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NSB NEW LONDON
5090.3a

MONTHLY OPERATIONS SUMMARY FOR THE NAVAL EXCHANGE (NEX) AND DOLPHIN MART AIR SPARGING/SOIL VAPOR EXTRACTION SYSTEMS

NEW LONDON NAVAL SUBMARINE BASE
GROTON, CONNECTICUT

Month: August 1999

Prepared by:

IT Corporation
Prepared by:

Stephen R. Daly /For
Associate Environmental Scientist

Reviewed By:

Foster Wheeler Environmental Corp.
Reviewed by:

Susan R. Leach, P.E.
Environmental Site Technical Manager

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OPERATIONAL SUMMARY

DOLPHIN MART AIR SPARGE/SVE SYSTEM

System Status - The remediation system at the site has been operating since June 29, 1996. The remediation system is composed of eight (8) horizontal vapor extraction trenches (VET-1, VET-2, VET-3, VET-4, VET-5, VET-6, VET-7 and VET-8), fifteen air sparge points (ASP-A through ASP-H, ASP-J through ASP-N, ASP-P, and ASP-Q) along with associated equipment. At the conclusion of the site visit on May 21, 1999, and as directed by the United States Navy, the SVE system was deactivated. The air sparge system was previously deactivated on January 30, 1999. The site is visited bi-weekly in order to maintain site security and to check conditions of all road boxes.

A site map has been included as **Figure 1**. The site was visited on August 5, 26-27, and 31, 1999. The monitoring forms for site visits conducted during the month of August 1999 are included in **Attachment 1**. A weekly breakdown of the month's field activities has been included as **Attachment 2**.

Mass Removal – Because the SVE system is deactivated, no SVE sample was collected for analysis during the August 1999 site visits. Therefore, no hydrocarbon mass removal rate was calculated. The total hydrocarbon mass extracted by the remediation system, as of April 1999, was approximately 2,153 lbs. The system database has been included in **Attachment 3**. Mass removal graphs have been included as **Figures 3A, 3B and 4**. Based on the hydrocarbon mass removal rate, no exceedance of the Connecticut Department of Environmental Protection (CTDEP) air quality guidelines were reported.

Carbon Usage - No carbon change-out occurred during the month of August 1999. The last vapor phase carbon change-out at the site occurred August 27, 1997. No liquid phase carbon change-out has occurred to date.

Discharge Monitoring Sampling – As stated above, no air discharge sampling was conducted during the August 1999 site visits. Water discharge sampling was collected during the August 27, 1999 site visit. System discharge samples were collected for analysis as a result of discharging purged groundwater generated from the quarterly monitoring well sampling event detailed below. Results of the system sampling event have previously been submitted under separate cover to the Town of Groton.

Monitoring Well Gauging – The most recent round of site monitoring well gauging was conducted on August 26-27, 1999 during the quarterly groundwater sampling event. Depth to groundwater at the site ranged from 4.48 feet in OBG-8A to 12.04 feet in WE-3. Historical well gauging data has been included in **Attachment 4**.

Monitoring Well Sampling – The most recent round of site monitoring well sampling was conducted on August 26-27, 1999. The August Quarterly Groundwater Sampling Report will be issued under separate cover. The historical groundwater sampling results have been summarized in **Attachment 5**.

Additional Activities – None

NEX AIR SPARGE/SVE SYSTEM

System Status - The remediation system at the site has been operating since July 31, 1997. As of May 26, 1999, 17 vapor extraction points (VEA-12 through VEA-16, VEA-18 through VEA-20, VEB-4, and VEB-8 through VEB-15) and 19 air sparge points (SPA-30 through SPA-37, SPB-14, SPB-16, and SPB-19 through SPB-27) were operating. Approximately 225,953 gallons of water had been extracted, treated, and discharged by the NEX system as of August 31, 1999.

A site map has been included as **Figure 2**. The site was visited on August 5 and 31, 1999. The monitoring forms for operation and maintenance (O&M) conducted during the month of August 1999 are included in **Attachment 1**. A weekly breakdown of the month's field activities has been included as **Attachment 2**.

Mass Removal - SVE influent samples were collected for analysis during the August 5, 1999 site visit. The total hydrocarbon mass extracted by the SVE system, as of August 1999, was approximately 3,768.54 lbs. The system database has been included in **Attachment 3**. Mass removal graphs have been included as **Figures 5A, 5B and 6**. Based on the hydrocarbon mass removal rate, no exceedance of CTDEP air quality guidelines was observed.

Carbon Usage – The liquid phase granular activated carbon was last changed-out on February 25, 1999. The last vapor-phase carbon change-out occurred September 8, 1997.

Discharge Monitoring Sampling – The most recent round of water discharge sampling was conducted on August 31, 1999. Results were previously submitted to the CTDEP under separate cover.

Monitoring Well Gauging – The most recent round of site monitoring well gauging was conducted on August 31, 1999, during the quarterly groundwater sampling event. Depth to groundwater at the site ranged from 5.26 feet in ERM-15 to 9.31 feet in ERM-16. Suspected petroleum based sheens were detected in monitoring well ERM-16.

Monitoring Well Sampling – The most recent round of site monitoring well sampling was conducted on August 31, 1999. The August Quarterly Groundwater Sampling Report was issued under separate cover. The historical groundwater sampling results have been summarized in **Attachment 5**.

Additional Activities – As requested by the U.S. Navy, the 55-gallon drums that were located near the transformer area were relocated.

FIGURES

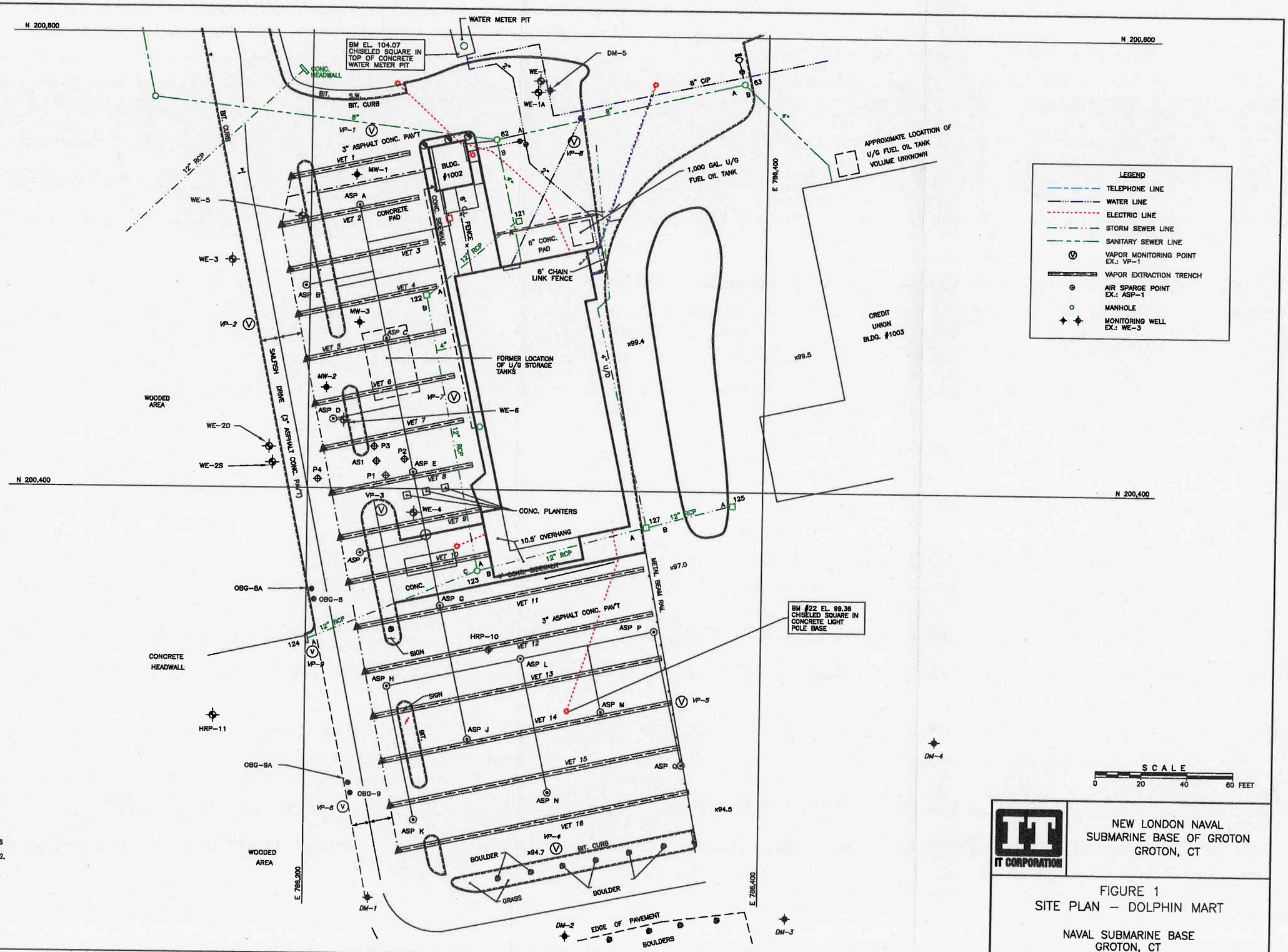


IMAGE	X-REF	OFFICE	DRAWN BY	CHECKED BY	APPROVED BY	DRAWING NUMBER
---	---	WIN	L. Avery	---	---	1405-17
			3/30/99	---	---	

DATE: 3/30/99
TIME: 2:02 PM
FORMAT REVISION 2/26/99

THIS MAP WAS PREPARED FROM MAPS LISTED BELOW:

1. NAUTILUS PARK, GROTON, CONN. EXISTING UTILITIES MAPS PREPARED BY CULLINAN ENGINEERING CO., INC. SCALE 1"=40' DATE 3/25/83 NAVFAC DRAWING NO'S. 2,064,332, 2,064,353 AND 2,064,374.
2. MONITOR WELL LOCATION AND GROUND WATER CONTOUR MAP OF JANUARY 21, 1992 DOLPHIN MART SITE US SUBASE, GROTON, CT. PREPARED BY ERM-NORTHEAST SCALE 1"=20' APRIL, 1992.
3. UTILITY DATA FROM AS-BUILT DRAWINGS AND UTILITY MAPS; EXACT LOCATIONS MUST BE VERIFIED IN FIELD.
4. ALL TOPOGRAPHIC FEATURES AND INVERTS SHOWN HEREON SHALL BE FIELD VERIFIED.

IT CORPORATION

NEW LONDON NAVAL SUBMARINE BASE OF GROTON
GROTON, CT

FIGURE 1
SITE PLAN – DOLPHIN MART

NAVAL SUBMARINE BASE
GROTON, CT

THIS MAP WAS PREPARED FROM MAPS LISTED BELOW:

1. EXISTING TOPOGRAPHY FROM MAP BY JAMES S. MINGES & ASSOCIATES, CARLSON & SWEATT FARMINGTON, CT & NEW YORK, N.Y. DATED 31 DEC. 1974.
2. EXISTING UTILITIES FROM 40 SCALE UTILITY MAPS SUPPLIED BY THE DEPARTMENT OF PUBLIC WORKS, NAVAL SUBMARINE BASE, NEW LONDON, GROTON, CT.
3. GROUND WATER ANALYTICAL RESULTS, JANUARY, 1992 NEX STATION SITE US SUBBASE, GROTON, CT PREPARED FOR ERM-PMC.
4. ALL TOPOGRAPHIC FEATURES AND INVERTS SHOWN HEREON SHALL BE FIELD VERIFIED.

IT CORPORATION

NEW LONDON NAVAL SUBMARINE BASE OF GROTON
GROTON, CT

FIGURE 2
SITE PLAN – NEX

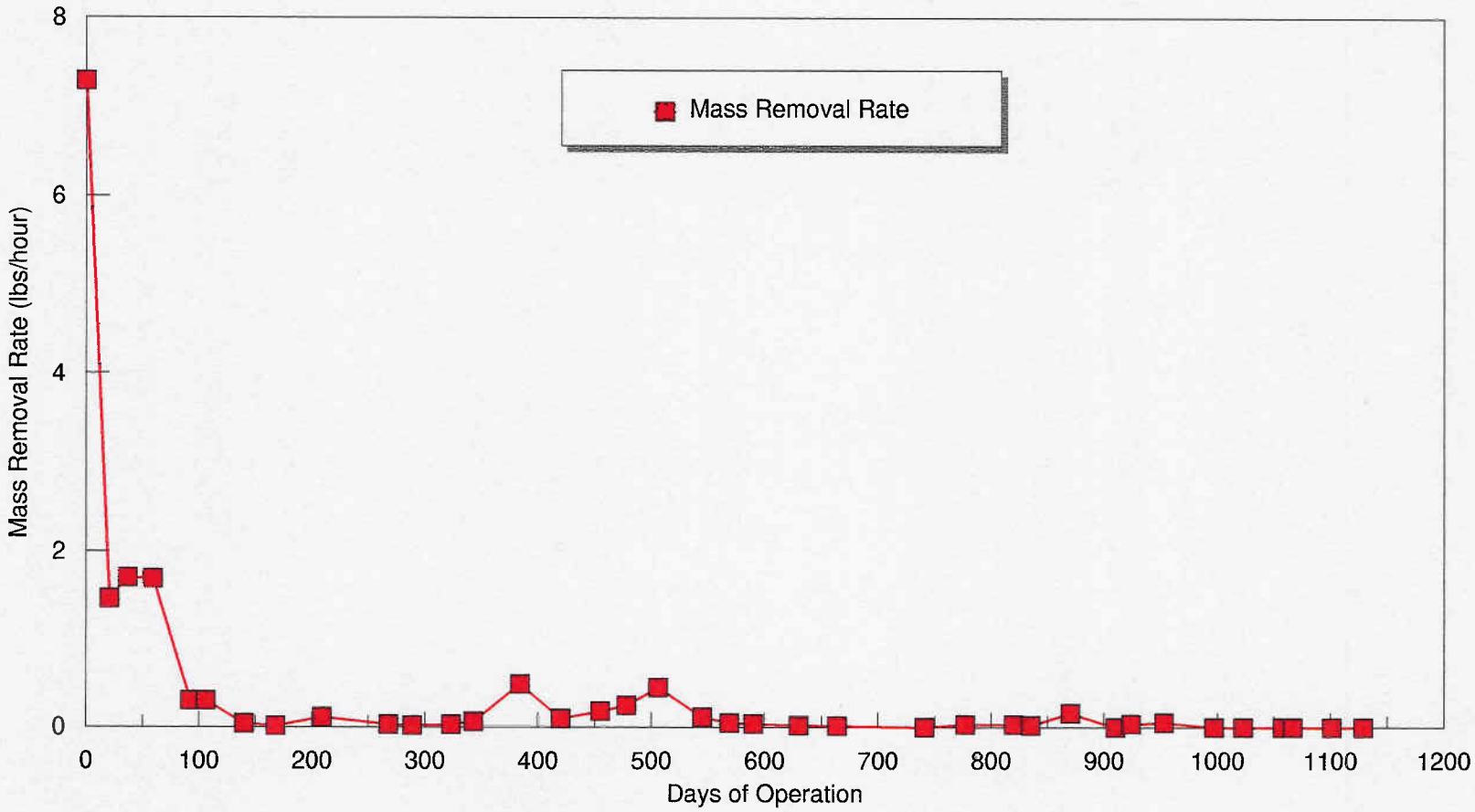
NAVAL SUBMARINE BASE
GROTON, CT

DRAWING NUMBER	APPROVED BY	CHECKED BY	DRAWN BY	OFFICE	X-REF	IMAGE
1405-16	---	---	3/30/99	WIN	---	---
			L. Avery			

DATE: 3/30/99
TIME: 2:07 PM
FORMAT REVISION 2/26/99

Figure 3A- Mass Removal Rate

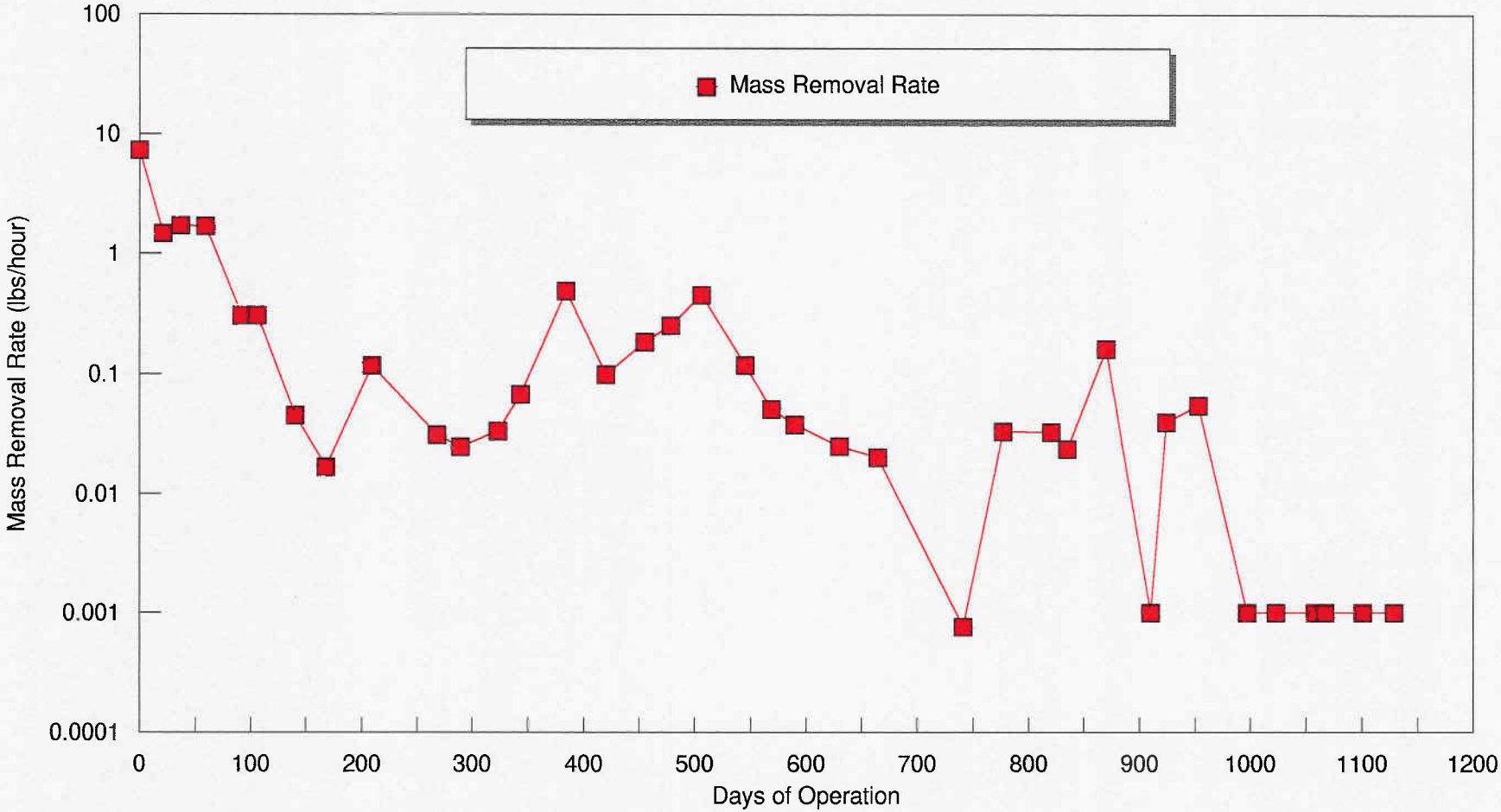
Dolphin Mart Site, New London Naval Submarine Base, Groton, CT



