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NAS CECIL FIELD, FL
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SITE ASSESSMENT REPORT FOR BUILDING 824 OIL-WATER SEPARATOR 824-OW BASE REALIGNMENT AND CLOSURE NAS CECIL FIELD FL

4/16/2002

TETRA TECH NUS INC

Site Assessment Report
for
Building 824,
Oil-Water Separator 824-OW

Base Realignment and Closure

Naval Air Station Cecil Field
Jacksonville, Florida

Southern Division
Naval Facilities Engineering Command
Contract Number N62467-94-D-0888

Contract Task Order 0168

April 2002

02JAX0079

SITE ASSESSMENT REPORT
FOR
BUILDING 824, OIL-WATER SEPARATOR 824-OW
BASE REALIGNMENT AND CLOSURE

NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

Submitted to:
Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
North Charleston, South Carolina 29406

Submitted by:
Tetra Tech NUS, Inc.
661 Andersen Drive
Foster Plaza 7
Pittsburgh, Pennsylvania 15220

CONTRACT NUMBER N62467-94-D-0888
CONTRACT TASK ORDER 0168

APRIL 2002

PREPARED UNDER THE SUPERVISION OF:

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PROFESSIONAL REVIEW CERTIFICATION

The Site Assessment contained in this report was prepared using sound hydrogeologic principles and judgment. This assessment is based on the geologic investigation and associated information detailed in the text and appended to this 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 assessment described in this report. This Site Assessment Report was developed for Building 824, Oil-Water Separator 824-OW at the former NAS Cecil Field, Jacksonville, Florida, and should not be construed to apply to any other site.

Mervin Dale
Florida Professional Geologist
P.G. No. 000191

MERVIN W. DALE LICENSE NO. 1917 STATE OF FLORIDA PROFESSIONAL GEOLOGIST

Date

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ACRONYMS

bls	Below Land Surface
BRAC	Base Realignment and Closure
BTEX	Benzene, Toluene, Ethylbenzene, Total Xylenes
btoc	Below Top-of-Casing
CCI	CH2M Hill Constructors, Inc.
COC	Contaminants of Concern
CompQAP	Comprehensive Quality Assurance Plan
CSR	Confirmatory Sampling Report
DPT	Direct Push Technology
DRO	Diesel Range Organics
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FID	Flame Ionization Detector
ft	Feet or Foot
GCTL	Groundwater Cleanup Target Level
HLA	Harding Lawson Associates
mg/kg	Milligrams per Kilogram
mg/L	Milligrams per Liter
msl	Mean Sea Level
OVA	Organic Vapor Analyzer
OWS	Oil-Water Separator
NASCF	Naval Air Station Cecil Field
ppm	Parts per Million
PVC	Polyvinyl Chloride
SA	Site Assessment
SAR	Site Assessment Report
SCTL	Soil Cleanup Target Level
SOUTHNAVFACENGCOM	Southern Division, Naval Facilities Engineering Command
SRR	Source Removal Report
TICs	Tentatively Identified Compounds
TOC	Top-of-Casing
TRPH	Total Recoverable Petroleum Hydrocarbons
TtNUS	Tetra Tech NUS, Inc.
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey

ACRONYMS (Continued)

µg/kg	Micrograms per Kilogram
µg/L	Micrograms per Liter
UST	Underground Storage Tank

EXECUTIVE SUMMARY

Tetra Tech NUS, Inc. (TtNUS) has completed a Site Assessment (SA) at Building 824, Oil-Water Separator 824-OW (OWS 824-OW), former Naval Air Station Cecil Field (NASCF), Jacksonville, Florida. The focal point of the study was on the south side of Building 824 where a 500-gallon OWS was formerly in service. The investigation was conducted in accordance with requirements of Chapter 62-770, Florida Administrative Code (FAC). This report is being submitted to the Florida Department of Environmental Protection (FDEP) for approval.

To complete this site assessment, TtNUS:

- Existing literature was reviewed to identify potential petroleum hydrocarbon sources and receptors in the site vicinity, located nearby surface water bodies, if any, and determined surface drainage features.

- Literature pertaining to previous environmental investigations at the site was reviewed to estimate the magnitude of potential contamination to environmental media.

- Hydraulic gradient at the site was determined to estimate migration direction of water-borne contaminants.

- A soil vapor survey was performed by collecting soil samples at 1-foot (ft) vertical intervals from ground surface to the water table at eight locations in and around the former source area.

- One soil sample was collected from each soil boring and analyzed for typical petroleum constituents using an on-site mobile laboratory, and a confirmatory soil sample was collected for fixed-based laboratory analysis of the used oil group contaminants of concern (COCs) in Chapter 62,770, FAC.

- Direct Push Technology (DPT) methods was used to collect eight grab samples of shallow groundwater [5 to 9 ft below land surface (bls)] and one deep sample (26 to 30 ft bls) for mobile lab analysis of typical petroleum constituents.

- Groundwater samples were collected from two permanent shallow monitoring wells on site and submitted to a fixed-based laboratory for analysis of the used oil group COCs in Chapter 62-770, FAC.

“Excessively contaminated” soil, as defined by Chapter 62-770.200, FAC, was not identified during field screening procedures, and no targeted compound was reported at a value equal to or greater than its FDEP Soil Cleanup Target Level (SCTL) in soil samples analyzed by mobile and fixed-based laboratories. The duplicate lead analysis of a groundwater sample collected from a permanent shallow monitoring well, located 15 ft southeast of the former source area, was reported as exceeding the FDEP Groundwater Cleanup Target Level (GCTL) of 15 micrograms per liter (µg/L). However, upon resampling and analysis, the results for both a filtered and unfiltered aliquot demonstrated that elevated lead concentrations in the duplicate sample was likely the result of sample turbidity. Other than some metal’s detections, none of the other petroleum COCs were detected in either the samples or the duplicate. Free product was not encountered in any of the DPT borings or permanent monitoring wells on site. TtNUS recommends no further action for the subject site based on the evidence presented in this Site Assessment Report (SAR).

1.0 INTRODUCTION

TtNUS was authorized by Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM) to conduct an SA at Building 824, OWS 824-OW, NASCF, in Jacksonville, Florida. Specifically, the SA applied to the former location of a 500-gallon OWS located on the south side of Building 824. Available background information for the site is provided in the following sections.

1.1 SITE DESCRIPTION

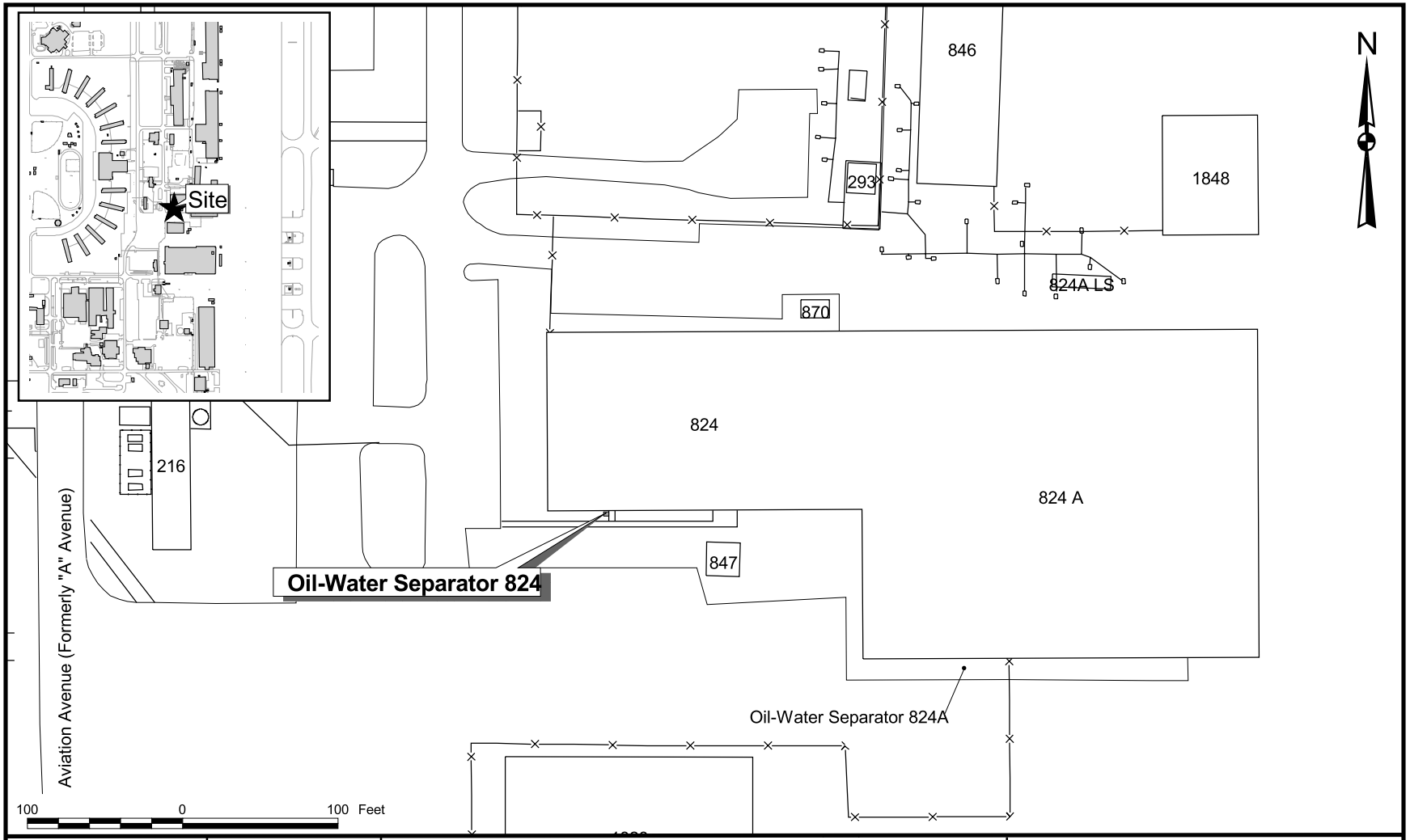
Building 824, formerly the avionics shop, is located in the east-central portion of NASCF in a series of buildings on the west side of the north-south flightline. The locations of Building 824 and OWS 824-OW are depicted in Figure 1-1. OWS 824-OW, removed in 1999, was bound to the north by Building 824, to the east by a concrete ramp, to the south by grass and a concrete sidewalk, and to the west by grass. According to the Confirmatory Sampling Report (CSR), installation and construction details of this OWS are unknown (Appendix A).

1.2 SURROUNDING PROPERTIES

In general, Building 824 is surrounded to the north, south, and west by other buildings, hangars, paved areas, and maintained lawns and to the east by the concrete-covered north-south flightline. Properties adjacent to Building 824 are shown on Figure 1-2, an aerial photograph reproduction.

Several buildings that surround the former OWS 824-OW are shown on Figure 1-2. The building numbers, current tenant, and current use, for some of the structures, are listed below:

- 216 No tenant, slated for demolition.
- 824/824A LSI – Avionics business.
- 826 Info Spectrum – Information technology business.
- 846 Air Kaman – Ground support equipment storage.
- 847 LSI – Power supply.
- 870 Empty, not in use.
- 1823 Boeing – Cold storage of aircraft parts.
- 1848 Air Kaman – Equipment maintenance.



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CHECKED BY	DATE		APPROVED BY / DATE
COST/SCHEDULE-AREA			APPROVED BY / DATE
SCALE: AS NOTED			DRAWING NO.: FIGURE 1-1 / REV: 0

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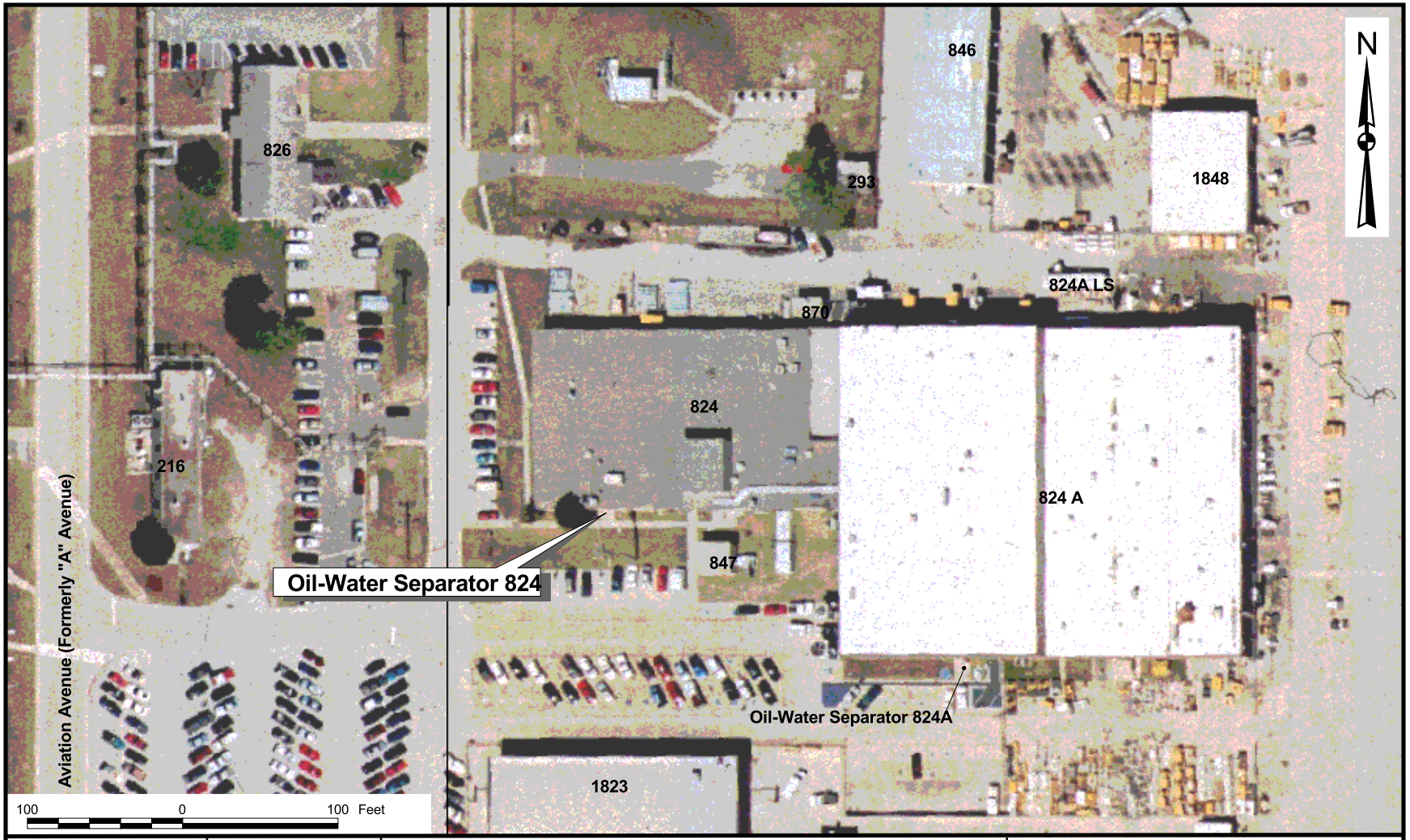

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CHECKED BY	DATE		APPROVED BY / DATE
COST/SCHEDULE-AREA			APPROVED BY / DATE
SCALE: AS NOTED			DRAWING NO.: FIGURE 1-2 / REV: 0

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1.3 TOPOGRAPHIC SETTING

A portion of the Fiftone, Florida United States Geological Survey (USGS) 7.5-minute quadrangle has been reproduced as Figure 1-3 to illustrate the subject site in relation to its topographic surroundings. The site area is virtually flat and there is one surface water body approximately 400 ft north of the site. That surface water body is associated with the Day Tank 1 site, which is currently under remedial action. Since this surface water feature is distant to the source and related to a underground storage tank (UST) site already under investigation, no sediment samples were collected for the SA.

1.4 INVESTIGATIVE HISTORY

In September 1998, Harding Lawson Associates (HLA) initiated a confirmatory sampling investigation for this site, and they submitted a CSR in April 1999 discussing the results of their investigation (Appendix A). Briefly, HLA recommended additional action for site cleanup because a soil sample collected at the site was reported to have a concentration of total recoverable petroleum hydrocarbons (TRPH) that exceeded the FDEP SCTLs. The other soil samples and one groundwater sample (from well CEF-824-1S) were also analyzed for used oil group COCs, and no analyte was reported at a concentration equal to or in excess of its regulatory standard as specified in Chapters 62-770 and 62-777, FAC.

In response to HLA's recommendation, the FDEP authorized the implementation of a source removal for OWS 824-OW. The FDEP's technical review letter of the CSR is included as Appendix B. The OWS and 28.67 tons of petroleum-contaminated soil were removed and transported offsite by CH2M HILL Constructors, Inc. (CCI) between September 23 and October 7, 1999. A temporary well was installed in the center of the excavation on October 19, 1999. Six analytes included in the used oil group (naphthalene, 2-methylnaphthalene, total xylenes, 4-methylphenol, 1,2,4- and 1,3,5-trimethylbenzene) were reported at concentrations exceeding FDEP GCTLs in groundwater samples collected from the temporary well. Details of CCI's activities at OWS 824-OW are documented in the Source Removal Report (SRR) (CCI, 2000) and are included in Appendix C. As a result of the SRR, the FDEP responded with a directive to the Navy to conduct a SA. A copy of that letter is included in Appendix D.

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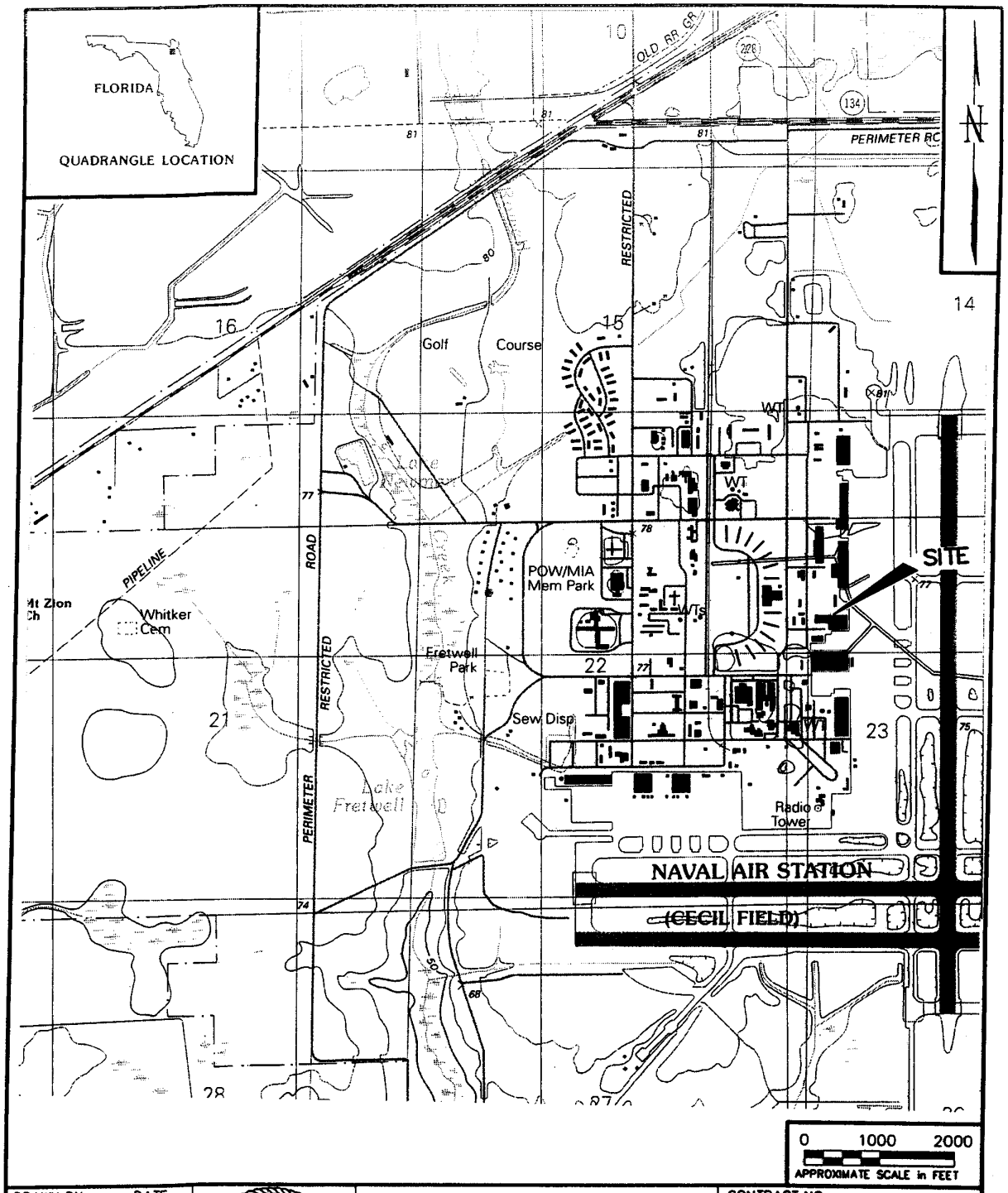


DRAWN BY LLK	DATE 1/7/02	TOPOGRAPHIC MAP SITE ASSESSMENT REPORT BLDG. 824, OWS 824-OW NAVAL AIR STATION CECIL FIELD JACKSONVILLE, FLORIDA	CONTRACT NO. 3996
CHECKED BY	DATE		APPROVED BY DATE
COST/SCHED-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 1-3 REV. 0

Source: USGS Fiftone Florida 7.5-Minute Topographic Quadrangle, 1993

2.0 INVESTIGATIVE METHODOLOGY

2.1 QUALITY ASSURANCE

The field procedures described in this SAR were performed in general accordance with the FDEP Standard Operating Procedures described in the TtNUS Comprehensive Quality Assurance Plan (CompQAP) Number 980038 and with the site-specific Sampling and Analysis Plan (SAP) (TtNUS, 2001). Soil and groundwater samples, collected during our investigation for analyses by a fixed-based laboratory, were shipped on ice and under chain of custody to Accutest Laboratory, Orlando, Florida. The CompQAP number for the Accutest Florida facility is 940304. Based on the type of site and the analytical rationale given in previous investigations, TtNUS used the used oil group analysis listed in Chapter 62-770, FAC for determination of fixed-based sample results.

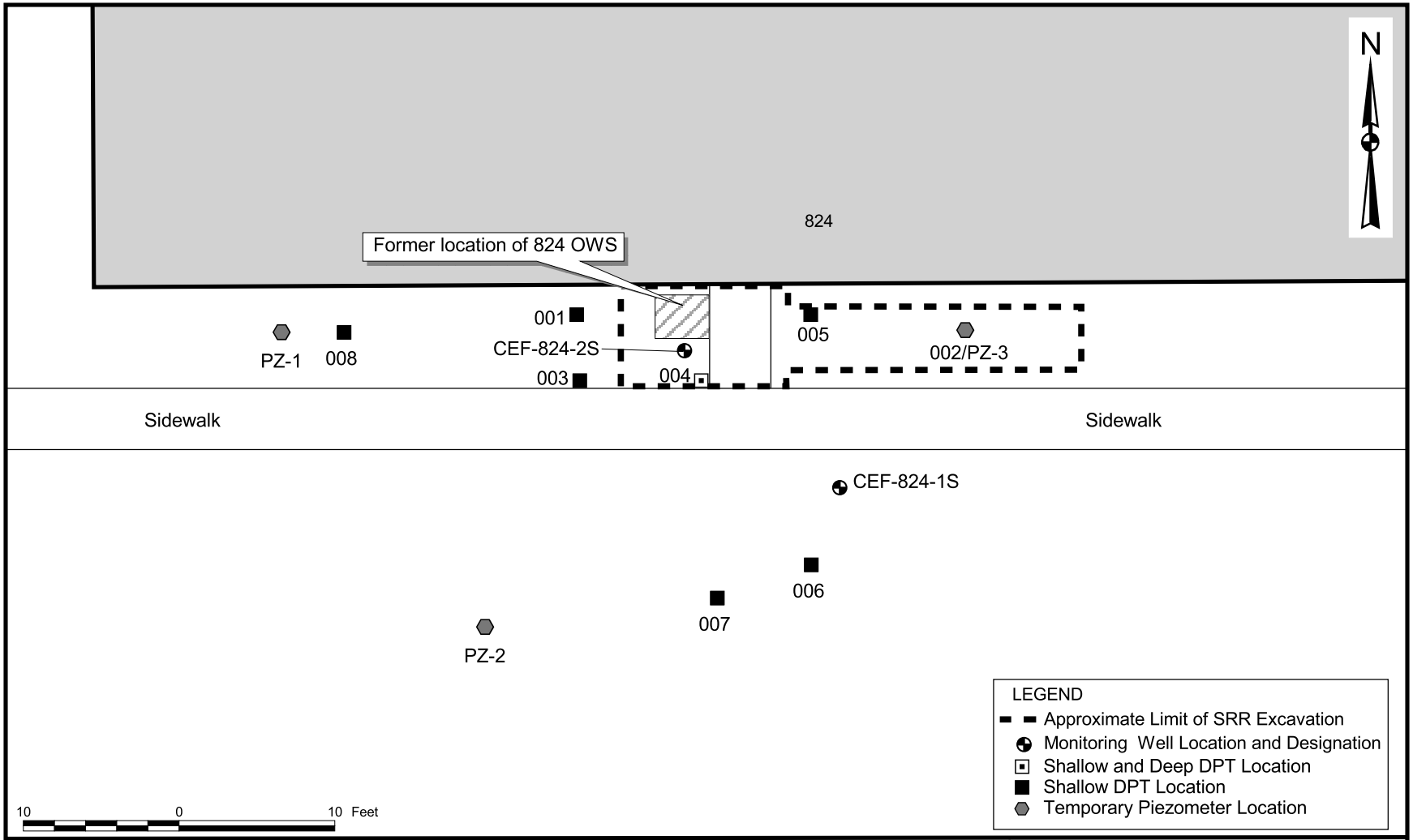
2.2 SOIL QUALITY ASSESSMENT

2.2.1 Organic Vapor Measurements

On September 12, 2001, eight borings were completed for soil screening in the area where OWS 824-OW was formerly located. Boring locations are shown on Figure 2-1. For brevity in this SAR, boring identification numbers may be shortened from CEF-824-SB-001 to SB-001, SB-002, etc. The depth-to-water measured in well CEF-824-1S on that day was 5.48 ft below top-of-casing (btoc). Based on that depth-to-water, soil samples were collected at 1-ft vertical intervals to a depth of 4 ft bls at each location using DPT soil sampling techniques. In general conformance with Chapter 62-770, FAC, samples were usually inspected for petroleum staining and headspace readings were obtained on soil samples using a PhotoVac Micro Flame Ionization Detector (FID). Appendix E shows the soil boring logs for each location with the unfiltered/filtered organic vapor analyzer (OVA)-FID results.

