

**Limited Site Assessment Report**  
for  
**PCA 23 – Tank Site G1000**

**Naval Air Station Jacksonville**  
**Jacksonville, Florida**



**Southern Division**  
**Naval Facilities Engineering Command**  
**Contract Number N62467-94-D-0888**  
**Contract Task Order 0252**

September 2003

**LIMITED SITE ASSESSMENT REPORT  
FOR  
PCA 23 – TANK SITE G1000**

**NAVAL AIR STATION JACKSONVILLE  
JACKSONVILLE, FLORIDA**

**COMPREHENSIVE LONG-TERM  
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT**

**Submitted to:  
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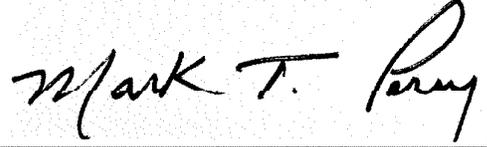
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**SEPTEMBER 2003**

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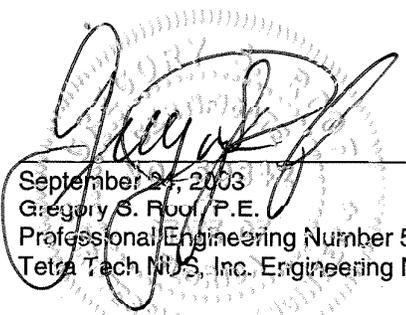
  
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The professional opinions rendered in this decision document identified as Limited Site Assessment Report for PCA 23 – Tank Site G1000, Naval Air Station, Jacksonville, Florida were developed in accordance with commonly accepted procedures consistent with applicable standards of practice. This document was prepared under the supervision of the signing engineer and is based on information obtained from others. If conditions are determined to exist differently than those described in this document, then the undersigned professional engineer should be notified to evaluate the effects of any additional information on the project described in this document.



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September 27, 2003  
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## ACRONYMS/ABBREVIATIONS

ABB-ES	ABB Environmental Services, Inc.
Bechtel	Bechtel Environmental, Inc.
bls	Below Land Surface
CLEAN	Comprehensive Environmental Action Navy
COC	Constituent of Concern
CTO	Contract Task Order
DPT	Direct-Push Technology
EDB	Ethylene Dibromide
ENCO	Environmental Conservation Laboratories, Inc.
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FID	Flame-Ionization Detector
FL-PRO	Florida Petroleum Range Organics
ft	Foot or Feet
ID	Inside Diameter
LSA	Limited Site Assessment
LSAR	Limited Site Assessment Report
µg/kg	Micrograms per Kilograms
mg/kg	Milligrams per Kilograms
msl	Mean Sea Level
NAS	Naval Air Station
Navy	United States Navy
OVA	Organic Vapor Analyzer
PAHs	Polynuclear Aromatic Hydrocarbons
PCA	Petroleum Contaminated Area
ppm	Parts per Million
PWC	Public Works Center
SCTLs	Soil Cleanup Target Levels
SOPs	Standard Operating Procedures
SOUTHNAVFACENGCOM	Southern Division, Naval Facilities Engineering Command
TCR	Tank Closure Report
TPH	Total Petroleum Hydrocarbons
TiNUS	Tetra Tech NUS, Inc.
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey

## ACRONYMS/ABBREVIATIONS (Continued)

UST	Underground Storage Tank
VOCs	Volatile Organic Compounds

## EXECUTIVE SUMMARY

Tetra Tech NUS, Inc. (TtNUS) has completed a Limited Site Assessment (LSA) at Petroleum Contaminated Area (PCA) 23, Underground Storage Tank (UST) Site Number G1000, Naval Air Station (NAS) Jacksonville, Jacksonville, Florida in accordance with the requirements of Chapter 62-770, Florida Administrative Code (FAC) and verbal agreement with the Florida Department of Environmental Protection (FDEP). This Limited Site Assessment Report (LSAR) is being submitted to the FDEP for approval.

On July 24, 2002, a meeting was held between the United States Navy (Navy), FDEP and TtNUS. It was agreed that based on previous site screening and sampling efforts, the investigation at this site need only address potential soil contamination. Therefore, to complete this LSA, TtNUS:

- Reviewed available Navy documents to:
  - Identify potential sources and receptors for petroleum hydrocarbons in the vicinity.
  - Identify private potable wells within a 0.25-mile radius of the site and public water supply wells within a 0.5-mile radius.
  - Locate nearby surface water bodies.
  - Evaluate surface hydrology and drainage.
- Generated a site plan based upon field measurements and information in historical documents.
- Performed a soil vapor survey in the unsaturated zone to delineate areas of excessively contaminated soil, if present.
- Advanced eight soil borings on site and collected soil samples from each for analysis by a certified fixed-base laboratory.

At the eight soil boring locations soil samples were collected at two-foot (ft) vertical intervals from the unsaturated zone at each boring location and field screened for organic vapors using an Organic Vapor Analyzer (OVA) equipped with a Flame Ionization Detector (FID). No OVA readings in excess of background were measured.

A sample collected immediately above the water table at each location was submitted to Environmental Conservation Laboratories, Inc. (ENCO) in Jacksonville, Florida and analyzed for volatile organic compounds (VOCs) by United States Environmental Protection Agency (USEPA) Method 8260, for polynuclear aromatic hydrocarbons (PAHs) by USEPA Method 8310, and for Total Petroleum Hydrocarbons (TPH) by the Florida Petroleum Range Organics (FL-PRO) method.

Nine PAH compounds were detected in a sample collected 4 ft below land surface (bls) from SB-06. Benzo(a)pyrene was reported at a concentration of 120 micrograms per kilogram ( $\mu\text{g}/\text{kg}$ ), exceeding its FDEP residential Soil Cleanup Target Level (SCTL) of 100  $\mu\text{g}/\text{kg}$ , but is less than the industrial SCTL of 800  $\mu\text{g}/\text{kg}$ . This was the only residential SCTL exceedance reported among the detected PAHs. Trace amounts of toluene, ethylbenzene and total xylenes were detected in most samples at concentrations several magnitudes less than FDEP residential SCTLs. TPH was detected in two samples collected near the southwest corner of the former tank at concentrations less than residential SCTLs.

During a preliminary field screening event on December 17, 2001, TtNUS personnel collected a shallow (5 to 8 ft bls) groundwater sample from the southeast corner of the former tank location. The sample was shipped to Accutest Laboratories of Orlando, Florida for analysis of VOCs, PAHs, TPH, and ethylene dibromide (EDB). Low levels of fluorene, fluoranthene, pyrene, and TPH were detected, but no significant concentrations of targeted analytes were reported. For this reason, FDEP did not require groundwater sampling and analysis as part of the LSA just completed.

TtNUS recommends that No Further Action status currently be granted for the site for the following reasons:

- The soil sample containing benzo(a)pyrene at an unacceptable concentration, based on a residential setting, is beneath asphalt pavement at an industrial site and does not present a human health concern due to lack of an exposure pathway.
- No COCs are present in groundwater at concentrations exceeding regulatory standards.
- Land use in the area of investigation is currently industrial (i.e., storage, operation, and maintenance of military aircraft) and conversion of the property to commercial or residential use in the near future is unlikely.
- A replacement UST was installed at the same location as the one removed. The removal of soil at the locations where the COC concentrations exceed SCTLs would necessitate the shoring or removal of the current tank, which would create a significant cost. The concentrations and aerial extent of impact are not significant enough to warrant this action.

## **1.0 INTRODUCTION**

### **1.1 PURPOSE AND SCOPE**

An LSA was conducted at PCA 23 (Tank Site G1000), NAS Jacksonville, by TtNUS for the Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM) under Contract Task Order (CTO) 0252, for the Comprehensive Long-term Environmental Action Navy (CLEAN) III, Contract Number N62467-94-D-0888. The data collected during the investigation was used to prepare this report. Information from the field investigation has been assimilated into this report to provide a characterization of site conditions from which to base future courses of action.

The purpose of this LSA was to evaluate the extent of petroleum hydrocarbons in subsurface soils at PCA 23 in accordance with the requirements of Chapter 62-770, FAC. PCA 23 is the former location of Tank Site Number G1000, located at Hangar 1000, which contained diesel fuel for an emergency generator. It was removed in 1998 by Bechtel Environmental, Inc. (Bechtel).

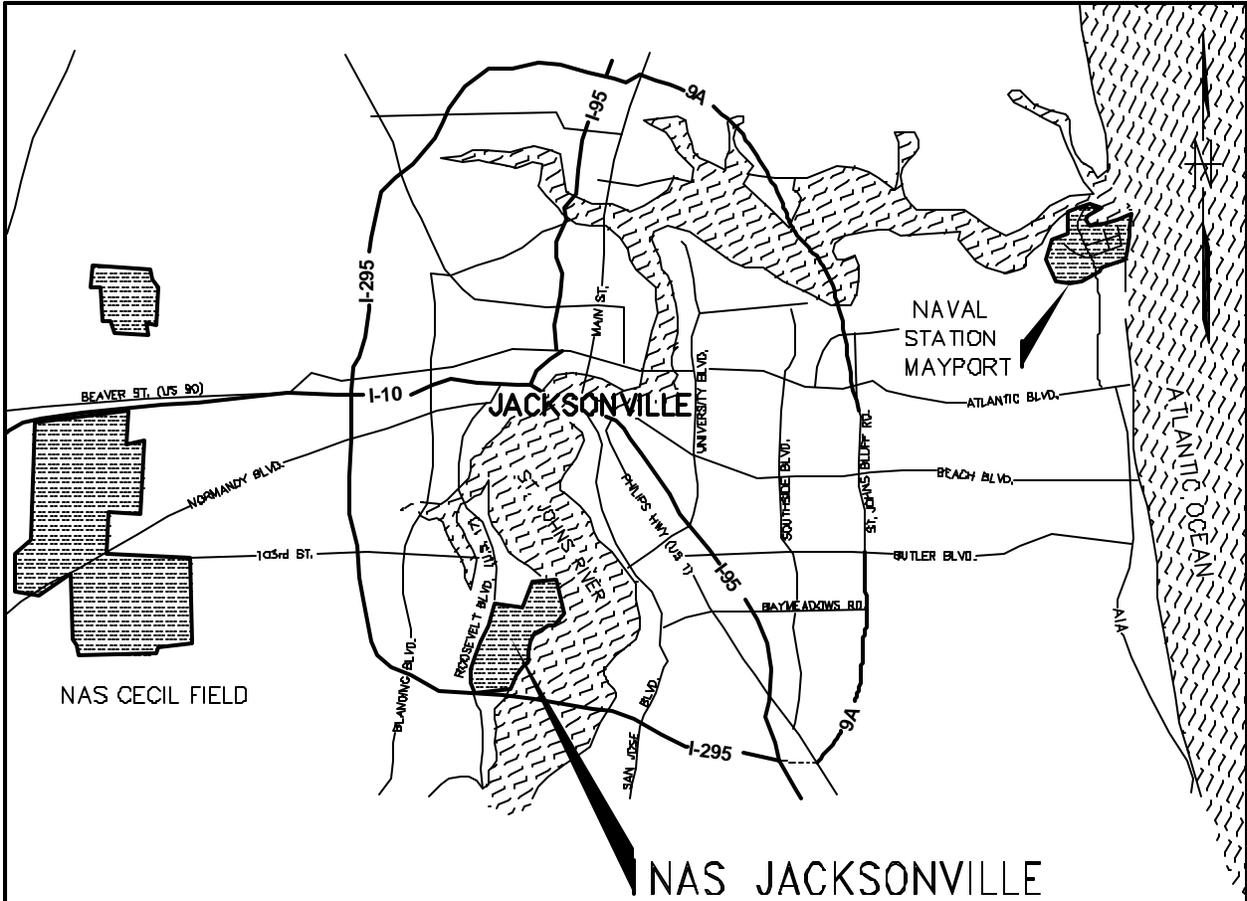
### **1.2 FACILITY AND SITE LOCATION**

NAS Jacksonville is located in northeast Florida on the west bank of the St. Johns River, southwest of downtown Jacksonville, Florida as depicted on Figure 1-1. The facility is bounded by the St. Johns River to the east, a golf course (Timuquana Country Club) to the north, U.S. Highway 17 (Roosevelt Boulevard) to the west, and a residential development to the south. Tank Site G1000 is located on the north side of Yorktown Avenue south of Hangar 1000 in the central portion of the base on the as shown on Figure 1-2. The site investigated is located on the south side of Hangar 1000 approximately 50 ft west of the keyway in an area paved with asphalt.

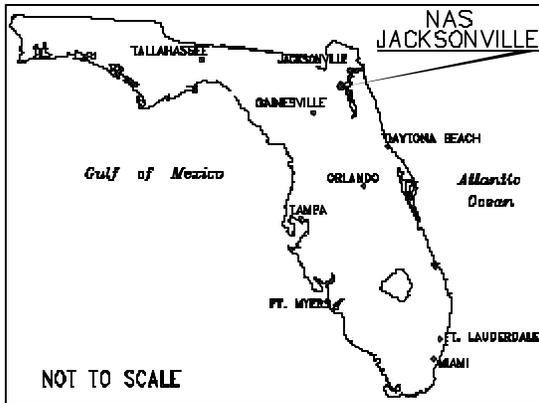
### **1.3 REGIONAL GEOLOGY AND HYDROGEOLOGY**

The geologic profile at NAS Jacksonville consists of unconsolidated surficial clastic deposits ranging from clean medium- to fine-grained sands to silty fine sands to sandy and silty clay (Fairchild, 1972) underlain by thick deposits of phosphatic sands and clays of the Hawthorn Group (Scott, 1988) and limestones and dolomites of the Floridan aquifer system (Leve, 1966).

The Hawthorn Group is significant at NAS Jacksonville because it contains as much as 200 ft of low permeability, silty, sandy clay (Scott, 1988). This low permeability unit acts as an aquiclude for the underlying Floridan aquifer system. The Floridan aquifer system is the major source of potable water in the Jacksonville area and throughout much of northeastern and central Florida.



NAS JACKSONVILLE

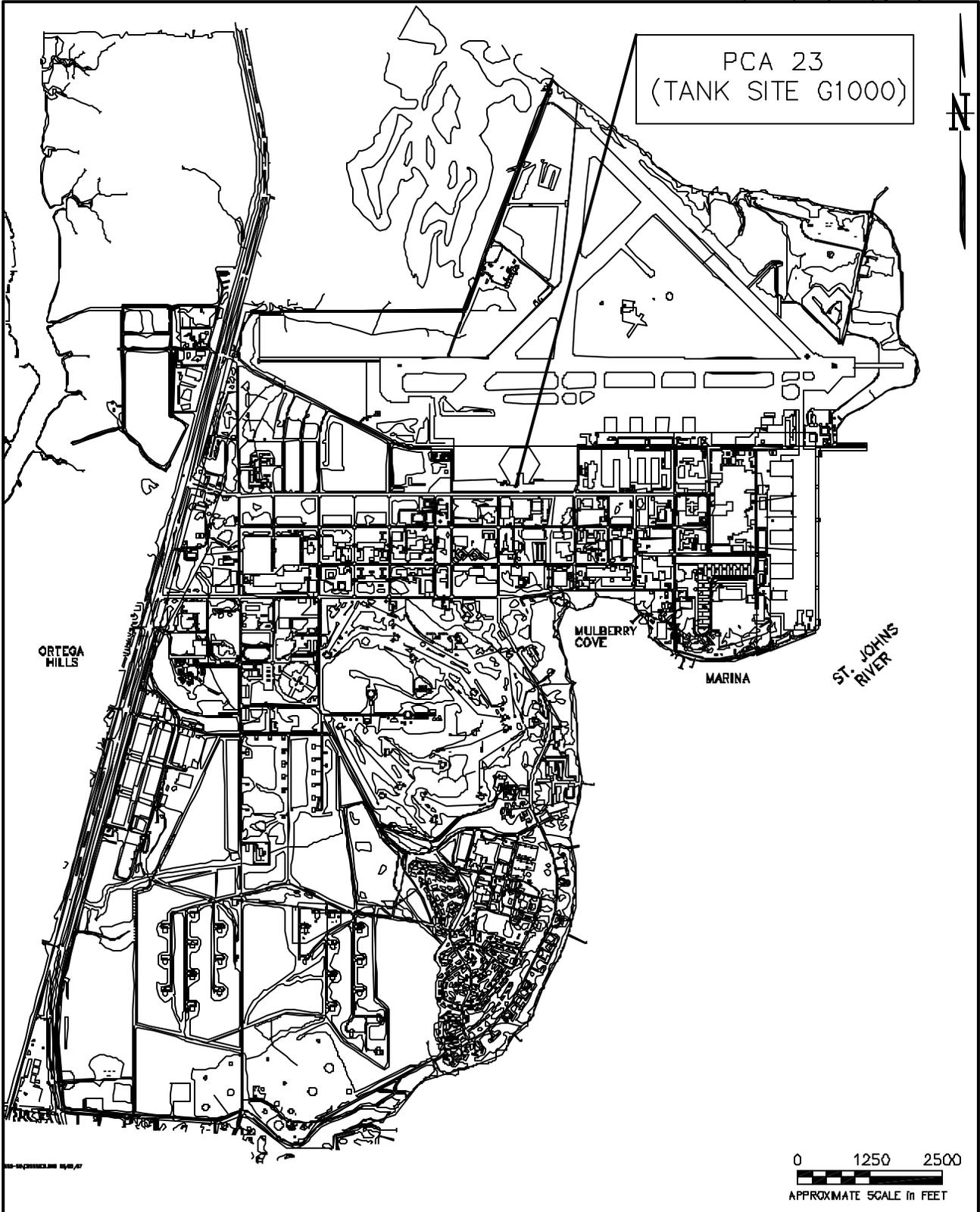


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REGIONAL LOCATION MAP  
LIMITED SITE ASSESSMENT REPORT  
PCA 23 (TANK SITE G1000)  
NAS JACKSONVILLE  
JACKSONVILLE, FLORIDA

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SITE LOCATION MAP LIMITED SITE ASSESSMENT REPORT PCA 23 (TANK SITE G1000) NAS JACKSONVILLE JACKSONVILLE, FLORIDA				

Three aquifer systems are present in northeast Florida: the surficial aquifer, intermediate aquifer, and Floridan aquifer systems. The surficial aquifer consists of sediments of Late Miocene to Recent age. The sediments are highly variable and include sand, shelly sand, coquina, silt, clay, shell beds, and in some parts of Duval County, a basal limestone unit known as the Rock Aquifer. While the surficial aquifer is considered a single unit on a regional scale, localized clay layers or discontinuous lenses may divide the aquifer into distinct permeable units [ABB Environmental Services, Inc. (ABB-ES), 1995]. It averages 50 to 70 ft in thickness, but in places exceeds 100 ft thick. Average well yields in Jacksonville from the surficial aquifer were estimated by the City of Jacksonville Planning Department to be between 200 and 500 gallons per day (Toth, 1990).

The underlying Hawthorn Group of Miocene age is variably referred to as the “intermediate aquifer system” or “secondary artesian aquifer.” Although the Hawthorn acts collectively as a confining unit between the surficial aquifer and the underlying Floridan aquifer due to high clay content, an interlayered aggregate of discontinuous, water-bearing horizons of low- to moderate yield give it aquifer characteristics. The Hawthorn is encountered at an average depth of approximately 50 to 60 ft bls and its thickness is approximately 300-350 ft in the vicinity of NAS Jacksonville (Scott, 1988). The main body of sediments within the Hawthorn Group consists primarily of low-permeability gray, blue-green, and olive green clay, sandy clay, and sandy limestone with abundant phosphate granules and pebbles (Spechler, 1982).

The Floridan aquifer system underlies the Hawthorn Group. The top of the Floridan aquifer in the vicinity of NAS Jacksonville occurs at a depth of about 400 ft bls. Its average thickness in Duval County is 1500 ft (Leve, 1966). From top to bottom, the Floridan aquifer consists of the limestones of the Ocala Group (Crystal River, Williston, and Inglis Formations), the Avon Park Limestone, Lake City Limestone, and Oldsmar Limestone, all of Eocene age. The Floridan aquifer system is the principal source of fresh water in northeast Florida. The water bearing zones consist of soft, porous limestone and porous dolomite beds. Groundwater in the Floridan aquifer in the vicinity of NAS Jacksonville is moving eastward toward the St. Johns River basin.

