

**QUARTERLY GROUNDWATER MONITORING REPORT  
SITE M232-236  
MARINE CORPS BASE CAMP LEJEUNE, NORTH CAROLINA  
Revision 0**

Prepared for:

**DEPARTMENT OF THE NAVY**  
Contract No. N62470-03-D-4000  
Task Order No 0009



Atlantic Division  
Naval Facilities Engineering Command  
6506 Hampton Boulevard  
Building C, Room 311  
Norfolk, Virginia 23508

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4 February 2005

EEI PROJECT NO. LDO3-0009

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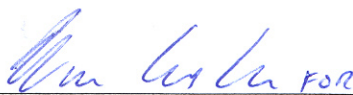
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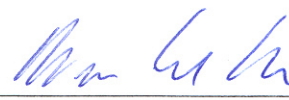
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We hereby certify that the Report shown and marked in this submittal is proposed to be incorporated into Contract Number N62470-03-D-4000, is in compliance with the contract drawings and specifications, can be installed in the allocated spaces, and is submitted for Government approval.

  
\_\_\_\_\_  
Certified by QC Program Manager  
Christopher R. Murray

  
\_\_\_\_\_  
Project Manager  
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4 February 2005

  
2-4-05

## LIST OF ACRONYMS/ABBREVIATIONS

|              |                                                                                            |
|--------------|--------------------------------------------------------------------------------------------|
| AVOC         | Aromatic Volatile Organic Compound                                                         |
| bgs          | below ground surface                                                                       |
| DI           | Deionized Water                                                                            |
| DWM          | Division of Waste Management                                                               |
| EEI          | Engineering and Environment, Inc.                                                          |
| GCL          | Gross Contamination Level                                                                  |
| L            | Liter                                                                                      |
| Law          | Law Engineering and Environmental Services, Inc.                                           |
| MADEP EPH    | Massachusetts Department of Environmental Protection Extractable<br>Petroleum Hydrocarbons |
| MADEP VPH    | Massachusetts Department of Environmental Protection Volatile<br>Petroleum Hydrocarbons    |
| MCB          | Marine Corps Base                                                                          |
| mg/kg        | milligrams per kilogram                                                                    |
| msl          | mean sea level                                                                             |
| MW           | Monitoring Well                                                                            |
| NAVFACENGCOM | Navy Atlantic Division, Naval Facilities Engineering Command                               |
| NCAC         | North Carolina Administrative Code                                                         |
| NCDENR       | North Carolina Department of Environment and Natural Resources                             |
| NCGS         | North Carolina Geological Survey                                                           |
| NCGWQS       | North Carolina Groundwater Quality Standard                                                |
| ND           | Not Detected                                                                               |
| OBG          | O'Brien & Gere Engineers, Inc.                                                             |
| QC           | Quality Control                                                                            |
| SVOC         | Semi-Volatile Organic Compound                                                             |
| TIC          | Tentatively Identified Compound                                                            |
| TPH          | Total Petroleum Hydrocarbons                                                               |
| ug/L         | micrograms per liter                                                                       |
| USEPA        | United States Environmental Protection Agency                                              |
| UST          | Underground Storage Tank                                                                   |

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## **EXECUTIVE SUMMARY**

On behalf of the Department of the Navy, Atlantic Division, Naval Facilities Engineering Command, Engineering and Environment, Inc. has prepared this quarterly groundwater monitoring report for Site M232-236, Marine Corps Base Camp Lejeune, North Carolina. The report presents the findings of groundwater monitoring activities conducted in December 2004.

Buildings M232 through M236 are located in the Camp Johnson area of Camp Lejeune and are used as bachelors' quarters for military personnel. In May 1990, five heating oil Underground Storage Tanks (USTs) ranging in capacity from 530 gallons to 550 gallons were excavated and removed from the site. Soil samples collected at the time the USTs were removed indicated petroleum constituents were present in soil above State action levels in effect at that time.

Monitoring wells subsequently installed in 1991 indicated free product was not present, and petroleum constituents were not detected in groundwater at concentrations above North Carolina Groundwater Quality Standards (NCGWQS). Removal of petroleum-impacted soil in the immediate vicinity of the former USTs was recommended.

Additional site characterization activities were conducted in 1992. No petroleum constituents were detected in groundwater above NCGWQSs, although measurable free product was observed in one well (well MW-3, at a thickness of 0.12 foot). It was recommended to remove petroleum-impacted soil in the immediate vicinity of the former USTs, conduct free product removal from well MW-3, and monitor groundwater quality biannually.

Five additional monitoring wells were subsequently installed in the immediate vicinity of each of the former USTs. Gauging data indicated free product was present only in well MW-19, located near the former UST associated with Building M235; free product was not identified in well MW-3. Based on the presence of measurable free product at well MW-19, it was considered that the site warranted an Intermediate Risk classification.

Further groundwater monitoring activities were conducted in 2000 and 2001. Quarterly gauging data indicated free product was present at well MW-19 only, at thicknesses of 0.12 foot to 0.61 foot, and free product recovery was conducted. Few compounds were present in groundwater at concentrations above NCGWQSs with none above established GCLs, and concentrations of detected constituents generally were decreasing over time. However, the site was considered to remain an Intermediate Risk due to the minor thickness of free product at well MW-19. Continued recovery of free product from this well was recommended.

Gauging events were conducted in 2002 and 2003 at seven site wells, including well MW-19. The data indicated free product was no longer present at site wells. For some of the events, sorbent socks that had been removed from well MW-19 in advance of the gauging event had been reinstalled by an unknown party, and the gauging data for those events was compromised. However, the remaining 2003 gauging events that indicated measurable free product was not present were considered valid without qualification.

In June 2004, the current groundwater monitoring program was initiated. The program includes quarterly well gauging at 22 site wells and semi-annual groundwater sampling at wells MW-5, MW-7, MW-18, MW-20, MW-21, and MW-22. Semi-annual groundwater sampling was conducted in June and December 2004. Gauging events were conducted in June, September, and December 2004.

For the three gauging events completed to date, free product was observed only in well MW-19, located in the immediate vicinity of the former UST associated with Building M235. Product thicknesses at this well ranged from 0.10 foot to 0.49 foot. Product recovery via hand bailing was conducted after each event. Analysis of groundwater samples from the semi-annual groundwater sampling events indicated no aromatic volatile organic compounds or target analyte semi-volatile organic compounds were present at concentrations above NCGWQSs. The C<sub>9</sub>-C<sub>22</sub> Aromatics were present at concentrations slightly above NCGWQSs in wells MW-18, MW-20, and/or MW-21. These wells are located in the immediate vicinity of the three former USTs associated with Buildings M236, M233, and M232.

It is recommended that the groundwater monitoring program be continued. Well MW-3 should be included in the next scheduled monitoring event, as the well previously had exhibited free product or elevated concentrations of dissolved-phased petroleum constituents.

## **SECTION 1 INTRODUCTION**

On behalf of the Department of the Navy, Atlantic Division, Naval Facilities Engineering Command (NAVFACENGCOM), Engineering and Environment, Inc. (EEI) has prepared this quarterly groundwater monitoring report for Site M232-236, Marine Corp Base (MCB) Camp Lejeune. The report presents the findings of groundwater monitoring activities conducted in December 2004. This report and the methods used to acquire the data in support of this report have been prepared in accordance with the North Carolina Department of Environmental Resources (NCDENR), Division of Waste Management (DWM), Underground Storage Tank (UST) Section guidelines (NCDENR, 2001; NCDENR, 2003) and the site specific work prepared for this site by EEI (EEI, 2004a).

The site has not been assigned an incident number by NCDENR. Previous site investigations have indicated the site meets criteria associated with NCDENR's Intermediate Risk classification (Law, 2000b).

### **1.1 Site Description**

The site is located on MCB Camp Lejeune in Onslow County, North Carolina (34°, 43', 13" N, 77°, 24', 52" W) (Figure 1-1). Within Camp Lejeune, the site is located along Hayes Street in the Camp Johnson area (Figure 1-2). Buildings M232 through M236 are used as bachelors' quarters for military personnel.

No permanent surface water bodies are present at the site. A shallow drainage ditch is present between the eastern wall of Buildings M232 through M236 and Hayes Street. The nearest mapped surface water bodies are the New River, located approximately 650 feet west of the site, and Northeast Creek, located approximately 850 feet southeast of the site. No potable water supply wells are located within 1200 feet of the site, and the potable water supply wells throughout Camp Lejeune draw water from the Castle Hayne aquifer at depths typically of at least 150 feet (OBG, 1993).

### **1.2 Site History**

In May 1990, five USTs (one each associated with Buildings M232 through 236) were excavated and removed from site (OBG, 1992). Four of the USTs had a capacity of 550-gallons and the fifth had a capacity of 530-gallons; all were used to store heating oil (Law2000a). The USTs had been in service from 1942 to the late 1980's (Law, 2000b). At the time the USTs were removed, soil samples were collected, analysis of the soil samples indicated Total Petroleum Hydrocarbons (TPH) were present at concentrations above State standards then in effect (OBG, 1992).

A site assessment was conducted in 1991 which included in part advancement of soil borings and installation of 14 surficial aquifer monitoring wells (seven with total depths of approximately 15 feet below ground surface [bgs], and seven with total depths of approximately 30 feet bgs, with the wells installed in pairs). Analysis of soil and groundwater samples collected during the investigation indicated petroleum constituents were not present at significant concentrations in

areas surrounding the former USTs, and no free product was observed in site monitoring wells. However, the assessment concluded that concentrations of petroleum constituents in soils in the immediate vicinity of the former USTs (as reported from the UST removal effort) could present a future exposure risk. The assessment recommended these soils be removed (OBG, 1992).

Further investigation was conducted in 1992. This investigation included in part installation of three surficial aquifer monitoring wells, each to total depths of approximately 15 feet bgs. No constituents were detected in groundwater samples collected from the three newly installed wells. However, free product was observed in well MW-3 at a thickness of 0.12 foot; measurable free product was not identified in any other site well. It was recommended to excavate petroleum-impacted soils in the immediate vicinity of the former USTs, conduct free product removal from well MW-3 using passive mechanisms, and monitor groundwater quality biannually.

Between July 1993 and November 1999, five monitoring wells were installed at locations adjacent to the former UST locations (Law, 2000a). EEI has been unable to locate well construction records for these wells, and well-specific data (e.g., top-of-casing elevations, screen parameters, etc.) are unavailable. (Additionally, at some point during this period, well identifications were changed, as follows: well MW-3 was re-identified as well MW-7; well MW-4 was re-identified as well MW-8; well MW-7 was re-identified as well MW4; and well MW-8 was re-identified as well MW-3. EEI is not aware of the reason for the well re-identification; the re-assignment of well identifications listed above is based on review of a site drawing presented in a Law Engineering and Environmental Services, Inc. (Law) work plan from 2000 [Law, 2000a] and comparison of well top-of-casing elevations presented in O'Brien and Gere Engineers, Inc. (OBG) reports from 1992/1993 [OBG, 1992; OBG, 1993] and Law reports from 2000/2001 [Law, 2000b; Law, 2001]. For this report and in EEI's work plan for this program [EEI, 2004a], well identifications follow that obtained from MCB Camp Lejeune's environmental database, which is consistent with the well identifications presented in the OBG reports [OBG, 1992; OBG, 1993]. All references to site data, including discussions in the report text, figures, and tables, consistently adhere to the database identifications. Footnotes are presented in tables as necessary.)

Based on citations on Law documents, natural attenuation monitoring was conducted at the site after July 1993 and prior to May 1998, and a risk characterization was conducted by Law in November 1999 (Law, 1999; Law, 2000b; Law, 2001). EEI was unable to locate these reports for review, although groundwater quality data apparently from the risk characterization assessment and summarized in later monitoring reports prepared by Law (Law, 2000b; Law, 2001) has been incorporated in this report. The risk characterization assessment reportedly indicated the site warranted classification as an Intermediate Risk based on the presence of measurable free product at well MW-19 (Law, 2000b; Law, 2001).

Further groundwater monitoring activities were conducted in 2000 and continued into 2001 (Law, 2000b, Law, 2001). The monitoring program included quarterly well gauging at all site wells and semi-annual groundwater sampling at wells MW-3 (identified as MW-7), MW-5, MW-18, MW-20, MW-21, and MW-22. The gauging data over this period identified the presence of measurable free product only in well MW-19, at thicknesses ranging from 0.12 foot to 0.61 foot,

and free product recovery was conducted. Groundwater sample data indicated few compounds were present at concentrations above NCGWQSs (none above established GCLs), and concentrations of detected constituents generally were decreasing over time. However, the site was considered to remain an Intermediate Risk due to the minor thickness of free product at well MW-19, and it was recommended to continue free product recovery from this well (Law, 2000b, Law, 2001).

A program of quarterly gauging of seven wells including well MW-19 was initiated in October 2002 and was completed in August 2003 (EEI, 2003a, b, c, d). The program included accessing well MW-19 in advance of the gauging event to remove a previously installed sorbent (product recovery) sock. No measurable free product was observed during four quarters of gauging. However, on two occasions, when the well was re-accessed for gauging, the sorbent sock had been reinstalled into the well by an unknown party. The product thickness data for these two events was considered compromised. However, data for the remaining events indicating measurable free product was not present was considered valid without qualification.

In June 2004, the current groundwater monitoring program was initiated. The program includes quarterly gauging at all 22 site wells and semi-annual groundwater sampling at wells MW-5, MW-7, MW-18, MW-20, MW-21, and MW-22. Additionally, free product recovery via hand bailing or installation of sorbent socks is conducted as needed (EEI, 2004a).

For the June and September 2004 quarterly gauging events, free product was observed only in well MW-19, at a thickness of 0.49 foot and 0.10 foot, respectively. Product recovery via hand bailing was conducted following each event. For the June 2004 semi-annual sampling event, no aromatic volatile organic compounds or target analyte semi-volatile organic compounds were present at concentrations above NCGWQSs. The C<sub>9</sub>-C<sub>22</sub> Aromatics were present at concentrations slightly above NCGWQSs in wells MW-18 and MW-21, respectively; both wells are located in the immediate vicinity of the two former USTs associated with Buildings M236 and M233 (EEI, 2004b and 2004c).

The current monitoring event was conducted in December 2004 and included well gauging and groundwater sampling. Data for the current event are discussed in the following sections. Section 2 describes field method used at the site. Section 3 discusses hydrogeologic characteristics of the site. Laboratory analytical results and their significance are presented in Section 4. Section 5 provides conclusions and recommendations based on review of the data. References cited in the report are listed in Section 6. Figures and tables are organized after the text. Supporting documentation (field records and laboratory analytical reports) are contained in Appendices A and B.

## **SECTION 2 FIELD PROGRAM**

Field methods employed during the groundwater monitoring program are discussed briefly below. Activities were conducted in accordance with NCDENR guidance (NCDENR, 2001 and 2003) and as per the work plan (EEI, 2004a) which details the field methods.

### **2.1 Well Gauging**

On 19 December 2004, 22 site monitoring wells (MW-1 through MW-22) were gauged. Well gauging was conducted using an electronic interface probe to measure the depth to water and depth to product (if present). Data were recorded to the nearest 0.01 foot and referenced to the surveyed top of casing. During the gauging event, measurable free product was observed only at well MW-19, at a thickness of 0.39 foot. Free product recovery via hand bailing subsequently was conducted. Approximately three ounces of free product were recovered; the material was processed through the treatment plant located at Lot 203 on MCB Camp Lejeune.

### **2.2 Groundwater Sampling**

Groundwater samples were collected on 19 December 2004 from monitoring wells MW-5, MW-7, MW-18, MW-20, MW-21, and MW-22. Additionally, one duplicate sample was collected, and one laboratory-prepared trip blank was included with the laboratory-supplied sample bottles. The trip blank was stored with the samples once sampling activities began. Field data sampling sheets are presented in Appendix A.

Monitoring well groundwater samples were collected using low-flow purging techniques. For the two-inch diameter wells (wells MW-5 and MW-7), a Grundfos Redi-Flo II stainless steel submersible pump discharging through polyethylene tubing was used to purge and sample the wells. The water level in a given well was periodically measured and recorded and, if necessary, the pumping rate was decreased to limit drawdown. Additionally, the pump intake height was adjusted as necessary. Water quality indicator parameters (pH, temperature, conductivity, oxidation-reduction potential, dissolved oxygen, and turbidity) were measured and recorded repeatedly during the purge. Purging was continued until water quality indicator parameters had stabilized or until a maximum of five well casing volumes had been purged. If a well purged to dryness, the well was allowed to recharge, and a sample then was collected; one well (MW-21) was purged dry during the sampling event. Samples were collected immediately upon completion of the purge by filling the laboratory-prepared sample bottles directly from the discharge tubing. Samples were kept in an iced cooler from the time of collection until received by the laboratory.

At the one-inch diameter wells (wells MW-18 and MW-20 through MW-22), the submersible pump was too large to be placed into the wells. Therefore, purging and sampling was conducted using a peristaltic pump with polyethylene tubing lowered into the water column of the well. The polyethylene tubing was connected to a short length of silicone tubing that was threaded over the pump's rotor. Because of the small diameter of the wells, the interface probe could not be placed in the well while the polyethylene discharge tubing was in place. Therefore, water

levels in these wells were not monitored during the purge. However, water quality indicator parameters as identified above were repeatedly measured and recorded while purging. Purging, sampling, and sample handling were conducted as described above. None of the one-inch diameter wells were purged dry during the sampling event.

Groundwater samples collected during this event were analyzed for the following parameters:

- AVOCs, EPA Method 602 with xylenes (3x40 milliliter [ml] vials),
- Massachusetts Department of Environmental Protection (MADEP) - Volatile Petroleum Hydrocarbons (VPH) (3 x 40 ml vials)
- SVOCs, EPA Method 625 + 10 largest non-target peaks (i.e., Tentatively Identified Compounds [TICs]) (2 x 1 liter [L])
- MADEP - Extractable Petroleum Hydrocarbons (EPH) (2 x 1 L)

Samples were submitted under chain-of-custody to Paradigm Analytical Laboratories in Wilmington, North Carolina. Samples were delivered to the laboratory either via overnight commercial courier or were picked up by a laboratory courier.

### **2.3 Equipment Decontamination and Waste Handling Procedures**

The submersible pump was decontaminated before first use and after each use by pumping a mixture of Alconox or Liquinox soap and potable water through the pump. The pump then was rinsed by pumping potable water through it, and final rinsed with deionized (DI) water. New polyethylene tubing was used at each well. For the peristaltic pump, the pump did not contact groundwater and decontamination of the pump was not required; new polyethylene and silicone tubing were used at each well.

Water quality meter flow-through cells and down-hole gauging equipment were decontaminated after each use by washing with an Alconox/DI water mixture, followed by a DI water rinse. The water quality probe was decontaminated with a DI rinse.

Well purge water and equipment decontamination water generated during the sampling event were contained in a portable holding tank. The water was processed through a groundwater treatment system located at Lot 203 on MCB Camp Lejeune. Used tubing and other miscellaneous material were collected and bagged as they were generated. This material was treated as normal solid waste and placed in EEI's refuse container at Lot 203.

### **2.4 Well Maintenance**

During the sampling event, any brush, debris, and/or litter in the vicinity of the well heads were cleared. The well heads, casing risers, well pads, bollards, well caps, locks, etc. were inspected for damage or deterioration. All wells appeared to be undamaged and in serviceable condition, although extensive rusting of the hinges on some of the well standards was observed. Repair or replacement of the affected hinges will be conducted.

## SECTION 3 HYDROGEOLOGY

The hydrogeologic characteristics of the subsurface substantially control the movement of groundwater, which strongly influences contaminant movement. The regional geologic setting provides a framework for understanding and interpreting the site-specific hydrogeology. Knowledge of the latter allows for evaluating groundwater flow at a scale relevant to the monitoring program.

### 3.1 Regional Hydrogeology

The site is located in the eastern portion of the Coastal Plain Physiographic Province of North Carolina. The Coastal Plain consists of nearly flat to gently dipping sedimentary strata of varying composition that overlie a crystalline basement complex. Approximately 80 miles northwest of the site, the Coastal Plain pinches out where it contacts the Piedmont Physiographic Province along the Fall Line. East of the Fall Line, the sediments gradually thicken, reaching a maximum thickness of approximately 10,000 feet at Cape Hatteras, North Carolina. In the vicinity of the site, the sedimentary sequence is estimated to be approximately 2000 feet thick (NCGS, 1988).

Surficial deposits of Quaternary age are present in and around the area of the site, typically at thicknesses ranging from about 25 to 80 feet. The uppermost mapped unit in the area of the site is identified as the River Bend Formation of Tertiary age, described as a calcareous limestone interlaced with indurated sandy, molluscan limestone (NCGS, 1985). The River Bend Formation overlies the Castle Hayne Formation, also of Tertiary age. The Castle Hayne Formation is described as gray to cream colored, fine grained to fossiliferous calcareous limestone with minor amounts of fine quartz, glauconite, and phosphate (NCGS, 1988). The thickness of the Castle Hayne Formation in the vicinity of the site is estimated at approximately 300 feet. The Castle Hayne aquifer is a primary source of potable water for the area.

### 3.2 Site Hydrogeology

The topography of the site is predominantly flat. A shallow drainage ditch is present between the Buildings M232 through M236 and Hayes Street. No permanent surface water bodies intersect the site. The nearest mapped surface water bodies are the New River, located approximately 650 feet west of the site, and Northeast Creek, located approximately 850 feet southeast of the site.

Shallow soil at the site includes a mixture of sands, silts, and clays. The uppermost nine feet of soils are described as silts and clays with variable amounts of very fine to medium sand. From approximately nine feet bgs to about 19 feet bgs, very fine sands coarsening downwards to very coarse sands are encountered. Below 19 feet bgs to 30 feet bgs (the maximum depth of borings advanced during previous site investigations), medium to very coarse sands are described (OBG, 1992; OBG, 1993). First saturated soils of the surficial aquifer typically were encountered at depths of nine to 11 feet bgs (OBG, 1992; OBG, 1993).

All of the monitoring wells installed at the site are screened in the surficial aquifer (Law, 1999). Ten of the wells (MW-1, MW-3, MW-5, MW-7, MW-9, MW-11, MW-13, MW-15, MW-16, and MW-17) are screened from about 5 feet bgs to 15 feet bgs, in the shallow silts/clays and the upper sands of the surficial aquifer. (These wells are designated in this report as surficial aquifer shallow wells.) Seven wells (MW-2, MW-4, MW-6, MW-8, MW-10, MW-12, and MW-14) are screened from approximately 20 feet bgs to 30 feet bgs in the medium to very coarse sands of the surficial aquifer (OBG, 1992; OBG, 1993). (These wells are designated in this report as surficial aquifer intermediate wells.) Each of the intermediate depth wells is paired with an odd numbered shallow depth well of next lowest number (e.g., intermediate well MW-2 is paired with shallow well MW-1). Construction records for wells MW-18 through MW-22 could not be located by EEI. Field measurements by EEI indicate these wells have total depths of approximately 14 to 15 feet bgs, and therefore are designated as shallow wells. Other information, such as screened intervals and top-of-casing elevations, are not known to EEI.

Using the top-of-casing elevation data (where available) and gauging data recorded 19 December 2004, groundwater elevations for the site monitoring wells were calculated (Table 3-1). For wells exhibiting measurable free product, the groundwater elevation was corrected by adding 80 percent of the product thickness to the calculated groundwater elevation. (The product thickness was multiplied by 80 percent as the specific gravity of the product is assumed to be 0.8.)

From Table 3-1, groundwater elevations calculated for the individual members of the shallow/intermediate depth well pairs are not identical. Variations in groundwater elevations at the well pairs are inconsistent, with higher elevations observed in the intermediate wells MW-6 and MW-10 relative to their respective shallow wells (wells MW-5 and MW-9), and lower elevations observed in the remaining five intermediate wells relative to their respective shallow wells. The inconsistent variation suggests the groundwater elevation differences arise from lateral heterogeneities in subsurface soils and are not indicative of restricted vertical hydraulic flow (i.e., an aquitard or aquiclude is not present between the screen zones of the wells, and all wells intercept the surficial aquifer).

The elevation data for the shallow and intermediate wells were used to construct surficial aquifer groundwater elevation maps from which groundwater flow directions were estimated (Figures 3-1 and 3-2). Due to the limited relief expressed by the groundwater elevation data, an elevation contour interval of 0.1 foot was selected to present interpreted groundwater elevations for both maps.

For the shallow well map, groundwater flow is generally to the south-southeast across the eastern and central portions of the site. In the southwestern portion of the site, an area of slightly elevated groundwater is observed, with flow in this part of the site to the east and northwest. Along the western portion of the site, flow is to the southwest and northwest as groundwater converges towards an area of low groundwater elevation exhibited at well MW-5. (In preparing the shallow well map, data from well MW-20 was excluded, as the calculated groundwater elevation was much lower than that of surrounding wells, and the resultant map would suggest inflow to an area without any realistically apparent outlet; it is expected that the depth-to-water datum was recorded in error.)

For the intermediate well map, groundwater flow is generally to the southwest across most of the site. Along the western portion of the site, an area of relatively elevated groundwater is observed in the immediate vicinity of well MW-5, and groundwater flow in this portion of the site is to the northeast and southeast.

The groundwater flow patterns exhibited from shallow and intermediate well data generally are dissimilar, although both exhibit a southerly flow component in the central and eastern portions of the site in the direction of Northeast Creek and/or the New River (Figure 1-1). Additionally, the December 2004 flow patterns are not similar to those observed for the September and June 2004 data, although all of the maps exhibit a general southward flow of groundwater. Previous investigations also have identified variable flow directions at the site (OBG, 1992; OBG, 1993; Law, 2000b, Law, 2001). Given the generally flat topography and absence of nearby significant surface water bodies, groundwater flow directions would be expected to be readily influenced by relatively minor changes in conditions at the site, such as seasonal variations in the water table elevation (Law, 2000b) and transient local recharge associated with precipitation.

The horizontal gradient  $i$  is calculated using the standard equation  $i = \Delta h / \Delta L$ , where  $\Delta h$  is the change in head measured along the direction of groundwater flow, and  $\Delta L$  is the straight-line distance between the measurement locations. With respect to wells screened in the shallow portion of the surficial aquifer, wells MW-16 and MW-9 are approximately aligned with the groundwater flow direction, and data from these wells were used to calculate the horizontal gradient. For these wells,  $\Delta L = 201$  feet and  $\Delta h = (2.26 \text{ feet} - 1.39 \text{ feet}) = 0.87$  foot, so that  $i = 0.87 \text{ foot} / 201 \text{ feet} = 0.0043$  (dimensionless). This is lower than the 0.024 gradient calculated for the June 2004 data (EEI, 2004b) and reflects the limited relief expressed in the current quarter groundwater elevation data.

The groundwater linear flow velocity  $V$  is calculated using the standard equation  $V = (Ki) / n_e$ , where  $i$  is the horizontal gradient (discussed above),  $K$  is the hydraulic conductivity, and  $n_e$  is the effective porosity. Previous investigations have provided estimates of  $K$  and  $n_e$ , respectively based on aquifer testing and examination of subsurface soil samples. The investigations identified a  $K$  of 1.47 feet/day for shallow wells, and a  $n_e$  of 0.40 (dimensionless) (OBG, 1993). Using these values and the horizontal gradient calculated above, the flow velocity is calculated as  $V = (1.47 \text{ feet /day} * 0.0043) / 0.40 = 0.016 \text{ foot/day}$ , or 5.84 feet/year. This is lower than the 32 feet/year velocity calculated for the June 2004 data (EEI, 2004b) due to the smaller gradient calculated for the current quarter groundwater elevation data.

## SECTION 4 LABORATORY ANALYTICAL RESULTS

Groundwater samples were collected in December 2004 from site monitoring wells MW-5, MW-7, MW-18, MW-20, MW-21, and MW-22. One duplicate groundwater sample was collected from well MW-7, and one laboratory-supplied trip blank was submitted for analysis. Groundwater samples were analyzed by Paradigm Analytical Laboratories for AVOCs (EPA Method 602), SVOCs (EPA Method 625), MADEP VPH, and MADEP EPH. The trip blank was analyzed for VOCs only. Appendix B presents the laboratory analytical reports.

### 4.1 Groundwater Analytical Results

Table 4-1 summarizes the laboratory data for the current sampling event. (For the SVOCs, only compounds detected at one or more locations during the current or previous sampling events and included in the current analytic suite are listed.) From a review of Table 4-1, no analytes were detected in the sample collected from well MW-5. At well MW-7, with the exception of toluene, reported at an estimated concentration of 0.808 ug/L, and the C<sub>9</sub>-C<sub>22</sub> Aliphatics, reported at a concentration of 600 ug/L, no analytes were detected; concentrations of both detected analytes were substantially below the NCGWQSs of 1000 ug/L and 42,000 ug/L, respectively. No analytes were detected in the duplicate sample collected at well MW-7.

Various target analyte AVOCs and SVOCs were reported for the samples collected from wells MW-18, MW-20, MW-21, and MW-22. Each of these wells are located in the immediate vicinity of USTs formerly present at the site (Figure 1-3). All of the detected AVOCs (ethylbenzene, toluene, and xylene isomers) and target analyte SVOCs (acenaphthene, diethylphthalate, fluorene, naphthalene, and phenanthrene) were reported at low (typically estimated) concentrations, and all were substantially below NCGWQSs and GCLs.

Some TICs were reported at wells MW-18, MW-21, and MW-22, most of which were not identified as specific compounds. (TICs are substances not on the target compound list, and not all TICs are identified and quantitated using individual standards. All TIC quantitations are estimated. Total TICs reported in Table 4-1 are the sum of all reported TICs, excluding those TICs identified as having been added by the laboratory.) Those TICs that were reported as specific compounds included 1-methylnaphthalene, 2-methylnaphthalene, and biphenyl. Of these TICs, biphenyl was reported only in well MW-18 at an estimated concentration of 9.82 ug/L. A NCGWQS has not been established for this compound, therefore the standard is set at the reporting limit, and the detection of the compound is by definition above the standard. A GCL has not been established for this compound. 1-Methylnaphthalene was reported at estimated concentrations of 4.7 ug/L, 30.2 ug/L, and 15.1 ug/L at wells MW-18, MW-21, and MW-22, respectively. A NCGWQS has not been established for 1-methylnaphthalene; therefore, as noted above, any detection of the compound is above the standard. A GCL has not been established for 1-methylnaphthalene. 2-Methylnaphthalene was reported in wells MW-21 and MW-22 at estimated concentrations of 10.7 ug/L and 6.6 ug/L, respectively. These concentrations are below the NCGWQS for 2-Methylnaphthalene of 14 ug/L and the GCL of 12,500 ug/L. For all of these reported TICs, given the uncertainties associated with TIC quantitation, a reduced level

of confidence in the reported concentration is warranted, and the significance of the data are limited.

Wells MW-18 and MW-21 exhibited detectable concentrations of the C<sub>9</sub>-C<sub>18</sub> Aliphatic Hydrocarbon fraction, quantitated by MADEP EPH. The C<sub>9</sub>-C<sub>12</sub> Aliphatics, quantitated by MADEP VPH, were not detected (at reporting limits of 100 ug/L) in these or any other samples collected during the current event. A NCGWQS of 4,200 ug/L has been established for the C<sub>9</sub>-C<sub>18</sub> Aliphatics, presented in Table 4-1 as the sum of the detected VPH C<sub>9</sub>-C<sub>12</sub> Aliphatic and EPH C<sub>9</sub>-C<sub>18</sub> Aliphatics. From Table 4-1, the (summed) C<sub>9</sub>-C<sub>18</sub> Aliphatics concentrations for wells MW-18 and MW-21 were 210 ug/L and 300 ug/L, substantially below the NCGWQS. A GCL has not been established for the C<sub>9</sub>-C<sub>18</sub> Aliphatics. The C<sub>19</sub>-C<sub>36</sub> Aliphatics, quantitated by MADEP VPH, were detected only in the primary sample collected from well MW-7 at a concentration of 600 ug/L, which, as discussed previously, is substantially below the NCGWQS of 42,000 ug/L. A GCL has not been established for the C<sub>19</sub>-C<sub>36</sub> Aliphatics. As noted above, the duplicate sample did not exhibit a detectable concentration of the C<sub>19</sub>-C<sub>36</sub> Aliphatics (reporting limit of 100 ug/L).

The C<sub>9</sub>-C<sub>10</sub> Aromatic Hydrocarbon fraction, quantitated by MADEP VPH, was detected only at well MW-18, at a concentration of 110 ug/L. Wells MW-18, MW-21, and MW-22 exhibited detectable concentrations of the C<sub>11</sub>-C<sub>22</sub> Aromatics, quantitated by MADEP EPH, at concentrations of 200 ug/L, 200 ug/L, and 240 ug/L, respectively. A NCGWQS of 210 ug/L has been established for the C<sub>9</sub>-C<sub>22</sub> Aromatics, presented in Table 4-1 as the sum of the detected VPH C<sub>9</sub>-C<sub>10</sub> Aromatics and EPH C<sub>11</sub>-C<sub>22</sub> Aromatics. From Table 4-1, the (summed) C<sub>9</sub>-C<sub>22</sub> Aromatic concentration for well MW-21 was 200 ug/L, below the NCGWQS of 210 ug/L; (summed) C<sub>9</sub>-C<sub>22</sub> Aromatic concentration for wells MW-18 and MW-22 of 310 ug/L and 240 ug/L, respectively, were slightly above the NCGWQS. A GCL has not been established for the C<sub>9</sub>-C<sub>22</sub> Aromatics. The C<sub>9</sub>-C<sub>22</sub> Aromatics were the only target analytes reported at concentrations greater than NCGWQSs.