2.2.2 Mobile Laboratory Analyses

The soil sample producing the highest OVA measurement at each boring location was submitted to an on-site mobile laboratory (KB Labs of Gainesville, Florida) for analysis of benzene, toluene, ethylbenzene, total xylenes (BTEX), naphthalene, and diesel range organics (DRO). If there was no instrument response from any sample at a given location, the sample from 4 ft bls was submitted for analysis.



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CHECKED BY	DATE	
COST/SCHEDULE-AREA		
SCALE: AS NOTED		

CONTRACT NUMBER: 3996

APPROVED BY: DATE

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2.2.3 Fixed-based Confirmatory Analyses

On October 4, 2001, a confirmatory soil sample was collected in the depth interval of 2 to 3 ft bls at the location of SB-003. The sample was sent to a fixed-based laboratory (Accutest in Orlando, Florida) and analyzed for the full suite of used oil group constituents as specified by Rule 62-770.600(4)(b), FAC. The sample was shipped on ice via overnight courier and under chain-of-custody.

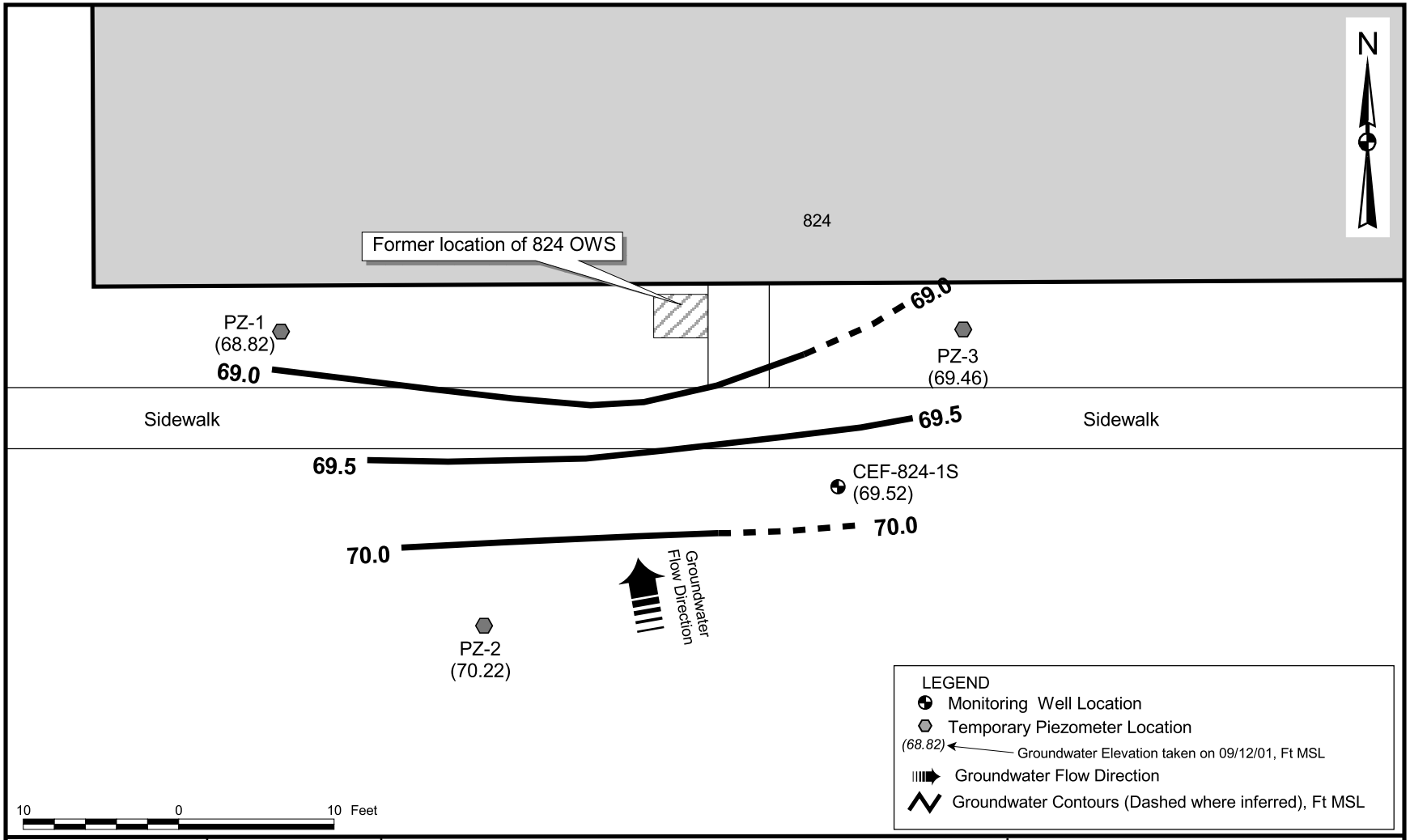
2.3 DETERMINATION OF GROUNDWATER GRADIENT

Groundwater Protection, Inc. installed three temporary piezometers (PZ-1, PZ-2, and PZ-3) under TtNUS supervision at the locations shown on Figure 2-1. Boreholes for the piezometers were advanced to 9 ft bls using 3-inch diameter DPT casings attached to a Geoprobe DPT rig. One-inch diameter Schedule 40 polyvinyl chloride (PVC) well screen was inserted through the drill rods after attaining total depth. The annular space between rod and well screen was filled with 20/30 silica sand from the bottom of the boring to land surface as the rods were being extracted.

The top-of-casing (TOC) elevations of the three piezometers were surveyed relative to the TOC elevation of permanent monitoring well CEF-824-1S (also shown on Figure 2-1). The TOC of well CEF-824-1S was assigned an elevation of 75 ft mean sea level (msl) based on local topographic map data. Depth-to-water was measured from the TOC of the permanent well and three piezometers. These values were subtracted from the surveyed TOC elevations to determine relative groundwater elevations at the four control points, and thus, to construct a groundwater elevation contour map.

The inferred direction of groundwater flow based on the resultant data is to the north toward Building 824 as indicated on Figure 2-2. Later during the investigation, however, the groundwater gradient was confirmed to be southeasterly as indicated by the USGS groundwater model for NASCF (HLA, 1999).

Two additional groundwater elevation contour maps were constructed based primarily on survey data from a state-registered surveyor. TOC elevations and depth-to-water measurements were obtained at permanent monitoring wells CEF-824-1S, CEF-824-2S (discussed below in Section 2.4), and two other existing permanent wells (CEF-293-4S and CEF-824A-1S) near the site. Locations of these four wells and the groundwater flow maps generated are presented as Figures 2-3 and 2-4. Groundwater elevation data used to generate these last two groundwater flow maps are provided in Table 2-1.



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COST/SCHEDULE-AREA			APPROVED BY: DATE:
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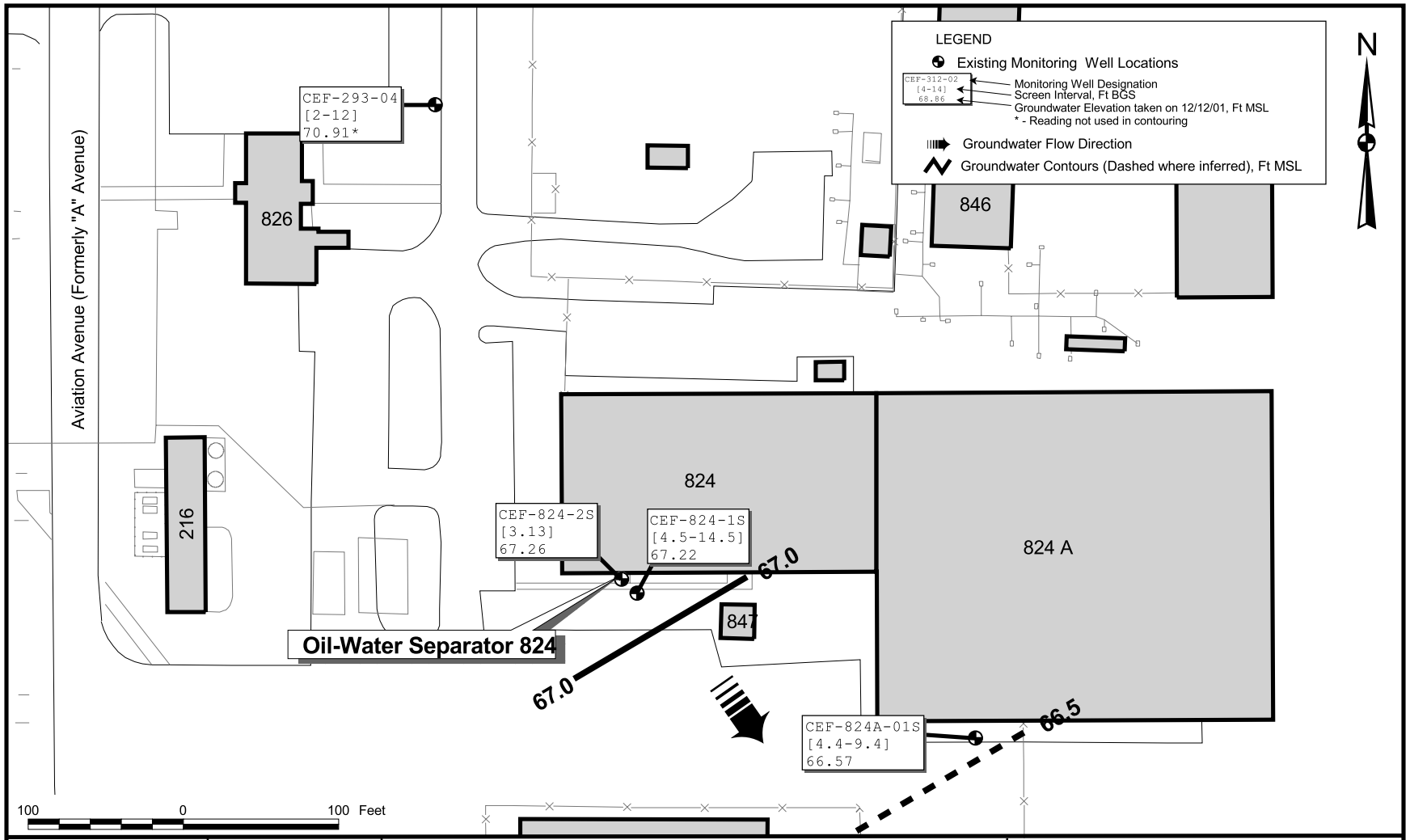

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COST/SCHEDULE-AREA			APPROVED BY / DATE
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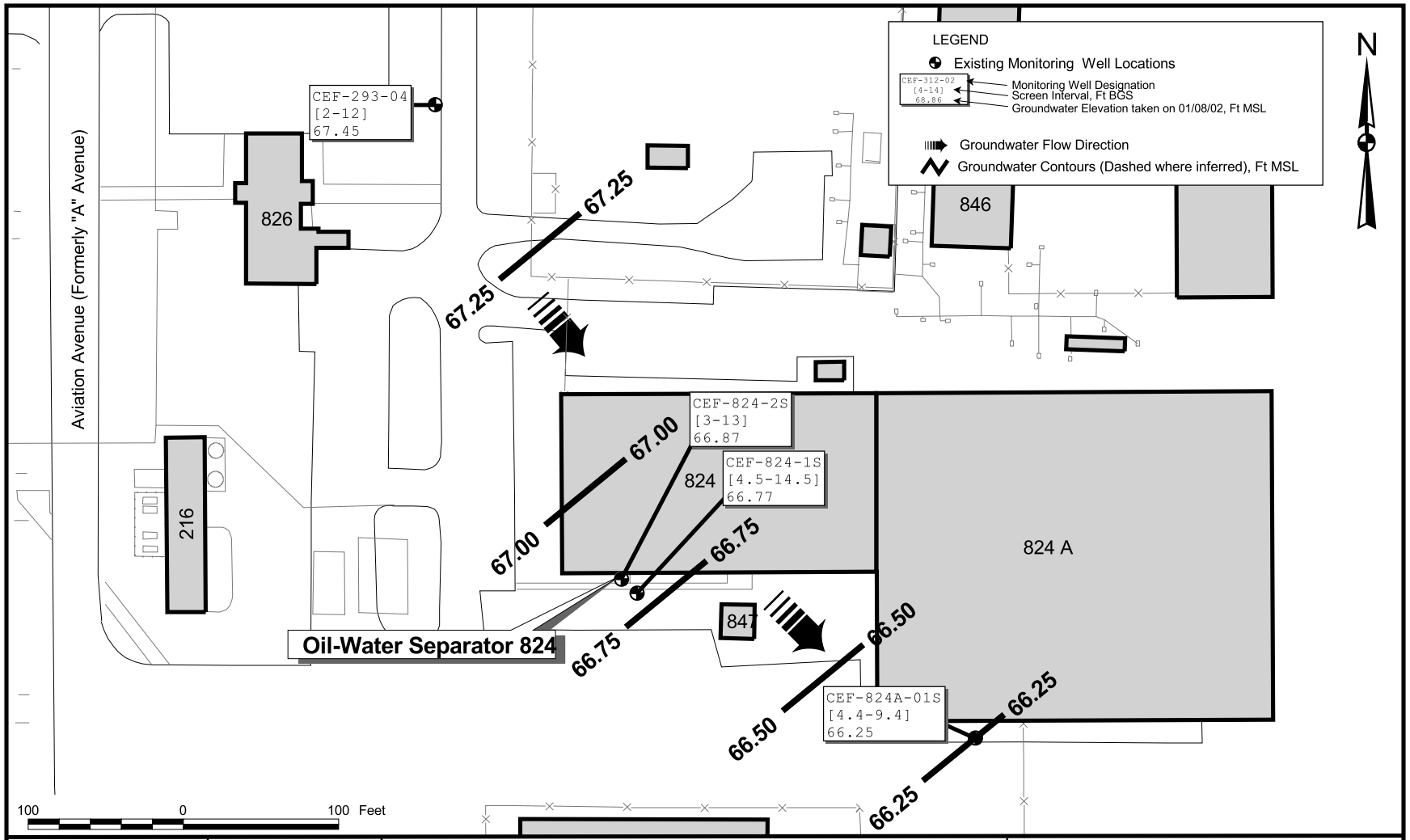

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COST/SCHEDULE-AREA			APPROVED BY: DATE:
SCALE: AS NOTED			DRAWING NO.: FIGURE 2-4 / REV: 0

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Table 2-1
Monitoring Well Construction and Water Elevation Data

Site Assessment Report
Building 81, Tanks 81 A, B, and C
Naval Air Station Cecil Field
Jacksonville, Florida

Monitoring Well Identification	Well Depth (feet, btoc)	Top-of-Casing Elevation (feet, msl)	December 12, 2001		January 8, 2002	
			Depth to Water (feet, btoc)	Water-Level Elevation (feet, msl)	Depth to Water (feet, btoc)	Water-Level Elevation (feet, msl)
CEF-824-1S	14.61	75.34	8.12	67.22	8.57	66.77
CEF-824-2S	13.07	75.53	8.27	67.26	8.66	66.87
CEF-824A-1S	9.62	74.56	7.99	66.57	8.31	66.25
CEF-293-4	11.00	75.72	4.81	70.91	8.27	67.45

Notes:
NM = not measured

2.4 MONITORING WELL INSTALLATION

With the consent of the Base Closure Team, a permanent shallow monitoring well (CEF-824-2S) was installed in the OWS 824-OW former source area under TtNUS supervision on December 5 and 6, 2001. The location of this well is shown on Figure 2-1. A lithologic boring log and well construction diagram for well CEF-824-2S is provided as Appendix F. This well was installed and developed in accordance with the required protocols stipulated in the SAP (TtNUS, 2001). Well CEF-824-1S, located approximately 15 ft southeast of well CEF-824–2S, was installed in April 1995 during the Base Realignment and Closure (BRAC) investigation of Building 824 (HLA, 1999). Henceforth, these wells will be referred to as MW-1S and MW-2S.

2.5 GROUNDWATER QUALITY ASSESSMENT

2.5.1 DPT Grab Samples

On September 12, 2001, groundwater samples were collected using DPT methodology at the same eight soil sampling locations discussed in Section 2.2.1 and shown on Figure 2-1. Groundwater identification numbers were abbreviated like the soil identification numbers to GW-001, GW-002, etc. Samples were collected using GeoProbe screen point samplers with 4-ft long stainless steel screens set at about 5 to 9 ft bls for the shallow water table. A deep sample (26 to 30 ft bls) was collected in addition to the shallow sample at the location nearest the former source (GW-004). After samplers were placed at the desired depth, approximately three screen volumes were purged using a peristaltic pump and environmental grade Teflon tubing. KB Labs analyzed samples on site for the same constituents (BTEX, naphthalene, and DRO) as the soil samples.

2.5.2 Fixed-Based Laboratory Analyses

Groundwater samples were collected from wells MW-1S and MW-2S on December 12, 2001 using the quiescent sampling technique. After collection, samples were packed on ice and shipped via overnight courier to Accutest Laboratories in Orlando, Florida for analysis of used oil constituents as specified in Chapter 62-770.600(4)(b), FAC. Monitoring well MW-2S was re-sampled for lead analysis (filtered and unfiltered) on January 8, 2002.

3.0 RESULTS OF INVESTIGATION

3.1 SOIL QUALITY

3.1.1 OVA-FID Headspace Analyses

Since no evidence of visible petroleum staining was encountered, TtNUS reverted to OVA-FID headspace analysis to assess if excessively contaminated soil remained on site. OVA-FID headspace measurements obtained in the upper four feet at the eight DPT locations are presented in Table 3-1. Since no OVA-FID response above 1.5 parts-per-million (ppm) was documented, TtNUS decided to utilize mobile laboratory screening results to determine where to obtain the confirmatory sample required by Chapter 62-770, FAC.

3.1.2 Mobile Laboratory Results

Mobile laboratory soil analytical results are summarized in Table 3-2, BTEX results are presented on Figure 3-1, and the laboratory report is provided in Appendix G.

None of the COCs was reported to exceed its respective SCTL in the eight samples collected at this site. Trace concentrations of various BTEX compounds were reported at values slightly exceeding laboratory reporting limits in all samples except SB-001, which was reportedly non-detect for the COCs. The most persistently reported compounds were toluene [maximum concentration 8.7 micrograms per kilogram (µg/kg)] and total xylenes (maximum concentration 14.2 µg/kg). Those concentrations were reported for the sample from SB-002 at 4 ft bls. The SCTLs for toluene and total xylenes are 500 µg/kg and 200 µg/kg, respectively. Naphthalene and DRO were not detected in the DPT soil screening samples.

3.1.3 Fixed-Based Confirmatory Results

Since the preliminary mobile laboratory result for sample SB-003 at 3 ft bls indicated that location had the highest concentration of COCs, the fixed-based confirmatory sample was collected from that location and depth. Results of fixed-based analyses performed by Accutest on that soil sample are summarized in Table 3-3 and the laboratory report is provided as Appendix H. None of the COCs (with established SCTLs) was reported at a concentration equal to or exceeding its SCTL. While scanning for priority pollutant extractable organics by United States Environmental Protection Agency (USEPA) Method SW846 8270C, the laboratory reported 15 tentatively identified compounds (TICs). As shown by Table 3-3, those TICs have no established SCTL.

Table 3-1
Soil Vapor Field Screening Results

Site Assessment Report
Building 824, OWS 824-OW
Naval Air Station Cecil Field
Jacksonville, Florida

Sample Identification	Depth	OVA Result (ppm)			Lithologic Description
"CEF-824-SB-"	(ft bls)	Unfiltered	Filtered	Net	
001	1*	1.5	NM	1.5	Sand, fine to medium., dark brown
	2	1.2	NM	1.2	Sand, fine to medium, dark brown
	3	1.0	NM	1.0	Sand, fine to medium, dark brown
	4	0	NM	0	Sand, fine to medium, light tan
002	1	0	NM	0	Sand, fine to medium, dark brown
	2	0	NM	0	Sand, fine to medium, dark brown
	3	0	NM	0	Sand, fine to medium, dark brown
	4*	0	NM	0	Sand, fine to medium, dark brown
003	1	0.2	NM	0.2	Soil, fine to medium, dark brown
	2	0.1	NM	0.1	Soil, fine to medium, dark brown
	3*	0.4	NM	0.4	Sand, fine, light tan
	4	0.2	NM	0.2	Clay, sandy, light tan
004	1	0	NM	0	Sand, fine with silt, dark brown
	2	0	NM	0	Sand, fine with silt, dark brown
	3	0	NM	0	Sand, fine with silt, light tan
	4*	0	NM	0	Clay, sandy, light tan
005	1	0.1	NM	0.1	Sand, fine, dark brown
	2	0	NM	0	Sand, fine, dark brown
	3*	0.2	NM	0.2	Sand, fine, dark brown
	4	0	NM	0	Sand, fine, dark brown
006	1	0	NM	0	Sand, fine, dark brown
	2	0	NM	0	Sand, fine, dark brown
	3	0	NM	0	Sand, fine, brown
	4*	0	NM	0	Sand, fine, brown
007	1	0	NM	0	Sand, fine, dark brown
	2	0	NM	0	Sand, fine, brown
	3*	0	NM	0	Sand, fine, brown
	4	0	NM	0	Clay, sandy, light tan, moist
008	1	0	NM	0	Sand, fine, dark brown
	2	1.4	NM	1.4	Sand, fine, dark brown
	3*	1.3	NM	1.3	sand, fine, brown
	4	NM	NM	NM	Clay, sandy, light tan, wet

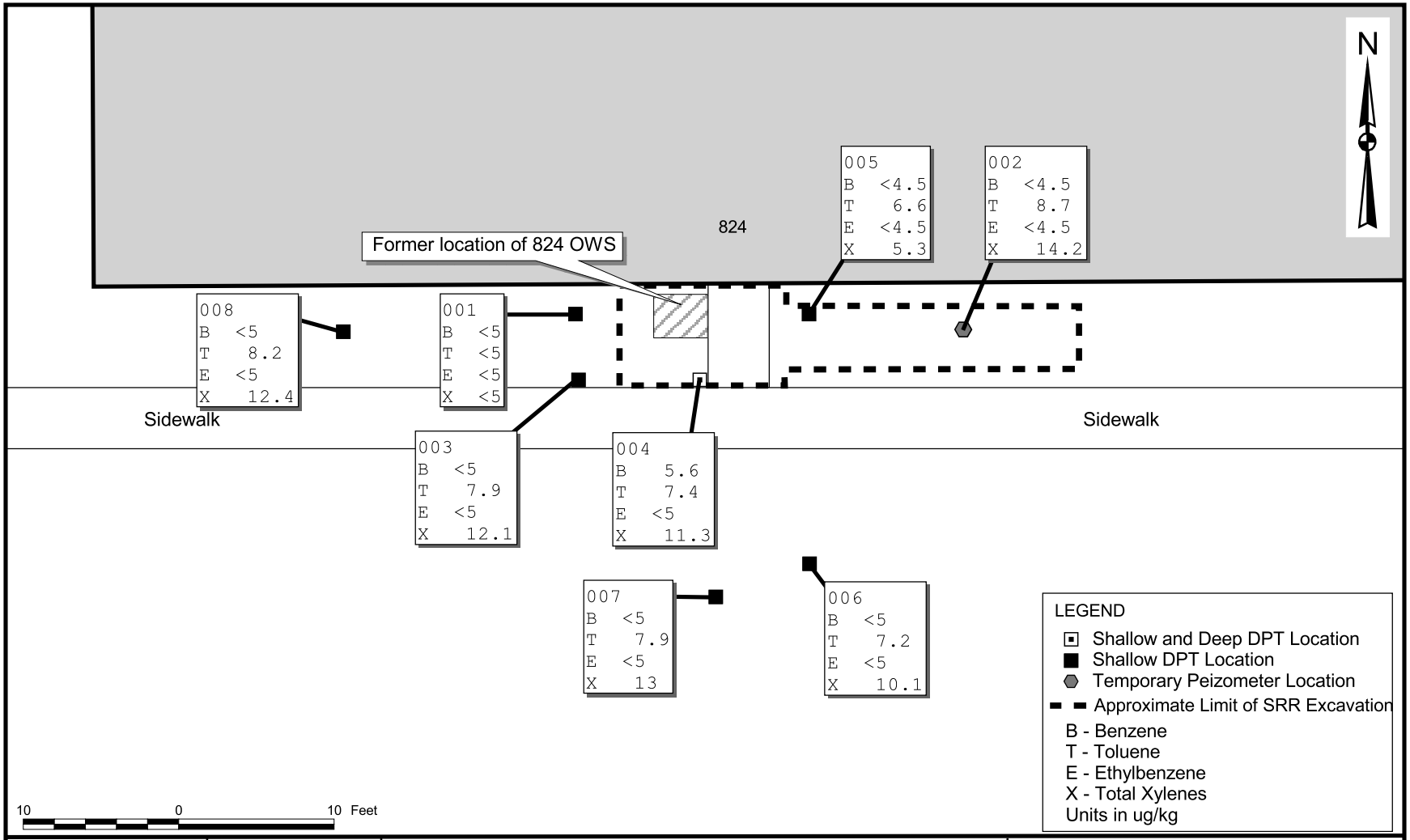
Notes:
* = Sample analyzed by mobile laboratory (see Table 3-2).
NM = not measured

Table 3-2
Mobile Laboratory Soil Analytical Results

Site Assessment Report
Building 824, OWS 824-OW
Naval Air Station Cecil Field
Jacksonville, Florida

Compounds	SCTLs	Sample Identification "CEF-824-SB-"							
		001 @ 1 ft.	002 @ 4 ft.	003 @ 3 ft.	004 @ 4 ft.	005 @ 3 ft.	006 @ 4 ft.	007 @ 3 ft.	008 @ 3 ft.
Benzene	7	<5	<4.5	<5	5.6	<4.5	<5	<5	<5
Toluene	500	<5	8.7	7.9	7.4	6.6	7.2	7.9	8.2
Ethylbenzene	600	<5	<4.5	<5	<5	<4.5	<5	<5	<5
Total xylenes	200	<5	14.2	12.1	11.3	5.3	10.1	13	12.4
DRO	None	<20	<20	<20	<20	<20	<20	<20	<20
Naphthalene	1700	<2500	<2500	<2500	<2500	<2500	<2500	<2500	<2500

Notes:
Sample date was September 12, 2001.
Compound units in micrograms per kilogram except DRO, which is in milligrams per kilogram.
Sample identifications shown with depth of bottom of sample interval.



