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FINAL SITE REHABILITATION COMPLETION REPORT ADDENDUM FOR BUILDING 425 NS MAYPORT FL

12/07/2011

TETRA TECH NUS

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Document Tracking Number 10JAX0012

December 7, 2011

Project Number 112G00758

Naval Facilities Engineering Command, Southeast
ATTN: Mr. Brian Syme (OPC 6)
Remedial Project Manager
135 Ajax Street North, Building 903
Naval Air Station Jacksonville
Jacksonville, FL 32212-0030

Reference: CLEAN IV Contract Number N62467-04-D-0055
Contract Tack Order Number 0078

Subject: Final Site Rehabilitation Completion Report Addendum, Building 245
Naval Station Mayport, Jacksonville, Florida

Dear Mr. Syme:

Tetra Tech NUS, Inc. (Tetra Tech) is pleased to submit the final Site Rehabilitation Completion Report Addendum for Building 245. This report was prepared for the United States Navy, Naval Facilities Engineering Command Southeast (NAVFAC SE) under Contract Task Order (CTO) 0078 for the Comprehensive Long-term Environmental Action Navy (CLEAN) IV Contract Number N62467-04-D-0055.

SITE LOCATION

Naval Station (NAVSTA) Mayport is located within the corporate limits of the city of Jacksonville, Duval County, Florida, approximately 12 miles northeast of downtown Jacksonville and adjacent to the town of Mayport. A Regional Area Map is provided as Figure 1. The Station complex is located on the northern end of a peninsula bound by the Atlantic Ocean to the east and the St. Johns River to the north. NAVSTA Mayport occupies the entire northern part of the peninsula except for the town of Mayport, which is located to the west between the Station and the St. Johns River. The site is located along the Atlantic Ocean as presented on Figure 2.

SITE DESCRIPTION

The site known as Building 245 is the community center building housing various businesses. The groundwater monitoring wells are located in a grassy area on the northern side of the building. A site plan depicting the well locations is provided as Figure 3.

PREVIOUS INVESTIGATIONS

Tank Closure Assessment Report (G. B. Robins, Inc., July 1995)
In April 1995, MEI Environmental Services of Dunn Loring, Virginia removed UST Number 245 and the associated piping. G. B. Robins, Inc. of Jacksonville, Florida prepared the July 1995 Tank Closure Assessment Report. Text, tables, and figures from the Tank Closure Assessment Report are provided as Attachment A.

The former underground storage tank (UST) was removed from a grassy area approximately 7 feet east of an electrical switch room located on the northern side of Building 245. Volatile organic compounds (VOCs) benzene, toluene, ethyl benzene, and xylenes and polynuclear hydrocarbons (PAHs) were present in groundwater collected from the tank pit area. Soil impacts were recorded in soil head space screened values using an organic vapor analyzer (OVA) equipped with a flame ionization detector (FID). Twenty-one screening samples were collected with contamination being encountered along the northern excavation wall at depths of 3 and 6 feet, and contaminated soils were measured on the southern, eastern, and western walls at depths of about 6 feet below land surface (bls). No contaminated soils were excavated.

Contamination Assessment Report (CAR) (Bhate Environmental Associates, Inc. [BEA], February 1998)

The initial assessment of UST 245 was completed by BEA of Birmingham, Alabama. The results were included in a CAR for UST 245 dated February 12, 1998. Tables 2, 4, and 7 and Figures 5, 8, and 11 from the CAR are provided as Attachment B.

Based on findings from the CAR, the following conclusions were made:

- Of the eight soil OVA-FID screening samples collected at the 1-foot to 3-foot interval, excessively contaminated soil vapor reading measuring 68 parts per million (ppm) was only present in sample S-1, which is the current location of monitoring well MW-4. The sample was taken at northern end of the former UST (see Table 4, Summary of Soil Headspace Analysis and Figure 8, Geoprobe Soil Analytical Results).

- Laboratory analysis of soil collected from 4 feet to 6 feet bls exceeded the Florida Department of Environmental Protection (FDEP) regulatory limit of 2500 ppm for Florida Petroleum Range Organics (FL-PRO). These samples were collected at points near the former UST with the greatest concentration (44,000 ppm) located at S-1. Based on the depth to groundwater measurements, the total recoverable petroleum hydrocarbon (TRPH) samples were collected below the water table. Depth to water for monitoring well MW-04 ranged between 3.32 and 4.61 feet bls during the June and July 1997 measurements (see Table 2, Monitoring Well Construction and Water Level Data).

- Monitoring wells MW-1, MW-2, MW-3, MW-4, and MW-5 were sampled; groundwater from monitoring well MW-4 exceeded the FDEP guidance criteria for benzene (6.5 micrograms per liter [µg/L]) and naphthalene (33 µg/L) per Chapter 62-777, Florida Administrative Code (F.A.C.). Lead also exceeded the FDEP guidance concentrations, but the samples were turbid when sampled (see Table 7, Summary of Monitoring Well Groundwater Analytical Results and Figure 11, Monitoring Well Groundwater Analytical Results).

- Depth to groundwater ranges between 3.5 feet to 6.0 feet bls with the groundwater flow direction being radial direction north, east, and west from Building 245 (see Table 2, Monitoring Well Construction and Water Level Data and Figure 5, Water Table Contour Map).

CAR Addendum (BEA, September 1999)

Additional assessment of the impacted soil areas and groundwater was requested by the FDEP in a letter dated June 22, 1998. Complying with the request, BEA completed a CAR Addendum dated September 10, 1999. Tables 3 and 4 and Figures 3 and 4 from the CAR Addendum are provided as Attachment C.

Work completed includes the following:

- Four additional soil samples (S-9, S-10, S-11 and S-12) were screened using an OVA-FID at depths of 1 and 3 feet bls to define impacts surrounding the former UST not associated with groundwater. No impacts were recorded (see Figure 3, Soil Analytical Results).

- Soil collected from soil sample S-9B at a depth of 3 feet bls was analyzed for gasoline analytical group (GAG)/kerosene analytical group (KAG) constituents, all of which were below laboratory detection limits. Soil sample S-9B is located at the northeastern corner of the former tank pit (see Table 3, Summary of Soil Analytical Results and Figure 3, Soil Analytical Results).

- Three additional monitoring wells (MW-6, MW-7, and MW-8) were installed, and groundwater was collected for analysis of GAG/KAG constituents.

- Groundwater samples from eight monitoring wells were analyzed for TRPH using the FL-PRO method. Monitoring wells MW-4, MW-6, MW-7, and MW-8 were sampled for the remaining analysis in addition to TRPH, which completes the GAG/KAG analysis package per Chapter 62-777 F.A.C. The monitoring well with the greatest impacts for TRPH, PAHs, and VOCs was monitoring well MW-8 (see Table 4, Summary of Monitoring Well Groundwater Analytical Results and Figure 4, Monitoring Well Groundwater Analytical Results).

- Wells with previous elevated lead groundwater sample results were resampled and found to not exceed FDEP guidance concentrations.

The FDEP approved the CAR and CAR Addendum in letter dated December 30, 1999, and requested that a Remedial Action Plan be developed.

Site Assessment Report (SAR) Addendum (Ellis Environmental Group [EEG], May 2002)
No work was conducted at UST 245 for a period greater than 270 days and, in accordance with the Chapter 62-770, F.A.C., new analytical data was required. EEG of Newberry, Florida was tasked with performing a SAR Addendum. Tables 1, 2, 3, 4, and 5 and Figures 4, 5, 6, 7, 8, and 9 from the SAR Addendum are provided as Attachment D.

Based on the SAR Addendum, findings were documented as follows:

- In general, the sands were dry from land surface to a depth of approximately 3 feet bls. Wet or saturated sands indicative of the capillary fringe were encountered in the 3- to 4-foot sample intervals. OVA measurements reported in the SAR Addendum were similar to those described in the BEA CAR (with exception to soil sample SS-1). The most recent OVA measurements appear to support an assumption that the contaminated soils were not present in the vadose zone that ends at approximately 3 feet bls (see Table 2, Soil Sample Field Screening Results).

- Three soils samples (SS-7 near the electrical room, SS-9 near monitoring well MW-4, and SS-10 north of monitoring well MW-4) were collected and analyzed for VOC, PAH, and TRPH analyses. Samples SS-7 and SS-10 were collected from the 2- to 3-foot bls interval, and SS-9 was collected at the 3- to 4-foot bls interval. No laboratory detections were reported for soil samples SS-7 and SS-10. Soil impacts were confirmed in excess of FDEP Soil Cleanup Target Levels (SCTLs) in soil sample SS-9 for TRPH and 10 PAH constituents. Because soil sample SS-9 (3- to 4-foot bls) was collected within the capillary fringe, the petroleum-related constituents are the result of groundwater contamination (see Table 3, Analytical Results for Soil Sample SS-9 Collected 3 to 4 ft-bls and Figure 7, Soil Sample Locations and Results).

- Free product was observed in monitoring well MW-8. The product thickness was reported to be approximately 0.25 inch at the time of the soil sample collection of nearby locations.

- A tidal survey verified the presence of limited tidal effects at this site (see Table 1, Groundwater Elevation Summary). Groundwater elevations were collected at 08:00, 12:00, and 16:00 hours. For all times measured, the groundwater flow was to the southeast (see Figure 4, Potentiometric surface at 8-1-01 at 08:00; Figure 5, Potentiometric surface at 8-1-01 at 12:00; and Figure 6, Potentiometric surface at 8-1-01 at 16:00).

- Monitoring wells MW-1 through MW-8 were to be sampled for VOCs, PAHs, and TRPH. Monitoring well MW-8 was not sampled because approximately ¼-inch of free product was present at the time of the sampling. The remaining wells were sampled and no VOCs were detected. PAH and TRPH constituents were documented, but below FDEP Groundwater Cleanup Target Levels (GCTLs). A historical summary of groundwater data presenting both the BEA and Ellis data is provided in Table 4, Groundwater Analytical Results – Volatile Organic Compounds and Table 5, Groundwater Analytical Results – Polynuclear Aromatics & Hydrocarbons and presented as Figure 8, Volatile Organic Analytes Detected in Groundwater Samples Collected on 7-31-01 and Figure 9, Semi-Volatile Organic Analytes Detected in Groundwater Samples Collected on 7-31-01.

- A summary of depth to groundwater measurements were recorded from both the BEA and Ellis Environmental Group field events. The Ellis Environmental Group 2001 depth to water in monitoring well MW-4 (SS-9) ranged between 4.90 and 4.82 feet bls (see Table 1, Groundwater Elevation Summary).

- A Groundwater Monitoring Only Plan was prepared.

In a letter dated July 18, 2002, from the FDEP regarding the EEG SAR Addendum, the following was requested:

- Monitoring well MW-8 was to be reinstalled as a 2-inch well due to damage during the UST removal.

- Quarterly monitoring only by natural attenuation should commence.

- An interim remedial action using aggressive fluid vapor recovery (AFVR) at monitoring well MW-8R (replacement monitoring well to MW 8) should be implemented.

- Soil samples should be collected for laboratory analysis from the vadose zone to confirm impacts reported by BEA.

The United States Army Corps of Engineers (USACE) was tasked with implementing the four items required by the FDEP from the July 18, 2002, letter (see Attachment E for the FDEP letter). The items were completed as follows:

- Monitoring well MW-8 was replaced with MW-8R on September 28, 2002.

- Three quarters of monitoring were completed. The report dates were February 2002, April 2003, and September 2003.

- AFVR was completed at monitoring well MW-8R and an estimated 125 gallons of free product was removed.

- An additional four soil samples were collected and analyzed for TRPH and PAH as documented in the March 2004, Site 245 Soil Investigation Addendum discussed below.

Site 245 Soil Investigation Addendum (USACE, March 2004)
On July 29, 2003, and January 26, 2004, four soil samples (SS-A, SS-B, SS-C, and SS-D) were collected from 2 feet to 3 feet bls and analyzed for TRPH and PAHs. Samples SS-A, SS-B, and SS-C were collected outside of the former tank pit. Soil sample SS-D was collected near monitoring well MW-4. Table A and Figure A from the Site 245 Soil Investigation are provided as Attachment F. No contamination in excess of FDEP SCTLs was recorded in the vadose zone for all samples collected.

On July 13, 2004, the FDEP submitted a letter referencing the September 2003 Third Quarter Site 245 Groundwater Monitoring Report and the March 2004 Site 245 Soil Investigation Addendum and stated that, "Recent soil borings confirm the absence of contaminated soil at the site and it is recommended that quarterly groundwater monitoring be continued" (see the July 13, 2004, FDEP letter in Attachment F). The USACE completed three monitoring events in October 2002, February 2003, and June 2003.

No monitoring activities were conducted after the third quarter USACE June 2003 sampling event until February 2006 when Tetra Tech began quarterly monitoring events. Monitoring wells MW-6 and MW-7 were removed from the original monitoring network since the wells were no longer present or inaccessible due to construction activities. Groundwater monitoring events continued until July 2007when the second of two groundwater sampling events was below FDEP GCTLS per 62-777 F.A.C. The July 2007 Monitoring Report/SRCR is discussed below.

2007 First Quarter Groundwater Monitoring Report/ SRCR (Tetra Tech, July 2007)
Tetra Tech submitted a Site Rehabilitation Completion Report as part of the First Quarter Groundwater Monitoring Letter Report on July 27, 2007. Select tables and figures from the report are provided as Attachment G.

The 2007 first quarter sampling event was the second of two sequential groundwater sampling events that were below the FDEP GCTLs for VOCs, PAHs, and TRPH. Results from the 2007 first quarter sampling event recorded petroleum constituents in monitoring wells MW-1, MW-4, MW-5, MW-8R, and MW-9 below FDEP GCTLs. A summary of the groundwater analytical results are provided on Table 2 in Attachment G.

Depth to groundwater measurements dating from June 1997 to February 2007 are provided on Table 1 in Attachment G. Typical groundwater flow is to the southeast (see figures in Attachment G for quarterly intervals from April 2006 to February 2007).

E-mail Comments Regarding Soil Impacts (John Winters, October 2008)
Based on the October 23, 2008, email and conversations with John Winters of the FDEP, it has been expressed that there is some uncertainty surrounding the soil impacts in the 3- to 4-foot bls interval near monitoring well MW-4. To address this concern an additional soil sample from the 3-to 4-foot bls interval was collected in the region of monitoring well MW-4. This is the same sample interval and location where soil sample SS-9 was collected from 3 feet to 4 feet bls (EEG). A soil sample sheet, laboratory analytical data, and site figure are provided in Attachment H.

On December 9, 2009, soil sample SS-9R was collected from the 3- to 4-foot bls interval near the southeastern corner of monitoring well MW-4. The soil sample was analyzed for PAH and TRPH constituents by ENCO Laboratories of Jacksonville, Florida. The soil was comprised of dry brown, medium grained sand that had a petroleum odor. Depth to groundwater in monitoring well MW-4 at the time of the sampling was 5.3 feet bls.

Results of the soil sampling did not record any PAH constituents, but did report a concentration of TRPH at 260 milligrams per kilogram (mg/kg). The leachability SCTL for TRPH is 340 mg/kg.

RECOMMENDATION

Oh behalf of NAVFAC SE, Tetra Tech requests a Site Rehabilitation Completion Order for Building 245. This site meets the No further Action Criteria as stated in Rule 62-770-.680, F.A.C. based on two sequential groundwater sampling events conducted on December 12, 2006, and February 14, 2007, that were below FDEP GCTLs and the December 9, 2009, soil sample SS-9R, located near monitoring well MW-4, that was below FDEP SCTLs.

If you have any questions with regard to this submittal, please feel free to contact me at (904) 730-4669, extension 213, or via e-mail at mark.peterson@tetratech.com.

Sincerely,

Mark A. Peterson, P.G.
Task Order Manager

MAP/ds

Attachments (11)

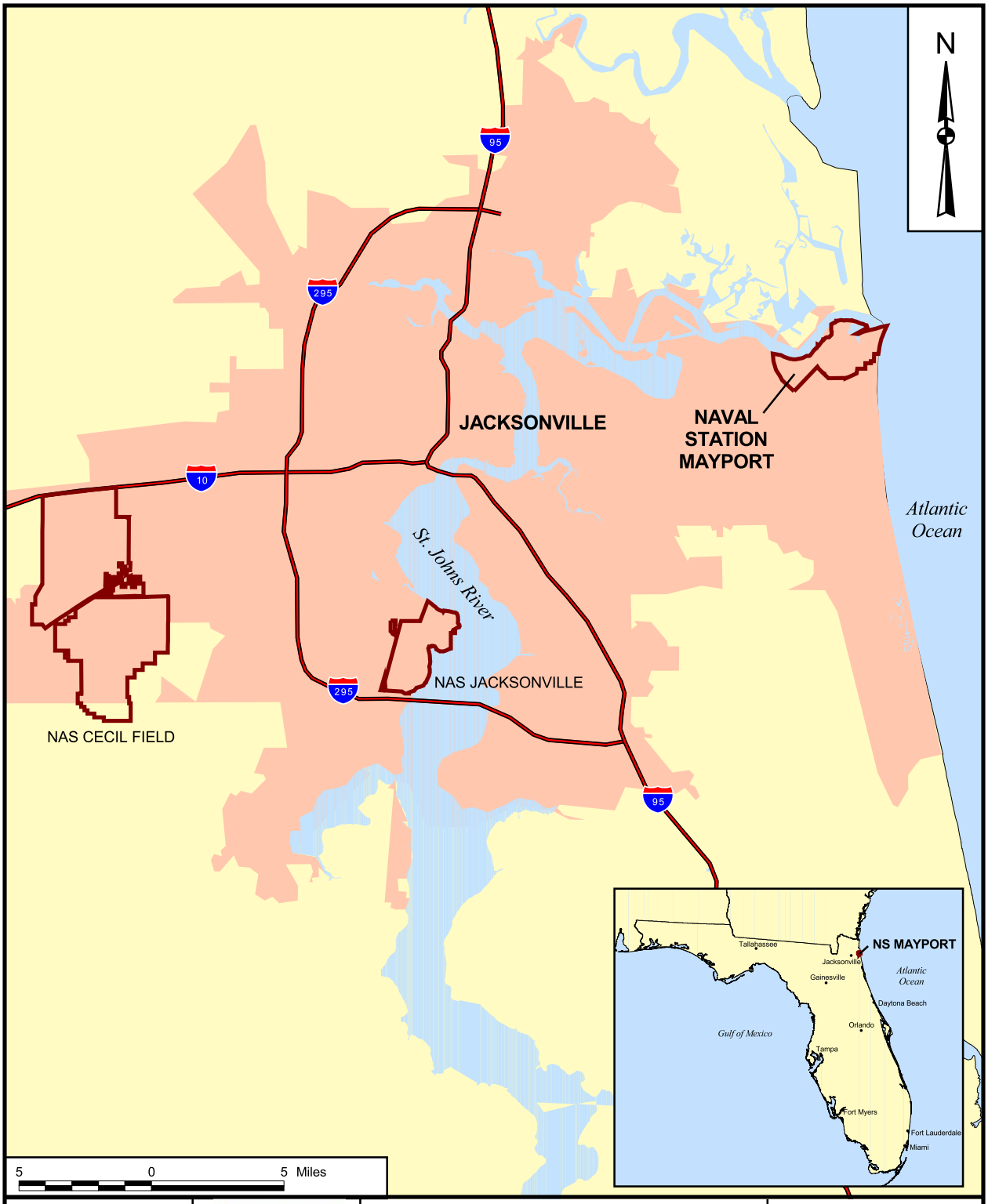
c: John Winters FDEP (1 hardcopy, 1 CD)
Paul Malewicki, NAVSTA Mayport (1 hardcopy, 1 CD)
Debra Humbert, Tetra Tech (1 unbound, 1 CD)
RDM, Tetra Tech (1 unbound, 1 CD)
CTO 0078 Project File

CERTIFICATION

The information contained is based on the geologic investigation and associated information detailed in the text and appended to this letter report. If conditions are determined to exist that differ from those described, the undersigned geologist should be notified to evaluate the effects of any additional information on the information described in this report. This Site Rehabilitation Completion Report Addendum was developed for Building 245 at the Naval Station Mayport, Jacksonville, Florida, and should not be construed to apply to any other site.

December 7, 2011
Richard D. McCann, P.G.
Florida License Number PG-2358

FIGURES



DRAWN BY K. PEILA	DATE 4/17/06	REGIONAL AREA MAP NAVAL STATION MAYPORT JACKSONVILLE, FLORIDA	CONTRACT NUMBER 00758
CHECKED BY D. SIEFKEN	DATE 1/11/10		APPROVED BY — DATE —
COST/SCHEDULE-AREA			APPROVED BY — DATE —
SCALE AS NOTED			DRAWING NO. FIGURE 1 / REV 0

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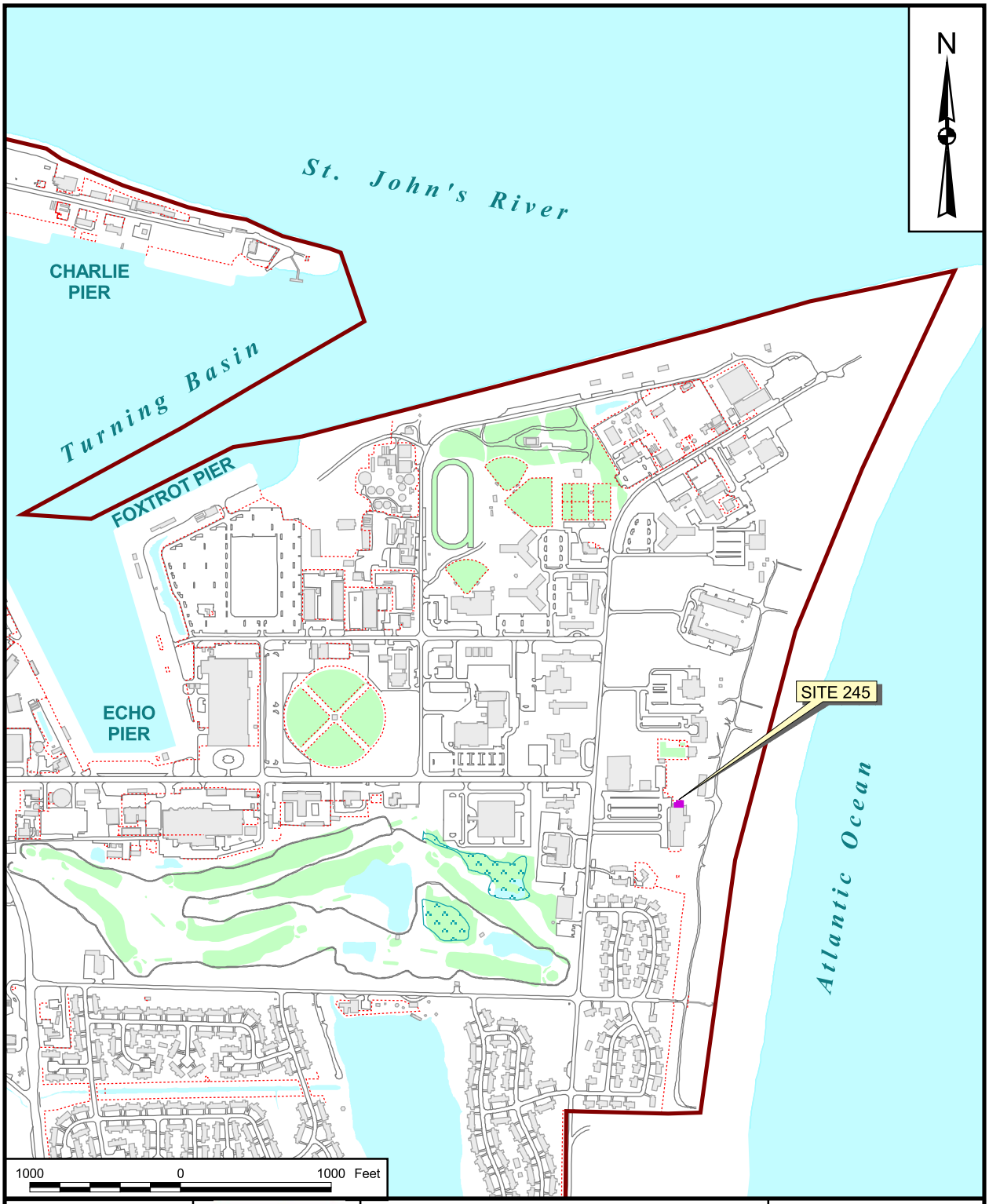

DRAWN BY	DATE	CONTRACT NUMBER
K. PEILA	4/17/06	00758
CHECKED BY	DATE	APPROVED BY / DATE
D. SIEFKEN	1/11/10	— / —
COST/SCHEDULE-AREA		APPROVED BY / DATE
		— / —
SCALE		DRAWING NO. / REV
AS NOTED		FIGURE 2 / 0

NAVFAC

SITE LOCATION MAP
SITE 245
NAVAL STATION MAYPORT
JACKSONVILLE, FLORIDA

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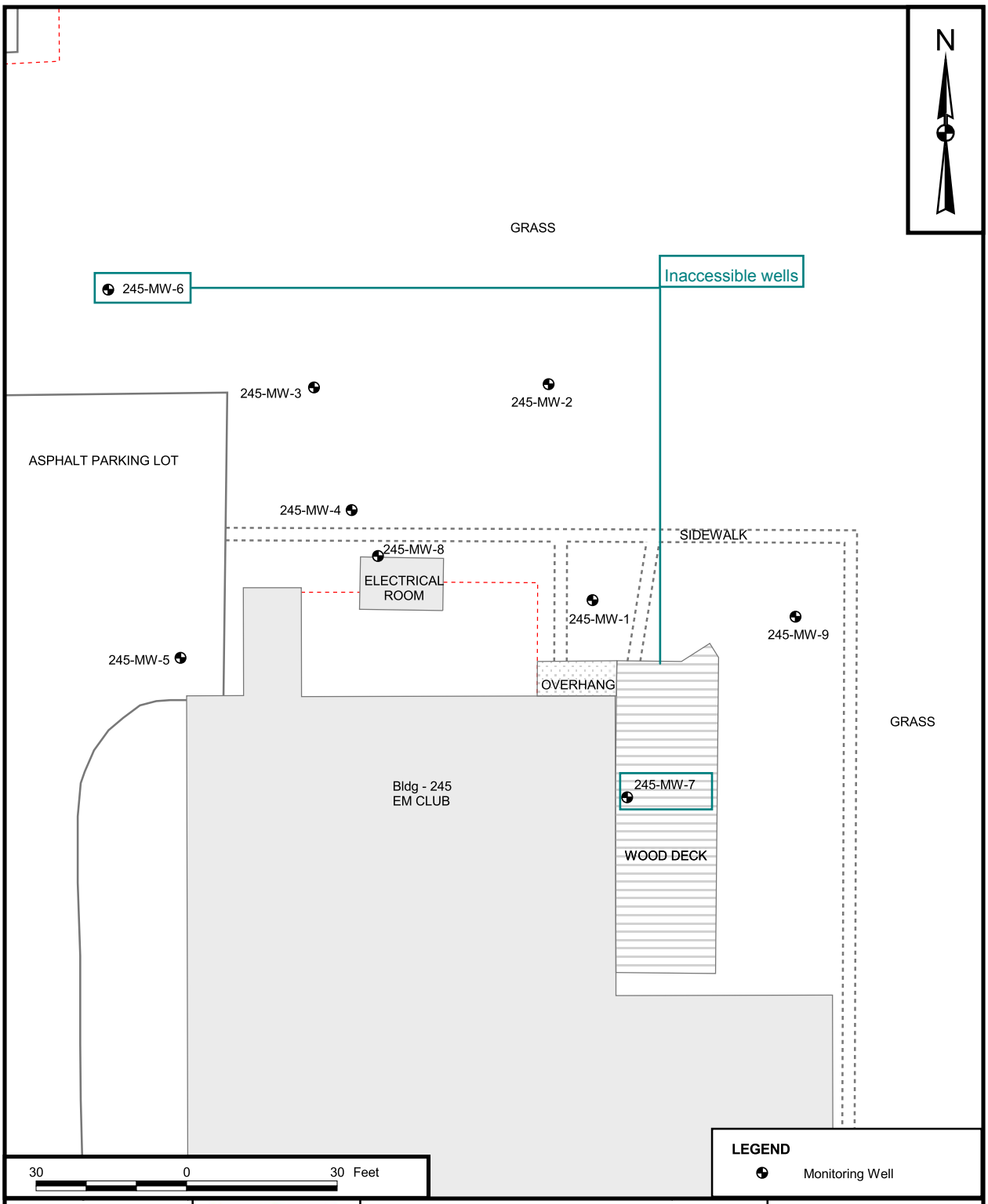


DRAWN BY K. PEILA	DATE 4/17/06	SITE PLAN SITE 245 NAVAL STATION MAYPORT JACKSONVILLE, FLORIDA	CONTRACT NUMBER 00758
CHECKED BY D. SIEFKEN	DATE 1/11/10		APPROVED BY — DATE —
COST/SCHEDULE-AREA			APPROVED BY — DATE —
SCALE AS NOTED	NAVFAC		DRAWING NO. FIGURE 3 / REV 0

P:\GIS\MAYPORT_NS\MAPDOCS\APR\BLDG413_1585.APR REVISED SITE 245 SITE PLAN LAYOUT 4/30/07 SS

ATTACHMENT A

UST CLOSURE REPORT
G. B. Robins, Inc., July 1995

MEI Environmental Services, Inc.
TANK CLOSURE ASSESSMENT REPORT

Tank ID # 245
FDEP FAC # 168626008
Naval Base Mayport
Mayport, Florida

July 11, 1995

Presented to:
MEI Environmental Services, Inc.
8351 Leesburg Pike
Vienna, Virginia (703) 893-1200

Presented By:
G.B. ROBBINS, INC.
P.O. Box 17132
Jacksonville, Florida 32245
(904) 724-9039

mei245

Florida Department of Environmental Regulation
Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

DER Form # 17-761.900(8)
Form Title Closure Assessment Form
Effective Date December 10, 1990
DER Application No. _____ (Field in by DER)

Closure Assessment Form

Owners of storage tank systems that are replacing, removing or closing in place storage tanks shall use this form to demonstrate that a storage system closure assesment was performed in accordance with Rule 17-761 or 17-762, Florida Administrative Code. Eligible Early Detection Incentive (EDI) and Reimbursement Program sites do not have to perform a closure assessment.

