

**Year 12 Groundwater Monitoring Report  
for  
Remedial Action Implementation  
Buildings C-17/20/16/50**

**Naval Weapons Station Earle  
Colts Neck, NJ**



**Prepared for:  
Department of the Navy  
Naval Facilities Engineering Command Mid-Atlantic  
9742 Maryland Ave.  
Norfolk, Virginia 23511-3095**

**Contract No. N40085-09-D-7035  
Contract Task Order No. 0010**

**July 2010**

**Prepared by:**



**H&S Environmental, Inc  
160 East Main Street, Suite 2F  
Westborough, MA 01581**

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A handwritten signature in blue ink, appearing to read "Patrick Schauble".

7/27/10

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Patrick Schauble, P.E.  
Program Manager

Date

A handwritten signature in blue ink, appearing to read "Jill Ann Parrett".

7/27/10

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Jill Ann Parrett, P.G.  
Project Manager

Date

## TABLE OF CONTENTS

<b>1.0</b>	<b>Introduction.....</b>	<b>1</b>
1.1	Introduction .....	1
1.2	Report Organization .....	2
<b>2.0</b>	<b>CEA Summary .....</b>	<b>3</b>
2.1	General Information .....	3
2.2	Site Location and CEA Descriptions .....	3
2.3	CEA Monitoring Program Overview .....	3
<b>3.0</b>	<b>Groundwater Monitoring Program .....</b>	<b>4</b>
3.1	Groundwater Monitoring Program: Years 1 through 12.....	4
3.1.1	<i>Year 1 Monitoring Program</i> .....	5
3.1.2	<i>Year 2 Monitoring Program</i> .....	5
3.1.3	<i>Year 3 Monitoring Program</i> .....	5
3.1.4	<i>Year 4 Monitoring Program</i> .....	5
3.1.5	<i>Year 5 Monitoring Program</i> .....	5
3.1.6	<i>Year 6 Monitoring Program</i> .....	6
3.1.7	<i>Year 7 Monitoring Program</i> .....	6
3.1.8	<i>Year 8 Monitoring Program</i> .....	7
3.1.9	<i>Year 9 Monitoring Program</i> .....	7
3.1.10	<i>Year 10 Monitoring Program</i> .....	7
3.1.11	<i>Year 11 Monitoring Program</i> .....	8
<b>4.0</b>	<b>Discussion of Results .....</b>	<b>8</b>
4.1	Technical Overview .....	8
4.2	Field Sampling and Analytical Methods .....	8
4.3	Data Validations .....	8
4.4	Analytical Results and Groundwater Flow Direction for Year 12 .....	8
4.4.1	Groundwater Analytical Results.....	9
4.4.2	Surface Water Analytical Results.....	10
4.4.3	Quality Assurance/Quality Control (QA/QC) Sampling .....	11
4.5	Trend Analysis .....	11
<b>5.0</b>	<b>Conclusions.....</b>	<b>13</b>
<b>6.0</b>	<b>References .....</b>	<b>13</b>

## FIGURES

Figure 1-1	Site Location Map
Figure 1-2	CEA Boundary
Figure 4-1	Year 12 Groundwater Quality Map
Figure 4-2	Potentiometric Surface Map – August 2009
Figure 4-3	Potentiometric Surface Map – November 2009
Figure 4-4	Potentiometric Surface Map – February 2010
Figure 4-5	Potentiometric Surface Map – May 2010
Figure 4-6	Monitoring Well 16MW-11, Benzene Concentration Trend
Figure 4-7	Monitoring Well 16MW-15, Benzene Concentration Trend
Figure 4-8	Monitoring Well 16MW-24, Benzene Concentration Trend
Figure 4-9	Monitoring Well 16MW-11, MTBE Concentration Trend
Figure 4-10	Monitoring Well 16MW-15, MTBE Concentration Trend
Figure 4-11	Monitoring Well 16MW-24, MTBE Concentration Trend
Figure 4-12	Benzene Concentration Transect – Year 12
Figure 4-13	MTBE Concentration Transect – Year 12

## TABLES

Table 1	Year 12 Groundwater and Surface Water Sampling and Analysis Summary
Table 2	Analytical Data Summary - Years 1-12
Table 3	Sample Data Summary - Year 12
Table 4	Surface Water Data Summary - Year 12
Table 5	Groundwater Level Data – Year 12
Table 6	Summary of Water Quality Indicator Parameters
Table 7	Quality Assurance/Quality Control (QA/QC) Data Summary – Year 12
Table 8	Relative Percent Differences – Year 12

## APPENDICES

Appendix A	Validated Data and Validation Reports
Appendix B	Field Data Logs
Appendix C	Chains of Custody

## 1.0 INTRODUCTION

### 1.1 Introduction

H&S Environmental, Inc (H&S) has prepared The Year 12 Groundwater Monitoring Report for the Remedial Action Implementation at Buildings C-17/20/16/50, for Naval Facilities Engineering Command Mid-Atlantic (NAVFAC MIDLANT) under the Contract Number N40085-09-D-7035, Contract Task Order (CTO) No. 0010. The purpose of this report is to present the quarterly results of the Year 12 of the groundwater monitoring program in the vicinity of Buildings C-17/20/16/50 on the Mainside area of the Naval Weapons Station (NWS) Earle. A map of this location is presented in **Figure 1-1**.

An underground fuel line located in the area was used to transport diesel fuel from an underground storage tank (UST) located in the vicinity of Buildings C-17 and C-20 to a dispensing station north of Building C-50 (**Figure 1-2**). A leak in the fuel line was discovered in 1977. The former USTs were removed from the former gas station in 1995. Part of the former underground diesel transfer line is still in place. An investigation was performed between 1995 and 1997 to delineate the extent of the soil and groundwater impact. The hydrogeologic investigation and site characterization for the Remedial Action Work Plan (RAWP) were completed in 1997 (Brown & Root Environmental, 1997). The New Jersey Department of Environmental Protection (NJDEP) approved the RAWP with monitored natural attenuation selected as the remedial method in 1998 (NJDEP, 1998a). The Classification Exception Area (CEA) documents for this Area of Concern (AOC) were approved by NJDEP in 1998 (NJDEP, 1998b). The CEA, depicted in **Figure 1-2**, encompasses groundwater impact from the leaking underground fuel line used to transport diesel fuel from a UST formerly located in the vicinity of Buildings C-20 and C-17 (**Figure 1-2**).

The plume of contamination includes highly weathered free-phase diesel fuel and dissolved-phase fuel constituents of concern (COC). The horizontal extent of the light non-aqueous phase liquid (LNAPL), including benzene and MTBE, encompasses an area of approximately one acre located northwest of Buildings C-17 and C-20 and between Buildings C-16 and C-50. The Navy is currently remediating the LNAPL via a bioslurping unit (**Figure 1-2**).

Prior to the CEA approval, trace concentrations of dissolved-phase benzene occurring below the NJDEP Groundwater Quality Standard (GWQS) were detected in monitoring wells 16MW-02, 16MW-08, 16MW-10, and 17MW-02, all located within 150 feet outside of the northern boundary of the CEA. Concentrations of benzene above the GWQS were also detected in monitoring well 16MW-06, located approximately 265 feet north of the CEA northern boundary. Previous investigations by Brown & Root Environmental (Brown & Root Environmental 1997 and 1998) had not confirmed a correlation between the LNAPL and the dissolved-phase benzene at well 16MW-06.

This report summarizes the results of the groundwater and the surface water sampling for dissolved-phase constituents. During Year 12, monitoring under the approved CEA was performed at monitoring wells 16MW-04, 16MW-05, 16MW-08, 16MW-10, 16MW-11, 16MW-15, 16MW-24, 16MW-25, 18MW-01, and two surface water locations, 16SW-01 and 16SW-02. In recent years, NJDEP-approved modifications have been made to the monitoring programs resulting in the removal of certain monitoring wells from the program and other recommended changes. These modifications leading up to the current monitoring program are detailed later in Section 3.0.

## **1.2 Report Organization**

Section 1.0 gives an introduction to the Site. Section 2.0 summarizes the CEA documents, and Section 3.0 summarizes the groundwater monitoring program as proposed in the CEA documents and modifications to the program during Years 1 through 12. Section 4.0 provides a summary and discusses the Year 12 monitoring results.

## 2.0 CEA SUMMARY

### 2.1 General Information

The CEA documents list the following general information for the C-17/20/16/50 Site:

- **Site Name/Location:** Buildings C-17/20/16/50, Naval Weapons Station Earle; Colts Neck, New Jersey.
- **Site Identification Number:** Spill Case Number 91-5-15-0941-14
- **NJDEP Case Manager:** Ms. Erica Bergman
- **Site Contact Person:** Mr. Scott Fleming
- **Lead Program:** NJDEP - Bureau of Federal Case Management
- **Aquifer/Formation Impacted:** Vincentown/Vincentown
- **Aquifer Classification:** Groundwater for the Mainside area of the NWS Earle facility is classified as Class II-A.
- **Contaminants Exceeding Applicable GWQS:** Benzene, Methyl tert-butyl ether (MTBE)
- **Projected Longevity of the CEA:** 23 years.

### 2.2 Site Location and CEA Description

The area of concern is located at the Mainside area of the NWS Earle facility (**Figure 1-2**). According to the Colts Neck Township Tax Office, the entire Mainside area is designated as Block 56, Lot 1. The area of the CEA may be described as a circular area of approximately 3,000 square feet. The area has been used in the past to store and maintain railroad cars and other heavy equipment. In general, the area is overlain by railroad tracks and both paved and unpaved surfaces. The area is bordered to the south by Buildings C-17, C-20, C-18, C-19, and C-50. The area is bordered to the west by Saipan Road, to the north by monitoring wells 16MW-08 and 16MW-12, and to the east by monitoring well 16MW-02 and a small unnamed creek. The CEA boundaries and surface features are presented in **Figure 1-2**.

### 2.3 CEA Monitoring Program Overview

The monitoring program provided for in the CEA consists of:

- Short-term monitoring of wells 16MW-04, 16MW-05, 16MW-08, 16MW-10, 16MW-11, 16MW-15, 16MW-24, 16MW-25, 18MW-01, and two surface water locations, 16SW-01 and 16SW-02, occurring throughout the implementation of the LNAPL recovery remedial program (bioslurper activities).
- Reviewing data from installed recovery wells within the eastern portion of the CEA. If groundwater impact is identified at levels above the GWQS within this area, an additional sentry or monitoring well may be required.
- Long-term monitoring will be implemented only in the event that the GWQS are not exceeded during the short-term monitoring and will last for a minimum of four and a maximum of eight consecutive quarters after bioslurper activities have ceased.

- US Environmental Protection Agency (EPA) Methods 624 and 625 is used to analyze groundwater samples for MTBE, benzene, ethylbenzene, toluene, xylenes (collectively BTEX) and naphthalene. All analyses are performed by a Department of Defense ELAP and New Jersey-certified laboratory. In Year 6, naphthalene analysis has been omitted from certain monitoring wells, due to repeated results showing levels are not detected above the method detection limits (MDLs). The complete sampling and analysis summary can be found in **Table 1**.
- Field chemistry measurements performed prior to sample acquisition include; dissolved oxygen, pH, specific conductivity, oxidation reduction potential (ORP), turbidity, and temperature. These parameters are measured using field instruments and recorded for all groundwater samples.

Groundwater monitoring reports are submitted to NJDEP on an annual basis. The reports include a tabulation of all sample results received during the reporting period pursuant to New Jersey Administrative Code (N.J.A.C.) 7:26E-3.13(c)3 and provide a brief narrative summarizing the data and presenting conclusions. In the event a non-compliance with the RAWP is identified, NJDEP will be notified as soon as possible.

### 3.0 GROUNDWATER MONITORING PROGRAM

#### 3.1 Groundwater Monitoring Program: Years 1 through 12

This section presents the results of the monitoring program during each year (Years 1 through 11). Modifications to the program or additional site investigations are also given here. A summary of historic groundwater laboratory analytical results are presented in **Table 2**.

##### 3.1.1 Year 1 Monitoring Program (August 1998 - May 1999)

The Year 1 monitoring program included the following monitoring wells: 16MW-02, 16MW-03, 16MW-04, 16MW-05, 16MW-06, 16MW-08, 16MW-10, 17MW-01, 17MW-02, and 18MW-01. Benzene concentrations in excess of the GWQS (1 microgram per liter [ $\mu\text{g/L}$ ]) were identified in all four sampling periods during Year 1 at monitoring well 16MW-06. Benzene was detected above the GWQS for at least one event in monitoring wells 16MW-08, 16MW-03, and 16MW-05. All other constituents were detected below the applicable GWQS.

##### 3.1.2 Year 2 Monitoring Program (August 1999 - May 2000)

Based on the Year 1 sampling results, the Navy modified the monitoring program for Year 2 to include monitoring well 16MW-09, located approximately 125 feet north and downgradient from monitoring well 16MW-06. During this monitoring period, benzene levels in excess of the GWQS were again identified in all four sampling periods at monitoring well 16MW-06, and in three sampling periods at monitoring well 16MW-09.

##### 3.1.3 Year 3 Monitoring Program (August 2000 - May 2001)

Based on the Year 2 sampling results, the Navy modified the monitoring program between the August 2000 and November 2000 sampling events to include installation and sampling of a new downgradient monitoring well (16MW-11) located approximately 280 feet north and downgradient of monitoring well 16MW-09. Results indicated benzene concentrations (100  $\mu\text{g/L}$  to 582  $\mu\text{g/L}$ ) above the GWQS for at least one sampling event in wells 16MW-08, 16MW-09, 16MW-10, 16MW-11, and 17MW-02. Monitoring well 16MW-11 contained the highest MTBE concentration outside of the LNAPL area. Therefore, in addition to the well installation and sampling, the Navy performed a one-time expanded monitoring program, concurrent with the February 2001 sampling period, at six wells located at Installation Restoration Program (IRP) Site 1 (01MW-01, 01MW-02, 01MW-03, 01MW-04, and 01MW-05) and two wells at IRP Site 29 (29MW-01 and 29MW-02). The monitoring wells at IRP Site 1 are located approximately 1,200 feet north and downgradient from monitoring well 16MW-11. The monitoring wells at IRP Site 29 are located approximately 240 feet southwest and cross-gradient from monitoring well 16MW-11. During Year 3, benzene concentrations above the GWQS were detected in monitoring wells 16MW-06, 16MW-08, 16MW-09, 16MW-10, and 17MW-01.

### **3.1.4 Year 4 Monitoring Program (August 2001 - May 2002)**

Based on the Year 3 sampling results, no changes were made to the Year 4 monitoring program. During the Year 4 monitoring program, MTBE concentrations exceeded the NJDEP GWQS (70 µg/L) in at least one sampling period in monitoring wells 16MW-05 and 16MW-11. Trace MTBE concentrations were intermittently detected in monitoring wells 16MW-06, 16MW-08, and 16MW-09. Benzene exceeded the GWQS in six of seven downgradient monitoring wells throughout this monitoring period. At monitoring well 16MW-05, located in the area of LNAPL, benzene exceeded the GWQS (ranging from 180 µg/L in August 2001 to the maximum concentration of 2,500 µg/L in November 2001). Concurrent with the Year 4 monitoring program, the Navy performed additional investigations in the area of monitoring well 16MW-11. The summary and results of these investigations were detailed in the Year 5 Groundwater Monitoring Report for Remedial Action Implementation (TtNUS, 2003). As a result of these investigations, the Navy added five new monitoring wells, 16MW-15, 16MW-16, 16MW-17, 16MW-24, 16MW-25, and two surface water sampling locations, 16SW-01 and 16SW-02, to the long term monitoring program for the site.

### **3.1.5 Year 5 Monitoring Program (August 2002 - May 2003)**

All five of the newly added monitoring wells were sampled during the Year 5 monitoring program, in addition to the monitoring wells sampled in Year 4. However, the surface water sample locations were only sampled in three out of the four monitoring periods. During the Year 5 monitoring program, MTBE concentrations exceeded the NJDEP GWQS during November 2002 and February 2003 in monitoring well 16MW-11. Benzene concentrations exceeded the GWQS at nine monitoring wells at various sampling periods throughout Year 5. The highest benzene concentration (132 µg/L) was indicated in monitoring well 16MW-11 during the February 2003 sampling period. In the CEA, benzene exceeded the GWQS at monitoring well 16MW-05 during two sampling periods when LNAPL was not present. Naphthalene levels exceeded the GWQS (300 µg/L) in monitoring well 16MW-05 during the August 2002 sampling period.

### **3.1.6 Year 6 Monitoring Program (August 2003 - May 2004)**

The Year 5 report recommended the removal of four monitoring wells from the program (16MW-02, 16MW-06, 16MW-16, and 17MW-02). These wells were sampled during the first two quarters and then removed from further sampling periods with the exception of monitoring well 17MW-02, which was sampled during all four quarters and maintained in the monitoring program. After the August 2003 monitoring period, monitoring well 16MW-03 was decommissioned in accordance with NJDEP regulations on 4 December 2003. The corresponding well decommissioning report was presented in the Year 6 Annual Report (TtNUS 2004b). Monitoring well 16MW-03 was replaced by monitoring well 17MW-02 in the program. Also, as recommended by the Year 5 report due to results indicating no detections above MDLs, the naphthalene analysis was omitted for the following six wells and both surface water locations: 16MW-03 (not currently sampled), 16MW-09 (not currently sampled), 16MW-15, 16MW-17 (not currently sampled), 16MW-24, 16MW-25, 16SW-01, and 16SW-02.

During the Year 6 monitoring program, MTBE concentrations exceeded the GWQS during one sampling event in monitoring well 16MW-05, which was only sampled once due to the presence of LNAPL, and during three sampling quarters at monitoring well 16MW-11. Benzene concentrations exceeded the GWQS at eight monitoring wells during at least one sampling period during Year 6. The highest benzene concentration (2,230 µg/L) was detected in monitoring well 16MW-05 during the November 2003 sampling event. Benzene concentrations exceeded the GWQS during all sampling events at monitoring wells 16MW-11, ranging from 54.8 to 68.2 µg/L, and 16MW-15, ranging from 8.8 to 233 J µg/L.

### **3.1.7 Year 7 Monitoring Program (August 2004 - May 2005)**

Based on the results of the Year 6 sampling program, modifications to the Year 7 monitoring program included the renaming of monitoring well 17MW-02 to 16MW-12 and the removal of the naphthalene analysis for this monitoring well. Also, monitoring well 17MW-01 was renamed to 17MW-17.

During Year 7, LNAPL was detected in monitoring well 16MW-05 during three of the four sampling events at thicknesses ranging from 0.05 foot to 0.16 foot. A groundwater sample was collected during November 2004 when LNAPL was not present and MTBE was the only constituent detected that exceeded the GWQS.

### **3.1.8 Year 8 Monitoring Program (August 2005 - May 2006)**

During Year 8, five additional recovery wells were installed (16MW-31, 16MW-32, 16MW-33, 16MW-34, and 16MW-35) in accordance with the Bioslurper Upgrade Work Plan (ECOR, 2005) (Figure 1-2). Since installation, all recovery wells have been added to the LNAPL recovery remedial program. All additional recovery wells have had some level of LNAPL present thus far. Four of the five wells reached a historic maximum product thickness during Year 8, ranging from 0.07 foot in 16MW-31 to 6.55 feet in 16MW-33 in January 2006. Recovery well 16MW-34 reached a historic maximum product thickness of 1.36 feet in March 2006.

### **3.1.9 Year 9 Monitoring Program (August 2006-May 2007)**

Based on results of Year 8, no changes were made to the Year 9 monitoring program. During Year 9, LNAPL was detected in monitoring wells 16MW-04 and 16MW-05 during all four events ranging in thickness from 0.02 feet to 0.45 feet. Therefore samples were not collected from these wells. Monitoring well 16MW-08 exceeded the GWQS for benzene in all four events. Monitoring well 16MW-11 exceeded the GWQS for benzene in all four events and for MTBE in three events. Monitoring well 16MW-15 exceeded the GWQS for benzene during all four events and monitoring well 16MW-24 exceeded the GWQS for benzene during all four events and for MTBE during one event. The remaining wells (16MW-10, 16MW-25, and 18MW-01) and surface water samples (16SW-01 and 16SW-02) exhibited no GWQS exceedances during any of the four events in Year 9.

### **3.1.10 Year 10 Monitoring Program (August 2007-May 2008)**

The Year 10 monitoring program was changed in September 2007 to include four additional wells (16MW-02, 16MW-06, 16MW-17, and 29MW-01) during the synoptic gauging to provide additional data for potentiometric maps. This was the only modification made during the Year 10 program. No samples were collected from monitoring wells 16MW-04 and 16MW-05 during Year 10 since LNAPL was detected in these wells during all four events. Samples collected from monitoring wells 16MW-08, 16MW-11, and 16MW-15 exceeded the benzene GWQS during all four events. Samples collected from 16MW-24 exceeded the benzene GWQS during three events. Samples collected from 16MW-11 exceeded the MTBE GWQS during all four events. The remaining wells (16MW-10, 16MW-25, and 18MW-01) and surface water samples (16SW-01 and 16SW-02) did not exceed the GWQS for any COC during any event.

### **3.1.11 Year 11 Monitoring Program (August 2008-May 2009)**

Based on the Year 10 results no changes were made to the Year 11 monitoring program. No samples were collected from monitoring wells 16MW-04 and 16MW-05 during Year 11 since LNAPL was detected in these wells during all four events. Samples collected from monitoring wells 16MW-08, 16MW-11, and 16MW-15 exceeded the benzene GWQS during all four events. Samples collected from 16MW-11 exceeded the MTBE GWQS during all four events. The remaining wells (16MW-10, 16MW-24, 16MW-25, and 18MW-01) and surface water samples (16SW-01 and 16SW-02) did not exceed the GWQS for any COC during any event.

## 4.0 DISCUSSION OF RESULTS

### 4.1 Technical Overview

The Year 12 quarterly groundwater monitoring program at Buildings C-17/20/16/50 was implemented in accordance with the CEA documents and the modifications described in the preceding sections of this report. Year 12 sampling events were performed in August 2009, November 2009, February 2010, and May 2010. Samples are analyzed by EPA Method 624 for BTEX and MTBE and EPA Method 625 for Naphthalene.

### 4.2 Field Sampling and Analytical Methods

All field sampling activities were completed by H&S and ECOR staff during Year 12. Sampling activities were conducted in accordance with the methods described in the NJDEP Field Sampling Procedures Manual (NJDEP, 2005) unless otherwise noted.

The field data logs (**Appendix B**) document all sample dates, times, field analysis results, depth to groundwater, and site-specific observations during sampling as well as water quality indicator parameter data.

Quality assurance/quality control (QA/QC) samples were included during each sampling round. The QA samples included one trip blank per sample shipment group (however, trip blanks were inadvertently omitted from November 2009 and February 2010 sampling events), one duplicate sample per sampling event (5% of total number of samples collected, in accordance with NJDEP guidelines), and one field blank per sampling event. The QA/QC Data Summary, which can be found in **Table 7** and **Table 8**, depicts Relative Percent Difference between field duplicates. An equipment blank was not prepared as dedicated sampling equipment was used. Sample containers and sample holding times were maintained in accordance with NJDEP guidelines.

### 4.3 Data Validation

An H&S data validator reviewed the laboratory analytical results from each quarter of the Year 12 groundwater monitoring program in accordance with US EPA Region 2 guidelines, NJDEP guidelines, and the Navy Installation Restoration Chemical Data Quality Manual. Data validation reports are included with the laboratory data presented in **Appendix A**.

Based on the results of the data validation, no quality issues were identified that would impact the reliability of the data or the conclusions reached based on the data.

## 4.4 Analytical Results and Groundwater Flow Direction for Year 12

### 4.4.1 Groundwater Analytical Results

**Table 2** provides a summary of the historical results through Year 12 and **Table 3** provides a summary of the results for Year 12. Surface water results can be found in **Table 4**, Groundwater Elevation Data in **Table 5**, and Summary of Water Quality Indicator Parameters in **Table 6**. The sample locations and the corresponding sample results for all four quarters sampled in Year 12 are depicted in **Figure 4-1**. **Figures 4-2 through 4-5** present potentiometric surface maps for each sampling event for Year 12.

Year 12 analytical results indicate the following:

- No contaminants were detected in either upgradient monitoring well 18MW-01 or downgradient monitoring well 16MW-25.
- MTBE concentrations were below the GWQS at all well locations during all four quarters in Year 12.
- Benzene concentrations exceeded the GWQS at three monitoring wells (16MW-08, 16MW-11, 16MW-15) during all four sampling quarters and at 16MW-10 during the August 2009 and February 2010 monitoring events. The highest benzene level (39.1µg/L) was indicated in monitoring well 16MW-08 during the February 2010 sampling event. Benzene was not detected during any sampling event at 16MW-24 and 16MW-25.
- The NJDEP GWQS for total xylenes was not exceeded during any of the quarterly sampling events for Year 10. Concentrations below the GWQS were detected at monitoring wells 16MW-08 (August 2009, February 2010, and May 2010) and 16MW-15 (August 2009).
- The NJDEP GWQS for ethylbenzene was not exceeded during any of the quarterly sampling events for Year 10. Concentrations below the GWQS were detected at monitoring well 16MW-08 (all four monitoring events) and 16MW-15 (August 2009).
- The NJDEP GWQS for toluene was not exceeded during any of the quarterly sampling events for Year 10. Concentrations below the GWQS were detected at 16MW-08 (February 2010).
- The NJDEP GWQS for naphthalene was not exceeded during any of the quarterly sampling events for Year 9. Concentrations below the GWQS were detected at 16MW-08 during all four events.
- 16MW-04 and 16MW-05 were not sampled during Year 9 because LNAPL was present in both wells during all four quarters ranging in thickness from <0.01 to 0.63 feet.

The general groundwater flow direction during Year 12 was similar to Years 1 through 11. The interpreted groundwater contours indicate that the general groundwater flow direction within the

southern area of the CEA and north of the CEA boundary is generally from the south toward the north-northwest. Groundwater at the far northern limits of the expanded groundwater monitoring area, in the vicinity of monitoring wells 16MW-15, 16MW-24, and 16MW-25, flows generally toward the northwest, toward the wetlands and the stream adjacent to the Family Housing area. Groundwater flow direction within the central area of the CEA during all four sampling events was in a northerly direction.

#### 4.4.2 Surface Water Analytical Results

Surface water samples were collected from two sample locations during all four events and analyzed by EPA Method 624 for BTEX and MTBE. No samples from either location exceeded the SWQS for any COC. No COCs were detected at SW-01. MTBE was detected at a concentration of 6.2 µg/L at SW-02 in February 2010. There is no established surface water standard for MTBE.

The laboratory analytical data reports for each sampling event are included in **Appendix A**. **Appendix B** contains field data logs and field notes.

#### 4.4.3 Quality Assurance/Quality Control (QA/QC) Sampling

As per the ECOR 2005 Quality Assurance Project Plan (QAPP), field and laboratory QA/QC samples were collected during the all Year 12 sampling events. Two types of field QA/QC samples were collected during this event including field blanks (FB) and trip blanks (TB). Since all sampling equipment was dedicated, no equipment blanks were necessary. TBs were sent with every shipment of samples to ensure that no cross-contamination occurred during transportation. However, TBs were not submitted with the November 2009 or May 2010 sampling events due to personnel error. FBs were collected to determine the ambient background VOC concentration in air during the sample collection process. FB samples were collected at a rate of one per day. TBs were prepared by Accutest Laboratories (Accutest) and submitted at a rate of one per sample cooler. Two types of laboratory QA/QC samples were utilized during this event including matrix spike/matrix spike duplicate (MS/MSD) samples, and blind field duplicate sample (DUP). MS/MSD and DUP samples were collected at a rate of five percent (5%) of the total samples collected per medium.

Naphthalene was detected in FB-02 during the November 2009 sampling event (1.1 µg/L). This concentration is low compared to the GWQS of 300 µg/L and, therefore, data quality was not impacted. No analytes were detected in the TB samples during any sampling event during Year 12. QA/QC results can be found in **Table 6**.

For duplicate samples, the precision between the original sample and its duplicate is evaluated by calculating the relative percent difference (RPD). H&S has evaluated duplicate samples using an acceptance criterion of 30 percent (30%) for detected primary COC. **Table 7** presents the RPDs for groundwater and sediment samples.

In general the RPDs reflect very good correlation between samples and duplicates as most were equal to or less than 30 percent. Of 24 RPDs, only two was above the 30 percent criterion: naphthalene in August 2009 and in November 2009. As shown on **Table 7**, this RPD exceedance of 30 percent can be attributed to low concentrations in the sample and the duplicate.

#### 4.5 Trend Analysis

Simple trend analyses, consisting of graphing the concentrations of benzene and MTBE for select monitoring wells (16MW-11, 16MW-15, and 16MW-24) over time, were prepared utilizing data collected through the fourth sampling event in Year 12. The monitoring wells selected are representative of the extent of the plume downgradient of the CEA boundary. Sufficient data was available from these three monitoring wells to accurately depict the trend analyses of the specified contaminants.

Benzene concentrations over time are represented in **Figures 4-6, 4-7, and 4-8** for monitoring wells 16MW-11, 16MW-15, and 16MW-24, respectively. Overall there is a decreasing trend in benzene concentrations over time for 16MW-11 and 16MW-15, though all measured concentrations were above the GWQS of 1 µg/L. Benzene has also been decreasing and is below the GWQS in 16MW-24.

MTBE concentrations over time are represented in **Figures 4-9, 4-10, and 4-11** for 16MW-11, 16MW-15, and 16MW-24, respectively. MTBE trend concentrations have been decreasing over time in both 16MW-11 and 16MW-24. Since Year 1, all samples collected for well 16MW-15, including all collected during Year 12, have indicated MTBE concentrations are below the GWQS of 70 µg/L. During Year 12, MTBE concentrations for well 16MW-11 were below the GWQS during all monitoring events, despite minor fluctuation in concentrations.

Graphs showing contaminant distribution for benzene and MTBE along a transect from the source area to downgradient monitoring wells were prepared for the quarterly sampling events during Year 12. The southernmost upgradient monitoring well, 18MW-01, was utilized as the transect starting point and 16MW-25, the furthest downgradient monitoring well, marks the end of the transect. **Figure 4-12** indicates benzene concentrations above the GWQS of 1 µg/L just outside of the CEA in monitoring well 16MW-08. The highest benzene concentrations were detected downgradient of the CEA at monitoring well 16MW-08 during November 2009, February 2010, and May 2010, while in August 2009 the highest benzene concentration was detected at 16MW-15. Benzene concentrations above the GWQS were detected at 16MW-08, 16MW-11, and 16MW-15. Results for the four remaining wells (18MW-01, 16MW-10, 16MW-24, and 16MW-25) did not exceed the GWQS for benzene during Year 12.

The MTBE transect in **Figure 4-13** indicates that the highest MTBE concentrations were detected during three events at monitoring well 16MW-11. MTBE concentrations were below the GWQS of 70 µg/L in all samples.

## **5.0 CONCLUSIONS**

### **5.1 Conclusions**

In general, contaminant trends appear to be consistent with historical analyses. Concentrations of the COCs have been generally decreasing at all locations over time. LNAPL continues to be present in monitoring wells 16MW-04 and 16MW-05, ranging from a sheen (<0.01) to 0.63 feet. The thickness appears to be diminishing over time, likely as a result of continued operation of the bioslurper remediation system.

It is recommended that the performance of the bioslurper continue to be monitored and optimized as appropriate. Optimization activities occurred on 15 July 2010. Bioslurper operation should be focused on the limited number of wells still containing recoverable LNAPL as this remedial action approaches completion. Continued quarterly groundwater monitoring is also recommended for Year 13. A new monitoring well is planned to be installed during the summer of 2010, pending permit approval, downgradient from 16MW-24 in order to delineate the extent of MTBE contamination. Its location is shown on Figure 1-2.

## 6.0 REFERENCES

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TETRA TECH NUS Inc., 2004b, *Year 6 Annual Report*, August.

**TABLES**

**TABLE 1**  
**YEAR 12 GROUNDWATER AND SURFACE WATER SAMPLING AND ANALYSIS SUMMARY**  
 BUILDINGS C-16/17/20/50  
 NWS Earle  
 Colts Neck, NJ

MONITORING WELL NUMBER	ANALYSIS	METHOD(S)
16MW-04	benzene, ethylbenzene, naphthalene, toluene, xylenes, MTBE	624/625
16MW-05	benzene, ethylbenzene, naphthalene, toluene, xylenes, MTBE	624/625
16MW-08	benzene, ethylbenzene, naphthalene, toluene, xylenes, MTBE	624/625
16MW-10	benzene, ethylbenzene, naphthalene, toluene, xylenes, MTBE	624/625
16MW-11	benzene, ethylbenzene, naphthalene, toluene, xylenes, MTBE	624/625
16MW-15	benzene, ethylbenzene, toluene, xylenes, MTBE	624 only
16MW-24	benzene, ethylbenzene, toluene, xylenes, MTBE	624 only
16MW-25	benzene, ethylbenzene, toluene, xylenes, MTBE	624 only
18MW-01	benzene, ethylbenzene, naphthalene, toluene, xylenes, MTBE	624/625
16SW-01	benzene, ethylbenzene, toluene, xylenes, MTBE	624 only
16SW-02	benzene, ethylbenzene, toluene, xylenes, MTBE	624 only

Notes:

Any well with light non-aqueous phase liquid (LNAPL) present will not be sampled.

**TABLE 2**  
**ANALYTICAL DATA SUMMARY**  
**YEARS 1 THROUGH 12 GROUNDWATER MONITORING**  
**NWS Earle**  
**Site C-17/20/16/50**

Location/ Duplicate	Compounds						Groundwater Levels		
	Volatiles					Semivolatiles	Elevation Top of Casing	Depth to GW	GW Elevation**
	Benzene ug/L	Ethylbenzene ug/L	MTBE ug/L	Toluene ug/L	Xylenes ug/L	Naphthalene ug/L			
NJDEP GQS	1.0	700	70	1,000	1,000*	300	ft above MSL	ft BGS	ft above MSL
<b>16-MW-02<sup>1</sup></b>									
Aug-98	ND	ND	NS	ND	ND	ND	98.48	7.04	91.44
Nov-98	ND	ND	NS	ND	ND	ND	98.48	7.31	91.17
Feb-99	ND	ND	NS	ND	ND	ND	98.48	6.59	91.89
May-99	ND	ND	NS	ND	ND	ND	98.48	6.40	92.08
Aug-99	ND	ND	NS	ND	ND	ND	98.48	7.52	90.96
Nov-99	ND	ND	NS	ND	ND	ND	98.48	7.17	91.31
Feb-00	ND	ND	ND	ND	ND	ND	98.48	7.13	91.35
May-00	ND	ND	ND	ND	ND	ND	98.48	6.64	91.84
Aug-00	ND	ND	ND	ND	ND	ND	98.48	6.85	91.63
Nov-00	ND	ND	ND	ND	ND	ND	98.48	7.37	91.11
Feb-01	ND	ND	ND	ND	ND	ND	98.48	6.52	91.96
May-01	ND	ND	ND	ND	ND	ND	98.48	6.44	92.04
Aug-01	ND	ND	ND	ND	ND	ND	98.48	7.58	90.90
Nov-01	ND	ND	ND	ND	ND	ND	98.48	7.96	90.52
Feb-02	ND	ND	ND	ND	ND	ND	98.48	7.68	90.80
May-02	ND	ND	ND	ND	ND	ND	98.48	7.15	91.33
Aug-02	ND	ND	ND	ND	ND	ND	98.48	8.68	89.80
Nov-02	ND	ND	ND	ND	ND	ND	98.48	7.26	91.22
Feb-03	ND	ND	ND	ND	ND	ND	98.48	6.82	91.66
May-03	ND	ND	ND	ND	ND	ND	98.48	6.32	92.16
Aug-03	ND	ND	ND	ND	ND	ND	98.48	6.23	92.25
Nov-03	ND	ND	ND	ND	ND	ND	98.48	6.81	91.67
Aug-07 <sup>8</sup>	NS	NS	NS	NS	NS	NS	98.48	7.10	91.38
Nov-07	NS	NS	NS	NS	NS	NS	98.48	7.12	91.36
Feb-08	NS	NS	NS	NS	NS	NS	98.48	6.26	92.22
May-08	NS	NS	NS	NS	NS	NS	98.48	6.73	91.75
Aug-08	NS	NS	NS	NS	NS	NS	98.48	7.33	91.15
Nov-08	NS	NS	NS	NS	NS	NS	98.48	6.93	91.55
Feb-09	NS	NS	NS	NS	NS	NS	98.48	6.28	92.20
May-09	NS	NS	NS	NS	NS	NS	98.48	5.88	92.60
Aug-10	NS	NS	NS	NS	NS	NS	98.48	6.51	91.97
Nov-09	NS	NS	NS	NS	NS	NS	98.48	6.51	91.97
Feb-10	NS	NS	NS	NS	NS	NS	98.48	5.90	92.58
May-10	NS	NS	NS	NS	NS	NS	98.48	5.18	93.30

**TABLE 2**  
**ANALYTICAL DATA SUMMARY**  
**YEARS 1 THROUGH 12 GROUNDWATER MONITORING**  
**NWS Earle**  
**Site C-17/20/16/50**

Location/ Duplicate	Compounds						Groundwater Levels		
	Volatiles					Semivolatiles	Elevation Top of Casing	Depth to GW	GW Elevation**
	Benzene ug/L	Ethylbenzene ug/L	MTBE ug/L	Toluene ug/L	Xylenes ug/L	Naphthalene ug/L			
NJDEP GQS	1.0	700	70	1,000	1,000*	300	ft above MSL	ft BGS	ft above MSL
<b>16-MW-03<sup>2</sup></b>									
Aug-98	3.8	ND	NS	ND	ND	ND	99.59	7.77	91.82
Nov-98	2.9	ND	NS	ND	ND	ND	99.59	7.94	91.65
Feb-99	ND	ND	NS	ND	ND	ND	99.59	7.29	92.30
May-99	ND	ND	NS	ND	ND	ND	99.59	7.10	92.49
Aug-99	ND	ND	NS	ND	ND	ND	99.59	8.48	91.11
Nov-99	ND / ND	ND / ND	NS	ND / ND	ND / ND	ND / ND	99.59	7.91	91.68
Feb-00	ND	ND	NS	ND	ND	ND	99.59	7.85	91.74
May-00	ND / ND	ND / ND	NS	ND / ND	ND / ND	ND / ND	99.59	7.51	92.08
Aug-00	ND	ND	NS	ND	ND	ND	99.59	7.57	92.02
Nov-00	NS	NS	NS	NS	NS	NS	99.59	NS	NS
Feb-01	NS	NS	NS	NS	NS	NS	99.59	NS	NS
May-01	NS	NS	NS	NS	NS	NS	99.59	NS	NS
Aug-01	NS	NS	NS	NS	NS	NS	99.59	NS	NS
Nov-01	NS	NS	NS	NS	NS	NS	99.59	NS	NS
Feb-02	ND	ND	NS	ND	ND	ND	99.59	8.38	91.21
May-02	1.8	ND	NS	ND	ND	ND	99.59	7.99	91.60
Aug-02	3.7 / 3.7	ND / ND	NS	ND / ND	ND / ND	ND / ND	99.59	9.39	90.20
Nov-02	ND	ND	NS	ND	ND	ND	99.59	8.00	91.59
Feb-03	ND / ND	ND / ND	NS	ND / ND	ND / ND	ND / ND	99.59	7.57	92.02
May-03	1.4	ND	NS	ND	ND	ND	99.59	6.97	92.62
Aug-03	2.3	ND	NS	ND	ND	2.2 J	99.59	6.90	92.69
<b>16-MW-04<sup>3</sup></b>									
Aug-01	110 J	63	13	8.7	229	270	101.23	9.15	92.08
Aug-04	NS	NS	NS	NS	NS	NS	101.23	9.30	91.93
Nov-04	NS	NS	NS	NS	NS	NS	101.23	8.65	92.58
Feb-05	NS	NS	NS	NS	NS	NS	101.23	9.65	91.58
May-05	NS	NS	NS	NS	NS	NS	101.23	8.41	92.82
Aug-05	NS	NS	NS	NS	NS	NS	101.23	10.51	90.72
Nov-05	NS	NS	NS	NS	NS	NS	101.23	NS	NS
Feb-06	NS	NS	NS	NS	NS	NS	101.23	NS	NS
May-06	NS	NS	NS	NS	NS	NS	101.23	8.05	93.18
Aug-06	NS	NS	NS	NS	NS	NS	101.23	9.10	92.13
Nov-06	NS	NS	NS	NS	NS	NS	101.23	7.80	93.43
Feb-07	NS	NS	NS	NS	NS	NS	101.23	7.81	93.42
May-07	NS	NS	NS	NS	NS	NS	101.23	6.62	94.61
Aug-07 <sup>a</sup>	NS	NS	NS	NS	NS	NS	101.23	8.13	93.10
Nov-07	NS	NS	NS	NS	NS	NS	101.23	8.87	92.36
Feb-08	NS	NS	NS	NS	NS	NS	101.23	8.19	93.04
May-08	NS	NS	NS	NS	NS	NS	101.23	8.32	92.91
Aug-08	NS	NS	NS	NS	NS	NS	101.23	9.04	92.19
Nov-08	NS	NS	NS	NS	NS	NS	101.23	8.91	92.32
Feb-09	NS	NS	NS	NS	NS	NS	101.23	8.10	93.13
May-09	NS	NS	NS	NS	NS	NS	101.23	8.06	93.17
Aug-09	NS	NS	NS	NS	NS	NS	101.23	8.02	93.21
Nov-09	NS	NS	NS	NS	NS	NS	101.23	8.35	92.88
Feb-10	NS	NS	NS	NS	NS	NS	101.23	NS	NS
May-10	NS	NS	NS	NS	NS	NS	101.23	7.09	94.14

**TABLE 2**  
**ANALYTICAL DATA SUMMARY**  
**YEARS 1 THROUGH 12 GROUNDWATER MONITORING**  
**NWS Earle**  
**Site C-17/20/16/50**

Location/ Duplicate	Compounds						Groundwater Levels		
	Volatiles					Semivolatiles	Elevation Top of Casing	Depth to GW	GW Elevation**
	Benzene	Ethylbenzene	MTBE	Toluene	Xylenes	Naphthalene			
	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ft above MSL	ft BGS	ft above MSL
NJDEP GQS	1.0	700	70	1,000	1,000*	300			
<b>16-MW-05</b>									
Aug-98	NS	NS	NS	NS	NS	NS	104.14	NS	NS
Nov-98	NS	NS	NS	NS	NS	NS	104.14	NS	NS
Feb-99	1520	147	NS	ND	103	110	104.14	NS	NS
May-99	1140	75.2	NS	44.3	75.1	249	104.14	10.40	93.74
Aug-99	2230	273	NS	238	338	125	104.14	NS	NS
Nov-99	135	62.9	NS	4.8	36.8	208	104.14	NS	NS
Feb-00	47.5	23.1	72	ND	16.1	81.8	104.14	NS	NS
May-00	328	47.4	218	6	30.8	213	104.14	NS	NS
Aug-00	1770	61.3	250	113	56.7	372	104.14	11.44	92.70
Nov-00	1730	109	279	ND	71.9	403	104.14	13.24	90.90
Feb-01	230	27	89	N.D	24.5	230	104.14	11.28	92.86
May-01	300	45 J	ND	ND	53 J	95	104.14	10.60	93.54
Aug-01	180J	31	110	ND	57.4	200	104.14	11.89	92.25
Nov-01	2500	241	278	70.4 J	294 J	207 J	104.14	13.18	90.96
Feb-02	NA	NA	NA	NA	NA	NA	104.14	12.03	92.11
May-02	610	58.3	44.3	40	50J	307	104.14	12.50	91.64
Aug-02	72.9 J	59.7 J	10.6 J	4.5 J	84.6 J	1280 J	104.14	15.35	91.22
Nov-02	NS	NS	NS	NS	NS	NS	104.14	12.10	92.36
Feb-03	74.5	39.2	13.2	2.1	37.1	154	104.14	11.57	92.98
May-03	NS	NS	NS	NS	NS	NS	104.14	10.72	93.62
Aug-03	NS	NS	NS	NS	NS	NS	104.14	10.64	93.50
Nov-03	NS	88.7	113	84.9	86.2	75.3	104.14	11.12	93.02
Mar-04	NS	NS	NS	NS	NS	NS	104.14	10.95	93.19
May-04	NS	NS	NS	NS	NS	NS	104.14	10.07	94.07
Aug-04	NS	NS	NS	NS	NS	NS	104.14	11.55	92.59
Nov-04	NS	163 / 160	83.5 / 88.1	30.8 / 30.8	155 / 158	49 / 50	104.14	11.14	93.00
Feb-05	NS	NS	NS	NS	NS	NS	104.14	11.05	93.09
May-05	NS	NS	NS	NS	NS	NS	104.14	10.06	94.08
Aug-05	NS	NS	NS	NS	NS	NS	104.14	11.96	92.18
Nov-05	NS	NS	NS	NS	NS	NS	104.14	10.81	93.33
Feb-06	NS	NS	NS	NS	NS	NS	104.14	9.97	94.17
May-06	NS	NS	NS	NS	NS	NS	104.14	10.57	93.57
Aug-06	NS	NS	NS	NS	NS	NS	104.14	11.70	92.44
Nov-06	NS	NS	NS	NS	NS	NS	104.14	9.89	94.25
Feb-07	NS	NS	NS	NS	NS	NS	104.14	10.51	93.63
May-07	NS	NS	NS	NS	NS	NS	104.14	9.00	95.14
Aug-07 <sup>s</sup>	NS	NS	NS	NS	NS	NS	104.14	10.60	93.54
Nov-07	NS	NS	NS	NS	NS	NS	104.14	11.45	92.69
Feb-08	NS	NS	NS	NS	NS	NS	104.14	10.53	93.61
May-08	NS	NS	NS	NS	NS	NS	104.14	10.82	93.32
Aug-08	NS	NS	NS	NS	NS	NS	104.14	11.59	92.55
Nov-08	NS	NS	NS	NS	NS	NS	104.14	11.46	92.68
Feb-09	NS	NS	NS	NS	NS	NS	104.14	10.73	93.41
May-09	NS	NS	NS	NS	NS	NS	104.14	9.95	94.19
Aug-09	NS	NS	NS	NS	NS	NS	104.14	10.59	93.55
Nov-09	NS	NS	NS	NS	NS	NS	104.14	10.72	93.42
Feb-10	NS	NS	NS	NS	NS	NS	104.14	9.97	94.17
May-10	NS	NS	NS	NS	NS	NS	104.14	9.10	95.04