#### **1.4 POTABLE WATER WELL SURVEY**

Potable water supply information presented in this report was obtained from the NAS Jacksonville Facilities and Environmental Department. Three public supply wells are present southeast of the study site, each of which is owned by the Navy Public Works Center (PWC). The nearest of the three wells is approximately 2800 ft from the site on the northwest corner of the intersection of Birmingham Avenue and Langley Street. The other two are located within the potable water plant complex, approximately 3500 ft southeast of the site, or approximately 700 ft southeast of the first well.

**Table 1-1  
Potable Water Well Survey**

Limited Site Assessment Report, PCA 23 (Tank Site G1000)  
Naval Air Station Jacksonville  
Jacksonville, Florida

Well ID	Approximate Distance from Site (ft)	Casing Diameter (inches)	Depth of Well (ft bls)	Use
A	2800	12	1,215	Public Supply
B	3500	18	1,200	Public Supply
C	3500	18	1,200	Public Supply

**1.5 TOPOGRAPHY AND DRAINAGE**

NAS Jacksonville is located in the Coastal Plain physiographic province. The Coastal Plain is composed of marine sediments deposited in terraces which originated due to prehistoric fluctuations in sea level. The terrace deposits are in the form of ridges that tend to parallel the current coastline. The terrace deposits are characterized by very low relief with gentle slopes to the east-southeast. Seven terraces are present in northeast Florida with NAS Jacksonville located within the Pamlico terrace [10 to 25 ft above mean sea level (msl)].

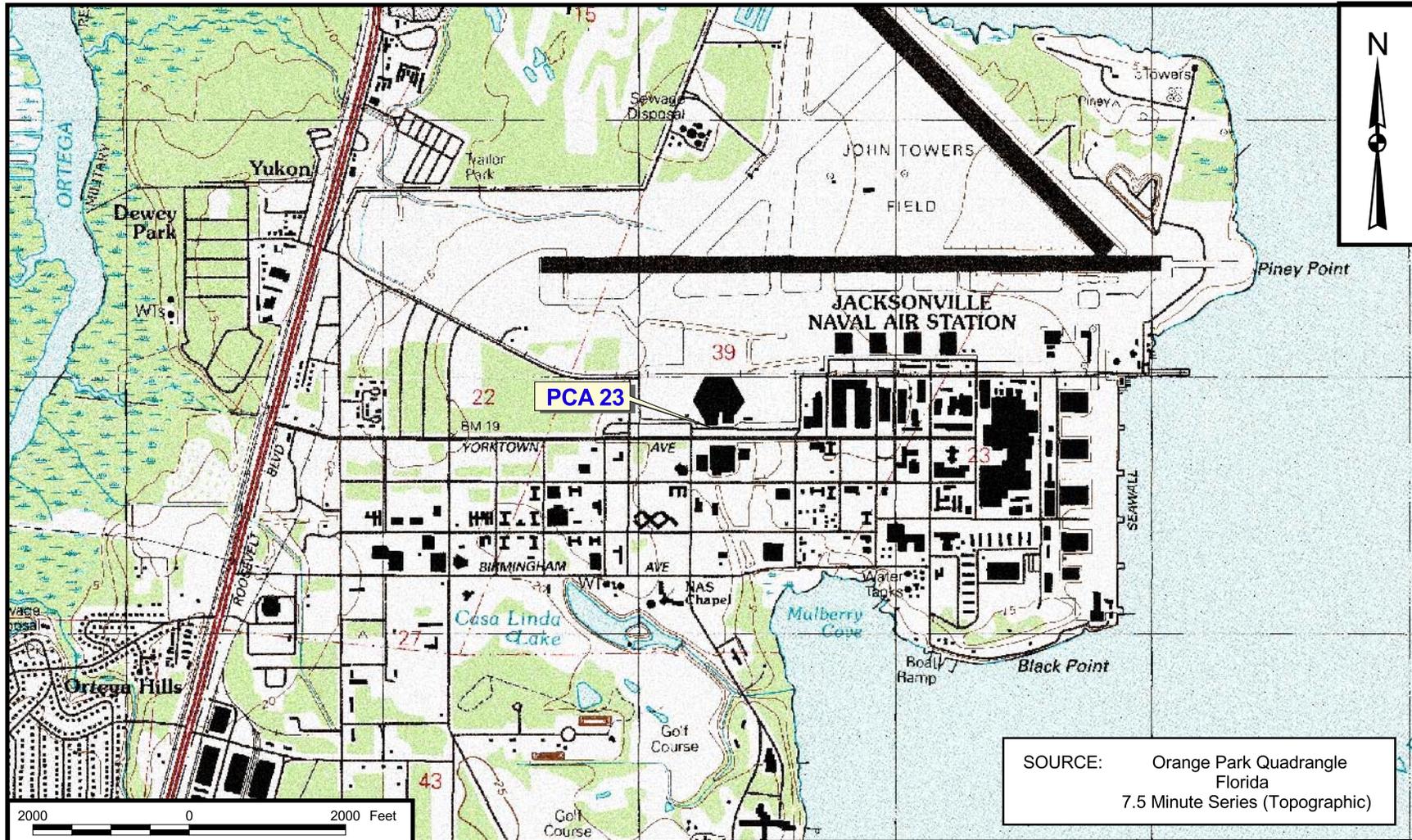
The area comprising PCA 23 is virtually flat. Based on information provided on the United States Geological Survey (USGS) Orange Park, Florida 7.5-minute quadrangle (USGS, 1993), surface elevation at the site averages approximately 10 ft above msl (Figure 1-3).

**1.6 LAND USE IN SITE VICINITY**

The site is situated on the south side of Hangar 1000, which abuts the flightline at NAS Jacksonville. The site is bounded on the east and west by asphalt parking, on the north by Hangar 1000 and on the south by Yorktown Avenue. Hangar 1000 is an industrial area where aircraft are managed and repaired.

**1.7 SITE DESCRIPTION**

A site plan showing surface features in the area of investigation is provided as Figure 1-4. The site and immediate surroundings consist exclusively of asphalt pavement. A security fence separating the asphalt parking area from Hangar 1000 is located approximately 14 ft north of the former tank location.



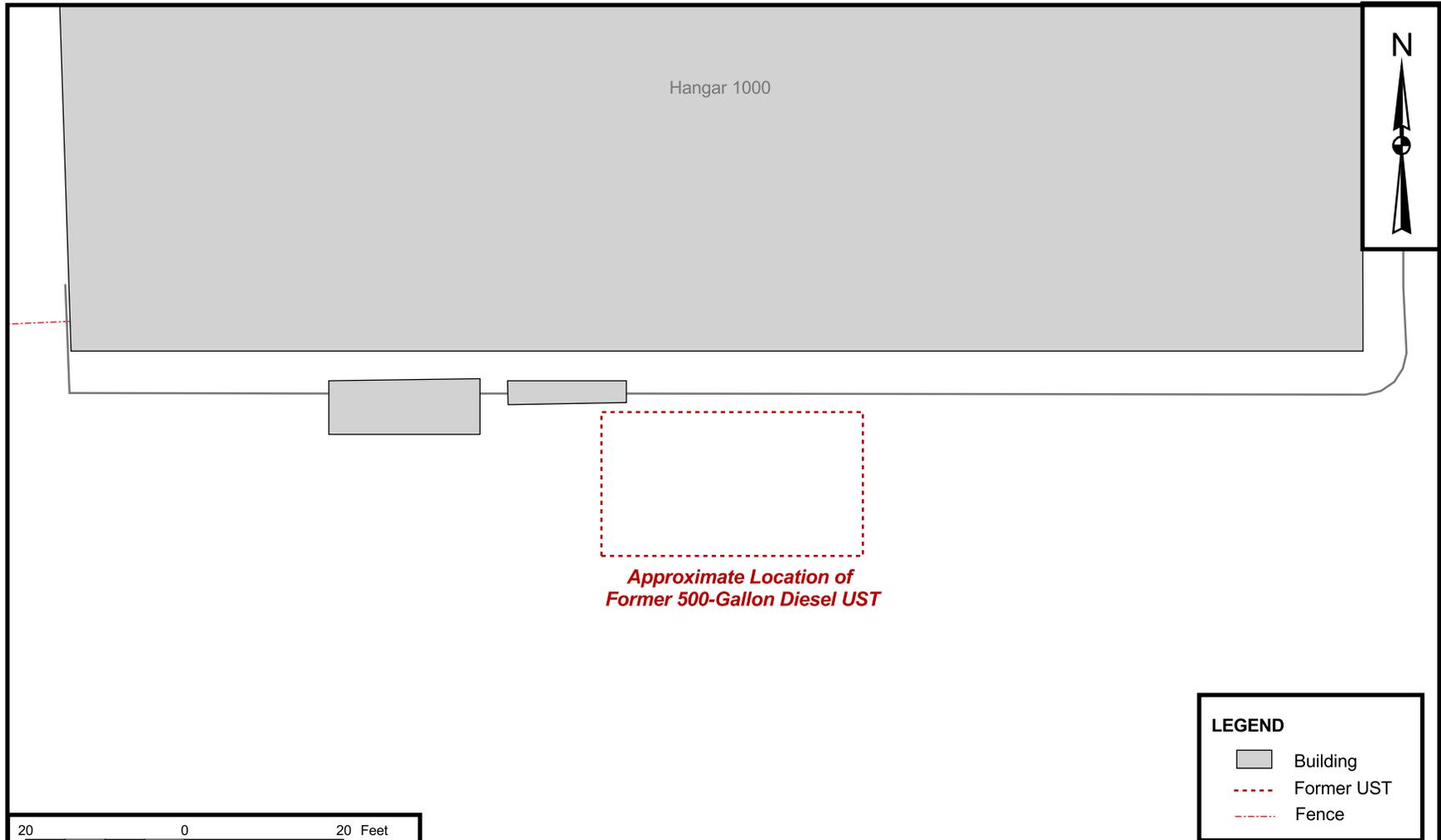
SOURCE: Orange Park Quadrangle  
 Florida  
 7.5 Minute Series (Topographic)

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TOPOGRAPHIC MAP  
 LIMITED SITE ASSESSMENT REPORT  
 PCA 23 (TANK SITE G1000)  
 NAS JACKSONVILLE  
 JACKSONVILLE, FLORIDA

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SITE PLAN  
 LIMITED SITE ASSESSMENT REPORT  
 PCA 23 (TANK SITE G1000)  
 NAS JACKSONVILLE  
 JACKSONVILLE, FLORIDA

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## **1.8 SITE INVESTIGATIVE HISTORY**

### **1.8.1 Tank Removal**

Tank Number G1000 was a 500-gallon fiberglass UST used to store diesel fuel for an emergency generator. It was removed and replaced by Bechtel on October 29, 1998. A copy of their Tank Closure Report (TCR) is provided as Appendix A. No information on installation date of the original tank is provided in the TCR.

The top of the UST was located 3 ft bls when removed. No stained soil or free product was noted in the excavation. Twelve soil samples collected from the excavation were screened for organic vapors with an OVA-FID and six of the samples collected 2 to 2.5 ft bls produced a net OVA-FID reading exceeding 50 parts per million (ppm), indicating the presence of "excessively contaminated soil" per Chapter 62-770.200(2), FAC. A confirmatory soil and groundwater sample collected from the excavation was sent to ENCO in Jacksonville, Florida for analysis of COCs, and no analyte was reported at a concentration exceeding its applicable regulatory criteria in either sample. The cavity was backfilled with excavated soils and clean fill material.

### **1.8.2 Site Screening Report**

On December 17, 2001, at the request of SOUTHNAVFACENGCOM, TtNUS performed a limited site screening at the former location of Tank G1000. Results are documented in a Site Screening Letter Report dated June 28, 2002 and are summarized here. A copy of this report is provided as Appendix B. One soil boring was advanced below the water table near the southeast corner of the former excavation. The water table was encountered at a depth of approximately 5 ft bls. Soil samples were collected from the boring at depths of 1 ft, 3 ft, and 5 ft bls and screened for organic vapors with an OVA-FID. None of the three samples produced an instrument reading above background. A split of the soil sample collected 5 ft bls was shipped to Accutest Laboratories in Orlando, Florida and analyzed for VOCs, PAHs, and TPH. Three PAHs [benzo(a) anthracene, benzo(a)pyrene, and dibenzo(a,h)anthracene] were reported at concentrations exceeding their FDEP residential SCTLs.

The boring was advanced below the water table to a total depth of 8 ft bls and a temporary monitoring well was installed. A groundwater sample collected from the temporary well was shipped to Accutest and analyzed for VOCs, PAHs, TPH, and ethylene dibromide (EDB). Three PAH compounds and TPH were reported at concentrations exceeding laboratory reporting limits, but did not exceed FDEP GCTLs. Based upon analytical results of the confirmatory soil sample, TtNUS recommended that a Site Assessment be performed. The Navy, FDEP, and TtNUS met and agreed that an expanded soil assessment should be performed at the site, but that groundwater assessment was not required.

## **1.9 PURPOSE OF CURRENT INVESTIGATION**

The objective of the field investigation just completed was to verify results of the site screening and delineate areas (if present) where hydrocarbon concentrations exceed action levels in soil. The data collected during the investigation was used to prepare this report. This LSAR provides a characterization of site conditions from which to base future courses of action. A SAR summary sheet is provided as Appendix C.

## **2.0 SUBSURFACE INVESTIGATION METHODS**

### **2.1 QUALITY ASSURANCE**

The site investigation was conducted in accordance with the Standard Operating Procedures (SOPs) described by the FDEP SOPs (DEP-SOP-001/01) and adopted by TtNUS.

### **2.2 SOIL QUALITY ASSESSMENT**

#### **2.2.1 Soil Borings**

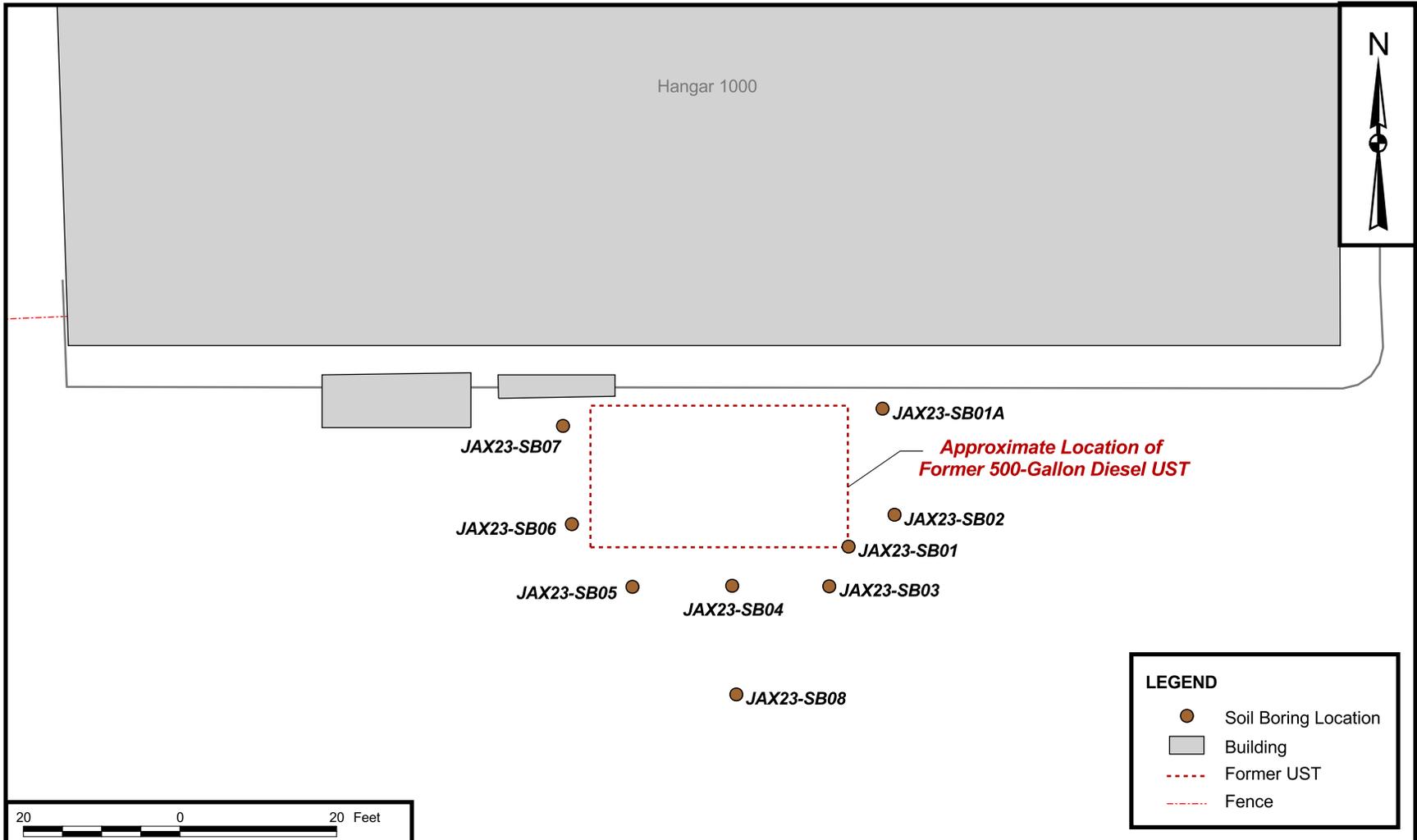
A total of eight shallow soil borings (JAX-PCA23-SB-01A through SB-08) were advanced in the area of the former UST. The eight soil boring locations completed during this LSA plus the location of the boring completed for soil and groundwater assessment during the Site Screening event (JAX-PCA23-SB-01, December 17, 2001) are shown on Figure 2-1. Borings were excavated with a stainless steel, 3-inch, inside diameter (ID) hand-auger assembly and were terminated when saturated sediments were encountered. Soil samples were collected at 2-ft vertical intervals beginning at 2-ft bls and screened for organic vapors with an OVA-FID. Lithologic descriptions of sediments encountered during completion of the borings are provided in Appendix D.

#### **2.2.2 Field Screening Procedures**

At the locations of borings SB-01A through SB-04 (Figure 2-1), soil samples were collected from 2 ft and 4 ft bls, and at locations SB-05 through SB-08, samples were collected from 2 ft, 4 ft, and 6 ft bls, based on first occurrence of saturated sediments. The samples were field screened for organic vapor content using an OVA-FID. Soil vapor analyses were performed in accordance with the headspace screening method described in Chapter 62-770.200(2), FAC. Results of the soil vapor screening survey conducted at PCA 23 are discussed below in Section 3.2.

#### **2.2.3 Soil Sampling for Laboratory Analysis**

One soil sample from each boring was submitted to ENCO for laboratory analysis. Sampling strategy called for selection of the sample from each boring exhibiting the highest organic vapor content for laboratory analysis. In the event no organic vapors were observed in any sample at a given location, the deepest sample, or one collected immediately above the water table, would be submitted. The seven samples collected and submitted on November 8, 2002 were analyzed for VOCs by USEPA Method 8260,



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SOIL BORING LOCATIONS  
 LIMITED SITE ASSESSMENT REPORT  
 PCA 23 (TANK SITE G1000)  
 NAS JACKSONVILLE  
 JACKSONVILLE, FLORIDA

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for PAHs by USEPA Method 8310, and for TPH by the FL-PRO Method. The sample collected and submitted on May 27, 2003 was analyzed for PAHs only.

## 3.0 RESULTS OF INVESTIGATION

### 3.1 SITE GEOLOGY AND HYDROGEOLOGY

#### 3.1.1 Lithology

As indicated on the Boring Logs presented in Appendix D, the study area is underlain by 6 ft of fine sand, silty sand, and clayey sand ranging in color from light brown to grayish brown to orange brown to reddish orange.