Figure 4-1 presents the surficial aquifer shallow well concentrations of the C<sub>9</sub>-C<sub>22</sub> Aromatics. The figure clearly illustrates the extent of the C<sub>9</sub>-C<sub>22</sub> Aromatics above the NCGWQS is limited to the immediate vicinity of the former USTs associated with Building M232 (monitored by well MW-22) and Building M-236 (monitored by well MW-18).

Groundwater quality data from the current and previous sampling events are summarized in Table 4-2. From Table 4-2, few compounds have been detected at concentrations above NCGWQSs at any site wells. One compound, phenanthrene, was reported above GCLs at well MW-3 during the November 1991 sampling event. However, phenanthrene was not detected at this well in any subsequent sampling event, nor was this compound detected in any other site wells during the November 1991 event or during any other sampling event. No other compounds have been detected at concentrations above GCLs during any sampling event.

Wells that have exhibited groundwater concentrations above NCGWQSs are limited to MW-3, MW-12, MW-18, MW-21, and MW-22. At well MW-3, other than phenanthrene (discussed above), only the C<sub>9</sub>-C<sub>22</sub> Aromatics have been detected at concentrations above NCGWQSs. In October 2000 and April 2001, the C<sub>9</sub>-C<sub>22</sub> Aromatics were reported at concentrations of 440 ug/L

and 430 ug/L, respectively, somewhat above the NCGWQS of 210 ug/L. As indicated above, a GCL has not been established for the C<sub>9</sub>-C<sub>22</sub> Aromatics. Well MW-3 is not designated for sampling for the current monitoring program.

Well MW-12 exhibited a chloroform concentration of 4.0 ug/l in November 1991, above the NCGWQS of 0.19 ug/L but substantially below the GCL of 190 ug/L. No other compounds were present above NCGWQSs at this well for that sampling event. Chloroform is not a constituent of petroleum fuels and often is present in potable water supplies that employ certain chlorine disinfection treatment processes. Consequently, the presence of chloroform at this low concentration is not considered significant. The well has not been sampled since the November 1991 event.

At well MW-18, 4-isopropyltoluene was reported at a concentration of 0.5 ug/L in April 2001. As a NCGWQS has not been established for this compound, the detection of the compound is considered above the standard; a GCL has not been established for this compound. 4-Isopropyltoluene is not included in the analytic suite for the current monitoring program. Bis(2-ethylhexyl)phthalate (DEHP) was reported at well MW-18 at a concentration of 159 ug/L in August 1999, above the NCGWQS of 3 ug/L but substantially below the GCL of 3000 ug/L. DEHP has not been detected at this well in subsequent sampling events (including the current event). DEHP is not a constituent of petroleum fuels but is a component of many plastics, and this compound frequently occurs as an artifact of the sampling and/or laboratory process due to incidental contact with plastics. Consequently, the reported former presence of DHEP at this well is not considered significant. The C<sub>9</sub>-C<sub>22</sub> Aromatics were reported at well MW-18 in October 2000 and April 2001 at concentrations of 280 ug/L and 270 ug/L, respectively, similar to the concentrations reported for the current monitoring program (June and December 2004 concentrations of 570 ug/L and 310 ug/L, respectively). Each of these concentrations is slightly above the NCGWQS of 210 ug/L.

Well MW-21 exhibited concentrations of 4-isopropyltoluene of 2 ug/L and 3 ug/L in October 2000 and April 2001, respectively. As noted previously, a NCGWQS is not available for this compound so that the detection constitutes an exceedance of the standard. As indicated above, the compound is not included in the current analytic suite. DEHP was detected only once at this well (also in August 1999) at a concentration of 6 ug/L, above the NCGWQS of 3 ug/L and substantially below the GCL of 3000 ug/L. As discussed with respect to DHEP reported at well MW-18, the reported former presence of DHEP is not considered significant. The C<sub>9</sub>-C<sub>22</sub> Aromatics were reported at well MW-21 in October 2000 and April 2001 at concentrations of 250 ug/L and 440 ug/L, respectively, and at a concentration of 360 ug/L in the previous (June 2004) sampling event; these concentrations are slightly above the NCGWQS of 210 ug/L. For the current event, the C<sub>9</sub>-C<sub>22</sub> Aromatics concentration of 200 ug/L was below the NCGWQS.

At well MW-22, 4-isopropyltoluene concentrations of 2 ug/L and 0.8 ug/L were reported for the October 2000 and April 2001 sampling events, respectively, and, in the absence of an established NCGWQS, the detection of the compound constitutes an exceedance; the compound is not included in the current analytic suite. DEHP was reported only once at this well (again in August 1999, as with wells MW-18 and MW-21) at a concentration of 283 ug/L, above the NCGWQS of 3 ug/L and substantially below the GCL of 3000 ug/L. As discussed above, the

reported former presence of DHEP is not considered significant. The C<sub>9</sub>-C<sub>22</sub> Aromatics were reported at well MW-21 in October 2000 and April 2001 at concentrations of 340 ug/L and 310 ug/L, respectively, slightly above the NCGWQS of 210 ug/L. The C<sub>9</sub>-C<sub>22</sub> Aromatics were not detected during the previous (June 2004) sampling event, but were reported during the current event at a concentration of 240 ug/L, slightly above the NCGWQS.

Measurable free product was detected during the current event only at well MW-19, at a thickness of 0.39 foot. Measurable free product was not observed at any other site well. Figure 4-2 presents the estimated extent of measurable free product for December 2004. The map illustrates the lateral extent of free product is restricted to the area in the immediate vicinity of the well and the former UST associated with the adjacent Building M235.

Previous gauging data also have identified measurable free product at well MW-19. Four gauging events conducted from July 2000 to April 2001 identified measurable free product at this well, ranging in thickness from 0.61 foot (January 2001) to 0.12 foot (July 2001) (Law, 2000b; Law, 2001). More recently, four gauging events conducted between October 2002 and August 2003 indicated measurable free product was not present at this well, although two events identified the presence of a sorbent sock in the well immediately prior to gauging, reducing the reliability of the gauging data at the well (EEI, 2003a; 2003b; 2003c; 2003d). During the current monitoring program, free product thicknesses of 0.49 foot and 0.10 foot for June and September 2004, respectively, were measured (EEI, 2004b and 2004c).

The only well other than MW-19 where measurable free product has been observed is well MW-3. Free product was reported at this well in December 1992 at a thickness of 0.12 foot (OBG, 1993). Measurable free product was not detected during gauging events conducted at this well in November 1991, July and October 2002, and January and April 2001 (OBG, 1992; Law, 2000b; Law, 2001). As indicated above, measurable free product was not observed at well MW-3 during the current event.

In summary, a review of site groundwater quality data indicate few AVOCs or SVOCs have been present at concentrations above NCGWQSs, and the current data indicate no AVOCs or target analyte SVOCs are present above NCGWQSs. The C<sub>9</sub>-C<sub>22</sub> Aromatics have been reported at concentrations slightly above NCGWQSs at wells MW-3, MW-18, MW-21, and MW-22. The current event, which included sampling at wells MW-18, MW21, and MW-22 but not MW-3, indicated the C<sub>9</sub>-C<sub>22</sub> Aromatics exceeded the NCGWQS only at wells MW-18 and MW-22. Other than one gauging event conducted in December 1992 that reported measurable free product in well MW-3, well MW-19 is the only well to exhibit measurable free product, and the free product measured in this well has not occurred consistently over time.

#### **4.2 Quality Assurance/Quality Control and Data Verification**

One quality control (QC) sample consisting of a field duplicate sample was collected from well MW-7. The primary and QC samples were submitted to Paradigm Analytical Laboratories for the same analyses. Results for the two samples generally were consistent. No VPH hydrocarbons, target SVOCs, or TICs were detected in either sample. The primary sample exhibited toluene at an estimated concentration of 0.808 ug/L, whereas toluene was not detected

in the duplicate sample, at a reporting limit of 1.00 ug/L. The EPH analyses indicated a concentration of 600 ug/L for the C<sub>19</sub>-C<sub>36</sub> Aliphatics for the primary sample, whereas the C<sub>19</sub>-C<sub>36</sub> Aliphatics were not detected in the duplicate sample, at a reporting limit of 100 ug/L. No other EPH hydrocarbons were detected in either sample.

A second QC sample consisting of a laboratory-supplied trip blank was submitted to the laboratory VOC analysis. No analytes were detected in the trip blank, indicating cross-contamination between stored samples is not of concern.

Data verification was performed by EEI on the complete set of the primary investigative samples, and included a review of the following:

- Holding times
- Blanks
- Laboratory control spikes
- Surrogate recoveries
- Internal standards
- Calibrations

An assessment of the results indicated the data are usable for project purposes.

## SECTION 5 CONCLUSIONS AND RECOMMENDATIONS

Conclusions and recommendations have been developed based on an evaluation of site data. Each is discussed below.

### 5.1 Conclusions

The following conclusions have been drawn based on site data:

- Surficial aquifer groundwater flow direction has varied over time, possibly in response to seasonal water table fluctuations and/or variable local recharge from precipitation. In general, groundwater flow patterns include a flow component to the south, southeast, and/or southwest in the direction of Northeast Creek and/or the New River.
- No water supply wells have been identified within 1200 feet of the site, and supply wells at the base do not draw water from the surficial aquifer but from the deeper Castle Hayne aquifer.
- There are no mapped surface water bodies present at the site. The closest mapped surface water bodies are more than 600 feet from the site.
- Previous investigations indicate petroleum-impacted soils exhibiting TPH concentrations above State standards in effect at the time of sampling are limited to the immediate vicinity of the former USTs.
- Gauging data suggest that a limited thickness of free product is present inconsistently at well MW-19, located in the immediate vicinity of the former UST associated with Building M235. The only other well where measurable product has been recorded is well MW-3, with free product recorded during a single gauging event conducted in November 1992.
- Historical groundwater quality data indicate few constituents have been present above NCGWQs, and, with the exception of phenanthrene detected once in 1991 at one well, all constituents have been substantially below GCLs.
- No AVOCs or target analyte SVOCs were present at concentrations above NCGWQs during the current sampling event.
- Historical and current groundwater quality data indicate that the C<sub>9</sub>-C<sub>22</sub> Aromatics are present at concentrations above slightly NCGWQs, primarily in wells located in the immediate vicinity of some of the former USTs.

### 5.2 Recommendations

The following recommendations are made based on site data:

- Continue with the planned groundwater monitoring program.
- Collect a groundwater sample from well MW-3 during the next scheduled monitoring event. Analyze the sample for the same analytic suite as specified for wells presently included in the monitoring program.

## **SECTION 6 REFERENCES**

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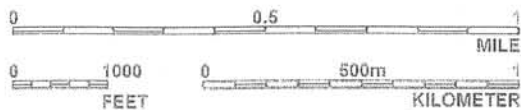
OBG, 1992 (O'Brien and Gere Engineers, Inc.). January 1992. Site Assessment, Tanks M232-M236, Camp Johnson, Marine Corps Base Camp Lejeune, North Carolina. Prepared for the Department of the Navy.

OBG, 1993 (O'Brien and Gere Engineers, Inc.). July 1993. Addendum Site Assessment, Tanks M232-M236, Camp Johnson, Marine Corps Base Camp Lejeune, North Carolina. Prepared for the Department of the Navy.

## **FIGURES**



Scale 1 : 24,000  
Contour Interval 5 ft



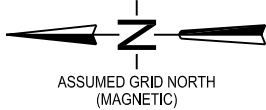
MAP LOCATION  
IN NORTH CAROLINA

U.S.G.S TOPOGRAPHIC MAP:  
JACKSONVILLE SOUTH, N.C.  
1952  
PHOTOINSPECTED 1988

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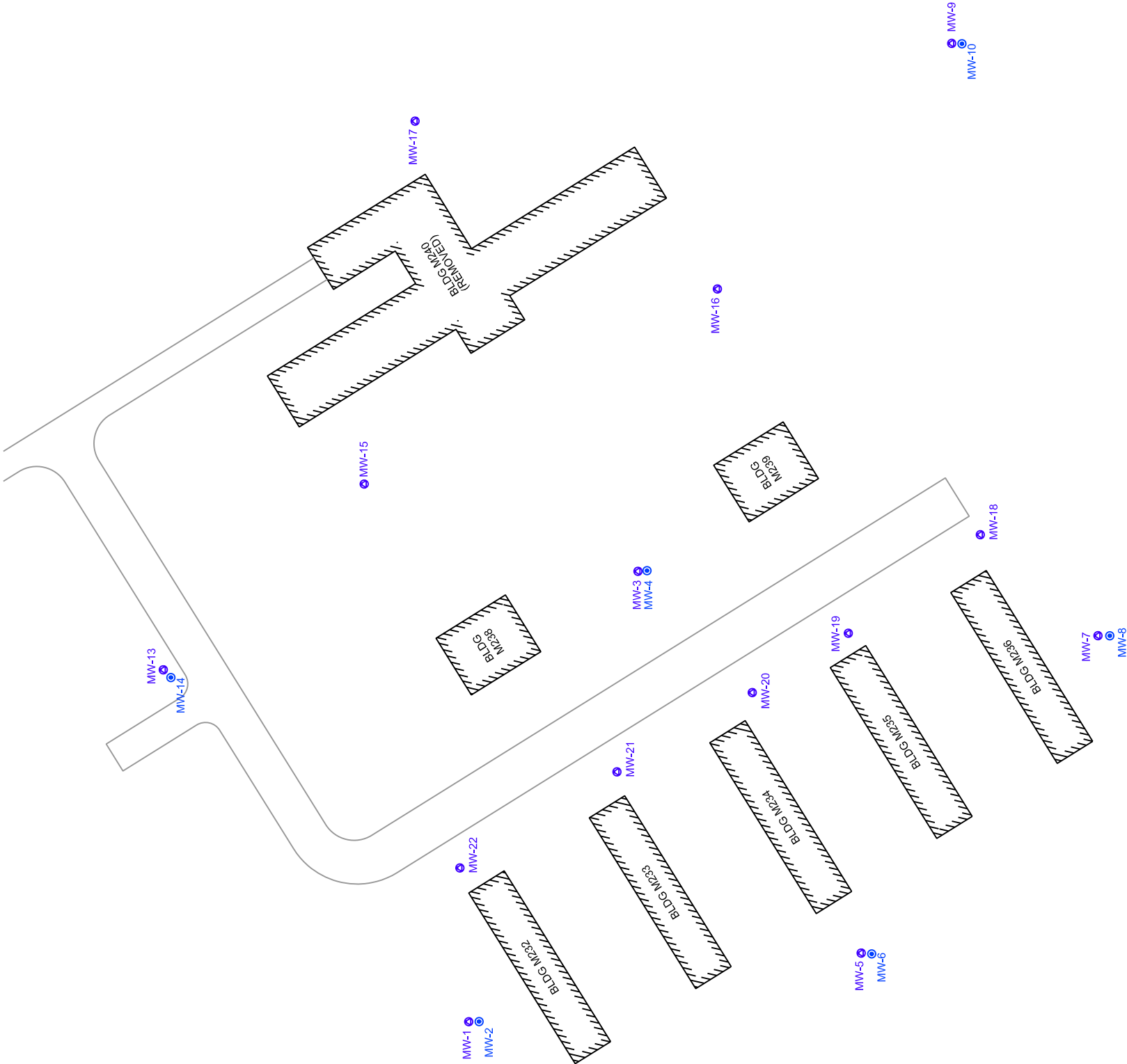
SITE LOCATION

SITE M232-236  
QUARTERLY MONITORING REPORT  
MCB CAMP LEJEUNE, NC



LEGEND

- SHALLOW MONITORING WELL
- INTERMEDIATE MONITORING WELL



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MW-12

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MW-13

MW-12

MW-11

MW-10

MW-9

MW-8

MW-7

MW-6

MW-5

MW-4

MW-3

MW-2

MW-1

MW-22

MW-21

MW-20

MW-19

MW-18

MW-17

MW-16

MW-15

MW-14

MW-13

MW-12

MW-11

MW-10

MW-9

MW-8

MW-7

MW-6

MW-5

MW-4

MW-3

MW-2

MW-1

MW-22

MW-21

MW-20

MW-19

MW-18

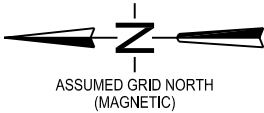
MW-17

MW-16

MW-15

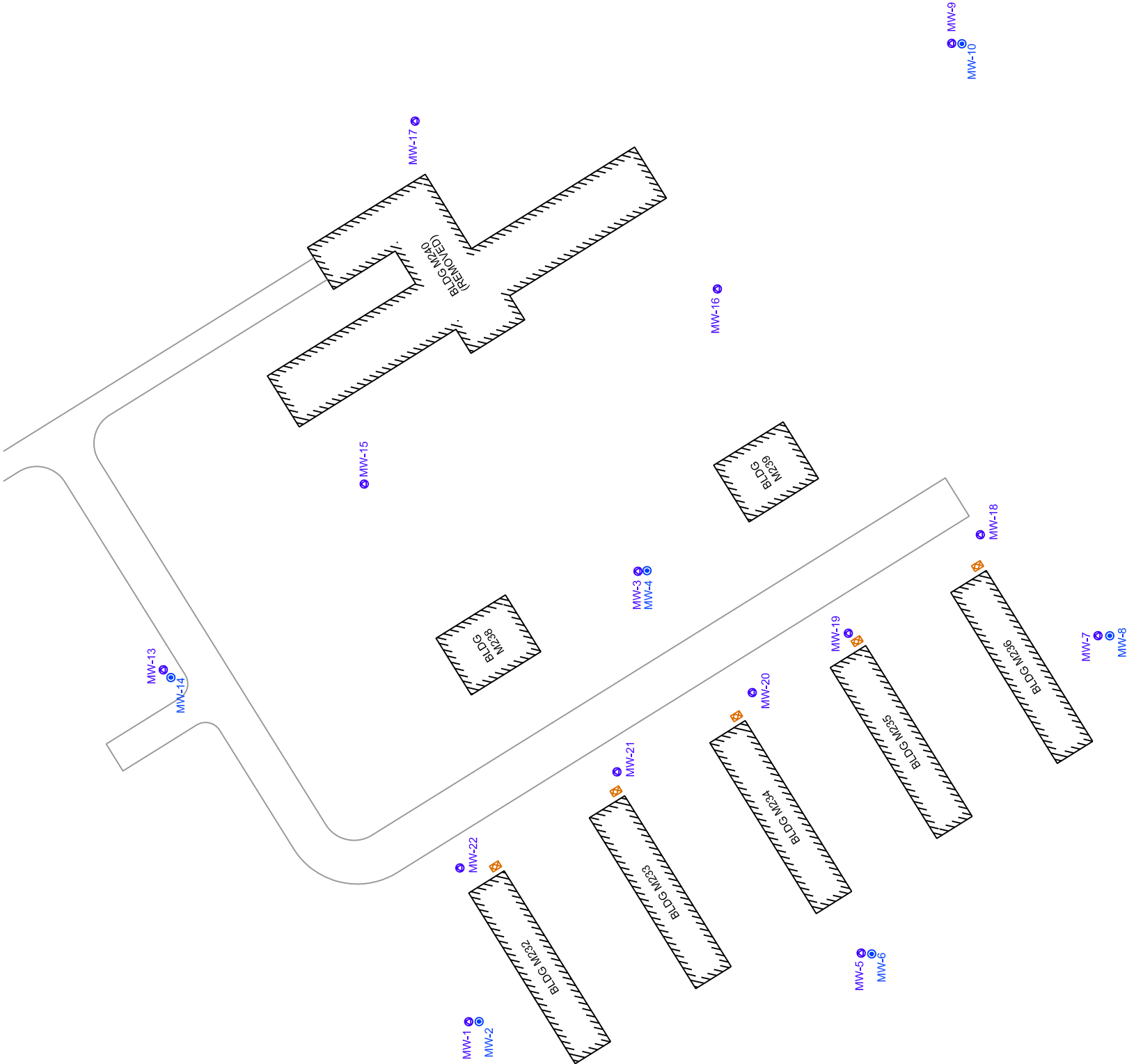
MW-14

MW-13



LEGEND

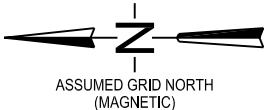
- SHALLOW MONITORING WELL
- INTERMEDIATE MONITORING WELL
- FORMER UST



MW-11  
MW-12

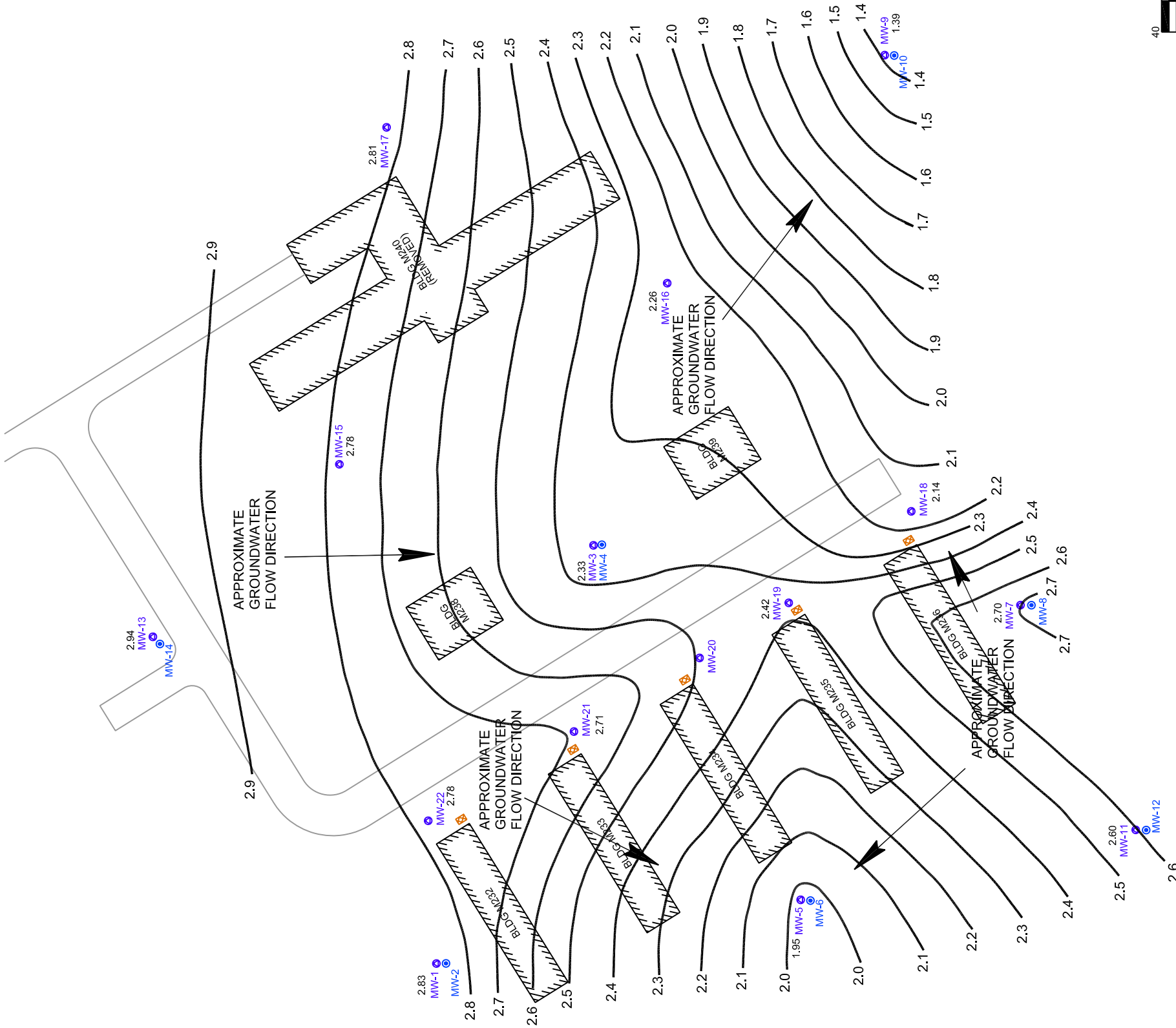
|  |          |          |                      |
|--|----------|----------|----------------------|
|  | FIGURE   | 1-3      | FORMER UST LOCATIONS |
|  | DATE     | 01/11/05 |                      |
|  | REVISION | 0        |                      |
|  | DRAWN BY | WCM      |                      |
|  | FILE     | M232_MAP |                      |

SITE M232-236  
QUARTERLY MONITORING REPORT  
MCB CAMP LEJEUNE, NC

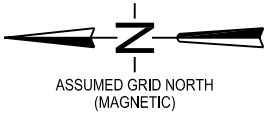


LEGEND

- SHALLOW MONITORING WELL
- INTERMEDIATE MONITORING WELL
- FORMER UST
- SURFICIAL AQUIFER SHALLOW WELL GROUNDWATER ELEVATION
- 1.51
- 3
- (GROUNDWATER ELEVATIONS EXPRESSED IN FEET ABOVE/BELOW MEAN SEA LEVEL)

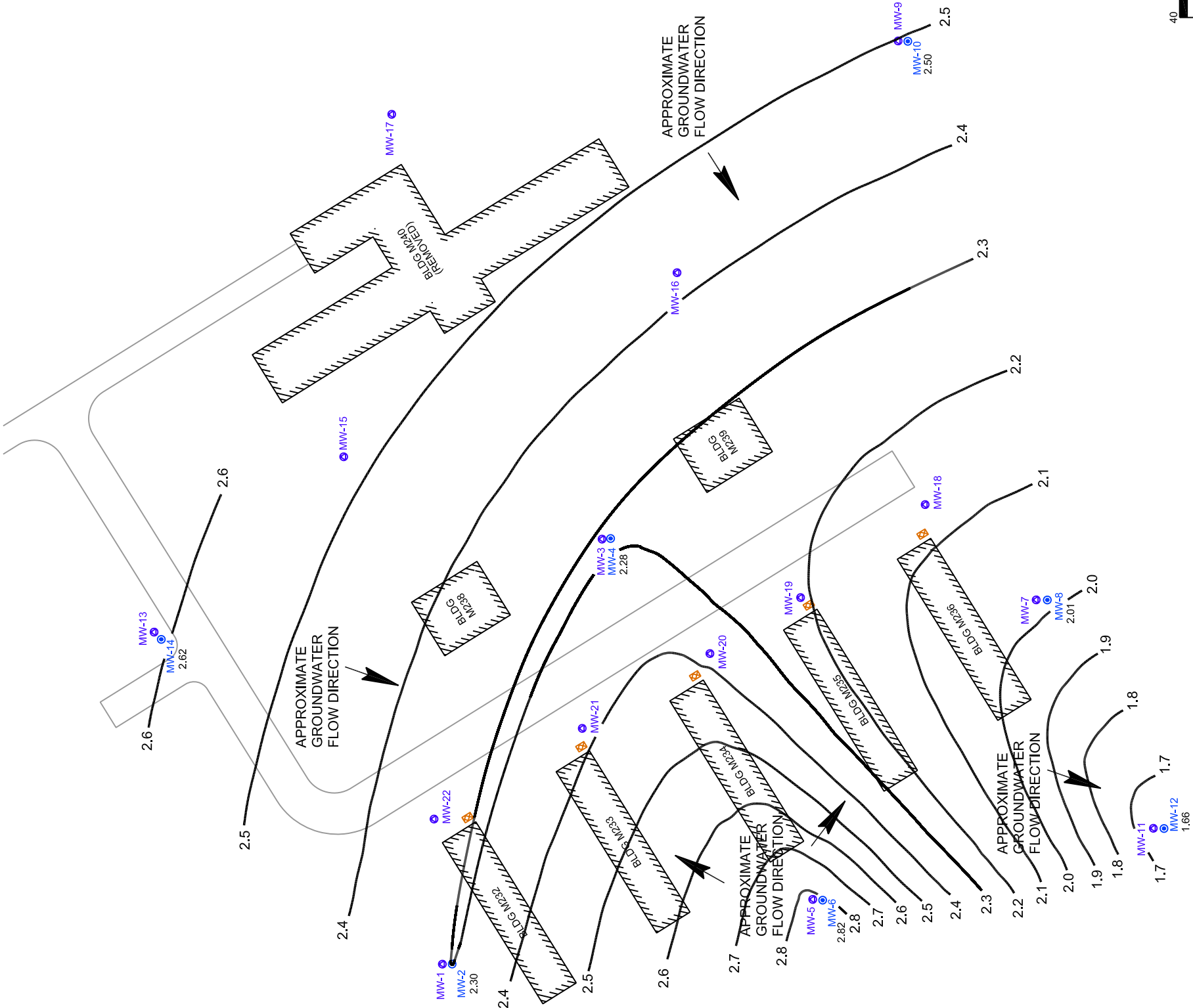


|  |          |          |                                                       |
|--|----------|----------|-------------------------------------------------------|
|  | FIGURE   | 3-1      | SURFICIAL AQUIFER SHALLOW WELL GROUNDWATER ELEVATIONS |
|  | DATE     | 01/11/05 | FOR 19 DECEMBER 2004                                  |
|  | REVISION | 0        | SITE M232-236                                         |
|  | DRAWN BY | WCM      | QUARTERLY MONITORING REPORT                           |
|  | FILE     | M232_MAP | MCB CAMP LEJEUNE, NC                                  |

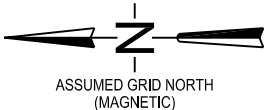


LEGEND

- SHALLOW MONITORING WELL
- INTERMEDIATE MONITORING WELL
- FORMER UST
- SURFICIAL AQUIFER INTERMEDIATE WELL GROUNDWATER ELEVATION CONTOUR
- (GROUNDWATER ELEVATIONS EXPRESSED IN FEET ABOVE/BELOW MEAN SEA LEVEL)

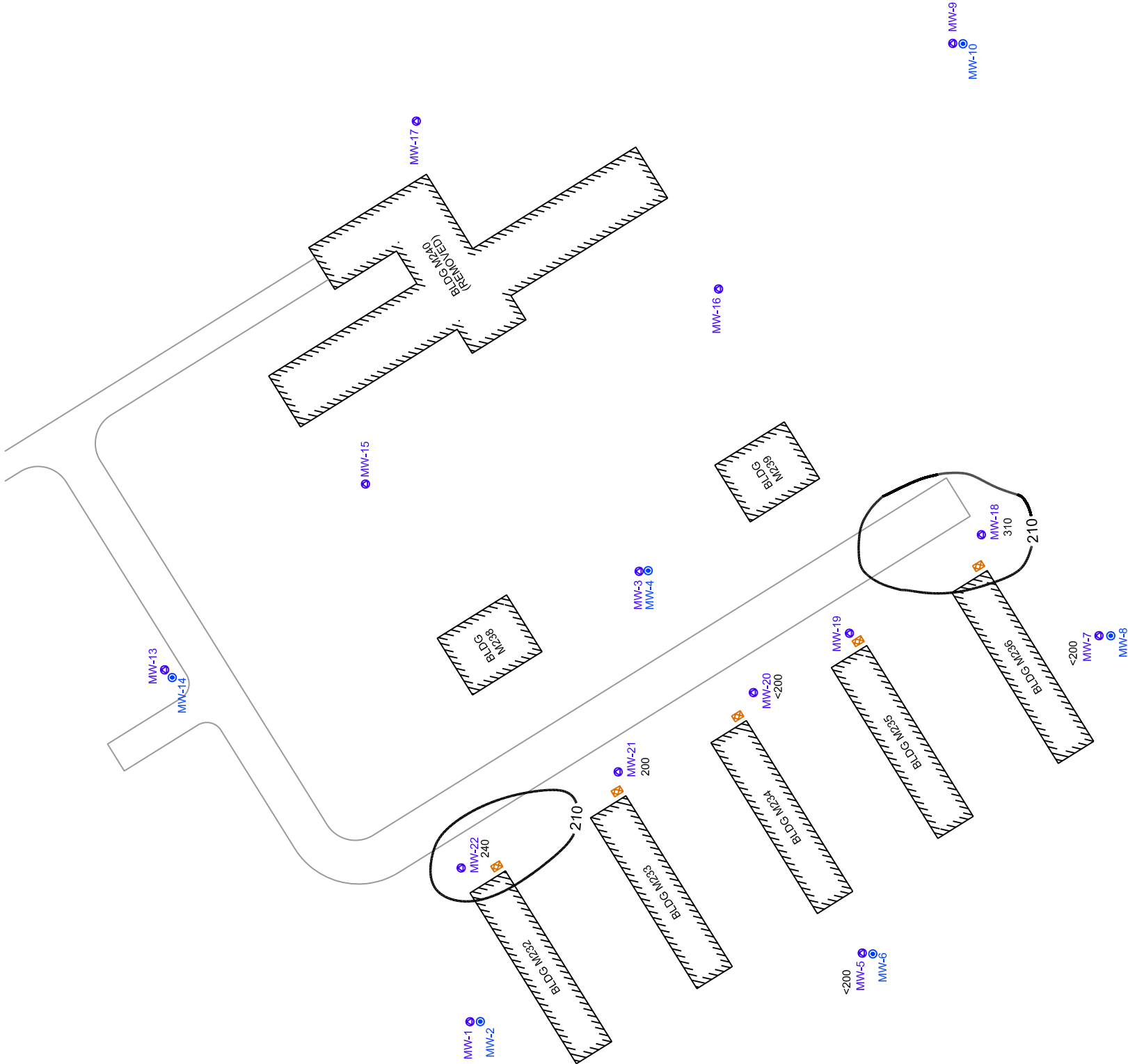


|  |          |          |                                                                                 |  |
|--|----------|----------|---------------------------------------------------------------------------------|--|
|  | FIGURE   | 3-2      | SURFICIAL AQUIFER INTERMEDIATE WELL GROUNDWATER ELEVATIONS FOR 19 DECEMBER 2004 |  |
|  | DATE     | 01/11/05 | SITE M232-236                                                                   |  |
|  | REVISION | 0        | QUARTERLY MONITORING REPORT                                                     |  |
|  | DRAWN BY | WCM      | MCB CAMP LEJEUNE, NC                                                            |  |

