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NAS PENSACOLA
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SITE ASSESSMENT REPORT ADDENDUM FOR UNDERGROUND STORAGE TANK AT
SITE 21 WITH TRANSMITTAL NAS PENSACOLA FL
4/15/2003
TETRA TECH NUS



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TtNUS/TAL-03-019/0401-5.2

April 15, 2003

Project Number 0401

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Reference: CLEAN Contract Number N62467-94-D0888
Contract Task Order Number 0112

Subject: **Site Assessment Report Addendum
Underground Storage Tank Site 21
Naval Air Station Pensacola, Pensacola, Florida
FDEP Site Number 1792003973**

Dear Ms. Vaught:

Tetra Tech NUS, Inc. (TtNUS) is pleased to submit this Site Assessment Report (SAR) Addendum for Underground Storage Tank (UST) Site 21, Naval Air Station (NAS) Pensacola, located in Pensacola, Florida. This report has been prepared for the United States Navy (Navy) Southern Division, Naval Facilities Engineering Command under Contract Task Order (CTO) Number 0112, for the Comprehensive Long-term Environmental Action Navy (CLEAN) III Contract Number N62467-94-D-0888. This report provides the results of the most recent site assessment activities and a limited review of previous site investigation results to aid in evaluating current site conditions and recommending future actions at the site.

SITE HISTORY

Site 21 is the former location of an aviation gasoline (AVGAS) tank farm (Figure 1). From approximately 1940 to the late 1960's, nine above ground storage tanks (ASTs) were used to store aviation gasoline at the site. The tanks were routinely cleaned and the sludge from the bottoms of the tanks was disposed of on the ground surface in the immediate vicinity of the tanks. The ASTs have been removed from the site and the majority of the site is currently grass covered. Building 670, which is a fuel system pump house, is located at the eastern edge of the site, south of Radford Boulevard. Two USTs for contaminated fuel were reportedly associated with Building 670.

Previous investigations at the site include the Phase I Installation Restoration (IR) assessment conducted in 1991 and the Contamination Assessment Report (CAR) field investigations conducted in December

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1995 and January 1997. In June 1997, the NAS Pensacola Navy Public Works Center submitted the CAR based on the findings of these investigations.

Upon review of the CAR prepared by the Navy, the Florida Department of Environmental Protection (FDEP) issued a technical review letter on August 25, 1997, which requested additional site assessment in order to meet the requirements of Chapter 62-770, Florida Administrative Code (FAC). The SAR addendum investigation was conducted from May to July 2000. Areas of the site were identified where petroleum constituent concentrations in site soil or groundwater exceeded regulatory criteria. The locations of significant findings from the SAR addendum are shown on Figure 1. Based on the additional site assessment data, the SAR addendum report recommended additional soil delineation and groundwater monitoring at the site. On April 20, 2001, FDEP issued a technical review letter agreeing with the recommendations in the SAR and requesting that additional assessment be conducted at the site before preparation of the Remedial Action Plan (RAP).

SITE ASSESSMENT OBJECTIVES

To address the comments in the technical review letter, the objectives of the additional investigation at Site 21 were to:

- Delineate the extent of total recoverable petroleum hydrocarbons (TRPH) in soil in the vicinity of previous sampling locations HA06, HA07, HA08, and HA09 (Figure 1).
- Evaluate the impact of TRPH to site groundwater in the vicinity of HA06, HA07, HA08, and HA09.
- Determine the extent of benzo(a)pyrene, copper, and lead soil cleanup target level (SCTL) exceedances in the vicinity of HA02.
- Delineate the southern edge of the dissolved lead groundwater plume to the north and west of Building 670.

SITE ASSESSMENT ACTIVITIES

The following site assessment activities were conducted as part of the SAR addendum investigation:

- Site reconnaissance and observation
- Soil borings and headspace screening
- Soil sampling for TRPH analysis
- Soil sampling for synthetic precipitation leaching procedure (SPLP) extraction and TRPH analysis
- Soil sampling for lead, copper, and polynuclear aromatic hydrocarbon (PAH) analysis
- Monitoring well installation
- Groundwater sampling for TRPH analysis
- Groundwater sampling for lead analysis

A direct push technology (DPT) crew was mobilized to the site to advance soil borings and install monitoring wells. Soil samples were collected and monitoring wells were installed during October, 2002. Groundwater samples were collected during February, 2003. Sampling activities were conducted in accordance with the FDEP Standard Operating Procedures (SOPs) for Field Activities (DEP-SOP-001/01). Copies of the field data records for the site activities are included in Attachment A.

Site Reconnaissance and Observation

Building 670 is an apparently inactive pump house for a fuel distribution system. Lines marked JP-4 and various pumps and valves were observed inside the building. At least two JP-4 lines exit the west end of Building 670 and continue below ground to unknown locations.

Rainfall occurred frequently during the site assessment activities. Groundwater was observed to pond in low-lying areas and discharge into the paved ditch at the west end of the site (Figure 1) through cracks in the concrete sides and bottom at time of the field investigation. Surface water in the paved ditch discharges directly into Pensacola Bay.

Soil Borings and Headspace Screening

Thirty-three soil borings were advanced during the DPT investigation (Figure 2). The soil borings were advanced to the water table or refusal. The soil types were logged at each boring location. Soil samples were collected at 2-foot intervals for field screening using headspace methods.

Soil Sampling – TRPH

Twenty-three soil borings (SB01 through SB23) were advanced at the west end of the site near the locations of HA06, HA07, HA08, and HA09 where TRPH SCTL exceedances were reported in the previous SAR Addendum (Figure 3). One soil sample was collected per boring location for TRPH analysis by the Florida petroleum range organics (FL-PRO) method at an off-site laboratory. The samples submitted to the off-site laboratory were collected either from the interval with the highest organic vapor analyzer (OVA) response or from directly above the water table. Selected samples were submitted for immediate FL-PRO analysis and the remaining samples were submitted for FL-PRO extraction only, pending the results of the FL-PRO analysis of the selected samples. The soil samples from the following soil borings were submitted for immediate FL-PRO analysis:

SB02	SB14
SB04	SB15
SB08	SB16
SB09	SB18
SB11	SB21
SB13	SB22

The soil samples from the following soil borings were submitted for extraction and were later analyzed:

SB05	SB17
SB07	SB19
SB12	SB23

The soil samples from the following soil borings were submitted for extraction only and were not analyzed:

SB01	SB10
SB06	SB20

Soil samples were not collected at the SB03 soil boring location due to sampler refusal at a shallow depth.

Soil Sampling – SPLP

Three additional soil samples were collected for SPLP extraction and TRPH analysis. The sampling locations for the SPLP samples were selected based on the OVA results from the field headspace screening and were intended to cover the range of positive OVA responses observed at the site. The following samples were selected for SPLP extraction and analysis:

PEN21SB0903	249.3 parts per million (ppm)
PEN21SB1603	407.0 ppm
PEN21SB1706	1,147 ppm

Soil Sampling – Lead, Copper, and PAHs

Ten soil borings (SB24 through SB33) were advanced at the east end of the site near the location of HA02 where benzo(a)pyrene, copper, lead, and zinc SCTL exceedances were reported in the previous SAR Addendum (Figure 3). Each of the soil borings were advanced to the water table or sampler refusal. Two soil samples were collected per boring location, from the 0-2 feet depth interval and from the 4-6 feet depth interval, except for SB32, where the deeper sample was collected from the 5-7 feet depth interval, and for SB26, where a deeper sample was not collected due to sampler refusal. Each of the soil samples was analyzed for lead and copper by United States Environmental Protection Agency (EPA) Method 6010B and PAHs by EPA Method 8310.

Monitoring Well Installation

Twelve new monitoring wells (MW-33 through MW-44) were installed at the site as part of this SAR addendum investigation (Figure 4). Seven new monitoring wells (MW-33 through MW-39) were installed at the west end of the site to evaluate TRPH impact to site groundwater and five new monitoring wells (MW-40 through MW-44) were installed at the eastern part of the site to further delineate the dissolved lead groundwater plume previously detected at the site. The new monitoring wells were installed using DPT driven casing methods. The wells were constructed of 1 ¼ inch inside diameter (ID) poly vinyl chloride (PVC) well screen and riser. The well screens were installed to bracket the water table. The installed depths of the monitoring wells ranged from 10.9 to 13.6 feet. The well installation details are summarized in Table 1 and the well installation diagrams are included in Attachment A. The monitoring wells were completed as flush mount wells with 2 feet by 2 feet concrete pads and bolt down vaults. Each monitoring well was developed following installation using a peristaltic pump.

Groundwater Sampling

In February 2003, groundwater samples were collected from the 12 new monitoring wells at Site 21. Groundwater sampling logs are provided in Attachment A. Static water level and total well depth were measured prior to sampling to determine the required purge volume. The monitoring wells were purged and sampled with a peristaltic pump. Following collection of the groundwater samples, the sample bottles were packed on ice and shipped via overnight transport to an approved fixed-base laboratory.

The groundwater samples collected from the seven wells installed at the west end of the site (MW-33, MW-34, MW-35, MW-36, MW-37, MW-38, and MW-39) were analyzed for TRPH by FL-PRO. The groundwater samples collected from the five wells installed at the east end of the site (MW-40, MW-41, MW-42, MW-43, and MW-44) were analyzed for lead by EPA Method 6010B. Copies of the validated analytical data and chain-of-custody documentation are provided in Attachment B.

HEADSPACE SCREENING RESULTS

Field headspace screening samples were collected at each of the soil boring locations. The headspace screening results are summarized in Table 2. Positive OVA headspace readings (greater than 10 ppm) were detected in surface soil (0 to 2 feet depth interval) in the following soil borings (Figure 2):

SB11 (0-2 feet)	61.3 ppm	SB14 (0-2 feet)	146.4 ppm
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Groundwater was encountered at shallow depths at these two soil boring locations and the headspace screening samples were collected from the interval directly above the water table.

Positive OVA headspace readings (greater than 10 ppm) were detected in subsurface soil (deeper than 2 feet) in the following soil borings (Figure 2):

SB04 (2-3 feet)	18.8 ppm	SB16 (2-4 feet)	407.0 ppm
SB08 (2-3 feet)	159.0 ppm	SB17 (4-6 feet)	1,147 ppm
SB09 (2-3 feet)	249.3 pm	SB21 (4-6 feet)	19.8 ppm
SB13 (2-4 feet)	2,182 ppm	SB28 (4-6 feet)	14.0 ppm
SB15 (4-6 feet)	129.4 ppm		

SB21 is located near the HA06 location from the previous SAR addendum investigation and SB28 is located near the HA01 location from the previous SAR addendum investigation. The other samples with positive OVA headspace screening responses were in the vicinity of HA07, HA08, and HA09. Each of these headspace screening samples was collected from the sample interval directly above the water table at the soil boring location. Headspace readings from shallower depths at these soil boring locations were below detection limits.