#### 3.1.2 Groundwater Occurrence

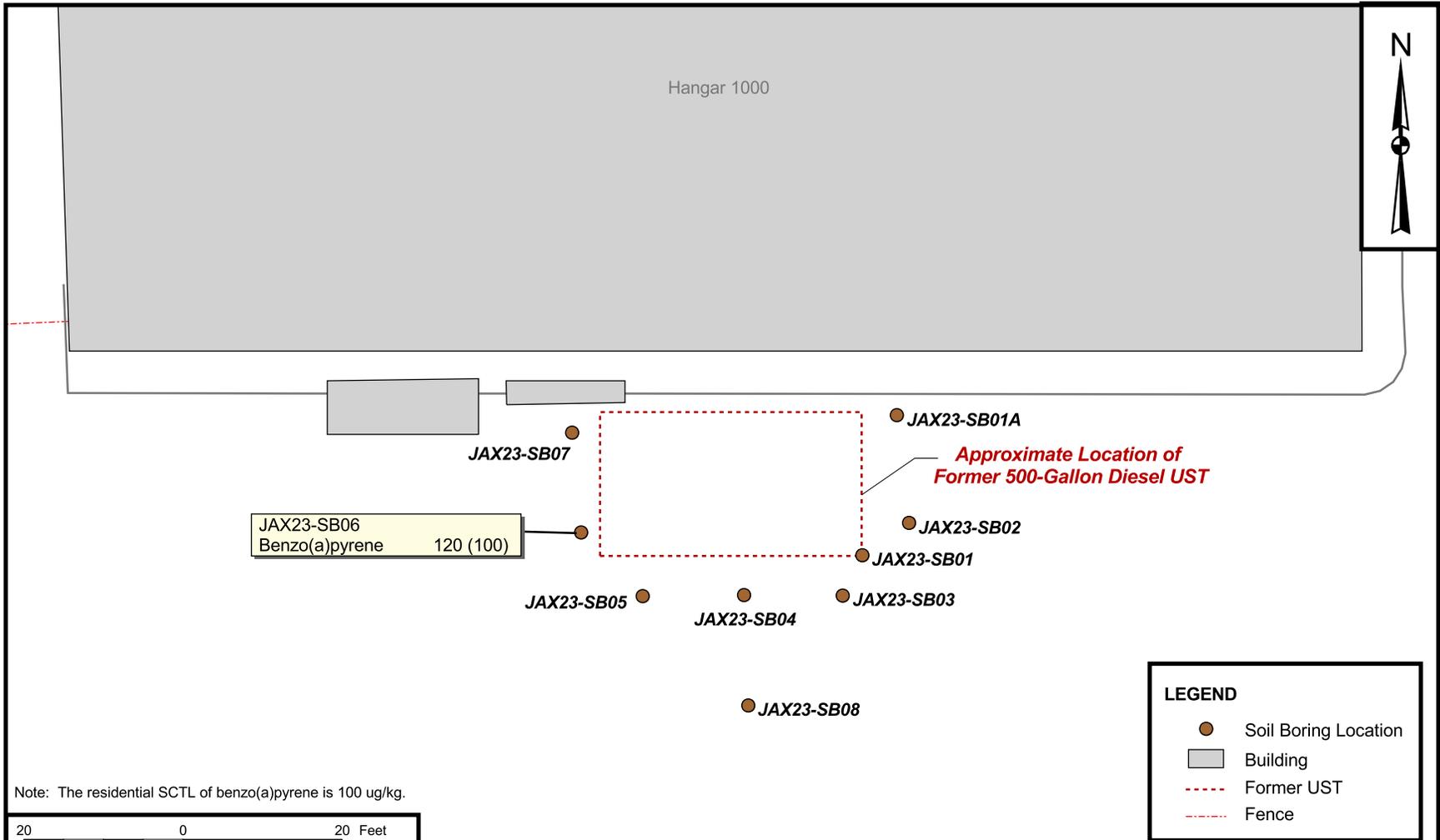
Based on information obtained during this LSA and on information from previous investigations [Bechtel, (1998) and TtNUS, (2002)], depth-to-water at the site can vary, minimally, from 4.0 ft bls to 6.5 ft bls. Groundwater flow direction (potentiometric) maps could not be generated from available data, but remedial investigation activities performed over the past 5 years by TtNUS and covering a large area that is approximately 100 ft east of the subject site indicate that groundwater flow in the vicinity is to the southeast.

### 3.2 SOIL SCREENING RESULTS

Soil vapor screening methods and sampling locations for headspace analyses are discussed above in Section 2.2.2. No organic vapors were detected in the samples analyzed. Results of the soil vapor survey are displayed on Direct-push Technology (DPT) Sample Log Sheets presented in Appendix E. As a consequence of the soil vapor screening results being at background levels, samples selected for laboratory analysis were those collected immediately above the water table (i.e., either 4 ft bls or 6 ft bls) at each boring location.

### 3.3 SOIL SAMPLE LABORATORY ANALYTICAL RESULTS

As indicated on Figure 3-1, the only analyzed constituent detected at a concentration exceeding its FDEP residential SCTL was benzo(a)pyrene at 120 µg/kg in sample SB-06 at 4 ft bls. The residential SCTL for benzo(a)pyrene is 100 µg/kg and the industrial SCTL is 800 µg/kg. Eight other PAH compounds were identified in this sample, located near the southwestern corner of the former UST, but none at concentrations exceeding residential SCTLs. Trace quantities of toluene and total xylenes were identified in seven soil samples and trace amounts of ethylbenzene were identified in six samples. TPH was reported at concentrations of 32 and 15 milligrams per kilogram (mg/kg) in samples SB-05 and SB-06 (4 ft bls), respectively. The residential SCTL for TPH is 340 mg/kg. A summary of detected constituents in soil samples is presented in Table 3-1 and complete laboratory data packages are included in Appendix F.



Note: The residential SCTL of benzo(a)pyrene is 100 ug/kg.



DRAWN BY J. LAMEY	DATE 9/16/03
CHECKED BY	DATE
COST/SCHEDULE-AREA	
SCALE AS NOTED	



SOIL ANALYTICAL RESULTS EXCEEDING FDEP RESIDENTIAL SCTLs  
 LIMITED SITE ASSESSMENT REPORT  
 PCA 23 (TANK SITE G1000)  
 NAS JACKSONVILLE  
 JACKSONVILLE, FLORIDA

CONTRACT NUMBER 4258	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 3-1	REV 0

**Table 3-1  
Dected Constituents in Fixed-Base Laboratory Soil Samples**

Limited Site Assessment Report  
PCA 23 - Tank Site G1000  
Naval Air Station Jacksonville  
Jacksonville, Florida

Compound	Direct Exposure Residential <sup>1</sup>	Leachability Based on Groundwater Criteria <sup>1</sup>	Sample ID ("JAX-PCA23-")							
			SB01-S06	SB02-S06	SB03-S06	SB04-S06	SB05-S04	SB06-S04	SB07-S04	SB08-S06
Sample Collection Date			11/08/02	11/08/02	11/08/02	11/08/02	11/08/02	11/08/02	11/08/02	05/27/03
Sample Depth (ft)			6	6	6	6	4	4	4	6
<b>Volatile Organic Compounds (USEPA Method 8021B)(µg/kg)</b>										
Toluene	380,000	500	1.3	1.7	1.1	1.1	1.1	1.7	1.5	NA
Ethylbenzene	1,100,000	600	1.3	1.6	1	1.1	1.1	1.5	1.4	NA
Total Xylenes	5,900,000	200	5.2	5.1	2.6	2.1	2.9	4.8	6.2	NA
<b>PAHs (USEPA Method 8310)(µg/kg)</b>										
Fluoranthene	2,900,000	1,200,000	<4.0	<4.0	<4.0	<4.1	<40	300	<39	<4.2
Pyrene	2,200,000	880,000	<4.0	<4.0	<4.0	<4.1	<40	230	<39	<4.2
Chysene	140,000	77,000	<4.0	<4.0	<4.0	<4.1	<40	120	<39	<4.2
Benzo(b)fluoranthene	1,400	1,000	<4.0	<4.0	<4.0	<4.1	<40	96	<39	<4.2
Benzo(k)fluoranthene	15,000	25,000	<4.0	<4.0	<4.0	<4.1	<40	44	<39	<4.2
Benzo(a)pyrene	100	800	<4.0	<4.0	<4.0	<4.1	<40	<b>120</b>	<39	<4.2
Dibenzo(a,h)anthracene	100	30,000	<4.0	<4.0	13	<4.1	<40	41	<39	<4.2
Benzo(g,h,i)perylene	2,300,000	32,000,000	<4.0	<4.0	9.6	<4.1	<40	75	<39	<4.2
Indeno(1,2,3-cd)pyrene	1,500	28,000	<4.0	<4.0	9.1	<4.1	<40	83	<39	<4.2
<b>FL-PRO (mg/kg)</b>										
TPH	340	340	<8	<8	<8	<8.2	32	15.0	<7.8	NA
Notes:										
µg/kg = micrograms per kilogram			NA = not analyzed							
mg/kg = milligrams per kilogram			<b>Bold</b> = Exceeds residential SCTL.							
TPH = Total Petroleum Hydrocarbons										
<sup>1</sup> Chapter 62-770, FAC (April 30, 1999)										

## 4.0 SUMMARY AND RECOMMENDATIONS

TtNUS has completed an LSA at PCA 23 (Tank Site G1000), NAS Jacksonville to evaluate potential soil contamination. The FDEP agreed to assess soil only during this investigation due to lack of evidence of groundwater contamination presented in previous reports, specifically in a Site Screening Report submitted by TtNUS on June 28, 2002. To assess soil quality, eight borings were advanced in and around the location of a former 500-gallon fiberglass diesel UST. Soil samples collected from the borings were field-screened for organic vapors using an OVA-FID and select samples were submitted to a fixed-base laboratory (ENCO of Jacksonville, Florida) for analysis of appropriate petroleum compounds.

Organic vapors were not detected in any of the soil samples collected from the borings that were screened in the field with the OVA instrument. Soil samples collected immediately above the soil/water interface from eight locations surrounding the former UST position were analyzed for VOCs, PAHs, and TPH. Benzo(a)pyrene was reported at a concentration of 120 µg/kg in sample SB-06 (4 ft bls) located near the southwest corner of the removed UST, exceeding its FDEP residential SCTL of 100 µg/kg, but less than the industrial SCTL of 800 µg/kg. No other exceedances were reported in the eight soil samples analyzed.

TtNUS recommends that No Further Action status currently be granted for the site for the following reasons:

- The soil sample containing benzo(a)pyrene at an unacceptable concentration for a residential setting is beneath asphalt pavement at an industrial site and does not present a human health concern due to lack of an exposure pathway.
- No COCs are present in groundwater at concentrations exceeding regulatory standards.
- Land use in the area of investigation is currently industrial (i.e., storage, operation, and maintenance of military aircraft) and conversion of the property to commercial or residential use in the near future is unlikely.
- A replacement UST was installed at the same location as the one removed. The removal of soil at the locations where the COC concentrations exceed SCTLs would necessitate the shoring or removal of the current tank, which would create a significant cost. The concentrations and aerial extent of impact are not significant enough to warrant this action.

## REFERENCES

- ABB-ES (ABB Environmental Services, Inc.), 1995. "Naval Installation Restoration Program Plan", Volume 7, Remedial Investigation and Feasibility Study Work and Project Management Plan, Operable Unit 3 (OU 3), NAS Jacksonville, Jacksonville, Florida. Prepared for Southern Division Naval Facilities Engineering Command, North Charleston, South Carolina. March.
- Bechtel (Bechtel Environmental, Inc.), 1998. "Tank Closure Report for Underground Storage Tank (UST) Removal at Building 1000 Tank #G1000". Prepared for Department of the Navy Southern Division Naval Facilities Engineering Command. October.
- Fairchild, R.W., 1972. "The Shallow-Aquifer System in Duval County, Florida: Florida Bureau of Geology Report of Investigation No. 59".
- FDEP (Florida Department of Environmental Protection), Standard Operating Procedure DEP-SOP-001.01.
- Leve, G. W., 1966. "Groundwater in Duval and Nassau Counties, Florida": Bureau of Geology Report of Investigation No. 43.
- Scott, T. M., 1988. "The Lithostratigraphy of the Hawthorn Group (Miocene) of Florida". Florida Geological Survey Bulletin No. 59.
- Spechler, R.M., 1982. "Generalized Configuration of the Top of the Limestone Unit of the Lower part of the Surficial Aquifer, Duval County, Florida".
- Toth, D. J., 1990. "Geohydrologic Summary of the Floridan Aquifer in Coastal Areas of Nassau, Duval, and Northern St. Johns Counties" St. Johns River Water Management District Technical Publication SJ 90-5, Palatka, Florida.
- TiNUS (Tetra Tech NUS, Inc.), 2002. "Site Screening Letter Report Petroleum Contaminated Area 23", Naval Air Station Jacksonville, Florida. Prepared for the Southern Division, Naval Facilities Engineering Command, North Charleston, South Carolina. June.
- USGS (United States Geological Survey), 1993. *Orange Park Quadrangle, Florida, 7.5 Minute Series (Topographic)*. United States Department of the Interior Geological Survey.

**APPENDIX A**  
**TANK CLOSURE REPORT**  
**BECHTEL ENVIRONMENTAL, INC.**  
**OCTOBER 29, 1998**

# **TANK CLOSURE REPORT**

For

## **UNDERGROUND STORAGE TANK (UST) REMOVAL AT BUILDING 1000 TANK #G1000**

### **NAVAL AIR STATION JACKSONVILLE**

Prepared for:

DEPARTMENT OF THE NAVY  
SOUTHERN DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
Under Contract No. N62467-93-D-0936

Prepared by:

Bechtel Environmental, Inc.

October 29, 1998

DO No. 0057

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5.0 GROUNDWATER SAMPLING.....	6

## Appendices

Appendix A - Figures

Appendix B - Soil Analytical Report

Appendix C - Groundwater Analytical Report

Appendix D - FDEP Forms

## 1.0 INTRODUCTION

Bechtel Environmental, Inc. (Bechtel) was contracted by the Navy under Prime Contract Number N62467-93-D-0936, Delivery Order 0057, to remove one 500- gallon underground storage tank (UST) at Building 1000 at Naval Air Station (NAS) Jacksonville. This UST is designated as Tank #G1000.

This UST is regulated per Chapter 62-761 F.A.C. because the size of the UST exceeds 110 gallons. And stored diesel fuel for an emergency generator. This UST was in service and replaced with one doublewall fiberglass ust (underground storage tank).

The closure assessment for this UST removal consisted of:

- Collecting soil samples during the excavation process from the top of the UST and from the sidewalls of the excavation.
- Screening the soil samples by headspace analysis using a flame ionization detector (FID) / organic vapor analyzer (OVA) meter.
- Sending one soil sample to a laboratory for analysis by EPA Method 8021, EPA Method 8100, and TRPH by Florida PRO Method.
- Documenting the location of the UST, the soil sample locations, and the soil screening results.
- Observing the excavation for the presence of free product and documenting the findings.
- Installing a temporary groundwater monitoring well.
- Documenting the location of the temporary groundwater monitoring well.
- Collecting a groundwater sample from the temporary groundwater monitoring well.
- Sending the groundwater samples to a laboratory for analysis by EPA Method 602, EPA Method 8310, and TRPH by Florida PRO Method.
- Preparing the required Florida Department of Environmental Protection (FDEP) forms.

## 2.0 TANK REMOVAL

One 500- gallon fiberglass UST, designated as Tank #G1000, was removed on October 29, 1998. This UST was located adjacent to building #1000. The location of Tank #G1000 is shown on the drawing found in Appendix A.

Tank #G1000 was used to store diesel fuel for the emergency generator located adjacent to this UST. The fuel in this UST had been transferred to a temporary tank located north of bldg prior to the start of the excavation and removal work.

The UST was excavated using a backhoe. The top surface of the UST was located approximately three feet below ground level. The piping from this UST was disconnected and removed during removal. Visual inspection of the UST after removal did not indicate that the tank had been leaking.

No free product was observed in the UST removal excavation.

Excavated soils were screened during the removal process using (FID) (OVA) meter readings see section 3.0. After removal of the UST, the excavation was backfilled to grade using all excavated soils and clean fill soil.

The removed UST was transported to the Bechtel yard on Albermerle Ave. The UST was placed in the decontamination area at the Bechtel yard where it was cut open and cleaned out. The cleaned-out UST was cut into pieces and placed in a roll off for disposal in a class C landfill

### 3.0 SOIL SAMPLING - HEADSPACE ANALYSIS

Soil samples were collected from the top, bottom, and sides of the UST during excavation and from the excavation walls after excavation was complete. Each soil sample was split and placed into two 16-ounce jars which were filled half-full and sealed with a lid. After waiting for equilibration, a small hole was made in the lid to sample the headspace using a FID/OVA meter. The type of FID/OVA meter that was used during this work was a Century Foxboro Model TVA-1000B. The FID/OVA readings are tabulated in Table 1 below.

**Table 1  
FID/OVA Readings**

Sample Number	Sample Date	Depth (ft bls)	Unfiltered OVA Reading (ppm)	Filtered OVA Reading (ppm)	Net OVA Reading (ppm)
1000-1	10/29/98	0	0	NP	0
1000-2	10/29/98	0	17.5	0	17.5
1000-3	10/29/98	2	411	0	411
1000-4	10/29/98	2	43	0	43
1000-5	10/29/98	2	1385	5	1380
1000-6	10/29/98	2	280	0	280
1000-7	10/29/98	2	117	0	117
1000-8	10/29/98	2	120	0	120
1000-9	10/29/98	2.5	5	NP	5
1000-10	10/29/98	2.5	6.5	NP	6.5
1000-11	10/29/98	2.5	530	0	530
1000-12	10/29/98	2.5	3	NP	3

Table 1 Notes:

1. The first digits of the sample number indicate the tank number.
2. NP = no reading performed
3. bls = below land surface
4. The sample locations are graphically shown on the figures found in Appendix A.

## 4.0 SOIL SAMPLING - LABORATORY ANALYSIS

One soil sample was collected for laboratory analysis per section B.1.a.(3) of the April 1998 Storage Tank System Closure Assessment Requirements. This soil sample was collected from the side wall of the excavation after excavation was complete. The soil sample was collected in accordance with the sampling, decontamination and handling procedures specified in Bechtel's Comprehensive Quality Assurance Plan (CompQAP) No. 940316 and the Bechtel Project procedures for the Navy RAC Project. The sample was sent to Environmental Conservation Laboratories (ENCO) for analysis by EPA Method 8021, EPA Method 8100, and TRPH by Florida PRO Method in accordance with ENCO's CompQAP No. 960038.

The results of the laboratory analysis found that the soil did not contain any petroleum products' chemicals of concern at a concentration that exceeded the minimum detection limit or the State of Florida Selected Soil Cleanup Target Levels except benzene at a concentration of 4.9 Mg/Kg. A copy of the ENCO laboratory analytical report and chain of custody are found in Appendix B.

## 5.0 GROUNDWATER SAMPLING

One temporary groundwater monitoring well (TGMW) was installed in the UST excavation, see the figure in Appendix A for the location. The TGMW consisted of a 2-inch PVC screen with a slot size of 0.010 inch. The screen was installed to a depth of approximately three feet below the water table and the screen extended approximately two feet above the water table. The water table was encountered at approximately four feet below ground level.

