
ARF, CRF, AND
CLIENT COMMUNICATION

APPL - Analysis Request Form 65882

Client: **Tetra Tech NUS, Inc.**
Address: **234 Mall Blvd, suite 260**
King of Prussia, PA 19406
Attn: **Barbra Becker**
Phone: **610-491-9688** Fax: **610-491-9645**
Job: **112G00810 Indian Head CTO423**
PO #: **MSA# 1045497 WR#06-423**
Chain of Custody (Y/N): **Y** # **35628,35604**
RAD Screen (Y/N): **Y** pH (Y/N): **Y**
Turn Around Type: **STD**

Received by: **TBV**
Date Received: **10/01/11** Time: **11:05**
Delivered by: **FED EX**
Shuttle Custody Seals (Y/N): **Y**
Chest Temp(s): **3.0,3.0°C**
Color: **I-PURRED,R-ORGYE**
Samples Chilled until Placed in Refrig/Freezer: **Y**
Project Manager: **Cynthia Clark**
QC Report Type: **DVP4/LEDD/RI**
Due Date: **10/24/11**

Comments:
send 1 hard copy and 2 BOOKMARKED CDs of report and Summary report on CD
Assemble report and summary package according to attached document, in same order as attached, special
EDD: LEDD to Tobrena Sedlmyer barb.becker@tetratech.com
guidance: DoD QSMv4.2, LOQ/LOD-calc/DL forms
8330 = Nitroglycerin only
Invoice in triplicate per PO
NAVY (CLEAN) CONTRACT N62467-04-D-0055, CTO 423
Please see attached email for container count discrepancy
NG added to sample AY47774 per BB (11/11/11) out of HT, addendum report by 11/30/11-chc

Sample Distribution:
GC: 3-$SIMDDODW
Extractions: 3-_MWE3535, 3-_SEP004S
LCMS: 3-$833BW
Metals: 2-$62ADODW(Sb), 1-$62ADODW(Sb,Cu), 1-$62ADODW(Sb,Pb), 3-$62ADODW(Cu,Pb), 2-$62ADODDW(Sb,Pb), 1-$62ADODDW(Sb), 1-$62ADODDW(Sb,Cu), 3-$62ADODDW(Cu,Pb)
Other: 14-_M3015

Charges:

Invoice To:
TETRA TECH NUS
Accounts Payable
661 Anderson Drive, Foster Plaz
Pittsburgh, PA 15220

	Client ID		APPL ID	Sampled		Analyses Requested
1.	X15GW0020911		AY47772W	09/28/11	12:30	$62ADODW(Sb)
2.	X15GW0010911	MS/MSD	AY47773W	09/28/11	15:35	$62ADODW(Sb), $833BW, $SIMDDODW -- Nitroglycerin only, ms/msd on 8330 & PAH
3.	X14GW0010911		AY47774W	09/29/11	12:15	$62ADODW(Sb,Cu), $833BW, $SIMDDODW -- Nitroglycerin only
4.	X15GW0020911-F		AY47775W	09/28/11	12:30	$62ADODDW(Sb,Pb)
5.	X15GW0010911-F		AY47776W	09/28/11	15:35	$62ADODDW(Sb)
6.	X14GW0010911-F		AY47777W	09/29/11	12:15	$62ADODDW(Sb,Cu)

7. X15GW0030911	AY47778W	09/29/11	16:05	$62ADODW(Sb,Pb)
8. X15GW0030911-F	AY47779W	09/29/11	16:05	$62ADODDW(Sb,Pb)
9. DUP01092811	AY47780W	09/28/11	00:00	$833BW, $SIMDDODW -- Nitroglycerin only
10. X14GW0020911	AY47781W	09/30/11	08:35	$62ADODW(Cu,Pb)
11. X14GW0020911-F	AY47782W	09/30/11	08:35	$62ADODDW(Cu,Pb)
12. X14GW0040911	AY47783W	09/30/11	14:30	$62ADODW(Cu,Pb)
13. X14GW0040911-F	AY47784W	09/30/11	14:30	$62ADODDW(Cu,Pb)
14. DUP02093011	AY47785W	09/30/11	00:00	$62ADODW(Cu,Pb)
15. DUO02093011-F	AY47786W	09/30/11	00:00	$62ADODDW(Cu,Pb)

APPL Sample Receipt Form

ARF# **65882**

Sample	Container Type	Count	pH
AY47772	[6] PL 500mL - HNO3	1	1.7
AY47773	[6] PL 500mL - HNO3	1	1.7
	[17] Amber Liter	12	NA
AY47774	[6] PL 500mL - HNO3	1	1.7
	[17] Amber Liter	2	NA
AY47775	[6] PL 500mL - HNO3	1	1.7
AY47776	[6] PL 500mL - HNO3	1	1.7
AY47777	[6] PL 500mL - HNO3	1	1.7
AY47778	[6] PL 500mL - HNO3	1	1.7
AY47779	[6] PL 500mL - HNO3	1	1.7
AY47780	[17] Amber Liter	4	NA
AY47781	[6] PL 500mL - HNO3	1	1.7
AY47782	[6] PL 500mL - HNO3	1	1.7
AY47783	[6] PL 500mL - HNO3	1	1.7
AY47784	[6] PL 500mL - HNO3	1	1.7
AY47785	[6] PL 500mL - HNO3	1	1.7
AY47786	[6] PL 500mL - HNO3	1	1.7

Sample	Container Type	Count	pH

Chue Moua

From: "Cynthia Clark" <cclark@applinc.com>
To: "'Renee Patterson'" <rpatterson@applinc.com>; "'Chue Moua'" <cmoua@applinc.com>; "'Extractions'" <extractions@applinc.com>; "'Paula Young'" <pyoung@applinc.com>; "'Sharon Dehmlow'" <sdehmlow@applinc.com>
Sent: Friday, November 11, 2011 9:30 AM
Subject: FW: X14GW001 for Package 65882

TTEC-NUS has requested that we analyze sample AY47774, ARF 65882, for nitroglycerin.
They are aware it is out of holding time but are unable to recollect.
Please continue with sending the current report. When analysis for this sample is complete we will submit it as a standalone addendum report.
They would like the report for this sample by the 30th of November.

I have added the $-codes and comments in Labworks

Thanks!

Cynthia Clark– Project Manager

APPL Inc.
908 North Temperance Ave., Clovis, CA 93611
Phone: 559-275-2175
Fax: 559-275-4422
cclark@applinc.com
www.applinc.com

This is a PRIVATE and CONFIDENTIAL message. If you are not the intended recipient, please delete without copying and kindly advise us by e-mail of the mistake in delivery. NOTE: Regardless of content, this e-mail shall not operate to bind APPL, Inc. to any order or other contract unless pursuant to explicit written agreement or government initiative expressly permitting the use of e-mail for such purpose.

From: Becker, Barb [mailto:Barb.Becker@tetratech.com]
Sent: Friday, November 11, 2011 9:18 AM
To: Cynthia Clark (cclark@applinc.com)
Cc: Traxler, Mark
Subject: X14GW001 for Package 65882

Cynthia,

In follow up to our phone conversations yesterday and today about Sample X14GW0010911 in Data Case 65882, please analyze the remaining sample volume for nitroglycerin. I understand that this sample is out of hold time, but believe the results could still be beneficial to help us meet project goals. Also, we'd like to have the results in hand by November 30, if possible. Please let me know whether your lab schedule will allow that and what the added cost will be.

Thanks,
Barb

Barb Becker, PMP | Senior Project Manager
Direct: 610.382.3770 | Main: 610.491.9688 | Mobile: 949.929.2748 | Fax: 610.491.9645
barb.becker@tetratech.com

65882

3°C

CHAIN OF CUSTODY RECORD

APPL, Inc.
908 N Temperance Ave
Clovis, CA 93611
Phone: (559) 275-2175
Fax: (559) 275-4422

C.O.C. 35628

Report to: PLEASE PRINT	Invoice to: PLEASE PRINT
Company Name: Tetra Tech NUS Phone: 610 491 9688	Company Name: Tetra Tech NUS Phone: 412 9217090
Address: 234 Mall Boulevard Suite 260 Fax: 610 491 9645	Address: 661 Andersen Drive Fax: 412 9214040
King of Prussia PA 19406	Pittsburgh, PA 15220
Attn: Barbra Becker	Attn:

Project Name/Number	Sampler (Print)
112G00810	Charles Meyer
Purchase Order Number	Sampler (Signature)
	Charles Meyer

Date Shipped: 9/30/11
Carrier: Federal Express
Waybill No.: 8744 5964 0350
Comments:

Sample Identification	Location	Date Collected	Time Collected	No. of Containers	Matrix: Aq	Sed.	Soil	Total Lead	Antimony	Dissolved Lead	Antimony	Low Level PAH	Nitroglycerin	Total Antimony	Dissolved Antimony	Total Copper	Antimony	Dissolved Copper	Antimony	Total Lead Copper	Dissolved Lead Copper	Comments
X156W00209 11	X 15	9/28/11	1230	1	✓			1	+	cm	9/29/11											
X156W00109 11	X 15	9/28/11	1535	13	✓					6	6	1	+	cm	9/29/11							Low Level PAH Do MS/MSD on Nitroglycerin 13
X146W00109 11	X 14	9/29/11	1215	1	✓					2				1	+	cm	9/29/11					
X156W00209 11-F	X 15	9/28/11	1230	1	✓					1												
X156W00109 11-F	X 15	9/28/11	1535	1	✓										1							
X146W00109 11-F	X 14	9/29/11	1215	1	✓													1				
X156W00309 11	X 15	9/29/11	1605	1	✓			1														
X156W00309 11-F	X 15	9/29/11	1605	1	✓					1												
Dup01 092811	Dup	9/28/11	0000	4	✓					2	2											
X146W00209 11	X 14	9/30/11	0935	1																1		
X146W00209 11-F	X 14	9/30/11	0835	1																	1	

Shuttle Temperature:

Turnaround Requested: MUST CHECK ONE
☐ Standard (2-3 week) ☐ One week ☐ 24-48 hour

Sample Disposal:
☐ Return to client ☐ Disposal by Lab (30-day retention)

Relinquished by sampler:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
Charles Meyer	9/30/11	1730					
Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received at lab by:
					10/01/11	11:05	Alicia Alfaro

White: Return to client with report Yellow: Laboratory Copy Pink: Sampler

See reverse side for Container Preservative and Sampling Information

APPL LABS

APPL, Inc.
908 N Temperance Ave
Clovis, CA 93611

Phone: (559) 275-2175
Fax: (559) 275-4422

CHAIN OF CUSTODY RECORD

C.O.C. 35604

Report to: PLEASE PRINT	Invoice to: PLEASE PRINT
Company Name: Tetra Tech NUS Phone: 610 4919688	Company Name: Tetra Tech NUS Phone: 412 921 7090
Address: 334 Mall Boulevard Suite 260 Fax: 610 4919645	Address: 661 Andersen Drive Fax: 412 921 4040
King of Prussia, PA 19344	Pittsburgh, PA 15220
Attn: Barbara Becker	Attn: Accounts Payable

Project Name/Number	Sampler (Print)				Matrix				Analysis Requested/Method Number												Date Shipped: 9/30/11
112600810	Charles Meyer																				Carrier: Federal Express
Purchase Order Number	Sampler (Signature)																				Waybill No.: 8744 5954 0350
																					Comments:
Sample Identification	Location	Date Collected	Time Collected	No. of Containers	Aq	Sed.	Soil		Total Lead copper	Dissolved lead copper											
X146W0040911	X14	9/30/11	1430	1	✓				1												
X146W0040911-F	X14	9/30/11	1430	1	✓					1											
DUP02093011	DUP02	9/30/11	0000	1	✓				1												
DUP02093011-F	DUP02	9/30/11	0000	1	✓					1											

14

Shuttle Temperature:

Turnaround Requested: MUST CHECK ONE
☐ Standard (2-3 week) ☐ One week ☐ 24-48 hour

Sample Disposal:
☐ Return to client ☐ Disposal by Lab (30-day retention)

Relinquished by sampler:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
Charles Meyer	9/30/11	1730					
Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received at lab by:
					10/01/11	08:05	Alicia Alfaro

White: Return to client with report Yellow: Laboratory Copy Pink: Sampler

See reverse side for Container Preservative and Sampling Information

COOLER RECEIPT FORM

1) Project: CTO 423, 112G00810 Indian Head Date Received: 10/1/11

2) Coolers: Number of Coolers: 2

3) YES NO Were coolers and samples screened for radioactivity?

4) YES NO Were custody seals on outside of cooler? How many? 4 Date on seal? 9/30/11

5) Name on seal? See Label

6) YES NO NA Were custody seals unbroken and intact at the time of arrival?

7) YES NO Did the cooler come with a shipping slip (air bill, etc.)? Carrier name: Fed Ex

8) Shipping slip numbers: 1) 8744 5964 0350 (MASTER) 2) 3)

9) YES NO NA Was the shipping slip scanned into the database?

10) YES NO NA If cooler belongs to APPL, has it been logged into the ice chest database?

11) Describe type of packing in cooler (bubble wrap, popcorn, type of ice, etc.): bubble bag in Ziploc, Ziploc in wet ice

12) YES NO NA For hand delivered samples was sufficient ice present to start the cooling process?

13) YES NO Was a temperature blank included in the cooler?

14) Serial number of certified NIST thermometer used: A39267 Correction factor: 0

15) Cooler temp(s): 1) 3.0°C 2) 3.0°C 3) 4) 5) 6) 7) 8)

Chain of custody:

16) YES NO Was a chain of custody received?

17) YES NO Were the custody papers signed in the appropriate places?

18) YES NO Was the project identifiable from custody papers?

19) YES NO Did the chain of custody include date and time of sampling?

20) YES NO Is location where sample was taken listed on the chain of custody?

Sample Labels:

21) YES NO Were container labels in good condition?

22) YES NO Was the client ID on the label?

23) YES NO Was the date of sampling on the label?

24) YES NO Was the time of sampling on the label?

25) YES NO Did all container labels agree with custody papers?

Sample Containers:

26) YES NO Were all containers sealed in separate bags?

27) YES NO Did all containers arrive unbroken?

28) YES NO Was there any leakage from samples?

29) YES NO Were any of the lids cracked or broken?

30) YES NO Were correct containers used for the tests indicated?

31) YES NO Was a sufficient amount of sample sent for tests indicated?

32) YES NO NA Were bubbles present in volatile samples? If yes, the following were received with air bubbles:

Larger than a pea:

Smaller than a pea:

Preservation & Hold time:

33) YES NO NA Was a sufficient amount of holding time remaining to analyze the samples?

34) YES NO NA Do the sample containers contain the same preservative as what is stated on the COC?

35) YES NO NA Was the pH taken of all non-VOA preserved samples and written on the sample container?

36) YES NO NA Was the pH of acid preserved non-VOA samples < 2 & sodium hydroxide preserved samples > 12?

37) YES NO NA Unpreserved VOA Vials received?

38) YES NO NA Are unpreserved VOA vials noted in the ADD TEST FIELD on the ARF?

Lab notified if pH was not adequate: YZ 10/1/11

Deficiencies: Sample X14GW0010911 - COC listed 1 container but received received total of 3 container (2 Amber liter, 1 500mL plastic (HNO_3))

Signature of personnel receiving samples: Yang Zhu Second reviewer:

Signature of project manager notified: Renée Date and Time of notification: 10-4-11

Name of client notified: Date and Time of notification:

Information given to client:

by whom (Initials):

Initials: Date: 10/1/11

APPL, Inc. (559) 275-2175

CE10547

Method 8330B

Data Summary Package

EPA 8330B EXPLOSIVES-WATER

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

Attn: Barbra Becker

Project: 112G00810 Indian Head CTO423

Sample ID: X14GW0010911

Sample Collection Date: 9/29/2011

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

ARF: 65882

APPL ID: AY47774

QCG: #833BW-111111A-161405

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
EPA 8330B	NITROGLYCERIN	0.260 U	0.50	0.260	0.130	ug/L	11/11/2011	11/14/2011
EPA 8330B	SURROGATE: 1,2-DINITROBENZENE (	85.0	70-130			%	11/11/2011	11/14/2011

Quant Method:	W110907.M
Run #:	1114_0000012
Instrument:	Waldorf
Sequence:	111114
Dilution Factor:	1
Initials:	RSM

Printed: 11/17/2011 5:47:23 PM
APPL-F1-SC-NoMC-REG MDLs

Method Blank
EPA 8330B EXPLOSIVES-WATER

Blank Name/QCG: **111111W-47774 - 161405**
Batch ID: #833BW-111111A

APPL Inc.
908 North Temperance Avenu
Clovis, CA 93611

Sample Type	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
BLANK	NITROGLYCERIN	0.260 U	0.50	0.260	0.130	ug/L	11/11/2011	11/14/2011
BLANK	SURROGATE: 1,2-DINITROBENZ	83.9	70-130			%	11/11/2011	11/14/2011

Quant Method:W110907.M
Run #:1114_000001
Instrument:Waldorf
Sequence:111114
Initials:RSM

GC SC-Blank-REG MDLs
Printed: 11/17/2011 5:47:22 PM

EPA 8330B

Form 4

Blank Summary

Lab Name: APPL, Inc. SDG No: 65882

Case No: 65882 Date Analyzed: 11/14/2011

Matrix: WATER Instrument: Waldorf

Blank ID: 111111A-BLK Time Analyzed: 2032

APPL ID.	Client Sample No.	File ID.	Date Analyzed
111111A-LCS	Lab Control Spike	1114_0000006	11/14/2011 1735
111111A-BLK	Blank	1114_0000011	11/14/2011 2032
AY47774	X14GW0010911	1114_0000012	11/14/2011 2110

Comments: Batch: #833BW-111111A

Printed: 11/17/2011 5:47:26 PM
Form 4, Blank Summary

Form 2 & 8

Surrogate Recovery

Lab Name: APPL, Inc. SDG No: 65882

Case No: 65882 Date Analyzed: 11/14/2011

Matrix: WATER Instrument: Waldorf

APPL ID.	Client Sample No.	SURROGATE: 1,2-DINITROBENZENE (S)					
		Limits	Result	Qualifier	Limits	Result	Qualifier
111111A-LCS	Lab Control Spike	70-130	83.6				
111111A-BLK	Blank	70-130	83.9				
AY47774	X14GW0010911	70-130	85.0				

Comments: Batch: #833BW-111111A

Laboratory Control Spike Recovery
EPA 8330B EXPLOSIVES-WATER

APPL ID: **111111W-47774 LCS - 161405**
Batch ID: #833BW-111111A

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Level ug/L	SPK Result ug/L	SPK % Recovery	Recovery Limits
NITROGLYCERIN	8.00	7.78	97.3	70-130
SURROGATE: 1,2-DINITROBENZENE (S)	8.00	6.69	83.6	70-130

Comments: _____

Primary	SPK
Quant Method :	W110907.M
Extraction Date :	11/11/2011
Analysis Date :	11/14/2011
Instrument :	Waldorf
Run :	1114_0000006
Initials :	RSM

Printed: 11/17/2011 5:47:23 PM

APPL Standard LCS

Waldorf-8330B
W110907.M

Form 6
Initial Calibration

Lab Name: APPL, Inc. SDG No: 65882
Case No: Initial Cal. Date: 10/13/2011
Matrix: Instrument: Waldorf Initials: HM

			1013_0000003.D	1013_0000004.D	1013_0000005.D	1013_0000006.D	1013_0000007.D	1013_0000008.D	1013_0000009.D	1013_0000010.D	1013_0000012.D					
		Compound	1	2	3	4	5	6	7	8	9		Avg	%RSD		
1	TM	NITROGLYCERIN	145	137	147	119	138	138	142	139	137		138	5.8	TM	
2	TM	PETN			93.1	96.7	114	119	125	123	123		113	12	TM	
		Signal #2														
1	TM	HMX #2	601	677	575	614	705	641	726	707	685		659	8.1	TM	
2	TM	RDX #2	408	459	376	401	462	413	478	470	463		437	8.5	TM	
3	TM	1,3,5-TRINITROBENZENE #2	703	782	648	687	789	716	819	807	803		750	8.3	TM	
4	S	1,2-DINITROBENZENE #2	315	341	283	294	339	308	351	351	355		326	8.2	S	
5	TM	1,3-DINITROBENZENE #2	671	756	626	651	757	686	780	780	781		721	8.6	TM	
6	TM	3,5-DINITROANILINE #2	524	584	546	531	605	602	632	624	622		586	7.1	TM	
7	TM	NITROBENZENE #2	302	343	301	293	347	314	352	357	357		329	8.1	TM	
8	TM	TETRYL #2	225	245	206	220	251	232	264	261	263		241	8.7	TM	
9	TM	2,4,6-TRINITROTOLUENE #2	310	338	281	298	339	312	353	348	348		325	7.9	TM	
10	TM	2-AMINO-4,6-DINITROTOLUENE	284	310	261	276	315	290	330	325	325		302	8.2	TM	
11	TM	4-AMINO-2,6-DINITROTOLUENE	227	247	207	220	250	230	261	256	254		239	7.8	TM	
12	TM	2,4-DINITROTOLUENE #2	288	324	270	282	324	299	337	336	336		311	8.4	TM	
13	TM	2,6-DINITROTOLUENE #2	169	181	153	158	182	168	188	186	187		175	7.7	TM	
14	TM	2-NITROTOLUENE #2	117	124	104	108	125	115	128	128	129		120	8.0	TM	
15	TM	4-NITROTOLUENE #2	111	121	103	106	123	113	126	128	127		118	8.2	TM	
16	TM	3-NITROTOLUENE #2	137	147	123	128	149	137	152	154	154		142	8.2	TM	

Form 7

Second Source Calibration

Lab Name: APPL, Inc.
Case No:
Matrix:

SDG No: 65882
Date Analyzed: 13-Oct-2011, 22:49:00
Instrument: Waldorf
Initial Cal. Date: 10/13/2011
Data File: 1013_0000014.D

		Compound	MEAN	CCRF	%D		%Drift
1	TM	NITROGLYCERIN	138	134	2.8	TM	
2	TM	TETRYL	0.0000	0.0000		TM	
3	TM	2,4,6-TRINITROTOLUENE	0.0000	0.0000		TM	
4	TM	2-AMINO-4,6-DINITROTOLUENE	0.0000	0.0000		TM	
5	TM	4-AMINO-2,6-DINITROTOLUENE	0.0000	0.0000		TM	
6	TM	2,4-DINITROTOLUENE	0.0000	0.0000		TM	
7	TM	2,6-DINITROTOLUENE	0.0000	0.0000		TM	
8	TM	PETN	113	120	6.3	TM	
	Signal #2						
1	TM	HMX	659	642	2.5	TM	
2	TM	RDX	437	423	3.2	TM	
3	TM	1,3,5-TRINITROBENZENE	750	668	11	TM	
4	S	1,2-DINITROBENZENE	326	309	5.2	S	
5	TM	1,3-DINITROBENZENE	721	722	0.16	TM	
6	TM	3,5-DINITROANILINE	586	611	4.3	TM	
7	TM	NITROBENZENE	329	324	1.5	TM	
8	TM	NITROGLYCERIN	0.0000	0.0000		TM	
9	TM	TETRYL	241	205	15	TM	
10	TM	2,4,6-TRINITROTOLUENE	325	285	12	TM	
11	TM	2-AMINO-4,6-DINITROTOLUEN	302	266	12	TM	
12	TM	4-AMINO-2,6-DINITROTOLUEN	239	252	5.4	TM	
13	TM	2,4-DINITROTOLUENE	311	320	3.0	TM	
14	TM	2,6-DINITROTOLUENE	175	163	6.6	TM	
15	TM	2-NITROTOLUENE	120	115	3.8	TM	
16	TM	4-NITROTOLUENE	118	108	8.1	TM	
17	TM	3-NITROTOLUENE	142	143	0.65	TM	
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							
31							

Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix:

SDG No: G5882
Date Analyzed: 14-Nov-2011, 17:07:55
Instrument: Waldorf
Initial Cal. Date: 10/13/2011
Data File: 1114_0000005.D

		Compound	MEAN	CCRF	%D		%Drift
1	TM	NITROGLYCERIN	137	129	5.5	TM	
2	TM	TETRYL	0.0000	0.0000		TM	
3	TM	2,4,6-TRINITROTOLUENE	0.0000	0.0000		TM	
4	TM	2-AMINO-4,6-DINITROTOLUENE	0.0000	0.0000		TM	
5	TM	4-AMINO-2,6-DINITROTOLUENE	0.0000	0.0000		TM	
6	TM	2,4-DINITROTOLUENE	0.0000	0.0000		TM	
7	TM	2,6-DINITROTOLUENE	0.0000	0.0000		TM	
8	TM	**PETN**	111	117	5.8	TM	
	Signal #2						
1	TM	HMX	671	671	0.01	TM	
2	TM	RDX	449	450	0.12	TM	
3	TM	1,3,5-TRINITROBENZENE	775	780	0.69	TM	
4	S	1,2-DINITROBENZENE	348	338	2.8	S	
5	TM	1,3-DINITROBENZENE	747	726	2.8	TM	
6	TM	3,5-DINITROANILINE	573	579	1.1	TM	
7	TM	NITROBENZENE	323	332	2.7	TM	
8	TM	NITROGLYCERIN	0.0000	0.0000		TM	
9	TM	TETRYL	250	257	2.8	TM	
10	TM	2,4,6-TRINITROTOLUENE	335	329	2.0	TM	
11	TM	2-AMINO-4,6-DINITROTOLUEN	310	298	3.8	TM	
12	TM	4-AMINO-2,6-DINITROTOLUEN	245	236	3.8	TM	
13	TM	2,4-DINITROTOLUENE	321	310	3.7	TM	
14	TM	2,6-DINITROTOLUENE	181	173	4.2	TM	
15	TM	2-NITROTOLUENE	116	119	2.7	TM	
16	TM	4-NITROTOLUENE	118	118	0.83	TM	
17	TM	3-NITROTOLUENE	139	143	2.4	TM	
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							
31							

Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix:

SDG No: G5882
Date Analyzed: 15-Nov-2011, 00:54:46
Instrument: Waldorf
Initial Cal. Date: 10/13/2011
Data File: 1114_0000018.D

		Compound	MEAN	CCRF	%D		%Drift
1	TM	NITROGLYCERIN	137	129	5.3	TM	
2	TM	TETRYL	0.0000	0.0000		TM	
3	TM	2,4,6-TRINITROTOLUENE	0.0000	0.0000		TM	
4	TM	2-AMINO-4,6-DINITROTOLUENE	0.0000	0.0000		TM	
5	TM	4-AMINO-2,6-DINITROTOLUENE	0.0000	0.0000		TM	
6	TM	2,4-DINITROTOLUENE	0.0000	0.0000		TM	
7	TM	2,6-DINITROTOLUENE	0.0000	0.0000		TM	
8	TM	**PETN**	111	117	5.6	TM	
	Signal #2						
1	TM	HMX	671	675	0.58	TM	
2	TM	RDX	449	448	0.23	TM	
3	TM	1,3,5-TRINITROBENZENE	775	779	0.57	TM	
4	S	1,2-DINITROBENZENE	348	338	2.9	S	
5	TM	1,3-DINITROBENZENE	747	727	2.7	TM	
6	TM	3,5-DINITROANILINE	573	582	1.5	TM	
7	TM	NITROBENZENE	323	327	1.3	TM	
8	TM	NITROGLYCERIN	0.0000	0.0000		TM	
9	TM	TETRYL	250	258	3.2	TM	
10	TM	2,4,6-TRINITROTOLUENE	335	330	1.6	TM	
11	TM	2-AMINO-4,6-DINITROTOLUEN	310	300	3.3	TM	
12	TM	4-AMINO-2,6-DINITROTOLUEN	245	238	3.1	TM	
13	TM	2,4-DINITROTOLUENE	321	310	3.4	TM	
14	TM	2,6-DINITROTOLUENE	181	174	3.8	TM	
15	TM	2-NITROTOLUENE	116	117	0.97	TM	
16	TM	4-NITROTOLUENE	118	117	0.07	TM	
17	TM	3-NITROTOLUENE	139	140	0.95	TM	
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							
31							

Injection Log

Directory: H:\WALDORF\CHEM32\1\DATA\111013

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1	0	1013_0000003.D		8830B_CB 0.005 PPM 10/13/11		10/13/2011 15:57
2	0	1013_0000004.D		8830B_CB 0.01 PPM 10/13/11		10/13/2011 16:34
3	0	1013_0000005.D		8830B_CB 0.02 PPM 10/13/11		10/13/2011 17:12
4	0	1013_0000006.D		8830B_CB 0.05 PPM 10/13/11		10/13/2011 17:49
5	0	1013_0000007.D		8830B_CB 0.1 PPM 10/13/11		10/13/2011 18:26
6	0	1013_0000008.D		8830B_CB 0.2 PPM 10/13/11		10/13/2011 19:04
7	0	1013_0000009.D		8830B_CB 0.5 PPM 10/13/11		10/13/2011 19:41
8	0	1013_0000010.D		8830B_CB 1.0 PPM 10/13/11		10/13/2011 20:19
9	0	1013_0000011.D		8830B_MX-A 2.0 PPM 10/13/11		10/13/2011 20:56
10	0	1013_0000012.D		8830B_MX-B 2.0 PPM 10/13/11		10/13/2011 21:34
11	0	1013_0000014.D		8830B_SS 1.0 PPM 10/13/11		10/13/2011 22:49
12	0	1114_0000005.D		8330_CCV 1.0 PPM 11/14/11		11/14/2011 17:07
13	0	1114_0000006.D	0.016	111111WLCS1A 0.016 DF 11/11/11	water	11/14/2011 17:35
14	0	1114_0000011.D	0.016	111111WBLK1A 0.016 DF 1/11/11	water	11/14/2011 20:32
15	0	1114_0000012.D	0.016	AY47774W01 0.016 DF 1/11/11	water	11/14/2011 21:10
16	0	1114_0000018.D		8330_CCV 1.0 PPM 11/14/11		11/15/2011 00:54

_MWE3535

Organic Extraction Worksheet

Method	EPA Method 3535A	Extraction Set	111111A	Extraction Method	MWE3535	Units	mL

Spiked ID 1	8330 100ppm STK 10-26-11 exp 04-26-12		Surrogate ID 1	8330_W_Surrogate 5 ppm 10-31-11 exp 12-31-11	
Spiked ID 2	Nitroglycerin 100ppm STK 10-26-11 exp 04-26-12		Surrogate ID 2		
Spiked ID 3	PETN 100ppm STK 10-24-11 exp 04-24-12		Surrogate ID 3		
Spiked ID 4			Surrogate ID 4		
Spiked ID 5	Picric_Acid 0.2ppm 11-10-11		Surrogate ID 5		
Spiked ID 6			Sufficient Vol for Matrix QC:	yes	
Spiked ID 7			Ext. Start Time:		
Spiked ID 8			Ext. End Time:		
			GC Requires Extract By:	11/11/11 17:00	

pH1			Water Bath Temp Criteria	
pH2				
pH3				

Spiked By: KY **Date** 11/11/2011 **Witnessed By:** JL **Date** 11/11/2011

	Sample	Sample Container	Spike Amount	Spike ID	Surrogate Amount	Surrogate ID	Extract Amount	Final Volume	pH	Extract Date/Time	Comments
1	111111A Blk				0.1	1 equip	500	2	NA	11/11/11 10:30	
2	111111A LCS-1		0.040	1-3	NA	NA equip	500	2	NA	11/11/11 10:30	
3	AY47774	AY47774W01			0.1	1 equip	500	2	NA	11/11/11 10:30	65882 -- Amber Liter
4	AY47927 LOD	AY47927W01	0.3	5	0.1	1 equip	500	2	2	11/11/11 10:30	65902 Picric Acid LOD -- Other
5	AY47927 LOQ	AY47927W01	0.5	5	0.1	1 equip	500	2	2	11/11/11 10:30	65902 Picric Acid LOQ -- Other
6	AY49289 MS-1	AY49289W04	0.040	1-3	NA	NA equip	500	2	NA	11/11/11 10:30	66105 -- Amber Liter
7	AY49289 MSD-1	AY49289W04	0.040	1-3	NA	NA equip	500	2	NA	11/11/11 10:30	66105 -- Amber Liter
8	AY50348	AY50348W02			0.1	1 equip	500	2	NA	11/11/11 10:30	66241 -- Amber Liter
9	AY50349	AY50349W02			0.1	1 equip	500	2	NA	11/11/11 10:30	66241 -- Amber Liter
10	AY50350	AY50350W01			0.1	1 equip	500	2	NA	11/11/11 10:30	66241 -- Amber Liter
11	AY50351	AY50351W01			0.1	1 equip	500	2	NA	11/11/11 10:30	66241 -- Amber Liter
12	AY50352	AY50352W01			0.1	1 equip	500	2	NA	11/11/11 10:30	66241 -- Amber Liter
13	AY50353 MS-1	AY50353W03	0.040	1/3	NA	NA equip	500	2	NA	11/11/11 10:30	66241 -- Amber Liter
14	AY50353 MSD-1	AY50353W03	0.040	1/3	NA	NA equip	500	2	NA	11/11/11 10:30	66241 -- Amber Liter
15	AY50353	AY50353W04			0.1	1 equip	500	2	NA	11/11/11 10:30	66241 -- Amber Liter
16	AY50354	AY50354W01			0.1	1 equip	500	2	NA	11/11/11 10:30	66241 -- Amber Liter

Solvent and Lot#	
Acetonitrile	DE551
Cartridge Sorbent Lot	S311-16
Serial No	108232

Extraction COC Transfer	
Extraction lab employee Initials	KY
GC analyst's initials	HSM
Date	11-11-11
Time	17:00
Refrigerator	Hobart/Brown

	Technician's Initials
Scanned By	KY
Sample Preparation	KY
Extraction	KY CFM
Concentration	----------

Modified	11/11/2011 9:55:30 AM

Reviewed By: [signature] **Date** 11-11-11

Raw Sample Data

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111114\
Data File : 1114_0000012.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 14-Nov-2011, 21:10:06
Operator : mp
Sample : AY47774W01 0.016 DF 1/11/11
Misc : water
ALS Vial : 8198 Sample Multiplier: 0.016

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Nov 15 16:25:39 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111114\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Fri Oct 14 10:08:44 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppb	ppb	
	System Monitoring Compounds							
4)	S 1,2-DINIT...	0.000	3.719	0	738839	N.D.	0.850 #	
	Spiked Amount 1.000			Recovery	=	0.00%	85.00%	
	Target Compounds							
1)	TM HMX	0.000	0.000	0	0	N.D.	N.D.	
2)	TM RDX	0.000	0.000	0	0	N.D.	N.D.	
3)	TM 1,3,5-TRI...	0.000	0.000	0	0	N.D.	N.D.	
5)	TM 1,3-DINIT...	0.000	0.000	0	0	N.D.	N.D.	
6)	TM 3,5-DINIT...	0.000	0.000	0	0	N.D.	N.D.	
7)	TM NITROBENZENE	0.000	0.000	0	0	N.D.	N.D. dNT	
8)	TM NITROGLYC...	0.000	6.019	0	60179	N.D. d	NoCal dNT	
9)	TM TETRYL	6.884	0.000	17983	0	NoCal	N.D.	
10)	TM 2,4,6-TRI...	0.000	0.000	0	0	N.D.	N.D.	
11)	TM 2-AMINO-4...	7.476	0.000	33903	0	NoCal	N.D.	
12)	TM 4-AMINO-2...	7.809	0.000	27265	0	NoCal	N.D.	
13)	TM 2,4-DINIT...	8.987	0.000	2571	0	NoCal	N.D.	
14)	TM 2,6-DINIT...	9.272	0.000	11550	0	NoCal	N.D.	
15)	TM 2-NITROTO...	0.000	0.000	0	0	N.D.	N.D.	
16)	TM 4-NITROTO...	0.000	0.000	0	0	N.D.	N.D. dNT	
17)	TM 3-NITROTO...	0.000	0.000	0	0	N.D.	N.D. d	
18)	TM PETN	0.000	0.000	0	0	N.D. d	N.D.	

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

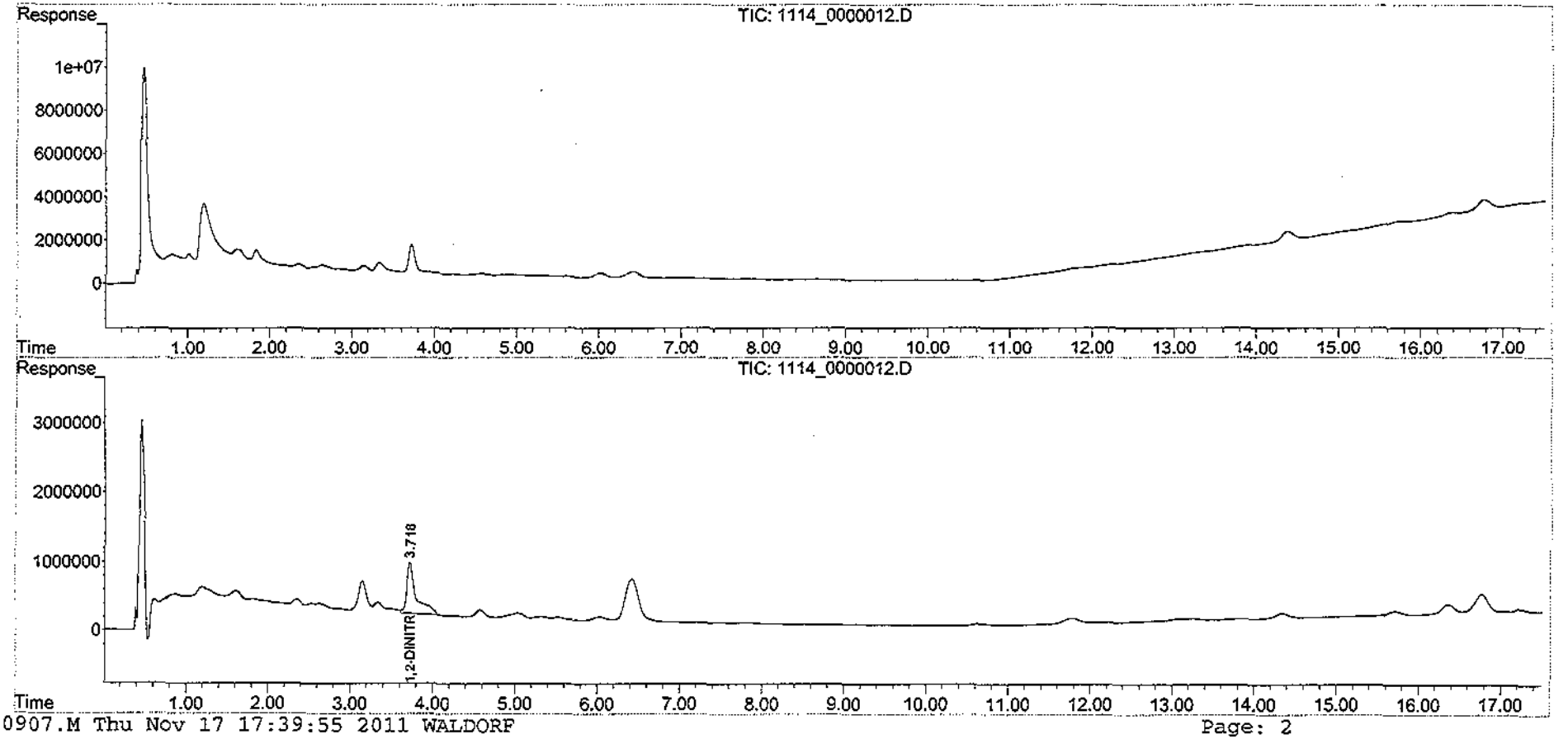
HM
11-17-11

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111114\
Data File : 1114_0000012.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 14-Nov-2011, 21:10:06
Operator : mp
Sample : AY47774W01 0.016 DF 1/11/11
Misc : water
ALS Vial : 8198 Sample Multiplier: 0.016

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Nov 15 16:25:39 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111114\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Fri Oct 14 10:08:44 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111114\
Data File : 1114_0000011.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 14-Nov-2011, 20:32:40
Operator : mp
Sample : 111111WBLK1A 0.016 DF 1/11/11
Misc : water
ALS Vial : 8197 Sample Multiplier: 0.016

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Nov 15 16:22:18 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111114\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Fri Oct 14 10:08:44 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppb	ppb	
	System Monitoring Compounds							
4) S	1,2-DINIT...	0.000	3.715	0	729933	N.D.	0.839 #	
	Spiked Amount 1.000			Recovery =		0.00%	83.90%	
	Target Compounds							
1) TM	HMX	0.000	0.000	0	0	N.D.	N.D.	
2) TM	RDX	0.000	0.000	0	0	N.D.	N.D.	
3) TM	1,3,5-TRI...	0.000	0.000	0	0	N.D.	N.D.	
5) TM	1,3-DINIT...	0.000	0.000	0	0	N.D.	N.D.	
6) TM	3,5-DINIT...	0.000	0.000	0	0	N.D.	N.D.	
7) TM	NITROBENZENE	0.000	0.000	0	0	N.D.	N.D.	
8) TM	NITROGLYC...	0.000	0.000	0	0	N.D. d	N.D. 43.5/N	HM
9) TM	TETRYL	6.846	0.000	26694	0	NoCal	N.D.	IMS-11
10) TM	2,4,6-TRI...	7.211	0.000	12476	0	NoCal	N.D.	
11) TM	2-AMINO-4...	7.466	0.000	14839	0	NoCal	N.D.	
12) TM	4-AMINO-2...	7.922	0.000	9792	0	NoCal	N.D.	
13) TM	2,4-DINIT...	8.981	0.000	20651	0	NoCal	N.D.	
14) TM	2,6-DINIT...	9.325	0.000	10700	0	NoCal	N.D.	
15) TM	2-NITROTO...	0.000	0.000	0	0	N.D.	N.D.	
16) TM	4-NITROTO...	0.000	0.000	0	0	N.D.	N.D.	
17) TM	3-NITROTO...	0.000	0.000	0	0	N.D.	N.D.	
18) TM	PETN	0.000	0.000	0	0	N.D.	N.D.	

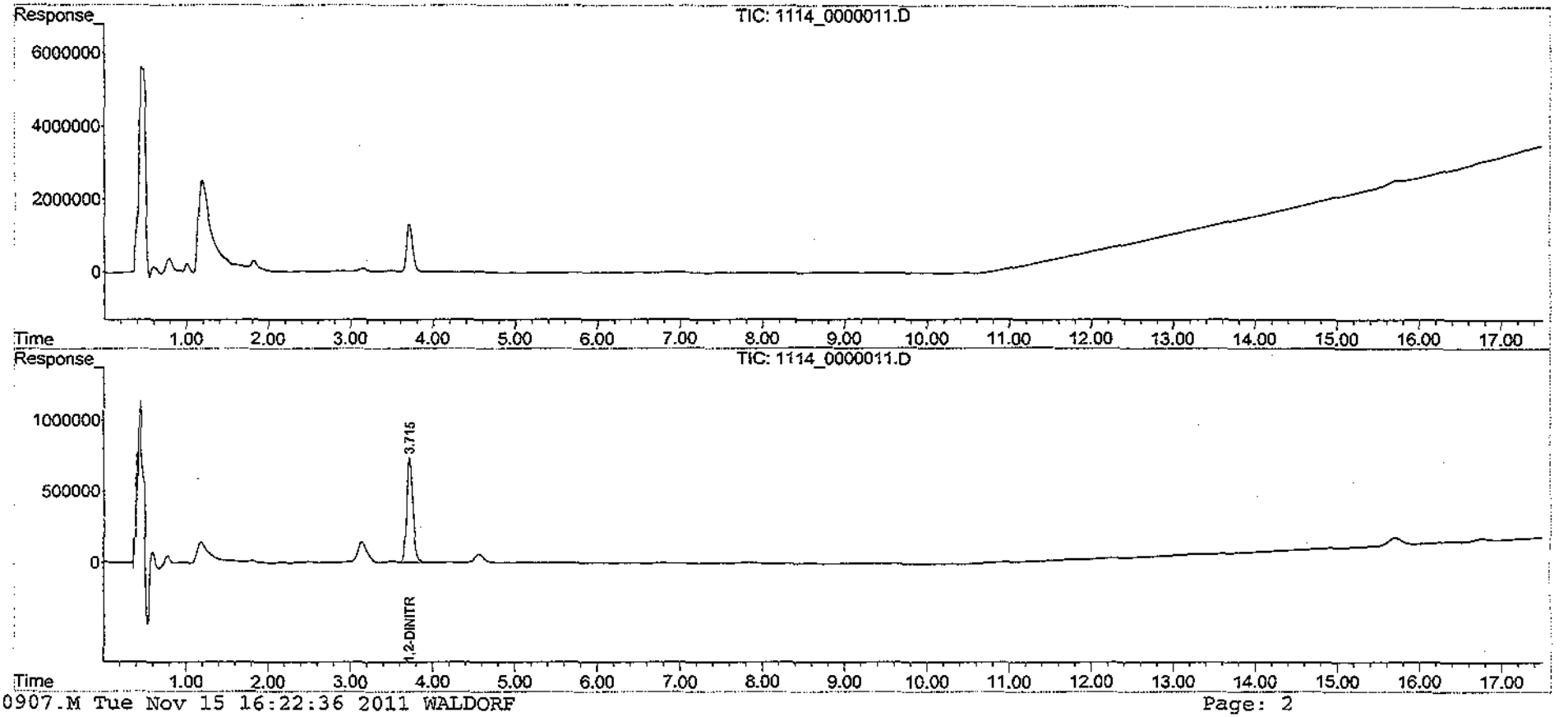
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111114\
Data File : 1114_0000011.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 14-Nov-2011, 20:32:40
Operator : mp
Sample : 111111WBLK1A 0.016 DF 1/11/11
Misc : water
ALS Vial : 8197 Sample Multiplier: 0.016

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Nov 15 16:22:18 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111114\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Fri Oct 14 10:08:44 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111114\
Data File : 1114_0000006.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 14-Nov-2011, 17:35:23
Operator : mp
Sample : 111111WLCS1A 0.016 DF 11/11/11
Misc : water
ALS Vial : 8192 Sample Multiplier: 0.016

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Nov 15 16:19:32 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111114\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Fri Oct 14 10:08:44 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppb	ppb	
	System Monitoring Compounds							
4)	S 1,2-DINIT...	0.000	3.725	0	5818445	N.D.	6.690	#
	Spiked Amount 1.000			Recovery	=	0.00%	669.00%	
	Target Compounds							
1)	TM HMX	0.000	0.963	0	13010362	N.D.	7.760	#
2)	TM RDX	0.000	1.819	→0	8020926	N.D.	7.146	#
3)	TM 1,3,5-TRI...	0.000	2.937	0	14764137	N.D.	7.621	#
5)	TM 1,3-DINIT...	0.000	3.877	0	14291081	N.D.	7.650	#
6)	TM 3,5-DINIT...	0.000	0.000	0	0	N.D.	N.D.	
7)	TM NITROBENZENE	0.000	5.220	0	6586605	N.D.	8.153	#
8)	TM NITROGLYC...	6.269	6.257	2658416	69003	7.782	NoCal	#
9)	TM TETRYL	6.780	6.779	5807822	3550484	NoCal	5.682	#
10)	TM 2,4,6-TRI...	7.203	7.201	7655449	5949520	NoCal	7.097	#
11)	TM 2-AMINO-4...	7.559	7.558	8230564	5606640	NoCal	7.240	#
12)	TM 4-AMINO-2...	7.861	7.861	8021808	4440795	NoCal	7.244	#
13)	TM 2,4-DINIT...	8.993	8.993	4428839	6149991	NoCal	7.653	#
14)	TM 2,6-DINIT...	9.349	9.349	4764481	3464395	NoCal	7.674	#
15)	TM 2-NITROTO...	0.000	12.658	0	2412654	N.D.	8.297	#
16)	TM 4-NITROTO...	0.000	13.266	0	2399042	N.D.	8.166	#
17)	TM 3-NITROTO...	0.000	14.132	0	2895335	N.D.	8.323	#
18)	TM PETN	16.293	0.000	2073162	0	7.487m	N.D.	#

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

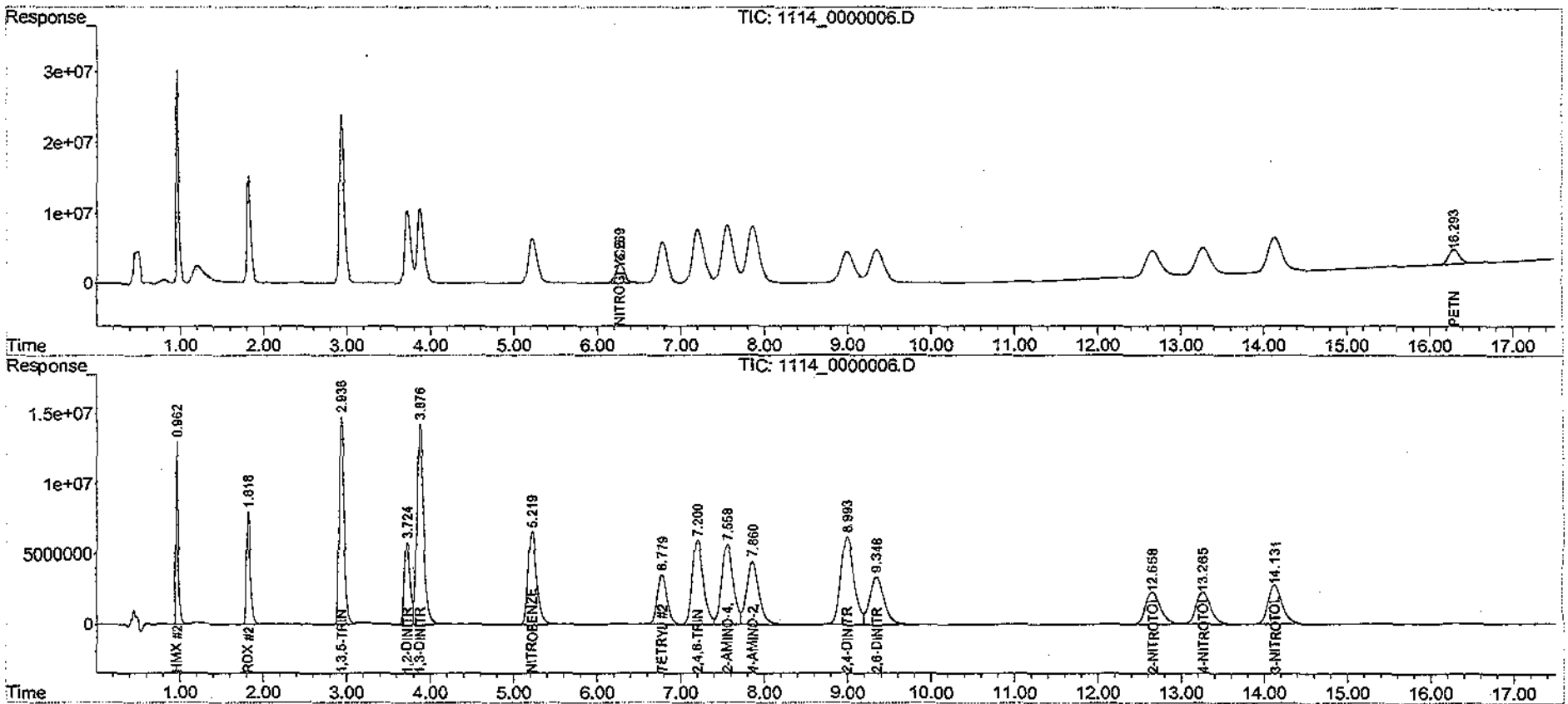
$$\text{Algo}\surd = \frac{(8020926)(2)(4)}{(500)(40)(437)} = 7.342$$ HM 11-17-11

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111114\
Data File : 1114_0000006.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 14-Nov-2011, 17:35:23
Operator : mp
Sample : 111111WLCS1A 0.016 DF 11/11/11
Misc : water
ALS Vial : 8192 Sample Multiplier: 0.016

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Nov 15 16:19:32 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111114\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Fri Oct 14 10:08:44 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

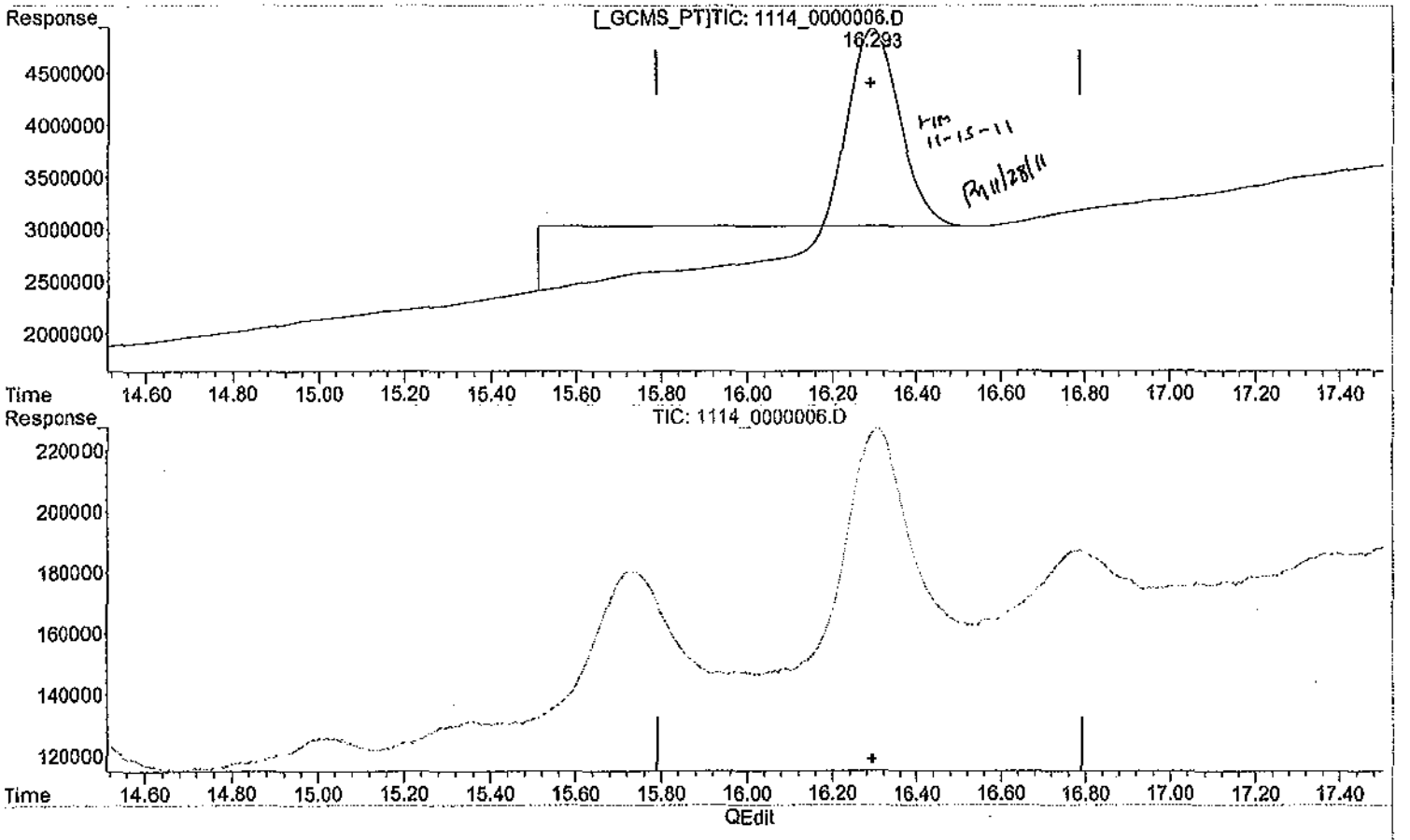


Quantitation Report (Qedit)

Data Path : H:\WALDORF\CHEM32\1\DATA\111114\
Data File : 1114_0000006.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 14-Nov-2011, 17:35:23
Operator : mp
Sample : 111111WLCS1A 0.016 DF 11/11/11
Misc : water
ALS Vial : 8192 Sample Multiplier: 0.016

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Nov 15 15:22:21 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111114\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Fri Oct 14 10:08:44 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(18) PETN (TM)

16.294min 6.858 ppb

response 1898873

(18) PETN #2 (TM)

0.000min 0.000 ppb

response 0

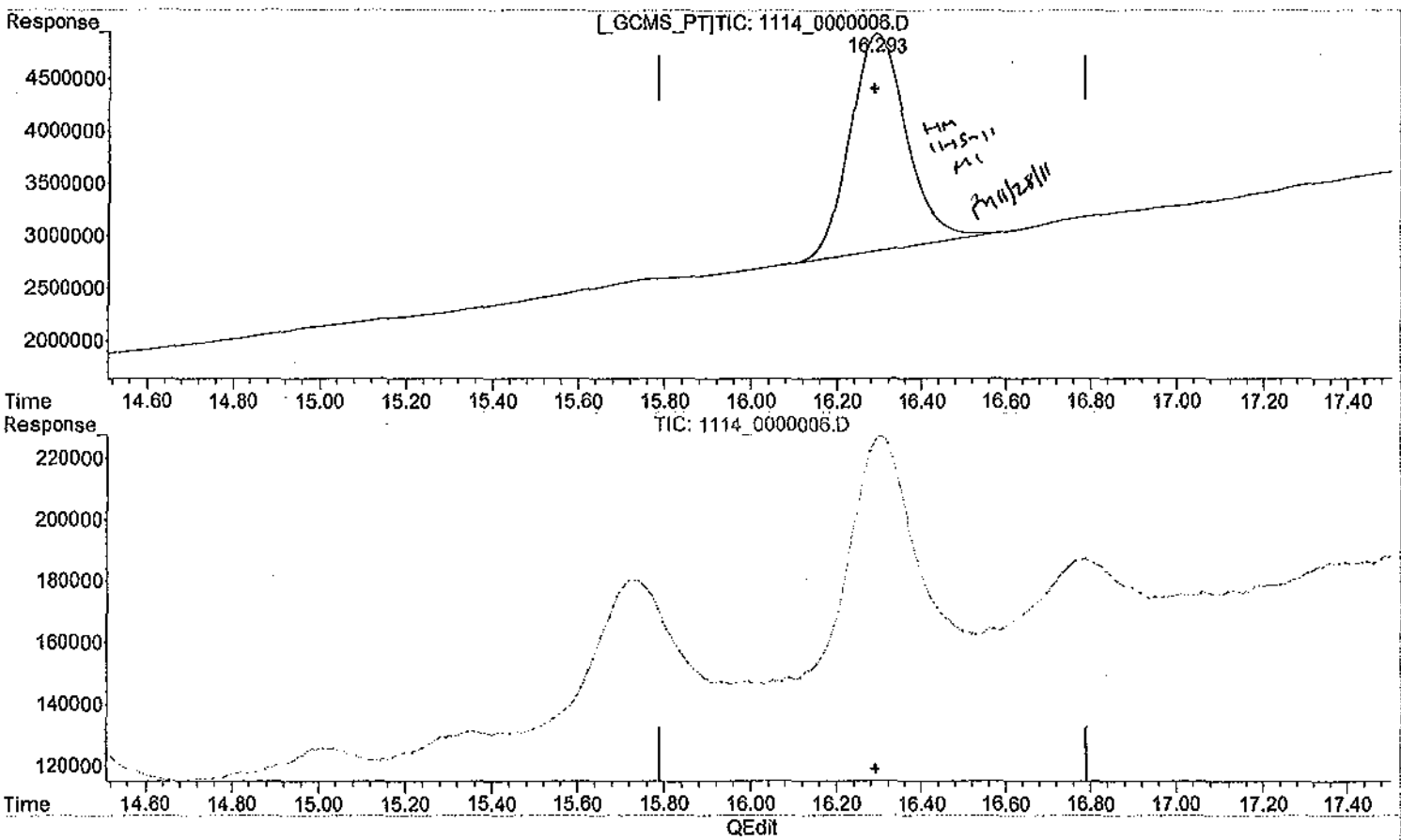
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\WALDORF\CHEM32\1\DATA\111114\
Data File : 1114_0000006.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 14-Nov-2011, 17:35:23
Operator : mp
Sample : 111111WLCS1A 0.016 DF 11/11/11
Misc : water
ALS Vial : 8192 Sample Multiplier: 0.016

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Nov 15 15:22:21 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111114\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Fri Oct 14 10:08:44 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(18) PETN (TM)

16.293min 7.487 ppb m

response 2073162

(18) PETN #2 (TM)

0.000min 0.000 ppb

response 0

(+) = Expected Retention Time

Calibration Data

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000003.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 15:57:10
Operator : mp
Sample : 8830B_CB 0.005 PPM 10/13/11
Misc :
ALS Vial : 8448 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:41:11 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppb	ppb
	System Monitoring Compounds						
4)	S 1,2-DINIT...	0.000	3.708	0	62925	N.D.	4.522 #
	Spiked Amount 62.500			Recovery	=	0.00%	7.24%
	Target Compounds						
1)	TM HMX	0.000	0.952	0	120168	N.D.	4.480m#
2)	TM RDX	0.000	1.807	0	81578	N.D.	4.542 #
3)	TM 1,3,5-TRI...	0.000	2.918	0	140621	N.D.	4.537 #
5)	TM 1,3-DINIT...	0.000	3.858	0	134292	N.D.	4.493 #
6)	TM 3,5-DINIT...	0.000	4.151	0	104706	N.D.	4.568 #
7)	TM NITROBENZENE	0.000	5.206	0	60321	N.D.	4.667 #
8)	TM NITROGLYC...	6.231	0.000	28922	0	5.291	N.D. #
9)	TM TETRYL	6.745	6.752	75015	45045	NoCal	4.506 #
10)	TM 2,4,6-TRI...	7.150	7.160	80118	61946	NoCal	4.619 #
11)	TM 2-AMINO-4...	7.537	7.540	95298	56805	NoCal	4.585 #
12)	TM 4-AMINO-2...	7.851	7.846	88758	45473	NoCal	4.636 #
13)	TM 2,4-DINIT...	8.967	8.955	49305	57573	NoCal	4.478 #
14)	TM 2,6-DINIT...	9.312	9.310	51056	33820	NoCal	4.682 #
15)	TM 2-NITROTO...	0.000	12.635	0	23381	N.D.	5.025 #
16)	TM 4-NITROTO...	0.000	13.243	0	22218	N.D.	4.726 #
17)	TM 3-NITROTO...	0.000	14.112	0	27318	N.D.	4.908 #
18)	TM PETN	0.000	0.000	0	0	N.D. d	N.D.

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

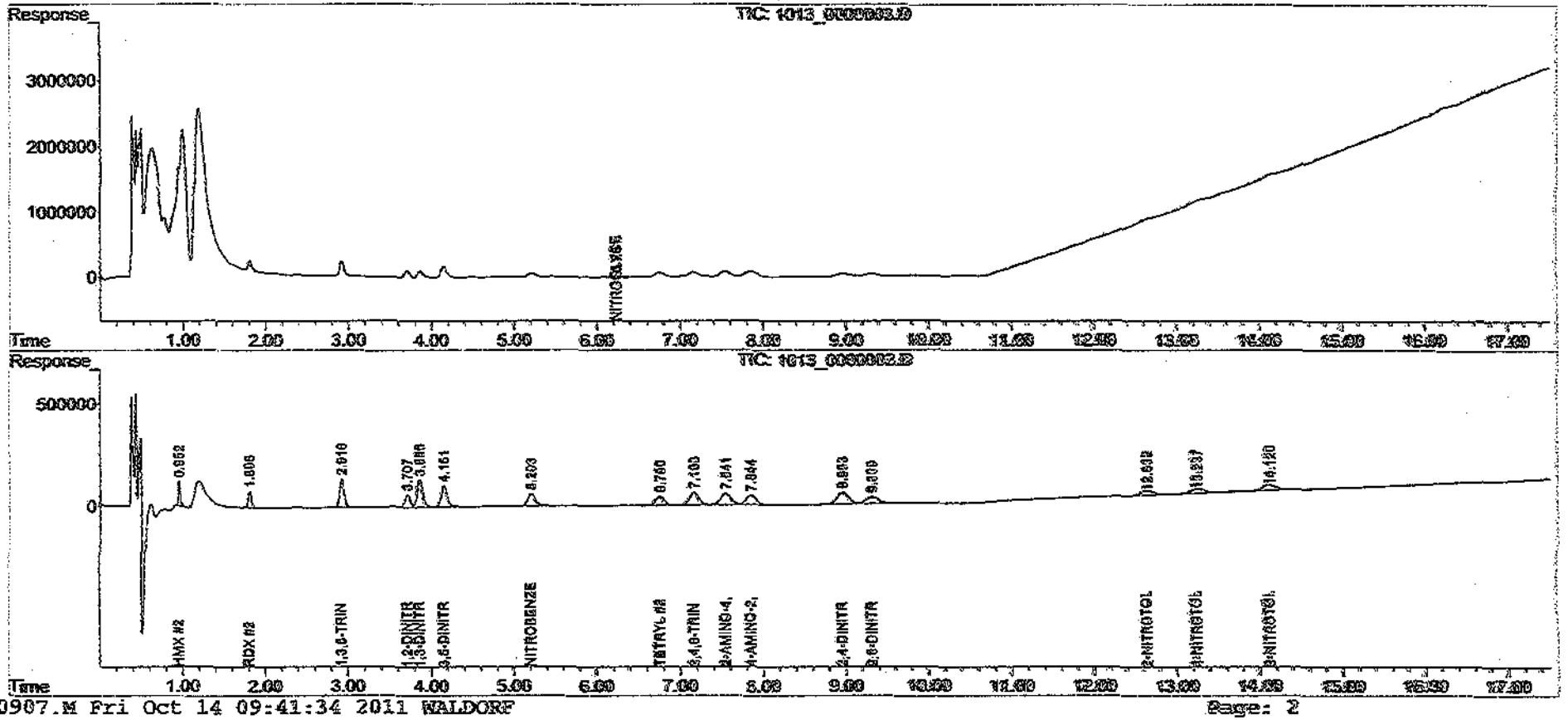
Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000003.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 15:57:10
Operator : mp
Sample : 8830B_CB 0.005 PPM 10/13/11
Misc :
ALS Vial : 8448 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:41:11 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

40

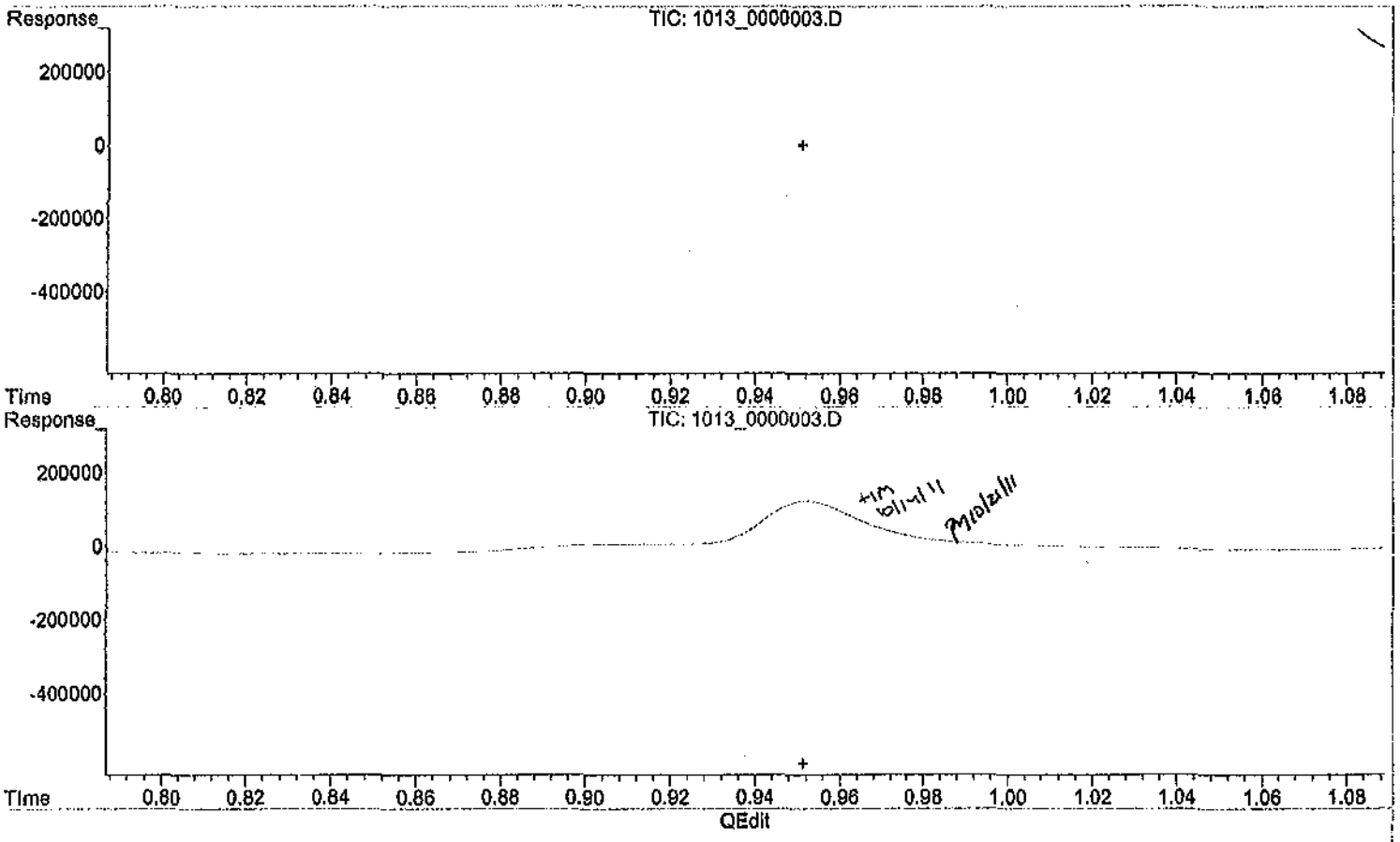


Quantitation Report (Qedit)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000003.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 15:57:10
Operator : mp
Sample : 8830B_CB 0.005 PPM 10/13/11
Misc :
ALS Vial : 8448 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:38:57 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(1) HMX (TM)

0.000min 0.000 ppb

response 0

(1) HMX #2 (TM)

0.000min 0.000 ppb

response 0

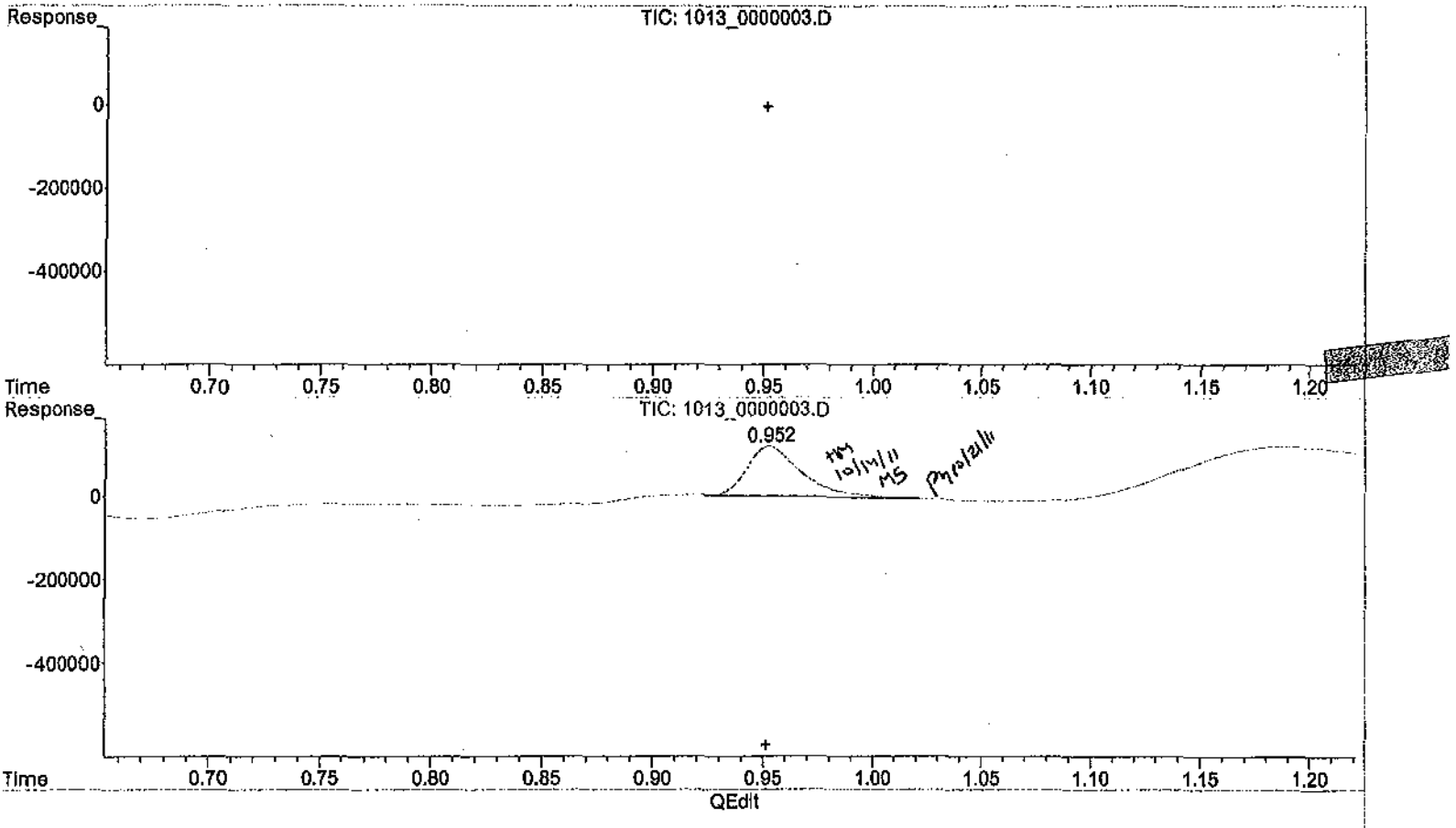
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000003.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 15:57:10
Operator : mp
Sample : 8830B_CB 0.005 PPM 10/13/11
Misc :
ALS Vial : 8448 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:38:57 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(1) HMX (TM)

0.000min 0.000 ppb

response 0

(1) HMX #2 (TM)

0.952min 4.480 ppb m

response 120168

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000004.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 16:34:38
Operator : mp
Sample : 8830B_CB 0.01 PPM 10/13/11
Misc :
ALS Vial : 8449 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:38:59 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppb	ppb	
	System Monitoring Compounds							
4)	S 1,2-DINIT...	0.000	3.710	0	136498	N.D.	9.809	#
	Spiked Amount 62.500			Recovery	=	0.00%	15.69%	
	Target Compounds							
1)	TM HMX	0.000	0.953	0	270661	N.D.	10.090	#
2)	TM RDX	0.000	1.807	0	183456	N.D.	10.215	#
3)	TM 1,3,5-TRI...	0.000	2.919	0	312870	N.D.	10.094	#
5)	TM 1,3-DINIT...	0.000	3.859	0	302414	N.D.	10.118	#
6)	TM 3,5-DINIT...	0.000	4.152	0	233670	N.D.	10.195	#
7)	TM NITROBENZENE	0.000	5.209	0	137283	N.D.	10.621	#
8)	TM NITROGLYC...	6.223	0.000	54980	0	10.058	N.D.	#
9)	TM TETRYL	6.758	6.755	162189	97986	NoCal	9.802	#
10)	TM 2,4,6-TRI...	7.164	7.163	171963	135345	NoCal	10.091	#
11)	TM 2-AMINO-4...	7.544	7.543	194717	124072	NoCal	10.014	#
12)	TM 4-AMINO-2...	7.853	7.852	176976	98871	NoCal	10.081	#
13)	TM 2,4-DINIT...	8.953	8.961	98693	129453	NoCal	10.068	#
14)	TM 2,6-DINIT...	9.309	9.315	105835	72294	NoCal	10.008	#
15)	TM 2-NITROTO...	0.000	12.635	0	49534	N.D.	10.646	#
16)	TM 4-NITROTO...	0.000	13.247	0	48376	N.D.	10.291	#
17)	TM 3-NITROTO...	0.000	14.111	0	58649	N.D.	10.537	#
18)	TM PETN	0.000	0.000	0	0	N.D.	N.D.	

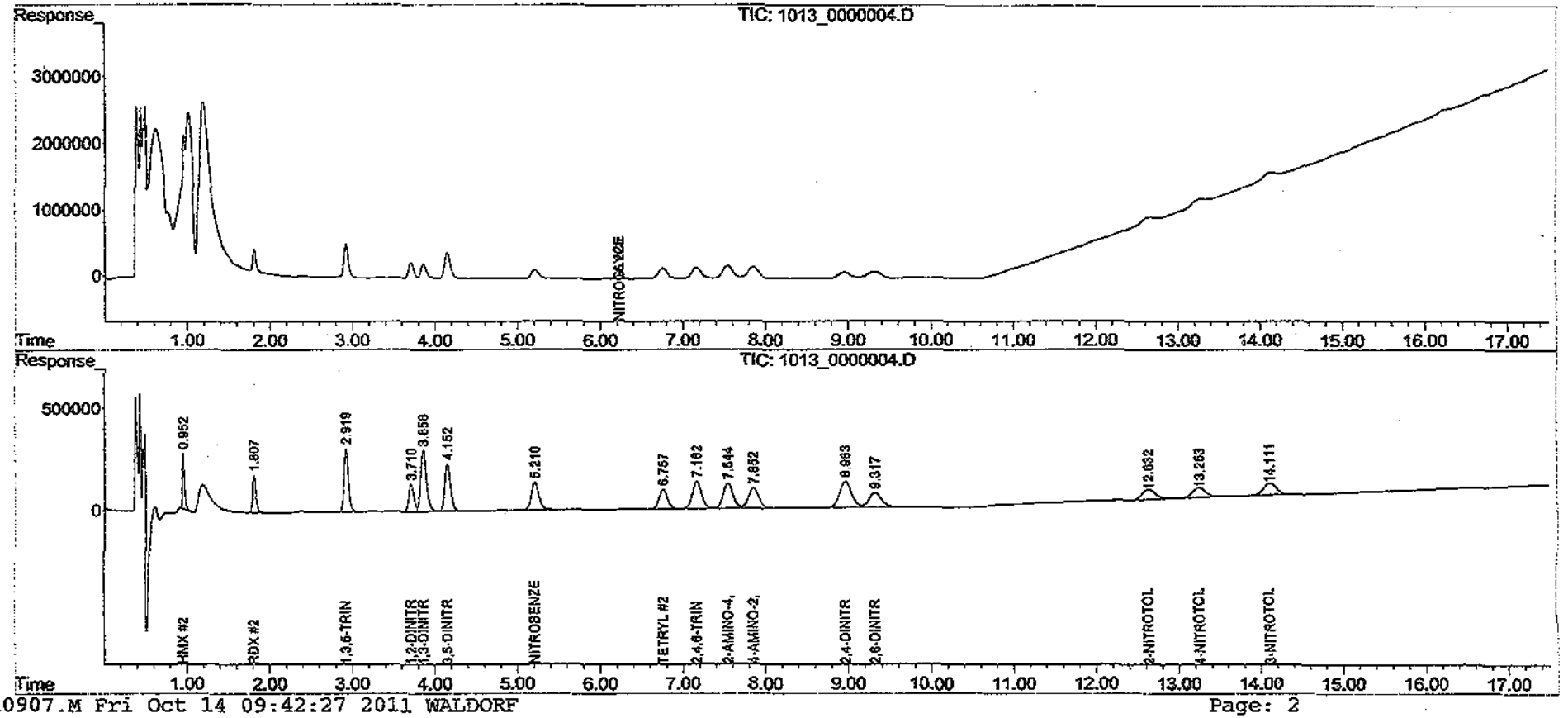
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000004.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 16:34:38
Operator : mp
Sample : 8830B_CB 0.01 PPM 10/13/11
Misc :
ALS Vial : 8449 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:38:59 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000005.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 17:12:05
Operator : mp
Sample : 8830B_CB 0.02 PPM 10/13/11
Misc :
ALS Vial : 8450 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:39:01 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppb	ppb	
	System Monitoring Compounds							
4)	S 1,2-DINIT...	0.000	3.707	0	226760	N.D.	16.296	#
	Spiked Amount 62.500			Recovery	=	0.00%	26.07%	
	Target Compounds							
1)	TM HMX	0.000	0.953	0	459683	N.D.	17.137	#
2)	TM RDX	0.000	1.806	0	301062	N.D.	16.764	#
3)	TM 1,3,5-TRI...	0.000	2.917	0	518154	N.D.	16.716	#
5)	TM 1,3-DINIT...	0.000	3.857	0	500498	N.D.	16.745	#
6)	TM 3,5-DINIT...	0.000	4.149	0	436976	N.D.	19.065	#
7)	TM NITROBENZENE	0.000	5.203	0	240728	N.D.	18.624	#
8)	TM NITROGLYC...	6.224	0.000	117884	0	21.567	N.D.	#
9)	TM TETRYL	6.752	6.750	278279	164884	NoCal	16.493	#
10)	TM 2,4,6-TRI...	7.160	7.158	290893	224816	NoCal	16.762	#
11)	TM 2-AMINO-4...	7.535	7.537	315950	208632	NoCal	16.839	#
12)	TM 4-AMINO-2...	7.845	7.846	309703	165218	NoCal	16.845	#
13)	TM 2,4-DINIT...	8.955	8.953	171302	216083	NoCal	16.806	#
14)	TM 2,6-DINIT...	9.308	9.309	187240	122050	NoCal	16.897	#
15)	TM 2-NITROTO...	0.000	12.626	0	82933	N.D.	17.825	#
16)	TM 4-NITROTO...	0.000	13.240	0	82244	N.D.	17.496	#
17)	TM 3-NITROTO...	0.000	14.102	0	98247	N.D.	17.651	#
18)	TM PETN	16.231	0.000	74476	0	16.811	N.D.	#

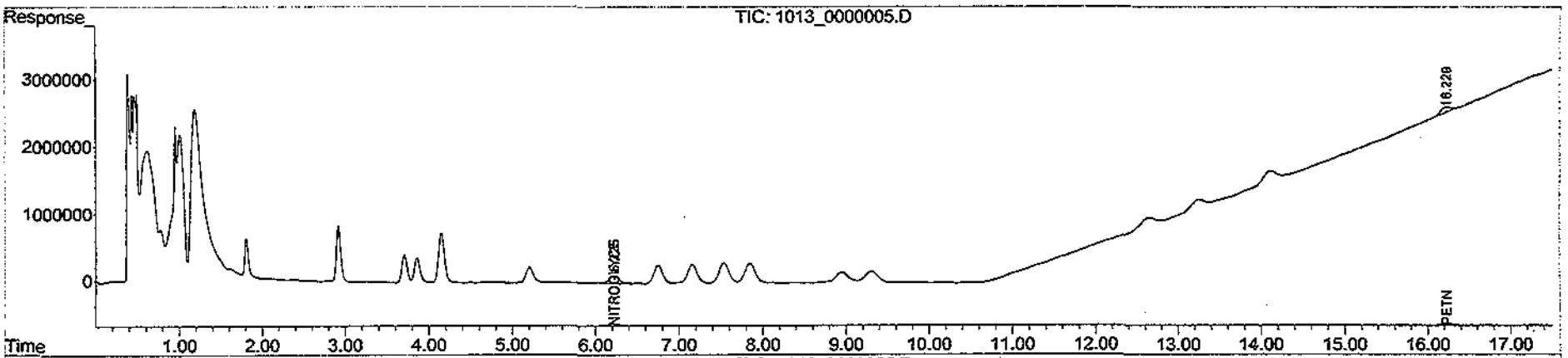
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

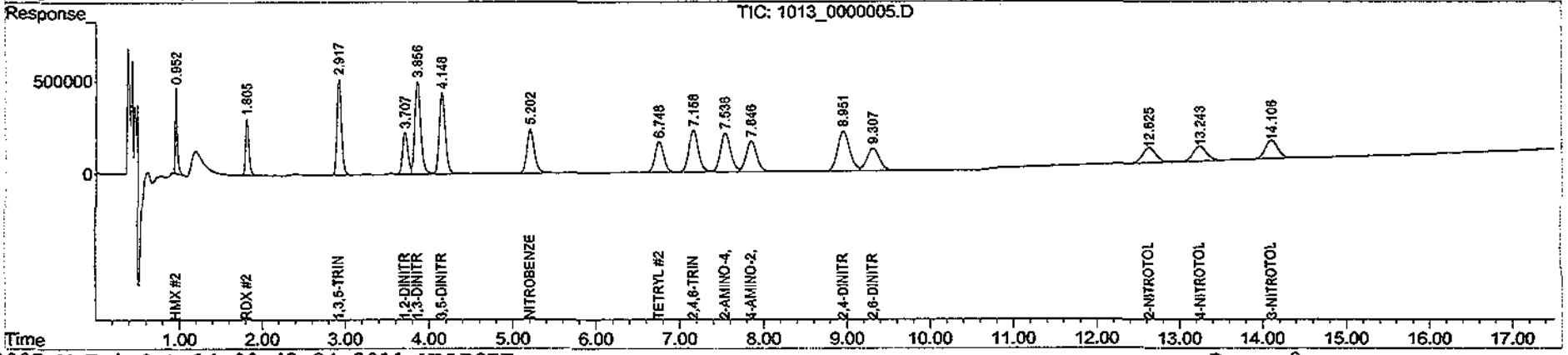
Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000005.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 17:12:05
Operator : mp
Sample : 8830B_CB 0.02 PPM 10/13/11
Misc :
ALS Vial : 8450 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:39:01 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron





Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000006.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 17:49:31
Operator : mp
Sample : 8330B_CB 0.05 PPM 10/13/11
Misc :
ALS Vial : 8451 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:39:03 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppb	ppb	
	System Monitoring Compounds							
4)	S 1,2-DINIT...	0.000	3.705	0	588248	N.D.	42.274	#
	Spiked Amount 62.500			Recovery =		0.00%	67.64%	
	Target Compounds							
1)	TM HMX	0.000	0.952	0	1227958	N.D.	45.777	#
2)	TM RDX	0.000	1.805	0	802162	N.D.	44.666	#
3)	TM 1,3,5-TRI...	0.000	2.915	0	1374225	N.D.	44.335	#
5)	TM 1,3-DINIT...	0.000	3.855	0	1301267	N.D.	43.535	#
6)	TM 3,5-DINIT...	0.000	4.147	0	1062050	N.D.	46.337	#
7)	TM NITROBENZENE	0.000	5.203	0	586622	N.D.	45.385	#
8)	TM NITROGLYC...	6.224	0.000	237705	0	43.488	N.D.	#
9)	TM TETRYL	6.749	6.749	728481	439849	NoCal	43.998	#
10)	TM 2,4,6-TRI...	7.157	7.157	757832	596170	NoCal	44.449	#
11)	TM 2-AMINO-4...	7.536	7.536	819645	552851	NoCal	44.622	#
12)	TM 4-AMINO-2...	7.844	7.845	794093	439844	NoCal	44.845	#
13)	TM 2,4-DINIT...	8.951	8.952	412927	564281	NoCal	43.887	#
14)	TM 2,6-DINIT...	9.309	9.309	447984	316346	NoCal	43.795	#
15)	TM 2-NITROTO...	0.000	12.625	0	215429	N.D.	46.302	#
16)	TM 4-NITROTO...	0.000	13.236	0	211198	N.D.	44.929	#
17)	TM 3-NITROTO...	0.000	14.100	0	255405	N.D.	45.887	#
18)	TM PETN	16.221	0.000	193389	0	43.653	N.D.	#

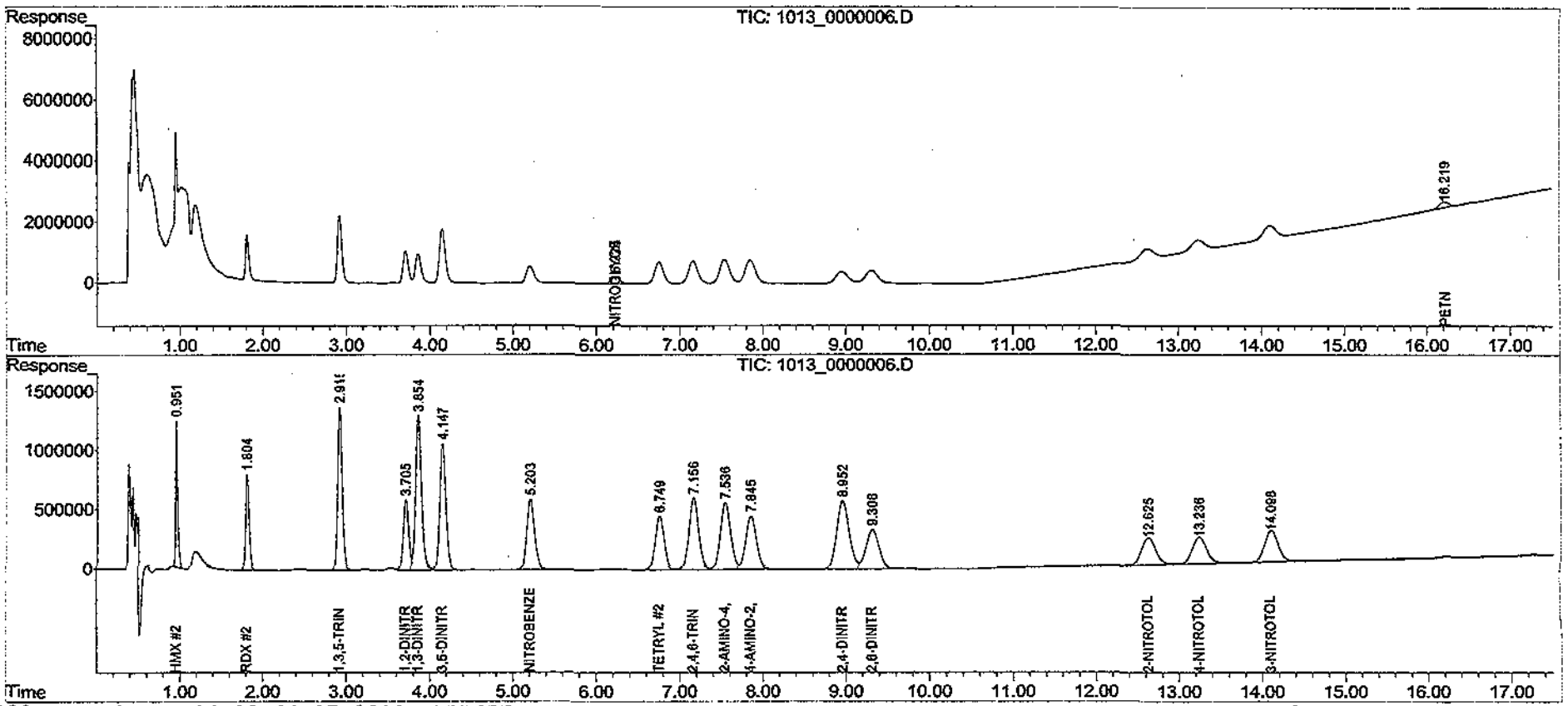
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000006.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 17:49:31
Operator : mp
Sample : 8830B_CB 0.05 PPM 10/13/11
Misc :
ALS Vial : 8451 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:39:03 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000007.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 18:26:57
Operator : mp
Sample : 8830B_CB 0.1 PPM 10/13/11
Misc :
ALS Vial : 8452 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:39:05 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppb	ppb	
	System Monitoring Compounds							
4)	S 1,2-DINIT...	0.000	3.703	0	1354221	N.D.	97.320	#
	Spiked Amount 62.500			Recovery	=	0.00%	155.71%	
	Target Compounds							
1)	TM HMX	0.000	0.951	0	2818294	N.D.	105.063	#
2)	TM RDX	0.000	1.804	0	1847067	N.D.	102.848	#
3)	TM 1,3,5-TRI...	0.000	2.914	0	3156895	N.D.	101.846	#
5)	TM 1,3-DINIT...	0.000	3.853	0	3026896	N.D.	101.268	#
6)	TM 3,5-DINIT...	0.000	4.145	0	2418382	N.D.	105.514	#
7)	TM NITROBENZENE	0.000	5.199	0	1386680	N.D.	107.282	#
8)	TM NITROGLYC...	6.218	6.221	552116	15463	101.008	NoCal	#
9)	TM TETRYL	6.742	6.741	1655833	1004882	NoCal	100.518	#
10)	TM 2,4,6-TRI...	7.150	7.151	1728448	1357860	NoCal	101.238	#
11)	TM 2-AMINO-4...	7.529	7.529	1865535	1259568	NoCal	101.663	#
12)	TM 4-AMINO-2...	7.837	7.837	1821139	998380	NoCal	101.791	#
13)	TM 2,4-DINIT...	8.945	8.945	948347	1297154	NoCal	100.887	#
14)	TM 2,6-DINIT...	9.301	9.302	1019423	728960	NoCal	100.917	#
15)	TM 2-NITROTO...	0.000	12.622	0	500925	N.D.	107.664	#
16)	TM 4-NITROTO...	0.000	13.234	0	492287	N.D.	104.726	#
17)	TM 3-NITROTO...	0.000	14.099	0	595187	N.D.	106.932	#
18)	TM PETN	16.214	0.000	454205	0	102.526	N.D.	#

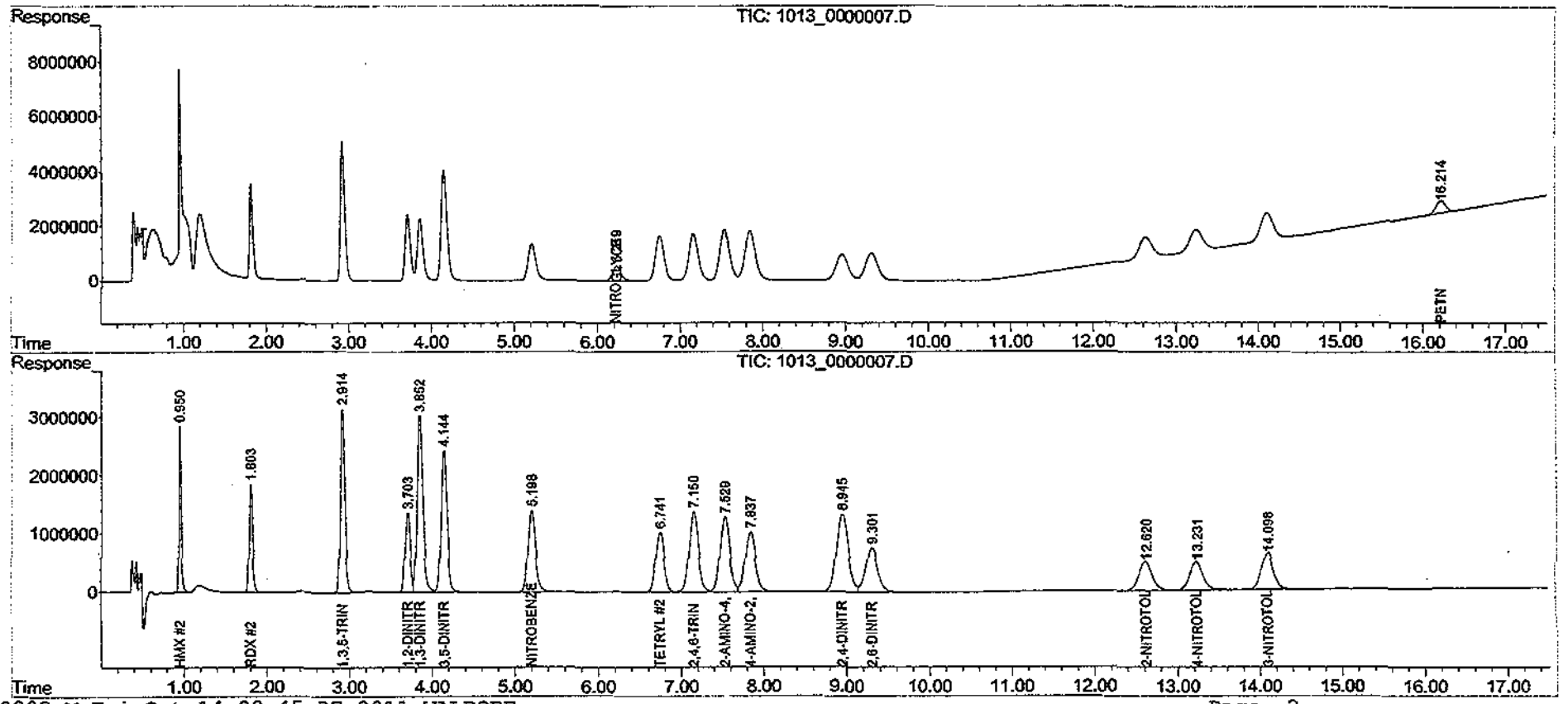
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000007.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 18:26:57
Operator : mp
Sample : 8830B_CB 0.1 PPM 10/13/11
Misc :
ALS Vial : 8452 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:39:05 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000009.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 19:41:50
Operator : mp
Sample : 8830B_CB 0.5 PPM 10/13/11
Misc :
ALS Vial : 8454 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:39:09 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppb	ppb	
	System Monitoring Compounds							
4) S	1,2-DINIT...	0.000	3.704	0	7029439	N.D.	505.162	#
Spiked Amount	62.500			Recovery	=	0.00%	808.26%	
	Target Compounds							
1) TM	HMX	0.000	0.953	0	14511006	N.D.	540.957	#
2) TM	RDX	0.000	1.805	0	9551736	N.D.	531.860	#
3) TM	1,3,5-TRI...	0.000	2.916	0	16381715	N.D.	528.499	#
5) TM	1,3-DINIT...	0.000	3.854	0	15601804	N.D.	521.975	#
6) TM	3,5-DINIT...	0.000	4.147	0	12649400	N.D.	551.892	#
7) TM	NITROBENZENE	0.000	5.202	0	7033495	N.D.	544.154	#
8) TM	NITROGLYC...	6.223	6.220	2836995	89325	519.022	NoCal	#
9) TM	TETRYL	6.749	6.749	8686009	5288304	NoCal	528.986	#
10) TM	2,4,6-TRI...	7.158	7.158	8929887	7061912	NoCal	526.515	#
11) TM	2-AMINO-4...	7.535	7.535	9720568	6601099	NoCal	532.791	#
12) TM	4-AMINO-2...	7.844	7.844	9469097	5215327	NoCal	531.735	#
13) TM	2,4-DINIT...	8.951	8.951	4860211	6739888	NoCal	524.199	#
14) TM	2,6-DINIT...	9.309	9.309	5211410	3763261	NoCal	520.986	#
15) TM	2-NITROTO...	0.000	12.624	0	2553237	N.D.	548.770	#
16) TM	4-NITROTO...	0.000	13.233	0	2521518	N.D.	536.412	#
17) TM	3-NITROTO...	0.000	14.099	0	3037512	N.D.	545.725	#
18) TM	PETN	16.214	0.000	2492447	0	562.611	N.D.	#

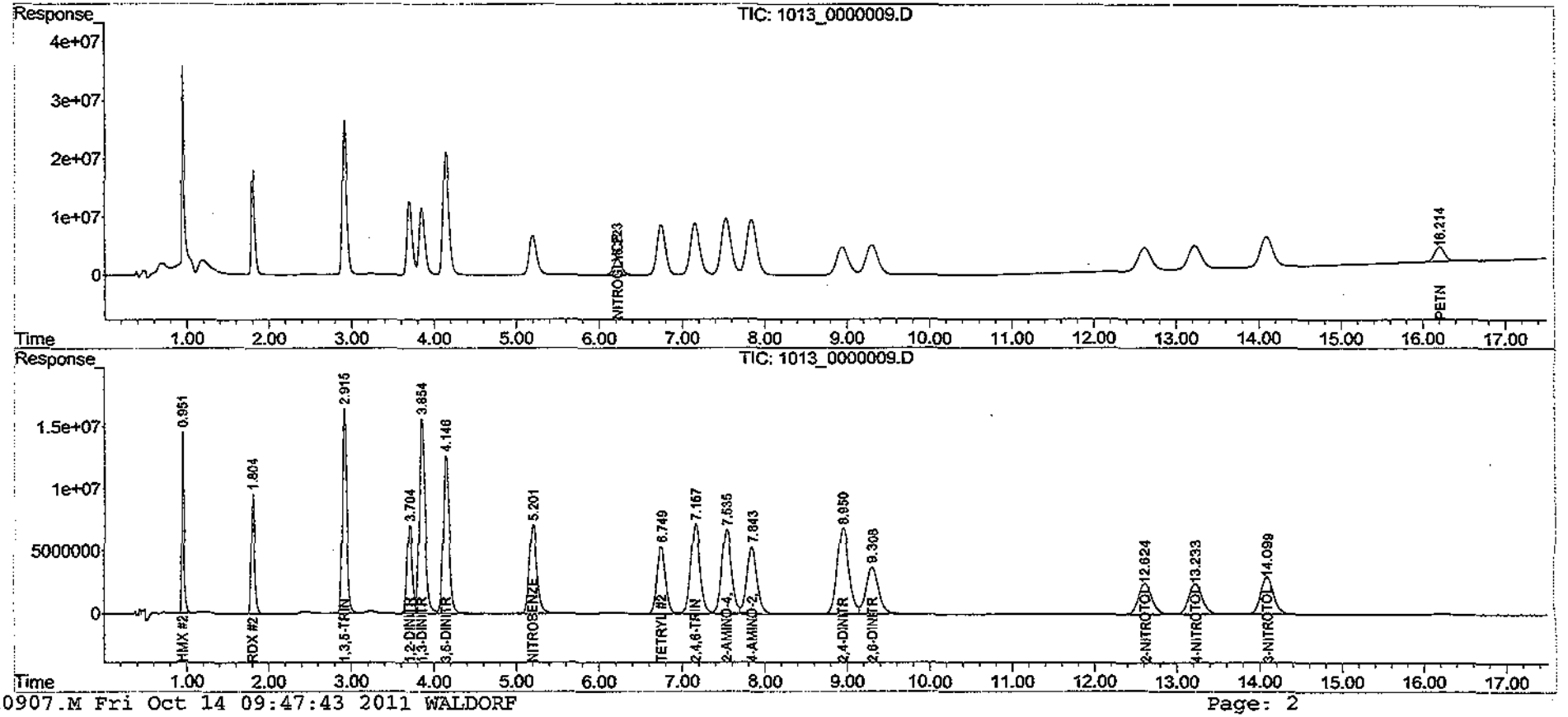
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000009.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 19:41:50
Operator : mp
Sample : 8830B_CB 0.5 PPM 10/13/11
Misc :
ALS Vial : 8454 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:39:09 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000010.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 20:19:16
Operator : mp
Sample : 8330B_CB 1.0 PPM 10/13/11
Misc :
ALS Vial : 8455 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:39:11 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 314nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppb	ppb	
	System Monitoring Compounds							
4)	S 1,2-DINIT...	0.000	3.703	0	14039224	N.D.	1008.912	#
	Spiked Amount 62.500			Recovery =		0.00%	1614.26%	
	Target Compounds							
1)	TM HMX	0.000	0.953	0	28273892	N.D.	1054.025	#
2)	TM RDX	0.000	1.805	0	18805099	N.D.	1047.106	#
3)	TM 1,3,5-TRI...	0.000	2.916	0	32262420	N.D.	1040.835	#
5)	TM 1,3-DINIT...	0.000	3.853	0	31191269	N.D.	1043.537	#
6)	TM 3,5-DINIT...	0.000	4.145	0	24953790	N.D.	1088.731	#
7)	TM NITROBENZENE	0.000	5.199	0	14290109	N.D.	1105.571	#
8)	TM NITROGLYC...	6.220	6.214	5558592	177295	1016.932	NoCal	#
9)	TM TETRYL	6.746	6.746	17123212	10447939	NoCal	1045.102	#
10)	TM 2,4,6-TRI...	7.156	7.156	17565872	13913388	NoCal	1037.340	#
11)	TM 2-AMINO-4...	7.531	7.531	19082544	12999019	NoCal	1049.182	#
12)	TM 4-AMINO-2...	7.840	7.840	18564419	10235662	NoCal	1043.590	#
13)	TM 2,4-DINIT...	8.948	8.948	9664329	13430382	NoCal	1044.556	#
14)	TM 2,6-DINIT...	9.306	9.306	10365744	7512336	NoCal	1040.009	#
15)	TM 2-NITROTO...	0.000	12.620	0	5176865	N.D.	1112.669	#
16)	TM 4-NITROTO...	0.000	13.228	0	5106236	N.D.	1086.270	#
17)	TM 3-NITROTO...	0.000	14.096	0	6163153	N.D.	1107.284	#
18)	TM PETN	16.210	0.000	4912900	0	1108.971	N.D.	#

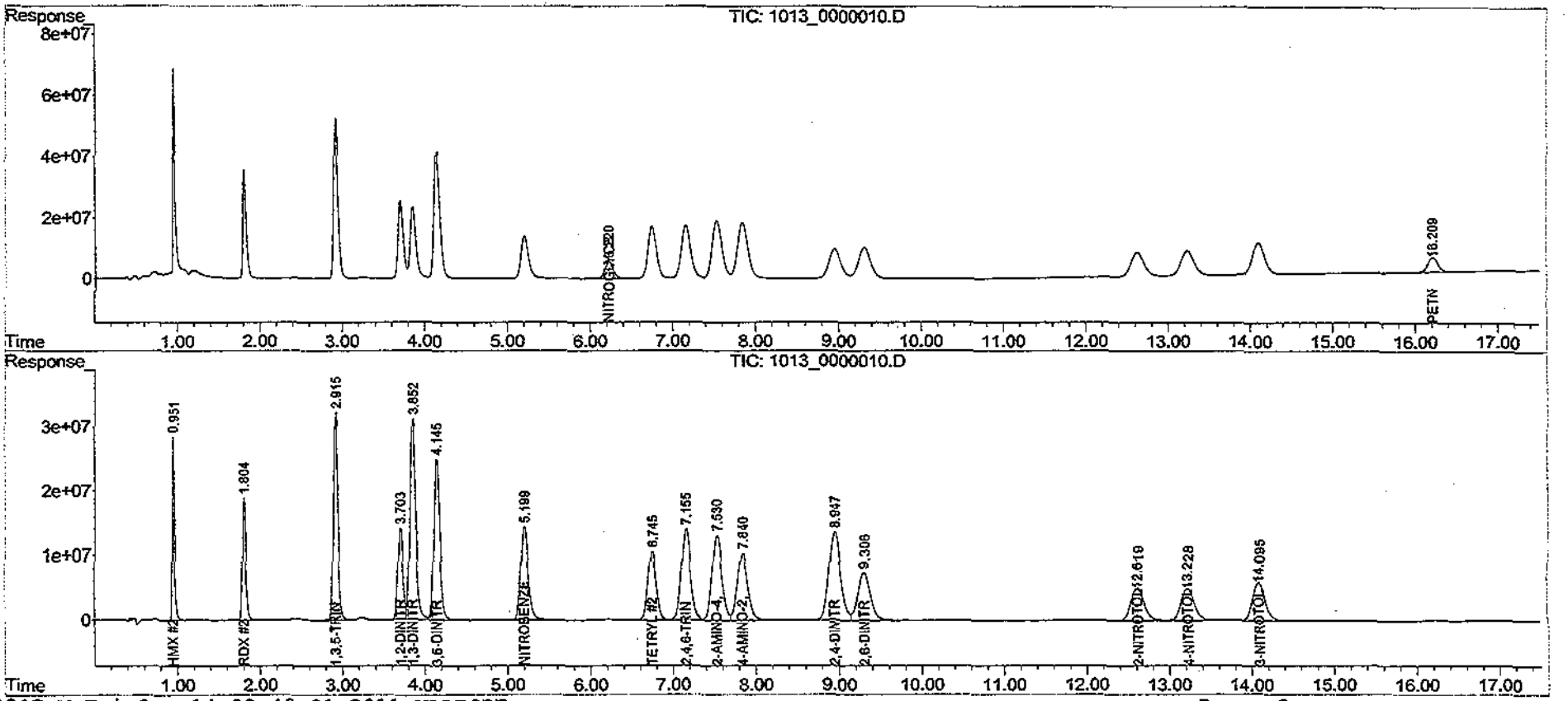
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000010.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 20:19:16
Operator : mp
Sample : 8830B_CB 1.0 PPM 10/13/11
Misc :
ALS Vial : 8455 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:39:11 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000011.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 20:56:43
Operator : mp
Sample : 8830B_MX-A 2.0 PPM 10/13/11
Misc :
ALS Vial : 8456 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:50:35 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppb	ppb	
	System Monitoring Compounds							
4)	S 1,2-DINIT...	0.000	3.706	0	28403384	N.D.	2041.176	#
	Spiked Amount 62.500			Recovery	=	0.00%	3265.88%	
	Target Compounds							
1)	TM HMX	0.000	0.954	0	54794188	N.D.	2042.678	#
2)	TM RDX	0.000	1.807	0	37079110	N.D.	2064.640	#
3)	TM 1,3,5-TRI...	0.000	2.918	0	64233589	N.D.	2072.274	#
5)	TM 1,3-DINIT...	0.000	3.855	0	62451373	N.D.	2089.378	#
6)	TM 3,5-DINIT...	0.000	0.000	0	0	N.D.	N.D.	
7)	TM NITROBENZENE	0.000	5.200	0	28546078	N.D.	2208.500	#
8)	TM NITROGLYC...	0.000	6.077	0	369798	N.D.	d NoCal	
9)	TM TETRYL	6.750	6.749	34401585	21039140	NoCal	2104.534	#
10)	TM 2,4,6-TRI...	7.160	7.160	35097578	27804550	NoCal	2073.023	#
11)	TM 2-AMINO-4...	7.532	7.532	38062907	25962348	NoCal	2095.484	#
12)	TM 4-AMINO-2...	7.843	7.843	36894157	20303859	NoCal	2070.106	#
13)	TM 2,4-DINIT...	8.951	8.951	19341844	26912491	NoCal	2093.135	#
14)	TM 2,6-DINIT...	9.311	9.311	20559554	14955505	NoCal	2070.442	#
15)	TM 2-NITROTO...	0.000	12.621	0	10332837	N.D.	2220.846	#
16)	TM 4-NITROTO...	0.000	13.228	0	10194101	N.D.	2168.631	#
17)	TM 3-NITROTO...	0.000	14.097	0	12291070	N.D.	2208.238	#
18)	TM PETN	0.000	0.000	0	0	N.D.	N.D.	

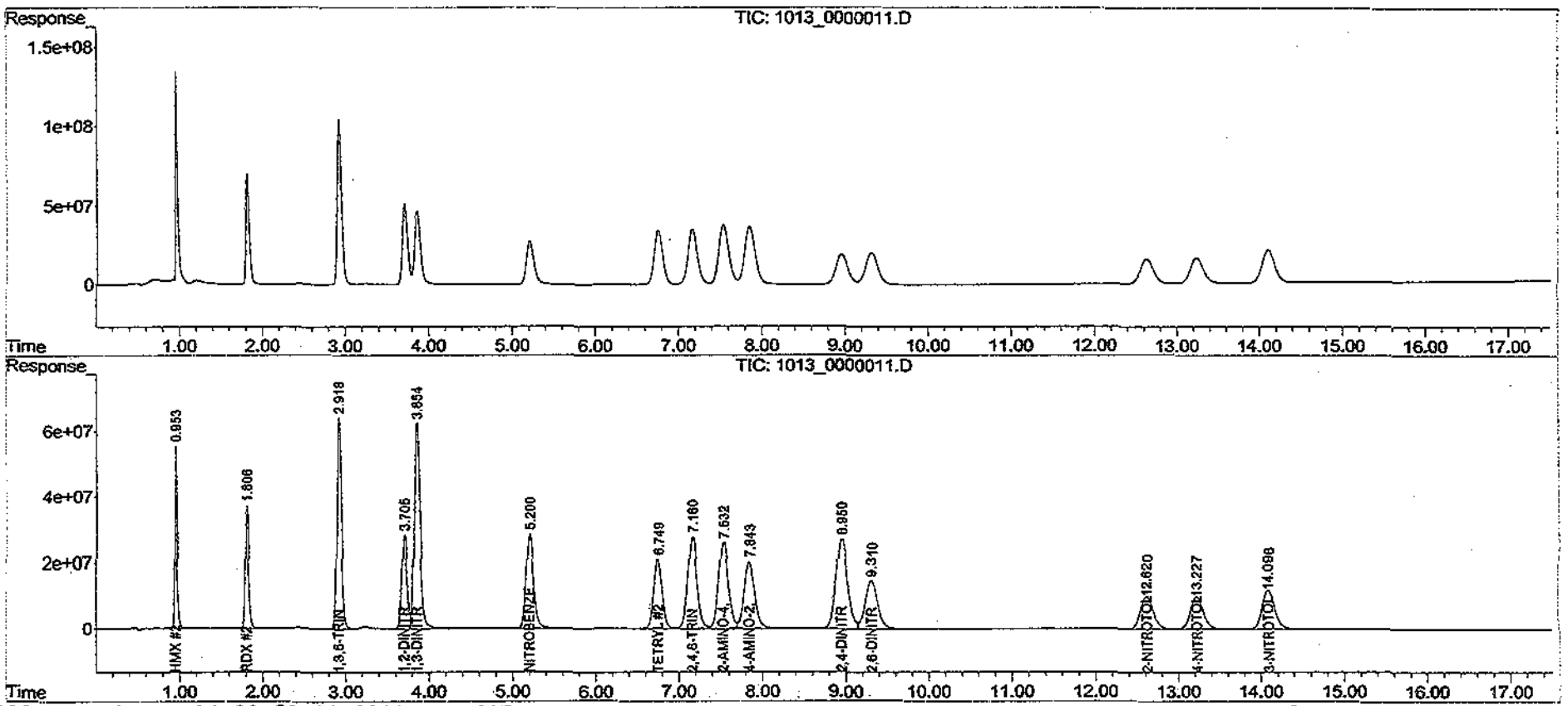
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000011.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 20:56:43
Operator : mp
Sample : 8830B_MX-A 2.0 PPM 10/13/11
Misc :
ALS Vial : 8456 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:50:35 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000012.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 21:34:10
Operator : mp
Sample : 8830B_MX-B 2.0 PPM 10/13/11
Misc :
ALS Vial : 8512 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:51:59 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppb	ppb	
	System Monitoring Compounds							
4)	S 1,2-DINIT...	0.000	0.000	0	0	N.D.	N.D.	d
	Spiked Amount 62.500			Recovery	=	0.00%	0.00%	
	Target Compounds							
1)	TM HMX	0.000	0.000	0	0	N.D.	N.D.	
2)	TM RDX	0.000	0.000	0	0	N.D.	N.D.	d
3)	TM 1,3,5-TRI...	0.000	0.000	0	0	N.D.	N.D.	d
5)	TM 1,3-DINIT...	0.000	0.000	0	0	N.D.	N.D.	d
6)	TM 3,5-DINIT...	0.000	4.143	0	49772961	N.D.	2171.588	#
7)	TM NITROBENZENE	0.000	0.000	0	0	N.D.	N.D.	
8)	TM NITROGLYC...	6.215	6.215	10957188	224918	2004.593	NoCal	#
9)	TM TETRYL	6.755	0.000	17012	0	NoCal	N.D.	
10)	TM 2,4,6-TRI...	7.182	0.000	45961	0	NoCal	N.D.	
11)	TM 2-AMINO-4...	7.524	0.000	24451	0	NoCal	N.D.	
12)	TM 4-AMINO-2...	7.830	0.000	22124	0	NoCal	N.D.	
13)	TM 2,4-DINIT...	8.937	0.000	16586	0	NoCal	N.D.	
14)	TM 2,6-DINIT...	9.289	0.000	146218	0	NoCal	N.D.	d
15)	TM 2-NITROTO...	0.000	0.000	0	0	N.D.	N.D.	d
16)	TM 4-NITROTO...	0.000	0.000	0	0	N.D.	N.D.	
17)	TM 3-NITROTO...	0.000	0.000	0	0	N.D.	N.D.	d
18)	TM PETN	16.207	0.000	9848327	0	2223.026	N.D.	#

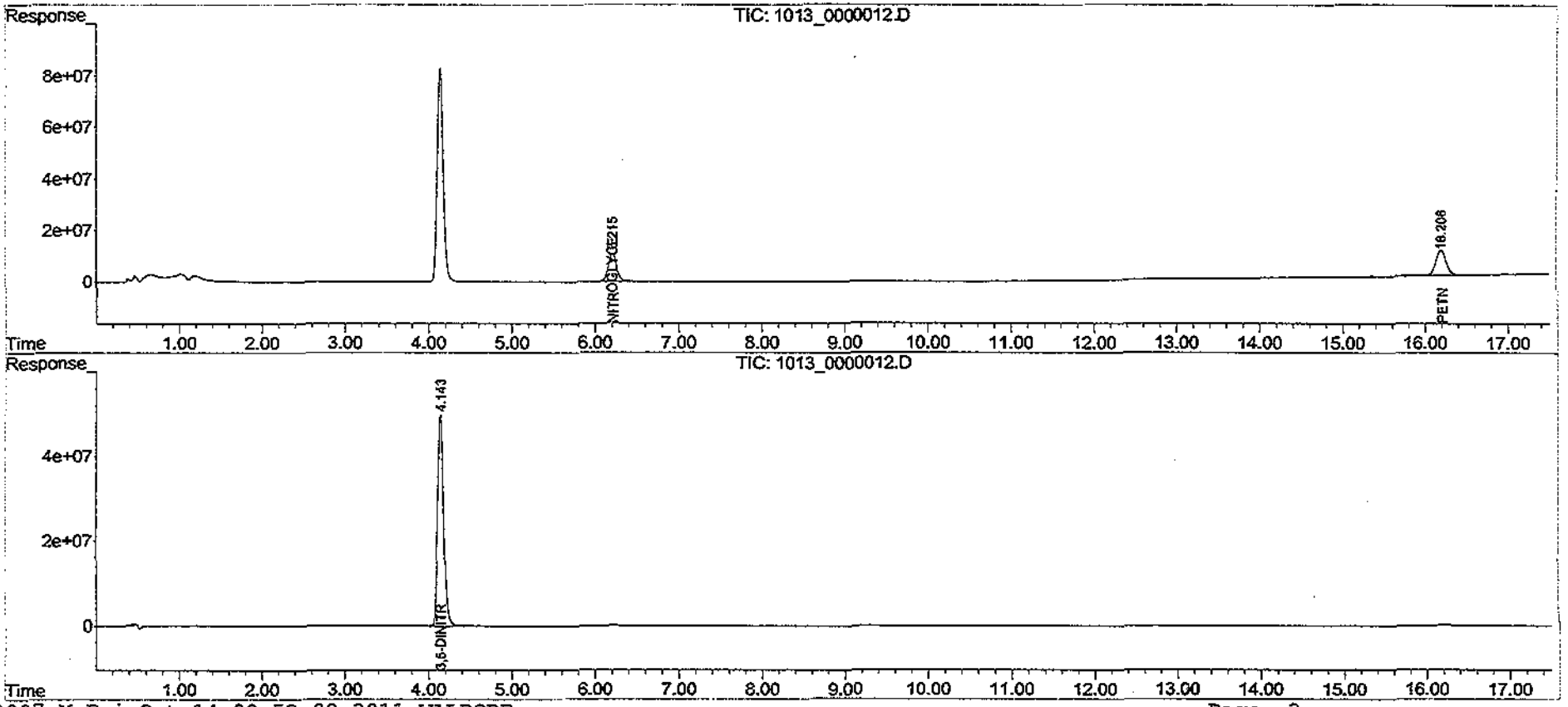
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000012.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 21:34:10
Operator : mp
Sample : 8830B_MX-B 2.0 PPM 10/13/11
Misc :
ALS Vial : 8512 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:51:59 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000014.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 22:49:00
Operator : mp
Sample : 8830B_SS 1.0 PPM 10/13/11
Misc :
ALS Vial : 8513 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:39:17 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppb	ppb	
	System Monitoring Compounds							
4)	S 1,2-DINIT...	0.000	3.703	0	12373961	N.D.	889.240	#
	Spiked Amount 62.500			Recovery	=	0.00%	1422.78%	
	Target Compounds							
1)	TM HMX	0.000	0.953	0	25690467	N.D.	957.717	#
2)	TM RDX	0.000	1.805	0	16902522	N.D.	941.167	#
3)	TM 1,3,5-TRI...	0.000	2.916	0	26708321	N.D.	861.651	#
5)	TM 1,3-DINIT...	0.000	3.853	0	28876263	N.D.	966.086	#
6)	TM 3,5-DINIT...	0.000	4.145	0	24434039	N.D.	1066.054	#
7)	TM NITROBENZENE	0.000	5.197	0	12975953	N.D.	1003.899	#
8)	TM NITROGLYC...	6.219	6.217	5365962	146865	981.691	NoCal	#
9)	TM TETRYL	6.744	6.744	13454322	8211419	NoCal	821.384	#
10)	TM 2,4,6-TRI...	7.153	7.153	14427334	11413209	NoCal	850.934	#
11)	TM 2-AMINO-4...	7.529	7.529	15617391	10632728	NoCal	858.193	#
12)	TM 4-AMINO-2...	7.838	7.838	18203670	10070897	NoCal	1026.791	#
13)	TM 2,4-DINIT...	8.944	8.944	9215643	12803366	NoCal	995.789	#
14)	TM 2,6-DINIT...	9.303	9.303	8963667	6532882	NoCal	904.413	#
15)	TM 2-NITROTO...	0.000	12.616	0	4611432	N.D.	991.139	#
16)	TM 4-NITROTO...	0.000	13.225	0	4317943	N.D.	918.573	#
17)	TM 3-NITROTO...	0.000	14.092	0	5721670	N.D.	1027.966	#
18)	TM PETN	16.208	0.000	4816054	0	1087.110	N.D.	#

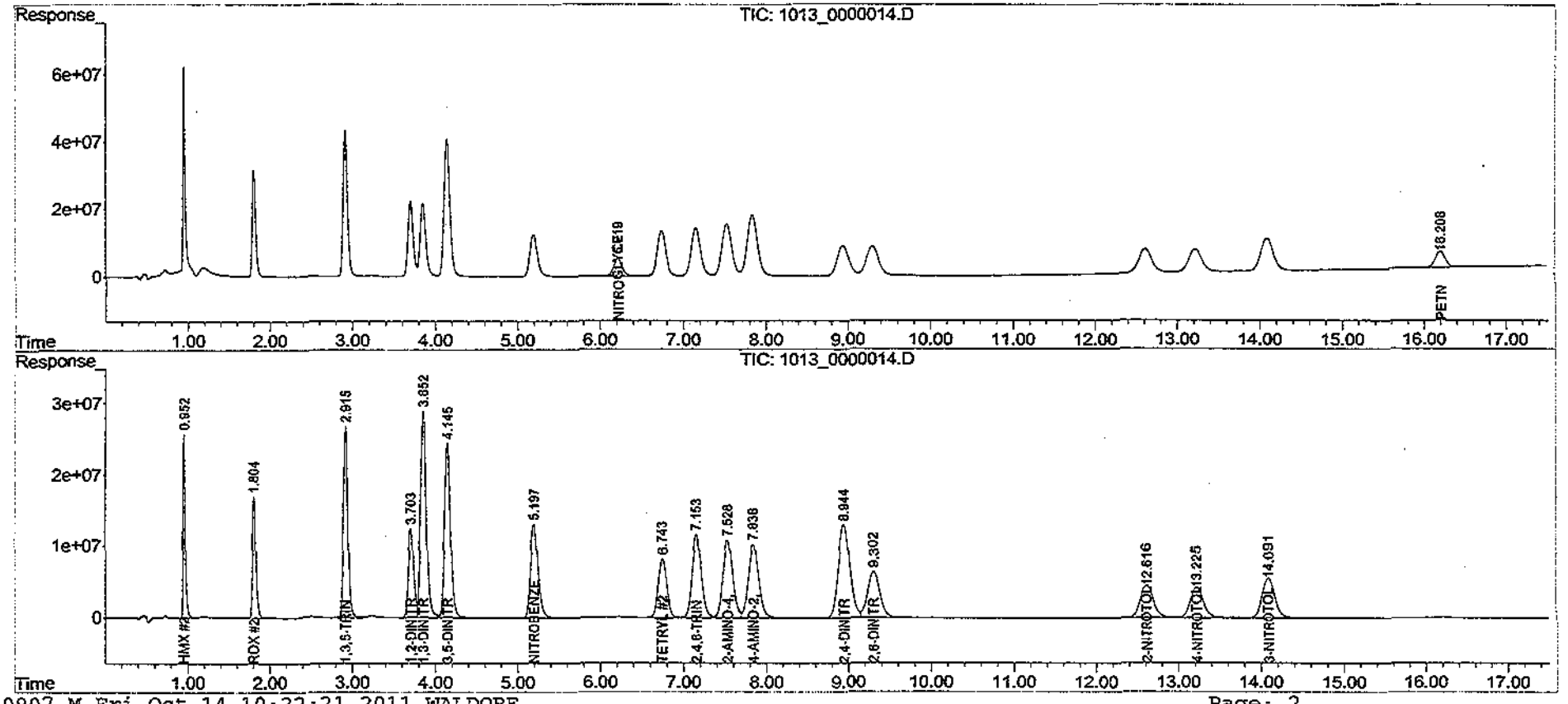
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000014.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 22:49:00
Operator : mp
Sample : 8830B_SS 1.0 PPM 10/13/11
Misc :
ALS Vial : 8513 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:39:17 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111114\
Data File : 1114_0000005.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 14-Nov-2011, 17:07:55
Operator : mp
Sample : 8330_CCV 1.0 PPM 11/14/11
Misc :
ALS Vial : 4424 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Nov 15 10:06:35 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111114\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Fri Oct 14 10:08:44 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppb	ppb	
	System Monitoring Compounds							
4)	S 1,2-DINIT...	0.000	3.721	0	13520628	N.D.	971.644	#
	Spiked Amount 62.500			Recovery	=	0.00%	1554.63%	
	Target Compounds							
1)	TM HMX	0.000	0.957	0	26822940	N.D.	999.935	#
2)	TM RDX	0.000	1.815	0	17981109	N.D.	1001.225	#
3)	TM 1,3,5-TRI...	0.000	2.932	0	31211560	N.D.	1006.933	#
5)	TM 1,3-DINIT...	0.000	3.874	0	29052461	N.D.	971.981	#
6)	TM 3,5-DINIT...	0.000	4.165	0	23166933	N.D.	1010.770	#
7)	TM NITROBENZENE	0.000	5.219	0	13276161	N.D.	1027.125	#
8)	TM NITROGLYC...	6.262	6.241	5168013	162789	945.476	NoCal	#
9)	TM TETRYL	6.775	6.775	16833507	10274885	NoCal	1027.791	#
10)	TM 2,4,6-TRI...	7.193	7.193	16607457	13148998	NoCal	980.350	#
11)	TM 2-AMINO-4...	7.559	7.559	17484707	11913585	NoCal	961.574	#
12)	TM 4-AMINO-2...	7.861	7.861	17066389	9433536	NoCal	961.808	#
13)	TM 2,4-DINIT...	8.991	8.991	8922025	12380836	NoCal	962.927	#
14)	TM 2,6-DINIT...	9.347	9.346	9513966	6918055	NoCal	957.736	#
15)	TM 2-NITROTO...	0.000	12.653	0	4777971	N.D.	1026.934	#
16)	TM 4-NITROTO...	0.000	13.259	0	4739532	N.D.	1008.259	#
17)	TM 3-NITROTO...	0.000	14.127	0	5700818	N.D.	1024.220	#
18)	TM PETN	16.286	0.000	4685585	0	1057.660m	N.D.	#

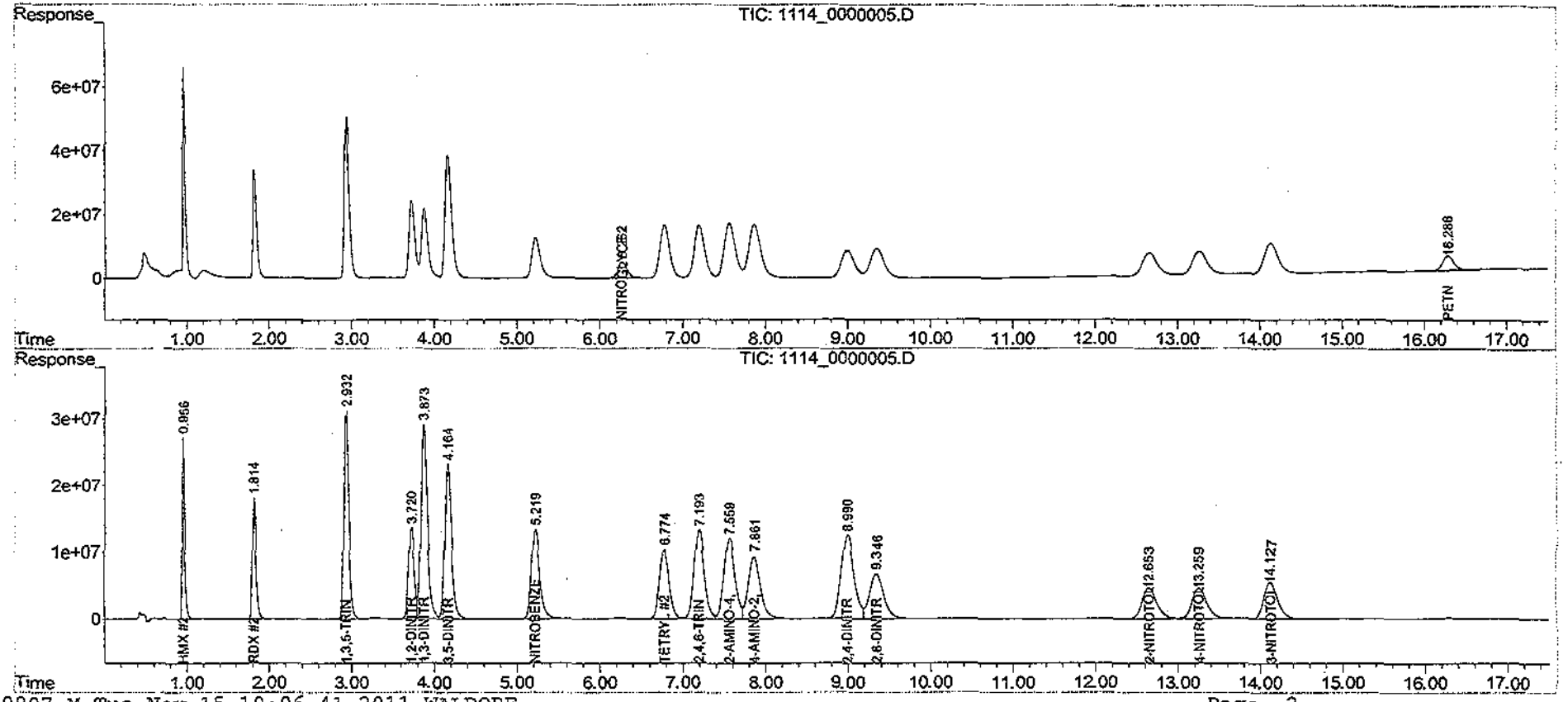
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111114\
Data File : 1114_0000005.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 14-Nov-2011, 17:07:55
Operator : mp
Sample : 8330_CCV 1.0 PPM 11/14/11
Misc :
ALS Vial : 4424 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Nov 15 10:06:35 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111114\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Fri Oct 14 10:08:44 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

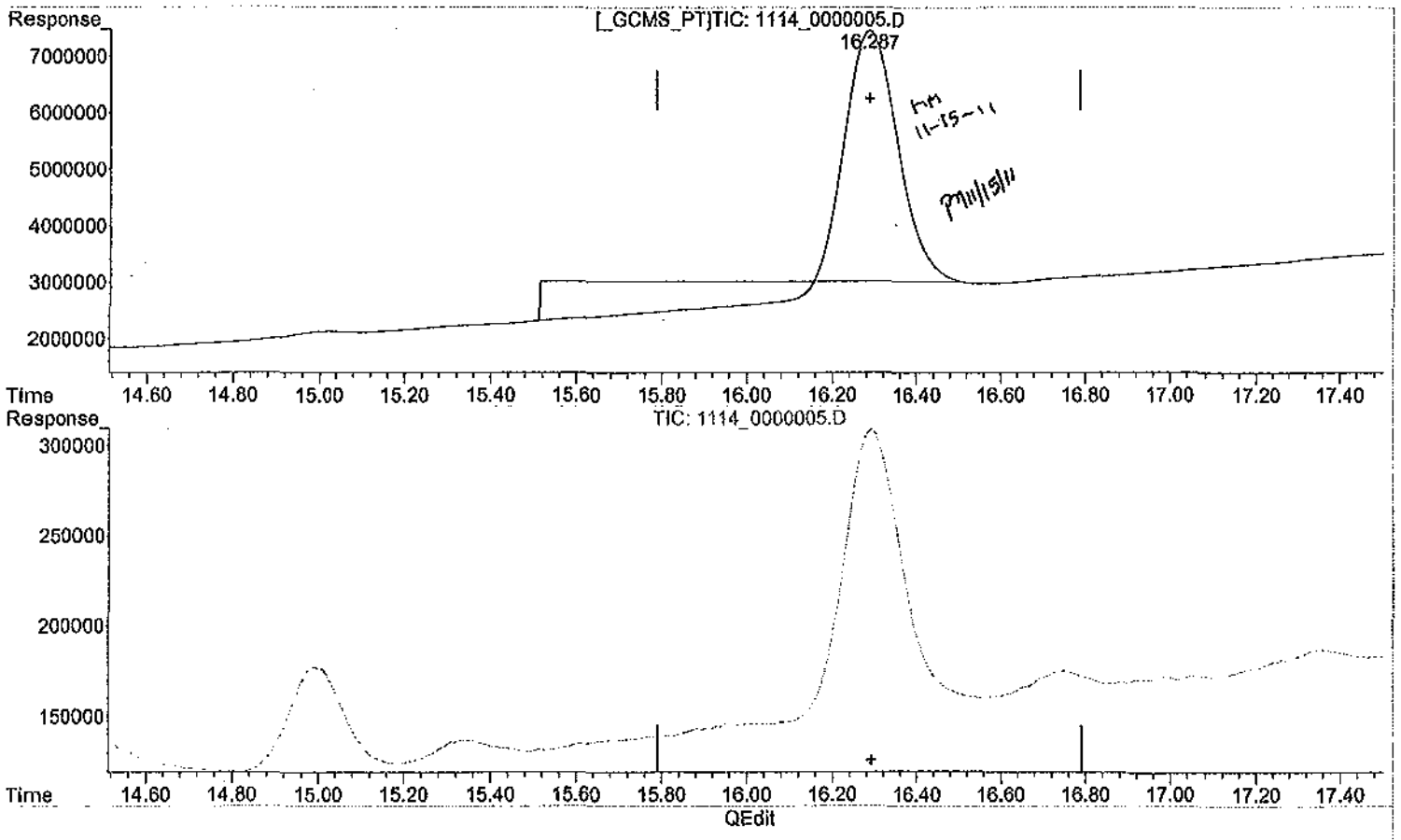


Quantitation Report (Qedit)

Data Path : H:\WALDORF\CHEM32\1\DATA\111114\
Data File : 1114_0000005.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 14-Nov-2011, 17:07:55
Operator : mp
Sample : 8330_CCV 1.0 PPM 11/14/11
Misc :
ALS Vial : 4424 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Nov 15 10:06:14 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111114\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Fri Oct 14 10:08:44 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(18) PETN (TM)

16.287min 1004.807 ppb

response 4451438

(18) PETN #2 (TM)

0.000min 0.000 ppb

response 0

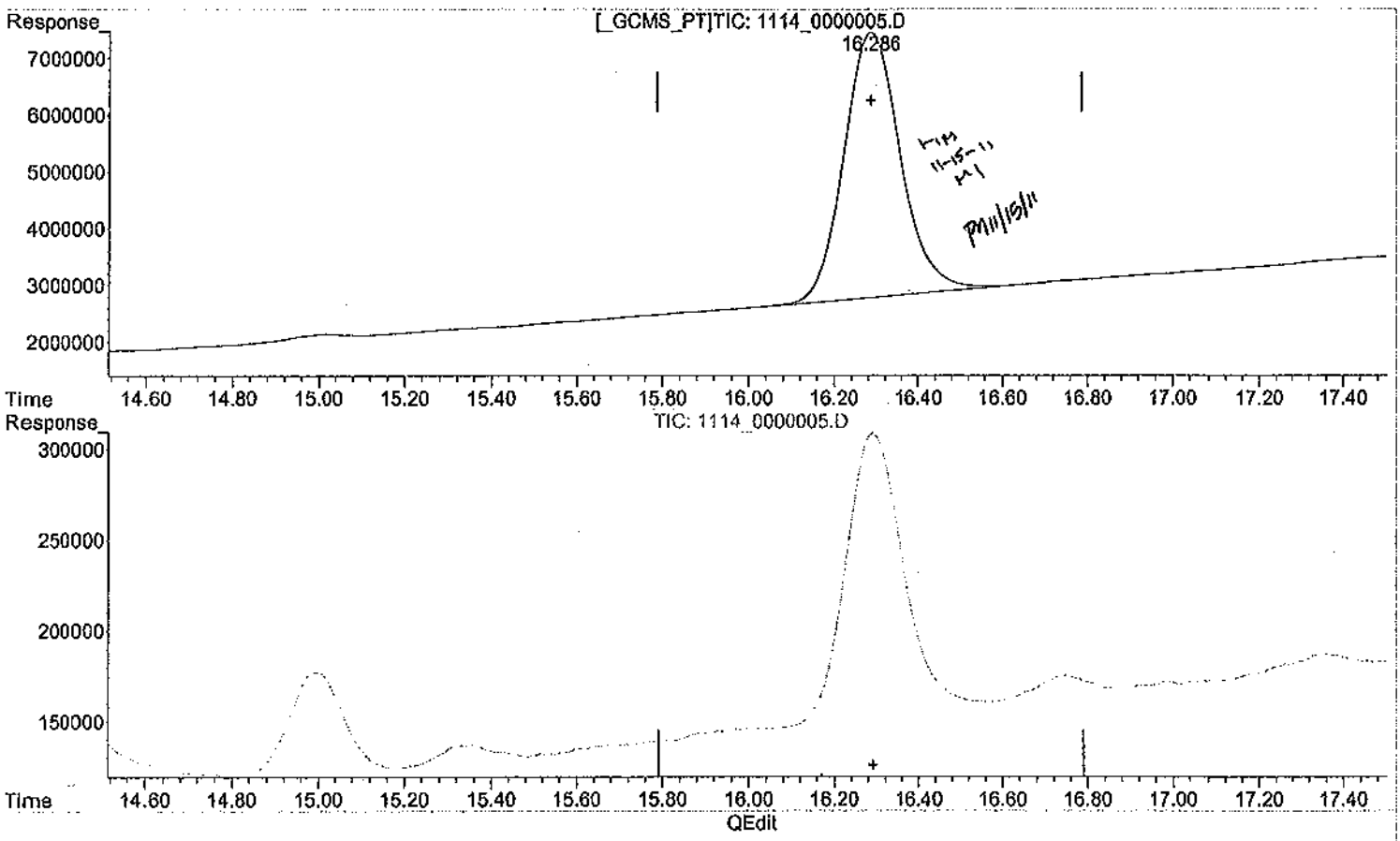
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\WALDORF\CHEM32\1\DATA\111114\
Data File : 1114_0000005.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 14-Nov-2011, 17:07:55
Operator : mp
Sample : 8330_CCV 1.0 PPM 11/14/11
Misc :
ALS Vial : 4424 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Nov 15 10:06:14 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111114\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Fri Oct 14 10:08:44 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(18) PETN (TM)

16.286min 1057.660 ppb m

response 4685585

(18) PETN #2 (TM)

0.000min 0.000 ppb

response 0

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111114\
Data File : 1114_0000018.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 15-Nov-2011, 00:54:46
Operator : mp
Sample : 8330_CCV 1.0 PPM 11/14/11
Misc :
ALS Vial : 4424 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Nov 15 10:07:54 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111114\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Fri Oct 14 10:08:44 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppb	ppb	
	System Monitoring Compounds							
4)	S 1,2-DINIT...	0.000	3.714	0	13508054	N.D.	970.740	#
	Spiked Amount 62.500			Recovery =		0.00%	1553.18%	
	Target Compounds							
1)	TM HMX	0.000	0.956	0	26980003	N.D.	1005.790	#
2)	TM RDX	0.000	1.813	0	17918209	N.D.	997.722	#
3)	TM 1,3,5-TRI...	0.000	2.927	0	31173705	N.D.	1005.712	#
5)	TM 1,3-DINIT...	0.000	3.868	0	29095193	N.D.	973.411	#
6)	TM 3,5-DINIT...	0.000	4.160	0	23271470	N.D.	1015.331	#
7)	TM NITROBENZENE	0.000	5.209	0	13099836	N.D.	1013.484	#
8)	TM NITROGLYC...	6.248	6.224	5174542	183287	946.671	NoCal	#
9)	TM TETRYL	6.761	6.761	16870480	10318708	NoCal	1032.175	#
10)	TM 2,4,6-TRI...	7.177	7.177	16657076	13203131	NoCal	984.386	#
11)	TM 2-AMINO-4...	7.549	7.549	17606052	11982892	NoCal	967.168	#
12)	TM 4-AMINO-2...	7.849	7.849	17211444	9503750	NoCal	968.967	#
13)	TM 2,4-DINIT...	8.976	8.976	8933896	12415834	NoCal	965.649	#
14)	TM 2,6-DINIT...	9.331	9.331	9530816	6947772	NoCal	961.850	#
15)	TM 2-NITROTO...	0.000	12.638	0	4697716	N.D.	1009.685	#
16)	TM 4-NITROTO...	0.000	13.244	0	4697272	N.D.	999.269	#
17)	TM 3-NITROTO...	0.000	14.112	0	5618793	N.D.	1009.483	#
18)	TM PETN	16.267	0.000	4679768	0	1056.347m	N.D.	#

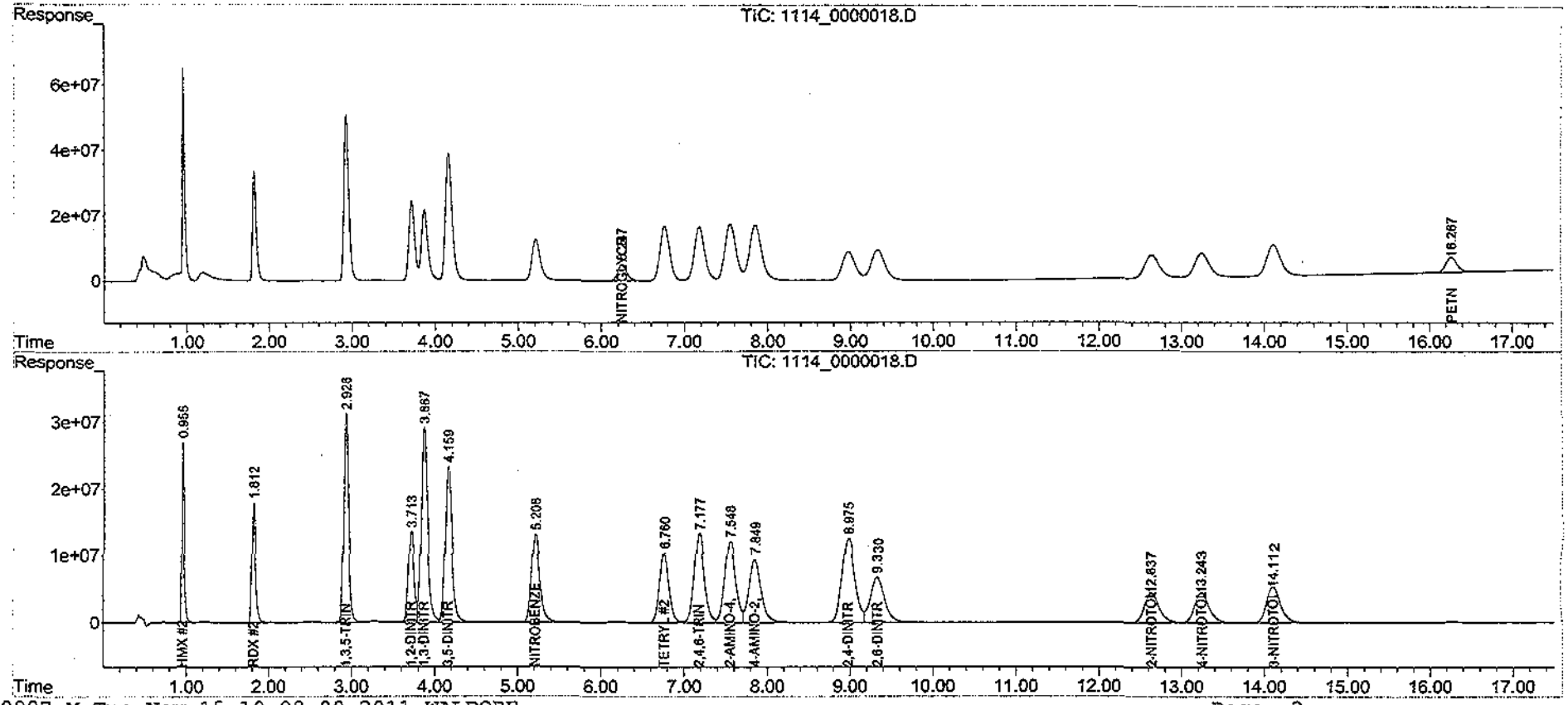
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111114\
Data File : 1114_0000018.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 15-Nov-2011, 00:54:46
Operator : mp
Sample : 8330_CCV 1.0 PPM 11/14/11
Misc :
ALS Vial : 4424 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Nov 15 10:07:54 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111114\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Fri Oct 14 10:08:44 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

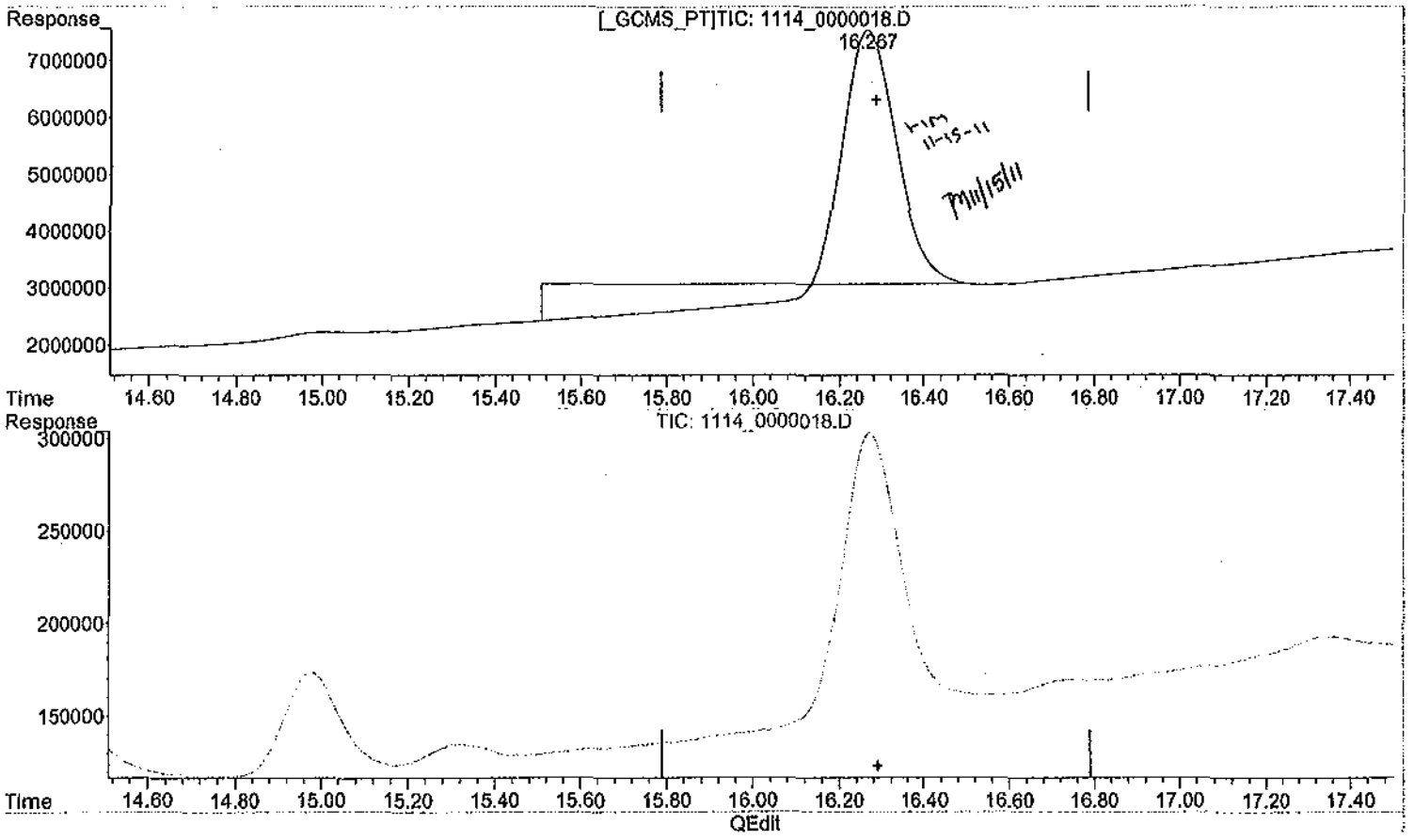


Quantitation Report (Qedit)

Data Path : H:\WALDORF\CHEM32\1\DATA\111114\
Data File : 1114_0000018.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 15-Nov-2011, 00:54:46
Operator : mp
Sample : 8330_CCV 1.0 PPM 11/14/11
Misc :
ALS Vial : 4424 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Nov 15 10:06:16 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111114\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Fri Oct 14 10:08:44 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(18) PETN (TM)

16.268min 1009.295 ppb

response 4471324

(18) PETN #2 (TM)

0.000min 0.000 ppb

response 0

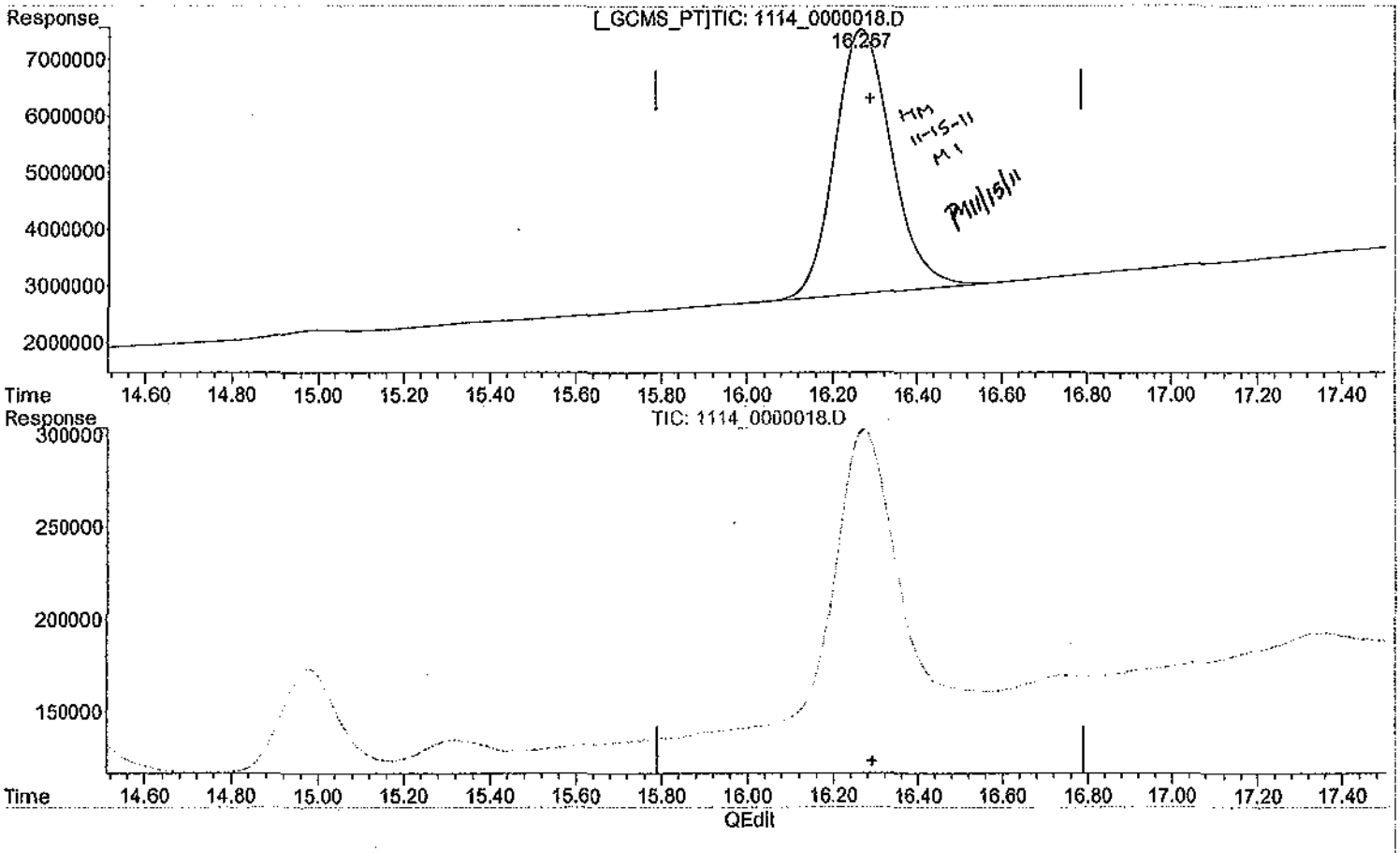
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\WALDORF\CHEM32\1\DATA\111114\
Data File : 1114_0000018.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 15-Nov-2011, 00:54:46
Operator : mp
Sample : 8330_CCV 1.0 PPM 11/14/11
Misc :
ALS Vial : 4424 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Nov 15 10:06:16 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111114\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Fri Oct 14 10:08:44 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(18) PETN (TM)

16.267min 1056.347 ppb m

response 4679768

(18) PETN #2 (TM)

0.000min 0.000 ppb

response 0

(+) = Expected Retention Time

Miscellaneous

Explosive by HPLC
Lot #: B8120095-[illegible]
Rec [illegible] exp. 12/09/10

125 Market Street
New Haven, CT 06513
USA

AccuStandard, Inc.

CERTIFICATE OF ANALYSIS

CATALOG NO: M-8330B-R-10X
DESCRIPTION: Explosive by HPLC
LOT: B8120095
SOLVENT: MeOH:AcCN (1:1)

EXPIRATION: Dec 9, 2010

See reverse for additional certification information.

This product is guaranteed accurate to ±0.5% of the Certified Analyte concentration through the Expiration Date on the Label.

Component	CAS #	Purity % (HPLC)	Prepared Concentration[1] (µg/mL)	Certified Analyte Concentration[2] (µg/mL)
Tetryl	479-45-8	99.4	1002	996
2,6-Dinitrotoluene	606-20-2	100	1006	1006
2-Nitrotoluene	88-72-2	99.0	1002	992
3-Nitrotoluene	99-08-1	98.7	1003	990
4-Nitrotoluene	99-99-0	99.2	1010	1002
2-Amino-4,6-dinitrotoluene	35572-78-2	97.8	1027*	1004
4-Amino-2,6-dinitrotoluene	19406-51-0	98.5	1005	

AccuStandard

7 Components

* Weight compensated to 100% purity

1. All weights are traceable through NIST, Test No. [illegible]

2. Certified Analyte Concentration = Purity x Prepared Concentration. The Uncertainty calculated for this product is ±4% which is the Combined Uncertainty u(y). It represents an estimated standard deviation equal to the positive square root of the total variance of the uncertainty of components. The Expanded Uncertainty is U which is U(y) * K where K is the coverage factor at the 95% confidence level (K=2).
3. A product with a suffix (-1A, -2B, etc) on its lot # has its expiration date extended and is identical to the same lot # without the suffix.

Certified by: R. Cooper

AccuStandard is accredited to ISO/IEC 17025:2005 and certified to ISO 9001:2000

[illegible]

Method 8330 - Mix A
Lot #: B2120217-3C - 21789
Rec: 2/2/09 MPR exp. 10/24/09

125 Market Street
New Haven, CT 06513
USA

AccuStandard, Inc.

Website AccuStandard.com

CERTIFICATE OF ANALYSIS

CATALOG NO: M-8330A-10X

EXPIRATION: Oct 24, 2009

DESCRIPTION: Method 8330 - Mix A

LOT: B2120217-3C **See reverse for additional certification information.**

SOLVENT: MeOH:AcCN (1:1)

This product is guaranteed accurate to ± 0.5% of the Certified Analyte concentration through the Expiration Date on the Label.

Component	CAS #	Purity % (GC/MS)	Prepared Concentration[1] (µg/mL)	Certified Analyte Concentration[2] (µg/mL)
1,3-Dinitrobenzene	99-65-0	97.0	1031 *	1000
2,4-Dinitrotoluene	121-14-2	100	1001	1001
HMX	2691-41-0	98.7	1001	988
Nitrobenzene	98-95-3	99.8	1002	1000
RDX	121-82-4	98.0	1000	980
1,3,5-Trinitrobenzene	99-35-4	99.8	1001	[illegible]
TNT	118-96-7	99.9	1000	[illegible]

7 Components

1. All weights are traceable through NIST, Test No. [illegible]

2. Certified Analyte Concentration = Purity x Prepared Concentration. The Uncertainty calculated for this product is ±4% which is the Combined Uncertainty $u_c(y)$. It represents an estimated standard deviation equal to the positive square root of the total variance of the uncertainty of components. The Expanded Uncertainty is U which is $U(y) * K$ where K is the coverage factor at the 95% confidence level (K=2).

3. A product with a suffix (-1A, -2B, etc) on its label has had its expiration date extended and is identical to the same item without the suffix.

Weight compensated to 100% purity

Certified by: R. Cooper

AccuStandard is accredited to ISO/IEC 17025:2005 and certified to ISO 9001:2000

CR-CRCAN-001
Rev [illegible]

AccuStandard

125 Market Street
New Haven, CT 06513 USA

PETN
Lot #: 87100168-22434
Rec: 1/26/08 [illegible] exp. 10/19/09

AccuStandard®, Inc.

CERTIFICATE OF ANALYSIS

CATALOG NO. M-8330-ADD-2-10X

DESCRIPTION: Individual Explosives Solution

EXPIRATION: Oct 19, 2009

LOT: 87100168

SOLVENT: MeOH

This product is guaranteed accurate to ±0.5% of the Certified Analyte concentration through the Expiration Date on the label.

See reverse for additional certification information.

Component	CAS #	Purity % (HPLC)	Prepared Concentration[1] (µg/mL)	Certified Analyte Concentration[2] (µg/mL)
PETN	78-11-5	99.3	1003	996

Please note: AccuStandard follows the U.S. conventions in reporting numerical values, on both certificates and labels.

A comma (,) is used to separate units of one-thousand or greater.
A period (.) is used as a decimal place marker.

1. All weights are traceable through NIST, Test No. [illegible]
2. Certified Analyte Concentration = Purity x Prepared Concentration. The Uncertainty calculated for this product [illegible] which is the Combined Uncertainty u(y). [illegible]
3. A product with a suffix (-1A, -2B, etc) [illegible]

Certified by: R. Cooper

AccuStandard is accredited to ISO/IEC 17025:2005

OR-ORG[illegible]
Rev 7/07

125 Market Street
New Haven, CT 06513 USA

Nitroglycerin
Lot#: B6040069-1A-[illegible]
Rec'd [illegible] exp. 10/18/09

AccuStandard®, Inc.

CERTIFICATE OF ANALYSIS

CATALOG NO. M-8330-ADD-1-10X

DESCRIPTION: Individual Explosives Solution

EXPIRATION: Oct 18, 2009

LOT: B6040069-1A

SOLVENT: EtOH : MeOH (97:3)

[illegible]

See reverse for additional certification information.

Component	CAS #	Purity % (HPLC)	Prepared Concentration[1] (µg/mL)	Certified Analyte Concentration[2] (µg/mL)
Nitroglycerin	55-63-0	100	1000	1000

Please note: AccuStandard follows the U.S. conventions in reporting numerical values, on both certificates and labels.

A comma (,) is used to separate units of one-thousand or greater.
A period (.) is used as a decimal place marker.

1. All weights are traceable through NIST, Test No. [illegible]
2. Certified Analyte Concentration = Purity x Prepared Concentration. [illegible]
3. [illegible]

Certified by: R. Cooper

AccuStandard is accredited to ISO/IEC 17025:2005

[illegible]

1,2-Dinitrobenzene
Lot# [illegible]
Rec: 2/4/09 NFR exp. 02/03/12

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Date Received: ____________

Certificate of Analysis

Page 1

Catalog No.:	Lot No.:	Storage:	Solvent:	Exp. Date:	Description:
010086-01	142799	<10 Degrees C	Acetonitrile	3-Feb-2012	1,2-Dinitrobenzene Solution, 1,000 mg/L, 1 ml

Compound	CAS No.	Purity (%)	Neat Material Lot No.	Concentration, mg/L
1,2-dinitrobenzene	528-29-0	99	861.3P	1002 +/- 14.021

Certified By: Lindsay E Edwards
Lindsay Edwards

All weights are traceable through N. I. S. T. Test No. 822/264157-00.
Concentration (correct for purity) and uncertainty (95% confidence) values listed are determined gravimetrically.

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CERTIFIED WEIGHT REPORT

Part Number: 95093
Lot Number: 051208
Description: 8330 Mix A
9 components
Expiration Date: 051211

Lot # E37818
Solvent(s): Acetonitrile

Formulated By:	Justin Dippold	051208 DATE
Reviewed By:	Pedro L. Rentas	051208 DATE

Nominal Concentration (µg/mL): 100

Volume(s) shown below were combined and diluted to: 10.0 — 5E-05 Balance Uncertainty; 0.001 Flask Uncertainty

Compound	Part Number	Lot Number	Dil. Factor	Initial Vol. (mL)	Uncertainty Pipette	Initial Conc. (ug/mL)	Final Conc. (ug/mL)	Expanded Uncertainty (+/-)	MSDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50
1. 4-Amino-2,6-dinitrotoluene	79070	062707	0.10	1.00	0.002	1001.6	100.2	0.00444	00000-00-0	N/A	N/A
2. 3,5-Dinitroaniline	71772	101807	0.10	1.00	0.002	1003.3	100.4	0.00581	00618-87-1	N/A	N/A
3. 1,3-Dinitrobenzene	79071	071706	0.10	1.00	0.002	1001.1	100.1	0.00451	00099-65-0	1mg/m3 8H (skin)	orl-rat 83mg/kg
4. 2,4-Dinitrotoluene	79072	110206	0.10	1.00	0.002	1002.8	100.3	0.00451	00121-14-2	1.5mg/m3 8H (skin)	orl-rat 268mg/kg
5. HMX	79074	041808	0.10	1.00	0.002	1000.7	100.1	0.00451	02691-41-0	N/A	N/A
6. Nitrobenzene	79075	100906	0.10	1.00	0.002	1003.4	100.4	0.00416	00098-95-3	1 ppm (5mg/m3 8H)(skin)	orl-rat 780mg/kg
7. 3-Nitrotoluene	79077	100906	0.10	1.00	0.002	1002.6	100.3	0.00417	00099-08-1	2 ppm (11mg/m3 8H)(skin)	orl-rat 1072mg/kg
8. RDX	79079	060904	0.10	1.00	0.002	1000.7	100.1	0.00581	00121-82-4	N/A	N/A
9. Trinitroglycerin	79252	072804	0.10	1.00	0.002	1000.3	100.1	0.00581	00055-63-0	STEL 0.1mg/m3(skin)	N/A
10.											
11.											
12.											
13.											
14.											
15.											
16.											
17.											
18.											
19.											
20.											

75

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CERTIFIED WEIGHT REPORT

Part Number: 95094
Lot Number: 051208
Description: 8330 Mix B
8 components
Expiration Date: 051211

Lot # E37818
Solvent(s): Acetonitrile

Nominal Concentration (µg/mL): 100

5E-05 Balance Uncertainty
Volume(s) shown below were combined and diluted to: 10.0 0.001 Flask Uncertainty

Formulated By:	Justin Dippold	051208 DATE
Reviewed By:	Pedro L. Reyes	051208 DATE

Compound	Part Number	Lot Number	Dil. Factor	Initial Vol. (mL)	Uncertainty Pipette	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty (+/-) (µg/mL)	MSDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50
1. 2-Amino-4,6-dinitrotoluene	79089	062707	0.10	1.00	0.002	1002.3	100.3	0.00417	35572-78-2	N/A	N/A
2. 1,2-Dinitrobenzene	79404	051208	0.10	1.00	0.002	1004.7	100.5	0.00565	00528-29-0	1mg/m3 (skin)	N/A
3. 2,6-Dinitrotoluene	79078	100906	0.10	1.00	0.002	1002.2	100.3	0.00416	00606-20-2	1.5mg/m3 (skin)	oral-rat 177mg/kg
4. 2-Nitrotoluene	79076	100906	0.10	1.00	0.002	1003.1	100.3	0.00416	00088-72-2	2 ppm (11mg/m3) [skin]	oral-rat 891mg/kg
5. 4-Nitrotoluene	79078	100906	0.10	1.00	0.002	1001.1	100.1	0.00417	00099-99-0	2 ppm (11mg/m3) [skin]	oral-rat 1960mg/kg
6. Tetryl	79080	120803	0.10	1.00	0.002	1000.7	100.1	0.00581	00479-45-8	N/A	N/A
7. 1,3,5-Trinitrobenzene	79081	010406	0.10	1.00	0.002	1001.5	100.2	0.00417	00099-35-4	N/A	N/A
8. 2,4,6-Trinitrotoluene	79082	011008	0.10	1.00	0.002	1002.0	100.2	0.01015	00118-96-7	0.5mg/m3 (skin)	oral-rat 820mg/kg

76

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Date Received: _____

Certificate of Analysis

Catalog No.:	Lot No.:	Storage:	Solvent:	Exp. Date:	Description:
010514-04	140502	</= 6 Degrees C	Acetonitrile	31-Oct-2009	PETN Solution, 1000 mg/L, 1 ml

Compound	CAS No.	Purity (%)	Neat Material Lot No.	Concentration, mg/L
PETN	78-11-5	99.9	614.92P	1000 +/- 14

Certified By: _____
Dick Potter

All weights are traceable through N. I. S. T. Test No. 822/264157-00.
Concentration (correct for purity) and uncertainty (95% confidence) values listed are determined gravimetrically.

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Date Received: _____

Certificate of Analysis

Catalog No.:	Lot No.:	Storage:	Solvent:	Exp. Date:	Description:
010612-04	140434	</= -10 Degrees C	Acetonitrile	3-Nov-2011	3,5-Dinitroaniline (3,5-DNA) Solution, 1000 mg/L, 1 ml

Compound	CAS No.	Purity (%)	Neat Material Lot No.	Concentration, mg/L
3,5-dinitroaniline	618-87-1	97	612.1.1	1000 +/- 14

Certified By: _____
Mike Wrigley

All weights are traceable through N. I. S. T. Test No. 822/264157-00.
Concentration (correct for purity) and uncertainty (95% confidence) values listed are determined gravimetrically.

068

STANDARD	INITIAL CONC	SOURCE DATE	ALIQUOT	FINAL VOLUME	FINAL CONC	SOLVENT LOT #	DATE / INITIALS
	~~8330_08/13_MR~~		8330_08/03_ZNT_MRLCHK				
8330_08/03_ZNT_CCV	1.0µg/mL	8/17/11	100µL	1.0mL	0.1µg/mL	2 : 1 : 1 H2O MeCN MeOH DE002 51076	8/17/11
	NG_3,5-DNA_PETN_08/03_ZNT_CCV ✱ Prepped in duplicate						
NG_3,5-DNA_PETN_08/03_ZNTSTK	10.0µg/mL	8/3/11	100µL	1.0mL	1.0µg/mL	2 : 1 : 1 H2O MeCN MeOH DE002 51076	8/17/11
	NG_08/18_STK						
Nitroglycerin	1000µg/mL	8/15/11	1.0mL	10.0mL	100µg/mL	1 : 1 ACN : MeOH DE002 : 51076	8-18-11 Exp. 2/18/12
	8330_08/18_STK						
8330_Explosives by HPLC m-8330-R	1000µg/mL	Accustandard 8/18/2011 LOT NO: 209101177-28370	1.0mL	10.0mL	100µg/mL	1:1 ACN: MeOH DE002: 51076	8-18-11 Exp. 10-21-11
1,2-Dinitrobenzene 010986-01	1000µg/mL	0251 8/18/2011 LOT NO: 175526-29022	1.0mL				

AccuStandard
M-8330-R
Method 8330 - Explosives
1.0 mg/mL in MeOH:AcCN (1:1)
Lot: 209101177
Exp: Oct,21,2011
14 comps.
FLAMMABLE

Method 8330 - Explosives
Lot #: 209101177 - 28370
Rec: 2/28/11 MFR exp. 10/21/11

FOR LABORATORY USE ONLY
WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm
STORAGE Freeze (<-10° C)

1,2-Dinitrobenzene
Solution, 1,000 mg/L, 1 ml
010986-01
Lot # 175526 Storage <10 Degrees C Expiry 7/18/14
Solv: Acetonitrile
1,2-Dinitrobenzene
Lot #: 175526 - 29022
Rec: 7/14/11 MFR exp. 07/10/14

STANDARD	INITIAL CONC	SOURCE DATE	ALIQUOT	FINAL VOLUME	FINAL CONC	SOLVENT LOT #	DATE / INITIALS
	8330_08/19_CCNTSTK						
8330_08/18_STK	100µg/mL	8/18/11	1.0mL	10.0mL	10.0µg/mL	1 : 1 ACN : MeOH DE296 51076	8/19/11 exp 10/19/11
	NG_3,5-DNA_PETN_08/19_CCNTSTK						
NG_08/18_STK	100µg/mL	8/18/11	1.0mL	10.0mL	10.0µg/mL	1 : 1 ACN : MeOH DE296 : 51076	8/19/11
3,5-DNA_07/13_STK		7/13/11					
PETN_08/12_STK		8/12/11					exp 10/19/11

LC/MS STANDARD PREP LOG# 97 PAGE # 70

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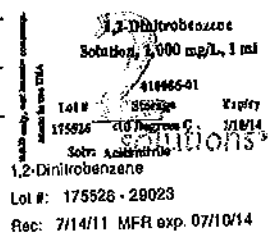
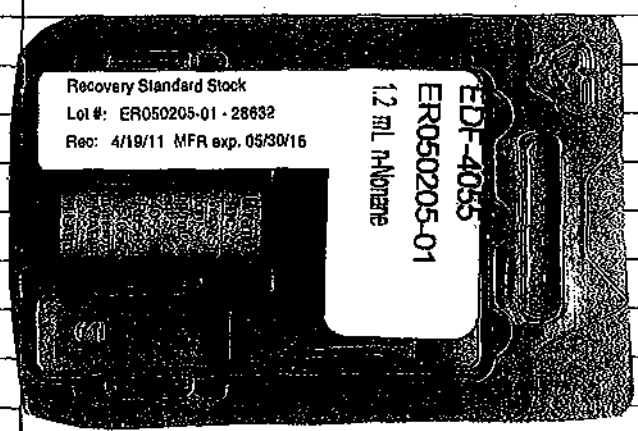
STANDARD	INITIAL CONC	SOURCE	DATE	ALIQUOT	FINAL VOLUME	FINAL CONC	SOLVENT / LOT #	DATE / INITIALS
Perchlorate QA/QC stock 10 ug/mL								
Perchlorate	1000	D25	Lot 1026135-2896	0.10mL	10.0mL	10ug/L	(Milli-pore water 08-22-11)	8-22-11
Perchlorate spk 0.1 ug/mL								
Perchlorate QA/QC	10.0	08-22-11		0.250mL	25.0mL	0.10	(Milli-pore water 08-22-11)	8-22-11
1,2-DNB-08/22-STK								
1,2-Dinitrobenzene	1000ug/mL	0221/11		1.0mL	10.0mL	100ug/mL	(3) / ACN. MeOH DE226-61006	RJM 8/22/11
Part #010006-11		Lot#175526-29023						exp 2/22/12



EDF-H055 500 ng/mL 08-22-11: BL 08.22.11



Cracked open the vial in the adjacent photo-copy and delivered contents into an amber injection vial

LC/MS STANDARD PREP LOG# 97 PAGE # 72

072

STANDARD	INITIAL CONC	SOURCE DATE	ALIQUOT	FINAL VOLUME	FINAL CONC	SOLVENT / LOT #	DATE / INITIALS
AYH3593_302 373.13 DF 08-09-11_B/22;							
AYH3593_302 373.13 DF 08-09-11_B/22 TOOK 0.005 ML AND ADDED TO 0.045 ML 8290_IL 40 ng/mL							08-22-11
AYH3593_302 373.13 DF 08-09-11_B/22; AYH3593_302 373.13 DF 08-09-11_B/22 TOOK 0.005 ML AND ADDED TO 0.045 ML 8290_IL 40 ng/mL							08-22-11
PETN_08/24_STK							
PETN Part# 010614-04	1000 µg/mL	8/24/11 Lot# 173603-28890	1.0 mL	10.0 mL	100 µg/mL	ACN MeOH DE296 51076	Prep 8/24/11 Chkd 8/24/11

PETN Solution, 1000 mg/L, 1 ml
Lot # 173603 | Storage 4 Degrees C | Expiry 5/24/12
Solvent: Acetonitrile
PETN
Lot #: 173603 - 28890
Rec: 6/2/11 MFR exp. 05/24/12

8330_08/19_INT_CCV							
8330_08/19_INT STK	10.0 µg/mL	8/19/11	10 µL	1.0 mL	1.0 µg/mL	2 H2O : ACN : MeOH DE296 51076	8/24/11
NG_3,5-DNA_PETN_08/19_INT_CCV							
NG_3,5-DNA_PETN_08/19_INT STK	10.0 µg/mL	8/19/11	100 µL	1.0 mL	1.0 µg/mL	2 H2O : ACN : MeOH DE296 51076	8/24/11
8330_08/19_CCV						0.MP.25-11	
8330 INT STK ID 08-19-11	0.10	1.0		1.0 mg/L		H : L : 10	08-25-11
NG_DNA_PETN STK ID 08-19-11	0.10	"		"		H2O ACN MeOH DE296 51076	

LC/MS STANDARD PREP LOG# 97 PAGE# 83

STANDARD	INITIAL CONC	SOURCE DATE	ALIQUOT	FINAL VOLUME	FINAL CONC	SOLVENT LOT #	INITIALS
						083	

AccuStandard
M-8330-R
Method 8330 - Explosives I
1000 µg/mL in MeOH:AcCN (1:1)
Lot: 209101177-01
Exp: Apr 29,2013

Method 8330 - Explosives
Lot #: 209101177-01 - 29423
Rec: 8/29/11 MFR exp. 04/29/13

14 comps.
HIGHLY FLAMMABLE

FOR LABORATORY USE ONLY
WARNING: This product contains chemicals known to the State of Florida to cause cancer and birth defects or other reproductive harm.

