

**JP-5 LINE AREA
2005 ANNUAL MONITORING REPORT
MARINE CORPS AIR STATION, NEW RIVER
NORTH CAROLINA**

Prepared for:

DEPARTMENT OF THE NAVY
Contract No. N62470-02-D-3260



Naval Facilities Engineering Command, Atlantic
6506 Hampton Boulevard
Norfolk, Virginia 23508-1273

Prepared by:



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Task Order 0046/Shaw Project No. 115122

June 2006

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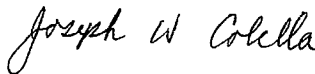
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LIST OF ACRONYMS

AFVR	Aggressive Fluid Vapor Recovery
bls	Below Land Surface
DRO	Diesel Range Organics
EPA	Environmental Protection Agency
FID	Flame Ionization Detector
GRO	Gasoline Range Organics
IDW	Investigation Derived Waste
NAVFAC	Naval Facilities Engineering Command, Atlantic Division
MCB	Marine Corps Base
NCAC	North Carolina Administrative Code
PAHs	Poly Aromatic Hydrocarbons
PVC	Poly Vinyl Chloride
Shaw	Shaw Environmental, Inc.
SVOCs	Semi-Volatile Organic Compounds
TCLP	Toxic Characteristic Leachability Procedure
TPH	Total Petroleum Hydrocarbons
VOCs	Volatile Organic Compounds

1.0 INTRODUCTION

1.1 Background

Shaw Environmental Inc. (Shaw) is tasked by the Department of the Navy, Naval Facilities Engineering Command, Atlantic Division (NAVFAC) under Contract Number N62470-02-D-3260, Task Order 0046 to prepare this Annual Monitoring Report for the JP-5 Line Area (Building AS-4141) site located at the Marine Corps Air Station, New River, in Onslow County North Carolina. The Air Station is associated with MCB Camp Lejeune, which is a training base for the United States Marine Corps. The Base covers approximately 236 square miles and includes 14 miles of coastline. MCB Camp Lejeune is bounded to the southeast by the Atlantic Ocean and the northeast by State Route 24. *Figure 1.1* presents the location of the Base.

1.2 JP-5 Line Area Site Description

The mission of the fuel transfer pipeline at MCAS New River is to transfer JP-5 fuel from the Campbell Street Bulk Fuel Farm to four Underground Storage Tanks at the rapid jet systems A & B and C & D. JP-5 fuel is transferred to the C & D rapid jet system via approximately 4,000 feet of singlewall fiberglass, underground piping. Its general routing is along White Street and then under the aircraft parking ramp MAT-7. Six valve pits with new block and bleed valves are located along the fiberglass portion of this piping system. The transfer pipeline transitions to 8-inch stainless steel just prior to entering valve box #6 and approximately 1,000 feet of 8 inch stainless steel transfer line continues to the A & B rapid jet UST systems. Leaks associated with the underground piping that transfers fuel from the bulk fuel farm to the Rapid Refueler system have been documented in the past. The location of the JP-5 Line Area is presented in *Figure 1.2*.

1.3 Objectives

The objective of the Annual Monitoring Report and associated sampling activity is to delineate the extent of free phase product as well as evaluate the extent of dissolved phase contamination at the site. The following bullets present the field activities completed at the site during 2005:

- Installation of two Type II monitoring wells, one Type III monitoring well, and five piezometers at the JP-5 Line Area (Building AS-4141).

- Continuation of Aggressive Fluid Vapor Recovery (AFVR) events on monitoring wells in the vicinity that display the presence of free product.
- Completion of one groundwater sample collection and analysis event from select monitoring wells to track free phase product and dissolved hydrocarbon contamination occurrence.

2.0 JP-5 LINE AREA SCOPE of WORK

Field activities that were completed at the JP-5 Line Area (Building AS4141) during Revised CAP implementation are as follows:

- Completion of an underground utilities location survey of the work areas
- Installation of two Type II and one Type III 2-inch diameter PVC monitoring wells
- Installation of five 1-inch diameter PVC piezometers to be gauged for the presence of free product. The piezometers were installed in accordance with 15A NCAC 2C .0108.
- Weekly monitoring well gauging for the presence of free product at the site.
- Weekly completion of AFVR events from monitoring wells displaying the presence of free product.
- Groundwater sample collection from five monitoring wells (USTAS4141-MW14, USTAS4141-MW15, USTAS4141-OBG06, USTAS4141-MW02 and USTAS4141-RW2). Monitoring well USTAS4141-OBG03R was not sampled due to the presence of free product. The samples were analyzed for VOCs using EPA Method 8260B, PAHs using EPA Method 8270C, and lead using EPA Method 6010B
- Completion of AFVR events at monitoring wells that display the presence of free phased product.
- Preparation of an Annual Monitoring Report

3.0 MONITORING WELL INSTALLATION and SAMPLING METHODS

3.1 Monitoring Well and Piezometer Installation

A total of three monitoring wells (USTAS4141-MW14, USTAS4141-MW15 and USTAS4141-OBG03R) and five piezometers (AS3905-TP1 through AS3905-TP5) were installed at the JP-5 Line Area (Building AS4141). These monitoring wells and piezometers along with three existing monitoring wells (USTAS4141-RW2, USTAS4141-MW02 and USTAS4141-OBG06) were used to assess the extent of free phased product and the dissolved contaminant plume. *Figure 3.1* presents the monitoring well locations at the site.

3.1.1 Shallow Type II Monitoring Wells and Piezometers Installation

Two Type II monitoring wells and five piezometers were installed to an approximate depth of 13 feet bls. The wells were installed using hollow stem auger drilling techniques. The monitoring well boring logs and well completion diagrams are provided in *Appendix A*.

During drilling activities, soil cuttings returned to the surface were screened for the presence of organic vapors using a Photovac MicrotipTM flame ionization detector (FID) for the presence of volatile organics. In addition, the soil cuttings were examined for evidence of petroleum impact (i.e.: staining, odor, etc.). No staining or odor was observed in any of the soil cuttings, and all FID readings were non-detect (i.e., 0 ppm).

The Type II monitoring wells were constructed using 2-inch diameter Schedule 40 screen, riser, and end cap. The screen section was 10-feet long (extending from 3 to 13 feet bls) with 0.010-inch machine slots. The piezometers were installed in the same manner using 1-inch diameter Schedule 40 PVC screen and riser.

A sand filter pack was placed in the annular space between the well screen and the wall of the boring. The sand filter pack was placed in the boring and PVC annulus from the bottom of the boring to approximately 1-foot above the top of the screened interval. Sand placement was performed in a manner that prevented bridging or creating holes or gaps in the sand filter pack. A 1-foot thick layer of bentonite was placed on top of the sand filter pack in a manner that prevented bridging or creating holes or gaps. The bentonite was then allowed to hydrate for a minimum period of two hours before placement of grout.

The monitoring wells and piezometers were then completed in a flush mount well vault using a non-shrink grout. The grout consisted of neat Portland cement with 5 to 8 percent (by volume) bentonite powder.

3.1.2 Deep Type III Monitoring Well

One 25-foot deep Type III monitoring well was installed at the site on October 26 and 27, 2005. The well was installed by first grouting in place a 6-inch diameter PVC casing from ground surface to 15 feet bls using hollow stem auger drilling techniques. A 2-inch diameter monitoring well was then installed to a depth of 25 feet bls using mud rotary drilling techniques. The well was constructed using 2-inch diameter Schedule 40 PVC riser and five feet of 0.010 slot PVC screen. The monitoring well boring logs are provided in *Appendix A*.

A sand filter pack was placed using tremie pipe in the annular space between the well screen and the wall of the boring. The sand filter pack was placed in the boring annulus from the bottom of the boring to approximately 2-feet above the top of the screened interval. Sand placement was performed in a manner that prevented bridging or creating holes or gaps in the sand filter pack. A 2-foot thick layer of bentonite was placed on top of the sand filter pack in a manner that prevented bridging or creating holes or gaps. The bentonite was then allowed to hydrate for a minimum period of two hours before placement of grout.

A non-shrink grout was placed in the annular space between the well casing and the wall of the boring from top of bentonite seal to ground surface. Care was taken when placing grout to prevent washing out the bentonite seal. The grout consisted of neat Portland cement with 5 to 8 percent (by volume) bentonite powder. The monitoring well was then completed in a flush mount well vault.

Site soils observed during boring activities consisted of a fine-medium silty-sand to depth of 3-4 feet bls which transitioned into a silty, sandy clay to an approximate depth of 13 feet bls. From 13 to 22 feet bls a silty-sand was observed before transitioning back into a silty-sandy clay from 23 to 25 feet bls. Depth to groundwater at the site in the vicinity of the boring was approximately five feet bls.

During drilling activities, soil cuttings returned to the surface were screened for the presence of organic vapors using a Photovac MicrotipTM flame ionization detector (FID) for the presence of volatile organics. In addition, the soil cuttings were examined for evidence of

petroleum impact (i.e.: staining, odor, etc.). No staining or odor was observed in any of the soil cuttings, and all FID readings were non-detect (i.e., 0 ppm).

3.2 Non-hazardous Soil Disposal

Approximately 15 drums of soil were generated during monitoring well installation activities. The soil from the drums was combined with other petroleum contaminated IDW soil for disposal.

A composite sample from the stockpiled soil was collected for disposal characterization analysis. The sample was analyzed for TPH-GRO, TPH-DRO, VOC-TCLP, SVOC-TCLP, pesticide TCLP and herbicide TCLP. Analytical results indicated all compounds were below their respective regulatory limits and the soil was determined to be non-hazardous. The soil was subsequently disposed of at the ES&J Enterprises, Inc. facility located in Autryville, North Carolina.

3.3 GROUNDWATER ELEVATION MEASUREMENTS

In November 2005 the depth to groundwater from top of casing was gauged in four monitoring wells (USTAS4141-MW14, USTAS4141-MW15, USTAS4141-OBG03R, and USTAS4141-OBG06) and five piezometers (AS3905-TP1 through AS3905-TP5) at the site. The depth to groundwater ranged from 3.67 feet bls in monitoring well USTAS4141-OBG06 to 8.23 feet bls in monitoring well USTAS4141-OBG03R. Groundwater elevations ranged from 12.12 feet National Geodetic Vertical Datum (NGVD) in monitoring well USTAS4141-OBG03R to 17.96 feet NGVD in monitoring well USTAS4141-OBG06 with a hydraulic gradient of 0.025 ft/ft from USTAS4141-OBG06 to USTAS4141-OBG03R (*Figure 3.1*). Detectable thickness of free product was observed in piezometers AS3905-TP3 and AS3905-TP5, monitoring well USTAS4141-OBG03R, and recovery well USTAS4141-RW1 (*Figure 3.2*).

3.4 Monitoring Well Groundwater Sample Collection

Prior to groundwater sample collection depth to groundwater measurements were collected from each monitoring well to be sampled. Groundwater samples were then collected from the new monitoring wells USTAS4141-MW14, USTAS4141-MW15 and existing wells USTAS4141-OBG06, USTAS4141-MW02 and USTAS4141-RW2 on December 22, 2005. Newly installed monitoring well USTAS4141-OBG03R was not sampled because free product (1.4 feet) was observed in the well.

Following purging a minimum of three well volumes from each monitoring well, groundwater samples were collected using a pre-cleaned dedicated polyethylene bailer. The samples were placed in preserved containers supplied by the laboratory. The collected samples were immediately placed in a cooler with ice and sent via overnight courier to Accutest Laboratory located in Orlando, Florida. The samples were analyzed for VOCs using EPA Method 8260B, PAHs using EPA Method 8270C and lead using EPA Method 6010B. Copies of the groundwater sample collection field logs are provided in *Appendix B*.

3.5 Aggressive Fluid Vapor Recovery

Select monitoring wells that have displayed the presence of free-phase product have been monitored on a weekly basis for the presence of product. If free-phase product is observed in a well in excess of 0.5 feet, an AFVR event is completed to remove the product from the well by vacuum lift using a vacuum recovery truck. An AFVR event consists of the removal of total fluids from an existing well that has demonstrated the presence of free-phase product. The total gallons of product recovered are calculated from liquid and vapor removal measurements of hydrocarbons from the well.

During 2005 and the first two months of 2006, a total of six AFVR events were completed at the JP-5 Fuel Line Area. Recovery well USTAS4141-RW1 required two AFVR events and monitoring well USTAS4141-OBG03R required four AFVR events. A total of 13 gallons of product was recovered from USTAS4141-RW1 and 42.5 gallons of product was recovered from USTAS4141-OBG03R since the well was installed in October 2005.