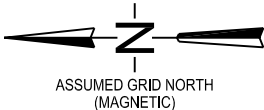


LEGEND

- SHALLOW MONITORING WELL
  - INTERMEDIATE MONITORING WELL
  - FORMER UST
  - SURFICIAL AQUIFER SHALLOW WELL C9-C22 AROMATICS CONCENTRATION CONTOUR
- 360
- 210
- (CONCENTRATIONS EXPRESSED IN MICROGRAMS PER LITER)  
(<# DENOTES NOT DETECTED AT THE INDICATED REPORTING LIMIT)  
(THE NORTH CAROLINA GROUNDWATER QUALITY STANDARD FOR C9-C22 AROMATICS IS 210 MICROGRAMS PER LITER)



MW-11  
MW-12



LEGEND

SHALLOW MONITORING WELL

INTERMEDIATE MONITORING WELL

FORMER UST

SURFICIAL AQUIFER FREE PRODUCT THICKNESS

ESTIMATED EXTENT OF FREE PRODUCT

(THICKNESS EXPRESSED IN FEET)

(NP: MEASURABLE FREE PRODUCT NOT PRESENT)

NP  
MW-11  
MW-12  
NP

NP  
MW-5  
MW-6  
NP

NP  
MW-7  
MW-8  
NP

NP  
MW-9  
MW-10  
NP

MW-16  
NP

NP  
MW-3  
MW-4  
NP

NP  
MW-1  
MW-2  
NP

MW-22  
NP

MW-21  
NP

BLDG MC38

BLDG MC34

MW-19  
0.39

MW-18  
NP

MW-17  
NP

NP  
MW-15

NP  
MW-13  
MW-14  
NP



|  |          |          |                                     |
|--|----------|----------|-------------------------------------|
|  | FIGURE   | 4-2      | ESTIMATED EXTENT OF<br>FREE PRODUCT |
|  | DATE     | 01/11/05 | FOR DECEMBER 2004                   |
|  | REVISION | 0        | SITE M232-236                       |
|  | DRAWN BY | WCM      | QUARTERLY MONITORING REPORT         |
|  | FILE     | M232_MAP | MCB CAMP LEJEUNE, NC                |

## **TABLES**

Table 3-1  
Gauging Data for 19 December 2004  
Site M232-236

| Well Identification | Top of Casing Elevation (feet msl) | Depth to Water (feet btoc) | Depth to Product (feet btoc) | Product Thickness (feet) | Uncorrected Groundwater Elevation (feet msl) | Corrected Groundwater Elevation <sup>(1)</sup> (feet msl) |
|---------------------|------------------------------------|----------------------------|------------------------------|--------------------------|----------------------------------------------|-----------------------------------------------------------|
| MW-1                | 14.20                              | 11.37                      | NP                           | NP                       | 2.83                                         | 2.83                                                      |
| MW-2                | 13.96                              | 11.66                      | NP                           | NP                       | 2.30                                         | 2.30                                                      |
| MW-3                | 16.33                              | 14.00                      | NP                           | NP                       | 2.33                                         | 2.33                                                      |
| MW-4                | 16.48                              | 14.20                      | NP                           | NP                       | 2.28                                         | 2.28                                                      |
| MW-5                | 12.80                              | 10.85                      | NP                           | NP                       | 1.95                                         | 1.95                                                      |
| MW-6                | 13.07                              | 10.25                      | NP                           | NP                       | 2.82                                         | 2.82                                                      |
| MW-7                | 12.90                              | 10.20                      | NP                           | NP                       | 2.70                                         | 2.70                                                      |
| MW-8                | 12.91                              | 10.90                      | NP                           | NP                       | 2.01                                         | 2.01                                                      |
| MW-9                | 13.88                              | 12.49                      | NP                           | NP                       | 1.39                                         | 1.39                                                      |
| MW-10               | 14.43                              | 11.93                      | NP                           | NP                       | 2.50                                         | 2.50                                                      |
| MW-11               | 10.87                              | 8.27                       | NP                           | NP                       | 2.60                                         | 2.60                                                      |
| MW-12               | 10.89                              | 9.23                       | NP                           | NP                       | 1.66                                         | 1.66                                                      |
| MW-13               | 16.10                              | 13.16                      | NP                           | NP                       | 2.94                                         | 2.94                                                      |
| MW-14               | 15.97                              | 13.35                      | NP                           | NP                       | 2.62                                         | 2.62                                                      |
| MW-15               | 15.28                              | 12.50                      | NP                           | NP                       | 2.78                                         | 2.78                                                      |
| MW-16               | 15.14                              | 12.88                      | NP                           | NP                       | 2.26                                         | 2.26                                                      |
| MW-17               | 14.52                              | 11.71                      | NP                           | NP                       | 2.81                                         | 2.81                                                      |
| MW-18               | 11.34                              | 9.20                       | NP                           | NP                       | 2.14                                         | 2.14                                                      |
| MW-19               | 11.45                              | 9.34                       | 8.95                         | 0.39                     | 2.11                                         | 2.42                                                      |
| MW-20               | 11.39                              | 9.98                       | NP                           | NP                       | 1.41                                         | 1.41                                                      |
| MW-21               | 11.75                              | 9.04                       | NP                           | NP                       | 2.71                                         | 2.71                                                      |
| MW-22               | 11.73                              | 8.95                       | NP                           | NP                       | 2.78                                         | 2.78                                                      |

<sup>(1)</sup> Corrected Groundwater Elevation = Top of Casing Elevation - Depth to Water + 0.8 x Product Thickness  
Well identifications shown in *italics* indicate wells screened from approximately 20 feet bgs to 30 feet bgs; all other wells screened at or above 15 feet bgs  
feet msl - feet above/below mean sea level  
feet btoc - feet below top of casing  
NA - Not Available - top of casing elevation data not available  
NC - Not Calculated - insufficient data available to calculate a groundwater elevation  
NP - Not Present - no measurable product detected

Table 4-1  
Summary of Groundwater Quality Analytical Data for December 2004  
Site M232-236

| EPA Method 602 (ug/L)                                                                       | NCGWQS | GCL     | MW-5     | MW-7     | DUP <sup>(1)</sup> | MW-18    | MW-20    | MW-21    | MW-22    |
|---------------------------------------------------------------------------------------------|--------|---------|----------|----------|--------------------|----------|----------|----------|----------|
|                                                                                             |        |         | 12/19/04 | 12/19/04 | 12/19/04           | 12/19/04 | 12/19/04 | 12/19/04 | 12/19/04 |
| Benzene                                                                                     | 1      | 5000    | <1.00    | <1.00    | <1.00              | <1.00    | <1.00    | <1.00    | <1.00    |
| Diisopropyl ether                                                                           | 70     | 70,000  | <1.00    | <1.00    | <1.00              | <1.00    | <1.00    | <1.00    | <1.00    |
| Ethylbenzene                                                                                | 29     | 29,000  | <1.00    | <1.00    | <1.00              | <1.00    | <1.00    | 0.845 J  | <1.00    |
| Methyl-tert butyl ether                                                                     | 200    | 200,000 | <2.00    | <2.00    | <2.00              | <2.00    | <2.00    | <2.00    | <2.00    |
| Toluene                                                                                     | 1000   | 257,500 | <1.00    | 0.808 J  | <1.00              | <1.00    | 0.498 J  | 0.869 J  | 0.396 J  |
| m,p-Xylene <sup>(2)</sup>                                                                   |        |         | <2.00    | <2.00    | <2.00              | 0.826 J  | 0.622 J  | 1.46 J   | 0.638 J  |
| o-Xylene <sup>(2)</sup>                                                                     |        |         | <2.00    | <2.00    | <2.00              | <2.00    | <2.00    | 0.904 J  | <2.00    |
| Total Xylenes <sup>(2)</sup>                                                                | 530    | 87,500  | <4.00    | <4.00    | <4.00              | 0.826 J  | 0.622 J  | 2.364 J  | 0.638 J  |
| EPA Method 625 (ug/L)                                                                       |        |         |          |          |                    |          |          |          |          |
| Acenaphthene                                                                                | 80     | 2120    | <10.0    | <10.0    | <10.0              | 2.80 J   | <10.0    | 2.20 J   | <10.0    |
| Anthracene                                                                                  | 2100   | 2100    | <10.0    | <10.0    | <10.0              | <10.0    | <10.0    | <10.0    | <10.0    |
| Bis(2-ethylhexyl)phthalate                                                                  | 3      | 3000    | <10.0    | <10.0    | <10.0              | <10.0    | <10.0    | <10.0    | <10.0    |
| Diethylphthalate                                                                            | 5000   | NE      | <10.0    | <10.0    | <10.0              | <10.0    | 2.90 J   | 15.5     | 4.60 J   |
| 4,6-Dinitro-2-methylphenol                                                                  | RL     | NE      | <50.0    | <50.0    | <50.0              | <50.0    | <50.0    | <50.0    | <50.0    |
| Fluorene                                                                                    | 280    | 950     | <10.0    | <10.0    | <10.0              | 4.70 J   | 1.30 J   | 3.50 J   | 1.60 J   |
| Naphthalene                                                                                 | 21     | 15,500  | <10.0    | <10.0    | <10.0              | <10.0    | <10.0    | 3.10 J   | 2.30 J   |
| Phenanthrene                                                                                | 210    | 410     | <10.0    | <10.0    | <10.0              | 4.90 J   | <10.0    | 3.10 J   | <10.0    |
| Pyrene                                                                                      | 210    | 210     | <10.0    | <10.0    | <10.0              | <10.0    | <10.0    | <10.0    | <10.0    |
| TICs (total)                                                                                |        |         | NR       | NR       | NR                 | 72.47 J  | NR       | 116.69 J | 32.8 J   |
| 1-Methylnaphthalene (TIC)                                                                   | RL     | NE      | NR       | NR       | NR                 | 4.7 J    | NR       | 30.2 J   | 15.1 J   |
| 2-Methylnaphthalene (TIC)                                                                   | 14     | 12,500  | NR       | NR       | NR                 | NR       | NR       | 10.7 J   | 6.6 J    |
| 2,3-Dimethylnaphthalene (TIC)                                                               | RL     | NE      | NR       | NR       | NR                 | NR       | NR       | NR       | NR       |
| Biphenyl (TIC)                                                                              | RL     | NE      | NR       | NR       | NR                 | 9.82 J   | NR       | NR       | NR       |
| MADEP VPH (ug/L)                                                                            |        |         |          |          |                    |          |          |          |          |
| C <sub>5</sub> -C <sub>8</sub> Aliphatics                                                   | 420    | NE      | <100     | <100     | <100               | <100     | <100     | <100     | <100     |
| C <sub>9</sub> -C <sub>12</sub> Aliphatics <sup>(3)</sup>                                   |        |         | <100     | <100     | <100               | <100     | <100     | <100     | <100     |
| C <sub>9</sub> -C <sub>10</sub> Aromatics <sup>(3)</sup>                                    |        |         | <100     | <100     | <100               | 110      | <100     | <100     | <100     |
| MADEP EPH (ug/L)                                                                            |        |         |          |          |                    |          |          |          |          |
| C <sub>9</sub> -C <sub>18</sub> Aliphatics <sup>(3)</sup>                                   |        |         | <100     | <100     | <100               | 210      | <100     | 300      | <100     |
| C <sub>19</sub> -C <sub>36</sub> Aliphatics                                                 | 42,000 | NE      | <100     | 600      | <100               | <100     | <100     | <100     | <100     |
| C <sub>11</sub> -C <sub>22</sub> Aromatics <sup>(3)</sup>                                   |        |         | <100     | <100     | <100               | 200      | <100     | 200      | 240      |
| MADEP VPH + EPH (ug/L)                                                                      |        |         |          |          |                    |          |          |          |          |
| C <sub>9</sub> -C <sub>12</sub> + C <sub>9</sub> -C <sub>18</sub> Aliphatics <sup>(3)</sup> | 4200   | NE      | <200     | <200     | <200               | 210      | <200     | 300      | <200     |
| C <sub>9</sub> -C <sub>10</sub> + C <sub>11</sub> -C <sub>22</sub> Aromatics <sup>(3)</sup> | 210    | NE      | <200     | <200     | <200               | 310      | <200     | 200      | 240      |

<sup>(1)</sup> DUP is a duplicate sample collected from well MW-7

<sup>(2)</sup> Laboratory quantitation is performed on the m,p-xylene isomers and on the o-xylene isomer; the NCGWQS is based on the sum of the m-, p-, and o-xylene isomers; the sum of the m,p-xylene isomers and the o-xylene isomer is presented as Total Xylenes

<sup>(3)</sup> Laboratory quantitation is performed on each of the indicated hydrocarbon fractions; NCGWQSs are based on the sum of the indicated fractions; the sums for the indicated fractions are presented as MADEP VPH + EPH

J: Estimated concentration below reporting limits or estimated concentration for TIC quantitations

NR: None Reported; no TICs were identified in the sample

<#: Analyte not detected at the indicated detection limit

GCL: Gross Contamination Level

NE: Not Established; a GCL has not been established for the analyte

NCGWQS: North Carolina Groundwater Quality Standard

RL: Reporting Limit; a NCGWQS has not been established for the compound; therefore, the NCGWQS is set at the reporting limit

TICs: Tentatively Identified Compound; "total" indicates sum of all TICs; discrete compounds when identified are listed separately; all TIC concentrations are estimated

ug/L: micrograms per liter

**Bold type indicates analyte detection**

**Shaded area in bold indicates analyte detection at a concentration above the NCGWQS**

***Shaded area in bold italics indicates analyte detection at a concentration above the GCL***

Table 4-2 (Page 1 of 2)  
Groundwater Quality Analytical Data Over Time  
Site M232-236

| Volatile Organic<br>Compounds (ug/L)        | NCGWQS | GCL     | MW-1             | MW-2             | MW-3             |                                | MW-4                         | MW-5             |                  |                 |               |              | MW-6             | MW-7             |                  |                      |       | MW-8                     | MW-9  | MW-10            | MW-11            | MW-12            | MW-13            |                  |                  |
|---------------------------------------------|--------|---------|------------------|------------------|------------------|--------------------------------|------------------------------|------------------|------------------|-----------------|---------------|--------------|------------------|------------------|------------------|----------------------|-------|--------------------------|-------|------------------|------------------|------------------|------------------|------------------|------------------|
|                                             |        |         | November<br>1991 | November<br>1991 | November<br>1991 | October<br>2000 <sup>(1)</sup> | April<br>2001 <sup>(1)</sup> | November<br>1991 | November<br>1991 | October<br>2000 | April<br>2001 | June<br>2004 | December<br>2004 | November<br>1991 | November<br>1991 | June 2004<br>Primary | Dup   | December 2004<br>Primary | Dup   | November<br>1991 | November<br>1991 | November<br>1991 | November<br>1991 | November<br>1991 | November<br>1991 |
|                                             |        |         | (8010/<br>8020)  | (8010/<br>8020)  | (8010/<br>8020)  | (6210D)                        | (6210D)                      | (8010/<br>8020)  | (8010/<br>8020)  | (6210D)         | (6210D)       | (602)        | (602)            | (8010/<br>8020)  | (8010/<br>8020)  | (602)                | (602) | (602)                    | (602) | (8010/<br>8020)  | (8010/<br>8020)  | (8010/<br>8020)  | (8010/<br>8020)  | (8010/<br>8020)  | (8010/<br>8020)  |
| n-Butylbenzene                              | 70     | 6900    | na               | na               | na               | ND                             | ND                           | na               | na               | ND              | ND            | na           | na               | na               | na               | na                   | na    | na                       | na    | na               | na               | na               | na               | na               |                  |
| sec-Butylbenzene                            | 70     | 8500    | na               | na               | na               | ND                             | ND                           | na               | na               | ND              | ND            | na           | na               | na               | na               | na                   | na    | na                       | na    | na               | na               | na               | na               | na               |                  |
| tert-Butylbenzene                           | 70     | 15,000  | na               | na               | na               | ND                             | ND                           | na               | na               | ND              | ND            | na           | na               | na               | na               | na                   | na    | na                       | na    | na               | na               | na               | na               | na               |                  |
| Chloroform                                  | 0.19   | 190     | ND               | ND               | ND               | ND                             | ND                           | ND               | ND               | ND              | ND            | na           | na               | ND               | ND               | na                   | na    | na                       | na    | ND               | ND               | ND               | ND               | 4.0              |                  |
| Ethylbenzene                                | 29     | 29,000  | ND               | ND               | ND               | ND                             | ND                           | ND               | ND               | ND              | ND            | <1.00        | <1.00            | ND               | ND               | <1.00                | <1.00 | <1.00                    | <1.00 | ND               | ND               | 2.0              | ND               | ND               |                  |
| Isopropylbenzene                            | 70     | 25,000  | na               | na               | na               | ND                             | ND                           | na               | na               | ND              | ND            | na           | na               | na               | na               | na                   | na    | na                       | na    | na               | na               | na               | na               | na               |                  |
| 4-Isopropyltoluene                          | RL     | NE      | na               | na               | na               | ND                             | ND                           | na               | na               | ND              | ND            | na           | na               | na               | na               | na                   | na    | na                       | na    | na               | na               | na               | na               | na               |                  |
| Naphthalene                                 | 21     | 15,500  | na               | na               | na               | ND                             | ND                           | na               | na               | ND              | ND            | na           | na               | na               | na               | na                   | na    | na                       | na    | na               | na               | na               | na               | na               |                  |
| n-Propyl benzene                            | 70     | 30,000  | na               | na               | na               | ND                             | ND                           | na               | na               | ND              | ND            | na           | na               | na               | na               | na                   | na    | na                       | na    | na               | na               | na               | na               | na               |                  |
| Tetrachloroethene                           | 0.7    | 700     | ND               | ND               | ND               | ND                             | ND                           | ND               | ND               | ND              | ND            | na           | na               | ND               | ND               | na                   | na    | na                       | na    | ND               | ND               | ND               | ND               | ND               |                  |
| Toluene                                     | 1000   | 257,500 | ND               | ND               | ND               | ND                             | ND                           | ND               | ND               | ND              | ND            | <1.00        | <1.00            | 1.0              | ND               | <1.00                | <1.00 | 0.808 J                  | <1.00 | ND               | ND               | 8.0              | 2.0              | 6.0              |                  |
| 1,2,4-Trimethylbenzene                      | 350    | 28,500  | na               | na               | na               | ND                             | ND                           | na               | na               | ND              | ND            | na           | na               | na               | na               | na                   | na    | na                       | na    | na               | na               | na               | na               | na               |                  |
| 1,3,5-Trimethylbenzene                      | 350    | 25,000  | na               | na               | na               | ND                             | ND                           | na               | na               | ND              | ND            | na           | na               | na               | na               | na                   | na    | na                       | na    | na               | na               | na               | na               | na               |                  |
| Total Xylenes                               | 530    | 87,500  | ND               | ND               | ND               | ND                             | ND                           | ND               | ND               | ND              | ND            | <4.00        | <4.00            | ND               | ND               | <4.00                | <4.00 | <4.00                    | <4.00 | ND               | ND               | 15.0             | ND               | ND               |                  |
| Semi-Volatile Organic<br>Compounds (ug/L)   |        |         | (8100)           | na               | (8100)           | (625)                          | (625)                        | na               | (8100)           | (625)           | (625)         | (625)        | (625)            | na               | na               | (625)                | (625) | (625)                    | (625) | na               | na               | na               | na               | na               | na               |
| Acenaphthene                                | 80     | 2120    | ND               | na               | ND               | ND                             | ND                           | na               | ND               | ND              | ND            | <10.0        | <10.0            | na               | na               | <10.0                | <10.0 | <10.0                    | <10.0 | na               | na               | na               | na               | na               | na               |
| Bis(2-ethylhexyl)phthalate                  | 3      | 3000    | na               | na               | na               | ND                             | ND                           | na               | na               | ND              | ND            | <10.0        | <10.0            | na               | na               | <10.0                | <10.0 | <10.0                    | <10.0 | na               | na               | na               | na               | na               | na               |
| Diethylphthalate                            | 5000   | NE      | na               | na               | na               | na                             | ND                           | na               | na               | na              | ND            | <10.0        | <10.0            | na               | na               | <10.0                | <10.0 | <10.0                    | <10.0 | na               | na               | na               | na               | na               | na               |
| Fluorene                                    | 280    | 950     | ND               | na               | ND               | ND                             | ND                           | na               | ND               | ND              | ND            | <10.0        | <10.0            | na               | na               | <10.0                | <10.0 | <10.0                    | <10.0 | na               | na               | na               | na               | na               | na               |
| Naphthalene                                 | 21     | 15,500  | ND               | na               | ND               | ND                             | ND                           | na               | ND               | ND              | ND            | <10.0        | <10.0            | na               | na               | <10.0                | <10.0 | <10.0                    | <10.0 | na               | na               | na               | na               | na               | na               |
| Phenanthrene                                | 210    | 410     | ND               | na               | 2900             | ND                             | ND                           | na               | ND               | ND              | ND            | <10.0        | <10.0            | na               | na               | <10.0                | <10.0 | <10.0                    | <10.0 | na               | na               | na               | na               | na               | na               |
| TICs (total)                                |        |         | na               | na               | na               | 1024 J                         | 585 J                        | na               | na               | ND              | ND            | 10 J         | NR               | na               | na               | 20 J                 | 13 J  | NR                       | NR    | na               | na               | na               | na               | na               | na               |
| MADEP VPH + EPH (ug/L)                      |        |         |                  |                  |                  |                                |                              |                  |                  |                 |               |              |                  |                  |                  |                      |       |                          |       |                  |                  |                  |                  |                  |                  |
| C <sub>9</sub> -C <sub>18</sub> Aliphatics  | 4200   | NE      | na               | na               | na               | 760                            | 690                          | na               | na               | ND              | ND            | <200         | <200             | na               | na               | <200                 | <200  | <200                     | <200  | na               | na               | na               | na               | na               | na               |
| C <sub>19</sub> -C <sub>36</sub> Aliphatics | 42,000 | NE      | na               | na               | na               | 200                            | 140                          | na               | na               | ND              | ND            | <100         | <100             | na               | na               | <100                 | <100  | 600                      | <100  | na               | na               | na               | na               | na               | na               |
| C <sub>9</sub> -C <sub>22</sub> Aromatics   | 210    | NE      | na               | na               | na               | 440                            | 430                          | na               | na               | ND              | ND            | <200         | <200             | na               | na               | <200                 | <200  | <200                     | <200  | na               | na               | na               | na               | na               | na               |

J: Estimated concentration below reporting limits or estimated concentration for TIC quantitations

na: Not Analyzed; compound not quantitated in the analytic suite specified for the sample

ND: Not Detected; compound quantitated and not detected; detection limit not specified in source document summary table

NR: None Reported; no TICs were identified in the sample

<#: Analyte not detected at the indicated detection limit

GCL:Gross Contamination Level

NE: Not Established; a GCL has not been established for the analyte

NCGWQS: North Carolina Groundwater Quality Standard

RL: Reporting Limit; a NCGWQS has not be established for the compound; therefore, the NCGWQS is set at the reporting limit

TICs (total): Tentatively Identified Compound; sum of all TICs; all TIC concentrations are estimated

ug/L: micrograms per liter

Bold type indicates analyte detection

Shaded area in bold indicates analyte detection at a concentration above the NCGWQS

Shaded area in bold italics indicates analyte detection at a concentration above the GCL

November 1991 data from OBG, 1992

December 1992 data from OBG, 1993

October 2000 data from Law, 2000b

April 2001 data from Law, 2001

June 2004 data from EEI, 2004b

December 2004 data presented in Appendix B

<sup>(1)</sup> Well identified as MW-7 in source document

Table 4-2 (Page 2 of 2)  
Groundwater Quality Analytical Data Over Time  
Site M232-236

| Volatile Organic<br>Compounds (ug/L)        | NCGWQS | GCL     | MW-14           | MW-15         | MW-16         | MW-17         | MW-18  |         |         |         |          | MW-20  |         |         |         |          | MW-21  |         |         |         |          | MW-22  |         |         |         |          |
|---------------------------------------------|--------|---------|-----------------|---------------|---------------|---------------|--------|---------|---------|---------|----------|--------|---------|---------|---------|----------|--------|---------|---------|---------|----------|--------|---------|---------|---------|----------|
|                                             |        |         | November        | December      | December      | December      | August | October | April   | June    | December | August | October | April   | June    | December | August | October | April   | June    | December | August | October | April   | June    | December |
|                                             |        |         | 1991            | 1992          | 1992          | 1992          | 1999   | 2000    | 2001    | 2004    | 2004     | 1999   | 2000    | 2001    | 2004    | 2004     | 1999   | 2000    | 2001    | 2004    | 2004     | 1999   | 2000    | 2001    | 2004    | 2004     |
|                                             |        |         | (8010/<br>8020) | (601/<br>602) | (601/<br>602) | (601/<br>602) | (602)  | (6210D) | (6210D) | (602)   | (602)    | (602)  | (6210D) | (6210D) | (602)   | (602)    | (602)  | (6210D) | (6210D) | (602)   | (602)    | (602)  | (6210D) | (6210D) | (602)   | (602)    |
| n-Butylbenzene                              | 70     | 6900    | na              | na            | na            | na            | na     | ND      | 10      | na      | na       | na     | 2       | 2       | na      | na       | na     | 4       | 4       | na      | na       | na     | ND      | 1       | na      | na       |
| sec-Butylbenzene                            | 70     | 8500    | na              | na            | na            | na            | na     | 4       | 6       | na      | na       | na     | ND      | ND      | na      | na       | na     | 6       | 6       | na      | na       | na     | 3       | 1       | na      | na       |
| tert-Butylbenzene                           | 70     | 15,000  | na              | na            | na            | na            | na     | 0.7     | 0.7     | na      | na       | na     | ND      | ND      | na      | na       | na     | ND      | 0.6     | na      | na       | na     | 0.8     | ND      | na      | na       |
| Chloroform                                  | 0.19   | 190     | ND              | ND            | ND            | ND            | na     | ND      | ND      | na      | na       | na     | ND      | ND      | na      | na       | na     | ND      | ND      | na      | na       | na     | ND      | ND      | na      | na       |
| Ethylbenzene                                | 29     | 29,000  | ND              | ND            | ND            | ND            | ND     | ND      | 0.8     | <1.00   | <1.00    | 7      | ND      | ND      | <1.00   | <1.00    | ND     | 0.7     | 1       | 0.720 J | 0.845 J  | ND     | 1       | ND      | 0.617 J | <1.00    |
| Isopropylbenzene                            | 70     | 25,000  | na              | na            | na            | na            | na     | ND      | 2       | na      | na       | na     | ND      | ND      | na      | na       | na     | 2       | 3       | na      | na       | na     | 3       | 1       | na      | na       |
| 4-Isopropyltoluene                          | RL     | NE      | na              | na            | na            | na            | na     | ND      | 0.5     | na      | na       | na     | ND      | ND      | na      | na       | na     | 2       | 3       | na      | na       | na     | 2       | 0.8     | na      | na       |
| Naphthalene                                 | 21     | 15,500  | na              | na            | na            | na            | na     | 3       | 5       | na      | na       | na     | 1       | 1       | na      | na       | na     | 8       | 7       | na      | na       | na     | 24      | 11      | na      | na       |
| n-Propyl benzene                            | 70     | 30,000  | na              | na            | na            | na            | na     | ND      | 1       | na      | na       | na     | 0.7     | 0.6     | na      | na       | na     | 5       | 6       | na      | na       | na     | 5       | 2       | na      | na       |
| Tetrachloroethene                           | 0.7    | 700     | ND              | ND            | ND            | ND            | na     | ND      | ND      | na      | na       | na     | ND      | ND      | na      | na       | na     | ND      | 0.6     | na      | na       | na     | ND      | ND      | na      | na       |
| Toluene                                     | 1000   | 257,500 | ND              | ND            | ND            | ND            | ND     | ND      | ND      | 0.443 J | <1.00    | ND     | ND      | ND      | 0.497 J | 0.498 J  | ND     | ND      | ND      | 0.655 J | 0.869 J  | ND     | ND      | ND      | <1.00   | 0.396 J  |
| 1,2,4-Trimethylbenzene                      | 350    | 28,500  | na              | na            | na            | na            | na     | ND      | ND      | na      | na       | na     | ND      | ND      | na      | na       | na     | 11      | 14      | na      | na       | na     | 22      | 9       | na      | na       |
| 1,3,5-Trimethylbenzene                      | 350    | 25,000  | na              | na            | na            | na            | na     | 0.5     | ND      | na      | na       | na     | ND      | ND      | na      | na       | na     | 3       | 5       | na      | na       | na     | 4       | 1       | na      | na       |
| Total Xylenes                               | 530    | 87,500  | 4.0             | ND            | ND            | ND            | ND     | ND      | ND      | 1.458 J | 0.826 J  | ND     | ND      | ND      | <4.00   | 0.622 J  | ND     | ND      | ND      | 1.514 J | 2.364 J  | ND     | ND      | ND      | <4.00   | 0.638 J  |
| Semi-Volatile Organic<br>Compounds (ug/L)   |        |         | na              | na            | na            | na            | (625)  | (625)   | (625)   | (625)   | (625)    | (625)  | (625)   | (625)   | (625)   | (625)    | (625)  | (625)   | (625)   | (625)   | (625)    | (625)  | (625)   | (625)   | (625)   | (625)    |
| Acenaphthene                                | 80     | 2120    | na              | na            | na            | na            | ND     | ND      | ND      | 6.50 J  | 2.80 J   | 3      | ND      | ND      | 1.80 J  | <10.0    | ND     | ND      | ND      | 2.20 J  | 2.20 J   | 2      | ND      | ND      | 3.20 J  | <10.0    |
| Bis(2-ethylhexyl)phthalate                  | 3      | 3000    | na              | na            | na            | na            | 159    | ND      | ND      | <10.0   | <10.0    | ND     | ND      | ND      | <10.0   | <10.0    | 6      | ND      | ND      | <10.0   | <10.0    | 283    | ND      | ND      | <10.0   | <10.0    |
| Diethylphthalate                            | 5000   | NE      | na              | na            | na            | na            | na     | na      | ND      | <10.0   | <10.0    | na     | na      | ND      | <10.0   | 2.90 J   | na     | na      | ND      | <10.0   | 15.5     | na     | na      | ND      | <10.0   | 4.60 J   |
| Fluorene                                    | 280    | 950     | na              | na            | na            | na            | ND     | 12      | 12      | 9.40 J  | 4.70 J   | 4      | ND      | ND      | 2.10 J  | 1.30 J   | 2      | ND      | ND      | 3.40 J  | 3.50 J   | 3      | ND      | ND      | 4.50 J  | 1.60 J   |
| Naphthalene                                 | 21     | 15,500  | na              | na            | na            | na            | 6      | ND      | ND      | 2.70 J  | <10.0    | ND     | ND      | ND      | <10.0   | <10.0    | ND     | ND      | ND      | 4.60 J  | 3.10 J   | 8      | 14      | 13      | 7.80 J  | 2.30 J   |
| Phenanthrene                                | 210    | 410     | na              | na            | na            | na            | ND     | 11      | ND      | 8.80 J  | 4.90 J   | 5      | ND      | ND      | <10.0   | <10.0    | 2      | ND      | ND      | 2.60 J  | 3.10 J   | 1      | ND      | ND      | 3.30 J  | <10.0    |
| TICs (total)                                |        |         | na              | na            | na            | na            | 19 J   | 222 J   | 203 J   | 109.6 J | 72.47 J  | 92 J   | 5.4 J   | 3.8 J   | 11 J    | NR       | 84 J   | 5170 J  | 430 J   | 100 J   | 116.69 J | 118 J  | 380 J   | 369 J   | 117 J   | 32.8 J   |
| MADEP VPH + EPH (ug/L)                      |        |         |                 |               |               |               |        |         |         |         |          |        |         |         |         |          |        |         |         |         |          |        |         |         |         |          |
| C <sub>9</sub> -C <sub>18</sub> Aliphatics  | 4200   | NE      | na              | na            | na            | na            | 21     | 630     | 430     | 200     | 210      | 260    | 120     | ND      | <200    | <200     | 110    | 460     | 520     | 130     | 300      | 150    | 420     | 340     | 120     | <200     |
| C <sub>19</sub> -C <sub>36</sub> Aliphatics | 42,000 | NE      | na              | na            | na            | na            | ND     | ND      | ND      | <100    | <100     | ND     | ND      | ND      | <100    | <100     | ND     | ND      | ND      | <100    | <100     | ND     | ND      | ND      | <100    | <100     |
| C <sub>9</sub> -C <sub>22</sub> Aromatics   | 210    | NE      | na              | na            | na            | na            | 15     | 280     | 270     | 570     | 310      | 170    | ND      | ND      | <200    | <200     | 72     | 250     | 440     | 360     | 200      | 96     | 340     | 310     | <200    | 240      |

J: Estimated concentration below reporting limits or estimated concentration for TIC quantitations

na: Not Analyzed, compound not quantitated in the analytic suite specified for the sample

ND: Not Detected; compound quantitated and not detected; detection limit not specified in source document summary table

NR: None Reported; no TICs were identified in the sample

<#: Analyte not detected at the indicated detection limit

GCL:Gross Contamination Level

NE: Not Established; a GCL has not been established for the analyte

NCGWQS: North Carolina Groundwater Quality Standard

RL: Reporting Limit; a NCGWQS has not be established for the compound; therefore, the NCGWQS is set at the reporting limit

