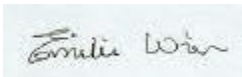


**SEMI-ANNUAL GROUNDWATER MONITORING REPORT  
ORGANIZATIONAL MAINTENANCE SHOP 28  
ALABAMA NATIONAL GUARD  
1622 SOUTH BROAD STREET  
MOBILE, ALABAMA**

**PREPARED FOR:**  
**UNITED STATES ARMY CORP OF ENGINEERS  
MOBILE DISTRICT  
109 ST. JOSEPH STREET  
MOBILE, ALABAMA 36602**

**PREPARED BY:**  
Aerostar Environmental Services, Inc.  
803 Government Street, Suite A  
Mobile, Alabama 36602  
(251) 432-2664

November 2005



Emilie A. Wien, Project Manager

November 21, 2005

Date



Paul Fitch, P.E., Senior Project Engineer

November 21, 2005

Date

CERTIFICATION

PROFESSIONAL ENGINEER LICENSED IN THE STATE OF ALABAMA

This is to certify that the geological and hydrogeological features of the ***Semi-Annual Groundwater Monitoring Report at Organizational Maintenance Shop 28, Mobile, Alabama*** has been prepared and examined by the undersigned.

Signed: \_\_\_\_\_  
Alabama Professional Engineer No. 25490  
Date Signed: \_\_\_\_\_

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<b>TABLE 1:</b>	Groundwater Elevation Table
<b>TABLE 2:</b>	Groundwater Laboratory Analytical Summary

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### **APPENDICES**

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<b>APPENDIX B:</b>	Laboratory Analytical Results and Chain of Custody

# UST RELEASE FACT SHEET

**GENERAL INFORMATION:**

SITE NAME: Organizational Maintenance Shop 28  
 ADDRESS: 1622 South Broad Street  
 FACILITY I.D. NO.: 14587-097-012257  
 UST INCIDENT NO.: 93-02-15

**RESULTS OF EXPOSURE ASSESSMENT:**

How many private drinking water wells are located within 1,000 ft. of site?	0
How many public water supply wells are located within 1 mile of the site?	0
Have any drinking water supply wells been impacted by contamination from this release?	0
Is there an imminent threat of contamination to any drinking water wells?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Have vapors or contaminated groundwater posed a threat to the public?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are any underground utilities impacted or imminently threatened by the release?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Have surface waters been impacted by the release?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Is there an imminent threat of contamination to surface waters?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
What is the type of surrounding population?	Commercial/Residential

**CONTAMINATION DESCRIPTION:**

Type of contamination at site:  Gasoline,  Diesel,  Waste Oil  
 Kerosene,  Other \_\_\_\_\_

Free product present in wells?  Yes  No Maximum thickness measured:

Maximum BTEX concentrations measured in soil: 3.00 mg/L (March 2004)

Maximum BTEX or PAH concentrations measured in groundwater: 2.28 mg/L (March 2005)

ADEM GROUNDWATER BRANCH  
 UST SITE CLASSIFICATION SYSTEM  
 CHECKLIST

Please read all of the following statements and mark either yes or no if the statement applies to your site. If you have conducted a Preliminary or Secondary Investigation, all questions should be answered. Closure site assessment reports may not provide you with all the necessary information, but answer the statements with the knowledge obtained during the closure site assessment.

SITE NAME: Organizational Maintenance Shop 28  
 SITE ADDRESS: 1622 South Broad Street  
Mobile, Alabama  
 FACILITY I.D. NO.: 14587-097-012257  
 UST INCIDENT NO.: 93-02-15

OWNER NAME: Alabama Army National Guard  
 OWNER ADDRESS: 109 St. Joseph Street Mobile, Alabama 36602

NAME & ADDRESS OF PERSON COMPLETING THIS FORM: Emilie A. Wien  
Aerostar Environmental Services, Inc.  
 \_\_\_\_\_  
 \_\_\_\_\_

<b>CLASSIFICATION</b>	<b>DESCRIPTION</b>	<b>YES</b>	<b>NO</b>
<b>CLASS A</b>	<b>IMMEDIATE THREAT TO HUMAN HEALTH, HUMAN SAFETY OR SENSITIVE ENVIRONMENTAL RECEPTOR</b>		
A.1	Vapor concentrations at or approaching explosive levels that could cause health effects, are present in a residence or building.	<input type="checkbox"/>	X
A.2	Vapor concentrations at or approaching explosive levels are present in subsurface utility system(s), but no buildings or residences are impacted.	<input type="checkbox"/>	X
<b>CLASS B</b>	<b>IMMEDIATE THREAT TO HUMAN HEALTH, HUMAN SAFETY OR SENSITIVE ENVIRONMENTAL RECEPTOR</b>		
B.1	An active public water supply well, public water supply line, or public surface water intake is impacted or immediately threatened.	<input type="checkbox"/>	X
B.2	An active domestic water supply well, domestic water supply line or domestic surface water intake is impacted or immediately threatened.	<input type="checkbox"/>	X
B.3	The release is located within a designated Wellhead Protection Area I.	<input type="checkbox"/>	X
<b>CLASS C</b>	<b>IMMEDIATE THREAT TO HUMAN HEALTH, HUMAN SAFETY OR SENSITIVE ENVIRONMENTAL RECEPTOR</b>		
C.1	Ambient vapor/particulate concentrations exceed concentrations of concern from an acute exposure, or safety viewpoint.	<input type="checkbox"/>	X
C.2	Free product is present on the groundwater, at ground surface, on surface water bodies, in utilities other than water supply lines, or in surface water runoff.	<input type="checkbox"/>	X

<b>CLASSIFICATION</b>	<b>DESCRIPTION</b>	<b>YES</b>	<b>NO</b>
<b>CLASS D</b>	<b>SHORT TERM THREAT TO HUMAN HEALTH, SAFETY, OR SENSITIVE ENVIRONMENTAL RECEPTORS</b>		
D.1	There is a potential for explosive levels, or concentrations of vapors that could cause acute effects, to accumulate in a residence or other building.	<input type="checkbox"/>	X
D.2	A non-potable water supply well is impacted or immediately threatened.	<input type="checkbox"/>	X
D.3	Shallow contaminated surface soils are open to public access, and dwellings, parks, playgrounds, day care centers, schools or similar use facilities are within 500 feet of those soils.	<input type="checkbox"/>	X
<b>CLASS E</b>	<b>SHORT TERM THREAT TO HUMAN HEALTH, SAFETY, OR SENSITIVE ENVIRONMENTAL RECEPTORS</b>		
E.1	A sensitive habitat or sensitive resources (sport fish, economically important species, threatened and endangered species, etc.) are impacted and affected.	<input type="checkbox"/>	X
<b>CLASS F</b>	<b>SHORT TERM THREAT TO HUMAN HEALTH, SAFETY, OR SENSITIVE ENVIRONMENTAL RECEPTORS</b>		
F.1	Groundwater is impacted and a public well is located within 1 mile of the site.	<input type="checkbox"/>	X
F.2	Groundwater is impacted and a domestic well is located within 1,000 feet of the site.	<input type="checkbox"/>	X
F.3	Contaminated soils and/or groundwater are located within designated Wellhead Protection Areas (Areas II or III).	<input type="checkbox"/>	X
<b>CLASS G</b>	<b>SHORT TERM THREAT TO HUMAN HEALTH, SAFETY, OR SENSITIVE ENVIRONMENTAL RECEPTORS</b>		
G.1	Contaminated soils and/or groundwater are located within areas vulnerable to contamination from surface sources.	<input type="checkbox"/>	X
<b>CLASS H</b>	<b>SHORT TERM THREAT TO HUMAN HEALTH, SAFETY, OR SENSITIVE ENVIRONMENTAL RECEPTORS</b>		
H.1	Impacted surface water, stormwater or groundwater discharges within 500 feet of a surface water body used for human drinking water, whole body water-contact sports, or habitat to a protected or listed endangered plant and animal species.	<input type="checkbox"/>	X
<b>CLASS I</b>	<b>LONG TERM THREAT TO HUMAN HEALTH, SAFETY, OR SENSITIVE ENVIRONMENTAL RECEPTORS</b>		
I.1.	Site has contaminated soils and/or groundwater but does not meet any of the above mentioned criteria.	X	<input type="checkbox"/>

***ADDITIONAL COMMENTS:***

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**Complete the classification evaluation questions listed above. Upon completion, determine the highest rank of the site (A.1 is the highest rank) based on the statements answered with a yes.**

Enter the determined classification ranking:	<b>I.1</b>
--	------------

ADEM GROUNDWATER BRANCH  
SITE CLASSIFICATION CHECKLIST  
(5/8/95)

## **1.0 INTRODUCTION**

Aerostar Environmental Services, Inc. (AEROSTAR) has prepared the Semi-Annual Groundwater Monitoring Report for Organizational Maintenance Shop (OMS) 28 located in Mobile, Alabama, hereafter referred to as OMS 28. This report was prepared for the United States Army Corps of Engineers (USACE) for one groundwater monitoring event. This report provides a site description, methods employed to conduct the assessment, and presents all analytical results, findings, and conclusions of the assessment.

## **2.0 BACKGROUND**

### **2.1 Site Description**

The OMS 28 property is located at 1622 South Broad Street in Mobile, Mobile County, Alabama. OMS 28 is located in Mobile County, near downtown Mobile, between Interstate 10 and Mobile Bay. The area is relatively flat with an elevation of 20 to 30 feet above mean sea level (AMSL). The subject property is located in Section 1, Township 4 South, Range 1 West and at approximate Longitude 88° 03' 42" West and Latitude 30° 39' 11" North. The site and surrounding areas are shown in **Figures 1 and 2, Site Location Map and Site Map.**

### **2.2 Site History**

Four underground storage tanks (UST) have been removed from three separate locations at the facility. A single 2000 gallon gasoline/diesel UST was removed from OMS 28 in October 1992. A ½ to ¾ inch hole was noted in the east end of the tank when it was removed. A preliminary investigation was performed in October 1993, but did not fully determine the extent of soil or groundwater contamination. A secondary investigation was completed in December 1994, establishing the extent of soil and groundwater contamination at the site. The 1994 Secondary Investigation was followed by quarterly groundwater monitoring in 1995. Groundwater monitoring continued on a roughly semi-annual basis through 1997. An additional set of groundwater samples was collected in October 2001. Bechtel-S was contracted to complete a risk-based assessment of the site in 2003 and the existing wells were sampled on site in March 2004.

