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SITE ASSESSMENT REPORT FOR JET FUEL PIPELINE NAS CECIL FIELD FL
5/2/2002
TETRA TECH NUS INC

Rev. 1
05/02/02

Site Assessment Report
for
Jet Fuel Pipeline

Naval Air Station Cecil Field
Jacksonville, Florida

Volume I of II: Sections 1.0 through 5.0 and References

Southern Division
Naval Facilities Engineering Command
Contract Number N62467-94-D-0888
Contract Task Order 0072

April 2002

Rev. 1
05/02/02

SITE ASSESSMENT REPORT
FOR
JET FUEL PIPELINE

NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

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

Submitted to:
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Naval Facilities Engineering Command
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CONTRACT TASK ORDER 0072

APRIL 2002

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PROFESSIONAL CERTIFICATION

Site Assessment Report
103rd Street Jet Fuel Pipeline
Naval Air Station Cecil Field, Jacksonville, Florida

This Site Assessment Report was prepared under the direct supervision of the undersigned geologist using geologic and hydrogeologic principles standard to the profession at the time the report was prepared. If conditions are determined to exist that differ from those described, the undersigned geologist should be notified to evaluate the effects of additional information on the assessment described in this report. This report was developed specifically for the referenced site and should not be construed to apply to any other site.

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5/2/02
Date

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ACRONYMS

BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
bls	Below Land Surface
BRAC	Base Realignment and Closure
CAP	Contamination Assessment Plan
CLEAN	Comprehensive Long-term Environmental Action Navy
COCs	Chemicals of Concern
CompQAP	Comprehensive Quality Assurance Plan
CTO	Contract Task Order
DPT	Direct-Push Technology
DPTAR	Direct-Push Technology Assessment Report
EDB	Dibromoethane
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FDOT	Florida Department of Transportation
FECC	Florida Environmental Compliance Corporation
FL-PRO	Florida Petroleum Range Organics
ft	Feet (or Foot)
FID	Flame Ionization Detector
GCTLs	Groundwater Cleanup Target Levels
HSA	Hollow Stem Auger
ID	Inside Diameter
IDW	Investigative Derived Waste
KAG	Kerosene Analytical Groups
µg/kg	Micrograms per Kilogram
µg/L	Micrograms per Liter
MDL	Method Detection Limit
MTBE	Methyl Tert-Butyl Ether
NASCF	Naval Air Station Cecil Field
NASJAX	Naval Air Station Jacksonville
Navy	United States Navy
OVA	Organic Vapor Analyzer
Oz	Ounces
PAHs	Polynuclear Aromatic Hydrocarbons
PID	Photo Ionization Detector
ppm	Parts per Million

ACRONYMS (Continued)

PQL	Practical Quantitation Limit
PVC	Polyvinyl Chloride
SA	Site Assessment
SAR	Site Assessment Report
SCTLs	Soil Cleanup Target Levels
SOPs	Standard Operating Procedures
SOUTHNAVFACENGCOM	Southern Division, Naval Facilities Engineering Command
SPLP	Synthetic Precipitant Leaching Procedure
TRPH	Total Recoverable Petroleum Hydrocarbons
TtNUS	Tetra Tech NUS, Inc.
UCL	Upper Confidence Limit
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
Vetco	Vetco Services, Inc.
VOAs	Volatile Organic Aromatics
VOCs	Volatile Organic Compounds

EXECUTIVE SUMMARY

Tetra Tech NUS, Inc. (TtNUS) prepared this Site Assessment Report (SAR) for the Naval Air Station Jacksonville (NASJAX) to Naval Air Station Cecil Field (NASCF) Jet Fuel Pipeline at NASCF, Jacksonville, Florida. This SAR was prepared for the United States Navy (Navy) Southern Division, Naval Facilities Engineering Command (SOUTHNVFACENGCOM) under Contract Task Order (CTO) 0072, for the Comprehensive Long-term Environmental Action Navy (CLEAN) III Contract Number N62467-94-D-0888.

This SAR documents the field activities conducted from March 1999 to June 2001 and is being submitted to the Florida Department of Environmental Protection (FDEP) for approval.

The Jet Fuel Pipeline was completed in 1952 and supplied bulk fuel to NASCF from the fuel facilities located at NASJAX. From 1952 to 1997, the pipeline supplied aviation gas and jet fuel to NASCF. The pipeline consists of an 8-inch diameter pipe with approximately 15 valves (TtNUS, 1999a). In 1994 and 1996, a mechanical "pig," fitted with instrumentation designed to measure pipe thickness, was passed through the Jet Fuel Pipeline from NASJAX to NASCF. The "pig" identified areas of the pipeline anomalies. The Navy identified 21 anomalies and 11 valves along the pipeline as potential leak locations (TtNUS, 1999a).

To assess potential leak locations, the Navy tasked TtNUS to conduct field assessment activities in two phases. Phase 1 consisted of a field investigation in March 1999 using direct-push technology (DPT) to determine the presence of petroleum hydrocarbons in subsurface soil and groundwater. Phase 2 involved the advancement of additional soil borings, and the installation of shallow monitoring wells at each of the sites in which Phase 1 indicated petroleum impacted soil or groundwater. The field investigation and analytical results from the Phase 1 and Phase 2 field activities have been incorporated into this SAR for the Jet Fuel Pipeline Investigation.

The following field activities were performed in support of the SA:

- Reviewed available Navy documents and identified potential sources and receptors for petroleum hydrocarbons in the vicinity.

- Advanced 216 soil borings using DPT, hand auger, or hollow stem auger (HAS) and analyzed the soil and groundwater.

- Installed 19 shallow monitoring wells for analysis of petroleum constituents.

The results of the soil vapor analysis during the SA revealed five sites (CF-AN08, CF-VA06, CF-VA09, CF-VA14, and CF-TH03) with "excessively contaminated" soil, as defined by Chapter 62-770.200, Florida Administrative Code (FAC). Soil samples collected for laboratory analysis at these locations confirmed soil vapor analysis results.

The results of soil laboratory analysis during the SA revealed eight sites (CF-AN08, CF-AN09, CF-AN11, CF-VA06, CF-VA08, CF-VA09, CF-VA14, and CF-TH03) with soil contaminants in excess of FDEP soil cleanup target levels (SCTLs) as defined by Chapter 62-770, FAC.

The results of the SA revealed hydrocarbon-impacted groundwater during the DPT assessment that exceeded groundwater cleanup target levels (GCTLs) at 13 sites (CF-AN03, CF-AN04, CF-AN08, CF-AN09, CF-AN10, CF-AN14, CF-AN15, CF-VA02, CF-VA07, CF-VA08, CF-VA09, CF-VA11, and CFVA14). However, the groundwater samples collected from permanent monitoring wells installed at each of the sites did not exceed GCTLs.

Based on the results of the SA, TtNUS recommends No Further Action at 23 sites (CF-AN03, CF-AN04, CF-AN05, CF-AN06, CF-AN07, CF-AN10, CF-AN12, CF-AN13, CF-AN14, CF-AN15, CF-AN16, CF-AN17, CF-AN18, CF-AN19, CF-AN20, CF-AN21, CF-VA02, CF-VA07, CF-VA10, CF-VA11, CF-VA12, CF-VA13, and CF-VA15).

TtNUS recommends No Further Action with the condition of the implementation of land use controls at four sites (CF-AN08, CF-AN09, CF-AN11, CF-VA14).

TtNUS recommends a source removal at four sites (CF-VA-06, CF-VA08, CF-VA09, and CF-TH03).

1.0 INTRODUCTION

1.1 PURPOSE AND SCOPE

A SA was conducted by TtNUS for the SOUTHNAVFACENGCOM CTO 0072 for the CLEAN III Contract Number N62467-94-D-0888. The SA was conducted on the Jet Fuel Pipeline NASJAX to NASCF.

In 1994 and 1996, a mechanical "pig," fitted with instrumentation designed to measure pipe thickness, was passed through the Jet Fuel Pipeline from NASJAX to NASCF. The "pig" identified areas of the pipeline anomalies. The Navy identified 21 anomalies and 11 valves along the pipeline as potential leak locations (TtNUS, 1999a).

The purpose of the field investigation was to determine if soil and/or groundwater have been adversely impacted by the operations of the pipeline at the anomaly and valve locations. The data collected during the investigation was used to prepare this SAR as required by Chapter 62-770.600, FAC. This SAR provides a characterization of site conditions from which to base future courses of action.