**TABLE 2**  
**ANALYTICAL DATA SUMMARY**  
**YEARS 1 THROUGH 12 GROUNDWATER MONITORING**  
**NWS Earle**  
**Site C-17/20/16/50**

Location/ Duplicate	Compounds						Groundwater Levels		
	Volatiles					Semivolatiles	Elevation Top of Casing	Depth to GW	GW Elevation**
	Benzene ug/L	Ethylbenzene ug/L	MTBE ug/L	Toluene ug/L	Xylenes ug/L	Naphthalene ug/L			
NJDEP GQS	1.0	700	70	1,000	1,000*	300	ft above MSL	ft BGS	ft above MSL
<b>16-MW-06<sup>4</sup></b>									
Aug-98	20.8	ND	NS	ND	0.84	0.91	98.73	8.33	90.40
Nov-98	46.5	ND	NS	ND	2.7	ND	98.73	9.26	89.47
Feb-99	84.4	ND	NS	0.99	3.8	19.8	98.73	7.61	91.12
May-99	113	3.7	NS	1.3	3.5	32.9	98.73	7.40	91.33
Aug-99	43.6	ND	NS	ND	0.62	3.6	98.73	9.17	89.56
Nov-99	18.9	ND	NS	ND	0.51	1.6	98.73	7.86	90.87
Feb-00	11.5	ND	1.1	ND	ND	1	98.73	7.82	90.91
May-00	7.8	ND	0.75	ND	ND	ND	98.73	7.71	91.02
Aug-00	7.5 / 7.5	ND / ND	1.8 / 1.9	ND / ND	ND / ND	ND / ND	98.73	7.74	90.99
Nov-00	6.6	ND	1.8	ND	ND	ND	98.73	8.06	90.67
Feb-01	5.7	ND	ND	ND	ND	ND	98.73	7.31	91.42
May-01	7.9J	ND	ND	ND	ND	ND	98.73	7.62	91.11
Aug-01	13J	ND	ND	ND	ND	3.3	98.73	8.57	90.16
Nov-01	10.6	ND	4.4	ND	ND	ND	98.73	8.91	89.82
Feb-02	13.2	ND	2.6	ND	ND	ND	98.73	8.33	90.40
May-02	38.8	40.5	ND	15.9	267	18.3	98.73	8.11	90.62
Aug-02	15.1	ND	5.5	ND	ND	5.4	98.73	9.54	89.19
Nov-02	20	ND	4.8	ND	ND	ND	98.73	8.05	90.68
Feb-03	26.2	ND	7.4	ND	ND	ND	98.73	7.87	90.86
May-03	58	ND	7.7	ND	ND	2.4 J	98.73	7.51	91.22
Aug-03	7.2	ND	3.1	ND	ND	ND	98.73	7.30	91.43
Nov-03	37	ND	10.5	0.58 J	ND	ND	98.73	7.70	91.03
<b>16-MW-08</b>									
Aug-98	0.55 / 0.54	ND / ND	NS	ND / ND	ND / ND	ND / ND	103.29	10.34	92.95
Nov-98	1.5	ND	NS	ND	ND	ND	103.29	12.24	91.05
Feb-99	N.D	ND	NS	ND	ND	ND	103.29	9.48	93.81
May-99	ND	ND	NS	ND	ND	ND	103.29	9.50	93.79
Aug-99	76.9	24.4	NS	1.6	45.4	131	103.29	12.29	91.00
Nov-99	28	6.2	NS	0.64	25.4	50.1	103.29	11.70	91.59
Feb-00	ND / ND	ND / ND	ND / ND	ND / ND	ND / ND	ND / ND	103.29	11.31	91.98
May-00	0.54	ND	ND	0.55	ND	ND	103.29	9.67	93.62
Aug-00	ND	ND	ND	ND	ND	ND	103.29	9.46	93.83
Nov-00	42.8	20.2	ND	ND	ND	1.7	103.29	10.34	92.95
Feb-01	ND / ND	ND / ND	ND / ND	ND / ND	ND / ND	ND / ND	103.29	9.29	94.00
May-01	130	38 J	ND	ND	130 J	200	103.29	9.56	93.73
Aug-01	7.2J	2.2	ND	ND	6.9	6.4	103.29	11.35	91.94
Nov-01	68.5 / 73.6	11.4 / 12.2	6.9 / 7.7	1.4 J / 1.5 J	11.2 / 12.1	130 / 116	103.29	12.54	90.75
Feb-02	ND	ND	ND	ND	ND	ND	103.29	12.11	91.18
May-02	ND	ND	1.2 J	ND	ND	ND	103.29	11.75	91.54
Aug-02	7.2	3.6	4.1	ND	ND	ND	103.29	13.25	90.04
Nov-02	ND / ND	ND / ND	ND / ND	ND / ND	ND / ND	ND / ND	103.29	10.24	93.05
Feb-03	8	ND	11	ND	ND	1J	103.29	9.81	93.48
May-03	20	0.56 J	4.5	ND	9.6	17.5	103.29	9.23	94.06
Aug-03	1.1	ND	0.51 J	ND	ND	ND	103.29	9.10	94.19
Nov-03	ND	ND	ND	ND	ND	ND	103.29	10.65	92.64
Mar-04	ND / N.D	ND / ND	ND / ND	ND / ND	ND / ND	ND / ND	103.29	9.73	93.56
May-04	ND	ND	ND	ND	ND	ND	103.29	9.71	93.58
Aug-04	24.4 / 24.4	7.1 / 7.9	2.2 / 2.3	ND / ND	ND / ND	4 / 2 J	103.29	11.55	91.74
Nov-04	18.9	4.8	3.3	ND	ND	0.80 J	103.29	11.12	92.17
Feb-05	35	11.5	0.51 J	ND	ND	3	103.29	11.15	92.14
May-05	29.8	1.5	2.6	1.0	2.0 J	17	103.29	9.41	93.88
Aug-05	15	1.7	4.6	0.24 J	0.58 J	4.0 J	103.29	10.81	92.48
Nov-05	26	10	1.6	0.56 J	4.5	20	103.29	9.81	93.48
Feb-06	24	7.2	0.33 J	0.43 J	2.5	30	103.29	9.04	94.25
May-06	ND	ND	ND	ND	ND	ND	103.29	9.29	94.00
Aug-06	1.1	ND	0.32 J	ND	ND	ND	103.29	10.51	92.78
Nov-06	1.4 / 1.3	ND / ND	ND / ND	ND / ND	ND / ND	ND / ND	103.29	9.76	93.53
Feb-07	34.6	9.6	2.5	0.70 J	ND	3	103.29	9.68	93.61
May-07	40.1 / 36.4	15.8 / 13.3	2.8	0.33 J / 0.28 J	1.5 J / 1.3 J	15 / 17	103.29	9.78	93.51
Aug-07 <sup>8</sup>	108 / 112	47.4 / 47.6	ND / ND	2.0 / 2.1	63.4 / 61.5	128 / 134	103.29	9.87	93.42
Nov-07	90.8	12.3	0.97 J	1.7	56.3	48	103.29	11.95	91.34
Feb-08	26.0	7.8	4.2	0.37 J	9.8	61	103.29	9.31	93.98
May-08	22.3	2.6	2.0	ND	3.5	33	103.29	11.87	91.42
Aug-08	27.5	3.2	9.9	ND	0.88J	10.9	103.29	12.50	90.79
Nov-08	11.6	4.4	0.95J	ND	0.50J	5.1	103.29	12.13	91.16
Feb-09	9.3/8.1	1.1/0.90J	1.9/1.6	ND/ND	3.0/2.1J	30.6/26.8	103.29	11.70	91.59
May-09	6.7/5.4	ND/ND	1.0J/ND	ND/ND	ND/ND	3.4/7.5	103.29	11.35	91.94
Aug-09	3.4/3.6	0.44 J/0.54 J	1.2/1.2	ND/ND	ND/ND	1.5 J/1.0 J	103.29	11.85	91.44
Nov-09	14.1/14.1	14.7/14.7	1.6/1.7	ND/ND	7.8/7.6	8.4 J/19.3 J	103.29	11.85	91.44
Feb-10	32.2/39.1	16.1/20.1	0.77 J/0.87 J	0.48 J/ND	11.9/15.1	56.7/50.4	103.29	11.10	92.19
May-10	28.5/30.3	12.1/13.6	ND/ND	ND/ND	17.2/15.7	37.7/30.9	103.29	10.71	92.58

**TABLE 2**  
**ANALYTICAL DATA SUMMARY**  
**YEARS 1 THROUGH 12 GROUNDWATER MONITORING**  
**NWS Earle**  
**Site C-17/20/16/50**

Location/ Duplicate	Compounds						Groundwater Levels		
	Volatiles					Semivolatiles	Elevation Top of Casing	Depth to GW	GW Elevation**
	Benzene ug/L	Ethylbenzene ug/L	MTBE ug/L	Toluene ug/L	Xylenes ug/L	Naphthalene ug/L			
NJDEP GQS	1.0	700	70	1,000	1,000*	300	ft above MSL	ft BGS	ft above MSL
<b>16-MW-09</b>									
Aug-99	NS	NS	NS	NS	NS	NS	--	--	--
Nov-99	16.2	ND	NS	ND	ND	1.4	99.99	9.37	90.62
Feb-00	6.7	ND	5.7	ND	ND	ND	99.99	9.44	90.55
May-00	2.5	ND	4.5	ND	ND	ND	99.99	9.30	90.69
Aug-00	3.5	ND	3	ND	ND	4.4	99.99	8.85	91.14
Nov-00	1.9	ND	1.8	ND	ND	ND	99.99	9.78	90.21
Feb-01	ND	ND	ND	ND	ND	ND	99.99	8.75	91.24
May-01	ND	ND	ND	ND	ND	ND	99.99	9.34	90.65
Aug-01	21 J	ND	14	ND	ND	ND	99.99	10.39	89.60
Nov-01	14	ND	2.8	ND	ND	ND	99.99	10.45	89.54
Feb-02	3.5	ND	2.1	ND	ND	ND	99.99	9.83	90.16
May-02	ND	ND	ND	ND	ND	ND	99.99	9.64	90.35
Aug-02	19.9	ND	30.2	0.64 J	9.1	ND	99.99	11.18	88.81
Nov-02	1.2	ND	3.2	ND	ND	ND	99.99	9.60	90.39
Feb-03	1.0 J	ND	2	ND	ND	1J	99.99	9.49	90.50
May-03	8.6	ND	17.8	ND	ND	ND	99.99	9.22	90.77
Aug-03	8 / 8.5	ND / ND	6.9 / 7.5	ND / ND	ND / ND	ND / ND	99.99	8.96	91.03
Nov-03	1.3 J / 2.3 J	ND / ND	1.5 J / 1.5 J	ND / ND	ND / ND	ND / ND	99.99	8.27	91.72
Mar-04	0.56 J	ND	1.3 J	ND	ND	NS	99.99	9.23	90.76
May-04	ND	ND	ND	ND	ND	NS	99.99	8.90	91.09
Aug-04	3.5	ND	13.4	ND	ND	NS	99.99	10.06	89.93
Nov-04	0.76 J	ND	1.1	ND	ND	ND	99.99	9.40	90.59
Feb-05	1.8	ND	1.4	ND	ND	NS	99.99	9.31	90.68
May-05	0.65 J	ND	0.99 J	ND	ND	NS	99.99	8.60	91.39
<b>16-MW-10</b>									
Aug-98	N.D	ND	NS	ND	ND	0.51	100.36	9.46	90.90
Nov-98	0.53	ND	NS	ND	ND	ND	100.36	9.56	90.80
Feb-99	ND	ND	NS	ND	ND	0.5	100.36	8.74	91.62
May-99	N.D	ND	NS	ND	ND	0.8	100.36	7.59	92.77
Aug-99	N.D / ND	ND / ND	NS	ND / ND	1.3 / 1.4	1.9 / 2.2	100.36	9.78	90.58
Nov-99	ND	ND	NS	ND	ND	1.5	100.36	9.18	91.18
Feb-00	ND	ND	ND	ND	ND	0.68	100.36	9.11	91.25
May-00	ND	ND	ND	ND	ND	ND	100.36	8.80	91.56
Aug-00	1.2	ND	ND	ND	1.1	1.5	100.36	9.06	91.30
Nov-00	2.1	ND	ND	ND	ND	ND	100.36	9.45	90.91
Feb-01	ND	ND	ND	ND	ND	ND	100.36	8.56	91.80
May-01	3.9J	ND	ND	ND	2.7 J	ND	100.36	8.68	91.68
Aug-01	ND	ND	ND	ND	ND	ND	100.36	9.81	90.55
Nov-01	5.9	ND	ND	ND	ND	1.0 J	100.36	10.09	90.27
Feb-02	3.9	ND	ND	ND	ND	ND	100.36	9.63	90.73
May-02	2.6	ND	ND	ND	ND	ND	100.36	9.30	91.06
Aug-02	2	ND	ND	ND	ND	ND	100.36	10.79	89.57
Nov-02	1.3	ND	ND	ND	ND	ND	100.36	9.31	91.05
Feb-03	1.3	ND	ND	ND	ND	ND	100.36	8.95	91.41
May-03	2.5	ND	ND	ND	ND	ND	100.36	8.53	91.83
Aug-03	2.2	ND	ND	ND	ND	ND	100.36	8.41	91.95
Nov-03	1.7	ND	ND	ND	ND	ND	100.36	8.88	91.48
Mar-04	3.8	ND	ND	ND	ND	ND	100.36	8.69	91.67
May-04	3.2	ND	ND	ND	ND	ND	100.36	8.15	92.21
Aug-04	2.1	ND	ND	ND	ND	ND	100.36	9.40	90.96
Nov-04	0.67 J	ND	ND	ND	1.4 J	1.0 J	100.36	8.68	91.68
Feb-05	0.60 J / 0.65 J	ND / ND	ND / ND	ND / ND	1.4 J / 1.3 J	2 J / 2 J	100.36	8.80	91.56
May-05	0.21 J / ND	ND / ND	ND / ND	ND / ND	2.8 J / 2.7 J	2 J / 2 J	100.36	7.94	92.42
Aug-05	ND	ND	ND	ND	2.0	2.0 J	100.36	9.88	90.48
Nov-05	2.2	ND	ND	ND	ND	2.6 J	100.36	8.77	91.59
Feb-06	2.1	ND	ND	ND	0.37 J	ND	100.36	8.15	92.21
May-06	ND / ND	ND / ND	ND / ND	ND / ND	ND / ND	ND / ND	100.36	8.51	91.85
Aug-06	0.46 J / 0.45 J	ND / ND	ND / ND	ND / ND	0.88 J / 1.0 J	1 J / 1 J	100.36	9.66	90.70
Nov-06	ND	ND	ND	ND	ND	ND	100.36	9.05	91.31
Feb-07	ND	ND	ND	ND	0.88 J	0.9 J	100.36	8.54	91.82
May-07	ND	ND	ND	ND	0.94 J	0.6 J	100.36	7.45	92.91
Aug-07 <sup>a</sup>	ND	ND	ND	ND	ND	ND	100.36	9.27	91.09
Nov-07	ND	ND	ND	ND	1.5 J	1 J	100.36	9.20	91.16
Feb-08	ND / ND	ND / ND	ND / ND	ND / ND	1.2 J / 1.3 J	2 J / 2 J	100.36	8.35	92.01
May-08	ND	ND	ND	ND	1.1	2 J	100.36	8.70	91.66
Aug-08	ND / ND	ND / ND	ND / ND	ND / ND	ND/0.45 J	1.6 J/2.2 J	100.36	9.58	90.78
Nov-08	ND	ND	ND	ND	ND	ND	100.36	8.80	91.56
Feb-09	ND	ND	ND	ND	ND	0.51 J	100.36	8.38	91.98
May-09	0.74 J	ND	ND	ND	ND	0.78 J	100.36	8.10	92.26
Aug-09	1.6	ND	ND	ND	ND	ND	100.36	8.60	91.76
Nov-09	ND	ND	ND	ND	ND	ND	100.36	8.60	91.76
Feb-10	1.4	ND	ND	ND	ND	ND	100.36	8.11	92.25
May-10	ND	ND	ND	ND	ND	ND	100.36	7.51	92.85

**TABLE 2**  
**ANALYTICAL DATA SUMMARY**  
**YEARS 1 THROUGH 12 GROUNDWATER MONITORING**  
**NWS Earle**  
**Site C-17/20/16/50**

Location/ Duplicate	Compounds						Groundwater Levels		
	Volatiles					Semivolatiles	Elevation Top of Casing	Depth to GW	GW Elevation**
	Benzene ug/L	Ethylbenzene ug/L	MTBE ug/L	Toluene ug/L	Xylenes ug/L	Naphthalene ug/L			
NJDEP GQS	1.0	700	70	1,000	1,000*	300	ft above MSL	ft BGS	ft above MSL
<b>16-MW-11</b>									
Aug-00	NS	NS	NS	NS	NS	NS	NS	NS	NS
Nov-00	566 / 564	ND / ND	997 / 872	ND / ND	ND / ND	ND / ND	91.76	3.03	88.73
Feb-01	580 / 470	ND / ND	ND / ND	ND / ND	2.6 J / 2.6 J	12 J / 13	91.76	2.53	89.23
May-01	99 J / 100	ND / ND	300 / 190	ND / ND	ND / ND	ND / ND	91.76	3.18	88.58
Aug-01	22 J / 21 J	ND / ND	110 / 100	ND / ND	ND / ND	ND / ND	91.76	4.22	87.54
Nov-01	18.3	ND	74.5	ND	ND	ND	91.76	3.99	87.77
Feb-02	83.5 / 95.2	ND / ND	89.3 / 114	ND / ND	ND / ND	ND / ND	91.76	3.19	88.57
May-02	5.2	ND	ND	ND	ND	ND	91.76	2.92	88.84
Aug-02	21.2	ND	20.5	ND	ND	ND	91.81	4.87	86.94
Nov-02	106	ND	75.9	ND	ND	ND	91.81	3.12	88.69
Feb-03	132	ND	74.5	ND	ND	1.7 J	91.81	3.09	88.72
May-03	37.1 / 34.3	ND / ND	37.1 / 35.2	ND / ND	ND / ND	ND / ND	91.81	3.04	88.77
Aug-03	56	ND	63.1	ND	ND	ND	91.81	2.77	89.04
Nov-03	60.9	ND	93.2	ND	ND	ND	91.81	2.91	88.90
Mar-04	66.8	ND	100	ND	ND	ND	91.81	2.89	88.92
May-04	54.8 / 68.2	ND / ND	172 / 164 J	ND / ND	ND / ND	ND / ND	91.81	2.82	88.99
Aug-04	50.9	ND	172	ND	ND	ND	91.81	3.80	88.01
Nov-04	36.2	ND	239	ND	ND	ND	91.81	2.73	89.08
Feb-05	4.5	ND	60.1	ND	ND	ND	91.81	3.25	88.56
May-05	5.7	ND	47.2	ND	ND	ND	91.81	2.64	89.17
Aug-05	2.6	ND	24	ND	ND	ND	91.81	4.27	87.54
Nov-05	15 / 15	ND / ND	60 / 64	ND / ND	ND / ND	ND / ND	91.81	3.02	88.79
Feb-06	13 / 12	ND / ND	52 / 51	ND / ND	ND / ND	ND / ND	91.81	2.79	89.02
May-06	6.4	ND	36	ND	ND	ND	91.81	1.94	89.87
Aug-06	3.8 / 3.8	ND / ND	20.5 / 20.9	ND / ND	ND / ND	ND / ND	91.81	4.25	87.56
Nov-06	19	ND	79	ND	ND	ND	91.81	2.53	89.28
Feb-07	81.4	ND	169	ND	ND	ND	91.81	2.99	88.82
May-07	159 / 164	ND / ND	288 / 301	ND / ND	ND / ND	ND / 2	91.81	2.62	89.19
Aug-07 <sup>s</sup>	181	ND	322	ND	ND	2	91.81	3.54	88.27
Nov-07	67.5	ND	121	ND	ND	1 J / 1 J	91.81	3.22	88.59
Feb-08	61.2	ND	80.7	ND	ND	ND	91.81	2.70	89.11
May-08	190	ND	208	ND	ND	1 J	91.81	2.97	88.84
Aug-08	270	ND	278	ND	ND	1.1J	91.81	3.95	87.86
Nov-08	296/321 J	ND / ND	152/157	ND / ND	ND / ND	1.6 J/1.1 J	91.81	2.73	89.08
Feb-09	109	ND	70.9	ND	ND	1.1 J	91.81	2.88	88.93
May-09	68.4	ND	32.7	ND	ND	0.55 J	91.81	2.74	89.07
Aug-09	9	ND	13.9	ND	ND	ND	91.81	2.79	89.02
Nov-09	2.3	ND	6.5	ND	ND	ND	91.81	2.82	88.99
Feb-10	5	ND	3.0	ND	ND	ND	91.81	2.67	89.14
May-10	26.2	ND	6.9	ND	ND	ND	91.81	2.55	89.26
<b>16-MW-15</b>									
Aug-02	289	7.4	16.5	3.3	49.5	13	91.97	5.88	86.09
Nov-02	271	ND	17.8	4 J	32.8	10.9	91.97	3.58	88.39
Feb-03	21	1 J	2 J	ND	6 J	4 J	91.97	3.65	88.32
May-03	99.7	2	6	ND	15.2	3.1 J	91.97	3.58	88.39
Aug-03	233J	10	14.1	5.2	47.9	11	91.97	3.32	88.65
Nov-03	118	11.8	7.5	2.3	52.6	8.4	91.97	3.38	88.59
Mar-04	15.7	ND	ND	ND	ND	NS	91.97	3.37	88.60
May-04	8.8	ND	ND	ND	ND	NS	91.97	2.32	89.65
Aug-04	8.1	ND	ND	ND	ND	NS	91.97	4.45	87.52
Nov-04	20.1	ND	0.79 J	ND	ND	NS	91.97	3.61	88.36
Feb-05	2.7	ND	1.1	ND	ND	NS	91.97	3.43	88.54
May-05	12.5	ND	0.90 J	ND	ND	NS	91.97	3.15	88.82
Aug-05	12	ND	ND	ND	ND	NS	91.97	5.12	86.85
Nov-05	14	ND	ND	ND	ND	NS	91.97	3.61	88.36
Feb-06	7.6	ND	0.42 J	ND	ND	NS	91.97	3.34	88.63
May-06	13	ND	ND	ND	ND	NS	91.97	2.72	89.25
Aug-06	7.7	ND	ND	ND	ND	NS	91.97	5.11	86.86
Nov-06	6.5	ND	ND	ND	ND	NS	91.97	3.21	88.76
Feb-07	14.6	ND	0.42 J	ND	ND	NS	91.97	3.90	88.07
May-07	20.4	ND	0.35 J	ND	ND	NS	91.97	3.51	88.46
Aug-07 <sup>s</sup>	25.8	ND	0.55 J	0.21 J	1.2 J	NS	91.97	4.24	87.73
Nov-07	43.3	ND	2.0	0.93 J	27.4	NS	91.97	4.11	87.86
Feb-08	6.3	ND	1.2	ND	0.97 J	NS	91.97	3.49	88.48
May-08	11.6	0.99 J	4.6	ND	4.5	NS	91.97	3.85	88.12
Aug-08	12.7	ND	16.0	ND	1.3 J	NS	91.97	4.60	87.37
Nov-08	8.1	ND	6.6	ND	0.41 J	NS	91.97	3.42	88.55
Feb-09	3.0	ND	2.3	ND	0.71 J	NS	91.97	3.45	88.52
May-09	30.3	0.66 J	9.2	0.26 J	3.4	NS	91.97	3.59	88.38
Aug-09	23.2	0.56 J	6.4	ND	3.7	NS	91.97	3.59	88.38
Nov-09	3.9	ND	2	ND	ND	NS	91.97	3.67	88.3
Feb-10	5.0	ND	0.59	ND	ND	NS	91.97	3.44	88.53
May-10	5.8	ND	2	ND	ND	NS	91.97	3.44	88.53

**TABLE 2**  
**ANALYTICAL DATA SUMMARY**  
**YEARS 1 THROUGH 12 GROUNDWATER MONITORING**  
**NWS Earle**  
**Site C-17/20/16/50**

Location/ Duplicate	Compounds						Groundwater Levels		
	Volatiles					Semivolatiles	Elevation Top of Casing	Depth to GW	GW Elevation**
	Benzene ug/L	Ethylbenzene ug/L	MTBE ug/L	Toluene ug/L	Xylenes ug/L	Naphthalene ug/L			
NJDEP GQS	1.0	700	70	1,000	1,000*	300	ft above MSL	ft BGS	ft above MSL
<b>16-MW-16<sup>2</sup></b>									
Aug-02	ND	ND	ND	ND	ND	ND	94.34	6.00	88.34
Nov-02	ND	ND	ND	ND	ND	ND	94.34	4.39	89.95
Feb-03	ND	ND	ND	ND	ND	ND	94.34	4.12	90.22
May-03	ND	ND	ND	ND	ND	ND	94.34	4.00	90.34
Aug-03	ND	ND	ND	ND	ND	ND	94.34	3.85	90.49
Nov-03	ND	ND	ND	ND	ND	ND	94.34	4.09	90.25
Aug-07 <sup>8</sup>	NS	NS	NS	NS	NS	NS	94.34	4.63	89.71
Nov-07	NS	NS	NS	NS	NS	NS	94.34	4.33	90.01
Feb-08	NS	NS	NS	NS	NS	NS	94.34	NA	NA
May-08	NS	NS	NS	NS	NS	NS	94.34	4.02	90.32
Aug-09	NS	NS	NS	NS	NS	NS	94.34	3.94	90.40
Nov-09	NS	NS	NS	NS	NS	NS	94.34	3.91	90.43
Feb-10	NS	NS	NS	NS	NS	NS	94.34	3.60	90.74
May-10	NS	NS	NS	NS	NS	NS	94.34	3.50	90.84
<b>16-MW-17</b>									
Aug-02	ND	ND	ND	ND	ND	ND	93.94	5.86	88.08
Nov-02	ND	ND	ND	ND	ND	ND	93.94	4.30	89.64
Feb-03	ND	ND	ND	ND	ND	ND	93.94	4.03	89.91
May-03	ND	ND	ND	ND	ND	ND	93.94	3.86	90.08
Aug-03	ND	ND	ND	ND	ND	ND	93.94	3.70	90.24
Nov-03	ND	ND	ND	ND	ND	ND	93.94	3.86	90.08
Mar-04	ND	ND	ND	ND	ND	NS	93.94	3.84	90.10
May-04	ND	ND	0.55 J	ND	ND	NS	93.94	3.69	90.25
Aug-04	ND	ND	N.D	ND	ND	NS	93.94	4.75	89.19
Nov-04	ND	ND	0.30 J	ND	ND	NS	93.94	3.81	90.13
Feb-05	ND	ND	ND	ND	ND	NS	93.94	3.20	90.74
May-05	ND	ND	0.31 J	ND	ND	NS	93.94	3.52	90.42
Aug-07 <sup>8</sup>	NS	NS	NS	NS	NS	NS	93.94	4.58	89.36
Nov-07	NS	NS	NS	NS	NS	NS	93.94	4.35	89.59
Feb-08	NS	NS	NS	NS	NS	NS	93.94	3.93	90.01
May-08	NS	NS	NS	NS	NS	NS	93.94	4.14	89.80
Aug-08	NS	NS	NS	NS	NS	NS	93.94	4.94	89.00
Nov-08	NS	NS	NS	NS	NS	NS	93.94	3.82	90.12
Feb-09	NS	NS	NS	NS	NS	NS	93.94	3.83	90.11
May-09	NS	NS	NS	NS	NS	NS	93.94	3.92	90.02
Aug-09	NS	NS	NS	NS	NS	NS	93.94	3.93	90.01
Nov-09	NS	NS	NS	NS	NS	NS	93.94	3.96	89.98
Feb-10	NS	NS	NS	NS	NS	NS	93.94	3.85	90.09
May-10	NS	NS	NS	NS	NS	NS	93.94	3.45	90.49

**TABLE 2**  
**ANALYTICAL DATA SUMMARY**  
**YEARS 1 THROUGH 12 GROUNDWATER MONITORING**  
**NWS Earle**  
**Site C-17/20/16/50**

Location/ Duplicate	Compounds						Groundwater Levels		
	Volatiles					Semivolatiles	Elevation Top of Casing	Depth to GW	GW Elevation**
	Benzene	Ethylbenzene	MTBE	Toluene	Xylenes	Naphthalene			
	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ft above MSL	ft BGS	ft above MSL
NJDEP GQS	1.0	700	70	1,000	1,000*	300			
<b>16-MW-24</b>									
Aug-02	ND	ND	3	ND	ND	ND	89.88	5.45	84.43
Nov-02	ND	ND	3.6	ND	ND	ND	89.88	4.03	85.85
Feb-03	ND	ND	1.3 J	ND	ND	ND	89.88	4.02	85.86
May-03	ND	ND	ND	ND	ND	ND	89.88	3.94	85.94
Aug-03	ND	ND	ND	ND	ND	ND	89.88	4.07	85.81
Nov-03	ND	ND	ND	ND	ND	ND	89.88	4.02	85.86
Mar-04	ND	ND	ND	ND	ND	NS	89.88	3.99	85.89
May-04	ND	ND	ND	ND	ND	NS	89.88	3.95	85.93
Aug-04	ND	ND	ND	ND	ND	NS	89.88	4.61	85.27
Nov-04	6.2	ND	9.2	ND	ND	NS	89.88	3.79	86.09
Feb-05	ND	ND	2.5	ND	ND	NS	89.88	3.95	85.93
May-05	ND	ND	6.1	ND	ND	NS	89.88	3.72	86.16
Aug-05	21	ND	28	ND	ND	NS	89.88	5.12	84.76
Nov-05	27	ND	33	ND	ND	NS	89.88	4.01	85.87
Feb-06	2.8	ND	35	0.18 J	ND	NS	89.88	3.92	85.96
May-06	35	ND	53	ND	ND	NS	89.88	2.38	87.50
Aug-06	114	ND	90.1	3.5	1.8 J	NS	89.88	5.12	84.76
Nov-06	4.8	ND	ND	ND	ND	NS	89.88	3.83	86.05
Feb-07	6.2	ND	13.4	ND	ND	NS	89.88	4.01	85.87
May-07	7.6	ND	20.9	ND	ND	NS	89.88	4.00	85.88
Aug-07 <sup>8</sup>	4.4	ND	20.5 J	ND	ND	NS	89.88	4.49	85.39
Nov-07	2.8	ND	9.3	ND	ND	NS	89.88	4.22	85.66
Feb-08	3.2	ND	7.0	ND	ND	NS	89.88	4.06	85.82
May-08	ND	ND	7.2	ND	ND	NS	89.88	3.95	85.93
Aug-08	ND	ND	8.7	ND	ND	NS	89.88	4.70	85.18
Nov-08	ND	ND	5.9	ND	ND	NS	89.88	3.60	86.28
Feb-09	ND	ND	4.6	ND	ND	NS	89.88	4.02	85.86
May-09	ND	ND	2.5	ND	ND	NS	89.88	4.10	85.78
Aug-09	ND	ND	1.5	ND	ND	NS	89.88	4.25	85.63
Nov-09	ND	ND	5.0	ND	ND	NS	89.88	4.03	85.85
Feb-10	ND	ND	3.8	ND	ND	NS	89.88	3.90	85.98
May-10	ND	ND	2.3	ND	ND	NS	89.88	4.11	85.77
<b>16-MW-25</b>									
Aug-02	ND / ND	ND / ND	ND / ND	ND / ND	ND / ND	ND / ND	93.22	9.04	84.18
Nov-02	ND	ND	ND	ND	ND	ND	93.22	6.30	86.92
Feb-03	ND	ND	ND	ND	ND	ND	93.22	6.20	87.02
May-03	ND	ND	ND	ND	ND	ND	93.22	6.11	87.11
Aug-03	ND	ND	ND	ND	ND	ND	93.22	6.55	86.67
Nov-03	ND	ND	ND	ND	ND	ND	93.22	6.43	86.79
Mar-04	ND	ND	ND	ND	ND	NS	93.22	6.13	87.09
May-04	ND	ND	ND	ND	ND	NS	93.22	5.80	87.42
Aug-04	ND	ND	ND	ND	ND	NS	93.22	7.85	85.37
Nov-04	ND	ND	ND	ND	ND	NS	93.22	5.91	87.31
Feb-05	ND	ND	ND	ND	ND	NS	93.22	6.17	87.05
May-05	ND	ND	ND	ND	ND	NS	93.22	5.31	87.91
Aug-05	ND	ND	ND	ND	ND	NS	93.22	8.36	84.86
Nov-05	ND	ND	ND	ND	ND	NS	93.22	9.11	84.11
Feb-06	ND	ND	ND	ND	ND	NS	93.22	5.71	87.51
May-06	ND	ND	ND	ND	ND	NS	93.22	6.61	86.61
Aug-06	ND	ND	ND	ND	ND	NS	93.22	8.32	84.90
Nov-06	ND	ND	ND	ND	ND	NS	93.22	5.42	87.80
Feb-07	ND	ND	ND	ND	ND	NS	93.22	6.21	87.01
May-07	ND	ND	ND	ND	ND	NS	93.22	5.10	88.12
Aug-07 <sup>8</sup>	ND	ND	ND	ND	ND	NS	93.22	7.88	85.34
Nov-07	2.8	ND	9.3	ND	ND	NS	93.22	7.49	85.73
Feb-08	ND	ND	ND	ND	ND	NS	93.22	6.02	87.20
May-08	ND	ND	ND	ND	ND	NS	93.22	6.68	86.54
Aug-08	ND	ND	ND	ND	ND	NS	93.22	8.10	85.12
Nov-08	ND	ND	ND	ND	ND	NS	93.22	6.64	86.58
Feb-09	ND	ND	ND	ND	ND	NS	93.22	6.00	87.22
May-09	ND	ND	ND	ND	ND	NS	93.22	6.00	87.22
Aug-09	ND	ND	ND	ND	ND	NS	93.22	6.91	86.31
Nov-09	ND	ND	ND	ND	ND	NS	93.22	6.58	86.64
Feb-10	ND	ND	ND	ND	ND	NS	93.22	6.04	87.18
May-10	ND	ND	ND	ND	ND	NS	93.22	5.92	87.30

**TABLE 2**  
**ANALYTICAL DATA SUMMARY**  
**YEARS 1 THROUGH 12 GROUNDWATER MONITORING**  
**NWS Earle**  
**Site C-17/20/16/50**

Location/ Duplicate	Compounds						Groundwater Levels		
	Volatiles					Semivolatiles	Elevation Top of Casing	Depth to GW	GW Elevation**
	Benzene ug/L	Ethylbenzene ug/L	MTBE ug/L	Toluene ug/L	Xylenes ug/L	Naphthalene ug/L			
NJDEP GQS	1.0	700	70	1,000	1,000*	300	ft above MSL	ft BGS	ft above MSL
<b>17-MW-01<sup>o</sup></b>									
Aug-01	44 J	3.6	ND	3.6	121	220	101.50	8.82	92.68
<b>17-MW-02<sup>2</sup></b>									
Aug-98	N.D	ND	NS	ND	ND	ND	98.38	7.08	91.30
Nov-98	0.96	ND	NS	ND	ND	ND	98.38	7.24	91.14
Feb-99	N.D	ND	NS	ND	ND	ND	98.38	6.02	92.36
May-99	ND	ND	NS	ND	ND	ND	98.38	6.64	91.74
Aug-99	8.5	3.7	NS	ND	15.8	76.7	98.38	7.60	90.78
Nov-99	ND	ND	NS	ND	ND	ND	98.38	7.19	91.19
Feb-00	0.64	ND	ND	ND	ND	0.71	98.38	6.98	91.40
May-00	ND	ND	ND	ND	ND	ND	98.38	6.28	92.10
Aug-00	ND	ND	ND	ND	ND	ND	98.38	--	--
Nov-00	3	ND	ND	ND	ND	2.6	98.38	7.32	91.06
Feb-01	ND	ND	ND	ND	ND	ND	98.38	5.78	92.60
May-01	ND	ND	ND	ND	ND	ND	98.38	5.80	92.58
Aug-01	1.3 J	ND	ND	ND	ND	ND	98.38	7.40	90.98
Nov-01	3.1	ND	ND	ND	ND	ND	98.38	7.90	90.48
Feb-02	3.5	ND	ND	ND	ND	ND	98.38	7.47	90.91
May-02	ND / ND	ND / ND	ND / ND	ND / ND	ND / ND	ND / ND	98.38	7.05	91.33
Aug-02	4.1	ND	0.9J	ND	ND	10.6	98.38	8.60	89.78
Nov-02	ND	ND	ND	ND	ND	ND	98.38	7.13	91.25
Feb-03	ND	ND	ND	ND	ND	ND	98.38	6.54	91.84
May-03	ND	ND	ND	ND	ND	ND	98.38	5.51	92.87
Aug-03	ND	ND	ND	ND	ND	ND	98.38	5.40	92.98
Nov-03	ND	ND	ND	ND	ND	ND	98.38	6.22	92.16
Mar-04	ND	ND	ND	ND	ND	NS	98.38	6.00	92.38
May-04	ND	ND	ND	ND	ND	NS	98.38	5.01	93.37
<b>16-MW-12 (Replaced 17-MW-02)</b>									
Aug-04	1.6	ND	ND	ND	ND	NS	98.38	6.99	91.39
Nov-04	0.34 J	ND	ND	ND	ND	NS	98.38	6.65	91.73
Feb-05	1.1	ND	ND	ND	ND	NS	98.38	7.58	90.80
May-05	0.38 J	ND	ND	ND	ND	NS	98.38	5.07	93.31
<b>18-MW-01</b>									
Aug-98	N.D	ND	NS	ND	ND	ND	103.00	9.21	93.79
Nov-98	ND	ND	NS	ND	ND	ND	103.00	9.71	93.29
Feb-99	ND	ND	NS	ND	ND	ND	103.00	9.29	93.71
May-99	ND	ND	NS	ND	ND	ND	103.00	9.00	94.00
Aug-99	ND	ND	NS	ND	ND	ND	103.00	10.55	92.45
Nov-99	ND	ND	NS	ND	ND	3.0	103.00	10.19	92.81
Feb-00	ND	ND	ND	ND	ND	ND	103.00	9.88	93.12
May-00	ND	ND	ND	0.71	ND	ND	103.00	9.41	93.59
Aug-00	ND	ND	ND	ND	ND	ND	103.00	9.66	93.34
Nov-00	ND	ND	ND	ND	ND	ND	103.00	10.30	92.70
Feb-01	ND	ND	ND	ND	ND	ND	103.00	9.52	93.48
May-01	ND	ND	ND	ND	ND	ND	103.00	8.58	94.42
Aug-01	ND	ND	ND	ND	ND	2.9	103.00	9.58	93.42
Nov-01	ND	ND	ND	ND	ND	ND	103.00	10.79	92.21
Feb-02	ND	ND	ND	ND	ND	ND	103.00	10.61	92.39
May-02	ND	ND	ND	ND	ND	ND	103.00	10.18	92.82
Aug-02	ND	ND	0.55 J	ND	ND	ND	103.00	11.39	91.61
Nov-02	ND	ND	ND	ND	ND	ND	103.00	10.19	92.81
Feb-03	ND	ND	ND	ND	ND	ND	103.00	9.26	93.74
May-03	ND	ND	ND	ND	ND	ND	103.00	8.39	94.61
Aug-03	ND	ND	ND	ND	ND	ND	103.00	8.27	94.73
Nov-03	ND	ND	ND	ND	ND	ND	103.00	9.17	93.83
Mar-04	ND	ND	ND	ND	ND	ND	103.00	8.79	94.21
May-04	ND	ND	R	ND	ND	ND	103.00	8.12	94.88
Aug-04	ND	ND	0.34 J	ND	ND	ND	103.00	9.67	93.33
Nov-04	ND	ND	ND	ND	ND	ND	103.00	9.59	93.41
Feb-05	ND	ND	ND	ND	ND	ND	103.00	9.32	93.68
May-05	ND	ND	ND	ND	ND	ND	103.00	8.21	94.79
Aug-05	ND / ND	ND / ND	ND / ND	ND / ND	ND / ND	ND / ND	103.00	9.94	93.06
Nov-05	ND	ND	ND	ND	ND	ND	103.00	8.81	94.19
Feb-06	ND	ND	ND	ND	ND	ND	103.00	7.86	95.14
May-06	ND	ND	ND	ND	ND	ND	103.00	5.47	97.53
Aug-06	ND	ND	ND	ND	ND	ND	103.00	9.78	93.22
Nov-06	ND / ND	ND / ND	ND / ND	ND / ND	ND / ND	ND / ND	103.00	8.08	94.92
Feb-07	ND	ND	ND	ND	ND	ND	103.00	8.62	94.38
May-07	ND	ND	ND	ND	ND	ND	103.00	7.35	95.65
Aug-07 <sup>s</sup>	ND	ND	ND	ND	ND	ND	103.00	9.18	93.82
Nov-07	ND / ND	ND / ND	ND / ND	ND / ND	ND / ND	ND / ND	103.00	9.99	93.01
Feb-08	ND	ND	ND	ND	ND	ND	103.00	8.73	94.27
May-08	ND / ND	ND / ND	ND / ND	ND / ND	ND / ND	ND / ND	103.00	9.03	93.97
Aug-08	ND	ND	ND	ND	ND	ND	103.00	10.90	92.10
Nov-08	B	B	B	B	B	B	103.00	10.10	92.90
Feb-09	ND	ND	ND	ND	ND	ND	103.00	8.55	94.45
May-09	ND	ND	ND	ND	ND	ND	103.00	8.10	94.90
Aug-09	ND	ND	ND	ND	ND	ND	103.00	9.23	93.77
Nov-09	ND	ND	ND	ND	ND	ND	103.00	9.26	93.74
Feb-10	ND	ND	ND	ND	ND	ND	103.00	8.40	94.60
May-10	ND	ND	ND	ND	ND	ND	103.00	7.25	95.75

**TABLE 2**  
**ANALYTICAL DATA SUMMARY**  
**YEARS 1 THROUGH 12 GROUNDWATER MONITORING**  
**NWS Earle**  
**Site C-17/20/16/50**

Location/ Duplicate	Compounds						Groundwater Levels		
	Volatiles					Semivolatiles	Elevation Top of Casing	Depth to GW	GW Elevation**
	Benzene	Ethylbenzene	MTBE	Toluene	Xylenes	Naphthalene			
	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ft above MSL	ft BGS	ft above MSL
<b>NJDEP GQS</b>	<b>1.0</b>	<b>700</b>	<b>70</b>	<b>1,000</b>	<b>1,000*</b>	<b>300</b>			
<b>29-MW-01</b>									
Aug-07 <sup>8</sup>	NS	NS	NS	NS	NS	NS	99.42	10.39	89.03
Nov-07	NS	NS	NS	NS	NS	NS	99.42	10.11	89.31
Feb-08	NS	NS	NS	NS	NS	NS	99.42	9.25	90.17
May-08	NS	NS	NS	NS	NS	NS	99.42	9.81	89.61
Aug-08	NS	NS	NS	NS	NS	NS	99.42	10.58	88.84
Nov-08	NS	NS	NS	NS	NS	NS	99.42	9.33	90.09
Feb-09	NS	NS	NS	NS	NS	NS	99.42	9.67	89.75
May-09	NS	NS	NS	NS	NS	NS	99.42	9.30	90.12
Aug-09	NS	NS	NS	NS	NS	NS	99.42	9.60	89.82
Nov-09	NS	NS	NS	NS	NS	NS	99.42	9.72	89.70
Feb-10	NS	NS	NS	NS	NS	NS	99.42	9.43	89.99
May-10	NS	NS	NS	NS	NS	NS	99.42	9.24	90.18

Data previous to August 2004 was provided by Tetra Tech NUS, Incorporated (TiNUS), data from August 2004 to May 2009 was provided by ECOR Solutions, Inc. (ECOR).