SOIL ANALYTICAL RESULTS

The analytical results for the soil samples collected at Site 21 have been compared to the appropriate SCTLs. The analytical results for the soil samples analyzed for TRPH are summarized in Table 3, the analytical results for the soil samples analyzed for PAHs are summarized in Table 4, and analytical results for the soil samples analyzed for lead and copper are summarized in Table 5.

FL-PRO Results

TRPH was detected at concentrations exceeding the residential direct exposure and leaching SCTLs of 340 milligrams per kilogram (mg/kg) in the following soil borings (Figure 3):

SB08 (2-3 feet)	4,460 mg/kg	SB15 (4-6 feet)	4,460 mg/kg
SB09 (2-3 feet)	2,010 mg/kg	SB16 (2-3 feet)	10,800 mg/kg
SB11 (4-6 feet)	10,500 mg/kg	SB17 (4-6 feet)	2,840 mg/kg
SB13 (2-4 feet)	20,600 mg/kg	SB21 (4-6 feet)	471 mg/kg

SB21 is located near the HA06 location from the previous SAR addendum investigation. The other samples with TRPH exceedances were in the vicinity of HA07, HA08, and HA09. Most of these TRPH concentrations also exceed the industrial direct exposure SCTL of 2,500 mg/kg.

SPLP Results

Three soil samples were sent to the laboratory for SPLP extraction and FL-PRO analysis. The SPLP extract TRPH results in the three soil samples submitted for extraction were below the laboratory detection limit and less than the TRPH groundwater cleanup target level (GCTL) of 5 micrograms per liter (mg/L). The headspace screening and the total soil TRPH, and SPLP extract TRPH results for the selected samples were:

<u>Sample Designation</u>	<u>OVA Headspace</u>	<u>Total Soil TRPH</u>	<u>SPLP Extract TRPH</u>
PEN21SB0903	249.3 ppm	2,010 mg/kg	< 1.7 mg/L
PEN21SB1603	407.0 ppm	10,800 mg/kg	< 1.7 mg/L
PEN21SB1706	1,147 ppm	2,840 mg/k	< 1.7 mg/L

PAH Results

PAH compounds at concentrations exceeding SCTLs were reported from two surface soil samples (0-2 feet interval) collected at Site 21 (Figure 3). Benzo(a)pyrene was detected at concentrations exceeding the residential direct exposure SCTL of 0.1 mg/kg in the following soil borings (Figure 3 and Table 4):

SB27 (0-2 feet)	0.136 mg/kg	SB29 (0-2 feet)	19.1 mg/kg
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Additional PAH compounds detected at concentrations exceeding the residential SCTLs in the surface soil sample from SB29 include:

Benzo(a)anthracene	23.6 mg/kg	SCTL = 1.4 mg/kg
Benzo(b)fluoranthene	12.6 mg/kg	SCTL = 1.4 mg/kg
Dibenzo(a,h)anthracene	1.960J mg/kg	SCTL = 0.1 mg/kg
Indeno(1,2,3)pyrene	12.2 mg/kg	SCTL = 1.5 mg/kg

The J flag on the dibenzo (a,h) anthracene result from SB29 indicates that the reported concentration is an estimated concentration less than the quantitation limit but above the instrument detection limit. PAH concentrations reported from the deeper sample intervals (4-6 or 5-7 feet) were below SCTLs.

Inorganic Results

Copper and lead were detected in each of the soil samples submitted for inorganic analysis. Reported copper concentrations ranged from 0.21 mg/kg to 30.3 mg/kg and were less than the residential SCTL of 110 mg/kg. Reported lead concentrations ranged from 1.5 mg/kg to 178 mg/kg and were less than the residential SCTL of 400 mg/kg. The analytical results for the copper and lead analyses are summarized in Table 5.

GROUNDWATER ANALYTICAL RESULTS

The analytical results for the groundwater samples collected at Site 21 during the groundwater monitoring event have been compared to the appropriate GCTLs. The analytical results for the monitoring wells sampled for TRPH are summarized in Table 6 and analytical results for the monitoring wells sampled for lead are summarized in Table 7.

FL-PRO Results

TRPH was detected at a concentration exceeding the GCTL of 5 milligrams per liter (mg/l) in the following monitoring well (Figure 4):

MW-39	7.09 mg/L
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The reported TRPH concentrations were below the GCTL in MW-34, MW-35, MW-36, and MW-38 and were below the laboratory detection limit in MW-33 and MW-37.

Lead Results

Lead was detected at a concentration exceeding the GCTL of 15 micrograms per liter ($\mu\text{g/L}$) in the following monitoring well (Figure 4):

MW-43	22.9 $\mu\text{g/L}$
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The reported lead concentrations were below the GCTL in MW-40, MW-41, and MW-44, and the reported lead concentration was below the laboratory detection limit in MW-42.

CONCLUSIONS

The following conclusions are based on current site conditions, the results of the most recent SAR addendum investigation, and data reported from previous investigations at Site 21.

Field headspace screening results indicate that petroleum impact has occurred to the soil at the west end of the site, south of Radford Boulevard. Because the headspace screening detections are limited to samples collected from the intervals immediately above the water table, the soil contamination in this area has most likely resulted from groundwater level fluctuations over time producing a smear zone of soil exposed to contaminated groundwater.

Off-site laboratory analyses for TRPH indicated that TRPH concentrations in site soil were above the residential and leaching SCTLs. Because the soil samples collected were from the intervals immediately above the water table, the TRPH concentrations most likely represent groundwater impact to the smear zone or capillary fringe, and may not be due to contamination of vadose zone soil. Three soil samples from this area were submitted for SPLP extraction and TRPH analysis. TRPH was below the laboratory detection limits in the three samples extracted and analyzed. Groundwater samples collected from the monitoring wells installed in this area had TRPH concentrations below the GCTL for TRPH.

Two surface soil samples collected in the area south of Building 670 had PAH detections at concentrations exceeding SCTLs. The surface soil sample from SB29 had five PAH compounds exceeding the SCTLs. The SB29 soil boring location was the westernmost soil boring installed in this area during the SAR addendum investigation. Lead and copper concentrations in the soil samples collected during this investigation were below the SCTLs.

The extent of the dissolved lead groundwater plume reported from previous investigations at the eastern end of the site appears to be delineated. Previous work at the site and the results from the most recent investigation indicate that this plume originates north of Radford Boulevard and extends south to Building 645. The lead GCTL exceedance detected in MW-43 appears to be separate from the original lead plume and may originate from a different release.

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RECOMMENDATIONS

Based on the results of the site assessment activities discussed in this report, TtNUS recommends that additional site assessment be conducted at UST Site 21. The additional site assessment should be designed to further delineate the following:

- The extent of TRPH in soil/groundwater at the west end of the site, south of Radford Boulevard
- The extent of TRPH in groundwater in the vicinity of MW-39
- The extent of PAHs in the soil in the vicinity of SB29
- The extent of lead in groundwater in the vicinity of MW-43

Following the further delineation indicated above, a remedial action plan will likely be required to address the dissolved lead contamination in groundwater that appears to originate north of Radford Boulevard at the eastern end of the site.

In addition, the status of the fuel distribution pipelines and the reported contaminated fuel USTs associated with Building 670 should be evaluated. These systems may be potential sources for petroleum constituents at the site. The groundwater discharging to the paved ditch at the west end of the site should also be evaluated to determine if petroleum constituents in site groundwater are being released to surface water at the site.

If you should have any questions or require additional information, please feel free to contact me at (850) 385-9899.

Sincerely,

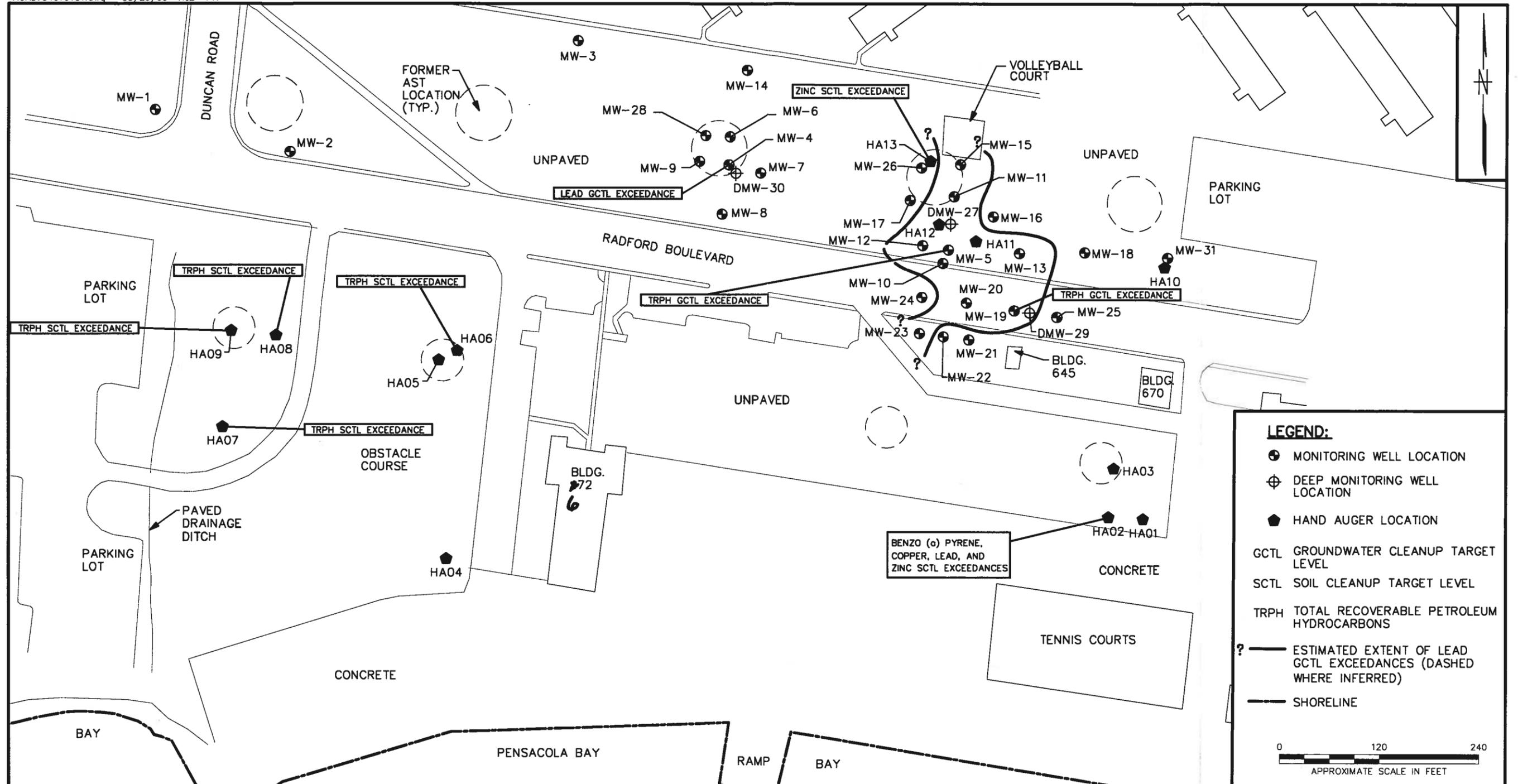
Bill Olson, P.G.
Florida License No. PG-0002031