To assess potential leak locations, TtNUS conducted field assessment activities in two phases. Phase 1 consisted of a field investigation in March 1999 using DPT to determine the presence of petroleum hydrocarbons in subsurface soil and groundwater. In May 1999, TtNUS submitted a Direct-Push Technology Assessment Report (DPTAR) on the Jet Fuel Pipeline summarizing the field investigation activities and analytical results (TtNUS, 1999b). Results of the DPTAR recommended the further assessment of some sites along the Jet Fuel Pipeline for Phase 2. Phase 2 involved the advancement of additional soil borings, and the installation of shallow monitoring wells at each of the sites in which Phase 1 indicated petroleum impacted soil or groundwater. The Phase 2 field activities were conducted from November 1999 to February 2000. One final location (TH-3) was investigated in October 2000 and May/June, 2001 as a result of petroleum odors discovered by the Florida Department of Transportation (FDOT). The field investigation and analytical results from the DPTAR and subsequent field activities have been incorporated into this SAR for the Jet Fuel Pipeline Investigation.

1.2 REPORT ORGANIZATION

This report is organized into six sections. Below is a list of the sections and a brief description of their purpose:

- Section 1: Introduction. Supplies the report's purpose, scope, site information, and report organization.

- Section 2: Subsurface Investigation Methods. Summarizes the investigative methods performed during field investigation activities.

- Section 3: Site Specific Results of Investigation. Summarizes the results of the field investigation at individual anomaly and valve locations.

- Section 4: Discussion.

- Section 5: Conclusions and Recommendations. Presents the conclusions and recommendations for the individual sites from the results of the investigation.

- References. Lists all references used.

1.3 SAR VARIANCES

This SAR is unique from typical SARs as a result of the numerous investigations conducted along various portions of the pipeline. Results of the initial field investigation and additional site investigations were presented to the Base Realignment and Closure (BRAC) Petroleum Subcommittee on numerous occasions over the three-year life span of the field investigation. As a result of these presentations, TtNUS and David Grabka of the FDEP agreed on July 26, 2001 that a potable water well survey, groundwater direction flow maps, and aquifer characteristics would not be required in this SAR based on the results of the field investigation.

1.4 SITE DESCRIPTION AND SETTING

1.4.1 Location

The Jet Fuel Pipeline is located underneath an approximately 14.5-mile section of Timiquana Road and 103rd Street (State Route 134) in Jacksonville, Florida. Figure 1-1 presents a regional representation of the investigative area. The pipeline is located in the Baldwin, Fiftone, Jacksonville, Jacksonville Heights, Marietta, and Orange Park, Florida United States Geological Survey (USGS) Quadrangles (7.5 Minute Series) presented in Figure 1-2.

1.4.2 Site Description

The pipeline was installed in 1952 and supplied fuel to NASCF from the river-accessible fuel storage facility at NASJAX. Generally, the pipeline runs underneath the center of the left (fast) lane of the eastbound corridor of State Route 134. The investigated sites are covered by paved sections of 103rd Street and Timiquana Road, and grassy sections adjacent to both 103rd Street and Timiquana Road. The pipeline ranges in depth from 2 to 15 feet (ft) below land surface (bls). Figure 1-1 is a regional map of the site and Figure 1-2 indicates the fuel pipeline location from NASJAX to NASCF with anomaly and valve locations.

1.4.3 Topography and Drainage

The land surface elevation along the pipeline route varies from approximately 5 ft above mean sea level near NASJAX, gradually rising to a height of 80 ft above mean sea level near NASCF. The overall topography of the area slopes from west to east toward the Ortega and St. Johns Rivers. The majority of the pipeline pathway is below Timiquana Road and 103rd Street where storm water drainage does not permeate the ground above the pipeline, but is directed through the road drainage system.

1.4.4 Regional Geology and Hydrogeology

The surficial soil at the study area consists of post-Miocene fluvial deposits including fine-grained sand, silty sand, clayey sand, and sandy clay overlying the Hawthorn Group. The underlying Hawthorn Group is composed mainly of low permeability clays and forms the base of the surficial aquifer. The surficial aquifer is composed of Pliocene-aged sedimentary deposits. The surficial aquifer is recharged by rainfall and the average recharge rate is estimated to be 10 to 16 inches per year (USGS, 1998). The depth to groundwater in the study area ranged from approximately 1 to 10 ft bls during the investigations that occurred from March 1999 to June 2001.

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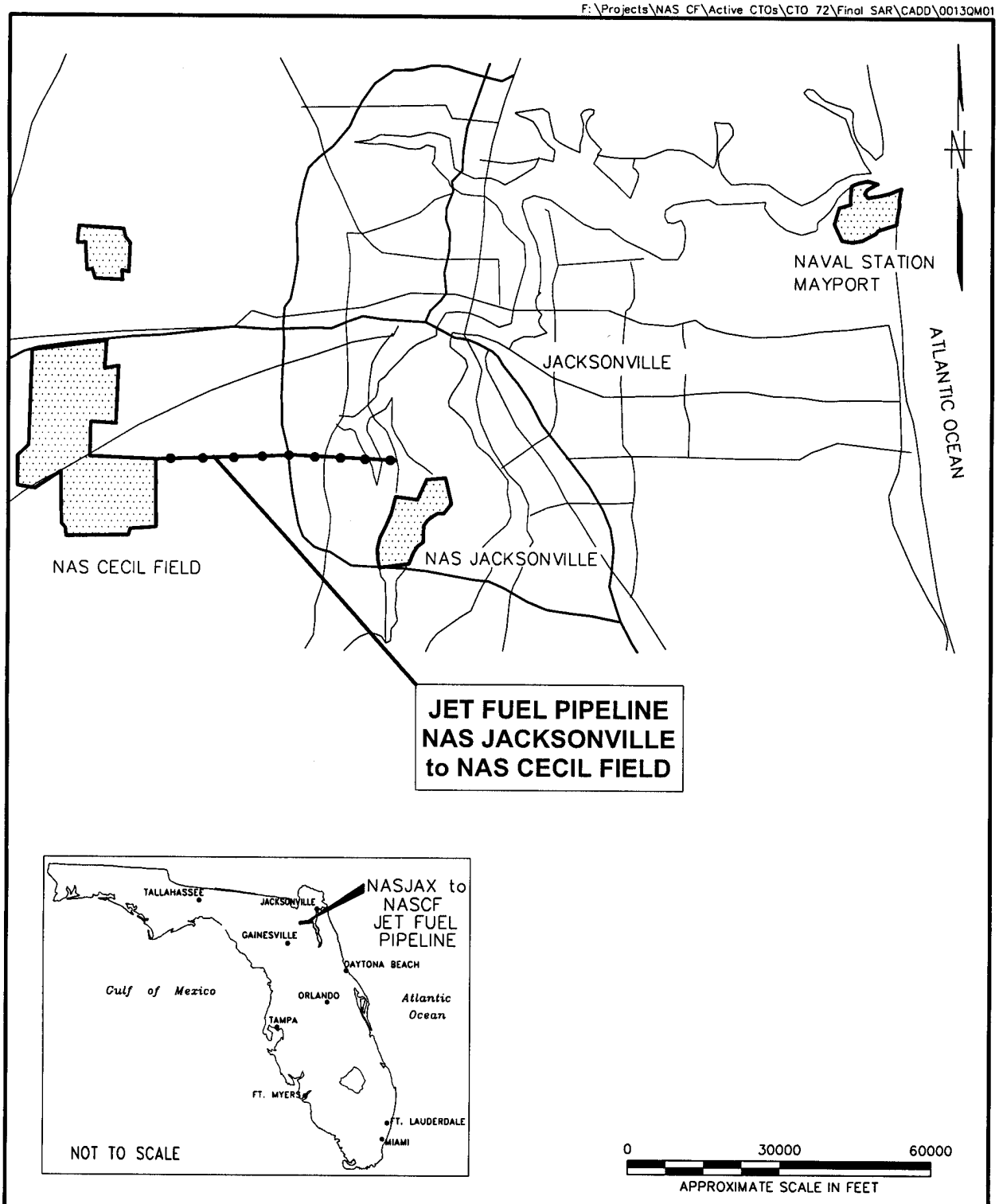