STORAGE Freeze (<-10° C)

W 08-31-11

I broke open the vial labelled above to use for 8330-08/31-5th 1000µg/L 08-31-11

1,2-Dinitrobenzene
Solution, 1,000 mg/L, 1 mL
#1H66-01
Lot # 175526 Storage 10 Degrees C Expiry 7/10/14
Solv: Acetonitrile
1,2-Dinitrobenzene
Lot #: 175526 - 29024
Rec: 7/14/11 MFR exp. 07/10/14

08-31-11 W

I broke open the vial labelled to the left and transferred to an amber 1.8ml injection vial → 1,2-DNB 1000µg/L 08-31-11

8330-08/31-5th 100µg/L-1 W

8330 explosives 1000µg/L	AccuStandard 08-31-11	1.0	10.0	100µg/L	1:1 MeOH/ACN	08-31-11	
1,2-DNB 1000µg/L	08-31-11	1.0				50252 DE002	

8330-W-Soil 5.0µg/L W

1,2 DNB 1000	08-31-11	0.025	5.0	5.0	1:1 MeOH/ACN	08-31-11	
						50252-DE002	

PER-IS 0.005 µg/mL 08-31-11: JH

COMBINED 10.000 ML LABORATORY SOURCE 08-31-11 DI-H2O WITH 10.000 ML BURDICK & JACKSON ACETONITRILE LOT DA355. WITHDREW 1.000 ML AND THEN ADDED 1.000 025I $^{18}O_4$ PERCHLORATE 100 µg/L LOT 1023BB4-28211

LC/MS STANDARD PREP LOG# 91 PAGE # 92

092

STANDARD	INITIAL CONC	SOURCE DATE	ALIQUOT	FINAL VOLUME	FINAL CONC	SOLVENT LOT#	DATE/ INITIAL

AccuStandard® 125 Market St. - New Haven, CT 06513 - USA FOR LABORATORY USE ONLY

M-8330-ADD-4
3,5-Dinitroaniline
0.1 mg/mL in AcCN:MeOH
Lot: 209121115
Exp. Dec 8, 2012

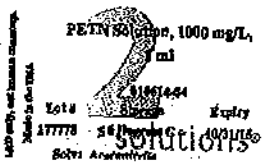
3,5-Dinitroaniline
Lot #: 209121115 - 27359
Rec: 9/28/10 MFR exp. 12/08/12

FLAMMABLE

STORAGE Ambient

09-07-11 lp

I broke open the vial labelled above and transferred to an amber 1.8ml injection vial → 3,5-DNA 1000µg/mL 09-07-11



PETN
Lot #: 177778 - 29394
Rec: 8/26/11 MFR exp. 10/31/15

09-07-11 lp

I broke open the vial labelled to the left & transferred to an amber 1.8ml injection vial → PETN 1000µg/mL 09-07-11

AccuStandard® 125 Market St. - New Haven, CT 06513 - USA FOR LABORATORY USE ONLY

M-8330-ADD-1-10X
Nitroglycerin
1000 µg/mL in EtOH:MeOH (97:3)
Lot: 210031440
Exp. Apr 12, 2012

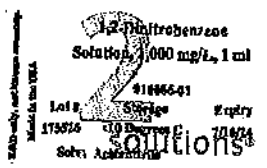
Nitroglycerin
Lot #: 210031440 - 28374
Rec: 2/28/11 MFR exp. 04/12/12

FLAMMABLE

STORAGE Refrig (0-6° C)

09-07-11 lp

I broke open the vial labelled above and transferred to an amber 1.8ml injection vial → Nitroglycerin 1000µg/mL 09-07-11 lp 9-7-11



1,2-Dinitrobenzene
Lot #: 175526 - 29025
Rec: 7/14/11 MFR exp. 07/10/14

I broke open the vial labelled to the left and transferred to an amber 1.8ml injection vial → 1,2 DNB 1000µg/mL 09-07-11

LC/MS STANDARD PREP LOG# 97 PAGE# 93

STANDARD	INITIAL CONC	SOURCE DATE	ALIQUOT	FINAL VOLUME	FINAL CONC	SOL'N LOT #	INITIALS
						093	09-07-11

AccuStandard
M-8330-R
Method 8330 - Explosives
1.0 mg/mL in MeOH:AcCN (1:1)
Lot: 209101177
Exp: Oct,21,2011

Method 8330 - Explosives
Lot #: 209101177 - 28369
Rec: 2/28/11 MFR exp. 10/21/11

14 comps.
FLAMMABLE

FOR LABORATORY USE ONLY
WARNING This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm
STORAGE Freeze (<-10° C)

I broke open the vial labelled above and transferred to an amber 1.8ml injection vial → M-8330-R 1000ug/L 09-07-11

8330_MX-A 10.0ug/L

M8330-R	1000	09-07-11	0.10	10.0	10.0	1:1 ACN/MeOH 09-07-11
1,2-DNB	1000	09-07-11	0.10			

8330-MX-B 10.0ug/L

3,5-DNA	10ug/L	09-07-11	1.0	10.0	10.0	1:1 ACN/MeOH 09-07-11
Nitroglycerin	1000	09-07-11	0.10	10.0		
PETN	1000	09-07-11	0.10			

8330_MX_A

8330_MX-A	10.0 ppm	08/03/11	200 µL	1.0 mL	2.0 ppm

1 : 1 : 6
ACN : MeOH : MILLIPORE
DE002 : 51076 : H2O

8330_MX_B

8330_MX-B	10.0 ppm	08/03/11	200 µL	1.0 mL	2.0 ppm

1 : 1 : 6
ACN : MeOH : MILLIPORE
DE002 : 51076 : H2O

8330B_CB

8330_MX-A	10.0 ppm	08/03/11	100 µL	1.0 mL	1.0 ppm
8330_MX-B	10.0 ppm	08/03/11	100 µL	1.0 mL	1.0 ppm
8330_MX-A	10.0 ppm	08/03/11	50 µL	1.0 mL	0.5 ppm
8330_MX-B	10.0 ppm	08/03/11	50 µL	1.0 mL	0.5 ppm
8330_MX-A	2.0 ppm	08/09/11	100 µL	1.0 mL	0.2 ppm
8330_MX-B	2.0 ppm	08/09/11	100 µL	1.0 mL	0.2 ppm
8330B_CB	1.0 ppm	08/09/11	100 µL	1.0 mL	0.1 ppm
8330B_CB	0.5 ppm	08/09/11	100 µL	1.0 mL	0.05 ppm
8330B_CB	0.2 ppm	08/09/11	100 µL	1.0 mL	0.02 ppm
8330B_CB	0.1 ppm	08/09/11	100 µL	1.0 mL	0.01 ppm
8330B_CB	0.05 ppm	08/09/11	100 µL	1.0 mL	0.005 ppm

1 : 1 : 6
ACN : MeOH : MILLIPORE
DE002 : 51076 : H2O

9-7-11

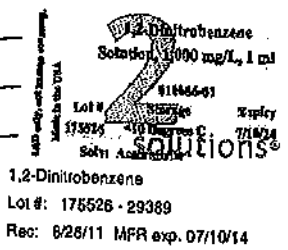
LC/MS STANDARD PREP LOG# 97 PAGE # 94

094

STANDARD	INITIAL CONC	SOURCE DATE	ALIQUOT	FINAL VOLUME	FINAL CONC	SOLVENT LOT #	DATE/ INITIALS

8330B_SS — kp 9-7-11

8330_07/13_MixA_SS_STK	100 ppm	07/13/11	10.0 µL	1.0 mL	1.0 ppm	1 : 1 : 6
8330_07/13_MixB_SS_STK	100 ppm	07/13/11	10.0 µL	1.0 mL	1.0 ppm	ACN : MeOH : MILLIPORE
PETN_07/13_SS_INTSTK	100 ppm	07/13/11	10.0 µL	1.0 mL	1.0 ppm	DE002 : 51076 : H2O



09-08-11 kp
I broke open the vial labelled to the left and transferred to an amber 1.8 ml injection vial
→ 1,2-DNB 1000 ug/L 09-08-11

1,2-DNB 100 ug/L

1,2-DNB	1000	09-08-11	1.0	10.0	100 ug/L	1:1 MeOH/ACN lot# 51076 DE296	9-8-11 kp

1,2-DNB 1.0 ug/L

1,2-DNB	100	09-08-11	0.10	10.0	1.0	1:1 MeOH/ACN 51076 DE296	9-8-11 kp

PETN_MDL_STD 5.0 ug/L

PETN STK	100	08-24-11	0.250	5.0	5.0	1:1 MeOH/ACN 51076 DE296	09-08-11 kp

NG_STD (Nitroglycerin) 100 ug/L

Nitroglycerin	1000	09-07-11	0.50	5.0	100 ug/L	1:1 MeOH/ACN 51076 DE296	09-08-11 kp

8330_MDL_STD 1.0 ug/L

8330_MIX_A	100 ug/L	09-07-11	0.50	5.0	1.0	1:1 MeOH/ACN 51076 DE296	9-8-11 kp

LC/MS STANDARD PREP LOG# 97 PAGE # 95

095

STANDARD	INITIAL CONC	SOURCE DATE	ALIQUOT	FINAL VOLUME	FINAL CONC	SOLVENT LOT #	DATE INITIALS
Nitroglycerin	1000	09-07-11	0.100ml	1.0ml	100ug/L	1:1 MeOH/ACN 51076 DE296	9-8-11
NG DNA MDL STD	1.0 ug/L						
Nitroglycerin	100	09-08-11	0.050	5.0	1.0	1:1 MeOH/ACN 51076 DE296	9-8-11
35-DNA	100	09-07-11	0.050	〃	〃	〃	〃
8330_CCV							
8330_Mix-A	10	09-07-11	100mL	1mL	10ug/mL	6:1:1 H_2O:ACN:MeOH 09108111	HM
8330_Mix-B	10	09-07-11	100mL	〃	〃		

832_METH 0.8 ug/ml

832_METH	10ug/ml	08/03/11	0.160ml	2.0 ml	0.8 ug/ml	Millipore water 09/09/11	09/09/11
HPLC_IS	100 ug/ml	07/08/11	0.020ml	2	1.0 ug/ml		

832_METH 0.6 ug/ml

832_METH	10ug/ml	08/03/11	0.120ml	2.0 ml	0.6 ug/ml	Millipore water 09/09/11	09/09/11
HPLC_IS	100 ug/ml	07/08/11	0.020ml	2	1.0 ug/ml		

832_METH 0.4 ug/ml

832_METH	10ug/ml	08/03/11	0.080ml	2.0 ml	0.4 ug/ml	Millipore water 09/09/11	09/09/11
HPLC_IS	100 ug/ml	07/08/11	0.020ml	2	1.0 ug/ml		

prepared 3 portions

832_METH 0.2 ug/ml

832_METH	10ug/ml	08/03/11	0.040ml	2.0 ml	0.2 ug/ml	Millipore water 09/09/11	09/09/11
HPLC_IS	100 ug/ml	07/08/11	0.020ml	2	1.0 ug/ml		

832_METH 0.1 ug/ml

832_METH	10ug/ml	08/03/11	0.020ml	2.0 ml	0.1 ug/ml	Millipore water 09/09/11	09/09/11
HPLC_IS	100 ug/ml	07/08/11	0.020ml	2	1.0 ug/ml		

prepared 2 portions

832_METH	10ug/ml	08/03/11	0.10 ml	1.0 ml	1.0ug/ml	Millipore water 09/09/11	09/09/11

832_METH 0.08ug/ml

832_METH	1.0ug/ml	09/09/11	0.160ml	2.0 ml	0.08 ug/ml	Millipore water 09/09/11	09/09/11
HPLC_IS	100 ug/ml	07/08/11	0.020ml	2	1.0 ug/ml		

LC/MS STANDARD PREP LOG# 97 PAGE# 109

STANDARD	INITIAL CONC	SOURCE DATE	ALIQUOT	FINAL VOLUME	FINAL CONC	SOLVENT / LOT#	INITIALS
	Solvent Blank 10%						HM
PETN/MX29-8 400		09-6-11	0.20	50.0 mL	1.6	Methanol/51183	9-15-11
8330 - CCV_09/14/11							
8330 MIX-A	10	9/07/11	100uL	1mL	1:0 ug/mL	6:1:1 H2O:ACN:MeOH	HM 9/13/11
8330 MIX-B	10	9/07/11	1	1	1		

AccuStan
M-8330-ADD-1-10X
Nitroglycerin
1000 µg/mL in EtOH:MeOH (97:3)
Lot: 211041387
Exp. Apr 19, 2013
Nitroglycerin
Lot #: 211041387 - 29420
Rec: 8/29/11 MFR exp. 04/19/13
nL
HIGHLY FLAMMABLE
FOR LABORATORY USE ONLY
STORAGE Refrig (0-5° C)

09/20/11 HM

I broke open the vial labelled above and transferred to an amber 1.8mL injection vial → Nitroglycerin 1000 ug/mL 09/20/11

Part #: 79250
Lot #: 071409
Laboratory Use Only - See MSDS
Exp: 071414
Storage 0 °C
EPA Method 8330 Analyte
Pentaerythritol tetra
1000 ug/mL in aceto
PETN
Lot #: 071409 - 28214
Rec: 2/11/11 MFR exp. 07/14/14
ABSOLUTE STANDARD

9/20/11 HM

HM 9/20/11

I broke open the vial ~~to be~~ labelled above and transferred to an amber 1.8mL injection vial → PETN 1000 ug/mL 9/20/11

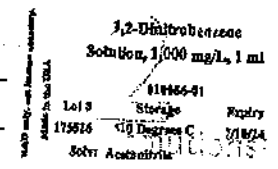
	8330MXA_CCV 10 ug/L						HM
8330MXA	10 ug/L	09-09-11	0.10	1.0	1.0	2:1:1 Millipore water MeOH/51076 ACN DE256	09-20-11
	8330MXB_CCV 10 ug/L						HM
8330MXB	10 ug/L	09-09-11	0.10	1.0	1.0	2:1:1 Millipore water MeOH/51076 ACN DE256	09-20-11

110

STANDARD	INITIAL CONC	SOURCE DATE	ALIQUOT	FINAL VOLUME	FINAL CONC	SOLVENT LOT #	DATE / INITIALS
	8330MXA CCV 1.0 µg/mL (Ar Stetler)						M
8330MXA	10	09-07-11	0.10	1.0	1.0	6:1:1 MeOH/DI/ACN - 09-20-11 MeOH/51076, ACN/DE256	
	8330MXB CCV 1.0 µg/mL (Ar Stetler)						M
8330MXB	10	09-07-11	0.10	1.0	1.0	6:1:1 MeOH/DI/ACN - 09-20-11 MeOH/51076, ACN DE256	
	1,2-DNB - 100 PPM 9/20/11						
1,2 DNB	1000 µg/mL	9/20/11	.5mL	5mL	100 PPM	1:1 ACN:MeOH DE256 51076	HM 9/20/11
	8330 - STK 100 PPM 9/20/11						
M-8330-STK	1000 µg/mL	09/07/11	.5mL	5mL	100 PPM	1:1 ACN:MeOH DE256 51076	HM 9/20/11
	PETN - 100PPM 9/20/11						
PETN	1000 µg/mL	9/20/11	.5mL	5mL	100 PPM	1:1 ACN:MeOH DE256 51076	HM 9/20/11
	NG - 100 PPM 9/20/11						
Nitroglycerin	1000 µg/mL	9/20/11	.5mL	5mL	100 PPM	1:1 ACN:MeOH DE256 51076	HM 9/20/11
	Picric Acid stk 0.2 µg/L						
Picric Acid	10	09-21-11	0.10	5.0	0.2	ACN DE256	09-21-11
	24 M 9-21-11						
	8321-TS stock 1 DF						M
P321AX(-7	500	8-31-11	0.10	10.0	5.0	MeOH/51133	09-22-11
Fluoranthene	1127	09-28-11	0.089	10			
8141 Surr	1060	09-29-11	0.10	10			

LC/MS STANDARD PREP LOG# 97 PAGE# 113

STANDARD	INITIAL CONC	SOURCE DATE	ALIQUOT	FINAL VOLUME	FINAL CONC	SOL. MIX / LOT #	INITIALS
The following CCV was made on 9/22/11 and documented here on 9/23/11 HM							
8330 - CCV 9/22/11							
8330 - MIX-A	10 ug/mL	9/07/11	100 uL	1 mL	1.0 ug/mL	6:1:1 H2O:ACN:MeOH DE256 : S1076	HM 9/23/11
8330 - MIX-B							
8330 - CCV 9/24/11							
8330 - MIX-A	10 ug/mL	9/07/11	100 uL	1 mL	1.0 ug/mL	6:1:1 H2O:ACN:MeOH DE256 : S1076	HM 9/24/11
8330 - MIX-B							



I broke open the vial labelled to the left and transferred to an amber 1.8mL injection vial.

→ 1,2-DNB 1000mg/L 9-26-11

1,2-DNB 100 mg/L

1,2-DNB	1000 mg/L	9-26-11	1.0 mL	10.0 mL	100mg/L	1:1 MeOH/ACN S1076 DE296 9-26-11 HM

8330 - CCV 9/26/11

8330 - MIX-A	10 ug/mL	9/07/11	100 uL	1 mL	1.0 ug/mL	6:1:1 H2O ACN MeOH DE296 S1076 9-26-11 HM
8330 - MIX-B						

832 - MeOH - SCC 0.5 mg/L

Dithranol	1000	07-15-11	0.10	200	0.5	MeOH/S1173 09-27-11

8330 - CCV 9/27/11

8330 - MIX-A	10 ug/mL	9/07/11	100 uL	1 mL	1.0 ug/mL	6:1:1 H2O ACN MeOH DE296 S1076 9-27-11 HM
8330 - MIX-B						

LC/MS STANDARD PREP LOG# 97 PAGE # 114

114

STANDARD	INITIAL CONC	SOURCE DATE	ALIQUOT	FINAL VOLUME	FINAL CONC	SOLVENT / LOT #	DATE / INITIALS
NG-3,5-DNB-PETN-09/28-INTSTK							
NG-09/20-STK	100 µg/mL	09/20/11	500 µL	5.0 mL	10.0 µg/mL	1:1 ACN:MeOH DE296 S1076	HM 9/28/11 exp 11/28/11
3,5-DNB-0713-STK		07/13/11					
PETN-09/20-STK		09/20/11					
8330-09/28-INTSTK							
M-8330-12	1000 µg/mL	9/07/11	100 mL	10.0 mL	100 µg/mL	1:1 ACN:MeOH DE296 S1076	HM 9/28/11 exp
1,2-DNB							
8330-WATER SURROGATE							
1,2-DNB-STK-100 PPM	100 µg/mL	09/29/11	500 mL	10.0 mL	5 µg/mL	1:1 ACN:MeOH DE296 S1076	HM 9/28/11 exp 01/28/11
8330-CCV 9/28/11							
8330-MIX-A	10 µg/mL	9/07/11	100 mL	1.0 mL	1.0 µg/mL	1:1 ACN:MeOH DE296 S1076	HM 9/28/11
8330-MIX-B							

AccuStandard® 125 Market St · New Haven, CT 06513 · USA

M-8330-ADD-35
Propyleneglycol dinitrate
100 µg/mL in methanol
Lot: B7040118-2B
Exp. Dec 7, 2012

Propyleneglycol dinitrate
Lot #: B7040118-2B · 28756
Rec: 4/25/11 MFR exp. 12/07/10

FLAMMABLE

FOR LABORATORY USE ONLY

STORAGE Freeze (<-10° C)

MP 09-30-11

I broke open the vial labelled above and transferred to an amber 1.8mL injection vial → PGDN ~~1000~~ 100 µg/mL 09-30-11 MP 09-30-11

PGDN 10 µg/mL (Cal stock)

PGDN 100	09-30-11	0.10	1.0	10.0	1:1 ACN/MeOH	08-19-11	9-30-11
1,2-DNB 100	09-26-11	0.10					

8321-V IS 1.0 g/L #

8321-V IS 100 07-27-11 0.250 25.0 1.0 MeOH/5135 10-4-11

AccuStandard

M-8330-R

Method 8330 - Explosives by 1000 µg/mL in MeOH:AcCN (1:1)

Lot: 209101177-01

Exp: Apr 29,2013

14 comps.

HIGHLY FLAMMABLE

Method 8330 - Explosives

Lot #: 209101177-01 - 29424

Rec: 8/29/11 MFR exp. 04/29/13

LABORATORY USE ONLY

WHG: This product contains ical's known to the State of rnia to cause cancer and birth ts or other reproductive harm.

STORAGE Freeze (<-10° C)

I broke open the vial labelled above and transferred to an amber 1.8mL injection vial → M-8330-R 1000ug/mL 10/04/11

1,2-Dinitrobenzene Solution, 1000 mg/L, 1 ml

Lot # 175526 Storage Expiry 7/10/14

Supelco Solutions

1,2-Dinitrobenzene

Lot #: 175526 - 29393

Rec: 8/26/11 MFR exp. 07/10/14

I broke open the vial labelled to left HM 10/04/11 and transferred to an amber 1.8mL injection vial → 1,2 DNB 1000 ug/mL 10/04/11

M-8330-R 100 ug/mL

M-8330-R	1000ug/mL	10/04/11	1mL	10mL	100ug/mL	1:1 AcN/MeOH
1,2-DNB	1000ug/mL	↓	↓	↓	↓	DB 296 S1076 HM 10/4/11

PETN Solution, 1000 mg/L, 1 ml

Lot # 177778 Storage Expiry 10/31/15

Supelco Solutions

PETN

Lot #: 177778 - 29398

Rec: 8/26/11 MFR exp. 10/31/15

HM 10/04/11

I broke open the vial ~~labelled~~ labelled to the left above and transferred to an amber 1.8mL injection vial → PETN 1000 ug/mL 10/04/11

PETN 100 ug/mL

PETN	1000 ug/mL	10/04/11	1mL	10mL	100ug/mL	1:1 ACN MeOH DB 296 S1076 10/4/11

1,2-Dinitrobenzene
Solution, 1,000 mg/L, 1 ml
91886-01
Lot # 175526 Storage <10 Degrees C Expiry 7/2014
Solv: Acetonitrile

1,2-Dinitrobenzene
Lot #: 175526 - 29392
Rec: 8/26/11 MFR exp. 07/10/14

I broke open the vial HM 10/4/11 ~~labbe~~ labelled to the left and transferred to an amber 1.8 mL injection vial → 1,2-DNB 1000 µg/mL 10/4/11

1,2-DNB - 100 µg/mL

1,2-DNB	1000 µg/mL	10/4/11	1mL	10mL	100 µg/mL	1:1 ACN:MeOH DF 96 51076	HM 10/4/11

AccuStandard
M-8330-ADD-1-10X
Nitroglycerin
1000 µg/mL in EtOH:MeOH (97:3)
Lot: 211041387
Exp. Apr 19, 2013
HIGHLY FLAMMABLE

Nitroglycerin
Lot #: 211041387 - 29421
Rec: 8/29/11 MFR exp. 04/19/13

FOR LABORATORY USE ONLY

STORAGE Refrig (0-5° C)

I broke open the vial labelled to the left and transferred to an amber 1.8 mL injection vial → ~~1,2-DNB~~ HM 10/4/11 Nitroglycerin 1000 µg/mL 10/4/11

Nitroglycerin - 100 µg/mL

Nitroglycerin	1000 µg/mL	10/4/11	1mL	10mL	~~1000 µg/mL~~ 100 µg/mL HM 10/4/11	1:1 ACN:MeOH DF 96 51076	HM 10/4/11

8321 Surr 2.0 kg/L-1

Fluorobenzene	1127	07-28-11	0.355	200 mL	MeOH/51173		10-6-11
8141 Surr	1000	10-3-11	0.400	I	I		I

HPLC 1.0 kg/L

HPLC	100	7-8-11	2.0	200	1.0	MeOH/51173	10-6-11

Metals Analysis

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker
Project: 112G00810 Indian Head CTO423
Sample ID: X15GW0020911
Sample Collection Date: 9/28/2011

ARF: 65882
APPL ID: AY47772

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6020A	ANTIMONY (SB)	0.91	0.20	0.020	0.010	ug/L	1	11/7/2011	11/9/2011
6020A	LEAD (PB)	21.8	0.50	0.220	0.110	ug/L	1	11/7/2011	11/9/2011

AMENDED PAGE
11-23-11

Printed: 11/21/2011 5:45:21 PM
APPL-F1-SC-NoMC-REG MDLs

908 North Temperance Ave. ∇ Clovis, CA 93611 ∇ Phone 559-275-2175 ∇ Fax 559-275-4422

Certification Number: CA1312
NELAP Certification number: 05233CA
DoD-ELAP Certificate number: ADE-1410

Data Validatable Report

November 7, 2011

Tetra Tech NUS, Inc.
234 Mall Boulevard, Suite 260
King of Prussia, Pennsylvania 19406

Attn: Barbara Becker

Title: Report of Data: Case 65895

Project: 112G00810 Indian Head CTO423, RI

Contract #: Prime contract # for DoD: N62467-04-D-0055, CTO 0423
Subcontract: MSA # 1045497, WR # 06-423

Dear Ms. Becker:

Samples were received October 5, 2011, in good condition. Written results for the requested analyses are provided on this November 7, 2011.

Results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

If you have any questions or require further information, please contact your APPL Project Manager, Cynthia Clark, at your convenience. Thank you for choosing APPL, Inc.

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 above. These test results meet all requirements of NELAC and DoD QSM. Release of the hard copy has been authorized by the Laboratory Manager or her designee, as verified by the following signature.

Sharon Dehmlow, Laboratory Director
APPL, Inc.

SD/rp
Enclosure
cc: File

Number of pages in this report: 222

Data Validation Package
for
112G00810 Indian Head CTO423, RI
ARF 65895

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SAMPLE RECEIPT INFORMATION

Sample receipt information

ARF: 65895

Project: 112G00810 Indian Head CTO423, RI

Sample Receipt Information:

The samples were received on October 5, 2011, at 3.0°C. The samples were assigned Analytical Request Form (ARF) number 65895. The sample numbers and requested analyses were compared to the chain of custody. No exception was encountered.

Sample Table

CLIENT ID	APPL ID	Matrix	Date Sampled	Date Received
X16GW0021011	AY47853	WATER	10/01/11	10/05/11
X16GW0021011-F	AY47854	WATER	10/01/11	10/05/11
X16GW0011011	AY47855	WATER	10/01/11	10/05/11
X16GW0011011-F	AY47856	WATER	10/01/11	10/05/11
X17GW0011011	AY47857	WATER	10/01/11	10/05/11
X17GW0011011-F	AY47858	WATER	10/01/11	10/05/11
FB01-100111	AY47859	WATER	10/01/11	10/05/11
DUP03100111	AY47860	WATER	10/01/11	10/05/11
DUP03100111-F	AY47861	WATER	10/01/11	10/05/11

Samples and blanks were screened for J-value responses between the detection limit (DL) and limit of quantitation (LOQ).

Laboratory control limits generated in house do not meet the control limits listed in DoD QSM 4.2 for all analytes. Laboratory control limits generated for this project meet all control limits listed in the DoD QSM 4.2 except where noted. A copy of our in house generated control limits is available upon request. In addition, a copy of our LOQ control limits, established using 7 data points, are also available upon request.

Only the portion of the injection log relative to these samples is included. A full sequence log is available upon request.

Measurement uncertainty can be reported upon request.

CASE NARRATIVE

Case Narrative

EPA Method 8270D SIM

Semi-Volatile Organic Analysis

Sample Preparation:

The water sample was extracted according to EPA method 3510C. All holding times were met.

Sample Analysis Information:

The sample was analyzed according to the method using a Hewlett Packard Gas Chromatograph with a mass spectrometer detector in selective ion monitoring mode.

Quality Control/Assurance

Calibrations:

Initial and continuing calibrations were performed according to the method and the DoD QSM.

Blanks:

No analyte was detected above one-half the reporting limit in method blank.

Spikes:

A Laboratory Control Spike (LCS) was used for quality assurance. All LCS recoveries were acceptable.

No sample was designated by the client for MS/MSD analysis.

Surrogates

Surrogate recoveries are summarized on form 2 & 8. All surrogate recoveries were within control limits.

Tuning:

The instrument was tuned using DFTPP. All method criteria were met.

Internal Standards

The internal standard area counts were compared to the mid-point of the initial calibration according to method 8270. All recoveries met acceptance criteria.

Summary:

No problem was encountered.

EPA Method 8330B

Energetics

Sample Preparation:

The water sample was extracted according to EPA method 3535A. All holding times were met.

Analysis:

The sample was analyzed according to EPA Method 8330B using an Agilent 1100 HPLC with DA detector and an Agilent 1100 HPLC with UV detector. Manual integrations were performed in accordance to APPL's SOP. Manual integrations were performed on Waldorf for HMX in data file 1013_0000003. Chromatograms of prior to and after manual integrations are enclosed.

Quality Control/Assurance:

Spike Recovery:

A Laboratory Control Spike (LCS) was used for quality assurance. All spike acceptance criteria was met.

No s sample was designated by the client for MS/MSD analysis; however sample X17GW0011011 was selected by the laboratory or MS/MSD analysis. Nitroglycerin spike recoveries were acceptable.

Method blanks:

No target analyte was detected at or above the detection limit.

Surrogates:

Surrogate recoveries are summarized on the Form 2 & 8. All surrogates had acceptable recoveries.

Calibration:

The initial and continuing calibrations and second source were analyzed according to the method. All calibration criteria were met.

Summary:

No other analytical problem was encountered. The data generated are acceptable.

EPA Method 6020A
Metals

Digestion Information:

The water samples were digested according to EPA method 3015. All holding times were met.

Analysis Information:

Samples:

The samples were analyzed according to EPA method 6020A using an Agilent 7500CX ICP-MS.

Calibrations:

The initial and continuing calibrations were analyzed according to the DoD QSM. The initial calibration verification is prepared from a second source standard.

Blanks:

No metal was detected at or above one-half the LOQ in the method blank.

Spikes:

Laboratory Control Spikes (LCS), Matrix Spikes (MS/MSD), post digestion spikes (PDS), and dilution tests were used for quality assurance. All LCS recoveries were within the acceptance limits.

The client designated samples X17GW0011011 and X17GW0011011-F for MS/MSD analysis. In both MS/MSD, all recoveries met acceptance criteria. Sample X17GW0011011 was designated as the QC sample for the batch. In the PDS and dilution test, all acceptance criteria were met.

Summary:

No analytical exception is noted.

Abbreviations and Flags

FLAG	DESCRIPTION
#	Recovery or RPD outside control limits
*	Recovery or RPD outside control limits
B	Analyte detected in associated method blank
C1	Reason for correction: wrote incorrect response
C2	Reason for correction: calculated incorrectly
C3	Reason for correction: needs to be rechecked
C4	Reason for correction: data not usable
DO	Diluted out
E	Exceeds linear range
F	Estimated value
G1	Includes a wide range of hydrocarbons which does not match our gasoline standard
G10	Includes a match to hydrocarbon profiles within the range of mineral spirits
G11	Includes a match to hydrocarbon profiles within the range of JP-4
G12	Pattern does not match the gasoline standard; the carbon range for this sample is consistent with JP8
G13	Closely resembles the hydrocarbon profile of aviation gasoline
G14	Analyte concentration may be biased due to carry over
G2	Closely resembles the boiling point hydrocarbon profile consistent with weathered gasoline
G3	Includes higher boiling hydrocarbons
G4	Includes dominant peak(s) not indicative of petroleum hydrocarbons
G5	Is mainly dominant peak(s) not indicative of petroleum hydrocarbons
G6	Contains recognizable contaminant peak(s) which has been removed from quantitation
G7	Is mainly a match to hydrocarbons within the range of gasoline
G8	Closely resembles the boiling point hydrocarbon profile consistent with weathered gasoline
G9	Includes hydrocarbons within the range of kerosene
J	Estimated value
M	Matrix effect
M1	Manual integration: integration does not follow baseline
M2	Manual integration: non-target peak interference
M3	Manual integration: to split a peak that was integrated as one peak by the computer
M4	Manual integration: to integrate a split peak
M5	Manual integration: the whole peak or part of the peak was not integrated
M6	Manual integration: computer integrated wrong peak
M7	Manual integration: other - explain
MDL	Method detection limit
ND	Not detected
NT	Non-target
Q	Acceptance criteria not met
T1 I	Includes wide range of hydrocarbons not indicative of diesel
T1 M	Is mainly wide range of hydrocarbons not necessarily indicative of diesel
T2 I	Includes lower boiling hydrocarbons, i.e. mineral spirits, kerosene, stoddard solvent, white gas
T2 M	Is mainly lower boiling hydrocarbons, i.e. mineral spirits, kerosene, stoddard solvent, white gas
T3 I	Includes higher boiling hydrocarbons, i.e. asphaltene, waster oil, motor oil, or weathered diesel fuel
T3 M	Is mainly higher boiling hydrocarbons, i.e. asphaltene, waster oil, motor oil, or weathered diesel fuel
T4 I	Includes dominant peak(s) not indicative of hydrocarbons
T4 M	Is mainly dominant peak(s) not indicative of hydrocarbons
T5	Contains recognizable contaminant peak(s) which has been removed from quantitation
T6	Is mainly a match to hydrocarbons within range of diesel fuel
T7	Closely resembles the boiling point hydrocarbon profile consistent with diesel fuel
T8	Includes a match to hydrocarbon profiles within range of diesel and kerosene fuel
T9 I	Includes non-diesel hydrocarbons within boiling point range of diesel fuel
T9 M	Is mainly non-diesel hydrocarbons within boiling point range of diesel fuel.
Y	Percent difference between primary and confirmation column > 40%

CHAIN OF CUSTODY,
ARF, CRF, AND
CLIENT COMMUNICATION

APPL - Analysis Request Form 65895

Client: Tetra Tech NUS, Inc.
Address: 234 Mall Blvd, suite 260
King of Prussia, PA 19406
Attn: Barbra Becker
Phone: 610-491-9688 Fax: 610-491-9645
Job: 112G00810 Indian Head CTO423
PO #: MSA# 1045497 WR#06-423
Chain of Custody (Y/N): Y # 2740
RAD Screen (Y/N): Y pH (Y/N): Y
Turn Around Type: STD

Received by: TBV
Date Received: 10/05/11 Time: 10:45
Delivered by: FED EX
Shuttle Custody Seals (Y/N): Y
Chest Temp(s): 3.0°C
Color: N-PURBLUE,R-ORYELL
Samples Chilled until Placed in Refrig/Freezer: Y
Project Manager: Cynthia Clark
QC Report Type: DVP4/LEDD/RI
Due Date: 10/26/11

Comments:
send 1 hard copy and 2 BOOKMARKED CDs of report and Summary report on CD
Assemble report and summary package according to attached document, in same order as attached, special dividers
EDD: LEDD to Tobrena Sedlmyer barb.becker@tetratech.com
guidance: DoD QSMv4.2, LOQ/LOD-calc/DL forms
8330 = Nitroglycerin only
invoice in triplicate per PO
NAVY (CLEAN) CONTRACT N62467-04-D-0055, CTO 423

Sample Distribution:
GC: 1-$SIMDDODW
Extractions: 1-_SEP004S, 1-_MWE3535
LCMS: 1-$633BW
Metals: 1-$62ADODW(Sb,Pb), 1-$62ADODW(Sb), 2-$62ADODW(Sb,As,Pb), 1-$62ADODDW(Sb,Pb), 1-$62ADODDW(Sb), 2-$62ADODDW(Sb,As,Pb), 1-$62ADODDW(Sb,As,Pb,Cu)
Other: 9-_M3015

Charges:

Invoice To:
TETRA TECH NUS
Accounts Payable
661 Anderson Drive, Foster Plaz
Pittsburgh, PA 15220

	Client ID		APPL ID	Sampled		Analyses Requested
1.	X16GW0021011		AY47853W	10/01/11	08:45	$62ADODW(Sb,Pb)
2.	X16GW0021011-F		AY47854W	10/01/11	08:45	$62ADODDW(Sb,Pb)
3.	X16GW0011011		AY47855W	10/01/11	10:45	$62ADODW(Sb), $SIMDDODW
4.	X16GW0011011-F		AY47856W	10/01/11	10:45	$62ADODDW(Sb)
5.	X17GW0011011	MS/MSD	AY47857W	10/01/11	13:40	$62ADODW(Sb,As,Pb), $633BW -- Nitroglycerin only, ms/msd on Metals
6.	X17GW0011011-F	MS/MSD	AY47858W	10/01/11	13:40	$62ADODDW(Sb,As,Pb)

7.	FB01-100111	AY47859W	10/01/11	15:20	$62ADODDW(Sb,As,Pb,Cu)
8.	DUP03100111	AY47860W	10/01/11	00:00	$62ADODW(Sb,As,Pb)
9.	DUP03100111-F	AY47861W	10/01/11	00:00	$62ADODDW(Sb,As,Pb)

APPL Sample Receipt Form

ARF# **65895**

Sample	Container Type	Count	pH
AY47853	[6] PL 500mL - HNO3	1	1.7
AY47854	[6] PL 500mL - HNO3	1	1.7
AY47855	[6] PL 500mL - HNO3	1	1.7
	[17] Amber Liter	2	NA
AY47856	[6] PL 500mL - HNO3	1	1.7
AY47857	[6] PL 500mL - HNO3	3	1.7
	[17] Amber Liter	2	NA
AY47858	[6] PL 500mL - HNO3	3	1.7
AY47859	[6] PL 500mL - HNO3	1	1.7
AY47860	[6] PL 500mL - HNO3	1	1.7
AY47861	[6] PL 500mL - HNO3	1	1.7

Sample	Container Type	Count	pH

TETRA TECH NUS, INC. | CHAIN OF CUSTODY | NUMBER 2740 | PAGE ___ OF ___

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
112600810	Stump Neck Annex	Barb Becker	610 491 9685	Sample Custodian APPL Inc
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER	PHONE NUMBER	ADDRESS
		Fred Ramsey	412 921 7090	908 N Temperance Avenue
		CARRIER/WAYBILL NUMBER Federal Express Airbill NO 8744 5964 0360		CITY, STATE Clovis, CA 93611

STANDARD TAT ☐
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR 2011	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	CONTAINER TYPE PLASTIC (P) or GLASS (G)	P	P	P	P	G	G	P	P	
									PRESERVATIVE USED	HNO3	HNO3	HNO3	HNO3	4°C	4°C	HNO3	HNO3	
									TYPE OF ANALYSIS: Antimony Lead Total HNO3									
									Dissolved Antimony Lead Total Antimony									
									Dissolved Antimony Low Level PAHs									
									Nitroglycerin									
									Total Antimony Arsenic Lead									
									Dissolved Antimony Arsenic Lead									
									Dissolved Antimony Arsenic Lead Copper									COMMENTS
10/1	0845	X16GW0021011	X16			GW	G	1		1								
10/1	0845	X16GW0021011-F	X16			GW	G	1			1							
10/1	1045	X16GW0011011	X16			GW	G					1		2				
10/1	1045	X16GW0011011-F	X16			GW	G						1					
10/1	1340	X17GW0011011	X17			GW	G								2	3			DO MS/MSD on Metals
10/1	1340	X17GW0011011-F	X17			GW	G										3		DO MS/MSD on Metals
10/1	1520	FB01-100111	FB			GW	G									+ cm lower		1	
10/1	0000	DUP03100111	DUP03			GW	G									1	+ cm w/111		
10/1	0000	DUP03100111-F	DUP03			GW	G										1		

1. RELINQUISHED BY	DATE	TIME	1. RECEIVED BY	DATE	TIME
	10/4/11	1960		10/5/11	1045
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY) 4/02R

FORM NO. TtNUS-001

COOLER RECEIPT FORM

1) Project: CT0423, 112G00810 Indian Head Date Received: 10/5/11

2) Coolers: Number of Coolers: 1

3) YES NO Were coolers and samples screened for radioactivity?

4) YES NO Were custody seals on outside of cooler? How many? 2 Date on seal? 10/4/11

5) Name on seal? See Label

6) YES NO NA Were custody seals unbroken and intact at the time of arrival?

7) YES NO Did the cooler come with a shipping slip (air bill, etc.)? Carrier name: Fed Ex

8) Shipping slip numbers: 1) 8744 5964 0360 2) 3)

9) YES NO NA Was the shipping slip scanned into the database?

10) YES NO NA If cooler belongs to APPL, has it been logged into the ice chest database?

11) Describe type of packing in cooler (bubble wrap, popcorn, type of ice, etc.): bubble bag, Ziploc, in wet ice

12) YES NO NA For hand delivered samples was sufficient ice present to start the cooling process?

13) YES NO Was a temperature blank included in the cooler?

14) Serial number of certified NIST thermometer used: A39267 Correction factor: 0

15) Cooler temp(s): 1) 3.0°C 2) 3) 4) 5) 6) 7) 8)

Chain of custody:

16) YES NO Was a chain of custody received?

17) YES NO Were the custody papers signed in the appropriate places?

18) YES NO Was the project identifiable from custody papers?

19) YES NO Did the chain of custody include date and time of sampling?

20) YES NO Is location where sample was taken listed on the chain of custody?

Sample Labels:

21) YES NO Were container labels in good condition?

22) YES NO Was the client ID on the label?

23) YES NO Was the date of sampling on the label?

24) YES NO Was the time of sampling on the label?

25) YES NO Did all container labels agree with custody papers?

Sample Containers:

26) YES NO Were all containers sealed in separate bags?

27) YES NO Did all containers arrive unbroken?

28) YES NO Was there any leakage from samples?

29) YES NO Were any of the lids cracked or broken?

30) YES NO Were correct containers used for the tests indicated?

31) YES NO Was a sufficient amount of sample sent for tests indicated?

32) YES NO NA Were bubbles present in volatile samples? If yes, the following were received with air bubbles:

Larger than a pea:

Smaller than a pea:

Preservation & Hold time:

33) YES NO NA Was a sufficient amount of holding time remaining to analyze the samples?

34) YES NO NA Do the sample containers contain the same preservative as what is stated on the COC?

35) YES NO NA Was the pH taken of all non-VOA preserved samples and written on the sample container?

36) YES NO NA Was the pH of acid preserved non-VOA samples < 2 & sodium hydroxide preserved samples > 12?

37) YES NO NA Unpreserved VOA Vials received?

38) YES NO NA Are unpreserved VOA vials noted in the ADD TEST FIELD on the ARF?

Lab notified if pH was not adequate:

Deficiencies:

Signature of personnel receiving samples: Yang Li Second reviewer:

Signature of project manager notified: Date and Time of notification:

Name of client notified: Date and Time of notification:

Information given to client:

by whom (Initials):

EPA METHOD 8270
Polynuclear Aromatic Hydrocarbons

APPL, INC.

EPA METHOD 8270
Polynuclear Aromatic Hydrocarbons
Summary

APPL, INC.

EPA 8270D LL WATER DODv3

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker

Project: 112G00810 Indian Head CTO423

ARF: 65895

Sample ID: X16GW0011011

APPL ID: AY47855

Sample Collection Date: 10/01/11

QCG: #SIMDD-111007A-160411

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
8270D-LL	2-METHYLNAPHTHALENE	0.12 U	0.2	0.12	0.06	ug/L	10/07/11	10/09/11
8270D-LL	ACENAPHTHENE	0.12 U	0.2	0.12	0.06	ug/L	10/07/11	10/09/11
8270D-LL	ACENAPHTHYLENE	0.12 U	0.2	0.12	0.06	ug/L	10/07/11	10/09/11
8270D-LL	ANTHRACENE	0.10 U	0.2	0.10	0.05	ug/L	10/07/11	10/09/11
8270D-LL	BENZ (A) ANTHRACENE	0.14 U	0.2	0.14	0.07	ug/L	10/07/11	10/09/11
8270D-LL	BENZO (A) PYRENE	0.14 U	0.2	0.14	0.07	ug/L	10/07/11	10/09/11
8270D-LL	BENZO (B) FLUORANTHENE	0.12 U	0.2	0.12	0.06	ug/L	10/07/11	10/09/11
8270D-LL	BENZO (G,H,I) PERYLENE	0.16 U	0.2	0.16	0.08	ug/L	10/07/11	10/09/11
8270D-LL	BENZO (K) FLUORANTHENE	0.14 U	0.2	0.14	0.07	ug/L	10/07/11	10/09/11
8270D-LL	CHRYSENE	0.10 U	0.2	0.10	0.05	ug/L	10/07/11	10/09/11
8270D-LL	DIBENZ (A,H) ANTHRACENE	0.10 U	0.2	0.10	0.05	ug/L	10/07/11	10/09/11
8270D-LL	FLUORANTHENE	0.16 U	0.2	0.16	0.08	ug/L	10/07/11	10/09/11
8270D-LL	FLUORENE	0.12 U	0.2	0.12	0.06	ug/L	10/07/11	10/09/11
8270D-LL	INDENO (1,2,3-CD) PYRENE	0.14 U	0.2	0.14	0.07	ug/L	10/07/11	10/09/11
8270D-LL	NAPHTHALENE	0.10 U	0.2	0.10	0.05	ug/L	10/07/11	10/09/11
8270D-LL	PHENANTHRENE	0.14 U	0.2	0.14	0.07	ug/L	10/07/11	10/09/11
8270D-LL	PYRENE	0.16 U	0.2	0.16	0.08	ug/L	10/07/11	10/09/11
8270D-LL	SURROGATE: 2-FLUORBIPHENYL (S)	84.9	50-110			%	10/07/11	10/09/11
8270D-LL	SURROGATE: NITROBENZENE-D5 (S)	98.8	40-110			%	10/07/11	10/09/11
8270D-LL	SURROGATE: TERPHENYL-D14 (S)	103	50-135			%	10/07/11	10/09/11

Quant Method: SIM2.M
Run #: 1009L005
Instrument: Linus
Sequence: L110921
Dilution Factor: 1
Initials: LF

Printed: 10/24/11 3:38:06 PM
APPL-F1-SC-NoMC-REG MDLs

Form 2 & 8

Surrogate Recovery

Lab Name: APPL, Inc. SDG No: 65895

Case No: 65895 Date Analyzed: 10/09/11

Matrix: WATER Instrument: Linus

APPL ID.	Client Sample No.	SURROGATE: 2-FLUORBIPHENYL (S)			SURROGATE: NITROBENZENE-D5 (S)		
		Limits	Result	Qualifier	Limits	Result	Qualifier
111007A-BLK	Blank	50-110	76.3		40-110	95.3	
111007A-LCS	Lab Control Spike	50-110	91.0		40-110	84.5	
AY47855	X16GW0011011	50-110	84.9		40-110	98.8	

Comments: Batch: #SIMDD-111007A

Form 2 & 8

Surrogate Recovery

Lab Name: APPL, Inc. SDG No: 65895

Case No: 65895 Date Analyzed: 10/09/11

Matrix: WATER Instrument: Linus

APPL ID.	Client Sample No.	SURROGATE: TERPHENYL-D14 (S)					
		Limits	Result	Qualifier	Limits	Result	Qualifier
111007A-BLK	Blank	50-135	97.9				
111007A-LCS	Lab Control Spike	50-135	102				
AY47855	X16GW0011011	50-135	103				

Comments: Batch: #SIMDD-111007A

Laboratory Control Spike Recovery
EPA 8270D LL WATER DODv3

APPL ID: **111007W-47855 LCS - 160411**
Batch ID: #SIMDD-111007A

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Level ug/L	SPK Result ug/L	SPK % Recovery	Recovery Limits
2-METHYLNAPHTHALENE	4.00	2.34	58.5	45-105
ACENAPHTHENE	4.00	2.42	60.5	45-110
ACENAPHTHYLENE	4.00	2.28	57.0	50-105
ANTHRACENE	4.00	2.61	65.3	55-110
BENZ (A) ANTHRACENE	4.00	2.88	72.0	55-110
BENZO (A) PYRENE	4.00	2.69	67.3	55-110
BENZO (B) FLUORANTHENE	4.00	2.31	57.8	45-120
BENZO (G,H,I) PERYLENE	4.00	2.73	68.3	40-125
BENZO (K) FLUORANTHENE	4.00	2.99	74.8	45-125
CHRYSENE	4.00	2.25	56.3	55-110
DIBENZ (A,H) ANTHRACENE	4.00	3.35	83.8	40-125
FLUORANTHENE	4.00	2.39	59.8	55-115
FLUORENE	4.00	2.71	67.8	50-110
INDENO (1,2,3-CD) PYRENE	4.00	3.07	76.8	45-125
NAPHTHALENE	4.00	2.25	56.3	40-100
PHENANTHRENE	4.00	2.52	63.0	50-115
PYRENE	4.00	2.02	50.5	50-130
SURROGATE: 2-FLUORBIPHENYL (S)	2.00	1.82	91.0	50-110
SURROGATE: NITROBENZENE-D5 (S)	2.00	1.69	84.5	40-110
SURROGATE: TERPHENYL-D14 (S)	2.00	2.04	102	50-135

Comments: _____

Primary	SPK
Quant Method :	SIM2.M
Extraction Date :	10/07/11
Analysis Date :	10/09/11
Instrument :	Linus
Run :	1009L004
Initials :	LF

Printed: 10/24/11 3:47:21 PM

APPL Standard LCS

8270D-LL

Form 4

Blank Summary

Lab Name: APPL, Inc. SDG No: 65895

Case No: 65895 Date Analyzed: 10/09/11

Matrix: WATER Instrument: Linus

Blank ID: 111007A-BLK Time Analyzed: 1313

APPL ID.	Client Sample No.	File ID.	Date Analyzed
111007A-BLK	Blank	1009L003	10/09/11 1313
111007A-LCS	Lab Control Spike	1009L004	10/09/11 1339
AY47855	X16GW0011011	1009L005	10/09/11 1405

Comments: Batch: #SIMDD-111007A

Printed: 10/24/11 3:38:04 PM
Form 4, Blank Summary

Method Blank

EPA 8270D LL WATER DODv3

Blank Name/QCG: **111007W-47855 - 160411**
Batch ID: #SIMDD-111007A

APPL Inc.
908 North Temperance Avenu
Clovis, CA 93611

Sample Type	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
BLANK	2-METHYLNAPHTHALENE	0.12 U	0.2	0.12	0.06	ug/L	10/07/11	10/09/11
BLANK	ACENAPHTHENE	0.12 U	0.2	0.12	0.06	ug/L	10/07/11	10/09/11
BLANK	ACENAPHTHYLENE	0.12 U	0.2	0.12	0.06	ug/L	10/07/11	10/09/11
BLANK	ANTHRACENE	0.10 U	0.2	0.10	0.05	ug/L	10/07/11	10/09/11
BLANK	BENZ (A) ANTHRACENE	0.14 U	0.2	0.14	0.07	ug/L	10/07/11	10/09/11
BLANK	BENZO (A) PYRENE	0.14 U	0.2	0.14	0.07	ug/L	10/07/11	10/09/11
BLANK	BENZO (B) FLUORANTHENE	0.12 U	0.2	0.12	0.06	ug/L	10/07/11	10/09/11
BLANK	BENZO (G,H,I) PERYLENE	0.16 U	0.2	0.16	0.08	ug/L	10/07/11	10/09/11
BLANK	BENZO (K) FLUORANTHENE	0.14 U	0.2	0.14	0.07	ug/L	10/07/11	10/09/11
BLANK	CHRYSENE	0.10 U	0.2	0.10	0.05	ug/L	10/07/11	10/09/11
BLANK	DIBENZ (A,H) ANTHRACENE	0.10 U	0.2	0.10	0.05	ug/L	10/07/11	10/09/11
BLANK	FLUORANTHENE	0.16 U	0.2	0.16	0.08	ug/L	10/07/11	10/09/11
BLANK	FLUORENE	0.12 U	0.2	0.12	0.06	ug/L	10/07/11	10/09/11
BLANK	INDENO (1,2,3-CD) PYRENE	0.14 U	0.2	0.14	0.07	ug/L	10/07/11	10/09/11
BLANK	NAPHTHALENE	0.10 U	0.2	0.10	0.05	ug/L	10/07/11	10/09/11
BLANK	PHENANTHRENE	0.14 U	0.2	0.14	0.07	ug/L	10/07/11	10/09/11
BLANK	PYRENE	0.16 U	0.2	0.16	0.08	ug/L	10/07/11	10/09/11
BLANK	SURROGATE: 2-FLUORBIPHENY	76.3	50-110			%	10/07/11	10/09/11
BLANK	SURROGATE: NITROBENZENE-	95.3	40-110			%	10/07/11	10/09/11
BLANK	SURROGATE: TERPHENYL-D14 (	97.9	50-135			%	10/07/11	10/09/11

Quant Method:SIM2.M
Run #:1009L003
Instrument:Linus
Sequence:L110921
Initials:LF

GC SC-Blank-REG MDLs
Printed: 10/24/11 3:37:53 PM

Form 5
Tune Summary

Lab Name: APPL Inc.
Case No: 65895
Matrix: Water
ID: SVTUNE 04-14-11

SDG No: 65895
Date Analyzed: 10/09/11
Instrument: Linus
Time Analyzed: 12:29

	Client Sample No.	APPL ID.	File ID.	Date Analyzed
1	Blank	111007A BLK 1/1000	1009L003.D	10/09/11 13:13
2	Lab Control Spike	111007A LCS-1 1/1000	1009L004.D	10/09/11 13:39
3	X16GW0011011	AY47855W02 1/1050	1009L005.D	10/09/11 14:05
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				

m/e		
51	29.95 - 60% of mass 198	46.1
68	0 - 2.05% of mass 69	0.0
70	0 - 2% of mass 69	0.1
127	40 - 60% of mass 198	51.9
197	0 - 1% of mass 198	0.0
198	100 - 100% of mass 198	100.0
199	5 - 9% of mass 198	7.1
275	10 - 30% of mass 198	23.3
365	1 - 100% of mass 198	2.2
441	0.01 - 100% of mass 443	74.2
442	40 - 150% of mass 198	82.0
443	17 - 23% of mass 442	19.9

EPA 8270C SIM

Form 6
Initial Calibration

Lab Name: APPL, Inc. SDG No: 65895
Case No: Initial Cal. Date: 09/21/11
Matrix: Instrument: Linus
Initials:

0921L003.D 0921L004.D 0921L005.D 0921L006.D 0921L007.D 0921L008.D 0921L009.D 0921L010.D

		Compound	0.1	0.2	0.5	1	5	10	50	100			Avg	%RSD		
1	I	Napthalene-D8(IS)														
2	SL	Surrogate Recovery (NBZ)		0.4008	0.2280	0.1787	0.2494	0.2725	0.2789	0.2813			0.27	25	SL	1.00
3	TM	Naphthalene	2.157	2.196	1.897	2.278	2.037	2.122	1.776	1.762			2.0	9.6	TM	
4	TM	2-Methylnaphthalene	1.111	1.086	1.147	1.238	1.255	1.318	1.165	1.219			1.2	6.6	TM	
5	TM	1-Methylnaphthalene	1.145	1.420	1.381	1.525	1.311	1.237	1.091	1.116			1.3	12	TM	
6	I	Acenaphthene-D10(IS)														
7	S	Surrogate Recovery (FBP)	1.573	1.778	1.585	1.603	1.583	1.653	1.407	1.325			1.6	9.0	S	
8	TM	Acenaphthylene	3.997	4.505	4.045	4.103	4.057	4.137	3.556	3.302			4.0	9.4	TM	
9	*TM	Acenaphthene	2.523	2.456	2.447	2.439	2.408	2.336	2.022	2.045			2.3	8.3	*TM	
10	TM	Fluorene	2.720	2.846	2.812	2.692	2.744	2.805	2.357	2.356			2.7	7.4	TM	
11	I	Phenanthrene-D10(IS)														
12	TM	Phenanthrene	2.316	2.199	2.240	2.141	2.575	2.546	2.112	2.143			2.3	8.0	TM	
13	TM	Anthracene	3.119	2.495	2.570	2.468	2.679	2.601	2.018	2.132			2.5	13	TM	
14	*TM	Fluoranthene	4.608	4.262	4.190	4.040	4.429	4.410	3.783	3.528			4.2	8.6	*TM	
15	I	Chrysene-D12(IS)														
16	TM	Pyrene	3.512	3.742	3.547	3.417	2.998	2.950	2.375				3.2	15	TM	
17	S	Surrogate Recovery (TPH)	1.020	0.8327	0.8506	0.8574	0.7514	0.7758	0.6975	0.6333			0.80	15	S	
18	TM	Benz (a) anthracene	1.926	1.723	1.797	1.530	1.865	1.886	1.850	1.920			1.8	7.3	TM	
19	TM	Chrysene	2.738	2.422	2.629	2.750	2.191	2.296	1.941	1.922			2.4	14	TM	
20	TM	Indeno (1,2,3-cd) pyrene	1.284	1.618	1.350	1.389	1.287	1.346	1.483	1.608			1.4	9.4	TM	
21	I	Perylene-D12(IS)														
22	TM	Benzo (b) fluoranthene	1.846	1.842	1.732	1.803	1.666	1.787	2.067	2.307			1.9	11	TM	
23	TM	Benzo (k) fluoranthene	2.818	2.636	2.555	2.673	2.620	2.834	2.006	2.049			2.5	13	TM	
24	*TM	Benzo (a) pyrene	1.944	1.930	2.046	2.093	2.014	2.082	1.924	1.861			2.0	4.2	*TM	
25	TM	Dibenz (a,h) anthracene	1.288	1.261	1.238	1.249	1.153	1.205	1.340	1.406			1.3	6.2	TM	
26	TM	Benzo (g,h,i) perylene	1.555	1.842	1.766	1.700	1.366	1.515	1.530	1.570			1.6	9.6	TM	
27																
28																
29																
30																
31																
32																
33																
34																
35																

Form 7

Second Source Calibration

Lab Name: APPL, Inc.
Case No:
Matrix:

SDG No: 65815
Date Analyzed: 09/21/11
Instrument: Linus
Initial Cal. Date: 09/21/11
Data File: 0921L011.D

		Compound	MEAN	CCRF	%D		%Drift
1	I	Napthalene-D8(IS)	ISTD			I	
2	TM	Naphthalene	2.028	1.972	2.8	TM	
3	TM	2-Methylnaphthalene	1.192	1.215	1.9	TM	
4	TM	1-Methylnaphthalene	1.278	1.303	1.9	TM	
5	I	Acenaphthene-D10(IS)	ISTD			I	
6	TM	Acenaphthylene	3.963	3.853	2.8	TM	
7	*TM	Acenaphthene	2.335	2.286	2.1	*TM	
8	TM	Fluorene	2.666	2.612	2.0	TM	
9	I	Phenanthrene-D10(IS)	ISTD			I	
10	TM	Phenanthrene	2.284	2.251	1.4	TM	
11	TM	Anthracene	2.510	2.363	5.9	TM	
12	*TM	Fluoranthene	4.156	3.841	7.6	*TM	
13	I	Chrysene-D12(IS)	ISTD			I	
14	TM	Pyrene	3.220	2.914	9.5	TM	
15	TM	Benz (a) anthracene	1.812	1.952	7.7	TM	
16	TM	Chrysene	2.361	2.253	4.6	TM	
17	TM	Indeno (1,2,3-cd) pyrene	1.421	1.590	12	TM	
18	I	Perylene-D12(IS)	ISTD			I	
19	TM	Benzo (b) fluoranthene	1.881	1.865	0.87	TM	
20	TM	Benzo (k) fluoranthene	2.524	2.659	5.3	TM	
21	*TM	Benzo (a) pyrene	1.987	2.244	13	*TM	
22	TM	Dibenz (a,h) anthracene	1.267	1.424	12	TM	
23	TM	Benzo (g,h,i) perylene	1.606	1.687	5.1	TM	
24							
25							
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							
		Average			5.5		

Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix:

SDG No: 60495
Date Analyzed: 9 Oct 11 12:48
Instrument: Linus
Initial Cal. Date: 09/21/11
Data File: 1009L002.D

		Compound	MEAN	CCRF	%D		%Drift
1	I	Napthalene-D8(IS)	ISTD			I	
2	SL	Surrogate Recovery (NBZ)	0.2699	0.3047	13	SL	14
3	TM	Naphthalene	2.028	1.646	19	TM	
4	TM	2-Methylnaphthalene	1.192	1.141	4.3	TM	
5	TM	1-Methylnaphthalene	1.278	1.144	11	TM	
6	I	Acenaphthene-D10(IS)	ISTD			I	
7	S	Surrogate Recovery (FBP)	1.563	1.651	5.6	S	
8	TM	Acenaphthylene	3.963	3.549	10	TM	
9	*TM	Acenaphthene	2.335	2.059	12	*TM	
10	TM	Fluorene	2.666	2.359	12	TM	
11	I	Phenanthrene-D10(IS)	ISTD			I	
12	TM	Phenanthrene	2.284	2.021	12	TM	
13	TM	Anthracene	2.510	2.145	15	TM	
14	*TM	Fluoranthene	4.156	3.546	15	*TM	
15	I	Chrysene-D12(IS)	ISTD			I	
16	TM	Pyrene	3.220	2.720	16	TM	
17	S	Surrogate Recovery (TPH)	0.8023	0.7898	1.6	S	
18	TM	Benz (a) anthracene	1.812	1.864	2.9	TM	
19	TM	Chrysene	2.361	2.070	12	TM	
20	TM	Indeno (1,2,3-cd) pyrene	1.421	1.521	7.1	TM	
21	I	Perylene-D12(IS)	ISTD			I	
22	TM	Benzo (b) fluoranthene	1.881	1.572	16	TM	
23	TM	Benzo (k) fluoranthene	2.524	2.221	12	TM	
24	*TM	Benzo (a) pyrene	1.987	1.832	7.8	*TM	
25	TM	Dibenz (a,h) anthracene	1.267	1.428	13	TM	
26	TM	Benzo (g,h,i) perylene	1.606	1.446	9.9	TM	
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							
		Average			10.8		

8A
INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: APPL Inc. Contract: Review

Lab Code: _____ SDG No.: 65895

Lab File ID (Standard): 0921L007.D Date Analyzed: 09/21/11

Instrument ID: Linus Time Analyzed: 21:51

GC Column: _____ ID: Heated Purge: (Y/N) _____

		Napthalene-D8(IS)		Acenaphthene-D10(IS)		Phenanthrene-D10(IS)	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	1616	6.12	743	8.13	1026	9.87
	UPPER LIMIT	3232	6.62	1486	8.63	2052	10.37
	LOWER LIMIT	808	5.62	372	7.63	513	9.37
	SAMPLE NO.						
01	111007A BLK 1/1000	1550	6.12	804	8.12	1710	9.87
02	111007A LCS-1 1/1000	1519	6.12	803	8.12	1413	9.86
03	AY47855W02 1/1050	1673	6.12	783	8.12	1515	9.86
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = -50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

8A
INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: APPL Inc. Contract: Review

Lab Code: SDG No.: 65895

Lab File ID (Standard): 0921L007.D Date Analyzed: 09/21/11

Instrument ID: Linus Time Analyzed: 21:51

GC Column: ID: Heated Purge: (Y/N)

		Chrysene-D12(IS)		Perylene-D12(IS)			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	1571	12.96	1247	14.59		
	UPPER LIMIT	3142	13.46	2494	15.09		
	LOWER LIMIT	786	12.46	624	14.09		
	SAMPLE NO.						
01	111007A BLK 1/1000	2116	12.96	1736	14.61		
02	111007A LCS-1 1/1000	2157	12.96	1716	14.59		
03	AY47855W02 1/1050	2032	12.96	1697	14.61		
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = -50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Injection Log

Directory: M:\LINUS\DATA\L110921\

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1	1	0921L001.D	1	SVTUNE 04-14-11		21 Sep 11 19:23
2	3	0921L003.D	1	0.1ug/ml PAH 09-21-11		21 Sep 11 20:07
3	4	0921L004.D	1	0.2ug/ml PAH		21 Sep 11 20:33
4	5	0921L005.D	1	0.5ug/ml PAH		21 Sep 11 20:59
5	6	0921L006.D	1	1.0ug/ml PAH		21 Sep 11 21:25
6	7	0921L007.D	1	5.0ug/ml PAH		21 Sep 11 21:51
7	8	0921L008.D	1	10ug/ml PAH		21 Sep 11 22:17
8	9	0921L009.D	1	50ug/ml PAH		21 Sep 11 22:43
9	10	0921L010.D	1	100ug/ml PAH		21 Sep 11 23:09
10	11	0921L011.D	1	5.0ug/ml PAH SS 9-21-11		21 Sep 11 23:35
11	1	1009L001.D	1	SVTUNE 04-14-11		9 Oct 11 12:29
12	2	1009L002.D	1	10ug/ml PAH 09-29-11		9 Oct 11 12:48
13	3	1009L003.D	1	111007A BLK 1/1000		9 Oct 11 13:13
14	4	1009L004.D	1	111007A LCS-1 1/1000		9 Oct 11 13:39
15	5	1009L005.D	0.95238	AY47855W02 1/1050		9 Oct 11 14:05

Raw Sample Data

Quantitation Report (QT Reviewed)

Data File : M:\LINUS\DATA\L110921\1009L005.D Vial: 5
Acq On : 9 Oct 11 14:05 Operator: LF
Sample : AY47855W02 1/1050 Inst : Linus
Misc : Multiplr: 0.95

Quant Time: Oct 10 14:57 2011 Quant Results File: SIM2.RES

Quant Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Sun Oct 09 00:31:59 2011
Response via : Initial Calibration
DataAcq Meth : 87SIMAQ

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Napthalene-D8(IS)	6.12	136	1673	2.50000	ppb	0.01
6) Acenaphthene-D10(IS)	8.12	164	783	2.50000	ppb	0.00
11) Phenanthrene-D10(IS)	9.86	188	1515	2.50000	ppb	0.00
15) Chrysene-D12(IS)	12.96	240	2032	2.50000	ppb	0.01
21) Perylene-D12(IS)	14.61	264	1697	2.50000	ppb	0.02
System Monitoring Compounds						
2) Surrogate Recovery (NBZ)	5.35	82	321	1.88250	ppb	0.01
Spiked Amount 1.905			Recovery = 98.805%			
7) Surrogate Recovery (FBP)	7.37	172	831	1.61652	ppb	0.01
Spiked Amount 1.905			Recovery = 84.893%			
17) Surrogate Recovery (TPH)	11.74	244	1343	1.96142	ppb	0.00
Spiked Amount 1.905			Recovery = 102.953%			

Target Compounds Qvalue

(#) = qualifier out of range (m) = manual integration

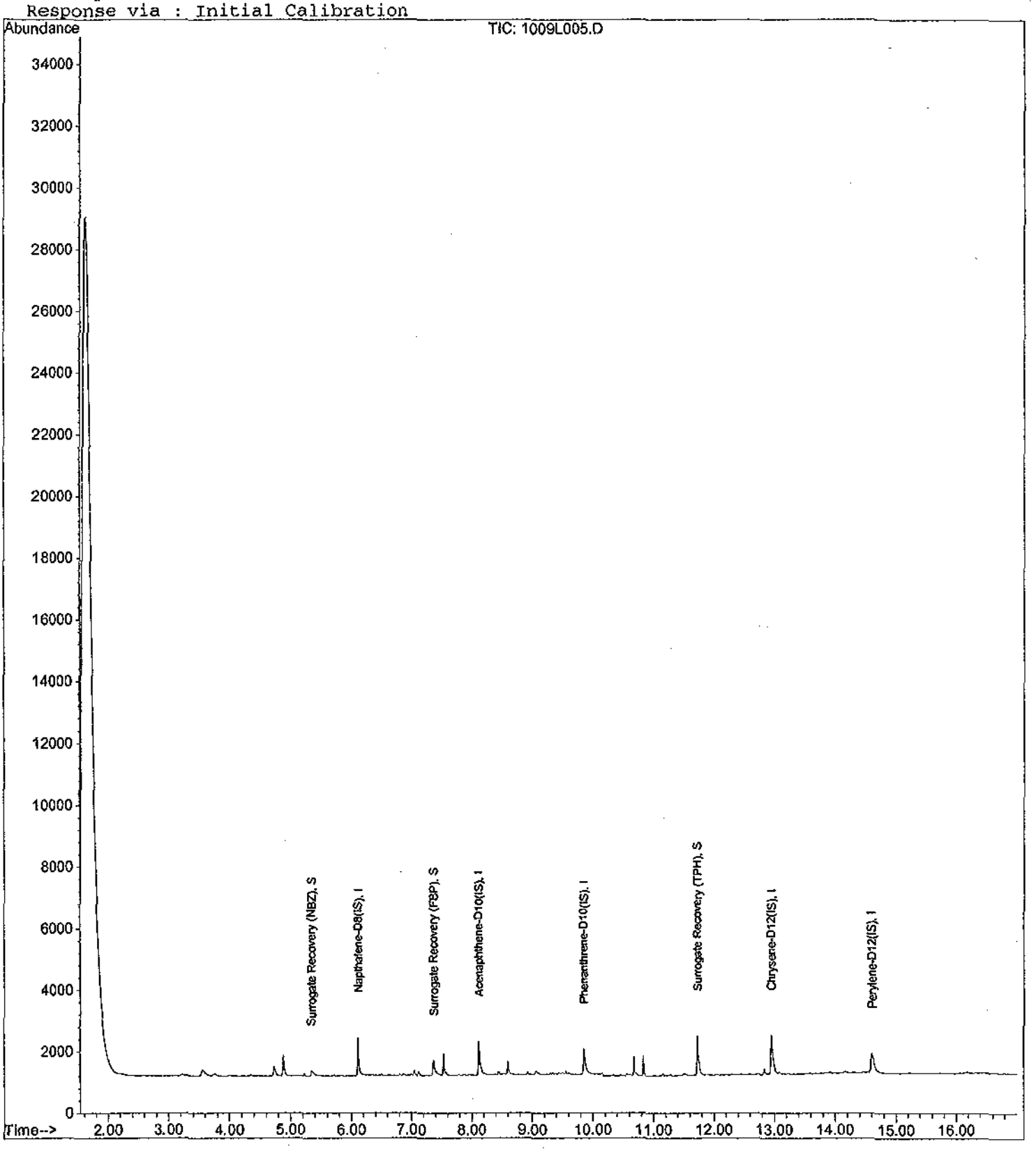
Quantitation Report

Data File : M:\LINUS\DATA\L110921\1009L005.D
Acq On : 9 Oct 11 14:05
Sample : AY47855W02 1/1050
Misc :

Vial: 5
Operator: LF
Inst : Linus
Multiplr: 0.95

Quant Time: Oct 10 14:57 2011 Quant Results File: SIM2.RES

Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Mon Oct 10 15:00:34 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : M:\LINUS\DATA\L110921\1009L003.D Vial: 3
Acq On : 9 Oct 11 13:13 Operator: LF
Sample : 111007A BLK 1/1000 Inst : Linus
Misc : Multiplr: 1.00

Quant Time: Oct 10 14:57 2011 Quant Results File: SIM2.RES

Quant Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Sun Oct 09 00:31:59 2011
Response via : Initial Calibration
DataAcq Meth : 87SIMAQ

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Napthalene-D8(IS)	6.12	136	1550	2.50000	ppb	0.01
6) Acenaphthene-D10(IS)	8.12	164	804	2.50000	ppb	0.00
11) Phenanthrene-D10(IS)	9.87	188	1710	2.50000	ppb	0.01
15) Chrysene-D12(IS)	12.96	240	2116	2.50000	ppb	0.01
21) Perylene-D12(IS)	14.61	264	1736	2.50000	ppb	0.02
System Monitoring Compounds						
2) Surrogate Recovery (NBZ)	5.35	82	285	1.90563	ppb	0.01
Spiked Amount 2.000			Recovery = 95.300%			
7) Surrogate Recovery (FBP)	7.37	172	767	1.52571	ppb	0.01
Spiked Amount 2.000			Recovery = 76.300%			
17) Surrogate Recovery (TPH)	11.74	244	1329	1.95712	ppb	0.00
Spiked Amount 2.000			Recovery = 97.850%			

Target Compounds	Qvalue

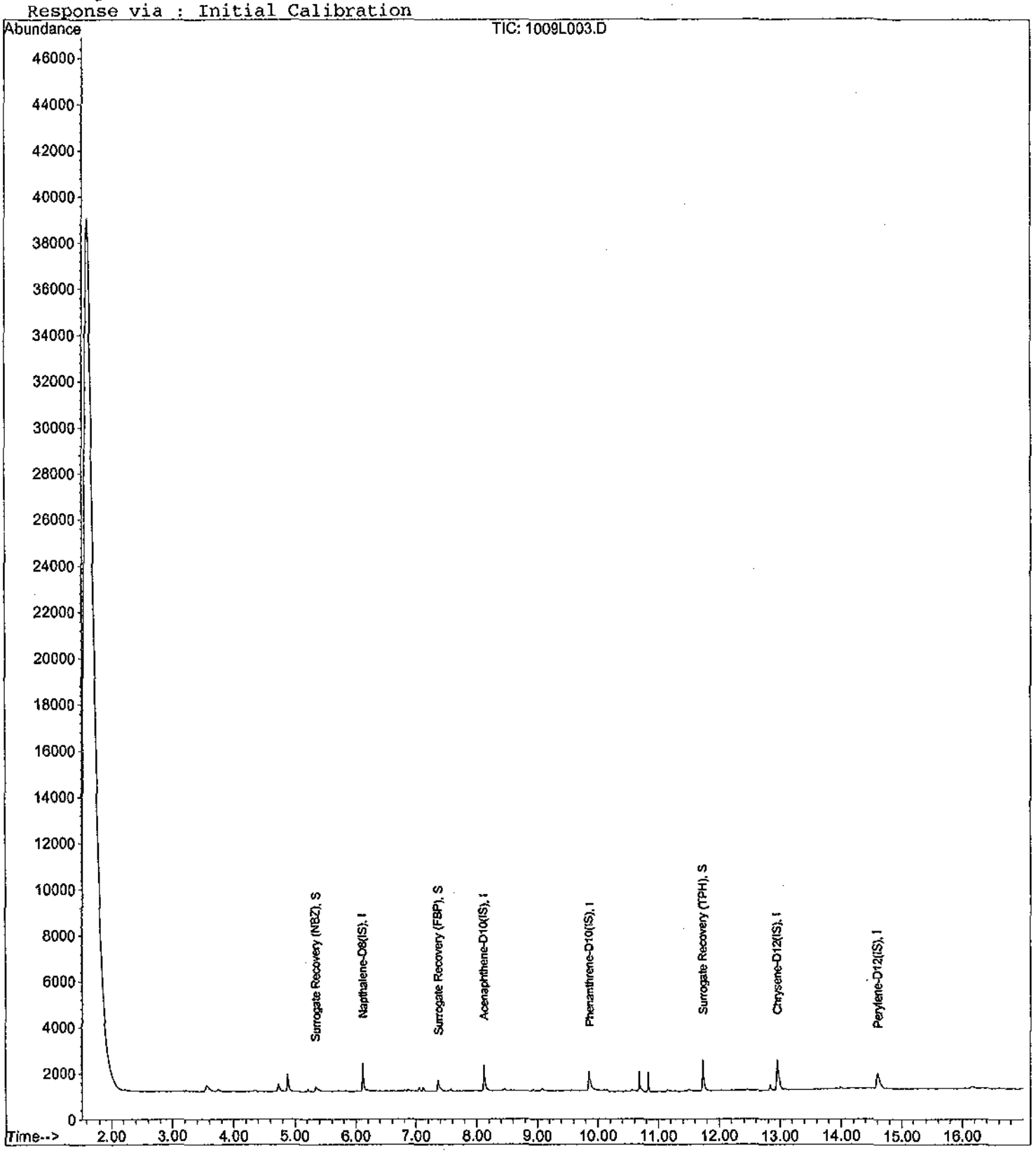
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : M:\LINUS\DATA\L110921\1009L003.D Vial: 3
Acq On : 9 Oct 11 13:13 Operator: LF
Sample : 111007A BLK 1/1000 Inst : Linus
Misc : Multiplr: 1.00

Quant Time: Oct 10 14:57 2011 Quant Results File: SIM2.RES

Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Mon Oct 10 15:00:34 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : M:\LINUS\DATA\L110921\1009L004.D Vial: 4
Acq On : 9 Oct 11 13:39 Operator: LF
Sample : 111007A LCS-1 1/1000 Inst : Linus
Misc : Multiplr: 1.00

Quant Time: Oct 24 15:44 2011 Quant Results File: SIM2.RES

Quant Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Sun Oct 09 00:31:59 2011
Response via : Initial Calibration
DataAcq Meth : 87SIMAQ

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Napthalene-D8(IS)	6.12	136	1519	2.50000	ppb		0.01
6) Acenaphthene-D10(IS)	8.12	164	803	2.50000	ppb		0.00
11) Phenanthrene-D10(IS)	9.86	188	1413	2.50000	ppb		0.00
15) Chrysene-D12(IS)	12.96	240	2157	2.50000	ppb		0.01
21) Perylene-D12(IS)	14.59	264	1716	2.50000	ppb		0.01
System Monitoring Compounds							
2) Surrogate Recovery (NBZ)	5.35	82	243	1.69356	ppb		0.01
Spiked Amount 2.000			Recovery = 84.700%				
7) Surrogate Recovery (FBP)	7.36	172	912	1.81640	ppb		0.00
Spiked Amount 2.000			Recovery = 90.800%				
17) Surrogate Recovery (TPH)	11.74	244	1413	2.04127	ppb		0.00
Spiked Amount 2.000			Recovery = 102.050%				
Target Compounds							Qvalue
3) Naphthalene	6.14	128	2778	2.25436	ppb		100
4) 2-Methylnaphthalene	6.93	142	1692	2.33556	ppb		98
5) 1-Methylnaphthalene	7.04	142	1992	2.56490	ppb		95
8) Acenaphthylene	7.97	152	2908	2.28455	ppb		98
9) Acenaphthene	8.16	154	1813	2.41777	ppb		93
10) Fluorene	8.77	166	2323	2.71238	ppb		99
12) Phenanthrene	9.88	178	3256	2.52214	ppb		99
13) Anthracene	9.96	178	3700	2.60773	ppb		100
14) Fluoranthene	11.27	202	5606	2.38640	ppb	#	93
16) Pyrene	11.53	202	5626	2.02492	ppb	#	90
18) Benz (a) anthracene	12.95	228	4496	2.87560	ppb		99
19) Chrysene	12.98	228	4591	2.25349	ppb		99
20) Indeno (1,2,3-cd) pyrene	16.13	276	3763	3.07013	ppb	#	88
22) Benzo (b) fluoranthene	14.14	252	2988	2.31405	ppb		97
23) Benzo (k) fluoranthene	14.17	252	5178	2.98897	ppb		99
24) Benzo (a) pyrene	14.52	252	3667	2.68917	ppb		99
25) Dibenz (a,h) anthracene	16.15	278	2914	3.34968	ppb		99
26) Benzo (g,h,i) perylene	16.58	276	3005	2.72676	ppb		97

$\frac{2778 \times 2.5 \times \text{LF } 10/24/11}{1579 \times 2.029} = 2.25$ LF 10/24/11

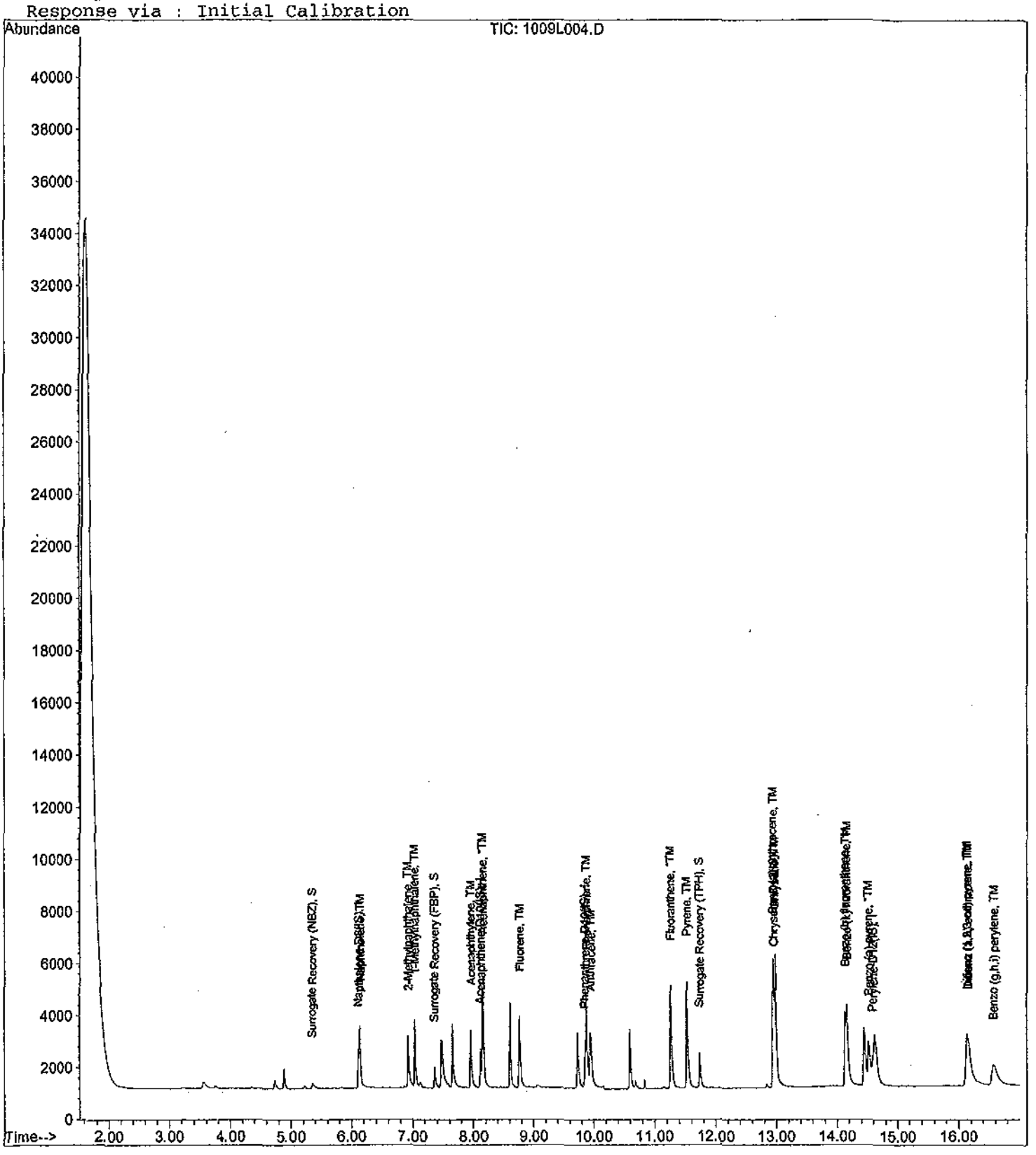
(#) = qualifier out of range (m) = manual integration
1009L004.D SIM2.M Mon Oct 24 15:44:53 2011 Page 1

Quantitation Report

Data File : M:\LINUS\DATA\L110921\1009L004.D Vial: 4
Acq On : 9 Oct 11 13:39 Operator: LF
Sample : 111007A LCS-1 1/1000 Inst : Linus
Misc : Multiplr: 1.00

Quant Time: Oct 24 15:44 2011 Quant Results File: SIM2.RES

Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Fri Oct 21 15:44:53 2011
Response via : Initial Calibration



EPA METHOD 8270
Polynuclear Aromatic Hydrocarbons
Calibration Data

APPL, INC.

Quantitation Report (QT Reviewed)

Data File : M:\LINUS\DATA\L110921\0921L003.D Vial: 3
Acq On : 21 Sep 11 20:07 Operator: LF
Sample : 0.1ug/ml PAH 09-21-11 Inst : Linus
Misc : Multiplr: 1.00

Quant Time: Sep 22 14:33 2011 Quant Results File: SIM2.RES

Quant Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Thu Sep 22 08:59:40 2011
Response via : Initial Calibration
DataAcq Meth : 87SIMAQ

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Napthalene-D8(IS)	6.12	136	1507	2.50000	ppb		0.00
6) Acenaphthene-D10(IS)	8.15	164	763	2.50000	ppb		0.01
11) Phenanthrene-D10(IS)	9.90	188	1058	2.50000	ppb		0.02
15) Chrysene-D12(IS)	12.98	240	1324	2.50000	ppb		0.02
21) Perylene-D12(IS)	14.62	264	1029	2.50000	ppb		0.02
System Monitoring Compounds							
2) Surrogate Recovery (NBZ)	5.38	82	8	0.02857	ppb		0.04
Spiked Amount 2.000			Recovery = 1.450%				
7) Surrogate Recovery (FBP)	7.41	172	48	0.06396	ppb		0.04
Spiked Amount 2.000			Recovery = 3.200%				
17) Surrogate Recovery (TPH)	11.78	244	54	0.07986	ppb		0.02
Spiked Amount 2.000			Recovery = 4.000%				
Target Compounds							Qvalue
3) Naphthalene	6.14	128	130	0.11178	ppb		98
4) 2-Methylnaphthalene	6.96	142	67	0.09429	ppb		84
5) 1-Methylnaphthalene	7.06	142	69	0.09382	ppb		96
8) Acenaphthylene	7.99	152	122	0.10312	ppb		99
9) Acenaphthene	8.18	154	77	0.11336	ppb		100
10) Fluorene	8.81	166	83	0.10619	ppb		97
12) Phenanthrene	9.92	178	98	0.11228	ppb		96
13) Anthracene	9.99	178	132	0.13378	ppb		93
14) Fluoranthene	11.32	202	195	0.12314	ppb	#	95
16) Pyrene	11.56	202	186	0.12874	ppb		95
18) Benz (a) anthracene	12.97	228	102	0.11324	ppb		94
19) Chrysene	13.01	228	145	0.12369	ppb		96
20) Indeno (1,2,3-cd) pyrene	16.18	276	68	0.08485	ppb		69
22) Benzo (b) fluoranthene	14.17	252	76	0.09935	ppb		93
23) Benzo (k) fluoranthene	14.21	252	116	0.11565	ppb		92
24) Benzo (a) pyrene	14.56	252	80	0.09415	ppb	#	90
25) Dibenz (a,h) anthracene	16.20	278	53	0.09174	ppb		3
26) Benzo (g,h,i) perylene	16.64	276	64	0.09044	ppb		84

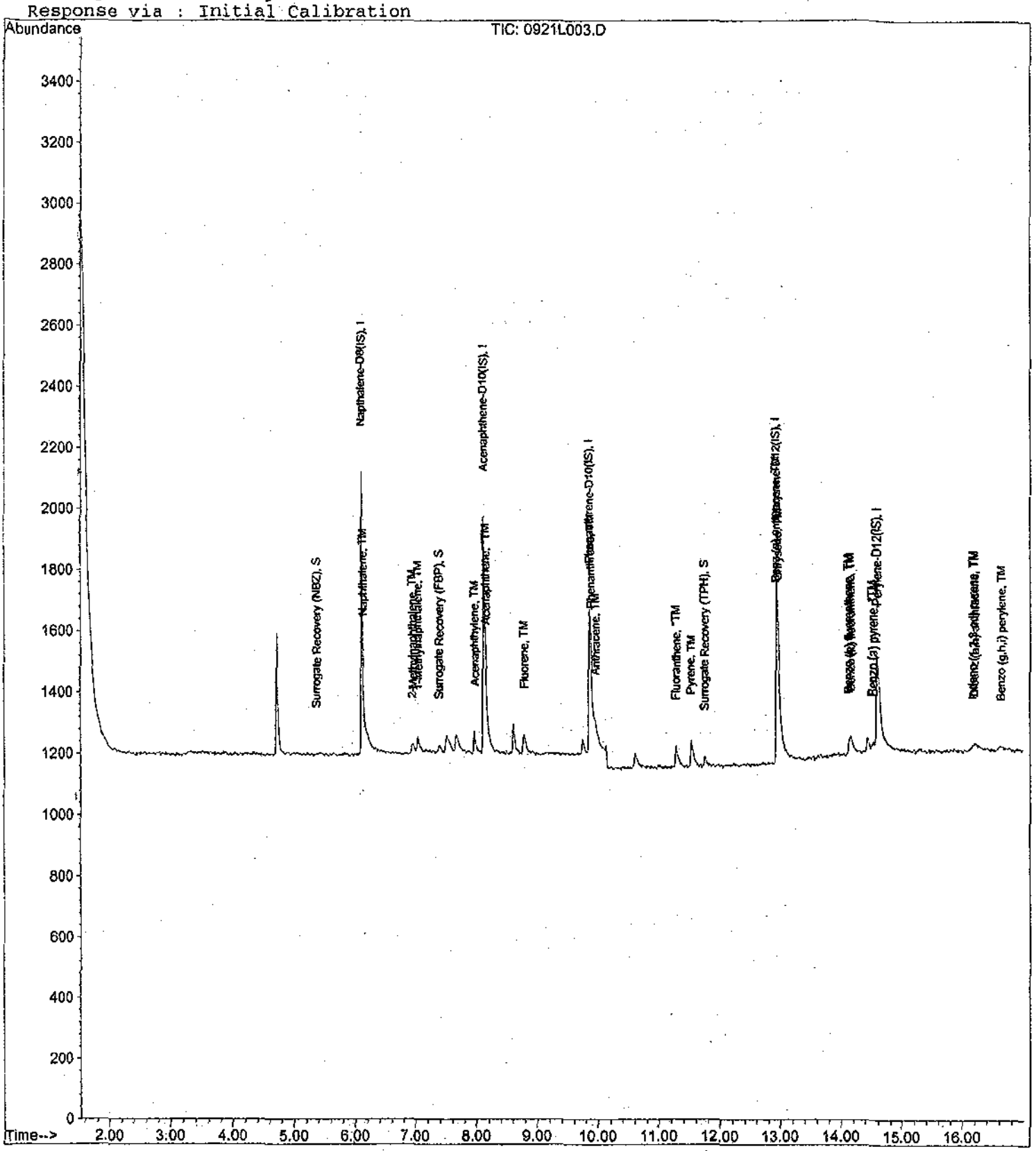
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : M:\LINUS\DATA\L110921\0921L003.D Vial: 3
Acq On : 21 Sep 11 20:07 Operator: LF
Sample : 0.1ug/ml PAH 09-21-11 Inst : Linus
Misc : Multiplr: 1.00

Quant Time: Sep 22 14:33 2011 Quant Results File: SIM2.RES

Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Thu Sep 22 14:50:13 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : M:\LINUS\DATA\L110921\0921L004.D Vial: 4
Acq On : 21 Sep 11 20:33 Operator: LF
Sample : 0.2ug/ml PAH Inst : Linus
Misc : Multiplr: 1.00

Quant Time: Sep 22 14:36 2011 Quant Results File: SIM2.RES

Quant Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Thu Sep 22 08:59:40 2011
Response via : Initial Calibration
DataAcq Meth : 87SIMAQ

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Napthalene-D8(IS)	6.12	136	1497	2.50000	ppb		0.00
6) Acenaphthene-D10(IS)	8.15	164	738	2.50000	ppb		0.01
11) Phenanthrene-D10(IS)	9.90	188	1097	2.50000	ppb		0.02
15) Chrysene-D12(IS)	12.98	240	1306	2.50000	ppb		0.02
21) Perylene-D12(IS)	14.62	264	991	2.50000	ppb		0.02
System Monitoring Compounds							
2) Surrogate Recovery (NBZ)	5.41	82	48	0.17256	ppb		0.06
Spiked Amount 2.000			Recovery = 8.650%				
7) Surrogate Recovery (FBP)	7.40	172	105	0.14464	ppb		0.02
Spiked Amount 2.000			Recovery = 7.250%				
17) Surrogate Recovery (TPH)	11.78	244	87	0.13043	ppb		0.02
Spiked Amount 2.000			Recovery = 6.500%				
Target Compounds							Qvalue
3) Naphthalene	6.14	128	263	0.22766	ppb		97
4) 2-Methylnaphthalene	6.96	142	130	0.18418	ppb		99
5) 1-Methylnaphthalene	7.06	142	170	0.23270	ppb		92
8) Acenaphthylene	7.99	152	266	0.23246	ppb		98
9) Acenaphthene	8.18	154	145	0.22071	ppb		95
10) Fluorene	8.81	166	168	0.22222	ppb		97
12) Phenanthrene	9.92	178	193	0.21326	ppb		97
13) Anthracene	9.99	178	219	0.21406	ppb		95
14) Fluoranthene	11.30	202	374	0.22778	ppb	#	94
16) Pyrene	11.57	202	391	0.27435	ppb		97
18) Benz (a) anthracene	12.97	228	180	0.20258	ppb		94
19) Chrysene	13.01	228	253	0.21878	ppb		96
20) Indeno (1,2,3-cd) pyrene	16.18	276	169	0.21379	ppb		95
22) Benzo (b) fluoranthene	14.17	252	146	0.19817	ppb		98
23) Benzo (k) fluoranthene	14.20	252	209	0.21636	ppb		97
24) Benzo (a) pyrene	14.56	252	153	0.18696	ppb		96
25) Dibenz (a,h) anthracene	16.19	278	100	0.17974	ppb		88
26) Benzo (g,h,i) perylene	16.60	276	146	0.21423	ppb		77

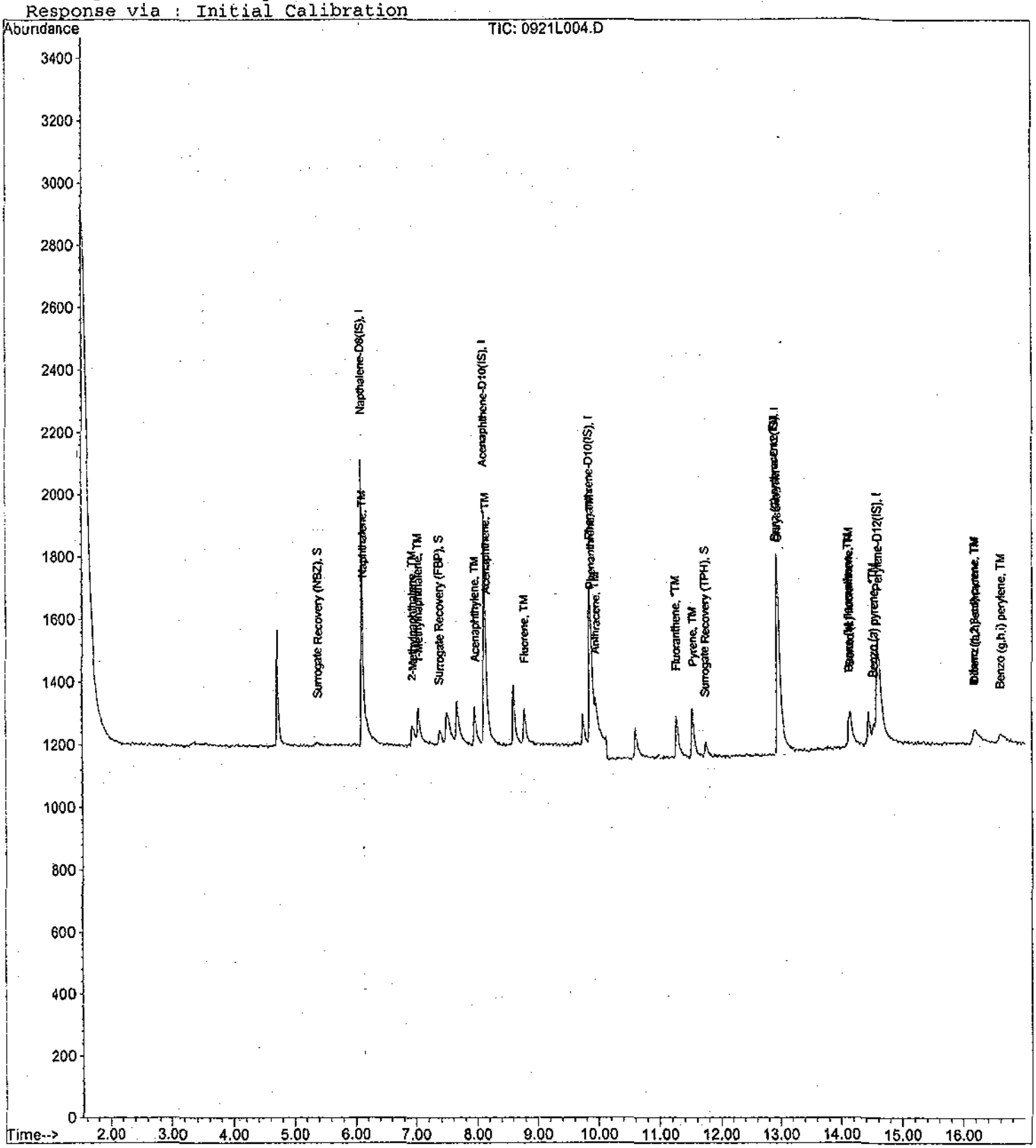
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : M:\LINUS\DATA\L110921\0921L004.D Vial: 4
Acq On : 21 Sep 11 20:33 Operator: LF
Sample : 0.2ug/ml PAH Inst : Linus
Misc : Multiplr: 1.00

Quant Time: Sep 22 14:36 2011 Quant Results File: SIM2.RES

Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Thu Sep 22 14:50:13 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : M:\LINUS\DATA\L110921\0921L005.D Vial: 5
Acq On : 21 Sep 11 20:59 Operator: LF
Sample : 0.5ug/ml PAH Inst : Linus
Misc : Multiplr: 1.00

Quant Time: Sep 22 14:38 2011 Quant Results File: SIM2.RES

Quant Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Thu Sep 22 08:59:40 2011
Response via : Initial Calibration
DataAcq Meth : 87SIMAQ

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Napthalene-D8(IS)	6.12	136	1513	2.50000 ppb	0.00
6) Acenaphthene-D10(IS)	8.13	164	754	2.50000 ppb	0.00
11) Phenanthrene-D10(IS)	9.88	188	1105	2.50000 ppb	0.01
15) Chrysene-D12(IS)	12.98	240	1352	2.50000 ppb	0.02
21) Perylene-D12(IS)	14.61	264	1002	2.50000 ppb	0.01
System Monitoring Compounds					
2) Surrogate Recovery (NBZ)	5.37	82	69	0.24543 ppb	0.02
Spiked Amount 2.000			Recovery	= 12.250%	
7) Surrogate Recovery (FBP)	7.40	172	239	0.32225 ppb	0.02
Spiked Amount 2.000			Recovery	= 16.100%	
17) Surrogate Recovery (TPH)	11.78	244	230	0.33308 ppb	0.02
Spiked Amount 2.000			Recovery	= 16.650%	
Target Compounds					Qvalue
3) Naphthalene	6.14	128	574	0.49161 ppb	99
4) 2-Methylnaphthalene	6.95	142	347	0.48642 ppb	96
5) 1-Methylnaphthalene	7.05	142	418	0.56613 ppb	93
8) Acenaphthylene	7.98	152	610	0.52178 ppb	99
9) Acenaphthene	8.17	154	369	0.54975 ppb	91
10) Fluorene	8.80	166	424	0.54894 ppb	95
12) Phenanthrene	9.92	178	495	0.54301 ppb	98
13) Anthracene	9.98	178	568	0.55117 ppb	98
14) Fluoranthene	11.30	202	926	0.55988 ppb	98
16) Pyrene	11.56	202	959	0.65001 ppb	98
18) Benz (a) anthracene	12.97	228	486	0.52837 ppb	97
19) Chrysene	13.01	228	711	0.59392 ppb	97
20) Indeno (1,2,3-cd) pyrene	16.16	276	365	0.44602 ppb	95
22) Benzo (b) fluoranthene	14.16	252	347	0.46582 ppb	95
23) Benzo (k) fluoranthene	14.20	252	512	0.52421 ppb	94
24) Benzo (a) pyrene	14.55	252	410	0.49550 ppb	99
25) Dibenz (a,h) anthracene	16.19	278	248	0.44085 ppb	94
26) Benzo (g,h,i) perylene	16.60	276	354	0.51372 ppb	97

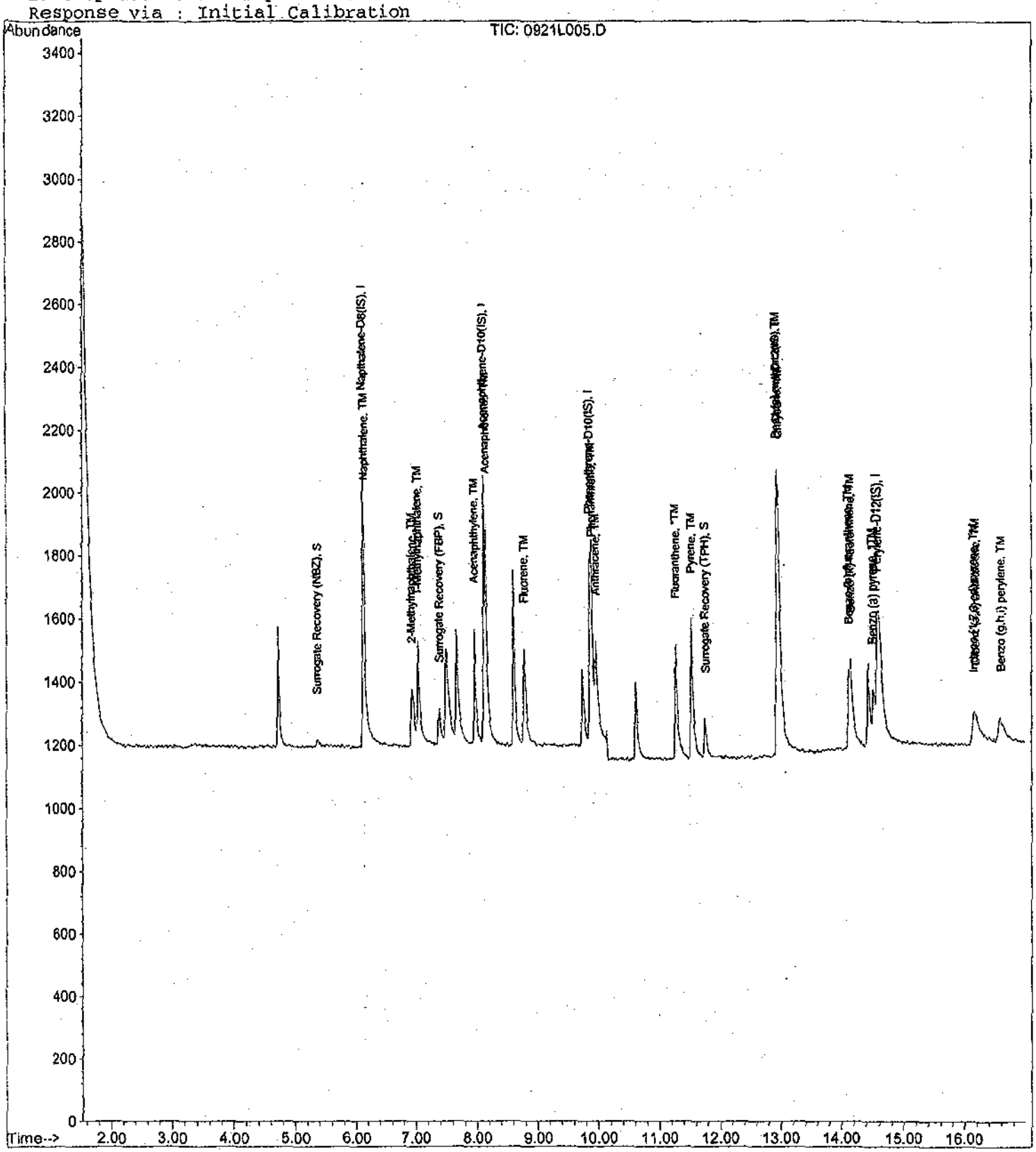
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : M:\LINUS\DATA\L110921\0921L005.D Vial: 5
Acq On : 21 Sep 11 20:59 Operator: LF
Sample : 0.5ug/ml PAH Inst : Linus
Misc : Multiplr: 1.00

Quant Time: Sep 22 14:38 2011 Quant Results File: SIM2.RES

Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Thu Sep 22 14:50:13 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : M:\LINUS\DATA\L110921\0921L006.D Vial: 6
Acq On : 21 Sep 11 21:25 Operator: LF
Sample : 1.0ug/ml PAH Inst : Linus
Misc : Multiplr: 1.00

Quant Time: Sep 22 14:45 2011 Quant Results File: SIM2.RES

Quant Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Thu Sep 22 08:59:40 2011
Response via : Initial Calibration
DataAcq Meth : 87SIMAQ

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Napthalene-D8(IS)	6.12	136	1511	2.50000 ppb	0.00
6) Acenaphthene-D10(IS)	8.13	164	741	2.50000 ppb	0.00
11) Phenanthrene-D10(IS)	9.88	188	1107	2.50000 ppb	0.01
15) Chrysene-D12(IS)	12.97	240	1350	2.50000 ppb	0.01
21) Perylene-D12(IS)	14.61	264	1069	2.50000 ppb	0.01
System Monitoring Compounds					
2) Surrogate Recovery (NBZ)	5.37	82	108	0.38466 ppb	0.02
Spiked Amount 2.000			Recovery	= 19.250%	
7) Surrogate Recovery (FBP)	7.39	172	475	0.65169 ppb	0.01
Spiked Amount 2.000			Recovery	= 32.600%	
17) Surrogate Recovery (TPH)	11.77	244	463	0.67150 ppb	0.01
Spiked Amount 2.000			Recovery	= 33.600%	
Target Compounds					Qvalue
3) Naphthalene	6.14	128	1377	1.18091 ppb	99
4) 2-Methylnaphthalene	6.94	142	748	1.04992 ppb	96
5) 1-Methylnaphthalene	7.05	142	922	1.25039 ppb	96
8) Acenaphthylene	7.98	152	1216	1.05839 ppb	99
9) Acenaphthene	8.17	154	723	1.09605 ppb	94
10) Fluorene	8.80	166	798	1.05128 ppb	99
12) Phenanthrene	9.91	178	948	1.03807 ppb	99
13) Anthracene	9.98	178	1093	1.05870 ppb	99
14) Fluoranthene	11.29	202	1789	1.07972 ppb	95
16) Pyrene	11.55	202	1845	1.25240 ppb	97
18) Benz (a) anthracene	12.96	228	826	0.89934 ppb	98
19) Chrysene	13.01	228	1485	1.24231 ppb	98
20) Indeno (1,2,3-cd) pyrene	16.16	276	750	0.91783 ppb	99
22) Benzo (b) fluoranthene	14.16	252	771	0.97014 ppb	99
23) Benzo (k) fluoranthene	14.19	252	1143	1.09690 ppb	97
24) Benzo (a) pyrene	14.55	252	895	1.01384 ppb	96
25) Dibenz (a,h) anthracene	16.18	278	534	0.88976 ppb	97
26) Benzo (g,h,i) perylene	16.59	276	727	0.98889 ppb	98

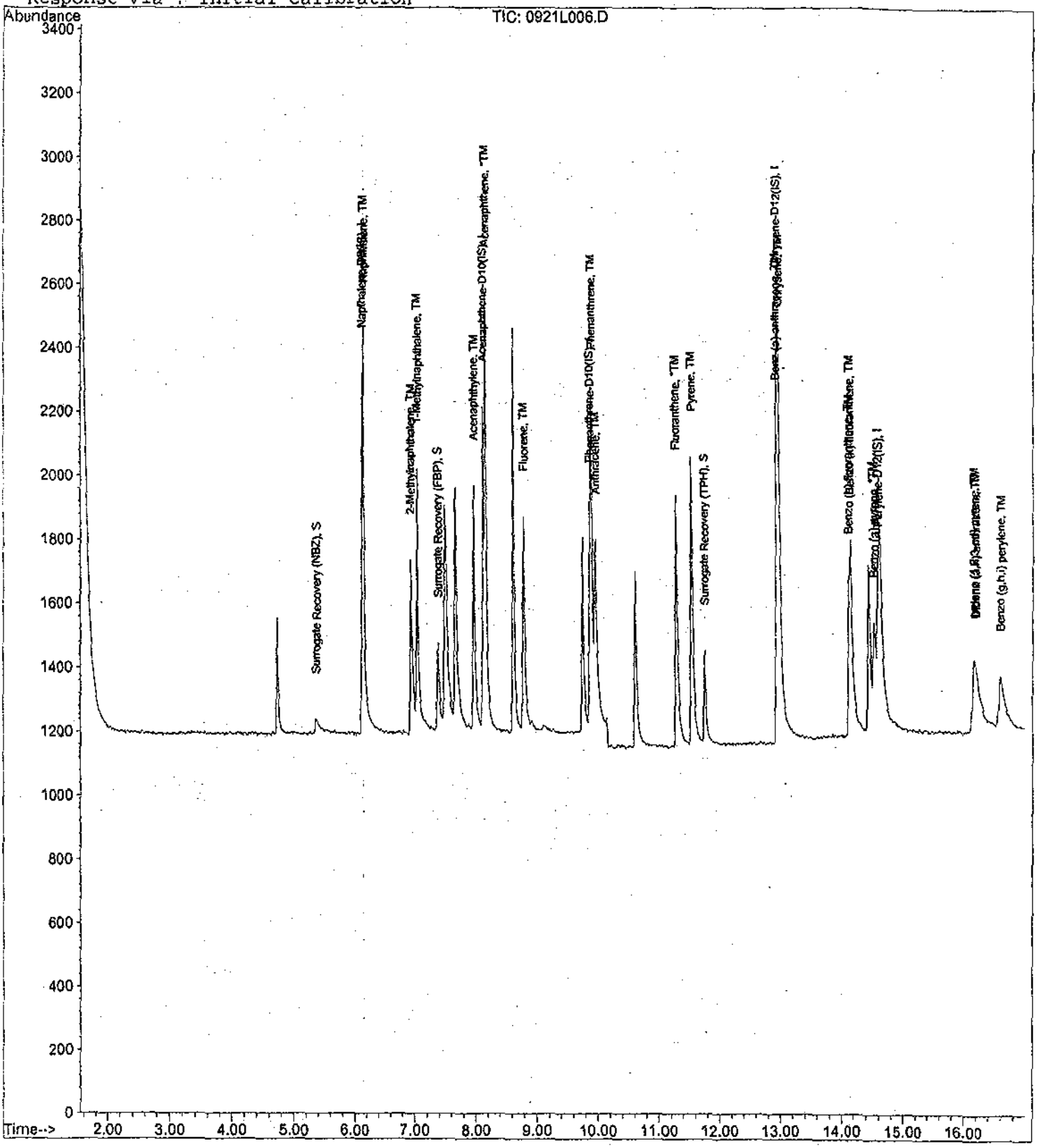
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : M:\LINUS\DATA\L110921\0921L006.D Vial: 6
Acq On : 21 Sep 11 21:25 Operator: LF
Sample : 1.0ug/ml PAH Inst : Linus
Misc : Multiplr: 1.00

Quant Time: Sep 22 14:45 2011 Quant Results File: SIM2.RES

Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Thu Sep 22 14:50:13 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : M:\LINUS\DATA\L110921\0921L007.D Vial: 7
Acq On : 21 Sep 11 21:51 Operator: LF
Sample : 5.0ug/ml PAH Inst : Linus
Misc : Multiplr: 1.00

Quant Time: Sep 22 9:00 2011 Quant Results File: SIM2.RES

Quant Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Thu Sep 22 08:59:40 2011
Response via : Initial Calibration
DataAcq Meth : 87SIMAQ

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Napthalene-D8(IS)	6.12	136	1616	2.50000 ppb	0.00
6) Acenaphthene-D10(IS)	8.13	164	743	2.50000 ppb	0.00
11) Phenanthrene-D10(IS)	9.87	188	1026	2.50000 ppb	0.00
15) Chrysene-D12(IS)	12.96	240	1571	2.50000 ppb	0.00
21) Perylene-D12(IS)	14.59	264	1247	2.50000 ppb	0.00
System Monitoring Compounds					
2) Surrogate Recovery (NBZ)	5.35	82	806	2.68419 ppb	0.00
Spiked Amount 2.000			Recovery	= 134.200%	
7) Surrogate Recovery (FBP)	7.37	172	2352	3.21822 ppb	0.00
Spiked Amount 2.000			Recovery	= 160.900%	
17) Surrogate Recovery (TPH)	11.76	244	2361	2.94252 ppb	0.00
Spiked Amount 2.000			Recovery	= 147.150%	
Target Compounds					Qvalue
3) Naphthalene	6.14	128	6582	5.27794 ppb	100
4) 2-Methylnaphthalene	6.93	142	4057	5.32453 ppb	100
5) 1-Methylnaphthalene	7.05	142	4236	5.37147 ppb	100
8) Acenaphthylene	7.97	152	6029	5.23341 ppb	100
9) Acenaphthene	8.17	154	3579	5.41109 ppb	100
10) Fluorene	8.77	166	4078	5.35785 ppb	100
12) Phenanthrene	9.90	178	5284	6.24280 ppb	100
13) Anthracene	9.96	178	5497	5.74485 ppb	100
14) Fluoranthene	11.28	202	9088	5.91793 ppb	100
16) Pyrene	11.54	202	9420	5.49482 ppb	100
18) Benz (a) anthracene	12.95	228	5859	5.48182 ppb	100
19) Chrysene	12.98	228	6885	4.94954 ppb	100
20) Indeno (1,2,3-cd) pyrene	16.11	276	4045	4.25382 ppb	100
22) Benzo (b) fluoranthene	14.14	252	4155	4.48191 ppb	100
23) Benzo (k) fluoranthene	14.16	252	6535	5.37625 ppb	100
24) Benzo (a) pyrene	14.52	252	5023	4.87777 ppb	100
25) Dibenz (a,h) anthracene	16.14	278	2875	4.10660 ppb	100
26) Benzo (g,h,i) perylene	16.56	276	3406	3.97165 ppb	100

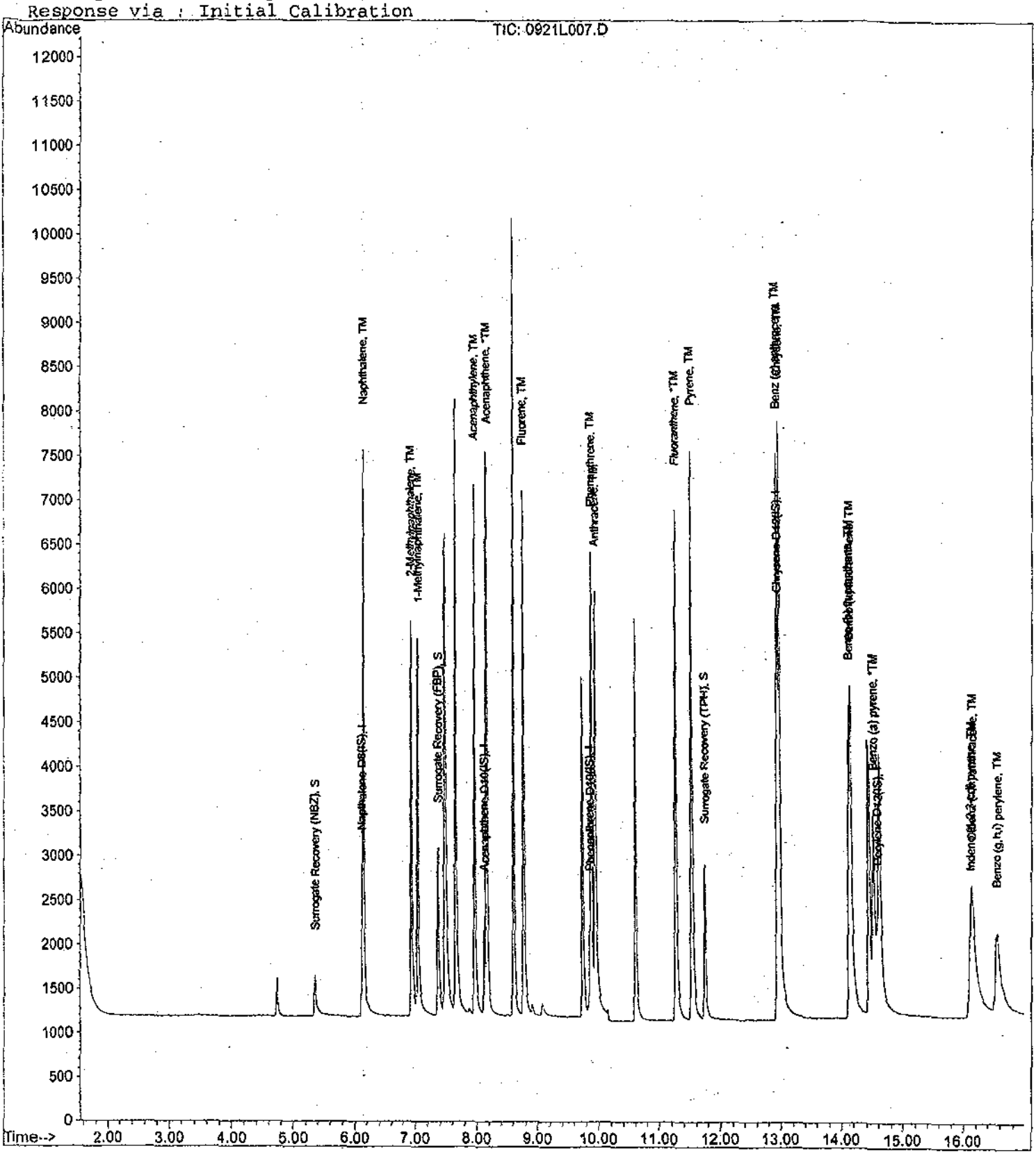
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : M:\LINUS\DATA\L110921\0921L007.D Vial: 7
Acq On : 21 Sep 11 21:51 Operator: LF
Sample : 5.0ug/ml PAH Inst : Linus
Misc : Multiplr: 1.00

Quant Time: Sep 22 9:00 2011 Quant Results File: SIM2.RES

Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Thu Sep 22 14:50:13 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : M:\LINUS\DATA\L110921\0921L008.D Vial: 8
Acq On : 21 Sep 11 22:17 Operator: LF
Sample : 10ug/ml PAH Inst : Linus
Misc : Multiplr: 1.00

Quant Time: Sep 22 14:46 2011 Quant Results File: SIM2.RES

Quant Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Thu Sep 22 08:59:40 2011
Response via : Initial Calibration
DataAcq Meth : 87SIMAQ

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Napthalene-D8(IS)	6.12	136	1554	2.50000	ppb		0.00
6) Acenaphthene-D10(IS)	8.12	164	757	2.50000	ppb		-0.01
11) Phenanthrene-D10(IS)	9.86	188	1107	2.50000	ppb		-0.01
15) Chrysene-D12(IS)	12.95	240	1689	2.50000	ppb		-0.01
21) Perylene-D12(IS)	14.57	264	1364	2.50000	ppb		-0.02
System Monitoring Compounds							
2) Surrogate Recovery (NBZ)	5.34	82	1694	5.86655	ppb		-0.01
Spiked Amount 2.000			Recovery = 293.350%				
7) Surrogate Recovery (FBP)	7.36	172	5005	6.72164	ppb		-0.01
Spiked Amount 2.000			Recovery = 336.100%				
17) Surrogate Recovery (TPH)	11.75	244	5241	6.07553	ppb		-0.01
Spiked Amount 2.000			Recovery = 303.800%				
Target Compounds							Qvalue
3) Naphthalene	6.14	128	13190	10.99871	ppb		100
4) 2-Methylnaphthalene	6.93	142	8193	11.18175	ppb		98
5) 1-Methylnaphthalene	7.04	142	7690	10.14037	ppb		92
8) Acenaphthylene	7.97	152	12528	10.67368	ppb		99
9) Acenaphthene	8.16	154	7074	10.49738	ppb		91
10) Fluorene	8.77	166	8493	10.95211	ppb		95
12) Phenanthrene	9.88	178	11275	12.34619	ppb		99
13) Anthracene	9.94	178	11519	11.15752	ppb		99
14) Fluoranthene	11.27	202	19528	11.78579	ppb		96
16) Pyrene	11.53	202	19932	10.81434	ppb	#	89
18) Benz (a) anthracene	12.94	228	12744	11.09057	ppb		98
19) Chrysene	12.98	228	15514	10.37364	ppb		97
20) Indeno (1,2,3-cd) pyrene	16.10	276	9093	8.89436	ppb		99
22) Benzo (b) fluoranthene	14.13	252	9751	9.61599	ppb		100
23) Benzo (k) fluoranthene	14.16	252	15461	11.62849	ppb		97
24) Benzo (a) pyrene	14.51	252	11359	10.08440	ppb		99
25) Dibenz (a,h) anthracene	16.12	278	6576	8.58735	ppb		97
26) Benzo (g,h,i) perylene	16.53	276	8267	8.81304	ppb		99

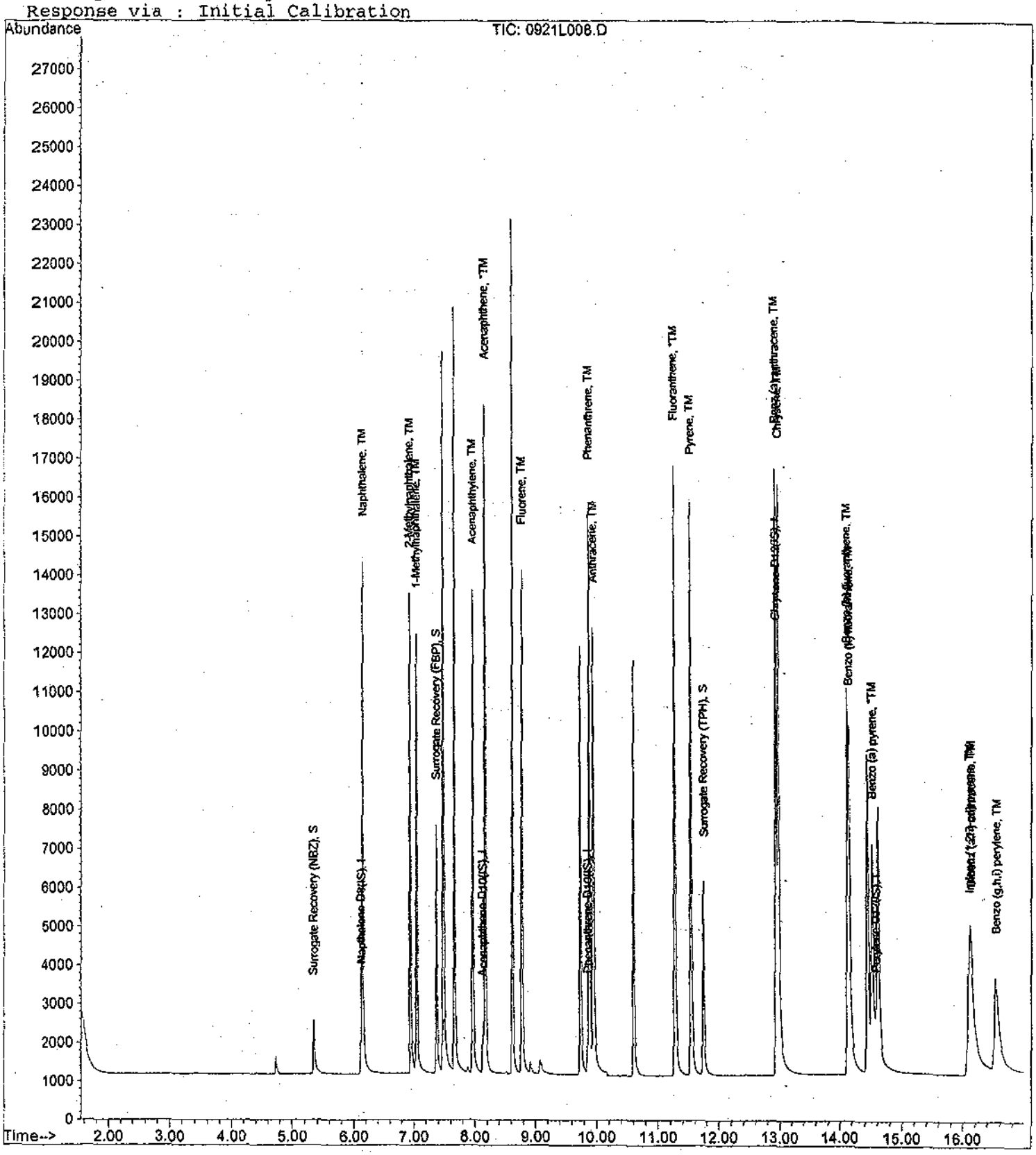
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : M:\LINUS\DATA\L110921\0921L008.D Vial: 8
Acq On : 21 Sep 11 22:17 Operator: LF
Sample : 10ug/ml PAH Inst : Linus
Misc : Multiplr: 1.00

Quant Time: Sep 22 14:46 2011 Quant Results File: SIM2.RES

Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Thu Sep 22 14:50:13 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : M:\LINUS\DATA\L110921\0921L009.D Vial: 9
Acq On : 21 Sep 11 22:43 Operator: LF
Sample : 50ug/ml PAH Inst : Linus
Misc : Multiplr: 1.00

Quant Time: Sep 22 14:47 2011 Quant Results File: SIM2.RES

Quant Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Thu Sep 22 08:59:40 2011
Response via : Initial Calibration
DataAcq Meth : 87SIMAQ

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Napthalene-D8(IS)	6.12	136	1616	2.50000	ppb		0.00
6) Acenaphthene-D10(IS)	8.12	164	771	2.50000	ppb		-0.01
11) Phenanthrene-D10(IS)	9.86	188	1191	2.50000	ppb		-0.01
15) Chrysene-D12(IS)	12.94	240	1864	2.50000	ppb		-0.02
21) Perylene-D12(IS)	14.56	264	1557	2.50000	ppb		-0.04
System Monitoring Compounds							
2) Surrogate Recovery (NBZ)	5.34	82	9014	30.01901	ppb		-0.01
Spiked Amount 2.000			Recovery	= 1500.950%			
7) Surrogate Recovery (FBP)	7.36	172	21689	28.59907	ppb		-0.01
Spiked Amount 2.000			Recovery	= 1429.950%			
17) Surrogate Recovery (TPH)	11.74	244	26004	27.31455	ppb		-0.02
Spiked Amount 2.000			Recovery	= 1365.750%			
Target Compounds							Qvalue
3) Naphthalene	6.14	128	57403	46.03002	ppb		99
4) 2-Methylnaphthalene	6.93	142	37645	49.40647	ppb		98
5) 1-Methylnaphthalene	7.05	142	35250	44.69884	ppb		99
8) Acenaphthylene	7.97	152	54835	45.87033	ppb		99
9) Acenaphthene	8.17	154	31177	45.42466	ppb		96
10) Fluorene	8.77	166	36340	46.01113	ppb		94
12) Phenanthrene	9.88	178	50317	51.21145	ppb		99
13) Anthracene	9.94	178	48068	43.27577	ppb		99
14) Fluoranthene	11.27	202	90121	50.55486	ppb		96
16) Pyrene	11.53	202	88550	43.53329	ppb		96
18) Benz (a) anthracene	12.94	228	68965	54.38267	ppb		98
19) Chrysene	12.97	228	72364	43.84437	ppb		98
20) Indeno (1,2,3-cd) pyrene	16.06	276	55292	49.00648	ppb	#	100
22) Benzo (b) fluoranthene	14.13	252	64368	55.60840	ppb		97
23) Benzo (k) fluoranthene	14.15	252	62455	41.15083	ppb		93
24) Benzo (a) pyrene	14.50	252	59910	46.59454	ppb		98
25) Dibenz (a,h) anthracene	16.09	278	41716	47.72276	ppb		98
26) Benzo (g,h,i) perylene	16.50	276	47657	44.50722	ppb		97

(#) = qualifier out of range (m) = manual integration

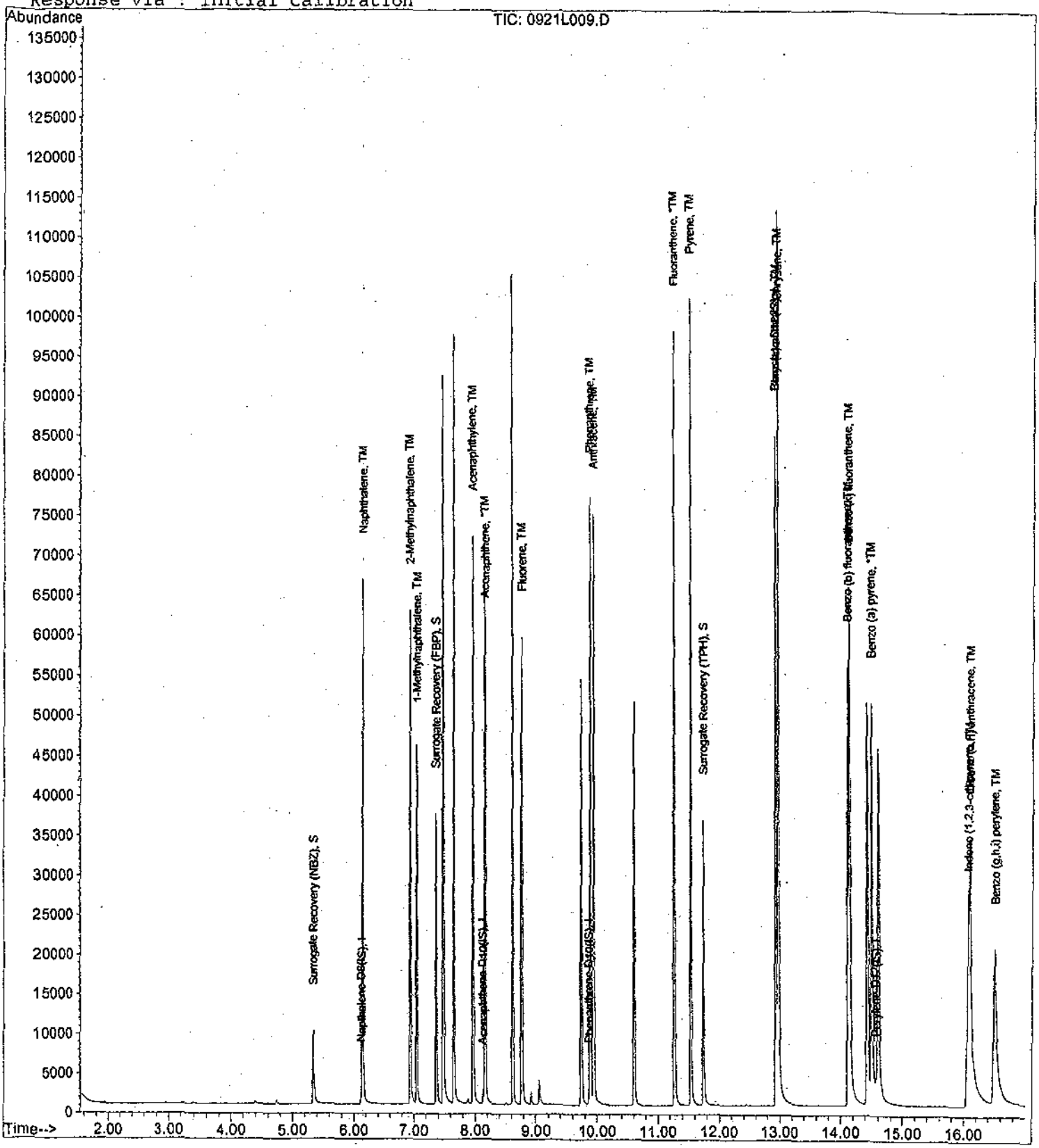
Quantitation Report

Data File : M:\LINUS\DATA\L110921\0921L009.D
Acq On : 21 Sep 11 22:43
Sample : 50ug/ml PAH
Misc :

Vial: 9
Operator: LF
Inst : Linus
Multiplr: 1.00

Quant Time: Sep 22 14:47 2011 Quant Results File: SIM2.RES

Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Thu Sep 22 14:50:13 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : M:\LINUS\DATA\L110921\0921L010.D Vial: 10
Acq On : 21 Sep 11 23:09 Operator: LF
Sample : 100ug/ml PAH Inst : Linus
Misc : Multiplr: 1.00

Quant Time: Sep 22 14:48 2011 Quant Results File: SIM2.RES

Quant Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Thu Sep 22 08:59:40 2011
Response via : Initial Calibration
DataAcq Meth : 87SIMAQ

Internal Standards	R.T.	QIon	Response	Conc Units		Dev(Min)
1) Napthalene-D8(IS)	6.12	136	1529	2.50000 ppb		0.00
6) Acenaphthene-D10(IS)	8.12	164	734	2.50000 ppb		-0.01
11) Phenanthrene-D10(IS)	9.86	188	1151	2.50000 ppb		-0.01
15) Chrysene-D12(IS)	12.95	240	1900	2.50000 ppb		-0.01
21) Perylene-D12(IS)	14.57	264	1664	2.50000 ppb		-0.02
System Monitoring Compounds						
2) Surrogate Recovery (NBZ)	5.34	82	17205	60.55743 ppb		-0.01
Spiked Amount 2.000			Recovery	= 3027.850%		
7) Surrogate Recovery (FBP)	7.36	172	38889	53.86387 ppb		-0.01
Spiked Amount 2.000			Recovery	= 2693.200%		
17) Surrogate Recovery (TPH)	11.74	244	48129	49.59673 ppb		-0.02
Spiked Amount 2.000			Recovery	= 2479.850%		
Target Compounds						Qvalue
3) Naphthalene	6.14	128	107792	91.35388 ppb		98
4) 2-Methylnaphthalene	6.94	142	74563	103.42696 ppb		90
5) 1-Methylnaphthalene	7.05	142	68267	91.49173 ppb		98
8) Acenaphthylene	7.97	152	96958	85.19538 ppb		99
9) Acenaphthene	8.17	154	60040	91.88749 ppb		98
10) Fluorene	8.77	166	69180	92.00615 ppb		99
12) Phenanthrene	9.88	178	98682	103.92660 ppb		98
13) Anthracene	9.96	178	98141	91.42724 ppb		99
14) Fluoranthene	11.27	202	162450	94.29595 ppb	#	89
16) Pyrene	11.54	202	177233	85.48104 ppb	#	86
18) Benz (a) anthracene	12.94	228	145938	112.89962 ppb		98
19) Chrysene	12.98	228	146103	86.84458 ppb		94
20) Indeno (1,2,3-cd) pyrene	16.08	276	122204	106.25978 ppb	#	97
22) Benzo (b) fluoranthene	14.13	252	153523	124.10211 ppb	#	96
23) Benzo (k) fluoranthene	14.16	252	136359	84.06796 ppb		98
24) Benzo (a) pyrene	14.51	252	123845	90.12588 ppb		95
25) Dibenz (a,h) anthracene	16.10	278	93587	100.17831 ppb		97
26) Benzo (g,h,i) perylene	16.51	276	104490	91.30904 ppb		96

(#) = qualifier out of range (m) = manual integration

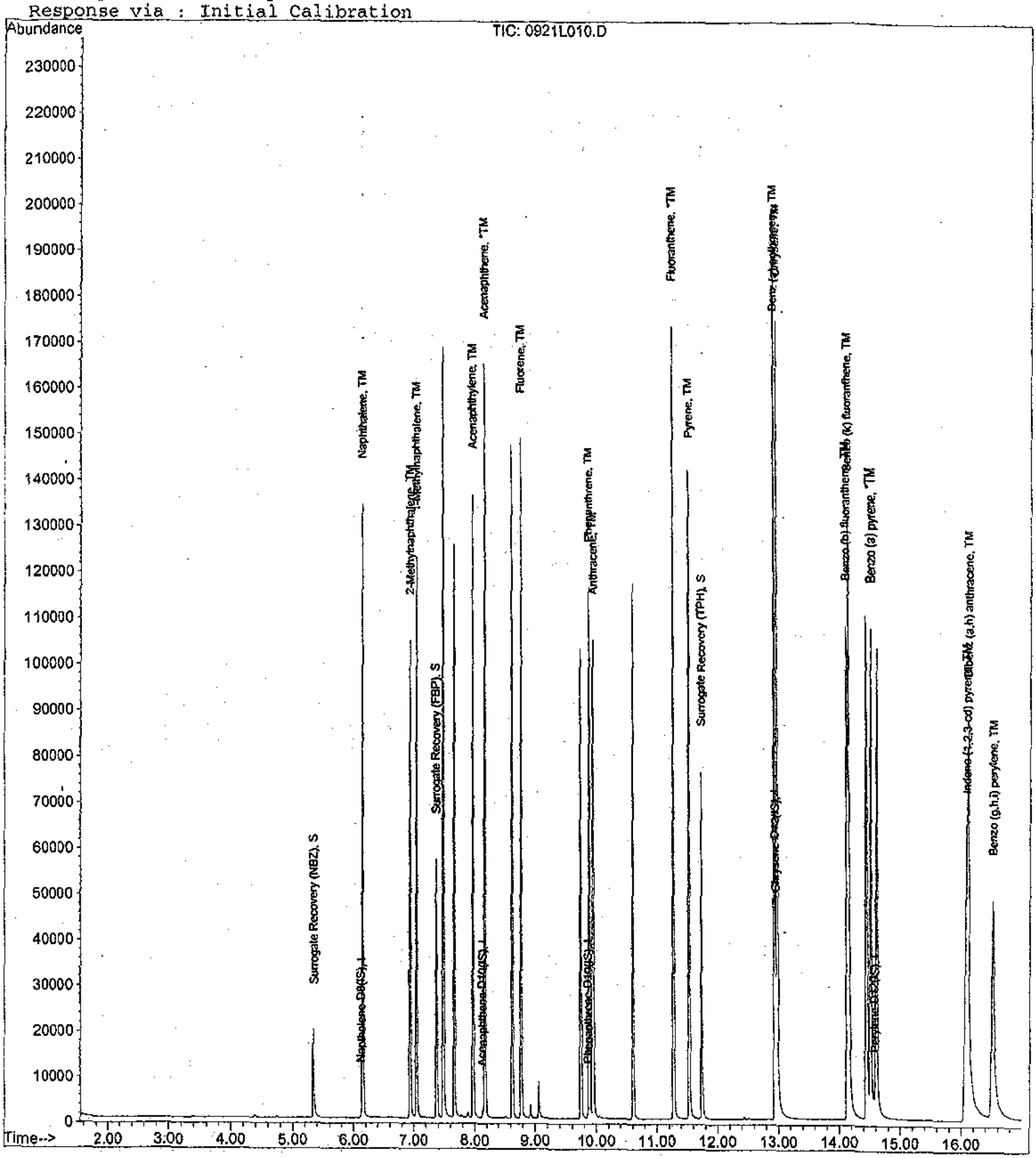
Quantitation Report

Data File : M:\LINUS\DATA\L110921\0921L010.D
Acq On : 21 Sep 11 23:09
Sample : 100ug/ml PAH
Misc :

Vial: 10
Operator: LF
Inst : Linus
Multiplr: 1.00

Quant Time: Sep 22 14:48 2011 Quant Results File: SIM2.RES

Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Thu Sep 22 14:50:13 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : M:\LINUS\DATA\L110921\0921L011.D Vial: 11
Acq On : 21 Sep 11 23:35 Operator: LF
Sample : 5.0ug/ml PAH SS 9-21-11 Inst : Linus
Misc : Multiplr: 1.00

Quant Time: Sep 23 13:04 2011 Quant Results File: SIM2.RES

Quant Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Thu Sep 22 14:50:13 2011
Response via : Initial Calibration
DataAcq Meth : 87SIMAQ

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Napthalene-D8(IS)	6.12	136	1563	2.50000	ppb	0.00
6) Acenaphthene-D10(IS)	8.13	164	747	2.50000	ppb	0.00
11) Phenanthrene-D10(IS)	9.87	188	1146	2.50000	ppb	0.00
15) Chrysene-D12(IS)	12.96	240	1578	2.50000	ppb	0.00
21) Perylene-D12(IS)	14.58	264	1246	2.50000	ppb	-0.01
System Monitoring Compounds						
2) Surrogate Recovery (NBZ)	0.00	82	0d	0.27390	ppb	
Spiked Amount 2.000			Recovery =	13.700%		
7) Surrogate Recovery (FBP)	0.00	172	0d	0.00000	ppb	
Spiked Amount 2.000			Recovery =	0.000%		
17) Surrogate Recovery (TPH)	0.00	244	0d	0.00000	ppb	
Spiked Amount 2.000			Recovery =	0.000%		
Target Compounds						Qvalue
3) Naphthalene	6.14	128	6164	4.86131	ppb	100
4) 2-Methylnaphthalene	6.93	142	3799	5.09635	ppb	100
5) 1-Methylnaphthalene	7.04	142	4072	5.09552	ppb	91
8) Acenaphthylene	7.97	152	5757	4.86181	ppb	100
9) Acenaphthene	8.17	154	3415	4.89556	ppb	99
10) Fluorene	8.77	166	3903	4.89886	ppb	100
12) Phenanthrene	9.90	178	5160	4.92824	ppb	99
13) Anthracene	9.96	178	5416	4.70649	ppb	100
14) Fluoranthene	11.28	202	8803	4.62039	ppb	100
16) Pyrene	11.54	202	9195	4.52380	ppb	99
18) Benz (a) anthracene	12.95	228	6161	5.38638	ppb	99
19) Chrysene	12.98	228	7109	4.76980	ppb	100
20) Indeno (1,2,3-cd) pyrene	16.11	276	5017	5.59513	ppb	93
22) Benzo (b) fluoranthene	14.14	252	4647	4.95638	ppb	99
23) Benzo (k) fluoranthene	14.16	252	6625	5.26678	ppb	99
24) Benzo (a) pyrene	14.52	252	5593	5.64873	ppb	98
25) Dibenz (a,h) anthracene	16.13	278	3549	5.61848	ppb	97
26) Benzo (g,h,i) perylene	16.54	276	4205	5.25494	ppb	97

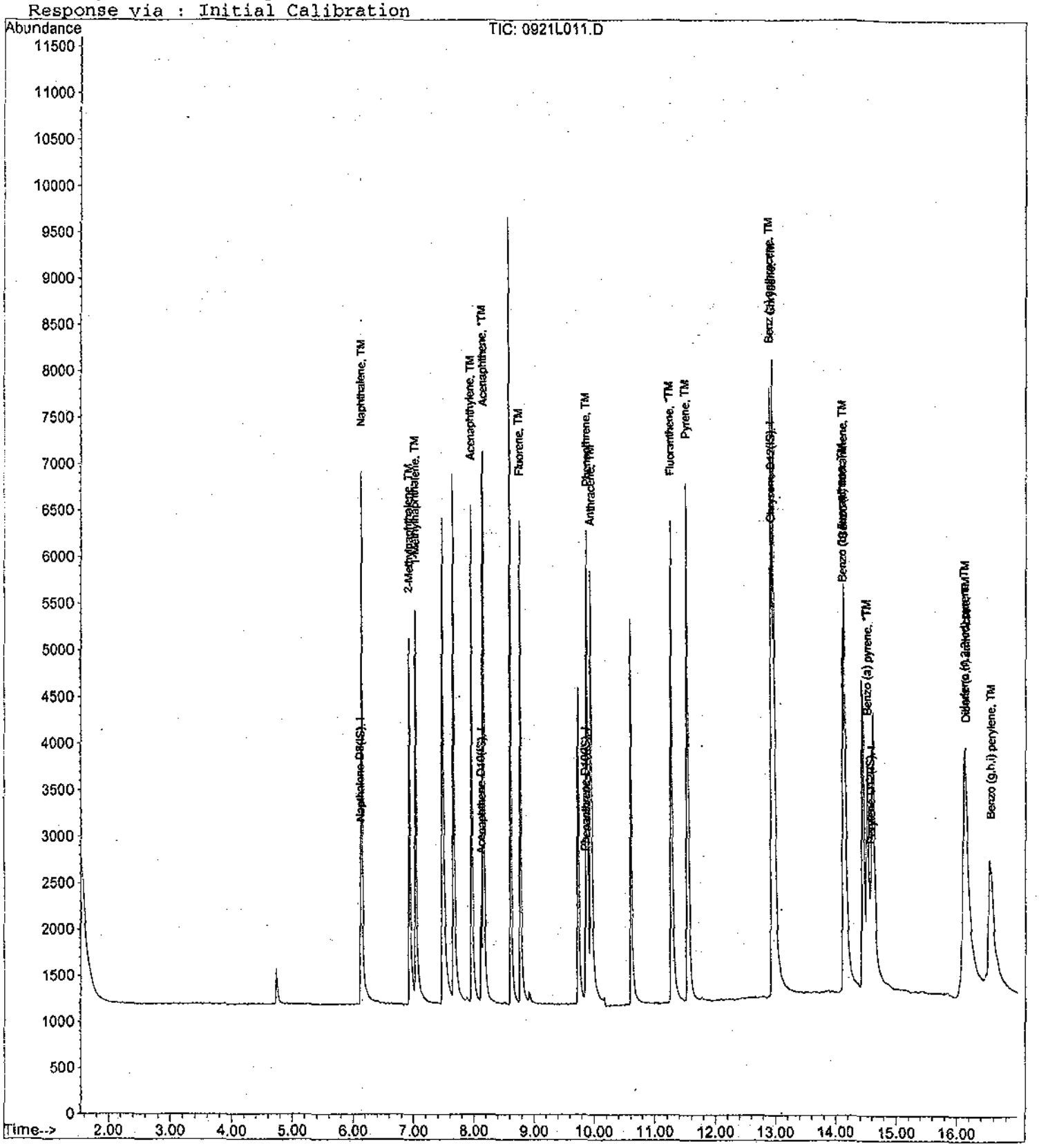
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : M:\LINUS\DATA\L110921\0921L011.D Vial: 11
Acq On : 21 Sep 11 23:35 Operator: LF
Sample : 5.0ug/ml PAH SS 9-21-11 Inst : Linus
Misc : Multiplr: 1.00

Quant Time: Sep 23 13:04 2011 Quant Results File: SIM2.RES

Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Thu Sep 22 14:50:13 2011
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : M:\LINUS\DATA\L110921\1009L002.D Vial: 2
Acq On : 9 Oct 11 12:48 Operator: LF
Sample : 10ug/ml PAH 09-29-11 Inst : Linus
Misc : Multiplr: 1.00

Quant Time: Oct 10 14:56 2011 Quant Results File: SIM2.RES

Quant Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Sun Oct 09 00:31:59 2011
Response via : Initial Calibration
DataAcq Meth : 87SIMAQ

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Napthalene-D8(IS)	6.12	136	1787	2.50000 ppb	0.01
6) Acenaphthene-D10(IS)	8.12	164	816	2.50000 ppb	0.00
11) Phenanthrene-D10(IS)	9.86	188	1275	2.50000 ppb	0.00
15) Chrysene-D12(IS)	12.95	240	1970	2.50000 ppb	0.00
21) Perylene-D12(IS)	14.58	264	1704	2.50000 ppb	0.00
System Monitoring Compounds					
2) Surrogate Recovery (NBZ)	5.35	82	1089	5.68194 ppb	0.01
Spiked Amount 2.000			Recovery	= 284.100%	
7) Surrogate Recovery (FBP)	7.36	172	2695	5.28202 ppb	0.00
Spiked Amount 2.000			Recovery	= 264.100%	
17) Surrogate Recovery (TPH)	11.74	244	3112	4.92245 ppb	0.00
Spiked Amount 2.000			Recovery	= 246.100%	
Target Compounds					Qvalue
3) Naphthalene	6.13	128	11768	8.11760 ppb	98
4) 2-Methylnaphthalene	6.93	142	8158	9.57212 ppb	94
5) 1-Methylnaphthalene	7.04	142	8174	8.94643 ppb	96
8) Acenaphthylene	7.95	152	11584	8.95552 ppb	99
9) Acenaphthene	8.16	154	6719	8.81752 ppb	96
10) Fluorene	8.76	166	7700	8.84744 ppb	97
12) Phenanthrene	9.88	178	10306	8.84721 ppb	100
13) Anthracene	9.94	178	10940	8.54497 ppb	100
14) Fluoranthene	11.27	202	18087	8.53274 ppb	98
16) Pyrene	11.53	202	21430	8.44529 ppb	99
18) Benz (a) anthracene	12.94	228	14690	10.28746 ppb	99
19) Chrysene	12.97	228	16315	8.76838 ppb	99
20) Indeno (1,2,3-cd) pyrene	16.11	276	11986	10.70732 ppb	86
22) Benzo (b) fluoranthene	14.13	252	10712	8.35431 ppb	97
23) Benzo (k) fluoranthene	14.16	252	15136	8.79870 ppb	98
24) Benzo (a) pyrene	14.51	252	12488	9.22248 ppb	100
25) Dibenz (a,h) anthracene	16.12	278	9734	11.26815 ppb	98
26) Benzo (g,h,i) perylene	16.54	276	9855	9.00547 ppb	97

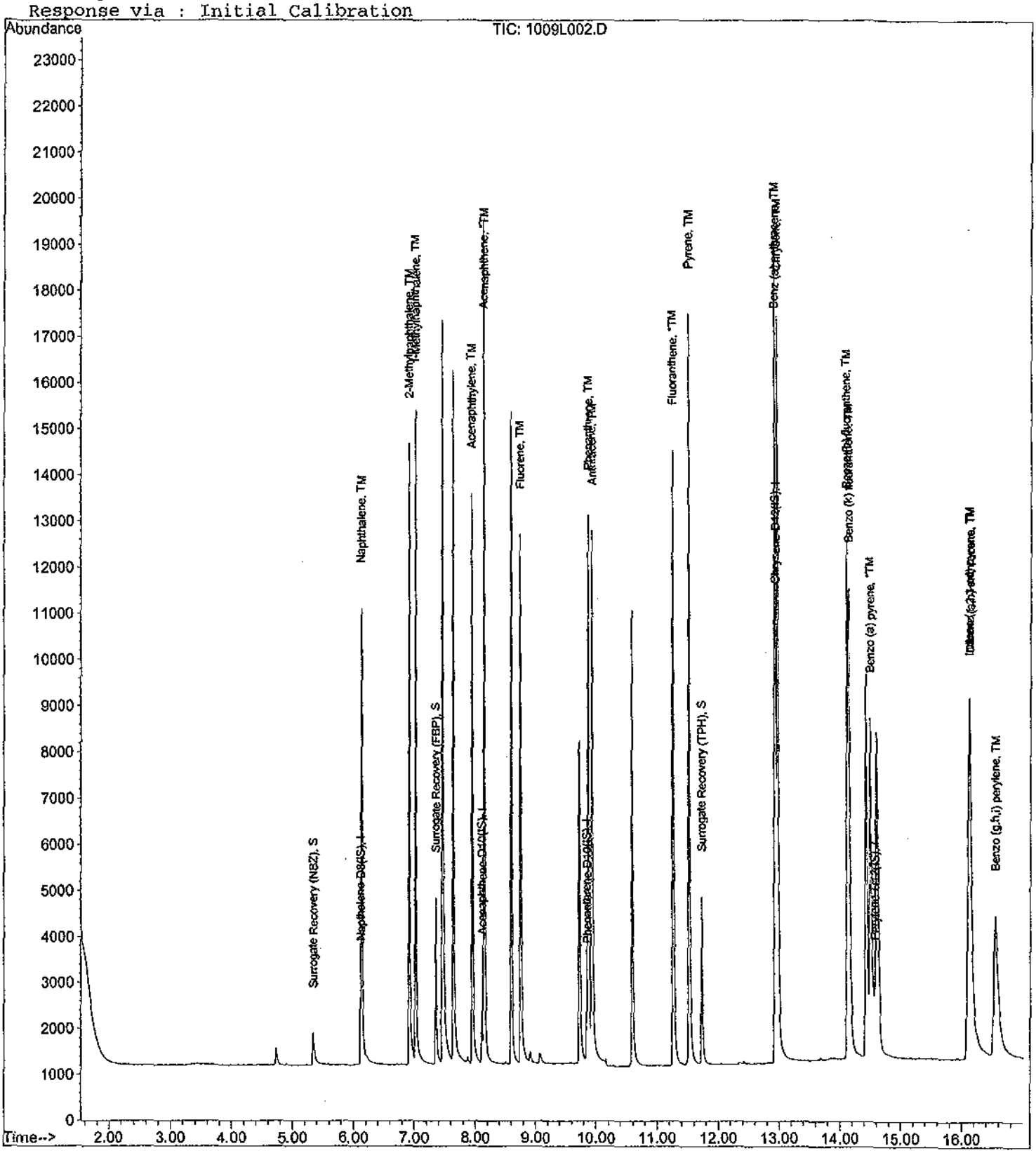
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : M:\LINUS\DATA\L110921\1009L002.D Vial: 2
Acq On : 9 Oct 11 12:48 Operator: LF
Sample : 10ug/ml PAH 09-29-11 Inst : Linus
Misc : Multiplr: 1.00

Quant Time: Oct 10 14:56 2011 Quant Results File: SIM2.RES

Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Mon Oct 10 15:00:34 2011
Response via : Initial Calibration



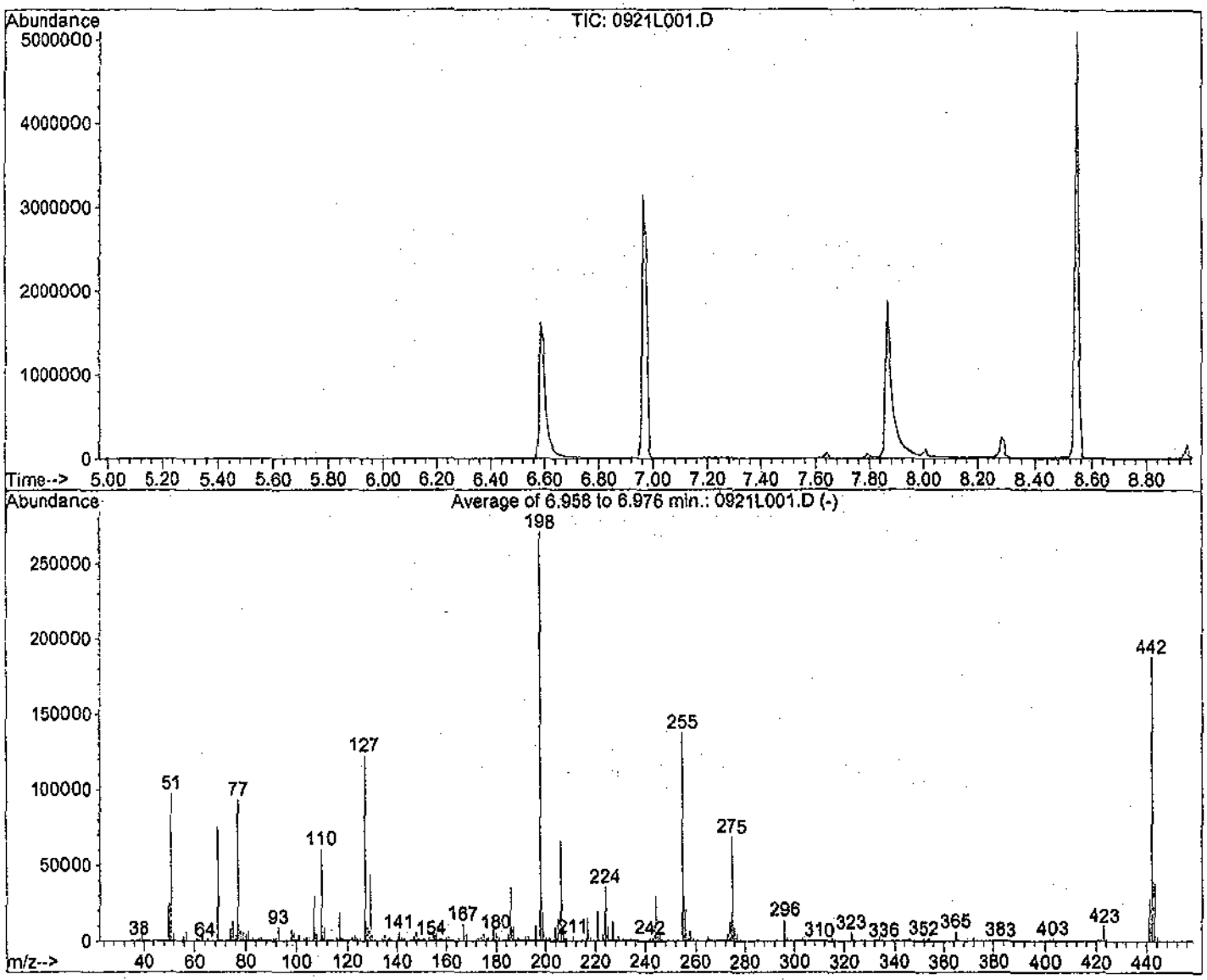
Miscellaneous

DFTPP

Data File : M:\LINUS\DATA\L110921\0921L001.D
Acq On : 21 Sep 11 19:23
Sample : SVTUNE 04-14-11
Misc :

Vial: 1
Operator: LF
Inst : Linus
Multiplr: 1.00

Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C



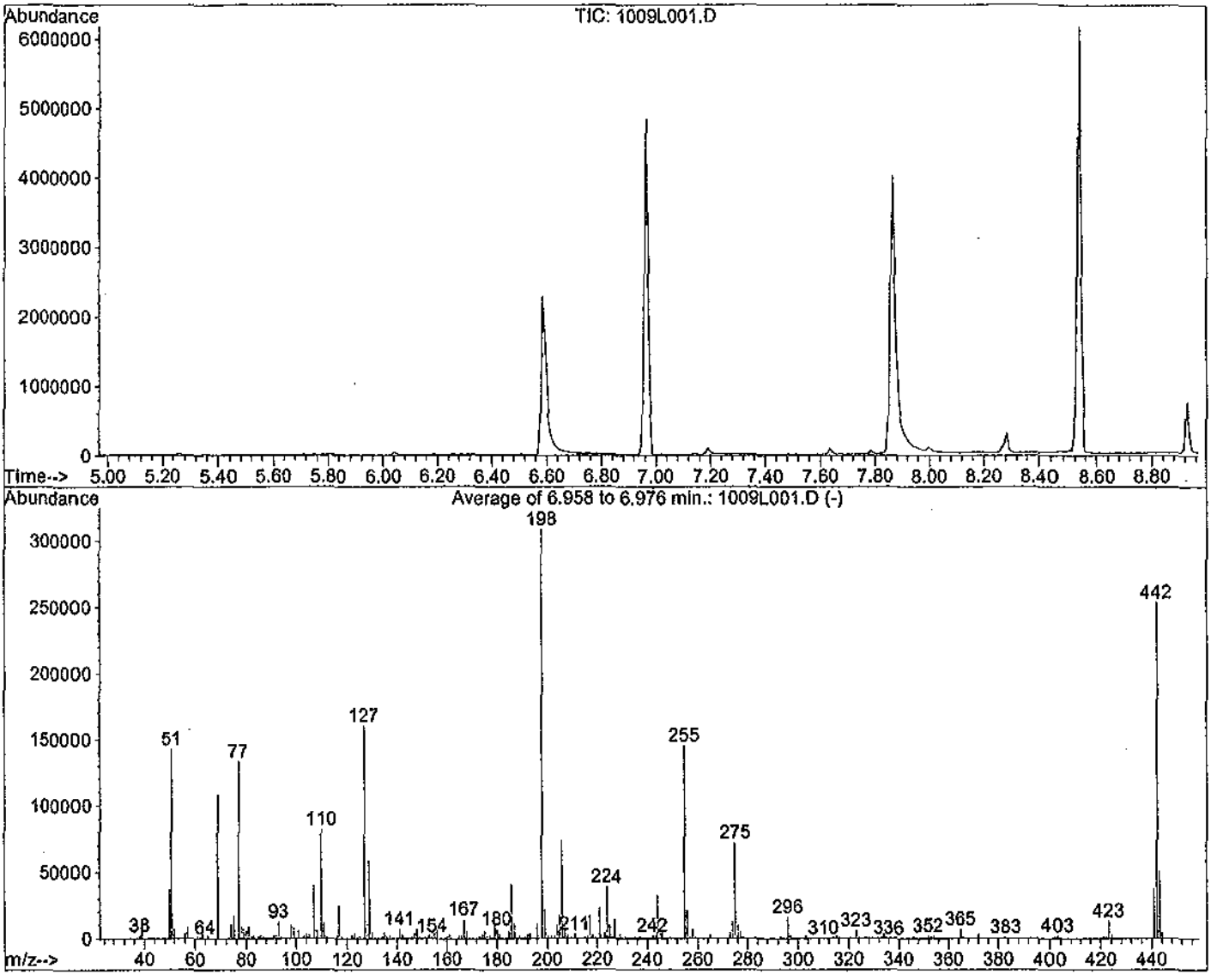
AutoFind: Scans 472, 473, 474; Background Corrected with Scan 469

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	30	60	35.9	97319	PASS
68	69	0.00	2	0.0	0	PASS
70	69	0.00	2	0.3	204	PASS
127	198	40	60	45.2	122512	PASS
197	198	0.00	1	0.1	138	PASS
198	198	100	100	100.0	271139	PASS
199	198	5	9	6.9	18702	PASS
275	198	10	30	25.2	68403	PASS
365	198	1	100	2.3	6146	PASS
441	443	0.01	100	72.7	27844	PASS
442	198	40	150	69.2	187686	PASS
443	442	17	23	20.4	38313	PASS

DFTPP

Data File : M:\LINUS\DATA\L110921\1009L001.D Vial: 1
Acq On : 9 Oct 11 12:29 Operator: LF
Sample : SVTUNE 04-14-11 Inst : Linus
Misc : Multiplr: 1.00

Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C



AutoFind: Scans 472, 473, 474; Background Corrected with Scan 469

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	30	60	46.1	142438	PASS
68	69	0.00	2	0.0	0	PASS
70	69	0.00	2	0.1	156	PASS
127	198	40	60	51.9	160481	PASS
197	198	0.00	1	0.0	0	PASS
198	198	100	100	100.0	309277	PASS
199	198	5	9	7.1	21846	PASS
275	198	10	30	23.3	72091	PASS
365	198	1	100	2.2	6874	PASS
441	443	0.01	100	74.2	37544	PASS
442	198	40	150	82.0	253555	PASS
443	442	17	23	19.9	50578	PASS

1009L001.D SIM2.M Mon Oct 10 16:12:21 2011

VF 1/17/11

PREP DATE:	01-17-11					
8270C Stock/Spike Standard						
Exp:	05-29-11					
		Conc.		Date	CODE:	P
Supplier	ID #	µg/mL	Lot #	Code	Exp.Date	µL
Absolute	10001	2000	032009-28092	01/17/11	03-20-12	1000
Absolute	10001	2000	032009-28091	01/17/11	03-20-12	1000
Absolute	10002	2000	073109-27974	01/17/11	07-31-12	1000
Absolute	10002	2000	073109-27973	01/17/11	07-31-12	1000
Absolute	10004	2000	101509-27979	01/17/11	10-15-14	1000
Absolute	10004	2000	101509-27978	01/17/11	10-15-14	1000
Absolute	10005	2000	061209-27984	01/17/11	06-12-14	1000
Absolute	10005	2000	061209-27983	01/17/11	06-12-14	1000
Absolute	10006	2000	120810-27989	01/17/11	12-08-13	1000
Absolute	10006	2000	120810-27988	01/17/11	12-08-13	1000
Absolute	10007	2000	100909-28010	01/17/11	10-09-14	1000
Absolute	10007	2000	100909-28013	01/17/11	10-09-14	1000
Absolute	10018	2000	073109-27994	01/17/11	07-31-14	1000
Absolute	10018	2000	073109-27993	01/17/11	07-31-14	1000
Absolute	70023	1000	080310-28008	01/17/11	08-03-15	1000
Absolute	70023	1000	080310-28009	01/17/11	08-03-15	1000
Absolute	82705	2000	121010-27999	01/17/11	12-10-13	1000
Absolute	82705	2000	121010-27998	01/17/11	12-10-13	1000
Absolute	94552	2000	052908-28004	01/17/11	05-29-11	1000
Absolute	94552	2000	052908-28003	01/17/11	05-29-11	1000
					Final Vol	20000

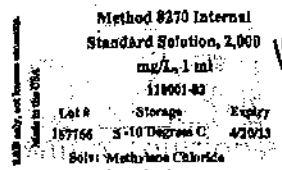
VF 1/25/11

PREP DATE:	01-25-11																
8270T STANDARD CURVE																	
Exp:	02-24-11						0.1	0.2	1	5	10	20	40	50	60	80	100
		Conc.		Date													
Supplier	ID #	µg/mL	Lot #	Code	Exp.Date				µL	µL	µL	µL	µL	µL	µL	µL	µL
	8270T Stock	200		12/17/10	05-29-11		0	0	0	5	5	10	20	25	30	40	50
	5.0ug/mL			01/25/11			0	0	20	0	0	0	0	0	0	0	0
	1.0ug/mL			01/25/11			10	20	0	0	0	0	0	0	0	0	0
	Surrogate Stock	VAR	160536-27570	11/11/10	11-11-11		0	0	0	5	5	10	20	25	30	40	50
EK Science	Methylene Chloride		47080				90	80	80	190	90	80	60	50	40	20	0
					Final Vol.				100	200	100	100	100	100	100	100	100

VF 1/25/11

PREP DATE:	01-25-11						VF
8270 Second Source (SS) 50ug/mL							
							50
		Conc.		Date	CODE:		
Supplier	ID #	µg/mL	Lot #	Code	Exp.Date		µL
	8270C SS	200		10/06/10	10-06-11		25
EK Science	Methylene Chloride		47080				75
					Final Vol.		100

VF 1/20/11



VF

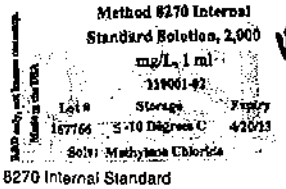
exp 1/25/12

8270 Internal Standard

Lot #: 167766 - 28148

Rec: 1/20/11 MFR exp. 04/20/13

VF 1/25/11



VF

exp 1/25/12

8270 Internal Standard

Lot #: 167766 - 28147

Rec: 1/20/11 MFR exp. 04/20/13

LF 3/23/11

Part #: 94552 Laboratory Use Only-See MSDS
Lot #: 052908 Exp: 052911 1 mL
Semi-Volatile Standard
11 components
Varied ug/mL in
ABSOLUTE STANDA
Semi-Volatile Standard
Lot #: 052908 - 28001
Rec: 12/16/10 MFR exp. 05/29/11

LF

exp 5/29/11

LF 3/23/11

Part #: 94552 Laboratory Use Only-See MSDS
Lot #: 052908 Exp: 052911 1 mL
Semi-Volatile Standard
11 components
Varied ug/mL in
ABSOLUTE STANDA
Semi-Volatile Standard
Lot #: 052908 - 28002
Rec: 12/16/10 MFR exp. 05/29/11

LF

exp 5/29/11

LF 3/23/11

Part #: 82705 Laboratory Use Only - See MSDS
Lot #: 121010 Exp: 121013 Storage 4 °C
EPA Method 8270A
4 components
2000 ug/mL in ace
EPA Method 8270A-Mix#11
Lot #: 121010 - 27996
Rec: 12/16/10 MFR exp. 12/10/13
ABSOLUTE STANDARDS, INC.