Please Print or Type
Complete All Applicable Blanks

1 Date: 7/11/95

2 DER Facility ID Number: 168626008 3. County: DUVAL

4 Facility Name: NAVAL STATION MAYPORT

5 Facility Owner: DEPARTMENT OF NAVY

6 Facility Address: NAVAL STATION MAYPORT, MAYPORT, FL 32228-0067

7 Mailing Address: --SAME--

8 Telephone Number: (904) 270-6730 9 Facility Operator: U. S. GOVERNMENT

10 Are the Storage Tank(s): (Circle one or both) A Aboveground or (B.) Underground

11 Type of Product(s) Stored: FUEL OIL - HEAT

12 Were the Tank(s): (Circle one) (A) Replaced B. Removed C. Closed in Place D Upgraded (aboveground tanks only)

13. Number of Tanks Closed: 1: 4,245 14. Age of Tanks: 33 YEARS

Facility Assessment Information

Yes	No	Not Applicable	
☐	☒		1. Is the facility participating in the Florida Petroleum Liability Insurance and Restoration Program (FPLIRP)?
☒	☐		2. Was a Discharge Reporting Form submitted to the Department? If yes, When: 4/27/95 Where: A.C. Carroll's office / City of Jacksonville DRES
☒	☐		3. Is the depth to ground water less than 20 feet?
☐	☒	☐	4. Are monitoring wells present around the storage system? If yes, specify type: ☐ Water monitoring ☐ Vapor monitoring
☐	☒	☐	5. Is there free product present in the monitoring wells or within the excavation?
☐	☐	☒	6. Were the petroleum hydrocarbon vapor levels in the soils greater than 500 parts per million for gasoline? Specify sample type: ☐ Vapor Monitoring wells ☐ Soil sample(s)
☒	☐	☐	7. Were the petroleum hydrocarbon vapor levels in the soils greater than 50 parts per million for diesel/kerosene? Specify sample type: ☐ Vapor Monitoring wells ☒ Soil sample(s)
☒	☐	☐	8. Were the analytical laboratory results of the ground water sample(s) greater than the allowable state target levels? (See target levels on reverse side of this form and supply laboratory data sheets)
☐	☐	☒	9. If a used oil storage system, did a visual inspection detect any discolored soil indicating a release?
☐	☒		10. Are any potable wells located within ¼ of a mile radius of the facility?
☒	☐		11. Is there a surface water body within ¼ mile radius of the site? If yes, indicate distance 650'

Northwest District 160 Governmental Center Pensacola, Florida 32501-5794
Northeast District 7825 Baymeadows Way, Suite B-200 Jacksonville, Florida 32256-7577
Central District 3319 Maguire Blvd., Suite 232 Orlando, Florida 32803-3767
Southwest District 4520 Oak Fair Blvd. Tampa, Florida 33610-7347
South District 2796 Bay St. Fort Myers, Florida 33901-7696
Southeast District 1900 S. Congress Ave., Suite A West Palm Beach, Florida 33406-5940

DER Form	17-761.900(6)
Form Title	Closure Assessment Form
Effective Date	December 10, 1990
DER Application No.	(Filled in by DER)

A detailed drawing or sketch of the facility that includes the storage system location, monitoring wells, buildings, storm drains, sample locations, and dispenser locations must accompany this form.

If a facility has a pollutant storage tank system that has both gasoline and kerosene/diesel stored on site, both EPA Method 602 and EPA Method 610 must be performed on the ground water samples obtained.

Amount of soils removed and receipt of proper disposal.

If yes is answered to any one of questions 5-9, a Discharge Reporting Form 17-761.900(1) indicating a suspected release shall be submitted to the Department within one working day.

A copy of this form and any attachments must be submitted to the Department's district office in your area and to the locally administered program office under contract with the Department within 60 days of completion of tank removal or filling a tank with an inert material.

Robert P. Walden

ROBERT P. WALDEN, LCDR, CEC, USN — AUG 2 1995

Signature of Owner — Date

EMCTW — 7/11/95

Signature of Person Performing Assessment — Date

aldine B. Robbins, President, G. B. Robbins, Inc.

Title of Person Performing Assessment

State Ground Water Target Levels That Affect A Pollutant Storage Tank System Closure Assessment

State ground water target levels are as follows:

. For gasoline (EPA Method 602):

a. Benzene — 1 ug/l

b. Total VOA — 50 ug/l
- Benzene
- Toluene
- Total Xylenes
- Ethylbenzene

c. Methyl Test-Butyl Ether (MTBE) — 50 ug/l

2. For kerosene/diesel (EPA Method 610):

a. Polynuclear Aromatic Hydrocarbons (PAHS) (Best achievable detection limit, 10 ug/l maximum)

TANK CLOSURE FIELD ACTIVITIES

United States Navy
Tank ID # 245
FDEP FAC #168626008
Naval Base Mayport
Mayport, Florida

This is supplemental information to accompany Department of Environmental Protection Form 62-761.900(6) for closure of one 2000 gallon underground fuel oil storage tank located north of Building 245 at the Naval Base Mayport, Mayport, Florida. General Site Location is represented in Figure 1.

The storage tank was used to store fuel oil for heating. Piping extended approximately 25 feet from the tank southward to the building. The tank had a diameter of approximately 5.3 feet and a length of approximately twelve feet. The tank and associated piping were cleaned and degassed prior to tank closure. Tank and piping locations are identified in Figure 2, Tank Location.

Tank removal and closure was performed on April 27, 1995 by MEI Environmental Services, Inc. The tank was removed intact. Two holes in the bottom of the tank were noted. Notification of discharge was given verbally to Mr. A.C. Carroll's Office of the City of Jacksonville Department of Regulatory and Environmental Services on April, 27 1995. Groundwater was not encountered within the excavation. Photographs of the tank removal are attached.

G.B. Robbins, Inc. performed the closure assessment as required by Chapter 62-762.800, FAC and described in the Florida Department of Environmental Protection's, "Pollutant Storage Tank Closure Assessment Requirements" dated June, 1995 and "Quality Assurance Standard Operating Procedures for Petroleum Storage Tank System Closure Assessment"

dated April, 1992. Screening, performed as outlined in Chapter 62-770.2, FAC, was conducted on-site using a Foxboro Century 128 Organic Vapor Analyzer equipped with a Flame Ionization Detector (OVA-FID). Calibration was performed according to the manufacturer's requirements and per FDER/FDEP SOPs. The OVA-FID procedure is presented immediately before the tabulated OVA-FID results.

Twenty-one soil screening samples were collected by G.B. Robbins, Inc. from the sides and invert of the excavation during the tank removal. Soil samples were collected at no greater than 5-ft vertical and 10-ft horizontal intervals and continued to the depth of the excavation, approximately six feet below land surface (bls). Screening results are presented in Table 1. Sample collection locations are identified in Figure 3, Soil Screening Locations.

One soil sample was collected from the excavation floor, directly beneath the tank for subcontracted analysis of lead. One groundwater sample was collected from a temporary monitoring well located adjacent to the UST on April 26, 1995. Soil and groundwater sample collection was performed as outlined in the appropriate FDEP/FDER SOPs and referenced in G.B. Robbins' CompQapp. A copy of the analytical results are attached and the results are presented below.

Tank Closure

* *Soil was screened at no greater than five foot vertical intervals to groundwater.*
* *Horizontal soil screening distances did not exceed ten feet.*
* *The area adjacent to the tank and soils within the excavation were inspected for staining. Any stressed vegetation in the area of the tank was noted.*
* *One soil sample was collected from the excavation floor for subcontracted laboratory analysis of lead using EPA Method 7421.*
* *One groundwater sample was collected for subcontracted laboratory analysis using EPA methods 602, 610, 245.1, 150.1, 7196, 413.1, and for Total Recoverable Cadmium, Copper, Lead, and Zinc and for Total Organic Carbon.*

Piping Closure

* *Piping closure assessment was not performed.*

Excessively contaminated soil, as defined by Chapter 62-770.200(2) was identified within the tank excavation by screening during the tank closure. Staining was noted below the north end of the tank. Distressed vegetation was not observed. The excessively contaminated soil was not removed from the excavation.

The soil sample from the floor of the tank excavation contained a concentration of 3.6 milligrams per kilogram (mg/Kg) of lead. The groundwater sample, analyzed by Savannah Laboratories, had a pH of 6.6. A summary of groundwater results above detection limits is presented below:

Groundwater Analytical Results - Tank # 245

Method Parameter	Reported Concentration (ug/L)
Naphthalene	15
1-Methylnaphthalene	19
2-Methylnaphthalene	30
Benzene	3.9
Ethylbenzene	8.1
Xylenes	3.7
Total Volatile Organic Aromatics	15.7
Total Organic Carbon	7.8 mg/L

Tables

mei245

Organic Vapor Analysis Procedure

G. B. Robbins, Inc.

Soil screening for petroleum contaminated soils is performed using a Foxboro Century 128 Organic Vapor Analyzer equipped with a flame ionization detector (OVA-FID). The OVA-FID is calibrated prior to use with a methane standard calibration gas manufactured by Alphagaz/Liquid Air, Cambridge, Md.

Soil samples are collected above the water table and are screened, according to Chapter 62-770.200(2), Florida Administrative Code (FAC), as follows:

> "... This reading shall be obtained on an organic vapor analysis instrument equipped with a flame ionization detector in the survey mode upon sampling the headspace in a half filled 16-ounce soil jar. The soil sample shall be brought to a temperature of between 20 degrees celsius and 32 degrees celsius and sampled five minutes thereafter. Analytical instruments shall be calibrated in accordance with the manufacturer's instructions."

Soil screening results are corrected for ambient methane by use of an activated charcoal filter. Reported results include both uncorrected and corrected data.

Table 1

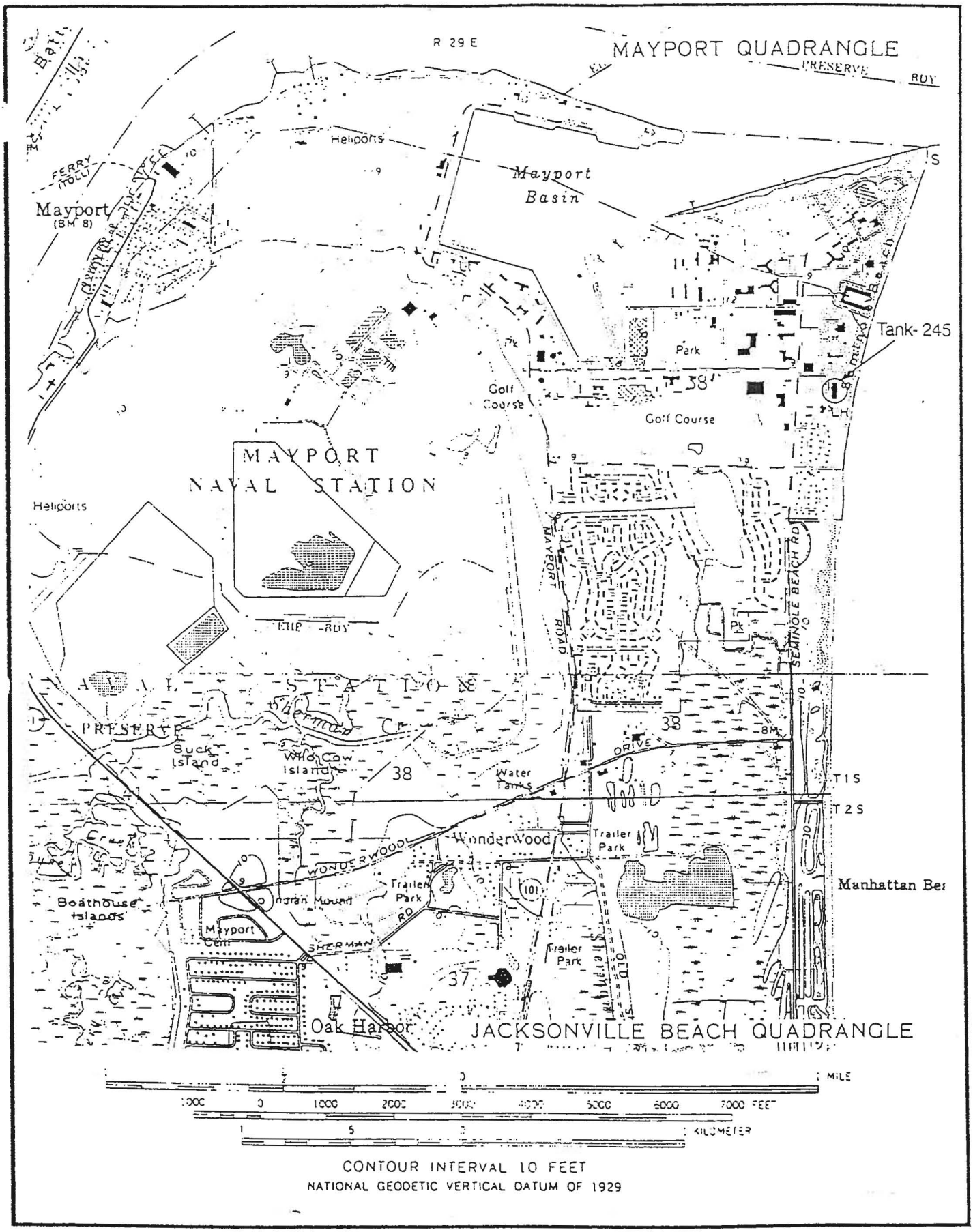
OVA-FID SCREENING RESULTS -Tank # 365

Sample No.	Sample Location	Depth ft - bls	Without Filter ppm	With Filter ppm	Corrected ppm	Notes
1	Fill port	0.5	0	-	0	No petroleum odor
2	Random bucket, W of tank	Surface	0	-	0	No petroleum odor
3	As above	2.5	0	-	0	No petroleum odor
4	As above	2 - 3	0	-	0	No petroleum odor
5	As above	2 - 3	48	12	36	No petroleum odor
6	As above	3	0	-	0	No petroleum odor
7	N wall, near tank	3	> 1000	810	> 190	V strong, old pet. odor
8a	North wall	3	> 1000	880	> 120	V strong, old pet. odor
8b	As above	6	> 1000	> 1000	?	V strong, old pet odor
9a	E wall, N	3	40	40	0	No petroleum odor
9b	As above	6	> 1000	260	> 740	V strong pet odor
10a	E wall, S	3	0	-	0	No petroleum odor
10b	As above	6	> 1000	> 1000	?	VV strong pet odor
11a	S wall	3	0	-	0	No petroleum odor
11b	As above	6	100	100	0	No petroleum odor
12a	W wall, S	3	10	0	10	No petroleum odor
12b	As above	6	> 1000	> 1000	?	VV strong pet odor
13a	W wall, N	3	15	0	15	No petroleum odor
13b	As above	6	> 1000	> 1000	?	Discoloration
14	Floor, N central	6	0	-	0	Discoloration
15	Floor, S central	6	250	0	250	-

mei245

Figures

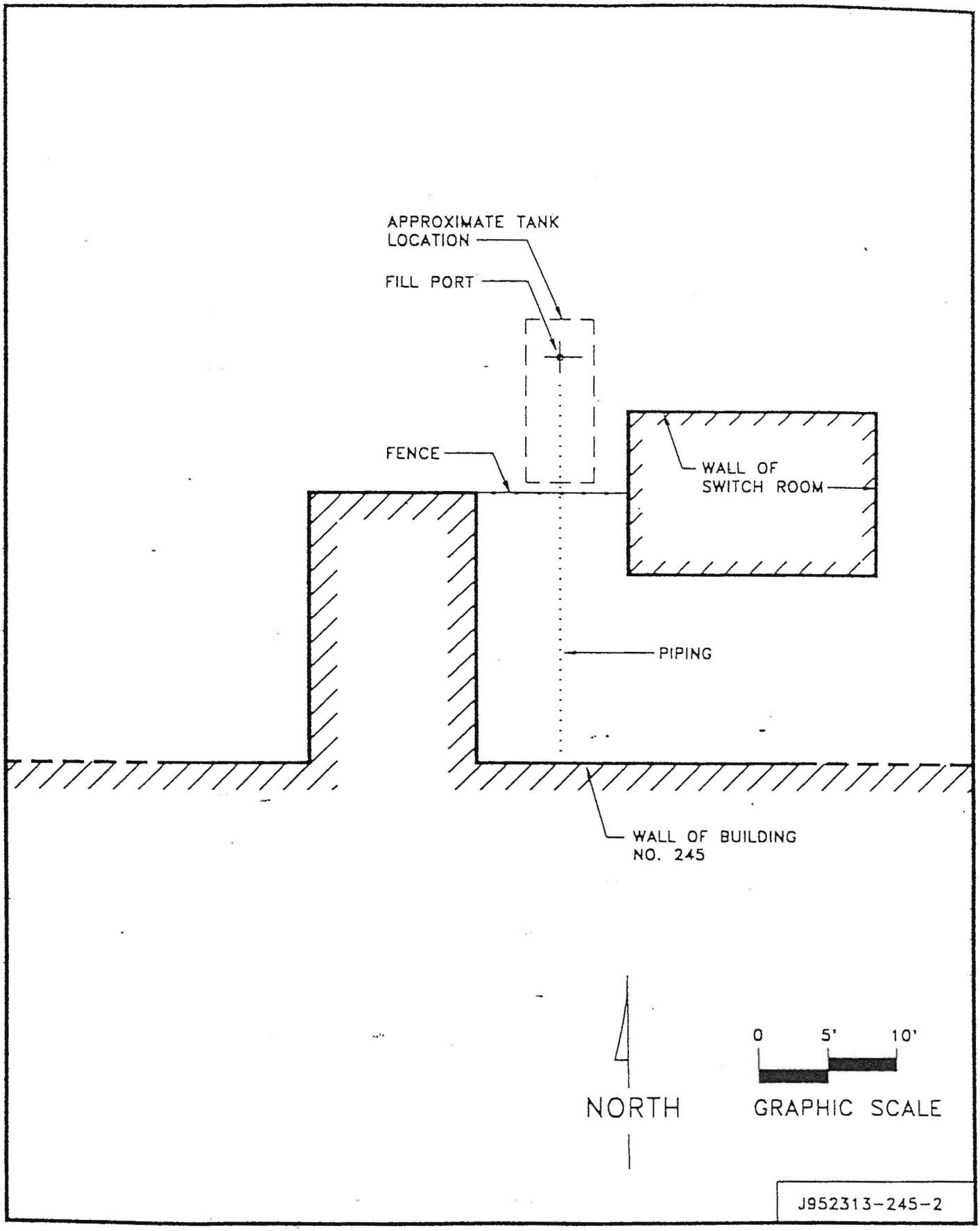
mei245



CONSULTING CHEMISTS

MAYPORT NAVAL STATION
MAYPORT, FLORIDA

FIGURE 1
SITE LOCATION



G.S. ROBBINS, INC.
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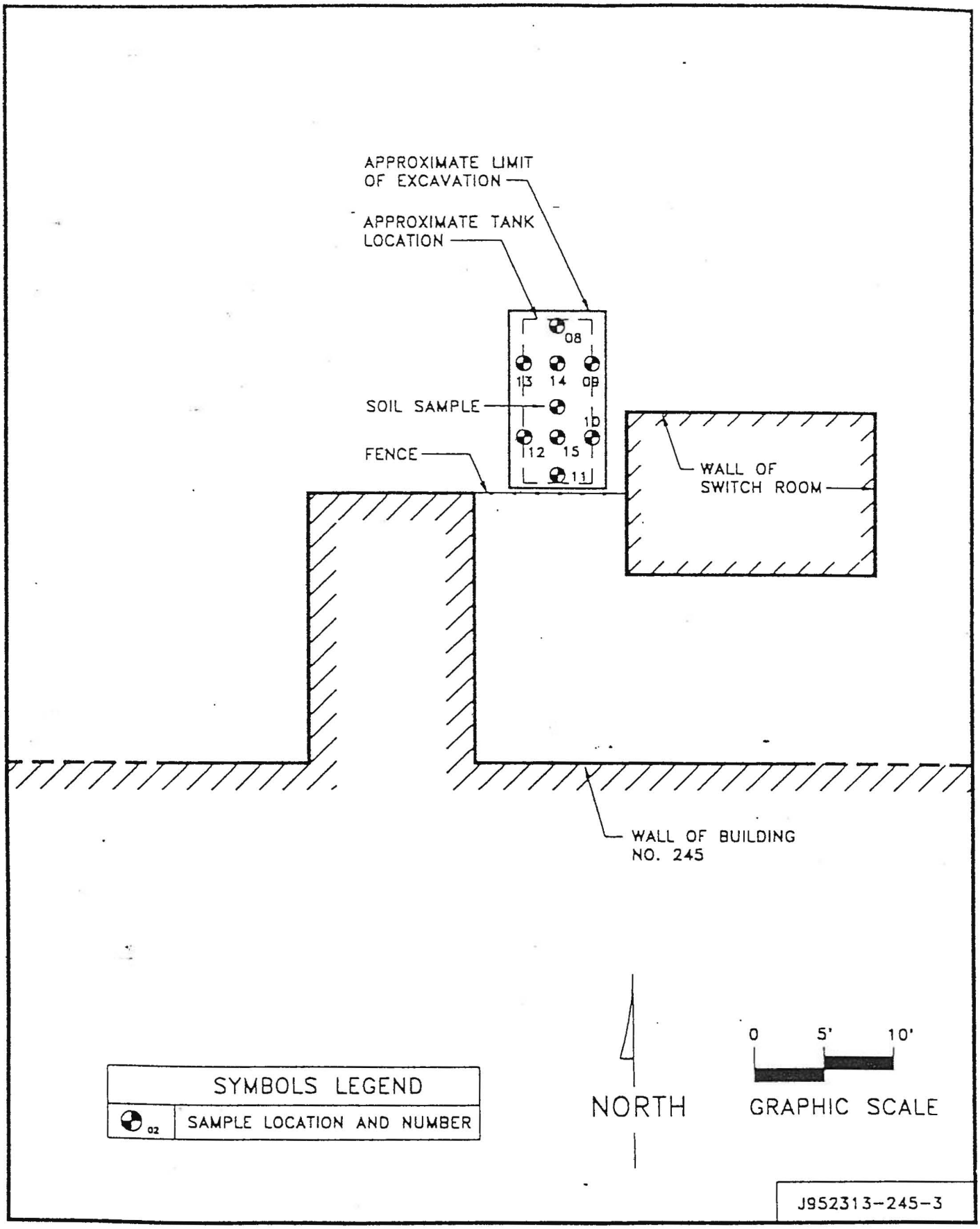
MAYPORT NAVAL STATION
MAYPORT, FLORIDA

TANK 245
FIGURE 2
TANK LOCATION



MAYPORT NAVAL STATION
MAYPORT, FLORIDA

TANK 245
FIGURE 3
SAMPLE LOCATIONS
AND AREA OF EXCAVATION

ATTACHMENT B

CAR
BEA, February 1998

TABLE 2
MONITORING WELL CONSTRUCTION AND WATER LEVEL DATA
CONTAMINATION ASSESSMENT REPORT
NAVAL STATION MAYPORT
UST-245

WELL NO.	DATE	TOTAL DEPTHS OF WELL (ft. bls)	TOP OF CASING (ft. bls)	SURVEYED TOP OF CASING ELEVATION (msl)*	SCREENED INTERVAL DEPTH BLS (ft.)	DEPTH TO WATER FROM TOP OF CASING (ft.)	ELEVATION OF WATER TABLE (msl)*
245-MW-1	7/24/97	13.21	0.21	11.57	2.99-12.49	6.00	5.57
245-MW-1	6/10/97	13.21	0.21	11.57	2.99-12.49	5.15	6.42
245-MW-2	7/24/97	13.02	0.25	10.27	2.81-12.31	4.12	6.15
245-MW-2	6/10/97	13.02	0.25	10.27	2.81-12.31	3.82	6.45
245-MW-3	7/24/97	13.26	0.33	10.15	3.05-12.55	4.45	5.70
245-MW-3	6/10/97	13.26	0.33	10.15	3.05-12.55	3.68	6.47
245-MW-4	7/24/97	13.32	0.21	10.31	3.11-12.61	4.61	5.70
245-MW-4	6/10/97	13.32	0.21	10.31	3.11-12.61	3.32	6.99
245-MW-5	7/24/97	13.03	0.25	9.76	2.82-12.32	4.13	5.63
245-MW-5	6/10/97	13.03	0.25	9.76	2.82-12.32	3.84	5.92