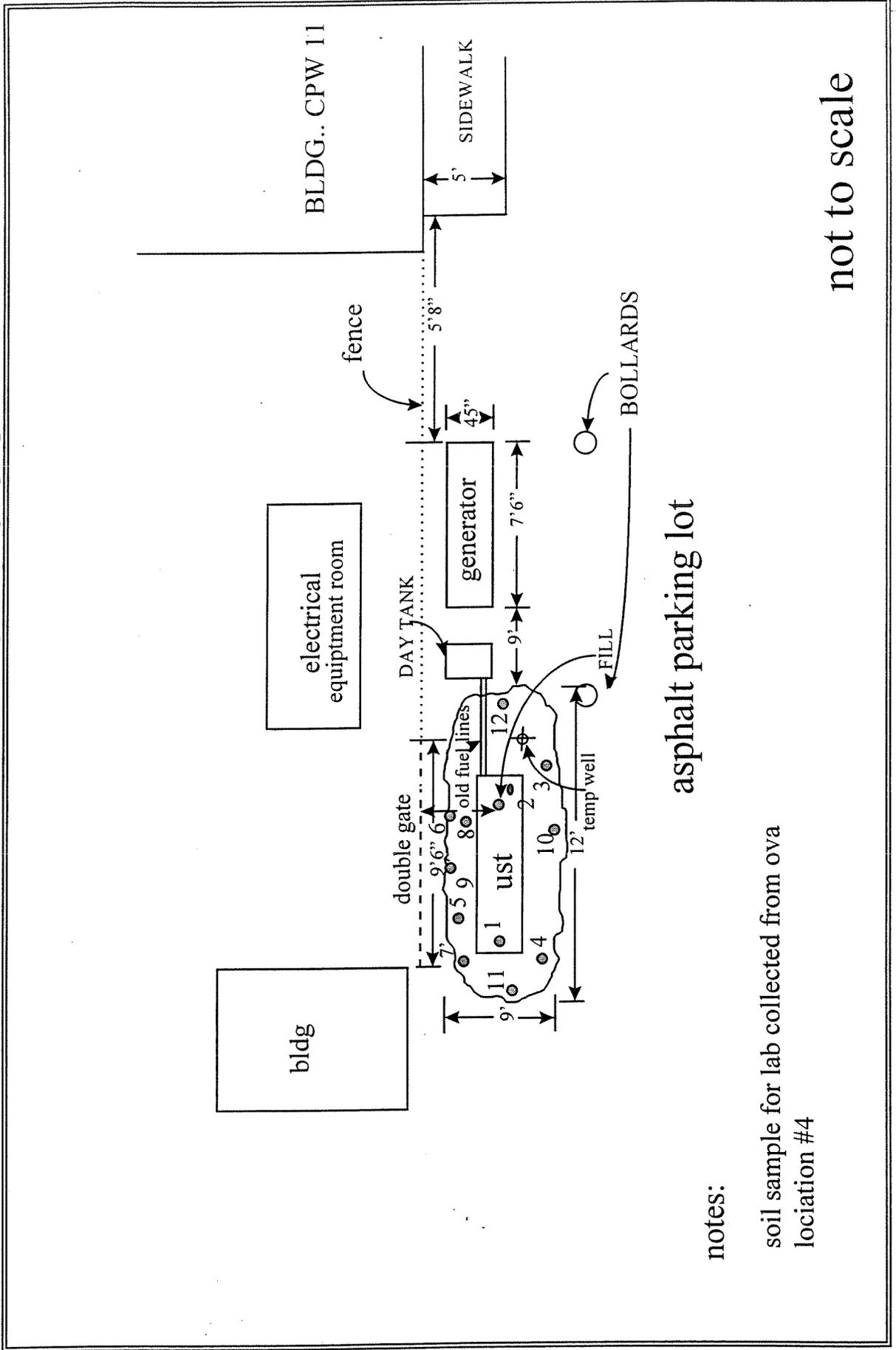
After waiting a minimum of 24 hours, the TGMW was purged and groundwater samples were collected. The groundwater samples were collected using a disposable teflon bailer in accordance with the sampling, decontamination and handling procedures specified in Bechtel's Comprehensive Quality Assurance Plan (CompQAP) No. 940316 and the Bechtel Project procedures for the Navy RAC Project. The samples were sent to Environmental Conservation Laboratories (ENCO) for analysis by EPA Method 602, EPA Method 8310 and TRPH by Florida PRO Method in accordance with their CompQAP No. 960038.

The results of the laboratory analysis found that the groundwater did not contain any petroleum products' chemicals of concern at a concentration that exceeded the minimum detection limit or the State of Florida Groundwater Cleanup Target Levels. A copy of the ENCO laboratory analytical report and chain of custody are found in Appendix C.

# **APPENDIX A**

## **Figures**

# Tank G 1000



asphalt parking lot

notes:

soil sample for lab collected from ova  
location #4

not to scale

# **APPENDIX B**

## **Soil Analytical Report**

15227

Environmental Conservation Laboratories  
4810 Executive Park Court, Suite 211  
Jacksonville, Florida 32216-6069  
904 / 296-3007  
Fax 904 / 296-6210  
www.encolabs.com



Laboratories

DHRS Certification No. E82277

CLIENT : Bechtel Environmental, Inc.  
ADDRESS: NAS Jacksonville  
P.O. Box 171  
Jacksonville, FL 32215

REPORT # : JR3858  
DATE SUBMITTED: October 29, 1998  
DATE REPORTED : November 11, 1998

PAGE 1 OF 5

ATTENTION: Mr. Tom Rountree

SAMPLE IDENTIFICATION

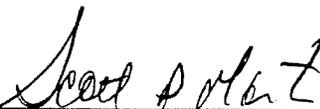
Samples submitted and  
identified by client as:

Post UST Removal Hangar 1000

10/29/98

#1 - JX01048 @ 11:15

PROJECT MANAGER

  
\_\_\_\_\_  
Scott D. Martin

ENCO LABORATORIES

REPORT # : JR3858  
 DATE REPORTED: November 11, 1998  
 PROJECT NAME : Post UST Removal Hang  
 1000

PAGE 2 OF 5

RESULTS OF ANALYSIS

<u>EPA METHOD 8021 - VOLATILE ORGANICS</u>	<u>JX01048</u>	<u>LAB BLANK</u>	<u>Units</u>
Methyl tert-butyl ether	2.0 U	2.0 U	µg/Kg
Benzene	4.9	1.0 U	µg/Kg
Toluene	110	1.0 U	µg/Kg
Chlorobenzene	1.0 U	1.0 U	µg/Kg
Ethylbenzene	44	1.0 U	µg/Kg
m-Xylene & p-Xylene	200 J	2.0 U	µg/Kg
o-Xylene	57	1.0 U	µg/Kg
1,3-Dichlorobenzene	1.0 U	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	1.0 U	µg/Kg
<u>Surrogate:</u>	<u>% RECOV</u>	<u>% RECOV</u>	<u>LIMITS</u>
Bromofluorobenzene	110	105	40-170
Date Analyzed	11/10/98	11/10/98	

J = Estimated value; result exceeds instrument calibration range.  
 U = Compound was analyzed for but not detected to the level shown.  
 DW = Analysis is reported on a "dry weight" basis.

ENCO LABORATORIES

REPORT # : JR3858

DATE REPORTED: November 11, 1998

PROJECT NAME : Post UST Removal Hangar  
1000

PAGE 3 OF 5

RESULTS OF ANALYSIS

EPA METHOD 8100 -  
POLY AROMATIC HYDROCARBONS

JX01048

LAB BLANK

Units

Naphthalene	380 U	330 U	µg/Kg
2-Methylnaphthalene	380 U	330 U	µg/Kg
1-Methylnaphthalene	380 U	330 U	µg/Kg
Acenaphthylene	380 U	330 U	µg/Kg
Acenaphthene	380 U	330 U	µg/Kg
Fluorene	380 U	330 U	µg/Kg
Phenanthrene	380 U	330 U	µg/Kg
Anthracene	380 U	330 U	µg/Kg
Fluoranthene	380 U	330 U	µg/Kg
Pyrene	380 U	330 U	µg/Kg
Chrysene	380 U	330 U	µg/Kg
Benzo (a) anthracene	380 U	330 U	µg/Kg
Benzo (b) fluoranthene	380 U	330 U	µg/Kg
Benzo (k) fluoranthene	380 U	330 U	µg/Kg
Benzo (a) pyrene	380 U	330 U	µg/Kg
Indeno (1,2,3-cd) pyrene	380 U	330 U	µg/Kg
Dibenzo (a,h) anthracene	380 U	330 U	µg/Kg
Benzo (g,h,i) perylene	380 U	330 U	µg/Kg

Surrogate:

% RECOV

% RECOV

LIMITS

2-Fluorobiphenyl  
Date Extracted  
Date Analyzed

60  
11/04/98  
11/07/98

61  
11/04/98  
11/07/98

14-146

U = Compound was analyzed for but not detected to the level shown.  
NR = Analysis not requested for this sample.  
DW = Analysis is reported on a "dry weight" basis.

ENCO LABORATORIES  
 REPORT # : JR3858  
 DATE REPORTED: November 11, 1998  
 PROJECT NAME : Post UST Removal Hangar  
 1000

PAGE 4 OF 5

RESULTS OF ANALYSIS

<u>FL METHOD FLPRO - PETROL. RESIDUAL ORG.</u>	<u>JX01048</u>	<u>LAB BLANK</u>	<u>Units</u>
Hydrocarbons (C8-C40)	7.7 U	6.6 U	mg/Kg
<u>Surrogate:</u>	<u>% RECOV</u>	<u>% RECOV</u>	<u>LIMITS</u>
o-Terphenyl	69	75	51-148
Date Extracted	11/04/98	11/04/98	
Date Analyzed	11/05/98	11/05/98	

<u>MISCELLANEOUS</u>	<u>METHOD</u>	<u>JX01048</u>	<u>LAB BLANK</u>	<u>Units</u>
Percent Solids	SM2540G	86	NR	%
Date Analyzed		10/30/98		

U = Compound was analyzed for but not detected to the level shown.  
 DW = Analysis is reported on a "dry weight" basis.

# NAVY RAC CHAIN OF CUSTODY RECORD

Facility Name: NAS Jacksonville  
 Site Name: HANGER 1000  
 Delivery Order No.: 57  
 Cooler/Crate No.: ---  
 Sampling Event: Post DST Removal Soil Samples  
 SEIR No.: VX090  
 COC Number: VX 244  
 Lab: ENCO  
 Field Logbook No.: ---  
 Logbook Pg. No.: ---

Sampled by: TE Rouire Sign: [Signature] Print: \_\_\_\_\_  
 Sign: \_\_\_\_\_ Print: \_\_\_\_\_

SAMPLE TYPE		MATRIX		QC LEVELS	
PSB Preservative Blank	BLS Blind Spike	SBS Subsurface Soil	PTW Potable Water	C Sample results and QC reported	
FDP Field Duplicate	BLB Blind Blank	SED Sediment	SEP Seeps	D Sample results, QC and raw data reported	
ENV Environmental	PTS Point Source	SFS Surface Soil	SOL Solid	E Sample results, blanks, and calibration reported	
FDB Field Blank	FRP Field Replicate	SFW Surface Water	WWT Waste Water	S Screening level analysis; sample results and QC as reported	
GEO Geotechnical Sample	RSB Rinsate Blank	SLG Sludge	SLW Solid Waste		
MXD Matrix Spike Duplicate	SPL Split	SLW Solid Waste	SST Surface Water		
MXS Matrix Spike	TRP Trip Blank	OFW Organic Free Water	Storm Event		

Station ID	BEI Sample ID	Sample Type	Matrix Code	Collection Date/Time	Container ID	Preservative	Pay Item	Parameter	Priority	QC Code
B1000	VX01048	ENV	SBS	10/24/80/11:15	010303	4°C		8021	5-7D	C
					04	4°C		FLO PD	✓	✓
					05	✓		8100	✓	✓
					06	✓				

RELINQUISHED BY	RECEIVED BY	DATE	TIME	REASON FOR TRANSFER	COMMENTS/INSTRUCTIONS
<u>[Signature]</u>	<u>[Signature]</u>	10-24	1438	Release to lab	JR3 858

CONTAMINATION	YES	NO
Radiological		✓
Chemical		✓

Shipper: \_\_\_\_\_ Traffic Report No. \_\_\_\_\_  
 Ship to: \_\_\_\_\_ Airbill No. \_\_\_\_\_

# **APPENDIX C**

## **Groundwater Analytical Report**

Nov-23-98 05:19P

ENCO LABORATORIES

REPORT # : JR4022  
 DATE REPORTED: November 19, 1998  
 REFERENCE : HANGAR 1000  
 PROJECT NAME : Groundwater Sampling

PAGE 2 OF 5

RESULTS OF ANALYSIS

EPA METHOD 602 -  
VOLATILE AROMATICS

Methyl tert-butyl ether  
 Benzene  
 Toluene  
 Chlorobenzene  
 Ethylbenzene  
 m-Xylene & p-Xylene  
 o-Xylene  
 1,3-Dichlorobenzene  
 1,4-Dichlorobenzene  
 1,2-Dichlorobenzene

JX01054

2.0 U  
 1.0 U

LAB BLANK

2.0 U  
 1.0 U

Units

µg/L  
 µg/L  
 µg/L  
 µg/L  
 µg/L  
 µg/L  
 µg/L  
 µg/L  
 µg/L

Surrogate:

Bromofluorobenzene  
 Date Analyzed

% RECOV

125  
 11/12/98

% RECOV

126  
 11/12/98

LIMITS

59-132

J = Compound was analyzed for but not detected to the level shown.

Nov-23-98 05:19P

ENCO LABORATORIES

REPORT # : JR4022  
 DATE REPORTED: November 19, 1998  
 REFERENCE : HANGAR 1000  
 PROJECT NAME : Groundwater Sampling

PAGE 3 OF 5

RESULTS OF ANALYSIS

EPA METHOD 8310 -  
PAH BY HPLC

	<u>JX01054</u>	<u>LAB BLANK</u>	<u>Units</u>
Napthalene	0.50 U	0.50 U	µg/L
Acenaphthylene	1.0 U	1.0 U	µg/L
1-Methylnapthalene	0.50 U	0.50 U	µg/L
2-Methylnapthalene	0.50 U	0.50 U	µg/L
Acenaphthene	1.3	0.50 U	µg/L
Fluorene	0.13 T	0.10 U	µg/L
Phenanthrene	0.26	0.050 U	µg/L
Anthracene	0.050 U	0.050 U	µg/L
Fluoranthene	0.10 U	0.10 U	µg/L
Pyrene	0.050 U	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	0.050 U	µg/L
Chrysene	0.10 U	0.10 U	µg/L
Benzo(b)fluoranthene	0.050 U	0.050 U	µg/L
Benzo(k)fluoranthene	0.050 U	0.050 U	µg/L
Benzo(a)pyrene	0.10 U	0.10 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	0.10 U	µg/L
Indeno(1,2,3 cd)pyrene	0.050 U	0.050 U	µg/L
<u>Surrogate:</u>	<u>% RECOV</u>	<u>% RECOV</u>	<u>LIMITS</u>
p-terphenyl	79	83	60-120
Date Extracted	11/15/98	11/15/98	
Date Analyzed	11/17/98	11/17/98	

U = Compound was analyzed for but not detected to the level shown.  
 T = Analyte detected; value is between the Method Detection Level (MDL)  
 and the Practical Quantitation Level (PQL).

Nov-23-98 05:20P

P.05

ENCO LABORATORIES

REPORT # : JR4022  
 DATE REPORTED: November 19, 1998  
 REFERENCE : HANGAR 1000  
 PROJECT NAME : Groundwater Sampling

PAGE 4 OF 5

RESULTS OF ANALYSIS

FL METHOD FLPRO -  
PETROL. RESIDUAL ORG.

JX01054

LAB BLANK

Units

Hydrocarbons (C8-C40)

0.20 U

0.20 U

mg/l

Surrogate:

% RECOV

% RECOV

LIMITS

o-Terphenyl  
 Date Extracted  
 Date Analyzed

71  
 11/16/98  
 11/16/98

75  
 11/16/98  
 11/16/98

65-140

U = Compound was analyzed for but not detected to the level shown.

Nov-23-98 05:20P

## ENCO LABORATORIES

REPORT # : JR4022  
 DATE REPORTED: November 19, 1998  
 REFERENCE : HANGAR 1000  
 PROJECT NAME : Groundwater Sampling

PAGE 5 OF 5

## QUALITY CONTROL DATA

<u>Parameter</u>	<u>% RECOVERY MS/MSD/LCS</u>	<u>ACCEPT LIMITS</u>	<u>% RPD MS/MSD</u>	<u>ACCEPT LIMITS</u>
<u>EPA Method 602/6230D/8020/8021</u>				
Benzene	96/ 97/ 95	60-138	1	17
Toluene	107/106/105	57-138	<1	16
Ethylbenzene	113/113/111	49-144	<1	17
o-Xylene	122/123/120	50-151	<1	17
<u>EPA Method 8310</u>				
Naphthalene	* / * / 70	66-105	*	20
Acenaphthene	* / * / 70	66-104	*	19
Benzo(a)pyrene	64/ 70/ 66	37-122	9	36
Benzo(g,h,i)perylene	65/ 67/ 78	44-114	3	34
<u>PETROL. RESIDUAL ORG.</u>				
Hydrocarbons (C8-C40)	77/ 93/ 77	51-163	19	27

Environmental Conservation Laboratories Comprehensive QA Plan #960038

- \* = MS/MSD/RPD unavailable due to matrix interferences.
- < = Less Than
- MS = Matrix Spike
- MSD = Matrix Spike Duplicate
- LCS = Laboratory Control Standard
- RPD = Relative Percent Difference

This report shall not be reproduced except in full, without the written approval of the laboratory. Results for these procedures apply only to the samples as submitted.

Nov-23-98 05:20P

Page 1 of 1

# CHAIN OF CUSTODY RECORD

SEIR No: JX-080  
 COC Number: JX249  
 Lab: EMCO  
 Field Logbook No.:  
 Logbook Pg. No.:

Facility Name: NAS JACKSONVILLE  
 Site Name: HANBAR 1000  
 Delivery Order No.: 57  
 Cooler/Crate No.: 28-12  
 Sampling Event: GROUNDWATER SAMPLING

Sampled by: M.S. DUNN Print Sign M.S. D Print Sign

Station ID	BEI Sample ID	SAMPLE TYPE		MATRIX		Container ID	Preservative	Pay Item	Parameter	Priority	QC Code
		Sample Type	Matrix Code	AIR	SBS						
100	X01054	ENV	6WT	11/19/98	0120	01	-4°C		602	5 day	C
						02	-4°C		602		
						03	4C		8310		
						04	H <sub>2</sub> SO <sub>4</sub>		101000		
						05	H <sub>2</sub> SO <sub>4</sub>		301000		
COMMENTS/INSTRUCTIONS											
JKR 4022 Case for PO											
REASON FOR TRANSFER											
TRANSFER TO LAB CO2 IN CAP											
RECEIVED BY											
C. Logan 11/19/98 16:00											
M.S. DUNN 11/19/98 17:00											
CONTAMINATION											
Radio logical											
Chemical											
YES NO											

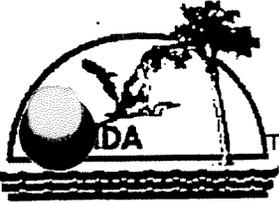
Shipper: \_\_\_\_\_ Traffic Report No. \_\_\_\_\_  
 Ship to: \_\_\_\_\_ Airbill No. \_\_\_\_\_

This package conforms to the conditions and limitations specified in 49 CFR 173.421 for excepted radioactive material, limited quantity, n.o.s. UN2910

This package conforms to the conditions and limitations specified in 49 CFR 173.421 for excepted radioactive material, limited quantity, n.o.s. UN2910

# **APPENDIX D**

**FDEP Forms**



# Department of Environmental Protection

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

DEP Form 62-761.900(8)  
Form Title: Limited Closure  
Summary Report  
Effective Date: July 13, 1998

## Limited Closure Summary Report

This form is required for facilities that have sites with documented contamination requiring a site assessment in accordance with Chapter 62-770, F.A.C. This includes those facilities that are eligible for the Early Detection Incentive Program (EDI), the Florida Petroleum Liability and Restoration Insurance Program (FPLRIP), and the Petroleum Cleanup Participation Program (PCPP), pursuant to Sections 376.3071 and 376.3072, F.S. Documentation of procedures followed, and results obtained during closure shall be reported in this form, along with any attachments. This form shall be submitted to the County within 60 days of completion of the closure in accordance with Section A of the "Storage Tank System Closure Assessment Requirements."