LF

exp 5/29/11

LF 3/23/11

Part #: 82705 Laboratory Use Only - See MSDS
Lot #: 121010 Exp: 121013 Storage 4 °C
EPA Method 8270A - Mix #11
4 components
2000 ug/mL in ace
EPA Method 8270A-Mix#11
Lot #: 121010 - 27997
Rec: 12/16/10 MFR exp. 12/10/13
ABSOLUTE STANDA

LF

exp 5/29/11

LF 3/23/11

PREP DATE:	03-23-11					
8270C Stock/Spike Standard						
Exp:	05-29-11					
		Conc.		Date	CODE:	F
Supplier	ID #	µg/mL	Lot #	Code	Exp.Date	µL
Absolute	10001	2000	032009-28089	03/23/11	03-20-12	1000
Absolute	10001	2000	320009-28090	03/23/11	03-20-12	1000
Absolute	10002	2000	073109-27971	03/23/11	07-31-12	1000
Absolute	10002	2000	073109-27972	03/23/11	07-31-12	1000
Absolute	10004	2000	101509-27976	03/23/11	10-15-14	1000
Absolute	10004	2000	101509-27977	03/23/11	10-15-14	1000
Absolute	10005	2000	061209-27981	03/23/11	06-12-14	1000
Absolute	10005	2000	061209-27982	03/23/11	06-12-14	1000
Absolute	10006	2000	120810-27986	03/23/11	12-08-13	1000
Absolute	10006	2000	120810-27987	03/23/11	12-08-13	1000
Absolute	10007	2000	100909-28015	03/23/11	10-09-14	1000
Absolute	10007	2000	100909-28014	03/23/11	10-09-14	1000
Absolute	10018	2000	073109-27991	03/23/11	07-31-14	1000
Absolute	10018	2000	073109-27992	03/23/11	07-31-14	1000
Absolute	70023	1000	080310-28006	03/23/11	08-03-15	1000
Absolute	70023	1000	080310-28007	03/23/11	08-03-15	1000
Absolute	82705	2000	052908-28001	03/23/11	05-29-11	1000
Absolute	82705	2000	052908-28002	03/23/11	05-29-11	1000
Absolute	94552	2000	121010-27996	03/23/11	12-10-13	1000
Absolute	94552	2000	121010-27997	03/23/11	12-10-13	1000
					Final Vol	20000

LF 3/23/11

SIM IS exp 1/25/12
1500µL EM Science MC Lot #47080
100µL 8270 IS opened 1/25/11 exp 1/25/12

KF 3/28/11

o2si — 8270 BN:A (200:400) Surrogate Solution, 1 ml
110004-17 — Storage: </= -10 Degrees C
Made in USA — Lot No: 160538 — Solvent: Methylene Chloride
Exp: 6/10/2012
Date Opened: 8270 BN:A (200:400) Surrogate Solution
Lot #: 160538 - 27574
Rec: 10/18/10 MFR exp. 06/10/12

KF exp 3/28/12

KF 3/28/11

PREP DATE:	03-28-11															
8270T STANDARD CURVE																
Exp:	04-27-11					0.1	0.2	1	5	10	20	40	50	60	80	100
		Conc.		Date												
Supplier	ID #	µg/mL	Lot #	Code	Exp.Date			µL	µL	µL	µL	µL	µL	µL	µL	µL
	8270T Stock	200		03/23/11	05-29-11	0	0	0	5	5	10	20	25	30	40	50
	5.0ug/mL			03/28/11		0	0	20	0	0	0	0	0	0	0	0
	1.0ug/mL			03/28/11		10	20	0	0	0	0	0	0	0	0	0
	Surrogate Stock	VAR	160538-27574	03/28/11	03-28-12	0	0	0	5	5	10	20	25	30	40	50
EM Science	Methylene Chloride		47080			90	80	80	190	90	80	60	50	40	20	0
					Final Vol.			100	200	100	100	100	100	100	100	100

KF 3/28/11

PREP DATE:	03-28-11					
8270 Second Source (SS) 50ug/mL						50 KF
		Conc.		Date	CODE:	
Supplier	ID #	µg/mL	Lot #	Code	Exp.Date	µL
	8270C SS	200		10/06/10	10-06-11	25
EM Science	Methylene Chloride		47080			75
					Final Vol.	100

KF 4/18/11

GCM-160-1 — ULTRA — 1 mL
Lot: CF-2995
Exp: 08/31/2011
Semi-Volatiles GC/MS Tuning Standard
4 analyte(s) at 1000 µg/mL in dichloromethane
250 Smith St, N o Kingstown, RI 02852 USA
Semi-volatiles GC/MS Tuning Standard
Lot #: CF-2995 - 26131
Rec: 2/17/10 MFR exp. 08/31/11

KF exp 8/31/11

KF 4/13/11

PREP DATE:	04-13-11					
BV Tune Mix 50ug/ml						KF
Exp:	08-31-11					
		Conc.		Date	CODE:	B
Supplier	ID #	µg/mL	Lot #	Code	Exp.Date	µL
U. Scientific	GCM-150	1000	CF-2995-26131	04/13/11	08-31-11	1000
EM Science	MeCl2		47080			19000
					Final Vol	20000

exp 8/31/11

KF 4/20/11

8270D PAH SIM Solution, 200 mg/L, 1 ml
110780-01
Lot # 170253 — Storage: </= -10 Degrees C — Expiry 3/3/13
Solv: Methylene Chloride

KF exp 4/20/12

8270D PAH SIM
Lot #: 170253 - 28485
Rec: 3/10/11 MFR exp. 3/3/2013

KF 4/20/11

8270D PAH SIM Solution, Second Source, 200 mg/L, 1 ml
110780-01-SS
Lot # 170256 — Storage: </= -10 Degrees C — Expiry 3/3/13
Solv: Methylene Chloride

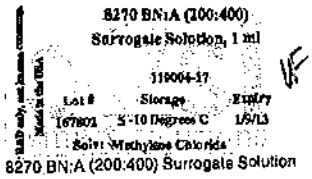
KF exp 4/20/12

8270D PAH SIM (SS)
Lot #: 170256 - 28487

VF 8/16/11

PREP DATE:	08/16/11		exp:	08/23/11			
10ug/mL 1,2,3-TCP							
	50uL of 1000ug/mL 1,2,3 TCP into a final volume of 5mL of P&T Methanol						
	1000ug/mL 1,2,3 TCP date code:				05/27/11		
	P & T Methonal Lot #				9077-02		
PREP DATE:	08/16/11		exp:	08/23/11			
1ug/mL 1,2,3-TCP							
	5uL of 1000ug/mL 1,2,3 TCP into a final volume of 5mL of P&T Methanol						
	1000ug/mL 1,2,3 TCP date code:				05/27/11		
	P & T Methanol Lot #			JT Baker H46E44			
PREP DATE:	08/16/11		exp:	08/23/11			
2ug/mL 1,2,3-TCPd5							
	10uL of 2000ug/mL 1,2,3 TCP into a final volume of 10mL of P&T Methanol						
	2000ug/mL 1,2,3 TCP-d5 date code:				05/27/11		
	P & T Methanol Lot #				9077-02		

VF 8/22/11



VF

exp 8/22/12

8270 BN:A (200:400) Surrogate Solution
Lot #: 167802 - 29313
Rec: 8/8/11 MFR exp. 01/09/13

VF 8/22/11

PREP DATE:	08-22-11												
8270 STANDARD CURVE													
Exp:	08-29-11						5	10	20	40	50	60	80	100
		Conc.		Date			µL	µL	µL	µL	µL	µL	µL	µL
Supplier	ID #	µg/mL	Lot #	Code	Exp.Date									
	8270T Stock	200		07/26/11	01-26-12		5	5	10	20	25	30	40	50
	Surrogate Stock	VAR	167802-29313	08/22/11	08-22-12		5	5	10	20	25	30	40	50
EM Science	Methylene Chloride		47186				190	90	80	60	50	40	20	0
						Final Vol.	200	100	100	100	100	100	100	100

VF 8/22/11

PREP DATE:	08-22-11					
8270 Second Source (SS) 50ug/mL						
						50
		Conc.		Date	CODE:	
Supplier	ID #	µg/mL	Lot #	Code	Exp.Date	µL
	8270C SS	200		10/06/10	10-06-11	25
EM Science	Methylene Chloride		47186			75
					Final Vol.	100

VF 9/21/11

PREP DATE:	09-21-11													
8270 SIM STANDARD CURVE														
							0.10	0.20	0.50	1.00	5.00	10.00	50.00	100.00
		Conc.		Date	CODE:		A	A	C	D	E	F	G	H
Supplier	ID #	µg/mL	Lot #	Code	Exp.Date		µL	µL	µL	µL	µL	µL	µL	µL
	8270D PAH SIM	200	170253-28485	04/20/11	04-20-12		0	0	0	0	5	5	25	50
	5.0ug/mL	5		09/21/11			0	0	10	20	0	0	0	0
	1.0ug/mL	1		09/21/11			10	20	0	0	0	0	0	0
	Surrogate Stock	VAR	167802-29313	08/22/11	08-23-11		0	0	0	0	5	5	25	50
EM Science	Methylene Chloride		47186				90	80	90	80	190	90	50	0
						Final Vol.	100	100	100	100	200	100	100	100

PREP DATE:	09-21-11						
SIM 8270 Second Source (5µg/mL)							
Exp:	10-05-11						
				Conc.	Date	CODE:	
Supplier	ID #		Lot #	µg/mL	Code	Exp.Date	µL
	8270D PAH SIM (SS)		170256-28467	200	04/20/11	04-20-12	5
	MeCl2			Lot#47185			195
					Final Volume		200

8270 BN Solution 14-4, 2,000 mg/L, 1 ml

Cat. No: 110391-01
Lot No: 158119
8270BN Solution 14-4
Lot #: 158119 - 28021
Rec: 12/16/10 MFR exp. 04/17/13

Exp: 4/17/2013
Storage: <= -10 Degrees C
Solvent: Methylene Chloride
For Research Use Only
d: _____

8270 BN Solution 14-3, 2,000 mg/L, 1 ml

Cat. No: 110392-01
Lot No: 158120
8270BN Solution 14-3
Lot #: 158120 - 28023
Rec: 12/16/10 MFR exp. 04/17/13

Exp: 4/17/2013
Storage: <= -10 Degrees C
Solvent: Methylene Chloride
For Research Use Only
ened: _____

8270 Acid Solution 4-6, 2,000 mg/L, 1 ml

Cat. No: 110393-01
Lot No: 158121
8270B Acid Solution 4-6
Lot #: 158121 - 28025
Rec: 12/16/10 MFR exp. 04/17/13

Exp: 4/17/2013
Storage: <= -10 Degrees C
Solvent: Methylene Chloride
For Research Use Only
ned: _____

TCL Hazardous Substances Solution 2, 2,000 mg/L, 1 ml

Cat. No: 110394-01
Lot No: 158122
TCL Hzd. Soln. 2
Lot #: 158122 - 28018
Rec: 12/16/10 MFR exp. 04/17/13

Exp: 4/17/2013
Storage: <= -10 Degrees C
Solvent: Methylene Chloride
For Research Use Only
d: _____

PAH Solution 17-3, 2,000 mg/L, 1 ml

Cat. No: 110070-02
Lot No: 158123
PAH Solution
Lot #: 158123 - 28027
Rec: 12/16/10 MFR exp. 07/17/13

Exp: 4/17/2013
Storage: <= -10 Degrees C
Solvent: Methylene Chloride
For Research Use Only
d: _____

8270 Acid Solution 13-4, 2,000 mg/L, 1 ml

Cat. No: 110396-01
Lot No: 158124
8270 Acid Solution 13-4
Lot #: 158124 - 28029
Rec: 12/16/10 MFR exp. 04/17/13

Exp: 4/17/2013
Storage: <= -10 Degrees C
Solvent: Methylene Chloride
For Research Use Only
d: _____

_SEP004S

Organic Extraction Worksheet

Method	SIM Separatory Funnel Extra 3510C	Extraction Set	111007A	Extraction Method	SEP004S	Units	mL

Spiked ID 1	SIM Spike 178987-29581		Surrogate ID 1	8270 SIM Surrogate 164394-27491	
Spiked ID 2			Surrogate ID 2		
Spiked ID 3			Surrogate ID 3		
Spiked ID 4			Surrogate ID 4		
Spiked ID 5			Surrogate ID 5		
Spiked ID 6			Sufficient Vol for Matrix QC:	NO	
Spiked ID 7			Ext. Start Time:		
Spiked ID 8			Ext. End Time:		
			GC Requires Extract By:	10/26/11 0:00	

pH1	2	0/07/11 10:25:00 AM	Water Bath Temp Criteria	80 °C
pH2	14	0/07/11 12:00:00 PM		
pH3				

Spiked By: HW **Date** 10/07/11 **Witnessed By:** DL **Date** 10/07/11

	Sample	Sample Container	Spike Amount	Spike ID	Surrogate Amount	Surrogate ID	Extract Amount	Final Volume	pH	Extract Date/Time	Comments
1	111007A Blk				0.025	1	1000	1	2/1	10/07/11 10:25	
						equip	E-WB5				
2	111007A LCS-1		0.025	1	0.025	1	1000	1	2/1	10/07/11 10:25	
						equip	E-WB5				
3	AY47855	AY47855W02			0.025	1	1050	1	2/1	10/07/11 10:25	65895 -- Amber Liter
						equip	E-WB5				

HW 10/7/11

Solvent and Lot#	
MC	BMD 51137
Na2SO4	3581C501
10N NaOH	10/06/11
1+1 Acid	09/15/11

Extraction COC Transfer	
Extraction lab employee Initials	HW
GC analyst's initials	LF
Date	10/9/11
Time	4 hours
Refrigerator	4 to 10°C

	Technician's Initials
Scanned By	HW
Sample Preparation	HW/CC
Extraction	CC
Concentration	

Modified	10/07/11 8:52:43 AM

Reviewed By: HW **Date** 10/07/11

Method 8330B

Data Summary Package

EPA 8330B EXPLOSIVES-WATER

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker

Project: 112G00810 Indian Head CTO423

ARF: 65895

Sample ID: X17GW0011011

APPL ID: AY47857

Sample Collection Date: 10/1/2011

QCG: #833BW-111006AA-160737

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
EPA 8330B	NITROGLYCERIN	0.260 U	0.50	0.260	0.130	ug/L	10/6/2011	10/18/2011
EPA 8330B	SURROGATE: 1,2-DINITROBENZENE (	83.8	70-130			%	10/6/2011	10/18/2011

Quant Method: W110907.M
Run #: 1017_0000040
Instrument: Waldorf
Sequence: 111017
Dilution Factor: 1
Initials: RSM

Printed: 11/2/2011 1:59:15 PM
APPL-F1-SC-NoMC-REG MDLs

Form 2 & 8

Surrogate Recovery

Lab Name: APPL, Inc. SDG No: 65895

Case No: 65895 Date Analyzed: 10/17/2011

Matrix: WATER Instrument: Waldorf

APPL ID.	Client Sample No.	SURROGATE: 1,2-DINITROBENZENE (S)					
		Limits	Result	Qualifier	Limits	Result	Qualifier
111006AA-LCS	Lab Control Spike	70-130	90.3				
AY47857-MS	Matrix Spike	70-130	79.5				
AY47857-MSD	Matrix SpikeD	70-130	90.3				
111006AA-BLK	Blank	70-130	80.1				
AY47857	X17GW0011011	70-130	83.8				

Comments: Batch: #833BW-111006AA

Matrix Spike Recoveries

EPA 8330B EXPLOSIVES-WATER

APPL ID: **111006W-47857 MS - 160737**
Batch ID: #833BW-111006AA
Sample ID: AY47857
Client ID: X17GW0011011

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Lvl ug/L	Matrix Result ug/L	SPK Result ug/L	DUP Result ug/L	SPK % Recovery	DUP % Recovery	Recovery Limits	RPD %	RPD Limits
NITROGLYCERIN	8.00	ND	7.42	8.61	92.8	108	70-130	14.8	20
SURROGATE: 1,2-DINITROBENZENE (S)	8.00	NA	6.36	7.22	79.5	90.3	70-130		

Comments: _____

Primary	SPK	DUP
Quant Method :	W110907.M	W110907.M
Extraction Date :	10/6/2011	10/6/2011
Analysis Date :	10/17/2011	10/18/2011
Instrument :	Waldorf	Waldorf
Run :	1017_0000023	1017_0000024
Initials :	RSM	

Printed: 11/2/2011 1:59:18 PM
APPL MSD SCII

Laboratory Control Spike Recovery
EPA 8330B EXPLOSIVES-WATER

APPL ID: **111006W-47857 LCS - 160737**
Batch ID: #833BW-111006AA

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Level ug/L	SPK Result ug/L	SPK % Recovery	Recovery Limits
NITROGLYCERIN	8.00	8.78	110	70-130
SURROGATE: 1,2-DINITROBENZENE (S)	8.00	7.22	90.3	70-130

Comments: _____

Primary	SPK
Quant Method :	W110907.M
Extraction Date :	10/6/2011
Analysis Date :	10/17/2011
Instrument :	Waldorf
Run :	1017_0000020
Initials :	RSM

Printed: 11/2/2011 1:59:16 PM

APPL Standard LCS

Method Blank

EPA 8330B EXPLOSIVES-WATER

Blank Name/QCG: **111006W-47857 - 160737**
Batch ID: #833BW-111006AA

APPL Inc.
908 North Tempèrance Avenu
Clovis, CA 93611

Sample Type	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
BLANK	NITROGLYCERIN	0.260 U	0.50	0.260	0.130	ug/L	10/6/2011	10/18/2011
BLANK	SURROGATE: 1,2-DINITROBENZ	80.1	70-130			%	10/6/2011	10/18/2011

Quant Method:W110907.M
Run #:1017_000002
Instrument:Waldorf
Sequence:111017
Initials:RSM

GC SC-Blank-REG MDLs
Printed: 11/2/2011 1:59:15 PM

EPA 8330B

Form 4

Blank Summary

Lab Name: APPL, Inc. SDG No: 65895

Case No: 65895 Date Analyzed: 10/18/2011

Matrix: WATER Instrument: Waldorf

Blank ID: 111006AA-BLK Time Analyzed: 0046

APPL ID.	Client Sample No.	File ID.	Date Analyzed
111006AA-LCS	Lab Control Spike	1017_0000020	10/17/2011 2149
111006AA-MS	Matrix Spike	1017_0000023	10/17/2011 2332
111006AA-MSD	Matrix SpikeD	1017_0000024	10/18/2011 0009
111006AA-BLK	Blank	1017_0000025	10/18/2011 0046
AY47857	X17GW0011011	1017_0000040	10/18/2011 0948

Comments: Batch: #833BW-111006AA

Printed: 11/2/2011 1:59:20 PM
Form 4, Blank Summary

Waldorf-8330B
W110907.M

Form 6
Initial Calibration

Lab Name: APPL, Inc. SDG No: 65895
Case No: Initial Cal. Date: 10/13/2011
Matrix: Instrument: Waldorf
Initials: HM

1013_0000003.D 1013_0000004.D 1013_0000005.D 1013_0000006.D 1013_0000007.D 1013_0000008.D 1013_0000009.D 1013_0000010.D 1013_0000012.D

		Compound	1	2	3	4	5	6	7	8	9		Avg	%RSD		
1	TM	NITROGLYCERIN	145	137	147	119	138	138	142	139	137		138	5.8	TM	
2	TM	PETN			93.1	96.7	114	119	125	123	123		113	12	TM	
		Signal #2														
1	TM	HMX #2	601	677	575	614	705	641	726	707	685		659	8.1	TM	
2	TM	RDX #2	408	459	376	401	462	413	478	470	463		437	8.5	TM	
3	TM	1,3,5-TRINITROBENZENE #2	708	782	648	687	789	716	819	807	803		750	8.3	TM	
4	S	1,2-DINITROBENZENE #2	315	341	283	294	339	308	351	351	355		326	8.2	S	
5	TM	1,3-DINITROBENZENE #2	671	756	626	651	757	686	780	780	781		721	8.6	TM	
6	TM	3,5-DINITROANILINE #2	524	584	546	531	605	602	632	624	622		586	7.1	TM	
7	TM	NITROBENZENE #2	302	343	301	293	347	314	352	357	357		329	8.1	TM	
8	TM	TETRYL #2	225	245	206	220	251	232	264	261	263		241	8.7	TM	
9	TM	2,4,6-TRINITROTOLUENE #2	310	338	281	298	339	312	353	348	348		325	7.9	TM	
10	TM	2-AMINO-4,6-DINITROTOLUENE	284	310	261	276	315	290	330	325	325		302	8.2	TM	
11	TM	4-AMINO-2,6-DINITROTOLUENE	227	247	207	220	250	230	261	256	254		239	7.8	TM	
12	TM	2,4-DINITROTOLUENE #2	288	324	270	282	324	299	337	336	336		311	8.4	TM	
13	TM	2,6-DINITROTOLUENE #2	169	181	153	158	182	168	188	188	187		175	7.7	TM	
14	TM	2-NITROTOLUENE #2	117	124	104	108	125	115	128	129	129		120	8.0	TM	
15	TM	4-NITROTOLUENE #2	111	121	103	106	123	113	126	128	127		118	8.2	TM	
16	TM	3-NITROTOLUENE #2	137	147	123	128	149	137	152	154	154		142	8.2	TM	

Form 7

Second Source Calibration

Lab Name: APPL, Inc.
Case No:
Matrix:

SDG No: G5895
Date Analyzed: 13-Oct-2011, 22:49:00
Instrument: Waldorf
Initial Cal. Date: 10/13/2011
Data File: 1013_0000014.D

		Compound	MEAN	CCRF	%D		%Drift
1	TM	NITROGLYCERIN	138	134	2.8	TM	
2	TM	TETRYL	0.0000	0.0000		TM	
3	TM	2,4,6-TRINITROTOLUENE	0.0000	0.0000		TM	
4	TM	2-AMINO-4,6-DINITROTOLUENE	0.0000	0.0000		TM	
5	TM	4-AMINO-2,6-DINITROTOLUENE	0.0000	0.0000		TM	
6	TM	2,4-DINITROTOLUENE	0.0000	0.0000		TM	
7	TM	2,6-DINITROTOLUENE	0.0000	0.0000		TM	
8	TM	PETN	113	120	6.3	TM	
	Signal #2						
1	TM	HMX	659	642	2.5	TM	
2	TM	RDX	437	423	3.2	TM	
3	TM	1,3,5-TRINITROBENZENE	750	668	11	TM	
4	S	1,2-DINITROBENZENE	326	309	5.2	S	
5	TM	1,3-DINITROBENZENE	721	722	0.16	TM	
6	TM	3,5-DINITROANILINE	586	611	4.3	TM	
7	TM	NITROBENZENE	329	324	1.5	TM	
8	TM	NITROGLYCERIN	0.0000	0.0000		TM	
9	TM	TETRYL	241	205	15	TM	
10	TM	2,4,6-TRINITROTOLUENE	325	285	12	TM	
11	TM	2-AMINO-4,6-DINITROTOLUEN	302	266	12	TM	
12	TM	4-AMINO-2,6-DINITROTOLUEN	239	252	5.4	TM	
13	TM	2,4-DINITROTOLUENE	311	320	3.0	TM	
14	TM	2,6-DINITROTOLUENE	175	163	6.6	TM	
15	TM	2-NITROTOLUENE	120	115	3.8	TM	
16	TM	4-NITROTOLUENE	118	108	8.1	TM	
17	TM	3-NITROTOLUENE	142	143	0.65	TM	
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Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix:

SDG No: G5895
Date Analyzed: 17-Oct-2011, 18:52:23
Instrument: Waldorf
Initial Cal. Date: 10/13/2011
Data File: 1017_0000015.D

		Compound	MEAN	CCRF	%D		%Drift
1	TM	NITROGLYCERIN	137	132	3.2	TM	
2	TM	TETRYL	0.0000	0.0000		TM	
3	TM	2,4,6-TRINITROTOLUENE	0.0000	0.0000		TM	
4	TM	2-AMINO-4,6-DINITROTOLUENE	0.0000	0.0000		TM	
5	TM	4-AMINO-2,6-DINITROTOLUENE	0.0000	0.0000		TM	
6	TM	2,4-DINITROTOLUENE	0.0000	0.0000		TM	
7	TM	2,6-DINITROTOLUENE	0.0000	0.0000		TM	
8	TM	PETN	111	116	4.7	TM	
	Signal #2						
1	TM	HMX	671	692	3.2	TM	
2	TM	RDX	449	465	3.7	TM	
3	TM	1,3,5-TRINITROBENZENE	775	815	5.2	TM	
4	S	1,2-DINITROBENZENE	348	356	2.5	S	
5	TM	1,3-DINITROBENZENE	747	774	3.6	TM	
6	TM	3,5-DINITROANILINE	573	594	3.7	TM	
7	TM	NITROBENZENE	323	289	10	TM	
8	TM	NITROGLYCERIN	0.0000	0.0000		TM	
9	TM	TETRYL	250	263	5.4	TM	
10	TM	2,4,6-TRINITROTOLUENE	335	347	3.6	TM	
11	TM	2-AMINO-4,6-DINITROTOLUEN	310	319	3.0	TM	
12	TM	4-AMINO-2,6-DINITROTOLUEN	245	251	2.5	TM	
13	TM	2,4-DINITROTOLUENE	321	332	3.2	TM	
14	TM	2,6-DINITROTOLUENE	181	184	2.0	TM	
15	TM	2-NITROTOLUENE	116	97.9	16	TM	
16	TM	4-NITROTOLUENE	118	106	9.5	TM	
17	TM	3-NITROTOLUENE	139	121	13	TM	
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Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix:

SDG No: 65895
Date Analyzed: 18-Oct-2011, 02:39:17
Instrument: Waldorf
Initial Cal. Date: 10/13/2011
Data File: 1017_0000028.D

		Compound	MEAN	CCRF	%D		%Drift
1	TM	NITROGLYCERIN	137	132	3.1	TM	
2	TM	TETRYL	0.0000	0.0000		TM	
3	TM	2,4,6-TRINITROTOLUENE	0.0000	0.0000		TM	
4	TM	2-AMINO-4,6-DINITROTOLUENE	0.0000	0.0000		TM	
5	TM	4-AMINO-2,6-DINITROTOLUENE	0.0000	0.0000		TM	
6	TM	2,4-DINITROTOLUENE	0.0000	0.0000		TM	
7	TM	2,6-DINITROTOLUENE	0.0000	0.0000		TM	
8	TM	PETN	111	116	6.2	TM	
	Signal #2						
1	TM	HMX	671	685	2.2	TM	
2	TM	RDX	449	459	2.1	TM	
3	TM	1,3,5-TRINITROBENZENE	775	801	3.3	TM	
4	S	1,2-DINITROBENZENE	348	349	0.46	S	
5	TM	1,3-DINITROBENZENE	747	764	2.2	TM	
6	TM	3,5-DINITROANILINE	573	593	3.4	TM	
7	TM	NITROBENZENE	323	350	8.5	TM	
8	TM	NITROGLYCERIN	0.0000	0.0000		TM	
9	TM	TETRYL	250	262	4.9	TM	
10	TM	2,4,6-TRINITROTOLUENE	335	343	2.2	TM	
11	TM	2-AMINO-4,6-DINITROTOLUEN	310	315	1.9	TM	
12	TM	4-AMINO-2,6-DINITROTOLUEN	246	248	1.3	TM	
13	TM	2,4-DINITROTOLUENE	321	328	2.1	TM	
14	TM	2,6-DINITROTOLUENE	181	183	1.5	TM	
15	TM	2-NITROTOLUENE	116	127	8.8	TM	
16	TM	4-NITROTOLUENE	118	125	6.3	TM	
17	TM	3-NITROTOLUENE	139	151	8.2	TM	
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Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix:

SDG No: G5895
Date Analyzed: 18-Oct-2011, 09:21:13
Instrument: Waldorf
Initial Cal. Date: 10/13/2011
Data File: 1017_0000039.D

		Compound	MEAN	CCRF	%D		%Drift
1	TM	NITROGLYCERIN	137	132	3.2	TM	
2	TM	TETRYL	0.0000	0.0000		TM	
3	TM	2,4,6-TRINITROTOLUENE	0.0000	0.0000		TM	
4	TM	2-AMINO-4,6-DINITROTOLUENE	0.0000	0.0000		TM	
5	TM	4-AMINO-2,6-DINITROTOLUENE	0.0000	0.0000		TM	
6	TM	2,4-DINITROTOLUENE	0.0000	0.0000		TM	
7	TM	2,6-DINITROTOLUENE	0.0000	0.0000		TM	
8	TM	PETN	111	116	5.0	TM	
	Signal #2						
1	TM	HMX	671	684	2.0	TM	
2	TM	RDX	449	458	2.1	TM	
3	TM	1,3,5-TRINITROBENZENE	775	802	3.5	TM	
4	S	1,2-DINITROBENZENE	348	350	0.63	S	
5	TM	1,3-DINITROBENZENE	747	763	2.1	TM	
6	TM	3,5-DINITROANILINE	573	592	3.3	TM	
7	TM	NITROBENZENE	323	346	7.0	TM	
8	TM	NITROGLYCERIN	0.0000	0.0000		TM	
9	TM	TETRYL	250	262	4.7	TM	
10	TM	2,4,6-TRINITROTOLUENE	335	342	2.1	TM	
11	TM	2-AMINO-4,6-DINITROTOLUEN	310	315	1.6	TM	
12	TM	4-AMINO-2,6-DINITROTOLUEN	245	248	1.2	TM	
13	TM	2,4-DINITROTOLUENE	321	328	1.9	TM	
14	TM	2,6-DINITROTOLUENE	181	183	1.3	TM	
15	TM	2-NITROTOLUENE	116	125	7.2	TM	
16	TM	4-NITROTOLUENE	118	124	5.4	TM	
17	TM	3-NITROTOLUENE	139	149	7.0	TM	
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Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix:

SDG No: G5895
Date Analyzed: 18-Oct-2011, 16:03:13
Instrument: Waldorf
Initial Cal. Date: 10/13/2011
Data File: 1017_0000050.D

		Compound	MEAN	CCRF	%D		%Drift
1	TM	NITROGLYCERIN	137	132	3.6	TM	
2	TM	TETRYL	0.0000	0.0000		TM	
3	TM	2,4,6-TRINITROTOLUENE	0.0000	0.0000		TM	
4	TM	2-AMINO-4,6-DINITROTOLUENE	0.0000	0.0000		TM	
5	TM	4-AMINO-2,6-DINITROTOLUENE	0.0000	0.0000		TM	
6	TM	2,4-DINITROTOLUENE	0.0000	0.0000		TM	
7	TM	2,6-DINITROTOLUENE	0.0000	0.0000		TM	
8	TM	PETN	111	116	4.0	TM	
	Signal #2						
1	TM	HMX	671	683	1.9	TM	
2	TM	RDX	449	458	2.0	TM	
3	TM	1,3,5-TRINITROBENZENE	775	800	3.2	TM	
4	S	1,2-DINITROBENZENE	348	350	0.49	S	
5	TM	1,3-DINITROBENZENE	747	761	1.8	TM	
6	TM	3,5-DINITROANILINE	573	589	2.8	TM	
7	TM	NITROBENZENE	323	339	5.0	TM	
8	TM	NITROGLYCERIN	0.0000	0.0000		TM	
9	TM	TETRYL	250	260	4.0	TM	
10	TM	2,4,6-TRINITROTOLUENE	335	340	1.5	TM	
11	TM	2-AMINO-4,6-DINITROTOLUEN	310	312	0.77	TM	
12	TM	4-AMINO-2,6-DINITROTOLUEN	245	246	0.28	TM	
13	TM	2,4-DINITROTOLUENE	321	325	1.2	TM	
14	TM	2,6-DINITROTOLUENE	181	181	0.49	TM	
15	TM	2-NITROTOLUENE	116	122	4.5	TM	
16	TM	4-NITROTOLUENE	118	122	3.4	TM	
17	TM	3-NITROTOLUENE	139	145	4.5	TM	
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Injection Log

Directory: H:\WALDORF\CHEM32\1\DATA\111013

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1	0	1013_0000003.D		8830B_CB 0.005 PPM 10/13/11		10/13/2011 15:57
2	0	1013_0000004.D		8830B_CB 0.01 PPM 10/13/11		10/13/2011 16:34
3	0	1013_0000005.D		8830B_CB 0.02 PPM 10/13/11		10/13/2011 17:12
4	0	1013_0000006.D		8830B_CB 0.05 PPM 10/13/11		10/13/2011 17:49
5	0	1013_0000007.D		8830B_CB 0.1 PPM 10/13/11		10/13/2011 18:26
6	0	1013_0000008.D		8830B_CB 0.2 PPM 10/13/11		10/13/2011 19:04
7	0	1013_0000009.D		8830B_CB 0.5 PPM 10/13/11		10/13/2011 19:41
8	0	1013_0000010.D		8830B_CB 1.0 PPM 10/13/11		10/13/2011 20:19
9	0	1013_0000011.D		8830B_MX-A 2.0 PPM 10/13/11		10/13/2011 20:56
10	0	1013_0000012.D		8830B_MX-B 2.0 PPM 10/13/11		10/13/2011 21:34
11	0	1013_0000014.D		8830B_SS 1.0 PPM 10/13/11		10/13/2011 22:49
12	0	1017_0000015.D		8330_CCV 1.0 PPM 10/13/11		10/17/2011 18:52
13	0	1017_0000020.D	0.016	111006WLCS1A 0.016 DF 10/06/11	water	10/17/2011 21:49
14	0	1017_0000023.D	0.016	AY47857W02_MS-1 0.016 DF 10/06/11	water	10/17/2011 23:32
15	0	1017_0000024.D	0.016	AY47857W02_MSD-1 0.016 DF 10/06/11	water	10/18/2011 00:09
16	0	1017_0000025.D	0.016	111006WBLK1A 0.016 DF 10/06/11	water	10/18/2011 00:46
17	0	1017_0000028.D		8330_CCV 1.0 PPM 10/17/11		10/18/2011 02:39
18	0	1017_0000039.D		8330_CCV 1.0 PPM 10/17/11		10/18/2011 09:21
19	0	1017_0000040.D	0.016	AY47857W01 0.016 DF 10/06/11	water	10/18/2011 09:48
20	0	1017_0000050.D		8330_CCV 1.0 PPM 10/17/11		10/18/2011 16:03

Raw Sample Data

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111017\
Data File : 1017_0000040.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 18-Oct-2011, 09:48:44
Operator : mp
Sample : AY47857W01 0.016 DF 10/06/11
Misc : water
ALS Vial : 8320 Sample Multiplier: 0.016

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 18 17:17:41 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111017\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Fri Oct 14 10:08:44 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppb	ppb	
	System Monitoring Compounds							
4)	S 1,2-DINIT...	0.000	3.716	0	728673	N.D.	0.838 #	
	Spiked Amount 1.000			Recovery	=	0.00%	83.80%	
	Target Compounds							
1)	TM HMX	0.000	0.000	0	0	N.D.	N.D.	
2)	TM RDX	0.000	0.000	0	0	N.D.	N.D.	
3)	TM 1,3,5-TRI...	0.000	0.000	0	0	N.D.	N.D.	
5)	TM 1,3-DINIT...	0.000	0.000	0	0	N.D.	N.D.	
6)	TM 3,5-DINIT...	0.000	0.000	0	0	N.D.	N.D.	
7)	TM NITROBENZENE	0.000	0.000	0	0	N.D.	N.D.	
8)	TM NITROGLYC...	0.000	0.000	0	0	N.D. d	N.D. <MDL	
9)	TM TETRYL	6.726	0.000	6654	0	NoCal	N.D.	
10)	TM 2,4,6-TRI...	7.102	0.000	4326	0	NoCal	N.D.	
11)	TM 2-AMINO-4...	7.475	0.000	9242	0	NoCal	N.D.	
12)	TM 4-AMINO-2...	7.835	0.000	4951	0	NoCal	N.D.	
13)	TM 2,4-DINIT...	8.942	0.000	3696	0	NoCal	N.D.	
14)	TM 2,6-DINIT...	9.353	0.000	8616	0	NoCal	N.D.	
15)	TM 2-NITROTO...	0.000	0.000	0	0	N.D.	N.D.	HM 10/17/11
16)	TM 4-NITROTO...	0.000	0.000	0	0	N.D.	N.D. d NT	
17)	TM 3-NITROTO...	0.000	0.000	0	0	N.D.	N.D.	
18)	TM PETN	0.000	0.000	0	0	N.D.	N.D.	

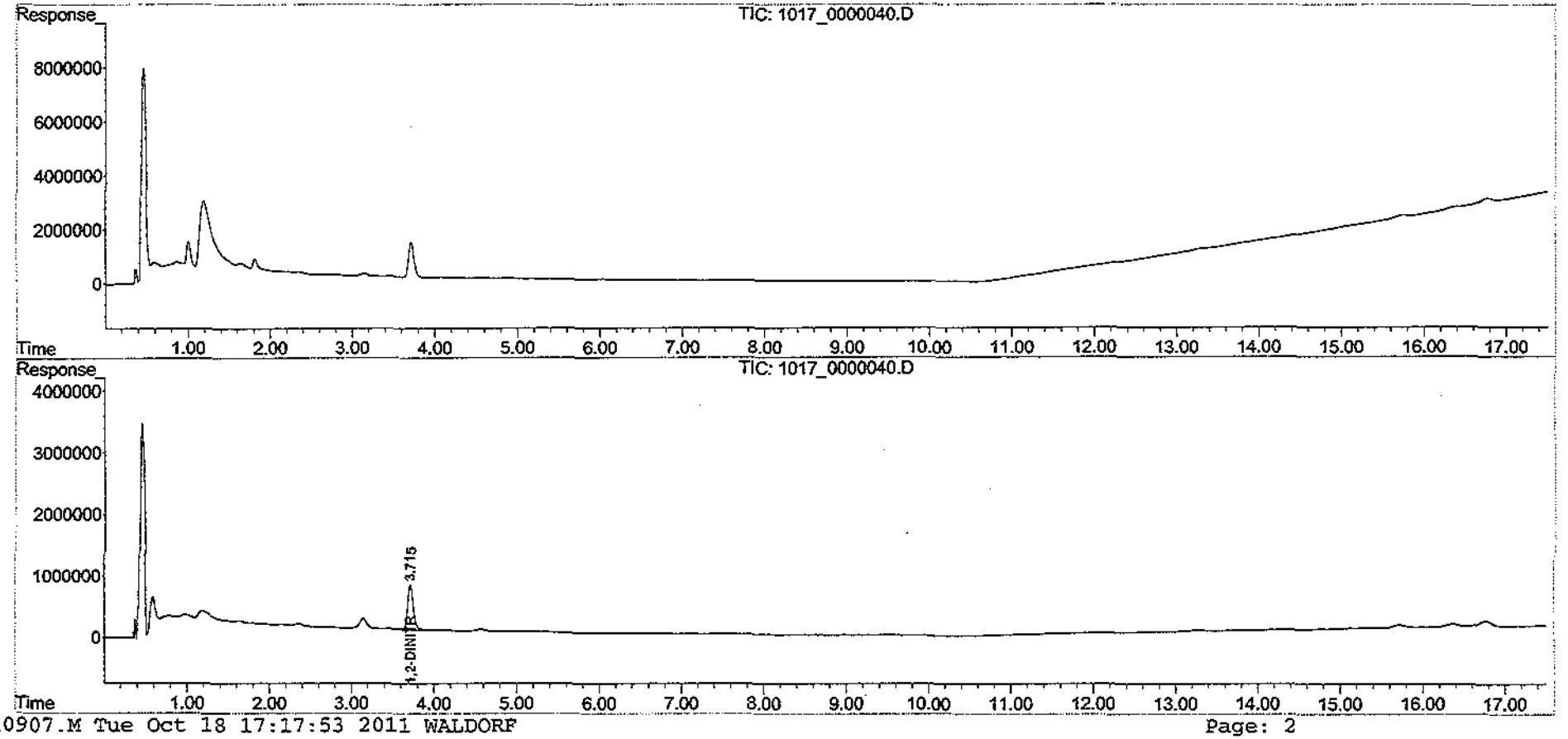
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111017\
Data File : 1017_0000040.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 18-Oct-2011, 09:48:44
Operator : mp
Sample : AY47857W01 0.016 DF 10/06/11
Misc : water
ALS Vial : 8320 Sample Multiplier: 0.016

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 18 17:17:41 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111017\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Fri Oct 14 10:08:44 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111017\
Data File : 1017_0000025.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 18-Oct-2011, 00:46:57
Operator : mp
Sample : 111006WBLK1A 0.016 DF 10/06/11
Misc : water
ALS Vial : 8197 Sample Multiplier: 0.016

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 18 10:53:26 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111017\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Fri Oct 14 10:08:44 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppb	ppb	
	System Monitoring Compounds							
4)	S 1,2-DINIT...	0.000	3.702	0	696624	N.D.	0.801 #	
	Spiked Amount 1.000			Recovery =		0.00%	80.10%	
	Target Compounds							
1)	TM HMX	0.000	0.000	0	0	N.D.	N.D.	
2)	TM RDX	0.000	0.000	0	0	N.D.	N.D.	
3)	TM 1,3,5-TRI...	0.000	0.000	0	0	N.D.	N.D.	
5)	TM 1,3-DINIT...	0.000	0.000	0	0	N.D.	N.D.	
6)	TM 3,5-DINIT...	0.000	0.000	0	0	N.D.	N.D.	
7)	TM NITROBENZENE	0.000	0.000	0	0	N.D.	N.D.	
8)	TM NITROGLYC...	0.000	0.000	0	0	N.D. d	N.D.	HM 10/18/11
9)	TM TETRYL	6.695	0.000	5674	0	NoCal	N.D.	
10)	TM 2,4,6-TRI...	7.162	0.000	7127	0	NoCal	N.D.	
11)	TM 2-AMINO-4...	7.536	0.000	8858	0	NoCal	N.D.	
12)	TM 4-AMINO-2...	7.924	0.000	7038	0	NoCal	N.D.	
13)	TM 2,4-DINIT...	8.996	0.000	3426	0	NoCal	N.D.	
14)	TM 2,6-DINIT...	9.257	0.000	10163	0	NoCal	N.D.	
15)	TM 2-NITROTO...	0.000	0.000	0	0	N.D.	N.D.	
16)	TM 4-NITROTO...	0.000	0.000	0	0	N.D.	N.D.	
17)	TM 3-NITROTO...	0.000	0.000	0	0	N.D.	N.D.	
18)	TM PETN	0.000	0.000	0	0	N.D.	N.D.	

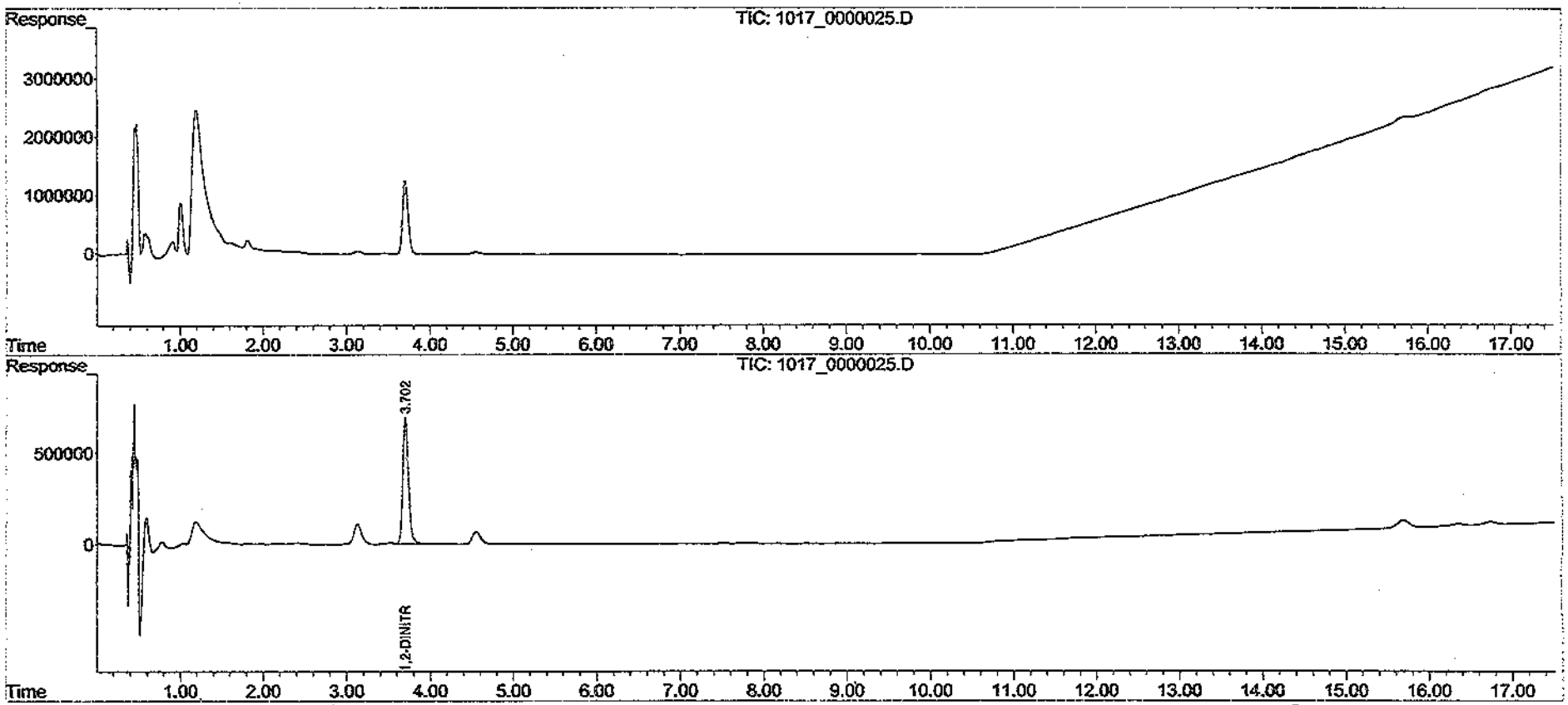
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111017\
Data File : 1017_0000025.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 18-Oct-2011, 00:46:57
Operator : mp
Sample : 111006WBLK1A 0.016 DF 10/06/11
Misc : water
ALS Vial : 8197 Sample Multiplier: 0.016

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 18 10:53:26 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111017\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Fri Oct 14 10:08:44 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



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Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111017\
Data File : 1017_0000020.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 17-Oct-2011, 21:49:45
Operator : mp
Sample : 111006WLCS1A 0.016 DF 10/06/11
Mise : water
ALS Vial : 8192 Sample Multiplier: 0.016

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 18 08:57:31 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111017\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Fri Oct 14 10:08:44 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppb	ppb	
	System Monitoring Compounds							
4)	S 1,2-DINIT...	0.000	3.702	0	6281086	N.D.	7.222	#
	Spiked Amount 1.000			Recovery	=	0.00%	722.20%	
	Target Compounds							
1)	TM HMX	0.000	0.955	0	13761727	N.D.	8.208	#
2)	TM RDX	0.000	1.806	→0	8681366	N.D.	7.734	#
3)	TM 1,3,5-TRI...	0.000	2.916	0	15513258	N.D.	8.008	#
5)	TM 1,3-DINIT...	0.000	3.852	0	15221650	N.D.	8.148	#
6)	TM 3,5-DINIT...	0.000	0.000	0	0	N.D.	N.D.	
7)	TM NITROBENZENE	0.000	5.193	0	6950408	N.D.	8.604	#
8)	TM NITROGLYC...	6.229	6.225	3000833	71679	8.784	NoCal	#
9)	TM TETRYL	6.742	6.741	3946718	2471948	NoCal	3.956	#
10)	TM 2,4,6-TRI...	7.165	7.162	7205843	5567429	NoCal	6.641	#
11)	TM 2-AMINO-4...	7.529	7.529	8955634	6091760	NoCal	7.867	#
12)	TM 4-AMINO-2...	7.837	7.837	8705247	4806013	NoCal	7.840	#
13)	TM 2,4-DINIT...	8.945	8.945	4757859	6617872	NoCal	8.235	#
14)	TM 2,6-DINIT...	9.302	9.302	5070675	3696566	NoCal	8.188	#
15)	TM 2-NITROTO...	0.000	12.612	0	2554457	N.D.	8.785	#
16)	TM 4-NITROTO...	0.000	13.221	0	2542671	N.D.	8.655	#
17)	TM 3-NITROTO...	0.000	14.089	0	3059311	N.D.	8.794	#
18)	TM PETN	16.224	0.000	2266408	0	8.185	N.D.	#

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

$$\text{Algo}\sqrt{} = \frac{(8681366)(2)(4)}{(500)(40)(437)} = 7.946$$

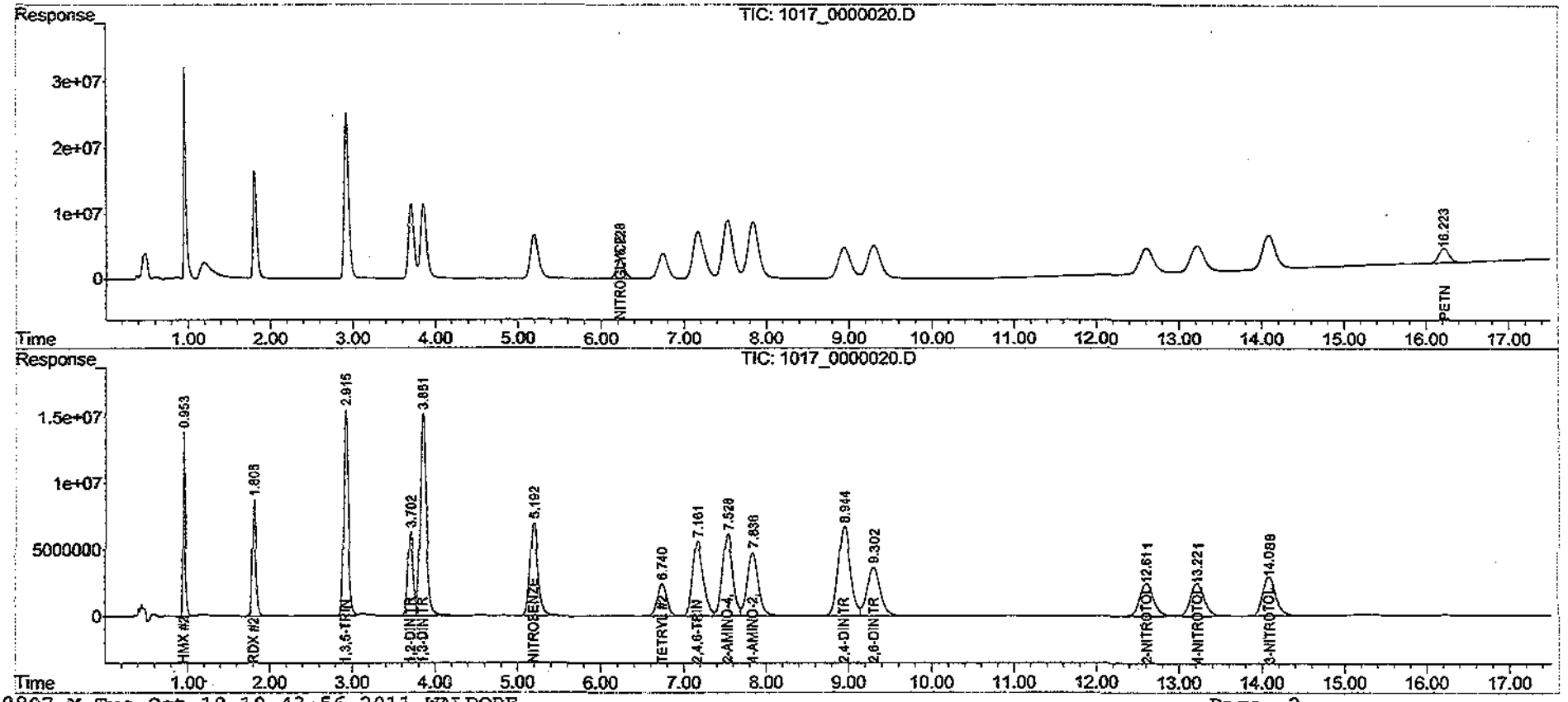
AM
11-2-11

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111017\
Data File : 1017_0000020.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 17-Oct-2011, 21:49:45
Operator : mp
Sample : 111006WLCS1A 0.016 DF 10/06/11
Misc : water
ALS Vial : 8192 Sample Multiplier: 0.016

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 18 08:57:31 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111017\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Fri Oct 14 10:08:44 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111017\
Data File : 1017_0000023.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 17-Oct-2011, 23:32:05
Operator : mp
Sample : AY47857W02_MS-1 0.016 DF 10/06/11
Misc : water
ALS Vial : 8195 Sample Multiplier: 0.016

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 18 10:50:03 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111017\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Fri Oct 14 10:08:44 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppb	ppb	
	System Monitoring Compounds							
4)	S 1,2-DINIT...	0.000	3.705	0	5534465	N.D.	6.364	#
	Spiked Amount 1.000			Recovery =		0.00%	636.40%	
	Target Compounds							
1)	TM HMX	0.000	0.000	0	0	N.D.	N.D.	
2)	TM RDX	0.000	0.000	0	0	N.D.	N.D.	
3)	TM 1,3,5-TRI...	0.000	0.000	0	0	N.D.	N.D.	
5)	TM 1,3-DINIT...	0.000	0.000	0	0	N.D.	N.D.	
6)	TM 3,5-DINIT...	0.000	0.000	0	0	N.D.	N.D.	
7)	TM NITROBENZENE	0.000	0.000	0	0	N.D.	N.D.	
8)	TM NITROGLYC...	6.231	6.231	2534154	48787	7.418	NoCal	#
9)	TM TETRYL	6.734	0.000	1106	0	NoCal	N.D.	
10)	TM 2,4,6-TRI...	7.155	0.000	1683	0	NoCal	N.D.	
11)	TM 2-AMINO-4...	7.548	0.000	4325	0	NoCal	N.D.	
12)	TM 4-AMINO-2...	7.822	0.000	4588	0	NoCal	N.D.	
13)	TM 2,4-DINIT...	8.989	0.000	10237	0	NoCal	N.D.	
14)	TM 2,6-DINIT...	9.323	0.000	16222	0	NoCal	N.D.	
15)	TM 2-NITROTO...	0.000	0.000	0	0	N.D.	N.D.	
16)	TM 4-NITROTO...	0.000	0.000	0	0	N.D.	N.D.	dc mdl
17)	TM 3-NITROTO...	0.000	0.000	0	0	N.D.	N.D.	
18)	TM PETN	0.000	0.000	0	0	N.D.	N.D.	

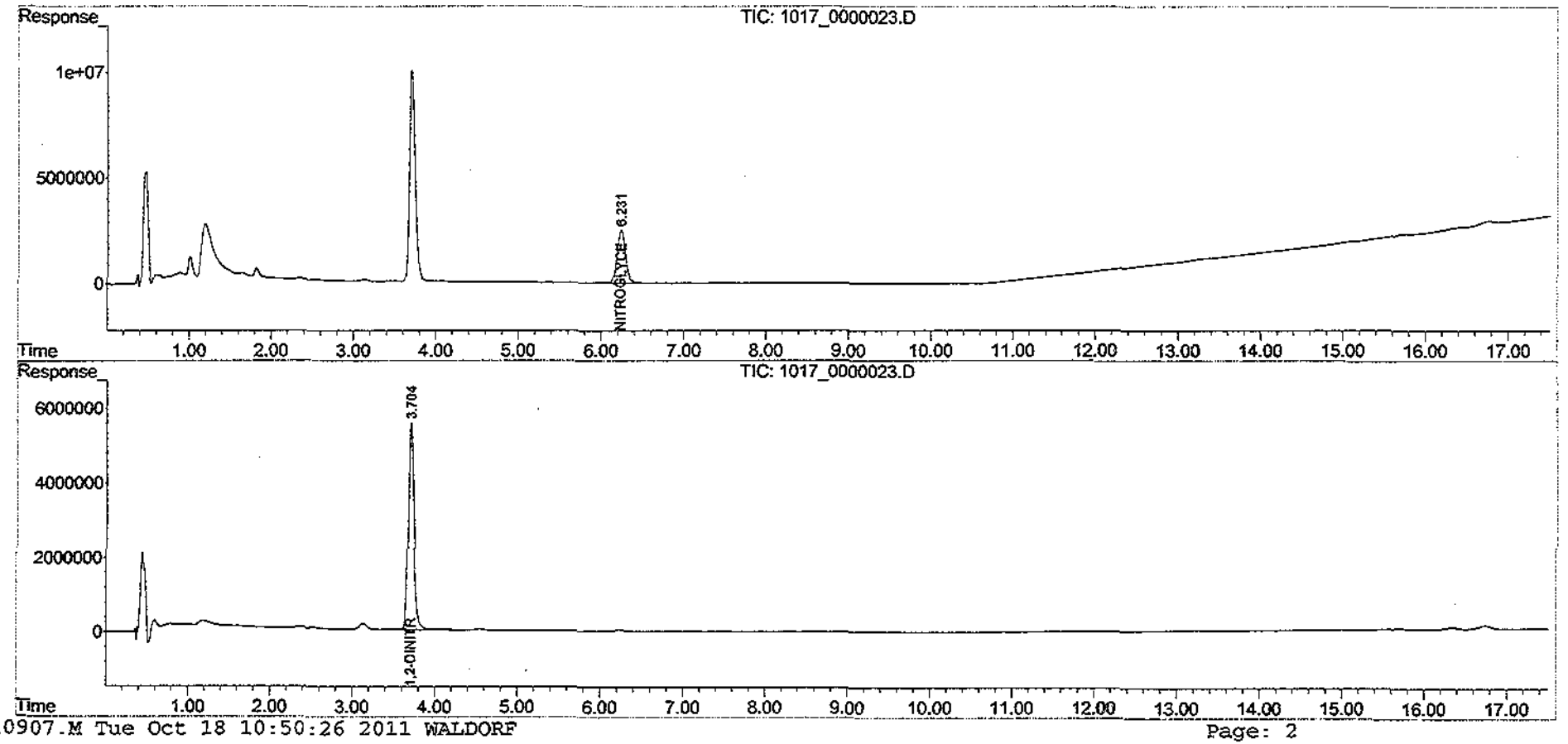
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111017\
Data File : 1017_0000023.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 17-Oct-2011, 23:32:05
Operator : mp
Sample : AY47857W02_MS-1 0.016 DF 10/06/11
Misc : water
ALS Vial : 8195 Sample Multiplier: 0.016

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 18 10:50:03 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111017\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Fri Oct 14 10:08:44 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111017\
Data File : 1017_0000024.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 18-Oct-2011, 00:09:32
Operator : mp
Sample : AY47857W02_MSD-1 0.016 DF 10/06/11
Misc : water
ALS Vial : 8196 Sample Multiplier: 0.016

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 18 10:50:56 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111017\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Fri Oct 14 10:08:44 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppb	ppb	
	System Monitoring Compounds							
4)	S 1,2-DINIT...	0.000	3.706	0	6275025	N.D.	7.215	#
	Spiked Amount 1.000			Recovery =		0.00%	721.50%	
	Target Compounds							
1)	TM HMX	0.000	0.000	0	0	N.D.	N.D.	
2)	TM RDX	0.000	0.000	0	0	N.D.	N.D.	
3)	TM 1,3,5-TRI...	0.000	0.000	0	0	N.D.	N.D.	
5)	TM 1,3-DINIT...	0.000	0.000	0	0	N.D.	N.D.	
6)	TM 3,5-DINIT...	0.000	0.000	0	0	N.D.	N.D.	
7)	TM NITROBENZENE	0.000	0.000	0	0	N.D.	N.D.	
8)	TM NITROGLYC...	6.230	6.230	2941307	59211	8.610	NoCal	#
9)	TM TETRYL	6.728	0.000	6043	0	NoCal	N.D.	
10)	TM 2,4,6-TRI...	7.194	0.000	2814	0	NoCal	N.D.	
11)	TM 2-AMINO-4...	7.473	0.000	15800	0	NoCal	N.D.	
12)	TM 4-AMINO-2...	7.801	0.000	7858	0	NoCal	N.D.	
13)	TM 2,4-DINIT...	8.883	0.000	6486	0	NoCal	N.D.	
14)	TM 2,6-DINIT...	9.307	0.000	7979	0	NoCal	N.D.	
15)	TM 2-NITROTO...	0.000	0.000	0	0	N.D. d	N.D. d	<MDL
16)	TM 4-NITROTO...	0.000	0.000	0	0	N.D. d	N.D. d	
17)	TM 3-NITROTO...	0.000	0.000	0	0	N.D. d	N.D. d	
18)	TM PETN	0.000	0.000	0	0	N.D. d	N.D. d	

MM 10/18/11

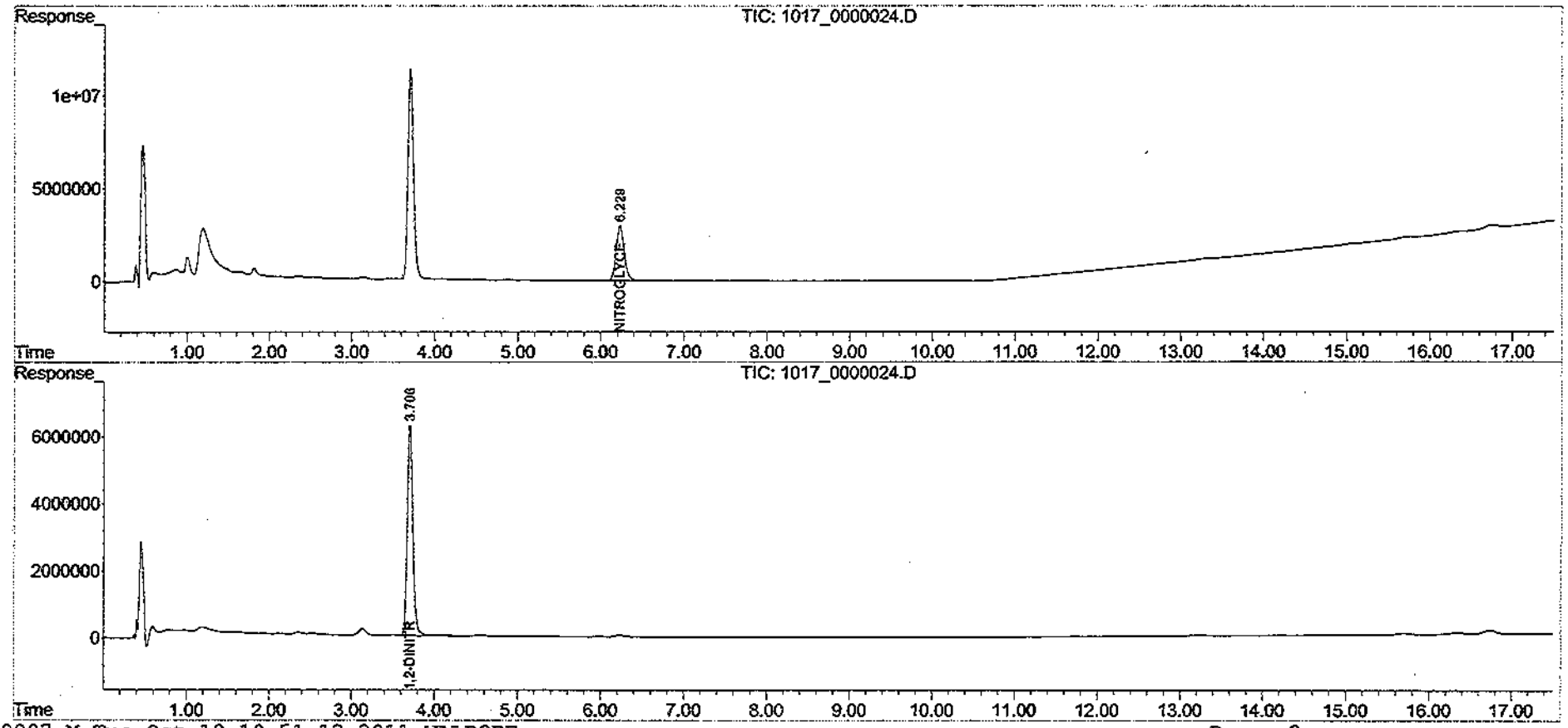
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111017\
Data File : 1017_0000024.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 18-Oct-2011, 00:09:32
Operator : mp
Sample : AY47857W02_MSD-1 0.016 DF 10/06/11
Misc : water
ALS Vial : 8196 Sample Multiplier: 0.016

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 18 10:50:56 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111017\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Fri Oct 14 10:08:44 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



Calibration Data

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000003.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 15:57:10
Operator : mp
Sample : 8830B_CB 0.005 PPM 10/13/11
Misc :
ALS Vial : 8448 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:41:11 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppb	ppb
	System Monitoring Compounds						
4)	S 1,2-DINIT...	0.000	3.708	0	62925	N.D.	4.522 #
	Spiked Amount 62.500			Recovery	=	0.00%	7.24%
	Target Compounds						
1)	TM HMX	0.000	0.952	0	120168	N.D.	4.480m#
2)	TM RDX	0.000	1.807	0	81578	N.D.	4.542 #
3)	TM 1,3,5-TRI...	0.000	2.918	0	140621	N.D.	4.537 #
5)	TM 1,3-DINIT...	0.000	3.858	0	134292	N.D.	4.493 #
6)	TM 3,5-DINIT...	0.000	4.151	0	104706	N.D.	4.568 #
7)	TM NITROBENZENE	0.000	5.206	0	60321	N.D.	4.667 #
8)	TM NITROGLYC...	6.231	0.000	28922	0	5.291	N.D. #
9)	TM TETRYL	6.745	6.752	75015	45045	NoCal	4.506 #
10)	TM 2,4,6-TRI...	7.150	7.160	80118	61946	NoCal	4.619 #
11)	TM 2-AMINO-4...	7.537	7.540	95298	56805	NoCal	4.585 #
12)	TM 4-AMINO-2...	7.851	7.846	88758	45473	NoCal	4.636 #
13)	TM 2,4-DINIT...	8.967	8.955	49305	57573	NoCal	4.478 #
14)	TM 2,6-DINIT...	9.312	9.310	51056	33820	NoCal	4.682 #
15)	TM 2-NITROTO...	0.000	12.635	0	23381	N.D.	5.025 #
16)	TM 4-NITROTO...	0.000	13.243	0	22218	N.D.	4.726 #
17)	TM 3-NITROTO...	0.000	14.112	0	27318	N.D.	4.908 #
18)	TM PETN	0.000	0.000	0	0	N.D. d	N.D.

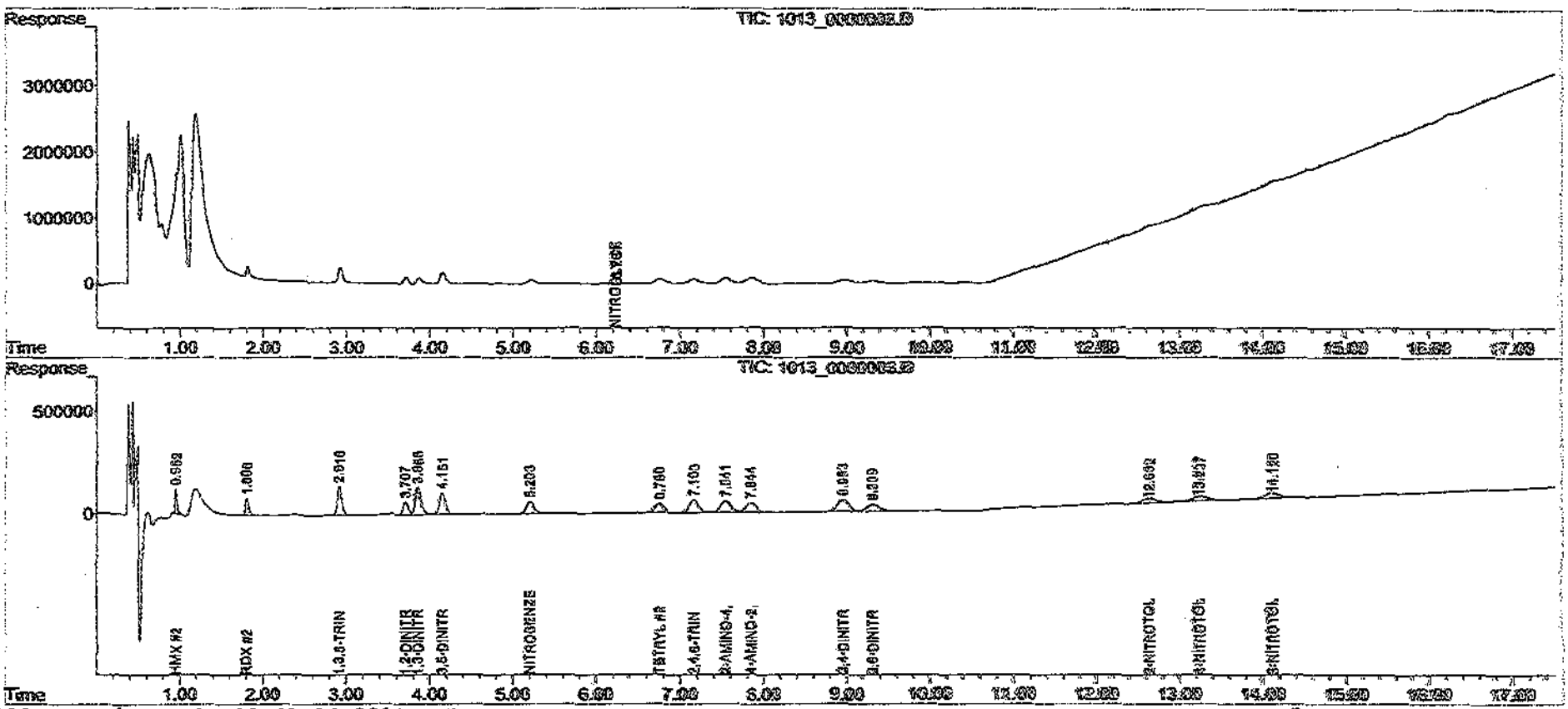
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000003.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 15:57:10
Operator : mp
Sample : 8830B_CB 0.005 PPM 10/13/11
Misc :
ALS Vial : 8448 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:41:11 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

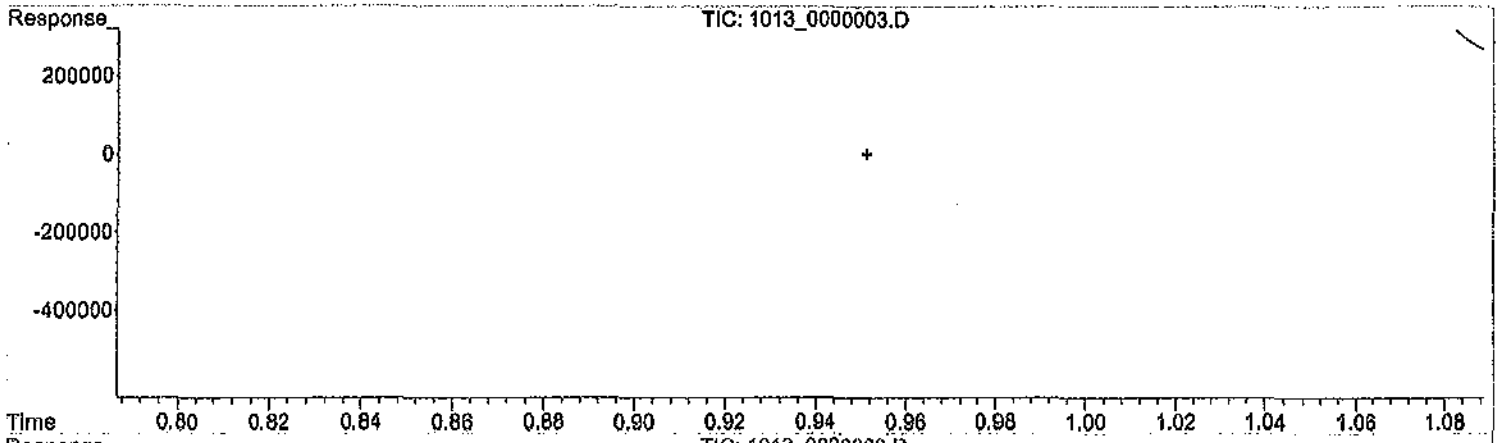


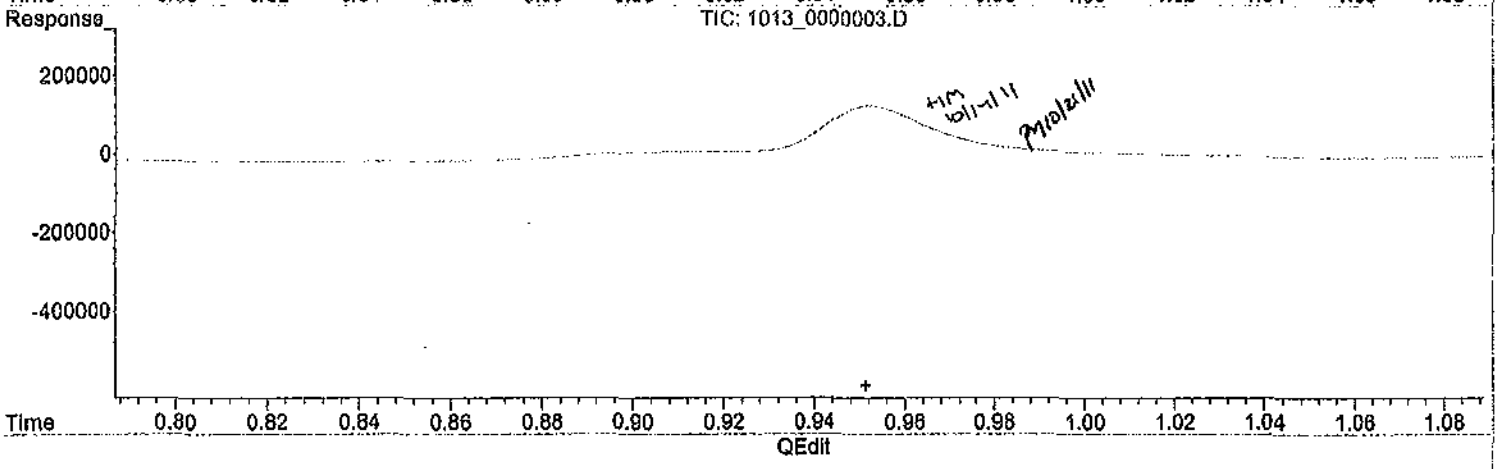
Quantitation Report (Qedit)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000003.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 15:57:10
Operator : mp
Sample : 8330B_CB 0.005 PPM 10/13/11
Misc :
ALS Vial : 8448 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:38:57 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron





(1) HMX (TM)

0.000min 0.000 ppb

response 0

(1) HMX #2 (TM)

0.000min 0.000 ppb

response 0

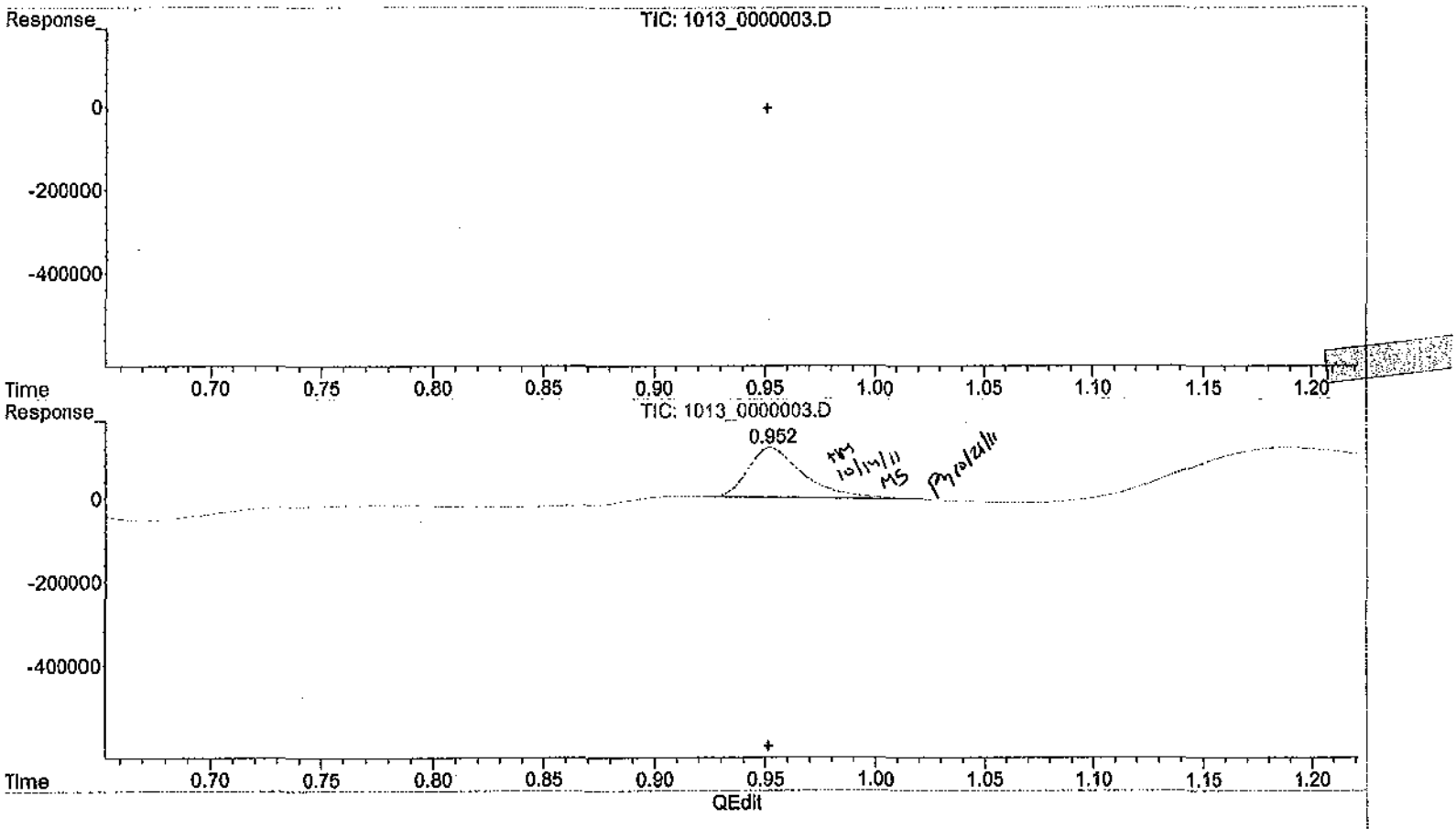
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000003.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 15:57:10
Operator : mp
Sample : 8830B_CB 0.005 PPM 10/13/11
Misc :
ALS Vial : 8448 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:38:57 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



(1) HMX (TM)

0.000min 0.000 ppb

response 0

(1) HMX #2 (TM)

0.952min 4.480 ppb m

response 120168

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000004.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 16:34:38
Operator : mp
Sample : 8830B_CB 0.01 PPM 10/13/11
Misc :
ALS Vial : 8449 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:38:59 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppb	ppb	
	System Monitoring Compounds							
4)	S 1,2-DINIT...	0.000	3.710	0	136498	N.D.	9.809	#
	Spiked Amount 62.500			Recovery	=	0.00%	15.69%	
	Target Compounds							
1)	TM HMX	0.000	0.953	0	270661	N.D.	10.090	#
2)	TM RDX	0.000	1.807	0	183456	N.D.	10.215	#
3)	TM 1,3,5-TRI...	0.000	2.919	0	312870	N.D.	10.094	#
5)	TM 1,3-DINIT...	0.000	3.859	0	302414	N.D.	10.118	#
6)	TM 3,5-DINIT...	0.000	4.152	0	233670	N.D.	10.195	#
7)	TM NITROBENZENE	0.000	5.209	0	137283	N.D.	10.621	#
8)	TM NITROGLYC...	6.223	0.000	54980	0	10.058	N.D.	#
9)	TM TETRYL	6.758	6.755	162189	97986	NoCal	9.802	#
10)	TM 2,4,6-TRI...	7.164	7.163	171963	135345	NoCal	10.091	#
11)	TM 2-AMINO-4...	7.544	7.543	194717	124072	NoCal	10.014	#
12)	TM 4-AMINO-2...	7.853	7.852	176976	98871	NoCal	10.081	#
13)	TM 2,4-DINIT...	8.953	8.961	98693	129453	NoCal	10.068	#
14)	TM 2,6-DINIT...	9.309	9.315	105835	72294	NoCal	10.008	#
15)	TM 2-NITROTO...	0.000	12.635	0	49534	N.D.	10.646	#
16)	TM 4-NITROTO...	0.000	13.247	0	48376	N.D.	10.291	#
17)	TM 3-NITROTO...	0.000	14.111	0	58649	N.D.	10.537	#
18)	TM PETN	0.000	0.000	0	0	N.D.	N.D.	

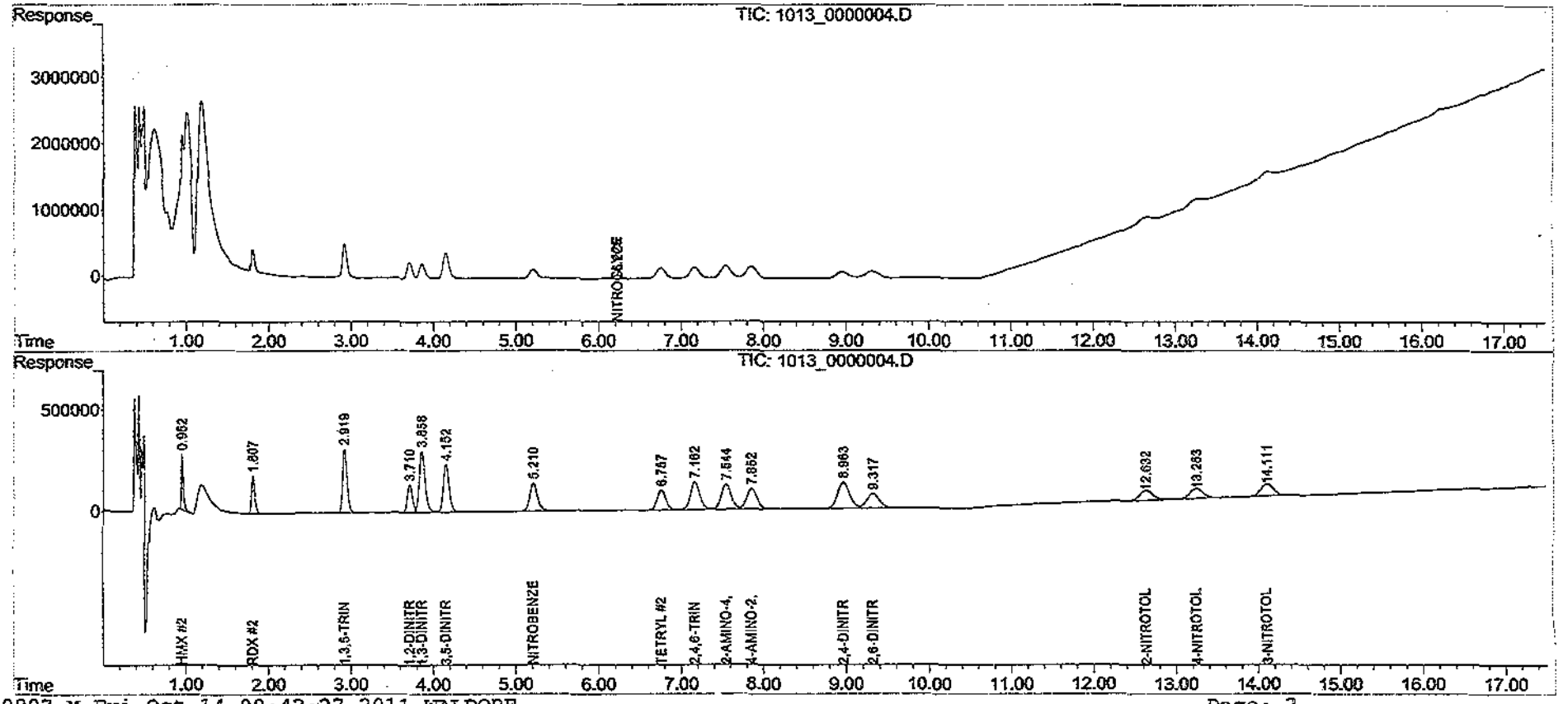
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000004.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 16:34:38
Operator : mp
Sample : 8830B_CB 0.01 PPM 10/13/11
Misc :
ALS Vial : 8449 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:38:59 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000005.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 17:12:05
Operator : mp
Sample : 8830B_CB 0.02 PPM 10/13/11
Misc :
ALS Vial : 8450 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:39:01 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppb	ppb	
	System Monitoring Compounds							
4)	S 1,2-DINIT...	0.000	3.707	0	226760	N.D.	16.296	#
	Spiked Amount 62.500			Recovery	=	0.00%	26.07%	
	Target Compounds							
1)	TM HMX	0.000	0.953	0	459683	N.D.	17.137	#
2)	TM RDX	0.000	1.806	0	301062	N.D.	16.764	#
3)	TM 1,3,5-TRI...	0.000	2.917	0	518154	N.D.	16.716	#
5)	TM 1,3-DINIT...	0.000	3.857	0	500498	N.D.	16.745	#
6)	TM 3,5-DINIT...	0.000	4.149	0	436976	N.D.	19.065	#
7)	TM NITROBENZENE	0.000	5.203	0	240728	N.D.	18.624	#
8)	TM NITROGLYC...	6.224	0.000	117884	0	21.567	N.D.	#
9)	TM TETRYL	6.752	6.750	278279	164884	NoCal	16.493	#
10)	TM 2,4,6-TRI...	7.160	7.158	290893	224816	NoCal	16.762	#
11)	TM 2-AMINO-4...	7.535	7.537	315950	208632	NoCal	16.839	#
12)	TM 4-AMINO-2...	7.845	7.846	309703	165218	NoCal	16.845	#
13)	TM 2,4-DINIT...	8.955	8.953	171302	216083	NoCal	16.806	#
14)	TM 2,6-DINIT...	9.308	9.309	187240	122050	NoCal	16.897	#
15)	TM 2-NITROTO...	0.000	12.626	0	82933	N.D.	17.825	#
16)	TM 4-NITROTO...	0.000	13.240	0	82244	N.D.	17.496	#
17)	TM 3-NITROTO...	0.000	14.102	0	98247	N.D.	17.651	#
18)	TM PETN	16.231	0.000	74476	0	16.811	N.D.	#

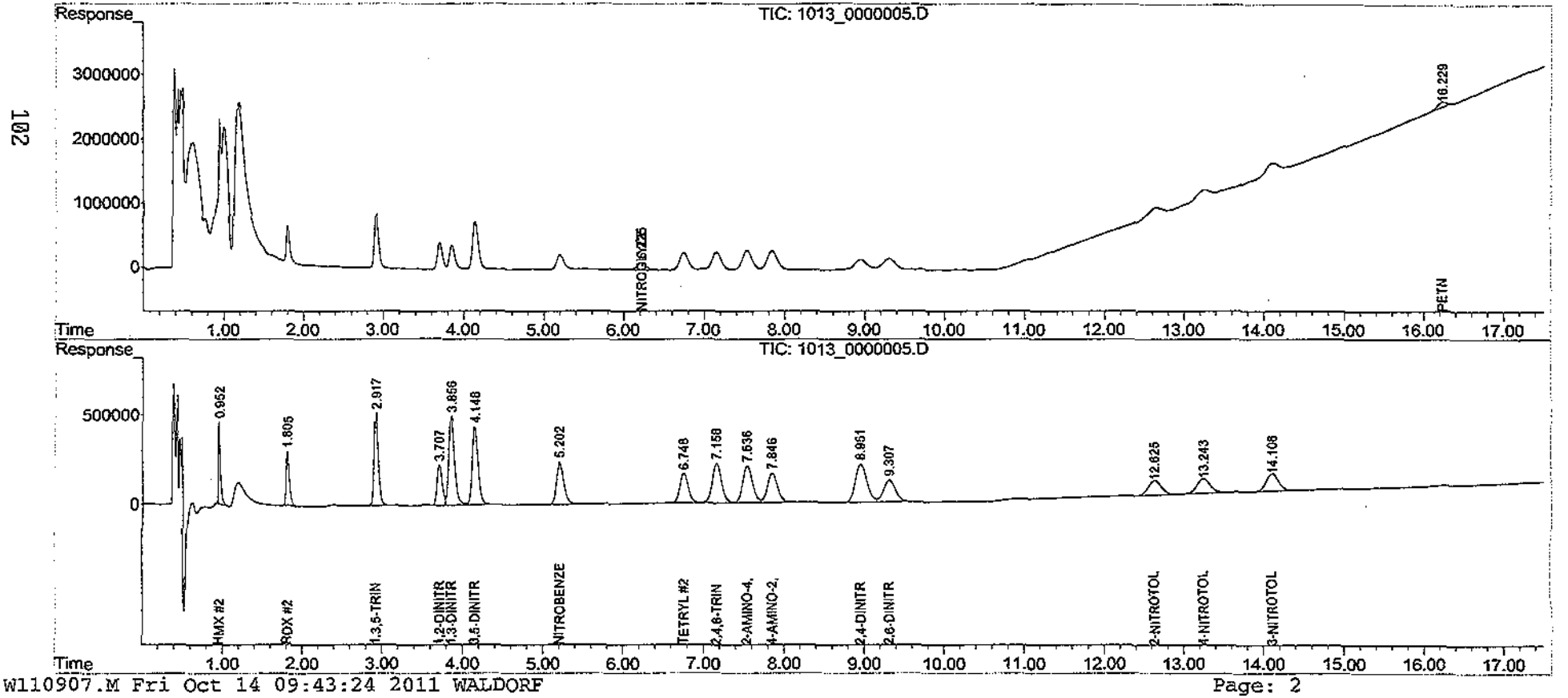
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000005.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 17:12:05
Operator : mp
Sample : 8830B_CB 0.02 PPM 10/13/11
Misc :
ALS Vial : 8450 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:39:01 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000006.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 17:49:31
Operator : mp
Sample : 8830B_CB 0.05 PPM 10/13/11
Misc :
ALS Vial : 8451 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:39:03 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppb	ppb	
	System Monitoring Compounds							
4)	S 1,2-DINIT...	0.000	3.705	0	588248	N.D.	42.274	#
	Spiked Amount 62.500			Recovery =		0.00%	67.64%	
	Target Compounds							
1)	TM HMX	0.000	0.952	0	1227958	N.D.	45.777	#
2)	TM RDX	0.000	1.805	0	802162	N.D.	44.666	#
3)	TM 1,3,5-TRI...	0.000	2.915	0	1374225	N.D.	44.335	#
5)	TM 1,3-DINIT...	0.000	3.855	0	1301267	N.D.	43.535	#
6)	TM 3,5-DINIT...	0.000	4.147	0	1062050	N.D.	46.337	#
7)	TM NITROBENZENE	0.000	5.203	0	586622	N.D.	45.385	#
8)	TM NITROGLYC...	6.224	0.000	237705	0	43.488	N.D.	#
9)	TM TETRYL	6.749	6.749	728481	439849	NoCal	43.998	#
10)	TM 2,4,6-TRI...	7.157	7.157	757832	596170	NoCal	44.449	#
11)	TM 2-AMINO-4...	7.536	7.536	819645	552851	NoCal	44.622	#
12)	TM 4-AMINO-2...	7.844	7.845	794093	439844	NoCal	44.845	#
13)	TM 2,4-DINIT...	8.951	8.952	412927	564281	NoCal	43.887	#
14)	TM 2,6-DINIT...	9.309	9.309	447984	316346	NoCal	43.795	#
15)	TM 2-NITROTO...	0.000	12.625	0	215429	N.D.	46.302	#
16)	TM 4-NITROTO...	0.000	13.236	0	211198	N.D.	44.929	#
17)	TM 3-NITROTO...	0.000	14.100	0	255405	N.D.	45.887	#
18)	TM PETN	16.221	0.000	193389	0	43.653	N.D.	#

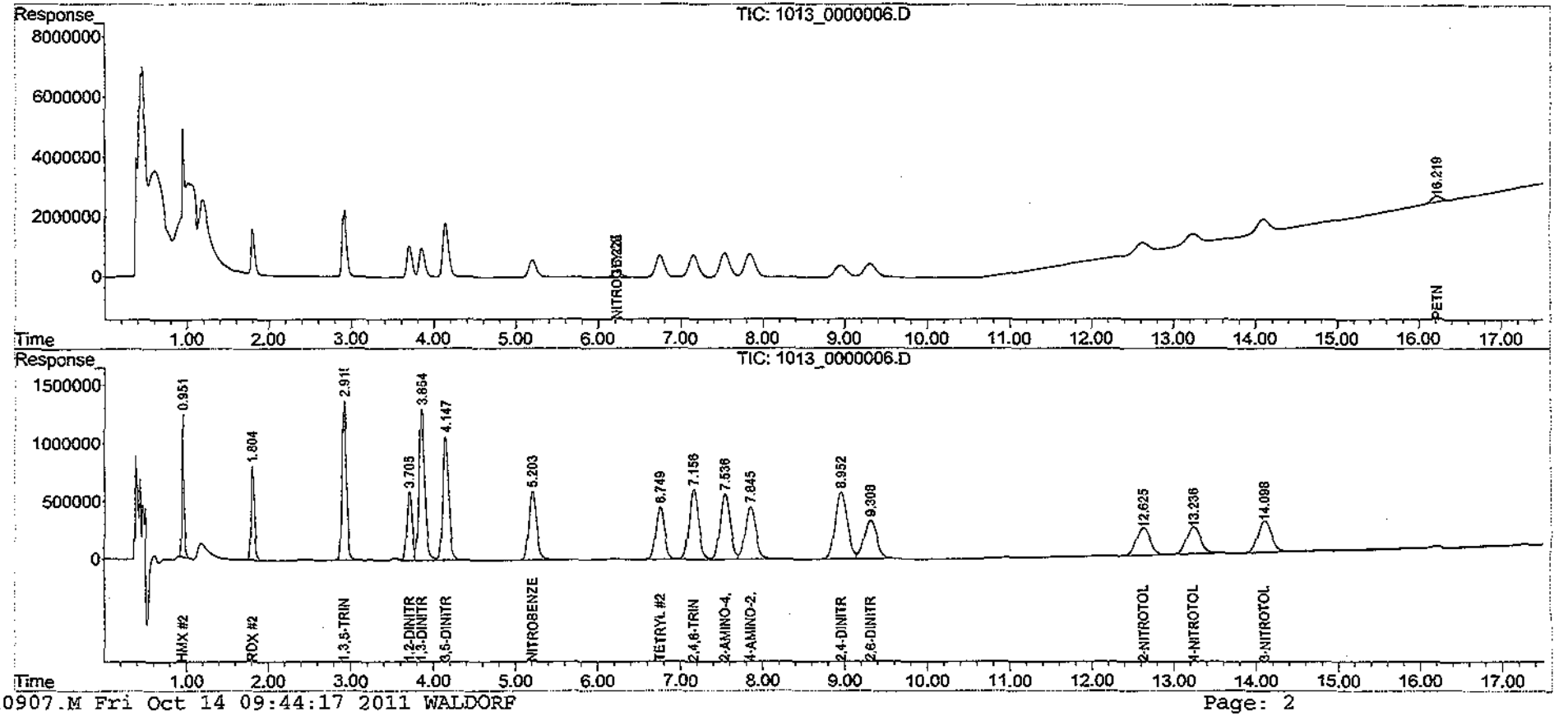
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000006.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 17:49:31
Operator : mp
Sample : 8830B_CB 0.05 PPM 10/13/11
Misc :
ALS Vial : 8451 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:39:03 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000007.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 18:26:57
Operator : mp
Sample : 8830B_CB 0.1 PPM 10/13/11
Misc :
ALS Vial : 8452 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:39:05 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppb	ppb	
	System Monitoring Compounds							
4)	S 1,2-DINIT...	0.000	3.703	0	1354221	N.D.	97.320	#
	Spiked Amount 62.500			Recovery	=	0.00%	155.71%	
	Target Compounds							
1)	TM HMX	0.000	0.951	0	2818294	N.D.	105.063	#
2)	TM RDX	0.000	1.804	0	1847067	N.D.	102.848	#
3)	TM 1,3,5-TRI...	0.000	2.914	0	3156895	N.D.	101.846	#
5)	TM 1,3-DINIT...	0.000	3.853	0	3026896	N.D.	101.268	#
6)	TM 3,5-DINIT...	0.000	4.145	0	2418382	N.D.	105.514	#
7)	TM NITROBENZENE	0.000	5.199	0	1386680	N.D.	107.282	#
8)	TM NITROGLYC...	6.218	6.221	552116	15463	101.008	NoCal	#
9)	TM TETRYL	6.742	6.741	1655833	1004882	NoCal	100.518	#
10)	TM 2,4,6-TRI...	7.150	7.151	1728448	1357860	NoCal	101.238	#
11)	TM 2-AMINO-4...	7.529	7.529	1865535	1259568	NoCal	101.663	#
12)	TM 4-AMINO-2...	7.837	7.837	1821139	998380	NoCal	101.791	#
13)	TM 2,4-DINIT...	8.945	8.945	948347	1297154	NoCal	100.887	#
14)	TM 2,6-DINIT...	9.301	9.302	1019423	728960	NoCal	100.917	#
15)	TM 2-NITROTO...	0.000	12.622	0	500925	N.D.	107.664	#
16)	TM 4-NITROTO...	0.000	13.234	0	492287	N.D.	104.726	#
17)	TM 3-NITROTO...	0.000	14.099	0	595187	N.D.	106.932	#
18)	TM PETN	16.214	0.000	454205	0	102.526	N.D.	#

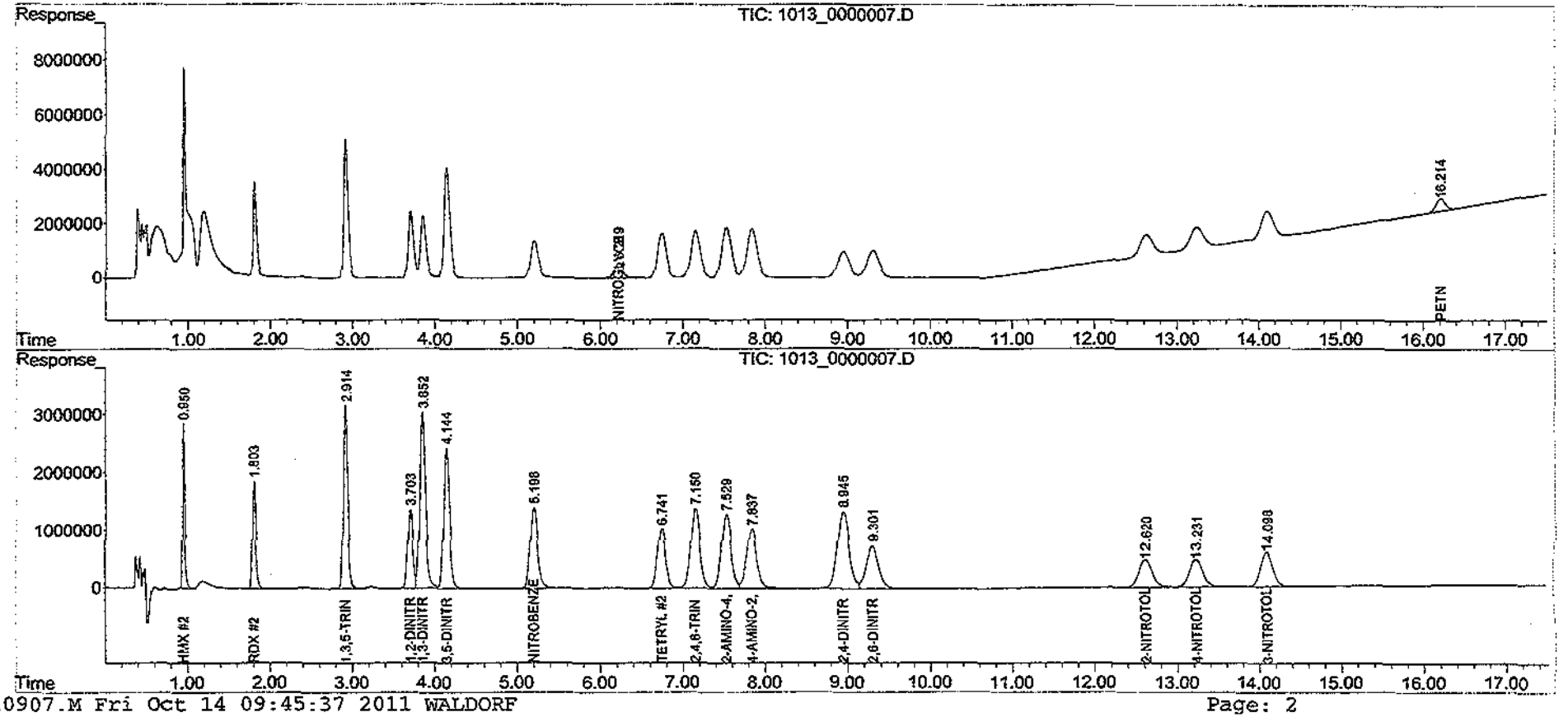
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000007.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 18:26:57
Operator : mp
Sample : 8830B_CB 0.1 PPM 10/13/11
Misc :
ALS Vial : 8452 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:39:05 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000009.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 19:41:50
Operator : mp
Sample : 8830B_CB 0.5 PPM 10/13/11
Misc :
ALS Vial : 8454 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:39:09 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppb	ppb	
	System Monitoring Compounds							
4)	S 1,2-DINIT...	0.000	3.704	0	7029439	N.D.	505.162	#
	Spiked Amount 62.500			Recovery	=	0.00%	808.26%	
	Target Compounds							
1)	TM HMX	0.000	0.953	0	14511006	N.D.	540.957	#
2)	TM RDX	0.000	1.805	0	9551736	N.D.	531.860	#
3)	TM 1,3,5-TRI...	0.000	2.916	0	16381715	N.D.	528.499	#
5)	TM 1,3-DINIT...	0.000	3.854	0	15601804	N.D.	521.975	#
6)	TM 3,5-DINIT...	0.000	4.147	0	12649400	N.D.	551.892	#
7)	TM NITROBENZENE	0.000	5.202	0	7033495	N.D.	544.154	#
8)	TM NITROGLYC...	6.223	6.220	2836995	89325	519.022	NoCal	#
9)	TM TETRYL	6.749	6.749	8686009	5288304	NoCal	528.986	#
10)	TM 2,4,6-TRI...	7.158	7.158	8929887	7061912	NoCal	526.515	#
11)	TM 2-AMINO-4...	7.535	7.535	9720568	6601099	NoCal	532.791	#
12)	TM 4-AMINO-2...	7.844	7.844	9469097	5215327	NoCal	531.735	#
13)	TM 2,4-DINIT...	8.951	8.951	4860211	6739888	NoCal	524.199	#
14)	TM 2,6-DINIT...	9.309	9.309	5211410	3763261	NoCal	520.986	#
15)	TM 2-NITROTO...	0.000	12.624	0	2553237	N.D.	548.770	#
16)	TM 4-NITROTO...	0.000	13.233	0	2521518	N.D.	536.412	#
17)	TM 3-NITROTO...	0.000	14.099	0	3037512	N.D.	545.725	#
18)	TM PETN	16.214	0.000	2492447	0	562.611	N.D.	#

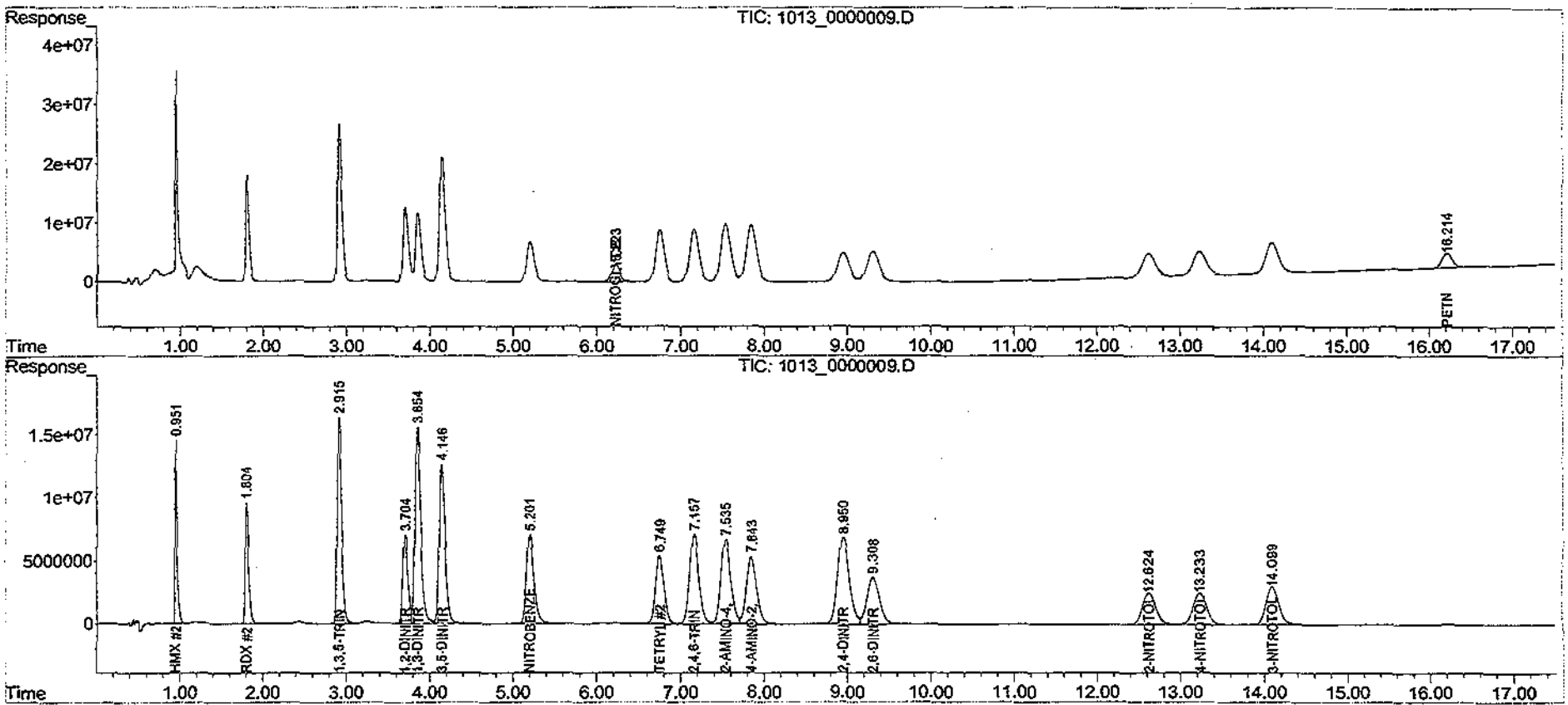
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000009.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 19:41:50
Operator : mp
Sample : 8830B_CB 0.5 PPM 10/13/11
Misc :
ALS Vial : 8454 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:39:09 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000010.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 20:19:16
Operator : mp
Sample : 8330B_CB 1.0 PPM 10/13/11
Misc :
ALS Vial : 845§ Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:39:11 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppb	ppb	
	System Monitoring Compounds							
4)	S 1,2-DINIT...	0.000	9.703	0	14039224	N.D.	1008.912	#
	Spiked Amount 62.500			Recovery =		0.00%	1614.26%	
	Target Compounds							
1)	TM HMX	0.000	0.953	0	28273892	N.D.	1054.025	#
2)	TM RDX	0.000	1.805	0	18805099	N.D.	1047.106	#
3)	TM 1,3,5-TRI...	0.000	2.916	0	32262420	N.D.	1040.835	#
5)	TM 1,3-DINIT...	0.000	3.853	0	31191269	N.D.	1043.537	#
6)	TM 3,5-DINIT...	0.000	4.145	0	24953790	N.D.	1088.731	#
7)	TM NITROBENZENE	0.000	5.199	0	14290109	N.D.	1105.571	#
8)	TM NITROGLYC...	6.220	6.214	5558592	177295	1016.932	NoCal	#
9)	TM TETRYL	6.746	6.746	17123212	10447939	NoCal	1045.102	#
10)	TM 2,4,6-TRI...	7.156	7.156	17565872	13913388	NoCal	1037.340	#
11)	TM 2-AMINO-4...	7.531	7.531	19082544	12999019	NoCal	1049.182	#
12)	TM 4-AMINO-2...	7.840	7.840	18564419	10235662	NoCal	1043.590	#
13)	TM 2,4-DINIT...	8.948	8.948	9664329	13430382	NoCal	1044.556	#
14)	TM 2,6-DINIT...	9.306	9.306	10365744	7512336	NoCal	1040.009	#
15)	TM 2-NITROTO...	0.000	12.620	0	5176865	N.D.	1112.669	#
16)	TM 4-NITROTO...	0.000	13.228	0	5106236	N.D.	1086.270	#
17)	TM 3-NITROTO...	0.000	14.096	0	6163153	N.D.	1107.284	#
18)	TM PETN	16.210	0.000	4912900	0	1108.971	N.D.	#

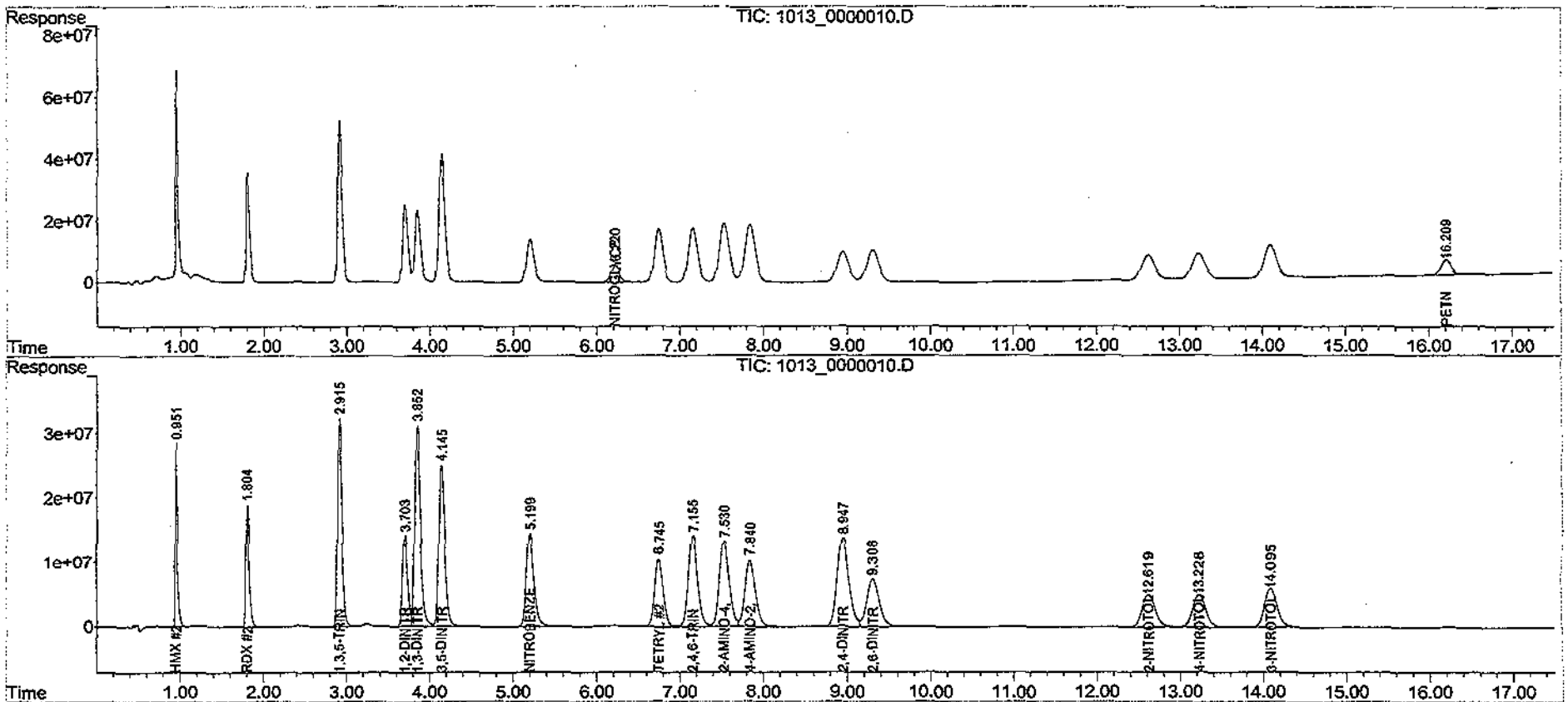
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000010.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 20:19:16
Operator : mp
Sample : 8830B_CB 1.0 PPM 10/13/11
Misc :
ALS Vial : 8455 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:39:11 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000011.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 20:56:43
Operator : mp
Sample : 8830B_MX-A 2.0 PPM 10/13/11
Misc :
ALS Vial : 8456 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:50:35 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppb	ppb	
	System Monitoring Compounds							
4)	S 1,2-DINIT...	0.000	3.706	0	28403384	N.D.	2041.176	#
	Spiked Amount 62.500			Recovery	=	0.00%	3265.88%	
	Target Compounds							
1)	TM HMX	0.000	0.954	0	54794188	N.D.	2042.678	#
2)	TM RDX	0.000	1.807	0	37079110	N.D.	2064.640	#
3)	TM 1,3,5-TRI...	0.000	2.918	0	64233589	N.D.	2072.274	#
5)	TM 1,3-DINIT...	0.000	3.855	0	62451373	N.D.	2089.378	#
6)	TM 3,5-DINIT...	0.000	0.000	0	0	N.D.	N.D.	
7)	TM NITROBENZENE	0.000	5.200	0	28546078	N.D.	2208.500	#
8)	TM NITROGLYC...	0.000	6.077	0	369798	N.D. d	NoCal	
9)	TM TETRYL	6.750	6.749	34401585	21039140	NoCal	2104.534	#
10)	TM 2,4,6-TRI...	7.160	7.160	35097578	27804550	NoCal	2073.023	#
11)	TM 2-AMINO-4...	7.532	7.532	38062907	25962348	NoCal	2095.484	#
12)	TM 4-AMINO-2...	7.843	7.843	36894157	20303859	NoCal	2070.106	#
13)	TM 2,4-DINIT...	8.951	8.951	19341844	26912491	NoCal	2093.135	#
14)	TM 2,6-DINIT...	9.311	9.311	20559554	14955505	NoCal	2070.442	#
15)	TM 2-NITROTO...	0.000	12.621	0	10332837	N.D.	2220.846	#
16)	TM 4-NITROTO...	0.000	13.228	0	10194101	N.D.	2168.631	#
17)	TM 3-NITROTO...	0.000	14.097	0	12291070	N.D.	2208.238	#
18)	TM PETN	0.000	0.000	0	0	N.D.	N.D.	

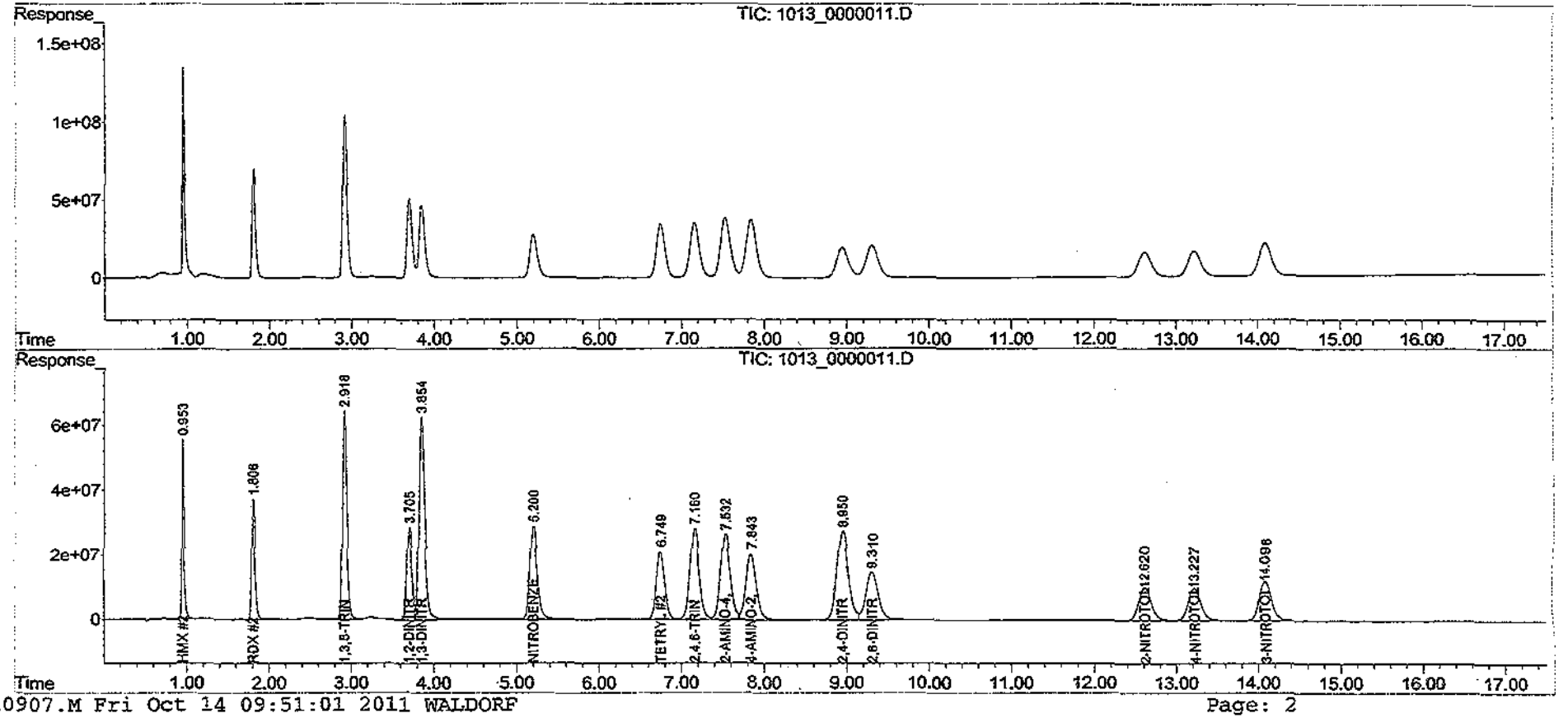
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000011.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 20:56:43
Operator : mp
Sample : 8830B_MX-A 2.0 PPM 10/13/11
Misc :
ALS Vial : 8456 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:50:35 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



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Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000012.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 21:34:10
Operator : mp
Sample : 8830B_MX-B 2.0 PPM 10/13/11
Misc :
ALS Vial : 8512 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:51:59 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppb	ppb	
	System Monitoring Compounds							
4) S	1,2-DINIT...	0.000	0.000	0	0	N.D.	N.D.	d
Spiked Amount	62.500			Recovery	=	0.00%	0.00%	
	Target Compounds							
1) TM	HMX	0.000	0.000	0	0	N.D.	N.D.	
2) TM	RDX	0.000	0.000	0	0	N.D.	N.D.	d
3) TM	1,3,5-TRI...	0.000	0.000	0	0	N.D.	N.D.	d
5) TM	1,3-DINIT...	0.000	0.000	0	0	N.D.	N.D.	d
6) TM	3,5-DINIT...	0.000	4.143	0	49772961	N.D.	2171.588	#
7) TM	NITROBENZENE	0.000	0.000	0	0	N.D.	N.D.	
8) TM	NITROGLYC...	6.215	6.215	10957188	224918	2004.593	NoCal	#
9) TM	TETRYL	6.755	0.000	17012	0	NoCal	N.D.	
10) TM	2,4,6-TRI...	7.182	0.000	45961	0	NoCal	N.D.	
11) TM	2-AMINO-4...	7.524	0.000	24451	0	NoCal	N.D.	
12) TM	4-AMINO-2...	7.830	0.000	22124	0	NoCal	N.D.	
13) TM	2,4-DINIT...	8.937	0.000	16586	0	NoCal	N.D.	
14) TM	2,6-DINIT...	9.289	0.000	146218	0	NoCal	N.D.	d
15) TM	2-NITROTO...	0.000	0.000	0	0	N.D.	N.D.	d
16) TM	4-NITROTO...	0.000	0.000	0	0	N.D.	N.D.	
17) TM	3-NITROTO...	0.000	0.000	0	0	N.D.	N.D.	d
18) TM	PETN	16.207	0.000	9848327	0	2223.026	N.D.	#

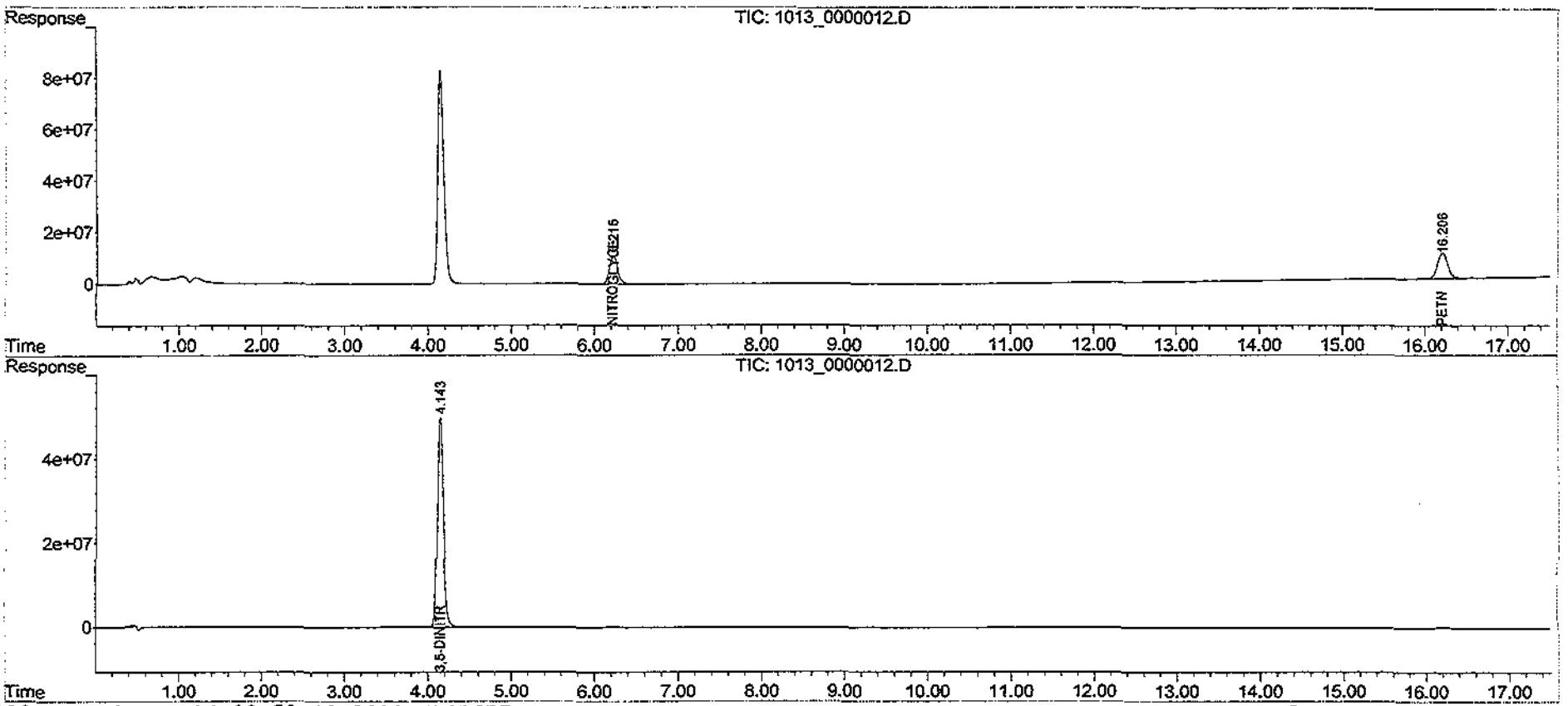
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000012.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 21:34:10
Operator : mp
Sample : 8830B_MX-B 2.0 PPM 10/13/11
Misc :
ALS Vial : 8512 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:51:59 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000014.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 22:49:00
Operator : mp
Sample : 8830B_SS 1.0 PPM 10/13/11
Misc :
ALS Vial : 8513 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:39:17 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppb	ppb	
	System Monitoring Compounds							
4)	S 1,2-DINIT...	0.000	3.703	0	12373961	N.D.	889.240	#
	Spiked Amount 62.500			Recovery =		0.00%	1422.78%	
	Target Compounds							
1)	TM HMX	0.000	0.953	0	25690467	N.D.	957.717	#
2)	TM RDX	0.000	1.805	0	16902522	N.D.	941.167	#
3)	TM 1,3,5-TRI...	0.000	2.916	0	26708321	N.D.	861.651	#
5)	TM 1,3-DINIT...	0.000	3.853	0	28876263	N.D.	966.086	#
6)	TM 3,5-DINIT...	0.000	4.145	0	24434039	N.D.	1066.054	#
7)	TM NITROBENZENE	0.000	5.197	0	12975953	N.D.	1003.899	#
8)	TM NITROGLYC...	6.219	6.217	5365962	146865	981.691	NoCal	#
9)	TM TETRYL	6.744	6.744	13454322	8211419	NoCal	821.384	#
10)	TM 2,4,6-TRI...	7.153	7.153	14427334	11413209	NoCal	850.934	#
11)	TM 2-AMINO-4...	7.529	7.529	15617391	10632728	NoCal	858.193	#
12)	TM 4-AMINO-2...	7.838	7.838	18203670	10070897	NoCal	1026.791	#
13)	TM 2,4-DINIT...	8.944	8.944	9215643	12803366	NoCal	995.789	#
14)	TM 2,6-DINIT...	9.303	9.303	8963667	6532882	NoCal	904.413	#
15)	TM 2-NITROTO...	0.000	12.616	0	4611432	N.D.	991.139	#
16)	TM 4-NITROTO...	0.000	13.225	0	4317943	N.D.	918.573	#
17)	TM 3-NITROTO...	0.000	14.092	0	5721670	N.D.	1027.966	#
18)	TM PETN	16.208	0.000	4816054	0	1087.110	N.D.	#

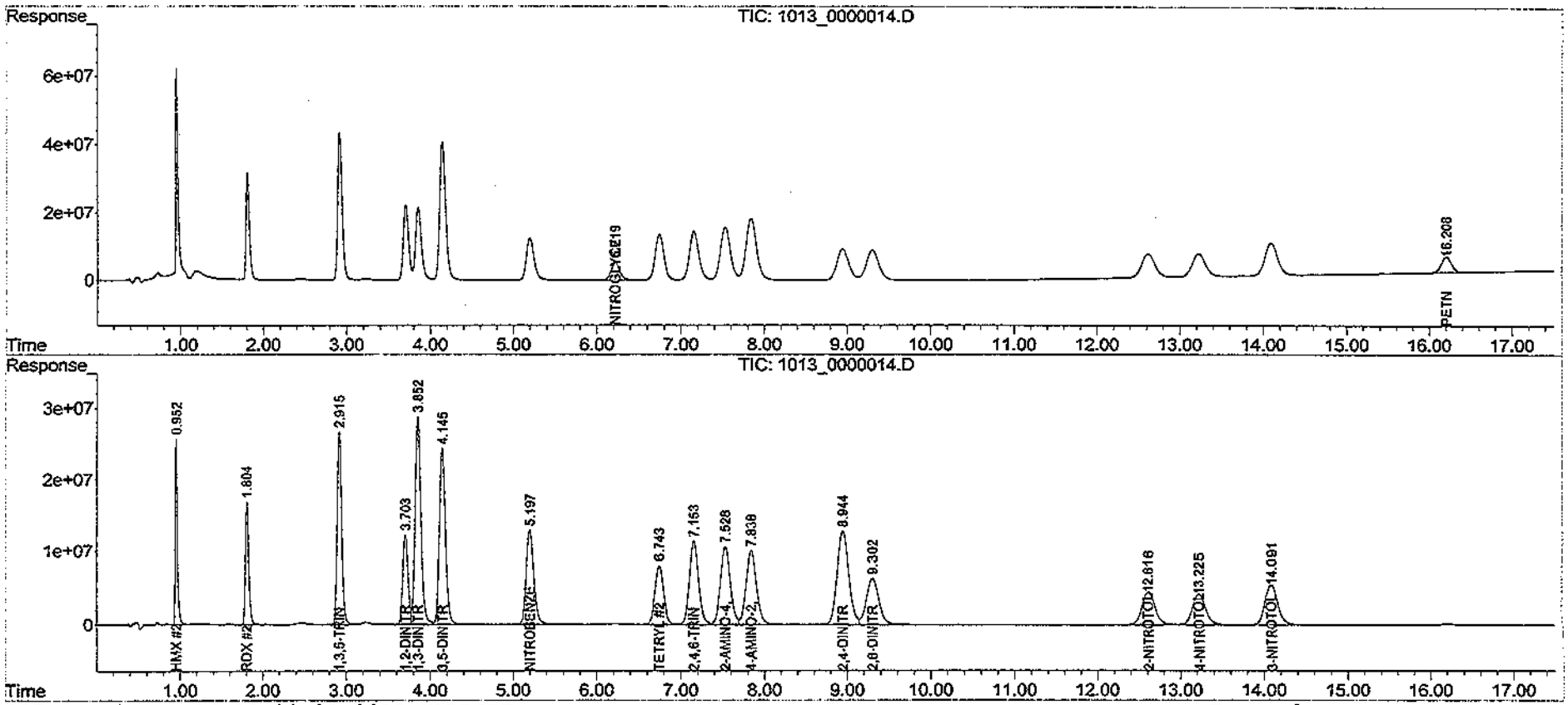
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111013\
Data File : 1013_0000014.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 13-Oct-2011, 22:49:00
Operator : mp
Sample : 8830B_SS 1.0 PPM 10/13/11
Misc :
ALS Vial : 8513 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 14 09:39:17 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111013\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Thu Oct 13 10:17:56 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111017\
Data File : 1017_0000015.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 17-Oct-2011, 18:52:23
Operator : mp
Sample : 8330_CCV 1.0 PPM 10/13/11
Misc :
ALS Vial : 4424 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 18 08:34:28 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111017\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Fri Oct 14 10:08:44 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppb	ppb	
	System Monitoring Compounds							
4)	S 1,2-DINIT...	0.000	3.704	0	14256618	N.D.	1024.535	#
	Spiked Amount 62.500			Recovery	=	0.00%	1639.26%	
	Target Compounds							
1)	TM HMX	0.000	0.954	0	27676140	N.D.	1031.741	#
2)	TM RDX	0.000	1.807	0	18615606	N.D.	1036.555	#
3)	TM 1,3,5-TRI...	0.000	2.917	0	32610901	N.D.	1052.078	#
5)	TM 1,3-DINIT...	0.000	3.854	0	30974342	N.D.	1036.280	#
6)	TM 3,5-DINIT...	0.000	4.147	0	23772662	N.D.	1037.198	#
7)	TM NITROBENZENE	0.000	5.197	0	11573008	N.D.	895.359	#
8)	TM NITROGLYC...	6.224	6.213	5288820	167534	967.578	NoCal	#
9)	TM TETRYL	6.745	6.745	17274714	10534453	NoCal	1053.756	#
10)	TM 2,4,6-TRI...	7.155	7.155	17556914	13892888	NoCal	1035.812	#
11)	TM 2-AMINO-4...	7.530	7.530	18753451	12765292	NoCal	1030.317	#
12)	TM 4-AMINO-2...	7.838	7.838	18237410	10054457	NoCal	1025.115	#
13)	TM 2,4-DINIT...	8.945	8.945	9536317	13262753	NoCal	1031.518	#
14)	TM 2,6-DINIT...	9.303	9.303	10168190	7370733	NoCal	1020.405	#
15)	TM 2-NITROTO...	0.000	12.616	0	3916044	N.D.	841.679	#
16)	TM 4-NITROTO...	0.000	13.224	0	4253020	N.D.	904.762	#
17)	TM 3-NITROTO...	0.000	14.093	0	4842778	N.D.	870.063	#
18)	TM PETN	16.223	0.000	4639944	0	1047.357	N.D.	#

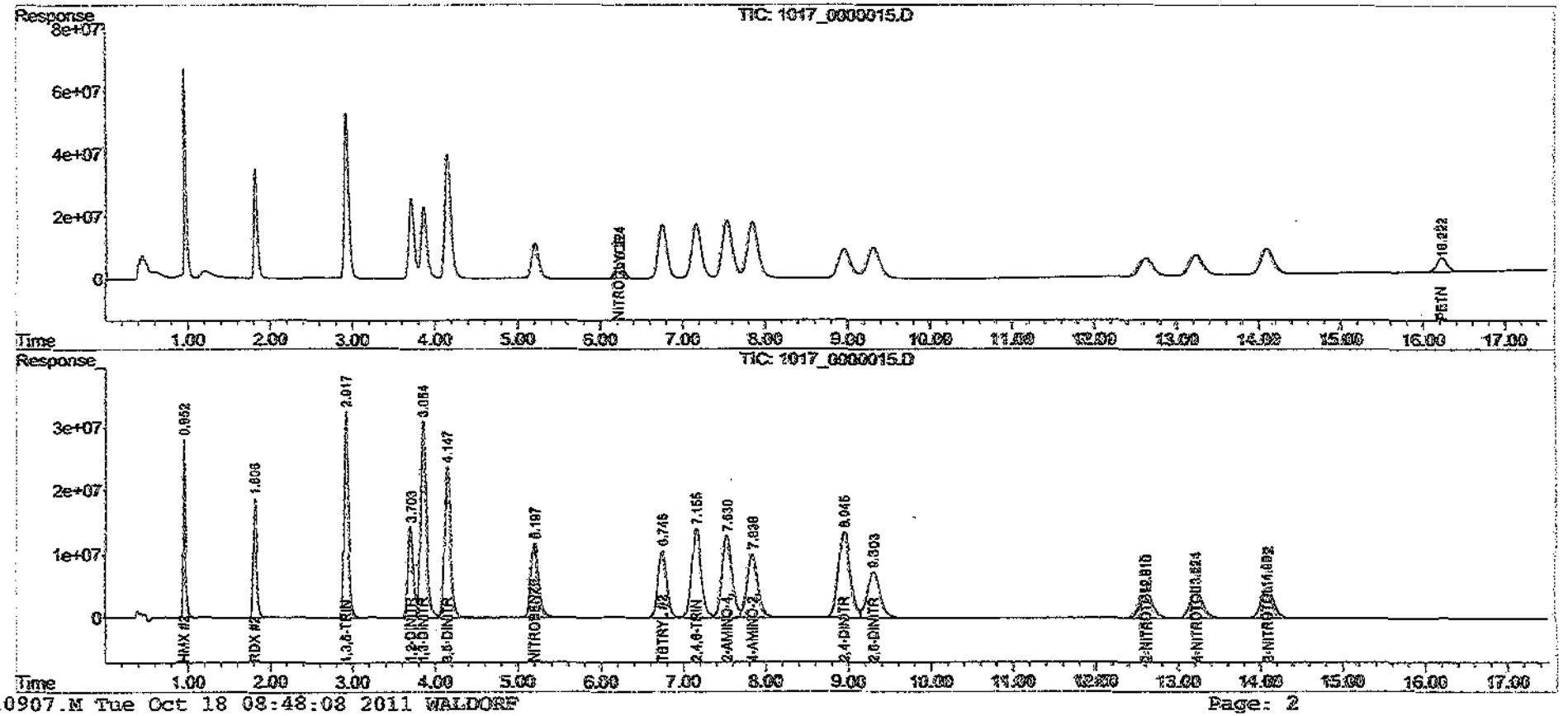
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111017\
Data File : 1017_0000015.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 17-Oct-2011, 18:52:23
Operator : mp
Sample : 8330_CCV 1.0 PPM 10/13/11
Misc :
ALS Vial : 4424 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 18 08:34:28 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111017\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Fri Oct 14 10:08:44 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111017\
Data File : 1017_0000028.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 18-Oct-2011, 02:39:17
Operator : mp
Sample : 8330_CCV 1.0 PPM 10/17/11
Misc :
ALS Vial : 4360 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 18 08:34:29 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111017\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Fri Oct 14 10:08:44 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppb	ppb	
	System Monitoring Compounds							
4)	S 1,2-DINIT...	0.000	3.704	0	13978779	N.D.	1004.569	#
	Spiked Amount 62.500			Recovery	=	0.00%	1607.31%	
	Target Compounds							
1)	TM HMX	0.000	0.954	0	27419280	N.D.	1022.166	#
2)	TM RDX	0.000	1.807	0	18342219	N.D.	1021.332	#
3)	TM 1,3,5-TRI...	0.000	2.917	0	32025598	N.D.	1033.195	#
5)	TM 1,3-DINIT...	0.000	3.855	0	30558928	N.D.	1022.382	#
6)	TM 3,5-DINIT...	0.000	4.149	0	23702854	N.D.	1034.153	#
7)	TM NITROBENZENE	0.000	5.196	0	14019820	N.D.	1084.659	#
8)	TM NITROGLYC...	6.222	6.211	5299107	168321	969.460	NoCal	#
9)	TM TETRYL	6.745	6.745	17174063	10483404	NoCal	1048.649	#
10)	TM 2,4,6-TRI...	7.153	7.153	17304789	13703585	NoCal	1021.698	#
11)	TM 2-AMINO-4...	7.531	7.531	18551713	12619363	NoCal	1018.539	#
12)	TM 4-AMINO-2...	7.838	7.838	18037268	9931651	NoCal	1012.594	#
13)	TM 2,4-DINIT...	8.943	8.943	9435817	13123915	NoCal	1020.720	#
14)	TM 2,6-DINIT...	9.301	9.301	10106952	7330718	NoCal	1014.865	#
15)	TM 2-NITROTO...	0.000	12.610	0	5062468	N.D.	1088.081	#
16)	TM 4-NITROTO...	0.000	13.218	0	4995920	N.D.	1062.802	#
17)	TM 3-NITROTO...	0.000	14.086	0	6023981	N.D.	1082.280	#
18)	TM PETN	16.215	0.000	4659441	0	1051.758	N.D.	#

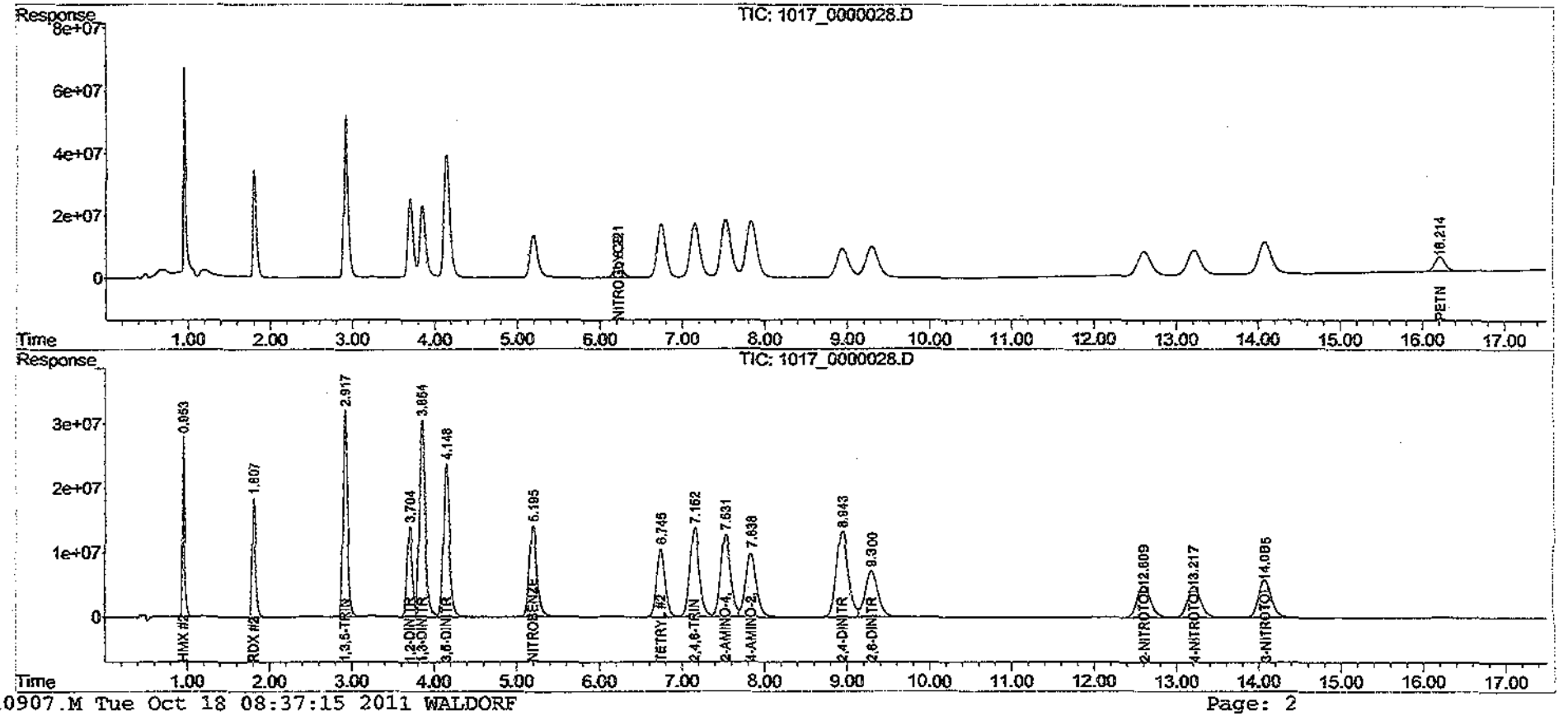
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111017\
Data File : 1017_0000028.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 18-Oct-2011, 02:39:17
Operator : mp
Sample : 8330_CCV 1.0 PPM 10/17/11
Misc :
ALS Vial : 4360 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 18 08:34:29 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111017\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Fri Oct 14 10:08:44 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



Quantitation Report (QT Reviewed)

Data Path : W:\WALDORF\CHEM32\1\DATA\111017\
Data File : 1017_0000039.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 18-Oct-2011, 09:21:13
Operator : mp
Sample : 8330_CCV 1.0 PPM 10/17/11
Misc :
ALS Vial : 4360 Sample Multiplier: 1

Integration File signal 1: Walderf_Signal_1_110721.e
Integration File signal 2: Walderf_Signal_2_110803.e
Quant Time: Oct 18 09:54:14 2011
Quant Method : W:\WALDORF\CHEM32\1\DATA\111017\W110907.M
Quant Title : 8330B - Soil - Walderf
QLast Update : Fri Oct 14 10:08:44 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 314nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppb	ppb	
	System Monitoring Compounds							
4)	S 1,2-DINIT...	0.000	3.708	0	14003145	N.D.	1006.330	#
	Spiked Amount 62.500			Recovery =		0.00%	1610.11%	
	Target Compounds							
1)	TM HMX	0.000	0.984	0	27353648	N.D.	1019.719	#
2)	TM RDX	0.000	1.808	0	18338551	N.D.	1021.138	#
3)	TM 1,3,5-TRI...	0.000	2.919	0	32075726	N.D.	1034.812	#
5)	TM 1,3-DINIT...	0.000	3.858	0	30527436	N.D.	1021.328	#
6)	TM 3,5-DINIT...	0.000	4.154	0	23681755	N.D.	1033.232	#
7)	TM NITROBENZENE	0.000	5.203	0	13827507	N.D.	1069.781	#
8)	TM NITROGLYC...	6.232	6.220	5293661	168267	968.463	NoCal	#
9)	TM TETRYL	6.760	6.759	17149750	10462612	NoCal	1046.569	#
10)	TM 2,4,6-TRI...	7.167	7.167	17318365	13697756	NoCal	1021.263	#
11)	TM 2-AMINO-4...	7.548	7.548	18509373	12589509	NoCal	1016.130	#
12)	TM 4-AMINO-2...	7.856	7.856	18021719	9923281	NoCal	1011.741	#
13)	TM 2,4-DINIT...	8.961	8.961	9431493	13107835	NoCal	1019.469	#
14)	TM 2,6-DINIT...	9.320	9.320	10089094	7317347	NoCal	1013.014	#
15)	TM 2-NITROTO...	0.000	12.628	0	4989197	N.D.	1072.333	#
16)	TM 4-NITROTO...	0.000	13.235	0	4955330	N.D.	1054.167	#
17)	TM 3-NITROTO...	0.000	14.102	0	5955847	N.D.	1070.039	#
18)	TM PETN	16.229	0.000	4653372	0	1050.388	N.D.	#

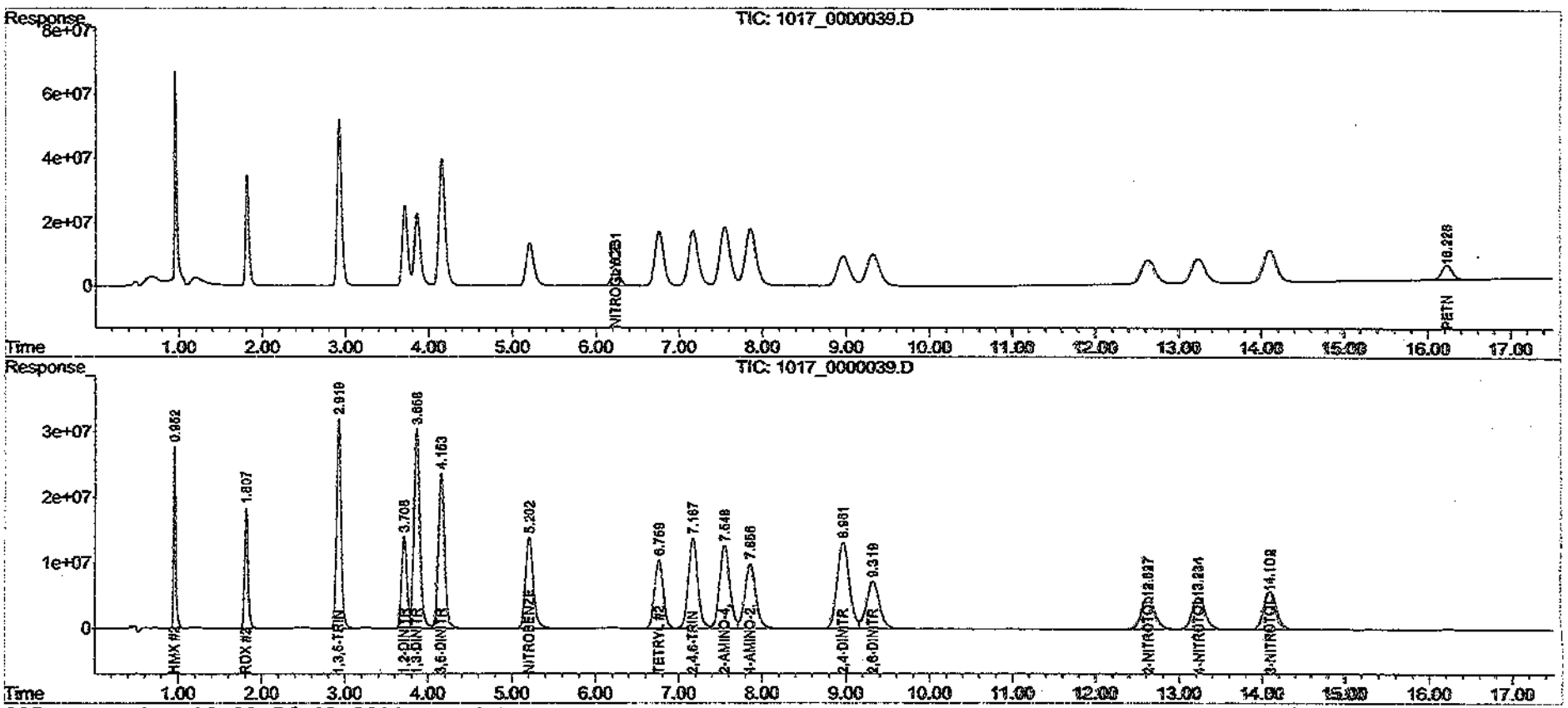
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111017\
Data File : 1017_0000039.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 18-Oct-2011, 09:21:13
Operator : mp
Sample : 8330_CCV 1.0 PPM 10/17/11
Misc :
ALS Vial : 4360 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 18 09:54:14 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111017\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Fri Oct 14 10:08:44 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron



Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111017\
Data File : 1017_0000050.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 18-Oct-2011, 16:03:13
Operator : mp
Sample : 8330_CCV 1.0 PPM 10/17/11
Misc :
ALS Vial : 4360 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 18 16:53:27 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111017\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Fri Oct 14 10:08:44 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppb	ppb	
	System Monitoring Compounds							
4)	S 1,2-DINIT...	0.000	3.709	0	13984084	N.D.	1004.950	#
	Spiked Amount 62.500			Recovery =		0.00%	1607.92%	
	Target Compounds							
1)	TM HMX	0.000	0.953	0	27328152	N.D.	1018.769	#
2)	TM RDX	0.000	1.808	0	18312993	N.D.	1019.705	#
3)	TM 1,3,5-TRI...	0.000	2.920	0	31997644	N.D.	1032.293	#
5)	TM 1,3-DINIT...	0.000	3.859	0	30420053	N.D.	1017.736	#
6)	TM 3,5-DINIT...	0.000	4.153	0	23565844	N.D.	1028.175	#
7)	TM NITROBENZENE	0.000	5.203	0	13572521	N.D.	1050.053	#
8)	TM NITROGLYC...	6.232	6.221	5268055	167089	963.779	NoCal	#
9)	TM TETRYL	6.757	6.757	17035863	10400285	NoCal	1040.335	#
10)	TM 2,4,6-TRI...	7.166	7.166	17202366	13615924	NoCal	1015.162	#
11)	TM 2-AMINO-4...	7.543	7.543	18356279	12485549	NoCal	1007.739	#
12)	TM 4-AMINO-2...	7.851	7.851	17848925	9833615	NoCal	1002.599	#
13)	TM 2,4-DINIT...	8.959	8.959	9356704	13006651	NoCal	1011.600	#
14)	TM 2,6-DINIT...	9.318	9.318	9997604	7258394	NoCal	1004.853	#
15)	TM 2-NITROTO...	0.000	12.625	0	4861093	N.D.	1044.799	#
16)	TM 4-NITROTO...	0.000	13.232	0	4862391	N.D.	1034.396	#
17)	TM 3-NITROTO...	0.000	14.099	0	5818981	N.D.	1045.449	#
18)	TM PETN	16.229	0.000	4608390	0	1040.235	N.D.	#

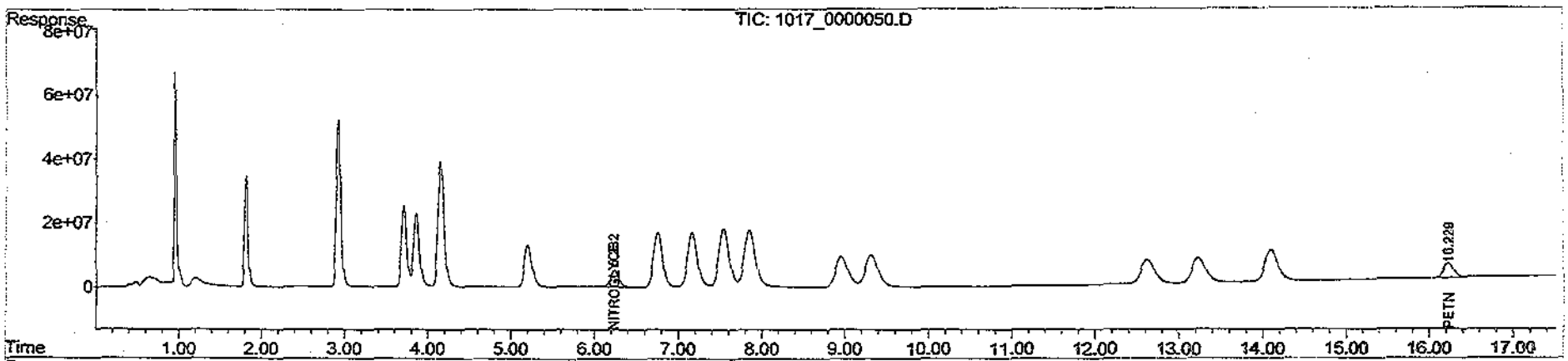
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

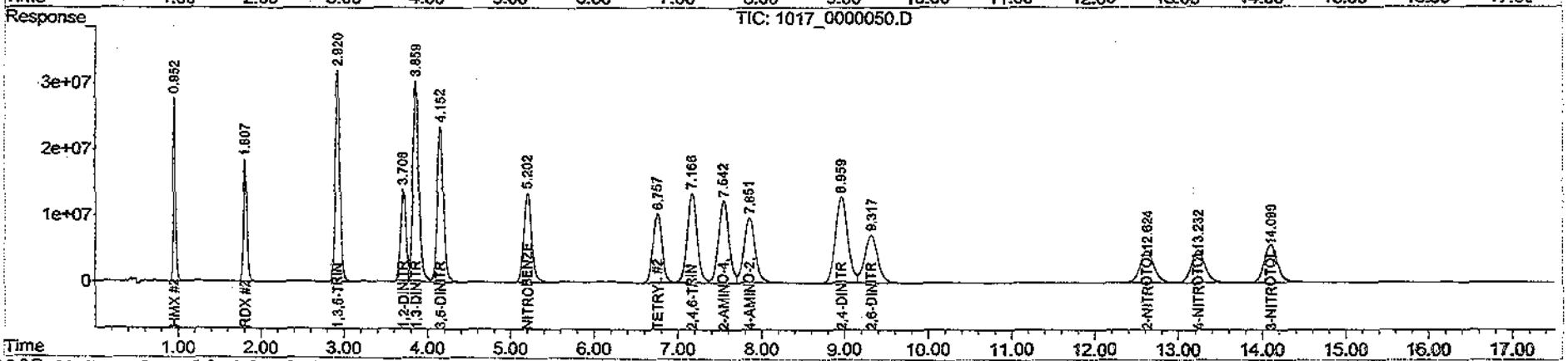
Quantitation Report (QT Reviewed)

Data Path : H:\WALDORF\CHEM32\1\DATA\111017\
Data File : 1017_0000050.D
Signal(s) : Signal #1: DAD1B.ch Signal #2: DAD1A.ch
Acq On : 18-Oct-2011, 16:03:13
Operator : mp
Sample : 8330_CCV 1.0 PPM 10/17/11
Misc :
ALS Vial : 4360 Sample Multiplier: 1

Integration File signal 1: Waldorf_Signal_1_110721.e
Integration File signal 2: Waldorf_Signal_2_110803.e
Quant Time: Oct 18 16:53:27 2011
Quant Method : H:\WALDORF\CHEM32\1\DATA\111017\W110907.M
Quant Title : 8330B - Soil - Waldorf
QLast Update : Fri Oct 14 10:08:44 2011
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 40uL
Signal #1 Phase : 214nm Signal #2 Phase: 254nm
Signal #1 Info : ZORBAX Extend-C18 Signal #2 Info : ZORBAX Extend-C18 100x3.0mm 1.8-micron





Miscellaneous

125 Market Street
New Haven, CT 06513
USA

AccuStandard, Inc.

Explosives by HPLC
Lot No: B8120095-25741
Rev: 8/2008 MFR exp. 12/2010

CERTIFICATE OF ANALYSIS

CATALOG NO: M-8330B-R-10X

EXPIRATION: Dec 9, 2010

DESCRIPTION: Explosive by HPLC

LOT: B8120095 · See reverse for additional certification information.

SOLVENT: MeOH:AcCN (1:1)

We produce pure substances as a part of the Certified Analytical Reference Group. The Explosives Division Unit Label.

Component	CAS #	Purity % (HPLC)	Prepared Concentration[1] (µg/mL)	Certified Analyte Concentration[2] (µg/mL)
Tetryl	479-45-8	99.4	1002	996
2,6-Dinitrotoluene	606-20-2	100	1005	1005
2-Nitrotoluene	88-72-2	99.0	1002	992
3-Nitrotoluene	99-08-1	98.7	1003	990
4-Nitrotoluene	99-99-0	99.2	1010	1002
2-Amino-4,6-dinitrotoluene	35572-78-2	97.5	1027*	1014
4-Amino-2,6-dinitrotoluene	19406-51-0	98.5	1009	1

7 Components

AccuStandard

1. All weights are traceable through NIST, Test No. 822/281101-07

2. Certified Analyte Concentration = Purity x Prepared Concentration. The Uncertainty calculated for this product is the value which is the Combined Uncertainty (uc). The uncertainty is calculated according to the specifications of the Guide to the Expression of Uncertainty in Measurement (GUM). The value is the coverage factor (k=2) for a 95% confidence level (k=2).

3. A product with a suffix (-1A, -1B, etc) contains the same components as the standard but at a different concentration.

Weight compensated to 100% purity

Certified by: R. Cooper

AccuStandard is accredited to ISO/IEC 17025:2005 and certified to ISO 9001:2000

OR-8330B-001
Rev A 0509

Method 8330 - Mix A
Lot #: B2120217-30 - 8/1/09
Rev: 8/4/09 MFR exp. 10/24/09

125 Market Street
New Haven, CT 06513
USA

AccuStandard, Inc.

Website AccuStandard.com

CERTIFICATE OF ANALYSIS

CATALOG NO: M-8330A-10X

EXPIRATION: Oct 24, 2009

DESCRIPTION: Method 8330 - Mix A

LOT: B2120217-30 See reverse for additional certification information.

SOLVENT: MeOH:AcCN (1:1)

This product is guaranteed accurate to ±0.5% of the Certified Analyte concentration through the Expiration Date on the Label.

Component	CAS #	Purity % (GC/MS)	Prepared Concentration[1] (µg/mL)	Certified Analyte Concentration[2] (µg/mL)
1,3-Dinitrobenzene	99-65-0	97.0	1031*	1000
2,4-Dinitrotoluene	121-14-2	100	1001	1001
HMX	2691-41-0	98.7	1001	988
Nitrobenzene	98-95-3	99.8	1002	1000
RDX	121-82-4	98.0	1000	980
1,3,5-Trinitrobenzene	99-35-4	99.8	1001	999
TNT	118-96-7	99.9	1000	[illegible]

7 Components

*Weight compensated to 100% purity

1. All weights are traceable through NIST, Test No. 822/273103-05

2. Certified Analyte Concentration = Purity x Prepared Concentration. The Uncertainty calculated for this product is ±[illegible] which is the Combined Uncertainty uc(y). It represents an estimated standard deviation equal to the positive square root of the total variance of the uncertainty of components. The Expanded Uncertainty is U which is U=uc(y)*K where K is the coverage factor at the 95% confidence level (K=2).
3. A product with a suffix (-1A, -3B, etc) on its label has the same expiration date as stated and is identical to the same item without the suffix.

Certified by: R. Cooper

AccuStandard is accredited to ISO/IEC 17025:2005 and certified to ISO 9001:2000

ORORGINC001 Rev139

AccuStandard

125 Market Street
New Haven, CT 06513 USA

PETN
Lot#: B7100193-[illegible]
Rev: 7/24/08 MFR exp. 10/18/09

AccuStandard®, Inc.

CERTIFICATE OF ANALYSIS

CATALOG NO. M-8330-ADD-2-10X

DESCRIPTION: Individual Explosives Solution

EXPIRATION: Oct 18, 2009

LOT: B7100193

SOLVENT: MeOH

See reverse for additional certification information.

This product is guaranteed to remain within ±[illegible]% of the Certified Analyte concentration through the Expiration Date on the Label.

Component	CAS #	Purity % (HPLC)	Prepared Concentration[1] (µg/mL)	Certified Analyte Concentration[2] (µg/mL)
PETN	78-11-5	99.3	1003	996

Please note: AccuStandard follows the U.S. conventions in reporting numerical values, on both certificates and labels.

A comma (,) is used to separate units of one-thousand or greater.
A period (.) is used as a decimal place marker.

1. All weights are traceable through NIST, Test No. [illegible]
2. Certified Analyte Concentration = Purity x Prepared Concentration. The Uncertainty calculated for this product is [illegible] which is the Combined Uncertainty u(c). [illegible] standard deviation equal to the positive square root of the total variance of the uncertainty of components. The Expanded Uncertainty is U which is U=k·u(c) where K is the coverage factor at the 95% confidence level (K=2).
3. A product with a suffix (-1A, -2B, etc) on its lot [illegible] to the same lot without the suffix.

Certified by: R. Cooper

AccuStandard is accredited to ISO/IEC 17025:2005

QA-ORG-[illegible]
Rev[illegible]

125 Market Street
New Haven, CT 06513 USA

Nitroglycerin
Lot #: B6040089-1A + 20559
Rec: 7/24/08 Exp. 10/18/09

AccuStandard, Inc.

CERTIFICATE OF ANALYSIS

CATALOG NO. M-8330-ADD-1-10X

DESCRIPTION: Individual Explosives Solution

EXPIRATION: Oct 18, 2009

LOT: B6040089-1A

SOLVENT: EtOH : MeOH (97::3)

This product is guaranteed [illegible] Certified Analyte concentration through the Expiration Date on the label.

See reverse for additional certification information.

Component	CAS #	Purity % (HPLC)	Prepared Concentration[1] (µg/mL)	Certified Analyte Concentration[2] (µg/mL)
Nitroglycerin	55-63-0	100	1000	1000

Please note: AccuStandard follows the U.S. conventions in reporting numerical values, on both certificates and labels.

A comma (,) is used to separate units of one-thousand or greater.
A period (.) is used as a decimal place marker.

1. All weights are traceable through NIST, Test No. [illegible]
2. Certified Analyte Concentration = Purity x Prepared Concentration. The Uncertainty calculated for this product is [illegible] which is the Combined Uncertainty uc(y). It represents an estimated standard deviation equal to the positive square root of the total variance of the uncertainty of components. The Expanded Uncertainty is U which is U=uc(y)*K where K is the coverage factor at the 95% confidence level (K=2).
3. A product with a suffix (-1A, -2B, etc.) [illegible] identical to the same lot without the suffix.

Certified by: R. Cooper

AccuStandard is accredited to ISO/IEC 17025:2005

[illegible]

1,2-Dinitrobenzene
Lot#: 142799-29733
Rec: 2/4/09 MFR exp. 02/03/12

o2si smart solutions®

2030 Savage Road
Charleston, South Carolina 29407
Phone (866) 272-0932
Fax (843) 766-9162
www.o2si.com

Quality System
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by NSF-ISR to ISO 9001:2000

Date Received: ____________

Certificate of Analysis

Page 1

Catalog No.:	Lot No.:	Storage:	Solvent:	Exp. Date:	Description:
010086-01	142799	<10 Degrees C	Acetonitrile	3-Feb-2012	1,2-Dinitrobenzene Solution, 1,000 mg/L, 1 ml

Compound	CAS No.	Purity (%)	Neat Material Lot No.	Concentration, mg/L
1,2-dinitrobenzene	528-29-0	99	8613P	1002 +/- 14.021

Certified By: *Lindsay E Edwards*
Lindsay Edwards

All weights are traceable through N. I. S. T. Test No. 822/264157-00. Concentration (correct for purity) and uncertainty (95% confidence) values listed are determined gravimetrically.

800-368-1131
www.absolutestandards.com

ISO 9001 QS Registered
ISO 17025 Accredited

CERTIFIED WEIGHT REPORT

Part Number: 95093
Lot Number: 051208
Description: 8330 Mix A
9 components
Expiration Date: 051211

Lot #: E37816
Solvent(s): Acetonitrile

Formulated By: Justin Dippold — 051208 DATE

Reviewed By: Pedro L. Rentas — 051208 DATE

Nominal Concentration (µg/mL): 100

5E-05 Balance Uncertainty

Volume(s) shown below were combined and diluted to: 10.0 — 0.001 Flask Uncertainty

Compound	Part Number	Lot Number	Dil. Factor	Initial Vol. (mL)	Uncertainty Pipette	Initial Conc. (ug/mL)	Final Conc. (ug/mL)	Expanded Uncertainty (+/-)	MSDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50
1. 4-Amino-2,6-dinitrotoluene	79070	062707	0.10	1.00	0.002	1001.6	100.2	0.00444	00000-00-0	N/A	N/A
2. 3,5-Dinitroaniline	71772	101807	0.10	1.00	0.002	1003.3	100.4	0.00581	00618-87-1	N/A	N/A
3. 1,3-Dinitrobenzene	79071	071706	0.10	1.00	0.002	1001.1	100.1	0.00451	00099-65-0	1mg/m3/8H (skin)	orl-rat 83mg/kg
4. 2,4-Dinitrotoluene	79072	110206	0.10	1.00	0.002	1002.8	100.3	0.00451	00121-14-2	1.5mg/m3/8H (skin)	orl-rat 268mg/kg
5. HMX	79074	041808	0.10	1.00	0.002	1000.7	100.1	0.00451	02691-41-0	N/A	N/A
6. Nitrobenzene	79075	100906	0.10	1.00	0.002	1003.4	100.4	0.00416	00098-95-3	1 ppm (5mg/m3/8H)(skin)	orl-rat 780mg/kg
7. 3-Nitrotoluene	79077	100906	0.10	1.00	0.002	1002.6	100.3	0.00417	00099-08-1	2 ppm (11mg/m3/8H)(skin)	orl-rat 1072mg/kg
8. RDX	79079	060904	0.10	1.00	0.002	1000.7	100.1	0.00581	00121-82-4	N/A	N/A
9. Trinitroglycerin	79252	072804	0.10	1.00	0.002	1000.3	100.1	0.00581	00055-63-0	STEL 0.1mg/m3(skin)	N/A
10.											
11.											
12.											
13.											
14.											
15.											
16.											
17.											
18.											
19.											
20.											

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CERTIFIED WEIGHT REPORT

Part Number: 95094
Lot Number: 051208
Description: 8330 Mix B
8 components
Expiration Date: 051211

Lot #: E37818
Solvent(s): Acetonitrile

Formulated By: Justin Dippold — 051208 (DATE)
Reviewed By: Pedro L. Rentas — 051208 (DATE)

Nominal Concentration (µg/mL): 100

5E-05 [illegible]
Volume(s) shown below were combined and diluted to: 10.0 — 0.001 [illegible]

Compound	Part Number	Lot Number	Dil. Factor	Initial Vol. (mL)	Uncertainty Pipette	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty (+/-) (µg/mL)	MSDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50
1. 2-Amino-4,6-dinitrotoluene	79089	082707	0.10	1.00	0.002	1002.3	100.3	0.00417	35572-78-2	N/A	N/A
2. 1,2-Dinitrobenzene	79404	051208	0.10	1.00	0.002	1004.7	100.5	0.00565	00528-29-0	1mg/m3/8H (skin)	N/A
3. 2,6-Dinitrotoluene	79073	100906	0.10	1.00	0.002	1002.2	100.3	0.00416	00606-20-2	1.5mg/m3/8H (skin)	orl-rat 177mg/kg
4. 2-Nitrotoluene	79076	100906	0.10	1.00	0.002	1003.1	100.3	0.00416	00088-72-2	2ppm (11mg/m3/8H)(skin)	orl-rat 891mg/kg
5. 4-Nitrotoluene	79078	100906	0.10	1.00	0.002	1001.1	100.1	0.00417	00099-99-0	2ppm (11mg/m3/8H)(skin)	orl-rat 1960mg/kg
6. Tetryl	79080	120803	0.10	1.00	0.002	1000.7	100.1	0.00581	00479-45-8	N/A	N/A
7. 1,3,5-Trinitrobenzene	79081	010406	0.10	1.00	0.002	1001.5	100.2	0.00417	00099-35-4	N/A	N/A
8. 2,4,6-Trinitrotoluene	79082	011008	0.10	1.00	0.002	1002.0	100.2	0.01015	00118-96-7	0.5mg/m3 (skin)	orl-rat 820mg/kg

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Date Received: _____

Certificate of Analysis

Catalog No.:	Lot No.:	Storage:	Solvent:	Exp. Date:	Description:
010614-04	140802	</= 6 Degrees C	Acetonitrile	31-Oct-2009	PETN Solution, 1000 mg/L, 1 ml

Compound	CAS No.	Purity (%)	Neat Material Lot No.	Concentration, mg/L
PETN	78-11-5	99.9	614.5P	1000 +/- 14

Certified By: _____
Dick Potter

All weights are traceable through N. I. S. T. Test No. 822/264157-00.
Concentration (correct for purity) and uncertainty (95% confidence) values listed are determined gravimetrically.

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Quality System
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by NSF-ISR to ISO 9001:2000

Date Received: _____

Certificate of Analysis

Catalog No:	Lot No.:	Storage:	Solvent:	Exp. Date:	Description:
010612-04	140434	</=-10 Degrees C	Acetonitrile	3-Nov-2011	3,5-Dinitroaniline (3,5-DNA) Solution, 1000 mg/L, 1 ml

Compound	CAS No.	Purity (%)	Neat Material Lot No.	Concentration, mg/L
3,5-dinitroaniline	618-87-1	97	612.1.1	1000 +/- 14

Certified By: Michael L. Wrigley
Mike Wrigley

All weights are traceable through N. I. S. T. Test No. 822/264157-00.
Concentration (correct for purity) and uncertainty (95% confidence) values listed are determined gravimetrically.