DRAWN BY: MJJ	DATE: 21Sept01	BTEX CONCENTRATIONS IN DPT SOIL SAMPLES SITE ASSESSMENT REPORT BUILDING 824, OWS 824-OW NAVAL AIR STATION CECIL FIELD JACKSONVILLE, FLORIDA	CONTRACT NUMBER: 3996
CHECKED BY:	DATE:		APPROVED BY: DATE:
COST/SCHEDULE-AREA			APPROVED BY: DATE:
SCALE: AS NOTED			DRAWING NO.: FIGURE 3-1 / REV: 0

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Table 3-3
Summary of Confirmatory Soil Sample Analytical Results

Site Assessment Report
Building 824, OWS 824-OW
Naval Air Station Cecil Field
Jacksonville, Florida

Compounds	Soil Cleanup Target Levels[1]	Soil Boring Number CEF-824-SB-003 3 feet below land surface Sampled: 10/4/2001
Priority Pollutant Volatile Organic Compounds (µg/kg)		None Detected
Priority Pollutant Extractable Organic Compounds (µg/kg)		None Detected
TRPH (mg/kg)		
TRPH	340	43.1
Tentatively Identified Compounds (Volatiles) (µg/kg)		None Detected
Tentatively Identified Compounds (Semi-volatiles) (µg/kg)		
1,4-Methano-1H-indene, octahydro-4-meth	NE	450
1,4-Methanoazulene, decahydro-4,8,8-trim	NE	3900
Copaene	NE	1000
Thujopsene	NE	490
Spiro[4.5]dec-7-ene, 1,8-dimethyl-4-(1-m	NE	610
Cedrol	NE	2000
2-Phenanthrenol, 4b,5,6,7,8,8a,9,10-octa	NE	1300
2-Phenanthrenol, 4b,5,6,7,8,8a,9,10-octa	NE	8500
2,6-Phenanthrenediol, 1,2,3,4,4a,9,10,10	NE	540
9(1H)-Phenanthrenone, 2,3,4,4a,10,10a-he	NE	380
.gamma.-Sitosterol	NE	670
Unknown	NE	3400
Unknown	NE	1900
Unknown	NE	370
Unknown	NE	2000
Metals (mg/kg)	Hi-Cut Values[2]	
Arsenic	2.0375	0.33 U
Cadmium	1.715	0.092
Chromium	7.75 [3]	3.3
Lead	196.9	6.1

Notes:
[1]Based on Chapter 62-777, Florida Administrative Code, Leachability to Groundwater Criteria.
[2] Values established for NAS Cecil Field.
[3] This value established for hexavalent chromium. NE = not established
[*]Duplicate sample.
U = not detected.
mg/kg = milligrams per kilogram
J = estimated

3.2 GROUNDWATER QUALITY

3.2.1 DPT Grab Sample Results

Mobile laboratory analytical results of groundwater samples collected by DPT are shown in Table 3-4 and BTEX values are depicted in Figure 3-2. The laboratory report is included as Appendix G.

As with soils, no constituent was reported in excess of applicable criteria, and toluene and total xylenes were reported fairly persistently in trace amounts. The highest reported toluene value was 2.0 µg/L in GW-001 and the highest reported total xylenes value was 3.3 µg/L, also in GW-001. The GCTLs for toluene and total xylenes are 40 µg/L and 20 µg/L, respectively.

3.2.2 Fixed-Based Laboratory Results

TtNUS personnel collected groundwater samples from permanent monitoring wells MW-1S and MW-2S on December 12, 2001. Groundwater sampling logs and low flow purge logs from this sampling event are provided in Appendix I. Analytical results are summarized in Table 3-5 and the laboratory report is provided as Appendix J. Metals were the only used oil analytes that were reported at concentrations above instrument detection limits. Particularly, lead was reported at concentrations of 6.7 µg/L and 22.6 µg/L in the sample and duplicate (respectively) from MW-1S. Only the duplicate value exceeded the GCTL of 15 µg/L for lead. Metals concentrations reported in these samples are illustrated in Figure 3-3.

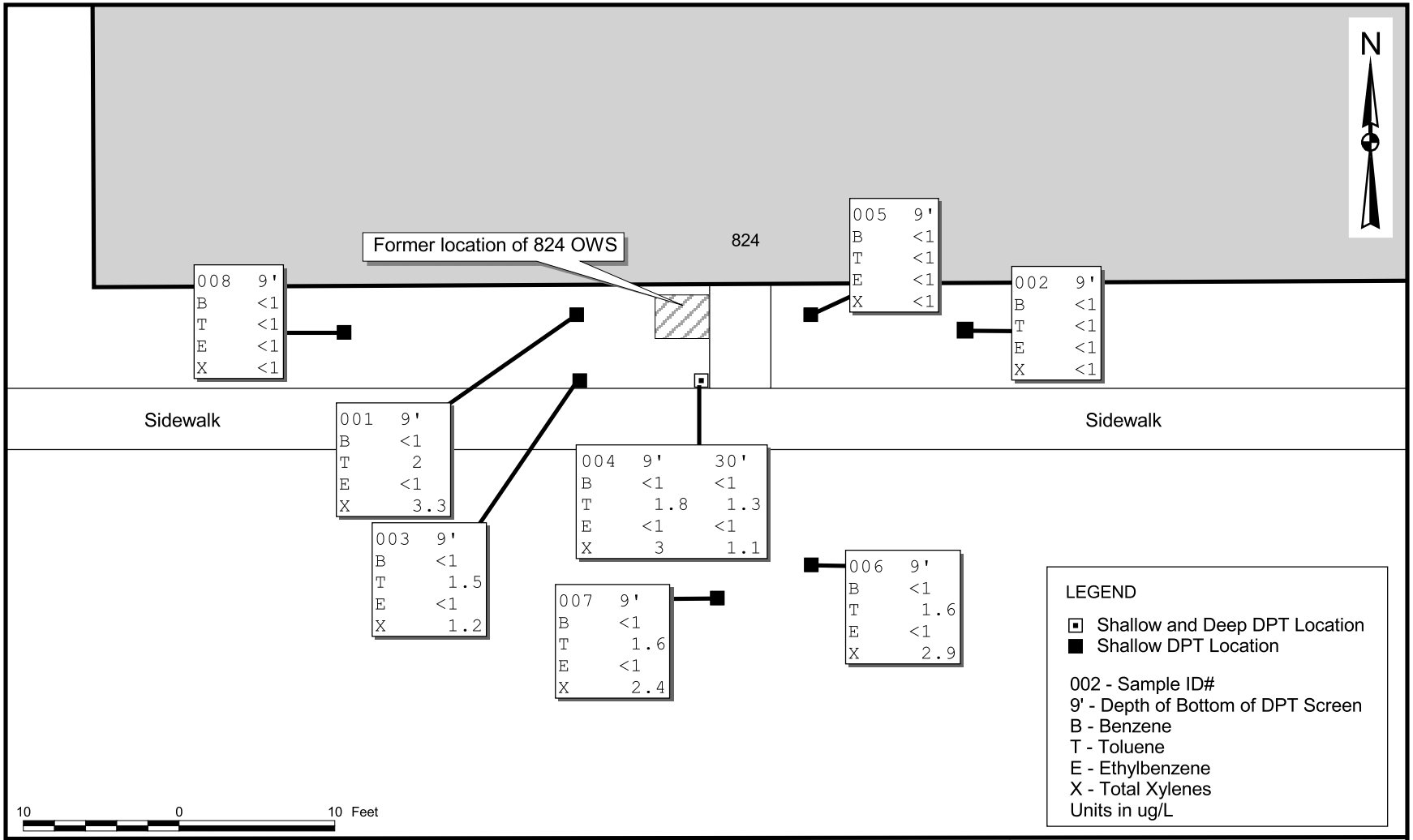
TtNUS re-sampled well MW-1S on January 8, 2002 to determine if these concentrations were elevated due to sample turbidity. During this supplemental sampling event, both filtered and unfiltered aliquots were submitted to the laboratory for analysis. Lead was not detected in the filtered sample and was reported at 6.0 µg/L in the unfiltered sample. Appendix I contains the field data sheets, and Appendix J contains the laboratory report for the second groundwater sampling event.

Table 3-4
Mobile Laboratory Groundwater Analytical Results

Site Assessment Report
Building 824, OWS 824-OW
Naval Air Station Cecil Field
Jacksonville, Florida

Compounds	GCTLs	Sample Identification "CEF-824-GW-"								
		001 @ 9 ft.	002 @ 9 ft.	003 @ 9 ft.	004 @ 9 ft.	004 @ 30 ft.	005 @ 9 ft.	006 @ 9 ft.	007 @ 9 ft.	008 @ 9 ft.
Benzene	1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	40	2.0	<1	1.5	1.8	1.3	1.6	<1	1.6	<1
Ethylbenzene	30	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total xylenes	20	3.3	<1	1.2	3	1.1	2.9	<1	2.4	<1
DRO	None	<1	<1	<1	<1	<1	<1	<1	<1	<1
Naphthalene	20	<20	<20	<20	<20	<20	<20	<20	<20	<20

Notes:
Sample date was September 12, 2001.
GCTL = Groundwater Cleanup Target Level.
DRO = Diesel Range Organics.
Compound units in µg/L except DRO, which is in milligrams per liter (mg/L).
Sample identifications shown with depth of bottom of DPT sample screen.



DRAWN BY MJJ	DATE 21Sept01	BTEX CONCENTRATIONS IN DPT GROUNDWATER SAMPLES SITE ASSESSMENT REPORT BUILDING 824, OWS 824-OW NAVAL AIR STATION CECIL FIELD JACKSONVILLE, FLORIDA
CHECKED BY	DATE	
COST/SCHEDULE-AREA		
SCALE AS NOTED		

CONTRACT NUMBER 3996	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 3-2	REV 0

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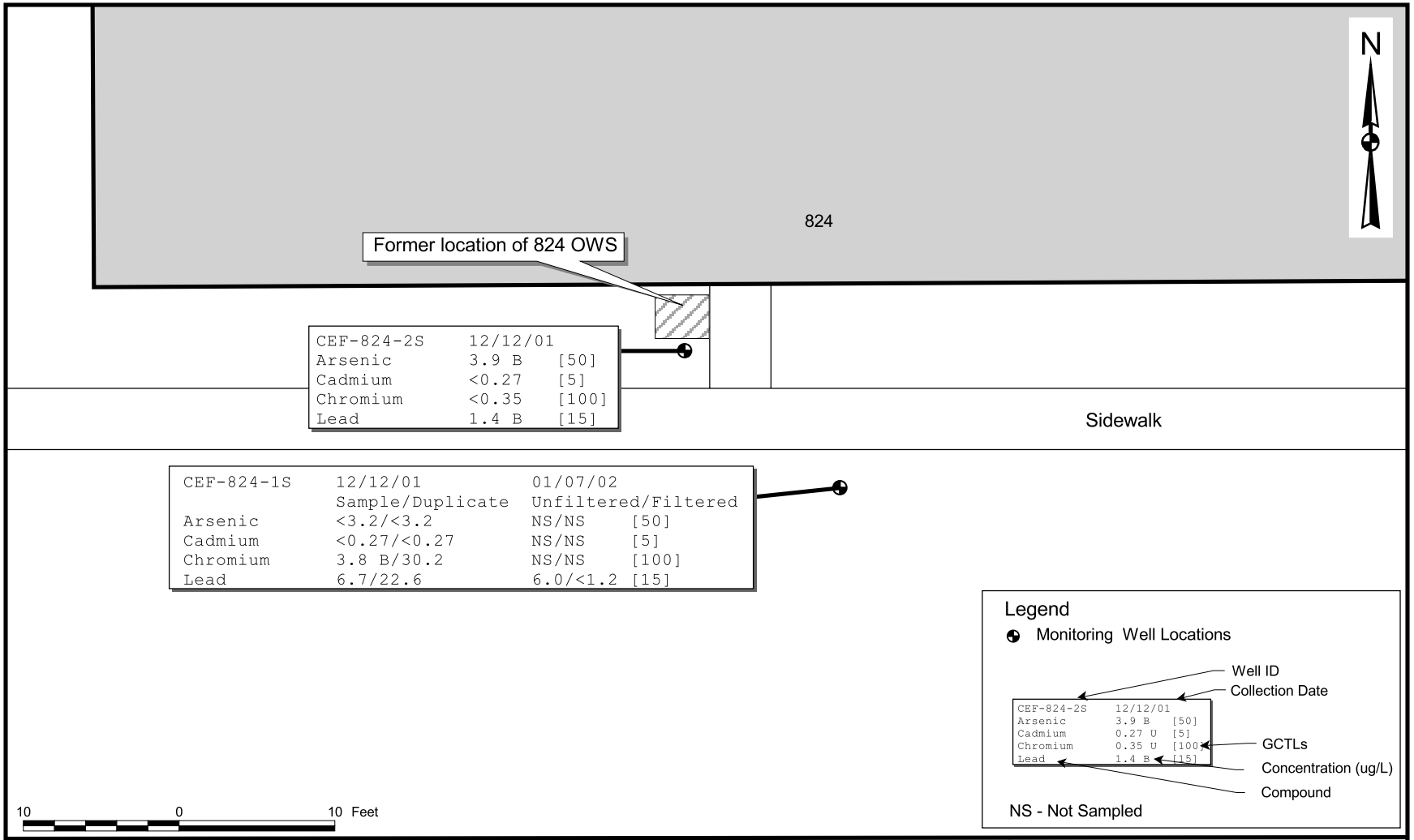
Table 3-5
Reported Metals Concentration in Groundwater Samples

Site Assessment Report
Building 824, OWS 824-OW
Naval Air Station Cecil Field
Jacksonville, Florida

Compounds	GCTLs (µg/L)	CEF-824-		
		GW-1S	[1]DU01-GW-01	GW-2S
Arsenic	50	<3.2	<3.2	3.9 B
Cadmium	5	<0.27	<0.27	<0.27
Chromium	100	3.8 B	30.2	<0.35
Lead	15	6.7	**22.6**	1.4 B

Notes:
Sample date was December 12, 2001.
[1]Duplicate of CEF-824-GW-1S
B = value greater than detection limit, but less than reporting limit.
Bold = detected above GCTLs
< = less than



DRAWN BY / DATE	MJJ / 21Sept01
CHECKED BY / DATE	
COST/SCHEDULE-AREA	
SCALE	AS NOTED

METAL CONCENTRATIONS IN MONITORING WELLS SAMPLES
SITE ASSESSMENT REPORT
BUILDING 824, OWS 824-OW
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

CONTRACT NUMBER	3996
APPROVED BY / DATE	
APPROVED BY / DATE	
DRAWING NO.	FIGURE 3-3
REV	0

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4.0 SUMMARY AND RECOMMENDATIONS

TtNUS has completed an SA on the site of a former OWS at Building 824, the former avionics shop, NASCF. This SA was completed following a CSR (HLA, 1999) and SRR (CCI, 2000), which indicated the necessity of this investigation.

The results of soil screening (both visual and OVA-FID headspace analysis) and confirmatory soil sampling indicate that no excessively contaminated soil is present on site. As indicated in Section 1.0, sediment sampling was not required for this site.

The groundwater flow direction reported to be southeasterly (HLA, 1999) was confirmed during this SA. The groundwater screening indicated that no COCs had impacted the shallow water table. For that reason, TtNUS only installed a shallow well in the source area, and no vertical extent well was considered necessary. The groundwater analytical results confirmed that no organic COCs had impacted the groundwater above GCTLs. The results for lead sampling in the groundwater sample appear to be the result of turbidity and do not appear to be representative of groundwater quality.

It should be noted that no free product was reported in the CSR or the SRR, and none was encountered during this SA. Since the site's groundwater quality appears to be free of petroleum COCs, no water well inventory or extensive aquifer testing data was collected for this SAR.

Based on results of this investigation, TtNUS recommends that OWS 824-OW be granted no further action status.

REFERENCES

CCI (CH2M HILL Constructors, Inc.), 2000. “Source Removal Report Oil/Water Separator Removal at Building 824”, Naval Air Station Cecil Field, Jacksonville, Florida. Prepared for U.S. Naval Facilities Engineering Command Southern Division, Charleston, SC. November.

HLA (Harding Lawson Associates), 1999. “Confirmatory Sampling Report, Building 824, Oil-Water Separator 824-OW”. Prepared for SOUTHNAVFACENGCOM, North Charleston, SC. April.

TtNUS (Tetra Tech NUS, Inc.), 2001. “Sampling and Analysis Plan for UST Investigations at North Fuel Farm and Other Sites”, Naval Air Station Cecil Field, Jacksonville, Florida. Prepared for SOUTHNAVFACENGCOM, North Charleston, SC. May.

APPENDIX A

CONFIRMATORY SAMPLING REPORT

CONFIRMATORY SAMPLING REPORT

BUILDING 824, OIL-WATER SEPARATOR 824-OW

BASE REALIGNMENT AND CLOSURE

UNDERGROUND STORAGE TANK AND ABOVEGROUND STORAGE TANK GRAY SITES

NAVAL AIR STATION CECIL FIELD JACKSONVILLE, FLORIDA

Unit Identification Code: N60200

Contract No.: N62467-89-D-0317/149

Prepared by:

Harding Lawson Associates
2590 Executive Center Circle, East
Tallahassee, Florida 32301

Prepared for:

Department of the Navy, Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
North Charleston, South Carolina 29418

Bryan Kizer, Code 1842, Engineer-in-Charge

April 1999

Revision 0.0

CERTIFICATION OF TECHNICAL
DATA CONFORMITY (MAY 1987)

The Contractor, Harding Lawson Associates, hereby certifies that, to the best of its knowledge and belief, the technical data delivered herewith under Contract No. N62467-89-D-0317/149 are complete and accurate and comply with all requirements of this contract.

DATE: April 6, 1999

NAME AND TITLE OF CERTIFYING OFFICIAL: Rao Angara
Task Order Manager

NAME AND TITLE OF CERTIFYING OFFICIAL: Eric A. Blomberg, P.G.
Project Technical Lead

(DFAR 252.227-7036)

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Naval Air Station Cecil Field
Jacksonville, Florida

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Naval Air Station Cecil Field
Jacksonville, Florida

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GLOSSARY

bls	below land surface
FDEP	Florida Department of Environmental Protection
NAS	Naval Air Station
OVA	organic vapor analyzer
ppm	parts per million
TRPH	total recoverable petroleum hydrocarbons

1.0 INTRODUCTION

Harding Lawson Associates, under contract to the Southern Division, Naval Facilities Engineering Command, has completed confirmatory sampling for oil-water separator 824-OW at Naval Air Station (NAS) Cecil Field in Jacksonville, Florida. This report summarizes the related field operations, results, conclusions, and recommendations.

Oil-water separator 824-OW is located on the south side of Building 824, the avionics shop (ABB Environmental Services, Inc., 1994) (Figure 1). The installation date and capacity of the oil-water separator are unknown.

2.0 FIELD INVESTIGATION

The confirmatory sampling for oil-water separator 824-OW was initiated in September 1998 and included

- the advancement of four soil borings to the water table,
- the installation of one monitoring well,
- collection and analysis of one groundwater sample and one subsurface soil sample, and
- collection and analysis of three subsurface soil samples to delineate the extent of contaminated soil above cleanup target levels.

Soil samples were collected from each boring at depth intervals of 1 foot below land surface (bls) and every 2 feet thereafter to the water table. These samples were screened for hydrocarbon vapors with an organic vapor analyzer (OVA).

One subsurface soil sample was collected on October 14, 1998, and analyzed for the used oil group parameters. Sample CEF-824-SB4 was collected from 7 feet bls at the location of soil screening boring SB4, which had the highest OVA concentration.

Three subsurface soil samples, CEF-824-SB5, CEF-824-SB6, and CEF-824-SB7, were collected on February 3, 1999, and analyzed for total recoverable petroleum hydrocarbons (TRPH) to delineate the extent of contaminated soil. The samples were collected just above the water table at 4 feet bls.

One monitoring well, CEF-824-1S, was installed downgradient of the oil-water separator during the Base Realignment and Closure investigation of Building 824. The downgradient location was selected based on the U.S. Geological Survey groundwater model for NAS Cecil Field. A groundwater sample was collected from this well and analyzed for the used oil group parameters. A general site plan indicating the location of the soil borings and monitoring wells is presented on Figure 2. The monitoring well installation detail is included in Appendix A.