4.0 GROUNDWATER INVESTIGATION RESULTS

On December 22, 2005, depth to groundwater measurements detected free phase product in monitoring well USTAS4141-OBG03R (1.4 feet), AS3905-TP3 (1.78 feet), AS3905-TP5 (0.05 feet) and USTAS4141-RW1 (0.1 feet). The estimated extent of free phase product at the site is presented in *Figure 4.1*.

Laboratory analysis completed on the groundwater samples from monitoring wells USTAS4141-MW14, USTAS4141-MW15, USTAS4141-OBG06, USTAS4141-MW02 and USTAS4141-RW2 included the following analysis: VOCs using EPA Method 8260B, PAHs using EPA Method 8270C, and lead using EPA Method 6010B. Analytical results are summarized below:

- *Lead Method 6010B Results:* Analytical results from the groundwater samples detected lead in excess of North Carolina 2L Groundwater Quality Standards (GWQS) in monitoring wells USTAS4141-MW15 (19.9 µg/l) and USTAS4141-MW02 (109 µg/l)
- *VOCs Method 8260B Results:* Analytical results from the groundwater samples did not detect VOC compounds above NC 2L GWQS.
- *PAHs Method 8270C Results:* Analytical results from the groundwater samples did not detect PAH compounds above NC 2L GWQS with the exception of USTAS4141-MW15 (2-methylnaphthalene, 36.2 µg/l).

Groundwater sample analytical results are provided in *Table 4.1* and presented in *Figure 4.1*. The groundwater sample laboratory analytical reports are provided in *Appendix C*.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Installation of shallow monitoring wells and piezometers in October 2005 and subsequent free phase product measurements detected free phase product in USTAS4141-OBG03R, AS3905-TP3, AS3905-TP05, and USTAS4141-RW1. Additional assessment work may be required to delineate the horizontal extent of free phase product in the vicinity of these wells.

Groundwater analytical results from two Type II monitoring wells (USTAS4141-MW02 and USTAS4141-MW15) detected lead and 2-methylnaphthalene at concentrations in excess of North Carolina 2L GWQS. Additional contamination assessment work may be required to delineate the horizontal extent of contamination in the vicinity of these two monitoring wells.

TABLES

Table 3.1
JP-5 Line Area (Building AS4141)
Well Gauging Total Fluids Recovery

Well ID	Date		11/22/2005					11/30/2005					1/6/2006				
	DTB	TOC Elevation	DTW	DTP	Product Thickness	Groundwater Elevation	Total Fluids Recovery (gal)	DTW	DTP	Product Thickness	Groundwater Elevation	Total Fluids Recovery (gal)	DTW	DTP	Product Thickness	Groundwater Elevation	Total Fluids Recovery (gal)
MW-14	24.82	19.24	5.62	0	0	13.62		5.57	0	0	13.67		5.28	0	0	13.96	
MW-15	12.79	18.62	1.27	0	0	17.35		2.78	0	0	15.84		3.15	0	0	15.47	
TP-1	12.25	20.09	6.35	0	0	13.74		6.3	0	0	13.79		6.09	0	0	14	
TP-2	12.96	19.92	6.31	0	0	13.61		6.24	0	0	13.68		5.98	0	0	13.94	
TP-3	12.59	20.06	6.72	6.37	0.35	13.34		6.75	6.3	0.45	13.31		6.53	5.81	0.72	13.53	
TP-4	12.61	19.87	5.66	0	0	14.21		5.65	0	0	14.22		5.59	0	0	14.28	
TP-5	12.32	19.98	6.68	6.67	0.01	13.3		6.35	6.3	0.05	13.63		6.69	6014	0.55	13.29	
OBG-03R	12.71	20.35	8.23	6.81	1.42	12.12		8.15	6.37	1.78	12.2		7.74	5.71	2.03	12.61	
RW-1	21.48	NM	5.01	4.85	0.16	NM		4.99	4.89	0.1	NM		4.89	4.62	0.27	NM	
OBG-06	17.39	21.63	3.67	0	0	17.96		3.83	0	0	17.8		4.54	0	0	17.09	

DTB = Depth to bottom of well (feet)

DTP = Depth to product (feet)

Well ID	Date		1/11/2006					1/16/2006					1/23/2006				
	DTB	TOC Elevation	DTW	DTP	Product Thickness	Groundwater Elevation	Total Fluids Recovery (gal)	DTW	DTP	Product Thickness	Groundwater Elevation	Total Fluids Recovery (gal)	DTW	DTP	Product Thickness	Groundwater Elevation	Total Fluids Recovery (gal)
MW-14	24.82	19.24	5.49	0	0	13.75		5.54	0	0	13.7		5.5	0	0	13.74	
MW-15	12.79	18.62	3.26	0	0	15.36		3.03	0	0	15.59		2.82	0	0	15.8	
TP-1	12.25	20.09	6.19	6.17	0.02	13.9		6.51	6.15	0.36	13.58	5	6.35	6.31	0.04	13.74	5
TP-2	12.96	19.92	6.11	0	0	13.81		6.15	0	0	13.77		6.11	0	0	13.81	
TP-3	12.59	20.06	6.65	5.9	0.75	13.41		7.69	5.93	1.76	12.37	5	6.83	6.11	0.72	13.23	5
TP-4	12.61	19.87	5.64	0	0	14.23		5.63	0	0	14.24		5.62	0	0	14.25	
TP-5	12.32	19.98	6.84	6.18	0.66	13.14		7.13	6.26	0.87	12.85	5	6.65	6.3	0.35	13.33	5
OBG-03R	12.71	20.35	8.3	5.85	2.45	12.05		7.34	6.19	1.16	13.01	81	6.81	6.15	0.66	13.54	126
RW-1	21.48	NM	4.78	4.6	0.18	NM		5.19	4.64	0.55	NM		5.14	4.6	0.54	NM	
OBG-06	17.39	21.63	4.67	0	0	16.96		4.47	0	0	17.16		4.92	0	0	16.71	

DTB = Depth to bottom of well (feet)

DTP = Depth to product (feet)

Table 3.1
JP-5 Line Area (Building AS4141)
Well Gauging Total Fluids Recovery

Date		2/6/2006						2/16/2006					2/20/2006				
Well ID	DTB	TOC Elevation	DTW	DTP	Product Thickness	Groundwater Elevation	Total Fluids Recovery (gal)	DTW	DTP	Product Thickness	Groundwater Elevation	Total Fluids Recovery (gal)	DTW	DTP	Product Thickness	Groundwater Elevation	Total Fluids Recovery (gal)
MW-14	24.82	19.24	5.5	0	0	13.74		5.61	0	0	13.63		5.68	0	0	13.56	
MW-15	12.79	18.62	3.07	0	0	15.55		3.02	0	0	15.6		3.13	0	0	15.49	
TP-1	12.25	20.09	6.5	6.3	0.2	13.59		6.73	6.36	0.37	13.36		6.77	6.45	0.32	13.32	
TP-2	12.96	19.92	6.14	0	30	13.78		6.23	0	0	13.69		6.28	0	0	13.64	
TP-3	12.59	20.06	7.01	6.07	0.94	13.05		7.45	6.08	1.37	12.61		7.6	6.15	1.45	12.46	
TP-4	12.61	19.87	5.64	0	0	14.23		5.64	0	0	14.23		5.64	0	0	14.23	
TP-5	12.32	19.98	6.35	6.11	0.24	13.63		6.98	6.18	0.8	13		7.51	6.27	1.24	12.47	
OBG-03R	12.71	20.35	6.63	6.15	0.48	13.72	75	6.75	6.31	0.44	13.6		6.83	6.4	0.43	13.52	
RW-1	21.48	NM	4.81	4.6	0.21	NM		4.69	0	0	NM		4.79	4.75	0.04	NM	
OBG-06	17.39	21.63	4.33	0	0	17.3		5.06	0	0	16.57		5.22	0	0	16.41	

DTB = Depth to bottom of well (feet)

DTP = Depth to product (feet)

Date																	
Well ID	DTB	TOC Elevation	DTW	DTP	Product Thickness	Groundwater Elevation	Total Fluids Recovery (gal)	DTW	DTP	Product Thickness	Groundwater Elevation	Total Fluids Recovery (gal)	DTW	DTP	Product Thickness	Groundwater Elevation	Total Fluids Recovery (gal)
MW-14	24.82	19.24															
MW-15	12.79	18.62															
TP-1	12.25	20.09															
TP-2	12.96	19.92															
TP-3	12.59	20.06															
TP-4	12.61	19.87															
TP-5	12.32	19.98															
OBG-03R	12.71	20.35															
RW-1	21.48	NM															
OBG-06	17.39	21.63															

DTB = Depth to bottom of well (feet)

DTP = Depth to product (feet)

Table 4.1
JP5 Line Area (Building AS-4141)
Groundwater Analytical Results
VOC, SVOC (PAHs Only) and Lead

Date: 1/27/2006			Incident Number and Name: 115122 JP 5 Wells																		
Analytical Method:			8260B																		
Contaminant of Concern			Acetone	Benzene	Bromodichloromethane	Bromoform	Chlorobenzene	Chloroethane	Chloroform	Carbon disulfide	Carbon tetrachloride	1,1-Dichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	1,2-Dichloropropane	Dibromochloromethane	cis-1,2-Dichloroethene	cis-1,3-Dichloropropene	trans-1,2-Dichloroethene	trans-1,3-Dichloropropane	Ethylbenzene
Sample ID	Date Collected	Sample Depth (ft bgs)	<25	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.6
USTAS4141-MW15	12/22/2005	N/A	<25	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
USTAS4141-MW14	12/22/2005	N/A	<25	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
USTAS4141-OBG06	12/22/2005	N/A	<25	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
USTAS4141-MW02	12/22/2005	N/A	9.5 J	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
USTAS4141-RW2	12/22/2005	N/A	<25	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
USTAS4141-RW2-DUP	12/22/2005	N/A	<25	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
USTAS4141-TB	12/22/2005	N/A	<25	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
GWQS (ug/L)			700	1	NS	0.19	50	NS	70	700	NS	70	7	0.38	0.51	0.41	70	0.19	100	0.19	550
GCL (ug/L)			700000	5000	NS	190	50000	NS	70000	700000	NS	700000	7000	380	510	410	70000	190	100000	190	84500

Date: 1/27/2006			Incident Number and Name: 115122 JP 5 Wells														
Analytical Method:			8260B														
Contaminant of Concern			2-Hexanone	4-Methyl-2-pentanone	Methyl bromide	Methyl chloride	Methylene chloride	Methyl ethyl ketone	Styrene	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloroethane	Tetrachloroethene	Toluene	Trichloroethene	Vinyl chloride	Xylenes (total)
Sample ID	Date Collected	Sample Depth (ft bgs)															
USTAS4141-MW15	12/22/2005	N/A	<5.0	<5.0	<2.0	<2.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<3.0
USTAS4141-MW14	12/22/2005	N/A	<5.0	<5.0	<2.0	<2.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<3.0
USTAS4141-OBG06	12/22/2005	N/A	<5.0	<5.0	<2.0	<2.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<3.0
USTAS4141-MW02	12/22/2005	N/A	<5.0	<5.0	<2.0	<2.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<3.0
USTAS4141-RW2	12/22/2005	N/A	<5.0	<5.0	<2.0	<2.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<3.0
USTAS4141-RW2-DUP	12/22/2005	N/A	<5.0	<5.0	<2.0	<2.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<3.0
USTAS4141-TB	12/22/2005	N/A	<5.0	<5.0	<2.0	<2.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<3.0
GWQS (ug/L)			280	NS	NS	2.6	4.6	4200	100	200	0.17	NS	0.7	1000	2.8	0.015	530
GCL (ug/L)			280000	NS	NS	2600	4600	4200000	100000	200000	170	NS	700	257500	2800	15	87500

Indicate method detection limit for contaminants when analyzed but not detected (i.e., <1.0)

List any contaminant detected above the method detection limit

Detectable concentration exceeds GWQS

GWQS = Groundwater Quality Standard NC Administrative Code Title 15A Subchapter 2L - Groundwater Classifications and Standards 04/01/05

GCL = Gross Contamination Level

Results must be reported in ug/L

ug/L = micrograms per liter

NA = not applicable

NS = no standard

J Numerical value is an estimate between laboratory reporting limit and laboratory method detection limit

Table 4.1
JP5 Line Area (Building AS-4141)
Groundwater Analytical Results
VOC, SVOC (PAHs Only) and Lead