Groundwater Quality Standard (GQS) and Surface Water Quality Standard (SWQS) Criteria is from the New Jersey Department of Environmental Protection (NJDEP) criteria for class II-A Groundwater (N.J.A.C. 7:9-6) and class FW2 Surface Water (N.J.A.C. 7:9B). Unless otherwise noted, the groundwater criteria used are the Higher of the Practical Quantitation Levels (PQLs) and Groundwater Quality Criteria.

Analytes with concentrations greater than the NJDEP GQS or SWQS are highlighted in bold.

\*Criterion for total xylenes was raised to the NJDEP Maximum Contaminant Level (MCL) of 1,000 ug/L as of 5 February 1997. Previous reports used a value of 40 ug/L; however, the bold highlights have been updated to correspond to the current criterion.

\*\*GW Elevation is not corrected for LNAPL (if present). Corrected GW Elevations are presented in Appendix F.

feet msl = feet above mean sea level; feet bgs = feet below ground surface

Sampling periods displaying two values for a concentration (i.e. XX/XX) indicate a duplicate sample was taken and analyzed.

B: samples broken; no data

J: Estimated value due to exceedance of technical criteria or because results are less than the CRQL.

ND: Non-Detect

NS: Not Sampled

NA: Not Available

<sup>1</sup> Omitted from monitoring program after second quarter of Year 6.

<sup>2</sup> Destroyed after first quarter of Year 6.

<sup>3</sup> Omitted from monitoring program due to active remediation (bioslurping).

<sup>4</sup> Omitted from monitoring program after second quarter of Year 6.

<sup>5</sup> Omitted from monitoring program after second quarter of Year 6.

<sup>6</sup> Renamed 17-MW-17 after Year 6. Omitted due to active remediation (bioslurping).

<sup>7</sup> Renamed 16-MW-12 after Year 6.

<sup>8</sup> Samples collected Aug-07, wells gauged Sept-07

**Table 3**  
**Sample Data Summary**  
**Year 12**  
**NWS Earle**  
**Site C-17/20/16/50**

Location/ Duplicate	Compounds					
	Volatiles					Semivolatiles
	Benzene	Ethylbenzene	MTBE	Toluene	Xylenes	Naphthalene
	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
<b>NJDEP GWQS</b>	<b>1.0</b>	<b>700</b>	<b>70</b>	<b>1,000</b>	<b>1,000</b>	<b>300</b>
<b>16MW-08</b>						
Aug-09	3.4	0.44 J	1.2	ND	ND	1.5
Aug-09 (DUP-1)	3.6	0.54 J	1.2	ND	ND	1.0
Nov-09	14.1	14.7	1.6	ND	7.8	8.4 J
Nov-09 (DUP-1)	14.1	14.7	1.7	ND	7.6	19.3 J
Feb-10	32.2	16.1	0.77 J	0.48 J	11.9	56.7
Feb-10 (DUP-1)	39.1	20.1	0.87 J	ND	15.1	50.4
May-10	28.5	12.1	ND	ND	17.2	37.7
May-10 (DUP-1)	30.3	13.6	ND	ND	15.7	30.9
<b>16MW-10</b>						
Aug-09	1.6	ND	ND	ND	ND	ND
Nov-09	ND	ND	ND	ND	ND	ND
Feb-10	1.4	ND	ND	ND	ND	ND
May-10	ND	ND	ND	ND	ND	ND
<b>16MW-11</b>						
Aug-09	9.0	ND	13.9	ND	ND	ND
Nov-09	2.3	ND	6.5	ND	ND	ND
Feb-10	5.0	ND	3.0	ND	ND	ND
May-10	26.2	ND	6.9	ND	ND	ND
<b>16MW-15</b>						
Aug-09	23.2	0.56 J	6.4	ND	3.7	NS
Nov-09	3.9	ND	2.0	ND	ND	NS
Feb-10	5.0	ND	0.59	ND	ND	NS
May-10	5.8	ND	2.0	ND	ND	NS
<b>16MW-24</b>						
Aug-09	ND	ND	1.5	ND	ND	NS
Nov-09	ND	ND	5.0	ND	ND	NS
Feb-10	ND	ND	3.8	ND	ND	NS
May-10	ND	ND	2.3	ND	ND	NS
<b>16MW-25</b>						
Aug-09	ND	ND	ND	ND	ND	NS
Nov-09	ND	ND	ND	ND	ND	NS
Feb-10	ND	ND	ND	ND	ND	NS
May-10	ND	ND	ND	ND	ND	NS
<b>18MW-01</b>						
Aug-09	ND	ND	ND	ND	ND	ND
Nov-09	ND	ND	ND	ND	ND	ND
Feb-10	ND	ND	ND	ND	ND	ND
May-10	ND	ND	ND	ND	ND	ND

**Table 3**  
**Sample Data Summary**  
**Year 12**  
**NWS Earle**  
**Site C-17/20/16/50**

<b>16SW-01</b>						
<b>Aug-09</b>	ND	ND	ND	ND	ND	NS
<b>Nov-09</b>	ND	ND	ND	ND	ND	NS
<b>Feb-10</b>	ND	ND	ND	ND	ND	NS
<b>May-10</b>	ND	ND	ND	ND	ND	NS
<b>16SW-02</b>						
<b>Aug-09</b>	ND	ND	ND	ND	ND	NS
<b>Nov-09</b>	ND	ND	ND	ND	ND	NS
<b>Feb-10</b>	ND	ND	6.2	ND	ND	NS
<b>May-10</b>	ND	ND	ND	ND	ND	NS

All results reported in micrograms per liter ( $\mu\text{g/L}$ ).

J = Estimated value. Result is less than the reporting limit.

ND = Not Detected.

NS = Not Sampled.

NA = Not Available.

Bold value indicates that results exceed NJDEP GWQS.

Table 4  
 Surface Water Data Summary  
 Year 12  
 NWS Earle  
 Site C-17/20/16/50

Location/ Duplicate	Compounds					
	Volatiles					Semivolatiles
	Benzene ug/L	Ethylbenzene ug/L	MTBE ug/L	Toluene ug/L	Xylenes ug/L	Naphthalene ug/L
<b>SWQS</b>	<b>0.2</b>	<b>3,030</b>	<b>NA</b>	<b>7,440</b>	<b>NA</b>	<b>NA</b>
<b>16-SW-01</b>						
May-02	ND	ND	3	ND	ND	ND
Aug-02	NS	NS	NS	NS	NS	NS
Nov-02	ND	ND	ND	ND	ND	ND
Feb-03	ND	ND	0.56 J	ND	ND	ND
May-03	ND	ND	ND	ND	ND	ND
Aug-03	ND	ND	0.53 J	ND	ND	ND
Nov-03	ND	ND	ND	ND	ND	ND
Mar-04	ND	ND	ND	ND	ND	NS
May-04	ND	ND	ND	ND	ND	NS
Aug-04	ND	ND	2.4 J	ND	ND	NS
Nov-04	ND	ND	ND	ND	ND	NS
Feb-05	ND	ND	ND	ND	ND	NS
May-05	ND	ND	8	ND	ND	NS
Aug-05	NS	NS	NS	NS	NS	NS
Nov-05	ND	ND	ND	ND	ND	NS
Feb-06	ND	ND	ND	ND	ND	NS
May-06	ND	ND	ND	ND	ND	NS
Aug-06	NS	NS	NS	NS	NS	NS
Nov-06	ND	ND	ND	ND	ND	NS
Feb-07	ND	ND	ND	ND	ND	NS
May-07	ND	ND	ND	ND	ND	NS
Aug-07	ND	ND	ND	0.59 J	ND	NS
Feb-08	ND	ND	ND	ND	ND	NS
May-08	ND	ND	ND	ND	ND	NS
Aug-08	ND	ND	ND	ND	ND	NS
Nov-08	ND	ND	ND	ND	ND	NS
Feb-09	ND	ND	ND	ND	ND	NS
May-09	ND	ND	ND	ND	ND	NS
Aug-09	ND	ND	ND	ND	ND	NS
Nov-09	ND	ND	ND	ND	ND	NS
Feb-10	ND	ND	ND	ND	ND	NS
May-10	ND	ND	ND	ND	ND	NS

Table 4  
Surface Water Data Summary  
Year 12  
NWS Earle  
Site C-17/20/16/50

Location/ Duplicate	Compounds					
	Volatiles					Semivolatiles
	Benzene ug/L	Ethylbenzene ug/L	MTBE ug/L	Toluene ug/L	Xylenes ug/L	Naphthalene ug/L
SWQS	0.2	3,030	NA	7,440	NA	NA
<b>16-SW-01</b>						
<b>16-SW-02</b>						
May-02	ND / ND	ND / ND	3.8 / 4.4	ND / ND	ND / ND	ND / ND
Aug-02	NS	NS	NS	NS	NS	NS
Nov-02	ND / ND	ND / ND	3.8 J / 5.5 J	ND / ND	ND / ND	ND / ND
Feb-03	ND	ND	7.7	ND	ND	ND
May-03	ND / ND	ND / ND	3.9 / 4.4	ND / ND	ND / ND	ND / ND
Aug-03	ND / ND	ND / ND	28.4 / 33.9	ND / ND	ND / ND	ND / ND
Nov-03	ND / ND	ND / ND	26.4 / 23.3	ND / ND	ND / ND	ND / ND
Mar-04	<b>1.4 / 1.2</b>	ND / ND	11.3 / 12	0.87 J / 2.2 J	ND / ND	NS / NS
May-04	ND / ND	ND / ND	7.7 J / R	0.6 J / ND	ND / ND	NS / NS
Aug-04	<b>0.66 J</b>	ND	58.6	ND	ND	NS
Nov-04	<b>0.20 J</b>	ND	9.7	ND	ND	NS
Feb-05	ND	ND	0.79 J	ND	ND	NS
May-05	ND	ND	ND	ND	ND	NS
Aug-05	ND	ND	21	1.2	ND	NS
Nov-05	ND	ND	0.52J	ND	ND	NS
Feb-06	ND	ND	2.0	ND	ND	NS
May-06	ND	ND	ND	ND	ND	NS
Aug-06	NS	NS	NS	NS	NS	NS
Nov-06	ND	ND	ND	ND	ND	NS
Feb-07	ND	ND	19.2	ND	ND	NS
May-07	ND	ND	0.76 J	ND	ND	NS
Aug-07	ND	ND	11.0 J	4.2	ND	NS
Feb-08	ND	ND	0.99 J	ND	ND	NS
May-08	ND	ND	3.0	ND	ND	NS
Aug-08	ND	ND	ND	ND	ND	NS
Nov-08	ND	ND	5.4	ND	ND	NS
Feb-09	<b>0.50J</b>	ND	6.2	ND	ND	NS
May-09	ND	ND	ND	ND	ND	NS
Aug-09	ND	ND	ND	ND	ND	NS
Nov-09	ND	ND	ND	ND	ND	NS
Feb-10	ND	ND	6.2	ND	ND	NS
May-10	ND	ND	ND	ND	ND	NS

Data previous to August 2004 was provided by Tetra Tech NUS, Incorporated (TtNUS), data from August 2004 to May 2009 was provided by ECOR Solutions, Inc. (ECOR).

Surface Water Quality Standard (SWQS) Criteria is from the New Jersey Department of Environmental Protection (NJDEP) criteria for class II-A Groundwater (N.J.A.C. 7:9-6) and class FW2 Surface Water (N.J.A.C. 79B). Unless otherwise noted, the groundwater criteria used are the Higher of the Practical Quantitation Levels (PQLs) and Groundwater Quality Criteria.

Analytes with concentrations greater than the NJDEP GQS or SWQS are highlighted in bold.

Sampling periods displaying two values for a concentration (i.e. XX/XX) indicate a duplicate sample was taken and analyzed.

J = Estimated value due to exceedance of technical criteria or because results are less than the CRQL.

ND = Non-Detect

NS = Not Sampled

NA = Not Available

**Table 5**  
**Groundwater Elevation Data**  
**Year 12**  
**NWS Earle**  
**Site C-17/20/16/50**

Location/ Duplicate	Groundwater Levels				
	Elevation Top of Casing	Depth to Product	Depth to GW	Product Thickness	Elevation GW*
NJDEP GWQS	ft above MSL	feet BTC	feet BTC	ft	ft above MSL
<b>16MW-02</b>					
Aug-09	98.48	NA	6.51	NA	91.97
Nov-09	98.48	NA	6.51	NA	91.97
Feb-10	98.48	NA	5.90	NA	92.58
May-10	98.48	NA	5.18	NA	93.30
<b>16MW-04</b>					
Aug-09	101.23	7.93	8.02	0.09	93.29
Nov-09	101.23	8.11	8.35	0.24	93.08
Feb-10	101.23	NA	NA	NA	NA
May-10	101.23	6.46	7.09	0.63	94.68
<b>16MW-05</b>					
Aug-09	104.14	11.19	10.59	<0.01	93.55
Nov-09	104.14	10.66	10.72	0.06	93.47
Feb-10	104.14	NA	9.97	NA	94.17
May-10	104.14	9.03	9.10	0.07	95.10
<b>16MW-08</b>					
Aug-09	103.29	NA	11.85	NA	91.44
Nov-09	103.29	NA	11.85	NA	91.44
Feb-10	103.29	NA	11.10	NA	92.19
May-10	103.29	NA	10.71	NA	92.58
<b>16MW-10</b>					
Aug-09	100.36	NA	8.60	NA	91.76
Nov-09	100.36	NA	8.60	NA	91.76
Feb-10	100.36	NA	8.11	NA	92.25
May-10	100.36	NA	7.51	NA	92.85
<b>16MW-11</b>					
Aug-09	91.81	NA	2.79	NA	89.02
Nov-09	91.81	NA	2.82	NA	88.99
Feb-10	91.81	NA	2.67	NA	89.14
May-10	91.81	NA	2.55	NA	89.26
<b>16MW-15</b>					
Aug-09	91.97	NA	11.59	NA	80.38
Nov-09	91.97	NA	3.67	NA	88.30
Feb-10	91.97	NA	3.44	NA	88.53
May-10	91.97	NA	3.44	NA	88.53
<b>16MW-16</b>					
Aug-09	94.34	NA	3.94	NA	90.40
Nov-09	94.34	NA	3.91	NA	90.43
Feb-10	94.34	NA	3.60	NA	90.74
May-10	94.34	NA	3.50	NA	90.84
<b>16MW-17</b>					
Aug-09	93.94	NA	3.93	NA	90.01
Nov-09	93.94	NA	3.96	NA	89.98
Feb-10	93.94	NA	3.85	NA	90.09
May-10	93.94	NA	3.50	NA	90.44

**Table 5**  
**Groundwater Elevation Data**  
**Year 12**  
**NWS Earle**  
**Site C-17/20/16/50**

Location/ Duplicate	Groundwater Levels				
	Elevation Top of Casing	Depth to Product	Depth to GW	Product Thickness	Elevation GW*
NJDEP GWQS	ft above MSL	feet BTC	feet BTC	ft	ft above MSL
<b>16MW-24</b>					
Aug-09	89.88	NA	4.25	NA	85.63
Nov-09	89.88	NA	4.03	NA	85.85
Feb-10	89.88	NA	3.90	NA	85.98
May-10	89.88	NA	4.11	NA	85.77
<b>16MW-25</b>					
Aug-09	93.22	NA	6.91	NA	86.31
Nov-09	93.22	NA	6.58	NA	86.64
Feb-10	93.22	NA	6.04	NA	87.18
May-10	93.22	NA	5.92	NA	87.30
<b>18MW-01</b>					
Aug-09	103	NA	9.23	NA	93.77
Nov-09	103	NA	9.26	NA	93.74
Feb-10	103	NA	8.40	NA	94.60
May-10	103	NA	7.25	NA	95.75
<b>29MW-01</b>					
Aug-09	99.42	NA	9.60	NA	89.82
Nov-09	99.42	NA	9.72	NA	89.70
Feb-10	99.42	NA	9.43	NA	89.99
May-10	99.42	NA	9.24	NA	90.18
<b>16SW-01</b>					
Aug-09	NA	NA	NA	NA	NA
Nov-09	NA	NA	NA	NA	NA
Feb-10	NA	NA	NA	NA	NA
May-10	NA	NA	NA	NA	NA
<b>16SW-02</b>					
Aug-09	NA	NA	NA	NA	NA
Nov-09	NA	NA	NA	NA	NA
Feb-10	NA	NA	NA	NA	NA
May-10	NA	NA	NA	NA	NA

MSL = Mean Sea Level.

BTC = Below top of casing.

NA = Not Available.

\* For wells with product present, groundwater elevations were calculated and corrected

\*\*Sheen of product present; product thickness <0.01 foot

**Table 6**  
**Summary of Water Quality Indicator Parameters**  
**Year 12**  
**NWS Earle**  
**Site C-17/20/16/50**

Sample Station	Sample Date	Temperature (°C)	pH	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	ORP (mV)	Turbidity (NTU)
<b>Groundwater</b>							
16MW-08	Aug-09	17.16	4.60	65	0.32	142.1	103.6
	Nov-09	16.12	4.85	87	0.08	147.4	102.4
	Feb-10	11.22	9.25	106	0.20	163.6	28.3
	May-10	13.99	6.58	99	1.02	6.1	63.1
16MW-10	Aug-09	20.66	5.45	482	0.30	84.0	212.0
	Nov-09	16.75	5.43	519	0.20	429.5	67.8
	Feb-10	10.79	5.54	315	0.55	76.1	717.0
	May-10	12.42	6.42	369	1.30	31.0	96.8
16MW-11	Aug-09	16.77	4.00	273	0.86	104.0	13.8
	Nov-09	14.52	4.18	255	0.11	277.2	18.4
	Feb-10	9.22	4.32	218	0.13	324.6	15.8
	May-10	11.00	6.19	334	0.53	41.1	9.4
16MW-15	Aug-09	19.27	4.51	174	1.60	153.2	16.0
	Nov-09	14.39	4.51	153	1.03	275.7	7.7
	Feb-10	7.09	4.69	113	2.79	317.8	7.5
	May-10	16.35	5.33	170	0.53	83.0	10.5
16MW-24	Aug-09	18.33	5.20	108	1.04	116.4	14.4
	Nov-09	13.18	4.99	105	0.32	434.7	7.2
	Feb-10	8.70	5.01	58	0.28	149.0	11.3
	May-10	12.69	6.59	88	0.59	36.0	6.5
16MW-25	Aug-09	16.82	3.81	67	2.71	175.3	20.4
	Nov-09	13.70	3.84	74	2.26	290.4	13.3
	Feb-10	7.53	3.74	56	1.22	368.1	6.4
	May-10	10.48	5.36	73	2.16	84.9	5.5
18MW-01	Aug-09	16.81	5.28	79	0.98	121.0	17.3
	Nov-09	16.20	5.22	74	3.67	183.9	32.2
	Feb-10	11.26	5.62	71	2.30	194.9	14.4
	May-10	12.25	6.29	81	4.52	40.7	43.8
NOTES:							
°C = degrees Celsius							
µmhos/cm = microhmos per centimeter							
mg/L = milligrams per liter							
mV = millivolt							
NTU = nephelometric turbidity unit.							
ORP = oxidation reduction potential							

**Table 7**  
**Quality Assurance/Quality Control (QA/QC) Data Summary**  
**Year 12**  
**NWS Earle**  
**Site C-17/20/16/50**

Year 11 Sampling Event	Data Collected	Sample ID	Benzene	Ethylbenzene	Toluene	Total Xylenes	MTBE	Naphthalene
<b>NJDEP GWQS</b>			<b>1</b>	<b>700</b>	<b>70</b>	<b>1,000</b>	<b>1,000*</b>	<b>300</b>
August-09	8/25/2009	FB-01	ND	ND	ND	ND	ND	ND
	8/26/2009	FB-02	ND	ND	ND	ND	ND	ND
	8/26/2009	TB-01	ND	ND	ND	ND	ND	ND
November-09	11/9/2009	FB-01	ND	ND	ND	ND	ND	NS
	11/10/2009	FB-02	ND	ND	ND	ND	ND	1.1
February-10	2/18/2010	FB-01	ND	ND	ND	ND	ND	ND
	2/18/2010	TB-01	ND	ND	ND	ND	ND	NS
May-10	5/3/2010	FB-01	ND	ND	ND	ND	ND	ND
	5/4/2010	FB-02	ND	ND	ND	ND	ND	ND

All results reported in micrograms per liter ( $\mu\text{g/L}$ )

ND = not detect above method detection limit

NA = not applicable; not analyzed

**Table 8**  
**Relative Percent Differences**  
**Year 12**  
**NWS Earle**  
**C-17/20/16/50**

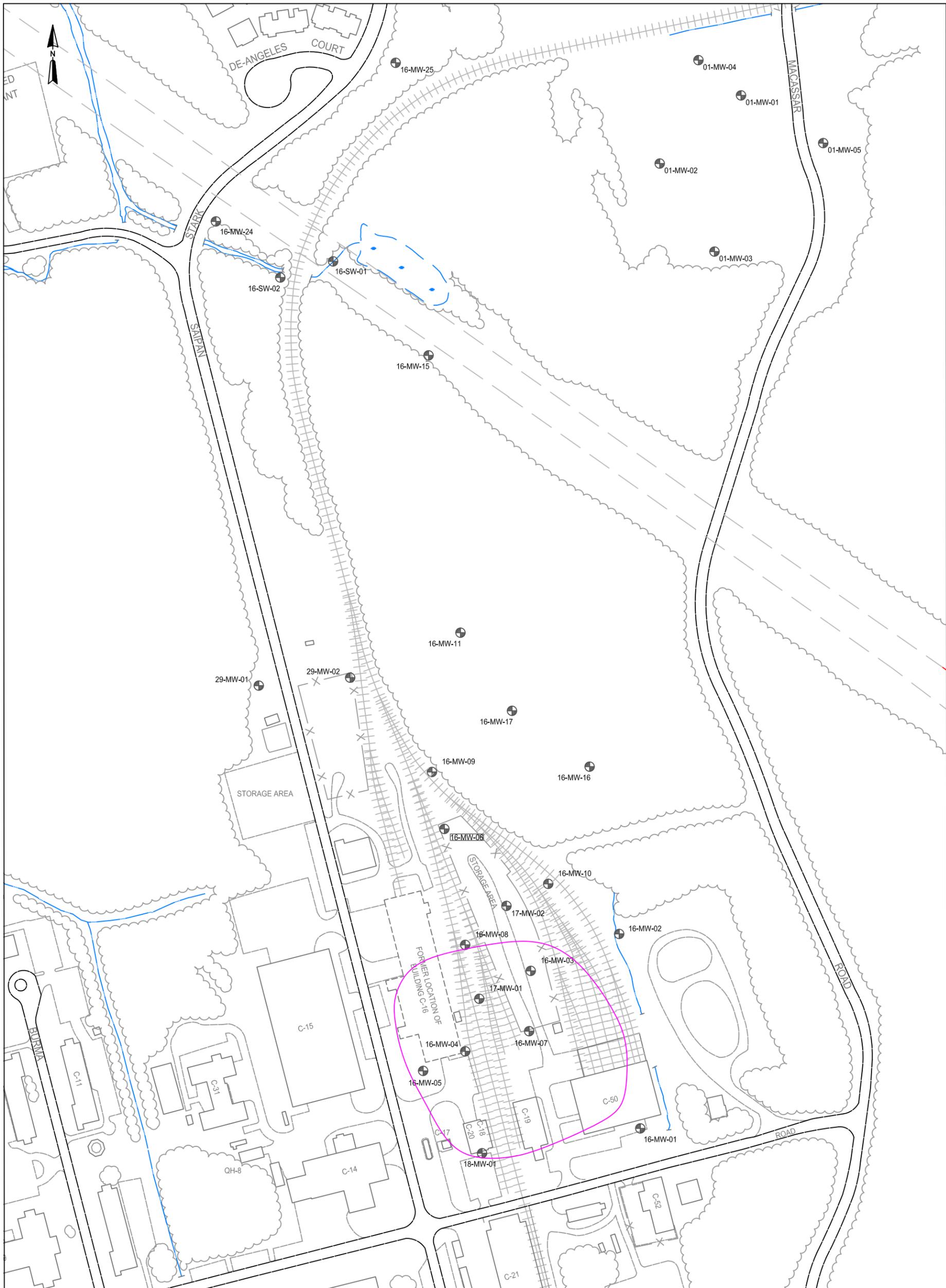
COC	Benzene			Ethylbenzene			MTBE			Toluene			Xylenes			Naphthalene		
	Sample	Duplicate	RPD	Sample	Duplicate	RPD	Sample	Duplicate	RPD	Sample	Duplicate	RPD	Sample	Duplicate	RPD	Sample	Duplicate	RPD
August-09	3.4	3.6	5.71%	0.44	0.54	20.41%	1.2	1.2	0.00%	ND	ND	NA	ND	ND	NA	1.5	1	40.00%
November-09	14.1	14.1	0.00%	14.7	14.7	0.00%	1.6	1.7	6.06%	ND	ND	NA	7.8	7.6	2.60%	8.4	19.3	78.70%
February-10	32.2	39.1	19.35%	16.1	20.1	22.10%	0.77	0.87	12.20%	0.48	ND	NA	11.9	15.1	23.70%	56.7	50.4	11.76%
May-10	28.5	30.3	6.12%	12.1	13.6	11.67%	ND	ND	NA	ND	ND	NA	17.2	15.7	9.12%	37.7	30.9	19.83%

All result reported in micrograms per liter (µg/L)

ND = not detect above method detection limit

NA = not applicable

## **FIGURES**



**LEGEND**

-  FENCE
-  TREELINE
-  RAILROAD
-  MONITORING WELL
-  CEA BOUNDARY

**CEA BOUNDARY**

BUILDINGS C-17/20/16/50  
U.S. NAVY NWS- EARLE  
COLTS NECK, NJ

**H&S Environmental, Inc.**

160 East Main Street, Suite 2F, Westborough, MA 01581

SCALE IN FEET



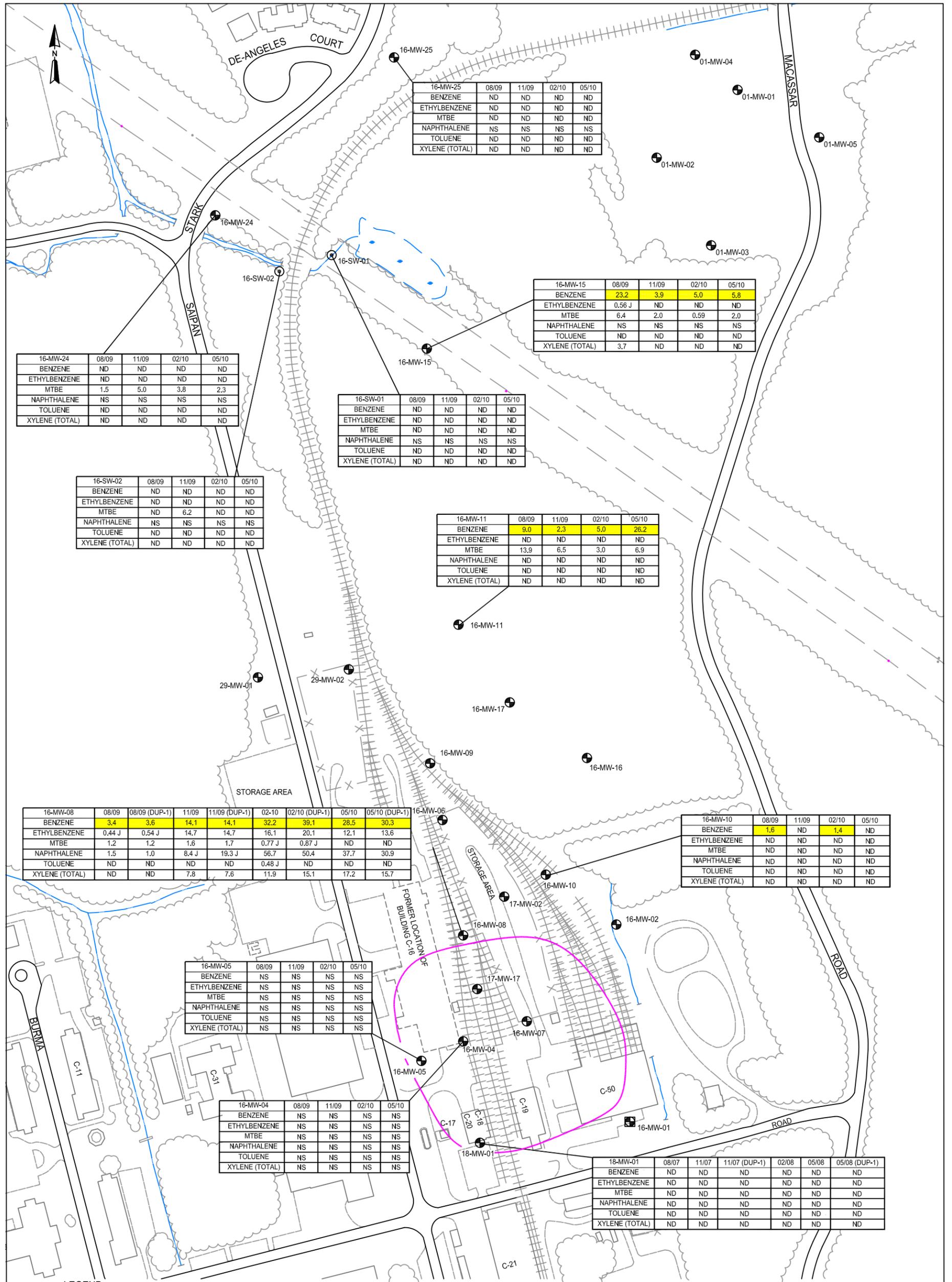
DATE

07-28-10

FIGURE

1-2





16-MW-25	08/09	11/09	02/10	05/10
BENZENE	ND	ND	ND	ND
ETHYLBENZENE	ND	ND	ND	ND
MTBE	ND	ND	ND	ND
NAPHTHALENE	NS	NS	NS	NS
TOLUENE	ND	ND	ND	ND
XYLENE (TOTAL)	ND	ND	ND	ND

16-MW-15	08/09	11/09	02/10	05/10
BENZENE	23.2	3.9	5.0	5.8
ETHYLBENZENE	0.56 J	ND	ND	ND
MTBE	6.4	2.0	0.59	2.0
NAPHTHALENE	NS	NS	NS	NS
TOLUENE	ND	ND	ND	ND
XYLENE (TOTAL)	3.7	ND	ND	ND

16-MW-24	08/09	11/09	02/10	05/10
BENZENE	ND	ND	ND	ND
ETHYLBENZENE	ND	ND	ND	ND
MTBE	1.5	5.0	3.8	2.3
NAPHTHALENE	NS	NS	NS	NS
TOLUENE	ND	ND	ND	ND
XYLENE (TOTAL)	ND	ND	ND	ND

16-SW-01	08/09	11/09	02/10	05/10
BENZENE	ND	ND	ND	ND
ETHYLBENZENE	ND	ND	ND	ND
MTBE	ND	ND	ND	ND
NAPHTHALENE	NS	NS	NS	NS
TOLUENE	ND	ND	ND	ND
XYLENE (TOTAL)	ND	ND	ND	ND

16-SW-02	08/09	11/09	02/10	05/10
BENZENE	ND	ND	ND	ND
ETHYLBENZENE	ND	ND	ND	ND
MTBE	ND	6.2	ND	ND
NAPHTHALENE	NS	NS	NS	NS
TOLUENE	ND	ND	ND	ND
XYLENE (TOTAL)	ND	ND	ND	ND

16-MW-11	08/09	11/09	02/10	05/10
BENZENE	9.0	2.3	5.0	26.2
ETHYLBENZENE	ND	ND	ND	ND
MTBE	13.9	6.5	3.0	6.9
NAPHTHALENE	ND	ND	ND	ND
TOLUENE	ND	ND	ND	ND
XYLENE (TOTAL)	ND	ND	ND	ND

16-MW-08	08/09	08/09 (DUP-1)	11/09	11/09 (DUP-1)	02-10	02/10 (DUP-1)	05/10	05/10 (DUP-1)
BENZENE	3.4	3.6	14.1	14.1	32.2	39.1	28.5	30.3
ETHYLBENZENE	0.44 J	0.54 J	14.7	14.7	16.1	20.1	12.1	13.6
MTBE	1.2	1.2	1.6	1.7	0.77 J	0.87 J	ND	ND
NAPHTHALENE	1.5	1.0	8.4 J	19.3 J	56.7	50.4	37.7	30.9
TOLUENE	ND	ND	ND	ND	0.48 J	ND	ND	ND
XYLENE (TOTAL)	ND	ND	7.8	7.6	11.9	15.1	17.2	15.7

16-MW-10	08/09	11/09	02/10	05/10
BENZENE	1.6	ND	1.4	ND
ETHYLBENZENE	ND	ND	ND	ND
MTBE	ND	ND	ND	ND
NAPHTHALENE	ND	ND	ND	ND
TOLUENE	ND	ND	ND	ND
XYLENE (TOTAL)	ND	ND	ND	ND

16-MW-05	08/09	11/09	02/10	05/10
BENZENE	NS	NS	NS	NS
ETHYLBENZENE	NS	NS	NS	NS
MTBE	NS	NS	NS	NS
NAPHTHALENE	NS	NS	NS	NS
TOLUENE	NS	NS	NS	NS
XYLENE (TOTAL)	NS	NS	NS	NS

16-MW-04	08/09	11/09	02/10	05/10
BENZENE	NS	NS	NS	NS
ETHYLBENZENE	NS	NS	NS	NS
MTBE	NS	NS	NS	NS
NAPHTHALENE	NS	NS	NS	NS
TOLUENE	NS	NS	NS	NS
XYLENE (TOTAL)	NS	NS	NS	NS

18-MW-01	08/07	11/07	11/07 (DUP-1)	02/08	05/08	05/08 (DUP-1)
BENZENE	ND	ND	ND	ND	ND	ND
ETHYLBENZENE	ND	ND	ND	ND	ND	ND
MTBE	ND	ND	ND	ND	ND	ND
NAPHTHALENE	ND	ND	ND	ND	ND	ND
TOLUENE	ND	ND	ND	ND	ND	ND
XYLENE (TOTAL)	ND	ND	ND	ND	ND	ND

LEGEND

- FENCE
- TREELINE
- RAILROAD
- MONITORING WELL
- ABANDONED MONITORING WELL
- SURFACE WATER SITES
- CEA BOUNDARY
- J* ESTIMATED VALUE
- ND* NOT DETECTED
- NS* NOT ANALYZED
- RESULT EXCEEDS NJDEP GWQS

YEAR 12  
GROUNDWATER QUALITY MAP

BUILDINGS C-17/20/16/50  
U.S. NAVY NWS- EARLE  
COLTS NECK, NJ

H&S Environmental, Inc.  
160 East Main St., Suite 2F, Westborough, MA 01581

SCALE IN FEET



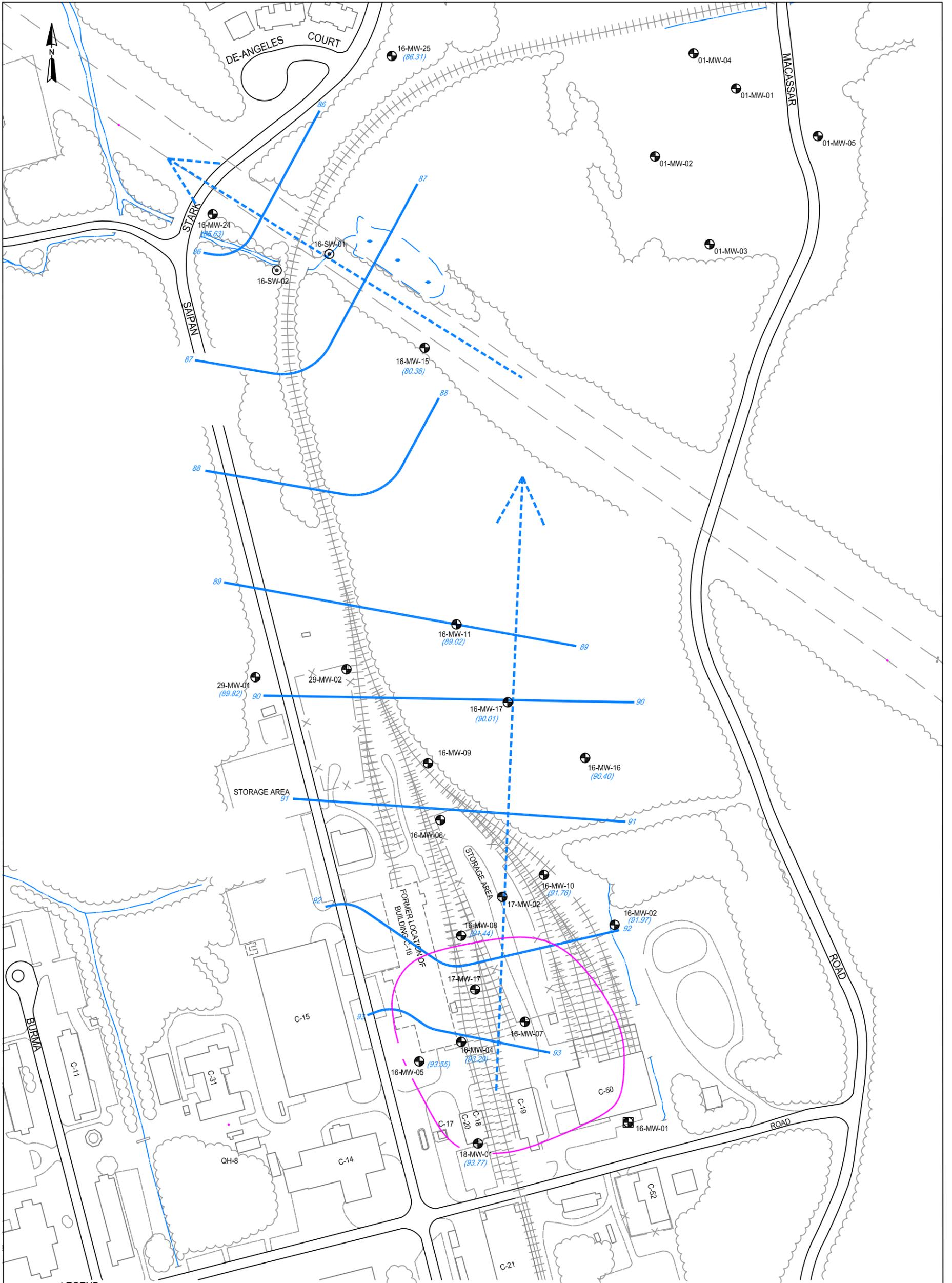
DATE

07-28-10

FIGURE

4-1





**LEGEND**

- FENCE
- TREELINE
- RAILROAD
- MONITORING WELL
- ABANDONED MONITORING WELL
- SURFACE WATER SITES
- CEA BOUNDARY
- GROUNDWATER CONTOUR (ft)
- GROUNDWATER ELEVATION (ft)
- GROUNDWATER FLOW DIRECTION (INFERRED)

NOTE: GROUNDWATER LEVEL AT 16-MW-15 NOT FACTORED INTO GROUNDWATER FLOW DUE TO WHAT APPEARS TO BE AN ANOMALOUS WATER LEVEL READING

**POTENTIOMETRIC SURFACE MAP**  
08/2009

BUILDINGS C-17/20/16/50  
U.S. NAVY NWS- EARLE  
COLTS NECK, NJ

H&S Environmental, Inc.  
160 East Main St., Suite 2F, Westborough, MA 01581

SCALE IN FEET



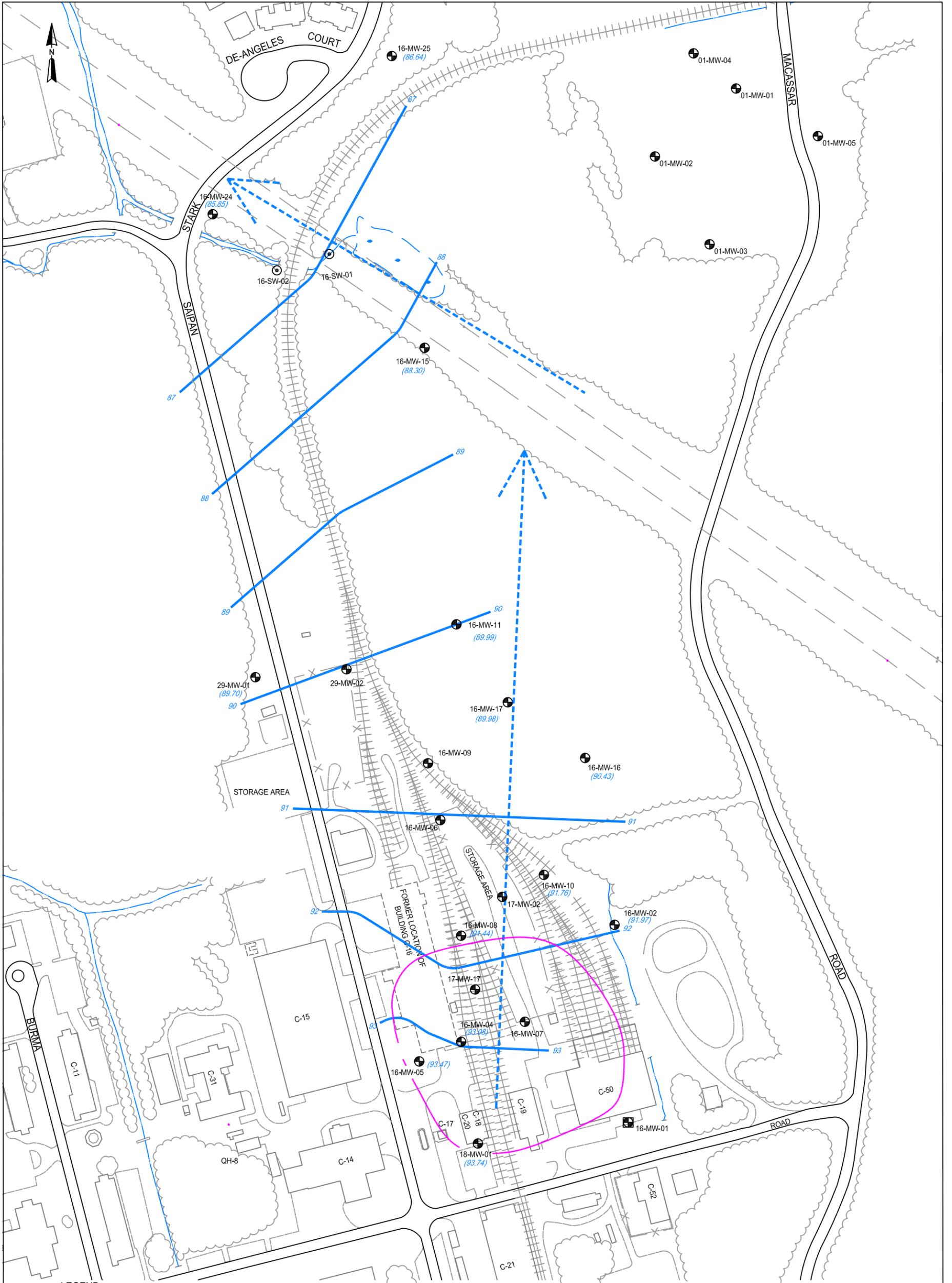
DATE

07-29-10

FIGURE

4-2





**LEGEND**

-  FENCE
-  TREELINE
-  RAILROAD
-  MONITORING WELL
-  ABANDONED MONITORING WELL
-  SURFACE WATER SITES
-  CEA BOUNDARY
-  GROUNDWATER CONTOUR (ft)
-  GROUNDWATER ELEVATION (ft)
-  GROUNDWATER FLOW DIRECTION (INFERRED)