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STANDARD	INITIAL CONC	SOURCE	DATE	ALIQUOT	FINAL VOLUME	FINAL CONC	SOLVENT LOT #	DATE / INITIALS
~~8330_08/13_MRL~~ 8/17/11								
8330_08/03_ZNT_MRL CHK								
8330_08/03_ZNT_CCV	1.0mg/mL	8/17/11	100µL	1.0mL	0.1µg/mL	2:1:1 H_2O MeCN DE002	MeOH 51076	8/17/11
NG_3,5-DNA_PETN_08/03_ZNT_CCV						☆ Prepped in duplicate		
~~NG_3,5-DNA_PETN_08/03_ZNTSTK~~ NG_3,5-DNA_PETN_08/03_ZNTSTK 8/17/11	10.0µg/mL	8/3/11	100µL	1.0mL	1.0µg/mL	2:1:1 H_2O DE002 MeCN	MeOH 51076	8/17/11
NG_08/18_STK								
Nitroglycerin	1000µg/mL	~~8/16/11~~ 8/15/11		7.0mL	10.0mL	100µg/mL	1:1 ACN: MeOH DE002: 51076	8/18/11 Exp. 2/18/12
8330_08/18_STK								
8330 Explosives by HPLC M-8330-R	1000µg/mL	Accustandard 8/18/2011 LOT NO: 209101177-28370		1.0mL	10.0mL	100µg/mL	1:1 ACN: MeOH DE002: 51076	8-18-11 Exp. 10-21-11
1,2-Dinitrobenzene #1B486-#1	1000µg/mL	0251 8/18/2011 LOT NO: 175526-29022		1.0mL				

AccuStanda

Method 8330 - Explosives
Lot #: 209101177 - 28370
Rec: 2/28/11 MFR exp. 10/21/11

M-8330-R
Method 8330 - Explosives
1.0 mg/mL in MeOH:AcCN (1:1)
Lot: 209101177
Exp: Oct,21,2011

14 comps.
FLAMMABLE

FOR LABORATORY USE ONLY

WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

STORAGE Freeze (<-10° C)

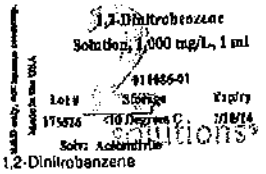
1,2-Dinitrobenzene
Solution, 1,000 mg/L, 1 ml
#1B486-01
Lot # 175526 Storage -10 Degrees C Expiry 7/14/14
Solv: Acetonitrile
1,2-Dinitrobenzene
Lot #: 175526 - 29022
Rec: 7/14/11 MFR exp. 07/10/14

8330_08/19_CNTSTK								
8330_08/18_STK	100µg/mL	8/18/11	1.0mL	10.0mL	10.0µg/mL	1:1 ACN DE296: MeOH 51076		8/19/11 exp 10/19/11
NG_3,5-DNA_PETN_08/19_CNTSTK								
NG_08/18_STK	100µg/mL	8/18/11	1.0mL	10.0mL	10.0µg/mL	1:1 ACN DE296: MeOH 51076		8/19/11 exp 10/19/11
3,5-DNA_07/13_STK		7/13/11						
PETN_08/12_STK		8/12/11						

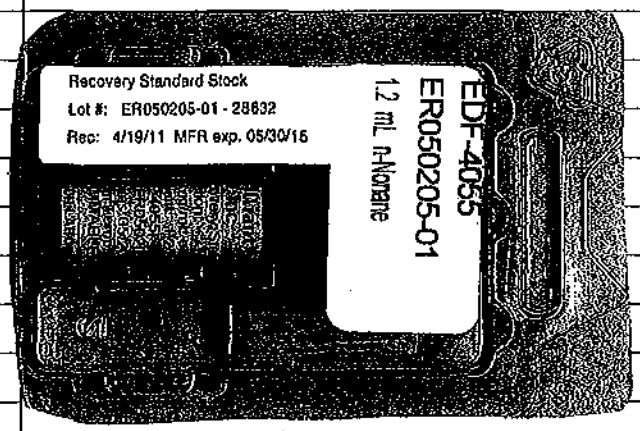
LC/MS STANDARD PREP LOG# 97 PAGE # 70

070

STANDARD	INITIAL CONC	SOURCE / DATE	ALIQUOT	FINAL VOLUME	FINAL CONC	SOLVENT / LOT #	INITIALS
Perchlorate QA/QC Stock 10 mg/L							
Perchlorate	1000	0251 / Lot 1026135-2896	0.10mL	10.0mL	10mg/L	(Millipore water 08-22-11)	8-22-11
Perchlorate Spk 0.1 mg/L							
Perchlorate QA/QC	10.0	08-22-11	0.250mL	25.0mL	0.10	(Milli-pore water 08-22-11)	8-22-11
1,2-DNB-08/22-STK							
1,2-Dinitrobenzene Part# 010006-01	1000 ug/mL	0227/11 Lot#175526-29023	1.0mL	10.0mL	100 ug/mL	1,3 / ACN: MeOH DE296-51096	8/22/11 exp 2/22/12



EDF-4055 500 ng/mL 08-22-11: JL



08-22-11

Cracked open the vial in the adjacent photo-copy and delivered contents into an amber injection vial

LC/MS STANDARD PREP LOG# 97 PAGE # 72

072

STANDARD	INITIAL CONC	SOURCE DATE	ALIQUOT	FINAL VOLUME	FINAL CONC	SOLVENT LOT #	DATE/ INITIALS
AYH3593_502 3T3.13 DF 08-09-11_8/22; AYH3593_502 3T3.13 DF 08-09-11_8/22 TOOK 0.005 ML AND ADDED TO 0.045 ML 8290_IL 40 mg/mL 08-22-11							08-22-11
AYH3593_502 3T3.13 DF 08-09-11_8/22; AYH3593_502 3T3.13 DF 08-09-11_8/22 TOOK 0.005 ML AND ADDED TO 0.045 ML 8290_IL 40 mg/mL 08-22-11							
PETN_08/24_STK							
PETN Part# 010614-04	1000 µg/mL	8/24/11 Lot# 173603-28896	1.0 mL	10.0 mL	100 µg/mL	ACN MeOH DE296 51076	Prep 8/24/11 Exp 2/24/12
8330-08/19_INT_CCV							
8330-08/19_INT STK	10.0 µg/mL	8/19/11	100 µL	1.0 mL	1.0 µg/mL	2:1:1 H_2O:ACN:MeOH DE296 51076	8/24/11
NG-3,5-DNA_PETN_08/19_INT_CCV							
NG-3,5-DNA_PETN 08/19_INT STK	10.0 µg/mL	8/19/11	100 µL	1.0 mL	1.0 µg/mL	2:1:1 H_2O:MeCN:MeOH DE296 51076	8/24/11
8330_08/19 CCV							8/25/11
8330 INT STK 10 08-19-11	0.10	1.0		1.0 mg/L		1:1:10	08-25-11
NG_DNA_PETN STK 10 08/19/11	0.10					H_2O ACN MeOH DE296 51076	

PETN Solution, 1000 mg/L, 1 ml
Lot# 41851464
Storage 4 Degrees C
Expiry 5/24/12
Solvent: Acetonitrile
PETN
Lot #: 173603 - 28890
Rec: 6/2/11 MFR exp. 05/24/12

LC/MS STANDARD PREP LOG# 97 PAGE# 83

STANDARD	INITIAL CONC	SOURCE DATE	ALIQUOT	FINAL VOLUME	FINAL CONC	SOLVENT LOT #	INITIALS

AccuStandard
M-8330-R
Method 8330 - Explosives I
1000 µg/mL in MeOH:AcCN (1:1)
Lot: 209101177-01
Exp: Apr 29,2013
14 comps.
HIGHLY FLAMMABLE

Method 8330 - Explosives
Lot #: 209101177-01 - 29423
Rec: 8/29/11 MFR exp. 04/29/13

FOR LABORATORY USE ONLY
WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

STORAGE Freeze (<-10° C)

W 08-31-11

I broke open the vial labelled above to use for 8330-08/31-5th 1000µg/mL 08-31-11

1,2-Dinitrobenzene
Solution, 1,000 mg/L, 1 ml
Lot # 175526 Storage <10 Degrees C Expiry 7/14/13
Solv: Acetonitrile
1,2-Dinitrobenzene
Lot #: 175526 - 29024
Rec: 7/14/11 MFR exp. 07/10/14

08-31-11 W

I broke open the vial labelled to the left and transferred to an amber 1.8ml injection vial → 1,2-DNB 1000µg/mL 08-31-11

8330-08/31-5th 100µg/mL

8330 explosives 1000µg/mL	AccuStandard 08-31-11		1.0	10.0	100µg/mL	1:1 MeOH/ACN	50252 DE002	08-31-11 W
1,2-DNB	1000µg/mL	08-31-11	1.0					

8330_W_Soil 5.0µg/mL

1,2 DNB	1000	08-31-11	0.025	5.0	5.0	1:1 MeOH/ACN	50252 DE002	08-31-11 W

PER_IS 0.005 µg/mL 08-31-11: JL

COMBINED 10.000 ML LABORATORY SOURCE 08-31-11 DI-H2O WITH 10.000 ML BURDICK & JACKSON ACETONITRILE LOT DA355. WITHDREW 1.000 ML AND THEN ADDED 1.000 025I $^{18}O_4$ PERCHLORATE 100 µg/L LOT 1023BB4-28211

LC/MS STANDARD PREP LOG# 91 PAGE # 92

092

STANDARD	INITIAL CONC	SOURCE DATE	ALIQUOT	FINAL VOLUME	FINAL CONC	SOLVENT LOT #	DATE/ INITIAL

AccuStandard® 125 Market St. · New Haven, CT 06513 USA FOR LABORATORY USE ONLY

M-8330-ADD-4
3,5-Dinitroaniline
0.1 mg/mL in AcCN:MeOH
Lot: 209121115
Exp. Dec 8, 2012

3,5-Dinitroaniline
Lot #: 209121115 - 27359
Rec: 9/28/10 MFR exp. 12/08/12

STORAGE Ambient

FLAMMABLE

09-07-11 lb

I broke open the vial labelled above and transferred to an amber 1.8ml injection vial → 3,5-DNA 1000ug/mL 09-07-11

PETN Solution, 1000 mg/L, 1 ml
Lot # 177778 Storage -10 Degrees C Expiry 10/31/15
Solvent Acetonitrile
Solutions

PETN
Lot #: 177778 - 29394
Rec: 8/26/11 MFR exp. 10/31/15

09-07-11 lb

I broke open the vial labelled to the left & transferred to an amber 1.8ml injection vial → PETN 1000ug/mL 09-07-11

AccuStandard® 125 Market St. · New Haven, CT 06513 USA FOR LABORATORY USE ONLY

M-8330-ADD-1-10X
Nitroglycerin
1000 µg/mL in EtOH:MeOH (97:3)
Lot: 210031440
Exp. Apr 12, 2012

Nitroglycerin
Lot #: 210031440 - 28374
Rec: 2/28/11 MFR exp. 04/12/12

STORAGE Refrig (0-6° C)

FLAMMABLE

09-07-11 lb

I broke open the vial labelled above and transferred to an amber 1.8ml injection vial → Nitroglycerin 1000ug/mL 09-07-11 lb 9-7-11

1,2-Dinitrobenzene Solution, 1,000 mg/L, 1 ml
Lot # 175526 Storage -10 Degrees C Expiry 7/14/14
Solvent Acetonitrile
Solutions

1,2-Dinitrobenzene
Lot #: 175526 - 29025
Rec: 7/14/11 MFR exp. 07/10/14

I broke open the vial labelled to the left and transferred to an amber 1.8ml injection vial → 1,2 DNB 1000ug/mL 09-07-11

LC/MS STANDARD PREP LOG# 97 PAGE# 93

STANDARD	INITIAL CONC	SOURCE DATE	ALIQUOT	FINAL VOLUME	FINAL CONC	SOL'N LOT #	INITIALS
						093	

09-07-11 M

AccuStandard

Method 8330 - Explosives
Lot #: 209101177 - 28369
Rec: 2/28/11 MFR exp. 10/21/11

M-8330-R
Method 8330 - Explosives L, ...
1.0 mg/mL in MeOH:AcCN (1:1)
Lot: 209101177 14 comps.
Exp: Oct.21,2011 FLAMMABLE

FOR LABORATORY USE ONLY

WARNING This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm

STORAGE Freeze (<-10° C)

I broke open the vial labelled above and transferred to an amber 1.8ml injection vial → M-8330-R 1000ug/L 09-07-11

8330_MX-A 10.0ug/L M

M8330-R	1000	09-07-11	0.10	10.0	10.0	1:1 ACN/MeOH	09-07-11 I
1,2-DNB	1000	09-07-11	0.10	I	I		

8330-MX-B 10.0ug/L M

3,5-DNA	1000ug/L	09-07-11	1.0	10.0	10.0	1:1 ACN/MeOH	09-07-11
Nitroglycerin	1000	09-07-11	0.10	10.0	I	I	I
PETN	1000	09-07-11	0.10	I			

8330_MX_A

8330_MX-A	10.0 ppm	08/03/11	200 µL	1.0 mL	2.0 ppm

M 9-7-11
1 : 1 : 6
ACN : MeOH : MILLIPORE
DE002 : 51076 : H2O

8330_MX_B

8330_MX-B	10.0 ppm	08/03/11	200 µL	1.0 mL	2.0 ppm

1 : 1 : 6
ACN : MeOH : MILLIPORE
DE002 : 51076 : H2O

8330B_CB

8330_MX-A	10.0 ppm	08/03/11	100 µL	1.0 mL	1.0 ppm
8330_MX-B	10.0 ppm	08/03/11	100 µL	1.0 mL	1.0 ppm
8330_MX-A	10.0 ppm	08/03/11	50 µL	1.0 mL	0.5 ppm
8330_MX-B	10.0 ppm	08/03/11	50 µL	1.0 mL	0.5 ppm
8330_MX-A	2.0 ppm	08/09/11	100 µL	1.0 mL	0.2 ppm
8330_MX-B	2.0 ppm	08/09/11	100 µL	1.0 mL	0.2 ppm
8330B_CB	1.0 ppm	08/09/11	100 µL	1.0 mL	0.1 ppm
8330B_CB	0.5 ppm	08/09/11	100 µL	1.0 mL	0.05 ppm
8330B_CB	0.2 ppm	08/09/11	100 µL	1.0 mL	0.02 ppm
8330B_CB	0.1 ppm	08/09/11	100 µL	1.0 mL	0.01 ppm
8330B_CB	0.05 ppm	08/09/11	100 µL	1.0 mL	0.005 ppm

1 : 1 : 6
ACN : MeOH : MILLIPORE
DE002 : 51076 : H2O

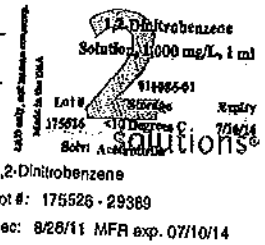
LC/MS STANDARD PREP LOG# 97 PAGE # 94

094

STANDARD	INITIAL CONC	SOURCE DATE	ALIQUOT	FINAL VOLUME	FINAL CONC	SOLVENT LOT #	DATE/ INITIALS

8330B_SS — hp 9-7-11

8330_07/13_MixA_SS_STK	100 ppm	07/13/11	10.0 µL	1.0 mL	1.0 ppm	1 : 1 : 6
8330_07/13_MixB_SS_STK	100 ppm	07/13/11	10.0 µL	1.0 mL	1.0 ppm	ACN : MeOH : MILLIPORE
PETN_07/13_SS_INTSTK	100 ppm	07/13/11	10.0 µL	1.0 mL	1.0 ppm	DE002 : 51076 : H2O



09-08-11 hp

I broke open the vial labelled to the left and transferred to an amber 1.8-1 injection vial.
→ 1,2-DNB 1000 µg/L-1 09-08-11

1,2-DNB 100 µg/L-1 hp

1,2-DNB	1000	09-08-11	1.0	10.0	100 µg/L-1	1:1 MeOH/ACN Lot# 51076 DE296	9-8-11

1,2-DNB 1.0 µg/L-1 W

1,2-DNB	100	09-08-11	0.10	10.0	1.0	1:1 MeOH/ACN 51076 DE296	9-8-11

PETN_MDL_STD 5.0 µg/L-1 W

PETN STK	100	08-24-11	0.250	5.0	5.0	1:1 MeOH/ACN 51076 DE296	09-08-11

NG_STD (Nitroglycerin) 100 µg/L-1 hp

Nitroglycerin	1000	09-07-11	0.50	5.0	100 µg/L-1	1:1 MeOH/ACN 51076 DE296	09-08-11

8330_MDL_STD 1.0 µg/L-1 W

8330 MIX A	100 µg/L-1	09-07-11	0.50	5.0	1.0	1:1 MeOH/ACN 51076 DE296	9-8-11

LC/MS STANDARD PREP LOG# 97 PAGE # 95

095

STANDARD	INITIAL CONC	SOURCE DATE	ALIQUOT	FINAL VOLUME	FINAL CONC	SOLVENT LOT #	INITIALS
Nitroglycerin 1000	09-07-11	0.10ml	1ml	100µg/L	1:1 MeOH/ACN	5107G DE29L	9-8-11
NG_DNA_MDL STD 1.0µg/L							
Nitroglycerin 100	09-08-11	0.050	5.0	1.0	1:1 MeOH/ACN	5107G DE29L	9-8-11
3,5-DNA 100	09-07-11	0.050	1	1			
8330_CCV							
8330_MIX-A 10	09-07-11	100uL	1mL	10mL	6:1:1 H_2O:ACN:MeOH		HM 09/08/11
8330_MIX-B 10	09-07-11	100uL	1	1			

832_METH 0.8 ug/ml

832_METH	10ug/ml	08/03/11	0.160ml	2.0 ml	0.8 ug/ml	Millipore water 09/09/11	09/09/11
HPLC_IS	100 ug/ml	07/08/11	0.020ml	2	1.0 ug/ml		

832_METH 0.6 ug/ml

832_METH	10ug/ml	08/03/11	0.120ml	2.0 ml	0.6 ug/ml	Millipore water 09/09/11	09/09/11
HPLC_IS	100 ug/ml	07/08/11	0.020ml	2	1.0 ug/ml		

832_METH 0.4 ug/ml

832_METH	10ug/ml	08/03/11	0.080ml	2.0 ml	0.4 ug/ml	Millipore water 09/09/11	09/09/11
HPLC_IS	100 ug/ml	07/08/11	0.020ml	2	1.0 ug/ml		

prepared 3 portions

832_METH 0.2 ug/ml

832_METH	10ug/ml	08/03/11	0.040ml	2.0 ml	0.2 ug/ml	Millipore water 09/09/11	09/09/11
HPLC_IS	100 ug/ml	07/08/11	0.020ml	2	1.0 ug/ml		

832_METH 0.1 ug/ml

832_METH	10ug/ml	08/03/11	0.020ml	2.0 ml	0.1 ug/ml	Millipore water 09/09/11	09/09/11
HPLC_IS	100 ug/ml	07/08/11	0.020ml	2	1.0 ug/ml		

prepared 2 portions

832_METH	10ug/ml	08/03/11	0.10 ml	1.0 ml	1.0ug/ml	Millipore water 09/09/11	09/09/11

832_METH 0.08ug/ml

832_METH	1.0ug/ml	09/09/11	0.160ml	2.0 ml	0.08 ug/ml	Millipore water 09/09/11	09/09/11
HPLC_IS	100 ug/ml	07/08/11	0.020ml	2	1.0 ug/ml		

LC/MS STANDARD PREP LOG# 97 PAGE# 109

STANDARD	INITIAL CONC	SOURCE DATE	ALIQUOT	FINAL VOLUME	FINAL CONC	SOLVENT LOT#	INITIALS
	lo lvl curve spk 1.6						
8321MX29-8	400.	09-6-11	0.20	50.0 ml	1.6	Methanol/51183	9-15-11
8330_CCV_09/14/11							
8330_MIX-A	10	9/07/11	100uL	1mL	1.0ug/mL	6:1:1 H2O:ACN:MeOH	HM 9/15/11
8330_MIX-B	10	9/07/11	↓	↓	↓		

09/20/11 HM

AccuStandard
M-8330-ADD-1-10X
Nitroglycerin
1000 µg/mL in EtOH:MeOH (97:3)
Lot: 211041387
Exp. Apr 19, 2013
HIGHLY FLAMMABLE
Nitroglycerin
Lot #: 211041387 - 29420
Rec: 8/29/11 MFR exp. 04/19/13
FOR LABORATORY USE ONLY
STORAGE Refrig (0-5° C)

I broke open the vial labelled above and transferred to an amber 1.8ml injection vial → Nitroglycerin 1000 ug/mL 09/20/11

9/20/11 HM

Part #: 79250
Lot #: 071409
Laboratory Use Only - See MSDS
Exp: 071414
Storage 0 °C
EPA Method 8330 Analyte
Pentaerythritol tetra
1000 ug/mL in acet
ABSOLUTE STANDARDS
PETN
Lot #: 071409 - 28214
Rec: 2/11/11 MFR exp. 07/14/14

I broke open the vial ~~to be~~ labelled above and transferred to an amber 1.8mL injection vial → PETN 1000ug/mL 9/20/11 HM

STANDARD	INITIAL CONC	SOURCE DATE	ALIQUOT	FINAL VOLUME	FINAL CONC	SOLVENT LOT#	INITIALS
	8330MXA_CCV 1.0ug/ml						
8330MXA	10ug/ml	09-07-11	0.10	1.0	1.0	2:1:1 Millipore water MeOH/51076 ACN DE296	09-20-11
	8330MXB_CCV 1.0ug/ml						
8330MXB	10ug/ml	09-07-11	0.10	1.0	1.0	2:1:1 Millipore water, MeOH/51076, ACN DE296	09-20-11

LC/MS STANDARD PREP LOG# 97 PAGE# 110

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STANDARD	INITIAL CONC	SOURCE DATE	ALIQUOT	FINAL VOLUME	FINAL CONC	SOLVENT LOT #	DATE/ INITIALS
	8330MXA_CCV 1.0 ug/mL (Ar-Stetler)						HM
8330MXA	10	09-07-11	0.10	1.0	1.0	6:1:1 MeOH/51076, ACN/DE256	Mill. pure water - 09-20-11
	8330MXB_CCV 1.0 ug/mL (Ar-Stetler)						HM
8330MXB	10	09-07-11	0.10	1.0	1.0	6:1:1 MeOH/51076, ACN DE256	Mill. pure water - 09-20-11
	1,2-DNB - 100 PPM 9/20/11						
1,2 DNB	1000 ug/mL	9/20/11	.5mL	5mL	100 PPM	1:1 ACN:MeOH DE256 51076	HM 9/20/11
	8330-STK 100 PPM 9/20/11						
M-8330-B	1000 ug/mL	09/07/11	.5mL	5mL	100 PPM	1:1 ACN:MeOH DE256 51076	HM 9/20/11
	PETN - 100 PPM 9/20/11						
PETN	1000 ug/mL	9/20/11	.5mL	5mL	100 PPM	1:1 ACN:MeOH DE256 51076	HM 9/20/11
	NG - 100 PPM 9/20/11						
Nitroglycerin	1000 ug/mL	9/20/11	.5mL	5mL	100 PPM	1:1 ACN:MeOH DE256 51076	HM 9/20/11
	Picric Acid stk 0.2 mg/L						
Picric Acid	10	06-09-11	0.10	5.0	0.2	ACN DE256	09-21-11
	24 HM 9-21-11						
	8321-TS stock 1 DF						HM
P321AXL-7	500	8-31-11	0.10	10.0	5.0	MeOH/51133	09-22-11
Fluoxetine	1127	08-28-11	0.089	10			
8141 Surr	1060	08-29-11	0.10	10			

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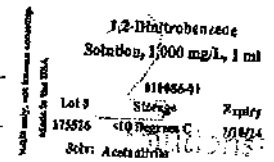
STANDARD	INITIAL CONC	SOURCE DATE	ALIQUOT	FINAL VOLUME	FINAL CONC	SOLVENT LOT #	INITIALS
The following CCV was made on 9/22/11 and documented here on 9/23/11 HM							
8330 - CCV 9/22/11							
8330 - MIX-A	10 ug/mL	9/07/11	100 uL	1 mL	1.0 ug/mL	6:1:1 H2O:ACN:MeOH DE256 51076	HM 9/23/11
8330 - MIX-B							
8330 - CCV 9/24/11							
8330 - MIX-A	10 ug/mL	9/07/11	100 uL	1 mL	1.0 ug/mL	6:1:1 H2O:ACN:MeOH DE256:51076	HM 9/24/11
8330 - MIX-B							



1,2-Dinitrobenzene
Lot #: 175526 - 29390
Rec: 8/26/11 MFR exp. 07/10/14

I broke open the vial labelled to the left and transferred to an amber 18mL injection vial.
→ 1,2-DNB 1000mg/L 9-26-11

1,2-DNB 100 mg/L

1,2-DNB	1000 mg/L	9-26-11	1.0mL	10.0mL	100mg/L	1:1 MeOH/ACN 51076 DE296	9-26-11 HM

8330-CCV 9/26/11

8330 - MIX-A	10ug/mL	9/07/11	100uL	1mL	1.0ug/mL	6:1:1 H2O ACN MeOH DE296 51076	9-26-11 HM
8330 - MIX-B							

832-Meth Secc 0.5 mg/L

Dinitrotoluene	1000	07-15-11	0.10	200	0.5	MeOH/51133	09-27-11

8330-CCV 9/27/11

8330 - MIX-A	10 ug/mL	9/07/11	100 uL	1mL	1.0 ug/mL	6:1:1 H2O ACN MeOH DE296 51076	9-27-11 HM
8330 - MIX-B							

LC/MS STANDARD PREP LOG# 97 PAGE # 114

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STANDARD	INITIAL CONC	SOURCE DATE	ALIQUOT	FINAL VOLUME	FINAL CONC	SOLVENT / LOT #	DATE / INITIALS
NG-3,5-DNA-PETN-09/28-INTSTK							
NO-09/20 STK	100 µg/mL	09/20/11	500 µL	5.0 mL	10.0 µg/mL	1:1 ACN:MeOH OB296 S1076	HM 9/28/11
3,5-DNB-0713-STK		07/13/11					exp 11/28/11
PETN-09/20-STK		09/20/11					
8330-09/28-INTSTK							
M-8330-R	1000 µg/mL	9/07/11	100 µL	10.0 mL	10.0 µg/mL	1:1 ACN:MeOH OB296 S1076	HM 9/28/11
1,2-DNB							exp.
8330-WATER SURROGATE							
1,2-DNB-STK-100 PPM	100 µg/mL	09/29/11	500 µL	10.0 mL	5 µg/mL	1:1 ACN:MeOH OB296 S1076	HM 9/28/11 exp 01/25/11
8330-CCV 9/28/11							
8330-MIX-A	10 µg/mL	9/07/11	100 µL	1.0 mL	1.0 µg/mL	1:1 ACN:MeOH OB296 S1076	HM 9/28/11
8330-MIX-B							

AccuStandard® 125 Market St. - New Haven, CT 06513 - USA

M-8330-ADD-35
Propyleneglycol dinitrate
100 µg/mL in methanol
Lot: B7040118-2B
Exp. Dec 7, 2012

Propyleneglycol dinitrate
Lot #: B7040118-2B - 28756
Rec: 4/25/11 MFR exp. 12/07/10

FLAMMABLE

FOR LABORATORY USE ONLY

STORAGE Freeze (<-10° C)

MP 09-30-11

I broke open the vial labelled above and transferred to an amber 1.8mL injection vial → PGDN 100 µg/mL 09-30-11
MP 9-30-11

PGDN 10 µg/mL (Cal stock)

PGDN 100	09-30-11	0.10	1.0	10.0	1:1 ACN/MeOH	08-19-11	9-30-11	MP
1,2-DNB 100	09-26-11	0.10						

8321-V IS 1.0 ug/ml

8321 V IS 100 07-27-11 0.250 25.0 1.0 MeOH/51133 10-4-11

AccuStandard
M-8330-R
Method 8330 - Explosives by
1000 µg/mL in MeOH:AcCN (1:1)
Lot: 209101177-01
Exp: Apr 29,2013
14 comps.
HIGHLY FLAMMABLE

Method 8330 - Explosives
Lot #: 209101177-01 - 29424
Rec: 8/29/11 MFR exp. 04/29/13

LABORATORY USE ONLY
WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.
STORAGE Freeze (<-10° C)

I broke open the vial labelled above and transferred to an amber 1.8mL injection vial → M-8330-R 1000ug/mL 10/04/11

1,2-Dinitrobenzene
Solution, 1,000 mg/L, 1 ml
Lot# 175526 Storage <10 Degrees C Expiry 7/10/14
Solv: Acetonitrile
Solutions
1,2-Dinitrobenzene
Lot #: 175526 - 29393
Rec: 8/26/11 MFR exp. 07/10/14

I broke open the vial labelled ~~above~~ to left HM 10/4/11 and transferred to an amber 1.8mL injection vial → 1,2 DNB 1000ug/mL 10/04/11

M-8330-R 100 ug/mL

M-8330-R	1000ug/mL	10/04/11	1mL	10mL	100ug/mL	1:1 AcN/MeOH
1,2-DNB	1000ug/mL	↓	↓	↓	↓	DE296 51076 HM 10/4/11

PETN Solution, 1000 mg/L, 1 ml
Lot# 177778 Storage ≤4 Degrees C Expiry 10/31/15
Solv: Acetonitrile
Solutions
PETN
Lot #: 177778 - 29396
Rec: 8/26/11 MFR exp. 10/31/15

HM 10/4/11

I broke open the vial ~~labelled~~ labelled ~~above~~ to the left HM 10/4/11 and transferred to an amber 1.8mL injection vial → PETN 1000ug/mL 10/04/11

PETN 100 ug/mL

PETN	1000ug/mL	10/04/11	1mL	10mL	100ug/mL	1:1 AcN MeOH DE296 51076 10/4/11

004

1,2-Dinitrobenzene
Solution, 1,000 mg/L, 1 ml
91456-01
Lot # 175526 Storage +10 Degrees C Expiry 7/2014
Solv: Acetonitrile
1,2-Dinitrobenzene
Lot #: 175526 - 29392
Rec: 8/26/11 MFR exp. 07/10/14

I broke open the vial ~~labbe~~ labelled to the left and transfered to an amber 1.8 mL injection vial → 1,2-DNB 1000 ug/mL 10/4/11 HM 10/4/11

1,2-DNB - 100 ug/mL

1,2-DNB	1000 ug/mL	10/4/11	1mL	10mL	100 ug/mL	1:1 ACN:MeOH DB196 51076	HM 10/4/11

AccuStand
M-8330-ADD-1-10X
Nitroglycerin
1000 µg/mL in EtOH:MeOH (97:3)
Lot: 211041387
Exp. Apr 19, 2013
HIGHLY FLAMMABLE

Nitroglycerin
Lot #: 211041387 - 29421
Rec: 8/29/11 MFR exp. 04/19/13

FOR LABORATORY USE ONLY
STORAGE Refrig (0-5° C)

I broke open the vial labelled to the left and transfered to an amber 1.8 mL injection vial → ~~1,2-DN~~ Nitroglycerin HM 10/4/11

1000 ug/mL 10/4/11

Nitroglycerin - 100 ug/mL

Nitroglycerin	1000 ug/mL	10/4/11	1mL	10mL	~~1000~~ 100 ug/mL HM 10/4/11	1:1 ACN:MeOH DB196 51076	HM 10/4/11

8321 Stock 2.0 mg/L-1

Fluoxetine	1127	07-28-11	0.355	200 mL	MeOH/51173	10-6-11
8141 Stock	1000	10-3-11	0.400	1	1	1

HPLC/S 1.0 mg/L

HPLC/D	100	7-8-11	2.0	200	1.0	MeOH/51173	10-6-11

_MWE3535

Organic Extraction Worksheet

Method	EPA Method 3535A	Extraction Set	111006A	Extraction Method	MWE3535	Units	mL

Spiked ID 1	8330 100ppm STK 10-04-11 exp 04-04-12		Surrogate ID 1	8330_W_Surrogate 5 ppm 09-28-11 EXP 01-28-12	
Spiked ID 2	Nitroglycerin 100ppm STK 10-04-11 exp 04-04-12		Surrogate ID 2	1,2-DNB STK 100 PPM 10-04-11 exp 04-04-12	
Spiked ID 3	PETN 100ppm STK 10-04-11 exp 04-04-12		Surrogate ID 3		
Spiked ID 4			Surrogate ID 4		
Spiked ID 5			Surrogate ID 5		
Spiked ID 6			Sufficient Vol for Matrix QC:	YES	
Spiked ID 7			Ext. Start Time:		
Spiked ID 8			Ext. End Time:		
			GC Requires Extract By:	10/06/11 17:00	

pH1			Water Bath Temp Criteria	
pH2				
pH3				

Spiked By: KY **Date** 10/6/2011 **Witnessed By:** CFM **Date** 10/6/2011

	Sample	Sample Container	Spike Amount	Spike ID	Surrogate Amount	Surrogate ID	Extract Amount	Final Volume	pH	Extract Date/Time	Comments
1	111006A Blk				0.1	1 equip	500	2	NA	10/06/11 12:45	
2	111006A LCS-1		0.040	1-3	NA	NA equip	500	2	NA	10/06/11 12:45	
3	AY47691	AY47691W01			0.1	1 equip	500	2	NA	10/06/11 12:45	65880 -- Amber Liter
4	AY47724	AY47724W01			0.1	1 equip	500	2	NA	10/06/11 12:45	65879 -- Amber Liter
5	AY47725	AY47725W01			0.1	1 equip	500	2	NA	10/06/11 12:45	65879 -- Amber Liter
6	AY47726	AY47726W01			0.1	1 equip	500	2	NA	10/06/11 12:45	65879 -- Amber Liter
7	AY47727	AY47727W02			0.1	1 equip	500	2	NA	10/06/11 12:45	65879 -- Amber Liter
8	AY47728 MS-1	AY47728W04	0.040	1-3	NA	NA equip	500	2	NA	10/06/11 12:45	65879 -- Amber Liter
9	AY47728 MSD-1	AY47728W04	0.040	1-3	NA	NA equip	500	2	NA	10/06/11 12:45	65879 -- Amber Liter
10	AY47728	AY47728W02			0.1	1 equip	500	2	NA	10/06/11 12:45	65879 -- Amber Liter
11	AY47729	AY47729W02			0.1	1 equip	500	2	NA	10/06/11 12:45	65879 -- Amber Liter
12	AY47730	AY47730W01			0.1	1 equip	500	2	NA	10/06/11 12:45	65879 -- Amber Liter
13	AY47731	AY47731W01			0.1	1 equip	500	2	NA	10/06/11 12:45	65879 -- Amber Liter
14	AY47732	AY47732W01			0.1	1 equip	500	2	NA	10/06/11 12:45	65879 -- Amber Liter
15	AY47750	AY47750W02			0.1	1 equip	500	2	NA	10/06/11 12:45	65879 -- Amber Liter
16	AY47751	AY47751W01			0.1	1 equip	500	2	NA	10/06/11 12:45	65879 -- Amber Liter

Solvent and Lot#	
Acetonitrile	DE419
Cartridge Sorbent Lot	S311-12
Serial No	96094

Extraction COC Transfer	
Extraction lab employee Initials	KY
GC analyst's initials	HSM
Date	10-7-11 / 10-6-11
Time	12:00 / 17:00
Refrigerator	Hobart/Brown

	Technician's Initials
Scanned By	KY
Sample Preparation	KY
Extraction	KY
Concentration	----------

Modified	10/7/2011 11:43:29 AM

Reviewed By: **Date**

_MWE3535

Organic Extraction Worksheet

Method	EPA Method 3535A	Extraction Set	111006A	Extraction Method	MWE3535	Units	mL

Spiked ID 1	8330 100ppm STK 10-04-11 exp 04-04-12		Surrogate ID 1	8330_W_Surrogate 5 ppm 09-28-11 EXP 01-28-12	
Spiked ID 2	Nitroglycerin 100ppm STK 10-04-11 exp 04-04-12		Surrogate ID 2	1,2-DNB STK 100 PPM 10-04-11 exp 04-04-12	
Spiked ID 3	PETN 100ppm STK 10-04-11 exp 04-04-12		Surrogate ID 3		
Spiked ID 4			Surrogate ID 4		
Spiked ID 5			Surrogate ID 5		
Spiked ID 6			Sufficient Vol for Matrix QC:	YES	
Spiked ID 7			Ext. Start Time:		
Spiked ID 8			Ext. End Time:		
			GC Requires Extract By:	10/06/11 17:00	

pH1			Water Bath Temp Criteria	
pH2				
pH3				

Spiked By: KY **Date** 10/6/2011 **Witnessed By:** CFM **Date** 10/6/2011

	Sample	Sample Container	Spike Amount	Spike ID	Surrogate Amount	Surrogate ID	Extract Amount	Final Volume	pH	Extract Date/Time	Comments
17	AY47857 MS-1	AY47857W02	0.040	2	0.040	2 equip	500	2	NA	10/06/11 12:45	65895 -- Amber Liter
18	AY47857 MSD-1	AY47857W02	0.040	2	0.040	2 equip	500	2	NA	10/06/11 12:45	65895 -- Amber Liter
19	AY47857	AY47857W01			0.1	1 equip	500	2	NA	10/06/11 12:45	65895 -- Amber Liter
20	AY47987	AY47987W01			0.1	1 equip	500	2	NA	10/07/11 10:25	65910 -- Amber Liter
21	AY48009	AY48009W06			0.1	1 equip	500	2	NA	10/07/11 10:25	65908 -- Amber Liter
22	AY48010	AY48010W05			0.1	1 equip	500	2	NA	10/07/11 10:25	65908 -- Amber Liter
23	AY48011	AY48011W06			0.1	1 equip	500	2	NA	10/07/11 10:25	65908 -- Amber Liter
24	AY48013	AY48013W06			0.1	1 equip	500	2	NA	10/07/11 10:25	65908 -- Amber Liter
25	AY48014	AY48014W05			0.1	1 equip	500	2	NA	10/07/11 10:25	65908 -- Amber Liter

KY 10-7-11

Solvent and Lot#	
Acetonitrile	DE419
Cartridge Sorbent Lot	S311-12
Serial No	96094

Extraction COC Transfer		
Extraction lab employee Initials		KY
GC analyst's initials		HSM
Date	10-7-11	10-6-11
Time	12:00	17:00
Refrigerator		Hobart/Brown

	Technician's Initials
Scanned By	KY
Sample Preparation	KY
Extraction	KY
Concentration	----------

Modified	10/7/2011 11:43:29 AM

Reviewed By: KY **Date** 10-7-11

METALS

APPL, INC.

METALS
Summary

APPL, INC.

Metals Analysis

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker
Project: 112G00810 Indian Head CTO423
Sample ID: X16GW0021011
Sample Collection Date: 10/1/2011

ARF: 65895
APPL ID: AY47853

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6020A	ANTIMONY (SB)	0.28	0.20	0.020	0.010	ug/L	1	10/26/2011	11/1/2011
6020A	LEAD (PB)	3.9	0.50	0.220	0.110	ug/L	1	10/26/2011	11/1/2011

Printed: 11/6/2011 10:19:25 AM

APPL-F1-SC-NoMC-URS-REG MDLs

Metals Analysis

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker

Project: 112G00810 Indian Head CTO423

ARF: 65895

Sample ID: X16GW0021011-F

APPL ID: AY47854

Sample Collection Date: 10/1/2011

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6020A	ANTIMONY (SB) (DISSOLVE	0.44	0.20	0.020	0.010	ug/L	1	10/26/2011	11/1/2011
6020A	LEAD (PB) (DISSOLVED)	1.7	0.50	0.220	0.110	ug/L	1	10/26/2011	11/1/2011

Printed: 11/6/2011 10:19:25 AM

APPL-F1-SC-NoMC-URS-REG MDLs

Metals Analysis

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker

Project: 112G00810 Indian Head CTO423

ARF: 65895

Sample ID: X16GW0011011

APPL ID: AY47855

Sample Collection Date: 10/1/2011

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6020A	ANTIMONY (SB)	0.097 J	0.20	0.020	0.010	ug/L	1	10/26/2011	11/1/2011

J = Estimated value.

Printed: 11/6/2011 10:19:25 AM

APPL-F1-SC-NoMC-URS-REG MDLs

Metals Analysis

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker

Project: 112G00810 Indian Head CTO423

ARF: 65895

Sample ID: X16GW0011011-F

APPL ID: AY47856

Sample Collection Date: 10/1/2011

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6020A	ANTIMONY (SB) (DISSOLVE	0.066 J	0.20	0.020	0.010	ug/L	1	10/26/2011	11/1/2011

J = Estimated value.

Printed: 11/6/2011 10:19:25 AM

APPL-F1-SC-NoMC-URS-REG MDLs

Metals Analysis

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker
Project: 112G00810 Indian Head CTO423
Sample ID: X17GW0011011
Sample Collection Date: 10/1/2011

ARF: 65895
APPL ID: AY47857

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6020A	ANTIMONY (SB)	0.29	0.20	0.020	0.010	ug/L	1	10/26/2011	11/1/2011
6020A	ARSENIC (AS)	0.41	0.20	0.180	0.090	ug/L	1	10/26/2011	11/1/2011
6020A	LEAD (PB)	4.2	0.50	0.220	0.110	ug/L	1	10/26/2011	11/1/2011

Metals Analysis

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

Attn: Barbra Becker

Project: 112G00810 Indian Head CTO423

Sample ID: X17GW0011011-F

Sample Collection Date: 10/1/2011

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

ARF: 65895

APPL ID: AY47858

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6020A	ANTIMONY (SB) (DISSOLVE	0.92	0.20	0.020	0.010	ug/L	1	10/26/2011	11/1/2011
6020A	ARSENIC (AS) (DISSOLVED)	0.26	0.20	0.180	0.090	ug/L	1	10/26/2011	11/1/2011
6020A	LEAD (PB) (DISSOLVED)	0.45 J	0.50	0.220	0.110	ug/L	1	10/26/2011	11/1/2011

J = Estimated value.

Printed: 11/6/2011 10:19:25 AM

APPL-F1-SC-NoMC-URS-REG MDLs

Metals Analysis

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker

Project: 112G00810 Indian Head CTO423

ARF: 65895

Sample ID: FB01-100111

APPL ID: AY47859

Sample Collection Date: 10/1/2011

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6020A	ANTIMONY (SB) (DISSOLVE	0.34	0.20	0.020	0.010	ug/L	1	10/26/2011	11/1/2011
6020A	ARSENIC (AS) (DISSOLVED)	0.13 J	0.20	0.180	0.090	ug/L	1	10/26/2011	11/1/2011
6020A	COPPER (CU) (DISSOLVED)	1.0	0.50	0.260	0.130	ug/L	1	10/26/2011	11/1/2011
6020A	LEAD (PB) (DISSOLVED)	0.220 U	0.50	0.220	0.110	ug/L	1	10/26/2011	11/1/2011

J = Estimated value.

Printed: 11/6/2011 10:19:25 AM

APPL-F1-SC-NoMC-URS-REG MDLs

Metals Analysis

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker
Project: 112G00810 Indian Head CTO423
Sample ID: DUP03100111
Sample Collection Date: 10/1/2011

ARF: 65895
APPL ID: AY47860

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6020A	ANTIMONY (SB)	0.28	0.20	0.020	0.010	ug/L	1	10/26/2011	11/1/2011
6020A	ARSENIC (AS)	0.34	0.20	0.180	0.090	ug/L	1	10/26/2011	11/1/2011
6020A	LEAD (PB)	0.38 J	0.50	0.220	0.110	ug/L	1	10/26/2011	11/1/2011

J = Estimated value.

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APPL-F1-SC-NoMC-URS-REG MDLs

Metals Analysis

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker
Project: 112G00810 Indian Head CTO423
Sample ID: DUP03100111-F
Sample Collection Date: 10/1/2011

ARF: 65895
APPL ID: AY47861

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6020A	ANTIMONY (SB) (DISSOLVE	0.24	0.20	0.020	0.010	ug/L	1	10/26/2011	11/1/2011
6020A	ARSENIC (AS) (DISSOLVED)	0.23	0.20	0.180	0.090	ug/L	1	10/26/2011	11/1/2011
6020A	LEAD (PB) (DISSOLVED)	0.220 U	0.50	0.220	0.110	ug/L	1	10/26/2011	11/1/2011

Printed: 11/6/2011 10:19:25 AM

APPL-F1-SC-NoMC-URS-REG MDLs

A.P.P.L. INC.

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: A.P.P.L. INC. Contract: Tetra Tech NUS, Inc.

ARF No: 65895 SDG: 65895

Initial Calibration Source: CPI

Continuing Calibration Source: Environmental Express

Analysis Date: 11/1/2011 Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration						M
	True	Found 13:17	%R(1)	True CCV1	Found 13:41	%R(1)	True CCV1	Found 14:11	%R(1)	
Arsenic (As)	100	99.93	99.9	50	50.08	100	50	50.1	100	P
Copper (Cu)	100	102	102	50	49.86	99.7	50	49.23	98.5	P
Lead (Pb)	100	98.85	98.8	50	50.97	102	50	51.12	102	P
Antimony (Sb)	100	99.43	99.4	50	49.06	98.1	50	50.37	101	P

(1) Control Limits: Metals 90-110

ILM02.0

A.P.P.L. INC.

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: A.P.P.L. INC. Contract: Tetra Tech NUS, Inc.

ARF No: 65895 SDG: 65895

Initial Calibration Source: CPI

Continuing Calibration Source: Environmental Express

Analysis Date: 11/1/2011 Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration						M
	True	Found 13:17	%R(1)	True CCV1	Found 15:37	%R(1)	True CCV1	Found 18:27	%R(1)	
Arsenic (As)	100	99.93	99.9	50	49.6	99.2	50	49.52	99.0	P
Copper (Cu)	100	102	102	50	48.36	96.7	50	47.5	95.0	P
Lead (Pb)	100	98.85	98.8	50	50.04	100	50	50.2	100	P
Antimony (Sb)	100	99.43	99.4	50	49.9	99.8	50	49.42	98.8	P

(1) Control Limits: Metals 90-110

ILM02.0

A.P.P.L. INC.

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: A.P.P.L. INC. Contract: Tetra Tech NUS, Inc.

ARF No: 65895 SDG: 65895

Initial Calibration Source: CPI

Continuing Calibration Source: Environmental Express

Analysis Date: 11/1/2011 Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration						M
	True	Found 13:17	%R(1)	True CCV1	Found 19:51	%R(1)	True CCV1	Found 21:15	%R(1)	
Arsenic (As)	100	99.93	99.9	50	49.42	98.8	50	49.76	99.5	P
Copper (Cu)	100	102	102	50	47.02	94.0	50	47.24	94.5	P
Lead (Pb)	100	98.85	98.8	50	49.18	98.4	50	48.63	97.3	P
Antimony (Sb)	100	99.43	99.4	50	50	100	50	49.08	98.2	P

(1) Control Limits: Metals 90-110

ILM02.0

METALS BLANK

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Method	Analyte	Result	LOQ	LOD	DL	Units	Prep Date	Analysis Date	QC Group
6020A	ANTIMONY (SB)	0.020 U	0.20	0.020	0.010	ug/L	10/26/11	11/01/11	#62ADO-A111026-AY47857
6020A	ARSENIC (AS)	0.180 U	0.20	0.180	0.090	ug/L	10/26/11	11/01/11	#62ADO-A111026-AY47857
6020A	LEAD (PB)	0.220 U	0.50	0.220	0.110	ug/L	10/26/11	11/01/11	#62ADO-A111026-AY47857
6020A	ANTIMONY (SB) (DI	0.020 U	0.20	0.020	0.010	ug/L	10/26/11	11/01/11	#62ADO-AA111026-AY47858
6020A	ARSENIC (AS) (DIS	0.180 U	0.20	0.180	0.090	ug/L	10/26/11	11/01/11	#62ADO-AA111026-AY47858
6020A	COPPER (CU) (DIS	0.260 U	0.50	0.260	0.130	ug/L	10/26/11	11/01/11	#62ADO-AA111026-AY47858
6020A	LEAD (PB) (DISSOL	0.220 U	0.50	0.220	0.110	ug/L	10/26/11	11/01/11	#62ADO-AA111026-AY47858

A.P.P.L. INC.
3
BLANKS

Lab Name: APPL, Inc. Contract #: Tetra Tech NUS, Inc Group

ARF No. 65895
Prep Blank Matrix: Water Concentration Units (ug/L or mg/kg): ug/L

Analysis Date: 11/1/2011

Analyte		Initial Calibration Blank 13:35	Continuing Calibration Blank 13:47	14:23	15:49	Preparation Blank 14:48	M
			1	2	3		
Arsenic		0.18U	0.18U	0.18U	0.18U	0.20U	
Copper		0.26U	0.26U	0.26U	0.26U	0.50U	
Lead		0.22U	0.22U	0.22U	0.22U	0.50U	
Antimony		0.20U	0.20U	0.20U	0.20U	0.20U	

Form III-IN

A.P.P.L. INC.
3
BLANKS

Lab Name: APPL, Inc. Contract #: Tetra Tech NUS, Inc Group

ARF No. 65895
Prep Blank Matrix: Water Concentration Units (ug/L or mg/kg): ug/L

Analysis Date: 11/1/2011

Analyte		Initial Calibration Blank 13:35	Continuing Calibration Blank 18:39	20:03	21:28	Preparation Blank 14:48	M
			1	2	3		
Arsenic		0.18U	0.18U	0.18U	0.18U	0.20U	
Copper		0.26U	0.26U	0.26U	0.26U	0.50U	
Lead		0.22U	0.22U	0.22U	0.22U	0.50U	
Antimony		0.20U	0.20U	0.20U	0.20U	0.20U	

Form III-IN

A.P.P.L. INC.

4

ICP INTERFERENCE CHECK SAMPLE

Lab Name:	A.P.P.L. INC.	Contract:	Tetra Tech NUS, Inc.
ARF No.:	65895	SDG:	65895
ICP ID Number:	Optimus	ICS Source:	Environmental Express

Analysis Date: 11/1/2011 Concentration Units: ug/L

Analyte	True		Initial Found		
	Sol A	Sol AB	Sol A 13:53	Sol AB 13:59	%R(1)
Arsenic (As)		250	1.385	228.2	91.3
Copper (Cu)		250	2.821	210.6	84.2
Lead (Pb)		500	2.087	463.3	92.7
Antimony (Sb)		250	1.112	248.6	99.4

(1) Control Limits: Metals 80-120

Matrix Spike Recoveries

METALS

APPL ID: **111026W-47857 MS - 160739**

Sample ID: AY47857

Client ID: X17GW0011011

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Method	Compound Name	Spike Lvl ug/L	Matrix Res ug/L	SPK Res ug/L	DUP Res ug/L	SPK % Recovery	DUP % Recovery	RPD	RPD Max	Recovery Limits	Extract Date-Spk	Analysis Date-Spk	Extract Date-Dup	Analysis Date-Dup	QC Group	QC Sample
6020A	ANTIMONY (SB)	50.0	0.29	44.0	44.3	87.4	88.0	0.7	20	80-120	0/26/2011	11/1/2011	0/26/2011	11/1/2011	160739	AY47857
6020A	ARSENIC (AS)	50.0	0.41	41.3	44.7	81.8	88.6	7.9	20	80-120	0/26/2011	11/1/2011	0/26/2011	11/1/2011	160739	AY47857
6020A	LEAD (PB)	50.0	4.2	50.6	54.1	92.8	99.8	6.7	20	80-120	0/26/2011	11/1/2011	0/26/2011	11/1/2011	160739	AY47857

Comments: _____

Matrix Spike Recoveries

METALS

APPL ID: **111026W-47858 MS - 160740**

Sample ID: AY47858

Client ID: X17GW0011011-F

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Method	Compound Name	Spike Lvl ug/L	Matrix Res ug/L	SPK Res ug/L	DUP Res ug/L	SPK % Recovery	DUP % Recovery	RPD	RPD Max	Recovery Limits	Extract Date-Spk	Analysis Date-Spk	Extract Date-Dup	Analysis Date-Dup	QC Group	QC Sample
6020A	ANTIMONY (SB) (DISS	50.0	0.92	47.2	46.4	92.6	91.0	1.7	20	80-120	0/26/2011	11/1/2011	0/26/2011	11/1/2011	160740	AY47858
6020A	ARSENIC (AS) (DISSO	50.0	0.26	43.3	43.2	86.1	85.9	0.2	20	80-120	0/26/2011	11/1/2011	0/26/2011	11/1/2011	160740	AY47858
6020A	LEAD (PB) (DISSOLVE	50.0	0.45	49.8	49.7	98.7	98.5	0.2	20	80-120	0/26/2011	11/1/2011	0/26/2011	11/1/2011	160740	AY47858

170

Comments: _____

A.P.P.L. INC.

5B

POST DIGEST SPIKE SAMPLE RECOVERY

CLIENT SAMPLE NO.

X17GW001 1011

Lab Name: A.P.P.L. INC. Contract: Tetra Tech NUS, Inc.

ARF No.: 65895 SDG: 65895

Analysis Date: 11/1/2011 Concentration Units: ug/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Arsenic (As)	75-125	221.667		0.405705		277.500	79.7		
Copper (Cu)	75-125	226.329		2.46864		277.500	80.7		
Lead (Pb)	75-125	243.534		4.22244		277.500	86.2		
Antimony (Sb)	75-125	232.101		0.291153		277.500	83.5		

Comments:

11/1/2011 19:39 AY47857W03

11/1/2011 20:21 AY47857W03-A

Laboratory Control Spike Recovery

METALS

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Method	Compound Name	Spike Level ug/L	SPK Result ug/L	SPK % Recovery	Recovery Limits	Extract Date	Analysis Date	QC Group
6020A	ANTIMONY (SB)	50.0	46.6	93.2	80-120	10/26/2011	11/1/2011	#62ADO-A111026-AY47857
6020A	ARSENIC (AS)	50.0	43.1	86.2	80-120	10/26/2011	11/1/2011	#62ADO-A111026-AY47857
6020A	LEAD (PB)	50.0	51.8	104	80-120	10/26/2011	11/1/2011	#62ADO-A111026-AY47857

Comments: _____

Printed: 11/6/2011 10:19:21 AM
APPL Standard LCS

Laboratory Control Spike Recovery
METALS

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Method	Compound Name	Spike Level ug/L	SPK Result ug/L	SPK % Recovery	Recovery Limits	Extract Date	Analysis Date	QC Group
6020A	ANTIMONY (SB) (DISSOLVED)	50.0	46.6	93.2	80-120	10/26/2011	11/1/2011	#62ADO-AA111026-AY47858
6020A	ARSENIC (AS) (DISSOLVED)	50.0	43.1	86.2	80-120	10/26/2011	11/1/2011	#62ADO-AA111026-AY47858
6020A	COPPER (CU) (DISSOLVED)	50.0	47.6	95.2	80-120	10/26/2011	11/1/2011	#62ADO-AA111026-AY47858
6020A	LEAD (PB) (DISSOLVED)	50.0	51.8	104	80-120	10/26/2011	11/1/2011	#62ADO-AA111026-AY47858

Comments: _____

A.P.P.L. INC.
9
ICP SERIAL DILUTION

CLIENT SAMPLE NO.
X17GW0011011

Lab Name: A.P.P.L. INC. Contract: Tetra Tech NUS, Inc.

ARF No.: 65895 SDG: 65895

Matrix: water

Analysis Date: 11/1/2011 Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	%D	Q	M
Arsenic (As)	0.405705		5.177472		NA		
Copper (Cu)	2.46864		2.915108		NA		
Lead (Pb)	4.22244		3.586756		NA		
Antimony (Sb)	0.291153		12.83248		NA		

Comments:

11/1/2011 19:39 AY47857W03

11/1/2011 20:27 AY47857W03-1/5

Metals Digestion Worksheet

Method Name 3015 Digestion **Prep Method** M3015 **Set** 111026A **Units** mL

Spikes	
Spiked ID 1	LCSW LOT# 1028408-29435
Spiked ID 2	LCSW LOT# 1028416-29433
Spiked ID 3	
Spiked ID 4	
Spiked By	NM Date: 10/26/11 10:30:00 AM
Witnessed By	KWS Date: 10/26/11 10:30:00 AM

Starting Temp:	25°c
Ending Temp:	170°c
Temperature Type:	Microwave
Sufficient Vol for Matrix QC:	Yes
End Date/Time	10/26/11 11:30

	Sample	Sample Container	Spike Amount	Spike ID	Digested Amount	Final Volume	Start Date/Time	Comments
1	111026A Blk				45mL	50mL	10/26/11 10:30	equip: Venus
2	111026A LCS		90uL	1+2	45mL	50mL	10/26/11 10:30	equip: Venus
3	AY47853	AY47853W01			45mL	50mL	10/26/11 10:30	equip: Venus
4	AY47854	AY47854W01			45mL	50mL	10/26/11 10:30	equip: Venus
5	AY47855	AY47855W03			45mL	50mL	10/26/11 10:30	equip: Venus
6	AY47856	AY47856W01			45mL	50mL	10/26/11 10:30	equip: Venus
7	AY47857	AY47857W03			45mL	50mL	10/26/11 10:30	equip: Venus
8	AY47857 MS	AY47857W04	90uL	1+2	45mL	50mL	10/26/11 10:30	equip: Venus
9	AY47857 MSD	AY47857W04	90uL	1+2	45mL	50mL	10/26/11 10:30	equip: Venus
10	AY47858	AY47858W01			45mL	50mL	10/26/11 10:30	equip: Venus
11	AY47858 MS	AY47858W03	90uL	1+2	45mL	50mL	10/26/11 10:30	equip: Venus
12	AY47858 MSD	AY47858W03	90uL	1+2	45mL	50mL	10/26/11 10:30	equip: Venus
13	AY47859	AY47859W01			45mL	50mL	10/26/11 10:30	equip: Venus
14	AY47860	AY47860W01			45mL	50mL	10/26/11 10:30	equip: Venus
15	AY47861	AY47861W01			45mL	50mL	10/26/11 10:30	equip: Venus
16	AY48326	AY48326W02			45mL	50mL	10/26/11 10:30	equip: Venus
17	AY48327	AY48327W02			45mL	50mL	10/26/11 10:30	equip: Venus
18	AY48328	AY48328W02			45mL	50mL	10/26/11 10:30	equip: Venus
19	AY48329	AY48329W02			45mL	50mL	10/26/11 10:30	equip: Venus
20	AY48330	AY48330W02			45mL	50mL	10/26/11 10:30	equip: Venus
21	AY48331	AY48331W02			45mL	50mL	10/26/11 10:30	equip: Venus

Solvent and Lot#
HNO3 J.T.B K19023 0087

Sample COC Transfer	
Sample prep employee Initials	nm
Analyst's initials	NBS
Date	10-26-11
Time	14:11
Moved to	METALS

Technician's Initials	
Scanned By	nm
Sample Preparation	lo
Digestion	lo
Bring up to volume	nm
Modified	10/26/11 10:12:52 AM

Reviewed By: EA **Date:** 10-26-11

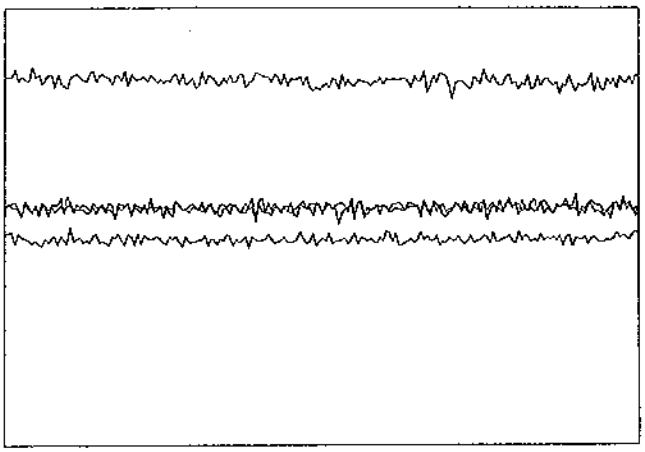
6020/200.8 Injection Log

Directory: K:\ICP-MS Optimus\raw data output csv\

RunID	Injected		Sample Name	Misc Info	FileName	Multiplier
1	01 Nov 2011	12:46	Calibration Blank		111101A	1.
2	01 Nov 2011	12:53	111101 Standard 1		111101A	1.
3	01 Nov 2011	12:59	111101 Standard 2		111101A	1.
4	01 Nov 2011	13:05	111101 Standard 3		111101A	1.
5	01 Nov 2011	13:11	111101 Standard 4		111101A	1.
6	01 Nov 2011	13:17	ICV 111101		111101A	1.
8	01 Nov 2011	13:35	ICB 111101		111101A	1.
9	01 Nov 2011	13:41	CCV 111101		111101A	1.
10	01 Nov 2011	13:47	CCB 111101		111101A	1.
11	01 Nov 2011	13:53	ICSA 111101		111101A	1.
12	01 Nov 2011	13:59	ICSAB 111101		111101A	1.
13	01 Nov 2011	14:11	CCV 111101		111101A	1.
14	01 Nov 2011	14:23	CCB 111101		111101A	1.
18	01 Nov 2011	14:48	111026A-3015-BLK		111101A	1.
21	01 Nov 2011	15:12	111026A-3015-LCS		111101A	1.
25	01 Nov 2011	15:37	CCV 111101		111101A	1.
26	01 Nov 2011	15:49	CCB 111101		111101A	1.
51	01 Nov 2011	18:27	CCV 111101		111101A	1.
52	01 Nov 2011	18:39	CCB 111101		111101A	1.
58	01 Nov 2011	19:15	AY47853W01		111101A	1.
59	01 Nov 2011	19:21	AY47854W01		111101A	1.
60	01 Nov 2011	19:27	AY47855W03		111101A	1.
61	01 Nov 2011	19:33	AY47856W01		111101A	1.
62	01 Nov 2011	19:39	AY47857W03		111101A	1.
64	01 Nov 2011	19:51	CCV 111101		111101A	1.
65	01 Nov 2011	20:03	CCB 111101		111101A	1.
66	01 Nov 2011	20:09	AY47857W04 MS		111101A	1.
67	01 Nov 2011	20:15	AY47857W04 MSD		111101A	1.
68	01 Nov 2011	20:21	AY47857W03-A		111101A	1.
69	01 Nov 2011	20:27	AY47857W03-1/5		111101A	5.
70	01 Nov 2011	20:33	AY47858W01		111101A	1.
71	01 Nov 2011	20:39	AY47858W03 MS		111101A	1.
72	01 Nov 2011	20:45	AY47858W03 MSD		111101A	1.
73	01 Nov 2011	20:51	AY47859W01		111101A	1.
74	01 Nov 2011	20:57	AY47860W01		111101A	1.
75	01 Nov 2011	21:03	AY47861W01		111101A	1.
77	01 Nov 2011	21:15	CCV 111101		111101A	1.
78	01 Nov 2011	21:28	CCB 111101		111101A	1.

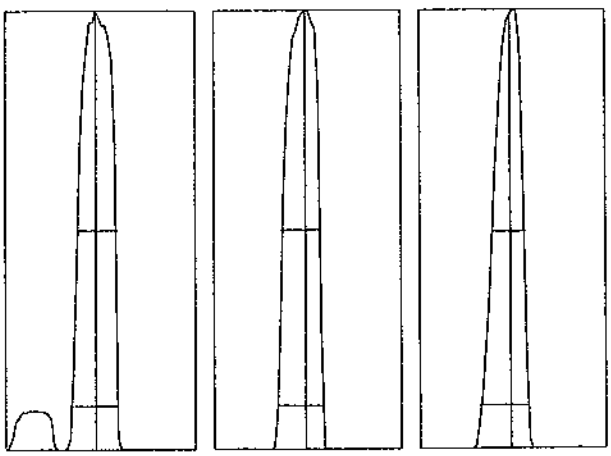
Tune Report

Tune File : nogas.u
Comment : 111101



Integration Time:	0.1000 sec	
Sampling Period:	0.6200 sec	
n:	200	
Oxide:	156/140	1.357%
Doubly Charged:	70/140	1.098%

m/z	Range	Count	Mean	RSD%	Background
7	50,000	41927.0	41681.7	1.46	0.40
89	50,000	28347.0	27026.2	1.97	1.50
205	50,000	23865.0	23566.8	1.82	4.40
156/140	2	1.422%	1.387%	6.45	
70/140	2	0.905%	1.035%	6.97	
140	50,000	27294.0	27295.2	1.77	3.50



m/z:	7	89	205
Height:	41,959	27,363	23,709
Axis:	6.95	89.00	205.00
W-50%:	0.65	0.65	0.55
W-10%:	0.7500	0.7500	0.800

Integration Time: 0.1000 sec
Acquisition Time: 22.7600 sec

Y axis : Linear

Generated : Nov 01, 2011 09:21:05
Printed : Nov 01, 2011 09:21:07

Tune Report

Tune File : nogas.u
Comment : 111101

Tuning Parameters

===Plasma Condition===			===Ion Lenses===			===Q-Pole Parameters===		
RF Power	1600	W	Extract 1	0	V	AMU Gain	128	
RF Matching	1.66	V	Extract 2	-130	V	AMU Offset	127	
Smpl Depth	9.6	mm	Omega Bias-ce	-22	V	Axis Gain	1	
Torch-H	-0.1	mm	Omega Lens-ce	-1.2	V	Axis Offset	-0.02	
Torch-V	0.1	mm	Cell Entrance	-30	V	QP Bias	-3	V
Carrier Gas	1.05	L/min	QP Focus	5	V			
Makeup Gas	0.1	L/min	Cell Exit	-30	V	===Detector Parameters===		
Optional Gas	---	%				Discriminator	8	mV
Nebulizer Pump	0.1	rps	===Octopole Parameters===			Analog HV	1650	V
Sample Pump	---	rps	OctP RF	180	V	Pulse HV	1420	V
S/C Temp	2	degC	OctP Bias	-6	V			

===Reaction Cell===

Reaction Mode	OFF						
H2 Gas	0	mL/min	He Gas	0	mL/min	Optional Gas	--- %

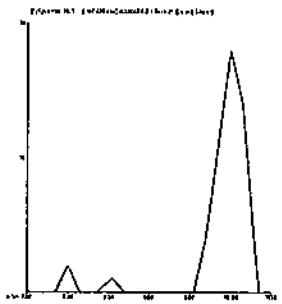
Generated : Nov 01, 2011 09:21:05
Printed : Nov 01, 2011 09:21:09

200.8 QC Tune Report

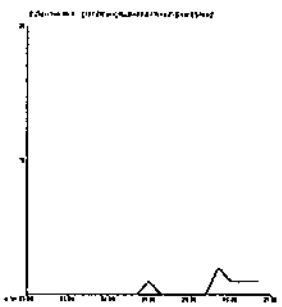
Data File: C:\ICPCHEM\1\DATA\11K01m00.B\001TUNE.D
Date Acquired: Nov 1 2011 12:28 pm
Acq. Method: TN200_8.M
Operator: SDM
Sample Name: 100ppb Tune sol
Misc Info:
Vial Number: 1303
Current Method: C:\ICPCHEM\1\METHODS\TN200_8.M

RSD (%)

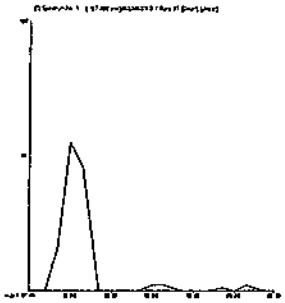
Element	CPS Mean	Rep1	Rep2	Rep3	Rep4	Rep5	%RSD	Required	Flag
9 Be	68399346	66935336	68329296	68612352	68771312	69348432	**1.20**	5.00	
24 Mg	134125388	########	########	########	########	########	**0.74**	5.00	
59 Co	117682052	########	########	########	########	########	**1.70**	5.00	
115 In	133345188	########	########	########	########	########	**1.38**	5.00	
208 Pb	81663346	81004576	81603480	81785624	82054000	81869048	**0.69**	5.00	



9 Be
Mass Calib.
Actual: 9.00
Required: 8.90 - 9.10
Flag:
Peak Width
Actual: 0.60
Required: 0.90
Flag:



24 Mg
Mass Calib.
Actual: 24.00
Required: 23.90 - 24.10
Flag:
Peak Width
Actual: 0.65
Required: 0.80
Flag:



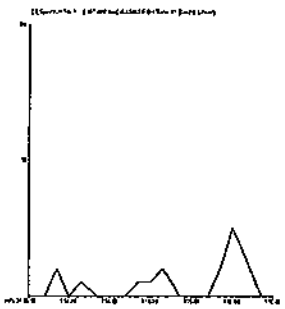
59 Co

Mass Calib.

Actual:	59.00		
Required:	58.90	-	59.10
Flag:			

Peak Width

Actual:	0.60		
Required:	0.90		
Flag:			



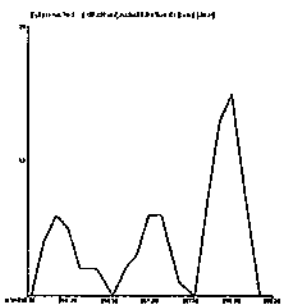
115 In

Mass Calib.

Actual:	115.05		
Required:	114.90	-	115.10
Flag:			

Peak Width

Actual:	0.65		
Required:	0.90		
Flag:			



208 Pb

Mass Calib.

Actual:	208.00		
Required:	207.90	-	208.10
Flag:			

Peak Width

Actual:	0.65		
Required:	0.80		
Flag:			

Tune Result: Pass

Raw Sample Data

Sample QC Report

Data File: C:\ICPCHEM\1\DATA\11K01m00.B\068SMPL.D\068SMPL.D#
Date Acquired: Nov 1 2011 07:15 pm
Operator: SDM
Sample Name: AY47853W01
Misc Info: 111026A-3015
Vial Number: 3310
Current Method: C:\ICPCHEM\1\METHODS\62A1101.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1101.C
Last Cal Update: Nov 01 2011 01:15 pm
Sample Type: Sample
Prep Dil Factor: 1.11
Total Dil Factor: 1.11

QC Elements

Element	Conc.		Corr. Conc.	RSD(%)	High Limit	Flag
7 (Li)	--------	ug/l	#VALUE!	--------	0	
9 Be	0.22	ug/l	0.24	3.90	1000	
11 B	25.92	ug/l	28.80	0.45	1000	
23 Na	3616.00	ug/l	4017.38	0.95	25000	
24 Mg	1684.00	ug/l	1870.92	1.00	50000	
27 Al	3531.00	ug/l	3922.94	0.54	20000	
39 K	2450.00	ug/l	2721.95	1.69	20000	
44 Ca	9012.00	ug/l	10012.33	1.99	50000	
47 Ti	27.30	ug/l	30.33	5.62	1000	
51 V	10.01	ug/l	11.12	0.84	1000	
52 Cr	9.98	ug/l	11.09	1.10	1000	
55 Mn	93.80	ug/l	104.21	1.49	1000	
56 Fe	8403.00	ug/l	9335.73	1.54	20000	
59 Co	3.63	ug/l	4.04	0.47	1000	
60 Ni	9.00	ug/l	9.99	0.64	1000	
63 Cu	3.42	ug/l	3.80	2.08	1000	
65 Cu	3.43	ug/l	3.81	1.17	1000	
66 Zn	28.99	ug/l	32.21	0.76	1000	
75 As	1.39	ug/l	1.55	2.73	1000	
78 Se	0.36	ug/l	0.40	13.63	1000	
78 Se	0.60	ug/l	0.66	15.14	1000	
88 Sr	35.80	ug/l	39.77	2.38	1000	
88 Sr	36.02	ug/l	40.02	0.03	1000	
95 Mo	0.55	ug/l	0.62	4.16	1000	
106 (Cd)	--------	ug/l	#VALUE!	--------	########	
107 Ag	0.01	ug/l	0.01	10.85	500	
108 (Cd)	--------	ug/l	#VALUE!	--------	########	
111 Cd	0.12	ug/l	0.14	20.00	1000	
118 Sn	0.66	ug/l	0.74	1.66	1000	
121 Sb	0.25	ug/l	0.28	1.54	1000	
137 Ba	143.40	ug/l	159.32	1.86	1000	
205 Tl	0.11	ug/l	0.12	0.16	1000	
206 (Pb)	--------	ug/l	#VALUE!	--------	########	
207 (Pb)	--------	ug/l	#VALUE!	--------	########	
208 Pb	3.53	ug/l	3.92	1.08	1000	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3134926.50	0.83	3046381.80	102.9
45 Sc	1176205.90	6.43	841537.88	139.8
45 Sc	148353.89	0.16	128014.41	115.9
45 Sc	2307208.00	0.52	1718861.00	134.2
72 Ge	205468.48	6.93	170470.91	120.5
72 Ge	70551.11	0.44	63924.71	110.4
72 Ge	324520.38	0.42	287615.47	112.8
115 In	2082225.30	0.90	1759271.40	118.4
159 Tb	3135996.50	1.24	2620168.30	119.7
165 Ho	3085126.50	1.16	2606629.50	118.4

ISTD Ref File : C:\ICPCHEM\1\DATA\11K01m00.B\004CALB.D\004CALB.D#

0 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Pass
ISTD: Fail

Sample QC Report

Data File: C:\ICPCHEM\1\DATA\11K01m00.B\069SMPL.D\069SMPL.D#
Date Acquired: Nov 1 2011 07:21 pm
Operator: SDM
Sample Name: AY47854N01
Misc Info: 111026A-3015
Vial Number: 3311
Current Method: C:\ICPCHEM\1\METHODS\62A1101.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1101.C
Last Cal Update: Nov 01 2011 01:15 pm
Sample Type: Sample
Prep Dil Factor: 1.11
Total Dil Factor: 1.11

QC Elements

Element	Conc.	Corr. Conc.	RSD(%)	High Limit	Flag
7 (Li)	-------- ug/l	#VALUE!	--------	0	
9 Be	0.02 ug/l	0.02	48.06	1000	
11 B	25.78 ug/l	28.64	1.46	1000	
23 Na	3562.00 ug/l	3957.38	1.45	25000	
24 Mg	1204.00 ug/l	1337.64	1.10	50000	
27 Al	42.10 ug/l	46.77	4.99	20000	
39 K	1728.00 ug/l	1919.81	1.63	20000	
44 Ca	6429.00 ug/l	7142.62	2.13	50000	
47 Ti	0.70 ug/l	0.78	14.17	1000	
51 V	0.68 ug/l	0.76	3.72	1000	
52 Cr	0.93 ug/l	1.04	3.63	1000	
55 Mn	78.04 ug/l	86.70	1.22	1000	
56 Fe	3523.00 ug/l	3914.05	1.74	20000	
59 Co	3.04 ug/l	3.38	2.20	1000	
60 Ni	8.66 ug/l	9.62	1.41	1000	
63 Cu	0.81 ug/l	0.90	1.57	1000	
65 Cu	0.88 ug/l	0.98	3.04	1000	
66 Zn	39.30 ug/l	43.66	0.77	1000	
75 As	0.63 ug/l	0.70	1.58	1000	
78 Se	0.30 ug/l	0.33	18.21	1000	
78 Se	0.37 ug/l	0.41	18.29	1000	
88 Sr	27.54 ug/l	30.60	1.85	1000	
88 Sr	27.60 ug/l	30.66	0.89	1000	
95 Mo	0.20 ug/l	0.22	8.55	1000	
106 (Cd)	-------- ug/l	#VALUE!	--------	#######	
107 Ag	0.00 ug/l	0.00	869.71	500	
108 (Cd)	-------- ug/l	#VALUE!	--------	#######	
111 Cd	0.10 ug/l	0.11	3.87	1000	
118 Sn	0.44 ug/l	0.49	2.45	1000	
121 Sb	0.39 ug/l	0.44	4.14	1000	
137 Ba	97.06 ug/l	107.83	1.09	1000	
205 Tl	0.03 ug/l	0.03	1.41	1000	
206 (Pb)	-------- ug/l	#VALUE!	--------	#######	
207 (Pb)	-------- ug/l	#VALUE!	--------	#######	
208 Pb	1.49 ug/l	1.66	0.16	1000	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3174003.50	0.68	3046381.80	104.2
45 Sc	1115632.50	4.27	841537.88	132.6
45 Sc	146980.11	0.51	128014.41	114.8
45 Sc	2196363.50	0.85	1718861.00	127.8
72 Ge	205643.80	7.29	170470.91	120.6
72 Ge	70748.32	0.20	63924.71	110.7
72 Ge	329470.03	0.34	287615.47	114.6
115 In	2135325.50	0.71	1759271.40	121.4
159 Tb	3199324.30	0.63	2620168.30	122.1
165 Ho	3145896.30	0.84	2606629.50	120.7

ISTD Ref File : C:\ICPCHEM\1\DATA\11K01m00.B\004CALB.D\004CALB.D#

0 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Pass
ISTD: Fail

Sample QC Report

Data File: C:\ICPCHEM\1\DATA\11K01m00.B\070SMPL.D\070SMPL.D#
Date Acquired: Nov 1 2011 07:27 pm
Operator: SDM
Sample Name: AY47855W03
Misc Info: 111026A-3015
Vial Number: 3312
Current Method: C:\ICPCHEM\1\METHODS\62A1101.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1101.C
Last Cal Update: Nov 01 2011 01:15 pm
Sample Type: Sample
Prep Dil Factor: 1.11
Total Dil Factor: 1.11

QC Elements

Element	Conc.	Corr. Conc.	RSD(%)	High Limit	Flag
7 (Li)	-------- ug/l	#VALUE!	--------	0	
9 Be	0.04 ug/l	0.04	4.82	1000	
11 B	9.93 ug/l	11.03	0.58	1000	
23 Na	2382.00 ug/l	2646.40	1.24	25000	
24 Mg	1271.00 ug/l	1412.08	0.90	50000	
27 Al	805.90 ug/l	895.35	1.27	20000	
39 K	1789.00 ug/l	1987.58	1.23	20000	
44 Ca	8313.00 ug/l	9235.74	1.25	50000	
47 Ti	10.53 ug/l	11.70	3.28	1000	
51 V	2.39 ug/l	2.65	1.92	1000	
52 Cr	2.07 ug/l	2.30	1.05	1000	
55 Mn	172.00 ug/l	191.09	0.84	1000	
56 Fe	1957.00 ug/l	2174.23	1.65	20000	
59 Co	2.53 ug/l	2.81	2.28	1000	
60 Ni	2.55 ug/l	2.83	3.28	1000	
63 Cu	3.07 ug/l	3.41	0.99	1000	
65 Cu	3.06 ug/l	3.40	0.91	1000	
66 Zn	16.53 ug/l	18.36	0.42	1000	
75 As	0.35 ug/l	0.39	2.24	1000	
78 Se	0.10 ug/l	0.11	5.85	1000	
78 Se	0.24 ug/l	0.27	18.08	1000	
88 Sr	39.82 ug/l	44.24	1.83	1000	
88 Sr	39.48 ug/l	43.86	1.41	1000	
95 Mo	0.17 ug/l	0.19	11.43	1000	
106 (Cd)	-------- ug/l	#VALUE!	--------	########	
107 Ag	0.00 ug/l	0.00	4.58	500	
108 (Cd)	-------- ug/l	#VALUE!	--------	########	
111 Cd	0.12 ug/l	0.13	9.59	1000	
118 Sn	0.46 ug/l	0.51	5.66	1000	
121 Sb	0.09 ug/l	0.10	4.54	1000	
137 Ba	55.50 ug/l	61.66	0.48	1000	
205 Tl	0.03 ug/l	0.03	14.09	1000	
206 (Pb)	-------- ug/l	#VALUE!	--------	########	
207 (Pb)	-------- ug/l	#VALUE!	--------	########	
208 Pb	2.26 ug/l	2.51	0.40	1000	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3201635.30	0.45	3046381.80	105.1
45 Sc	1103156.00	4.92	841537.88	131.1
45 Sc	148848.11	0.69	128014.41	116.3
45 Sc	2176762.80	0.58	1718861.00	126.6
72 Ge	204854.92	6.38	170470.91	120.2
72 Ge	71146.25	0.41	63924.71	111.3
72 Ge	327921.97	0.76	287615.47	114.0
115 In	2146898.50	0.37	1759271.40	122.0
159 Tb	3200433.50	0.15	2620168.30	122.1
165 Ho	3187201.50	0.87	2606629.50	122.3

ISTD Ref File : C:\ICPCHEM\1\DATA\11K01m00.B\004CALB.D\004CALB.D#

0 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Pass
ISTD: Fail

Sample QC Report

Data File: C:\ICPCHEM\1\DATA\11K01m00.B\071SMPL.D\071SMPL.D#
Date Acquired: Nov 1 2011 07:33 pm
Operator: SDM
Sample Name: AY47856W01
Misc Info: 111026A-3015
Vial Number: 3401
Current Method: C:\ICPCHEM\1\METHODS\62A1101.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1101.C
Last Cal Update: Nov 01 2011 01:15 pm
Sample Type: Sample
Prep Dil Factor: 1.11
Total Dil Factor: 1.11

QC Elements

Element	Conc.	Corr. Conc.	RSD(%)	High Limit	Flag
7 (Li)	-------- ug/l	#VALUE!	--------	0	
9 Be	-0.02 ug/l	-0.02	29.82	1000	
11 B	15.30 ug/l	17.00	0.43	1000	
23 Na	2434.00 ug/l	2704.17	0.74	25000	
24 Mg	1254.00 ug/l	1393.19	0.98	50000	
27 Al	12.11 ug/l	13.45	4.74	20000	
39 K	1735.00 ug/l	1927.59	0.74	20000	
44 Ca	8615.00 ug/l	9571.27	1.37	50000	
47 Ti	0.57 ug/l	0.63	9.19	1000	
51 V	1.02 ug/l	1.13	5.66	1000	
52 Cr	0.56 ug/l	0.62	2.29	1000	
55 Mn	144.90 ug/l	160.98	0.83	1000	
56 Fe	205.40 ug/l	228.20	3.15	20000	
59 Co	1.85 ug/l	2.05	0.66	1000	
60 Ni	1.95 ug/l	2.17	1.41	1000	
63 Cu	1.73 ug/l	1.92	1.47	1000	
65 Cu	1.78 ug/l	1.98	1.78	1000	
66 Zn	15.28 ug/l	16.98	1.25	1000	
75 As	0.24 ug/l	0.26	8.63	1000	
78 Se	0.07 ug/l	0.08	10.42	1000	
78 Se	0.08 ug/l	0.09	5.77	1000	
88 Sr	40.14 ug/l	44.60	2.30	1000	
88 Sr	39.66 ug/l	44.06	1.38	1000	
95 Mo	0.09 ug/l	0.10	15.12	1000	
106 (Cd)	-------- ug/l	#VALUE!	--------	#######	
107 Ag	0.00 ug/l	0.00	44.71	500	
108 (Cd)	-------- ug/l	#VALUE!	--------	#######	
111 Cd	0.02 ug/l	0.02	41.23	1000	
118 Sn	0.20 ug/l	0.23	3.96	1000	
121 Sb	0.06 ug/l	0.07	8.15	1000	
137 Ba	46.14 ug/l	51.26	0.71	1000	
205 Tl	0.02 ug/l	0.02	20.88	1000	
206 (Pb)	-------- ug/l	#VALUE!	--------	#######	
207 (Pb)	-------- ug/l	#VALUE!	--------	#######	
208 Pb	0.35 ug/l	0.39	1.43	1000	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3185823.80	0.15	3046381.80	104.6
45 Sc	1097084.30	4.91	841537.88	130.4
45 Sc	147468.69	0.19	128014.41	115.2
45 Sc	2151258.00	0.62	1718861.00	125.2
72 Ge	206059.63	6.38	170470.91	120.9
72 Ge	70662.79	0.70	63924.71	110.5
72 Ge	326844.91	0.77	287615.47	113.6
115 In	2120831.50	0.47	1759271.40	120.6
159 Tb	3193899.80	0.46	2620168.30	121.9
165 Ho	3155574.80	0.50	2606629.50	121.1

ISTD Ref File : C:\ICPCHEM\1\DATA\11K01m00.B\004CALB.D\004CALB.D#

0 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Pass
ISTD: Fail

Sample QC Report

Data File: C:\ICPCHEM\1\DATA\11K01m00.B\072SMPL.D\072SMPL.D#
Date Acquired: Nov 1 2011 07:39 pm
Operator: SDM
Sample Name: AY47657W03
Misc Info: 111026A-3015
Vial Number: 3402
Current Method: C:\ICPCHEM\1\METHODS\62A1101.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1101.C
Last Cal Update: Nov 01 2011 01:15 pm
Sample Type: Sample
Prep Dil Factor: 1.11
Total Dil Factor: 1.11

QC Elements

Element	Conc.	Corr. Conc.	RSD(%)	High Limit	Flag
7 (Li)	-------- ug/l	#VALUE!	--------	0	
9 Be	-0.03 ug/l	-0.03	16.77	1000	
11 B	18.45 ug/l	20.50	1.30	1000	
23 Na	769.50 ug/l	854.91	2.44	25000	
24 Mg	2940.00 ug/l	3266.34	1.72	50000	
27 Al	462.40 ug/l	513.73	1.67	20000	
39 K	2039.00 ug/l	2265.33	1.14	20000	
44 Ca	13930.00 ug/l	15476.23	0.85	50000	
47 Ti	10.98 ug/l	12.20	13.78	1000	
51 V	1.86 ug/l	2.06	8.40	1000	
52 Cr	1.30 ug/l	1.45	1.86	1000	
55 Mn	105.20 ug/l	116.88	1.45	1000	
56 Fe	463.40 ug/l	514.84	2.81	20000	
59 Co	1.96 ug/l	2.17	1.93	1000	
60 Ni	2.59 ug/l	2.88	1.36	1000	
63 Cu	2.22 ug/l	2.47	2.08	1000	
65 Cu	2.27 ug/l	2.52	1.95	1000	
66 Zn	42.97 ug/l	47.74	1.49	1000	
75 As	0.37 ug/l	0.41	10.16	1000	
78 Se	0.29 ug/l	0.33	8.70	1000	
78 Se	0.38 ug/l	0.43	14.00	1000	
88 Sr	60.06 ug/l	66.73	1.66	1000	
88 Sr	59.76 ug/l	66.39	0.97	1000	
95 Mo	0.56 ug/l	0.62	1.46	1000	
106 (Cd)	-------- ug/l	#VALUE!	--------	########	
107 Ag	0.00 ug/l	0.00	124.60	500	
108 (Cd)	-------- ug/l	#VALUE!	--------	########	
111 Cd	0.06 ug/l	0.07	22.39	1000	
118 Sn	0.43 ug/l	0.48	4.00	1000	
121 Sb	0.26 ug/l	0.29	2.91	1000	
137 Ba	20.74 ug/l	23.04	0.67	1000	
205 Tl	0.06 ug/l	0.07	4.65	1000	
206 (Pb)	-------- ug/l	#VALUE!	--------	########	
207 (Pb)	-------- ug/l	#VALUE!	--------	########	
208 Pb	3.80 ug/l	4.23	0.22	1000	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3199113.50	0.82	3046381.80	105.0
45 Sc	1041296.70	5.58	841537.88	123.7
45 Sc	145858.70	0.26	128014.41	113.9
45 Sc	1980850.50	0.38	1718861.00	115.2
72 Ge	208219.61	6.94	170470.91	122.1
72 Ge	70963.04	0.49	63924.71	111.0
72 Ge	326955.84	0.29	287615.47	113.7
115 In	2149719.00	0.33	1759271.40	122.2
159 Tb	3198350.80	0.55	2620168.30	122.1
165 Ho	3174249.30	0.16	2606629.50	121.8

ISTD Ref File : C:\ICPCHEM\1\DATA\11K01m00.B\004CALB.D\004CALB.D#

0 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Pass
ISTD: Fail

Sample QC Report

Data File: C:\ICPCHEM\1\DATA\11K01m00.B\081SMPL.D\081SMPL.D#
Date Acquired: Nov 1 2011 08:33 pm
Operator: SDM
Sample Name: AY47858W01
Misc Info: 111026A-3015
Vial Number: 3407
Current Method: C:\ICPCHEM\1\METHODS\62A1101.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1101.C
Last Cal Update: Nov 01 2011 01:15 pm
Sample Type: Sample
Prep Dil Factor: 1.11
Total Dil Factor: 1.11

QC Elements

Element	Conc.	Corr. Conc.	RSD(%)	High Limit	Flag
7 (Li)	-------- ug/l	#VALUE!	--------	0	
9 Be	-0.05 ug/l	-0.06	3.14	1000	
11 B	18.59 ug/l	20.65	0.68	1000	
23 Na	667.00 ug/l	741.04	1.88	25000	
24 Mg	2899.00 ug/l	3220.79	1.68	50000	
27 Al	12.57 ug/l	13.97	1.39	20000	
39 K	1961.00 ug/l	2178.67	1.93	20000	
44 Ca	12750.00 ug/l	14165.25	1.91	50000	
47 Ti	0.30 ug/l	0.33	10.26	1000	
51 V	0.80 ug/l	0.89	7.21	1000	
52 Cr	0.78 ug/l	0.87	3.67	1000	
55 Mn	84.53 ug/l	93.91	1.05	1000	
56 Fe	44.28 ug/l	49.20	1.11	20000	
59 Co	1.66 ug/l	1.84	2.31	1000	
60 Ni	1.47 ug/l	1.63	2.09	1000	
63 Cu	1.19 ug/l	1.32	1.60	1000	
65 Cu	1.21 ug/l	1.35	5.02	1000	
66 Zn	10.32 ug/l	11.47	0.62	1000	
75 As	0.23 ug/l	0.26	9.35	1000	
78 Se	0.32 ug/l	0.35	17.49	1000	
78 Se	0.39 ug/l	0.43	18.12	1000	
88 Sr	57.42 ug/l	63.79	1.13	1000	
88 Sr	58.08 ug/l	64.53	0.23	1000	
95 Mo	0.46 ug/l	0.51	4.14	1000	
106 (Cd)	-------- ug/l	#VALUE!	--------	########	
107 Ag	0.31 ug/l	0.35	0.26	500	
108 (Cd)	-------- ug/l	#VALUE!	--------	########	
111 Cd	0.05 ug/l	0.06	31.54	1000	
118 Sn	0.17 ug/l	0.19	7.77	1000	
121 Sb	0.83 ug/l	0.92	1.96	1000	
137 Ba	18.59 ug/l	20.65	0.76	1000	
205 Tl	0.03 ug/l	0.03	8.95	1000	
206 (Pb)	-------- ug/l	#VALUE!	--------	########	
207 (Pb)	-------- ug/l	#VALUE!	--------	########	
208 Pb	0.40 ug/l	0.45	4.64	1000	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3153370.50	1.49	3046381.80	103.5
45 Sc	1037114.30	5.71	841537.88	123.2
45 Sc	147307.20	0.41	128014.41	115.1
45 Sc	1999563.40	0.46	1718861.00	116.3
72 Ge	210877.02	7.26	170470.91	123.7
72 Ge	72612.02	1.19	63924.71	113.6
72 Ge	337368.13	0.23	287615.47	117.3
115 In	2194310.00	0.98	1759271.40	124.7
159 Tb	3233174.30	0.32	2620168.30	123.4
165 Ho	3198673.00	0.44	2606629.50	122.7

ISTD Ref File : C:\ICPCHEM\1\DATA\11K01m00.B\004CALB.D\004CALB.D#

0 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Pass
ISTD: Fail

Sample QC Report

Data File: C:\ICPCHEM\1\DATA\11K01m00.B\084SMPL.D\084SMPL.D#
Date Acquired: Nov 1 2011 08:51 pm
Operator: SDM
Sample Name: AY47859W01
Misc Info: 111026A-3015
Vial Number: 3410
Current Method: C:\ICPCHEM\1\METHODS\62A1101.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1101.C
Last Cal Update: Nov 01 2011 01:15 pm
Sample Type: Sample
Prep Dil Factor: 1.11
Total Dil Factor: 1.11

QC Elements

Element	Conc.	Corr. Conc.	RSD(%)	High Limit	Flag
7 (Li)	-------- ug/l	#VALUE!	--------	0	
9 Be	-0.06 ug/l	-0.06	2.37	1000	
11 B	13.48 ug/l	14.98	0.25	1000	
23 Na	2139.00 ug/l	2376.43	1.69	25000	
24 Mg	44.99 ug/l	49.98	1.42	50000	
27 Al	5.63 ug/l	6.25	22.49	20000	
39 K	35.15 ug/l	39.05	1.04	20000	
44 Ca	160.20 ug/l	177.98	3.59	50000	
47 Ti	0.13 ug/l	0.14	23.71	1000	
51 V	0.72 ug/l	0.80	9.40	1000	
52 Cr	0.50 ug/l	0.56	1.79	1000	
55 Mn	0.21 ug/l	0.23	3.72	1000	
56 Fe	3.16 ug/l	3.51	0.85	20000	
59 Co	-0.04 ug/l	-0.04	6.03	1000	
60 Ni	0.09 ug/l	0.10	12.41	1000	
63 Cu	0.92 ug/l	1.03	1.33	1000	
65 Cu	0.92 ug/l	1.02	2.92	1000	
66 Zn	10.11 ug/l	11.23	1.79	1000	
75 As	0.12 ug/l	0.13	10.02	1000	
78 Se	0.04 ug/l	0.05	17.84	1000	
78 Se	0.03 ug/l	0.04	176.11	1000	
88 Sr	0.63 ug/l	0.71	2.14	1000	
88 Sr	0.63 ug/l	0.70	1.94	1000	
95 Mo	0.07 ug/l	0.08	12.20	1000	
106 (Cd)	-------- ug/l	#VALUE!	--------	#######	
107 Ag	0.50 ug/l	0.56	1.24	500	
108 (Cd)	-------- ug/l	#VALUE!	--------	#######	
111 Cd	0.00 ug/l	0.00	112.85	1000	
118 Sn	0.13 ug/l	0.14	0.68	1000	
121 Sb	0.30 ug/l	0.34	2.66	1000	
137 Ba	0.74 ug/l	0.82	0.92	1000	
205 Tl	0.01 ug/l	0.01	7.45	1000	
206 (Pb)	-------- ug/l	#VALUE!	--------	#######	
207 (Pb)	-------- ug/l	#VALUE!	--------	#######	
208 Pb	-0.17 ug/l	-0.19	0.77	1000	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3209990.50	1.15	3046381.80	105.4
45 Sc	1071306.40	8.47	841537.88	127.3
45 Sc	150650.77	0.49	128014.41	117.7
45 Sc	1994769.00	1.14	1718861.00	116.1
72 Ge	221866.47	8.46	170470.91	130.1
72 Ge	73484.40	0.83	63924.71	115.0
72 Ge	343747.25	0.29	287615.47	119.5
115 In	2225220.30	0.71	1759271.40	126.5
159 Tb	3263458.00	1.00	2620168.30	124.6
165 Ho	3200178.30	0.57	2606629.50	122.8

ISTD Ref File : C:\ICPCHEM\1\DATA\11K01m00.B\004CALB.D\004CALB.D#

0 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Pass
ISTD: Fail

Sample QC Report

Data File: C:\ICPCHEM\1\DATA\11K01m00.B\085SMPL.D\085SMPL.D#
Date Acquired: Nov 1 2011 08:57 pm
Operator: SDM
Sample Name: AY47860W01
Misc Info: 111026A-3015
Vial Number: 3411
Current Method: C:\ICPCHEM\1\METHODS\62A1101.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1101.C
Last Cal Update: Nov 01 2011 01:15 pm
Sample Type: Sample
Prep Dil Factor: 1.11
Total Dil Factor: 1.11

QC Elements

Element	Conc.	Corr. Conc.	RSD(%)	High Limit	Flag
7 (Li)	-------- ug/l	#VALUE!	--------	0	
9 Be	-0.05 ug/l	-0.05	5.33	1000	
11 B	12.65 ug/l	14.05	0.16	1000	
23 Na	793.40 ug/l	881.47	1.73	25000	
24 Mg	2929.00 ug/l	3254.12	1.05	50000	
27 Al	333.60 ug/l	370.63	1.49	20000	
39 K	1998.00 ug/l	2219.78	1.37	20000	
44 Ca	13190.00 ug/l	14654.09	0.75	50000	
47 Ti	6.06 ug/l	6.74	1.00	1000	
51 V	1.60 ug/l	1.78	7.69	1000	
52 Cr	1.07 ug/l	1.19	1.96	1000	
55 Mn	103.60 ug/l	115.10	1.28	1000	
56 Fe	345.80 ug/l	384.18	0.90	20000	
59 Co	1.94 ug/l	2.16	1.69	1000	
60 Ni	2.28 ug/l	2.53	1.43	1000	
63 Cu	2.71 ug/l	3.01	1.66	1000	
65 Cu	2.71 ug/l	3.01	3.06	1000	
66 Zn	18.98 ug/l	21.09	1.43	1000	
75 As	0.30 ug/l	0.34	9.20	1000	
78 Se	0.26 ug/l	0.29	15.23	1000	
78 Se	0.39 ug/l	0.43	18.18	1000	
88 Sr	58.97 ug/l	65.52	1.56	1000	
88 Sr	58.39 ug/l	64.87	1.61	1000	
95 Mo	0.50 ug/l	0.56	4.25	1000	
106 (Cd)	-------- ug/l	#VALUE!	--------	#######	
107 Ag	0.05 ug/l	0.05	12.92	500	
108 (Cd)	-------- ug/l	#VALUE!	--------	#######	
111 Cd	0.03 ug/l	0.03	38.00	1000	
118 Sn	0.22 ug/l	0.25	3.38	1000	
121 Sb	0.25 ug/l	0.28	5.15	1000	
137 Ba	19.92 ug/l	22.13	0.38	1000	
205 Tl	0.03 ug/l	0.04	12.78	1000	
206 (Pb)	-------- ug/l	#VALUE!	--------	#######	
207 (Pb)	-------- ug/l	#VALUE!	--------	#######	
208 Pb	0.34 ug/l	0.38	1.98	1000	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3142322.00	1.29	3046381.80	103.1
45 Sc	1063947.60	8.89	841537.88	126.4
45 Sc	147297.66	0.60	128014.41	115.1
45 Sc	2020116.90	0.25	1718861.00	117.5
72 Ge	215038.08	9.64	170470.91	126.1
72 Ge	71900.72	0.87	63924.71	112.5
72 Ge	336783.88	0.21	287615.47	117.1
115 In	2170566.00	0.16	1759271.40	123.4
159 Tb	3236542.80	0.24	2620168.30	123.5
165 Ho	3182957.80	0.85	2606629.50	122.1

ISTD Ref File : C:\ICPCHEM\1\DATA\11K01m00.B\004CALB.D\004CALB.D#

0 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Pass
ISTD: Fail

Sample QC Report

Data File: C:\ICPCHEM\1\DATA\11K01m00.B\086SMPL.D\086SMPL.D#
Date Acquired: Nov 1 2011 09:03 pm
Operator: SDM
Sample Name: AY47861W01
Misc Info: 111026A-3015
Vial Number: 3412
Current Method: C:\ICPCHEM\1\METHODS\62A1101.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1101.C
Last Cal Update: Nov 01 2011 01:15 pm
Sample Type: Sample
Prep Dil Factor: 1.11
Total Dil Factor: 1.11

QC Elements

Element	Conc.	Corr. Conc.	RSD(%)	High Limit	Flag
7 (Li)	-------- ug/l	#VALUE!	--------	0	
9 Be	-0.05 ug/l	-0.06	1.96	1000	
11 B	12.30 ug/l	13.67	1.06	1000	
23 Na	871.50 ug/l	968.24	1.36	25000	
24 Mg	2996.00 ug/l	3328.56	0.67	50000	
27 Al	12.39 ug/l	13.77	7.13	20000	
39 K	1961.00 ug/l	2178.67	0.43	20000	
44 Ca	13150.00 ug/l	14609.65	0.75	50000	
47 Ti	0.19 ug/l	0.21	23.38	1000	
51 V	1.16 ug/l	1.28	9.11	1000	
52 Cr	0.57 ug/l	0.64	2.36	1000	
55 Mn	87.45 ug/l	97.16	1.08	1000	
56 Fe	41.12 ug/l	45.68	1.08	20000	
59 Co	1.71 ug/l	1.90	1.63	1000	
60 Ni	1.83 ug/l	2.04	2.35	1000	
63 Cu	2.02 ug/l	2.24	0.77	1000	
65 Cu	2.02 ug/l	2.25	2.70	1000	
66 Zn	17.45 ug/l	19.39	1.55	1000	
75 As	0.21 ug/l	0.23	12.21	1000	
78 Se	0.25 ug/l	0.27	11.06	1000	
78 Se	0.35 ug/l	0.39	26.28	1000	
88 Sr	59.32 ug/l	65.90	2.01	1000	
88 Sr	58.70 ug/l	65.22	0.64	1000	
95 Mo	0.46 ug/l	0.51	4.88	1000	
106 (Cd)	-------- ug/l	#VALUE!	--------	########	
107 Ag	0.02 ug/l	0.02	9.74	500	
108 (Cd)	-------- ug/l	#VALUE!	--------	########	
111 Cd	0.02 ug/l	0.02	38.89	1000	
118 Sn	0.15 ug/l	0.17	3.14	1000	
121 Sb	0.22 ug/l	0.24	3.99	1000	
137 Ba	18.17 ug/l	20.19	0.55	1000	
205 Tl	0.03 ug/l	0.03	3.68	1000	
206 (Pb)	-------- ug/l	#VALUE!	--------	########	
207 (Pb)	-------- ug/l	#VALUE!	--------	########	
208 Pb	-0.06 ug/l	-0.06	8.67	1000	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3173316.80	1.06	3046381.80	104.2
45 Sc	1089316.10	10.59	841537.88	129.4
45 Sc	147102.81	0.61	128014.41	114.9
45 Sc	2020488.80	1.00	1718861.00	117.5
72 Ge	218530.48	10.85	170470.91	128.2
72 Ge	72397.52	0.38	63924.71	113.3
72 Ge	338128.88	0.30	287615.47	117.6
115 In	2194597.50	1.40	1759271.40	124.7
159 Tb	3255881.80	0.46	2620168.30	124.3
165 Ho	3209216.00	0.58	2606629.50	123.1

ISTD Ref File : C:\ICPCHEM\1\DATA\11K01m00.B\004CALB.D\004CALB.D#

0 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Pass
ISTD: Fail

Sample QC Report

Data File: C:\ICPCHEM\1\DATA\11K01m00.B\079SMPL.D\079SMPL.D#
Date Acquired: Nov 1 2011 08:21 pm
Operator: SDM
Sample Name: AY47857W03-A
Misc Info: 111026A-3015
Vial Number: 3405
Current Method: C:\ICPCHEM\1\METHODS\62A1101.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1101.C
Last Cal Update: Nov 01 2011 01:15 pm
Sample Type: Sample
Prep Dil Factor: 1.11
Total Dil Factor: 1.11

QC Elements

Element	Conc.		Corr. Conc.	RSD(%)	High Limit	Flag
7 (Li)	--------	ug/l	#VALUE!	--------	0	
9 Be	34.30	ug/l	38.11	0.90	1000	
11 B	184.80	ug/l	205.31	0.72	1000	
23 Na	21720.00	ug/l	24130.92	1.34	25000	
24 Mg	23390.00	ug/l	25986.29	0.34	50000	
27 Al	2597.00	ug/l	2885.27	0.87	20000	
39 K	6191.00	ug/l	6878.20	1.27	20000	
44 Ca	33830.00	ug/l	37585.13	2.20	50000	
47 Ti	239.00	ug/l	265.53	1.18	1000	
51 V	208.20	ug/l	231.31	0.88	1000	
52 Cr	213.30	ug/l	236.98	0.90	1000	
55 Mn	317.60	ug/l	352.85	1.83	1000	
56 Fe	1429.00	ug/l	1587.62	0.70	20000	
59 Co	210.40	ug/l	233.75	1.36	1000	
60 Ni	209.60	ug/l	232.87	0.90	1000	
63 Cu	203.90	ug/l	226.53	0.61	1000	
65 Cu	205.10	ug/l	227.87	0.98	1000	
66 Zn	401.90	ug/l	446.51	0.62	1000	
75 As	199.70	ug/l	221.87	1.10	1000	
78 Se	155.70	ug/l	172.98	10.82	1000	
78 Se	189.60	ug/l	210.65	1.07	1000	
88 Sr	295.80	ug/l	328.63	1.31	1000	
88 Sr	290.60	ug/l	322.86	0.24	1000	
95 Mo	234.20	ug/l	260.20	0.59	1000	
106 (Cd)	--------	ug/l	#VALUE!	--------	#######	
107 Ag	59.94	ug/l	66.59	21.19	500	
108 (Cd)	--------	ug/l	#VALUE!	--------	#######	
111 Cd	42.11	ug/l	46.78	0.75	1000	
118 Sn	241.20	ug/l	267.97	0.12	1000	
121 Sb	209.10	ug/l	232.31	0.81	1000	
137 Ba	259.70	ug/l	288.53	0.89	1000	
205 Tl	218.00	ug/l	242.20	0.89	1000	
206 (Pb)	--------	ug/l	#VALUE!	--------	#######	
207 (Pb)	--------	ug/l	#VALUE!	--------	#######	
208 Pb	219.40	ug/l	243.75	0.15	1000	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	2993975.00	0.29	3046381.80	98.3
45 Sc	1047787.30	8.64	841537.88	124.5
45 Sc	145055.22	0.60	128014.41	113.3
45 Sc	1998795.00	0.70	1718861.00	116.3
72 Ge	205543.47	8.34	170470.91	120.6
72 Ge	69170.01	0.52	63924.71	108.2
72 Ge	324521.28	0.06	287615.47	112.8
115 In	2072045.60	0.19	1759271.40	117.8
159 Tb	3167328.50	0.64	2620168.30	120.9
165 Ho	3111942.00	0.64	2606629.50	119.4

ISTD Ref File : C:\ICPCHEM\1\DATA\11K01m00.B\004CALB.D\004CALB.D#

0 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Pass
ISTD: Fail

Sample QC Report

Data File: C:\ICPCHEM\1\DATA\11K01m00.B\024SMPL.D\024SMPL.D#
Date Acquired: Nov 1 2011 02:48 pm
Operator: SDM
Sample Name: 111026A-3015-BLK
Misc Info: 111026A-3015
Vial Number: 3104
Current Method: C:\ICPCHEM\1\METHODS\62A1101.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1101.C
Last Cal Update: Nov 01 2011 01:15 pm
Sample Type: Sample
Prep Dil Factor: 1.11
Total Dil Factor: 1.11

QC Elements

Element	Conc.		Corr. Conc.	RSD(%)	High Limit	Flag
7 (Li)	--------	ug/l	#VALUE!	--------	0	
9 Be	-0.05	ug/l	-0.06	6.64	1000	
11 B	-0.06	ug/l	-0.07	6.16	1000	
23 Na	-19.74	ug/l	-21.93	14.88	25000	
24 Mg	-0.16	ug/l	-0.17	19.63	50000	
27 Al	0.02	ug/l	0.02	288.27	20000	
39 K	-2.73	ug/l	-3.03	125.53	20000	
44 Ca	-0.49	ug/l	-0.54	318.80	50000	
47 Ti	0.00	ug/l	0.00	7966.30	1000	
51 V	0.41	ug/l	0.46	10.27	1000	
52 Cr	0.01	ug/l	0.01	61.11	1000	
55 Mn	-0.01	ug/l	-0.01	24.34	1000	
56 Fe	0.18	ug/l	0.20	12.29	20000	
59 Co	-0.06	ug/l	-0.07	0.87	1000	
60 Ni	0.00	ug/l	0.00	177.28	1000	
63 Cu	-0.01	ug/l	-0.01	24.61	1000	
65 Cu	-0.01	ug/l	-0.01	45.21	1000	
66 Zn	0.00	ug/l	0.00	635.78	1000	
75 As	0.08	ug/l	0.09	12.63	1000	
78 Se	0.01	ug/l	0.01	87.30	1000	
78 Se	0.00	ug/l	0.00	6624.80	1000	
88 Sr	0.00	ug/l	-0.01	21.00	1000	
88 Sr	-0.01	ug/l	-0.02	7.73	1000	
95 Mo	0.01	ug/l	0.01	53.97	1000	
106 (Cd)	--------	ug/l	#VALUE!	--------	########	
107 Ag	0.00	ug/l	0.00	59.37	500	
108 (Cd)	--------	ug/l	#VALUE!	--------	########	
111 Cd	0.00	ug/l	0.00	102.34	1000	
118 Sn	0.00	ug/l	0.00	107.79	1000	
121 Sb	0.00	ug/l	0.00	163.51	1000	
137 Ba	-0.01	ug/l	-0.01	76.62	1000	
205 Tl	0.00	ug/l	0.00	116.91	1000	
206 (Pb)	--------	ug/l	#VALUE!	--------	########	
207 (Pb)	--------	ug/l	#VALUE!	--------	########	
208 Pb	-0.25	ug/l	-0.28	0.54	1000	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3084193.80	1.14	3046381.80	101.2
45 Sc	854167.94	4.84	841537.88	101.5
45 Sc	130279.20	1.35	128014.41	101.8
45 Sc	1714327.10	1.04	1718861.00	99.7
72 Ge	179568.86	0.41	170470.91	105.3
72 Ge	66563.56	0.52	63924.71	104.1
72 Ge	286162.16	0.34	287615.47	99.5
115 In	1791242.00	1.53	1759271.40	101.8
159 Tb	2661081.30	0.73	2620168.30	101.6
165 Ho	2635185.50	0.50	2606629.50	101.1

ISTD Ref File : C:\ICPCHEM\1\DATA\11K01m00.B\004CALB.D\004CALB.D#

0 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Pass
ISTD: Pass

Sample QC Report

Data File: C:\ICPCHEM\1\DATA\11K01m00.B\028SMPL.D\028SMPL.D#
Date Acquired: Nov 1 2011 03:12 pm
Operator: SDM
Sample Name: 111026A-3015-LCS
Misc Info: 111026A-3015
Vial Number: 3108
Current Method: C:\ICPCHEM\1\METHODS\62A1101.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1101.C
Last Cal Update: Nov 01 2011 01:15 pm
Sample Type: Sample
Prep Dil Factor: 1.11
Total Dil Factor: 1.11

QC Elements

Element	Conc.		Corr. Conc.	RSD(%)	High Limit	Flag
7 (Li)	--------	ug/l	#VALUE!	--------	0	
9 Be	7.35	ug/l	8.16	0.29	1000	
11 B	36.58	ug/l	40.64	1.30	1000	
23 Na	4268.00	ug/l	4741.75	0.49	25000	
24 Mg	4339.00	ug/l	4820.63	0.92	50000	
27 Al	377.90	ug/l	419.85	1.58	20000	
39 K	909.60	ug/l	1010.57	0.63	20000	
44 Ca	4771.00	ug/l	5300.58	1.08	50000	
47 Ti	42.93	ug/l	47.70	1.50	1000	
51 V	45.46	ug/l	50.51	1.55	1000	
52 Cr	46.39	ug/l	51.54	0.86	1000	
55 Mn	47.13	ug/l	52.36	0.60	1000	
56 Fe	200.70	ug/l	222.98	3.14	20000	
59 Co	45.14	ug/l	50.15	0.86	1000	
60 Ni	44.45	ug/l	49.38	1.35	1000	
63 Cu	42.84	ug/l	47.60	0.74	1000	
65 Cu	42.95	ug/l	47.72	0.84	1000	
66 Zn	88.48	ug/l	98.30	1.23	1000	
75 As	38.80	ug/l	43.11	0.97	1000	
78 Se	34.60	ug/l	38.44	6.22	1000	
78 Se	36.71	ug/l	40.78	1.02	1000	
88 Sr	47.36	ug/l	52.62	1.59	1000	
88 Sr	47.99	ug/l	53.32	1.20	1000	
95 Mo	45.51	ug/l	50.56	0.63	1000	
106 (Cd)	--------	ug/l	#VALUE!	--------	#######	
107 Ag	16.96	ug/l	18.84	0.94	500	
108 (Cd)	--------	ug/l	#VALUE!	--------	#######	
111 Cd	8.30	ug/l	9.22	0.19	1000	
118 Sn	49.26	ug/l	54.73	1.22	1000	
121 Sb	41.95	ug/l	46.61	1.25	1000	
137 Ba	44.83	ug/l	49.81	2.16	1000	
205 Tl	46.17	ug/l	51.29	0.34	1000	
206 (Pb)	--------	ug/l	#VALUE!	--------	#######	
207 (Pb)	--------	ug/l	#VALUE!	--------	#######	
208 Pb	46.68	ug/l	51.86	0.52	1000	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3337677.00	0.34	3046381.80	109.6
45 Sc	1003145.90	4.39	841537.88	119.2
45 Sc	147107.41	0.69	128014.41	114.9
45 Sc	1940336.80	0.65	1718861.00	112.9
72 Ge	198857.69	4.78	170470.91	116.7
72 Ge	70657.98	0.31	63924.71	110.5
72 Ge	310752.75	0.24	287615.47	108.0
115 In	1993268.10	1.28	1759271.40	113.3
159 Tb	2968932.00	0.52	2620168.30	113.3
165 Ho	2937504.00	0.38	2606629.50	112.7

ISTD Ref File : C:\ICPCHEM\1\DATA\11K01m00.B\004CALB.D\004CALB.D#

0 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Pass
ISTD: Pass

Sample QC Report

Data File: C:\ICPCHEM\1\DATA\11K01m00.B\077SMPL.D\077SMPL.D#
Date Acquired: Nov 1 2011 08:09 pm
Operator: SDM
Sample Name: AY47857W04 MS
Misc Info: 111026A-3015
Vial Number: 3403
Current Method: C:\ICPCHEM\1\METHODS\62A1101.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1101.C
Last Cal Update: Nov 01 2011 01:15 pm
Sample Type: Sample
Prep Dil Factor: 1.11
Total Dil Factor: 1.11

QC Elements

Element	Conc.	Corr. Conc.	RSD(%)	High Limit	Flag
7 (Li)	-------- ug/l	#VALUE!	--------	0	
9 Be	6.57 ug/l	7.30	1.18	1000	
11 B	53.52 ug/l	59.46	0.59	1000	
23 Na	4688.00 ug/l	5208.37	1.27	25000	
24 Mg	6830.00 ug/l	7588.13	0.73	50000	
27 Al	738.60 ug/l	820.58	0.83	20000	
39 K	2813.00 ug/l	3125.24	0.81	20000	
44 Ca	17680.00 ug/l	19642.48	0.86	50000	
47 Ti	46.84 ug/l	52.04	1.37	1000	
51 V	43.78 ug/l	48.64	0.34	1000	
52 Cr	44.19 ug/l	49.10	0.25	1000	
55 Mn	152.50 ug/l	169.43	0.90	1000	
56 Fe	568.30 ug/l	631.38	1.51	20000	
59 Co	43.67 ug/l	48.52	0.76	1000	
60 Ni	42.69 ug/l	47.43	0.66	1000	
63 Cu	40.45 ug/l	44.94	0.10	1000	
65 Cu	40.66 ug/l	45.17	0.54	1000	
66 Zn	91.91 ug/l	102.11	0.54	1000	
75 As	37.25 ug/l	41.38	1.25	1000	
78 Se	29.00 ug/l	32.22	10.70	1000	
78 Se	35.39 ug/l	39.32	1.58	1000	
88 Sr	105.40 ug/l	117.10	2.15	1000	
88 Sr	104.00 ug/l	115.54	0.77	1000	
95 Mo	45.39 ug/l	50.43	0.77	1000	
106 (Cd)	-------- ug/l	#VALUE!	--------	########	
107 Ag	16.13 ug/l	17.92	1.55	500	
108 (Cd)	-------- ug/l	#VALUE!	--------	########	
111 Cd	7.90 ug/l	8.78	2.52	1000	
118 Sn	44.45 ug/l	49.38	1.79	1000	
121 Sb	39.62 ug/l	44.02	1.81	1000	
137 Ba	64.50 ug/l	71.66	2.29	1000	
205 Tl	43.84 ug/l	48.71	1.07	1000	
206 (Pb)	-------- ug/l	#VALUE!	--------	########	
207 (Pb)	-------- ug/l	#VALUE!	--------	########	
208 Pb	45.63 ug/l	50.69	1.12	1000	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3114333.80	0.78	3046381.80	102.2
45 Sc	1040789.80	8.94	841537.88	123.7
45 Sc	145070.06	0.64	128014.41	113.3
45 Sc	1973048.30	0.40	1718861.00	114.8
72 Ge	208651.38	8.95	170470.91	122.4
72 Ge	70434.34	0.46	63924.71	110.2
72 Ge	325593.53	0.17	287615.47	113.2
115 In	2136484.00	1.96	1759271.40	121.4
159 Tb	3166373.00	1.03	2620168.30	120.8
165 Ho	3129783.30	0.04	2606629.50	120.1

ISTD Ref File : C:\ICPCHEM\1\DATA\11K01m00.B\004CALB.D\004CALB.D#

0 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Pass
ISTD: Fail

Sample QC Report

Data File: C:\ICPCHEM\1\DATA\11K01m00.B\078SMPL.D\078SMPL.D#
Date Acquired: Nov 1 2011 08:15 pm
Operator: SDM
Sample Name: AY47857W04 MSD
Misc Info: 111026A-3015
Vial Number: 3404
Current Method: C:\ICPCHEM\1\METHODS\62A1101.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1101.C
Last Cal Update: Nov 01 2011 01:15 pm
Sample Type: Sample
Prep Dil Factor: 1.11
Total Dil Factor: 1.11

QC Elements

Element	Conc.		Corr. Conc.	RSD(%)	High Limit	Flag
7 (Li)	--------	ug/l	#VALUE!	--------	0	
9 Be	7.03	ug/l	7.81	1.49	1000	
11 B	51.45	ug/l	57.16	0.84	1000	
23 Na	4987.00	ug/l	5540.56	2.32	25000	
24 Mg	7094.00	ug/l	7881.43	2.20	50000	
27 Al	788.90	ug/l	876.47	2.01	20000	
39 K	2873.00	ug/l	3191.90	1.88	20000	
44 Ca	18000.00	ug/l	19998.00	1.44	50000	
47 Ti	48.90	ug/l	54.33	2.37	1000	
51 V	47.03	ug/l	52.25	1.55	1000	
52 Cr	47.34	ug/l	52.59	1.63	1000	
55 Mn	155.70	ug/l	172.98	1.26	1000	
56 Fe	585.20	ug/l	650.16	1.63	20000	
59 Co	47.02	ug/l	52.24	1.03	1000	
60 Ni	45.56	ug/l	50.62	0.50	1000	
63 Cu	43.40	ug/l	48.22	0.83	1000	
65 Cu	43.83	ug/l	48.70	0.60	1000	
66 Zn	99.55	ug/l	110.60	0.46	1000	
75 As	40.24	ug/l	44.71	0.92	1000	
78 Se	31.12	ug/l	34.57	11.11	1000	
78 Se	37.64	ug/l	41.82	1.18	1000	
88 Sr	109.20	ug/l	121.32	1.77	1000	
88 Sr	107.30	ug/l	119.21	0.24	1000	
95 Mo	46.47	ug/l	51.63	1.21	1000	
106 (Cd)	--------	ug/l	#VALUE!	--------	########	
107 Ag	16.69	ug/l	18.54	0.79	500	
108 (Cd)	--------	ug/l	#VALUE!	--------	########	
111 Cd	8.56	ug/l	9.51	2.13	1000	
118 Sn	45.69	ug/l	50.76	1.05	1000	
121 Sb	39.90	ug/l	44.33	0.37	1000	
137 Ba	68.62	ug/l	76.24	0.24	1000	
205 Tl	47.26	ug/l	52.51	0.79	1000	
206 (Pb)	--------	ug/l	#VALUE!	--------	########	
207 (Pb)	--------	ug/l	#VALUE!	--------	########	
208 Pb	48.71	ug/l	54.12	0.91	1000	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3112970.30	0.77	3046381.80	102.2
45 Sc	1058843.00	9.12	841537.88	125.8
45 Sc	146779.58	0.10	128014.41	114.7
45 Sc	1996174.80	0.92	1718861.00	116.1
72 Ge	210362.13	8.58	170470.91	123.4
72 Ge	71027.48	0.47	63924.71	111.1
72 Ge	328512.00	0.09	287615.47	114.2
115 In	2132066.80	0.39	1759271.40	121.2
159 Tb	3189655.50	0.87	2620168.30	121.7
165 Ho	3143054.30	0.38	2606629.50	120.6

ISTD Ref File : C:\ICPCHEM\1\DATA\11K01m00.B\004CALB.D\004CALB.D#

0 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Pass
ISTD: Fail

Sample QC Report

Data File: C:\ICPCHEM\1\DATA\11K01m00.B\082SMPL.D\082SMPL.D#
Date Acquired: Nov 1 2011 08:39 pm
Operator: SDM
Sample Name: AY47858W03 M8
Misc Info: 111026A-3015
Vial Number: 3408
Current Method: C:\ICPCHEM\1\METHODS\62A1101.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1101.C
Last Cal Update: Nov 01 2011 01:15 pm
Sample Type: Sample
Prep Dil Factor: 1.11
Total Dil Factor: 1.11

QC Elements

Element	Conc.		Corr. Conc.	RSD(%)	High Limit	Flag
7 (Li)	--------	ug/l	#VALUE!	--------	0	
9 Be	6.83	ug/l	7.59	0.88	1000	
11 B	45.63	ug/l	50.69	0.60	1000	
23 Na	4942.00	ug/l	5490.56	0.91	25000	
24 Mg	6993.00	ug/l	7769.22	1.01	50000	
27 Al	404.40	ug/l	449.29	1.42	20000	
39 K	2804.00	ug/l	3115.24	0.73	20000	
44 Ca	17500.00	ug/l	19442.50	0.62	50000	
47 Ti	42.33	ug/l	47.03	1.29	1000	
51 V	45.23	ug/l	50.25	0.66	1000	
52 Cr	45.67	ug/l	50.74	1.14	1000	
55 Mn	138.10	ug/l	153.43	1.47	1000	
56 Fe	242.90	ug/l	269.86	1.71	20000	
59 Co	45.52	ug/l	50.57	1.07	1000	
60 Ni	44.57	ug/l	49.52	0.56	1000	
63 Cu	49.95	ug/l	55.49	0.47	1000	
65 Cu	50.29	ug/l	55.87	0.40	1000	
66 Zn	90.04	ug/l	100.03	0.57	1000	
75 As	38.97	ug/l	43.30	0.92	1000	
78 Se	30.97	ug/l	34.41	10.49	1000	
78 Se	36.73	ug/l	40.81	2.61	1000	
88 Sr	105.50	ug/l	117.21	1.76	1000	
88 Sr	105.20	ug/l	116.88	0.50	1000	
95 Mo	46.74	ug/l	51.93	0.21	1000	
106 (Cd)	--------	ug/l	#VALUE!	--------	#######	
107 Ag	16.74	ug/l	18.60	0.66	500	
108 (Cd)	--------	ug/l	#VALUE!	--------	#######	
111 Cd	8.25	ug/l	9.16	2.22	1000	
118 Sn	47.68	ug/l	52.97	0.50	1000	
121 Sb	42.49	ug/l	47.21	0.53	1000	
137 Ba	63.84	ug/l	70.93	0.21	1000	
205 Tl	45.23	ug/l	50.25	0.53	1000	
206 (Pb)	--------	ug/l	#VALUE!	--------	#######	
207 (Pb)	--------	ug/l	#VALUE!	--------	#######	
208 Pb	44.86	ug/l	49.84	0.04	1000	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3120105.30	1.08	3046381.80	102.4
45 Sc	1042430.50	8.92	841537.88	123.9
45 Sc	146401.50	0.37	128014.41	114.4
45 Sc	1993808.30	0.77	1718861.00	116.0
72 Ge	209722.61	8.84	170470.91	123.0
72 Ge	71351.74	0.51	63924.71	111.6
72 Ge	332608.44	0.45	287615.47	115.6
115 In	2159896.50	0.62	1759271.40	122.8
159 Tb	3203448.80	0.41	2620168.30	122.3
165 Ho	3151016.00	0.33	2606629.50	120.9

ISTD Ref File : C:\ICPCHEM\1\DATA\11K01m00.B\004CALB.D\004CALB.D#

0 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Pass
ISTD: Fail

Sample QC Report

Data File: C:\ICPCHEM\1\DATA\11K01m00.B\083SMPL.D\083SMPL.D#
Date Acquired: Nov 1 2011 08:45 pm
Operator: SDM
Sample Name: AY47858W03 MSD
Misc Info: 111026A-3015
Vial Number: 3409
Current Method: C:\ICPCHEM\1\METHODS\62A1101.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1101.C
Last Cal Update: Nov 01 2011 01:15 pm
Sample Type: Sample
Prep Dil Factor: 1.11
Total Dil Factor: 1.11

QC Elements

Element	Conc.		Corr. Conc.	RSD(%)	High Limit	Flag
7 (Li)	--------	ug/l	#VALUE!	--------	0	
9 Be	6.80	ug/l	7.56	1.32	1000	
11 B	45.13	ug/l	50.14	1.36	1000	
23 Na	4793.00	ug/l	5325.02	0.44	25000	
24 Mg	6915.00	ug/l	7682.57	1.24	50000	
27 Al	382.30	ug/l	424.74	1.20	20000	
39 K	2795.00	ug/l	3105.25	0.75	20000	
44 Ca	17020.00	ug/l	18909.22	0.52	50000	
47 Ti	42.88	ug/l	47.64	2.17	1000	
51 V	44.86	ug/l	49.84	0.63	1000	
52 Cr	45.20	ug/l	50.22	0.46	1000	
55 Mn	139.20	ug/l	154.65	0.25	1000	
56 Fe	227.40	ug/l	252.64	0.86	20000	
59 Co	45.12	ug/l	50.13	0.53	1000	
60 Ni	44.60	ug/l	49.55	0.94	1000	
63 Cu	41.58	ug/l	46.20	0.41	1000	
65 Cu	41.76	ug/l	46.40	0.72	1000	
66 Zn	78.49	ug/l	87.20	0.42	1000	
75 As	38.89	ug/l	43.21	0.63	1000	
78 Se	30.07	ug/l	33.41	9.93	1000	
78 Se	36.70	ug/l	40.77	1.11	1000	
88 Sr	104.80	ug/l	116.43	0.94	1000	
88 Sr	103.60	ug/l	115.10	0.68	1000	
95 Mo	46.66	ug/l	51.84	0.87	1000	
106 (Cd)	--------	ug/l	#VALUE!	--------	########	
107 Ag	16.78	ug/l	18.64	0.14	500	
108 (Cd)	--------	ug/l	#VALUE!	--------	########	
111 Cd	8.19	ug/l	9.10	0.77	1000	
118 Sn	47.76	ug/l	53.06	0.52	1000	
121 Sb	41.82	ug/l	46.46	0.46	1000	
137 Ba	63.50	ug/l	70.55	0.23	1000	
205 Tl	45.31	ug/l	50.34	0.98	1000	
206 (Pb)	--------	ug/l	#VALUE!	--------	########	
207 (Pb)	--------	ug/l	#VALUE!	--------	########	
208 Pb	44.74	ug/l	49.71	0.35	1000	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3113455.00	0.49	3046381.80	102.2
45 Sc	1061117.40	7.22	841537.88	126.1
45 Sc	146513.58	0.95	128014.41	114.5
45 Sc	1998127.90	0.57	1718061.00	116.2
72 Ge	213966.19	7.50	170470.91	125.5
72 Ge	71286.42	0.88	63924.71	111.5
72 Ge	332664.59	0.42	287615.47	115.7
115 In	2149554.30	0.32	1759271.40	122.2
159 Tb	3207554.00	0.38	2620168.30	122.4
165 Ho	3163147.00	0.19	2606629.50	121.4

ISTD Ref File : C:\ICPCHEM\1\DATA\11K01m00.B\004CALB.D\004CALB.D#

0 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Pass
ISTD: Fail

METALS
Calibration Data

APPL, INC.

Sample QC Report

Data File: C:\ICPCHEM\1\DATA\11K01m00.B\080SMPL.D\080SMPL.D#
Date Acquired: Nov 1 2011 08:27 pm
Operator: SDM
Sample Name: AY47857W03-1/5
Misc Info: 111026A-3015
Vial Number: 3406
Current Method: C:\ICPCHEM\1\METHODS\62A1101.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1101.C
Last Cal Update: Nov 01 2011 01:15 pm
Sample Type: Sample
Prep Dil Factor: 5.56
Total Dil Factor: 5.56

QC Elements

Element	Conc.		Corr. Conc.	RSD(%)	High Limit	Flag
7 (Li)	--------	ug/l	#VALUE!	--------	0	
9 Be	-0.02	ug/l	-0.09	62.83	1000	
11 B	5.15	ug/l	28.61	1.31	1000	
23 Na	101.20	ug/l	562.27	7.94	25000	
24 Mg	600.40	ug/l	3335.82	3.32	50000	
27 Al	90.20	ug/l	501.15	1.56	20000	
39 K	415.80	ug/l	2310.18	3.30	20000	
44 Ca	2696.00	ug/l	14978.98	3.35	50000	
47 Ti	1.84	ug/l	10.24	4.82	1000	
51 V	3.17	ug/l	17.59	1.52	1000	
52 Cr	0.47	ug/l	2.62	3.22	1000	
55 Mn	20.66	ug/l	114.79	2.78	1000	
56 Fe	96.30	ug/l	535.04	3.50	20000	
59 Co	0.34	ug/l	1.90	5.25	1000	
60 Ni	0.72	ug/l	4.02	2.96	1000	
63 Cu	0.52	ug/l	2.91	4.97	1000	
65 Cu	0.52	ug/l	2.91	1.97	1000	
66 Zn	11.94	ug/l	66.34	2.96	1000	
75 As	0.93	ug/l	5.17	1.02	1000	
78 Se	0.27	ug/l	1.51	7.31	1000	
78 Se	0.28	ug/l	1.54	17.53	1000	
88 Sr	11.17	ug/l	62.06	3.99	1000	
88 Sr	10.99	ug/l	61.06	0.75	1000	
95 Mo	0.22	ug/l	1.20	2.36	1000	
106 (Cd)	--------	ug/l	#VALUE!	--------	########	
107 Ag	2.52	ug/l	13.98	1.71	500	
108 (Cd)	--------	ug/l	#VALUE!	--------	########	
111 Cd	0.02	ug/l	0.11	67.53	1000	
118 Sn	0.98	ug/l	5.46	3.64	1000	
121 Sb	2.31	ug/l	12.82	5.03	1000	
137 Ba	4.22	ug/l	23.42	3.01	1000	
205 Tl	0.03	ug/l	0.16	6.28	1000	
206 (Pb)	--------	ug/l	#VALUE!	--------	########	
207 (Pb)	--------	ug/l	#VALUE!	--------	########	
208 Pb	0.65	ug/l	3.58	4.14	1000	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3393061.80	1.22	3046381.80	111.4
45 Sc	931710.88	1.74	841537.88	110.7
45 Sc	148691.39	2.12	128014.41	116.2
45 Sc	1922265.90	0.55	1718861.00	111.8
72 Ge	200630.25	0.36	170470.91	117.7
72 Ge	74199.22	1.82	63924.71	116.1
72 Ge	352162.97	0.08	287615.47	122.4
115 In	2055699.80	1.23	1759271.40	116.8
159 Tb	3006299.00	0.26	2620168.30	114.7
165 Ho	2983122.00	0.06	2606629.50	114.4

ISTD Ref File : C:\ICPCHEM\1\DATA\11K01m00.B\004CALB.D\004CALB.D#

0 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Pass
ISTD: Fail

Calibration Blank QC Report

Data File: C:\ICPCHEM\1\DATA\11K01m00.B\004CAL
Date Acquired: Nov 1 2011 12:46 pm
Operator: SDM
Sample Name: Calibration Blank
Misc Info:
Vial Number: 1102
Current Method: C:\ICPCHEM\1\METHODS\62A1101.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1101.C
Last Cal Update: Nov 01 2011 12:44 pm
Sample Type: CalBlk
Total Dil Factor: 1.00

QC&ISTD Elements

Element		CPS Mean		SD	RSD(%)
6	Li	3046382.00	A	14120.00	0.46
7	(Li)	191211.59	P	86.11	0.05
9	Be	746.71	P	47.03	6.30
11	B	3430.51	P	164.80	4.80
23	Na	114265.80	P	3235.00	2.83
24	Mg	353.35	P	76.38	21.62
27	Al	61.11	P	10.18	16.66
39	K	51754.69	P	1044.00	2.02
44	Ca	274.44	P	19.31	7.04
45	Sc	841537.88	P	12500.00	1.49
45	Sc	128014.40	P	1607.00	1.26
45	Sc	1718861.00	A	11520.00	0.67
47	Ti	2.67	P	1.33	49.99
51	V	615.58	P	31.28	5.08
52	Cr	248.89	P	16.02	6.44
55	Mn	139.56	P	5.05	3.62
56	Fe	2137.10	P	50.43	2.36
59	Co	499.13	P	50.82	10.18
60	Ni	43.56	P	9.65	22.15
63	Cu	268.45	P	18.92	7.05
65	Cu	127.56	P	4.29	3.36
66	Zn	220.00	P	12.86	5.85
72	Ge	170470.91	P	361.80	0.21
72	Ge	63924.71	P	387.10	0.61
72	Ge	287615.50	P	1830.00	0.64
75	As	43.56	P	6.84	15.71
78	Se	9.00	P	1.00	11.11
78	Se	24.78	P	3.15	12.72
88	Sr	75.56	P	18.36	24.30
88	Sr	510.03	P	11.55	2.26
95	Mo	95.56	P	15.03	15.73
106	(Cd)	6.67	P	0.00	0.00
107	Ag	70.00	P	26.03	37.18
108	(Cd)	4.44	P	3.85	86.60
111	Cd	35.53	P	12.79	35.99
115	In	1759271.00	A	6321.00	0.36
118	Sn	91.11	P	11.71	12.85
121	Sb	378.07	P	173.10	45.79
137	Ba	53.34	P	8.82	16.54
159	Tb	2620168.00	A	15560.00	0.59
165	Ho	2606630.00	A	7778.00	0.30
205	Tl	284.46	P	19.53	6.87
206	(Pb)	2351.41	P	77.49	3.30
207	(Pb)	2019.11	P	73.52	3.64
208	Pb	9366.09	P	241.80	2.58

Calibration Standard QC Report

Data File: C:\ICPCHEM\1\DATA\11K01m00.B\005CALS.D\005CALS.D#
Date Acquired: Nov 1 2011 12:53 pm
Operator: SDM
Sample Name: 111101 Standard 1
Misc Info:
Vial Number: 1103
Current Method: C:\ICPCHEM\1\METHODS\62A1101.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1101.C
Last Cal Update: Nov 01 2011 12:50 pm
Sample Type: CalStd
Total Dil Factor: 1.00

QC#ISTD Elements

Element	CPS Mean		SD	RSD(%)	Cal Coef
6 Li	3196009.00	A	34570.00	1.08	0.0000
7 (Li)	196395.09	P	960.40	0.49	0.0000
9 Be	1822.40	P	28.36	1.55	0.0000
11 B	6576.12	P	99.19	1.51	0.0000
23 Na	62770.42	P	299.80	0.48	0.0000
24 Mg	3695.03	P	185.50	5.02	0.0000
27 Al	701.15	P	47.89	6.83	0.0000
39 K	58256.53	P	1160.00	1.99	0.0000
44 Ca	554.59	P	42.19	7.61	0.0000
45 Sc	843057.69	M	45330.00	5.38	0.0000
45 Sc	126767.40	P	593.50	0.47	0.0000
45 Sc	1660098.00	A	16520.00	1.00	0.0000
47 Ti	92.89	P	3.85	4.14	0.0000
51 V	6431.72	P	5.38	0.08	0.0000
52 Cr	1380.53	P	8.68	0.63	0.0000
55 Mn	648.91	P	18.20	2.80	0.0000
56 Fe	17629.91	P	151.40	0.86	0.0000
59 Co	1223.18	P	37.63	3.08	0.0000
60 Ni	510.68	P	20.00	3.92	0.0000
63 Cu	1792.58	P	39.94	2.23	0.0000
65 Cu	821.37	P	51.45	6.26	0.0000
66 Zn	646.69	P	13.13	2.03	0.0000
72 Ge	165428.20	P	875.30	0.53	0.0000
72 Ge	60755.73	P	415.50	0.68	0.0000
72 Ge	264127.50	P	1487.00	0.56	0.0000
75 As	396.01	P	7.69	1.94	0.0000
78 Se	52.33	P	2.96	5.66	0.0000
78 Se	32.67	P	2.89	8.84	0.0000
88 Sr	511.14	P	42.21	8.26	0.0000
88 Sr	2882.61	P	105.00	3.64	0.0000
95 Mo	2130.23	P	83.74	3.93	0.0000
106 (Cd)	35.56	P	16.78	47.19	0.0000
107 Ag	2643.67	P	29.06	1.10	0.0000
108 (Cd)	23.33	P	5.77	24.75	0.0000
111 Cd	331.41	P	4.85	1.46	0.0000
115 In	1635800.00	A	40910.00	2.50	0.0000
118 Sn	4059.62	P	122.20	3.01	0.0000
121 Sb	4672.04	P	91.57	1.96	0.0000
137 Ba	458.91	P	26.74	5.83	0.0000
159 Tb	2459511.00	A	12910.00	0.52	0.0000
165 Ho	2427350.00	A	14190.00	0.58	0.0000
205 Tl	3088.25	P	155.20	5.03	0.0000
206 (Pb)	3361.66	P	71.23	2.12	0.0000
207 (Pb)	2915.99	P	58.74	2.01	0.0000
208 Pb	13312.00	P	36.72	0.28	0.0000

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3196009.00	1.08	3046381.80	104.9
45 Sc	843057.75	5.38	841537.88	100.2
45 Sc	126767.42	0.47	128014.41	99.0
45 Sc	1660097.80	1.00	1718861.00	96.6
72 Ge	165428.20	0.53	170470.91	97.0
72 Ge	60755.73	0.68	63924.71	95.0
72 Ge	264127.53	0.56	287615.47	91.8
115 In	1635800.30	2.50	1759271.60	93.0
159 Tb	2459510.80	0.52	2620168.30	93.9
165 Ho	2427350.00	0.58	2606629.50	93.1

ISTD Ref File : C:\ICPCHEM\1\DATA\11K01m00.B\004CALB.D\004CALB.D#

--- :Element Failures --- :Max. Number of Failures Allowed

Data Results:
Analytes: Pass
ISTD: Pass

Calibration Standard QC Report

Data File: C:\ICPCHEM\1\DATA\11K01m00.B\006CALS.D\006CALS.D
Date Acquired: Nov 1 2011 12:59 pm
Operator: SDM
Sample Name: 111101 Standard 2
Misc Info:
Vial Number: 1104
Current Method: C:\ICPCHEM\1\METHODS\62A1101.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1101.C
Last Cal Update: Nov 01 2011 12:56 pm
Sample Type: CalStd
Total Dil Factor: 1.00

QC&ISTD Elements

Element	CPS Mean		SD	RSD(%)	Cal Coef
6 Li	3197911.00	A	17520.00	0.55	0.0000
7 (Li)	197005.20	P	694.10	0.35	1.0000
9 Be	12212.01	P	123.60	1.01	1.0000
11 B	14676.30	P	83.77	0.57	1.0000
23 Na	87927.42	P	644.40	0.73	-1.0000
24 Mg	28221.90	P	289.20	1.02	1.0000
27 Al	4290.77	P	242.60	5.65	1.0000
39 K	66973.10	P	943.20	1.41	1.0000
44 Ca	1551.95	P	130.20	8.39	1.0000
45 Sc	856704.63	M	34370.00	4.01	0.0000
45 Sc	126362.70	P	1003.00	0.79	0.0000
45 Sc	1658378.00	A	9601.00	0.58	0.0000
47 Ti	171.11	P	11.34	6.63	1.0000
51 V	9869.63	P	96.32	0.98	1.0000
52 Cr	5507.32	P	80.66	1.46	1.0000
55 Mn	3488.01	P	66.06	1.95	1.0000
56 Fe	94356.23	P	276.20	0.29	1.0000
59 Co	7205.87	P	49.41	0.69	1.0000
60 Ni	4417.61	P	64.19	1.45	1.0000
63 Cu	9145.64	P	27.36	0.30	1.0000
65 Cu	4432.73	P	63.81	1.44	1.0000
66 Zn	1444.09	P	31.53	2.18	1.0000
72 Ge	166110.91	P	706.90	0.43	0.0000
72 Ge	61388.42	P	139.80	0.23	0.0000
72 Ge	264230.19	P	352.60	0.13	0.0000
75 As	835.69	P	16.70	2.00	1.0000
78 Se	282.89	P	10.94	3.87	1.0000
78 Se	82.78	P	2.01	2.43	1.0000
88 Sr	3954.03	P	45.09	1.14	1.0000
88 Sr	21523.49	P	368.30	1.71	1.0000
95 Mo	3956.25	P	16.76	0.42	1.0000
106 (Cd)	218.90	P	45.26	20.68	1.0000
107 Ag	5320.07	P	95.17	1.79	1.0000
108 (Cd)	146.67	P	8.82	6.01	1.0000
111 Cd	2304.30	P	53.19	2.31	1.0000
115 In	1630541.00	A	12150.00	0.75	0.0000
118 Sn	6609.59	P	35.97	0.54	1.0000
121 Sb	7880.29	P	83.42	1.06	1.0000
137 Ba	2917.08	P	61.20	2.10	1.0000
159 Tb	2451921.00	A	19280.00	0.79	0.0000
165 Ho	2421550.00	A	16140.00	0.67	0.0000
205 Tl	22590.97	P	57.29	0.25	1.0000
206 (Pb)	9463.73	P	75.56	0.80	1.0000
207 (Pb)	8101.61	P	210.40	2.60	1.0000
208 Pb	37842.60	P	470.10	1.24	1.0000

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3197911.00	0.55	3046381.80	105.0
45 Sc	856704.63	4.01	841537.88	101.8
45 Sc	126362.73	0.79	128014.41	98.7
45 Sc	1658378.30	0.58	1718861.00	96.5
72 Ge	166110.89	0.43	170470.91	97.4
72 Ge	61388.42	0.23	63924.71	96.0
72 Ge	264230.19	0.13	287615.47	91.9
115 In	1630541.50	0.75	1759271.40	92.7
159 Tb	2451921.00	0.79	2620168.30	93.6
165 Ho	2421549.80	0.67	2606629.50	92.9

ISTD Ref File : C:\ICPCHEM\1\DATA\11K01m00.B\004CALS.D\004CALS.D

--- :Element Failures --- :Max. Number of Failures Allowed

Data Results:
Analytes: Pass
ISTD: Pass

Calibration Standard QC Report

Data File: C:\ICPCHEM\1\DATA\11K01m00.B\007CALS.D\007CALS.D#
Date Acquired: Nov 1 2011 01:05 pm
Operator: SDM
Sample Name: 111101 Standard 3
Misc Info:
Vial Number: 1105
Current Method: C:\ICPCHEM\1\METHODS\62A1101.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1101.C
Last Cal Update: Nov 01 2011 01:02 pm
Sample Type: CalStd
Total Dil Factor: 1.00

QC&ISTD Elements

Element	CPS Mean		SD	RSD(%)	Cal Coef
6 Li	3165803.00	A	26650.00	0.84	0.0000
7 (Li)	197816.30	P	869.80	0.44	0.6522
9 Be	608963.50	P	2794.00	0.46	1.0000
11 B	452491.69	P	2117.00	0.47	0.9818
23 Na	1431299.00	A	4912.00	0.34	-0.0851
24 Mg	1351011.00	A	16640.00	1.23	0.9998
27 Al	207750.20	P	1980.00	0.95	0.9988
39 K	588864.69	P	1990.00	0.34	0.9350
44 Ca	61690.99	P	509.70	0.83	0.9928
45 Sc	837307.31	A	13130.00	1.57	0.0000
45 Sc	127755.60	P	239.50	0.19	0.0000
45 Sc	1678097.00	A	13090.00	0.78	0.0000
47 Ti	7922.23	P	218.90	2.76	0.8908
51 V	207767.50	P	417.60	0.20	0.8376
52 Cr	235696.00	P	2680.00	1.14	0.9934
55 Mn	159043.50	P	1196.00	0.75	0.9987
56 Fe	4042510.00	A	14290.00	0.35	0.9978
59 Co	339808.50	P	2376.00	0.70	1.0000
60 Ni	88233.43	P	834.70	0.95	1.0000
63 Cu	224364.00	P	1909.00	0.85	0.9973
65 Cu	107291.20	P	694.50	0.65	0.9980
66 Zn	41810.34	P	277.10	0.66	0.9635
72 Ge	168510.41	P	779.50	0.46	0.0000
72 Ge	61639.75	P	65.10	0.11	0.0000
72 Ge	266418.50	P	1865.00	0.70	0.0000
75 As	25511.61	P	94.77	0.37	0.9299
78 Se	13440.59	P	88.79	0.66	0.9983
78 Se	3072.89	P	37.59	1.22	0.9985
88 Sr	192754.70	P	2165.00	1.12	0.9999
88 Sr	1034465.00	A	12900.00	1.25	0.9999
95 Mo	190059.80	P	678.60	0.36	0.8937
106 (Cd)	10020.54	P	261.00	2.60	0.9994
107 Ag	258067.91	P	3799.00	1.47	0.9130
108 (Cd)	7429.98	P	39.79	0.54	0.9995
111 Cd	110722.90	P	575.90	0.52	0.9996
115 In	1645273.00	A	1081.00	0.07	0.0000
118 Sn	296988.31	P	2137.00	0.72	0.8492
121 Sb	374085.00	P	3501.00	0.94	0.8700
137 Ba	141653.80	P	260.80	0.18	0.9992
159 Tb	2497817.00	A	18000.00	0.72	0.0000
165 Ho	2459640.00	A	5971.00	0.24	0.0000
205 Tl	1101270.00	M	2575.00	0.23	0.9997
206 (Pb)	386136.91	P	3185.00	0.82	0.9992
207 (Pb)	334077.09	P	2427.00	0.73	0.9989
208 Pb	1546072.00	P	2608.00	0.17	0.9986

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3165803.50	0.84	3046381.80	103.9
45 Sc	837307.31	1.57	841537.88	99.5
45 Sc	127755.65	0.19	128014.41	99.8
45 Sc	1678097.10	0.78	1718861.00	97.6
72 Ge	168510.41	0.46	170470.91	98.8
72 Ge	61639.75	0.11	63924.71	96.4
72 Ge	266418.47	0.70	287615.47	92.6
115 In	1645272.90	0.07	1759271.40	93.5
159 Tb	2497817.50	0.72	2620168.30	95.3
165 Ho	2459640.30	0.24	2606629.50	94.4

ISTD Ref File : C:\ICPCHEM\1\DATA\11K01m00.B\004CALB.D\004CALB.D#

--- :Element Failures --- :Max. Number of Failures Allowed

Data Results:
Analytes: Pass
ISTD: Pass

Calibration Standard QC Report

Data File: C:\ICPCHEM\1\DATA\11K01m00.B\008CALS.D\008CALS.D#
Date Acquired: Nov 1 2011 01:11 pm
Operator: SDM
Sample Name: 111101 Standard 4
Misc Info:
Vial Number: 1106
Current Method: C:\ICPCHEM\1\METHODS\62A1101.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1101.C
Last Cal Update: Nov 01 2011 01:09 pm
Sample Type: CalStd
Total Dil Factor: 1.00

QC&ISTD Elements

Element	CPS Mean		SD	RSD(%)	Cal Coef
6 Li	3176536.00	A	30230.00	0.95	0.0000
7 (Li)	198346.30	P	1684.00	0.85	0.5032
9 Be	1203152.00	A	13110.00	1.09	1.0000
11 B	940517.38	A	18310.00	1.95	1.0000
23 Na	2717050.00	A	24220.00	0.89	0.9993
24 Mg	2656840.00	A	28290.00	1.06	1.0000
27 Al	418135.41	P	4721.00	1.13	1.0000
39 K	1038440.00	A	3476.00	0.33	0.9999
44 Ca	124341.80	P	1957.00	1.57	1.0000
45 Sc	853187.69	A	4873.00	0.57	0.0000
45 Sc	129883.70	P	512.10	0.39	0.0000
45 Sc	1703099.00	A	5059.00	0.30	0.0000
47 Ti	15795.27	P	79.12	0.50	1.0000
51 V	416895.19	P	3057.00	0.73	0.9997
52 Cr	473581.41	P	1978.00	0.42	1.0000
55 Mn	320138.69	P	2035.00	0.64	1.0000
56 Fe	8046140.00	A	67730.00	0.84	1.0000
59 Co	678884.88	P	5021.00	0.74	1.0000
60 Ni	174526.91	P	1106.00	0.63	0.9996
63 Cu	446402.31	P	3722.00	0.83	0.9999
65 Cu	213868.80	P	339.10	0.16	0.9998
66 Zn	78915.62	P	735.90	0.93	1.0000
72 Ge	171005.09	P	739.80	0.43	0.0000
72 Ge	62542.05	P	439.40	0.70	0.0000
72 Ge	269344.69	P	1433.00	0.53	0.0000
75 As	51154.91	P	63.57	0.12	0.9999
78 Se	26767.16	P	305.80	1.14	1.0000
78 Se	6106.64	P	3.46	0.06	1.0000
88 Sr	388046.31	P	3939.00	1.02	1.0000
88 Sr	2073205.00	A	15240.00	0.74	1.0000
95 Mo	380840.59	P	4103.00	1.08	1.0000
106 (Cd)	20159.45	P	127.80	0.63	1.0000
107 Ag	514040.19	P	989.40	0.19	1.0000
108 (Cd)	14892.80	P	389.20	2.61	1.0000
111 Cd	221650.30	P	919.40	0.41	1.0000
115 In	1646242.00	A	1674.00	0.10	0.0000
118 Sn	598295.19	P	784.80	0.13	0.9999
121 Sb	763971.50	P	2247.00	0.29	1.0000
137 Ba	281729.31	P	2011.00	0.71	1.0000
159 Tb	2535357.00	A	10580.00	0.42	0.0000
165 Ho	2514012.00	A	12770.00	0.51	0.0000
205 Tl	2209126.00	A	2212.00	0.10	1.0000
206 (Pb)	762566.69	P	4537.00	0.59	1.0000
207 (Pb)	656525.69	P	2599.00	0.39	1.0000
208 Pb	3045645.00	A	11790.00	0.39	1.0000

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3176535.80	0.95	3046381.80	104.3
45 Sc	853187.75	0.57	841537.88	101.4
45 Sc	129883.66	0.39	128014.41	101.5
45 Sc	1703099.00	0.30	1718861.00	99.1
72 Ge	171005.06	0.43	170470.91	100.3
72 Ge	62542.05	0.70	63924.71	97.8
72 Ge	269344.69	0.53	287615.47	93.6
115 In	1646242.40	0.10	1759271.40	93.6
159 Tb	2535356.80	0.42	2620168.30	96.8
165 Ho	2514011.80	0.51	2606629.50	96.4

ISTD Ref File : C:\ICPCHEM\1\DATA\11K01m00.B\004CALS.D\004CALS.D#

--- :Element Failures --- :Max. Number of Failures Allowed

Data Results:
Analytes: **Pass**
ISTD: **Pass**

QCS QC Report

Data File: C:\ICPCHEM\1\DATA\11K01m00.B\009_QCS.D\009_QCS.D#
Date Acquired: Nov 1 2011 01:17 pm
Operator: SDM
Sample Name: ICV 111101
Misc Info:
Vial Number: 1107
Current Method: C:\ICPCHEM\1\METHODS\62A1101.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1101.C
Last Cal Update: Nov 01 2011 01:15 pm
Sample Type: QCS
Total Dil Factor: 1.00

QC Elements

Element	Conc.		RSD(%)	Expected	QC Range(%)		Flag
7 (Li)	--------	ug/l	--------	100.00	90 -	110	
9 Be	96.35	ug/l	0.35	100.00	90 -	110	
11 B	95.37	ug/l	0.64	100.00	90 -	110	
23 Na	2620.00	ug/l	8.11	2500.00	90 -	110	
24 Mg	2655.00	ug/l	7.53	2500.00	90 -	110	
27 Al	2669.00	ug/l	8.00	2500.00	90 -	110	
39 K	2556.00	ug/l	9.62	2500.00	90 -	110	
44 Ca	2652.00	ug/l	7.70	2500.00	90 -	110	
47 Ti	100.10	ug/l	7.22	100.00	90 -	110	
51 V	103.70	ug/l	7.41	100.00	90 -	110	
52 Cr	107.40	ug/l	6.90	100.00	90 -	110	
55 Mn	106.50	ug/l	7.53	100.00	90 -	110	
56 Fe	2623.00	ug/l	7.24	2500.00	90 -	110	
59 Co	105.10	ug/l	7.62	100.00	90 -	110	
60 Ni	105.80	ug/l	7.03	100.00	90 -	110	
63 Cu	102.00	ug/l	8.45	100.00	90 -	110	
65 Cu	102.30	ug/l	8.21	100.00	90 -	110	
66 Zn	102.20	ug/l	8.55	100.00	90 -	110	
75 As	99.93	ug/l	8.37	100.00	90 -	110	
78 Se	99.37	ug/l	0.71	100.00	90 -	110	
78 Se	105.90	ug/l	9.14	100.00	90 -	110	
88 Sr	102.30	ug/l	7.76	100.00	90 -	110	
88 Sr	95.84	ug/l	1.28	100.00	90 -	110	
95 Mo	91.71	ug/l	1.01	100.00	90 -	110	
106 (Cd)	--------	ug/l	--------	100.00	90 -	110	
107 Ag	45.52	ug/l	0.38	50.00	90 -	110	
108 (Cd)	--------	ug/l	--------	100.00	90 -	110	
111 Cd	96.57	ug/l	0.26	100.00	90 -	110	
118 Sn	47.57	ug/l	1.71	50.00	90 -	110	
121 Sb	99.43	ug/l	0.40	100.00	90 -	110	
137 Ba	95.03	ug/l	0.55	100.00	90 -	110	
205 Tl	98.04	ug/l	1.17	100.00	90 -	110	
206 (Pb)	--------	ug/l	--------	100.00	90 -	110	
207 (Pb)	--------	ug/l	--------	100.00	90 -	110	
208 Pb	98.85	ug/l	0.92	100.00	90 -	110	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3197158.30	0.99	3046381.80	104.9
45 Sc	870008.00	0.75	841537.88	103.4
45 Sc	123055.63	7.32	128014.41	96.1
45 Sc	1678354.00	0.41	1718861.00	97.6
72 Ge	173079.38	0.72	170470.91	101.5
72 Ge	59473.47	7.70	63924.71	93.0
72 Ge	267335.19	0.40	287615.47	92.9
115 In	1629751.60	0.63	1759271.40	92.6
159 Tb	2485242.50	0.49	2620168.30	94.9
165 Ho	2449410.30	0.02	2606629.50	94.0

ISTD Ref File : C:\ICPCHEM\1\DATA\11K01m00.B\004CALB.D\004CALB.D#

0 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Pass
ISTD: Pass

CCB QC Report

Data File: C:\ICPCHEM\1\DATA\11K01m00.B\012_CCB.D\012_CCB.D#
Date Acquired: Nov 1 2011 01:35 pm
Operator: SDM
Sample Name: ICB 111101
Misc Info:
Vial Number: 1102
Current Method: C:\ICPCHEM\1\METHODS\62A1101.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1101.C
Last Cal Update: Nov 01 2011 01:15 pm
Sample Type: CCB
Total Dil Factor: 1.00

QC Elements

Element	Conc.	RSD(%)	High Limit	Flag
7 (Li)	-------- ug/l	--------	#VALUE!	
9 Be	-0.05 ug/l	2.30	0.12	
11 B	0.13 ug/l	18.35	15.00	
23 Na	-15.50 ug/l	12.01	77.10	
24 Mg	0.18 ug/l	40.55	7.50	
27 Al	0.02 ug/l	419.26	3.96	
39 K	-5.67 ug/l	64.40	19.20	
44 Ca	1.63 ug/l	52.11	90.00	
47 Ti	0.01 ug/l	33.84	0.78	
51 V	0.26 ug/l	8.57	0.21	Fail
52 Cr	0.01 ug/l	59.56	0.12	
55 Mn	0.00 ug/l	168.47	0.18	
56 Fe	0.10 ug/l	32.20	40.80	
59 Co	-0.06 ug/l	5.37	0.09	
60 Ni	0.02 ug/l	22.54	0.48	
63 Cu	0.02 ug/l	41.61	0.39	
65 Cu	0.01 ug/l	64.11	0.39	
66 Zn	0.07 ug/l	12.24	6.90	
75 As	0.04 ug/l	25.27	0.27	
78 Se	0.02 ug/l	57.96	0.30	
78 Se	-0.03 ug/l	123.31	0.30	
88 Sr	0.00 ug/l	4852.60	0.03	
88 Sr	0.00 ug/l	14.82	0.03	
95 Mo	0.02 ug/l	17.11	0.21	
106 (Cd)	-------- ug/l	--------	#VALUE!	
107 Ag	0.00 ug/l	36.45	0.09	
108 (Cd)	-------- ug/l	--------	#VALUE!	
111 Cd	0.00 ug/l	272.81	0.06	
118 Sn	0.01 ug/l	56.54	0.30	
121 Sb	0.02 ug/l	20.15	0.03	
137 Ba	0.00 ug/l	437.48	0.12	
205 Tl	0.00 ug/l	1219.40	0.03	
206 (Pb)	-------- ug/l	--------	#VALUE!	
207 (Pb)	-------- ug/l	--------	#VALUE!	
208 Pb	-0.20 ug/l	0.68	0.33	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3076661.80	0.75	3046381.80	101.0
45 Sc	858010.13	1.36	841537.88	102.0
45 Sc	131195.80	1.22	128014.41	102.5
45 Sc	1746094.50	0.51	1718861.00	101.6
72 Ge	174806.50	0.75	170470.91	102.5
72 Ge	65442.94	0.36	63924.71	102.4
72 Ge	290267.66	0.45	287615.47	100.9
115 In	1795900.60	1.20	1759271.40	102.1
159 Tb	2660423.80	0.47	2620168.30	101.5
165 Ho	2626198.80	0.87	2606629.50	100.8

ISTD Ref File : C:\ICPCHEM\1\DATA\11K01m00.B\004CALB.D\004CALB.D#

1 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Fail
ISTD: Pass

CCV QC Report

Data File: C:\ICPCHEM\1\DATA\11K01m00.B\013_CCV.D\013_CCV.D#
Date Acquired: Nov 1 2011 01:41 pm
Operator: SDM
Sample Name: CCV 111101
Misc Info:
Vial Number: 1105
Current Method: C:\ICPCHEM\1\METHODS\62A1101.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1101.C
Last Cal Update: Nov 01 2011 01:15 pm
Sample Type: CCV
Total Dil Factor: 1.00

QC Elements

Element	Conc.		RSD(%)	Expected	QC Range(%)	Flag
7 (Li)	--------	ug/l	--------	50.00	90 - 110	
9 Be	50.13	ug/l	0.35	50.00	90 - 110	
11 B	48.68	ug/l	0.36	50.00	90 - 110	
23 Na	1277.00	ug/l	0.42	1250.00	90 - 110	
24 Mg	2579.00	ug/l	0.72	2500.00	90 - 110	
27 Al	1017.00	ug/l	0.84	1000.00	90 - 110	
39 K	1082.00	ug/l	0.71	1000.00	90 - 110	
44 Ca	2493.00	ug/l	1.17	2500.00	90 - 110	
47 Ti	50.39	ug/l	0.75	50.00	90 - 110	
51 V	51.42	ug/l	0.58	50.00	90 - 110	
52 Cr	50.19	ug/l	1.12	50.00	90 - 110	
55 Mn	50.27	ug/l	0.41	50.00	90 - 110	
56 Fe	1015.00	ug/l	0.76	1000.00	90 - 110	
59 Co	50.34	ug/l	0.73	50.00	90 - 110	
60 Ni	50.58	ug/l	0.91	50.00	90 - 110	
63 Cu	49.86	ug/l	0.41	50.00	90 - 110	
65 Cu	50.33	ug/l	0.71	50.00	90 - 110	
66 Zn	52.32	ug/l	0.44	50.00	90 - 110	
75 As	50.08	ug/l	0.76	50.00	90 - 110	
78 Se	49.42	ug/l	1.62	50.00	90 - 110	
78 Se	50.31	ug/l	1.20	50.00	90 - 110	
88 Sr	50.14	ug/l	1.50	50.00	90 - 110	
88 Sr	50.73	ug/l	1.60	50.00	90 - 110	
95 Mo	50.03	ug/l	1.11	50.00	90 - 110	
106 (Cd)	--------	ug/l	--------	50.00	90 - 110	
107 Ag	25.00	ug/l	0.78	25.00	90 - 110	
108 (Cd)	--------	ug/l	--------	50.00	90 - 110	
111 Cd	49.56	ug/l	0.36	50.00	90 - 110	
118 Sn	49.70	ug/l	0.50	50.00	90 - 110	
121 Sb	49.06	ug/l	0.27	50.00	90 - 110	
137 Ba	49.53	ug/l	0.79	50.00	90 - 110	
205 Tl	50.33	ug/l	0.20	50.00	90 - 110	
206 (Pb)	--------	ug/l	--------	50.00	90 - 110	
207 (Pb)	--------	ug/l	--------	50.00	90 - 110	
208 Pb	50.97	ug/l	0.31	50.00	90 - 110	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3183744.30	1.19	3046381.80	104.5
45 Sc	851787.94	1.26	841537.88	101.2
45 Sc	128582.07	0.15	128014.41	100.4
45 Sc	1678539.60	0.54	1718861.00	97.7
72 Ge	171574.59	0.85	170470.91	100.6
72 Ge	62395.17	0.26	63924.71	97.6
72 Ge	266506.19	0.55	287615.47	92.7
115 In	1647933.10	0.55	1759271.40	93.7
159 Tb	2486711.50	0.32	2620168.30	94.9
165 Ho	2462420.80	0.62	2606629.50	94.5

ISTD Ref File : C:\ICPCHEM\1\DATA\11K01m00.B\004CALB.D\004CALB.D#

0 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Pass
ISTD: Pass

CCB QC Report

Data File: C:\ICPCHEM\1\DATA\11K01m00.B\014_CCB.D\014_CCB.D#
Date Acquired: Nov 1 2011 01:47 pm
Operator: SDM
Sample Name: CCB 111101
Misc Info:
Vial Number: 1102
Current Method: C:\ICPCHEM\1\METHODS\62A1101.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1101.C
Last Cal Update: Nov 01 2011 01:15 pm
Sample Type: CCB
Total Dil Factor: 1.00

QC Elements

Element	Conc.		RSD(%)	High Limit	Flag
7 (Li)	--------	ug/l	--------	#VALUE!	
9 Be	-0.05	ug/l	5.94	0.12	
11 B	0.23	ug/l	5.36	15.00	
23 Na	-14.34	ug/l	21.41	77.10	
24 Mg	0.11	ug/l	15.32	7.50	
27 Al	0.03	ug/l	337.34	3.96	
39 K	-4.71	ug/l	49.60	19.20	
44 Ca	1.90	ug/l	25.86	90.00	
47 Ti	0.01	ug/l	460.78	0.78	
51 V	0.20	ug/l	2.98	0.21	
52 Cr	0.02	ug/l	24.60	0.12	
55 Mn	0.00	ug/l	118.88	0.18	
56 Fe	0.18	ug/l	20.08	40.80	
59 Co	-0.05	ug/l	4.71	0.09	
60 Ni	0.01	ug/l	31.62	0.48	
63 Cu	0.02	ug/l	70.32	0.39	
65 Cu	0.01	ug/l	82.37	0.39	
66 Zn	0.04	ug/l	50.82	6.90	
75 As	0.04	ug/l	15.04	0.27	
78 Se	0.07	ug/l	15.22	0.30	
78 Se	0.07	ug/l	40.13	0.30	
88 Sr	0.01	ug/l	38.74	0.03	
88 Sr	0.00	ug/l	681.24	0.03	
95 Mo	0.05	ug/l	8.17	0.21	
106 (Cd)	--------	ug/l	--------	#VALUE!	
107 Ag	0.00	ug/l	203.21	0.09	
108 (Cd)	--------	ug/l	--------	#VALUE!	
111 Cd	0.00	ug/l	97.83	0.06	
118 Sn	0.01	ug/l	56.20	0.30	
121 Sb	0.20	ug/l	2.15	0.03	
137 Ba	0.00	ug/l	43.34	0.12	
205 Tl	0.01	ug/l	10.42	0.03	
206 (Pb)	--------	ug/l	--------	#VALUE!	
207 (Pb)	--------	ug/l	--------	#VALUE!	
208 Pb	-0.21	ug/l	0.65	0.33	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3046888.30	1.02	3046381.80	100.0
45 Sc	861817.75	2.28	841537.88	102.4
45 Sc	130067.15	0.45	128014.41	101.6
45 Sc	1729945.90	1.43	1718861.00	100.6
72 Ge	175283.66	0.32	170470.91	102.8
72 Ge	65163.56	0.07	63924.71	101.9
72 Ge	287913.88	0.86	287615.47	100.1
115 In	1795390.50	0.13	1759271.40	102.1
159 Tb	2647443.30	1.25	2620168.30	101.0
165 Ho	2611104.30	1.38	2606629.50	100.2

ISTD Ref File : C:\ICPCHEM\1\DATA\11K01m00.B\004CALB.D\004CALB.D#

1 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Fail
ISTD: Pass

ICS-A QC Report

Data File: C:\ICPCHEM\1\DATA\11K01m00.B\015ICSA.D\015ICSA.D#
Date Acquired: Nov 1 2011 01:53 pm
Acq. Method: 62A1101.M
Operator: SDM
Sample Name: ICSA 111101
Misc Info:
Vial Number: 3102
Current Method: C:\ICPCHEM\1\METHODS\62A1101.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1101.C
Last Cal. Update: Nov 01 2011 01:15 pm
Sample Type: ICSA
Dilution Factor: 1.00

Data Results:
Analytes: Pass
ISTD: Pass

QC Elements

Element	IS Ref	Tune	Conc.		RSD(%)	High Limit ppb	Flag
7 (Li)	---	3	--------	ug/l	--------		
9 Be	45	3	0.02	ug/l	21.09		
11 B	45	3	1.23	ug/l	1.90		
23 Na	45	2	92330.00	ug/l	0.70		
24 Mg	45	2	88610.00	ug/l	0.42		
27 Al	45	2	91060.00	ug/l	0.28		
39 K	45	2	86870.00	ug/l	0.69		
44 Ca	45	2	84840.00	ug/l	0.99		
47 Ti	45	2	1878.00	ug/l	0.91		
51 V	45	2	3.08	ug/l	0.68		
52 Cr	45	2	1.51	ug/l	1.23		
55 Mn	45	2	6.76	ug/l	0.35		
56 Fe	45	2	88270.00	ug/l	0.86		
59 Co	45	2	18.56	ug/l	1.35		
60 Ni	45	2	2.54	ug/l	1.26		
63 Cu	72	2	2.82	ug/l	0.87		
65 Cu	72	2	2.99	ug/l	1.92		
66 Zn	72	2	5.22	ug/l	1.77		
75 As	72	2	1.39	ug/l	4.77		
78 Se	72	1	0.34	ug/l	5.54		
78 Se	72	2	0.29	ug/l	19.98		
88 Sr	72	2	0.57	ug/l	4.90		
88 Sr	72	3	0.58	ug/l	0.93		
95 Mo	72	3	1608.00	ug/l	0.13		
106 (Cd)	---	3	--------	ug/l	--------		
107 Ag	115	3	0.67	ug/l	3.00		
108 (Cd)	---	3	--------	ug/l	--------		
111 Cd	115	3	0.61	ug/l	21.25		
118 Sn	115	3	1.21	ug/l	2.26		
121 Sb	115	3	1.11	ug/l	2.23		
137 Ba	115	3	2.55	ug/l	0.76		
205 Tl	159	3	0.52	ug/l	1.04		
206 (Pb)	---	3	--------	ug/l	--------		
207 (Pb)	---	3	--------	ug/l	--------		
208 Pb	159	3	2.09	ug/l	3.36		

ISTD Elements

Element	Tune	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3	2937460	0.84	3046382	96.4
45 Sc	1	804952	4.67	841538	95.7
45 Sc	2	126644	0.04	128014	98.9
45 Sc	3	1661407	0.56	1718861	96.7
72 Ge	1	155557	6.23	170471	91.3
72 Ge	2	63379	0.48	63925	99.1
72 Ge	3	276757	0.45	287615	96.2
115 In	3	1498329	0.37	1759271	85.2
159 Tb	3	2367263	1.06	2620168	90.3
165 Ho	3	2343867	0.48	2606630	89.9

Tune File# 1 c:\icpchem\1\7500\h2.u
Tune File# 2 c:\icpchem\1\7500\he.u
Tune File# 3 c:\icpchem\1\7500\nogas.u

ISTD Ref File : C:\ICPCHEM\1\DATA\11K01m00.B\004CALB.D\004CALB.D#

0 :Element Failures 0 :Max. Number of Failures Allowed

ICS-AB QC Report

Data File: C:\ICPCHEM\1\DATA\11K01m00.B\016ICSB.D\016ICSB.D#
Date Acquired: Nov 1 2011 01:59 pm
Acq. Method: 62A1101.M
Operator: SDM
Sample Name: ICSAB 111101
Misc Info:
Vial Number: 2103
Current Method: C:\ICPCHEM\1\METHODS\62A1101.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1101.C
Last Cal. Update: Nov 01 2011 01:15 pm
Sample Type: ICSAB
Dilution Factor: 1.00

Data Results:
Analytes: Pass
ISTD: Pass

QC Elements

Element	IS Ref	Tune	Conc. ppb	RSD(%)	Expected	%Recovery	QC Range(%)	Flag
7 (Li)	---	3	--------	--------	---		-	
9 Be	45	3	224.30	1.68	250	89.7	80 - 120	
11 B	45	3	1.18	3.11	---		-	
23 Na	45	2	91740.00	1.12	---		-	
24 Mg	45	2	87330.00	1.09	---		-	
27 Al	45	2	90190.00	0.84	---		-	
39 K	45	2	86280.00	0.84	---		-	
44 Ca	45	2	84280.00	1.19	---		-	
47 Ti	45	2	1872.00	1.21	2000	93.6	80 - 120	
51 V	45	2	230.70	0.86	250	92.3	80 - 120	
52 Cr	45	2	234.30	0.65	250	93.7	80 - 120	
55 Mn	45	2	254.20	1.09	250	101.7	80 - 120	
56 Fe	45	2	87900.00	1.72	---		-	
59 Co	45	2	240.40	1.78	250	96.2	80 - 120	
60 Ni	45	2	447.20	1.18	500	89.4	80 - 120	
63 Cu	72	2	210.60	0.43	250	84.2	80 - 120	
65 Cu	72	2	211.50	0.82	250	84.6	80 - 120	
66 Zn	72	2	473.50	0.36	500	94.7	80 - 120	
75 As	72	2	228.20	0.96	250	91.3	80 - 120	
78 Se	72	1	238.40	0.73	250	95.4	80 - 120	
78 Se	72	2	229.00	0.64	250	91.6	80 - 120	
88 Sr	72	2	0.65	0.80	---		-	
88 Sr	72	3	0.68	1.51	---		-	
95 Mo	72	3	1820.00	1.02	2000	91.0	80 - 120	
106 (Cd)	---	3	--------	--------	---		-	
107 Ag	115	3	439.60	1.14	500	87.9	80 - 120	
108 (Cd)	---	3	--------	--------	---		-	
111 Cd	115	3	477.20	1.23	500	95.4	80 - 120	
118 Sn	115	3	1.28	1.11	---		-	
121 Sb	115	3	248.60	0.82	250	99.4	80 - 120	
137 Ba	115	3	261.40	1.29	250	104.6	80 - 120	
205 Tl	159	3	236.30	0.97	250	94.5	80 - 120	
206 (Pb)	---	3	--------	--------	---		-	
207 (Pb)	---	3	--------	--------	---		-	
208 Pb	159	3	463.30	1.41	500	92.7	80 - 120	

ISTD Elements

Element	Tune	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3	2975227	0.21	3046382	97.7
45 Sc	1	845620	1.03	841538	100.5
45 Sc	2	128349	0.48	128014	100.3
45 Sc	3	1675506	1.16	1718861	97.5
72 Ge	1	167384	0.81	170471	98.2
72 Ge	2	63304	0.42	63925	99.0
72 Ge	3	276707	0.83	287615	96.2
115 In	3	1511222	0.95	1759271	85.9
159 Tb	3	2402647	0.39	2620168	91.7
165 Ho	3	2384254	1.47	2606630	91.5

Tune File# 1 c:\icpchem\1\7500\h2.u
Tune File# 2 c:\icpchem\1\7500\he.u
Tune File# 3 c:\icpchem\1\7500\nogas.u

ISTD Ref File : C:\ICPCHEM\1\DATA\11K01m00.B\004CALB.D\004CALB.D#

0 :Element Failures 0 :Max. Number of Failures Allowed

CCV QC Report

Data File: C:\ICPCHEM\1\DATA\11K01m00.B\018_CCV.D\018_CCV.D#
Date Acquired: Nov 1 2011 02:11 pm
Operator: SDM
Sample Name: CCV 111101
Misc Info:
Vial Number: 1105
Current Method: C:\ICPCHEM\1\METHODS\62A1101.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1101.C
Last Cal Update: Nov 01 2011 01:15 pm
Sample Type: CCV
Total Dil Factor: 1.00

QC Elements

Element	Conc.		RSD(%)	Expected	QC Range(%)		Flag
7 (Li)	--------	ug/l	--------	50.00	90 -	110	
9 Be	49.33	ug/l	0.57	50.00	90 -	110	
11 B	47.11	ug/l	0.82	50.00	90 -	110	
23 Na	1253.00	ug/l	0.14	1250.00	90 -	110	
24 Mg	2558.00	ug/l	0.59	2500.00	90 -	110	
27 Al	1006.00	ug/l	0.73	1000.00	90 -	110	
39 K	1058.00	ug/l	0.48	1000.00	90 -	110	
44 Ca	2490.00	ug/l	1.19	2500.00	90 -	110	
47 Ti	49.81	ug/l	2.14	50.00	90 -	110	
51 V	51.54	ug/l	0.29	50.00	90 -	110	
52 Cr	50.08	ug/l	0.51	50.00	90 -	110	
55 Mn	50.05	ug/l	0.49	50.00	90 -	110	
56 Fe	1010.00	ug/l	0.78	1000.00	90 -	110	
59 Co	50.14	ug/l	0.91	50.00	90 -	110	
60 Ni	50.28	ug/l	1.67	50.00	90 -	110	
63 Cu	49.23	ug/l	0.67	50.00	90 -	110	
65 Cu	49.49	ug/l	0.49	50.00	90 -	110	
66 Zn	51.59	ug/l	0.73	50.00	90 -	110	
75 As	50.10	ug/l	0.40	50.00	90 -	110	
78 Se	49.64	ug/l	1.56	50.00	90 -	110	
78 Se	49.81	ug/l	1.77	50.00	90 -	110	
88 Sr	50.45	ug/l	0.40	50.00	90 -	110	
88 Sr	50.58	ug/l	0.31	50.00	90 -	110	
95 Mo	49.94	ug/l	0.40	50.00	90 -	110	
106 (Cd)	--------	ug/l	--------	50.00	90 -	110	
107 Ag	24.82	ug/l	1.10	25.00	90 -	110	
108 (Cd)	--------	ug/l	--------	50.00	90 -	110	
111 Cd	49.59	ug/l	0.90	50.00	90 -	110	
118 Sn	49.93	ug/l	0.20	50.00	90 -	110	
121 Sb	50.37	ug/l	1.12	50.00	90 -	110	
137 Ba	50.23	ug/l	0.62	50.00	90 -	110	
205 Tl	51.55	ug/l	0.90	50.00	90 -	110	
206 (Pb)	--------	ug/l	--------	50.00	90 -	110	
207 (Pb)	--------	ug/l	--------	50.00	90 -	110	
208 Pb	51.12	ug/l	0.79	50.00	90 -	110	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3202008.80	0.51	3046381.80	105.1
45 Sc	852356.44	1.69	841537.88	101.3
45 Sc	127580.99	0.10	128014.41	99.7
45 Sc	1666933.30	0.83	1718861.00	97.0
72 Ge	172698.94	0.12	170470.91	101.3
72 Ge	62139.25	0.73	63924.71	97.2
72 Ge	269637.81	0.61	287615.47	93.7
115 In	1673784.50	0.21	1759271.40	95.1
159 Tb	2577835.00	0.22	2620168.30	98.4
165 Ho	2548018.00	0.13	2606629.50	97.8

ISTD Ref File : C:\ICPCHEM\1\DATA\11K01m00.B\004CALB.D\004CALB.D#

0 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Pass
ISTD: Pass

CCB QC Report

Data File: C:\ICPCHEM\1\DATA\11K01m00.B\020_CCB.D\020_CCB.D#
Date Acquired: Nov 1 2011 02:23 pm
Operator: SDM
Sample Name: CCB 111101
Misc Info:
Vial Number: 1102
Current Method: C:\ICPCHEM\1\METHODS\62A1101.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1101.C
Last Cal Update: Nov 01 2011 01:15 pm
Sample Type: CCB
Total Dil Factor: 1.00

QC Elements

Element	Conc.		RSD(%)	High Limit	Flag
7 (Li)	--------	ug/l	--------	#VALUE!	
9 Be	-0.04	ug/l	2.46	0.12	
11 B	0.06	ug/l	9.86	15.00	
23 Na	-25.19	ug/l	8.94	77.10	
24 Mg	0.32	ug/l	24.61	7.50	
27 Al	0.19	ug/l	91.81	3.96	
39 K	-4.23	ug/l	65.60	19.20	
44 Ca	0.54	ug/l	96.41	90.00	
47 Ti	0.01	ug/l	305.81	0.78	
51 V	0.28	ug/l	11.32	0.21	Fail
52 Cr	0.02	ug/l	10.22	0.12	
55 Mn	0.00	ug/l	310.96	0.18	
56 Fe	0.39	ug/l	8.21	40.80	
59 Co	-0.06	ug/l	6.08	0.09	
60 Ni	0.02	ug/l	18.30	0.48	
63 Cu	0.01	ug/l	62.12	0.39	
65 Cu	0.01	ug/l	129.02	0.39	
66 Zn	0.05	ug/l	1.11	6.90	
75 As	0.06	ug/l	29.61	0.27	
78 Se	0.04	ug/l	33.82	0.30	
78 Se	0.02	ug/l	228.04	0.30	
88 Sr	0.00	ug/l	108.13	0.03	
88 Sr	0.00	ug/l	98.57	0.03	
95 Mo	0.05	ug/l	13.12	0.21	
106 (Cd)	--------	ug/l	--------	#VALUE!	
107 Ag	0.00	ug/l	169.19	0.09	
108 (Cd)	--------	ug/l	--------	#VALUE!	
111 Cd	0.00	ug/l	1044.50	0.06	
118 Sn	0.00	ug/l	119.29	0.30	
121 Sb	0.10	ug/l	10.99	0.03	
137 Ba	0.00	ug/l	225.61	0.12	
205 Tl	0.00	ug/l	32.48	0.03	
206 (Pb)	--------	ug/l	--------	#VALUE!	
207 (Pb)	--------	ug/l	--------	#VALUE!	
208 Pb	-0.24	ug/l	1.12	0.33	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3081250.80	1.24	3046381.80	101.1
45 Sc	837889.19	4.07	841537.88	99.6
45 Sc	127959.42	0.92	128014.41	100.0
45 Sc	1698801.80	1.12	1718861.00	98.8
72 Ge	176629.08	0.47	170470.91	103.6
72 Ge	65372.20	0.61	63924.71	102.3
72 Ge	280717.56	0.03	287615.47	97.6
115 In	1756298.40	0.10	1759271.40	99.8
159 Tb	2634075.80	1.00	2620168.30	100.5
165 Ho	2605268.30	0.71	2606629.50	99.9

ISTD Ref File : C:\ICPCHEM\1\DATA\11K01m00.B\004CALB.D\004CALB.D#

2 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Fail
ISTD: Pass

CCV QC Report

Data File: C:\ICPCHEM\1\DATA\11K01m00.B\032_CCV.D\032_CCV.D#
Date Acquired: Nov 1 2011 03:37 pm
Operator: SDM
Sample Name: CCV 111101
Misc Info:
Vial Number: 1105
Current Method: C:\ICPCHEM\1\METHODS\62A1101.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1101.C
Last Cal Update: Nov 01 2011 01:15 pm
Sample Type: CCV
Total Dil Factor: 1.00