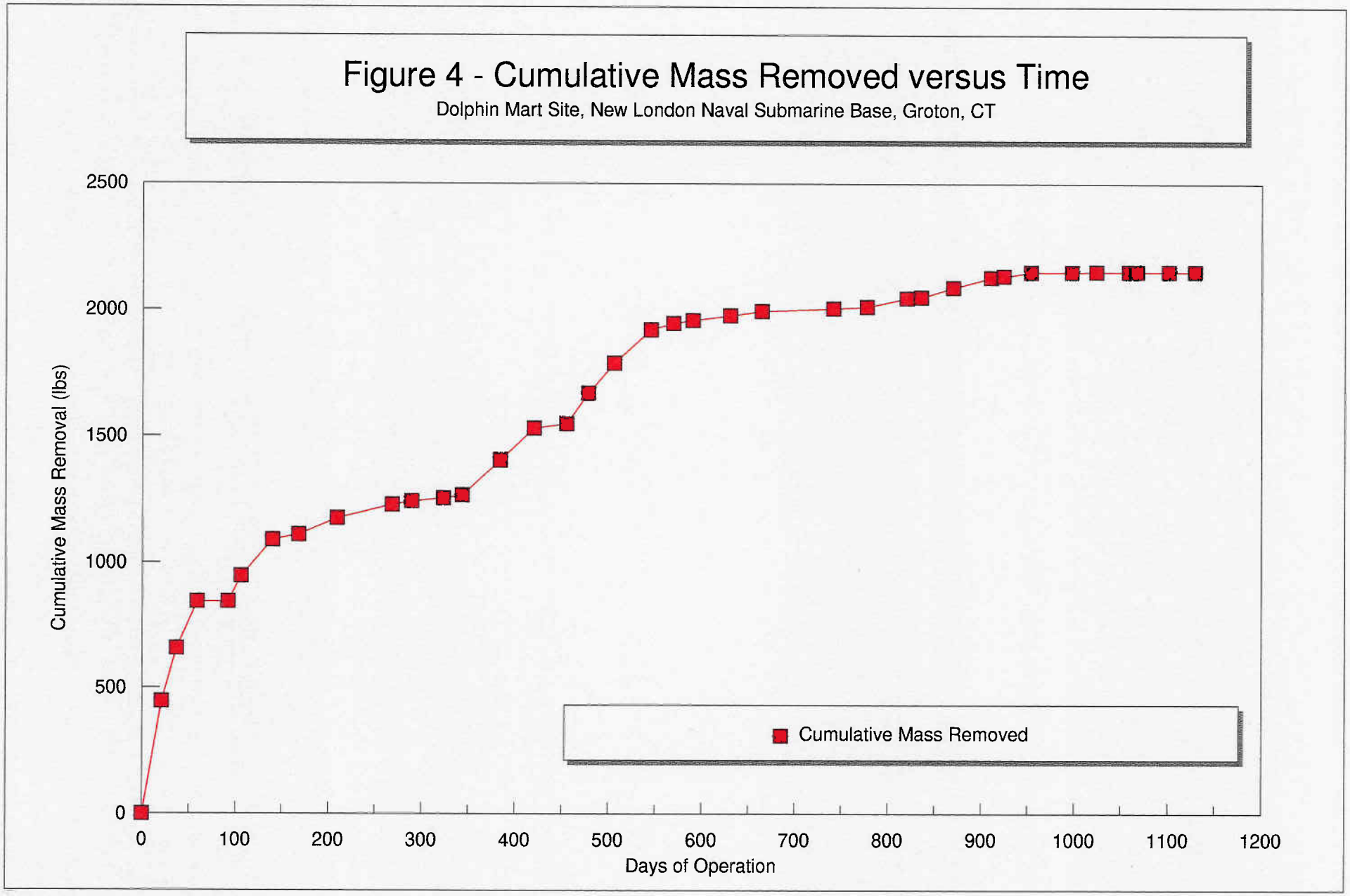
MASSREM3.WK4

Figure 3B- Mass Removal Rate

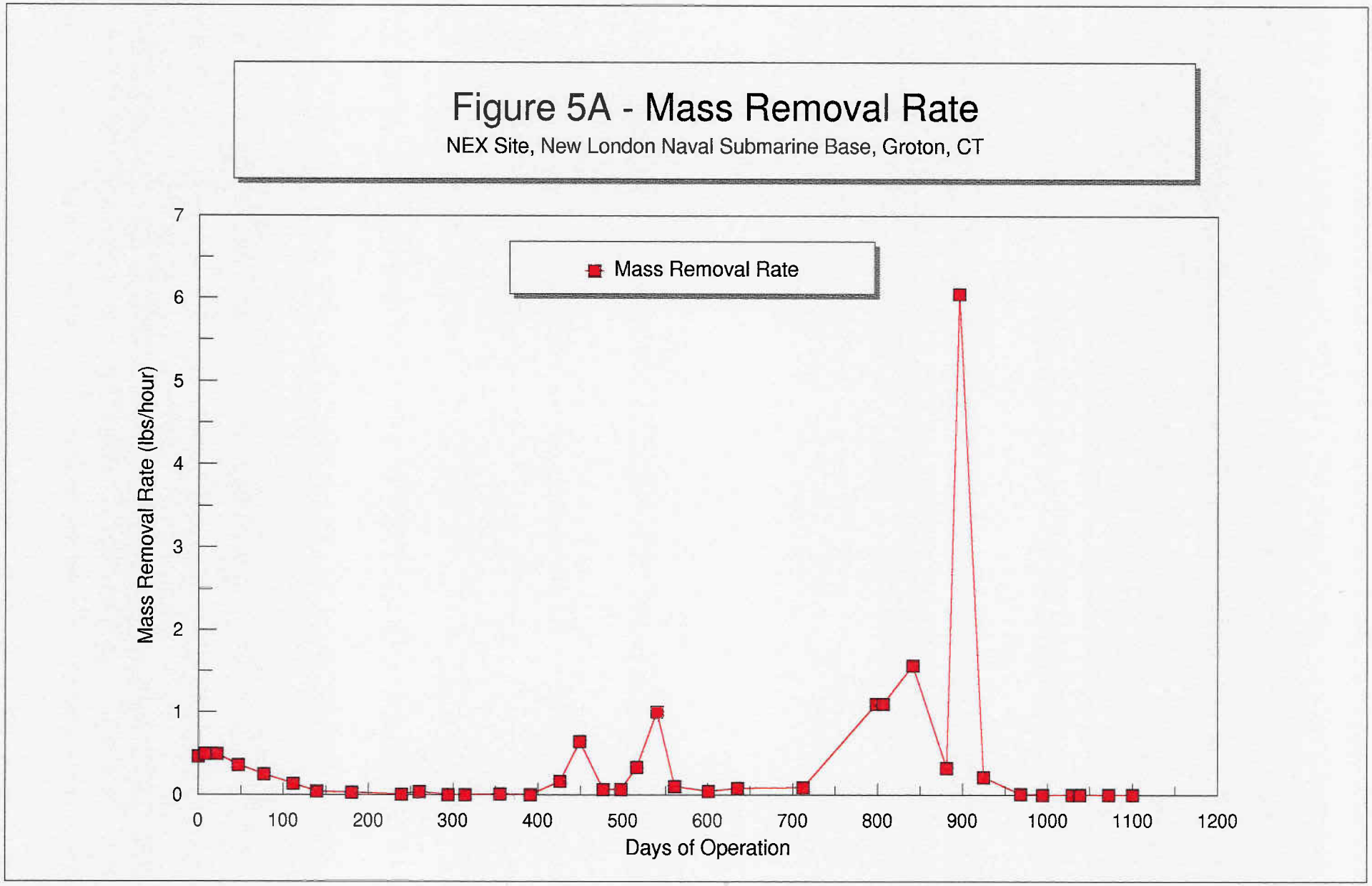
Dolphin Mart Site, New London Naval Submarine Base, Groton, CT



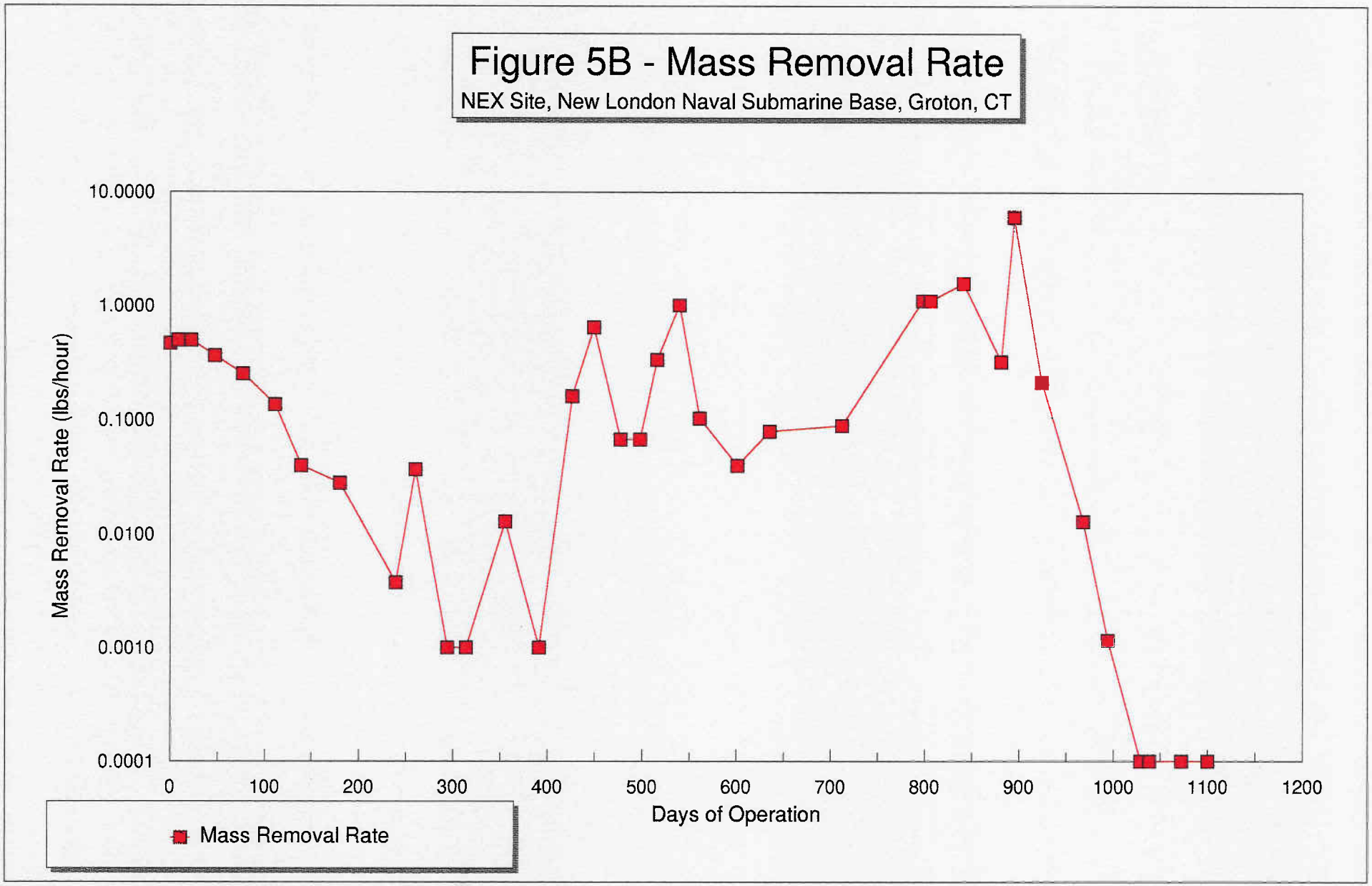
MASSREM3.WK4



MASSREM3.WK4



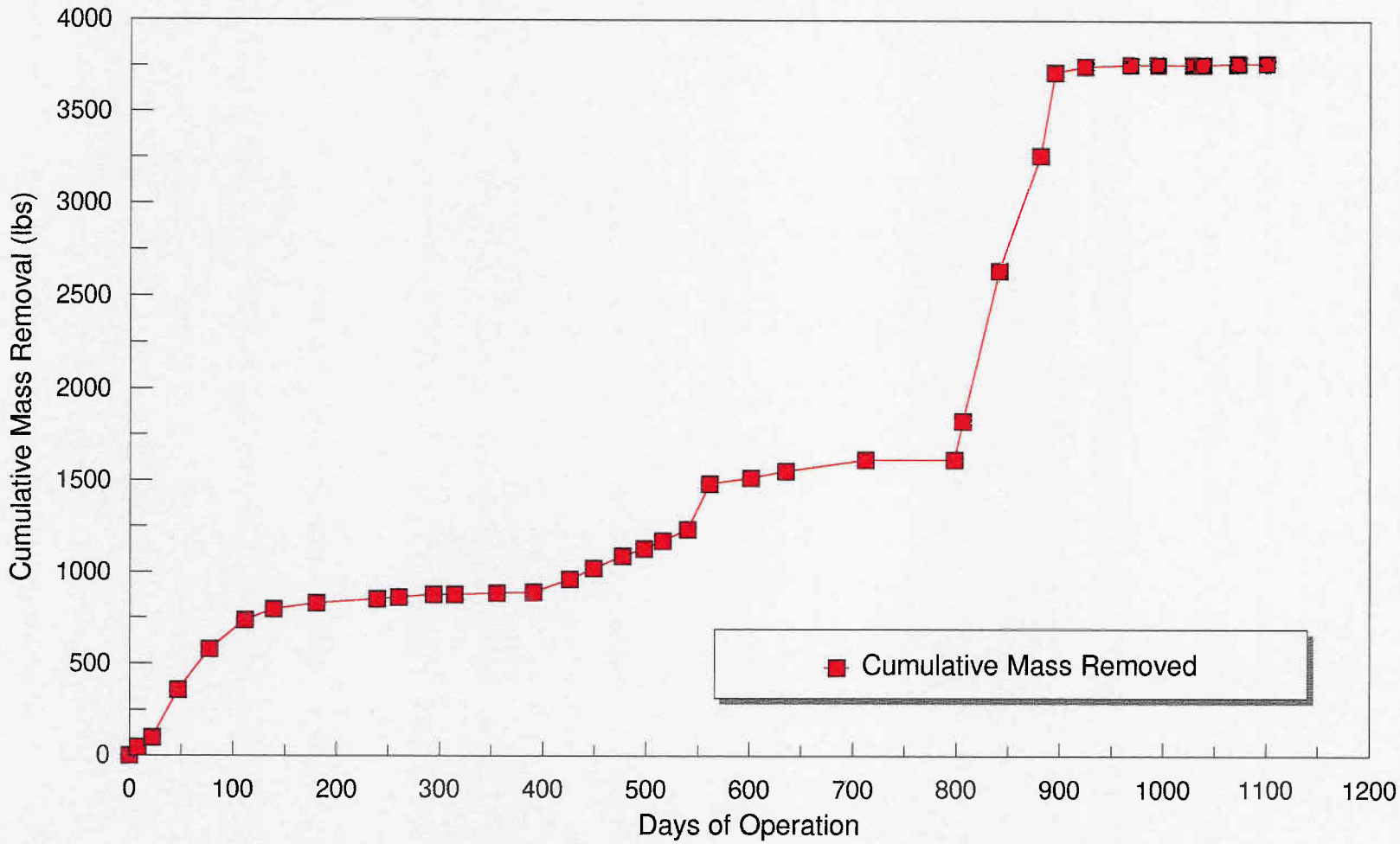
MASSREM3.WK4



MASSREM3.WK4

Figure 6 - Cumulative Mass Removed versus Time

NEX Site, New London Naval Submarine Base, Groton, CT



MASSREM3.WK4

ATTACHMENT 1

SITE VISIT FORMS

NAVAL SUBMARINE BASE
GROTON, CT.
87260014

Date: 8/5/99
Project Number: 87260014
DB/SCA Box Check: Yes / No
Site Arrival Time: 9:40
Total Hours on Site: 3.00

Staff: J.K. DR
Task Number: 0401
Bill Code Override:
Site Departure Time: 12:45
Total Hours Billed: 6.00

Please complete the following requested work scope and check off each task as it's completed:
R = Requested C = Completed

DOLPHIN MART:

R	C	
☐	☐	COMPLETE OPERATIONAL DATA FORM
☐	☐	GAUGE MONITORING WELLS
☐	☐	MEASURE FID AND VACUUM AT VAPOR MONITORING WELLS
☐	☐	COMPLETE SVE EXTRACTION POINT FORMS
☐	☐	COMPLETE SPARGE POINT FORMS
☐	☐	COLLECT AIR AND WATER DMR SAMPLES
☐	☐	COMPLETE PH FORM
☐	☐	COMPLETE QUARTERLY GROUNDWATER SAMPLING
☑	☐	Complete driveby to check site security
☐	☐	Check (gauge) sump

NEX:

R	C	
☑	☒	COMPLETE OPERATIONAL DATA FORM
☐	☐	GAUGE MONITORING WELLS
☑	☐	MEASURE FID AND VACUUM AT VAPOR MONITORING WELLS
☐	☐	COMPLETE SVE EXTRACTION POINT FORMS
☐	☐	COMPLETE SPARGE POINT FORMS
☑	☒	COLLECT AIR AND WATER DMR SAMPLES
☑	☐	COMPLETE PH FORM
☐	☐	COMPLETE QUARTERLY GROUNDWATER SAMPLING
☑	☒	Move carbon drums by transformer, see attached

EQUIPMENT NEEDED: HASP, PPE, FID, PH METER, TEDLAR BAGS, VELOCITY METER, MAGNEHELICS, IP, SORBENT PADS, DMR SAMPLE COOLERS AND CONTAINERS

TASK NUMBERS:

Monthly O&M	= 04010000	Unscheduled Maintenance	= 07010000
Quarterly Sampling	= 05010000	Sys. Modification/Roadbox Repair	= 08010000
Carbon Change-out	= 06010000		

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MONITORING PROTOCOL

COMPONENT	FREQUENCY	RECORD DATA FOR:
Air Compressors C-1 and C-2	Monthly + Flybys	Flow Rate Pressure Temperature Flow Control Valve Setting Bypass Valve Setting Radiator Status
Vacuum Pumps V-1, V-2, V-3, and V-4	Monthly + Flybys	Flow Rate Inlet Vacuum Discharge Pressure Discharge Temperature Particulate Filter Condition Moisture Trap Condition Flow Control Valve Setting Bypass Valve Setting
Vapor Phase Carbon Units A/B and C/D	Monthly + Flybys	Pressure Influent VOC Concentration (FID) Midfluent VOC Concentration (FID) Effluent VOC Concentration (FID)
Air Sparge Wells ASP-A through ASPA-Q	As Directed	Flow Rate Pressure Flow Control Valve Setting
SVE Trenches VET-1 through VET-17	As Directed	Flow Rate Vacuum Flow Control Valve Setting VOC Concentration by FID
Vapor Monitoring Points VP-1 through VP-9	Monthly	Vacuum/Pressure VOC Concentration by FID
Air Discharge	Monthly	Vapor Phase GAC Influent - Tedlar bag samples for: EPA Method T03 for BTEX + MTBE + Total Volatile Petroleum Hydrocarbons
Water Discharge	Monthly	Liquid Phase GAC Total Effluent - EPA Method 624 + MTBE + Xylenes EPA Method 418.1 (TPH) EPA Method 239.2 (Total Lead) pH
Water Discharge	March, June, September, and August	Liquid Phase GAC Total Influent - EPA Method 624 + MTBE + Xylenes EPA Method 418.1 (TPH) EPA Method 239.2 (Total Lead) pH

IT CORPORATION

NEW LONDON NAVAL SUBMARINE BASE, NEW LONDON, CT

DOLPHIN MART SITE

Groundwater Gauging Monitoring Wells DM-1, DM-2, DM-3, DM-4, DM-5, HRP-10, HRP-11, MW-1, MW-2, MW-3, OBG-8A, OBG-9A, WE-2D(B), WE-2S, WE-3, WE-4, WE-5, and WE-6	Feb, May, Aug, Nov	Depth to Groundwater Depth to Petroleum (if present)
Groundwater Sampling Monitoring Wells DM-1, DM-2, DM-3, DM-4, DM-5, HRP-10, HRP-11, MW-1, MW-2, MW-3, OBG-8A, OBG-9A, WE-2D(B), WE-2S, WE-3, WE-4, WE-5, and WE-6	Feb, May, Aug, Nov	EPA Method 8021 (BTEX + MTBE) EPA Method 8100M (TPH)

MONITORING PROTOCOL

COMPONENT	FREQUENCY	RECORD DATA FOR:
Air Compressors C-1 and C-2	Monthly + Flybys	Flow Rate Pressure Temperature Flow Control Valve Setting Bypass Valve Setting Radiator Status
Vacuum Pumps V-1, V-2, V-3, and V-4	Monthly + Flybys	Flow Rate Inlet Vacuum Discharge Pressure Discharge Temperature Particulate Filter Condition Moisture Trap Condition Flow Control Valve Setting Bypass Valve Setting
Vapor Phase Carbon Units A/B and C/D	Monthly + Flybys	Pressure Influent VOC Concentration (FID) Midfluent VOC Concentration (FID) Effluent VOC Concentration (FID)
Air Sparge Wells SPA-1 through SPA-37 and SPB-1 through SPB-27	As Directed	Flow Rate Pressure Flow Control Valve Setting
SVE Wells VEA-1 through VEA-20 and VEB-1 through VEB-15	As Directed	Flow Rate Vacuum Flow Control Valve Setting VOC Concentration by FID
Vapor Monitoring Points VP-1 through VP-9	Monthly	Vacuum/Pressure VOC Concentration by FID
Air Discharge	Monthly	Vapor Phase GAC A/B Influent - Tedlar bag samples for: EPA Method T03 for BTEX + MTBE + Total Volatile Petroleum Hydrocarbons Vapor Phase GAC C/D Influent - Tedlar bag samples for: EPA Method T03 for BTEX + MTBE + Total Volatile Petroleum Hydrocarbons

IT CORPORATION

NEW LONDON NAVAL SUBMARINE BASE, NEW LONDON, CT

NEX SITE

Water Discharge	Monthly	Liquid Phase GAC A/B Influent - EPA Method 624 + MTBE + Xylenes Liquid Phase GAC A/B Midfluent - EPA Method 624 + MTBE + Xylenes Liquid Phase GAC C/D Influent - EPA Method 624 + MTBE + Xylenes Liquid Phase GAC C/D Midfluent - EPA Method 624 + MTBE + Xylenes Liquid Phase GAC Total Effluent - EPA Method 624 + MTBE + Xylenes EPA Method 418.1 (TPH) EPA Method 239.2 (Total Lead) pH
Water Discharge	April and October	Liquid Phase GAC Total Effluent - Aquatic Toxicity
Groundwater Gauging Monitoring Wells ERM-12, ERM-14, ERM-16, OBG-1, and OBG-9	Monthly	Depth to Groundwater Depth to Petroleum (if present)
Groundwater Gauging Monitoring Wells ERM-5, ERM-6, ERM-7, ERM-11, ERM-12, ERM-13, ERM-14, ERM-15, ERM-16, ERM-17, ERM-19, FD-1, FD-2, FD-3, MW-4, MW-6, NEX-1, OBG-1, OBG-2, OBG-4, OBG-7, OBG-9, VEA-4, VEA-7, VEA-21, and VEB-6	Feb, May, Aug, Nov	Depth to Groundwater Depth to Petroleum (if present)
Groundwater Sampling Monitoring Wells ERM-5, ERM-6, ERM-12, ERM-14, ERM-15, ERM-16, FD-1, FD-2, FD-3, MW-4, MW-6, OBG-1, OBG-2, OBG-9, OBG-4, VEA-4, VEA-7, VEA-21, and VEB-6	Feb, May, Nov	EPA Method 8021 (BTEX + MTBE) EPA Method 8100M (TPH)
Groundwater Sampling Monitoring Wells ERM-5, ERM-6, ERM-7, ERM-11, ERM-12, ERM-13, ERM-14, ERM-15, ERM-16, ERM-17, ERM-19, FD-1, FD-2, FD-3, MW-4, MW-6, NEX-1, OBG-1, OBG-2, OBG-4, OBG-7, OBG-9, VEA-4, VEA-7, VEA-21, and VEB-6	August	EPA Method 8021 (BTEX + MTBE) EPA Method 8100M (TPH)