Notes:
bls = below land surface
*** = Elevations referenced to msl (mean sea level)**
Water level measurements were obtained on June 10 and July 24, 1997

TABLE 4
SUMMARY OF SOIL HEADSPACE ANALYSES
NAVAL STATION MAYPORT
UST 245

SAMPLE DESIGNATION	DATE	DEPTH (feet)	OVA HEADSPACE READING (ppm)	OVA HEADSPACE READING WITH CARBON FILTER (ppm)	CORRECTED OVA HEADSPACE READING (ppm)
S-1/245-1-1	5/07/97	1-3	68	< 1	68
S-2/245-2-1	5/07/97	1-3	< 1	NR	< 1
S-3/245-3-1	5/07/97	1-3	< 1	NR	< 1
S-4/245-4-1	5/07/97	1-3	< 1	NR	< 1
S-5/245-5-1	5/07/97	1-3	< 1	NR	< 1
S-6/245-6-1	5/07/97	1-3	< 1	NR	< 1
S-7/245-7-1	5/07/97	1-3	< 1	NR	< 1
S-8/245-8-1	5/07/97	1-3	1	NR	1

Notes:
ppm = parts per million
NR = not recorded
OVA = Organic Vapor Analyzer equipped with a flameionization detector

TABLE 7
SUMMARY OF MONITORING WELL GROUNDWATER ANALYTICAL RESULTS
UST 245
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

POLYNUCLEAR AROMATIC HYDROCARBONS (Method 8270)

PARAMETER	DATE	MW-1	MW-2	MW-3	MW-4	MW-5	MW-4A (Duplicate)	Detection Limit	RS
Naphthalene ug/l	6/10/97	BDL	BDL	BDL	**33**	BDL	26	1.0	20
2-Methylnaphthalene ug/l	6/10/97	BDL	BDL	BDL	42	BDL	28	1.0	NR
1-Methylnaphthalene ug/l	6/10/97	BDL	BDL	BDL	41	BDL	33	1.0	NR
Acenaphthylene ug/l	6/10/97	BDL	BDL	BDL	BDL	BDL	BDL	1.0	210
Acenaphthene ug/l	6/10/97	BDL	BDL	BDL	3.4	BDL	3.4	1.0	20
Fluorene ug/l	6/10/97	BDL	BDL	BDL	3.9	BDL	3.5	1.0	280
Phenanthrene ug/l	6/10/97	BDL	BDL	BDL	3.7	BDL	2.1	1.0	210
Anthracene ug/l	6/10/97	BDL	BDL	BDL	BDL	BDL	BDL	1.0	2100
Fluoranthene ug/l	6/10/97	BDL	BDL	BDL	BDL	BDL	BDL	1.0	280
Pyrene ug/l	6/10/97	BDL	BDL	BDL	BDL	BDL	BDL	1.0	210
Benzo(a)anthracene ug/l	6/10/97	BDL	BDL	BDL	BDL	BDL	BDL	1.0	0.2
Chrysene ug/l	6/10/97	BDL	BDL	BDL	BDL	BDL	BDL	1.0	5
Benzo(b)Fluoranthene ug/l	6/10/97	BDL	BDL	BDL	BDL	BDL	BDL	1.0	0.2
Benzo(k)Fluoranthene ug/l	6/10/97	BDL	BDL	BDL	BDL	BDL	BDL	1.0	0.5
Benzo(a)pyrene ug/l	6/10/97	BDL	BDL	BDL	BDL	BDL	BDL	1.0	0.2

Notes:
BDL = Below Detection Limit
Bold values indicate value exceeding regulatory standard
RS = Regulatory Standard
NR = Not Regulated

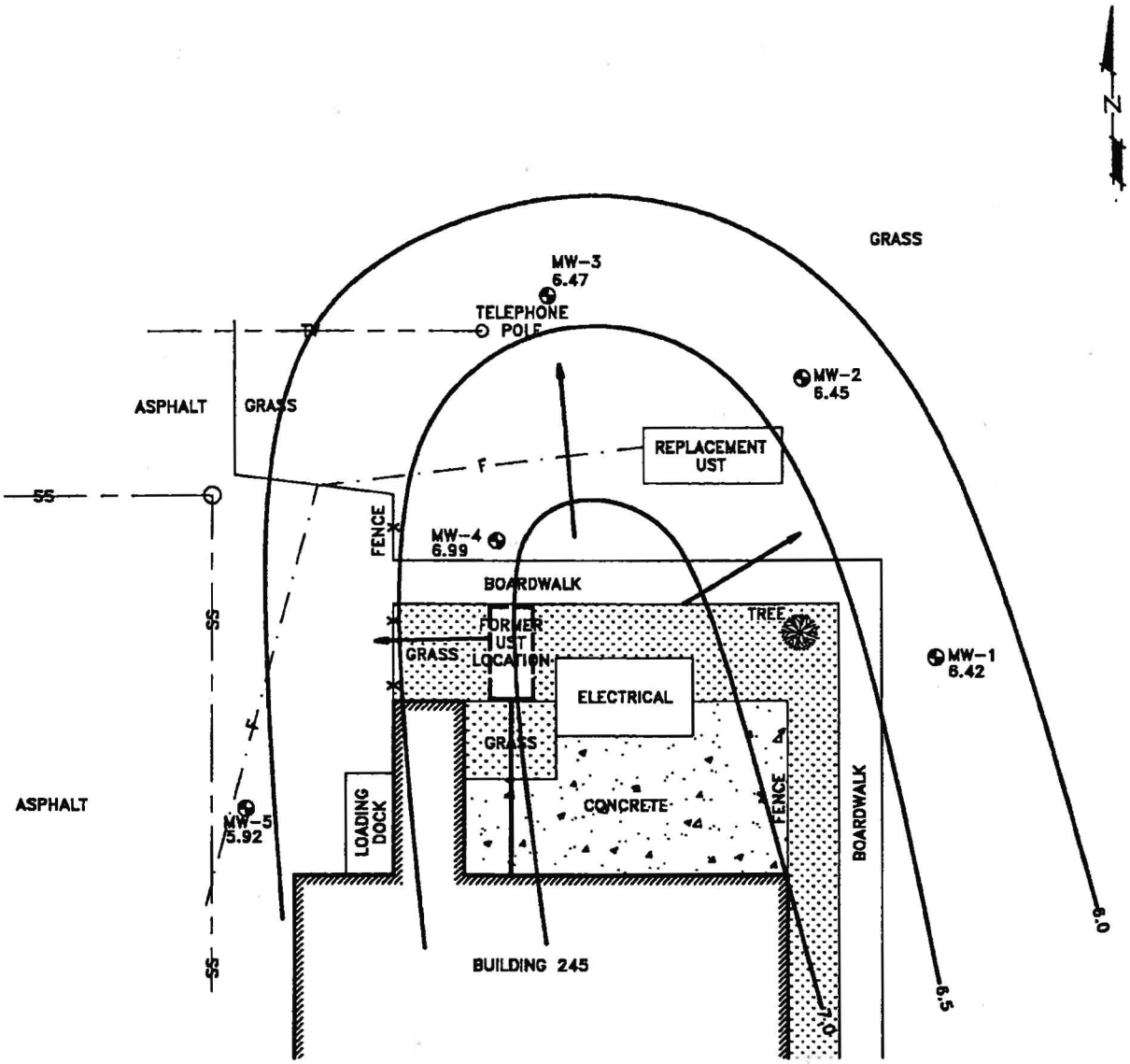
TABLE 7 (CONTINUED)
SUMMARY OF MONTIORING WELL GROUNDWATER ANALYTICAL RESULTS
UST 245
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

PARAMETER	DATE	MW-1	MW-2	MW-3	MW-4	MW-5	MW-4A (Duplicate)	Detection Limit	RS
POLYNUCLEAR AROMATIC HYDROCARBONS (Continued)									
Dibenzo(a,h)Anthracene ug/l	6/10/97	BDL	BDL	BDL	BDL	BDL	BDL	1.0	0.2
Indeno(1,2,3-c,d)pyrene ug/l	6/10/97	BDL	BDL	BDL	BDL	BDL	BDL	1.0	0.2
Benzo(g,h,i)perylene ug/l	6/10/97	BDL	BDL	BDL	BDL	BDL	BDL	1.0	210
PURGEABLE AROMATICS (Method 602)									
Benzene ug/l	6/10/97	BDL	BDL	BDL	6.5	BDL	6.3	1.0	1
Chlorobenzene ug/l	6/10/97	BDL	BDL	BDL	BDL	BDL	BDL	1.0	NR
1,2-Dichlorobenzene ug/l	6/10/97	BDL	BDL	BDL	BDL	BDL	BDL	1.0	600
1,3-Dichlorobenzene ug/l	6/10/97	BDL	BDL	BDL	BDL	BDL	BDL	1.0	10
1,4-Dichlorobenzene ug/l	6/10/97	BDL	BDL	BDL	BDL	BDL	BDL	1.0	75
Ethylbenzene ug/l	6/10/97	BDL	BDL	BDL	22	BDL	21	1.0	30
Toluene ug/l	6/10/97	BDL	BDL	BDL	BDL	BDL	BDL	1.0	40
Total Xylenes ug/l	6/10/97	BDL	BDL	BDL	18	BDL	16	1.0	20
Total BTEX ug/l	6/10/97	BDL	BDL	BDL	46.5	BDL	43.3	1.0	NR
MTBE ug/l	6/10/97	BDL	BDL	BDL	BDL	BDL	BDL	1.0	35

TABLE 7 (CONTINUED)
SUMMARY OF MONTIORING WELL GROUNDWATER ANALYTICAL RESULTS
UST 245
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

METALS (METHOD 6010A)									
LEAD mg/l	6/10/97	0.014	0.032	0.012	0.011	0.026	0.010	0.005	0.015

Notes:
BDL = Below Detection Limit
Shaded values indicate value exceeding regulatory standard
RS = Regulatory Standard
NR = Not Regulated



NOTE:
The information shown on this map was obtained from existing maps from previous investigations prepared by others. This information is depicted to provide visual aid within the context of this plan and should not be used as a sole reference in precise dimensioning of features indicated.

LEGEND

ESTIMATED GROUNDWATER FLOW DIRECTION

MONITORING WELL LOCATION

WATER TABLE ELEVATION CONTOUR (CONTOUR INTERVALS = 0.5ft.)

6.42 WATER TABLE ELEVATION IN FEET ABOVE MEAN SEA LEVEL

-20' 0' 20'

GRAPHIC SCALE
1"=20'

BEA
Bhate Environmental Associates, Inc.
Environmental Engineers & Scientists

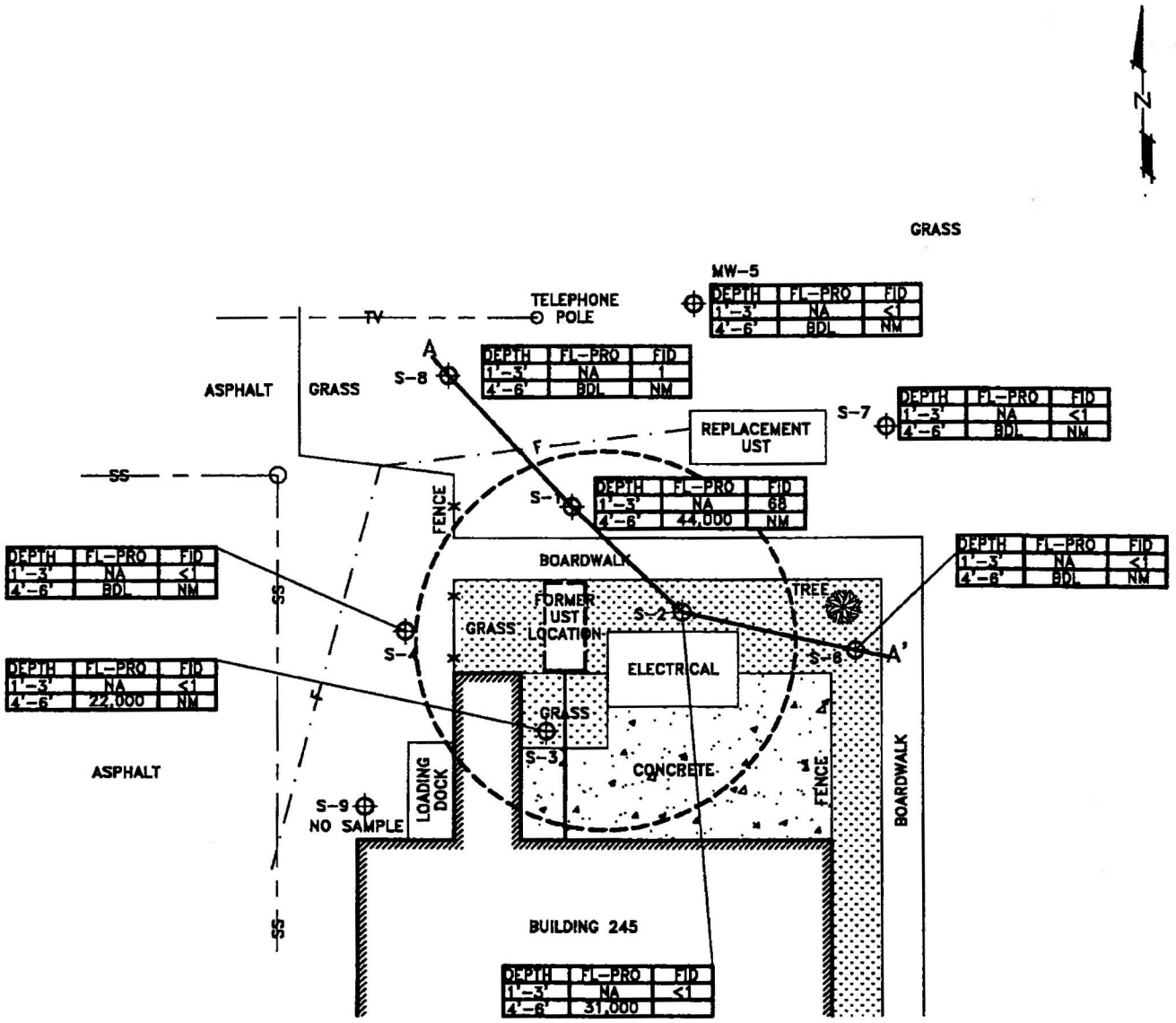
WATER TABLE CONTOUR MAP
6/10/97

PROJECT NO.	SCALE	DATE	DRAWN BY:
9970058	1"=20'	11/8/97	–
			DRAWING NO: F-5

Contamination Assessment Report
UST 245

Department of the Navy
Naval Station Mayport
Mayport, Florida

Figure 5



LEGEND

⊕	GEOPROBE SOIL AND GROOUNDWATER SAMPLING LOCATIONS
FL-PRO	FLORIDA PETROLEUM RESIDUAL ORGANICS IN PARTS PER MILLION (ppm)
FID	FLAME IONIZATION DETECTOR IN PARTS PER MILLION (ppm)
BDL	BELOW DETECTION LIMITS
NA	NOT ANALYZED
NM	NOT MEASURED
— — — —	APPROXIMATE LIMIT OF SOIL CONTAMINATION
A——A'	LINE OF CROSS-SECTION

-20' 0' 20'

GRAPHIC SCALE
1"=20'

NOTE:
The information shown on this map was obtained from existing maps from previous investigations prepared by others. This information is depicted to provide visual aid within the context of this plan and should not be used as a sole reference in precise dimensioning of features indicated.

BEA
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Environmental Engineers & Scientists

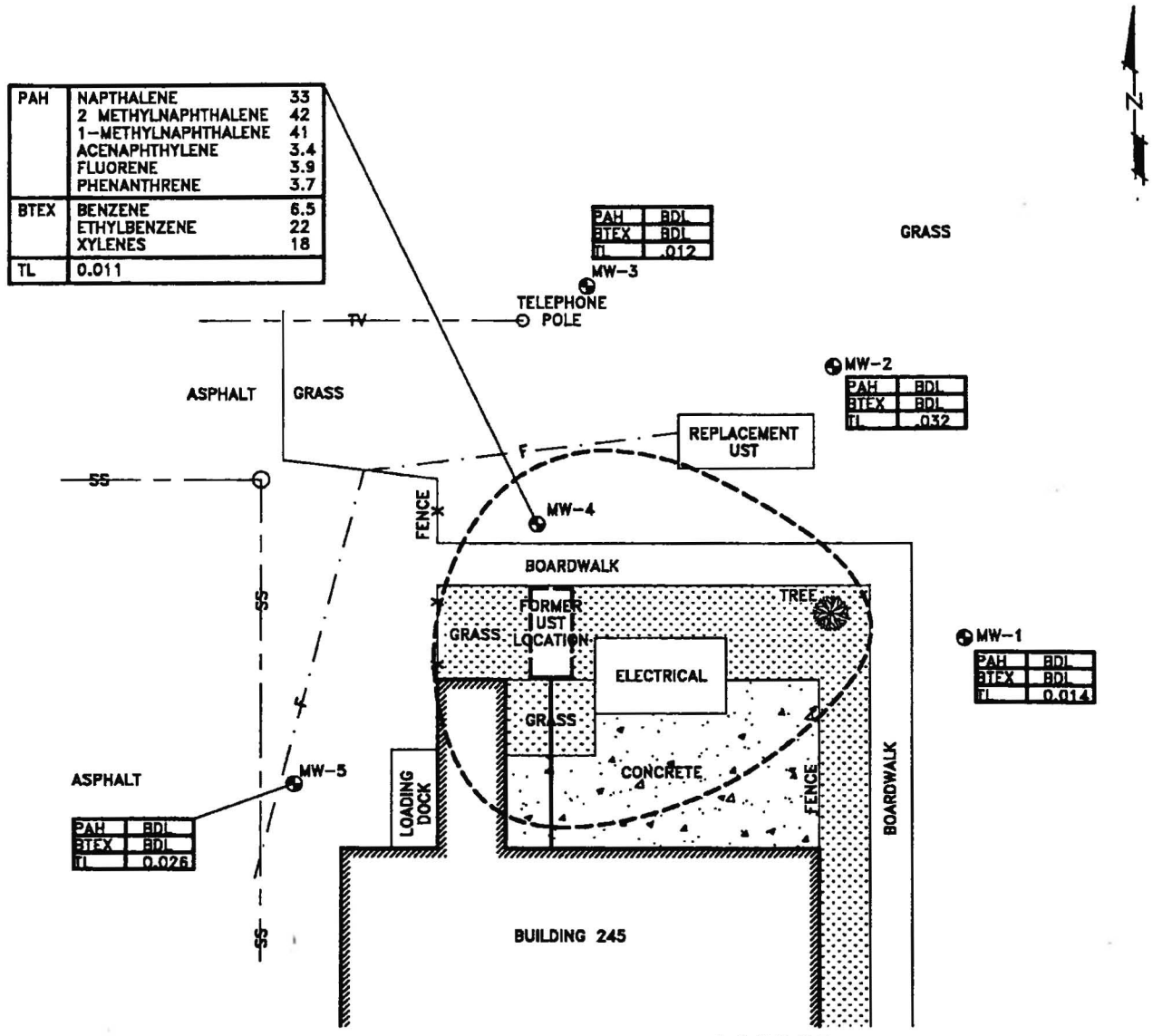
GEOPROBE SOIL ANALYTICAL RESULTS

PROJECT NO.	SCALE	DATE	DRAWN BY:
9970058	1"=20'	11/8/97	–
			DRAWING NO: F-8

Contamination Assessment Report
UST 245

Department of the Navy
Naval Station Mayport
Mayport, Florida

Figure 8



LEGEND

⊕	MONITORING WELL LOCATION
— — —	APPROXIMATE EXTENT OF GROUNDWATER CONTAMINATION
BTEX	TOTAL BENZENE, TOLUENE, ETHYLBENZENE AND XYLENE CONCENTRATION IN PARTS PER BILLION
PAH	POLYNUCLEAR AROMATIC HYDROCARBONS IN PARTS BILLION
LEAD	TOTAL LEAD IN PARTS PER MILLION
BDL	BELOW DETECTION LIMITS

-20' 0' 20'

GRAPHIC SCALE
1"=20'

NOTE:
The information shown on this map was obtained from existing maps from previous investigations prepared by others. This information is depicted to provide visual aid within the context of this plan and should not be used as a sole reference in precise dimensioning of features indicated.

Bhate Environmental Associates, Inc.
Environmental Engineers & Scientists

MONITORING WELL GROUNDWATER ANALYTICAL RESULTS

PROJECT NO.	SCALE	DATE	DRAWN BY:
9970058	1"=20'	11/8/97	–
			DRAWING NO: F-11

Contamination Assessment Report
UST 245

Department of the Navy
Naval Station Mayport
Mayport, Florida

Figure 11

ATTACHMENT C

CAR ADDENDUM
BEA, September 1999

TABLE 3
SUMMARY OF SOIL ANALYTICAL RESULTS
UST 245
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

POLYNUCLEAR AROMATIC HYDROCARBONS (Method 8270C)		
PARAMETER	**245-S-9B**	**RS**
DATE	2/11/99	
Naphthalene mg/kg	< 0.165	1000
Acenaphthene mg/kg	< 0.165	2300
Anthracene mg/kg	< 0.165	19000
Fluoranthene mg/kg	< 0.165	2800
Fluorene mg/kg	< 0.165	2100
Pyrene mg/kg	< 0.165	2200
Benzo(a)anthracene mg/kg	< 0.165	1.4
Benzo(a)pyrene mg/kg	< 0.165	0.1
Benzo(b)Fluoranthene mg/kg	< 0.165	1.4
Benzo(k)Fluoranthene mg/kg	< 0.165	15
Chrysene mg/kg	< 0.165	140
Dibenzo(a,h)Anthracene mg/kg	< 0.165	0.1
Indeno(1,2,3-c,d)pyrene mg/kg	< 0.165	1.5
Acenaphthylene mg/kg	< 0.165	1100
Benzo (g,h,I) perylene mg/kg	< 0.165	2300
Phenanthrene mg/kg	< 0.165	1900
PURGEABLE AROMATICS (8310B)		
Benzene mg/kg	< .05*	1.1
Ethylbenzene mg/kg	< .05*	240
Toluene mg/kg	< .05*	300
Total Xylenes mg/kg	< 0.1000*	290
MTBE mg/kg	< 0.2500*	350
PETROLEUM HYDROCARBONS (FL-PRO)		
FL-PRO mg/kg	< 5.0	350

Notes: * = Dilution factor was used to establish Report Limit
Shaded values indicate value exceeding regulatory standard
RS = Regulatory Standard
NR = Not Regulated

TABLE 4
SUMMARY OF MONITORING WELL GROUNDWATER ANALYTICAL RESULTS
UST-245
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

POLYNUCLEAR AROMATIC HYDROCARBONS

ANALYTICAL METHOD	8270	8270	8270	8270	8310	8270	8310	8310		8310	RS
DATE	6/13/97	6/13/97	6/13/97	6/13/97	2/16/99	6/13/97	2/16/99	2/16/99	7/01/99	2/16/99	
PARAMETER	MW-1	MW-2	MW-3	MW-4		MW-5	MW-6	MW-7		MW-8	
Naphthalene ug/l	< 1.0	< 1.0	< 1.0	**33**	**37.0***	< 1.0	< 1.0	**32.8***	<1.1	**164***	20
2-Methylnaphthalene ug/l	< 1.0	< 1.0	< 1.0	42	< 10.1*	< 1.0	< 2.1	< 10.2*	NA	76.0*	NR
1-Methylnaphthalene ug/l	< 1.0	< 1.0	< 1.0	41	< 10.1*	< 1.0	< 21.	12.3*	NA	75.2*	NR
Acenaphthylene ug/l	< 1.0	< 1.0	< 1.0	< 1.0	10.1*	< 1.0	< 2.1	< 10.2*	<2.1	< 42.1*	210
Acenaphthene ug/l	< 1.0	< 1.0	< 1.0	3.4	< 5.1*	< 1.0	< 1.0	< 5.1*	<1.1	<21.1*	20
Fluorene ug/l	< 1.0	< 1.0	< 1.0	3.9	0.5	< 1.0	< 0.2	1.3*	<0.2	4.8*	280
Phenanthrene ug/l	< 1.0	< 1.0	< 1.0	3.7	< 0.6	< 1.0	< 0.7	< 0.7	<0.7	< 13.5*	210
Anthracene ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 0.2	< 1.0	< 0.7	< 0.7	<0.7	< 0.7	2100
Fluoranthene ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 0.2	< 1.0	< 0.2	0.3*	<0.2	0.4	280
Pyrene ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 0.3	< 1.0	< 0.3	< 0.3	<0.3	0.4	210
Benzo(a)anthracene ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 0.1	< 1.0	< 0.1	< 0.1	<0.1	< 0.1	0.2
Chrysene ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 0.2	< 1.0	< 0.2	< 0.2	<0.1	< 0.2	5
Benzo(b)Fluoranthene ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 0.2	< 1.0	< 0.2	< 0.2	<0.2	< 0.2	0.2
Benzo(k)Fluoranthene ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 0.2	< 1.0	< 0.2	< 0.2	<0.2	< 0.2	0.5
Benzo(a)pyrene ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 0.1	< 1.0	< 0.1	< 0.1	<0.1	< 0.1	0.2

TABLE 4
SUMMARY OF MONITORING WELL GROUNDWATER ANALYTICAL RESULTS
(CONTINUED)
UST-245
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

POLYNUCLEAR AROMATIC HYDROCARBONS (Continued)

	MW-1	MW-2	MW-3	MW-4		MW-5	MW-6	MW-7		MW-8	RS
DATE	6/13/97	6/13/97	6/13/97	6/13/97	2/16/99	6/13/97	2/16/99	2/16/99	7/01/99	2/16/99	
Dibenzo(a,h)Anthracene ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 0.3	< 1.0	< 0.3	< 0.3	<0.2	< 0.3	0.2
Indeno(1,2,3-c,d)pyrene ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 0.4	< 1.0	< 0.4	< 0.4	<0.2	< 0.5	0.2
Benzo(g,h,i)perylene ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 0.8	< 1.0	< 0.8	< 0.8	<0.8	< 0.8	210

TABLE 4
SUMMARY OF MONITORING WELL GROUNDWATER ANALYTICAL RESULTS
(CONTINUED)
UST-245
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