Complete All Applicable Blanks. Please Print or Type

### General Information

Date <u>2-26-99</u>	FDEP Facility ID Number <u>168731736</u>	County <u>DUAL</u>
Facility Name <u>NAVAL STATION JACKSONVILLE</u>	Facility Telephone #: (904) <sup>542</sup> <u>772-2717 x 133</u>	
Facility Address: <u>6500 ROOSEVELT BOULEVARD JACKSONVILLE, FL 32212-5000</u>		
Owner or Operator Name: <u>US GOVERNMENT</u>	Owner/Operator phone #: (904) <sup>542</sup> <u>772-2717 x 133</u>	
Mailing Address: <u>PO Box 5 FACILITIES DEPARTMENT JACKSONVILLE, FL 32212-5000</u>		

### Storage Tank System Closure Information

1. Were the storage tanks(s): (Check one or both)

<input type="checkbox"/> Aboveground	<input checked="" type="checkbox"/> Underground <u>6100</u>
--------------------------------------	---

2. General System Information

Types of Products Stored: <u>Disc</u>	Number of Tanks Closed <u>1</u>	Age(s) of Tanks <u>1989</u>
---------------------------------------	---------------------------------	-----------------------------

3. Was the Limited Closure Summary Report Performed as a Result of: (check one or more)

<input checked="" type="checkbox"/> Tank Systems Removal?	<input type="checkbox"/> Spill Containment Installation?	<input type="checkbox"/> Change in Storage to a Non-Regulated Substance?
<input type="checkbox"/> Tank Systems Closed in Place?	<input type="checkbox"/> Dispenser Liners Installation?	<input type="checkbox"/> Release Prevention Barrier Installation?
<input type="checkbox"/> Piping Sump Installation?	<input type="checkbox"/> Secondary Containment Installation?	<input type="checkbox"/> Other? (please explain)

4. Please Check Yes or No to the following:

a. Was there previously reported contamination discovered on site? If yes, was	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
1. A Discharge Report Form submitted to the County?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
2. An investigation performed in accordance with Rule 62-761.820, F.A.C.?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
b. Is the depth to groundwater less than 20 feet?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
c. Are there monitoring wells on site? If yes, were they	<input type="checkbox"/> Yes	<input type="checkbox"/> No
1. Groundwater monitoring wells?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
2. Vapor monitoring wells?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
3. Used for closure assessment sampling?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
4. Properly closed?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
5. Retained for site assessment purposes?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
d. If tanks were replaced, were contaminated soils returned to the tank excavation?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

Signature of owner or operator

Signature of person performing Limited Closure Assessment

TE Rountree  
Name of person performing Limited Closure Assessment



# Underground Storage System Installation and Removal Form for Certified Contractors

Pollutant Storage Systems Contractor as defined in Section 489.113, Florida Statutes (certified contractors as defined in Section 62-761.200, Florida Administrative Code) shall use this form to certify that the installation, replacement or removal of the underground storage tank system(s) located at the address listed below was performed in accordance with Department Reference Standards. This includes system components such as dispenser liners, piping sumps, and overflow protection devices.

## General Facility Information

Facility Name: <u>NAVAL STATION JACKSONVILLE</u>	DEP Facility Identification No. :
Street Address (physical location): <u>10500 ROOSEVELT BOULEVARD JACKSONVILLE, FL 32212-500</u>	
County: <u>DUVAL</u>	Telephone #: <u>(904) 772-2717 x 133</u>
Owner Name: <u>US GOVERNMENT</u>	Telephone #: <u>(904) 772-2717 x 133</u>
Owner Address: <u>PO Box 5 FACILITIES DEPARTMENT JACKSONVILLE, FL 32212</u>	

## Storage Tank System Information

Number of Tanks Installed: <u>(1) 5000L Double wall</u>	Number of Tanks Removed: <u>(1) 5000L</u>
Date Work Initiated: <u>10-29-98</u>	Date Work Completed: <u>11-12-98</u>
Tank(s) Manufactured by: <u>Fluid Containment</u>	
Description of work Completed: <u>Removed 1 single wall Fiberglas Tank and replaced it with 1 5000L Double wall Tank and Double wall piping</u>	

## Certification

I hereby certify and attest that I am familiar with the facility that is registered with the Florida Department of Environmental Protection; that to the best of my knowledge and belief, the storage tank system installation, replacement or removal at this facility was conducted in accordance with Chapter 489, Florida Statutes, Section 376.303, Florida Statutes, and Chapter 62-761, Florida Administrative Code, and its adopted reference standards and documents for underground storage tank systems.

Roland Bradman  
(Type or Print)  
Certified Pollutant Tank Contractor Name

[Signature]  
Certified Tank Contractor Signature

Ron Lockwood  
Field Supervisor Name

PCC 054952  
PSSC Number

[Signature]  
Pollutant Storage Systems Contractor License Number

11-16-98  
Date

11-16-98  
Date

**APPENDIX B**  
**SITE SCREENING LETTER REPORT**  
**TtNUS – JUNE 28, 2002**



**TETRA TECH NUS, INC.**

7018 A.C. Skinner Parkway ■ Suite 250 ■ Jacksonville, FL 32256  
(904) 281-0400 ■ FAX (904) 281-0070 ■ www.tetrattech.com

Document Tracking Number 02JAX0145

June 28, 2002

Project Number N2872

Commander, Southern Division  
Naval Facilities Engineering Command  
ATTN: Mr. Wayne Hansel (Code ES24)  
2155 Eagle Drive  
North Charleston, South Carolina 29406

Reference: CLEAN Contract Number N62467-94-D-0888  
Contract Task Order Number 0192

Subject: Site Screening Letter Report  
Petroleum Contaminated Area 23  
Naval Air Station Jacksonville, Jacksonville, Florida

Dear Mr. Hansel:

Tetra Tech NUS, Inc. (TtNUS) is pleased to submit this Site Screening Letter Report for Petroleum Contaminated Area (PCA) 23. This Site Screening Letter Report was prepared for the U.S. Navy (Navy) Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM) under Contract Task Order (CTO) 0192, for the Comprehensive Long-term Environmental Action Navy (CLEAN) Contract Number N62467-94-D-0888. The objective of the Site Screening Letter Report is to document results of the field screening activities for soil and groundwater contamination. The field screening activities were performed in accordance with the Work Plan for Site Screening at Various Petroleum Sites dated August 2001.

**Background Information**

PCA 23 is the former location of underground storage tank (UST) Number G1000 located at Hangar 1000, Naval Air Station (NAS) Jacksonville (Figure 1). The former UST was located south of the electrical equipment room and west of Building 1000 (Figure 2). A security fence that separates a parking area from Hangar 1000 is approximately 14 feet (ft) north of the former tank. The UST was used to supply diesel fuel to an emergency generator. In October 29,1998, the tank was removed by Bechtel Environmental, Inc. and J. A. Jones completed a tank closure assessment. The UST and surrounding area was excavated to a total depth of 3 ft below land surface (bls). No visible signs of petroleum stained soil were present surrounding the tank. However, organic vapor analyzer (OVA) readings performed during the tank closure indicated evidence of soil contamination from the tank excavation. One soil sample was collected from the side wall of the excavation for laboratory analysis for volatile organic compounds by United States Environmental Protection Agency (EPA) Method 8021, polynuclear aromatic hydrocarbons (PAHs) by EPA method 8310, and total recoverable petroleum hydrocarbons (TRPH) by Florida Petroleum Range Organics (FL-PRO). Analytical results indicated VOCs present in soil above Chapter 62-770 Florida Administrative Code (FAC) Soil Cleanup Target Levels (SCTLs). A temporary well was installed 2 ft below the water table in the region of the highest OVA readings. Groundwater samples were analyzed for VOCs by EPA Methods 8021, PAHs by EPA Method 8310, and TRPH by

FL-PRO. Groundwater analytical results indicated PAH constituents present in site groundwater at levels below Chapter 62-777, FAC groundwater cleanup target levels (GCTLs).

SOUTHNAVFACENGCOM contracted TtNUS to screen each PCA site for possible soil and groundwater contamination. To accomplish this, TtNUS was to install one soil boring near the center of the previous tank location. Figures showing the PCA Site Plans were obtained from the station and were used in the planning documents. TtNUS was to collect and screen soil samples, and have one soil and one groundwater sample analyzed for petroleum constituents at a laboratory.

The activities completed by TtNUS and the results are detailed below.

### **Field Screening Activities**

On December 17, 2001, TtNUS mobilized to PCA 23 (Hangar 1000) for the field screening activities. The field screening activities consisted of soil and groundwater sample collection via direct-push technology (DPT). During field screening activities, one soil boring (JAX-23-SB-1) was installed at PCA 23 via DPT to a depth of 8 ft bls. The soil boring was placed southeast of the former tank location (presumed downgradient) due to the presence of a new tank in place of tank G1000. The location of PCA 23 with surrounding features, former tank location, and the location of the soil boring is indicated on Figure 2.

### **Site Lithology**

The site is underlain by a layer of brown fine silty sand from the surface to 1 ft bls. A tan to brown sand begins at 1 ft bls and continues to a depth of 8 ft bls.

### **Soil Vapor Analysis**

The potential for petroleum impacted soil in the vadose zone was assessed through soil headspace analysis. OVA headspace analysis was conducted using a flame ionization detector (FID). The soil vapor analysis was performed according to the head space method prescribed in Chapter 62-770.200 (2), FAC. Soil samples were collected at 2-ft intervals to the water table, which was encountered at 5 ft bls. The results of the soil vapor screening are presented in Table 1. All readings were below instrument detection limits.

### **Soil Sampling Results**

One soil sample [JAX-23-SB-1 (5)] was collected at 5 ft bls. The soil sample was placed on ice, shipped to Accutest Laboratories in Orlando, Florida, and analyzed for VOCs by EPA Method 8021B, PAHs by EPA Method 8310, and TRPH by FL-PRO. Results of the laboratory analysis indicated the presence of petroleum compounds. Three constituents, benzo(a)anthracene, benzo(a)pyrene, and dibenzo(a,h)anthracene were detected above Chapter 62-770, FAC SCTLs. A summary of detected constituents is presented in Table 2. The complete set of analytical results is presented in Attachment A.

### **Groundwater Sampling Results**

For groundwater sample collection, the soil boring was advanced with the Geoprobe DPT rig at the soil boring locations JAX-23-SB-1. The sample was collected using a detachable drive tip attached to a 24-inch long, retractable, stainless steel well screen encased in the lead probe tube. After the water sampler was advanced into the water-bearing zone, the probe was withdrawn 24 inches to allow the screen to open to the formation. For groundwater recovery, Teflon® tubing was inserted into the DPT rod, and the tubing was connected to a peristaltic pump for low-flow purging and sampling. Several screen volumes were then pumped from the well in order to reduce the turbidity level (based on visual observation) and ensure a representative sample. One groundwater sample [JAX-23-GW (5-8)] was collected, placed on ice, shipped to Accutest Laboratories in Orlando, Florida, and analyzed for VOCs using EPA Method 8021B, PAHs using EPA Method 8310, TRPH using FL-PRO, and ethylene

Mr. Wayne Hansel  
Naval Facilities Engineering Command  
June 28, 2002 – Page 3

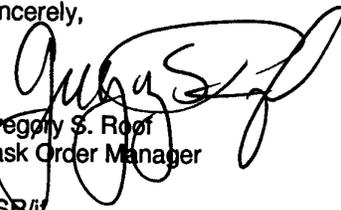
dibromide (EDB) using EPA Method 504.1. The groundwater analytical results, presented in Table 3, indicate the presence of dissolved petroleum constituents, but at concentrations below Florida Department of Environmental Protection (FDEP) GCTLs. The complete set of analytical results is presented in Attachment A.

### Conclusions and Recommendations

Data obtained during the field screening at PCA 23 indicated soil vapor readings below 50 parts per million (ppm). Confirmatory soil sample results indicated three PAH constituents were detected above FDEP SCTLs. Dissolved petroleum constituents in groundwater were below FDEP GCTLs per Chapter 62-770, FAC.

TtNUS recommends that a Site Assessment (SA) be conducted in accordance with Chapter 62-770, FAC for PCA Site 23.

Sincerely,



Gregory S. Roof  
Task Order Manager

GSR/jr

Enclosures (3)

cc: Jorge Caspary, FDEP (hard copy, CD)  
Frank Sigona, NAS Jacksonville (hard copy, CD)  
D. Wroblewski (letter only)  
M. Perry (unbound copy, CD)  
File – CTO 192

## TABLES

**TABLE 1  
SOIL VAPOR MEASUREMENTS**

**PCA 23  
NAVAL AIR STATION JACKSONVILLE  
JACKSONVILLE, FLORIDA**

Soil Boring Number	Date of Measurement	Sample Depth (ft bls)	Headspace Readings (ppm)		
			Total Organic Reading	Carbon Filtered Reading	Net Reading
<b>JAX-23-SB-1</b>	12/17/2001	1	0	0	0
		3	0	0	0
		5	0	0	0

Notes:  
 Wet Soils encountered at depths ranging at approximately 5 ft bls.  
 ft bls = foot/feet below land surface  
 ppm = parts-per-million

**TABLE 2  
CONFIRMATORY SOIL SAMPLING ANALYTICAL RESULTS**

**PCA 23  
NAVAL AIR STATION JACKSONVILLE  
JACKSONVILLE, FLORIDA**

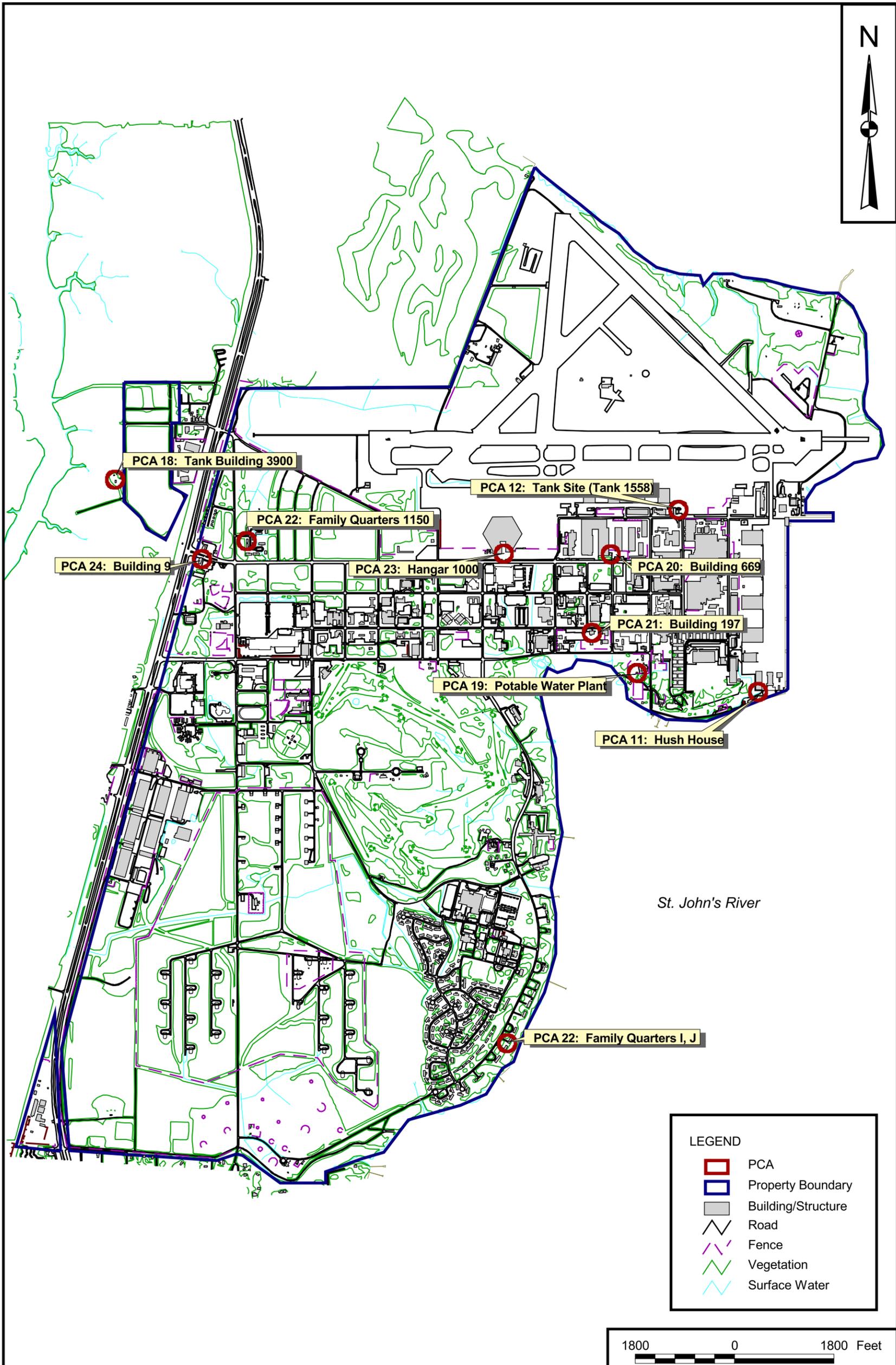
Compound	Direct Exposure Residential <sup>1</sup>	Leachability Based on Groundwater Criteria <sup>1</sup>	PCA 23
			JAX-23-SB-1(5)
			12/17/2001
<b>Sample Depth</b>			5 ft bls
<b>PAHs (USEPA Method 8310)(ug/kg)</b>			
Anthracene	18000000	2500	1000
Benzo(a)anthracene	1400	3.2	<b>1710</b>
Benzo(a)pyrene	100	8	<b>1580</b>
Benzo(b)fluoranthene	10000	10	919
Benzo(g,h,i)perylene	2300000	32000	868
Benzo(k)fluoranthene	10000	25	610
Chrysene	140000	77	1410
Dibenzo(a,h)anthracene	100	30	<b>182</b>
Fluoranthene	2900000	1200	4510
Fluorene	2200000	160	436J
Indeno(1,2,3-cd)pyrene	1500	28	951
Phenanthrene	2000000	250	3660
Pyrene	2200000	880	3260
<b>FL-PRO (mg/kg)</b>			
TPH	340	340	23.9
Notes:			
<sup>1</sup> Chapter 62-770, FAC (April 30, 1999) <b>Bold</b> values are above target levels. ft bls = foot/feet below land surface J = Estimated value less than practical quantitation level mg/kg = milligrams per kilogram µg/kg = micrograms per kilogram			

**TABLE 3  
SUMMARY OF GROUNDWATER QUALITY**

**PCA SITE 23  
NAVAL AIR STATION JACKSONVILLE  
JACKSONVILLE, FLORIDA**

Compound	FDEP Target Level <sup>1</sup>	PCA 23
		JAX-23-GW (5-8)
		12/17/01
<b>PAHs (USEPA Method 8310) (µg/L)</b>		
Fluoranthene	280	8.4
Fluorene	280	6.0
Pyrene	210	4.8
<b>FL-PRO (USEPA Method 8270) (mg/L)</b>		
TRPH	5	0.381
Notes:		
<sup>1</sup> Chapter 62-770, FAC (August, 1999) µg/L = micrograms per liter mg/L = milligrams per liter U = below method detection limit		

## FIGURES



LEGEND

-  PCA
-  Property Boundary
-  Building/Structure
-  Road
-  Fence
-  Vegetation
-  Surface Water



DRAWN BY J. LAMEY	DATE 5/14/02
CHECKED BY	DATE
COST/SCHEDULE-AREA	
SCALE AS NOTED	



SITE LOCATION MAP  
 PETROLEUM CONTAMINATION ASSESSMENT  
 NAVAL AIR STATION  
 JACKSONVILLE, FLORIDA

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



Hangar 1000

Former UST  
 ●  
 JAX-23-SB-1

Yorktown Ave.