Date: 1/27/2006			Incident Number and Name: 115122 JP 5 Wells																		
Analytical Method:			6010B	8270C																	
Contaminant of Concern			Lead	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	1-Methylnaphthalene	2-Methylnaphthalene	Naphthalene	Phenanthrene	Pyrene
Sample ID	Date Collected	Sample Depth (ft bgs)																			
USTAS4141-MW15	12/22/2005	N/A	19.9	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	38.9	36.2	18.1	<4.8	<4.8
USTAS4141-MW14	12/22/2005	N/A	5.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8
USTAS4141-OBG06	12/22/2005	N/A	14.3	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8
USTAS4141-MW02	12/22/2005	N/A	10.5	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8
USTAS4141-RW2	12/22/2005	N/A	1.7 B	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	4.2 J	<4.8	5.0	<4.8	<4.8
USTAS4141-RW2-DUP	12/22/2005	N/A	2.3 B	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	4.6 J	<4.8	5.6	<4.8	<4.8
GWQS (ug/L)			15	80	210	2100	0.0479	0.00479	0.0479	210	0.479	4.79	0.0047	280	280	0.047	NS	14	21	210	210
GCL (ug/L)			15000	2120	1965	2000000	22	1.5	0.6	210	0.4	0.8	0.25	280	950	31	NS	12500	15500	410	210

Indicate method detection limit for contaminants when analyzed but not detected (i.e., <1.0)

List any contaminant detected above the method detection limit

~~Detectable concentration~~ exceeds GWQS

GWQS = Groundwater Quality Standard NC Administrative Code Title 15A Subchapter 2L - Groundwater Classifications and Standards 04/01/05

GCL = Gross Contamination Level

Results must be reported in ug/L

ug/L = micrograms per liter

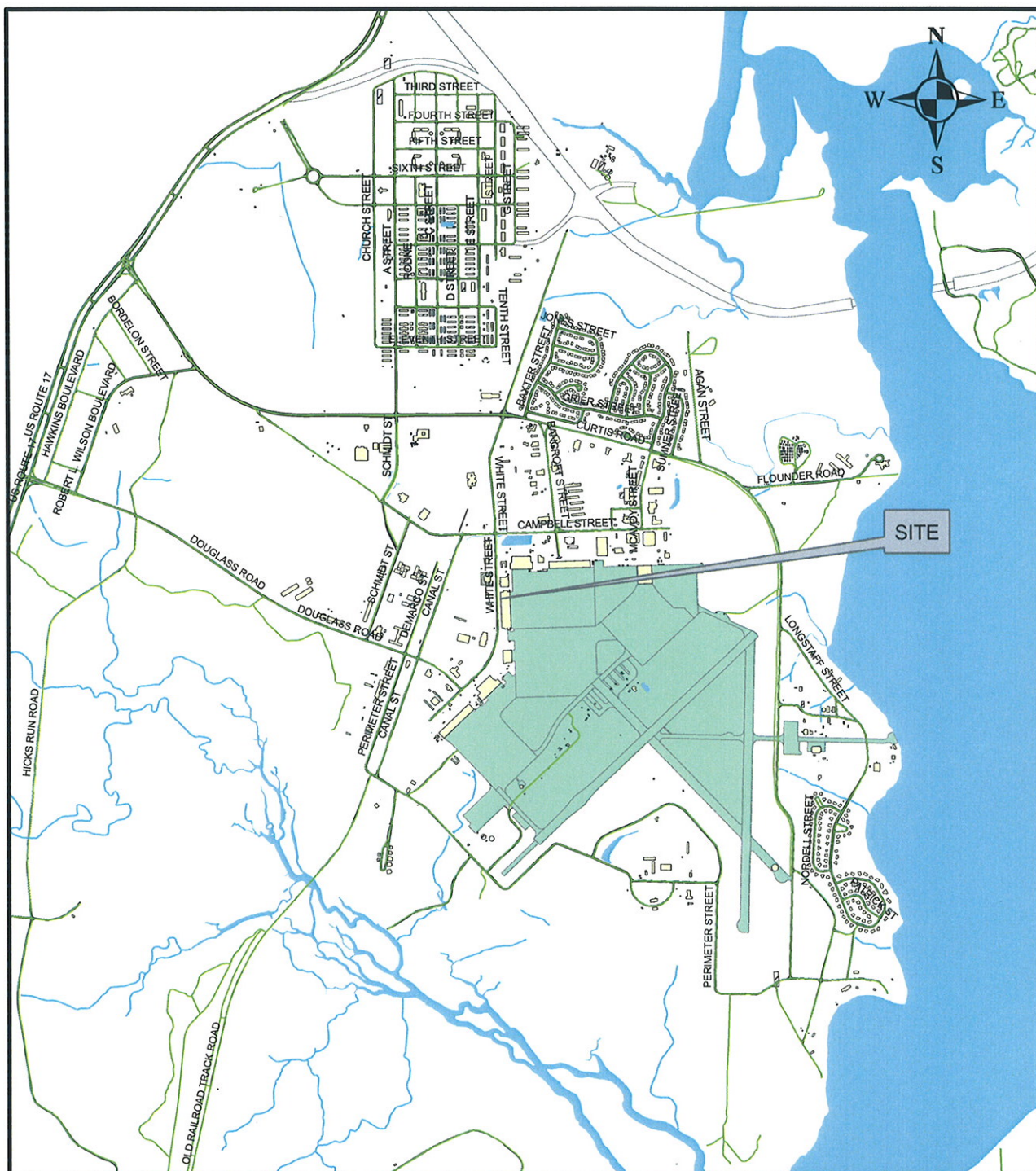
NA = not applicable

NS = no standard

J Numerical value is an estimate between laboratory reporting limit and laboratory method detection limit

B Indicates a result > =Instrument detection limit but < reporting limit

FIGURES



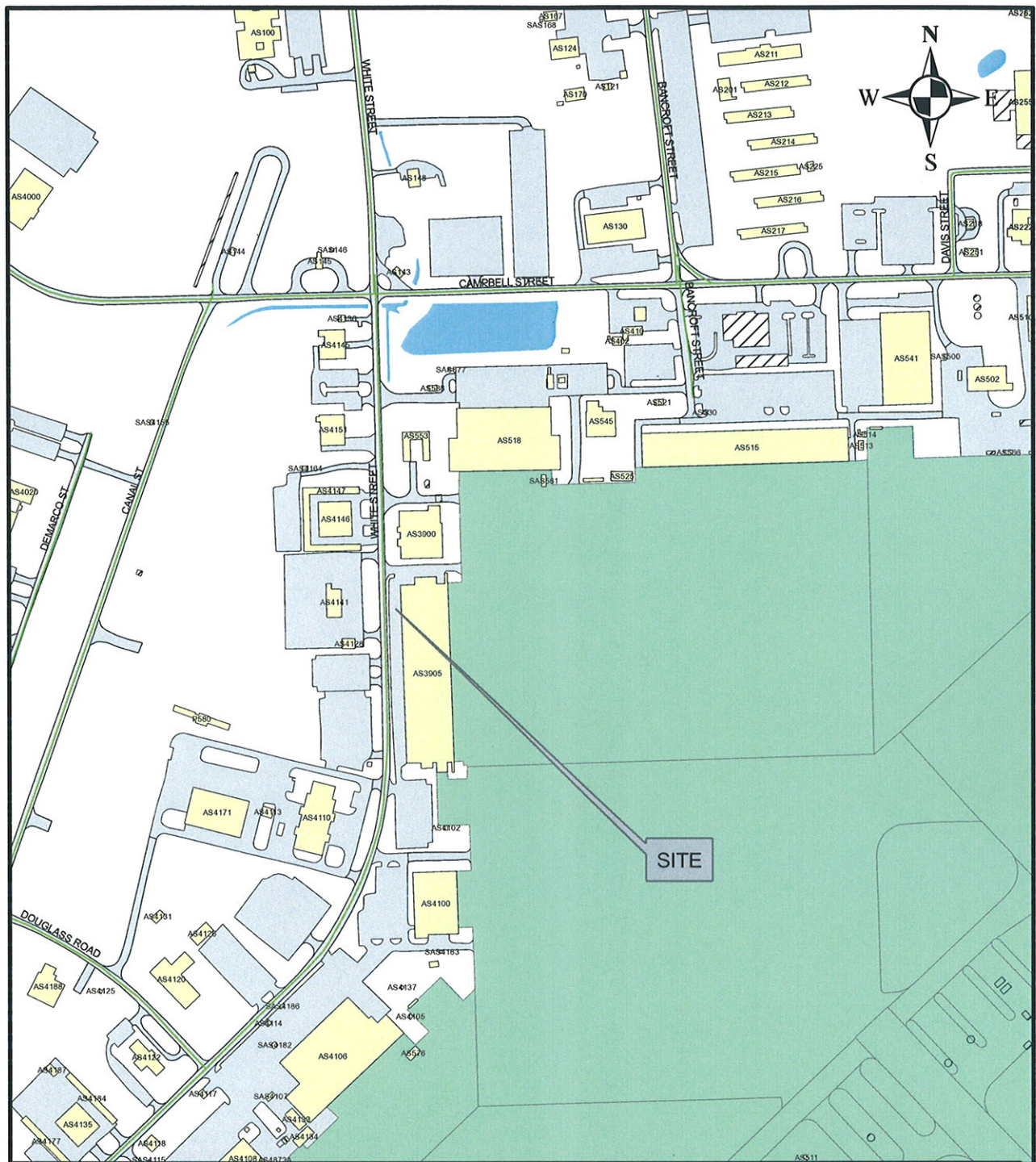
0 850 1,700 3,400 5,100 6,800
Feet



Shaw™ Shaw Environmental, Inc.