QC Elements

Element	Conc.	RSD(%)	Expected	QC Range (%)	Flag
7 (Li)	-------- ug/l	--------	50.00	90 - 110	
9 Be	49.23 ug/l	1.65	50.00	90 - 110	
11 B	47.31 ug/l	1.22	50.00	90 - 110	
23 Na	1258.00 ug/l	1.08	1250.00	90 - 110	
24 Mg	2517.00 ug/l	0.76	2500.00	90 - 110	
27 Al	995.50 ug/l	0.53	1000.00	90 - 110	
39 K	1070.00 ug/l	0.17	1000.00	90 - 110	
44 Ca	2473.00 ug/l	0.33	2500.00	90 - 110	
47 Ti	49.57 ug/l	2.10	50.00	90 - 110	
51 V	51.54 ug/l	1.18	50.00	90 - 110	
52 Cr	49.65 ug/l	0.57	50.00	90 - 110	
55 Mn	50.29 ug/l	0.83	50.00	90 - 110	
56 Fe	1001.00 ug/l	0.38	1000.00	90 - 110	
59 Co	49.64 ug/l	0.98	50.00	90 - 110	
60 Ni	49.41 ug/l	1.40	50.00	90 - 110	
63 Cu	48.36 ug/l	0.60	50.00	90 - 110	
65 Cu	48.39 ug/l	0.82	50.00	90 - 110	
66 Zn	50.93 ug/l	0.79	50.00	90 - 110	
75 As	49.60 ug/l	0.19	50.00	90 - 110	
78 Se	47.45 ug/l	0.93	50.00	90 - 110	
78 Se	49.11 ug/l	0.40	50.00	90 - 110	
88 Sr	50.43 ug/l	0.45	50.00	90 - 110	
88 Sr	48.61 ug/l	0.38	50.00	90 - 110	
95 Mo	47.63 ug/l	0.41	50.00	90 - 110	
106 (Cd)	-------- ug/l	--------	50.00	90 - 110	
107 Ag	24.71 ug/l	1.89	25.00	90 - 110	
108 (Cd)	-------- ug/l	--------	50.00	90 - 110	
111 Cd	49.90 ug/l	0.77	50.00	90 - 110	
118 Sn	49.90 ug/l	0.44	50.00	90 - 110	
121 Sb	49.90 ug/l	0.80	50.00	90 - 110	
137 Ba	50.64 ug/l	0.90	50.00	90 - 110	
205 Tl	50.42 ug/l	0.95	50.00	90 - 110	
206 (Pb)	-------- ug/l	--------	50.00	90 - 110	
207 (Pb)	-------- ug/l	--------	50.00	90 - 110	
208 Pb	50.04 ug/l	0.76	50.00	90 - 110	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3359634.50	0.88	3046381.80	110.3
45 Sc	888829.44	2.38	841537.88	105.6
45 Sc	134763.30	0.21	128014.41	105.3
45 Sc	1752806.10	1.84	1718861.00	102.0
72 Ge	186889.09	0.08	170470.91	109.6
72 Ge	66390.57	1.04	63924.71	103.9
72 Ge	292141.63	0.34	287615.47	101.6
115 In	1726984.60	0.86	1759271.40	98.2
~~159 Tb~~	~~2665414.30~~	~~0.69~~	~~2620168.30~~	~~101.7~~
165 Ho	2607966.00	1.28	2606629.50	100.1

ISTD Ref File : C:\ICPCHEM\1\DATA\11K01m00.B\004CALB.D\004CALB.D#

0 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Pass
ISTD: Pass

CCB QC Report

Data File: C:\ICPCHEM\1\DATA\11K01m00.B\034_CCB.D\034_CCB.D#
Date Acquired: Nov 1 2011 03:49 pm
Operator: SDM
Sample Name: CCB 111101
Misc Info:
Vial Number: 1102
Current Method: C:\ICPCHEM\1\METHODS\62A1101.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1101.C
Last Cal Update: Nov 01 2011 01:15 pm
Sample Type: CCB
Total Dil Factor: 1.00

QC Elements

Element	Conc.		RSD(%)	High Limit	Flag
7 (Li)	--------	ug/l	--------	#VALUE!	
9 Be	-0.05	ug/l	2.30	0.12	
11 B	0.01	ug/l	30.41	15.00	
23 Na	-11.56	ug/l	37.97	77.10	
24 Mg	0.20	ug/l	95.18	7.50	
27 Al	0.06	ug/l	108.49	3.96	
39 K	-1.51	ug/l	168.77	19.20	
44 Ca	1.82	ug/l	28.44	90.00	
47 Ti	0.00	ug/l	889.47	0.78	
51 V	0.26	ug/l	12.83	0.21	Fail
52 Cr	0.02	ug/l	58.60	0.12	
55 Mn	0.01	ug/l	42.91	0.18	
56 Fe	0.47	ug/l	9.81	40.80	
59 Co	-0.06	ug/l	2.27	0.09	
60 Ni	0.02	ug/l	10.90	0.48	
63 Cu	0.05	ug/l	86.03	0.39	
65 Cu	0.02	ug/l	22.51	0.39	
66 Zn	0.08	ug/l	26.20	6.90	
75 As	0.05	ug/l	23.62	0.27	
78 Se	0.03	ug/l	52.48	0.30	
78 Se	0.01	ug/l	259.33	0.30	
88 Sr	0.00	ug/l	70.69	0.03	
88 Sr	0.00	ug/l	293.50	0.03	
95 Mo	0.02	ug/l	21.42	0.21	
106 (Cd)	--------	ug/l	--------	#VALUE!	
107 Ag	0.00	ug/l	82.90	0.09	
108 (Cd)	--------	ug/l	--------	#VALUE!	
111 Cd	0.00	ug/l	1094.90	0.06	
118 Sn	0.01	ug/l	53.54	0.30	
121 Sb	0.05	ug/l	6.71	0.03	
137 Ba	0.01	ug/l	113.25	0.12	
205 Tl	0.00	ug/l	18.97	0.03	
206 (Pb)	--------	ug/l	--------	#VALUE!	
207 (Pb)	--------	ug/l	--------	#VALUE!	
208 Pb	-0.26	ug/l	0.70	0.33	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3266517.80	1.23	3046381.80	107.2
45 Sc	847799.25	1.35	841537.88	100.7
45 Sc	139103.55	1.49	128014.41	108.7
45 Sc	1818696.60	0.48	1718861.00	105.8
72 Ge	190967.42	0.61	170470.91	112.0
72 Ge	70786.73	0.25	63924.71	110.7
72 Ge	301638.31	0.54	287615.47	104.9
115 In	1870475.50	0.56	1759271.40	106.3
~~159 Tb~~	~~2765730.00~~	~~0.64~~	~~2620160.30~~	~~105.6~~
165 Ho	2719143.50	0.67	2606629.50	104.3

ISTD Ref File : C:\ICPCHEM\1\DATA\11K01m00.B\004CALB.D\004CALB.D#

2 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Fail
ISTD: Pass

CCV QC Report

Data File: C:\ICPCHEM\1\DATA\11K01m00.B\060_CCV.D\060_CCV.D#
Date Acquired: Nov 1 2011 06:27 pm
Operator: SDM
Sample Name: CCV 111101
Misc Info:
Vial Number: 1105
Current Method: C:\ICPCHEM\1\METHODS\62A1101.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1101.C
Last Cal Update: Nov 01 2011 01:15 pm
Sample Type: CCV
Total Dil Factor: 1.00

QC Elements

Element	Conc.		RSD(%)	Expected	QC Range(%)	Flag
7 (Li)	--------	ug/l	--------	50.00	90 - 110	
9 Be	47.66	ug/l	0.77	50.00	90 - 110	
11 B	45.84	ug/l	2.57	50.00	90 - 110	
23 Na	1229.00	ug/l	1.00	1250.00	90 - 110	
24 Mg	2497.00	ug/l	1.43	2500.00	90 - 110	
27 Al	1001.00	ug/l	1.72	1000.00	90 - 110	
39 K	1068.00	ug/l	0.41	1000.00	90 - 110	
44 Ca	2507.00	ug/l	1.12	2500.00	90 - 110	
47 Ti	49.18	ug/l	1.52	50.00	90 - 110	
51 V	52.17	ug/l	0.77	50.00	90 - 110	
52 Cr	49.02	ug/l	1.11	50.00	90 - 110	
55 Mn	49.74	ug/l	1.40	50.00	90 - 110	
56 Fe	989.90	ug/l	1.57	1000.00	90 - 110	
59 Co	49.36	ug/l	1.19	50.00	90 - 110	
60 Ni	49.44	ug/l	1.34	50.00	90 - 110	
63 Cu	47.50	ug/l	0.31	50.00	90 - 110	
65 Cu	47.59	ug/l	0.15	50.00	90 - 110	
66 Zn	49.35	ug/l	1.01	50.00	90 - 110	
75 As	49.52	ug/l	0.48	50.00	90 - 110	
78 Se	44.64	ug/l	1.45	50.00	90 - 110	Fail
78 Se	49.89	ug/l	1.41	50.00	90 - 110	
88 Sr	50.70	ug/l	0.43	50.00	90 - 110	
88 Sr	47.28	ug/l	0.73	50.00	90 - 110	
95 Mo	46.46	ug/l	0.90	50.00	90 - 110	
106 (Cd)	--------	ug/l	--------	50.00	90 - 110	
107 Ag	25.11	ug/l	1.81	25.00	90 - 110	
108 (Cd)	--------	ug/l	--------	50.00	90 - 110	
111 Cd	48.97	ug/l	1.94	50.00	90 - 110	
118 Sn	49.72	ug/l	0.82	50.00	90 - 110	
121 Sb	49.42	ug/l	1.09	50.00	90 - 110	
137 Ba	51.09	ug/l	1.31	50.00	90 - 110	
205 Tl	50.54	ug/l	1.01	50.00	90 - 110	
206 (Pb)	--------	ug/l	--------	50.00	90 - 110	
207 (Pb)	--------	ug/l	--------	50.00	90 - 110	
208 Pb	50.20	ug/l	0.44	50.00	90 - 110	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3384293.80	0.30	3046381.80	111.1
45 Sc	879324.88	2.88	841537.88	104.5
45 Sc	136769.45	0.73	128014.41	106.8
45 Sc	1808329.90	0.29	1718861.00	105.2
72 Ge	196920.52	0.68	170470.91	115.5
72 Ge	67969.54	0.25	63924.71	106.3
72 Ge	322880.84	0.15	287615.47	112.3
115 In	1869324.30	1.34	1759271.40	106.3
159 Tb	2827700.00	0.22	2620168.30	107.9
165 Ho	2765504.30	0.48	2606629.50	106.1

ISTD Ref File : C:\ICPCHEM\1\DATA\11K01m00.B\004CALB.D\004CALB.D#

1 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Fail
ISTD: Pass

CCB QC Report

Data File: C:\ICPCHEM\1\DATA\11K01m00.B\062_CCB.D\062_CCB.D#
Date Acquired: Nov 1 2011 06:39 pm
Operator: SDM
Sample Name: CCB 111101
Misc Info:
Vial Number: 1102
Current Method: C:\ICPCHEM\1\METHODS\62A1101.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1101.C
Last Cal Update: Nov 01 2011 01:15 pm
Sample Type: CCB
Total Dil Factor: 1.00

QC Elements

Element	Conc.	RSD(%)	High Limit	Flag
7 (Li)	-------- ug/l	--------	#VALUE!	
9 Be	-0.05 ug/l	2.19	0.12	
11 B	-0.07 ug/l	23.64	15.00	
23 Na	5.67 ug/l	179.65	77.10	
24 Mg	0.06 ug/l	215.80	7.50	
27 Al	0.00 ug/l	7659.90	3.96	
39 K	-4.75 ug/l	35.94	19.20	
44 Ca	-2.23 ug/l	42.09	90.00	
47 Ti	-0.01 ug/l	36.92	0.78	
51 V	0.42 ug/l	9.40	0.21	Fail
52 Cr	0.01 ug/l	79.07	0.12	
55 Mn	0.00 ug/l	100.72	0.18	
56 Fe	0.41 ug/l	6.52	40.80	
59 Co	-0.06 ug/l	1.98	0.09	
60 Ni	0.00 ug/l	133.56	0.48	
63 Cu	-0.01 ug/l	67.11	0.39	
65 Cu	-0.01 ug/l	103.62	0.39	
66 Zn	0.07 ug/l	6.36	6.90	
75 As	0.07 ug/l	47.11	0.27	
78 Se	0.02 ug/l	44.73	0.30	
78 Se	0.02 ug/l	174.50	0.30	
88 Sr	0.00 ug/l	330.15	0.03	
88 Sr	-0.01 ug/l	39.85	0.03	
95 Mo	0.01 ug/l	37.50	0.21	
106 (Cd)	-------- ug/l	--------	#VALUE!	
107 Ag	0.00 ug/l	2.24	0.09	
108 (Cd)	-------- ug/l	--------	#VALUE!	
111 Cd	0.00 ug/l	58.72	0.06	
118 Sn	0.00 ug/l	251.77	0.30	
121 Sb	0.05 ug/l	5.63	0.03	
137 Ba	0.00 ug/l	462.74	0.12	
205 Tl	0.00 ug/l	29.08	0.03	
206 (Pb)	-------- ug/l	--------	#VALUE!	
207 (Pb)	-------- ug/l	--------	#VALUE!	
208 Pb	-0.27 ug/l	0.52	0.33	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3191348.00	0.49	3046381.80	104.8
45 Sc	831073.44	2.80	841537.88	98.8
45 Sc	142408.08	0.73	128014.41	111.2
45 Sc	1881775.30	1.79	1718861.00	109.5
72 Ge	191297.44	0.56	170470.91	112.2
72 Ge	72619.73	0.38	63924.71	113.6
72 Ge	326286.13	1.20	287615.47	113.4
115 In	2013394.80	0.44	1759271.40	114.4
159 Tb	2951640.00	1.42	2620168.30	112.7
165 Ho	2889185.80	1.39	2606629.50	110.8

ISTD Ref File : C:\ICPCHEM\1\DATA\11K01m00.B\004CALB.D\004CALB.D#

2 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Fail
ISTD: Pass

CCV QC Report

Data File: C:\ICPCHEM\1\DATA\11K01m00.B\074_CCV.D\074_CCV.D#
Date Acquired: Nov 1 2011 07:51 pm
Operator: SDM
Sample Name: CCV 111101
Misc Info:
Vial Number: 1105
Current Method: C:\ICPCHEM\1\METHODS\62A1101.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1101.C
Last Cal Update: Nov 01 2011 01:15 pm
Sample Type: CCV
Total Dil Factor: 1.00

QC Elements

Element	Conc.	RSD(%)	Expected	QC Range(%)	Flag
7 (Li)	-------- ug/l	--------	50.00	90 - 110	
9 Be	46.85 ug/l	0.49	50.00	90 - 110	
11 B	43.98 ug/l	1.59	50.00	90 - 110	Fail
23 Na	1202.00 ug/l	1.52	1250.00	90 - 110	
24 Mg	2449.00 ug/l	1.26	2500.00	90 - 110	
27 Al	1001.00 ug/l	1.18	1000.00	90 - 110	
39 K	1052.00 ug/l	1.11	1000.00	90 - 110	
44 Ca	2483.00 ug/l	1.15	2500.00	90 - 110	
47 Ti	48.99 ug/l	1.74	50.00	90 - 110	
51 V	51.47 ug/l	1.81	50.00	90 - 110	
52 Cr	48.52 ug/l	0.78	50.00	90 - 110	
55 Mn	49.31 ug/l	0.95	50.00	90 - 110	
56 Fe	991.50 ug/l	2.38	1000.00	90 - 110	
59 Co	48.96 ug/l	1.05	50.00	90 - 110	
60 Ni	48.77 ug/l	1.51	50.00	90 - 110	
63 Cu	47.02 ug/l	0.85	50.00	90 - 110	
65 Cu	47.22 ug/l	1.50	50.00	90 - 110	
66 Zn	49.58 ug/l	0.94	50.00	90 - 110	
75 As	49.42 ug/l	0.89	50.00	90 - 110	
78 Se	45.41 ug/l	0.92	50.00	90 - 110	
78 Se	49.76 ug/l	1.56	50.00	90 - 110	
88 Sr	50.43 ug/l	1.83	50.00	90 - 110	
88 Sr	47.25 ug/l	0.33	50.00	90 - 110	
95 Mo	46.80 ug/l	0.46	50.00	90 - 110	
106 (Cd)	-------- ug/l	--------	50.00	90 - 110	
107 Ag	24.83 ug/l	0.97	25.00	90 - 110	
108 (Cd)	-------- ug/l	--------	50.00	90 - 110	
111 Cd	48.67 ug/l	0.57	50.00	90 - 110	
118 Sn	49.97 ug/l	1.20	50.00	90 - 110	
121 Sb	50.00 ug/l	1.27	50.00	90 - 110	
137 Ba	51.19 ug/l	1.39	50.00	90 - 110	
205 Tl	49.83 ug/l	1.73	50.00	90 - 110	
206 (Pb)	-------- ug/l	--------	50.00	90 - 110	
207 (Pb)	-------- ug/l	--------	50.00	90 - 110	
208 Pb	49.18 ug/l	0.77	50.00	90 - 110	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3371575.50	0.87	3046381.80	110.7
45 Sc	854610.38	1.11	841537.88	101.6
45 Sc	137992.36	0.64	128014.41	107.8
45 Sc	1837631.50	0.69	1718861.00	106.9
72 Ge	191713.17	0.51	170470.91	112.5
72 Ge	68682.59	0.64	63924.71	107.4
72 Ge	332461.56	0.26	287615.47	115.6
115 In	1933297.90	0.67	1759271.40	109.9
159 Tb	2941051.80	0.86	2620168.30	112.2
165 Ho	2881314.50	0.75	2606629.50	110.5

ISTD Ref File : C:\ICPCHEM\1\DATA\11K01m00.B\004CALB.D\004CALB.D#

1 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Fail
ISTD: Pass

CCB QC Report

Data File: C:\ICPCHEM\1\DATA\11K01m00.B\076_CCB.D\076_CCB.D#
Date Acquired: Nov 1 2011 08:03 pm
Operator: SDM
Sample Name: CCB 111101
Misc Info:
Vial Number: 1102
Current Method: C:\ICPCHEM\1\METHODS\62A1101.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1101.C
Last Cal Update: Nov 01 2011 01:15 pm
Sample Type: CCB
Total Dil Factor: 1.00

QC Elements

Element	Conc.	RSD(%)	High Limit	Flag
7 (Li)	-------- ug/l	--------	#VALUE!	
9 Be	-0.05 ug/l	1.80	0.12	
11 B	-0.06 ug/l	18.06	15.00	
23 Na	31.83 ug/l	32.74	77.10	
24 Mg	0.64 ug/l	34.62	7.50	
27 Al	0.12 ug/l	84.00	3.96	
39 K	-2.95 ug/l	106.78	19.20	
44 Ca	-0.01 ug/l	17302.00	90.00	
47 Ti	0.00 ug/l	583.65	0.78	
51 V	0.44 ug/l	11.68	0.21	Fail
52 Cr	0.02 ug/l	35.58	0.12	
55 Mn	0.02 ug/l	32.81	0.18	
56 Fe	0.44 ug/l	9.02	40.80	
59 Co	-0.05 ug/l	11.73	0.09	
60 Ni	0.03 ug/l	17.09	0.48	
63 Cu	0.02 ug/l	83.13	0.39	
65 Cu	0.03 ug/l	116.40	0.39	
66 Zn	0.09 ug/l	45.13	6.90	
75 As	0.08 ug/l	13.27	0.27	
78 Se	0.02 ug/l	14.00	0.30	
78 Se	0.10 ug/l	32.95	0.30	
88 Sr	0.01 ug/l	62.79	0.03	
88 Sr	0.00 ug/l	220.68	0.03	
95 Mo	0.01 ug/l	59.93	0.21	
106 (Cd)	-------- ug/l	--------	#VALUE!	
107 Ag	0.00 ug/l	63.15	0.09	
108 (Cd)	-------- ug/l	--------	#VALUE!	
111 Cd	0.00 ug/l	287.54	0.06	
118 Sn	0.00 ug/l	83.06	0.30	
121 Sb	0.05 ug/l	19.68	0.03	
137 Ba	0.00 ug/l	257.18	0.12	
205 Tl	0.00 ug/l	62.49	0.03	
206 (Pb)	-------- ug/l	--------	#VALUE!	
207 (Pb)	-------- ug/l	--------	#VALUE!	
208 Pb	-0.28 ug/l	0.23	0.33	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3161199.00	0.64	3046381.80	103.8
45 Sc	849076.44	4.46	841537.88	100.9
45 Sc	142496.34	1.76	128014.41	111.3
45 Sc	1896191.10	0.34	1718861.00	110.3
72 Ge	187070.89	0.37	170470.91	109.7
72 Ge	72649.14	0.20	63924.71	113.6
72 Ge	333685.13	0.36	287615.47	116.0
115 In	2094109.10	0.24	1759271.40	119.0
159 Tb	3030797.50	0.60	2620168.30	115.7
165 Ho	2974365.50	0.67	2606629.50	114.1

ISTD Ref File : C:\ICPCHEM\1\DATA\11K01m00.B\004CALB.D\004CALB.D#

2 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Fail
ISTD: Pass

CCV QC Report

Data File: C:\ICPCHEM\1\DATA\11K01m00.B\088_CCV.D\088_CCV.D#
Date Acquired: Nov 1 2011 09:15 pm
Operator: SDM
Sample Name: CCV 111101
Misc Info:
Vial Number: 1105
Current Method: C:\ICPCHEM\1\METHODS\62A1101.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1101.C
Last Cal Update: Nov 01 2011 01:15 pm
Sample Type: CCV
Total Dil Factor: 1.00

QC Elements

Element	Conc.		RSD(%)	Expected	QC Range(%)		Flag
7 (Li)	--------	ug/l	--------	50.00	90 -	110	
9 Be	45.66	ug/l	0.40	50.00	90 -	110	
11 B	42.58	ug/l	0.41	50.00	90 -	110	Fail
23 Na	1192.00	ug/l	1.99	1250.00	90 -	110	
24 Mg	2443.00	ug/l	1.10	2500.00	90 -	110	
27 Al	987.40	ug/l	0.93	1000.00	90 -	110	
39 K	1047.00	ug/l	0.82	1000.00	90 -	110	
44 Ca	2466.00	ug/l	0.49	2500.00	90 -	110	
47 Ti	48.58	ug/l	2.69	50.00	90 -	110	
51 V	50.98	ug/l	1.07	50.00	90 -	110	
52 Cr	48.47	ug/l	0.72	50.00	90 -	110	
55 Mn	48.94	ug/l	0.31	50.00	90 -	110	
56 Fe	982.40	ug/l	1.39	1000.00	90 -	110	
59 Co	48.88	ug/l	0.59	50.00	90 -	110	
60 Ni	48.71	ug/l	1.40	50.00	90 -	110	
63 Cu	47.24	ug/l	1.03	50.00	90 -	110	
65 Cu	47.59	ug/l	1.31	50.00	90 -	110	
66 Zn	49.88	ug/l	0.77	50.00	90 -	110	
75 As	49.76	ug/l	0.55	50.00	90 -	110	
78 Se	45.19	ug/l	0.68	50.00	90 -	110	
78 Se	49.13	ug/l	0.35	50.00	90 -	110	
88 Sr	50.72	ug/l	1.11	50.00	90 -	110	
88 Sr	47.19	ug/l	1.90	50.00	90 -	110	
95 Mo	46.81	ug/l	1.10	50.00	90 -	110	
106 (Cd)	--------	ug/l	--------	50.00	90 -	110	
107 Ag	24.87	ug/l	0.46	25.00	90 -	110	
108 (Cd)	--------	ug/l	--------	50.00	90 -	110	
111 Cd	48.76	ug/l	0.75	50.00	90 -	110	
118 Sn	48.95	ug/l	0.67	50.00	90 -	110	
121 Sb	49.08	ug/l	0.69	50.00	90 -	110	
137 Ba	51.04	ug/l	0.54	50.00	90 -	110	
205 Tl	48.94	ug/l	0.93	50.00	90 -	110	
206 (Pb)	--------	ug/l	--------	50.00	90 -	110	
207 (Pb)	--------	ug/l	--------	50.00	90 -	110	
208 Pb	48.63	ug/l	0.18	50.00	90 -	110	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3365263.50	0.76	3046381.80	110.5
45 Sc	861738.38	1.53	841537.88	102.4
45 Sc	138217.16	0.55	128014.41	108.0
45 Sc	1804663.90	0.08	1718861.00	109.6
72 Ge	192424.11	0.95	170470.91	112.9
72 Ge	68861.23	0.53	63924.71	107.7
72 Ge	340946.00	0.82	287615.47	118.5
115 In	2006757.30	0.38	1759271.40	114.1
159 Tb	2996661.50	0.39	2620168.30	114.4
165 Ho	2900622.80	0.26	2606629.50	111.3

ISTD Ref File : C:\ICPCHEM\1\DATA\11K01m00.B\004CALB.D\004CALB.D#

1 ;Element Failures 0 ;Max. Number of Failures Allowed

Data Results:
Analytes: Fail
ISTD: Pass

CCB QC Report

Data File: C:\ICPCHEM\1\DATA\11K01m00.B\090_CCB.D\090_CCB.D#
Date Acquired: Nov 1 2011 09:28 pm
Operator: SDM
Sample Name: CCB 111101
Misc Info:
Vial Number: 1102
Current Method: C:\ICPCHEM\1\METHODS\62A1101.M
Calibration File: C:\ICPCHEM\1\CALIB\62A1101.C
Last Cal Update: Nov 01 2011 01:15 pm
Sample Type: CCB
Total Dil Factor: 1.00

QC Elements

Element	Conc.	RSD(%)	High Limit	Flag
7 (Li)	-------- ug/l	--------	#VALUE!	
9 Be	-0.04 ug/l	6.31	0.12	
11 B	-0.05 ug/l	27.70	15.00	
23 Na	66.64 ug/l	21.07	77.10	
24 Mg	0.81 ug/l	19.35	7.50	
27 Al	0.18 ug/l	50.56	3.96	
39 K	0.60 ug/l	352.12	19.20	
44 Ca	1.23 ug/l	39.72	90.00	
47 Ti	0.00 ug/l	535.52	0.78	
51 V	0.37 ug/l	8.75	0.21	Fail
52 Cr	0.02 ug/l	29.36	0.12	
55 Mn	0.02 ug/l	14.86	0.18	
56 Fe	0.46 ug/l	11.09	40.80	
59 Co	-0.05 ug/l	5.31	0.09	
60 Ni	0.05 ug/l	23.00	0.48	
63 Cu	0.04 ug/l	68.81	0.39	
65 Cu	0.04 ug/l	67.15	0.39	
66 Zn	0.11 ug/l	19.35	6.90	
75 As	0.08 ug/l	5.82	0.27	
78 Se	0.02 ug/l	40.26	0.30	
78 Se	0.10 ug/l	64.98	0.30	
88 Sr	0.01 ug/l	51.50	0.03	
88 Sr	0.02 ug/l	14.25	0.03	
95 Mo	0.01 ug/l	40.06	0.21	
106 (Cd)	-------- ug/l	--------	#VALUE!	
107 Ag	0.00 ug/l	19.42	0.09	
108 (Cd)	-------- ug/l	--------	#VALUE!	
111 Cd	0.00 ug/l	227.76	0.06	
118 Sn	0.03 ug/l	143.88	0.30	
121 Sb	0.06 ug/l	9.79	0.03	
137 Ba	0.01 ug/l	13.51	0.12	
205 Tl	0.00 ug/l	281.06	0.03	
206 (Pb)	-------- ug/l	--------	#VALUE!	
207 (Pb)	-------- ug/l	--------	#VALUE!	
208 Pb	-0.27 ug/l	0.19	0.33	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	3131473.80	0.64	3046381.80	102.8
45 Sc	850227.75	4.85	841537.88	101.0
45 Sc	141977.84	1.78	128014.41	110.9
45 Sc	1931730.60	0.62	1718861.00	112.4
72 Ge	189452.84	1.40	170470.91	111.1
72 Ge	73205.34	0.13	63924.71	114.5
72 Ge	338074.00	0.56	287615.47	117.5
115 In	2099631.80	0.81	1759271.40	119.3
159 Tb	3053418.00	0.38	2620168.30	116.5
165 Ho	2982721.00	1.18	2606629.50	114.4

ISTD Ref File : C:\ICPCHEM\1\DATA\11K01m00.B\004CALB.D\004CALB.D#

2 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Fail
ISTD: Pass

Miscellaneous

KS 06-16-11

Metals Standards Log Book # ____ Page #~~11~~ 111

NBS 11/01/11

NBS 11/01/11
6020/6020A

ICP-MS STANDARDS 6020/6020A/3015/3051A

Today's Date: 11/1/2011
Expires: 11/8/2011
Prep Date 1% HNO3/1.0%HCL
20 mL HNO3 / 2000 mL DI Water
Lot # K19023
20mL HCL / 2000mL DI Water
Lot #4110110
Expires: 11/8/2011

Standard 4

Amount	STD	Manufacturer	Lot #
50 uL	CCV-A	Env. Express	1036407-28139
50 uL	CCV-B	Env. Express	1036410-28140
50 uL	CCV-C	Env. Express	1100309-28141

Prepared in 100 mL of 1% HNO3/1.0% HCL 11/1/2011

Standard 3 11/8/2011

Amount	STD	Manufacturer	Lot #
25 uL	CCV-A	Env. Express	1036407-28139
25 uL	CCV-B	Env. Express	1036410-28140
25 uL	CCV-C	Env. Express	1100309-28141

Prepared in 100 mL of 1% HNO3/1.0% HCL 11/1/2011

Standard 2 11/8/2011

Amount	STD		
500 uL	Standard 4		11/1/2011

Prepared in 50 mL of 1% HNO3/1.0% HCL 11/1/2011

Standard 1 11/8/2011

Amount	STD		
50 uL	Standard 4		11/1/2011

Prepared in 50 mL of 1% HNO3/1.0% HCL 11/1/2011

ICP-MS ICV 11/8/2011

Amount	STD		
50 uL	QCS ICV A	CPI	11C174-28548
50 uL	QCS ICV B	CPI	11C174-28549

Prepared in 50 mL of 1% HNO3/1.0% HCL 11/1/2011

ICSA Prep: 11/8/2011

1 mL	ICSA	CPI	11C066-28529

Prepared in 5 mL of 1% HNO3/1.0% HCL 11/1/2011

ICSAB Prep: 11/8/2011

1mL	ICSA	CPI	11C066-28529
0.025mL	INT	O2SI	1023805-28210

Prepared in 5 mL of 1% HNO3/1.0% HCL 11/1/2011

ICP-LDR 11/8/2011

Amount	STD		
50 uL	CCV-A	Env. Express	1036407-28139
50 uL	CCV-B	Env. Express	1036410-28140
50 uL	CCV-C	Env. Express	1100309-28141

Prepared in 10 mL of 1% HNO3/1.0% HCL 11/1/2011

NBS 11/01/11

NBS
11/01/11

Internal Standard Concentration

Amt	STD	Element	Vendor	Lot#	Final Conc. In Std	Expires
50uL	1000 ug/mL	Li	CPI	10L079-27839	0.1ppm	6/10/2012
50uL	1000 ug/mL	In	CPI	10J155-28574	0.1ppm	9/25/2012
50uL	1000 ug/mL	Ho	CPI	10A107-28576	0.1ppm	9/25/2012
50uL	1000 ug/mL	Tb	CPI	11B054-28575	0.1ppm	9/25/2012
50uL	1000 ug/mL	Sc	o2si	1024073-28527	0.1ppm	8/15/2012
50uL	1000 ug/mL	Ge	Environmental Express	1116011-29381	0.1ppm	2/8/2013

Prep: 11/1/2011 SDM Prep in - 1%HNO3/1.0%HCL: Lot #1110030/4110060 In 50mL
Expires: 12/1/2011

KWS 11/01/11

KWS
11/01/11
Book Edit for
10/13/11

Hg WORKING STANDARD

1ml X 10ug/ml Hg STOCK STD. (09/26/11RJS)/200ml 1% HNO3 Lot#K19023
1ml X 10ug/ml Hg STOCK ICV (09/26/11RJS)/200ml 1% HNO3 Lot#K19023
Final concentration is 50 ug/L. Expires....10/13/11.....

KWS 11/01/11

KWS 11/01/11
Book Edit for
10/17/11

Hg WORKING STANDARD

1ml X 10ug/ml Hg STOCK STD. (09/26/11RJS)/200ml 1% HNO3 Lot#K19023
1ml X 10ug/ml Hg STOCK ICV (09/26/11RJS)/200ml 1% HNO3 Lot#K19023
Final concentration is 50 ug/L. Expires....10/17/11.....

KWS 11/01/11

KWS 11/01/11
Book Edit
for 10/18/11

Hg WORKING STANDARD

1ml X 10ug/ml Hg STOCK STD. (09/26/11RJS)/200ml 1% HNO3 Lot#K19023
1ml X 10ug/ml Hg STOCK ICV (09/26/11RJS)/200ml 1% HNO3 Lot#K19023
Final concentration is 50 ug/L. Expires....10/18/11.....

APPENDIX D

DATA VALIDATION REPORTS AND ASSOCIATED DOCUMENTATION

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO: **B. BECKER** **DATE:** **DECEMBER 8, 2011**

FROM: **EDWARD SEDLMYER** **COPIES:** **DV FILE/REV 1**

SUBJECT: **ORGANIC AND INORGANIC DATA VALIDATION – PAH/NITROGLYCERIN/SELECT TOTAL AND DISSOLVED METALS**
NSF INDIAN HEAD – FULL REVIEW
SAMPLE DELIVERY GROUP (SDG) 65882

SAMPLES: 3/Aqueous/PAH/NITROGLYCERIN

DUP01092811 X14GW0010911 X15GW0010911

7/Aqueous/SELECT TOTAL AND DISSOLVED METALS

X14GW0040911 X14GW0010911 X14GW0020911
X14GW0040911 X15GW0010911 X15GW0020911
X15GW0030911

Overview

The sample set for NSF Indian Head, SDG 65882 consists of seven (7) environmental aqueous samples. Two field duplicate pairs were associated with this SDG: X15GW0010911 / DUP01092811 and X14GW0040911 / X14GW0040911. All samples were analyzed for polynuclear aromatic hydrocarbons (PAH), nitroglycerin, and total and dissolved select metals including antimony, copper, and lead.

The samples were collected on September 28, 29, and 30, 2011 and analyzed by APPL Labs. PAH, nitroglycerin, and metals analyses were conducted in accordance to SW-846 Methods 8270 SIM, 8330B, and 6020A.

Summary

The data contained in this SDG were validated with regard to the following parameters: data completeness, system performance, holding times, GC/MS tuning, initial / continuing calibrations, laboratory method blank results, surrogate spike/internal standard recoveries, laboratory control sample results, matrix spike/matrix spike duplicate results, interference check sample (ICS) results, laboratory duplicate precision, ICP serial dilution results, field duplicate precision, analyte identification, analyte quantitation, and detection limits.

Areas of concern with respect to data quality are listed below.

Major Problems

- The nitroglycerin collection extraction holding time for sample X14GW0010911 was grossly exceeded, (43 days after collection). As a consequence of holding time exceedance, the nitroglycerin result for sample X14GW0010911 was rejected (UR). According to laboratory sample receipt documentation, three sample bottles were collected and received for the affected sample, but the chain of custody record requested analysis for PAHs and metals rather than nitroglycerin and metals. The discrepancy was not discovered until after the original results were reported. Tetra Tech requested that the laboratory perform the nitroglycerin analysis with the understanding that the holding time had been exceeded and the results would be qualified for limited use.

Minor Problems

- Antimony was detected in the method blanks at the following maximum concentrations:

Analyte	Maximum Concentration	Action Level
Antimony[1]	0.08 ug/L	0.4 ug/L

1 - Method blank analyzed on 11/9/11 @ 17:45 affecting samples X15GW0020911, X15GW0020911-F, X15GW0010911, X15GW0010911-F, X14GW0010911, X14GW0010911-F, X15GW0030911, and X15GW0030911-F

An action level of 5X the maximum concentration level has been used in order to evaluate sample data for blank contamination. Positive results less than the action level were qualified (B) as a result of blank contamination. Sample aliquot, percent solids and dilution factors were taken into account in validation of data.

Notes

The matrix spike / matrix spike duplicate (MS/MSD) performed on sample X15GW0010911 had percent recoveries less than the quality control limit for chrysene and fluoranthene in the MS and benzo(a)pyrene in the MSD. No action was taken on this basis because either the MS or the MSD had acceptable recoveries.

The laboratory performed analysis for nitroglycerin on sample X14GW0010911 despite the absence for this parameter on the chain of custody record. No action was taken on this basis.

Positive results less than the limit of quantitation (LOQ) but greater than the method detection limit (MDL) were qualified as estimated, (J), due to uncertainty near the detection limit.

Nondetected results were reported to the limit of detection (LOD).

EXECUTIVE SUMMARY

Laboratory Performance Issues: Antimony was detected in the laboratory blanks resulting in qualification of several results. Matrix spike recovery noncompliances in the PAH fraction did not result in qualification of the data.

Other Factors Affecting Data Quality: Gross extraction hold time excceedance resulted in the rejection of one nitroglycerin result.Positive results less than the limit of quantitation (LOQ) but greater than the method detection limit (MDL) were qualified as estimated, (J), due to uncertainty near the detection limit.

The data for these analyses were reviewed with reference to the Region III EPA Functional Guidelines for Organic Data Validation (September 1994), Region III modifications to the National Functional Guidelines for Inorganic Data Validation (April 1993), 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

TetraTech NUS
Joseph A. Samchuck
Data Validation 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

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: 00810	NSAMPLE	DUP01092811			X14GW0010911			X15GW0010911		
SDG: 65882	LAB_ID	AY47780			AY47774			AY47773		
FRACTION: PAH	SAMP_DATE	9/28/2011			9/29/2011			9/28/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0		
	DUP_OF	X15GW0010911								
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
2-METHYLNAPHTHALENE		0.12	U		0.12	U		0.12	U	
ACENAPHTHENE		0.12	U		0.12	U		0.12	U	
ACENAPHTHYLENE		0.12	U		0.12	U		0.12	U	
ANTHRACENE		0.1	U		0.1	U		0.1	U	
BENZO(A)ANTHRACENE		0.089	J	P	0.14	U		0.25		
BENZO(A)PYRENE		0.1	J	P	0.12	U		0.31		
BENZO(B)FLUORANTHENE		0.15	J	P	0.12	U		0.49		
BENZO(G,H,I)PERYLENE		0.16	U		0.16	U		0.26		
BENZO(K)FLUORANTHENE		0.11	J	P	0.14	U		0.36		
CHRYSENE		0.072	J	P	0.1	U		0.25		
DIBENZO(A,H)ANTHRACENE		0.1	U		0.1	U		0.14	J	P
FLUORANTHENE		0.1	J	P	0.16	U		0.24		
FLUORENE		0.12	U		0.12	U		0.12	U	
INDENO(1,2,3-CD)PYRENE		0.14	U		0.14	U		0.24		
NAPHTHALENE		0.1	U		0.1	U		0.1	U	
PHENANTHRENE		0.077	J	P	0.14	U		0.16	J	P
PYRENE		0.092	J	P	0.16	U		0.22		

PROJ_NO: 00810	NSAMPLE	X14GW0010911			X15GW0010911			X15GW0010911-D		
SDG: 65882	LAB_ID	AY47774			AY47773			AY47780		
FRACTION: EXP	SAMP_DATE	9/29/2011			9/28/2011			9/28/2011		
MEDIA: WATER	QC_TYPE	NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0		
	DUP_OF							X15GW0010911		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
NITROGLYCERIN		0.26	UR	H	0.26	U		0.26	U	

PROJ_NO: 00810	NSAMPLE	DUP02093011			DUP02093011-F			X14GW0010911			X14GW0010911-F		
SDG: 65882	LAB_ID	AY47785			AY47786			AY47774			AY47777		
FRACTION: M	SAMP_DATE	9/30/2011			9/30/2011			9/29/2011			9/29/2011		
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	X14GW0040911			X14GW0040911-F								
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY								0.55			0.1	B	A
COPPER		8.4			6			5.1			5.6		
LEAD		15.7			7.5								

PROJ_NO: 00810	NSAMPLE	X14GW0020911			X14GW0020911-F			X14GW0040911			X14GW0040911-F		
SDG: 65882	LAB_ID	AY47781			AY47782			AY47783			AY47784		
FRACTION: M	SAMP_DATE	9/30/2011			9/30/2011			9/30/2011			9/30/2011		
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
ANTIMONY													
COPPER		1.5			0.54			8.4			5.4		
LEAD		0.67			0.22	U		14.8			7.7		

PROJ_NO: 00810	NSAMPLE	X15GW0010911			X15GW0010911-F			X15GW0020911			X15GW0020911-F		
SDG: 65882	LAB_ID	AY47773			AY47776			AY47772			AY47775		
FRACTION: M	SAMP_DATE	9/28/2011			9/28/2011			9/28/2011			9/28/2011		
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
ANTIMONY		0.16	B	A	0.17	B	A	0.91			0.58		
COPPER													
LEAD								21.8			0.17	J	P

PROJ_NO: 00810	NSAMPLE	X15GW0030911			X15GW0030911-F		
SDG: 65882	LAB_ID	AY47778			AY47779		
FRACTION: M	SAMP_DATE	9/29/2011			9/29/2011		
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
ANTIMONY		0.16	B	A	0.25	B	A
COPPER							
LEAD		10.4			0.48	J	P

Appendix B

Results as Reported by the Laboratory

EPA 8270D LL WATER DODv3

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker

Project: 112G00810 Indian Head CTO423

ARF: 65882

Sample ID: DUP01092811

APPL ID: AY47780

Sample Collection Date: 09/28/11

QCG: #SIMDD-111005A-160276

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
8270D-LL	2-METHYLNAPHTHALENE	0.12 U	0.2	0.12	0.06	ug/L	10/05/11	10/06/11
8270D-LL	ACENAPHTHENE	0.12 U	0.2	0.12	0.06	ug/L	10/05/11	10/06/11
8270D-LL	ACENAPHTHYLENE	0.12 U	0.2	0.12	0.06	ug/L	10/05/11	10/06/11
8270D-LL	ANTHRACENE	0.10 U	0.2	0.10	0.05	ug/L	10/05/11	10/06/11
8270D-LL	BENZ (A) ANTHRACENE	0.089 J	0.2	0.14	0.07	ug/L	10/05/11	10/06/11
8270D-LL	BENZO (A) PYRENE	0.10 J	0.2	0.14	0.07	ug/L	10/05/11	10/06/11
8270D-LL	BENZO (B) FLUORANTHENE	0.15 J	0.2	0.12	0.06	ug/L	10/05/11	10/06/11
8270D-LL	BENZO (G,H,I) PERYLENE	0.16 U	0.2	0.16	0.08	ug/L	10/05/11	10/06/11
8270D-LL	BENZO (K) FLUORANTHENE	0.11 J	0.2	0.14	0.07	ug/L	10/05/11	10/06/11
8270D-LL	CHRYSENE	0.072 J	0.2	0.10	0.05	ug/L	10/05/11	10/06/11
8270D-LL	DIBENZ (A,H) ANTHRACENE	0.10 U	0.2	0.10	0.05	ug/L	10/05/11	10/06/11
8270D-LL	FLUORANTHENE	0.10 J	0.2	0.16	0.08	ug/L	10/05/11	10/06/11
8270D-LL	FLUORENE	0.12 U	0.2	0.12	0.06	ug/L	10/05/11	10/06/11
8270D-LL	INDENO (1,2,3-CD) PYRENE	0.14 U	0.2	0.14	0.07	ug/L	10/05/11	10/06/11
8270D-LL	NAPHTHALENE	0.10 U	0.2	0.10	0.05	ug/L	10/05/11	10/06/11
8270D-LL	PHENANTHRENE	0.077 J	0.2	0.14	0.07	ug/L	10/05/11	10/06/11
8270D-LL	PYRENE	0.092 J	0.2	0.16	0.08	ug/L	10/05/11	10/06/11
8270D-LL	SURROGATE: 2-FLUORBIPHENYL (S)	59.8	50-110			%	10/05/11	10/06/11
8270D-LL	SURROGATE: NITROBENZENE-D5 (S)	66.8	40-110			%	10/05/11	10/06/11
8270D-LL	SURROGATE: TERPHENYL-D14 (S)	72.6	50-135			%	10/05/11	10/06/11

J = Estimated value.

Quant Method: SIM2.M
Run #: 1006L020
Instrument: Linus
Sequence: L110921
Dilution Factor: 1
Initials: LF

Printed: 10/19/11 12:27:54 PM
APPL-F1-SC-NoMC-REG MDLs

EPA 8270D LL WATER DODv3

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker

Project: 112G00810 Indian Head CTO423

ARF: 65882

Sample ID: X14GW0010911

APPL ID: AY47774

Sample Collection Date: 09/29/11

QCG: #SIMDD-111005A-160276

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
8270D-LL	2-METHYLNAPHTHALENE	0.12 U	0.2	0.12	0.06	ug/L	10/05/11	10/06/11
8270D-LL	ACENAPHTHENE	0.12 U	0.2	0.12	0.06	ug/L	10/05/11	10/06/11
8270D-LL	ACENAPHTHYLENE	0.12 U	0.2	0.12	0.06	ug/L	10/05/11	10/06/11
8270D-LL	ANTHRACENE	0.10 U	0.2	0.10	0.05	ug/L	10/05/11	10/06/11
8270D-LL	BENZ (A) ANTHRACENE	0.14 U	0.2	0.14	0.07	ug/L	10/05/11	10/06/11
8270D-LL	BENZO (A) PYRENE	0.14 U	0.2	0.14	0.07	ug/L	10/05/11	10/06/11
8270D-LL	BENZO (B) FLUORANTHENE	0.12 U	0.2	0.12	0.06	ug/L	10/05/11	10/06/11
8270D-LL	BENZO (G,H,I) PERYLENE	0.16 U	0.2	0.16	0.08	ug/L	10/05/11	10/06/11
8270D-LL	BENZO (K) FLUORANTHENE	0.14 U	0.2	0.14	0.07	ug/L	10/05/11	10/06/11
8270D-LL	CHRYSENE	0.10 U	0.2	0.10	0.05	ug/L	10/05/11	10/06/11
8270D-LL	DIBENZ (A,H) ANTHRACENE	0.10 U	0.2	0.10	0.05	ug/L	10/05/11	10/06/11
8270D-LL	FLUORANTHENE	0.16 U	0.2	0.16	0.08	ug/L	10/05/11	10/06/11
8270D-LL	FLUORENE	0.12 U	0.2	0.12	0.06	ug/L	10/05/11	10/06/11
8270D-LL	INDENO (1,2,3-CD) PYRENE	0.14 U	0.2	0.14	0.07	ug/L	10/05/11	10/06/11
8270D-LL	NAPHTHALENE	0.10 U	0.2	0.10	0.05	ug/L	10/05/11	10/06/11
8270D-LL	PHENANTHRENE	0.14 U	0.2	0.14	0.07	ug/L	10/05/11	10/06/11
8270D-LL	PYRENE	0.16 U	0.2	0.16	0.08	ug/L	10/05/11	10/06/11
8270D-LL	SURROGATE: 2-FLUORBIPHENYL (S)	53.2	50-110			%	10/05/11	10/06/11
8270D-LL	SURROGATE: NITROBENZENE-D5 (S)	67.3	40-110			%	10/05/11	10/06/11
8270D-LL	SURROGATE: TERPHENYL-D14 (S)	73.4	50-135			%	10/05/11	10/06/11

Quant Method: SIM2.M
Run #: 1006L019
Instrument: Linus
Sequence: L110921
Dilution Factor: 1
Initials: LF

Printed: 10/19/11 12:27:54 PM
APPL-F1-SC-NoMC-REG MDLs

EPA 8270D LL WATER DODv3

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker

Project: 112G00810 Indian Head CTO423

ARF: 65882

Sample ID: X15GW0010911

APPL ID: AY47773

Sample Collection Date: 09/28/11

QCG: #SIMDD-111005A-160276

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
8270D-LL	2-METHYLNAPHTHALENE	0.12 U	0.2	0.12	0.06	ug/L	10/05/11	10/06/11
8270D-LL	ACENAPHTHENE	0.12 U	0.2	0.12	0.06	ug/L	10/05/11	10/06/11
8270D-LL	ACENAPHTHYLENE	0.12 U	0.2	0.12	0.06	ug/L	10/05/11	10/06/11
8270D-LL	ANTHRACENE	0.10 U	0.2	0.10	0.05	ug/L	10/05/11	10/06/11
8270D-LL	BENZ (A) ANTHRACENE	0.25	0.2	0.14	0.07	ug/L	10/05/11	10/06/11
8270D-LL	BENZO (A) PYRENE	0.31	0.2	0.14	0.07	ug/L	10/05/11	10/06/11
8270D-LL	BENZO (B) FLUORANTHENE	0.49	0.2	0.12	0.06	ug/L	10/05/11	10/06/11
8270D-LL	BENZO (G,H,I) PERYLENE	0.26	0.2	0.16	0.08	ug/L	10/05/11	10/06/11
8270D-LL	BENZO (K) FLUORANTHENE	0.36	0.2	0.14	0.07	ug/L	10/05/11	10/06/11
8270D-LL	CHRYSENE	0.25	0.2	0.10	0.05	ug/L	10/05/11	10/06/11
8270D-LL	DIBENZ (A,H) ANTHRACENE	0.14 J	0.2	0.10	0.05	ug/L	10/05/11	10/06/11
8270D-LL	FLUORANTHENE	0.24	0.2	0.16	0.08	ug/L	10/05/11	10/06/11
8270D-LL	FLUORENE	0.12 U	0.2	0.12	0.06	ug/L	10/05/11	10/06/11
8270D-LL	INDENO (1,2,3-CD) PYRENE	0.24	0.2	0.14	0.07	ug/L	10/05/11	10/06/11
8270D-LL	NAPHTHALENE	0.10 U	0.2	0.10	0.05	ug/L	10/05/11	10/06/11
8270D-LL	PHENANTHRENE	0.16 J	0.2	0.14	0.07	ug/L	10/05/11	10/06/11
8270D-LL	PYRENE	0.22	0.2	0.16	0.08	ug/L	10/05/11	10/06/11
8270D-LL	SURROGATE: 2-FLUORBIPHENYL (S)	55.2	50-110			%	10/05/11	10/06/11
8270D-LL	SURROGATE: NITROBENZENE-D5 (S)	53.9	40-110			%	10/05/11	10/06/11
8270D-LL	SURROGATE: TERPHENYL-D14 (S)	64.1	50-135			%	10/05/11	10/06/11

J = Estimated value.

Quant Method: SIM2.M
Run #: 1006L018
Instrument: Linus
Sequence: L110921
Dilution Factor: 1
Initials: LF

Printed: 10/19/11 12:27:54 PM
APPL-F1-SC-NoMC-REG MDLs

EPA 8330B EXPLOSIVES-WATER

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker

Project: 112G00810 Indian Head CTO423

ARF: 65882

Sample ID: DUP01092811

APPL ID: AY47780

Sample Collection Date: 9/28/2011

QCG: #833BW-111005AA-160735

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
EPA 8330B	NITROGLYCERIN	0.260 U	0.50	0.260	0.130	ug/L	10/5/2011	10/14/2011
EPA 8330B	SURROGATE: 1,2-DINITROBENZENE (	101	70-130			%	10/5/2011	10/14/2011

Quant Method: STE2_X02.M
Run #: 1012_0000071
Instrument: Statler
Sequence: 111012
Dilution Factor: 1
Initials: RSM

Printed: 11/2/2011 2:00:10 PM
APPL-F1-SC-NoMC-REG MDLs

EPA 8330B EXPLOSIVES-WATER

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

Attn: Barbra Becker

Project: 112G00810 Indian Head CTO423

Sample ID: X14GW0010911

Sample Collection Date: 9/29/2011

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

ARF: 65882

APPL ID: AY47774

QCG: #833BW-111111A-161405

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
EPA 8330B	NITROGLYCERIN	0.260 U	0.50	0.260	0.130	ug/L	11/11/2011	11/14/2011
EPA 8330B	SURROGATE: 1,2-DINITROBENZENE (	85.0	70-130			%	11/11/2011	11/14/2011

Quant Method: W110907.M
Run #: 1114_0000012
Instrument: Waldorf
Sequence: 111114
Dilution Factor: 1
Initials: RSM

Printed: 11/17/2011 5:47:23 PM
APPL-F1-SC-NoMC-REG MDLs

EPA 8330B EXPLOSIVES-WATER

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker

Project: 112G00810 Indian Head CTO423

ARF: 65882

Sample ID: X15GW0010911

APPL ID: AY47773

Sample Collection Date: 9/28/2011

QCG: #833BW-111005AA-160735

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
EPA 8330B	NITROGLYCERIN	0.260 U	0.50	0.260	0.130	ug/L	10/5/2011	10/14/2011
EPA 8330B	SURROGATE: 1,2-DINITROBENZENE (	96.5	70-130			%	10/5/2011	10/14/2011

Quant Method: STE2_X02.M
Run #: 1012_0000070
Instrument: Statler
Sequence: 111012
Dilution Factor: 1
Initials: RSM

Printed: 11/2/2011 2:00:10 PM
APPL-F1-SC-NoMC-REG MDLs

Metals Analysis

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker
Project: 112G00810 Indian Head CTO423
Sample ID: DUP02093011
Sample Collection Date: 9/30/2011

ARF: 65882
APPL ID: AY47785

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6020A	COPPER (CU)	8.4	0.50	0.260	0.130	ug/L	1	11/7/2011	11/8/2011
6020A	LEAD (PB)	15.7	0.50	0.220	0.110	ug/L	1	11/7/2011	11/8/2011

Printed: 11/11/2011 3:12:07 PM
APPL-F1-SC-NoMC-REG MDLs

Metals Analysis

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker
Project: 112G00810 Indian Head CTO423
Sample ID: DUP02093011-F
Sample Collection Date: 09/30/11

ARF: 65882
APPL ID: AY47786

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6020A	COPPER (CU) (DISSOLVED)	6.0	0.50	0.260	0.130	ug/L	1	11/07/11	11/08/11
6020A	LEAD (PB) (DISSOLVED)	7.5	0.50	0.220	0.110	ug/L	1	11/07/11	11/08/11

Printed: 11/16/11 2:05:30 PM
APPL-F1-SC-NoMC-REG MDLs

Metals Analysis

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

Attn: Barbra Becker

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Project: 112G00810 Indian Head CTO423
Sample ID: X14GW0010911
Sample Collection Date: 9/29/2011

ARF: 65882
APPL ID: AY47774

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6020A	ANTIMONY (SB)	0.55	0.20	0.020	0.010	ug/L	1	11/7/2011	11/9/2011
6020A	COPPER (CU)	5.1	0.50	0.260	0.130	ug/L	1	11/7/2011	11/9/2011

Printed: 11/11/2011 3:12:07 PM

APPL-F1-SC-NoMC-REG MDLs

Metals Analysis

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

Attn: Barbra Becker

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Project: 112G00810 Indian Head CTO423

ARF: 65882

Sample ID: X14GW0010911-F

APPL ID: AY47777

Sample Collection Date: 9/29/2011

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6020A	ANTIMONY (SB) (DISSOLVE	0.10J	0.20	0.020	0.010	ug/L	1	11/7/2011	11/9/2011
6020A	COPPER (CU) (DISSOLVED)	5.6	0.50	0.260	0.130	ug/L	1	11/7/2011	11/9/2011

J = Estimated value.

Printed: 11/11/2011 3:12:07 PM

APPL-F1-SC-NoMC-REG MDLs

Metals Analysis

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker
Project: 112G00810 Indian Head CTO423
Sample ID: X14GW0020911
Sample Collection Date: 9/30/2011

ARF: 65882
APPL ID: AY47781

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6020A	COPPER (CU)	1.5	0.50	0.260	0.130	ug/L	1	11/7/2011	11/8/2011
6020A	LEAD (PB)	0.67	0.50	0.220	0.110	ug/L	1	11/7/2011	11/8/2011

Printed: 11/11/2011 3:12:07 PM
APPL-F1-SC-NoMC-REG MDLs

Metals Analysis

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker
Project: 112G00810 Indian Head CTO423
Sample ID: X14GW0020911-F
Sample Collection Date: 9/30/2011

ARF: 65882
APPL ID: AY47782

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6020A	COPPER (CU) (DISSOLVED)	0.54	0.50	0.260	0.130	ug/L	1	11/7/2011	11/8/2011
6020A	LEAD (PB) (DISSOLVED)	0.220U	0.50	0.220	0.110	ug/L	1	11/7/2011	11/8/2011

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APPL-F1-SC-NoMC-REG MDLs

Metals Analysis

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker
Project: 112G00810 Indian Head CTO423
Sample ID: X14GW0040911
Sample Collection Date: 9/30/2011

ARF: 65882
APPL ID: AY47783

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6020A	COPPER (CU)	8.4	0.50	0.260	0.130	ug/L	1	11/7/2011	11/8/2011
6020A	LEAD (PB)	14.8	0.50	0.220	0.110	ug/L	1	11/7/2011	11/8/2011

Printed: 11/11/2011 3:12:07 PM
APPL-F1-SC-NoMC-REG MDLs

Metals Analysis

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker
Project: 112G00810 Indian Head CTO423
Sample ID: X14GW0040911-F
Sample Collection Date: 9/30/2011

ARF: 65882
APPL ID: AY47784

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6020A	COPPER (CU) (DISSOLVED)	5.4	0.50	0.260	0.130	ug/L	1	11/7/2011	11/8/2011
6020A	LEAD (PB) (DISSOLVED)	7.7	0.50	0.220	0.110	ug/L	1	11/7/2011	11/8/2011

Printed: 11/11/2011 3:12:07 PM
APPL-F1-SC-NoMC-REG MDLs

Metals Analysis

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker
Project: 112G00810 Indian Head CTO423
Sample ID: X15GW0010911
Sample Collection Date: 9/28/2011

ARF: 65882
APPL ID: AY47773

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6020A	ANTIMONY (SB)	0.16J	0.20	0.020	0.010	ug/L	1	11/7/2011	11/9/2011

J = Estimated value.

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APPL-F1-SC-NoMC-REG MDLs

Metals Analysis

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

Attn: Barbra Becker

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Project: 112G00810 Indian Head CTO423
Sample ID: X15GW0010911-F
Sample Collection Date: 9/28/2011

ARF: 65882
APPL ID: AY47776

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6020A	ANTIMONY (SB) (DISSOLVE	0.17 J	0.20	0.020	0.010	ug/L	1	11/7/2011	11/9/2011

J = Estimated value.

Printed: 11/11/2011 3:12:07 PM
APPL-F1-SC-NoMC-REG MDLs

Metals Analysis

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker

Project: 112G00810 Indian Head CTO423

ARF: 65882

Sample ID: X15GW0020911

APPL ID: AY47772

Sample Collection Date: 9/28/2011

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6020A	ANTIMONY (SB)	0.91	0.20	0.020	0.010	ug/L	1	11/7/2011	11/9/2011
6020A	LEAD (PB)	21.8	0.50	0.220	0.110	ug/L	1	11/7/2011	11/9/2011

AMENDED PAGE
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APPL-F1-SC-NoMC-REG MDLs

Metals Analysis

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker
Project: 112G00810 Indian Head CTO423
Sample ID: X15GW0020911-F
Sample Collection Date: 9/28/2011

ARF: 65882
APPL ID: AY47775

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6020A	ANTIMONY (SB) (DISSOLVE	0.58	0.20	0.020	0.010	ug/L	1	11/7/2011	11/9/2011
6020A	LEAD (PB) (DISSOLVED)	0.17J	0.50	0.220	0.110	ug/L	1	11/7/2011	11/9/2011

J = Estimated value.

Printed: 11/11/2011 3:12:07 PM
APPL-F1-SC-NoMC-REG MDLs

Metals Analysis

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker
Project: 112G00810 Indian Head CTO423
Sample ID: X15GW0030911
Sample Collection Date: 9/29/2011

ARF: 65882
APPL ID: AY47778

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6020A	ANTIMONY (SB)	0.16 J	0.20	0.020	0.010	ug/L	1	11/7/2011	11/9/2011
6020A	LEAD (PB)	10.4	0.50	0.220	0.110	ug/L	1	11/7/2011	11/9/2011

J = Estimated value.

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APPL-F1-SC-NoMC-REG MDLs

Metals Analysis

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker

Project: 112G00810 Indian Head CTO423

ARF: 65882

Sample ID: X15GW0030911-F

APPL ID: AY47779

Sample Collection Date: 9/29/2011

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6020A	ANTIMONY (SB) (DISSOLVE	0.25	0.20	0.020	0.010	ug/L	1	11/7/2011	11/9/2011
6020A	LEAD (PB) (DISSOLVED)	0.48J	0.50	0.220	0.110	ug/L	1	11/7/2011	11/9/2011

J = Estimated value.

Printed: 11/11/2011 3:12:07 PM

APPL-F1-SC-NoMC-REG MDLs

Appendix C

Support Documentation

65892

3°C

APPL LABS

CHAIN OF CUSTODY RECORD

APPL, Inc.
908 N Temperance Ave
Clovis, CA 93611
Phone: (559) 275-2175
Fax: (559) 275-4422

C.O.C. 35628

Report to: PLEASE PRINT	Invoice to: PLEASE PRINT
Company Name: Tetra Tech NUS Phone: 610 491 9688	Company Name: Tetra Tech NUS Phone: 412 921 7090
Address: 234 Mall Boulevard Suite 260 Fax: 610 491 9645	Address: 661 Andersen Drive Fax: 412 921 4040
King of Prussia PA 19406	Pittsburgh, PA 15220
Attn: Barbra Becker	Attn:

Project Name/Number	Sampler (Print)	Date Shipped: 9/30/11
112G00810	Charles Meyer	Carrier: Federal Express
Purchase Order Number	Sampler (Signature)	Waybill No.: 8744 5964 0350
	Charles Meyer	Comments:

Sample Identification	Location	Date Collected	Time Collected	No. of Containers	Matrix: Aq	Sed.	Soil	Total Lead Antimony	Dissolved Lead Antimony	Low Level PAH	Nitroglycerin	Total Antimony	Dissolved Antimony	Total Copper Antimony	Dissolved copper Antimony	Total Lead Copper	Dissolved Lead copper			
X156W0020911	X 15	9/28/11	1230	2	✓			1	+	cm	9/29/11									
X156W0010911	X 15	9/28/11	1535	13	✓					6	6 ✓	1	+	cm	9/29/11					Low Level PAH by MS/MSD on Nitroglycerin 1308
X146W0010911	X 14	9/29/11	1215	1	✓					2				1	+	cm	9/29/11			
X156W0020911-F	X 15	9/28/11	1230	1	✓				1											
X156W0010911-F	X 15	9/28/11	1535	1	✓								1							
X146W0010911-F	X 14	9/29/11	1215	1	✓										1					
X156W0030911	X 15	9/29/11	1605	1	✓			1												
X156W0030911-F	X 15	9/29/11	1605	1	✓				1											
DUP01092811	DUP	9/28/11	0000	4	✓					2	2 ✓									
X146W0020911	X 14	9/30/11	0835	1												1				
X146W0020911-F	X 14	9/30/11	0835	1													1			

Analysis Requested/Method Number

Shuttle Temperature:	Turnaround Requested: MUST CHECK ONE ☐ Standard (2-3 week) ☐ One week ☐ 24-48 hour	Sample Disposal: ☐ Return to client ☐ Disposal by Lab (30-day retention)

Relinquished by sampler:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
Charles Meyer	9/30/11	1730					
Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received at lab by:
					10/01/11	11:05	Alicia Lotte

White: Return to client with report Yellow: Laboratory Copy Pink: Sampler

See reverse side for Container Preservative and Sampling Information

APPL LABS

CHAIN OF CUSTODY RECORD

APPL, Inc.
908 N Temperance Ave
Clovis, CA 93611
Phone: (559) 275-2175
Fax: (559) 275-4422

C.O.C. 35604

Report to: PLEASE PRINT	Invoice to: PLEASE PRINT
Company Name: Tetra Tech NUS Phone: 610 4919688	Company Name: Tetra Tech NUS Phone: 412.921.7090
Address: 234 Mall Boulevard Suite 260 Fax: 610 4919645	Address: 661 Andersen Drive Fax: 412 921 4040
King of Prussia, PA 19344	Pittsburgh, PA 15220
Attn: Barbara Backer	Attn: Accounts Payable

Project Name/Number	Sampler (Print)				Matrix				Analysis Requested/Method Number													Date Shipped: 9/30/11
112G00810	Charles Meyer																					Carrier: Federal Express
Purchase Order Number	Sampler (Signature)																					Waybill No.: 8744 5954 0350
																						Comments:
Sample Identification	Location	Date Collected	Time Collected	No. of Containers	Aq	Sed.	Soil		Total Lead copper	Dissolved Lead copper												
X146W0040911	X14	9/30/11	1430	1	✓				1													
X146W0040911-F	X14	9/30/11	1430	1	✓					1												
DUP02093011	DUP02	9/30/11	0000	1	✓				1													
DUP02093011-F	DUP02	9/30/11	0000	1	✓					1												

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Shuttle Temperature:	Turnaround Requested: MUST CHECK ONE ☐ Standard (2-3 week) ☐ One week ☐ 24-48 hour	Sample Disposal: ☐ Return to client ☐ Disposal by Lab (30-day retention)

Relinquished by sampler:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
Charles Meyer	9/30/11	1730					
Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received at lab by:
					10/01/11	09:05	Alicia Lofton

White: Return to client with report Yellow: Laboratory Copy Pink: Sampler

See reverse side for Container Preservative and Sampling Information

908 North Temperance Ave. ∇ Clovis, CA 93611 ∇ Phone 559-275-2175 ∇ Fax 559-275-4422

Certification Number: CA1312
NELAP Certification number: 05233CA
DoD-ELAP Certificate number: ADE-1410

Data Validatable Report

November 16, 2011

Tetra Tech NUS, Inc.
234 Mall Boulevard, Suite 260
King of Prussia, Pennsylvania 19406

Attn: Barbara Becker

Title: Report of Data: Case 65882

Project: 112G00810 Indian Head CTO423, RI

Contract #: Prime contract # for DoD: N62467-04-D-0055, CTO 0423
Subcontract: MSA # 1045497, WR # 06-423

Dear Ms. Becker:

Samples were received October 1, 2011, in good condition. On November 11, 2011, Nitroglycerin analysis was added to sample X14GW0010911, which will be reported separately, as an addendum to this report. Written results for the requested analyses are provided on this November 16, 2011.

Results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

If you have any questions or require further information, please contact your APPL Project Manager, Cynthia Clark, at your convenience. Thank you for choosing APPL, Inc.

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 above. These test results meet all requirements of NELAC and DoD QSM. Release of the hard copy has been authorized by the Laboratory Manager or her designee, as verified by the following signature.

Sharon Dehmlow, Laboratory Director
APPL, Inc.

SD/sf
Enclosure
cc: File

Number of pages in this report: 98

HOLDTIME

SDG 65882

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
EXP	%	X14GW0010911	AY47774	NM	09/29/2011	11/11/2011	11/14/2011	43	3	46
EXP	%	X15GW0010911	AY47773	NM	09/28/2011	10/05/2011	10/14/2011	7	9	16
EXP	%	DUP01092811	AY47780	NM	09/28/2011	10/05/2011	10/14/2011	7	9	16
EXP	UG/L	DUP01092811	AY47780	NM	09/28/2011	10/05/2011	10/14/2011	7	9	16
EXP	UG/L	X14GW0010911	AY47774	NM	09/29/2011	11/11/2011	11/14/2011	43	3	46
EXP	UG/L	X15GW0010911	AY47773	NM	09/28/2011	10/05/2011	10/14/2011	7	9	16
M	UG/L	X14GW0040911-F	AY47784	NM	09/30/2011	11/07/2011	11/08/2011	38	1	39
M	UG/L	DUP02093011	AY47785	NM	09/30/2011	11/07/2011	11/08/2011	38	1	39
M	UG/L	DUP02093011-F	AY47786	NM	09/30/2011	11/07/2011	11/08/2011	38	1	39
M	UG/L	X14GW0010911	AY47774	NM	09/29/2011	11/07/2011	11/09/2011	39	2	41
M	UG/L	X14GW0010911-F	AY47777	NM	09/29/2011	11/07/2011	11/09/2011	39	2	41
M	UG/L	X14GW0020911	AY47781	NM	09/30/2011	11/07/2011	11/08/2011	38	1	39
M	UG/L	X14GW0040911	AY47783	NM	09/30/2011	11/07/2011	11/08/2011	38	1	39
M	UG/L	X15GW0010911	AY47773	NM	09/28/2011	11/07/2011	11/09/2011	40	2	42
M	UG/L	X15GW0010911-F	AY47776	NM	09/28/2011	11/07/2011	11/09/2011	40	2	42

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
M	UG/L	X15GW0020911	AY47772	NM	09/28/2011	11/07/2011	11/09/2011	40	2	42
M	UG/L	X15GW0020911-F	AY47775	NM	09/28/2011	11/07/2011	11/09/2011	40	2	42
M	UG/L	X15GW0030911	AY47778	NM	09/29/2011	11/07/2011	11/09/2011	39	2	41
M	UG/L	X15GW0030911-F	AY47779	NM	09/29/2011	11/07/2011	11/09/2011	39	2	41
M	UG/L	X14GW0020911-F	AY47782	NM	09/30/2011	11/07/2011	11/08/2011	38	1	39
SIM	%	DUP01092811	AY47780	NM	09/28/2011	10/05/2011	10/06/2011	7	1	8
SIM	%	X14GW0010911	AY47774	NM	09/29/2011	10/05/2011	10/06/2011	6	1	7
SIM	%	X15GW0010911	AY47773	NM	09/28/2011	10/05/2011	10/06/2011	7	1	8
SIM	UG/L	X15GW0010911	AY47773	NM	09/28/2011	10/05/2011	10/06/2011	7	1	8
SIM	UG/L	DUP01092811	AY47780	NM	09/28/2011	10/05/2011	10/06/2011	7	1	8
SIM	UG/L	X14GW0010911	AY47774	NM	09/29/2011	10/05/2011	10/06/2011	6	1	7

NSF INDIAN HEAD
WATER DATA
65882

FRACTION	CHEMICAL	X16GW0010911	UNITS	DUP01092811	RPD	D
PAH	BENZO(A)ANTHRACENE	0.25	UG/L	0.089 J	94.99	0.16
PAH	BENZO(A)PYRENE	0.31	UG/L	0.1 J	102.44	0.21
PAH	BENZO(B)FLUORANTHENE	0.49	UG/L	0.15 J	106.25	0.34
PAH	BENZO(G,H,I)PERYLENE	0.26	UG/L	ND	200.00	0.26
PAH	BENZO(K)FLUORANTHENE	0.36	UG/L	0.11 J	106.38	0.25
PAH	CHRYSENE	0.25	UG/L	0.072 J	110.56	0.18
PAH	DIBENZO(A,H)ANTHRACENE	0.14 J	UG/L	ND	200.00	0.14
PAH	FLUORANTHENE	0.24	UG/L	0.1 J	82.35	0.14
PAH	INDENO(1,2,3-CD)PYRENE	0.24	UG/L	ND	200.00	0.24
PAH	PHENANTHRENE	0.16 J	UG/L	0.077 J	70.04	0.08
PAH	PYRENE	0.22	UG/L	0.092 J	82.05	0.13

c.u. 22 x 8

Current RPD Quality Control Limit: 30 %.
Shaded cells indicate RPDs that exceed the applicable quality control limit.

NSF INDIAN HEAD
WATER DATA
65882

FRACTION	CHEMICAL	X14GW0040911	UNITS	DUP02093011	RPD	D
M	COPPER	8.4	UG/L	8.4	0.00	0.00
M	LEAD	14.8	UG/L	15.7	5.90	0.90

Current RPD Quality Control Limit: 30 %.
Shaded cells indicate RPDs that exceed the applicable quality control limit.

NSF INDIAN HEAD
WATER DATA
65882

FRACTION	CHEMICAL	X14GW004091-F	UNITS	DUP02093011-F	RPD	D
M	COPPER	5.4	UG/L	6	10.53	0.60
M	LEAD	7.7	UG/L	7.5	2.63	0.20

Current RPD Quality Control Limit: 30 %.
Shaded cells indicate RPDs that exceed the applicable quality control limit.

Sample receipt information

ARF: 65882

Project: 112G00810 Indian Head CTO423, RI

Sample Receipt Information:

The samples were received on October 1, 2011, at 3.0°C and 3.0°C. The samples were assigned Analytical Request Form (ARF) number 65882. The sample numbers and requested analyses were compared to the chain of custody and email communication. A container count discrepancy was noted and reported to the client. On November 11, 2011, Nitroglycerin analysis was added to sample X14GW0010911, which will be reported separately, as an addendum to this report. No other exception was encountered.

Sample Table

CLIENT ID	APPL ID	Matrix	Date Sampled	Date Received
X15GW0020911	AY47772	WATER	09/28/11	10/01/11
X15GW0010911	AY47773	WATER	09/28/11	10/01/11
X14GW0010911	AY47774	WATER	09/29/11	10/01/11
X15GW0020911-F	AY47775	WATER	09/28/11	10/01/11
X15GW0010911-F	AY47776	WATER	09/28/11	10/01/11
X14GW0010911-F	AY47777	WATER	09/29/11	10/01/11
X15GW0030911	AY47778	WATER	09/29/11	10/01/11
X15GW0030911-F	AY47779	WATER	09/29/11	10/01/11
DUP01092811	AY47780	WATER	09/28/11	10/01/11
X14GW0020911	AY47781	WATER	09/30/11	10/01/11
X14GW0020911-F	AY47782	WATER	09/30/11	10/01/11
X14GW0040911	AY47783	WATER	09/30/11	10/01/11
X14GW0040911-F	AY47784	WATER	09/30/11	10/01/11
DUP02093011	AY47785	WATER	09/30/11	10/01/11
DUP02093011-F	AY47786	WATER	09/30/11	10/01/11

Samples and blanks were screened for J-value responses between the detection limit (DL) and limit of quantitation (LOQ).

Laboratory control limits generated in house do not meet the control limits listed in DoD QSM 4.2 for all analytes. Laboratory control limits generated for this project meet all control limits listed in the DoD QSM 4.2 except where noted. A copy of our in house generated control limits is available upon request. In addition, a copy of our LOQ control limits, established using 7 data points, are also available upon request.

Only the portion of the injection log relative to these samples is included. A full sequence log is available upon request.

Measurement uncertainty can be reported upon request.

EPA Method 8270 SIM
Semi-Volatile Organic Analysis

Sample Preparation:

The water samples were extracted according to EPA method 3510C. All holding times were met.

Sample Analysis Information:

The samples were analyzed according to the method using a Hewlett Packard Gas Chromatograph with a mass spectrometer detector in selective ion monitoring mode. Benzo(b)fluoranthene and Benzo(k)fluoranthene could not be chromatographically separated in samples X15GW0010911 and DUP01092811 due to the matrix. As a result, each of these is reported from the sum of the two area counts and may be biased high.

Quality Control/Assurance

Calibrations:

Initial and continuing calibrations were performed according to the method and the DoD QSM.

Blanks:

No target analyte was detected at or above the detection limit.

Spikes:

A Laboratory Control Spike (LCS) was used for quality assurance. All spike acceptance criteria was met.

Sample X15GW0010911 was designated by the laboratory for MS/MSD analysis. For the MS/MSD, Benzo(a)pyrene recovered below the 55% lower control limit at 52.3% in the MSD, Chrysene below the 55% lower control limit in the MS, and Fluoranthene below the 55% lower control limit in the MS. All other recoveries met acceptance criteria.

Surrogates

Surrogate recoveries are summarized on form 2 & 8. All surrogate recoveries were within control limits.

Tuning:

The instrument was tuned using DFTPP. All method criteria were met.

Internal Standards

The internal standard area counts were compared to the mid-point of the initial calibration according to method 8270. All recoveries met acceptance criteria.

Summary:

No other problem was encountered.

EPA Method 8330B
Energetics

Sample Preparation:

Two water samples were extracted according to EPA method 3535A. All holding times were met.

Analysis:

The samples were analyzed according to EPA Method 8330B using an Agilent 1290 HPLC with DA detector. Manual integrations were performed in accordance to APPL's SOP. Manual integrations were performed on the following: For Statler: Tetryl in data file 1002_000012, 2,6-Dinitrotoluene in data files 1002_000011 and 1002_000013, 2,4-Dinitrotoluene in data files 1002_000011 and 1002_000013, 4-Amino-2,6-Dinitrotoluene in data files 1002_000011, 1002_000013, 1012_0000068 and 1012_0000072, 2-Amino-4,6-Dinitrotoluene in data files 1002_000011, 1002_000013 and 1002_000015, Nitroglycerin in data files 1002_000012, 1002_000016, 1002_000018, 1002_000020, 1002_000022, 1002_000024, 1002_000026, 1012_0000068 and 1012_0000072, 2-Nitrotoluene in data file 1002_000013, 3-Nitrotoluene in data files 1002_000015, 1002_000019, 1012_0000068 and 1012_0000072, 3,5-Dinitroaniline in data files 1002_000014, 1002_000018, 1002_000020 and 1002_000022, and PETN in data files 1002_000018, 1002_000020, 1002_000022, 1002_000024, 1002_000026, 1002_000028, 1002_000030, 1012_0000068 and 1012_0000072. For Waldorf: HMX in data file 1013_0000003. Chromatograms of prior to and after manual integrations are enclosed.

Quality Control/Assurance:

Spike Recovery:

A Laboratory Control Spike (LCS) was used for quality assurance. All spike acceptance criteria was met.

Sample X15GW0010911 was designated by the laboratory for MS/MSD analysis. All recoveries met acceptance criteria.

Method blanks:

No target analyte was detected at or above the detection limit.

Surrogates:

Surrogate recoveries are summarized on the Form 2 & 8. All surrogates had acceptable recoveries.

Calibration:

The initial and continuing calibrations and second source were analyzed according to the method. All calibration criteria were met.

Summary:

No other analytical problem was encountered. The data generated are acceptable.

EPA Method 6020A
Metals

Digestion Information:

The water samples were digested according to EPA method 3015. All holding times were met.

Analysis Information:

Samples:

The samples were analyzed according to EPA method 6020A using an Agilent 7500CX ICP-MS.

Calibrations:

The initial and continuing calibrations were analyzed according to the method and DoD QSMv.4.2. The initial calibration verification is prepared from a second source standard.

Blanks:

No target analyte was detected above one-half the limit of quantitation (LOQ) in the method blank. In the continuing calibration blanks (CCBs) on 11-8-11, at 11:37, 12:14, 13:39, and 15:10, antimony was detected above the LOD of 0.20ug/L. Antimony was reported in the blank and LCS bracketed by these CCBs. Additionally, on 11-9-11, at 11:31 and 12:14, antimony was detected above the LOD. No associated samples are bracketed by these CCBs.

Spikes:

Laboratory control spikes (LCS), matrix spikes (MS/MSD), post-digestion spike (PDS), and dilution test (DT) were used for quality assurance. All LCS acceptance criteria were met.

Sample X15GW0010911 was selected by the laboratory for QC analysis. All acceptance criteria were met in the MS/MSD, PDS, and DT.

Summary:

No other analytical exception is noted.

Abbreviations and Flags

FLAG	DESCRIPTION
#	Recovery or RPD outside control limits
*	Recovery or RPD outside control limits
B	Analyte detected in associated method blank
C1	Reason for correction: wrote incorrect response
C2	Reason for correction: calculated incorrectly
C3	Reason for correction: needs to be rechecked
C4	Reason for correction: data not usable
DO	Diluted out
E	Exceeds linear range
F	Estimated value
G1	Includes a wide range of hydrocarbons which does not match our gasoline standard
G10	Includes a match to hydrocarbon profiles within the range of mineral spirits
G11	Includes a match to hydrocarbon profiles within the range of JP-4
G12	Pattern does not match the gasoline standard; the carbon range for this sample is consistent with JP8
G13	Closely resembles the hydrocarbon profile of aviation gasoline
G14	Analyte concentration may be biased due to carry over
G2	Closely resembles the boiling point hydrocarbon profile consistent with weathered gasoline
G3	Includes higher boiling hydrocarbons
G4	Includes dominant peak(s) not indicative of petroleum hydrocarbons
G5	Is mainly dominant peak(s) not indicative of petroleum hydrocarbons
G6	Contains recognizable contaminant peak(s) which has been removed from quantitation
G7	Is mainly a match to hydrocarbons within the range of gasoline
G8	Closely resembles the boiling point hydrocarbon profile consistent with weathered gasoline
G9	Includes hydrocarbons within the range of kerosene
J	Estimated value
M	Matrix effect
M1	Manual integration: integration does not follow baseline
M2	Manual integration: non-target peak interference
M3	Manual integration: to split a peak that was integrated as one peak by the computer
M4	Manual integration: to integrate a split peak
M5	Manual integration: the whole peak or part of the peak was not integrated
M6	Manual integration: computer integrated wrong peak
M7	Manual integration: other - explain
MDL	Method detection limit
ND	Not detected
NT	Non-target
Q	Acceptance criteria not met
T1 I	Includes wide range of hydrocarbons not indicative of diesel
T1 M	Is mainly wide range of hydrocarbons not necessarily indicative of diesel
T2 I	Includes lower boiling hydrocarbons, i.e. mineral spirits, kerosene, stoddard solvent, white gas
T2 M	Is mainly lower boiling hydrocarbons, i.e. mineral spirits, kerosene, stoddard solvent, white gas
T3 I	Includes higher boiling hydrocarbons, i.e. asphaltene, waster oil, motor oil, or weathered diesel fuel
T3 M	Is mainly higher boiling hydrocarbons, i.e. asphaltene, waster oil, motor oil, or weathered diesel fuel
T4 I	Includes dominant peak(s) not indicative of hydrocarbons
T4 M	Is mainly dominant peak(s) not indicative of hydrocarbons
T5	Contains recognizable contaminant peak(s) which has been removed from quantitation
T6	Is mainly a match to hydrocarbons within range of diesel fuel
T7	Closely resembles the boiling point hydrocarbon profile consistent with diesel fuel
T8	Includes a match to hydrocarbon profiles within range of diesel and kerosene fuel
T9 I	Includes non-diesel hydrocarbons within boiling point range of diesel fuel
T9 M	Is mainly non-diesel hydrocarbons within boiling point range of diesel fuel.
Y	Percent difference between primary and confirmation column > 40%

APPL - Analysis Request Form

65882

Client: Tetra Tech NUS, Inc.
Address: 234 Mall Blvd, suite 260
King of Prussia, PA 19406
Attn: Barbra Becker
Phone: 610-491-9688 Fax: 610-491-9645
Job: 112G00810 Indian Head CTO423
PO #: MSA# 1045497 WR#06-423
Chain of Custody (Y/N): Y # 35628,35604
RAD Screen (Y/N): Y pH (Y/N): Y
Turn Around Type: STD

Received by: TBV
Date Received: 10/01/11 Time: 11:05
Delivered by: FED EX
Shuttle Custody Seals (Y/N): Y
Chest Temp(s): 3.0,3.0°C
Color: I-PURRED,R-ORGYE
Samples Chilled until Placed in Refrig/Freezer: Y
Project Manager: Cynthia Clark
QC Report Type: DVP4/LEDD/RI
Due Date: 10/24/11

Comments:
send 1 hard copy and 2 BOOKMARKED CDs of report and Summary report on CD
Assemble report and summary package according to attached document, in same order as attached, special
EDD: LEDD to Tobrena Sedimyer barb.becker@tetratech.com
guidance: DoD QSMv4.2, LOQ/LOD-calc/DL forms
8330 = Nitroglycerin only
Invoice in triplicate per PO
NAVY (CLEAN) CONTRACT N62467-04-D-0055, CTO 423
Please see attached email for container count discrepancy

Sample Distribution:
GC: 3-$SIMDDODW
Extractions: 2-_MWE3535, 3-_SEP004
LCMS: 2-$833BW
Metals: 2-$62ADODW(Sb), 1-$62ADODW(Sb,Cu), 1-$62ADODW(Sb,Pb), 3-$62ADODW(Cu,Pb), 2-$62ADODDW(Sb,Pb), 1-$62ADODDW(Sb), 1-$62ADODDW(Sb,Cu), 3-$62ADODDW(Cu,Pb)
Other: 14-_M3015

Charges:

Invoice To:
TETRA TECH NUS
Accounts Payable
661 Anderson Drive, Foster Plaz
Pittsburgh, PA 15220

	Client ID		APPL ID	Sampled		Analyses Requested
1.	X15GW0020911		AY47772W	09/28/11	12:30	$62ADODW(Sb)
2.	X15GW0010911	MS/MSD	AY47773W	09/28/11	15:35	$62ADODW(Sb), $833BW, $SIMDDODW -- Nitroglycerin only, ms/msd on 8330 & PAH
3.	X14GW0010911		AY47774W	09/29/11	12:15	$62ADODW(Sb,Cu), $SIMDDODW
4.	X15GW0020911-F		AY47775W	09/28/11	12:30	$62ADODDW(Sb,Pb)
5.	X15GW0010911-F		AY47776W	09/28/11	15:35	$62ADODDW(Sb)
6.	X14GW0010911-F		AY47777W	09/29/11	12:15	$62ADODDW(Sb,Cu)

7.	X15GW0030911	AY47778W	09/29/11	16:05	$62ADODW(Sb,Pb)
8.	X15GW0030911-F	AY47779W	09/29/11	16:05	$62ADODDW(Sb,Pb)
9.	DUP01092811	AY47780W	09/28/11	00:00	$833BW, $SIMDDODW -- Nitroglycerin only
10.	X14GW0020911	AY47781W	09/30/11	08:35	$62ADODW(Cu,Pb)
11.	X14GW0020911-F	AY47782W	09/30/11	08:35	$62ADODDW(Cu,Pb)
12.	X14GW0040911	AY47783W	09/30/11	14:30	$62ADODW(Cu,Pb)
13.	X14GW0040911-F	AY47784W	09/30/11	14:30	$62ADODDW(Cu,Pb)
14.	DUP02093011	AY47785W	09/30/11	00:00	$62ADODW(Cu,Pb)
15.	DUP02093011-F	AY47786W	09/30/11	00:00	$62ADODDW(Cu,Pb)

APPL Sample Receipt Form

ARF# 65882

Sample	Container Type	Count	pH
AY47772	6 PL 500mL - HNO3	1	1.7
AY47773	6 PL 500mL - HNO3	1	1.7
	17 Amber Liter	12	NA
AY47774	6 PL 500mL - HNO3	1	1.7
	17 Amber Liter	2	NA
AY47775	6 PL 500mL - HNO3	1	1.7
AY47776	6 PL 500mL - HNO3	1	1.7
AY47777	6 PL 500mL - HNO3	1	1.7
AY47778	6 PL 500mL - HNO3	1	1.7
AY47779	6 PL 500mL - HNO3	1	1.7
AY47780	17 Amber Liter	4	NA
AY47781	6 PL 500mL - HNO3	1	1.7
AY47782	6 PL 500mL - HNO3	1	1.7
AY47783	6 PL 500mL - HNO3	1	1.7
AY47784	6 PL 500mL - HNO3	1	1.7
AY47785	6 PL 500mL - HNO3	1	1.7
AY47786	6 PL 500mL - HNO3	1	1.7

Sample	Container Type	Count	pH

COOLER RECEIPT FORM

1) Project: CTO 423, 112G00810 Indian Head Date Received: 10/1/11
2) **Coolers:** Number of Coolers: 2
3) YES NO Were coolers and samples screened for radioactivity?
4) YES NO Were custody seals on outside of cooler? How many? 4 Date on seal? 9/30/11
5) Name on seal? See Label
6) YES NO NA Were custody seals unbroken and intact at the time of arrival?
7) YES NO Did the cooler come with a shipping slip (air bill, etc.)? Carrier name: Fed Ex
8) Shipping slip numbers: 1) 8944 5764 0350 (Master) 2) 3)
9) YES NO NA Was the shipping slip scanned into the database?
10) YES NO NA If cooler belongs to APPL, has it been logged into the ice chest database?
11) Describe type of packing in cooler (bubble wrap, popcorn, type of ice, etc.): bubble bag in Ziploc, Ziploc, in wet ice
12) YES NO NA For hand delivered samples was sufficient ice present to start the cooling process?
13) YES NO Was a temperature blank included in the cooler?
14) Serial number of certified NIST thermometer used: 439267 Correction factor: 0
15) Cooler temp(s): 1) 3.0°C 2) 3.0°C 3) 4) 5) 6) 7) 8)

Chain of custody:

16) YES NO Was a chain of custody received?
17) YES NO Were the custody papers signed in the appropriate places?
18) YES NO Was the project identifiable from custody papers?
19) YES NO Did the chain of custody include date and time of sampling?
20) YES NO Is location where sample was taken listed on the chain of custody?

Sample Labels:

21) YES NO Were container labels in good condition?
22) YES NO Was the client ID on the label?
23) YES NO Was the date of sampling on the label?
24) YES NO Was the time of sampling on the label?
25) YES NO Did all container labels agree with custody papers?

Sample Containers:

26) YES NO Were all containers sealed in separate bags?
27) YES NO Did all containers arrive unbroken?
28) YES NO Was there any leakage from samples?
29) YES NO Were any of the lids cracked or broken?
30) YES NO Were correct containers used for the tests indicated?
31) YES NO Was a sufficient amount of sample sent for tests indicated?
32) YES NO NA Were bubbles present in volatile samples? If yes, the following were received with air bubbles:
Larger than a pea:
Smaller than a pea:

Preservation & Hold time:

33) YES NO NA Was a sufficient amount of holding time remaining to analyze the samples?
34) YES NO NA Do the sample containers contain the same preservative as what is stated on the COC?
35) YES NO NA Was the pH taken of all non-VOA preserved samples and written on the sample container?
36) YES NO NA Was the pH of acid preserved non-VOA samples < 2 & sodium hydroxide preserved samples > 12?
37) YES NO NA Unpreserved VOA Vials received?
38) YES NO NA Are unpreserved VOA vials noted in the ADD TEST FIELD on the ARF?

Lab notified if pH was not adequate: YZ 10/1/11
Deficiencies: Sample X14GW0010911 - COC listed 1 container but received total of 3 container (2 Amber liter, 1 500mL plastic (HNO3))

Signature of personnel receiving samples: Yang Yu Second reviewer:
Signature of project manager notified: Renée Date and Time of notification: 10-4-11
Name of client notified: Date and Time of notification:
Information given to client:
by whom (initials):

CUSTODY SEAL
APPL, Inc.
(559) 275-2175

Initials: Date: 10/1/11

Form 2 & 8

Surrogate Recovery

Lab Name: APPL, Inc. SDG No: 65882

Case No: 65882 Date Analyzed: 10/06/11

Matrix: WATER Instrument: Linus

APPL ID.	Client Sample No.	SURROGATE: 2-FLUORBIPHENYL (S)			SURROGATE: NITROBENZENE-D5 (S)		
		Limits	Result	Qualifier	Limits	Result	Qualifier
111005A-BLK	Blank	50-110	56.9		40-110	67.2	
111005A-LCS	Lab Control Spike	50-110	53.5		40-110	82.0	
AY47773-MS	Matrix Spike	50-110	69.9		40-110	80.6	
AY47773-MSD	Matrix SpikeD	50-110	61.7		40-110	86.7	
AY47773	X15GW0010911	50-110	55.2		40-110	53.9	
AY47774	X14GW0010911	50-110	53.2		40-110	67.3	
AY47780	DUP01092811	50-110	59.8		40-110	66.8	

Comments: Batch: #SIMDD-111005A

Form 2 & 8

Surrogate Recovery

Lab Name: APPL, Inc. SDG No: 65882

Case No: 65882 Date Analyzed: 10/06/11

Matrix: WATER Instrument: Linus

APPL ID.	Client Sample No.	SURROGATE: TERPHENYL-D14 (S)					
		Limits	Result	Qualifier	Limits	Result	Qualifier
111005A-BLK	Blank	50-135	69.9				
111005A-LCS	Lab Control Spike	50-135	80.5				
AY47773-MS	Matrix Spike	50-135	78.6				
AY47773-MSD	Matrix SpikeD	50-135	83.7				
AY47773	X15GW0010911	50-135	64.1				
AY47774	X14GW0010911	50-135	73.4				
AY47780	DUP01092811	50-135	72.6				

Comments: Batch: #SIMDD-111005A

8270D-LL

Form 4

Blank Summary

Lab Name: APPL, Inc. SDG No: 65882

Case No: 65882 Date Analyzed: 10/06/11

Matrix: WATER Instrument: Linus

Blank ID: 111005A-BLK Time Analyzed: 1634

APPL ID.	Client Sample No.	File ID.	Date Analyzed
111005A-BLK	Blank	1006L012	10/06/11 1634
111005A-LCS	Lab Control Spike	1006L013	10/06/11 1659
111005A-MS	Matrix Spike	1006L016	10/06/11 1815
111005A-MSD	Matrix SpikeD	1006L017	10/06/11 1841
AY47773	X15GW0010911	1006L018	10/06/11 1907
AY47774	X14GW0010911	1006L019	10/06/11 1932
AY47780	DUP01092811	1006L020	10/06/11 1958

Comments: Batch: #SIMDD-111005A

Printed: 11/16/11 2:12:54 PM
Form 4, Blank Summary

Method Blank

EPA 8270D LL WATER DODv3

APPL Inc.
908 North Temperance Avenu
Clovis, CA 93611

Blank Name/QCG: **111005W-47773 - 160276**
Batch ID: #SIMDD-111005A

Sample Type	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
BLANK	2-METHYLNAPHTHALENE	0.12 U	0.2	0.12	0.06	ug/L	10/05/11	10/06/11
BLANK	ACENAPHTHENE	0.12 U	0.2	0.12	0.06	ug/L	10/05/11	10/06/11
BLANK	ACENAPHTHYLENE	0.12 U	0.2	0.12	0.06	ug/L	10/05/11	10/06/11
BLANK	ANTHRACENE	0.10 U	0.2	0.10	0.05	ug/L	10/05/11	10/06/11
BLANK	BENZ (A) ANTHRACENE	0.14 U	0.2	0.14	0.07	ug/L	10/05/11	10/06/11
BLANK	BENZO (A) PYRENE	0.14 U	0.2	0.14	0.07	ug/L	10/05/11	10/06/11
BLANK	BENZO (B) FLUORANTHENE	0.12 U	0.2	0.12	0.06	ug/L	10/05/11	10/06/11
BLANK	BENZO (G,H,I) PERYLENE	0.16 U	0.2	0.16	0.08	ug/L	10/05/11	10/06/11
BLANK	BENZO (K) FLUORANTHENE	0.14 U	0.2	0.14	0.07	ug/L	10/05/11	10/06/11
BLANK	CHRYSENE	0.10 U	0.2	0.10	0.05	ug/L	10/05/11	10/06/11
BLANK	DIBENZ (A,H) ANTHRACENE	0.10 U	0.2	0.10	0.05	ug/L	10/05/11	10/06/11
BLANK	FLUORANTHENE	0.16 U	0.2	0.16	0.08	ug/L	10/05/11	10/06/11
BLANK	FLUORENE	0.12 U	0.2	0.12	0.06	ug/L	10/05/11	10/06/11
BLANK	INDENO (1,2,3-CD) PYRENE	0.14 U	0.2	0.14	0.07	ug/L	10/05/11	10/06/11
BLANK	NAPHTHALENE	0.10 U	0.2	0.10	0.05	ug/L	10/05/11	10/06/11
BLANK	PHENANTHRENE	0.14 U	0.2	0.14	0.07	ug/L	10/05/11	10/06/11
BLANK	PYRENE	0.16 U	0.2	0.16	0.08	ug/L	10/05/11	10/06/11
BLANK	SURROGATE: 2-FLUORBIPHENY	56.9	50-110			%	10/05/11	10/06/11
BLANK	SURROGATE: NITROBENZENE-	67.2	40-110			%	10/05/11	10/06/11
BLANK	SURROGATE: TERPHENYL-D14 (	69.9	50-135			%	10/05/11	10/06/11

Quant Method: SIM2.M
Run #: 1006L012
Instrument: Linus
Sequence: L110921
Initials: LF

GC SC-Blank-REG MDLs
Printed: 10/19/11 12:21:26 PM

Matrix Spike Recoveries

EPA 8270D LL WATER DODv3

APPL ID: 111005W-47773 MS - 160276
Batch ID: #SIMDD-111005A
Sample ID: AY47773
Client ID: X15GW0010911

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Lvl ug/L	Matrix Result ug/L	SPK Result ug/L	DUP Result ug/L	SPK % Recovery	DUP % Recovery	Recovery Limits	RPD %	RPD Limits
2-METHYLNAPHTHALENE	3.92	ND	2.42	2.49	61.7	63.5	45-105	2.9	30
ACENAPHTHENE	3.92	ND	2.41	2.45	61.5	62.5	45-110	1.6	30
ACENAPHTHYLENE	3.92	ND	2.25	2.47	57.4	63.0	50-105	9.3	30
ANTHRACENE	3.92	ND	2.36	2.85	60.2	72.7	55-110	18.8	30
BENZ (A) ANTHRACENE	3.92	0.25	2.68	2.52	59.4	57.9	55-110	2.4	30
BENZO (A) PYRENE	3.92	0.31	2.51	2.36	56.1	52.3 #	55-110	6.2	30
BENZO (B) FLUORANTHENE	3.92	0.49	2.46	2.49	50.3	51.0	45-120	1.2	30
BENZO (G,H,I) PERYLENE	3.92	0.26	2.59	2.65	59.4	61.0	40-125	2.3	30
BENZO (K) FLUORANTHENE	3.92	0.36	2.65	2.54	58.4	55.6	45-125	4.2	30
CHRYSENE	3.92	0.25	2.40	2.50	54.8 #	57.4	55-110	4.1	30
DIBENZ (A,H) ANTHRACENE	3.92	0.14	2.71	2.93	65.6	71.2	40-125	7.8	30
FLUORANTHENE	3.92	0.24	2.36	2.82	54.1 #	65.8	55-115	17.8	30
FLUORENE	3.92	ND	2.53	2.60	64.5	66.3	50-110	2.7	30
INDENO (1,2,3-CD) PYRENE	3.92	0.24	2.45	2.59	56.4	59.9	45-125	5.6	30
NAPHTHALENE	3.92	ND	2.56	2.54	65.3	64.8	40-100	0.78	30
PHENANTHRENE	3.92	0.16	2.35	2.89	55.9	69.6	50-115	20.6	30
PYRENE	3.92	0.22	2.26	2.38	52.0	55.1	50-130	5.2	30
SURROGATE: 2-FLUORBIPHENYL (S)	1.96	NA	1.37	1.21	69.9	61.7	50-110		
SURROGATE: NITROBENZENE-D5 (S)	1.96	NA	1.58	1.70	80.6	86.7	40-110		
SURROGATE: TERPHENYL-D14 (S)	1.96	NA	1.54	1.64	78.6	83.7	50-135		

= Recovery is outside QC limits.

Comments:

Primary	SPK	DUP
Quant Method :	SIM2.M	SIM2.M
Extraction Date :	10/05/11	10/05/11
Analysis Date :	10/06/11	10/06/11
Instrument :	Linus	Linus
Run :	1006L016	1006L017
Initials :	LF	

Printed: 10/19/11 12:27:45 PM
APPL MSD SCII

Laboratory Control Spike Recovery
EPA 8270D LL WATER DODv3

APPL ID: **111005W-47773 LCS - 160276**
Batch ID: #SIMDD-111005A

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Level ug/L	SPK Result ug/L	SPK % Recovery	Recovery Limits
2-METHYLNAPHTHALENE	4.00	2.19	54.8	45-105
ACENAPHTHENE	4.00	2.27	56.8	45-110
ACENAPHTHYLENE	4.00	2.26	56.5	50-105
ANTHRACENE	4.00	2.23	55.8	55-110
BENZ (A) ANTHRACENE	4.00	2.57	64.3	55-110
BENZO (A) PYRENE	4.00	2.39	59.8	55-110
BENZO (B) FLUORANTHENE	4.00	2.44	61.0	45-120
BENZO (G,H,I) PERYLENE	4.00	2.72	68.0	40-125
BENZO (K) FLUORANTHENE	4.00	2.46	61.5	45-125
CHRYSENE	4.00	2.65	66.3	55-110
DIBENZ (A,H) ANTHRACENE	4.00	2.59	64.8	40-125
FLUORANTHENE	4.00	2.45	61.3	55-115
FLUORENE	4.00	2.28	57.0	50-110
INDENO (1,2,3-CD) PYRENE	4.00	2.81	70.3	45-125
NAPHTHALENE	4.00	2.19	54.8	40-100
PHENANTHRENE	4.00	2.38	59.5	50-115
PYRENE	4.00	2.37	59.3	50-130
SURROGATE: 2-FLUORBIPHENYL (S)	2.00	1.07	53.5	50-110
SURROGATE: NITROBENZENE-D5 (S)	2.00	1.64	82.0	40-110
SURROGATE: TERPHENYL-D14 (S)	2.00	1.61	80.5	50-135

Comments: _____

Primary	SPK
Quant Method :	SIM2.M
Extraction Date :	10/05/11
Analysis Date :	10/06/11
Instrument :	Linus
Run :	1006L013
Initials :	LF

Printed: 10/19/11 12:27:41 PM

APPL Standard LCS

Injection Log

Directory: M:\LINUS\DATA\L110921\

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1	1	0921L001.D	1	SVTUNE 04-14-11		21 Sep 11 19:23
2	3	0921L003.D	1	0.1ug/ml PAH 09-21-11		21 Sep 11 20:07
3	4	0921L004.D	1	0.2ug/ml PAH		21 Sep 11 20:33
4	5	0921L005.D	1	0.5ug/ml PAH		21 Sep 11 20:59
5	6	0921L006.D	1	1.0ug/ml PAH		21 Sep 11 21:25
6	7	0921L007.D	1	5.0ug/ml PAH		21 Sep 11 21:51
7	8	0921L008.D	1	10ug/ml PAH		21 Sep 11 22:17
8	9	0921L009.D	1	50ug/ml PAH		21 Sep 11 22:43
9	10	0921L010.D	1	100ug/ml PAH		21 Sep 11 23:09
10	11	0921L011.D	1	5.0ug/ml PAH SS 9-21-11		21 Sep 11 23:35
11	1	1006L001.D	1	SVTUNE 04-14-11		6 Oct 11 12:01
12	2	1006L002.D	1	10ug/ml PAH 09-29-11		6 Oct 11 12:19
13	12	1006L012.D	1	111005A BLK 1/1000		6 Oct 11 16:34
14	13	1006L013.D	1	111005A LCS-1 1/1000		6 Oct 11 16:59
15	16	1006L016.D	0.98039	AY47773W01 MS-1 1/1020		6 Oct 11 18:15
16	17	1006L017.D	0.98039	AY47773W04 MSD-1 1/1020		6 Oct 11 18:41
17	18	1006L018.D	0.98039	AY47773W06 1/1020		6 Oct 11 19:07
18	19	1006L019.D	1	AY47774W02 1/1000		6 Oct 11 19:32
19	20	1006L020.D	0.9901	AY47780W03 1/1010		6 Oct 11 19:58

Form 5
Tune Summary

Lab Name: APPL Inc.
Case No: 65882
Matrix: Water
ID: SVTUNE 04-14-11

SDG No: 65882
Date Analyzed: 10/06/11
Instrument: Linus
Time Analyzed: 12:01

	Client Sample No.	APPL ID.	File ID.	Date Analyzed
1	Blank	111005A BLK 1/1000	1006L012.D	10/06/11 16:34
2	Lab Control Spike	111005A LCS-1 1/1000	1006L013.D	10/06/11 16:59
3	Matrix Spike	AY47773W01 MS-1 1/10	1006L016.D	10/06/11 18:15
4	Matrix Spike Dup	AY47773W04 MSD-1 1/1	1006L017.D	10/06/11 18:41
5	X15GW0010911	AY47773W06 1/1020	1006L018.D	10/06/11 19:07
6	X14GW0010911	AY47774W02 1/1000	1006L019.D	10/06/11 19:32
7	DUP01092811	AY47780W03 1/1010	1006L020.D	10/06/11 19:58
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				

m/e		
51	29.95 - 60% of mass 198	46.2
68	0 - 2.05% of mass 69	0.0
70	0 - 2% of mass 69	0.4
127	40 - 60% of mass 198	51.4
197	0 - 1% of mass 198	0.2
198	100 - 100% of mass 198	100.0
199	5 - 9% of mass 198	7.3
275	10 - 30% of mass 198	24.6
365	1 - 100% of mass 198	2.4
441	0.01 - 100% of mass 443	75.0
442	40 - 150% of mass 198	90.5
443	17 - 23% of mass 442	19.9

EPA 8270C SIM

Form 6
Initial Calibration

Lab Name: APPL, Inc. SDG No: 65882
Case No: Initial Cal. Date: 09/21/11
Matrix: Instrument: Linus
Initials:

			0921L003.D	0921L004.D	0921L005.D	0921L006.D	0921L007.D	0921L008.D	0921L009.D	0921L010.D						
		Compound	0.1	0.2	0.5	1	5	10	50	100			Avg	%RSD		
1	I	Naphthalene-D8(IS)														
2	SL	Surrogate Recovery (NBZ)		0.4008	0.2280	0.1787	0.2494	0.2725	0.2789	0.2813			0.27	25	SL	1.00
3	TM	Naphthalene	2.157	2.196	1.897	2.278	2.037	2.122	1.776	1.762			2.0	9.6	TM	
4	TM	2-Methylnaphthalene	1.111	1.086	1.147	1.238	1.255	1.318	1.165	1.219			1.2	6.6	TM	
5	TM	1-Methylnaphthalene	1.145	1.420	1.381	1.525	1.311	1.237	1.091	1.116			1.3	12	TM	
6	I	Acenaphthene-D10(IS)														
7	S	Surrogate Recovery (FBP)	1.573	1.778	1.585	1.603	1.583	1.653	1.407	1.325			1.6	9.0	S	
8	TM	Acenaphthylene	3.997	4.505	4.045	4.103	4.057	4.137	3.556	3.302			4.0	9.4	TM	
9	*TM	Acenaphthene	2.523	2.456	2.447	2.439	2.408	2.336	2.022	2.045			2.3	8.3	*TM	
10	TM	Fluorene	2.720	2.846	2.812	2.692	2.744	2.805	2.357	2.356			2.7	7.4	TM	
11	I	Phenanthrene-D10(IS)														
12	TM	Phenanthrene	2.316	2.199	2.240	2.141	2.575	2.546	2.112	2.143			2.3	8.0	TM	
13	TM	Anthracene	3.119	2.495	2.570	2.468	2.679	2.601	2.018	2.132			2.5	13	TM	
14	*TM	Fluoranthene	4.608	4.262	4.190	4.040	4.429	4.410	3.783	3.528			4.2	8.6	*TM	
15	I	Chrysene-D12(IS)														
16	TM	Pyrene	3.512	3.742	3.547	3.417	2.998	2.950	2.375				3.2	15	TM	
17	S	Surrogate Recovery (TPH)	1.020	0.8327	0.8506	0.8574	0.7514	0.7758	0.6975	0.6333			0.80	15	S	
18	TM	Benz (a) anthracene	1.926	1.723	1.797	1.530	1.865	1.886	1.850	1.920			1.8	7.3	TM	
19	TM	Chrysene	2.738	2.422	2.629	2.750	2.191	2.296	1.941	1.922			2.4	14	TM	
20	TM	Indeno (1,2,3-cd) pyrene	1.284	1.618	1.350	1.389	1.267	1.346	1.483	1.606			1.4	9.4	TM	
21	I	Perylene-D12(IS)														
22	TM	Benzo (b) fluoranthene	1.846	1.842	1.732	1.803	1.666	1.787	2.067	2.307			1.9	11	TM	
23	TM	Benzo (k) fluoranthene	2.818	2.636	2.555	2.673	2.620	2.834	2.006	2.049			2.5	13	TM	
24	*TM	Benzo (a) pyrene	1.944	1.930	2.046	2.093	2.014	2.082	1.924	1.861			2.0	4.2	*TM	
25	TM	Dibenz (a,h) anthracene	1.288	1.261	1.238	1.249	1.153	1.205	1.340	1.406			1.3	6.2	TM	
26	TM	Benzo (g,h,i) perylene	1.555	1.842	1.766	1.700	1.368	1.515	1.530	1.570			1.6	9.6	TM	
27																
28																
29																
30																
31																
32																
33																
34																
35																

Form 7

Second Source Calibration

Lab Name: APPL, Inc.
Case No:
Matrix:

SDG No: 65882
Date Analyzed: 09/21/11
Instrument: Linus
Initial Cal. Date: 09/21/11
Data File: 0921L011.D

		Compound	MEAN	CCRF	%D		%Drift
1	I	Napthalene-D8(IS)	ISTD			I	
2	TM	Naphthalene	2.028	1.972	2.8	TM	
3	TM	2-Methylnaphthalene	1.192	1.215	1.9	TM	
4	TM	1-Methylnaphthalene	1.276	1.303	1.9	TM	
5	I	Acenaphthene-D10(IS)	ISTD			I	
6	TM	Acenaphthylene	3.963	3.853	2.8	TM	
7	*TM	Acenaphthene	2.335	2.286	2.1	*TM	
8	TM	Fluorene	2.666	2.612	2.0	TM	
9	I	Phenanthrene-D10(IS)	ISTD			I	
10	TM	Phenanthrene	2.284	2.251	1.4	TM	
11	TM	Anthracene	2.510	2.363	5.9	TM	
12	*TM	Fluoranthene	4.156	3.841	7.6	*TM	
13	I	Chrysene-D12(IS)	ISTD			I	
14	TM	Pyrene	3.220	2.914	9.5	TM	
15	TM	Benz (a) anthracene	1.812	1.962	7.7	TM	
16	TM	Chrysene	2.361	2.253	4.6	TM	
17	TM	Indeno (1,2,3-cd) pyrene	1.421	1.590	12	TM	
18	I	Perylene-D12(IS)	ISTD			I	
19	TM	Benzo (b) fluoranthene	1.661	1.665	0.87	TM	
20	TM	Benzo (k) fluoranthene	2.524	2.659	5.3	TM	
21	*TM	Benzo (a) pyrene	1.987	2.244	13	*TM	
22	TM	Dibenz (a,h) anthracene	1.267	1.424	12	TM	
23	TM	Benzo (g,h,i) perylene	1.606	1.687	5.1	TM	
24							
25							
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							
		Average			5.5		

Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix:

SDG No: 65982
Date Analyzed: 6 Oct 11 12:19
Instrument: Linus
Initial Cal. Date: 09/21/11
Data File: 1006L002.D

		Compound	MEAN	CCRF	%D		%Drift
1	I	Napthalene-D8(IS)	ISTD			I	
2	SL	Surrogate Recovery (NBZ)	0.2699	0.2692	0.29	SL	1.0
3	TM	Naphthalene	2.028	1.878	7.4	TM	
4	TM	2-Methylnaphthalene	1.192	1.220	2.3	TM	
5	TM	1-Methylnaphthalene	1.278	1.159	9.3	TM	
6	I	Acenaphthene-D10(IS)	ISTD			I	
7	S	Surrogate Recovery (FBP)	1.563	1.670	6.9	S	
8	TM	Acenaphthylene	3.963	3.567	10.0	TM	
9	*TM	Acenaphthene	2.335	2.191	6.1	*TM	
10	TM	Fluorene	2.666	2.557	4.1	TM	
11	I	Phenanthrene-D10(IS)	ISTD			I	
12	TM	Phenanthrene	2.284	2.306	0.97	TM	
13	TM	Anthracene	2.510	2.322	7.5	TM	
14	*TM	Fluoranthene	4.156	3.823	8.0	*TM	
15	I	Chrysene-D12(IS)	ISTD			I	
16	TM	Pyrene	3.220	2.718	16	TM	
17	S	Surrogate Recovery (TPH)	0.8023	0.8602	7.2	S	
18	TM	Benz (a) anthracene	1.812	1.897	4.7	TM	
19	TM	Chrysene	2.361	2.064	13	TM	
20	TM	Indeno (1,2,3-cd) pyrene	1.421	1.618	14	TM	
21	I	Perylene-D12(IS)	ISTD			I	
22	TM	Benzo (b) fluoranthene	1.881	2.191	16	TM	
23	TM	Benzo (k) fluoranthene	2.524	2.114	16	TM	
24	*TM	Benzo (a) pyrene	1.987	1.947	2.0	*TM	
25	TM	Dibenz (a,h) anthracene	1.267	1.465	16	TM	
26	TM	Benzo (g,h,i) perylene	1.606	1.594	0.71	TM	
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							
		Average			8.0		

8A
INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: APPL Inc. Contract: Review

Lab Code: _____ SDG No.: 65882

Lab File ID (Standard): 0921L007.D Date Analyzed: 09/21/11

Instrument ID: Linus Time Analyzed: 21:51

GC Column: _____ ID: Heated Purge: (Y/N) _____

		Napthalene-D8(IS)		Acenaphthene-D10(IS)		Phenanthrene-D10(IS)	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	1616	6.12	743	8.13	1026	9.87
	UPPER LIMIT	3232	6.62	1486	8.63	2052	10.37
	LOWER LIMIT	808	5.62	372	7.63	513	9.37
	SAMPLE NO.						
01	111005A BLK 1/1000	2023	6.12	864	8.13	1462	9.87
02	111005A LCS-1 1/1000	1715	6.12	808	8.12	1302	9.86
03	AY47773W01 MS-1 1/1	1663	6.12	822	8.12	1280	9.86
04	AY47773W04 MSD-1 1/	1649	6.12	814	8.12	1201	9.87
05	AY47773W06 1/1020	1610	6.12	653	8.13	1158	9.88
06	AY47774W02 1/1000	1773	6.12	968	8.13	1487	9.87
07	AY47780W03 1/1010	1988	6.12	926	8.13	1495	9.88
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = -50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

8A
INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: APPL Inc. Contract: Review

Lab Code: SDG No.: 65882

Lab File ID (Standard): 0921L007.D Date Analyzed: 09/21/11

Instrument ID: Linus Time Analyzed: 21:51

GC Column: ID: Heated Purge: (Y/N)

		Chrysene-D12(IS)		Perylene-D12(IS)			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	1571	12.96	1247	14.59		
	UPPER LIMIT	3142	13.46	2494	15.09		
	LOWER LIMIT	786	12.46	624	14.09		
	SAMPLE NO.						
01	111005A BLK 1/1000	2367	12.96	1950	14.61		
02	111006A LCS-1 1/1000	2044	12.96	1719	14.59		
03	AY47773W01 MS-1 1/1(	2050	12.96	1647	14.59		
04	AY47773W04 MSD-1 1/	1900	12.96	1546	14.59		
05	AY47773W06 1/1020	1830	12.96	1502	14.61		
06	AY47774W02 1/1000	2311	12.97	1892	14.61		
07	AY47780W03 1/1010	2309	12.97	1868	14.61		
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = -50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

SAMPLE ID X15GW0010911

SAMPLE CALC IS AREA	DILUTION	COMPOUND OF INTEREST	IS AMOUNT (NG)	Final Extract Volume (UL)	AVE RRF	CONCENTRATION PPB
1502	1	561	2.5	1000	1.9000	0.49

Sample Volume (mL)
1000

Benzo(b)fluoranthene = 0.49 ug/L

X1SGW001091/

Quantitation Report (QT Reviewed)

Data File : M:\LINUS\DATA\L110921\1006L018.D Vial: 18
Acq On : 6 Oct 11 19:07 Operator: LF
Sample : AY47773W06 1/1020 Inst : Linus
Misc : Multiplr: 0.98

Quant Time: Oct 7 9:15 2011 Quant Results File: SIM2.RES

Quant Method : M:\LINUS\DATA\L110921\SIM2.M (RTE Integrator)
Title : EPA 8270C
Last Update : Wed Oct 05 18:18:09 2011
Response via : Initial Calibration
DataAcq Meth : 87SIMAQ

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Napthalene-D8(IS)	6.12	136	1610	2.50000 ppb	0.00
6) Acenaphthene-D10(IS)	8.13	164	653	2.50000 ppb	0.01
11) Phenanthrene-D10(IS)	9.88	188	1158	2.50000 ppb	0.02
15) Chrysene-D12(IS)	12.96	240	1830	2.50000 ppb	0.01
21) Perylene-D12(IS)	14.61	264	1502	2.50000 ppb	0.02
System Monitoring Compounds					
2) Surrogate Recovery (NBZ)	5.37	82	146	1.05750 ppb	0.02
Spiked Amount 1.961			Recovery	= 53.907%	
7) Surrogate Recovery (FBP)	7.39	172	451	1.08291 ppb	0.02
Spiked Amount 1.961			Recovery	= 55.233%	
17) Surrogate Recovery (TPH)	11.75	244	753	1.25705 ppb	0.00
Spiked Amount 1.961			Recovery	= 64.107%	
Target Compounds					Qvalue
12) Phenanthrene	9.91	178	172	0.15938 ppb	98
14) Fluoranthene	11.29	202	475	0.24189 ppb	98
16) Pyrene	11.55	202	522	0.21711 ppb	99
18) Benz (a) anthracene	12.96	228	337	0.24907 ppb	98
19) Chrysene	13.00	228	447	0.25354 ppb	97
20) Indeno (1,2,3-cd) pyrene	16.16	276	258	0.24324 ppb #	100
22) Benzo (b) fluoranthene	14.16	252	561	0.48663 ppb	98
23) Benzo (k) fluoranthene	14.16	252	561	0.36272 ppb	98
24) Benzo (a) pyrene	14.54	252	377	0.30967 ppb	95
25) Dibenz (a,h) anthracene	16.18	278	111	0.14292 ppb	95
26) Benzo (g,h,i) perylene	16.61	276	260	0.26425 ppb	96

(#) = qualifier out of range (m) = manual integration

Method 8330B

Form 2 & 8

Surrogate Recovery

Lab Name: APPL, Inc. SDG No: 65882

Case No: 65882 Date Analyzed: 10/14/2011

Matrix: WATER Instrument: Statler

APPL ID.	Client Sample No.	SURROGATE: 1,2-DINITROBENZENE (S)					
		Limits	Result	Qualifier	Limits	Result	Qualifier
AY47773	X15GW0010911	70-130	96.5				
AY47780	DUP01092811	70-130	101				
111005AA-LCS	Lab Control Spike	70-130	91.5				
AY47773-MS	Matrix Spike	70-130	96.3				
AY47773-MSD	Matrix SpikeD	70-130	95.6				
111005AA-BLK	Blank	70-130	102				

Comments: Batch: #833BW-111005AA

Form 2 & 8

Surrogate Recovery

Lab Name: APPL, Inc. SDG No: 65882

Case No: 65882 Date Analyzed: 11/14/2011

Matrix: WATER Instrument: Waldorf

APPL ID.	Client Sample No.	SURROGATE: 1,2-DINITROBENZENE (S)					
		Limits	Result	Qualifier	Limits	Result	Qualifier
111111A-LCS	Lab Control Spike	70-130	83.6				
111111A-BLK	Blank	70-130	83.9				
AY47774	X14GW0010911	70-130	85.0				

Comments: Batch: #833BW-111111A

Printed: 11/17/2011 5:47:26 PM

Form 2 & 8, Surrogate Recovery Summary

EPA 8330B

Form 4

Blank Summary

Lab Name: APPL, Inc. SDG No: 65882

Case No: 65882 Date Analyzed: 10/19/2011

Matrix: WATER Instrument: Statler

Blank ID: 111005AA-BLK Time Analyzed: 0048

APPL ID.	Client Sample No.	File ID.	Date Analyzed
AY47773	X15GW0010911	1012_0000070	10/14/2011 1214
AY47780	DUP01092811	1012_0000071	10/14/2011 1255
111005AA-LCS	Lab Control Spike	1017_0000059	10/18/2011 2113
111005AA-MS	Matrix Spike	1017_0000062	10/18/2011 2305
111005AA-MSD	Matrix SpikeD	1017_0000063	10/18/2011 2343
111005AA-BLK	Blank	1017_0000065	10/19/2011 0048

Comments: Batch: #633BW-111005AA

Printed: 11/2/2011 2:00:14 PM
Form 4, Blank Summary

Method Blank

EPA 8330B EXPLOSIVES-WATER

Blank Name/QCG: **111005W-47773 - 160735**
Batch ID: #833BW-111005AA

APPL Inc.
908 North Temperance Avenu
Clovis, CA 93611

Sample Type	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
BLANK	NITROGLYCERIN	0.260 U	0.50	0.260	0.130	ug/L	10/5/2011	10/19/2011
BLANK	SURROGATE: 1,2-DINITROBENZ	102	70-130			%	10/5/2011	10/19/2011

Quant Method:W110907.M
Run #:1017_000006
Instrument:Waldorf
Sequence:111017
Initials:RSM

GC SC-Blank-REG MDLs
Printed: 11/2/2011 2:00:09 PM

Matrix Spike Recoveries

EPA 8330B EXPLOSIVES-WATER

APPL ID: **111005W-47773 MS - 160735**
Batch ID: #833BW-111005AA
Sample ID: AY47773
Client ID: X15GW0010911

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Lvl ug/L	Matrix Result ug/L	SPK Result ug/L	DUP Result ug/L	SPK % Recovery	DUP % Recovery	Recovery Limits	RPD %	RPD Limits
NITROGLYCERIN	8.00	ND	9.67	9.52	121	119	70-130	1.6	20
SURROGATE: 1,2-DINITROBENZENE (S)	8.00	NA	7.70	7.65	96.3	95.6	70-130		

Comments: _____

Primary	SPK	DUP
Quant Method :	W110907.M	W110907.M
Extraction Date :	10/5/2011	10/5/2011
Analysis Date :	10/18/2011	10/18/2011
Instrument :	Waldorf	Waldorf
Run :	1017_0000062	1017_0000063
Initials :	RSM	

Printed: 11/2/2011 2:00:13 PM
APPL MSD SCII

Laboratory Control Spike Recovery
EPA 8330B EXPLOSIVES-WATER

APPL ID: **111005W-47773 LCS - 160735**
Batch ID: **#833BW-111005AA**

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Level ug/L	SPK Result ug/L	SPK % Recovery	Recovery Limits
NITROGLYCERIN	8.00	9.04	113	70-130
SURROGATE: 1,2-DINITROBENZENE (S)	8.00	7.32	91.5	70-130

Comments: _____

Primary	SPK
Quant Method :	W110907.M
Extraction Date :	10/5/2011
Analysis Date :	10/18/2011
Instrument :	Waldorf
Run :	1017_0000059
Initials :	RSM

Printed: 11/2/2011 2:00:11 PM

APPL Standard LCS

Injection Log

Directory: H:\WALDORF\CHEM32\1\DATA\111013

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1	0	1013_0000003.D		8830B_CB 0.005 PPM 10/13/11		10/13/2011 15:57
2	0	1013_0000004.D		8830B_CB 0.01 PPM 10/13/11		10/13/2011 16:34
3	0	1013_0000005.D		8830B_CB 0.02 PPM 10/13/11		10/13/2011 17:12
4	0	1013_0000006.D		8830B_CB 0.05 PPM 10/13/11		10/13/2011 17:49
5	0	1013_0000007.D		8830B_CB 0.1 PPM 10/13/11		10/13/2011 18:26
6	0	1013_0000008.D		8830B_CB 0.2 PPM 10/13/11		10/13/2011 19:04
7	0	1013_0000009.D		8830B_CB 0.5 PPM 10/13/11		10/13/2011 19:41
8	0	1013_0000010.D		8830B_CB 1.0 PPM 10/13/11		10/13/2011 20:19
9	0	1013_0000011.D		8830B_MX-A 2.0 PPM 10/13/11		10/13/2011 20:56
10	0	1013_0000012.D		8830B_MX-B 2.0 PPM 10/13/11		10/13/2011 21:34
11	0	1013_0000014.D		8830B_SS 1.0 PPM 10/13/11		10/13/2011 22:49
12	0	1017_0000050.D		8330_CCV 1.0 PPM 10/17/11		10/18/2011 16:03
13	0	1017_0000059.D	0.016	111005WLCS1A 0.016 DF 10/05/11	water	10/18/2011 21:13
14	0	1017_0000062.D	0.016	AY47773W10_MS-1 0.016 DF 10/05/11	water	10/18/2011 23:05
15	0	1017_0000063.D	0.016	AY47773W10_MSD-1 0.016 DF 10/05/11	water	10/18/2011 23:43
16	0	1017_0000064.D		8330_CCV 1.0 PPM 10/17/11		10/19/2011 00:20
17	0	1017_0000065.D	0.016	111005WBLK1A 0.016 DF 10/05/11	water	10/19/2011 00:48
18	0	1017_0000076.D		8330_CCV 1.0 PPM 10/17/11		10/19/2011 07:40

Injection Log

Directory: H:\STATLER\CHEM32\1\DATA\111002

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1	0	1002_000011.D		8330MXA_CB 0.005 PPM 10/01/11		10/02/2011 21:44
2	0	1002_000012.D		8330MXB_CB 0.005 PPM 10/01/11		10/02/2011 22:26
3	0	1002_000013.D		8330MXA_CB 0.010 PPM 10/01/11		10/02/2011 23:07
4	0	1002_000014.D		8330MXB_CB 0.010 PPM 10/01/11		10/02/2011 23:49
5	0	1002_000015.D		8330MXA_CB 0.020 PPM 10/01/11		10/03/2011 00:30
6	0	1002_000016.D		8330MXB_CB 0.020 PPM 10/01/11		10/03/2011 01:12
7	0	1002_000017.D		8330MXA_CB 0.050 PPM 10/01/11		10/03/2011 01:53
8	0	1002_000018.D		8330MXB_CB 0.050 PPM 10/01/11		10/03/2011 02:35
9	0	1002_000019.D		8330MXA_CB 0.10 PPM 10/01/11		10/03/2011 03:16
10	0	1002_000020.D		8330MXB_CB 0.10 PPM 10/01/11		10/03/2011 03:58
11	0	1002_000021.D		8330MXA_CB 0.20 PPM 10/01/11		10/03/2011 04:39
12	0	1002_000022.D		8330MXB_CB 0.20 PPM 10/01/11		10/03/2011 05:21
13	0	1002_000023.D		8330MXA_CB 0.50 PPM 10/01/11		10/03/2011 06:02
14	0	1002_000024.D		8330MXB_CB 0.50 PPM 10/01/11		10/03/2011 06:44
15	0	1002_000025.D		8330MXA_CB 1.0 PPM 10/01/11		10/03/2011 07:25
16	0	1002_000026.D		8330MXB_CB 1.0 PPM 10/01/11		10/03/2011 08:07
17	0	1002_000027.D		8330MXA_CB 2.0 PPM 10/01/11		10/03/2011 08:48
18	0	1002_000028.D		8330MXB_CB 2.0 PPM 10/01/11		10/03/2011 09:30
19	0	1002_000029.D		8330MXA_SS 1.0 PPM 10/01/11		10/03/2011 10:11
20	0	1002_000030.D		8330MXB_SS 1.0 PPM 10/01/11		10/03/2011 10:53
21	0	1012_0000068.D		8330MXA_CCV 1.0 PPM 10/12/11		10/14/2011 10:49
22	0	1012_0000069.D		8330MXB_CCV 1.0 PPM 10/12/11		10/14/2011 11:31
23	0	1012_0000070.D	0.016	AY47773W11 0.016 DF 10/05/11	water	10/14/2011 12:14
24	0	1012_0000071.D	0.016	AY47780W01 0.016 DF 10/05/11	water	10/14/2011 12:55
25	0	1012_0000072.D		8330MXA_CCV 1.0 PPM 10/12/11		10/14/2011 13:37
26	0	1012_0000073.D		8330MXB_CCV 1.0 PPM 10/12/11		10/14/2011 14:18

Waldorf-8330B
W110907.M

Form 6
Initial Calibration

Lab Name: APPL, Inc. SDG No: 65882

Case No: Initial Cal. Date: 10/13/2011

Matrix: Instrument: Waldorf Initials: HM

1013_0000003.D 1013_0000004.D 1013_0000005.D 1013_0000006.D 1013_0000007.D 1013_0000008.D 1013_0000009.D 1013_0000010.D 1013_0000012.D

		Compound	1	2	3	4	5	6	7	8	9		Avg	%RSD		
1	TM	NITROGLYCERIN	145	137	147	119	138	138	142	139	137		138	5.8	TM	
2	TM	PETN			93.1	96.7	114	119	125	123	123		113	12	TM	
		Signal #2														
1	TM	HMX #2	601	677	575	614	705	641	726	707	685		659	8.1	TM	
2	TM	RDX #2	408	459	376	401	462	413	478	470	463		437	8.5	TM	
3	TM	1,3,5-TRINITROBENZENE #2	703	782	648	687	789	716	819	807	803		750	8.3	TM	
4	S	1,2-DINITROBENZENE #2	315	341	283	294	339	308	351	351	355		326	8.2	S	
5	TM	1,3-DINITROBENZENE #2	671	758	626	651	757	686	780	780	781		721	8.6	TM	
6	TM	3,5-DINITROANILINE #2	524	584	546	531	605	602	632	624	622		586	7.1	TM	
7	TM	NITROBENZENE #2	302	343	301	293	347	314	352	357	357		329	8.1	TM	
8	TM	TETRYL #2	225	245	206	220	251	232	264	261	263		241	8.7	TM	
9	TM	2,4,6-TRINITROTOLUENE #2	310	338	281	298	339	312	353	348	348		325	7.9	TM	
10	TM	2-AMINO-4,6-DINITROTOLUENE	284	310	261	276	315	290	330	325	325		302	8.2	TM	
11	TM	4-AMINO-2,6-DINITROTOLUENE	227	247	207	220	250	230	261	256	254		239	7.8	TM	
12	TM	2,4-DINITROTOLUENE #2	288	324	270	282	324	299	337	336	336		311	8.4	TM	
13	TM	2,6-DINITROTOLUENE #2	169	181	153	158	182	168	188	188	187		175	7.7	TM	
14	TM	2-NITROTOLUENE #2	117	124	104	108	125	115	128	129	129		120	8.0	TM	
15	TM	4-NITROTOLUENE #2	111	121	103	106	123	113	126	126	127		118	8.2	TM	
16	TM	3-NITROTOLUENE #2	137	147	123	128	149	137	152	154	154		142	8.2	TM	

Form 7

Second Source Calibration

Lab Name: APPL, Inc.
Case No:
Matrix:

SDG No: G5882
Date Analyzed: 13-Oct-2011, 22:49:00
Instrument: Waldorf
Initial Cal. Date: 10/13/2011
Data File: 1013_0000014.D

		Compound	MEAN	CCRF	%D		%Drift
1	TM	NITROGLYCERIN	138	134	2.8	TM	
2	TM	TETRYL	0.0000	0.0000		TM	
3	TM	2,4,6-TRINITROTOLUENE	0.0000	0.0000		TM	
4	TM	2-AMINO-4,6-DINITROTOLUENE	0.0000	0.0000		TM	
5	TM	4-AMINO-2,6-DINITROTOLUENE	0.0000	0.0000		TM	
6	TM	2,4-DINITROTOLUENE	0.0000	0.0000		TM	
7	TM	2,6-DINITROTOLUENE	0.0000	0.0000		TM	
8	TM	PETN	113	120	6.3	TM	
	Signal #2						
1	TM	HMX	659	642	2.5	TM	
2	TM	RDX	437	423	3.2	TM	
3	TM	1,3,5-TRINITROBENZENE	750	668	11	TM	
4	S	1,2-DINITROBENZENE	326	309	5.2	S	
5	TM	1,3-DINITROBENZENE	721	722	0.16	TM	
6	TM	3,5-DINITROANILINE	586	611	4.3	TM	
7	TM	NITROBENZENE	329	324	1.5	TM	
8	TM	NITROGLYCERIN	0.0000	0.0000		TM	
9	TM	TETRYL	241	205	15	TM	
10	TM	2,4,6-TRINITROTOLUENE	325	285	12	TM	
11	TM	2-AMINO-4,6-DINITROTOLUEN	302	266	12	TM	
12	TM	4-AMINO-2,6-DINITROTOLUEN	239	252	5.4	TM	
13	TM	2,4-DINITROTOLUENE	311	320	3.0	TM	
14	TM	2,6-DINITROTOLUENE	175	163	6.6	TM	
15	TM	2-NITROTOLUENE	120	115	3.8	TM	
16	TM	4-NITROTOLUENE	118	108	8.1	TM	
17	TM	3-NITROTOLUENE	142	143	0.65	TM	
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Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix:

SDG No: G5882
Date Analyzed: 18-Oct-2011, 16:03:13
Instrument: Waldorf
Initial Cal. Date: 10/13/2011
Data File: 1017_0000050.D

		Compound	MEAN	CCRF	%D		%Drift
1	TM	NITROGLYCERIN	137	132	3.6	TM	
2	TM	TETRYL	0.0000	0.0000		TM	
3	TM	2,4,6-TRINITROTOLUENE	0.0000	0.0000		TM	
4	TM	2-AMINO-4,6-DINITROTOLUENE	0.0000	0.0000		TM	
5	TM	4-AMINO-2,6-DINITROTOLUENE	0.0000	0.0000		TM	
6	TM	2,4-DINITROTOLUENE	0.0000	0.0000		TM	
7	TM	2,6-DINITROTOLUENE	0.0000	0.0000		TM	
8	TM	PETN	111	115	4.0	TM	
	Signal #2						
1	TM	HMX	671	683	1.9	TM	
2	TM	RDX	449	458	2.0	TM	
3	TM	1,3,5-TRINITROBENZENE	775	800	3.2	TM	
4	S	1,2-DINITROBENZENE	348	350	0.49	S	
5	TM	1,3-DINITROBENZENE	747	761	1.8	TM	
6	TM	3,5-DINITROANILINE	573	589	2.8	TM	
7	TM	NITROBENZENE	323	339	5.0	TM	
8	TM	NITROGLYCERIN	0.0000	0.0000		TM	
9	TM	TETRYL	250	260	4.0	TM	
10	TM	2,4,6-TRINITROTOLUENE	335	340	1.5	TM	
11	TM	2-AMINO-4,6-DINITROTOLUEN	310	312	0.77	TM	
12	TM	4-AMINO-2,6-DINITROTOLUEN	245	246	0.26	TM	
13	TM	2,4-DINITROTOLUENE	321	326	1.2	TM	
14	TM	2,6-DINITROTOLUENE	181	181	0.49	TM	
15	TM	2-NITROTOLUENE	116	122	4.5	TM	
16	TM	4-NITROTOLUENE	118	122	3.4	TM	
17	TM	3-NITROTOLUENE	139	145	4.5	TM	
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Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix:

SDG No: 65882
Date Analyzed: 19-Oct-2011, 00:20:34
Instrument: Waldorf
Initial Cal. Date: 10/13/2011
Data File: 1017_0000064.D

		Compound	MEAN	CCRF	%D		%Drift
1	TM	NITROGLYCERIN	137	132	3.6	TM	
2	TM	TETRYL	0.0000	0.0000		TM	
3	TM	2,4,6-TRINITROTOLUENE	0.0000	0.0000		TM	
4	TM	2-AMINO-4,6-DINITROTOLUENE	0.0000	0.0000		TM	
5	TM	4-AMINO-2,6-DINITROTOLUENE	0.0000	0.0000		TM	
6	TM	2,4-DINITROTOLUENE	0.0000	0.0000		TM	
7	TM	2,6-DINITROTOLUENE	0.0000	0.0000		TM	
8	TM	PETN	111	116	4.8	TM	
	Signal #2						
1	TM	HMX	671	687	2.5	TM	
2	TM	RDX	449	458	2.0	TM	
3	TM	1,3,5-TRINITROBENZENE	775	798	2.9	TM	
4	S	1,2-DINITROBENZENE	348	351	0.88	S	
5	TM	1,3-DINITROBENZENE	747	760	1.7	TM	
6	TM	3,5-DINITROANILINE	573	590	3.0	TM	
7	TM	NITROBENZENE	323	334	3.3	TM	
8	TM	NITROGLYCERIN	0.0000	0.0000		TM	
9	TM	TETRYL	260	261	4.4	TM	
10	TM	2,4,6-TRINITROTOLUENE	335	341	1.6	TM	
11	TM	2-AMINO-4,6-DINITROTOLUEN	310	314	1.3	TM	
12	TM	4-AMINO-2,6-DINITROTOLUEN	245	247	0.82	TM	
13	TM	2,4-DINITROTOLUENE	321	326	1.4	TM	
14	TM	2,6-DINITROTOLUENE	181	182	0.73	TM	
15	TM	2-NITROTOLUENE	116	119	2.3	TM	
16	TM	4-NITROTOLUENE	118	120	2.2	TM	
17	TM	3-NITROTOLUENE	139	143	2.6	TM	
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Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix:

SDG No: G5882
Date Analyzed: 19-Oct-2011, 07:40:00
Instrument: Waldorf
Initial Cal. Date: 10/13/2011
Data File: 1017_0000076.D

		Compound	MEAN	CCRF	%D		%Drift
1	TM	NITROGLYCERIN	137	131	3.8	TM	
2	TM	TETRYL	0.0000	0.0000		TM	
3	TM	2,4,6-TRINITROTOLUENE	0.0000	0.0000		TM	
4	TM	2-AMINO-4,6-DINITROTOLUENE	0.0000	0.0000		TM	
5	TM	4-AMINO-2,6-DINITROTOLUENE	0.0000	0.0000		TM	
6	TM	2,4-DINITROTOLUENE	0.0000	0.0000		TM	
7	TM	2,6-DINITROTOLUENE	0.0000	0.0000		TM	
8	TM	PETN	111	116	3.8	TM	
	Signal #2						
1	TM	HMX	671	684	2.0	TM	
2	TM	RDX	449	454	1.1	TM	
3	TM	1,3,5-TRINITROBENZENE	775	796	2.7	TM	
4	S	1,2-DINITROBENZENE	348	351	1.0	S	
5	TM	1,3-DINITROBENZENE	747	759	1.5	TM	
6	TM	3,5-DINITROANILINE	573	586	2.3	TM	
7	TM	NITROBENZENE	323	328	1.4	TM	
8	TM	NITROGLYCERIN	0.0000	0.0000		TM	
9	TM	TETRYL	250	260	4.1	TM	
10	TM	2,4,6-TRINITROTOLUENE	336	340	1.4	TM	
11	TM	2-AMINO-4,6-DINITROTOLUEN	310	312	0.67	TM	
12	TM	4-AMINO-2,6-DINITROTOLUEN	245	246	0.16	TM	
13	TM	2,4-DINITROTOLUENE	321	326	1.3	TM	
14	TM	2,6-DINITROTOLUENE	181	182	0.81	TM	
15	TM	2-NITROTOLUENE	116	116	0.23	TM	
16	TM	4-NITROTOLUENE	118	118	0.36	TM	
17	TM	3-NITROTOLUENE	139	140	0.52	TM	
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Form 6
Initial Calibration

Lab Name: APPL, Inc. SDG No: 65882
Case No: Initial Cal. Date: 10/2/2011
Matrix: Instrument: Statler
Initials:

			1002_000012.D 1002_000011.D	1002_000014.D 1002_000013.D	1002_000016.D 1002_000015.D	1002_000018.D 1002_000017.D	1002_000020.D 1002_000019.D	1002_000022.D 1002_000021.D	1002_000024.D 1002_000023.D	1002_000026.D 1002_000025.D	1002_000028.D 1002_000027.D					
		Compound	1	2	3	4	5	6	7	8	9		Avg	%RSD		
	TM	NITROGLYCERIN #1	19.9	19.0	18.1	17.2	17.2	16.9	17.2	17.0	17.0		18	6.1	TM	
	TM	3,5-DINITROANILINE #1	77.4	50.5	57.4	55.8	56.4	55.9	57.7	56.7	55.8		58	13	TM	
	TM	PETN #1					18.3	17.9	18.9	18.5	18.5		18	2.0	TM	
		Signal #2														
	TM	HMX #2		68.9	56.8	50.7	48.0	46.7	46.8	46.3	46.6		51	15	TM	
	TM	RDX #2	45.4	42.3	39.7	38.6	38.0	37.5	37.9	37.7	37.8		39	6.8	TM	
	TM	1,3,5-TRINITROBENZENE #2	95.3	92.0	91.0	90.8	90.7	90.3	91.9	91.8	92.7		92	1.6	TM	
	S	1,2-DINITROBENZENE #2	44.4	42.3	42.8	41.4	41.0	41.0	41.5	41.6	41.7		42	2.6	S	
	TM	1,3-DINITROBENZENE #2	97.2	93.7	94.5	93.5	93.5	93.0	94.5	94.7	95.2		94	1.3	TM	
	TM	NITROBENZENE #2	53.9	48.6	48.5	47.1	46.6	46.3	46.9	47.1	47.5		48	4.9	TM	
	TM	2,4,6-TRINITROTOLUENE #2	54.2	50.9	49.2	48.2	48.2	47.6	48.2	48.2	48.5		49	4.2	TM	
	TM	TETRYL #2	36.4	39.6	36.5	35.0	35.2	34.5	35.0	34.9	35.3		36	4.4	TM	
	TM	2,6-DINITROTOLUENE #2	32.6	29.6	30.9	28.1	28.6	27.6	27.9	28.0	28.2		29	5.8	TM	
	TM	2,4-DINITROTOLUENE #2	52.4	50.3	53.2	49.3	49.8	48.8	49.5	49.7	50.0		50	2.9	TM	
	TM	2-NITROTOLUENE #2	12.7	19.9	22.0	17.6	18.2	17.2	17.5	17.5	17.7		18	14	TM	
	TM	4-NITROTOLUENE #2	21.7	16.3	14.8	16.0	16.0	15.5	15.5	15.6	16.0		16	12	TM	
	TM	3-NITROTOLUENE #2			18.9	19.4	19.2	18.9	19.5	19.4	19.7		19	1.6	TM	
	TM	4-AMINO-2,6-DINITROTOLUENE	33.0	38.7	36.9	32.4	32.8	31.3	32.0	31.7	32.2		33	7.7	TM	
	TM	2-AMINO-4,6-DINITROTOLUENE	33.5	36.8	36.4	36.7	37.1	35.6	36.2	35.7	35.9		36	2.9	TM	

Form 7

Second Source Calibration

Lab Name: APPL, Inc.
Case No:
Matrix:

SDG No: L5882-
Date Analyzed: 03-Oct-2011, 10:11:37
Instrument: STATLER
Initial Cal. Date: 10/2/2011
Data File: 1002_000029-30.D

		Compound	MEAN	CCRF	%D		%Drift
1	TM	NITROGLYCERIN #1	17.7	17.7	0.00	TM	
2	TM	3,5-DINITROANILINE #1	58.2	61.1	5.0	TM	
3	TM	PETN #1	18.4	18.2	1.3	TM	
4							
5	TM	HMX #2	51.4	47.0	8.6	TM	
6	TM	RDX #2	39.5	38.1	3.3	TM	
7	TM	1,3,5-TRINITROBENZENE #2	91.8	88.6	3.5	TM	
8	S	1,2-DINITROBENZENE #2	42.0	41.5	1.1	S	
9	TM	1,3-DINITROBENZENE #2	94.4	90.2	4.5	TM	
10	TM	NITROBENZENE #2	48.0	47.6	0.83	TM	
11	TM	2,4,6-TRINITROTOLUENE #2	49.2	45.4	7.9	TM	
12	TM	TETRYL #2	35.8	32.0	11	TM	
13	TM	2,6-DINITROTOLUENE #2	29.1	28.7	1.4	TM	
14	TM	2,4-DINITROTOLUENE #2	50.3	50.1	0.55	TM	
15	TM	2-NITROTOLUENE #2	17.8	18.2	2.0	TM	
16	TM	4-NITROTOLUENE #2	16.4	15.5	5.5	TM	
17	TM	3-NITROTOLUENE #2	19.3	20.1	4.5	TM	
18	TM	4-AMINO-2,6-DINITROTOLUENE #2	33.5	34.3	2.6	TM	
19	TM	2-AMINO-4,6-DINITROTOLUENE #2	36.0	33.7	6.2	TM	
20							
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		Average			4.2		

Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix:

SDG No: 65882
Date Analyzed: 14-Oct-2011, 11:31:10
Instrument: Statler
Initial Cal. Date: 10/2/2011
Data File: 1012_0000068-69.D

		Compound	MEAN	CCRF	%D		%Drift
1	TM	RDX #1	0.0000	0.0000		TM	
2	TM	1,3,5-TRINITROBENZENE #1	0.0000	0.0000		TM	
3	S	1,2-DINITROBENZENE #1	0.0000	0.0000		S	
4	TM	1,3-DINITROBENZENE #1	0.0000	0.0000		TM	
5	TM	NITROBENZENE #1	0.0000	0.0000		TM	
6	TM	2,4,6-TRINITROTOLUENE #1	0.0000	0.0000		TM	
7	TM	TETRYL #1	0.0000	0.0000		TM	
8	TM	NITROGLYCERIN #1	17.7	15.4	13	TM	
9	TM	2,6-DINITROTOLUENE #1	0.0000	0.0000		TM	
10	TM	2,4-DINITROTOLUENE #1	0.0000	0.0000		TM	
11	TM	2-NITROTOLUENE #1	0.0000	0.0000		TM	
12	TM	3,5-DINITROANILINE #1	58.2	62.3	10	TM	
13	TM	4-NITROTOLUENE #1	0.0000	0.0000		TM	
14	TM	PETN #1	18.4	16.5	10	TM	
	Signal #2						
1	TM	HMX #2	51.4	47.8	6.8	TM	
2	TM	RDX #2	39.5	38.9	1.4	TM	
3	TM	1,3,5-TRINITROBENZENE #2	91.8	94.4	2.8	TM	
4	S	1,2-DINITROBENZENE #2	42.0	42.4	1.1	S	
5	TM	1,3-DINITROBENZENE #2	94.4	95.9	1.6	TM	
6	TM	NITROBENZENE #2	48.0	46.4	3.3	TM	
7	TM	2,4,6-TRINITROTOLUENE #2	49.2	49.6	0.62	TM	
8	TM	TETRYL #2	35.8	36.4	1.7	TM	
9	TM	NITROGLYCERIN #2	0.0000	0.0000		TM	
10	TM	2,6-DINITROTOLUENE #2	29.1	28.5	2.0	TM	
11	TM	2,4-DINITROTOLUENE #2	50.3	50.9	1.2	TM	
12	TM	2-NITROTOLUENE #2	17.8	17.2	3.7	TM	
13	TM	4-NITROTOLUENE #2	16.4	15.5	5.1	TM	
14	TM	3-NITROTOLUENE #2	19.3	20.0	3.9	TM	
15	TM	4-AMINO-2,6-DINITROTOLUENE #2	33.5	34.1	1.8	TM	
16	TM	2-AMINO-4,6-DINITROTOLUENE #2	36.0	36.6	1.6	TM	
17	TM	PETN #2	0.0000	0.0000		TM	
18							
19							
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25							

Form 7

Continuing Calibration

Lab Name: APPL, Inc. SDG No: 65882

Case No: Date Analyzed: 14-Oct-2011, 14:18:42

Matrix: Instrument: Statler

Initial Cal. Date: 10/2/2011

Data File: 1012_0000072-73.D

		Compound	MEAN	CCRF	%D		%Drift
1	TM	RDX #1	0.0000	0.0000		TM	
2	TM	1,3,5-TRINITROBENZENE #1	0.0000	0.0000		TM	
3	S	1,2-DINITROBENZENE #1	0.0000	0.0000		S	
4	TM	1,3-DINITROBENZENE #1	0.0000	0.0000		TM	
5	TM	NITROBENZENE #1	0.0000	0.0000		TM	
6	TM	2,4,6-TRINITROTOLUENE #1	0.0000	0.0000		TM	
7	TM	TETRYL #1	0.0000	0.0000		TM	
8	TM	NITROGLYCERIN #1	17.7	15.6	13	TM	
9	TM	2,6-DINITROTOLUENE #1	0.0000	0.0000		TM	
10	TM	2,4-DINITROTOLUENE #1	0.0000	0.0000		TM	
11	TM	2-NITROTOLUENE #1	0.0000	0.0000		TM	
12	TM	3,5-DINITROANILINE #1	68.2	62.5	9.8	TM	
13	TM	PETN #1	18.4	16.6	9.9	TM	
	Signal #2						
1	TM	HMX #2	51.4	47.9	6.7	TM	
2	TM	RDX #2	39.6	39.0	1.1	TM	
3	TM	1,3,5-TRINITROBENZENE #2	91.6	94.6	3.0	TM	
4	S	1,2-DINITROBENZENE #2	42.0	42.6	1.4	S	
5	TM	1,3-DINITROBENZENE #2	94.4	96.0	1.7	TM	
6	TM	NITROBENZENE #2	48.0	46.3	3.6	TM	
7	TM	2,4,6-TRINITROTOLUENE #2	49.2	49.6	0.74	TM	
8	TM	TETRYL #2	36.6	36.6	2.3	TM	
9	TM	NITROGLYCERIN #2	0.0000	0.0000		TM	
10	TM	2,6-DINITROTOLUENE #2	29.1	28.4	2.1	TM	
11	TM	2,4-DINITROTOLUENE #2	50.3	51.0	1.3	TM	
12	TM	2-NITROTOLUENE #2	17.8	17.0	4.8	TM	
13	TM	4-NITROTOLUENE #2	16.4	15.4	5.7	TM	
14	TM	3-NITROTOLUENE #2	19.3	19.8	2.5	TM	
15	TM	4-AMINO-2,6-DINITROTOLUENE #2	33.5	34.2	2.1	TM	
16	TM	2-AMINO-4,6-DINITROTOLUENE #2	36.0	36.5	1.4	TM	
17							
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EPA 8330B

Form 4

Blank Summary

Lab Name: APPL, Inc. SDG No: 65882

Case No: 65882 Date Analyzed: 11/14/2011

Matrix: WATER Instrument: Waldorf

Blank ID: 111111A-BLK Time Analyzed: 2032

APPL ID.	Client Sample No.	File ID.	Date Analyzed
111111A-LCS	Lab Control Spike	1114_0000006	11/14/2011 1735
111111A-BLK	Blank	1114_0000011	11/14/2011 2032
AY47774	X14GW0010911	1114_0000012	11/14/2011 2110

Comments: Batch: #833BW-111111A

Printed: 11/17/2011 5:47:26 PM

Form 4, Blank Summary

Method Blank
EPA 8330B EXPLOSIVES-WATER

Blank Name/QCG: 111111W-47774 - 161405
Batch ID: #833BW-111111A

APPL Inc.
908 North Temperance Avenu
Clovis, CA 93611

Sample Type	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
BLANK	NITROGLYCERIN	0.260 U	0.50	0.260	0.130	ug/L	11/11/2011	11/14/2011
BLANK	SURROGATE: 1,2-DINITROBENZ	83.9	70-130			%	11/11/2011	11/14/2011

Quant Method:W110907.M
Run #:1114_000001
Instrument:Waldorf
Sequence:111114
Initials:RSM

GC SC-Blank-REG MDLs
Printed: 11/17/2011 5:47:22 PM

Laboratory Control Spike Recovery
EPA 8330B EXPLOSIVES-WATER

APPL ID: **111111W-47774 LCS - 161405**
Batch ID: #833BW-111111A

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Level ug/L	SPK Result ug/L	SPK % Recovery	Recovery Limits
NITROGLYCERIN	8.00	7.78	97.3	70-130
SURROGATE: 1,2-DINITROBENZENE (S)	8.00	6.69	83.6	70-130

Comments: _____

Primary	SPK
Quant Method :	W110907.M
Extraction Date :	11/11/2011
Analysis Date :	11/14/2011
Instrument :	Waldorf
Run :	1114_0000006
Initials :	RSM

Printed: 11/17/2011 5:47:23 PM

APPL Standard LCS

Waldorf-8330B
W110907.M

Form 6
Initial Calibration

Lab Name: APPL, Inc. SDG No: 65882

Case No: Initial Cal. Date: 10/13/2011

Matrix: Instrument: Waldorf

Initials: HM

1013_0000003.D 1013_0000004.D 1013_0000005.D 1013_0000006.D 1013_0000007.D 1013_0000008.D 1013_0000009.D 1013_0000010.D 1013_0000012.D

		Compound	1	2	3	4	5	6	7	8	9		Avg	%RSD		
1	TM	NITROGLYCERIN	145	137	147	119	138	138	142	139	137		138	5.6	TM	
2	TM	PETN			93.1	96.7	114	119	125	123	123		113	12	TM	
		Signal #2														
1	TM	HMX #2	601	677	575	614	705	641	726	707	685		659	8.1	TM	
2	TM	RDX #2	408	459	376	401	462	413	476	470	463		437	8.5	TM	
3	TM	1,3,5-TRINITROBENZENE #2	703	782	648	687	789	716	819	807	803		750	8.3	TM	
4	S	1,2-DINITROBENZENE #2	315	341	283	294	339	308	351	351	355		326	8.2	S	
5	TM	1,3-DINITROBENZENE #2	671	756	626	651	757	686	780	780	781		721	8.6	TM	
6	TM	3,5-DINITROANILINE #2	524	584	546	531	605	602	632	624	622		586	7.1	TM	
7	TM	NITROBENZENE #2	302	343	301	293	347	314	352	357	357		329	8.1	TM	
8	TM	TETRYL #2	225	245	206	220	251	232	264	261	263		241	8.7	TM	
9	TM	2,4,6-TRINITROTOLUENE #2	310	338	281	298	339	312	353	348	348		325	7.9	TM	
10	TM	2-AMINO-4,6-DINITROTOLUENE	284	310	261	276	315	290	330	325	325		302	8.2	TM	
11	TM	4-AMINO-2,6-DINITROTOLUENE	227	247	207	220	250	230	261	256	254		239	7.8	TM	
12	TM	2,4-DINITROTOLUENE #2	288	324	270	282	324	299	337	336	336		311	8.4	TM	
13	TM	2,6-DINITROTOLUENE #2	169	181	153	158	182	168	188	188	187		175	7.7	TM	
14	TM	2-NITROTOLUENE #2	117	124	104	108	125	115	128	129	129		120	8.0	TM	
15	TM	4-NITROTOLUENE #2	111	121	103	106	123	113	126	126	127		118	8.2	TM	
16	TM	3-NITROTOLUENE #2	137	147	123	128	149	137	152	154	154		142	8.2	TM	

Form 7

Second Source Calibration

Lab Name: APPL, Inc.
Case No:
Matrix:

SDG No: G5882
Date Analyzed: 13-Oct-2011, 22:49:00
Instrument: Waldorf
Initial Cal. Date: 10/13/2011
Data File: 1013_0000014.D

		Compound	MEAN	CCRF	%D		%Drift
1	TM	NITROGLYCERIN	138	134	2.6	TM	
2	TM	TETRYL	0.0000	0.0000		TM	
3	TM	2,4,6-TRINITROTOLUENE	0.0000	0.0000		TM	
4	TM	2-AMINO-4,6-DINITROTOLUENE	0.0000	0.0000		TM	
5	TM	4-AMINO-2,6-DINITROTOLUENE	0.0000	0.0000		TM	
6	TM	2,4-DINITROTOLUENE	0.0000	0.0000		TM	
7	TM	2,6-DINITROTOLUENE	0.0000	0.0000		TM	
8	TM	PETN	113	120	6.3	TM	
	Signal #2						
1	TM	HMX	669	642	2.5	TM	
2	TM	RDX	437	423	3.2	TM	
3	TM	1,3,5-TRINITROBENZENE	750	668	11	TM	
4	S	1,2-DINITROBENZENE	326	309	5.2	S	
5	TM	1,3-DINITROBENZENE	721	722	0.16	TM	
6	TM	3,5-DINITROANILINE	586	611	4.3	TM	
7	TM	NITROBENZENE	329	324	1.5	TM	
8	TM	NITROGLYCERIN	0.0000	0.0000		TM	
9	TM	TETRYL	241	205	15	TM	
10	TM	2,4,6-TRINITROTOLUENE	325	286	12	TM	
11	TM	2-AMINO-4,6-DINITROTOLUEN	302	266	12	TM	
12	TM	4-AMINO-2,6-DINITROTOLUEN	239	252	5.4	TM	
13	TM	2,4-DINITROTOLUENE	311	320	3.0	TM	
14	TM	2,6-DINITROTOLUENE	175	163	6.6	TM	
15	TM	2-NITROTOLUENE	120	115	3.8	TM	
16	TM	4-NITROTOLUENE	118	108	8.1	TM	
17	TM	3-NITROTOLUENE	142	143	0.65	TM	
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Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix:

SDG No: 65882
Date Analyzed: 14-Nov-2011, 17:07:55
Instrument: Waldorf
Initial Cal. Date: 10/13/2011
Data File: 1114_0000005.D

		Compound	MEAN	CCRF	%D		%Drift
1	TM	NITROGLYCERIN	137	129	5.5	TM	
2	TM	TETRYL	0.0000	0.0000		TM	
3	TM	2,4,6-TRINITROTOLUENE	0.0000	0.0000		TM	
4	TM	2-AMINO-4,6-DINITROTOLUENE	0.0000	0.0000		TM	
5	TM	4-AMINO-2,6-DINITROTOLUENE	0.0000	0.0000		TM	
6	TM	2,4-DINITROTOLUENE	0.0000	0.0000		TM	
7	TM	2,6-DINITROTOLUENE	0.0000	0.0000		TM	
8	TM	PETN	111	117	5.8	TM	
	Signal #2						
1	TM	HMX	671	671	0.01	TM	
2	TM	RDX	449	450	0.12	TM	
3	TM	1,3,5-TRINITROBENZENE	775	780	0.69	TM	
4	S	1,2-DINITROBENZENE	348	338	2.8	S	
5	TM	1,3-DINITROBENZENE	747	726	2.8	TM	
6	TM	3,5-DINITROANILINE	573	579	1.1	TM	
7	TM	NITROBENZENE	323	332	2.7	TM	
8	TM	NITROGLYCERIN	0.0000	0.0000		TM	
9	TM	TETRYL	250	257	2.8	TM	
10	TM	2,4,6-TRINITROTOLUENE	335	329	2.0	TM	
11	TM	2-AMINO-4,6-DINITROTOLUEN	310	298	3.8	TM	
12	TM	4-AMINO-2,6-DINITROTOLUEN	245	236	3.8	TM	
13	TM	2,4-DINITROTOLUENE	321	310	3.7	TM	
14	TM	2,6-DINITROTOLUENE	181	173	4.2	TM	
15	TM	2-NITROTOLUENE	116	119	2.7	TM	
16	TM	4-NITROTOLUENE	118	118	0.83	TM	
17	TM	3-NITROTOLUENE	139	143	2.4	TM	
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Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix:

SDG No: G5882
Date Analyzed: 15-Nov-2011, 00:54:46
Instrument: Waldorf
Initial Cal. Date: 10/13/2011
Data File: 1114_0000018.D

		Compound	MEAN	CCRF	%D		%Drift
1	TM	NITROGLYCERIN	137	129	5.3	TM	
2	TM	TETRYL	0.0000	0.0000		TM	
3	TM	2,4,6-TRINITROTOLUENE	0.0000	0.0000		TM	
4	TM	2-AMINO-4,6-DINITROTOLUENE	0.0000	0.0000		TM	
5	TM	4-AMINO-2,6-DINITROTOLUENE	0.0000	0.0000		TM	
6	TM	2,4-DINITROTOLUENE	0.0000	0.0000		TM	
7	TM	2,6-DINITROTOLUENE	0.0000	0.0000		TM	
8	TM	PETN	111	117	5.6	TM	
	Signal #2						
1	TM	HMX	671	675	0.58	TM	
2	TM	RDX	449	448	0.23	TM	
3	TM	1,3,5-TRINITROBENZENE	775	779	0.57	TM	
4	S	1,2-DINITROBENZENE	348	338	2.9	S	
5	TM	1,3-DINITROBENZENE	747	727	2.7	TM	
6	TM	3,5-DINITROANILINE	573	582	1.5	TM	
7	TM	NITROBENZENE	323	327	1.3	TM	
8	TM	NITROGLYCERIN	0.0000	0.0000		TM	
9	TM	TETRYL	250	258	3.2	TM	
10	TM	2,4,6-TRINITROTOLUENE	335	330	1.6	TM	
11	TM	2-AMINO-4,6-DINITROTOLUEN	310	300	3.3	TM	
12	TM	4-AMINO-2,6-DINITROTOLUEN	245	238	3.1	TM	
13	TM	2,4-DINITROTOLUENE	321	310	3.4	TM	
14	TM	2,6-DINITROTOLUENE	181	174	3.8	TM	
15	TM	2-NITROTOLUENE	116	117	0.97	TM	
16	TM	4-NITROTOLUENE	118	117	0.07	TM	
17	TM	3-NITROTOLUENE	139	140	0.95	TM	
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31							

Injection Log

Directory: H:\WALDORF\CHEM32\1\DATA\111013

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1	0	1013_0000003.D		8830B_CB 0.005 PPM 10/13/11		10/13/2011 15:57
2	0	1013_0000004.D		8830B_CB 0.01 PPM 10/13/11		10/13/2011 16:34
3	0	1013_0000005.D		8830B_CB 0.02 PPM 10/13/11		10/13/2011 17:12
4	0	1013_0000006.D		8830B_CB 0.05 PPM 10/13/11		10/13/2011 17:49
5	0	1013_0000007.D		8830B_CB 0.1 PPM 10/13/11		10/13/2011 18:26
6	0	1013_0000008.D		8830B_CB 0.2 PPM 10/13/11		10/13/2011 19:04
7	0	1013_0000009.D		8830B_CB 0.5 PPM 10/13/11		10/13/2011 19:41
8	0	1013_0000010.D		8830B_CB 1.0 PPM 10/13/11		10/13/2011 20:19
9	0	1013_0000011.D		8830B_MX-A 2.0 PPM 10/13/11		10/13/2011 20:56
10	0	1013_0000012.D		8830B_MX-B 2.0 PPM 10/13/11		10/13/2011 21:34
11	0	1013_0000014.D		8830B_SS 1.0 PPM 10/13/11		10/13/2011 22:49
12	0	1114_0000005.D		8330_CCV 1.0 PPM 11/14/11		11/14/2011 17:07
13	0	1114_0000006.D	0.016	111111WLCS1A 0.016 DF 11/11/11	water	11/14/2011 17:35
14	0	1114_0000011.D	0.016	111111WBLK1A 0.016 DF 1/11/11	water	11/14/2011 20:32
15	0	1114_0000012.D	0.016	AY47774W01 0.016 DF 1/11/11	water	11/14/2011 21:10
16	0	1114_0000018.D		8330_CCV 1.0 PPM 11/14/11		11/15/2011 00:54

METALS

APPL, INC.

6020/200.8 Injection Log

Directory: K:\ICP-MS Optimus\raw data output csv\

RunID	Injected		Sample Name	Misc Info	FileName	Multiplier
1	08 Nov 2011	10:35	Calibration Blank		111108A	1.
2	08 Nov 2011	10:41	111108 Standard 1		111108A	1.
3	08 Nov 2011	10:47	111108 Standard 2		111108A	1.
4	08 Nov 2011	10:53	111108 Standard 3		111108A	1.
5	08 Nov 2011	11:00	111108 Standard 4		111108A	1.
6	08 Nov 2011	11:06	ICV 111108		111108A	1.
8	08 Nov 2011	11:25	ICB 111108		111108A	1.
9	08 Nov 2011	11:31	CCV 111108		111108A	1.
10	08 Nov 2011	11:37	CCB 111108		111108A	1.
11	08 Nov 2011	11:43	ICSA 111108		111108A	1.
12	08 Nov 2011	11:49	ICSAB 111108		111108A	1.
13	08 Nov 2011	12:01	CCV 111108		111108A	1.
14	08 Nov 2011	12:14	CCB 111108		111108A	1.
16	08 Nov 2011	12:32	111107A-3015-BLK		111108A	1.
19	08 Nov 2011	12:51	111107A-3015-LCS		111108A	1.
25	08 Nov 2011	13:27	CCV 111108		111108A	1.
26	08 Nov 2011	13:39	CCB 111108		111108A	1.
38	08 Nov 2011	14:58	CCV 111108		111108A	1.
39	08 Nov 2011	15:10	CCB 111108		111108A	1.
42	08 Nov 2011	15:28	AY47781W01 X14602		111108A	1.
43	08 Nov 2011	15:34	AY47782W01 -F		111108A	1.
44	08 Nov 2011	15:41	AY47783W01 X14602		111108A	1.
45	08 Nov 2011	15:47	AY47784W01 F		111108A	1.
46	08 Nov 2011	15:53	AY47785W01 DUP02		111108A	1.
47	08 Nov 2011	15:59	AY47786W01 DUP02 -F		111108A	1.
51	08 Nov 2011	16:23	CCV 111108		111108A	1.
52	08 Nov 2011	16:35	CCB 111108		111108A	1.

A.P.P.L. INC.
3
BLANKS

Lab Name: APPL, Inc. Contract #: Tetra Tech NUS, Inc Group

ARF No. 65882
Prep Blank Matrix: Water Concentration Units (ug/L or mg/kg):ug/L

Analysis Date: 11/08/2011

Analyte		Initial Calibration Blank 11:25	Continuing Calibration Blank 11:37	12:14	13:39	Preparation Blank 12:32	M
			1	2	3		
Copper		0.26U	0.26U	0.26U	0.26U	0.50U	
Lead		0.22U	0.22U	0.22U	0.22U	0.50U	
Antimony		0.20U	0.26	0.34	0.2	0.20U	*

*Exceeds LOD

Form III-IN

A.P.P.L. INC.
3
BLANKS

Lab Name: APPL, Inc. Contract #: Tetra Tech NUS, Inc Group

ARF No. 65882
Prep Blank Matrix: Water Concentration Units (ug/L or mg/kg):ug/L

Analysis Date: 11/08/2011

Analyte		Initial Calibration Blank 11:25	Continuing Calibration Blank 15:10	16:35		Preparation Blank 12:32	M
			1	2			
Copper		0.26U	0.26U	0.26U		0.50U	
Lead		0.22U	0.22U	0.22U		0.50U	
Antimony		0.20U	0.2J	0.19J		0.20U	*

*Exceeds LOD

Form III-IN

METALS BLANK

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Method	Analyte	Result	LOQ	LOD	DL	Units	Prep Date	Analysis Date	QC Group
6020A	ANTIMONY (SB)	0.020 U	0.20	0.020	0.010	ug/L	11/07/11	11/08/11	#62ADO-111107A-AY47773
6020A	COPPER (CU)	0.260 U	0.50	0.260	0.130	ug/L	11/07/11	11/08/11	#62ADO-111107A-AY47773
6020A	LEAD (PB)	0.220 U	0.50	0.220	0.110	ug/L	11/07/11	11/08/11	#62ADO-111107A-AY47773
6020A	ANTIMONY (SB) (DI	0.020 U	0.20	0.020	0.010	ug/L	11/07/11	11/08/11	#62ADO-111107A1-AY47786
6020A	COPPER (CU) (DIS	0.260 U	0.50	0.260	0.130	ug/L	11/07/11	11/08/11	#62ADO-111107A1-AY47786
6020A	LEAD (PB) (DISSOL	0.220 U	0.50	0.220	0.110	ug/L	11/07/11	11/08/11	#62ADO-111107A1-AY47786

Metals SC-Blank-REG MDLs
Printed: 11/11/2011 3:07:13 PM

Matrix Spike Recoveries

METALS

APPL ID: **111107W-47773 MS - 161259**

Sample ID: AY47773

Client ID: X15GW0010911

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Method	Compound Name	Spike Lvl ug/L	Matrix Res ug/L	SPK Res ug/L	DUP Res ug/L	SPK % Recovery	DUP % Recovery	RPD	RPD Max	Recovery Limits	Extract Date-Spk	Analysis Date-Spk	Extract Date-Dup	Analysis Date-Dup	QC Group	QC Sample
6020A	ANTIMONY (SB)	50.0	0.16	48.4	47.6	96.5	94.9	1.7	30-12(	80-120	11/7/2011	11/9/2011	11/7/2011	11/9/2011	161259	AY47773
6020A	COPPER (CU)	50.0	0.65	45.7	45.0	90.1	88.7	1.5	30-12(	80-120	11/7/2011	11/9/2011	11/7/2011	11/9/2011	161259	AY47773
6020A	LEAD (PB)	50.0	0.24	46.8	46.2	93.1	91.9	1.3	30-12(	80-120	11/7/2011	11/9/2011	11/7/2011	11/9/2011	161259	AY47773

Comments: _____

Laboratory Control Spike Recovery

METALS

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Method	Compound Name	Spike Level ug/L	SPK Result ug/L	SPK % Recovery	Recovery Limits	Extract Date	Analysis Date	QC Group
6020A	ANTIMONY (SB)	50.0	48.5	97.0	80-120	11/7/2011	11/8/2011	#62ADO-111107A-AY47773
6020A	COPPER (CU)	50.0	47.3	94.6	80-120	11/7/2011	11/8/2011	#62ADO-111107A-AY47773
6020A	LEAD (PB)	50.0	48.1	96.2	80-120	11/7/2011	11/8/2011	#62ADO-111107A-AY47773

Comments: _____

Laboratory Control Spike Recovery

METALS

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Method	Compound Name	Spike Level ug/L	SPK Result ug/L	SPK % Recovery	Recovery Limits	Extract Date	Analysis Date	QC Group
6020A	ANTIMONY (SB) (DISSOLVED)	50.0	48.5	97.0	80-120	11/7/2011	11/8/2011	#62ADO-111107A1-AY47786
6020A	COPPER (CU) (DISSOLVED)	50.0	47.3	94.6	80-120	11/7/2011	11/8/2011	#62ADO-111107A1-AY47786
6020A	LEAD (PB) (DISSOLVED)	50.0	48.1	96.2	80-120	11/7/2011	11/8/2011	#62ADO-111107A1-AY47786

Comments: _____

Printed: 11/11/2011 3:15:41 PM
APPL Standard LCS

A.P.P.L. INC.
5B

POST DIGEST SPIKE SAMPLE RECOVERY

CLIENT SAMPLE NO.
X15GW0010911

Lab Name: A.P.P.L. INC. Contract: Tetra Tech NUS, Inc.

ARF No.: 65882 SDG: 65882

Analysis Date: 11/9/2011 Concentration Units: ug/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Copper (Cu)	75-125	226.662		0.646353		277.500	81.5		
Lead (Pb)	75-125	246.087		0.239538		277.500	88.6		
Antimony (Sb)	75-125	259.74		0.164391		277.500	93.5		

Comments:

11/9/2011 14:15 AY47773W13

11/9/2011 14:46 AY47773W13-A

A.P.P.L. INC.

9

ICP SERIAL DILUTION

CLIENT SAMPLE NO.

X15GW0010911

Lab Name: A.P.P.L. INC. Contract: Tetra Tech NUS, Inc.

ARF No.: 65882 SDG: 65882

Matrix: water

Analysis Date: 11/9/2011 Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	%D	Q	M
Copper (Cu)	0.646353		0.1622964		NA		
Lead (Pb)	0.239538		-1.494528		NA		
Antimony (Sb)	0.164391		10.59736		NA		

Comments:

11/9/2011 14:15 AY47773W13

11/9/2011 14:52 AY47773W13-1/5

_M3015

Metals Digestion Worksheet

Method Name 3015 Digestion **Prep Method** M3015 **Set** 111107A **Units** mL

Spikes	
Spiked ID 1	LCSW LOT# 1028408-29435
Spiked ID 2	LCSW LOT# 1028416-29433
Spiked ID 3	
Spiked ID 4	
Spiked By	NM Date: 11/07/11 2:26:00 PM
Witnessed By	KWS Date: 11/07/11 2:26:00 PM

Starting Temp:	25 C
Ending Temp:	170 C
Temperature Type:	Microwave
Sufficient Vol for Matrix QC:	YES
End Date/Time	11/07/11 15:30

	Sample	Sample Container	Spike Amount	Spike ID	Digested Amount	Final Volume	Start Date/Time	Comments
1	111107A Blk				45mL	50mL	11/07/11 14:26	equip: Venus
2	111107A LCS		90uL	1+2	45mL	50mL	11/07/11 14:26	equip: Venus
3	AY47772	AY47772W01			45mL	50mL	11/07/11 14:26	equip: Venus
4	AY47773	AY47773W13			45mL	50mL	11/07/11 14:26	equip: Venus
5	AY47773 MS	AY47773W13	90uL	1+2	45mL	50mL	11/07/11 14:26	equip: Venus
6	AY47773 MSD	AY47773W13	90uL	1+2	45mL	50mL	11/07/11 14:26	equip: Venus
7	AY47774	AY47774W03			45mL	50mL	11/07/11 14:26	equip: Venus
8	AY47775	AY47775W01			45mL	50mL	11/07/11 14:26	equip: Venus
9	AY47776	AY47776W01			45mL	50mL	11/07/11 14:26	equip: Venus
10	AY47777	AY47777W01			45mL	50mL	11/07/11 14:26	equip: Venus
11	AY47778	AY47778W01			45mL	50mL	11/07/11 14:26	equip: Venus
12	AY47779	AY47779W01			45mL	50mL	11/07/11 14:26	equip: Venus
13	AY47781	AY47781W01			45mL	50mL	11/07/11 14:26	equip: Venus
14	AY47782	AY47782W01			45mL	50mL	11/07/11 14:26	equip: Venus
15	AY47783	AY47783W01			45mL	50mL	11/07/11 14:26	equip: Venus
16	AY47784	AY47784W01			45mL	50mL	11/07/11 14:26	equip: Venus
17	AY47785	AY47785W01			45mL	50mL	11/07/11 14:26	equip: Venus
18	AY47786	AY47786W01			45mL	50mL	11/07/11 14:26	equip: Venus

Solvent and Lot#
HNO3 J.T.B k19023 0094

Sample/QC Transfered	
Sample prep employee Initials	nm
Analyst's Initials	NBS
Date	11-7-11
Time	17:20
Moved to	Metals

Technician Initials	
Scanned By	nm
Sample Preparation	lo
Digestion	lo
Bring up to volume	nm
Modified	11/07/11 2:31:09 PM

Reviewed By: [signature] **Date:** 11-7-11

6020/200.8 Injection Log

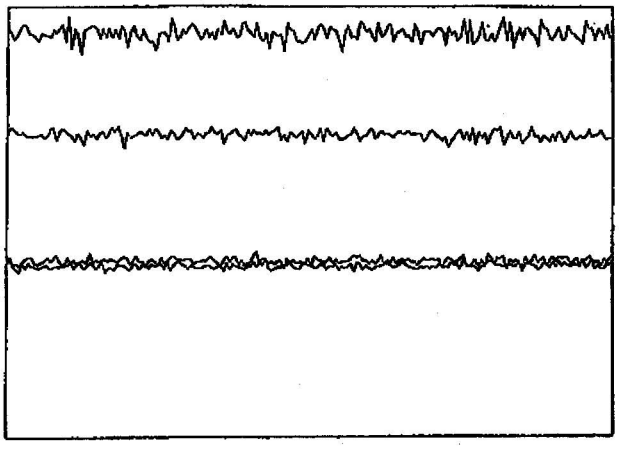
Directory: K:\ICP-MS Optimus\raw data output csv\

RunID	Injected		Sample Name	Misc Info	FileName	Multiplier
1	09 Nov 2011	10:27	Calibration Blank		111109A	1.
2	09 Nov 2011	10:35	111109 Standard 1		111109A	1.
3	09 Nov 2011	10:41	111109 Standard 2		111109A	1.
4	09 Nov 2011	10:47	111109 Standard 3		111109A	1.
5	09 Nov 2011	10:54	111109 Standard 4		111109A	1.
6	09 Nov 2011	11:00	ICV 111109		111109A	1.
8	09 Nov 2011	11:19	ICB 111109		111109A	1.
9	09 Nov 2011	11:25	CCV 111109		111109A	1.
10	09 Nov 2011	11:31	CCB 111109 Sb 0.8		111109A	1.
11	09 Nov 2011	11:37	ICSA 111109		111109A	1.
12	09 Nov 2011	11:50	ICSAB 111109		111109A	1.
13	09 Nov 2011	12:02	CCV 111109		111109A	1.
14	09 Nov 2011	12:14	CCB 111109 Sb 0.8		111109A	1.
25	09 Nov 2011	13:32	CCV 111109		111109A	1.
26	09 Nov 2011	13:45	CCB 111109 Sb 0.07		111109A	1.
27	09 Nov 2011	14:09	AY47772W01 X15GW002		111109A	1.
28	09 Nov 2011	14:15	AY47773W13 X15GW001		111109A	1.
29	09 Nov 2011	14:31	AY47773W13 MS		111109A	1.
30	09 Nov 2011	14:40	AY47773W13 MSD		111109A	1.
31	09 Nov 2011	14:46	AY47773W13-A X15GW001		111109A	1.
32	09 Nov 2011	14:52	AY47773W13-1/5		111109A	5.
33	09 Nov 2011	15:00	AY47774W03 X14GW001		111109A	1.
34	09 Nov 2011	15:06	AY47775W01 X15GW002-F		111109A	1.
35	09 Nov 2011	15:13	AY47776W01 X15GW001-F		111109A	1.
36	09 Nov 2011	15:19	AY47777W01 X14GW001-F		111109A	1.
38	09 Nov 2011	15:37	CCV 111109		111109A	1.
39	09 Nov 2011	15:49	CCB 111109		111109A	1.
43	09 Nov 2011	16:14	AY47779W01 X15GW003-F		111109A	1.
48	09 Nov 2011	17:04	AY47778W01 X15GW003 [redacted]		111109A	1.
51	09 Nov 2011	17:33	CCV 111109		111109A	1.
52	09 Nov 2011	17:45	CCB 111109		111109A	1.