**POTENTIOMETRIC SURFACE MAP  
11/2009**

**BUILDINGS C-17/20/16/50  
U.S. NAVY NWS- EARLE  
COLTS NECK, NJ**

**H&S Environmental, Inc.**  
160 East Main St., Suite 2F, Westborough, MA 01581

SCALE IN FEET



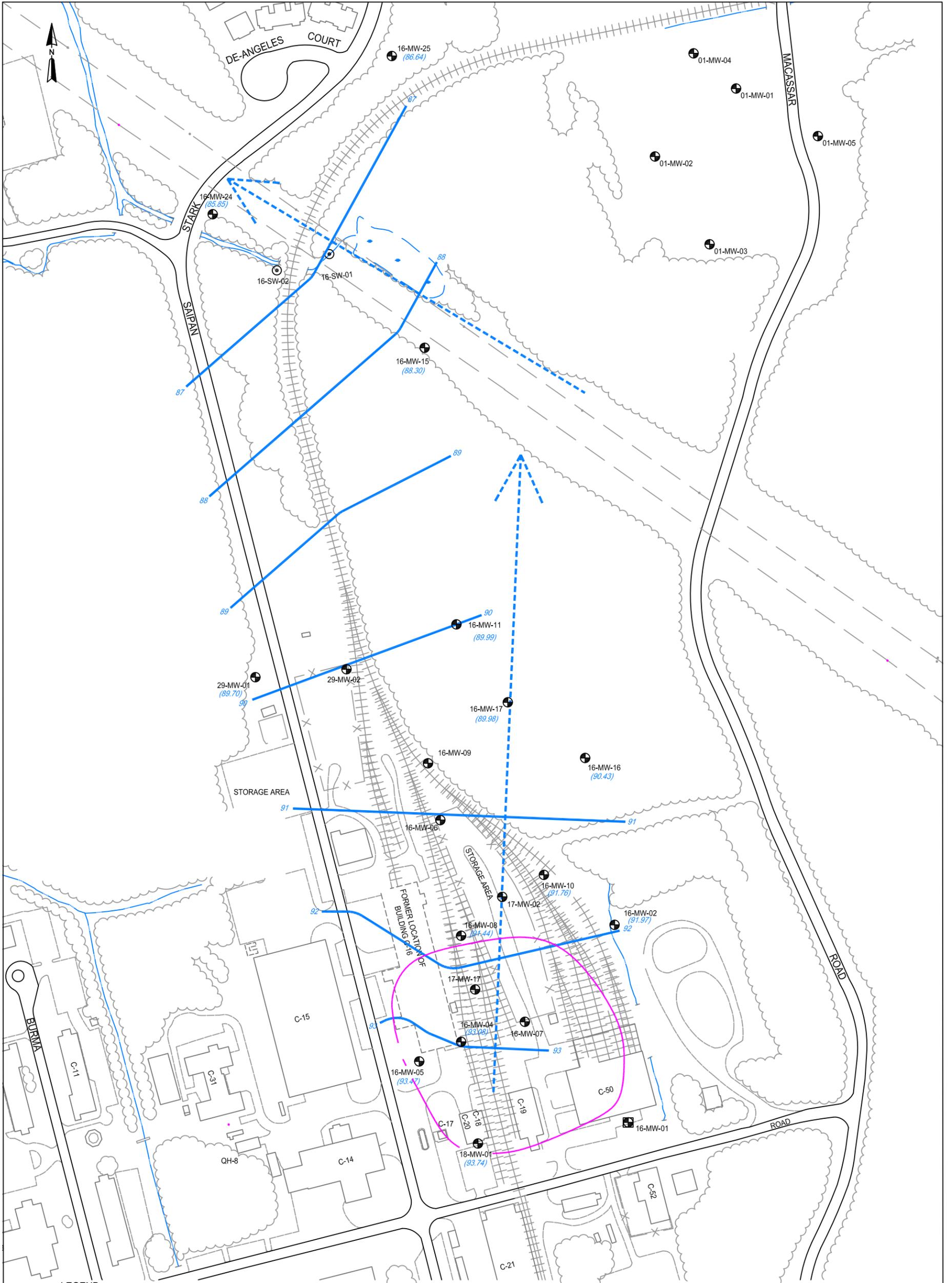
DATE

07-29-10

FIGURE

4-3





**LEGEND**

-  FENCE
-  TREELINE
-  RAILROAD
-  MONITORING WELL
-  ABANDONED MONITORING WELL
-  SURFACE WATER SITES
-  CEA BOUNDARY
-  GROUNDWATER CONTOUR (ft)
-  GROUNDWATER ELEVATION (ft)
-  GROUNDWATER FLOW DIRECTION (INFERRED)

**POTENTIOMETRIC SURFACE MAP**  
02/2010

BUILDINGS C-17/20/16/50  
U.S. NAVY NWS- EARLE  
COLTS NECK, NJ

H&S Environmental, Inc.  
160 East Main St., Suite 2F, Westborough, MA 01581

SCALE IN FEET



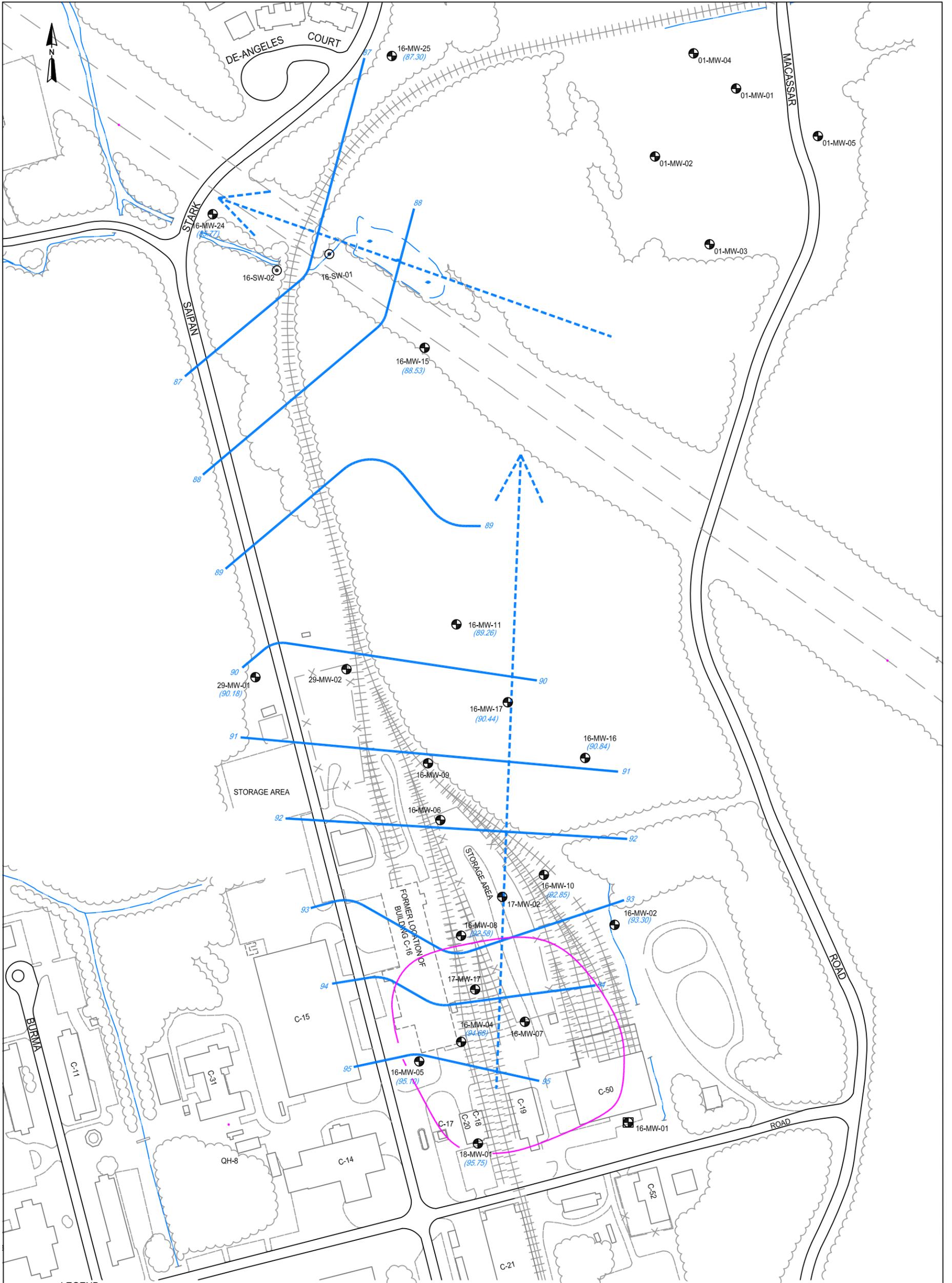
DATE

07-29-10

FIGURE

4-4



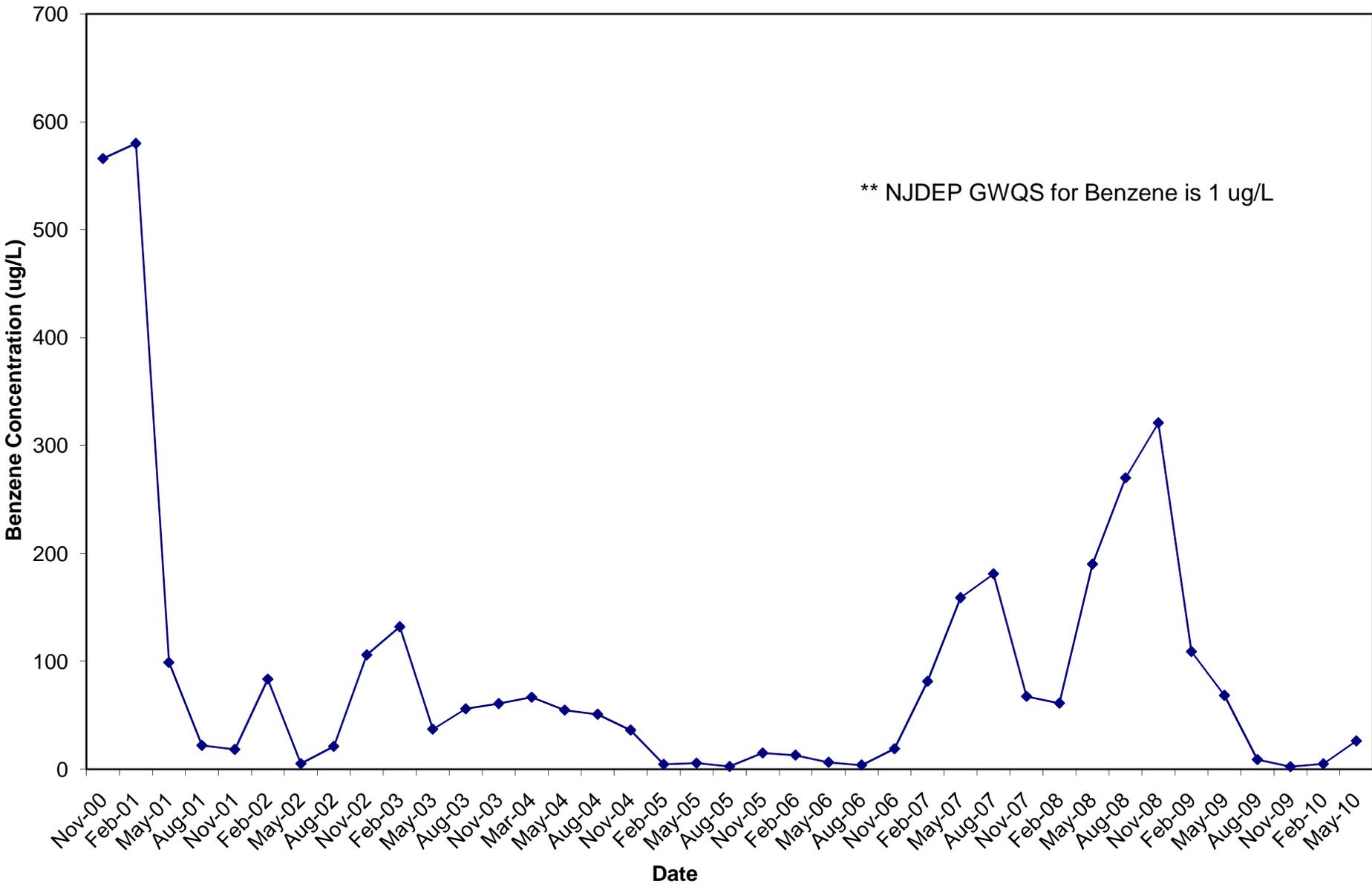


**LEGEND**

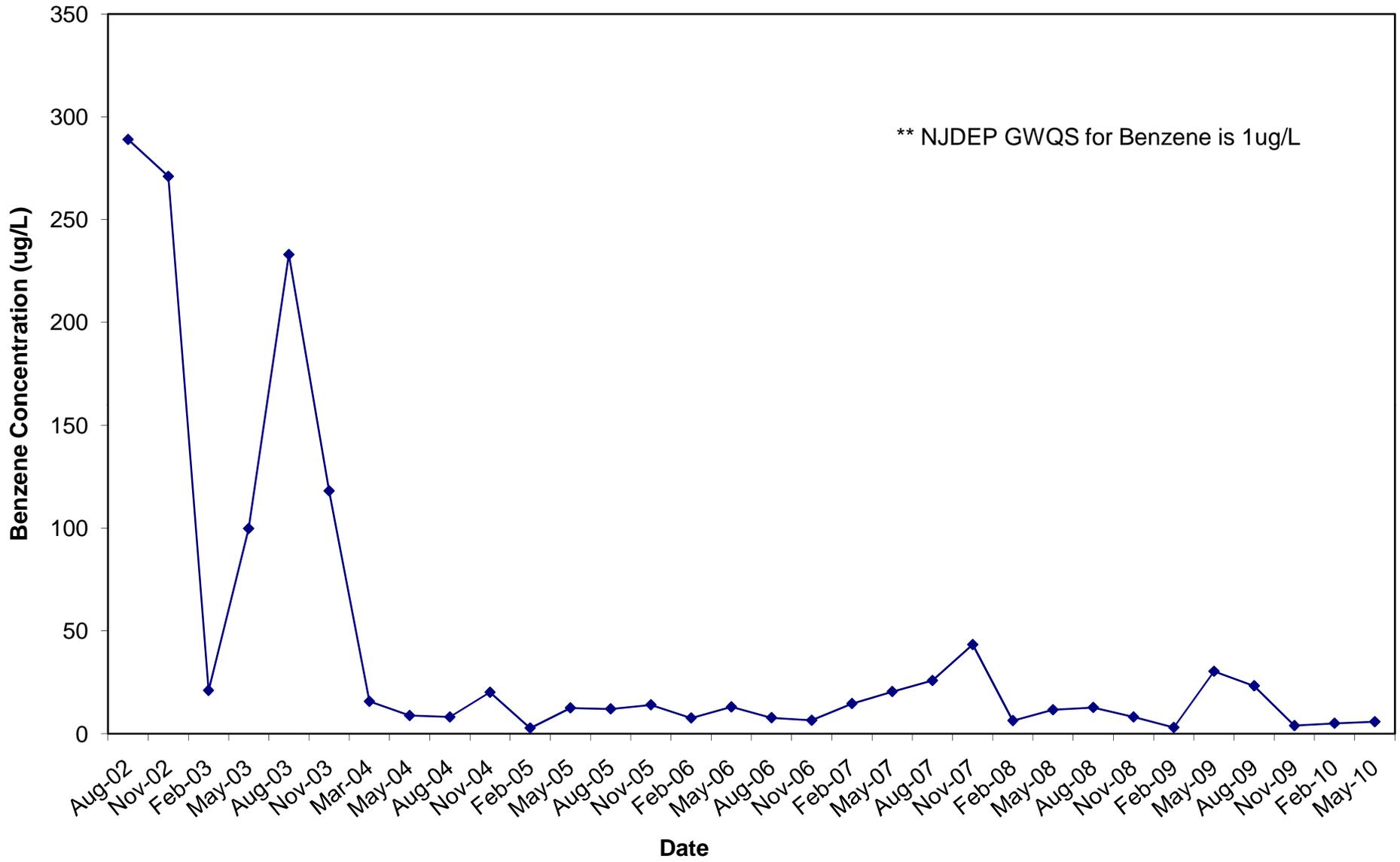
-  FENCE
-  TREELINE
-  RAILROAD
-  MONITORING WELL
-  ABANDONED MONITORING WELL
-  SURFACE WATER SITES
-  CEA BOUNDARY
-  GROUNDWATER CONTOUR (ft)
-  GROUNDWATER ELEVATION (ft)
-  GROUNDWATER FLOW DIRECTION (INFERRED)

<b>POTENTIOMETRIC SURFACE MAP</b> 05/2010		
<b>BUILDINGS C-17/20/16/50</b> <b>U.S. NAVY NWS- EARLE</b> <b>COLTS NECK, NJ</b>		
<b>H&amp;S Environmental, Inc.</b> 160 East Main St., Suite 2F, Westborough, MA 01581		
SCALE IN FEET 	DATE 07-29-10	FIGURE 4-5
		

**Figure 4-6**  
**Monitoring Well 16MW-11**  
**Benzene Concentration Trend**



**Figure 4-7**  
**Monitoring Well 16MW-15**  
**Benzene Concentration Trend**



**Figure 4-8**  
**Monitoring Well 16MW-24**  
**Benzene Concentration Trend**

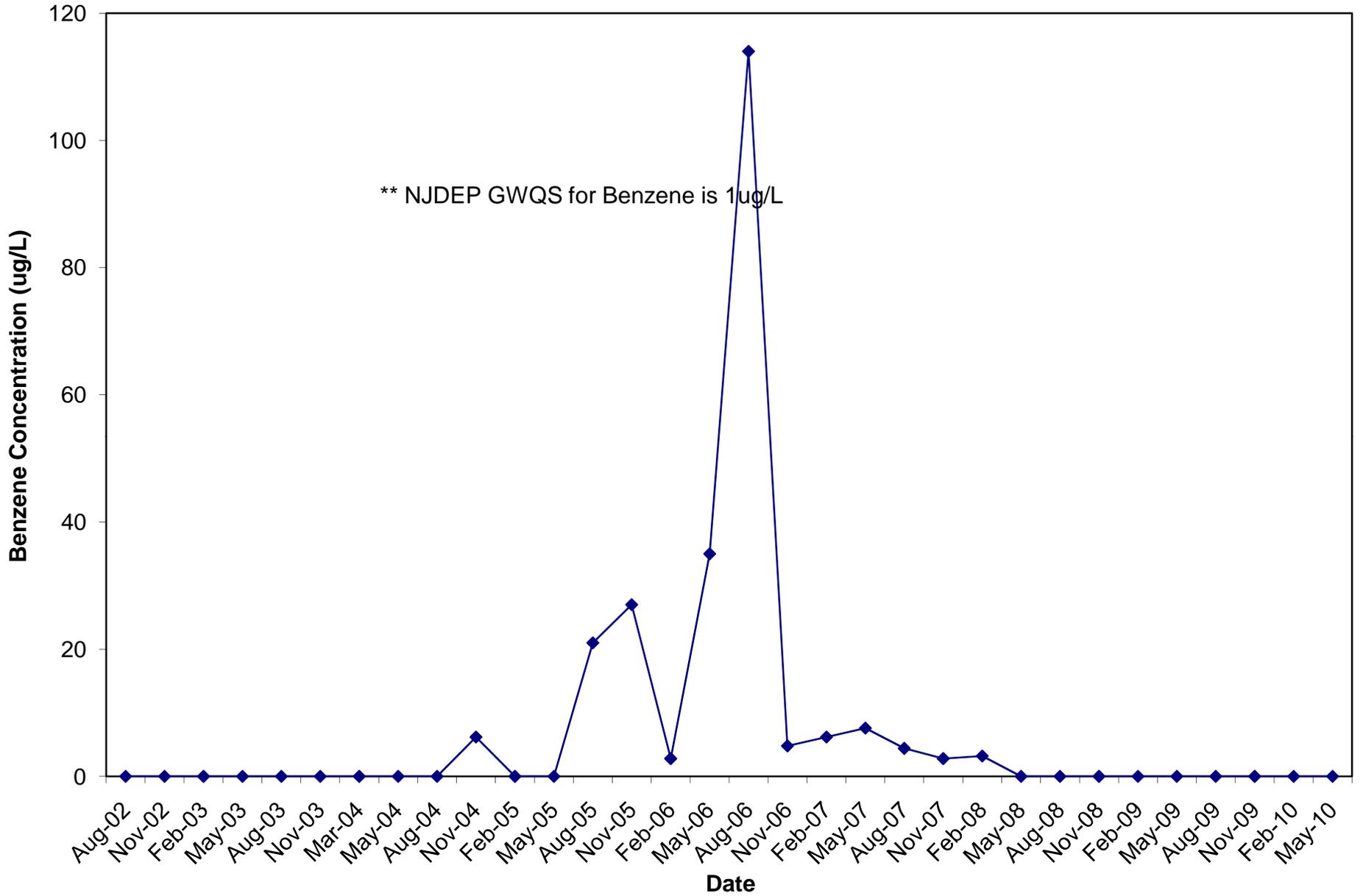


Figure 4-9  
Monitoring Well 16MW-11  
MTBE Concentration Trend

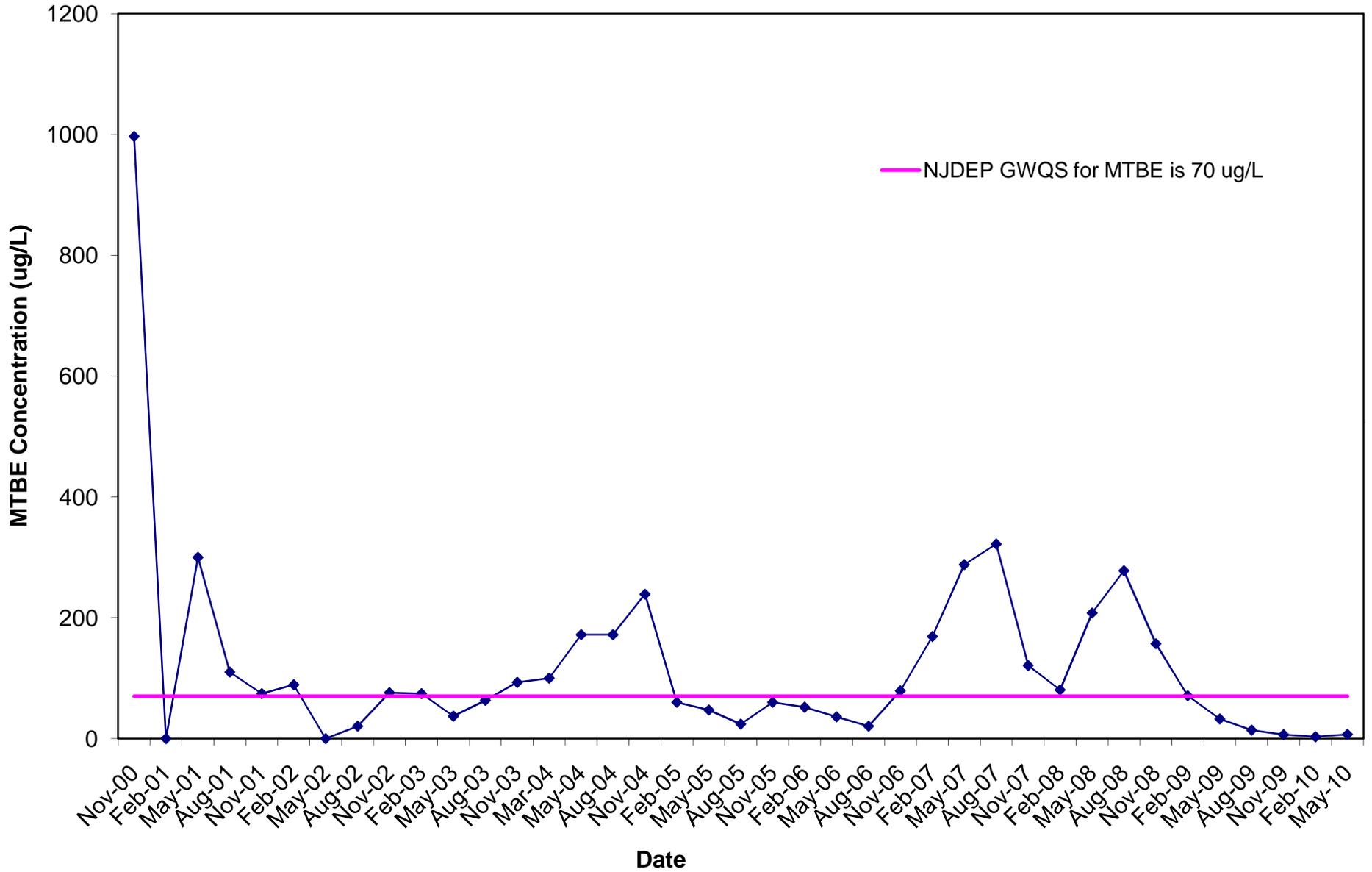


Figure 4-10  
Monitoring Well 16MW-15  
MTBE Concentration Trend

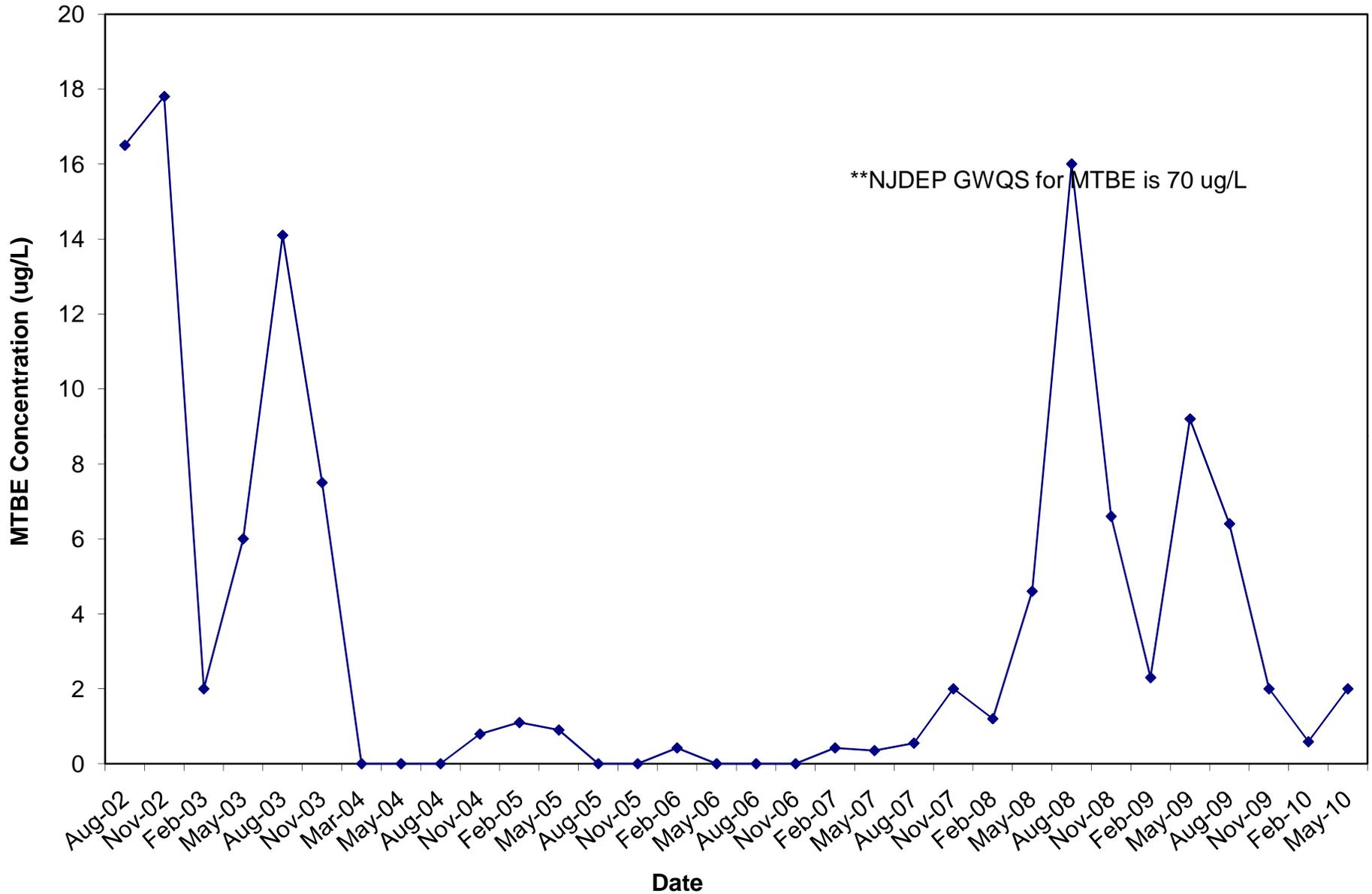


Figure 4-11  
Monitoring Well 16MW-24  
MTBE Concentration Trend

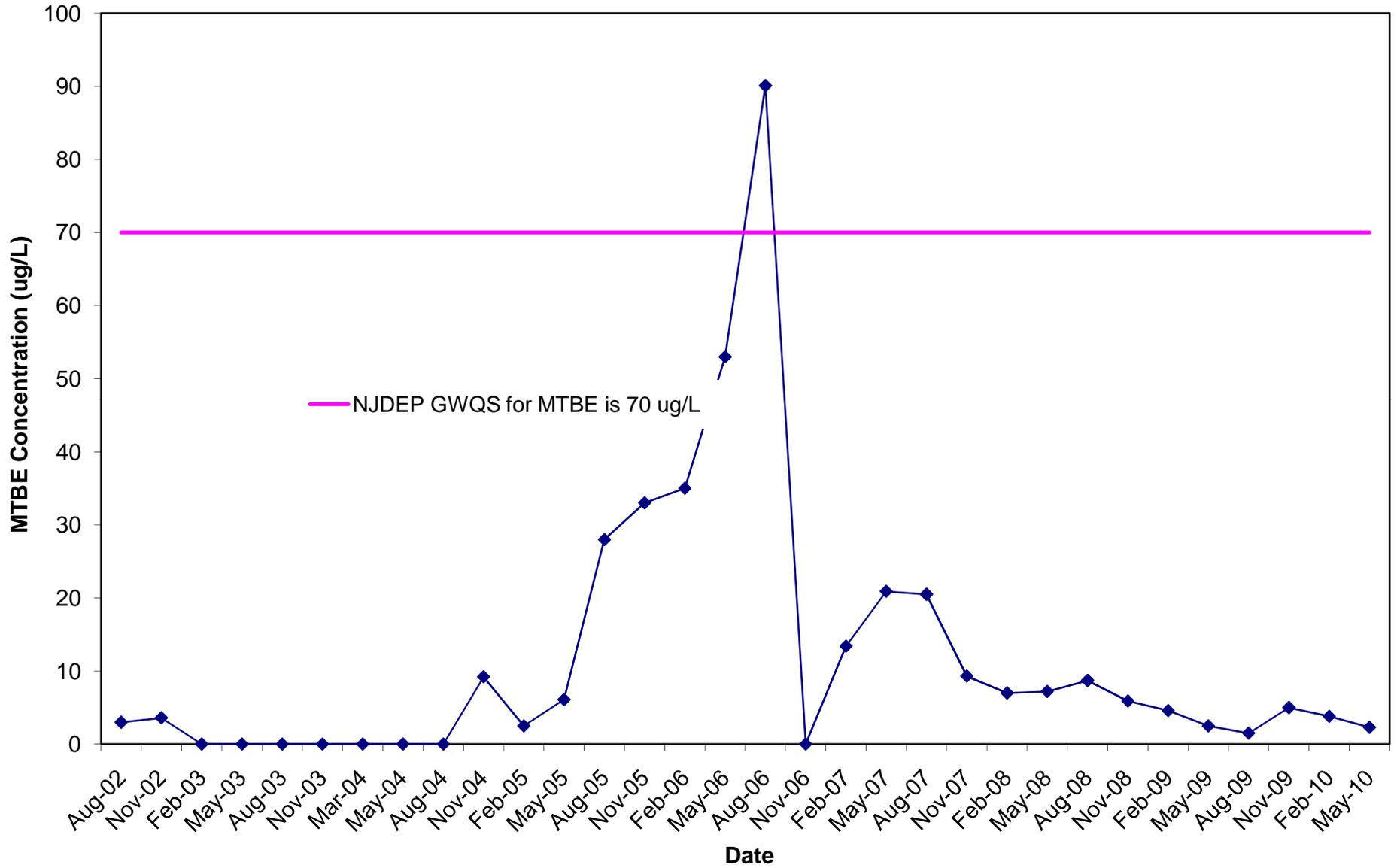


Figure 4-12  
Benzene Concentration Transect  
Year 12

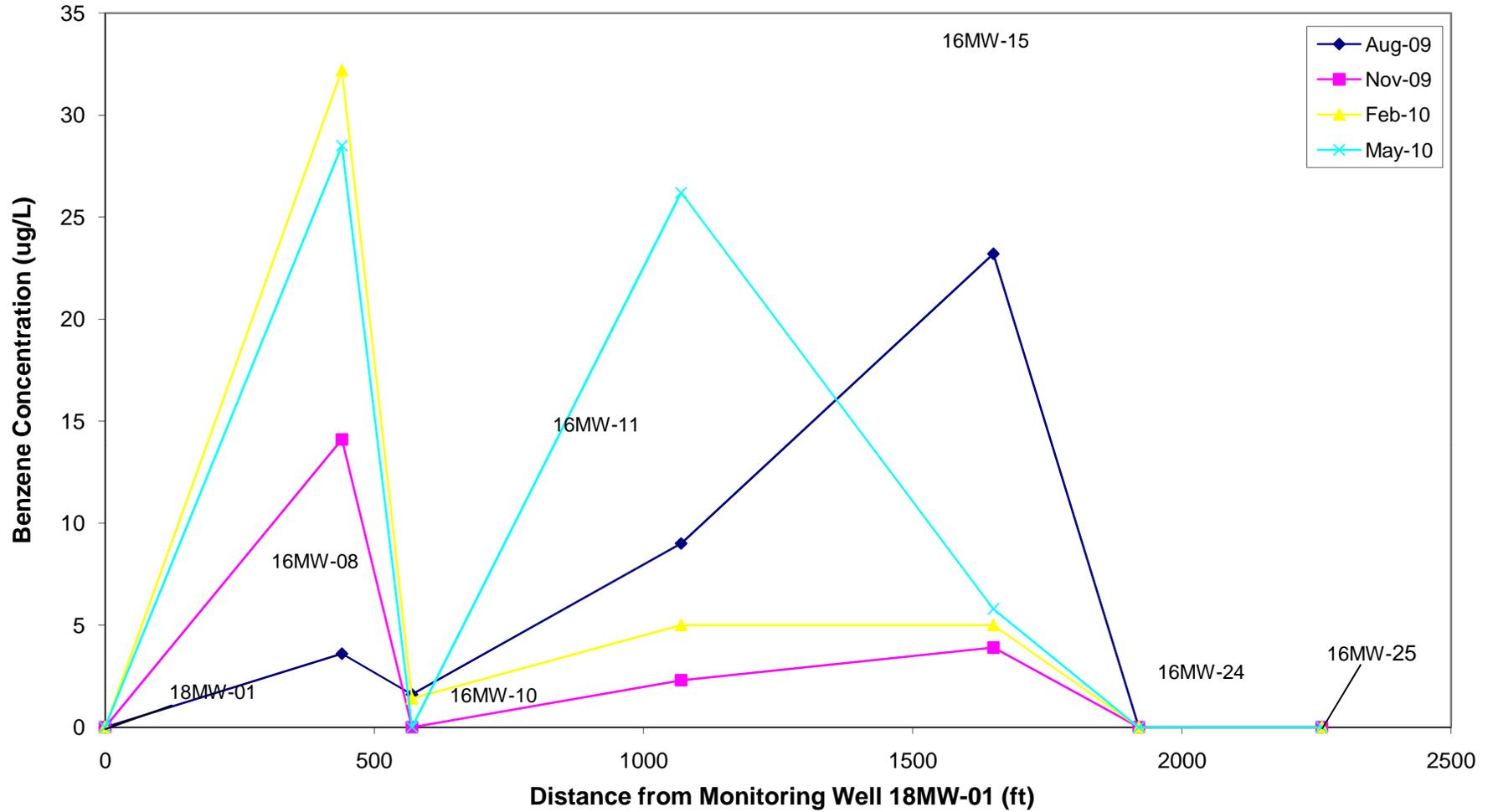
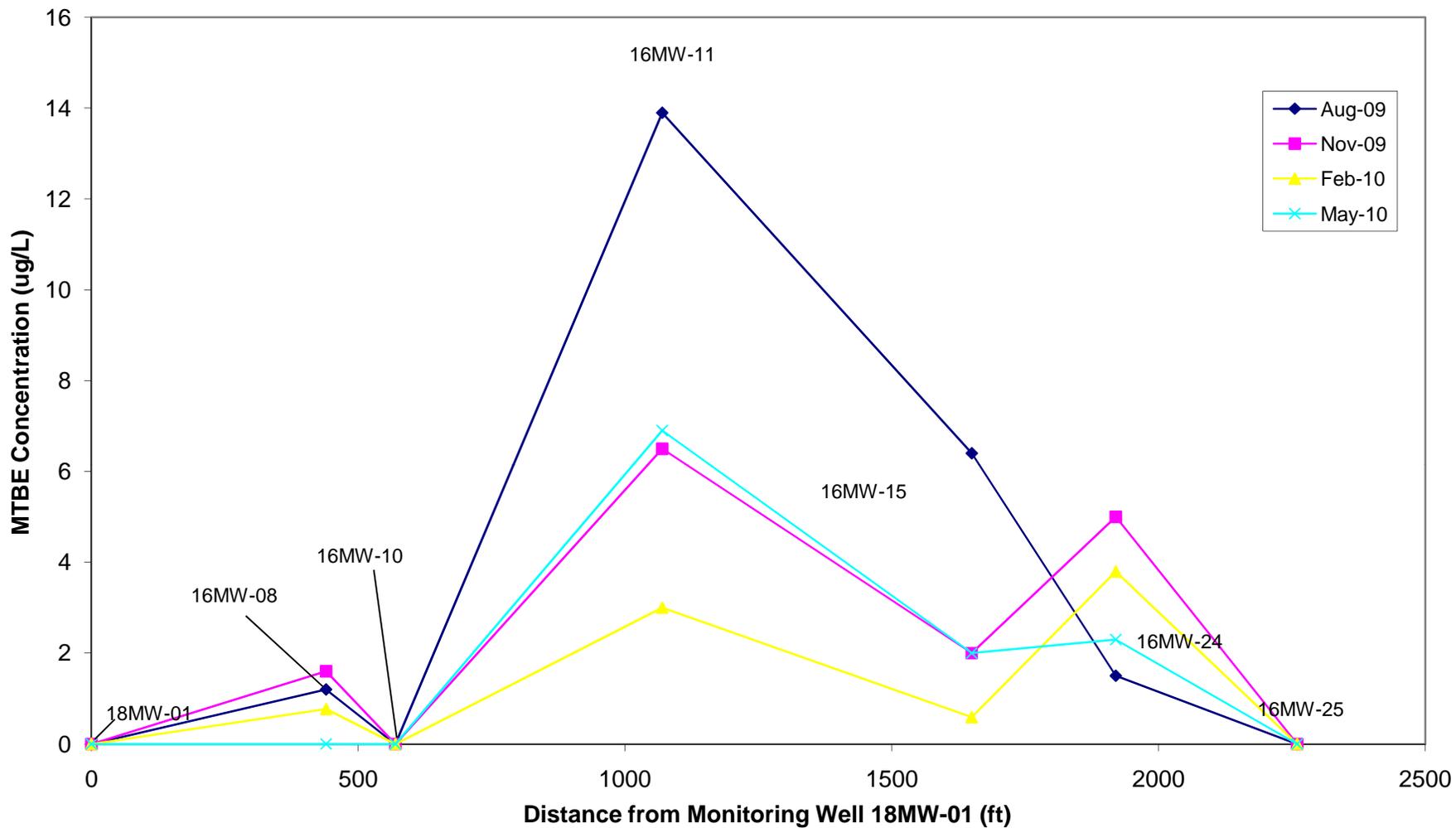


Figure 4-13  
MTBE Concentration Transect  
Year 12



## **APPENDICES**

**APPENDIX A**

**VALIDATED DATA AND  
VALIDATION REPORTS**



**Project Name:** NWS EARLE-TO 10  
**Laboratory:** Accutest Laboratories  
**SDG #:** JA26487  
**Fraction:** Organics  
**Matrix:** Aqueous  
**Report Date:** 10/02/2009

This analytical quality assurance report is based upon a review of analytical data generated for groundwater samples. The sample locations, laboratory identification numbers, sample collection dates, sample matrix, and analyses performed are presented in Table 1.

**Table 1**

Sample Location	Laboratory Sample ID	Date Collected	Matrix	Analyses Performed	
				VOC	SVOC
16-MW-11	JA26487-01	VOA	Groundwater	X	X
16-MW-15	JA26487-02	VOA	Groundwater	X	
16-MW-24	JA26487-03	VOA	Groundwater	X	
16-MW-25	JA26487-04	VOA	Groundwater	X	
16-SW-01	JA26487-05	VOA	Groundwater	X	
16-SW-02	JA26487-06	VOA	Groundwater	X	
FB-01	JA26487-07	VOA	Field Blank	X	X
16-MW-10	JA26487-08	VOA	Groundwater	X	X
16-MW-08	JA26487-09	VOA	Groundwater	X	X
18-MW-01	JA26487-10	VOA	Groundwater	X	X
DUP-01	JA26487-11	VOA	Field Duplicate	X	X
FB02	JA26487-12	VOA	Field Blank	X	X
Trip Blank	JA26487-13	VOA	Trip Blank	X	

The parameters presented below were evaluated.

- X • Data Completeness
- X • Chain of Custody Documentation
- X • Holding Times
- X • Instrument Performance
- X • Initial and Continuing Calibration Summaries
- X • Laboratory and Field Blank Analysis Results
- X • Surrogate Compound Recoveries
- X • Matrix Spike/Matrix Spike Duplicate Recoveries and Reproducibility
- X • Field Duplicate Analysis Results
- X • Laboratory Control Sample Results
- X • Internal Standard Performance
- X • Qualitative Identification
- X • Quantitation/Reporting Limits

X – Denotes parameter evaluated.

It is recommended that the data only be used according to the qualifiers presented, and discussed in this report. All other data should be considered qualitatively and quantitatively valid as reported by the laboratory, based on the items evaluated.

**VOLATILE ORGANIC COMPOUNDS**  
USEPA Region II – Level II Data Validation

**Project Name:** NWS EARLE-TO 10  
**Location:** Colts Neck, NJ 07722  
**Project Number:** 02-04-03-10  
**SDG #:** JA26487  
**Client:** NAVFAC  
**Date:** 10/02/2009  
**Laboratory:** Accutest Laboratories  
**Reviewer:** Sherri Pullar

**Summary:**

1. Level II data validation was performed on the data for fourteen (13) water samples analyzed for Volatiles by EPA Method 624 (BETX+ MTBE).
2. The samples were collected on 08/25-26/2009. The samples were submitted to Analytical Laboratory Services, Inc. for analysis on 08/26/2009.
3. The USEPA Region II SOP HW-24, Revision 1, June 1999: Validating Volatile Organic Compounds by SW-846 Method 8260B and EPA Method 624 were used in evaluating the Volatiles data in this summary report.
4. In general, the data are valid as reported and may be used for decision making purposes. Selected data points were qualified due to nonconformance of certain Quality Control criteria (See discussion below).

### **Samples:**

The samples included in this review are listed below:

<b>Client Sample ID</b>	<b>Laboratory Sample ID</b>	<b>Analysis</b>	<b>Matrix</b>	<b>Sample Status</b>
16-MW-11	JA26487-01	VOA	Water	
16-MW-15	JA26487-02	VOA	Water	
16-MW-24	JA26487-03	VOA	Water	
16-MW-25	JA26487-04	VOA	Water	
16-SW-01	JA26487-05	VOA	Water	
16-SW-02	JA26487-06	VOA	Water	
FB-1	JA26487-07	VOA	Water	
16-MW-10	JA26487-08	VOA	Water	
16-MW-08	JA26487-09	VOA	Water	
18-MW-01	JA26487-10	VOA	Water	
DUP-1	JA26487-11	VOA	Water	Field Duplicate of Sample 16-MW-08
FB-2	JA26487-12	VOA	Water	
Trip Blank	JA26487-13	VOA	Water	

### **Sample Conditions/Problems:**

1. The Traffic Reports/Chain-of-Custody Records, Sampling Report and/or Laboratory Case Narrative did not indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data. No qualifications were required.

### **Holding Times:**

1. All water samples were analyzed within 14days from sample collection. No qualifications were required.
2. All water samples were properly preserved (pH<2.0). No qualifications were required.

### **GC/MS Tuning:**

1. All of the BFB tunes in the initial and continuing calibrations met the percent relative abundance criteria. No qualifications were required.

### **Initial Calibration:**

1. Initial calibration curve analyzed on instrument "GCMSI" (08/27/2009) exhibited acceptable %RSD ( $\leq 35\%$ ) for all compounds of interest. No qualifications were required.
2. Initial calibration curve analyzed on instrument "GCMSU" (08/26/2009) exhibited acceptable %RSD ( $\leq 35\%$ ) for all compounds of interest. No qualifications were required.

### **Continuing Calibration Verification (CCV):**

1. CCV analyzed on instrument "GCMSI" (09/04/2009) exhibited acceptable %D for benzene, toluene, ethylbenzene, xylenes (total) and methyl tert butyl ether. No qualifications were required.
2. CCV analyzed on instrument "GCMSU" (08/29/2009) exhibited acceptable %D for samples 16-SW-01 (JA26487-5) and 16-SW-02 (JA26487-6) reanalyzed at 5x dilution.

### **Surrogates:**

1. All surrogates %REC's values for all water samples and associated QC were within the laboratory control limits. No qualifications were required.

### **Internal Standard (IS) Area Performance:**

1. All samples exhibited acceptable area count for all five internal standards. No qualifications were required.

### **Method Blank, Trip, Field, Equipment Blank:**

1. Method Blank (VU4839-MB) analyzed on 08/30/2009 was free contaminations. No qualifications were required.
2. Method Blank (VI6025-MB1) analyzed on 09/04/2009 was free contaminations. No qualifications were required.
3. Trip Blank (Trip Blank) associated with the samples collected on 08/25-26/2009 and analyzed on 08/30/2009 & 09/04/2009 was free of contaminations. No qualifications were required.
4. Field Blank (FB-1) associated with the samples collected on 08/25/2009 and analyzed on 09/04/2009 was free of contaminations. No qualifications were required.