TICs (total): Tentatively Identified Compound; sum of all TICs; all TIC concentrations are estimated

ug/L: micrograms per liter

Bold type indicates analyte detection

Shaded area in bold indicates analyte detection at a concentration above the NCGWQS

Shaded area in bold italics indicates analyte detection at a concentration above the GCL

November 1991 data from OBG, 1992

December 1992 data from OBG, 1993

October 2000 data from Law, 2000b

April 2001 data from Law, 2001

June 2004 data from EEI, 2004b

December 2004 data presented in Appendix B

**APPENDIX A**  
**FIELD DATA SAMPLING SHEETS**

**EEl,Water Level Sheet Bld. M232****Date- 12/19/04**

|         |      |                 |  |                  |      |                |       |
|---------|------|-----------------|--|------------------|------|----------------|-------|
| Well ID | MW01 | Depth to Bottom |  | Depth to Product |      | Depth to Water | 11.37 |
| Well ID | MW02 | Depth to Bottom |  | Depth to Product |      | Depth to Water | 11.66 |
| Well ID | MW03 | Depth to Bottom |  | Depth to Product |      | Depth to Water | 14    |
| Well ID | MW04 | Depth to Bottom |  | Depth to Product |      | Depth to Water | 14.2  |
| Well ID | MW05 | Depth to Bottom |  | Depth to Product |      | Depth to Water | 10.85 |
| Well ID | MW06 | Depth to Bottom |  | Depth to Product |      | Depth to Water | 10.25 |
| Well ID | MW07 | Depth to Bottom |  | Depth to Product |      | Depth to Water | 10.2  |
| Well ID | MW08 | Depth to Bottom |  | Depth to Product |      | Depth to Water | 10.9  |
| Well ID | MW09 | Depth to Bottom |  | Depth to Product |      | Depth to Water | 12.49 |
| Well ID | MW10 | Depth to Bottom |  | Depth to Product |      | Depth to Water | 11.93 |
| Well ID | MW11 | Depth to Bottom |  | Depth to Product |      | Depth to Water | 8.27  |
| Well ID | MW12 | Depth to Bottom |  | Depth to Product |      | Depth to Water | 9.23  |
| Well ID | MW13 | Depth to Bottom |  | Depth to Product |      | Depth to Water | 13.16 |
| Well ID | MW14 | Depth to Bottom |  | Depth to Product |      | Depth to Water | 13.35 |
| Well ID | MW15 | Depth to Bottom |  | Depth to Product |      | Depth to Water | 12.5  |
| Well ID | MW16 | Depth to Bottom |  | Depth to Product |      | Depth to Water | 12.88 |
| Well ID | MW17 | Depth to Bottom |  | Depth to Product |      | Depth to Water | 11.71 |
| Well ID | MW18 | Depth to Bottom |  | Depth to Product |      | Depth to Water | 9.2   |
| Well ID | MW19 | Depth to Bottom |  | Depth to Product | 8.95 | Depth to Water | 9.34  |
| Well ID | MW20 | Depth to Bottom |  | Depth to Product |      | Depth to Water | 9.98  |
| Well ID | MW21 | Depth to Bottom |  | Depth to Product |      | Depth to Water | 9.04  |
| Well ID | MW22 | Depth to Bottom |  | Depth to Product |      | Depth to Water | 8.95  |
| Well ID |      | Depth to Bottom |  | Depth to Product |      | Depth to Water |       |
| Well ID |      | Depth to Bottom |  | Depth to Product |      | Depth to Water |       |

**Approximately 3 oz. of product was bailed out of MW19**



# ENGINEERING AND ENVIRONMENT, INC.

## M232 field data

Project # LD03-011

Date **12/19/2004** Time **14:05** Weather **cloudy, 52 degrees**

Sampler **BS** Well/Sample # **USTM232-MW5**

Depth To Bottom (ft) **32.45** Depth To Water (ft) **10.85** Water Depth (ft) **21.6**

Well Vol. **3.6** Purge Vol. **10.8** Vol. Purged

Sampling Device (pump/Bailer)

|                    | ONE       | TWO      | THREE | FOUR  | FIVE  | SIX | UNIT    |
|--------------------|-----------|----------|-------|-------|-------|-----|---------|
| Time               | 13:38     | 13:45    | 13:52 | 13:57 | 14:03 |     | N/A     |
| Temperature        | 18.52     | 18.58    | 18.62 | 18.66 | 18.71 |     | °C      |
| Spec. Conductivity | 0.06      | 0.06     | 0.059 | 0.059 | 0.059 |     | (m s/m) |
| Dissolved Oxygen   | 3.01      | 1.19     | 0.91  | 0.93  | 0.87  |     | ms/L    |
| PH                 | 4.85      | 4.79     | 4.72  | 4.69  | 4.61  |     | STD     |
| ORP                | 208.5     | 227.1    | 236.4 | 251.7 | 262.2 |     | (G/L)   |
| Turbidity          | O/L       | 404      | 171   | 55    | 32.6  |     | (NTU)   |
|                    |           |          |       |       |       |     |         |
| Analyte            | Size      | Preserv. |       |       |       |     |         |
| 6210D              | 3 X 40 ml | HCL      |       |       |       |     |         |
| 625                | 1 X 1 L   | None     |       |       |       |     |         |
| VPH                | 2 X 40 ml | HCL      |       |       |       |     |         |
| Comments:          |           |          |       |       |       |     |         |
|                    |           |          |       |       |       |     |         |
|                    |           |          |       |       |       |     |         |
|                    |           |          |       |       |       |     |         |

2" well vol.=water depth X 0.1632 4" well vol.=water depth x 0.6528

|            |       |       |       |       |  |  |  |
|------------|-------|-------|-------|-------|--|--|--|
| Pid        | 0     |       |       |       |  |  |  |
| Time       | 13:31 | 13:35 | 13:40 | 13:46 |  |  |  |
| SWL        | 10.85 | 11.15 | 11.15 | 11.15 |  |  |  |
| Pump Depth | 30    | 30    | 30    | 30    |  |  |  |



# ENGINEERING AND ENVIRONMENT, INC.

## M232 field data

Project # LD03-011

Date  Time  Weather

Sampler  Well/Sample #

Depth To Bottom (ft)  Depth To Water (ft)  Water Depth (ft)

Well Vol.  Purge Vol.  Vol. Purged

Sampling Device (pump/Bailer)

|                    | ONE       | TWO      | THREE | FOUR  | FIVE  | SIX | UNIT    |
|--------------------|-----------|----------|-------|-------|-------|-----|---------|
| Time               | 12:46     | 10:49    | 12:53 | 12:57 | 13:01 |     | N/A     |
| Temperature        | 18.49     | 18.63    | 18.68 | 18.68 | 18.71 |     | ©       |
| Spec. Conductivity | 0.099     | 0.099    | 0.097 | 0.097 | 0.095 |     | (m s/m) |
| Dissolved Oxygen   | 0.73      | 0.6      | 0.44  | 0.4   | 0.39  |     | ms/L    |
| PH                 | 5.37      | 5.34     | 5.29  | 5.25  | 5.25  |     | STD     |
| ORP                | 165.5     | 178.5    | 196.9 | 202.5 | 204   |     | (G/L)   |
| Turbidity          | 47.1      | 23.6     | 8.07  | 2.69  |       |     | (NTU)   |
|                    |           |          |       |       |       |     |         |
| Analyte            | Size      | Preserv. |       |       |       |     |         |
| 6210D              | 3 X 40 ml | HCL      |       |       |       |     |         |
| 625                | 1 X 1 L   | None     |       |       |       |     |         |
| VPH                | 2 X 40 ml | HCL      |       |       |       |     |         |
| Comments:          | DUP       |          |       |       |       |     |         |
|                    |           |          |       |       |       |     |         |
|                    |           |          |       |       |       |     |         |
|                    |           |          |       |       |       |     |         |

|                                                                     |       |       |       |       |  |  |  |
|---------------------------------------------------------------------|-------|-------|-------|-------|--|--|--|
| 2" well vol.=water depth X 0.1632 4" well vol.=water depth x 0.6528 |       |       |       |       |  |  |  |
| Pid                                                                 | 0     |       |       |       |  |  |  |
| Time                                                                | 12:41 | 12:48 | 12:51 | 12:55 |  |  |  |
| SWL                                                                 | 10.2  | 10.52 | 10.61 | 10.62 |  |  |  |
| Pump Depth                                                          | 16.5  | 16.5  | 16.5  | 16.5  |  |  |  |



## ENGINEERING AND ENVIRONMENT, INC.

### M232 field data

Project # LD03-011

Date  Time  Weather

Sampler  Well/Sample #

Depth To Bottom (ft)  Depth To Water (ft)  Water Depth (ft)

Well Vol.  Purge Vol.  Vol. Purged

Sampling Device (pump/Bailer)

|                    | ONE       | TWO      | THREE | FOUR  | FIVE | SIX | UNIT    |
|--------------------|-----------|----------|-------|-------|------|-----|---------|
| Time               | 12:13     | 12:17    | 12:20 | 12:23 |      |     | N/A     |
| Temperature        | 18.92     | 19.02    | 19.09 | 19.05 |      |     | ©       |
| Spec. Conductivity | 0.23      | 0.228    | 0.223 | 0.214 |      |     | (m s/m) |
| Dissolved Oxygen   | 0.9       | 0.87     | 0.63  | 1.24  |      |     | ms/L    |
| PH                 | 6.23      | 6.27     | 6.27  | 6.21  |      |     | STD     |
| ORP                | -81.9     | -81.4    | -84.3 | -80.7 |      |     | (G/L)   |
| Turbidity          | 43.4      | 30.1     | 10.5  | 5.57  |      |     | (NTU)   |
|                    |           |          |       |       |      |     |         |
| Analyte            | Size      | Preserv. |       |       |      |     |         |
| 6210D              | 3 X 40 ml | HCL      |       |       |      |     |         |
| 625                | 1 X 1 L   | None     |       |       |      |     |         |
| VPH                | 2 X 40 ml | HCL      |       |       |      |     |         |
| Comments:          |           |          |       |       |      |     |         |
|                    |           |          |       |       |      |     |         |
|                    |           |          |       |       |      |     |         |
|                    |           |          |       |       |      |     |         |

2" well vol.=water depth X 0.1632 4" well vol.=water depth x 0.6528

|            |  |  |  |  |  |  |  |
|------------|--|--|--|--|--|--|--|
| Pid        |  |  |  |  |  |  |  |
| Time       |  |  |  |  |  |  |  |
| SWL        |  |  |  |  |  |  |  |
| Pump Depth |  |  |  |  |  |  |  |



# ENGINEERING AND ENVIRONMENT, INC.

## M232 field data

Project # LD03-011

Date  Time  Weather

Sampler  Well/Sample #

Depth To Bottom (ft)  Depth To Water (ft)  Water Depth (ft)

Well Vol.  Purge Vol.  Vol. Purged

Sampling Device (pump/Bailer)

|                    | ONE       | TWO      | THREE | FOUR | FIVE | SIX | UNIT    |
|--------------------|-----------|----------|-------|------|------|-----|---------|
| Time               | 11:46     | 11:50    | 11:54 |      |      |     | N/A     |
| Temperature        | 20.26     | 20.64    | 20.69 |      |      |     | °C      |
| Spec. Conductivity | 0.106     | 0.106    | 0.105 |      |      |     | (m s/m) |
| Dissolved Oxygen   | 2.78      | 0.86     | 0.79  |      |      |     | ms/L    |
| PH                 | 5.7       | 5.55     | 5.52  |      |      |     | STD     |
| ORP                | 24.9      | 25.4     | 24.7  |      |      |     | (G/L)   |
| Turbidity          | 872       | 33.9     | 9.87  |      |      |     | (NTU)   |
|                    |           |          |       |      |      |     |         |
| Analyte            | Size      | Preserv. |       |      |      |     |         |
| 6210D              | 3 X 40 ml | HCL      |       |      |      |     |         |
| 625                | 1 X 1 L   | None     |       |      |      |     |         |
| VPH                | 2 X 40 ml | HCL      |       |      |      |     |         |
| Comments:          |           |          |       |      |      |     |         |
|                    |           |          |       |      |      |     |         |
|                    |           |          |       |      |      |     |         |
|                    |           |          |       |      |      |     |         |

|                                                                     |  |  |  |  |  |  |  |
|---------------------------------------------------------------------|--|--|--|--|--|--|--|
| 2" well vol.=water depth X 0.1632 4" well vol.=water depth x 0.6528 |  |  |  |  |  |  |  |
| Pid                                                                 |  |  |  |  |  |  |  |
| Time                                                                |  |  |  |  |  |  |  |
| SWL                                                                 |  |  |  |  |  |  |  |
| Pump Depth                                                          |  |  |  |  |  |  |  |



## ENGINEERING AND ENVIRONMENT, INC.

### M232 field data

Project # LD03-011

Date  Time  Weather

Sampler  Well/Sample #

Depth To Bottom (ft)  Depth To Water (ft)  Water Depth (ft)

Well Vol.  Purge Vol.  Vol. Purged

Sampling Device (pump/Bailer)

|                    | ONE                                              | TWO      | THREE | FOUR | FIVE | SIX | UNIT    |
|--------------------|--------------------------------------------------|----------|-------|------|------|-----|---------|
| Time               | 11:13                                            |          |       |      |      |     | N/A     |
| Temperature        | 19.74                                            |          |       |      |      |     | °C      |
| Spec. Conductivity | 1.73                                             |          |       |      |      |     | (m s/m) |
| Dissolved Oxygen   | 6.26                                             |          |       |      |      |     | ms/L    |
| PH                 | 6.24                                             |          |       |      |      |     | STD     |
| ORP                | -55.6                                            |          |       |      |      |     | (G/L)   |
| Turbidity          |                                                  |          |       |      |      |     | (NTU)   |
|                    |                                                  |          |       |      |      |     |         |
| Analyte            | Size                                             | Preserv. |       |      |      |     |         |
| 6210D              | 3 X 40 ml                                        | HCL      |       |      |      |     |         |
| 625                | 1 X 1 L                                          | None     |       |      |      |     |         |
| VPH                | 2 X 40 ml                                        | HCL      |       |      |      |     |         |
| Comments:          | Dry at 1.2 vol.; waited ten minutes; took sample |          |       |      |      |     |         |
|                    |                                                  |          |       |      |      |     |         |
|                    |                                                  |          |       |      |      |     |         |
|                    |                                                  |          |       |      |      |     |         |

|                                                                     |   |  |  |  |  |  |  |
|---------------------------------------------------------------------|---|--|--|--|--|--|--|
| 2" well vol.=water depth X 0.1632 4" well vol.=water depth x 0.6528 |   |  |  |  |  |  |  |
| Pid                                                                 | 0 |  |  |  |  |  |  |
| Time                                                                |   |  |  |  |  |  |  |
| SWL                                                                 |   |  |  |  |  |  |  |
| Pump Depth                                                          |   |  |  |  |  |  |  |



# ENGINEERING AND ENVIRONMENT, INC.

## M232 field data

Project # LD03-011

Date  Time  Weather

Sampler  Well/Sample #

Depth To Bottom (ft)  Depth To Water (ft)  Water Depth (ft)

Well Vol.  Purge Vol.  Vol. Purged

Sampling Device (pump/Bailer)

|                    | ONE       | TWO      | THREE | FOUR  | FIVE  | SIX | UNIT    |
|--------------------|-----------|----------|-------|-------|-------|-----|---------|
| Time               | 10:39     | 10:43    | 10:45 | 10:48 | 10:51 |     | N/A     |
| Temperature        | 20.15     | 20.12    | 20.14 | 20.17 | 20.12 |     | ©       |
| Spec. Conductivity | 0.154     | 0.127    | 0.122 | 0.114 | 0.113 |     | (m s/m) |
| Dissolved Oxygen   | 3.3       | 3.17     | 3.11  | 3.04  | 3.05  |     | ms/L    |
| PH                 | 6.48      | 6.11     | 6.01  | 5.9   | 5.85  |     | STD     |
| ORP                | -60       | -36.4    | -29.8 | -20.7 | -16.9 |     | (G/L)   |
| Turbidity          | 135       | 52.6     | 41    | 43.1  | 30.9  |     | (NTU)   |
|                    |           |          |       |       |       |     |         |
| Analyte            | Size      | Preserv. |       |       |       |     |         |
| 6210D              | 3 X 40 ml | HCL      |       |       |       |     |         |
| 625                | 1 X 1 L   | None     |       |       |       |     |         |
| VPH                | 2 X 40 ml | HCL      |       |       |       |     |         |
| Comments:          |           |          |       |       |       |     |         |
|                    |           |          |       |       |       |     |         |
|                    |           |          |       |       |       |     |         |
|                    |           |          |       |       |       |     |         |

|                                                                     |     |  |  |  |  |  |  |
|---------------------------------------------------------------------|-----|--|--|--|--|--|--|
| 2" well vol.=water depth X 0.1632 4" well vol.=water depth x 0.6528 |     |  |  |  |  |  |  |
| Pid                                                                 | 0   |  |  |  |  |  |  |
| Time                                                                |     |  |  |  |  |  |  |
| SWL                                                                 | N/A |  |  |  |  |  |  |
| Pump Depth                                                          |     |  |  |  |  |  |  |

## **APPENDIX B**

### **LABORATORY ANALYTICAL REPORTS**

Mr. Fred Kozminski  
Engineering & Environment, Inc.  
195 South Rosemont Rd.  
Suite 118  
Virginia Beach VA 23452-4353  
Report Number: G546-20  
Client Project: M232

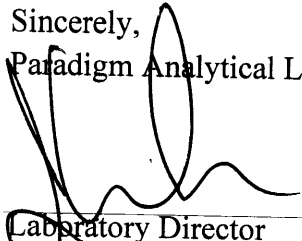
Dear Mr. Kozminski:

Enclosed are the results of the analytical services performed under the referenced project. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of five years in the event they are required for future reference. Any samples submitted to our laboratory will be retained for a maximum of thirty (30) days from the date of this report unless other arrangements are requested.

If there are any questions about the report or the services performed during this project, please call Paradigm at (910) 350-1903. We will be happy to answer any questions or concerns which you may have.

Thank you for using Paradigm Analytical Labs for your analytical services. We look forward to working with you again on any additional analytical needs which you may have.

Sincerely,  
Paradigm Analytical Laboratories, Inc.

  
Laboratory Director  
J. Patrick Weaver

  
Date

## VPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Engineering & Environment, Inc.

Project Name: M232

| Sample Information and Analytical Results    |              |
|----------------------------------------------|--------------|
| Sample Identification                        | USTM232-MW22 |
| Sample Matrix                                | Water        |
| Collection Option (for Soil)*                |              |
| Date Collected                               | 12/19/04     |
| Date Received                                | 12/21/04     |
| Date Extracted                               | 12/30/04     |
| Date Analyzed                                | 12/30/04     |
| Dry Weight                                   |              |
| Dilution Factor                              | 1            |
| C <sub>5</sub> -C <sub>8</sub> Aliphatics**  | < 100 (µg/L) |
| C <sub>9</sub> -C <sub>12</sub> Aliphatics** | < 100 (µg/L) |
| C <sub>9</sub> -C <sub>10</sub> Aromatics**  | < 100 (µg/L) |
| Surrogate % Recovery - PID                   | 110          |
| Surrogate % Recovery - FID                   | 89           |

\* = Option 1 = Established fill line on vial, Option 2 = Sampling Device/Brand, or Option 3 = Field weight of soil.

\*\* = Excludes any surrogates or internal standards.

Lab Info: g546-20-1e

Reviewed By: me

## VPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Engineering & Environment, Inc.

Project Name: M232

| Sample Information and Analytical Results    |              |
|----------------------------------------------|--------------|
| Sample Identification                        | USTM232-MW21 |
| Sample Matrix                                | Water        |
| Collection Option (for Soil)*                |              |
| Date Collected                               | 12/19/04     |
| Date Received                                | 12/21/04     |
| Date Extracted                               | 12/30/04     |
| Date Analyzed                                | 12/30/04     |
| Dry Weight                                   |              |
| Dilution Factor                              | 1            |
| C <sub>5</sub> -C <sub>8</sub> Aliphatics**  | < 100 (µg/L) |
| C <sub>9</sub> -C <sub>12</sub> Aliphatics** | < 100 (µg/L) |
| C <sub>9</sub> -C <sub>10</sub> Aromatics**  | < 100 (µg/L) |
| Surrogate % Recovery - PID                   | 100          |
| Surrogate % Recovery - FID                   | 87           |

\* = Option 1 = Established fill line on vial, Option 2 = Sampling Device/Brand, or Option 3 = Field weight of soil.

\*\* = Excludes any surrogates or internal standards.

Lab Info: g546-20-2e

Reviewed By: 

## VPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Engineering & Environment, Inc.

Project Name: M232

| Sample Information and Analytical Results    |              |
|----------------------------------------------|--------------|
| Sample Identification                        | USTM232-MW20 |
| Sample Matrix                                | Water        |
| Collection Option (for Soil)*                |              |
| Date Collected                               | 12/19/04     |
| Date Received                                | 12/21/04     |
| Date Extracted                               | 12/30/04     |
| Date Analyzed                                | 12/30/04     |
| Dry Weight                                   |              |
| Dilution Factor                              | 1            |
| C <sub>5</sub> -C <sub>8</sub> Aliphatics**  | < 100 (µg/L) |
| C <sub>9</sub> -C <sub>12</sub> Aliphatics** | < 100 (µg/L) |
| C <sub>9</sub> -C <sub>10</sub> Aromatics**  | < 100 (µg/L) |
| Surrogate % Recovery - PID                   | 110          |
| Surrogate % Recovery - FID                   | 92           |

\* = Option 1 = Established fill line on vial, Option 2 = Sampling Device/Brand, or Option 3 = Field weight of soil.

\*\* = Excludes any surrogates or internal standards.

Lab Info: g546-20-3e

Reviewed By: mc

## VPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Engineering & Environment, Inc.

Project Name: M232

| Sample Information and Analytical Results    |              |
|----------------------------------------------|--------------|
| Sample Identification                        | USTM232-MW18 |
| Sample Matrix                                | Water        |
| Collection Option (for Soil)*                |              |
| Date Collected                               | 12/19/04     |
| Date Received                                | 12/21/04     |
| Date Extracted                               | 12/30/04     |
| Date Analyzed                                | 12/30/04     |
| Dry Weight                                   |              |
| Dilution Factor                              | 1            |
| C <sub>5</sub> -C <sub>8</sub> Aliphatics**  | < 100 (µg/L) |
| C <sub>9</sub> -C <sub>12</sub> Aliphatics** | < 100 (µg/L) |
| C <sub>9</sub> -C <sub>10</sub> Aromatics**  | 110 (µg/L)   |
| Surrogate % Recovery - PID                   | 110          |
| Surrogate % Recovery - FID                   | 90           |

\* = Option 1 = Established fill line on vial, Option 2 = Sampling Device/Brand, or Option 3 = Field weight of soil.  
 \*\* = Excludes any surrogates or internal standards.

Lab Info: g546-20-4e

Reviewed By: 

## VPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Engineering & Environment, Inc.

Project Name: M232

| Sample Information and Analytical Results    |              |
|----------------------------------------------|--------------|
| Sample Identification                        | USTM232-MW07 |
| Sample Matrix                                | Water        |
| Collection Option (for Soil)*                |              |
| Date Collected                               | 12/19/04     |
| Date Received                                | 12/21/04     |
| Date Extracted                               | 12/30/04     |
| Date Analyzed                                | 12/30/04     |
| Dry Weight                                   |              |
| Dilution Factor                              | 1            |
| C <sub>5</sub> -C <sub>8</sub> Aliphatics**  | < 100 (µg/L) |
| C <sub>9</sub> -C <sub>12</sub> Aliphatics** | < 100 (µg/L) |
| C <sub>9</sub> -C <sub>10</sub> Aromatics**  | < 100 (µg/L) |
| Surrogate % Recovery - PID                   | 96           |
| Surrogate % Recovery - FID                   | 96           |

\* = Option 1 = Established fill line on vial, Option 2 = Sampling Device/Brand, or Option 3 = Field weight of soil.

\*\* = Excludes any surrogates or internal standards.

Lab Info: g546-20-5e

Reviewed By: *me*

## VPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Engineering & Environment, Inc.

Project Name: M232

| Sample Information and Analytical Results    |              |
|----------------------------------------------|--------------|
| Sample Identification                        | USTM232-MW05 |
| Sample Matrix                                | Water        |
| Collection Option (for Soil)*                |              |
| Date Collected                               | 12/19/04     |
| Date Received                                | 12/21/04     |
| Date Extracted                               | 12/30/04     |
| Date Analyzed                                | 12/30/04     |
| Dry Weight                                   |              |
| Dilution Factor                              | 1            |
| C <sub>5</sub> -C <sub>8</sub> Aliphatics**  | < 100 (µg/L) |
| C <sub>9</sub> -C <sub>12</sub> Aliphatics** | < 100 (µg/L) |
| C <sub>9</sub> -C <sub>10</sub> Aromatics**  | < 100 (µg/L) |
| Surrogate % Recovery - PID                   | 97           |
| Surrogate % Recovery - FID                   | 97           |

\* = Option 1 = Established fill line on vial, Option 2 = Sampling Device/Brand, or Option 3 = Field weight of soil.

\*\* = Excludes any surrogates or internal standards.

Lab Info: g546-20-6e

Reviewed By: my

## VPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Engineering & Environment, Inc.

Project Name: M232

| Sample Information and Analytical Results    |              |
|----------------------------------------------|--------------|
| Sample Identification                        | USTM232-Dup  |
| Sample Matrix                                | Water        |
| Collection Option (for Soil)*                |              |
| Date Collected                               | 12/19/04     |
| Date Received                                | 12/21/04     |
| Date Extracted                               | 12/30/04     |
| Date Analyzed                                | 12/30/04     |
| Dry Weight                                   |              |
| Dilution Factor                              | 1            |
| C <sub>5</sub> -C <sub>8</sub> Aliphatics**  | < 100 (µg/L) |
| C <sub>9</sub> -C <sub>12</sub> Aliphatics** | < 100 (µg/L) |
| C <sub>9</sub> -C <sub>10</sub> Aromatics**  | < 100 (µg/L) |
| Surrogate % Recovery - PID                   | 96           |
| Surrogate % Recovery - FID                   | 96           |

\* = Option 1 = Established fill line on vial, Option 2 = Sampling Device/Brand, or Option 3 = Field weight of soil.

\*\* = Excludes any surrogates or internal standards.

Lab Info: g546-20-7e

Reviewed By: 

## Attachment 2

## VPH Laboratory Reporting Form

## Calibration and QA/QC Information

FID Initial Calibration Date: 12/17/04PID Initial Calibration Date: 12/17/04

## Calibration Ranges and Limits

| Range                                      | MDL (07/15/2004)<br>(µg/L) | ML<br>(µg/L) | RL<br>(µg/L) | RL<br>(mg/Kg) |
|--------------------------------------------|----------------------------|--------------|--------------|---------------|
| C <sub>5</sub> -C <sub>8</sub> Aliphatics  | 4.4                        | 14           | 100          | 10            |
| C <sub>9</sub> -C <sub>12</sub> Aliphatics | 3.4                        | 11           | 100          | 10            |
| C <sub>9</sub> -C <sub>10</sub> Aromatics  | 0.13                       | 0.41         | 100          | 10            |

## Calibration Concentration Levels

| Range                                         | Levels<br>(µg/L) | %RSD or CCC | Method of Quantitation |
|-----------------------------------------------|------------------|-------------|------------------------|
| C <sub>5</sub> -C <sub>8</sub><br>Aliphatics  | 40               | 4.8         | Calibration Factor     |
|                                               | 1000             |             |                        |
|                                               | 2000             |             |                        |
|                                               | 3000             |             |                        |
|                                               | 4000             |             |                        |
| C <sub>9</sub> -C <sub>12</sub><br>Aliphatics | 10               | 0.993       | Linear Regression      |
|                                               | 250              |             |                        |
|                                               | 500              |             |                        |
|                                               | 750              |             |                        |
|                                               | 1000             |             |                        |
| C <sub>9</sub> -C <sub>10</sub><br>Aromatics  | 10               | 6.8         | Calibration Factor     |
|                                               | 250              |             |                        |
|                                               | 500              |             |                        |
|                                               | 750              |             |                        |
|                                               | 1000             |             |                        |

Calibration Check Date: 12/30/04

## Calibration Check

| Range                                      | Levels<br>(µg/L) | Levels<br>(mg/Kg) | RPD  |
|--------------------------------------------|------------------|-------------------|------|
| C <sub>5</sub> -C <sub>8</sub> Aliphatics  | 2000             | 200               | -1.9 |
| C <sub>9</sub> -C <sub>12</sub> Aliphatics | 500              | 50                | 1.9  |
| C <sub>9</sub> -C <sub>10</sub> Aromatics  | 500              | 50                | -6.4 |

MDL = Method Detection Limit

ML = Minimum Limit

RL = Reportable Limit

RPD = Relative Percent Difference

%RSD = Percent Relative Standard Deviation

CCC = Correlation Coefficient of Curve

**EPH (Aliphatics/Aromatics) Results**

by MDEP-EPH

Client Name: Engineering & Environment, Inc.Project Name: M232

| Sample Information and Analytical Results    |              |
|----------------------------------------------|--------------|
| Sample Identification                        | USTM232-MW22 |
| Sample Matrix                                | Water        |
| Date Collected                               | 12/19/04     |
| Date Received                                | 12/21/04     |
| Date Extracted                               | 12/22/04     |
| Date Analyzed                                | 01/03/05     |
| Dry Weight                                   |              |
| Dilution Factor                              | 1:1          |
| C <sub>9</sub> -C <sub>18</sub> Aliphatics*  | < 100 (ug/L) |
| C <sub>19</sub> -C <sub>36</sub> Aliphatics* | < 100 (ug/L) |
| C <sub>11</sub> -C <sub>22</sub> Aromatics*  | 240 (ug/L)   |
| Aliphatic Surrogate % Recovery               | 86           |
| Aromatic Surrogate % Recovery                | 84           |
| Fractionation Surrogate 1 % Recovery         | 120          |

**Comments:**

\* = Excludes any surrogates or internal standards.

Lab info: G546-20-1J

Reviewed By: me

**EPH (Aliphatics/Aromatics) Results**

by MDEP-EPH

Client Name: Engineering & Environment, Inc.Project Name: M232

| Sample Information and Analytical Results    |              |
|----------------------------------------------|--------------|
| Sample Identification                        | USTM232-MW21 |
| Sample Matrix                                | Water        |
| Date Collected                               | 12/19/04     |
| Date Received                                | 12/21/04     |
| Date Extracted                               | 12/22/04     |
| Date Analyzed                                | 01/07/05     |
| Dry Weight                                   |              |
| Dilution Factor                              | 1:1          |
| C <sub>9</sub> -C <sub>18</sub> Aliphatics*  | 300 (ug/L)   |
| C <sub>19</sub> -C <sub>36</sub> Aliphatics* | < 100 (ug/L) |
| C <sub>11</sub> -C <sub>22</sub> Aromatics*  | 200 (ug/L)   |
| Aliphatic Surrogate % Recovery               | 89           |
| Aromatic Surrogate % Recovery                | 83           |
| Fractionation Surrogate 1 % Recovery         | 98           |

**Comments:**

\* = Excludes any surrogates or internal standards.

Lab info: G546-20-2J

Reviewed By: ml

**EPH (Aliphatics/Aromatics) Results**

by MDEP-EPH

Client Name: Engineering & Environment, Inc.Project Name: M232

| Sample Information and Analytical Results    |              |
|----------------------------------------------|--------------|
| Sample Identification                        | USTM232-MW20 |
| Sample Matrix                                | Water        |
| Date Collected                               | 12/19/04     |
| Date Received                                | 12/21/04     |
| Date Extracted                               | 12/22/04     |
| Date Analyzed                                | 12/27/04     |
| Dry Weight                                   |              |
| Dilution Factor                              | 1            |
| C <sub>9</sub> -C <sub>18</sub> Aliphatics*  | < 100 (ug/L) |
| C <sub>19</sub> -C <sub>36</sub> Aliphatics* | < 100 (ug/L) |
| C <sub>11</sub> -C <sub>22</sub> Aromatics*  | < 100 (ug/L) |
| Aliphatic Surrogate % Recovery               | 82           |
| Aromatic Surrogate % Recovery                | 89           |

**Comments:**

\* = Excludes any surrogates or internal standards.

Sample did not require fractionation.

Lab info: G546-20-3J

Reviewed By: mw

**EPH (Aliphatics/Aromatics) Results**

by MDEP-EPH

Client Name: Engineering & Environment, Inc.Project Name: M232

| Sample Information and Analytical Results    |              |
|----------------------------------------------|--------------|
| Sample Identification                        | USTM232-MW18 |
| Sample Matrix                                | Water        |
| Date Collected                               | 12/19/04     |
| Date Received                                | 12/21/04     |
| Date Extracted                               | 12/22/04     |
| Date Analyzed                                | 01/03/05     |
| Dry Weight                                   |              |
| Dilution Factor                              | 1:1          |
| C <sub>9</sub> -C <sub>18</sub> Aliphatics*  | 210 (ug/L)   |
| C <sub>19</sub> -C <sub>36</sub> Aliphatics* | < 100 (ug/L) |
| C <sub>11</sub> -C <sub>22</sub> Aromatics*  | 200 (ug/L)   |
| Aliphatic Surrogate % Recovery               | 70           |
| Aromatic Surrogate % Recovery                | 75           |
| Fractionation Surrogate 1 % Recovery         | 92           |

**Comments:**

\* = Excludes any surrogates or internal standards.