Sb-0.08

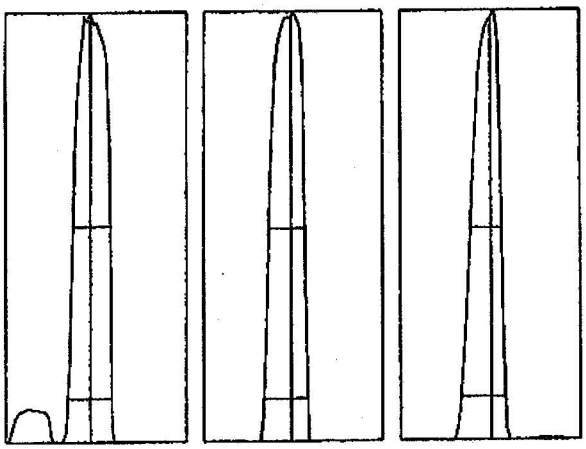
Tune Report

Tune File : nogas.u
Comment : 111108



Integration Time:	0.1000 sec	
Sampling Period:	0.6200 sec	
n:	200	
Oxide:	156/140	1.373%
Doubly Charged:	70/140	1.007%

m/z	Range	Count	Mean	RSD%	Background
7	50,000	34669.0	35101.4	1.44	0.30
89	50,000	20283.0	19793.1	1.51	1.30
205	20,000	18736.0	18754.5	1.76	4.60
156/140	2	1.495%	1.401%	6.36	
70/140	2	0.952%	0.971%	7.85	
140	50,000	21004.0	20403.7	1.73	3.40



m/z:	7	89	205
Height:	35,224	19,750	18,561
Axis:	6.95	89.00	205.05
W-50%:	0.65	0.65	0.55
W-10%:	0.7500	0.7500	0.7500

Integration Time:	0.1000 sec
Acquisition Time:	22.7600 sec

Y axis : Linear

Generated : Nov 08, 2011 09:47:17
Printed : Nov 08, 2011 09:47:20

Tune Report

Tune File	: nogas.u
Comment	: 111108

Tuning Parameters

===Plasma Condition===			===Ion Lenses===			===Q-Pole Parameters===		
RF Power	:	1600 W	Extract 1	:	0 V	AMU Gain	:	128
RF Matching	:	1.66 V	Extract 2	:	-130 V	AMU Offset	:	127
Smpl Depth	:	9.6 mm	Omega Bias-ce	:	-22 V	Axis Gain	:	1
Torch-H	:	-0.3 mm	Omega Lens-ce	:	-1.2 V	Axis Offset	:	-0.02
Torch-V	:	0.1 mm	Cell Entrance	:	-30 V	QP Bias	:	-3 V
Carrier Gas	:	1.02 L/min	QP Focus	:	5 V			
Makeup Gas	:	0.1 L/min	Cell Exit	:	-30 V	===Detector Parameters===		
Optional Gas	:	--- %				Discriminator	:	8 mV
Nebulizer Pump	:	0.1 rps	===Octopole Parameters===			Analog HV	:	1630 V
Sample Pump	:	--- rps	OctP RF	:	180 V	Pulse HV	:	1440 V
S/C Temp	:	2 degC	OctP Bias	:	-6 V			

===Reaction Cell===								
Reaction Mode	:	OFF						
H2 Gas	:	0 mL/min	He Gas	:	0 mL/min	Optional Gas	:	--- %

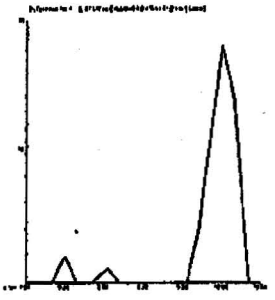
Generated : Nov 08, 2011 09:47:17
Printed : Nov 08, 2011 09:47:22

200.8 QC Tune Report

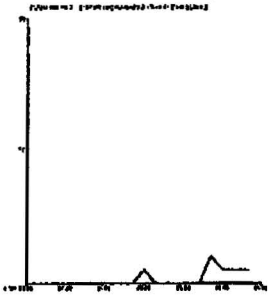
Data File: C:\ICPCHEM\1\DATA\11K08j00.B\001TUNE.D
Date Acquired: Nov 8 2011 09:54 am
Acq. Method: TN200_8.M
Operator: NBS
Sample Name: 100ppb Tune sol
Misc Info:
Vial Number: 1303
Current Method: C:\ICPCHEM\1\METHODS\TN200_8.M

RSD (%)

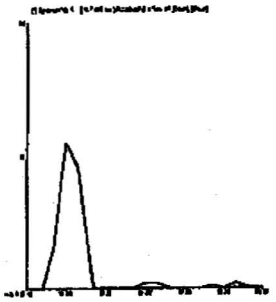
Element	CPS Mean	Rep1	Rep2	Rep3	Rep4	Rep5	%RSD	Required	Flag
9 Be	59673669	59491320	59608068	59407888	59798864	60062204	0.82	5.00	
24 Mg	103938978	########	########	########	########	########	0.95	5.00	
59 Co	88899605	88848832	89270400	88854864	88675680	88848248	0.39	5.00	
115 In	102713896	########	########	########	########	########	0.62	5.00	
208 Pb	65508450	65320172	65699020	65733584	65661332	65128140	1.12	5.00	



9 Be
Mass Calib.
Actual: 9.00
Required: 8.90 - 9.10
Flag:
Peak Width
Actual: 0.65
Required: 0.90
Flag:



24 Mg
Mass Calib.
Actual: 23.95
Required: 23.90 - 24.10
Flag:
Peak Width
Actual: 0.65
Required: 0.80
Flag:



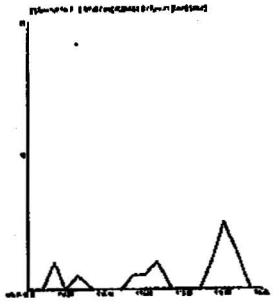
59 Co

Mass Calib.

Actual:	59.00		
Required:	58.90	-	59.10
Flag:			

Peak Width

Actual:	0.65		
Required:	0.90		
Flag:			



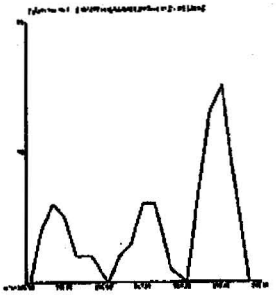
115 In

Mass Calib.

Actual:	115.05		
Required:	114.90	-	115.10
Flag:			

Peak Width

Actual:	0.65		
Required:	0.90		
Flag:			



208 Pb

Mass Calib.

Actual:	208.05		
Required:	207.90	-	208.10
Flag:			

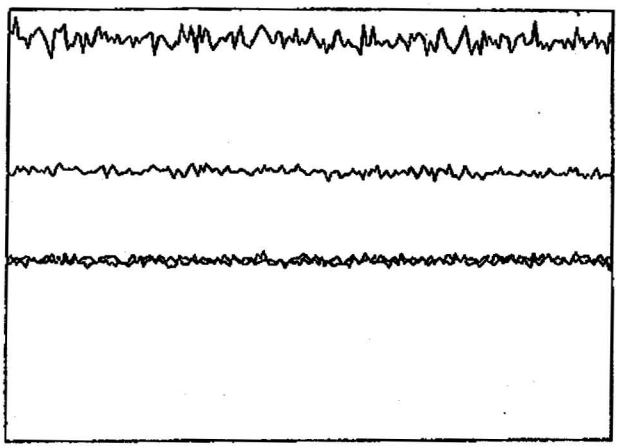
Peak Width

Actual:	0.65		
Required:	0.80		
Flag:			

Tune Result: Pass

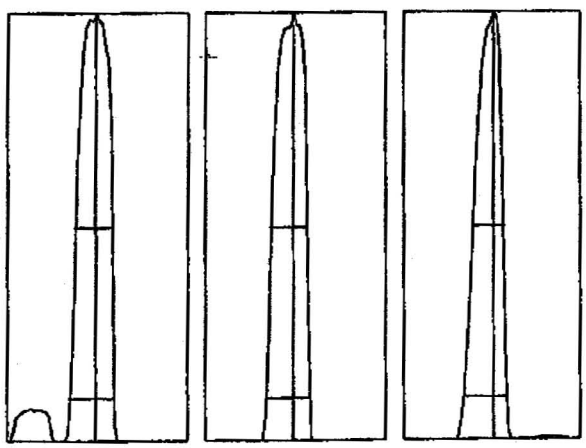
Tune Report

Tune File : nogas.u
Comment : 111109



Integration Time: 0.1000 sec
Sampling Period: 0.6200 sec
n: 200
Oxide: 156/140 1.293%
Doubly Charged: 70/140 1.160%

m/z	Range	Count	Mean	RSD%	Background
7	50,000	31393.0	31328.8	1.33	0.60
89	50,000	20908.0	20823.2	1.58	2.20
205	20,000	18634.0	18575.6	1.85	5.30
156/140	2	1.240%	1.307%	6.61	
70/140	2	1.222%	1.098%	7.44	
140	50,000	21285.0	21188.3	1.50	5.00



m/z:	7	89	205
Height:	31,087	21,094	18,836
Axis:	7.00	89.00	205.05
W-50%:	0.65	0.65	0.55
W-10%:	0.7500	0.7500	0.7500

Integration Time: 0.1000 sec
Acquisition Time: 22.7600 sec

Y axis : Linear

Generated : Nov 09, 2011 10:01:06
Printed : Nov 09, 2011 10:01:08

Tune Report

Tune File : nogas.u
Comment : 111109

Tuning Parameters

===Plasma Condition===			===Ion Lenses===			===Q-Pole Parameters===		
RF Power	1600	W	Extract 1	0	V	AMU Gain	128	
RF Matching	1.66	V	Extract 2	-130	V	AMU Offset	127	
Smpl Depth	9.6	mm	Omega Bias-ce	-22	V	Axis Gain	1	
Torch-H	-0.1	mm	Omega Lens-ce	-1.2	V	Axis Offset	-0.02	
Torch-V	0.1	mm	Cell Entrance	-30	V	QP Bias	-3	V
Carrier Gas	1.02	L/min	QP Focus	5	V			
Makeup Gas	0.1	L/min	Cell Exit	-30	V	===Detector Parameters===		
Optional Gas	---	%				Discriminator	8	mV
Nebulizer Pump	0.1	rps	===Octopole Parameters===			Analog HV	1650	V
Sample Pump	---	rps	OctP RF	180	V	Pulse HV	1450	V
S/C Temp	2	degC	OctP Bias	-6	V			

===Reaction Cell===								
Reaction Mode	OFF							
H2 Gas	0	mL/min	He Gas	0	mL/min	Optional Gas	---	%

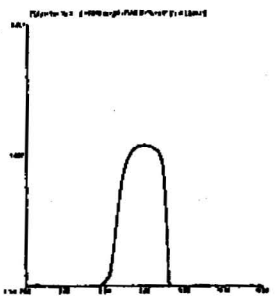
Generated : Nov 09, 2011 10:01:06
Printed : Nov 09, 2011 10:01:10

200.8 QC Tune Report

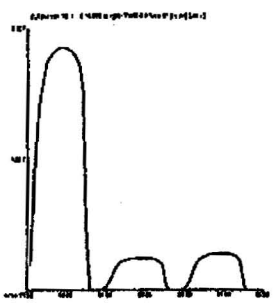
Data File: C:\ICPCHEM\1\DATA\11K09k00.B\001TUNE.D
Date Acquired: Nov 9 2011 10:10 am
Acq. Method: TN200_8.M
Operator: NBS
Sample Name: 100ppb Tune sol
Misc Info:
Vial Number: 1303
Current Method: C:\ICPCHEM\1\METHODS\TN200_8.M

RSD (%)

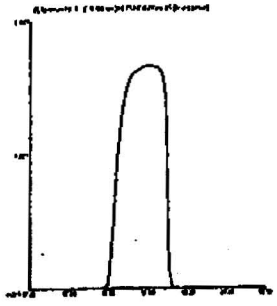
Element	CPS Mean	Rep1	Rep2	Rep3	Rep4	Rep5	%RSD	Required	Flag
9 Be	63186591	61753436	62871384	63490292	63765652	64052192	1.44	5.00	
24 Mg	111752866	########	########	########	########	########	1.78	5.00	
59 Co	102229572	########	########	########	########	########	1.16	5.00	
115 In	111193910	########	########	########	########	########	1.04	5.00	
208 Pb	65257836	64701096	65547852	64818384	65488080	65733768	0.57	5.00	



9 Be
Mass Calib.
Actual: 9.00
Required: 8.90 - 9.10
Flag:
Peak Width
Actual: 0.65
Required: 0.90
Flag:

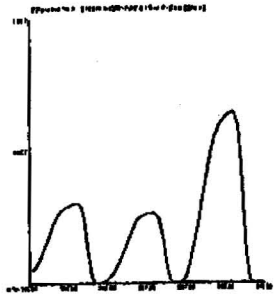


24 Mg
Mass Calib.
Actual: 23.95
Required: 23.90 - 24.10
Flag:
Peak Width
Actual: 0.65
Required: 0.80
Flag:



59 Co
Mass Calib.
Actual: 59.00
Required: 58.90 - 59.10
Flag:
Peak Width
Actual: 0.65
Required: 0.90
Flag:

115 In
Mass Calib.
Actual: 115.05
Required: 114.90 - 115.10
Flag:
Peak Width
Actual: 0.65
Required: 0.90
Flag:



208 Pb
Mass Calib.
Actual: 208.00
Required: 207.90 - 208.10
Flag:
Peak Width
Actual: 0.65
Required: 0.80
Flag:

Tune Result: Pass

A.P.P.L. INC.
3
BLANKS

Lab Name: APPL, Inc. Contract #: Tetra Tech NUS, Inc Group

ARF No. 65882
Prep Blank Matrix: Water Concentration Units (ug/L or mg/kg):ug/L

Analysis Date: 11/09/2011

Analyte		Initial Calibration Blank 11:19	Continuing Calibration Blank 11:31	12:14	13:45	Preparation Blank	M
			1	2	3		
Copper		0.26U	0.26U	0.26U	0.26U		
Lead		0.22U	0.22U	0.22U	0.22U		
Antimony		0.17J	0.8	0.32	0.07J		*

*Exceeds LOD

Form III-IN

A.P.P.L. INC.
3
BLANKS

Lab Name: APPL, Inc. Contract #: Tetra Tech NUS, Inc Group

ARF No. 65882
Prep Blank Matrix: Water Concentration Units (ug/L or mg/kg): ug/L

Analysis Date: 11/09/2011

Analyte		Initial Calibration Blank 11:19	Continuing Calibration Blank 15:49	Continuing Calibration Blank 17:45		Preparation Blank	M
			1	2			
Copper		0.26U	0.26U	0.26U			
Lead		0.22U	0.22U	0.22U			
Antimony		0.17J	0.07J	0.08J			

Form III-IN

A.P.P.L. INC.

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: A.P.P.L. INC. Contract: Tetra Tech NUS, Inc.

ARF No: 65882 SDG: 65882

Initial Calibration Source: CPI

Continuing Calibration Source: Environmental Express

Analysis Date: 11/8/2011 Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration						M
	True	Found 11:06	%R(1)	True CCV1	Found 11:31	%R(1)	True CCV1	Found 12:01	%R(1)	
Copper (Cu)	100	100.1	100	50	50.45	101	50	48.44	96.9	P
Lead (Pb)	100	101.2	101	50	49.08	98.2	50	48.75	97.5	P
Antimony (Sb)	100	103.2	103	50	50.21	100	50	50.72	101	P

(1) Control Limits: Metals 90-110

ILM02.0

A.P.P.L. INC.

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: A.P.P.L. INC. Contract: Tetra Tech NUS, Inc.

ARF No: 65882 SDG: 65882

Initial Calibration Source: CPI

Continuing Calibration Source: Environmental Express

Analysis Date: 11/8/2011 Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration						M
	True	Found 11:06	%R(1)	True CCV1	Found 13:27	%R(1)	True CCV1	Found 14:58	%R(1)	
Copper (Cu)	100	100.1	100	50	48.88	97.8	50	48.41	96.8	P
Lead (Pb)	100	101.2	101	50	48.24	96.5	50	48.43	96.9	P
Antimony (Sb)	100	103.2	103	50	49.6	99.2	50	49.71	99.4	P

(1) Control Limits: Metals 90-110

ILM02.0

A.P.P.L. INC.

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: A.P.P.L. INC. Contract: Tetra Tech NUS, Inc.

ARF No: 65882 SDG: 65882

Initial Calibration Source: CPI

Continuing Calibration Source: Environmental Express

Analysis Date: 11/8/2011 Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration						M
	True	Found 11:06	%R(1)	True CCV1	Found 16:23	%R(1)	True	Found	%R(1)	
Copper (Cu)	100	100.1	100	50	48.65	97.3				P
Lead (Pb)	100	101.2	101	50	48.54	97.1				P
Antimony (Sb)	100	103.2	103	50	49.35	98.7				P

(1) Control Limits: Metals 90-110

ILM02.0

A.P.P.L. INC.

4

ICP INTERFERENCE CHECK SAMPLE

Lab Name:	A.P.P.L. INC.	Contract:	Tetra Tech NUS, Inc.
ARF No.:	65882	SDG:	65882
ICP ID Number:	Optimus	ICS Source:	Environmental Express

Analysis Date: 11/8/2011 Concentration Units: ug/L

Analyte	True		Initial Found		
	Sol A	Sol AB	Sol A 11:43	Sol AB 11:49	%R(1)
Copper (Cu)		250	1.053	206.5	82.6
Lead (Pb)		500	3.253	444.6	88.9
Antimony (Sb)		250	2.152	256.3	103

(1) Control Limits: Metals 80-120

A.P.P.L. INC.

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: A.P.P.L. INC. Contract: Tetra Tech NUS, Inc.

ARF No: 65882 SDG: 65882

Initial Calibration Source: CPI

Continuing Calibration Source: Environmental Express

Analysis Date: 11/9/2011 Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration						M
	True	Found 11:00	%R(1)	True CCV1	Found 11:25	%R(1)	True CCV1	Found 12:02	%R(1)	
Copper (Cu)	100	98.92	98.9	50	49.92	99.8	50	47.99	96.0	P
Lead (Pb)	100	97.06	97.1	50	48.16	96.3	50	48.21	96.4	P
Antimony (Sb)	100	101.5	102	50	48.53	97.1	50	49.95	99.9	P

(1) Control Limits: Metals 90-110

ILM02.0

A.P.P.L. INC.

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: A.P.P.L. INC. Contract: Tetra Tech NUS, Inc.

ARF No: 65882 SDG: 65882

Initial Calibration Source: CPI

Continuing Calibration Source: Environmental Express

Analysis Date: 11/9/2011 Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration						M
	True	Found 11:00	%R(1)	True CCV1	Found 13:32	%R(1)	True CCV1	Found 15:37	%R(1)	
Copper (Cu)	100	98.92	98.9	50	47.08	94.2	50	46.59	93.2	P
Lead (Pb)	100	97.06	97.1	50	48.35	96.7	50	48.22	96.4	P
Antimony (Sb)	100	101.5	102	50	49.44	98.9	50	49.23	98.5	P

(1) Control Limits: Metals 90-110

ILM02.0

A.P.P.L. INC.

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: A.P.P.L. INC. Contract: Tetra Tech NUS, Inc.

ARF No: 65882 SDG: 65882

Initial Calibration Source: CPI

Continuing Calibration Source: Environmental Express

Analysis Date: 11/9/2011 Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration						M
	True	Found 11:00	%R(1)	True CCV1	Found 17:33	%R(1)	True	Found	%R(1)	
Copper (Cu)	100	98.92	98.9	50	46.36	92.7				P
Lead (Pb)	100	97.06	97.1	50	47.86	95.7				P
Antimony (Sb)	100	101.5	102	50	49.76	99.5				P

(1) Control Limits: Metals 90-110

ILM02.0

A.P.P.L. INC.

4

ICP INTERFERENCE CHECK SAMPLE

Lab Name:	A.P.P.L. INC.	Contract:	Tetra Tech NUS, Inc.
ARF No.:	65882	SDG:	65882
ICP ID Number:	Optimus	ICS Source:	Environmental Express

Analysis Date: 11/9/2011 Concentration Units: ug/L

Analyte	True		Initial Found		
	Sol A	Sol AB	Sol A 11:37	Sol AB 11:50	%R(1)
Copper (Cu)		250	1.89	198.9	79.6
Lead (Pb)		500	3.279	449.7	89.9
Antimony (Sb)		250	2.044	256.5	103

(1) Control Limits: Metals 80-120

Sample QC Report

Data File:	C:\ICPCHEM\1\DATA\11K09k00.B\036SMPL.D\036SMPL.D#
Date Acquired:	Nov 9 2011 02:09 pm
Operator:	NBS
Sample Name:	AY47772N01
Misc Info:	111107A-3018
Vial Number:	3110
Current Method:	C:\ICPCHEM\1\METHODS\62A1109.M
Calibration File:	C:\ICPCHEM\1\CALIB\62A1109.C
Last Cal Update:	Nov 09 2011 10:58 am
Sample Type:	Sample
Prep Dil Factor:	1.11
Total Dil Factor:	1.11

QC Elements

Element	Conc.		Corr. Conc.	RSD(%)	High Limit	Flag
7 (Li)	--------	ug/l	#VALUE!	--------	0	
9 Be	0.55	ug/l	0.61	2.82	1000	
11 B	36.58	ug/l	40.64	0.81	1000	
23 Na	19180.00	ug/l	21308.98	0.62	25000	
24 Mg	3492.00	ug/l	3879.61	1.40	50000	
27 Al	12420.00	ug/l	13798.62	1.09	20000	
39 K	4372.00	ug/l	4857.29	0.41	20000	
44 Ca	7968.00	ug/l	8852.45	0.29	50000	
47 Ti	162.70	ug/l	180.76	1.26	1000	
51 V	31.81	ug/l	35.34	0.87	1000	
52 Cr	35.64	ug/l	39.60	0.48	1000	
55 Mn	251.90	ug/l	279.86	0.49	1000	
56 Fe	18090.00	ug/l	20097.99	0.95	20000	
59 Co	6.78	ug/l	7.53	1.23	1000	
60 Ni	13.96	ug/l	15.51	1.74	1000	
63 Cu	11.88	ug/l	13.20	0.59	1000	
65 Cu	11.82	ug/l	13.13	0.21	1000	
66 Zn	29.62	ug/l	32.91	0.74	1000	
75 As	3.37	ug/l	3.74	2.01	1000	
78 Se	0.29	ug/l	0.32	7.01	1000	
78 Se	1.13	ug/l	1.25	11.85	1000	
88 Sr	58.16	ug/l	64.62	0.25	1000	
88 Sr	59.22	ug/l	65.79	0.47	1000	
95 Mo	1.88	ug/l	2.09	1.63	1000	
106 (Cd)	--------	ug/l	#VALUE!	--------	#######	
107 Ag	0.03	ug/l	0.04	11.03	500	
108 (Cd)	--------	ug/l	#VALUE!	--------	#######	
111 Cd	0.26	ug/l	0.28	19.48	1000	
118 Sn	0.60	ug/l	0.67	0.54	1000	
121 Sb	0.82	ug/l	0.92	3.39	1000	
137 Ba	98.43	ug/l	109.36	1.50	1000	
205 Tl	0.18	ug/l	0.20	5.35	1000	
206 (Pb)	--------	ug/l	#VALUE!	--------	#######	
207 (Pb)	--------	ug/l	#VALUE!	--------	#######	
208 Pb	19.60	ug/l	21.78	0.29	1000	

19.6 x 1.11 = 21.78

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)
6 Li	2933021.30	0.54	2718933.80	107.9
45 Sc	872307.06	1.48	580246.44	150.3
45 Sc	102848.54	0.25	78449.59	131.1
45 Sc	2087700.90	1.09	1460500.30	142.9
72 Ge	134799.97	0.56	106527.24	126.5
72 Ge	49884.48	0.70	39295.42	126.9
72 Ge	240473.20	0.29	209205.06	114.9
115 In	1546855.60	0.92	1337657.80	115.6
159 Tb	2333481.80	0.58	1942159.60	120.1
165 Ho	2379973.80	0.23	1969815.00	120.8

ISTD Ref File : C:\ICPCHEM\1\DATA\11K09k00.B\004CALB.D\004CALB.D#

0 :Element Failures 0 :Max. Number of Failures Allowed

Data Results:
Analytes: Pass

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**B. BECKER**	**DATE:**	**November 21, 2011**
FROM:	**MEGAN CARSON**	**COPIES:**	**DV FILE**

SUBJECT: **ORGANIC AND INORGANIC DATA VALIDATION –SIM PAHs, NITROGLYCERIN, SELECT TOTAL AND FILTERED METALS NSF INDIAN HEAD, CTO 423 SAMPLE DELIVERY GROUP (SDG) – 65895**

SAMPLES: 9/Waters/

DUP03100111	DUP03100111-F	FB01-100111
X16GW0011011	X16GW0011011-F	X16GW0021011
X16GW0021011-F	X17GW0011011	X17GW0011011-F

Overview

The sample set for NSF Indian Head, SDG 65895 consists of eight (8) aqueous environmental samples and one (1) field blank. This SDG contained two field duplicate pairs: DUP03100111/X17GW0011011 and DUP03100111-F/X17GW0011011-F.

Sample X16GW0011011 was analyzed for total antimony and polycyclic aromatic hydrocarbons (PAHs). Sample X16GW0011011-F was analyzed for dissolved antimony. Sample X16GW0021011 was analyzed for total antimony and lead. Sample X16GW0021011-F was analyzed for dissolved antimony and lead. Sample X17GW0011011 was analyzed for total antimony, arsenic, lead, and nitroglycerin. Samples X17GW0011011-F and DUP03100111-F were analyzed for dissolved antimony, arsenic, and lead. Sample DUP03100111 was analyzed for total antimony, arsenic, and lead. Sample FB01-100111 was analyzed for dissolved for antimony, arsenic, lead, and copper. The samples were collected by Tetra Tech NUS, Inc. on October 1st, 2001 and analyzed by APPL Inc. under Naval Facilities Engineering Service Center (NFESC) Quality Assurance / Quality Control (QA/QC) criteria. Metals analyses were conducted using SW846 method 6010C. PAH analyses were conducted using method 8270C selective ion monitoring (SIM). Nitroglycerin analyses were conducted using method 8330B.

Summary

All analytes were successfully analyzed. The findings offered in this report are based upon a general review of all available data. The data review was based on data completeness, holding times, GCMS tune, calibration data, laboratory method/preparation blanks, interference check sample (ICS) results, matrix spike / matrix spike duplicate results, field duplicate pair, laboratory duplicate precision, laboratory control sample (LCS) results, ICP serial dilution results, detection limits and analyte quantitation.

Areas of concern with respect to data quality are listed below.

Major Problems:

- None.

Minor Problems:

- The field duplicate pair DUP03100111/X17GW0011011 had a relative percent difference greater than 50% for lead. All total samples were affected. Positive results were qualified as estimated (J).

- The field duplicate pair DUP03100111-F/X17GW0011011-F had a percent difference/variance greater than 2X limit of quantitation for antimony. All dissolved samples were affected. Positive results were qualified as estimated (J).

- Positive results < LOQ but > MDL were qualified as estimated (J).

Notes

Executive Summary

Laboratory Performance: None.

Other Factors Affecting Data Quality: Field duplicate pair non-compliances for total lead and dissolved antimony resulted in the qualification of sample results.

The data for these analyses were reviewed with reference to Region III modifications to U.S. EPA National Functional Guidelines for Organic Data Validation (Sept. 1994), Region III modifications to U.S. EPA National Functional Guidelines for Inorganic Data Validation (April 1993), 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.

The text of this report has been formulated to address only those problem areas affecting data quality.

Megan Carson

Tetra Tech NUS
Megan Carson
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: 00810	NSAMPLE	X16GW0011011
SDG: 65895	LAB_ID	AY47855
FRACTION: PAH	SAMP_DATE	10/1/2011
MEDIA: WATER	QC_TYPE	NM
	UNITS	UG/L
	PCT_SOLIDS	0.0
	DUP_OF	

PARAMETER	RESULT	VQL	QLCD
2-METHYLNAPHTHALENE	0.12	U	
ACENAPHTHENE	0.12	U	
ACENAPHTHYLENE	0.12	U	
ANTHRACENE	0.1	U	
BENZO(A)ANTHRACENE	0.14	U	
BENZO(A)PYRENE	0.14	U	
BENZO(B)FLUORANTHENE	0.12	U	
BENZO(G,H,I)PERYLENE	0.16	U	
BENZO(K)FLUORANTHENE	0.14	U	
CHRYSENE	0.1	U	
DIBENZO(A,H)ANTHRACENE	0.1	U	
FLUORANTHENE	0.16	U	
FLUORENE	0.12	U	
INDENO(1,2,3-CD)PYRENE	0.14	U	
NAPHTHALENE	0.1	U	
PHENANTHRENE	0.14	U	
PYRENE	0.16	U	

PROJ_NO: 00810	NSAMPLE	X17GW0011011		
SDG: 65895	LAB_ID	AY47857		
FRACTION: EXP	SAMP_DATE	10/1/2011		
MEDIA: WATER	QC_TYPE	NM		
	UNITS	UG/L		
	PCT_SOLIDS	0.0		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
NITROGLYCERIN		0.26	U	

PROJ_NO: 00810	NSAMPLE	DUP03100111			X16GW0011011			X16GW0021011			X17GW0011011		
SDG: 65895	LAB_ID	AY47860			AY47855			AY47853			AY47857		
FRACTION: M	SAMP_DATE	10/1/2011			10/1/2011			10/1/2011			10/1/2011		
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	X17GW0011011											
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY		0.28			0.097	J	P	0.28			0.29		
ARSENIC		0.34									0.41		
LEAD		0.38	J	GP				3.9	J	G	4.2	J	G

PROJ_NO: 00810	NSAMPLE	DUP03100111-F			FB01-100111			X16GW0011011-F			X16GW0021011-F		
SDG: 65895	LAB_ID	AY47861			AY47859			AY47856			AY47854		
FRACTION: MF	SAMP_DATE	10/1/2011			10/1/2011			10/1/2011			10/1/2011		
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	X17GW0011011-F											
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY		0.24	J	G	0.34	J	G	0.066	J	GP	0.44	J	G
ARSENIC		0.23			0.13	J	P						
COPPER					1								
LEAD		0.22	U		0.22	U					1.7		

PROJ_NO: 00810	NSAMPLE	X17GW0011011-F		
SDG: 65895	LAB_ID	AY47858		
FRACTION: MF	SAMP_DATE	10/1/2011		
MEDIA: WATER	QC_TYPE	NM		
	UNITS	UG/L		
	PCT_SOLIDS	0.0		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
ANTIMONY		0.92	J	G
ARSENIC		0.26		
COPPER				
LEAD		0.45	J	P

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

EPA 8270D LL WATER DODv3

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker

Project: 112G00810 Indian Head CTO423

ARF: 65895

Sample ID: X16GW0011011

APPL ID: AY47855

Sample Collection Date: 10/01/11

QCG: #SIMDD-111007A-160411

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
8270D-LL	2-METHYLNAPHTHALENE	0.12 U	0.2	0.12	0.06	ug/L	10/07/11	10/09/11
8270D-LL	ACENAPHTHENE	0.12 U	0.2	0.12	0.06	ug/L	10/07/11	10/09/11
8270D-LL	ACENAPHTHYLENE	0.12 U	0.2	0.12	0.06	ug/L	10/07/11	10/09/11
8270D-LL	ANTHRACENE	0.10 U	0.2	0.10	0.05	ug/L	10/07/11	10/09/11
8270D-LL	BENZ (A) ANTHRACENE	0.14 U	0.2	0.14	0.07	ug/L	10/07/11	10/09/11
8270D-LL	BENZO (A) PYRENE	0.14 U	0.2	0.14	0.07	ug/L	10/07/11	10/09/11
8270D-LL	BENZO (B) FLUORANTHENE	0.12 U	0.2	0.12	0.06	ug/L	10/07/11	10/09/11
8270D-LL	BENZO (G,H,I) PERYLENE	0.16 U	0.2	0.16	0.08	ug/L	10/07/11	10/09/11
8270D-LL	BENZO (K) FLUORANTHENE	0.14 U	0.2	0.14	0.07	ug/L	10/07/11	10/09/11
8270D-LL	CHRYSENE	0.10 U	0.2	0.10	0.05	ug/L	10/07/11	10/09/11
8270D-LL	DIBENZ (A,H) ANTHRACENE	0.10 U	0.2	0.10	0.05	ug/L	10/07/11	10/09/11
8270D-LL	FLUORANTHENE	0.16 U	0.2	0.16	0.08	ug/L	10/07/11	10/09/11
8270D-LL	FLUORENE	0.12 U	0.2	0.12	0.06	ug/L	10/07/11	10/09/11
8270D-LL	INDENO (1,2,3-CD) PYRENE	0.14 U	0.2	0.14	0.07	ug/L	10/07/11	10/09/11
8270D-LL	NAPHTHALENE	0.10 U	0.2	0.10	0.05	ug/L	10/07/11	10/09/11
8270D-LL	PHENANTHRENE	0.14 U	0.2	0.14	0.07	ug/L	10/07/11	10/09/11
8270D-LL	PYRENE	0.16 U	0.2	0.16	0.08	ug/L	10/07/11	10/09/11
8270D-LL	SURROGATE: 2-FLUORBIPHENYL (S)	84.9	50-110			%	10/07/11	10/09/11
8270D-LL	SURROGATE: NITROBENZENE-D5 (S)	98.8	40-110			%	10/07/11	10/09/11
8270D-LL	SURROGATE: TERPHENYL-D14 (S)	103	50-135			%	10/07/11	10/09/11

Quant Method: SIM2.M
Run #: 1009L005
Instrument: Linus
Sequence: L110921
Dilution Factor: 1
Initials: LF

Printed: 10/24/11 3:36:06 PM
APPL-F1-SC-NoMC-REG MDLs

EPA 8330B EXPLOSIVES-WATER

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

Attn: Barbra Becker

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Project: 112G00810 Indian Head CTO423
Sample ID: X17GW0011011
Sample Collection Date: 10/1/2011

ARF: 65895
APPL ID: AY47857
QCG: #833BW-111006AA-160737

Method	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
EPA 8330B	NITROGLYCERIN	0.260 U	0.50	0.260	0.130	ug/L	10/6/2011	10/18/2011
EPA 8330B	SURROGATE: 1,2-DINITROBENZENE (	83.8	70-130			%	10/6/2011	10/18/2011

Quant Method: W110907.M
Run #: 1017_0000040
Instrument: Waldorf
Sequence: 111017
Dilution Factor: 1
Initials: RSM

Printed: 11/2/2011 1:59:15 PM
APPL-F1-SC-NoMC-REG MDLs

Metals Analysis

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker
Project: 112G00810 Indian Head CTO423
Sample ID: DUP03100111
Sample Collection Date: 10/1/2011

ARF: 65895
APPL ID: AY47860

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6020A	ANTIMONY (SB)	0.28	0.20	0.020	0.010	ug/L	1	10/26/2011	11/1/2011
6020A	ARSENIC (AS)	0.34	0.20	0.180	0.080	ug/L	1	10/26/2011	11/1/2011
6020A	LEAD (PB)	0.38 J	0.50	0.220	0.110	ug/L	1	10/26/2011	11/1/2011

J = Estimated value.

Printed: 11/8/2011 10:19:25 AM
APPL-F1-SC-NoMC-URS-REG MDLs

Metals Analysis

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker
Project: 112G00810 Indian Head CTO423
Sample ID: X16GW0011011
Sample Collection Date: 10/1/2011

ARF: 65895
APPL ID: AY47855

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6020A	ANTIMONY (SB)	0.097 J	0.20	0.020	0.010	ug/L	1	10/26/2011	11/1/2011

J = Estimated value.

Printed: 11/6/2011 10:19:25 AM
APPL-F1-SC-NoMC-URS-REG MDLs

Metals Analysis

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker

Project: 112G00810 Indian Head CTO423

ARF: 65895

Sample ID: X16GW0021011

APPL ID: AY47853

Sample Collection Date: 10/1/2011

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6020A	ANTIMONY (SB)	0.28	0.20	0.020	0.010	ug/L	1	10/26/2011	11/1/2011
6020A	LEAD (PB)	3.9	0.50	0.220	0.110	ug/L	1	10/26/2011	11/1/2011

Printed: 11/6/2011 10:19:25 AM

APPL-F1-SC-NoMC-URS-REG MDLs

Metals Analysis

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker
Project: 112G00810 Indian Head CTO423
Sample ID: X17GW0011011
Sample Collection Date: 10/1/2011

ARF: 65895
APPL ID: AY47857

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6020A	ANTIMONY (SB)	0.29	0.20	0.020	0.010	ug/L	1	10/26/2011	11/1/2011
6020A	ARSENIC (AS)	0.41	0.20	0.180	0.090	ug/L	1	10/26/2011	11/1/2011
6020A	LEAD (PB)	4.2	0.50	0.220	0.110	ug/L	1	10/26/2011	11/1/2011

Metals Analysis

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker

Project: 112G00810 Indian Head CTO423

ARF: 65895

Sample ID: DUP03100111-F

APPL ID: AY47861

Sample Collection Date: 10/1/2011

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6020A	ANTIMONY (SB) (DISSOLVE	0.24	0.20	0.020	0.010	ug/L	1	10/26/2011	11/1/2011
6020A	ARSENIC (AS) (DISSOLVED)	0.23	0.20	0.180	0.090	ug/L	1	10/26/2011	11/1/2011
6020A	LEAD (PB) (DISSOLVED)	0.220 U	0.50	0.220	0.110	ug/L	1	10/26/2011	11/1/2011

Printed: 11/8/2011 10:19:25 AM

APPL-F1-SC-NoMC-URS-REG MDLs

Metals Analysis

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker
Project: 112G00810 Indian Head CTO423
Sample ID: FB01-100111
Sample Collection Date: 10/1/2011

ARF: 65895
APPL ID: AY47859

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6020A	ANTIMONY (SB) (DISSOLVE	0.34	0.20	0.020	0.010	ug/L	1	10/26/2011	11/1/2011
6020A	ARSENIC (AS) (DISSOLVED)	0.13 J	0.20	0.180	0.090	ug/L	1	10/26/2011	11/1/2011
6020A	COPPER (CU) (DISSOLVED)	1.0	0.50	0.260	0.130	ug/L	1	10/26/2011	11/1/2011
6020A	LEAD (PB) (DISSOLVED)	0.220 U	0.50	0.220	0.110	ug/L	1	10/26/2011	11/1/2011

J = Estimated value.

Printed: 11/6/2011 10:19:25 AM
APPL-F1-SC-NoMC-URS-REG MDLs

Metals Analysis

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker
Project: 112G00810 Indian Head CTO423
Sample ID: X16GW0011011-F
Sample Collection Date: 10/1/2011

ARF: 65895
APPL ID: AY47856

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6020A	ANTIMONY (SB) (DISSOLVE	0.066 J	0.20	0.020	0.010	ug/L	1	10/26/2011	11/1/2011

J = Estimated value.

Printed: 11/6/2011 10:19:25 AM
APPL-F1-SC-NoMC-URS-REG MDLs

Metals Analysis

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker
Project: 112G00810 Indian Head CTO423
Sample ID: X16GW0021011-F
Sample Collection Date: 10/1/2011

ARF: 65895
APPL ID: AY47854

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6020A	ANTIMONY (SB) (DISSOLVE	0.44	0.20	0.020	0.010	ug/L	1	10/26/2011	11/1/2011
6020A	LEAD (PB) (DISSOLVED)	1.7	0.50	0.220	0.110	ug/L	1	10/26/2011	11/1/2011

Printed: 11/6/2011 10:19:25 AM
APPL-F1-SC-NoMC-URS-REG MDLs

Metals Analysis

Tetra Tech NUS, Inc.
234 Mall Blvd, suite 260
King of Prussia, PA 19406

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Barbra Becker

Project: 112G00810 Indian Head CTO423

ARF: 65895

Sample ID: X17GW0011011-F

APPL ID: AY47858

Sample Collection Date: 10/1/2011

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
6020A	ANTIMONY (SB) (DISSOLVE	0.92	0.20	0.020	0.010	ug/L	1	10/26/2011	11/1/2011
6020A	ARSENIC (AS) (DISSOLVED)	0.26	0.20	0.180	0.090	ug/L	1	10/26/2011	11/1/2011
6020A	LEAD (PB) (DISSOLVED)	0.46 J	0.50	0.220	0.110	ug/L	1	10/26/2011	11/1/2011

J = Estimated value.

Printed: 11/8/2011 10:19:25 AM

APPL-F1-SC-NoMC-URS-REG MDLs

APPENDIX C

SUPPORT DOCUMENTATION

_M3015

Metals Digestion Worksheet

Method Name 3015 Digestion | **Prep Method** M3015 | **Set** 111026A | **Units** mL

Spikes	
Spiked ID 1	LCSW LOT# 1028408-29435
Spiked ID 2	LCSW LOT# 1028416-29433
Spiked ID 3	
Spiked ID 4	
Spiked By	NM Date: 10/26/11 10:30:00 AM
Witnessed By	KWS Date: 10/26/11 10:30:00 AM

Starting Temp:	25°c
Ending Temp:	170°c
Temperature Type:	Microwave
Sufficient Vol for Matrix QC:	YES
End Date/Time	10/26/11 11:30

	Sample	Sample Container	Spike Amount	Spike ID	Digested Amount	Final Volume	Start Date/Time	Comments
1	111026A Blk				45mL	50mL	10/26/11 10:30	equip: Venus
2	111026A LCS		90uL	1+2	45mL	50mL	10/26/11 10:30	equip: Venus
3	AY47853	AY47853W01			45mL	50mL	10/26/11 10:30	equip: Venus
4	AY47854	AY47854W01			45mL	50mL	10/26/11 10:30	equip: Venus
5	AY47855	AY47855W03			45mL	50mL	10/26/11 10:30	equip: Venus
6	AY47856	AY47856W01			45mL	50mL	10/26/11 10:30	equip: Venus
7	AY47857	AY47857W03			45mL	50mL	10/26/11 10:30	equip: Venus
8	AY47857 MS	AY47857W04	90uL	1+2	45mL	50mL	10/26/11 10:30	equip: Venus
9	AY47857 MSD	AY47857W04	90uL	1+2	45mL	50mL	10/26/11 10:30	equip: Venus
10	AY47858	AY47858W01			45mL	50mL	10/26/11 10:30	equip: Venus
11	AY47858 MS	AY47858W03	90uL	1+2	45mL	50mL	10/26/11 10:30	equip: Venus
12	AY47858 MSD	AY47858W03	90uL	1+2	45mL	50mL	10/26/11 10:30	equip: Venus
13	AY47859	AY47859W01			45mL	50mL	10/26/11 10:30	equip: Venus
14	AY47860	AY47860W01			45mL	50mL	10/26/11 10:30	equip: Venus
15	AY47861	AY47861W01			45mL	50mL	10/26/11 10:30	equip: Venus
16	AY48326	AY48326W02			45mL	50mL	10/26/11 10:30	equip: Venus
17	AY48327	AY48327W02			45mL	50mL	10/26/11 10:30	equip: Venus
18	AY48328	AY48328W02			45mL	50mL	10/26/11 10:30	equip: Venus
19	AY48329	AY48329W02			45mL	50mL	10/26/11 10:30	equip: Venus
20	AY48330	AY48330W02			45mL	50mL	10/26/11 10:30	equip: Venus
21	AY48331	AY48331W02			45mL	50mL	10/26/11 10:30	equip: Venus

Solvent and Lot #
HNO3 J.T.B K19023 0087

Sample COC Tracking	
Sample prep employee Initials	nm
Analyst's initials	NBS
Date	10-26-11
Time	14:11
Moved to	MSTACS

Technician Initials	
Scanned By	nm
Sample Preparation	lo
Digestion	lo
Bring up to volume	nm
Modified	10/26/11 10:12:52 AM

Reviewed By: ZA **Date:** 10-26-11

A.P.P.L. INC.

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: A.P.P.L. INC. Contract: Tetra Tech NUS, Inc.

ARF No: 65895 SDG: 65895

Initial Calibration Source: CPI

Continuing Calibration Source: Environmental Express

Analysis Date: 11/1/2011 Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration						M
	True	Found 13:17	%R(1)	True CCV1	Found 13:41	%R(1)	True CCV1	Found 14:11	%R(1)	
Arsenic (As)	100	99.93	99.9	50	50.08	100	50	50.1	100	P
Copper (Cu)	100	102	102	50	49.86	99.7	50	49.23	98.5	P
Lead (Pb)	100	98.85	98.8	50	50.97	102	50	51.12	102	P
Antimony (Sb)	100	99.43	99.4	50	49.06	98.1	50	50.37	101	P

(1) Control Limits: Metals 90-110

ILM02.0

A.P.P.L. INC.

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: A.P.P.L. INC. Contract: Tetra Tech NUS, Inc.

ARF No: 65895 SDG: 65895

Initial Calibration Source: CPI

Continuing Calibration Source: Environmental Express

Analysis Date: 11/1/2011 Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration						M
	True	Found 13:17	%R(1)	True CCV1	Found 15:37	%R(1)	True CCV1	Found 18:27	%R(1)	
Arsenic (As)	100	99.93	99.9	50	49.6	99.2	50	49.52	99.0	P
Copper (Cu)	100	102	102	50	48.36	96.7	50	47.5	95.0	P
Lead (Pb)	100	98.85	98.8	50	50.04	100	50	50.2	100	P
Antimony (Sb)	100	99.43	99.4	50	49.9	99.8	50	49.42	98.8	P

(1) Control Limits: Metals 90-110

ILM02.0

A.P.P.L. INC.

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: A.P.P.L. INC. Contract: Tetra Tech NUS, Inc.

ARF No: 65895 SDG: 65895

Initial Calibration Source: CPI

Continuing Calibration Source: Environmental Express

Analysis Date: 11/1/2011 Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration						M
	True	Found 13:17	%R(1)	True CCV1	Found 19:51	%R(1)	True CCV1	Found 21:15	%R(1)	
Arsenic (As)	100	99.93	99.9	50	49.42	98.8	50	49.76	99.5	P
Copper (Cu)	100	102	102	50	47.02	94.0	50	47.24	94.5	P
Lead (Pb)	100	98.85	98.8	50	49.18	98.4	50	48.63	97.3	P
Antimony (Sb)	100	99.43	99.4	50	50	100	50	49.08	98.2	P

(1) Control Limits: Metals 90-110

ILM02.0

A.P.P.L. INC.
3
BLANKS

Lab Name: APPL, Inc. Contract #: Tetra Tech NUS, Inc Group

ARF No. 65895
Prep Blank Matrix: Water Concentration Units (ug/L or mg/kg): ug/L

Analysis Date: 11/1/2011

Analyte		Initial Calibration Blank 13:35	Continuing Calibration Blank 13:47	14:23	15:49	Preparation Blank 14:48	M
			1	2	3		
Arsenic		0.18U	0.18U	0.18U	0.18U	0.20U	
Copper		0.26U	0.26U	0.26U	0.26U	0.50U	
Lead		0.22U	0.22U	0.22U	0.22U	0.50U	
Antimony		0.20U	0.20U	0.20U	0.20U	0.20U	

Form III-IN

A.P.P.L. INC.
3
BLANKS

Lab Name: APPL, Inc. Contract #: Tetra Tech NUS, Inc Group

ARF No. 65895
Prep Blank Matrix: Water Concentration Units (ug/L or mg/kg): ug/L

Analysis Date: 11/1/2011

Analyte		Initial Calibration Blank 13:35	Continuing Calibration Blank 18:39	20:03	21:28	Preparation Blank 14:48	M
			1	2	3		
Arsenic		0.18U	0.18U	0.18U	0.18U	0.20U	
Copper		0.26U	0.26U	0.26U	0.26U	0.50U	
Lead		0.22U	0.22U	0.22U	0.22U	0.50U	
Antimony		0.20U	0.20U	0.20U	0.20U	0.20U	

Form III-IN

A.P.P.L. INC.
4
ICP INTERFERENCE CHECK SAMPLE

Lab Name: A.P.P.L. INC. Contract: Tetra Tech NUS, Inc.

ARF No.: 65895 SDG: 65895

ICP ID Number: Optimus ICS Source: Environmental Express

Analysis Date: 11/1/2011 Concentration Units: ug/L

Analyte	True		Initial Found		
	Sol A	Sol AB	Sol A 13:53	Sol AB 13:59	%R(1)
Arsenic (As)		250	1.385	228.2	91.3
Copper (Cu)		250	2.821	210.6	84.2
Lead (Pb)		500	2.087	463.3	92.7
Antimony (Sb)		250	1.112	248.6	99.4

(1) Control Limits: Metals 80-120

METALS BLANK

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Method	Analyte	Result	LOQ	LOD	DL	Units	Prep Date	Analysis Date	QC Group
6020A	ANTIMONY (SB)	0.020 U	0.20	0.020	0.010	ug/L	10/26/11	11/01/11	#62ADO-A111026-AY47857
6020A	ARSENIC (AS)	0.180 U	0.20	0.180	0.090	ug/L	10/26/11	11/01/11	#62ADO-A111026-AY47857
6020A	LEAD (PB)	0.220 U	0.50	0.220	0.110	ug/L	10/26/11	11/01/11	#62ADO-A111026-AY47857
6020A	ANTIMONY (SB) (DI	0.020 U	0.20	0.020	0.010	ug/L	10/26/11	11/01/11	#62ADO-AA111026-AY47858
6020A	ARSENIC (AS) (DIS	0.180 U	0.20	0.180	0.090	ug/L	10/26/11	11/01/11	#62ADO-AA111026-AY47858
6020A	COPPER (CU) (DIS	0.260 U	0.50	0.260	0.130	ug/L	10/26/11	11/01/11	#62ADO-AA111026-AY47858
6020A	LEAD (PB) (DISSOL	0.220 U	0.50	0.220	0.110	ug/L	10/26/11	11/01/11	#62ADO-AA111026-AY47858

Metals SC-Blank-URS-REG MDLs
Printed: 11/8/2011 10:19:29 AM

Matrix Spike Recoveries

METALS

APPL ID: **111026W-47857 MS - 160739**

Sample ID: AY47857

Client ID: X17GW0011011

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Method	Compound Name	Spike Lvl ug/L	Matrix Res ug/L	SPK Res ug/L	DUP Res ug/L	SPK % Recovery	DUP % Recovery	RPD	RPD Max	Recovery Limits	Extract Date-Spk	Analysis Date-Spk	Extract Date-Dup	Analysis Date-Dup	QC Group	QC Sample
6020A	ANTIMONY (SB)	50.0	0.29	44.0	44.3	87.4	88.0	0.7	20	80-120	0/26/2011	11/1/2011	0/26/2011	11/1/2011	160739	AY47857
6020A	ARSENIC (AS)	50.0	0.41	41.3	44.7	81.8	88.6	7.9	20	80-120	0/26/2011	11/1/2011	0/26/2011	11/1/2011	160739	AY47857
6020A	LEAD (PB)	50.0	4.2	50.6	54.1	92.8	99.8	6.7	20	80-120	0/26/2011	11/1/2011	0/26/2011	11/1/2011	160739	AY47857

Comments: _____

Matrix Spike Recoveries

METALS

APPL ID: **111026W-47858 MS - 160740**

Sample ID: AY47858

Client ID: X17GW0011011-F

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Method	Compound Name	Spike Lvl ug/L	Matrix Res ug/L	SPK Res ug/L	DUP Res ug/L	SPK % Recovery	DUP % Recovery	RPD	RPD Max	Recovery Limits	Extract Date-Spk	Analysis Date-Spk	Extract Date-Dup	Analysis Date-Dup	QC Group	QC Sample
6020A	ANTIMONY (SB) (DISS	50.0	0.92	47.2	46.4	92.6	91.0	1.7	20	80-120	0/26/2011	11/1/2011	0/26/2011	11/1/2011	160740	AY47858
6020A	ARSENIC (AS) (DISSO	50.0	0.26	43.3	43.2	86.1	85.9	0.2	20	80-120	0/26/2011	11/1/2011	0/26/2011	11/1/2011	160740	AY47858
6020A	LEAD (PB) (DISSOLVE	50.0	0.45	49.8	49.7	98.7	98.5	0.2	20	80-120	0/26/2011	11/1/2011	0/26/2011	11/1/2011	160740	AY47858

Comments: _____

A.P.P.L. INC.

5B

POST DIGEST SPIKE SAMPLE RECOVERY

CLIENT SAMPLE NO.

X17GW001 1011

Lab Name: A.P.P.L. INC. Contract: Tetra Tech NUS, Inc.

ARF No.: 65895 SDG: 65895

Analysis Date: 11/1/2011 Concentration Units: ug/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Arsenic (As)	75-125	221.667		0.405705		277.500	79.7		
Copper (Cu)	75-125	226.329		2.46864		277.500	80.7		
Lead (Pb)	75-125	243.534		4.22244		277.500	86.2		
Antimony (Sb)	75-125	232.101		0.291153		277.500	83.5		

Comments:

11/1/2011 19:39 AY47857W03

11/1/2011 20:21 AY47857W03-A

Laboratory Control Spike Recovery
METALS

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Method	Compound Name	Spike Level ug/L	SPK Result ug/L	SPK % Recovery	Recovery Limits	Extract Date	Analysis Date	QC Group
6020A	ANTIMONY (SB)	50.0	46.6	93.2	80-120	10/26/2011	11/1/2011	#62ADO-A111026-AY47857
6020A	ARSENIC (AS)	50.0	43.1	86.2	80-120	10/26/2011	11/1/2011	#62ADO-A111026-AY47857
6020A	LEAD (PB)	50.0	51.8	104	80-120	10/26/2011	11/1/2011	#62ADO-A111026-AY47857

172

Comments: _____

Printed: 11/6/2011 10:19:21 AM
APPL Standard LCS

Laboratory Control Spike Recovery
METALS

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Method	Compound Name	Spike Level ug/L	SPK Result ug/L	SPK % Recovery	Recovery Limits	Extract Date	Analysis Date	QC Group
6020A	ANTIMONY (SB) (DISSOLVED)	50.0	46.6	93.2	80-120	10/26/2011	11/1/2011	#62ADO-AA111026-AY47858
6020A	ARSENIC (AS) (DISSOLVED)	50.0	43.1	86.2	80-120	10/26/2011	11/1/2011	#62ADO-AA111026-AY47858
6020A	COPPER (CU) (DISSOLVED)	50.0	47.6	95.2	80-120	10/26/2011	11/1/2011	#62ADO-AA111026-AY47858
6020A	LEAD (PB) (DISSOLVED)	50.0	51.8	104	80-120	10/26/2011	11/1/2011	#62ADO-AA111026-AY47858

Comments: _____

A.P.P.L. INC.
9
ICP SERIAL DILUTION

CLIENT SAMPLE NO.
X17GW0011011

Lab Name: A.P.P.L. INC. Contract: Tetra Tech NUS, Inc.

ARF No.: 65895 SDG: 65895

Matrix: water

Analysis Date: 11/1/2011 Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	%D	Q	M
Arsenic (As)	0.405705		5.177472		NA		
Copper (Cu)	2.46864		2.915108		NA		
Lead (Pb)	4.22244		3.586756		NA		
Antimony (Sb)	0.291153		12.83248		NA		

Comments:

11/1/2011 19:39 AY47857W03

11/1/2011 20:27 AY47857W03-1/5

6020/200.8 Injection Log

Directory: K:\ICP-MS Optimus\raw data output csv\

RunID	Injected		Sample Name	Misc Info	FileName	Multiplier
1	01 Nov 2011	12:46	Calibration Blank		111101A	1.
2	01 Nov 2011	12:53	111101 Standard 1		111101A	1.
3	01 Nov 2011	12:59	111101 Standard 2		111101A	1.
4	01 Nov 2011	13:05	111101 Standard 3		111101A	1.
5	01 Nov 2011	13:11	111101 Standard 4		111101A	1.
6	01 Nov 2011	13:17	ICV 111101		111101A	1.
8	01 Nov 2011	13:35	ICB 111101		111101A	1.
9	01 Nov 2011	13:41	CCV 111101		111101A	1.
10	01 Nov 2011	13:47	CCB 111101		111101A	1.
11	01 Nov 2011	13:53	ICSA 111101		111101A	1.
12	01 Nov 2011	13:59	ICSAB 111101		111101A	1.
13	01 Nov 2011	14:11	CCV 111101		111101A	1.
14	01 Nov 2011	14:23	CCB 111101		111101A	1.
18	01 Nov 2011	14:48	111026A-3015-BLK		111101A	1.
21	01 Nov 2011	15:12	111026A-3015-LCS		111101A	1.
25	01 Nov 2011	15:37	CCV 111101		111101A	1.
26	01 Nov 2011	15:49	CCB 111101		111101A	1.
51	01 Nov 2011	18:27	CCV 111101		111101A	1.
52	01 Nov 2011	18:39	CCB 111101		111101A	1.
58	01 Nov 2011	19:15	AY47853W01		111101A	1.
59	01 Nov 2011	19:21	AY47854W01		111101A	1.
60	01 Nov 2011	19:27	AY47855W03		111101A	1.
61	01 Nov 2011	19:33	AY47856W01		111101A	1.
62	01 Nov 2011	19:39	AY47857W03		111101A	1.
64	01 Nov 2011	19:51	CCV 111101		111101A	1.
65	01 Nov 2011	20:03	CCB 111101		111101A	1.
66	01 Nov 2011	20:09	AY47857W04 MS		111101A	1.
67	01 Nov 2011	20:15	AY47857W04 MSD		111101A	1.
68	01 Nov 2011	20:21	AY47857W03-A		111101A	1.
69	01 Nov 2011	20:27	AY47857W03-1/5		111101A	5.
70	01 Nov 2011	20:33	AY47858W01		111101A	1.
71	01 Nov 2011	20:39	AY47858W03 MS		111101A	1.
72	01 Nov 2011	20:45	AY47858W03 MSD		111101A	1.
73	01 Nov 2011	20:51	AY47859W01		111101A	1.
74	01 Nov 2011	20:57	AY47860W01		111101A	1.
75	01 Nov 2011	21:03	AY47861W01		111101A	1.
77	01 Nov 2011	21:15	CCV 111101		111101A	1.
78	01 Nov 2011	21:28	CCB 111101		111101A	1.

TETRA TECH NUS, INC. | CHAIN OF CUSTODY | NUMBER 2740 | PAGE ___ OF ___

3.0

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
112G00810	Stump Neck Annex	Barb Becker	610 491 9688	Sample Custodian APPL Inc
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER	PHONE NUMBER	ADDRESS
		Rod Ramser	412 921 7090	908 N Temperance Avenue
		CARRIER/WAYBILL NUMBER Federal Express Airbill NO 8744 5964 0360		CITY, STATE Clovis, CA 93611

STANDARD TAT ☐
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR 2011	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	CONTAINER TYPE PLASTIC (P) or GLASS (G)	PRESERVATIVE USED	TYPE OF ANALYSIS: Antimony Lead / Total Hydrides / Dissolved Antimony Lead / Total Antimony / Dissolved Antimony / Low Level PANs / Nitroglycerin / Total Antimony Arsenic Lead / Dissolved Antimony Arsenic Lead / Dissolved Antimony Arsenic Lead Copper	COMMENTS
10/1	0945	X16GW0021011	X16			GW	G	1	P	HNO3	1	
10/1	0945	X16GW0021011-F	X16			GW	G	1	P	HNO3	1	
10/1	1045	X16GW0011011	X16			GW	G		P	HNO3	1	
10/1	1045	X16GW0011011-F	X16			GW	G		P	HNO3	1	
10/1	1340	X17GW0010011	X17			GW	G		G	4°C	2	DO MS/MSD on Metals
10/1	1340	X17GW0011011-F	X17			GW	G		G	4°C	3	DO MS/MSD on Metals
10/1	1520	FB01-100111	FB			GW	G		P	HNO3	3	
10/1	0000	DUP03100111	DUP03			GW	G		P	HNO3	1 + cm volume	
10/1	0000	DUP03100111-F	DUP03			GW	G		P	HNO3	1 + cm w/ filter	
											1	

1. RELINQUISHED BY		DATE 10/4/11	TIME 1960	1. RECEIVED BY		DATE 10/5/11	TIME 1045
2. RELINQUISHED BY		DATE	TIME	2. RECEIVED BY		DATE	TIME
3. RELINQUISHED BY		DATE	TIME	3. RECEIVED BY		DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R
FORM NO. TtNUS-001

908 North Temperance Ave. ∇ Clovis, CA 93611 ∇ Phone 559-275-2175 ∇ Fax 559-275-4422

Certification Number: CA1312
NELAP Certification number: 05233CA
DoD-ELAP Certificate number: ADE-1410

Data Validatable Report

November 7, 2011

Tetra Tech NUS, Inc.
234 Mall Boulevard, Suite 260
King of Prussia, Pennsylvania 19406

Attn: Barbara Becker

Title: Report of Data: Case 65895

Project: 112G00810 Indian Head CTO423, RI

Contract #: Prime contract # for DoD: N62467-04-D-0055, CTO 0423
Subcontract: MSA # 1045497, WR # 06-423

Dear Ms. Becker:

Samples were received October 5, 2011, in good condition. Written results for the requested analyses are provided on this November 7, 2011.

Results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

If you have any questions or require further information, please contact your APPL Project Manager, Cynthia Clark, at your convenience. Thank you for choosing APPL, Inc.

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 above. These test results meet all requirements of NELAC and DoD QSM. Release of the hard copy has been authorized by the Laboratory Manager or her designee, as verified by the following signature.

Sharon Dehmlow, Laboratory Director
APPL, Inc.

SD/rp
Enclosure
cc: File

Number of pages in this report: 222

Sample receipt information

ARF: 65895

Project: 112G00810 Indian Head CTO423, RI

Sample Receipt Information:

The samples were received on October 5, 2011, at 3.0°C. The samples were assigned Analytical Request Form (ARF) number 65895. The sample numbers and requested analyses were compared to the chain of custody. No exception was encountered.

Sample Table

CLIENT ID	APPL ID	Matrix	Date Sampled	Date Received
X16GW0021011	AY47853	WATER	10/01/11	10/05/11
X16GW0021011-F	AY47854	WATER	10/01/11	10/05/11
X16GW0011011	AY47855	WATER	10/01/11	10/05/11
X16GW0011011-F	AY47856	WATER	10/01/11	10/05/11
X17GW0011011	AY47857	WATER	10/01/11	10/05/11
X17GW0011011-F	AY47858	WATER	10/01/11	10/05/11
FB01-100111	AY47859	WATER	10/01/11	10/05/11
DUP03100111	AY47860	WATER	10/01/11	10/05/11
DUP03100111-F	AY47861	WATER	10/01/11	10/05/11

Samples and blanks were screened for J-value responses between the detection limit (DL) and limit of quantitation (LOQ).

Laboratory control limits generated in house do not meet the control limits listed in DoD QSM 4.2 for all analytes. Laboratory control limits generated for this project meet all control limits listed in the DoD QSM 4.2 except where noted. A copy of our in house generated control limits is available upon request. In addition, a copy of our LOQ control limits, established using 7 data points, are also available upon request.

Only the portion of the injection log relative to these samples is included. A full sequence log is available upon request.

Measurement uncertainty can be reported upon request.

Case Narrative

EPA Method 8270D SIM

Semi-Volatile Organic Analysis

Sample Preparation:

The water sample was extracted according to EPA method 3510C. All holding times were met.

Sample Analysis Information:

The sample was analyzed according to the method using a Hewlett Packard Gas Chromatograph with a mass spectrometer detector in selective ion monitoring mode.

Quality Control/Assurance

Calibrations:

Initial and continuing calibrations were performed according to the method and the DoD QSM.

Blanks:

No analyte was detected above one-half the reporting limit in method blank.

Spikes:

A Laboratory Control Spike (LCS) was used for quality assurance. All LCS recoveries were acceptable.

No sample was designated by the client for MS/MSD analysis.

Surrogates

Surrogate recoveries are summarized on form 2 & 8. All surrogate recoveries were within control limits.

Tuning:

The instrument was tuned using DFTPP. All method criteria were met.

Internal Standards

The internal standard area counts were compared to the mid-point of the initial calibration according to method 8270. All recoveries met acceptance criteria.

Summary:

No problem was encountered.

EPA Method 8330B

Energetics

Sample Preparation:

The water sample was extracted according to EPA method 3535A. All holding times were met.

Analysis:

The sample was analyzed according to EPA Method 8330B using an Agilent 1100 HPLC with DA detector and an Agilent 1100 HPLC with UV detector. Manual integrations were performed in accordance to APPL's SOP. Manual integrations were performed on Waldorf for HMX in data file 1013_0000003. Chromatograms of prior to and after manual integrations are enclosed.

Quality Control/Assurance:

Spike Recovery:

A Laboratory Control Spike (LCS) was used for quality assurance. All spike acceptance criteria was met.

No s sample was designated by the client for MS/MSD analysis; however sample X17GW0011011 was selected by the laboratory or MS/MSD analysis. Nitroglycerin spike recoveries were acceptable.

Method blanks:

No target analyte was detected at or above the detection limit.

Surrogates:

Surrogate recoveries are summarized on the Form 2 & 8. All surrogates had acceptable recoveries.

Calibration:

The initial and continuing calibrations and second source were analyzed according to the method. All calibration criteria were met.

Summary:

No other analytical problem was encountered. The data generated are acceptable.

EPA Method 6020A
Metals

Digestion Information:

The water samples were digested according to EPA method 3015. All holding times were met.

Analysis Information:

Samples:

The samples were analyzed according to EPA method 6020A using an Agilent 7500CX ICP-MS.

Calibrations:

The initial and continuing calibrations were analyzed according to the DoD QSM. The initial calibration verification is prepared from a second source standard.

Blanks:

No metal was detected at or above one-half the LOQ in the method blank.

Spikes:

Laboratory Control Spikes (LCS), Matrix Spikes (MS/MSD), post digestion spikes (PDS), and dilution tests were used for quality assurance. All LCS recoveries were within the acceptance limits.

The client designated samples X17GW0011011 and X17GW0011011-F for MS/MSD analysis. In both MS/MSD, all recoveries met acceptance criteria. Sample X17GW0011011 was designated as the QC sample for the batch. In the PDS and dilution test, all acceptance criteria were met.

Summary:

No analytical exception is noted.

NSF INDIAN HEAD
WATER DATA
65895

FRACTION	CHEMICAL	DUP03100111-F	UNITS	X17GW0011011-F	RPD	D
MF	ANTIMONY	0.24	UG/L	0.92	117.24	0.68
MF	ARSENIC	0.23	UG/L	0.26	12.24	0.03
MF	LEAD	ND	UG/L	0.45 J	200.00	OK 0.45

Current RPD Quality Control Limit: 30 %.
Shaded cells indicate RPDs that exceed the applicable quality control limit.

NSF INDIAN HEAD
WATER DATA
65895

FRACTION	CHEMICAL	DUP03100111	UNITS	X17GW0011011	RPD	D
M	ANTIMONY	0.28	UG/L	0.29	3.51	0.01
M	ARSENIC	0.34	UG/L	0.41	18.67	0.07
M	LEAD	0.38 J	UG/L	4.2	166.81	3.82

Current RPD Quality Control Limit: 30 %.
Shaded cells indicate RPDs that exceed the applicable quality control limit.

COOLER RECEIPT FORM

1) Project: CT0423, 112G00810 Indian Head Date Received: 10/5/11
2) **Coolers:** Number of Coolers: 1
3) YES NO Were coolers and samples screened for radioactivity?
4) YES NO Were custody seals on outside of cooler? How many? 2 Date on seal? 10/4/11
5) Name on seal? See Label
6) YES NO NA Were custody seals unbroken and intact at the time of arrival?
7) YES NO Did the cooler come with a shipping slip (air bill, etc.)? Carrier name: Fed Ex
8) Shipping slip numbers: 1) 8744 5964 0360 2) 3)
9) YES NO NA Was the shipping slip scanned into the database?
10) YES NO NA If cooler belongs to APPL, has it been logged into the ice chest database?
11) Describe type of packing in cooler (bubble wrap, popcorn, type of ice, etc.): bubble bag, Ziploc, in wet ice
12) YES NO NA For hand delivered samples was sufficient ice present to start the cooling process?
13) YES NO Was a temperature blank included in the cooler?
14) Serial number of certified NIST thermometer used: A39267 Correction factor: 0
15) Cooler temp(s): 1) 3.0°C 2) 3) 4) 5) 6) 7) 8)

Chain of custody:

16) YES NO Was a chain of custody received?
17) YES NO Were the custody papers signed in the appropriate places?
18) YES NO Was the project identifiable from custody papers?
19) YES NO Did the chain of custody include date and time of sampling?
20) YES NO Is location where sample was taken listed on the chain of custody?

Sample Labels:

21) YES NO Were container labels in good condition?
22) YES NO Was the client ID on the label?
23) YES NO Was the date of sampling on the label?
24) YES NO Was the time of sampling on the label?
25) YES NO Did all container labels agree with custody papers?

Sample Containers:

26) YES NO Were all containers sealed in separate bags?
27) YES NO Did all containers arrive unbroken?
28) YES NO Was there any leakage from samples?
29) YES NO Were any of the lids cracked or broken?
30) YES NO Were correct containers used for the tests indicated?
31) YES NO Was a sufficient amount of sample sent for tests indicated?
32) YES NO NA Were bubbles present in volatile samples? If yes, the following were received with air bubbles:
Larger than a pea:
Smaller than a pea:

Preservation & Hold time:

33) YES NO NA Was a sufficient amount of holding time remaining to analyze the samples?
34) YES NO NA Do the sample containers contain the same preservative as what is stated on the COC?
35) YES NO NA Was the pH taken of all non-VOA preserved samples and written on the sample container?
36) YES NO NA Was the pH of acid preserved non-VOA samples < 2 & sodium hydroxide preserved samples > 12?
37) YES NO NA Unpreserved VOA Vials received?
38) YES NO NA Are unpreserved VOA vials noted in the ADD TEST FIELD on the ARF?

Lab notified if pH was not adequate:
Deficiencies:

Signature of personnel receiving samples: Second reviewer:
Signature of project manager notified: Date and Time of notification:
Name of client notified: Date and Time of notification:
Information given to client:
by whom (initials):

HOLDTIME

PROJ_NO 00810

SDG	SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
65895	EXP	%	X17GW0011011	AY47857	NM	10/01/2011	10/06/2011	10/18/2011	5	12	17
65895	EXP	UG/L	X17GW0011011	AY47857	NM	10/01/2011	10/06/2011	10/18/2011	5	12	17
65895	M	UG/L	X17GW0011011	AY47857	NM	10/01/2011	10/26/2011	11/01/2011	25	6	31
65895	M	UG/L	X16GW0021011	AY47853	NM	10/01/2011	10/26/2011	11/01/2011	25	6	31
65895	M	UG/L	X16GW0011011	AY47855	NM	10/01/2011	10/26/2011	11/01/2011	25	6	31
65895	M	UG/L	DUP03100111	AY47860	NM	10/01/2011	10/26/2011	11/01/2011	25	6	31
65895	MF	UG/L	X17GW0011011-F	AY47858	NM	10/01/2011	10/26/2011	11/01/2011	25	6	31
65895	MF	UG/L	X16GW0021011-F	AY47854	NM	10/01/2011	10/26/2011	11/01/2011	25	6	31
65895	MF	UG/L	X16GW0011011-F	AY47856	NM	10/01/2011	10/26/2011	11/01/2011	25	6	31
65895	MF	UG/L	FB01-100111	AY47859	NM	10/01/2011	10/26/2011	11/01/2011	25	6	31
65895	MF	UG/L	DUP03100111-F	AY47861	NM	10/01/2011	10/26/2011	11/01/2011	25	6	31
65895	SIM	%	X16GW0011011	AY47855	SUR	10/01/2011	10/07/2011	10/09/2011	6	2	8
65895	SIM	%	X16GW0011011	AY47855	NM	10/01/2011	10/07/2011	10/09/2011	6	2	8
65895	SIM	UG/L	X16GW0011011	AY47855	NM	10/01/2011	10/07/2011	10/09/2011	6	2	8

Injection Log

Directory: M:\LINUS\DATA\L110921\

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1	1	0921L001.D	1	SVTUNE 04-14-11		21 Sep 11 19:23
2	3	0921L003.D	1	0.1ug/ml PAH 09-21-11		21 Sep 11 20:07
3	4	0921L004.D	1	0.2ug/ml PAH		21 Sep 11 20:33
4	5	0921L005.D	1	0.5ug/ml PAH		21 Sep 11 20:59
5	6	0921L006.D	1	1.0ug/ml PAH		21 Sep 11 21:25
6	7	0921L007.D	1	5.0ug/ml PAH		21 Sep 11 21:51
7	8	0921L008.D	1	10ug/ml PAH		21 Sep 11 22:17
8	9	0921L009.D	1	50ug/ml PAH		21 Sep 11 22:43
9	10	0921L010.D	1	100ug/ml PAH		21 Sep 11 23:09
10	11	0921L011.D	1	5.0ug/ml PAH SS 9-21-11		21 Sep 11 23:35
11	1	1009L001.D	1	SVTUNE 04-14-11		9 Oct 11 12:29
12	2	1009L002.D	1	10ug/ml PAH 09-29-11		9 Oct 11 12:48
13	3	1009L003.D	1	111007A BLK 1/1000		9 Oct 11 13:13
14	4	1009L004.D	1	111007A LCS-1 1/1000		9 Oct 11 13:39
15	5	1009L005.D	0.95238	AY47855W02 1/1050		9 Oct 11 14:05

Form 5
Tune Summary

Lab Name: APPL Inc.
Case No: 65895
Matrix: Water
ID: SVTUNE 04-14-11

SDG No: 65895
Date Analyzed: 10/09/11
Instrument: Linus
Time Analyzed: 12:29

	Client Sample No.	APPL ID.	File ID.	Date Analyzed
1	Blank	111007A BLK 1/1000	1009L003.D	10/09/11 13:13
2	Lab Control Spike	111007A LCS-1 1/1000	1009L004.D	10/09/11 13:39
3	X16GW0011011	AY47865W02 1/1050	1009L005.D	10/09/11 14:05
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				

m/e		
51	29.95 - 60% of mass 198	46.1
68	0 - 2.05% of mass 69	0.0
70	0 - 2% of mass 69	0.1
127	40 - 60% of mass 198	51.9
197	0 - 1% of mass 198	0.0
198	100 - 100% of mass 198	100.0
199	5 - 9% of mass 198	7.1
275	10 - 30% of mass 198	23.3
365	1 - 100% of mass 198	2.2
441	0.01 - 100% of mass 443	74.2
442	40 - 150% of mass 198	82.0
443	17 - 23% of mass 442	19.9

8270D-LL

Form 4

Blank Summary

Lab Name: APPL, Inc. SDG No: 65895

Case No: 65895 Date Analyzed: 10/09/11

Matrix: WATER Instrument: Linus

Blank ID: 111007A-BLK Time Analyzed: 1313

APPL ID.	Client Sample No.	File ID.	Date Analyzed
111007A-BLK	Blank	1009L003	10/09/11 1313
111007A-LCS	Lab Control Spike	1009L004	10/09/11 1339
AY47855	X16GW0011011	1009L005	10/09/11 1405

Comments: Batch: #SIMDD-111007A

Method Blank

EPA 8270D LL WATER DODv3

Blank Name/QCG: **111007W-47855 - 160411**
Batch ID: **#SIMDD-111007A**

APPL Inc.
908 North Temperance Avenu
Clovis, CA 93611

Sample Type	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
BLANK	2-METHYLNAPHTHALENE	0.12 U	0.2	0.12	0.06	ug/L	10/07/11	10/09/11
BLANK	ACENAPHTHENE	0.12 U	0.2	0.12	0.06	ug/L	10/07/11	10/09/11
BLANK	ACENAPHTHYLENE	0.12 U	0.2	0.12	0.06	ug/L	10/07/11	10/09/11
BLANK	ANTHRACENE	0.10 U	0.2	0.10	0.05	ug/L	10/07/11	10/09/11
BLANK	BENZ (A) ANTHRACENE	0.14 U	0.2	0.14	0.07	ug/L	10/07/11	10/09/11
BLANK	BENZO (A) PYRENE	0.14 U	0.2	0.14	0.07	ug/L	10/07/11	10/09/11
BLANK	BENZO (B) FLUORANTHENE	0.12 U	0.2	0.12	0.06	ug/L	10/07/11	10/09/11
BLANK	BENZO (G,H,I) PERYLENE	0.16 U	0.2	0.16	0.08	ug/L	10/07/11	10/09/11
BLANK	BENZO (K) FLUORANTHENE	0.14 U	0.2	0.14	0.07	ug/L	10/07/11	10/09/11
BLANK	CHRYSENE	0.10 U	0.2	0.10	0.05	ug/L	10/07/11	10/09/11
BLANK	DIBENZ (A,H) ANTHRACENE	0.10 U	0.2	0.10	0.05	ug/L	10/07/11	10/09/11
BLANK	FLUORANTHENE	0.16 U	0.2	0.16	0.08	ug/L	10/07/11	10/09/11
BLANK	FLUORENE	0.12 U	0.2	0.12	0.06	ug/L	10/07/11	10/09/11
BLANK	INDENO (1,2,3-CD) PYRENE	0.14 U	0.2	0.14	0.07	ug/L	10/07/11	10/09/11
BLANK	NAPHTHALENE	0.10 U	0.2	0.10	0.05	ug/L	10/07/11	10/09/11
BLANK	PHENANTHRENE	0.14 U	0.2	0.14	0.07	ug/L	10/07/11	10/09/11
BLANK	PYRENE	0.16 U	0.2	0.16	0.08	ug/L	10/07/11	10/09/11
BLANK	SURROGATE: 2-FLUORBIPHENY	76.3	50-110			%	10/07/11	10/09/11
BLANK	SURROGATE: NITROBENZENE-	95.3	40-110			%	10/07/11	10/09/11
BLANK	SURROGATE: TERPHENYL-D14 (	97.9	50-135			%	10/07/11	10/09/11

Quant Method:SIM2.M
Run #:1009L003
Instrument:Linus
Sequence:L110921
Initials:LF

GC SC-Blank-REG MDLs
Printed: 10/24/11 3:37:53 PM

Laboratory Control Spike Recovery
EPA 8270D LL WATER DODv3

APPL ID: 111007W-47855 LCS - 160411
Batch ID: #SIMDD-111007A

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Level ug/L	SPK Result ug/L	SPK % Recovery	Recovery Limits
2-METHYLNAPHTHALENE	4.00	2.34	58.5	45-105
ACENAPHTHENE	4.00	2.42	60.5	45-110
ACENAPHTHYLENE	4.00	2.28	57.0	50-105
ANTHRACENE	4.00	2.61	65.3	55-110
BENZ (A) ANTHRACENE	4.00	2.88	72.0	55-110
BENZO (A) PYRENE	4.00	2.69	67.3	55-110
BENZO (B) FLUORANTHENE	4.00	2.31	57.8	45-120
BENZO (G,H,I) PERYLENE	4.00	2.73	68.3	40-125
BENZO (K) FLUORANTHENE	4.00	2.99	74.8	45-125
CHRYSENE	4.00	2.25	56.3	55-110
DIBENZ (A,H) ANTHRACENE	4.00	3.35	83.8	40-125
FLUORANTHENE	4.00	2.39	59.8	55-115
FLUORENE	4.00	2.71	67.8	50-110
INDENO (1,2,3-CD) PYRENE	4.00	3.07	76.8	45-125
NAPHTHALENE	4.00	2.25	56.3	40-100
PHENANTHRENE	4.00	2.52	63.0	50-115
PYRENE	4.00	2.02	50.5	50-130
SURROGATE: 2-FLUORBIPHENYL (S)	2.00	1.82	91.0	50-110
SURROGATE: NITROBENZENE-D5 (S)	2.00	1.69	84.5	40-110
SURROGATE: TERPHENYL-D14 (S)	2.00	2.04	102	50-135

Comments: _____

Primary	SPK
Quant Method :	SIM2.M
Extraction Date :	10/07/11
Analysis Date :	10/09/11
Instrument :	Linus
Run :	1009L004
Initials :	LF

Printed: 10/24/11 3:47:21 PM

APPL Standard LCS

Form 2 & 8

Surrogate Recovery

Lab Name: APPL, Inc. SDG No: 65895

Case No: 65895 Date Analyzed: 10/09/11

Matrix: WATER Instrument: Linus

APPL ID.	Client Sample No.	SURROGATE: 2-FLUORBIPHENYL (S)			SURROGATE: NITROBENZENE-D5 (S)		
		Limits	Result	Qualifier	Limits	Result	Qualifier
111007A-BLK	Blank	50-110	76.3		40-110	95.3	
111007A-LCS	Lab Control Spike	50-110	91.0		40-110	84.5	
AY47855	X16GW0011011	50-110	84.9		40-110	98.8	

Comments: Batch: #SIMDD-111007A

Form 2 & 8

Surrogate Recovery

Lab Name: APPL, Inc. SDG No: 65895

Case No: 65895 Date Analyzed: 10/09/11

Matrix: WATER Instrument: Linus

APPL ID.	Client Sample No.	SURROGATE: TERPHENYL-D14 (S)					
		Limits	Result	Qualifier	Limits	Result	Qualifier
111007A-BLK	Blank	50-135	97.9				
111007A-LCS	Lab Control Spike	50-135	102				
AY47855	X16GW0011011	50-135	103				

Comments: Batch: #SIMDD-111007A

EPA 8270C SIM

Form 6
Initial Calibration

Lab Name: APPL, Inc. SDG No: 65895
Case No: Initial Cal. Date: 09/21/11
Matrix: Instrument: Linus
Initials:

		Compound	0.1	0.2	0.5	1	5	10	50	100			Avg	%RSD		
			0321L003.D	0321L004.D	0321L005.D	0321L006.D	0321L007.D	0321L008.D	0321L009.D	0321L010.D						
1	I	Naphthalene-D8(IS)														
2	SL	Surrogate Recovery (NBZ)		0.4008	0.2280	0.1787	0.2494	0.2725	0.2789	0.2813			0.27	25	SL	1.00
3	TM	Naphthalene	2.157	2.196	1.897	2.276	2.037	2.122	1.776	1.762			2.0	9.6	TM	
4	TM	2-Methylnaphthalene	1.111	1.086	1.147	1.238	1.255	1.318	1.165	1.219			1.2	6.6	TM	
5	TM	1-Methylnaphthalene	1.145	1.420	1.381	1.525	1.311	1.237	1.091	1.116			1.3	12	TM	
6	I	Acenaphthene-D10(IS)														
7	S	Surrogate Recovery (FBP)	1.573	1.778	1.585	1.603	1.583	1.653	1.407	1.325			1.6	9.0	S	
8	TM	Acenaphthylene	3.997	4.505	4.045	4.103	4.057	4.137	3.556	3.302			4.0	9.4	TM	
9	*TM	Acenaphthene	2.523	2.456	2.447	2.439	2.408	2.336	2.022	2.045			2.3	8.3	*TM	
10	TM	Fluorene	2.720	2.846	2.812	2.692	2.744	2.805	2.357	2.356			2.7	7.4	TM	
11	I	Phenanthrene-D10(IS)														
12	TM	Phenanthrene	2.316	2.199	2.240	2.141	2.575	2.546	2.112	2.143			2.3	8.0	TM	
13	TM	Anthracene	3.119	2.495	2.570	2.468	2.679	2.601	2.018	2.132			2.5	13	TM	
14	*TM	Fluoranthene	4.606	4.262	4.190	4.040	4.429	4.410	3.783	3.528			4.2	8.6	*TM	
15	I	Chrysene-D12(IS)														
16	TM	Pyrene	3.512	3.742	3.547	3.417	2.998	2.950	2.375				3.2	15	TM	
17	S	Surrogate Recovery (TPH)	1.020	0.8327	0.8506	0.8574	0.7514	0.7758	0.6975	0.6333			0.80	15	S	
18	TM	Benz (a) anthracene	1.926	1.723	1.797	1.530	1.865	1.886	1.850	1.920			1.8	7.3	TM	
19	TM	Chrysene	2.736	2.422	2.629	2.750	2.191	2.296	1.941	1.922			2.4	14	TM	
20	TM	Indeno (1,2,3-cd) pyrene	1.284	1.618	1.350	1.389	1.287	1.346	1.483	1.608			1.4	9.4	TM	
21	I	Perylene-D12(IS)														
22	TM	Benzo (b) fluoranthene	1.845	1.842	1.732	1.803	1.666	1.787	2.067	2.307			1.9	11	TM	
23	TM	Benzo (k) fluoranthene	2.818	2.636	2.555	2.673	2.620	2.834	2.006	2.049			2.5	13	TM	
24	*TM	Benzo (a) pyrene	1.944	1.930	2.046	2.093	2.014	2.082	1.924	1.861			2.0	4.2	*TM	
25	TM	Dibenz (a,h) anthracene	1.266	1.261	1.238	1.249	1.153	1.205	1.340	1.406			1.3	6.2	TM	
26	TM	Benzo (g,h,i) perylene	1.555	1.842	1.766	1.700	1.366	1.515	1.530	1.570			1.6	9.6	TM	
27																
28																
29																
30																
31																
32																
33																
34																
35																

Form 7

Second Source Calibration

Lab Name: APPL, Inc.
Case No:
Matrix:

SDG No: 65845
Date Analyzed: 09/21/11
Instrument: Linus
Initial Cal. Date: 09/21/11
Data File: 0921L011.D

		Compound	MEAN	CCRF	%D		%Drift
1	I	Napthalene-D8(IS)	ISTD			I	
2	TM	Naphthalene	2.028	1.972	2.8	TM	
3	TM	2-Methylnaphthalene	1.192	1.215	1.9	TM	
4	TM	1-Methylnaphthalene	1.278	1.303	1.9	TM	
5	I	Acenaphthene-D10(IS)	ISTD			I	
6	TM	Acenaphthylene	3.963	3.853	2.8	TM	
7	*TM	Acenaphthene	2.335	2.286	2.1	*TM	
8	TM	Fluorene	2.666	2.612	2.0	TM	
9	I	Phenanthrene-D10(IS)	ISTD			I	
10	TM	Phenanthrene	2.284	2.251	1.4	TM	
11	TM	Anthracene	2.510	2.363	5.9	TM	
12	*TM	Fluoranthene	4.156	3.841	7.6	*TM	
13	I	Chrysene-D12(IS)	ISTD			I	
14	TM	Pyrene	3.220	2.914	9.5	TM	
15	TM	Benz (a) anthracene	1.812	1.952	7.7	TM	
16	TM	Chrysene	2.361	2.253	4.6	TM	
17	TM	Indeno (1,2,3-cd) pyrene	1.421	1.590	12	TM	
18	I	Perylene-D12(IS)	ISTD			I	
19	TM	Benzo (b) fluoranthene	1.881	1.865	0.87	TM	
20	TM	Benzo (k) fluoranthene	2.524	2.659	5.3	TM	
21	*TM	Benzo (a) pyrene	1.987	2.244	13	*TM	
22	TM	Dibenz (a,h) anthracene	1.267	1.424	12	TM	
23	TM	Benzo (g,h,i) perylene	1.606	1.687	5.1	TM	
24							
25							
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							
		Average			5.5		

Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix:

SDG No: 6CW15
Date Analyzed: 9 Oct 11 12:48
Instrument: Linus
Initial Cal. Date: 09/21/11
Data File: 1009L002.D

		Compound	MEAN	CCRF	%D		%Drift
1	I	Napthalene-D8(IS)	ISTD			I	
2	SL	Surrogate Recovery (NBZ)	0.2699	0.3047	13	SL	14
3	TM	Naphthalene	2.028	1.646	19	TM	
4	TM	2-Methylnaphthalene	1.192	1.141	4.3	TM	
5	TM	1-Methylnaphthalene	1.276	1.144	11	TM	
6	I	Acenaphthene-D10(IS)	ISTD			I	
7	S	Surrogate Recovery (FBP)	1.563	1.651	5.6	S	
8	TM	Acenaphthylene	3.963	3.549	10	TM	
9	*TM	Acenaphthene	2.335	2.059	12	*TM	
10	TM	Fluorene	2.666	2.359	12	TM	
11	I	Phenanthrene-D10(IS)	ISTD			I	
12	TM	Phenanthrene	2.284	2.021	12	TM	
13	TM	Anthracene	2.510	2.145	15	TM	
14	*TM	Fluoranthene	4.156	3.546	15	*TM	
15	I	Chrysene-D12(IS)	ISTD			I	
16	TM	Pyrene	3.220	2.720	16	TM	
17	S	Surrogate Recovery (TPH)	0.8023	0.7898	1.6	S	
18	TM	Benz (e) anthracene	1.812	1.864	2.9	TM	
19	TM	Chrysene	2.361	2.070	12	TM	
20	TM	Indeno (1,2,3-cd) pyrene	1.421	1.521	7.1	TM	
21	I	Perylene-D12(IS)	ISTD			I	
22	TM	Benzo (b) fluoranthene	1.881	1.572	16	TM	
23	TM	Benzo (k) fluoranthene	2.524	2.221	12	TM	
24	*TM	Benzo (a) pyrene	1.987	1.832	7.8	*TM	
25	TM	Dibenz (a,h) anthracene	1.267	1.428	13	TM	
26	TM	Benzo (g,h,i) perylene	1.606	1.446	9.9	TM	
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							
		Average			10.8		

8A
INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: APPL Inc. Contract: Review

Lab Code: SDG No.: 65895

Lab File ID (Standard): 0921L007.D Date Analyzed: 09/21/11

Instrument ID: Linus Time Analyzed: 21:51

GC Column: ID: Heated Purge: (Y/N)

		Napthalene-D8(IS)		Acenaphthene-D10(IS)		Phenanthrene-D10(IS)	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	1616	6.12	743	8.13	1026	9.87
	UPPER LIMIT	3232	6.62	1486	8.63	2052	10.37
	LOWER LIMIT	808	5.62	372	7.63	513	9.37
	SAMPLE NO.						
01	111007A BLK 1/1000	1550	6.12	804	8.12	1710	9.87
02	111007A LCS-1 1/1000	1519	6.12	803	8.12	1413	9.86
03	AY47855W02 1/1050	1673	6.12	783	8.12	1515	9.86
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = -50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

8A
INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: APPL Inc. Contract: Review

Lab Code: SDG No.: 65895

Lab File ID (Standard): 0921L007.D Date Analyzed: 09/21/11

Instrument ID: Linus Time Analyzed: 21:51

GC Column: ID: Heated Purge: (Y/N)

		Chrysene-D12(IS)		Perylene-D12(IS)			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	1571	12.96	1247	14.59		
	UPPER LIMIT	3142	13.46	2494	15.09		
	LOWER LIMIT	786	12.46	624	14.09		
	SAMPLE NO.						
01	111007A BLK 1/1000	2116	12.96	1736	14.61		
02	111007A LCS-1 1/1000	2157	12.96	1716	14.59		
03	AY47855W02 1/1050	2032	12.96	1697	14.61		
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = -50% of internal standard area.
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

EPA 8330B

Form 4

Blank Summary

Lab Name: APPL, Inc. SDG No: 65895

Case No: 65895 Date Analyzed: 10/18/2011

Matrix: WATER Instrument: Waldorf

Blank ID: 111006AA-BLK Time Analyzed: 0046

APPL ID.	Client Sample No.	File ID.	Date Analyzed
111006AA-LCS	Lab Control Spike	1017_0000020	10/17/2011 2149
111006AA-MS	Matrix Spike	1017_0000023	10/17/2011 2332
111006AA-MSD	Matrix SpikeD	1017_0000024	10/18/2011 0009
111006AA-BLK	Blank	1017_0000025	10/18/2011 0046
AY47857	X17GW0011011	1017_0000040	10/18/2011 0948

Comments: Batch: #833BW-111006AA

Printed: 11/2/2011 1:59:20 PM
Form 4, Blank Summary

Method Blank

EPA 8330B EXPLOSIVES-WATER

Blank Name/QCG: **111006W-47857 - 160737**
Batch ID: #833BW-111006AA

APPL Inc.
908 North Temperance Avenu
Clovis, CA 93611

Sample Type	Analyte	Result	LOQ	LOD	DL	Units	Extraction Date	Analysis Date
BLANK	NITROGLYCERIN	0.260 U	0.50	0.260	0.130	ug/L	10/6/2011	10/18/2011
BLANK	SURROGATE: 1,2-DINITROBENZ	80.1	70-130			%	10/6/2011	10/18/2011

Quant Method:W110907.M
Run #:1017_000002
Instrument:Waldorf
Sequence:111017
Initials:RSM

GC SC-Blank-REG MDLs
Printed: 11/2/2011 1:59:15 PM

Laboratory Control Spike Recovery
EPA 8330B EXPLOSIVES-WATER

APPL ID: 111006W-47857 LCS - 160737
Batch ID: #833BW-111006AA

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Level ug/L	SPK Result ug/L	SPK % Recovery	Recovery Limits
NITROGLYCERIN	8.00	8.78	110	70-130
SURROGATE: 1,2-DINITROBENZENE (S)	8.00	7.22	90.3	70-130

Comments: _____

Primary	SPK
Quant Method :	W110907.M
Extraction Date :	10/6/2011
Analysis Date :	10/17/2011
Instrument :	Waldorf
Run :	1017_0000020
Initials :	RSM

Printed: 11/2/2011 1:59:16 PM

APPL Standard LCS

Matrix Spike Recoveries

EPA 8330B EXPLOSIVES-WATER

APPL ID: **111006W-47857 MS - 160737**
Batch ID: #833BW-111006AA
Sample ID: AY47857
Client ID: X17GW0011011

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Lvl ug/L	Matrix Result ug/L	SPK Result ug/L	DUP Result ug/L	SPK % Recovery	DUP % Recovery	Recovery Limits	RPD %	RPD Limits
NITROGLYCERIN	8.00	ND	7.42	8.61	92.8	108	70-130	14.8	20
SURROGATE: 1,2-DINITROBENZENE (S)	8.00	NA	6.36	7.22	79.5	90.3	70-130		

Comments: _____

Primary	SPK	DUP
Quant Method :	W110907.M	W110907.M
Extraction Date :	10/6/2011	10/6/2011
Analysis Date :	10/17/2011	10/18/2011
Instrument :	Waldorf	Waldorf
Run :	1017_0000023	1017_0000024
Initials :	RSM	

Printed: 11/2/2011 1:59:18 PM
APPL MSD SCII

Form 2 & 8

Surrogate Recovery

Lab Name: APPL, Inc. SDG No: 65895

Case No: 65895 Date Analyzed: 10/17/2011

Matrix: WATER Instrument: Waldorf

APPL ID.	Client Sample No.	SURROGATE: 1,2-DINITROBENZENE (S)					
		Limits	Result	Qualifier	Limits	Result	Qualifier
111006AA-LCS	Lab Control Spike	70-130	90.3				
AY47857-MS	Matrix Spike	70-130	79.5				
AY47857-MSD	Matrix SpikeD	70-130	90.3				
111006AA-BLK	Blank	70-130	80.1				
AY47857	X17GW0011011	70-130	83.8				

Comments: Batch: #833BW-111006AA

Printed: 11/2/2011 1:59:19 PM

Form 2 & 8, Surrogate Recovery Summary

Injection Log

Directory: H:\WALDORF\CHEM32\1\DATA\111013

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1	0	1013_0000003.D		8830B_CB 0.005 PPM 10/13/11		10/13/2011 15:57
2	0	1013_0000004.D		8830B_CB 0.01 PPM 10/13/11		10/13/2011 16:34
3	0	1013_0000005.D		8830B_CB 0.02 PPM 10/13/11		10/13/2011 17:12
4	0	1013_0000006.D		8830B_CB 0.05 PPM 10/13/11		10/13/2011 17:49
5	0	1013_0000007.D		8830B_CB 0.1 PPM 10/13/11		10/13/2011 18:26
6	0	1013_0000008.D		8830B_CB 0.2 PPM 10/13/11		10/13/2011 19:04
7	0	1013_0000009.D		8830B_CB 0.5 PPM 10/13/11		10/13/2011 19:41
8	0	1013_0000010.D		8830B_CB 1.0 PPM 10/13/11		10/13/2011 20:19
9	0	1013_0000011.D		8830B_MX-A 2.0 PPM 10/13/11		10/13/2011 20:56
10	0	1013_0000012.D		8830B_MX-B 2.0 PPM 10/13/11		10/13/2011 21:34
11	0	1013_0000014.D		8830B_SS 1.0 PPM 10/13/11		10/13/2011 22:49
12	0	1017_0000015.D		8330_CCV 1.0 PPM 10/13/11		10/17/2011 18:52
13	0	1017_0000020.D	0.016	111006WLCB1A 0.016 DF 10/06/11	water	10/17/2011 21:49
14	0	1017_0000023.D	0.016	AY47857W02_MS-1 0.016 DF 10/06/11	water	10/17/2011 23:32
15	0	1017_0000024.D	0.016	AY47857W02_MSD-1 0.016 DF 10/06/11	water	10/18/2011 00:09
16	0	1017_0000025.D	0.016	111006WBLK1A 0.016 DF 10/06/11	water	10/18/2011 00:46
17	0	1017_0000028.D		8330_CCV 1.0 PPM 10/17/11		10/18/2011 02:39
18	0	1017_0000039.D		8330_CCV 1.0 PPM 10/17/11		10/18/2011 09:21
19	0	1017_0000040.D	0.016	AY47857W01 0.016 DF 10/06/11	water	10/18/2011 09:48
20	0	1017_0000050.D		8330_CCV 1.0 PPM 10/17/11		10/18/2011 16:03

Waldorf-8330B
W110907.M

Form 6
Initial Calibration

Lab Name: APPL, Inc. SDG No: 65895
Case No: Initial Cal. Date: 10/13/2011
Matrix: Instrument: Waldorf Initials: HM

1013_0000003.D 1013_0000004.D 1013_0000005.D 1013_0000006.D 1013_0000007.D 1013_0000008.D 1013_0000009.D 1013_0000010.D 1013_0000012.D

		Compound	1	2	3	4	5	6	7	8	9		Avg	%RSD		
1	TM	NITROGLYCERIN	145	137	147	119	138	138	142	139	137		138	5.8	TM	
2	TM	PETN			93.1	96.7	114	119	125	123	123		113	12	TM	
		Signal #2														
1	TM	HMX #2	601	677	575	614	705	641	726	707	685		659	8.1	TM	
2	TM	RDX #2	408	459	376	401	462	413	476	470	463		437	8.5	TM	
3	TM	1,3,5-TRINITROBENZENE #2	703	782	648	687	789	716	819	807	803		750	8.3	TM	
4	S	1,2-DINITROBENZENE #2	315	341	283	294	339	308	351	351	355		326	8.2	S	
5	TM	1,3-DINITROBENZENE #2	671	756	626	651	757	686	780	780	781		721	8.6	TM	
6	TM	3,5-DINITROANILINE #2	524	584	546	531	605	602	632	624	622		586	7.1	TM	
7	TM	NITROBENZENE #2	302	343	301	293	347	314	352	357	357		329	8.1	TM	
8	TM	TETRYL #2	225	245	206	220	251	232	264	261	263		241	8.7	TM	
9	TM	2,4,6-TRINITROTOLUENE #2	310	338	281	298	339	312	353	348	348		325	7.9	TM	
10	TM	2-AMINO-4,6-DINITROTOLUENE	284	310	261	276	315	290	330	325	325		302	8.2	TM	
11	TM	4-AMINO-2,6-DINITROTOLUENE	227	247	207	220	250	230	261	256	254		239	7.8	TM	
12	TM	2,4-DINITROTOLUENE #2	288	324	270	282	324	299	337	336	336		311	8.4	TM	
13	TM	2,6-DINITROTOLUENE #2	169	181	153	158	182	168	188	188	187		175	7.7	TM	
14	TM	2-NITROTOLUENE #2	117	124	104	108	125	115	128	129	129		120	8.0	TM	
15	TM	4-NITROTOLUENE #2	111	121	103	106	123	113	126	128	127		118	8.2	TM	
16	TM	3-NITROTOLUENE #2	137	147	123	128	149	137	152	154	154		142	8.2	TM	

Form 7

Second Source Calibration

Lab Name: APPL, Inc.
Case No:
Matrix:

SDG No: G5895
Date Analyzed: 13-Oct-2011, 22:49:00
Instrument: Waldorf
Initial Cal. Date: 10/13/2011
Data File: 1013_0000014.D

		Compound	MEAN	CCRF	%D		%Drift
1	TM	NITROGLYCERIN	138	134	2.8	TM	
2	TM	TETRYL	0.0000	0.0000		TM	
3	TM	2,4,6-TRINITROTOLUENE	0.0000	0.0000		TM	
4	TM	2-AMINO-4,6-DINITROTOLUENE	0.0000	0.0000		TM	
5	TM	4-AMINO-2,6-DINITROTOLUENE	0.0000	0.0000		TM	
6	TM	2,4-DINITROTOLUENE	0.0000	0.0000		TM	
7	TM	2,6-DINITROTOLUENE	0.0000	0.0000		TM	
8	TM	PETN	113	120	6.3	TM	
	Signal #2						
1	TM	HMX	659	642	2.5	TM	
2	TM	RDX	437	423	3.2	TM	
3	TM	1,3,5-TRINITROBENZENE	750	668	11	TM	
4	S	1,2-DINITROBENZENE	328	309	5.2	S	
5	TM	1,3-DINITROBENZENE	721	722	0.16	TM	
6	TM	3,5-DINITROANILINE	586	611	4.3	TM	
7	TM	NITROBENZENE	329	324	1.5	TM	
8	TM	NITROGLYCERIN	0.0000	0.0000		TM	
9	TM	TETRYL	241	205	15	TM	
10	TM	2,4,6-TRINITROTOLUENE	325	285	12	TM	
11	TM	2-AMINO-4,6-DINITROTOLUEN	302	266	12	TM	
12	TM	4-AMINO-2,6-DINITROTOLUEN	239	252	5.4	TM	
13	TM	2,4-DINITROTOLUENE	311	320	3.0	TM	
14	TM	2,6-DINITROTOLUENE	175	163	6.6	TM	
15	TM	2-NITROTOLUENE	120	115	3.8	TM	
16	TM	4-NITROTOLUENE	118	108	8.1	TM	
17	TM	3-NITROTOLUENE	142	143	0.65	TM	
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Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix:

SDG No: G5895
Date Analyzed: 17-Oct-2011, 18:52:23
Instrument: Waldorf
Initial Cal. Date: 10/13/2011
Data File: 1017_0000015.D

		Compound	MEAN	CCRF	%D		%Drift
1	TM	NITROGLYCERIN	137	132	3.2	TM	
2	TM	TETRYL	0.0000	0.0000		TM	
3	TM	2,4,6-TRINITROTOLUENE	0.0000	0.0000		TM	
4	TM	2-AMINO-4,6-DINITROTOLUENE	0.0000	0.0000		TM	
5	TM	4-AMINO-2,6-DINITROTOLUENE	0.0000	0.0000		TM	
6	TM	2,4-DINITROTOLUENE	0.0000	0.0000		TM	
7	TM	2,6-DINITROTOLUENE	0.0000	0.0000		TM	
8	TM	PETN	111	116	4.7	TM	
	Signal #2						
1	TM	HMX	671	692	3.2	TM	
2	TM	RDX	449	466	3.7	TM	
3	TM	1,3,5-TRINITROBENZENE	775	815	5.2	TM	
4	S	1,2-DINITROBENZENE	348	356	2.5	S	
5	TM	1,3-DINITROBENZENE	747	774	3.6	TM	
6	TM	3,5-DINITROANILINE	573	594	3.7	TM	
7	TM	NITROBENZENE	323	289	10	TM	
8	TM	NITROGLYCERIN	0.0000	0.0000		TM	
9	TM	TETRYL	260	263	5.4	TM	
10	TM	2,4,6-TRINITROTOLUENE	335	347	3.6	TM	
11	TM	2-AMINO-4,6-DINITROTOLUEN	310	319	3.0	TM	
12	TM	4-AMINO-2,6-DINITROTOLUEN	245	251	2.5	TM	
13	TM	2,4-DINITROTOLUENE	321	332	3.2	TM	
14	TM	2,6-DINITROTOLUENE	181	184	2.0	TM	
15	TM	2-NITROTOLUENE	116	97.9	16	TM	
16	TM	4-NITROTOLUENE	118	106	9.6	TM	
17	TM	3-NITROTOLUENE	139	121	13	TM	
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Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix:

SDG No: 65895
Date Analyzed: 18-Oct-2011, 02:39:17
Instrument: Waldorf
Initial Cal. Date: 10/13/2011
Data File: 1017_0000028.D

		Compound	MEAN	CCRF	%D		%Drift
1	TM	NITROGLYCERIN	137	132	3.1	TM	
2	TM	TETRYL	0.0000	0.0000		TM	
3	TM	2,4,6-TRINITROTOLUENE	0.0000	0.0000		TM	
4	TM	2-AMINO-4,6-DINITROTOLUENE	0.0000	0.0000		TM	
5	TM	4-AMINO-2,6-DINITROTOLUENE	0.0000	0.0000		TM	
6	TM	2,4-DINITROTOLUENE	0.0000	0.0000		TM	
7	TM	2,6-DINITROTOLUENE	0.0000	0.0000		TM	
8	TM	PETN	111	116	5.2	TM	
	Signal #2						
1	TM	HMX	671	685	2.2	TM	
2	TM	RDX	449	459	2.1	TM	
3	TM	1,3,5-TRINITROBENZENE	775	801	3.3	TM	
4	S	1,2-DINITROBENZENE	348	349	0.46	S	
5	TM	1,3-DINITROBENZENE	747	764	2.2	TM	
6	TM	3,5-DINITROANILINE	573	593	3.4	TM	
7	TM	NITROBENZENE	323	350	8.5	TM	
8	TM	NITROGLYCERIN	0.0000	0.0000		TM	
9	TM	TETRYL	260	262	4.9	TM	
10	TM	2,4,6-TRINITROTOLUENE	336	343	2.2	TM	
11	TM	2-AMINO-4,6-DINITROTOLUEN	310	315	1.9	TM	
12	TM	4-AMINO-2,6-DINITROTOLUEN	246	248	1.3	TM	
13	TM	2,4-DINITROTOLUENE	321	328	2.1	TM	
14	TM	2,6-DINITROTOLUENE	181	183	1.5	TM	
15	TM	2-NITROTOLUENE	116	127	8.8	TM	
16	TM	4-NITROTOLUENE	118	125	6.3	TM	
17	TM	3-NITROTOLUENE	139	151	8.2	TM	
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Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix:

SDG No: 65895
Date Analyzed: 18-Oct-2011, 09:21:13
Instrument: Waldorf
Initial Cal. Date: 10/13/2011
Data File: 1017_0000039.D

		Compound	MEAN	CCRF	%D		%Drift
1	TM	NITROGLYCERIN	137	132	3.2	TM	
2	TM	TETRYL	0.0000	0.0000		TM	
3	TM	2,4,6-TRINITROTOLUENE	0.0000	0.0000		TM	
4	TM	2-AMINO-4,6-DINITROTOLUENE	0.0000	0.0000		TM	
5	TM	4-AMINO-2,6-DINITROTOLUENE	0.0000	0.0000		TM	
6	TM	2,4-DINITROTOLUENE	0.0000	0.0000		TM	
7	TM	2,6-DINITROTOLUENE	0.0000	0.0000		TM	
8	TM	PETN	111	116	5.0	TM	
	Signal #2						
1	TM	HMX	671	684	2.0	TM	
2	TM	RDX	449	458	2.1	TM	
3	TM	1,3,5-TRINITROBENZENE	775	802	3.5	TM	
4	S	1,2-DINITROBENZENE	348	350	0.63	S	
5	TM	1,3-DINITROBENZENE	747	763	2.1	TM	
6	TM	3,5-DINITROANILINE	573	592	3.3	TM	
7	TM	NITROBENZENE	323	346	7.0	TM	
8	TM	NITROGLYCERIN	0.0000	0.0000		TM	
9	TM	TETRYL	250	262	4.7	TM	
10	TM	2,4,6-TRINITROTOLUENE	335	342	2.1	TM	
11	TM	2-AMINO-4,6-DINITROTOLUEN	310	316	1.6	TM	
12	TM	4-AMINO-2,6-DINITROTOLUEN	245	248	1.2	TM	
13	TM	2,4-DINITROTOLUENE	321	328	1.9	TM	
14	TM	2,6-DINITROTOLUENE	161	163	1.3	TM	
15	TM	2-NITROTOLUENE	116	125	7.2	TM	
16	TM	4-NITROTOLUENE	118	124	5.4	TM	
17	TM	3-NITROTOLUENE	139	149	7.0	TM	
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Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix:

SDG No: G5895
Date Analyzed: 18-Oct-2011, 16:03:13
Instrument: Waldorf
Initial Cal. Date: 10/13/2011
Data File: 1017_0000050.D

		Compound	MEAN	CCRF	%D		%Drift
1	TM	NITROGLYCERIN	137	132	3.6	TM	
2	TM	TETRYL	0.0000	0.0000		TM	
3	TM	2,4,6-TRINITROTOLUENE	0.0000	0.0000		TM	
4	TM	2-AMINO-4,6-DINITROTOLUENE	0.0000	0.0000		TM	
5	TM	4-AMINO-2,6-DINITROTOLUENE	0.0000	0.0000		TM	
6	TM	2,4-DINITROTOLUENE	0.0000	0.0000		TM	
7	TM	2,6-DINITROTOLUENE	0.0000	0.0000		TM	
8	TM	PETN	111	116	4.0	TM	
	Signal #2						
1	TM	HMX	671	663	1.9	TM	
2	TM	RDX	449	458	2.0	TM	
3	TM	1,3,5-TRINITROBENZENE	775	800	3.2	TM	
4	S	1,2-DINITROBENZENE	348	350	0.49	S	
5	TM	1,3-DINITROBENZENE	747	761	1.8	TM	
6	TM	3,5-DINITROANILINE	573	589	2.8	TM	
7	TM	NITROBENZENE	323	339	5.0	TM	
8	TM	NITROGLYCERIN	0.0000	0.0000		TM	
9	TM	TETRYL	250	260	4.0	TM	
10	TM	2,4,6-TRINITROTOLUENE	335	340	1.5	TM	
11	TM	2-AMINO-4,6-DINITROTOLUEN	310	312	0.77	TM	
12	TM	4-AMINO-2,6-DINITROTOLUEN	246	246	0.28	TM	
13	TM	2,4-DINITROTOLUENE	321	325	1.2	TM	
14	TM	2,6-DINITROTOLUENE	181	181	0.49	TM	
15	TM	2-NITROTOLUENE	116	122	4.5	TM	
16	TM	4-NITROTOLUENE	118	122	3.4	TM	
17	TM	3-NITROTOLUENE	139	145	4.5	TM	
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Table D-1
Qualified Analytical Results Database
Indian Head MRP Phase II SI Report
Indian Head, Maryland

sample_id	parameter	fraction	val_res	val_qual	detect	qual_cod	units	val_leve	sdg	lab_resul	lab_unit	lab_q	rl	rl_type	dil_factor
FB01-100111	ANTIMONY	MF	0.34	J	Y	G	UG/L	F	65895	0.34	UG/L		0.2	PQL	1
FB01-100111	ARSENIC	MF	0.13	J	Y	P	UG/L	F	65895	0.13	UG/L	J	0.2	PQL	1
FB01-100111	COPPER	MF	1		Y		UG/L	F	65895	1	UG/L		0.5	PQL	1
FB01-100111	LEAD	MF	0.22	U	N		UG/L	F	65895	0.11	UG/L	U	0.5	PQL	1
X14GW0010911	2-METHYLNAPHTHALENE	PAH	0.12	U	N		UG/L	F	65882	0.06	ug/L	U	0.2	PQL	1
X14GW0010911	ACENAPHTHENE	PAH	0.12	U	N		UG/L	F	65882	0.06	ug/L	U	0.2	PQL	1
X14GW0010911	ACENAPHTHYLENE	PAH	0.12	U	N		UG/L	F	65882	0.06	ug/L	U	0.2	PQL	1
X14GW0010911	ANTHRACENE	PAH	0.1	U	N		UG/L	F	65882	0.05	ug/L	U	0.2	PQL	1
X14GW0010911	ANTIMONY	M	0.55		Y		UG/L	F	65882	0.55	ug/L		0.2	PQL	1
X14GW0010911	ANTIMONY	MF	0.1	B	N	A	UG/L	F	65882	0.1	ug/L	J	0.2	PQL	1
X14GW0010911	BENZO(A)ANTHRACENE	PAH	0.14	U	N		UG/L	F	65882	0.07	ug/L	U	0.2	PQL	1
X14GW0010911	BENZO(A)PYRENE	PAH	0.12	U	N		UG/L	F	65882	0.06	ug/L	U	0.2	PQL	1
X14GW0010911	BENZO(B)FLUORANTHENE	PAH	0.12	U	N		UG/L	F	65882	0.06	ug/L	U	0.2	PQL	1
X14GW0010911	BENZO(G,H,I)PERYLENE	PAH	0.16	U	N		UG/L	F	65882	0.08	ug/L	U	0.2	PQL	1
X14GW0010911	BENZO(K)FLUORANTHENE	PAH	0.14	U	N		UG/L	F	65882	0.07	ug/L	U	0.2	PQL	1
X14GW0010911	CHRYSENE	PAH	0.1	U	N		UG/L	F	65882	0.05	ug/L	U	0.2	PQL	1
X14GW0010911	COPPER	M	5.1		Y		UG/L	F	65882	5.1	ug/L		0.5	PQL	1
X14GW0010911	COPPER	MF	5.6		Y		UG/L	F	65882	5.6	ug/L		0.5	PQL	1
X14GW0010911	DIBENZO(A,H)ANTHRACENE	PAH	0.1	U	N		UG/L	F	65882	0.05	ug/L	U	0.2	PQL	1
X14GW0010911	FLUORANTHENE	PAH	0.16	U	N		UG/L	F	65882	0.08	ug/L	U	0.2	PQL	1
X14GW0010911	FLUORENE	PAH	0.12	U	N		UG/L	F	65882	0.06	ug/L	U	0.2	PQL	1
X14GW0010911	INDENO(1,2,3-CD)PYRENE	PAH	0.14	U	N		UG/L	F	65882	0.07	ug/L	U	0.2	PQL	1
X14GW0010911	NAPHTHALENE	PAH	0.1	U	N		UG/L	F	65882	0.05	ug/L	U	0.2	PQL	1
X14GW0010911	NITROGLYCERIN	EXP	0.26	UR	R	H	UG/L	F	65882	0.13	ug/L	U	0.5	PQL	1
X14GW0010911	PHENANTHRENE	PAH	0.14	U	N		UG/L	F	65882	0.07	ug/L	U	0.2	PQL	1
X14GW0010911	PYRENE	PAH	0.16	U	N		UG/L	F	65882	0.08	ug/L	U	0.2	PQL	1
X14GW0020911	COPPER	M	1.5		Y		UG/L	F	65882	1.5	ug/L		0.5	PQL	1
X14GW0020911	COPPER	MF	0.54		Y		UG/L	F	65882	0.54	ug/L		0.5	PQL	1
X14GW0020911	LEAD	M	0.67		Y		UG/L	F	65882	0.67	ug/L		0.5	PQL	1
X14GW0020911	LEAD	MF	0.22	U	N		UG/L	F	65882	0.11	ug/L	U	0.5	PQL	1
X14GW0040911	COPPER	M	8.4		Y		UG/L	F	65882	8.4	ug/L		0.5	PQL	1
X14GW0040911	COPPER	MF	5.4		Y		UG/L	F	65882	5.4	ug/L		0.5	PQL	1
X14GW0040911	LEAD	M	14.8		Y		UG/L	F	65882	14.8	ug/L		0.5	PQL	1
X14GW0040911	LEAD	MF	7.7		Y		UG/L	F	65882	7.7	ug/L		0.5	PQL	1
X14GW0040911-D	COPPER	M	8.4		Y		UG/L	F	65882	8.4	ug/L		0.5	PQL	1
X14GW0040911-D	COPPER	MF	6		Y		UG/L	F	65882	6	ug/L		0.5	PQL	1
X14GW0040911-D	LEAD	M	15.7		Y		UG/L	F	65882	15.7	ug/L		0.5	PQL	1

Table D-1
Qualified Analytical Results Database
Indian Head MRP Phase II SI Report
Indian Head, Maryland

sample_id	parameter	fraction	val_res	val_qual	detect	qual_cod	units	val_leve	sdg	lab_resul	lab_unit	lab_q	rl	rl_type	dil_factor
X14GW0040911-D	LEAD	MF	7.5		Y		UG/L	F	65882	7.5	ug/L		0.5	PQL	1
X15GW0010911	2-METHYLNAPHTHALENE	PAH	0.12	U	N		UG/L	F	65882	0.06	ug/L	U	0.2	PQL	1
X15GW0010911	ACENAPHTHENE	PAH	0.12	U	N		UG/L	F	65882	0.06	ug/L	U	0.2	PQL	1
X15GW0010911	ACENAPHTHYLENE	PAH	0.12	U	N		UG/L	F	65882	0.06	ug/L	U	0.2	PQL	1
X15GW0010911	ANTHRACENE	PAH	0.1	U	N		UG/L	F	65882	0.05	ug/L	U	0.2	PQL	1
X15GW0010911	ANTIMONY	M	0.16	B	N	A	UG/L	F	65882	0.16	ug/L	J	0.2	PQL	1
X15GW0010911	ANTIMONY	MF	0.17	B	N	A	UG/L	F	65882	0.17	ug/L	J	0.2	PQL	1
X15GW0010911	BENZO(A)ANTHRACENE	PAH	0.25		Y		UG/L	F	65882	0.25	ug/L		0.2	PQL	1
X15GW0010911	BENZO(A)PYRENE	PAH	0.31		Y		UG/L	F	65882	0.31	ug/L		0.2	PQL	1
X15GW0010911	BENZO(B)FLUORANTHENE	PAH	0.49		Y		UG/L	F	65882	0.49	ug/L		0.2	PQL	1
X15GW0010911	BENZO(G,H,I)PERYLENE	PAH	0.26		Y		UG/L	F	65882	0.26	ug/L		0.2	PQL	1
X15GW0010911	BENZO(K)FLUORANTHENE	PAH	0.36		Y		UG/L	F	65882	0.36	ug/L		0.2	PQL	1
X15GW0010911	CHRYSENE	PAH	0.25		Y		UG/L	F	65882	0.25	ug/L		0.2	PQL	1
X15GW0010911	DIBENZO(A,H)ANTHRACENE	PAH	0.14	J	Y	P	UG/L	F	65882	0.14	ug/L	J	0.2	PQL	1
X15GW0010911	FLUORANTHENE	PAH	0.24		Y		UG/L	F	65882	0.24	ug/L		0.2	PQL	1
X15GW0010911	FLUORENE	PAH	0.12	U	N		UG/L	F	65882	0.06	ug/L	U	0.2	PQL	1
X15GW0010911	INDENO(1,2,3-CD)PYRENE	PAH	0.24		Y		UG/L	F	65882	0.24	ug/L		0.2	PQL	1
X15GW0010911	NAPHTHALENE	PAH	0.1	U	N		UG/L	F	65882	0.05	ug/L	U	0.2	PQL	1
X15GW0010911	NITROGLYCERIN	EXP	0.26	U	N		UG/L	F	65882	0.13	ug/L	U	0.5	PQL	1
X15GW0010911	PHENANTHRENE	PAH	0.16	J	Y	P	UG/L	F	65882	0.16	ug/L	J	0.2	PQL	1
X15GW0010911	PYRENE	PAH	0.22		Y		UG/L	F	65882	0.22	ug/L		0.2	PQL	1
X15GW0010911-D	2-METHYLNAPHTHALENE	PAH	0.12	U	N		UG/L	F	65882	0.06	ug/L	U	0.2	PQL	1
X15GW0010911-D	ACENAPHTHENE	PAH	0.12	U	N		UG/L	F	65882	0.06	ug/L	U	0.2	PQL	1
X15GW0010911-D	ACENAPHTHYLENE	PAH	0.12	U	N		UG/L	F	65882	0.06	ug/L	U	0.2	PQL	1
X15GW0010911-D	ANTHRACENE	PAH	0.1	U	N		UG/L	F	65882	0.05	ug/L	U	0.2	PQL	1
X15GW0010911-D	BENZO(A)ANTHRACENE	PAH	0.089	J	Y	P	UG/L	F	65882	0.089	ug/L	J	0.2	PQL	1
X15GW0010911-D	BENZO(A)PYRENE	PAH	0.1	J	Y	P	UG/L	F	65882	0.1	ug/L	J	0.2	PQL	1
X15GW0010911-D	BENZO(B)FLUORANTHENE	PAH	0.15	J	Y	P	UG/L	F	65882	0.15	ug/L	J	0.2	PQL	1
X15GW0010911-D	BENZO(G,H,I)PERYLENE	PAH	0.16	U	N		UG/L	F	65882	0.08	ug/L	U	0.2	PQL	1
X15GW0010911-D	BENZO(K)FLUORANTHENE	PAH	0.11	J	Y	P	UG/L	F	65882	0.11	ug/L	J	0.2	PQL	1
X15GW0010911-D	CHRYSENE	PAH	0.072	J	Y	P	UG/L	F	65882	0.072	ug/L	J	0.2	PQL	1
X15GW0010911-D	DIBENZO(A,H)ANTHRACENE	PAH	0.1	U	N		UG/L	F	65882	0.05	ug/L	U	0.2	PQL	1
X15GW0010911-D	FLUORANTHENE	PAH	0.1	J	Y	P	UG/L	F	65882	0.1	ug/L	J	0.2	PQL	1
X15GW0010911-D	FLUORENE	PAH	0.12	U	N		UG/L	F	65882	0.06	ug/L	U	0.2	PQL	1
X15GW0010911-D	INDENO(1,2,3-CD)PYRENE	PAH	0.14	U	N		UG/L	F	65882	0.07	ug/L	U	0.2	PQL	1
X15GW0010911-D	NAPHTHALENE	PAH	0.1	U	N		UG/L	F	65882	0.05	ug/L	U	0.2	PQL	1
X15GW0010911-D	NITROGLYCERIN	EXP	0.26	U	N		UG/L	F	65882	0.13	ug/L	U	0.5	PQL	1

Table D-1
Qualified Analytical Results Database
Indian Head MRP Phase II SI Report
Indian Head, Maryland

sample_id	parameter	fraction	val_res	val_qual	detect	qual_cod	units	val_leve	sdg	lab_resul	lab_unit	lab_q	rl	rl_type	dil_factor
X15GW0010911-D	PHENANTHRENE	PAH	0.077	J	Y	P	UG/L	F	65882	0.077	ug/L	J	0.2	PQL	1
X15GW0010911-D	PYRENE	PAH	0.092	J	Y	P	UG/L	F	65882	0.092	ug/L	J	0.2	PQL	1
X15GW0020911	ANTIMONY	M	0.91		Y		UG/L	F	65882	0.91	ug/L		0.2	PQL	1
X15GW0020911	ANTIMONY	MF	0.58		Y		UG/L	F	65882	0.58	ug/L		0.2	PQL	1
X15GW0020911	LEAD	M	21.8		Y		UG/L	F	65882	21.8	ug/L		0.5	PQL	1
X15GW0020911	LEAD	MF	0.17	J	Y	P	UG/L	F	65882	0.17	ug/L	J	0.5	PQL	1
X15GW0030911	ANTIMONY	M	0.16	B	N	A	UG/L	F	65882	0.16	ug/L	J	0.2	PQL	1
X15GW0030911	ANTIMONY	MF	0.25	B	N	A	UG/L	F	65882	0.25	ug/L		0.2	PQL	1
X15GW0030911	LEAD	M	10.4		Y		UG/L	F	65882	10.4	ug/L		0.5	PQL	1
X15GW0030911	LEAD	MF	0.48	J	Y	P	UG/L	F	65882	0.48	ug/L	J	0.5	PQL	1
X16GW0011011	2-METHYLNAPHTHALENE	PAH	0.12	U	N		UG/L	F	65895	0.06	UG/L	U	0.2	PQL	1
X16GW0011011	ACENAPHTHENE	PAH	0.12	U	N		UG/L	F	65895	0.06	UG/L	U	0.2	PQL	1
X16GW0011011	ACENAPHTHYLENE	PAH	0.12	U	N		UG/L	F	65895	0.06	UG/L	U	0.2	PQL	1
X16GW0011011	ANTHRACENE	PAH	0.1	U	N		UG/L	F	65895	0.05	UG/L	U	0.2	PQL	1
X16GW0011011	ANTIMONY	M	0.097	J	Y	P	UG/L	F	65895	0.097	UG/L	J	0.2	PQL	1
X16GW0011011	ANTIMONY	MF	0.066	J	Y	GP	UG/L	F	65895	0.066	UG/L	J	0.2	PQL	1
X16GW0011011	BENZO(A)ANTHRACENE	PAH	0.14	U	N		UG/L	F	65895	0.07	UG/L	U	0.2	PQL	1
X16GW0011011	BENZO(A)PYRENE	PAH	0.14	U	N		UG/L	F	65895	0.07	UG/L	U	0.2	PQL	1
X16GW0011011	BENZO(B)FLUORANTHENE	PAH	0.12	U	N		UG/L	F	65895	0.06	UG/L	U	0.2	PQL	1
X16GW0011011	BENZO(G,H,I)PERYLENE	PAH	0.16	U	N		UG/L	F	65895	0.08	UG/L	U	0.2	PQL	1
X16GW0011011	BENZO(K)FLUORANTHENE	PAH	0.14	U	N		UG/L	F	65895	0.07	UG/L	U	0.2	PQL	1
X16GW0011011	CHRYSENE	PAH	0.1	U	N		UG/L	F	65895	0.05	UG/L	U	0.2	PQL	1
X16GW0011011	DIBENZO(A,H)ANTHRACENE	PAH	0.1	U	N		UG/L	F	65895	0.05	UG/L	U	0.2	PQL	1
X16GW0011011	FLUORANTHENE	PAH	0.16	U	N		UG/L	F	65895	0.08	UG/L	U	0.2	PQL	1
X16GW0011011	FLUORENE	PAH	0.12	U	N		UG/L	F	65895	0.06	UG/L	U	0.2	PQL	1
X16GW0011011	INDENO(1,2,3-CD)PYRENE	PAH	0.14	U	N		UG/L	F	65895	0.07	UG/L	U	0.2	PQL	1
X16GW0011011	NAPHTHALENE	PAH	0.1	U	N		UG/L	F	65895	0.05	UG/L	U	0.2	PQL	1
X16GW0011011	PHENANTHRENE	PAH	0.14	U	N		UG/L	F	65895	0.07	UG/L	U	0.2	PQL	1
X16GW0011011	PYRENE	PAH	0.16	U	N		UG/L	F	65895	0.08	UG/L	U	0.2	PQL	1
X16GW0021011	ANTIMONY	M	0.28		Y		UG/L	F	65895	0.28	UG/L		0.2	PQL	1
X16GW0021011	ANTIMONY	MF	0.44	J	Y	G	UG/L	F	65895	0.44	UG/L		0.2	PQL	1
X16GW0021011	LEAD	M	3.9	J	Y	G	UG/L	F	65895	3.9	UG/L		0.5	PQL	1
X16GW0021011	LEAD	MF	1.7		Y		UG/L	F	65895	1.7	UG/L		0.5	PQL	1
X17GW0011011	ANTIMONY	M	0.29		Y		UG/L	F	65895	0.29	UG/L		0.2	PQL	1
X17GW0011011	ANTIMONY	MF	0.92	J	Y	G	UG/L	F	65895	0.92	UG/L		0.2	PQL	1
X17GW0011011	ARSENIC	M	0.41		Y		UG/L	F	65895	0.41	UG/L		0.2	PQL	1
X17GW0011011	ARSENIC	MF	0.26		Y		UG/L	F	65895	0.26	UG/L		0.2	PQL	1

Table D-1
Qualified Analytical Results Database
Indian Head MRP Phase II SI Report
Indian Head, Maryland

sample_id	parameter	fraction	val_res	val_qual	detect	qual_cod	units	val_leve	sdg	lab_resul	lab_unit	lab_q	rl	rl_type	dil_factor
X17GW0011011	LEAD	M	4.2	J	Y	G	UG/L	F	65895	4.2	UG/L		0.5	PQL	1
X17GW0011011	LEAD	MF	0.45	J	Y	P	UG/L	F	65895	0.45	UG/L	J	0.5	PQL	1
X17GW0011011	NITROGLYCERIN	EXP	0.26	U	N		UG/L	F	65895	0.13	UG/L	U	0.5	PQL	1
X17GW0011011-D	ANTIMONY	M	0.28		Y		UG/L	F	65895	0.28	UG/L		0.2	PQL	1
X17GW0011011-D	ANTIMONY	MF	0.24	J	Y	G	UG/L	F	65895	0.24	UG/L		0.2	PQL	1
X17GW0011011-D	ARSENIC	M	0.34		Y		UG/L	F	65895	0.34	UG/L		0.2	PQL	1
X17GW0011011-D	ARSENIC	MF	0.23		Y		UG/L	F	65895	0.23	UG/L		0.2	PQL	1
X17GW0011011-D	LEAD	M	0.38	J	Y	GP	UG/L	F	65895	0.38	UG/L	J	0.5	PQL	1
X17GW0011011-D	LEAD	MF	0.22	U	N		UG/L	F	65895	0.11	UG/L	U	0.5	PQL	1

Table D-2
Field Duplicate Comparison
Indian Head MRP Phase II SI Report
Indian Head, Maryland

sample_id	parameter	fractio	val_res	val_qua	qual_c	detec	dup_val_re	dup_v	dup_qua	dup_de	no_match
X14GW0040911	COPPER	M	8.4			Y	8.4			Y	
X14GW0040911	COPPER	MF	5.4			Y	6			Y	
X14GW0040911	LEAD	M	14.8			Y	15.7			Y	
X14GW0040911	LEAD	MF	7.7			Y	7.5			Y	
X15GW0010911	2-METHYLNAPHTHALENE	PAH	0.12	U		N	0.12	U		N	
X15GW0010911	ACENAPHTHENE	PAH	0.12	U		N	0.12	U		N	
X15GW0010911	ACENAPHTHYLENE	PAH	0.12	U		N	0.12	U		N	
X15GW0010911	ANTHRACENE	PAH	0.1	U		N	0.1	U		N	
X15GW0010911	ANTIMONY	M	0.16	B	A	N					
X15GW0010911	ANTIMONY	MF	0.17	B	A	N					
X15GW0010911	BENZO(A)ANTHRACENE	PAH	0.25			Y	0.089	J	P	Y	
X15GW0010911	BENZO(A)PYRENE	PAH	0.31			Y	0.1	J	P	Y	
X15GW0010911	BENZO(B)FLUORANTHENE	PAH	0.49			Y	0.15	J	P	Y	
X15GW0010911	BENZO(G,H,I)PERYLENE	PAH	0.26			Y	0.16	U		N	X
X15GW0010911	BENZO(K)FLUORANTHENE	PAH	0.36			Y	0.11	J	P	Y	
X15GW0010911	CHRYSENE	PAH	0.25			Y	0.072	J	P	Y	
X15GW0010911	DIBENZO(A,H)ANTHRACENE	PAH	0.14	J	P	Y	0.1	U		N	X
X15GW0010911	FLUORANTHENE	PAH	0.24			Y	0.1	J	P	Y	
X15GW0010911	FLUORENE	PAH	0.12	U		N	0.12	U		N	
X15GW0010911	INDENO(1,2,3-CD)PYRENE	PAH	0.24			Y	0.14	U		N	X
X15GW0010911	NAPHTHALENE	PAH	0.1	U		N	0.1	U		N	
X15GW0010911	NITROGLYCERIN	EXP	0.26	U		N	0.26	U		N	
X15GW0010911	PHENANTHRENE	PAH	0.16	J	P	Y	0.077	J	P	Y	
X15GW0010911	PYRENE	PAH	0.22			Y	0.092	J	P	Y	
X17GW0011011	ANTIMONY	M	0.29			Y	0.28			Y	
X17GW0011011	ANTIMONY	MF	0.92	J	G	Y	0.24	J	G	Y	
X17GW0011011	ARSENIC	M	0.41			Y	0.34			Y	
X17GW0011011	ARSENIC	MF	0.26			Y	0.23			Y	
X17GW0011011	LEAD	M	4.2	J	G	Y	0.38	J	GP	Y	
X17GW0011011	LEAD	MF	0.45	J	P	Y	0.22	U		N	X
X17GW0011011	NITROGLYCERIN	EXP	0.26	U		N					

Table D-3
Sample Counts Summary
Indian Head MRP Phase II SI Report
Indian Head, Maryland

site	matrix	sample_id	sacode	Total Of parameter	EXP	M	MF	PAH
UXO14	GW	X14GW0010911	NORMAL	22	1	2	2	17
UXO14	GW	X14GW0020911	NORMAL	4		2	2	
UXO14	GW	X14GW0040911	NORMAL	4		2	2	
UXO14	GW	X14GW0040911-D	DUP	4		2	2	
UXO15	GW	X15GW0010911	NORMAL	20	1	1	1	17
UXO15	GW	X15GW0010911-D	DUP	18	1			17
UXO15	GW	X15GW0020911	NORMAL	4		2	2	
UXO15	GW	X15GW0030911	NORMAL	4		2	2	
UXO16	GW	X16GW0011011	NORMAL	19		1	1	17
UXO16	GW	X16GW0021011	NORMAL	4		2	2	
UXO17	GW	X17GW0011011	NORMAL	7	1	3	3	
UXO17	GW	X17GW0011011-D	DUP	6		3	3	
	QC	FB01-100111	NORMAL	4			4	

Table D-4
Rejected Results
Indian Head MRP Phase II SI Report
Indian Head, Maryland

site	matrix	fraction	sacode	Total Of cnt	DETECTS	NON_DETECTS	REJECTED
UXO14	GW	EXP	NORMAL	1			1
UXO15	GW	EXP	NORMAL	1		1	
UXO17	GW	EXP	NORMAL	1		1	
UXO15	GW	EXP	DUP	1		1	
UXO14	GW	M	NORMAL	6	6		
UXO15	GW	M	NORMAL	5	3	2	
UXO16	GW	M	NORMAL	3	3		
UXO17	GW	M	NORMAL	3	3		
UXO14	GW	M	DUP	2	2		
UXO17	GW	M	DUP	3	3		
UXO14	GW	MF	NORMAL	6	4	2	
UXO15	GW	MF	NORMAL	5	3	2	
UXO16	GW	MF	NORMAL	3	3		
UXO17	GW	MF	NORMAL	3	3		
UXO14	GW	MF	DUP	2	2		
UXO17	GW	MF	DUP	3	2	1	
UXO14	GW	PAH	NORMAL	17		17	
UXO15	GW	PAH	NORMAL	17	11	6	
UXO16	GW	PAH	NORMAL	17		17	
UXO15	GW	PAH	DUP	17	8	9	
	QC	MF	NORMAL	4	3	1	

APPENDIX E

DATA QUALITY REVIEW

APPENDIX E

DATA QUALITY REVIEW
PHASE II SITE INSPECTIONS AT FIVE SMALL ARMS/SKEET RANGES
NAVAL SUPPORT FACILITY – INDIAN HEAD
INDIAN HEAD, MARYLAND

A description of the data review processes used to determine whether analytical laboratory data were of acceptable technical quality for use in decision making is presented in this data quality review (DQR). The review began with data verification and validation. Verification is a process used to ensure that contractual requirements were satisfied. Validation is a comparison of data quality indicators (DQIs) against prescribed acceptance criteria to assess analytical method performance. The DQIs include measures to assess the bias and precision of the analytical calibrations and sample analyses. Together, verification and validation are the first steps in evaluating the DQIs of precision, accuracy, representativeness, completeness, comparability, and sensitivity (PARCCS). The data review process culminates with a data usability assessment during which the final usability of the data is established relative to the intended data use.

1.0 DATA VALIDATION PROCESS

All of the results from analytical laboratory samples were validated according to multiple specifications. Assignment of data qualification flags conformed to rules established in the United States Environmental Protection Agency (USEPA) guidance documents "Region III Modifications to the National Functional Guidelines for Organic Data Review" (USEPA, 1994) for the PAHs and nitroglycerin results, and "Region III Modifications to the National Functional Guidelines for Inorganic Data Validation" (USEPA, 1993) for metals results, and the Department of Defense (DoD) guidance document "Quality Systems Manual (QSM) for Environmental Laboratories", Version 4.1 (DoD, April 2009), to the greatest extent practicable for non-contract laboratory program (non-CLP) data. Numerical criteria used in conjunction with these rules were specified in the Sampling and Analysis Plan (SAP) for the Phase II Site Inspections at Five Small Arms/Skeet Ranges (Tetra Tech, 2011).

If no qualifier is assigned to a result that has been validated, the data user is assured that no analytical performance 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 noted. Non-detected results are reported with a "U" qualifier when received from the laboratory. Additionally, a "U" qualifier is added to a result (reported by the laboratory) if the detected concentration is determined to be attributable to contamination introduced during field sampling or laboratory analysis.

J – Indicates that the chemical was detected. However, the associated numerical result is only an approximate representation of the amount that is actually present in the sample. The laboratory reported concentration is considered to be an estimate of the true concentration.

UJ – Indicates that the chemical was not detected. The detection limit provided (sample-specific quantitation limit) is considered to be estimated.

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. The "R" 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 QC recoveries).

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. The "UR" 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 QC recoveries).

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. Rejected data are considered invalid and are not used for decision making purposes unless used in a qualitative way and the use is justified and documented. Less severe deficiencies, associated with "U", "J", and "UJ" data validation qualifiers, are minor problems defined as issues resulting in the estimation of data. 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. Also, 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.

Samples were analyzed for this project by APPL Inc. (APPL) located in Clovis, California and reported by the laboratory in two Sample Delivery Groups (SDGs), 65882 and 65895. A total of nine groundwater samples were collected in the September 26 to October 1, 2011 sampling event and analyzed for one or more of the following analytical groups: low level polycyclic aromatic hydrocarbons (PAHs); nitroglycerin; and site-related select metals (antimony, arsenic, copper, and/or lead).

A complete list of analytical groups that were sampled and analyzed for each of the originally planned samples as identified in the SAP are identified in Table E-1. Samples that were not originally specified in

the SAP, but were submitted to the laboratory and analyzed as part of the project, are also identified in Table E-1.

For quality assurance/quality control (QA/QC) purposes, a minimum of one field duplicate per 10 field samples for groundwater were planned to be collected and analyzed for low level PAHs, nitroglycerin, and/or select total and dissolved metals; and a minimum of one equipment rinsate blank per 20 field samples for each environmental matrix were planned to be collected and analyzed for low level PAHs, nitroglycerin, and total and dissolved metals.

During the September 26 to October 1, 2011 sampling event, one filtered equipment rinsate blank was collected and analyzed for dissolved antimony, arsenic, copper, and lead; one field duplicate groundwater sample was collected and analyzed for low level PAHs and nitroglycerin; one field duplicate groundwater sample was collected and analyzed for total and dissolved antimony, copper, and lead; and one field duplicate groundwater sample was collected and analyzed for total and dissolved antimony, arsenic, and lead. The types of QA/QC samples and the quantities that were collected were consistent with the planned quantities as identified in the SAP.

One of the 116 data points from the September 26 to October 1, 2011 sampling event (0.86 percent) were rejected during validation. Any impacts to the project based on the results of the data evaluation are discussed in the remainder of this review. Please note that data users should be aware that any qualified data, even if it is considered usable, may be less accurate or less precise than non-qualified data.

2.0 DATA VALIDATION OUTPUTS

After laboratory 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 Tetra Tech data validator made professional judgments 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. Tetra Tech data validators incorporated data qualifiers into the electronic database and submitted the information to the Tetra Tech data management group. A complete printout of the data results with validation flags is presented in Appendix D and the database is included in this report as an electronic file on a compact disk (CD).

A total of two data validation summary narrative reports addressing the September 26 to October 1, 2011 sampling event were generated in support of this project, as identified below. Data validation summary narrative reports are included in Appendix D. Pertinent quality estimates are summarized in a more quantitative format in the following sections.

DATA VALIDATION REPORTS

SDG	Fraction(s)	Name	Date	Number of Samples	Type
September 26 to October 1, 2011 Data					
65882	PAHs, Nitroglycerin, Total and Dissolved Metals	E. Sedlmyer	12/8/11	5	Aqueous
65895	PAHs, Nitroglycerin, Total and Dissolved Metals	M. Carson	11/21/11	8	Aqueous

3.0 GENERAL DATA QUALITY REVIEW

The DQR provided herein is designed to provide an overall quantitative measure of analytical performance that is not provided by data validation. The analytical performance quantitative evaluations are frequently analyte-specific and reflect deficiencies such as biases associated with the quantitation of particular analytes in a particular sample matrix. The data user must be aware that different chemicals in the same analytical group (e.g., PAHs) may exhibit different degrees of quality.

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 collection completeness was a measure of the number of 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 for each target analyte in each analytical group obtained per matrix as compared to those intended to be measured.

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:

$$\%C = \frac{V}{T} x\,100$$

where %C = percent completeness

V = number of samples (or results) determined to be valid

T = total number of planned samples (or results)

The total sample collection completeness evaluations for each analytical group for each matrix are the values used to evaluate sample collection completeness against a completeness goal of 95 percent. A specific completeness goal was not established in the SAP; however, a goal of 95 percent is appropriate for this project. Completeness evaluations for each analytical group are tabulated in Table E-2. Discussions pertaining to sample collection and laboratory measurement percent completeness deficiencies (i.e., percent completeness values less than 95 percent) follow.

Every sample that was planned in the SAP were collected and analyzed for the analytical groups as identified in the plan, except as identified in Table E-1 and as described herein. Planned sample X14GW003 was not collected because the well was dry, and planned sample X25GW001 was not collected because the location was inaccessible. No unplanned samples were collected and analyzed; however, unplanned additional analytical groups that were analyzed in planned samples include PAHs for sample X14GW001 due to an error on the chain-of-custody.

There were no sample collection completeness deficiencies because the sample collection completeness goals were met for all sample matrices and all analytical groups, as identified in Table E-2.

The percent completeness calculations also include QA/QC field duplicate samples collected to aid in the evaluation of data usability. Therefore, field duplicate data determined to be unusable as a result of the data validation process are represented in the percent completeness values.

There were no laboratory measurement completeness deficiencies, as identified in Table E-2. Laboratory measurement completeness was greater than the goal of 95 percent for all sample matrices and all analytical groups. All samples that were submitted to the laboratory were analyzed and a total of 1 of the 116 data points (0.86 percent) from the September 26 to October 1, 2011 sampling event were rejected, yielding an overall laboratory measurement completeness value of 99.14 percent.

Per the SAP, deviations from sample collection and laboratory analysis percent completeness were evaluated by the Tetra Tech Project Chemist to determine if those deviations compromise the ability to meet project quality objectives (PQOs). No completeness deviations were identified.

3.2 Sensitivity

The detection limits (DLs) reported by the laboratory were less than the applicable Project Action Limits (PALs) provided in Table E-3 for all samples, including all samples that required dilutions due to elevated

concentrations of target analytes in the same analytical group (i.e., PAHs), except as identified in Table E-3. Table E-3 lists target analytes for which the DL exceeded the corresponding revised PAL for one or more sample results. Table E-3 also displays two different percentages, which are: the percentage of non-detected results that exceeded PALs when comparing the non-detected exceedances to the total number of non-detected results; and the percentage of non-detected results that exceeded PALs when comparing the non-detected exceedances to the total number of results analyzed (positive and non-detected results).

The percentage of non-detected results that exceeded PALs when comparing the non-detected exceedances to the total number of non-detected results is used to evaluate the overall success of the laboratory achieving DLs equal to, or less than, PALs and the percentage of non-detected results that exceeded PALs when comparing the non-detected exceedances to the total number of results analyzed (positive and non-detected results) is used to evaluate the effect of sensitivity exceedances on the complete corresponding data set. Lists of target analytes per matrix for which sensitivity issues were identified and corresponding effects on data usability are described below.

As identified in Table E-3, the following percentages of the data points in each analytical group that were reported as non-detected were reported at a concentration that exceeded the corresponding revised PAL: 17.65 percent of the PAHs; 0.00 percent of the nitroglycerin; 0.00 percent of the select total metals; and 0.00 percent of the select dissolved metals results. None of these analytes were detected in any of the samples, with the exception of benzo(a)anthracene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-c,d)pyrene in sample X15GW001.

Detection limits exceeded the PAL for the following non-detected analytes in one or more samples in each matrix specified in the table below:

TARGET ANALYTES WITH NON-DETECTED RESULTS EXCEEDING PAL

Analytical Group	Target Analyte	Matrix
PAHs	Benzo(a)anthracene	Groundwater
	Benzo(b)fluoranthene	Groundwater
	Dibenzo(a,h)anthracene	Groundwater
	Indeno(1,2,3-c,d)pyrene	Groundwater

As identified in Table E-3, 10.43 percent of the overall data points that were reported as non-detected were reported at a concentration that was above the corresponding revised PAL.

One groundwater sample (X15GW001) contained detectable levels of the following target analytes that were reported with non-detect values in all other samples above the applicable PAL: benzo(a)anthracene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-c,d)pyrene.

Per the SAP, sensitivity was evaluated by the Tetra Tech Project Chemist to determine if reporting limits identified in Worksheet #15 of the SAP were achieved and to describe any limitations to the use of the data due to poor sensitivity. The planned reporting limits were achieved and the analytes that were not reported down to the PAL for every sample are identified in Table E-3. There are no limitations to the use of the data due to poor sensitivity.

3.3 Accuracy

Accuracy in the laboratory was measured through the comparison of a spiked sample or a Laboratory Control Sample (LCS) result to a known or calculated value, and is expressed as a percent recovery (%R). Accuracy was also assessed by monitoring the analytical recovery of select surrogate compounds added to samples that are analyzed by organic chromatographic methods and the analytical recovery of calibration standards for all analyses, also expressed as a %R. LCSs were used to assess the accuracy of laboratory operations with minimal sample matrix effects. Matrix spike/matrix spike duplicate (MS/MSD) and surrogate compound analyses measure the combined effects on accuracy of the sample matrix, sample preparation, and sample measurement. LCS and MS analyses were performed at a minimum frequency of one per 20 associated samples of like matrix. Laboratory accuracy was assessed by comparing calculated %R values to accuracy control limits specified by the laboratory using the appropriate USEPA SW-846 Method and the DoD QSM acceptance limits.

Percent recovery is calculated using the following equation:

$$\%R = \frac{Ss - So}{S} \times 100$$

where	%R	=	percent recovery
	Ss	=	result of spiked sample
	So	=	result of non-spiked sample
	S	=	concentration of spiked amount.

According to the data validation summary narrative reports, all LCS %Rs were compliant with the project accuracy QC limits and no results were qualified due to LCS non-compliance.

According to the data validation summary narrative reports, all MS and MSD %Rs were within the project accuracy QC limits, except for a low MS %R for chrysene and fluoranthene and a low MSD %R for benzo(a)pyrene. Since an MS or MSD was within QC limits for all target analytes, no results were qualified due to MS/MSD %R non-compliance.

No results were qualified as estimated (J or UJ) due to continuing calibration verification (CCV), internal standard (IS), or surrogate %R non-compliance, as described in the data validation summary narrative reports located in Appendix G, as identified in the results database in Appendix F, and as summarized in Table E-4.

Due to inherent uncertainty near the detection limit, 9 of the 116 data points (7.76 percent) were qualified as estimated (J) (data validation code “P”).

Accuracy is also evaluated for potential bias due to contaminants that are introduced into samples either in the field or in the laboratory. This bias is monitored through the use of trip blanks, field blanks, equipment rinsate blanks, and/or laboratory method blanks. A detectable concentration of antimony was identified in one laboratory blank (data validation qualifier code “A”) in SDG 65895, so results were qualified for some samples for total and dissolved antimony.

Per the SAP, accuracy was evaluated by the Tetra Tech Project Chemist to determine if actual results compromise the ability to meet the PQOs. Based on the evaluation of field and laboratory contamination, instrument calibration variability, and analyte recoveries for surrogates, MS samples, and LCS samples, the overall accuracy goals were met for this project. Biased (estimated) results due to non-compliance with project accuracy QC limits have been identified through the data validation process and are considered usable data. An evaluation of accuracy deviations is provided in Section 3.4 of the Phase II SI Report.

3.4 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 between two values 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 duplicate 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 field duplicate 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 laboratory duplicate samples incorporate only homogenization, subsampling, preparation for analysis, laboratory storage (if applicable), and analysis uncertainties.

A total of three field duplicate samples were collected and analyzed, including one groundwater sample for low level PAHs and nitroglycerin; one groundwater sample for total and dissolved antimony, copper and lead; and one groundwater sample for total and dissolved antimony, arsenic, and lead.

According to the data validation summary narrative reports, and as identified in the database of results in Appendix D and Table E-4 (data validation qualifier code "G"), some results were qualified as estimated (J) due to field duplicate imprecision greater than 50 RPD for aqueous samples, including: total lead (X17GW001/DUP03100111); and dissolved antimony (X17GW001-F/DUP03100111-F) in SDG 65895. For this project, 8 of the 116 data points (6.90 percent) required qualification due to field duplicate deviations.

MS/MSD RPD results were within 30 RPD for all aqueous samples (or two times the laboratory reporting limit for non-metals and four times the laboratory reporting limit for metals). No action was taken due to MS/MSD RPD deviations.

Per the SAP, precision was evaluated by the Tetra Tech Project Chemist to determine if actual results compromise the ability to meet the PQOs. There are no limitations to the use of the data due to poor precision.

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 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

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 SAP. No comparability issues were noted during the data validation process.

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. By complying with the SAP, and through the use of standardized sampling, sample handling, sample analysis, and data reporting procedures, the sampling program was designed so that the final data would be accurate representations of actual site conditions. The DQR found the data collected to be representative of the targeted populations.

One significant parameter that ensures representativeness is the analysis of samples within recommended holding times. Due to miscommunication with the laboratory, one nitroglycerin sample was extracted grossly outside of the recommended holding time of 14 days (43 days). As identified in Table E-4 (data validation qualifier code "H"), that one sample result for this project was qualified as rejected (UR) because it was extracted past the recommended holding time for nitroglycerin extraction.

4.0 DATA USABILITY

The following findings effect project data usability and must be considered by project data users.

The data collected during the SWMU 28 RFI were determined to be of sufficient quality to be used for determining the nature and extent of chemical contaminants identified at the site. QC samples collected during the September 26 to October 1, 2011 sampling event included three field duplicate samples, one MS/MSD sample, and one filtered equipment rinsate blank, which met or exceeded the minimum quantities defined in the SAP. USEPA SW-846 methods were used to analyze the samples for low level PAHs, nitroglycerin, and total and dissolved metals. Data validation was performed in accordance with the SAP following the "Region III Modifications to the National Functional Guidelines for Organic Data Review" (USEPA, 1994) for the PAHs and nitroglycerin results, and "Region III Modifications to the National Functional Guidelines for Inorganic Data Validation" (USEPA, 1993) for metals results, the DoD QSM, Version 4.1 (DoD, April 2009), and in conjunction with the method specific criteria presented in the SAP.

No sampling issues or field conditions were identified that caused a rejection of any reported data.

Field duplicate precision measurements exceeded the acceptance criteria of 50 RPD for aqueous samples (or two times the laboratory reporting limit for non-metals and four times the laboratory reporting limit for metals) for lead and dissolved antimony in SDG 65895 and associated data were qualified as estimated (J) and are considered usable. No problems were associated with data representativeness with the exception of an exceeded extraction holding time for one nitroglycerin sample, which was qualified as rejected (UR) and is considered unusable. All other data are considered usable.

Some results were flagged with the qualifiers J, U, or UJ because the data were outside QC acceptance criteria and some results were flagged with the qualifier J due to inherent uncertainty near detection limits. For all detected target analytes in groundwater, the Limits of Quantitation (LOQs) were sufficiently sensitive (below the corresponding PALs as originally identified in Worksheet #15 of the SAP and as revised according to current USEPA risk-based criteria as identified in Table E-3) to meet the PQOs. Any positive detection between the LOQ and the DL were qualified as estimated (J) and are considered usable.

Data validation qualifications and discussions can be found in the reports in Appendix D.

Table E-1
Sample Names and Planned (P)/Collected (C) Analyses Crosswalk
Indian Head MRP Phase II SI Report
Indian Head, Maryland

SAP - Location ID	SAP - Sample ID	SAP Matrix/ Depth (ft bgs)	Actual Sample ID	Actual Matrix/ Depth (ft bgs)	Total Sb	Total As	Total Cu	Total Pb	PAHs	NG	Diss. Sb	Diss. As	Diss. Cu	Diss. Pb	Notes
Originally Planned Samples (SAP)															
Marine Rifle Range (UXO 14)															
X14GW001 - Firing Line Area	X14GW001	10-15	X14GW001	3.80-13.80	PC		PC		C	PC	PC		PC		
X14GW002- Target Berm Area	X14GW002	10-15	X14GW002	14.85-24.85			PC	PC					PC	PC	
X14GW003 - Hillside Impact Area - N	X14GW003	10-15	X14GW003	6.50-21.50			P	P					P	P	
X14GW004 - Hillside Impact Area - S	X14GW004	10-15	X14GW004	2.80-7.80			PC	PC					PC	PC	D
Old Skeet and Trap Range (UXO 15)															
X15GW001 – Target Area/Firing Points	X15GW001	5-10	X15GW001	2.00-12.00	PC				PC	PC	PC				D; MS/MSD
X15GW002 – NW Shot Fall Area	X15GW002	5-10	X15GW002	2.00-12.00	PC			PC			PC			PC	
X15GW003 – NE Shot Fall Area	X15GW003	5-10	X15GW003	1.65-11.65	PC			PC			PC			PC	
Rum Point Skeet Range (UXO 16)															
X16GW001 - Firing Points/Target Area	X16GW001	20-30	X16GW001	12.00-27.00	PC				PC		PC				
X16GW002 - NW Shot Fall Area	X16GW002	15-25	X16GW002	8.05-18.05	PC			PC			PC			PC	
Small Arms (Pistol) Range (UXO 17)															
X17GW001 - Firing Line/Target Areas	X17GW001	30-40	X17GW001	9.40-19.40	PC	PC		PC		PC	PC	PC		PC	D; MS/MSD
Roach Road Rifle Range (UXO 25)															
X25GW001 - Target Area	X25GW001	30-40	X25GW001	NA	P		P	P			P		P	P	

SAP = Sampling and Analysis Plan; Sb = antimony; As = arsenic; Cu = copper; Pb = lead; PAHs = polycyclic aromatic hydrocarbons; NG = nitroglycerin; Diss. = dissolved.
Codes - P = Planned; C = Collected and Analyzed; D = Field Duplicate Collected and Analyzed; MS/MSD = Matrix Spike/Matrix Spike Duplicate Collected and Analyzed; NA = Not Applicable
Notes:
PC = Planned and Collected
C = Collected, but not planned
P = Planned, but not collected

Table E-2
Completeness Assessment
Indian Head MRP Phase II SI Report
Indian Head, Maryland

	Sample Collection Completeness			Laboratory Measurement Completeness		
Analytical Fraction	Planned Environmental Samples	Environmental Samples Collected	Environmental Sample Collection Percent Completeness	Environmental Samples Collected	Valid Analytical Results	Laboratory Measurement Collection Percent Completeness
			Groundwater			
Antimony, total	9	8	88.89	8	8	100.00
Arsenic, total	2	2	100.00	2	2	100.00
Copper, total	6	4	66.67	4	4	100.00
Lead, total	10	8	80.00	8	8	100.00
PAHs (17 analytes)	3	4	133.33	4	68	100.00
Nitroglycerin	4	4	100.00	4	3	75.00
Antimony, dissolved	9	8	88.89	8	8	100.00
Arsenic, dissolved	2	2	100.00	2	2	100.00
Copper, dissolved	6	4	66.67	4	4	100.00
Lead, dissolved	10	8	80.00	8	8	100.00
All Analytical Groups				12	115	99.14

The totals above include the groundwater samples and associated field duplicate samples, which are identified in the database in Appendix D.
The totals above do not include equipment rinsate blanks, which were included in the data validation process and in the final database in Appendix D.

Environmental Sample Collection Percent Completeness includes samples that were collected even when they were not originally planned, thus resulting in a calculated percent completeness of greater than 100 percent in some cases.

Table E-3
Sensitivity Assessment
Indian Head MRP Phase II SI Report
Indian Head, Maryland

Parameter	Original PAL	Original PAL Reference	Current (Jan 2012) PAL	Current (Jan 2012) PAL Reference	SAP Laboratory Reporting Limit*	Number of Non-Detected Results	Number of Non-Detected Results Exceeding PAL	Percentage of Non-Detected Results Exceeding PAL	Number of Analyses	Percentage of Non-Detected Results Exceeding PAL for Entire Data Set
Groundwater										
PAHs (ug/L)										
2-METHYLNAPHTHALENE	NA	NA	150	RSL - T	0.12	4	0	0	4	0
ACENAPHTHENE	220	RSL - T	220	RSL - T	0.12	4	0	0	4	0
ACENAPHTHYLENE	220	RSL - T	220	RSL - T	0.12	4	0	0	4	0
ANTHRACENE	1,100	RSL - T	1,100	RSL - T	0.10	4	0	0	4	0
BENZO(A)ANTHRACENE	**0.029**	**RSL - T**	**0.029**	**RSL - T**	0.14	3	3	100	4	75.00
BENZO(A)PYRENE	**0.0029**	**RSL - T**	0.2	MCL	0.12	3	0	0	4	0
BENZO(B)FLUORANTHENE	**0.029**	**RSL - T**	**0.029**	**RSL - T**	0.12	3	3	100	4	75.00
BENZO(G,H,I)PERYLENE	110	RSL - T	110	RSL - T	0.16	3	0	0	4	0
BENZO(K)FLUORANTHENE	0.29	RSL - T	0.29	RSL - T	0.14	3	0	0	4	0
CHRYSENE	2.9	RSL - T	2.9	RSL - T	0.10	3	0	0	4	0
DIBENZO(A,H)ANTHRACENE	**0.0029**	**RSL - T**	**0.0029**	**RSL - T**	0.10	3	3	100	4	75.00
FLUORANTHENE	150	RSL - T	150	RSL - T	0.16	3	0	0	4	0
FLUORENE	150	RSL - T	150	RSL - T	0.12	4	0	0	4	0
INDENO(1,2,3-CD)PYRENE	**0.029**	**RSL - T**	**0.029**	**RSL - T**	0.14	3	3	100	4	75.00
NAPHTHALENE	0.14	RSL - T	0.14	RSL - T	0.10	4	0	0	4	0
PHENANTHRENE	110	RSL - T	110	RSL - T	0.14	3	0	0	4	0
PYRENE	110	RSL - T	110	RSL - T	0.16	3	0	0	4	0
PAHs - Totals						57	12	21.05	68	17.65
Nitroglycerin (ug/L)										
NITROGLYCERIN	0.37	RSL - T	0.37	RSL - T	0.26	3	0	0	3	0
Nitroglycerin - Totals						3	0	0.00	3	0.00
Metals, total (ug/L)										
ANTIMONY	1.5	RSL - T	6	MCL	0.02	0	0	NA	8	0
ARSENIC	**0.045**	**RSL - T**	10	MCL	0.18	0	0	NA	2	0
COPPER	150	RSL - T	1,300	MCL	0.26	0	0	NA	4	0
LEAD	15	MCL	15	MCL	0.22	0	0	NA	8	0
Metals, total - Totals						0	0	NA	22	0.00

Table E-3
Sensitivity Assessment
Indian Head MRP Phase II SI Report
Indian Head, Maryland

Parameter	Original PAL	Original PAL Reference	Current (Jan 2012) PAL	Current (Jan 2012) PAL Reference	SAP Laboratory Reporting Limit*	Number of Non-Detected Results	Number of Non-Detected Results Exceeding PAL	Percentage of Non-Detected Results Exceeding PAL	Number of Analyses	Percentage of Non-Detected Results Exceeding PAL for Entire Data Set
Metals, dissolved (ug/L)										
ANTIMONY	1.5	RSL - T	6	MCL	0.02	0	0	NA	8	0
ARSENIC	**0.045**	**RSL - T**	10	MCL	0.18	0	0	NA	2	0
COPPER	150	RSL - T	1,300	MCL	0.26	0	0	NA	4	0
LEAD	15	MCL	15	MCL	0.22	2	0	0	8	0
Metals, dissolved - Totals						2	0	0.00	22	0.00
Project Overall Totals										
	PAHs					57	12	21.05	68	17.65
	Nitroglycerin					3	0	0.00	3	0.00
	Metals, total					0	0	NA	22	0.00
	Metals, dissolved					2	0	0.00	22	0.00
	All Analytical Groups					62	12	19.35	115	10.43

* - Laboratory Reporting Limit only shown for those analytes with at least one sample with a reporting limit that was above the PAL. Reporting limits were consistent with the planned LOQ/LOD values identified in Worksheet #15 of the SAP.

Yellow highlights identify analytes that had one or more samples with a non-detected result that exceeded the PAL.

Gold highlights identify analytes that have revised PALs due to changes in the PAL References or due to typographical errors in the SAP.

Bolded and shaded cells indicate a PAL that was lower than the laboratory detection limit.

Table E-4
Qualified Data
Indian Head MRP Phase II SI Report
Indian Head, Maryland

SAMPLE NUMBER	PARAMETER	SAMPLE RESULT	UNIT	VALIDATION QUALIFIER	QUALIFICATION CODE	REASON FOR QUALIFICATION
X14GW0010911	NITROGLYCERIN	0.10	ug/L	UR	H	Gross holding time exceedance
X14GW0010911-F	ANTIMONY (SB) (DISSOLVED)	0.10	ug/L	J	A	Field blank contamination
X15GW0010911	DIBENZ (A,H) ANTHRACENE	0.14	ug/L	J	P	Uncertainty near detection limit
X15GW0010911	PHENANTHRENE	0.16	ug/L	J	P	Uncertainty near detection limit
X15GW0010911	ANTIMONY (SB)	0.16	ug/L	J	A	Field blank contamination
X15GW0010911-F	ANTIMONY (SB) (DISSOLVED)	0.17	ug/L	J	A	Field blank contamination
X15GW0020911-F	LEAD (PB) (DISSOLVED)	0.17	ug/L	J	P	Uncertainty near detection limit
X15GW0030911	ANTIMONY (SB)	0.16	ug/L	J	A	Field blank contamination
X15GW0030911-F	ANTIMONY (SB) (DISSOLVED)	0.25	ug/L	J	A	Field blank contamination
X15GW0030911-F	LEAD (PB) (DISSOLVED)	0.48	ug/L	J	P	Uncertainty near detection limit
X16GW0011011	ANTIMONY (SB)	0.097	ug/L	J	P	Uncertainty near detection limit
X16GW0011011-F	ANTIMONY (SB) (DISSOLVED)	0.066	ug/L	J	GP	Uncertainty near detection limit
X16GW0020911	LEAD (PB)	3.9	ug/L	J	G	Field duplicate imprecision
X16GW0020911-F	ANTIMONY (SB) (DISSOLVED)	0.44	ug/L	J	G	Field duplicate imprecision
X17GW0011011	LEAD (PB)	4.2	ug/L	J	G	Field duplicate imprecision
X17GW0011011-F	ANTIMONY (SB) (DISSOLVED)	0.92	ug/L	J	G	Field duplicate imprecision
X17GW0011011-F	LEAD (PB) (DISSOLVED)	0.45	ug/L	J	P	Uncertainty near detection limit
DUP03100111	LEAD (PB)	0.28	ug/L	J	GP	Uncertainty near detection limit
DUP03100111-F	ANTIMONY (SB) (DISSOLVED)	0.24	ug/L	J	G	Field duplicate imprecision
FB01-100111	ANTIMONY (SB) (DISSOLVED)	0.34	ug/L	J	G	Field duplicate imprecision
FB01-100111	ARSENIC (AS) (DISSOLVED)	0.13	ug/L	J	P	Uncertainty near detection limit

APPENDIX F

HUMAN HEALTH RISK SCREENING SUPPORTING DOCUMENTATION

TABLE F-1
Human Health Risk-Based Screening Levels for Groundwater
All Ranges
Phase 2 Site Inspection
NSF Indian Head - Stump Neck Annex
Indian Head, Maryland

Parameter	Risk-Based Screening Levels for Tapwater[1]			USEPA Maximum Contaminant Level[2]	Lowest Risk-Based Screening Level
	Based on 10^{-6} Cancer Risk	Based on Hazard Index of 1	Based on Hazard Index of 0.1		
Inorganics (µg/L)					
Antimony		6.0E+00	6.0E-01	6.0E+00	6.0E-01
Arsenic	4.5E-02	4.7E+00	4.7E-01	1.0E+01	4.5E-02
Copper		6.2E+02	6.2E+01	1.3E+03	6.2E+01
Lead				1.5E+01	1.5E+01
PAHs (µg/L)					
Acenaphthene		4.0E+02	4.0E+01		4.0E+01
Acenaphthylene[3]		4.0E+02	4.0E+01		4.0E+01
Anthracene		1.3E+03	1.3E+02		1.3E+02
Benzo(a)anthracene	2.9E-02				2.9E-02
Benzo(a)pyrene	2.9E-03			2.0E-01	2.9E-03
Benzo(b)fluoranthene	2.9E-02				2.9E-02
Benzo(g,h,i)perylene[4]		8.7E+01	8.7E+00		8.7E+00
Benzo(k)fluoranthene	2.9E-01				2.9E-01
Chrysene	2.9E+00				2.9E+00
Dibenzo(a,h)anthracene	2.9E-03				2.9E-03
Fluoranthene		6.3E+02	6.3E+01		6.3E+01
Fluorene		2.2E+02	2.2E+01		2.2E+01
Indeno(1,2,3-cd)pyrene	2.9E-02				2.9E-02
Naphthalene	1.4E-01	6.1E+00	6.1E-01		1.4E-01
Phenanthrene[4]		8.7E+01	8.7E+00		8.7E+00
Pyrene		8.7E+01	8.7E+00		8.7E+00
Explosives (µg/L)					
Nitroglycerin	3.9E+00	1.5E+00	1.5E-01		1.5E-01

Blank cell indicates no value available.

Footnotes:
1 Based on Regional Screening Levels (RSLs) for tapwater (USEPA, November 2011).
2 2011 Edition of the Drinking Water Standards and Health Advisories.
3 Acenaphthene used as a surrogate.
4 Pyrene used as a surrogate.

TABLE F-2

Human Health Risk-Based Concentrations for Direct Contact Exposures to Groundwater
All Ranges
Phase 2 Site Inspection
NSF Indian Head - Stump Neck Annex
Indian Head, Maryland

	Risk-Based Screening Levels for Tapwater[1]	
Parameter	**Based on 10^{-6} Cancer Risk**	**Based on Hazard Index of 1**
Inorganics (µg/L)		
Antimony		6.0E+00
Arsenic	4.5E-02	4.7E+00
Copper		6.2E+02
Lead		
PAHs (µg/L)		
Acenaphthene		4.0E+02
Acenaphthylene[2]		4.0E+02
Anthracene		1.3E+03
Benzo(a)anthracene	2.9E-02	
Benzo(a)pyrene	2.9E-03	
Benzo(b)fluoranthene	2.9E-02	
Benzo(g,h,i)perylene[3]		8.7E+01
Benzo(k)fluoranthene	2.9E-01	
Chrysene	2.9E+00	
Dibenzo(a,h)anthracene	2.9E-03	
Fluoranthene		6.3E+02
Fluorene		2.2E+02
Indeno(1,2,3-cd)pyrene	2.9E-02	
Naphthalene	1.4E-01	6.1E+00
Phenanthrene[3]		8.7E+01
Pyrene		8.7E+01
Explosives (µg/L)		
Nitroglycerin	3.9E+00	1.5E+00

Blank cell indicates no value available.

Footnotes:
1 Based on Regional Screening Levels (RSLs) for tapwater (USEPA, November 2011).
2 Acenaphthene used as a surrogate.
3 Pyrene used as a surrogate.

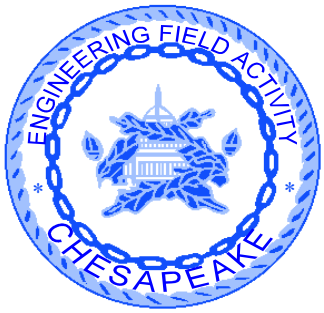
APPENDIX G

BACKGROUND INVESTIGATION REPORT FOR GROUNDWATER, FRESHWATER SEDIMENTS, AND BIOTA (APPENDIX A)

Background Soil Investigation Report

for

Indian Head and Stump Neck Annex
Naval Surface Warfare Center
Indian Head, Maryland



Engineering Field Activity Chesapeake
Naval Facilities Engineering Command

Contract Number N62472-90-D-1298
Contract Task Order 0320

October 2002

129702/P

BACKGROUND SOIL INVESTIGATION REPORT
for
INDIAN HEAD AND STUMP NECK ANNEX
NAVAL SURFACE WARFARE CENTER
INDIAN HEAD, MARYLAND

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

Submitted to:
Engineering Field Activity Chesapeake
1314 Harwood Street, S.E.
Washington Navy Yard, D.C. 20374-5018

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CONTRACT NUMBER N62472-90-D-1298
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APPENDIX A

BACKGROUND INVESTIGATION REPORT FOR GROUNDWATER, FRESHWATER SEDIMENTS, AND BIOTA

APPENDIX A

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A.1 INTRODUCTION

This appendix was prepared for the Naval Surface Warfare Center (NSWC) at Indian Head, Maryland, through the U.S. Navy (Navy) Northern Division Naval Facilities Engineering Command (NAVFAC). The report provides the results of the background characterization of environmental media at the NSWC Indian Head (the Station). The characterization included the sampling of groundwater and freshwater sediment at the Station and in general vicinity of the Station. The characterization did not include the sampling and analysis of surface waters, or marine or estuarine sediments. At the request of the Navy, a literature search for background concentrations of chemicals in environmental media was also conducted.

At the direction of the Navy, this appendix was developed using groundwater and sediment information taken from the Draft version of Background Investigation (BI) Report [BI Report for Indian Head and Stump Neck Annex (Brown & Root Environmental, 1997)].