OPERATIONAL DATA FORM
Air Sparging/Soil Vapor Extraction System
Naval Exchange
Naval Submarine Base -Groton, CT
Project #83001-9999

Date: 8/5/99
Time: 10:00 AM
Technician: J.K. JR

AIR COMPRESSOR SYSTEM

Flow Rate	37 SCFM	Total Flow	21251978 SCFM

Air Compressor C-1		Air Compressor C-2	
Pressure	8.0 psi	Pressure	NA psi
Temperature	258 °F	Temperature	°F
Flow Control Valve Setting	100 %	Flow Control Valve Setting	
Bleed Valve	90 %	Bleed Valve	
Radiator	(ON) OFF	Radiator	ON / (OFF)

SOIL VAPOR EXTRACTION SYSTEM

Eastern Flow Rate	182 SCFM	Total Flow	13561305 SCFM
Western Flow Rate	89 SCFM	Total Flow	31165080 SCFM

Vacuum Pump V-1		Vacuum Pump V-2	
Vacuum	6 "Hg	Vacuum	NA "Hg
Temperature	148 °F	Temperature	°F
Particulate Filter	O/K	Particulate Filter	
Flow Control Valve Setting	100 %	Flow Control Valve Setting	
Bleed Air Valve Setting	25 %	Bleed Air Valve Setting	
Liquid Level	O/K	Liquid Level	

Vacuum Pump V-3		Vacuum Pump V-4	
Vacuum	8 "Hg	Vacuum	NA "Hg
Temperature	196 °F	Temperature	°F
Particulate Filter	OK	Particulate Filter	
Flow Control Valve Setting	100 %	Flow Control Valve Setting	
Bleed Air Valve Setting	25 %	Bleed Air Valve Setting	
Liquid Level	O/K	Liquid Level	

ACTIVATED CARBON ADSORPTION SYSTEM

Carbon Adsorber A/B		Carbon Adsorber C/D	
Pressure	20 psi	Pressure	psi
Inf. VOC Level	8.2 ppm	Inf. VOC Level	50 ppm
Mid. VOC Level	5.4 ppm	Mid. VOC Level	NA ppm
Eff. VOC Level	7.4 ppm	Eff. VOC Level	50 ppm
Change out Date	NA	Change out Date	8-22-96

WATER TREATMENT

Flowmeter Reading 022515 3.0 Gallons (arrival reading) Flowmeter Reading ~~22/5~~ Gallons (departure reading)

COMMENTS

* FILL IN ALL SPACES WITH THE APPROPRIATE READING OR "NA". 225153.0

IT CORPORATION

PROJECT: Naval subbase LOCATION: Groton, CT

PROJECT #: 872600 14 OPERATOR: J.K. Jr

DATE: 8/5/99 EQUIPMENT #:

PROBE CORRECTION: COMMENTS:

WELL MONITORING FORM

WELL ID	WELL DEPTH	DEPTH TO WATER	DEPTH TO PETROLEUM	PETROLEUM THICKNESS	− VACUUM OR + PRESSURE	VOC CONCENTRATION (PPM)
ERM-12		.	.			
ERM-14		.	.			
ERM-16		.	.			
OBG-1		.	.			
OBG-9		.	.			
Dolphin Mart						
VP-1						
VP-2						
VP-3						
VP-4						
VP-5						
VP-6						
VP-7						
VP-8						
VP-9						
NEX						
VP-1					0	0
VP-2					0	0
VP-3					.25 −	0
VP-4					.30 −	0
VP-5					0	0
VP-6					0	0
VP-7					0	0
VP-8					0	0
VP-9					0	0

Naval subbase, Groton CT

87260014/0401000 8/4/99

P.M. Jonathan Sorrow Tech J.K.JR

8:00 AM to 9:40 Arrived at IT corp and picked up supplies for the job. Depart IT and traveled down to the site.

9:40 to 12:45 Arrived on site, found SVE and Sparge systems ~~operation~~ operational. Calibrated Fid and began to do the system check. obtained air samples, then tried to obtain DMR samples and there was no water in the system. Called and spoke to Jonathan Sorrow and he said it was not a problem. I informed him that we would try to obtain D.M.R. Samples when we do the quarterly sampling. then went and placed the drums on the outside of the fence at nex. the carbon drums were placed on a skid and covered with a tarp. Then went and checked the vapor points. when that was completed, I secured the shed and departed site. The systems were operational upon departure.

Returned to IT and sent air samples to mitkem VIA Airborne express.

NAVAL SUBMARINE BASE
GROTON, CT.
87260014

Date: 8/26-30/99
Project Number: 87260014
DB/SCA Box Check: Yes / No
Site Arrival Time: _____
Total Hours on Site: _____

Staff: John Bartlett
Task Number: 05010000
Bill Code Override: _____
Site Departure Time: _____
Total Hours Billed: 15 hrs

Please complete the following requested work scope and check off each task as it's completed:
R = Requested C = Completed

DOLPHIN MART:

R	C	
☐	☐	COMPLETE OPERATIONAL DATA FORM
☒	☑	GAUGE MONITORING WELLS
☐	☐	MEASURE FID AND VACUUM AT VAPOR MONITORING WELLS
☐	☐	COMPLETE SVE EXTRACTION POINT FORMS
☐	☐	COMPLETE SPARGE POINT FORMS
☐	☐	COLLECT AIR AND WATER DMR SAMPLES
☐	☐	COMPLETE PH FORM
☒	☑	COMPLETE QUARTERLY GROUNDWATER SAMPLING
☐	☐	
☐	☐	

NEX :

R	C	
☐	☐	COMPLETE OPERATIONAL DATA FORM
☒	☑	GAUGE MONITORING WELLS
☐	☐	MEASURE FID AND VACUUM AT VAPOR MONITORING WELLS
☐	☐	COMPLETE SVE EXTRACTION POINT FORMS
☐	☐	COMPLETE SPARGE POINT FORMS
☐	☐	COLLECT AIR AND WATER DMR SAMPLES
☐	☐	COMPLETE PH FORM
☒	☑	COMPLETE QUARTERLY GROUNDWATER SAMPLING
☐	☐	

EQUIPMENT NEEDED: HASP, PPE, FID, PH METER, TEDLAR BAGS, VELOCITY METER, MAGNEHELICS, IP, SORBENT PADS, DMR SAMPLE COOLERS AND CONTAINERS

TASK NUMBERS:

Monthly O&M	= 04010000	Unscheduled Maintenance	= 07010000
Quarterly Sampling	= 05010000	Sys. Modification/Roadbox Repair	= 08010000
Carbon Change-out	= 06010000		

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MONITORING PROTOCOL

COMPONENT	FREQUENCY	RECORD DATA FOR:
Air Compressors C-1 and C-2	Monthly + Flybys	Flow Rate Pressure Temperature Flow Control Valve Setting Bypass Valve Setting Radiator Status
Vacuum Pumps V-1, V-2, V-3, and V-4	Monthly + Flybys	Flow Rate Inlet Vacuum Discharge Pressure Discharge Temperature Particulate Filter Condition Moisture Trap Condition Flow Control Valve Setting Bypass Valve Setting
Vapor Phase Carbon Units A/B and C/D	Monthly + Flybys	Pressure Influent VOC Concentration (FID) Midfluent VOC Concentration (FID) Effluent VOC Concentration (FID)
Air Sparge Wells ASP-A through ASPA-Q	As Directed	Flow Rate Pressure Flow Control Valve Setting
SVE Trenches VET-1 through VET-17	As Directed	Flow Rate Vacuum Flow Control Valve Setting VOC Concentration by FID
Vapor Monitoring Points VP-1 through VP-9	Monthly	Vacuum/Pressure VOC Concentration by FID
Air Discharge	Monthly	Vapor Phase GAC Influent - Tedlar bag samples for: EPA Method T03 for BTEX + MTBE + Total Volatile Petroleum Hydrocarbons
Water Discharge	Monthly	Liquid Phase GAC Total Effluent - EPA Method 624 + MTBE + Xylenes EPA Method 418.1 (TPH) EPA Method 239.2 (Total Lead) pH
Water Discharge	March, June, September, and August	Liquid Phase GAC Total Influent - EPA Method 624 + MTBE + Xylenes EPA Method 418.1 (TPH) EPA Method 239.2 (Total Lead) pH

IT CORPORATION

NEW LONDON NAVAL SUBMARINE BASE, NEW LONDON, CT

DOLPHIN MART SITE

Groundwater Gauging Monitoring Wells DM-1, DM-2, DM-3, DM-4, DM-5, HRP-10, HRP-11, MW-1, MW-2, MW-3, OBG-8A, OBG-9A, WE-2D(B), WE-2S, WE-3, WE-4, WE-5, and WE-6	Feb, May, Aug, Nov	Depth to Groundwater Depth to Petroleum (if present)
Groundwater Sampling Monitoring Wells DM-1, DM-2, DM-3, DM-4, DM-5, HRP-10, HRP-11, MW-1, MW-2, MW-3, OBG-8A, OBG-9A, WE-2D(B), WE-2S, WE-3, WE-4, WE-5, and WE-6	Feb, May, Aug, Nov	EPA Method 8021 (BTEX + MTBE) EPA Method 8100M (TPH)

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GROUNDWATER GAUGING/SAMPLING FORM

Groton Sub Base

JOB NAME: Dolphin MART
JOB NUMBER: 872600.14

DATE: 8-26-99
NAME: J Bartlett

WELL ID NUMBER	DEPTH TO BOTTOM:	DEPTH TO WATER:	DEPTH TO PRODUCT:	SATURATED THICKNESS:	# GALLONS TO BAIL:	ACTUAL GALLONS BAILED:
DM-1	13.16	4.51			7.2	8.0
Dm-2	7.70	5.32			1.6	.5
Dm 3	13.00	5.16			6.4	2.5
Dm 4	13.40	5.86			6.4	3.0
Dm 5	23.40	10.59			10.4	11.0
HRP-10	15.96	7.34			6.4	7.0
HRP-11	11.55	6.62			4	4.0
MW-1	12.42	8.99			14	12.0
MW-2	16.70	7.20			100	100
MW-3	7.00	6.93			—	—
OBG-8A	8.31	4.48			3.2	1.0
OBG-9A	10.80	4.85			4.8	
WE-2D (B)	21.85	9.84			8.8	5.0
WE-2S	15.60	10.12			4	2.0
WE-3	15.27	12.04			2.4	1.5
WE-4	13.98	7.53			4.8	1.2
WE-5	14.66	9.10			4	1.0
WE-6	13.23	6.94			5.6	6.0

Saturated Thickness	Gallons to Bail		Saturated Thickness	Gallons to Bail		Saturated Thickness	Gallons to Bail	
	2"	4"		2"	4"		2"	4"
1	0.8	3.5	8	6.4	28	15	12	52.5
2	1.6	7	9	7.2	31.5	16	12.8	56
3	2.4	10.5	10	8	35	17	13.6	59.5
4	3.2	14	11	8.8	38.5	18	14.4	63
5	4	17.5	12	9.6	42	19	15.2	66.5
6	4.8	21	13	10.4	45.5	20	16	70
7	5.6	24.5	14	11.2	49			

Groton Sub Base

8-26-99 Dolphin MART Site J Bartlett

7:30 In office Begin Packing truck collecting Items needed for the days Sampling

8:30 Depart office for Groton Sub Base Dolphin MART Site

9:50 Arrive on site I have trouble with the copied keys I have been given key assigned to open garage door does not appear to work. I travel to Nex to get a spare set of keys.

10:40 Problem Resolved

11:00 Begin Gauging + Purging + sampling of wells Specified

12:45 MW 3 well is Dry no sample

13:00 Continue gauging purging + sampling of wells specified

17:30 gauge Purged + Sampled 11 of 17 wells will Clean up + Stop for the day

6:00 Depart site 1/2 hr travel Time = 6:30

11 hrs

Groton Sub Base

8-27-99 Dolphin MART Site J Bartlett

8:45 Back on Site to continue ~~gauging~~ purging ~~and~~ ~~sump~~
Sampling of wells not finished on 8-26

9:00 Gauge Remaining 6 wells

9:45 Purge OBG 9A + HRP-10

10:10 Sample those wells

10:30 Purge DM wells 1, 2, 3, 4

11:20 Sample those wells

12:15 There is 1 50 gallon drum filled with purge water from MW 2 and the sump is full of Purge water from All wells

12:30 Depart Site

1:30 Arrive in office Ice down Samples + Prepare for Pickup from Mitkem

2:00 Leave Samples for Mitkem

6 hrs

MONITORING PROTOCOL

COMPONENT	FREQUENCY	RECORD DATA FOR:
Air Compressors C-1 and C-2	Monthly + Flybys	Flow Rate Pressure Temperature Flow Control Valve Setting Bypass Valve Setting Radiator Status
Vacuum Pumps V-1, V-2, V-3, and V-4	Monthly + Flybys	Flow Rate Inlet Vacuum Discharge Pressure Discharge Temperature Particulate Filter Condition Moisture Trap Condition Flow Control Valve Setting Bypass Valve Setting
Vapor Phase Carbon Units A/B and C/D	Monthly + Flybys	Pressure Influent VOC Concentration (FID) Midfluent VOC Concentration (FID) Effluent VOC Concentration (FID)
Air Sparge Wells SPA-1 through SPA-37 and SPB-1 through SPB-27	As Directed	Flow Rate Pressure Flow Control Valve Setting
SVE Wells VEA-1 through VEA-20 and VEB-1 through VEB-15	As Directed	Flow Rate Vacuum Flow Control Valve Setting VOC Concentration by FID
Vapor Monitoring Points VP-1 through VP-9	Monthly	Vacuum/Pressure VOC Concentration by FID
Air Discharge	Monthly	Vapor Phase GAC A/B Influent - Tedlar bag samples for: EPA Method T03 for BTEX + MTBE + Total Volatile Petroleum Hydrocarbons Vapor Phase GAC C/D Influent - Tedlar bag samples for: EPA Method T03 for BTEX + MTBE + Total Volatile Petroleum Hydrocarbons

IT CORPORATION

NEW LONDON NAVAL SUBMARINE BASE, NEW LONDON, CT

NEX SITE

Water Discharge	Monthly Eff pH 7.25 17:15 17:18 17:21 17:25 17:30	Liquid Phase GAC A/B Influent - EPA Method 624 + MTBE + Xylenes Liquid Phase GAC A/B Midfluent - EPA Method 624 + MTBE + Xylenes Liquid Phase GAC C/D Influent - EPA Method 624 + MTBE + Xylenes Liquid Phase GAC C/D Midfluent - EPA Method 624 + MTBE + Xylenes Liquid Phase GAC Total Effluent - EPA Method 624 + MTBE + Xylenes EPA Method 418.1 (TPH) EPA Method 239.2 (Total Lead) pH
Water Discharge	April and October	Liquid Phase GAC Total Effluent - Aquatic Toxicity
Groundwater Gauging Monitoring Wells ERM-12, ERM-14, ERM-16, OBG-1, and OBG-9	Monthly	Depth to Groundwater Depth to Petroleum (if present)
Groundwater Gauging Monitoring Wells ERM-5, ERM-6, ERM-7, ERM-11, ERM-12, ERM-13, ERM-14, ERM-15, ERM-16, ERM-17, ERM-19, FD-1, FD-2, FD-3, MW-4, MW-6, NEX-1, OBG-1, OBG-2, OBG-4, OBG-7, OBG-9, VEA-4, VEA-7, VEA-21, and VEB-6	Feb, May, Aug, Nov	Depth to Groundwater Depth to Petroleum (if present)
Groundwater Sampling Monitoring Wells ERM-5, ERM-6, ERM-12, ERM-14, ERM-15, ERM-16, FD-1, FD-2, FD-3, MW-4, MW-6, OBG-1, OBG-2, OBG-9, OBG-4, VEA-4, VEA-7, VEA-21, and VEB-6	Feb, May, Nov	EPA Method 8021 (BTEX + MTBE) EPA Method 8100M (TPH)
Groundwater Sampling Monitoring Wells ERM-5, ERM-6, ERM-7, ERM-11, ERM-12, ERM-13, ERM-14, ERM-15, ERM-16, ERM-17, ERM-19, FD-1, FD-2, FD-3, MW-4, MW-6, NEX-1, OBG-1, OBG-2, OBG-4, OBG-7, OBG-9, VEA-4, VEA-7, VEA-21, and VEB-6	August	EPA Method 8021 (BTEX + MTBE) EPA Method 8100M (TPH)

IT Corporation
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GROUNDWATER GAUGING/SAMPLING FORM

JOB NAME: Groton Sub Base NEX Site
JOB NUMBER: 82260014

DATE: 8-31-99
NAME: J Rowzon / JBARkeff

WELL ID NUMBER	DEPTH TO BOTTOM:	DEPTH TO WATER:	DEPTH TO PRODUCT:	SATURATED THICKNESS:	# GALLONS TO BAIL:	ACTUAL GALLONS BAILED:
ERM 5	12.12	5.35	—		5.6	2.7 Dry
ERM 6	13.45	6.15	—		5.6	5.0 Dry
ERM 7	14.22	6.47	—		6.4	3.2 Dry
ERM 11	12.83	8.30	—		3.2	1.0 Dry
ERM 12	15.57	8.54	—		5.6	1.0 Dry
ERM 13	14.57	8.10	—		4.8	5.0
ERM 14	14.35	7.73	—		5.6	5.6
ERM 15	16.17	5.26	—		4.8	2.0 Dry
ERM 16	16.22	9.31	9.28		—	—
ERM 17	12.25	6.21	—		21.0	8.0 Dry
ERM 19	11.92	6.27	—		4.0	~~5.0~~ 3.0
FD 1	14.87	8.52	—		4.8	1.25 dry
FD 2	14.83	8.74	—		4.8	1.00 dry
FD 3	14.75	8.58	—		4.8	1.50 dry
MW 4	7.63	7.21	—		0.8	1.25 dry
MW 6	11.54	5.80	—		21.0	5.0 Dry
OBG 1	11.76	8.58	—		2.4	2.0 dry
OBG 2	9.71	8.74	—		0.8	0 dry
OBG 9	12.85	7.28	—		4.0	5.0
OBG 4	8.70	8.48	—	—	0.8	0 dry
VEA 4	3.21	—	—	—	—	—
VEA 7	3.45	—	—	—	—	—
VEA (14) ~~21~~	7.09	5.65	—	—	1.6	.50 dry
VEB 6	3.90	—	—	—	—	—
OBG -7	14.04	7.66	—	—	5.6 —	7.0
NEX -1	14.30	6.64	—	—	6.4	2.0 dry

Saturated Thickness	Gallons to Bail 2"	Gallons to Bail 4"	Saturated Thickness	Gallons to Bail 2"	Gallons to Bail 4"	Saturated Thickness	Gallons to Bail 2"	Gallons to Bail 4"
1	0.8	3.5	8	6.4	28	15	12	52.5
2	1.6	7	9	7.2	31.5	16	12.8	56
3	2.4	10.5	10	8	35	17	13.6	59.5
4	3.2	14	11	8.8	38.5	18	14.4	63
5	4	17.5	12	9.6	42	19	15.2	66.5
6	4.8	21	13	10.4	45.5	20	16	70
7	5.6	24.5	14	11.2	49			

Groton Sub Base

8-31-99 NEX Site J Bartlett

8:00 Meet John Kowzun in office for prep travel to NEX Site for Quarterly sampling Event.

9:45 Arrive at Dolphin mart site for DMR Sampling of Purge water in the sump

11:00 Leave Dolphin mart for NEX site

11:15 Begin gauging wells

1:00 Begin Purging of Wells

15:00 Begin Sampling wells. No samples taken of MW-4, OBG-4, VEA 4, VEA-7, VEA-14, VEB-6,

17:50 Depart site Stop at a Mobil to buy 4 Bags of Ice for Samples to be stored overnight

1/2 hr Travel 1/2 hr Icing Samples down (11 hrs)

9-1-99

10:00 Drop Samples of at office for pickup by Mitkem Add more Ice Unload truck Complete paperwork ETC. 1/2 hr Travel 1 hr ETC

1.5

11.0
1.5
12.5 hrs

8/31/99

Flow meter Dolphin mart

Arrival 46675 EFF. pH 6.86
Departure 48689

Nex ★ 8/31/99
Arrival ~~[illegible]~~ 2259953
Departure
EFF pH 7.25

ATTACHMENT 2

MONTHLY FIELD ACTIVITY SUMMARY

Field Activity Summary
August 1999

New London Naval Submarine Base
Groton, Connecticut

Week Ending	Site	Period	Field Activities	Comments
8/5/99	Dolphin Mart	Monthly Monitoring	Conducted drive-by and checked security. Checked (gauge) sump.	Security and road boxes OK
	NEX		Checked SVE system, attempted to collect DMR samples, move carbon drums.	Could not collect DMR water samples. Drum moved to safe location away from transformer, as per U.S. Navy requirements.