Lab info: G546-20-4J

Reviewed By: mw

**EPH (Aliphatics/Aromatics) Results**

by MDEP-EPH

Client Name: Engineering & Environment, Inc.Project Name: M232

| Sample Information and Analytical Results    |              |
|----------------------------------------------|--------------|
| Sample Identification                        | USTM232-MW07 |
| Sample Matrix                                | Water        |
| Date Collected                               | 12/19/04     |
| Date Received                                | 12/21/04     |
| Date Extracted                               | 12/22/04     |
| Date Analyzed                                | 01/03/05     |
| Dry Weight                                   |              |
| Dilution Factor                              | 1:1          |
| C <sub>9</sub> -C <sub>18</sub> Aliphatics*  | < 100 (ug/L) |
| C <sub>19</sub> -C <sub>36</sub> Aliphatics* | 600 (ug/L)   |
| C <sub>11</sub> -C <sub>22</sub> Aromatics*  | < 100 (ug/L) |
| Aliphatic Surrogate % Recovery               | 98           |
| Aromatic Surrogate % Recovery                | 77           |
| Fractionation Surrogate 1 % Recovery         | 110          |

**Comments:**

\* = Excludes any surrogates or internal standards.

Lab info: G546-20-5K

Reviewed By: me

**EPH (Aliphatics/Aromatics) Results**

by MDEP-EPH

Client Name: Engineering & Environment, Inc.Project Name: M232

| <b>Sample Information and Analytical Results</b> |              |
|--------------------------------------------------|--------------|
| Sample Identification                            | USTM232-MW05 |
| Sample Matrix                                    | Water        |
| Date Collected                                   | 12/19/04     |
| Date Received                                    | 12/21/04     |
| Date Extracted                                   | 12/22/04     |
| Date Analyzed                                    | 01/03/05     |
| Dry Weight                                       |              |
| Dilution Factor                                  | 1:1          |
| C <sub>9</sub> -C <sub>18</sub> Aliphatics*      | < 100 (ug/L) |
| C <sub>19</sub> -C <sub>36</sub> Aliphatics*     | < 100 (ug/L) |
| C <sub>11</sub> -C <sub>22</sub> Aromatics*      | < 100 (ug/L) |
| Aliphatic Surrogate % Recovery                   | 69           |
| Aromatic Surrogate % Recovery                    | 76           |
| Fractionation Surrogate 1 % Recovery             | 66           |

**Comments:**

\* = Excludes any surrogates or internal standards.

**Note:** Low surrogates confirmed by duplicate analysis.

Lab info: G546-20-6J

Reviewed By: 

**EPH (Aliphatics/Aromatics) Results**

by MDEP-EPH

Client Name: Engineering & Environment, Inc.Project Name: M232

| Sample Information and Analytical Results    |              |
|----------------------------------------------|--------------|
| Sample Identification                        | USTM232-Dup  |
| Sample Matrix                                | Water        |
| Date Collected                               | 12/19/04     |
| Date Received                                | 12/21/04     |
| Date Extracted                               | 12/22/04     |
| Date Analyzed                                | 12/27/04     |
| Dry Weight                                   |              |
| Dilution Factor                              | 1            |
| C <sub>9</sub> -C <sub>18</sub> Aliphatics*  | < 100 (ug/L) |
| C <sub>19</sub> -C <sub>36</sub> Aliphatics* | < 100 (ug/L) |
| C <sub>11</sub> -C <sub>22</sub> Aromatics*  | < 100 (ug/L) |
| Aliphatic Surrogate % Recovery               | 75           |
| Aromatic Surrogate % Recovery                | 89           |

**Comments:**

\* = Excludes any surrogates or internal standards.

Sample did not require fractionation.

Lab info: G546-20-7J

Reviewed By: WMC

## Attachment 3

## EPH Laboratory Reporting Form

## Calibration and QA/QC Information

Initial Calibration Date: 12/15/04

## Calibration Ranges and Limits

| Range                                       | MDL (2/2004)<br>(µg/L) | ML<br>(µg/L) | RL<br>(µg/L) (mg/Kg) |    |
|---------------------------------------------|------------------------|--------------|----------------------|----|
| C <sub>9</sub> -C <sub>18</sub> Aliphatics  | 3.84                   | 12.2         | 100                  | 10 |
| C <sub>19</sub> -C <sub>36</sub> Aliphatics | 0.57                   | 1.8          | 100                  | 10 |
| C <sub>11</sub> -C <sub>22</sub> Aromatics  | 4.54                   | 14.4         | 100                  | 10 |

## Calibration Concentration Levels

| Range                                          | Levels<br>(µg/mL) | %RSD or CCC | Method of Quantitation |
|------------------------------------------------|-------------------|-------------|------------------------|
| C <sub>9</sub> -C <sub>18</sub><br>Aliphatics  | 6                 | 4.80        | Calibration Factor     |
|                                                | 30                |             |                        |
|                                                | 60                |             |                        |
|                                                | 120               |             |                        |
|                                                | 240               |             |                        |
| C <sub>19</sub> -C <sub>36</sub><br>Aliphatics | 8                 | 8.3         | Calibration Factor     |
|                                                | 40                |             |                        |
|                                                | 80                |             |                        |
|                                                | 160               |             |                        |
|                                                | 320               |             |                        |
| C <sub>11</sub> -C <sub>22</sub><br>Aromatics  | 17                | 5.4         | Calibration Factor     |
|                                                | 85                |             |                        |
|                                                | 170               |             |                        |
|                                                | 340               |             |                        |
|                                                | 680               |             |                        |

Calibration Check Date: 12/27/04

## Calibration Check

| Range                                       | Levels<br>(µg/mL) | RPD   |
|---------------------------------------------|-------------------|-------|
| C <sub>9</sub> -C <sub>18</sub> Aliphatics  | 120               | 0.6   |
| C <sub>19</sub> -C <sub>36</sub> Aliphatics | 160               | -17.7 |
| C <sub>11</sub> -C <sub>22</sub> Aromatics  | 340               | 4.9   |

MDL = Method Detection Limit

ML = Minimum Limit

RL = Reportable Limit

RPD = Relative Percent Difference

%RSD = Percent Relative Standard Deviation

CCC = Correlation Coefficient of Curve

## Attachment 3

## EPH Laboratory Reporting Form

## Calibration and QA/QC Information

Initial Calibration Date: 12/30/04

## Calibration Ranges and Limits

| Range                                       | MDL (2/2004)<br>(µg/L) | ML<br>(µg/L) | RL<br>(µg/L) (mg/Kg) |    |
|---------------------------------------------|------------------------|--------------|----------------------|----|
| C <sub>9</sub> -C <sub>18</sub> Aliphatics  | 3.84                   | 12.2         | 100                  | 10 |
| C <sub>19</sub> -C <sub>36</sub> Aliphatics | 0.57                   | 1.8          | 100                  | 10 |
| C <sub>11</sub> -C <sub>22</sub> Aromatics  | 4.54                   | 14.4         | 100                  | 10 |

## Calibration Concentration Levels

| Range                                          | Levels<br>(µg/mL) | %RSD or CCC | Method of Quantitation |
|------------------------------------------------|-------------------|-------------|------------------------|
| C <sub>9</sub> -C <sub>18</sub><br>Aliphatics  | 6                 | 9.00        | Calibration Factor     |
|                                                | 30                |             |                        |
|                                                | 60                |             |                        |
|                                                | 120               |             |                        |
|                                                | 240               |             |                        |
| C <sub>19</sub> -C <sub>36</sub><br>Aliphatics | 8                 | 6.1         | Calibration Factor     |
|                                                | 40                |             |                        |
|                                                | 80                |             |                        |
|                                                | 160               |             |                        |
|                                                | 320               |             |                        |
| C <sub>11</sub> -C <sub>22</sub><br>Aromatics  | 17                | 5.4         | Calibration Factor     |
|                                                | 85                |             |                        |
|                                                | 170               |             |                        |
|                                                | 340               |             |                        |
|                                                | 680               |             |                        |

Calibration Check Date: 01/03/05

## Calibration Check

| Range                                       | Levels<br>(µg/mL) | RPD   |
|---------------------------------------------|-------------------|-------|
| C <sub>9</sub> -C <sub>18</sub> Aliphatics  | 120               | -3.5  |
| C <sub>19</sub> -C <sub>36</sub> Aliphatics | 160               | -10.0 |
| C <sub>11</sub> -C <sub>22</sub> Aromatics  | 340               | 16.8  |

MDL = Method Detection Limit

ML = Minimum Limit

RL = Reportable Limit

RPD = Relative Percent Difference

%RSD = Percent Relative Standard Deviation

CCC = Correlation Coefficient of Curve

## Attachment 3

## EPH Laboratory Reporting Form

## Calibration and QA/QC Information

Initial Calibration Date: 12/30/04

## Calibration Ranges and Limits

| Range                                       | MDL (2/2004)<br>(µg/L) | ML<br>(µg/L) | RL<br>(µg/L) (mg/Kg) |    |
|---------------------------------------------|------------------------|--------------|----------------------|----|
| C <sub>9</sub> -C <sub>18</sub> Aliphatics  | 3.84                   | 12.2         | 100                  | 10 |
| C <sub>19</sub> -C <sub>36</sub> Aliphatics | 0.57                   | 1.8          | 100                  | 10 |
| C <sub>11</sub> -C <sub>22</sub> Aromatics  | 4.54                   | 14.4         | 100                  | 10 |

## Calibration Concentration Levels

| Range                                          | Levels<br>(µg/mL) | %RSD or CCC | Method of Quantitation |
|------------------------------------------------|-------------------|-------------|------------------------|
| C <sub>9</sub> -C <sub>18</sub><br>Aliphatics  | 6                 | 9.00        | Calibration Factor     |
|                                                | 30                |             |                        |
|                                                | 60                |             |                        |
|                                                | 120               |             |                        |
|                                                | 240               |             |                        |
| C <sub>19</sub> -C <sub>36</sub><br>Aliphatics | 8                 | 6.1         | Calibration Factor     |
|                                                | 40                |             |                        |
|                                                | 80                |             |                        |
|                                                | 160               |             |                        |
|                                                | 320               |             |                        |
| C <sub>11</sub> -C <sub>22</sub><br>Aromatics  | 17                | 5.4         | Calibration Factor     |
|                                                | 85                |             |                        |
|                                                | 170               |             |                        |
|                                                | 340               |             |                        |
|                                                | 680               |             |                        |

Calibration Check Date: 01/07/05

## Calibration Check

| Range                                       | Levels<br>(µg/mL) | RPD  |
|---------------------------------------------|-------------------|------|
| C <sub>9</sub> -C <sub>18</sub> Aliphatics  | 120               | -6.2 |
| C <sub>19</sub> -C <sub>36</sub> Aliphatics | 160               | -5.2 |
| C <sub>11</sub> -C <sub>22</sub> Aromatics  | 340               | 8.5  |

MDL = Method Detection Limit

ML = Minimum Limit

RL = Reportable Limit

RPD = Relative Percent Difference

%RSD = Percent Relative Standard Deviation

CCC = Correlation Coefficient of Curve

**Results for Volatiles**

by GC 602

Client Sample ID: USTM232-MW22

Analyzed By: JTF

Client Project ID: M232

Date Collected: 12/19/2004 10:55

Lab Sample ID: G546-20-1A

Date Received: 12/21/04

Lab Project ID: G546-20

Matrix: Water

| Analyte                        | Result<br>ug/L | RL<br>ug/L | MDL<br>ug/L | Dilution<br>Factor | Date<br>Analyzed | Flags |
|--------------------------------|----------------|------------|-------------|--------------------|------------------|-------|
| Benzene                        | BQL            | 1.00       | 0.316       | 1                  | 12/28/2004       |       |
| Diisopropyl ether (DIPE)       | BQL            | 1.00       | 0.294       | 1                  | 12/28/2004       |       |
| Ethylbenzene                   | BQL            | 1.00       | 0.299       | 1                  | 12/28/2004       |       |
| Methyl-tert butyl ether (MTBE) | BQL            | 2.00       | 0.588       | 1                  | 12/28/2004       |       |
| Toluene                        | <b>0.396</b>   | 1.00       | 0.302       | 1                  | 12/28/2004       | J     |
| m/p-Xylene                     | <b>0.638</b>   | 2.00       | 0.608       | 1                  | 12/28/2004       | J     |
| o-Xylene                       | BQL            | 2.00       | 0.596       | 1                  | 12/28/2004       |       |

**Surrogate Spike Recoveries**

|                  | Spike<br>Added | Spike<br>Result | Percent<br>Recovery |
|------------------|----------------|-----------------|---------------------|
| Trifluorotoluene | 40             | 35.3            | 88.2                |

**Comments:**

All values corrected for dilution.

BQL = Below quantitation limit.

Reviewed By: 

**Results for Volatiles**

by GC 602

Client Sample ID: USTM232-MW21

Analyzed By: JTF

Client Project ID: M232

Date Collected: 12/19/2004 11:25

Lab Sample ID: G546-20-2A

Date Received: 12/21/04

Lab Project ID: G546-20

Matrix: Water

| Analyte                        | Result<br>ug/L | RL<br>ug/L | MDL<br>ug/L | Dilution<br>Factor | Date<br>Analyzed | Flags |
|--------------------------------|----------------|------------|-------------|--------------------|------------------|-------|
| Benzene                        | BQL            | 1.00       | 0.316       | 1                  | 12/28/2004       |       |
| Diisopropyl ether (DIPE)       | BQL            | 1.00       | 0.294       | 1                  | 12/28/2004       |       |
| Ethylbenzene                   | <b>0.845</b>   | 1.00       | 0.299       | 1                  | 12/28/2004       | J     |
| Methyl-tert butyl ether (MTBE) | BQL            | 2.00       | 0.588       | 1                  | 12/28/2004       |       |
| Toluene                        | <b>0.869</b>   | 1.00       | 0.302       | 1                  | 12/28/2004       | J     |
| m/p-Xylene                     | <b>1.46</b>    | 2.00       | 0.608       | 1                  | 12/28/2004       | J     |
| o-Xylene                       | <b>0.904</b>   | 2.00       | 0.596       | 1                  | 12/28/2004       | J     |

**Surrogate Spike Recoveries****Spike  
Added****Spike  
Result****Percent  
Recovery**

Trifluorotoluene

40

35.5

88.8

**Comments:**

All values corrected for dilution.

BQL = Below quantitation limit.

Reviewed By: ml

**Results for Volatiles**

by GC 602

Client Sample ID: USTM232-MW20

Analyzed By: JTF

Client Project ID: M232

Date Collected: 12/19/2004 11:58

Lab Sample ID: G546-20-3A

Date Received: 12/21/04

Lab Project ID: G546-20

Matrix: Water

| Analyte                        | Result<br>ug/L | RL<br>ug/L | MDL<br>ug/L | Dilution<br>Factor | Date<br>Analyzed | Flags |
|--------------------------------|----------------|------------|-------------|--------------------|------------------|-------|
| Benzene                        | BQL            | 1.00       | 0.316       | 1                  | 12/28/2004       |       |
| Diisopropyl ether (DIPE)       | BQL            | 1.00       | 0.294       | 1                  | 12/28/2004       |       |
| Ethylbenzene                   | BQL            | 1.00       | 0.299       | 1                  | 12/28/2004       |       |
| Methyl-tert butyl ether (MTBE) | BQL            | 2.00       | 0.588       | 1                  | 12/28/2004       |       |
| Toluene                        | <b>0.498</b>   | 1.00       | 0.302       | 1                  | 12/28/2004       | J     |
| m/p-Xylene                     | <b>0.622</b>   | 2.00       | 0.608       | 1                  | 12/28/2004       | J     |
| o-Xylene                       | BQL            | 2.00       | 0.596       | 1                  | 12/28/2004       |       |

**Surrogate Spike Recoveries****Spike  
Added****Spike  
Result****Percent  
Recovery**

Trifluorotoluene

40

35.3

88.3

**Comments:**

All values corrected for dilution.

BQL = Below quantitation limit.

Reviewed By: ml

**Results for Volatiles**

by GC 602

Client Sample ID: USTM232-MW18

Analyzed By: JTF

Client Project ID: M232

Date Collected: 12/19/2004 12:25

Lab Sample ID: G546-20-4A

Date Received: 12/21/04

Lab Project ID: G546-20

Matrix: Water

| <b>Analyte</b>                 | <b>Result</b><br>ug/L | <b>RL</b><br>ug/L | <b>MDL</b><br>ug/L | <b>Dilution</b><br><b>Factor</b> | <b>Date</b><br><b>Analyzed</b> | <b>Flags</b> |
|--------------------------------|-----------------------|-------------------|--------------------|----------------------------------|--------------------------------|--------------|
| Benzene                        | BQL                   | 1.00              | 0.316              | 1                                | 12/29/2004                     |              |
| Diisopropyl ether (DIPE)       | BQL                   | 1.00              | 0.294              | 1                                | 12/29/2004                     |              |
| Ethylbenzene                   | BQL                   | 1.00              | 0.299              | 1                                | 12/29/2004                     |              |
| Methyl-tert butyl ether (MTBE) | BQL                   | 2.00              | 0.588              | 1                                | 12/29/2004                     |              |
| Toluene                        | BQL                   | 1.00              | 0.302              | 1                                | 12/29/2004                     |              |
| m/p-Xylene                     | <b>0.826</b>          | 2.00              | 0.608              | 1                                | 12/29/2004                     | J            |
| o-Xylene                       | BQL                   | 2.00              | 0.596              | 1                                | 12/29/2004                     |              |

**Surrogate Spike Recoveries**

|                  | <b>Spike</b><br><b>Added</b> | <b>Spike</b><br><b>Result</b> | <b>Percent</b><br><b>Recovery</b> |
|------------------|------------------------------|-------------------------------|-----------------------------------|
| Trifluorotoluene | 40                           | 35.4                          | 88.5                              |

**Comments:**

All values corrected for dilution.

BQL = Below quantitation limit.

Reviewed By: 

**Results for Volatiles**

by GC 602

Client Sample ID: USTM232-MW07

Analyzed By: JTF

Client Project ID: M232

Date Collected: 12/19/2004 13:05

Lab Sample ID: G546-20-5A

Date Received: 12/21/04

Lab Project ID: G546-20

Matrix: Water

| Analyte                        | Result<br>ug/L | RL<br>ug/L | MDL<br>ug/L | Dilution<br>Factor | Date<br>Analyzed | Flags |
|--------------------------------|----------------|------------|-------------|--------------------|------------------|-------|
| Benzene                        | BQL            | 1.00       | 0.316       | 1                  | 12/29/2004       |       |
| Diisopropyl ether (DIPE)       | BQL            | 1.00       | 0.294       | 1                  | 12/29/2004       |       |
| Ethylbenzene                   | BQL            | 1.00       | 0.299       | 1                  | 12/29/2004       |       |
| Methyl-tert butyl ether (MTBE) | BQL            | 2.00       | 0.588       | 1                  | 12/29/2004       |       |
| Toluene                        | <b>0.808</b>   | 1.00       | 0.302       | 1                  | 12/29/2004       | J     |
| m/p-Xylene                     | BQL            | 2.00       | 0.608       | 1                  | 12/29/2004       |       |
| o-Xylene                       | BQL            | 2.00       | 0.596       | 1                  | 12/29/2004       |       |

**Surrogate Spike Recoveries****Spike  
Added****Spike  
Result****Percent  
Recovery**

Trifluorotoluene

40

35.1

87.8

**Comments:**

All values corrected for dilution.

BQL = Below quantitation limit.

Reviewed By:

**Results for Volatiles**

by GC 602

Client Sample ID: USTM232-MW05

Analyzed By: DCS

Client Project ID: M232

Date Collected: 12/19/2004 14:05

Lab Sample ID: G546-20-6A

Date Received: 12/21/04

Lab Project ID: G546-20

Matrix: Water

| Analyte                        | Result<br>ug/L | RL<br>ug/L | MDL<br>ug/L | Dilution<br>Factor | Date<br>Analyzed | Flags |
|--------------------------------|----------------|------------|-------------|--------------------|------------------|-------|
| Benzene                        | BQL            | 1.00       | 0.316       | 1                  | 12/30/2004       |       |
| Diisopropyl ether (DIPE)       | BQL            | 1.00       | 0.294       | 1                  | 12/30/2004       |       |
| Ethylbenzene                   | BQL            | 1.00       | 0.299       | 1                  | 12/30/2004       |       |
| Methyl-tert butyl ether (MTBE) | BQL            | 2.00       | 0.588       | 1                  | 12/30/2004       |       |
| Toluene                        | BQL            | 1.00       | 0.302       | 1                  | 12/30/2004       |       |
| m/p-Xylene                     | BQL            | 2.00       | 0.608       | 1                  | 12/30/2004       |       |
| o-Xylene                       | BQL            | 2.00       | 0.596       | 1                  | 12/30/2004       |       |

**Surrogate Spike Recoveries**

|                  | Spike<br>Added | Spike<br>Result | Percent<br>Recovery |
|------------------|----------------|-----------------|---------------------|
| Trifluorotoluene | 40             | 36.2            | 90.4                |

**Comments:**

All values corrected for dilution.

BQL = Below quantitation limit.

Reviewed By: 

**Results for Volatiles**

by GC 602

Client Sample ID: USTM232-Dup

Analyzed By: DCS

Client Project ID: M232

Date Collected: 12/19/2004 00:00

Lab Sample ID: G546-20-7A

Date Received: 12/21/04

Lab Project ID: G546-20

Matrix: Water

| <b>Analyte</b>                 | <b>Result</b><br>ug/L | <b>RL</b><br>ug/L | <b>MDL</b><br>ug/L | <b>Dilution</b><br><b>Factor</b> | <b>Date</b><br><b>Analyzed</b> | <b>Flags</b> |
|--------------------------------|-----------------------|-------------------|--------------------|----------------------------------|--------------------------------|--------------|
| Benzene                        | BQL                   | 1.00              | 0.316              | 1                                | 12/30/2004                     |              |
| Diisopropyl ether (DIPE)       | BQL                   | 1.00              | 0.294              | 1                                | 12/30/2004                     |              |
| Ethylbenzene                   | BQL                   | 1.00              | 0.299              | 1                                | 12/30/2004                     |              |
| Methyl-tert butyl ether (MTBE) | BQL                   | 2.00              | 0.588              | 1                                | 12/30/2004                     |              |
| Toluene                        | BQL                   | 1.00              | 0.302              | 1                                | 12/30/2004                     |              |
| m/p-Xylene                     | BQL                   | 2.00              | 0.608              | 1                                | 12/30/2004                     |              |
| o-Xylene                       | BQL                   | 2.00              | 0.596              | 1                                | 12/30/2004                     |              |

**Surrogate Spike Recoveries**

|                  | <b>Spike</b><br><b>Added</b> | <b>Spike</b><br><b>Result</b> | <b>Percent</b><br><b>Recovery</b> |
|------------------|------------------------------|-------------------------------|-----------------------------------|
| Trifluorotoluene | 40                           | 36.0                          | 89.9                              |

**Comments:**

All values corrected for dilution.

BQL = Below quantitation limit.

Reviewed By: 

**Results for Volatiles**

by GC 602

Client Sample ID: Trip Blank

Analyzed By: DCS

Client Project ID: M232

Date Collected: 12/20/2004 00:00

Lab Sample ID: G546-20-8A

Date Received: 12/21/04

Lab Project ID: G546-20

Matrix: Water

| Analyte                        | Result<br>ug/L | RL<br>ug/L | MDL<br>ug/L | Dilution<br>Factor | Date<br>Analyzed | Flags |
|--------------------------------|----------------|------------|-------------|--------------------|------------------|-------|
| Benzene                        | BQL            | 1.00       | 0.316       | 1                  | 12/30/2004       |       |
| Diisopropyl ether (DIPE)       | BQL            | 1.00       | 0.294       | 1                  | 12/30/2004       |       |
| Ethylbenzene                   | BQL            | 1.00       | 0.299       | 1                  | 12/30/2004       |       |
| Methyl-tert butyl ether (MTBE) | BQL            | 2.00       | 0.588       | 1                  | 12/30/2004       |       |
| Toluene                        | BQL            | 1.00       | 0.302       | 1                  | 12/30/2004       |       |
| m/p-Xylene                     | BQL            | 2.00       | 0.608       | 1                  | 12/30/2004       |       |
| o-Xylene                       | BQL            | 2.00       | 0.596       | 1                  | 12/30/2004       |       |

**Surrogate Spike Recoveries**

|                  | Spike<br>Added | Spike<br>Result | Percent<br>Recovery |
|------------------|----------------|-----------------|---------------------|
| Trifluorotoluene | 40             | 35.9            | 89.7                |

**Comments:**

All values corrected for dilution.

BQL = Below quantitation limit.

Reviewed By: 

**Results for Volatiles**

by GC 602

Client Sample ID: Method Blank

Analyzed By: JTF

Client Project ID:

Date Collected:

Lab Sample ID: VBLK122804D

Date Received:

Lab Project ID:

Matrix: Water

| Analyte                           | Result<br>ug/L | RL<br>ug/L             | MDL<br>ug/L | Dilution<br>Factor      | Date<br>Analyzed            | Flags |
|-----------------------------------|----------------|------------------------|-------------|-------------------------|-----------------------------|-------|
| Benzene                           | BQL            | 1.00                   | 0.316       | 1                       | 12/28/2004                  |       |
| Diisopropyl ether (DIPE)          | BQL            | 1.00                   | 0.294       | 1                       | 12/28/2004                  |       |
| Ethylbenzene                      | BQL            | 1.00                   | 0.299       | 1                       | 12/28/2004                  |       |
| Methyl-tert butyl ether (MTBE)    | BQL            | 2.00                   | 0.588       | 1                       | 12/28/2004                  |       |
| Toluene                           | BQL            | 1.00                   | 0.302       | 1                       | 12/28/2004                  |       |
| m/p-Xylene                        | BQL            | 2.00                   | 0.608       | 1                       | 12/28/2004                  |       |
| o-Xylene                          | BQL            | 2.00                   | 0.596       | 1                       | 12/28/2004                  |       |
| <b>Surrogate Spike Recoveries</b> |                | <b>Spike<br/>Added</b> |             | <b>Spike<br/>Result</b> | <b>Percent<br/>Recovery</b> |       |

Trifluorotoluene

40

35.5

88.7

**Comments:**

All values corrected for dilution.

BQL = Below quantitation limit.

Reviewed By: me

**Results for Volatiles**

by GC 602

Client Sample ID: Method Blank

Analyzed By: DCS

Client Project ID:

Date Collected:

Lab Sample ID: VBLK3123004B

Date Received:

Lab Project ID:

Matrix: Water

| Analyte                        | Result<br>ug/L | RL<br>ug/L | MDL<br>ug/L | Dilution<br>Factor | Date<br>Analyzed | Flags |
|--------------------------------|----------------|------------|-------------|--------------------|------------------|-------|
| Benzene                        | BQL            | 1.00       | 0.316       | 1                  | 12/30/2004       |       |
| Diisopropyl ether (DIPE)       | BQL            | 1.00       | 0.294       | 1                  | 12/30/2004       |       |
| Ethylbenzene                   | BQL            | 1.00       | 0.299       | 1                  | 12/30/2004       |       |
| Methyl-tert butyl ether (MTBE) | BQL            | 2.00       | 0.588       | 1                  | 12/30/2004       |       |
| Toluene                        | BQL            | 1.00       | 0.302       | 1                  | 12/30/2004       |       |
| m/p-Xylene                     | BQL            | 2.00       | 0.608       | 1                  | 12/30/2004       |       |
| o-Xylene                       | BQL            | 2.00       | 0.596       | 1                  | 12/30/2004       |       |

**Surrogate Spike Recoveries**

|                  | Spike<br>Added | Spike<br>Result | Percent<br>Recovery |
|------------------|----------------|-----------------|---------------------|
| Trifluorotoluene | 40             | 35.8            | 89.6                |

**Comments:**

All values corrected for dilution.

BQL = Below quantitation limit.

Reviewed By: 

## Control Limits for QC Check / Laboratory Control Spike

Method: 602      Spike[ppb] : 10  
Instrument : gc3  
Filename : 122804\021r0101.txt

| Compound            | ppb  | Q(%)  | QC Limits |       | P <sub>s</sub> (%) | LCS Limits |       |
|---------------------|------|-------|-----------|-------|--------------------|------------|-------|
|                     |      |       | Lower     | Upper |                    | Lower      | Upper |
| Benzene             | 10.2 | 102.4 | 77.0      | 123.0 | 102                | 39         | 150   |
| Chlorobenzene       | 10.3 | 103.3 | 80.5      | 119.5 | 103                | 55         | 135   |
| 1,2-Dichlorobenzene | 10.8 | 107.9 | 68.0      | 132.0 | 108                | 37         | 154   |
| 1,3-Dichlorobenzene | 10.4 | 104.2 | 72.5      | 127.5 | 104                | 50         | 141   |
| 1,4-Dichlorobenzene | 10.6 | 106.1 | 69.5      | 130.5 | 106                | 42         | 143   |
| • Diisopropyl ether | 9.6  | 96.3  | 43.1      | 156.9 | 96                 | 30         | 170   |
| Ethylbenzene        | 10.8 | 108.0 | 63.0      | 137.0 | 108                | 32         | 160   |
| • MTBE              | 10.0 | 100.4 | 46.8      | 153.2 | 100                | 35         | 165   |
| Toluene             | 10.4 | 103.7 | 77.5      | 127.0 | 104                | 46         | 148   |
| • m,p-Xylene        | 21.5 | 107.4 | 11.2      | 188.8 | 107                | D          | 239   |
| • o-Xylene          | 10.7 | 106.9 | 47.6      | 152.4 | 107                | 36         | 164   |

## Flags :

- + = out of QC limits.
- = lab generated limits.
- D = Detected

Reviewed by: mc

**Control Limits for MS-MSD**

Method: **602** Spike[ppb]: **10**  
 Instrument : gc3  
 Sample : 122804\024r0101.txt  
 MS : 122804\034r0101.txt  
 MSD : 122804\035r0101.txt

| Compound            | µg/L |      |      | P(%) |     | P Limits |       |
|---------------------|------|------|------|------|-----|----------|-------|
|                     | Sam. | MS   | MSD  | MS   | MSD | Lower    | Upper |
| Benzene             | ND   | 10.3 | 10.4 | 103  | 104 | 39       | 150   |
| Chlorobenzene       | ND   | 10.4 | 10.5 | 104  | 105 | 55       | 135   |
| 1,2-Dichlorobenzene | ND   | 11.2 | 11.2 | 109  | 110 | 37       | 154   |
| 1,3-Dichlorobenzene | ND   | 10.7 | 10.8 | 105  | 105 | 50       | 141   |
| 1,4-Dichlorobenzene | ND   | 10.8 | 10.8 | 108  | 108 | 42       | 143   |
| • Diisopropyl ether | ND   | 9.7  | 9.9  | 97   | 99  | 30       | 170   |
| Ethylbenzene        | ND   | 11.0 | 11.0 | 110  | 110 | 32       | 160   |
| • MTBE              | ND   | 10.0 | 10.2 | 100  | 102 | 35       | 165   |
| Toluene             | ND   | 10.6 | 10.6 | 105  | 106 | 46       | 148   |
| • m,p-Xylene        | ND   | 22.0 | 22.0 | 110  | 110 | D        | 239   |
| • o-Xylene          | ND   | 10.9 | 10.7 | 109  | 107 | 36       | 164   |

**Flags :**

+ = out of QC limits.  
 ♦ = lab generated limits.  
 D = Detected  
 ND = None Detected

Reviewed by: MC

## Control Limits for QC Check / Laboratory Control Spike

Method: 602      Spike[ppb]: 10  
 Instrument : gc3  
 Filename : 123004\010r0101.txt

| Compound            | ppb  | Q(%)  | QC Limits |       | P <sub>s</sub> (%) | LCS Limits |       |
|---------------------|------|-------|-----------|-------|--------------------|------------|-------|
|                     |      |       | Lower     | Upper |                    | Lower      | Upper |
| Benzene             | 10.0 | 100.2 | 77.0      | 123.0 | 100                | 39         | 150   |
| Chlorobenzene       | 10.0 | 100.4 | 80.5      | 119.5 | 100                | 55         | 135   |
| 1,2-Dichlorobenzene | 9.9  | 99.1  | 68.0      | 132.0 | 99                 | 37         | 154   |
| 1,3-Dichlorobenzene | 9.8  | 98.3  | 72.5      | 127.5 | 98                 | 50         | 141   |
| 1,4-Dichlorobenzene | 10.1 | 100.5 | 69.5      | 130.5 | 101                | 42         | 143   |
| • Diisopropyl ether | 9.5  | 94.8  | 43.1      | 156.9 | 95                 | 30         | 170   |
| Ethylbenzene        | 10.4 | 103.6 | 63.0      | 137.0 | 104                | 32         | 160   |
| • MTBE              | 9.7  | 96.6  | 46.8      | 153.2 | 97                 | 35         | 165   |
| Toluene             | 10.1 | 100.8 | 77.5      | 127.0 | 101                | 46         | 148   |
| • m,p-Xylene        | 20.5 | 102.4 | 11.2      | 188.8 | 102                | D          | 239   |
| • o-Xylene          | 10.2 | 101.8 | 47.6      | 152.4 | 102                | 36         | 164   |

## Flags :

- + = out of QC limits.
- ♦ = lab generated limits.
- D = Detected

Reviewed by: 