A.2 PREVIOUS STUDIES

Previous studies and groundwater data based on previous studies that were considered for inclusion into the background data set are discussed in Section 2 of the Background Soil Investigation (BSI) Report. The extent of the data review for inclusion into the background data set is discussed in Section A.3.

A.3 DEVELOPMENT OF THE BACKGROUND DATA SET FOR GROUNDWATER AND SEDIMENT

Section A.3 describes the field investigations conducted to collect background data, presents the results of the background field investigation, and evaluates data for inclusion in the background data set for the Station. The field investigation for background data was conducted concurrently with the ongoing RCRA Facility/Verification Investigation (RFI/VI) field investigation of six sites at the Stump Neck Annex (June 18, 1997, through September 17, 1997). The field activities for groundwater and sediment investigation included the installation of 5 monitoring wells, the collection of a groundwater sample from each newly-installed monitoring well, and the collection of freshwater sediment samples at 10 locations. Data available as a result of the analysis of these samples and supplemental data available from the ongoing RFI/VI at the Stump Neck Annex and as a result of the implementation of CTO 222 were evaluated for inclusion into the background data set for the Station. To allow for future statistical comparisons with data from IR Sites/SWMUs/AOCs, a goal of 10 background data points (minimum) per environmental medium was established. Additionally, a literature search for background environmental data was performed. Attachment 4 contains analytical data, and Appendix F of the BSI contains the associated data validation memoranda.

A.3.1 GROUNDWATER

Groundwater data for five monitoring wells installed during the BI [as presented in the Draft version of Background Investigation Report for Indian Head and Stump Neck Annex (Brown & Root Environmental, 1997)], three RFI/VI monitoring wells installed for CTO 287, and two monitoring wells installed for CTO 222 were considered for inclusion in the background data set for the uppermost groundwater zone at the Station. The BI did not pursue characterization of the deeper aquifer zones underlying the Station but did pursue a literature search for background groundwater quality in the general vicinity of the Station.

A.3.1.1 Results of the Literature Search

Several government agencies (e.g., the Maryland Department of Environment) were contacted regarding the availability of background groundwater data for the Indian Head area. Background groundwater data were not available.

A.3.1.2 Background Investigation Sampling Program

The following monitoring wells were installed during the BI:

BGDMW01 BGDMW04
BGDMW02 BGDMW05
BGDMW03

A.3.1.2.1 Selection of the Sampling Locations

The locations of the five background monitoring wells installed during the BI were based on the project objectives and on comments received from Naval Facility personnel prior to and during a site reconnaissance and the field effort. The selection process focused primarily on the groundwater flow patterns in the general areas of the proposed monitoring well locations in relation to the Station's IR Sites/SWMUs and other AOCs and on selecting remote locations away from historical and current facility operation areas. No hydrogeologic data were available to determine shallow groundwater flow patterns in the local areas; therefore, the assumptions made regarding the groundwater flow directions are based primarily on land surface topography. The locations of the newly installed and existing monitoring wells are illustrated in Figure A-9. Figures A-1 and A-2 illustrate the location of IR Sites/SWMUs relative to background sample locations for Stump Neck Annex and the Main Area (Cornwallis Neck), respectively. These figures include elevation contour lines that depict upgradient or upstream conditions for background samples relative to IR Sites/SWMUs. Presumed groundwater flow directions are also indicated with arrows on Figures A-1 and A-2.

Background monitoring well BGDMW01 was installed in the southeast corner of the Stump Neck Annex in a wildlife viewing area. This location is comparatively remote. The groundwater in this area is probably flowing south toward a local stream.

BI monitoring wells BGDMW02, BGDMW03, BGDMW04 and BDGMW05 are located on the main Indian Head (Cornwallis Neck) peninsula. BGDMW02 is in the north-central portion of the facility, probably on or just south of a groundwater divide. Groundwater south of the well likely flows south to Mattawoman Creek, and groundwater north of the well likely flows north to the Potomac River. BGDMW03 is in the southwestern portion of the facility in an area of very low relief. It is believed that the groundwater in this area flows east-south by east direction toward Mattawoman Creek. Well BGDMW04 is just south of Strauss Avenue in the southwestern portion of the facility. Groundwater in this area is believed to flow to the north. Monitoring well BGDMW05 is on the facility's northeast boundary, south of State Route 210. Groundwater in this area is likely to flow the south.

A.3.1.3 Supplemental Sampling Program

Analytical results for five existing groundwater monitoring wells (RPLMW01D, RN6MW05, RN3MW01, 25MW03 and 26MW03) were considered for inclusion in the background data set to supplement the five samples collected during the BI. The locations of the monitoring wells are shown on Figure A-9.

A.3.1.3.1 Selection of Supplemental Locations

Groundwater samples were collected from four monitoring wells (RPLMW01D, RN6MW05, RN3MW01, and DSBMW04) installed as part of the RFI/VI field effort at Stump Neck (CTO 287). These wells were positioned upgradient of IR sites/SWMUs under investigation. Candidates for inclusion in the background data set were selected by considering the groundwater flow patterns and monitoring well locations relative to the IR Sites/SWMU locations. Groundwater sample results from RPLMW01D, RN6MW05, and RN3MW01 were considered for inclusion to the background data set. The groundwater sample results from monitoring well DSBMW04 were excluded from the background data set, because it was determined that the well originally anticipated to be upgradient of an IR Site/SWMU, may be at times downgradient of the site because of a tidally influenced groundwater flow pattern. The B&R Environmental RFI/VI Report for CTO 287 provides hydrogeologic and geologic details regarding monitoring wells installed at the RFI/VI sites.

On Stump Neck Annex, monitoring wells 25MW03 and 26MW03 were installed upgradient of Area 8 (IR Site 63) and the Improvised Explosive Device (IED) site (IR Site 64) respectively, as part of the CTO 222 VI by B&R Environmental in September 1995 (B&R Environmental, 1996). The groundwater sample results from these wells were considered for inclusion in the background data set.

A.3.1.4 Monitoring Well Installation

The monitoring wells for both the BI and RFI/VI were installed by a Maryland-licensed well driller. Well permits were obtained from the Charles County Health Department and the State of Maryland Department of the Environment prior to well installation. State well completion forms were completed by the driller after the wells were installed and were sent to the State and County. Copies of these documents for the newly installed wells are supplied in Attachment 1. In addition, B&R Environmental well construction sheets are supplied in Attachment 2, which provides a more detailed description of the materials used and how the wells were constructed.

The horizontal locations of the newly installed monitoring wells were surveyed to the nearest 0.1 foot. The top of the riser (reference point) and the ground surface elevations were surveyed to the nearest 0.01 foot

and referenced to the 1983 North American Datum. The surveying was performed by a State of Maryland registered professional land surveyor. Survey data are provided in Attachment 2.

Monitoring wells BGDMW01, BGDMW02, BGDMW04, BDGMW05, RN3MW01, and RN6MW05, were installed with screened intervals crossing the water table. BGDMW03 and RPLMW01(D) were installed with the screen set across the first water-bearing zone encountered; however, the water level in these wells is above the top of the screen because of the local, semi-confined aquifer conditions. The monitoring wells were installed and developed in accordance with the methods and procedures detailed in The Background Investigation Work Plan, (B&R Environmental, 1997a). Monitoring well construction sheets were generated during the drilling and installation process and are provided in Attachment 2. The monitoring wells were installed using schedule 40 polyvinyl chloride (PVC), .010-inch slot, 10 feet long by 2-inch inside diameter (I.D.) screens and 2-inch (I.D.) PVC riser. The annulus of the boring around the well screen was backfilled with clean silica sand (No. 20 to 30 U.S. Standard sieve size) to approximately 1 to 2 feet above the well screen. A 2-foot-thick bentonite pellet seal was installed above the sand pack and allowed to hydrate in accordance with the manufacturer's recommendations. The remaining annular space was backfilled with a bentonite and cement grout from the bentonite pellet seal to about the ground surface using a tremie pipe.

The monitoring wells installed during the September 1995 VI field investigation (CTO 222) (B&R Environmental, 1996) were installed in the same manner as the monitoring wells installed for the BI/RFI/VI. However, the monitoring wells installed during the September 1995 field effort were constructed using 4-inch-I.D., schedule 40 PVC screen and riser pipe.

The monitoring well construction summary presented in Table A-1 presents the ground elevation at the concrete pad well head, elevation of the top of the well riser pipe, total well depth (the depth of the well below ground surface), monitored or screened interval, depth to groundwater from below the ground surface, depth to groundwater from the top of the riser piper, and the groundwater elevation in feet.

A.3.1.5 Sampling Procedures

Groundwater samples were collected from monitoring wells in accordance with the low-flow sampling procedures detailed in B&R Environmental Standard Operating Procedures (SOP) SA-1.1 (B&R Environmental, 1997b). The purging and sampling apparatus used for collecting groundwater samples consisted of a length of Teflon tubing connected to a peristaltic pump. Silicon tubing was threaded through the pump, and a section of Teflon tubing was used for discharge. Measurements of depth to water, purge rate, pH, specific conductivity, temperature, salinity, and turbidity of the groundwater were performed at 5-minute intervals during the purging process. Groundwater sample collection was not initiated until at least two saturated screen length volumes were removed and

stabilization of the groundwater parameters was observed. Stabilization was defined as ±0.1 pH units, ±10% for specific conductance, ±0.1°C for temperature, and <10 nephelometric turbidity units (NTU) for turbidity.

Low-flow groundwater sampling was performed using the peristaltic pump discharging through a short piece of tubing directly into the appropriate sample containers. Sample containers were filled in the following order: Target Compound List (TCL) pesticides and polychlorinated biphenyls (PCBs), Target Analyte List (TAL) metals plus tin (total), total organic carbon (TOC)/total organic halides (TOX), anions, and dissolved TAL metals plus tin. After the samples were collected, they were placed on ice in a cooler for delivery to the laboratory. The groundwater samples collected from the monitoring wells installed as part of the RFI/VI were analyzed for additional parameters as specified by the RFI/VI Work Plan (B&R Environmental, 1997c), and are presented on the sample summary Table A-2. The sample summary table provides a list of all groundwater samples considered for the background investigation groundwater data set and the analyses performed.

A groundwater sample log sheet and a low-flow purge data sheet were generated for every sample collected. These sheets provide records of the purging and sampling conditions including but not limited to: sample identification, well depth, static water level, amount of water purged, date, time, samples collected for fixed-base laboratory analysis, purge and sample data, pH, conductivity, water temperature, turbidity, drawdown, and flow rate. The sample log sheets are supplied in Attachment 3.

The monitoring wells installed during the September 1995, CTO 222 field investigation (25MW03 and 26MW03) were sampled using macro purge sampling procedures, using a bailer to purge and collect the sample (B&R Environmental, 1996). The sample log sheets are supplied in Attachment 3. Sample Summary Table A-2 provides the analyses performed for these samples.

A.3.1.6 Results of the Groundwater Background and Supplemental Sampling Programs

This section presents the results of the analyses of groundwater samples collected from the five BI monitoring wells, the three upgradient monitoring wells from the RFI/VI investigation of Stump Neck (RN3MW001001, RN6MW005001, and RPLMW001001), and the two Verification Investigation Report wells (25MW03 and 26MW03). Table A-3 presents the positive detections for unfiltered groundwater samples. Figures A-3 and A-4 show the locations for unfiltered groundwater samples and list the positive detections for samples from Stump Neck Annex and the Main Area (Cornwallis Neck), respectively. Table A-4 presents descriptive statistics for the analytical sampling results for unfiltered groundwater samples. Table A-5 presents the positive detections for filtered groundwater samples. Figures A-5 and A-6 show the locations for filtered groundwater samples and list the positive detections for samples from Stump Neck Annex and the Main Area (Cornwallis Neck), respectively.

Descriptive statistics for filtered groundwater samples are presented in Table A-6. Given that turbidity often results in elevated metals concentrations in unfiltered groundwater samples, statistics were also developed for unfiltered groundwater samples that were reportedly "non-turbid" based on a review of the sample log sheets and the concentrations of inorganics often present in groundwater at milligram per liter concentrations (or greater) when groundwater samples are turbid (e.g., aluminum, magnesium, iron, manganese). Table A-7 presents the positive detections for these non-turbid unfiltered groundwater samples, and statistics are summarized in Table A-8. Maximum chemical concentrations detected in the background samples considered for inclusion in the background data set are compared to Federal Safe Drinking Water Act (SDWA) maximum contaminant levels (MCLs) (EPA, 2002) and EPA Region III RBCs (EPA, 2002).

A.3.1.6.1 General Water Quality Parameters

The water quality parameters examined include ammonia, chloride, nitrate/nitrite, phosphorus, and sulfate. In addition, total Kjeldahl nitrogen (TKN), TOX, and TOC were measured. None of the water quality parameters were detected at concentrations exceeding MCLs (EPA, 2002) or Region III RBCs (EPA, 2002).

A.3.1.6.2 Organic Compounds

Organic compounds were detected in background groundwater samples at maximum concentrations that did not exceed 10 µg/L. The target analytes detected were three volatile organic compounds, three phthalate compounds, and one energetic. In overview, none of these organics were detected at concentrations exceeding SDWA MCLs, where available (EPA, 2002). Three compounds, however, were detected at maximum concentrations exceeding Region III RBCs (EPA, 2002). It is important to note that the target analytes were not the same for all samples analyzed. For example, pesticides/PCBs were the only organics included in the analytical program for samples collected from the BI monitoring wells. The analytical program for each groundwater sample is presented in Table A-2.

Volatile Organic Compounds

The three volatile organics detected in the groundwater were chloroform, toluene, and carbon disulfide. Chloroform was detected in three wells sampled for the ongoing RFI/VI for Stump Neck and the VI CTO 222, and toluene was detected in the well located at Rum Point. The maximum chloroform concentration (3.1 µg/L), detected in well 26MW03 exceeds the EPA Region III RBC for tapwater. However, it is approximately one order of magnitude less than the MCL of 80 µg/L (EPA, 2002). The maximum concentration (C_{max}) for toluene of 7 µg/L is also less than the MCL. In addition, toluene is a

common laboratory contaminant. Carbon disulfide was detected in one well at a C_{max} of 6 µg/L, which is less than the EPA Region III RBC of 1000 µg/L for tap water (EPA, 2002).

Semivolatile Organic Compounds

The following semivolatile organic compounds were detected at low concentrations in groundwater: bis(2-ethylhexyl)phthalate, di-N-butyl phthalate, and diethyl phthalate. These compounds are plasticizers and common laboratory contaminants. They were detected in samples collected from upgradient monitoring wells at Range 6 and the Rum Point Landfill at the Stump Neck Annex. Bis(2-ethylhexyl)phthalate was the only semivolatile detected at the concentration exceeding the EPA Region III RBC for tapwater (EPA, 2002); the reported concentrations did not exceed the SDWA MCL (EPA, 2002).

Pesticides/PCBs

No pesticides/PCBs were detected in groundwater samples from the five newly installed BI monitoring wells. Sample 26MW03 was analyzed for PCBs, but no positive detections were reported. Pesticides/PCBs were not part of the analytical program for any other groundwater samples.

Energetics

Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) was detected in one groundwater sample, RN3MW001001, at a concentration of 1.2 µg/L. This well is located on Range 3 at the Stump Neck Annex, which is an area currently and historically known for heavy explosive activity. It should be noted that the concentration reported is within the range of detection limits reported for the other samples analyzed (0.74 U µg/L to 1.3 U µg/L).

A.3.1.6.3 Inorganic Compounds

Unfiltered and filtered groundwater samples were collected from all 10 background monitoring wells and analyzed for inorganic constituents. However, as detailed in Table A-2, the analyte list for some samples was the Appendix IX list of inorganics, whereas other samples were analyzed for inorganic constituents specified on the TAL list of metals. The analyte lists are a function of the scope of work and regulatory driver for each investigation producing potential background data.

Descriptive statistics for inorganic constituents detected in unfiltered groundwater samples, unfiltered groundwater samples reported to be non-turbid, and filtered groundwater samples are presented in Tables A-4, A-8, and A-6, respectively. The "unfiltered groundwater samples reported to be non-turbid" were selected based on a review of sample log sheets (to identify samples described as turbid by the field

samplers based on NTU readings or visual observation) and by a review of the concentrations of inorganics that are often present in groundwater at milligram per liter concentrations (or greater) when groundwater samples are turbid (e.g., aluminum, magnesium, iron, and manganese). Results for the following unfiltered samples comprise the "non-turbid" data set: BGDMW001U001, BGDMW002U001, BGDMW003U001, BGDMW004U001, RN3MW001U001, and RPLMW001U001. Results for the following unfiltered samples were not included in the "non-turbid" data set: 25MW03, 26MW03, RN6MW005U001, and BGDMW005U001. It should be noted that samples 25MW03 and 26MW03 were collected using bailers, a fact that may account, in part, for the turbidity noted.

The data sets presented in Tables A-4, A-6, and A-8 are compared to Federal SDWA MCLs, (EPA, 2002) and EPA Region III RBCs (EPA, 2002) as points of reference. Inorganic constituents were detected in all samples collected. Arsenic (C_{max} = 19.1 µg/L), beryllium (C_{max} = 11 µg/L), cadmium (C_{max} = 9.8 µg/L), chromium (C_{max} = 191 µg/L), and lead (C_{max} = 51 µg/L) were the only inorganics detected in the unfiltered groundwater samples at maximum concentrations exceeding SDWA primary (i.e., health-based) MCLs or action levels. However, the following inorganics were detected in the unfiltered samples at concentrations exceeding EPA Region III RBCs: aluminum, arsenic, chromium, iron, manganese, and vanadium. Inorganics were not detected at concentrations exceeding primary MCLs in unfiltered groundwater samples reported to be non-turbid or in filtered groundwater samples. Aluminum, iron, and manganese were reported in all three of the aforementioned data sets at concentrations exceeding SDWA secondary (aesthetic-based) MCLs. Iron and manganese were the only metals detected at concentrations exceeding EPA Region III RBCs in unfiltered groundwater samples reported to be non-turbid groundwater samples.

A.3.1.7 Selection of Background Data Set

Groundwater samples from 10 monitoring wells at the Indian Head Station were considered for inclusion in the background data set. The rationale for each monitoring well location was outlined in Sections A.3.1.2 and A.3.1.3. With exception of the influence of turbidity on metals concentrations in some of the unfiltered groundwater samples, analytical results for background samples collected during the BI, the RFI/VI at Stump Neck, and the CTO 222 VI are similar. Given the fact that turbidity may obscure (elevate) the actual metals concentrations in unfiltered samples, it is recommended that the results of turbid, "unfiltered" groundwater samples not be considered representative of background groundwater quality. Additionally, filtration of groundwater samples may remove metals concentrations typically present in a groundwater aquifer. Consequently, the non-turbid, unfiltered groundwater data set is most likely to be representative of shallow background groundwater quality in the Indian Head area.

A.3.2 FRESHWATER SEDIMENTS

Freshwater sediment samples were collected from 10 locations during the BI. Samples from any other environmental investigations were not added to supplement this data set. Site reconnaissance with Indian Head Station personnel concluded that it was not possible to gather 10 sediment samples from streams not impacted by facility operations on Cornwallis Neck and Stump Neck peninsulas. Therefore, three samples were collected off-base, as described in Section A.3.2.2.1. The BI did pursue a literature search for freshwater sediment quality in the general vicinity of the Station.

A.3.2.1 Results of the Literature Search

Table A-9 presents the results of the analysis of three freshwater sediment samples (INOS-C-1, INOS-C-2, and INOS-C-3) collected in 1985 by the U.S. Fish and Wildlife Service (USFW, 1990) at a location referred to as the Upper Mattawoman Creek Reference site. This location is approximately 4.25 miles upstream of the mouth of Mattawoman Creek.

A review of the inorganic data (Table A-9) from the Upper Mattawoman Creek Reference Site suggest that this site has not been affected by Naval facilities, wastewater treatment plants, or industrial facilities. Arithmetic means calculated for all of the inorganic compounds in the samples from the Upper Mattawoman Creek Reference Site were less than the means for Eastern U.S. (Shacklette and Boerngen, 1984) and Maryland soils (Dragun, 1991). Also, it is unlikely that IR Sites/SWMUs or AOCs at the Station, which are located downstream of the Upper Mattawoman Reference Site, would have influenced the results reported for this sampling location.

A.3.2.2 Background Investigation Sampling Program

Freshwater sediment samples were collected from 10 on-base and off-base locations (BGDSD01 through BGDSD10) during the BI.

A.3.2.2.1 Selection of the Sampling Locations

Sampling locations were selected in areas where the surface water is believed to have not been impacted by the facility operations. Four of the ten samples -- BGDSD01, BGDSD02, BGDSD05, and BGDSD06 -- were collected on the Stump Neck Annex property. Three samples -- BGDSD08, BGDSD09, and BGDSD10 -- were collected from streams on the Cornwallis Neck peninsula. Two samples, BGDSD04 and BGDSD07, were collected from streams nearby Smallwood State Park. One sample, BGDSD03, was collected from a stream in the nearby Doncaster State Forest. Sampling locations are shown on Figure A-9. Maps of Stump Neck (Figure A-1) and the main area of IHDIV-NSWC (Cornwallis Neck)

(Figure A-2) are provided which depict the sampling locations in relationship to the IR Sites/SWMUs and other AOCs.

The selection of the fresh water sediment sample locations was based upon the project objectives and recommendations received from Naval personnel prior to and during a site reconnaissance and during the field effort. The recommendations considered surface water flow directions in relation to the locations of the SWMUs and other AOCs.

Sample BGDSD01 was collected from an unnamed intermittent stream in the southeast corner of the Stump Neck Annex in a wildlife viewing area. There was water flowing in the unnamed stream at the time the sample was collected. The stream drains from the south beyond the facility property boundary from a sparsely populated area at the intersection of Stump Neck Road and State Route 224.

Sample BGDSD02 was collected from an unnamed intermittent stream in the eastern portion of the facility, several hundred feet up stream from Rum Point Landfill and approximately 500 feet downstream from the intersection of Rum Point Road and Stump Neck Road. This is an area where local residents reportedly dumped minor amounts of domestic debris. Water was flowing in the unnamed stream at the time the sample was collected.

Sample BGDSD03 was collected from an unnamed intermittent stream in the Doncaster State Forest, approximately 100 feet upstream from Forest Road. Water was flowing in the unnamed stream at the time the sample was collected.

Samples BGDSD04 and BGDSD07 were collected from unnamed perennial streams within Smallwood State Park. BGDSD04 was collected from a stream located in the eastern portion of the park and just downstream of Sweden Point Road. BGDSD07 was collected from a stream located in the western portion of the park, 3000 feet downstream from State Road 210.

Sample BGDSD05 was collected from an unnamed intermittent stream along the eastern boundary of the Stump Neck Annex facility, approximately 600 feet east of Rum Point Road. Water was flowing in the unnamed stream at the time the sample was collected.

Sample BGDSD06 was collected from an unnamed intermittent stream located in the Stump Neck Annex, approximately 100 feet south of Archer Avenue and approximately 300 feet upstream of the intersection of Archer Avenue and Roach Road. There was no water flowing at this location when the sample was collected.

Sample BGDSD08 was collected from an unnamed intermittent stream on the main area of the Indian Head facility (Cornwallis Neck), approximately 50 feet south of Hanlon Road, across from the golf course. Water was flowing at the time the sample was collected.

Sample BGDSD09 was collected from a drainage swale located on the main area of the Indian Head facility (Cornwallis Neck), approximately 40 feet downstream from a 36-inch steel pipe culvert and approximately 200 feet upstream from the wastewater treatment plant. Water was flowing in this swale at the time the sample was collected, and a distinct sewer odor was detected during the sampling event.

Sample BGDSD10 was collected from a drainage swale located on the main area of the Indian Head facility (Cornwallis Neck) approximately 75 feet upstream from Jackson Road. Water was flowing in this swale at the time the sample was collected.

A.3.2.3 Sampling Procedures

The sediment samples were collected in accordance with the procedures detailed in the B&R Environmental Background Investigation Work Plan (B&R Environmental, 1997). After the samples were collected, they were placed on ice in a cooler for delivery to the laboratory. The samples collected were analyzed for the following parameters and chemicals: TCL Pesticides/PCBs, TAL metals plus tin, TOC/TOX, and grain size distribution. A sediment sample log sheet was generated for each sample collected. The sample log sheets are included in Attachment 3. Sample Summary Table A-10 provides a list of sediment samples collected and the analyses performed by the laboratory.

A.3.2.4 Results of the Freshwater Sediment Background Sampling Programs

This section summarizes the results of the analysis of 10 sediment samples collected during the BI. Table A-11 presents the positive detections for the sediment samples, and Figures A-7 and A-8 locates these samples and list the positive detections for samples on Stump Neck Annex and the Man Area (Cornwallis Neck), respectively. There are no readily available criteria or standards for sediment based on the protection of human health. Consequently, the results of freshwater sediment sampling were compared to literature values for background surface soil and Region III RBCs for soil (EPA, 2002). Descriptive statistics for the freshwater sediment data are presented in Table A-12.

A.3.2.4.1 Physical Sediment Characteristics

The ten sediment samples collected as part of the background investigation were analyzed for grain size distribution. The results were reported using the Unified Soil Classification System, and indicate that the sediments sampled consist primarily of sand, silty sand and poorly-graded (well-sorted) sand. Five

samples were characterized as silty sand (SM); three samples were characterized as poorly-graded sand (SP). Samples BGDSD07 and BGDSD10 were classified as sandy silt (ML) and clayey sand (SC), respectively. Laboratory reports providing size distribution analysis are provided in Attachment 4.

A.3.2.4.2 Organic Compounds

The following three pesticides were the only organics detected in the BI sediment samples:

Dichlorodiphenyldichloroethane (DDD) - C_{max} = 40 µg/kg
Dichlorodiphenyldichloroethylene (DDE) - C_{max} = 12 µg/kg
Dichlorodiphenyltrichloroethane (DDT) - C_{max} = 14 µg/kg

However, as requested by the Navy, TCL pesticides and PCBs were the only target analytes specified in the analytical program for the sediments. The maximum concentrations of DDT, DDE, and DDD did not exceed the EPA Region III RBCs. These pesticides are probably present as a result of the widespread historical use of pesticides in our environment.

A.3.2.4.3 Inorganic Compounds

The results of the analysis of the freshwater sediment samples for TAL metals plus tin are presented in Table A-12. With the exception of silver, the distributions of the data reported for the metals are lognormal. This is an expected result for naturally occurring metals in environmental media (EPA, 1992b). An "undefined" distribution was reported for silver. An explanation of the statistical tests used to determine the distribution of a data set is presented in Section 4 of the BSI report.

Descriptive statistics for inorganic constituents presented in Table A-12 are compared to background concentrations reported in the literature for soils in the Eastern United States and the State of Maryland, and to EPA RBCs for soil ingestion as points of reference. None of the metals concentrations detected in the sediment samples exceed background soil concentrations for soils of the Eastern United States (Shacklette and Boerngen, 1984). Five metals were detected in at least one sample at a concentration exceeding background soil concentrations for soils in the State of Maryland (Dragun, 1991): arsenic (C_{max} = 10.6 mg/kg), lead (C_{max} = 79.3 mg/kg), mercury (C_{max} = 0.25 mg/kg), selenium (C_{max} = 2.3 mg/kg), and zinc (C_{max} = 158 mg/kg). It should be noted that the TOC content of sediment samples with metals concentrations exceeding the State of Maryland background soil concentrations exceed 15,000 mg/kg. The TOC content of all other sediment samples did not exceed 15,000 mg/kg. Metals concentrations in sediments are strongly related to TOC and sediment particle size. For soils or sediments, the finer the particle size and the higher the organic carbon, the greater the potential for accumulating metals. Of the metals exceeding the State of Maryland background soil concentrations,

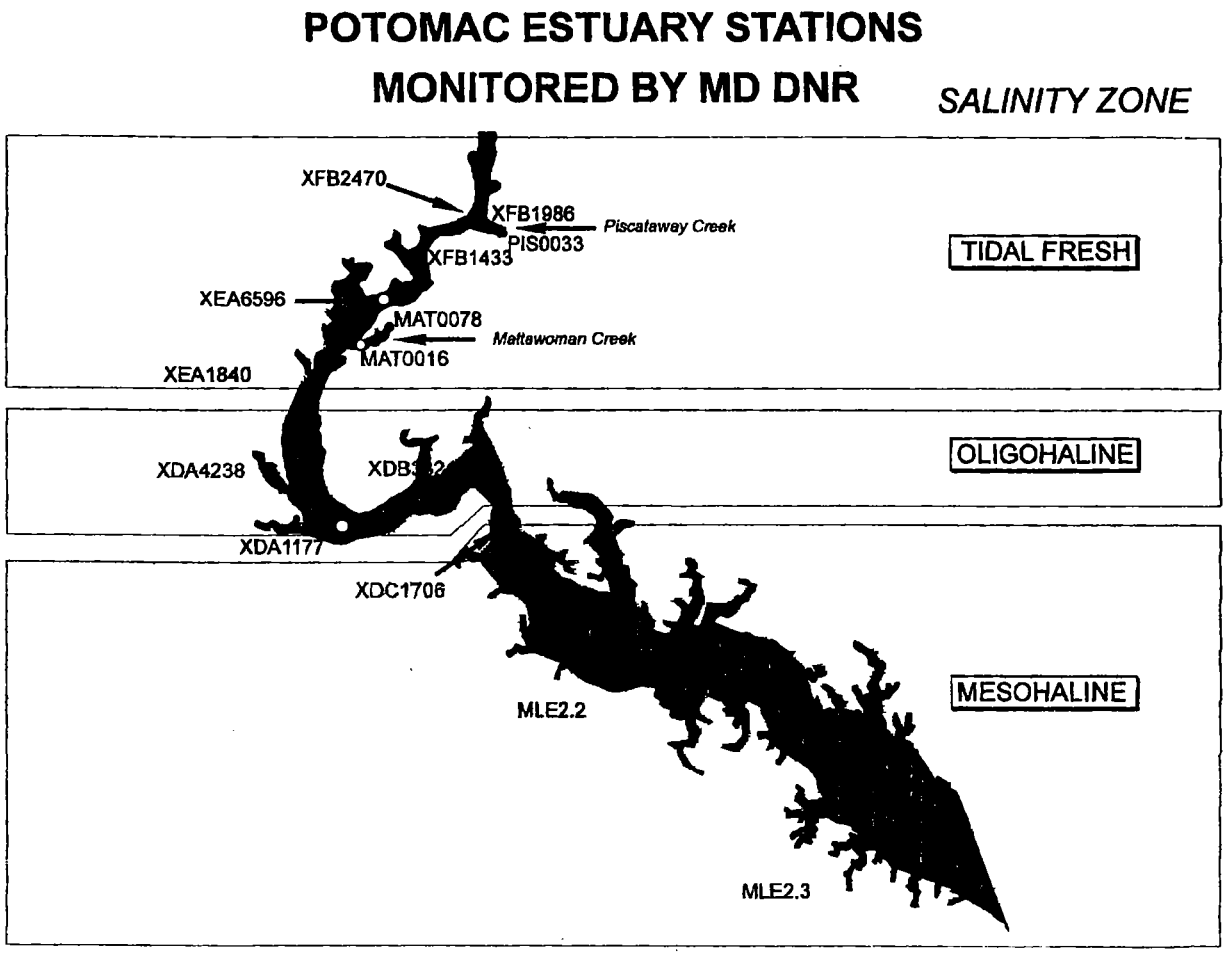
arsenic is the only metal exceeding an EPA RBC for soil ingestion (EPA, 2002). The maximum arsenic concentration detected (10.6 mg/kg) is approximately 1.5 times the maximum arsenic concentration reported for State of Maryland background soils.

A.3.2.5 Selection of the Background Data Set

A total of 10 freshwater sediment samples comprise the background data set. All samples were taken as part of the BI, and no supplemental samples were added to the data set. The rationale for the sampling locations is outlined in Section A.3.2.2.1. The data collected are generally reflective of background soil concentrations reported in the literature. There were no anomalies in the data to necessitate the removal of any of the samples from the background data set.

A.3.3 TIDAL FRESHWATER SEDIMENTS AND OLIGOHALINE SEDIMENTS

Freshwater sediments were the only sediments sampled during the BI. However, data from the Maryland Department of the Environment were obtained for one tidal freshwater sediment location (MAT0016) near the mouth of Mattawoman Creek, one tidal freshwater sediment location (XEA6596) in the Potomac River offshore from the Indian Head Facility, and one oligohaline sediment location (XDA1177) in the Potomac River near Maryland Point. Oligahaline sediments are defined as sediments underlying oligahaline waters, that is, waters containing a minute amount of salinity. These three locations were sampled from 1987 through 1994. The database is included in Attachment 5 and the locations are marked on the following Potomac Estuary Map, which was obtained from the Maryland Department of Natural Resources (MD DNR, 1997).



A.3.3.1 Results of the Literature Search

The results of the analysis of samples collected from locations MAT0016, XDA1177, and XEA6596 are presented in Table A-13 and Attachment 5. Inorganic concentrations reported from MAT0016, at the mouth of Mattawoman Creek, are less than concentrations reported at the other two locations. Inorganic concentrations reported from XDA1177 at Maryland Point in the Potomac River (downstream of the Indian Head and Stump Neck Annex) exceeded those detected at XEA6596 (Potomac River - upstream of XEA6596 and adjacent to Indian Head). Not unexpectedly, as the distance downstream in the Potomac River increased, the concentrations of metals increased.

The metals concentrations in sediments collected at locations MAT0016, XEA6596, and XDA1177 were compared to literature values for Eastern U.S. soils (Shacklette and Boerngen, 1984) and State of Maryland soils (Dragun, 1991) (Table A-13), because sediment criteria for the protection of human health are not readily available.

The concentrations of chromium and copper in sediment were less than the concentrations presented for both the Eastern U.S. and State of Maryland soils. The concentrations of cadmium were less than the concentrations for Maryland soils. The concentrations for aluminum, iron, and manganese were within the range for Eastern U.S. soils.

Individually, several of the concentrations for arsenic at locations MAT0016, XEA6596, and XDA1177 slightly exceeded the State of Maryland soils range, but were within the range for Eastern U.S. soils. Additionally, none of the means calculated for 1987 through 1994 exceeded the range for State of Maryland soils.

Mercury [C=0.2 - 0.3 mg/kg (MAT0016)], nickel [C=35 - 48 mg/kg (XDA1177)], and zinc [C=186 - 217 mg/kg (XEA6596)] had individual concentrations which exceeded the range presented for Maryland soils, but were within the range for Eastern U.S. soil and less than the Region III RBCs. The mean concentrations for lead [C = 35 - 41mg/kg (XDA1177)] were within the range for the State of Maryland soils.

The review of this historical data suggests that low levels of inorganic compounds exist in Mattawoman Creek and in the Potomac River. The concentrations of these metals are less than the literature value for either Eastern U.S. soils.

Chemical concentrations in sediment can be influenced by physical factors, such as sedimentation rates, resuspension from tidal and wind-induced currents, river flow, and bioturbation. However, it is assumed that these factors have been constant over the past 15 years (USFW, 1990).

A.3.4 BIOTA

The U.S. Fish and Wildlife Service, in coordination with the EPA's Chesapeake Bay Program and the Maryland Department of the Environment, selected the Indian Head Station as one of four sites to examine the effectiveness of National Pollution Discharge Elimination Discharge System permits. The objective of this study was to determine whether metal contaminants introduced by the Station were affecting fish and wildlife. A report was prepared in 1990 (USFW, 1990). Data from two locations, one at Marsh Island in the lower Mattawoman Creek and an upstream reference site located 4.25 miles upstream of the mouth of Mattawoman Creek, are included in this report as potential background data for the Indian Head Station.

A.3.4.1 Results of the Literature Search (USFW, 1990)

Results of chemical analyses of fish and clams from Marsh Island and the upstream reference site on Mattawoman Creek are presented in Table A-14 and are compared to mean concentrations in biota as reported by the State of Maryland. The data and State of Maryland mean concentrations in biota are reported in USFW (1990). The conclusions of the report are summarized as follows:

- Cadmium was not detected in any tissue samples above the 0.1 parts per million (ppm) detection limit. It is likely, based on the results of the study, that Mattawoman Creek fish are not bioaccumulating or being detrimentally affected by cadmium.

- Mercury was detected in 24 of 36 fish and 2 of 4 clam samples. Concentrations ranged from less than detection to 0.072 ppm (white perch and brown bullhead). Mean concentrations of mercury for Marsh Island bullhead, channel catfish, and white perch tissue are slightly higher than the mean concentrations reported by the State of Maryland for fish tissue.

- Two of the three Marsh Island clam samples contained mercury, and the mean mercury level for the tissue samples was 0.02 ppm. The Upstream Mattawoman Creek Reference Site had no detectable mercury.

- Mean zinc concentrations in channel catfish and gizzard shad were not statistically different among locations. The mean value for Marsh Island channel catfish was two times greater than the value for the Upstream Mattawoman Creek Reference Site catfish, but these values were at or below mean concentrations reported by the State of Maryland for the five species with comparable data. Zinc levels were marginally higher than mean concentrations reported by the State of Maryland. Zinc is an important metallo-enzyme for fish.

- Zinc levels in clams were higher at the Upstream Mattawoman Creek Reference Site than at Marsh Island. It should be noted that different species were collected at the two sites, and only one sample was collected at the reference site.

TABLE A-1

SUMMARY OF MONITORING WELL CONSTRUCTION
BACKGROUND INVESTIGATION REPORT
INDIAN HEAD DIVISION
NSWC INDIAN HEAD, MARYLAND

Well Number	Ground Elevation (Feet MSL)	Top of Riser Elevation (Feet MSL)	Total Well Depth (Feet BGS)	Monitored Interval (Feet BGS)	Depth to Groundwater (Feet BGS)	Groundwater Elevation (Feet MSL)	Depth to Groundwater (Feet BTOR)
BGDMW01	86.08	88.43	16	6-16	10.95	75.13	13.3
BGDMW02	38.47	39.40	14	4-14	7.84	30.63	8.77
BGDMW03	35.49	37.87	22	12-22	11.11	24.38	13.49
BGDMW04	33.64	36.17	22	12-22	13.34	20.30	15.87
BGDMW05	108.23	110.66	52	42-52	44.51	63.72	46.94
RN6MW05	30.07	32.17	31	21-31	28.84	1.23	30.94
RPLMW01(D)	89.59	91.23	70	60-70	23.28	66.31	24.92
RN3MW01	25.62	27.76	32.5	22-32	24.40	1.22	26.54
25MW03	71.14	74.17	45	35-45	31.88	39.26	34.91
26MW03	31	34.04	18.5	7.5-17.5	9.40	21.6	12.44

BGS - Below ground surface
MSL - Mean sea level
BTOR - Below top of riser

TABLE A-2

SUMMARY OF GROUNDWATER SAMPLING AND ANALYTICAL PROGRAM
BACKGROUND INVESTIGATION REPORT
INDIAN HEAD DIVISION
NSWC INDIAN HEAD, MARYLAND

Sample	APP IX VOA SW846 8240B	APP IX SVOA SW846 8270B	TAL Metals SW846 6010A/7000	APP IX Metals SW846 6010A/7000	Explosives SW846 8330	TCL Pesticides SW846 8081	TCL PCBs SW846 8081	*Miscellaneous EPA 300.0	TPH EPA 418.1	TOC SW846 9060	TOX SW846 9020B
25MW03	X	X	X		X			X		X	X
25MW03-F			X								
26MW03	X	X	X		X		X	X	X	X	X
26MW03-F			X								
BGDMW001F001			X								
BGDMW001U001			X			X	X	X		X	X
BGDMW002F001			X								
BGDMW002U001			X			X	X	X		X	X
BGDMW003F001			X								
BGDMW003U001			X			X	X	X		X	X
BGDMW004F001			X								
BGDMW004U001			X			X	X	X		X	X
BGDMW005F001			X								
BGDMW005F001-D			X								
BGDMW005U001			X			X	X	X		X	X
BGDMW005U001-D			X			X	X	X		X	X
RN3MW001F001				X							
RN3MW001U001	X	X		X	X					X	X
RN6MW005F001				X							
RN6MW005U001	X	X		X	X						
RPLMW001F001				X							
RPLMW001U001	X	X		X							

* Miscellaneous parameters include ammonia, nitrate/nitrite, phosphorus, sulfate, total Kjeldahl nitrogen for samples 25MW03 and 26MW03. Miscellaneous parameters include chloride, fluoride, nitrate, nitrite, phosphorus, and sulfate for all other samples.

APP IX - Appendix IX
VOA - Volatile organic analyte
SVOA - Semi-volatile organic analyte
TAL - Target analyte list
TCL - Target compound list
PCBs - Polychlorinated biphenyls
TPH - Total petroleum hydrocarbons
TOC - Total organic carbon
TOX - Total organic halides

TABLE A-3
SUMMARY OF POSITIVE DETECTIONS IN UNFILTERED GROUNDWATER SAMPLES
BACKGROUND INVESTIGATION REPORT
INDIAN HEAD DIVISION
NSWC INDIAN HEAD, MARYLAND

SAMPLE NUMBER:	BGDMW001U001	BGDMW002U001	BGDMW003U001	BGDMW004U001	BGDMW005U001	BGDMW005U001-D	25MW03
LOCATION:	BGDMW001U001	BGDMW002U001	BGDMW003U001	BGDMW004U001	BGDMW005U001	BGDDUP004	25MW03
SAMPLE DATE:	08/06/97	08/12/97	08/12/97	08/13/97	08/15/97	08/15/97	10/04/95
VOLATILES (µg/L)							
CARBON DISULFIDE							0.48 U
CHLOROFORM							2.6 J
TOLUENE							0.17 U
SEMIVOLATILES (µg/L)							
BIS(2-ETHYLHEXYL)PHTHALATE							3.3 J
DI-N-BUTYL PHTHALATE							2.0 U
DIETHYL PHTHALATE							0.65 U
ENERGETICS (µg/L)							
RDX							0.79 U
METALS (µg/L)							
ALUMINUM	63.0 U	71.0 K	1130	9620	21000 J	4400 J	73400 J
ARSENIC	1.9 UL	2.0 B	1.9 UL	4.6 B	5.4 B	1.9 UL	2.2 L
BARIUM	32.4	89.6	52.9	139	173	53.6	688
BERYLLIUM	1.4 B	1.5 B	1.3 B	2.1 B	3.3 B	2.4 B	11.0
CADMIUM	2.8	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	6.4 L
CALCIUM	18100	6200 K	2970 K	2340 K	4600 K	2230 K	40300
CHROMIUM	2.0 U	2.0 U	4.2	16.4	46.9 J	11.4 J	191
COBALT	2.1	6.7	4.2	15.6	46.6 L	16.7 L	169
COPPER	3.3 U	3.3 U	4.4	22.4	50.0 J	13.5 J	166 L
IRON	156 K	15100	4230	19900	58200	13000	252000
LEAD	2.2 B	2.4 B	3.3 B	12.4 B	16.8 L	5.5 B	51.0
MAGNESIUM	1290 K	3980 K	1250 K	2110 K	2900	1170	16800
MANGANESE	104 L	824 L	156 L	334 L	929 J	356 J	2290
MERCURY	0.13 B	0.10 U	0.10 U	0.10 U	0.10 UL	0.10 UL	0.20 B
NICKEL	2.7	1.1 U	2.6	16.6	27.3	10.3	166 K
POTASSIUM	2220	1340	6040	1380	6350	3820	8430
SELENIUM	2.5 UL	2.5 UL	2.5 UL	2.5 UL	2.5 UL	2.5 UL	1.5 U
SODIUM	3580 L	33000	17200	14200	24900	23700	8840
VANADIUM	0.70 U	0.70 U	3.5 B	20.9	80.7 J	17.6 J	281
ZINC	8.5 B	10.7 B	12.7 B	45.2	80.4 J	27.7 J	483
MISCELLANEOUS PARAMETERS (mg/L)							
AMMONIA							0.41
CHLORIDE	4.3 L	40.1 L	11.8 L	20.8 L	43.1	41.2	

TABLE A-3
SUMMARY OF POSITIVE DETECTIONS IN UNFILTERED GROUNDWATER SAMPLES
BACKGROUND INVESTIGATION REPORT
INDIAN HEAD DIVISION
NSWC INDIAN HEAD, MARYLAND

SAMPLE NUMBER:	BGDMW001U001	BGDMW002U001	BGDMW003U001	BGDMW004U001	BGDMW005U001	BGDMW005U001-D	25MW03
LOCATION:	BGDMW001U001	BGDMW002U001	BGDMW003U001	BGDMW004U001	BGDMW005U001	BGDDUP004	25MW03
SAMPLE DATE:	08/06/97	08/12/97	08/12/97	08/13/97	08/15/97	08/15/97	10/04/95
MISCELLANEOUS PARAMETERS (mg/L)							
NITRATE	0.11 L	0.073 L	0.40 L	0.05 L	0.632 L	0.466 L	
NITRATE/NITRITE							0.05 UL
PHOSPHORUS	0.5 UR	0.5 UR	0.5 UR	0.5 UR	0.5 UR	0.5 UR	1.5
SULFATE	23.6	9.3	17.8	16.6	3.93	4.01	8.0 L
TOTAL KJELDAHL NITROGEN							0.43 L
TOTAL ORGANIC CARBON	3.1	2.9	3.2	6.9	1.38	1 U	1.0 U
TOTAL ORGANIC HALIDES (ug/L)							13.6 L

TABLE A-3
SUMMARY OF POSITIVE DETECTIONS IN UNFILTERED GROUNDWATER SAMPLES
BACKGROUND INVESTIGATION REPORT
INDIAN HEAD DIVISION
NSWC INDIAN HEAD, MARYLAND

SAMPLE NUMBER:	26MW03	RN6MW005U001	RPLMW001U001	RN3MW001U001			
LOCATION:	26MW03	RN6MW005U001	RPLMW001U001	RN3MW001U001			
SAMPLE DATE:	10/04/95	08/04/97	08/06/97	08/03/97	/ /	/ /	/ /
VOLATILES (µg/L)							
CARBON DISULFIDE	0.48 U	5 U	6	5 U			
CHLOROFORM	3.1	5 U	2 J	5 U			
TOLUENE	0.17 U	5 U	7	5 U			
SEMIVOLATILES (µg/L)							
BIS(2-ETHYLHEXYL)PHTHALATE	5.4 U	6 J	1 J	11 U			
DI-N-BUTYL PHTHALATE	2.4 U	1 J	1 J	11 U			
DIETHYL PHTHALATE	0.78 U	12 U	3 J	11 U			
ENERGETICS (µg/L)							
RDX	0.74 UJ	1.3 U		1.2 J			
METALS (µg/L)							
ALUMINUM	11100 J						
ARSENIC	1.9 UL	19.1 L	1.9 UL	1.9 UL			
BARIUM	140	624	60.3	12.9			
BERYLLIUM	0.90 U	7.8	1.1 B	1.3 B			
CADMIUM	5.0 UL	9.8	1.3 U	1.3 U			
CALCIUM	3580 K						
CHROMIUM	14.8 L	97.0	2.5	2.0 U			
COBALT	15.6	641	0.70 U	3.8			
COPPER	16.3	78.7	3.3 U	4.0 B			
IRON	22100						
LEAD	10.3 B	46.0	5.2 B	2.7 B			
MAGNESIUM	2920 K						
MANGANESE	328						
MERCURY	0.10 U	0.17	0.13	0.10 U			
NICKEL	30.9 B	77.6	1.1 U	8.7			
POTASSIUM	3640						
SELENIUM	1.5 U	14.1	2.5 U	2.5 U			
SODIUM	9120						
VANADIUM	37.4	120	2.4 B	1.2 B			
ZINC	70.1 B	254	6.4 B	13.2 B			
MISCELLANEOUS PARAMETERS (mg/L)							
AMMONIA	0.60						
NITRATE/NITRITE	0.73 L						

TABLE A-3
SUMMARY OF POSITIVE DETECTIONS IN UNFILTERED GROUNDWATER SAMPLES
BACKGROUND INVESTIGATION REPORT
INDIAN HEAD DIVISION
NSWC INDIAN HEAD, MARYLAND

SAMPLE NUMBER:	26MW03	RN6MW005U001	RPLMW001U001	RN3MW001U001			
LOCATION:	26MW03	RN6MW005U001	RPLMW001U001	RN3MW001U001			
SAMPLE DATE:	10/04/95	08/04/97	08/06/97	08/03/97	/ /	/ /	/ /
MISCELLANEOUS PARAMETERS (mg/L)							
PHOSPHORUS	0.21						
SULFATE	1.6 L						
TOTAL KJELDAHL NITROGEN	0.60 L						
TOTAL ORGANIC CARBON	4.3			1.11			
TOTAL ORGANIC HALIDES (ug/L)	11.8 L						

TABLE A-4

STATISTICAL SUMMARY OF ANALYTICAL RESULTS FOR UNFILTERED GROUNDWATER SAMPLES
BACKGROUND INVESTIGATION REPORT
INDIAN HEAD DIVISION
NSWC INDIAN HEAD, MARYLAND

Chemical	Frequency of Detection	Minimum Detection	Maximum Detection	Average of Positive Detections	Location of Maximum	Distribution of Data	95% Upper Confidence Limit	95% Upper Tolerance Limit	Federal Maximum Contaminant Level[1]	Risk-Based Concentration[2]
Volatile Organic Compounds (ug/L)										
Carbon disulfide	1/5	6	6	6	RPLMW001U001	Normal	4.55	12.2	NA	1000
Chloroform	3/5	**2**	**3.1**	**2.57**	26MW03	Normal	2.91	4.18	100/80	0.15
Toluene	1/5	7	7	7	RPLMW001U001	Normal	5.13	14.3	1000	750
Semivolatile Organic Compounds (ug/L)										
Bis(2-Ethylhexyl)phthalate	3/5	1	**6**	3.43	RN6MW005U001	Normal	5.66	12.4	6	4.8
Di-N-butyl phthalate	2/5	1	1	1	RN6MW005U001, RPLMW001U001	Undefined	1	1	NA	3700
Diethyl phthalate	1/5	3	3	3	RPLMW001U001	Normal	3	14.4	NA	29000
Energetics (ug/L)										
RDX	1/4	**1.2**	**1.2**	**1.2**	RN3MW001U001	Lognormal	1.2	9.6	NA	0.61
Inorganics (ug/L)										
Aluminum	6/7	71	**73400**	**18004**	25MW03	Lognormal	73400	41956191	50 -200[3]	37000
Arsenic	3/10	**2.2**	**19.1**	**8.2**	RN6MW005U001	Undefined	19.1	19.1	10	0.045
Barium	10/10	12.9	688	195	25MW03	Lognormal	688	3553	2000	2600
Beryllium	2/10	**7.8**	**11**	**9.4**	25MW03	Undefined	11	11	4	73
Cadmium	3/10	2.8	**9.8**	**6.33**	RN6MW005U001	Undefined	9.8	9.8	5	18
Calcium	7/7	2230	40300	10986	25MW03	Lognormal	40300	233970	NA	NA
Chromium	7/10	2.5	**191**	51	25MW03	Lognormal	191	2272	100	110
Cobalt	9/10	2.1	641	98.9	RN6MW005U001	Lognormal	641	6593	NA	730
Copper	6/10	4.4	166	53.3	25MW03	Lognormal	166	1519	1300[4]	1500
Iron	7/7	156	**252000**	**49869**	25MW03	Lognormal	252000	27834817	300[3]	11000
Lead	2/10	**16.8**	**51**	**48.5**	25MW03	Lognormal	51	273	15[4]	NA
Magnesium	7/7	1170	16800	4341	25MW03	Lognormal	14351	57981	NA	NA
Manganese	7/7	**104**	**2290**	**668**	25MW03	Lognormal	2290	14516	50[3]	730
Mercury	2/10	0.13	0.17	0.15	RN6MW005U001	Undefined	0.17	0.17	2	11
Nickel	7/10	2.6	**166**	41.9	25MW03	Lognormal	166	2094	NA	730
Potassium	7/7	1340	8430	4019	25MW03	Lognormal	8430	38498	NA	NA
Selenium	1/10	14.1	14.1	14.1	RN6MW005U001	Undefined	14.1	14.1	50	180
Sodium	7/7	3580	33000	15749	BGDMW002U001	Lognormal	33000	158156	NA	NA
Vanadium	5/10	17.6	**281**	102	25MW03	Lognormal	281	11317	NA	260
Zinc	4/10	27.7	483	209	25MW03	Lognormal	483	3976	5000[3]	11000
Miscellaneous (mg/L)										
Ammonia	2/2	0.41	0.60	0.505	26MW03	Undefined	0.60	0.60	NA	0.21
Chloride	5/5	4.3	43.1	23.8	BGDMW005U001	Lognormal	43.1	966	250[3]	NA
Nitrate (ug/l)	5/5	0.05	0.632	0.236	BGDMW005U001	Lognormal	0.632	13.1	10000	58000
Nitrate/nitrite	1/2	0.73	0.73	0.73	26MW03	Undefined	0.73	0.73	1	3.7
Phosphorus	2/7	0.21	1.5	0.855	25MW03	Undefined	1.5	1.5	NA	NA
Sulfate	7/7	1.6	23.6	11.6	BGDMW001U001	Normal	17.4	38.7	250[3]	NA
Total kjeldahl nitrogen	2/2	0.43	0.60	0.515	26MW03	Undefined	0.60	0.60	NA	NA
Total organic halides (µg/l)	2/8	11.8	13.6	12.7	25MW03	Undefined	13.6	13.6	NA	NA
Total organic carbon	7/8	1.11	6.9	3.21	BGDMW004U001	Lognormal	6.9	35.9	NA	NA

Notes:
1 - Drinking Water Regulations and Health Advisories, www.epa.gov/safewater, July, 2002.
2 - EPA Region III Risk-Based Concentrations, October, 2002. Values presented are tap water values.
3 - Secondary Maximum Contaminant Level (SMCL), Drinking Water Regulations and Health Advisories, EPA 822-B-00-001, Summer, 2002.
4 - Action Level, Drinking Water Regulations and heatlh Advisories, www.epa.gov/safewater, July, 2002.
Value which is bolded exceeds Region III RBCs or MCLs.
NA - Not available

TABLE A-5
SUMMARY OF POSITIVE DETECTIONS IN FILTERED GROUNDWATER SAMPLES
BACKGROUND INVESTIGATION REPORT
INDIAN HEAD DIVISION
NSWC INDIAN HEAD, MARYLAND

SAMPLE NUMBER:	BGDMW001F001	BGDMW002F001	BGDMW003F001	BGDMW004F001	BGDMW005F001	BGDMW005F001-D	25MW03-F
LOCATION:	BGDMW001F001	BGDMW002F001	BGDMW003F001	BGDMW004F001	BGDMW005F001	BGDDUP004-F	25MW03
SAMPLE DATE:	08/06/97	08/12/97	08/12/97	08/13/97	08/15/97	08/15/97	10/04/95
DISSOLVED METALS (µg/L)							
ALUMINUM, FILTERED	63.0 U	63.0 U	335 K	97.6 K	63.0	63.0	110 UL
ANTIMONY, FILTERED	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U	1.7 U
ARSENIC, FILTERED	1.9 UL	1.9 B	1.9 UL	1.9 UL	1.9 UL	1.9 UL	1.9 U
BARIUM, FILTERED	34.0	86.7	41.4	50.2	23.5	21.9	51.2
BERYLLIUM, FILTERED	1.3 B	1.5 B	1.9 B	1.3 B	2.0 B	2.5 B	0.90 U
CADMIUM, FILTERED	2.9	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	5.0 UL
CALCIUM, FILTERED	18800	6090 K	2650 K	1790 K	1710 K	1620 K	9650 K
CHROMIUM, FILTERED	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	10.0 UL
COBALT, FILTERED	2.3	6.8	3.6	7.7	8.2	8.3	14.0 U
COPPER, FILTERED	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	15.0 U
IRON, FILTERED	55.8 B	14100	2210	5230	346	340	47.0 U
LEAD, FILTERED	2.0 B	2.9 B	2.0 B	2.3 B	1.6 B	2.6 B	0.60 U
MAGNESIUM, FILTERED	1350 K	3830 K	1090 K	1120 K	746 K	712 K	3610 K
MANGANESE, FILTERED	108 L	806 L	138 L	211 L	193	191	288
MERCURY, FILTERED	0.14 B	0.10 U	0.10 U	0.10 U	0.10 UL	0.10 UL	0.10 U
NICKEL, FILTERED	2.6	1.4	3.7	3.3	2.2	4.3	17.0 U
POTASSIUM, FILTERED	2210	1300	5910	484	2910	2890	3440
SELENIUM, FILTERED	2.5 UL	2.5 UL	2.5 UL	2.5 UL	2.5 UL	2.5 UL	1.5 U
SILVER, FILTERED	0.70 U	0.70 U	0.70 U	0.70 U	0.70 U	0.70 U	1.0 U
SODIUM, FILTERED	3860 L	32300	15700	15500	22700	22100	8790
THALLIUM, FILTERED	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
TIN, FILTERED	1.2 U	1.3 B	1.4 B	1.2 U	1.2 U	1.2 U	33.6 U
VANADIUM, FILTERED	0.70 U	0.70 U	1.4 B	0.70 U	0.70 U	0.70 U	22.0 U
ZINC, FILTERED	8.9 B	12.1 B	10.3 B	12.8 B	8.6 B	8.7 B	8.0 U

TABLE A-5
SUMMARY OF POSITIVE DETECTIONS IN FILTERED GROUNDWATER SAMPLES
BACKGROUND INVESTIGATION REPORT
INDIAN HEAD DIVISION
NSWC INDIAN HEAD, MARYLAND

SAMPLE NUMBER:	26MW03-F	RN6MW005F001	RPLMW001F001	RN3MW001F001			
LOCATION:	26MW03	RN6MW005F001	RPLMW001F001	RN3MW001F001			
SAMPLE DATE:	10/04/95	08/04/97	08/06/97	08/03/97	/ /	/ /	/ /
DISSOLVED METALS (µg/L)							
ALUMINUM, FILTERED	110 UL						
ANTIMONY, FILTERED	1.7 U	2.3 U	2.3 U	2.3 U			
ARSENIC, FILTERED	1.9 U	1.9 UL	1.9 UL	1.9 UL			
BARIUM, FILTERED	14.0 U	4.0	60.3	9.9			
BERYLLIUM, FILTERED	0.90 U	0.20 U	1.2 B	1.5 B			
CADMIUM, FILTERED	5.0 UL	1.3 U	1.3 U	1.3 U			
CALCIUM, FILTERED	1980 K						
CHROMIUM, FILTERED	10.0 UL	2.0 U	2.0 U	2.0 U			
COBALT, FILTERED	14.0 U	2.5	0.70 U	3.0			
COPPER, FILTERED	15.0 U	3.8	3.3 U	3.3 U			
IRON, FILTERED	47.0 U						
LEAD, FILTERED	0.60 U	1.4	2.3 B	2.4 B			
MAGNESIUM, FILTERED	892 K						
MANGANESE, FILTERED	106						
MERCURY, FILTERED	0.10 U	0.10 U	0.16	0.10 U			
NICKEL, FILTERED	17.0 U	2.4 B	1.1 U	7.5			
POTASSIUM, FILTERED	1040						
SELENIUM, FILTERED	1.5 U	2.5 U	2.5 U	2.5 U			
SILVER, FILTERED	1.0 U	0.86 B	0.70 U	0.70 U			
SODIUM, FILTERED	10900						
THALLIUM, FILTERED	2.5 U	2.5 U	2.5 U	2.5 U			
TIN, FILTERED	33.6 U	1.2 U	1.7 B	1.2 U			
VANADIUM, FILTERED	22.0 U	0.70 U	0.70 U	0.70 U			
ZINC, FILTERED	8.0 U	7.3	6.1 B	7.8 B			

TABLE A-6

STATISTICAL SUMMARY OF ANALYTICAL RESULTS FOR FILTERED GROUNDWATER SAMPLES
BACKGROUND INVESTIGATION REPORT
INDIAN HEAD DIVISION
NSWC INDIAN HEAD, MARYLAND

Chemical	Frequency of Detection	Minimum Detection	Maximum Detection	Average of Positive Detections	Location of Maximum	Distribution of Data	Upper 95% Confidence Limit	Upper 95% Tolerance Limit	Federal Maximum Contaminant Level[1]	Risk - Based Concentration[2]
Inorganics (ug/L)										
Aluminum, filtered	3/7	63	**335**	165	BGDMW003F001	Lognormal	268	1060	50-200[3]	37000
Barium, filtered	9/10	4.0	86.7	40.0	BGDMW002F001	Normal	52.1	114	2000	2600
Cadmium, filtered	1/10	2.9	2.9	2.9	BGDMW001F001	Undefined	2.9	2.9	5	18
Calcium, filtered	7/7	1620	18800	6089	BGDMW001F001	Lognormal	18800	102113	NA	NA
Cobalt, filtered	7/10	2.3	8.3	4.9	BGDMW005F001-D	Normal	6.47	13	NA	730
Copper, filtered	1/10	3.8	3.8	3.8	RN6MW005F001	Undefined	3.8	3.8	1300[4]	1500
Iron, filtered	4/7	**340**	**14100**	**3137**	BGDMW002F001	Lognormal	14100	4171372	300[3]	11000
Lead, filtered	1/10	1.4	1.4	1.4	RN6MW005F001	Undefined	1.4	1.4	15[4]	NA
Magnesium, filtered	7/7	712	3830	1803	BGDMW002F001	Lognormal	3830	13988	NA	NA
Manganese, filtered	7/7	**106**	**806**	**264**	BGDMW002F001	Lognormal	609	2257	50[3]	730
Mercury, filtered	1/10	0.16	0.16	0.16	RPLMW001F001	Undefined	0.16	0.16	2	11
Nickel, filtered	6/10	1.4	7.5	3.6	RN3MW001F001	Lognormal	7.5	41.4	NA	730
Potassium, filtered	7/7	484	5910	2469	BGDMW003F001	Lognormal	5910	32631	NA	NA
Sodium, filtered	7/7	3860	32300	15636	BGDMW002F001	Lognormal	32300	135991	NA	NA
Zinc, filtered	1/10	7.3	7.3	7.3	RN6MW005F001	Lognormal	5.8	10.3	5000[3]	11000

Notes:
1 - Drinking Water Regulations and Health Advisories, www.epa.gov/safewater, July, 2002.
2 - EPA Region III Risk-Based Concentrations, October, 2002. Values presented are tap water values.
3 - Secondary Maximum Contaminant Level (SMCL), Drinking Water Regulations and Health Advisories, EPA 822-B-00-001, Summer, 2002.
4 - Action Level, Drinking Water Regulations and Health Advisories, www.epa.gov/safewater, July 2002.
NA - Not available
Values which are bolded exceed Region III RBCs or MCLs.

TABLE A-7
SUMMARY OF POSITIVE DETECTIONS IN NON-TURBID UNFILTERED GROUNDWATER SAMPLES
BACKGROUND INVESTIGATION REPORT
INDIAN HEAD DIVISION
NSWC INDIAN HEAD, MARYLAND

SAMPLE NUMBER:	BGDMW001U001	BGDMW002U001	BGDMW003U001	BGDMW004U001	RPLMW001U001	RN3MW001U001	
LOCATION:	BGDMW001U001	BGDMW002U001	BGDMW003U001	BGDMW004U001	RPLMW001U001	RN3MW001U001	
SAMPLE DATE:	08/06/97	08/12/97	08/12/97	08/13/97	08/06/97	08/03/97	/ /
VOLATILES (µg/L)							
CARBON DISULFIDE					6	5 U	
CHLOROFORM					2 J	5 U	
TOLUENE					7	5 U	
SEMIVOLATILES (µg/L)							
BIS(2-ETHYLHEXYL)PHTHALATE					1 J	11 U	
DI-N-BUTYL PHTHALATE					1 J	11 U	
DIETHYL PHTHALATE					3 J	11 U	
ENERGETICS (µg/L)							
RDX						1.2 J	
METALS (µg/L)							
ALUMINUM	63.0 U	71.0 K	1130	9620			
BARIUM	32.4	89.6	52.9	139	60.3	12.9	
CADMIUM	2.8	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	
CALCIUM	18100	6200 K	2970 K	2340 K			
CHROMIUM	2.0 U	2.0 U	4.2	16.4	2.5	2.0 U	
COBALT	2.1	6.7	4.2	15.6	0.70 U	3.8	
COPPER	3.3 U	3.3 U	4.4	22.4	3.3 U	4.0 B	
IRON	156 K	15100	4230	19900			
MAGNESIUM	1290 K	3980 K	1250 K	2110 K			
MANGANESE	104 L	824 L	156 L	334 L			
MERCURY	0.13 B	0.10 U	0.10 U	0.10 U	0.13	0.10 U	
NICKEL	2.7	1.1 U	2.6	16.6	1.1 U	8.7	
POTASSIUM	2220	1340	6040	1380			
SODIUM	3580 L	33000	17200	14200			
VANADIUM	0.70 U	0.70 U	3.5 B	20.9	2.4 B	1.2 B	
ZINC	8.5 B	10.7 B	12.7 B	45.2	6.4 B	13.2 B	
MISCELLANEOUS PARAMETERS (mg/L)							
CHLORIDE	4.3 L	40.1 L	11.8 L	20.8 L			
NITRATE	0.11 L	0.073 L	0.40 L	0.05 L			
SULFATE	23.6	9.3	17.8	16.6			
TOTAL ORGANIC CARBON	3.1	2.9	3.2	6.9		1.11	

TABLE A-8

STATISTICAL SUMMARY OF ANALYTICAL RESULTS FOR NON-TURBID UNFILTERED GROUNDWATER SAMPLES
BACKGROUND INVESTIGATION REPORT
INDIAN HEAD DIVISION
NSWC INDIAN HEAD, MARYLAND

Chemical	Frequency of Detection	Minimum Detection	Maximum Detection	Average of Positive Detections	Location of Maximum	Distribution of Data	95% Upper Confidence Limit	95% Upper Tolerance Limit	Federal Maximum Contaminant Level[1]	Risk-Based Concentration[2]
Volatile Organic Compounds (ug/L)										
Carbon disulfide	1/2	6	6	6	RPLMW001U001	Undefined	6	6	NA	1000
Chloroform	1/2	**2**	**2**	**2**	RPLMW001U001	Undefined	2	2	100/80[3]	0.15
Toluene	1/2	7	7	7	RPLMW001U001	Undefined	7	7	1000	750
Semivolatile Organic Compounds (ug/L)										
Bis(2-Ethylhexyl)phthalate	1/2	1	1	1	RPLMW001U001	Undefined	1	1	6	4.8
Di-N-butyl phthalate	1/2	1	1	1	RPLMW001U001	Undefined	1	1	NA	3700
Diethyl phthalate	1/2	3	3	3	RPLMW001U001	Undefined	3	3	NA	29000
Energetics (ug/L)										
RDX	1/1	**1.2**	**1.2**	**1.2**	RN3MW001U001	Undefined	1.2	1.2	NA	0.61
Inorganics (ug/L)										
Aluminum	3/4	71	**9620**	**3607**	BGDMW004U001	Lognormal	9620	286545198	50-200[3]	37000
Barium	6/6	12.9	139	64	BGDMW004U001	Lognormal	139	254	2000	2600
Cadmium	1/6	2.8	2.8	2.8	BGDMW001U001	Undefined	2.8	2.8	5	18
Calcium	4/4	2340	18100	7402.5	BGDMW001U001	Lognormal	18100	599450	NA	NA
Chromium	3/6	2.5	16.4	7.7	BGDMW004U001	Lognormal	16.4	20.9	100	110
Cobalt	5/6	2.1	15.6	6.48	BGDMW004U001	Lognormal	15.6	39.6	NA	730
Copper	2/6	4.4	22.4	13.4	BGDMW004U001	Undefined	22.4	22.4	1300[4]	1500
Iron	4/4	156	**19900**	**9846.5**	BGDMW004U001	Normal	19900	57199	300[3]	11000
Magnesium	4/4	1250	3980	2157.5	BGDMW002U001	Lognormal	3980	31254	NA	NA
Manganese	4/4	**104**	**824**	**354.5**	BGDMW002U001	Lognormal	824	28160	50[3]	730
Mercury	1/6	0.13	0.13	0.13	RPLMW001U001	Undefined	0.13	0.13	2	11
Nickel	4/6	2.6	16.6	7.65	BGDMW004U001	Lognormal	16.6	39.0	NA	730
Potassium	4/4	1340	6040	2745	BGDMW003U001	Lognormal	6040	83058	NA	NA
Sodium	4/4	3580	33000	16995	BGDMW002U001	Normal	31307	79585	NA	NA
Vanadium	1/6	20.9	20.9	20.9	BGDMW004U001	Lognormal	20.9	24.1	NA	260
Zinc	1/6	45.2	45.2	45.2	BGDMW004U001	Undefined	45.2	45.2	5000[3]	11000
Miscellaneous (mg/l)										
Chloride	4/4	4.3	40.1	19.3	BGDMW002U001	Lognormal	40.1	1863	250[3]	NA
Nitrate (ug/l)	4/4	0.05	0.40	0.158	BGDMW003U001	Lognormal	0.40	11.8	10000	58000
Sulfate	4/4	9.3	23.6	16.8	BGDMW001U001	Normal	23.6	47.0	250[3]	NA
Total Organic Carbon	5/5	1.11	6.9	3.44	BGDMW004U001	Lognormal	6.9	45.0	NA	NA

Notes:
1 - Drinking Water Regulations and Health Advisories, www.epa.gov/sofewater, July, 2002.
2 - EPA Region III Risk-Based Concentrations, October, 2002. Values presented are tap water values.
3 - Secondary Maximum Contaminant Level (SMCL), Drinking Water Regulations and Health Advisories, EPA 822-B-96-002, Summer, 2002.
4 - Action Level, Drinking Water Regulations and Health Advisories, www.epa.gov/safewater, July, 2002.
Value is bolded which exceeds Region III RBCs or MCLs.
NA - Not available

TABLE A-9

SUMMARY OF INORGANIC CONSTITUENTS (mg/kg) IN FRESHWATER SEDIMENT BASED ON LITERATURE SEARCH
BACKGROUND INVESTIGATION REPORT
INDIAN HEAD DIVISION
NSWC INDIAN HEAD, MARYLAND

Station		Arsenic	Cadmium	Chromium	Copper	Mercury	Lead	Selenium	Silver	Zinc
Upper Mattawoman Creek Reference Site (USFW Report, January 1990)(1)										
INOS-C-1	1985	2	0.19	8.9	7.9	0.1	16	<0.05	0.2	63
INOS-C-2	1985	0.81	<0.1	8.1	3.2	0.036	5.3	<0.05	<0.05	13
INOS-C-3	1985	2.6	<0.1	9.1	10	0.08	14	0.02	<0.05	26
Arithmetic Mean		2	0.19	8.7	7	0.07	12	0.02	0.2	34

1 - U.S. Fish and Wildlife Service, "Metals in Sediment and Biota of Mattawoman Creek", January 1990.

TABLE A-10

SUMMARY OF FRESHWATER SEDIMENT SAMPLING AND ANALYTICAL PROGRAM
BACKGROUND INVESTIGATION REPORT
INDIAN HEAD DIVISION
NSWC INDIAN HEAD, MARYLAND

Sample	TCL VOA SW846 8240B	TCL SVOA SW846 8270B	TAL Metals SW846 6010A/7000	Explosives SW846 8330	TCL Pesticides SW846 8081	TCL PCBs SW846 8081	Particle Size ASTM D422	TPH EPA 418.1	TOC LLOYD KAHN	TOX SW846 9020B
BGDSD0010101			X		X	X	X		X	X
BGDSD0020101			X		X	X	X		X	X
BGDSD0030101			X		X	X	X		X	X
BGDSD0040101			X		X	X	X		X	X
BGDSD0040101-D			X		X	X	X		X	X
BGDSD0050101			X		X	X	X		X	X
BGDSD0060101			X		X	X	X		X	X
BGDSD0070101			X		X	X	X		X	X
BGDSD0070101-D			X		X	X	X		X	X
BGDSD0080101			X		X	X	X		X	X
BGDSD0090101			X		X	X	X		X	X
BGDSD0100101			X		X	X	X		X	X

VOA - Volatile organic analyte
SVOA - Semi-voltile organic analyte
TAL - Target analyte list
TCL - Target compound list
PCBs - Polychlorinated biphenyls
TPH - Total petroleum hydrocarbons
TOC - Total organic carbon
TOX - Total organic halides

TABLE A-11
SUMMARY OF POSITIVE DETECTIONS IN FRESHWATER SEDIMENT SAMPLES
BACKGROUND INVESTIGATION REPORT
INDIAN HEAD DIVISION
NSWC INDIAN HEAD, MARYLAND

SAMPLE NUMBER:	BGDSD0010101	BGDSD0020101	BGDSD0030101	BGDSD0040101	BGDSD0040101-D	BGDSD0050101	BGDSD0060101
LOCATION:	BGDSD0010101	BGDSD0020101	BGDSD0030101	BGDSD0040101	BGDDUP001	BGDSD0050101	BGDSD0060101
SAMPLE DATE:	07/31/97	07/31/97	08/18/97	07/31/97	07/31/97	07/31/97	08/01/97
PESTICIDES/PCBs (µg/kg)							
4,4'-DDD	5.2 UJ	1.0 J	6.2 U	4.7 UJ	4.6 UJ	4.7 UJ	4.9 UJ
4,4'-DDE	1.9 UJ	1.7 J	2.3 U	1.7 UJ	1.7 UJ	1.7 UJ	6.4 J
4,4'-DDT	5.7 UJ	1.9 J	6.8 U	5.1 UJ	5.1 UJ	5.1 UJ	5.4 UJ
METALS (mg/kg)							
ALUMINUM	4530 J	3240 J	2680	784 J	853 J	639 J	4570 J
ARSENIC	3.5	2.8	0.82 B	0.31 L	0.25 L	0.40 L	0.92 L
BARIUM	77.9 J	15.9 J	17.5	6.7 J	8.0 J	5.8 J	26.2 J
BERYLLIUM	0.50	0.41 L	0.09 B	0.14	0.13	0.17	0.51
CADMIUM	0.27	0.30 K	0.44 U	0.13	0.16	0.16 U	0.20
CALCIUM	569 K	1110	110 K	145 B	147 B	167 B	202 B
CHROMIUM	16.5 J	20.5 J	3.3	4.4 J	5.2 J	4.0 J	6.2 J
COBALT	6.4	1.4 L	0.67	0.80	0.95	1.1	6.1
COPPER	3.4	2.1 K	1.6	0.62	0.65	0.70	20.4
IRON	10900 J	10500 J	2620	2640 J	2720 J	1780 J	6510 J
LEAD	17.7	5.8	6.4 K	1.8	2.4	3.5	79.3
MAGNESIUM	2420	945	149 K	157 K	157 K	96.7 K	298 K
MANGANESE	207 J	71.1 J	11.2 K	34.3 J	73.6 J	44.0 J	160 J
MERCURY	0.03	0.02	0.02 L	0.02	0.04	0.01	0.03
NICKEL	25.2	3.7 L	0.54	0.71	0.45 B	0.55 B	3.2
POTASSIUM	390 J	2050 J	227	405 J	394 J	217 J	279 J
SELENIUM	0.62 J	0.62 J	0.85 UL	0.25 UJ	0.27 UJ	0.31 UJ	0.54 J
SILVER	0.12 B	0.09 B	0.31	0.08 B	0.09 B	0.10 B	0.13 B
SODIUM	58.1	70.0	104 B	24.6 U	30.2	33.3	61.2
VANADIUM	18.4 J	16.8 J	8.1	4.3 J	4.7 J	3.2 J	12.0 J
ZINC	30.9 J	18.8 J	1.1 B	11.2 J	11.0 J	4.4 J	11.4 J
MISCELLANEOUS PARAMETERS (mg/kg)							
TOTAL ORGANIC CARBON	11600	6830	5860	444	1020	871	15100

TABLE A-11
SUMMARY OF POSITIVE DETECTIONS IN FRESHWATER SEDIMENT SAMPLES
BACKGROUND INVESTIGATION REPORT
INDIAN HEAD DIVISION
NSWC INDIAN HEAD, MARYLAND

SAMPLE NUMBER:	BGDSD0070101	BGDSD0070101-D	BGDSD0080101	BGDSD0090101	BGDSD0100101		
LOCATION:	BGDSD0070101	BGDDUP003	BGDSD0080101	BGDSD0090101	BGDSD0100101		
SAMPLE DATE:	08/17/97	08/17/97	08/01/97	08/01/97	08/01/97	/ /	/ /
PESTICIDES/PCBs (µg/kg)							
4,4'-DDD	13 U	12 U	3.3 J	40 J	24 J		
4,4'-DDE	4.9 U	4.4 U	2.5 J	12 J	1.6 J		
4,4'-DDT	15 U	13 U	3.8 J	14 J	5.4 UJ		
METALS (mg/kg)							
ALUMINUM	14200	16600	1150 J	7540 J	3360 J		
ARSENIC	10.6	8.5	2.5	8.7	1.1 L		
BARIUM	175	175	9.9 J	65.7 J	18.5 K		
BERYLLIUM	2.8 B	2.7 B	0.09 B	0.88 L	1.0 L		
CADMIUM	0.95 U	0.85 U	0.18	0.86 K	0.48 K		
CALCIUM	4060	4110	171 B	10100	1530		
CHROMIUM	25.7	29.7	6.2 J	14.3 J	12.3 J		
COBALT	17.6	16.5	1.7	11.8	12.6		
COPPER	25.2	28.3	1.8	24.1	13.5		
IRON	42900	37500	4230 J	27300 J	25300 J		
LEAD	48.5 K	56.2 K	3.9	31.6	28.1		
MAGNESIUM	1200	1370	131 K	3030	628 K		
MANGANESE	392 K	390 K	134 J	444 J	107 J		
MERCURY	0.25	0.21	0.11	0.16	0.03		
NICKEL	18.3	18.6	1.8	13.8 L	7.1 L		
POTASSIUM	1150	1370	95.2 J	492 J	260 J		
SELENIUM	2.3	1.6 UL	0.45 J	1.5 J	1.2 J		
SILVER	0.51 U	0.46 U	0.18 B	0.92 K	0.08 U		
SODIUM	182 UL	163 UL	61.1	303	77.5		
VANADIUM	38.0	43.1	5.8 J	30.7 J	46.3 J		
ZINC	135	158	22.1 J	88.2 J	37.4 J		
MISCELLANEOUS PARAMETERS (mg/kg)							
TOTAL ORGANIC CARBON	39400	43500	515	16500	1060		

TABLE A-12

STATISTICAL SUMMARY OF ANALYTICAL RESULTS FOR FRESHWATER SEDIMENT SAMPLES
BACKGROUND INVESTIGATION REPORT
INDIAN HEAD DIVISION
NSWC INDIAN HEAD, MARYLAND

Chemical	Frequency of Detection	Minimum Detection	Maximum Detection	Average of Positive Detections	Location of Maximum	Distribution of Data	95% Upper Confidence Limit	95% Upper Tolerance Limit	Eastern U.S. Soils[1]	Maryland Soils[2]	Residential Risk-Based Concentration[3]	Industrial Risk-Based Concentration[3]
Pesticides/PCBs (ug/kg)												
4,4'-DDD	4/10	1.0	40	17.1	BGDSD0090101	Lognormal	29.9	118	NA	NA	2700	24000
4,4'-DDE	5/10	1.6	12	4.84	BGDSD0090101	Lognormal	6.85	26.1	NA	NA	1900	17000
4,4'-DDT	3/10	1.9	14	6.57	BGDSD0090101	Undefined	14	14	NA	NA	1900	17000
Inorganics (mg/kg)												
Aluminum	10/10	639	16600	4393	BGDSD0070101-D	Lognormal	13234	52362	7000 - 100000	NA	78000	2000000
Arsenic	9/10	0.25	**10.6**	**3.3**	BGDSD0070101	Lognormal	10.6	63	<0.1 - 73	1.1 - 7.1	0.43	3.8
Barium	10/10	5.8	175	42.0	BGDSD0070101, BGDSD0070101-D	Lognormal	145	577	10 - 1500	150 - 700	5500	140000
Beryllium	7/10	0.13	1.0	0.52	BGDSD0100101	Lognormal	1.0	10.9	<1 - 7	ND - 3	160	4100
Cadmium	7/10	0.13	0.86	0.35	BGDSD0090101	Lognormal	0.57	1.85	NA	<0.01 - 5.6	78	2000
Calcium	6/10	110	10100	2917	BGDSD0090101	Lognormal	10100	88137	100 - 280000	NA	NA	NA
Chromium	10/10	3.3	29.7	11.6	BGDSD0070101-D	Lognormal	22.9	79.2	1 - 1000	15 - 100	230	6100
Cobalt	10/10	0.67	17.6	5.97	BGDSD0070101	Lognormal	17.6	118	<0.3 - 70	ND - 20	1600	41000
Copper	10/10	0.62	28.3	9.5	BGDSD0070101-D	Lognormal	28.3	297	<1 - 700	5 - 70	3100	82000
Iron	10/10	1780	**42900**	13202	BGDSD0070101	Lognormal	42900	193218	100 - >100000	NA	23000	610000
Lead	10/10	1.8	79.3	23.1	BGDSD0060101	Lognormal	79.3	476	<10 - 300	10 - 50	400[4]	750[4]
Magnesium	10/10	96.7	**3030**	914	BGDSD0090101	Lognormal	3030	19043	50 - 50000	NA	NA	NA
Manganese	10/10	11.2	444	162	BGDSD0090101	Lognormal	444	2561	<2 - 7000	NA	1600	41000
Mercury	10/10	0.01	0.25	0.07	BGDSD0070101	Lognormal	0.196	0.778	0.01 - 3.4	0.04 - 0.14	23	610
Nickel	8/10	0.54	25.2	9.2	BGDSD0010101	Lognormal	25.2	382	<5 - 700	ND - 30	1600	41000
Potassium	10/10	95.2	2050	567	BGDSD0020101	Lognormal	1328	5061	50 - 37000	NA	NA	NA
Selenium	7/10	0.45	2.3	0.93	BGDSD0070101	Lognormal	1.73	6.45	<0.1 - 3.9	<0.1 - 0.5	390	10000
Silver	2/10	0.31	0.92	0.62	BGDSD0090101	Undefined	0.92	0.92	NA	NA	390	10000
Sodium	8/10	30.2	303	85.7	BGDSD0090101	Lognormal	144	472	<500 - 50000	NA	NA	NA
Vanadium	10/10	3.2	46.3	18.6	BGDSD0100101	Lognormal	46.3	196	<7 - 300	20 - 150	550	14000
Zinc	9/10	4.4	158	41.2	BGDSD0070101-D	Lognormal	158	1660	<5 - 2900	8 - 113	23000	610000
Miscellaneous (mg/kg)												
Total organic carbon	10/10	444	43500	10052	BGDSD0070101-D	Lognormal	43500	395297	NA	NA	NA	NA

Notes:
1 - Shacklette and Boerngen, (1984).
2 - Dragun (1991). Values presented in table are surface soil values.
3 - EPA Region III Risk-Based Concentrations, October, 2002.
4 - EPA Region 9 PRGs Table, October, 2002.
Bolded values are exceedances of Region III RBCs.
NA - Not available

TABLE A-13

SUMMARY OF INORGANIC CONSTITUENTS (mg/kg) IN TIDAL FRESH AND OLIGOHALINE SEDIMENT BASED ON LITERATURE SEARCH
BACKGROUND INVESTIGATION REPORT
INDIAN HEAD DIVISION
NSWC INDIAN HEAD, MARYLAND

Station		Aluminum	Arsenic	Cadmium	Chromium	Copper	Iron	Mercury	Manganese	Nickel	Lead	Zinc
Mattawoman Creek - near the mouth of Mattawoman Creek (1)												
MAT0016	1989	36500	9.9	0.71	50	28	38549	0.274	1337	32	22	168
MAT0016	1990	20016	23.4	0.8	45.1	32.8	33688	0.15	1116	37.7	35.6	184.8
MAT0016	1991	25010	7	0.8	38	32	32903	0.08	1010	35	32	192
MAT0016	1992	21636	36.4	0.5	40	35.2	33748	0.74	1254	37.2	46.6	206
MAT0016	1993	21560	6	0.9	36.6	33	35178	0.17	1332	30.8	44.8	194
MAT0016	1994	34800	6.4	0.94	54	31.4	32700	0.3	1150	39	45.4	172
Arithmetic Mean		26587	15	0.8	44	32	34461	0.3	1200	35	38	186
Potomac River - Maryland Point (1)												
XDA1177	1987	NA	27.5	0.54	50	43.4	46464	0.186	4326	64.1	37	251
XDA1177	1988	NA	30.71	0.56	43.695	36.055	38953	0.297	2628.95	35.705	27.9	199.495
XDA1177	1989	28300	13.8	2.01	45	37	46258	0.308	4140	53	32	196
XDA1177	1990	24470	31.8	0.6	47.2	36.9	36177	0.18	3067	45.7	37.5	198.2
XDA1177	1991	30278	9	0.7	36	38	39906	0.12	2588	45	48	192
XDA1177	1992	26100	35.4	0.4	49.6	43.4	40506	0.08	3494	45.4	46.6	224
XDA1177	1993	24776	9.28	0.7	41.4	36.8	39978	0.17	3149	38	47	224
XDA1177	1994	52600	8.3	0.95	66.6	50.2	45800	0.3	3130	54.2	52.8	247
Arithmetic Mean		31087	21	0.8	47	40	41755	0.2	3315	48	41	216
Potomac River offshore of Indian Head (1)												
XEA6596	1987	NA	15.3	0.7	39	43.1	36315	0.123	1808	54.7	33	272
XEA6596	1988	NA	15.27	0.18	39.36	34.73	29415	0.305	1056.9	29.65	17.94	189.89
XEA6596	1989	33300	11.6	0.75	50	37	37858	0.225	4140	45	20	209
XEA6596	1990	34269	27.6	0.8	50.9	40.2	35980	0.19	2288	41.7	33.7	209.8
XEA6596	1991	26308	20	0.8	38	38	35801	0.11	1920	40	40	200
XEA6596	1992	28596	33.6	0.5	44.6	41.6	36606	0.41	1214	41.4	42	214
XEA6596	1993	19402	6.91	0.9	38.4	36.2	33744	0.19	1536	35.6	46.2	201
XEA6596	1994	42600	6.5	0.7	56.2	46.2	39200	0.3	1570	50	46	242
Arithmetic Mean		30746	17	0.7	45	40	35615	0.2	1942	42	35	217

1 - Data obtained from the Technical and Regulatory Services Administration, Maryland Department of the Environment, November 26, 1997.
NA - Not Available.

TABLE A-14

METAL CONCENTRATIONS IN AQUATIC ANIMAL TISSUE BASED ON LITERATURE SEARCH (1)
BACKGROUND INVESTIGATION REPORT
INDIAN HEAD DIVISION
NSWC INDIAN HEAD, MARYLAND

Species	Location Mattawoman Creek	Number of Samples	Cadmium mean/range ppm	Maryland Level Cadmium (2) ppm	Mercury mean/range ppm	Maryland Level Mercury (2) ppm	Zinc mean/range ppm	Maryland Level Zinc (2) ppm
Brackish water clam	Marsh Island	3	ND	NA	0.02 ND - 0.025	NA	12.7 9.3 - 17	NA
Asiatic clam	Upstream Reference Site	1	ND	NA	ND	NA	22	NA
Gizzard shad	Marsh Island	6	ND	0.15	0.01 ND - 0.034	0.01	9.4 2.6 - 14	14
Gizzard shad	Upstream Reference Site	5	ND	0.15	0.02 ND - 0.028	0.01	12.7 8.1 - 28	14
Brown bullhead	Marsh Island	5	ND	0.58	0.04 ND - 0.072	0.03	10.1 7.6 - 14	15.5
Channel catfish	Marsh Island	5	ND	0.27	0.06 0.04 - 0.068	0.03	21.9 4.6 - 55	24.5
Channel catfish	Upstream Reference Site	4	ND	0.27	0.04 0.028 - 0.061	0.03	10.5 3.7 - 19	24.5
White perch	Marsh Island	5	ND	0.68	0.05 0.027 -0.072	0.04	17.6 6.2 - 38	20.9
Black crappie	Marsh Island	1	ND	0.8	ND	0.1	7.9	18.3
Spot	Marsh Island	5	ND	0.57	0.01 ND - 0.035	0.01	15.9/ 14 - 18	14.2

Notes:

1 USFS (1990).
2 Butler and Allison (1984).
ND - Not Detected
NA - Not Available

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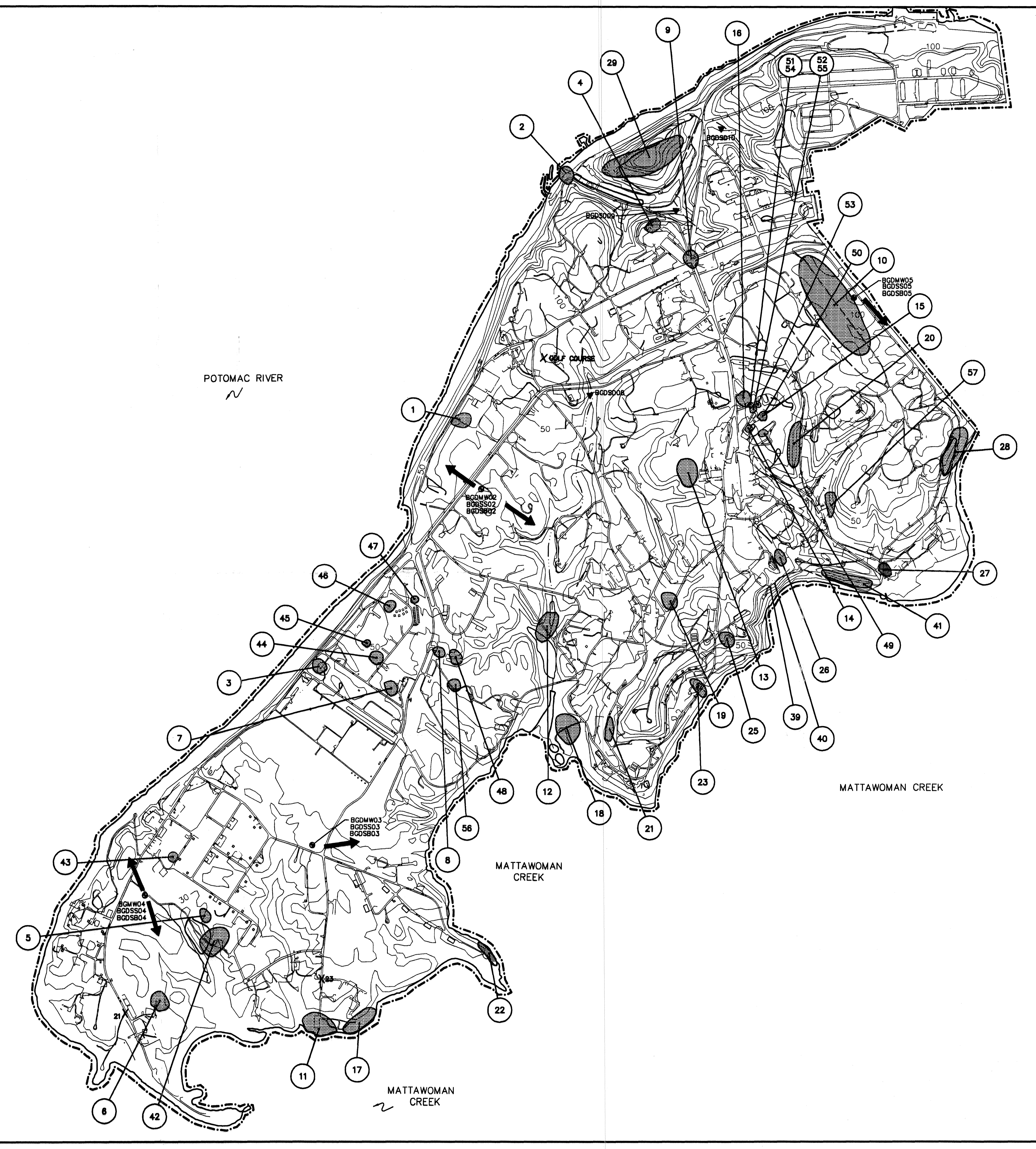
IR SITES/SOLID WASTE MANAGEMENT UNITS
SITE 30 STUMP NECK IMPACT AREA – SWMU 22
SITE 31 OLD DEMOLITION RANGE – SWMU 23
SITE 32 SUSPECTED TOOL BURIAL SITE – SWMU 11
SITE 33 SCRAP METAL PIT – SWMU 7
SITE 34 TOOL BURIAL SITE – SWMU 8
SITE 35 TORPEDO BURIAL SITE – SWMU 9
SITE 36 INACTIVE DISPOSAL SITE – SWMU 10
SITE 37 CAUSEWAY – SWMU 24
SITE 38 RUM POINT LANDFILL – SWMU 1
SITE 58 RANGE 3 BURN POINT – SWMU 2
SITE 59 CHICAMUXEN CREEK'S EDGE DUMP SITE A – SWMU 3
SITE 60 CHICAMUXEN CREEK'S EDGE DUMP SITE B – SWMU 4
SITE 61 RANGE 6 – SWMU 5
SITE 62 AIR BLAST POND – SWMU 6
SITE 63 AREA 8 – SWMU 25
SITE 64 IED SITE – SWMU 26
SITE 65 IOD SITE – SWMU 27
SWMU 12 WASTE OIL STORAGE SITE
SWMU 13 PINK WATER TREATMENT TANK AND ASSOCIATED TRENCHES
SWMU 14 PHOTOGRAPHIC LAB SEPTIC TANK SYSTEM
SWMU 15 SPENT PHOTOGRAPHIC SOLUTION STORAGE
SWMU 16 THERMAL TREATMENT TANK
SWMU 17 BLDG. 2015 – CHEMISTRY LAB ACCUMULATION AREA
SWMU 18 WASTE PILE
SWMU 19 DISPOSAL AREA #1
SWMU 20 DISPOSAL AREA #2
SWMU 21 DRUM STORAGE AREA
SWMU 28 SKEET RANGE
SWMU 29 OLD PISTOL RANGE
SWMU 30 BUILDING 2015 DRY WELL
POTOMAC RIVER
ARCHER AVE.
26MW03
BGDSD06
BGDSS08
BGDSB08
MARSH/WETLAND AREA
CHICAMUXEN CREEK
BGDSS09
BGDSB09
BGDSS07
BGDSB07
POND
25MW03
RPLMW01D
RPLSS03
RPLSB03
BGDSD02
BGDSD05
RN3MW01
RN6MW05
RN6SB17
RN6SS17
BGDMW01
BGDSS01
BGDSB01
x134
LEGEND:
FRESHWATER SEDIMENT SITE
SOIL BORING SAMPLE SITE
MW INSTALLATION SITE
SWMU NUMBER
IR SITES
FLOW DIRECTION
ESTIMATED GROUNDWATER FLOW DIRECTION
100 CONTOUR INTERVAL 10 FEET
APPROXIMATE IR SITE/SWMU LOCATION
NAVAL RESERVE BOUNDARY
INTERMITTENT STREAM
PERENNIAL STREAM
MARSH/WETLAND AREA
0 550 1100
SCALE IN FEET
ACAD:0530CM12.dwg 08/23/02 HJB PIT
Tetra Tech NUS, Inc.
REV. DESCRIPTION PREP BY DATE APPRVD
DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
ENGINEERING FIELD ACTIVITY CHESAPEAKE
WASHINGTON, DC
NAVAL SURFACE WARFARE CENTER
INDIAN HEAD, MD
SAMPLE LOCATIONS–STUMP NECK PENINSULA
BACKGROUND INVESTIGATION REPORT
IHDIV–NSWC, INDIAN HEAD, MARYLAND
SEAL AREA
SAT TO DATE
CODE I.D. NO. 80091
SCALE : AS SHOWN
SPEC. NO. 04 – NA
CONSTRN. CONTR. NO. NA
NAVFAC DRAWING NO. NA
SHEET 1 OF 1
SIZE: D
DIS. SH. NO. FIGURE A-1



LEGEND:

SITE NUMBER	SITE NAME
1	Thorium Spill
2	Waste Crank Case Oil Applied to Torrence Road
3	Nitroglycerin Explosion, Nitration Building Area
4	Lloyd Road Oil Spill Sites
5	X-Ray Building 731
6	Building 1349, Hypo Spill
7	Building 682, HMX Spill
8	Building 766, Mercury Deposits
9	Patterson Avenue, Oil Spill
10	Single-base Propellant Grains Spill
11	Caffee Road Landfill
12	Town Gut Landfill
13	Paint Solvents Disposal Ground
14	Waste Acid Disposal Pit
15	Mercury Deposits in Manhole, Flourine Lab
16	Laboratory Chemical Disposal
17	Disposal Metal Parts Along Shoreline
18	Hog Island
19	Catch Basins at Chip Collection Houses
20	Single-base Powder Facilities
21	Bronson Road Landfill
22	NG Slums Burning Site
23	Hydraulic Oil Spill Discharges From Extrusion Plant
24	Abandoned Drain Lines
25	Hypo Discharge X-Ray Building No. 2
26	Thermal Destructor 2
27	Thermal Destructor 1
28	Original Burning Ground
29	The Valley
30–38	Stump Neck Annex (SEE FIGURE 3-2)
39	Organics Plant
40	Palladium Catalyst in Sediments
41	Scrap Yard
42	Olson Road Landfill
43	Toluene Disposal Site
44	Soak Out Area
45	Abandoned Drums
46	Cadmium Sandblast Grit
47	Mercuric Nitrate Disposal Area
48	Nitroglycerine Plant Disposal Area
49	Chemical Disposal Area
50	Building 103, Crawl Space
51	Building 101, Dry Wall
52	Building 102, Dry Wall
53	Mercury Contamination of the Sewage System
54	Building 101
55	Building 102
56	IW87 – Lead Contamination
57	TCE Building 292 Area

APPROXIMATE IR SITE LOCATION

INTERMITTENT STREAM

NAVAL RESERVE BOUNDARY

ESTIMATED GROUNDWATER FLOW DIRECTION

—100— CONTOUR INTERVAL 10 FEET

FLOW DIRECTION

0 800 1600
SCALE IN FEET

ACAD: 0530CM11.dwg 08/23/02 HJB PIT

REV. DESCRIPTION PREP BY DATE APPRVD

Tetra Tech NUS, Inc.

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
ENGINEERING FIELD ACTIVITY CHESAPEAKE
WASHINGTON, DC
NAVAL SURFACE WARFARE CENTER
INDIAN HEAD, MD

SAMPLE LOCATIONS–CORNWALLIS NECK PENINSULA
BACKGROUND INVESTIGATION REPORT
IHDIV–NSWC, INDIAN HEAD, MARYLAND

SEAL AREA

SAT TO	DATE
CODE I.D. NO.	80091
SCALE :	AS SHOWN
SPEC. NO. 04 –	NA
CONSTRN. CONTR. NO.	NA
NAVFAC DRAWING NO.	NA
SHEET 1 OF 1	
SIZE: D	DIS. SH. NO. FIGURE A–2

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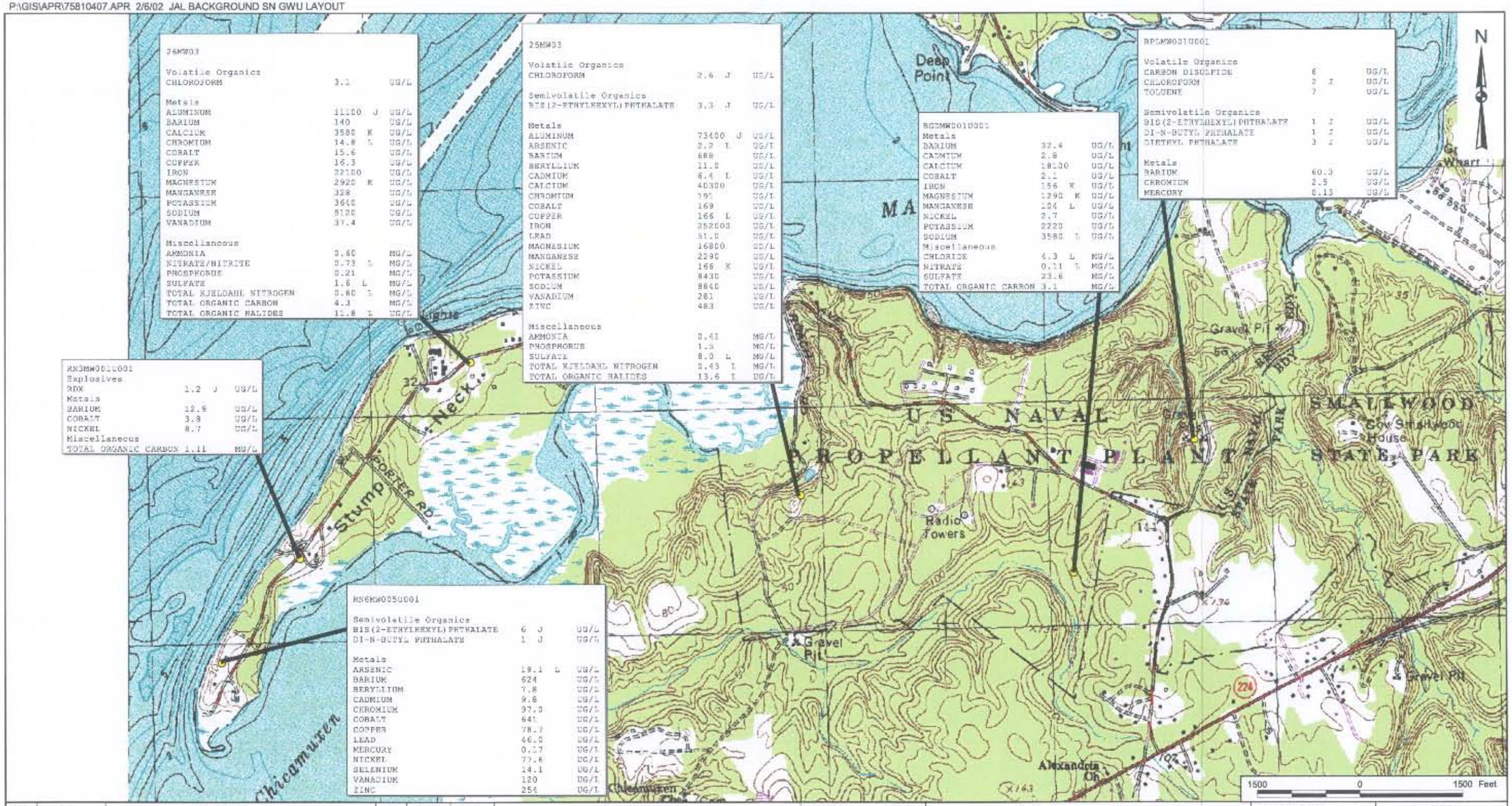

NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY D. PERRY DATE 4-DEC-97
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

Tetra Tech NUS, Inc.

GROUNDWATER (UNFILTERED) DETECTS -
STUMP NECK ANNEX
BACKGROUND INVESTIGATION REPORT
INDIV-NSWC, INDIAN HEAD, MARYLAND

CONTRACT NO.
OWNER NO.
APPROVED BY JAH DATE 10/24/02
APPROVED BY DATE
DRAWING NO. FIGURE A-3
REV. 0

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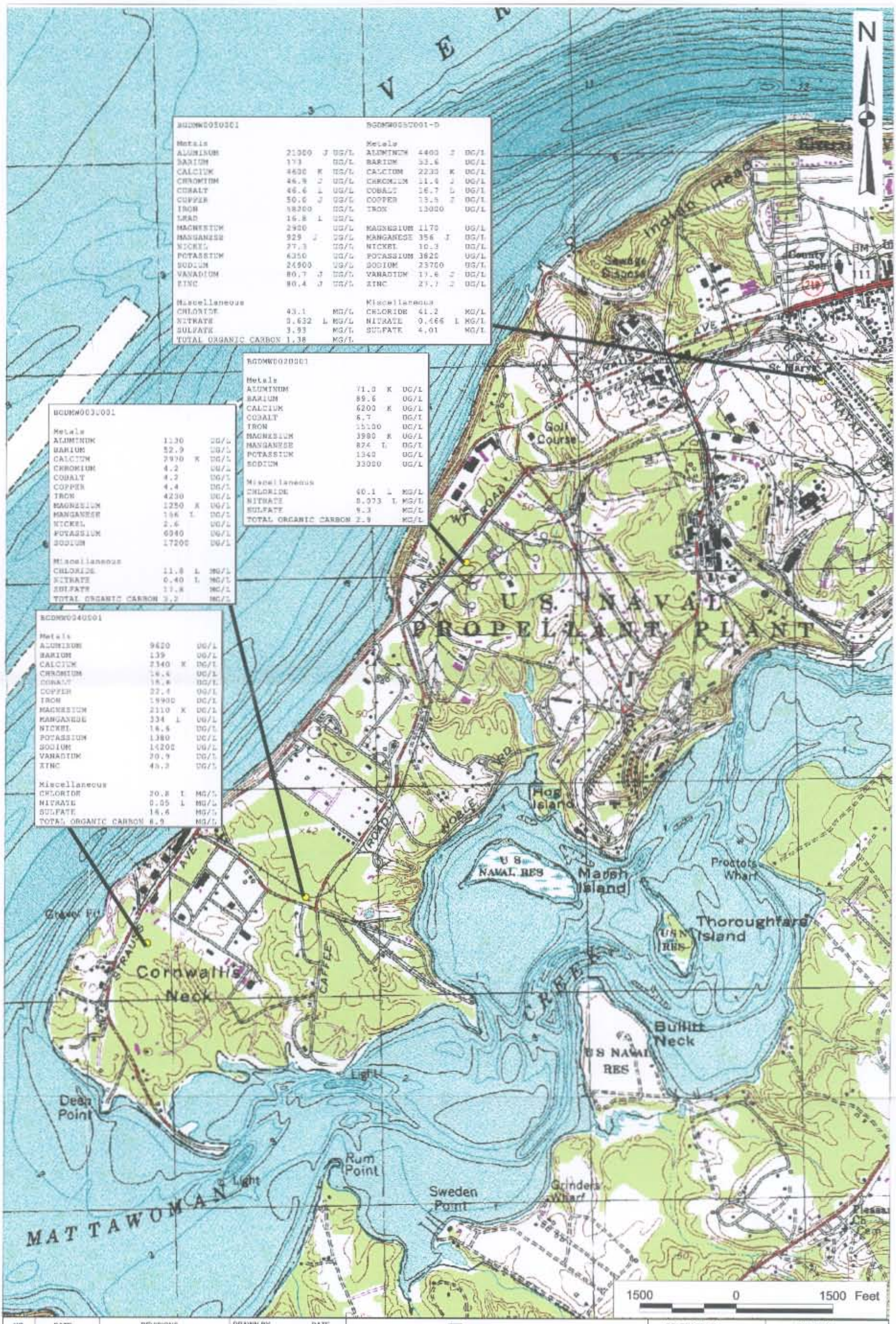

NO.	DATE	REVISIONS	DRAWN BY	DATE	Tetra Tech NUS, Inc.	CONTRACT NO.	OWNER NO.
			D. PERRY	4-DEC-97			
			CHECKED BY	DATE	GROUNDWATER (UNFILTERED) DETECTS - INDIAN HEAD BACKGROUND INVESTIGATION REPORT INDIV-NSWC, INDIAN HEAD, MARYLAND	APPROVED BY JAR	DATE 10/24/02
			COST/SCHED-AREA			APPROVED BY	DATE
			SCALE AS NOTED			DRAWING NO. FIGURE A-4	REV. 0

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NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY D. PERRY	DATE 4-DEC-97
CHECKED BY	DATE
COST/SCHED-AREA	
SCALE AS NOTED	

Tetra Tech NUS, Inc.

GROUNDWATER (FILTERED) DETECTS -
STUMP NECK ANNEX
BACKGROUND INVESTIGATION REPORT
INDIV-NSWC, INDIAN HEAD, MARYLAND

CONTRACT NO.	OWNER NO.
APPROVED BY JAL	DATE 10/24/02
APPROVED BY	DATE
DRAWING NO. FIGURE A-5	REV. 0

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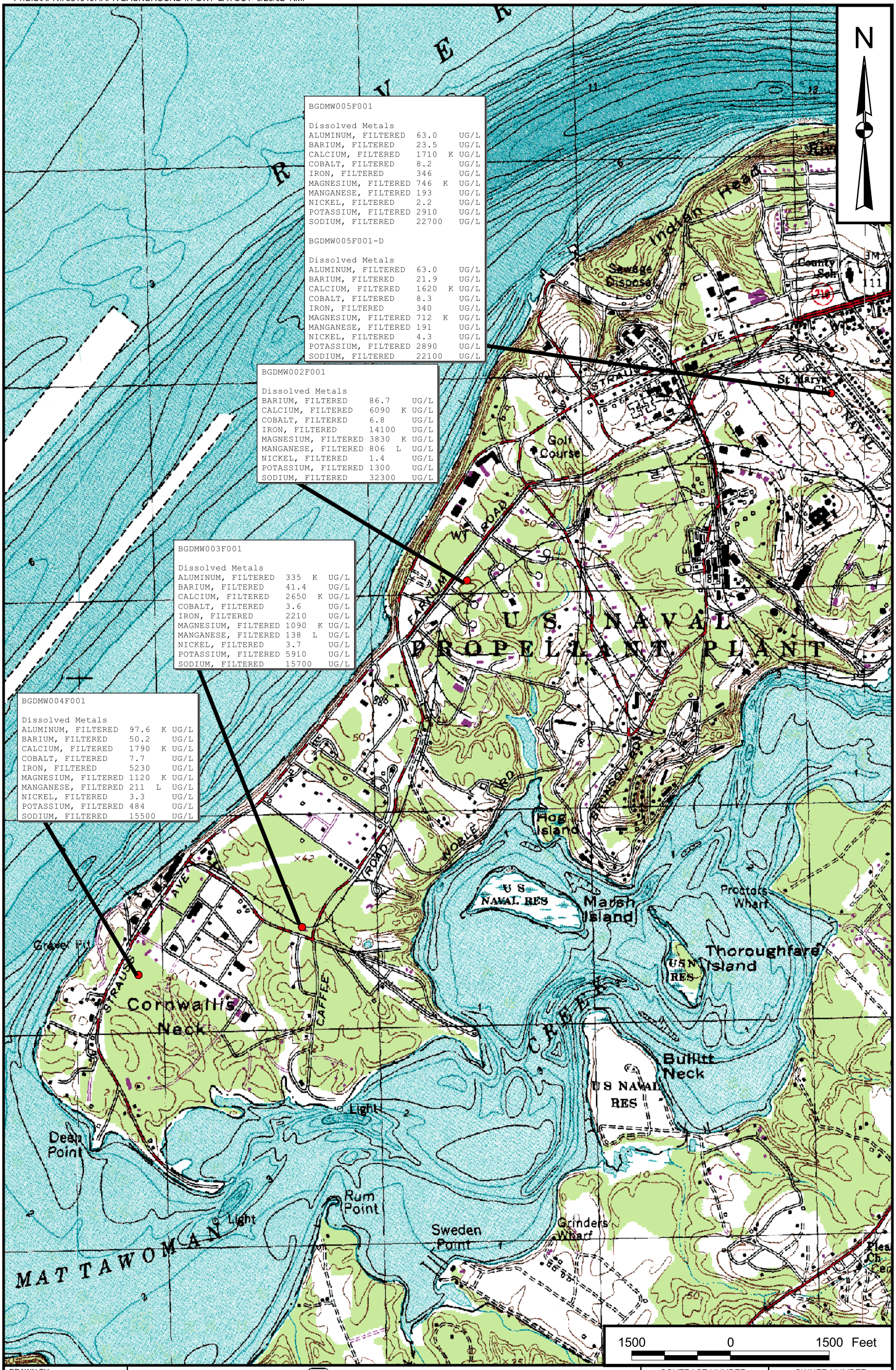

DRAWN BY K. PEILA	DATE 8/26/02	Tetra Tech NUS, Inc.	CONTRACT NUMBER 0530 / OWNER NUMBER 0320
CHECKED BY GJL	DATE 8/26/02	GROUNDWATER (FILTERED) DETECTS - CORNWALLIS NECK BACKGROUND INVESTIGATION REPORT INDIV-NSWC, INDIAN HEAD, MARYLAND	APPROVED BY GJL / DATE 8/26/02
COST/SCHEDULE-AREA			APPROVED BY — / DATE —
SCALE AS NOTED			DRAWING NO. FIGURE A-6 / REV 0

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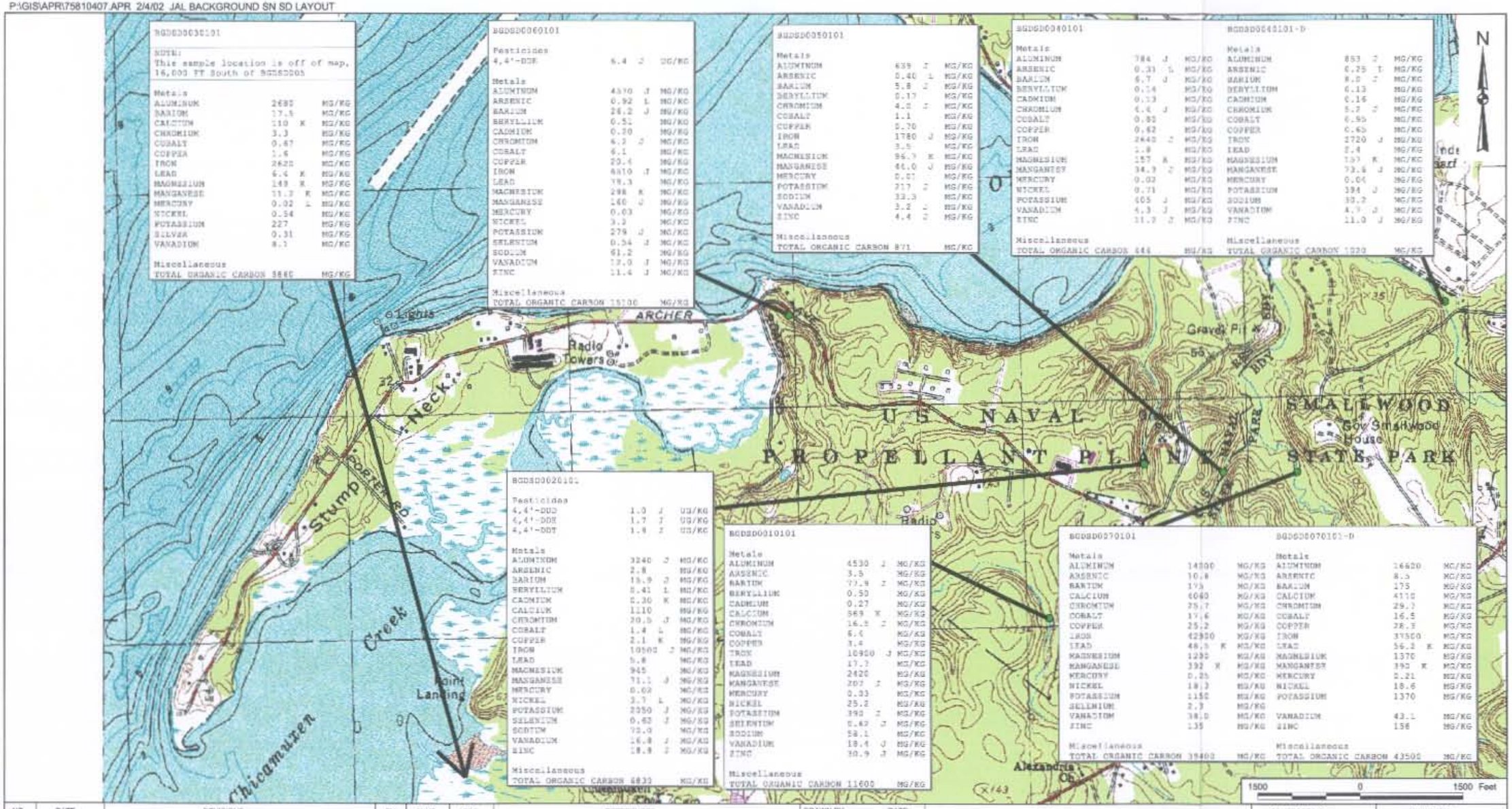

NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY	DATE
D. PERRY	4-DEC-02
CHECKED BY	DATE
COST/SCHED-AREA	
SCALE	AS NOTED

Tetra Tech NUS, Inc.

SEDIMENT DETECTS -
STUMP NECK ANNEX
BACKGROUND INVESTIGATION REPORT
INDIV-NSWC, INDIAN HEAD, MARYLAND

CONTRACT NO. 0030	OWNER NO. 0320
APPROVED BY	DATE 10/24/02
APPROVED BY	DATE
DRAWING NO. FIGURE A-7	REV. 0

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BGDSD0090101

Pesticides			
4,4'-DDD	40	J	UG/KG
4,4'-DDE	12	J	UG/KG
4,4'-DDT	14	J	UG/KG
Metals			
ALUMINUM	7540	J	MG/KG
ARSENIC	8.7		MG/KG
BARIUM	65.7	J	MG/KG
BERYLLIUM	0.88	L	MG/KG
CADMIUM	0.86	K	MG/KG
CALCIUM	10100		MG/KG
CHROMIUM	14.3	J	MG/KG
COBALT	11.8		MG/KG
COPPER	24.1		MG/KG
IRON	27300	J	MG/KG
LEAD	31.6		MG/KG
MAGNESIUM	3030		MG/KG
MANGANESE	444	J	MG/KG
MERCURY	0.16		MG/KG
NICKEL	13.8	L	MG/KG
POTASSIUM	492	J	MG/KG
SELENIUM	1.5	J	MG/KG
SILVER	0.92	K	MG/KG
SODIUM	303		MG/KG
VANADIUM	30.7	J	MG/KG
ZINC	88.2	J	MG/KG
Miscellaneous			
TOTAL ORGANIC CARBON	16500		MG/KG

BGDSD0080101

Pesticides			
4,4'-DDD	3.3	J	UG/KG
4,4'-DDE	2.5	J	UG/KG
4,4'-DDT	3.8	J	UG/KG
Metals			
ALUMINUM	1150	J	MG/KG
ARSENIC	2.5		MG/KG
BARIUM	9.9	J	MG/KG
CADMIUM	0.18		MG/KG
CHROMIUM	6.2	J	MG/KG
COBALT	1.7		MG/KG
COPPER	1.8		MG/KG
IRON	4230	J	MG/KG
LEAD	3.9		MG/KG
MAGNESIUM	131	K	MG/KG
MANGANESE	134	J	MG/KG
MERCURY	0.11		MG/KG
NICKEL	1.8		MG/KG
POTASSIUM	95.2	J	MG/KG
SELENIUM	0.45	J	MG/KG
SODIUM	61.1		MG/KG
VANADIUM	5.8	J	MG/KG
ZINC	22.1	J	MG/KG
Miscellaneous			
TOTAL ORGANIC CARBON	515		MG/KG

BGDSD0100101

Pesticides			
4,4'-DDD	24	J	UG/KG
4,4'-DDE	1.6	J	UG/KG
Metals			
ALUMINUM	3360	J	MG/KG
ARSENIC	1.1	L	MG/KG
BARIUM	18.5	K	MG/KG
BERYLLIUM	1.0	L	MG/KG
CADMIUM	0.48	K	MG/KG
CALCIUM	1530		MG/KG
CHROMIUM	12.3	J	MG/KG
COBALT	12.6		MG/KG
COPPER	13.5		MG/KG
IRON	25300	J	MG/KG
LEAD	28.1		MG/KG
MAGNESIUM	628	K	MG/KG
MANGANESE	107	J	MG/KG
MERCURY	0.03		MG/KG
NICKEL	7.1	L	MG/KG
POTASSIUM	260	J	MG/KG
SELENIUM	1.2	J	MG/KG
SODIUM	77.5		MG/KG
VANADIUM	46.3	J	MG/KG
ZINC	37.4	J	MG/KG
Miscellaneous			
TOTAL ORGANIC CARBON	1060		MG/KG

N

1500 0 1500 Feet

DRAWN BY K. PEILA	DATE 8/26/02	Tetra Tech NUS, Inc.	CONTRACT NUMBER 0530 / OWNER NUMBER 0320
CHECKED BY GJL	DATE 8/26/02	SEDIMENT DETECTS - CORNWALLIS NECK BACKGROUND INVESTIGATION REPORT INDIV-NSWC, INDIAN HEAD, MARYLAND	APPROVED BY GJL / DATE 8/26/02
COST/SCHEDULE-AREA			APPROVED BY — / DATE —
SCALE AS NOTED			DRAWING NO. FIGURE A-8 / REV 0

P:\GIS\APR\75810407.APR 2/5/02 JAL BACKGROUND SAMPLES LAYOUT

NOTE:
* IN addition TO GROUNDWATER SAMPLES, SURFACE AND SUBSURFACE SOIL SAMPLES WERE COLLECTED

LEGEND
● Background Samples

3000 0 3000 Feet

NO.	DATE	REVISIONS

DRAWN BY: D. PERRY — DATE: 4-DEC-97
CHECKED BY — DATE
COST/SCHED-AREA
SCALE: AS NOTED

Tetra Tech NUS, Inc.

BACKGROUND SAMPLE LOCATIONS
BACKGROUND INVESTIGATION REPORT
INDIV-NSWC, INDIAN HEAD, MARYLAND

CONTRACT NO. — OWNER NO.
APPROVED BY JAL — DATE 10/24/02
APPROVED BY — DATE
DRAWING NO. FIGURE A-9 — REV. 0

A.4 STATISTICAL APPROACH FOR BACKGROUND DATA

The methodology used for statistical analysis of background data collected at the NSWC Indian Head Facility is presented in Section 4.0 of the BSI Report. The statistical methods used to evaluate the groundwater and freshwater sediment data are provided to:

1. Develop summary statistics (e.g., range, mean, standard deviation, 95% Upper Confidence Limits) that describe background concentrations of environmental contaminants.

2. Facilitate comparisons of background concentrations to those detected in site environmental samples collected in areas potentially contaminated by SWMUs at the facility.

The basic approach of the statistical analysis of background and statistical methods are presented in Section 4.0 of the BSI Report. Example calculations for the Shapiro Wilk, test and UTL determination are found in Attachment 6.

A.5 CONCLUSIONS

The Background Investigation achieved the objective of establishing a basewide background database for the NSWC Indian Head Facility. The background database includes analytical data for groundwater and freshwater sediments in the vicinity of the Station. The background database may be used in current and future environmental investigations to determine whether samples from known/suspected IR Sites/SWMUs or AOCs at the Station have contaminant concentrations above naturally occurring background concentrations.

Following are the major conclusions of this report:

- There are sufficient numbers of samples to characterize background groundwater and freshwater sediment. The goal of attaining a minimum of 10 samples for future statistical analysis was achieved for freshwater sediments. This goal was not achieved for groundwater because of the influence of turbidity on some of the unfiltered groundwater samples. However, the sample count should be sufficient to yield reliable statistical comparisons and summaries for each media type sampled during the Background Investigation, including groundwater.

- The data collected are of sufficient quality to be used for purposes of background comparisons in risk assessments, Remedial Investigations, RCRA Facility Investigations, and other environmental investigations conducted at the Station. Five monitoring wells and ten freshwater sediment samples were installed and sampled expressly for the purpose of the Background Investigation. Every effort was taken to ensure that the samples were collected from pristine, undisturbed areas not influenced by IR Sites/SWMUs or AOCs. Existing samples, which were added to supplement the background data set, were carefully screened. All sample data in the background data set have been validated in accordance with EPA Region III guidelines (EPA, 1993 and EPA, 1994).

- Samples were evenly distributed across both the Cornwallis Neck and Stump Neck peninsulas of the facility. Since there was no bias regarding sample distribution, the background database is valid for future comparisons to suspected IR Sites/SWMUs or AOCs anywhere on the Station.

- Organics detections were infrequent and insignificant for both media types when analyses were available. Specifically, the inorganic profile of the background samples was not impacted by the presence of low-level organic constituents. At the request of the Navy, organics analyses for volatiles, semivolatiles, and energetics were not performed on samples collected specifically for the BI. However, samples collected for the CTO 222 VI in 1995 (B&R Environmental, 1996) and the ongoing 1997 RFI/VI at the Stump Neck Annex, which were added to the background data set, were

analyzed for these parameters in accordance with the statements of work for these projects and the data were included in the background database.

- There is evidence that turbidity is impacting the inorganic profile of some of the unfiltered background groundwater samples. Data sets for the unfiltered groundwater samples were evaluated with "turbid" samples included in the data set and with the turbid samples removed from the data set. Generally, results for the unfiltered samples with the "turbid" samples removed from the data set were significantly lower and similar to results reported for the filtered groundwater samples. The "turbid" samples may not be representative of local groundwater quality, and it is recommended that they not be considered for inclusion in the background data set.

- The inorganic concentrations reported in the freshwater sediments are within the range of background concentrations reported for surface soils in the Eastern United States (Shacklette and Boerngen, 1984). With few exceptions, the concentrations reported are also within the range of values reported for surface soils of the State of Maryland (Dragun, 1991). There is a positive correlation between the total organic content of the sediment samples and the metals content in the sediments.

ATTACHMENT 1

STATE OF MARYLAND
DEPARTMENT OF THE ENVIRONMENT
WELL COMPLETION REPORT

C 1 | 3344 | SEQUENCE NO. (MDE USE ONLY)

(THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
WELL COMPLETION REPORT
FILL IN THIS FORM COMPLETELY
PLEASE PRINT OR TYPE

THIS REPORT MUST BE SUBMITTED WITHIN 45 DAYS AFTER WELL IS COMPLETED.

COUNTY NUMBER 97-375-W(M)

ST/CO USE ONLY
DATE Received MM DD YY

DATE WELL COMPLETED: 08 20 97

Depth of Well: 70 (TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WELL": CH - 94 - 1576

OWNER US NAVAL Surface Warfare Center
STREET OR RFD Indian Head TOWN Indian Head, mD 20640
SUBDIVISION SECTION LOT

WELL LOG
Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	check if water bearing
dark gray sand	0	6	
orange/brown silty sand	6	10	
lt gray/brown silty sand	10	26	
dark gray silty sand	26	48	
gray clay and silty sand	48	50	
gray sand, silty	50	60	
green clay	60	65	
gray med sand	65	70'	
water @ approx 65'			

NUMBER OF UNSUCCESSFUL WELLS:

WELL HYDROFRACTURED: yes [Y] no [N]

CIRCLE APPROPRIATE LETTER
- A A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
- E ELECTRIC LOG OBTAINED
- P TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS LIC. NO. M G D 046
DRILLERS SIGNATURE Michael W. Rader
(MUST MATCH SIGNATURE ON APPLICATION)
LIC. NO.: M D AWD591

SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box): yes [Y] no [N]

TYPE OF GROUTING MATERIAL (Circle one)
CEMENT [C M] BENTONITE CLAY [B C]

NO. OF BAGS 16 NO. OF POUNDS 1600
GALLONS OF WATER 112
DEPTH OF GROUT SEAL (to nearest foot)
from 0 TOP ft. to 58 BOTTOM ft.
(enter 0 if from surface)

CASING RECORD
casing types insert appropriate code below:
[S T] STEEL [C O] CONCRETE [P L] PLASTIC [O T] OTHER

MAIN CASING TYPE	Nominal diameter top (main) casing (nearest inch)!	Total depth of main casing (nearest foot)
PL	2	60

OTHER CASING (if used)

EACH CASING	diameter inch	depth (feet) from	to

SCREEN RECORD
screen type or open hole insert appropriate code below:
[S T] STEEL [B R] BRASS BRONZE [H O] OPEN HOLE [P L] PLASTIC [O T] OTHER

C 2 DEPTH (nearest ft.)

EACH SCREEN		from	to
1	PL	60	70
2			
3			

SLOT SIZE 1 0 2 1 3 0

DIAMETER OF SCREEN 2 (NEAREST INCH)

GRAVEL PACK IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68: from 58 to 70

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER)
T (E.R.O.S.) W Q
TELESCOPE LOG

C 3 PUMPING TEST N/A

HOURS PUMPED (nearest hour)
PUMPING RATE (gal. per min.)
METHOD USED TO MEASURE PUMPING RATE
WATER LEVEL (distance from land surface)
BEFORE PUMPING ft.
WHEN PUMPING ft.

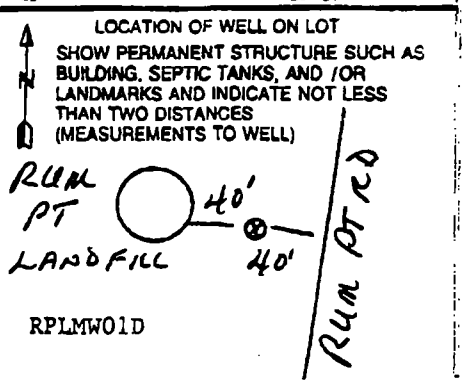
TYPE OF PUMP USED (for test)
[A] air [P] piston [T] turbine
[C] centrifugal [R] rotary [O] other (describe below)
[J] jet [S] submersible
MONITORING

PUMP INSTALLED
DRILLER WILL INSTALL PUMP (CIRCLE) (YES or NO): YES NO

IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.

TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29.
CAPACITY: GALLONS PER MINUTE (to nearest gallon)
PUMP HORSE POWER
PUMP COLUMN LENGTH (nearest ft.)
CASING HEIGHT (circle appropriate box and enter casing height)
[+] above [–] below LAND SURFACE 02 (nearest foot)

LOCATION OF WELL ON LOT
SHOW PERMANENT STRUCTURE SUCH AS BUILDING, SEPTIC TANKS, AND /OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)



C 1 3223 — SEQUENCE NO. (MDE USE ONLY)

(THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
WELL COMPLETION REPORT
FILL IN THIS FORM COMPLETELY
PLEASE PRINT OR TYPE

THIS REPORT MUST BE SUBMITTED WITHIN 45 DAYS AFTER WELL IS COMPLETED.

COUNTY NUMBER 97-325-W(M)

ST/CO USE ONLY
DATE Received MM DD YY

DATE WELL COMPLETED MM 07 DD 21 YY 97

Depth of Well 31' (TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WELL" CH - 94 - 1526

OWNER Naval Surface Warfare Cnter. (6288)

STREET OR RFD Stump NEck Annex TOWN Indian Head

SUBDIVISION SECTION LOT

WELL LOG
Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	check if water bearing
brown fine sand	0	10	
gray/brown silty clay	10	12	
brown silty sand	12	16	
brown/gray clayey silt	16	24	
brown/gray sand	24	26	
red silt, sand and gravel	26	28	
dark red sand and gravel	28	31'	
water @ approx 24'			

NUMBER OF UNSUCCESSFUL WELLS:

WELL HYDROFRACTURED yes [ ] no [N]

N/A

CIRCLE APPROPRIATE LETTER
- A A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
- E ELECTRIC LOG OBTAINED
- P TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS LIC. NO.: M G D 046

DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION)

LIC. NO.: M D JGD049

SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box) yes [Y] no [N]

TYPE OF GROUTING MATERIAL (Circle one)

CEMENT [CM] BENTONITE CLAY [BC]

NO. OF BAGS 6 NO. OF POUNDS 600

GALLONS OF WATER 42

DEPTH OF GROUT SEAL (to nearest foot)

from 0 (TOP) ft. to 19 (BOTTOM) ft.

(enter 0 if from surface)

CASING RECORD
casing types insert appropriate code below

[ST] STEEL [CO] CONCRETE [PL] PLASTIC [OT] OTHER

MAIN CASING TYPE	Nominal diameter top (main) casing (nearest inch)	Total depth of main casing (nearest foot)
PL	2	31

OTHER CASING (if used)

EACH CASING	diameter inch	depth (feet) from	depth (feet) to

SCREEN RECORD
screen type or open hole insert appropriate code below

[ST] STEEL [BR] BRASS BRONZE [HO] OPEN HOLE [PL] PLASTIC [OT] OTHER

EACH SCREEN		DEPTH (nearest ft.)
1	PL	21 to 31
2		
3		

SLOT SIZE 1 10 2 1 3 0

DIAMETER OF SCREEN 2 (NEAREST INCH)

GRAVEL PACK IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68: from 19 to 31

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER)

T (E.R.O.S.) W Q

TELESCOPE CASING | LOG INDICATOR | OTHER DATA

C 3

PUMPING TEST
N/A

HOURS PUMPED (nearest hour)

PUMPING RATE (gal. per min.)

METHOD USED TO MEASURE PUMPING RATE

WATER LEVEL (distance from land surface)

BEFORE PUMPING ft.

WHEN PUMPING ft.

TYPE OF PUMP USED (for test)

[A] air [P] piston [T] turbine

[C] centrifugal [R] rotary [O] other (describe below)

[J] jet MONITORING [S] submersible

PUMP INSTALLED
DRILLER WILL INSTALL PUMP (CIRCLE) (YES or NO) YES NO

IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.

TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29.

CAPACITY: GALLONS PER MINUTE (to nearest gallon)

PUMP HORSE POWER

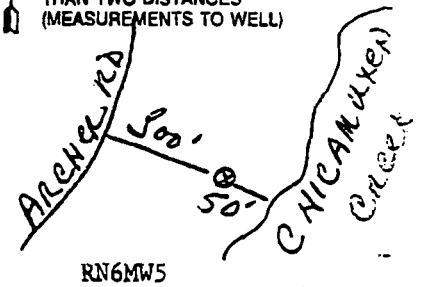
PUMP COLUMN LENGTH (nearest ft.)

CASING HEIGHT (circle appropriate box and enter casing height)

[+] above [–] below LAND SURFACE

02 (nearest foot)

LOCATION OF WELL ON LOT
SHOW PERMANENT STRUCTURE SUCH AS BUILDING, SEPTIC TANKS, AND /OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)



RN6MW5

C 1 **3232** SEQUENCE NO. (MDE USE ONLY)
(THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
WELL COMPLETION REPORT
FILL IN THIS FORM COMPLETELY
PLEASE PRINT OR TYPE

THIS REPORT MUST BE SUBMITTED WITHIN 45 DAYS AFTER WELL IS COMPLETED.

COUNTY NUMBER 97-318-W(M)

ST/CO USE ONLY DATE Received MM DD YY

DATE WELL COMPLETED MM 08 DD 08 YY 97

Depth of Well (TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WELL" CH - 94 - 1519

OWNER Naval Surface Warfare Center (6293)
STREET OR RFD Stump Neck Road TOWN Indian Head
SUBDIVISION SECTION LOT

WELL LOG
Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	check if water bearing
yellowish/brown sand & silt	0	6	
lt brown clayey fine sand	6	10	
yellow/brown silt & sand	10	12	
yellow/brown silt & clay	12	18	
grayish/green sand	18	20	
yellow/brown sand	20	26	
yellow/brown sandy gravel	26	33'	
water @ approx 24'			

NUMBER OF UNSUCCESSFUL WELLS:

WELL HYDROFRACTURED yes Y no N

N/A CIRCLE APPROPRIATE LETTER
A A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
E ELECTRIC LOG OBTAINED
P TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE (ADDITIONS) PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS LIC. NO.: M C D 046
DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION)
LIC. NO.: M D AWD591

SITE SUPERVISOR (sign, of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box) yes Y no N
TYPE OF GROUTING MATERIAL (Circle one)
CEMENT CM BENTONITE CLAY BC
NO. OF BAGS 6 NO. OF POUNDS 60
GALLONS OF WATER 42
DEPTH OF GROUT SEAL (to nearest foot) from 0 TOP ft. to 20 BOTTOM ft.
(enter 0 if from surface)

CASING RECORD
casing types insert appropriate code below: ST STEEL, CO CONCRETE, PL PLASTIC, OT OTHER

MAIN CASING TYPE	Nominal diameter top (main) casing (nearest inch)!	Total depth of main casing (nearest foot)
PL	2	22

OTHER CASING (if used) EACH CASING

diameter inch	depth (feet) from	to

SCREEN RECORD
screen type or open hole: insert appropriate code below: ST STEEL, BR BRASS BRONZE, HO OPEN HOLE, PL PLASTIC, OT OTHER

C 2 DEPTH (nearest ft.)

EACH SCREEN		
1 PL	22	32
2		
3		

SLOT SIZE 1 10 2 1 3 0
DIAMETER OF SCREEN 2 (NEAREST INCH)
GRAVEL PACK from 20 to 32
IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER)
T (E.R.O.S.) W Q
TELESCOPE CASING LOG INDICATOR OTHER DATA

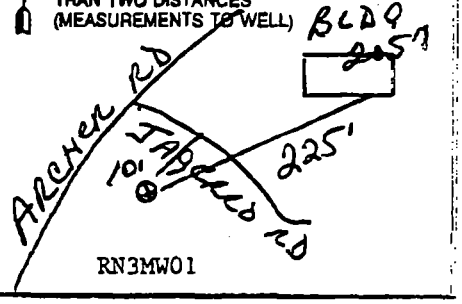
C 3

PUMPING TEST N/A
HOURS PUMPED (nearest hour)
PUMPING RATE (gal. per min.)
METHOD USED TO MEASURE PUMPING RATE
WATER LEVEL (distance from land surface)
BEFORE PUMPING ft.
WHEN PUMPING ft.

TYPE OF PUMP USED (for test)
A air, P piston, T turbine, C centrifugal, R rotary, O other (describe below), J jet, S submersible
MONITORIN G

PUMP INSTALLED
DRILLER WILL INSTALL PUMP (CIRCLE) (YES or NO) YES NO
IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.
TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29.
CAPACITY: GALLONS PER MINUTE (to nearest gallon)
PUMP HORSE POWER
PUMP COLUMN LENGTH (nearest ft.)
CASING HEIGHT (circle appropriate box and enter casing height) above + / below − LAND SURFACE 02 (nearest foot)

LOCATION OF WELL ON LOT
SHOW PERMANENT STRUCTURE SUCH AS BUILDING, SEPTIC TANKS, AND /OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)



C 1 | 3345 SEQUENCE NO. (MDE USE ONLY)

(THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
WELL COMPLETION REPORT
FILL IN THIS FORM COMPLETELY
PLEASE PRINT OR TYPE

THIS REPORT MUST BE SUBMITTED WITHIN 45 DAYS AFTER WELL IS COMPLETED.

COUNTY NUMBER 97-376-W(M)

ST/CO USE ONLY
DATE Received

DATE WELL COMPLETED: 8/4/97

Depth of Well: 16 (TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WELL": CH - 94 - 1577

OWNER: US NAVAL Surface Warfare Center
STREET OR RFD: Stump Neck Annex TOWN: Indian Head, MD 20640
SUBDIVISION: SECTION: LOT:

WELL LOG
Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	check if water bearing
topsoil, yellow brown gravel & sand	0	4	
fine sand & silt, tr gravel	4	7	
fine grain sand some silt	7	12	
dark green sand and silt	12	16	
water @ approx 6'			

NUMBER OF UNSUCCESSFUL WELLS:

WELL HYDROFRACTURED: yes [Y] no [N]

N/A

CIRCLE APPROPRIATE LETTER
- A A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
- E ELECTRIC LOG OBTAINED
- P TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS LIC. NO.: M GD 046
DRILLER'S SIGNATURE: (MUST MATCH SIGNATURE ON APPLICATION)

LIC. NO.: M G D 081

SITE SUPERVISOR (sign, of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box): yes [Y] no [N]

TYPE OF GROUTING MATERIAL (Circle one)
CEMENT [CM] BENTONITE CLAY [BC]

NO. OF BAGS 1 NO. OF POUNDS 20

GALLONS OF WATER 1

DEPTH OF GROUT SEAL (to nearest foot) from 0 TOP ft. to 4 BOTTOM ft.
(enter 0 if from surface)

CASING RECORD
casing types insert appropriate code below

[ST] STEEL [CO] CONCRETE [PL] PLASTIC [OT] OTHER

MAIN CASING TYPE	Nominal diameter top (main) casing (nearest inch)	Total depth of main casing (nearest foot)
PC	2	6

OTHER CASING (if used)

EACH CASING	diameter inch	depth (feet) from	to

SCREEN RECORD
screen type or open hole insert appropriate code below

[ST] STEEL [BR] BRASS [HO] OPEN HOLE [BZ] BRONZE [PL] PLASTIC [OT] OTHER

C 2

DEPTH (nearest ft.)

EACH SCREEN		from	to
1	PC	6	16
2			
3			

SLOT SIZE 1 10 2 1 3 0

DIAMETER OF SCREEN 2 (NEAREST INCH)

GRAVEL PACK IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68: from 4 to 16

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER)
T (E.R.O.S.) W Q

TELESCOPE CASING | LOG INDICATOR | OTHER DATA

C 3

PUMPING TEST
N/A

HOURS PUMPED (nearest hour)

PUMPING RATE (gal. per min.)

METHOD USED TO MEASURE PUMPING RATE

WATER LEVEL (distance from land surface)

BEFORE PUMPING ft.

WHEN PUMPING ft.

TYPE OF PUMP USED (for test)
- [A] air
- [P] piston
- [T] turbine
- [C] centrifugal
- [R] rotary
- [O] other (describe below)
- [J] jet
- [S] submersible

MONITORING

PUMP INSTALLED
DRILLER WILL INSTALL PUMP (CIRCLE) (YES or NO): YES (NO)

IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.

TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29.

CAPACITY: GALLONS PER MINUTE (to nearest gallon)

PUMP HORSE POWER

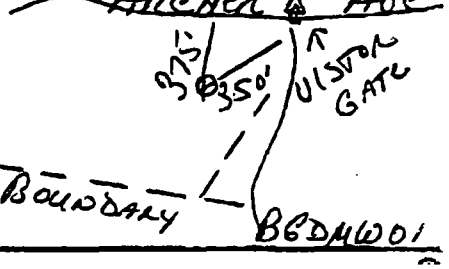
PUMP COLUMN LENGTH (nearest ft.)

CASING HEIGHT (circle appropriate box and enter casing height)
- [+] above
- [−] below

LAND SURFACE

02 (nearest foot)

LOCATION OF WELL ON LOT
SHOW PERMANENT STRUCTURE SUCH AS BUILDING, SEPTIC TANKS, AND /OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)



ORIGINAL - STATE

DEC 05 '97 13:06 HARDIN-HUBER, INC. P.2

C 1 | 3341 | SEQUENCE NO. (MDE USE ONLY)

1 2 3 6 (THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
WELL COMPLETION REPORT
FILL IN THIS FORM COMPLETELY
PLEASE PRINT OR TYPE

THIS REPORT MUST BE SUBMITTED WITHIN 45 DAYS AFTER WELL IS COMPLETED.

COUNTY NUMBER 97-372-W(M)

ST/CO USE ONLY DATE Received MM DD YY: 1 5 13

DATE WELL COMPLETED MM DD YY: 08 04 97 (15 20)

Depth of Well: 14 (TO NEAREST FOOT) (22 26)

PERMIT NO. FROM "PERMIT TO DRILL WELL": CH - 94 - 1673 (28 29 30 31 32 33 34 35 36 37)

OWNER US NAVAL Warfare Center (last name / first name)

STREET OR RFD Indian Head TOWN Indian Head, MD 20640

SUBDIVISION SECTION LOT

WELL LOG
Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	check if water bearing
lightyellow fine sand	0	4	
gray fine sand	4	12	
fine clayey silt	12	15	
water @ approx 8'			

NUMBER OF UNSUCCESSFUL WELLS:

WELL HYDROFRACTURED (yes Y / no N): N/A

CIRCLE APPROPRIATE LETTER
- A A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
- E ELECTRIC LOG OBTAINED
- P TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS LIC. NO. M G D 046

DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION)

LIC. NO.: M D AWD591

SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box) (yes Y / no N): Y (44)

TYPE OF GROUTING MATERIAL (Circle one): CEMENT CM BENTONITE CLAY BC

NO. OF BAGS 1 NO. OF POUNDS 202

GALLONS OF WATER 14

DEPTH OF GROUT SEAL (to nearest foot): from 0 (48 TOP 52) ft. to 3 (54 BOTTOM 58) ft. (enter 0 if from surface)

CASING RECORD
casing types insert appropriate code below: ST STEEL, CO CONCRETE, PL PLASTIC, OT OTHER

MAIN CASING TYPE	Nominal diameter top (main) casing (nearest inch)	Total depth of main casing (nearest foot)
PC (60 61)	2 (63 64)	4 (66 70)

OTHER CASING (if used) — EACH CASING

diameter inch	depth (feet) from	to

SCREEN RECORD
screen type or open hole insert appropriate code below: ST STEEL, BR BRASS BRONZE, HO OPEN HOLE, PL PLASTIC, OT OTHER

C 2 — EACH SCREEN

	DEPTH (nearest ft.)	
1	PC (6 9)	4 (11 15) — 14 (17 21)
2	(23 24 26 30) — (32 36)	
3	(38 39 41 45) — (47 51)	

SLOT SIZE 1 10 2 1 3 0

DIAMETER OF SCREEN 2 (56 60) (NEAREST INCH)

GRAVEL PACK IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68: from 3 to 14 (68)

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER)

T (70) (E.R.O.S.) (72) W Q

TELESCOPE CASING | LOG INDICATOR | (74 75 76) OTHER DATA

C 3

PUMPING TEST
N/A

HOURS PUMPED (nearest hour) (8 9)

PUMPING RATE (gal. per min.) (11 15)

METHOD USED TO MEASURE PUMPING RATE

WATER LEVEL (distance from land surface)

BEFORE PUMPING (17 20) ft.

WHEN PUMPING (22 25) ft.

TYPE OF PUMP USED (for test)

A air (27) | P piston (27) | T turbine (27)

C centrifugal (27) | R rotary (27) | O other (describe below) (27)

J jet (27) | S submersible (27)

MONITORING

PUMP INSTALLED
DRILLER WILL INSTALL PUMP (CIRCLE) (YES or NO): YES / NO

IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.

TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29. (29)

CAPACITY: GALLONS PER MINUTE (to nearest gallon) (31 35)

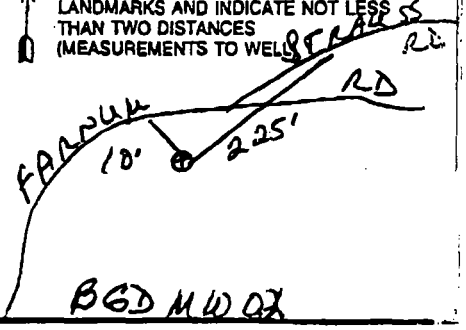
PUMP HORSE POWER (37 41)

PUMP COLUMN LENGTH (nearest ft.) (43 47)

CASING HEIGHT (circle appropriate box and enter casing height) (49)
- + above
- – below

LAND SURFACE 02 (nearest foot) (50 51)

LOCATION OF WELL ON LOT
SHOW PERMANENT STRUCTURE SUCH AS BUILDING, SEPTIC TANKS, AND /OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)



C 1 | 3342 | SEQUENCE NO. (MDE USE ONLY)

(THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
WELL COMPLETION REPORT
FILL IN THIS FORM COMPLETELY
PLEASE PRINT OR TYPE

THIS REPORT MUST BE SUBMITTED WITHIN 45 DAYS AFTER WELL IS COMPLETED.

COUNTY NUMBER 97-373-W(M)

ST/CO USE ONLY
DATE Received MM DD YY

DATE WELL COMPLETED: MM 08 DD 05 YY 97

Depth of Well: 22 (TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WELL": CH - 94 - 1574

OWNER US NAVAL Warfare Center (last name / first name)

STREET OR RFD Indian Head TOWN Indian Head, MD 20640

SUBDIVISION SECTION LOT

WELL LOG
Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	check if water bearing
light tan to yellow silt to fine sand	0	4	
silty black clay	4	7	
orange fine sand	7	11	
brown clay, tr silt	11	13	
tan very fine silty sand	13	19	
medium gray clayey silt	19	22'	
water @ approx 8'			

NUMBER OF UNSUCCESSFUL WELLS:

WELL HYDROFRACTURED: yes / no — N/A

CIRCLE APPROPRIATE LETTER
- A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
- E ELECTRIC LOG OBTAINED
- P TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS LIC. NO.: M GD 046

DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION)

LIC. NO.: M GD 081

SITE SUPERVISOR (sign, of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box): yes (Y) / no (N)

TYPE OF GROUTING MATERIAL (Circle one)
CEMENT (CM) BENTONITE CLAY (BC)

NO. OF BAGS 3 NO. OF POUNDS 300

GALLONS OF WATER 21

DEPTH OF GROUT SEAL (to nearest foot)
from 0 (TOP) ft. to 10 (BOTTOM) ft.
(enter 0 if from surface)

CASING RECORD
casing types insert appropriate code below

(ST) STEEL (CO) CONCRETE (PL) PLASTIC (OT) OTHER

MAIN CASING TYPE	Nominal diameter top (main) casing (nearest inch)	Total depth of main casing (nearest foot)
PL	2	12

OTHER CASING (if used)

EACH CASING	diameter inch	depth (feet) from	depth (feet) to

SCREEN RECORD
screen type or open hole — insert appropriate code below

(ST) STEEL (BR) BRASS (HO) OPEN HOLE (PL) PLASTIC (OT) OTHER

DEPTH (nearest ft.)

EACH SCREEN		from	to
1	PL	12	22
2			
3			

SLOT SIZE 1: 0 2: 1 3: 0

DIAMETER OF SCREEN 2 (NEAREST INCH)

GRAVEL PACK IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68

from	to
10	22

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER)
T (E.R.O.S.) W Q

TELESCOPE CASING | LOG INDICATOR | OTHER DATA

PUMPING TEST
N/A

HOURS PUMPED (nearest hour)

PUMPING RATE (gal. per min.)

METHOD USED TO MEASURE PUMPING RATE

WATER LEVEL (distance from land surface)

BEFORE PUMPING ft.

WHEN PUMPING ft.

TYPE OF PUMP USED (for test)
- (A) air
- (P) piston
- (T) turbine
- (C) centrifugal
- (R) rotary
- (O) other (describe below) — MONITORING
- (J) jet
- (S) submersible

PUMP INSTALLED
DRILLER WILL INSTALL PUMP (CIRCLE) (YES or NO): YES / (NO)

IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.

TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29.

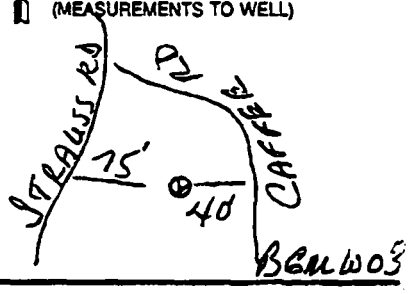
CAPACITY: GALLONS PER MINUTE (to nearest gallon)

PUMP HORSE POWER

PUMP COLUMN LENGTH (nearest ft.)

CASING HEIGHT (circle appropriate box and enter casing height)
(+) above / (–) below LAND SURFACE
02 (nearest foot)

LOCATION OF WELL ON LOT
SHOW PERMANENT STRUCTURE SUCH AS BUILDING, SEPTIC TANKS, AND /OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)



C 1 **3340** SEQUENCE NO. (MDE USE ONLY)

(THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
WELL COMPLETION REPORT
FILL IN THIS FORM COMPLETELY
PLEASE PRINT OR TYPE

THIS REPORT MUST BE SUBMITTED WITHIN 45 DAYS AFTER WELL IS COMPLETED.

COUNTY NUMBER 97-371-W(M)

ST/CO USE ONLY
DATE Received MM DD YY

DATE WELL COMPLETED: 08 06 97

Depth of Well: 22' (TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WELL": CH 94 1572

OWNER US Naval Surface Warefare Center (last name / first name)
STREET OR RFD Indian Head TOWN Indian Head, MD 20640
SUBDIVISION SECTION LOT

WELL LOG
Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	check if water bearing
yellow/brown sand & silt	0	6	
pale yellow sand	6	8	
clay w/some sand & silt	8	14	
yellow/brown med sand	14	16	
olive gray clay & silt	16	22	
water @ approx 14'			

NUMBER OF UNSUCCESSFUL WELLS:

WELL HYDROFRACTURED: yes [Y] no [N]

N/A CIRCLE APPROPRIATE LETTER
A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
E ELECTRIC LOG OBTAINED
P TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS LIC. NO.: M G D 046
DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION)
LIC. NO.: M G D 081
SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box): yes [Y] no [N]
TYPE OF GROUTING MATERIAL (Circle one)
CEMENT [CM] BENTONITE CLAY [BC]
NO. OF BAGS 3 NO. OF POUNDS 30
GALLONS OF WATER 21
DEPTH OF GROUT SEAL (to nearest foot)
from 0 ft. to 10 ft.
(enter 0 if from surface)

CASING RECORD
casing types insert appropriate code below
[ST] STEEL [CO] CONCRETE [PL] PLASTIC [OT] OTHER

MAIN CASING TYPE: PL
Nominal diameter top (main) casing (nearest inch): 2
Total depth of main casing (nearest foot): 12

OTHER CASING (if used)

	diameter inch	depth (feet) from	to
EACH CASING			

SCREEN RECORD
screen type or open hole — insert appropriate code below
[ST] STEEL [BR] BRASS BRONZE [HO] OPEN HOLE [PL] PLASTIC [OT] OTHER

C 2

	TYPE	DEPTH (nearest ft.)	
1	PL	12	22
2			
3			

SLOT SIZE 1 10 2 1 3 0
DIAMETER OF SCREEN 2 (NEAREST INCH)

GRAVEL PACK: from — to 22
IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER)
T (E.R.O.S.) W Q
TELESCOPE CASING | LOG INDICATOR | OTHER DATA

C 3

PUMPING TEST
N/A
HOURS PUMPED (nearest hour)
PUMPING RATE (gal. per min.)
METHOD USED TO MEASURE PUMPING RATE
WATER LEVEL (distance from land surface)
BEFORE PUMPING ft.
WHEN PUMPING ft.
TYPE OF PUMP USED (for test)
[A] air [P] piston [T] turbine
[C] centrifugal [R] rotary [O] other (describe below)
[J] jet [S] submersible
MONITORING

PUMP INSTALLED
DRILLER WILL INSTALL PUMP (CIRCLE) (YES or NO): YES (NO)
IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.
TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29.
CAPACITY: GALLONS PER MINUTE (to nearest gallon)
PUMP HORSE POWER
PUMP COLUMN LENGTH (nearest ft.)
CASING HEIGHT (circle appropriate box and enter casing height)
[+] above [−] below LAND SURFACE
02 (nearest foot)

LOCATION OF WELL ON LOT
SHOW PERMANENT STRUCTURE SUCH AS BUILDING, SEPTIC TANKS, AND /OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)

DEC 05 '97 13:09 HARDIN-HUBER, INC. P.12

C 1 | 3339 SEQUENCE NO. (MDE USE ONLY)

(THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
WELL COMPLETION REPORT
FILL IN THIS FORM COMPLETELY
PLEASE PRINT OR TYPE

THIS REPORT MUST BE SUBMITTED WITHIN 45 DAYS AFTER WELL IS COMPLETED.

COUNTY NUMBER 97-370-W(M)

ST/CO USE ONLY
DATE Received MM DD YY

DATE WELL COMPLETED: MM 08 DD 07 YY 97

Depth of Well: 52 (TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WELL": CH - 94 - 1571

OWNER US NAVAL Surface Warfare Center

STREET OR RFD Indian Head Divivision TOWN Indian Head, MD 20640

SUBDIVISION SECTION LOT

WELL LOG
Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	check if water bearing
brown/tan silt	0	4	
tan/brown silt, some clay	4	18	
reddish/brown clayey sand	18	23	
yellow/brown sand, some clay	23	25	
reddish/brown gravelly sand	25	27	
yellow/brown gravelly snad	27	33	
yellow/brown fine sand, tr clay	33	41	
lt gray sand, tr silt	41	44	
lt gray, tr clay	44	50	
lt green fine sand	50	52	
water @ approx 30'			

NUMBER OF UNSUCCESSFUL WELLS:

WELL HYDROFRACTURED yes Y no N: N/A

CIRCLE APPROPRIATE LETTER
- A A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
- E ELECTRIC LOG OBTAINED
- P TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS LIC. NO.: M G D 046

DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION)

LIC. NO.: M G D 081

SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box) yes Y no N

TYPE OF GROUTING MATERIAL (Circle one)

CEMENT CM BENTONITE CLAY BC

NO. OF BAGS 12 NO. OF POUNDS 1200

GALLONS OF WATER 82

DEPTH OF GROUT SEAL (to nearest foot) from 0 ft. to 40 ft.
(enter 0 if from surface)

CASING RECORD
casing types insert appropriate code below

ST STEEL CO CONCRETE PL PLASTIC OT OTHER

MAIN CASING TYPE	Nominal diameter top (main) casing (nearest inch)!	Total depth of main casing (nearest foot)
PL	2	42

OTHER CASING (if used) EACH CASING

	diameter inch	depth (feet) from	to

SCREEN RECORD
screen type or open hole insert appropriate code below

ST STEEL BR BRASS BRONZE HO OPEN HOLE PL PLASTIC OT OTHER

C 2

EACH SCREEN	DEPTH (nearest ft.)		
1	PL	42	52
2			
3			

SLOT SIZE 1 10 2 1 3 0

DIAMETER OF SCREEN 2 (NEAREST INCH)

GRAVEL PACK from 40 to 52

IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER)
T (E.R.O.S.) W Q

TELESCOPE CASING LOG INDICATOR OTHER DATA

C 3

PUMPING TEST N/A
HOURS PUMPED (nearest hour)

PUMPING RATE (gal. per min.)

METHOD USED TO MEASURE PUMPING RATE

WATER LEVEL (distance from land surface)

BEFORE PUMPING ft.

WHEN PUMPING ft.

TYPE OF PUMP USED (for test)

A air P piston T turbine C centrifugal R rotary O other (describe below) J jet S submersible

MONITORING

PUMP INSTALLED
DRILLER WILL INSTALL PUMP (CIRCLE) (YES or NO) YES NO

IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.

TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29.

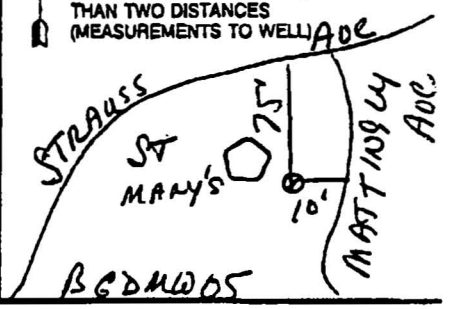
CAPACITY: GALLONS PER MINUTE (to nearest gallon)

PUMP HORSE POWER

PUMP COLUMN LENGTH (nearest ft.)

CASING HEIGHT (circle appropriate box and enter casing height)
+ above / – below LAND SURFACE 02 (nearest foot)

LOCATION OF WELL ON LOT
SHOW PERMANENT STRUCTURE SUCH AS BUILDING, SEPTIC TANKS, AND /OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)



ORIGINAL - STATE

ATTACHMENT 2

BROWN & ROOT ENVIRONMENTAL
WELL CONSTRUCTION SHEETS
AND SURVEY DATA

ATTACHMENT 2.A

WELL CONSTRUCTION SHEETS

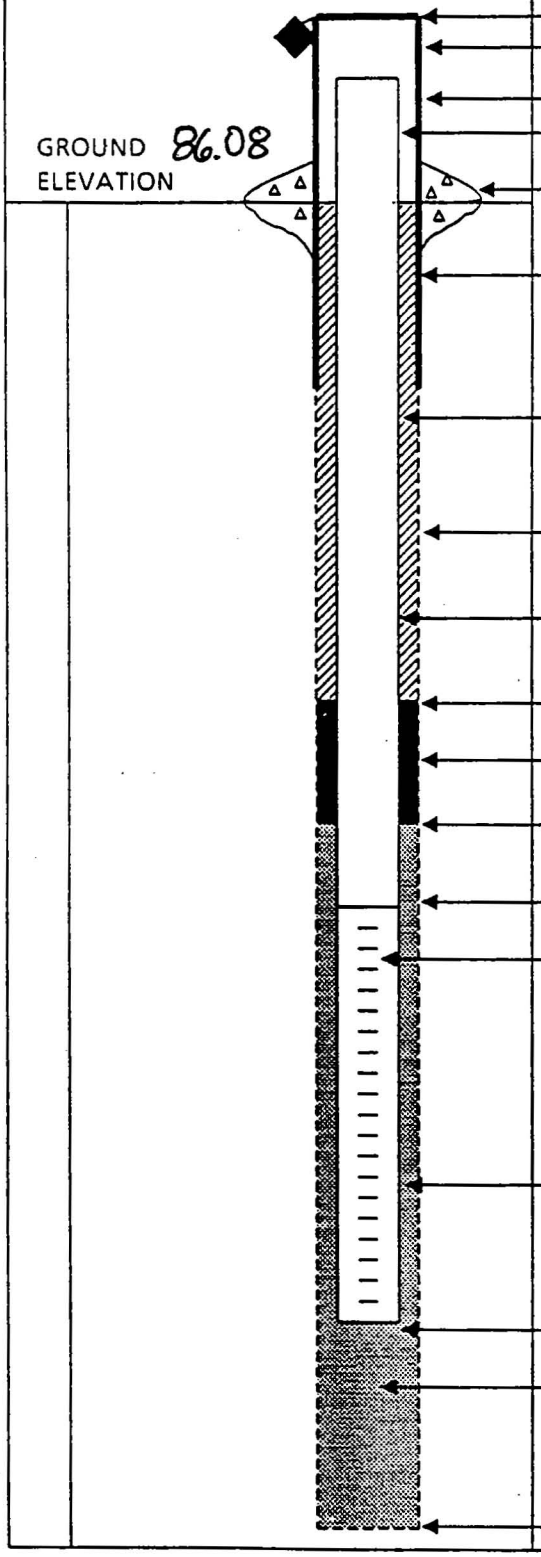
BORING NO.: BGDSB001
BGDMW01

OVERBURDEN
MONITORING WELL SHEET

PROJECT: BACKGROUND STUMP NECK RI/VI
PROJECT NO.: 7581
ELEVATION: 86.08
FIELD GEOLOGIST: FRED W. RAMSER

LOCATION: STUMP NECK WILDLIFE VIEWING AREA
BORING: BGDMW01
DATE: 7-15-97

DRILLER: MIKE C.
DRILLING METHOD: 4¼ HSA
DEVELOPMENT METHOD: SURGE BLK W/ SUB. PUMP.