PURGEABLE AROMATICS

ANALYTICAL METHOD	8020	8020	8020	8020	8021B		8020	8021B		8021B		8021B		8021B		RS
DATE	6/10/97	6/10/97	6/10/97	6/10/97	2/16/99	7/01/99	6/10/97	2/16/99	7/01/99	2/16/99	7/01/99	2/16/99	7/01/99	2/16/99	7/01/99	
	MW-1	MW-2	MW-3	MW-4			MW-5	MW-6		MW-7		MW-8		MW-9 MW-4 Duplicate		
Benzene ug/l	< 1.0	< 1.0	< 1.0	**6.5**	**1.8**	NA	< 1.0	< 1.0	NA	< 1.0	NA	**17.5**	NA	**1.4**	NA	1
Toluene ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	NA	< 1.0	< 1.0	NA	< 1.0	NA	< 5.0	NA	<1.0	NA	40
Ethylbenzene ug/l	< 1.0	< 1.0	< 1.0	22	1.8	NA	< 1.0	< 1.0	NA	< 1.0	NA	**59.0**	NA	1.2	NA	30
Total Xylenes ug/l	< 1.0	< 1.0	< 1.0	18	< 1.0	NA	< 1.0	< 1.0	NA	< 1.0	NA	7.5	NA	<1.0	NA	20
n-Butylbenzene ug/l	NA	NA	NA	NA	1.1	NA	NA	< 1.0	NA	2.1	NA	19.0	NA	<1.0	NA	NR
sec-Butylbenzene ug/l	NA	NA	NA	NA	2.3	NA	NA	< 1.0	NA	< 1.0	NA	15.0	NA	1.8	NA	NR
n-Propylbenzene ug/l	NA	NA	NA	NA	1.7	NA	NA	< 1.0	NA	< 1.0	NA	23.0	NA	<1.0	NA	NR
Naphthalene ug/l	NA	NA	NA	NA	**30.6**	NA	NA	< 1.0	NA	**36.4**	NA	**416.0**	NA	**24.1**	NA	20
4-Isopropyltoluene ug/l	NA	NA	NA	NA	< 1.0	NA	NA	< 1.0	NA	< 1.0	NA	5.5	NA	<1.0	NA	NR
1,2,4-Trimethylbenzene ug/l	NA	NA	NA	NA	< 1.0	NA	NA	< 1.0	NA	< 1.0	NA	45.5	NA	<1.0	NA	NR
Isopropylbenzene ug/l	NA	NA	NA	NA	1.6	NA	NA	< 1.0	NA	3.7	NA	25.0	NA	1.1	NA	NR
MTBE ug/l	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	NA	< 1.0	< 1.0	NA	< 1.0	NA	< 1.0	NA	<1.0	NA	35
EDB ug/l	NA	NA	NA	NA	< 1.0	<0.02	NA	< 1.0	<0.02	< 1.0	<0.02	< 5.0	<0.02	<1.0	<0.02	0.02
1,2-dichloroethane ug/l	NA	NA	NA	NA	< 1.0	NA	NA	< 1.0	NA	< 1.0	NA	< 1.0	NA	<1.0	NA	3.0

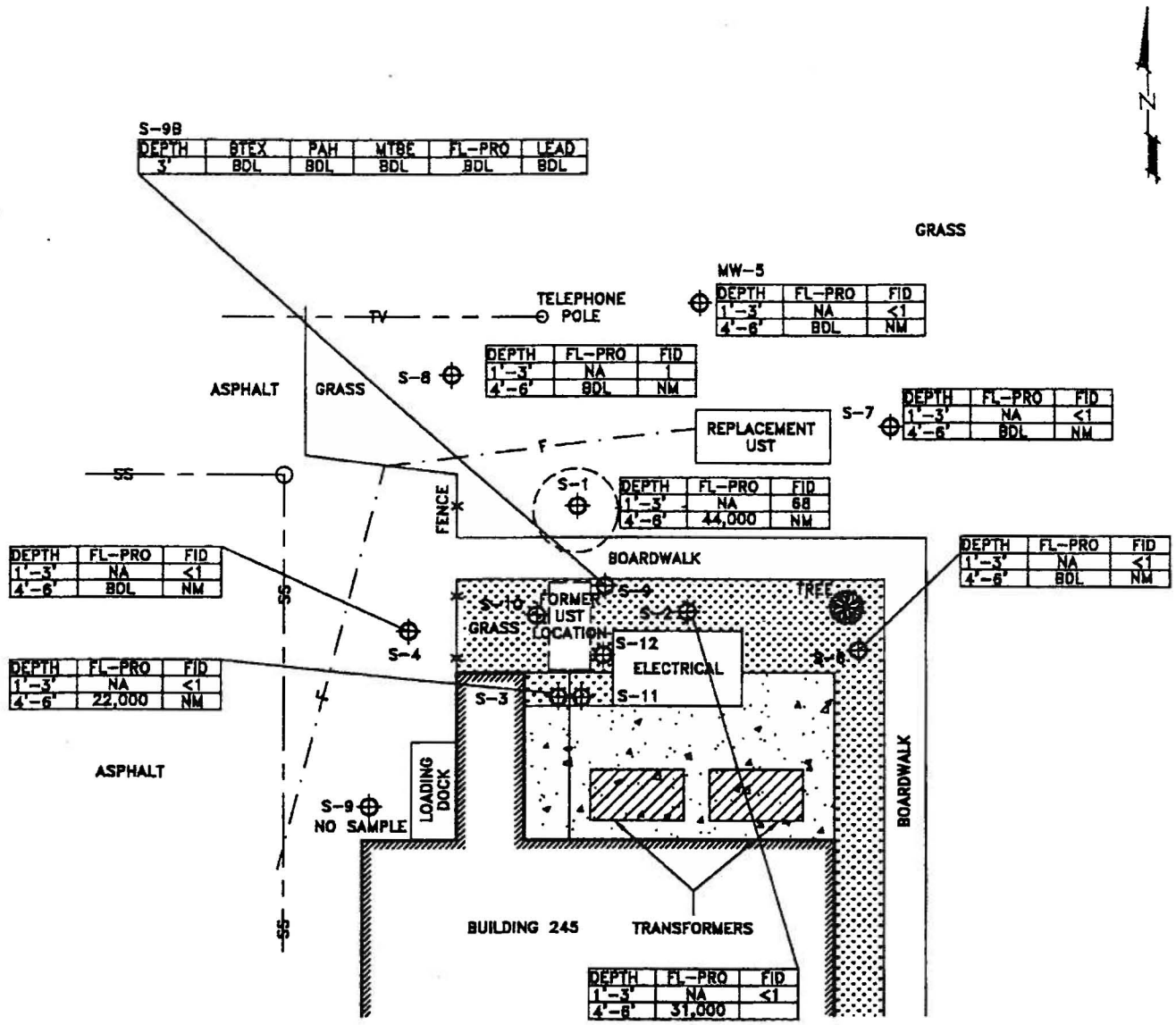
TABLE 4
SUMMARY OF MONITORING WELL GROUNDWATER ANALYTICAL RESULTS
UST-245
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

	MW-1		MW-2		MW-3		MW-4		MW-5		MW-6	MW-7	MW-8	RS
PETROLEUM HYDROCARBONS														
Date	6/10/97	2/16/99	6/10/97	2/16/99	6/10/99	2/16/99	6/10/97	2/16/99	6/13/97	2/16/99	2/16/99	2/16/99	2/16/99	
FL-PRO mg/l	NA	< 0.202	NA	< 0.202	NA	< 0.206	NA	0.790	NA	< 0.206	< 0.202	0.440	2.830	5.0
METALS														
Lead mg/l	0.014	NA	**0.032**	<.003	0.012	NA	0.011	< 0.0030 Duplicate (MW-9)	**0.026**	< .004	< .003	< .003	< .003	.015

Notes: Bold values indicate value exceeding regulatory standard
NA = Not Analyzed
RS = Regulatory Standard

NR = Not Regulated

* = Dilution factor used in determining analytical reporting limits



NOTE:
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LEGEND

⊕	GEOPROBE SOIL AND GROOUNDWATER SAMPLING LOCATIONS
FL-PRO	FLORIDA PETROLEUM RESIDUAL ORGANICS IN PARTS PER MILLION (ppm)
FID	FLAME IONIZATION DETECTOR IN PARTS PER MILLION (ppm)
BDL	BELOW DETECTION LIMITS
NM	NOT MEASURED
— — — —	APPROXIMATE LIMIT OF SOIL CONTAMINATION

-20' 0' 20'
GRAPHIC SCALE
1"=20'

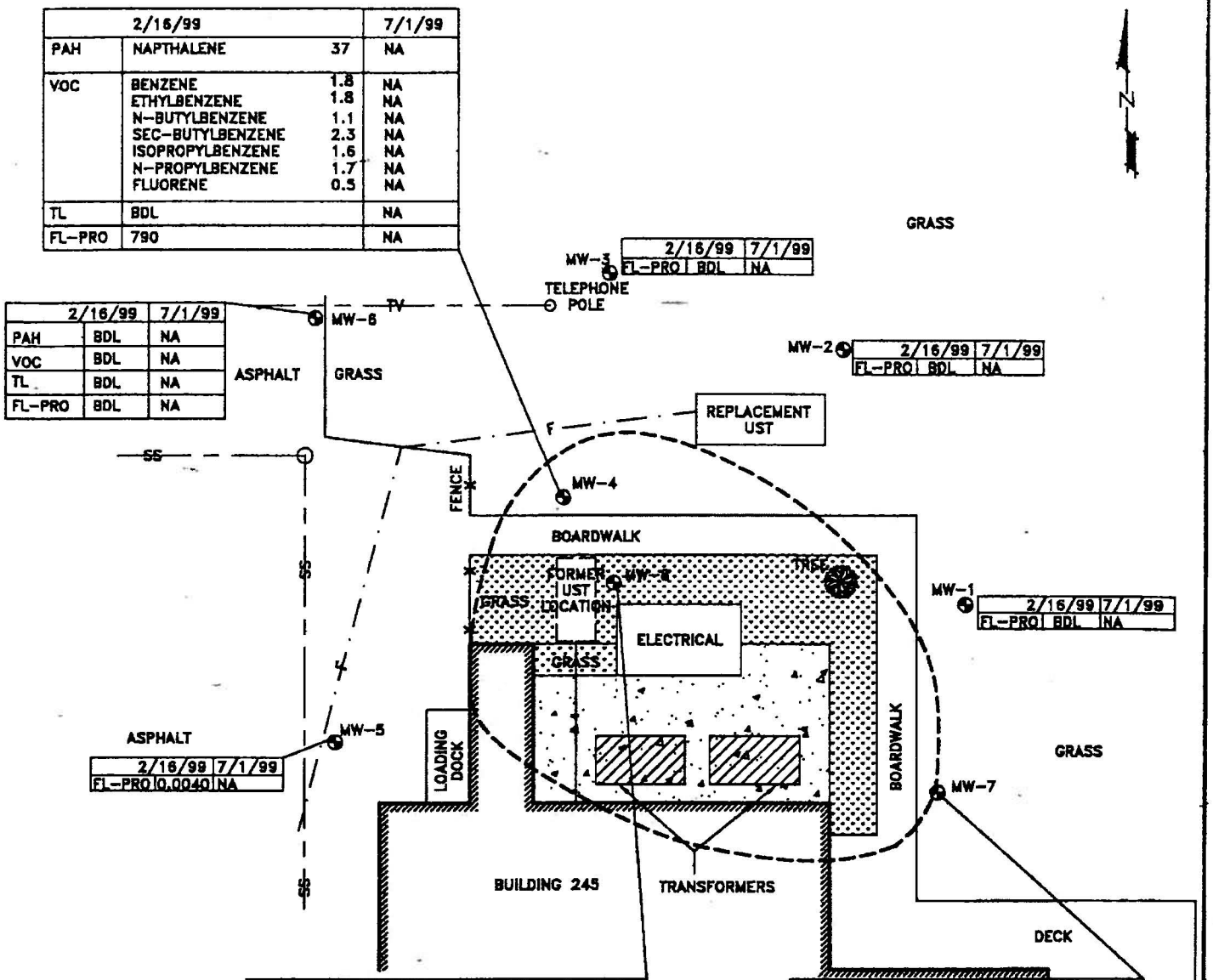
BEA
Bhate Environmental Associates, Inc.
Environmental Engineers & Scientists

SOIL ANALYTICAL RESULTS

PROJECT NO.	SCALE	DATE	DRAWN BY:
9970058	1"=20'	3/22/99	–
			DRAWING NO: F2B

Contamination Assessment Report
UST 245
Department of the Navy
Naval Station Mayport
Mayport, Florida

Figure 3



	2/16/99		7/1/99
PAH	NAPTHALENE	37	NA
VOC	BENZENE	1.8	NA
	ETHYLBENZENE	1.8	NA
	N-BUTYLBENZENE	1.1	NA
	SEC-BUTYLBENZENE	2.3	NA
	ISOPROPYLBENZENE	1.6	NA
	N-PROPYLBENZENE	1.7	NA
	FLUORENE	0.5	NA
TL	BDL		NA
FL-PRO	790		NA

	2/16/99	7/1/99
FL-PRO	BDL	NA

	2/16/99	7/1/99
FL-PRO	BDL	NA

	2/16/99	7/1/99
PAH	BDL	NA
VOC	BDL	NA
TL	BDL	NA
FL-PRO	BDL	NA

	2/16/99	7/1/99
FL-PRO	BDL	NA

	2/16/99	7/1/99
FL-PRO	0.0040	NA

	2/16/99		7/1/99
PAH	NAPTHALENE	164	NA
	FLUORANTHENE	0.4	NA
	FLUORENE	4.8	NA
	PYRENE	0.4	NA
	1-METHYLNAPTHALENE	76.0	NA
	2-METHYLNAPTHALENE	75.2	NA
VOC	BENZENE	17.5	NA
	ETHYLBENZENE	59.0	NA
	XYLENES	7.5	NA
TL	BDL		NA
FL-PRO	2830		NA

	2/16/99		7/1/99
PAH	NAPTHALENE	32.8	BDL
	FLUORANTHENE	0.3	BDL
	FLUORENE	1.3	BDL
	1-METHYLNAPTHALENE	12.3	NA
VOC	N-BUTYLBENZENE	2.1	NA
	ISOPROPYLBENZENE	3.7	NA
TL	BDL		NA
FL-PRO	440		NA

NOTE:
The information shown on this map was obtained from existing maps from previous investigations prepared by others. This information is depicted to provide visual aid within the context of this plan and should not be used as a sole reference in precise dimensioning of features indicated.

-20' 0' 20'
GRAPHIC SCALE
1"=20'

LEGEND

●	MONITORING WELL LOCATION
———	APPROXIMATE EXTENT OF GROUNDWATER CONTAMINATION
VOC	VOLATILE ORGANIC COMPOUNDS IN PARTS PER BILLION (ppb)
PAH	POLYNUCLEAR AROMATIC HYDROCARBONS IN PARTS BILLION
TL	TOTAL LEAD IN PARTS PER MILLION (ppm)
BDL	BELOW DETECTION LIMITS
FL-PRO	IN PARTS PER MILLION (ppm)

Bhate Environmental Associates, Inc.
Environmental Engineers & Scientists

MONITORING WELL GROUNDWATER ANALYTICAL RESULTS

PROJECT NO.	SCALE	DATE	DRAWN BY:
9970058	1"=20'	11/8/97	–
			DRAWING NO: F4

Contamination Assessment Report
UST 245

Department of the Navy
Naval Station Mayport
Mayport, Florida

Figure 4

ATTACHMENT D

SAR ADDENDUM
EEG, May 2002

Table 1. Groundwater Elevation Summary

WELL NO.	MW-1			MW-2			MW-3			MW-4		
DIAMETER	2-Inches			2-Inches			2-Inches			2-Inches		
WELL DEPTH (ft)	13.21			13.02			13.26			13.32		
SCREEN INTERVAL	2.99 to 12.49			2.81 to 12.31			3.05 to 12.55			3.11 to 12.61		
TOC ELEVATION	11.57			10.27			10.15			10.31		
DATE	ELEV	DTW	FP	ELEV	DTW	FP	ELEV	DTW	FP	ELEV	DTW	FP
06/10/97	6.42	5.15	NO	6.45	3.82	NO	6.47	3.68	NO	6.99	3.32	NO
07/24/97	5.57	6.00	NO	6.15	4.12	NO	5.70	4.45	NO	5.70	4.61	NO
02/16/99	5.75	5.82	NO	5.75	4.52	NO	5.82	4.33	NO	5.80	4.51	NO
07/01/99	4.92	6.65	NO	5.01	5.26	NO	5.07	5.08	NO	5.06	5.25	NO
07/31/01	5.27	6.30	NO	5.34	4.93	NO	5.43	4.72	NO	5.41	4.90	NO
8/1/2001 (0800)	5.33	6.24	NO	5.42	4.85	NO	5.52	4.63	NO	5.49	4.82	NO
8/1/2001 (1200)	5.32	6.25	NO	5.40	4.87	NO	5.49	4.66	NO	5.47	4.84	NO
8/1/2001 (1600)	5.32	6.25	NO	5.39	4.88	NO	5.49	4.66	NO	5.45	4.86	NO

WELL NO.	MW-5			MW-6			MW-7			MW-8		
DIAMETER	2-Inches			3/4-Inches			3/4-Inches			3/4-Inches		
WELL DEPTH (ft)	13.03			12.80			13.60			13.60		
SCREEN INTERVAL	2.82 to 12.32			3.3 to 12.8			4.1 to 13.1			4.1 to 13.1		
TOC ELEVATION	9.76			9.15			12.48			10.07		
DATE	ELEV	DTW	FP	ELEV	DTW	FP	ELEV	DTW	FP	ELEV	DTW	FP
06/10/97	5.92	3.84	NO	NI	NI	NO	NI	NI	NO	NI	NI	NO
07/24/97	5.63	4.13	NO	NI	NI	NO	NI	NI	NO	NI	NI	NO
02/16/99	5.82	3.94	NO	5.69	3.46	NO	5.73	6.75	NO	5.80	4.27	NO
07/01/99	5.09	4.67	NO	5.08	4.07	NO	4.91	7.57	NO	4.67	5.40	NO
07/31/01	5.46	4.30	NO	5.67	3.48	NO	5.30	7.18	NO	5.33	4.74	Yes
8/1/2001 (0800)	5.53	4.23	NO	5.47	3.68	NO	5.31	7.17	NO	5.35	4.72	Yes
8/1/2001 (1200)	5.51	4.25	NO	5.47	3.68	NO	5.30	7.18	NO	NM	NM	NM
8/1/2001 (1600)	5.54	4.22	NO	5.45	3.7	NO	5.30	7.18	NO	NM	NM	NM

Notes:
Measurements made prior to July 31, 2001, were by Bhate Environmental Associates (Bhate, 1997, 1999)
DTW = Measurement of depth to groundwater in feet
FP = Observation/measurement of free phase liquid
ELEV = Groundwater elevation (NGVD)
NO = Free phase liquid observed
NGVD = National Geodetic Vertical Datum
NM = Not measured
TOC = Top of the well casing
NI = Not installed

Table 2. Soil Sample Field Screening Results

Sample Location / Date	Depth	OVA Measurements (parts per million)			Comments
		Direct Measurement	With Charcoal Filter	Corrected	
SS-1	0 to 1	0	–	0	Tan Sand
3/5/02	1 to 2	0	–	0	Tan Sand
	2 to 3	1	–	1	Tan Sand
	3 to 4	0	–	0	Wet – Tan Sand
SS-2	0 to 1	0	–	0	Tan Sand
3/5/02	1 to 2	0	–	0	Tan Sand
	2 to 3	1	–	1	Tan Sand with little Clay
	3 to 4	1	–	1	Wet - Tan Sand
SS-3	0 to 1	0	–	0	Tan Sand & Clay, Little Shells
3/5/02	1 to 2	0	–	0	Tan Sand & Clay, with Shells
	2 to 3	0	–	0	Wet - Tan Clayey Sand
SS-4	0 to 1	0	–	0	Very Fine Brown Sand
3/5/02	1 to 2	0	–	0	Very Fine Brown Sand
	2 to 3	1	–	1	Very Fine Brown Sand
	3 to 4	0	–	0	Wet - Very Fine Brown Sand
SS-5	0 to 1	0	–	0	White to Brown fine Sand
3/5/02	1 to 2	0	–	0	White to Brown fine Sand
	2 to 3	1	–	1	Damp – White Sand
	2 to 3	1	–	1	Wet – Brown and White Sand
SS-6	0 to 1	1	–	1	Brown and Tan Sand
3/5/02	1 to 2	1	–	1	Brown and Tan Sand
	2 to 3	1	–	1	Tan Sand
	3 to 4	1	–	1	Damp - Brown Sand
SS-7	0 to 1	0	-	0	Brown Sand
3/5/021	1 to 2	1	-	1	White and Brown Sand with Shells
	2 to 3	1	-	1	White and Tan Sand with Shells
	3 to 4	100	0	100	Wet – Black Sand
SS-8	0 to 1	0	–	0	Very Fine Brown Sand
3/5/02	1 to 2	0	–	0	Very Fine Brown Sand
	2 to 3	1	–	1	Damp – Very Fine Brown Sand
	3 to 4	–	–	–	Saturated
SS-9	0 to 1	0	–	0	Tan Sand with Shells
3/5/02	1 to 2	0	–	0	Tan Sand
	2 to 3	0	–	0	Tan Sand
	3 to 4	75	0	75	Fine Gray Sand
SS-10	0 to 1	0	–	0	Tan Sand
3/5/02	1 to 2	0	–	0	Tan Sand
	2 to 3	1	–	1	Tan Sand
	3 to 4	0	–	0	Brown Sand
SS-11	0 to 1	0	–	0	Tan and Brown Sand, and Shells
3/5/02	1 to 2	0	–	0	Tan Shells and Sand
	2 to 3	1	–	1	Damp – Tan Sand
	3 to 4	–	–	–	Saturated

Notes:
OVA = Organic Vapor Analyzer; – = measurement not obtained due to low measurement or no organic vapors present.

Table 3. Analytical Results for Soil Sample SS-9 Collected 3 to 4 ft-bls

Parameter	SS-7 2 to 3 ft-bls	SS-9 3 to 4 ft-bls	SS-10 2 to 3 ft-bls	Unit	Soil Cleanup Target Levels			
					Residential	Industrial	Leachability to Groundwater	Leachability to Marine Water
Total Recoverable Petroleum Hydrocarbons								
Petroleum Residual Organics	0.1 U	**31,000**	0.1 U	mg/kg	**340**	**2,500**	**340**	**340**
Volatile Organics								
Ethylbenzene	5 U	270	5 U	µg/kg	1,100,000	8,400,000	600	12,000
Polynuclear Aromatic Hydrocarbons								
1-Methylnaphthalene	35 U	**35,000**	35 U	µg/kg	68,000	470,000	**2,200**	**10,000**
2-Methylnaphthalene	35 U	**88,000**	35 U	µg/kg	**80,000**	560,000	**6,100**	**9,100**
Acenaphthene	35 U	**3,900**	35 U	µg/kg	1,900,000	18,000,000	**2,100**	**700**
Acenaphthylene	35 U	**3,700**	35 U	µg/kg	1,100,000	11,000,000	27,000	**700**
Benzo(a)anthracene	35 U	**6,000**	35 U	µg/kg	**1,400**	**5,000**	**3,200**	**700**
Fluoranthene	35 U	**45,000**	35 U	µg/kg	2,900,000	48,000,000	1,200,000	**1,300**
Fluorene	35 U	6,300	35 U	µg/kg	2,200,000	28,000,000	160,000	17,000
Naphthalene	35 U	**16,000**	35 U	µg/kg	40,000	270,000	**1,700**	**2,200**
Phenanthrene	35 U	**13,000**	35 U	µg/kg	2,000,000	30,000,000	250,000	**700**
Pyrene	35 U	**3,900**	35 U	µg/kg	2,200,000	37,000,000	880,000	**1,300**

Notes:
ft-bls = feet beneath the land surface
Soil Cleanup Target Levels from Chapter 62-777, Florida Administrative Code
mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram
U = analyte, if present, was at a concentration less than the detection limit.
Bold = analyte concentration exceed regulatory screening criteria

Table 4. Groundwater Analytical Results – Volatile Organic Compounds

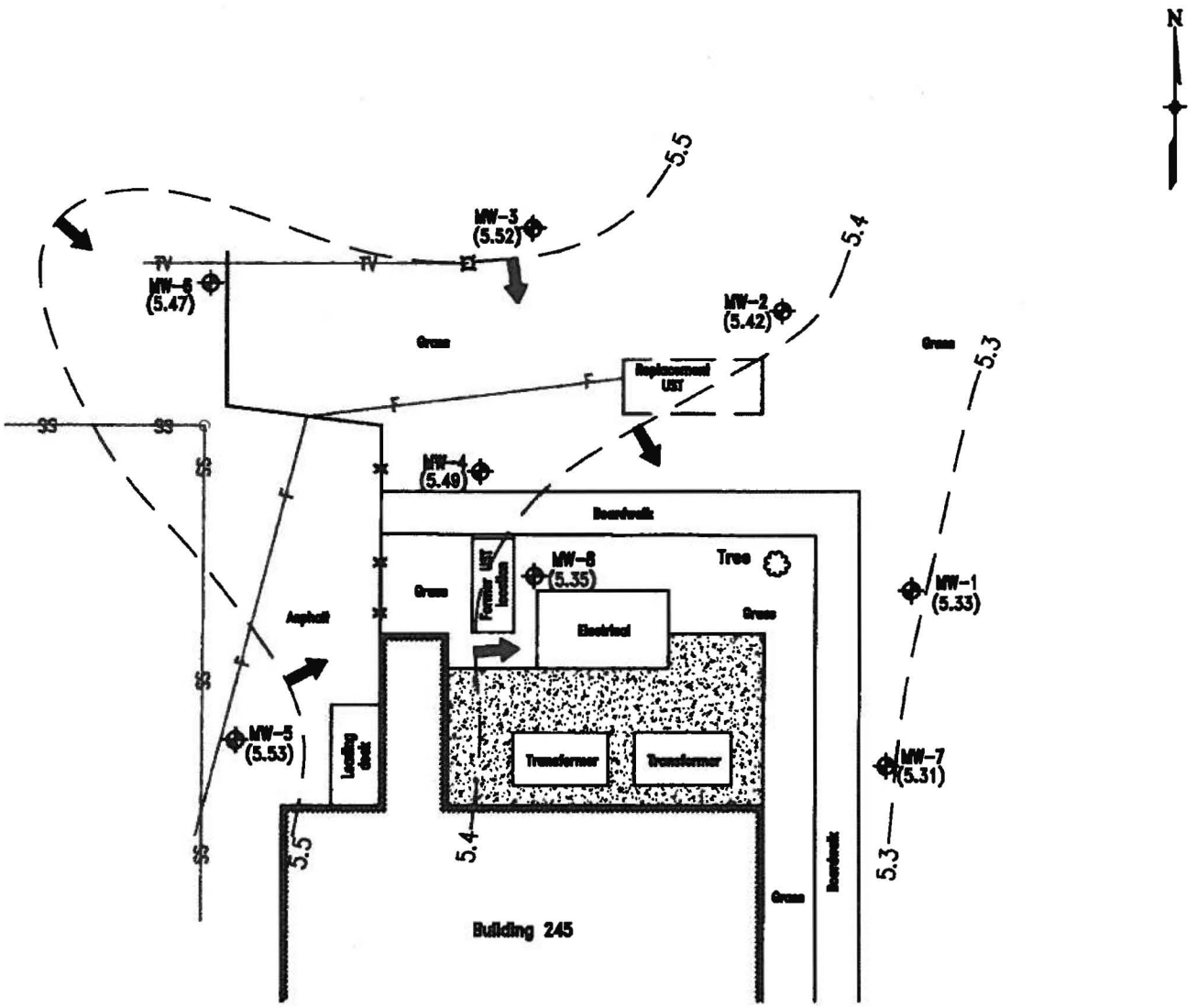
Sample Location	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	EDB (µg/L)
MW-1	06/10/97	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	NA
	02/16/99	NS	NS	NS	NS	NS	NS
	07/01/99	NS	NS	NS	NS	NS	NS
	07/31/01	16.0	< 1.0	< 1.0	< 1.0	NA	NA
MW-2	06/10/97	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	NA
	02/16/99	NS	NS	NS	NS	NS	NS
	07/01/99	NS	NS	NS	NS	NS	NS
	07/31/01	< 1.0	< 1.0	< 1.0	< 1.0	NA	NA
MW-3	06/10/97	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	NA
	02/16/99	NS	NS	NS	NS	NS	NS
	07/01/99	NS	NS	NS	NS	NS	NS
	07/31/01	< 1.0	< 1.0	< 1.0	< 1.0	NA	NA
MW-4	06/10/97	6.5	< 1.0	22.0	18.0	< 1.0	NA
	02/16/99	1.8	< 1.0	1.8	< 1.0	< 1.0	< 1.0
(Duplicate)	02/16/99	1.4	<1.0	1.2	<1.0	<1.0	<1.0
	07/01/99	NA	NA	NA	NA	NA	< 0.02
(Duplicate)	07/01/99	NA	NA	NA	NA	NA	< 0.02
	07/31/01	< 1.0	< 1.0	< 1.0	< 1.0	NA	NA
MW-5	06/10/97	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	NA
	02/16/99	NS	NS	NS	NS	NS	NS
	07/01/99	NS	NS	NS	NS	NS	NS
	07/31/01	< 1.0	< 1.0	< 1.0	< 1.0	NA	NA
MW-6	06/10/97	NI	NI	NI	NI	NI	NI
	02/16/99	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	07/01/99	NA	NA	NA	NA	NA	< 0.02
	08/01/01	< 1.0	< 1.0	< 1.0	< 1.0	NA	NA
(Duplicate)	08/01/01	< 1.0	< 1.0	< 1.0	< 1.0	NA	NA
MW-7	06/10/97	NI	NI	NI	NI	NI	NI
	02/16/99	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	07/01/99	NA	NA	NA	NA	NA	< 0.02
	07/31/01	< 1.0	< 1.0	< 1.0	< 1.0	NA	NA
MW-8	06/10/97	NI	NI	NI	NI	NI	NI
	02/16/99	17.5	< 5.0	59.0	7.5	< 1.0	< 5.0
	07/01/99	NA	NA	NA	NA	NA	< 0.02
	08/01/01	FP	FP	FP	FP	FP	FP
Groundwater		1	40	30	20	50	0.02
Marine		10	400	300	200	500	0.2
NA source		100	400	300	200	500	2
NA parameter		1	40	30	20	50	0.02