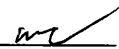
## Control Limits for MS-MSD

Method: 602 Spike[ppb] : 10  
 Instrument : gc3  
 Sample : 123004\025r0101.txt  
 MS : 123004\028r0101.txt  
 MSD : 123004\029r0101.txt

| Compound            | µg/L |      |      | P(%) |     | P Limits |       |
|---------------------|------|------|------|------|-----|----------|-------|
|                     | Sam. | MS   | MSD  | MS   | MSD | Lower    | Upper |
| Benzene             | ND   | 10.0 | 10.1 | 100  | 101 | 39       | 150   |
| Chlorobenzene       | ND   | 10.4 | 10.3 | 104  | 103 | 55       | 135   |
| 1,2-Dichlorobenzene | ND   | 10.8 | 10.8 | 108  | 108 | 37       | 154   |
| 1,3-Dichlorobenzene | ND   | 10.4 | 10.4 | 104  | 104 | 50       | 141   |
| 1,4-Dichlorobenzene | ND   | 10.6 | 10.6 | 106  | 106 | 42       | 143   |
| • Diisopropyl ether | ND   | 9.3  | 9.4  | 93   | 94  | 30       | 170   |
| Ethylbenzene        | ND   | 10.8 | 10.7 | 108  | 107 | 32       | 160   |
| • MTBE              | ND   | 9.6  | 9.6  | 96   | 96  | 35       | 165   |
| Toluene             | ND   | 10.4 | 10.2 | 104  | 102 | 46       | 148   |
| • m,p-Xylene        | ND   | 21.5 | 21.2 | 107  | 106 | D        | 239   |
| • o-Xylene          | ND   | 10.6 | 10.5 | 106  | 105 | 36       | 164   |

## Flags :

+ = out of QC limits.  
 ♦ = lab generated limits.  
 D = Detected  
 ND = None Detected

Reviewed by: 

# Results for Semivolatiles by GCMS 625

Client Sample ID: USTM232-MW22

Client Project ID: M232

Lab Sample ID: G546-20-11

Lab Project ID: G546-20

Analyzed By: MRC

Date Collected: 12/19/2004 10:55

Date Received: 12/21/2004

Date Extracted: 12/21/2004

Matrix: Water

| Compound                    | Result<br>ug/L | Quantitation<br>Limit ug/L | MDL<br>ug/L | Dilution<br>Factor | Date<br>Analyzed | Flag |
|-----------------------------|----------------|----------------------------|-------------|--------------------|------------------|------|
| Acenaphthene                | BQL            | 10.0                       | 1.22        | 1                  | 12/28/2004       |      |
| Acenaphthylene              | BQL            | 10.0                       | 1.12        | 1                  | 12/28/2004       |      |
| Anthracene                  | BQL            | 10.0                       | 1.75        | 1                  | 12/28/2004       |      |
| Benzo[a]anthracene          | BQL            | 10.0                       | 1.36        | 1                  | 12/28/2004       |      |
| Benzo[a]pyrene              | BQL            | 10.0                       | 1.27        | 1                  | 12/28/2004       |      |
| Benzo[b]fluoranthene        | BQL            | 10.0                       | 1.43        | 1                  | 12/28/2004       |      |
| Benzo[g,h,i]perylene        | BQL            | 10.0                       | 4.57        | 1                  | 12/28/2004       |      |
| Benzo[k]fluoranthene        | BQL            | 10.0                       | 1.09        | 1                  | 12/28/2004       |      |
| Bis(2-chloroethoxy)methane  | BQL            | 10.0                       | 1.11        | 1                  | 12/28/2004       |      |
| Bis(2-chloroethyl)ether     | BQL            | 10.0                       | 1.09        | 1                  | 12/28/2004       |      |
| Bis(2-chloroisopropyl)ether | BQL            | 10.0                       | 1.57        | 1                  | 12/28/2004       |      |
| Bis(2-ethylhexyl)phthalate  | BQL            | 10.0                       | 1.33        | 1                  | 12/28/2004       |      |
| 4-bromophenyl phenyl ether  | BQL            | 10.0                       | 1.99        | 1                  | 12/28/2004       |      |
| Butylbenzylphthalate        | BQL            | 10.0                       | 1.53        | 1                  | 12/28/2004       |      |
| 2-Chloronaphthalene         | BQL            | 10.0                       | 1.25        | 1                  | 12/28/2004       |      |
| 2-Chlorophenol              | BQL            | 10.0                       | 4.22        | 1                  | 12/28/2004       |      |
| 4-Chloro-3-methylphenol     | BQL            | 10.0                       | 3.26        | 1                  | 12/28/2004       |      |
| 4-Chlorophenyl phenyl ether | BQL            | 10.0                       | 1.42        | 1                  | 12/28/2004       |      |
| Chrysene                    | BQL            | 10.0                       | 1.11        | 1                  | 12/28/2004       |      |
| Dibenzo[a,h]anthracene      | BQL            | 10.0                       | 4.87        | 1                  | 12/28/2004       |      |
| Di-n-Butylphthalate         | BQL            | 10.0                       | 1.65        | 1                  | 12/28/2004       |      |
| 1,2-Dichlorobenzene         | BQL            | 10.0                       | 1.25        | 1                  | 12/28/2004       |      |
| 1,3-Dichlorobenzene         | BQL            | 10.0                       | 1.24        | 1                  | 12/28/2004       |      |
| 1,4-Dichlorobenzene         | BQL            | 10.0                       | 1.20        | 1                  | 12/28/2004       |      |
| 3,3'-Dichlorobenzidine      | BQL            | 20.0                       | 4.10        | 1                  | 12/28/2004       |      |
| 2,4-Dichlorophenol          | BQL            | 10.0                       | 3.75        | 1                  | 12/28/2004       |      |
| Diethylphthalate            | 4.60           | 10.0                       | 1.48        | 1                  | 12/28/2004       | J    |
| Dimethylphthalate           | BQL            | 10.0                       | 1.04        | 1                  | 12/28/2004       |      |
| 2,4-Dimethylphenol          | BQL            | 10.0                       | 9.25        | 1                  | 12/28/2004       |      |
| Di-n-octylphthalate         | BQL            | 10.0                       | 1.16        | 1                  | 12/28/2004       |      |
| 4,6-Dinitro-2-methylphenol  | BQL            | 50.0                       | 3.71        | 1                  | 12/28/2004       |      |
| 2,4-Dinitrophenol           | BQL            | 50.0                       | 4.20        | 1                  | 12/28/2004       |      |
| 2,4-Dinitrotoluene          | BQL            | 10.0                       | 1.52        | 1                  | 12/28/2004       |      |
| 2,6-Dinitrotoluene          | BQL            | 10.0                       | 1.41        | 1                  | 12/28/2004       |      |
| Fluoranthene                | BQL            | 10.0                       | 1.41        | 1                  | 12/28/2004       |      |
| Fluorene                    | 1.60           | 10.0                       | 1.22        | 1                  | 12/28/2004       | J    |
| Hexachlorobenzene           | BQL            | 10.0                       | 1.22        | 1                  | 12/28/2004       |      |
| Hexachlorobutadiene         | BQL            | 10.0                       | 1.58        | 1                  | 12/28/2004       |      |
| Hexachlorocyclopentadiene   | BQL            | 20.0                       | 20.0        | 1                  | 12/28/2004       |      |
| Hexachloroethane            | BQL            | 10.0                       | 1.58        | 1                  | 12/28/2004       |      |
| Indeno(1,2,3-c,d)pyrene     | BQL            | 10.0                       | 4.57        | 1                  | 12/28/2004       |      |
| Isophorone                  | BQL            | 10.0                       | 1.27        | 1                  | 12/28/2004       |      |

**Results for Semivolatiles  
by GCMS 625**

Client Sample ID: USTM232-MW22

Client Project ID: M232

Lab Sample ID: G546-20-11

Lab Project ID: G546-20

Analyzed By: MRC

Date Collected: 12/19/2004 10:55

Date Received: 12/21/2004

Date Extracted: 12/21/2004

Matrix: Water

| Compound                  | Result<br>ug/L | Quantitation<br>Limit ug/L | MDL<br>ug/L | Dilution<br>Factor | Date<br>Analyzed | Flag |
|---------------------------|----------------|----------------------------|-------------|--------------------|------------------|------|
| Naphthalene               | 2.30           | 10.0                       | 1.08        | 1                  | 12/28/2004       | J    |
| Nitrobenzene              | BQL            | 10.0                       | 1.32        | 1                  | 12/28/2004       |      |
| 2-Nitrophenol             | BQL            | 10.0                       | 3.52        | 1                  | 12/28/2004       |      |
| 4-Nitrophenol             | BQL            | 50.0                       | 3.17        | 1                  | 12/28/2004       |      |
| N-Nitrosodi-n-propylamine | BQL            | 10.0                       | 1.87        | 1                  | 12/28/2004       |      |
| N-Nitrosodiphenylamine    | BQL            | 10.0                       | 1.53        | 1                  | 12/28/2004       |      |
| Pentachlorophenol         | BQL            | 50.0                       | 2.83        | 1                  | 12/28/2004       |      |
| Phenanthrene              | BQL            | 10.0                       | 1.38        | 1                  | 12/28/2004       |      |
| Phenol                    | BQL            | 10.0                       | 3.38        | 1                  | 12/28/2004       |      |
| Pyrene                    | BQL            | 10.0                       | 2.08        | 1                  | 12/28/2004       |      |
| 1,2,4-Trichlorobenzene    | BQL            | 10.0                       | 1.33        | 1                  | 12/28/2004       |      |
| 2,4,6-Trichlorophenol     | BQL            | 10.0                       | 2.92        | 1                  | 12/28/2004       |      |

|                      | Spike<br>Added | Spike<br>Result | Percent<br>Recovered |
|----------------------|----------------|-----------------|----------------------|
| 2-Fluorobiphenyl     | 10             | 8.1             | 81                   |
| 2-Fluorophenol       | 10             | 8.8             | 88                   |
| Nitrobenzene-d5      | 10             | 7.9             | 79                   |
| Phenol-d6            | 10             | 8.5             | 85                   |
| 2,4,6-Tribromophenol | 5              | 3.5             | 71                   |
| 4-Terphenyl-d14      | 10             | 12.9            | 129                  |

**Comments:****Flags:**

BQL = Below Quantitation Limits.

J = Detected below the quantitation limit.

Reviewed By: mc

## Results of Library Search for Semivolatile Compounds

*by GCMS*

Client Sample ID: USTM232-MW22  
 Client Project ID: M232  
 Lab Sample ID: G546-20-11  
 Lab Project ID: G546-20  
 Sample Wt/Vol: 500 ML  
 Dilution: 1

Analyzed By: MRC  
 Date Collected: 12/19/2004 10:55  
 Date Received: 12/21/2004  
 Date Analyzed: 12/28/2004  
 Date Extracted: 12/21/2004  
 Matrix: Water

| No. | Compound                          | Retention Time | CAS#        | Match Probability | Result (ug/L) |
|-----|-----------------------------------|----------------|-------------|-------------------|---------------|
| 1   | Know solvent peak (added by lab)  | 3.84           |             |                   | 1460          |
| 2   | Know compound peak (added by lab) | 11.85          |             |                   | 117           |
| 3   | 1-Methylnaphthalene               | 10.19          | 000090-12-0 | 99                | 15.1          |
| 4   | Dimethylnaphthalene, Isomer of    | 11.16          |             |                   | 11.1          |
| 5   | 2-Methylnaphthalene               | 10.03          | 000091-57-6 | 97                | 6.6           |
| 6   |                                   |                |             |                   |               |
| 7   |                                   |                |             |                   |               |
| 8   |                                   |                |             |                   |               |
| 9   |                                   |                |             |                   |               |
| 10  |                                   |                |             |                   |               |

### Comment:

Tentatively Identified Compound (TIC) refers to substances which are not present in the list of target compounds. Therefore, not all TICs are identified and quantitated using individual standards. TIC listings are prepared utilizing a computerized library search of electron impact mass spectral data and evaluation of the relevant data by a mass spectral data specialist.

Quantitation is accomplished by relative peak area of the compound compared to that of the nearest internal standard from the total ion chromatogram. TICs are identified and quantitated only if the peak area is equal to or greater than 10% of that of the nearest internal standard. Quantitation provided is an estimate.

Reviewed by: 

**Results for Semivolatiles  
by GCMS 625**

Client Sample ID: USTM232-MW21

Client Project ID: M232

Lab Sample ID: G546-20-2I

Lab Project ID: G546-20

Analyzed By: MRC

Date Collected: 12/19/2004 11:25

Date Received: 12/21/2004

Date Extracted: 12/21/2004

Matrix: Water

| Compound                    | Result<br>ug/L | Quantitation<br>Limit ug/L | MDL<br>ug/L | Dilution<br>Factor | Date<br>Analyzed | Flag |
|-----------------------------|----------------|----------------------------|-------------|--------------------|------------------|------|
| Acenaphthene                | 2.20           | 10.0                       | 1.22        | 1                  | 12/28/2004       | J    |
| Acenaphthylene              | BQL            | 10.0                       | 1.12        | 1                  | 12/28/2004       |      |
| Anthracene                  | BQL            | 10.0                       | 1.75        | 1                  | 12/28/2004       |      |
| Benzo[a]anthracene          | BQL            | 10.0                       | 1.36        | 1                  | 12/28/2004       |      |
| Benzo[a]pyrene              | BQL            | 10.0                       | 1.27        | 1                  | 12/28/2004       |      |
| Benzo[b]fluoranthene        | BQL            | 10.0                       | 1.43        | 1                  | 12/28/2004       |      |
| Benzo[g,h,i]perylene        | BQL            | 10.0                       | 4.57        | 1                  | 12/28/2004       |      |
| Benzo[k]fluoranthene        | BQL            | 10.0                       | 1.09        | 1                  | 12/28/2004       |      |
| Bis(2-chloroethoxy)methane  | BQL            | 10.0                       | 1.11        | 1                  | 12/28/2004       |      |
| Bis(2-chloroethyl)ether     | BQL            | 10.0                       | 1.09        | 1                  | 12/28/2004       |      |
| Bis(2-chloroisopropyl)ether | BQL            | 10.0                       | 1.57        | 1                  | 12/28/2004       |      |
| Bis(2-ethylhexyl)phthalate  | BQL            | 10.0                       | 1.33        | 1                  | 12/28/2004       |      |
| 4-bromophenyl phenyl ether  | BQL            | 10.0                       | 1.99        | 1                  | 12/28/2004       |      |
| Butylbenzylphthalate        | BQL            | 10.0                       | 1.53        | 1                  | 12/28/2004       |      |
| 2-Chloronaphthalene         | BQL            | 10.0                       | 1.25        | 1                  | 12/28/2004       |      |
| 2-Chlorophenol              | BQL            | 10.0                       | 4.22        | 1                  | 12/28/2004       |      |
| 4-Chloro-3-methylphenol     | BQL            | 10.0                       | 3.26        | 1                  | 12/28/2004       |      |
| 4-Chlorophenyl phenyl ether | BQL            | 10.0                       | 1.42        | 1                  | 12/28/2004       |      |
| Chrysene                    | BQL            | 10.0                       | 1.11        | 1                  | 12/28/2004       |      |
| Dibenzo[a,h]anthracene      | BQL            | 10.0                       | 4.87        | 1                  | 12/28/2004       |      |
| Di-n-Butylphthalate         | BQL            | 10.0                       | 1.65        | 1                  | 12/28/2004       |      |
| 1,2-Dichlorobenzene         | BQL            | 10.0                       | 1.25        | 1                  | 12/28/2004       |      |
| 1,3-Dichlorobenzene         | BQL            | 10.0                       | 1.24        | 1                  | 12/28/2004       |      |
| 1,4-Dichlorobenzene         | BQL            | 10.0                       | 1.20        | 1                  | 12/28/2004       |      |
| 3,3'-Dichlorobenzidine      | BQL            | 20.0                       | 4.10        | 1                  | 12/28/2004       |      |
| 2,4-Dichlorophenol          | BQL            | 10.0                       | 3.75        | 1                  | 12/28/2004       |      |
| Diethylphthalate            | 15.5           | 10.0                       | 1.48        | 1                  | 12/28/2004       |      |
| Dimethylphthalate           | BQL            | 10.0                       | 1.04        | 1                  | 12/28/2004       |      |
| 2,4-Dimethylphenol          | BQL            | 10.0                       | 9.25        | 1                  | 12/28/2004       |      |
| Di-n-octylphthalate         | BQL            | 10.0                       | 1.16        | 1                  | 12/28/2004       |      |
| 4,6-Dinitro-2-methylphenol  | BQL            | 50.0                       | 3.71        | 1                  | 12/28/2004       |      |
| 2,4-Dinitrophenol           | BQL            | 50.0                       | 4.20        | 1                  | 12/28/2004       |      |
| 2,4-Dinitrotoluene          | BQL            | 10.0                       | 1.52        | 1                  | 12/28/2004       |      |
| 2,6-Dinitrotoluene          | BQL            | 10.0                       | 1.41        | 1                  | 12/28/2004       |      |
| Fluoranthene                | BQL            | 10.0                       | 1.41        | 1                  | 12/28/2004       |      |
| Fluorene                    | 3.50           | 10.0                       | 1.22        | 1                  | 12/28/2004       | J    |
| Hexachlorobenzene           | BQL            | 10.0                       | 1.22        | 1                  | 12/28/2004       |      |
| Hexachlorobutadiene         | BQL            | 10.0                       | 1.58        | 1                  | 12/28/2004       |      |
| Hexachlorocyclopentadiene   | BQL            | 20.0                       | 20.0        | 1                  | 12/28/2004       |      |
| Hexachloroethane            | BQL            | 10.0                       | 1.58        | 1                  | 12/28/2004       |      |
| Indeno(1,2,3-c,d)pyrene     | BQL            | 10.0                       | 4.57        | 1                  | 12/28/2004       |      |
| Isophorone                  | BQL            | 10.0                       | 1.27        | 1                  | 12/28/2004       |      |

**Results for Semivolatiles  
by GCMS 625**

Client Sample ID: USTM232-MW21

Client Project ID: M232

Lab Sample ID: G546-20-2I

Lab Project ID: G546-20

Analyzed By: MRC

Date Collected: 12/19/2004 11:25

Date Received: 12/21/2004

Date Extracted: 12/21/2004

Matrix: Water

| Compound                  | Result<br>ug/L | Quantitation<br>Limit ug/L | MDL<br>ug/L | Dilution<br>Factor | Date<br>Analyzed | Flag |
|---------------------------|----------------|----------------------------|-------------|--------------------|------------------|------|
| Naphthalene               | 3.10           | 10.0                       | 1.08        | 1                  | 12/28/2004       | J    |
| Nitrobenzene              | BQL            | 10.0                       | 1.32        | 1                  | 12/28/2004       |      |
| 2-Nitrophenol             | BQL            | 10.0                       | 3.52        | 1                  | 12/28/2004       |      |
| 4-Nitrophenol             | BQL            | 50.0                       | 3.17        | 1                  | 12/28/2004       |      |
| N-Nitrosodi-n-propylamine | BQL            | 10.0                       | 1.87        | 1                  | 12/28/2004       |      |
| N-Nitrosodiphenylamine    | BQL            | 10.0                       | 1.53        | 1                  | 12/28/2004       |      |
| Pentachlorophenol         | BQL            | 50.0                       | 2.83        | 1                  | 12/28/2004       |      |
| Phenanthrene              | 3.10           | 10.0                       | 1.38        | 1                  | 12/28/2004       | J    |
| Phenol                    | BQL            | 10.0                       | 3.38        | 1                  | 12/28/2004       |      |
| Pyrene                    | BQL            | 10.0                       | 2.08        | 1                  | 12/28/2004       |      |
| 1,2,4-Trichlorobenzene    | BQL            | 10.0                       | 1.33        | 1                  | 12/28/2004       |      |
| 2,4,6-Trichlorophenol     | BQL            | 10.0                       | 2.92        | 1                  | 12/28/2004       |      |

|                      | Spike<br>Added | Spike<br>Result | Percent<br>Recovered |
|----------------------|----------------|-----------------|----------------------|
| 2-Fluorobiphenyl     | 10             | 7               | 70                   |
| 2-Fluorophenol       | 10             | 7.3             | 73                   |
| Nitrobenzene-d5      | 10             | 6.6             | 66                   |
| Phenol-d6            | 10             | 7.4             | 74                   |
| 2,4,6-Tribromophenol | 5              | 3.5             | 69                   |
| 4-Terphenyl-d14      | 10             | 12.3            | 123                  |

**Comments:****Flags:**

BQL = Below Quantitation Limits.

J = Detected below the quantitation limit.

Reviewed By: 

# Results of Library Search for Semivolatile Compounds by GCMS

Client Sample ID: USTM232-MW21  
 Client Project ID: M232  
 Lab Sample ID: G546-20-2I  
 Lab Project ID: G546-20  
 Sample Wt/Vol: 500 ML  
 Dilution: 1

Analyzed By: MRC  
 Date Collected: 12/19/2004 11:25  
 Date Received: 12/21/2004  
 Date Analyzed: 12/28/2004  
 Date Extracted: 12/21/2004  
 Matrix: Water

| No. | Compound                          | Retention Time | CAS#        | Match Probability | Result (ug/L) |
|-----|-----------------------------------|----------------|-------------|-------------------|---------------|
| 1   | Know solvent peak (added by lab)  | 3.84           |             |                   | 1530          |
| 2   | Know compound peak (added by lab) | 11.85          |             |                   | 113           |
| 3   | Dimethylnaphthalene, Isomer of    | 11.16          |             |                   | 30.9          |
| 4   | 1-Methylnaphthalene               | 10.19          | 000090-12-0 | 98                | 30.2          |
| 5   | Dimethylnaphthalene, Isomer of    | 11.03          |             |                   | 12.4          |
| 6   | Dimethylnaphthalene, Isomer of    | 11.34          |             |                   | 11.6          |
| 7   | Ethyl dimethylbenzene, Isomer of  | 8.50           |             |                   | 10.9          |
| 8   | 2-Methylnaphthalene               | 10.03          | 000091-57-6 | 98                | 10.7          |
| 9   | Dimethylnaphthalene, Isomer of    | 11.20          |             |                   | 9.99          |
| 10  |                                   |                |             |                   |               |

## Comment:

Tentatively Identified Compound (TIC) refers to substances which are not present in the list of target compounds. Therefore, not all TICs are identified and quantitated using individual standards. TIC listings are prepared utilizing a computerized library search of electron impact mass spectral data and evaluation of the relevant data by a mass spectral data specialist.

Quantitation is accomplished by relative peak area of the compound compared to that of the nearest internal standard from the total ion chromatogram. TICs are identified and quantitated only if the peak area is equal to or greater than 10% of that of the nearest internal standard. Quantitation provided is an estimate.

Reviewed by: 

**Results for Semivolatiles  
by GCMS 625**

Client Sample ID: USTM232-MW20

Client Project ID: M232

Lab Sample ID: G546-20-3I

Lab Project ID: G546-20

Analyzed By: MRC

Date Collected: 12/19/2004 11:58

Date Received: 12/21/2004

Date Extracted: 12/21/2004

Matrix: Water

| Compound                    | Result<br>ug/L | Quantitation<br>Limit ug/L | MDL<br>ug/L | Dilution<br>Factor | Date<br>Analyzed | Flag |
|-----------------------------|----------------|----------------------------|-------------|--------------------|------------------|------|
| Acenaphthene                | BQL            | 10.0                       | 1.22        | 1                  | 12/29/2004       |      |
| Acenaphthylene              | BQL            | 10.0                       | 1.12        | 1                  | 12/29/2004       |      |
| Anthracene                  | BQL            | 10.0                       | 1.75        | 1                  | 12/29/2004       |      |
| Benzo[a]anthracene          | BQL            | 10.0                       | 1.36        | 1                  | 12/29/2004       |      |
| Benzo[a]pyrene              | BQL            | 10.0                       | 1.27        | 1                  | 12/29/2004       |      |
| Benzo[b]fluoranthene        | BQL            | 10.0                       | 1.43        | 1                  | 12/29/2004       |      |
| Benzo[g,h,i]perylene        | BQL            | 10.0                       | 4.57        | 1                  | 12/29/2004       |      |
| Benzo[k]fluoranthene        | BQL            | 10.0                       | 1.09        | 1                  | 12/29/2004       |      |
| Bis(2-chloroethoxy)methane  | BQL            | 10.0                       | 1.11        | 1                  | 12/29/2004       |      |
| Bis(2-chloroethyl)ether     | BQL            | 10.0                       | 1.09        | 1                  | 12/29/2004       |      |
| Bis(2-chloroisopropyl)ether | BQL            | 10.0                       | 1.57        | 1                  | 12/29/2004       |      |
| Bis(2-ethylhexyl)phthalate  | BQL            | 10.0                       | 1.33        | 1                  | 12/29/2004       |      |
| 4-bromophenyl phenyl ether  | BQL            | 10.0                       | 1.99        | 1                  | 12/29/2004       |      |
| Butylbenzylphthalate        | BQL            | 10.0                       | 1.53        | 1                  | 12/29/2004       |      |
| 2-Chloronaphthalene         | BQL            | 10.0                       | 1.25        | 1                  | 12/29/2004       |      |
| 2-Chlorophenol              | BQL            | 10.0                       | 4.22        | 1                  | 12/29/2004       |      |
| 4-Chloro-3-methylphenol     | BQL            | 10.0                       | 3.26        | 1                  | 12/29/2004       |      |
| 4-Chlorophenyl phenyl ether | BQL            | 10.0                       | 1.42        | 1                  | 12/29/2004       |      |
| Chrysene                    | BQL            | 10.0                       | 1.11        | 1                  | 12/29/2004       |      |
| Dibenzo[a,h]anthracene      | BQL            | 10.0                       | 4.87        | 1                  | 12/29/2004       |      |
| Di-n-Butylphthalate         | BQL            | 10.0                       | 1.65        | 1                  | 12/29/2004       |      |
| 1,2-Dichlorobenzene         | BQL            | 10.0                       | 1.25        | 1                  | 12/29/2004       |      |
| 1,3-Dichlorobenzene         | BQL            | 10.0                       | 1.24        | 1                  | 12/29/2004       |      |
| 1,4-Dichlorobenzene         | BQL            | 10.0                       | 1.20        | 1                  | 12/29/2004       |      |
| 3,3'-Dichlorobenzidine      | BQL            | 20.0                       | 4.10        | 1                  | 12/29/2004       |      |
| 2,4-Dichlorophenol          | BQL            | 10.0                       | 3.75        | 1                  | 12/29/2004       |      |
| Diethylphthalate            | 2.90           | 10.0                       | 1.48        | 1                  | 12/29/2004       | J    |
| Dimethylphthalate           | BQL            | 10.0                       | 1.04        | 1                  | 12/29/2004       |      |
| 2,4-Dimethylphenol          | BQL            | 10.0                       | 9.25        | 1                  | 12/29/2004       |      |
| Di-n-octylphthalate         | BQL            | 10.0                       | 1.16        | 1                  | 12/29/2004       |      |
| 4,6-Dinitro-2-methylphenol  | BQL            | 50.0                       | 3.71        | 1                  | 12/29/2004       |      |
| 2,4-Dinitrophenol           | BQL            | 50.0                       | 4.20        | 1                  | 12/29/2004       |      |
| 2,4-Dinitrotoluene          | BQL            | 10.0                       | 1.52        | 1                  | 12/29/2004       |      |
| 2,6-Dinitrotoluene          | BQL            | 10.0                       | 1.41        | 1                  | 12/29/2004       |      |
| Fluoranthene                | BQL            | 10.0                       | 1.41        | 1                  | 12/29/2004       |      |
| Fluorene                    | 1.30           | 10.0                       | 1.22        | 1                  | 12/29/2004       | J    |
| Hexachlorobenzene           | BQL            | 10.0                       | 1.22        | 1                  | 12/29/2004       |      |
| Hexachlorobutadiene         | BQL            | 10.0                       | 1.58        | 1                  | 12/29/2004       |      |
| Hexachlorocyclopentadiene   | BQL            | 20.0                       | 20.0        | 1                  | 12/29/2004       |      |
| Hexachloroethane            | BQL            | 10.0                       | 1.58        | 1                  | 12/29/2004       |      |
| Indeno(1,2,3-c,d)pyrene     | BQL            | 10.0                       | 4.57        | 1                  | 12/29/2004       |      |
| Isophorone                  | BQL            | 10.0                       | 1.27        | 1                  | 12/29/2004       |      |

**Results for Semivolatiles  
by GCMS 625**

Client Sample ID: USTM232-MW20

Client Project ID: M232

Lab Sample ID: G546-20-3I

Lab Project ID: G546-20

Analyzed By: MRC

Date Collected: 12/19/2004 11:58

Date Received: 12/21/2004

Date Extracted: 12/21/2004

Matrix: Water

| Compound                  | Result<br>ug/L | Quantitation<br>Limit ug/L | MDL<br>ug/L | Dilution<br>Factor | Date<br>Analyzed | Flag |
|---------------------------|----------------|----------------------------|-------------|--------------------|------------------|------|
| Naphthalene               | BQL            | 10.0                       | 1.08        | 1                  | 12/29/2004       |      |
| Nitrobenzene              | BQL            | 10.0                       | 1.32        | 1                  | 12/29/2004       |      |
| 2-Nitrophenol             | BQL            | 10.0                       | 3.52        | 1                  | 12/29/2004       |      |
| 4-Nitrophenol             | BQL            | 50.0                       | 3.17        | 1                  | 12/29/2004       |      |
| N-Nitrosodi-n-propylamine | BQL            | 10.0                       | 1.87        | 1                  | 12/29/2004       |      |
| N-Nitrosodiphenylamine    | BQL            | 10.0                       | 1.53        | 1                  | 12/29/2004       |      |
| Pentachlorophenol         | BQL            | 50.0                       | 2.83        | 1                  | 12/29/2004       |      |
| Phenanthrene              | BQL            | 10.0                       | 1.38        | 1                  | 12/29/2004       |      |
| Phenol                    | BQL            | 10.0                       | 3.38        | 1                  | 12/29/2004       |      |
| Pyrene                    | BQL            | 10.0                       | 2.08        | 1                  | 12/29/2004       |      |
| 1,2,4-Trichlorobenzene    | BQL            | 10.0                       | 1.33        | 1                  | 12/29/2004       |      |
| 2,4,6-Trichlorophenol     | BQL            | 10.0                       | 2.92        | 1                  | 12/29/2004       |      |

|                      | Spike<br>Added | Spike<br>Result | Percent<br>Recovered |
|----------------------|----------------|-----------------|----------------------|
| 2-Fluorobiphenyl     | 10             | 7.8             | 78                   |
| 2-Fluorophenol       | 10             | 8.7             | 87                   |
| Nitrobenzene-d5      | 10             | 7.8             | 78                   |
| Phenol-d6            | 10             | 8.4             | 84                   |
| 2,4,6-Tribromophenol | 5              | 3.6             | 71                   |
| 4-Terphenyl-d14      | 10             | 12.5            | 125                  |

**Comments:****Flags:**

BQL = Below Quantitation Limits.

J = Detected below the quantitation limit.

Reviewed By: MC

**Results of Library Search for Semivolatile Compounds**  
*by GCMS*

Client Sample ID: USTM232-MW20

Client Project ID: M232

Lab Sample ID: G546-20-3I

Lab Project ID: G546-20

Sample Wt/Vol: 500 ML

Dilution: 1

Analyzed By: MRC

Date Collected: 12/19/2004 11:58

Date Received: 12/21/2004

Date Analyzed: 12/29/2004

Date Extracted: 12/21/2004

Matrix: Water

| No. | Compound                          | Retention<br>Time | CAS# | Match<br>Probability | Result<br>(ug/L) |
|-----|-----------------------------------|-------------------|------|----------------------|------------------|
| 1   | Know solvent peak (added by lab)  | 3.85              |      |                      | 1400             |
| 2   | Know compound peak (added by lab) | 11.85             |      |                      | 130              |
| 3   |                                   |                   |      |                      |                  |
| 4   |                                   |                   |      |                      |                  |
| 5   |                                   |                   |      |                      |                  |
| 6   |                                   |                   |      |                      |                  |
| 7   |                                   |                   |      |                      |                  |
| 8   |                                   |                   |      |                      |                  |
| 9   |                                   |                   |      |                      |                  |
| 10  |                                   |                   |      |                      |                  |

**Comment:**

Tentatively Identified Compound (TIC) refers to substances which are not present in the list of target compounds. Therefore, not all TICs are identified and quantitated using individual standards. TIC listings are prepared utilizing a computerized library search of electron impact mass spectral data and evaluation of the relevant data by a mass spectral data specialist.

Quantitation is accomplished by relative peak area of the compound compared to that of the nearest internal standard from the total ion chromatogram. TICs are identified and quantitated only if the peak area is equal to or greater than 10% of that of the nearest internal standard. Quantitation provided is an estimate.