ELEVATION OF TOP OF SURFACE CASING: 89.14
ELEVATION OF TOP OF RISER PIPE: 88.43

STICK - UP TOP OF SURFACE CASING: 2.5'
STICK - UP RISER PIPE: 2'

TYPE OF SURFACE SEAL: CONCRETE PAD 3' x 3' x 6"

I.D. OF SURFACE CASING: 6"
TYPE OF SURFACE CASING: STEEL

RISER PIPE I.D. 2"
TYPE OF RISER PIPE: SCH. 40 PVC

BOREHOLE DIAMETER: 8"

TYPE OF BACKFILL: CEMENT/BENTONITE GROUT

ELEVATION / DEPTH TOP OF SEAL: 84.08' / 2'

TYPE OF SEAL: BENTONITE CHIPS

DEPTH TOP OF SAND PACK: 4'

ELEVATION / DEPTH TOP OF SCREEN: 80.08' / 6'

TYPE OF SCREEN: SCH. 40 PVC

SLOT SIZE x LENGTH: .010" x 10'

I.D. OF SCREEN: 2"

TYPE OF SAND PACK: #1 (10/20) SILICA SAND

ELEVATION / DEPTH BOTTOM OF SCREEN: 70.08' / 16'

ELEVATION / DEPTH BOTTOM OF SAND PACK: 70.08' / 16'

TYPE OF BACKFILL BELOW OBSERVATION WELL:

ELEVATION / DEPTH OF HOLE: 70.08' / 16'

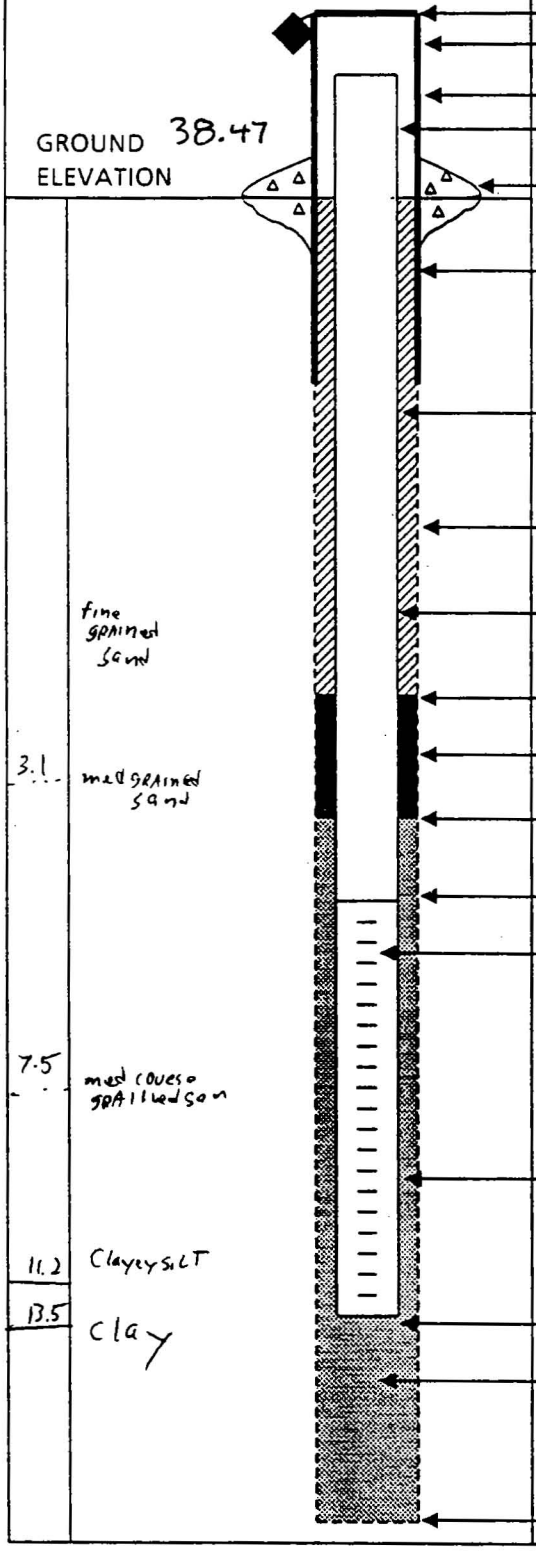
BORING NO.: ~~BGDMW02~~ FW
BGDMW02

OVERBURDEN
MONITORING WELL SHEET

PROJECT ~~758~~ FW INDIAN Head
PROJECT NO. 7581
ELEVATION 39.40'
FIELD GEOLOGIST F. Wudkwxch

LOCATION BGDSB02
BORING BGDSB02
DATE 7-24-97

DRILLER D. TAYLOR
DRILLING METHOD HSA
DEVELOPMENT METHOD BAILER



ELEVATION OF TOP OF SURFACE CASING: 42.35
ELEVATION OF TOP OF RISER PIPE: 39.40
STICK - UP TOP OF SURFACE CASING: ~2.5'
STICK - UP RISER PIPE: ~2'
TYPE OF SURFACE SEAL: CEMENT PAD 3'x3'x6"
I.D. OF SURFACE CASING: 6"
TYPE OF SURFACE CASING: ROUND STEEL
RISER PIPE I.D. 2"
TYPE OF RISER PIPE: Sch 40 PVC
BOREHOLE DIAMETER: 8"
TYPE OF BACKFILL: CEMENT
ELEVATION / DEPTH TOP OF SEAL: 35.97 / 2.5'
TYPE OF SEAL: bentonite pellets 3/8" shured
DEPTH TOP OF SAND PACK: 3.5'
ELEVATION / DEPTH TOP OF SCREEN: 34.47 / 4'
TYPE OF SCREEN: Sch 40 PVC
SLOT SIZE x LENGTH: 0.010" x 10'
I.D. OF SCREEN: 2"
TYPE OF SAND PACK: #1 Value Sand
ELEVATION / DEPTH BOTTOM OF SCREEN: 24.47 / 14'
ELEVATION / DEPTH BOTTOM OF SAND PACK: 23.97 / 14.5
TYPE OF BACKFILL BELOW OBSERVATION WELL:
ELEVATION / DEPTH OF HOLE: 23.97 / 14.5

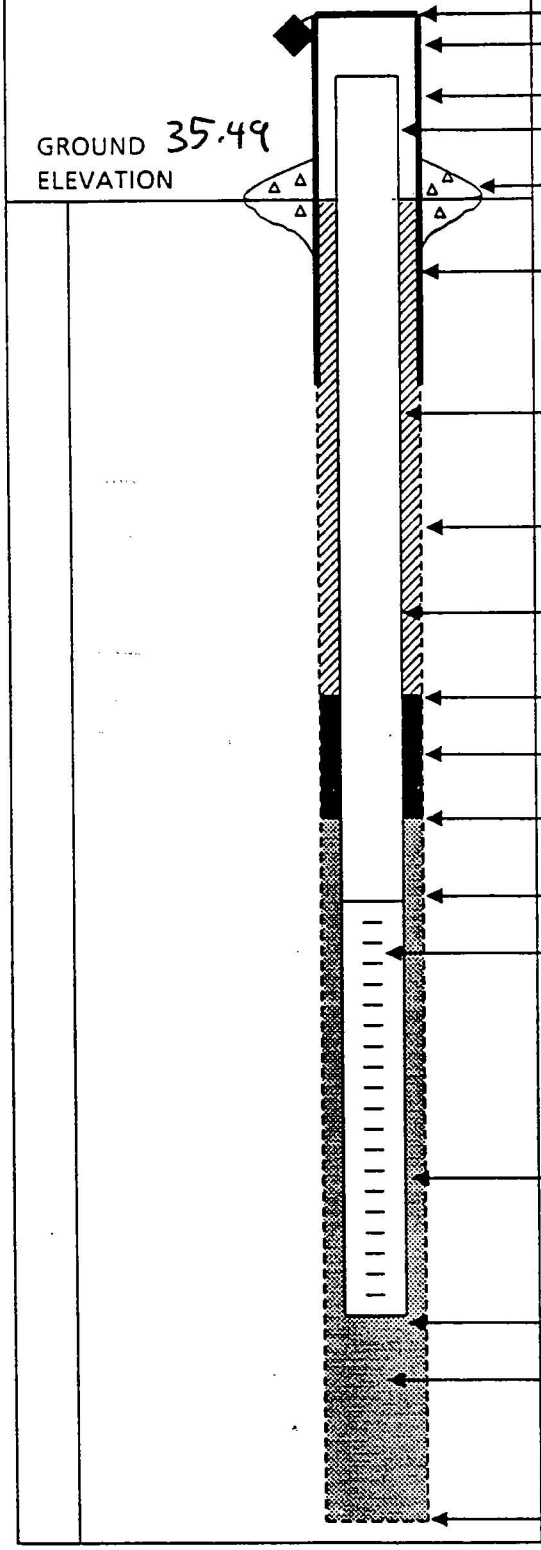
BORING NO.: BGD SB03
BGDMW03

OVERBURDEN
MONITORING WELL SHEET

PROJECT BACKGROUND INV
PROJECT NO. 7581
ELEVATION 35.49
FIELD GEOLOGIST HALE

LOCATION INDIANHEAD
BORING BGDSB03
DATE 7-30-97

DRILLER MCKINNEY
DRILLING METHOD HSA 4¼" ID
DEVELOPMENT METHOD



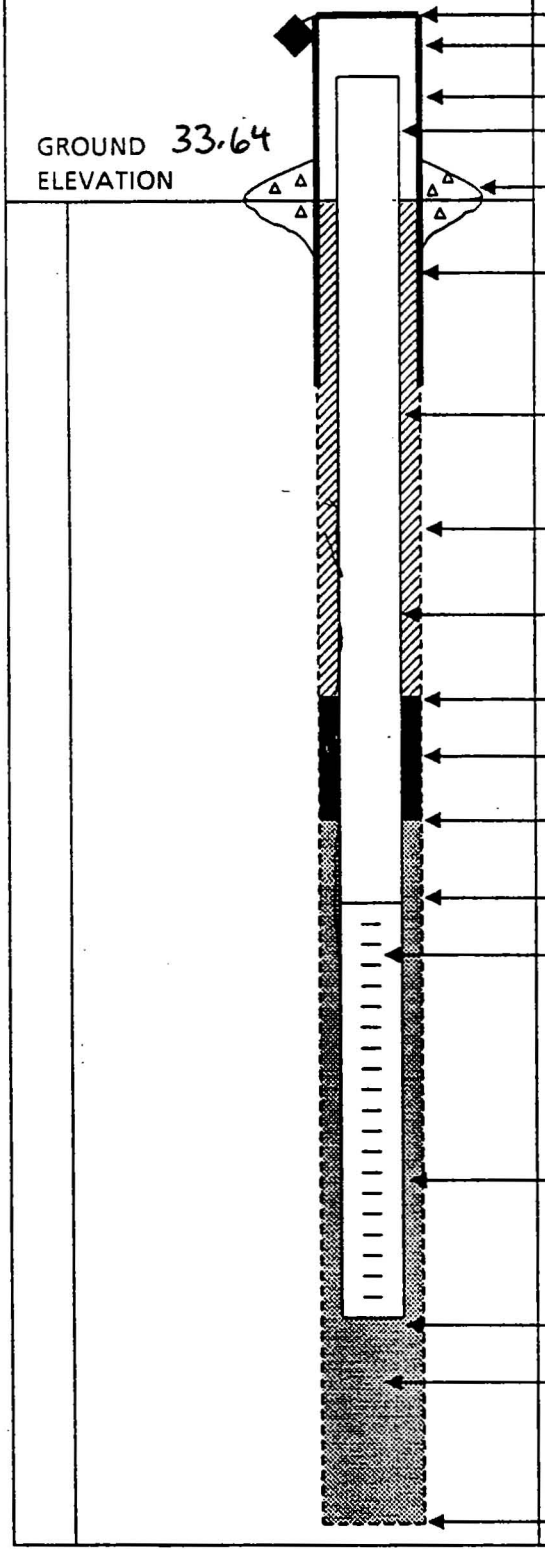
ELEVATION OF TOP OF SURFACE CASING: 38.23
ELEVATION OF TOP OF RISER PIPE: 37.87
STICK - UP TOP OF SURFACE CASING: ~2.5'
STICK - UP RISER PIPE: ~2'
TYPE OF SURFACE SEAL: CEMENT PAD 3'x3'x0.5'
I.D. OF SURFACE CASING: 6"
TYPE OF SURFACE CASING: ROUND STEEL
RISER PIPE I.D. 2"
TYPE OF RISER PIPE: SCH 40 PVC
BOREHOLE DIAMETER: 8"
TYPE OF BACKFILL: CEMENT AND BENTONITE GROUT
ELEVATION / DEPTH TOP OF SEAL: 27.49'/8'
TYPE OF SEAL: BENTONITE PELLETS
DEPTH TOP OF SAND PACK: 10'
ELEVATION / DEPTH TOP OF SCREEN: 23.49'/12'
TYPE OF SCREEN: SCH 40 PVC
SLOT SIZE x LENGTH: 0.010" x 10'
I.D. OF SCREEN: 2"
TYPE OF SAND PACK: #1 VALVE
ELEVATION / DEPTH BOTTOM OF SCREEN: 13.49'/22'
ELEVATION / DEPTH BOTTOM OF SAND PACK: 13.49'/22'
TYPE OF BACKFILL BELOW OBSERVATION WELL: NA
ELEVATION / DEPTH OF HOLE: 13.49'/22'

BORING NO.: BGDSB04
BGDMW04

OVERBURDEN
MONITORING WELL SHEET

PROJECT BACKGROUND INV. LOCATION INDIANHEAD
PROJECT NO. 7581 BORING BGD SB04
ELEVATION 33.64 DATE 7-30-97
FIELD GEOLOGIST HALE

DRILLER McKINNEY
DRILLING METHOD HSA 4.25" ID
DEVELOPMENT METHOD



ELEVATION OF TOP OF SURFACE CASING: 36.34
ELEVATION OF TOP OF RISER PIPE: 36.17
STICK - UP TOP OF SURFACE CASING: 2.5'
STICK - UP RISER PIPE : 2'
TYPE OF SURFACE SEAL: 3'x3'x0.5'
I.D. OF SURFACE CASING: 6"
TYPE OF SURFACE CASING: STEEL, ROUND
RISER PIPE I.D. 2"
TYPE OF RISER PIPE: SCH 40 PVC.
BOREHOLE DIAMETER: 8"
TYPE OF BACKFILL: CEMENT / BENTONITE GROUT
ELEVATION / DEPTH TOP OF SEAL: 25.64'/8'
TYPE OF SEAL: BENTONITE PELLETS
DEPTH TOP OF SAND PACK: 10'
ELEVATION / DEPTH TOP OF SCREEN: 21.64'/12'
TYPE OF SCREEN: SCH 40 PVC
SLOT SIZE x LENGTH: 0.010" x 10'
I.D. OF SCREEN: 2"
TYPE OF SAND PACK: #1 VALVE
ELEVATION / DEPTH BOTTOM OF SCREEN: 11.64'/22'
ELEVATION / DEPTH BOTTOM OF SAND PACK: 11.64'/22'
TYPE OF BACKFILL BELOW OBSERVATION WELL:
ELEVATION / DEPTH OF HOLE: 11.64'/22'

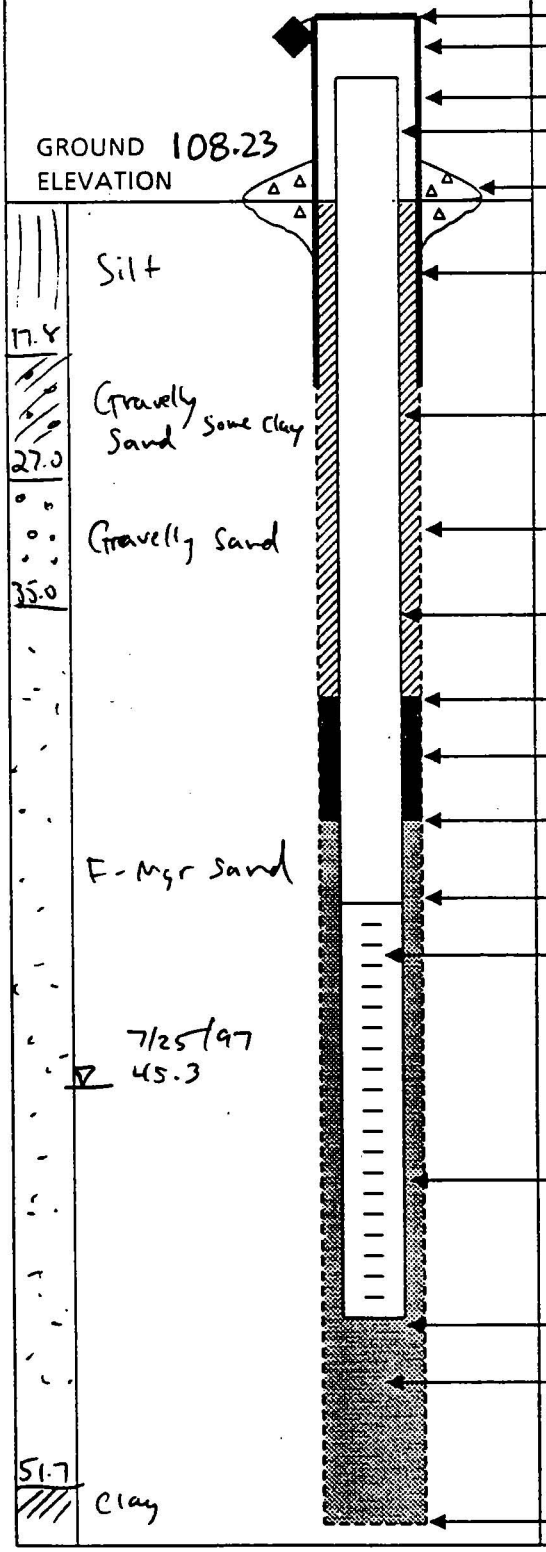
BORING NO.: BGD MW05

OVERBURDEN
MONITORING WELL SHEET

PROJECT: ~~Bac~~ Indianhead
PROJECT NO.: 7581
ELEVATION: 108.23
FIELD GEOLOGIST: T. Evans

LOCATION: Indianhead MD
BORING: BGD MW05
DATE: 7-25-97

DRILLER: M. McKinney
DRILLING METHOD: HSA
DEVELOPMENT METHOD:



ELEVATION OF TOP OF SURFACE CASING: 110.80
ELEVATION OF TOP OF RISER PIPE: 110.66
STICK - UP TOP OF SURFACE CASING: ~2.5'
STICK - UP RISER PIPE: ~2'
TYPE OF SURFACE SEAL: CEMENT PAD 3' x 3' x 6"
I.D. OF SURFACE CASING: 6"
TYPE OF SURFACE CASING: ROUND STEEL
RISER PIPE I.D. 2"
TYPE OF RISER PIPE: Sch 40 PVC
BOREHOLE DIAMETER: 6"
TYPE OF BACKFILL: CEMENT/BENTONITE GROUT
ELEVATION / DEPTH TOP OF SEAL: 71.13'/37.1
TYPE OF SEAL: Bentonite Pellets (3/8" ϕ DSI Shur Pel)
DEPTH TOP OF SAND PACK: /40.7
ELEVATION / DEPTH TOP OF SCREEN: 66.23/42
TYPE OF SCREEN: Sch 40 PVC
SLOT SIZE x LENGTH: 0.010" x 10'
I.D. OF SCREEN: 2"
TYPE OF SAND PACK: #1 Value Sand
ELEVATION / DEPTH BOTTOM OF SCREEN: 56.23/52
ELEVATION / DEPTH BOTTOM OF SAND PACK: 55.93/52.3
TYPE OF BACKFILL BELOW OBSERVATION WELL:
ELEVATION / DEPTH OF HOLE: 55.73/52.5

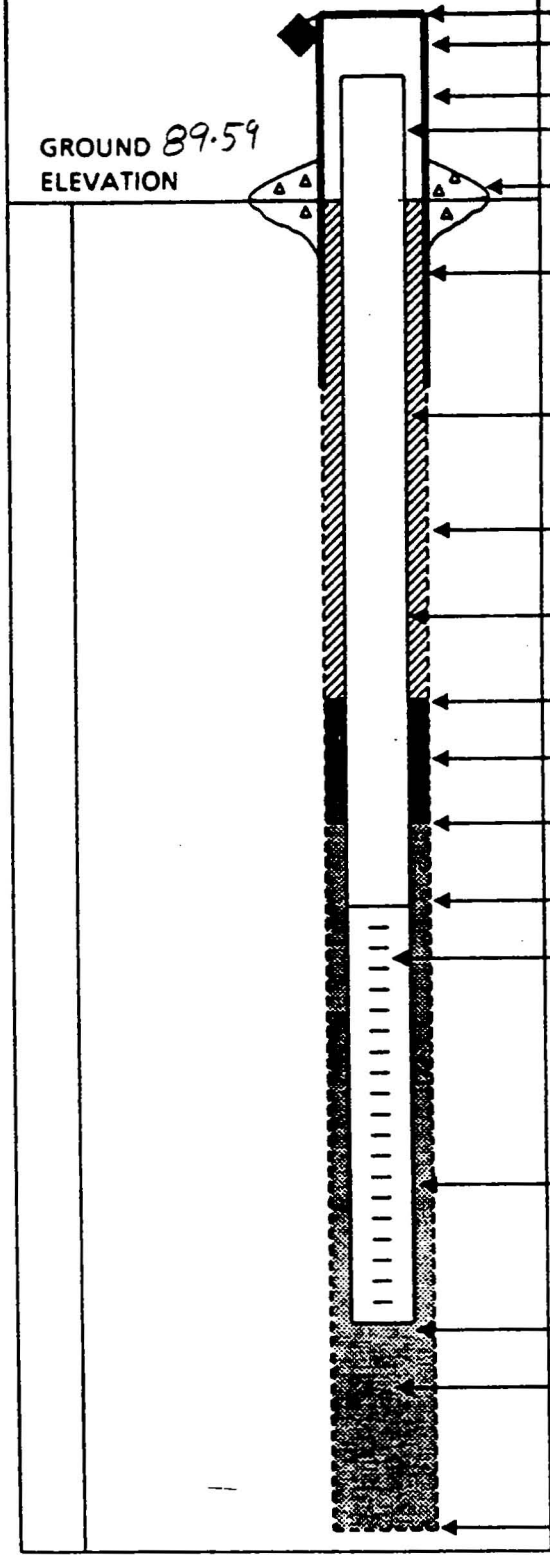
BORING NO.: RPLMW01(D)

OVERBURDEN
MONITORING WELL SHEET

PROJECT STUMPNECK RI/FS
PROJECT NO. 7581
ELEVATION
FIELD GEOLOGIST F. WUDKWICH

LOCATION PUMPKIN LANDFILL
BORING RPLSB05
DATE 7-25-97

DRILLER DAVE TAYLOR
DRILLING METHOD 4¼ HSA
DEVELOPMENT METHOD SURGE + PUMP



ELEVATION OF TOP OF SURFACE CASING :
ELEVATION OF TOP OF RISER PIPE:
STICK - UP TOP OF SURFACE CASING: 2.5
STICK - UP RISER PIPE : 2'
TYPE OF SURFACE SEAL: CONCRETE 3'x3'x6"
I.D. OF SURFACE CASING: 6"
TYPE OF SURFACE CASING: STEEL
RISER PIPE I.D. 2"
TYPE OF RISER PIPE: SCH. 40 PVC
BOREHOLE DIAMETER: 8"
TYPE OF BACKFILL: CEMENT/BENTONITE GROUT
ELEVATION / DEPTH TOP OF SEAL: 156'
TYPE OF SEAL: BENTONITE PELLETS
DEPTH TOP OF SAND PACK: 58'
ELEVATION / DEPTH TOP OF SCREEN: 160'
TYPE OF SCREEN: SCH 40 PVC
SLOT SIZE x LENGTH: .010" x 10'
I.D. OF SCREEN: 2"
TYPE OF SAND PACK: #1 (10/20) SILICA SAND
ELEVATION / DEPTH BOTTOM OF SCREEN: 170'
ELEVATION / DEPTH BOTTOM OF SAND PACK: 170'
TYPE OF BACKFILL BELOW OBSERVATION WELL:
ELEVATION / DEPTH OF HOLE: 170'

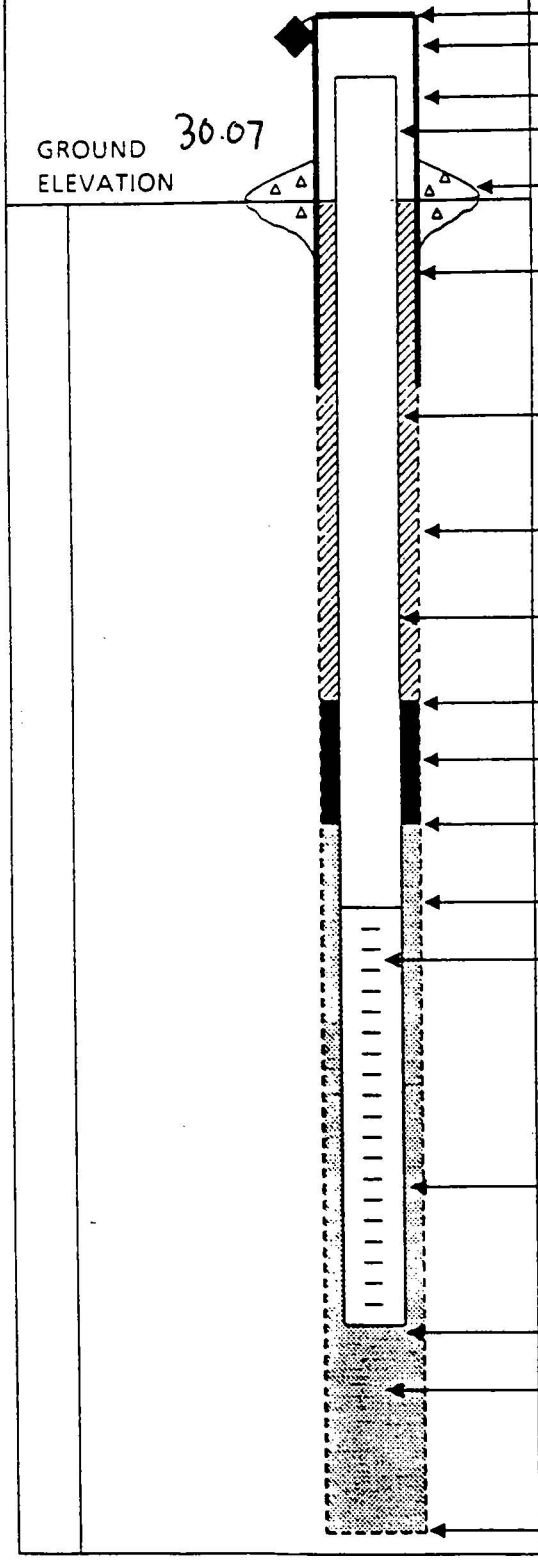
BORING NO.: RNG MW05

OVERBURDEN
MONITORING WELL SHEET

PROJECT STUMP NECK RI/VI
PROJECT NO. 7581
ELEVATION
FIELD GEOLOGIST F. WUDKWICH

LOCATION RANGE 6
BORING RNGMW05
DATE 7-10-97

DRILLER M. CORBON
DRILLING METHOD 4¼ HSA
DEVELOPMENT METHOD



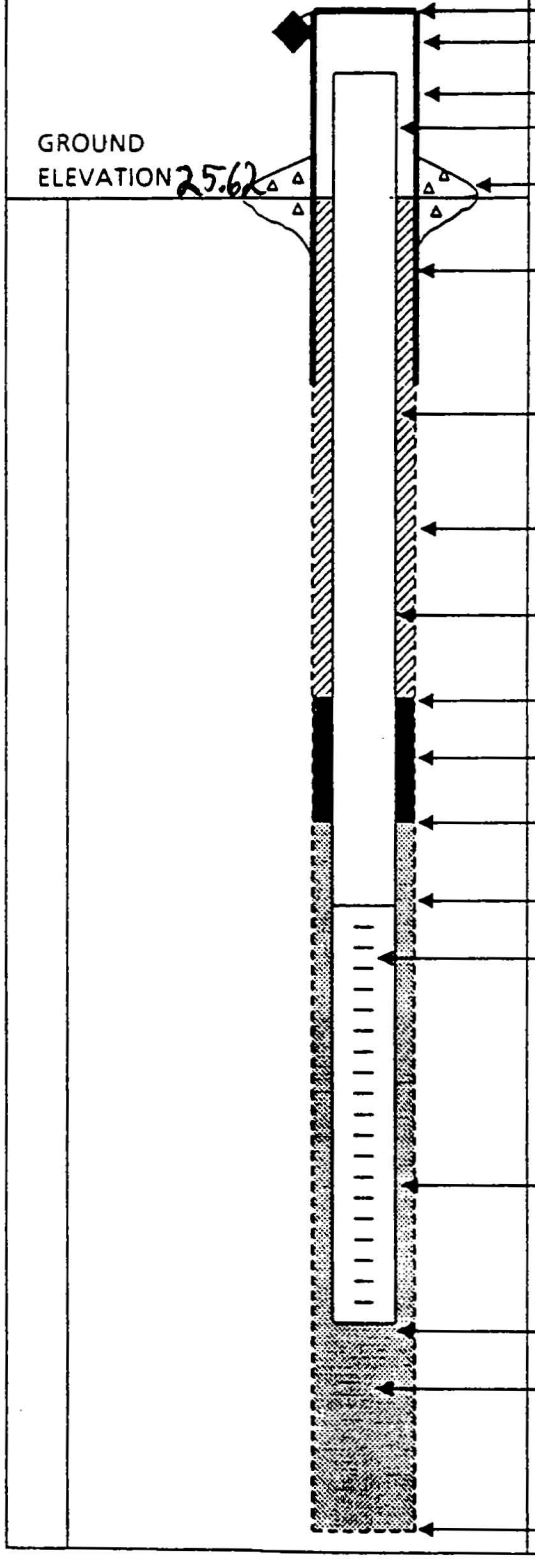
ELEVATION OF TOP OF SURFACE CASING :
ELEVATION OF TOP OF RISER PIPE:
STICK - UP TOP OF SURFACE CASING: 2.5'
STICK - UP RISER PIPE : 2'
TYPE OF SURFACE SEAL: CONCRETE PAD 3' x 3' x 6"
I.D. OF SURFACE CASING: 6"
TYPE OF SURFACE CASING: STEEL
RISER PIPE I.D. 2"
TYPE OF RISER PIPE: SCH. 40 PVC
BOREHOLE DIAMETER: 8"
TYPE OF BACKFILL: CEMENT/BENTONITE GROUT
ELEVATION / DEPTH TOP OF SEAL: 13.07 / 17'
TYPE OF SEAL: BENTONITE CHIPS
DEPTH TOP OF SAND PACK: 19'
ELEVATION / DEPTH TOP OF SCREEN: 9.07 / 21'
TYPE OF SCREEN: SCH. 40 PVC
SLOT SIZE x LENGTH: .010" x 10'
I.D. OF SCREEN: 2"
TYPE OF SAND PACK: #1 (10/20) SILICA SAND
ELEVATION / DEPTH BOTTOM OF SCREEN: -0.93 / 31'
ELEVATION / DEPTH BOTTOM OF SAND PACK: -0.93 / 31'
TYPE OF BACKFILL BELOW OBSERVATION WELL:
ELEVATION / DEPTH OF HOLE: -0.93 / 31'

BORING NO.: RN3MW01

OVERBURDEN
MONITORING WELL SHEET

PROJECT STUMP NECK RI/VI
PROJECT NO. 7581
ELEVATION
FIELD GEOLOGIST F.W. RAMSER
LOCATION RANGE 3
BORING RN3MW01
DATE 7-8-97

DRILLER D. TAYLOR
DRILLING METHOD 4¼ HSA
DEVELOPMENT METHOD PUMP/SURGE



ELEVATION OF TOP OF SURFACE CASING :
ELEVATION OF TOP OF RISER PIPE:
STICK - UP TOP OF SURFACE CASING: 2.5'
STICK - UP RISER PIPE : 2'
TYPE OF SURFACE SEAL: CONCRETE PAD 3' x 3' x 6"
I.D. OF SURFACE CASING: 6"
TYPE OF SURFACE CASING: STEEL
RISER PIPE I.D. 2"
TYPE OF RISER PIPE: SCH. 40 PVC
BOREHOLE DIAMETER: 8"
TYPE OF BACKFILL: CEMENT/BENTONITE GROUT
ELEVATION / DEPTH TOP OF SEAL: 7.62 / 18'
TYPE OF SEAL: BENTONITE CHIPS
DEPTH TOP OF SAND PACK: 20'
ELEVATION / DEPTH TOP OF SCREEN: 3.62 / 22'
TYPE OF SCREEN: SCH. 40 PVC
SLOT SIZE x LENGTH: .010" x 10'
I.D. OF SCREEN: 2"
TYPE OF SAND PACK: #1 (10/20) SILICA SAND
ELEVATION / DEPTH BOTTOM OF SCREEN: -6.38 / 32'
ELEVATION / DEPTH BOTTOM OF SAND PACK: -6.88 / 32.5'
TYPE OF BACKFILL BELOW OBSERVATION WELL:
ELEVATION / DEPTH OF HOLE: -6.88 / 32.5'

BORING NO. S25-MW03

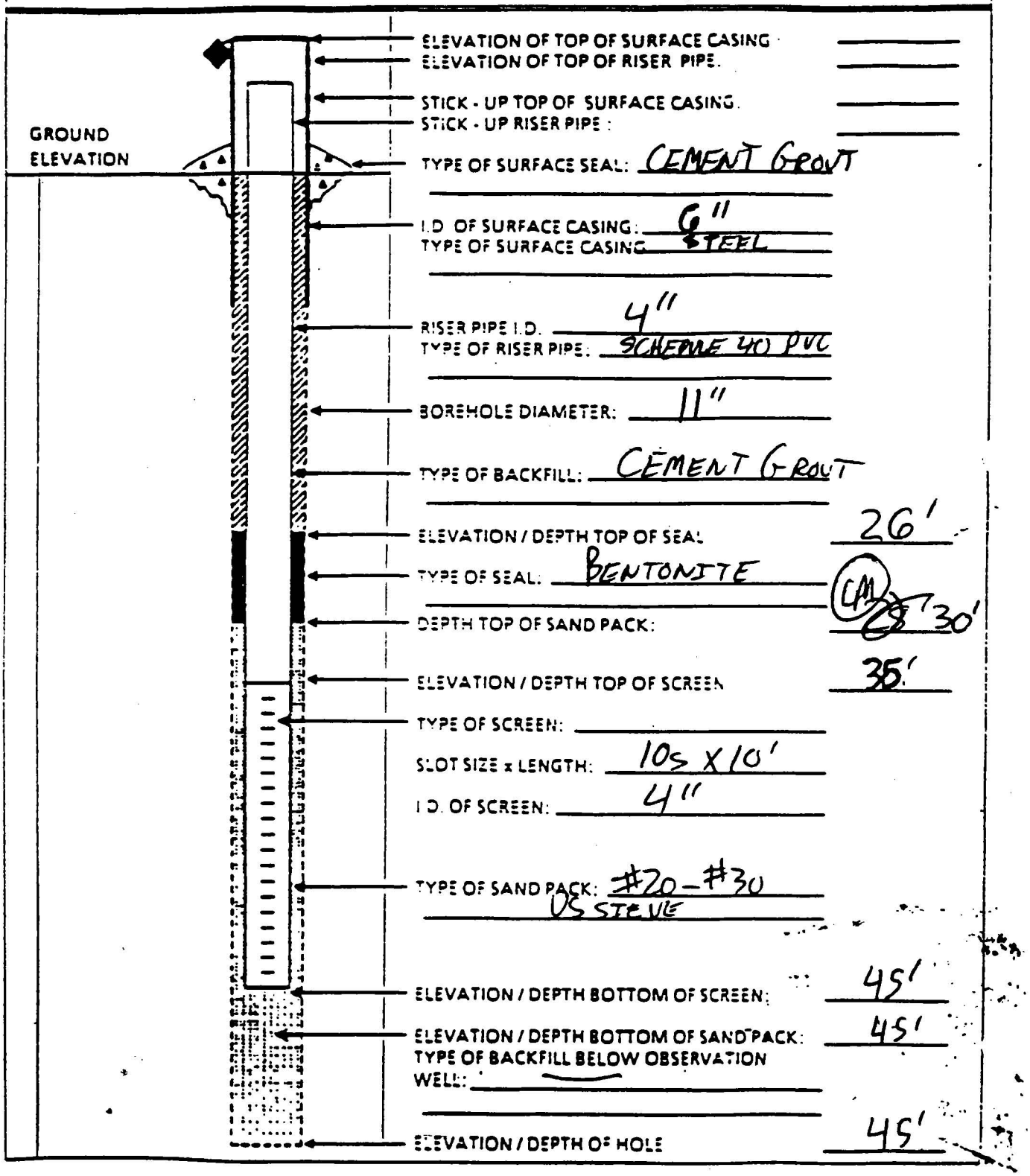
Brown & Root Environmental

MONITORING WELL SHEET

PROJECT INDIAN HEAD
PROJECT NO. 5280
ELEVATION
FIELD GEOLOGIST MARSHALL/WEST

LOCATION AREA 8
BORING S25-MW03
DATE 9/25/95

DRILLER TLB ASSOC. INC.
DRILLING METHOD HSA
DEVELOPMENT METHOD BAILING



ELEVATION OF TOP OF SURFACE CASING
ELEVATION OF TOP OF RISER PIPE.
STICK - UP TOP OF SURFACE CASING.
STICK - UP RISER PIPE :
TYPE OF SURFACE SEAL: CEMENT GROUT
I.D. OF SURFACE CASING: 6"
TYPE OF SURFACE CASING STEEL
RISER PIPE I.D. 4"
TYPE OF RISER PIPE: SCHEDULE 40 PVC
BOREHOLE DIAMETER: 11"
TYPE OF BACKFILL: CEMENT GROUT
ELEVATION / DEPTH TOP OF SEAL 26'
TYPE OF SEAL: BENTONITE
DEPTH TOP OF SAND PACK: 28' 30'
ELEVATION / DEPTH TOP OF SCREEN 35'
TYPE OF SCREEN:
SLOT SIZE x LENGTH: 10s X 10'
I.D. OF SCREEN: 4"
TYPE OF SAND PACK: #20-#30 US SIEVE
ELEVATION / DEPTH BOTTOM OF SCREEN: 45'
ELEVATION / DEPTH BOTTOM OF SAND PACK: 45'
TYPE OF BACKFILL BELOW OBSERVATION WELL:
ELEVATION / DEPTH OF HOLE 45'

BORING NO. S26-MW03

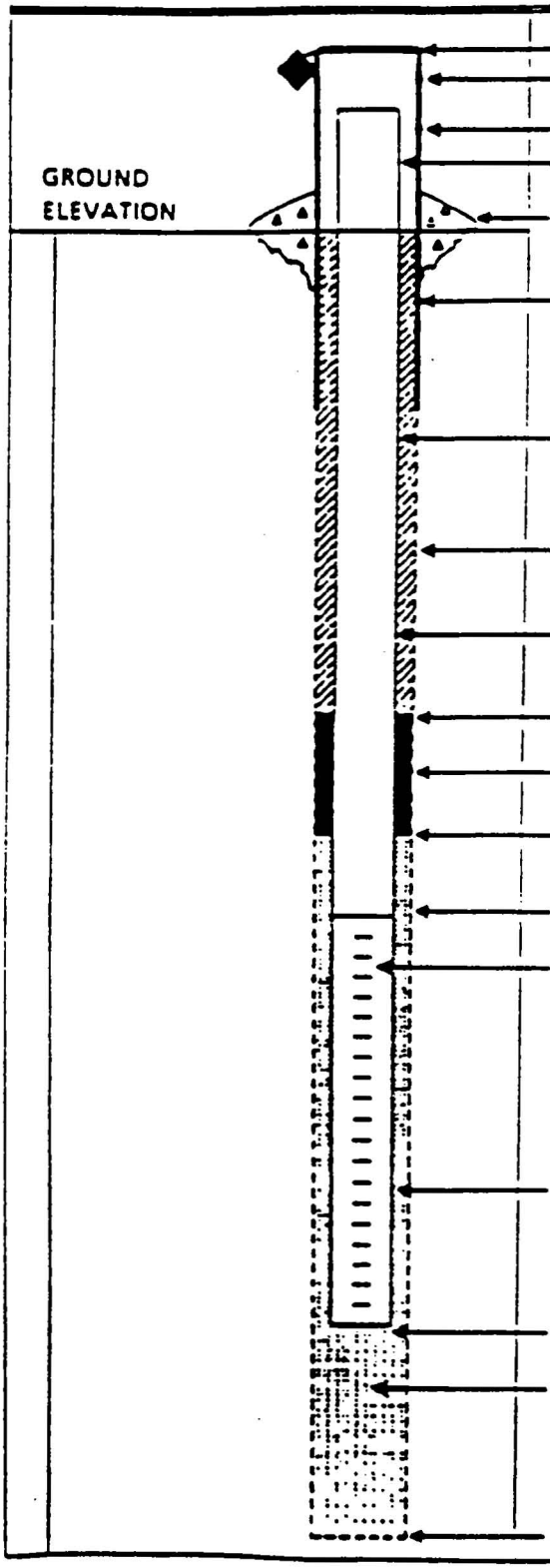
Brown & Root Environmental

MONITORING WELL SHEET

PROJECT INDIAN HEAD
PROJECT NO. 5280
ELEVATION
FIELD GEOLOGIST MARSHALL

LOCATION IED
BORING S26-MW03
DATE 9/24/96

DRILLER ILB Assoc. INC.
DRILLING METHOD HSA
DEVELOPMENT METHOD BAIL & SURGE



ELEVATION OF TOP OF SURFACE CASING: ____
ELEVATION OF TOP OF RISER PIPE: ____
STICK - UP TOP OF SURFACE CASING: ____
STICK - UP RISER PIPE: ____
TYPE OF SURFACE SEAL: CEMENT
I.D. OF SURFACE CASING: 6"
TYPE OF SURFACE CASING: STEEL
RISER PIPE I.D.: 4"
TYPE OF RISER PIPE: SCHEDULE 40 PVC
BOREHOLE DIAMETER: 11"
TYPE OF BACKFILL: CEMENT GROUT
ELEVATION / DEPTH TOP OF SEAL: 3.5'
TYPE OF SEAL: BENTONITE
DEPTH TOP OF SAND PACK: 5.5'
ELEVATION / DEPTH TOP OF SCREEN: 7.5'
TYPE OF SCREEN: SCHEDULE 40 PVC
SLOT SIZE x LENGTH: 10s X 10'
I.D. OF SCREEN: 4"
TYPE OF SAND PACK: #20 - #30 US SIEVE
ELEVATION / DEPTH BOTTOM OF SCREEN: 17.5'
ELEVATION / DEPTH BOTTOM OF SAND PACK: 18.5'
TYPE OF BACKFILL BELOW OBSERVATION WELL: SAND
ELEVATION / DEPTH OF HOLE: 18.5'

ATTACHMENT 2.B

SURVEY DATA

CODE	NORTHING	EASTING	ELEVATION
BGMW05	338,265.31	1,264,281.45	110.80
GRND	338,264.11	1,264,279.73	108.23
RISR	338,265.23	1,264,281.32	110.66
BGMW02	335,423.41	1,258,747.72	38.47
GRND	335,421.22	1,258,748.04	39.40
RISR	335,423.38	1,258,747.78	42.35
BGMW04	329,433.68	1,253,759.87	36.34
GRND	329,432.73	1,253,761.28	33.64
RISR	329,433.75	1,253,760.01	36.17
BGMW03	330,159.97	1,256,243.04	38.23
GRND	330,159.01	1,256,244.51	35.49
RISR	330,159.98	1,256,243.04	37.87
BGMW01	319,502.09	1,254,686.93	89.14
GRND	319,502.63	1,254,688.92	86.08
RISR	319,501.92	1,254,686.95	88.43

Grand
RISR
STEEL

STATE OF MARYLAND
JAMES B. MURPHY
NO. 10928
REGISTERED
PROFESSIONAL LAND SURVEYOR

9/30/97

STUMP NECK ANNEX - NAVAL SURFACE WARFARE CENTER
INDIAN HEAD, MARYLAND
OCTOBER 16, 1995
MARYLAND STATE PLANE COORDINATES - NAD 83

SWMU 5 - RANGE 6

	DESC	NORTH	EAST	ELEV
0+00	SURVEY BASELINE	317768.763	1242303.030	13.32
5+00	SURVEY BASELINE	317377.486	1241991.750	5.00
5MW01	TOP METAL CAP	317364.387	1242222.666	10.02
5MW01	SURFACE ELEV			7.13
06-SS-13	PART OF GRID	317338.501	1242154.194	6.79
06-SS-11	PART OF GRID	317460.025	1242116.805	8.06
06-SS-16	PART OF GRID	317540.053	1242186.630	11.05
06-SS-17	PART OF GRID	317470.114	1242200.694	8.52

SWMU 26 - IED SITE

RBS9=0+00	SURVEY BASELINE	322661.212	1245848.743	30.72
9001=5+00	SURVEY BASELINE	322197.850	1246036.614	18.66
26MW01	TOP METAL CAP	322013.459	1246073.336	10.55
26MW01	SURFACE ELEV			8.22
26MW02	TOP METAL CAP	322373.322	1245942.619	29.14
26MW02	SURFACE ELEV			26.14
26MW03	TOP METAL CAP	322581.484	1245912.435	34.04
26MW03	SURFACE ELEV			31.00
26SB01		322050.459	1246034.059	14.57
26SB02		322420.424	1246063.276	26.99
26SB03		322478.672	1245883.880	30.18
26SB04		322395.331	1245937.284	27.65

SWMU 27 - IOD SITE

9002=0+00	SURVEY BASELINE	321781.129	1244825.483	13.06
9003=501.38	SURVEY BASELINE	321541.900	1245266.121	17.48

SWMU 25 - AREA 8

RBS50=0+00	SURVEY BASELINE	320635.226	1250737.248	71.40
RBS51=2+73.16	SURVEY BASELINE	320908.387	1250738.435	31.81
RBS52=5+31.10	SURVEY BASELINE	321157.840	1250804.039	23.27
RBS53=7+62.60	SURVEY BASELINE	321348.383	1250672.566	12.08
25MW01	TOP METAL CAP	321487.423	1250530.617	6.24
25MW01	SURFACE ELEV			3.62
25MW02	TOP METAL CAP	321527.877	1250868.468	24.66
25MW02	SURFACE ELEV			22.11
25MW03	TOP METAL CAP	320635.516	1250724.213	74.17
25MW03	SURFACE ELEV			71.14
25SB01		321152.802	1251055.144	45.87
25SB02		320894.096	1250981.910	66.93
25SB03		320693.257	1250664.856	59.22
25SW-SD01		321555.976	1250871.117	18.80
25SW-SD02		321271.753	1250882.768	23.28
25SW-SD03		321509.082	1250508.292	2.43
25SW-SD04		321263.557	1249534.287	3.34

ATTACHMENT 3

BROWN & ROOT ENVIRONMENTAL
SAMPLE LOG SHEETS:
GROUNDWATER AND SEDIMENT

ATTACHMENT 3.A

GROUNDWATER SAMPLE LOG SHEETS

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: INDIANHEAD BACKGROUND
Project No.: 7581

[] Domestic Well Data
[✓] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: BSDMW0001[U/F]0001
Sample Location: Wildlife Viewing Area
Sampled By: PAH
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 8-6-97	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Time: 1635	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	%	NA
Method: LOW FLOW / PERI	Clear	6.66	0.127	18.1	5	—	0.00	—

PURGE DATA:

Date: 8-6-97	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: LOW FLOW / PERI	Initial							
Monitor Reading (ppm): 0	1							
Well Casing Diameter & Material	2							
Type: 2" ID SCH 40 PVC	3							
Total Well Depth (TD): 18.13								
Static Water Level (WL): 13.30								
One Casing Volume(gal/L): 0.79 g								
Start Purge (hrs): 1525								
End Purge (hrs): 1625								
Total Purge Time (min): 60								
Total Vol. Purged (gal/L): 2.2 g								

SEE LOW FLOW PURGE DATA SHEET

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
APP IX 5XOA	4°C	2 x 1 L amber	✓
VOA	HCl	3 x 40 mL	✓
EXPLOSIVES		1 L amber	✓
TOTAL METALS 1 SU	HNO_3	500 mL	✓
DISSOLVED METALS 1 SU	HNO_3	500 mL	✓
PEST / PCB		1 L amber	✓

OBSERVATIONS / NOTES:

STUMPNECK AREA

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: INDIANHEAD BACKGROUND
PROJECT NUMBER: 7581

WELL I.D.: BGDMW0001
DATE: 8-6-97

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	Temp. (Celcius)	pH (S.U.)	Cond.	DO (mg/L)	Sal. %	Turb. (NTU)	Comments
1525	13.30								begin @ 1525
1530	13.55 -0.25	144 ±	18.8 6	6.93 3	0.130 4		0.00	94 24	TD 18.13
1545	13.87 -0.32	± 100	17.7 2	6.78 5	0.129 7		0.00	123 62	
1600	14.20 -0.33	↓	17.9 3	6.74 2	0.1313		0.00	47 68	
1610	14:30 -0.10	↓	18.4 2	6.661	0.1280		0.00	15 54	
1615	14.37 -0.07	↓	18.2 1	6.641	0.1251		0.00	7 30	
1625	14.49	↓	18.1	6.66	0.127		0.00	5	2.2 gallons purged

SIGNATURE(S)

2

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: INDIAN HEAD BACKGROUND
Project No.: 7581

Sample ID No.: 28DMW002[WF]001
Sample Location:
Sampled By: PAH
C.O.C. No.:

[] Domestic Well Data
[✓] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 8-12-97 / Time: 1515	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	Salinity %	Other NA
Method: Direct Fill	Clear	5.81	0.377	20.8	0		0.01	

PURGE DATA:

Date: 8-12-97	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: LOW FLOW/PEEI	Initial							
Monitor Reading (ppm): -0-	1							
Well Casing Diameter & Material	2							
Type: 2"ID SCH 40 PVC	3							
Total Well Depth (TD): 16.55								
Static Water Level (WL): 8.77								
One Casing Volume(gal/L): 1.27								
Start Purge (hrs): 13:47								
End Purge (hrs): 1515								
Total Purge Time (min): 90								
Total Vol. Purged (gal/L): 2.6 gal								

SEE LOW FLOW PURGE DATA SHEET

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
PEST / PCB	4°C	AMBER LITER	✓
TOC / TOX	H_2SO_4	↓	✓
TAL Metals +Sn, TOTAL	HNO_3	500 mL	✓
TAL Metals +Sn, DISSOLVED	HNO_3		✓
ANIONS	↓	↓	✓

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

LOW FLOW F GE DATA SHEET

PROJECT SITE NAME: INDIAN HEAD: BACKGROUND
PROJECT NUMBER: 7581

WELL I.D.: BGDMW002
DATE: 8-12-97

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	Temp. (Celcius)	pH (S.U.)	Cond.	DO (mg/L)	Sal. %	Turb. (NTU)	Comments
1347	9.77								TD = 16.55'
1400	9.38 0.41	± 100	20.9	6.00	0.378		0.01	12	∴ 7.78' H2O x 0.163 = 1.27 gall
1415	9.55 0.17		20.9 0	5.98 1	0.394 2		0.01	8	
1425	9.58 0.03	± 100	21.0 1	5.96 1	0.399 2		0.01	4	∴ 1.27 gall x 2 = 2.5 gall
1435	9.62 0.04	± 100	20.7 2	5.89 1	0.374 2		0.01	4	need purged before
1445	9.64 0.02	± 100	21.1 2	5.82 2	0.374 0		0.01	2	sampling
1500	9.69	± 100	20.4	5.99	0.376		0.01	1	
1515	9.73	± 100	20.8	5.81	0.377		0.01	0	

SIGNATURE(S)

PAGE 1 of 1

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GROUNDWATER SAMPLE LOG SHEET

Project Site Name: INDIAN HEAD BACKGROUND INV
Project No.: 7581

Sample ID No.: BGDMW0003[U/F]001
Sample Location:
Sampled By: PAH
C.O.C. No.:

[] Domestic Well Data
[✓] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 8-12-97 / Time: 1830	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	Salinity %	Other NA
Method: Direct Fill	Clear	6.01	0.204	17.8	18		0.00	

PURGE DATA:

Date: 8-12-97	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: LOW FLOW / PERIST	Initial							
Monitor Reading (ppm): -0-	1							
Well Casing Diameter & Material	2							
Type: 2" ID SCH 40 PVC	3							
Total Well Depth (TD): 24.24								
Static Water Level (WL): 13.49								
One Casing Volume(gal/L): 1.75g								
Start Purge (hrs): 1630								
End Purge (hrs): 1830								
Total Purge Time (min): 120								
Total Vol. Purged (gal/L): 3.5gall								

SEE LOW FLOW PURGE DATA SHEET

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
PEST / PCB	4°C	AMBER LITER	✓
TOC / TOX	H_2SO_4	↓	✓
TAL Metals + Sn, Total	HNO_3	500 mL	✓
TAL Metals + Sn, Dissolved	HNO_3		✓
Anions	↓	↓	✓

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

LOW FLOW I .GE DATA SHEET

PROJECT SITE NAME: INDIANHEAD BACKGROUND
PROJECT NUMBER: 7581

WELL I.D.: BGDMW0003
DATE: 8-12-97

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	Temp. (Celcius)	pH (S.U.)	Cond.	DO (mg/L)	Sal. %	Turb. (NTU)	Comments
1630	13.49								TD=24.24
1645	14.29	± 100	19.4	5.87	0.176		0.00	26	
1700	14.63	± 100	19.3	5.86	0.174		0.00	25	
1715	14.95	± 100	18.8	5.82	0.169		0.00	20	
1730	15.52	± 150	18.4	5.70	0.156		0.00	11	
1740	15.46	± 150	17.3	5.64	0.140		0.00	7	
1750	15.49	± 150	17.5	5.86	0.168		0.00	20	
1800	15.50	± 150	17.1	5.90	0.184		0.00	19	
1815	15.42	± 100	17.8	5.99	0.196		0.00	19	
1830	15.45	± 100	17.8	6.01	0.204		0.00	18	

SIGNATURE(S)

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: INDIAN HEAD BACKGROUND INVEST.
Project No.: 7581

[] Domestic Well Data
[✓] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: B30MW004[U/F]0001
Sample Location:
Sampled By: PAH
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 8-13-97	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Time: 1100	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	%	NA
Method: Direct Fill	Cloudy	5.50	0.169	14.0	727		0	

PURGE DATA:

Date: 8-13-97	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: LOW FLOW/PERI	Initial							
Monitor Reading (ppm): - 0 -	1							
Well Casing Diameter & Material	2							
Type: 2" ID SCH 40 PVC	3							
Total Well Depth (TD): 25.31								
Static Water Level (WL): 15.87								
One Casing Volume(gal/L): 1.54 g								
Start Purge (hrs): 0835								
End Purge (hrs): 1045								
Total Purge Time (min): 130								
Total Vol. Purged (gal/L): + 3 gal								

SEE LOW FLOW PURGE DATA SHEET

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
PEST / PCB	4°C	AMBER LITER	✓
TOX / TOC	H_2SO_4	↓	✓
TAL Metals + Sn, Total	HNO_3	500 mL	✓
TAL Metals + Sn, Dissolved	HNO_3	↓	✓
ANIONS	↓	↓	✓

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

LOW FLOW P GE DATA SHEET

PROJECT SITE NAME: INDIAN HEAD BACKGROUND INV.
PROJECT NUMBER: 7581

WELL I.D.: BGDMW0004
DATE: 8-13-97

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	Temp. (Celcius)	pH (S.U.)	Cond.	DO (mg/L)	Sal. %	Turb. (NTU)	Comments
0835	15.87								TD = 25.31
0850	16.67	± 100	19.8	5.69	0.216		0	406	
0900	16.85	± 100	19.0	5.60	0.200		0	700	target purge volume
0920	16.85	± 100	20.5	5.66	0.199		0	700	= 3.08 gallons
0930	17:00	± 100	18.7	5.56	0.195		0	488	
0945	17.15	± 100	19.3	5.49	0.193		0	489	
1000	17.37	± 100	18.5	5.343	0.180		0	447	
1015	17.15	± 100	20.8	5.467	0.167		0	509	
1045	16.92	± 100	19.0	5.50	0.169		0	727	

SIGNATURE(S)

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: INDIAN HEAD BACKGROUND INV
Project No.: 7581

[] Domestic Well Data
[x] Monitoring Well Data
[] Other Well Type: DUPLICATE
[x] QA Sample Type: MS / MSD

Sample ID No.: BGDMW0005[V/F]001
Sample Location: INDIAN HEAD
Sampled By: SRW
C.O.C. No.:
Type of Sample:
[x] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 8-15-97	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Time: 1530	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	%	NA
Method: Direct Fill	CLEAR TO CLOUDY	5.52	0.147	23.9	387		0.00	

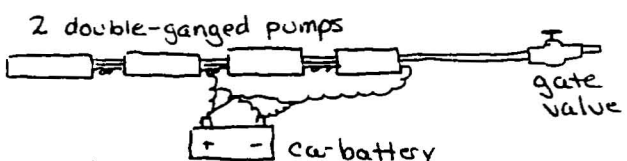
PURGE DATA:

Date: 8-14-97	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: LOW FLOW/SUBMERS.	Initial							
Monitor Reading (ppm): -0-	1							
Well Casing Diameter & Material	2							
Type: 2" ID SCH 40 PVC	3							
Total Well Depth (TD): 54.97								
Static Water Level (WL): 46.94								
One Casing Volume(gal/L): 1.31 gal								
Start Purge (hrs): 0955								
End Purge (hrs): 1135								
Total Purge Time (min): 100								
Total Vol. Purged (gal/L): ± 2.7 gal								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL PEST / PCB	4°C	1 L amber	✓
TAL METALS + SN, TOTAL	HNO_3	500 mL HDPE	✓
TAL METALS + SN, DISSOLVED	HNO_3	↓	✓
ANIONS		↓	✓
TOX / TOC	H_2SO_4	1 L amber	✓

OBSERVATIONS / NOTES:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
✓	BGD DUP 004

Signature(s):

LOW FLOW P .GE DATA SHEET

PROJECT SITE NAME: INDIAN HEAD BACKGROUND INV.
PROJECT NUMBER: 7581

WELL I.D.: BGDMW005
DATE: 8-14-97.

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	Temp. (Celcius)	pH (S.U.)	Cond.	DO (mg/L)	Sal. %	Turb. (NTU)	Comments
0810	46.94								TD = 54.97
0955	46.94								begin @ 0955
1000	47.10	±100	21.6	5.68	0.172		0.00	189	
1015	47.07	±100	22.3	5.72	0.162		0.00	153	
1025	47.06	±100	23.1	5.70	0.161		0.00	410	
1035	47.08	±100	23.0	5.64	0.160		0.00	999	
1040	47.10	±100	22.9	5.61	0.157		0.00	999	
1055	47.03	±100	23.9	5.65	0.156		0.00	543	
1100	47.14	±200	23.2	5.57	0.153		0.00	999	
1110	47.11	±100	23.9	5.52	0.147		0.00	337	bottom 2 pumps burned out just prior to sampling

SIGNATURE(S)

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GROUNDWATER SAMPLE LOG SHEET

Project Site Name: STUMPNECK ANNEX: RI/VI
Project No.: 7581

[] Domestic Well Data
[x] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: RN3MW001 [VO/FQ] ↓ 01
Sample Location: RN3 MW01
Sampled By: SRW
C.O.C. No.:
Type of Sample:
[x] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 8-3-97	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Time: 0945	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	%	NA
Method: Low Flow/Peristaltic	Clear	5.95	0.123	18.5	17	—	-0-	

PURGE DATA:

Date: 8-3-97	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Low Flow	Initial							
Monitor Reading (ppm): 0	1							
Well Casing Diameter & Material	2							
Type: 2" ID SCH40 PVC	3							
Total Well Depth (TD):	34.6'							
Static Water Level (WL):	26.7'							
One Casing Volume(gal/L):	1.29 gal							
Start Purge (hrs):	0825							
End Purge (hrs):	0945							
Total Purge Time (min):	80	SEE LOW FLOW PURGE DATA SHEET						
Total Vol. Purged (gal/L):	26.4 L							

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
APP IX VOC	HCL, 4°C	3 x 40mL	✓
APP IX SVOC	↓	Amber Liter (x 2)	✓
APP IX Metals (+Sn), Total	HNO_3	500 mL	✓
TOX, TOC	H_2SO_4	Amber Liter	✓
APP IX Metals, Dissolved	HNO_3 ↓	500 mL	✓

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s):

LOW FLOW P GE DATA SHEET

PROJECT SITE NAME: STUMPNECK ANNEX RI/VI RANGE 3 RN3
WELL I.D.: MW01
PROJECT NUMBER: 7581
DATE: 8-3-97

34.6
16.67
8 =

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	Temp. (Celcius)	pH (S.U.)	Cond.	DO (mg/L)	Sal. %	Turb. (NTU)	Comments
0825	26.67	330/1							Total Depth 34.60
0845	26.67	330/1	18.8	6.45	.167	—	0.00	999	
0850	26.70	330/1	19.7	6.34	.159	—	0.00	771	
0855	26.70	330/1	19.8	6.30	.152	—	0.00	355	
0900	26.70	330/1	19.3	6.22	.148	—	0.00	192	
0900	26.70	330/1	19.2	6.18	.141	—	0.00	108	
0905	26.70	330/1	19.4	6.15	.139	—	0.00	63	
0910	26.70	330/1	19.3	6.15	.137	—	0.00	56	
0915	26.70	330/1	19.2	6.09	.134	—	0.00	41	
0925	26.70	330/1	18.9	6.08	.132	—	0.00	35	
0930	26.70	330/1	18.8	6.00	.130	—	0.00	28	
0935	26.70	330/1	18.8	6.00	.128	—	0.00	20	
0940	26.70	330/1	18.8	5.99	.126	—	0.00	20	
0945	26.70	330/1	18.8	5.95	.123	—	0.00	17	

SIGNATURE(S) _____

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GROUNDWATER SAMPLE LOG SHEET

Project Site Name: STUMPNECK ANNEX : RI/FS
Project No.: 7581

Sample ID No.: RNG MW005[U/F]0001
Sample Location: Range 6
Sampled By: SLH
C.O.C. No.:

[] Domestic Well Data
[x] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 8-4-97	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Time: 1300	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	%	NA
Method: Submersible pump w/ surface drive	brown	5.83	0.040	20.7	999	—	0	

PURGE DATA:

Date: 8-4-97	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: LOW FLOW / SUBMER.	Initial							
Monitor Reading (ppm):	1							
Well Casing Diameter & Material	2							
Type: 2" ID SCH 40 PVC	3							
Total Well Depth (TD): 33.12								
Static Water Level (WL): 31.12								
One Casing Volume(gal/L): 0.33 g								
Start Purge (hrs): 1030								
End Purge (hrs): 1110								
Total Purge Time (min): 40 min	SEE LOW FLOW PURGE DATA SHEETS							
Total Vol. Purged (gal/L): 2 gal								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
APP IX VOA	4°C, HCL	3 x 40mL	✓
SVOA		2 x AMBER LITER	✓
EXPLOSIVES		AMBER LITER	✓
TOTAL METALS + Sn	, HNO_3	500 mL	✓
DISSOLVED METALS + Sn	, HNO_3	500 mL	✓

OBSERVATIONS / NOTES:

Circle if Applicable:
MS/MSD | Duplicate ID No.:

Signature(s):

LOW FLOW P GE DATA SHEET

RN6 MW05

PROJECT SITE NAME: STUMPNECK ANNEX RI/FS
PROJECT NUMBER: 7581

WELL I.D.: MW5
DATE: 9-4-97

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	Temp. (Celcius)	pH (S.U.)	Cond.	DO (mg/L)	Sal. %	Turb. (NTU)	Comments
1030	~~29~~ 31.12	105							TOTAL Depth 33.12
									Purge TO 1045.
1045	31.53	105/1	22.0	7.40	.053	-	0.00	228	
1050	31.65	105/1	21.8	6.70	.043	-	0.00	148	
1055	31.67	105/1	21.1	6.18	.042	-	0.00	174	
1100	31.78	105/1	21.1	6.01	.040	-	0.00	563	
1105	31.87	105/1	21.0	5.97	.040	-	0.00	999	
1110	32.00	105/1	20.7	5.83	.040	-	0.00	999	well went dry

SIGNATURE(S)

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: STUMPNECK ANNEX: RI/VI
Project No.: 7581

[] Domestic Well Data
[✓] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: RPLMW01[U/F]0001
Sample Location: Rum Point Landfill
Sampled By: PAH
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 8-6-97 / Time: 1115	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	Salinity %	Other NA
Method: LOW FLOW/SUB. PUMP	Clear	7.60	0.541	17.91	95	—	0.02	—

PURGE DATA:

Date: 8-6-97	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Low Flow/Sub. Pump	Initial							
Monitor Reading (ppm): - 0 -	1							
Well Casing Diameter & Material	2							
Type: 2" ID SCH 40 PVC	3							
Total Well Depth (TD): 71.0								
Static Water Level (WL): 25.66								
One Casing Volume(gal/L): 7.39								
Start Purge (hrs): 0900								
End Purge (hrs): 1100								
Total Purge Time (min): 120								
Total Vol. Purged (gal/L): ≈40								

SEE LOW FLOW PURGE DATA SHEET

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
APP IX VOA	HCL 4°C	3 x 40 mL	✓
SVOA		2 x 1 L amber	✓
EXPLOSIVE		1 L amber	✓
TOTAL METALS +SN	HNO_3	500 mL	✓
DISSOLVED METALS +SN	HNO_3	500 mL	✓

OBSERVATIONS / NOTES:

COLLECTED FROM THE DEEP RPLMW01(D)

Circle if Applicable:
MS/MSD | Duplicate ID No.:

Signature(s):

LOW FLOW [illegible]GE DATA SHEET

PROJECT SITE NAME: STUMPNECK ANNEX: R/V/L
PROJECT NUMBER: 7581

WELL I.D.: RPLMW0001
DATE: 8-6-97

Time (Hrs)	Water Level (ft. below TOC)	Flow (mL/min)	Temp. (Celsius)	pH (S.U.)	Cond.	DO (mg/L)	Sal. %	Turb. (NTU)	Comments
0900	25.63	100	17.2	7.33	0.528		0.02	101	pH bulk on, flow adjust
0910	25.82 -0.19	100-50	17.4	7.73	0.492		0.02	176	
0920	26.23 -0.42	11	16.2	7.70	0.489		0.02	86	
0930	27.51 -1.28	± 150	16.2	7.81	0.499		0.02	82	
0945	28.38 -0.87	± 150	16.2	7.76	0.498		0.02	88	TD = 69.5'
1000	28.23 +0.15	150-100	16.8	7.67	0.511		0.02	127	
1015	27.83 +0.40	75-100	17.3	7.67	0.539		0.02	170	HORIBA BATTERY LOW ∴
1030	28.00 -0.17	± 150	17.0	7.66	0.552		0.02	118	DECREASE FREQUENCY
1045	28.06 -0.06	± 150	16.9	7.66	0.548		0.02	113	
1100	27.76	± 100	17.9	7.60	0.541		0.02	94	SUBMERSIBLE PUMP → TEFLON TUBING → GATE VALVE - VALVE DIFFICULT TO REGULATE
									INTAKE @ ±56 feet

SIGNATURE(S) [signature]

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GROUNDWATER
SAMPLE LOG SHEET

Page ___ of ___

Project Site Name: INDIAN HEAD
Project No.: 5280

- ☐ Domestic Well Data
- ☑ Monitoring Well Data
- ☐ Other Well Type: ___
- ☐ QA Sample Type: ___

Sample ID No.: 25 MW03
Sample Location: AREA 8
Sampled By: MARSHALL/YOST
C.O.C. No.: 9A,B

Sampling Data

Date: 10/4/95	pH	S.C.	Temp. (°C)	Turbidity	Color	TBD	TBD	TBD
Time: 1330								
Method: SS. Bailer	5.88	.110	18.1	999	Brown			

Purge Data

Date: 10/4/95	Volume	pH	S.C.	Temp.(°C)	Turbidity	Color	TBD	TBD
Method: SS Bailer	Initial	5.50	.066	998 1448	999	Brown		
Monitor Reading (ppm): 0	1	5.82	.100	18.2	"	"		
Well Casing Dia. & Material Type: 4"	2	5.87	.109	18.1	"	"		
	3	5.88	.110	18.1				
Total Well Depth (TD): 45	4							
Static Water Level (WL): 34.90	5							
TD-WL (ft.) = 13								
One Casing Volume: (gal/L) 30L								
Start Purge (hrs.): 1250								
End Purge (hrs.): 1325								
Total Purge Time (min): 35								
Total Amount Purged (gal/L): 90L								

Analysis	Preservative	Container Requirements	Collected (✓)
APPENDIX IX VOA	HCl	3-40 ml VIAL	✓
APPENDIX IX SVOA	—	1 LT AMBER	✓
EXPLOSIVES, PETN, NG	—	" "	✓
NC/NG	—	" "	✓
METALS - TOTAL and DISSOLVED	HNO_3	1-LT POLY	✓
CYANIDE	NAOH	" "	✓
TOX	H_2SO_4	1-250 ml AMBER	✓
TOC, NH_3	H_2SO_4	" "	✓
TKN	H_2SO_4	1-250 ml POLY	✓
SO_4/PO_4	—	" "	✓
NO_2, NO_3	H_2SO_4	1-80 ml POLY	✓

Observations/Notes:

Circle if Applicable:
MS/MSD | Duplicate ID No:

Signature(s): D. Yost

TBD: To Be Determined

GROUNDWATER
SAMPLE LOG SHEET

Page ___ of ___

Project Site Name: INDIAN HEAD
Project No.: 5280
Sample ID No.: 26MW03
Sample Location: IED
Sampled By: MARSHALL/YOST
C.O.C. No.: 9A,B

- ☐ Domestic Well Data
- ☑ Monitoring Well Data
- ☐ Other Well Type: ____
- ☐ QA Sample Type: ____

Sampling Data

Date: 10/4/95
Time: 1550
Method: SS Bailer

pH	S.C.	Temp. (°C)	Turbidity	Color	TBD	TBD	TBD
5.82	.131	18.4	999	BROWN	—		

Purge Data

Date: 10/4/95
Method: SS Bailer
Monitor Reading (ppm):
Well Casing Dia. & Material Type: 4"
Total Well Depth (TD): 20.00
Static Water Level (WL): 14.67
TD-WL (ft.) = 5.5
One Casing Volume: (gal/L) 1.3L
Start Purge (hrs.): 0816
End Purge (hrs.): 0836
Total Purge Time (min): 19
Total Amount Purged (gal/L): 2GAL

Volume	pH	S.C.	Temp.(°C)	Turbidity	Color	TBD	TBD
Initial	5.86	.153	18.3	999	BROWN	—	—
1	5.77	.134	18.4	"	"	—	—
2	5.82	.131	18.4	"	"		
3							
4							
5							
	DRY AFTER 2 VOLUMES						

Analysis	Preservative	Container Requirements	Collected (✓)
APPENDIX IE VOA	HCl	3-40 ml VIAL	✓
APPENDIX IE SVOA	—	1-LT AMBER	✓
PCBs	—	" "	✓
EXPLOSIVES, PETN, NG	—	" "	✓
NC, NQ	—	" "	✓
TPH-418.1	H_2SO_4	" "	✓
METALS-TOTAL + DISSOLVED	HNO_3	1 LT POLY	✓
~~FREE~~ CYANIDE	NAOH	" "	✓
TOC, NH_3	H_2SO_4	1-250 ml amber	✓
TOX	H_2SO_4	" "	✓
TKN	H_2SO_4	1-250 ml POLY	✓
Observations/Notes: SO_4 / PO_4	—	" "	✓
NO_2, NO_3	H_2SO_4	1-80 ml POLY	✓

Circle if Applicable:
MS/MSD | Duplicate ID No:

Signature(s): D Yost

TBD: To Be Determined

ATTACHMENT 3.B

SEDIMENT SAMPLE LOG SHEETS

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: STUMPNECK BACKGROUND
Project No.: 7581

Sample ID No.: BGDSD001010101
Sample Location: see map
Sampled By: FRED W RAMSEY
C.O.C. No.:

[] Surface Soil
[] Subsurface Soil
[✓] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[✓] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 7-30-97	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1100	0-3"	MODERATE BROWN	Silty Sand w/ some Fine gravel (SW) saturated
Method: Direct. Fill			
Monitor Reading (ppm): NONE			

COMPOSITE SAMPLE DATA:

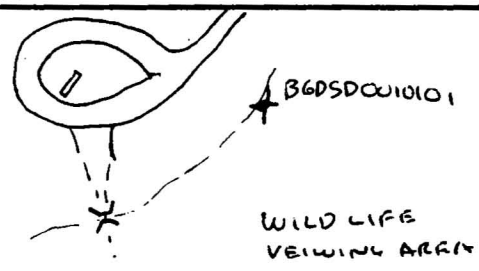
Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL, PEST/PCB, TAL Metals [+Sn], TOC, TOX	8oz	✓	
Grain Size Distribution	2x 8oz	✓	

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Fred W Ramsey

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: STUMPNECK ANNEX
Project No.: 7581 BACKGROUND

Sample ID No.: BGDSD002.0101
Sample Location: see map
Sampled By: Fred. W. Ramsey
C.O.C. No.:

- [ ] Surface Soil
- [ ] Subsurface Soil
- [x] Sediment
- [ ] Other:
- [ ] QA Sample Type:

Type of Sample:
- [ ] Low Concentration
- [ ] High Concentration

GRAB SAMPLE DATA:

Date: 7-31-97	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1130	0-3"	Moderate Brown	Medium gr. sand, trace organic debris, (SP) wet
Method: Direct Fill			
Monitor Reading (ppm): NA			

COMPOSITE SAMPLE DATA:

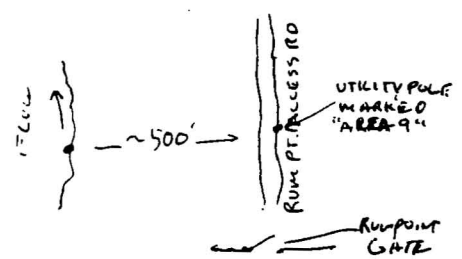
Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL PEST/PCB, TAL Metals (TSP), TOC, TOX	8oz	✓	
Grain Size Distribution	2 x 8oz	✓	

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
———	[redacted] PAH

Signature(s): Fred W Ramsey

SOIL & SEDIMENT SAMPLE LOG SHEET

Page ___ of ___

Project Site Name: STUMPNECK BACKGROUND
Project No.: 7581

Sample ID No.: B6DSD003010101
Sample Location: DONCASTER ST FOREST
Sampled By: SRW
C.O.C. No.: ___

[] Surface Soil
[] Subsurface Soil
[✓] Sediment
[] Other: ___
[] QA Sample Type: ___

Type of Sample:
[✓] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 8-18-97	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 0900	0-3"	MOD. BRN ~~SAND LAYER~~	SAND W/SOME LEAVE MATL. SATURATED
Method: DIRECT FILL			
Monitor Reading (ppm): —			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

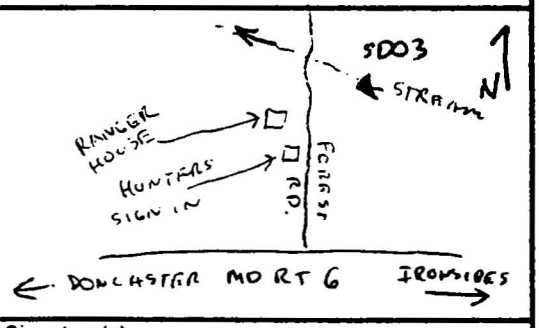
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TAL METALS	} 8oz	✓	
TCL PEST / PCB's			
TOX & TOC			
GRAIN SIZE DIST	2x 8oz	✓	

OBSERVATIONS / NOTES:

- RAIN NIGHT BEFORE, STRONG FLOWING STREAM.
- HEAD WATERS OF THE REHDER RUN.
- PESTICIDES ARE SAID TO HAVE BEEN USED ON THE STATE FOREST

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Fred W Ramsey

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: STUMPNECK BACKGROUND
Project No.: 7581

Sample ID No.: BGDSD0040101
Sample Location: SMALLWOOD ST PK
Sampled By: FUR
C.O.C. No.:

- [ ] Surface Soil
- [ ] Subsurface Soil
- [x] Sediment
- [ ] Other:
- [ ] QA Sample Type:

Type of Sample:
- [x] Low Concentration
- [ ] High Concentration

GRAB SAMPLE DATA:

Date: 7-31-97	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1625	0-3"	MOD BRN TO PALE BRN	M-g SAND WET
Method: DIRECT FILL			
Monitor Reading (ppm): —			

COMPOSITE SAMPLE DATA:

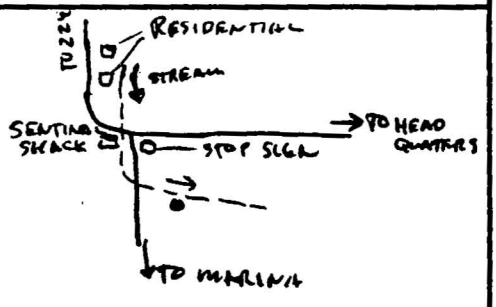
Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TAL METALS + Sn	8oz	✓	
TCL PEST/PCBS		✓	
TOX + TOC		✓	
GRAIN SIZE DIST	2x8oz	✓	

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.: FUR BGDDUP0040101

Signature(s): Fred W Ramser

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: STUMPNECK BACKGROUND
Project No.: 7581

Sample ID No.: B6DSD0050101
Sample Location: RUM POINT
Sampled By: PWR
C.O.C. No.:

- [ ] Surface Soil
- [ ] Subsurface Soil
- [x] Sediment
- [ ] Other:
- [ ] QA Sample Type:

Type of Sample:
- [x] Low Concentration
- [ ] High Concentration

GRAB SAMPLE DATA:

Date: 7-31-97	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1820	0-3"	MOD BRN	M-G SAND WET
Method: DIRECT. FILL			
Monitor Reading (ppm): ~			

COMPOSITE SAMPLE DATA:

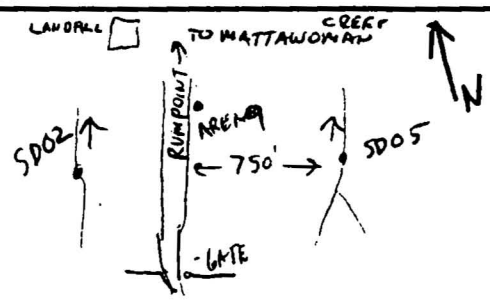
Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TAL METAL + Sn	8oz WMG	✓	
TCL PEST/PCBs			
TOX + TOC			
GRAIN SIZE DIST.	8oz WMG	✓	

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: BACKGROUND STUMPNECK/INDIANHEAD
Project No.: 7581

Sample ID No.: BGDSD006010I
Sample Location: STUMPNECK
Sampled By: SRWILLOUGHBY
C.O.C. No.: ____

- [ ] Surface Soil
- [ ] Subsurface Soil
- [x] Sediment
- [ ] Other: ____
- [ ] QA Sample Type: ____

Type of Sample:
- [x] Low Concentration
- [ ] High Concentration

GRAB SAMPLE DATA:

Date: 8-1-97	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1135	0-3"	MOD TO LLGHT BRN	SILTY M-g SAND MOIST
Method: DIRECT FILL			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCL PEST/PCB	} 8oz WMG	—	
TAL METALS + Sn			
TOX + TOC			
GSD	2x 8oz WMG	—	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Fred W Ramsey

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: STUMPNECK BACKGROUND
Project No.: 7581

Sample ID No.: BGDSD007010
Sample Location: SMALLWOOD ST. PK
Sampled By: SRW
C.O.C. No.: ___

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other: ___
[] QA Sample Type: ___

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 8-17-97	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1020	0-3"	BRN	SAND TR LEAVES SATURATED (SP)
Method: DIRECT FILL			
Monitor Reading (ppm): —			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

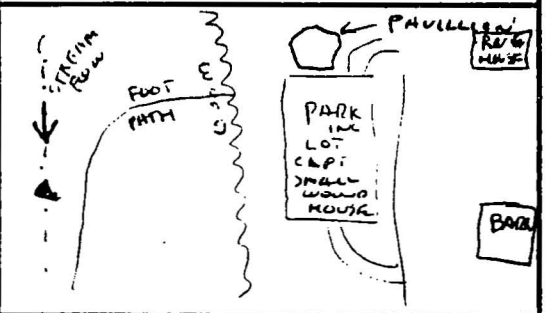
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TAL METALS	} 8oz		
TCL PEST/PCBs			
TOX & TOC			
GRAIN SIZE DIST	2 x 8oz		

OBSERVATIONS / NOTES:

BGD DUP003 COLLECTED AT THIS LOCATION

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
	BGDDUP003

Signature(s):

SOIL & SEDIMENT SAMPLE LOG SHEET

Page ___ of ___

Project Site Name: BACKGROUND STUMPNECK INDIAN HEAD
Project No.: 7581

Sample ID No.: BGDSD008010 1
Sample Location: INDIAN HEAD
Sampled By: SRWILLOUGHBY
C.O.C. No.: ___

[ ] Surface Soil
[ ] Subsurface Soil
[x] Sediment
[ ] Other: ___
[ ] QA Sample Type: ___

Type of Sample:
[x] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

Date: 8-1-97	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: ~~1530~~ F 1530	0-3"	YEL BRN	M-g SAND SATURATED
Method: DIRECT FILL			
Monitor Reading (ppm): —			

COMPOSITE SAMPLE DATA:

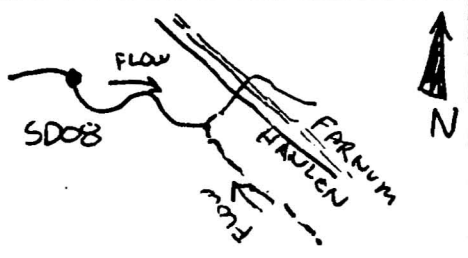
Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TAL METALS + Sn			
TCL PEST/PCB			
TOX + TOC			
GSD			

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Sred McRamsey

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: BACKGROUND STUMPNECK/INDIANHEAD
Project No.: 7581

Sample ID No.: BGDSD0090101
Sample Location: INDIAN HEAD
Sampled By: SR WILLOUGHBY
C.O.C. No.: ____

[] Surface Soil
[] Subsurface Soil
[x] Sediment
[] Other: ____
[] QA Sample Type: ____

Type of Sample:
[x] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 8-1-97	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1550	0 - 3"	MOD BRWN	SAND + SILT SATURATED
Method: DIRECT FILL			
Monitor Reading (ppm): —			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

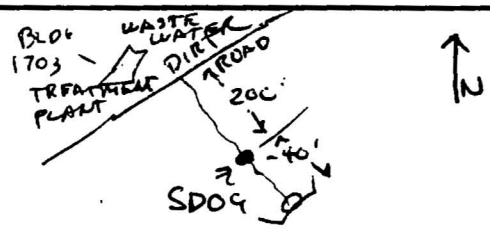
Analysis	Container Requirements	Collected	Other
TAL METALS + Sn	} 8oz		
TCL PEST/PCB			
TOX + TOC			
GSD	2x 8oz		

OBSERVATIONS / NOTES:

- SPL COLLECT APPROX. 30' DOWNSTREAM FROM A ~36" STEEL PIPE CULVERT.

- NOTICIMBLE ODOR AT STREAM/SPL LOCATION. (SEWER ODOR)

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Scott M Ramsey

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: STUMPNECK BACKGROUND
Project No.: 7581

Sample ID No.: BGDSD0100101
Sample Location: INDIAN HEAD
Sampled By: SR WILLOUGHBY
C.O.C. No.: ____

[ ] Surface Soil
[ ] Subsurface Soil
[X] Sediment
[ ] Other: ____
[ ] QA Sample Type: ____

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

Date: 8-1-97 / Time: 1615 / Method: DIRECT FILL / Monitor Reading (ppm): —	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
	0-3"	MOD BRN	COARSE TO F-g SAND SAND

COMPOSITE SAMPLE DATA:

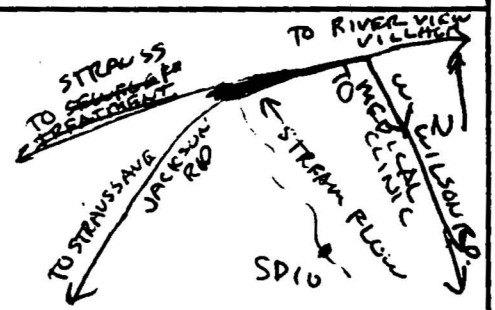
Date: / Method: / Monitor Readings (Range in ppm):	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TAL METALS + Sn			
TCL PEST / PCB			
TOX + TOC			
GSD			

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Scott Willoughby

ATTACHMENT 4

DATABASE:
CHEMICAL ANALYSES AND GRAIN SIZE DISTRIBUTION

ATTACHMENT 4.A

DATABASE - CHEMICAL ANALYSES

SUMMARY OF SEDIMENT ANALYTICAL RESULTS
BACKGROUND INVESTIGATION REPORT
INDIAN HEAD DIVISION
NSWC INDIAN HEAD, MARYLAND

SAMPLE NUMBER:	BGDSD0010101	BGDSD0020101	BGDSD0030101	BGDSD0040101	BGDSD0040101-D	BGDSD0040101-AVG	BGDSD0050101
DUPLICATE:					BGDSD0040101	BGDSD0040101	
LOCATION:	BGDSD0010101	BGDSD0020101	BGDSD0030101	BGDSD0040101	BGDDUP001	BGDSD0040101	BGDSD0050101
SAMPLE DATE:	07/31/97	07/31/97	08/18/97	07/31/97	07/31/97	07/31/97	07/31/97
PESTICIDES/PCBs (µg/kg)							
4,4'-DDD	5.2 UJ	1.0 J	6.2 U	4.7 UJ	4.6 UJ	4.65 UJ	4.7 UJ
4,4'-DDE	1.9 UJ	1.7 J	2.3 U	1.7 UJ	1.7 UJ	1.7 UJ	1.7 UJ
4,4'-DDT	5.7 UJ	1.9 J	6.8 U	5.1 UJ	5.1 UJ	5.1 UJ	5.1 UJ
ALDRIN	1.9 UJ	1.8 UJ	2.3 U	1.7 UJ	1.7 UJ	1.7 UJ	1.7 UJ
ALPHA-BHC	1.4 UJ	1.4 UJ	1.7 U	1.3 UJ	1.3 UJ	1.3 UJ	1.3 UJ
AROCLOR-1016	24 UJ	23 UJ	28 U	21 UJ	21 UJ	21 UJ	21 UJ
AROCLOR-1221	24 UJ	23 UJ	28 U	21 UJ	21 UJ	21 UJ	21 UJ
AROCLOR-1232	24 UJ	23 UJ	28 U	21 UJ	21 UJ	21 UJ	21 UJ
AROCLOR-1242	31 UJ	29 UJ	37 U	27 UJ	27 UJ	27 UJ	28 UJ
AROCLOR-1248	47 UJ	45 UJ	57 U	42 UJ	42 UJ	42 UJ	42 UJ
AROCLOR-1254	47 UJ	45 UJ	57 U	42 UJ	42 UJ	42 UJ	42 UJ
AROCLOR-1260	47 UJ	45 UJ	57 U	42 UJ	42 UJ	42 UJ	42 UJ
BETA-BHC	2.8 UJ	2.7 UJ	3.4 U	2.5 UJ	2.5 UJ	2.5 UJ	2.5 UJ
CHLORDANE	6.6 UJ	6.3 UJ	8.0 U	5.9 UJ	5.9 UJ	5.9 UJ	5.9 UJ
DELTA-BHC	4.3 UJ	4.1 UJ	5.1 U	3.8 UJ	3.8 UJ	3.8 UJ	3.8 UJ
DIELDRIN	0.95 UJ	0.90 UJ	1.1 U	0.84 UJ	0.84 UJ	0.84 UJ	0.85 UJ
ENDOSULFAN I	6.6 UJ	6.3 UJ	8.0 U	5.9 UJ	5.9 UJ	5.9 UJ	5.9 UJ
ENDOSULFAN II	1.9 UJ	1.8 UJ	2.3 U	1.7 UJ	1.7 UJ	1.7 UJ	1.7 UJ
ENDOSULFAN SULFATE	31 UJ	30 UJ	37 U	28 UJ	28 UJ	28 UJ	28 UJ
ENDRIN	2.8 UJ	2.7 UJ	3.4 U	2.5 UJ	2.5 UJ	2.5 UJ	2.5 UJ
ENDRIN ALDEHYDE	11 UJ	10 UJ	13 U	9.7 UJ	9.7 UJ	9.7 UJ	9.8 UJ
GAMMA-BHC (LINDANE)	1.9 UJ	1.8 UJ	2.3 U	1.7 UJ	1.7 UJ	1.7 UJ	1.7 UJ
HEPTACHLOR	1.4 UJ	1.4 UJ	1.7 U	1.3 UJ	1.3 UJ	1.3 UJ	1.3 UJ
HEPTACHLOR EPOXIDE	2.4 UJ	2.3 UJ	2.8 U	2.1 UJ	2.1 UJ	2.1 UJ	2.2 UJ
METHOXYCHLOR	84 UJ	79 UJ	100 U	74 UJ	74 UJ	74 UJ	75 UJ
TOXAPHENE	110 UJ	110 UJ	140 UJ	100 UJ	100 UJ	100 UJ	100 UJ
METALS (mg/kg)							
ALUMINUM	4530 J	3240 J	2680	784 J	853 J	818.5 J	639 J
ANTIMONY	0.51 B	0.45 B	0.79 UL	0.31 B	0.42 B	0.365 B	0.34 B
ARSENIC	3.5	2.8	0.82 B	0.31 L	0.25 L	0.28 L	0.40 L
BARIUM	77.9 J	15.9 J	17.5	6.7 J	8.0 J	7.35 J	5.8 J
BERYLLIUM	0.50	0.41 L	0.09 B	0.14	0.13	0.135	0.17
CADMIUM	0.27	0.30 K	0.44 U	0.13	0.16	0.145	0.16 U

SUMMARY OF SEDIMENT ANALYTICAL RESULTS
BACKGROUND INVESTIGATION REPORT
INDIAN HEAD DIVISION
NSWC INDIAN HEAD, MARYLAND

SAMPLE NUMBER:	BGDSD0010101	BGDSD0020101	BGDSD0030101	BGDSD0040101	BGDSD0040101-D	BGDSD0040101-AVG	BGDSD0050101
DUPLICATE:					BGDSD0040101	BGDSD0040101	
LOCATION:	BGDSD0010101	BGDSD0020101	BGDSD0030101	BGDSD0040101	BGDDUP001	BGDSD0040101	BGDSD0050101
SAMPLE DATE:	07/31/97	07/31/97	08/18/97	07/31/97	07/31/97	07/31/97	07/31/97
METALS (mg/kg)							
CALCIUM	569 K	1110	110 K	145 B	147 B	146 B	167 B
CHROMIUM	16.5 J	20.5 J	3.3	4.4 J	5.2 J	4.8 J	4.0 J
COBALT	6.4	1.4 L	0.67	0.80	0.95	0.875	1.1
COPPER	3.4	2.1 K	1.6	0.62	0.65	0.635	0.70
IRON	10900 J	10500 J	2620	2640 J	2720 J	2680 J	1780 J
LEAD	17.7	5.8	6.4 K	1.8	2.4	2.1	3.5
MAGNESIUM	2420	945	149 K	157 K	157 K	157 K	96.7 K
MANGANESE	207 J	71.1 J	11.2 K	34.3 J	73.6 J	53.95 J	44.0 J
MERCURY	0.03	0.02	0.02 L	0.02	0.04	0.03	0.01
NICKEL	25.2	3.7 L	0.54	0.71	0.45 B	0.58 B	0.55 B
POTASSIUM	390 J	2050 J	227	405 J	394 J	399.5 J	217 J
SELENIUM	0.62 J	0.62 J	0.85 UL	0.25 UJ	0.27 UJ	0.26 UJ	0.31 UJ
SILVER	0.12 B	0.09 B	0.31	0.08 B	0.09 B	0.085 B	0.10 B
SODIUM	58.1	70.0	104 B	24.6 U	30.2	21.25	33.3
THALLIUM	0.29 U	0.25 U	0.85 U	0.25 U	0.27 U	0.26 U	0.31 U
TIN	3.4 B	3.0 B	5 B	2.7 B	2.7 B	2.7 B	3.0 B
VANADIUM	18.4 J	16.8 J	8.1	4.3 J	4.7 J	4.5 J	3.2 J
ZINC	30.9 J	18.8 J	1.1 B	11.2 J	11.0 J	11.1 J	4.4 J
MISCELLANEOUS PARAMETERS (mg/kg)							
TOTAL ORGANIC CARBON	11600	6830	5860	444	1020	732	871
TOTAL ORGANIC HALIDES (ug/L)	43.2 U	44.8 U	54.6 U	43.2 U	56.0 U	49.6 U	37.4 U

SUMMARY OF SEDIMENT ANALYTICAL RESULTS
BACKGROUND INVESTIGATION REPORT
INDIAN HEAD DIVISION
NSWC INDIAN HEAD, MARYLAND

SAMPLE NUMBER:	BGDSD0060101	BGDSD0070101	BGDSD0070101-D	BGDSD0070101-AVG	BGDSD0080101	BGDSD0090101	BGDSD0100101
DUPLICATE:			BGDSD0070101	BGDSD0070101			
LOCATION:	BGDSD0060101	BGDSD0070101	BGDDUP003	BGDSD0070101	BGDSD0080101	BGDSD0090101	BGDSD0100101
SAMPLE DATE:	08/01/97	08/17/97	08/17/97	08/17/97	08/01/97	08/01/97	08/01/97
PESTICIDES/PCBs (µg/kg)							
4,4'-DDD	4.9 UJ	13 U	12 U	12.5 U	3.3 J	40 J	24 J
4,4'-DDE	6.4 J	4.9 U	4.4 U	4.65 U	2.5 J	12 J	1.6 J
4,4'-DDT	5.4 UJ	15 U	13 U	14 U	3.8 J	14 J	5.4 UJ
ALDRIN	1.8 UJ	4.9 U	4.4 U	4.65 U	1.7 UJ	2.3 UJ	1.8 UJ
ALPHA-BHC	1.4 UJ	3.6 U	3.3 U	3.45 U	1.2 UJ	1.7 UJ	1.4 UJ
AROCLOR-1016	22 UJ	61 U	54 U	57.5 U	21 UJ	28 UJ	23 UJ
AROCLOR-1221	22 UJ	61 U	54 U	57.5 U	21 UJ	28 UJ	23 UJ
AROCLOR-1232	22 UJ	61 U	54 U	57.5 U	21 UJ	28 UJ	23 UJ
AROCLOR-1242	29 UJ	79 U	71 U	75 U	27 UJ	37 UJ	30 UJ
AROCLOR-1248	45 UJ	120 U	110 U	115 U	41 UJ	56 UJ	45 UJ
AROCLOR-1254	45 UJ	120 U	110 U	115 U	41 UJ	56 UJ	45 UJ
AROCLOR-1260	45 UJ	120 U	110 U	115 U	41 UJ	56 UJ	45 UJ
BETA-BHC	2.7 UJ	7.3 U	6.5 U	6.9 U	2.5 UJ	3.4 UJ	2.7 UJ
CHLORDANE	6.3 UJ	17 U	15 U	16 U	5.8 UJ	7.9 UJ	6.4 UJ
DELTA-BHC	4.0 UJ	11 U	9.8 U	10.4 U	3.7 UJ	5.1 UJ	4.1 UJ
DIELDRIN	0.90 UJ	2.4 U	2.2 U	2.3 U	0.83 UJ	1.1 UJ	0.91 UJ
ENDOSULFAN I	6.3 UJ	17 U	15 U	16 U	5.8 UJ	7.9 UJ	6.4 UJ
ENDOSULFAN II	1.8 UJ	4.9 U	4.4 U	4.65 U	1.7 UJ	2.3 UJ	1.8 UJ
ENDOSULFAN SULFATE	30 UJ	80 U	72 U	76 U	27 UJ	37 UJ	30 UJ
ENDRIN	2.7 UJ	7.3 U	6.5 U	6.9 U	2.5 UJ	3.4 UJ	2.7 UJ
ENDRIN ALDEHYDE	10 UJ	28 U	25 U	26.5 U	9.5 UJ	13 UJ	10 UJ
GAMMA-BHC (LINDANE)	1.8 UJ	4.9 U	4.4 U	4.65 U	1.7 UJ	2.3 UJ	1.8 UJ
HEPTACHLOR	1.4 UJ	3.6 U	3.3 U	3.45 U	1.2 UJ	1.7 UJ	1.4 UJ
HEPTACHLOR EPOXIDE	2.3 UJ	6.1 U	5.4 U	5.75 U	2.1 UJ	2.9 UJ	2.3 UJ
METHOXYCHLOR	79 UJ	210 U	190 U	200 U	73 UJ	99 UJ	80 UJ
TOXAPHENE	110 UJ	290 UJ	260 UJ	275 U	99 UJ	140 UJ	110 UJ
METALS (mg/kg)							
ALUMINUM	4570 J	14200	16600	15400	1150 J	7540 J	3360 J
ANTIMONY	0.53 B	1.7 UL	1.5 UL	1.6 UL	0.26 B	1.0 B	0.65 B
ARSENIC	0.92 L	10.6	8.5	9.55	2.5	8.7	1.1 L
BARIUM	26.2 J	175	175	175	9.9 J	65.7 J	18.5 K
BERYLLIUM	0.51	2.8 B	2.7 B	2.75 B	0.09 B	0.88 L	1.0 L
CADMIUM	0.20	0.95 U	0.85 U	0.9 U	0.18	0.86 K	0.48 K

SUMMARY OF SEDIMENT ANALYTICAL RESULTS
BACKGROUND INVESTIGATION REPORT
INDIAN HEAD DIVISION
NSWC INDIAN HEAD, MARYLAND

SAMPLE NUMBER:	BGDSD0060101	BGDSD0070101	BGDSD0070101-D	BGDSD0070101-AVG	BGDSD0080101	BGDSD0090101	BGDSD0100101
DUPLICATE:			BGDSD0070101	BGDSD0070101			
LOCATION:	BGDSD0060101	BGDSD0070101	BGDDUP003	BGDSD0070101	BGDSD0080101	BGDSD0090101	BGDSD0100101
SAMPLE DATE:	08/01/97	08/17/97	08/17/97	08/17/97	08/01/97	08/01/97	08/01/97
METALS (mg/kg)							
CALCIUM	202 B	4060	4110	4085	171 B	10100	1530
CHROMIUM	6.2 J	25.7	29.7	27.7	6.2 J	14.3 J	12.3 J
COBALT	6.1	17.6	16.5	17.05	1.7	11.8	12.6
COPPER	20.4	25.2	28.3	26.75	1.8	24.1	13.5
IRON	6510 J	42900	37500	40200	4230 J	27300 J	25300 J
LEAD	79.3	48.5 K	56.2 K	52.35 K	3.9	31.6	28.1
MAGNESIUM	298 K	1200	1370	1285	131 K	3030	628 K
MANGANESE	160 J	392 K	390 K	391 K	134 J	444 J	107 J
MERCURY	0.03	0.25	0.21	0.23	0.11	0.16	0.03
NICKEL	3.2	18.3	18.6	18.45	1.8	13.8 L	7.1 L
POTASSIUM	279 J	1150	1370	1260	95.2 J	492 J	260 J
SELENIUM	0.54 J	2.3	1.6 UL	1.55	0.45 J	1.5 J	1.2 J
SILVER	0.13 B	0.51 U	0.46 U	0.485 U	0.18 B	0.92 K	0.08 U
SODIUM	61.2	182 UL	163 UL	172.5 UL	61.1	303	77.5
THALLIUM	0.33 U	1.8 U	1.6 U	1.7 U	0.28 U	0.34 U	0.29 U
TIN	6.6 B	18.5 B	15.5 B	17 B	2.9 B	5.5 B	4.9 B
VANADIUM	12.0 J	38.0	43.1	40.55	5.8 J	30.7 J	46.3 J
ZINC	11.4 J	135	158	146.5	22.1 J	88.2 J	37.4 J
MISCELLANEOUS PARAMETERS (mg/kg)							
TOTAL ORGANIC CARBON	15100	39400	43500	41450	515	16500	1060
TOTAL ORGANIC HALIDES (ug/L)	60.3 U	171 U	143 U	157 U	36.3 U	65.3 U	54.1 U

SUMMARY OF FILTERED GROUNDWTER ANALYTICAL RESULTS
BACKGROUND INVESTIGATION REPORT
INDIAN HEAD DIVISION
NSWC INDIAN HEAD, MARYLAND

SAMPLE NUMBER:	BGDMW001F001	BGDMW002F001	BGDMW003F001	BGDMW004F001	BGDMW005F001	BGDMW005F001-D	BGDMW005F001-AVG
DUPLICATE:						BGDMW005F001	BGDMW005F001
LOCATION:	BGDMW001F001	BGDMW002F001	BGDMW003F001	BGDMW004F001	BGDMW005F001	BGDDUP004-F	BGDMW005F001
SAMPLE DATE:	08/06/97	08/12/97	08/12/97	08/13/97	08/15/97	08/15/97	08/15/97
DISSOLVED METALS (µg/L)							
ALUMINUM, FILTERED	63.0 U	63.0 U	335 K	97.6 K	63.0	63.0	63
ANTIMONY, FILTERED	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U
ARSENIC, FILTERED	1.9 UL	1.9 B	1.9 UL	1.9 UL	1.9 UL	1.9 UL	1.9 UL
BARIUM, FILTERED	34.0	86.7	41.4	50.2	23.5	21.9	22.7
BERYLLIUM, FILTERED	1.3 B	1.5 B	1.9 B	1.3 B	2.0 B	2.5 B	2.25 B
CADMIUM, FILTERED	2.9	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
CALCIUM, FILTERED	18800	6090 K	2650 K	1790 K	1710 K	1620 K	1665 K
CHROMIUM, FILTERED	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2 U
COBALT, FILTERED	2.3	6.8	3.6	7.7	8.2	8.3	8.25
COPPER, FILTERED	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U
IRON, FILTERED	55.8 B	14100	2210	5230	346	340	343
LEAD, FILTERED	2.0 B	2.9 B	2.0 B	2.3 B	1.6 B	2.6 B	2.1 B
MAGNESIUM, FILTERED	1350 K	3830 K	1090 K	1120 K	746 K	712 K	729 K
MANGANESE, FILTERED	108 L	806 L	138 L	211 L	193	191	192
MERCURY, FILTERED	0.14 B	0.10 U	0.10 U	0.10 U	0.10 UL	0.10 UL	0.1 UL
NICKEL, FILTERED	2.6	1.4	3.7	3.3	2.2	4.3	3.25
POTASSIUM, FILTERED	2210	1300	5910	484	2910	2890	2900
SELENIUM, FILTERED	2.5 UL	2.5 UL	2.5 UL	2.5 UL	2.5 UL	2.5 UL	2.5 UL
SILVER, FILTERED	0.70 U	0.70 U	0.70 U	0.70 U	0.70 U	0.70 U	0.7 U
SODIUM, FILTERED	3860 L	32300	15700	15500	22700	22100	22400
THALLIUM, FILTERED	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
TIN, FILTERED	1.2 U	1.3 B	1.4 B	1.2 U	1.2 U	1.2 U	1.2 U
VANADIUM, FILTERED	0.70 U	0.70 U	1.4 B	0.70 U	0.70 U	0.70 U	0.7 U
ZINC, FILTERED	8.9 B	12.1 B	10.3 B	12.8 B	8.6 B	8.7 B	8.65 B

SUMMARY OF FILTERED GROUNDWTER ANALYTICAL RESULTS
BACKGROUND INVESTIGATION REPORT
INDIAN HEAD DIVISION
NSWC INDIAN HEAD, MARYLAND

SAMPLE NUMBER:	25MW03-F	26MW03-F	RN6MW005F001	RPLMW001F001	RN3MW001F001		
DUPLICATE:							
LOCATION:	25MW03	26MW03	RN6MW005F001	RPLMW001F001	RN3MW001F001		
SAMPLE DATE:	10/04/95	10/04/95	08/04/97	08/06/97	08/03/97	/ /	/ /
DISSOLVED METALS (µg/L)							
ALUMINUM, FILTERED	110 UL	110 UL					
ANTIMONY, FILTERED	1.7 U	1.7 U	2.3 U	2.3 U	2.3 U		
ARSENIC, FILTERED	1.9 U	1.9 U	1.9 UL	1.9 UL	1.9 UL		
BARIUM, FILTERED	51.2	14.0 U	4.0	60.3	9.9		
BERYLLIUM, FILTERED	0.90 U	0.90 U	0.20 U	1.2 B	1.5 B		
CADMIUM, FILTERED	5.0 UL	5.0 UL	1.3 U	1.3 U	1.3 U		
CALCIUM, FILTERED	9650 K	1980 K					
CHROMIUM, FILTERED	10.0 UL	10.0 UL	2.0 U	2.0 U	2.0 U		
COBALT, FILTERED	14.0 U	14.0 U	2.5	0.70 U	3.0		
COPPER, FILTERED	15.0 U	15.0 U	3.8	3.3 U	3.3 U		
IRON, FILTERED	47.0 U	47.0 U					
LEAD, FILTERED	0.60 U	0.60 U	1.4	2.3 B	2.4 B		
MAGNESIUM, FILTERED	3610 K	892 K					
MANGANESE, FILTERED	288	106					
MERCURY, FILTERED	0.10 U	0.10 U	0.10 U	0.16	0.10 U		
NICKEL, FILTERED	17.0 U	17.0 U	2.4 B	1.1 U	7.5		
POTASSIUM, FILTERED	3440	1040					
SELENIUM, FILTERED	1.5 U	1.5 U	2.5 U	2.5 U	2.5 U		
SILVER, FILTERED	1.0 U	1.0 U	0.86 B	0.70 U	0.70 U		
SODIUM, FILTERED	8790	10900					
THALLIUM, FILTERED	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U		
TIN, FILTERED	33.6 U	33.6 U	1.2 U	1.7 B	1.2 U		
VANADIUM, FILTERED	22.0 U	22.0 U	0.70 U	0.70 U	0.70 U		
ZINC, FILTERED	8.0 U	8.0 U	7.3	6.1 B	7.8 B		

SUMMARY OF UNFILTERED GROUNDWTER ANALYTICAL RESULTS
BACKGROUND INVESTIGATION REPORT
INDIAN HEAD DIVISION
NSWC INDIAN HEAD, MARYLAND

SAMPLE NUMBER: DUPLICATE: LOCATION: SAMPLE DATE:	BGDMW001U001 BGDMW001U001 08/06/97	BGDMW002U001 BGDMW002U001 08/12/97	BGDMW003U001 BGDMW003U001 08/12/97	BGDMW004U001 BGDMW004U001 08/13/97	BGDMW005U001 BGDMW005U001 08/15/97	BGDMW005U001-D BGDMW005U001 BGDDUP004 08/15/97	BGDMW005U001-AVG BGDMW005U001 BGDMW005U001 08/15/97
PESTICIDES/PCBs (µg/L)							
4,4'-DDD	0.12 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U
4,4'-DDE	0.044 U	0.048 U	0.048 U	0.048 U	0.049 U	0.047 U	0.048 U
4,4'-DDT	0.13 U	0.14 U	0.14 U	0.14 U	0.15 U	0.14 U	0.145 U
ALDRIN	0.044 U	0.048 U	0.048 U	0.048 U	0.049 U	0.047 U	0.048 U
ALPHA-BHC	0.033 U	0.036 U	0.036 U	0.036 U	0.037 U	0.035 U	0.036 U
AROCLOR-1016	0.55 U	0.60 U	0.60 U	0.60 U	0.61 U	0.59 U	0.6 U
AROCLOR-1221	0.55 U	0.60 U	0.60 U	0.60 U	0.61 U	0.59 U	0.6 U
AROCLOR-1232	0.55 U	0.60 U	0.60 U	0.60 U	0.61 U	0.59 U	0.6 U
AROCLOR-1242	0.71 U	0.77 U	0.77 U	0.78 U	0.79 U	0.76 U	0.775 U
AROCLOR-1248	1.1 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
AROCLOR-1254	1.1 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
AROCLOR-1260	1.1 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
BETA-BHC	0.066 U	0.071 U	0.071 U	0.072 U	0.073 U	0.071 U	0.072 U
CHLORDANE	0.15 U	0.17 U	0.17 U	0.17 U	0.17 U	0.16 U	0.165 U
DELTA-BHC	0.099 U	0.11 UJ	0.11 UJ	0.11 UJ	0.11 U	0.11 U	0.11 U
DIELDRIN	0.022 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U
ENDOSULFAN I	0.15 U	0.17 U	0.17 U	0.17 U	0.17 U	0.16 U	0.165 U
ENDOSULFAN II	0.044 U	0.048 U	0.048 U	0.048 U	0.049 U	0.047 U	0.048 U
ENDOSULFAN SULFATE	0.073 U	0.79 U	0.79 U	0.80 U	0.80 U	0.78 U	0.79 U
ENDRIN	0.066 U	0.071 U	0.071 U	0.072 U	0.073 U	0.071 U	0.072 U
ENDRIN ALDEHYDE	0.25 U	0.27 UJ	0.27 UJ	0.28 UJ	0.28 U	0.27 U	0.275 U
GAMMA-BHC (LINDANE)	0.044 U	0.048 U	0.048 U	0.048 U	0.049 U	0.047 U	0.048 U
HEPTACHLOR	0.033 U	0.036 U	0.036 U	0.036 U	0.037 U	0.035 U	0.036 U
HEPTACHLOR EPOXIDE	0.055 U	0.060 U	0.060 U	0.060 U	0.061 U	0.059 U	0.06 U
METHOXYCHLOR	1.9 U	2.1 U	2.1 U	2.1 U	2.2 U	2.1 U	2.15 U
TOXAPHENE	2.6 U	2.9 U	2.9 U	2.9 U	2.9 UJ	2.8 UJ	2.85 U
METALS (µg/L)							
ALUMINUM	63.0 U	71.0 K	1130	9620	21000 J	4400 J	12700 J
ANTIMONY	2.3 U	2.3 U	2.3 U	2.3 U	2.3 UL	2.3 UL	2.3 UJ
ARSENIC	1.9 UL	2.0 B	1.9 UL	4.6 B	5.4 B	1.9 UL	3.175
BARIUM	32.4	89.6	52.9	139	173	53.6	113.3
BERYLLIUM	1.4 B	1.5 B	1.3 B	2.1 B	3.3 B	2.4 B	2.85 B
CADMIUM	2.8	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U

SUMMARY OF UNFILTERED GROUNDWTER ANALYTICAL RESULTS
BACKGROUND INVESTIGATION REPORT
INDIAN HEAD DIVISION
NSWC INDIAN HEAD, MARYLAND

SAMPLE NUMBER:	BGDMW001U001	BGDMW002U001	BGDMW003U001	BGDMW004U001	BGDMW005U001	BGDMW005U001-D	BGDMW005U001-AVG
DUPLICATE:						BGDMW005U001	BGDMW005U001
LOCATION:	BGDMW001U001	BGDMW002U001	BGDMW003U001	BGDMW004U001	BGDMW005U001	BGDDUP004	BGDMW005U001
SAMPLE DATE:	08/06/97	08/12/97	08/12/97	08/13/97	08/15/97	08/15/97	08/15/97
METALS (µg/L)							
CALCIUM	18100	6200 K	2970 K	2340 K	4600 K	2230 K	3415 K
CHROMIUM	2.0 U	2.0 U	4.2	16.4	46.9 J	11.4 J	29.15 J
COBALT	2.1	6.7	4.2	15.6	46.6 L	16.7 L	31.65 L
COPPER	3.3 U	3.3 U	4.4	22.4	50.0 J	13.5 J	31.75 J
IRON	156 K	15100	4230	19900	58200	13000	35600
LEAD	2.2 B	2.4 B	3.3 B	12.4 B	16.8 L	5.5 B	11.15 B
MAGNESIUM	1290 K	3980 K	1250 K	2110 K	2900	1170	2035
MANGANESE	104 L	824 L	156 L	334 L	929 J	356 J	642.5 J
MERCURY	0.13 B	0.10 U	0.10 U	0.10 U	0.10 UL	0.10 UL	0.1 UL
NICKEL	2.7	1.1 U	2.6	16.6	27.3	10.3	18.8
POTASSIUM	2220	1340	6040	1380	6350	3820	5085
SELENIUM	2.5 UL	2.5 UL	2.5 UL	2.5 UL	2.5 UL	2.5 UL	2.5 UL
SILVER	0.70 U	0.70 U	0.70 U	0.70 U	0.70 U	0.70 U	0.7 U
SODIUM	3580 L	33000	17200	14200	24900	23700	24300
THALLIUM	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
TIN	1.2 U	1.2 U	1.2 U	1.7 B	2.4 B	1.7 B	2.05 B
VANADIUM	0.70 U	0.70 U	3.5 B	20.9	80.7 J	17.6 J	49.15 J
ZINC	8.5 B	10.7 B	12.7 B	45.2	80.4 J	27.7 J	54.05 J
MISCELLANEOUS PARAMETERS (mg/L)							
CHLORIDE	4.3 L	40.1 L	11.8 L	20.8 L	43.1	41.2	42.15
FLUORIDE	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
NITRATE	0.11 L	0.073 L	0.40 L	0.05 L	0.632 L	0.466 L	0.549 L
NITRITE	0.05 UR	0.25 UR	0.25 UR	0.25 UR	0.25 UR	0.25 UR	0.25 UR
PHOSPHORUS	0.5 UR	0.5 UR	0.5 UR	0.5 UR	0.5 UR	0.5 UR	0.5 UR
SULFATE	23.6	9.3	17.8	16.6	3.93	4.01	3.97
TOTAL ORGANIC CARBON	3.1	2.9	3.2	6.9	1.38	1 U	0.94
TOTAL ORGANIC HALIDES (ug/L)	10.0 U	10.0 U	10.0 U	10.0 U	10 U	10 U	10 U

SUMMARY OF UNFILTERED GROUNDWTER ANALYTICAL RESULTS
BACKGROUND INVESTIGATION REPORT
INDIAN HEAD DIVISION
NSWC INDIAN HEAD, MARYLAND

SAMPLE NUMBER:	25MW03	26MW03	RN6MW005U001	RPLMW001U001	RN3MW001U001		
DUPLICATE:							
LOCATION:	25MW03	26MW03	RN6MW005U001	RPLMW001U001	RN3MW001U001		
SAMPLE DATE:	10/04/95	10/04/95	08/04/97	08/06/97	08/03/97	/ /	/ /
VOLATILES (µg/L)							
1,1,1,2-TETRACHLOROETHANE	5.0 U	5.0 U	5 U	5 U	5 U		
1,1,1-TRICHLOROETHANE	0.28 U	0.28 U	5 U	5 U	5 U		
1,1,2,2-TETRACHLOROETHANE	0.49 U	0.49 U	5 U	5 U	5 U		
1,1,2-TRICHLOROETHANE	0.28 U	0.28 U	5 U	5 U	5 U		
1,1-DICHLOROETHANE	0.29 U	0.29 U	5 U	5 U	5 U		
1,1-DICHLOROETHENE	0.37 U	0.37 U	5 U	5 U	5 U		
1,2,3-TRICHLOROPROPANE	5.0 U	5.0 U	5 U	5 U	5 U		
1,2-DIBROMO-3-CHLOROPROPANE	100 U	100 U	100 U	100 U	100 U		
1,2-DIBROMOETHANE	5.0 U	5.0 U	5 U	5 U	5 U		
1,2-DICHLOROETHANE	0.13 U	0.13 U	5 U	5 U	5 U		
1,2-DICHLOROPROPANE	0.23 U	0.23 U	5 U	5 U	5 U		
1,4-DICHLORO-2-BUTENE	100 U	100 U	100 U	100 U	100 U		
1,4-DIOXANE	150 UR	150 UR	12 UJ	11 U	11 U		
2-BUTANONE	1.5 U	1.5 U	10 UR	10 UR	10 UR		
2-HEXANONE	0.67 U	0.67 U	10 U	10 U	10 U		
4-METHYL-2-PENTANONE	0.52 U	0.52 U	5 U	5 U	5 U		
ACETONE	2.9 UJ	2.9 UJ	10 U	10 U	10 UJ		
ACETONITRILE	100 U	100 U	100 UR	100 UR	100 UR		
ACROLEIN	2.6 UR	2.6 UR	20 UR	20 UR	20 UR		
ACRYLONITRILE	2.0 U	2.0 U	5 UR	5 UR	5 UR		
ALLYL CHLORIDE	5.0 U	5.0 U	5 U	5 U	5 U		
BENZENE	0.14 U	0.14 U	5 U	5 U	5 U		
BROMODICHLOROMETHANE	0.16 U	0.16 U	5 U	5 U	5 U		
BROMOFORM	0.16 U	0.16 U	5 U	5 U	5 U		
BROMOMETHANE	0.41 U	0.41 U	10 U	10 U	10 U		
CARBON DISULFIDE	0.48 U	0.48 U	5 U	6	5 U		
CARBON TETRACHLORIDE	0.27 U	0.27 U	5 U	5 U	5 U		
CHLOROBENZENE	0.30 U	0.30 U	5 U	5 U	5 U		
CHLOROETHANE	0.49 U	0.49 U	10 U	10 U	10 U		
CHLOROFORM	2.6 J	3.1	5 U	2 J	5 U		
CHLOROMETHANE	0.32 U	0.32 U	10 U	10 U	10 U		
CHLOROPRENE	5.0 UR	5.0 UR					
CIS-1,3-DICHLOROPROPENE	0.21 U	0.21 U	5 U	5 U	5 U		

SUMMARY OF UNFILTERED GROUNDWTER ANALYTICAL RESULTS
BACKGROUND INVESTIGATION REPORT
INDIAN HEAD DIVISION
NSWC INDIAN HEAD, MARYLAND

SAMPLE NUMBER:	25MW03	26MW03	RN6MW005U001	RPLMW001U001	RN3MW001U001		
DUPLICATE:							
LOCATION:	25MW03	26MW03	RN6MW005U001	RPLMW001U001	RN3MW001U001		
SAMPLE DATE:	10/04/95	10/04/95	08/04/97	08/06/97	08/03/97	/ /	/ /
VOLATILES (µg/L)							
DIBROMOCHLOROMETHANE	0.18 U	0.18 U	5 U	5 U	5 U		
DIBROMOMETHANE	5.0 U	5.0 U	5 U	5 U	5 U		
DICHLORODIFLUOROMETHANE	2.6 U	2.6 U	5 U	5 U	5 U		
ETHYL METHACRYLATE	16.7 U	20.0 U	12 U	11 U	11 U		
ETHYLBENZENE	0.23 U	0.23 U	5 U	5 U	5 U		
IODOMETHANE	5.0 U	5.0 U	5 U	5 U	5 U		
ISOBUTYL ALCOHOL	50.0 U	50.0 U	50 UR	50 UR	50 UR		
M & P-CRESOL			12 U	11 U	11 U		
M+P-XYLENES			5 U	5 U	5 U		
METHACRYLONITRILE	5.0 U	5.0 U	5 U	5 U	5 U		
METHYL METHACRYLATE	5.0 U	5.0 U	5 U	5 U	5 U		
METHYLENE CHLORIDE	1.2 B	0.45 U	5 U	3 B	5 U		
O-XYLENE			5 U	5 U	5 U		
PENTACHLOROETHANE	5.0 U	5.0 U	5 U	5 U	5 U		
PROPIONITRILE	50.0 UJ	50.0 UJ	50 UR	50 UR	50 UR		
STYRENE	0.29 U	0.29 U	5 U	5 U	5 U		
TETRACHLOROETHENE	0.23 U	0.23 U	5 U	5 U	5 U		
TOLUENE	0.17 U	0.17 U	5 U	7	5 U		
TRANS-1,2-DICHLOROETHENE	0.31 U	0.31 U	5 U	5 U	5 U		
TRANS-1,3-DICHLOROPROPENE	0.28 U	0.28 U	5 U	5 U	5 U		
TRICHLOROETHENE	0.15 U	0.15 U	5 U	5 U	5 U		
TRICHLOROFLUOROMETHANE	0.44 U	0.44 U	5 U	5 U	5 U		
VINYL ACETATE	0.28 U	0.28 U	10 UR	10 UR	10 UR		
VINYL CHLORIDE	0.56 U	0.56 U	5 U	5 U	5 U		
XYLENES, TOTAL	0.24 U	0.24 U					
SEMIVOLATILES (µg/L)							
1,2,4,5-TETRACHLOROBENZENE	16.7 U	20.0 U	12 U	11 U	11 U		
1,2,4-TRICHLOROBENZENE	3.7 U	4.5 U	12 U	11 U	11 U		
1,2-DICHLOROBENZENE			12 U	11 U	11 U		
1,3 DINITROBENZENE	0.40 U	0.37 UJ					
1,3,5 TRINITROBENZENE	0.40 U	0.37 UJ					
1,3-DICHLOROBENZENE			12 U	11 U	11 U		
1,4-DICHLOROBENZENE			12 U	11 U	11 U		

SUMMARY OF UNFILTERED GROUNDWTER ANALYTICAL RESULTS
BACKGROUND INVESTIGATION REPORT
INDIAN HEAD DIVISION
NSWC INDIAN HEAD, MARYLAND

SAMPLE NUMBER:	25MW03	26MW03	RN6MW005U001	RPLMW001U001	RN3MW001U001		
DUPLICATE:							
LOCATION:	25MW03	26MW03	RN6MW005U001	RPLMW001U001	RN3MW001U001		
SAMPLE DATE:	10/04/95	10/04/95	08/04/97	08/06/97	08/03/97	/ /	/ /
SEMIVOLATILES (µg/L)							
1,4-NAPHTHOQUINONE	16.7 U	20.0 U	12 U	11 U	11 U		
1-NAPHTHYLAMINE	16.7 U	20.0 U	12 U	11 U	11 U		
2,2'-OXYBIS(1-CHLOROPROPANE)	16.7 U	20.0 U	12 U	11 U	11 U		
2,3,4,6-TETRACHLOROPHENOL	16.7 U	20.0 U	59 U	57 U	56 U		
2,4,5-TRICHLOROPHENOL	1.4 U	1.7 U	24 U	23 U	22 U		
2,4,6-TRICHLOROPHENOL	3.7 U	4.4 U	12 U	11 U	11 U		
2,4-DICHLOROPHENOL	3.2 U	3.8 U	12 U	11 U	11 U		
2,4-DIMETHYLPHENOL	11.4 U	13.6 U	12 U	11 U	11 U		
2,4-DINITROPHENOL	3.8 U	4.5 U	59 U	57 U	56 U		
2,4-DINITROTOLUENE	1.5 U	1.8 U	12 U	11 U	11 U		
2,6-DICHLOROPHENOL	16.7 U	20.0 U	12 U	11 U	11 U		
2,6-DINITROTOLUENE	1.8 U	2.2 U	12 U	11 U	11 U		
2-ACETYLAMINOFLUORENE	33.4 U	40.0 U	12 U	11 U	11 U		
2-CHLORONAPHTHALENE	2.8 U	3.3 U	12 U	11 U	11 U		
2-CHLOROPHENOL	2.2 U	2.6 U	12 U	11 U	11 U		
2-METHYLNAPHTHALENE	3.6 U	4.3 U	12 U	11 U	11 U		
2-METHYLPHENOL	2.0 U	2.4 U	12 U	11 U	11 U		
2-NAPHTHYLAMINE	16.7 U	20.0 U	12 U	11 U	11 U		
2-NITROANILINE	2.4 U	2.9 U	59 U	57 U	56 U		
2-NITROPHENOL	2.5 U	2.9 U	12 U	11 U	11 U		
2-PICOLINE	16.7 U	20.0 U	12 U	11 U	11 U		
3,3'-DICHLOROBENZIDINE	16.5 U	19.8 U	12 UJ	11 UJ	11 UJ		
3,3'-DIMETHYLBENZIDINE	16.7 U	20.0 U	12 U	11 U	11 U		
3-METHYLCHOLANTHRENE	16.7 U	20.0 U	12 U	11 U	11 U		
3-METHYLPHENOL	16.7 U	20.0 U					
3-NITROANILINE	6.9 UJ	8.3 UJ	59 U	57 U	56 U		
4,6-DINITRO-2-METHYLPHENOL	8.5 U	10.2 U	59 U	57 U	56 U		
4-AMINOBIPHENYL	33.4 U	40.0 U	12 U	11 U	11 U		
4-BROMOPHENYL PHENYL ETHER	2.0 U	2.4 U	12 U	11 U	11 U		
4-CHLORO-3-METHYLPHENOL	3.8 U	4.6 U	12 U	11 U	11 U		
4-CHLOROANILINE	1.1 U	1.3 U	12 U	11 U	11 U		
4-CHLOROPHENYL PHENYL ETHER	2.1 U	2.5 U	12 U	11 U	11 U		
4-METHYLPHENOL	1.9 U	2.2 U					

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BACKGROUND INVESTIGATION REPORT
INDIAN HEAD DIVISION
NSWC INDIAN HEAD, MARYLAND

SAMPLE NUMBER:	25MW03	26MW03	RN6MW005U001	RPLMW001U001	RN3MW001U001		
DUPLICATE:							
LOCATION:	25MW03	26MW03	RN6MW005U001	RPLMW001U001	RN3MW001U001		
SAMPLE DATE:	10/04/95	10/04/95	08/04/97	08/06/97	08/03/97	/ /	/ /
SEMIVOLATILES (µg/L)							
4-NITROANILINE	6.2 U	7.4 U	59 UJ	57 UJ	56 UJ		
4-NITROPHENOL	4.3 UJ	5.1 UJ	59 U	57 U	56 U		
4-NITROQUINOLINE-1-OXIDE	66.8 UR	80.0 UR	12 UR	11 UR	11 UR		
5-NITRO-O-TOLUIDINE	16.7 U	20.0 U	12 U	11 U	11 U		
7,12-DIMETHYLBENZ(A)ANTHRACENE	16.7 U	20.0 U	12 U	11 U	11 U		
A,A-DIMETHYLPHENETHYLAMINE	16.7 U	20.0 U	24 UJ	23 U	22 U		
ACENAPHTHENE	2.3 U	2.7 U	12 U	11 U	11 U		
ACENAPHTHYLENE	2.4 U	2.8 U	12 U	11 U	11 U		
ACETOPHENONE	16.7 U	20.0 U	12 U	11 U	11 U		
ANILINE	16.7 U	20.0 U	12 U	11 U	11 U		
ANTHRACENE	2.1 U	2.5 U	12 U	11 U	11 U		
ARAMITE	33.4 U	40.0 U	12 UJ	11 U	11 U		
BENZO(A)ANTHRACENE	2.1 U	2.5 U	12 U	11 U	11 U		
BENZO(A)PYRENE	1.7 U	2.0 U	12 U	11 U	11 U		
BENZO(B)FLUORANTHENE	1.4 U	1.7 U	12 U	11 U	11 U		
BENZO(G,H,I)PERYLENE	6.1 U	7.3 U	12 U	11 U	11 U		
BENZO(K)FLUORANTHENE	2.9 U	3.5 U	12 U	11 U	11 U		
BENZYL ALCOHOL	3.7 U	4.5 U	12 U	11 U	11 U		
BIS(2-CHLOROETHOXY)METHANE	2.0 U	2.4 U	12 U	11 U	11 U		
BIS(2-CHLOROETHYL)ETHER	1.4 U	1.6 U	12 U	11 U	11 U		
BIS(2-ETHYLHEXYL)PHTHALATE	3.3 J	5.4 U	6 J	1 J	11 U		
BUTYLBENZYL PHTHALATE	7.6 U	9.1 U	12 U	11 U	11 U		
CHLOROBENZILATE	16.7 U	20.0 U	12 U	11 U	11 U		
CHRYSENE	2.0 U	2.4 U	12 U	11 U	11 U		
CIS-ISOSAFROLE			12 UJ	11 UJ	11 UJ		
DI-N-BUTYL PHTHALATE	2.0 U	2.4 U	1 J	1 J	11 U		
DI-N-OCTYL PHTHALATE	2.9 U	3.5 U	12 U	11 U	11 U		
DIALLATE	16.7 UR	20.0 UR	12 U	11 U	11 U		
DIBENZO(A,H)ANTHRACENE	2.1 U	2.5 U	12 U	11 U	11 U		
DIBENZOFURAN	2.4 U	2.8 U	12 U	11 U	11 U		
DIETHYL PHTHALATE	0.65 U	0.78 U	12 U	3 J	11 U		
DIMETHYL PHTHALATE	0.12 U	0.14 U	12 U	11 U	11 U		
DIPHENYLAMINE	16.7 U	20.0 U	12 U	11 U	11 U		

SUMMARY OF UNFILTERED GROUNDWTER ANALYTICAL RESULTS
BACKGROUND INVESTIGATION REPORT
INDIAN HEAD DIVISION
NSWC INDIAN HEAD, MARYLAND

SAMPLE NUMBER:	25MW03	26MW03	RN6MW005U001	RPLMW001U001	RN3MW001U001		
DUPLICATE:							
LOCATION:	25MW03	26MW03	RN6MW005U001	RPLMW001U001	RN3MW001U001		
SAMPLE DATE:	10/04/95	10/04/95	08/04/97	08/06/97	08/03/97	/ /	/ /
SEMIVOLATILES (µg/L)							
ETHYL METHANESULFONATE			24 U	23 U	22 U		
FAMPHUR	33.4 UJ	40.0 UJ	12 UR	11 UR	11 UR		
FLUORANTHENE	2.5 U	2.9 U	12 U	11 U	11 U		
FLUORENE	2.6 U	3.1 U	12 U	11 U	11 U		
HEXACHLOROBENZENE	1.3 U	1.5 U	12 U	11 U	11 U		
HEXACHLOROBUTADIENE	3.9 U	4.7 U	12 U	11 U	11 U		
HEXACHLOROCYCLOPENTADIENE	1.6 U	1.9 U	12 U	11 U	11 U		
HEXACHLOROETHANE	3.1 U	3.7 U	12 U	11 U	11 U		
HEXACHLOROPHENE	83.5 UR	100 UR					
HEXACHLOROPROPENE	16.7 U	20.0 U	12 U	11 U	11 U		
INDENO(1,2,3-CD)PYRENE	2.2 U	2.6 U	12 U	11 U	11 U		
ISODRIN	33.4 U	40.0 U	12 U	11 U	11 U		
ISOPHORONE	1.9 U	2.2 U	12 U	11 U	11 U		
ISOSAFROLE	16.7 U	20.0 U					
KEPONE	33.4 UR	40.0 UR	12 UR	11 UR	11 UR		
METHAPYRILENE	167 U	200 U	12 U	11 UJ	11 UJ		
METHYL METHANESULFONATE	25.0 U	30.0 U	24 U	23 U	22 U		
N-NITROSO-DI-N-BUTYLAMINE	16.7 U	20.0 U	12 U	11 U	11 U		
N-NITROSO-DI-N-PROPYLAMINE	2.9 U	3.5 U	12 U	11 U	11 U		
N-NITROSODIETHYLAMINE	33.4 U	40.0 U	12 U	11 U	11 U		
N-NITROSODIMETHYLAMINE	5.4 U	6.4 U	12 U	11 U	11 U		
N-NITROSODIPHENYLAMINE	2.4 U	2.9 U	12 U	11 U	11 U		
N-NITROSOMETHYLETHYLAMINE	16.7 U	20.0 U	12 U	11 U	11 U		
N-NITROSOMORPHOLINE	16.7 U	20.0 U	12 U	11 U	11 U		
N-NITROSOPIPERIDINE	33.4 U	40.0 U	12 U	11 U	11 U		
N-NITROSOPYRROLIDINE	16.7 U	20.0 U	12 U	11 U	11 U		
NAPHTHALENE	2.6 U	3.1 U	12 U	11 U	11 U		
NITROBENZENE	2.2 U	2.6 U	12 U	11 U	11 U		
O,O,O-TRIETHYLPHOSPHOROTHIOATE	16.7 U	20.0 U	12 U	11 U	11 U		
O-TOLUIDINE	16.7 U	20.0 U	12 UJ	11 UJ	11 UJ		
P-DIMETHYLAMINOAZOBENZENE	16.7 U	20.0 U	12 U	11 U	11 U		
P-PHENYLENEDIAMINE	16.7 U	20.0 U	12 U	11 UJ	11 UJ		
PENTACHLOROBENZENE	16.7 U	20.0 U	12 U	11 U	11 U		

SUMMARY OF UNFILTERED GROUNDWTER ANALYTICAL RESULTS
BACKGROUND INVESTIGATION REPORT
INDIAN HEAD DIVISION
NSWC INDIAN HEAD, MARYLAND

SAMPLE NUMBER: DUPLICATE: LOCATION: SAMPLE DATE:	25MW03 25MW03 10/04/95	26MW03 26MW03 10/04/95	RN6MW005U001 RN6MW005U001 08/04/97	RPLMW001U001 RPLMW001U001 08/06/97	RN3MW001U001 RN3MW001U001 08/03/97	/ / / /	/ / / /
SEMIVOLATILES (µg/L)							
PENTACHLORONITROBENZENE	33.4 U	40.0 U	12 U	11 U	11 U		
PENTACHLOROPHENOL	3.6 U	4.4 U	59 U	57 U	56 U		
PHENACETIN	33.4 U	40.0 U	12 U	11 U	11 U		
PHENANTHRENE	2.6 U	3.1 U	12 U	11 U	11 U		
PHENOL	3.5 U	4.2 U	12 U	11 U	11 U		
PRONAMIDE	16.7 U	20.0 U	12 U	11 U	11 U		
PYRENE	2.6 U	3.1 U	12 U	11 U	11 U		
PYRIDINE	16.7 U	20.0 U	12 U	11 U	11 U		
SAFROLE	16.7 U	20.0 U	12 U	11 U	11 U		
TRANS-ISOSAFROLE			12 UJ	11 U	11 U		
PESTICIDES/PCBs (µg/L)							
AROCLOR-1016		0.53 U					
AROCLOR-1221		0.53 U					
AROCLOR-1232		0.53 U					
AROCLOR-1242		0.68 U					
AROCLOR-1248		1.1 U					
AROCLOR-1254		1.1 U					
AROCLOR-1260		1.1 U					
HERBICIDES (µg/L)							
DIMETHOATE	33.4 U	40.0 U	12 UJ	11 U	11 UJ		
PHORATE	16.7 UR	20.0 UR	12 U	11 U	11 U		
SULFOTEP			12 UJ	11 U	11 U		
ENERGETICS (µg/L)							
1,3,5-TRINITROBENZENE	16.7 U	20.0 U	12 U	11 U	11 U		
1,3-DINITROBENZENE	16.7 U	20.0 U	12 U	11 U	11 U		
2,4 DINITROTOLUENE	0.40 U	0.37 UJ					
2,4,6-TRINITROTOLUENE	0.40 U	0.37 UJ	0.6 U		0.6 U		
2,6 DINITROTOLUENE	0.40 U	0.37 UJ					
2-AMINO-4,6-DINITROTOLUENE	0.40 U	0.37 UJ	0.6 U		0.6 U		
2-NITROTOLUENE	0.79 U	0.74 UJ	1.3 U		1.3 U		
3-NITROTOLUENE	0.79 U	0.74 UJ	1.3 U		1.3 U		
4-AMINO-2,6-DINITROTOLUENE	0.40 U	0.37 UJ	0.6 U		0.6 U		
4-NITROTOLUENE	0.79 U	0.74 UJ	1.3 U		1.3 U		

SUMMARY OF UNFILTERED GROUNDWTER ANALYTICAL RESULTS
BACKGROUND INVESTIGATION REPORT
INDIAN HEAD DIVISION
NSWC INDIAN HEAD, MARYLAND

SAMPLE NUMBER:	25MW03	26MW03	RN6MW005U001	RPLMW001U001	RN3MW001U001		
DUPLICATE:							
LOCATION:	25MW03	26MW03	RN6MW005U001	RPLMW001U001	RN3MW001U001		
SAMPLE DATE:	10/04/95	10/04/95	08/04/97	08/06/97	08/03/97	/ /	/ /
ENERGETICS (µg/L)							
HMX	0.79 U	0.74 UJ	1.3 U		1.3 U		
NITRO-BENZENE	0.40 U	0.37 UJ					
NITROCELLULOSE	0.18 UL	0.18 UL					
NITROGLYCERIN	15.8 U	14.8 UJ					
NITROGUANIDINE	5.0 U	5.0 U					
PETN	0.40 U	0.37 UJ					
RDX	0.79 U	0.74 UJ	1.3 U		1.2 J		
TETRYL	0.79 U	0.74 UJ	1.3 U		1.3 U		
METALS (µg/L)							
ALUMINUM	73400 J	11100 J					
ANTIMONY	1.7 U	1.7 U	6.2 B	2.3 U	2.3 U		
ARSENIC	2.2 L	1.9 UL	19.1 L	1.9 UL	1.9 UL		
BARIUM	688	140	624	60.3	12.9		
BERYLLIUM	11.0	0.90 U	7.8	1.1 B	1.3 B		
CADMIUM	6.4 L	5.0 UL	9.8	1.3 U	1.3 U		
CALCIUM	40300	3580 K					
CHROMIUM	191	14.8 L	97.0	2.5	2.0 U		
COBALT	169	15.6	641	0.70 U	3.8		
COPPER	166 L	16.3	78.7	3.3 U	4.0 B		
CYANIDE	5.0 U	5.0 U					
IRON	252000	22100					
LEAD	51.0	10.3 B	46.0	5.2 B	2.7 B		
MAGNESIUM	16800	2920 K					
MANGANESE	2290	328					
MERCURY	0.20 B	0.10 U	0.17	0.13	0.10 U		
NICKEL	166 K	30.9 B	77.6	1.1 U	8.7		
POTASSIUM	8430	3640					
SELENIUM	1.5 U	1.5 U	14.1	2.5 U	2.5 U		
SILVER	1.0 U	1.0 U	0.75 B	0.70 U	0.70 U		
SODIUM	8840	9120					
THALLIUM	2.5 UJ	2.5 UJ	9.5 B	2.5 U	2.5 U		
TIN	33.6 UL	33.6 U	6.4 B	1.2 U	1.2 U		
VANADIUM	281	37.4	120	2.4 B	1.2 B		

SUMMARY OF UNFILTERED GROUNDWTER ANALYTICAL RESULTS
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INDIAN HEAD DIVISION
NSWC INDIAN HEAD, MARYLAND

SAMPLE NUMBER:	25MW03	26MW03	RN6MW005U001	RPLMW001U001	RN3MW001U001		
DUPLICATE:							
LOCATION:	25MW03	26MW03	RN6MW005U001	RPLMW001U001	RN3MW001U001		
SAMPLE DATE:	10/04/95	10/04/95	08/04/97	08/06/97	08/03/97	/ /	/ /
METALS (µg/L)							
ZINC	483	70.1 B	254	6.4 B	13.2 B		
TOTAL PETROLEUM HYDROCARBONS (mg/L)							
TPH		0.52 U					
MISCELLANEOUS PARAMETERS (mg/L)							
AMMONIA	0.41	0.60					
NITRATE/NITRITE	0.05 UL	0.73 L					
PHOSPHORUS	1.5	0.21					
SULFATE	8.0 L	1.6 L					
TOTAL KJELDAHL NITROGEN	0.43 L	0.60 L					
TOTAL ORGANIC CARBON	1.0 U	4.3			1.11		
TOTAL ORGANIC HALIDES (ug/L)	13.6 L	11.8 L			16 B		

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ATTACHMENT 4.B

DATABASE - GRAIN SIZE DISTRIBUTION

VALLEY
FORGE
LABORATORIES, INC.

30th
1967 ANNIVERSARY 1997

Engineering Consultants Since 1967

SOIL LABORATORY TEST REPORT 8-3

Project No. 97128
August 29, 1997

Geotechnical Engineering

Attention: Mr. Paul Frank
Brown and Root Environmental
661 Andersen Drive
Foster Plaza 7
Pittsburgh, PA 15220

Construction Quality Control

Re: Subcontract Agreement No. GCDB-97-531-1298
Geotechnical Laboratory Analytical Services
CTO No. 0287 - Naval Surface Warfare Center (NSWC),
Indian Head, MD

Laboratory Testing

Samples Received: Received 8/18/97: 26 jar samples, 25 of which we were directed to test. Received 8/19/97: 5 additional jar samples for testing.

Testing Completed: Total of 30 samples tested.

	Test	ASTM Standard
NDT and Related Services	1. Particle Size Analysis (Sieve and Hydrometer)	D422

Results:

Research and Special Studies

The results of the testing are graphically depicted on the attached Grain Size Distribution Curves. If you have any questions about this test report, please call.

Sincerely,

Environmental Engineering

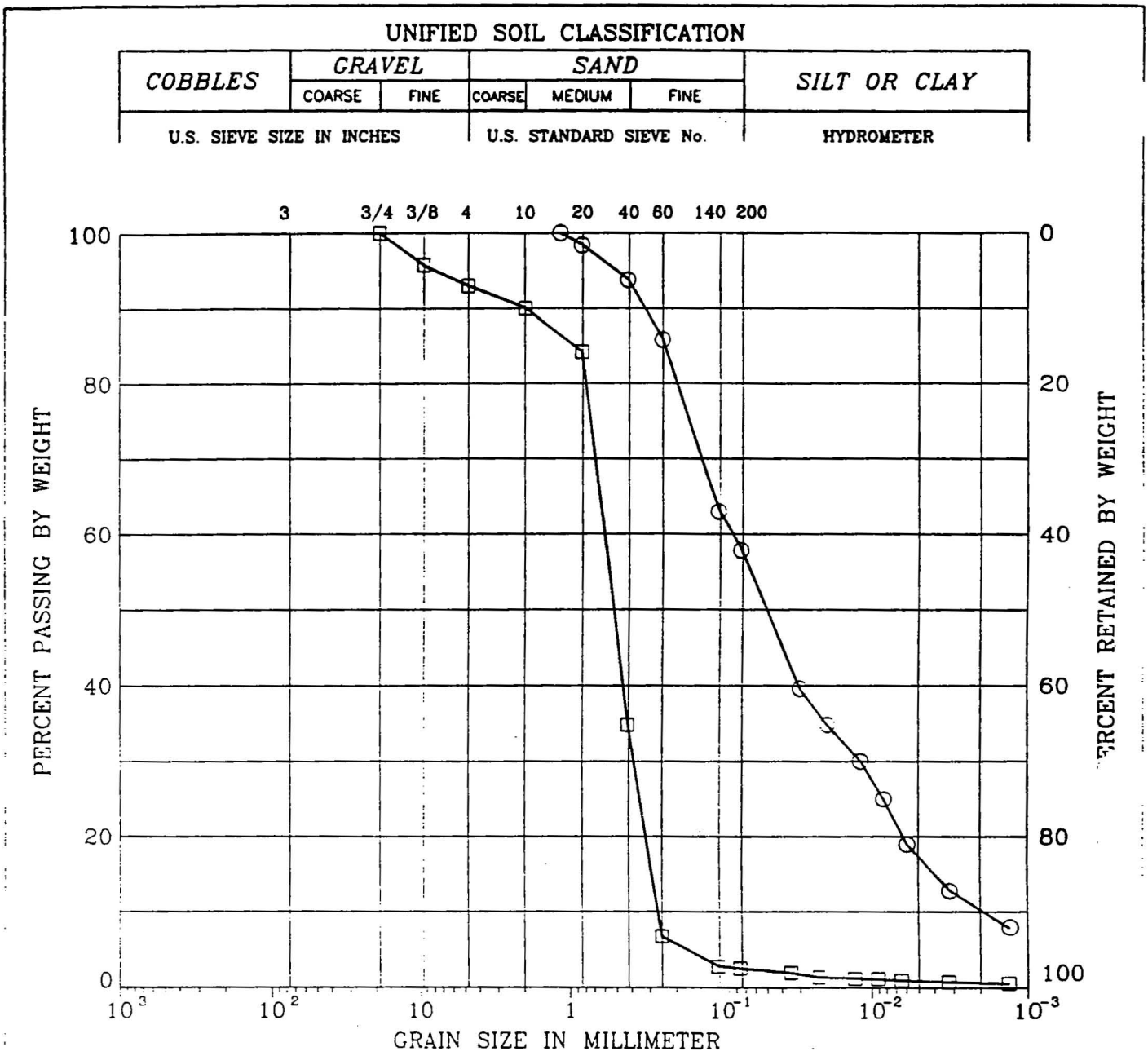
Eric J. Seksinsky, P.G., P.E.
Technical & Quality
System Manager

EJS:lcw
Enclosures

Transportation and Traffic Engineering

Fax (610) 688-8143 • 6 Berkeley Road, Devon, PA 19333-1397 • (610) 688-8517

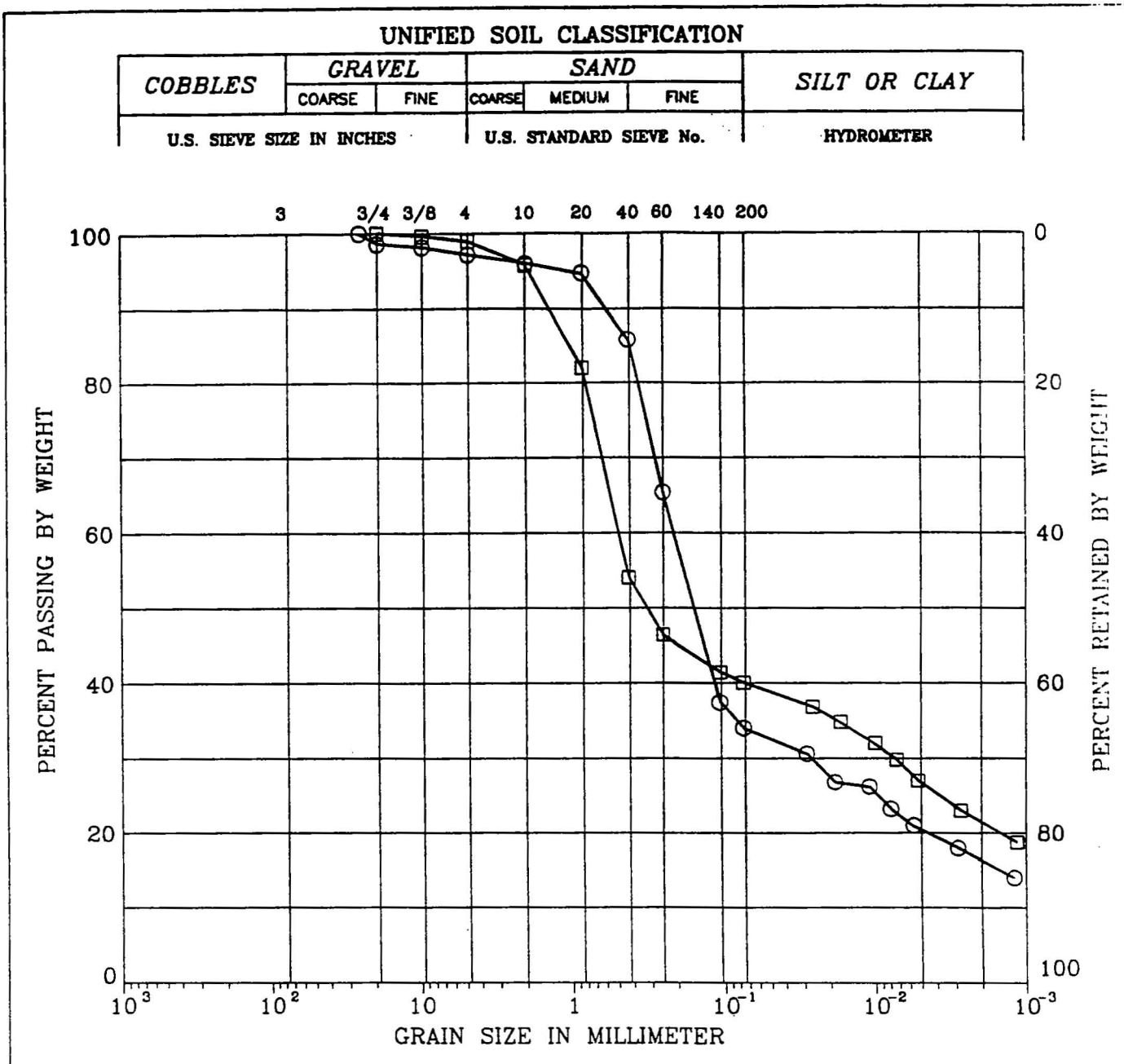
URL: http://www.mgar.com/vfl • E-mail : vflabs@voicenet.com



SYMBOL	BORING	DEPTH (ft)	LL (%)	PI (%)	DESCRIPTION
○	BGDSD0070101				BROWN SANDY SILT WITH ORGANICS (ML)
□	BGDSD0080101				LT BROWN POORLY-GRADED SAND (SP)

Remark :

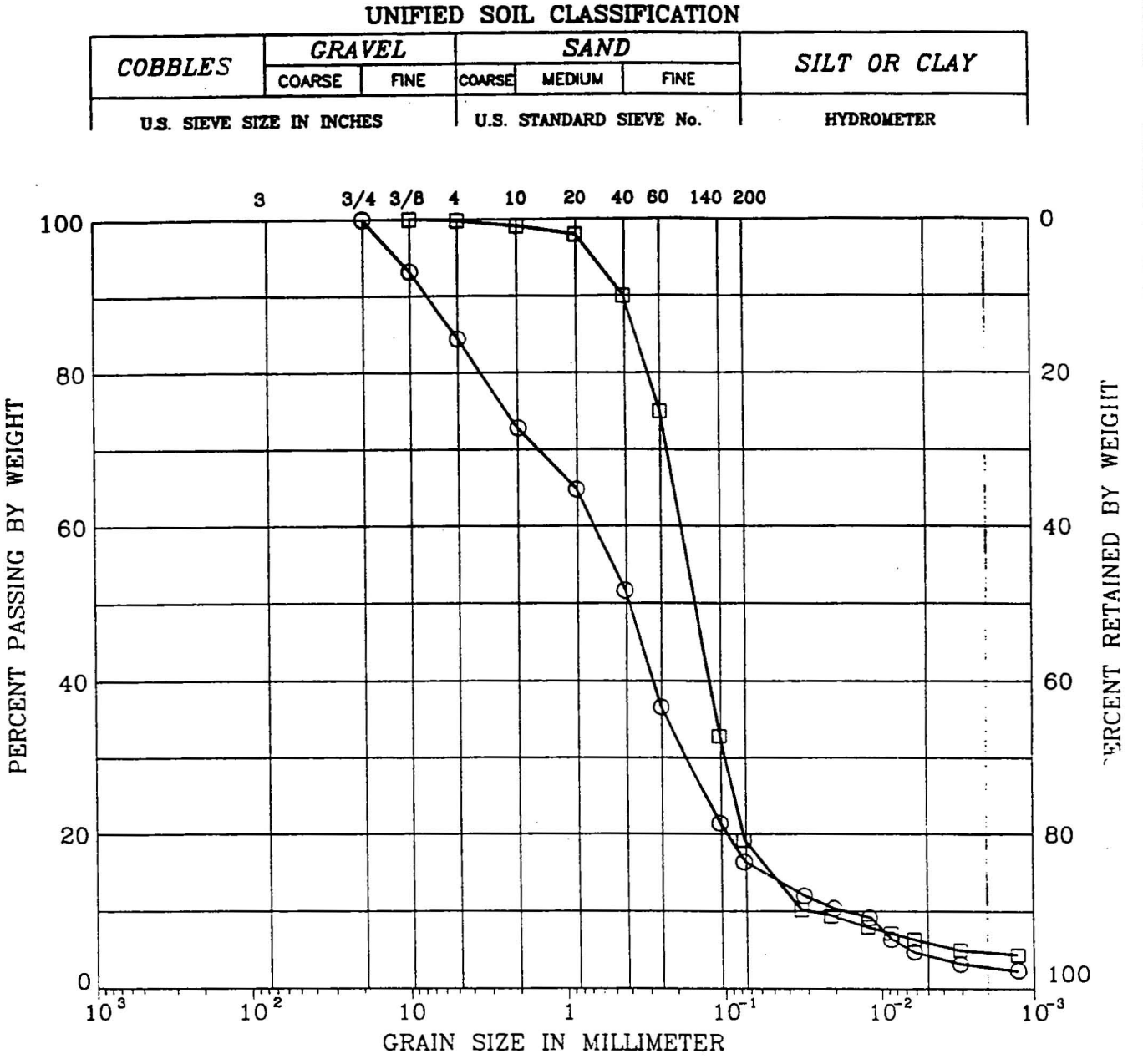
Project No. 97128	BROWN & ROOT ENVIRONMENTAL
Valley Forge Laboratories, Inc.	GRAIN SIZE DISTRIBUTION — 8/18/97



SYMBOL	BORING	DEPTH (ft)	LL (%)	PI (%)	DESCRIPTION
○	BGDSD0090101				BROWN SILTY SAND (SM)
□	BGDSD0100101				BROWN-GRAY CLAYEY SAND (SC)

Remark :

Project No. 97128	BROWN & ROOT ENVIRONMENTAL
Valley Forge Laboratories, Inc.	GRAIN SIZE DISTRIBUTION 8/18/97



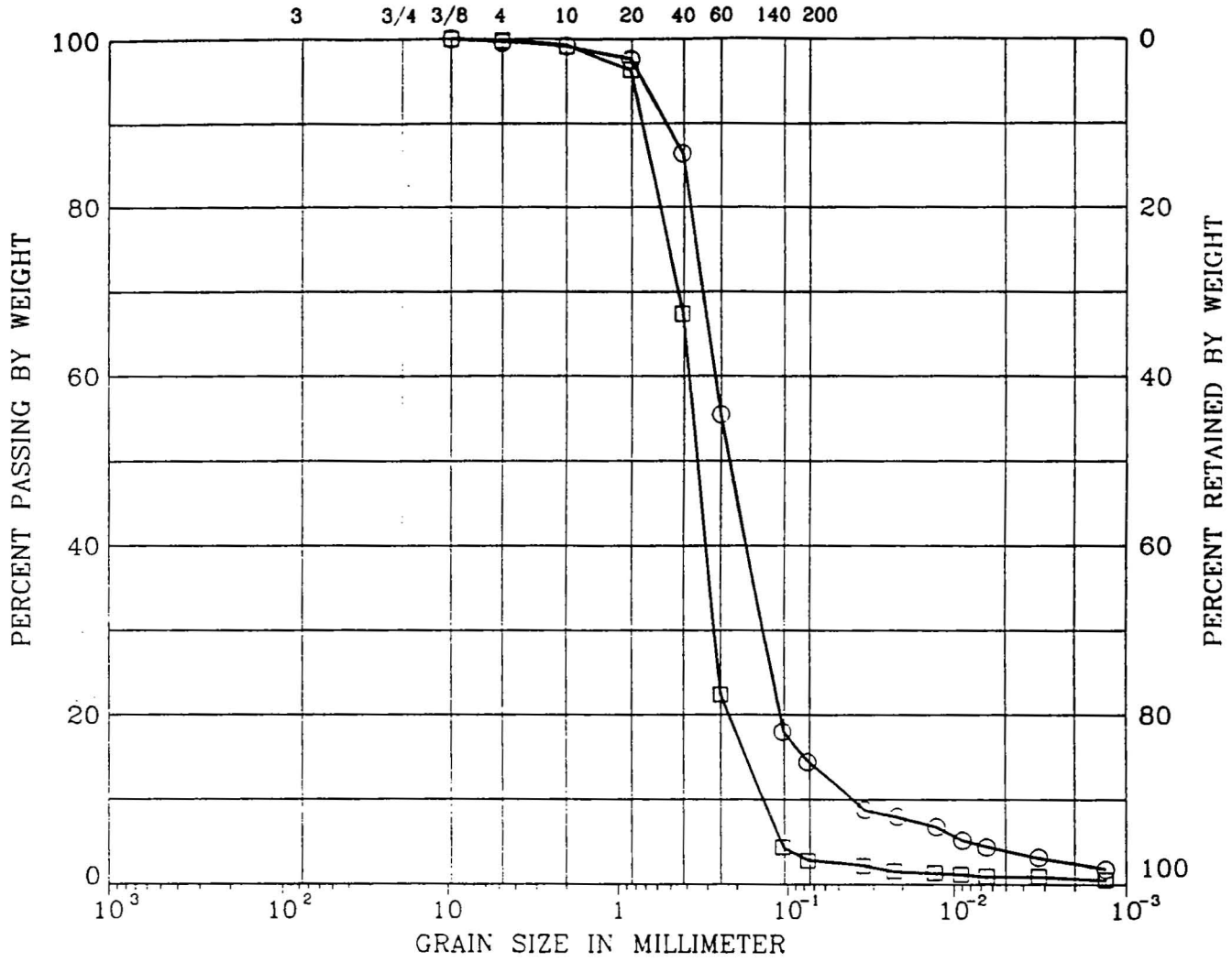
SYMBOL	BORING	DEPTH (ft)	LL (%)	PI (%)	DESCRIPTION
○	BGDSD0010101				GRAY SILTY SAND (SM)
□	BGDSD0020101				GRAY SILTY SAND (SM)

Remark :

Project No. 97128	BROWN & ROOT ENVIRONMENTAL
Valley Forge Laboratories, Inc.	GRAIN SIZE DISTRIBUTION 8/16/97

UNIFIED SOIL CLASSIFICATION

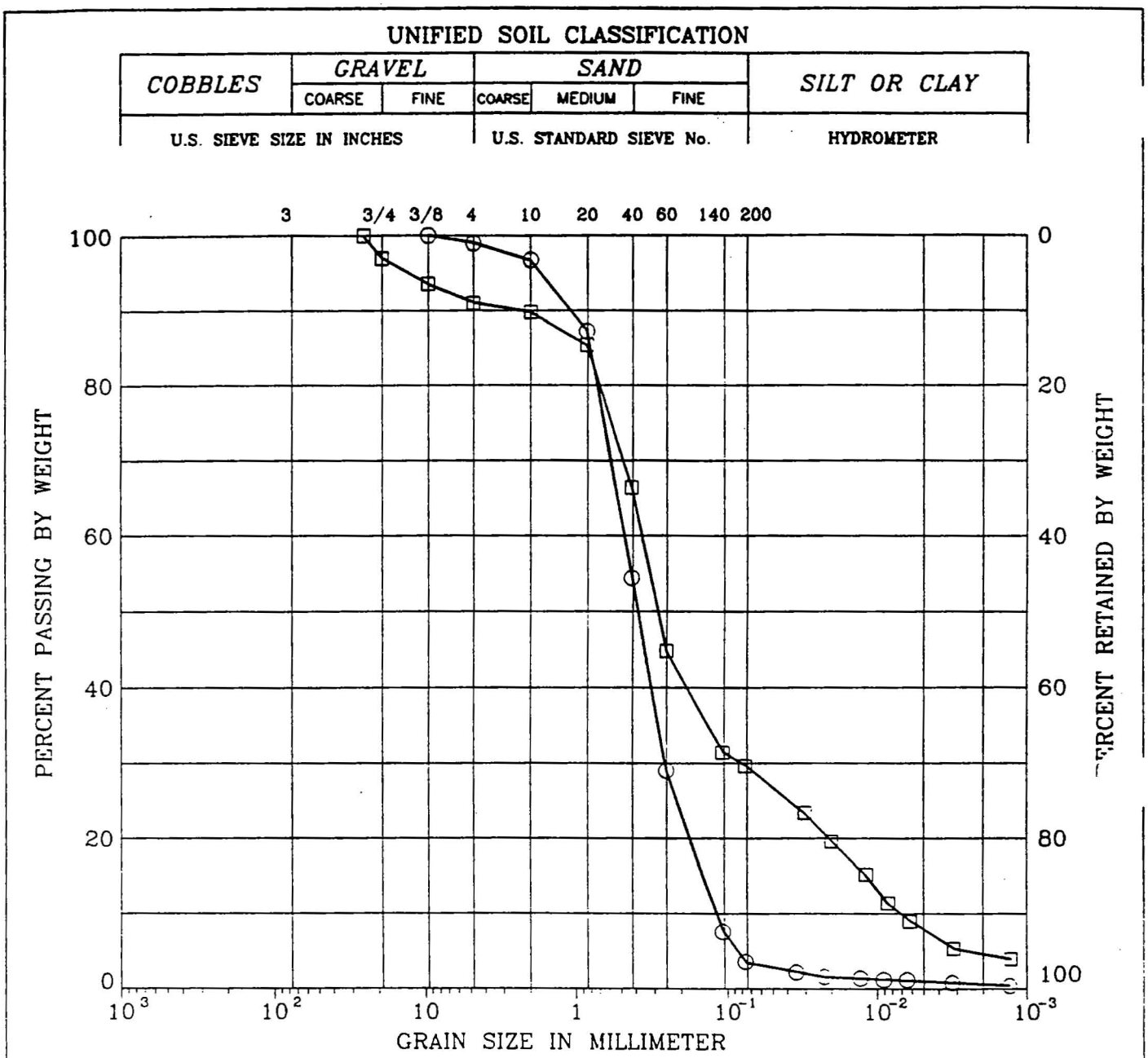
COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	
U.S. SIEVE SIZE IN INCHES			U.S. STANDARD SIEVE No.			HYDROMETER



SYMBOL	BORING	DEPTH (ft)	LL (%)	PI (%)	DESCRIPTION
○	BGDSD0030101				GRAY SILTY SAND (SM)
□	BGDSD0040101				LIGHT BROWN POORLY-GRADED SAND (SP)

Remark :

Project No. 97128	BROWN & ROOT ENVIRONMENTAL
Valley Forge Laboratories, Inc.	GRAIN SIZE DISTRIBUTION 8/16/97



SYMBOL	BORING	DEPTH (ft)	LL (%)	PI (%)	DESCRIPTION
○	BGDSD0050101				GRAY POORLY-GRADED SAND (SP)
□	BGDSD0060101				GRAY SILTY SAND (SM)

Remark :

Project No. 97128	BROWN & ROOT ENVIRONMENTAL
Valley Forge Laboratories, Inc.	GRAIN SIZE DISTRIBUTION 8/16/97

ATTACHMENT 5

LITERATURE SEARCH DATA FOR SEDIMENT

CONTENTS PROCEDURE

Data Set Name:	WORK.KATH	Observations:	22
Member Type:	DATA	Variables:	25
Engine:	V612	Indexes:	0
Created:	8:29 Monday, November 24, 1997	Observation Length:	201
Last Modified:	8:29 Monday, November 24, 1997	Deleted Observations:	0
Protection:		Compressed:	NO
Data Set Type:		Sorted:	NO
Label:			

-----Engine/Host Dependent Information-----

Data Set Page Size:	30208
Number of Data Set Pages:	1
File Format:	607
First Data Page:	1
Max Obs per Page:	150
Obs in First Data Page:	22
Filename:	CHESIE$DKA0:[USERS.BTHOMAS.DATMGMT.SAS$WORK00006138]KATH.SASEB$DATA
Host Format:	AXP
Disk Blocks Allocated:	60

-----Alphabetic List of Variables and Attributes-----

#	Variable	Type	Len	Pos	Format	Label
10	AL	Num	8	73		ALUMINUM UG/G
11	AS	Num	8	81		ARSENIC UG/G
12	CD	Num	8	89		CADMIUM UG/G
13	CR	Num	8	97		CHROMIUM UG/G
14	CU	Num	8	105		COPPER UG/G
15	FE	Num	8	113		IRON UG/G
9	G62	Num	8	65		PERCENT SAND (62-1000 UM)
8	GL62	Num	8	57		PERCENT SILT/CLAY (<62 UM)
7	GMAX	Num	8	49		PERCENT GRAVEL (>1000 UM)
16	H2S	Num	8	121		ACID VOLATILE SULFIDE
17	HG	Num	8	129		MERCURY UG/G
18	MN	Num	8	137		MANGANESE UG/G
3	MONTH	Num	8	17	2.	SAMPLING START MONTH
19	NI	Num	8	145		NICKEL UG/G
20	PB	Num	8	153		LEAD UG/G
21	PC	Num	8	161	4.2	PERCENT PARTICULATE CARBON
22	PM	Num	8	169		PERCENT MOISTURE
23	PN	Num	8	177	4.2	PERCENTAGE OF NITROGEN IN SEDIMENT
24	PP	Num	8	185	4.2	PERCENTAGE OF PHOSPHORUS IN SEDIMENT
1	STATION	Char	9	0		SAMPLING STATION IDENTIFIER
25	TOCS	Num	8	193		TOTAL ORGANIC CARBON % DRY WEIGHT
2	YEAR	Num	8	9	2.	SAMPLING START YEAR
6	ZN	Num	8	41		ZINC UG/G
5	_FREQ_	Num	8	33		
4	_TYPE_	Num	8	25		

SEDIMENT DATA FOR INDIAN HEAD, MARYLAND POINT AND MATTAWOMAN CREEK

OBS	STATION	YEAR	ZN	GMAX	GL62	G62	AL	AS	CD	CR	CU
1	MAT0016	89	168.000	0.5	87.6	11.9	36500	9.900	0.710	50.000	28.000
2	MAT0016	90	184.800	0.1	93.9	6.0	20016	23.400	0.800	45.100	32.800
3	MAT0016	91	192.000	0.1	87.4	12.6	25010	7.000	0.800	38.000	32.000
4	MAT0016	92	206.000	0.0	92.0	7.9	21636	36.400	0.500	40.000	35.200
5	MAT0016	93	194.000	0.1	95.4	4.5	21560	6.000	0.900	36.600	33.000
6	MAT0016	94	172.000	.	.	.	34800	6.400	0.940	54.000	31.400
7	XDA1177	87	251.000	0.1	95.2	4.6	.	27.500	0.540	50.000	43.400
8	XDA1177	88	199.495	0.1	79.2	20.7	.	30.705	0.555	43.695	36.055
9	XDA1177	89	196.000	0.1	81.6	18.3	28300	13.800	2.010	45.000	37.000
10	XDA1177	90	198.200	0.1	91.4	8.4	24470	31.800	0.600	47.200	36.900
11	XDA1177	91	192.000	0.1	90.6	9.4	30278	9.000	0.700	36.000	38.000
12	XDA1177	92	224.000	0.0	93.8	6.2	26100	35.400	0.400	49.600	43.400
13	XDA1177	93	224.000	0.1	99.1	0.8	24776	9.280	0.700	41.400	36.800
14	XDA1177	94	247.000	.	.	.	52600	8.300	0.950	66.600	50.200
15	XEA6596	87	272.000	1.3	79.5	19.2	.	15.300	0.700	39.000	43.100
16	XEA6596	88	189.890	2.5	54.9	42.6	.	15.270	0.180	39.360	34.730
17	XEA6596	89	209.000	0.1	96.6	3.3	33300	11.600	0.750	50.000	37.000
18	XEA6596	90	209.800	0.0	96.9	3.1	34269	27.600	0.800	50.900	40.200
19	XEA6596	91	200.000	0.1	92.8	7.1	26308	20.000	0.800	38.000	38.000
20	XEA6596	92	214.000	0.1	90.4	9.6	28596	33.600	0.500	44.600	41.600
21	XEA6596	93	201.000	15.3	79.4	5.1	19402	6.910	0.900	38.400	36.200
22	XEA6596	94	242.000	.	.	.	42600	6.500	0.700	56.200	46.200

OBS	FE	H2S	HG	MN	NI	PB	PC	PM	PN	PP	TOCS	ZN
1	38549	.	0.274	1337.00	32.000	22.00	.	73.5	0.36	0.09	3.19	168.000
2	33688	.	0.150	1116.00	37.700	35.60	.	75.0	0.37	0.09	3.40	184.800
3	32903	.	0.080	1010.00	35.000	32.00	.	74.1	0.35	0.03	3.21	192.000
4	33748	.	0.740	1254.00	37.200	46.60	3.13	76.1	0.35	0.08	.	206.000
5	35178	.	0.170	1332.00	30.800	44.80	3.22	73.4	0.37	0.09	.	194.000
6	32700	.	0.300	1150.00	39.000	45.40	2.47	.	0.32	0.08	.	172.000
7	46464	.	0.186	4326.00	64.100	37.00	.	75.1	0.29	.	2.44	251.000
8	38953	.	0.297	2628.95	35.705	27.90	.	69.0	0.29	.	2.56	199.495
9	46258	.	0.308	4140.00	53.000	32.00	.	70.7	0.29	0.14	2.71	196.000
10	36177	.	0.180	3067.00	45.700	37.50	.	73.7	0.27	0.10	2.57	198.200
11	39906	.	0.120	2588.00	45.000	48.00	.	71.1	0.30	0.13	2.76	192.000
12	40506	.	0.080	3494.00	45.400	46.60	2.61	75.1	0.29	0.12	.	224.000
13	39978	.	0.170	3149.00	38.000	47.00	2.83	71.9	0.31	0.13	.	224.000
14	45800	.	0.300	3130.00	54.200	52.80	2.73	.	0.30	0.13	.	247.000
15	36315	.	0.123	1808.00	54.700	33.00	.	69.4	0.33	.	3.77	272.000
16	29415	.	0.305	1056.90	29.650	17.94	.	46.7	0.24	.	2.69	189.890
17	37858	.	0.225	4140.00	45.000	20.00	.	70.7	0.35	0.12	3.42	209.000
18	35980	.	0.190	2288.00	41.700	33.70	.	71.4	0.30	0.11	3.20	209.800
19	35801	.	0.110	1920.00	40.000	40.00	.	74.7	0.31	0.10	3.24	200.000
20	36606	.	0.410	1214.00	41.400	42.00	2.20	65.5	0.25	0.11	.	214.000
21	33744	.	0.190	1536.00	35.600	46.20	2.86	66.4	0.27	0.12	.	201.000
22	39200	.	0.300	1570.00	50.000	46.00	2.84	.	0.27	0.12	.	242.000

MAT0016=Mattawoman Creek XEA6596=Indian Head XDA1177=MD. Point

ATTACHMENT 6

STATISTICAL ANALYSIS

CALCULATION WORKSHEET Order No. 19116 (01-91) PAGE 1 OF 3

CLIENT	JOB NUMBER
NSWC INDIAN HEAD, MD	7581 CTO 287
SUBJECT	
SAMPLE CALCULATIONS ON BACKGROUND DATA	
BASED ON	DRAWING NUMBER
BY / CHECKED BY	APPROVED BY / DATE
BEL / RJJ	11/18/97

THE DATA USED FOR THE FOLLOWING SAMPLE CALCULATIONS ARE THE UNFILTERED CHROMIUM RESULTS FROM THE BACKGROUND GROUNDWATER SAMPLES.

SAMPLE	RESULT	QUAL		
25MW03	191. ✓			1
26MW03	14.8 ✓	L		2
BGDMW001U001	2.0 ✓	U	*	3
BGDMW002U001	2.0 ✓	U	*	4
BGDMW003U001	4.2 ✓			5
BGDMW004U001	16.4 ✓			6
BGDMW005U001-AVG	29.15 ✓	J		7
RN3MW001U001	2.0 ✓	U	*	8
RN6MW005U001	97.0 ✓			9
RPLMW001U001	2.5 ✓			10

$$\sum_{i=1}^{10} x_i = 358.05 \quad \text{(SUM)}$$

$$\bar{x} = \frac{\sum_{i=1}^{n} x_i}{n} = \frac{358.05}{10} = 35.805 \quad \text{(MEAN)} \checkmark$$

CALCULATE THE STANDARD DEVIATION (S_x):

$$S_x = \sqrt{\frac{\sum_{i=1}^{n} (x_i - \bar{x})^2}{n-1}}$$

$$\sum_{i=1}^{10} (x_i - \bar{x})^2 = (191-35.805)^2 + (14.8-35.805)^2 + (1.0-35.805)^2 + (1.0-35.805)^2$$
$$+ (4.2-35.805)^2 + (16.4-35.805)^2 + (29.15-35.805)^2 + (10-35.805)^2 + (97.0-35.805)^2 + (2.5-35.805)^2$$
$$= (155.195)^2 + (-21.005)^2 + (-34.805)^2 + (-34.805)^2 + (-31.605)^2 + (-19.405)^2 + (-6.655)^2$$
$$+ (-34.805)^2 + (61.195)^2 + (-33.305)^2 = 24085.49 + 441.21 + 121.39 + 121.39 + 998.88$$
$$+ 376.55 + 44.29 + 121.39 + 3744.83 + 1109.22 = 34,434.63$$

* = USE VALUE OF 1/2 THE RESULT FOR NON-DETECTS (QUALIFIER = B OR U)

CLIENT	JOB NUMBER
NSWC INDIAN HEAD, MD	7581 CTO 287
SUBJECT	
SAMPLE CALCULATIONS OF BACKGROUND DATA	
BASED ON	**DRAWING NUMBER**
BY BEL / **CHECKED BY** RJJ	**APPROVED BY** / **DATE** 11/18/97

$$S_x = \sqrt{\frac{34,434.63}{9}} = \sqrt{3826.07} = 61.8552$$

CALCULATE THE SHAPIRO-WILK (W) STATISTIC (W_{CALC}):

$$W_{CALC} = \left[\frac{b}{S_x\sqrt{n-1}}\right]^2$$

CALCULATE b BY CREATING A TABLE WITH:
COLUMN 1 = RESULTS ORDERED FROM SMALLEST TO LARGEST (R_i)
COLUMN 2 = RESULTS ORDERED FROM LARGEST TO SMALLEST ($R_{(n-i+1)}$)
COLUMN 3 = COLUMN 2 − COLUMN 1 ($R_{(n-i+1)} - R_i$)
COLUMN 4 = COEFFICIENT A_i FOUND IN TABLE 1
COLUMN 5 = COLUMN 3 × COLUMN 4 (b_i)

$$b = \sum_{i=1}^{k} b_i$$

where k is the greatest integer less than or equal to n/2

R_i	$R_{(n-i+1)}$	$R_{(n-i+1)} - R_i$	A_i	b_i	i
1	191	190	0.5739	109.041	1
1	97	96	0.3291	31.594	2
1	29.15	28.15	0.2141	6.027	3
2.5	16.4	13.9	0.1224	1.701	4
4.2	14.8	10.6	0.0399	0.423	5
14.8	4.2				6
16.4	2.5			$b = 148.786$	7
29.15	1				8
97	1				9
191	1				10

$$W_{CALC} = \left[\frac{148.786}{(61.8552)(3)}\right]^2 = (0.8018)^2 = 0.6429$$

CLIENT NSWC INDIAN HEAD, MD	JOB NUMBER 7581 GT0287
SUBJECT SAMPLE CALCULATIONS @ BACKGROUND DATA	
BASED ON	DRAWING NUMBER
BY BEL / CHECKED BY RJJ / APPROVED BY / DATE 11/18/97	

DETERMINE W TEST AT THE 5% SIGNIFICANCE LEVEL FROM TABLE 2:

$W_{TEST} = 0.842$

SINCE $W_{CALC} < W_{TEST}$ WE REJECT THE NULL HYPOTHESIS (H_0) THAT THE DATA HAS A NORMAL DISTRIBUTION

CALCULATE THE 95% UPPER TOLERANCE LIMIT (UTL0.95):

$$UTL_{0.95} = \bar{X} + K S_X$$

where $K = t_{n-1,0.95}\sqrt{1+\frac{1}{n}}$ = One-sided tolerance factor

$K = (2.7755)\sqrt{1+\frac{1}{10}} = (2.7755)(1.0488) = 2.9110$

$UTL_{0.95} = 35.805 + (2.9110)(61.8552) = 215.865$

SINCE THE DATA IS LOGNORMALLY DISTR. BUILD THE CORRECT 95% UTL IS OBTAINED USING THE NATURAL LOGS OF THE DATA:

	LN(RESULTS)
1	5.2523
2	2.6946
3	0 *
4	0 *
5	1.4351
6	2.7973
7	3.3725
8	0 *
9	4.5749
10	0.9163
	$21.0427 = \sum_{i=1}^{10} \ln X_i$
	$2.10427 = \overline{\ln X_i}$

$\ln(UTL_{0.95}) = \overline{\ln X} + K S_{\ln X}$

$\ln(UTL_{0.95}) = 2.10427 + (2.9110)(1.9320)$

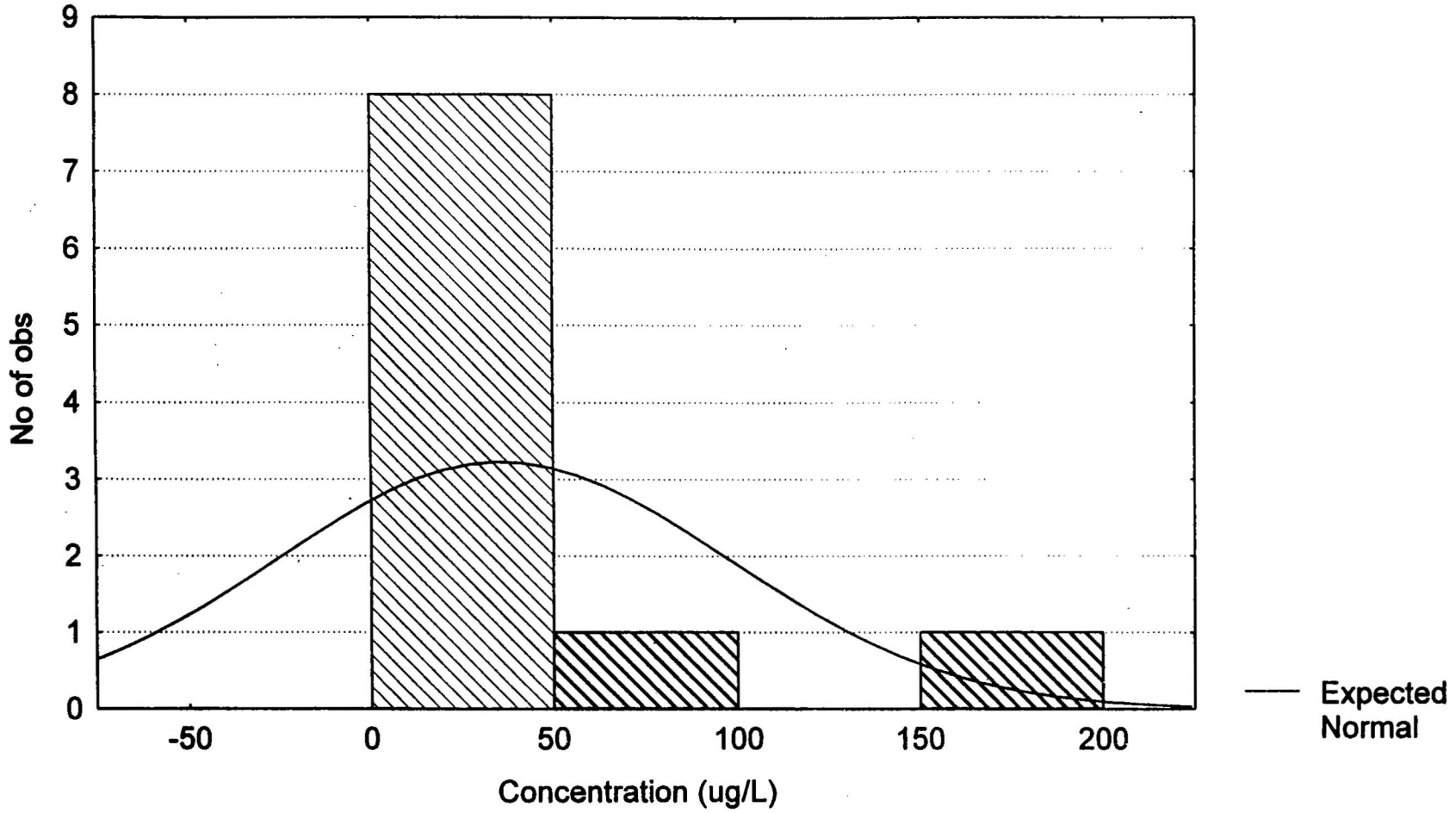
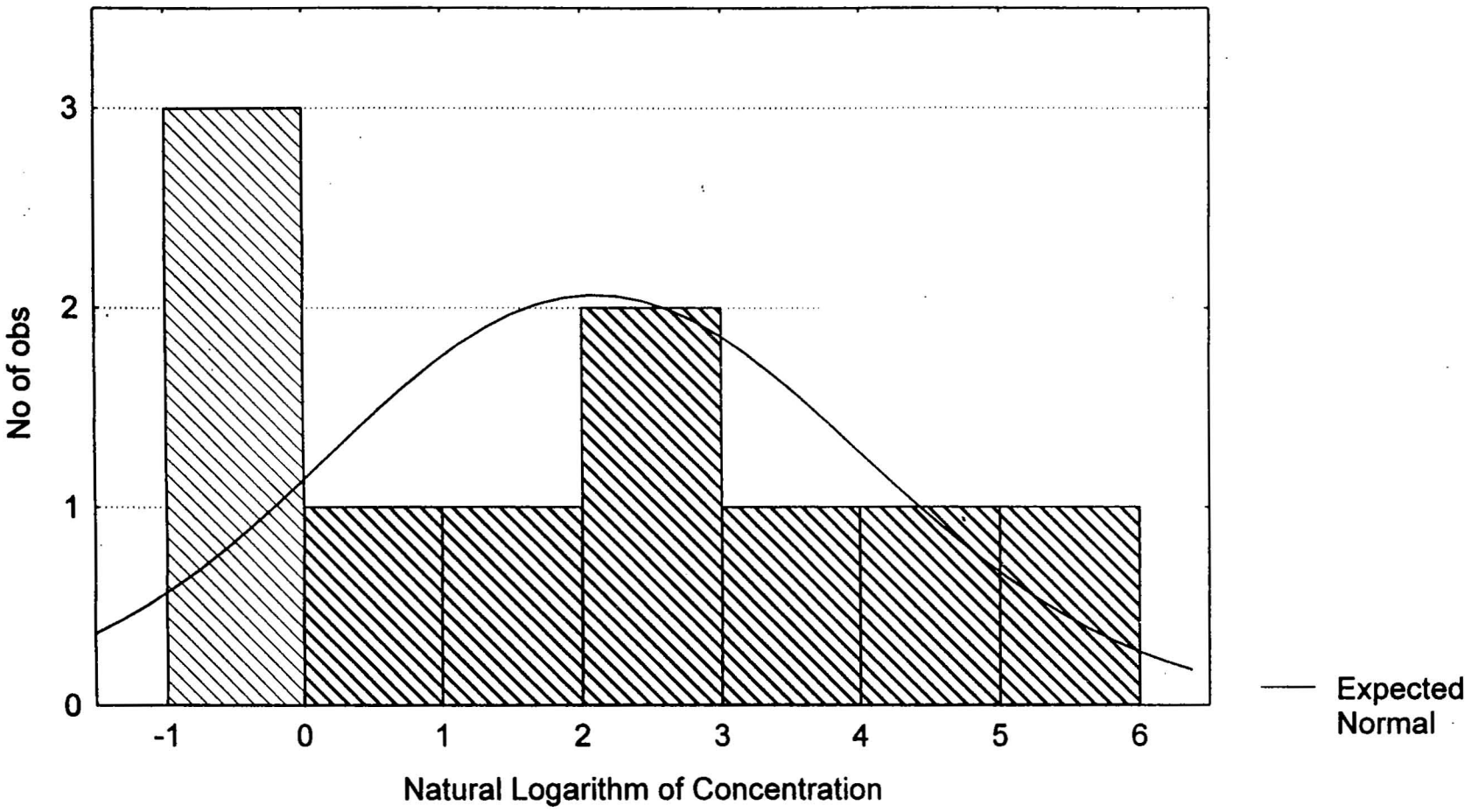
$\ln(UTL_{0.95}) = 7.7283$

$UTL_{0.95} = e^{7.7283} = 2271.683$

CHROMIUM RESULTS

BACKGROUND UNFILTERED GROUNDWATER

Shapiro-Wilk W=.6429, W(test)=0.842



NATURAL LOG OF CHROMIUM RESULTS
BACKGROUND UNFILTERED GROUNDWATER
Shapiro-Wilk W=.9078, W(test)=0.842