- Field Blank (FB-2) associated with the samples collected on 08/26/2009 and analyzed on 09/04/2009 was free of contaminations. No qualifications were required.

**Laboratory Control Sample (LCS)/ Laboratory Control Sample Duplicate (LCSD):**

- All %REC's in Laboratory Control Sample (VU4839-BS) associated with samples analyzed 08/30/2009 were within the QC limits. No qualifications were required.
- All %REC's in Laboratory Control Sample (VI6025-BS) associated with samples analyzed 09/04/2009 were within the QC limits. No qualifications were required.

**Field Duplicate:**

- Sample DUP-1 was collected as field duplicate for sample 16-MW-08. All RPD's were <30%. No qualifications were required.

COMPOUND	16-MW-08 (µG/L)	DUP-2 (µG/L)	RPD	ACTION
Benzene	3.4	3.6	5.7	None
Ethyl Benzene	0.44	0.54	20.4	None
Methyl Tert Butyl Ether	1.2	1.2	0	None

**Matrix Spike (MS)/ Matrix Spike Duplicate (MSD):**

- Matrix Spike (MS) and Matrix Spike duplicate (MSD) performed on sample 16-MW-08 (JA26487-9). All %REC's and RPD's were within the QC limits. No qualifications were required.

**Compound Quantitation and Reported Detection Limits:**

- Samples 16-SW-01 (JA26487-5) and 16-SW-02 (JA26487-6) was re-analyzed at 5x dilution due to sample foaming. No qualifications were required.
- All compounds qualitatively identified at concentrations below their respective Quantitation Limits (QLs), have been marked with "J" qualifiers to indicate that they are quantitative estimates.

**SEMI-VOLATILE ORGANIC COMPOUNDS**  
USEPA Region II – Level II Data Validation

**Project Name:** NWS EARLE-TO 10  
**Location:** Colts Neck, NJ 07722  
**Project Number:** 02-04-03-10  
**SDG #:** JA26487  
**Client:** NAVFAC  
**Date:** 10/02/2009  
**Laboratory:** Accutest Laboratories  
**Reviewer:** Sherri Pullar

**Summary:**

1. Level II data validation was performed on the data for thirteen (7) water samples analyzed for Semi-volatiles (Naphthalene only) by EPA Method 625.
2. The samples were collected on 08/25-26/2009. The samples were submitted to Accutest Laboratories for analysis on 08/26/2009.
3. The USEPA Region II SOP HW-22, Revision 2, June 2001: Validating Semi-volatile Organic Compounds by SW-846 Method 8270C and EPA Method 625 were used in evaluating the Semi-volatiles data in this summary report.
4. In general, the data are valid as reported and may be used for decision making purposes. Selected data points were qualified due to nonconformance of certain Quality Control criteria (See discussion below).

**Samples:**

The samples included in this review are listed below:

<b>Client Sample ID</b>	<b>Laboratory Sample ID</b>	<b>Analysis</b>	<b>Matrix</b>	<b>Sample Status</b>
16-MW-11	JA26487-1	SVO	Water	
FB-01	JA26487-7	SVO	Water	
16-MW-10	JA26487-8	SVO	Water	
16-MW-08	JA26487-9	SVO	Water	
18-MW-01	JA26487-10	SVO	Water	
DUP-01	JA26487-11	SVO	Water	Field Duplicate for Sample 16-MW-08
FB-02	JA26487-12	SVO	Water	

**Sample Conditions/Problems:**

1. The Traffic Reports/Chain-of-Custody Records, Sampling Report and/or Laboratory Case Narrative did not indicate any problems with sample receipt, condition of samples, analytical problems, or special circumstances affecting the quality of the data. No qualifications were required.

**Holding Times:**

1. All water samples were extracted within 7 days from sample collection and analyzed within 40 days following sample extraction. No qualifications were required.

**GC/MS Tuning:**

1. All of the DFTPP tunes in the initial and continuing calibrations met the percent relative Abundance. Pentachlorophenol and Benzidine tailing factors were acceptable. No qualifications were required.

### **Initial Calibration:**

1. Initial calibration curve analyzed instrument (GCMSP) (07/09/09) exhibited acceptable %RSD ( $\leq 35\%$ ) for Naphthalene. No qualifications were required.
2. Initial calibration curve analyzed instrument (GCMSP) (09/09/09) exhibited acceptable %RSD ( $\leq 35\%$ ) for Naphthalene. No qualifications were required.

### **Continuing Calibration Verification (CCV):**

1. The CCV (GCMSP) analyzed on 09/04/09 @ 07:36 exhibited acceptable %D ( $\leq 20\%$ ) for Naphthalene. No qualifications were required.
2. The CCV (GCMSP) analyzed on 09/09/09 @ 00:13 exhibited acceptable %D ( $\leq 20\%$ ) for Naphthalene. No qualifications were required.

### **Method Blank:**

1. Method Blank (OP39683-MB1) associated with the water samples extracted on 08/29/2009 and analyzed on 09/04/2009 was free of contaminations. No qualifications were required.

### **Field, Equipment (Rinsate) Blank:**

1. Field Blank (FB-01) associated with the water samples collected on 08/25/2009 and analyzed on 09/04/2009 was free of contaminations. No qualifications were required.
2. Field Blank (FB-02) associated with the water samples collected on 08/26/2009 and analyzed on 09/04/2009 was free of contaminations. No qualifications were required.

### **Surrogates:**

1. All surrogate %REC values in the original extracts were within the laboratory control limits. No qualifications were required.

### **Internal Standard (IS) Area Performance:**

1. All samples exhibited acceptable area count for all six internal standards. No qualifications were required.

**Laboratory Control Sample (LCS)/ Laboratory Control Sample Duplicate (LCSD):**

1. Laboratory Control Sample (OP39683-BS1) associated with the water samples analyzed on 09/04/2009 was within the QC limits. No qualifications were required.

**Field Duplicate:**

1. Sample DUP-2 was collected as field duplicate for sample 16-MW-08. Naphthalene RPD was <30%. No qualifications were required.

<b>COMPOUND</b>	<b>16-MW-08 (<math>\mu\text{G/L}</math>)</b>	<b>DUP-1 (<math>\mu\text{G/L}</math>)</b>	<b>RPD</b>	<b>ACTION</b>
Naphthalene	1.5	1	40	J/J

**Matrix Spike (MS)/Matrix Spike Duplicate (MSD):**

1. Matrix Spike (MS) and Matrix Spike Duplicate (MSD) were performed on sample 16-MW-08 (JA26487-9). %REC in the MS/MSD was acceptable. No qualifications were required.

**Compound Quantitation and Reported Detection Limits:**

1. All compounds qualitatively identified at concentrations below their respective Quantitation Limits (QLs), have been marked with “J” qualifiers to indicate that they are quantitative estimates.

**NWS EARLE – AUGUST 2009**  
**DATA SUMMARY TABLE – AQUEOUS SDG JA26487**

Sample Name	Lab Id	Analytical Method	Sample Date	Dilution Factor	Analyte	Result	Unit	Qualifier	MDL	QL
I6MW11	JA26487-1	EPA625	08/25/2009	1	Naphthalene		ug/l	U	0.32	1.0
I6MW11	JA26487-1	EPA624	08/25/2009	1	Benzene	9.0	ug/l		0.15	1.0
I6MW11	JA26487-1	EPA624	08/25/2009	1	Toluene		ug/l	U	0.19	1.0
I6MW11	JA26487-1	EPA624	08/25/2009	1	Ethylbenzene		ug/l	U	0.15	1.0
I6MW11	JA26487-1	EPA624	08/25/2009	1	Xylenes (total)		ug/l	U	0.27	1.0
I6MW11	JA26487-1	EPA624	08/25/2009	1	Methyl Tert Butyl Ether	13.9	ug/l		0.31	1.0
I8MW1	JA26487-10	EPA625	08/26/2009	1	Naphthalene		ug/l	U	0.32	1.0
I8MW1	JA26487-10	EPA624	08/26/2009	1	Benzene		ug/l	U	0.15	1.0
I8MW1	JA26487-10	EPA624	08/26/2009	1	Toluene		ug/l	U	0.19	1.0
I8MW1	JA26487-10	EPA624	08/26/2009	1	Ethylbenzene		ug/l	U	0.15	1.0
I8MW1	JA26487-10	EPA624	08/26/2009	1	Xylenes (total)		ug/l	U	0.27	1.0
I8MW1	JA26487-10	EPA624	08/26/2009	1	Methyl Tert Butyl Ether		ug/l	U	0.31	1.0
DUP-01	JA26487-11	EPA625	08/26/2009	1	Naphthalene	1.0	ug/l	J	0.33	1.0
DUP-01	JA26487-11	EPA624	08/26/2009	1	Benzene	3.6	ug/l		0.15	1.0
DUP-01	JA26487-11	EPA624	08/26/2009	1	Toluene		ug/l	U	0.19	1.0
DUP-01	JA26487-11	EPA624	08/26/2009	1	Ethylbenzene	0.54	ug/l	J	0.15	1.0
DUP-01	JA26487-11	EPA624	08/26/2009	1	Xylenes (total)		ug/l	U	0.27	1.0
DUP-01	JA26487-11	EPA624	08/26/2009	1	Methyl Tert Butyl Ether	1.2	ug/l		0.31	1.0
FB-02	JA26487-12	EPA625	08/26/2009	1	Naphthalene		ug/l	U	0.34	1.1
FB-02	JA26487-12	EPA624	08/26/2009	1	Benzene		ug/l	U	0.15	1.0
FB-02	JA26487-12	EPA624	08/26/2009	1	Toluene		ug/l	U	0.19	1.0
FB-02	JA26487-12	EPA624	08/26/2009	1	Ethylbenzene		ug/l	U	0.15	1.0
FB-02	JA26487-12	EPA624	08/26/2009	1	Xylenes (total)		ug/l	U	0.27	1.0
FB-02	JA26487-12	EPA624	08/26/2009	1	Methyl Tert Butyl Ether		ug/l	U	0.31	1.0
TRIP BLANK	JA26487-13	EPA624	08/26/2009	1	Benzene		ug/l	U	0.15	1.0
TRIP BLANK	JA26487-13	EPA624	08/26/2009	1	Toluene		ug/l	U	0.19	1.0
TRIP BLANK	JA26487-13	EPA624	08/26/2009	1	Ethylbenzene		ug/l	U	0.15	1.0
TRIP BLANK	JA26487-13	EPA624	08/26/2009	1	Xylenes (total)		ug/l	U	0.27	1.0
TRIP BLANK	JA26487-13	EPA624	08/26/2009	1	Methyl Tert Butyl Ether		ug/l	U	0.31	1.0
I6MW15	JA26487-2	EPA624	08/25/2009	1	Benzene	23.2	ug/l		0.15	1.0
I6MW15	JA26487-2	EPA624	08/25/2009	1	Toluene		ug/l	U	0.19	1.0

Sample Name	Lab Id	Analytical Method	Sample Date	Dilution Factor	Analyte	Result	Unit	Qualifier	MDL	QL
I6MW15	JA26487-2	EPA624	08/25/2009	1	Ethylbenzene	0.56	ug/l	J	0.15	1.0
I6MW15	JA26487-2	EPA624	08/25/2009	1	Xylenes (total)	3.7	ug/l		0.27	1.0
I6MW15	JA26487-2	EPA624	08/25/2009	1	Methyl Tert Butyl Ether	6.4	ug/l		0.31	1.0
I6MW24	JA26487-3	EPA624	08/25/2009	1	Benzene		ug/l	U	0.15	1.0
I6MW24	JA26487-3	EPA624	08/25/2009	1	Toluene		ug/l	U	0.19	1.0
I6MW24	JA26487-3	EPA624	08/25/2009	1	Ethylbenzene		ug/l	U	0.15	1.0
I6MW24	JA26487-3	EPA624	08/25/2009	1	Xylenes (total)		ug/l	U	0.27	1.0
I6MW24	JA26487-3	EPA624	08/25/2009	1	Methyl Tert Butyl Ether	1.5	ug/l		0.31	1.0
I6MW25	JA26487-4	EPA624	08/25/2009	1	Benzene		ug/l	U	0.15	1.0
I6MW25	JA26487-4	EPA624	08/25/2009	1	Toluene		ug/l	U	0.19	1.0
I6MW25	JA26487-4	EPA624	08/25/2009	1	Ethylbenzene		ug/l	U	0.15	1.0
I6MW25	JA26487-4	EPA624	08/25/2009	1	Xylenes (total)		ug/l	U	0.27	1.0
I6MW25	JA26487-4	EPA624	08/25/2009	1	Methyl Tert Butyl Ether		ug/l	U	0.31	1.0
I6-SW-01	JA26487-5	EPA624	08/25/2009	5	Benzene		ug/l	U	0.77	5.0
I6-SW-01	JA26487-5	EPA624	08/25/2009	5	Toluene		ug/l	U	0.97	5.0
I6-SW-01	JA26487-5	EPA624	08/25/2009	5	Ethylbenzene		ug/l	U	0.74	5.0
I6-SW-01	JA26487-5	EPA624	08/25/2009	5	Xylenes (total)		ug/l	U	1.3	5.0
I6-SW-01	JA26487-5	EPA624	08/25/2009	5	Methyl Tert Butyl Ether		ug/l	U	1.5	5.0
I6-SW-02	JA26487-6	EPA624	08/25/2009	5	Benzene		ug/l	U	0.77	5.0
I6-SW-02	JA26487-6	EPA624	08/25/2009	5	Toluene		ug/l	U	0.97	5.0
I6-SW-02	JA26487-6	EPA624	08/25/2009	5	Ethylbenzene		ug/l	U	0.74	5.0
I6-SW-02	JA26487-6	EPA624	08/25/2009	5	Xylenes (total)		ug/l	U	1.3	5.0
I6-SW-02	JA26487-6	EPA624	08/25/2009	5	Methyl Tert Butyl Ether		ug/l	U	1.5	5.0
FB-01	JA26487-7	EPA625	08/25/2009	1	Naphthalene		ug/l	U	0.36	1.1
FB-01	JA26487-7	EPA624	08/25/2009	1	Benzene		ug/l	U	0.15	1.0
FB-01	JA26487-7	EPA624	08/25/2009	1	Toluene		ug/l	U	0.19	1.0
FB-01	JA26487-7	EPA624	08/25/2009	1	Ethylbenzene		ug/l	U	0.15	1.0
FB-01	JA26487-7	EPA624	08/25/2009	1	Xylenes (total)		ug/l	U	0.27	1.0
FB-01	JA26487-7	EPA624	08/25/2009	1	Methyl Tert Butyl Ether		ug/l	U	0.31	1.0
I6MW10	JA26487-8	EPA625	08/26/2009	1	Naphthalene		ug/l	U	0.32	1.0
I6MW10	JA26487-8	EPA624	08/26/2009	1	Benzene	1.6	ug/l		0.15	1.0
I6MW10	JA26487-8	EPA624	08/26/2009	1	Toluene		ug/l	U	0.19	1.0
I6MW10	JA26487-8	EPA624	08/26/2009	1	Ethylbenzene		ug/l	U	0.15	1.0
I6MW10	JA26487-8	EPA624	08/26/2009	1	Xylenes (total)		ug/l	U	0.27	1.0

Sample Name	Lab Id	Analytical Method	Sample Date	Dilution Factor	Analyte	Result	Unit	Qualifier	MDL	QL
I6MW10	JA26487-8	EPA624	08/26/2009	1	Methyl Tert Butyl Ether		ug/l	U	0.31	1.0
I6MW8	JA26487-9	EPA625	08/26/2009	1	Naphthalene	1.5	ug/l	J	0.32	1.0
I6MW8	JA26487-9	EPA624	08/26/2009	1	Benzene	3.4	ug/l		0.15	1.0
I6MW8	JA26487-9	EPA624	08/26/2009	1	Toluene		ug/l	U	0.19	1.0
I6MW8	JA26487-9	EPA624	08/26/2009	1	Ethylbenzene	0.44	ug/l	J	0.15	1.0
I6MW8	JA26487-9	EPA624	08/26/2009	1	Xylenes (total)		ug/l	U	0.27	1.0
I6MW8	JA26487-9	EPA624	08/26/2009	1	Methyl Tert Butyl Ether	1.2	ug/l		0.31	1.0

**VOLATILE ORGANIC COMPOUNDS**  
USEPA Region II – Tier II Data Validation

**Project Name:** Naval Warfare Station Earle-TO 10- Building C  
**Location:** Colts Neck, New Jersey  
**Project Number:** 02-04-03-10-04  
**SDG #:** JA32638 & JA32638R  
**Client:** H&S Environmental, Inc.  
**Date:** 12/18/2009  
**Laboratory:** Accutest Laboratories, Dayton, NJ  
**Reviewer:** Samir A. Naguib

**Summary:**

1. Tier II data validation was performed on the data for ten (10) water samples and two (2) field blanks analyzed for Volatiles (BTEX +MTBE) by EPA624.
2. The samples were collected on 11/09 and 10/2009. The samples were submitted to Accutest Laboratories, Dayton, NJ on 11/11/2009 for analysis.
3. The USEPA Region II SOP HW-24, Revision No.: 2, October 2006: Validating Volatile Organic Compounds by SW-846 Method 8260B EPA Method 624 were used in evaluating the Volatiles data in this summary report.
4. In general, the data are valid as reported and may be used for decision making purposes. Selected data points were qualified due to nonconformance of certain Quality Control criteria (See discussion below).

### Samples:

The samples included in this review are listed below:

Client Sample ID	Laboratory Sample ID	Collection Date	Analysis	Matrix	Sample Status
16MW-24	JA32638-1, 1R	11/09/09	VOA	Water	
16MW-25	JA32638-2, 2R	11/09/09	VOA	Water	
FB-1	JA32638-3, 3R	11/09/09	VOA	Water	Field Blank
18-MW-01	JA32638-4, 4R	11/10/09	VOA	Water	
16-MW-08	JA32638-5, 5R	11/10/09	VOA	Water	
DUP-1	JA32638-6, 6R	11/10/09	VOA	Water	Field Duplicate of sample 16-MW-08
16-MW-11	JA32638-7, 6R	11/10/09	VOA	Water	
16-MW-15	JA32638-8, 8R	11/10/09	VOA	Water	
16-SW-01	JA32638-9, 9R	11/10/09	VOA	Water	
16-SW-02	JA32638-10, 10R	11/10/09	VOA	Water	
FB-2	JA32638-11, 11R	11/10/09	VOA	Water	Field Blank
16-MW-10	JA32638-12, 12R	11/10/09	VOA	Water	

### Sample Conditions/Problems:

1. The Traffic Reports/Chain-of-Custody Records, Sampling Report and/or Laboratory Case Narrative did not indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data. No qualifications were required.

### Holding Times:

1. All water samples were analyzed within 14days from sample collection. No qualifications were required.
2. All water samples were properly preserved (pH<2.0). No qualifications were required.

### GC/MS Tuning:

1. All of the BFB tunes in the initial and continuing calibrations met the percent relative abundance criteria. No qualifications were required.

### **Initial Calibration:**

1. Initial calibration curve analyzed on 10/20/2009 (GCMSN) exhibited acceptable %RSD ( $\leq 35\%$ ) for BTEX + MTBE. No qualifications were required.

### **Initial Calibration Verification (ICV):**

1. Initial calibration verification analyzed on 10/20/2009 (GCMSN) exhibited acceptable %D's ( $\leq 20.0\%$ ) for BTEX + MTBE. No qualifications were required.

### **Continuing Calibration Verification (CCV):**

1. CCV analyzed on 11/17/2009 @ 09:35AM (GCMSN) exhibited acceptable %D's ( $\leq 20\%$ ) for BTEX + MTBE. No qualifications were required.
2. CCV analyzed on 11/18/2009 @ 09:23AM (GCMSN) exhibited acceptable %D's ( $\leq 20\%$ ) for BTEX + MTBE. No qualifications were required.

### **Surrogates:**

1. All surrogates %REC's values for all water samples and associated QC were within the laboratory control limits. No qualifications were required.

### **Internal Standard (IS) Area Performance:**

1. All samples exhibited acceptable area count for all three internal standards. No qualifications were required.

### **Method Blank (MB), Storage Blank (SB), Trip Blank (TB), Field Blank (FB), Rinsate Blank (RB) and Equipment Blank (EB):**

1. Method Blank (VN7651-MB) analyzed on 11/17/2009 was free of contaminations. No qualifications were required.
2. Method Blank (VN7652-MB) analyzed on 11/18/2009 was free of contaminations. No qualifications were required.

**Method Blank (MB), Storage Blank (SB), Trip Blank (TB), Field Blank (FB), Rinsate Blank (RB) and Equipment Blank (EB) (cont.):**

3. Method Blank (VN7653-MB) analyzed on 11/18/2009 was free of contaminations. No qualifications were required.
4. Field Blank (FB-1) associated with the samples collected on 11/09/2009 was free of contaminations. No qualifications were required.
5. Field Blank (FB-2) associated with the samples collected on 11/10/2009 was free of contaminations. No qualifications were required.

**Laboratory Control Sample (LCS)/ Laboratory Control Sample Duplicate (LCSD):**

1. Laboratory Control Sample (VN7651-BS) was analyzed on 11/17/2009. All %REC's were within the laboratory control limits. No qualifications were required.
2. Laboratory Control Sample (VN7652-BS) was analyzed on 11/18/2009. All %REC's were within the laboratory control limits. No qualifications were required.
3. Laboratory Control Sample (VN7653-BS) was analyzed on 11/18/2009. All %REC's were within the laboratory control limits. No qualifications were required.

**Field Duplicate:**

1. Sample DUP-1 (JA32638-6, 6R) was collected as field duplicate for sample 16-MW-08 (JA32638-5, 5R). All RPD's were <30%. No qualifications were required.

Field Sample	Analyte	Analytical Method	Result	Units	Field Duplicate	Result	Units	RPD	Qualifier
16-MW-08	Benzene	EPA 624	14.1	µg/L	DUP-1	14.1	µg/L	0.0	None
16-MW-08	Ethylbenzene	EPA 624	14.7	µg/L	DUP-1	14.7	µg/L	0.0	None
16-MW-08	Xylenes (total)	EPA 624	7.8	µg/L	DUP-1	7.6	µg/L	2.6	None
16-MW-08	Methyl Tert Butyl Ether	EPA 624	1.6	µg/L	DUP-1	1.7	µg/L	6.1	None

**Matrix Spike (MS)/ Matrix Spike Duplicate (MSD):**

1. Matrix Spike (MS) and Matrix Spike Duplicate (MSD) were performed on sample 16-MW-08 (JA32638-5, 5R). All %REC's and RPD's were within the laboratory control limits. No qualifications were required.

**Compound Quantitation and Reported Contract Required Quantitation Limits (CRQLs):**

1. All results were within the linear calibration range. No qualifications were required.

**Target Compound Identification:**

1. All Relative Retention Times (RRTs) of the reported compounds were within  $\pm 0.06$  RRT units of the standard (opening CCV).
2. Sample compound spectra were compared against the laboratory standard spectra.
3. No QC deviations were observed.

**Comments:**

1. Validation qualifiers (if required) were entered into the EDD for SDG: JA32638 and JA32638R.

**SEMI-VOLATILE ORGANIC COMPOUNDS**  
USEPA Region II – Tier II Data Validation

**Project Name:** Naval Warfare Station Earle-TO 10- Building C  
**Location:** Colts Neck, New Jersey  
**Project Number:** 02-04-03-10-04  
**SDG #:** JA32638  
**Client:** H&S Environmental, Inc.  
**Date:** 12/02/2009  
**Laboratory:** Accutest Laboratories, Dayton, NJ  
**Reviewer:** Samir A. Naguib

**Summary:**

1. Tier II data validation was performed on the data for five (5) water samples and one (1) field blank analyzed for Semi-volatiles (Naphthalene only) by EPA Method 625.
2. The samples were collected on 11/10/2009. The samples were submitted to Accutest Laboratories, Dayton, NJ on 11/11/2009 for analysis.
3. The USEPA Region II SOP HW-22, Revision 3, October 2006: Validating Semi-volatile Organic Compounds by SW-846 Method 8270D and EPA Method 625 were used in evaluating the Semi-volatiles data in this summary report.
4. In general, the data are valid as reported and may be used for decision making purposes. Selected data points were qualified due to nonconformance of certain Quality Control criteria (See discussion below).

### **Samples:**

The samples included in this review are listed below:

<b>Client Sample ID</b>	<b>Laboratory Sample ID</b>	<b>Collection Date</b>	<b>Analysis</b>	<b>Matrix</b>	<b>Sample Status</b>
18-MW-01	JA32638-4	11/10/09	VOA	Water	
16-MW-08	JA32638-5	11/10/09	VOA	Water	
DUP-1	JA32638-6	11/10/09	VOA	Water	Field Duplicate of sample 16-MW-08
16-MW-11	JA32638-7	11/10/09	VOA	Water	
FB-2	JA32638-11	11/10/09	VOA	Water	Field Blank
16-MW-10	JA32638-12	11/10/09	VOA	Water	

### **Sample Conditions/Problems:**

1. The Traffic Reports/Chain-of-Custody Records, Sampling Report and/or Laboratory Case Narrative did not indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data. No qualifications were required.

### **Holding Times:**

1. All water samples were extracted within 7days from sample collection and analyzed within 40days following sample extraction. No qualifications were required.

### **GC/MS Tuning:**

1. All of the DFTPP tunes in the initial and continuing calibrations met the percent relative abundance criteria. No qualifications were required.

### **Initial Calibration:**

1. Initial calibration curve analyzed on 11/03/2009 (GCMSF) exhibited acceptable %RSD ( $\leq 35\%$ ) for Naphthalene. No qualifications were required.
2. Initial calibration curve analyzed on 11/13/2009 (GCMSM) exhibited acceptable %RSD ( $\leq 35\%$ ) for Naphthalene. No qualifications were required.

**Initial Calibration Verification (ICV):**

1. Initial calibration verification analyzed on 11/03/2009 (GCMSF) exhibited acceptable %D ( $\leq 20.0\%$ ) for Naphthalene. No qualifications were required.
2. Initial calibration verification analyzed on 11/13/2009 (GCMSM) exhibited acceptable %D ( $\leq 20.0\%$ ) for Naphthalene. No qualifications were required.

**Continuing Calibration Verification (CCV):**

1. The CCV analyzed on 11/20/2009@ 07:45AM (GCMSF) exhibited acceptable %D ( $\leq 20\%$ ) for Naphthalene. No qualifications were required.
2. The CCV analyzed on 11/13/2009@ 04:10PM (GCMSM) exhibited acceptable %D ( $\leq 20\%$ ) for Naphthalene. No qualifications were required.
3. The CCV analyzed on 11/20/2009@ 10:54PM (GCMSM) exhibited acceptable %D ( $\leq 20\%$ ) for Naphthalene. No qualifications were required.

**Method Blank (MB), Storage Blank (SB), Trip Blank (TB), Field Blank (FB), Rinsate Blank (RB) and Equipment Blank (EB):**

1. Method Blank (OP40912-MB1) extracted on 11/13/2009 and analyzed on 11/13 and 20/2009 was free of contaminations. No qualifications were required.
2. Field Blank (FB-2) associated with the samples collected on 11/10/2009 was analyzed on 11/21/2009

Compound	Concentration ( $\mu\text{g/L}$ )	CRQL ( $\mu\text{g/L}$ )	Sample(s) Affected	Action*
Naphthalene	1.1	1.1	18-MW-01, 16-MW-08, DUP-1 16-MW-11, 16-MW-10	None None

\*= When the sample concentration is greater than the MDL, but less than the CRQL, sample result will be qualified as non-detect (U). If the sample concentration greater than the CRQL or sample result was non-detect, no qualifications/action required.

**Surrogates:**

1. All surrogate %REC values in the original extracts were within the laboratory control limits. No qualifications were required.

**Internal Standard (IS) Area Performance:**

1. All samples exhibited acceptable area count for all six internal standards. No qualifications were required.

**Laboratory Control Sample (LCS)/ Laboratory Control Sample Duplicate (LCSD):**

1. Laboratory Control Sample (OP40912-BS1) was analyzed on 11/13/2009. Naphthalene %REC was within the laboratory control limits. No qualifications were required.

**Field Duplicate:**

1. Sample DUP-1 (JA32638-6) was collected as field duplicate for sample 16-MW-08 (JA32638-5). Naphthalene RPD was >30%. Both samples were qualified (J).

Field Sample	Analyte	Analytical Method	Result	Units	Field Duplicate	Result	Units	RPD	Qualifier
16-MW-08	Naphthalene	EPA 625	8.4	µg/L	DUP-1	19.3	µg/L	78.7	J

**Matrix Spike (MS)/Matrix Spike Duplicate (MSD):**

1. Matrix Spike (MS) and Matrix Spike Duplicate (MSD) were performed on sample 16-MW-08 (JA32638-5). All %REC's and RPD were within the laboratory control limits. No qualifications were required.

**Compound Quantitation and Reported Contract Required Quantitation Limits (CRQLs):**

1. All results were within the linear calibration range. No qualifications were required.

**Target Compound Identification:**

1. All Relative Retention Times (RRTs) of the reported compounds were within ± 0.06 RRT units of the standard (opening CCV).
2. Sample compound spectra were compared against the laboratory standard spectra.
3. No QC deviations were observed.

**Comments:**

1. Validation qualifiers (if required) were entered into the EDD for SDG: JA32638.



NAVAL WARFARE STATION, EARLE-TO 10  
BUILDING C  
DATA SUMMARY TABLE  
AQUEOUS  
SDG: JA32638

Sample Name	Lab ID	Analytical Method	Sample Date	Dilution Factor	Analyte	Result	Unit	Qualifier	MDL	RL
16-MW-08	JA32638-5	EPA625	11/10/2009	1	Naphthalene	8.4	ug/l	J	0.36	1.1
16-MW-08	JA32638-5	EPA624	11/10/2009	1	Methyl Tert Butyl Ether	1.6	ug/l		0.31	1.0
16-MW-10	JA32638-12	EPA625	11/10/2009	1	Naphthalene		ug/l	U	0.32	1.0
16-MW-10	JA32638-12	EPA624	11/10/2009	1	Methyl Tert Butyl Ether		ug/l	U	0.31	1.0
16-MW-11	JA32638-7	EPA625	11/10/2009	1	Naphthalene		ug/l	U	0.35	1.1
16-MW-11	JA32638-7	EPA624	11/10/2009	1	Methyl Tert Butyl Ether	6.5	ug/l		0.31	1.0
16-MW-15	JA32638-8	EPA624	11/10/2009	1	Methyl Tert Butyl Ether	2.0	ug/l		0.31	1.0
16-MW-24	JA32638-1	EPA624	11/09/2009	1	Methyl Tert Butyl Ether	5.0	ug/l		0.31	1.0
16-MW-25	JA32638-2	EPA624	11/09/2009	1	Methyl Tert Butyl Ether		ug/l	U	0.31	1.0
16-SW-01	JA32638-9	EPA624	11/10/2009	1	Methyl Tert Butyl Ether		ug/l	U	0.31	1.0
16-SW-02	JA32638-10	EPA624	11/10/2009	1	Methyl Tert Butyl Ether		ug/l	U	0.31	1.0
18-MW-01	JA32638-4	EPA625	11/10/2009	1	Naphthalene		ug/l	U	0.34	1.1
18-MW-01	JA32638-4	EPA624	11/10/2009	1	Methyl Tert Butyl Ether		ug/l	U	0.31	1.0
DUP-1	JA32638-6	EPA625	11/10/2009	1	Naphthalene	19.3	ug/l	J	0.34	1.1
DUP-1	JA32638-6	EPA624	11/10/2009	1	Methyl Tert Butyl Ether	1.7	ug/l		0.31	1.0
FB-1	JA32638-3	EPA624	11/09/2009	1	Methyl Tert Butyl Ether		ug/l	U	0.31	1.0
FB-2	JA32638-11	EPA625	11/10/2009	1	Naphthalene	1.1	ug/l		0.34	1.1
FB-2	JA32638-11	EPA624	11/10/2009	1	Methyl Tert Butyl Ether		ug/l	U	0.31	1.0



NAVAL WARFARE STATION, EARLE-TO 10  
BUILDING C  
DATA SUMMARY TABLE  
AQUEOUS  
SDG: JA32638R

Sample Name	Lab ID	Analytical Method	Sample Date	Dilution Factor	Analyte	Result	Unit	Qualifier	MDL	RL
16-MW-08	JA32638-5R	EPA624	11/10/2009	1	Benzene	14.1	ug/l		0.15	1.0
16-MW-08	JA32638-5R	EPA624	11/10/2009	1	Toluene		ug/l	U	0.19	1.0
16-MW-08	JA32638-5R	EPA624	11/10/2009	1	Ethylbenzene	14.7	ug/l		0.15	1.0
16-MW-08	JA32638-5R	EPA624	11/10/2009	1	Xylenes (total)	7.8	ug/l		0.27	1.0
16-MW-10	JA32638-12R	EPA624	11/10/2009	1	Benzene		ug/l	U	0.15	1.0
16-MW-10	JA32638-12R	EPA624	11/10/2009	1	Toluene		ug/l	U	0.19	1.0
16-MW-10	JA32638-12R	EPA624	11/10/2009	1	Ethylbenzene		ug/l	U	0.15	1.0
16-MW-10	JA32638-12R	EPA624	11/10/2009	1	Xylenes (total)		ug/l	U	0.27	1.0
16-MW-11	JA32638-7R	EPA624	11/10/2009	1	Benzene	2.3	ug/l		0.15	1.0
16-MW-11	JA32638-7R	EPA624	11/10/2009	1	Toluene		ug/l	U	0.19	1.0
16-MW-11	JA32638-7R	EPA624	11/10/2009	1	Ethylbenzene		ug/l	U	0.15	1.0
16-MW-11	JA32638-7R	EPA624	11/10/2009	1	Xylenes (total)		ug/l	U	0.27	1.0
16-MW-15	JA32638-8R	EPA624	11/10/2009	1	Benzene	3.9	ug/l		0.15	1.0
16-MW-15	JA32638-8R	EPA624	11/10/2009	1	Toluene		ug/l	U	0.19	1.0
16-MW-15	JA32638-8R	EPA624	11/10/2009	1	Ethylbenzene		ug/l	U	0.15	1.0
16-MW-15	JA32638-8R	EPA624	11/10/2009	1	Xylenes (total)		ug/l	U	0.27	1.0
16-MW-24	JA32638-1R	EPA624	11/09/2009	1	Benzene		ug/l	U	0.15	1.0
16-MW-24	JA32638-1R	EPA624	11/09/2009	1	Toluene		ug/l	U	0.19	1.0
16-MW-24	JA32638-1R	EPA624	11/09/2009	1	Ethylbenzene		ug/l	U	0.15	1.0
16-MW-24	JA32638-1R	EPA624	11/09/2009	1	Xylenes (total)		ug/l	U	0.27	1.0
16-MW-25	JA32638-2R	EPA624	11/09/2009	1	Benzene		ug/l	U	0.15	1.0
16-MW-25	JA32638-2R	EPA624	11/09/2009	1	Toluene		ug/l	U	0.19	1.0
16-MW-25	JA32638-2R	EPA624	11/09/2009	1	Ethylbenzene		ug/l	U	0.15	1.0
16-MW-25	JA32638-2R	EPA624	11/09/2009	1	Xylenes (total)		ug/l	U	0.27	1.0
16-SW-01	JA32638-9R	EPA624	11/10/2009	1	Benzene		ug/l	U	0.15	1.0
16-SW-01	JA32638-9R	EPA624	11/10/2009	1	Toluene		ug/l	U	0.19	1.0
16-SW-01	JA32638-9R	EPA624	11/10/2009	1	Ethylbenzene		ug/l	U	0.15	1.0
16-SW-01	JA32638-9R	EPA624	11/10/2009	1	Xylenes (total)		ug/l	U	0.27	1.0
16-SW-02	JA32638-10R	EPA624	11/10/2009	1	Benzene		ug/l	U	0.15	1.0
16-SW-02	JA32638-10R	EPA624	11/10/2009	1	Toluene		ug/l	U	0.19	1.0
16-SW-02	JA32638-10R	EPA624	11/10/2009	1	Ethylbenzene		ug/l	U	0.15	1.0
16-SW-02	JA32638-10R	EPA624	11/10/2009	1	Xylenes (total)		ug/l	U	0.27	1.0
18-MW-01	JA32638-4R	EPA624	11/10/2009	1	Benzene		ug/l	U	0.15	1.0
18-MW-01	JA32638-4R	EPA624	11/10/2009	1	Toluene		ug/l	U	0.19	1.0
18-MW-01	JA32638-4R	EPA624	11/10/2009	1	Ethylbenzene		ug/l	U	0.15	1.0
18-MW-01	JA32638-4R	EPA624	11/10/2009	1	Xylenes (total)		ug/l	U	0.27	1.0



NAVAL WARFARE STATION, EARLE-TO 10  
BUILDING C  
DATA SUMMARY TABLE  
AQUEOUS  
SDG: JA32638R

Sample Name	Lab ID	Analytical Method	Sample Date	Dilution Factor	Analyte	Result	Unit	Qualifier	MDL	RL
DUP-1	JA32638-6R	EPA624	11/10/2009	1	Benzene	14.1	ug/l		0.15	1.0
DUP-1	JA32638-6R	EPA624	11/10/2009	1	Toluene		ug/l	U	0.19	1.0
DUP-1	JA32638-6R	EPA624	11/10/2009	1	Ethylbenzene	14.7	ug/l		0.15	1.0
DUP-1	JA32638-6R	EPA624	11/10/2009	1	Xylenes (total)	7.6	ug/l		0.27	1.0
FB-1	JA32638-3R	EPA624	11/09/2009	1	Benzene		ug/l	U	0.15	1.0
FB-1	JA32638-3R	EPA624	11/09/2009	1	Toluene		ug/l	U	0.19	1.0
FB-1	JA32638-3R	EPA624	11/09/2009	1	Ethylbenzene		ug/l	U	0.15	1.0
FB-1	JA32638-3R	EPA624	11/09/2009	1	Xylenes (total)		ug/l	U	0.27	1.0
FB-2	JA32638-11R	EPA624	11/10/2009	1	Benzene		ug/l	U	0.15	1.0
FB-2	JA32638-11R	EPA624	11/10/2009	1	Toluene		ug/l	U	0.19	1.0
FB-2	JA32638-11R	EPA624	11/10/2009	1	Ethylbenzene		ug/l	U	0.15	1.0
FB-2	JA32638-11R	EPA624	11/10/2009	1	Xylenes (total)		ug/l	U	0.27	1.0

**Project Name:** NWS EARLE-TO 10  
**Laboratory:** Accutest Laboratories  
**SDG #:** JA40155  
**Fraction:** Organics  
**Matrix:** Aqueous  
**Report Date:** 03/16/2010

This analytical quality assurance report is based upon a review of analytical data generated for groundwater samples. The sample locations, laboratory identification numbers, sample collection dates, sample matrix, and analyses performed are presented in Table 1.

**Table 1**

Sample Location	Laboratory Sample ID	Date Collected	Matrix	Analyses Performed	
				VOC	SVOC
TB-021810	JA40155-01	VOA	Groundwater	X	
16-MW-08	JA40155-02	VOA	Groundwater	X	X
16-MW-10	JA40155-03	VOA	Groundwater	X	X
16-MW-11	JA40155-04	VOA	Groundwater	X	X
16-MW-15	JA40155-05	VOA	Groundwater	X	
16-MW-24	JA40155-06	VOA	Groundwater	X	
16-MW-25	JA40155-07	VOA	Groundwater	X	
18-MW-01	JA40155-08	VOA	Groundwater	X	X
16-SW-01	JA40155-09	VOA	Groundwater	X	
16-SW-02	JA40155-10	VOA	Groundwater	X	
NWSE-DUP01	JA40155-11	VOA	Field Duplicate	X	X
FB-01	JA40155-12	VOA	Field Blank	X	X

The parameters presented below were evaluated.

- X • Data Completeness
- X • Chain of Custody Documentation
- X • Holding Times
- X • Instrument Performance
- X • Initial and Continuing Calibration Summaries
- X • Laboratory and Field Blank Analysis Results
- X • Surrogate Compound Recoveries
- X • Matrix Spike/Matrix Spike Duplicate Recoveries and Reproducibility
- X • Field Duplicate Analysis Results
- X • Laboratory Control Sample Results
- X • Internal Standard Performance
- X • Qualitative Identification
- X • Quantitation/Reporting Limits

X – Denotes parameter evaluated.

It is recommended that the data only be used according to the qualifiers presented, and discussed in this report. All other data should be considered qualitatively and quantitatively valid as reported by the laboratory, based on the items evaluated.

**VOLATILE ORGANIC COMPOUNDS**  
USEPA Region II – Level II Data Validation

**Project Name:** NWS EARLE-TO 10

**Location:** Colts Neck, NJ 07722

**Project Number:** 02-04-03-10

**SDG #:** JA40155

**Client:** NAVFAC

**Date:** 03/16/2010

**Laboratory:** Accutest Laboratories

**Reviewer:** Sherri Pullar

**Summary:**

1. Level II data validation was performed on the data for twelve (12) water samples analyzed for Volatiles by EPA Method 624 (BETX+ MTBE).
2. The samples were collected on 02/18/2010. The samples were submitted to Analytical Laboratory Services, Inc. for analysis on 02/19/2010.
3. The USEPA Region II SOP HW-24, Revision 1, June 1999: Validating Volatile Organic Compounds by SW-846 Method 8260B and EPA Method 624 were used in evaluating the Volatiles data in this summary report.
4. In general, the data are valid as reported and may be used for decision making purposes. Selected data points were qualified due to nonconformance of certain Quality Control criteria (See discussion below).

**Samples:**

The samples included in this review are listed below:

<b>Client Sample ID</b>	<b>Laboratory Sample ID</b>	<b>Analysis</b>	<b>Matrix</b>	<b>Sample Status</b>
TB-021810	JA40155-01	VOA	Water	Trip Blank
16-MW-08	JA40155-02	VOA	Water	
16-MW-10	JA40155-03	VOA	Water	
16-MW-11	JA40155-04	VOA	Water	
16-MW-15	JA40155-05	VOA	Water	
16-MW-24	JA40155-06	VOA	Water	
16-MW-25	JA40155-07	VOA	Water	
18-MW-01	JA40155-08	VOA	Water	
16-SW-01	JA40155-09	VOA	Water	
16-SW-02	JA40155-10	VOA	Water	
NWSE-DUP01	JA40155-11	VOA	Water	Field Duplicate of Sample 16-MW-08
FB-01	JA40155-12	VOA	Water	

**Sample Conditions/Problems:**

1. The Traffic Reports/Chain-of-Custody Records, Sampling Report and/or Laboratory Case Narrative did not indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data. No qualifications were required.

**Holding Times:**

1. All water samples were analyzed within 14days from sample collection. No qualifications were required.
2. All water samples were properly preserved (pH<2.0). No qualifications were required.

**GC/MS Tuning:**

1. All of the BFB tunes in the initial and continuing calibrations met the percent relative abundance criteria. No qualifications were required.

### **Initial Calibration:**

1. Initial calibration curve analyzed on instrument "GCMS" (02/03/2010) exhibited acceptable %RSD ( $\leq 35\%$ ) for all compounds of interest. No qualifications were required.
2. Initial calibration curve analyzed on instrument "GCMSN" (02/11/2010) exhibited acceptable %RSD ( $\leq 35\%$ ) for all compounds of interest. No qualifications were required.

### **Continuing Calibration Verification (CCV):**

1. CCV analyzed on instrument "GCMS" (02/22/2010) exhibited acceptable %D for benzene, toluene, ethylbenzene, xylenes (total) and methyl tert butyl ether in samples 16MW-25 (JA40155-7), 18MW-01 (JA40155-8), 16SW-01 (JA40155-9), 16SW-02 (JA40155-10), and NWSE-DUP01 (JA40155-13). No qualifications were required.
2. CCV analyzed on instrument "GCMSN" (02/22/2010) exhibited acceptable %D for samples TB-021810 (JA40155-1), 16MW-08 (JA40155-2), 16MW-10 (JA40155-3), 16MW-11 (JA40155-4), 16MW-15 (JA40155-5), and 16MW-24 (JA50144-6).
3. CCV analyzed on instrument "GCMSN" (02/23/2010) exhibited acceptable %D for samples FB-01 (JA40155-14).

### **Surrogates:**

1. All surrogates %REC's values for all water samples and associated QC were within the laboratory control limits. No qualifications were required.

### **Internal Standard (IS) Area Performance:**

1. All samples exhibited acceptable area count for all five internal standards. No qualifications were required.

**Method Blank, Trip, Field, Equipment Blank:**

1. Method Blank (VN7779-MB) analyzed on 02/22/2010 was free contaminations. No qualifications were required.
2. Method Blank (VC5092-MB) analyzed on 02/22/2010 was free contaminations. No qualifications were required.
3. Method Blank (VN7780-MB) analyzed on 02/23/2010 was free contaminations. No qualifications were required.
4. Trip Blank (TB-021810) associated with the samples collected on 02/18/2010 and analyzed on 02/23/2010 was free of contaminations. No qualifications were required.
5. Field Blank (FB-1) associated with the samples collected on 02/18/2010 and analyzed on 02/23/2010 was free of contaminations. No qualifications were required.