**LEGEND**

- Soil Boring Location
- ▭ Property Boundary
- Building/Structure
- Road
- Fence
- Vegetation
- Surface Water



DRAWN BY J. LAMEY	DATE 4/26/02
CHECKED BY	DATE
COST/SCHEDULE-AREA	
SCALE AS NOTED	



SOIL BORING LOCATIONS  
 PCA 23 - HANGAR 1000  
 PETROLEUM CONTAMINATION ASSESSMENT  
 NAVAL AIR STATION  
 JACKSONVILLE, FLORIDA

CONTRACT NUMBER 2872	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. <b>FIGURE 2</b>	REV 0

**ATTACHMENT A  
ANALYTICAL RESULTS**

**CTO192-NAS JACKSONVILLE**

**SOIL DATA**  
**Accutest, NJ**  
**SDG: F11825**

SAMPLE NUMBER:	JAX-23-SB-1 (5)			
SAMPLE DATE:	12/17/01	//	//	//
LABORATORY ID:	F11825-2			
QC_TYPE:	NORMAL			
% SOLIDS:	83.2 %	100.0 %	100.0 %	100.0 %
UNITS:	UG/KG			
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE									
<b>VOLATILES</b>												
1,1,1-TRICHLOROETHANE	6	U										
1,1,2,2-TETRACHLOROETHANE	6	U										
1,1,2-TRICHLOROETHANE	6	U										
1,1-DICHLOROETHANE	6	U										
1,1-DICHLOROETHENE	6	U										
1,2-DICHLOROBENZENE	6	U										
1,2-DICHLOROETHANE	6	U										
1,2-DICHLOROPROPANE	6	U										
1,3-DICHLOROBENZENE	6	U										
1,4-DICHLOROBENZENE	6	U										
2-CHLOROETHYL VINYL ETHER	12	U										
BENZENE	6	U										
BROMODICHLOROMETHANE	6	U										
BROMOFORM	6	U										
BROMOMETHANE	6	U										
CARBON TETRACHLORIDE	6	U										
CHLOROBENZENE	6	U										
CHLORODIBROMOMETHANE	6	U										
CHLOROETHANE	6	U										
CHLOROFORM	6	U										
CHLOROMETHANE	6	U										
CIS-1,2-DICHLOROETHENE	6	U										
CIS-1,3-DICHLOROPROPENE	6	U										
DICHLORODIFLUOROMETHANE	6	U										
ETHYLBENZENE	6	U										
METHYL TERT-BUTYL ETHER	6	U										
METHYLENE CHLORIDE	12	U										
TETRACHLOROETHENE	6	U										
TOLUENE	6	U										
TOTAL XYLENES	18	U										
TRANS-1,2-DICHLOROETHENE	6	U										
TRANS-1,3-DICHLOROPROPENE	6	U										

**CTO192-NAS JACKSONVILLE**

**SOIL DATA**  
**Accutest, NJ**  
**SDG: F11825**

SAMPLE NUMBER:	JAX-23-SB-1 (5)			
SAMPLE DATE:	12/17/01	//	//	//
LABORATORY ID:	F11825-2			
QC_TYPE:	NORMAL			
% SOLIDS:	83.2 %	100.0 %	100.0 %	100.0 %
UNITS:	UG/KG			
FIELD DUPLICATÉ OF:				

	RESULT	QUAL	CODE									
<b>VOLATILES</b>												
TRICHLOROETHENE	6	U										
TRICHLOROFLUOROMETHANE	6	U										
VINYL CHLORIDE	6	U										

**CTO192-NAS JACKSONVILLE**

**SOIL DATA**

**Accutest, NJ**

**SDG: F11825**

SAMPLE NUMBER:

JAX-23-SB-1 (5)

SAMPLE DATE:

12/17/01

LABORATORY ID:

F11825-2

QC\_TYPE:

NORMAL

% SOLIDS:

83.2 %

100.0 %

100.0 %

100.0 %

UNITS:

UG/KG

FIELD DUPLICATE OF:

	RESULT	QUAL	CODE									
<b>POLYNUCLEAR AROMATIC HYDROCARBONS</b>												
1-METHYLNAPHTHALENE	800	U										
2-METHYLNAPHTHALENE	800	U										
ACENAPHTHENE	1600	U										
ACENAPHTHYLENE	1600	U										
ANTHRACENE	1000											
BENZO(A)ANTHRACENE	1710											
BENZO(A)PYRENE	1580											
BENZO(B)FLUORANTHENE	919											
BENZO(G,H,I)PERYLENE	868											
BENZO(K)FLUORANTHENE	610											
CHRYSENE	1410											
DIBENZO(A,H)ANTHRACENE	182											
FLUORANTHENE	4510											
FLUORENE	436	J	P									
INDENO(1,2,3-CD)PYRENE	951											
NAPHTHALENE	800	U										
PHENANTHRENE	3660											
PYRENE	3260											

**CTO192-NAS JACKSONVILLE**

**SOIL DATA**

**Accutest, NJ**

**SDG: F11825**

SAMPLE NUMBER:	JAX-23-SB-1 (5)			
SAMPLE DATE:	12/17/01	//	//	//
LABORATORY ID:	F11825-2			
QC_TYPE:	NORMAL			
% SOLIDS:	83.2 %	100.0 %	100.0 %	100.0 %
UNITS:	MG/KG			
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE									
PETROLEUM HYDROCARBONS												
TOTAL PETROLEUM HYDROCARBONS	23.9											

CTO192-NAS JACKSONVILLE

WATER DATA

Accutest, NJ

SDG: F11825

SAMPLE NUMBER:

JAX-23-GW-1 (5-8)

SAMPLE DATE:

12/17/01

LABORATORY ID:

F11825-1

QC\_TYPE:

NORMAL

% SOLIDS:

0.0 %

100.0 %

100.0 %

100.0 %

UNITS:

UG/L

FIELD DUPLICATE OF:

	RESULT	QUAL	CODE									
VOLATILES												
1,1,1-TRICHLOROETHANE	1	U										
1,1,2,2-TETRACHLOROETHANE	1	U										
1,1,2-TRICHLOROETHANE	1	U										
1,1-DICHLOROETHANE	1	U										
1,1-DICHLOROETHENE	1	U										
1,2-DIBROMOETHANE	0.02	U										
1,2-DICHLOROBENZENE	1	U										
1,2-DICHLOROETHANE	1	U										
1,2-DICHLOROPROPANE	1	U										
1,3-DICHLOROBENZENE	1	U										
1,4-DICHLOROBENZENE	1	U										
2-CHLOROETHYL VINYL ETHER	1	U										
BENZENE	1	U										
BROMODICHLOROMETHANE	1	U										
BROMOFORM	1	U										
BROMOMETHANE	1	U										
CARBON TETRACHLORIDE	1	U										
CHLOROETHANE	1	U										
CHLORODIBROMOMETHANE	1	U										
CHLOROETHANE	1	U										
CHLOROFORM	1	U										
CHLOROMETHANE	1	U										
CIS-1,2-DICHLOROETHENE	1	U										
CIS-1,3-DICHLOROPROPENE	1	U										
DICHLORODIFLUOROMETHANE	1	U										
ETHYLBENZENE	1	U										
METHYL TERT-BUTYL ETHER	1	U										
METHYLENE CHLORIDE	5	U										
TETRACHLOROETHENE	1	U										
TOLUENE	1	U										
TOTAL XYLENES	3	U										
TRANS-1,2-DICHLOROETHENE	1	U										

**CTO192-NAS JACKSONVILLE**

**WATER DATA**

**Accutest, NJ**

**SDG: F11825**

SAMPLE NUMBER:	JAX-23-GW-1 (5-8)			
SAMPLE DATE:	12/17/01	//	//	//
LABORATORY ID:	F11825-1			
QC_TYPE:	NORMAL			
% SOLIDS:	0.0 %	100.0 %	100.0 %	100.0 %
UNITS:	UG/L			
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE									
<b>VOLATILES</b>												
TRANS-1,3-DICHLOROPROPENE	1	U										
TRICHLOROETHENE	1	U										
TRICHLOROFUOROMETHANE	1	U										
VINYL CHLORIDE	1	U										

CTO192-NAS JACKSONVILLE

WATER DATA

Accutest, NJ

SDG: F11825

SAMPLE NUMBER: JAX-23-GW-1 (5-8)  
 SAMPLE DATE: 12/17/01  
 LABORATORY ID: F11825-1  
 QC\_TYPE: NORMAL  
 % SOLIDS: 0.0 %  
 UNITS: UGL  
 FIELD DUPLICATE OF:

//	//	//
100.0 %	100.0 %	100.0 %

	RESULT	QUAL	CODE									
<b>POLYNUCLEAR AROMATIC HYDROCARBONS</b>												
1-METHYLNAPHTHALENE	2	U										
2-METHYLNAPHTHALENE	2	U										
ACENAPHTHENE	4	U										
ACENAPHTHYLENE	4	U										
ANTHRACENE	2	U										
BENZO(A)ANTHRACENE	0.2	U										
BENZO(A)PYRENE	0.2	U										
BENZO(B)FLUORANTHENE	0.2	U										
BENZO(G,H,I)PERYLENE	0.2	U										
BENZO(K)FLUORANTHENE	0.2	U										
CHRYSENE	2	U										
DIBENZO(A,H)ANTHRACENE	0.2	U										
FLUORANTHENE	8.4											
FLUORENE	6											
INDENO(1,2,3-CD)PYRENE	0.2	U										
NAPHTHALENE	2	U										
PHENANTHRENE	2	U										
PYRENE	4.8											

**CTO192-NAS JACKSONVILLE**

**WATER DATA**

**Accutest, NJ**

**SDG: F11825**

SAMPLE NUMBER:	JAX-23-GW-1 (5-8)		
SAMPLE DATE:	12/17/01	//	//
LABORATORY ID:	F11825-1		//
QC_TYPE:	NORMAL		
% SOLIDS:	0.0 %	100.0 %	100.0 %
UNITS:	MG/L		
FIELD DUPLICATE OF:			

	RESULT	QUAL	CODE									
TOTAL PETROLEUM HYDROCARBONS	0.381											

Accutest Laboratories

## Sample Summary

Tetra-Tech,NUS

Job No: F11825

NAS JAX- N2872 KJ0050115

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
F11825-1	12/17/01	17:00 LK	12/18/01	AQ	Ground Water	JAX-23-GW-1 (5-8)
F11825-2	12/17/01	16:45 LK	12/18/01	SO	Soil	JAX-23-SB-1 (5)

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

Report of Analysis

Client Sample ID: JAX-23-GW-1 (5-8)	Date Sampled: 12/17/01
Lab Sample ID: F11825-1	Date Received: 12/18/01
Matrix: AQ - Ground Water	Percent Solids: n/a
Method: EPA 504.1 EPA 504	
Project: NAS JAX- N2872 KJ0050115	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	DD04347.D	1	12/20/01	SKW	12/19/01	OP4404	GDD160
Run #2							

CAS No.	Compound	Result	RL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.020	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:	JAX-23-GW-1 (5-8)	Date Sampled:	12/17/01
Lab Sample ID:	F11825-1	Date Received:	12/18/01
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8021B		
Project:	NAS JAX- N2872 KJ0050115		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	QR007974.D	1	12/19/01	RA	n/a	n/a	GQR338
Run #2							

## VOA 8021 List

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	1.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	1.0	ug/l	
110-75-8	2-Chloroethylvinyl ether	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	1.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylenes (total)	ND	3.0	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

## Report of Analysis

Client Sample ID:	JAX-23-GW-1 (5-8)	Date Sampled:	12/17/01
Lab Sample ID:	F11825-1	Date Received:	12/18/01
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8021B		
Project:	NAS JAX- N2872 KJ0050115		

## VOA 8021 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
75-29-6	2-Chloropropane	94%		56-125%
352-33-0	1-Chloro-4-fluorobenzene	100%		80-120%
352-33-0	1-Chloro-4-fluorobenzene	103%		80-120%
98-08-8	aaa-Trifluorotoluene	98%		70-127%

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:	JAX-23-GW-1 (5-8)	Date Sampled:	12/17/01
Lab Sample ID:	F11825-1	Date Received:	12/18/01
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	EPA 8310 SW846 3510C		
Project:	NAS JAX- N2872 KJ0050115		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 <sup>a</sup>	EE006771.D	1	12/26/01	MRE	12/21/01	OP4416	GEE307
Run #2							

## Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.0	ug/l	
208-96-8	Acenaphthylene	ND	4.0	ug/l	
120-12-7	Anthracene	ND	2.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	ug/l	
218-01-9	Chrysene	ND	2.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	ug/l	
206-44-0	Fluoranthene	8.4	2.0	ug/l	
86-73-7	Fluorene	6.0	2.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	2.0	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	ug/l	
85-01-8	Phenanthrene	ND	2.0	ug/l	
129-00-0	Pyrene	4.8	2.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	56%		33-141%
92-94-4	p-Terphenyl	77%		31-122%

(a) All hits confirmed by spectral match using a diode array detector.

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:	JAX-23-GW-1 (5-8)	Date Sampled:	12/17/01
Lab Sample ID:	F11825-1	Date Received:	12/18/01
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	FLORIDA-PRO SW846 3510C		
Project:	NAS JAX- N2872 KJ0050115		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP18993.D	1	12/26/01	ME	12/22/01	OP4433	GOP708
Run #2							

CAS No.	Compound	Result	RL	Units	Q
	TPH (C8-C40)	0.381	0.28	mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits	
84-15-1	o-Terphenyl	88%		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

## Report of Analysis

Client Sample ID:	JAX-23-SB-1 (5)		Date Sampled:	12/17/01
Lab Sample ID:	F11825-2		Date Received:	12/18/01
Matrix:	SO - Soil		Percent Solids:	83.2
Method:	SW846 8260B			
Project:	NAS JAX- N2872 KJ0050115			

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H014755.D	1	12/19/01	NAF	n/a	n/a	VH471
Run #2							

## VOA 8021 List

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	6.0	ug/kg	
75-27-4	Bromodichloromethane	ND	6.0	ug/kg	
75-25-2	Bromoform	ND	6.0	ug/kg	
108-90-7	Chlorobenzene	ND	6.0	ug/kg	
75-00-3	Chloroethane	ND	6.0	ug/kg	
67-66-3	Chloroform	ND	6.0	ug/kg	
110-75-8	2-Chloroethyl vinyl ether	ND	12	ug/kg	
56-23-5	Carbon tetrachloride	ND	6.0	ug/kg	
75-34-3	1,1-Dichloroethane	ND	6.0	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	6.0	ug/kg	
107-06-2	1,2-Dichloroethane	ND	6.0	ug/kg	
78-87-5	1,2-Dichloropropane	ND	6.0	ug/kg	
124-48-1	Dibromochloromethane	ND	6.0	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	6.0	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	6.0	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	6.0	ug/kg	
541-73-1	m-Dichlorobenzene	ND	6.0	ug/kg	
95-50-1	o-Dichlorobenzene	ND	6.0	ug/kg	
106-46-7	p-Dichlorobenzene	ND	6.0	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	6.0	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	6.0	ug/kg	
100-41-4	Ethylbenzene	ND	6.0	ug/kg	
74-83-9	Methyl bromide	ND	6.0	ug/kg	
74-87-3	Methyl chloride	ND	6.0	ug/kg	
75-09-2	Methylene chloride	ND	12	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	6.0	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	6.0	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	6.0	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	6.0	ug/kg	
127-18-4	Tetrachloroethylene	ND	6.0	ug/kg	
108-88-3	Toluene	ND	6.0	ug/kg	
79-01-6	Trichloroethylene	ND	6.0	ug/kg	
75-69-4	Trichlorofluoromethane	ND	6.0	ug/kg	
75-01-4	Vinyl chloride	ND	6.0	ug/kg	
1330-20-7	Xylene (total)	ND	18	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:	JAX-23-SB-1 (5)	Date Sampled:	12/17/01
Lab Sample ID:	F11825-2	Date Received:	12/18/01
Matrix:	SO - Soil	Percent Solids:	83.2
Method:	SW846 8260B		
Project:	NAS JAX- N2872 KJ0050115		

## VOA 8021 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		75-125%
2037-26-5	Toluene-D8	109%		75-125%
460-00-4	4-Bromofluorobenzene	104%		72-137%
17060-07-0	1,2-Dichloroethane-D4	103%		68-125%

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:	JAX-23-SB-1 (5)	Date Sampled:	12/17/01
Lab Sample ID:	F11825-2	Date Received:	12/18/01
Matrix:	SO - Soil	Percent Solids:	83.2
Method:	EPA 8310 SW846 3550B		
Project:	NAS JAX- N2872 KJ0050115		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 <sup>a</sup>	EE006916.D	2	01/03/02	MRE	12/28/01	OP4455	GEE314
Run #2							

## Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	1600	ug/kg	
208-96-8	Acenaphthylene	ND	1600	ug/kg	
120-12-7	Anthracene	1000	800	ug/kg	
56-55-3	Benzo(a)anthracene	1710	800	ug/kg	
50-32-8	Benzo(a)pyrene	1580	160	ug/kg	
205-99-2	Benzo(b)fluoranthene	919	160	ug/kg	
191-24-2	Benzo(g,h,i)perylene	868	160	ug/kg	
207-08-9	Benzo(k)fluoranthene	610	160	ug/kg	
218-01-9	Chrysene	1410	800	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	182	160	ug/kg	
206-44-0	Fluoranthene	4510	800	ug/kg	
86-73-7	Fluorene	436	800	ug/kg	J
193-39-5	Indeno(1,2,3-cd)pyrene	951	160	ug/kg	
91-20-3	Naphthalene	ND	800	ug/kg	
90-12-0	1-Methylnaphthalene	ND	800	ug/kg	
91-57-6	2-Methylnaphthalene	ND	800	ug/kg	
85-01-8	Phenanthrene	3660	800	ug/kg	
129-00-0	Pyrene	3260	800	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	92%		37-158%
92-94-4	p-Terphenyl	117%		59-149%

(a) All hits confirmed by spectral match using a diode array detector.

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:	JAX-23-SB-1 (5)		Date Sampled:	12/17/01
Lab Sample ID:	F11825-2		Date Received:	12/18/01
Matrix:	SO - Soil		Percent Solids:	83.2
Method:	FLORIDA-PRO SW846 3550B			
Project:	NAS JAX- N2872 KJ0050115			

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP19069.D	1	12/29/01	ME	12/27/01	OP4451	GOP710
Run #2							

CAS No.	Compound	Result	RL	Units	Q
	TPH (C8-C40)	23.9	10	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	98%		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



**APPENDIX C**

**SAR SUMMARY SHEET**

**LIMITED SITE ASSESSMENT REPORT SUMMARY SHEET**

Facility Name: PCA 23 (Tank Site G1000), NAS Jacksonville Reimbursement Site:   
 Location: Jacksonville, Florida State Contract Site:   
 EDI #: \_\_\_\_\_ FAC I.D.# \_\_\_\_\_ Other: Non-Prog.

Date Reviewed: \_\_\_\_\_ Local Government: \_\_\_\_\_

(1) Source of Spill: Leaking UST Date of Spill: unknown

(2) Type of Product:	Gasoline Group	Gallons Lost	Kerosene Group	Gallons Lost
<input type="checkbox"/> Leaded	_____	_____	<input type="checkbox"/> Kerosene	_____
<input type="checkbox"/> Unleaded Regular	_____	_____	<input checked="" type="checkbox"/> Diesel	<u>50 known</u>
<input type="checkbox"/> Unleaded Premium	_____	_____	<input type="checkbox"/> JP-4 Jet Fuel	_____
<input type="checkbox"/> Gasohol	_____	_____	<input type="checkbox"/> Heating Fuel	_____
<input type="checkbox"/> Undetermined	_____	_____	<input type="checkbox"/> Unknown	_____

(3) Description of IRA: N/A  
 Free Product Contact Water Removal: \_\_\_\_\_ (gals)  
 Soil Removal: \_\_\_\_\_ (cubic yds)  
 Soil Incineration: \_\_\_\_\_ (cubic yds)

(4) Free Product still present (yes/no) No Maximum apparent product thickness: N/A (feet)

(5) Maximum Groundwater contamination levels (ppb):  
 Total VOA: <1 benzene: <1 EDB: < 0.020  
 lead: <.01 ppm MTBE: <5.0 PAHs: (<GCTLs)

(6) Brief lithologic description: Medium to fine grained silty sand. No significant lithologic variations across site.

(7) Areal and vertical extent of soils contamination defined (yes/no) Yes

Highest current soil concentration (OVA): 0 (ppm) or (EPA method 5030/8020: Benzo(a) pyrene 120 ppb

(8) Lower aquifer contaminated? (yes/no) No Depth of vertical contamination: N/A

(9) Date of last complete round of groundwater sampling: N/A Date of last soil sampling: 5/27/03

(10) QAPP approved? (yes/no) Date: N/A

(11) Direction (e.g. NNW) of surficial groundwater flow: SE Estimated \_\_\_\_\_

(12) Average depth to groundwater: 5 (ft)

(13) Observed range of seasonal groundwater fluctuations: NA

(14) Estimated rate of groundwater flow: 0.22 (ft/day)

(15) Hydraulic gradient across site: 0.011 (ft/ft)

(16) Aquifer characteristics:	Values	Units	Method
Hydraulic conductivity	<u>N/A</u>	<u>ft/day</u>	<u>-</u>
Storage coefficient	<u>-</u>	<u>ft/ft</u>	<u>-</u>
Aquifer thickness	<u>40</u>	<u>ft</u>	<u>Literature</u>
Effective soil porosity	<u>N/A</u>	<u>%</u>	<u>-</u>
Transmissivity	<u>-</u>	<u>gal/day/ft</u>	<u>-</u>

(17) Other remarks: (11), (14), (15), and (16) above based on results at nearby sites and info in literature

**APPENDIX D**

**SOIL BORING LOGS**

















# BORING LOG

PROJECT NAME: PCA 23 SOIL INVESTIGATION BORING NUMBER: JAX. PCA 23. SB 08  
 PROJECT NUMBER: N 4258 DATE: 5.27.03  
 DRILLING COMPANY: N/A GEOLOGIST: DAVE SIEFKE  
 DRILLING RIG: HAND AUGER DRILLER: N/A

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			U S C S *	Remarks	PID/FID Reading (ppm)				
					Soil Density/ Consistency or Rock Hardness	Color	Material Classification			Sample	Sampler BZ	Borehole**	Driller BZ**	
				0.4 -			ASPHALT / LIMESTONE							
							SAND: fine & medium, light brown							
				4.5 -			SAND w/ trace clay, fine/med; light greenish gray							
				6.0 -			FOB = 6 ft 6 in							

\* When rock coring, enter rock brokenness.