**FIGURE 1.1
VICINITY MAP**

**RAPID REFUELER A-B TANKS CAP IMPLEMENTATION
MARINE CORPS AIR STATION
CAMP LEJEUNE, NORTH CAROLINA**

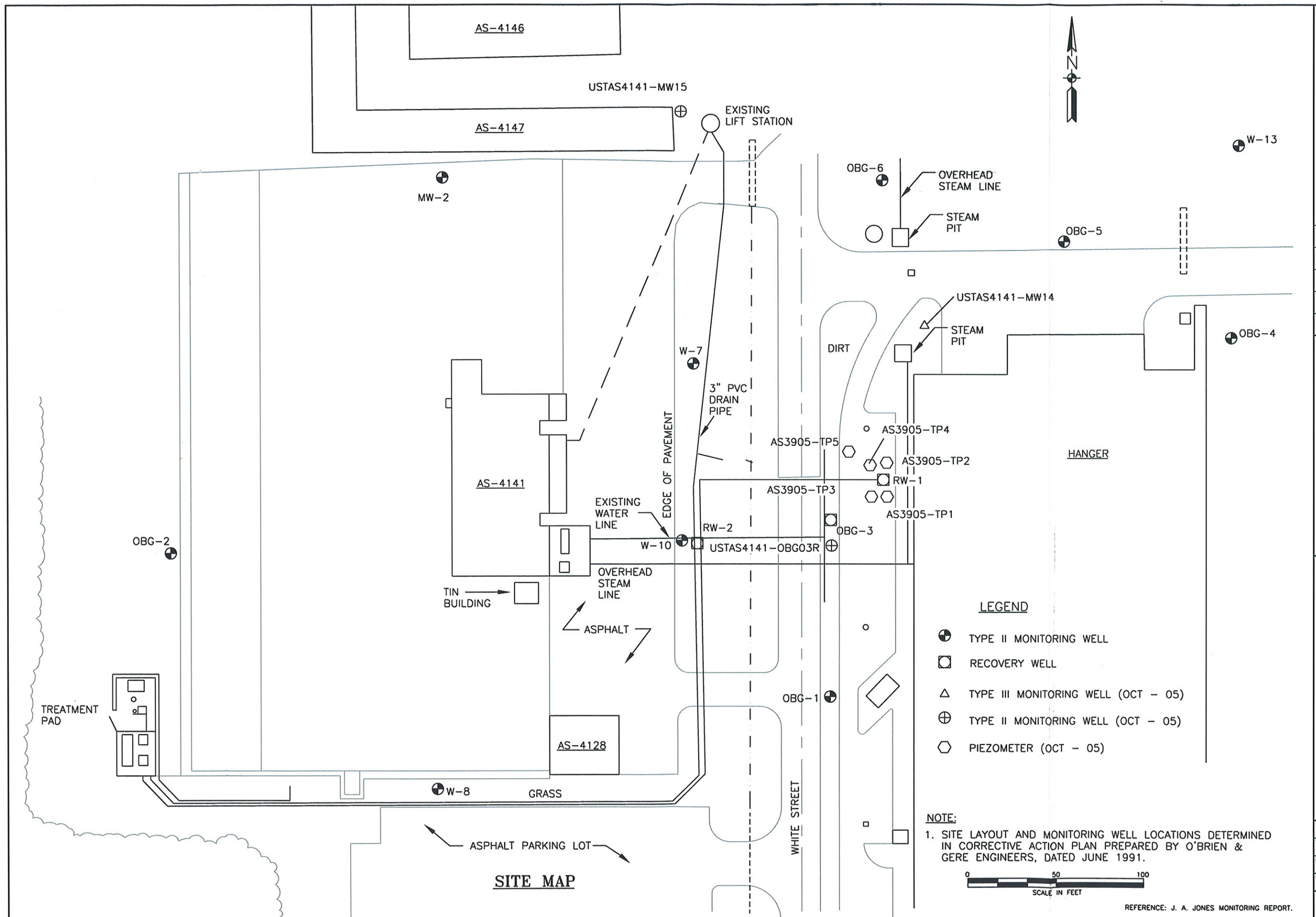


0 187.5 375 750 1,125 1,500
 Feet

 **Shaw**™ Shaw Environmental, Inc.

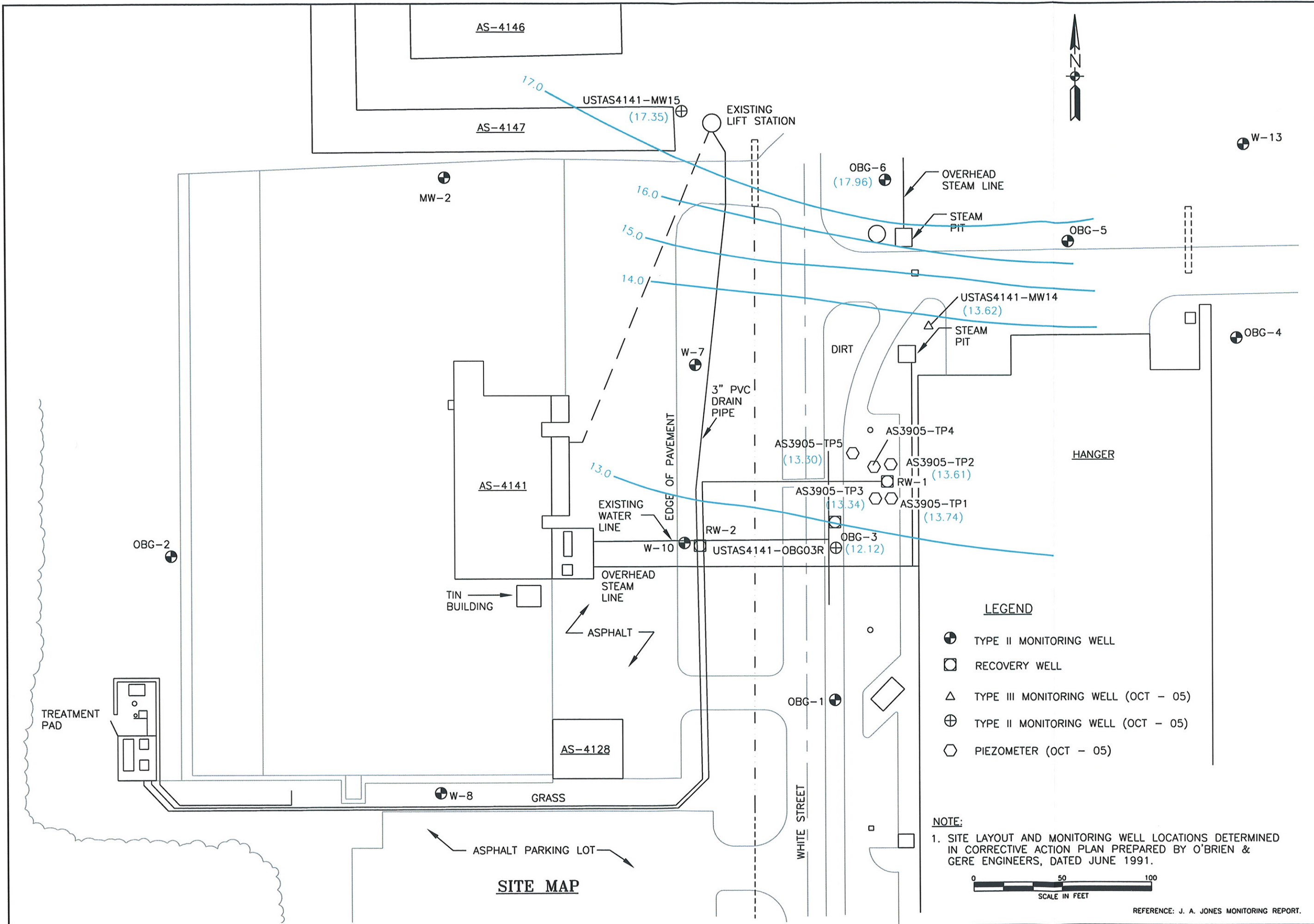
FIGURE 1.2
LOCATION MAP
 JP-5 LINE AREA
 MARINE CORPS AIR STATION
 CAMP LEJEUNE, NORTH CAROLINA

File: Z:\LEJUNE-6-05\VRAC_M\TO-46_RAPID_FEFUELER\JP-5_LINE_AREA_ANNUAL_MONITORING_REPORT_2005\JP-5-LINE-AREA-SITE.dwg
Plot Date/Time: Jun 12, 2006 - 1:04pm
Plotted By: Angela N. Morgan



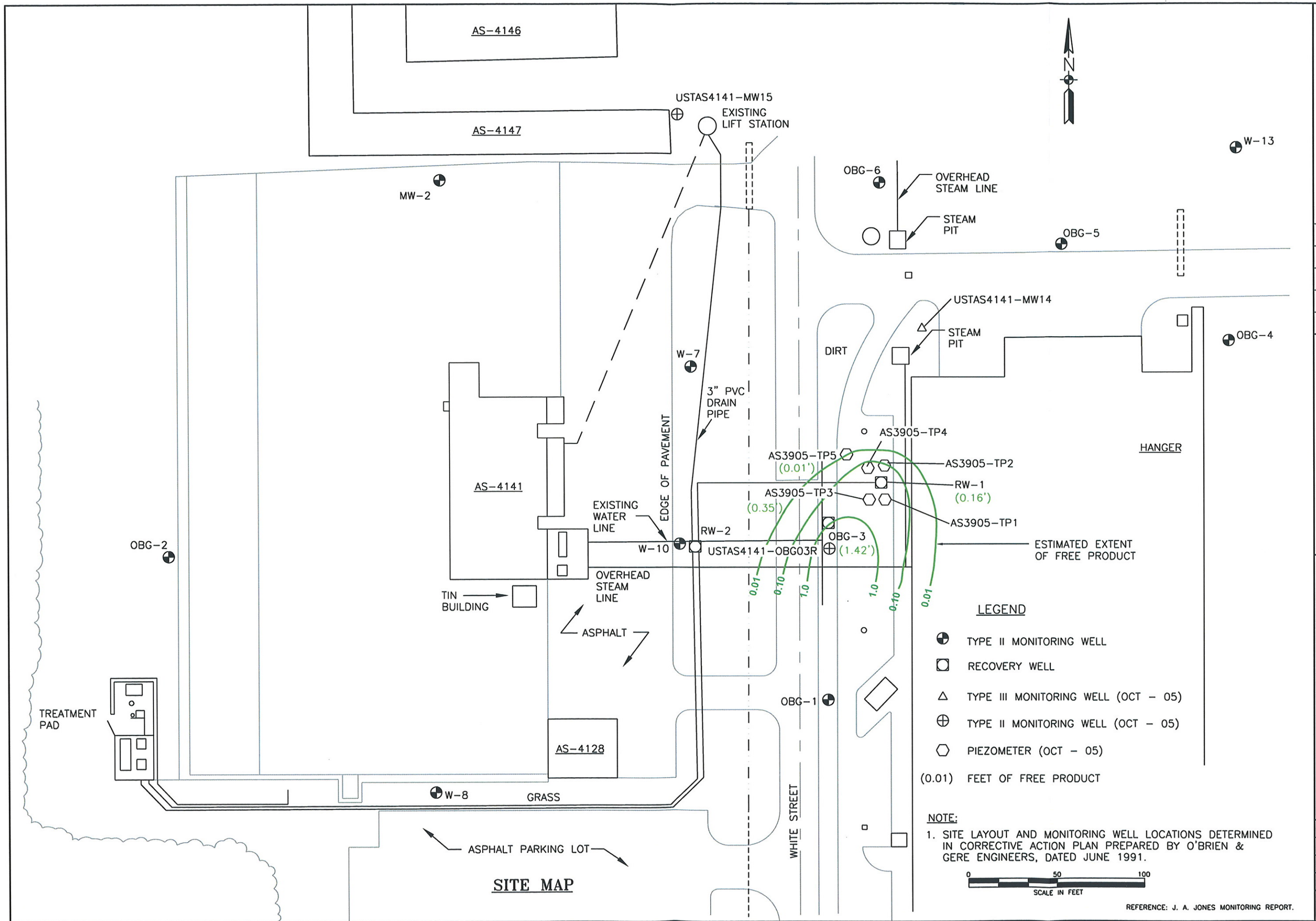
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JP-5 LINE AREA SITE MAP		PROJECT NO. 845823		CHECKED BY RBK		APPROVED BY		REVISIONS	
AS SHOWN		TASK ORDER NO. 046		CONSTR. CONTRACT NO. N62470-02-D-3260		NAVFAC DRAWING NO.		SHEET I.D.	
2.1									

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Plotted By: Angela N. Morgan



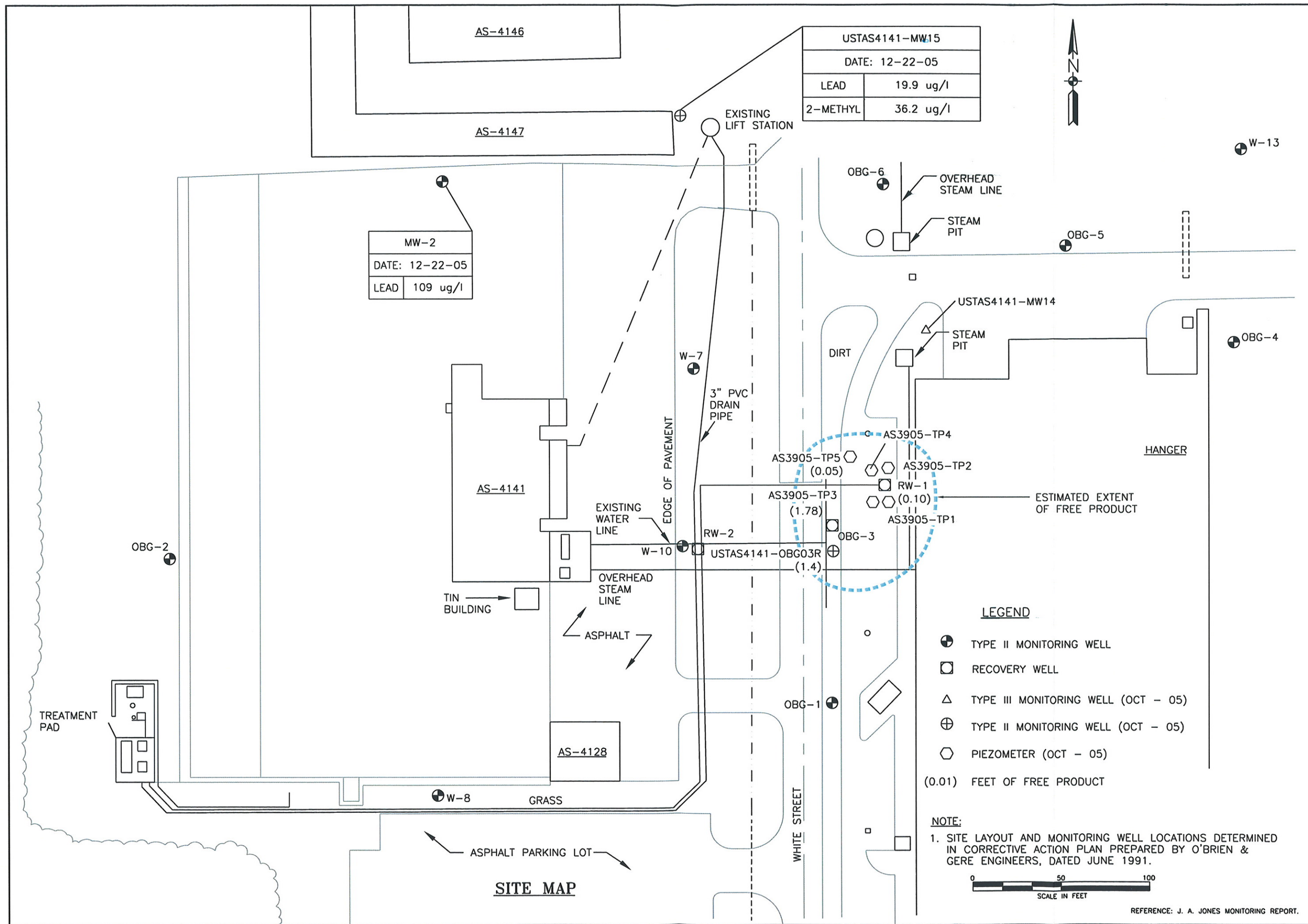
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NAVAL STATION		ATLANTIC DIVISION		NAVAL STATION		NORFOLK, VIRGINIA		GROUNDWATER ELEVATION MAP	
NAVAL STATION		ATLANTIC DIVISION		NAVAL STATION		NORFOLK, VIRGINIA		JP-5 LINE AREA	
NAVAL STATION		ATLANTIC DIVISION		NAVAL STATION		NORFOLK, VIRGINIA		NOVEMBER 22, 2005	
NAVAL STATION		ATLANTIC DIVISION		NAVAL STATION		NORFOLK, VIRGINIA		DESIGNED BY RBK	
NAVAL STATION		ATLANTIC DIVISION		NAVAL STATION		NORFOLK, VIRGINIA		CHECKED BY RBK	
NAVAL STATION		ATLANTIC DIVISION		NAVAL STATION		NORFOLK, VIRGINIA		APPROVED BY JEL	
NAVAL STATION		ATLANTIC DIVISION		NAVAL STATION		NORFOLK, VIRGINIA		PROJECT NO. 845823	
NAVAL STATION		ATLANTIC DIVISION		NAVAL STATION		NORFOLK, VIRGINIA		REVISIONS	
NAVAL STATION		ATLANTIC DIVISION		NAVAL STATION		NORFOLK, VIRGINIA		REV DATE BY	
NAVAL STATION		ATLANTIC DIVISION		NAVAL STATION		NORFOLK, VIRGINIA		CHK'D APRVD	
NAVAL STATION		ATLANTIC DIVISION		NAVAL STATION		NORFOLK, VIRGINIA		DESCRIPTION/ISSUE	
NAVAL STATION		ATLANTIC DIVISION		NAVAL STATION		NORFOLK, VIRGINIA		3.1	