In August 2005, Bechtel-S submitted a Secondary Investigation (SI) Addendum. Small amounts of residual LNAPL were present at MW-1. Vacuum extraction from MW-1 reportedly removed approximately 5.6 pounds of hydrocarbons from the immediate vicinity of MW-1, but had no effect on neighboring wells. Groundwater contamination did not appear to extend offsite. The contaminant plume appeared to extend from the source area (former UST location) towards monitor well MW-6.



Dissolved oxygen appeared to be depleted in the source area and extended as far downgradient as monitor well MW-6. Along with the SI Addendum, Bechtel-S also submitted an Alabama Risk Based Corrective Action (ARBCA) assessment in August 2005. Aerostar was contracted in October 2005 to perform one semi-annual sampling event for monitor wells MW-1 through MW-3 and MW-5 through MW-8.

Based on a conversation with Mr. John Pierce, Alabama Department of Environmental Management (ADEM) on November 4, 2005, the Site Specific Target Levels (SSTLs) developed in the ARBCA have not been approved and were not used for comparison purposes in this report.

### **3.0 SCOPE OF WORK**

AEROSTAR developed the scope of work based on the past history of operations of the facility. The Semi-Annual Groundwater Monitoring scope of work included:

- Collection of groundwater samples from seven monitoring wells identified as MW-1 through MW-3 and MW-5 through MW-8, using low-flow sampling methods.
- Collection of duplicate, trip blank, field blank, Matrix Spike (MS), and Matrix Spike Duplicate (MSD) samples for Quality Assurance/Quality Control (QA/QC).
- Determination of groundwater flow direction through a groundwater elevation survey.
- Groundwater samples were analyzed for Volatile Organic Compounds (VOCs) of benzene, toluene, ethylbenzene, total xylenes (BTEX) and naphthalene per Environmental Protection Agency (EPA) Method 8260.
- Containerization of development/purge water in Department of Transportation (DOT) approved 55-gallon steel drums. Groundwater analytical data from the monitoring wells will be used to determine the proper disposal method of the development/purge water.
- Preparation of a Semi-Annual Groundwater Monitoring Report presenting investigative methodology, findings, and conclusions from the assessment.

## **4.0 INVESTIGATIVE METHODOLOGY**

### **4.1 Groundwater Sampling**

AEROSTAR conducted groundwater sampling on October 13, 2005. Each monitoring well was inspected for the presence of free product. Free product was not encountered within the monitoring wells during the sampling event.

Groundwater samples were collected from the seven monitoring wells using low-flow sampling techniques. Monitor wells were sampled from the lowest concentration to the highest concentration of BTEX based on reported historic concentrations. Prior to sampling, the monitoring wells were developed using a peristaltic pump with a sufficient length of chemically inert disposable tubing to reach the middle of the screen of each well. The pump was run at a low rate so as to minimize draw-down and sample turbidity.

Disposable nitrile gloves were worn during the sample collection. Gloves were also changed between each sample acquisition during the sampling process. Depending on analysis, groundwater samples were transferred to laboratory prepared glass or plastic containers, labeled, and immediately placed on ice. The sample containers contained the appropriate preservatives. The sample containers were immediately sealed, labeled with the appropriate sample name, placed within a protective envelope, and placed in an individual sealed zip lock bag before placing on ice inside coolers. Coolers were insulated to maintain a sample temperature near 4 °C. Each cooler was sealed with tape to discourage tampering. The samples were shipped with chain-of-custody forms via common courier to an independent, qualified laboratory experienced in EPA Standard Test Method analysis and QA/QC procedures. The laboratory used was Gulf Coast Analytical Laboratory, Inc. (GCAL) in Baton Rouge, Louisiana, which is a Department of Defense (DOD) approved laboratory.

Water samples analyzed for VOCs per EPA Method 8260 were stored in 40-milliliter (ml) septum vials with screw cap and Teflon®-silicone disk in the cap to prevent contamination of the sample by the cap. The vials were completely filled to prevent volatilization, and extreme caution was exercised when filling a vial to avoid any turbulence, which could also produce volatilization. The samples were carefully poured down the side of the vials to minimize turbulence. As a rule, it is best to gently pour the last few drops into the vial so that surface tension holds the water in a convex meniscus. The cap is then applied and some overflow is lost, but the air space in the bottle is eliminated. After capping, the bottle was turned over and tapped to check for bubbles. If any bubbles were present, the procedure was repeated with another clean 40-ml vial. Since the VOC vials are pre-preserved, caution was exercised

when the vials were used as the collection device for surface water samples in order to prevent the loss of the preservative. Groundwater samples were shipped to Gulf Coast Analytical Laboratory, Inc. in Baton Rouge, Louisiana.

## **4.2 Groundwater Sample Collection**

AEROSTAR collected groundwater samples on October 13, 2005 from monitor wells MW-1, MW-2, MW-3, MW-5, MW-6, MW-7, and MW-8 to evaluate groundwater quality. The groundwater samples were collected from lowest to highest BTEX concentrations utilizing a variable speed peristaltic pump. Field quality control samples consisting of equipment blanks were collected during each sampling event. The groundwater samples were transferred into the appropriate laboratory supplied sample containers, placed on ice and delivered, under chain-of-custody, to a DOD approved laboratory for analyses per EPA Method 8260 for BTEX and naphthalene. Duplicate, trip blank, field blank, MS, and MSD samples were collected for QA/QC procedures. GCAL of Baton Rouge, Louisiana, was utilized during this monitoring event.

Groundwater sampling logs are included in **Appendix A**. The results of the groundwater laboratory analyses are detailed in Section 4.2, and included in **Appendix B**.

## **4.3 Groundwater Elevation Survey**

AEROSTAR mobilized to the site on October 13, 2005 to collect depth-to-water (DTW) measurements from groundwater monitor wells MW-1 through MW-3 and MW-5 through MW-8. Prior to gauging the depths-to-water, the well caps were removed and the water levels were allowed to stabilize for at least 15 minutes. Site groundwater flow direction was determined through a water table elevation survey. Results of this survey were used to determine the likely direction of groundwater migration at the site. Elevations were obtained from the top of each monitoring well casing to the nearest 0.01 foot using conventional survey equipment. The top of casing elevations are relative to MSL elevations as shown on a USGS Topographic Map of the site (approximately 25 feet MSL). Groundwater depths were measured from the same point on the monitoring well casing from which the elevation was obtained (north side of casing).

## **5.0 FINDINGS**

### **5.1 Groundwater Flow Direction**

DTW measurements were collected from seven (7) monitor wells on October 13, 2005. DTW and total depth of each monitor well were recorded and presented in **Table 1**. Top of casing elevations for each well were subtracted from the corresponding DTW measurement to derive groundwater elevations from which to create a groundwater contour map. The inferred groundwater flow direction was estimated to be towards the northwest, which is consistent with historical data. **Figure 3** illustrates the approximate groundwater flow direction for the October 2005 groundwater monitoring event.

### **5.2 Groundwater Laboratory Analysis**

Groundwater samples collected from MW-1, MW-2, MW-3, MW-5, MW-6, MW-7, and MW-8 were submitted to GCAL, Inc. for BTEX and naphthalene analysis per EPA Method 8260.

Benzene concentrations were detected in monitor wells MW-1 and MW-6 at concentrations of 0.140 milligrams per liter (mg/L) and 0.0184 mg/L, respectively, which exceeded ADEM's Initial Screening Level (ISL) of 0.005 mg/L. Monitor wells MW-2, MW-3, MW-5, MW-7, and MW-8 were below the laboratory detection limit for benzene.

Toluene was detected in monitor well MW-1 at a concentration of 0.0182 mg/L, which is below ADEM's ISL of 1.00 mg/L. Ethylbenzene was detected in monitor well MW-1 at a concentration of 0.442 mg/L, which is below ADEM's ISL of 0.700 mg/L. Total xylenes were detected in monitor wells MW-1 and MW-6 at concentrations of 1.22 mg/L and 0.00195 mg/L, respectively, which is below ADEM's ISL of 10.0 mg/L. Total BTEX concentrations ranged from below detection limits (BDL) to 1.82 mg/L (MW-1).

Naphthalene concentrations ranged from less than (<) 0.000304 mg/L to 0.223 mg/L. Naphthalene concentrations exceeded ADEM's ISL of 0.020 mg/L in monitor wells MW-1 (0.223 mg/L) and MW-6 (0.0406 mg/L).

The results of the groundwater laboratory analysis are summarized in **Table 2**. Contaminants of Concern (COC) concentrations from the October 2005 sampling event are illustrated in **Figure 4**, **Figure 5**, and **Figure 6**. The laboratory analytical results with appropriate chain-of-custody records are included in **Appendix B**.

## **6.0 CONCLUSIONS AND RECOMMENDATIONS**

AEROSTAR conducted site assessment activities during October 2005 at OMS 28. Based on the findings of the investigation, AEROSTAR presents the following conclusions and recommendations:

- The inferred groundwater flow direction at OMS 28 is to the northwest. This flow direction is consistent with previously reported groundwater flow data.
- Benzene concentrations exceeded ADEM's ISL of 0.005 mg/L in monitor wells MW-1 (0.140 mg/L) and MW-6 (0.0184 mg/L). Benzene concentrations have increased in monitor well MW-1 and decreased in MW-6 since the March 2005 groundwater sampling event.
- Toluene, ethylbenzene, and total xylenes concentrations have remained below their respective ISLs since the March 2004 sampling event.
- Total BTEX concentrations ranged from BDL to 1.82 mg/L (MW-1). Based on **Table 2**, monitor well MW-1 has historically had the greatest total BTEX concentrations. Total BTEX concentrations have decreased in monitor well MW-1 and MW-6 since the March 2005 groundwater sampling event. Total BTEX concentrations have remained BDL in monitor wells MW-2, MW-3, MW-5, MW-7, and MW-8 since November 2004.
- Naphthalene concentrations exceeded ADEM's ISL of 0.020 mg/L in monitor wells MW-1 (0.223 mg/L) and MW-6 (0.0406 mg/L). Naphthalene concentrations have increased in monitor well MW-1 and decreased in monitor well MW-6 since the March 2005 groundwater sampling event.

AEROSTAR recommends continuing semi-annual groundwater sampling until the SSTLs developed in the ARBCA have been approved by ADEM.