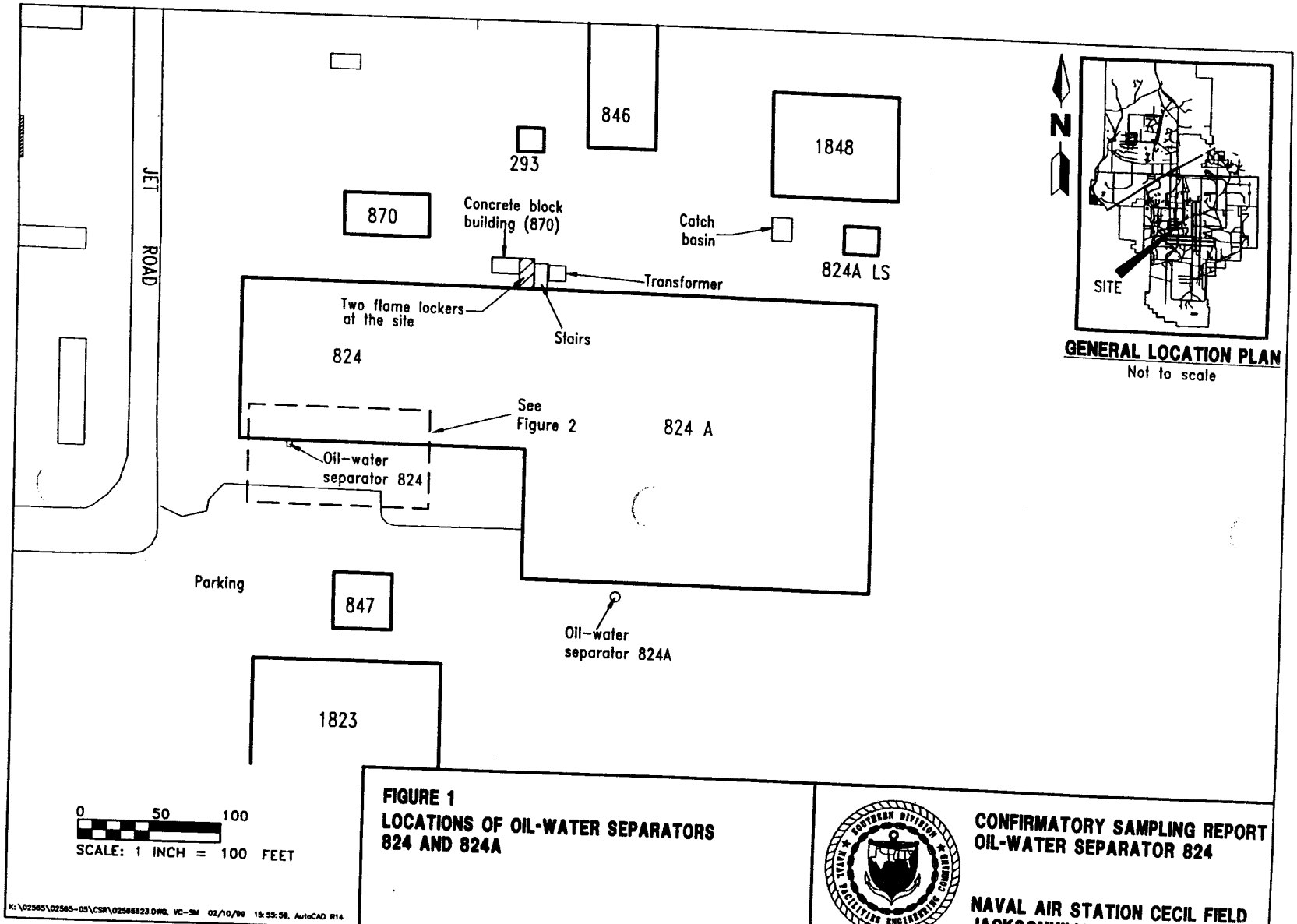


FIGURE 1
LOCATIONS OF OIL-WATER SEPARATORS 824 AND 824A

CONFIRMATORY SAMPLING REPORT
OIL-WATER SEPARATOR 824

NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

CF-824OW.CSR
PMW.04.99

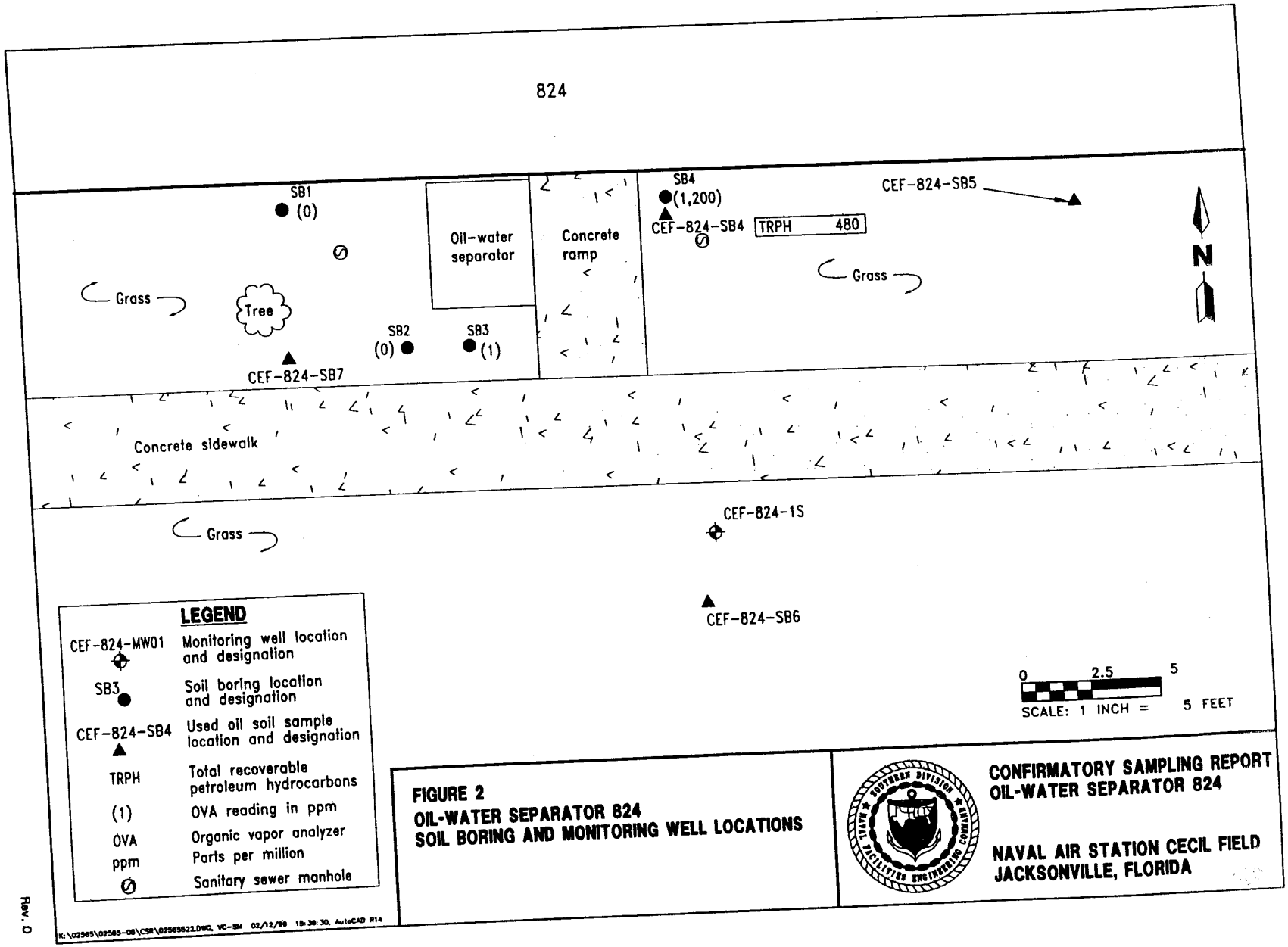


FIGURE 2
OIL-WATER SEPARATOR 824
SOIL BORING AND MONITORING WELL LOCATIONS

CONFIRMATORY SAMPLING REPORT
OIL-WATER SEPARATOR 824

NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

Rev. 0

3.0 SCREENING AND ANALYTICAL RESULTS

Excessively contaminated soil (greater than 50 parts per million [ppm] on an OVA) was detected in one of the four soil borings advanced during the confirmatory sampling. Soil boring SB4 had the highest OVA concentration (1,200 ppm) at a depth of 7 feet bls. The soil OVA data are summarized in Table 1 and presented on Figure 2.

TRPH was the only contaminant that was detected above Florida Department of Environmental Protection (FDEP) soil cleanup target levels in the subsurface soil samples collected for used oil analysis. Subsurface soil analytical results are summarized in Table 2 and presented in Appendix A. No contaminants were detected above FDEP groundwater cleanup target levels in the groundwater samples collected from monitoring well CEF-824-1S during the confirmatory sampling. A summary of the groundwater analytical results is presented in Table 3. The complete analytical data set is presented in Appendix B.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Data obtained during the confirmatory sampling of oil-water separator 824-OW indicated the presence of soil contamination at levels above cleanup target levels. The extent of TRPH soil contamination has been delineated at the site. No contaminants were detected in groundwater sample CEF-824-1S above cleanup target levels.

Based on the presence of soil contamination above cleanup target levels, it is recommended that additional action take place at the oil-water separator site.

Table 1
Soil Screening Results

Confirmatory Sampling Report
Building 824, Oil-Water Separator 824-OW
Naval Air Station Cecil Field
Jacksonville, Florida

Location	OVA Concentration (ppm)			
	Depth (feet bls)	Unfiltered	Filtered	Actual
SB1	1	0	–	0
	3	0	–	0
	5	0	–	0
	7 (wet)	2	0	0
SB2	1	0	–	0
	3	0	–	0
	5	0	–	0
	7 (moist)	0	–	0
	8 (wet)	0	–	0
SB3	1	0	0	0
	3	0	0	0
	5	1	0	1
	7	1	0	1
	7.5 (wet)	0	–	0
SB4	1	0	–	0
	3	0	–	0
	5 (moist)	2	0	2
	7 (moist)	1,200	0	1,200
	7.5 (wet)	450	0	450

Notes: Soil samples were filtered with carbon to determine the methane concentration.

OVA = organic vapor analyzer.
ppm = parts per million.
bls = below land surface.
– = filtered readings were not collected..
wet = soil sample was completely saturated when analyzed.
moist = soil sample was partially saturated when analyzed.

Table 2
Summary of Subsurface Soil Analytical Detections

Confirmatory Sampling Report
Building 824, Oil-Water Separator 824-OW
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	CEF-824-SB4 (OVA = 1,200 ppm; 7 feet bls)	CEF-824-SB5 (OVA = 0 ppm; 4 feet bls)	CEF-824-SB6 (OVA = 0 ppm; 4 feet bls)	CEF-824-SB7 (OVA = 0 ppm; 4 feet bls)	Soil Cleanup Target Levels[1]
Volatile Organic Aromatics (USEPA Method 8020) (mg/kg)					
1,1-Dichloroethane	0.0017	NC	NC	NC	NA
Ethylbenzene	0.020	NC	NC	NC	240/0.4
Tetrachloroethene	0.017	NC	NC	NC	NA
Xylenes	0.105	NC	NC	NC	290/0.3
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (mg/kg)					
Naphthalene	0.660	NC	NC	NC	1,000/1
2-Methylnaphthalene	3.1	NC	NC	NC	NA
Total Recoverable Petroleum Hydrocarbons (TRPH) (FL-PRO) (mg/kg)					
TRPH	**480**	ND	ND	ND	350/340
Inorganic Analytes (mg/kg)					
Chromium	12	NC	NC	NC	290/TCLP
Lead	12 J	NC	NC	NC	500/TCLP
Mercury	0.019	NC	NC	NC	3.7/TCLP

[1] Chapter 62-770, Florida Administrative Code: Direct Exposure 1/Leachability, Table V.

Notes: Bold indicates exceedance of soil cleanup target level.

OVA = organic vapor analyzer.
ppm = parts per million.
bls = below land surface.
USEPA = U.S. Environmental Protection Agency.
mg/kg = milligrams per kilogram.
NC = not collected.
NA = not applicable.
FL-PRO = Florida-Petroleum Residual Organics.
ND = not detected.
TCLP = toxicity characteristic leaching procedure.

Table 3
Summary of Groundwater Analytical Results

Confirmatory Sampling Report
Building 824, Oil-Water Separator 824-OW
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	CEF-824-1S	Groundwater Cleanup Target Levels[1]
Volatile Organic Aromatics (USEPA Method 601/602) (µg/ℓ)		
Not detected		
Polynuclear Aromatic Hydrocarbons (USEPA Method 625) (µg/ℓ)		
Not detected		
Total Recoverable Petroleum Hydrocarbons (FL-PRO) (mg/ℓ)		
Not detected		
Inorganic Analytes (µg/ℓ)		
Barium	24.5	2,000
Chromium	8.6 J	100
Lead	4.9	15

[1] Chapter 62-770, Florida Administrative Code.

Notes: USEPA = U.S. Environmental Protection Agency.
µg/ℓ = micrograms per liter.
FL-PRO = Florida Petroleum Residual Organics.
mg/ℓ = milligrams per liter.
J = estimated value.

REFERENCE

ABB Environmental Services, Inc. 1994. *Base Realignment and Closure Environmental Baseline Survey Report, Naval Air Station Cecil Field, Jacksonville, Florida.* Prepared for Southern Division, Naval Facilities Engineering Command, North Charleston, South Carolina (November).

APPENDIX A

MONITORING WELL INSTALLATION DETAIL

PROJECT: NAS Cecil Field BRAC Group I & II		LOG of WELL: CEF-0824-01	BORING NO. CEF-0824-01
CLIENT: SOUTHDIVNAVFACENGCOM	PROJECT NO: 8520.81	DATE STARTED: 04-12-95	COMPLETED: 04-12-95
DRILLING SUBCONTRACTOR: Groundwater Protection Inc.		SITE: Building 824	MONITOR INST. Microtip-PID
METHOD: Mobil Drill B-52 w/8.25"HSA	WELL CASE DIAM.: 2"	SCREEN INT.: 4.5-14.5 FT.	SCREEN SLOT SIZE: 0.010"
TOC ELEVATION: 78.70 FT. NGVD	GROUND ELEV.: 78.8 FT. NGVD	NORTHING: 2143715.78	EASTING: 377847.99
WELL DEVELOP. DATE: 04-12-95	TOTAL DEPTH: 15 FT. BLS	DEPTH TO ▽ 7 FT. BLS	LOGGED BY: R. Holloway

DEPTH FT.	SAMPLE INTERVAL	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
0			0ppm			SM	posthole	
			0ppm				posthole	
			0ppm				2-2-1-1	
5		80%	0ppm				1-1-3-2	
		50%	0ppm	Silty Sand, brown to light tan to light grey, fine-grained, wet below 7' bls.			4-4-4-4	
		80%	0ppm				2-3-3-3	
10		90%	0ppm				3-3-3-5	
		90%	0ppm				5-6-7-7	
15		90%	0ppm	End of boring: 15'bls.				
20								

ABB ENVIRONMENTAL SERVICES, INC.

APPENDIX B

ANALYTICAL DATA

NAS CECIL FIELD -- OIL/WATER SEPARATOR AT FACILITY
SUBSURFACE SOIL -- VOLATILES -- REPORT REQUEST NO.

Lab Sample Number:	JR36663
Site	UST GREY
Locator	CEF-824-SB4
Collect Date:	14-OCT-98

	VALUE	QUAL	UNITS	DL
BRAC VOLATILES				
1,1,1-Trichloroethane	1	U	ug/kg	1
1,1,2,2-Tetrachloroethane	1	U	ug/kg	1
1,1,2-Trichloroethane	1	U	ug/kg	1
1,1-Dichloroethane	1.7		ug/kg	1
1,1-Dichloroethene	1	U	ug/kg	1
1,2-Dichloroethane	1	U	ug/kg	1
1,2-Dichloropropane	1	U	ug/kg	1
Benzene	1	U	ug/kg	1
Bromodichloromethane	1	U	ug/kg	1
Bromoform	1	U	ug/kg	1
Bromomethane	1	U	ug/kg	1
Carbon tetrachloride	1	U	ug/kg	1
Chlorobenzene	1	U	ug/kg	1
Chloroethane	1	U	ug/kg	1
Chloroform	1	U	ug/kg	1
Chloromethane	1	U	ug/kg	1
Dibromochloromethane	20		ug/kg	1
Ethyl benzene	30	U	ug/kg	30
Methylene chloride	17		ug/kg	1
Tetrachloroethene	1	U	ug/kg	1
Toluene	1	U	ug/kg	1
Trichloroethene	1	U	ug/kg	1
Vinyl chloride	1	U	ug/kg	1
cis-1,3-Dichloropropene	69		ug/kg	1
m,p-Xylene	36		ug/kg	1
o-Xylene	1	U	ug/kg	1
trans-1,2-Dichloroethene	1	U	ug/kg	1
trans-1,3-Dichloropropene				

U = NOT DETECTED J = ESTIMATED VALUE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
R = RESULT IS REJECTED AND UNUSABLE

NAS CECIL FIELD -- OIL/WATER SEPARATOR AT FACILITY 824
SUBSURFACE SOIL -- SEMIVOLATILES -- REPORT REQUEST NO. 10911

Lab Sample Number:	JR36663			
Site	UST GREY			
Locator	CEF-824-SB4			
Collect Date:	14-OCT-98			
	VALUE	QUAL	UNITS	DL
BRAC SEMIVOLATILES				
Phenol	390	U	ug/kg	390
bis(2-Chloroethyl)ether	390	U	ug/kg	390
1,3-Dichlorobenzene	390	U	ug/kg	390
1,4-Dichlorobenzene	390	U	ug/kg	390
1,2-Dichlorobenzene	390	U	ug/kg	390
N-Nitroso-di-n-propylamine	390	U	ug/kg	390
Nitrobenzene	390	U	ug/kg	390
Isophorone	390	U	ug/kg	390
2-Methylphenol	390	U	ug/kg	390
2-Nitrophenol	390	U	ug/kg	390
2,4-Dimethylphenol	390	U	ug/kg	390
bis(2-Chloroethoxy) methane	390	U	ug/kg	390
2,4-Dichlorophenol	390	U	ug/kg	390
1,2,4-Trichlorobenzene	390	U	ug/kg	390
Naphthalene	390	U	ug/kg	390
Hexachlorobutadiene	660		ug/kg	390
Hexachlorocyclopentadiene	390	U	ug/kg	390
Hexachloroethane	390	U	ug/kg	390
4-Chloro-3-methylphenol	390	U	ug/kg	390
2-Methylnaphthalene	390	U	ug/kg	390
2,4,6-Trichlorophenol	3100		ug/kg	390
2-Chloronaphthalene	390	U	ug/kg	390
Dimethylphthalate	390	U	ug/kg	390
Acenaphthylene	390	U	ug/kg	390
2,4-Dinitrophenol	390	U	ug/kg	390
3- & 4-Methylphenol (2)	2000	U	ug/kg	2000
4-Nitrophenol	390	U	ug/kg	390
2,4-Dinitrotoluene	390	U	ug/kg	390
Diethylphthalate	390	U	ug/kg	390
4-Chlorophenyl-phenylether	390	U	ug/kg	390
Fluorene	390	U	ug/kg	390
4,6-Dinitro-2-methylphenol	390	U	ug/kg	390
4-Bromophenyl-phenylether	1200	U	ug/kg	1200
Hexachlorobenzene	390	U	ug/kg	390
Pentachlorophenol	390	U	ug/kg	390
Phenanthrene	390	U	ug/kg	390
Pyrene	390	U	ug/kg	390
Anthracene	390	U	ug/kg	390
Acenaphthene	390	U	ug/kg	390
Di-n-butylphthalate	390	U	ug/kg	390
Fluoranthene	390	U	ug/kg	390
3,3-Dichlorobenzidine	790	U	ug/kg	790
Benzo (a) anthracene	390	U	ug/kg	390
Carbazole	390	U	ug/kg	390
Chrysene	390	U	ug/kg	390
bis(2-Ethylhexyl) phthalate	390	U	ug/kg	390
Di-n-octylphthalate	390	U	ug/kg	390
Benzo (b) fluoranthene	390	U	ug/kg	390
Benzo (k) fluoranthene	390	U	ug/kg	390
Benzo (a) pyrene	390	U	ug/kg	390

	Lab Sample Number:	JR36663			
	Site	UST GREY			
	Locator	CEF-824-SB4			
	Collect Date:	14-OCT-98			
	VALUE	QUAL	UNITS	DL	
Indeno (1,2,3-cd) pyrene	390	U	ug/kg	390	
Dibenzo (a,h) anthracene	390	U	ug/kg	390	
Benzo (g,h,i) perylene	390	U	ug/kg	390	
2,6-Dinitrotoluene	390	U	ug/kg	390	
4-Chloroaniline	390	U	ug/kg	390	
2-Nitroaniline	390	U	ug/kg	390	
3-Nitroaniline	390	U	ug/kg	390	
4-Nitroaniline	390	U	ug/kg	390	

U = NOT DETECTED J = ESTIMATED VALUE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
R = RESULT IS REJECTED AND UNUSABLE

NAS CECIL FIELD -- OIL/WATER SEPARATOR AT FACILITY 824
SUBSURFACE SOIL -- INORGANICS -- REPORT REQUEST NO. 10910

Lab Sample Number:	JR36663			
Site	UST GREY			
Locator	CEF-824-SB4			
Collect Date:	14-OCT-98			
	VALUE	QUAL	UNITS	DL
RCRA 8				
Arsenic	.6	U	mg/kg	.6
Barium	24	U	mg/kg	24
Cadmium	1	U	mg/kg	1
Chromium	12		mg/kg	1
Lead	12	J	mg/kg	8
Mercury	.019		mg/kg	.01
Selenium	2	U	mg/kg	2
Silver	2	U	mg/kg	2

U = NOT DETECTED J = ESTIMATED VALUE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
R = RESULT IS REJECTED AND UNUSABLE

NAS CECIL FIELD
SUBSURFACE SOIL

SEPARATOR AT FACILITY 824
REPORT REQUEST NO. 10908

	Lab Sample Number:	JR36663				JR52911			JR52912			JR52913		
	Site	UST GREY				UST GREY			UST GREY			UST GREY		
	Locator	CEF-824-SB4				CEF-824-SB5			CEF-824-SB6			CEF-824-SB7		
	Collect Date:	14-OCT-98				03-FEB-99			03-FEB-99			03-FEB-99		
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	
FLA PRO														
TPH C8-C40		480		mg/kg	78	71		mg/kg	8.4	7.6	U	mg/kg	7.6	7.7 U mg/kg 7.7

U = NOT DETECTED J = ESTIMATED VALUE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
R = RESULT IS REJECTED AND UNUSABLE

NAS CECIL FIELD -- OIL/WATER SEPARATOR 8240W
GROUNDWATER -- ANALYTICAL DATA -- REPORT REQUEST NO. 10700

	Lab Sample Number:	Site	Locator	Collect Date:			
	713782	CECILBRAC1	09G00101	05-MAY-95			
	VALUE	QUAL	UNITS	DL			
beta-BHC	.05	U	ug/l	.05			
delta-BHC	.05	U	ug/l	.05			
gamma-BHC (Lindane)	.05	U	ug/l	.05			
Heptachlor	.05	U	ug/l	.05			
Aldrin	.05	U	ug/l	.05			
Heptachlor epoxide	.0059	J	ug/l	.05			
Endosulfan I	.05	U	ug/l	.05			
Dieldrin	.0034	J	ug/l	.1			
4,4-DDE	.1	U	ug/l	.1			
Endrin	.1	U	ug/l	.1			
Endosulfan II	.1	U	ug/l	.1			
4,4-DDD	.1	U	ug/l	.1			
Endosulfan sulfate	.1	U	ug/l	.1			
4,4-DDT	.1	U	ug/l	.1			
Methoxychlor	.5	U	ug/l	.5			
Endrin ketone	.1	U	ug/l	.1			
Endrin aldehyde	.1	U	ug/l	.1			
alpha-Chlordane	.05	U	ug/l	.05			
gamma-Chlordane	.0016	J	ug/l	.05			
Toxaphene	5	U	ug/l	5			
Aroclor-1016	1	U	ug/l	1			
Aroclor-1221	2	U	ug/l	2			
Aroclor-1232	1	U	ug/l	1			
Aroclor-1242	1	U	ug/l	1			
Aroclor-1248	1	U	ug/l	1			
Aroclor-1254	1	U	ug/l	1			
Aroclor-1260	1	U	ug/l	1			
CLP METALS AND CYANIDE							
Aluminum	10200		ug/l	200			
Antimony	1.9	U	ug/l	1.9			
Arsenic	3.2	U	ug/l	3.2			
Barium	24.5	J	ug/l	200			
Beryllium	.2	U	ug/l	.2			
Cadmium	.3	U	ug/l	.3			
Calcium	76800		ug/l	5000			
Chromium	8.6	J	ug/l	10			
Cobalt	.6	U	ug/l	.6			
Copper	1.9	J	ug/l	25			
Iron	5850		ug/l	100			
Lead	4.9		ug/l	3			
Magnesium	5130		ug/l	5000			
Manganese	72.4		ug/l	15			
Mercury	.2	U	ug/l	.2			
Nickel	3.2	J	ug/l	40			
Potassium	712	J	ug/l	5000			
Selenium	4.4	U	ug/l	4.4			
Silver	.5	U	ug/l	.5			
Sodium	3440	J	ug/l	5000			
Thallium	4.5	U	ug/l	4.5			
Vanadium	8.9	J	ug/l	50			
Zinc	13.4	UJ	ug/l	13.4			

Lab Sample Number:	713782			
Site	CECILBRAC1			
Locator	09G00101			
Collect Date:	05-MAY-95			
	VALUE	QUAL	UNITS	DL
Cyanide	10	U	ug/l	10

U = NOT DETECTED J = ESTIMATED VALUE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
R = RESULT IS REJECTED AND UNUSABLE

NAS CECIL FIELD -- OIL/WATER SEPARATOR AT FACILITY 824
GROUNDWATER -- TPH -- REPORT REQUEST NO. 10909

Lab Sample Number:	JR505313			
Site	UST GREY			
Locator	CEF-824-1S			
Collect Date:	20-JAN-99			
	VALUE	QUAL	UNITS	DL
FLA PRO				
TPH C8-C40	.2	U	mg/l	.2

U = NOT DETECTED J = ESTIMATED VALUE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
R = RESULT IS REJECTED AND UNUSABLE

APPENDIX B

FDEP TECHNICAL REVIEW LETTER
RE: CSR FOR OWS 824-OW

Department of Environmental Protection

Jeb Bush
Governor

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

David B. Struhs
Secretary

July 9, 1999

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Commanding Officer
Mr. Bryan Kizer, Code 1842
SOUTHNAVFACENGCOM
Post Office Box 190010
North Charleston, SC 29419-0068

RE: Confirmation Sampling Report, Building 824, Oil Water Separator 824-OW, Naval Air Station Cecil Field, Florida.