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Plot Date/Time: Jun 12, 2006 - 2:05pm
Plotted By: Angelo N. Morgan



DEPARTMENT OF THE NAVY		NAVAL FACILITIES ENGINEERING COMMAND		NAVAL DIVISION		NORFOLK, VIRGINIA	
NAVAL STATION		ATLANTIC DIVISION		FREE PHASED PRODUCT THICKNESS MAP		JP-5 LINE AREA	
				NOVEMBER 22, 2005			
SCALE:		AS SHOWN		TASK ORDER NO.		046	
				CONSTR. CONTRACT NO.		N62470-02-D-3260	
				NAVFAC DRAWING NO.			
SHEET I.D.						3.2	
				PROJECT NO. 845823			
				DESIGNED BY		RBK	
				CHECKED BY		RBK	
				APPROVED BY		JEL	
				REV		DATE	
				BY		CHK'D	
				APRVD			
				DESCRIPTION/ISSUE		REVISIONS	

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Plot Date/Time: Jun 12, 2006 - 12:53pm
Plotted By: Angela N. Morgan



DEPARTMENT OF THE NAVY		NAVAL FACILITIES ENGINEERING COMMAND		NAVAL DIVISION		ATLANTIC DIVISION		NAVAL STATION		NORFOLK, VIRGINIA	
JP-5 LINE AREA		GROUNDWATER ANALYTICAL RESULTS		PROJECT NO. 845823		DESIGNED BY		CHECKED BY		APPROVED BY	
REV		DATE		BY		CHK'D		APPROV		REVISIONS	
DESCRIPTION/ISSUE											
SHEET I.D.		AS SHOWN		TASK ORDER NO.		CONSTR. CONTRACT NO.		NAVFAC DRAWING NO.		4.1	
				046		N62470-02-D-3260					

APPENDIX A

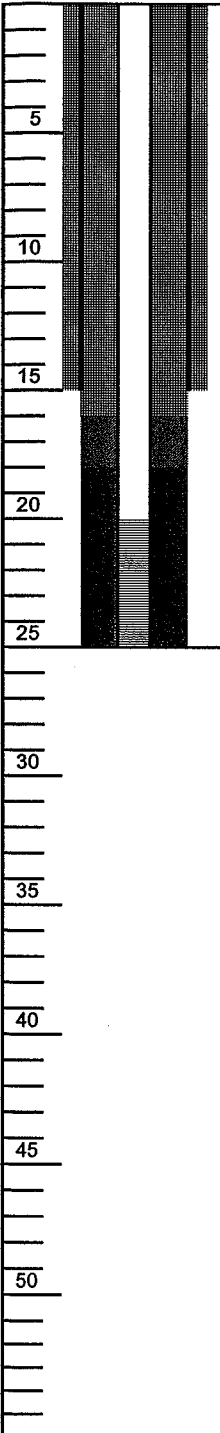
Monitoring Well Construction Boring Log

BORING LOG

1 of 1

Project Name: **Building AS4141**
 Client: **Marine Corps Air Station**
 Location: **New River, NC**

Project No.: 115122
 Boring No.: USTAS4141-MW14
 Well Diameter: 2-inch
 Date: 27-Oct-05

Well Construct	Description	USCS	Depth (feet)	OVA-FID (ppm)	Blows per 6"	Recovery (inches)	Drilling Observations
	2-inches asphalt	CL					6-inch diameter PVC casing installed from ground surface to 15 feet bls Mud rotary drilling from 15 to 25 feet bls 2-inch diameter riser and 5 feet of well screen installed from ground surface to 25 feet bls End of Boring
	6-inches sand and gravel						
	Clay, silty, sandy gray		5.0	0			
			10.0	0			
			15.0	0			
	Sand, silty, some clay	SM	20.0				
	Clay, silty, gray	CL	25.0				
			30.0				
			35.0				
			40.0				
			45.0				
			50.0				

LEGEND

 Grout (with bentonite) Seal
 Sand Pack
 Well Screen
 Bentonite Seal

BORING LOG

1 of 1

Project Name: **Building AS4141**
 Client: **Marine Corps Air Station**
 Location: **New River, NC**

Project No.: 115122
 Boring No.: USTAS4141-MW15
 Well Diameter: 2-inch
 Date: 27-Oct-05

Well Construct	Description	USCS	Depth (feet)	OVA-FID (ppm)	Blows per 6"	Recovery (inches)	Drilling Observations
	12-inches topsoil						
	6-inches sand and gravel						
	Sand, f-med, silty, some clay lt brown dry	SM					
	Clay, silty, sandy, gray	CL	5.0	0			
10			10.0	0			
15			15.0				End of Boring
20			20.0				
25			25.0				
30			30.0				
35			35.0				
40			40.0				
45			45.0				
50 #			50.0				

LEGEND

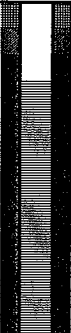
Grout (with bentonite) Seal
 Sand Pack
 Well Screen
 Bentonite Seal

BORING LOG

1 of 1

Project Name: **Building AS4141**
 Client: **Marine Corps Air Station**
 Location: **New River, NC**

Project No.: 115122
 Boring No.: USTAS4141-OBG03R
 Well Diameter: 2-inch
 Date: 26-Oct-05

Well Construct	Description	USCS	Depth (feet)	OVA-FID (ppm)	Blows per 6"	Recovery (inches)	Drilling Observations
	2-inches asphalt						
	6-inches sand and gravel						
	Sand, f-med, silty, gray	SM	5.0	0			
	Clay, silty, sandy, gray	CL	10.0	0			
15			15.0				End of Boring
20			20.0				
25			25.0				
30			30.0				
35			35.0				
40			40.0				
45			45.0				
50			50.0				
							LEGEND  Grout (with bentonite) Seal  Sand Pack  Well Screen  Bentonite Seal

BORING LOG

1 of 1

Project Name: **Building AS4141**
 Client: **Marine Corps Air Station**
 Location: **New River, NC**

Project No.: **115122**
 Boring No.: **AS3905-TP1**
 Well Diameter: **1-inch**
 Date: **25-Oct-05**

Well Construct	Description	USCS	Depth (feet)	OVA-FID (ppm)	Blows per 6"	Recovery (inches)	Drilling Observations
	2-inches asphalt						
	6-inches sand and gravel						
	Sand, f-med, silty, lt brown dry	SM					
	Clay, silty, sandy, gray	CL	5.0	0			
10			10.0	0			
15			15.0				End of Boring
20			20.0				
25			25.0				
30			30.0				
35			35.0				
40			40.0				
45			45.0				
50			50.0				

LEGEND

Grout (with bentonite) Seal
 Sand Pack
 Well Screen
 Bentonite Seal

BORING LOG

1 of 1

Project Name: **Building AS4141**
 Client: **Marine Corps Air Station**
 Location: **New River, NC**

Project No.: **115122**
 Boring No.: **AS3905-TP2**
 Well Diameter: **1-inch**
 Date: **26-Oct-05**

Well Construct	Description	USCS	Depth (feet)	OVA-FID (ppm)	Blows per 6"	Recovery (inches)	Drilling Observations
	2-inches asphalt						
	6-inches sand and gravel						
	Sand, f-med, silty, lt brown dry	SM					
	Clay, silty, sandy, gray	CL	5.0	0			
10			10.0	0			
15			15.0				End of Boring
20			20.0				
25			25.0				
30			30.0				
35			35.0				
40			40.0				
45			45.0				
50			50.0				

LEGEND

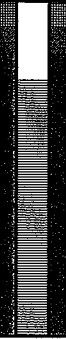
 Grout (with bentonite) Seal
 Sand Pack
 Well Screen
 Bentonite Seal

BORING LOG

1 of 1

Project Name: **Building AS4141**
 Client: **Marine Corps Air Station**
 Location: **New River, NC**

Project No.: **115122**
 Boring No.: **AS3905-TP3**
 Well Diameter: **1-inch**
 Date: **25-Oct-05**

Well Construct	Description	USCS	Depth (feet)	OVA-FID (ppm)	Blows per 6"	Recovery (inches)	Drilling Observations
	2-inches asphalt						
	6-inches sand and gravel						
	Sand, f-med, silty, lt brown dry	SM					
	Clay, silty, sandy, gray	CL	5.0	0			
10			10.0	0			
15			15.0				End of Boring
20			20.0				
25			25.0				
30			30.0				
35			35.0				
40			40.0				
45			45.0				
50			50.0				

LEGEND

 Grout (with bentonite) Seal
 Sand Pack
 Well Screen
 Bentonite Seal

BORING LOG

1 of 1

Project Name: **Building AS4141**
 Client: **Marine Corps Air Station**
 Location: **New River, NC**

Project No.: **115122**
 Boring No.: **AS3905-TP4**
 Well Diameter: **1-inch**
 Date: **25-Oct-05**

Well Construct	Description	USCS	Depth (feet)	OVA-FID (ppm)	Blows per 6"	Recovery (inches)	Drilling Observations
	2-inches asphalt						
	6-inches sand and gravel						
	Sand, f-med, silty, lt brown dry	SM					
	Clay, silty, sandy, gray	CL	5.0	0			
10			10.0	0			
15			15.0				End of Boring
20			20.0				
25			25.0				
30			30.0				
35			35.0				
40			40.0				
45			45.0				
50			50.0				

LEGEND

 Grout (with bentonite) Seal
 Sand Pack
 Well Screen
 Bentonite Seal

1 of 1

Project No.: 115122
Boring No.: AS3905-TP5
Well Diameter: 1-inch
Date: 25-Oct-05

[illegible]

APPENDIX B

Groundwater Sample Collection Field Logs

		WELL OR GROUND WATER DATA SHEET		PROJECT NUMBER:	
				PROJECT NAME: JP-5 Wells	
				WELL NO. 08G-06	
				SAMPLE NO. USTAS4/41-08G06	
PROJECT LOCATION: Camp Lejeune, NC			LOGGER:		DATE 12-22-05
PROJECT CONTACT:			SAMPLER:		TIME 1015
PHONE: 910-451-2390			WEATHER: 41° Sunny		
LEL: N/A			Well Locked: [X] Yes		
PID: N/A			Sampling Device:		No