Reviewed by: 

**Results for Semivolatiles  
by GCMS 625**

Client Sample ID: USTM232-MW18

Client Project ID: M232

Lab Sample ID: G546-20-4I

Lab Project ID: G546-20

Analyzed By: MRC

Date Collected: 12/19/2004 12:25

Date Received: 12/21/2004

Date Extracted: 12/21/2004

Matrix: Water

| Compound                    | Result<br>ug/L | Quantitation<br>Limit ug/L | MDL<br>ug/L | Dilution<br>Factor | Date<br>Analyzed | Flag |
|-----------------------------|----------------|----------------------------|-------------|--------------------|------------------|------|
| Acenaphthene                | 2.80           | 10.0                       | 1.22        | 1                  | 12/29/2004       | J    |
| Acenaphthylene              | BQL            | 10.0                       | 1.12        | 1                  | 12/29/2004       |      |
| Anthracene                  | BQL            | 10.0                       | 1.75        | 1                  | 12/29/2004       |      |
| Benzo[a]anthracene          | BQL            | 10.0                       | 1.36        | 1                  | 12/29/2004       |      |
| Benzo[a]pyrene              | BQL            | 10.0                       | 1.27        | 1                  | 12/29/2004       |      |
| Benzo[b]fluoranthene        | BQL            | 10.0                       | 1.43        | 1                  | 12/29/2004       |      |
| Benzo[g,h,i]perylene        | BQL            | 10.0                       | 4.57        | 1                  | 12/29/2004       |      |
| Benzo[k]fluoranthene        | BQL            | 10.0                       | 1.09        | 1                  | 12/29/2004       |      |
| Bis(2-chloroethoxy)methane  | BQL            | 10.0                       | 1.11        | 1                  | 12/29/2004       |      |
| Bis(2-chloroethyl)ether     | BQL            | 10.0                       | 1.09        | 1                  | 12/29/2004       |      |
| Bis(2-chloroisopropyl)ether | BQL            | 10.0                       | 1.57        | 1                  | 12/29/2004       |      |
| Bis(2-ethylhexyl)phthalate  | BQL            | 10.0                       | 1.33        | 1                  | 12/29/2004       |      |
| 4-bromophenyl phenyl ether  | BQL            | 10.0                       | 1.99        | 1                  | 12/29/2004       |      |
| Butylbenzylphthalate        | BQL            | 10.0                       | 1.53        | 1                  | 12/29/2004       |      |
| 2-Chloronaphthalene         | BQL            | 10.0                       | 1.25        | 1                  | 12/29/2004       |      |
| 2-Chlorophenol              | BQL            | 10.0                       | 4.22        | 1                  | 12/29/2004       |      |
| 4-Chloro-3-methylphenol     | BQL            | 10.0                       | 3.26        | 1                  | 12/29/2004       |      |
| 4-Chlorophenyl phenyl ether | BQL            | 10.0                       | 1.42        | 1                  | 12/29/2004       |      |
| Chrysene                    | BQL            | 10.0                       | 1.11        | 1                  | 12/29/2004       |      |
| Dibenzo[a,h]anthracene      | BQL            | 10.0                       | 4.87        | 1                  | 12/29/2004       |      |
| Di-n-Butylphthalate         | BQL            | 10.0                       | 1.65        | 1                  | 12/29/2004       |      |
| 1,2-Dichlorobenzene         | BQL            | 10.0                       | 1.25        | 1                  | 12/29/2004       |      |
| 1,3-Dichlorobenzene         | BQL            | 10.0                       | 1.24        | 1                  | 12/29/2004       |      |
| 1,4-Dichlorobenzene         | BQL            | 10.0                       | 1.20        | 1                  | 12/29/2004       |      |
| 3,3'-Dichlorobenzidine      | BQL            | 20.0                       | 4.10        | 1                  | 12/29/2004       |      |
| 2,4-Dichlorophenol          | BQL            | 10.0                       | 3.75        | 1                  | 12/29/2004       |      |
| Diethylphthalate            | BQL            | 10.0                       | 1.48        | 1                  | 12/29/2004       |      |
| Dimethylphthalate           | BQL            | 10.0                       | 1.04        | 1                  | 12/29/2004       |      |
| 2,4-Dimethylphenol          | BQL            | 10.0                       | 9.25        | 1                  | 12/29/2004       |      |
| Di-n-octylphthalate         | BQL            | 10.0                       | 1.16        | 1                  | 12/29/2004       |      |
| 4,6-Dinitro-2-methylphenol  | BQL            | 50.0                       | 3.71        | 1                  | 12/29/2004       |      |
| 2,4-Dinitrophenol           | BQL            | 50.0                       | 4.20        | 1                  | 12/29/2004       |      |
| 2,4-Dinitrotoluene          | BQL            | 10.0                       | 1.52        | 1                  | 12/29/2004       |      |
| 2,6-Dinitrotoluene          | BQL            | 10.0                       | 1.41        | 1                  | 12/29/2004       |      |
| Fluoranthene                | BQL            | 10.0                       | 1.41        | 1                  | 12/29/2004       |      |
| Fluorene                    | 4.70           | 10.0                       | 1.22        | 1                  | 12/29/2004       | J    |
| Hexachlorobenzene           | BQL            | 10.0                       | 1.22        | 1                  | 12/29/2004       |      |
| Hexachlorobutadiene         | BQL            | 10.0                       | 1.58        | 1                  | 12/29/2004       |      |
| Hexachlorocyclopentadiene   | BQL            | 20.0                       | 20.0        | 1                  | 12/29/2004       |      |
| Hexachloroethane            | BQL            | 10.0                       | 1.58        | 1                  | 12/29/2004       |      |
| Indeno(1,2,3-c,d)pyrene     | BQL            | 10.0                       | 4.57        | 1                  | 12/29/2004       |      |
| Isophorone                  | BQL            | 10.0                       | 1.27        | 1                  | 12/29/2004       |      |

**Results for Semivolatiles  
by GCMS 625**

Client Sample ID: USTM232-MW18

Client Project ID: M232

Lab Sample ID: G546-20-4I

Lab Project ID: G546-20

Analyzed By: MRC

Date Collected: 12/19/2004 12:25

Date Received: 12/21/2004

Date Extracted: 12/21/2004

Matrix: Water

| Compound                  | Result<br>ug/L | Quantitation<br>Limit ug/L | MDL<br>ug/L | Dilution<br>Factor | Date<br>Analyzed | Flag |
|---------------------------|----------------|----------------------------|-------------|--------------------|------------------|------|
| Naphthalene               | BQL            | 10.0                       | 1.08        | 1                  | 12/29/2004       |      |
| Nitrobenzene              | BQL            | 10.0                       | 1.32        | 1                  | 12/29/2004       |      |
| 2-Nitrophenol             | BQL            | 10.0                       | 3.52        | 1                  | 12/29/2004       |      |
| 4-Nitrophenol             | BQL            | 50.0                       | 3.17        | 1                  | 12/29/2004       |      |
| N-Nitrosodi-n-propylamine | BQL            | 10.0                       | 1.87        | 1                  | 12/29/2004       |      |
| N-Nitrosodiphenylamine    | BQL            | 10.0                       | 1.53        | 1                  | 12/29/2004       |      |
| Pentachlorophenol         | BQL            | 50.0                       | 2.83        | 1                  | 12/29/2004       |      |
| Phenanthrene              | 4.90           | 10.0                       | 1.38        | 1                  | 12/29/2004       | J    |
| Phenol                    | BQL            | 10.0                       | 3.38        | 1                  | 12/29/2004       |      |
| Pyrene                    | BQL            | 10.0                       | 2.08        | 1                  | 12/29/2004       |      |
| 1,2,4-Trichlorobenzene    | BQL            | 10.0                       | 1.33        | 1                  | 12/29/2004       |      |
| 2,4,6-Trichlorophenol     | BQL            | 10.0                       | 2.92        | 1                  | 12/29/2004       |      |

|                      | Spike<br>Added | Spike<br>Result | Percent<br>Recovered |
|----------------------|----------------|-----------------|----------------------|
| 2-Fluorobiphenyl     | 10             | 7.2             | 73                   |
| 2-Fluorophenol       | 10             | 7.6             | 76                   |
| Nitrobenzene-d5      | 10             | 7.2             | 72                   |
| Phenol-d6            | 10             | 7.8             | 78                   |
| 2,4,6-Tribromophenol | 5              | 3.4             | 68                   |
| 4-Terphenyl-d14      | 10             | 12.2            | 122                  |

**Comments:****Flags:**

BQL = Below Quantitation Limits.

J = Detected below the quantitation limit.

Reviewed By: ml

## Results of Library Search for Semivolatile Compounds

*by GCMS*

Client Sample ID: USTM232-MW18

Client Project ID: M232

Lab Sample ID: G546-20-41

Lab Project ID: G546-20

Sample Wt/Vol: 500 ML

Dilution: 1

Analyzed By: MRC

Date Collected: 12/19/2004 12:25

Date Received: 12/21/2004

Date Analyzed: 12/29/2004

Date Extracted: 12/21/2004

Matrix: Water

| No. | Compound                               | Retention Time | CAS#        | Match Probability | Result (ug/L) |
|-----|----------------------------------------|----------------|-------------|-------------------|---------------|
| 1   | Know solvent peak (added by lab)       | 3.84           |             |                   | 1570          |
| 2   | Know compound peak (added by lab)      | 11.85          |             |                   | 119           |
| 3   | Propenylbenzene, Isomer of             | 7.23           |             |                   | 29.3          |
| 4   | Aromatic, Unknown                      | 8.50           |             |                   | 19.2          |
| 5   | Biphenyl                               | 10.79          | 000092-52-4 | 93                | 9.82          |
| 6   | Tetrahydromethylnaphthalene, Isomer of | 9.95           |             |                   | 9.45          |
| 7   | 1-Methylnaphthalene                    | 10.19          | 000090-12-0 | 99                | 4.7           |
| 8   |                                        |                |             |                   |               |
| 9   |                                        |                |             |                   |               |
| 10  |                                        |                |             |                   |               |

**Comment:**

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Quantitation is accomplished by relative peak area of the compound compared to that of the nearest internal standard from the total ion chromatogram. TICs are identified and quantitated only if the peak area is equal to or greater than 10% of that of the nearest internal standard. Quantitation provided is an estimate.

Reviewed by: 

**Results for Semivolatiles  
by GCMS 625**

Client Sample ID: USTM232-MW07

Client Project ID: M232

Lab Sample ID: G546-20-5I

Lab Project ID: G546-20

Analyzed By: MRC

Date Collected: 12/19/2004 13:05

Date Received: 12/21/2004

Date Extracted: 12/21/2004

Matrix: Water

| Compound                    | Result<br>ug/L | Quantitation<br>Limit ug/L | MDL<br>ug/L | Dilution<br>Factor | Date<br>Analyzed | Flag |
|-----------------------------|----------------|----------------------------|-------------|--------------------|------------------|------|
| Acenaphthene                | BQL            | 10.0                       | 1.22        | 1                  | 12/29/2004       |      |
| Acenaphthylene              | BQL            | 10.0                       | 1.12        | 1                  | 12/29/2004       |      |
| Anthracene                  | BQL            | 10.0                       | 1.75        | 1                  | 12/29/2004       |      |
| Benzo[a]anthracene          | BQL            | 10.0                       | 1.36        | 1                  | 12/29/2004       |      |
| Benzo[a]pyrene              | BQL            | 10.0                       | 1.27        | 1                  | 12/29/2004       |      |
| Benzo[b]fluoranthene        | BQL            | 10.0                       | 1.43        | 1                  | 12/29/2004       |      |
| Benzo[g,h,i]perylene        | BQL            | 10.0                       | 4.57        | 1                  | 12/29/2004       |      |
| Benzo[k]fluoranthene        | BQL            | 10.0                       | 1.09        | 1                  | 12/29/2004       |      |
| Bis(2-chloroethoxy)methane  | BQL            | 10.0                       | 1.11        | 1                  | 12/29/2004       |      |
| Bis(2-chloroethyl)ether     | BQL            | 10.0                       | 1.09        | 1                  | 12/29/2004       |      |
| Bis(2-chloroisopropyl)ether | BQL            | 10.0                       | 1.57        | 1                  | 12/29/2004       |      |
| Bis(2-ethylhexyl)phthalate  | BQL            | 10.0                       | 1.33        | 1                  | 12/29/2004       |      |
| 4-bromophenyl phenyl ether  | BQL            | 10.0                       | 1.99        | 1                  | 12/29/2004       |      |
| Butylbenzylphthalate        | BQL            | 10.0                       | 1.53        | 1                  | 12/29/2004       |      |
| 2-Chloronaphthalene         | BQL            | 10.0                       | 1.25        | 1                  | 12/29/2004       |      |
| 2-Chlorophenol              | BQL            | 10.0                       | 4.22        | 1                  | 12/29/2004       |      |
| 4-Chloro-3-methylphenol     | BQL            | 10.0                       | 3.26        | 1                  | 12/29/2004       |      |
| 4-Chlorophenyl phenyl ether | BQL            | 10.0                       | 1.42        | 1                  | 12/29/2004       |      |
| Chrysene                    | BQL            | 10.0                       | 1.11        | 1                  | 12/29/2004       |      |
| Dibenzo[a,h]anthracene      | BQL            | 10.0                       | 4.87        | 1                  | 12/29/2004       |      |
| Di-n-Butylphthalate         | BQL            | 10.0                       | 1.65        | 1                  | 12/29/2004       |      |
| 1,2-Dichlorobenzene         | BQL            | 10.0                       | 1.25        | 1                  | 12/29/2004       |      |
| 1,3-Dichlorobenzene         | BQL            | 10.0                       | 1.24        | 1                  | 12/29/2004       |      |
| 1,4-Dichlorobenzene         | BQL            | 10.0                       | 1.20        | 1                  | 12/29/2004       |      |
| 3,3'-Dichlorobenzidine      | BQL            | 20.0                       | 4.10        | 1                  | 12/29/2004       |      |
| 2,4-Dichlorophenol          | BQL            | 10.0                       | 3.75        | 1                  | 12/29/2004       |      |
| Diethylphthalate            | BQL            | 10.0                       | 1.48        | 1                  | 12/29/2004       |      |
| Dimethylphthalate           | BQL            | 10.0                       | 1.04        | 1                  | 12/29/2004       |      |
| 2,4-Dimethylphenol          | BQL            | 10.0                       | 9.25        | 1                  | 12/29/2004       |      |
| Di-n-octylphthalate         | BQL            | 10.0                       | 1.16        | 1                  | 12/29/2004       |      |
| 4,6-Dinitro-2-methylphenol  | BQL            | 50.0                       | 3.71        | 1                  | 12/29/2004       |      |
| 2,4-Dinitrophenol           | BQL            | 50.0                       | 4.20        | 1                  | 12/29/2004       |      |
| 2,4-Dinitrotoluene          | BQL            | 10.0                       | 1.52        | 1                  | 12/29/2004       |      |
| 2,6-Dinitrotoluene          | BQL            | 10.0                       | 1.41        | 1                  | 12/29/2004       |      |
| Fluoranthene                | BQL            | 10.0                       | 1.41        | 1                  | 12/29/2004       |      |
| Fluorene                    | BQL            | 10.0                       | 1.22        | 1                  | 12/29/2004       |      |
| Hexachlorobenzene           | BQL            | 10.0                       | 1.22        | 1                  | 12/29/2004       |      |
| Hexachlorobutadiene         | BQL            | 10.0                       | 1.58        | 1                  | 12/29/2004       |      |
| Hexachlorocyclopentadiene   | BQL            | 20.0                       | 20.0        | 1                  | 12/29/2004       |      |
| Hexachloroethane            | BQL            | 10.0                       | 1.58        | 1                  | 12/29/2004       |      |
| Indeno(1,2,3-c,d)pyrene     | BQL            | 10.0                       | 4.57        | 1                  | 12/29/2004       |      |
| Isophorone                  | BQL            | 10.0                       | 1.27        | 1                  | 12/29/2004       |      |

**Results for Semivolatiles  
by GCMS 625**

Client Sample ID: USTM232-MW07

Client Project ID: M232

Lab Sample ID: G546-20-5I

Lab Project ID: G546-20

Analyzed By: MRC

Date Collected: 12/19/2004 13:05

Date Received: 12/21/2004

Date Extracted: 12/21/2004

Matrix: Water

| Compound                  | Result<br>ug/L | Quantitation<br>Limit ug/L | MDL<br>ug/L | Dilution<br>Factor | Date<br>Analyzed | Flag |
|---------------------------|----------------|----------------------------|-------------|--------------------|------------------|------|
| Naphthalene               | BQL            | 10.0                       | 1.08        | 1                  | 12/29/2004       |      |
| Nitrobenzene              | BQL            | 10.0                       | 1.32        | 1                  | 12/29/2004       |      |
| 2-Nitrophenol             | BQL            | 10.0                       | 3.52        | 1                  | 12/29/2004       |      |
| 4-Nitrophenol             | BQL            | 50.0                       | 3.17        | 1                  | 12/29/2004       |      |
| N-Nitrosodi-n-propylamine | BQL            | 10.0                       | 1.87        | 1                  | 12/29/2004       |      |
| N-Nitrosodiphenylamine    | BQL            | 10.0                       | 1.53        | 1                  | 12/29/2004       |      |
| Pentachlorophenol         | BQL            | 50.0                       | 2.83        | 1                  | 12/29/2004       |      |
| Phenanthrene              | BQL            | 10.0                       | 1.38        | 1                  | 12/29/2004       |      |
| Phenol                    | BQL            | 10.0                       | 3.38        | 1                  | 12/29/2004       |      |
| Pyrene                    | BQL            | 10.0                       | 2.08        | 1                  | 12/29/2004       |      |
| 1,2,4-Trichlorobenzene    | BQL            | 10.0                       | 1.33        | 1                  | 12/29/2004       |      |
| 2,4,6-Trichlorophenol     | BQL            | 10.0                       | 2.92        | 1                  | 12/29/2004       |      |

|                      | Spike<br>Added | Spike<br>Result | Percent<br>Recovered |
|----------------------|----------------|-----------------|----------------------|
| 2-Fluorobiphenyl     | 10             | 7.6             | 76                   |
| 2-Fluorophenol       | 10             | 8.4             | 84                   |
| Nitrobenzene-d5      | 10             | 7.6             | 76                   |
| Phenol-d6            | 10             | 8.3             | 83                   |
| 2,4,6-Tribromophenol | 5              | 3.1             | 62                   |
| 4-Terphenyl-d14      | 10             | 12.8            | 128                  |

**Comments:****Flags:**

BQL = Below Quantitation Limits.

J = Detected below the quantitation limit.

Reviewed By: 

**Results of Library Search for Semivolatile Compounds**  
*by GCMS*

Client Sample ID: USTM232-MW07  
Client Project ID: M232  
Lab Sample ID: G546-20-5I  
Lab Project ID: G546-20  
Sample Wt/Vol: 500 ML  
Dilution: 1

Analyzed By: MRC  
Date Collected: 12/19/2004 13:05  
Date Received: 12/21/2004  
Date Analyzed: 12/29/2004  
Date Extracted: 12/21/2004  
Matrix: Water

| No. | Compound                          | Retention<br>Time | CAS# | Match<br>Probability | Result<br>(ug/L) |
|-----|-----------------------------------|-------------------|------|----------------------|------------------|
| 1   | Know solvent peak (added by lab)  | 3.84              |      |                      | 1490             |
| 2   | Know compound peak (added by lab) | 11.85             |      |                      | 119              |
| 3   |                                   |                   |      |                      |                  |
| 4   |                                   |                   |      |                      |                  |
| 5   |                                   |                   |      |                      |                  |
| 6   |                                   |                   |      |                      |                  |
| 7   |                                   |                   |      |                      |                  |
| 8   |                                   |                   |      |                      |                  |
| 9   |                                   |                   |      |                      |                  |
| 10  |                                   |                   |      |                      |                  |

**Comment:**

Tentatively Identified Compound (TIC) refers to substances which are not present in the list of target compounds. Therefore, not all TICs are identified and quantitated using individual standards. TIC listings are prepared utilizing a computerized library search of electron impact mass spectral data and evaluation of the relevant data by a mass spectral data specialist.

Quantitation is accomplished by relative peak area of the compound compared to that of the nearest internal standard from the total ion chromatogram. TICs are identified and quantitated only if the peak area is equal to or greater than 10% of that of the nearest internal standard. Quantitation provided is an estimate.

Reviewed by: MC

# Results for Semivolatiles by GCMS 625

Client Sample ID: USTM232-MW05

Client Project ID: M232

Lab Sample ID: G546-20-6I

Lab Project ID: G546-20

Analyzed By: MRC

Date Collected: 12/19/2004 14:05

Date Received: 12/21/2004

Date Extracted: 12/22/2004

Matrix: Water

| Compound                    | Result<br>ug/L | Quantitation<br>Limit ug/L | MDL<br>ug/L | Dilution<br>Factor | Date<br>Analyzed | Flag |
|-----------------------------|----------------|----------------------------|-------------|--------------------|------------------|------|
| Acenaphthene                | BQL            | 10.0                       | 1.22        | 1                  | 12/29/2004       |      |
| Acenaphthylene              | BQL            | 10.0                       | 1.12        | 1                  | 12/29/2004       |      |
| Anthracene                  | BQL            | 10.0                       | 1.75        | 1                  | 12/29/2004       |      |
| Benzo[a]anthracene          | BQL            | 10.0                       | 1.36        | 1                  | 12/29/2004       |      |
| Benzo[a]pyrene              | BQL            | 10.0                       | 1.27        | 1                  | 12/29/2004       |      |
| Benzo[b]fluoranthene        | BQL            | 10.0                       | 1.43        | 1                  | 12/29/2004       |      |
| Benzo[g,h,i]perylene        | BQL            | 10.0                       | 4.57        | 1                  | 12/29/2004       |      |
| Benzo[k]fluoranthene        | BQL            | 10.0                       | 1.09        | 1                  | 12/29/2004       |      |
| Bis(2-chloroethoxy)methane  | BQL            | 10.0                       | 1.11        | 1                  | 12/29/2004       |      |
| Bis(2-chloroethyl)ether     | BQL            | 10.0                       | 1.09        | 1                  | 12/29/2004       |      |
| Bis(2-chloroisopropyl)ether | BQL            | 10.0                       | 1.57        | 1                  | 12/29/2004       |      |
| Bis(2-ethylhexyl)phthalate  | BQL            | 10.0                       | 1.33        | 1                  | 12/29/2004       |      |
| 4-bromophenyl phenyl ether  | BQL            | 10.0                       | 1.99        | 1                  | 12/29/2004       |      |
| Butylbenzylphthalate        | BQL            | 10.0                       | 1.53        | 1                  | 12/29/2004       |      |
| 2-Chloronaphthalene         | BQL            | 10.0                       | 1.25        | 1                  | 12/29/2004       |      |
| 2-Chlorophenol              | BQL            | 10.0                       | 4.22        | 1                  | 12/29/2004       |      |
| 4-Chloro-3-methylphenol     | BQL            | 10.0                       | 3.26        | 1                  | 12/29/2004       |      |
| 4-Chlorophenyl phenyl ether | BQL            | 10.0                       | 1.42        | 1                  | 12/29/2004       |      |
| Chrysene                    | BQL            | 10.0                       | 1.11        | 1                  | 12/29/2004       |      |
| Dibenzo[a,h]anthracene      | BQL            | 10.0                       | 4.87        | 1                  | 12/29/2004       |      |
| Di-n-Butylphthalate         | BQL            | 10.0                       | 1.65        | 1                  | 12/29/2004       |      |
| 1,2-Dichlorobenzene         | BQL            | 10.0                       | 1.25        | 1                  | 12/29/2004       |      |
| 1,3-Dichlorobenzene         | BQL            | 10.0                       | 1.24        | 1                  | 12/29/2004       |      |
| 1,4-Dichlorobenzene         | BQL            | 10.0                       | 1.20        | 1                  | 12/29/2004       |      |
| 3,3'-Dichlorobenzidine      | BQL            | 20.0                       | 4.10        | 1                  | 12/29/2004       |      |
| 2,4-Dichlorophenol          | BQL            | 10.0                       | 3.75        | 1                  | 12/29/2004       |      |
| Diethylphthalate            | BQL            | 10.0                       | 1.48        | 1                  | 12/29/2004       |      |
| Dimethylphthalate           | BQL            | 10.0                       | 1.04        | 1                  | 12/29/2004       |      |
| 2,4-Dimethylphenol          | BQL            | 10.0                       | 9.25        | 1                  | 12/29/2004       |      |
| Di-n-octylphthalate         | BQL            | 10.0                       | 1.16        | 1                  | 12/29/2004       |      |
| 4,6-Dinitro-2-methylphenol  | BQL            | 50.0                       | 3.71        | 1                  | 12/29/2004       |      |
| 2,4-Dinitrophenol           | BQL            | 50.0                       | 4.20        | 1                  | 12/29/2004       |      |
| 2,4-Dinitrotoluene          | BQL            | 10.0                       | 1.52        | 1                  | 12/29/2004       |      |
| 2,6-Dinitrotoluene          | BQL            | 10.0                       | 1.41        | 1                  | 12/29/2004       |      |
| Fluoranthene                | BQL            | 10.0                       | 1.41        | 1                  | 12/29/2004       |      |
| Fluorene                    | BQL            | 10.0                       | 1.22        | 1                  | 12/29/2004       |      |
| Hexachlorobenzene           | BQL            | 10.0                       | 1.22        | 1                  | 12/29/2004       |      |
| Hexachlorobutadiene         | BQL            | 10.0                       | 1.58        | 1                  | 12/29/2004       |      |
| Hexachlorocyclopentadiene   | BQL            | 20.0                       | 20.0        | 1                  | 12/29/2004       |      |
| Hexachloroethane            | BQL            | 10.0                       | 1.58        | 1                  | 12/29/2004       |      |
| Indeno(1,2,3-c,d)pyrene     | BQL            | 10.0                       | 4.57        | 1                  | 12/29/2004       |      |
| Isophorone                  | BQL            | 10.0                       | 1.27        | 1                  | 12/29/2004       |      |

**Results for Semivolatiles  
by GCMS 625**

Client Sample ID: USTM232-MW05

Client Project ID: M232

Lab Sample ID: G546-20-6I

Lab Project ID: G546-20

Analyzed By: MRC

Date Collected: 12/19/2004 14:05

Date Received: 12/21/2004

Date Extracted: 12/22/2004

Matrix: Water

| Compound                  | Result<br>ug/L | Quantitation<br>Limit ug/L | MDL<br>ug/L | Dilution<br>Factor | Date<br>Analyzed | Flag |
|---------------------------|----------------|----------------------------|-------------|--------------------|------------------|------|
| Naphthalene               | BQL            | 10.0                       | 1.08        | 1                  | 12/29/2004       |      |
| Nitrobenzene              | BQL            | 10.0                       | 1.32        | 1                  | 12/29/2004       |      |
| 2-Nitrophenol             | BQL            | 10.0                       | 3.52        | 1                  | 12/29/2004       |      |
| 4-Nitrophenol             | BQL            | 50.0                       | 3.17        | 1                  | 12/29/2004       |      |
| N-Nitrosodi-n-propylamine | BQL            | 10.0                       | 1.87        | 1                  | 12/29/2004       |      |
| N-Nitrosodiphenylamine    | BQL            | 10.0                       | 1.53        | 1                  | 12/29/2004       |      |
| Pentachlorophenol         | BQL            | 50.0                       | 2.83        | 1                  | 12/29/2004       |      |
| Phenanthrene              | BQL            | 10.0                       | 1.38        | 1                  | 12/29/2004       |      |
| Phenol                    | BQL            | 10.0                       | 3.38        | 1                  | 12/29/2004       |      |
| Pyrene                    | BQL            | 10.0                       | 2.08        | 1                  | 12/29/2004       |      |
| 1,2,4-Trichlorobenzene    | BQL            | 10.0                       | 1.33        | 1                  | 12/29/2004       |      |
| 2,4,6-Trichlorophenol     | BQL            | 10.0                       | 2.92        | 1                  | 12/29/2004       |      |

|                      | Spike<br>Added | Spike<br>Result | Percent<br>Recovered |
|----------------------|----------------|-----------------|----------------------|
| 2-Fluorobiphenyl     | 10             | 5.5             | 55                   |
| 2-Fluorophenol       | 10             | 5.7             | 57                   |
| Nitrobenzene-d5      | 10             | 5.3             | 53                   |
| Phenol-d6            | 10             | 6.1             | 61                   |
| 2,4,6-Tribromophenol | 5              | 2.8             | 55                   |
| 4-Terphenyl-d14      | 10             | 12.4            | 124                  |

**Comments:****Flags:**

BQL = Below Quantitation Limits.

J = Detected below the quantitation limit.

Reviewed By: 

**Results of Library Search for Semivolatile Compounds***by GCMS*

Client Sample ID: USTM232-MW05

Client Project ID: M232

Lab Sample ID: G546-20-6I

Lab Project ID: G546-20

Sample Wt/Vol: 500 ML

Dilution: 1

Analyzed By: MRC

Date Collected: 12/19/2004 14:05

Date Received: 12/21/2004

Date Analyzed: 12/29/2004

Date Extracted: 12/22/2004

Matrix: Water

| No. | Compound                          | Retention<br>Time | CAS# | Match<br>Probability | Result<br>(ug/L) |
|-----|-----------------------------------|-------------------|------|----------------------|------------------|
| 1   | Know solvent peak (added by lab)  | 3.84              |      |                      | 1280             |
| 2   | Know compound peak (added by lab) | 11.85             |      |                      | 125              |
| 3   |                                   |                   |      |                      |                  |
| 4   |                                   |                   |      |                      |                  |
| 5   |                                   |                   |      |                      |                  |
| 6   |                                   |                   |      |                      |                  |
| 7   |                                   |                   |      |                      |                  |
| 8   |                                   |                   |      |                      |                  |
| 9   |                                   |                   |      |                      |                  |
| 10  |                                   |                   |      |                      |                  |

**Comment:**

Tentatively Identified Compound (TIC) refers to substances which are not present in the list of target compounds. Therefore, not all TICs are identified and quantitated using individual standards. TIC listings are prepared utilizing a computerized library search of electron impact mass spectral data and evaluation of the relevant data by a mass spectral data specialist.

Quantitation is accomplished by relative peak area of the compound compared to that of the nearest internal standard from the total ion chromatogram. TICs are identified and quantitated only if the peak area is equal to or greater than 10% of that of the nearest internal standard. Quantitation provided is an estimate.

Reviewed by: 

**Results for Semivolatiles  
by GCMS 625**

Client Sample ID: USTM232-Dup

Client Project ID: M232

Lab Sample ID: G546-20-71

Lab Project ID: G546-20

Analyzed By: MRC

Date Collected: 12/19/2004 00:00

Date Received: 12/21/2004

Date Extracted: 12/22/2004

Matrix: Water

| Compound                    | Result<br>ug/L | Quantitation<br>Limit ug/L | MDL<br>ug/L | Dilution<br>Factor | Date<br>Analyzed | Flag |
|-----------------------------|----------------|----------------------------|-------------|--------------------|------------------|------|
| Acenaphthene                | BQL            | 10.0                       | 1.22        | 1                  | 12/29/2004       |      |
| Acenaphthylene              | BQL            | 10.0                       | 1.12        | 1                  | 12/29/2004       |      |
| Anthracene                  | BQL            | 10.0                       | 1.75        | 1                  | 12/29/2004       |      |
| Benzo[a]anthracene          | BQL            | 10.0                       | 1.36        | 1                  | 12/29/2004       |      |
| Benzo[a]pyrene              | BQL            | 10.0                       | 1.27        | 1                  | 12/29/2004       |      |
| Benzo[b]fluoranthene        | BQL            | 10.0                       | 1.43        | 1                  | 12/29/2004       |      |
| Benzo[g,h,i]perylene        | BQL            | 10.0                       | 4.57        | 1                  | 12/29/2004       |      |
| Benzo[k]fluoranthene        | BQL            | 10.0                       | 1.09        | 1                  | 12/29/2004       |      |
| Bis(2-chloroethoxy)methane  | BQL            | 10.0                       | 1.11        | 1                  | 12/29/2004       |      |
| Bis(2-chloroethyl)ether     | BQL            | 10.0                       | 1.09        | 1                  | 12/29/2004       |      |
| Bis(2-chloroisopropyl)ether | BQL            | 10.0                       | 1.57        | 1                  | 12/29/2004       |      |
| Bis(2-ethylhexyl)phthalate  | BQL            | 10.0                       | 1.33        | 1                  | 12/29/2004       |      |
| 4-bromophenyl phenyl ether  | BQL            | 10.0                       | 1.99        | 1                  | 12/29/2004       |      |
| Butylbenzylphthalate        | BQL            | 10.0                       | 1.53        | 1                  | 12/29/2004       |      |
| 2-Chloronaphthalene         | BQL            | 10.0                       | 1.25        | 1                  | 12/29/2004       |      |
| 2-Chlorophenol              | BQL            | 10.0                       | 4.22        | 1                  | 12/29/2004       |      |
| 4-Chloro-3-methylphenol     | BQL            | 10.0                       | 3.26        | 1                  | 12/29/2004       |      |
| 4-Chlorophenyl phenyl ether | BQL            | 10.0                       | 1.42        | 1                  | 12/29/2004       |      |
| Chrysene                    | BQL            | 10.0                       | 1.11        | 1                  | 12/29/2004       |      |
| Dibenzo[a,h]anthracene      | BQL            | 10.0                       | 4.87        | 1                  | 12/29/2004       |      |
| Di-n-Butylphthalate         | BQL            | 10.0                       | 1.65        | 1                  | 12/29/2004       |      |
| 1,2-Dichlorobenzene         | BQL            | 10.0                       | 1.25        | 1                  | 12/29/2004       |      |
| 1,3-Dichlorobenzene         | BQL            | 10.0                       | 1.24        | 1                  | 12/29/2004       |      |
| 1,4-Dichlorobenzene         | BQL            | 10.0                       | 1.20        | 1                  | 12/29/2004       |      |
| 3,3'-Dichlorobenzidine      | BQL            | 20.0                       | 4.10        | 1                  | 12/29/2004       |      |
| 2,4-Dichlorophenol          | BQL            | 10.0                       | 3.75        | 1                  | 12/29/2004       |      |
| Diethylphthalate            | BQL            | 10.0                       | 1.48        | 1                  | 12/29/2004       |      |
| Dimethylphthalate           | BQL            | 10.0                       | 1.04        | 1                  | 12/29/2004       |      |
| 2,4-Dimethylphenol          | BQL            | 10.0                       | 9.25        | 1                  | 12/29/2004       |      |
| Di-n-octylphthalate         | BQL            | 10.0                       | 1.16        | 1                  | 12/29/2004       |      |
| 4,6-Dinitro-2-methylphenol  | BQL            | 50.0                       | 3.71        | 1                  | 12/29/2004       |      |
| 2,4-Dinitrophenol           | BQL            | 50.0                       | 4.20        | 1                  | 12/29/2004       |      |
| 2,4-Dinitrotoluene          | BQL            | 10.0                       | 1.52        | 1                  | 12/29/2004       |      |
| 2,6-Dinitrotoluene          | BQL            | 10.0                       | 1.41        | 1                  | 12/29/2004       |      |
| Fluoranthene                | BQL            | 10.0                       | 1.41        | 1                  | 12/29/2004       |      |
| Fluorene                    | BQL            | 10.0                       | 1.22        | 1                  | 12/29/2004       |      |
| Hexachlorobenzene           | BQL            | 10.0                       | 1.22        | 1                  | 12/29/2004       |      |
| Hexachlorobutadiene         | BQL            | 10.0                       | 1.58        | 1                  | 12/29/2004       |      |
| Hexachlorocyclopentadiene   | BQL            | 20.0                       | 20.0        | 1                  | 12/29/2004       |      |
| Hexachloroethane            | BQL            | 10.0                       | 1.58        | 1                  | 12/29/2004       |      |
| Indeno(1,2,3-c,d)pyrene     | BQL            | 10.0                       | 4.57        | 1                  | 12/29/2004       |      |
| Isophorone                  | BQL            | 10.0                       | 1.27        | 1                  | 12/29/2004       |      |

**Results for Semivolatiles  
by GCMS 625**

Client Sample ID: USTM232-Dup

Client Project ID: M232

Lab Sample ID: G546-20-71

Lab Project ID: G546-20

Analyzed By: MRC

Date Collected: 12/19/2004 00:00

Date Received: 12/21/2004

Date Extracted: 12/22/2004

Matrix: Water

| Compound                  | Result<br>ug/L | Quantitation<br>Limit ug/L | MDL<br>ug/L | Dilution<br>Factor | Date<br>Analyzed | Flag |
|---------------------------|----------------|----------------------------|-------------|--------------------|------------------|------|
| Naphthalene               | BQL            | 10.0                       | 1.08        | 1                  | 12/29/2004       |      |
| Nitrobenzene              | BQL            | 10.0                       | 1.32        | 1                  | 12/29/2004       |      |
| 2-Nitrophenol             | BQL            | 10.0                       | 3.52        | 1                  | 12/29/2004       |      |
| 4-Nitrophenol             | BQL            | 50.0                       | 3.17        | 1                  | 12/29/2004       |      |
| N-Nitrosodi-n-propylamine | BQL            | 10.0                       | 1.87        | 1                  | 12/29/2004       |      |
| N-Nitrosodiphenylamine    | BQL            | 10.0                       | 1.53        | 1                  | 12/29/2004       |      |
| Pentachlorophenol         | BQL            | 50.0                       | 2.83        | 1                  | 12/29/2004       |      |
| Phenanthrene              | BQL            | 10.0                       | 1.38        | 1                  | 12/29/2004       |      |
| Phenol                    | BQL            | 10.0                       | 3.38        | 1                  | 12/29/2004       |      |
| Pyrene                    | BQL            | 10.0                       | 2.08        | 1                  | 12/29/2004       |      |
| 1,2,4-Trichlorobenzene    | BQL            | 10.0                       | 1.33        | 1                  | 12/29/2004       |      |
| 2,4,6-Trichlorophenol     | BQL            | 10.0                       | 2.92        | 1                  | 12/29/2004       |      |

|                      | Spike<br>Added | Spike<br>Result | Percent<br>Recovered |
|----------------------|----------------|-----------------|----------------------|
| 2-Fluorobiphenyl     | 10             | 7               | 70                   |
| 2-Fluorophenol       | 10             | 7.8             | 78                   |
| Nitrobenzene-d5      | 10             | 7.1             | 71                   |
| Phenol-d6            | 10             | 7.9             | 79                   |
| 2,4,6-Tribromophenol | 5              | 3               | 60                   |
| 4-Terphenyl-d14      | 10             | 12.9            | 129                  |

**Comments:****Flags:**

BQL = Below Quantitation Limits.