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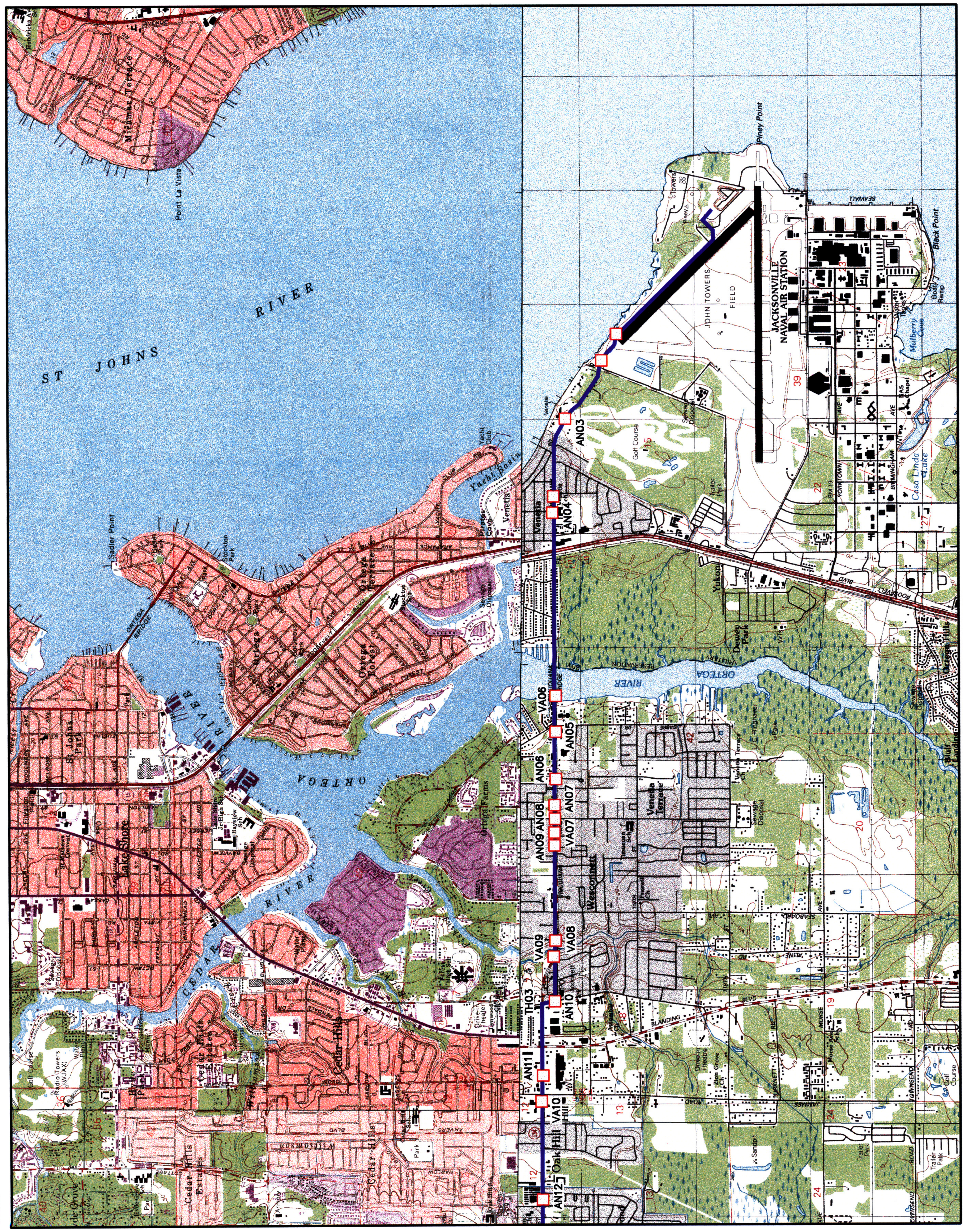

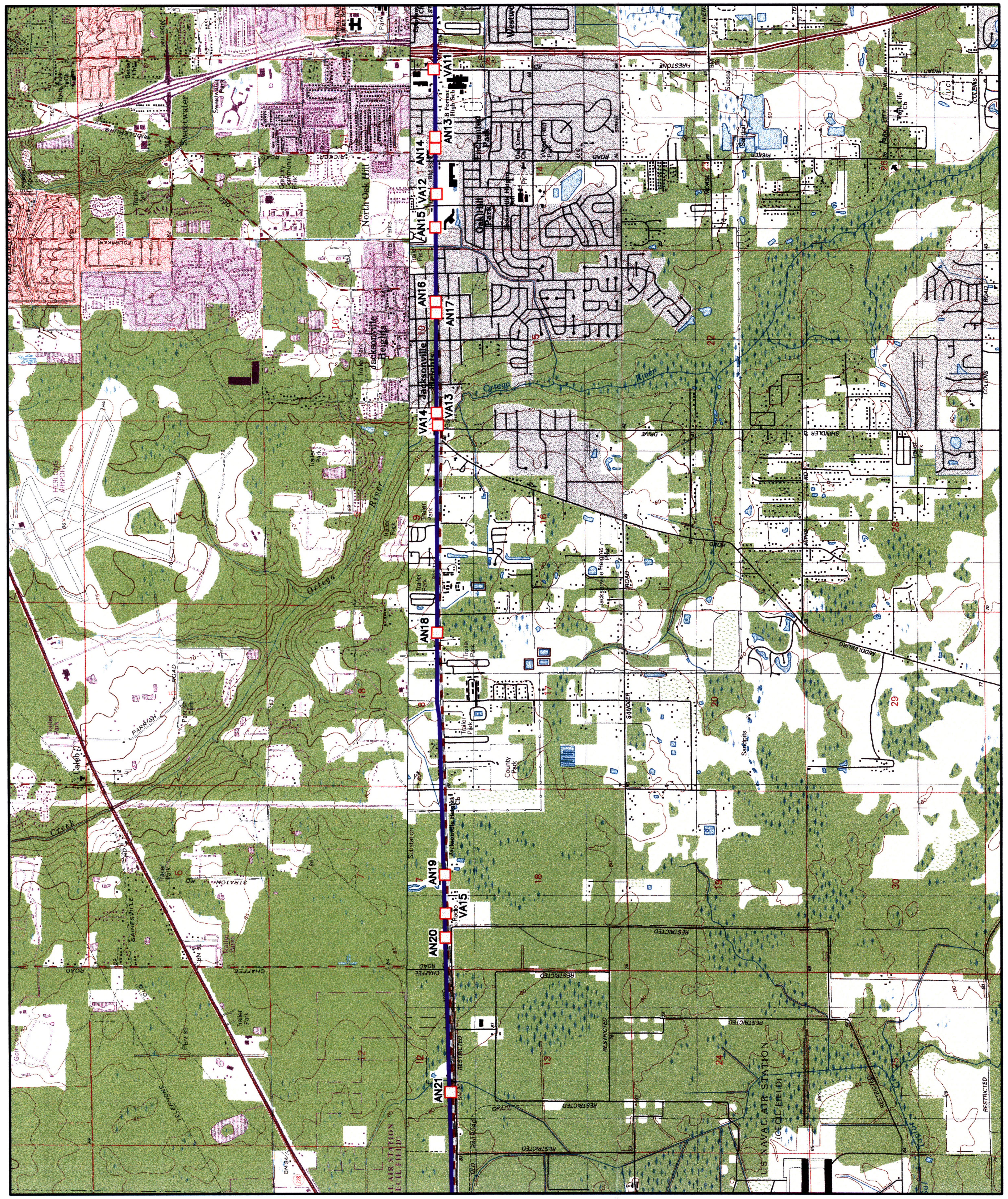

LEGEND:

JET FUEL PIPELINE

ANOMALY OR VALVE LOCATION

AN10

SOURCE: UNITED STATES GEOLOGICAL SURVEY QUADRANGLE MAPS: BALWIN, FL., FIFTONE, FL., JACKSONVILLE, FL., JACKSONVILLE HEIGHTS, FL., MARIETTA, FL., AND ORANGE PARK, FL.

FLORIDA

QUADRANGLE LOCATION

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DEPARTMENT OF THE NAVY ★ SOUTHERN DIV FACILITIES ENGINEERING COMD ★

FUEL PIPELINE LOCATION MAP
NASJAX TO NASCF JET FUEL PIPELINE
JACKSONVILLE, FLORIDA

CONTRACT NO.	
0013	
OWNER NO.	

APPROVED BY	DATE
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1.4.5 Land Use

The majority of the pipeline is located approximately 3 ft to the north of the center of the eastbound lane of State Route 134 (Timiquana Road and 103rd Street). State Route 134 is primarily a six-lane road, which conveys traffic east to west on the West Side of Jacksonville, Florida.

1.4.6 Potable Water Well Survey

At the July 26, 2001 BRAC Petroleum Subcommittee meeting, it was agreed that a potable water supply survey was not required for the SAR due to the large area investigated and the results of the investigation.

1.5 SITE HISTORY AND OPERATIONS

1.5.1 Site History

The Jet Fuel Pipeline was completed in 1952 and supplied bulk fuel to NASCF from the fuel facilities located at NASJAX. From 1952 to 1997, the pipeline supplied aviation gas and jet fuel to NASCF. The pipeline consists of an 8-inch diameter pipe with approximately 15 valves (TtNUS, 1999a).

1.5.2 Pipeline Assessment

In 1994, the Navy contracted with Turboscope to conduct a pipe integrity investigation of the fuel pipeline. During the investigation approximately 81 thickness anomalies were discovered along the fuel line. Several of the areas were excavated, the anomalies were located, and that section of the pipe was replaced or repaired. In 1996, the Navy contracted with Vetco Services, Inc. (Vetco) to conduct a similar survey (TtNUS, 1999a). The survey indicated 19 Class III anomalies as shown on Figure 1-2. In addition, 13 valves were located. In July 1997, a leak in the pipeline was discovered along 103rd Street, approximately ¼ mile east of the “A” Avenue gate at NASCF and was investigated separately from this report. Since the discovery of the leak in 1997, the pipeline has been inoperable.