**Laboratory Control Sample (LCS)/ Laboratory Control Sample Duplicate (LCSD):**

1. All %REC's in Laboratory Control Sample (VN7779-BS) associated with samples analyzed 02/22/2010 were within the QC limits. No qualifications were required.
2. All %REC's in Laboratory Control Sample (VC5092-BS) associated with samples analyzed 02/22/2010 were within the QC limits. No qualifications were required.
3. All %REC's in Laboratory Control Sample (VN7780-BS) associated with samples analyzed 02/23/2010 were within the QC limits. No qualifications were required.

**Field Duplicate:**

1. Sample DUP-1 was collected as field duplicate for sample 16-MW-08. All RPD's were <30%. Toluene was qualified J/UJ in samples 16-MW-08 and DUP-01, respectively.

COMPOUND	16-MW-08 (µG/L)	DUP-01 (µG/L)	RPD	ACTION
Benzene	32.2	39.1	19.4	None
Ethyl Benzene	16.1	20.1	22.1	None
Methyl Tert Butyl Ether	0.77	0.87	12.2	None
Toluene	0.48	ND	NC	J/UJ
Xylenes	11.9	15.1	23.7	None

ND = Not detected above method detection limit.

NC = Not calculated.

**Matrix Spike (MS)/ Matrix Spike Duplicate (MSD):**

1. Matrix Spike (MS) and Matrix Spike duplicate (MSD) performed on sample 16-MW-08 (JA40155-2). All %REC's and RPD's were within the QC limits. No qualifications were required.

**Compound Quantitation and Reported Detection Limits:**

1. Samples were analyzed at 1x dilution. No qualifications were required.
2. All compounds qualitatively identified at concentrations below their respective Quantitation Limits (QLs), have been marked with "J" qualifiers to indicate that they are quantitative estimates.

**SEMI-VOLATILE ORGANIC COMPOUNDS**  
USEPA Region II – Level II Data Validation

**Project Name:** NWS EARLE-TO 10  
**Location:** Colts Neck, NJ 07722  
**Project Number:** 02-04-03-10  
**SDG #:** JA40155  
**Client:** NAVFAC  
**Date:** 03/16/2010  
**Laboratory:** Accutest Laboratories  
**Reviewer:** Sherri Pullar

**Summary:**

1. Level II data validation was performed on the data for six (6) water samples analyzed for Semi-volatiles (Naphthalene only) by EPA Method 625.
2. The samples were collected on 02/18/2010. The samples were submitted to Accutest Laboratories for analysis on 02/19/2010.
3. The USEPA Region II SOP HW-22, Revision 2, June 2001: Validating Semi-volatile Organic Compounds by SW-846 Method 8270C and EPA Method 625 were used in evaluating the Semi-volatiles data in this summary report.
4. In general, the data are valid as reported and may be used for decision making purposes. Selected data points were qualified due to nonconformance of certain Quality Control criteria (See discussion below).

### **Samples:**

The samples included in this review are listed below:

<b>Client Sample ID</b>	<b>Laboratory Sample ID</b>	<b>Analysis</b>	<b>Matrix</b>	<b>Sample Status</b>
16-MW-08	JA40155-02	SVO	Water	
16-MW-10	JA40155-03	SVO	Water	
16-MW-11	JA40155-04	SVO	Water	
18-MW-01	JA40155-08	SVO	Water	
NWSE-DUP01	JA40155-11	SVO	Water	Field Duplicate for Sample 16-MW-08
FB-01	JA40155-12	SVO	Water	

### **Sample Conditions/Problems:**

1. The Traffic Reports/Chain-of-Custody Records, Sampling Report and/or Laboratory Case Narrative did not indicate any problems with sample receipt, condition of samples, analytical problems, or special circumstances affecting the quality of the data. No qualifications were required.

### **Holding Times:**

1. All water samples were extracted within 7 days from sample collection and analyzed within 40 days following sample extraction. No qualifications were required.

### **GC/MS Tuning:**

1. All of the DFTPP tunes in the initial and continuing calibrations met the percent relative Abundance. Pentachlorophenol and Benzidine tailing factors were acceptable. No qualifications were required.

### **Initial Calibration:**

1. Initial calibration curve analyzed instrument (GCMS3M) (02/22/10) exhibited acceptable %RSD ( $\leq 35\%$ ) for Naphthalene. No qualifications were required.
2. Initial calibration curve analyzed instrument (GCMSF) (01/22/10) exhibited acceptable %RSD ( $\leq 35\%$ ) for Naphthalene. No qualifications were required.

**Continuing Calibration Verification (CCV):**

1. The CCV (GCMS3M) analyzed on 02/22/10 @ 10:03 exhibited acceptable %D ( $\leq 20\%$ ) for Naphthalene. No qualifications were required.
2. The CCV (GCMSF) analyzed on 02/26/10 @ 09:09 exhibited acceptable %D ( $\leq 20\%$ ) for Naphthalene. No qualifications were required.

**Method Blank:**

1. Method Blank (OP42346-MB1) associated with the water samples extracted on 02/22-23/2010 and analyzed on 02/24/2010 and 2/26/2010 was free of contaminations. No qualifications were required.

**Field, Equipment (Rinsate) Blank:**

1. Field Blank (FB-01) associated with the water samples collected on 02/18/2010 and analyzed on 02/26/2010 was free of contaminations. No qualifications were required.

**Surrogates:**

1. All surrogate %REC values in the original extracts were within the laboratory control limits. No qualifications were required.

**Internal Standard (IS) Area Performance:**

1. All samples exhibited acceptable area count for all six internal standards. No qualifications were required.

**Laboratory Control Sample (LCS)/ Laboratory Control Sample Duplicate (LCSD):**

1. Laboratory Control Sample (OP42346-BS1) associated with the water samples analyzed on 02/26/2010 was within the QC limits. No qualifications were required.

**Field Duplicate:**

1. Sample DUP-01 was collected as field duplicate for sample 16-MW-08. Naphthalene RPD was <30%. No qualifications were required.

<b>COMPOUND</b>	<b>16-MW-08 (µG/L)</b>	<b>DUP-1 (µG/L)</b>	<b>RPD</b>	<b>ACTION</b>
Naphthalene	56.7	50.4	11.8	None

**Matrix Spike (MS)/Matrix Spike Duplicate (MSD):**

1. Matrix Spike (MS) and Matrix Spike Duplicate (MSD) were performed on sample 16-MW-08 (JA40155-2). %REC in the MS/MSD was acceptable. No qualifications were required.

**Compound Quantitation and Reported Detection Limits:**

1. All compounds qualitatively identified at concentrations below their respective Quantitation Limits (QLs), have been marked with “J” qualifiers to indicate that they are quantitative estimates.



**NWS EARLE – FEBRUARY 2010  
DATA SUMMARY TABLE – AQUEOUS SDG JA40155**

Sample Name	Lab Id	Analytical Method	Sample Date	Dilution Factor	Analyte	Result	Unit	Qualifier	MDL	QL
16MW-08	JA40155-2	EPA625	02/18/2010	1	Naphthalene	56.7	ug/l		0.32	1.0
16MW-08	JA40155-2	EPA624	02/18/2010	1	Benzene	32.2	ug/l		0.15	1.0
16MW-08	JA40155-2	EPA624	02/18/2010	1	Toluene	0.48	ug/l	J	0.19	1.0
16MW-08	JA40155-2	EPA624	02/18/2010	1	Ethylbenzene	16.1	ug/l		0.15	1.0
16MW-08	JA40155-2	EPA624	02/18/2010	1	Xylenes (total)	11.9	ug/l		0.27	1.0
16MW-08	JA40155-2	EPA624	02/18/2010	1	Methyl Tert Butyl Ether	0.77	ug/l	J	0.31	1.0
16MW-10	JA40155-3	EPA625	02/18/2010	1	Naphthalene		ug/l	U	0.32	1.0
16MW-10	JA40155-3	EPA624	02/18/2010	1	Benzene	1.4	ug/l		0.15	1.0
16MW-10	JA40155-3	EPA624	02/18/2010	1	Toluene		ug/l	U	0.19	1.0
16MW-10	JA40155-3	EPA624	02/18/2010	1	Ethylbenzene		ug/l	U	0.15	1.0
16MW-10	JA40155-3	EPA624	02/18/2010	1	Xylenes (total)		ug/l	U	0.27	1.0
16MW-10	JA40155-3	EPA624	02/18/2010	1	Methyl Tert Butyl Ether		ug/l	U	0.31	1.0
16MW-11	JA40155-4	EPA625	02/18/2010	1	Naphthalene		ug/l	U	0.32	1.0
16MW-11	JA40155-4	EPA624	02/18/2010	1	Benzene	5.0	ug/l		0.15	1.0
16MW-11	JA40155-4	EPA624	02/18/2010	1	Toluene		ug/l	U	0.19	1.0
16MW-11	JA40155-4	EPA624	02/18/2010	1	Ethylbenzene		ug/l	U	0.15	1.0
16MW-11	JA40155-4	EPA624	02/18/2010	1	Xylenes (total)		ug/l	U	0.27	1.0
16MW-11	JA40155-4	EPA624	02/18/2010	1	Methyl Tert Butyl Ether	3.0	ug/l		0.31	1.0
16MW-15	JA40155-5	EPA624	02/18/2010	1	Benzene	5.0	ug/l		0.15	1.0
16MW-15	JA40155-5	EPA624	02/18/2010	1	Toluene		ug/l	U	0.19	1.0
16MW-15	JA40155-5	EPA624	02/18/2010	1	Ethylbenzene		ug/l	U	0.15	1.0
16MW-15	JA40155-5	EPA624	02/18/2010	1	Xylenes (total)		ug/l	U	0.27	1.0
16MW-15	JA40155-5	EPA624	02/18/2010	1	Methyl Tert Butyl Ether	0.59	ug/l	J	0.31	1.0
16MW-24	JA40155-6	EPA624	02/18/2010	1	Benzene		ug/l	U	0.15	1.0
16MW-24	JA40155-6	EPA624	02/18/2010	1	Toluene		ug/l	U	0.19	1.0
16MW-24	JA40155-6	EPA624	02/18/2010	1	Ethylbenzene		ug/l	U	0.15	1.0
16MW-24	JA40155-6	EPA624	02/18/2010	1	Xylenes (total)		ug/l	U	0.27	1.0
16MW-24	JA40155-6	EPA624	02/18/2010	1	Methyl Tert Butyl Ether	3.8	ug/l		0.31	1.0
16MW-25	JA40155-7	EPA624	02/18/2010	1	Benzene		ug/l	U	0.15	1.0
16MW-25	JA40155-7	EPA624	02/18/2010	1	Toluene		ug/l	U	0.19	1.0
16MW-25	JA40155-7	EPA624	02/18/2010	1	Ethylbenzene		ug/l	U	0.15	1.0
16MW-25	JA40155-7	EPA624	02/18/2010	1	Xylenes (total)		ug/l	U	0.27	1.0

Sample Name	Lab Id	Analytical Method	Sample Date	Dilution Factor	Analyte	Result	Unit	Qualifier	MDL	QL
16MW-25	JA40155-7	EPA624	02/18/2010	1	Methyl Tert Butyl Ether		ug/l	U	0.31	1.0
16SW-01	JA40155-9	EPA624	02/18/2010	1	Benzene		ug/l	U	0.15	1.0
16SW-01	JA40155-9	EPA624	02/18/2010	1	Toluene		ug/l	U	0.19	1.0
16SW-01	JA40155-9	EPA624	02/18/2010	1	Ethylbenzene		ug/l	U	0.15	1.0
16SW-01	JA40155-9	EPA624	02/18/2010	1	Xylenes (total)		ug/l	U	0.27	1.0
16SW-01	JA40155-9	EPA624	02/18/2010	1	Methyl Tert Butyl Ether		ug/l	U	0.31	1.0
16SW-02	JA40155-10	EPA624	02/18/2010	1	Benzene		ug/l	U	0.15	1.0
16SW-02	JA40155-10	EPA624	02/18/2010	1	Toluene		ug/l	U	0.19	1.0
16SW-02	JA40155-10	EPA624	02/18/2010	1	Ethylbenzene		ug/l	U	0.15	1.0
16SW-02	JA40155-10	EPA624	02/18/2010	1	Xylenes (total)		ug/l	U	0.27	1.0
16SW-02	JA40155-10	EPA624	02/18/2010	1	Methyl Tert Butyl Ether	6.2	ug/l		0.31	1.0
18MW-01	JA40155-8	EPA625	02/18/2010	1	Naphthalene		ug/l	U	0.32	1.0
18MW-01	JA40155-8	EPA624	02/18/2010	1	Benzene		ug/l	U	0.15	1.0
18MW-01	JA40155-8	EPA624	02/18/2010	1	Toluene		ug/l	U	0.19	1.0
18MW-01	JA40155-8	EPA624	02/18/2010	1	Ethylbenzene		ug/l	U	0.15	1.0
18MW-01	JA40155-8	EPA624	02/18/2010	1	Xylenes (total)		ug/l	U	0.27	1.0
18MW-01	JA40155-8	EPA624	02/18/2010	1	Methyl Tert Butyl Ether		ug/l	U	0.31	1.0
FB-01	JA40155-14	EPA625	02/18/2010	1	Naphthalene		ug/l	U	0.32	1.0
FB-01	JA40155-14	EPA624	02/18/2010	1	Benzene		ug/l	U	0.15	1.0
FB-01	JA40155-14	EPA624	02/18/2010	1	Toluene		ug/l	U	0.19	1.0
FB-01	JA40155-14	EPA624	02/18/2010	1	Ethylbenzene		ug/l	U	0.15	1.0
FB-01	JA40155-14	EPA624	02/18/2010	1	Xylenes (total)		ug/l	U	0.27	1.0
FB-01	JA40155-14	EPA624	02/18/2010	1	Methyl Tert Butyl Ether		ug/l	U	0.31	1.0
NWSE-DUP01	JA40155-13	EPA625	02/18/2010	1	Naphthalene	50.4	ug/l		0.32	1.0
NWSE-DUP01	JA40155-13	EPA624	02/18/2010	1	Benzene	39.1	ug/l		0.15	1.0
NWSE-DUP01	JA40155-13	EPA624	02/18/2010	1	Toluene		ug/l	UJ	0.19	1.0
NWSE-DUP01	JA40155-13	EPA624	02/18/2010	1	Ethylbenzene	20.1	ug/l		0.15	1.0
NWSE-DUP01	JA40155-13	EPA624	02/18/2010	1	Xylenes (total)	15.1	ug/l		0.27	1.0
NWSE-DUP01	JA40155-13	EPA624	02/18/2010	1	Methyl Tert Butyl Ether	0.87	ug/l	J	0.31	1.0
TB-021810	JA40155-1	EPA624	02/18/2010	1	Benzene		ug/l	U	0.15	1.0
TB-021810	JA40155-1	EPA624	02/18/2010	1	Toluene		ug/l	U	0.19	1.0
TB-021810	JA40155-1	EPA624	02/18/2010	1	Ethylbenzene		ug/l	U	0.15	1.0
TB-021810	JA40155-1	EPA624	02/18/2010	1	Xylenes (total)		ug/l	U	0.27	1.0
TB-021810	JA40155-1	EPA624	02/18/2010	1	Methyl Tert Butyl Ether		ug/l	U	0.31	1.0

**VOLATILE ORGANIC COMPOUNDS**  
USEPA Region II – Tier II Data Validation

**Project Name:** Naval Warfare Station Earle -TO 10- Building C  
**Location:** Colts Neck, New Jersey  
**Project Number:** 02-04-03-10-04  
**SDG #:** JA45872  
**Client:** H&S Environmental, Inc.  
**Date:** 06/02/2010  
**Laboratory:** Accutest Laboratories, Dayton, NJ  
**Reviewer:** Samir A. Naguib

**Summary:**

1. Tier II data validation was performed on the data for ten (10) water samples and two (2) field blank analyzed for Volatiles (BTEX +MTBE) by EPA624.
2. The samples were collected on 05/03 and 04/2010. The samples were submitted to Accutest Laboratories, Dayton, NJ on 05/05/2010 for analysis.
3. The USEPA Region II SOP HW-24, Revision No.: 2, October 2006: Validating Volatile Organic Compounds by SW-846 Method 8260B and EPA Method 624 were used in evaluating the Volatiles data in this summary report.
4. In general, the data are valid as reported and may be used for decision making purposes. Selected data points were qualified due to nonconformance of certain Quality Control criteria (See discussion below).

### **Samples:**

The samples included in this review are listed below:

<b>Client Sample ID</b>	<b>Laboratory Sample ID</b>	<b>Collection Date</b>	<b>Analysis</b>	<b>Matrix</b>	<b>Sample Status</b>
16MW-08	JA45872-1	05/03/10	VOA	Water	
16MW-10	JA45872-2	05/03/10	VOA	Water	
16MW-11	JA45872-3	05/04/10	VOA	Water	
16MW-15	JA45872-4	05/04/10	VOA	Water	
16MW-24	JA45872-5	05/04/10	VOA	Water	
16MW-25	JA45872-6	05/04/10	VOA	Water	
18MW-01	JA45872-7	05/04/10	VOA	Water	
16SW-01	JA45872-8	05/04/10	VOA	Water	
16SW-02	JA45872-9	05/04/10	VOA	Water	
FB-01	JA45872-10	05/03/10	VOA	Water	Field Blank
FB-02	JA45872-11	05/03/10	VOA	Water	Field Blank
NWSE-DUP01	JA45872-12	05/03/10	VOA	Water	Field Duplicate of sample 16MW-08

### **Sample Conditions/Problems:**

1. The Traffic Reports/Chain-of-Custody Records, Sampling Report and/or Laboratory Case Narrative did not indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data. No qualifications were required.

### **Holding Times:**

1. All water samples were analyzed within 14days from sample collection. No qualifications were required.
2. All water samples were properly preserved (pH<2.0). No qualifications were required.

### **GC/MS Tuning:**

1. All of the BFB tunes in the initial and continuing calibrations met the percent relative abundance criteria. No qualifications were required.

**Initial Calibration:**

1. Initial calibration curve analyzed on 04/08/2010 (GCMSN) exhibited acceptable %RSD ( $\leq 35\%$ ) for BTEX + MTBE. No qualifications were required.

**Initial Calibration Verification (ICV):**

1. Initial calibration verification analyzed on 04/08/2010 (GCMSN) exhibited acceptable %D's ( $\leq 20.0\%$ ) for BTEX + MTBE. No qualifications were required.

**Continuing Calibration Verification (CCV):**

1. CCV analyzed on 05/07/2010 @ 08:51AM (GCMSN) exhibited acceptable %D's ( $\leq 20\%$ ) for BTEX + MTBE. No qualifications were required.

**Surrogates:**

1. All surrogates %REC's values for all water samples and associated QC were within the laboratory control limits. No qualifications were required.

**Internal Standard (IS) Area Performance:**

1. All samples exhibited acceptable area count for all five internal standards. No qualifications were required.

**Method Blank (MB), Storage Blank (SB), Trip Blank (TB), Field Blank (FB), Rinsate Blank (RB) and Equipment Blank (EB):**

1. Method Blank (VN7890-MB) analyzed on 05/07/2010 was free of contaminations. No qualifications were required.
2. Field Blank (FB-01) associated with the samples collected on 05/03/2010 was free of contaminations. No qualifications were required.
3. Field Blank (FB-02) associated with the samples collected on 05/04/2010 was free of contaminations. No qualifications were required.

**Laboratory Control Sample (LCS)/ Laboratory Control Sample Duplicate (LCSD):**

1. Laboratory Control Sample (VN7890-BS) was analyzed on 05/07/2010. All %REC's were within the laboratory control limits. No qualifications were required.

**Field Duplicate:**

1. Sample NWSE-DUP-1 (JA45872-12) was collected as field duplicate for sample 16-MW-08 (JA45872-1). All RPD's were <30%. No qualifications were required.

Field Sample	Analyte	Analytical Method	Result	Units	Field Duplicate	Result	Units	RPD	Qualifier
16-MW-08	Benzene	EPA 624	28.5	µg/L	NWSE-DUP01	30.3	µg/L	6.1	None
16-MW-08	Ethylbenzene	EPA 624	12.1	µg/L	NWSE-DUP01	13.6	µg/L	11.7	None
16-MW-08	Xylenes (total)	EPA 624	17.2	µg/L	NWSE-DUP01	15.7	µg/L	9.1	None

**Matrix Spike (MS)/ Matrix Spike Duplicate (MSD):**

1. Matrix Spike (MS) and Matrix Spike Duplicate (MSD) were performed on sample 16-MW-08 (JA45872-1). All %REC's and RPD's were within the laboratory control limits. No qualifications were required.

**Compound Quantitation and Reported Contract Required Quantitation Limits (CROLs):**

1. All results were within the linear calibration range. No qualifications were required.

**Target Compound Identification:**

1. All Relative Retention Times (RRTs) of the reported compounds were within  $\pm 0.06$  RRT units of the standard (opening CCV).
2. Sample compound spectra were compared against the laboratory standard spectra.
3. No QC deviations were observed.

**Comments:**

1. Validation qualifiers (if required) were entered into the EDD for SDG: JA45872.

**SEMI-VOLATILE ORGANIC COMPOUNDS**  
USEPA Region II – Tier II Data Validation

**Project Name:** Naval Warfare Station Earle-TO 10- Building C  
**Location:** Colts Neck, New Jersey  
**Project Number:** 02-04-03-10-04  
**SDG #:** JA45872  
**Client:** H&S Environmental, Inc.  
**Date:** 06/02/2010  
**Laboratory:** Accutest Laboratories, Dayton, NJ  
**Reviewer:** Samir A. Naguib

**Summary:**

1. Tier II data validation was performed on the data for five (5) water samples and two (2) field blanks analyzed for Semi-volatiles (Naphthalene only) by EPA Method 625.
2. The samples were collected on 05/03 and 04/2010. The samples were submitted to Accutest Laboratories, Dayton, NJ on 05/05/2010 for analysis.
3. The USEPA Region II SOP HW-22, Revision 3, October 2006: Validating Semi-volatile Organic Compounds by SW-846 Method 8270D and EPA Method 625 were used in evaluating the Semi-volatiles data in this summary report.
4. In general, the data are valid as reported and may be used for decision making purposes. Selected data points were qualified due to nonconformance of certain Quality Control criteria (See discussion below).

### **Samples:**

The samples included in this review are listed below:

<b>Client Sample ID</b>	<b>Laboratory Sample ID</b>	<b>Collection Date</b>	<b>Analysis</b>	<b>Matrix</b>	<b>Sample Status</b>
16MW-08	JA45872-1	05/03/10	SVO	Water	
16MW-10	JA45872-2	05/03/10	SVO	Water	
16MW-11	JA45872-3	05/04/10	SVO	Water	
18MW-01	JA45872-7	05/04/10	SVO	Water	
FB-01	JA45872-10	05/03/10	SVO	Water	Field Blank
FB-02	JA45872-11	05/03/10	SVO	Water	Field Blank
NWSE-DUP01	JA45872-12	05/03/10	SVO	Water	Field Duplicate of sample 16MW-08

### **Sample Conditions/Problems:**

1. The Traffic Reports/Chain-of-Custody Records, Sampling Report and/or Laboratory Case Narrative did not indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data. No qualifications were required.

### **Holding Times:**

1. All water samples were extracted within 7days from sample collection and analyzed within 40days following sample extraction. No qualifications were required.

### **GC/MS Tuning:**

1. All of the DFTPP tunes in the initial and continuing calibrations met the percent relative abundance criteria. No qualifications were required.

### **Initial Calibration:**

1. Initial calibration curve analyzed on 04/12//2010 (GCMSP) exhibited acceptable %RSD ( $\leq 35\%$ ) for Naphthalene. No qualifications were required.

**Initial Calibration Verification (ICV):**

1. Initial calibration verification analyzed on 04/12/2010 (GCMSP) exhibited acceptable %D's ( $\leq 20.0\%$ ) for Naphthalene. No qualifications were required.

**Continuing Calibration Verification (CCV):**

1. The CCV analyzed on 05/17/2010@ 10:44AM (GCMSP) exhibited acceptable %D's ( $\leq 20\%$ ) for Naphthalene. No qualifications were required.

**Method Blank (MB), Storage Blank (SB), Trip Blank (TB), Field Blank (FB), Rinsate Blank (RB) and Equipment Blank (EB):**

1. Method Blank (OP43478-MB1) extracted on 05/07/2010 and analyzed on 05/17/2010 was free of contaminations. No qualifications were required.
2. Field Blank (FB-01) associated with the samples collected on 05/03/2010 was free of contaminations. No qualifications were required.
3. Field Blank (FB-02) associated with the samples collected on 05/03/2010 was free of contaminations. No qualifications were required.

**Surrogates:**

1. All surrogate %REC values in the original extracts were within the laboratory control limits. No qualifications were required.

**Internal Standard (IS) Area Performance:**

1. All samples exhibited acceptable area count for all six internal standards. No qualifications were required.

**Laboratory Control Sample (LCS)/ Laboratory Control Sample Duplicate (LCSD):**

1. Laboratory Control Sample (OP43478-BS1) was analyzed on 05/17/2010. Naphthalene %REC was within the laboratory control limits. No qualifications were required.

**Field Duplicate:**

1. Sample NWSE-DUP01 (JA45872-12) was collected as field duplicate for sample 16-MW-08 (JA45872-1). Naphthalene RPD was <30%. No qualifications were required.

Field Sample	Analyte	Analytical Method	Result	Units	Field Duplicate	Result	Units	RPD	Qualifier
16-MW-08	Naphthalene	EPA 625	37.7	µg/L	NWSE-DUP01	30.9	µg/L	19.8	None

**Matrix Spike (MS)/Matrix Spike Duplicate (MSD):**

1. Matrix Spike (MS) and Matrix Spike Duplicate (MSD) were performed on sample 16-MW-08 (JA45872-1). All %REC's and RPD were within the laboratory control limits. No qualifications were required.

**Compound Quantitation and Reported Contract Required Quantitation Limits (CRQLs):**

1. All results were within the linear calibration range. No qualifications were required.

**Target Compound Identification:**

1. All Relative Retention Times (RRTs) of the reported compounds were within ± 0.06 RRT units of the standard (opening CCV).
2. Sample compound spectra were compared against the laboratory standard spectra.
3. No QC deviations were observed.

**Comments:**

1. Validation qualifiers (if required) were entered into the EDD for SDG: JA45872.



NAVAL WARFARE STATION, EARLE-TO 10  
BUILDING C  
DATA SUMMARY TABLE  
AQUEOUS  
SDG: JA45872

Sample Name	Lab ID	Analytical Method	Sample Date	Dilution Factor	Analyte	Result	Unit	Qualifier	MDL	RL
16MW-08	JA45872-1	EPA624	05/03/2010	1	Benzene	28.5	ug/l		0.15	1.0
16MW-08	JA45872-1	EPA624	05/03/2010	1	Toluene		ug/l	U	0.19	1.0
16MW-08	JA45872-1	EPA624	05/03/2010	1	Ethylbenzene	12.1	ug/l		0.15	1.0
16MW-08	JA45872-1	EPA624	05/03/2010	1	Xylenes (total)	17.2	ug/l		0.27	1.0
16MW-08	JA45872-1	EPA624	05/03/2010	1	Methyl Tert Butyl Ether		ug/l	U	0.31	1.0
16MW-08	JA45872-1	EPA625	05/03/2010	1	Naphthalene	37.7	ug/l		0.34	1.1
FB-01	JA45872-10	EPA624	05/03/2010	1	Benzene		ug/l	U	0.15	1.0
FB-01	JA45872-10	EPA624	05/03/2010	1	Toluene		ug/l	U	0.19	1.0
FB-01	JA45872-10	EPA624	05/03/2010	1	Ethylbenzene		ug/l	U	0.15	1.0
FB-01	JA45872-10	EPA624	05/03/2010	1	Xylenes (total)		ug/l	U	0.27	1.0
FB-01	JA45872-10	EPA624	05/03/2010	1	Methyl Tert Butyl Ether		ug/l	U	0.31	1.0
FB-01	JA45872-10	EPA625	05/03/2010	1	Naphthalene		ug/l	U	0.43	1.3
FB-02	JA45872-11	EPA624	05/04/2010	1	Benzene		ug/l	U	0.15	1.0
FB-02	JA45872-11	EPA624	05/04/2010	1	Toluene		ug/l	U	0.19	1.0
FB-02	JA45872-11	EPA624	05/04/2010	1	Ethylbenzene		ug/l	U	0.15	1.0
FB-02	JA45872-11	EPA624	05/04/2010	1	Xylenes (total)		ug/l	U	0.27	1.0
FB-02	JA45872-11	EPA624	05/04/2010	1	Methyl Tert Butyl Ether		ug/l	U	0.31	1.0
FB-02	JA45872-11	EPA625	05/04/2010	1	Naphthalene		ug/l	U	0.58	1.8
NWSE-DUP01	JA45872-12	EPA624	05/03/2010	1	Benzene	30.3	ug/l		0.15	1.0
NWSE-DUP01	JA45872-12	EPA624	05/03/2010	1	Toluene		ug/l	U	0.19	1.0
NWSE-DUP01	JA45872-12	EPA624	05/03/2010	1	Ethylbenzene	13.6	ug/l		0.15	1.0
NWSE-DUP01	JA45872-12	EPA624	05/03/2010	1	Xylenes (total)	15.7	ug/l		0.27	1.0
NWSE-DUP01	JA45872-12	EPA624	05/03/2010	1	Methyl Tert Butyl Ether		ug/l	U	0.31	1.0
NWSE-DUP01	JA45872-12	EPA625	05/03/2010	1	Naphthalene	30.9	ug/l		0.35	1.1
16MW-10	JA45872-2	EPA624	05/03/2010	1	Benzene		ug/l	U	0.15	1.0
16MW-10	JA45872-2	EPA624	05/03/2010	1	Toluene		ug/l	U	0.19	1.0
16MW-10	JA45872-2	EPA624	05/03/2010	1	Ethylbenzene		ug/l	U	0.15	1.0
16MW-10	JA45872-2	EPA624	05/03/2010	1	Xylenes (total)		ug/l	U	0.27	1.0
16MW-10	JA45872-2	EPA624	05/03/2010	1	Methyl Tert Butyl Ether		ug/l	U	0.31	1.0
16MW-10	JA45872-2	EPA625	05/03/2010	1	Naphthalene		ug/l	U	0.33	1.0
16MW-11	JA45872-3	EPA624	05/04/2010	1	Benzene	26.2	ug/l		0.15	1.0
16MW-11	JA45872-3	EPA624	05/04/2010	1	Toluene		ug/l	U	0.19	1.0
16MW-11	JA45872-3	EPA624	05/04/2010	1	Ethylbenzene		ug/l	U	0.15	1.0
16MW-11	JA45872-3	EPA624	05/04/2010	1	Xylenes (total)		ug/l	U	0.27	1.0
16MW-11	JA45872-3	EPA624	05/04/2010	1	Methyl Tert Butyl Ether	6.9	ug/l		0.31	1.0
16MW-11	JA45872-3	EPA625	05/04/2010	1	Naphthalene		ug/l	U	0.33	1.0
16MW-15	JA45872-4	EPA624	05/04/2010	1	Benzene	5.8	ug/l		0.15	1.0



NAVAL WARFARE STATION, EARLE-TO 10  
BUILDING C  
DATA SUMMARY TABLE  
AQUEOUS  
SDG: JA45872

Sample Name	Lab ID	Analytical Method	Sample Date	Dilution Factor	Analyte	Result	Unit	Qualifier	MDL	RL
16MW-15	JA45872-4	EPA624	05/04/2010	1	Toluene		ug/l	U	0.19	1.0
16MW-15	JA45872-4	EPA624	05/04/2010	1	Ethylbenzene		ug/l	U	0.15	1.0
16MW-15	JA45872-4	EPA624	05/04/2010	1	Xylenes (total)		ug/l	U	0.27	1.0
16MW-15	JA45872-4	EPA624	05/04/2010	1	Methyl Tert Butyl Ether	2.0	ug/l		0.31	1.0
16MW-24	JA45872-5	EPA624	05/04/2010	1	Benzene		ug/l	U	0.15	1.0
16MW-24	JA45872-5	EPA624	05/04/2010	1	Toluene		ug/l	U	0.19	1.0
16MW-24	JA45872-5	EPA624	05/04/2010	1	Ethylbenzene		ug/l	U	0.15	1.0
16MW-24	JA45872-5	EPA624	05/04/2010	1	Xylenes (total)		ug/l	U	0.27	1.0
16MW-24	JA45872-5	EPA624	05/04/2010	1	Methyl Tert Butyl Ether	2.3	ug/l		0.31	1.0
16MW-25	JA45872-6	EPA624	05/04/2010	1	Benzene		ug/l	U	0.15	1.0
16MW-25	JA45872-6	EPA624	05/04/2010	1	Toluene		ug/l	U	0.19	1.0
16MW-25	JA45872-6	EPA624	05/04/2010	1	Ethylbenzene		ug/l	U	0.15	1.0
16MW-25	JA45872-6	EPA624	05/04/2010	1	Xylenes (total)		ug/l	U	0.27	1.0
16MW-25	JA45872-6	EPA624	05/04/2010	1	Methyl Tert Butyl Ether		ug/l	U	0.31	1.0
18MW-01	JA45872-7	EPA624	05/04/2010	1	Benzene		ug/l	U	0.15	1.0
18MW-01	JA45872-7	EPA624	05/04/2010	1	Toluene		ug/l	U	0.19	1.0
18MW-01	JA45872-7	EPA624	05/04/2010	1	Ethylbenzene		ug/l	U	0.15	1.0
18MW-01	JA45872-7	EPA624	05/04/2010	1	Xylenes (total)		ug/l	U	0.27	1.0
18MW-01	JA45872-7	EPA624	05/04/2010	1	Methyl Tert Butyl Ether		ug/l	U	0.31	1.0
18MW-01	JA45872-7	EPA625	05/04/2010	1	Naphthalene		ug/l	U	0.34	1.1
16SW-01	JA45872-8	EPA624	05/04/2010	1	Benzene		ug/l	U	0.15	1.0
16SW-01	JA45872-8	EPA624	05/04/2010	1	Toluene		ug/l	U	0.19	1.0
16SW-01	JA45872-8	EPA624	05/04/2010	1	Ethylbenzene		ug/l	U	0.15	1.0
16SW-01	JA45872-8	EPA624	05/04/2010	1	Xylenes (total)		ug/l	U	0.27	1.0
16SW-01	JA45872-8	EPA624	05/04/2010	1	Methyl Tert Butyl Ether		ug/l	U	0.31	1.0
16SW-02	JA45872-9	EPA624	05/04/2010	1	Benzene		ug/l	U	0.15	1.0
16SW-02	JA45872-9	EPA624	05/04/2010	1	Toluene		ug/l	U	0.19	1.0
16SW-02	JA45872-9	EPA624	05/04/2010	1	Ethylbenzene		ug/l	U	0.15	1.0
16SW-02	JA45872-9	EPA624	05/04/2010	1	Xylenes (total)		ug/l	U	0.27	1.0
16SW-02	JA45872-9	EPA624	05/04/2010	1	Methyl Tert Butyl Ether		ug/l	U	0.31	1.0

**APPENDIX B**  
**FIELD DATA LOGS**

Date: 8/25/09



**Groundwater Level Measurement Sheet**

Project Site: NWS Earle TD 10  
 Location: Colts Neck, NJ  
 Field Crew: Sam Gaud, Ryan Hipp

Water Level Meter: Solinst Interface prob  
 Weather: Sunny ~75°  
 Time of Low Tide: N/A  
 Time of High Tide: N/A

\* Pump was removed during gauging

Well ID	Time	Depth to Water (Et.)		-PID Reading (ppm)	Comments
		Depth to Water	Total Depth		
<del>1cmw04</del>	0	Depth to Water	Total Depth	Depth to product	
1cmw04	8:20	8.02	17.45	7.55	
1cmw05	8:25	10.59	19.92	10.6	
1cmw08	8:30	11.85	20.45		
1cmw10	8:39	8.60	18.90		
1cmw11	14:10 (8/26)	2.79	15.32		
1cmw15	9:45	11.59	10.39		
1cmw24	12:40	4.25	10.74		
1cmw25	11:30	6.91	18.68		
1cmw01	8:50	<del>9.23</del>	20.29		
1cmw02	8:43	4.51	10.65		
1cmw16	14:45	3.94	14.70		
1cmw17	14:40	3.93	12.70		
2cmw01	14:50	9.0	17.74		

Signature: Ryan Hipp

Date: 8/26/09







Low Flow/Low Stress Groundwater Sampling Low

Sample Collection

Time	Sample ID	Container	# of Bottles	Preservative	Analyses
11:00	1C01W15	40ml vial	3	HCL	624 BTEX + MBTE

Comments:

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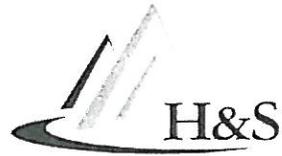
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Signature: Ray [Signature]

Date: 8/25/09



### Monitoring Well Inspection Sheet

Project Site: NWS Earle TOL

Location: Colts Neck, NJ

Well ID: 16mW15

Date: 8/25/09

Inspector's Name: Ryan Hipp

Time: 9:45

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in place, legible?	✓		
Well Security	Condition of protective case, cap and lock.	✓		
Well Pad	Concrete or gravel and condition	✓		
Well Seal	Condition of...	✓		
Area Immediately around well pad.	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition...	✓		
PVC Riser	Condition of riser and survey reference point	✓		

**Comments:**

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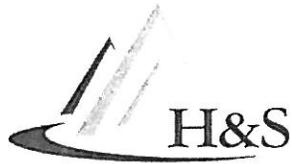


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Signature: Ryan Hipp

Date: 8/25/09

S= Satisfactory, U= Unsatisfactory  
Check one, if unsatisfactory please explain



### Low Flow/Low Stress Groundwater Sampling Log

Project: NWS Earle T010  
 Location: NWS Earle T010

Date: 8/25/09  
 Well ID: 16MW24

Sampler: Ryan Hiff & Jen Gossel  
 PID: \_\_\_\_\_

Start Time: 12:40 End Time: 13:45  
 Well Construction: PVC  
 Depth to Water: 4.25  
 Water Column: 10.74 <sup>to top of</sup> 12.49'  
 Total Volume Removed (L): 7.02

#### Field Testing Equipment

Make	Model	Serial #
VST	SSC mps	0502373AL
Solinst	Dipper-T	
Lanette	Z020	8769-1205

#### Mixed Purge

Time	Volume Removed (L)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (mS/cm)	DO (mg/L)	ORP (mg/L)	Turbidity (NTU)	Salinity (ppt)	Color
12:50	~	140	3.98	17.91	5.16	0.104	1.79	131.9	52.8		Clear
12:55	0.7	140	3.98	18.38	5.22	0.103	1.44	124.4	37.7		"
13:00	1.4	140	3.98	18.63	5.24	0.103	1.32	121.5	31.8		"
13:05	2.1	140	3.98	18.65	5.24	0.119	1.23	120.8	29.1		"
13:10	2.8	140	3.98	18.43	5.21	0.107	1.19	120.3	23.5		"
13:15	3.5	140	3.98	17.91	5.17	0.106	1.15	121.5	21.5		"
13:20	4.2	140	3.98	17.76	5.10	0.105	1.09	122.7	20.4		"
13:25	4.9	140	3.98	18.61	5.14	0.100	1.03	120.2	18.6		"
13:30	5.6	140	3.98	19.20	5.21	0.107	1.02	117.2	14.9		"
13:35	6.3	140	3.98	19.30	5.24	0.106	1.00	115.7	14.2		"
13:40	7.0	140	3.98	18.35	5.26	0.105	1.04	116.4	14.4		"

Acceptance Criteria: < 0.3 ft    3%    ± 0.1    3%    10%    ± 10mv    10%  
 2" screen volume 0.163 gal/ft or 616 ml per foot

Signature: [Signature]

Date: 8/25/09



Low Flow/Low Stress Groundwater Sampling Low  
Sample Collection

Time	Sample ID	Container	# of Bottles	Preservative	Analyses
13:45	16MW24	40ml wal	3	HCL	CoZ4

Comments:

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Signature: Ray [Signature]

Date: 8/25/09



## Monitoring Well Inspection Sheet

Project Site: NW's Earle T610

Location: Colts Neck, NJ

Well ID: 1Cemwzy

Date: 8/25/09

Inspector's Name: Ryan Hipp

Time: 12:40

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in place, legible?	✓		
Well Security	Condition of protective case, cap and lock.	✓		
Well Pad	Concrete or gravel and condition	✓		
Well Seal	Condition of...	✓		
Area Immediately around well pad.	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition...	✓		
PVC Riser	Condition of riser and survey reference point	✓		

**Comments:**

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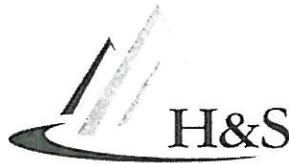


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Signature: *Ryan Hipp*

Date: 8/25/09

S= Satisfactory, U= Unsatisfactory  
Check one, if unsatisfactory please explain



### Low Flow/Low Stress Groundwater Sampling Log

Project: NWS Earle T010  
 Location: NWS Earle T010

Date: 8/25/09  
 Well ID: 1COMWZ5

Sampler: Ryan Hipp + Jen Good  
 PID: \_\_\_\_\_

Start Time: 11:30 End Time: 12:30  
 Well Construction: PVC  
 Depth to Water: 6.91  
 Water Column: 18.68 <sup>→ depth to bottom 11.77'</sup>  
 Total Volume Removed (L): 4.2L

#### Field Testing Equipment

Make	Model	Serial #
VST	550 mps	05023734L
Solinst	Dipper - T	
LaMotte	2020	5769-1205

MZD purge

Time	Volume Removed (L)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (mS/cm)	DO (mg/L)	ORP (mg/L)	Turbidity (NTU)	Salinity (ppt)	Color
11:50	—	120	6.57	16.86	3.89	0.007	3.30	152.9	46.2		Light Brown
11:55	0.4	120	6.60	16.98	3.86	0.007	2.91	157.2	38.8		
12:00	1.2	120	6.57	17.16	3.88	0.007	2.79	160.2	32.5		
12:05	1.8	120	6.56	17.01	3.87	0.007	2.72	163.0	29.1		
12:10	2.4	120	6.58	16.86	3.84	0.007	2.72	167.7	25.1		
12:15	3.0	120	6.57	16.74	3.81	0.007	2.71	171.2	21.2		
12:20	3.6	120	6.57	16.75	3.81	0.007	2.72	173.9	20.0		
12:25	4.2	120	6.57	16.92	3.81	0.007	2.71	175.3	20.4		

Acceptance Criteria: < 0.3 ft    3%    ± 0.1    3%    10%    ± 10mv    10%  
 2" screen volume 0.163 gal/ft or 616 ml per foot

Signature: Ryan Hipp

Date: 8/25/09



Low Flow/Low Stress Groundwater Sampling Low  
Sample Collection

Time	Sample ID	Container	# of Bottles	Preservative	Analyses
12:30	106MWS	40ml vial	3	HCL	624
	F				

Comments:

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Signature: Ray H. H. H.