Gerald A. Walker, P.G.
Project Manager

Attachments

c: Byas Glover, SOUTHDIV
Greg Campbell, NASP PWC
Debbie Wroblewski (TtNUS cover letter only)
Mark Perry/File (TtNUS unbound)
Tallahassee Project File

FIGURES



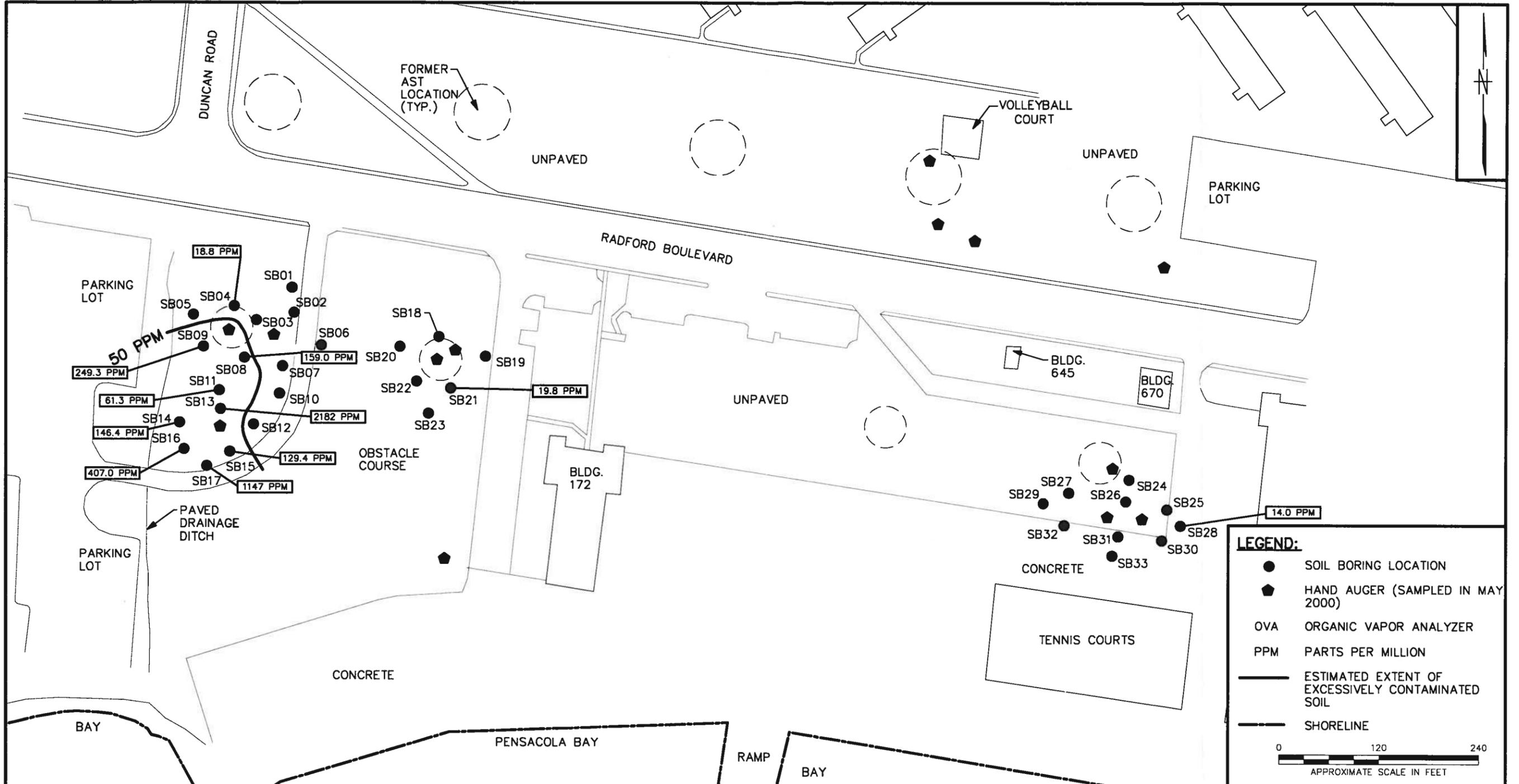
NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY HJB	DATE 3/19/03
CHECKED BY	DATE
COST/SCHED-AREA	
SCALE AS NOTED	



SITE PLAN AND RESULTS OF 2000 INVESTIGATION
UST SITE NO. 21
SITE ASSESSMENT REPORT ADDENDUM
U.S. NAVAL AIR STATION
PENSACOLA, FLORIDA

CONTRACT NO. 0401	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 1	REV. 0



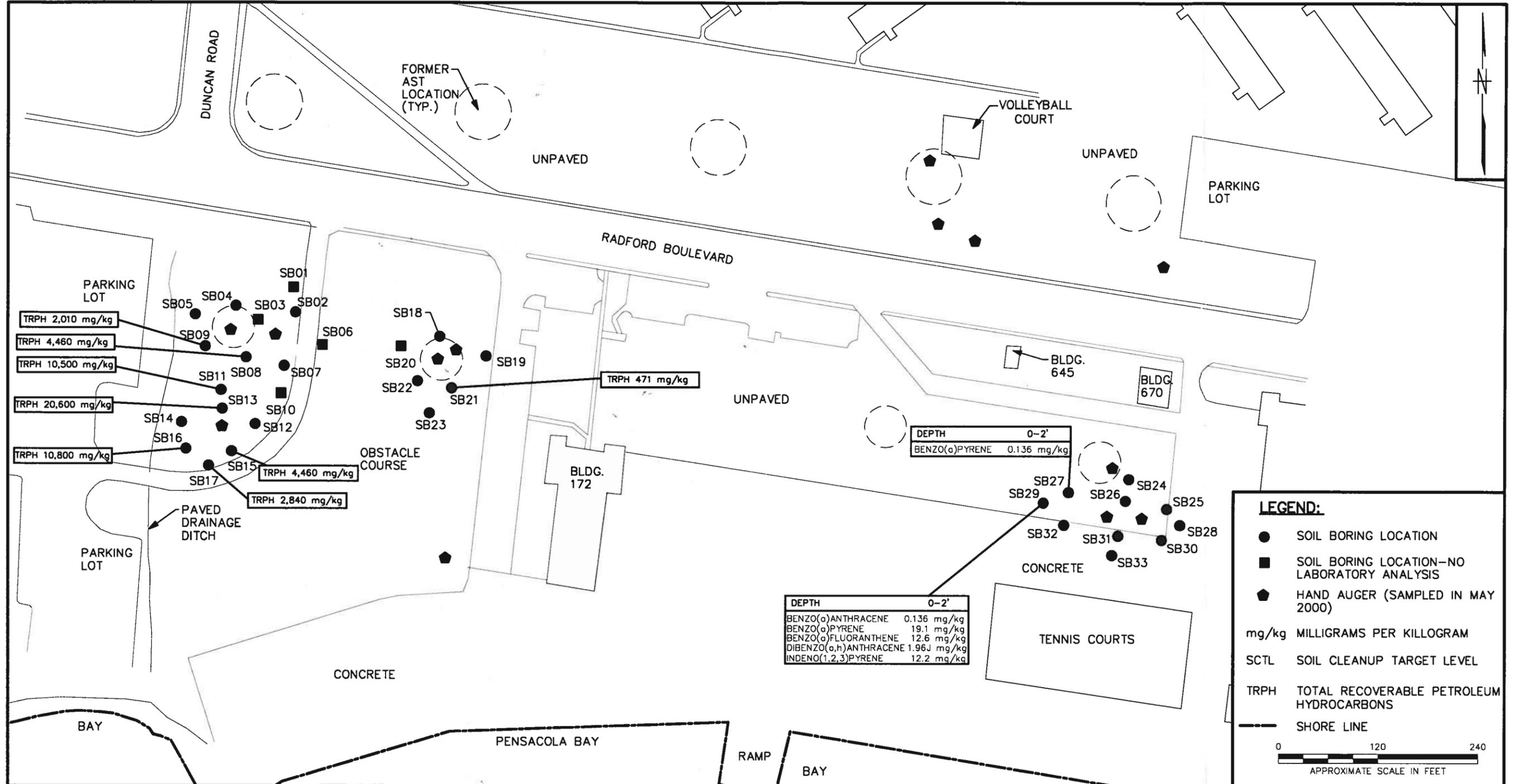
NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY HJB	DATE 3/19/03
CHECKED BY	DATE
COST/SCHED-AREA	
SCALE AS NOTED	



SOIL BORING LOCATIONS AND
OVA DETECTIONS, 2002
UST SITE NO. 21
SITE ASSESSMENT REPORT ADDENDUM
U.S. NAVAL AIR STATION
PENSACOLA, FLORIDA

CONTRACT NO. 0401	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 2	REV. 0



LEGEND:

- SOIL BORING LOCATION
- SOIL BORING LOCATION—NO LABORATORY ANALYSIS
- ◆ HAND AUGER (SAMPLED IN MAY 2000)

mg/kg MILLIGRAMS PER KILOGRAM

SCTL SOIL CLEANUP TARGET LEVEL

TRPH TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

--- SHORE LINE

0 120 240
APPROXIMATE SCALE IN FEET

NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY: HJB DATE: 3/19/03

CHECKED BY: DATE:

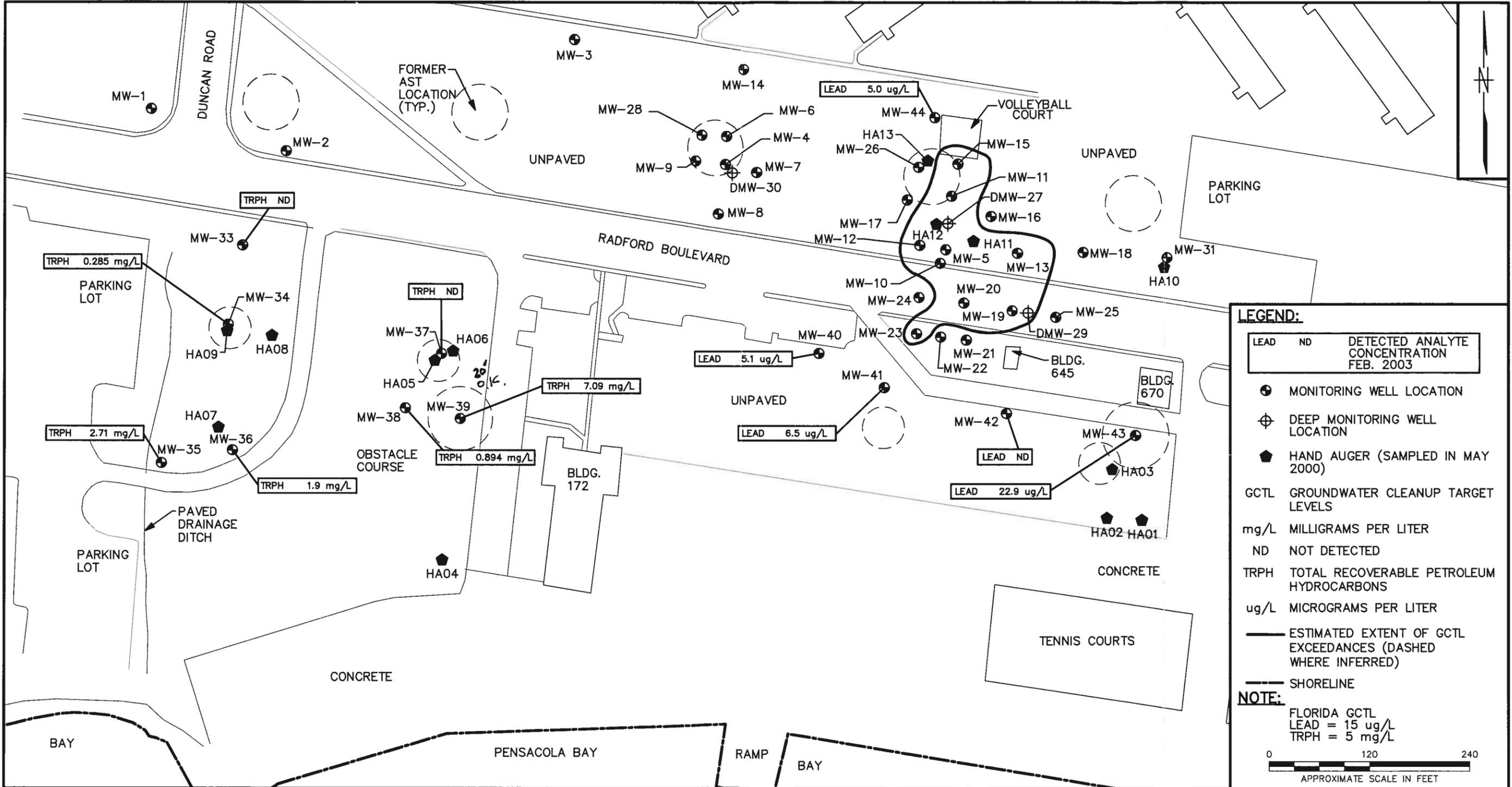
COST/SCHED-AREA:

SCALE: AS NOTED



**SCTL EXCEEDANCES
UST SITE NO. 21
SITE ASSESSMENT REPORT ADDENDUM
U.S. NAVAL AIR STATION
PENSACOLA, FLORIDA**

CONTRACT NO. 0401	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 3	REV. 0



NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY HJB DATE 3/19/03
 CHECKED BY DATE
 COST/SCHED-AREA
 SCALE AS NOTED



GROUNDWATER SAMPLING RESULTS
 UST SITE NO. 21
 SITE ASSESSMENT REPORT ADDENDUM
 U.S. NAVAL AIR STATION
 PENSACOLA, FLORIDA

CONTRACT NO. 0401	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 4	REV. 0

TABLES

TABLE 1
NEW MONITORING WELL CONSTRUCTION DETAILS
UST SITE 21
SITE ASSESSMENT REPORT ADDENDUM
NAVAL AIR STATION PENSACOLA
PENSACOLA, FLORIDA

Monitoring Well ID	Installation Date	Top of Screen (ft bls)	Static Water Level Feb. 2003	Total Depth Feb. 2003 (Measured)
PEN-21-MW33	10/26/02	4	6.00	13.00
PEN-21-MW34	10/24/02	1.5	2.00	10.90
PEN-21-MW35	10/25/02	2.5	3.55	11.16
PEN-21-MW36	10/26/02	3	5.50	12.00
PEN-21-MW37	10/26/02	3	6.44	12.50
PEN-21-MW38	10/26/02	3	7.65	12.25
PEN-21-MW39	10/26/02	2	7.53	11.30
PEN-21-MW40	10/26/02	3	7.26	12.34
PEN-21-MW41	10/26/02	3	6.61	12.60
PEN-21-MW42	10/26/02	3	7.66	12.68
PEN-21-MW43	10/26/02	3	7.37	12.37
PEN-21-MW44	11/7/02	3.5	5.52	13.60

ft bls = feet below land surface

TABLE 2
SOIL OVA SCREENING RESULTS
UST SITE 21
SITE ASSESSMENT REPORT ADDENDUM
NAVAL AIR STATION PENSACOLA
PENSACOLA, FLORIDA

SAMPLE INFORMATION				OVA SCREENING RESULTS			COMMENTS
BORING NO.	SAMPLE DATE	DEPTH TO WATER	SAMPLE HORIZON (ft bls)	TOTAL READING (ppm)	CARBON FILTERED (ppm)	NET READING (ppm)	
SB01	10/23/02	6'	0-2	0.0	-	0.0	
			2-4	0.0	-	0.0	
			4-6	0.0	-	0.0	
			6-8				
SB02	10/23/02	6'	0-2	0.0	-	0.0	
			2-4	0.0	-	0.0	
			4-6	0.0	-	0.0	
			6-8				
SB03	10/23/02	NA	0-2	0.0	-	0.0	
			2-4				refusal at 2 feet
			4-6				
			6-8				
SB04	10/23/02	3'	0-2	0.0	-	0.0	
			2-4	68.2	49.4	18.8	Ended boring at 3 feet due to sat. soil
			4-6				
			6-8				
SB05	10/23/02	3'	0-2	0.0	-	0.0	
			2-4	0.0	-	0.0	Ended boring at 3 feet due to sat. soil
			4-6				
			6-8				
SB06	10/23/02	6'	0-2	0.0	-	0.0	
			2-4	0.0	-	0.0	
			4-6				
			6-8				
SB07	10/23/02	6'	0-2	0.0	-	0.0	
			2-4	0.0	-	0.0	
			4-6	0.0	-	0.0	
			6-8				
SB08	10/23/02	3'	0-2	0.0	-	0.0	
			2-4	223.0	64.0	159.0	refusal at 3 feet
			4-6				
			6-8				
SB09	10/23/02	3'	0-2	0.0	-	0.0	
			2-4	294.1	44.8	249.3	Ended boring at 3 feet due to sat. soil
			4-6				
			6-8				
SB10	10/23/02	6'	0-2	0.0	-	0.0	
			2-4	0.0	-	0.0	
			4-6	0.0	-	0.0	
			6-8				

TABLE 2
SOIL OVA SCREENING RESULTS
UST SITE 21
SITE ASSESSMENT REPORT ADDENDUM
NAVAL AIR STATION PENSACOLA
PENSACOLA, FLORIDA

SAMPLE INFORMATION				OVA SCREENING RESULTS			COMMENTS
BORING NO.	SAMPLE DATE	DEPTH TO WATER	SAMPLE HORIZON (ft bls)	TOTAL READING (ppm)	CARBON FILTERED (ppm)	NET READING (ppm)	
SB11	10/23/02	3'	0-2	61.3	136.0		
			2-4				
			4-6				
			6-8				
SB12	10/23/02	6'	0-2	0.0	-	0.0	
			2-4	0.0	-	0.0	
			4-6	0.0	-	0.0	
			6-8				
SB13	10/23/02	4'	0-2	0.0	-	0.0	
			2-4	2632	450.2	2182	
			4-6				
			6-8				
SB14	10/23/02	2'	0-2	146.4	848.0		
			2-4				
			4-6				
			6-8				
SB15	10/24/02	6'	0-2	0.0	-	0.0	
			2-4	0.0	-	0.0	
			4-6	129.4	0.0	129.4	
			6-8				
SB16	10/24/02	3'	0-2	0.0	-	0.0	
			2-4	813.5	406.5	407.0	
			4-6				
			6-8				
SB17	10/24/02	6'	0-2	0.0	-	0.0	
			2-4	0.0	-	0.0	
			4-6	1846	699.2	1147	
			6-8				
SB18	10/24/02	6'	0-2	0.0	-	0.0	
			2-4	0.0	-	0.0	
			4-6	0.0	-	0.0	
			6-8				
SB19	10/24/02	6'	0-2	0.0	-	0.0	
			2-4	0.0	-	0.0	
			4-6	0.0	-	0.0	
			6-8				
SB20	10/24/02	6'	0-2	0.0	-	0.0	
			2-4	0.0	-	0.0	
			4-6	0.0	-	0.0	
			6-8				

TABLE 2
SOIL OVA SCREENING RESULTS
UST SITE 21
SITE ASSESSMENT REPORT ADDENDUM
NAVAL AIR STATION PENSACOLA
PENSACOLA, FLORIDA

SAMPLE INFORMATION				OVA SCREENING RESULTS			COMMENTS
BORING NO.	SAMPLE DATE	DEPTH TO WATER	SAMPLE HORIZON (ft bls)	TOTAL READING (ppm)	CARBON FILTERED (ppm)	NET READING (ppm)	
SB21	10/24/02	6'	0-2	0.0	-	0.0	
			2-4	0.0	-	0.0	
			4-6	44.0	24.2	19.8	
			6-8				
SB22	10/24/02	6'	0-2	0.0	-	0.0	
			2-4	0.0	-	0.0	
			4-6				
			6-8				
SB23	10/24/02	6'	0-2	0.0	-	0.0	
			2-4	0.0	-	0.0	
			4-6	0.0	-	0.0	
			6-8				
SB24	10/25/02	6'	0-2	0.0	-	0.0	
			2-4	0.0	-	0.0	
			4-6				
			6-8				
SB25	10/25/02	6'	0-2	0.0	-	0.0	
			2-4	0.0	-	0.0	
			4-6				
			6-8				
SB26	10/25/02	NA	0-2				Refusal @ 2.5 feet
			2-4				
			4-6				
			6-8				
SB27	10/25/02	6'	0-2	0.0	-	0.0	
			2-4	0.0	-	0.0	
			4-6	0.0	-	0.0	
			6-8				
SB28	10/25/02	6'	0-2	0.0	-	0.0	
			2-4	0.0	-	0.0	
			4-6	14.0	0.0	14.0	
			6-8				
SB29	10/25/02	6'	0-2	0.0	-	0.0	
			2-4	0.0	-	0.0	
			4-6	0.0	-	0.0	
			6-8				
SB30	10/25/02	6'	0-2	0.0	-	0.0	
			2-4	0.0	-	0.0	
			4-6	0.0	-	0.0	
			6-8				