As a result of the Vetco pipeline assessment, SOUTHNAVFACENGCOM tasked TtNUS to conduct a field assessment of the pipeline anomalies and valve boxes. The pipeline assessment was conducted in two phases. Phase 1 consisted of a field investigation in March 1999 using DPT to determine the presence of petroleum hydrocarbons in subsurface soil and groundwater. In May 1999, TtNUS submitted a DPTAR on the Jet Fuel Pipeline summarizing the field investigation activities and analytical results. Results of the DPTAR recommended the further assessment of some sites along the Jet Fuel Pipeline for Phase 2.

Phase 2 involved the mobilization to advance additional soil borings and install shallow monitoring wells at each of the sites in which Phase 1 indicated petroleum impacted soil or groundwater. The Phase 2 field activities were conducted from November 1999 to February 2000. One final location (TH-3) was investigated in October 2000 and May/June, 2001 as a result of petroleum odors discovered by the FDOT. Field investigation and analytical results from Phase 1, Phase 2, and the TH-3 location have been incorporated into this SAR for the Jet Fuel Pipeline.

2.0 SUBSURFACE INVESTIGATION METHODS

2.1 QUALITY ASSURANCE

The site investigations were conducted in accordance with in the approved Contamination Assessment Plan (CAP) (TtNUS, 1999a), and the Standard Operating Procedures (SOPs) prescribed by the FDEP Quality Assurance Section Document DER-001/92, and adopted by the TtNUS Comprehensive Quality Assurance Plan (CompQAP) Number 980038, Revision 1.

Each sample during the field investigations was assigned a unique sample identification number. The unique label system established for the site assessment was as follows:

1	2	3	4
Site Code	**Type**	**Location**	**Depth**

Where:

1 – Site Code Cecil Field, 103rd Street (VA = valve) location 01 (valves were numbered sequentially beginning from NASJAX to NASCF), or Cecil Field, 103rd Street (AN = Anomaly) location 01 (Anomaly locations were numbered sequentially beginning from NASJAX to NASCF).

2 – Type SB (soil boring), MW (monitoring well), TMW (temporary monitoring well)

3 – Location An ascending sequential number of sample locations.

4 – Depth Bottom of subsurface sample interval (for soil samples only)

For example, a soil sample collected from the third boring at the site, at 4 ft deep, from the valve site closest to NASJAX would have the nomenclature: VA01-SB-03-04.

2.2 SOIL INVESTIGATION

A soil investigation was conducted at the anomaly and valve locations by the installation of soil borings using three advancement methods: DPT, HSA, and hand auger. Prior to any ground penetrations, utility permits were pulled and any possible utility line interference(s) resolved.

Soil boring advancement equipment was decontaminated prior to and following each installation as specified in TtNUS' CompQAP. Rinse water generated during the decontamination of equipment was containerized in 55-gallon drums, sampled, and removed for later disposal.

In addition to liquid investigative derived waste (IDW), soil cuttings were also generated during monitoring well installation. Soil cuttings were placed in 55-gallon steel drums, sampled, and removed for later disposal.

2.2.1 Direct-Push Soil Borings

Between March 8, and March 29, 1999, TtNUS personnel advanced 126 soil borings at the 30 locations depicted on Figure 1-2. Between October 10, 2000 and May 24, 2001, TtNUS personnel advanced 22 soil borings at the TH-3 location. Typically, four soil borings were advanced at each location in accordance with the methodology outlined in the approved CAP (TtNUS, 1999a); however, depending on access, presence of utility conflicts, and changing site conditions, anywhere from three to 22 borings were installed at each of the suspected leak locations.

At each boring, soil samples were collected at 2-ft intervals and soils were logged for the entire depth of the boring. The soils were classified by the on-site TtNUS geologist and transcribed on to a boring log (Appendix A). Samples were collected for the purpose of organic vapor screening and for lithologic purposes.

2.2.2 Hand Augered Soil Borings

TtNUS advanced soil borings, using a stainless steel, 3-inch, inside diameter (ID) hand-auger at various locations where the use of a DPT rig was not feasable. The borings were advanced with a hand auger at locations to collect soil samples for laboratory analysis to confirm the presence of petroleum-related compounds in the vadose zone soils. Samples were collected from each hand-auger interval of each boring and screened with an organic vapor analyzer (OVA)-flame ionization detector (FID) or an OVA photo ionization detector (PID). Soil vapor analysis was performed in accordance with the approved CAP (TtNUS, 1999a).

2.2.3 Hollow Stem Auger (HSA) Soil Borings

Between November 1999 and June 2001, a total of 16 soil borings were drilled at sites along the pipeline using HSA drilling techniques. HSA soil borings were advanced for the installation of groundwater monitoring wells. Soil cuttings were collected from the 4.25-inch auger flights for characterization purposes.

2.3 GROUNDWATER INVESTIGATION

2.3.1 Direct-Push Well Points

During the direct-push field investigation in March 1999, the groundwater was sampled with the aid of DPT. After the soil borings were completed, TtNUS personnel installed temporary monitoring wells at all of the soil boring locations and collected groundwater samples from the surficial aquifer. The temporary monitoring points were installed using a 4-ft long stainless steel screen. Generally, the screen was set such that it was just below the groundwater table. However, in some instances the lithologic formation at this interface was of such low transmissivity that the well screen was deployed at a greater depth in order to produce water.

2.3.2 Monitoring Well Installation and Development

Monitoring wells were installed in conjunction with the HSA soil boring procedures discussed in Section 2.2.2. Prior to installation of the monitoring wells, the soil and groundwater screening data obtained during the DPT investigation was evaluated to determine the number and location of the wells. Monitoring wells were designed so that the screened interval intersected the surface of the groundwater. Monitoring well placements were selected to provide spatial coverage around the areas of the releases. Results of the sampling were used to determine if petroleum products had impacted the groundwater in the area of the suspected releases.

A truck mounted drill rig installed the monitoring wells using 4 ¼-inch ID HSAs. Each well was constructed of 2-inch ID flush threaded, schedule 40 polyvinyl chloride (PVC) solid riser and 0.010-inch slot well screen with a silt trap and well bottom cap. The shallow wells were installed with a 10-ft screened interval. Each annulus was filled to approximately 2 ft above the well screen with US Standard Sieve size 20/30 silica sand. The 20/30 sand was capped to about 1 ft bls with 30/65 sand. The remainder of the annulus was grouted to the surface with a cement/bentonite grout. Each well was secured with a locking, watertight cap within a steel, 8-inch diameter steel manhole. The manhole was set within a 24-inch square apron finished slightly above grade. A typical Well Construction Diagram is provided as Figure 2-1. Well completion logs are provided in Appendix B.

Each well was developed using a submersible pump. During well development, field measurements of pH, temperature, turbidity, dissolved oxygen, and specific conductance were monitored from the purge water generated. All monitoring wells were developed until such field measurements became stable and the purge water was clear for a maximum of one hour. Stabilization of field measurements is based on the United States Environmental Protection Agency (USEPA) SOPs (USEPA, 1997), which specifies the