FIELD MEASUREMENTS						
	1	2	3	4		
PH	7.40	6.55				(STD)
Specific Conductivity	0.241	0.234				(m S/cm)
Turbidity (Turb)	704.0	1072.8				(NTU)
Dissolved Oxygen (DO)	0.70	0.68				(mg/l)
Temperature (Temp)	17.43	18.18				(°C)
ORP	323.5	335.5				

Depth to Bottom		(In) (Minus)	Depth to Water		(In) =	HT (in)
Depth to Bottom		(Ft) (Minus)	Depth to Water	3.98	(Ft) =	HT (ft)

d = 2	MEASUREMENTS (IN INCHES)										
r = 1	Multiply Together						Vol.				
d/2 =	BOTTOM	TOP	Layer Thickness	r ²	π	Cubic in.	Conversion Factor	EST. GALLONS		Purge Vol.	Vol. Purged
TOP					3.14		.0043				
Middle					3.14		.0043				
Bottom					3.14		.0043				
Total					3.14		.0043				

ANALYTE	CONTAINER NUMBER	SIZE	PRESERVATIVE
VOC 602	See Sample Number Above	3- 40 ml Vial	HCL
PAH 610	See Sample Number Above	1-1 Liter Amber	4° C
COMMENTS:			
PURGE DISCHARGED:	DRUM:	DRUM#	SITE TREATMENT: [X]
OTHER:			

DTW 3.98

		WELL OR GROUND WATER DATA SHEET		PROJECT NUMBER:		
				PROJECT NAME: JP-5 Well 13		
				WELL NO. ~~US 75 447-2104~~ MW 14		
				SAMPLE NO. US 75 447-1 MW 4		
PROJECT LOCATION: Camp Lejeune, NC			LOGGER:		DATE 12-22-05	
PROJECT CONTACT:			SAMPLER: Joe Horley		TIME 1055	
PHONE: 910-451-2390			WEATHER:			
LEL: N/A					Well Locked: [X] Yes	
PID: N/A			Sampling Device: No			

FIELD MEASUREMENTS						
	1	2	3	4		
PH	7.07					(STD)
Specific Conductivity	0.900					(m S/cm)
Turbidity (Turb)	361.1					(NTU)
Dissolved Oxygen (DO)	0.9					(mg/l)
Temperature (Temp)	22.2					(°C)
ORP	321.5					

Depth to Bottom		(In) (Minus)	Depth to Water		(In) =	HT (in)
Depth to Bottom		(Ft) (Minus)	Depth to Water	5.52	(Ft) =	HT (ft)

d = 2	MEASUREMENTS (IN INCHES)										
r = 1	Multiply Together					Vol.					
d/2 =	BOTTOM	TOP	Layer Thickness	r ²	Π	Cubic in.	Conversion Factor	EST. GALLONS		Purge Vol.	Vol. Purged
	TOP				3.14		.0043				
	Middle				3.14		.0043				
	Bottom				3.14		.0043				
	Total				3.14		.0043				

ANALYTE	CONTAINER NUMBER	SIZE	PRESERVATIVE
VOC 602	See Sample Number Above	3- 40 ml Vial	HCL
PAH 610	See Sample Number Above	1-1 Liter Amber	4° C
COMMENTS:			
PURGE DISCHARGED:	DRUM:	DRUM#	SITE TREATMENT: [X]
OTHER: WWP			

DTW 5.52

		WELL OR GROUND WATER DATA SHEET		PROJECT NUMBER:	
				PROJECT NAME: DP-5 Wells	
				WELL NO. MW15	
				SAMPLE NO. D5TAS4141-MW15	
PROJECT LOCATION: Camp Lejeune, NC		LOGGER:		DATE 12-22-05	
PROJECT CONTACT:		SAMPLER: Joe Hurley		TIME 0845	
PHONE: 910-451-2390		WEATHER: 34° Sunny			
LEL: N/A		Well Locked: [X] Yes			
PID: N/A		Sampling Device:		(No)	

FIELD MEASUREMENTS						
	1	2	3	4		
PH	7.11	6.58				(STD)
Specific Conductivity	701	679				(m S/cm)
Turbidity (Turb)	854.2	403.4				(NTU)
Dissolved Oxygen (DO)	.37	1.96				(mg/l)
Temperature (Temp)	21.85	24.80				(°C)
ORP	97.0	40.0				

Depth to Bottom	(In) (Minus)	Depth to Water	(In)	=	HT (in)
Depth to Bottom	(Ft) (Minus)	Depth to Water	(Ft)	=	HT (ft)

MEASUREMENTS (IN INCHES)											
d =											
r =	Multiply Together						Vol.				
d/2 =	BOTTOM	TOP	Layer Thickness	r ²	Π	Cubic in.	Conversion Factor	EST. GALLONS		Purge Vol.	Vol. Purged
TOP					3.14		.0043				
Middle					3.14		.0043				
Bottom					3.14		.0043				
Total					3.14		.0043				

ANALYTE	CONTAINER NUMBER	SIZE	PRESERVATIVE
VOC 602	See Sample Number Above	3- 40 ml Vial	HCL
PAH 610	See Sample Number Above	1-1 Liter Amber	4° C
COMMENTS:			
PURGE DISCHARGED:	DRUM:	DRUM#	SITE TREATMENT: [X]
OTHER:			

DTW 2.68
DTB

		WELL OR GROUND WATER DATA SHEET		PROJECT NUMBER:	
				PROJECT NAME: JPS Wells	
				WELL NO. W-2	
				SAMPLE NO. 65TAS4141-01402	
PROJECT LOCATION: Camp Lejeune, NC			LOGGER:		DATE 12-22-05
PROJECT CONTACT:			SAMPLER:		TIME 1145
PHONE: 910-451-2390			WEATHER:		
LEL: N/A					Well Locked: [X] Yes
PID: N/A			Sampling Device:		No

FIELD MEASUREMENTS						
	1	2	3	4		
PH	5.72					(STD)
Specific Conductivity	0.309					(m S/cm)
Turbidity (Turb)	1361.6					(NTU)
Dissolved Oxygen (DO)	-0.20					(mg/l)
Temperature (Temp)	21.56					(°C)
ORP	297.2					

Depth to Bottom		(In) (Minus)	Depth to Water		(In) =	HT (in)
Depth to Bottom	2.95	(Ft) (Minus)	Depth to Water	3.92	(Ft) =	11.31

d = 2	MEASUREMENTS (IN INCHES)										
r = 1	Multiply Together						Vol.				
d/2 =	BOTTOM	TOP	Layer Thickness	r ²	π	Cubic in.	Conversion Factor	EST. GALLONS		Purge Vol.	Vol. Purged
	TOP				3.14		.0043				1.5 gal
	Middle				3.14		.0043				
	Bottom				3.14		.0043				
	Total				3.14		.0043				

ANALYTE	CONTAINER NUMBER	SIZE	PRESERVATIVE
VOC 602	See Sample Number Above	3- 40 ml Vial	HCL
PAH 610	See Sample Number Above	1-1 Liter Amber	4° C
COMMENTS: Well recharged very slow and samples were very cloudy			
PURGE DISCHARGED:	DRUM:	DRUM#	SITE TREATMENT: [X]
OTHER: WWT			

2.95' to top of casing in pipe
6.87' - 2.95' water top
18.81 - 2.95' Bottom of well

		WELL OR GROUND WATER DATA SHEET		PROJECT NUMBER:	
				PROJECT NAME:	
				WELL NO. <u>RW-2</u>	
				SAMPLE NO. <u>USTAS4141-RW2</u>	
PROJECT LOCATION: Camp Lejeune, NC		LOGGER:		DATE <u>12-22-05</u>	
PROJECT CONTACT:		SAMPLER: <u>Jeff Moore</u>		TIME <u>1315</u>	
PHONE: 910-451-2390		WEATHER:			
LEL: <u>N/A</u>				Well Locked: [X] Yes	
PID: <u>N/A</u>		Sampling Device:			No

FIELD MEASUREMENTS						
	1	2	3	4		
PH	6.33	6.65	6.59	6.52		(STD)
Specific Conductivity	0.615	.622	.628	.630		(m S/cm)
Turbidity (Turb)	1356.9	179.0	272.6	279.9		(NTU)
Dissolved Oxygen (DO)	-0.81	.30	1.36	1.51		(mg/l)
Temperature (Temp)	21.16	21.88	22.26	22.31		(°C)
ORP	397.0	158.2	32.5	44.5		

Depth to Bottom		(In) (Minus)	Depth to Water		(In)	=		HT (in)
Depth to Bottom	20.51	(Ft) (Minus)	Depth to Water	6.83	(Ft)	=		HT (ft)

d = <u>6</u>		MEASUREMENTS (IN INCHES)										
r = <u>3</u>		Multiply Together					Vol.					
d/2 =	BOTTOM	TOP	Layer Thickness	r ²	Π	Cubic in.	Conversion Factor	EST. GALLONS		Purge Vol.	Vol. Purged	
TOP					3.14		.0043					
Middle					3.14		.0043					
Bottom					3.14		.0043					
Total					3.14		.0043					

ANALYTE	CONTAINER NUMBER	SIZE	PRESERVATIVE
VOC 602	See Sample Number Above	3- 40 ml Vial	HCL
PAH 610	See Sample Number Above	1-1 Liter Amber	4° C
COMMENTS:			
PURGE DISCHARGED:	DRUM:	DRUM#	SITE TREATMENT: [X]
OTHER: <u>WWT</u>			

DTW 6.83

DTB 20.81

APPENDIX C

Groundwater Laboratory Analytical Reports



01/06/06

Technical Report for

Shaw E & I, Inc.

Camp Lejeune-JP-5 Wells

115122

Accutest Job Number: F37523

Sampling Date: 12/22/05

Report to:

Shaw E & I, Inc.
5700 Thurston Ave. Suite 116-B
Virginia Beach, VA 23455
natasha.sullivan@shawgrp.com

ATTN: Natasha Sullivan

Total number of pages in report: 55



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Harry Behzadi
Harry Behzadi, Ph.D.
Laboratory Director

Certifications: FL (DOH E83510), NC (573), NJ (FL002), MA (FL946), IA (366), LA (03051), KS (E-10327), SC, AK
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Sample Summary

Shaw E & I, Inc.

Job No: F37523

Camp Lejeune-JP-5 Wells
Project No: 115122

Sample Number	Collected Date	Time By	Received	Matrix Code Type	Client Sample ID
F37523-1	12/22/05	08:45 JH	12/23/05	AQ Ground Water	USTAS4141-MW15
F37523-2	12/22/05	10:55 JH	12/23/05	AQ Ground Water	USTAS4141-MW14
F37523-3	12/22/05	10:15 JH	12/23/05	AQ Ground Water	USTAS4141-OBG06
F37523-4	12/22/05	11:45 JH	12/23/05	AQ Ground Water	USTAS4141-MW02
F37523-5	12/22/05	13:15 JH	12/23/05	AQ Ground Water	USTAS4141-RW2
F37523-6	12/22/05	13:15 JH	12/23/05	AQ Ground Water	USTAS4141-RW2-DUP
F37523-7	12/22/05	00:00 JH	12/23/05	AQ Trip Blank Water	USTAS4141-TB

Report of Analysis

Client Sample ID: USTAS4141-MW15
 Lab Sample ID: F37523-1
 Matrix: AQ - Ground Water
 Method: SW846 8260B
 Project: Camp Lejeune-JP-5 Wells

Date Sampled: 12/22/05
 Date Received: 12/23/05
 Percent Solids: n/a

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M0009679.D	1	01/04/06	KK	n/a	n/a	VM410
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	25	5.0	ug/l	
71-43-2	Benzene	ND	1.0	0.50	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.50	ug/l	
75-25-2	Bromoform	ND	1.0	0.50	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.50	ug/l	
75-00-3	Chloroethane	ND	2.0	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
75-15-0	Carbon disulfide	ND	2.0	1.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.50	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.50	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.50	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.50	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.50	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.40	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	1.6	1.0	0.50	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.5	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	2.5	ug/l	
74-83-9	Methyl bromide	ND	2.0	1.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	1.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.0	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	2.5	ug/l	
100-42-5	Styrene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.50	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.40	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.50	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.50	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.50	ug/l	