Week Ending	Site	Period	Field Activities	Comments
8/31/99	Dolphin Mart	Monthly Monitoring	Conducted quarterly groundwater gauging and sampling	De-watered shed sump through water treatment system.
	NEX		Conducted quarterly groundwater gauging and sampling	

ATTACHMENT 3

AIR SPARGE/SVE SYSTEM DATABASES

SYSTEM MONITORING DATA
SOIL VAPOR EXTRACTION/AIR SPARGE SYSTEM

New London Naval Submarine Base
Dolphin Mart Site
Groton, CT

Date	Days of Operation	Air Sparge Flowrate (scfm)	Extraction Flowrate (scfm)	Extraction Flowrate (cfm)	Influent Concentration BTEX (ppmv)	Removal Rate BTEX (lb/hr)	Influent Concentration MTBE (ppmv)	Removal Rate MTBE (lb/hr)	Influent Concentration Aliphatics (ppmv)	Removal Rate Aliphatics (lb/hr)	Influent Concentration Aromatics (ppmv)	Removal Rate Aromatics (lb/hr)	Influent Concentration TVPH (ppmv)	Removal Rate TVPH (lb/hr)	Total Mass Removal Rate (lbs/hr)	Period Mass Removed (lbs)	Cumulative Mass Removed (lbs)	Comments
07/02/96	0	25	450	512.26	24.00	0.187	33.00	0.232	1000.00	6.876	0.00	0.000	---	0.000	7.295	0.00	0.00	
07/23/96	21	20	449	511.12	11.40	0.091	0.00	0.000	200.00	1.372	0.00	0.000	---	0.000	1.463	446.70	446.70	system operated approx. 102 hrs between 7/2 and 7/23
08/08/96	37	32	454	516.81	18.00	0.143	---	0.000	210.00	1.457	12.00	0.103	---	0.000	1.702	210.53	657.23	system operated approx. 133 hrs between 7/23 and 8/8
08/30/96	59	0	450	512.26	18.00	0.142	---	0.000	210.00	1.444	12.00	0.102	---	0.000	1.687	188.14	845.37	system operated approx. 111 hrs between 8/8 and 8/30
10/02/96	92	30	448	509.98	2.30	0.019	0.00	0.000	---	0.000	---	0.000	36.00	0.286	0.305	0.00	845.37	system not in operation from 8/30 to 10/2 due to flow meter problem
10/16/96	106	30	450	512.26	2.30	0.019	0.00	0.000	---	0.000	---	0.000	36.00	0.287	0.306	102.58	947.95	system reactivated 10/2/96
11/19/96	140	30	450	512.26	0.38	0.003	0.00	0.000	---	0.000	---	0.000	5.29	0.042	0.045	143.33	1091.28	
12/17/96	168	30	450	512.26	0.12	0.001	0.00	0.000	---	0.000	---	0.000	1.97	0.016	0.017	20.84	1112.12	
01/27/97	209	30	450	512.26	1.35	0.011	0.00	0.000	---	0.000	---	0.000	13.23	0.106	0.117	65.56	1177.68	
03/27/97	268	30	450	512.26	0.00	0.000	0.00	0.000	---	0.000	---	0.000	3.90	0.031	0.031	104.53	1229.95	assume 50% up-time, blowers shutting down due to influent water
04/17/97	289	30	450	512.26	0.00	0.000	0.00	0.000	---	0.000	---	0.000	3.13	0.025	0.025	14.13	1244.08	
05/21/97	323	15	329	374.52	0.00	0.000	0.00	0.000	---	0.000	---	0.000	5.77	0.034	0.034	11.96	1256.03	assume 50% up-time, blowers shutting down due to influent water
06/10/97	343	15	329	374.52	0.25	0.002	0.00	0.000	---	0.000	---	0.000	11.31	0.066	0.067	12.14	1268.17	assume 50% up-time, blowers shutting down due to influent water
07/21/97	384	15	329	374.52	1.89	0.011	0.00	0.000	---	0.000	---	0.000	81.79	0.477	0.488	136.76	1404.93	assume 50% up-time, blowers shutting down due to influent water
08/26/97	420	15	482	548.69	0.73	0.007	0.00	0.000	---	0.000	---	0.000	10.82	0.092	0.099	126.91	1531.85	assume 50% up-time, blowers shutting down due to influent water
09/30/97	455	15	482	548.69	0.34	0.003	0.00	0.000	---	0.000	---	0.000	21.17	0.181	0.184	17.84	1549.68	assume ~15% up-time, blowers shutting down due to influent water
10/23/97	478	14	589	670.49	0.00	0.000	0.00	0.000	---	0.000	---	0.000	24.06	0.251	0.251	120.10	1669.78	
11/20/97	506	32	590	671.63	0.00	0.000	5.45	0.050	---	0.000	---	0.000	38.49	0.403	0.453	118.28	1788.06	assume 50% up-time, blowers shutting down due to influent water
12/29/97	545	28	590	671.63	0.45	0.005	0.00	0.000	---	0.000	---	0.000	10.82	0.113	0.118	133.65	1921.71	assume 50% up-time, blowers shutting down due to influent water
01/22/98	569	27	471	536.16	0.32	0.003	0.00	0.000	---	0.000	---	0.000	5.77	0.048	0.051	24.38	1946.09	assume 50% up-time, blowers shutting down due to influent water
02/12/98	590	23	295	335.81	0.23	0.001	0.00	0.000	---	0.000	---	0.000	6.98	0.036	0.038	11.19	1957.28	assume 50% up-time, blowers shutting down due to influent water
03/24/98	630	30	245	278.90	0.45	0.002	0.00	0.000	---	0.000	---	0.000	5.29	0.023	0.025	19.91	1977.19	system down for approximately one week due to influent water
04/27/98	664	30	215	244.75	0.00	0.000	0.00	0.000	---	0.000	---	0.000	5.29	0.020	0.020	18.47	1995.65	
07/13/98	741	13	294	334.68	0.14	0.001	0.00	0.000	---	0.000	---	0.000	0.00	0.000	0.001	9.67	2005.32	assume 50% up-time, blowers shutting down due to influent water
08/18/98	777	10	294	334.68	0.14	0.001	0.00	0.000	---	0.000	---	0.000	6.25	0.033	0.033	7.37	2012.69	assume 50% up-time, AS blower shut down due to high pressure
09/30/98	820	14	294	334.68	0.07	0.0004	0.00	0.000	---	0.000	---	0.000	6.25	0.033	0.033	34.22	2046.92	
10/15/98	835	0	231	262.96	0.00	0.0000	0.00	0.000	---	0.000	---	0.000	5.77	0.024	0.024	5.10	2052.01	assume 50% up-time, AS blower shut down due to high pressure
11/19/98	870	14	223	253.69	0.00	0.0000	0.00	0.000	---	0.000	---	0.000	40.89	0.162	0.162	38.89	2090.90	assume 50% up-time, AS blower shut down due to high pressure
12/29/98	910	0	442	502.91	0.00	0.0000	0.00	0.000	---	0.000	---	0.000	0.00	0.000	0.001	39.01	2129.91	assume 50% up-time, AS blower shut down due to high pressure
01/12/99	924	0	255	290.57	0.07	0.0003	0.00	0.000	---	0.000	---	0.000	8.66	0.039	0.040	6.81	2136.72	
02/10/99	953	0	346	393.83	0.00	0.0000	0.00	0.000	---	0.000	---	0.000	8.90	0.055	0.055	16.37	2153.09	assume 50% up-time, blowers shutting down due to influent water
03/26/99	997	0	160	182.14	0.00	0.0000	0.00	0.000	---	0.000	---	0.000	0.00	0.000	0.001	0.38	2153.47	
04/21/99	1023	0	160	182.14	0.00	0.0000	0.00	0.000	---	0.000	---	0.000	0.00	0.000	0.001	0.38	2153.85	
05/26/99	1058	0	0	0.00	0.00	0.0000	0.00	0.000	---	0.000	---	0.000	0.00	0.000	0.001	0.00	2153.85	system deactivated May 1999
06/04/99	1067	0	0	0.00	0.00	0.0000	0.00	0.000	---	0.000	---	0.000	0.00	0.000	0.001	0.00	2153.85	system deactivated May 1999
07/08/99	1101	0	0	0.00	0.00	0.0000	0.00	0.000	---	0.000	---	0.000	0.00	0.000	0.001	0.00	2153.85	system deactivated May 1999
08/05/99	1129	0	0	0.00	0.00	0.0000	0.00	0.000	---	0.000	---	0.000	0.00	0.000	0.001	0.00	2153.85	system deactivated May 1999

Notes:

1) Aliphatics are weighted using a response factor of hexane. (MW = 86.2)
2) Aromatics are weighted using a response factor of o-xylene. (MW=106.16)
3) Analytical data for 8/30/96 is assumed based on results of sampling conducted 8/8/96. System was deactivated 8/30/96 due to flow meter failure.
4) Flow rate of 10/16/96 through 4/17/97, 6/10/97 and 7/21/97 is assumed. Air flow meter not in operation.
5) Analytical data for 10/2 is assumed based on data from 10/16/96.
6) Beginning 10/16/96 lab analysis was performed by Mitkem Laboratory. Prior to 10/16/96 air analysis performed by NEI/GTEL
7) Mitkem results report total volatile petroleum hydrocarbons, not misc. aromatics and aliphatics.
   Total Volatile Petroleum Hydrocarbons are weighted to molecular weight of 100.
8) Laboratory results from 11/19/96 to present are reported in mg/m3.

SYSTEM MONITORING DATA
SOIL VAPOR EXTRACTION/AIR SPARGE SYSTEM

New London Naval Submarine Base
NEX Site
Groton, CT

Date	Day of Operation	Air Sparge Flowrate (scfm)	Extraction Flowrate (total) (scfm)	Influent Concentration BTEX (ppmv)	Removal Rate BTEX (lb/hr)	Influent Concentration MTBE (ppmv)	Removal Rate MTBE (lb/hr)	Influent Concentration Aliphatics (ppmv)	Removal Rate Aliphatics (lb/hr)	Influent Concentration Aromatics (ppmv)	Removal Rate Aromatics (lb/hr)	Influent Concentration TVPH (mg/m3)	Influent Concentration TVPH (ppmv)	Removal Rate TVPH (lb/hr)	Total Mass Removal Rate (lbs/hr)	Period Mass Removed (lbs)	Cumulative Mass Removed (lbs)	Comments
07/31/96	0	NA*	253	1.80	0.007	---	0.000	130.00	0.455	0.00	0.000	---	---	0.000	0.463	0.00	0.00	
08/08/96	8	NA*	270	1.80	0.008	---	0.000	130.00	0.486	0.00	0.000	---	---	0.000	0.494	46.93	46.93	system operated approx. 92 hrs.between 7/31 and 8/8
08/22/96	22	NA*	270	1.80	0.008	---	0.000	130.00	0.486	0.00	0.000	---	---	0.000	0.494	52.85	99.78	24-hour per day system operation began 8/8
09/16/96	47	NA*	320	2.70	0.015	0.00	0.000	---	0.000	---	0.000	---	61.00	0.346	0.361	256.56	356.34	
10/16/96	77	NA*	320	2.50	0.014	0.00	0.000	---	0.000	---	0.000	---	42.00	0.238	0.253	220.98	577.32	
11/19/96	111	NA*	324	0.95	0.006	0.00	0.000	---	0.000	---	0.000	94.00	22.61	0.130	0.135	158.31	735.63	
12/17/96	139	NA*	310	0.18	0.001	0.07	0.000	---	0.000	---	0.000	29.00	6.98	0.038	0.040	58.83	794.47	
01/27/97	180	NA*	321	0.14	0.001	0.00	0.000	---	0.000	---	0.000	20.00	4.81	0.027	0.028	33.39	827.85	
03/27/97	239	NA**	384	0.00	0.000	0.00	0.000	---	0.000	---	0.000	---	0.55	0.004	0.004	22.62	850.47	
04/17/97	260	NA**	721	0.00	0.000	0.00	0.000	---	0.000	---	0.000	12.00	2.89	0.037	0.037	10.24	860.71	
05/21/97	294	6***	360	0.00	0.000	0.00	0.000	---	0.000	---	0.000	0.00	0.00	0.000	0.00	15.46	876.17	
06/10/97	314	2***	300	0.00	0.000	0.00	0.000	---	0.000	---	0.000	0.00	0.00	0.000	0.00	0.48	876.65	
07/21/97	355	36***	358	0.00	0.000	0.00	0.000	---	0.000	---	0.000	8.50	2.04	0.013	0.013	6.88	883.53	
08/26/97	391	28***	223	0.00	0.000	0.00	0.000	---	0.000	---	0.000	0.00	0.00	0.000	0.00	6.04	889.57	One blower down due to high water level in moisture trap.
09/30/97	426	27***	221	2.37	0.009	6.00	0.021	---	0.000	---	0.000	140.00	33.68	0.132	0.161	68.15	957.72	One blower down due to high water level in moisture trap.
10/23/97	449	47***	322	2.47	0.013	17.05	0.086	---	0.000	---	0.000	395.00	95.02	0.542	0.641	60.12	1017.84	Two blowers down due to high water level in moisture trap.
11/20/97	477	47***	213	0.50	0.002	1.12	0.004	---	0.000	---	0.000	68.00	16.36	0.062	0.067	69.68	1087.51	One blower down due to high water level in moisture trap.
12/11/97	498	47	213	0.50	0.002	1.12	0.004	---	0.000	---	0.000	68.00	16.36	0.062	0.067	40.27	1127.78	
12/29/97	516	47	520	0.78	0.007	2.18	0.018	---	0.000	---	0.000	140.00	33.68	0.310	0.335	42.29	1170.07	
01/22/98	540	53	479	2.46	0.020	4.50	0.034	---	0.000	---	0.000	465.00	111.86	0.949	1.003	63.09	1233.15	
02/12/98	561	NA****	324	0.77	0.004	1.05	0.005	---	0.000	---	0.000	67.50	16.24	0.093	0.103	248.54	1481.70	
03/24/98	601	53	249	0.44	0.002	0.82	0.003	---	0.000	---	0.000	33.00	7.94	0.035	0.040	32.99	1514.68	
04/27/98	635	53	170	0.57	0.002	8.32	0.022	---	0.000	---	0.000	76.50	18.40	0.055	0.079	36.71	1551.39	
07/13/98	712	53	154	1.96	0.005	0.00	0.000	39.42	0.084	0.00	0.000	---	0.00	0.000	0.089	63.76	1615.16	
10/07/98	798	0	278	8.40	0.042	0.00	0.000	0.00	0.000	0.00	0.000	890.43	214.19	1.054	1.096	0.00	1615.16	System modification/repair completed, system reactivated.
10/15/98	806	0	278	8.40	0.042	0.00	0.000	0.00	0.000	0.00	0.000	890.43	214.19	1.056	1.098	210.77	1825.92	
11/19/98	841	41	216	4.67	0.018	0.46	0.002	0.00	0.000	0.00	0.000	1679.20	403.93	1.543	1.563	812.98	2638.91	
12/29/98	881	41	148	0.90	0.002	0.00	0.000	0.00	0.000	0.00	0.000	507.90	122.18	0.321	0.323	621.50	3260.40	One blower and air compressor down due to high water.
01/12/99	895	82	307	3.22	0.018	0.34	0.002	0.00	0.000	0.00	0.000	4607.80	1108.41	6.032	6.052	459.46	3719.87	
02/10/99	924	70	294	0.81	0.004	0.54	0.002	0.00	0.000	0.00	0.000	165.78	39.88	0.207	0.214	31.67	3751.54	
03/26/99	968	79	255	0.08	0.000	0.27	0.001	0.00	0.000	0.00	0.000	10.50	2.53	0.011	0.013	8.31	3759.85	One blower and air compressor down due to tripped breaker
04/21/99	994	38	244	0.26	0.001	0.00	0.000	0.00	0.000	0.00	0.000	0.00	0.00	0.000	0.001	0.54	3760.40	
05/26/99	1029	***	0	0.00	0.000	0.00	0.000	0.00	0.000	0.00	0.000	0.00	0.00	0.000	0.000	0.00	3760.40	
06/04/99	1038	***	0	0.00	0.000	0.00	0.000	0.00	0.000	0.00	0.000	0.00	0.00	0.000	0.000	0.00	3760.40	System is non-operational
07/08/99	1072	32	290	3.64	0.000	3.64	0.000	0.00	0.000	0.00	0.000	0.00	0.00	0.000	0.000	7.75	3768.15	System reactivated 7/8/99
08/05/99	1100	37	271	0.80	0.000	0.19	0.000	0.00	0.000	0.00	0.000	0.00	0.00	0.000	0.000	0.40	3768.54	

Notes:

* Air sparge compressor not activated due to elevated SVE influent concentrations.
** Air sparge compressor not activated due to improperly sized pressure switch.
*** Air sparge compressor activated, but high water levels in the moisture separators cause frequent compressor shut-down.
**** Air sparge compressor deactivated on 1/28/98 due to lack of vapor recovery from western portion of site.
1) Aliphatics are weighted using a response factor of hexane. (MW = 86.2)
2) Aromatics are weighted using a response factor of o-xylene. (MW=106.16)
3) Analytical data for 7/31/96 is assumed based on results of sampling conducted 8/8/96.
4) Analytical data for 8/22/96 is assumed based on results of sampling conducted 8/8/96.
5) Air flow rate from 10/16/96 assumed for 9/16/96, due to a broken flow meter
6) Beginning 9/16/96 lab analysis was performed by Mitkem Laboratory. Prior to 9/16/96 air analysis performed by NEI/GTEL
7) Mitkem results report total volatile petroleum hydrocarbons, not misc. aromatics and aliphatics.
Total Volatile Petroleum Hydrocarbons are weighted to molecular weight of 100.
8) System modificatons to allow continuous dewatering were conducted on December 11, 1997.
The data for this date was assumed to be the same as November that for November 20, 1997.
Flow rates for this date have been interpolated from 11/20/97 and 12/29/97 data.
9) 4/27/98 TVPH results reported as C5-C12 Aliphatics and C9-C10 Aromatics. Ppmv equivalents have been estimated.
10) The system was found to be inactive on 8/19/98 due to water in the moisture traps and was not restarted. No samples were taken.
11) System modifications and repairs completed on 10/7/98. System reactivated. Influent concentrations assumed to be the same as sampled on 10/15/98.
12) On 10/7/98 the east side flowmeter was found to be inoperable. West and East flowrates were subsequently assumed to be equal for mass removal calculation purposes.
13) A flow rate weighted average was used to calculate the SVE system influent beginning 10/15/98.
14) On 3/26/99 the air sparge compressor was not operating. The air sparge flow rate is based on the March 8 data.
15) Air flow data from 4/2/99 used for April's flow rate.

ATTACHMENT 4

HISTORICAL WELL GAUGING DATA

Well Gauging Data

Dolphin Mart Site

New London Naval Submarine Base, Groton, CT

Date	Date	DM-1			DM-2			DM-3			DM-4		
		Well Casing Elevation	Depth to Groundwater	Groundwater Elevation	Well Casing Elevation	Depth to Groundwater	Groundwater Elevation	Well Casing Elevation	Depth to Groundwater	Groundwater Elevation	Well Casing Elevation	Depth to Groundwater	Groundwater Elevation
07/02/96	07/02/96	94.23	6.37	87.86	94.30	NG	NA	94.02	NG	NA	94.81	NG	NA
07/03/96	07/03/96	94.23	NG	NA	94.30	NG	NA	94.02	NG	NA	94.81	NG	NA
07/12/96	07/12/96	94.23	NG	NA	94.30	NG	NA	94.02	NG	NA	94.81	NG	NA
07/16/96	07/16/96	94.23	NG	NA	94.30	NG	NA	94.02	NG	NA	94.81	NG	NA
07/17/96	07/17/96	94.23	NG	NA	94.30	NG	NA	94.02	NG	NA	94.81	NG	NA
07/19/96	07/19/96	94.23	NG	NA	94.30	NG	NA	94.02	NG	NA	94.81	NG	NA
07/22/96	07/22/96	94.23	NG	NA	94.30	NG	NA	94.02	NG	NA	94.81	NG	NA
07/23/96	07/23/96	94.23	NG	NA	94.30	NG	NA	94.02	NG	NA	94.81	NG	NA
07/24/96	07/24/96	94.23	NG	NA	94.30	NG	NA	94.02	NG	NA	94.81	NG	NA
07/25/96	07/25/96	94.23	NG	NA	94.30	NG	NA	94.02	NG	NA	94.81	NG	NA
07/26/96	07/26/96	94.23	NG	NA	94.30	NG	NA	94.02	NG	NA	94.81	NG	NA
08/01/96	08/01/96	94.23	NG	NA	94.30	NG	NA	94.02	NG	NA	94.81	NG	NA
08/02/96	08/02/96	94.23	NG	NA	94.30	NG	NA	94.02	NG	NA	94.81	NG	NA
08/05/96	08/05/96	94.23	NG	NA	94.30	NG	NA	94.02	NG	NA	94.81	NG	NA
09/04/96	09/04/96	94.23	NG	NA	94.30	NG	NA	94.02	NG	NA	94.81	NG	NA
10/02/96	10/02/96	94.23	NG	NA	94.30	NG	NA	94.02	NG	NA	94.81	NG	NA
10/21/96	10/21/96	94.23	NG	NA	94.30	NG	NA	94.02	NG	NA	94.81	NG	NA
11/19/96	11/19/96	94.23	1.90	92.33	94.30	NG	NA	94.02	2.06	91.96	94.81	2.68	92.13
12/17/96	12/17/96	94.23	2.53	91.70	94.30	NG	NA	94.02	1.60	92.42	94.81	NG	NA
01/27/97	01/27/97	94.23	1.91	92.32	94.30	NG	NA	94.02	1.89	92.13	94.81	NG	NA
02/18/97	02/18/97	94.23	1.93	92.30	94.30	NG	NA	94.02	1.90	92.12	94.81	2.04	92.77
03/27/97	03/27/97	94.23	1.89	92.34	94.30	2.27	92.03	94.02	1.86	92.16	94.81	2.41	92.40
04/17/97	04/17/97	94.23	NG	NA	94.30	NG	NA	94.02	NG	NA	94.81	NG	NA
05/21/97	05/21/97	94.23	2.04	92.19	94.30	2.39	91.91	94.02	2.08	91.94	94.81	3.08	91.73
08/27/97	08/27/97	94.23	NG	NA	94.30	NG	NA	94.02	NG	NA	94.81	NG	NA
11/21/97	11/21/97	94.23	2.26	91.97	94.30	3.20	91.10	94.02	2.56	91.46	94.81	3.33	91.48
02/11/98	02/11/98	94.23	1.79	92.44	94.30	2.63	91.67	94.02	1.61	92.41	94.81	1.84	92.97
05/11/98	05/11/98	94.23	1.80	92.43	94.30	1.85	92.45	94.02	1.50	92.52	94.81	2.34	92.47
08/17/98	08/17/98	94.23	2.70	91.53	94.30	3.75	90.55	94.02	3.30	90.72	94.81	1.25	93.56
11/18/98	11/18/98	94.23	2.32	91.91	94.30	2.88	91.42	94.02	2.60	91.42	94.81	3.35	91.46
02/19/99	02/19/99	94.23	2.06	92.17	94.30	2.61	91.69	94.02	1.88	92.14	94.81	2.03	92.78
05/21/99	05/21/99	94.23	2.04	92.19	94.30	2.57	91.73	94.02	2.26	91.76	94.81	3.83	90.98
08/26/99	08/26/99	94.23	4.51	89.72	94.30	5.32	88.98	94.02	5.16	88.86	94.81	5.86	88.95