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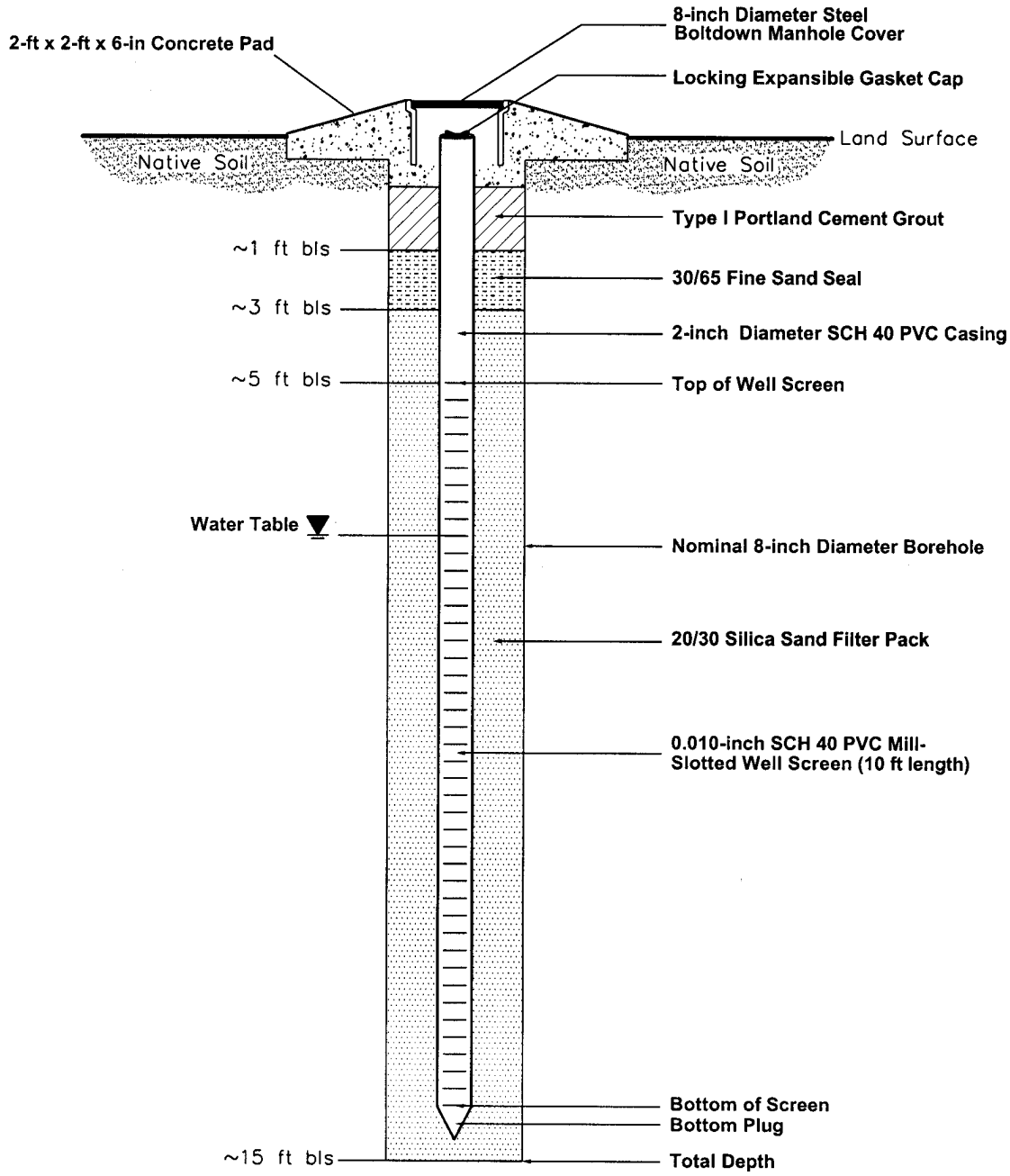

DRAWN BY LLK DATE 01/24/01		WELL CONSTRUCTION DIAGRAM NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA	CONTRACT NO. 0072
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COST/SCHED-AREA			APPROVED BY DATE
SCALE NOT TO SCALE			DRAWING NO. FIGURE 2-1 REV. 0

following criteria: temperature +/-0.5 degrees Celsius, pH +/-0.1 unit, and specific conductance +/-10 micro ohms per centimeter. A TtNUS geologist supervised all monitoring well development. All development water was containerized for disposal in 55-gallon steel drums. The water in the drums was disposed based on the analytical results of the groundwater samples.

2.4 MEDIA SAMPLING

2.4.1 Lithologic Sampling

Representative soil samples were collected during the soil vapor assessment to assess the shallow subsurface geologic conditions at the sites. Soil boring logs are provided in Appendix A.

2.4.2 Soil Vapor Screening

During DPT or hand auger soil boring advancement, a soil vapor assessment was conducted to determine the presence of hydrocarbon concentrations in the vicinity of anomalies or valve locations. The assessment consisted of both visual inspection for petroleum staining and soil vapor screening. While logging the lithology, soil headspace vapors were screened for the presence of hydrocarbons using an OVA-PID as approved in the CAP (TtNUS, 1999a). The use of a PID was selected over the use of a FID during the DPT portion of the investigation because of the high organic content in the soil at the sites. The PID does not ionize methane and was not adversely affected by the presence of methane in the soil. The soils were screened by placing approximately 4 ounces (oz) of soil into an 8-oz Mason jar, then sealing the jar with aluminum foil. The soil vapors were allowed to equilibrate to ambient temperature, which was within the temperature range specified by FDEP.

At the TH-03 location an OVA-FID was used to determine the soil vapor content. Soil vapor screening with the use of the OVA-FID was performed in accordance with the standard operation procedures stated in Chapter 62-770 FAC. Prior to each day's activities, the OVA was field calibrated in accordance with the manufacturer's specifications. Sample screening was accomplished by inserting the OVA probe through the foil sample cover and recording the highest OVA reading. In accordance with Rule 62-770.200(8), FAC, headspace levels in excess of 50 parts per million (ppm) is defined as "excessively contaminated soil" for Kerosene Analytical Group (KAG) parameters. Headspace levels in excess of 10 ppm but less than 50 ppm is considered as contaminated though not excessively contaminated.

2.4.3 Soil Analytical Sampling

If a soil vapor screening reading indicated a hydrocarbon vapor concentration above 10 ppm, a discreet soil sample was collected from the soil boring interval. The on-site geologist chose the number of laboratory samples collected at each site based upon field observations and the OVA data. The goal of the discreet soil samples was to quantify the soil contamination indicated by the OVA-PID readings and to attempt soil contaminant delineation. Typically, when none of the soil samples collected at a site indicated hydrocarbon headspace vapors greater than 10 ppm, a discreet soil sample was collected at the soil boring located closest to the suspected anomaly/valve location. This sample was collected as a confirmatory sample. When OVA-PID readings indicated vapor concentrations greater than 10 ppm, three discreet samples were generally collected: one from the boring of highest readings, one from the boring indicating medium readings on the OVA, and one from the soil boring with the lowest readings. All of the discreet samples were sent to ENCO Labs of Jacksonville and analyzed for Volatile Organic Aromatics (VOAs) and Polynuclear Aromatic Hydrocarbons (PAHs) by USEPA Methods 8021B and 8310, respectively.

2.4.4 Direct-Push Groundwater Sampling

During the DPT portion of the field investigation each soil boring was advanced into the saturated zone in order to collect groundwater samples for laboratory analysis. After the soil borings were completed, TtNUS personnel installed temporary monitoring wells in the majority of borings at each site and collected groundwater samples from the surficial aquifer. The temporary monitoring wells were installed using a 4-ft long stainless steel screen. Generally, the screen was set such that it was just below the groundwater table. However, in some instances the lithologic formation at this interface was of such low transmissivity that the well screen was deployed at a greater depth in order to produce water.

Once the well screen was deployed, polyethylene tubing was inserted into the screen and attached to a peristaltic pump. Water was pumped from the screen until the groundwater became visually clear and at least three screen volumes were removed. After three screen volumes of water were extracted, water quality measurements were collected. The groundwater was measured for temperature, specific conductance, dissolved oxygen, turbidity, and pH. Following the measurement of groundwater quality parameters, groundwater samples were collected and placed into laboratory-supplied containers. The samples were placed on ice and delivered to ENCO Labs for analysis by USEPA Method(s) 8021B and 8310.

Upon completion of the temporary monitoring well sampling, the screen was removed and the open borehole filled with a neat cement grout. The borings were flagged so they could be located and surveyed. Purge water was placed in 55-gallon drums for later sampling and disposal.

2.4.5 Groundwater Monitoring Well Sampling

Groundwater samples were collected from anomaly and valve site location monitoring wells to determine if the surficial aquifer in the vicinity of the valve or anomaly had been impacted by petroleum hydrocarbons. TtNUS personnel collected groundwater samples from site monitoring wells in December 1999 and June 2001. Groundwater samples from monitoring wells were analyzed for USEPA Method 8021 for VOAs, and/or USEPA Method 8310 for PAHs. The groundwater samples were collected using low-flow or quiescent purging and sampling method using new Teflon® tubing for each sample and a peristaltic pump. Approximately three well volumes of groundwater were removed from each well using the peristaltic pump. Temperature, pH, specific conductivity, turbidity, dissolved oxygen, oxidation-reduction potential measurements, and total well purge volumes were recorded at the time of the groundwater sample collection. Groundwater samples were placed on ice and delivered to ENCO Laboratories of Jacksonville, Florida. Groundwater sample log sheets are provided in Appendix C.

Sampling activities were performed in general accordance with the procedures prescribed in the FDEP Quality Assurance Section's SOPs for Laboratory Operations and Sample Collection Activities (DER-001/92) adopted by TtNUS' CompQAP. Sample preservation was accomplished by obtaining pre-preserved containers from an approved laboratory with an approved CompQAP. During the groundwater sampling events, quality control samples (e.g. equipment blanks and trip blanks) were prepared and submitted to the laboratory as required by the CompQAP. Sampling activities were documented in a site-specific field book, and samples were transmitted under chain-of-custody protocols to the laboratory.

2.4.6 Free Product Sampling

Prior to groundwater sampling, TtNUS personnel checked each well for free product using an oil-water interface probe.

2.5 HYDROLOGIC INVESTIGATION

2.5.1 Water Level Measurements

The depth to groundwater was measured in the site monitoring wells prior to groundwater sampling activities. Measurements were made from the north rim of the top of well riser using an electronic water level indicator. The water level measurements were used to determine the depth to water in the surficial aquifer.

A Florida registered surveyor determined the elevation of the north rim of each top of casing to the nearest 0.01-ft relative. Elevations are based on the National Geodetic Vertical Datum of 1929.