Date: 8/25/09



### Monitoring Well Inspection Sheet

Project Site: NWS Earle TD10

Location: Cats Neck, NJ

Well ID: 16mw25

Date: 8/25/09

Inspector's Name: Ryan Hipp

Time: 11:30

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in place, legible?	✓		
Well Security	Condition of protective case, cap and lock.	✓		
Well Pad	Concrete or gravel and condition	✓		
Well Seal	Condition of...	✓		
Area Immediately around well pad.	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition...	✓		
PVC Riser	Condition of riser and survey reference point	✓		

**Comments:**

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Signature: *Ryan Hipp*

Date: 8/25/09

S= Satisfactory, U= Unsatisfactory  
Check one, if unsatisfactory please explain



### Low Flow/Low Stress Groundwater Sampling Log

Project: NWS Earle T010  
 Location: NWS Earle T010

Date: 8/25/09  
 Well ID: 16mw11

Sampler: Ryan HPP + Jen Good  
 PID: +

Start Time: 14:10 End Time: 16:05  
 Well Construction: PVC  
 Depth to Water: 2.79'  
 Water Column: 12.53' | 15.32' → Depth and Out  
 Total Volume Removed (L): 15.2 L

#### Field Testing Equipment

Make	Model	Serial #
YSI	550mps	0502373AL
Solinst	Dipper-T	
Lanettec	2020	5769-1205

PH, DO purge

Time	Volume Removed (L)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (mS/cm)	DO (mg/L)	ORP (mg/L)	Turbidity (NTU)	Salinity (ppt)	Color
14:25	—	100	2.81	16.36	4.09	0.301	1.32	129.4	290		Cloudy
14:30	0.8	100	2.85	16.27	4.00	0.297	1.16	127.0	215		11
14:35	1.6	100	2.82	16.30	4.05	0.294	1.07	125.3	173		11
14:40	2.4	100	2.82	16.36	4.05	0.293	1.04	123.4	143		11
14:45	3.2	100	2.82	16.21	4.04	0.291	1.02	121.5	107.4		11
14:50	4.0	100	2.82	16.10	4.02	0.287	1.00	120.5	85.1		11
14:55	4.8	100	2.82	16.14	4.01	0.286	0.99	119.4	73.1		11
15:00	5.6	100	2.82	16.02	3.99	0.283	0.97	117.7	60.8		11
15:05	6.4	100	2.82	16.03	3.99	0.281	0.96	116.3	52.1		11
15:10	7.2	100	2.82	16.15	4.00	0.286	1.03	114.6	43.4		11
15:15	8.0	100	2.82	16.12	4.00	0.278	0.93	112.9	36.4		11
15:20	8.8	100	2.82	16.16	3.99	0.277	0.92	111.8	30.9		11

Acceptance Criteria: < 0.3 ft    3%    ± 0.1    3%    10%    ± 10mv    10%  
 2" screen volume 0.163 gal/ft or 616 ml per foot

Signature: [Signature]

Date: 8/25/09



**Low Flow/Low Stress Groundwater Sampling Log**

Project: NWS Earle TO 10  
 Location: NWS Earle TO 10

Date: 8/25/09  
 Well ID: 16 MW 11

Sampler: Ryan Hipp + Jon Good  
 PID: \_\_\_\_\_

Start Time: \_\_\_\_\_ End Time: \_\_\_\_\_

Well Construction: \_\_\_\_\_

Depth to Water: \_\_\_\_\_

Water Column: \_\_\_\_\_

Total Volume Removed (L): \_\_\_\_\_

*See previous page*

**Field Testing Equipment**

Make \_\_\_\_\_ Model \_\_\_\_\_ Serial # \_\_\_\_\_

Time	Volume Removed (L)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (mS/cm)	DO (mg/L)	ORP (mg/L)	Turbidity (NTU)	Salinity (ppt)	Color
<del>13:25</del>	5.25	9.6	160	2.82	16.16	3.98	0.276	0.90	110.9	27.8	11
13:30	10.4	160	2.82	16.26	3.98	0.275	0.90	109.5	23.7	11	
13:35	11.2	160	2.82	16.26	3.99	0.275	0.89	108.2	21.2	11	
13:40	12.0	160	2.82	16.35	3.99	0.275	0.88	107.3	19.3	11	
13:45	12.8	160	2.82	16.25	4.00	0.275	0.87	106.1	17.3	11	
13:50	13.6	160	2.82	16.17	3.99	0.273	0.86	105.0	15.7	11	
13:55	14.4	160	2.82	16.34	4.00	0.274	0.85	104.9	14.3	11	
14:00	15.2	160	2.82	16.27	4.00	0.273	0.86	104.0	13.8	11	

Acceptance Criteria: < 0.3 ft    3%    ± 0.1    3%    10%    ± 10mv    10%  
 2" screen volume 0.163 gal/ft or 616 ml per foot

Signature: *Ryan Hipp*

Date: 8/25/09



## Low Flow/Low Stress Groundwater Sampling Low

### Sample Collection

Time	Sample ID	Container	# of Bottles	Preservative	Analyses
10:05	1Ce MW11	1L Amber	2	4c	025
10:05	1Ce MW11	40ml vial	3	HCL	024

**Comments:**

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Signature: Py [Signature]

Date: 8/25/08



## Monitoring Well Inspection Sheet

Project Site: NWS Earle TD10

Location: Lotts Neck, NS

Well ID: 1Cmw11

Date: 8/25/09

Inspector's Name: Ryan Hogg

Time: 14:10

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in place, legible?	✓		
Well Security	Condition of protective case, cap and lock.	✓		
Well Pad	Concrete or gravel and condition	✓		
Well Seal	Condition of...	✓		
Area Immediately around well pad.	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition...	✓		
PVC Riser	Condition of riser and survey reference point	✓		

**Comments:**

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Signature: *Ryan Hogg*

Date: 8/25/09

S= Satisfactory, U= Unsatisfactory  
Check one, if unsatisfactory please explain



### Low Flow/Low Stress Groundwater Sampling Log

Project: NWS Earle 7010  
 Location: \_\_\_\_\_

Date: 8/26/09  
 Well ID: 104W10

Sampler: Ryan Hopp + Jen Good  
 PID: \_\_\_\_\_

Start Time: 10:00 End Time: 10:55  
 Well Construction: PVC  
 Depth to Water: 8.5'  
 Water Column: 10.46'  
 Total Volume Removed (L): 9.0

#### Field Testing Equipment

Make	Model	Serial #
Solinst	Dipper-T	
YSI	556 MPS	05DZ373AL
LaMotte	2020	5769-1205

Micro Purge

Time	Volume Removed (L)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (mS/cm)	DO (mg/L)	ORP (mg/L)	Turbidity (NTU)	Salinity (ppt)	Color
10:00	—	180	8.5	19.54	5.34	0.464	0.57	102.1	609	/	cloudy
10:05	0.9	180	8.5	19.85	5.37	0.470	0.43	97.5	571		H
10:10	1.8	180	8.5	19.53	5.38	0.470	0.46	95.6	508		H
10:15	2.7	180	8.5	19.17	5.36	0.464	0.49	95.3	417		H
10:20	3.6	180	8.5	19.13	5.36	0.463	0.50	94.1	349		H
10:25	4.5	180	8.5	19.04	5.35	0.463	0.53	93.3	303		H
10:30	5.4	180	8.5	19.42	5.37	0.465	0.39	91.2	259		H
10:35	6.3	180	8.5	20.10	5.41	0.473	0.35	87.8	232		H
10:40	7.2	180	8.5	20.32	5.42	0.478	0.32	86.1	228		H
10:45	8.1	180	8.5	20.56	5.43	0.481	0.31	85.3	208		H
10:50	9.0	180	8.5	20.66	5.45	0.492	0.30	84.0	212		H

Acceptance Criteria: < 0.3 ft    3%    ± 0.1    3%    10%    ± 10mv    10%  
 2" screen volume 0.163 gal/ft or 616 ml per foot

Signature: Ryan Hopp

Date: 8/26/09



### Low Flow/Low Stress Groundwater Sampling Low

### Sample Collection

Time	Sample ID	Container	# of Bottles	Preservative	Analyses
10:55	1CeMW10	1 L Amber	2	4c	Ce25
10:55	1CeMW10	40ml Vial	3	HCL	Ce24

**Comments:**

*well pad cracked*

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Signature: *Ry [Signature]*

Date: *8/20/09*



## Monitoring Well Inspection Sheet

Project Site: NWS Earle TO 10

Location: Colts Neck, NJ

Well ID: 10MWT0

Date: 8/26/09

Inspector's Name: Ryan Hipp

Time: 10:00

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in place, legible?	✓		
Well Security	Condition of protective case, cap and lock.	✓		
Well Pad	Concrete or gravel and condition		✓	Cracked Concrete
Well Seal	Condition of...	✓		
Area Immediately around well pad.	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition...	✓		
PVC Riser	Condition of riser and survey reference point	✓		

**Comments:**

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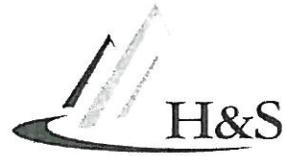
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Signature: *Ryan Hipp*

Date: 8/26/09

S= Satisfactory, U= Unsatisfactory  
Check one, if unsatisfactory please explain





## Low Flow/Low Stress Groundwater Sampling Low

### Sample Collection

Time	Sample ID	Container	# of Bottles	Preservative	Analyses
11:55	18 MW 2	1 L Amber	2	Hc	Co25
11:55	18 MW 2	40 mL vial	3	HCC	Co24

**Comments:**

debris in casing

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Signature: Ry [Signature]

Date: 8/20/09



### Monitoring Well Inspection Sheet

Project Site: NWS Earle T010

Location: Colts Neck, NJ

Well ID: 18mw2

Date: 8/20/09

Inspector's Name: Ryan Hipp

Time: 11:15

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in place, legible?	✓		
Well Security	Condition of protective case, cap and lock.	✓		
Well Pad	Concrete or gravel and condition	✓		
Well Seal	Condition of...		✓	Debris around well riser
Area Immediately around well pad.	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition...	✓		
PVC Riser	Condition of riser and survey reference point	✓		

**Comments:**

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Signature: Ryan Hipp

Date: 8/20/09

S= Satisfactory, U= Unsatisfactory  
Check one, if unsatisfactory please explain



### Low Flow/Low Stress Groundwater Sampling Log

Project: NWS Earle 1010  
 Location: Colts Neck, NJ

Date: 8/26/09  
 Well ID: 1COMW83

Sampler: Ryan Hipp + Jen Good  
 PID: \_\_\_\_\_

Start Time: 7:30 End Time: 9:15  
 Well Construction: PVC  
 Depth to Water: 11.21'  
 Water Column: 9.24'  
 Total Volume Removed (L): ~~6.4~~ 8.4L

#### Field Testing Equipment

Make	Model	Serial #
Solinst	Dipper-T	
VSI	556 mps	05023734L
Lanotte	2020	5709-1205

*micro purge*

Time	Volume Removed (L)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (mS/cm)	DO (mg/L)	ORP (mg/L)	Turbidity (NTU)	Salinity (ppt)	Color
8:00	—	120	11.21	17.34	4.25	0.093	0.46	159.5	414	X	Floccy
8:05	0.8	120	11.21	17.30	4.25	0.093	0.42	157.9	334		11
8:10	1.2	120	11.21	17.28	4.29	0.093	0.39	154.0	369		11
8:15	1.8	120	11.21	16.98	4.41	0.056	0.70	156.4	107		11
8:20	2.4	120	11.21	16.99	4.39	0.052	0.44	157.7	325		11
8:25	3.0	120	11.21	16.93	4.40	0.051	0.43	153.8	248		11
8:30	3.6	120	11.21	16.93	4.39	0.053	0.36	152.3	183		11
8:35	4.2	120	11.21	16.97	4.41	0.054	0.32	149.9	164		11
8:40	4.8	120	11.21	17.05	4.49	0.055	0.32	146.1	145		11
8:45	5.4	120	11.21	17.11	4.53	0.057	0.33	144.1	135		11
8:50	6.0	120	11.21	17.11	4.54	0.058	0.30	149.0	138		11
8:55	6.6	120	11.21	17.11	4.55	0.059	0.27	143.5	126		11

Acceptance Criteria: < 0.3 ft    3%    ± 0.1    3%    10%    ± 10mv    10%  
 2" screen volume 0.163 gal/ft or 616 ml per foot

Signature: Ryan Hipp

Date: 8/26/09



Sheet 2

### Low Flow/Low Stress Groundwater Sampling Log

Project: MWS Earle T010  
 Location: \_\_\_\_\_

Date: 8/20/09  
 Well ID: 10MWS

Sampler: Ryan Hipp + Jen Good  
 PID: \_\_\_\_\_

Start Time: \_\_\_\_\_ End Time: \_\_\_\_\_

**Field Testing Equipment**

Well Construction: \_\_\_\_\_

Make \_\_\_\_\_ Model \_\_\_\_\_ Serial # \_\_\_\_\_

Depth to Water: \_\_\_\_\_ *See*

Water Column: \_\_\_\_\_ *previous page*

Total Volume Removed (L): \_\_\_\_\_

Time	Volume Removed (L)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (mS/cm)	DO (mg/L)	ORP (mg/L)	Turbidity (NTU)	Salinity (ppt)	Color
9:00	7.2	120	11.21	17.12	4.58	0.061	0.27	143.1	103.4		Placy
9:05	7.8	120	11.21	17.22	4.62	0.062	0.33	142.1	101.1		11
9:10	8.4	120	11.21	17.16	4.60	0.065	0.32	142.1	<del>103.4</del> 103.6		11

Acceptance Criteria: < 0.3 ft    3%    ± 0.1    3%    10%    ± 10mv    10%  
 2" screen volume 0.163 gal/ft or 616 ml per foot

Signature: Ryan Hipp

Date: 8/20/09



### Low Flow/Low Stress Groundwater Sampling Low

### Sample Collection

Time	Sample ID	Container	# of Bottles	Preservative	Analyses
9:15	1C6MWS	1 L Amber	2	HCl	625
9:15	1C6MWS	40L Vial	3	HCl	624
9:15	1C6MWS	MS/MSD	Same as above		
9:20	Dup-01	Same as above			

**Comments:**

Flocc in well

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Signature: Ryan King

Date: 8/20/09



### Monitoring Well Inspection Sheet

Project Site: MWS Earle 7010

Location: Colts Neck, NJ

Well ID: 16mW8

Date: 8/20/09

Inspector's Name: Ryan Hipp

Time: 7:30

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in place, legible?	✓		
Well Security	Condition of protective case, cap and lock.	✓		
Well Pad	Concrete or gravel and condition	✓		
Well Seal	Condition of...	✓		
Area Immediately around well pad.	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition...	✓		
PVC Riser	Condition of riser and survey reference point	✓		

**Comments:**

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Signature: Ryan Hipp

Date: 8/20/09

S= Satisfactory, U= Unsatisfactory  
Check one, if unsatisfactory please explain

Date: 11/9/09



### Groundwater Level Measurement Sheet

Project Site: NWS Earle Quarry CTM  
Location: Colts Neck, NJ  
Field Crew: Victer & Jen

Water Level Meter: Solinst Interface Probe  
Weather: Clear, sunny 40°F  
Time of Low Tide: \_\_\_\_\_  
Time of High Tide: \_\_\_\_\_

Well ID	Time	Depth to Water (Ft.)	Total Depth of Well (Ft.)	Comments
16-MW-04	09:25	8.35	16.40	
16-MW-05	07:30	10.72	20.15	
16-MW-08	07:35	11.85	19.50	
16-MW-10	07:58	8.60	18.91	
16-MW-11	07:48	2.82	15.35	
16-MW-15	08:23	3.67	11.44	
16-MW-24	08:18	4.03	16.78	
16-MW-25	08:32	6.58	18.67	
18-MW-01	08:05	9.26	19.80	
16-MW-02	08:00	6.51	16.92	
16-MW-16	07:40	3.91	14.61	
16-MW-17	07:44	3.96	12.76	
29-MW-01	07:53	9.72	17.80	

Signature: JG/UL

Date: 11/9/09



732  
539  
9981

# H&S Environmental, Inc.

## Low Flow/ Low Stress Groundwater Sampling Log



Project: NWS Earle Annual LTM  
 Location: C-16/2/17/50  
 Well ID: 16-MW-08

Date: 11/10/09  
 Sampler: JB, VL  
 PID: 0.0 ppm

Start Time: 0820 End Time: 1025  
 Well Construction: 2" PVC  
 Depth to Water: 11.85 (11/10) 10.70 (11/10)  
 Well Depth: 19.50  
 Water Column: 9.30  
 Total Volume Removed (L): 27.5  
 Dedicated Pump in Well?: Yes

### Field Testing Equipment

Make	Model	Serial #
YSI	556	E16092
LaMotte	2020	5679-1205

Time (hh:mm)	Volume Removed (L)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm) mg	DO (mg/L)	ORP (mg/L)	Turbidity (NTU)	Color
0850	6.6	220	11.20	15.91	4.58	0.055	0.17	180.7	335	Tannal flocc
0900	2.2		11.20	15.95	4.60	0.057	0.15	179.4	243	"
0910	2.2		11.20	15.98	4.62	0.062	0.13	175.5	162	Lt tan
0920	2.2		11.20	16.03	4.64	0.066	0.12	173.1	124	"
0930	2.2		11.20	16.03	4.66	0.070	0.11	171.4	126	"
0940	2.2		11.20	16.07	4.68	0.074	0.10	169.6	98.8	"
0950	2.2		11.20	16.07	4.89	0.079	0.08	147.5	425	Tan w/ flocc.
1000	2.2		11.20	16.08	4.76	0.081	0.09	161.7	199	"
1010	2.2		11.20	16.09	4.82	0.084	0.07	154.2	114	Lt tan
1015	1.1		11.20	16.13	4.86	0.087	0.07	147.0	109.8	"
1020	1.1		11.20	16.13	4.86	0.087	0.08	146.8	108.1	"
1025	1.1		11.20	16.12	4.85	0.087	0.08	147.4	102.4	"

Acceptance Criteria:                      <0.3ft                      3%                      ±0.1                      3%                      10%                      10%                      <10

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

### Sample Collection

Time	Sample ID	Container	# Bottles	Preservative	Analysis
1025	16-MW-08	40 mL CG	3 x 3 = 9	HCl	624 + MTBE
1025	"	1 L AG	2 x 3 = 6	—	625
0000	DUP-1	40 mL CG	3	HCl	624 + MTBE
0000	"	1 L AG	2	—	625

### Comments

DUP-1, MS/MSD collected

[Signature]  
 Signature

11/10/09  
 Date



## Monitoring Well Inspection Sheet

Project Site: NWS Earle Annual LTM

Location: C-16/20/17/50

Well ID: 16-MW-08

Date: 11/12/24

Inspector's Name: Len Good

Time: 0815

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in place, legible?	✓		
Well Security	Condition of protective case, cap and lock.	✓		
Well Pad	Concrete or gravel and condition	✓		
Well Seal	Condition of...	✓		
Area Immediately around well pad.	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition...	✓		
PVC Riser	Condition of riser and survey reference point	✓		

**Comments:**

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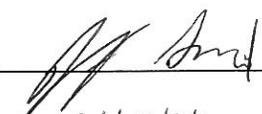
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Signature: 

Date: 11/12/24

S= Satisfactory, U= Unsatisfactory  
 Check one, if unsatisfactory please explain

# H&S Environmental, Inc.

## Low Flow/ Low Stress Groundwater Sampling Log

Project: NWS Erie Annual LTM  
 Location: C-16/20/17/50  
 Well ID: 16-MW-10

Date: 11/10/09  
 Sampler: SG, VL  
 PID: 0.0 ppm



Start Time: 0910 End Time: 1055  
 Well Construction: 2" PVC  
 Depth to Water: 8.60 (11/9) 8.61 (11/10)  
 Well Depth: 18.91  
 Water Column: 31.5  
 Total Volume Removed (L): \_\_\_\_\_  
 Dedicated Pump in Well?: Yes

### Field Testing Equipment

Make	Model	Serial #
YSI	556	05D2373
LaMotte	2020	5769-1205

Time (hh:mm)	Volume Removed (L)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µs/cm) mS	DO (mg/L)	ORP (mg/L)	Turbidity (NTU)	Color
0920	3.0	300	8.53	15.64	5.26	0.452	2.55	439.4	505	10-11/10/09
0930	3.0		8.62	15.99	5.30	0.510	0.83	437.1	412	"
0940	3.0		8.62	16.01	5.36	0.517	0.60	433.6	364	"
0950	3.0		8.62	16.04	5.38	0.514	0.39	432.2	233	"
1000	3.0		8.62	16.04	5.39	0.515	0.34	432.0	189	"
1010	3.0		8.62	16.05	5.41	0.515	0.30	431.2	145	"
1020	3.0		8.62	16.14	5.43	0.516	0.32	429.5	91.3	"
1030	3.0		8.62	16.18	5.42	0.517	0.23	430.3	80.1	"
1040	3.0		8.62	16.22	5.45	0.518	0.21	428.7	75.0	"
1045	1.5		8.62	16.23	5.44	0.518	0.21	428.9	73.0	"
1050	1.5		8.62	16.25	5.43	0.519	0.19	429.7	70.7	"
1055	1.5	↓	8.62	16.25	5.43	0.519	0.20	429.5	67.8	"

Acceptance Criteria: <0.3ft      3%      ±0.1      3%      10%      10%      <10

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

### Sample Collection

Time	Sample ID	Container	# Bottles	Preservative	Analysis
1055	16-MW-10	40 mL GG	3	HCl	624 + MTBE
1055	"	1 L AG	2	—	625

### Comments

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

[Signature]  
 Signature

11/10/09  
 Date



## Monitoring Well Inspection Sheet

**Project Site:** NWS Earle Annual LTM

**Location:** G-16/20/17/50

**Well ID:** 16-MW-10

**Date:** 11/10/24

**Inspector's Name:** Len Good

**Time:** 0905

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in place, legible?	✓		
Well Security	Condition of protective case, cap and lock.	✓		
Well Pad	Concrete or gravel and condition	✓		
Well Seal	Condition of...	✓		
Area Immediately around well pad.	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition...	✓		
PVC Riser	Condition of riser and survey reference point	✓		

**Comments:**

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Signature:

Date: 11/10/24

S= Satisfactory, U= Unsatisfactory  
Check one, if unsatisfactory please explain

# H&S Environmental, Inc.

## Low Flow/ Low Stress Groundwater Sampling Log

Project: NWS Earle Annual LTM  
 Location: C-16/20/17/50  
 Well ID: 16-MW-11

Date: 11/10/09  
 Sampler: JB, VL  
 PID: 0.10 ppm



Start Time: 1128 End Time: 1258  
 Well Construction: 2" PVC  
 Depth to Water: 2.82 (11/9) 2.85 (11/10)  
 Well Depth: 15.35  
 Water Column: 12.50  
 Total Volume Removed (L): 18.0  
 Dedicated Pump in Well?: Yes

### Field Testing Equipment

Make	Model	Serial #
YSI	556	E16092
L.M.H.C.	2020	5769-1205

Time (hh:mm)	Volume Removed (L)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm)	DO (mg/L)	ORP (mg/L)	Turbidity (NTU)	Color
1138	2.0	200	2.85	14.38	4.16	0.284	0.66	232.5	249	cloudy tan
1148	2.0		2.85	14.36	4.15	0.275	0.34	240.9	119	"
1158	2.0		2.85	14.38	4.16	0.267	0.21	249.9	74.5	"
1208	2.0		2.85	14.37	4.14	0.265	0.17	258.0	56.9	sl. tan
1218	2.0		2.85	14.40	4.17	0.260	0.14	263.0	43.1	"
1228	2.0		2.85	14.42	4.17	0.258	0.13	266.7	33.2	"
1238	2.0		2.85	14.45	4.17	0.257	0.11	271.3	25.8	"
1243	1.0		2.85	14.47	4.17	0.256	0.10	273.3	24.8	"
1248	1.0		2.85	14.51	4.17	0.255	0.10	276.0	19.8	clear
1253	1.0		2.85	14.53	4.18	0.255	0.10	276.7	18.8	"
1258	1.0	↓	2.85	14.52	4.18	0.255	0.11	277.2	18.4	"

Acceptance Criteria: <0.3ft 3% ±0.1 3% 10% 10% <10

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

### Sample Collection

Time	Sample ID	Container	# Bottles	Preservative	Analysis
1258	16-MW-11	40 mL CG	3	HCl	624 + MTBE
1258	"	1 L AG	2	—	625

### Comments

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

[Signature]  
 Signature

11/10/09  
 Date



## Monitoring Well Inspection Sheet

Project Site: NWS Early Annual LTM

Location: C-16/2017/50

Well ID: 16-MW-11

Date: 11/10/09

Inspector's Name: Jen Good

Time: 1125

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in place, legible?	✓		ID painted on stick-up
Well Security	Condition of protective case, cap and lock.	✓		
Well Pad	Concrete or gravel and condition	✓		
Well Seal	Condition of...	✓		
Area Immediately around well pad.	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition...	✓		
PVC Riser	Condition of riser and survey reference point	✓		

**Comments:**

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Signature: Jen Good

Date: 11/10/09

S= Satisfactory, U= Unsatisfactory  
Check one, if unsatisfactory please explain

# H&S Environmental, Inc.

## Low Flow/ Low Stress Groundwater Sampling Log

Project: NWS EWR Annual LTM  
 Location: C-16/20/17/150  
 Well ID: 16-MW-15

Date: 11/10/09  
 Sampler: JG, VL  
 PID: 0.0 ppm



Start Time: 1320 End Time: 1455  
 Well Construction: 2" PVC  
 Depth to Water: 3.67(11/4) 3.28(11/10)  
 Well Depth: 11.44  
 Water Column: 8.16  
 Total Volume Removed (L): 3.8  
 Dedicated Pump in Well?: Yes

### Field Testing Equipment

Make	Model	Serial #
YSI	556	E16092
LaMotte	2020	5769-1205

Time (hh:mm)	Volume Removed (L)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm)	DO (mg/L)	ORP (mg/L)	Turbidity (NTU)	Color
1340	0.8	40	3.50	15.35	5.03	0.154	6.98	243.7	34.2	Sl. Tan
1350	0.4	1	3.50	15.00	4.85	0.149	6.30	249.7	26.1	"
1400	0.4	1	3.50	14.85	4.72	0.147	4.78	258.0	18.2	Clear
1410	0.4	1	3.50	14.79	4.61	0.151	3.38	264.8	16.0	"
1420	0.4	1	3.50	14.75	4.55	0.150	2.34	267.5	11.8	"
1430	0.4	1	3.50	14.60	4.52	0.150	1.76	270.6	10.28	"
1440	0.4	1	3.50	14.46	4.50	0.151	1.10	273.5	9.15	"
1445	0.2	1	3.50	14.43	4.51	0.154	1.14	274.7	7.39	"
1450	0.2	1	3.50	14.41	4.50	0.151	1.05	275.4	7.18	"
1455	0.2	1	3.50	14.39	4.51	0.153	1.03	275.7	7.71	"

Acceptance Criteria: <0.3ft 3% ±0.1 3% 10% 10% <10

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

### Sample Collection

Time	Sample ID	Container	# Bottles	Preservative	Analysis
1455	16-MW-15	40 mL CG	3	HCl	624 + MTBE

### Comments

Field Blank (FB-2) collected @ 1530 for 624 + MTBE + 625

[Signature]  
 Signature

11/10/09  
 Date



### Monitoring Well Inspection Sheet

Project Site: NPS Earle Annual LTM

Location: C-16/2/17/50

Well ID: 16-MW-15

Date: 11/10/09

Inspector's Name: Len Good

Time: 1300

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in place, legible?	✓		well ID painted on stick-up
Well Security	Condition of protective case, cap and lock.	✓		
Well Pad	Concrete or gravel and condition	✓		
Well Seal	Condition of...	✓		
Area Immediately around well pad.	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition...	✓		
PVC Riser	Condition of riser and survey reference point	✓		

**Comments:**

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Signature: [Signature]

Date: 11/10/09

S= Satisfactory, U= Unsatisfactory  
Check one, if unsatisfactory please explain

# H&S Environmental, Inc.

## Low Flow/ Low Stress Groundwater Sampling Log

Project: NWS Ewle Annual LTM  
 Location: C-16/20/17/50  
 Well ID: 16-MW-24

Date: 11/9/09  
 Sampler: JB, VL  
 PID: 0.0 ppm



Start Time: 1535 End Time: 1635  
 Well Construction: 2" PVC  
 Depth to Water: 4.03  
 Well Depth: 16.78  
 Water Column: 12.75  
 Total Volume Removed (L): 14.4  
 Dedicated Pump in Well?: Yes

### Field Testing Equipment

Make	Model	Serial #
<u>YSI</u>	<u>556</u>	<u>OSD 2373</u>
<u>LaMotte</u>	<u>2020</u>	<u>5769-1205</u>

Time (hh:mm)	Volume Removed (L)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm)	DO (mg/L)	ORP (mg/L)	Turbidity (NTU)	Color
1545	2.4	240	3.92	13.48	5.50	0.107	2.60	407.2	65.3	SI tan
1555	2.4		3.92	13.33	5.04	0.106	0.75	432.1	23.4	"
1605	2.4		3.92	13.28	5.02	0.106	0.51	433.1	15.8	Clear
1610	1.2		3.92	13.23	5.01	0.105	0.40	433.9	11.4	"
1615	1.2		3.92	13.21	5.00	0.105	0.37	434.1	9.82	"
1620	1.2		3.92	13.18	5.00	0.105	0.35	434.3	8.75	"
1625	1.2		3.92	13.17	4.99	0.105	0.32	434.8	7.80	"
1630	1.2		3.92	13.17	4.99	0.105	0.31	434.7	7.65	"
1635	1.2	↓	3.92	13.18	4.99	0.105	0.32	434.7	7.22	"

Acceptance Criteria: <0.3ft      3%      ±0.1      3%      10%      10%      <10

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

### Sample Collection

Time	Sample ID	Container	# Bottles	Preservative	Analysis
1635	16-MW-24	40 mL CG	3	HCl	624 + MTBE

### Comments

Field blank (FB-1) collected @ 1700

[Signature]  
 Signature

11/9/09  
 Date



## Monitoring Well Inspection Sheet

Project Site: NWS Earle Annual LTM

Location: C-16/20/17/50

Well ID: 16-MW-24

Date: 11/9/09

Inspector's Name: Jan Good

Time: 1530

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in place, legible?	✓		Well ID painted in stick-up.
Well Security	Condition of protective case, cap and lock.	✓		
Well Pad	Concrete or gravel and condition	✓		
Well Seal	Condition of...	✓		
Area Immediately around well pad.	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition...	✓		
PVC Riser	Condition of riser and survey reference point	✓		

**Comments:**

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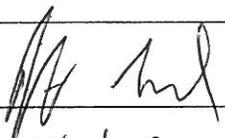
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Signature:   
 Date: 11/9/09

S= Satisfactory, U= Unsatisfactory  
 Check one, if unsatisfactory please explain

# H&S Environmental, Inc.

## Low Flow/ Low Stress Groundwater Sampling Log

Project: NWS Env Annual LTM  
 Location: C-16/20/17/50  
 Well ID: 16-MW-25

Date: 11/9/09  
 Sampler: JB, VL  
 PID: 0.0 ppm



Start Time: 1520 End Time: 1625  
 Well Construction: 2" PVC  
 Depth to Water: 6.58  
 Well Depth: 18.67  
 Water Column: 12.09  
 Total Volume Removed (L): 24.7  
 Dedicated Pump in Well?: Yes

### Field Testing Equipment

Make	Model	Serial #
YSI	556	E16092
LaMotte	2020	5769-1205

Time (hh:mm)	Volume Removed (L)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µs/cm) MS	DO (mg/L)	ORP (mg/L)	Turbidity (NTU)	Color
1530	3.8	380	6.02	14.09	3.69	0.091	0.78	233.0	57.8	SI tan
1540	3.8		6.02	13.90	3.75	0.083	1.40	238.9	23.4	"
1550	3.8		6.02	13.85	3.79	0.079	1.77	245.3	16.3	clear
1600	3.8		6.02	13.81	3.80	0.077	1.96	256.7	14.8	"
1610	3.8		6.02	13.77	3.83	0.075	2.06	269.7	14.4	"
1615	1.9		6.02	13.74	3.83	0.075	2.14	278.0	13.9	"
1620	1.9		6.02	13.72	3.83	0.075	2.19	285.7	13.5	"
1625	1.9	↓	6.02	13.70	3.84	0.074	2.26	290.4	13.3	"

Acceptance Criteria: <0.3ft 3% ±0.1 3% 10% 10% <10

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

### Sample Collection

Time	Sample ID	Container	# Bottles	Preservative	Analysis
1625	16-MW-25	40 mL CG	3	HCl	624 + MTBE

### Comments

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 Signature

11/9/09  
 Date



### Monitoring Well Inspection Sheet

Project Site: NWS Early Annual LTM

Location: C-16/20/17/50

Well ID: 16-MW-25

Date: 11/9/09

Inspector's Name: Jan Good

Time: 1515

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in place, legible?	✓		well ID printed on stick-up
Well Security	Condition of protective case, cap and lock.	✓		
Well Pad	Concrete or gravel and condition	✓		
Well Seal	Condition of...	✓		
Area Immediately around well pad.	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition...	✓		
PVC Riser	Condition of riser and survey reference point	✓		

**Comments:**

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Signature: [Signature]  
Date: 11/9/09

S= Satisfactory, U= Unsatisfactory  
Check one, if unsatisfactory please explain

# H&S Environmental, Inc.

## Low Flow/ Low Stress Groundwater Sampling Log

Project: NWS Eagle Annual LTM  
 Location: C-16/20/17/50  
 Well ID: 18-MW-01

Date: 11/10/09  
 Sampler: SG, VL  
 PID: 0.0 ppm



Start Time: 0720 End Time: 0805  
 Well Construction: 4" steel  
 Depth to Water: 9.26 (11/9) 8.92 (11/10)  
 Well Depth: 19.80  
 Water Column: 10.88  
 Total Volume Removed (L): 13.5  
 Dedicated Pump in Well?: Yes

### Field Testing Equipment

Make	Model	Serial #
YSI	556	E16092
LaMotte	2020	5769-1205

Time (hh:mm)	Volume Removed (L)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm) MS	DO (mg/L)	ORP (mg/L)	Turbidity (NTU)	Color
0730	3.0	300	9.10	16.27	5.28	0.074	4.52	156.4	39.9	Sl. Tan
0740	3.0		9.12	16.24	5.24	0.073	4.20	166.0	32.3	"
0750	3.0		9.12	16.18	5.22	0.074	3.89	176.1	32.2	"
0755	1.5		9.12	16.14	5.22	0.073	3.80	180.6	31.9	"
0800	1.5		9.12	16.20	5.21	0.072	3.74	183.7	32.4	"
0805	1.5	↓	9.12	16.10	5.22	0.074	3.67	183.9	32.2	"

Acceptance Criteria:                      <0.3ft                      3%                      ±0.1                      3%                      10%                      10%                      <10

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

### Sample Collection

Time	Sample ID	Container	# Bottles	Preservative	Analysis
0805	18-MW-01	40 mL CG	3	HCl	624 + MTBE
0805	"	1 L AG	2	—	625

### Comments

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[Signature]  
 Signature

11/10/09  
 Date



## Monitoring Well Inspection Sheet

Project Site: NWS ENR Annual LTM

Location: C-16/2017/50

Well ID: 18-MW-01

Date: 11/10/09

Inspector's Name: Len Good

Time: \_\_\_\_\_

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in place, legible?	✓		Well ID painted on flush mount
Well Security	Condition of protective case, cap and lock.	✓		
Well Pad	Concrete or gravel and condition	✓		Buried in grass, but in good condition
Well Seal	Condition of...	✓		
Area Immediately around well pad.	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition...	✓		
PVC Riser	Condition of riser and survey reference point	✓		

**Comments:**

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Signature:

Date: 11/10/09

S= Satisfactory, U= Unsatisfactory  
Check one, if unsatisfactory please explain



# H&S Environmental, Inc.

Surface Water and Sediment Sampling Log

Project: NWS Erie Annual LTM  
 Location: C-16/20/17/50  
 Sample Location ID: 16-SW-02

Date/Time: 11/10/09  
 Sampler: JB, VL



## Surface Water/Leachate Seep Information

Type of SW: <input checked="" type="checkbox"/> Stream <input type="checkbox"/> River <input type="checkbox"/> Seep			
Water Depth: <u>      </u>	Dissolved Oxygen (mg/L): <u>6.44</u>		
Velocity of Water: <u>      </u>	ORP (mV): <u>249.9</u>		
Temperature (C): <u>12.37</u>	Specific Conductance ( <sup>MS</sup> µS/cm): <u>0.078</u>		
pH (STD): <u>3.82</u>	Turbidity (NTU): <u>12.9</u>		
Sample Observations:		Field Testing Equipment:	
<input type="checkbox"/> Odor <u>None</u>	Make	Model	Serial #
<input type="checkbox"/> Color <u>Translucent orange tan</u>	<u>YSI</u>	<u>556</u>	<u>05D2373</u>
<input type="checkbox"/> Other	<u>LAMAR</u>	<u>2020</u>	<u>5769-1205</u>

## Sediment/Leachate Seep Sediment Information

Sediment Type: <input type="checkbox"/> Organic <input type="checkbox"/> Gravel <input type="checkbox"/> Clay <input type="checkbox"/> Silt <input type="checkbox"/> Sand <input type="checkbox"/> Other _____
Type of Sample Collected: <input type="checkbox"/> Discrete <input type="checkbox"/> Composite
Sample Observations:
<input type="checkbox"/> Odor
<input type="checkbox"/> Color
<input type="checkbox"/> Other

## Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
<u>16-SW-02</u>	<u>Erie</u>	<u>1510</u>	<u>SW</u>	<u>3</u>	<u>HCl</u>	<u>624+ MTBE</u>

Comments:

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Date: 2/17/10



**Groundwater Level Measurement Sheet**

Project Site: NWS Earle (Bioslurper)  
 Location: Colts Neck, NJ  
 Field Crew: Ryan Hagg, Jen Good

Water Level Meter: Solinst Interface Probe  
 Weather: Overcast, breezy ~ 35°F  
 Time of Low Tide: \_\_\_\_\_  
 Time of High Tide: N/A

Well ID	Time	Depth to Water (Ft.)	Total Depth of Well (Ft.)	Comments
100-mw-04	cannot	ACCESS DUE TO SNOW COVER		
100-mw-05	15:34	9.97	20.14	0 Depth to free product: 9.92
100-mw-08	15:38	11.10	19.43	0
100-mw-10	15:43	8.10	18.80	0
100-mw-11	15:55	2.07	15.30	0
100-mw-15	16:00	3.44	11.40	0
100-mw-24	16:11	3.90	16.00	0
100-mw-25	16:08	6.04	18.07	0
100-mw-01	16:30	8.40	20.90	0
				<del>0</del>
100-mw-02	15:45	5.90	16.81	0
100-mw-16	15:50	3.00	14.68	0
100-mw-17	15:52	3.85	12.80	0
<del>100</del> 29-mw-01	14:20	9.43	17.73	0
				PTD Reading

Signature: Ryan Hagg

Date: 2/17/10



# H&S Environmental, Inc.

## Low Flow/ Low Stress Groundwater Sampling Log

Project: NWS Park Only LTM  
 Location: C-17/20/16/50  
 Well ID: 16-MW-08

Date: 2/18/10  
 Sampler: JG, RH  
 PID: ---



Start Time: 1240 End Time: 1410  
 Well Construction: 2" PVC  
 Depth to Water: 11.10 (2/13) 10.71 (2/18)  
 Well Depth: 19.83  
 Water Column: 8.73  
 Total Volume Removed (L): 23.0  
 Dedicated Pump in Well?: YES

### Field Testing Equipment

Make	Model	Serial #
<u>YSI</u>	<u>554</u>	<u>08K100254</u>
<u>LaMotte</u>	<u>2020</u>	<u>5769-1025</u>

Time (hh:mm)	Volume Removed (L)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color
1250	3.0	300	11.15	10.45	4.99	0.056	0.36	221.7	56.5	Rusty. nany e
1300	3.0		11.15	10.81	4.79	0.048	0.23	242.6	292	"
1310	3.0		11.15	10.92	4.78	0.049	0.18	242.5	155	"
1320	3.0		11.15	11.15	4.95	0.053	0.15	231.0	86.4	Lt nany e
1330	3.0		11.15	11.14	4.92	0.063	0.18	221.1	67.0	"
1340	3.0		11.15	11.22	5.06	0.072	0.20	204.6	46.0	"
1350	3.0		11.15	11.17	5.18	0.087	0.20	185.3	34.3	"
1400	3.0		11.15	11.22	5.24	0.099	0.19	168.8	31.3	"
1405	1.5		11.15	11.22	5.25	0.104	0.19	165.0	28.4	"
1410	1.5		11.15	11.22	5.25	0.106	0.20	163.6	28.3	"

Acceptance Criteria: <0.3ft 3% ±0.1 3% 10% ± 10mv 10%

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

### Sample Collection

Time	Sample ID	Container	# Bottles	Preservative	Analysis
1410	16-MW-08	40 mL CG	3	HCl	624+MTBE
1410	"	1 L AG	2	---	625
0000	NWSF-DUP-01	40 mL CG	3	HCl	624+MTBE
000	"	1 L AG	2	---	625
1410	16-MW-08 MS/MSD	40 mL CG	3+2=6	HCl	624+MTBE
1410	"	1 L AG	2+2=4	---	625

### Comments

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 \_\_\_\_\_  
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 Signature

2/18/10  
 Date



## Monitoring Well Inspection Sheet

Project Site: NWS Earle      Location: C-17/20/16/50  
 Well ID: 16, MW-08      Date: 4/18/10  
 Inspector's Name: Len Good      Time: 1235

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in place, legible?	✓		
Well Security	Condition of protective case, cap and lock.	✓		
Well Pad	Concrete or gravel and condition	✓		
Well Seal	Condition of...	✓		
Area Immediately around well pad.	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition...	✓		
PVC Riser	Condition of riser and survey reference point	✓		

**Comments:**

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Signature: [Signature]  
 Date: 4/18/10

S= Satisfactory, U= Unsatisfactory  
 Check one, if unsatisfactory please explain

# H&S Environmental, Inc.

## Low Flow/ Low Stress Groundwater Sampling Log



Project: NWS Earle Drivly LTM  
 Location: C-17/12/16150  
 Well ID: 16-MW-10

Date: 2/18/10  
 Sampler: SG, RW  
 PID: \_\_\_\_\_

Start Time: 1420 End Time: 1605  
 Well Construction: 2" NC  
 Depth to Water: 8.11 (2/17) 8.01 (2/18)  
 Well Depth: 18.86  
 Water Column: 10.75  
 Total Volume Removed (L): 29.7  
 Dedicated Pump in Well?: Yes

### Field Testing Equipment

Make	Model	Serial #
<u>YSI</u>	<u>556</u>	<u>08K100254</u>
<u>LA MATE</u>	<u>2020</u>	<u>5769-1205</u>

Time (hh:mm)	Volume Removed (L)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color
1430	4.4	440	8.13	10.72	5.52	0.263	0.40	93.9	>1200	cloudy orange/brown
1440	4.4		8.13	11.18	5.55	0.286	0.31	77.0	>1200	"
1450	4.4	820	8.13	11.12	5.57	0.298	0.27	68.1	>1200	"
1500	2.2		8.08	10.79	5.55	0.301	0.24	66.4	>1200	"
1510	2.2		8.08	10.49	5.56	0.302	0.29	62.6	698	"
1520	2.2		8.08	10.48	5.56	0.303	0.38	73.0	648	"
1530	2.2		8.08	10.78	5.57	0.304	0.40	69.5	544	"
1540	2.2		8.08	11.10	5.59	0.311	0.38	65.2	457	cloudy tan
1550	2.2		8.08	10.57	5.56	0.317	0.31	83.8	532	"
1555	1.1		8.08	10.52	5.54	0.312	0.37	79.1	673	"
1600	1.1		8.08	10.51	5.55	0.314	0.57	78.1	698	"
1605	1.1		8.08	10.74	5.54	0.315	0.55	76.1	717	"

Acceptance Criteria: <0.3ft 3% ±0.1 3% 10% ± 10mv 10%

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

### Sample Collection

Time	Sample ID	Container	# Bottles	Preservative	Analysis
1605	16-MW-10	40 mL CG	3	HCl	624 + MTBE
	"	1 L AG	2	—	625

### Comments

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Signature

2/18/10  
 Date



## Monitoring Well Inspection Sheet

Project Site: NWS Bank      Location: C-17/20/16/50  
 Well ID: 16-MW-10      Date: 2/18/10  
 Inspector's Name: Ken Good      Time: \_\_\_\_\_

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in place, legible?	✓		
Well Security	Condition of protective case, cap and lock.	✓		
Well Pad	Concrete or gravel and condition	✓		
Well Seal	Condition of...	✓		
Area Immediately around well pad.	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition...	✓		
PVC Riser	Condition of riser and survey reference point	✓		

**Comments:**

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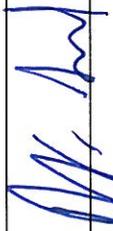
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Signature:   
 Date: 2/18/10

S= Satisfactory, U= Unsatisfactory  
 Check one, if unsatisfactory please explain

# H&S Environmental, Inc.

## Low Flow/ Low Stress Groundwater Sampling Log

Project: NWS Fenc Offly LTM  
 Location: C-17/20/16/50  
 Well ID: 16-MW-11

Date: 2/18/10  
 Sampler: JF, KH  
 PID: ~~AS 111~~



Start Time: 1055 End Time: 1200  
 Well Construction: 2" PVC  
 Depth to Water: 2.67 (2/17) 2.60 (2/18)  
 Well Depth: 15.30  
 Water Column: 12.63  
 Total Volume Removed (L): 19.5  
 Dedicated Pump in Well?: Yes

### Field Testing Equipment

Make	Model	Serial #
YSI	556	08K100254
LaMotte	2020	5769-125

Time (hh:mm)	Volume Removed (L)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color
1105	3.0	300	2.61	9.16	4.32	0.232	0.44	327.4	22.9	cloudy tan
1115	3.0		2.61	9.19	4.32	0.235	0.22	327.9	73.4	"
1125	3.0		2.61	9.14	4.33	0.226	0.19	327.3	44.4	lt tan
1135	3.0		2.61	9.37	4.32	0.226	0.19	327.0	32.8	"
1145	3.0		2.61	9.24	4.32	0.221	0.15	325.8	18.8	clear
1156	1.5		2.61	9.23	4.32	0.222	0.14	325.1	19.4	"
1155	1.5		2.61	9.23	4.32	0.218	0.14	324.8	15.2	"
1200	1.5		2.61	9.22	4.32	0.218	0.13	324.6	15.8	"

Acceptance Criteria: <0.3ft 3% ±0.1 3% 10% ± 10mv 10%

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

### Sample Collection

Time	Sample ID	Container	# Bottles	Preservative	Analysis
1200	16-MW-11	43 mL CG	3	HCl	8267 621 mmbE
	"	1 L AG	2	—	6025