Notes: WE-2 Notes: WE-2D, WE-2S, and WE-3 are covered by stand pipes.
NG NG = Not Gauged
* Po * Possible interference due to AS/SVE system

NA = Not Available NG = Not Gauged

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Date		DM-5			HRP-10			HRP-11			MW-1	
	Well Casing Elevation	Depth to Groundwater	Groundwater Elevation	Well Casing Elevation	Depth to Groundwater	Groundwater Elevation	Well Casing Elevation	Depth to Groundwater	Groundwater Elevation	Well Casing Elevation	Depth to Groundwater	Groundwater Elevation
07/02/96	101.06	NG	NA	97.05	4.65	92.40	96.79	NG	NA		4.65	
07/03/96	101.06	NG	NA	97.05	5.19	91.86	96.79	NG	NA		4.63	
07/12/96	101.06	NG	NA	97.05	5.81	91.24	96.79	NG	NA		5.01	
07/16/96	101.06	NG	NA	97.05	4.33	92.72	96.79	NG	NA		4.55	
07/17/96	101.06	NG	NA	97.05	2.73	94.32	96.79	NG	NA		4.94	
07/19/96	101.06	NG	NA	97.05	4.38	92.67	96.79	NG	NA		5.21	
07/22/96	101.06	NG	NA	97.05	4.54	92.51	96.79	NG	NA		4.82	
07/23/96	101.06	NG	NA	97.05	4.55	92.50	96.79	NG	NA		4.75	
07/24/96	101.06	NG	NA	97.05	4.33	92.72	96.79	NG	NA		5.22	
07/25/96	101.06	NG	NA	97.05	4.46	92.59	96.79	NG	NA		5.31	
07/26/96	101.06	NG	NA	97.05	4.43	92.62	96.79	NG	NA		4.79	
08/01/96	101.06	NG	NA	97.05	3.93	93.12	96.79	NG	NA		4.96	
08/02/96	101.06	NG	NA	97.05	4.08	92.97	96.79	NG	NA		5.24	
08/05/96	101.06	NG	NA	97.05	4.35	92.70	96.79	NG	NA		5.08	
09/04/96	101.06	NG	NA	97.05	5.43	91.62	96.79	NG	NA		6.07	
10/02/96	101.06	NG	NA	97.05	3.53	93.52	96.79	NG	NA		5.43	
10/21/96	101.06	NG	NA	97.05	3.98	93.07	96.79	NG	NA		NG	
11/19/96	101.06	5.37	95.69	97.05	4.15	92.90	96.79	NG	NA		3.85	
12/17/96	101.06	3.67	97.39	97.05	NG	NA	96.79	NG	NA		3.85	
01/27/97	101.06	4.26	96.80	97.05	3.29	93.76	96.79	NG	NA		2.53	
02/18/97	101.06	NG	NA	97.05	4.04	93.01	96.79	NG	NA		2.98	
03/27/97	101.06	4.60	96.46	97.05	4.04	93.01	96.79	3.21	93.58		2.91	
04/17/97	101.06	NG	NA	97.05	5.25	91.80	96.79	NG	NA		3.48	
05/21/97	101.06	5.19	95.87	97.05	4.11	92.94	96.79	3.43	93.36		3.14	
08/27/97	101.06	NG	NA	97.05	5.01	92.04	96.79	4.10	92.69		3.60	
11/21/97	101.06	6.83	94.23	97.05	4.43	92.62	96.79	3.77	93.02		5.33	
02/11/98	101.06	3.87	97.19	97.05	3.64	93.41	96.79	3.08	93.71		3.23	
05/11/98	101.06	2.41	98.65	97.05	3.65	93.40	96.79	3.16	93.63		1.81	
08/17/98	101.06	7.69	93.37	97.05	5.11	91.94	96.79	3.99	92.80		6.32	
11/18/98	101.06	7.46	93.60	97.05	5.13	91.92	96.79	3.85	92.94		5.74	
02/19/99	101.06	4.38	96.68	97.05	4.15	92.90	96.79	3.33	93.46		2.95	
05/21/99	101.06	5.63	95.43	97.05	4.36	92.69	96.79	3.55	93.24		3.96	
08/26/99	101.06	10.59	90.47	97.05	7.34	89.71	96.79	6.62	90.17		8.99	

NA = Not Available NG = Not Gauged

Date		MW-2			MW-3			OBG8A			OBG9A	
	Well Casing Elevation	Depth to Groundwater	Groundwater Elevation	Well Casing Elevation	Depth to Groundwater	Groundwater Elevation	Well Casing Elevation	Depth to Groundwater	Groundwater Elevation	Well Casing Elevation	Depth to Groundwater	Groundwater Elevation
07/02/96		3.55			3.12		95.20	NG	NA	94.67	0.82	93.85
07/03/96		2.86			0.00		95.20	NG	NA	94.67	0.89	93.78
07/12/96		3.82			1.95		95.20	NG	NA	94.67	1.85	92.82
07/16/96		2.89			0.74		95.20	NG	NA	94.67	0.69	93.98
07/17/96		1.63			2.79		95.20	NG	NA	94.67	0.00	94.67
07/19/96		0.61			0.00		95.20	NG	NA	94.67	0.00	94.67
07/22/96		1.95			1.17		95.20	NG	NA	94.67	0.00	94.67
07/23/96		3.33			0.00		95.20	NG	NA	94.67	0.20	94.47
07/24/96		1.18			0.00		95.20	NG	NA	94.67	0.00	94.67
07/25/96		NG			NG		95.20	NG	NA	94.67	0.16	94.51
07/26/96		NG			NG		95.20	NG	NA	94.67	0.00	94.67
08/01/96		2.20			1.28		95.20	NG	NA	94.67	NG	NA
08/02/96		1.82			1.31		95.20	NG	NA	94.67	0.00	94.67
08/05/96		NG			1.08		95.20	NG	NA	94.67	0.00	94.67
09/04/96		4.59			DRY		95.20	NG	NA	94.67	NG	NA
10/02/96		NG			3.86		95.20	NG	NA	94.67	NG	NA
10/21/96		NG			NG		95.20	NG	NA	94.67	NG	NA
11/19/96		3.00			DRY		95.20	NG	NA	94.67	NG	NA
12/17/96		2.17			NG		95.20	NG	NA	94.67	NG	NA
01/27/97		2.13			NG		95.20	NG	NA	94.67	NG	NA
02/18/97		2.56			2.28		95.20	NG	NA	94.67	NG	NA
03/27/97		1.86			1.27		95.20	NG	NA	94.67	NG	NA
04/17/97		1.94			1.39		95.20	NG	NA	94.67	NG	NA
05/21/97		2.93			2.44		95.20	NG	NA	94.67	NG	NA
08/27/97		4.28			DRY		95.20	NG	NA	94.67	2.46	92.21
11/21/97		3.84			3.06		95.20	2.26	92.94	94.67	0.95	93.72
02/11/98		1.34			1.88		95.20	1.47	93.73	94.67	1.31	93.36
05/11/98		1.99			4.08		95.20	0.31	94.89	94.67	0.98	93.69
08/17/98		4.95			4.96		95.20	2.35	92.85	94.67	2.58	92.09
11/18/98		5.27			3.27		95.20	2.30	92.90	94.67	1.91	92.76
02/19/99		2.59			1.92		95.20	0.50	94.70	94.67	1.77	92.90
05/21/99		3.23			2.20		95.20	1.71	93.49	94.67	2.42	92.25
08/26/99		7.20			6.93		95.20	4.48	90.72	94.67	4.85	89.82

NA = Not Available NG = Not Gauged

Date		WE-1			WE-1A			WE-2D			WE-2S	
	Well Casing Elevation	Depth to Groundwater	Groundwater Elevation	Well Casing Elevation	Depth to Groundwater	Groundwater Elevation	Well Casing Elevation	Depth to Groundwater	Groundwater Elevation	Well Casing Elevation	Depth to Groundwater	Groundwater Elevation
07/02/96		DRY			DRY		100.84	6.56	94.28	100.86	6.78	94.08
07/03/96		NG			NG		100.84	6.35	94.49	100.86	6.58	94.28
07/12/96		NG			NG		100.84	6.83	94.01	100.86	6.96	93.90
07/16/96		NG			NG		100.84	6.24	94.60	100.86	6.47	94.39
07/17/96		NG			NG		100.84	5.88	94.96	100.86	6.30	94.56
07/19/96		NG			NG		100.84	5.53	95.31	100.86	6.18	94.68
07/22/96		NG			NG		100.84	6.42	94.42	100.86	6.45	94.41
07/23/96		NG			NG		100.84	6.33	94.51	100.86	6.70	94.16
07/24/96		NG			NG		100.84	5.67	95.17	100.86	6.31	94.55
07/25/96		NG			NG		100.84	NG	NA	100.86	NG	NA
07/26/96		NG			NG		100.84	NG	NA	100.86	NG	NA
08/01/96		NG			NG		100.84	6.09	94.75	100.86	6.39	94.47
08/02/96		NG			NG		100.84	5.73	95.11	100.86	6.30	94.56
08/05/96		NG			NG		100.84	NG	NA	100.86	NG	NA
09/04/96		NG			NG		100.84	7.51	93.33	100.86	7.39	93.47
10/02/96		NG			NG		100.84	5.82	95.02	100.86	6.41	94.45
10/21/96		NG			NG		100.84	NG	NA	100.86	NG	NA
11/19/96		NG			NG		100.84	5.89	94.95	100.86	6.46	94.40
12/17/96		NG			NG		100.84	NG	NA	100.86	6.10	94.76
01/27/97		NG			NG		100.84	5.73	95.11	100.86	6.24	94.62
02/18/97		NG			NG		100.84	5.84	95.00	100.86	6.32	94.54
03/27/97		5.03			DRY		100.84	5.45	95.39	100.86	6.21	94.65
04/17/97		NG			NG		100.84	NG	NA	100.86	NG	NA
05/21/97		DRY			DRY		100.84	6.11	94.73	100.86	NG	NA
08/27/97		NG			NG		100.84	7.03	93.81	100.86	NG	NA
11/21/97		DRY			DRY		100.84	6.66	94.18	100.86	6.97	93.89
02/11/98		NG			NG		100.84	5.49	95.35	100.86	6.29	94.57
05/11/98		NG			NG		100.84	5.16	95.68	100.86	6.18	94.68
08/17/98		NG			NG		100.84	7.50	93.34	100.86	7.53	93.33
11/18/98		DRY			DRY		100.84	7.23	93.61	100.86	7.62	93.24
02/19/99		NG			NG		100.84	5.72	95.12	100.86	6.44	94.42
05/21/99		NG			NG		100.84	6.26	94.58	100.86	6.69	94.17
08/26/99		NG			NG		100.84	9.84	91.00	100.86	10.12	90.74

NA = Not Available NG = Not Gauged

Date	WE-3			WE-4			WE-5			WE-6		
	Well Casing Elevation	Depth to Groundwater	Groundwater Elevation	Well Casing Elevation	Depth to Groundwater	Groundwater Elevation	Well Casing Elevation	Depth to Groundwater	Groundwater Elevation	Well Casing Elevation	Depth to Groundwater	Groundwater Elevation
07/02/96	103.14	8.67	103.14	97.52	4.24	93.28	99.72	4.80	94.92	97.32	3.40	93.92
07/03/96	103.14	8.69	94.47	97.52	6.38	91.14	99.72	4.33	95.39	97.32	2.30	95.02
07/12/96	103.14	8.93	94.45	97.52	6.38	91.14	99.72	4.98	94.74	97.32	3.60	93.72
07/16/96	103.14	8.50	94.21	97.52	6.27	91.25	99.72	4.08	95.64	97.32	2.76	94.56
07/17/96	103.14	8.62	94.64	97.52	6.47	91.05	99.72	3.62	96.10	97.32	1.72	95.60
07/19/96	103.14	8.45	94.52	97.52	NG	NA	99.72	3.19	96.53	97.32	1.08	96.24
07/22/96	103.14	8.64	94.69	97.52	3.68	93.84	99.72	3.73	95.99	97.32	1.96	95.36
07/23/96	103.14	8.72	94.50	97.52	8.72	88.80	99.72	4.49	95.23	97.32	2.40	94.92
07/24/96	103.14	8.45	94.42	97.52	3.38	94.14	99.72	3.33	96.39	97.32	1.49	95.83
07/25/96	103.14	NG	NA	97.52	NG	NA	99.72	NG	NA	97.32	2.12	95.20
07/26/96	103.14	NG	NA	97.52	NG	NA	99.72	NG	NA	97.32	2.95	94.37
08/01/96	103.14	8.55	103.14	97.52	3.22	94.30	99.72	4.06	95.66	97.32	1.15	96.17
08/02/96	103.14	8.56	94.59	97.52	2.96	94.56	99.72	3.76	95.96	97.32	0.86	96.46
08/05/96	103.14	NG	NA	97.52	NG	NA	99.72	NG	NA	97.32	1.28	96.04
09/04/96	103.14	9.73	103.14	97.52	5.11	92.41	99.72	6.23	93.49	97.32	4.59	92.73
10/02/96	103.14	8.41	93.41	97.52	3.11	94.41	99.72	3.96	95.76	97.32	1.60	95.72
10/21/96	103.14	NG	NA	97.52	NG	NA	99.72	NG	NA	97.32	2.43	94.89
11/19/96	103.14	8.32	103.14	97.52	3.53	93.99	99.72	3.87	95.85	97.32	2.90	94.42
12/17/96	103.14	7.92	94.82	97.52	2.17	95.35	99.72	2.96	96.76	97.32	2.10	95.22
01/27/97	103.14	7.94	95.22	97.52	3.08	94.44	99.72	3.26	96.46	97.32	1.53	95.79
02/18/97	103.14	7.95	95.20	97.52	3.49	94.03	99.72	3.21	96.51	97.32	2.55	94.77
03/27/97	103.14	8.08	95.19	97.52	1.66	95.86	99.72	3.51	96.21	97.32	1.15	96.17
04/17/97	103.14	NG	NA	97.52	3.00	94.52	99.72	3.18	96.54	97.32	1.30	96.02
05/21/97	103.14	8.20	103.14	97.52	3.73	93.79	99.72	4.07	95.65	97.32	2.84	94.48
08/27/97	103.14	9.54	94.94	97.52	4.69	92.83	99.72	5.77	93.95	97.32	4.07	93.25
11/21/97	103.14	8.86	93.60	97.52	7.53	89.99	99.72	5.29	94.43	97.32	3.56	93.76
02/11/98	103.14	8.33	94.28	97.52	2.14	95.38	99.72	2.87	96.85	97.32	1.35	95.97
05/11/98	103.14	7.91	94.81	97.52	7.51	*	99.72	2.50	97.22	97.32	2.02	95.30
08/17/98	103.14	9.78	95.23	97.52	7.45	*	99.72	5.81	93.91	97.32	4.61	92.71
11/18/98	103.14	8.88	93.36	97.52	8.65	*	99.72	6.15	93.57	97.32	5.42	91.90
02/19/99	103.14	8.49	94.65	97.52	3.49	94.03	99.72	3.51	96.21	97.32	2.50	94.82
05/21/99	103.14	8.57	94.57	97.52	4.95	92.57	99.72	4.66	95.06	97.32	3.06	94.26
08/26/99	103.14	12.04	91.10	97.52	7.53	89.99	99.72	9.10	90.62	97.32	6.94	90.38

NA = Not Available NG = Not Gauged

Date		ERM-5			ERM-6			ERM-7	
	Well Casing Elevation	Depth to Groundwater/ Product	Groundwater Elevation	Well Casing Elevation	Depth to Groundwater/ Product	Groundwater Elevation	Well Casing Elevation	Depth to Groundwater/ Product	Groundwater Elevation
09/16/96		3.82		22.09	5.14	16.95	21.98	5.27	16.71
10/16/96		NG		22.09	4.82	17.27	21.98	4.75	17.23
11/18/96		3.72		22.09	4.64	17.45	21.98	4.93	17.05
12/16/96		3.10		22.09	4.08	18.01	21.98	4.21	17.77
02/17/97		3.00		22.09	4.34	17.75	21.98	4.29	17.69
03/27/97		2.89		22.09	4.28	17.81	21.98	4.19	17.79
04/15/97		NG		22.09	NG	NA	21.98	NG	NA
04/17/97		2.73		22.09	NG	NA	21.98	NG	NA
04/24/97		NG		22.09	NG	NA	21.98	NG	NA
05/21/97		NG		22.09	4.72	17.37	21.98	4.61	17.37
08/28/97		NG		22.09	5.29	16.80	21.98	6.49	15.49
11/20/97		4.35		22.09	5.24	16.85	21.98	5.35	16.63
02/12/98		3.59		22.09	4.68	17.41	21.98	4.71	17.27
05/12/98		2.09		22.09	2.69	19.40	21.98	3.32	18.66
08/19/98		3.43		22.09	5.26	16.83	21.98	5.19	16.79
11/19/98		4.58		22.09	5.80	16.29	21.98	5.80	16.18
02/18/99		3.80		22.09	4.74	17.35	21.98	NG	NG
05/26/99		3.52		22.09	5.16	16.93	21.98	5.02	16.96
08/30/99		5.35		22.09	6.15	15.94	21.98	6.47	15.51

NI = Not Installed

Date		ERM-8			ERM-9			ERM-10	
	Well Casing Elevation	Depth to Groundwater/ Product	Groundwater Elevation	Well Casing Elevation	Depth to Groundwater/ Product	Groundwater Elevation	Well Casing Elevation	Depth to Groundwater/ Product	Groundwater Elevation
09/16/96		NG			NG			NG	
10/16/96		NG			NG			NG	
11/18/96		NG			NG			NG	
12/16/96		NG			NG			NG	
02/17/97		NG			NG			NG	
03/27/97		NG			NG			NG	
04/15/97		NG			NG			NG	
04/17/97		NG			NG			NG	
04/24/97		NG			NG			NG	
05/21/97		NG			NG			NG	
08/28/97		NG			NG			NG	
11/20/97		NG			NG			NG	
02/12/98		NG			NG			NG	
05/12/98		NG			NG			NG	
08/19/98		NG			NG			NG	
11/19/98		NG			NG			NG	
02/18/99		NG			NG			NG	
05/26/99		NG			NG			NG	
08/30/99		NG			NG			NG	

NI = Not Installed

Date	ERM-11 Well Casing Elevation	ERM-11 Depth to Groundwater/ Product	ERM-11 Groundwater Elevation	ERM-12 Well Casing Elevation	ERM-12 Depth to Groundwater/ Product	ERM-12 Groundwater Elevation	ERM-13 Well Casing Elevation	ERM-13 Depth to Groundwater/ Product	ERM-13 Groundwater Elevation
09/16/96	23.19	NG	NA	23.16	8.38	14.78	26.01	7.01	19.00
10/16/96	23.19	6.4	16.79	23.16	8.13	15.03	26.01	7.15	18.86
11/18/96	23.19	6.36	16.83	23.16	8.09	15.07	26.01	7.13	18.88
12/16/96	23.19	5.02	18.17	23.16	7.83	15.33	26.01	6.55	19.46
02/17/97	23.19	4.89	18.30	23.16	7.65	15.51	26.01	6.03	19.98
03/27/97	23.19	5.19	18.00	23.16	7.63	15.53	26.01	5.98	20.03
04/15/97	23.19	NG	NA	23.16	NG	NA	26.01	5.86	20.15
04/17/97	23.19	NG	NA	23.16	NG	NA	26.01	NG	NA
04/24/97	23.19	NG	NA	23.16	NG	NA	26.01	NG	NA
05/21/97	23.19	6.27	16.92	23.16	7.81/7.80	15.35	26.01	6.15	19.86
08/28/97	23.19	7.65	15.54	23.16	NG	NA	26.01	7.24	18.77
11/20/97	23.19	6.89	16.30	23.16	8.23	14.93	26.01	7.84	18.17
02/12/98	23.19	5.04	18.15	23.16	7.99	15.17	26.01	6.71	19.30
05/12/98	23.19	4.39	18.80	23.16	7.90	15.26	26.01	5.23	20.78
08/19/98	23.19	7.56	15.63	23.16	8.34/sheen	14.82	26.01	6.51	19.50
11/19/98	23.19	7.65	15.54	23.16	8.22	14.94	26.01	8.06	17.95
02/18/99	23.19	NG	NG	23.16	8.37	14.79	26.01	NG	NG
05/26/99	23.19	6.92	16.27	23.16	9.02/sheen	14.14	26.01	6.88	19.13
08/30/99	23.19	8.30	14.89	23.16	8.54	14.14	26.01	8.10	17.91

NI = Not Installed

Date		ERM-14			ERM-15			ERM-16	
	Well Casing Elevation	Depth to Groundwater/ Product	Groundwater Elevation	Well Casing Elevation	Depth to Groundwater/ Product	Groundwater Elevation	Well Casing Elevation	Depth to Groundwater/ Product	Groundwater Elevation
09/16/96	25.56	6.89	18.67		4.30			8.51	
10/16/96	25.56	6.92	18.64		3.94			8.49	
11/18/96	25.56	7.10/6.91	18.61		4.03			8.43	
12/16/96	25.56	6.35	19.21		NG			7.8	
02/17/97	25.56	5.89	19.67		NG			7.85	
03/27/97	25.56	5.82	19.74		NG			7.79	
04/15/97	25.56	5.7	19.86		3.39			7.84	
04/17/97	25.56	5.66	19.90		3.31			NG	
04/24/97	25.56	NG	NA		NG			NG	
05/21/97	25.56	6.04/5.99	19.56		NG			8.16	
08/28/97	25.56	7.24/7.01	18.49		NG			8.63/sheen	
11/20/97	25.56	7.63	17.93		4.46			8.77	
02/12/98	25.56	6.59	18.97		3.54			8.18	
05/12/98	25.56	5.09	20.47		2.63			7.32	
08/19/98	25.56	6.37/sheen	19.19		4.02			8.79/8.75	
11/19/98	25.56	7.80	17.76		4.59			9.03/9.00	
02/18/99	25.56	7.47	18.09		4.29			8.00	
05/26/99	25.56	6.62	18.94		3.47			8.58/sheen	
08/30/99	25.56	7.73	17.83		5.26			9.31/9.28	