Notes:
Analytical results obtained prior to July 31, 2001, were by Bhate Environmental Associates (BEA, 1997, 1999)
FP = Free-phase liquid present, groundwater sample not collected; NA = Not analyzed; NI = Not installed; NS = Not sampled
NA source = Natural attenuation source guidance concentration; NA parameter = Natural attenuation parameter guidance concentration
µg/L = Micrograms per liter

Table 5. Groundwater Analytical Results – Polynuclear Aromatics & Hydrocarbons

Sample Location	Date	1-Methyl-naphthalene (µg/L)	2-Methyl-naphthalene (µg/L)	Acenaphthene (µg/L)	Acenaphthylene (µg/L)	Naphthalene (µg/L)	Fluorene (µg/L)	Phenanthrene µg/L	FL-PRO (mg/L)
MW-1	06/13/97	< 1.0	< 1.0	< 1.0	< 1.0	NA	< 1.0	< 1.0	NA
	02/16/99	NA	NA	NA	NA	NA	NA	NA	< 0.202
	07/31/01	4.6	2.0	< 1.0	14	8	< 1.0	< 1.0	1.0
MW-2	06/13/97	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	NA
	02/16/99	NA	NA	NA	NA	NA	NA	NA	< 0.202
	07/31/01	< 1.5	< 1.5	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 0.10
MW-3	06/13/97	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	NA
	02/16/99	NA	NA	NA	NA	NA	NA	NA	< 0.206
	07/31/01	< 1.5	< 1.5	< 1.0	< 2.0	4	< 1.0	< 1.0	< 0.10
MW-4	06/13/97	41	42	3.4	< 1.0	33	3.9	3.7	NA
	02/16/99	< 10.1 *	< 10.1 *	< 5.1 *	10.1 *	37 *	0.5	< 0.6	0.790
	07/31/01	< 1.5	< 1.5	< 1.0	< 2.0	9.9	< 1.0	< 1.0	0.44
MW-5	06/13/97	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	NA
	02/16/99	NA	NA	NA	NA	NA	NA	NA	< 0.004
	07/31/01	< 1.5	< 1.5	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	0.26
MW-6	02/16/99	< 2.1	< 2.1	< 1.0	< 2.1	< 1.0	< 0.2	< 0.7	< 0.202
	08/01/01	< 1.5	< 1.5	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 0.10
(Duplicate)	08/01/01	< 1.5	< 1.5	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 0.10
MW-7	02/16/99	12.3 *	< 10.2 *	< 5.1 *	< 10.2 *	32.8 *	1.3 *	< 0.7	0.440
	07/01/99	NA	NA	< 1.1	< 2.1	< 1.1	< 0.2	< 0.7	NA
	07/31/01	< 1.5	< 1.5	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	0.12
MW-8	02/16/99	75.2 *	76.0 *	< 21.1 *	< 42.1 *	164 *	4.8 *	< 13.5 *	2.830
	08/01/01	FP	FP	FP	FP	FP	FP	FP	FP
Groundwater		20	20	20	210	20	280	210	5
Marine		95	30	3	0.031	26	30	0.031	5
NA source		200	200	200	2,100	200	2,800	2,100	50
NA parameter		20	20	20	210	20	280	210	5

Notes:
Analytical results obtained prior to July 30, 2001, were by Bhate Environmental Associates (BEA, 1997, 1999)
* = Dilution factor used in determining analytical reporting limits
FP = Free-phase liquid present, groundwater sample not collected; NA = Not analyzed
NA source = Natural attenuation source guidance concentration; NA parameter = Natural attenuation parameter guidance concentration
mg/L = Milligrams per liter; ug/L = Micrograms per liter



0 10 20
SCALE: 1 INCH = 20 FEET

LEGEND

MW-1	Monitoring well location and designation
(5.43)	Potentiometric surface elevation
5.4	Potentiometric surface elevation contour
	Potentiometric surface flow direction
	Power pole
TV	Overhead utilities
SS	Sanitary sewer
F	Fuel
	Concrete
	Fence

NOTE:
The information shown on this map was obtained in part by others. This information is depicted to provide visual aid within the context of this report and should not be used as a sole reference in precise dimensioning of features indicated.

FIGURE: 4

Potentiometric Surface on 8-1-01 at 08:00

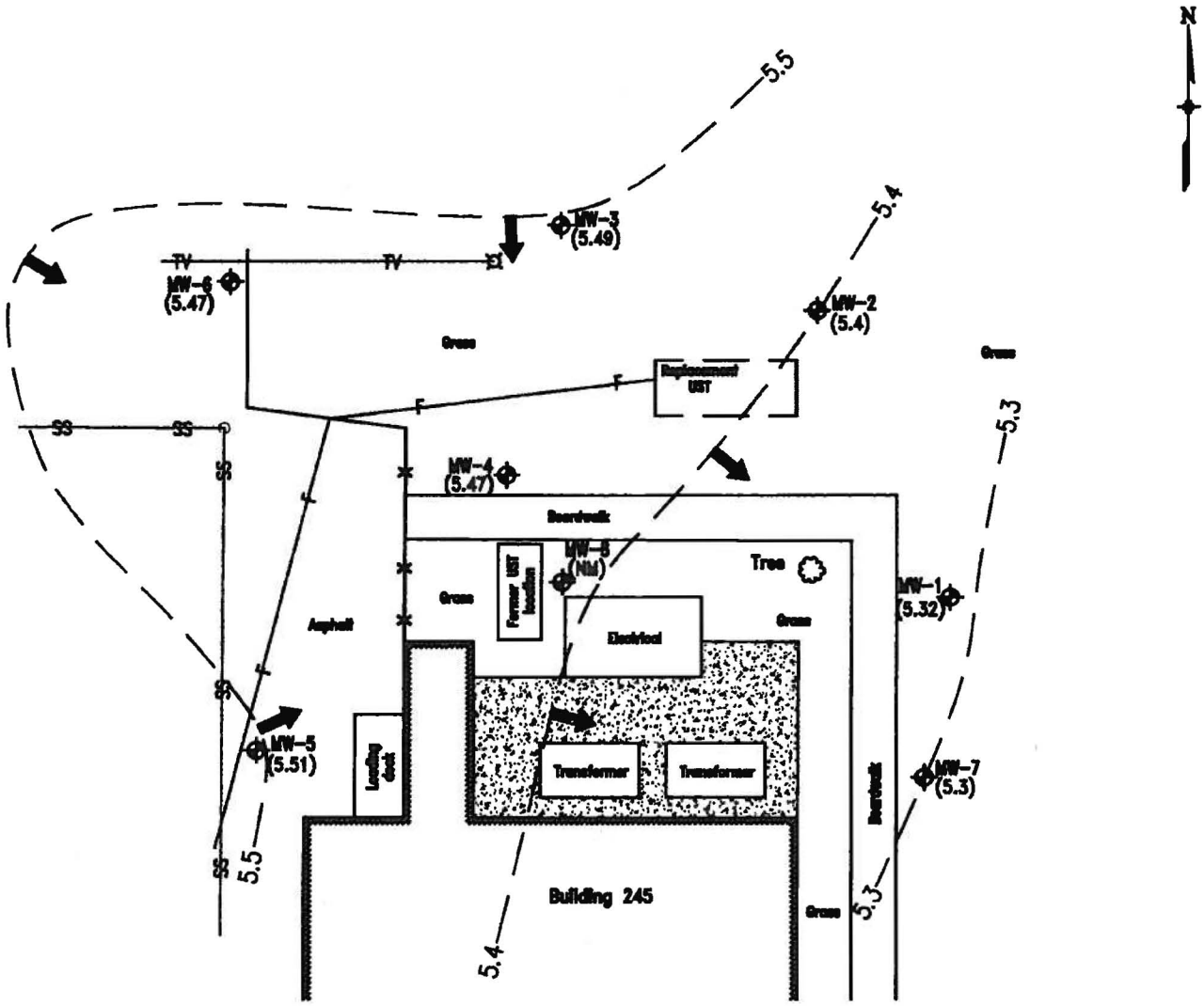
EEG No. 7034.100 Date: 4-25-02

ELLIS ENVIRONMENTAL GROUP, LC

Contamination Assessment Report Addendum
UST SITE 245
Mayport, Florida

Contract No. N62467-01-C-8826

Client: SOUTHERN DIVISION NAVAL FACILITIES ENGINEERING COMMAND



0 10 20
SCALE: 1 INCH = 20 FEET

LEGEND

MW-1	Monitoring well location and designation
(5.43)	Potentiometric surface elevation
5.4	Potentiometric surface elevation contour
	Potentiometric surface flow direction
	Power pole
TV	Overhead utilities
SS	Sanitary sewer
F	Fuel
	Concrete
	Fence

NOTE:
The information shown on this map was obtained in part by others. This information is depicted to provide visual aid within the context of this report and should not be used as a sole reference in precise dimensioning of features indicated.

FIGURE: 5

Potentiometric Surface at 8-1-01 at 12:00

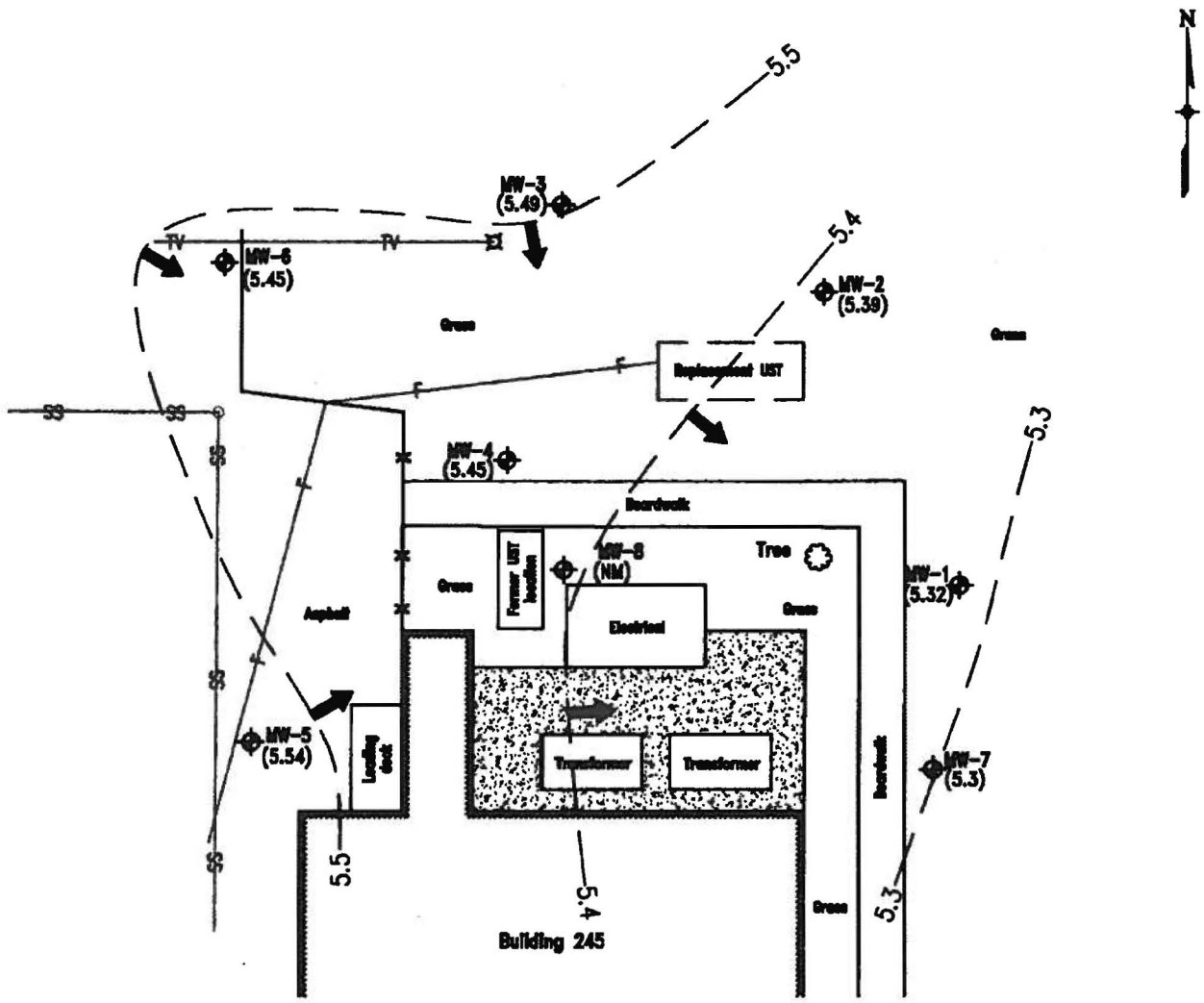
EEG No. 7034.100 Date: 4-25-02

ELLIS ENVIRONMENTAL GROUP, LC

Contamination Assessment Report Addendum
UST SITE 245
Mayport, Florida

Contract No. N62467-01-C-8826

Client:
SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND



0 10 20

SCALE: 1 INCH = 20 FEET

LEGEND

MW-1	Monitoring well location and designation
(5.43)	Potentiometric surface elevation
5.4	Potentiometric surface elevation contour
	Potentiometric surface flow direction
	Power pole
TV	Overhead utilities
SS	Sanitary sewer
F	Fuel
	Concrete
	Fence

NOTE:
The information shown on this map was obtained in part by others. This information is depicted to provide visual aid within the context of this report and should not be used as a sole reference in precise dimensioning of features indicated.

FIGURE: 6

Potentiometric Surface on 8-1-01 at 16:00

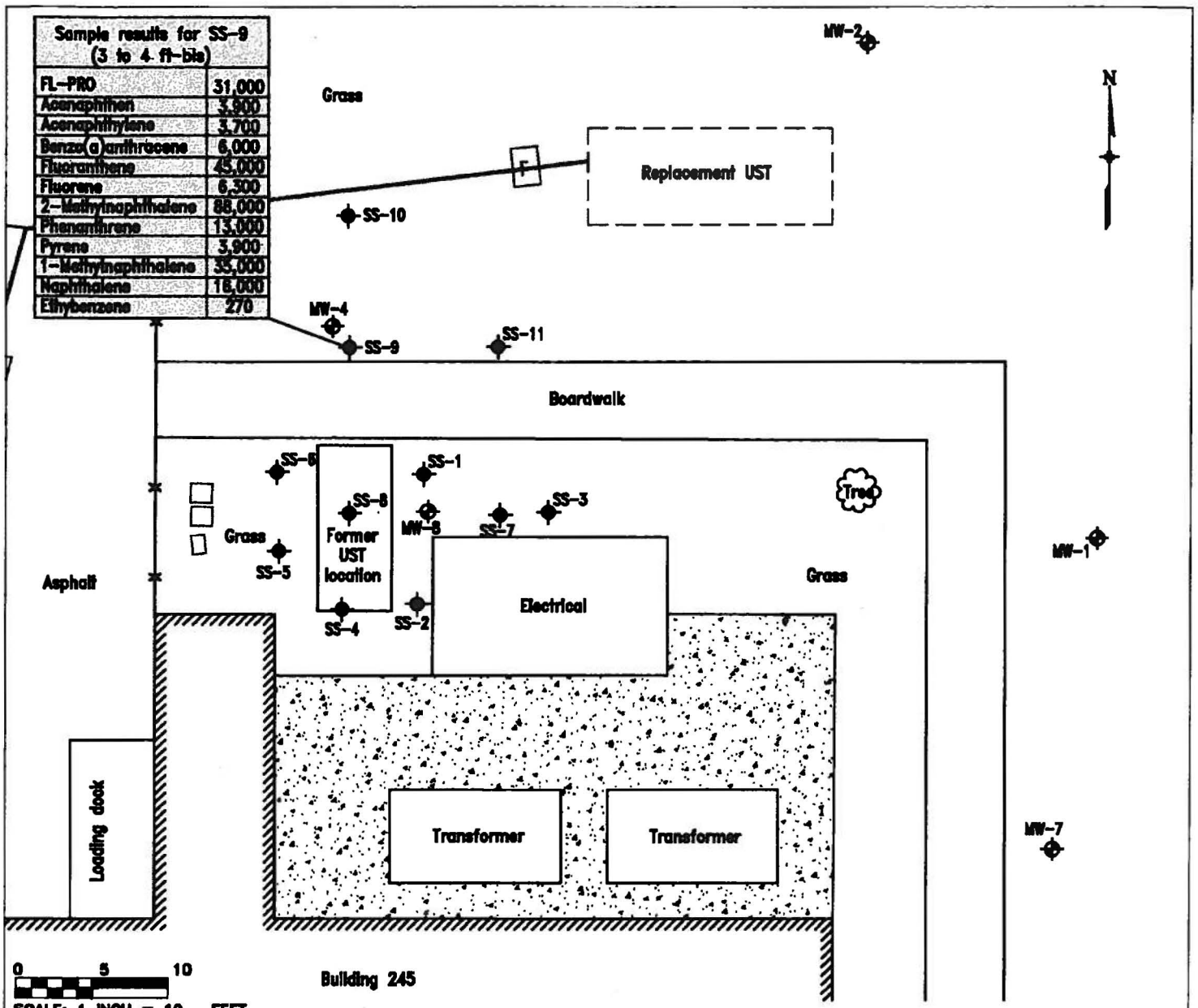
EEG No. 7034.100 Date: 4-25-02

ELLIS ENVIRONMENTAL GROUP, LC

Contamination Assessment Report Addendum
UST SITE 245
Mayport, Florida

Contract No. N62467-01-C-8826

Client: SOUTHERN DIVISION NAVAL FACILITIES ENGINEERING COMMAND



0 5 10

SCALE: 1 INCH = 10 FEET

NOTES:

1. All concentrations for SS-9 are in micrograms per kilogram except FL-PRO which is in milligrams per kilogram.
2. The information shown on this map was obtained in part by others. This information is depicted to provide visual aid within the context of this report and should not be used as a sole reference in precise dimensioning of features indicated.

OVA at Depth (feet bls, in ppm)				
Boring ID	0-1	1-2	2-3	3-4
SS-1	0	0	1	0
SS-2	0	0	1	1
SS-3	0	0	0	NC
SS-4	0	0	1	0
SS-5	0	0	1	1
SS-6	1	1	1	1
SS-7	0	1	1	100
SS-8	0	0	1	NC
SS-9	0	0	0	75
SS-10	0	0	1	0
SS-11	0	0	1	NC

LEGEND

MW-1	Monitoring well location and designation
SS-1	Soil sample location and designation
	Power pole
TV	Overhead utilities
SS	Sanitary sewer
F	Fuel
	Concrete
	Fence
NC	Not collected
ppm	Parts per million

FIGURE: 7

Soil Sample Locations and Results

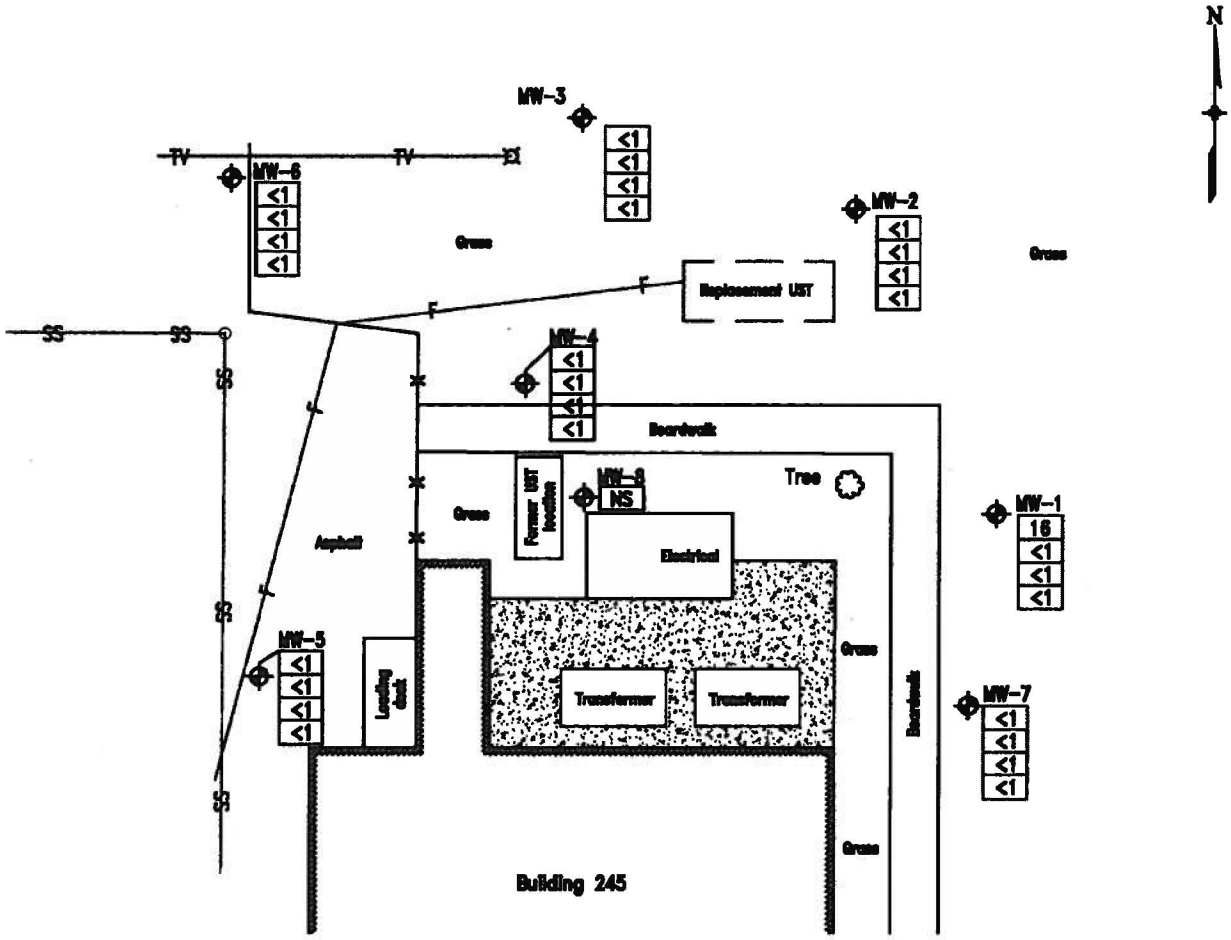
EEG No. 7034.100 Date: 4-25-02

ELLIS ENVIRONMENTAL GROUP, LC

Contamination Assessment Report Addendum
UST SITE 245
Mayport, Florida

Contract No. N62467-01-C-6826

Client: SOUTHERN DIVISION NAVAL FACILITIES ENGINEERING COMMAND



0 10 20

SCALE: 1 INCH = 20 FEET

LEGEND

MW-1	Monitoring well location and designation
16	Benzene
<1	Toluene
<1	Ethylbenzene
<1	Xylenes
NS	Not sampled
	Power pole
TV	Overhead utilities
SS	Sanitary sewer
F	Fuel
	Concrete
	Fence

NOTE:
The information shown on this map was obtained in part by others. This information is depicted to provide visual aid within the context of this report and should not be used as a sole reference in precise dimensioning of features indicated.