## **FIGURES**

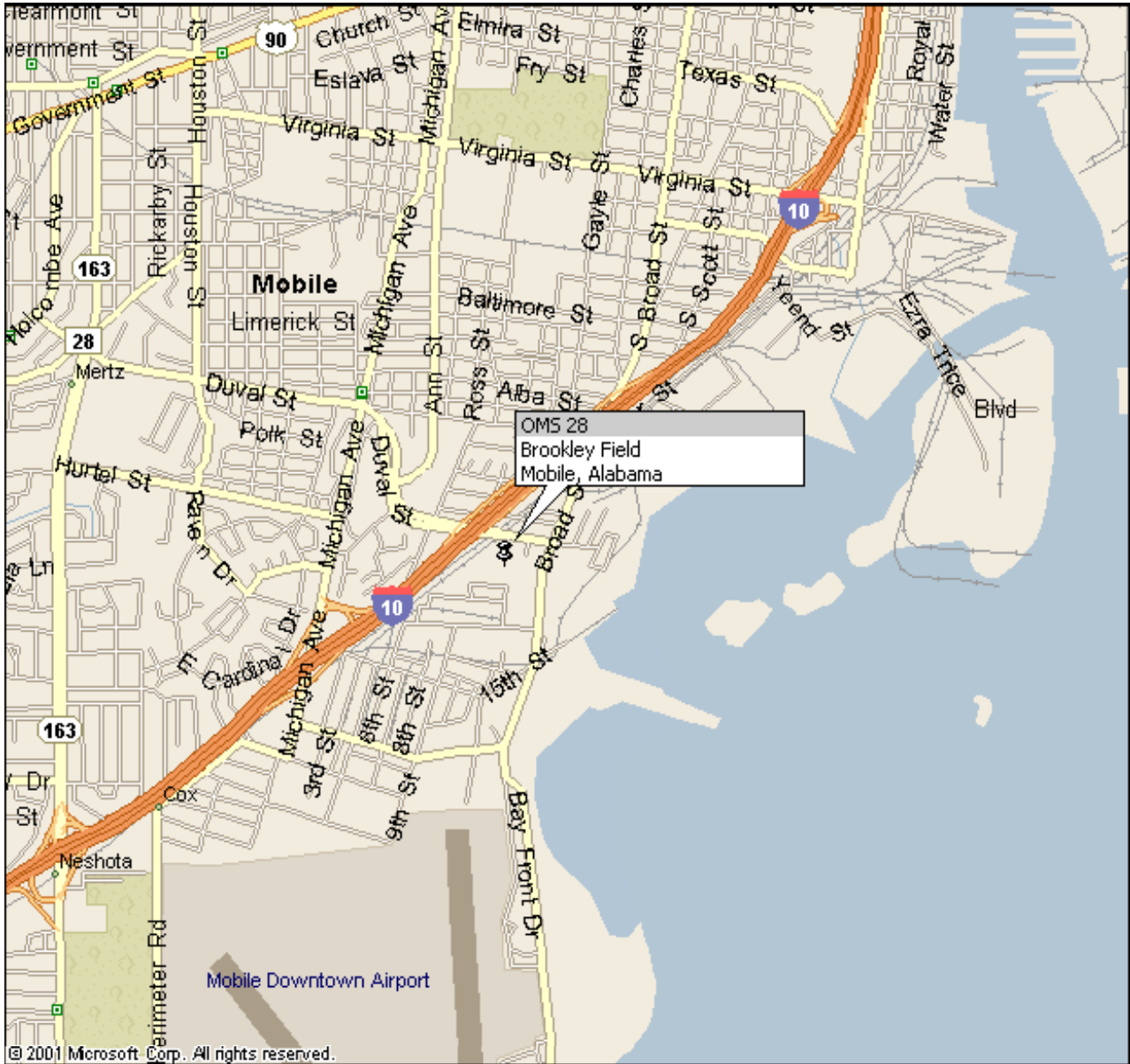


FIGURE 1 - SITE LOCATION MAP



OMS 28  
 ALABAMA NATIONAL GUARD  
 1622 SOUTH BROAD STREET  
 MOBILE, ALABAMA

DRAWN BY: EAW

REFERENCE: MAP OF  
 MOBILE, ALABAMA  
 PREPARED BY: THE  
 MICROSOFT CORP.

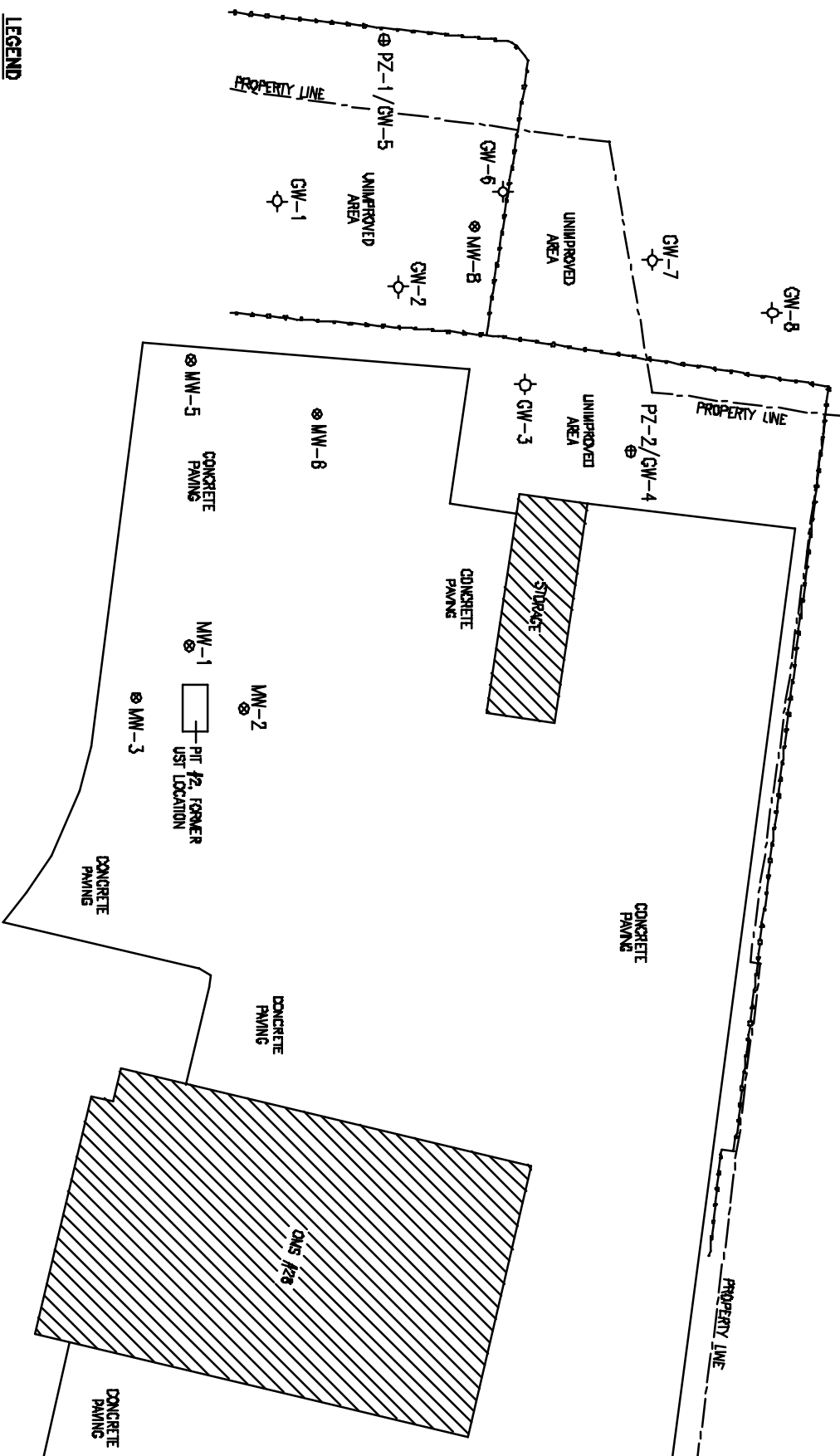
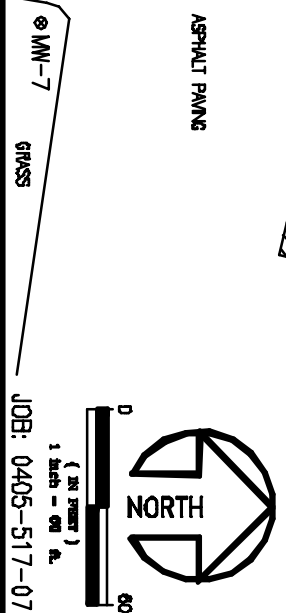