Groundwater elevations were determined by subtracting the measured depth to groundwater for each well from its respective top of riser elevation.

2.6 SITE SURVEYING

A State of Florida registered surveyor mobilized to the sites between February 24, 1999 to March 10, 1999. During this period, the anomalies and valves were surveyed and site plans were developed for each of the sites. The initial survey work consisted of locating and mapping all relevant features around the anomaly or valve, and detailing the surrounding properties.

During the period from March 15 to March 31, 1999, the surveyors mobilized to the sites and surveyed each of the DPT borings completed. The borings were assigned a horizontal location, and the ground surface at the top of the boring was assigned a vertical elevation.

After approval of the DPTAR, the surveyors mobilized to the sites to locate the borings where monitoring wells were located. Subsequently, the installed monitoring wells were surveyed with respect to their horizontal and vertical locations.

3.0 SITE SPECIFIC RESULTS OF INVESTIGATION

3.1 ANOMOLY NUMBER 3 (CF- AN03)

CF-AN03 is located along the Timiquana Country Club access road in front of the Timiquana Country Club clubhouse. The location of CF-AN03 is indicated on Figure 1-2 (the Fuel Pipeline Location Map) and Figure 3.1.1 (the combined Site Plan, Sample Locations, and Results Map). TtNUS mobilized to site CF-AN03 on March 22, 1999 for the DPT portion of the investigation. On November 29, 1999, TtNUS revisited the site to install one permanent groundwater monitoring well. The permanent well was developed on December 9, 1999 and sampled on December 13, 1999.

3.1.1 Site Lithology

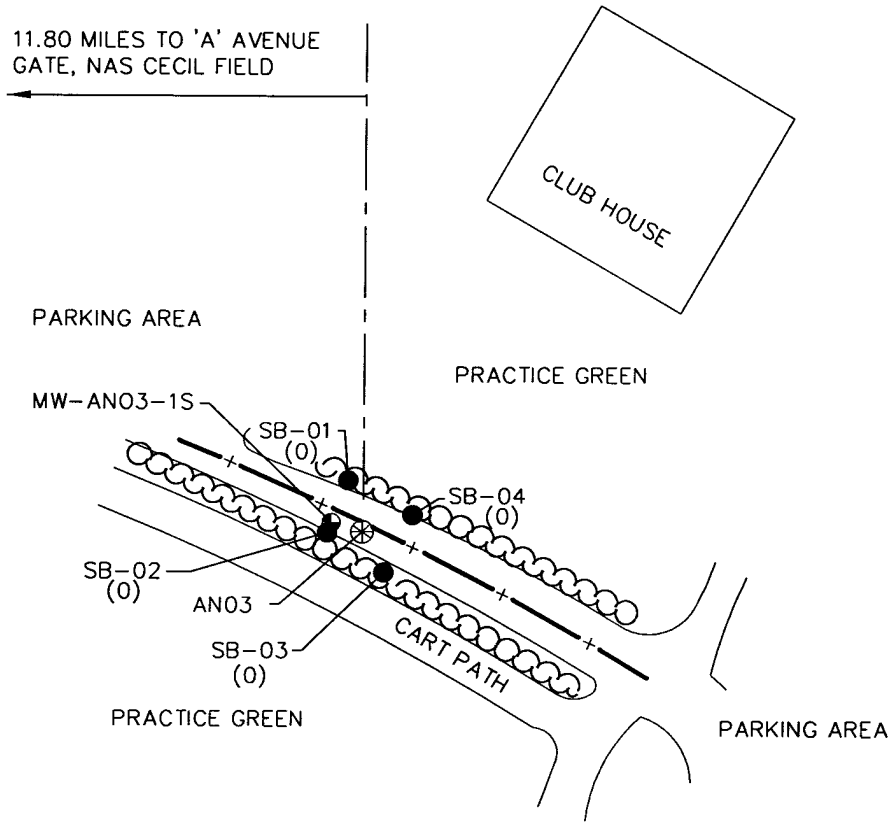
The site is underlain by a gray fine-grained silty sand to a depth of 3 ft bls. At 3 ft bls the site is underlain by a light gray fine-grained clayey sand. This soil type extends to at least 13 ft bls, the maximum depth advanced during SA activities. Soil boring logs for CF-AN03 are included in Appendix A.

3.1.2 Soil Vapor

The vertical and horizontal extent of petroleum impacted soil in the vadose zone was assessed through soil headspace analysis performed during the DPT investigation. Four soil borings (CF-AN03-SB-01 through 04) were advanced to an approximate depth of 8 ft bls at the locations shown on Figure 3.1.1. Groundwater was encountered at 5 ft bls. Soil samples were collected at 2-ft intervals from 0 to 8 ft bls, and the samples were screened for hydrocarbon vapors with an OVA-PID as described in Section 2.4.2. Soils exhibiting an OVA response of greater than 50 ppm are considered “excessively contaminated” as defined by Chapter 62-770.200, FAC. The results of the soil vapor screening, presented in the Table 3.1.1, indicated no soils with hydrocarbon vapors above 10 ppm. The DPT sample and boring logs for CF-AN03 are included in Appendix A.

3.1.3 Soil Quality

Based on the results of the soil headspace analyses, one soil sample was collected for confirmation laboratory analysis from soil boring CF-AN03-SB-01. Discreet soil sample CF-AN03-SB-01-04 was collected at a depth of 4 ft bls. The soil sample was placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. The confirmatory sample collected at SB-01 contained no VOAs or PAHs at or above FDEP SCTLs.



LEGEND

- ● SOIL BORING, 3/99
- (0.0) OVA-FID MEASUREMENT (PARTS PER MILLION)
- ⊛ ANOMALY OR VALVE LOCATION
- SHALLOW MONITORING WELL
- —+— JET FUEL PIPELINE
- OHP,T OVERHEAD TRANSMISSION LINE
- ⊗ MANHOLE COVER

0 50 100
SCALE IN FEET

DRAWN BY LLK	DATE 1/2/02	SITE PLAN, SAMPLE LOCATIONS, AND SOIL VAPOR SCREENING RESULTS CF-AN03 NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA
CHECKED BY	DATE	
COST/SCHED-AREA		
SCALE AS NOTED		

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CONTRACT NO. 0013	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 3.1.1	REV. 0

FORM CADD NO. SDIV_AH.DWG - REV 0 - 1/20/98

Table 3.1.1
Soil Vapor Screening Results for CF-AN03

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Soil Boring Number	Date of Measurement	Sample Interval (ft bls)	PID Measurement (ppm)
SB-01	3/22/1999	2	0.0
		4	0.0
		6	0.0
		8	0.0
SB-02	3/22/1999	2	0.0
		4	0.0
		6	0.0
		8	0.0
SB-03	3/22/1999	2	0.0
		4	0.0
		6	0.0
		8	0.0
SB-04	3/22/1999	2	0.0
		4	0.0
		6	0.0
		8	0.0

Notes: Soil borings analyzed with a PID

The results of the laboratory analysis are summarized on Table 3.1.2. A Laboratory Soil Analytical Results figure was not created since results did not exceed SCTLs. The complete set of analytical results is presented in Appendix D.

3.1.4 Temporary Well Point Sampling

During the DPT investigation, the soil borings at the site were converted to temporary wells and the DPT screen was deployed from 5 to 9 ft bls at each soil boring location. The groundwater samples were collected and analyzed as described in Section 2.4.2. Groundwater samples were placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. The groundwater sample collected from the temporary monitoring well installed in SB-02 (TMW-02) indicated that benzo(b)fluoranthene [0.22 micrograms per liter (µg/L)] was detected above the regulatory limit of 0.2 µg/L. Other tested constituents were not detected at or above GCTLs in the groundwater samples. The groundwater analytical results are summarized on Table 3.1.3 and results exceeding GCTLs are depicted on Figure 3.1.2. The complete set of analytical results is presented in Appendix D.

3.1.5 Monitoring Well Sampling

On November 29, 1999, TtNUS installed one permanent monitoring well, CF-AN3-1S, at the location indicated on Figure 3.1.1. The monitoring well was installed to a depth of 13 ft, and screened from 3 to 13 ft bls. The monitoring well was installed and developed as described in Section 2.3.2 and monitoring well installation and development logs are included in Appendix B. On December 13, 1999, TtNUS personnel collected a groundwater sample from monitoring well CF-AN3-1S. Analytical results from the groundwater sample indicated petroleum product chemicals of concern (COCs) were below GCTLs (Chapter 62-770, FAC). The groundwater analytical results are summarized on Table 3.1.3 and the complete set of analytical results is included in Appendix D.

3.1.6 Discussion

Data obtained during the DPT assessment indicated that of the four soil borings installed at Site CF-AN03 all OVA responses were less than 10 ppm. The confirmatory soil sample collected for laboratory analysis indicated soil analytical results below SCTLs for all COCs (Chapter 62-770, FAC). The groundwater sample collected from TMW-02 indicated that benzo(b)fluoranthene exceeded the Chapter 62-770, FAC, GCTL concentration. However, the analytical results from the permanent monitoring well installed at the site indicated that dissolved hydrocarbon concentrations were below GCTLs (Chapter 62-770, FAC) for all COCs.