FIGURE: 8

Volatile Organic Analytes Detected in Groundwater Samples Collected on 7-31-01

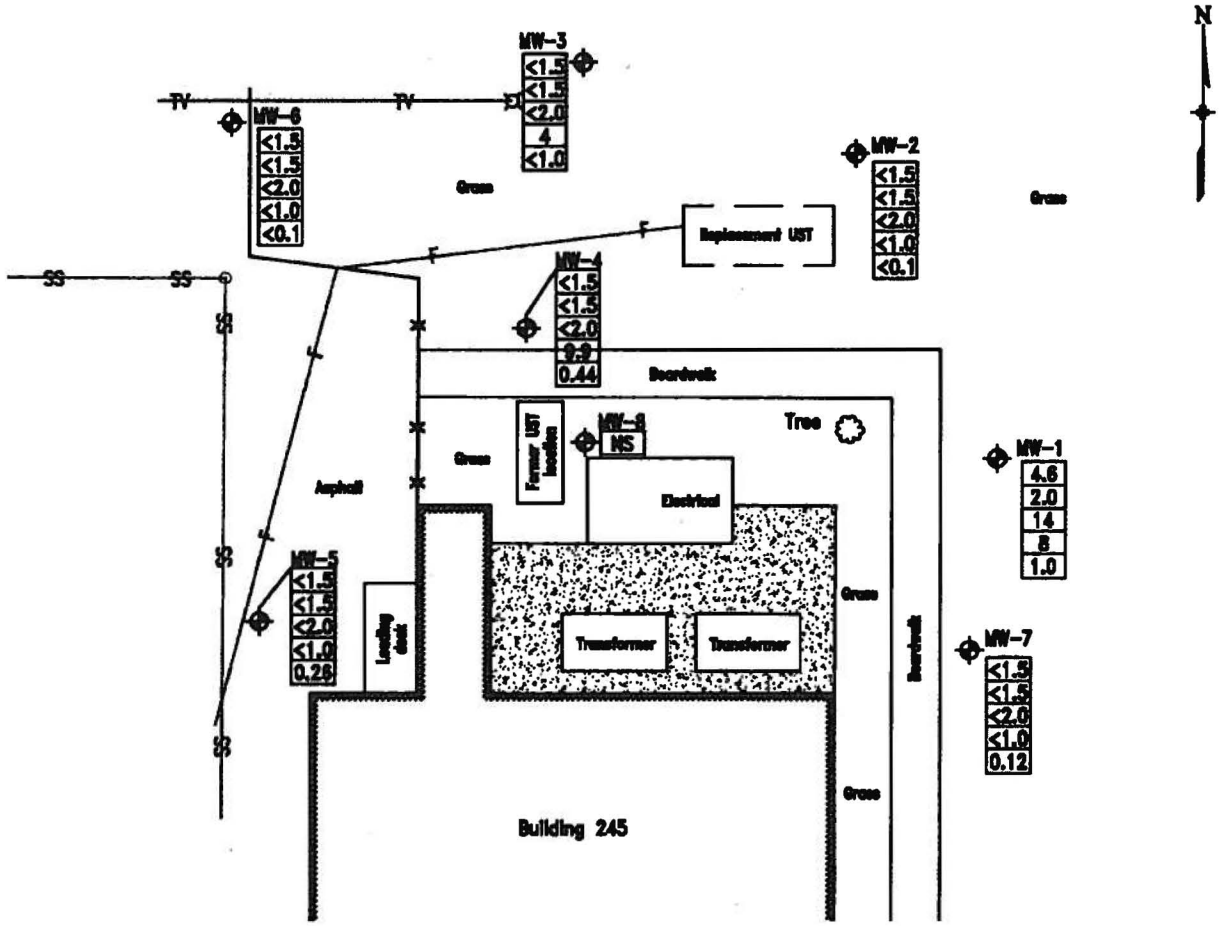
EEG No. 7034.100 Date: 4-25-02

ELLIS ENVIRONMENTAL GROUP, LC

Contamination Assessment Report Addendum
UST SITE 245
Mayport, Florida

Contract No. N62467-01-C-8826

Client: SOUTHERN DIVISION NAVAL FACILITIES ENGINEERING COMMAND



0 10 20

SCALE: 1 INCH = 20 FEET

LEGEND

MW-1	Monitoring well location and designation
<1.5	1-Methylnaphthalene
<1.5	2-Methylnaphthalene
<2.0	Acenaphthylene
9.9	Naphthalene
0.44	FL-Pro
NS	Not sampled
	Power pole
TV	Overhead utilities
SS	Sanitary sewer
F	Fuel
	Concrete
	Fence

NOTE:
The information shown on this map was obtained in part by others. This information is depicted to provide visual aid within the context of this report and should not be used as a sole reference in precise dimensioning of features indicated.

FIGURE: 9

Semi-Volatile Organic Analytes Detected in Groundwater Samples Collected on 7-31-01

EEG No. 7034.100 Date: 4-25-02

ELLIS ENVIRONMENTAL GROUP, LC

Contamination Assessment Report Addendum
UST SITE 245
Mayport, Florida

Contract No. N62467-01-C-8826

Client: SOUTHERN DIVISION NAVAL FACILITIES ENGINEERING COMMAND

ATTACHMENT E

FDEP LETTER
Dated July 18, 2002

Department of Environmental Protection

Jeb Bush
Governor

Twin Towers Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

David B. Struhs
Secretary

July 18, 2002

Ms. Beverly Washington
Department of the Navy, Petroleum Program
Southern Division - Naval Facilities Engineering Command
PO Box 190010
2155 Eagle Drive
North Charleston, SC 29419-9010

file:245sara2.doc

RE: Site Assessment Report Addendum, Tank Site 245, Naval Station Mayport, Mayport, FL

Dear Ms. Washington:

I have reviewed the above document dated May 2002 (received May 15, 2002). The document describes recent soil and groundwater investigations at the site. It is noted that as a result of a previous Site Assessment Addendum for this site in 1999, I requested that the Navy prepare a Remedial Action Plan addressing soil and groundwater contamination at the site. Based on my review of the present document, please consider the following:

1. The document (page 6) states that the soil petroleum-related contaminants that are observed in soil sample SS-9 is smear zone contamination and *"are a result of the groundwater contamination present at the site. Soil sample location SS-9 is near monitoring well MW-8, which is located hydraulically downgradient from the former UST."* In my examination of Figures 3, 4, 5 and 6, it appears that soil sampling point SS-9 is directly adjacent to monitoring well MW-4 (that shows no groundwater contamination); furthermore, it appears to be upgradient or slightly side gradient from the former UST location. This would also place it upgradient of monitoring well MW-8 (that contains free product). Given this interpretation, please reconcile the apparent discrepancy in the above quoted statement.

2. Based on an interpreted groundwater gradient of east or southeast and the fact that monitoring well MW-1 contained 16 ug/L of benzene in the July 2001 sampling event, should this well be resampled for volatile and semivolatile petroleum constituents? Should an additional monitoring well, downgradient (east to southeast) of monitoring well MW-1 be installed if the benzene quantities are similar to the July 2001 sampling event? Should an additional well be installed between MW-1 and MW-8?

3. Should additional soil sampling for analytical determination in the vicinity of, or downgradient of, soil sampling point SS-7 be accomplished?

The present document recommends that an interim remedial action be done at monitoring well MW-8 following replacement of that well. I concur with that recommendation. Following those actions, we can meet and discuss future recommendations for this site at a Partnering meeting. In we choose to do that, a formal response to this letter is not necessary. If further clarification is required or if you have any questions, please contact me at 850-921-4230.

Sincerely,

James H. Cason, P.G.
Remedial Project Manager

CC: Cheryl Mitchell, NAVSTA Mayport
Frank Lesesne, HLA, Tallahassee

TJB___ JJC___ ESN___

ATTACHMENT F

SOIL INVESTIGATION ADDENDUM, SITE 245
USACE, March 2004

TABLE A

SUMMARY OF SOIL ANALYTICAL RESULTS
SITE 245
MAYPORT NAVAL STATION
MAYPORT FLORIDA
MARCH 2004

SOIL SAMPLE NUMBER

PARAMETER DEPTH (FT)	S87 03-02 2-3	SB9 03 02 3-4	SS10 03-01 2-3	MAY 245 - SSA 07-03 2-3	MAY 245 - SSA 07-03 Duplicate	MAY 245 - SSB 07-03 2-3	MAY 245 - SSC 07-03 2-3	MAY 245 - Blank 07-03 2-3	MAY 245 - SSD 01-04 2-3	BASED ON GROUNDWATER CRITERIA MCL	BASED ON MARINE SURFACE WATER CRITERIA MCL
Florida PRO (mg/L)											
Petroleum Range Organics, mg/kg	<0.1	**31,000**	<0.1	*35JB*	*38JB*	*28JB*	*270JB*	*0.64JB*	*97.9*	340 mg/kg	340 mg/kg
Volatile Organics (8260)											
Ethylbenzene (ug/kg)	<5	<5	<5	NA	NA	NA	NA	NA	NA		
Extractable Organics (8310)											
Acenaphthene, ug/kg	<35	**3,900**	<35	<8.4	<8.4	<8.4	<8.4	<0.20	<4.35	2100 ug/kg	700 ug/kg
Acenaphthylene, ug/kg	<35	**3,700**	<35	<8.4	<8.4	<8.4	<8.4	<0.20	<21.1	27,000 ug/kg	700 ug/kg
Anthracene, ug/kg	<35	<35	<35	<8.4	<8.4	<8.4	<8.4	<0.20	<1.01	2,500,000 ug/kg	700 ug/kg
Benzo (a) anthracene, ug/kg	<35	<35	<35	*9.3*	*13*	<8.4	<8.4	<0.20	<2.01	3,200 ug/kg	1,200 ug/kg
Benzo (a) pyrene, ug/kg	<35	**6,000**	<35	<8.4	*6.6J*	<8.4	<8.4	<0.20	<2.01	8,000 ug/kg	1,200 ug/kg
Benzo (b) fluoranthene, ug/kg	<35	<35	<35	<8.4	*8.3J*	<8.4	<8.4	<0.20	<1..01	10,000 ug/kg	1,600 ug/kg
Benzo (g,h,i) perylene, ug/kg	<35	<35	<35	<8.4	*4.1J*	<8.4	<8.4	<0.20	<3.35	32,000,000 ug/kg	4,800 ug/kg
Benzo (k) fluoranthene, ug/kg	<35	<35	<35	<8.4	*6.6J*	<8.4	<8.4	<0.20	<1.01	25,000 ug/kg	1,600 ug/kg
Chrysene, ug/kg	<35	<35	<35	*8.8*	*20*	<8.4	<8.4	<0.20	<2.01	77,000 ug/kg	700 ug/kg
Dibenzo(a,h) anthracene, ug/kg	<35	<35	<35	<8.4	<8.4	<8.4	<8.4	<0.20	<8.38	30,000 ug/kg	4,700 ug/kg
Fluoranthene, ug/kg	<35	**45,000**	<35	*68*	*42*	<8.4	<8.4	<0.20	<2.01	1,200,000 ug/kg	1,300 ug/kg
Fluorene, ug/kg	<35	6,300	<35	<8.4	<8.4	<8.4	<8.4	<0.20	<4.35	160,000 ug/kg	17,000 ug/kg
Indeno(1,2,3-cd)pyrene, ug/kg	<35	<35	<35	<8.4	<8.4	<8.4	<8.4	<0.20	<2.01	28,000 ug/kg	4,300 ug/kg
1-Methylnaphthalene, ug/kg	<35	**35,000**	<35	<8.4	<8.4	<8.4	<8.4	<0.20	N/A	2,200 ug/kg	10,000 ug/kg
2-Methylnaphthalene, ug/kg	<35	**88,000**	<35	<8.4	<8.4	<8.4	<8.4	<0.20	N/A	6,100 ug/kg	9,100 ug/kg
Naphthalene, ug/kg	<35	**16,000**	<35	<8.4	<8.4	<8.4	<8.4	<0.20	<21.1	1,700 ug/kg	2,200 ug/kg
Phenanthrene, ug/kg	<35	**13,000**	<35	<8.4	*7.1J*	<8.4	<8.4	<0.20	<1.68	250,000 ug/kg	700 ug/kg
Pyrene, ug/kg	<35	**3,900**	<35	*68*	*47*	*4.1J*	<8.4	<0.20	<4.35	880,000 ug/kg	1,300 ug/kg

Notes:
- Bold value indicates regulatory limit exceeded.
- *Italic values indicate concentration detected is below clean up target level*
- J values indicate detection was below laboratory reporting limits
- B values indicate that contaminat was detected in the equipment blank.
- NA indicates compound was not analyzed for
- Because samples from sites 1343 and 245 were submitted simultaneously, the appendix entitled "Laboratory Analytical Results" contains sample data from both sites.

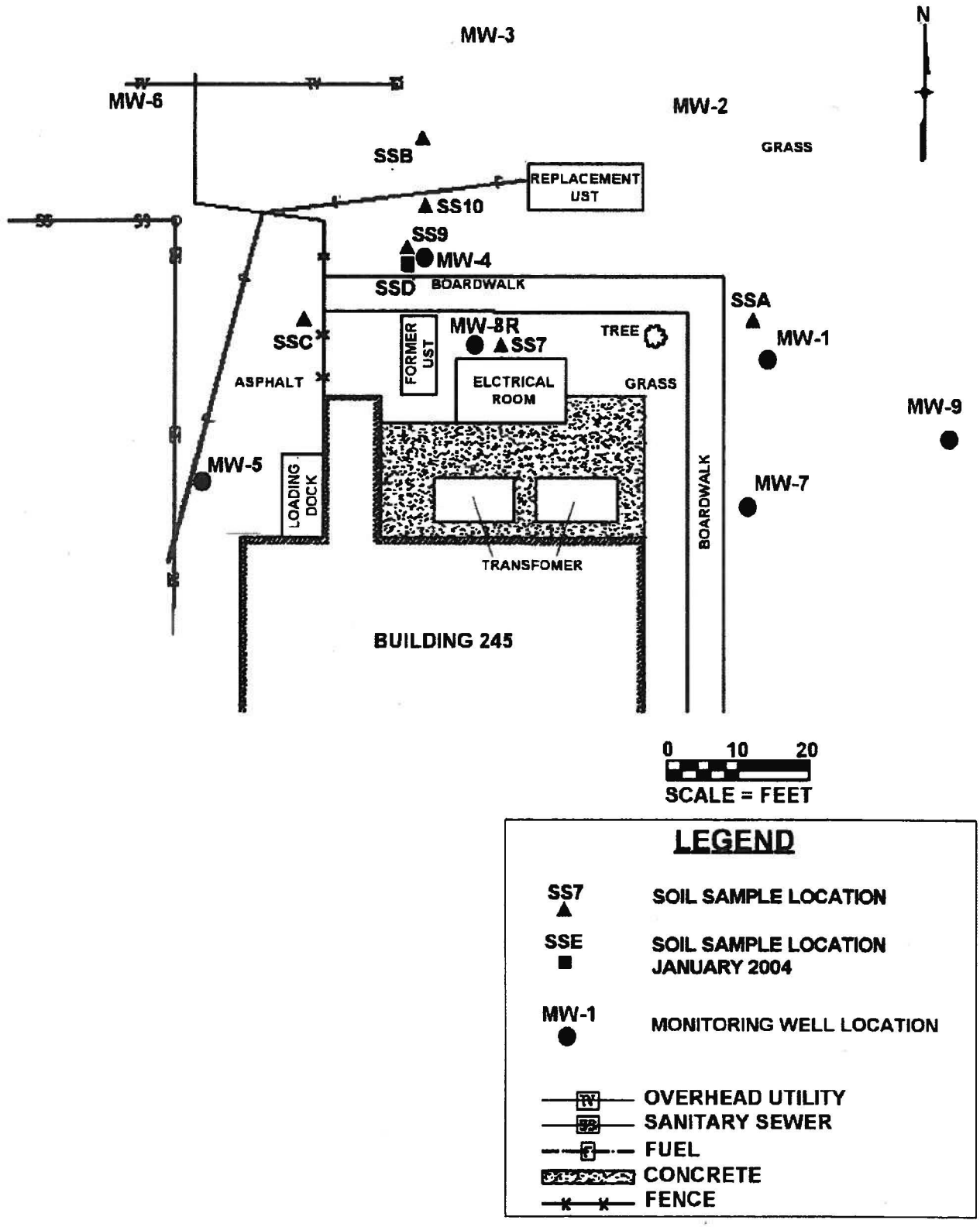


FIGURE A: SITE 245 SOIL SAMPLE AND MONITORING WELL LOCATIONS

Department of Environmental Protection

Jeb Bush
Governor

Twin Towers Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Colleen M. Castille
Secretary

July 13, 2004

Ms. Beverly Washington
Department of the Navy, Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive, PO Box 190010
North Charleston, SC 29419-9010

file: 245CWI0903.doc

RE: Site 245 Soil Investigation Addendum, Naval Station Mayport, Mayport, Florida

Third Quarter Site 245 Groundwater Monitoring Report, Naval Station Mayport, Mayport, Florida

Dear Ms. Washington:

I have reviewed the above documents dated, respectively, March 2004 (received June 8, 2004) and September 2003 (received June 8, 2004). The documents furnish a summary of the groundwater and soil investigation activities at Site 245. Recent soil borings confirm the absence of contaminated soil at the site and it is recommended that quarterly groundwater monitoring be continued. I concur with that recommendation.

Thank you for the opportunity to review this document. If you require further clarification or other assistance, please contact me at 850-245-8999.

Sincerely,

James H. Cason, P.G.
Remedial Program Manager

CC: Diane Lancaster, NAVSTA Mayport

ESN ESN JJC JJC by ESN

ATTACHMENT G

FIRST QUARTER GROUNDWATER MONITORING LETTER REPORT
Tetra Tech, 2007

Site 245 Historical Depth to Water Measurements

Date / TOC (ft)	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8 /MW-8R	MW-9
6/10/1997 (1)	5.15	3.82	3.68	3.32	3.84	NI	NI	NI	NP
7/24/1997 (1)	6.00	4.12	4.45	4.61	4.13	NI	NI	NI	NP
2/16/1999 (1)	5.82	4.52	4.33	4.51	3.94	3.46	6.75	4.27	NP
7/1/1999 (1)	6.65	5.26	5.08	5.25	4.67	4.04	7.57	5.4	NP
7/31/2001 (1)	6.30	4.93	4.72	4.90	4.30	3.48	7.18	4.74 *	NP
8/1/2001 (0800) (1)	6.24	4.85	4.63	4.82	4.23	3.68	7.17	4.72*	NP
8/1/2001 (1200) (1)	6.25	4.87	4.66	4.84	4.25	3.68	7.18	NM	NP
8/1/2001 (1600) (1)	6.25	4.88	4.66	4.86	4.22	3.70	7.18	NM	NP
10/6/2002 (2)	4.91	NM	NM	3.53	2.90	2.31	5.82	3.54*	NP
2/24/2003 (2)	6.34	NM	NM	4.96	4.40	3.70	7.19	4.79	NP
6/9/2003 (2	6.34	NM	NM	4.89	4.30	3.71	7.20	4.95	NP
2/13/2006 (3)	6.67	5.28	5.05	5.24	4.63	NM	NM	5.28	7.39
6/1/2006 (3)	7.32	6.02	5.82	6.01	5.45	NM	NM	6.05	8.02
9/28/2006 (3)	6.73	5.34	5.14	5.33	4.76	NM	NM	5.31	7.42
12/12/2006 (3)	7.46	6.10	5.90	6.11	5.53	NM	NM	6.12	8.06
2/14/2007 (3)	7.10	5.79	5.57	5.68	5.10	NM	NM	5.72	7.7

NI= Not installed

NM =Not measured

* = Free product present

Histroical GW data from obtained from (1) Ellis Environemntal Grup , LC Site 245 Final SAR addendum (2) Army Corps of Engineers Groundwater Monitoring Reports and (3),Tetra Tech NUS Groundwater Monitoring Reports.

NP = Not present

All measurements measured from north side of well top of casing (TOC).

TABLE 2
SUMMARY OF LABORATORY GROUNDWATER ANALYTICAL DETECTIONS
FIRST QUARTER GROUNDWATER MONITORING LETTER REPORT, 2007
BUILDING 245
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

Constituent	GCTL [1]	Monitoring Well Locations							
		MPT-245-MW01							
VOCs (USEPA Method 8260B) (µg/L)		10/6/2002 [2]	2/24/2003 [2]	6/9/2003 [2]	2/15/2006	6/1/2006	9/28/2006	12/12/2006	2/14/2007
BENZENE	1	NA	NA	**22**	4.33	**2**	0.2 U	0.2 U	0.2 U
ETHYLBENZENE	30	NA	NA	0.87	0.32 J	1.7	0.3 U	0.3 U	0.3 U
TOLUENE	40	NA	NA	1.0 U	0.2 U	0.5 J	0.2 U	0.2 U	0.3 I
XYLENES, TOTAL	20	NA	NA	3.0 U	0.2 U	0.8 J	0.5 U	0.3 I	0.3 U
PAHs (USEPA Method 8270C SIM) (µg/L)									
1-METHYLNAPHTHALENE	28	1.0 U	6.3	26	**47.4 J**	**52**	0.02 U	0.05 I	0.07 I
2-METHYLNAPHTHALENE	28	1.0 U	4.9	18	**32.0 J**	14.3	0.02 U	0.02 U	0.02 U
ACENAPHTHENE	20	1.0 U	0.41	1.3	2.04	3.32	0.22	1.05	0.36
ANTHRACENE	2100	1.0 U	0.20 U	0.20 U	0.22	0.43	0.19	0.33	0.02 U
FLUORANTHENE	280	1.0 U	0.20 U	0.20 U	0.01 U	0.1	0.01 U	0.01 U	0.01 U
FLUORENE	280	1.0 U	0.64	1.6	2.51	4.6	0.49	2.13	0.71
NAPHTHALENE	14	1.0 U	7.9	**26**	**53.4 J**	**34.8**	0.02 U	0.15	0.33
PHENANTHRENE	210	1.0 U	0.25	0.88	1.07	2.38	0.02 U	0.02 U	0.02 U
PYRENE	210	1.0 U	0.20 U	0.20 U	0.10	0.23	0.07 J	0.15	0.02 U
Petroleum Hydrocarbons (mg/L)									
TPH (C08-C40)	5	1.7 U	1.7	3.9 B	**9.13**	**13.4**	0.25	0.765	0.378

Constituent	GCTL [1]	Monitoring Well Locations							
		MPT-245-MW04							
VOCs (USEPA Method 8260B) (µg/L)		10/6/2002 [2]	2/24/2003 [2]	6/9/2003 [2]	2/15/2006	6/1/2006	9/28/2006	12/12/2006	2/14/2007
BENZENE	1	NA	NA	NA	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
ETHYLBENZENE	30	NA	NA	NA	0.37 J	0.3 U	0.5 J	0.3 U	0.3 U
TOLUENE	40	NA	NA	NA	0.2 U	0.2 U	0.3 J	0.2 U	0.4 I
XYLENES, TOTAL	20	NA	NA	NA	0.5 U	0.5 U	0.5 J	0.5 U	0.6 I
PAHs (USEPA Method 8270C SIM) (µg/L)									
1-METHYLNAPHTHALENE	28	1.0 U	3.9	5.9	3.97 J	0.71	0.41	0.06 I	0.33
2-METHYLNAPHTHALENE	28	1.0 U	1.5	3.1	1.52 J	0.62	0.02 U	0.02 U	0.02 U
ACENAPHTHENE	20	1.0 U	0.57	0.62	0.52	0.24	0.68	0.2	0.23
ANTHRACENE	2100	1.0 U	0.20 U	0.20 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
FLUORANTHENE	280	1.0 U	0.20 U	0.20 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
FLUORENE	280	1.0 U	0.9	0.9	0.54	0.29	0.02 U	0.17	0.09 I
NAPHTHALENE	14	1.2	3.7	5.4	5.87 J	0.86	1.29	0.07 I	0.24
PHENANTHRENE	210	1.0 U	0.2	0.29	0.17	0.11	0.02 U	0.02 U	0.02 U
PYRENE	210	1.0 U	0.20 U	0.20 U	0.02 U	0.02 U	0.16	0.02 U	0.02 U
Petroleum Hydrocarbons (mg/L)									
TPH (C08-C40)	5	**6.5**	1.7 U	2.1 B	0.61	0.09 U	1.74	0.094 U	0.195

See notes at end of table

TABLE 2
SUMMARY OF LABORATORY GROUNDWATER ANALYTICAL DETECTIONS
FIRST QUARTER GROUNDWATER MONITORING LETTER REPORT, 2007
BUILDING 245
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

Constituent	GCTL [1]	Monitoring Well Locations							
		MPT-245-MW05							
VOCs (USEPA Method 8260B) (µg/L)		10/6/2002 [2]	2/24/2003 [2]	6/9/2003 [2]	2/15/2006	6/1/2006	9/28/2006	12/12/2006	2/14/2007
BENZENE	1	NA	NA	NA	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
ETHYLBENZENE	30	NA	NA	NA	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
TOLUENE	40	NA	NA	NA	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
XYLENES, TOTAL	20	NA	NA	NA	0.5 U	0.5 U	0.5 U	0.5 U	0.4 I
PAHs (USEPA Method 8270C SIM) (µg/L)									
1-METHYLNAPHTHALENE	28	1.0 U	0.20 U	0.20 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
2-METHYLNAPHTHALENE	28	1.0 U	0.20 U	0.20 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
ACENAPHTHENE	20	1.0 U	0.20 U	0.20 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
ANTHRACENE	2100	1.0 U	0.20 U	0.20 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
FLUORANTHENE	280	1.0 U	0.20 U	0.20 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
FLUORENE	280	1.0 U	0.20 U	0.20 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
NAPHTHALENE	14	1.0 U	0.20 U	0.20 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
PHENANTHRENE	210	1.0 U	0.20 U	0.20 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
PYRENE	210	1.0 U	0.20 U	0.20 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Petroleum Hydrocarbons (mg/L)									
TPH (C08-C40)	5	1.7 U	1.7 U	0.78 JB	0.09 U	0.09 U	0.09 U	0.094 U	0.094 U

Constituent	GCTL [1]	Monitoring Well Locations							
		MPT-245-MW06							
VOCs (USEPA Method 8260B) (µg/L)		10/6/2002 [2]	2/24/2003 [2]	6/9/2003 [2]	2/15/2006	6/1/2006	9/28/2006	12/12/2006	2/14/2007
BENZENE	1	NA	NA	NA	NA	NA	NA	NA	NA
ETHYLBENZENE	30	NA	NA	NA	NA	NA	NA	NA	NA
TOLUENE	40	NA	NA	NA	NA	NA	NA	NA	NA
XYLENES, TOTAL	20	NA	NA	NA	NA	NA	NA	NA	NA
PAHs (USEPA Method 8270C SIM) (µg/L)									
1-METHYLNAPHTHALENE	28	1.0 U	0.20 U	0.20 U	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	28	1.0 U	0.20 U	0.20 U	NA	NA	NA	NA	NA
ACENAPHTHENE	20	1.0 U	0.20 U	0.20 U	NA	NA	NA	NA	NA
ANTHRACENE	2100	1.0 U	0.20 U	0.20 U	NA	NA	NA	NA	NA
FLUORANTHENE	280	1.0 U	0.20 U	0.20 U	NA	NA	NA	NA	NA
FLUORENE	280	1.0 U	0.20 U	0.20 U	NA	NA	NA	NA	NA
NAPHTHALENE	14	1.0 U	0.20 U	0.20 U	NA	NA	NA	NA	NA
PHENANTHRENE	210	1.0 U	0.20 U	0.20 U	NA	NA	NA	NA	NA
PYRENE	210	1.0 U	0.20 U	0.20 U	NA	NA	NA	NA	NA
Petroleum Hydrocarbons (mg/L)									
TPH (C08-C40)	5	1.7 U	1.7 U	1.7 JB	NA	NA	NA	NA	NA

See notes at end of table

TABLE 2
SUMMARY OF LABORATORY GROUNDWATER ANALYTICAL DETECTIONS
FIRST QUARTER GROUNDWATER MONITORING LETTER REPORT, 2007
BUILDING 245
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