Dear Mr. Kizer:

I have completed the technical review of the Confirmation Sampling Report, dated April 1999 (received April 28, 1999) submitted for the above-referenced building. FDEP concurs with the recommendation that a Source Removal is warranted under Chapters 62-770, Florida Administrative Code.

If you have any concerns regarding this letter, please contact me at (850) 921-9991.

Sincerely,

Michael J. Deliz

Michael J. Deliz, P.G.
Remedial Project Manager

9-JULY-99
Date

MICHAEL J. DELIZ LICENSE NO. 1481 STATE OF FLORIDA PROFESSIONAL GEOLOGIST

CC: Debbie Vaughn-Wright, USEPA - Atlanta
John Flowe, City of Jacksonville
Scott Glass, SOUTHNAVFACENGCOM
Dave Kruzicki, NAS Cecil Field
Eric Blomberg, HLA

TJB JJC JJC ESN ESN
by ESN

"Protect, Conserve and Manage Florida's Environment and Natural Resources"

Printed on recycled paper.

APPENDIX C

SOURCE REMOVAL REPORT

Source Removal Report
Oil/Water Separator Removal at Building 824

Naval Air Station Cecil Field
Jacksonville, Florida

Contract No. N62467-98-D-0995
Contract Task Order No. 002

Submitted to:

U.S. Naval Facilities
Engineering Command
Southern Division

Prepared by:

CH2MHILL
Constructors, Inc.

115 Perimeter Center Place, N.E.
Suite 700
Atlanta, GA 30346

November 2000

Source Removal Report Requirements – *Checklist*

Per FAC 62-770.300(3) the Source Removal Report shall contain the following information in detail, as applicable:

Site Name: Building 824 OWS **Date(s) of Source Removal: 09/23 – 10/07/99**

Required Information	Response
1. Volume of product that was discharged, if known	*Unknown*
2. Volume of free product and the volume of groundwater recovered	*None*
3. Volume of contaminated soil excavated and treated or properly disposed	*28.67 tons of soil excavated and disposed of offsite, manifest #s 6110001 and 6110115 (Appendix C "Certificate of Recycle is for manifest # 6110001 – 6110149)*
4. Disposal or recycling methods for free product and contaminated soil	*Contaminated soils recycled at Soil Safe Technologies, Garden City, Georgia*
5. Disposal methods for other contaminated media	*No other contaminated media*
6. Scaled site map (including a graphical representation of the scale used) showing location(s) of free product recovered and the area of soil removed or treated and the approximate locations of all samples taken	*See Figure 2-1*
7. Table summarizing free product thickness in each monitoring well or piezometer and the dates the measurements were made	*Monitoring wells were not measured for free product prior to the excavation.*
8. Type of field screening instrument or method used	*OVA/FID*
9. Dimensions of the excavation(s) and location(s), integrity, capacities and last known contents of storage tanks, integral piping, dispensers, or appurtenances removed	*Excavation area: 30 feet long by 3 feet wide by 8 feet deep (see Figure 2-1)* *One 500-gallon OWS, used oil and water (see Figure 1-1)*
10. Dimensions of the excavation(s) and location(s) and capacities of replacement underground storage tanks	*Not Applicable. No replacement OWS installed. Per direction of Navy.*
11. Table indicating the identification, depth and field soil screening results of each sample collected	*See Table 2-2*
12. Depth to groundwater at the time of each excavation, measurement locations and method used to obtain that information	*Depth to groundwater approximately 9 feet bls. Noted by visual observation (See Section 2.2.1)*
13. Type of petroleum or petroleum products discharged	*Used Oil*
14. Documentation confirming the proper treatment or proper disposal of the free product or contaminated soil, including disposal manifests for free product, a copy of the treatment or acceptance of the contaminated soil and results of analyses, if performed	*See Table 2-1 and Appendix C*
15. For land farmed soil, a copy of the pre-treatment and post-treatment analytical results	*Not Applicable. Soil disposed of offsite*

1.0 Introduction

CH2M HILL Constructors, Inc. (CCI) was contracted by the Southern Division Naval Facilities Engineering Command (Southern Division, NAVFAC) to perform the removal of an oil/water separator (OWS), excavate petroleum-contaminated soil and prepare a Source Removal Report at Building 824 at Naval Air Station (NAS) Cecil Field in Jacksonville, Florida. The source removal was conducted in accordance with the Florida Department of Environmental Protection (FDEP) Petroleum Contamination Site Cleanup rule 62-770, Florida Administrative Code (FAC).

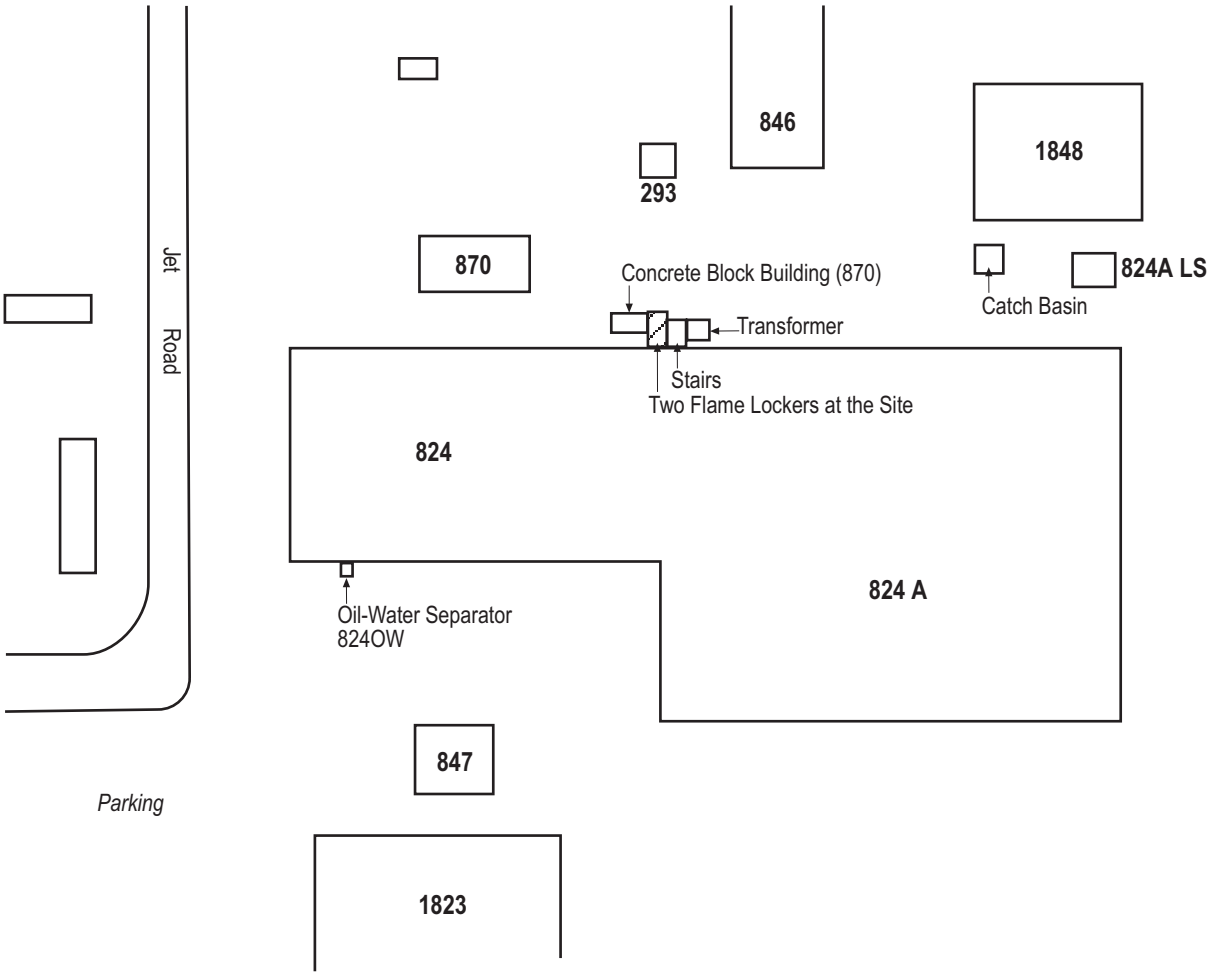
The scope of services for excavation of petroleum-contaminated soils at Building 824 is described in detail in the NAS Cecil Field Basewide Work Plan, Revision 01 (CCI, 1998a) and the Work Plan Addendum No. 1, Revision 01 (CCI, 1998b). This work was authorized under the Remedial Action Contract No. N62467-98-D-0995, Contract Task Order (CTO) No. 0002.

1.1 Site Background

The site contained one 500-gallon OWS on the south side of the avionics shop located in Building 824. A confirmatory sampling event (CSE) was conducted by ABB Environmental Services in September 1998. Four subsurface soil samples were collected and analyzed by an organic vapor analyzer (OVA), one soil sample was analyzed for Kerosene Analytical Group (KAG) parameters, one monitoring well was installed, and one groundwater sample was collected and analyzed for KAG parameters. The results of the CSE were summarized in a Confirmatory Sampling Report, which documented soil contamination in the subsurface around the OWS with an OVA headspace concentration of 1,200 parts per million (ppm), and a TRPH concentration of 480 micrograms per liter (mg/L). The groundwater sample from monitoring well CEF-824-1S was below the regulatory standards specified in FAC 62-770, for all constituents. A site plan showing the site conditions prior to the Source Removal is presented in Figure 1-1.

1.2 Project Objectives

The primary objective was to remove the source by removing the OWS and to remove petroleum-contaminated soils that exceed the Soil Cleanup Target Levels (SCTLs) outlined in FAC 62-770 and 62-777. Visual inspection of soils and use of field OVA headspace analysis were used as a screening tool in evaluating whether the soil samples exceed the SCTLs. Soils exhibiting staining/discoloration or an OVA concentration of greater than 50 parts per million (ppm) were considered to be excessively contaminated and were expected to contain constituents exceeding the SCTLs. Soils were excavated until no visible indication of contamination and OVA concentrations of less than 50 ppm are achieved, then confirmatory sampling for Used Oil Group Parameters was performed. The Used Oil Group analyses for soils include volatile organic compounds (VOCs) by Environmental Protection Agency (EPA) Method 8260, polynuclear aromatic hydrocarbons (PAHs) and semi-volatile organic aromatics (SVOAs) by EPA Method 8270, Resource Conservation and Recovery Act (RCRA) metals by EPA Methods 6010, and 7471, and total recoverable petroleum hydrocarbons (TRPH) by the Florida Petroleum Residual Organic (FL-PRO) method.



N 1" = 100'

Figure 1-1
Pre-Excavation Site Conditions
Building 824 OWS
NAS Cecil Field, Jacksonville, Florida

CH2MHILL

A022000004ATL\lk 009.FH8

2.0 Source Removal Activities

A source removal was conducted at Building 824 during the period of September 23 to October 7, 1999. A total of 28.67 tons of petroleum-contaminated soil was excavated from around the former location of the OWS and disposed offsite on October 7, 1999. No free product was found during the excavation. Photographs showing the site during and after the source removal are presented in Appendix A.

2.1 Site Preparation

In preparation for excavation, all utilities were marked out by the base maintenance contractor and Sunshine State One Call of Florida. No active utilities were encountered during the OWS removal or associated soil excavation.

2.2 OWS Removal

One 500-gallon OWS was removed on September 23, 1999. The piping entering and exiting the OWS was cut and capped at the boundary of the excavation. The OWS was decontaminated and disposed offsite.

2.3 Soil Excavation and Disposal

Soils were excavated to the east of the OWS based on the limits of the excessively contaminated soil that was delineated during the excavation. The delineation was performed by visual inspection and by screening the walls of the excavation using headspace analyses (summarized in Table 2-2 in Section 2.4.1) to determine if additional soil should be excavated. No contaminated soils were noted on the western or southern walls of the former OWS pit.

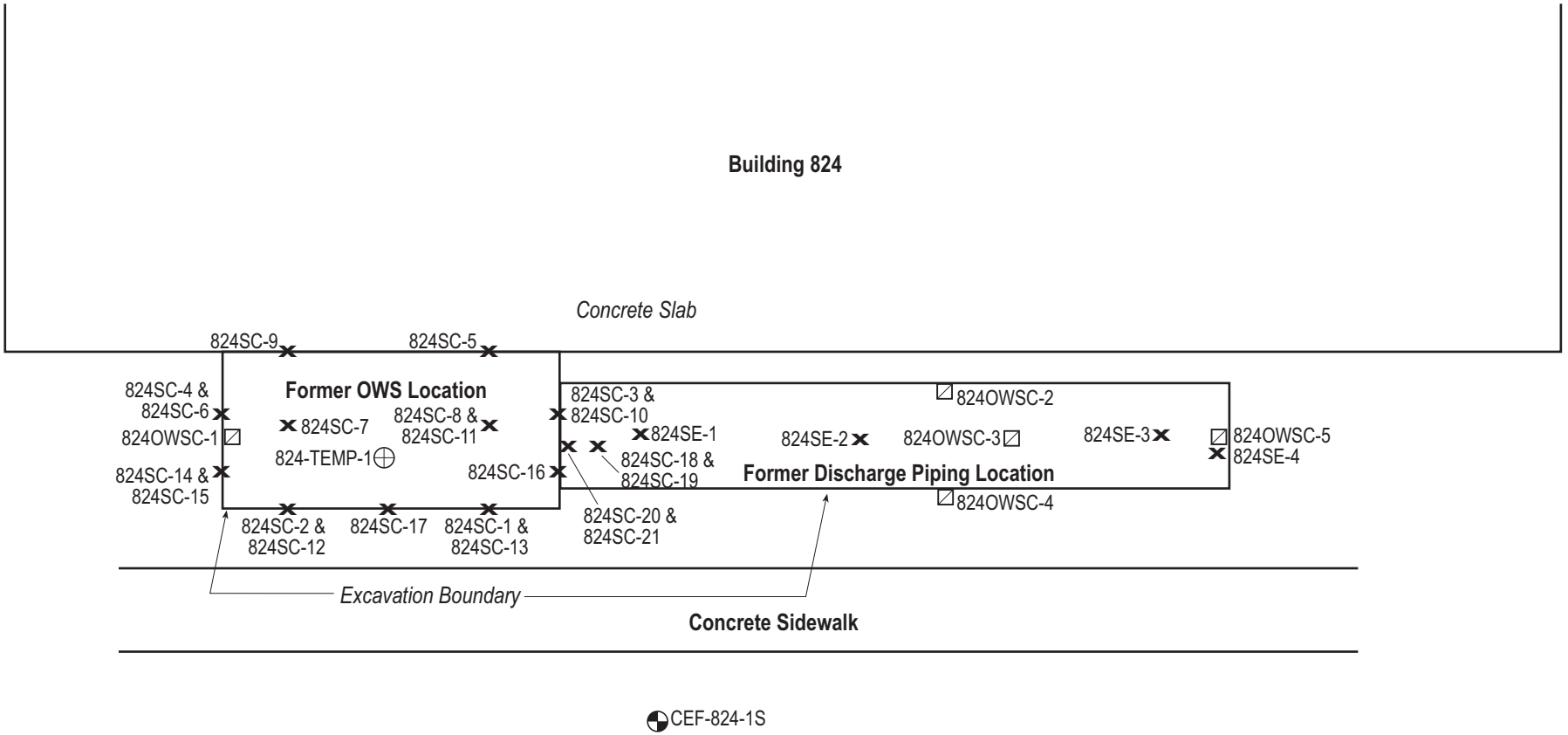
2.3.1 Soil Excavation

The soil was excavated to the water table, to a depth of approximately 8 feet (average) below land surface (bls). The depth to groundwater was determined by visual inspection during the excavation.

The soil was excavated using a backhoe and was stockpiled on visqueen prior to being loaded into trucks. The final limits of the excavation area were approximately 30 feet long, 3 feet wide, and 8 feet deep, corresponding to approximately 27 cubic yards. The excavation areas are shown on Figure 2-1.

2.3.2 Soil Transportation and Disposal

The petroleum-contaminated soil was transported offsite by truck to the Soil Safe Technologies soil thermal treatment facility in Garden City, Georgia. A summary of the manifests is presented in Table 2-1 and copies of the manifests are presented in Appendix B, and a copy of the Certificate of Recycle that includes these manifests is presented in Appendix C.



LEGEND

824OWSC-1 ⊠ Confirmatory Laboratory Soil Sample Location and Designation

824SC-16 ✕ OVA Screening Location and Designation

CEF-824-1S ◓ Monitoring Well Location and Designation

824-TEMP-1 ⊕ Temporary Well Location and Designation

N Scale: 1"= 5'

Figure 2-1
Soil Excavation Area
Building 824 OWS
NAS Cecil Field, Jacksonville, Florida

CH2MHILL

A022000004ATL\lk 010.FH8

TABLE 2-1
Summary of Manifests for Soil Disposal

Date	Truck #	Company	Manifest #	Weight (pounds)	Tare (pounds)	Net (pounds)	Net (tons)
10/07/99	775	Pritchett	6110114	64,080	24,900	39,180	19.59
10/07/99	115	Pritchett	6110115	44,960	26,800	18,160	9.08

2.3.3 Backfilling and Site Restoration

The material used to backfill the excavation was clean fill brought in from a borrow pit operated by Marietta Sand Corporation. A copy of the letter certifying that the material was clean fill is presented in Appendix D.

Once the excavation area was backfilled, the site was graded and seeded with a mixture of rye and bahia grass.

2.4 Sampling and Analysis

Soil samples were collected from the walls of the excavation at a depth of 9 feet bls and from the floor. The sampling locations are shown in Figure 2-1.

2.4.1 Headspace Analysis

Soil samples collected from the excavation were screened using an OVA equipped with a flame ionization detector (FID). See Section 1.2 for screening methodology. A methane filter was used to subtract methane. The lateral excavation limits were expanded until net headspace concentrations were below 50 ppm or until no soil visual soil staining was noted. The results of the headspace analyses are shown in Table 2-2.

TABLE 2-2
Summary of Headspace Screening Results

Sample Location (see Figure 2-1)	Depth (feet bls)	FID Unfiltered (ppm)	FID with Filter (ppm)	FID Net (ppm)
824SC-1 (wall)	2	0	---	0
824SC-2 (wall)	2	0	---	0
824SC-3 (wall)	2	0	---	0
824SC-4 (wall)	2	0	---	0
824SC-5 (wall)	5	20	3.5	16.5
824SC-6 (wall)	5	1	---	1
824SC-7 (wall)	6	100	1	99
824SC-8 (wall)	6	14	2.5	11.5

TABLE 2-2
Summary of Headspace Screening Results

Sample Location (see Figure 2-1)	Depth (feet bls)	FID Unfiltered (ppm)	FID with Filter (ppm)	FID Net (ppm)
824SC-9 (wall)	5	8	---	8
824SC-10 (wall)	5	3.5	---	3.5
824SC-11 (wall)	6	2	---	2
824SC-12 (wall)	5	8	---	8
824SC-13 (wall)	5	10	---	10
824SC-14 (wall)	7	4.5	---	4.5
824SC-15 (wall)	7	8	---	8
824SC-16 (wall)	7	3	---	3
824SC-17 (wall)	7	4	---	4
824SC-18 (wall)	3.5	0	---	0
824SC-19 (wall)	5.5	300	50	250
824SC-20 (wall)	5.5	800	85	715
824SC-21 (wall)	7.5	650	40	610
824SE-1 (wall)	8.5	25	10	15
824SE-2 (wall)	8.5	190	6	184
824SE-3 (bottom)	9	425	75	350
824SE-4 (wall)	5.5	1	---	1
824SE-4 (wall)	7	35	---	35
824SE-4 (wall)	9	8	---	8

2.4.2 Laboratory Analyses of Soil Samples for Used Oil Parameters

Five soil samples were collected from the excavation limit for Used Oil Parameters analyses. The sample locations are shown on Figure 2-1. The results were below SCTLs outlined in FAC 62-770 and 62-777 for all Used Oil constituents. The analytical results are summarized in Table 2-3. The analytical laboratory report is provided in Appendix E.

TABLE 2-3
Summary of Used Oil Parameters Analyses for Soil

Sample Location	West Wall	North Wall	Bottom	South Wall	East Wall	SCTL (Leachability)
Depth (feet)	4	4	8	4	4	--
Sample ID	824OWSC-1	824OWSC-2	824OWSC-3	824OWSC-4	824OWSC-5	--
Date	9/30/99	9/30/99	9/30/99	9/30/99	9/30/99	--
TRPH	70	33	27	ND	ND	340
Benzo (b) Fluoranthene	0.510	ND	ND	ND	ND	10
Benzo (ghi) Perylene	0.420	ND	ND	ND	ND	32000
Di N Butylphthalate	ND	0.360	ND	ND	ND	47
Ethylbenzene	ND	ND	0.016	ND	ND	0.6
Xylenes	ND	ND	0.008	ND	ND	0.2
Arsenic	ND	2.2	ND	ND	ND	29
Barium	3.2	8.7	7.2	5.2	19	1600
Chromium	3.4	17	14	8.3	6.9	38
Mercury	ND	0.08	0.02	0.02	ND	2.1
Lead	6.6	6.2	5.1	4.5	5.4	NA

Limit All values reported in mg/L
ND – Not Detected Above Reportable

2.4.3 Temporary Well Installation and Laboratory Analysis of Groundwater Samples for Used Oil Parameters

A temporary well was installed in the center of the excavation on October 19, 1999, in accordance with FAC 62-761. The well was screened from 5 to 15 feet bls. A sand pack was installed around the screened interval, and the well was developed until clear. The well location is shown in Figure 2-1.

One groundwater sample was collected from the temporary well for Used Oil Parameters analyses. The sample concentrations were below FAC 62-777 Natural Attenuation Default Source Concentrations (NADSC) for all KAG parameters, except 4-methylphenol. The sample concentrations were above the FAC 62-777 Groundwater Criteria for naphthalene, 2-methynaphthalene, 4-methylphenol, xylenes, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene. The analytical results are summarized in Table 2-4. The analytical laboratory report is provided in Appendix F.

TABLE 2-4
Summary of Used Oil Parameters Analyses for Groundwater

Sample Location	824-Temp-1	Groundwater Criteria	Natural Attenuation Default Source Concentrations
Screened Interval (feet)	5 – 15	--	--
Date	10/24/99	--	--
TRPH	--	5000	50000
Benzoic Acid	--	28000	280000
Naphthalene	--	20	200
2-Methylnaphthalene	--	20	200
4-Methylphenol	--	4	40
Ethylbenzene	--	30	300
Xylenes	--	20	200
Isopropyl Benzene	--	NA	NA
P-Isopropyltoluene	--	NA	NA
N-Propyl Benzene	--	NA	NA
SEC Butyl Benzene	--	NA	NA
Trichlorofluoromethane	--	2100	21000
1,2,4-Trimethylbenzene	--	10	100
1,3,5-Trimethylbenzene	--	10	100
Barium	--	2000	20000
Lead	--	15	150

All valves reported in micrograms per liter (µg/L)

3.0 Conclusions

One 500-gallon OWS was removed and a total of 28.67 tons of petroleum-contaminated soils at Building 824 that were identified during the Source Removal have been removed and properly disposed of offsite. The soil was excavated to the water table, to a depth of approximately 8 feet bls. The horizontal limits of the excavation exhibited no net headspace results (OVA with FID) of greater than 50 ppm. Five soil samples collected from the limits of the excavation were analyzed for Used Oil Parameters and were below SCTLs outlined in FAC 62-770 and 62-777, confirming that the horizontal and vertical limits of the soil contamination were reached. One groundwater sample that was collected for Used Oil Parameters analyses from a temporary well installed in the center of the excavation was below NADSC for all KAG parameters, except 4-methylphenol. The sample concentrations were above the Groundwater Criteria for naphthalene, 2-methynaphthalene, 4-methylphenol, xylenes, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene. No free product was found during the excavation.

It is recommended that monitoring for natural attenuation, per FAC 62-770.690, be considered for this site. The following conditions are currently present at the site:

- Excessively contaminated soil has been removed down to the water table.
- Contaminant concentrations above the Groundwater Criteria (GC) per FAC 62-770 were detected in the confirmatory groundwater sample collected beneath the excavation area;
- Only 4-methylphenol (65 micrograms per liter [µg/L]): also exceeded the NADSC 40 µg/L.