NI = Not Installed

Date		ERM-17			ERM-18			ERM-19	
	Well Casing Elevation	Depth to Groundwater/ Product	Groundwater Elevation	Well Casing Elevation	Depth to Groundwater/ Product	Groundwater Elevation	Well Casing Elevation	Depth to Groundwater/ Product	Groundwater Elevation
09/16/96		5.62			3.65		22.42	5.28	17.14
10/16/96		5.56			3.96		22.42	5.17	17.25
11/18/96		5.53			NG		22.42	5.19	17.23
12/16/96		3.73			NG		22.42	4.23	18.19
02/17/97		4.53			NG		22.42	4.18	18.24
03/27/97		4.87			NG		22.42	4.06	18.36
04/15/97		4.84			NG		22.42	NG	NA
04/17/97		4.67			NG		22.42	3.91	18.51
04/24/97		NG			NG		22.42	NG	NA
05/21/97		5.26			NG		22.42	4.46	17.96
08/28/97		5.77			NG		22.42	5.41	17.01
11/20/97		5.77			NG		22.42	5.79	16.63
02/12/98		5.14			NG		22.42	4.44	17.98
05/12/98		2.98			NG		22.42	3.43	18.99
08/19/98		5.83			NG		22.42	5.11	17.31
11/19/98		6.05			NG		22.42	6.29	16.13
02/18/99		NG			NG		22.42	NG	NG
05/26/99		5.20			NG		22.42	5.06	17.36
08/30/99		6.21			NG		22.42	6.21	16.21

NI = Not Installed

Date	FD-1			FD-2			FD-3		
	Well Casing Elevation	Depth to Groundwater/ Product	Groundwater Elevation	Well Casing Elevation	Depth to Groundwater/ Product	Groundwater Elevation	Well Casing Elevation	Depth to Groundwater/ Product	Groundwater Elevation
09/16/96	NI	NI	NI	NI	NI	NI	NI	NI	NI
10/16/96	NI	NI	NI	NI	NI	NI	NI	NI	NI
11/18/96	NI	NI	NI	NI	NI	NI	NI	NI	NI
12/16/96	NI	NI	NI	NI	NI	NI	NI	NI	NI
02/17/97	NI	NI	NI	NI	NI	NI	NI	NI	NI
03/27/97	NI	NI	NI	NI	NI	NI	NI	NI	NI
04/15/97	NI	NI	NI	NI	NI	NI	NI	NI	NI
04/17/97	NI	NI	NI	NI	NI	NI	NI	NI	NI
04/24/97	NI	NI	NI	NI	NI	NI	NI	NI	NI
05/21/97	NI	NI	NI	NI	NI	NI	NI	NI	NI
08/28/97	NI	NI	NI	NI	NI	NI	NI	NI	NI
11/20/97	NI	NI	NI	NI	NI	NI	NI	NI	NI
02/12/98	NI	NI	NI	NI	NI	NI	NI	NI	NI
05/12/98	NI	NI	NI	NI	NI	NI	NI	NI	NI
08/19/98	NI	NI	NI	NI	NI	NI	NI	NI	NI
11/19/98	NI	NI	NI	NI	NI	NI	NI	NI	NI
02/18/99	NI	NI	NI	NI	NI	NI	NI	NI	NI
05/26/99	14.80	8.05	6.75	14.76	8.26	6.50	14.20	8.43	5.77
08/30/99	14.80	8.52	6.28	14.76	8.74	6.02	14.20	8.58	5.62

NI = Not Installed

Date		MW-4			MW-6			NEX-1	
	Well Casing Elevation	Depth to Groundwater/ Product	Groundwater Elevation	Well Casing Elevation	Depth to Groundwater/ Product	Groundwater Elevation	Well Casing Elevation	Depth to Groundwater/ Product	Groundwater Elevation
09/16/96		NG			NG		24.16	NG	NA
10/16/96		NG			NG		24.16	NG	NA
11/18/96		NG			NG		24.16	NG	NA
12/16/96		NG			NG		24.16	NG	NA
02/17/97		NG			NG		24.16	NG	NA
03/27/97		4.91			4.49		24.16	5.81	18.35
04/15/97		NG			NG		24.16	5.74	18.42
04/17/97		NG			NG		24.16	NG	NA
04/24/97		NG			NG		24.16	NG	NA
05/21/97		NG			4.85		24.16	5.80	18.36
08/28/97		NG			5.34		24.16	6.15	18.01
11/20/97		NG			5.33		24.16	6.45	17.71
02/12/98		NG			4.92		24.16	5.28	18.88
05/12/98		4.16			3.74		24.16	5.20	18.96
08/19/98		NG			5.41		24.16	5.99	18.17
11/19/98		6.99			5.64		24.16	6.31	17.85
02/18/99		6.12			4.72		24.16	NG	NG
05/26/99		6.02			4.83		24.16	6.42	17.74
08/30/99		7.21			5.80		24.16	6.64	17.52

NI = Not Installed

Date		OBG-1			OBG-2			OBG-4	
	Well Casing Elevation	Depth to Groundwater/ Product	Groundwater Elevation	Well Casing Elevation	Depth to Groundwater/ Product	Groundwater Elevation	Well Casing Elevation	Depth to Groundwater/ Product	Groundwater Elevation
09/16/96		NG		25.36	NG	NA	25.22	NG	NA
10/16/96		NG		25.36	NG	NA	25.22	NG	NA
11/18/96		NG		25.36	NG	NA	25.22	NG	NA
12/16/96		NG		25.36	NG	NA	25.22	NG	NA
02/17/97		NG		25.36	NG	NA	25.22	NG	NA
03/27/97		8.12		25.36	7.95	17.41	25.22	7.75	17.47
04/15/97		NG		25.36	7.92	17.44	25.22	7.75	17.47
04/17/97		NG		25.36	7.91	17.45	25.22	7.78	17.44
04/24/97		NG		25.36	NG	NA	25.22	7.74	17.48
05/21/97		7.98		25.36	7.81	17.55	25.22	7.64	17.58
08/28/97		8.22		25.36	8.03	17.33	25.22	7.9	17.32
11/20/97		8.43		25.36	8.23	17.13	25.22	8.07	17.15
02/12/98		8.19		25.36	8.01	17.35	25.22	7.84	17.38
05/12/98		7.88/7.87		25.36	7.71	17.65	25.22	7.51	17.71
08/19/98		8.13		25.36	7.94	17.42	25.22	7.76	17.46
11/19/98		8.21		25.36	8.03	17.33	25.22	7.91	17.31
02/18/99		7.97		25.36	7.78	17.58	25.22	7.26	17.96
05/26/99		8.35		25.36	8.17	17.19	25.22	8.05	17.17
08/30/99		8.58		25.36	8.74	16.62	25.22	8.48	16.74

NI = Not Installed

Date	OBG-6			OBG-7			OBG-8		
	Well Casing Elevation	Depth to Groundwater/ Product	Groundwater Elevation	Well Casing Elevation	Depth to Groundwater/ Product	Groundwater Elevation	Well Casing Elevation	Depth to Groundwater/ Product	Groundwater Elevation
09/16/96	24.76	NG	NA	25.47	NG	NA	24.87	NG	NA
10/16/96	24.76	NG	NA	25.47	NG	NA	24.87	NG	NA
11/18/96	24.76	NG	NA	25.47	NG	NA	24.87	NG	NA
12/16/96	24.76	NG	NA	25.47	NG	NA	24.87	NG	NA
02/17/97	24.76	NG	NA	25.47	NG	NA	24.87	NG	NA
03/27/97	24.76	7.95	16.81	25.47	5.61	19.86	24.87	NG	NA
04/15/97	24.76	NG	NA	25.47	NG	NA	24.87	NG	NA
04/17/97	24.76	NG	NA	25.47	NG	NA	24.87	NG	NA
04/24/97	24.76	NG	NA	25.47	NG	NA	24.87	NG	NA
05/21/97	24.76	NG	NA	25.47	5.79	19.68	24.87	5.60	19.27
08/28/97	24.76	NG	NA	25.47	6.49	18.98	24.87	NG	NA
11/20/97	24.76	NG	NA	25.47	7.09	18.38	24.87	NG	NA
02/12/98	24.76	NG	NA	25.47	5.84	19.63	24.87	NG	NA
05/12/98	24.76	NG	NA	25.47	4.56	20.91	24.87	NG	NA
08/19/98	24.76	NG	NA	25.47	5.83	19.64	24.87	NG	NA
11/19/98	24.76	NG	NA	25.47	7.22	18.25	24.87	NG	NA
02/18/99	24.76	NG	NG	25.47	NG	NG	24.87	NG	NG
05/26/99	24.76	NG	NG	25.47	6.04	19.43	24.87	NG	NG
08/30/99	24.76	NG	NG	25.47	7.66	17.81	24.87	NG	NG

NI = Not Installed

Date		OBG-9			VEA-4			VEA-7	
	Well Casing Elevation	Depth to Groundwater/ Product	Groundwater Elevation	Well Casing Elevation	Depth to Groundwater/ Product	Groundwater Elevation	Well Casing Elevation	Depth to Groundwater/ Product	Groundwater Elevation
09/16/96	24.93	NG	NA		NG			NG	
10/16/96	24.93	NG	NA		NG			NG	
11/18/96	24.93	NG	NA		NG			NG	
12/16/96	24.93	NG	NA		NG			NG	
02/17/97	24.93	NG	NA		NG			NG	
03/27/97	24.93	5.54	19.39		NG			NG	
04/15/97	24.93	5.54	19.39		NG			NG	
04/17/97	24.93	5.58	19.35		NG			NG	
04/24/97	24.93	NG	NA		NG			NG	
05/21/97	24.93	5.84/5.31	19.49		NG			NG	
08/28/97	24.93	6.56/6.45	18.45		NG			NG	
11/20/97	24.93	7.06	17.87		NG			NG	
02/12/98	24.93	NG	NA		NG			NG	
05/12/98	24.93	4.60/4.58	20.35		NG			NG	
08/19/98	24.93	5.81	19.12		NG			NG	
11/19/98	24.93	7.34	17.59		NG			NG	
02/18/99	24.93	6.36	18.57		NG			NG	
05/26/99	24.93	6.05	18.88	3.25	2.73	0.52		NG	
08/30/99	24.93	7.28	17.65	3.25	DRY	3.25		DRY	

NI = Not Installed

Date		VEA-14			VEB-6	
	Well Casing Elevation	Depth to Groundwater/ Product	Groundwater Elevation	Well Casing Elevation	Depth to Groundwater/ Product	Groundwater Elevation
09/16/96		NG			NG	
10/16/96		NG			NG	
11/18/96		NG			NG	
12/16/96		NG			NG	
02/17/97		NG			NG	
03/27/97		NG			NG	
04/15/97		NG			NG	
04/17/97		NG			NG	
04/24/97		NG			NG	
05/21/97		NG			NG	
08/28/97		NG			NG	
11/20/97		NG			NG	
02/12/98		NG			NG	
05/12/98		NG			NG	
08/19/98		NG			NG	
11/19/98		NG			NG	
02/18/99		NG			NG	
05/26/99	7.07	4.46	2.61		DRY	
08/30/99	7.07	5.65	1.42		DRY	

ATTACHMENT 5

HISTORICAL GROUNDWATER SAMPLING RESULTS

Table 1
Historical Groundwater Sampling Results
Dolphin Mart - March 1995 - August 1999
Naval Submarine Base, Groton, CT

(analytical results in µg/l)

Compound		BTEX				MTBE	TPH (By EPA Method 418.1)[1]	Total Volatiles (by EPA Method 8010/8020)	DRO	GRO
		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		1.0	1,000	700	530	100	500	NA	NA	NA
Well	Date									
DM-1	3/95	<1.0	<1.0	<1.0	<1.0	<2.0	<473	NS	NS	NS
	5/96	<1.0	<1.0	<1.0	<1.0	4.0	<473	NS	NS	NS
	11/96	<1.0	<1.0	<1.0	<1.0	<1.0	<1,000	<1.0	1,000	<500
	2/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	<500	<500
	8/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	2/98	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	5/98	<1.0	3.0	<1.0	3.0	<1.0	<500	6.0	NS	NS
	8/98	<1.0	<1.0	<1.0	<1.0	3.0	<500	3.0	NS	NS
	11/98	<1.0	<1.0	<1.0	2.0	3.0	<400	5.0	NS	NS
	2/99	<1.0	<1.0	<1.0	<1.0	1.0	<400	1.0	NS	NS
	5/99	<1.0	<1.0	<1.0	<1.0	1.0	<400	1.0	NS	NS
	8/99	<1.0	<1.0	<1.0	<1.0	<1.0	<400	<1.0	NS	NS

Notes: NA = Not Analyzed
NS = Not sampled (NS results have been shaded)
Bold numbers indicate an exceedance of State of CT Clean-up Standards
B = Analyte detected in method blank, **D** = Analyte concentration was obtained from a diluted analysis, **E** = Analyte concentration exceeded the calibration range
DRO=Diesel Range Organics, **GRO**=Gasoline Range Organics
[1] = Beginning 5/98, TPH was analyzed using EPA Method 8100M

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Naval Submarine Base, Groton, CT

(analytical results in µg/l)

Compound		BTEX				MTBE	TPH (By EPA Method 418.1)[1]	Total Volatiles (by EPA Method 8010/8020)	DRO	GRO
		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		1.0	1,000	700	530	100	500	NA	NA	NA
Well	Date									
DM-2	3/95	<1.0	<1.0	<1.0	<1.0	<2.0	<473	NS	NS	NS
	5/96	<1.0	<1.0	<1.0	<1.0	4.0	<473	NS	NS	NS
	11/96	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	<500	<500
	8/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/97	<1.0	<1.0	<1.0	<1.0	8.0	<500	8.0	NS	NS
	2/98	<1.0	<1.0	<1.0	<1.0	5.0	<500	5.0	NS	NS
	5/98	<1.0	<1.0	<1.0	<1.0	2.0	**1,500**	2.0	NS	NS
	8/98	<1.0	<1.0	<1.0	<1.0	19	<500	19	NS	NS
	11/98	<1.0	<1.0	<1.0	<1.0	9.0	<400	9.0	NS	NS
	2/99	<1.0	<1.0	<1.0	<1.0	4.0	<400	4.0	NS	NS
	5/99	<1.0	<1.0	<1.0	<1.0	3.0	<400	3.0	NS	NS
	8/99	<1.0	<1.0	<1.0	<1.0	6.0	<400	6.0	NS	NS

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Naval Submarine Base, Groton, CT

(analytical results in µg/l)

Compound		BTEX				MTBE	TPH (By EPA Method 418.1)[1]	Total Volatiles (by EPA Method 8010/8020)	DRO	GRO
		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		1.0	1,000	700	530	100	500	NA	NA	NA
Well	Date									
DM-3	3/95	<1.0	<1.0	<1.0	<1.0	7.9	<473	NS	NS	NS
	5/96	<1.0	<1.0	<1.0	<1.0	<2.0	<473	NS	NS	NS
	11/96	<1.0	<1.0	<1.0	<1.0	<1.0	<1,000	7.0	<500	<500
	2/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	<500	<500
	8/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	2/98	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	5/98	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	8/98	<1.0	<1.0	<1.0	<1.0	1.0	<500	1.0	NS	NS
	11/98	<1.0	<1.0	<1.0	<1.0	2.0	<400	2.0	NS	NS
	2/99	<1.0	<1.0	<1.0	<1.0	<1.0	<400	<1.0	NS	NS
	5/99	<1.0	<1.0	<1.0	<1.0	<1.0	<400	<1.0	NS	NS
	8/99	<1.0	<1.0	<1.0	<1.0	<1.0	NA	<1.0	NS	NS

Notes: NA = Not Analyzed
NS = Not sampled (NS results have been shaded)
Bold numbers indicate an exceedance of State of CT Clean-up Standards
B = Analyte detected in method blank, **D** = Analyte concentration was obtained from a diluted analysis, **E** = Analyte concentration exceeded the calibration range
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(analytical results in µg/l)

Compound		BTEX				MTBE	TPH (By EPA Method 418.1)[1]	Total Volatiles (by EPA Method 8010/8020)	DRO	GRO
		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		1.0	1,000	700	530	100	500	NA	NA	NA
Well	Date									
DM-4	3/95	<1.0	<1.0	<1.0	<1.0	<2.0	<473	NS	NS	NS
	5/96	<1.0	<1.0	<1.0	<1.0	<2.0	<473	NS	NS	NS
	11/96	<1.0	<1.0	<1.0	<1.0	<1.0	<1,000	5.0	600	<500
	2/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	<500	<500
	8/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/97	**2.0**	<1.0	<1.0	<1.0	3.0	<500	5.0	NS	NS
	2/98	<1.0	<1.0	<1.0	<1.0	<1.0	**800**	<1.0	NS	NS
	5/98	<1.0	<1.0	<1.0	<1.0	<1.0	**700**	<1.0	NS	NS
	8/98	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	11/98	<1.0	4.0	1.0	5.0	<1.0	**600**	10	NS	NS
	2/99	<1.0	3.0	<1.0	<1.0	1.0	<400	4.0	NS	NS
	5/99	<1.0	<1.0	<1.0	<1.0	<1.0	**500**	<1.0	NS	NS
	8/99	<1.0	<1.0	<1.0	<1.0	<1.0	400	<1.0	NS	NS

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Bold numbers indicate an exceedance of State of CT Clean-up Standards
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Naval Submarine Base, Groton, CT

(analytical results in µg/l)

Compound		BTEX				MTBE	TPH (By EPA Method 418.1)[1]	Total Volatiles (by EPA Method 8010/8020)	DRO	GRO
		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		1.0	1,000	700	530	100	500	NA	NA	NA
Well	Date									
DM-5	3/95	<1.0	<1.0	<1.0	<1.0	<2.0	<473	NS	NS	NS
	5/96	<1.0	<1.0	<1.0	<1.0	<2.0	<473	NS	NS	NS
	11/96	<1.0	<1.0	<1.0	<1.0	<1.0	<1,000	6.0	<500	<500
	2/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	<500	<500
	8/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	2/98	<1.0	<1.0	<1.0	<1.0	<1.0	**700**	<1.0	NS	NS
	5/98	<1.0	<1.0	<1.0	<1.0	<1.0	**1,200**	<1.0	NS	NS
	8/98	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	11/98	<1.0	1.0	<1.0	<1.0	2.0	<400	3.0	NS	NS
	2/99	<1.0	3.0	<1.0	<1.0	<1.0	<400	3.0	NS	NS
	5/99	<1.0	<1.0	<1.0	<1.0	<1.0	<400	<1.0	NS	NS
	8/99	<1.0	<1.0	<1.0	<1.0	<1.0	<400	<1.0	NS	NS

Notes: NA = Not Analyzed
NS = Not sampled (NS results have been shaded)
Bold numbers indicate an exceedance of State of CT Clean-up Standards
B = Analyte detected in method blank, **D** = Analyte concentration was obtained from a diluted analysis, **E** = Analyte concentration exceeded the calibration range
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(analytical results in µg/l)

Compound		BTEX				MTBE	TPH (By EPA Method 418.1)[1]	Total Volatiles (by EPA Method 8010/8020)	DRO	GRO
		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		1.0	1,000	700	530	100	500	NA	NA	NA
Well	Date									
HRP-10	3/95	**304**	35.2	257	**1140**	<50	**6,080**	NS	NS	NS
	5/96	**125**	21	54	329	<20	**1,740**	NS	NS	NS
	11/96	**9.0**	<1.0	65	<1.0	7.0	<1,000	81	600	<500
	2/97	<1.0	<1.0	<1.0	<1.0	3.0	<500	3.0	<500	<500
	5/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	<500	<500
	8/97	<1.0	<1.0	<1.0	<1.0	3.0	**800**	3.0	<500	<500
	11/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	2/98	<1.0	<1.0	<1.0	<1.0	<1.0	**700**	<1.0	NS	NS
	5/98	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	8/98	<1.0	<1.0	<1.0	<1.0	1.0	<500	1.0	NS	NS
	11/98	<1.0	<1.0	<1.0	<1.0	2.0	<400	2.0	NS	NS
	2/99	<1.0	3.0	<1.0	<1.0	2.0	<400	5.0	NS	NS
	5/99	<1.0	<1.0	<1.0	<1.0	<1.0	<400	<1.0	NS	NS
	8/99	<1.0	<1.0	<1.0	<1.0	<1.0	<400	<1.0	NS	NS

Notes: NA = Not Analyzed
NS = Not sampled (NS results have been shaded)
Bold numbers indicate an exceedance of State of CT Clean-up Standards
B = Analyte detected in method blank, **D** = Analyte concentration was obtained from a diluted analysis, **E** = Analyte concentration exceeded the calibration range
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(analytical results in µg/l)

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		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		1.0	1,000	700	530	100	500	NA	NA	NA
Well	Date									
HRP-11	3/95	<1.0	<1.0	<1.0	<1.0	<2.0	<473	NS	NS	NS
	5/96	1.0	<1.0	<1.0	3.0	<2.0	<473	NS	NS	NS
	11/96	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	<500	<500
	8/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	<500	<500
	11/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	2/98	<1.0	<1.0	<1.0	<1.0	<1.0	500	<1.0	NS	NS
	5/98	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	8/98	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	11/98	<1.0	<1.0	<1.0	<1.0	<1.0	<400	<1.0	NS	NS
	2/99	<1.0	3.0	<1.0	<1.0	<1.0	<400	3.0	NS	NS
	5/99	<1.0	<1.0	<1.0	<1.0	1.0	<400	1.0	NS	NS
	8/99	<1.0	<1.0	<1.0	<1.0	<1.0	<400	<1.0	NS	NS