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	USTAS4141-MW15	Date Sampled:	12/22/05
Lab Sample ID:	F37523-1	Date Received:	12/23/05
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	Camp Lejeune-JP-5 Wells		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	1.0	0.50	ug/l	
1330-20-7	Xylene (total)	ND	3.0	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		86-115%
17060-07-0	1,2-Dichloroethane-D4	93%		73-126%
2037-26-5	Toluene-D8	93%		86-112%
460-00-4	4-Bromofluorobenzene	83%		83-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	USTAS4141-MW15	Date Sampled:	12/22/05
Lab Sample ID:	F37523-1	Date Received:	12/23/05
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	Camp Lejeune-JP-5 Wells		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R00299.D	1	12/30/05	NJ	12/29/05	OP15383	SR18
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1040 ml	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	4.8	0.96	ug/l	
208-96-8	Acenaphthylene	ND	4.8	0.96	ug/l	
120-12-7	Anthracene	ND	4.8	0.96	ug/l	
56-55-3	Benzo(a)anthracene	ND	4.8	0.96	ug/l	
50-32-8	Benzo(a)pyrene	ND	4.8	0.96	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	4.8	0.96	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	4.8	1.9	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	4.8	0.96	ug/l	
218-01-9	Chrysene	ND	4.8	0.96	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	4.8	1.9	ug/l	
206-44-0	Fluoranthene	ND	4.8	0.96	ug/l	
86-73-7	Fluorene	ND	4.8	0.96	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	4.8	1.9	ug/l	
90-12-0	1-Methylnaphthalene	38.9	4.8	0.96	ug/l	
91-57-6	2-Methylnaphthalene	36.2	4.8	0.96	ug/l	
91-20-3	Naphthalene	18.1	4.8	0.96	ug/l	
85-01-8	Phenanthrene	ND	4.8	0.96	ug/l	
129-00-0	Pyrene	ND	4.8	0.96	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	80%		49-119%
321-60-8	2-Fluorobiphenyl	79%		45-118%
1718-51-0	Terphenyl-d14	69%		46-135%

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 1

2.1

2

Client Sample ID: USTAS4141-MW15
Lab Sample ID: F37523-1
Matrix: AQ - Ground Water
Project: Camp Lejeune-JP-5 Wells

Date Sampled: 12/22/05
Date Received: 12/23/05
Percent Solids: n/a

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead	19.9	5.0	1.2	ug/l	1	12/28/05	12/29/05 RS	SW846 6010B ¹	SW846 3010A ²

(1) Instrument QC Batch: MA4731

(2) Prep QC Batch: MP9066

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Report of Analysis

Page 1 of 2

Client Sample ID:	USTAS4141-MW14	Date Sampled:	12/22/05
Lab Sample ID:	F37523-2	Date Received:	12/23/05
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	Camp Lejeune-JP-5 Wells		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M0009680.D	1	01/04/06	KK	n/a	n/a	VM410
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	25	5.0	ug/l	
71-43-2	Benzene	ND	1.0	0.50	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.50	ug/l	
75-25-2	Bromoform	ND	1.0	0.50	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.50	ug/l	
75-00-3	Chloroethane	ND	2.0	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
75-15-0	Carbon disulfide	ND	2.0	1.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.50	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.50	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.50	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.50	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.50	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.40	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.50	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.5	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	2.5	ug/l	
74-83-9	Methyl bromide	ND	2.0	1.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	1.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.0	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	2.5	ug/l	
100-42-5	Styrene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.50	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.40	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.50	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.50	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.50	ug/l	

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	USTAS4141-MW14	Date Sampled:	12/22/05
Lab Sample ID:	F37523-2	Date Received:	12/23/05
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	Camp Lejeune-JP-5 Wells		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	1.0	0.50	ug/l	
1330-20-7	Xylene (total)	ND	3.0	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		86-115%
17060-07-0	1,2-Dichloroethane-D4	99%		73-126%
2037-26-5	Toluene-D8	98%		86-112%
460-00-4	4-Bromofluorobenzene	96%		83-119%

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: USTAS4141-MW14
 Lab Sample ID: F37523-2
 Matrix: AQ - Ground Water
 Method: SW846 8270C SW846 3510C
 Project: Camp Lejeune-JP-5 Wells

Date Sampled: 12/22/05
 Date Received: 12/23/05
 Percent Solids: n/a

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R00300.D	1	12/30/05	NJ	12/29/05	OP15383	SR18
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1040 ml	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	4.8	0.96	ug/l	
208-96-8	Acenaphthylene	ND	4.8	0.96	ug/l	
120-12-7	Anthracene	ND	4.8	0.96	ug/l	
56-55-3	Benzo(a)anthracene	ND	4.8	0.96	ug/l	
50-32-8	Benzo(a)pyrene	ND	4.8	0.96	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	4.8	0.96	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	4.8	1.9	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	4.8	0.96	ug/l	
218-01-9	Chrysene	ND	4.8	0.96	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	4.8	1.9	ug/l	
206-44-0	Fluoranthene	ND	4.8	0.96	ug/l	
86-73-7	Fluorene	ND	4.8	0.96	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	4.8	1.9	ug/l	
90-12-0	1-Methylnaphthalene	ND	4.8	0.96	ug/l	
91-57-6	2-Methylnaphthalene	ND	4.8	0.96	ug/l	
91-20-3	Naphthalene	ND	4.8	0.96	ug/l	
85-01-8	Phenanthrene	ND	4.8	0.96	ug/l	
129-00-0	Pyrene	ND	4.8	0.96	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	72%		49-119%
321-60-8	2-Fluorobiphenyl	75%		45-118%
1718-51-0	Terphenyl-d14	67%		46-135%

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

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2.2

2

Client Sample ID: USTAS4141-MW14
Lab Sample ID: F37523-2
Matrix: AQ - Ground Water
Project: Camp Lejeune-JP-5 Wells

Date Sampled: 12/22/05
Date Received: 12/23/05
Percent Solids: n/a

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead	5.8	5.0	1.2	ug/l	1	12/28/05	12/29/05 RS	SW846 6010B ¹	SW846 3010A ²

(1) Instrument QC Batch: MA4731

(2) Prep QC Batch: MP9066

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: USTAS4141-OBG06
 Lab Sample ID: F37523-3
 Matrix: AQ - Ground Water
 Method: SW846 8260B
 Project: Camp Lejeune-JP-5 Wells

Date Sampled: 12/22/05
 Date Received: 12/23/05
 Percent Solids: n/a

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M0009681.D	1	01/04/06	KK	n/a	n/a	VM410
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	25	5.0	ug/l	
71-43-2	Benzene	ND	1.0	0.50	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.50	ug/l	
75-25-2	Bromoform	ND	1.0	0.50	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.50	ug/l	
75-00-3	Chloroethane	ND	2.0	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
75-15-0	Carbon disulfide	ND	2.0	1.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.50	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.50	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.50	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.50	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.50	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.40	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.50	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.5	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	2.5	ug/l	
74-83-9	Methyl bromide	ND	2.0	1.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	1.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.0	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	2.5	ug/l	
100-42-5	Styrene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.50	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.40	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.50	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.50	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.50	ug/l	

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	USTAS4141-OBG06	Date Sampled:	12/22/05
Lab Sample ID:	F37523-3	Date Received:	12/23/05
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	Camp Lejeune-JP-5 Wells		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	1.0	0.50	ug/l	
1330-20-7	Xylene (total)	ND	3.0	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		86-115%
17060-07-0	1,2-Dichloroethane-D4	97%		73-126%
2037-26-5	Toluene-D8	101%		86-112%
460-00-4	4-Bromofluorobenzene	95%		83-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: USTAS4141-OBG06
 Lab Sample ID: F37523-3
 Matrix: AQ - Ground Water
 Method: SW846 8270C SW846 3510C
 Project: Camp Lejeune-JP-5 Wells

Date Sampled: 12/22/05
 Date Received: 12/23/05
 Percent Solids: n/a

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R00301.D	1	12/30/05	NJ	12/29/05	OP15383	SR18
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1040 ml	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	4.8	0.96	ug/l	
208-96-8	Acenaphthylene	ND	4.8	0.96	ug/l	
120-12-7	Anthracene	ND	4.8	0.96	ug/l	
56-55-3	Benzo(a)anthracene	ND	4.8	0.96	ug/l	
50-32-8	Benzo(a)pyrene	ND	4.8	0.96	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	4.8	0.96	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	4.8	1.9	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	4.8	0.96	ug/l	
218-01-9	Chrysene	ND	4.8	0.96	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	4.8	1.9	ug/l	
206-44-0	Fluoranthene	ND	4.8	0.96	ug/l	
86-73-7	Fluorene	ND	4.8	0.96	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	4.8	1.9	ug/l	
90-12-0	1-Methylnaphthalene	ND	4.8	0.96	ug/l	
91-57-6	2-Methylnaphthalene	ND	4.8	0.96	ug/l	
91-20-3	Naphthalene	ND	4.8	0.96	ug/l	
85-01-8	Phenanthrene	ND	4.8	0.96	ug/l	
129-00-0	Pyrene	ND	4.8	0.96	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	65%		49-119%
321-60-8	2-Fluorobiphenyl	67%		45-118%
1718-51-0	Terphenyl-d14	71%		46-135%

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

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2.3

2

Client Sample ID: USTAS4141-OBG06
Lab Sample ID: F37523-3
Matrix: AQ - Ground Water
Project: Camp Lejeune-JP-5 Wells

Date Sampled: 12/22/05
Date Received: 12/23/05
Percent Solids: n/a

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead	14.3	5.0	1.2	ug/l	1	12/28/05	12/29/05 RS	SW846 6010B ¹	SW846 3010A ²

(1) Instrument QC Batch: MA4731

(2) Prep QC Batch: MP9066

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result >= MDL but < RL

Report of Analysis

Client Sample ID:	USTAS4141-MW02	Date Sampled:	12/22/05
Lab Sample ID:	F37523-4	Date Received:	12/23/05
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	Camp Lejeune-JP-5 Wells		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M0009682.D	1	01/04/06	KK	n/a	n/a	VM410
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone ^a	9.5	25	5.0	ug/l	J
71-43-2	Benzene	ND	1.0	0.50	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.50	ug/l	
75-25-2	Bromoform	ND	1.0	0.50	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.50	ug/l	
75-00-3	Chloroethane	ND	2.0	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
75-15-0	Carbon disulfide	ND	2.0	1.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.50	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.50	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.50	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.50	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.50	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.40	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.50	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.5	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	2.5	ug/l	
74-83-9	Methyl bromide	ND	2.0	1.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	1.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.0	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	2.5	ug/l	
100-42-5	Styrene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.50	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.40	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.50	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.50	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.50	ug/l	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	USTAS4141-MW02		
Lab Sample ID:	F37523-4	Date Sampled:	12/22/05
Matrix:	AQ - Ground Water	Date Received:	12/23/05
Method:	SW846 8260B	Percent Solids:	n/a
Project:	Camp Lejeune-JP-5 Wells		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	1.0	0.50	ug/l	
1330-20-7	Xylene (total)	ND	3.0	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	107%		86-115%
17060-07-0	1,2-Dichloroethane-D4	100%		73-126%
2037-26-5	Toluene-D8	97%		86-112%
460-00-4	4-Bromofluorobenzene	93%		83-119%

(a) Associated BS recovery outside control limits.

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID: USTAS4141-MW02
 Lab Sample ID: F37523-4
 Matrix: AQ - Ground Water
 Method: SW846 8270C SW846 3510C
 Project: Camp Lejeune-JP-5 Wells

Date Sampled: 12/22/05
 Date Received: 12/23/05
 Percent Solids: n/a

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	R00304.D	1	12/30/05	NJ	12/29/05	OP15383	SR18
Run #2 ^b	R00343.D	1	01/05/06	NJ	01/04/06	OP15417	SR21

Run #	Initial Volume	Final Volume
Run #1	1040 ml	1.0 ml
Run #2	1050 ml	1.0 ml

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	4.8	0.96	ug/l	
208-96-8	Acenaphthylene	ND	4.8	0.96	ug/l	
120-12-7	Anthracene	ND	4.8	0.96	ug/l	
56-55-3	Benzo(a)anthracene	ND	4.8	0.96	ug/l	
50-32-8	Benzo(a)pyrene	ND	4.8	0.96	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	4.8	0.96	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	4.8	1.9	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	4.8	0.96	ug/l	
218-01-9	Chrysene	ND	4.8	0.96	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	4.8	1.9	ug/l	
206-44-0	Fluoranthene	ND	4.8	0.96	ug/l	
86-73-7	Fluorene	ND	4.8	0.96	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	4.8	1.9	ug/l	
90-12-0	1-Methylnaphthalene	ND	4.8	0.96	ug/l	
91-57-6	2-Methylnaphthalene	ND	4.8	0.96	ug/l	
91-20-3	Naphthalene	ND	4.8	0.96	ug/l	
85-01-8	Phenanthrene	ND	4.8	0.96	ug/l	
129-00-0	Pyrene	ND	4.8	0.96	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	55%	61%	49-119%
321-60-8	2-Fluorobiphenyl	42%	50%	45-118%
1718-51-0	Terphenyl-d14	27%	40%	46-135%

(a) Confirmed ND by re-extraction and reanalysis beyond holdtime.