APPENDIX D

FDEP TECHNICAL REVIEW LETTER
RE: SRR FOR OWS 824-OW

Department of Environmental Protection

Jeb Bush
Governor

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

David B. Struhs
Secretary

April 4, 2001

Mr. Nick Ugolini
Code 1843 (UST RPM)
Southern Division
Naval Facilities Engineering Command
Post Office Box 190010
North Charleston, South Carolina 29419-9010

RE: Source Removal Report, Oil/Water Separator Removal at Building 824, Naval Air Station Cecil Field, Jacksonville, Florida

Dear Mr. Ugolini:

I have completed the review of the Source Removal Report, Oil/Water Separator Removal at Building 824, Naval Air Station Cecil Field, dated November 2000 (received November 17, 2000), prepared and submitted by CH2M Hill Constructors, Inc. A total of 28.67 tons of soil were excavated and properly disposed. As contaminated soil and groundwater were detected during source removal and closure assessment activities, Site Assessment activities in accordance with Chapter 62-770, F.A.C., are required.

If I can be of any further assistance with this matter, please contact me at (850) 488-3693.

Sincerely,

David P. Grabka

David P. Grabka
Remedial Project Manager

cc: Scott Glass, Southern Division
Debbie Vaughn-Wright, USEPA Region 4
Mark Speranza, TetraTech NUS, Pittsburgh
Sam Ross, CH2M Hill Constructors, Inc.
Mike Fitzsimmons, FDEP Northeast District

TJB _____ JJC _____ ESN _____

APPENDIX E

DPT SOIL BORING LOGS

Tetra Tech NUS, Inc.

BORING LOG

Page ___ of ___

PROJECT NAME: NAS CECIL FIELD
PROJECT NUMBER: N3396
DRILLING COMPANY: Groundwater Protection
DRILLING RIG: DPT
BORING NUMBER: CEF-824-SB1
DATE: 9/12/01
GEOLOGIST: D. Siefken/M. Dale
DRILLER: Bob Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/FL) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ*
	0						Dark Brown Organics with		Unfiltered/filtered				
							fine to medium sand						
	1		100%						1.5/0	0	0	0	0
	1						Dark Brown Organics with		Unfiltered/filtered				
							fine to medium sand						
	2		100%						1.2/0	0	0	0	0
	2						Dark Brown Organics with		Unfiltered/filtered				
							fine to medium sand						
	3		100%						1.0/0	0	0	0	0
	3						Light tan sand fine to		Unfiltered/filtered				
							medium						
									Sample collected				
									at 0900				
	4		100%						0/0	0	0	0	0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: _____

Converted to Well: Yes _____ No X Well I.D. #: _____

Tetra Tech NUS, Inc. Page ___ of ___

PROJECT NAME: NAS CECIL FIELD BORING NUMI CEF-824-SB2
PROJECT NUMBER: N3396 DATE: 9/12/01
DRILLING COMPANY: Groundwater Protection GEOLOGIST: D. Siefken/M. Dale
DRILLING RIG: DPT DRILLER: Bob Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0						Dark brown/black organics		Unfiltered/Filtered				
							soil with fine to						
							medium sand						
	1		100%						0/0	0	0	0	0
	1						Dark brown/black organics		Unfiltered/Filtered				
							soil with fine to						
							medium sand						
	2		100%						0/0	0	0	0	0
	2						Dark brown/black organics		Unfiltered/Filtered				
							soil with fine to						
							medium sand						
	3		100%						0/0	0	0	0	0
	3						Dark brown/black organics		Unfiltered/Filtered				
							soil with fine to						
							medium sand		Sample collected				
									at 0935				
	4		100%						0/0	0	0	0	0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: _____

Converted to Well: Yes X No _____ Well I.D. #: PZ-3

Tetra Tech NUS, Inc.

PROJECT NAME: NAS CECIL FIELD
PROJECT NUMBER: N3396
DRILLING COMPANY: Groundwater Protection
DRILLING RIG: DPT
BORING NUM: CEF-824-SB3
DATE: 9/12/01
GEOLOGIST: D. Siefken/M. Dale
DRILLER: Bob Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0						Dark brown organic soil		Unfiltered/Filtered				
							fine to medium sand						
	1		100%						0.2/0	0	0	0	0
	1						Dark brown organic soil		Unfiltered/Filtered				
							fine to medium sand						
	2		100%						0.1/0	0	0	0	0
	2						Light tan fine sand		Unfiltered/Filtered				
	3		100%						0.4/0	0	0	0	0
	3						Light tan clayey fine		Unfiltered/Filtered				
							sand with orange spots		sample collected				
									at 1010				
	4		100%						0.2/0	0	0	0	0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: _____

Converted to Well: Yes _____ No X Well I.D. #: _____

Tetra Tech NUS, Inc.

PROJECT NAME: NAS CECIL FIELD
PROJECT NUMBER: N3396
DRILLING COMPANY: Groundwater Protection
DRILLING RIG: DPT
BORING NUMI CEF-824-SB4
DATE: 9/12/01
GEOLOGIST: D. Siefken/M. Dale
DRILLER: Bob Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0						Dark brown organic		Unfiltered/Filtered				
							fine sand with silt						
	1		100%						0/0	0	0	0	0
	1						Dark brown organic		Unfiltered/Filtered				
							fine sand with silt						
	2		100%						0/0	0	0	0	0
	2						Light tan fine sand		Unfiltered/Filtered				
							with silt						
	3		100%						0/0	0	0	0	0
	3						light tan clayey sand,		Unfiltered/Filtered				
							fine						
									sample collected				
									at 1050				
	4		100%						0/0	0	0	0	0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: _____

Converted to Well: Yes _____ No X Well I.D. #: _____

Tetra Tech NUS, Inc.

PROJECT NAME: NAS CECIL FIELD
PROJECT NUMBER: N3396
DRILLING COMPANY: Groundwater Protection
DRILLING RIG: DPT
BORING NUMBER: CEF-824-SB5
DATE: 9/12/01
GEOLOGIST: D. Siefken/M. Dale
DRILLER: Bob Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0						Dark brown organic		Unfiltered/Filtered				
							fine sand						
	1		100%						0.1/0	0	0	0	0
	1						Dark brown organic		Unfiltered/Filtered				
							fine sand						
	2		100%						0/0	0	0	0	0
	2						Dark brown organic		Unfiltered/Filtered				
							fine sand						
	3		100%						0.2/0	0	0	0	0
	3						Dark brown organic		Unfiltered/Filtered				
							fine sand						
									sample collected				
									at 1250				
	4		100%						0/0	0	0	0	0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: _____

Converted to Well: Yes _____ No X Well I.D. #: _____

Tetra Tech NUS, Inc.

Page ___ of ___

PROJECT NAME: NAS CECIL FIELD
PROJECT NUMBER: N3396
DRILLING COMPANY: Groundwater Protection
DRILLING RIG: DPT
BORING NUMBER: CEF-824-SB6
DATE: 9/12/01
GEOLOGIST: D. Siefken/M. Dale
DRILLER: Bob Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0						Dark brown organic		Unfiltered/Filtered				
							fine sand						
	1		100%						0/0	0	0	0	0
	1						Brown fine sand		Unfiltered/Filtered				
	2		100%						0/0	0	0	0	0
	2						Brown sand with tan		Unfiltered/Filtered				
							mottles fine						
	3		100%						0/0	0	0	0	0
	3						Brown sand with tan		Unfiltered/Filtered				
							mottles fine						
									sample collected				
									at 1040				
	4		100%						0/0	0	0	0	0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: _____

Converted to Well: Yes _____ No X Well I.D. #: _____

Tetra Tech NUS, Inc.

Page ___ of ___

PROJECT NAME: NAS CECIL FIELD
PROJECT NUMBER: N3396
DRILLING COMPANY: Groundwater Protection
DRILLING RIG: DPT
BORING NUMBER: CEF-824-SB7
DATE: 9/12/01
GEOLOGIST: D. Siefken/M. Dale
DRILLER: Bob Evans

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0						Dark brown organic		Unfiltered/Filtered				
							fine sand						
	1		100%						0/0	0	0	0	0
	1						Brown fine sand		Unfiltered/Filtered				
	2		100%						0/0	0	0	0	0
	2						Brown fine sand with		Unfiltered/Filtered				
							light tan mottles						
	3		100%						0/0	0	0	0	0
	3						Light tan sandy gray		Unfiltered/Filtered				
							with orange spots						
							Moist		sample collected				
									at 1045				
	4		100%						0/0	0	0	0	0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: _____

Converted to Well: Yes _____ No X Well I.D. #: _____

Tetra Tech NUS, Inc.

Page ___ of ___

PROJECT NAME: NAS CECIL FIELD
PROJECT NUMBER: N3396
DRILLING COMPANY: Groundwater Protection
DRILLING RIG: DPT
BORING NUMBER: CEF-824-SB8
DATE: 9/12/01
GEOLOGIST: D. Siefken/M. Dale
DRILLER: Bob Evans

Sample No. and Type or RQD	Depth (Ft) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0						Dark brown organic fine		Unfiltered/Filtered				
							sand						
	1		100%						0/0	0	0	0	0
	1						Dark brown organic		Unfiltered/Filtered				
							fine sand						
	2		100%						1.4/0	0	0	0	0
	2						Brown fine sand with		Unfiltered/Filtered				
							black mottles						
	3		100%						1.3/0	0	0	0	0
	3						Light tan clayey sand		Unfiltered/Filtered				
							moist						
							unable to collect Filter/Un		sample collected				
							do to moisture content		at 1100				
	4		100%						unable to collect	0	0	0	0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: _____

Converted to Well: Yes _____ No X Well I.D. #: _____

APPENDIX F

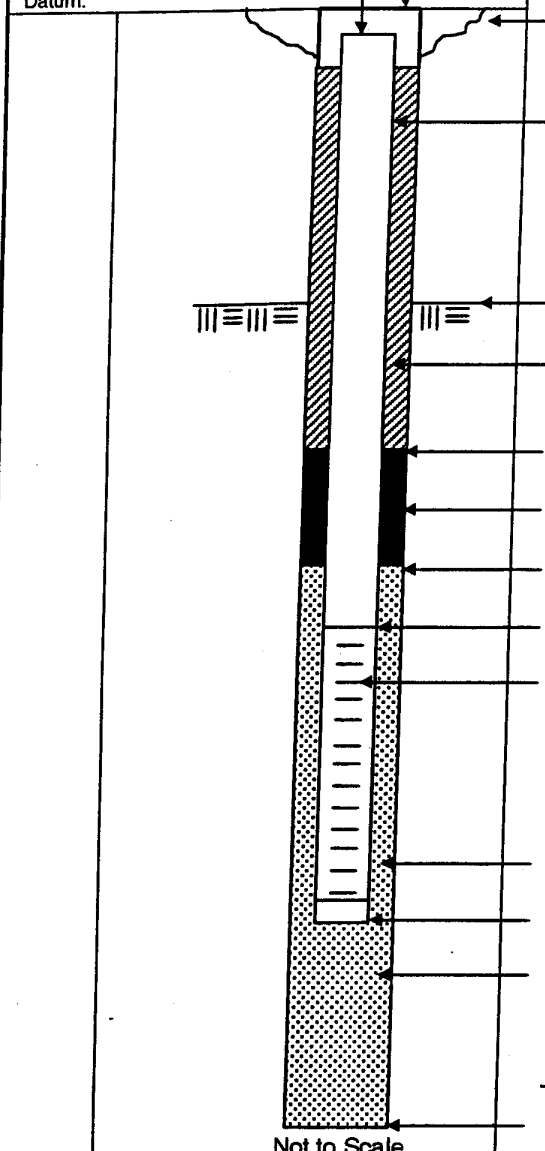
WELL BORING LOG AND CONSTRUCTION DIAGRAM

Tetra Tech NUS, Inc.

WELL No.: CEF-824-2S

MONITORING WELL SHEET

PROJECT:	Bldg 824	DRILLING Co.:	TRANSAMERICAN	BORING No.:	CEF-824-2S
PROJECT No.:	N3996	DRILLER:	D. HEARNE	DATE COMPLETED:	12.5.01
SITE:	Bldg. 824 (SOUTH)	DRILLING METHOD:	HSA	NORTHING:	
GEOLOGIST:	L. KNIGHT	DEV. METHOD:	PERISTALTIC	EASTING:	



Elevation / Depth of Top of Riser:	1
Elevation / Height of Top of Surface Casing:	1
I.D. of Surface Casing:	8"
Type of Surface Casing:	Steel
Type of Surface Seal:	QUIKRETE CONCRETE
I.D. of Riser:	2"
Type of Riser:	PVC
Borehole Diameter:	8"
Elevation / Depth Top of Rock:	1
Type of Backfill:	TYPE I PORTLAND CEMENT
Elevation / Depth of Seal:	11.5
Type of Seal:	30/65 Sand
Elevation / Depth of Top of Filter Pack:	12.0
Elevation / Depth of Top of Screen:	13.0
Type of Screen:	PVC
Slot Size x Length:	0.010" x 10'
I.D. of Screen:	2"
Type of Filter Pack:	20/30 SILICA SAND
Elevation / Depth of Bottom of Screen:	113.0
Elevation / Depth of Bottom of Filter Pack:	113.5
Type of Backfill Below Well:	
Elevation / Total Depth of Borehole:	113.5

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Bldg 824
PROJECT NUMBER: N3996
DRILLING COMPANY: TRANSAMERICAN
DRILLING RIG: GEOPROBE (ADVANCE 66 DT)

BORING NUMBER: CEF-824-2S
DATE: 12.5.01
GEOLOGIST: L. KNIGHT
DRILLER: D. HEARNE

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
							FILL - SAND; f\vf; lt. grey; dry						
				2.5									
							SAND: f\vf; v. dk. brown becoming pale gray-tan @ 6' bls						
							EOB = 13'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 14.4

Remarks:

Converted to Well: Yes ✓ No _____ Well I.D. #: CEF-824-2S

MONITORING WELL MATERIALS
CERTIFICATE OF CONFORMANCE

Well Designation: CEF.824.2S
Site Name: Bldg - 824
Date Installed: 12.5.01
Project Name: Bldg. 824 SAR

Site Geologist: LOUIS KNIGHT
Drilling Company: TRANSAMERICAN
Driller: D. HEARNE
Project Number: N3996

Material	Brand/Description	Source/Supplier	Sample Collected ?
Well Casing	2" SCH 40 PVC	TONEY DRILLING SUPPLIES / ORLANDO, FL	NO
Well Screen	2" SCH 40 PVC	TONEY DRILLING SUPPLIES / ORLANDO, FL	
End Cap	2" SCH 40 PVC	TONEY DRILLING SUPPLIES / ORLANDO, FL	
Drilling Fluid	N/A	N/A	
Drilling Fluid Additives	N/A	N/A	
Backfill Material	N/A	N/A	
Annular Filter Pack	STANDARD / 20/30 SILICA SAND	STANDARD SAND CO.	
~~Bentonite Seal~~ CHUKE SAND	STANDARD / 30-65 SILICA SAND	STANDARD SAND CO.	
Annular Grout	QUIKRETE - TYPE I PORTLAND CEMENT	FLORIDA IRRIGATION	
Surface Cement	QUIKRETE - CONCRETE	FLORIDA IRRIGATION	
Protective Casing	N/A	N/A	
Paint	N/A	N/A	
Rod Lubricant	N/A	N/A	
Compressor Oil	N/A	N/A	
MANHOLE (8" DIAM)	PETROLEUM EQUIPMENT MANUFACTURING CO (PEMCO)	TONEY DRILLING SUPPLIES / ORLANDO, FL	

To the best of my knowledge, I certify that the above described materials were used during installation of this monitoring well.

Signature of Site Geologist: Louis Knight

APPENDIX G

MOBILE LABORATORY REPORT

KB LABS, INC.

Final Data Report
Cecil Field CEF 824

Prepared for: Tetra Tech NUS

Well ID	Matrix	Date Sampled	Benzene	Toluene	Ethylbenzene	o-Xylene	m- & p-Xylene	DRO	Naphthalene
GW2 -9'	water	9/12/01	<1	<1	<1	<1	<1	<1	<20
GW6 -9'	water	9/12/01	<1	<1	<1	<1	<1	<1	<20
GW8 -9'	water	9/12/01	<1	<1	<1	<1	<1	<1	<20
GW1 -9'	water	9/12/01	<1	**2.0**	<1	**1.3**	**2.0**	<1	<20
GW3 -9'	water	9/12/01	<1	**1.5**	<1	<1	**1.2**	<1	<20
GW4 -9'	water	9/12/01	<1	**1.8**	<1	**1.2**	**1.8**	<1	<20
GW4 -30'	water	9/12/01	<1	**1.3**	<1	**1.1**	<1	<1	<20
GW5 -9'	water	9/12/01	<1	**1.6**	<1	**1.2**	**1.7**	<1	<20
GW7 -9'	water	9/12/01	<1	**1.6**	<1	**1.1**	**1.3**	<1	<20
S01-1'	soil	9/12/01	<5	<5	<5	<5	<5	<20	<2.5
S02-4'	soil	9/12/01	<4.5	**8.7**	<4.5	**6.6**	**7.6**	<20	<2.5
S03-3'	soil	9/12/01	<5	**7.9**	<5	**5.5**	**6.6**	<20	<2.5
S05-3'	soil	9/12/01	<4.5	**6.6**	<4.5	<4.5	**5.3**	<20	<2.5
S04-4'	soil	9/12/01	**5.6**	**7.4**	<5	**5.2**	**6.1**	<20	<2.5
S07-3'	soil	9/12/01	<5	**7.9**	<5	**5.8**	**7.2**	<20	<2.5
S08-3'	soil	9/12/01	<5	**8.2**	<5	**5.5**	**6.9**	<20	<2.5
S06-4'	soil	9/12/01	<5	**7.2**	<5	**5.1**	**5.0**	<20	<2.5

Reporting units for waters: DRO mg/L; all other analytes ug/L.
Reporting units for soils: DRO and naphthalene mg/kg; BTEX ug/kg.

Well ID (KB Labs)	Location ID (TtNUS)
GW2 -9'	GW-002
GW6 -9'	GW-006
GW8 -9'	GW-008
GW1 -9'	GW-001
GW3 -9'	GW-003
GW4 -9'	GW-004
GW4 -30'	GW-004
GW5 -9'	GW-005
GW7 -9'	GW-007
S01-1'	SB-001
S02-4'	SB-002
S03-3'	SB-003
S05-3'	SB-005
S04-4'	SB-004
S07-3'	SB-007
S08-3'	SB-008
S06-4'	SB-006

Note: Numbers shown after hyphen in KB Labs column indicate depth of sample collection in feet below land surface.

APPENDIX H

CONFIRMATORY SOIL LABORATORY REPORT

Southeast
ACCUTEST

03/20/02

Technical Report for

Tetra Tech, NUS

Cecil Field CTO168

WORK RELEASE 168CF-4

Accutest Job Number: F11114

Report to:

Tetra Tech, NUS Corporate

smithsi@ttnus.com

ATTN: Suzanne Smith

Total number of pages in report: 16

ACCREDITED IN ACCORDANCE WITH nelac

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

Harry Behzadi, Ph.D.
Laboratory Director

Sample Summary

Tetra Tech, NUS

Job No: F11114

Cecil Field CTO168
Project No: WORK RELEASE 168CF-4

Sample Number	Collected Date	Time	By	Received	Matrix Code	Matrix Type	Client Sample ID
F11114-1	10/04/01	12:09	MWD	10/05/01	SO	Soil	CEF-312-SB-B002-04
F11114-2	10/04/01	13:15	MWD	10/05/01	SO	Soil	CEF-824-SB-B003-03

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

Report of Analysis

Client Sample ID:	CEF-312-SB-B002-04		
Lab Sample ID:	F11114-1	Date Sampled:	10/04/01
Matrix:	SO - Soil	Date Received:	10/05/01
Method:	SW846 8260B	Percent Solids:	90.8
Project:	Cecil Field CTO168		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	K007034.D	1	10/17/01	NAF	n/a	n/a	VK235
Run #2							

VOA PPL List

CAS No.	Compound	Result	RL	Units	Q
107-02-8	Acrolein	ND	11	ug/kg	
107-13-1	Acrylonitrile	ND	11	ug/kg	
71-43-2	Benzene	ND	5.7	ug/kg	
75-27-4	Bromodichloromethane	ND	5.7	ug/kg	
75-25-2	Bromoform	ND	5.7	ug/kg	
108-90-7	Chlorobenzene	ND	5.7	ug/kg	
75-00-3	Chloroethane	ND	5.7	ug/kg	
67-66-3	Chloroform	ND	5.7	ug/kg	
110-75-8	2-Chloroethyl vinyl ether	ND	11	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.7	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.7	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.7	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.7	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.7	ug/kg	
124-48-1	Dibromochloromethane	ND	5.7	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.7	ug/kg	
541-73-1	m-Dichlorobenzene	ND	5.7	ug/kg	
95-50-1	o-Dichlorobenzene	ND	5.7	ug/kg	
106-46-7	p-Dichlorobenzene	ND	5.7	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	5.7	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.7	ug/kg	
100-41-4	Ethylbenzene	ND	5.7	ug/kg	
74-83-9	Methyl bromide	ND	5.7	ug/kg	
74-87-3	Methyl chloride	ND	5.7	ug/kg	
75-09-2	Methylene chloride	ND	11	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.7	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.7	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.7	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.7	ug/kg	
108-88-3	Toluene	ND	5.7	ug/kg	
79-01-6	Trichloroethylene	ND	5.7	ug/kg	
75-69-4	Trichlorofluoromethane	ND	5.7	ug/kg	
75-01-4	Vinyl chloride	ND	5.7	ug/kg	
1330-20-7	Xylene (total)	ND	17	ug/kg	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-312-SB-B002-04		
Lab Sample ID:	F11114-1	Date Sampled:	10/04/01
Matrix:	SO - Soil	Date Received:	10/05/01
Method:	SW846 8260B	Percent Solids:	90.8
Project:	Cecil Field CTO168		

VOA PPL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		75-125%
2037-26-5	Toluene-D8	97%		75-125%
460-00-4	4-Bromofluorobenzene	97%		72-137%
17060-07-0	1,2-Dichloroethane-D4	107%		68-125%

CAS No.	Tentatively Identified Compounds [a]	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/kg	

(a) No TICs detected.