TABLE 2

**SOIL OVA SCREENING RESULTS
UST SITE 21
SITE ASSESSMENT REPORT ADDENDUM
NAVAL AIR STATION PENSACOLA
PENSACOLA, FLORIDA**

SAMPLE INFORMATION				OVA SCREENING RESULTS			COMMENTS
BORING NO.	SAMPLE DATE	DEPTH TO WATER	SAMPLE HORIZON (ft bls)	TOTAL READING (ppm)	CARBON FILTERED (ppm)	NET READING (ppm)	
SB31	10/24/02		0-2	0.0	-	0.0	
			2-4	0.0	-	0.0	
	10/25/02		4-6	0.0	-	0.0	
			6-8				
SB32	10/24/02	7'	0-2	0.0	-	0.0	
			2-4				
			4-6				
			6-8				
SB33	10/25/02	6'	0-2	0.0	-	0.0	
			2-4	0.0	-	0.0	
			4-6	0.0	-	0.0	
			6-8				

ft bls = feet below land surface
ppm = parts per million

TABLE 4

SOIL PAH ANALYTICAL SUMMARY
 UST SITE 21
 SITE ASSESSMENT REPORT ADDENDUM
 NAVAL AIR STATION PENSACOLA
 PENSACOLA, FLORIDA

Sample Location	Sample ID	Sample Interval	Sample Date	Leaching to groundwater SCTL																			
				Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3)pyrene	Naphthalene	1-Methylnaphthalene	2-Methylnaphthalene	Phenanthrene	Pyrene		
				Residential SCTL	1,900	1,100	18,000	1.4	0.1	1.4	1.4	2,300	15	140	0.1	2,900	2,200	1.5	40	68	80	2,000	2,200
				Industrial SCTL	18,000	11,000	260,000	5	0.5	4.8	41,000	52	450	0.5	48,000	28,000	5.3	270	470	560	30,000	37,000	
				Leaching to groundwater SCTL	2.1	27	2500.0	3.2	8	10	32,000	25	77	30	1200	160	28	1.7	2.2	6.1	250	880	
Sample Location	Sample ID	Sample Interval	Sample Date	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3)pyrene	Naphthalene	1-Methylnaphthalene	2-Methylnaphthalene	Phenanthrene	Pyrene		
SB32	PEN21SB3207	5-7	10/24/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
SB33	PEN21SB3302	0-2	10/25/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
SB33	PEN21SB3306	4-6	10/25/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	

NOTES:

PAH - Polynuclear Aromatic Hydrocarbons
 SCTL - Soil Cleanup Target Level established in Chapter 62-770, FAC
 Concentrations reported in milligrams per kilogram.
 Values shown in bold are at concentrations exceeding one or more SCTL.
 -- indicates that the analyte concentration was below the standard laboratory detection limit.
 J - indicates that the reported concentration is an estimated value between the practical quantitation limit and the method detection limit.

TABLE 5
SOIL INORGANIC ANALYTICAL SUMMARY
UST SITE 21
SITE ASSESSMENT REPORT ADDENDUM
NAVAL AIR STATION PENSACOLA
PENSACOLA, FLORIDA

				Copper (mg/kg)	Lead (mg/kg)
Residential SCTL				110	400
Industrial SCTL				76,000	920
Sample Location	Sample ID	Sample Horizon (feet)	Sample Date		
SB24	PENS1SB2402	0-2	10/25/02	0.28	3.0
SB24	PEN21SB2406	4-6	10/25/02	0.53	24.0
SB25	PEN21SB2502	0-2	10/25/02	0.94	48.0
SB25	PEN21SB2506	4-6	10/25/02	0.23	9.1
SB26	PEN21SB2602	0-2	10/25/02	20.2	177
SB27	PEN21SB2702	0-2	10/25/02	30.3	174
SB27	PEN21SB2706	4-6	10/25/02	1.1	28.6
SB28	PEN21SB2802	0-2	10/25/02	0.81	5.3
SB28	PEN21SB2806	4-6	10/25/02	1.1	4.5
SB29	PEN21SB2902	0-2	10/25/02	25.2	178
SB29	PEN21SB2906	4-6	10/25/02	0.83	13.3
SB30	PEN21SB3002	0-2	10/25/02	0.61	2.9
SB30	PEN21SB3006	4-6	10/25/02	2.8	25.5
SB31	PEN21SB3102	0-2	10/24/02	0.5	1.5
SB31	PEN21SB3106	4-6	10/25/02	0.5	7.4
SB232	PEN21SB3202	0-2	10/24/02	0.31	3.1
SB32	PEN21SB3207	5-7	10/24/02	0.21	3.8
SB33	PEN21SB3302	0-2	10/25/02	0.49	2.8
SB33	PEN21SB3306	4-6	10/25/02	1.5	7.9
<p>NOTES:</p> <p>mg/kg - milligrams per kilogram.</p> <p>SCTL = Soil Cleanup Target Level established in Chapter 62-770, FAC</p>					

TABLE 6

**GROUNDWATER TRPH ANALYTICAL SUMMARY
UST SITE 21
SITE ASSESSMENT REPORT ADDENDUM
NAVAL AIR STATION PENSACOLA
PENSACOLA, FLORIDA**

			TRPH (mg/L)
GCTL			5
Monitoring Well ID	Sample ID	Sample Date	
MW-33	PEN-21-MW-33-01	2/11/03	--
MW-34	PEN-21-MW-34-01	2/11/03	0.285
MW-35	PEN-21-MW-35-01	2/11/03	2.71
MW-36	PEN-21-MW-36-01	2/11/03	1.9
MW-37	PEN-21-MW-37-01	2/11/03	--
MW-38	PEN-21-MW-38-01	2/11/03	0.894
MW-39	PEN-21-MW-39-01	2/11/03	7.09
NOTES:			
mg/L - milligrams per liter.			
GCTL = Groundwater Cleanup Target Level established in Chapter 62-770, FAC			
-- indicates a reported concentration below the laboratory detection limit.			
Concentrations in bold exceed the GCTL.			

TABLE 7

**GROUNDWATER LEAD ANALYTICAL SUMMARY
 UST SITE 21
 SITE ASSESSMENT REPORT ADDENDUM
 NAVAL AIR STATION PENSACOLA
 PENSACOLA, FLORIDA**

			Lead (µg/L)
GCTL			15
Monitoring Well	Sample ID	Sample Date	
MW-40	PEN-21-MW-40-01	2/11/03	5.1
MW-41	PEN-21-MW-41-01	2/11/03	6.5
MW-42	PEN-21-MW-42-01	2/11/03	--
MW-43	PEN-21-MW-43-01	2/11/03	22.9
MW-44	PEN-21-MW-44-01	2/11/03	5.0

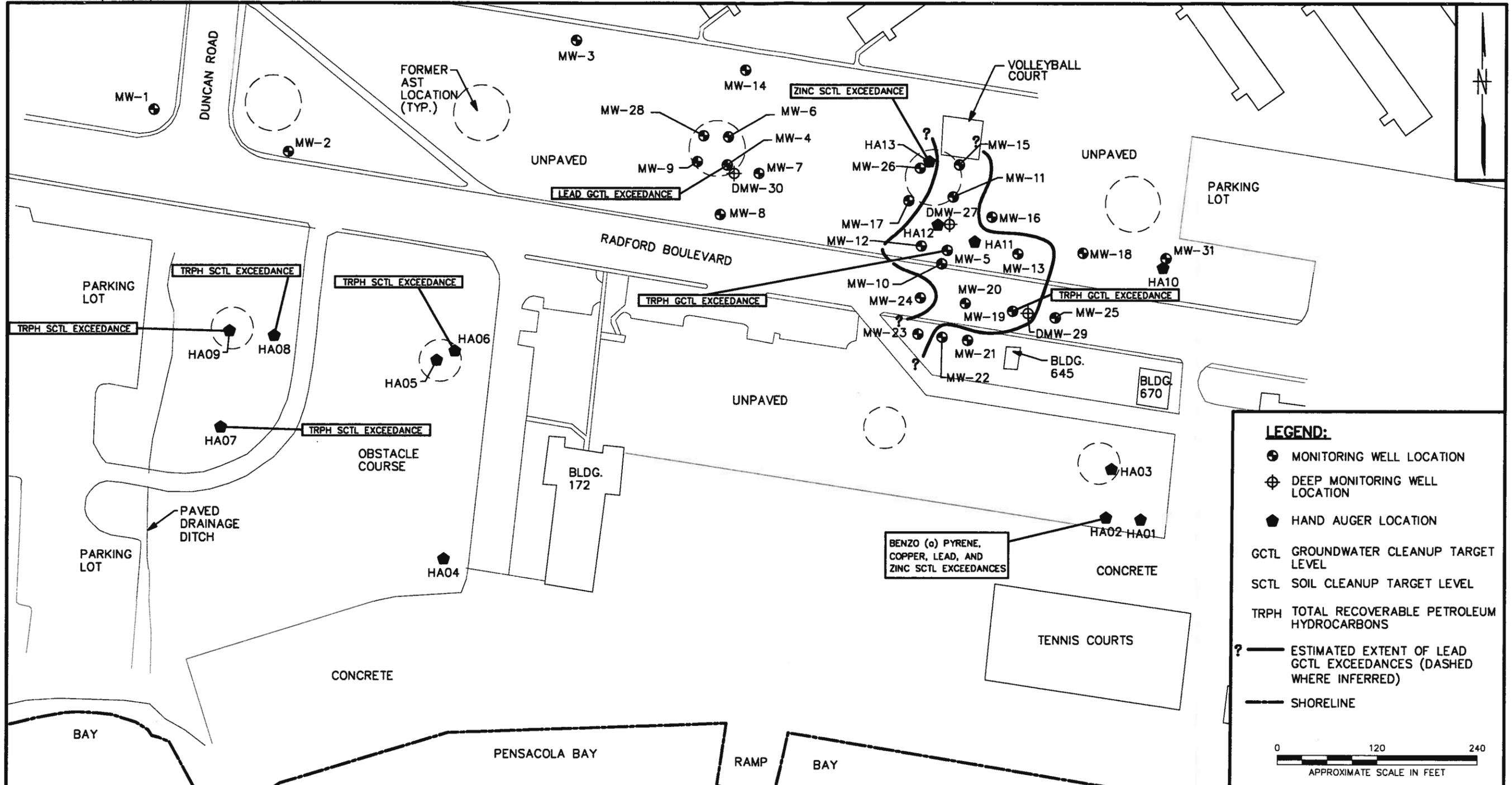
NOTES:

µg/L - micrograms per liter.
 GCTL = Groundwater Cleanup Target Level established in Chapter 62-770, FAC
 -- indicates a reported concentration below the laboratory detection limit.
 Concentrations in bold exceed the GCTL.