FIGURE 2. SITE AND VICINITY MAP

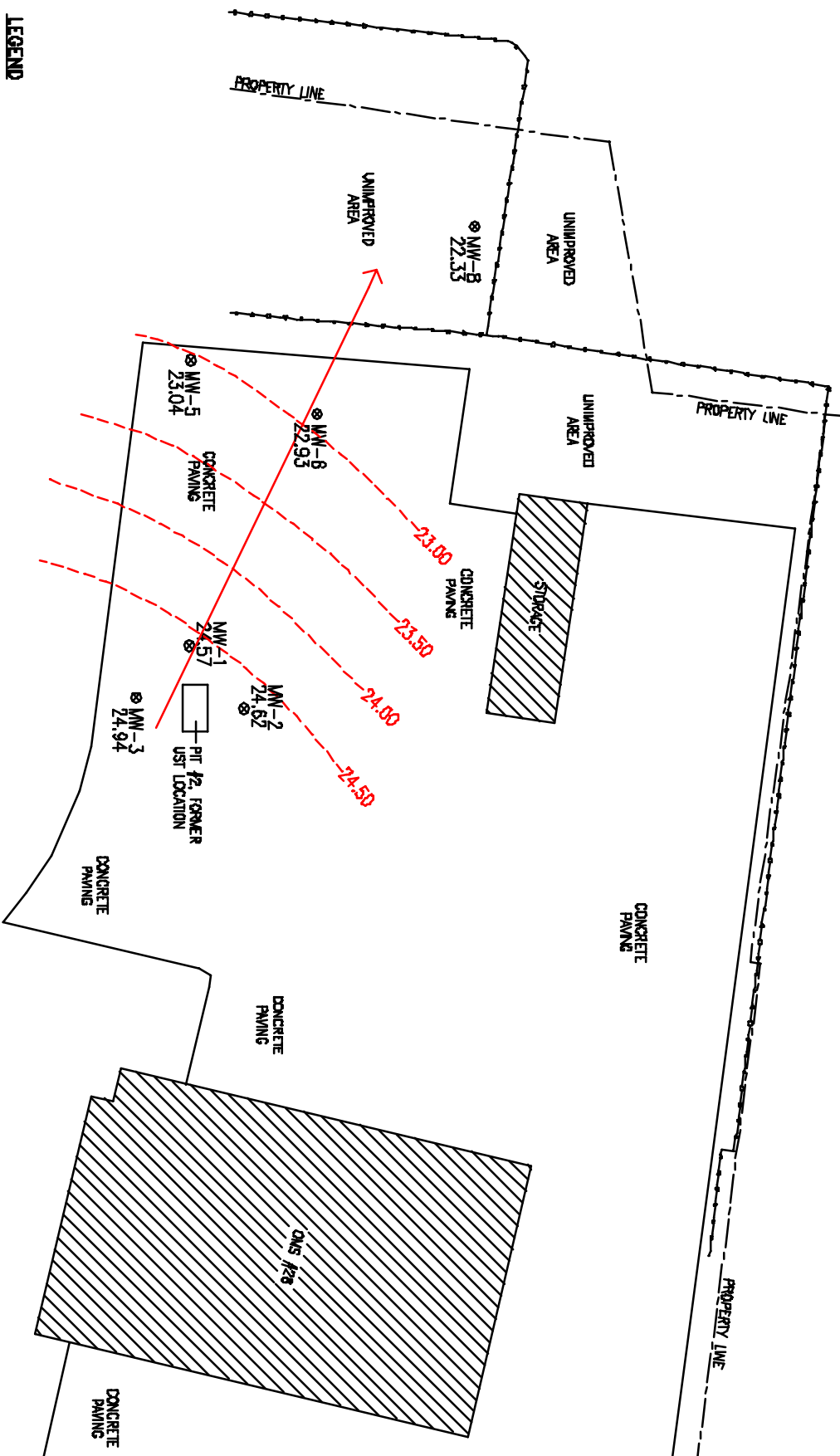


OMS 28  
1622 SOUTH BROAD STREET  
MOBILE, ALABAMA

DRAWN BY: EW  
SCALE: 1" = 60'-0"  
DATE: 11/9/05

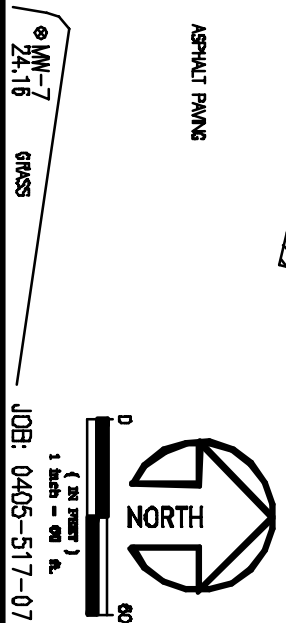






- LEGEND**
- 23.04 GROUNDWATER ELEVATION (FT)
  - 23.00 GROUNDWATER ELEVATION CONTOUR (FT)
  - PROPERTY BOUNDARY
  - FENCE
  - ⊗ MONITORING WELL
  - ▨ BUILDING
  - ▨ GRAVEL

FIGURE 3. GROUNDWATER ELEVATION AND FLOW DIRECTION MAP (OCTOBER 15, 2005)



OMS 28  
1622 SOUTH BROAD STREET  
MOBILE, ALABAMA

DRAWN BY: EW  
SCALE: 1" = 60'-0"  
DATE: 11/9/05

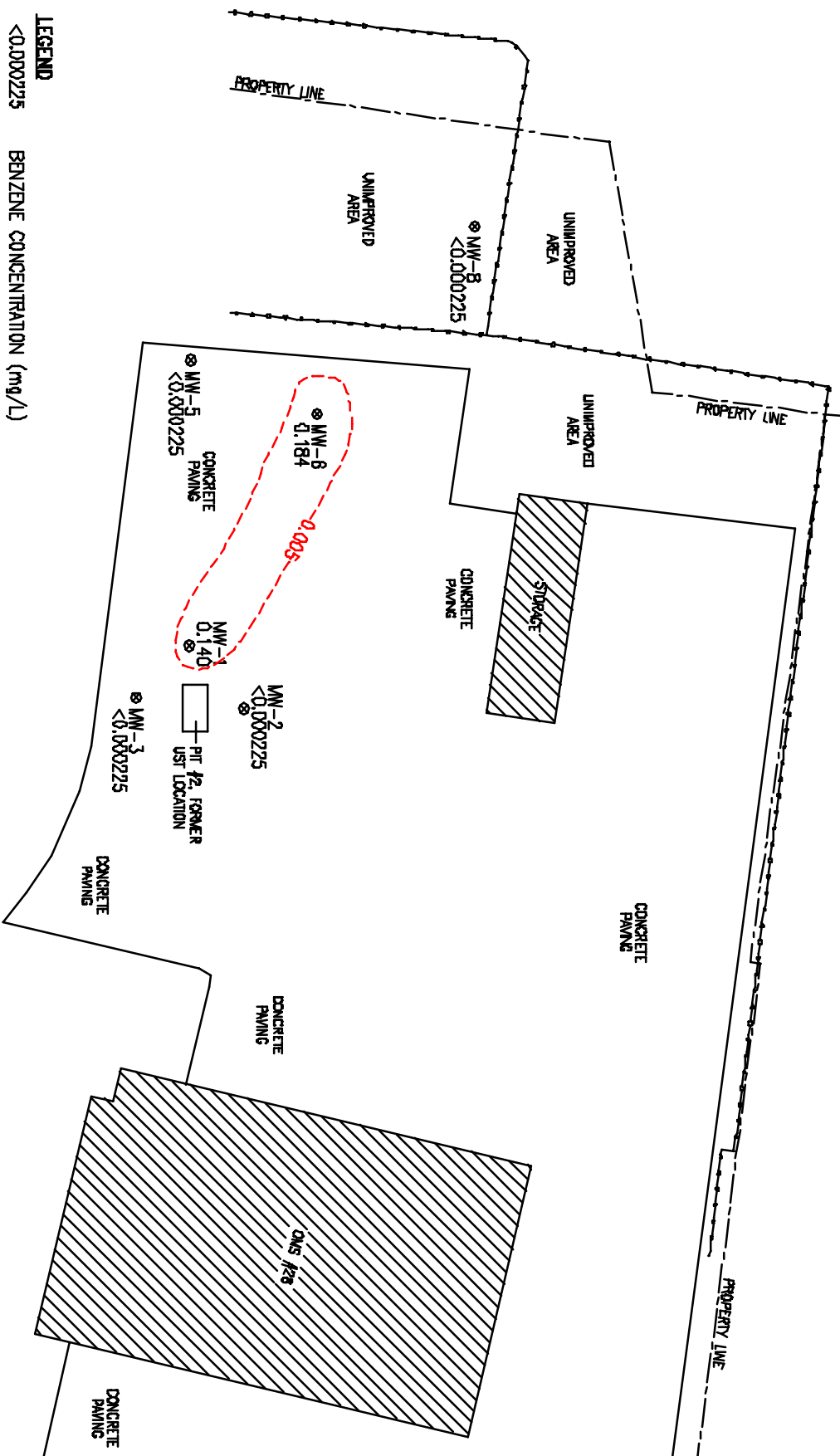
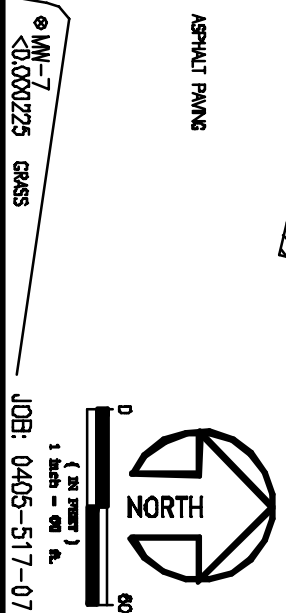


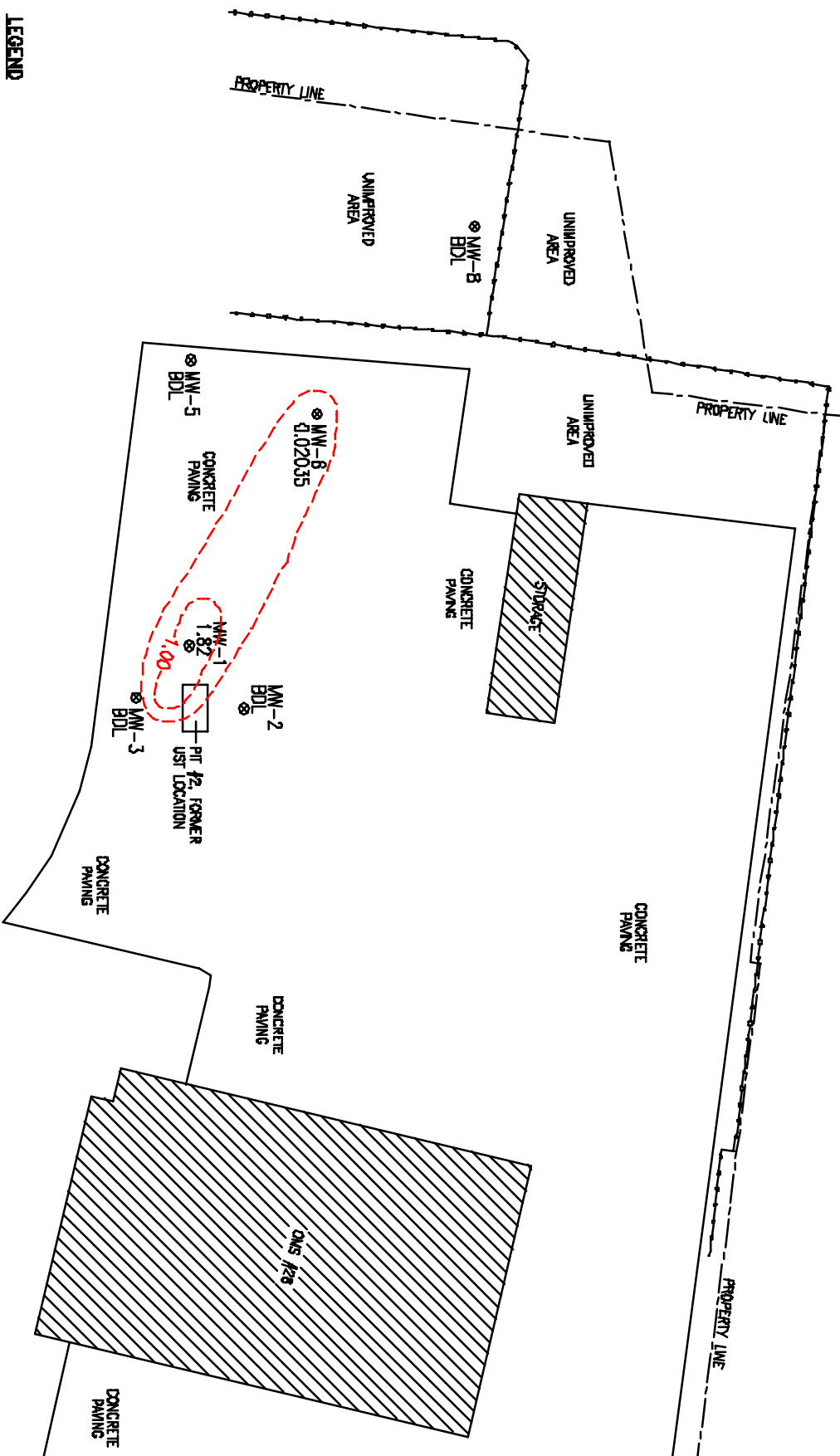
FIGURE 4. BENZENE CONCENTRATIONS IN GROUNDWATER (OCTOBER 15, 2005)