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-312-SB-B002-04		
Lab Sample ID:	F11114-1	Date Sampled:	10/04/01
Matrix:	SO - Soil	Date Received:	10/05/01
Method:	SW846 8270C SW846 3550B	Percent Solids:	90.8
Project:	Cecil Field CTO168		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L009152.D	1	10/11/01	ME	10/09/01	OP3976	SL522
Run #2							

ABN PPL List

CAS No.	Compound	Result	RL	Units	Q
95-57-8	2-Chlorophenol	ND	360	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	360	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	360	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	910	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	910	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	730	ug/kg	
88-75-5	2-Nitrophenol	ND	360	ug/kg	
100-02-7	4-Nitrophenol	ND	910	ug/kg	
87-86-5	Pentachlorophenol	ND	910	ug/kg	
108-95-2	Phenol	ND	360	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	360	ug/kg	
83-32-9	Acenaphthene	ND	360	ug/kg	
208-96-8	Acenaphthylene	ND	360	ug/kg	
120-12-7	Anthracene	ND	360	ug/kg	
92-87-5	Benzidine	ND	910	ug/kg	
56-55-3	Benzo(a)anthracene	ND	360	ug/kg	
50-32-8	Benzo(a)pyrene	ND	360	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	360	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	360	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	360	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	360	ug/kg	
85-68-7	Butyl benzyl phthalate	235	360	ug/kg	J
91-58-7	2-Chloronaphthalene	ND	360	ug/kg	
106-47-8	4-Chloroaniline	ND	360	ug/kg	
218-01-9	Chrysene	ND	360	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	360	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	360	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	360	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	360	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	360	ug/kg	
122-66-7	1,2-Diphenylhydrazine	ND	360	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	360	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	360	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	360	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	360	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	730	ug/kg	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-312-SB-B002-04		
Lab Sample ID:	F11114-1	Date Sampled:	10/04/01
Matrix:	SO - Soil	Date Received:	10/05/01
Method:	SW846 8270C SW846 3550B	Percent Solids:	90.8
Project:	Cecil Field CTO168		

ABN PPL List

CAS No.	Compound	Result	RL	Units	Q
53-70-3	Dibenzo(a,h)anthracene	ND	360	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	360	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	360	ug/kg	
84-66-2	Diethyl phthalate	ND	360	ug/kg	
131-11-3	Dimethyl phthalate	ND	360	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	360	ug/kg	
206-44-0	Fluoranthene	ND	360	ug/kg	
86-73-7	Fluorene	ND	360	ug/kg	
118-74-1	Hexachlorobenzene	ND	360	ug/kg	
87-68-3	Hexachlorobutadiene	ND	360	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	360	ug/kg	
67-72-1	Hexachloroethane	ND	360	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	360	ug/kg	
78-59-1	Isophorone	ND	360	ug/kg	
91-20-3	Naphthalene	ND	360	ug/kg	
98-95-3	Nitrobenzene	ND	360	ug/kg	
62-75-9	N-Nitrosodimethylamine	ND	360	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	360	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	360	ug/kg	
85-01-8	Phenanthrene	ND	360	ug/kg	
129-00-0	Pyrene	ND	360	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	360	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	69%		37-125%
4165-62-2	Phenol-d5	75%		42-125%
118-79-6	2,4,6-Tribromophenol	90%		52-125%
4165-60-0	Nitrobenzene-d5	76%		40-125%
321-60-8	2-Fluorobiphenyl	79%		42-125%
1718-51-0	Terphenyl-d14	91%		45-135%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
62238-37-3	3-Penten-1-ol, 2-methyl-	3.15	1300	ug/kg	JN
4127-45-1	Cyclopropane, 1,1,2-trimethyl-	3.52	1300	ug/kg	JN
294-62-2	Cyclododecane	10.99	460	ug/kg	JN
2437-56-1	1-Tridecene	11.81	520	ug/kg	JN
1120-36-1	1-Tetradecene	12.59	480	ug/kg	JN
	unknown hydrocarbon	17.07	760	ug/kg	J

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-312-SB-B002-04		
Lab Sample ID:	F11114-1	Date Sampled:	10/04/01
Matrix:	SO - Soil	Date Received:	10/05/01
Method:	SW846 8270C SW846 3550B	Percent Solids:	90.8
Project:	Cecil Field CTO168		

ABN PPL List

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
3386-33-2	Octadecane, 1-chloro-	17.16	3000	ug/kg	JN
	unknown	17.26	4600	ug/kg	J
630-07-9	Pentatriacontane	17.31	1700	ug/kg	JN
54833-48-6	Heptadecane, 2,6,10,15-tetramethyl-	17.39	930	ug/kg	JN
7098-22-8	Tetratetracontane	17.52	9200	ug/kg	JN
638-67-5	Tricosane	17.62	3100	ug/kg	JN
7098-21-7	Tritetracontane	17.83	12000	ug/kg	JN
629-97-0	Docosane	17.97	570	ug/kg	JN
	Total TIC, Semi-Volatile		39920	ug/kg	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-312-SB-B002-04		
Lab Sample ID:	F11114-1	Date Sampled:	10/04/01
Matrix:	SO - Soil	Date Received:	10/05/01
Method:	FLORIDA-PRO SW846 3550B	Percent Solids:	90.8
Project:	Cecil Field CTO168		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	OP17550.D	20	10/15/01	ME	10/11/01	OP3981	GOP674
Run #2							

CAS No.	Compound	Result	RL	Units	Q
	TPH (C8-C40)	549	180	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	88%		66-130%

(a) Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-312-SB-B002-04		
Lab Sample ID:	F11114-1	Date Sampled:	10/04/01
Matrix:	SO - Soil	Date Received:	10/05/01
		Percent Solids:	90.8
Project:	Cecil Field CTO168		

Metals Analysis

Analyte	Result	RL	IDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	0.42 B	0.55	0.35	mg/kg	1	10/09/01	10/09/01	JK	SW846 6010B	SW846 3050B
Cadmium	0.36 B	0.44	0.030	mg/kg	1	10/09/01	10/09/01	JK	SW846 6010B	SW846 3050B
Chromium	7.5	1.1	0.039	mg/kg	1	10/09/01	10/09/01	JK	SW846 6010B	SW846 3050B
Lead	11.7	11	0.13	mg/kg	1	10/09/01	10/09/01	JK	SW846 6010B	SW846 3050B

RL = Reporting Limit
IDL = Instrument Detection Limit

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

Report of Analysis

Client Sample ID:	CEF-824-SB-B003-03		
Lab Sample ID:	F11114-2	Date Sampled:	10/04/01
Matrix:	SO - Soil	Date Received:	10/05/01
Method:	SW846 8260B	Percent Solids:	94.5
Project:	Cecil Field CTO168		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	K007035.D	1	10/17/01	NAF	n/a	n/a	VK235
Run #2							

VOA PPL List

CAS No.	Compound	Result	RL	Units	Q
107-02-8	Acrolein	ND	12	ug/kg	
107-13-1	Acrylonitrile	ND	12	ug/kg	
71-43-2	Benzene	ND	6.2	ug/kg	
75-27-4	Bromodichloromethane	ND	6.2	ug/kg	
75-25-2	Bromoform	ND	6.2	ug/kg	
108-90-7	Chlorobenzene	ND	6.2	ug/kg	
75-00-3	Chloroethane	ND	6.2	ug/kg	
67-66-3	Chloroform	ND	6.2	ug/kg	
110-75-8	2-Chloroethyl vinyl ether	ND	12	ug/kg	
56-23-5	Carbon tetrachloride	ND	6.2	ug/kg	
75-34-3	1,1-Dichloroethane	ND	6.2	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	6.2	ug/kg	
107-06-2	1,2-Dichloroethane	ND	6.2	ug/kg	
78-87-5	1,2-Dichloropropane	ND	6.2	ug/kg	
124-48-1	Dibromochloromethane	ND	6.2	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	6.2	ug/kg	
541-73-1	m-Dichlorobenzene	ND	6.2	ug/kg	
95-50-1	o-Dichlorobenzene	ND	6.2	ug/kg	
106-46-7	p-Dichlorobenzene	ND	6.2	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	6.2	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	6.2	ug/kg	
100-41-4	Ethylbenzene	ND	6.2	ug/kg	
74-83-9	Methyl bromide	ND	6.2	ug/kg	
74-87-3	Methyl chloride	ND	6.2	ug/kg	
75-09-2	Methylene chloride	ND	12	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	6.2	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	6.2	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	6.2	ug/kg	
127-18-4	Tetrachloroethylene	ND	6.2	ug/kg	
108-88-3	Toluene	ND	6.2	ug/kg	
79-01-6	Trichloroethylene	ND	6.2	ug/kg	
75-69-4	Trichlorofluoromethane	ND	6.2	ug/kg	
75-01-4	Vinyl chloride	ND	6.2	ug/kg	
1330-20-7	Xylene (total)	ND	19	ug/kg	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-824-SB-B003-03		
Lab Sample ID:	F11114-2	Date Sampled:	10/04/01
Matrix:	SO - Soil	Date Received:	10/05/01
Method:	SW846 8260B	Percent Solids:	94.5
Project:	Cecil Field CTO168		

VOA PPL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	111%		75-125%
2037-26-5	Toluene-D8	104%		75-125%
460-00-4	4-Bromofluorobenzene	115%		72-137%
17060-07-0	1,2-Dichloroethane-D4	119%		68-125%

CAS No.	Tentatively Identified Compounds [a]	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/kg	

(a) No TICs detected.

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-824-SB-B003-03		
Lab Sample ID:	F11114-2	Date Sampled:	10/04/01
Matrix:	SO - Soil	Date Received:	10/05/01
Method:	SW846 8270C SW846 3550B	Percent Solids:	94.5
Project:	Cecil Field CTO168		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L009153.D	1	10/11/01	ME	10/09/01	OP3976	SL522
Run #2							

ABN PPL List

CAS No.	Compound	Result	RL	Units	Q
95-57-8	2-Chlorophenol	ND	350	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	350	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	350	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	880	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	880	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	700	ug/kg	
88-75-5	2-Nitrophenol	ND	350	ug/kg	
100-02-7	4-Nitrophenol	ND	880	ug/kg	
87-86-5	Pentachlorophenol	ND	880	ug/kg	
108-95-2	Phenol	ND	350	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	350	ug/kg	
83-32-9	Acenaphthene	ND	350	ug/kg	
208-96-8	Acenaphthylene	ND	350	ug/kg	
120-12-7	Anthracene	ND	350	ug/kg	
92-87-5	Benzidine	ND	880	ug/kg	
56-55-3	Benzo(a)anthracene	ND	350	ug/kg	
50-32-8	Benzo(a)pyrene	ND	350	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	350	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	350	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	350	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	350	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	350	ug/kg	
91-58-7	2-Chloronaphthalene	ND	350	ug/kg	
106-47-8	4-Chloroaniline	ND	350	ug/kg	
218-01-9	Chrysene	ND	350	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	350	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	350	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	350	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	350	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	350	ug/kg	
122-66-7	1,2-Diphenylhydrazine	ND	350	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	350	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	350	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	350	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	350	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	700	ug/kg	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-824-SB-B003-03		
Lab Sample ID:	F11114-2	Date Sampled:	10/04/01
Matrix:	SO - Soil	Date Received:	10/05/01
Method:	SW846 8270C SW846 3550B	Percent Solids:	94.5
Project:	Cecil Field CTO168		

ABN PPL List

CAS No.	Compound	Result	RL	Units	Q
53-70-3	Dibenzo(a,h)anthracene	ND	350	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	350	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	350	ug/kg	
84-66-2	Diethyl phthalate	ND	350	ug/kg	
131-11-3	Dimethyl phthalate	ND	350	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	350	ug/kg	
206-44-0	Fluoranthene	ND	350	ug/kg	
86-73-7	Fluorene	ND	350	ug/kg	
118-74-1	Hexachlorobenzene	ND	350	ug/kg	
87-68-3	Hexachlorobutadiene	ND	350	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	350	ug/kg	
67-72-1	Hexachloroethane	ND	350	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	350	ug/kg	
78-59-1	Isophorone	ND	350	ug/kg	
91-20-3	Naphthalene	ND	350	ug/kg	
98-95-3	Nitrobenzene	ND	350	ug/kg	
62-75-9	N-Nitrosodimethylamine	ND	350	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	350	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	350	ug/kg	
85-01-8	Phenanthrene	ND	350	ug/kg	
129-00-0	Pyrene	ND	350	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	350	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	61%		37-125%
4165-62-2	Phenol-d5	69%		42-125%
118-79-6	2,4,6-Tribromophenol	89%		52-125%
4165-60-0	Nitrobenzene-d5	66%		40-125%
321-60-8	2-Fluorobiphenyl	76%		42-125%
1718-51-0	Terphenyl-d14	92%		45-135%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
3650-28-0	1,4-Methano-1H-indene, octahydro-4-meth	7.99	450	ug/kg	JN
475-20-7	1,4-Methanoazulene, decahydro-4,8,8-trim	8.17	3900	ug/kg	JN
3856-25-5	Copaene	8.21	1000	ug/kg	JN
470-40-6	Thujopsene	8.36	490	ug/kg	JN
	unknown	8.49	3400	ug/kg	J
24048-44-0	Spiro[4.5]dec-7-ene, 1,8-dimethyl-4-(1-m	8.59	610	ug/kg	JN

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-824-SB-B003-03		
Lab Sample ID:	F11114-2	Date Sampled:	10/04/01
Matrix:	SO - Soil	Date Received:	10/05/01
Method:	SW846 8270C SW846 3550B	Percent Solids:	94.5
Project:	Cecil Field CTO168		

ABN PPL List

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
77-53-2	Cedrol	9.85	2000	ug/kg	JN
511-15-9	2-Phenanthrenol, 4b,5,6,7,8,8a,9,10-octa	14.92	1300	ug/kg	JN
511-15-9	2-Phenanthrenol, 4b,5,6,7,8,8a,9,10-octa	15.14	8500	ug/kg	JN
	unknown	15.20	1900	ug/kg	J
	unknown	15.97	370	ug/kg	J
564-73-8	2,6-Phenanthrenediol, 1,2,3,4,4a,9,10,10	16.10	540	ug/kg	JN
511-05-7	9(1H)-Phenanthrenone, 2,3,4,4a,10,10a-he	17.11	380	ug/kg	JN
	unknown	17.17	2000	ug/kg	J
83-47-6	.gamma.-Sitosterol	20.89	670	ug/kg	JN
	Total TIC, Semi-Volatile		27510	ug/kg	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-824-SB-B003-03		
Lab Sample ID:	F11114-2	Date Sampled:	10/04/01
Matrix:	SO - Soil	Date Received:	10/05/01
Method:	FLORIDA-PRO SW846 3550B	Percent Solids:	94.5
Project:	Cecil Field CTO168		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP17520.D	1	10/12/01	ME	10/11/01	OP3981	GOP673
Run #2							

CAS No.	Compound	Result	RL	Units	Q
	TPH (C8-C40)	43.1	8.8	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	73%		66-130%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-824-SB-B003-03		
Lab Sample ID:	F11114-2	Date Sampled:	10/04/01
Matrix:	SO - Soil	Date Received:	10/05/01
		Percent Solids:	94.5
Project:	Cecil Field CTO168		

Metals Analysis

Analyte	Result	RL	IDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	0.33 U	0.53	0.33	mg/kg	1	10/09/01	10/09/01	JK	SW846 6010B	SW846 3050B
Cadmium	0.092 B	0.42	0.029	mg/kg	1	10/09/01	10/09/01	JK	SW846 6010B	SW846 3050B
Chromium	3.3	1.0	0.037	mg/kg	1	10/09/01	10/09/01	JK	SW846 6010B	SW846 3050B
Lead	6.1 B	10	0.12	mg/kg	1	10/09/01	10/09/01	JK	SW846 6010B	SW846 3050B

RL = Reporting Limit
IDL = Instrument Detection Limit

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

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER CF168-100401 | PAGE 1 OF 1

F1114

PROJECT NO: N3996	SITE NAME: B.312 OWS / B.824 OWS	PROJECT MANAGER AND PHONE NUMBER: PAUL CALLIGAN 8503859899	LABORATORY NAME AND CONTACT: ACCUTEST LINDA WILLIAMS
SAMPLERS (SIGNATURE): Mervin W. Dale		FIELD OPERATIONS LEADER AND PHONE NUMBER: MERV DALE 904 281 0400	ADDRESS: 4405 VINELAND RD Ste C-15
		CARRIER/WAYBILL NUMBER: Fedex 8287 2074 0730	CITY, STATE: ORLANDO FL 32811

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

	DATE YEAR 2001	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: PP VO SW846 8260B	TPH FL-PRO	PP/EO SW846 8270C	PAHs SW846 8310	TOTAL METALS SW846 6010B				COMMENTS
			CONTAINER TYPE PLASTIC (P) or GLASS (G)				P	G	G	G	G				
			PRESERVATIVE USED				None	None	None	None	None				
1)	10/4	1209	CEF-312-SB-B002-04	SO	G	6	3	1	1	✓	1				Cool to 4°C
2)	10/4	1315	CEF-824-SB-B003-03	SO	G	6	3	1	1	✓	1				WR 168CF-4
										MWD					* As, Cd, Cr, Pb
															Note: PAHs deleted by MWDale

1. RELINQUISHED BY: Mervin W. Dale	DATE 10/4/01	TIME 1700	1. RECEIVED BY: Fedex	DATE	TIME
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY: [signature]	DATE 10/5/01	TIME 1000
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS: 3.2°

WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY) 3/99

APPENDIX I

GROUNDWATER FIELD DATA SHEETS

Tetra Tech NUS, Inc. **GROUNDWATER SAMPLE LOG SHEET**

Project Site Name: Building 824 OW
Project No.: N3996.JG0050145

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: CEF-824-GW- 15-01
Sample Location: CEF-824- 15
Sampled By: L. MIDDLETON
C.O.C. No.: ~~824-121101-TCN~~ 824-121201A
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	ORP	Other
Date: 12/12/01								
Time: 1045								
Method: Low Flow Peristaltic	MILKY WHITE	6.91	0496	22.7	~~439~~ >999	4.88	132	

PURGE DATA

Date: 12/12/01	Time	pH	S.C.	Temp (°C)	Turbidity	DO		ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm): 0.1								
Well Casing Diameter: 2 In.								
Well Casing Material:PVC								
Total Well Depth (TD): 14.61								
Static Water Level (WL): 8.12								
One Casing Volume(gal): 0.4								
Start Purge (hrs): 0930								
End Purge (hrs): 1040								
Total Purge Time (min): 70								
Total Vol. Purged (gal): 2.1								

See Low Flow Purge Sheet

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
PPVO w/Tics SW846 8260B	HCL	3-40 ml vials	X
PPEO w/Tics SW846 8270C	None	2 - 1liter glass ambers	X
TRPH FL-PRO	H2SO4	2 - 1liter glass ambers	X
Total Metals* SW846 6010B	HNO3	1 - 500 ml HDPE	X
* Arsenic, Cadmium, Chromium and Lead			

OBSERVATIONS / NOTES

Circle if Applicable:

MS/MSD: —

Duplicate ID No.: CEF-824-DUO1-GW-01

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Building 824 OW
PROJECT NUMBER: N3996.JG0050145

WELL ID.: CEF-824- 15
DATE: 12/12/01

	Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
	0930	8.22	300	—	—	—	—	—	—	
1.5	0935	8.28	300	6.60	0.506	171	3.32	22.5	163	CLEAR
3	0940	8.29	300	6.72	0.495	160	3.39	22.5	155	
6	0950	8.29	300	6.82	0.490	135	1.07	22.5	122	
9	1000	8.29	300	6.82	0.494	>999	0.99	22.8	111	MILKY WHITE
12	1010	8.30	300	6.86	0.497	>999	0.76	22.6	111	
15	1020	8.30	300	6.89	0.493	>999	3.44	22.6	121	
18	1030	8.30	300	6.89	0.495	>999	1.48	22.9	124	
21	1040	8.30	300	6.91	0.496	429	4.88	22.7	132	
	END PURGE									

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Building 824 OW
Project No.: N3996.JG0050145

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: CEF-824-GW- 25-01
Sample Location: CEF-824- 25
Sampled By: C. MIDDLETON
C.O.C. No.: ~~824-121101~~ RUM
Type of Sample: 824-121201C
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 12/12/01 Time: 1340	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	ORP	Other
Method: Low Flow Peristaltic	CLEAR	5.28	0.076	23.1	2.5	0.31	87	

PURGE DATA

Date: 12/12/01	Time	pH	S.C.	Temp (°C)	Turbidity	DO		ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm): 0.0								
Well Casing Diameter: 2 In.								
Well Casing Material: PVC								
Total Well Depth (TD): 13.07								
Static Water Level (WL): ~~8.27~~ Bottom 8.27								
One Casing Volume(gal/L): 0.29								
Start Purge (hrs): 1255								
End Purge (hrs): 1330								
Total Purge Time (min): 35								
Total Vol. Purged (gal): 10.5								

See Low Flow Purge Sheet

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
PPVO w/Tics SW846 8260B	HCL	3-40 ml vials	X
PPEO w/Tics SW846 8270C	None	2 - 1liter glass ambers	X
TRPH FL-PRO	H2SO4	2 - 1liter glass ambers	X
			X
Total Metals* SW846 6010B	HNO3	1 - 500 ml HDPE	X
* Arsenic, Cadmium, Chromium and Lead			

OBSERVATIONS / NOTES

Circle if Applicable:

MS/MSD	Duplicate ID No.:
X	

Signature(s):

CEF-824-MD01-GW-01

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Building 824 OW
PROJECT NUMBER: N3996.JG0050145

WELL ID.: CEF-824-25
DATE: 12/12/01

	Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
	1255	8.27	300	—	—	—	—	—	—	
3	1305	8.50	300	5.60	0.076	50	0.47	23.0	136	CLEAR
4.5	1310	8.53	300	5.41	0.083	26	0.76	23.1	110	
6	1315	8.53	300	5.35	0.089	16	0.25	23.1	104	
7.5	1320	8.52	300	5.33	0.082	9	0.32	23.1	101	
9	1325	8.52	300	5.31	0.084	6	0.38	23.1	94	
10.5	1330	8.53	300	5.28	0.076	2.5	0.31	23.1	87	
		END PURGE								

SIGNATURE(S):

DN3996.4.4.69

Tetra Tech NUS, Inc. **GROUNDWATER SAMPLE LOG SHEET**

Project Site Name: B. 824 OWS
Project No.: N3996.JG0050145

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: CEF-824-GW-E01S-01a
Sample Location: CEF-824-01S
Sampled By: L. MIDDLETON
C.O.C. No.: 824-010802
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 1/8/02 Time:	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	~~Salinity~~ ORP	Other
Method: Low Flow Peristaltic	MILKY WHITE	6.86	0.461	20.0	339	5.71	-7	

PURGE DATA

Date: 1/8/02	Time	pH	S.C.	Temp (°C)	Turbidity	DO	Salinity	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm): 0								
Well Casing Diameter: 2"								
Well Casing Material: PVC								
Total Well Depth (TD): 14.61								
Static Water Level (WL): 8.57								
One Casing Volume(gal/L): 3.7								
Start Purge (hrs): ~~0930~~ 0945	See Low Flow Purge Sheet							
End Purge (hrs): 1100								
Total Purge Time (min): 75								
Total Vol. Purged (gal/L): 20								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Total Lead SW846 6010B	HNO3	Minimum 500 ml HDPT	X
Dissolved Lead SW846 6010B	HNO3	Minimum 500 ml HDPT	X

OBSERVATIONS / NOTES

Note: For the Dissolved (or filtered) sample, use a 1 micron filter. Also, change the label of that sample by changing the "GW" to a "GF"

work release
168CF-4

Circle if Applicable:

MS/MSD	Duplicate ID No.:
None	None

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Bldg. 824 OWS
PROJECT NUMBER: N3996.JG0050145

WELL ID.: CEF-824-01S
DATE: 1/8/02

	Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
	0945	8.57	300	—	—	—	—	—	—	
3	0955	8.75	300	6.68	0.453	558	7.37	20.08	4	CLEAR
	1000	8.77	300	6.67	0.467	467	6.91	19.81	-4	MILKY W/SETT.
6	1005	8.77	300	6.67	0.466	569	6.28	20.09	-9	
	1010	8.77	300	6.71	0.470	523	6.08	19.67	-10	
9	1015	8.78	300	6.76	0.469	437	6.00	18.70	-13	
10.5	1020	8.78	300	6.79	0.468	399	6.01	18.38	-13	
12	1025	8.81	300	6.77	0.449	332	8.29	19.38	-14	
14	1035	8.82	200	6.71	0.466	330	4.64	20.43	-26	
16	1045	8.82	200	6.71	0.466	323	4.36	20.41	-25	
18	1055	8.82	200	6.84	0.461	340	5.66	20.35	-7	
20	1100	8.83	200	6.86	0.461	339	5.71	20.02	-7	
		END PURGE								

SIGNATURE(S):

APPENDIX J

GROUNDWATER LABORATORY REPORTS

Accutest Laboratories

Sample Summary

Tetra Tech, NUS

Job No: F11765

Cecil Field CTO168
Project No: WORK RELEASE 168CF-4

Sample Number	Collected Date	Time	By	Received	Matrix Code	Matrix Type	Client Sample ID
F11765-1	12/12/01	13:40	RA	12/13/01	AQ	Ground Water	CEF-824-GW-2S
F11765-2	12/12/01	10:45	RA	12/13/01	AQ	Ground Water	CEF-824-GW-1S
F11765-3	12/12/01	00:00	RA	12/13/01	AQ	Ground Water	CEF-824-DU01-GW-01

Accutest Laboratories

Report of Analysis

Client Sample ID:	CEF-824-GW-2S		
Lab Sample ID:	F11765-1	**Date Sampled:**	12/12/01
Matrix:	AQ - Ground Water	**Date Received:**	12/13/01
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	Cecil Field CTO168		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C0007431.D	1	12/23/01	JG	n/a	n/a	VC345
Run #2							

VOA PPL List

CAS No.	Compound	Result	RL	Units	Q
107-02-8	Acrolein	ND	10	ug/l	
107-13-1	Acrylonitrile	ND	10	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	2.0	ug/l	
75-25-2	Bromoform	ND	2.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-00-3	Chloroethane	ND	5.0	ug/l	
67-66-3	Chloroform	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
124-48-1	Dibromochloromethane	ND	2.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	2.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	ug/l	
541-73-1	m-Dichlorobenzene	ND	2.0	ug/l	
95-50-1	o-Dichlorobenzene	ND	2.0	ug/l	
106-46-7	p-Dichlorobenzene	ND	2.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	2.0	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
74-83-9	Methyl bromide	ND	5.0	ug/l	
74-87-3	Methyl chloride	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	CEF-824-GW-2S		
Lab Sample ID:	F11765-1	**Date Sampled:**	12/12/01
Matrix:	AQ - Ground Water	**Date Received:**	12/13/01
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	Cecil Field CTO168		

VOA PPL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		80-120%
17060-07-0	1,2-Dichloroethane-D4	96%		80-120%
2037-26-5	Toluene-D8	98%		80-120%
460-00-4	4-Bromofluorobenzene	97%		80-120%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile [a]		0	ug/l	

(a) No TICs detected.