(b) Confirmation run.

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

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2.4
2

Client Sample ID: USTAS4141-MW02
Lab Sample ID: F37523-4
Matrix: AQ - Ground Water
Project: Camp Lejeune-JP-5 Wells

Date Sampled: 12/22/05
Date Received: 12/23/05
Percent Solids: n/a

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead	105	5.0	1.2	ug/l	1	12/28/05	12/29/05 RS	SW846 6010B ¹	SW846 3010A ²

(1) Instrument QC Batch: MA4731

(2) Prep QC Batch: MP9066

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	USTAS4141-RW2	Date Sampled:	12/22/05
Lab Sample ID:	F37523-5	Date Received:	12/23/05
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	Camp Lejeune-JP-5 Wells		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M0009683.D	1	01/04/06	KK	n/a	n/a	VM410
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	25	5.0	ug/l	
71-43-2	Benzene	ND	1.0	0.50	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.50	ug/l	
75-25-2	Bromoform	ND	1.0	0.50	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.50	ug/l	
75-00-3	Chloroethane	ND	2.0	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
75-15-0	Carbon disulfide	ND	2.0	1.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.50	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.50	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.50	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.50	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.50	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.40	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.50	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.5	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	2.5	ug/l	
74-83-9	Methyl bromide	ND	2.0	1.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	1.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.0	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	2.5	ug/l	
100-42-5	Styrene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.50	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.40	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.50	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.50	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.50	ug/l	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	USTAS4141-RW2		
Lab Sample ID:	F37523-5	Date Sampled:	12/22/05
Matrix:	AQ - Ground Water	Date Received:	12/23/05
Method:	SW846 8260B	Percent Solids:	n/a
Project:	Camp Lejeune-JP-5 Wells		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	1.0	0.50	ug/l	
1330-20-7	Xylene (total)	ND	3.0	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		86-115%
17060-07-0	1,2-Dichloroethane-D4	96%		73-126%
2037-26-5	Toluene-D8	96%		86-112%
460-00-4	4-Bromofluorobenzene	90%		83-119%

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: USTAS4141-RW2
 Lab Sample ID: F37523-5
 Matrix: AQ - Ground Water
 Method: SW846 8270C SW846 3510C
 Project: Camp Lejeune-JP-5 Wells

Date Sampled: 12/22/05
 Date Received: 12/23/05
 Percent Solids: n/a

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R00305.D	1	12/30/05	NJ	12/29/05	OP15383	SR18
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1040 ml	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	4.8	0.96	ug/l	
208-96-8	Acenaphthylene	ND	4.8	0.96	ug/l	
120-12-7	Anthracene	ND	4.8	0.96	ug/l	
56-55-3	Benzo(a)anthracene	ND	4.8	0.96	ug/l	
50-32-8	Benzo(a)pyrene	ND	4.8	0.96	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	4.8	0.96	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	4.8	1.9	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	4.8	0.96	ug/l	
218-01-9	Chrysene	ND	4.8	0.96	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	4.8	1.9	ug/l	
206-44-0	Fluoranthene	ND	4.8	0.96	ug/l	
86-73-7	Fluorene	ND	4.8	0.96	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	4.8	1.9	ug/l	
90-12-0	1-Methylnaphthalene	4.2	4.8	0.96	ug/l	J
91-57-6	2-Methylnaphthalene	ND	4.8	0.96	ug/l	
91-20-3	Naphthalene	5.0	4.8	0.96	ug/l	
85-01-8	Phenanthrene	ND	4.8	0.96	ug/l	
129-00-0	Pyrene	ND	4.8	0.96	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	76%		49-119%
321-60-8	2-Fluorobiphenyl	78%		45-118%
1718-51-0	Terphenyl-d14	70%		46-135%

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: USTAS4141-RW2
Lab Sample ID: F37523-5
Matrix: AQ - Ground Water
Project: Camp Lejeune-JP-5 Wells

Date Sampled: 12/22/05
Date Received: 12/23/05
Percent Solids: n/a

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead	1.7 B	5.0	1.2	ug/l	1	12/28/05	12/29/05 RS	SW846 6010B ¹	SW846 3010A ²

(1) Instrument QC Batch: MA4731

(2) Prep QC Batch: MP9066

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result >= MDL but < RL

Report of Analysis

Client Sample ID:	USTAS4141-RW2-DUP	Date Sampled:	12/22/05
Lab Sample ID:	F37523-6	Date Received:	12/23/05
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	Camp Lejeune-JP-5 Wells		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M0009692.D	1	01/05/06	KK	n/a	n/a	VM411
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	25	5.0	ug/l	
71-43-2	Benzene	ND	1.0	0.50	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.50	ug/l	
75-25-2	Bromoform	ND	1.0	0.50	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.50	ug/l	
75-00-3	Chloroethane	ND	2.0	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
75-15-0	Carbon disulfide	ND	2.0	1.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.50	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.50	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.50	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.50	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.50	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.40	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.50	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.5	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	2.5	ug/l	
74-83-9	Methyl bromide	ND	2.0	1.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	1.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.0	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	2.5	ug/l	
100-42-5	Styrene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.50	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.40	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.50	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.50	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.50	ug/l	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: USTAS4141-RW2-DUP
Lab Sample ID: F37523-6
Matrix: AQ - Ground Water
Method: SW846 8260B
Project: Camp Lejeune-JP-5 Wells

Date Sampled: 12/22/05
Date Received: 12/23/05
Percent Solids: n/a

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	1.0	0.50	ug/l	
1330-20-7	Xylene (total)	ND	3.0	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		86-115%
17060-07-0	1,2-Dichloroethane-D4	98%		73-126%
2037-26-5	Toluene-D8	101%		86-112%
460-00-4	4-Bromofluorobenzene	99%		83-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	USTAS4141-RW2-DUP	Date Sampled:	12/22/05
Lab Sample ID:	F37523-6	Date Received:	12/23/05
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	Camp Lejeune-JP-5 Wells		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R00306.D	1	12/30/05	NJ	12/29/05	OP15383	SR18
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1040 ml	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	4.8	0.96	ug/l	
208-96-8	Acenaphthylene	ND	4.8	0.96	ug/l	
120-12-7	Anthracene	ND	4.8	0.96	ug/l	
56-55-3	Benzo(a)anthracene	ND	4.8	0.96	ug/l	
50-32-8	Benzo(a)pyrene	ND	4.8	0.96	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	4.8	0.96	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	4.8	1.9	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	4.8	0.96	ug/l	
218-01-9	Chrysene	ND	4.8	0.96	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	4.8	1.9	ug/l	
206-44-0	Fluoranthene	ND	4.8	0.96	ug/l	
86-73-7	Fluorene	ND	4.8	0.96	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	4.8	1.9	ug/l	
90-12-0	1-Methylnaphthalene	4.6	4.8	0.96	ug/l	J
91-57-6	2-Methylnaphthalene	ND	4.8	0.96	ug/l	
91-20-3	Naphthalene	5.6	4.8	0.96	ug/l	
85-01-8	Phenanthrene	ND	4.8	0.96	ug/l	
129-00-0	Pyrene	ND	4.8	0.96	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	82%		49-119%
321-60-8	2-Fluorobiphenyl	82%		45-118%
1718-51-0	Terphenyl-d14	71%		46-135%

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: USTAS4141-RW2-DUP
Lab Sample ID: F37523-6
Matrix: AQ - Ground Water
Project: Camp Lejeune-JP-5 Wells

Date Sampled: 12/22/05
Date Received: 12/23/05
Percent Solids: n/a

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead	2.3 B	5.0	1.2	ug/l	1	12/28/05	12/29/05 RS	SW846 6010B ¹	SW846 3010A ²

(1) Instrument QC Batch: MA4731

(2) Prep QC Batch: MP9066

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result >= MDL but < RL

Report of Analysis

Client Sample ID:	USTAS4141-TB	Date Sampled:	12/22/05
Lab Sample ID:	F37523-7	Date Received:	12/23/05
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	Camp Lejeune-JP-5 Wells		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M0009665.D	1	01/04/06	KK	n/a	n/a	VM410
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	25	5.0	ug/l	
71-43-2	Benzene	ND	1.0	0.50	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.50	ug/l	
75-25-2	Bromoform	ND	1.0	0.50	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.50	ug/l	
75-00-3	Chloroethane	ND	2.0	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
75-15-0	Carbon disulfide	ND	2.0	1.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.50	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.50	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.50	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.50	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.50	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.40	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.50	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.5	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	2.5	ug/l	
74-83-9	Methyl bromide	ND	2.0	1.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	1.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.0	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	2.5	ug/l	
100-42-5	Styrene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.50	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.40	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.50	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.50	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.50	ug/l	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	USTAS4141-TB	Date Sampled:	12/22/05
Lab Sample ID:	F37523-7	Date Received:	12/23/05
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	Camp Lejeune-JP-5 Wells		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	1.0	0.50	ug/l	
1330-20-7	Xylene (total)	ND	3.0	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		86-115%
17060-07-0	1,2-Dichloroethane-D4	97%		73-126%
2037-26-5	Toluene-D8	96%		86-112%
460-00-4	4-Bromofluorobenzene	90%		83-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound



Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

Shaw® The Shaw Group Inc.

2,2

ACCUTEST LABORATORIES SAMPLE RECEIPT CONFIRMATION

ACCUTEST'S JOB NUMBER: **F37523** CLIENT: Shaw ELL PROJECT: Camp Latrine
 DATE/TIME RECEIVED: 11-23-05/10:00 # OF COOLERS RECEIVED: 1 COOLER TEMPS: 20
 METHOD OF DELIVERY: FEDEX UPS ACCUTEST COURIER GREYHOUND DELIVERY OTHER
 AIRBILL NUMBERS: 8520-7647-6061

COOLER INFORMATION

- ☐ CUSTODY SEAL NOT PRESENT OR NOT INTACT
- ☐ NO COC RECEIVED
- ☐ ANALYSIS REQUESTED IS UNCLEAR OR MISSING
- ☐ SAMPLE DATES OR TIMES UNCLEAR OR MISSING
- ☐ TEMPERATURE CRITERIA NOT MET

TRIP BLANK INFORMATION

- ☐ TRIP BLANK NOT PROVIDED
- ☐ TRIP BLANK NOT ON COC
- ☒ TRIP BLANK INTACT
- ☐ TRIP BLANK NOT INTACT
- ☒ RECEIVED WATER TRIP BLANK
- ☐ RECEIVED SOIL TRIP BLANK

SOIL INFORMATION

NUMBER OF ENCORES ? 02
 NUMBER OF 5035 FIELD KITS ? 02

SUMMARY OF COMMENTS: Received two T.B.S. Received one vial broken for mws,
mw-14. Received one amber broken for RW2-DUP.

SAMPLE INFORMATION

- ☐ SAMPLE LABELS PRESENT ON ALL BOTTLES
- ☐ CORRECT NUMBER OF CONTAINERS USED
- ☐ SAMPLE RECEIVED IMPROPERLY PRESERVED
- ☐ INSUFFICIENT VOLUME FOR ANALYSIS
- ☐ TIMES ON COC DON'T MATCH LABEL
- ☐ ID'S ON COC DON'T MATCH LABEL
- ☐ VOC VIALS HAVE HEADSPACE (MACRO BUBBLES)
- ☐ BOTTLES RECEIVED BUT ANALYSIS NOT REQUESTED
- ☐ NO BOTTLES RECEIVED FOR ANALYSIS REQUESTED
- ☐ UNCLEAR FILTERING INSTRUCTIONS
- ☐ UNCLEAR COMPOSITING INSTRUCTIONS
- ☒ SAMPLE(S) RECEIVED BROKEN
- ☐ % SOLIDS JAR NOT RECEIVED

TECHNICIAN SIGNATURE/DATE Steven Green/11-23-05 TECHNICIAN SIGNATURE/DATE _____

ASBD06/22/05

F37523: Chain of Custody

Page 2 of 2