Table 3.1.2
Laboratory Soil Analysis Summary for CF-AN03

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	SB-04 @ 4 ft				
		3/22/1999				
Volatile Organic Compounds (USEPA Method 8021B) (µg/kg)						
MTBE	200	2.0U				
Benzene	7	1.0U				
Toluene	500	1.0U				
Chlorobenzene	1300	1.0U				
Ethylbenzene	600	1.0U				
Total Xylenes	200	2.0U				
1,3-Dichlorobenzene	300	1.0U				
1,4-Dichlorobenzene	2200	1.0U				
1,2 Dichloroethane	10	1.0U				
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/kg)						
Naphthalene	1700	19U				
1-Methylnaphthalene	2200	38U				
2-Methylnaphthalene	6100	38U				
Acenaphthylene	27000	38U				
Acenaphthene	2100	19U				
Phenanthrene	250000	38U				
Anthracene	2500000	2.0U				
Fluorene	160000	3.8U				
Fluoranthene	1200000	49				
Pyrene	880000	60				
Benzo (a) anthracene	1400	18				
Chrysene	77000	20				
Benzo (b) fluoranthene	1400	31				
Benzo (k) fluoranthene	15000	18				
Benzo (a) pyrene	100	25				
Dibenzo (a,h) anthracene	100	21				
Benzo (g,h,I) perylene	2300000	17				
Indeno (1,2,3-cd) pyrene	1500	21				

Notes: [1]Chapter 62-777, FAC (August 1999). Most stringent value of groundwater leachability and direct exposure limits.
U = constituent not detected µg/kg - micrograms per kilogram
MTBE = methyl tert-butyl ether

Table 3.1.3
Groundwater Analytical Results for CF-AN03

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	TMW-01	TMW-02	TMW-03	TMW-04	MW-01
		3/22/1999	3/22/1999	3/22/1999	3/22/1999	12/13/1999
Volatile Organic Compounds (USEPA Method 8021B) (μg/L)						
Benzene	1	ND	ND	ND	ND	NA
Ethylbenzene	30	ND	ND	ND	ND	NA
Toluene	40	ND	ND	ND	ND	NA
Total Xylenes	20	ND	ND	ND	ND	NA
MTBE	50	ND	ND	ND	ND	NA
1,2 Dichloroethane	3	ND	ND	ND	ND	NA
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (μg/L)						
Naphthalene	20	ND	ND	ND	ND	ND
Acenaphthylene	210	ND	ND	ND	ND	ND
Acenaphthene	20	ND	ND	ND	ND	ND
Phenanthrene	210	ND	ND	ND	ND	ND
Anthracene	2100	ND	ND	ND	ND	ND
Fluoranthene	280	ND	0.36	ND	ND	ND
Pyrene	210	0.39	0.56	ND	ND	ND
Benzo(a)anthracene	210	0.12	0.16	ND	ND	ND
Chrysene	4.8	0.15	0.19	ND	ND	ND
Benzo(b)fluoranthene	0.2	0.14	**0.22**	ND	ND	ND
Benzo(k)fluoranthene	0.5	0.05	0.07	ND	ND	ND
Benzo(a)pyrene	0.2	0.12	0.19	ND	ND	ND
Dibenz(a,h)anthracene	0.2	ND	0.12	ND	ND	ND
Benzo(g,h,i)perylene	210	0.14	0.12	ND	ND	ND
Indeno(1,2,3-cd)pyrene	0.2	0.12	0.16	ND	ND	ND

Notes: [1]Chapter 62-770, FAC (August, 1999)
BOLD = Exceeds target levels
NA = not analyzed
ND = no constituents detected

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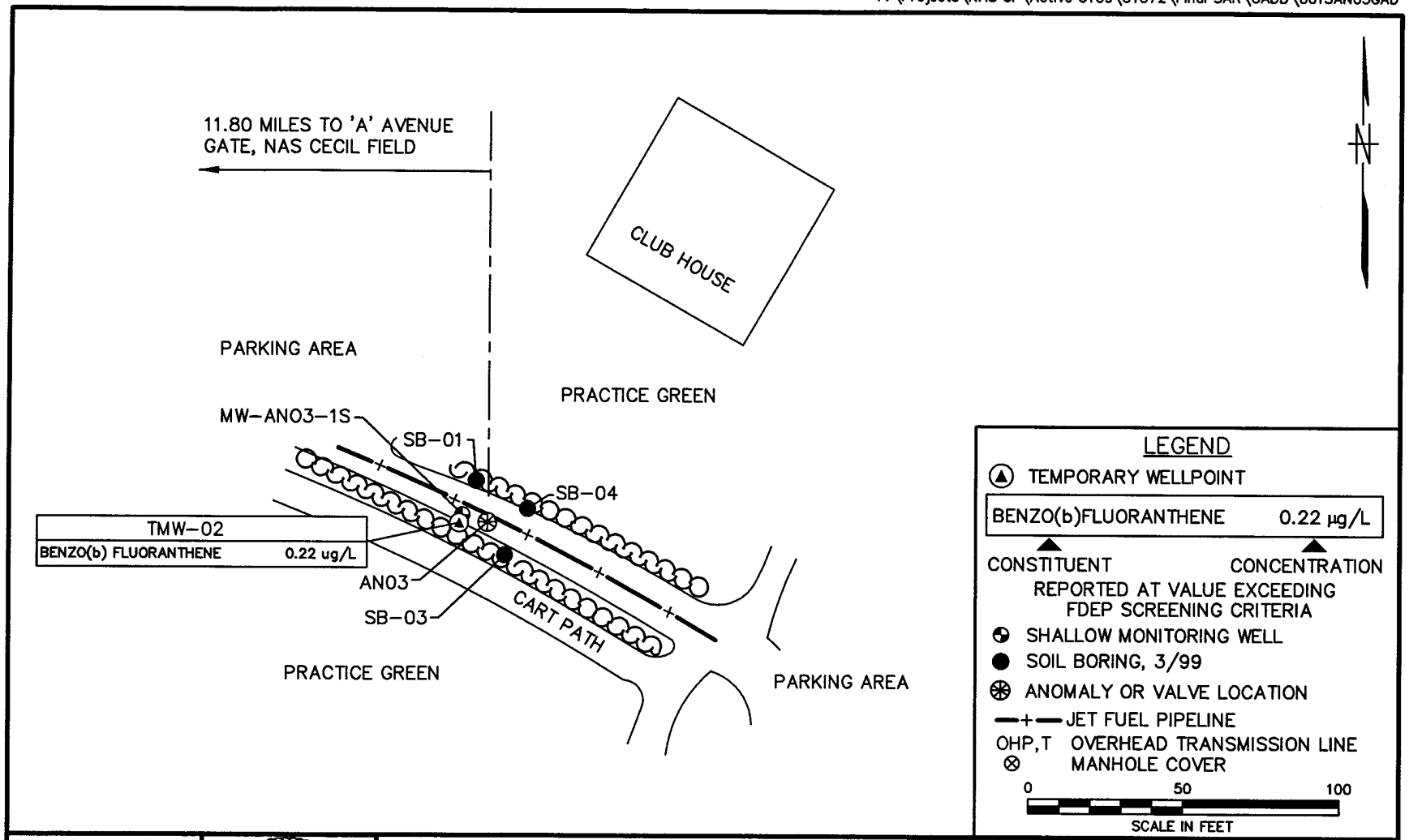


DRAWN BY LLK	DATE 1/2/02	GROUNDWATER ANALYTICAL RESULTS EXCEEDING FDEP SCREENING CRITERIA CF-AN03 NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA	CONTRACT NO. 0013
CHECKED BY	DATE		APPROVED BY DATE
COST/SCHED-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 3.1.2 REV. 0

FORM CADD NO. SDIV_AH.DWG - REV 0 - 1/20/98

3.2 ANONMOLY NUMBER 04 (AN04)

CF-AN04 is located along Timiquana Road in front of the Venetia Elementary School. The location of CF-AN04 is indicated on Figure 1-2 (the Site Vicinity Map) and Figure 3.2.1 (the combined Site Plan, Sample Locations, and Results Map). TtNUS mobilized to site CF-AN04 on March 23, 1999 for the DPT portion of the investigation. On November 30, 1999, TtNUS revisited the site to install one permanent groundwater monitoring well. The permanent well was developed on December 9, 1999 and sampled on December 13, 1999.