Constituent	GCTL [1]	Monitoring Well Locations							
		MPT-245-MW07							
VOCs (USEPA Method 8260B) (µg/L)		10/6/2002 [2]	2/24/2003 [2]	6/9/2003 [2]	2/15/2006	6/1/2006	9/28/2006	12/12/2006	2/14/2007
BENZENE	1	NA	NA	1.0 U	NA	NA	NA	NA	NA
ETHYLBENZENE	30	NA	NA	1.0 U	NA	NA	NA	NA	NA
TOLUENE	40	NA	NA	1.0 U	NA	NA	NA	NA	NA
XYLENES, TOTAL	20	NA	NA	3.0 U	NA	NA	NA	NA	NA
PAHs (USEPA Method 8270C SIM) (µg/L)									
1-METHYLNAPHTHALENE	28	1.0 U	0.20 U	0.20 U	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	28	1.0 U	0.20 U	0.20 U	NA	NA	NA	NA	NA
ACENAPHTHENE	20	1.0 U	0.20 U	0.20 U	NA	NA	NA	NA	NA
ANTHRACENE	2100	1.0 U	0.20 U	0.20 U	NA	NA	NA	NA	NA
FLUORANTHENE	280	1.0 U	0.20 U	0.20 U	NA	NA	NA	NA	NA
FLUORENE	280	1.0 U	0.20 U	0.20 U	NA	NA	NA	NA	NA
NAPHTHALENE	14	1.0 U	0.20 U	0.20 U	NA	NA	NA	NA	NA
PHENANTHRENE	210	1.0 U	0.20 U	0.20 U	NA	NA	NA	NA	NA
PYRENE	210	1.0 U	0.20 U	0.20 U	NA	NA	NA	NA	NA
Petroleum Hydrocarbons (mg/L)									
TPH (C08-C40)	5	1.7 U	1.7 U	1.7 JB	NA	NA	NA	NA	NA

Constituent	GCTL [1]	Monitoring Well Locations							
		MPT-245-MW08R							
VOCs (USEPA Method 8260B) (µg/L)		10/6/2002 [2]	2/24/2003 [2]	6/9/2003 [2]	2/15/2006	6/1/2006	9/28/2006	12/12/2006	2/14/2007
BENZENE	1	NA	NA	NA	0.35 J	0.2 J	0.3 J	0.2 I	0.3 I
ETHYLBENZENE	30	NA	NA	NA	7.53	1.9	2.8	3.4	4.6
TOLUENE	40	NA	NA	NA	0.2 U	0.2 U	0.2 U	0.2 U	0.2 I
XYLENES, TOTAL	20	NA	NA	NA	0.5 U	0.5 U	0.5 U	0.5 U	0.3 I
PAHs (USEPA Method 8270C SIM) (µg/L)									
1-METHYLNAPHTHALENE	28	NA	**29**	9.5	3.23 J	11.8	26.8	9.81	7.79
2-METHYLNAPHTHALENE	28	NA	14	3.2	0.64 J	4.45	3.04	5.23	0.91
ACENAPHTHENE	20	NA	1.8	0.72	0.47	0.95	1.62	0.87	0.82
ANTHRACENE	2100	NA	0.17 J	0.20 U	0.02 U	0.02 U	0.17	0.02 U	0.02 U
FLUORANTHENE	280	NA	0.20 U	0.20 U	0.01 U	0.05 J	0.05 J	0.01 U	0.01 U
FLUORENE	280	NA	2.6	1.0	0.47	1.27	2.43	1.53	1.04
NAPHTHALENE	14	NA	**23**	5.9	5.03 J	7.55	**26.4**	11.9	12.5
PHENANTHRENE	210	NA	1.6	0.7	0.09 J	0.83	1.08	0.53	0.15
PYRENE	210	NA	0.20 U	0.20 U	0.02 U	0.08 J	0.12	0.08 I	0.07 I
Petroleum Hydrocarbons (mg/L)									
TPH (C08-C40)	5	NA	2.1	**5.0 B**	0.10	1.18	1.19	0.763	0.766

See notes at end of table

TABLE 2
SUMMARY OF LABORATORY GROUNDWATER ANALYTICAL DETECTIONS
FIRST QUARTER GROUNDWATER MONITORING LETTER REPORT, 2007
BUILDING 245
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

Constituent	GCTL [1]	Monitoring Well Locations							
		MPT-245-MW09							
VOCs (USEPA Method 8260B) (µg/L)		10/6/2002 [2]	2/24/2003 [2]	6/9/2003 [2]	2/15/2006	6/1/2006	9/28/2006	12/12/2006	2/14/2007
BENZENE	1	NA	NA	1.0 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
ETHYLBENZENE	30	NA	NA	1.0 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
TOLUENE	40	NA	NA	1.0 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
XYLENES, TOTAL	20	NA	NA	3.0 U	0.5 U	0.5 U	0.5 U	0.5 U	0.3 I
PAHs (USEPA Method 8270C SIM) (µg/L)									
1-METHYLNAPHTHALENE	28	NA	NA	0.20 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
2-METHYLNAPHTHALENE	28	NA	NA	0.20 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
ACENAPHTHENE	20	NA	NA	0.20 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
ANTHRACENE	2100	NA	NA	0.20 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
FLUORANTHENE	280	NA	NA	0.20 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
FLUORENE	280	NA	NA	0.20 U	0.02 U	0.02 U	0.06 J	0.02 U	0.02 U
NAPHTHALENE	14	NA	NA	0.20 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
PHENANTHRENE	210	NA	NA	0.20 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
PYRENE	210	NA	NA	0.20 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Petroleum Hydrocarbons (mg/L)									
TPH (C08-C40)	5	NA	NA	0.82 JB	0.09 U	0.09 U	0.09 U	0.094 U	0.094 U

Notes:

[1] GCTL Level as defined by Chapter 62-777, Table I, FAC (as amended 4/17/05).

[2] Historical data from Third Quarter Groundwater Monitoring Report, Mayport Naval Station Site 245, U.S. Army Corps of Engineers, 2003.

Bold font indicates a GCTL was exceeded.

B = contaminant was detected in the equipment blank.

I = detected but below the reporting limit; therefore, result is an estimated concentration.

J = estimated value

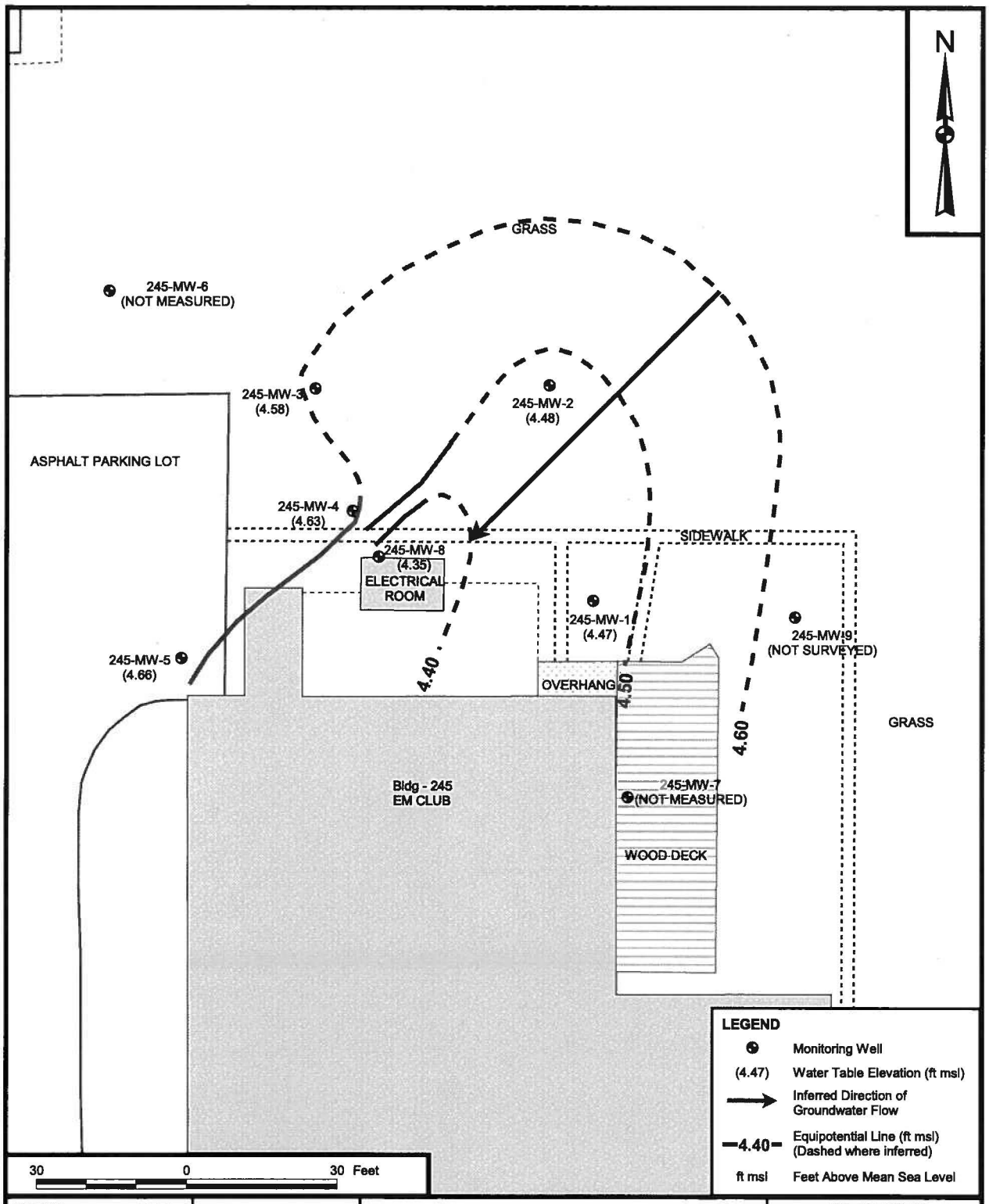
mg/L = milligrams per liter

NA = indicates compound not analyzed for.

U = less than laboratory method detection limit.

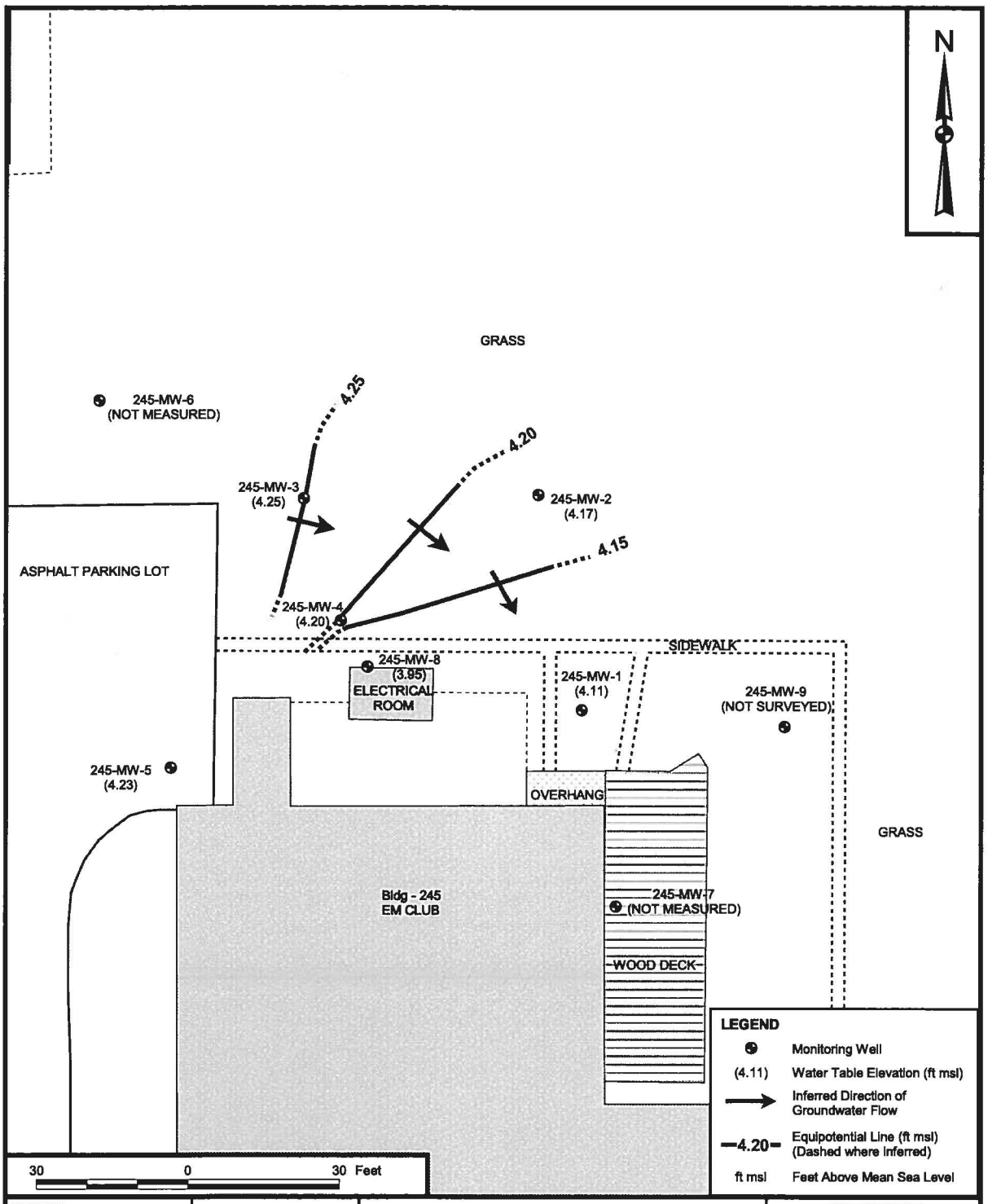
SIM = Select Ion Method

µg/L = micrograms per liter



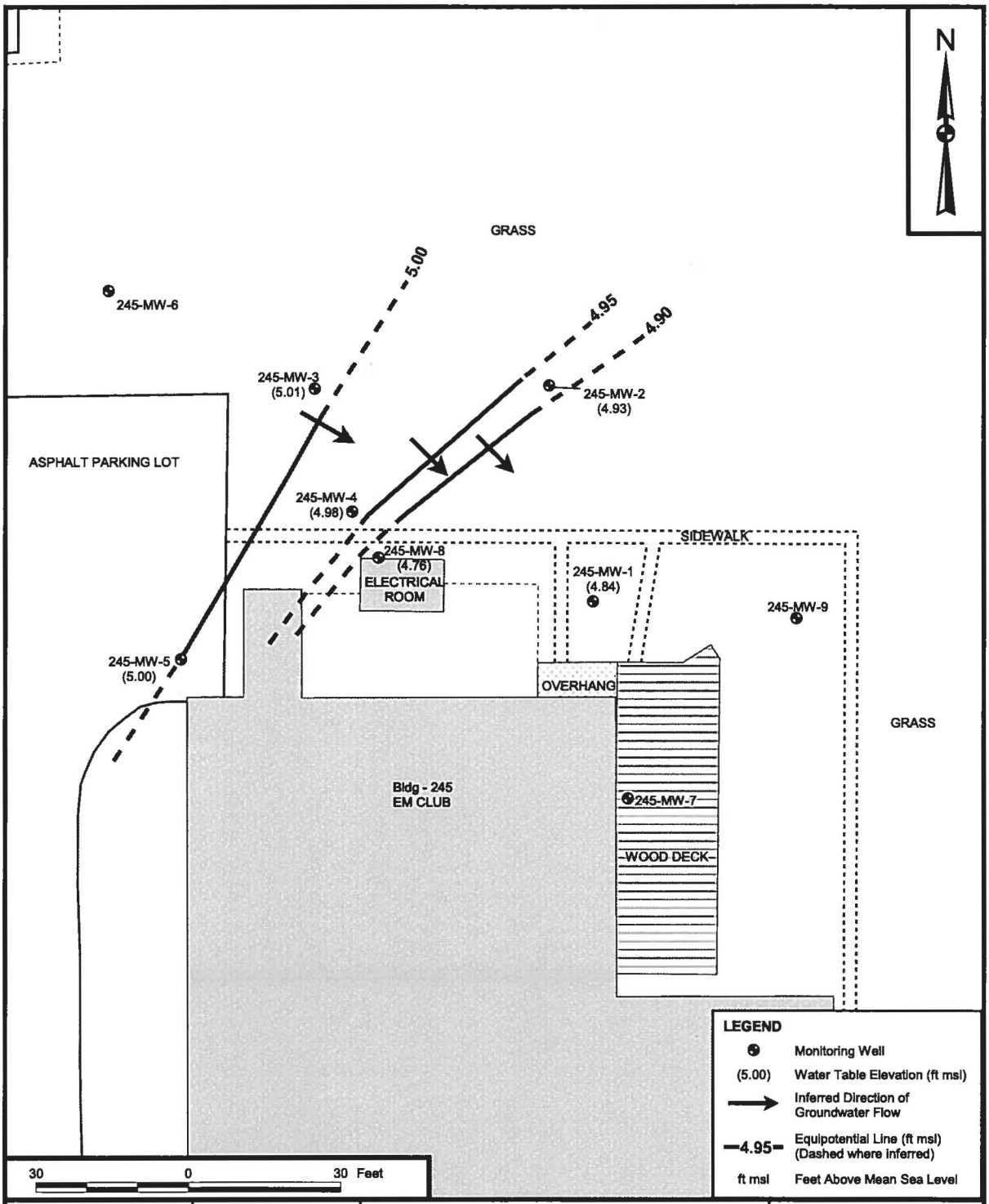
DRAWN BY K. PEILA	DATE 4/17/06	GROUNDWATER ELEVATION CONTOUR MAP, 2/16/07 SITE 245 NAVAL STATION MAYPORT MAYPORT, FLORIDA	CONTRACT NUMBER CTO 0050
CHECKED BY T. COTTENOIR	DATE 4/30/07		APPROVED BY — DATE —
COST/SCHEDULE-AREA			APPROVED BY — DATE —
SCALE AS NOTED	NAVFAC		DRAWING NO. FIGURE 4 / REV 0

P:\GIS\MAYPORT_NS\MAPDOCS\APR\BLDG413_1585.APR BLDG 245 SITE PLAN_LAYOUT 4/30/07 SS



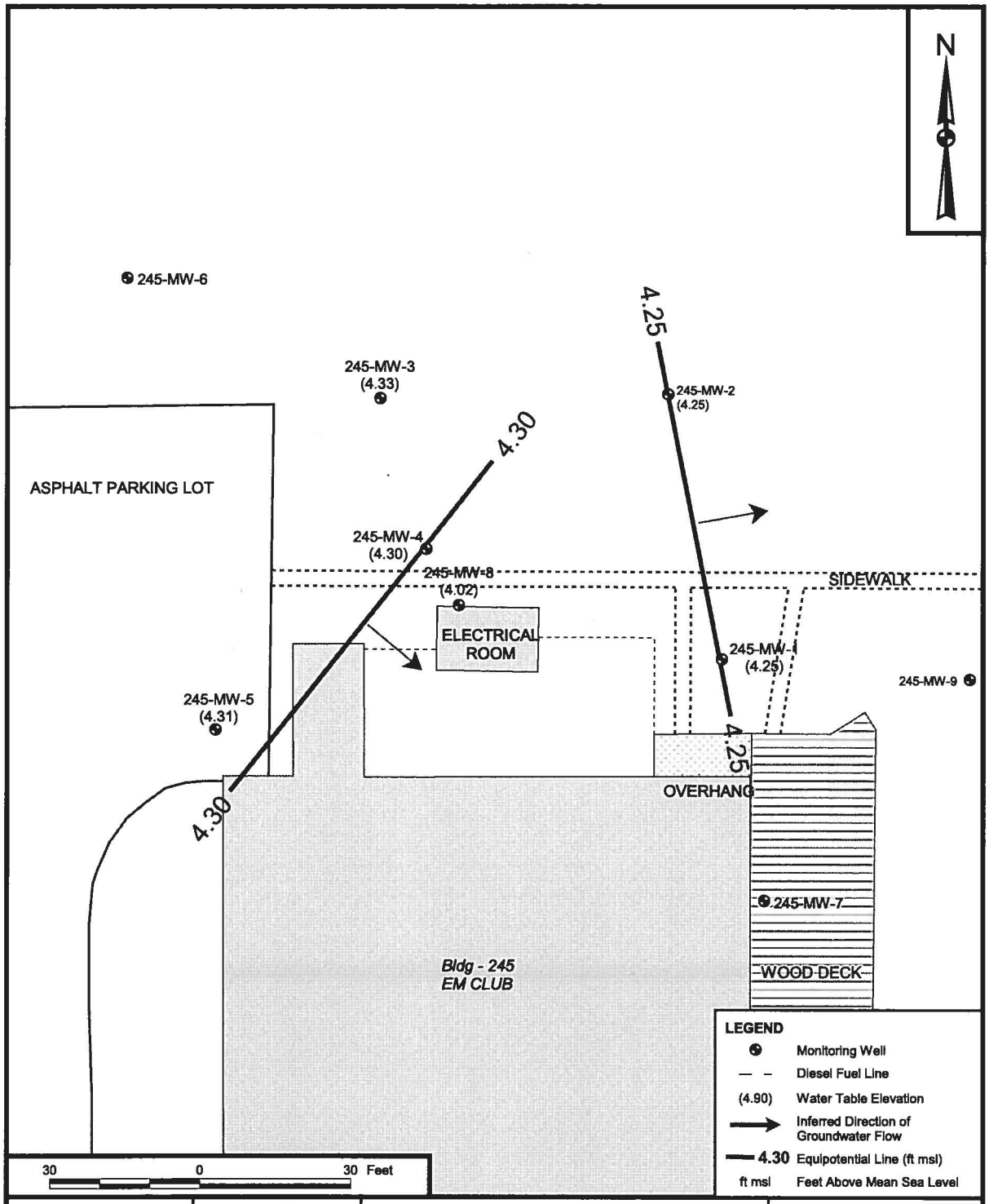
DRAWN BY K. PEILA	DATE 4/17/06	GROUNDWATER ELEVATION CONTOUR MAP, 12/21/06 SITE 245 NAVAL STATION MAYPORT MAYPORT, FLORIDA	CONTRACT NUMBER CTO 00103
CHECKED BY T. COTTENOIR	DATE 4/05/07		APPROVED BY — DATE —
COST/SCHEDULE-AREA			APPROVED BY — DATE —
SCALE AS NOTED	NAVFAC		DRAWING NO. FIGURE 4 REV 0

P:\GIS\MAYPORT_NS\MAPDOCS\APR\BLDG413_1585.APR SITE 245 POTENTIOMETRIC LAYOUT 4/05/07 SP



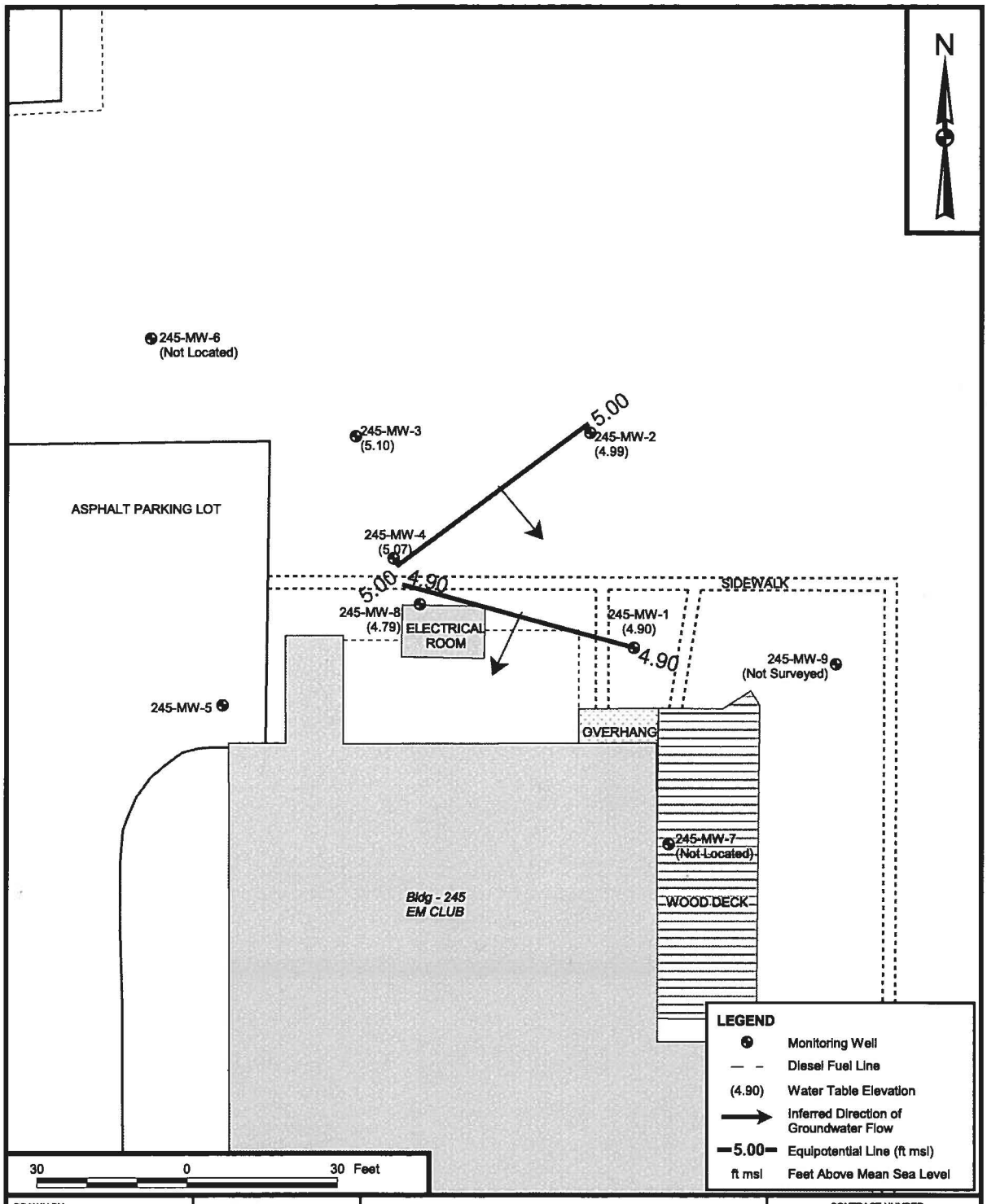
DRAWN BY K. PEILA	DATE 4/17/06	GROUNDWATER ELEVATION CONTOUR MAP, 09/28/06 SITE 245 MAYPORT NAVAL STATION MAYPORT, FLORIDA	CONTRACT NUMBER CTO 00103
CHECKED BY D. SIEFKEN	DATE 11/17/06		APPROVED BY — DATE —
COST/SCHEDULE-AREA			APPROVED BY — DATE —
SCALE AS NOTED		NAVFAC	DRAWING NO. FIGURE 4 REV 0