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

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

Accutest Laboratories

Report of Analysis

Client Sample ID:	CEF-824-GW-2S		
Lab Sample ID:	F11765-1	**Date Sampled:**	12/12/01
Matrix:	AQ - Ground Water	**Date Received:**	12/13/01
Method:	SW846 8270C SW846 3510C	**Percent Solids:**	n/a
Project:	Cecil Field CTO168		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L010068.D	1	12/18/01	ME	12/17/01	OP4382	SL571
Run #2							

ABN PPL List

CAS No.	Compound	Result	RL	Units	Q
95-57-8	2-Chlorophenol	ND	5.0	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.0	ug/l	
120-83-2	2,4-Dichlorophenol	ND	5.0	ug/l	
105-67-9	2,4-Dimethylphenol	ND	25	ug/l	
51-28-5	2,4-Dinitrophenol	ND	25	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	ug/l	
88-75-5	2-Nitrophenol	ND	5.0	ug/l	
100-02-7	4-Nitrophenol	ND	25	ug/l	
87-86-5	Pentachlorophenol	ND	25	ug/l	
108-95-2	Phenol	ND	5.0	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.0	ug/l	
83-32-9	Acenaphthene	ND	5.0	ug/l	
208-96-8	Acenaphthylene	ND	5.0	ug/l	
120-12-7	Anthracene	ND	5.0	ug/l	
92-87-5	Benzidine	ND	25	ug/l	
56-55-3	Benzo(a)anthracene	ND	5.0	ug/l	
50-32-8	Benzo(a)pyrene	ND	5.0	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	5.0	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	5.0	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	5.0	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.0	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.0	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	ug/l	
106-47-8	4-Chloroaniline	ND	5.0	ug/l	
218-01-9	Chrysene	ND	5.0	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	5.0	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	5.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	5.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	5.0	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	5.0	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	10	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-824-GW-2S		
Lab Sample ID:	F11765-1	**Date Sampled:**	12/12/01
Matrix:	AQ - Ground Water	**Date Received:**	12/13/01
Method:	SW846 8270C SW846 3510C	**Percent Solids:**	n/a
Project:	Cecil Field CTO168		

ABN PPL List

CAS No.	Compound	Result	RL	Units	Q
53-70-3	Dibenzo(a,h)anthracene	ND	5.0	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.0	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.0	ug/l	
84-66-2	Diethyl phthalate	ND	5.0	ug/l	
131-11-3	Dimethyl phthalate	ND	5.0	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	5.0	ug/l	
206-44-0	Fluoranthene	ND	5.0	ug/l	
86-73-7	Fluorene	ND	5.0	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	5.0	ug/l	
67-72-1	Hexachloroethane	ND	5.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	5.0	ug/l	
78-59-1	Isophorone	ND	5.0	ug/l	
91-20-3	Naphthalene	ND	5.0	ug/l	
98-95-3	Nitrobenzene	ND	5.0	ug/l	
62-75-9	N-Nitrosodimethylamine	ND	5.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	ug/l	
85-01-8	Phenanthrene	ND	5.0	ug/l	
129-00-0	Pyrene	ND	5.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	56%		20-125%
4165-62-2	Phenol-d5	41%		10-125%
118-79-6	2,4,6-Tribromophenol	98%		35-140%
4165-60-0	Nitrobenzene-d5	79%		46-125%
321-60-8	2-Fluorobiphenyl	80%		46-125%
1718-51-0	Terphenyl-d14	96%		49-126%

CAS No.	Tentatively Identified Compounds [a]	R.T.	Est. Conc.	Units	Q
	Total TIC, Semi-Volatile		0	ug/l	

(a) No TICs detected.

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	CEF-824-GW-2S		
Lab Sample ID:	F11765-1	**Date Sampled:**	12/12/01
Matrix:	AQ - Ground Water	**Date Received:**	12/13/01
Method:	FLORIDA-PRO SW846 3510C	**Percent Solids:**	n/a
Project:	Cecil Field CTO168		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP18869.D	1	12/19/01	SKW	12/18/01	OP4393	GOP704
Run #2							

CAS No.	Compound	Result	RL	Units	Q
	TPH (C8-C40)	ND	0.28	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	91%		55-130%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

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

Accutest Laboratories

Report of Analysis

Client Sample ID:	CEF-824-GW-2S		
Lab Sample ID:	F11765-1	**Date Sampled:**	12/12/01
Matrix:	AQ - Ground Water	**Date Received:**	12/13/01
		Percent Solids:	n/a
Project:	Cecil Field CTO168		

Metals Analysis

Analyte	Result	RL	IDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	3.9 B	10	3.2	ug/l	1	12/19/01	12/20/01	DM	SW846 6010B	SW846 3010A
Cadmium	0.27 U	5.0	0.27	ug/l	1	12/19/01	12/20/01	DM	SW846 6010B	SW846 3010A
Chromium	0.35 U	10	0.35	ug/l	1	12/19/01	12/20/01	DM	SW846 6010B	SW846 3010A
Lead	1.4 B	5.0	1.2	ug/l	1	12/19/01	12/20/01	DM	SW846 6010B	SW846 3010A

RL = Reporting Limit
IDL = Instrument Detection Limit

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

Accutest Laboratories

Report of Analysis

Client Sample ID:	CEF-824-GW-1S		
Lab Sample ID:	F11765-2	**Date Sampled:**	12/12/01
Matrix:	AQ - Ground Water	**Date Received:**	12/13/01
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	Cecil Field CTO168		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C0007432.D	1	12/23/01	JG	n/a	n/a	VC345
Run #2							

VOA PPL List

CAS No.	Compound	Result	RL	Units	Q
107-02-8	Acrolein	ND	10	ug/l	
107-13-1	Acrylonitrile	ND	10	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	2.0	ug/l	
75-25-2	Bromoform	ND	2.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-00-3	Chloroethane	ND	5.0	ug/l	
67-66-3	Chloroform	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
124-48-1	Dibromochloromethane	ND	2.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	2.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	ug/l	
541-73-1	m-Dichlorobenzene	ND	2.0	ug/l	
95-50-1	o-Dichlorobenzene	ND	2.0	ug/l	
106-46-7	p-Dichlorobenzene	ND	2.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	2.0	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
74-83-9	Methyl bromide	ND	5.0	ug/l	
74-87-3	Methyl chloride	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	CEF-824-GW-1S		
Lab Sample ID:	F11765-2	**Date Sampled:**	12/12/01
Matrix:	AQ - Ground Water	**Date Received:**	12/13/01
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	Cecil Field CTO168		

VOA PPL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		80-120%
17060-07-0	1,2-Dichloroethane-D4	95%		80-120%
2037-26-5	Toluene-D8	98%		80-120%
460-00-4	4-Bromofluorobenzene	96%		80-120%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile [a]		0	ug/l	

(a) No TICs detected.

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	CEF-824-GW-1S		
Lab Sample ID:	F11765-2	**Date Sampled:**	12/12/01
Matrix:	AQ - Ground Water	**Date Received:**	12/13/01
Method:	SW846 8270C SW846 3510C	**Percent Solids:**	n/a
Project:	Cecil Field CTO168		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L010071.D	1	12/18/01	ME	12/17/01	OP4382	SL571
Run #2							

ABN PPL List

CAS No.	Compound	Result	RL	Units	Q
95-57-8	2-Chlorophenol	ND	5.0	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.0	ug/l	
120-83-2	2,4-Dichlorophenol	ND	5.0	ug/l	
105-67-9	2,4-Dimethylphenol	ND	25	ug/l	
51-28-5	2,4-Dinitrophenol	ND	25	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	ug/l	
88-75-5	2-Nitrophenol	ND	5.0	ug/l	
100-02-7	4-Nitrophenol	ND	25	ug/l	
87-86-5	Pentachlorophenol	ND	25	ug/l	
108-95-2	Phenol	ND	5.0	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.0	ug/l	
83-32-9	Acenaphthene	ND	5.0	ug/l	
208-96-8	Acenaphthylene	ND	5.0	ug/l	
120-12-7	Anthracene	ND	5.0	ug/l	
92-87-5	Benzidine	ND	25	ug/l	
56-55-3	Benzo(a)anthracene	ND	5.0	ug/l	
50-32-8	Benzo(a)pyrene	ND	5.0	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	5.0	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	5.0	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	5.0	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.0	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.0	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	ug/l	
106-47-8	4-Chloroaniline	ND	5.0	ug/l	
218-01-9	Chrysene	ND	5.0	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	5.0	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	5.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	5.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	5.0	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	5.0	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	10	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	CEF-824-GW-1S		
Lab Sample ID:	F11765-2	**Date Sampled:**	12/12/01
Matrix:	AQ - Ground Water	**Date Received:**	12/13/01
Method:	SW846 8270C SW846 3510C	**Percent Solids:**	n/a
Project:	Cecil Field CTO168		

ABN PPL List

CAS No.	Compound	Result	RL	Units	Q
53-70-3	Dibenzo(a,h)anthracene	ND	5.0	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.0	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.0	ug/l	
84-66-2	Diethyl phthalate	ND	5.0	ug/l	
131-11-3	Dimethyl phthalate	ND	5.0	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	5.0	ug/l	
206-44-0	Fluoranthene	ND	5.0	ug/l	
86-73-7	Fluorene	ND	5.0	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	5.0	ug/l	
67-72-1	Hexachloroethane	ND	5.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	5.0	ug/l	
78-59-1	Isophorone	ND	5.0	ug/l	
91-20-3	Naphthalene	ND	5.0	ug/l	
98-95-3	Nitrobenzene	ND	5.0	ug/l	
62-75-9	N-Nitrosodimethylamine	ND	5.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	ug/l	
85-01-8	Phenanthrene	ND	5.0	ug/l	
129-00-0	Pyrene	ND	5.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	34%		20-125%
4165-62-2	Phenol-d5	26%		10-125%
118-79-6	2,4,6-Tribromophenol	88%		35-140%
4165-60-0	Nitrobenzene-d5	55%		46-125%
321-60-8	2-Fluorobiphenyl	60%		46-125%
1718-51-0	Terphenyl-d14	92%		49-126%

CAS No.	Tentatively Identified Compounds [a]	R.T.	Est. Conc.	Units	Q
	Total TIC, Semi-Volatile		0	ug/l	

(a) No TICs detected.

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	CEF-824-GW-1S		
Lab Sample ID:	F11765-2	**Date Sampled:**	12/12/01
Matrix:	AQ - Ground Water	**Date Received:**	12/13/01
Method:	FLORIDA-PRO SW846 3510C	**Percent Solids:**	n/a
Project:	Cecil Field CTO168		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP18872.D	1	12/19/01	SKW	12/18/01	OP4393	GOP704
Run #2							

CAS No.	Compound	Result	RL	Units	Q
	TPH (C8-C40)	ND	0.25	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	93%		55-130%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

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

Accutest Laboratories

Report of Analysis

Client Sample ID: CEF-824-GW-1S
Lab Sample ID: F11765-2
Matrix: AQ - Ground Water
Project: Cecil Field CTO168

Date Sampled: 12/12/01
Date Received: 12/13/01
Percent Solids: n/a

Metals Analysis

Analyte	Result	RL	IDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	3.2 U	10	3.2	ug/l	1	12/19/01	12/20/01	DM	SW846 6010B	SW846 3010A
Cadmium	0.27 U	5.0	0.27	ug/l	1	12/19/01	12/20/01	DM	SW846 6010B	SW846 3010A
Chromium	3.8 B	10	0.35	ug/l	1	12/19/01	12/20/01	DM	SW846 6010B	SW846 3010A
Lead	6.7	5.0	1.2	ug/l	1	12/19/01	12/20/01	DM	SW846 6010B	SW846 3010A

RL = Reporting Limit
IDL = Instrument Detection Limit

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

Accutest Laboratories

Report of Analysis

Client Sample ID:	CEF-824-DU01-GW-01		
Lab Sample ID:	F11765-3	**Date Sampled:**	12/12/01
Matrix:	AQ - Ground Water	**Date Received:**	12/13/01
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	Cecil Field CTO168		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C0007433.D	1	12/23/01	JG	n/a	n/a	VC345
Run #2							

VOA PPL List

CAS No.	Compound	Result	RL	Units	Q
107-02-8	Acrolein	ND	10	ug/l	
107-13-1	Acrylonitrile	ND	10	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	2.0	ug/l	
75-25-2	Bromoform	ND	2.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-00-3	Chloroethane	ND	5.0	ug/l	
67-66-3	Chloroform	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
124-48-1	Dibromochloromethane	ND	2.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	2.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	ug/l	
541-73-1	m-Dichlorobenzene	ND	2.0	ug/l	
95-50-1	o-Dichlorobenzene	ND	2.0	ug/l	
106-46-7	p-Dichlorobenzene	ND	2.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	2.0	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
74-83-9	Methyl bromide	ND	5.0	ug/l	
74-87-3	Methyl chloride	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	CEF-824-DU01-GW-01		
Lab Sample ID:	F11765-3	**Date Sampled:**	12/12/01
Matrix:	AQ - Ground Water	**Date Received:**	12/13/01
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	Cecil Field CTO168		

VOA PPL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		80-120%
17060-07-0	1,2-Dichloroethane-D4	94%		80-120%
2037-26-5	Toluene-D8	97%		80-120%
460-00-4	4-Bromofluorobenzene	95%		80-120%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile [a]		0	ug/l	

(a) No TICs detected.

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

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

Accutest Laboratories

Report of Analysis

Client Sample ID:	CEF-824-DU01-GW-01		
Lab Sample ID:	F11765-3	**Date Sampled:**	12/12/01
Matrix:	AQ - Ground Water	**Date Received:**	12/13/01
Method:	SW846 8270C SW846 3510C	**Percent Solids:**	n/a
Project:	Cecil Field CTO168		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L010072.D	1	12/18/01	ME	12/17/01	OP4382	SL571
Run #2							

ABN PPL List

CAS No.	Compound	Result	RL	Units	Q
95-57-8	2-Chlorophenol	ND	5.0	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.0	ug/l	
120-83-2	2,4-Dichlorophenol	ND	5.0	ug/l	
105-67-9	2,4-Dimethylphenol	ND	25	ug/l	
51-28-5	2,4-Dinitrophenol	ND	25	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	ug/l	
88-75-5	2-Nitrophenol	ND	5.0	ug/l	
100-02-7	4-Nitrophenol	ND	25	ug/l	
87-86-5	Pentachlorophenol	ND	25	ug/l	
108-95-2	Phenol	ND	5.0	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.0	ug/l	
83-32-9	Acenaphthene	ND	5.0	ug/l	
208-96-8	Acenaphthylene	ND	5.0	ug/l	
120-12-7	Anthracene	ND	5.0	ug/l	
92-87-5	Benzidine	ND	25	ug/l	
56-55-3	Benzo(a)anthracene	ND	5.0	ug/l	
50-32-8	Benzo(a)pyrene	ND	5.0	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	5.0	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	5.0	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	5.0	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.0	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.0	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	ug/l	
106-47-8	4-Chloroaniline	ND	5.0	ug/l	
218-01-9	Chrysene	ND	5.0	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	5.0	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	5.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	5.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	5.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	5.0	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	5.0	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	10	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-824-DU01-GW-01		
Lab Sample ID:	F11765-3	**Date Sampled:**	12/12/01
Matrix:	AQ - Ground Water	**Date Received:**	12/13/01
Method:	SW846 8270C SW846 3510C	**Percent Solids:**	n/a
Project:	Cecil Field CTO168		

ABN PPL List

CAS No.	Compound	Result	RL	Units	Q
53-70-3	Dibenzo(a,h)anthracene	ND	5.0	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.0	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.0	ug/l	
84-66-2	Diethyl phthalate	ND	5.0	ug/l	
131-11-3	Dimethyl phthalate	ND	5.0	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	5.0	ug/l	
206-44-0	Fluoranthene	ND	5.0	ug/l	
86-73-7	Fluorene	ND	5.0	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	5.0	ug/l	
67-72-1	Hexachloroethane	ND	5.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	5.0	ug/l	
78-59-1	Isophorone	ND	5.0	ug/l	
91-20-3	Naphthalene	ND	5.0	ug/l	
98-95-3	Nitrobenzene	ND	5.0	ug/l	
62-75-9	N-Nitrosodimethylamine	ND	5.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	ug/l	
85-01-8	Phenanthrene	ND	5.0	ug/l	
129-00-0	Pyrene	ND	5.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	49%		20-125%
4165-62-2	Phenol-d5	35%		10-125%
118-79-6	2,4,6-Tribromophenol	90%		35-140%
4165-60-0	Nitrobenzene-d5	80%		46-125%
321-60-8	2-Fluorobiphenyl	77%		46-125%
1718-51-0	Terphenyl-d14	91%		49-126%

CAS No.	Tentatively Identified Compounds [a]	R.T.	Est. Conc.	Units	Q
	Total TIC, Semi-Volatile		0	ug/l	

(a) No TICs detected.

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	CEF-824-DU01-GW-01		
Lab Sample ID:	F11765-3	**Date Sampled:**	12/12/01
Matrix:	AQ - Ground Water	**Date Received:**	12/13/01
Method:	FLORIDA-PRO SW846 3510C	**Percent Solids:**	n/a
Project:	Cecil Field CTO168		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP18873.D	1	12/19/01	SKW	12/18/01	OP4393	GOP704
Run #2							

CAS No.	Compound	Result	RL	Units	Q
	TPH (C8-C40)	ND	0.28	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	83%		55-130%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

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

Accutest Laboratories

Report of Analysis

Client Sample ID:	CEF-824-DU01-GW-01		
Lab Sample ID:	F11765-3	**Date Sampled:**	12/12/01
Matrix:	AQ - Ground Water	**Date Received:**	12/13/01
		Percent Solids:	n/a
Project:	Cecil Field CTO168		

Metals Analysis

Analyte	Result	RL	IDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	3.2 U	10	3.2	ug/l	1	12/19/01	12/20/01	DM	SW846 6010B	SW846 3010A
Cadmium	0.27 U	5.0	0.27	ug/l	1	12/19/01	12/20/01	DM	SW846 6010B	SW846 3010A
Chromium	30.2	10	0.35	ug/l	1	12/19/01	12/20/01	DM	SW846 6010B	SW846 3010A
Lead	22.6	5.0	1.2	ug/l	1	12/19/01	12/20/01	DM	SW846 6010B	SW846 3010A

RL = Reporting Limit
IDL = Instrument Detection Limit

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

DN 3996:4.6:50

TETRA TECH NUS, INC. **CHAIN OF CUSTODY** | **NUMBER** 824-12201A | **PAGE** 1 **OF** 1

PROJECT NO: N3996 JG005014S	**SITE NAME:** Bldg. 824 OW	**PROJECT MANAGER AND PHONE NUMBER** PAUL CALLIGAN 850 385 9899	**LABORATORY NAME AND CONTACT:** ACCUTEST L. WILLIAMS
SAMPLERS (SIGNATURE)		**FIELD OPERATIONS LEADER AND PHONE NUMBER** MERV DALE 904 281 0400	**ADDRESS** 4405 VINELAND RD., Suite C-15
		CARRIER/WAYBILL NUMBER Fedex 8311 6072 8229	**CITY, STATE** ORLANDO, FL 32811

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR 2001	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	CONTAINER TYPE PLASTIC (P) or GLASS (G)	PRESERVATIVE USED	TYPE OF ANALYSIS: PPVO w/TICS SW846 8260B	PAEO w/TIC SW846 8270C	TRPH	TOTAL MET/MS* SW846 6010B	FL-PRO				COMMENTS
									HCl	None	H_2SO_4 / HNO_3					
12/12	1045	CEF-824-GW-1S	GW	G	8	G		3	2	2	1					Cool to 4°C
12/12	0000	CEF-824-DU01-GW-01	GW	G	8	G		3	2	2	1					
																Week Release 168CF-4
																* Arsenic Cadmium Chromium Lead

1. RELINQUISHED BY	DATE 12/12/01	TIME 1600	1. RECEIVED BY	DATE	TIME
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

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

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TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER 824-121201B | PAGE 1 OF 1

PROJECT NO: N3996JG0050145	SITE NAME: B.824 OW	PROJECT MANAGER AND PHONE NUMBER: PAUL CALLEGAN 850 385-9894	LABORATORY NAME AND CONTACT: ACCUTEST L. WILLIAMS
SAMPLERS (SIGNATURE): R. Lee Mc		FIELD OPERATIONS LEADER AND PHONE NUMBER: MERV DALE 904-281-0400	ADDRESS: 4405 VINELAND RD C-15
		CARRIER/WAYBILL NUMBER: FED EX 831160728218	CITY, STATE: ORLANDO, FL

STANDARD TAT ☒
RUSH TAT ☐ ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR 2001	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	CONTAINER TYPE PLASTIC (P) or GLASS (G)	PRESERVATIVE USED	TYPE OF ANALYSIS: PP/O W/ TICs SW846 8260B	PP/EO W/ TICs SW846 8260B	TPH FL-PRO SW846 8270C	TOTAL METALS * SW846 6010B				COMMENTS
						G		HCl	NONE	H_2SO_4	HNO_3				
12/12	1340	CEF-824-MD01-GW-01	GW	~~G~~ GW	16	6	4	4	2						COOL TO 4°C
															WORK RELEASE 168CF-4
															* ARSENIC CADMIUM CHROMIUM LEAD

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY: R. Lee Mc	12/12/01	1600	1. RECEIVED BY		
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

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

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FORM NO. TtNUS-001

TETRA TECH NUS, INC. | CHAIN OF CUSTODY | NUMBER 824-1T1201C | PAGE 1 OF 1

PROJECT NO: N3996J0105014S	SITE NAME: B.824 OW
SAMPLERS (SIGNATURE)	PROJECT MANAGER AND PHONE NUMBER: PAUL CALLIGAN 850 385-1899
	FIELD OPERATIONS LEADER AND PHONE NUMBER: MEIN DAVE 904-281-0400
	CARRIER/WAYBILL NUMBER: FEDEX
	LABORATORY NAME AND CONTACT: ACCUTEST L. NEWMANS
	ADDRESS: 4405 VINELAND BLVD C-15
	CITY, STATE: ORLANDO, FL

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	CONTAINER TYPE PLASTIC (P) or GLASS (G)								PRESERVATIVE USED				TYPE OF ANALYSIS								COMMENTS
						G	G	P						HCl				PP+VO w/ TICs SW846 8260B								
						NONE								NONE				PPEO w/ TICs SW846 8270C								
						H_2SO_4								H_2SO_4				1,4 DIOXANE SW846 8270C								
						HNO_3								HNO_3				TOTAL METALS SW846 6010B								
12/12/01	1340	CEF-824-GW-25	GW	G	8	3	2	2	1																	COOL TO 4°C
																										WATER RELEASE 168CF-4
																										* ARSENIC CADMIUM CHROMIUM LEAD

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	12/12/01	1600	1. RECEIVED BY		
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

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

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Accutest Laboratories

Report of Analysis

Client Sample ID:	CEF-824-GF-E01S-01A		
Lab Sample ID:	F11976-1	**Date Sampled:**	01/07/02
Matrix:	AQ - Groundwater Filtered	**Date Received:**	01/09/02
		Percent Solids:	n/a
Project:	Cecil Field CTO168		

Metals Analysis

Analyte	Result	RL	IDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	1.2 U	5.0	1.2	ug/l	1	01/10/02	01/11/02	DM	SW846 6010B	SW846 3010A

RL = Reporting Limit
IDL = Instrument Detection Limit

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

Accutest Laboratories

Report of Analysis

Client Sample ID:	CEF-824-GW-E01S-01A		
Lab Sample ID:	F11976-2	**Date Sampled:**	01/07/02
Matrix:	AQ - Ground Water	**Date Received:**	01/09/02
		Percent Solids:	n/a
Project:	Cecil Field CTO168		

Metals Analysis

Analyte	Result	RL	IDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	6.0	5.0	1.2	ug/l	1	01/10/02	01/11/02	DM	SW846 6010B	SW846 3010A

RL = Reporting Limit
IDL = Instrument Detection Limit

U = Indicates a result < IDL

B = Indicates a result >= IDL but < RL

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER CEF-824-010802 | PAGE 1 OF 1

PROJECT NO: N3796.JC0.05945	SITE NAME: B.824	PROJECT MANAGER AND PHONE NUMBER: PAUL CALLIGAN	LABORATORY NAME AND CONTACT: ACCUTEST L. WILLIAMS
SAMPLERS (SIGNATURE): [signature]		FIELD OPERATIONS LEADER AND PHONE NUMBER: MERV DALE 904 281-0400	ADDRESS: 4405 VINELAND RD C-15
		CARRIER/WAYBILL NUMBER: FEDEX 8311 6072 7601	CITY, STATE: ORLANDO, FL

STANDARD TAT ☒
RUSH TAT ☐ ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE (MO/DAY/YEAR)	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	CONTAINER TYPE PLASTIC (P) or GLASS (G)	PRESERVATIVE USED	TYPE OF ANALYSIS: TOTAL LEAD SW846 6010B	TYPE OF ANALYSIS: DISSOLVED LEAD SW846 6010B	COMMENTS
						P	HNO3		HNO3	
1/7/02	1610	CEF-824-GF-E015-01a	GW	G	1			X		WORK RELEASE 168CF-4
1/8/02	1610	CEF-824-GW-E015-01a	GW	G	1	X				COOL TO 4°C

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY: [signature]	1/8/02	1800	1. RECEIVED BY		
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS

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

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UN3796.46.01