OMS 28  
 1622 SOUTH BROAD STREET  
 MOBILE, ALABAMA



DRAWN BY: EW  
 SCALE: 1" = 60'-0"  
 DATE: 11/9/05

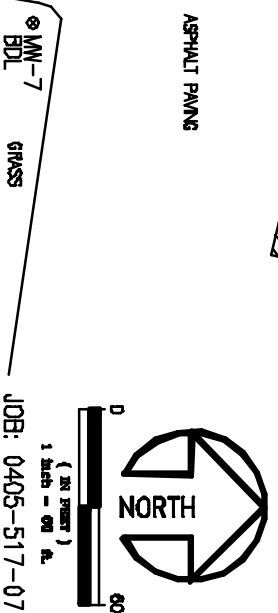


- LEGEND**
- 1.82 TOTAL BTEX CONCENTRATION (mg/L)
  - 1.00 TOTAL BTEX CONCENTRATION CONTOUR (mg/L)
  - PROPERTY BOUNDARY
  - FENCE
  - ⊗ MONITORING WELL
  - ▤ BUILDING
  - ▨ CONCRETE PAVING
  - ▧ ASPHALT PAVING
  - ▩ GRAVEL

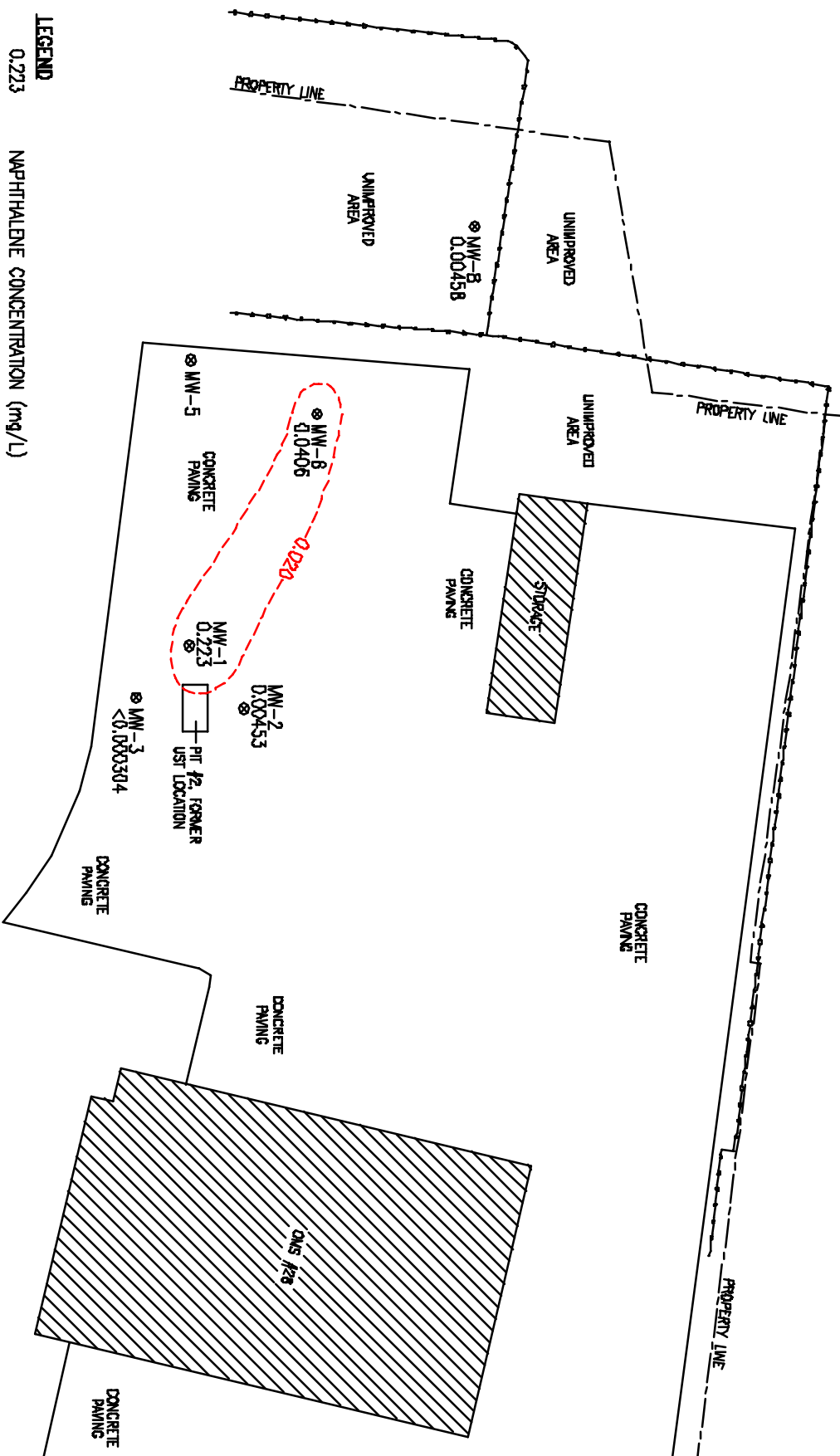
FIGURE 5. TOTAL BTEX CONCENTRATIONS IN GROUNDWATER (OCTOBER 15, 2005)



OMS 28  
 1622 SOUTH BROAD STREET  
 MOBILE, ALABAMA



DRAWN BY: EW  
 SCALE: 1" = 60'-0"  
 DATE: 11/9/05



- LEGEND**
- 0.223 NAPHTHALENE CONCENTRATION (mg/L)
  - 0.020 NAPHTHALENE CONCENTRATION CONTOUR (mg/L)
  - \* 0.020 ADEM ISL
  - PROPERTY BOUNDARY
  - - - FENCE
  - ⊗ MONITORING WELL
  - ▨ BUILDING
  - ▨ GRAVEL

**FIGURE 6. NAPHTHALENE CONCENTRATIONS IN GROUNDWATER (OCTOBER 15, 2005)**



OMS 28  
 1622 SOUTH BROAD STREET  
 MOBILE, ALABAMA

⊗ MW-7  
 0.00469 GRASS  
 (SEE FIGURE 1)  
 1 inch = 60 ft.  
 NORTH  
 60  
 JOB: 0405-517-07

DRAWN BY: EW  
 SCALE: 1" = 60'-0"  
 DATE: 11/9/05

# **TABLES**

**TABLE 1**

**GROUNDWATER ELEVATION SURVEY DATA**

<b>Well ID</b>	<b>Depth of Well (ft-BTOC)</b>	<b>Screened Interval (ft - BGS)</b>	<b>Top Of Casing Elevation (ft – AMSL)</b>	<b>Survey Date</b>	<b>Depth To Product (ft - BTOC)</b>	<b>Depth To Water (ft - BTOC)</b>	<b>Groundwater Elevation (ft –AMSL)</b>
MW-1	13.93	NA	28.82	10/13/05	NE	4.25	24.57
MW-2	14.92	NA	28.53	10/13/05	NE	3.91	24.62
MW-3	14.20	NA	28.99	10/13/05	NE	4.05	24.94
MW-5	12.55	NA	28.14	10/13/05	NE	5.10	23.04
MW-6	12.65	NA	28.15	10/13/05	NE	5.22	22.93
MW-7	14.74	NA	27.55	10/13/05	NE	3.39	24.16
MW-8	15.15	NA	28.17	10/13/05	NE	5.84	22.33

*Notes: BTOC = Below Top of Casing BGS = Below Ground Surface  
AMSL = Above Mean Sea Level based on an estimated site elevation of 125 feet amsl  
NE=Not Encountered  
BGS=Below Ground Surface  
NA= Not Available*