P:\GIS\MAYPORT_NS\MAPDOCS\APR\BLDG413_1585.APR SITE 245 POTENTIOMETRIC LAYOUT 11/17/06 SS



DRAWN BY MK BOND	DATE 6/15/06	GROUNDWATER ELEVATION CONTOUR MAP JUNE 2006 SITE 245 SECOND QUARTER MONITORING REPORT NAVAL STATION MAYPORT MAYPORT, FLORIDA	CONTRACT NUMBER CTO 00386
CHECKED BY D. HARDISON	DATE 6/15/06		APPROVED BY — DATE —
COST/SCHEDULE-AREA			APPROVED BY — DATE —
SCALE AS NOTED	NAVFAC		DRAWING NO. FIGURE 4 REV 0

P:\GIS\MAYPORT_NS\MAPDOCS\APR\BLDG413_1585.APR BLDG 245 POTENTIOMETRIC0506 6/15/06 MKB (KOP)

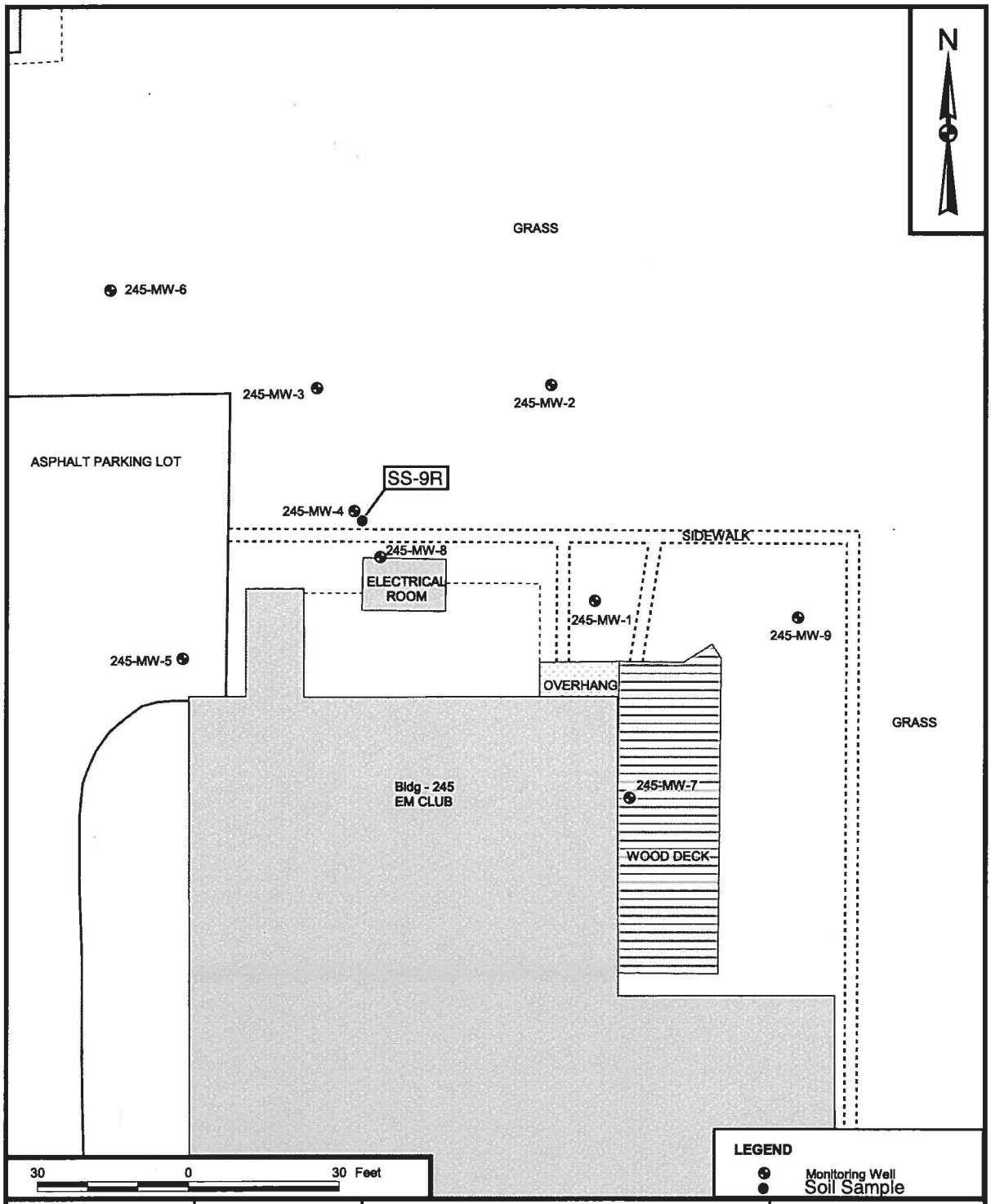


DRAWN BY K. PEILA	DATE 4/17/06	GROUNDWATER ELEVATION CONTOUR MAP APRIL 2006 SITE 245 FIRST QUARTER MONITORING REPORT NAVAL STATION MAYPORT MAYPORT, FLORIDA	CONTRACT NUMBER CTO 00103
CHECKED BY D. SIEFKEN	DATE 4/17/06		APPROVED BY — DATE —
COST/SCHEDULE-AREA			APPROVED BY — DATE —
SCALE AS NOTED	NAVFAC		DRAWING NO. FIGURE 2 / REV 0

P:\GIS\MAYPORT_NS\MAPDOCS\APR\BLDG413_1585.APR BLDG 245 POTENTIOMETRIC0406 6/5/06 MKB (KOP)

ATTACHMENT H

SOIL SAMPLE SS-9R INFORMATION



DRAWN BY K. PEILA	DATE 4/17/06	Soil Sample SS-9R Collection Location (December 9, 2009)	CONTRACT NUMBER CTO 0050
CHECKED BY T. COTTENOIR	DATE 4/30/07	SITE 245	APPROVED BY — DATE —
COST/SCHEDULE-AREA		NAVAL STATION MAYPORT	APPROVED BY — DATE —
SCALE AS NOTED	NAVFAC	MAYPORT, FLORIDA	DRAWING NO. FIGURE 5 / REV 0

P:\GIS\MAYPORT_NS\MAPDOCS\APR\BLDG413_1585.APR REVISED SITE 245 SITE PLAN LAYOUT 4/30/07 SS

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Site 245
Project No.: 112g01516

[] Surface Soil (SS)
[x] Subsurface Soil (SU)
[] Sediment (SD)
[] Other:
[] QA Sample Type:

Sample ID No.: **SS-9R**
Sample Location: SS-9R
Sampled By: DS
C.O.C. No.: 935

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

		Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:	12/9/2009			
Time:	1415	3 to 4	brown	medium grain, dry, petroluem odor
Method:				
Monitor Reading (ppm none				

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

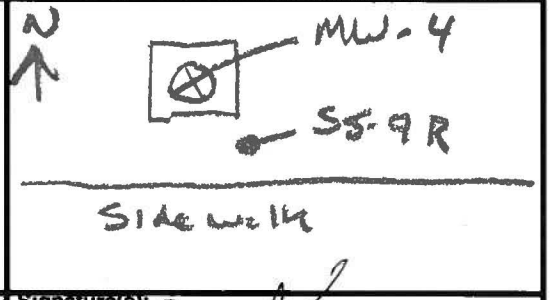
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	LAB
8270 SIM	4 oz	yes	ENCO
TRPH	4 oz	yes	ENCO

OBSERVATIONS / NOTES:

soil appears stained

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Environmental Conservation Laboratories, Inc.
4810 Executive Park Court, Suite 211
Jacksonville FL, 32216-6069
Phone: 904.296.3007 FAX: 904.296.6210

www.encolabs.com

Wednesday, December 30, 2009

Tetra Tech NUS (BR006)

Attn: Mark Peterson

8640 Philips Highway Suite 16

Jacksonville, FL 32256

RE: Laboratory Results for
Project Number: [none], Project Name/Desc: CTO 118 Site 245
ENCO Workorder: B905838

Dear Mark Peterson,

Enclosed is a copy of your laboratory report for test samples received by our laboratory on Wednesday, December 9, 2009.

Unless otherwise noted in an attached project narrative, all samples were received in acceptable condition and processed in accordance with the referenced methods/procedures. Results for these procedures apply only to the samples as submitted.

The analytical results contained in this report are in compliance with NELAC standards, except as noted in the project narrative. This report shall not be reproduced except in full, without the written approval of the Laboratory.

This report contains only those analyses performed by Environmental Conservation Laboratories. Unless otherwise noted, all analyses were performed at ENCO Jacksonville. Data from outside organizations will be reported under separate cover.

If you have any questions or require further information, please do not hesitate to contact me.

Sincerely,

Lorraine Strong

Project Manager

Enclosure(s)

The total number of pages in this report, including this page is 9.

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SAMPLE SUMMARY/LABORATORY CHRONICLE

Client ID: SS-9R	Lab ID: B905838-01	Sampled: 12/09/09 14:15	Received: 12/09/09 15:15

Parameter	Hold Date/Time(s)		Prep Date/Time(s)		Analysis Date/Time(s)
EPA 8270D	12/23/09	01/31/10	12/22/09	10:46	12/29/2009 21:05

Client ID: SS-9R	Lab ID: B905838-01RE1	Sampled: 12/09/09 14:15	Received: 12/09/09 15:15

Parameter	Hold Date/Time(s)		Prep Date/Time(s)		Analysis Date/Time(s)
FLPRO	12/23/09	01/23/10	12/14/09	11:32	12/15/2009 19:01

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SAMPLE DETECTION SUMMARY

Client ID: SS-9R			Lab ID: B905838-01RE1				
Analyte	**Results**	**Flag**	**MDL**	**PQL**	**Units**	**Method**	**Notes**
TPH (C8-C40)	260		11	21	mg/kg dry	FLPRO	

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ANALYTICAL RESULTS

Description:	SS-9R	**Lab Sample ID:**	B905838-01	**Received:**	12/09/09 15:15
Matrix:	Soil	**Sampled:**	12/09/09 14:15	**Work Order:**	B905838
Project:	CTO 118 Site 245	**Sampled By:**		**% Solids:**	93.25

Semivolatile Organic Compounds by GCMS SIM

^ - ENCO Jacksonville certified analyte [NELAC E82277]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	POL	Batch	Method	Analyzed	By	Notes
1-Methylnaphthalene [90-12-0] ^	0.025	U	mg/kg dry	1	0.025	0.049	9L22014	EPA 8270D	12/29/09 21:05	JWJ	
2-Methylnaphthalene [91-57-6] ^	0.025	U	mg/kg dry	1	0.025	0.049	9L22014	EPA 8270D	12/29/09 21:05	JWJ	
Acenaphthene [83-32-9] ^	0.025	U	mg/kg dry	1	0.025	0.049	9L22014	EPA 8270D	12/29/09 21:05	JWJ	
Acenaphthylene [208-96-8] ^	0.025	U	mg/kg dry	1	0.025	0.049	9L22014	EPA 8270D	12/29/09 21:05	JWJ	
Anthracene [120-12-7] ^	0.025	U	mg/kg dry	1	0.025	0.049	9L22014	EPA 8270D	12/29/09 21:05	JWJ	
Benzo(a)anthracene [56-55-3] ^	0.025	U	mg/kg dry	1	0.025	0.049	9L22014	EPA 8270D	12/29/09 21:05	JWJ	
Benzo(a)pyrene [50-32-8] ^	0.025	U	mg/kg dry	1	0.025	0.049	9L22014	EPA 8270D	12/29/09 21:05	JWJ	
Benzo(b)fluoranthene [205-99-2] ^	0.025	U	mg/kg dry	1	0.025	0.049	9L22014	EPA 8270D	12/29/09 21:05	JWJ	
Benzo(g,h,i)perylene [191-24-2] ^	0.025	U	mg/kg dry	1	0.025	0.049	9L22014	EPA 8270D	12/29/09 21:05	JWJ	
Benzo(k)fluoranthene [207-08-9] ^	0.025	U	mg/kg dry	1	0.025	0.049	9L22014	EPA 8270D	12/29/09 21:05	JWJ	
Chrysene [218-01-9] ^	0.025	U	mg/kg dry	1	0.025	0.049	9L22014	EPA 8270D	12/29/09 21:05	JWJ	
Dibenzo(a,h)anthracene [53-70-3] ^	0.025	U	mg/kg dry	1	0.025	0.049	9L22014	EPA 8270D	12/29/09 21:05	JWJ	
Fluoranthene [206-44-0] ^	0.025	U	mg/kg dry	1	0.025	0.049	9L22014	EPA 8270D	12/29/09 21:05	JWJ	
Fluorene [86-73-7] ^	0.025	U	mg/kg dry	1	0.025	0.049	9L22014	EPA 8270D	12/29/09 21:05	JWJ	
Indeno(1,2,3-cd)pyrene [193-39-5] ^	0.025	U	mg/kg dry	1	0.025	0.049	9L22014	EPA 8270D	12/29/09 21:05	JWJ	
Naphthalene [91-20-3] ^	0.025	U	mg/kg dry	1	0.025	0.049	9L22014	EPA 8270D	12/29/09 21:05	JWJ	
Phenanthrene [85-01-8] ^	0.025	U	mg/kg dry	1	0.025	0.049	9L22014	EPA 8270D	12/29/09 21:05	JWJ	
Pyrene [129-00-0] ^	0.025	U	mg/kg dry	1	0.025	0.049	9L22014	EPA 8270D	12/29/09 21:05	JWJ	

Surrogates	*Results*	*DF*	*Spike Lvl*	*% Rec*	*% Rec Limits*	*Batch*	*Method*	*Analyzed*	*By*	Notes
p-Terphenyl	*1.8*	*1*	*1.78*	*102 %*	*61-150*	*9L22014*	*EPA 8270D*	*12/29/09 21:05*	*JWJ*	

FL Petroleum Range Organics

^ - ENCO Jacksonville certified analyte [NELAC E82277]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	POL	Batch	Method	Analyzed	By	Notes
TPH (C8-C40) [ECL-0175] ^	**260**		mg/kg dry	2	11	21	9L14016	FLPRO	12/15/09 19:01	LJC	

Surrogates	*Results*	*DF*	*Spike Lvl*	*% Rec*	*% Rec Limits*	*Batch*	*Method*	*Analyzed*	*By*	Notes
n-Nonatriacontane	*2.9*	*2*	*3.57*	*80 %*	*23-189*	*9L14016*	*FLPRO*	*12/15/09 19:01*	*LJC*	
o-Terphenyl	*1.6*	*2*	*1.79*	*87 %*	*64-118*	*9L14016*	*FLPRO*	*12/15/09 19:01*	*LJC*	

This report relates only to the sample as received by the laboratory, and may only be reproduced in full.

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QUALITY CONTROL

Semivolatile Organic Compounds by GCMS SIM - Quality Control

Batch 9L22014 - EPA 3545_MS

Blank (9L22014-BLK1) Prepared: 12/22/2009 10:46 Analyzed: 12/29/2009 19:51

Analyte	Result	Flag	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
1-Methylnaphthalene	0.023	U	0.046	mg/kg wet							
2-Methylnaphthalene	0.023	U	0.046	mg/kg wet							
Acenaphthene	0.023	U	0.046	mg/kg wet							
Acenaphthylene	0.023	U	0.046	mg/kg wet							
Anthracene	0.023	U	0.046	mg/kg wet							
Benzo(a)anthracene	0.023	U	0.046	mg/kg wet							
Benzo(a)pyrene	0.023	U	0.046	mg/kg wet							
Benzo(b)fluoranthene	0.023	U	0.046	mg/kg wet							
Benzo(g,h,i)perylene	0.023	U	0.046	mg/kg wet							
Benzo(k)fluoranthene	0.023	U	0.046	mg/kg wet							
Chrysene	0.023	U	0.046	mg/kg wet							
Dibenzo(a,h)anthracene	0.023	U	0.046	mg/kg wet							
Fluoranthene	0.023	U	0.046	mg/kg wet							
Fluorene	0.023	U	0.046	mg/kg wet							
Indeno(1,2,3-cd)pyrene	0.023	U	0.046	mg/kg wet							
Naphthalene	0.023	U	0.046	mg/kg wet							
Phenanthrene	0.023	U	0.046	mg/kg wet							
Pyrene	0.023	U	0.046	mg/kg wet							
Surrogate: p-Terphenyl	*1.6*			*mg/kg wet*	*1.67*		*96*	*61-150*			

LCS (9L22014-BS1) Prepared: 12/22/2009 10:46 Analyzed: 12/29/2009 20:10

Analyte	Result	Flag	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
1-Methylnaphthalene	0.56		0.046	mg/kg wet	0.667		85	60-120			
2-Methylnaphthalene	0.54		0.046	mg/kg wet	0.667		81	45-105			
Acenaphthene	0.58		0.046	mg/kg wet	0.667		88	35-110			
Acenaphthylene	0.56		0.046	mg/kg wet	0.667		84	35-115			
Anthracene	0.54		0.046	mg/kg wet	0.667		81	45-125			
Benzo(a)anthracene	0.55		0.046	mg/kg wet	0.667		83	50-105			
Benzo(a)pyrene	0.52		0.046	mg/kg wet	0.667		78	40-135			
Benzo(b)fluoranthene	0.55		0.046	mg/kg wet	0.667		82	55-120			
Benzo(g,h,i)perylene	0.65		0.046	mg/kg wet	0.667		98	55-115			
Benzo(k)fluoranthene	0.57		0.046	mg/kg wet	0.667		85	50-120			
Chrysene	0.56		0.046	mg/kg wet	0.667		85	55-120			
Dibenzo(a,h)anthracene	0.66		0.046	mg/kg wet	0.667		98	45-115			
Fluoranthene	0.60		0.046	mg/kg wet	0.667		90	40-135			
Fluorene	0.57		0.046	mg/kg wet	0.667		85	45-105			
Indeno(1,2,3-cd)pyrene	0.64		0.046	mg/kg wet	0.667		95	55-135			
Naphthalene	0.61		0.046	mg/kg wet	0.667		91	50-110			
Phenanthrene	0.57		0.046	mg/kg wet	0.667		85	55-125			
Pyrene	0.57		0.046	mg/kg wet	0.667		86	50-115			
Surrogate: p-Terphenyl	*1.5*			*mg/kg wet*	*1.67*		*89*	*61-150*			

Matrix Spike (9L22014-MS1) Prepared: 12/22/2009 10:46 Analyzed: 12/29/2009 20:28

Source: B905838-01

Analyte	Result	Flag	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

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QUALITY CONTROL

Semivolatile Organic Compounds by GCMS SIM - Quality Control

Batch 9L22014 - EPA 3545_MS

Matrix Spike (9L22014-MS1) Continued Prepared: 12/22/2009 10:46 Analyzed: 12/29/2009 20:28

Source: B905838-01

Analyte	Result	Flag	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
1-Methylnaphthalene	0.71		0.049	mg/kg dry	0.720	0.025 U	99	60-120			
2-Methylnaphthalene	0.68		0.049	mg/kg dry	0.720	0.025 U	95	45-105			
Acenaphthene	0.71		0.049	mg/kg dry	0.720	0.025 U	99	35-110			
Acenaphthylene	0.68		0.049	mg/kg dry	0.720	0.025 U	95	35-115			
Anthracene	0.70		0.049	mg/kg dry	0.720	0.025 U	97	45-125			
Benzo(a)anthracene	0.69		0.049	mg/kg dry	0.720	0.025 U	96	50-105			
Benzo(a)pyrene	0.66		0.049	mg/kg dry	0.720	0.025 U	92	40-135			
Benzo(b)fluoranthene	0.69		0.049	mg/kg dry	0.720	0.025 U	96	55-120			
Benzo(g,h,i)perylene	0.83		0.049	mg/kg dry	0.720	0.025 U	115	55-115			
Benzo(k)fluoranthene	0.73		0.049	mg/kg dry	0.720	0.025 U	101	50-120			
Chrysene	0.70		0.049	mg/kg dry	0.720	0.025 U	97	55-120			
Dibenzo(a,h)anthracene	0.85		0.049	mg/kg dry	0.720	0.025 U	119	45-115			
Fluoranthene	0.79		0.049	mg/kg dry	0.720	0.025 U	110	40-135			
Fluorene	0.71		0.049	mg/kg dry	0.720	0.025 U	98	45-105			
Indeno(1,2,3-cd)pyrene	0.82		0.049	mg/kg dry	0.720	0.025 U	114	55-135			
Naphthalene	0.75		0.049	mg/kg dry	0.720	0.025 U	105	50-110			
Phenanthrene	0.72		0.049	mg/kg dry	0.720	0.025 U	100	55-125			
Pyrene	0.77		0.049	mg/kg dry	0.720	0.025 U	106	50-115			
Surrogate: p-Terphenyl	*1.9*			*mg/kg dry*	*1.80*		*106*	*61-150*			

Matrix Spike Dup (9L22014-MSD1) Prepared: 12/22/2009 10:46 Analyzed: 12/29/2009 20:46

Source: B905838-01

Analyte	Result	Flag	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
1-Methylnaphthalene	0.63		0.049	mg/kg dry	0.720	0.025 U	88	60-120	12	20	
2-Methylnaphthalene	0.61		0.049	mg/kg dry	0.720	0.025 U	85	45-105	11	30	
Acenaphthene	0.64		0.049	mg/kg dry	0.720	0.025 U	89	35-110	10	30	
Acenaphthylene	0.62		0.049	mg/kg dry	0.720	0.025 U	86	35-115	10	30	
Anthracene	0.64		0.049	mg/kg dry	0.720	0.025 U	89	45-125	9	30	
Benzo(a)anthracene	0.64		0.049	mg/kg dry	0.720	0.025 U	89	50-105	8	30	
Benzo(a)pyrene	0.63		0.049	mg/kg dry	0.720	0.025 U	87	40-135	5	30	
Benzo(b)fluoranthene	0.64		0.049	mg/kg dry	0.720	0.025 U	89	55-120	8	30	
Benzo(g,h,i)perylene	0.76		0.049	mg/kg dry	0.720	0.025 U	106	55-115	8	30	
Benzo(k)fluoranthene	0.62		0.049	mg/kg dry	0.720	0.025 U	86	50-120	16	30	
Chrysene	0.65		0.049	mg/kg dry	0.720	0.025 U	90	55-120	7	30	
Dibenzo(a,h)anthracene	0.79		0.049	mg/kg dry	0.720	0.025 U	110	45-115	7	30	
Fluoranthene	0.73		0.049	mg/kg dry	0.720	0.025 U	101	40-135	9	30	
Fluorene	0.64		0.049	mg/kg dry	0.720	0.025 U	89	45-105	10	30	
Indeno(1,2,3-cd)pyrene	0.76		0.049	mg/kg dry	0.720	0.025 U	106	55-135	7	30	
Naphthalene	0.67		0.049	mg/kg dry	0.720	0.025 U	94	50-110	11	30	
Phenanthrene	0.65		0.049	mg/kg dry	0.720	0.025 U	91	55-125	10	30	
Pyrene	0.70		0.049	mg/kg dry	0.720	0.025 U	97	50-115	9	30	
Surrogate: p-Terphenyl	*1.8*			*mg/kg dry*	*1.80*		*103*	*61-150*			

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Batch 9L14016 - EPA 3545A

Blank (9L14016-BLK1) Prepared: 12/14/2009 11:32 Analyzed: 12/14/2009 20:52

Analyte	Result	Flag	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
TPH (C8-C40)	5.0	U	10	mg/kg wet							
Surrogate: n-Nonatriacontane	*3.1*			*mg/kg wet*	*3.33*		*92*	*23-189*			
Surrogate: o-Terphenyl	*1.5*			*mg/kg wet*	*1.67*		*93*	*64-118*			

LCS (9L14016-BS1) Prepared: 12/14/2009 11:32 Analyzed: 12/14/2009 21:15

Analyte	Result	Flag	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
TPH (C8-C40)	53		10	mg/kg wet	56.7		93	63-153			
Surrogate: n-Nonatriacontane	*3.1*			*mg/kg wet*	*3.33*		*93*	*60-118*			
Surrogate: o-Terphenyl	*1.7*			*mg/kg wet*	*1.67*		*99*	*62-109*			

Matrix Spike (9L14016-MS2) Prepared: 12/14/2009 11:32 Analyzed: 12/15/2009 18:14

Source: B905838-01RE1

Analyte	Result	Flag	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
TPH (C8-C40)	350		21	mg/kg dry	60.8	260	139	63-122			QM-14
Surrogate: n-Nonatriacontane	*2.1*			*mg/kg dry*	*3.57*		*59*	*23-189*			
Surrogate: o-Terphenyl	*1.6*			*mg/kg dry*	*1.79*		*90*	*64-118*			

Matrix Spike Dup (9L14016-MSD2) Prepared: 12/14/2009 11:32 Analyzed: 12/15/2009 18:38

Source: B905838-01RE1

Analyte	Result	Flag	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
TPH (C8-C40)	330		21	mg/kg dry	60.8	260	120	63-122	3	30	
Surrogate: n-Nonatriacontane	*2.6*			*mg/kg dry*	*3.57*		*74*	*23-189*			
Surrogate: o-Terphenyl	*1.6*			*mg/kg dry*	*1.79*		*87*	*64-118*			

FLAGS/NOTES AND DEFINITIONS

PQL	PQL: Practical Quantitation Limit.
B	Results are based upon membrane filter colony counts that are outside the method indicated ideal range.
I	The reported value is between the laboratory method detection limit (MDL) and the practical quantitation limit (PQL).
J	Estimated value. The associated sample note or project narrative indicate the causative reason.
K	Off-scale low; Actual value is known to be less than the value given.
L	Off-scale high; Actual value is known to be greater than value given.
M	Presence of analyte is verified but not quantified; the actual value is less than the MRL but greater than the MDL.
N	Presumptive evidence of presence of material.
O	Sampled, but analysis lost or not performed.
Q	Sample exceeded the accepted holding time.
T	Value reported is less than the laboratory method detection limit. The value is reported for informational purposes only and shall not be used in statistical analysis.
U	Indicates that the compound was analyzed for but not detected.
V	Indicates that the analyte was detected in both the sample and the associated method blank.
Y	The laboratory analysis was from an improperly preserved sample. The data may not be accurate.
Z	Too many colonies were present (TNTC); the numeric value represents the filtration volume.
?	Data are rejected and should not be used. Some or all of the quality control data for the analyte were outside criteria, and the presence or absence of the analyte cannot be determined from the data.
*	Not reported due to interference.
QM-14	Confirmed matrix effects

B905838

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER 0935 | PAGE ___ OF ___

PROJECT NO: 112601517	FACILITY: CTO 116	PROJECT MANAGER: M Peterson	PHONE NUMBER: 904.334.7260	LABORATORY NAME AND CONTACT: ENCO / Chris
SAMPLERS (SIGNATURE): [signature]		FIELD OPERATIONS LEADER: D. Siepka	PHONE NUMBER: 904.334.7260	ADDRESS: 4810 Executive Dr, Suite 21
		CARRIER/WAYBILL NUMBER: Drop-off		CITY, STATE: Jacksonville, FL

STANDARD TAT ☑
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 12 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G)
PRESERVATIVE USED

DATE YEAR 2009	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: TRPH 418.1								COMMENTS
12/9	1415	SS-9R	SS-9R	3	4	So	G		X								Cool to 4°C

1. RELINQUISHED BY: [signature]	DATE: 12-9-09	TIME: 15:15	1. RECEIVED BY: C. Donald	DATE: 12/9/09	TIME: 15:15
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS: JX-171 @ 3.4°C

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R
FORM NO. TINUS-001

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