Notes: NA = Not Analyzed
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Bold numbers indicate an exceedance of State of CT Clean-up Standards
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		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		1.0	1,000	700	530	100	500	NA	NA	NA
Well	Date									
MW-1	11/96	**3.0**	<1.0	5.0	<1.0	<1.0	<1,000	11	1,000	<500
	2/97	<1.0	<1.0	4.0	<1.0	<1.0	<500	4.0	<500	600
	5/97	<1.0	<1.0	4.0	<1.0	<1.0	<500	6.0	700	760
	8/97	<1.0	<1.0	16	2B	<1.0	**1,000**	18	800	600
	11/97	**2.0**	<1.0	9.0	<1.0	<1.0	<500	11	NS	NS
	2/98	<1.0	1.0	4.0	<1.0	<1.0	**800**	5.0	NS	NS
	5/98	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	8/98	**3.0**	<1.0	1.0	<1.0	<1.0	<500	4.0	NS	NS
	11/98	**4.0**	1.0	1.0	1.0	<1.0	**600**	7.0	NS	NS
	2/99	<1.0	<1.0	<1.0	<1.0	<1.0	<400	<1.0	NS	NS
	5/99	<1.0	<1.0	<1.0	<1.0	<1.0	<400	<1.0	NS	NS
	8/99	<1.0	<1.0	<1.0	<1.0	<1.0	**800**	<1.0	NS	NS

Notes: NA = Not Analyzed
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Bold numbers indicate an exceedance of State of CT Clean-up Standards
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Naval Submarine Base, Groton, CT

(analytical results in µg/l)

Compound		BTEX				MTBE	TPH (By EPA Method 418.1)[1]	Total Volatiles (by EPA Method 8010/8020)	DRO	GRO
		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		1.0	1,000	700	530	100	500	NA	NA	NA
Well	Date									
MW-2	11/96	**4.0**	<1.0	14	<1.0	4.0	<1,000	28	1,200	<500
	2/97	<1.0	<1.0	<1.0	<1.0	<1.0	**1,000**	1.0 B	1,200	1,200
	5/97	<1.0	<1.0	3.0	<1.0	<1.0	<500	3.0	500	580
	8/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	<500	<500
	11/97	**2.0**	<1.0	3.0	1.0	3.0	<500	9.0	NS	NS
	2/98	**2.0**	1.0	6.0	<1.0	<1.0	**700**	9.0	NS	NS
	5/98	<1.0	<1.0	<1.0	<1.0	3.0	500	3.0	NS	NS
	8/98	<1.0	<1.0	<1.0	2.0	1.0	<500	3.0	NS	NS
	11/98	**2.0**	2.0	<1.0	2.0	4.0	<400	10	NS	NS
	2/99	<1.0	<1.0	2.0	1.0	4.0	**700**	7.0	NS	NS
	5/99	<1.0	<1.0	<1.0	<1.0	<1.0	**500**	<1.0	NS	NS
	8/99	<1.0	<1.0	3.0	7.0	<1.0	**500**	10	NS	NS

Notes: NA = Not Analyzed
NS = Not sampled (NS results have been shaded)
Bold numbers indicate an exceedance of State of CT Clean-up Standards
B = Analyte detected in method blank, **D** = Analyte concentration was obtained from a diluted analysis, **E** = Analyte concentration exceeded the calibration range
DRO=Diesel Range Organics, **GRO**=Gasoline Range Organics
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Table 1
Historical Groundwater Sampling Results
Dolphin Mart - March 1995 - August 1999
Naval Submarine Base, Groton, CT

(analytical results in µg/l)

Compound		BTEX				MTBE	TPH (By EPA Method 418.1)[1]	Total Volatiles (by EPA Method 8010/8020)	DRO	GRO
		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		1.0	1,000	700	530	100	500	NA	NA	NA
Well	Date									
MW-3	2/97	**36**	23	72	500	5.0	**2,000**	645 B	3,300	1,600
	5/97	**60**	38	69	**730D**	<1.0	**5,000**	897D	7,900	<500
	8/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/97	<1.0	2.0	3.0	56	<1.0	<500	61	NS	NS
	2/98	<1.0	<1.0	<1.0	1.0	<1.0	**21,000**	1.0	NS	NS
	5/98	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	8/98	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)
	11/98	<1.0	<1.0	<1.0	<1.0	<1.0	NS	<1.0	NS	NS
	2/99	**4.0**	5.0	39	75	2.0	**800**	125	NS	NS
	5/99	**6.0**	15	<1.0	2.0	16	**900**	39	NS	NS
	8/99	NS	NS	NS	NS	NS	NS	NS	NS	NS

Notes: NA = Not Analyzed
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Bold numbers indicate an exceedance of State of CT Clean-up Standards
B = Analyte detected in method blank, **D** = Analyte concentration was obtained from a diluted analysis, **E** = Analyte concentration exceeded the calibration range
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Dolphin Mart - March 1995 - August 1999
Naval Submarine Base, Groton, CT

(analytical results in µg/l)

Compound		BTEX				MTBE	TPH (By EPA Method 418.1)[1]	Total Volatiles (by EPA Method 8010/8020)	DRO	GRO
		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		1.0	1,000	700	530	100	500	NA	NA	NA
Well	Date									
OBG-8A	3/95	**72**	24.6	25.9	62.4	9.29	<473	NS	NS	NS
	5/96	**12.0**	<1.0	9.0	4.0	<2.0	<473	NS	NS	NS
	11/96	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/97	**3.0**	25	5.0	5.0	<1.0	<500	38	NS	NS
	2/98	<1.0	<1.0	<1.0	<1.0	<1.0	**9,300**	<1.0	NS	NS
	5/98	<1.0	2.0	<1.0	2.0	<1.0	**3,800**	4.0	NS	NS
	8/98	**2.0**	<1.0	3.0	<1.0	1.0	**2,400**	6.0	NS	NS
	11/98	1.0	<1.0	<1.0	1.0	2.0	**2,300**	4.0	NS	NS
	2/99	<1.0	<1.0	<1.0	<1.0	2.0	**4,400**	2.0	NS	NS
	5/99	**6.0**	<1.0	8.0	<1.0	5.0	**800**	19	NS	NS
	8/99	**7.0**	<1.0	9.0	8.0	<1.0	**3,300**	24	NS	NS

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Bold numbers indicate an exceedance of State of CT Clean-up Standards
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DRO=Diesel Range Organics, **GRO**=Gasoline Range Organics
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Naval Submarine Base, Groton, CT

(analytical results in µg/l)

Compound		BTEX				MTBE	TPH (By EPA Method 418.1)[1]	Total Volatiles (by EPA Method 8010/8020)	DRO	GRO
		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		1.0	1,000	700	530	100	500	NA	NA	NA
Well	Date									
OBG-9A	3/95	<1.0	<1.0	<1.0	<1.0	<2.0	<473	NS	NS	NS
	5/96	<1.0	<1.0	<1.0	<1.0	<2.0	<473	NS	NS	NS
	11/96	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/97	<1.0	<1.0	<1.0	<1.0	<1.0	**3,000**	<1.0	<500	<500
	8/97	<1.0	<1.0	<1.0	<1.0	3.0	**11,000**	3.0	2,200	<500
	11/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	2/98	<1.0	<1.0	<1.0	<1.0	<1.0	**3,100**	<1.0	NS	NS
	5/98	<1.0	<1.0	<1.0	<1.0	<1.0	**2,100**	<1.0	NS	NS
	8/98	<1.0	<1.0	<1.0	<1.0	3.0	**1,000**	3.0	NS	NS
	11/98	<1.0	<1.0	<1.0	<1.0	3.0	**800**	3.0	NS	NS
	2/99	<1.0	<1.0	<1.0	<1.0	<1.0	**1,300**	<1.0	NS	NS
	5/99	<1.0	<1.0	<1.0	<1.0	1.0	**800**	1.0	NS	NS
	8/99	<1.0	<1.0	<1.0	<1.0	<1.0	**700**	<1.0	NS	NS

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Bold numbers indicate an exceedance of State of CT Clean-up Standards
B = Analyte detected in method blank, **D** = Analyte concentration was obtained from a diluted analysis, **E** = Analyte concentration exceeded the calibration range
DRO=Diesel Range Organics, **GRO**=Gasoline Range Organics
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Naval Submarine Base, Groton, CT

(analytical results in µg/l)

Compound		BTEX				MTBE	TPH (By EPA Method 418.1)[1]	Total Volatiles (by EPA Method 8010/8020)	DRO	GRO
		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		1.0	1,000	700	530	100	500	NA	NA	NA
Well	Date									
WE-2D(B)	11/96	1.0	<1.0	<1.0	<1.0	<1.0	<1,000	3.0	<500	<500
	2/97	**2.0**	<1.0	<1.0	<1.0	3.0	<500	5.0	<500	<500
	5/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	<500	<500
	8/97	<1.0	<1.0	<1.0	<1.0	4.0	**11,000**	4.0	<500	<500
	11/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	2/98	<1.0	<1.0	<1.0	<1.0	<1.0	**1,000**	<1.0	NS	NS
	5/98	<1.0	<1.0	<1.0	<1.0	3.0	**1500.0**	3.0	NS	NS
	8/98	**2.0**	<1.0	<1.0	<1.0	5.0	<500	7.0	NS	NS
	11/98	**2.0**	<1.0	<1.0	1.0	3.0	400.0	6.0	NS	NS
	2/99	<1.0	<1.0	<1.0	<1.0	2.0	<400	2.0	NS	NS
	5/99	<1.0	<1.0	<1.0	<1.0	<1.0	<400	<1.0	NS	NS
	8/99	<1.0	<1.0	<1.0	<1.0	<1.0	<400	<1.0	NS	NS

Notes: NA = Not Analyzed
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Bold numbers indicate an exceedance of State of CT Clean-up Standards
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(analytical results in µg/l)

Compound		BTEX				MTBE	TPH (By EPA Method 418.1)[1]	Total Volatiles (by EPA Method 8010/8020)	DRO	GRO
		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		1.0	1,000	700	530	100	500	NA	NA	NA
Well	Date									
WE-2S	3/95	**37.9**	24.2	60.3	126.4	21.3	**725**	NS	NS	NS
	5/96	**50**	22	101	144	<10	**1,570**	NS	NS	NS
	11/96	**7.0**	<1.0	9.0	4.0	14	<1,000	34	<500	<500
	2/97	**5.0**	<1.0	14	3.0	10	<500	32	500	600
	5/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	2/98	**4.0**	<1.0	<1.0	15	7.0	<500	26	NS	NS
	5/98	**2.0**	<1.0	10	<1.0	7.0	**1,200**	19	NS	NS
	8/98	**2.0**	<1.0	3.0	<1.0	6.0	<500	11	NS	NS
	11/98	<1.0	1.0	<1.0	<1.0	4.0	<400	5.0	NS	NS
	2/99	**2.0**	<1.0	11	5.0	8.0	<400	26	NS	NS
	5/99	**2.0**	2.0	13	1.0	<1.0	<400	18	NS	NS
	8/99	<1.0	<1.0	<1.0	<1.0	<1.0	<400	<1.0	NS	NS

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(analytical results in µg/l)

Compound		BTEX				MTBE	TPH (By EPA Method 418.1)[1]	Total Volatiles (by EPA Method 8010/8020)	DRO	GRO
		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		1.0	1,000	700	530	100	500	NA	NA	NA
Well	Date									
WE-3	3/95	<1.0	<1.0	<1.0	<1.0	8.70	<473	NS	NS	NS
	5/96	**2.0**	<1.0	<1.0	<1.0	14	<473	NS	NS	NS
	11/96	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/97	<1.0	<1.0	<1.0	<1.0	6.0	<500	6.0	<500	<500
	5/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	<500	<500
	8/97	<1.0	<1.0	<1.0	<1.0	**220**	**3,000**	220	<500	<500
	11/97	<1.0	<1.0	<1.0	<1.0	38	<500	38	NS	NS
	2/98	**2.0**	<1.0	<1.0	<1.0	**160D**	<500	162	NS	NS
	5/98	<1.0	<1.0	<1.0	<1.0	2.0	<500	2.0	NS	NS
	8/98	<1.0	<1.0	<1.0	<1.0	94D	<500	94	NS	NS
	11/98	<1.0	<1.0	<1.0	<1.0	36	500	36	NS	NS
	2/99	<1.0	<1.0	<1.0	<1.0	9.0	<400	9.0	NS	NS
	5/99	<1.0	<1.0	<1.0	<1.0	<1.0	<400	<1.0	NS	NS
	8/99	<1.0	<1.0	<1.0	<1.0	69	<400	69	NS	NS

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Compound		BTEX				MTBE	TPH (By EPA Method 418.1)[1]	Total Volatiles (by EPA Method 8010/8020)	DRO	GRO
		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		1.0	1,000	700	530	100	500	NA	NA	NA
Well	Date									
WE-4	3/95	**267**	29.8	392	**712**	<40	**5,180**	NS	NS	NS
	5/96	**160**	16	301	**617**	<40	**3,680**	NS	NS	NS
	11/96	**41**	1.0	100	2.0	19	<1,000	166	1,100	500
	2/97	**21**	<1.0	27	1.0	17	<500	66	500	700
	5/97	**13**	<1.0	13	<1.0	19	<500	45	700	540
	8/97	**7.0**	<1.0	19	3B	3B	**700**	44	<500	<500
	11/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	2/98	<1.0	<1.0	<1.0	<1.0	<1.0	**1,300**	<1.0	NS	NS
	5/98	<1.0	<1.0	<1.0	<1.0	<1.0	**600**	<1.0	NS	NS
	8/98	<1.0	<1.0	<1.0	<1.0	1.0	<500	1.0	NS	NS
	11/98	**5.0**	<1.0	7.0	<1.0	4.0	400	16	NS	NS
	2/99	<1.0	<1.0	<1.0	1.0	<1.0	<400	1.0	NS	NS
	5/99	<1.0	<1.0	<1.0	<1.0	<1.0	<400	<1.0	NS	NS
	8/99	<1.0	<1.0	<1.0	<1.0	8.0	<400	8.0	NS	NS

Notes: NA = Not Analyzed
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Bold numbers indicate an exceedance of State of CT Clean-up Standards
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Naval Submarine Base, Groton, CT

(analytical results in µg/l)

Compound		BTEX				MTBE	TPH (By EPA Method 418.1)[1]	Total Volatiles (by EPA Method 8010/8020)	DRO	GRO
		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		1.0	1,000	700	530	100	500	NA	NA	NA
Well	Date									
WE-5	11/96	**240D**	410D	**720D**	**4,300E**	27	**9,000**	5,697	12,000	8,900
	2/97	**42D**	10	89D	490D	6.0	**2,000**	637	2,000	1,200
	5/97	**370**	190	**840**	**3,900D**	<1.0	**4,000**	5,300	11,000	16,000
	8/97	**210D**	<1.0	210D	470DB	63D	**5,000**	953	3,900	2,500
	11/97	**11**	<1.0	2.0	6.0	27	**1,100**	46	NS	NS
	2/98	**11**	<1.0	10	14	3.0	**1,800**	38	NS	NS
	5/98	<1.0	<1.0	<1.0	<1.0	<1.0	**1,400**	<1.0	NS	NS
	8/98	**94**	1.0	30	28	31	**2,400**	184	NS	NS
	11/98	**4.0**	<1.0	<1.0	1.0	37	**1,500**	42	NS	NS
	2/99	**12**	1.0	6.0	78	5.0	**1,000**	102	NS	NS
	5/99	**99**	2.0	8.0	49	<1.0	**1,700**	158	NS	NS
	8/99	<1.0	<1.0	<1.0	<1.0	44	**1,200**	44	NS	NS

Notes: NA = Not Analyzed
NS = Not sampled (NS results have been shaded)
Bold numbers indicate an exceedance of State of CT Clean-up Standards
B = Analyte detected in method blank, **D** = Analyte concentration was obtained from a diluted analysis, **E** = Analyte concentration exceeded the calibration range
DRO=Diesel Range Organics, **GRO**=Gasoline Range Organics
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Table 1
Historical Groundwater Sampling Results
Dolphin Mart - March 1995 - August 1999
Naval Submarine Base, Groton, CT

(analytical results in µg/l)

Compound		BTEX				MTBE	TPH (By EPA Method 418.1)[1]	Total Volatiles (by EPA Method 8010/8020)	DRO	GRO
		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		1.0	1,000	700	530	100	500	NA	NA	NA
Well	Date									
WE-6	11/96	**5.0**	210 D	71 D	**630 D**	<1.0	<1,000	916	2,000	1,400
	2/97	**3.0**	4.0	8.0	12	2.0	<500	29	800	700
	5/97	**3.0**	1.0	12	<1.0	<1.0	<500	15	1,200	1,200
	8/97	<1.0	1.0	<1.0	28	<1.0	**1,000**	29	<500	<500
	11/97	**2.0**	<1.0	3.0	2.0	4.0	<500	11	NS	NS
	2/98	**2.0**	<1.0	5.0	3.0	4.0	500	14	NS	NS
	5/98	<1.0	<1.0	<1.0	<1.0	<1.0	**1,000**	<1.0	NS	NS
	8/98	**3.0**	4.0	9.0	44	<1.0	<500	60	NS	NS
	11/98	**2.0**	<1.0	<1.0	2.0	5.0	<400	9.0	NS	NS
	2/99	<1.0	1.0	3.0	12	2.0	400	18	NS	NS
	5/99	<1.0	<1.0	<1.0	<1.0	<1.0	<400	<1.0	NS	NS
	8/99	<1.0	<1.0	<1.0	<1.0	<1.0	**1,200**	<1.0	NS	NS

Notes: NA = Not Analyzed
NS = Not sampled (NS results have been shaded)
Bold numbers indicate an exceedance of State of CT Clean-up Standards
B = Analyte detected in method blank, **D** = Analyte concentration was obtained from a diluted analysis, **E** = Analyte concentration exceeded the calibration range
DRO=Diesel Range Organics, **GRO**=Gasoline Range Organics
[1] = Beginning 5/98, TPH was analyzed using EPA Method 8100M

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Table 2
Historical Groundwater Sampling Results
NEX - March 1995 - August 1999
Naval Submarine Base, Groton, CT

(analytical results in µg/l)

Compound		BTEX				MTBE	TPH (By EPA Method 418.1)[1]	Total Volatiles (by EPA Method 8010/8020)	DRO	GRO
		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		215	23,500	50,000	21,300	50,000	NARS	NARS	NARS	NARS
Well	Date									
ERM-5	3/95	**967**	431	390	1,340	<100	NS	3,295.1	430	8,250
	5/96	112	6.0	34	28	<10	NS	196	159	554
	11/96	**370D**	14	33	61 D	<1.0	3,000	480	1,100	1,600
	2/97	**1,100**	1,100	580	1,600	<50	3,000	4,440 B	3,900	9,100
	5/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/97	**730**	250	870	620	<10	2,300	2,470	NS	NS
	2/98	**310**	460	300	710	<10	5,400	1,780	NS	NS
	5/98	**790**	280	1,200	4,900	<100	9,200	7,170	NS	NS
	8/98	130	16	330	1,100	<10	2,200	1,576	NS	NS
	11/98	140	8.0	32	75	<1.0	4,200	255	NS	NS
	2/99	56	2.0	2.0	3.0	2.0	1,900	65	NS	NS
	5/99	**590**	74	560	2,000	<20	1,900	3,224	NS	NS
	8/99	120 D	7.0	<1.0	900 D	<1.0	1,600	1,027	NS	NS

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Table 2
Historical Groundwater Sampling Results
NEX - March 1995 - August 1999
Naval Submarine Base, Groton, CT

(analytical results in µg/l)

Compound		BTEX				MTBE	TPH (By EPA Method 418.1)[1]	Total Volatiles (by EPA Method 8010/8020)	DRO	GRO
		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		215	23,500	50,000	21,300	50,000	NARS	NARS	NARS	NARS
Well	Date									
ERM-6	5/96	15	<1.0	<1.0	<1.0	<2.0	NS	35	63	<473
	11/96	**610**	230	770	2,400 E	<40	5,000	4,054	500	7,800
	2/97	**430 D**	21	300	1,000 D	<10	2,000	1,763 B	2,200	4,800
	5/97	**430 D**	21	640 D	2,300 D	<1.0	1,000	3,391 D	1,500	6,700
	8/97	**470**	90	650	2,000	<1.0	2,000	3,210	3,500	6,200
	11/97	**250 D**	23	260 D	530 D	<1.0	<500	1,063	NS	NS
	2/98	97 D	13	110 D	240 D	<1.0	<500	460	NS	NS
	5/98	21	4.0	28	78	<1.0	<500	131	NS	NS
	8/98	63	8.0	170D	<190 D	<1.0	800	431	NS	NS
	11/98	1.0	<1.0	3.0	<1.0	<1.0	<400	4.0	NS	NS
	2/99	<1.0	<1.0	<1.0	<1.0	2.0	<400	2.0	NS	NS
	5/99	<1.0	<1.0	<1.0	<1.0	5.0	<400	5.0	NA	NS
	8/99	<1.0	<1.0	<1.0	2.0	<1.0	<400	2.0	NA	NA

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Table 2
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NEX - March 1995 - August 1999
Naval Submarine Base, Groton, CT

(analytical results in µg/l)

Compound		BTEX				MTBE	TPH (By EPA Method 418.1)[1]	Total Volatiles (by EPA Method 8010/8020)	DRO	GRO
		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		215	23,500	50,000	21,300	50,000	NARS	NARS	NARS	NARS
Well	Date									
ERM-7	5/96	5.0	<1.0	<1.0	<1.0	<2.0	NS	8.0	38	<473
	11/96	<1.0	<1.0	<1.0	<1.0	<1.0	<1,000	4.0	<500	<500
	2/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	1.0	<500	<500
	5/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	<500	<500
	8/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	<500	<500
	11/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	2/98	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	5/98	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	8/98	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	11/98	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/99	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/99	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/99	<1.0	<1.0	<1.0	<1.0	<1.0	<400	<1.0	NS	NS