**TABLE 2**

**GROUNDWATER ANALYTICAL SUMMARY**

SAMPLE DATA		ANALYTE CONCENTRATIONS (ppm)					
Well ID	Sample Date	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	Naphthalene
MW-1	3/2004	<b>0.200</b>	0.140	0.750	1.121	1.82	<b>0.076</b>
	11/2004	<b>0.140</b>	0.0076	0.580	0.400	1.13	<b>0.260</b>
	3/2005	<b>0.077</b>	0.570	0.400	1.23	2.28	<b>0.140</b>
	10/13/05	<b>0.140</b>	0.0182 F	0.442	1.22	1.82	<b>0.223</b>
MW-2	3/2004	ND	ND	ND	ND	BDL	ND
	11/2004	<0.00025	<0.00025	<0.00025	<0.00075	BDL	<0.00025
	3/2005	<0.00025	<0.00025	<0.00025	<0.00075	BDL	<0.00025
	10/13/05	<0.000225	<0.000213	<0.000227	<0.000509	BDL	0.00453 F
MW-3	3/2004	ND	0.00021 J	0.00120 J	0.0018 J	0.00321	0.00060 JP
	11/2004	<0.00025	<0.00025	<0.00025	<0.00075	BDL	<0.00025
	3/2005	<0.00025	<0.00025	<0.00025	<0.00075	BDL	<0.00025
	10/13/05	<0.000225	<0.000213	<0.000227	<0.000509	BDL	<0.000304
MW-5	3/2004	ND	ND	ND	ND	BDL	0.00040 JP
	11/2004	<0.00025	<0.00025	<0.00025	<0.00075	BDL	<0.00025
	3/2005	<0.00025	<0.00025	<0.00025	<0.00075	BDL	<0.00025
	10/13/05	<0.000225	<0.000213	<0.000227	<0.000509	BDL	0.00458
MW-6	3/2004	<b>0.023</b>	0.00055 J	0.0014 J	0.0014 J	0.02635	<b>0.028</b>
	11/2004	<b>0.060</b>	<0.0012	<0.0012	0.0105	0.07050	<b>0.088</b>
	3/2005	<b>0.041</b>	0.00071	0.0015	0.0065	0.04971	<b>0.059</b>
	10/13/05	<b>0.0184</b>	<0.000213	<0.000227	0.00195 F	0.02035	<b>0.0406</b>
MW-7	11/2004	<0.00025	<0.00025	<0.00025	<0.00075	BDL	<0.00025
	3/2005	<0.00025	<0.00025	<0.00025	<0.00075	BDL	<0.00025
	10/13/05	<0.000225	<0.000213	<0.000227	<0.000509	BDL	0.00469
MW-8	11/2004	<0.0050	<0.0050	<0.0050	<0.015	BDL	<0.0050
	3/2005	<0.0063	<0.0063	<0.0063	<0.0193	BDL	<0.0063
	10/13/05	<0.000225	<0.000213	<0.000227	<0.000509	BDL	0.00458
<b>ADEM'S ISL</b>		<b>0.005</b>	<b>1.00</b>	<b>0.700</b>	<b>10.0</b>	<b>*</b>	<b>0.020</b>

Notes: All concentrations in parts per million (ppm)

<-Contaminant is below the laboratory detection limits

BDL-Below Detection Limits

F=Result is less than the Reporting Detection Limit and greater than the Method Detection Limit

## **APPENDIX A**



### GROUNDWATER SAMPLING LOG

<b>SITE NAME:</b> OMS 28		<b>SITE LOCATION:</b> Mobile, Alabama	
<b>WELL NO:</b> MW-1	<b>SAMPLE ID:</b> MW-1		<b>DATE:</b> 10/13/05
<b>WELL DIAMETER (in):</b> 2.00	<b>TOTAL WELL DEPTH (ft):</b> 13.93	<b>STATIC DEPTH TO WATER (ft):</b> 4.25	<b>WELL CAPACITY:</b> 0.16
WELL CAPACITY (Gallons per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88			
<b>1 WELL VOLUME (gal) = (TOTAL WELL DEPTH - DEPTH TO WATER) X WELL CAPACITY =</b>			
= ( 13.93 - 4.25 ) X 0.16 = 1.50			
<b>PURGE METHOD:</b>	Peristaltic Pump		
<b>VOLUME PURGED (10.9)</b>	<b>pH (SU)</b>	<b>TEMPERATURE (°C)</b>	<b>SPECIFIC CONDUCTANCE (µS/CM)</b>
			<b>Turbidity (NTU)</b>
			<b>DO (MG/L)</b>
1	6.03	28.6	181
2	6.03	28.7	179
3	6.03	28.7	179
4			
5			
NOTES: Sampled @ 1532			

### GROUNDWATER SAMPLING LOG

SITE NAME: OMS 28		SITE LOCATION: Mobile, Alabama				
WELL NO: MW-2	SAMPLE ID: MW-2		DATE: 10/13/05			
WELL DIAMETER (in): 2.00	TOTAL WELL DEPTH (ft): 14.92	STATIC DEPTH TO WATER (ft): 3.91	WELL CAPACITY: 0.16			
WELL CAPACITY (Gallons per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88						
<b>1 WELL VOLUME (gal) = (TOTAL WELL DEPTH - DEPTH TO WATER) X WELL CAPACITY =</b> = ( 14.92 - 3.91 ) X 0.16 = 1.75						
PURGE METHOD:	Peristaltic Pump					
VOLUME PURGED (9.6 gal)	pH (SU)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (µS/CM)	Turbidity (NTU)	DO (MG/L)	NOTES: Sampled @ 1338; Dup collected
1	4.84	28.9	237	7.89	3.25	
2	4.84	29.1	231	7.80	3.71	
3	4.84	29.2	231	6.18	3.30	
4						
5						

### GROUNDWATER SAMPLING LOG

<b>SITE NAME:</b> OMS 28		<b>SITE LOCATION:</b> Mobile, Alabama	
<b>WELL NO:</b> MW-3	<b>SAMPLE ID:</b> MW-3		<b>DATE:</b> 10/13/05
<b>WELL DIAMETER (in):</b> 2.00	<b>TOTAL WELL DEPTH (ft):</b> 14.20	<b>STATIC DEPTH TO WATER (ft):</b> 4.05	<b>WELL CAPACITY</b> 0.16
WELL CAPACITY (Gallons per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88			
<b>1 WELL VOLUME (gal) = (TOTAL WELL DEPTH - DEPTH TO WATER) X WELL CAPACITY =</b> $= ( 14.20 - 4.05 ) \times 0.16 = 1.60$			
<b>PURGE METHOD:</b>	Peristaltic Pump		
<b>VOLUME PURGED (10.0 gal)</b>	<b>pH (SU)</b>	<b>TEMPERATURE (°C)</b>	<b>SPECIFIC CONDUCTANCE (µS/CM)</b>
			<b>Turbidity (NTU)</b>
			<b>DO (MG/L)</b>
1	4.13	28.9	201
2	4.16	28.8	201
3	4.18	29.0	198
4			
5			
NOTES: Sampled @ 1220			

### GROUNDWATER SAMPLING LOG

SITE NAME: OMS 28		SITE LOCATION: Mobile, Alabama			
WELL NO: MW-5		SAMPLE ID: MW-5			DATE: 10/13/05
WELL DIAMETER (in): 2.00	TOTAL WELL DEPTH (ft): 12.55	STATIC DEPTH TO WATER (ft): 5.10		WELL CAPACITY 0.16	
WELL CAPACITY (Gallons per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88					
<b>1 WELL VOLUME (gal) = (TOTAL WELL DEPTH - DEPTH TO WATER) X WELL CAPACITY =</b> = ( 12.55 - 5.10 ) X 0.16 = 1.20					
PURGE METHOD:	Peristaltic Pump				
					NOTES: Sampled @ 1255
VOLUME PURGED (12 gal)	pH (SU)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (µS/CM)	Turbidity (NTU)	DO (MG/L)
1	4.59	28.1	158.1	9.95	9.00
2	4.54	28.1	156.2	9.93	8.50
3	4.49	28.1	155.7	9.90	8.60
4					
5					

### GROUNDWATER SAMPLING LOG

SITE NAME: OMS 28		SITE LOCATION: Mobile, Alabama					
WELL NO: MW-6	SAMPLE ID: MW-6		DATE: 10/13/05				
WELL DIAMETER (in): 2.00	TOTAL WELL DEPTH (ft): 12.65	STATIC DEPTH TO WATER (ft): 5.22	WELL CAPACITY: 0.16				
WELL CAPACITY (Gallons per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88							
<b>1 WELL VOLUME (gal) = (TOTAL WELL DEPTH - DEPTH TO WATER) X WELL CAPACITY =</b> $= ( 12.65 - 5.22 ) \times 0.16 = 1.20$							
PURGE METHOD:	Peristaltic Pump						
VOLUME PURGED (11.10 gal)	pH (SU)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (µS/CM)	Turbidity (NTU)	DO (MG/L)	NOTES: Sampled @ 1510	
	1	5.05	28.36	176.9	2.33		0.57
	2	5.04	28.4	179.2	2.31		0.55
	3	5.04	28.4	179.1	2.32		0.57
	4						
	5						

### GROUNDWATER SAMPLING LOG

SITE NAME: OMS 28		SITE LOCATION: Mobile, Alabama			
WELL NO: MW-7		SAMPLE ID: MW-7			DATE: 10/13/05
WELL DIAMETER (in): 2.00	TOTAL WELL DEPTH (ft): 14.74	STATIC DEPTH TO WATER (ft): 3.39		WELL CAPACITY: 0.16	
WELL CAPACITY (Gallons per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88					
<b>1 WELL VOLUME (gal) = (TOTAL WELL DEPTH - DEPTH TO WATER) X WELL CAPACITY =</b> = ( 14.74 - 3.39 ) X 0.16 = 1.80					
PURGE METHOD:	Peristaltic Pump				
	NOTES: Sampled @ 1135				
VOLUME PURGED (10.5 gal)	pH (SU)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (µS/CM)	Turbidity (NTU)	DO (MG/L)
1	4.28	27.2	156.3	9.66	0.63
2	4.31	27.2	154.7	9.50	0.64
3	4.32	27.2	154.7	9.50	0.64
4					
5					

### GROUNDWATER SAMPLING LOG

SITE NAME: OMS 28		SITE LOCATION: Mobile, Alabama				
WELL NO: MW-8		SAMPLE ID: MW-8			DATE: 10/13/05	
WELL DIAMETER (in): 2.00	TOTAL WELL DEPTH (ft): 15.15	STATIC DEPTH TO WATER (ft): 5.84		WELL CAPACITY 0.16		
WELL CAPACITY (Gallons per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88						
<b>1 WELL VOLUME (gal) = (TOTAL WELL DEPTH - DEPTH TO WATER) X WELL CAPACITY =</b> $= ( 15.15 - 5.84 ) \times 0.16 = 1.5$						
PURGE METHOD:	Peristaltic Pump					
VOLUME PURGED (10.1 gal)	pH (SU)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (µS/CM)	Turbidity (NTU)	DO (MG/L)	NOTES: Sampled @ 1430
1	5.97	24.7	293	3.85	0.31	
2	5.97	24.4	293	3.81	0.25	
3	5.97	24.6	292	3.88	0.25	
4						
5						

## **APPENDIX B**



# ANALYTICAL RESULTS

PERFORMED BY

GULF COAST ANALYTICAL LABORATORIES, INC.