J = Detected below the quantitation limit.

Reviewed By:

**Results of Library Search for Semivolatile Compounds***by GCMS*

Client Sample ID: USTM232-Dup

Client Project ID: M232

Lab Sample ID: G546-20-7I

Lab Project ID: G546-20

Sample Wt/Vol: 500 ML

Dilution: 1

Analyzed By: MRC

Date Collected: 12/19/2004 00:00

Date Received: 12/21/2004

Date Analyzed: 12/29/2004

Date Extracted: 12/22/2004

Matrix: Water

| No. | Compound                          | Retention<br>Time | CAS# | Match<br>Probability | Result<br>(ug/L) |
|-----|-----------------------------------|-------------------|------|----------------------|------------------|
| 1   | Know solvent peak (added by lab)  | 3.84              |      |                      | 1160             |
| 2   | Know compound peak (added by lab) | 11.85             |      |                      | 130              |
| 3   |                                   |                   |      |                      |                  |
| 4   |                                   |                   |      |                      |                  |
| 5   |                                   |                   |      |                      |                  |
| 6   |                                   |                   |      |                      |                  |
| 7   |                                   |                   |      |                      |                  |
| 8   |                                   |                   |      |                      |                  |
| 9   |                                   |                   |      |                      |                  |
| 10  |                                   |                   |      |                      |                  |

**Comment:**

Tentatively Identified Compound (TIC) refers to substances which are not present in the list of target compounds. Therefore, not all TICs are identified and quantitated using individual standards. TIC listings are prepared utilizing a computerized library search of electron impact mass spectral data and evaluation of the relevant data by a mass spectral data specialist.

Quantitation is accomplished by relative peak area of the compound compared to that of the nearest internal standard from the total ion chromatogram. TICs are identified and quantitated only if the peak area is equal to or greater than 10% of that of the nearest internal standard. Quantitation provided is an estimate.

Reviewed by: 

# Results for Semivolatiles by GCMS 625

Client Sample ID: Method Blank

Client Project ID:

Lab Sample ID: PB2163

Lab Project ID:

Analyzed By: MRC

Date Collected:

Date Received:

Date Extracted: 12/21/2004

Matrix: WATER

| Compound                    | Result<br>ug/L | Quantitation<br>Limit ug/L | MDL<br>ug/L | Dilution<br>Factor | Date<br>Analyzed | Flag |
|-----------------------------|----------------|----------------------------|-------------|--------------------|------------------|------|
| Acenaphthene                | BQL            | 10.0                       | 1.22        | 1                  | 12/28/2004       |      |
| Acenaphthylene              | BQL            | 10.0                       | 1.12        | 1                  | 12/28/2004       |      |
| Anthracene                  | BQL            | 10.0                       | 1.75        | 1                  | 12/28/2004       |      |
| Benzo[a]anthracene          | BQL            | 10.0                       | 1.36        | 1                  | 12/28/2004       |      |
| Benzo[a]pyrene              | BQL            | 10.0                       | 1.27        | 1                  | 12/28/2004       |      |
| Benzo[b]fluoranthene        | BQL            | 10.0                       | 1.43        | 1                  | 12/28/2004       |      |
| Benzo[g,h,i]perylene        | BQL            | 10.0                       | 4.57        | 1                  | 12/28/2004       |      |
| Benzo[k]fluoranthene        | BQL            | 10.0                       | 1.09        | 1                  | 12/28/2004       |      |
| Bis(2-chloroethoxy)methane  | BQL            | 10.0                       | 1.11        | 1                  | 12/28/2004       |      |
| Bis(2-chloroethyl)ether     | BQL            | 10.0                       | 1.09        | 1                  | 12/28/2004       |      |
| Bis(2-chloroisopropyl)ether | BQL            | 10.0                       | 1.57        | 1                  | 12/28/2004       |      |
| Bis(2-ethylhexyl)phthalate  | BQL            | 10.0                       | 1.33        | 1                  | 12/28/2004       |      |
| 4-bromophenyl phenyl ether  | BQL            | 10.0                       | 1.99        | 1                  | 12/28/2004       |      |
| Butylbenzylphthalate        | BQL            | 10.0                       | 1.53        | 1                  | 12/28/2004       |      |
| 2-Chloronaphthalene         | BQL            | 10.0                       | 1.25        | 1                  | 12/28/2004       |      |
| 2-Chlorophenol              | BQL            | 10.0                       | 4.22        | 1                  | 12/28/2004       |      |
| 4-Chloro-3-methylphenol     | BQL            | 10.0                       | 3.26        | 1                  | 12/28/2004       |      |
| 4-Chlorophenyl phenyl ether | BQL            | 10.0                       | 1.42        | 1                  | 12/28/2004       |      |
| Chrysene                    | BQL            | 10.0                       | 1.11        | 1                  | 12/28/2004       |      |
| Dibenzo[a,h]anthracene      | BQL            | 10.0                       | 4.87        | 1                  | 12/28/2004       |      |
| Di-n-Butylphthalate         | BQL            | 10.0                       | 1.65        | 1                  | 12/28/2004       |      |
| 1,2-Dichlorobenzene         | BQL            | 10.0                       | 1.25        | 1                  | 12/28/2004       |      |
| 1,3-Dichlorobenzene         | BQL            | 10.0                       | 1.24        | 1                  | 12/28/2004       |      |
| 1,4-Dichlorobenzene         | BQL            | 10.0                       | 1.20        | 1                  | 12/28/2004       |      |
| 3,3'-Dichlorobenzidine      | BQL            | 20.0                       | 4.10        | 1                  | 12/28/2004       |      |
| 2,4-Dichlorophenol          | BQL            | 10.0                       | 3.75        | 1                  | 12/28/2004       |      |
| Diethylphthalate            | BQL            | 10.0                       | 1.48        | 1                  | 12/28/2004       |      |
| Dimethylphthalate           | BQL            | 10.0                       | 1.04        | 1                  | 12/28/2004       |      |
| 2,4-Dimethylphenol          | BQL            | 10.0                       | 9.25        | 1                  | 12/28/2004       |      |
| Di-n-octylphthalate         | BQL            | 10.0                       | 1.16        | 1                  | 12/28/2004       |      |
| 4,6-Dinitro-2-methylphenol  | BQL            | 50.0                       | 3.71        | 1                  | 12/28/2004       |      |
| 2,4-Dinitrophenol           | BQL            | 50.0                       | 4.20        | 1                  | 12/28/2004       |      |
| 2,4-Dinitrotoluene          | BQL            | 10.0                       | 1.52        | 1                  | 12/28/2004       |      |
| 2,6-Dinitrotoluene          | BQL            | 10.0                       | 1.41        | 1                  | 12/28/2004       |      |
| Fluoranthene                | BQL            | 10.0                       | 1.41        | 1                  | 12/28/2004       |      |
| Fluorene                    | BQL            | 10.0                       | 1.22        | 1                  | 12/28/2004       |      |
| Hexachlorobenzene           | BQL            | 10.0                       | 1.22        | 1                  | 12/28/2004       |      |
| Hexachlorobutadiene         | BQL            | 10.0                       | 1.58        | 1                  | 12/28/2004       |      |
| Hexachlorocyclopentadiene   | BQL            | 20.0                       | 20.0        | 1                  | 12/28/2004       |      |
| Hexachloroethane            | BQL            | 10.0                       | 1.58        | 1                  | 12/28/2004       |      |
| Indeno(1,2,3-c,d)pyrene     | BQL            | 10.0                       | 4.57        | 1                  | 12/28/2004       |      |
| Isophorone                  | BQL            | 10.0                       | 1.27        | 1                  | 12/28/2004       |      |

# Results for Semivolatiles by GCMS 625

Client Sample ID: Method Blank

Client Project ID:

Lab Sample ID: PB2163

Lab Project ID:

Analyzed By: MRC

Date Collected:

Date Received:

Date Extracted: 12/21/2004

Matrix: WATER

| Compound                  | Result<br>ug/L | Quantitation<br>Limit ug/L | MDL<br>ug/L             | Dilution<br>Factor           | Date<br>Analyzed | Flag |
|---------------------------|----------------|----------------------------|-------------------------|------------------------------|------------------|------|
| Naphthalene               | BQL            | 10.0                       | 1.08                    | 1                            | 12/28/2004       |      |
| Nitrobenzene              | BQL            | 10.0                       | 1.32                    | 1                            | 12/28/2004       |      |
| 2-Nitrophenol             | BQL            | 10.0                       | 3.52                    | 1                            | 12/28/2004       |      |
| 4-Nitrophenol             | BQL            | 50.0                       | 3.17                    | 1                            | 12/28/2004       |      |
| N-Nitrosodi-n-propylamine | BQL            | 10.0                       | 1.87                    | 1                            | 12/28/2004       |      |
| N-Nitrosodiphenylamine    | BQL            | 10.0                       | 1.53                    | 1                            | 12/28/2004       |      |
| Pentachlorophenol         | BQL            | 50.0                       | 2.83                    | 1                            | 12/28/2004       |      |
| Phenanthrene              | BQL            | 10.0                       | 1.38                    | 1                            | 12/28/2004       |      |
| Phenol                    | BQL            | 10.0                       | 3.38                    | 1                            | 12/28/2004       |      |
| Pyrene                    | BQL            | 10.0                       | 2.08                    | 1                            | 12/28/2004       |      |
| 1,2,4-Trichlorobenzene    | BQL            | 10.0                       | 1.33                    | 1                            | 12/28/2004       |      |
| 2,4,6-Trichlorophenol     | BQL            | 10.0                       | 2.92                    | 1                            | 12/28/2004       |      |
|                           |                | <b>Spike<br/>Added</b>     | <b>Spike<br/>Result</b> | <b>Percent<br/>Recovered</b> |                  |      |
| 2-Fluorobiphenyl          |                | 10                         | 7.9                     | 79                           |                  |      |
| 2-Fluorophenol            |                | 10                         | 8.5                     | 85                           |                  |      |
| Nitrobenzene-d5           |                | 10                         | 7.9                     | 79                           |                  |      |
| Phenol-d6                 |                | 10                         | 8.3                     | 83                           |                  |      |
| 2,4,6-Tribromophenol      |                | 5                          | 3.3                     | 66                           |                  |      |
| 4-Terphenyl-d14           |                | 10                         | 12                      | 120                          |                  |      |

**Comments:****Flags:**

BQL = Below Quantitation Limits.

J = Detected below the quantitation limit.

Reviewed By: 

**Results for Semivolatiles  
by GCMS 625**

Client Sample ID: Method Blank

Client Project ID:

Lab Sample ID: PB2168

Lab Project ID:

Analyzed By: MRC

Date Collected:

Date Received:

Date Extracted: 12/22/2004

Matrix: WATER

| Compound                    | Result<br>ug/L | Quantitation<br>Limit ug/L | MDL<br>ug/L | Dilution<br>Factor | Date<br>Analyzed | Flag |
|-----------------------------|----------------|----------------------------|-------------|--------------------|------------------|------|
| Acenaphthene                | BQL            | 10.0                       | 1.22        | 1                  | 12/28/2004       |      |
| Acenaphthylene              | BQL            | 10.0                       | 1.12        | 1                  | 12/28/2004       |      |
| Anthracene                  | BQL            | 10.0                       | 1.75        | 1                  | 12/28/2004       |      |
| Benzo[a]anthracene          | BQL            | 10.0                       | 1.36        | 1                  | 12/28/2004       |      |
| Benzo[a]pyrene              | BQL            | 10.0                       | 1.27        | 1                  | 12/28/2004       |      |
| Benzo[b]fluoranthene        | BQL            | 10.0                       | 1.43        | 1                  | 12/28/2004       |      |
| Benzo[g,h,i]perylene        | BQL            | 10.0                       | 4.57        | 1                  | 12/28/2004       |      |
| Benzo[k]fluoranthene        | BQL            | 10.0                       | 1.09        | 1                  | 12/28/2004       |      |
| Bis(2-chloroethoxy)methane  | BQL            | 10.0                       | 1.11        | 1                  | 12/28/2004       |      |
| Bis(2-chloroethyl)ether     | BQL            | 10.0                       | 1.09        | 1                  | 12/28/2004       |      |
| Bis(2-chloroisopropyl)ether | BQL            | 10.0                       | 1.57        | 1                  | 12/28/2004       |      |
| Bis(2-ethylhexyl)phthalate  | BQL            | 10.0                       | 1.33        | 1                  | 12/28/2004       |      |
| 4-bromophenyl phenyl ether  | BQL            | 10.0                       | 1.99        | 1                  | 12/28/2004       |      |
| Butylbenzylphthalate        | BQL            | 10.0                       | 1.53        | 1                  | 12/28/2004       |      |
| 2-Chloronaphthalene         | BQL            | 10.0                       | 1.25        | 1                  | 12/28/2004       |      |
| 2-Chlorophenol              | BQL            | 10.0                       | 4.22        | 1                  | 12/28/2004       |      |
| 4-Chloro-3-methylphenol     | BQL            | 10.0                       | 3.26        | 1                  | 12/28/2004       |      |
| 4-Chlorophenyl phenyl ether | BQL            | 10.0                       | 1.42        | 1                  | 12/28/2004       |      |
| Chrysene                    | BQL            | 10.0                       | 1.11        | 1                  | 12/28/2004       |      |
| Dibenzo[a,h]anthracene      | BQL            | 10.0                       | 4.87        | 1                  | 12/28/2004       |      |
| Di-n-Butylphthalate         | BQL            | 10.0                       | 1.65        | 1                  | 12/28/2004       |      |
| 1,2-Dichlorobenzene         | BQL            | 10.0                       | 1.25        | 1                  | 12/28/2004       |      |
| 1,3-Dichlorobenzene         | BQL            | 10.0                       | 1.24        | 1                  | 12/28/2004       |      |
| 1,4-Dichlorobenzene         | BQL            | 10.0                       | 1.20        | 1                  | 12/28/2004       |      |
| 3,3'-Dichlorobenzidine      | BQL            | 20.0                       | 4.10        | 1                  | 12/28/2004       |      |
| 2,4-Dichlorophenol          | BQL            | 10.0                       | 3.75        | 1                  | 12/28/2004       |      |
| Diethylphthalate            | BQL            | 10.0                       | 1.48        | 1                  | 12/28/2004       |      |
| Dimethylphthalate           | BQL            | 10.0                       | 1.04        | 1                  | 12/28/2004       |      |
| 2,4-Dimethylphenol          | BQL            | 10.0                       | 9.25        | 1                  | 12/28/2004       |      |
| Di-n-octylphthalate         | BQL            | 10.0                       | 1.16        | 1                  | 12/28/2004       |      |
| 4,6-Dinitro-2-methylphenol  | BQL            | 50.0                       | 3.71        | 1                  | 12/28/2004       |      |
| 2,4-Dinitrophenol           | BQL            | 50.0                       | 4.20        | 1                  | 12/28/2004       |      |
| 2,4-Dinitrotoluene          | BQL            | 10.0                       | 1.52        | 1                  | 12/28/2004       |      |
| 2,6-Dinitrotoluene          | BQL            | 10.0                       | 1.41        | 1                  | 12/28/2004       |      |
| Fluoranthene                | BQL            | 10.0                       | 1.41        | 1                  | 12/28/2004       |      |
| Fluorene                    | BQL            | 10.0                       | 1.22        | 1                  | 12/28/2004       |      |
| Hexachlorobenzene           | BQL            | 10.0                       | 1.22        | 1                  | 12/28/2004       |      |
| Hexachlorobutadiene         | BQL            | 10.0                       | 1.58        | 1                  | 12/28/2004       |      |
| Hexachlorocyclopentadiene   | BQL            | 20.0                       | 20.0        | 1                  | 12/28/2004       |      |
| Hexachloroethane            | BQL            | 10.0                       | 1.58        | 1                  | 12/28/2004       |      |
| Indeno(1,2,3-c,d)pyrene     | BQL            | 10.0                       | 4.57        | 1                  | 12/28/2004       |      |
| Isophorone                  | BQL            | 10.0                       | 1.27        | 1                  | 12/28/2004       |      |

# Results for Semivolatiles by GCMS 625

Client Sample ID: Method Blank

Client Project ID:

Lab Sample ID: PB2168

Lab Project ID:

Analyzed By: MRC

Date Collected:

Date Received:

Date Extracted: 12/22/2004

Matrix: WATER

| Compound                  | Result<br>ug/L | Quantitation<br>Limit ug/L | MDL<br>ug/L | Dilution<br>Factor | Date<br>Analyzed | Flag |
|---------------------------|----------------|----------------------------|-------------|--------------------|------------------|------|
| Naphthalene               | BQL            | 10.0                       | 1.08        | 1                  | 12/28/2004       |      |
| Nitrobenzene              | BQL            | 10.0                       | 1.32        | 1                  | 12/28/2004       |      |
| 2-Nitrophenol             | BQL            | 10.0                       | 3.52        | 1                  | 12/28/2004       |      |
| 4-Nitrophenol             | BQL            | 50.0                       | 3.17        | 1                  | 12/28/2004       |      |
| N-Nitrosodi-n-propylamine | BQL            | 10.0                       | 1.87        | 1                  | 12/28/2004       |      |
| N-Nitrosodiphenylamine    | BQL            | 10.0                       | 1.53        | 1                  | 12/28/2004       |      |
| Pentachlorophenol         | BQL            | 50.0                       | 2.83        | 1                  | 12/28/2004       |      |
| Phenanthrene              | BQL            | 10.0                       | 1.38        | 1                  | 12/28/2004       |      |
| Phenol                    | BQL            | 10.0                       | 3.38        | 1                  | 12/28/2004       |      |
| Pyrene                    | BQL            | 10.0                       | 2.08        | 1                  | 12/28/2004       |      |
| 1,2,4-Trichlorobenzene    | BQL            | 10.0                       | 1.33        | 1                  | 12/28/2004       |      |
| 2,4,6-Trichlorophenol     | BQL            | 10.0                       | 2.92        | 1                  | 12/28/2004       |      |

|                      | Spike<br>Added | Spike<br>Result | Percent<br>Recovered |
|----------------------|----------------|-----------------|----------------------|
| 2-Fluorobiphenyl     | 10             | 5.9             | 59                   |
| 2-Fluorophenol       | 10             | 6.5             | 65                   |
| Nitrobenzene-d5      | 10             | 6.1             | 61                   |
| Phenol-d6            | 10             | 6.7             | 67                   |
| 2,4,6-Tribromophenol | 5              | 2.8             | 56                   |
| 4-Terphenyl-d14      | 10             | 12              | 120                  |

**Comments:****Flags:**

BQL = Below Quantitation Limits.

J = Detected below the quantitation limit.

Reviewed By: 

**Results For Water Laboratory Control Standard (LCS)**  
by GCMS

Client Sample ID: Batch QC  
 Client Project ID:  
 Lab Sample ID: W-LCS-2163  
 Lab Project ID:  
 Matrix: Water

Date Collected:  
 Date Received:  
 Date Analyzed: 12/28/04  
 Analyzed By: MRC

|                           | Spiked<br>ng | LCS<br>ng | LCS<br>% Rec. | LIMITS |       |
|---------------------------|--------------|-----------|---------------|--------|-------|
|                           |              |           |               | LOWER  | UPPER |
| Acenaphthylene            | 10           | 8.65      | 86            | 84     | 114   |
| 4-Chloro-3-methylphenol   | 10           | 8.00      | 80            | 63     | 110   |
| 2-Chlorophenol            | 10           | 7.53      | 75            | 64     | 94    |
| 1,4-Dichlorobenzene       | 10           | 5.72      | 57            | 27     | 78    |
| 2,4-Dinitrotoluene        | 10           | 7.59      | 76            | 73     | 103   |
| N-Nitrosodi-n-propylamine | 10           | 9.08      | 91            | 73     | 100   |
| 4-Nitrophenol             | 10           | 7.66      | 77            | 45     | 127   |
| Pentachlorophenol         | 10           | 7.48      | 75            | 54     | 99    |
| Phenol                    | 10           | 7.84      | 78            | 64     | 94    |
| Pyrene                    | 10           | 7.74      | 77            | 58     | 114   |
| 1,2,4-Trichlorobenzene    | 10           | 6.93      | 69            | 51     | 96    |

**Comments:**

Concentrations are on column amounts.

**Flags:**

\* = Out of limits.

NA = Not applicable.

Reviewed By: 

**Results For Water Matrix Spike / Matrix Spike Duplicate (MS/MSD)**  
by GCMS

Client Sample ID: Batch QC  
 Client Project ID:  
 Lab Sample ID: W-MS-2163  
 Lab Project ID:  
 Matrix: Water

Date Collected:  
 Date Received:  
 Date Analyzed: 12/28/04  
 Analyzed By: MRC  
 Dilution: 1

|                           | Sample<br>ng | Spiked<br>ng | MS<br>% | MSD<br>% | Limits     |            | RPD<br>% | Limit     |
|---------------------------|--------------|--------------|---------|----------|------------|------------|----------|-----------|
|                           |              |              |         |          | Lower<br>% | Upper<br>% |          | Max.<br>% |
| Acenaphthylene            | BQL          | 10           | 93      | 91       | 79         | 118        | 2.5      | 30        |
| 4-Chloro-3-methylphenol   | BQL          | 10           | 85      | 82       | 63         | 112        | 3.7      | 30        |
| 2-Chlorophenol            | BQL          | 10           | 84      | 78       | 57         | 102        | 7.5      | 30        |
| 1,4-Dichlorobenzene       | BQL          | 10           | 58      | 55       | 40         | 89         | 4.8      | 30        |
| 2,4-Dinitrotoluene        | BQL          | 10           | 81      | 80       | 70         | 108        | 0.7      | 30        |
| N-Nitrosodi-n-propylamine | BQL          | 10           | 96      | 93       | 66         | 109        | 3.3      | 30        |
| 4-Nitrophenol             | BQL          | 10           | 80      | 75       | 50         | 130        | 7.0      | 30        |
| Pentachlorophenol         | BQL          | 10           | 82      | 77       | 52         | 110        | 6.1      | 30        |
| Phenol                    | BQL          | 10           | 88      | 82       | 59         | 100        | 6.3      | 30        |
| Pyrene                    | BQL          | 10           | 79      | 77       | 58         | 112        | 2.3      | 30        |
| 1,2,4-Trichlorobenzene    | BQL          | 10           | 75      | 71       | 46         | 103        | 6.1      | 30        |

**Comments:**

Concentrations are on column amounts.

**Flags:**

\* = Out of limits.

NA = Not applicable.

Reviewed By: 

**Results For Water Laboratory Control Standard (LCS)**  
by GCMS

Client Sample ID: Batch QC  
 Client Project ID:  
 Lab Sample ID: W-LCS-2168  
 Lab Project ID:  
 Matrix: Water

Date Collected:  
 Date Received:  
 Date Analyzed: 12/28/04  
 Analyzed By: MRC

|                           | Spiked<br>ng | LCS<br>ng | LCS<br>% Rec. | LIMITS |       |
|---------------------------|--------------|-----------|---------------|--------|-------|
|                           |              |           |               | LOWER  | UPPER |
| Acenaphthylene            | 10           | 9.38      | 94            | 84     | 114   |
| 4-Chloro-3-methylphenol   | 10           | 8.27      | 83            | 63     | 110   |
| 2-Chlorophenol            | 10           | 6.68      | 67            | 64     | 94    |
| 1,4-Dichlorobenzene       | 10           | 4.46      | 45            | 27     | 78    |
| 2,4-Dinitrotoluene        | 10           | 8.09      | 81            | 73     | 103   |
| N-Nitrosodi-n-propylamine | 10           | 9.12      | 91            | 73     | 100   |
| 4-Nitrophenol             | 10           | 7.60      | 76            | 45     | 127   |
| Pentachlorophenol         | 10           | 7.61      | 76            | 54     | 99    |
| Phenol                    | 10           | 7.51      | 75            | 64     | 94    |
| Pyrene                    | 10           | 8.12      | 81            | 58     | 114   |
| 1,2,4-Trichlorobenzene    | 10           | 6.18      | 62            | 51     | 96    |

**Comments:**

Concentrations are on column amounts.

**Flags:**

\* = Out of limits.

NA = Not applicable.

Reviewed By: 

**Results For Water Matrix Spike / Matrix Spike Duplicate (MS/MSD)**  
by GCMS

Client Sample ID: Batch QC  
 Client Project ID:  
 Lab Sample ID: W-MS-2168  
 Lab Project ID:  
 Matrix: Water

Date Collected:  
 Date Received:  
 Date Analyzed: 12/28/04  
 Analyzed By: MRC  
 Dilution: 1

|                           | Sample<br>ng | Spiked<br>ng | MS<br>% | MSD<br>% | Limits     |            | RPD<br>% | Limit<br>Max.<br>% |
|---------------------------|--------------|--------------|---------|----------|------------|------------|----------|--------------------|
|                           |              |              |         |          | Lower<br>% | Upper<br>% |          |                    |
| Acenaphthylene            | BQL          | 10           | 64 *    | 73 *     | 79         | 118        | 12.5     | 30                 |
| 4-Chloro-3-methylphenol   | BQL          | 10           | 67      | 81       | 63         | 112        | 18.1     | 30                 |
| 2-Chlorophenol            | BQL          | 10           | 50 *    | 71       | 57         | 102        | 35.0 *   | 30                 |
| 1,4-Dichlorobenzene       | BQL          | 10           | 33 *    | 48       | 40         | 89         | 37.9 *   | 30                 |
| 2,4-Dinitrotoluene        | BQL          | 10           | 63 *    | 71       | 70         | 108        | 12.7     | 30                 |
| N-Nitrosodi-n-propylamine | BQL          | 10           | 67      | 86       | 66         | 109        | 24.2     | 30                 |
| 4-Nitrophenol             | BQL          | 10           | 63      | 75       | 50         | 130        | 16.6     | 30                 |
| Pentachlorophenol         | BQL          | 10           | 66      | 71       | 52         | 110        | 7.4      | 30                 |
| Phenol                    | BQL          | 10           | 55 *    | 74       | 59         | 100        | 28.5     | 30                 |
| Pyrene                    | BQL          | 10           | 60      | 67       | 58         | 112        | 11.0     | 30                 |
| 1,2,4-Trichlorobenzene    | BQL          | 10           | 42 *    | 56       | 46         | 103        | 27.0     | 30                 |

**Comments:**

Concentrations are on column amounts.

**Flags:**

\* = Out of limits.

NA = Not applicable.

Reviewed By: 

## List of Reporting Abbreviations and Data Qualifiers

B = Compound also detected in batch blank

BQL = Below Quantitation Limit

DF = Dilution Factor

Dup = Duplicate

E = Estimated concentration, exceeds calibration range.

J = Estimated concentration, below calibration range and above MDL

LCS(D) = Laboratory Control Spike (Duplicate)

MDL = Method Detection Limit

MS(D) = Matrix Spike (Duplicate)

PQL = Practical Quantitation Limit

RL = Reporting Limit

RPD = Relative Percent Difference

mg/kg = milligram per kilogram, ppm, parts per million

ug/kg = micrograms per kilogram, ppb, parts per billion

mg/L = milligram per liter, ppm, parts per million

ug/L = micrograms per liter, ppb, parts per billion

% Rec = Percent Recovery

% solids = Percent Solids

### Special Notes:

- 1) Metals and mercury samples are digested with a hot block, see the standard operating procedure document for details.
- 2) Uncertainty for all reported data is less than or equal to 30 percent.

# PARADIGM ANALYTICAL LABORATORIES, INC.

5500 Business Drive, Wilmington, NC 28405

Phone: (910)-350-1903 FAX: (910)-350-1557

Chain-of Custody Record & Analytical Request

COC# 43618

Page 1 of 1

Client: Engineering + Environment

Project ID: M232

Date: 12-20-04

Report To: Bill Morris

Address: 6846 branch rd suite 5

Contact: Bill Morris

Turnaround: Standard

Address: Jacksonville NC 28546

Phone: 910-989-3214

Job Number: 6003-011

Quote #: \_\_\_\_\_

Fax: 910-989-3341

P.O. Number: \_\_\_\_\_

Invoice To: \_\_\_\_\_

| Sample ID       | Date     | Time  | Matrix      | Preservatives |      |             | Analyses                      |               |               |   |  | Comments:<br>Please specify any special reporting requirements |  |
|-----------------|----------|-------|-------------|---------------|------|-------------|-------------------------------|---------------|---------------|---|--|----------------------------------------------------------------|--|
|                 |          |       |             | HCT           | None | VPH         | EPH                           | 602 w/xy/leas | 625 + 10 Tics |   |  |                                                                |  |
| ASTM232-MW22    | 12-19-04 | 10:55 | GW          | X             |      | X           | 3                             | 1             | 3             | 1 |  |                                                                |  |
| ASTM232-MW21    | 12-19-04 | 11:25 | GW          | X             |      | X           | 3                             | 1             | 3             | 1 |  |                                                                |  |
| ASTM232-MW20    | 12-19-04 | 11:54 | GW          | X             |      | X           | 3                             | 1             | 3             | 1 |  |                                                                |  |
| ASTM232-MW18    | 12-19-04 | 12:25 | GW          | X             |      | X           | 3                             | 1             | 3             | 1 |  |                                                                |  |
| ASTM232-MW07    | 12-19-04 | 13:06 | GW          | X             |      | X           | 3                             | 1             | 3             | 1 |  |                                                                |  |
| ASTM232-MW05    | 12-19-04 | 14:05 | GW          | X             |      | X           | 3                             | 1             | 3             | 1 |  |                                                                |  |
| ASTM232-MW00    | 12-14-04 | -     | GW          | X             |      | X           | 3                             | 1             | 3             | 1 |  |                                                                |  |
| Trig Block      | 12-20-04 | 11:00 |             |               |      |             |                               |               |               |   |  |                                                                |  |
| Relinquished By | Date     | Time  | Received By | Date          | Time | Temperature | State Certification Requested |               |               |   |  |                                                                |  |
| Bob Sellers     | 12-20-04 | 11:15 | Bob Sellers | 12/20/04      | 1155 | 274<br>634  | NC SC Other                   |               |               |   |  |                                                                |  |

G546-20

ORIGINAL