**ATTACHMENT A
FIELD DATA**

**ATTACHMENT B
VALIDATED LABORATORY RESULTS**

FIGURES



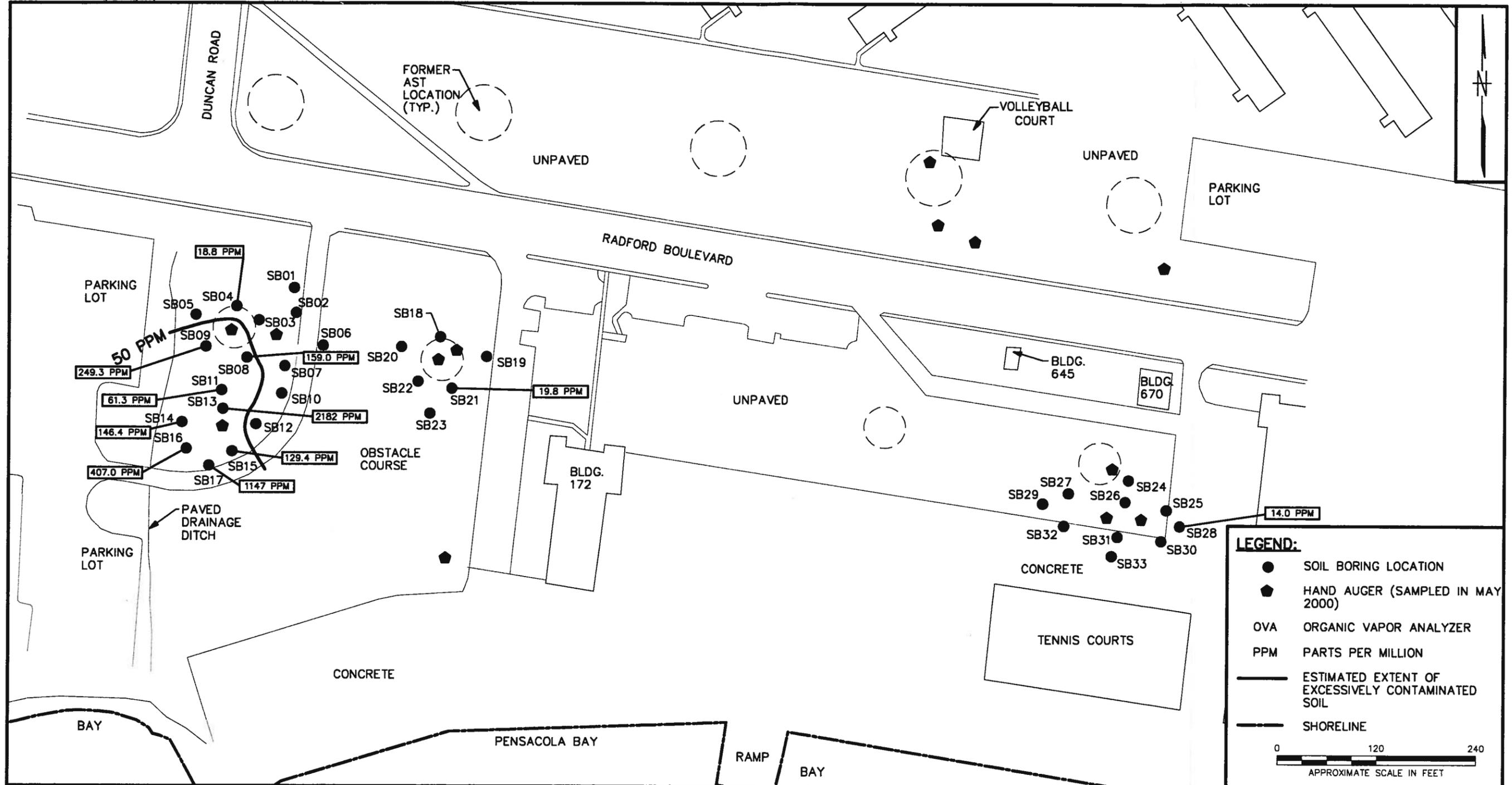
NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY: HJB 3/19/03
 CHECKED BY: _____ DATE: _____
 COST/SCHED-AREA: _____
 SCALE: AS NOTED



SITE PLAN AND RESULTS OF 2000 INVESTIGATION
UST SITE NO. 21
SITE ASSESSMENT REPORT ADDENDUM
U.S. NAVAL AIR STATION
PENSACOLA, FLORIDA

CONTRACT NO. 0401	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 1	REV. 0



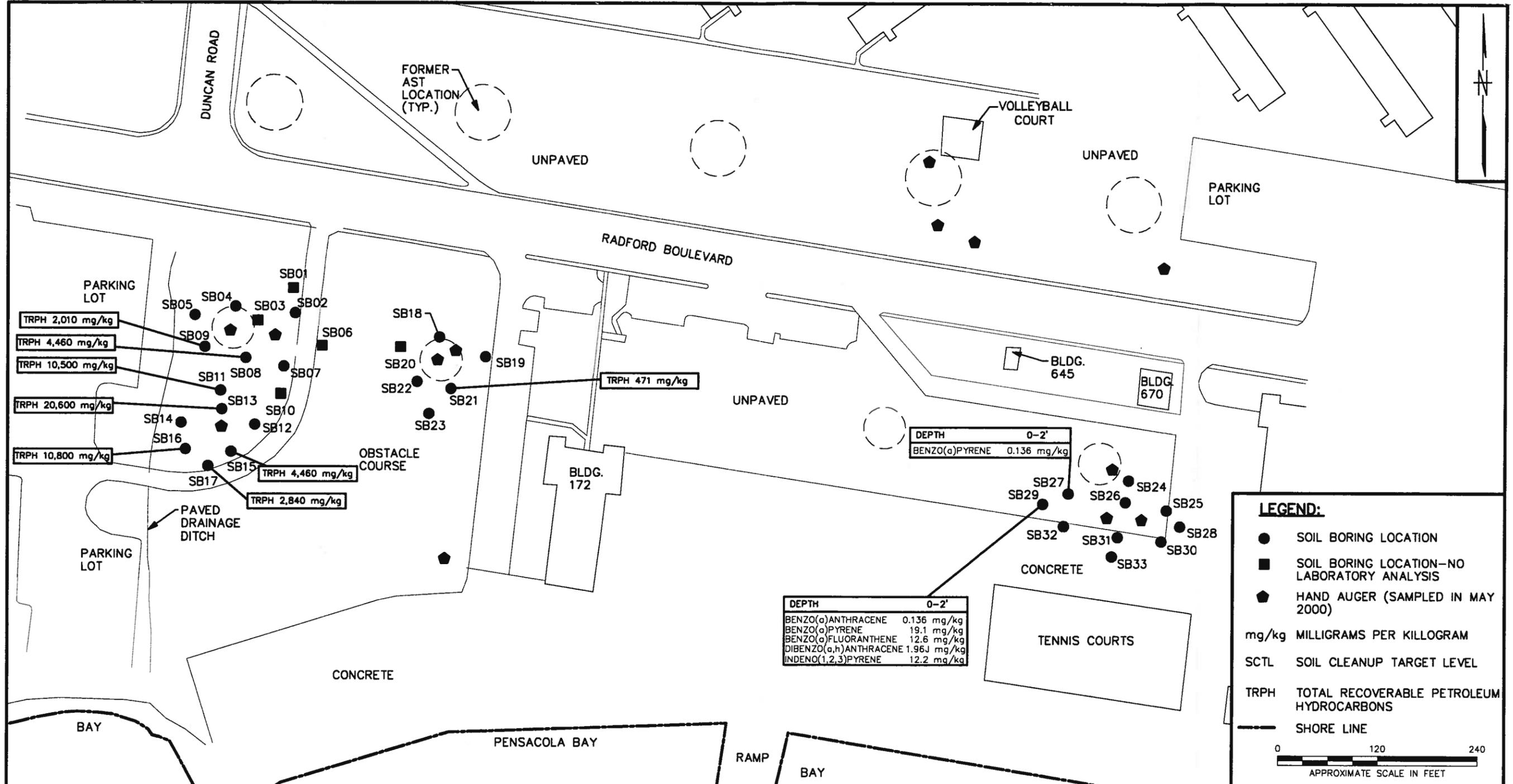
NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY HJB	DATE 3/19/03
CHECKED BY	DATE
COST/SCHED-AREA	
SCALE AS NOTED	



**SOIL BORING LOCATIONS AND
 OVA DETECTIONS, 2002**
UST SITE NO. 21
SITE ASSESSMENT REPORT ADDENDUM
U.S. NAVAL AIR STATION
PENSACOLA, FLORIDA

CONTRACT NO. 0401	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 2	REV. 0



LEGEND:

- SOIL BORING LOCATION
- SOIL BORING LOCATION—NO LABORATORY ANALYSIS
- ◆ HAND AUGER (SAMPLED IN MAY 2000)

mg/kg MILLIGRAMS PER KILOGRAM
 SCTL SOIL CLEANUP TARGET LEVEL
 TRPH TOTAL RECOVERABLE PETROLEUM HYDROCARBONS
 --- SHORE LINE