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

Remarks: \_\_\_\_\_

Drilling Area Background (ppm): 0

Converted to Well: Yes \_\_\_\_\_ No / Well I.D. #: N/A

**APPENDIX E**

**DPT SAMPLE LOGS**



Project / Site: NASJAX PCA Sites Soil Boring ID No.: JAX-PCA23-SB01  
 Project No.: N4258 Sample Location: SB01

[ ] Temporary Monitoring Well  
 [X] Soil Boring  
 [ ] Other: \_\_\_\_\_  
 Sampler: L. Middleton/M. Ferguson

**SOIL AND GROUNDWATER SAMPLING DATA**

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
JAX-PCA23-SB01-S06	11/8/2002	1323	org/brn					
Total Depth:	6.0	DTW:	6.0	Stickup:	NA	Screen Int:		

**SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA**

Soil Boring ID:	JAX-PCA23-SB01	Date:	11/8/2002	Time Start:	1300
Location Desc.:		Time End:		Time Sample:	1323
		Amount Grout:			

**PID / FID READINGS**

Depth	Sample ID	Initial	Filtered	Total	Remarks
2	JAX-PCA23-SB01-02	0	-	0	
4	JAX-PCA23-SB01-04	0	-	0	
6	JAX-PCA23-SB01-06	0	-	0	

**SOIL SAMPLE COLLECTION INFORMATION**

Analysis	Preservative	Container Requirements	Laboratory	Collected
8260/AROM	1 MeOH & 2 DI H <sub>2</sub> O	3 - 40 mL vials	ENCO	X
TRPH FL-PRO	None	1 - 4 oz. jar	ENCO	X
8310	None	1 - 4 oz. jar	ENCO	X

**OBSERVATIONS / NOTES**

FID CAL. 100.3 PPM Field Log Book No. CTO 252 Book #1  
 Drilling Area Background (PPM): 0

**LAB INFO**

LAB: ENCO  
Jacksonville, FL  
 COC #: 0246

Check if Collected:

MS / MSD  DUPLICATE / ID No.:

Signature(s): \_\_\_\_\_



Project / Site: NASJAX PCA Sites - PCA 23 Soil Boring ID No.: JAX-PCA23-SB02  
 Project No.: N4258 Sample Location: SB02  
 Temporary Monitoring Well  
 Soil Boring  
 Other: \_\_\_\_\_  
 Sampler: L. Middleton/M. Ferguson

SOIL AND GROUNDWATER SAMPLING DATA								
Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
JAX-PCA23-SB02-S06	11/8/2002	930	lt. Brown					
Total Depth:	6.5	DTW:		Soekup:	NA	Screen Int:		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA			
Soil Boring ID:	JAX-PCA23-SB02	Date:	11/8/2002
Location:		Time Start:	0905
Desc.:		Time End:	0930
		Time Sample:	0930
		Amount Grout:	

Depth	Sample ID	PID / FID READINGS			Remarks
		Initial	Filtered	Total	
2 ft	JAX-PCA23-SB02-S02	0	-	0	
4	JAX-PCA23-SB02-S04	0	-	0	
6	JAX-PCA23-SB02-S06	0	-	0	

SOIL SAMPLE COLLECTION INFORMATION				
Analysis	Preservative	Container Requirements	Laboratory	Collected
8260/AROM	1 MeOH & 2 DI H <sub>2</sub> O	3 - 40 mL vials	ENCO	X
TRPH FL-PRO	None	1 - 4 oz. jar	ENCO	X
8310	None	1 - 4 oz. jar	ENCO	X

OBSERVATIONS / NOTES		LAB INFO	
FID CAL. <u>100.3</u> PPM	Field Log Book No. <u>CTO 252 Book #1</u>	LAB: <u>ENCO</u>	<u>Jacksonville, FL</u>
Drilling Area Background (PPM): <u>0</u>		COC #: <u>0246</u>	

Check if Collected:

MS / MSD     DUPLICATE / ID No.:

Signature(s): \_\_\_\_\_



Project / Site: NASJAX PCA Sites - PCA 23 Soil Boring ID No.: JAX-PCA23-SB03  
 Project No.: N4258 Sample Location: SB03

[ ] Temporary Monitoring Well Sampler: L. Middleton/M. Ferguson  
 [X] Soil Boring  
 [ ] Other: \_\_\_\_\_

SOIL AND GROUNDWATER SAMPLING DATA								
Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
JAX-PCA23-SB03-S06	11/8/2002	1014	grey					
Total Depth:	6.5	DTW:	6.5	Stickup:	NA	Screen Int:		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA			
Soil Boring ID:	JAX-PCA23-SB03	Date:	11/8/2002
Location Desc.:		Time Start:	0950
		Time End:	1015
		Time Sample:	1014
		Amount Grout:	

		PID / FID READINGS			
Depth	Sample ID	Initial	Filtered	Total	Remarks
2	JAX-PCA23-SB03-S02	0	-	0	
4	JAX-PCA23-SB03-S04	0	-	0	
6	JAX-PCA23-SB03-S06	0	-	0	

SOIL SAMPLE COLLECTION INFORMATION				
Analysis	Preservative	Container Requirements	Laboratory	Collected
8260/AROM	1 MeOH & 2 DI H <sub>2</sub> O	3 - 40 mL vials	ENCO	X
TRPH FL-PRO	None	1 - 4 oz. jar	ENCO	X
8310	None	1 - 4 oz. jar	ENCO	X

OBSERVATIONS / NOTES	LAB INFO
FID CAL. <u>100.3</u> PPM Field Log Book No. <u>CTO 252 Book #1</u>	LAB: <u>ENCO</u>
Drilling Area Background (PPM): <u>0</u>	<u>Jacksonville, FL</u>
	COC #: <u>0246</u>

Check if Collected:

MS / MSD  DUPLICATE / ID No.:

Signature(s): \_\_\_\_\_



Project / Site:	<u>NASJAX PCA Sites - PCA 23</u>	Soil Boring ID No.:	<u>JAX-PCA23-SB04</u>
Project No.:	<u>N4258</u>	Sample Location:	<u>SB04</u>
<input type="checkbox"/> Temporary Monitoring Well <input checked="" type="checkbox"/> Soil Boring <input type="checkbox"/> Other: _____		Sampler: <u>L. Middleton/M. Ferguson</u>	

SOIL AND GROUNDWATER SAMPLING DATA								
Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
JAX-PCA23-SB04-S06	11/8/2002	1054	lt grey					
Total Depth:		6.5	DTW:	6.5	Stickup:	NA	Screen Int:	

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA			
Soil Boring ID:	<u>JAX-PCA23-SB04</u>	Date:	<u>11/8/2002</u>
Location Desc.:	Time Start:		<u>1025</u>
	Time End:		<u>1054</u>
	Time Sample:		<u>1054</u>
		Amount Grout:	

		PID / FID READINGS			
Depth	Sample ID	Initial	Filtered	Total	Remarks
2	JAX-PCA23-SB04-S02	0	-	0	
4	JAX-PCA23-SB04-S04	0.7	-	0.7	
6	JAX-PCA23-SB04-S06	1.5	-	1.5	

SOIL SAMPLE COLLECTION INFORMATION				
Analysis	Preservative	Container Requirements	Laboratory	Collected
B260/AROM	1 MeOH & 2 DI H <sub>2</sub> O	3 - 40 mL vials	ENCO	X
TRPH FL-PRO	None	1 - 4 oz. jar	ENCO	X
B310	None	1 - 4 oz. jar	ENCO	X

OBSERVATIONS / NOTES	LAB INFO
FID CAL. <u>100.3</u> PPM      Field Log Book No. <u>CTO 252 Book #1</u>  Drilling Area Background (PPM): <u>0</u>	LAB: <u>ENCO</u> <u>Jacksonville, FL</u>  COC #: <u>0246</u>

Check if Collected: <input type="checkbox"/> MS / MSD <input type="checkbox"/> DUPLICATE / ID No.:	Signature(s): _____
---	---------------------



Project / Site: NASJAX PCA Sites - PCA 23 Soil Boring ID No.: JAX-PCA23-SB05  
 Project No.: N4258 Sample Location: SB05  
 Temporary Monitoring Well Sampler: L. Middleton/M. Ferguson  
 Soil Boring  
 Other: \_\_\_\_\_

SOIL AND GROUNDWATER SAMPLING DATA								
Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
JAX-PCA23-SB05-S04	11/8/2002	1228	brown					
Total Depth:		6	DTW:	5.5	Stickup:	NA	Screen Int:	

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA			
Soil Boring ID:	JAX-PCA23-SB05	Date:	11/8/2002
Location Desc.:		Time Start:	1218
		Time End:	1228
		Time Sample:	1228
		Amount Grout:	

Depth	Sample ID	PID / FID READINGS			Remarks
		Initial	Filtered	Total	
2	JAX-PCA23-SB05-S02	0	-	0	
4	JAX-PCA23-SB05-S04	0	-	0	

SOIL SAMPLE COLLECTION INFORMATION				
Analysis	Preservative	Container Requirements	Laboratory	Collected
8260/AROM	1 MeOH & 2 DI H <sub>2</sub> O	3 - 40 mL vials	ENCO	X
TRPH FL-PRO	None	1 - 4 oz. jar	ENCO	X
8310	None	1 - 4 oz. jar	ENCO	X

OBSERVATIONS / NOTES	LAB INFO
FID CAL. <u>100.3</u> PPM Field Log Book No. <u>CTO 252 Book #1</u>	LAB: <u>ENCO</u>
Drilling Area Background (PPM): <u>0</u>	<u>Jacksonville, FL</u>
	COC #: <u>0246</u>

Check if Collected:  MS / MSD  DUPLICATE / ID No.: \_\_\_\_\_ Signature(s): \_\_\_\_\_



Project / Site:	NASJAX PCA Sites	Soil Boring ID No.:	JAX-PCA23-SB06
Project No.:	N4258	Sample Location:	SB06
<input type="checkbox"/> Temporary Monitoring Well <input checked="" type="checkbox"/> Soil Boring <input type="checkbox"/> Other: _____		Sampler: L. Middleton/M. Ferguson	

SOIL AND GROUNDWATER SAMPLING DATA								
Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
JAX-PCA23-SB06-S04	11/8/2002	1258	lt.brn.grey					
Total Depth:		5	DTW:	5	Stickup:	NA	Screen Int:	

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA						
Soil Boring ID:	JAX-PCA23-SB06	Date:	11/8/2002	Time Start:	1232	
Location Desc.:					Time End:	1258
					Time Sample:	1258
					Amount Grout:	

		PID / FID READINGS			
Depth	Sample ID	Initial	Filtered	Total	Remarks
2	JAX-PCA23-SB06-S02	0	-	0	
4	JAX-PCA23-SB06-S04	0	-	0	

SOIL SAMPLE COLLECTION INFORMATION				
Analysis	Preservative	Container Requirements	Laboratory	Collected
8260/AROM	1 MeOH & 2 DI H <sub>2</sub> O	3 - 40 mL vials	ENCO	X
TRPH FL-PRO	None	1 - 4 oz. jar	ENCO	X
8310	None	1 - 4 oz. jar	ENCO	X

OBSERVATIONS / NOTES	LAB INFO
FID CAL. <u>100.3</u> PPM      Field Log Book No. <u>CTO 252 Book #1</u>  Drilling Area Background (PPM): <u>0</u>	LAB: <u>ENCO</u> <u>Jacksonville, FL</u>  COC #: <u>0246</u>

Check if Collected: <input type="checkbox"/> MS / MSD <input type="checkbox"/> DUPLICATE / ID No.: _____	Signature(s): _____
---	---------------------



Project / Site: NASJAX PCA Sites - PCA 23 Soil Boring ID No.: JAX-PCA23-SB07  
 Project No.: N4258 Sample Location: SB07

[ ] Temporary Monitoring Well  
 [X] Soil Boring  
 [ ] Other: \_\_\_\_\_  
 Sampler: L. Middleton/M. Ferguson

SOIL AND GROUNDWATER SAMPLING DATA								
Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
JAX-PCA23-SB07-S04	11/8/2002	1325	org/ltbrn					
Total Depth:		DTW:	Stickup:	NA	Screen Int:			

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA					
Soil Boring ID:	JAX-PCA23-SB07	Date:	11/8/2002	Time Start:	1312
Location:				Time End:	1323
Desc.:				Time Sample:	1325
				Amount Grout:	

Depth	Sample ID	PID / FID READINGS			Remarks
		Initial	Filtered	Total	
2	JAX-PCA23-SB07-S02	0	-	0	
4	JAX-PCA23-SB07-S04	0	-	0	

SOIL SAMPLE COLLECTION INFORMATION				
Analysis	Preservative	Container Requirements	Laboratory	Collected
8260/AROM	1 MeOH & 2 DI H <sub>2</sub> O	3 - 40 mL vials	ENCO	X
TRPH FL-PRO	None	1 - 4 oz. jar	ENCO	X
8310	None	1 - 4 oz. jar	ENCO	X

OBSERVATIONS / NOTES	LAB INFO
FID CAL. <u>100.3</u> PPM Field Log Book No. <u>CTO 252 Book #1</u>	LAB: <u>ENCO</u>
Drilling Area Background (PPM): <u>0</u>	<u>Jacksonville, FL</u>
	COC #: <u>0246</u>

Check if Collected:  MS / MSD  DUPLICATE / ID No.: \_\_\_\_\_

Signature(s): \_\_\_\_\_

**APPENDIX F**

**SOIL SAMPLE ANALYTICAL RESULTS**

Environmental Conservation Laboratories, Inc.  
4810 Executive Park Court, Suite 211  
Jacksonville, Florida 32216-6069  
904 / 296-3007  
Fax 904 / 296-6210  
www.encolabs.com



DHRS Certification No. E82277

CLIENT : Tetra Tech NUS  
ADDRESS: 8640 Philips Highway  
Suite 16  
Jacksonville, FL 32256

REPORT # : JAX27879  
DATE SUBMITTED: November 8, 2002  
DATE REPORTED : November 15, 2002

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ATTENTION: Mr. Greg Roof

**SAMPLE IDENTIFICATION**

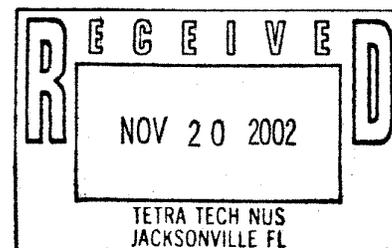
Samples submitted and  
identified by client as:

**REFERENCE:** N4258

PCA 23

11/08/02

- #1 - JAX-PCA23-SB01-S06 @ 13:23
- #2 - JAX-PCA23-SB02-S06 @ 09:30
- #3 - JAX-PCA23-SB03-S06 @ 10:14
- #4 - JAX-PCA23-SB04-S06 @ 10:54
- #5 - JAX-PCA23-SB05-S04 @ 12:33
- #6 - JAX-PCA23-SB06-S04 @ 12:58
- #7 - JAX-PCA23-SB07-S04 @ 13:25



Unless otherwise noted in an attached project narrative, all samples were received in acceptable condition and processed in accordance with the referenced methods/procedures. This data has been produced in accordance with NELAC Standards (July, 1999). This report shall not be reproduced except in full, without the written approval of the laboratory. Results for these procedures apply only to the samples as submitted.

PROJECT MANAGER

Scott D. Martin

ENCO LABORATORIES  
 REPORT # : JAX27879  
 DATE REPORTED: November 15, 2002  
 REFERENCE : N4258  
 PROJECT NAME : PCA 23

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RESULTS OF ANALYSIS

EPA METHOD 8260 -  
 VOLATILE ORGANICS

	<u>JAX-PCA23-SB01-S06</u>	<u>JAX-PCA23-SB02-S06</u>	<u>Units</u>
Methyl tert-butyl ether	1.0 U	1.1 U	ug/Kg
Benzene	0.95 U	1.1 U	ug/Kg
Toluene	1.3	1.7	ug/Kg
Chlorobenzene	1.0 U	1.1 U	ug/Kg
Ethylbenzene	1.3	1.6	ug/Kg
m-Xylene & p-Xylene	4.0	3.9	ug/Kg
o-Xylene	1.2	1.2	ug/Kg
1,3-Dichlorobenzene	1.0 U	1.1 U	ug/Kg
1,4-Dichlorobenzene	1.0 U	1.1 U	ug/Kg
1,2-Dichlorobenzene	1.0 U	1.1 U	ug/Kg
<b>Surrogate:</b>	<b>% RECOV</b>	<b>% RECOV</b>	<b>LIMITS</b>
Dibromofluoromethane	110	105	70-134
D8-Toluene	104	105	60-144
Bromofluorobenzene	103	96	71-127
Date Prepared	11/09/02 11:00	11/09/02 11:00	
Date Analyzed	11/12/02 17:00	11/12/02 17:31	

U = Compound was analyzed for but not detected to the level shown.

ENCO LABORATORIES

REPORT # : JAX27879  
 DATE REPORTED: November 15, 2002  
 REFERENCE : N4258  
 PROJECT NAME : PCA 23

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RESULTS OF ANALYSIS

<u>EPA METHOD 8310 - PAH BY HPLC</u>	<u>JAX-PCA23-SB01-S06</u>	<u>JAX-PCA23-SB02-S06</u>	<u>Units</u>
Naphthalene	20 U	20 U	ug/Kg
Acenaphthylene	40 U	40 U	ug/Kg
1-Methylnaphthalene	40 U	40 U	ug/Kg
2-Methylnaphthalene	40 U	40 U	ug/Kg
Acenaphthene	20 U	20 U	ug/Kg
Fluorene	4.0 U	4.0 U	ug/Kg
Phenanthrene	40 U	40 U	ug/Kg
Anthracene	20 U	20 U	ug/Kg
Fluoranthene	4.0 U	4.0 U	ug/Kg
Pyrene	4.0 U	4.0 U	ug/Kg
Benzo(a)anthracene	20 U	20 U	ug/Kg
Chrysene	4.0 U	4.0 U	ug/Kg
Benzo(b)fluoranthene	4.0 U	4.0 U	ug/Kg
Benzo(k)fluoranthene	4.0 U	4.0 U	ug/Kg
Benzo(a)pyrene	4.0 U	4.0 U	ug/Kg
Dibenzo(a,h)anthracene	4.0 U	4.0 U	ug/Kg
Benzo(g,h,i)perylene	4.0 U	4.0 U	ug/Kg
Indeno(1,2,3-cd)pyrene	4.0 U	4.0 U	ug/Kg
<b>Surrogate:</b>	<b>% RECOV</b>	<b>% RECOV</b>	<b>LIMITS</b>
p-terphenyl	73	69	39-141
Date Prepared	11/11/02 17:00	11/11/02 17:00	
Date Analyzed	11/13/02 13:24	11/13/02 14:11	

<u>MISCELLANEOUS</u>	<u>METHOD</u>	<u>JAX-PCA23-SB01-S06</u>	<u>JAX-PCA23-SB02-S06</u>	<u>Units</u>
Percent Solids	SM2540G	82	82	%
Date Prepared		11/10/02 13:34	11/10/02 13:34	
Date Analyzed		11/11/02 11:30	11/11/02 11:30	

U = Compound was analyzed for but not detected to the level shown.

ENCO LABORATORIES  
 REPORT # : JAX27879  
 DATE REPORTED: November 15, 2002  
 REFERENCE : N4258  
 PROJECT NAME : PCA 23

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RESULTS OF ANALYSIS

EPA METHOD FLPRO -  
 PETROL. RESIDUAL ORG.