### Comments

\_\_\_\_\_  
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Signature

2/18/10  
 Date



## Monitoring Well Inspection Sheet

Project Site: NWS ENK      Location: C-17/20/16/50  
 Well ID: 16-MW-11      Date: 2/18/10  
 Inspector's Name: Jen Good      Time: 1:55

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in place, legible?	✓		
Well Security	Condition of protective case, cap and lock.	✓		
Well Pad	Concrete or gravel and condition	✓		
Well Seal	Condition of...	✓		
Area Immediately around well pad.	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition...	✓		
PVC Riser	Condition of riser and survey reference point	✓		

**Comments:**

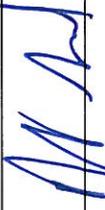
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Signature:   
 Date: 2/18/10

S= Satisfactory, U= Unsatisfactory  
 Check one, if unsatisfactory please explain

# H&S Environmental, Inc.

## Low Flow/ Low Stress Groundwater Sampling Log

Project: NWS Eagle Wtly LPM  
 Location: C-19/20/14/50  
 Well ID: 16-MW-15

Date: 2/18/10  
 Sampler: JL, RH  
 PID: ~~2011~~



Start Time: 0935 End Time: 1045  
 Well Construction: 1/2" PVC  
 Depth to Water: 3.44 (2/17) 3.10 (2/18)  
 Well Depth: 11.40  
 Water Column: 7.96  
 Total Volume Removed (L): ~3.2  
 Dedicated Pump in Well?: YES

### Field Testing Equipment

Make	Model	Serial #
YSI	556	08K100254
LaMotte	2020	5769-1205

Time (hh:mm)	Volume Removed (L)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color
0955	0.90	45	3.31	7.08	4.95	0.114	7.94	252.4	18.4	51, cloudy white
1005	0.90		3.30	7.12	4.80	0.114	5.61	289.6	13.1	"
0025	0.45		3.28	7.26	4.71	0.113	3.36	310.8	8.33	Clear
0035	0.45		3.28	7.16	4.67	0.113	2.85	316.4	7.20	"
1040	0.225		3.28	7.16	4.68	0.111	2.86	37.8	7.62	"
1045	0.225		3.28	7.09	4.69	0.113	2.77	37.8	7.52	"

Acceptance Criteria: <0.3ft      3%      ±0.1      3%      10%      ± 10mv      10%

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

### Sample Collection

Time	Sample ID	Container	# Bottles	Preservative	Analysis
1045	16-MW-15	40 ml CG	3	HCl	<del>2262</del> 624+MTBE

### Comments

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Signature

2/18/10  
 Date



## Monitoring Well Inspection Sheet

Project Site: NWS ESK      Location: C-17/10/16/50  
 Well ID: 16-MW-15      Date: 2/18/10  
 Inspector's Name: Zen Good      Time: 0930

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in place, legible?	✓		
Well Security	Condition of protective case, cap and lock.	✓		
Well Pad	Concrete or gravel and condition	✓		
Well Seal	Condition of...	✓		
Area Immediately around well pad.	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition...	✓		
PVC Riser	Condition of riser and survey reference point	✓		

**Comments:**

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Signature:   
 Date: 2/18/10

S= Satisfactory, U= Unsatisfactory  
 Check one, if unsatisfactory please explain

# H&S Environmental, Inc.

## Low Flow/ Low Stress Groundwater Sampling Log

Project: NWS Earle Qtrly LTM  
 Location: C-17/20/16/50  
 Well ID: 16-MW-24

Date: 2/18/10  
 Sampler: JG, RH  
 PID: \_\_\_\_\_



Start Time: 0855 End Time: 0855  
 Well Construction: 2" PVC  
 Depth to Water: 3.70 (2/17) 3.50 (2/18)  
 Well Depth: 16.50  
 Water Column: 12.90  
 Total Volume Removed (L): 22.2  
 Dedicated Pump in Well?: Yes

### Field Testing Equipment

Make	Model	Serial #
YSI	556	08K100254
LaMotte	220	5769-1205

Time (hh:mm)	Volume Removed (L)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color
0805	3.7	370	3.85	8.94	4.96	0.067	1.60	95.0	73.0	lt tan
0815	3.7		3.85	8.57	4.99	0.060	0.35	135.7	28.4	"
0825	3.7		3.85	8.61	5.06	0.054	0.34	130.3	19.4	Clear
0835	3.7		3.85	8.57	5.01	0.062	0.32	139.0	11.5	"
0845	3.7		3.85	8.71	5.04	0.059	0.29	145.1	11.8	"
0850	1.85		3.85	8.65	5.05	0.060	0.28	148.1	11.8	"
0855	1.85		3.85	8.70	5.1	0.058	0.28	149.0	11.3	"

Acceptance Criteria: <0.3ft 3% ±0.1 3% 10% ± 10mv 10%

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

### Sample Collection

Time	Sample ID	Container	# Bottles	Preservative	Analysis
0855	16-MW-24	CG	3	HCl	<del>624</del> 624 + MTBE

### Comments

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[Signature]  
 Signature

2/18/10  
 Date



## Monitoring Well Inspection Sheet

Project Site: NWS EARLE      Location: C-17/20/16/50  
 Well ID: 16-MW-24      Date: 2/18/10  
 Inspector's Name: Jan Good      Time: 0750

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in place, legible?	✓		
Well Security	Condition of protective case, cap and lock.	✓		
Well Pad	Concrete or gravel and condition	✓		
Well Seal	Condition of...	✓		
Area Immediately around well pad.	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition...	✓		
PVC Riser	Condition of riser and survey reference point	✓		

**Comments:**

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Signature: [Signature]  
 Date: 2/18/10

S= Satisfactory, U= Unsatisfactory  
 Check one, if unsatisfactory please explain

# H&S Environmental, Inc.

## Low Flow/ Low Stress Groundwater Sampling Log

Project: NWS Exite Drily LTM  
 Location: C-17/20/14/50  
 Well ID: 16-MW-25

Date: 2/18/10  
 Sampler: RG, RH  
 PID: —



Start Time: 0820 End Time: 0915  
 Well Construction: 2" PVC  
 Depth to Water: 6.04 (2/17) 5.85 (2/18)  
 Well Depth: 18.67  
 Water Column: 12.63  
 Total Volume Removed (L): 13.75  
 Dedicated Pump in Well?: Yes

### Field Testing Equipment

Make	Model	Serial #
YSI	556	09M101017
LaMotte	2020	5769-1205

Time (hh:mm)	Volume Removed (L)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color
0830	2.5	250	5.87	6.89	3.74	0.062	2.30	304.7	49.5	cloudy tan
0840	2.5		5.87	7.20	3.76	0.056	1.81	333.8	21.9	ft tan
0850	2.5		5.87	7.31	3.75	0.056	1.56	348.7	16.1	"
0900	2.5		5.87	7.50	3.74	0.056	1.33	361.3	10.38	clear
0905	1.25		5.87	7.64	3.74	0.056	1.30	365.5	8.51	"
0910	1.25		5.87	7.54	3.74	0.056	1.24	368.3	6.63	"
0915	1.25		5.87	7.53	3.74	0.056	1.22	368.1	6.91	"

Acceptance Criteria: <0.3ft 3% ±0.1 3% 10% ± 10mv 10%

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

### Sample Collection

Time	Sample ID	Container	# Bottles	Preservative	Analysis
0915	16-MW-25	40 mL CG	3	HCl	<del>82628</del> 624 + MTBE

### Comments

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 \_\_\_\_\_

Signature

2/18/10  
 Date



## Monitoring Well Inspection Sheet

Project Site: NWS Ewh      Location: G-17/70/16/50  
 Well ID: 16-MW-29      Date: 2/18/10  
 Inspector's Name: Yu Good      Time: 0815

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in place, legible?	✓		
Well Security	Condition of protective case, cap and lock.	✓		
Well Pad	Concrete or gravel and condition	✓		
Well Seal	Condition of...	✓		
Area Immediately around well pad.	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition...	✓		
PVC Riser	Condition of riser and survey reference point	✓		Need to replace tubing to bladder pump - cannot change now because connections frozen

**Comments:**

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Signature: AP Ad

Date: 2/18/10

S= Satisfactory, U= Unsatisfactory  
 Check one, if unsatisfactory please explain

# H&S Environmental, Inc.

## Low Flow/ Low Stress Groundwater Sampling Log

Project: NWS Earle Arky LPM  
 Location: C-17/20/16/50  
 Well ID: 18-MW-01

Date: 2/18/10  
 Sampler: JB, RH  
 PID: \_\_\_\_\_



Start Time: 1417 End Time: \_\_\_\_\_  
 Well Construction: 4" steel  
 Depth to Water: 8.40 (2/17) 8.07 (2/18)  
 Well Depth: 20.90  
 Water Column: 12.50  
 Total Volume Removed (L): 13.5  
 Dedicated Pump in Well?: Yes

### Field Testing Equipment

Make	Model	Serial #
YSI	556	08K100254
LaMotte	7020	5769-1205

Time (hh:mm)	Volume Removed (L)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color
1427	3.0	300	8.34	11.23	5.64	0.069	3.37	158.1	21.5	clear
1437	3.0		8.36	11.34	5.62	0.070	2.45	183.2	17.8	"
1447	3.0		8.36	11.39	5.62	0.070	2.47	191.9	16.0	"
1452	1.5		8.36	11.25	5.62	0.070	2.38	193.8	15.5	"
1457	1.5		8.36	11.22	5.62	0.070	2.28	192.3	15.5	"
1702	1.5		8.36	11.26	5.62	0.071	2.30	194.9	14.4	"

Acceptance Criteria: <0.3ft      3%      ±0.1      3%      10%      ± 10mv      10%

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

### Sample Collection

Time	Sample ID	Container	# Bottles	Preservative	Analysis
17:02	18-MW-01	40 mL CG	3	HCl	624 + MTBE
"	"	1 L AG	2	—	625

### Comments

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 Signature

2/18/10  
 Date



## Monitoring Well Inspection Sheet

Project Site: Alms Enk Only LTM Location: C-17/20/10/50

Well ID: 18-MW-01 Date: 2/18/12

Inspector's Name: Jim Good Time: 14/5

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in place, legible?	✓		
Well Security	Condition of protective case, cap and lock.	✓		
Well Pad	Concrete or gravel and condition	✓		
Well Seal	Condition of...	✓		
Area Immediately around well pad.	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition...	✓		
PVC Riser	Condition of riser and survey reference point	✓		

Comments:

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Signature: [Signature]

Date: 2/18/12

S= Satisfactory, U= Unsatisfactory  
Check one, if unsatisfactory please explain

# H&S Environmental, Inc.

Surface Water and Sediment Sampling Log

Project: NWS Ewic QHly LTM  
 Location: C-17/20/16/50  
 Sample Location ID: 16-SW-01

Date/Time: 2/18/10  
 Sampler: St. Pitt



## Surface Water/Leachate Seep Information

Type of SW:  Stream    ( ) River    ( ) Seep

Water Depth: <u>    </u>	Dissolved Oxygen (mg/L): <u>7.97</u>
Velocity of Water: <u>    </u>	ORP (mV): <u>304.6</u>
Temperature (C): <u>1.50</u>	Specific Conductance (µS/cm): <u>0.078</u>
pH (STD): <u>3.74</u>	Turbidity (NTU): <u>2.08</u>

Sample Observations: ( ) Odor None    ( ) Color Clear    ( ) Other     

Field Testing Equipment:

	Make	Model	Serial #
( ) Odor	<u>YSI</u>	<u>556</u>	<u>09M101017</u>
( ) Color	<u>LAMBDA</u>	<u>2020</u>	<u>5769-1205</u>

## Sediment/Leachate Seep Sediment Information

Sediment Type: ( ) Organic    ( ) Gravel    ( ) Clay    ( ) Silt    ( ) Sand    ( ) Other     

Type of Sample Collected: ( ) Discrete    ( ) Composite

Sample Observations: ( ) Odor    ( ) Color    ( ) Other

## Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
<u>16-SW-01</u>		<u>1000</u>	<u>SW</u>	<u>3</u>	<u>HCl</u>	<u>624 + MTBE</u>

Comments:

# H&S Environmental, Inc.

Surface Water and Sediment Sampling Log

Project: NWS Earle dtyly LTM

Date/Time: 2/18/10

Location: C-17/20/16/50

Sampler: JG, FH

Sample Location ID: 16-SW-02



## Surface Water/Leachate Seep Information

Type of SW: <input checked="" type="checkbox"/> Stream <input type="checkbox"/> River <input type="checkbox"/> Seep			
Water Depth: <u>    </u>	Dissolved Oxygen (mg/L): <u>6.94</u>		
Velocity of Water: <u>    </u>	ORP (mV): <u>296.1</u>		
Temperature (C): <u>3.60</u>	Specific Conductance ( $\mu$ S/cm): <u>0.082</u>		
pH (STD): <u>3.56</u>	Turbidity (NTU): <u>1.64</u>		
Sample Observations:		Field Testing Equipment:	
<input type="checkbox"/> Odor <u>NONE</u>	Make	Model	Serial #
<input type="checkbox"/> Color <u>clear</u>	<u>YSE</u>	<u>556</u>	<u>09M101017</u>
<input type="checkbox"/> Other	<u>LaMotte</u>	<u>2020</u>	<u>5769-1205</u>

## Sediment/Leachate Seep Sediment Information

Sediment Type: <input type="checkbox"/> Organic <input type="checkbox"/> Gravel <input type="checkbox"/> Clay <input type="checkbox"/> Silt <input type="checkbox"/> Sand <input type="checkbox"/> Other <u>    </u>
Type of Sample Collected: <input type="checkbox"/> Discrete <input type="checkbox"/> Composite
Sample Observations:
<input type="checkbox"/> Odor
<input type="checkbox"/> Color
<input type="checkbox"/> Other

## Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
<u>16-SW-02</u>		<u>1005</u>	<u>SW</u>	<u>3</u>	<u>HCl</u>	<u>624 + MTBE</u>

Comments:

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## Monitoring Well Inspection Sheet

Project Site: NWS Earle Biosloper      Location: Colts Neck, NJ

Well ID: 16MW-08      Date: 5/3/2010

Inspector's Name: Stacy Lee      Time: \_\_\_\_\_

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in place, legible?	✓		
Well Security	Condition of protective case, cap and lock.	✓		
Well Pad	Concrete or gravel and condition	✓		
Well Seal	Condition of...	✓		
Area Immediately around well pad.	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition...	✓		
PVC Riser	Condition of riser and survey reference point	✓		

**Comments:**

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Signature: Stacy Lee  
 Date: 5/3/10

S= Satisfactory, U= Unsatisfactory  
 Check one, if unsatisfactory please explain

# H&S Environmental, Inc.

## Low Flow/ Low Stress Groundwater Sampling Log

Project: NWS Earle Bioslopper  
 Location: Colts Neck, NJ  
 Well ID: 16MW-10

Date: 5/3/10  
 Sampler: JG, SL  
 PID: \_\_\_\_\_



Start Time: 1600 End Time: 1805  
 Well Construction: 2" PVC  
 Depth to Water: 7.51  
 Well Depth: 18.90  
 Water Column: 11.39  
 Total Volume Removed (L): ~65L  
 Dedicated Pump in Well?: Yes

### Field Testing Equipment

Make	Model	Serial #
YSI	SS4	0904101017
LaMotte	2020	5769-1205

Time (hh:mm)	Volume Removed (L)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color
1610	4.8	480	7.65	12.93	6.77	0.358	1.28	10.7	2120	cloudy
1620	4.8		7.65	13.01	6.77	0.354	1.17	10.4	2120	"
1630	4.8		7.65	13.01	6.77	0.358	0.98	10.3	2120	"
1640	4.8		7.65	12.85	6.78	0.360	1.04	10.0	2120	"
1650	4.8		7.65	13.28	6.72	0.362	1.18	11.9	738	"
1700	4.8		7.65	13.30	6.65	0.363	1.21	17.0	570	"
1710	4.8		7.65	13.17	6.68	0.361	1.23	14.1	458	"
1720	4.8		7.65	12.83	6.70	0.367	1.12	12.9	354	"
1730	4.8		7.65	12.80	6.69	0.365	1.20	13.6	231	"
1740	4.8		7.45	12.72	6.51	0.365	1.19	25.6	188	"
1750	4.8		7.65	12.73	6.47	0.365	1.17	27.4	159	"
1800	4.8		7.65	12.58	6.44	0.365	1.22	29.9	110	"

Acceptance Criteria: <0.3ft 3% ±0.1 3% 10% ± 10mv 10%

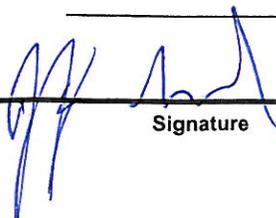
2" Screen Volume = 0.163 gal/ft or 616 ml per foot

### Sample Collection

Time	Sample ID	Container	# Bottles	Preservative	Analysis
1805	16MW-10	40ml VOA	3	HCL	604 + MTBE
"	"	1L Amber	2	NONE	605

### Comments

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 Signature

5/3/10  
 Date





## Monitoring Well Inspection Sheet

Project Site: NWS Earle BioSuper

Location: Cotts Neck, NJ

Well ID: 16MW-10

Date: 5/3/10

Inspector's Name: Sachy Lee

Time: \_\_\_\_\_

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in place, legible?	✓		
Well Security	Condition of protective case, cap and lock.	✓		
Well Pad	Concrete or gravel and condition	✓		
Well Seal	Condition of...	✓		
Area Immediately around well pad.	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition...	✓		
PVC Riser	Condition of riser and survey reference point	✓		

**Comments:**

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Signature: Sachy Lee

Date: 5/3/10

S= Satisfactory, U= Unsatisfactory  
Check one, if unsatisfactory please explain

# H&S Environmental, Inc.

## Low Flow/ Low Stress Groundwater Sampling Log

Project: NWS Earle Bioslopper  
 Location: Colts Neck, NJ  
 Well ID: 16MW-11

Date: 5/4/10  
 Sampler: JL SL  
 PID: \_\_\_\_\_



Start Time: 0740 End Time: 0850  
 Well Construction: 2" PVC  
 Depth to Water: 2.55  
 Well Depth: 15.30  
 Water Column: 12.75  
 Total Volume Removed (L): 32 L  
 Dedicated Pump in Well?: Yes

### Field Testing Equipment

Make	Model	Serial #
YSI	556	09M101017
LaMotte	2020	5769-1205

Time (hh:mm)	Volume Removed (L)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm) mS	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color
0750	4.6	460	2.62	11.00	6.08	0.375	1.23	55.9	267	cloudy tan
0800	4.6		2.62	10.99	6.23	0.374	0.76	47.5	107.2	"
0810	4.6		2.62	11.00	6.23	0.370	0.49	46.4	47.0	sl. cloudy
0820	4.6		2.62	10.92	6.21	0.362	0.52	43.5	33.1	"
0830	4.6		2.62	11.00	6.24	0.361	0.57	42.6	18.2	clear
0840	4.6		2.62	11.04	6.24	0.356	0.56	40.5	10.31	clear
0845	2.3		2.62	11.01	6.21	0.354	0.55	40.7	12.88	"
0850	2.3		2.62	11.00	6.19	0.354	0.53	41.1	9.38	"

Acceptance Criteria: <0.3ft 3% ±0.1 3% 10% ± 10mv 10%

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

### Sample Collection

Time	Sample ID	Container	# Bottles	Preservative	Analysis
0850	16MW-11	40ml Jca	3	HCL	624 + MTBE
0850	" "	1L Amber	2	NONE	625

### Comments

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[Signature]  
 Signature

5/4/10  
 Date

Field Blank (FB-02) collected @ 0830 hr 624 + MTBE + 625



## Monitoring Well Inspection Sheet

Project Site: NWS Earle Biosphere      Location: Colts Neck, NJ

Well ID: 16MW-11      Date: 5/4/10

Inspector's Name: Stacy Lee      Time: 07:30

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in place, legible?	✓		
Well Security	Condition of protective case, cap and lock.	✓		
Well Pad	Concrete or gravel and condition	✓		
Well Seal	Condition of...	✓		
Area Immediately around well pad.	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition...	✓		
PVC Riser	Condition of riser and survey reference point	✓		

**Comments:**

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Signature: Stacy Lee  
 Date: 5/4/10

S= Satisfactory, U= Unsatisfactory  
 Check one, if unsatisfactory please explain

# H&S Environmental, Inc.

## Low Flow/ Low Stress Groundwater Sampling Log

Project: NWS Earle Biosloped  
 Location: Cotts Neck, NJ  
 Well ID: 16MW-15

Date: 5/4/10  
 Sampler: SR, SL  
 PID:       



Start Time: 0904 End Time: 1004  
 Well Construction: 1" PVC  
 Depth to Water: 3.44  
 Well Depth: 11.40  
 Water Column: 7.96  
 Total Volume Removed (L): 3.0L  
 Dedicated Pump in Well?: Yes

### Field Testing Equipment

Make	Model	Serial #
YSI	5560	09M101017
LaMotte	2020	5769-1205

Time (hh:mm)	Volume Removed (L)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm) m5	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color
0924	0.0	50	3.35	14.80	5.58	0.180	3.74	68.2	12.1	Clear
0934	0.5		3.31	15.02	5.50	0.174	1.91	71.7	12.3	"
0944	0.5		3.31	15.16	5.42	0.171	0.88	77.3	13.1	"
0954	0.5		3.31	15.88	5.36	0.169	0.55	81.8	12.0	"
0959	0.25		3.31	16.20	5.32	0.166	0.53	83.0	11.1	"
1004	0.25		3.31	16.35	5.33	0.170	0.53	83.0	10.48	"

Acceptance Criteria:                      <0.3ft                      3%                      ±0.1                      3%                      10%                      ± 10mv                      10%

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

### Sample Collection

Time	Sample ID	Container	# Bottles	Preservative	Analysis
1004	16MW-15	40ml Joca	3	HCl	604 + MTBE
1004	" "	1L Amber	2	None	625

### Comments

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

[Signature]  
 \_\_\_\_\_  
 Signature

5/4/10  
 \_\_\_\_\_  
 Date



## Monitoring Well Inspection Sheet

Project Site: NWS Earle BioSuper      Location: Colts Neck, NJ  
 Well ID: 16MW-15      Date: 5/4/10  
 Inspector's Name: Stacy Lee      Time: 0900

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in place, legible?	✓		
Well Security	Condition of protective case, cap and lock.	✓		
Well Pad	Concrete or gravel and condition	✓		
Well Seal	Condition of...	✓		
Area Immediately around well pad.	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition...	✓		
PVC Riser	Condition of riser and survey reference point	✓		

**Comments:**

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Signature: [Signature]  
 Date: 5/4/10

S= Satisfactory, U= Unsatisfactory  
 Check one, if unsatisfactory please explain

# H&S Environmental, Inc.

## Low Flow/ Low Stress Groundwater Sampling Log

Project: NWS Earle Bioslopper  
 Location: Cotts Neck, NJ  
 Well ID: 16MW-24

Date: 5/4/10  
 Sampler: R.S.  
 PID:                     



Start Time: 1025 End Time: 1130  
 Well Construction: 2" PVC  
 Depth to Water: 4.11  
 Well Depth: 16.70  
 Water Column: 12.59  
 Total Volume Removed (L): 27.3 L  
 Dedicated Pump in Well?: Yes

### Field Testing Equipment

Make	Model	Serial #
YSI	556	09M101217
LaMotte	2020	5769-1205

Time (hh:mm)	Volume Removed (L)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (#S/cm) MS	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color
1035	0.05	65	3.88	14.19	6.29	0.089	1.82	53.2	32.5	sl. cloudy
1045	0.05	130	3.88	13.47	6.43	0.087	1.43	47.8	19.4	"
1055	1.3	130	3.88	13.74	6.43	0.088	1.09	45.2	45.2	clear
1105	1.3		3.88	13.51	6.52	0.085	0.78	38.6	7.15	"
1115	1.3		3.88	13.28	6.57	0.086	0.72	36.3	7.98	"
1120	0.65		3.88	12.94	6.58	0.089	0.63	36.4	8.53	"
1125	0.65		3.88	12.83	6.60	0.089	0.64	35.4	7.03	"
1130	0.65		3.88	12.69	6.59	0.088	0.59	36.0	6.49	"

Acceptance Criteria:                      <0.3ft                      3%                      ±0.1                      3%                      10%                      ± 10mv                      10%

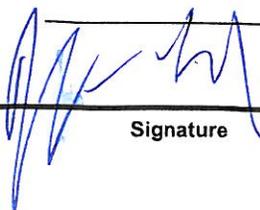
2" Screen Volume = 0.163 gal/ft or 616 ml per foot

### Sample Collection

Time	Sample ID	Container	# Bottles	Preservative	Analysis
1130	16MW-24	40mL	3	HCL	624 + MTBE
1130	" "	1L Amber	2	NONE	625

### Comments

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

  
 \_\_\_\_\_  
 Signature

5/4/10  
 \_\_\_\_\_  
 Date



## Monitoring Well Inspection Sheet

Project Site: W'S Earle Biosloper      Location: Colts Neck, NJ

Well ID: 16MW-24      Date: 5/4/10

Inspector's Name: Stacey Lee      Time: 1020

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in place, legible?	✓		
Well Security	Condition of protective case, cap and lock.	✓		
Well Pad	Concrete or gravel and condition	✓		
Well Seal	Condition of...	✓		
Area Immediately around well pad.	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition...	✓		
PVC Riser	Condition of riser and survey reference point	✓		

**Comments:**

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Signature: Stacey Lee  
 Date: 5/4/10

S= Satisfactory, U= Unsatisfactory  
 Check one, if unsatisfactory please explain

# H&S Environmental, Inc.

Low Flow/ Low Stress Groundwater Sampling Log

Project: NWS Earle Bioslurper  
 Location: Colts Neck, NJ  
 Well ID: 16MW-25

Date: 5/4/10  
 Sampler: JF SL  
 PID: \_\_\_\_\_



Start Time: 1140 End Time: 1225  
 Well Construction: 2" PVC  
 Depth to Water: 5.92  
 Well Depth: 18.64  
 Water Column: 12.72  
 Total Volume Removed (L): 22.5L  
 Dedicated Pump in Well?: Y15

### Field Testing Equipment

Make	Model	Serial #
VSI	556	5769-1205
LaMotte	2020	09M001017

Time (hh:mm)	Volume Removed (L)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color
1150	5.0	500	5.92	10.74	5.76	0.068	2.59	72.2	41.8	cloudy tan
1200	5.0		5.92	10.65	5.72	0.070	2.15	74.7	17.5	Clear
1210	5.0		5.92	10.59	5.72	0.072	2.07	74.5	11.5	"
1215	2.5		5.92	10.51	5.40	0.073	2.05	81.0	87.8	"
1220	2.5		5.92	10.53	5.35	0.073	2.14	83.9	7.23	"
1225	2.5		5.92	10.48	5.36	0.073	2.16	84.9	5.49	"

Acceptance Criteria: <0.3ft 3% ±0.1 3% 10% ± 10mv 10%

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

### Sample Collection

Time	Sample ID	Container	# Bottles	Preservative	Analysis
1225	16MW-25	40mL Jaa	3	HCL	604 + MTBE
1225	" "	16 Amber	2	NONE	625

### Comments

\_\_\_\_\_  
 \_\_\_\_\_

Signature

5/4/10

Date



## Monitoring Well Inspection Sheet

Project Site: Alus Earle BioSperer      Location: Colts Neck, NJ  
 Well ID: 16MW-25      Date: 5/4/10  
 Inspector's Name: Stacey Lee      Time: 1130

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in place, legible?	✓		
Well Security	Condition of protective case, cap and lock.	✓		
Well Pad	Concrete or gravel and condition	✓		
Well Seal	Condition of...	✓		
Area Immediately around well pad.	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition...	✓		
PVC Riser	Condition of riser and survey reference point	✓		

**Comments:**

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Signature: Stacey Lee  
 Date: 5/4/10

S= Satisfactory, U= Unsatisfactory  
 Check one, if unsatisfactory please explain

# H&S Environmental, Inc.

## Low Flow/ Low Stress Groundwater Sampling Log

Project: NWS Fork BioSlurper  
 Location: Cotts Neck, NJ  
 Well ID: 18MW-01

Date: 5/4/10  
 Sampler: SB, SL  
 PID: \_\_\_\_\_



Start Time: 1435 End Time: 1525  
 Well Construction: 4" steel  
 Depth to Water: 7.25  
 Well Depth: 2000  
 Water Column: 12.75  
 Total Volume Removed (L): 214.0 L  
 Dedicated Pump in Well?: Yes

### Field Testing Equipment

Make	Model	Serial #
YSI	556	09M101017
LaMotte	2020	5769-1205

Time (hh:mm)	Volume Removed (L)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µg/cm³) m5	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color
1445	2.8	280	7.23	12.26	5.56	0.080	5.03	8.0	52.4	Cloudy wh.
1455	2.8		7.31	12.18	6.40	0.081	4.54	33.6	48.5	"
1505	2.8		7.31	12.16	6.34	0.080	4.53	37.2	45.8	"
1515	2.8		7.31	12.20	6.35	0.082	4.38	38.2	44.1	"
1520	1.4		7.31	12.20	6.27	0.081	4.44	41.8	41.9	"
1525	1.4		7.31	12.25	6.29	0.081	4.52	40.7	43.8	"

Acceptance Criteria: <0.3ft      3%      ±0.1      3%      10%      ± 10mv      10%

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

### Sample Collection

Time	Sample ID	Container	# Bottles	Preservative	Analysis
1525	18MW-01	40ml VOC	3	HCL	604 + MTBE
1525	" "	1L Amber	2	NONE	605

### Comments

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

[Signature]  
 Signature

5/4/10  
 Date



## Monitoring Well Inspection Sheet

Project Site: NWS Earle Biosphere      Location: Colts Neck, NJ

Well ID: 18mw-D1      Date: 5/14/10

Inspector's Name: Stawfhee      Time: 1430

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in place, legible?	✓		
Well Security	Condition of protective case, cap and lock.	✓		
Well Pad	Concrete or gravel and condition	✓		
Well Seal	Condition of...	✓		
Area Immediately around well pad.	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition...	✓		
PVC Riser	Condition of riser and survey reference point	✓		

**Comments:**

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Signature: Stawfhee

Date: 5/14/10

S= Satisfactory, U= Unsatisfactory  
Check one, if unsatisfactory please explain

# H&S Environmental, Inc.

## Surface Water and Sediment Sampling Log

Project: NWS Earle Biosloper  
 Location: Cotts Neck, NJ  
 Sample Location ID: 16SW-01

Date/Time: 5/4/10  
 Sampler: JR, SL



### Surface Water/Leachate Seep Information

Type of SW: <input checked="" type="checkbox"/> Stream    ( ) River    ( ) Seep			
Water Depth: <u>—</u>	Dissolved Oxygen (mg/L): <u>4.63</u>		
Velocity of Water: <u>—</u>	ORP (mV): <u>150.8</u>		
Temperature (C): <u>19.87</u>	Specific Conductance ( <sup>MS</sup> µS/cm): <u>0.139</u>		
pH (STD): <u>3.92</u>	Turbidity (NTU): <u>21.9</u>		
<b>Sample Observations:</b>		<b>Field Testing Equipment:</b>	
<input checked="" type="checkbox"/> Odor <u>None</u>	Make	Model	Serial #
<input checked="" type="checkbox"/> Color <u>lt. Auburn</u>	<u>YSI</u>	<u>556</u>	<u>09M101017</u>
<input type="checkbox"/> Other	<u>Lamtec</u>	<u>2020</u>	<u>5769-1205</u>

### Sediment/Leachate Seep Sediment Information

Sediment Type: ( ) Organic    ( ) Gravel    ( ) Clay    ( ) Silt    ( ) Sand    ( ) Other \_\_\_\_\_

Type of Sample Collected: ( ) Discrete    ( ) Composite

Sample Observations:

( ) Odor

( ) Color

( ) Other

### Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
<u>16SW-01</u>	<u>E. of RR tracks</u>	<u>1210</u>	<u>SW</u>	<u>3</u>	<u>HCl</u>	<u>624+MTBE</u>

Comments:



## Monitoring Well Inspection Sheet

Project Site: NWS Earle Bioslurper      Location: Colts Neck NJ  
 Well ID: 16SW-01      Date: 5/4/10  
 Inspector's Name: Stacey Lee      Time: 1005

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in place, legible?		U	
Well Security	Condition of protective case, cap and lock.		NA	
Well Pad	Concrete or gravel and condition		NA	
Well Seal	Condition of...		NA	
Area Immediately around well pad.	Record any evidence of/or standing water in area of well		NA	
Dedicated sampling equipment	Condition...		NA	
PVC Riser	Condition of riser and survey reference point		NA	

**Comments:** water sampled from standing water / No actual well  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Signature: Stacey Lee  
 Date: 5/4/10

S= Satisfactory, U= Unsatisfactory  
 Check one, if unsatisfactory please explain

# H&S Environmental, Inc.

## Surface Water and Sediment Sampling Log

Project: NWS Earle Bioslurper  
 Location: Colts Neck, NJ  
 Sample Location ID: 16SW-02

Date/Time: 5/4/10  
 Sampler: JB, SL



### Surface Water/Leachate Seep Information

Type of SW: <input checked="" type="checkbox"/> Stream    ( ) River    ( ) Seep			
Water Depth: <u>—</u>	Dissolved Oxygen (mg/L): <u>7.25</u>		
Velocity of Water: <u>—</u>	ORP (mV): <u>144.6</u>		
Temperature (C): <u>19.68</u>	Specific Conductance ( <sup>MS</sup> µS/cm): <u>0.145</u>		
pH (STD): <u>3.96</u>	Turbidity (NTU): <u>7.43</u>		
Sample Observations:		Field Testing Equipment:	
<input checked="" type="checkbox"/> Odor <u>Lt auburn</u>	Make	Model	Serial #
<input checked="" type="checkbox"/> Color <u>None</u>	<u>YSI</u>	<u>556</u>	<u>29M101017</u>
( ) Other	<u>LAMORTE</u>	<u>2020</u>	<u>521-6975</u>

### Sediment/Leachate Seep Sediment Information

Sediment Type: ( ) Organic    ( ) Gravel    ( ) Clay    ( ) Silt    ( ) Sand    ( ) Other \_\_\_\_\_

Type of Sample Collected: ( ) Discrete    ( ) Composite

Sample Observations:

( ) Odor

( ) Color

( ) Other

### Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
<u>16SW-02</u>	<u>N of RR Tracks</u>	<u>1020</u>	<u>SW</u>	<u>3</u>	<u>HCl</u>	<u>624 + MTBE</u>

Comments:



## Monitoring Well Inspection Sheet

**Project Site:** NWStarke Biosurfer      **Location:** Colts Neck, NJ  
**Well ID:** 16SN-02      **Date:** 5/14/10  
**Inspector's Name:** Stacey Lee      **Time:** 1015

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in place, legible?		NA	
Well Security	Condition of protective case, cap and lock.		NA	
Well Pad	Concrete or gravel and condition		NA	
Well Seal	Condition of...		NA	
Area Immediately around well pad.	Record any evidence of/or standing water in area of well		NA	
Dedicated sampling equipment	Condition...		NA	
PVC Riser	Condition of riser and survey reference point		NA	

**Comments:**

Sample taken from standing water

Stacey Lee

Signature: \_\_\_\_\_  
 Date: 5/14/10

S= Satisfactory, U= Unsatisfactory  
 Check one, if unsatisfactory please explain

**APPENDIX C**  
**CHAINS OF CUSTODY**







**ACCUTEST®**  
Laboratories

# CHAIN OF CUSTODY

495 TECHNOLOGY CENTER WEST • BUILDING ONE  
MARLBOROUGH, MA 01752  
TEL: 508-481-6200 • FAX: 508-481-7753

ACCUTEST JOB #:  
ACCUTEST QUOTE #:

CLIENT INFORMATION		FACILITY INFORMATION		ANALYTICAL INFORMATION		MATRIX CODES	
NAME: <u>HAS</u> ADDRESS: <u>160 East Main Street</u> CITY: <u>Westborough</u> MA STATE: <u>01581</u> ZIP: _____ CONTACT: <u>Jill Parrett</u> PHONE #: <u>508-366-7441</u>		PROJECT NAME: <u>Naval Air Station Park</u> LOCATION: <u>Colts Neck, New Jersey</u> PROJECT NO.: <u>03-04-03-11</u> FAX #: <u>508-366-7445</u>		DW - DRINKING WATER GW - GROUND WATER WW - WASTE WATER SO - SOIL SL - SLUDGE LIQ - OTHER LIQUID SOL - OTHER SOLID		LAB USE ONLY	
ACCUTEST SAMPLE #	FIELD ID / POINT OF COLLECTION	DATE	TIME	SAMPLED BY:	MATRIX	# OF BOTTLES	PRESERVATION
					HCl	HNO3	H2SO4
	<u>R6/7 - MW - 106</u>	<u>11/9/09</u>	<u>12:10</u>	<u>J.G.</u>	<u>6W</u>	<u>3</u>	<u>X</u>
	<u>R6/7 - MW - 102</u>		<u>11:50</u>				
	<u>R6/7 - MW - 107</u>		<u>13:45</u>				
	<u>R6/7 MW - 107 MSD</u>		<u>13:45</u>				
	<u>R12-RC-03</u>		<u>00:00</u>				
	<u>EB-1</u>		<u>14:05</u>				
		<u>11/9/09</u>	<u>14:30</u>	<u>J.G.</u>	<u>6W</u>	<u>3</u>	<u>X</u>
DATA TURNAROUND INFORMATION <input checked="" type="checkbox"/> 14 DAYS STANDARD <input type="checkbox"/> 7 DAYS RUSH <input type="checkbox"/> 48 HOUR EMERGENCY <input type="checkbox"/> OTHER _____ 14 DAY TURNAROUND HARDCOPY. EMERGENCY OR RUSH IS FAX DATA UNLESS PREVIOUSLY APPROVED		DATA DELIVERABLE INFORMATION <input type="checkbox"/> STANDARD <input type="checkbox"/> COMMERCIAL "B" <input type="checkbox"/> DISK DELIVERABLE <input type="checkbox"/> STATE FORMS <input type="checkbox"/> OTHER (SPECIFY) _____		COMMENTS/REMARKS <u>14 Day TAT -&gt; 6W + MTBE</u> <u>R47-MW-107 MS MSD</u> <u>No Seals</u>			

1 of 1

6W + MTBE

### SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY

RELINQUISHED BY: SAMPLER:	DATE TIME:	RECEIVED BY:	DATE TIME:
1. <u>[Signature]</u>	<u>11/11/09</u>	2. <u>[Signature]</u>	
3. <u>[Signature]</u>		4. <u>[Signature]</u>	
5. <u>[Signature]</u>		5. <u>[Signature]</u>	

SEAL # No Seals      PRESERVE WHERE APPLICABLE  ON ICE       TEMPERATURE C

4 of 2

ACCUTEST JOB #:  
ACCUTEST QUOTE #:

CLIENT INFORMATION		FACILITY INFORMATION				ANALYTICAL INFORMATION				MATRIX CODES													
NAME: <u>H&amp;S</u> ADDRESS: <u>160 East Main Street</u> CITY: <u>Marlborough</u> MA STATE: <u>01581</u> ZIP: <u></u> SEND REPORT TO: <u>Till Parrett</u> PHONE #: <u>508-366-7442</u>		PROJECT NAME: <u>Naval Warfare Station Earle</u> LOCATION: <u>Cotts Neck</u> PROJECT NO.: <u>New Jersey</u> FAX #: <u>02-04-03-11</u>				DW - DRINKING WATER GW - GROUND WATER WW - WASTE WATER SO - SOIL SL - SLUDGE LIQ - OTHER LIQUID SOL - OTHER SOLID				LAB USE ONLY													
ACCUTEST SAMPLE #	FIELD ID / POINT OF COLLECTION	COLLECTION		SAMPLED BY:	MATRIX	# OF BOTTLES	PRESERVATION																
		DATE	TIME				HCl	NaOH	HNO3	H2SO4	NONE												
	16-MW-24	11/9/09	16:35	J.G.	6W	3	X																
	16-MW-25		16:25		↓	3	↓																
	FB-1		17:02		↓	3	↓																
	18-MW-01	11/10/09	08:05	J.G.	6W	3	X																
	16-MW-08		↓		↓	2	X																
	16-MW-08 MS/MSD		↓		↓	3	X																
	DUP-1		↓		↓	6	X																
	<del>16-MW-08</del> DWP-2		00:00		↓	4	X																
			00:00		↓	3	X																
					↓	2	X																

605 Mph Home  
604 + MTBE

16-MW-08 MS MSD  
page 1 of 2  
Noseair

DATA DELIVERABLE INFORMATION

STANDARD   
 COMMERCIAL "B"   
 DISK DELIVERABLE   
 STATE FORMS   
 OTHER (SPECIFY) \_\_\_\_\_

DATA TURNAROUND INFORMATION

14 DAYS STANDARD APPROVED BY: \_\_\_\_\_  
 7 DAYS RUSH \_\_\_\_\_  
 48 HOUR EMERGENCY \_\_\_\_\_  
 OTHER \_\_\_\_\_

14 DAY TURNAROUND HARD COPY, EMERGENCY OR RUSH IS FAX DATA UNLESS PREVIOUSLY APPROVED

RECEIVED BY: 1. [Signature] DATE TIME: 11/10/09  
 RECEIVED BY: 2. [Signature] DATE TIME: 11/10/09  
 RECEIVED BY: 3. [Signature] DATE TIME: 11/10/09  
 RECEIVED BY: 4. [Signature] DATE TIME: 11/10/09  
 RECEIVED BY: 5. [Signature] DATE TIME: 11/10/09

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY

RECEIVED BY: 1. [Signature] DATE TIME: 11/10/09  
 RECEIVED BY: 2. [Signature] DATE TIME: 11/10/09  
 RECEIVED BY: 3. [Signature] DATE TIME: 11/10/09  
 RECEIVED BY: 4. [Signature] DATE TIME: 11/10/09  
 RECEIVED BY: 5. [Signature] DATE TIME: 11/10/09

SEAL # Noseair 30...

PRESERVE WHERE APPLICABLE

ON ICE

TEMPERATURE \_\_\_\_\_ C



# CHAIN OF CUSTODY

Job #:		Control #:	
Client Information		Facility Information	
Name: H&S Environmental, Inc. Address: 160 East Main St, Suite 2F City: Westborough MA 01581 State: MA Zip: 01581 Send Report to: Jill Parrett Phone #: 508-366.7442 FAX #: 508-366-7445		Project Name: TO 10 Bioslurper Location: Colts Neck, NJ Project No.: 02-04-03-10 BTEX & MBTE (624) Naphthalene (625)	
Analytical Information		Analytical Information	
Field ID / Point of Collection		Preservation	
Field ID	Point of Collection	Date	Time
Sampled By	Matrix	# of bottles	None
			H2SO4
			HNO3
			NaOH
			Voc Hc
TB-021810		RH/JG	AQ
16MW-08	MSMSD	2/18/10	14:10
16MW-10		2/18/10	16:05
16MW-11		2/18/10	12:00
16MW-15		2/18/10	10:45
16MW-24		2/18/10	08:55
16MW-25		2/18/10	09:15
18MW-01		2/18/10	17:02
16SW-01		2/18/10	10:00
16SW-02		2/18/10	10:05
16SW-03		2/18/10	10:10
16SW-04		2/18/10	10:20
NWSE-DUP01		2/18/10	00:00
FB-01		2/18/10	14:30
Turnaround Information		Data Deliverable Information	
<input checked="" type="checkbox"/> 21 Day Standard <input type="checkbox"/> 14 Day <input type="checkbox"/> 7 Days EMERGENCY <input type="checkbox"/> Other _____ (Days) RUSH TAT is for FAX data Data unless previously approved.		<input type="checkbox"/> NJ Reduced <input type="checkbox"/> NJ Full <input type="checkbox"/> FULL CLP <input type="checkbox"/> Disk Deliverable <input type="checkbox"/> Other (Specify) _____ <input type="checkbox"/> Commercial "A" <input type="checkbox"/> Commercial "B" <input type="checkbox"/> ASP Category B <input type="checkbox"/> State Forms	
Approved By: _____		Date: _____	
<b>HOLD 16SW-03 AND 16SW-04 FOR ANALYSIS UNTIL AUTHORIZATION IS RECEIVED FROM JILL PARRETT</b>			
Sample Custody must be documented below each time samples change possession, including courier delivery.		Date Time:	
Relinquished by Sampler:	Received By:	Relinquished By:	Received By:
1 <i>[Signature]</i>	1 <i>[Signature]</i>	2	2
Relinquished by Sampler:	Received By:	Relinquished By:	Received By:
3	3	4	4
Relinquished by Sampler:	Received By:	Relinquished By:	Received By:
5	5	Seal #	On Ice: <input checked="" type="checkbox"/> -1.6 -0.6 -2.9
Date Time:		Date Time:	
2/19/10 08:40	2/19/10 08:40	2	2
3	3	4	4
5	5	Seal #	On Ice: <input checked="" type="checkbox"/> -1.6 -0.6 -2.9
Date Time:		Date Time:	
2/19/10 08:40	2/19/10 08:40	2	2
3	3	4	4
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Date Time:		Date Time:	
2/19/10 08:40	2/19/10 08:40	2	2
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3	3	4	4
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3	3	4	4
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