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NEX - March 1995 - August 1999
Naval Submarine Base, Groton, CT

(analytical results in µg/l)

Compound		BTEX				MTBE	TPH (By EPA Method 418.1)[1]	Total Volatiles (by EPA Method 8010/8020)	DRO	GRO
		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		215	23,500	50,000	21,300	50,000	NARS	NARS	NARS	NARS
Well	Date									
ERM-8 (destroyed)	3/95	109	11.5	272	157	<50	NS	665.4	464	2,350
	5/96	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/96	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/98	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/98	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/98	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/98	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/99	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/99	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/99	NS	NS	NS	NS	NS	NS	NS	NS	NS

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Table 2
Historical Groundwater Sampling Results
NEX - March 1995 - August 1999
Naval Submarine Base, Groton, CT

(analytical results in µg/l)

Compound		BTEX				MTBE	TPH (By EPA Method 418.1)[1]	Total Volatiles (by EPA Method 8010/8020)	DRO	GRO
		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		215	23,500	50,000	21,300	50,000	NARS	NARS	NARS	NARS
Well	Date									
ERM-9 (destroyed)	5/96	<1.0	<1.0	<1.0	<1.0	2.0	NS	4.0	3,310	<473
	11/96	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/98	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/98	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/98	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/98	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/99	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/99	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/99	NS	NS	NS	NS	NS	NS	NS	NS	NS

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NEX - March 1995 - August 1999
Naval Submarine Base, Groton, CT

(analytical results in µg/l)

Compound		BTEX				MTBE	TPH (By EPA Method 418.1)[1]	Total Volatiles (by EPA Method 8010/8020)	DRO	GRO
		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		215	23,500	50,000	21,300	50,000	NARS	NARS	NARS	NARS
Well	Date									
ERM-11	11/96	<1.0	<1.0	<1.0	<1.0	<1.0	<1,000	3.0	<500	<500
	2/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	2.0	<500	<500
	5/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	<500	<500
	8/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	<500	<500
	11/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	2/98	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	5/98	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	8/98	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	11/98	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/99	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/99	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/99	<1.0	<1.0	<1.0	<1.0	<1.0	**800**	<1.0	NS	NS

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(analytical results in µg/l)

Compound		BTEX				MTBE	TPH (By EPA Method 418.1)[1]	Total Volatiles (by EPA Method 8010/8020)	DRO	GRO
		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		215	23,500	50,000	21,300	50,000	NARS	NARS	NARS	NARS
Well	Date									
ERM-12	3/95	<1.0	<1.0	<1.0	<1.0	<2.0	NS	1.0	27	<473
	5/96	1.0	2.0	7.0	14	<2.0	NS	61	4,300	1,390
	11/96	<1.0	2.0	<1.0	9.0	<1.0	3,000	16	7,300	6,700
	2/97	<1.0	1.0	2.0	9.0	<1.0	15,000	13	4,800	1,300
	5/97	**LP**	**LP**	**LP**	**LP**	**LP**	**LP**	**LP**	**LP**	**LP**
	8/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/97	<1.0	<1.0	<1.0	4.0	<1.0	7,100	4.0	NS	NS
	2/98	<1.0	<1.0	<1.0	1.0	<1.0	23,000	1.0	NS	NS
	5/98	<1.0	<1.0	2.0	2.0	<1.0	5,400	4.0	NS	NS
	8/98	<5.0	<5.0	<5.0	<5.0	<5.0	5,200	<5.0	NS	NS
	11/98	<1.0	<1.0	<1.0	2.0	<1.0	5,100	2.0	NS	NS
	2/99	<1.0	<1.0	<1.0	<1.0	<1.0	1,000	<1.0	NS	NS
	5/99	<1.0	<1.0	<1.0	<1.0	<1.0	1,000	<1.0	NS	NS
	8/99	<1.0	<1.0	<1.0	<1.0	<1.0	<400	<1.0	NS	NS

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Compound		BTEX				MTBE	TPH (By EPA Method 418.1)[1]	Total Volatiles (by EPA Method 8010/8020)	DRO	GRO
		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		215	23,500	50,000	21,300	50,000	NARS	NARS	NARS	NARS
Well	Date									
ERM-13	3/95	<1.0	<1.0	<1.0	<1.0	<2.0	NS	534	50	<473
	5/96	<1.0	<1.0	<1.0	<1.0	<2.0	NS	9.0	<100	<473
	11/96	<1.0	<1.0	<1.0	<1.0	<1.0	<1,000	2.0	<500	<500
	2/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	<500	<500
	5/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	<500	<500
	8/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	<500	<500
	11/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	2/98	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	5/98	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	8/98	<1.0	<1.0	<1.0	1.0	<1.0	<500	1.0	NS	NS
	11/98	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/99	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/99	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/99	<1.0	<1.0	<1.0	3.0	37.0	<400	40.0	NS	NS

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Compound		BTEX				MTBE	TPH (By EPA Method 418.1)[1]	Total Volatiles (by EPA Method 8010/8020)	DRO	GRO
		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		215	23,500	50,000	21,300	50,000	NARS	NARS	NARS	NARS
Well	Date									
ERM-14	3/95	**292**	4,880	8,190	6,020	<2.0	NS	19,995	4,840	3,670
	5/96	**305**	5,670	1,250	8,350	<2.0	NS	22,543	7,290	3,890
	11/96	**270**	8,300D	1,700D	11,000D	<25	7,000	21,270	12,000	30,000
	2/97	140	4,500D	980	7,100	<100	60,000	12,840	20,000	20,000
	5/97	**LP**	**LP**	**LP**	**LP**	**LP**	**LP**	**LP**	**LP**	**LP**
	8/97	**LP**	**LP**	**LP**	**LP**	**LP**	**LP**	**LP**	**LP**	**LP**
	11/97	40	2,300D	700D	2,500D	<1.0	4,600	5,540	NS	NS
	2/98	<1.0	930	210	2,800	<1.0	28,000	3,940	NS	NS
	5/98	80	2,200	690	5,400	<1.0	11,000	8,370	NS	NS
	8/98	**270**	5,900	1,600	16,000	<100	24,000	23,770	NS	NS
	11/98	<50	1,000	730	7,300	<50	16,000	9,030	NS	NS
	2/99	<100	420	160	5,300	<100	20,000	5,880	NS	NS
	5/99	<50	590	500	4,200	<50	15,000	5,290	NS	NS
	8/99	5.0	230D	<1.0	9,600D	<1.0	12,000	9,830D	NS	NS

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Compound		BTEX				MTBE	TPH (By EPA Method 418.1)	Total Volatiles (by EPA Method 8010/8020)	DRO	GRO
		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		215	23,500	50,000	21,300	50,000	NARS	NARS	NARS	NARS
Well	Date									
ERM-15	11/96	**280**	760	330	1,100	<40	1,000	2,517	2,300	4,500
	2/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/97	210	630	240	120	<10	<500	1,200	NS	NS
	2/98	8.0	9.0	4.0	25	<1.0	600	46	NS	NS
	5/98	**1,100**	2,700	810	3,200	<50	11,000	7,810	NS	NS
	8/98	**1,000**	2,200	1,100	3,600	<100	5,900	7,900	NS	NS
	11/98	150 D	270 D	280 D	1,300 D	<1.0	3,100	2,000	NS	NS
	2/99	38	64	48	170	1.0	600	321	NS	NS
	5/99	<1.0	<1.0	<1.0	<1.0	<1.0	<400	<1.0	NS	NS
	8/99	79.0	16.0	150D	<1.0	130D	1,000	375D	NS	NS

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Compound		BTEX				MTBE	TPH (By EPA Method 418.1)[1]	Total Volatiles (by EPA Method 8010/8020)	DRO	GRO
		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		215	23,500	50,000	21,300	50,000	NARS	NARS	NARS	NARS
Well	Date									
ERM-16	11/96	37	<2.0	13	16	30	<1,000	68	4,400	2,000
	2/97	56D	<1.0	16	34		6,000	136	11,000	1,400
	5/97	34	<1.0	20	42	11	26,000	107	60,000	2,000
	8/97	**LP**	**LP**	**LP**	**LP**	**LP**	**LP**	**LP**	**LP**	**LP**
	11/97	5.0	<1.0	7.0	30	<1.0	15,000	42	NS	NS
	2/98	8.0	<1.0	3.0	15	6.0	25,000	32	NS	NS
	5/98	25	<1.0	9.0	18	13	4,800	65	NS	NS
	8/98	**LP**	**LP**	**LP**	**LP**	**LP**	**LP**	**LP**	**LP**	**LP**
	11/98	**LP**	**LP**	**LP**	**LP**	**LP**	**LP**	**LP**	**LP**	**LP**
	2/99	12	<1.0	7.0	29	9.0	57,000	57	NS	NS
	5/99	8.0	<1.0	2.0	3.0	14	1,900	27	NS	NS
	8/99	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)

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Table 2
Historical Groundwater Sampling Results
NEX - March 1995 - August 1999
Naval Submarine Base, Groton, CT

(analytical results in µg/l)

Compound		BTEX				MTBE	TPH (By EPA Method 418.1)[1]	Total Volatiles (by EPA Method 8010/8020)	DRO	GRO
		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		215	23,500	50,000	21,300	50,000	NARS	NARS	NARS	NARS
Well	Date									
ERM-17	11/96	10	<1.0	<1.0	<1.0	9.0	<1,000	11	600	600
	2/97	<1.0	<1.0	<1.0	<1.0	<1.0	1,000	<1.0	500	<500
	5/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	1,500	<500
	8/97	12	<1.0	<1.0	<1.0	<1.0	1,000	12	1,000	500
	11/97	2.0	<1.0	<1.0	<1.0	<1.0	<500	2.0	NS	NS
	2/98	3.0	<1.0	<1.0	<1.0	<1.0	<500	3.0	NS	NS
	5/98	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	8/98	13	<1.0	<1.0	<1.0	3.0	900	16	NS	NS
	11/98	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/99	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/99	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/99	<1.0	<1.0	12.0	12.0	<1.0	1,000	24.0	NS	NS

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		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		215	23,500	50,000	21,300	50,000	NARS	NARS	NARS	NARS
Well	Date									
ERM-19	11/96	<1.0	<1.0	<1.0	<1.0	<1.0	<1,000	1.0	<500	<500
	2/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	<500	<500
	5/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	<500	<500
	8/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	<500	<500
	11/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	2/98	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	5/98	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	8/98	<10	<10	<10	13	<10	<500	13	NS	NS
	11/98	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/99	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/99	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/99	<1.0	<1.0	<1.0	<1.0	<1.0	<400	<1.0	NS	NS

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Naval Submarine Base, Groton, CT

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Compound		BTEX				MTBE	TPH (By EPA Method 418.1)[1]	Total Volatiles (by EPA Method 8010/8020)	DRO	GRO
		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		215	23,500	50,000	21,300	50,000	NARS	NARS	NARS	NARS
Well	Date									
FD-1	5/98	210	3.0	140	29	66	48,000	448	NS	NS
	8/98	160	<10	55	<10	140	3,300	355	NS	NS
	11/98	42	<5.0	5.0	<5.0	220	9,000	267	NS	NS
	2/99	<50	<50	<50	<50	780	38,000	780	NS	NS
	5/99	160	6.0	55	11	410	11,000	642	NS	NS
	8/99	100D	<1.0	5.0	<1.0	220D	3,400	325D	NS	NS

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		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		215	23,500	50,000	21,300	50,000	NARS	NARS	NARS	NARS
Well	Date									
FD-2	5/98	63	<1.0	<1.0	3.0	31	14,000	97	NS	NS
	8/98	62	1.0	3.0	<1.0	36	3,300	102	NS	NS
	11/98	<1.0	<1.0	<1.0	<1.0	4.0	4,000	4.0	NS	NS
	2/99	<1.0	<1.0	<1.0	<1.0	25	5,000	25	NS	NS
	5/99	58	<1.0	1.0	<1.0	30	2,500	89	NS	NS
	8/99	52.0	<1.0	<1.0	<1.0	46.0	2,400	52	NS	NS
FD-3	5/98	<1.0	<1.0	<1.0	<1.0	9.0	<500	9.0	NS	NS
	8/98	<1.0	<1.0	<1.0	<1.0	4.0	<600	4.0	NS	NS
	11/98	<1.0	<1.0	<1.0	<1.0	3.0	<1,300	4.0	NS	NS
	2/99	<1.0	<1.0	<1.0	<1.0	10	<400	10	NS	NS
	5/99	<1.0	<1.0	<1.0	<1.0	4.0	<400	4.0	NS	NS
	8/99	<1.0	<1.0	<1.0	<1.0	<1.0	<400	<1.0	NS	NS

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		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		215	23,500	50,000	21,300	50,000	NARS	NARS	NARS	NARS
Well	Date									
MW-4	2/97	29	1.0	<1.0	3.0	<1.0	NS	33	NS	NS
	5/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/98	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/98	15	2.0	<1.0	<1.0	<1.0	1,000	17	NS	NS
	8/98	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/98	**490**	3,000	280	3,100	<50	NS	6,870	NS	NS
	2/99	<250	6,500	470	6,500	<250	8,800	13,470	NS	NS
	5/99	**230**	1,000	410	3,700	<20	NA	5,340	NS	NS
	8/99	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)

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Compound		BTEX				MTBE	TPH (By EPA Method 418.1)[1]	Total Volatiles (by EPA Method 8010/8020)	DRO	GRO
		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		215	23,500	50,000	21,300	50,000	NARS	NARS	NARS	NARS
Well	Date									
MW-6	2/97	<1.0	9.0	<1.0	<1.0	<1.0	NS	9.0	NS	NS
	5/97	18	<1.0	2.0	8.0	<1.0	<500	28	<500	<500
	8/97	35D	1.0	<1.0	8.0	<1.0	<500	46	<500	<500
	11/97	6.0	<1.0	<1.0	3.0	<1.0	<500	9.0	NS	NS
	2/98	8.0	<1.0	<1.0	3.0	<1.0	<500	11	NS	NS
	5/98	1.0	<1.0	<1.0	<1.0	<1.0	<500	1.0	NS	NS
	8/98	170	8.0	13	62	<2.0	<500	253	NS	NS
	11/98	5.0	<1.0	<1.0	2.0	<1.0	<400	7.0	NS	NS
	2/99	71	<1.0	<1.0	3.0	3.0	<400	77	NS	NS
	5/99	<1.0	<1.0	<1.0	<1.0	<1.0	<400	<1.0	NS	NS
	8/99	<1.0	<1.0	<1.0	3.0	<1.0	<400	3.0	NS	NS

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		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		215	23,500	50,000	21,300	50,000	NARS	NARS	NARS	NARS
Well	Date									
NEX-1	3/95	<1.0	<1.0	<1.0	<1.0	<2.0	NS	7.0	35	<143
	5/96	<1.0	<1.0	<1.0	<1.0	<2.0	NS	8.0	<122	<143
	11/96	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/97	2.0	11	4.0	34	<1.0	<500	57	<500	<500
	8/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	3.0	<500	<500
	11/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	2/98	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	5/98	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	8/98	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	11/98	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/99	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/99	<1.0	<1.0	<1.0	<1.0	<1.0	<400	<1.0	NS	NS
	8/99	<1.0	<1.0	<1.0	<1.0	<1.0	<400	<1.0	NS	NS

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		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		215	23,500	50,000	21,300	50,000	NARS	NARS	NARS	NARS
Well	Date									
OBG-1	5/97	**480**	3,300 D	1,100D	10,000 D	540	110,000	15,420	260,000	49,000
	8/97	**1,600**	6,200	1,700	12,000	810	220,000	**22,310**	580,000	56,000
	11/97	**1,600**	8,800	2,300	16,000	38,000	21,000	66,700	NS	NS
	2/98	**1,400**	7,100 D	2,200	15,000 D	24,000 D	160,000	49,700	NS	NS
	5/98	**LP**	**LP**	**LP**	**LP**	**LP**	**LP**	**LP**	**LP**	**LP**
	8/98	**340**	1,400	790	5,000	1,600	25,000	9,130	NS	NS
	11/98	**13,000**	**51,000**	15,000	**110,000**	1,000	86,000	190,000	NS	NS
	2/99	**2,500**	16,000	1,600	15,000	4,600	40,000	39,700	NS	NS
	5/99	130	840	270	7,000	720	27,000	8,960	NS	NS
	8/99	100	400	<1.0	5,400	3,000	25,000	8,900	NS	NS

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		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		215	23,500	50,000	21,300	50,000	NARS	NARS	NARS	NARS
Well	Date									
OBG-2	5/97	77	280	530	9,800 D	290	87,000	10,977	120,000	44,000
	8/97	**470**	410	1,100	11,000	830	180,000	13,990	99,000	75,000
	11/97	**370**	380	960	9,200	40,000	23,000	50,910	NS	NS
	2/98	**410**	340	680	7,900	26,000 D	120,000	35,330	NS	NS
	5/98	**570**	<1.0	650	6,300	15,000	33,000	22,520	NS	NS
	8/98	**330**	620	760	5,300	27,000 D	25,000	34,010	NS	NS
	11/98	<250	300	480	5,600	2,000	25,000	8,380	NS	NS
	2/99	<100	500	220	4,100	1,600	39,000	6,420	NS	NS
	5/99	<50	58	290	3,700	2,000	29,000	6,048	NS	NS
	8/99	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)

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		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		215	23,500	50,000	21,300	50,000	NARS	NARS	NARS	NARS
Well	Date									
OBG-4	2/97	<1.0	<1.0	<1.0	<1.0	<1.0	NS	<1.0	NS	NS
	5/97	<1.0	<1.0	<1.0	2.0	<1.0	6,000	2.0	3,100	<500
	8/97	<1.0	<1.0	<1.0	<1.0	4.0	1,000	4.0	3,500	<500
	11/97	<1.0	3.0	<1.0	7.0	8.0	NS	18	NS	NS
	2/98	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/98	<1.0	<1.0	<1.0	<1.0	5.0	4,100	5.0	NS	NS
	8/98	<1.0	<1.0	<1.0	<1.0	5.0	6,100	5.0	NS	NS
	11/98	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/99	<250	3,100	1,200	11,000	<250	160,000	15,300	NS	NS
	5/99	<100	<100	<100	1,400	<100	NA	1,400	NS	NS
	8/99	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)

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		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		215	23,500	50,000	21,300	50,000	NARS	NARS	NARS	NARS
Well	Date									
OBG-7	5/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	<500	<500
	8/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	<500	<500
	11/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	2/98	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	5/98	<1.0	<1.0	<1.0	<1.0	<1.0	900	<1.0	NS	NS
	8/98	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	11/98	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/99	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/99	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/99	<1.0	<1.0	<1.0	2.0	<1.0	<400	2.0	NS	NS

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		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		215	23,500	50,000	21,300	50,000	NARS	NARS	NARS	NARS
Well	Date									
OBG-8 (destroyed)	5/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	<500	<500
	8/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/98	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/98	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/98	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/98	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/99	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/99	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/99	NS	NS	NS	NS	NS	NS	NS	NS	NS

Notes:
NA = Not Analyzed
NARS = No Applicable Remediation Standard
NS = Not sampled (NS results have been shaded)
Bold numbers indicate an exceedance of State of CT Clean-up Standards
D = Analyte concentration was obtained from a diluted analysis, B = Analyte detected in method blank, E = Analyte concentration exceeded the calibration range
DRO=Diesel Range Organics, GRO=Gasoline Range Organics
L P = Liquid-phase petroleum present; well could not be sampled
[1] = Beginning 5/98, TPH was analyzed using EPA Method 8100M

Table 2
Historical Groundwater Sampling Results
NEX - March 1995 - August 1999
Naval Submarine Base, Groton, CT

(analytical results in µg/l)

Compound		BTEX				MTBE	TPH (By EPA Method 418.1)[1]	Total Volatiles (by EPA Method 8010/8020)	DRO	GRO
		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		215	23,500	50,000	21,300	50,000	NARS	NARS	NARS	NARS
Well	Date									
OBG-9	5/97	LP	LP	LP	LP	LP	LP	LP	LP	LP
	8/97	LP	LP	LP	LP	LP	LP	LP	LP	LP
	11/97	**490**	4,800	2,100	16,000	<200	24,000	23,390	NS	NS
	2/98	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/98	LP	LP	LP	LP	LP	LP	LP	LP	LP
	8/98	56	280	250	2,300	23	NS	2,909	NS	NS
	11/98	31	97	120	1,200	<5.0	5,800	1,448	NS	NS
	2/99	77	190 D	32	340 D	1.0	2,900	640	NS	NS
	5/99	140	4,700	2,500	12,000	<100	1,800	19,340	NS	NS
	8/99	38	660D	2,500D	12,000D	<1.0	16,000	15,198	NS	NS

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		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		215	23,500	50,000	21,300	50,000	NARS	NARS	NARS	NARS
Well	Date									
VEA-4	8/98	<1.0	<1.0	<1.0	<1.0	<1.0	<600	<1.0	NS	NS
	11/98	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)
	2/99	<1.0	<1.0	<1.0	<1.0	<1.0	<400	<1.0	NS	NS
	5/99	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)
	6/99	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS	NS
	8/99	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)
VEA-7	8/98	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	11/98	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)
	2/99	<1.0	<1.0	<1.0	<1.0	1.0	<400	1.0	NS	NS
	5/99	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)
	6/99	<1.0	<1.0	<1.0	<1.0	<1.0	NA	<1.0	NS	NS
	8/99	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)	NS (dry)

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		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		215	23,500	50,000	21,300	50,000	NARS	NARS	NARS	NARS
Well	Date									
VEA-14	8/98	<10	<10	410	1,000	<10	<500	1,410	NS	NS
	11/98	<1.0	<1.0	16	44	<1.0	1,800	60	NS	NS
	2/99	<1.0	<1.0	21	23	<1.0	5,000	44	NS	NS
	5/99	<1.0	<1.0	48	<1.0	1.0	3,800	49	NS	NS
	8/99	<1.0	<1.0	<1.0	2.0	<1.0	15,000	2.0	NS	NS

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