	<u>JAX-PCA23-SB01-S06</u>	<u>JAX-PCA23-SB02-S06</u>	<u>Units</u>
Hydrocarbons (C8-C40)	8.0 U	8.0 U	mg/Kg
<u>Surrogate:</u>	<u>% RECOV</u>	<u>% RECOV</u>	<u>LIMITS</u>
o-Terphenyl	68	74	51-148
Nonatriacontane	73	79	36-152
Date Prepared	11/12/02 09:00	11/12/02 09:00	
Date Analyzed	11/13/02 12:10	11/13/02 12:19	

U = Compound was analyzed for but not detected to the level shown.

ENCO LABORATORIES

REPORT # : JAX27879  
 DATE REPORTED: November 15, 2002  
 REFERENCE : N4258  
 PROJECT NAME : PCA 23

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RESULTS OF ANALYSIS

EPA METHOD 8260 -  
 VOLATILE ORGANICS

	<u>JAX-PCA23-SB03-S06</u>	<u>JAX-PCA23-SB04-S06</u>	<u>Units</u>
Methyl tert-butyl ether	1.0 U	1.0 U	ug/Kg
Benzene	1.0 U	0.94 U	ug/Kg
Toluene	1.1	1.1	ug/Kg
Chlorobenzene	1.0 U	1.0 U	ug/Kg
Ethylbenzene	1.0 I	1.0 U	ug/Kg
m-Xylene & p-Xylene	2.6	2.1	ug/Kg
o-Xylene	1.0 U	0.94 U	ug/Kg
1,3-Dichlorobenzene	1.0 U	1.0 U	ug/Kg
1,4-Dichlorobenzene	1.0 U	1.0 U	ug/Kg
1,2-Dichlorobenzene	1.0 U	1.0 U	ug/Kg
<b>Surrogate:</b>	<b>% RECOV</b>	<b>% RECOV</b>	<b>LIMITS</b>
Dibromofluoromethane	107	109	70-134
D8-Toluene	102	101	60-144
Bromofluorobenzene	96	97	71-127
Date Prepared	11/09/02 11:00	11/09/02 11:00	
Date Analyzed	11/12/02 18:01	11/12/02 18:32	

U = Compound was analyzed for but not detected to the level shown.  
 I = Analyte detected; value is between the Method Detection Level (MDL)  
 and the Practical Quantitation Level (PQL).

**ENCO LABORATORIES**

REPORT # : JAX27879  
 DATE REPORTED: November 15, 2002  
 REFERENCE : N4258  
 PROJECT NAME : PCA 23

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**RESULTS OF ANALYSIS**

**EPA METHOD 8310 -  
 PAH BY HPLC**

	<u>JAX-PCA23-SB03-S06</u>	<u>JAX-PCA23-SB04-S06</u>	<u>Units</u>
Naphthalene	20 U	21 U	ug/Kg
Acenaphthylene	40 U	41 U	ug/Kg
1-Methylnaphthalene	40 U	41 U	ug/Kg
2-Methylnaphthalene	40 U	41 U	ug/Kg
Acenaphthene	20 U	21 U	ug/Kg
Fluorene	4.0 U	4.1 U	ug/Kg
Phenanthrene	40 U	41 U	ug/Kg
Anthracene	20 U	21 U	ug/Kg
Fluoranthene	4.0 U	4.1 U	ug/Kg
Pyrene	4.0 U	4.1 U	ug/Kg
Benzo (a) anthracene	20 U	21 U	ug/Kg
Chrysene	4.0 U	4.1 U	ug/Kg
Benzo (b) fluoranthene	4.0 U	4.1 U	ug/Kg
Benzo (k) fluoranthene	4.0 U	4.1 U	ug/Kg
Benzo (a) pyrene	4.0 U	4.1 U	ug/Kg
Dibenzo (a, h) anthracene	13	4.1 U	ug/Kg
Benzo (g, h, i) perylene	9.6	4.1 U	ug/Kg
Indeno (1, 2, 3-cd) pyrene	9.1	4.1 U	ug/Kg

<u>Surrogate:</u>	<u>% RECOV</u>	<u>% RECOV</u>	<u>LIMITS</u>
p-terphenyl	64	71	39-141
Date Prepared	11/11/02 17:00	11/11/02 17:00	
Date Analyzed	11/13/02 14:57	11/13/02 15:44	

<u>MISCELLANEOUS</u>	<u>METHOD</u>	<u>JAX-PCA23-SB03-S06</u>	<u>JAX-PCA23-SB04-S06</u>	<u>Units</u>
Percent Solids	SM2540G	82	80	%
Date Prepared		11/10/02 13:34	11/10/02 13:34	
Date Analyzed		11/11/02 11:30	11/11/02 11:30	

U = Compound was analyzed for but not detected to the level shown.

ENCO LABORATORIES

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PROJECT NAME : PCA 23

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RESULTS OF ANALYSIS

EPA METHOD FLPRO -  
PETROL. RESIDUAL ORG.

	<u>JAX-PCA23-SB03-S06</u>	<u>JAX-PCA23-SB04-S06</u>	<u>Units</u>
Hydrocarbons (C8-C40)	8.0 U	8.2 U	mg/Kg
<u>Surrogate:</u>	<u>% RECOV</u>	<u>% RECOV</u>	<u>LIMITS</u>
o-Terphenyl	64	75	51-148
Nonatriacontane	78	81	36-152
Date Prepared	11/12/02 09:00	11/12/02 09:00	
Date Analyzed	11/13/02 12:28	11/13/02 12:37	

U = Compound was analyzed for but not detected to the level shown.

ENCO LABORATORIES

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RESULTS OF ANALYSIS

EPA METHOD 8260 -  
 VOLATILE ORGANICS

	<u>JAX-PCA23-SB05-S04</u>	<u>JAX-PCA23-SB06-S04</u>	<u>Units</u>
Methyl tert-butyl ether	1.0 U	1.0 U	ug/Kg
Benzene	1.0 U	1.0 U	ug/Kg
Toluene	1.1	1.7	ug/Kg
Chlorobenzene	1.0 U	1.0 U	ug/Kg
Ethylbenzene	1.1	1.5	ug/Kg
m-Xylene & p-Xylene	2.9	3.8	ug/Kg
o-Xylene	1.0 U	1.0	ug/Kg
1,3-Dichlorobenzene	1.0 U	1.0 U	ug/Kg
1,4-Dichlorobenzene	1.0 U	1.0 U	ug/Kg
1,2-Dichlorobenzene	1.0 U	1.0 U	ug/Kg
<b>Surrogate:</b>	<b>% RECOV</b>	<b>% RECOV</b>	<b>LIMITS</b>
Dibromofluoromethane	107	106	70-134
D8-Toluene	100	98	60-144
Bromofluorobenzene	95	92	71-127
Date Prepared	11/09/02 11:00	11/09/02 11:00	
Date Analyzed	11/12/02 19:02	11/12/02 19:33	

U = Compound was analyzed for but not detected to the level shown.

**ENCO LABORATORIES**

**REPORT #** : JAX27879  
**DATE REPORTED**: November 15, 2002  
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**RESULTS OF ANALYSIS**

**EPA METHOD 8310 -  
 PAH BY HPLC**

	<u>JAX-PCA23-SB05-S04</u>			<u>JAX-PCA23-SB06-S04</u>			<u>Units</u>
Naphthalene	200	U	D1	200	U	D1	ug/Kg
Acenaphthylene	400	U	D1	410	U	D1	ug/Kg
1-Methylnaphthalene	400	U	D1	410	U	D1	ug/Kg
2-Methylnaphthalene	400	U	D1	410	U	D1	ug/Kg
Acenaphthene	200	U	D1	200	U	D1	ug/Kg
Fluorene	40	U	D1	41	U	D1	ug/Kg
Phenanthrene	400	U	D1	410	U	D1	ug/Kg
Anthracene	200	U	D1	200	U	D1	ug/Kg
Fluoranthene	40	U	D1	300		D1	ug/Kg
Pyrene	40	U	D1	230		D1	ug/Kg
Benzo(a) anthracene	200	U	D1	200	U	D1	ug/Kg
Chrysene	40	U	D1	120		D1	ug/Kg
Benzo(b) fluoranthene	40	U	D1	96		D1	ug/Kg
Benzo(k) fluoranthene	40	U	D1	44		D1	ug/Kg
Benzo(a) pyrene	40	U	D1	120		D1	ug/Kg
Dibenzo(a,h) anthracene	40	U	D1	41		D1	ug/Kg
Benzo(g,h,i) perylene	40	U	D1	75		D1	ug/Kg
Indeno(1,2,3-cd) pyrene	40	U	D1	83		D1	ug/Kg

<u>Surrogate:</u>	<u>% RECOV</u>		<u>% RECOV</u>		<u>LIMITS</u>
p-terphenyl		63		103	39-141
Date Prepared	11/11/02	17:00	11/11/02	17:00	
Date Analyzed	11/14/02	04:58	11/14/02	05:45	

<u>MISCELLANEOUS</u>	<u>METHOD</u>	<u>JAX-PCA23-SB05-S04</u>		<u>JAX-PCA23-SB06-S04</u>		<u>Units</u>
Percent Solids	SM2540G		82		81	%
Date Prepared		11/10/02	13:34	11/10/02	13:34	
Date Analyzed		11/11/02	11:30	11/11/02	11:30	

U = Compound was analyzed for but not detected to the level shown.  
 D1 = Analyte value determined from a 1:10 dilution.

ENCO LABORATORIES

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RESULTS OF ANALYSIS

EPA METHOD FLPRO -  
PETROL. RESIDUAL ORG.

Hydrocarbons (C8-C40)

surrogate:

o-Terphenyl  
Nonatriacontane  
Date Prepared  
Date Analyzed

<u>JAX-PCA23-SB05-S04</u>	<u>JAX-PCA23-SB06-S04</u>	<u>Units</u>
32	15	mg/Kg
<u>% RECOV</u>	<u>% RECOV</u>	<u>LIMITS</u>
81	72	51-148
72	78	36-152
11/12/02 09:00	11/12/02 09:00	
11/14/02 08:11	11/14/02 08:20	

ENCO LABORATORIES

REPORT # : JAX27879  
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RESULTS OF ANALYSIS

EPA METHOD 8260 -  
 VOLATILE ORGANICS

JAX-PCA23-SB07-S04

LAB BLANK

Units

Methyl tert-butyl ether	1.1 U	1.0 U	ug/Kg
Benzene	1.1 U	1.0 U	ug/Kg
Toluene	1.5	1.0 U	ug/Kg
Chlorobenzene	1.1 U	1.0 U	ug/Kg
Ethylbenzene	1.4	1.0 U	ug/Kg
m-Xylene & p-Xylene	4.0	1.0 U	ug/Kg
o-Xylene	1.2	2.0 U	ug/Kg
1,3-Dichlorobenzene	1.1 U	1.0 U	ug/Kg
1,4-Dichlorobenzene	1.1 U	1.0 U	ug/Kg
1,2-Dichlorobenzene	1.1 U	1.0 U	ug/Kg

Surrogate:

	% RECOV	% RECOV	LIMITS
Dibromofluoromethane	107	108	70-134
D8-Toluene	102	100	60-144
Bromofluorobenzene	101	95	71-127
Date Prepared	11/09/02 11:00		
Date Analyzed	11/12/02 20:03	11/12/02 12:56	

U = Compound was analyzed for but not detected to the level shown.

ENCO LABORATORIES

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RESULTS OF ANALYSIS

EPA METHOD 8310 -  
 PAH BY HPLC

	<u>JAX-PCA23-SB07-S04</u>	<u>LAB BLANK</u>	<u>Units</u>
Naphthalene	200 U D1	16 U	ug/Kg
Acenaphthylene	390 U D1	33 U	ug/Kg
1-Methylnaphthalene	390 U D1	33 U	ug/Kg
2-Methylnaphthalene	390 U D1	33 U	ug/Kg
Acenaphthene	200 U D1	16 U	ug/Kg
Fluorene	39 U D1	3.3 U	ug/Kg
Phenanthrene	390 U D1	33 U	ug/Kg
Anthracene	200 U D1	16 U	ug/Kg
Fluoranthene	39 U D1	3.3 U	ug/Kg
Pyrene	39 U D1	3.3 U	ug/Kg
Benzo (a) anthracene	200 U D1	16 U	ug/Kg
Chrysene	39 U D1	3.3 U	ug/Kg
Benzo (b) fluoranthene	39 U D1	3.3 U	ug/Kg
Benzo (k) fluoranthene	39 U D1	3.3 U	ug/Kg
Benzo (a) pyrene	39 U D1	3.3 U	ug/Kg
Dibenzo (a, h) anthracene	39 U D1	3.3 U	ug/Kg
Benzo (g, h, i) perylene	39 U D1	3.3 U	ug/Kg
Indeno (1, 2, 3-cd) pyrene	39 U D1	3.3 U	ug/Kg
<b>Surrogate:</b>	<b>% RECOV</b>	<b>% RECOV</b>	<b>LIMITS</b>
p-terphenyl	83	88	39-141
Date Prepared	11/11/02 17:00	11/11/02 17:00	
Date Analyzed	11/14/02 06:32	11/13/02 11:51	

MISCELLANEOUS

	<u>METHOD</u>	<u>JAX-PCA23-SB07-S04</u>	<u>LAB BLANK</u>	<u>Units</u>
Percent Solids	SM2540G	84	NA	%
Date Prepared		11/10/02 13:34		
Date Analyzed		11/11/02 11:30		

NA = Analysis not applicable for this sample.  
 U = Compound was analyzed for but not detected to the level shown.  
 D1 = Analyte value determined from a 1:10 dilution.

ENCO LABORATORIES

REPORT # : JAX27879  
DATE REPORTED: November 15, 2002  
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RESULTS OF ANALYSIS

EPA METHOD FLPRO -  
PETROL. RESIDUAL ORG.

JAX-PCA23-SB07-S04

LAB BLANK

Units

Hydrocarbons (C8-C40)

7.8 U

6.6 U

mg/Kg

Surrogate:

% RECOV

% RECOV

LIMITS

o-Terphenyl

76

61

51-148

Nonatriacontane

84

69

36-152

Date Prepared

11/12/02 09:00

11/12/02 09:00

Date Analyzed

11/13/02 12:46

11/13/02 11:25

U = Compound was analyzed for but not detected to the level shown.

**ENCO LABORATORIES**

**REPORT #** : JAX27879

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**LABORATORY CERTIFICATIONS**

Laboratory Certification: FDEP:910190 NELAC:E82277

All analyses reported with this project were analyzed by the facility indicated unless identified below.

**ENCO LABORATORIES**

**REPORT #** : JAX27879  
**DATE REPORTED:** November 15, 2002  
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**QUALITY CONTROL DATA**

<u>Parameter</u>	<u>% RECOVERY MS/MSD/LCS</u>	<u>ACCEPT LIMITS</u>	<u>% RPD MS/MSD</u>	<u>ACCEPT LIMITS</u>
<u>EPA Method 8260</u>				
1,1-Dichloroethene	91/ 81/ 83	44-169	12	19
Benzene	109/106/110	50-140	3	23
Trichloroethene	91/ 89/ 92	75-125	2	17
Toluene	92/ 91/ 92	56-139	1	22
Chlorobenzene	97/ 94/ 97	73-123	3	24
<u>EPA Method 8310</u>				
Naphthalene	89/ 83/ 82	48-130	7	20
Acenaphthene	77/ 70/ 90	36-127	10	17
Benzo(a)pyrene	120/115/ 81	64-141	4	22
Benzo(g,h,i)perylene	108/107/ 73	58-168	<1	21
<u>PETROL. RESIDUAL ORG.</u>				
Hydrocarbons (C8-C40)	82/ 84/ 74	62-204	2	25

< = Less Than  
MS = Matrix Spike  
MSD = Matrix Spike Duplicate  
LCS = Laboratory Control Standard  
RPD = Relative Percent Difference



ENCO LABORATORIES

REPORT # : JAX32001  
 DATE REPORTED: June 2, 2003  
 REFERENCE : 4258  
 PROJECT NAME : GAS HILL / NAS JAX

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RESULTS OF ANALYSIS

EPA METHOD 8270 - -  
PAH Compounds by SIM

	<u>JAX PCA 23 SB8 (6)</u>	<u>LAB BLANK</u>	<u>Units</u>
Naphthalene	4.2 U	3.3 U	ug/Kg
2-Methylnaphthalene	4.2 U	3.3 U	ug/Kg
1-Methylnaphthalene	4.2 U	3.3 U	ug/Kg
Acenaphthylene	4.2 U	3.3 U	ug/Kg
Acenaphthene	4.2 U	3.3 U	ug/Kg
Fluorene	4.2 U	3.3 U	ug/Kg
Phenanthrene	4.2 U	3.3 U	ug/Kg
Anthracene	4.2 U	3.3 U	ug/Kg
Fluoranthene	4.2 U	3.3 U	ug/Kg
Pyrene	4.2 U	3.3 U	ug/Kg
Chrysene	4.2 U	3.3 U	ug/Kg
Benzo (a) anthracene	4.2 U	3.3 U	ug/Kg
Benzo (b) fluoranthene	4.2 U	3.3 U	ug/Kg
Benzo (k) fluoranthene	4.2 U	3.3 U	ug/Kg
Benzo (a) pyrene	4.2 U	3.3 U	ug/Kg
Indeno (1,2,3-cd) pyrene	4.2 U	3.3 U	ug/Kg
Dibenzo (a,h) anthracene	4.2 U	3.3 U	ug/Kg
Benzo (g,h,i) perylene	4.2 U	3.3 U	ug/Kg

<u>Surrogate:</u>	<u>% RECOV</u>	<u>% RECOV</u>	<u>LIMITS</u>
p-Terphenyl	73	83	19-162
Date Prepared	05/29/03	05/29/03	
Date Analyzed	06/02/03 13:55	06/02/03 12:07	

<u>MISCELLANEOUS</u>	<u>METHOD</u>	<u>JAX PCA 23 SB8 (6)</u>	<u>LAB BLANK</u>	<u>Units</u>
Percent Solids	SM2540G	79	NA	%
Date Prepared		05/29/03 16:00		
Date Analyzed		05/30/03 10:30		

NA = Analysis not applicable for this sample.  
 U = Compound was analyzed for but not detected to the level shown.

**PROJ\_NO: 4258**

SDG: 32001 MEDIA: SOIL DATA FRACTION: PAH

nsample JAX PCA 23 SB8 (6)  
 samp\_date 5/27/2003  
 lab\_id JAX32001-1  
 qt\_type NM  
 units UG/KG  
 Pct\_Solids 79  
 DUP\_OF:

Parameter	Result	Lab Qual	Val Qual Code
1-METHYLNAPHTHALENE	4.2	U	U
2-METHYLNAPHTHALENE	4.2	U	U
ACENAPHTHENE	4.2	U	U
ACENAPHTHYLENE	4.2	U	U
ANTHRACENE	4.2	U	U
BENZO(A)ANTHRACENE	4.2	U	U
BENZO(A)PYRENE	4.2	U	U
BENZO(B)FLUORANTHENE	4.2	U	U
BENZO(G,H,I)PERYLENE	4.2	U	U
BENZO(K)FLUORANTHENE	4.2	U	U
CHRYSENE	4.2	U	U
DIBENZO(A,H)ANTHRACENE	4.2	U	U
FLUORANTHENE	4.2	U	U
FLUORENE	4.2	U	U
INDENO(1,2,3-CD)PYRENE	4.2	U	U
NAPHTHALENE	4.2	U	U
P-1ENANTHRENE	4.2	U	U
PYRENE	4.2	U	U

32001

HOLDING TIME

06/13/03

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
%	JAX PCA 23 SB8 (6)	JAX32001-1	NORMAL	32001		05/27/03	05/29/03	05/30/03	2	1	3
%	PER030529-1	PER030529-1	DUPLICATE	32001		//	05/29/03	05/30/03	0	1	0
%	JAX PCA 23 SB8 (6)	JAX32001-1	NORMAL	32001	PAH	05/27/03	05/29/03	06/02/03	2	4	6
%	X030529C-1	X030529C-1	P_BLANK	32001	PAH	//	05/29/03	06/02/03	0	4	0
%	X030529C-2	X030529C-2	LCS	32001	PAH	//	05/29/03	06/02/03	0	4	0
%	X030529C-3	X030529C-3	MS	32001	PAH	//	05/29/03	06/02/03	0	4	0
%	X030529C-4	X030529C-4	MSD	32001	PAH	//	05/29/03	06/02/03	0	4	0