**Report Date** 10/25/2005

**GCAL Report** 205101728



**Deliver To** Aerostar  
803 Government St  
Suite A  
Mobile, AL 36602

**Attn** Emilie Wien

**Customer** Aerostar

**Project** Brookley Field Corps

# Laboratory Endorsement

Sample analysis was performed in accordance with approved methodologies provided by the Environmental Protection Agency or other recognized agencies. The samples and their corresponding extracts will be maintained for a period of 30 days unless otherwise arranged. Following this retention period the samples will be disposed in accordance with GCAL's Standard Operating Procedures.

## Common Abbreviations Utilized in this Report

<b>ND</b>	Indicates the result was Not Detected at the specified RDL
<b>DO</b>	Indicates the result was Diluted Out
<b>MI</b>	Indicates the result was subject to Matrix Interference
<b>TNTC</b>	Indicates the result was Too Numerous To Count
<b>SUBC</b>	Indicates the analysis was Sub-Contracted
<b>FLD</b>	Indicates the analysis was performed in the Field
<b>PQL</b>	Practical Quantitation Limit
<b>MDL</b>	Method Detection Limit
<b>RDL</b>	Reporting Detection Limit
<b>00:00</b>	Reported as a time equivalent to 12:00 AM

## Reporting Flags Utilized in this Report

<b>J</b>	Indicates an estimated value
<b>U</b>	Indicates the compound was analyzed for but not detected
<b>B</b>	(ORGANICS) Indicates the analyte was detected in the associated Method Blank
<b>B</b>	(INORGANICS) Indicates the result is between the RDL and MDL

Sample receipt at GCAL is documented through the attached chain of custody. In accordance with [ISO Guide 25](#) and [NELAC](#), this report shall be reproduced only in full and with the written permission of GCAL. The results contained within this report relate only to the samples reported. The documented results are presented within this report.

This report pertains only to the samples listed in the Report Sample Summary and should be retained as a permanent record thereof. The results contained within this report are intended for the use of the client. Any unauthorized use of the information contained in this report is prohibited.

I certify that this data package is in compliance with the terms and conditions of the contract and Statement of Work both technically and for completeness, for other than the conditions in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data submitted has been authorized by the Quality Assurance Manager or his/her designee, as verified by the following signature.

---

CURTIS EKKER  
DATA VALIDATION MANAGER  
GCAL REPORT 205101728

THIS REPORT CONTAINS \_\_\_\_\_ PAGES.

# Report Sample Summary

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20510172801	MW-1	Water	10/13/2005 15:32	10/15/2005 11:00
20510172802	MW-2	Water	10/13/2005 13:38	10/15/2005 11:00
20510172803	MW-3	Water	10/13/2005 12:20	10/15/2005 11:00
20510172804	MW-5	Water	10/13/2005 12:55	10/15/2005 11:00
20510172805	MW-6	Water	10/13/2005 15:10	10/15/2005 11:00
20510172806	MW-7	Water	10/13/2005 11:35	10/15/2005 11:00
20510172807	MW-8	Water	10/13/2005 14:30	10/15/2005 11:00
20510172808	DUP	Water	10/13/2005 00:00	10/15/2005 11:00
20510172809	MW-1 (MS)	Water	10/13/2005 00:00	10/15/2005 11:00
20510172810	MW-1 (MSD)	Water	10/13/2005 00:00	10/15/2005 11:00
20510172811	TRIP BLANK	Water	10/13/2005 00:00	10/15/2005 11:00
20510172812	FIELD BLANK	Water	10/13/2005 00:00	10/15/2005 11:00

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20510172801	MW-1	Water	10/13/2005 15:32	10/15/2005 11:00

8260B, Volatiles

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			10	10/21/2005 20:43	JCK	302752

CAS#	Parameter	Result	RDL	MDL	Units
71-43-2	Benzene	140	25.0	2.25	ug/L
100-41-4	Ethylbenzene	442	50.0	2.27	ug/L
91-20-3	Naphthalene	223	50.0	3.04	ug/L
108-88-3	Toluene	18.2F	50.0	2.13	ug/L
1330-20-7	Xylene (total)	1220	100	5.09	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	500	521	ug/L	104	78 - 130
1868-53-7	Dibromofluoromethane	500	468	ug/L	94	77 - 127
2037-26-5	Toluene d8	500	510	ug/L	102	76 - 134
17060-07-0	1,2-Dichloroethane-d4	500	440	ug/L	88	71 - 127

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20510172802	MW-2	Water	10/13/2005 13:38	10/15/2005 11:00

8260B, Volatiles

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	10/22/2005 13:56	RSS	302900

CAS#	Parameter	Result	RDL	MDL	Units
71-43-2	Benzene	0.225U	2.50	0.225	ug/L
100-41-4	Ethylbenzene	0.227U	5.00	0.227	ug/L
<b>91-20-3</b>	<b>Naphthalene</b>	<b>4.53F</b>	<b>5.00</b>	<b>0.304</b>	<b>ug/L</b>
108-88-3	Toluene	0.213U	5.00	0.213	ug/L
1330-20-7	Xylene (total)	0.509U	10.0	0.509	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	48.9	ug/L	98	78 - 130
1868-53-7	Dibromofluoromethane	50	47.9	ug/L	96	77 - 127
2037-26-5	Toluene d8	50	50	ug/L	100	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	43.3	ug/L	87	71 - 127

<b>GCAL ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Collect Date/Time</b>	<b>Receive Date/Time</b>
20510172803	MW-3	Water	10/13/2005 12:20	10/15/2005 11:00

8260B, Volatiles

<b>Prep Date</b>	<b>Prep Batch</b>	<b>Prep Method</b>	<b>Dilution</b>	<b>Analyzed</b>	<b>By</b>	<b>Analytical Batch</b>
			1	10/22/2005 14:30	RSS	302900

CAS#	Parameter	Result	RDL	MDL	Units
71-43-2	Benzene	0.225U	2.50	0.225	ug/L
100-41-4	Ethylbenzene	0.227U	5.00	0.227	ug/L
91-20-3	Naphthalene	0.304U	5.00	0.304	ug/L
108-88-3	Toluene	0.213U	5.00	0.213	ug/L
1330-20-7	Xylene (total)	0.509U	10.0	0.509	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	49.3	ug/L	99	78 - 130
1868-53-7	Dibromofluoromethane	50	48.3	ug/L	97	77 - 127
2037-26-5	Toluene d8	50	50.8	ug/L	102	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	43.1	ug/L	86	71 - 127

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20510172804	MW-5	Water	10/13/2005 12:55	10/15/2005 11:00

8260B, Volatiles

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	10/22/2005 16:03	RSS	302900

CAS#	Parameter	Result	RDL	MDL	Units
71-43-2	Benzene	0.225U	2.50	0.225	ug/L
100-41-4	Ethylbenzene	0.227U	5.00	0.227	ug/L
<b>91-20-3</b>	<b>Naphthalene</b>	<b>4.58F</b>	<b>5.00</b>	<b>0.304</b>	<b>ug/L</b>
108-88-3	Toluene	0.213U	5.00	0.213	ug/L
1330-20-7	Xylene (total)	0.509U	10.0	0.509	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	49.6	ug/L	99	78 - 130
1868-53-7	Dibromofluoromethane	50	48.3	ug/L	97	77 - 127
2037-26-5	Toluene d8	50	51	ug/L	102	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	42.9	ug/L	86	71 - 127

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20510172805	MW-6	Water	10/13/2005 15:10	10/15/2005 11:00

### 8260B, Volatiles

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	10/22/2005 16:26	RSS	302900

CAS#	Parameter	Result	RDL	MDL	Units
<b>71-43-2</b>	<b>Benzene</b>	<b>18.4</b>	<b>2.50</b>	<b>0.225</b>	<b>ug/L</b>
100-41-4	Ethylbenzene	0.227U	5.00	0.227	ug/L
<b>91-20-3</b>	<b>Naphthalene</b>	<b>40.6</b>	<b>5.00</b>	<b>0.304</b>	<b>ug/L</b>
108-88-3	Toluene	0.213U	5.00	0.213	ug/L
<b>1330-20-7</b>	<b>Xylene (total)</b>	<b>1.95F</b>	<b>10.0</b>	<b>0.509</b>	<b>ug/L</b>

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	48.3	ug/L	97	78 - 130
1868-53-7	Dibromofluoromethane	50	48.7	ug/L	97	77 - 127
2037-26-5	Toluene d8	50	49	ug/L	98	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	48.3	ug/L	97	71 - 127



GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20510172806	MW-7	Water	10/13/2005 11:35	10/15/2005 11:00

### 8260B, Volatiles

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	10/22/2005 16:50	RSS	302900

CAS#	Parameter	Result	RDL	MDL	Units
71-43-2	Benzene	0.225U	2.50	0.225	ug/L
100-41-4	Ethylbenzene	0.227U	5.00	0.227	ug/L
<b>91-20-3</b>	<b>Naphthalene</b>	<b>4.69F</b>	<b>5.00</b>	<b>0.304</b>	<b>ug/L</b>
108-88-3	Toluene	0.213U	5.00	0.213	ug/L
1330-20-7	Xylene (total)	0.509U	10.0	0.509	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	48.1	ug/L	96	78 - 130
1868-53-7	Dibromofluoromethane	50	48.8	ug/L	98	77 - 127
2037-26-5	Toluene d8	50	50.7	ug/L	101	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	44.1	ug/L	88	71 - 127

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20510172807	MW-8	Water	10/13/2005 14:30	10/15/2005 11:00

8260B, Volatiles

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	10/22/2005 17:13	RSS	302900

CAS#	Parameter	Result	RDL	MDL	Units
71-43-2	Benzene	0.225U	2.50	0.225	ug/L
100-41-4	Ethylbenzene	0.227U	5.00	0.227	ug/L
<b>91-20-3</b>	<b>Naphthalene</b>	<b>4.58F</b>	<b>5.00</b>	<b>0.304</b>	<b>ug/L</b>
108-88-3	Toluene	0.213U	5.00	0.213	ug/L
1330-20-7	Xylene (total)	0.509U	10.0	0.509	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	48.1	ug/L	96	78 - 130
1868-53-7	Dibromofluoromethane	50	48.3	ug/L	97	77 - 127
2037-26-5	Toluene d8	50	51	ug/L	102	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	44.4	ug/L	89	71 - 127

<b>GCAL ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Collect Date/Time</b>	<b>Receive Date/Time</b>
20510172808	DUP	Water	10/13/2005 00:00	10/15/2005 11:00

8260B, Volatiles

<b>Prep Date</b>	<b>Prep Batch</b>	<b>Prep Method</b>	<b>Dilution</b>	<b>Analyzed</b>	<b>By</b>	<b>Analytical Batch</b>
			1	10/22/2005 17:36	RSS	302900