0 120 240
 APPROXIMATE SCALE IN FEET

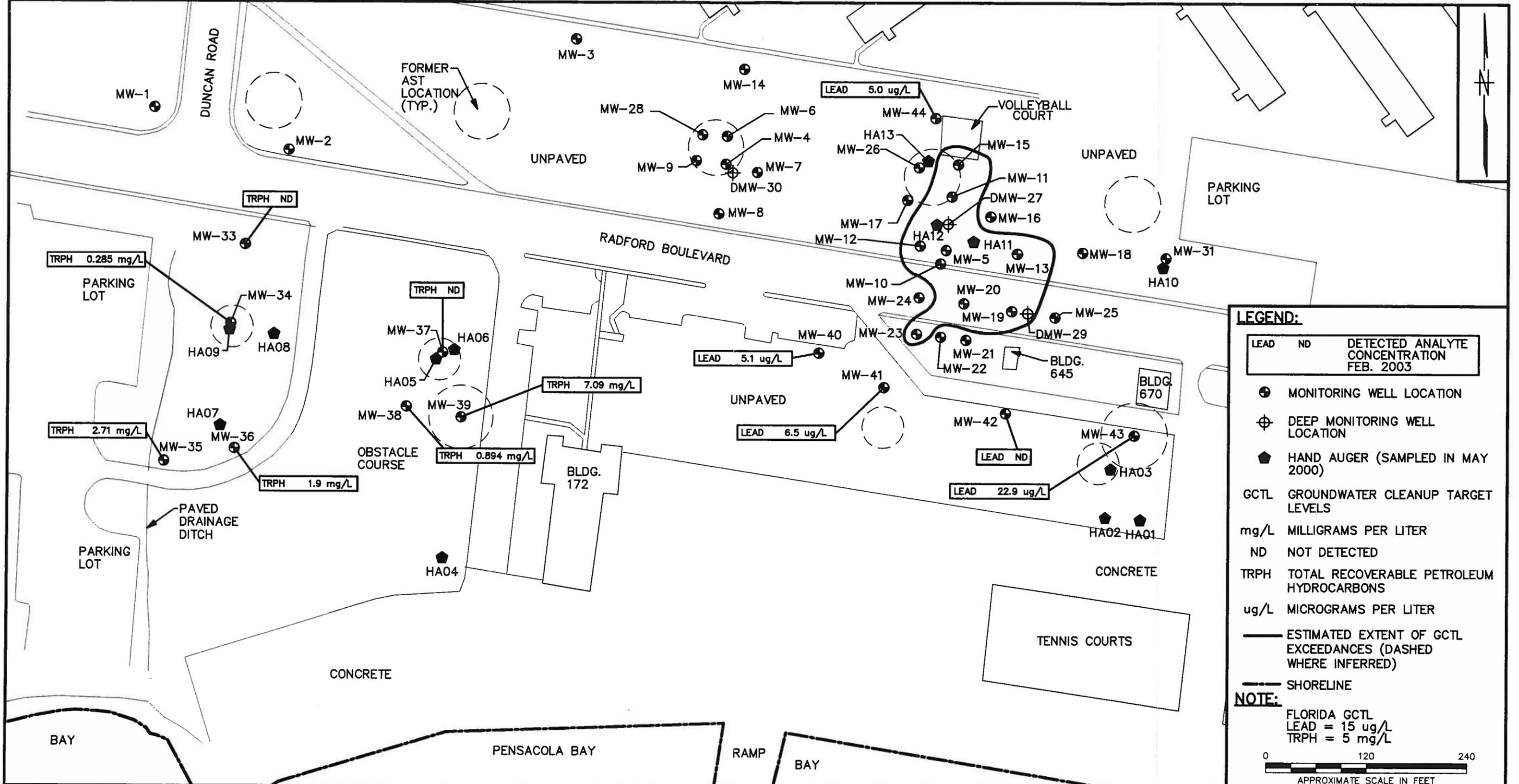
NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY HJB	DATE 3/19/03
CHECKED BY	DATE
COST/SCHED-AREA	
SCALE AS NOTED	



SCTL EXCEEDANCES
UST SITE NO. 21
SITE ASSESSMENT REPORT ADDENDUM
U.S. NAVAL AIR STATION
PENSACOLA, FLORIDA

CONTRACT NO. 0401	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 3	REV. 0



LEGEND:

- LEAD ND DETECTED ANALYTE CONCENTRATION FEB. 2003
- ⊕ MONITORING WELL LOCATION
- ⊕ DEEP MONITORING WELL LOCATION
- ⬢ HAND AUGER (SAMPLED IN MAY 2000)
- GCTL GROUNDWATER CLEANUP TARGET LEVELS
- mg/L MILLIGRAMS PER LITER
- ND NOT DETECTED
- TRPH TOTAL RECOVERABLE PETROLEUM HYDROCARBONS
- ug/L MICROGRAMS PER LITER
- ESTIMATED EXTENT OF GCTL EXCEEDANCES (DASHED WHERE INFERRED)
- SHORELINE

NOTE:

FLORIDA GCTL
 LEAD = 15 ug/L
 TRPH = 5 mg/L

0 120 240
 APPROXIMATE SCALE IN FEET

NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY DATE
 HJB 3/19/03
 CHECKED BY DATE
 COST/SCHED-AREA
 SCALE AS NOTED



GROUNDWATER SAMPLING RESULTS
 UST SITE NO. 21
 SITE ASSESSMENT REPORT ADDENDUM
 U.S. NAVAL AIR STATION
 PENSACOLA, FLORIDA

CONTRACT NO. 0401	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 4	REV. 0

TABLES

TABLE 1
NEW MONITORING WELL CONSTRUCTION DETAILS
UST SITE 21
SITE ASSESSMENT REPORT ADDENDUM
NAVAL AIR STATION PENSACOLA
PENSACOLA, FLORIDA

Monitoring Well ID	Installation Date	Top of Screen (ft bls)	Static Water Level Feb. 2003	Total Depth Feb. 2003 (Measured)
PEN-21-MW33	10/26/02	4	6.00	13.00
PEN-21-MW34	10/24/02	1.5	2.00	10.90
PEN-21-MW35	10/25/02	2.5	3.55	11.16
PEN-21-MW36	10/26/02	3	5.50	12.00
PEN-21-MW37	10/26/02	3	6.44	12.50
PEN-21-MW38	10/26/02	3	7.65	12.25
PEN-21-MW39	10/26/02	2	7.53	11.30
PEN-21-MW40	10/26/02	3	7.26	12.34
PEN-21-MW41	10/26/02	3	6.61	12.60
PEN-21-MW42	10/26/02	3	7.66	12.68
PEN-21-MW43	10/26/02	3	7.37	12.37
PEN-21-MW44	11/7/02	3.5	5.52	13.60

ft bls = feet below land surface

TABLE 2
SOIL OVA SCREENING RESULTS
UST SITE 21
SITE ASSESSMENT REPORT ADDENDUM
NAVAL AIR STATION PENSACOLA
PENSACOLA, FLORIDA

SAMPLE INFORMATION				OVA SCREENING RESULTS			COMMENTS
BORING NO.	SAMPLE DATE	DEPTH TO WATER	SAMPLE HORIZON (ft bls)	TOTAL READING (ppm)	CARBON FILTERED (ppm)	NET READING (ppm)	
SB01	10/23/02	6'	0-2	0.0	-	0.0	
			2-4	0.0	-	0.0	
			4-6	0.0	-	0.0	
			6-8				
SB02	10/23/02	6'	0-2	0.0	-	0.0	
			2-4	0.0	-	0.0	
			4-6	0.0	-	0.0	
			6-8				
SB03	10/23/02	NA	0-2	0.0	-	0.0	
			2-4				refusal at 2 feet
			4-6				
			6-8				
SB04	10/23/02	3'	0-2	0.0	-	0.0	
			2-4	68.2	49.4	18.8	Ended boring at 3 feet due to sat. soil
			4-6				
			6-8				
SB05	10/23/02	3'	0-2	0.0	-	0.0	
			2-4	0.0	-	0.0	Ended boring at 3 feet due to sat. soil
			4-6				
			6-8				
SB06	10/23/02	6'	0-2	0.0	-	0.0	
			2-4	0.0	-	0.0	
			4-6				
			6-8				
SB07	10/23/02	6'	0-2	0.0	-	0.0	
			2-4	0.0	-	0.0	
			4-6	0.0	-	0.0	
			6-8				
SB08	10/23/02	3'	0-2	0.0	-	0.0	
			2-4	223.0	64.0	159.0	refusal at 3 feet
			4-6				
			6-8				
SB09	10/23/02	3'	0-2	0.0	-	0.0	
			2-4	294.1	44.8	249.3	Ended boring at 3 feet due to sat. soil
			4-6				
			6-8				
SB10	10/23/02	6'	0-2	0.0	-	0.0	
			2-4	0.0	-	0.0	
			4-6	0.0	-	0.0	
			6-8				

TABLE 2
SOIL OVA SCREENING RESULTS
UST SITE 21
SITE ASSESSMENT REPORT ADDENDUM
NAVAL AIR STATION PENSACOLA
PENSACOLA, FLORIDA

SAMPLE INFORMATION				OVA SCREENING RESULTS			COMMENTS
BORING NO.	SAMPLE DATE	DEPTH TO WATER	SAMPLE HORIZON (ft bls)	TOTAL READING (ppm)	CARBON FILTERED (ppm)	NET READING (ppm)	
SB11	10/23/02	3'	0-2	61.3	136.0		
			2-4				
			4-6				
			6-8				
SB12	10/23/02	6'	0-2	0.0	-	0.0	
			2-4	0.0	-	0.0	
			4-6	0.0	-	0.0	
			6-8				
SB13	10/23/02	4'	0-2	0.0	-	0.0	
			2-4	2632	450.2	2182	
			4-6				
			6-8				
SB14	10/23/02	2'	0-2	146.4	848.0		
			2-4				
			4-6				
			6-8				
SB15	10/24/02	6'	0-2	0.0	-	0.0	
			2-4	0.0	-	0.0	
			4-6	129.4	0.0	129.4	
			6-8				
SB16	10/24/02	3'	0-2	0.0	-	0.0	
			2-4	813.5	406.5	407.0	
			4-6				
			6-8				
SB17	10/24/02	6'	0-2	0.0	-	0.0	
			2-4	0.0	-	0.0	
			4-6	1846	699.2	1147	
			6-8				
SB18	10/24/02	6'	0-2	0.0	-	0.0	
			2-4	0.0	-	0.0	
			4-6	0.0	-	0.0	
			6-8				
SB19	10/24/02	6'	0-2	0.0	-	0.0	
			2-4	0.0	-	0.0	
			4-6	0.0	-	0.0	
			6-8				
SB20	10/24/02	6'	0-2	0.0	-	0.0	
			2-4	0.0	-	0.0	
			4-6	0.0	-	0.0	
			6-8				

TABLE 2
SOIL OVA SCREENING RESULTS
UST SITE 21
SITE ASSESSMENT REPORT ADDENDUM
NAVAL AIR STATION PENSACOLA
PENSACOLA, FLORIDA