CAS#	Parameter	Result	RDL	MDL	Units
71-43-2	Benzene	0.225U	2.50	0.225	ug/L
100-41-4	Ethylbenzene	0.227U	5.00	0.227	ug/L
<b>91-20-3</b>	<b>Naphthalene</b>	<b>4.54F</b>	<b>5.00</b>	<b>0.304</b>	<b>ug/L</b>
108-88-3	Toluene	0.213U	5.00	0.213	ug/L
1330-20-7	Xylene (total)	0.509U	10.0	0.509	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	48.2	ug/L	96	78 - 130
1868-53-7	Dibromofluoromethane	50	49	ug/L	98	77 - 127
2037-26-5	Toluene d8	50	50.6	ug/L	101	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	43.8	ug/L	88	71 - 127

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20510172809	MW-1 (MS)	Water	10/13/2005 00:00	10/15/2005 11:00

8260B, Volatiles

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			10	10/21/2005 21:06	JCK	302752

CAS#	Parameter	Result	RDL	MDL	Units
71-43-2	Benzene	389	25.0	2.25	ug/L
100-41-4	Ethylbenzene	717	50.0	2.27	ug/L
91-20-3	Naphthalene	495	50.0	3.04	ug/L
108-88-3	Toluene	279	50.0	2.13	ug/L
1330-20-7	Xylene (total)	2030	100	5.09	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	500	534	ug/L	107	78 - 130
1868-53-7	Dibromofluoromethane	500	464	ug/L	93	77 - 127
2037-26-5	Toluene d8	500	522	ug/L	104	76 - 134
17060-07-0	1,2-Dichloroethane-d4	500	451	ug/L	90	71 - 127

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20510172810	MW-1 (MSD)	Water	10/13/2005 00:00	10/15/2005 11:00

8260B, Volatiles

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			10	10/21/2005 21:29	JCK	302752

CAS#	Parameter	Result	RDL	MDL	Units
71-43-2	Benzene	380	25.0	2.25	ug/L
100-41-4	Ethylbenzene	690	50.0	2.27	ug/L
91-20-3	Naphthalene	496	50.0	3.04	ug/L
108-88-3	Toluene	271	50.0	2.13	ug/L
1330-20-7	Xylene (total)	1940	100	5.09	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	500	530	ug/L	106	78 - 130
1868-53-7	Dibromofluoromethane	500	466	ug/L	93	77 - 127
2037-26-5	Toluene d8	500	511	ug/L	102	76 - 134
17060-07-0	1,2-Dichloroethane-d4	500	446	ug/L	89	71 - 127

<b>GCAL ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Collect Date/Time</b>	<b>Receive Date/Time</b>
20510172811	TRIP BLANK	Water	10/13/2005 00:00	10/15/2005 11:00

8260B, Volatiles

<b>Prep Date</b>	<b>Prep Batch</b>	<b>Prep Method</b>	<b>Dilution</b>	<b>Analyzed</b>	<b>By</b>	<b>Analytical Batch</b>
			1	10/21/2005 14:26	JCK	302752

CAS#	Parameter	Result	RDL	MDL	Units
71-43-2	Benzene	0.225U	2.50	0.225	ug/L
100-41-4	Ethylbenzene	0.227U	5.00	0.227	ug/L
91-20-3	Naphthalene	0.304U	5.00	0.304	ug/L
108-88-3	Toluene	0.213U	5.00	0.213	ug/L
1330-20-7	Xylene (total)	0.509U	10.0	0.509	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	44	ug/L	88	78 - 130
1868-53-7	Dibromofluoromethane	50	50.5	ug/L	101	77 - 127
2037-26-5	Toluene d8	50	48.6	ug/L	97	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	49.6	ug/L	99	71 - 127

<b>GCAL ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Collect Date/Time</b>	<b>Receive Date/Time</b>
20510172812	FIELD BLANK	Water	10/13/2005 00:00	10/15/2005 11:00

8260B, Volatiles

<b>Prep Date</b>	<b>Prep Batch</b>	<b>Prep Method</b>	<b>Dilution</b>	<b>Analyzed</b>	<b>By</b>	<b>Analytical Batch</b>
			1	10/21/2005 14:49	JCK	302752

CAS#	Parameter	Result	RDL	MDL	Units
71-43-2	Benzene	0.225U	2.50	0.225	ug/L
100-41-4	Ethylbenzene	0.227U	5.00	0.227	ug/L
91-20-3	Naphthalene	0.304U	5.00	0.304	ug/L
108-88-3	Toluene	0.213U	5.00	0.213	ug/L
1330-20-7	Xylene (total)	0.509U	10.0	0.509	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	50	43.4	ug/L	87	78 - 130
1868-53-7	Dibromofluoromethane	50	51	ug/L	102	77 - 127
2037-26-5	Toluene d8	50	49.2	ug/L	98	76 - 134
17060-07-0	1,2-Dichloroethane-d4	50	50.5	ug/L	101	71 - 127

## GC/MS Volatiles Quality Control Summary

Analytical Batch 302752 Prep Batch N/A		Client ID MB302752 GCAL ID 287417 Sample Type Method Blank Analytical Date 10/21/2005 12:38 Matrix Water		LCS302752 287418 LCS 10/21/2005 11:28 Water			
8260B, Volatiles		Units Result	ug/L RDL	Spike Added	Result	% R	Control Limits % R
71-43-2	Benzene	0.225U	0.225	25.0	24.1	96	80 - 120
100-41-4	Ethylbenzene	0.227U	0.227	25.0	24.1	96	80 - 125
91-20-3	Naphthalene	0.304U	0.304	25.0	20.8	83	67 - 149
108-88-3	Toluene	0.213U	0.213	25.0	24.6	98	80 - 124
1330-20-7	Xylene (total)	0.509U	0.509	75.0	75.0	100	80 - 129
<b>Surrogate</b>							
460-00-4	4-Bromofluorobenzene	45.1	90	50	48.4	97	78 - 130
1868-53-7	Dibromofluoromethane	49.3	99	50	48.2	96	77 - 127
2037-26-5	Toluene d8	49.4	99	50	50.4	101	76 - 134
17060-07-0	1,2-Dichloroethane-d4	47.6	95	50	46.7	93	71 - 127

Analytical Batch 302752 Prep Batch N/A		Client ID MW-1 GCAL ID 20510172801 Sample Type SAMPLE Analytical Date 10/21/2005 20:43 Matrix Water		MW-1 (MS) 20510172809 MS 10/21/2005 21:06 Water			MW-1 (MSD) 20510172810 MSD 10/21/2005 21:29 Water				
8260B, Volatiles		Units Result	ug/L RDL	Spike Added	Result	% R	Control Limits % R	Result	% R	RPD	RPD Limit
71-43-2	Benzene	140	2.25	250	389	100	80 - 120	380	96	2	11
100-41-4	Ethylbenzene	442	2.27	250	717	110	80 - 125	690	99	4	30
91-20-3	Naphthalene	223	3.04	250	495	109	67 - 149	496	109	0.2	30
108-88-3	Toluene	18.2	2.13	250	279	104	80 - 124	271	101	3	13
1330-20-7	Xylene (total)	1220	5.09	750	2030	108	80 - 129	1940	96	5	30
<b>Surrogate</b>											
460-00-4	4-Bromofluorobenzene	521	104	500	534	107	78 - 130	530	106		
1868-53-7	Dibromofluoromethane	468	94	500	464	93	77 - 127	466	93		
2037-26-5	Toluene d8	510	102	500	522	104	76 - 134	511	102		
17060-07-0	1,2-Dichloroethane-d4	440	88	500	451	90	71 - 127	446	89		



## GC/MS Volatiles Quality Control Summary

Analytical Batch 302900 Prep Batch N/A		Client ID MB302900 GCAL ID 288043 Sample Type Method Blank Analytical Date 10/22/2005 11:43 Matrix Water		LCS302900 288044 LCS 10/22/2005 11:07 Water			
8260B, Volatiles		Units Result	ug/L RDL	Spike Added	Result	% R	Control Limits % R
71-43-2	Benzene	0.225U	0.225	25.0	27.0	108	80 - 120
100-41-4	Ethylbenzene	0.227U	0.227	25.0	27.1	108	80 - 125
91-20-3	Naphthalene	4.73F	0.304	25.0	24.9	100	67 - 149
108-88-3	Toluene	0.213U	0.213	25.0	28.2	113	80 - 124
1330-20-7	Xylene (total)	0.509U	0.509	75.0	84.0	112	80 - 129
<b>Surrogate</b>							
460-00-4	4-Bromofluorobenzene	50	100	50	52.2	104	78 - 130
1868-53-7	Dibromofluoromethane	46.8	94	50	46.7	93	77 - 127
2037-26-5	Toluene d8	51.9	104	50	52.2	104	76 - 134
17060-07-0	1,2-Dichloroethane-d4	42.6	85	50	41.3	83	71 - 127

Analytical Batch 302900 Prep Batch N/A		Client ID EPZ617C-041-1005 GCAL ID 20510171702 Sample Type SAMPLE Analytical Date 10/22/2005 13:10 Matrix Water		EPZ617C-041-1005 (MS) 20510171703 MS 10/22/2005 14:53 Water			EPZ617C-041-1005 (MSD) 20510171704 MSD 10/22/2005 15:17 Water				
8260B, Volatiles		Units Result	ug/L RDL	Spike Added	Result	% R	Control Limits % R	Result	% R	RPD	RPD Limit
71-43-2	Benzene	8.16	0.225	25.0	32.9	99	80 - 120	32.3	97	2	11
100-41-4	Ethylbenzene	0.00	0.227	25.0	26.2	105	80 - 125	25.1	100	4	30
108-88-3	Toluene	3.10	0.213	25.0	29.4	105	80 - 124	28.4	101	3	13
1330-20-7	Xylene (total)	0.00	0.509	75.0	82.6	110	80 - 129	78.8	105	5	30
<b>Surrogate</b>											
460-00-4	4-Bromofluorobenzene			50	52.6	105	78 - 130	52.1	104		
1868-53-7	Dibromofluoromethane			50	48.3	97	77 - 127	47.9	96		
2037-26-5	Toluene d8			50	51	102	76 - 134	50.8	102		
17060-07-0	1,2-Dichloroethane-d4			50	45.4	91	71 - 127	46.7	93		