SAMPLE INFORMATION				OVA SCREENING RESULTS			COMMENTS
BORING NO.	SAMPLE DATE	DEPTH TO WATER	SAMPLE HORIZON (ft bls)	TOTAL READING (ppm)	CARBON FILTERED (ppm)	NET READING (ppm)	
SB21	10/24/02	6'	0-2	0.0	-	0.0	
			2-4	0.0	-	0.0	
			4-6	44.0	24.2	19.8	
			6-8				
SB22	10/24/02	6'	0-2	0.0	-	0.0	
			2-4	0.0	-	0.0	
			4-6				
			6-8				
SB23	10/24/02	6'	0-2	0.0	-	0.0	
			2-4	0.0	-	0.0	
			4-6	0.0	-	0.0	
			6-8				
SB24	10/25/02	6'	0-2	0.0	-	0.0	
			2-4	0.0	-	0.0	
			4-6				
			6-8				
SB25	10/25/02	6'	0-2	0.0	-	0.0	
			2-4	0.0	-	0.0	
			4-6				
			6-8				
SB26	10/25/02	NA	0-2				Refusal @ 2.5 feet
			2-4				
			4-6				
			6-8				
SB27	10/25/02	6'	0-2	0.0	-	0.0	
			2-4	0.0	-	0.0	
			4-6	0.0	-	0.0	
			6-8				
SB28	10/25/02	6'	0-2	0.0	-	0.0	
			2-4	0.0	-	0.0	
			4-6	14.0	0.0	14.0	
			6-8				
SB29	10/25/02	6'	0-2	0.0	-	0.0	
			2-4	0.0	-	0.0	
			4-6	0.0	-	0.0	
			6-8				
SB30	10/25/02	6'	0-2	0.0	-	0.0	
			2-4	0.0	-	0.0	
			4-6	0.0	-	0.0	
			6-8				

TABLE 2

**SOIL OVA SCREENING RESULTS
UST SITE 21
SITE ASSESSMENT REPORT ADDENDUM
NAVAL AIR STATION PENSACOLA
PENSACOLA, FLORIDA**

SAMPLE INFORMATION				OVA SCREENING RESULTS			COMMENTS
BORING NO.	SAMPLE DATE	DEPTH TO WATER	SAMPLE HORIZON (ft bls)	TOTAL READING (ppm)	CARBON FILTERED (ppm)	NET READING (ppm)	
SB31	10/24/02		0-2	0.0	-	0.0	
			2-4	0.0	-	0.0	
	10/25/02		4-6	0.0	-	0.0	
			6-8				
SB32	10/24/02	7'	0-2	0.0	-	0.0	
			2-4				
			4-6				
			6-8				
SB33	10/25/02	6'	0-2	0.0	-	0.0	
			2-4	0.0	-	0.0	
			4-6	0.0	-	0.0	
			6-8				

ft bls = feet below land surface
ppm = parts per million

TABLE 4

SOIL PAH ANALYTICAL SUMMARY
 UST SITE 21
 SITE ASSESSMENT REPORT ADDENDUM
 NAVAL AIR STATION PENSACOLA
 PENSACOLA, FLORIDA

Sample Location	Sample ID	Sample Interval	Sample Date	Leaching to groundwater SCTL																			
				Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3)pyrene	Naphthalene	1-Methylnaphthalene	2-Methylnaphthalene	Phenanthrene	Pyrene		
				1,900	1,100	18,000	1.4	0.1	1.4	0.0395J	0.0395J	0.0492J	0.030J	140	0.1	2,900	2,200	1.5	40	68	80	2,000	2,200
				18,000	11,000	260,000	5	0.5	4.8	0.0835	0.0835	0.106	0.0688J	450	0.5	41,000	28,000	5.3	270	470	560	30,000	37,000
				2.1	27	2500.0	3.2	8	10				25	77	30	1200	160	28	1.7	2.2	6.1	250	880
SB24	PEN21SB2402	0-2	10/25/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB24	PEN21SB2406	4-6	10/25/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB25	PEN21SB2502	0-2	10/25/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB25	PEN21SB2506	4-6	10/25/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB26	PEN21SB2602	0-2	10/25/02	--	--	--	--	0.0655J	0.0395J	0.0395J	0.0492J	0.030J	--	--	--	--	--	0.0692J	--	--	--	--	--
SB27	PEN21SB2702	0-2	10/25/02	--	--	--	0.0967J	0.136	0.0835	0.0835	0.106	0.0688J	0.108J	--	--	0.226J	--	0.115	--	--	--	--	0.182
SB27	PEN21SB2706	4-6	10/25/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB28	PEN21SB2802	0-2	10/25/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB28	PEN21SB2806	4-6	10/25/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB29	PEN21SB2902	0-2	10/25/02	--	--	--	23.6	19.1	12.6	12.6	10.7	9.19	19.2	1.960J	66.4	--	12.2	--	--	--	--	22.9	39.4
SB29	PEN21SB2906	4-6	10/25/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB30	PEN21SB3002	0-2	10/25/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB30	PEN21SB3006	4-6	10/25/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB31	PEN21SB3102	0-2	10/24/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB31	PEN21SB3106	4-6	10/25/02	--	--	--	0.05866J	0.0245J	0.0245J	0.0429J	0.0429J	--	--	--	--	--	--	0.0482J	--	--	--	--	--
SB32	PEN21SB3202	0-2	10/24/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

See Notes on Page 2 of 2

TABLE 4

SOIL PAH ANALYTICAL SUMMARY
 UST SITE 21
 SITE ASSESSMENT REPORT ADDENDUM
 NAVAL AIR STATION PENSACOLA
 PENSACOLA, FLORIDA

Sample Location	Sample ID	Sample Interval	Sample Date	Leaching to groundwater SCTL																		
				Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3)pyrene	Naphthalene	1-Methylnaphthalene	2-Methylnaphthalene	Phenanthrene	Pyrene	
				Residential SCTL	1,900	1,100	18,000	1.4	0.1	1.4	2,300	15	140	0.1	2,900	2,200	1.5	40	68	80	2,000	2,200
				Industrial SCTL	18,000	11,000	260,000	5	0.5	4.8	41,000	52	450	0.5	48,000	28,000	5.3	270	470	560	30,000	37,000
				Leaching to groundwater SCTL	2.1	27	2500.0	3.2	8	10	32,000	25	77	30	1200	160	28	1.7	2.2	6.1	250	880
SB32	PEN21SB3207	5-7	10/24/02		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB33	PEN21SB3302	0-2	10/25/02		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB33	PEN21SB3306	4-6	10/25/02		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

NOTES:
 PAH - Polynuclear Aromatic Hydrocarbons
 SCTL - Soil Cleanup Target Level established in Chapter 62-770, FAC
 Concentrations reported in milligrams per kilogram.
 Values shown in bold are at concentrations exceeding one or more SCTL.
 -- indicates that the analyte concentration was below the standard laboratory detection limit.
 J - indicates that the reported concentration is an estimated value between the practical quantitation limit and the method detection limit.

TABLE 5
SOIL INORGANIC ANALYTICAL SUMMARY
UST SITE 21
SITE ASSESSMENT REPORT ADDENDUM
NAVAL AIR STATION PENSACOLA
PENSACOLA, FLORIDA

				Copper (mg/kg)	Lead (mg/kg)
Residential SCTL				110	400
Industrial SCTL				76,000	920
Sample Location	Sample ID	Sample Horizon (feet)	Sample Date		
SB24	PENS1SB2402	0-2	10/25/02	0.28	3.0
SB24	PEN21SB2406	4-6	10/25/02	0.53	24.0
SB25	PEN21SB2502	0-2	10/25/02	0.94	48.0
SB25	PEN21SB2506	4-6	10/25/02	0.23	9.1
SB26	PEN21SB2602	0-2	10/25/02	20.2	177
SB27	PEN21SB2702	0-2	10/25/02	30.3	174
SB27	PEN21SB2706	4-6	10/25/02	1.1	28.6
SB28	PEN21SB2802	0-2	10/25/02	0.81	5.3
SB28	PEN21SB2806	4-6	10/25/02	1.1	4.5
SB29	PEN21SB2902	0-2	10/25/02	25.2	178
SB29	PEN21SB2906	4-6	10/25/02	0.83	13.3
SB30	PEN21SB3002	0-2	10/25/02	0.61	2.9
SB30	PEN21SB3006	4-6	10/25/02	2.8	25.5
SB31	PEN21SB3102	0-2	10/24/02	0.5	1.5
SB31	PEN21SB3106	4-6	10/25/02	0.5	7.4
SB232	PEN21SB3202	0-2	10/24/02	0.31	3.1
SB32	PEN21SB3207	5-7	10/24/02	0.21	3.8
SB33	PEN21SB3302	0-2	10/25/02	0.49	2.8
SB33	PEN21SB3306	4-6	10/25/02	1.5	7.9
<p>NOTES:</p> <p>mg/kg - milligrams per kilogram.</p> <p>SCTL = Soil Cleanup Target Level established in Chapter 62-770, FAC</p>					

TABLE 6
GROUNDWATER TRPH ANALYTICAL SUMMARY
UST SITE 21
SITE ASSESSMENT REPORT ADDENDUM
NAVAL AIR STATION PENSACOLA
PENSACOLA, FLORIDA

			TRPH (mg/L)
GCTL			5
Monitoring Well ID	Sample ID	Sample Date	
MW-33	PEN-21-MW-33-01	2/11/03	--
MW-34	PEN-21-MW-34-01	2/11/03	0.285
MW-35	PEN-21-MW-35-01	2/11/03	2.71
MW-36	PEN-21-MW-36-01	2/11/03	1.9
MW-37	PEN-21-MW-37-01	2/11/03	--
MW-38	PEN-21-MW-38-01	2/11/03	0.894
MW-39	PEN-21-MW-39-01	2/11/03	7.09

NOTES:

mg/L - milligrams per liter.
GCTL = Groundwater Cleanup Target Level established in Chapter 62-770, FAC
-- indicates a reported concentration below the laboratory detection limit.
Concentrations in bold exceed the GCTL.

TABLE 7
GROUNDWATER LEAD ANALYTICAL SUMMARY
UST SITE 21
SITE ASSESSMENT REPORT ADDENDUM
NAVAL AIR STATION PENSACOLA
PENSACOLA, FLORIDA

			Lead (µg/L)
GCTL			15
Monitoring Well	Sample ID	Sample Date	
MW-40	PEN-21-MW-40-01	2/11/03	5.1
MW-41	PEN-21-MW-41-01	2/11/03	6.5
MW-42	PEN-21-MW-42-01	2/11/03	--
MW-43	PEN-21-MW-43-01	2/11/03	22.9
MW-44	PEN-21-MW-44-01	2/11/03	5.0
NOTES:			
µg/L - micrograms per liter.			
GCTL = Groundwater Cleanup Target Level established in Chapter 62-770, FAC			
-- indicates a reported concentration below the laboratory detection limit.			
Concentrations in bold exceed the GCTL.			