3.2.1 Site Lithology

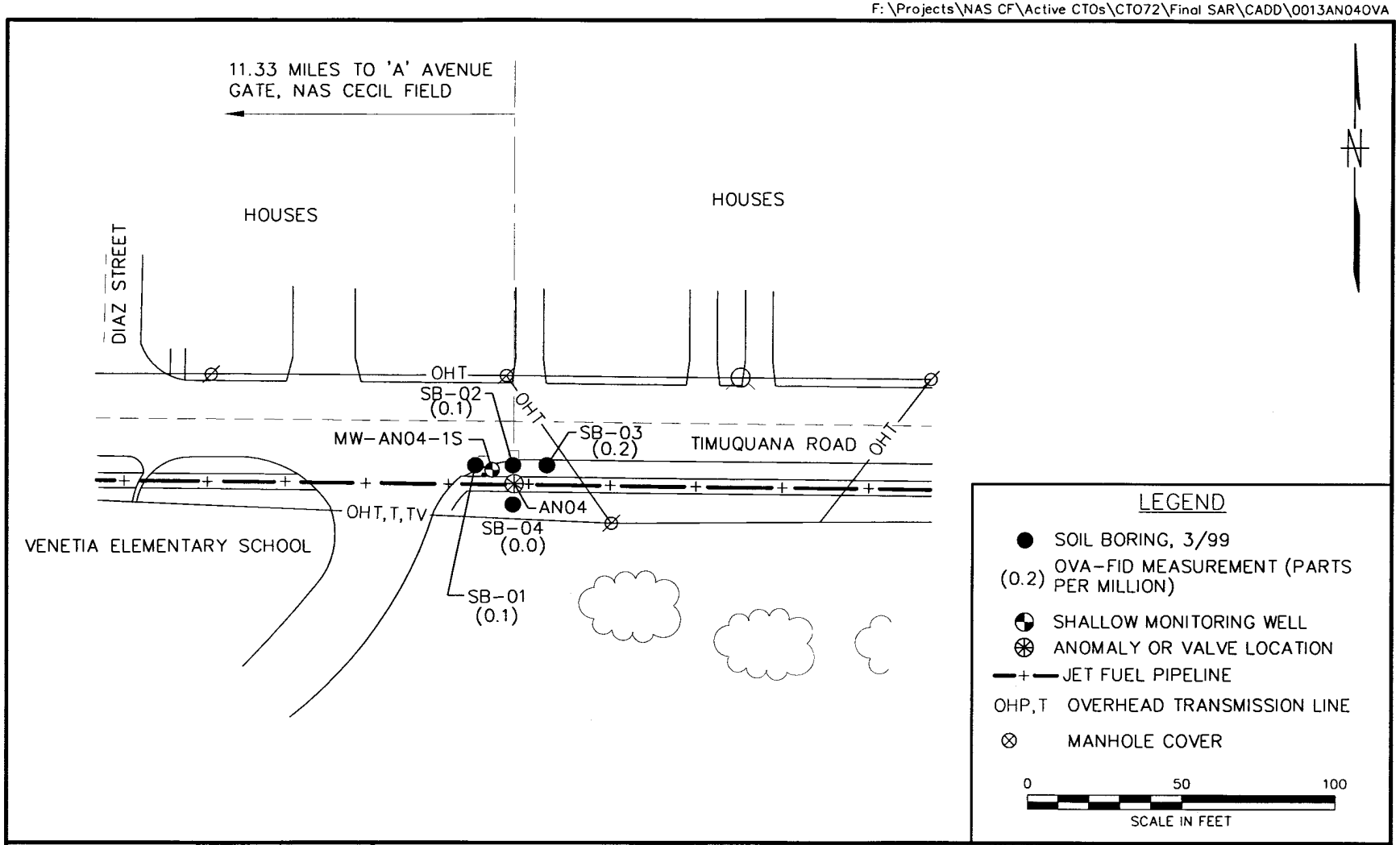
The site is underlain by a gray fine-grained silty sand to a depth of 3 ft bls. At 3 ft bls, the site is underlain by a light gray fine-grained clayey sand. This soil type extends to at least 12 ft bls, the maximum depth drilled at the site during the assessment. Soil boring logs are included in Appendix A.

3.2.2 Soil Vapor

The vertical and horizontal extent of petroleum impacted soil in the vadose zone was assessed through soil headspace analysis performed during the DPT investigation. Four soil borings (CF-AN04-SB-01 through 04) were advanced to depths ranging from 6 to 12 ft bls at the locations shown on Figure 3.2.1. Groundwater was encountered at 4 ft bls. Soil samples were collected at 2-ft intervals from 0 to 12 ft bls and screened for hydrocarbon vapors with an OVA-PID as described in Section 2.2.4. The results of the soil vapor screening, presented in the Table 3.2.1, indicated no soils with hydrocarbon vapors above 10 ppm. The DPT sample and boring logs for CF-AN04 are included in Appendix A.

3.2.3 Soil Quality

Based on the results of the soil headspace analyses, one soil sample was collected for laboratory analysis from CF-AN04-SB-04. Discrete soil sample CF-AN04-SB-04-02 was collected at a depth of 2 ft bls. The soil sample was placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. The confirmatory sample collected at SB-04 contained no VOAs or PAHs at or above FDEP SCTLs. The results of the laboratory soil analysis are summarized on Table 3.2.2. A Laboratory Soil Analytical Results figure was not created since results did not exceed SCTLs. The complete set of analytical results is presented in Appendix D.



DRAWN BY LLK DATE 1/2/02	SITE PLAN, SAMPLE LOCATIONS, AND SOIL VAPOR SCREENING RESULTS CF-AN04 NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA	CONTRACT NO. 0013	
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COST/SCHED-AREA		APPROVED BY DATE	
SCALE AS NOTED		DRAWING NO. FIGURE 3.2.1	REV. 0

Table 3.2.1
Soil Vapor Screening Results for CF-AN04

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Soil Boring Number	Date of Measurement	Sample Interval (ft bls)	PID Measurement (ppm)
SB-01	3/23/1999	2	0.1
		4	0.1
		6	0.0
		8	0.0
SB-02	3/23/1999	2	0.1
		4	0.0
		6	0.1
		8	NS
SB-03	3/23/1999	2	0.0
		4	0.0
		6	0.1
		8	0.1
		10	0.2
		12	0.0
SB-04	3/24/1999	2	0.0
		4	0.0
		6	0.0
		8	0.0
		10	NS
		12	NS

Notes: Soil borings analyzed with a PID
NS = not sampled

Table 3.2.2
Laboratory Soil Analysis Summry for CF-AN04

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	SB-04 @ 2 ft				
		3/23/1999				
Volatile Organic Compounds (USEPA Method 8021B) (µg/kg)						
MTBE	200	2.0U				
Benzene	7	1.0U				
Toluene	500	1.0U				
Chlorobenzene	1300	1.0U				
Ethylbenzene	600	1.0U				
Total Xylenes	200	2.0U				
1,3-Dichlorobenzene	300	1.0U				
1,4-Dichlorobenzene	2200	1.0U				
1,2 Dichloroethane	10	1.0U				
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/kg)						
Naphthalene	1700	21U				
1-Methylnaphthalene	2200	42U				
2-Methylnaphthalene	6100	42U				
Acenaphthylene	27000	42U				
Acenaphthene	2100	21U				
Phenanthrene	250000	42U				
Anthracene	2500000	2.0U				
Fluorene	160000	4.2U				
Fluoranthene	1200000	4.2U				
Pyrene	880000	2.1U				
Benzo (a) Anthracene	1400	2.1U				
Chrysene	77000	2.1U				
Benzo (b) fluoranthene	1400	4.0U				
Benzo (k) fluoranthene	15000	2.0U				
Benzo (a) pyrene	100	2.0U				
Dibenzo (a,h) anthracene	100	4.2U				
Benzo (g,h,i) perylene	2300000	4.2U				
Indeno (1,2,3-cd) pyrene	1500	2.2I				

Notes: [1]Chapter 62-777, FAC (August 1999). Most stringent value of groundwater leachability and direct exposure limits.
I = value is between MDL and PQL MDL = Method detection limit
U = constituent not detected PQL = Practical quantitation limit

3.2.4 Temporary Well Point Sampling

During the DPT investigation, the soil borings at the site were converted to temporary wells and the DPT screen was deployed from 4 to 8 ft bls at each soil boring location. Groundwater samples were collected and analyzed as described in Section 2.4.2. In the groundwater sample collected from TMW-01 benzo(b)fluoranthene (0.57 µg/L) and benzo(a)pyrene (0.27 µg/L) were detected above the regulatory limits of 0.2 µg/L for each. Other tested constituents were not detected at or above GCTLs in the groundwater samples collected. The groundwater analytical results are summarized on Table 3.2.3 and results exceeding GCTLs are depicted on Figure 3.2.2. The complete set of analytical results is presented in Appendix D.

3.2.5 Monitoring Well Sampling

On November 30, 1999, TtNUS installed one permanent monitoring well, CF-AN04-1S adjacent to TMW-01 (see Figure 3.2.2). The monitoring well was installed to a depth of 13 ft and screened from 3 to 13 ft bls. The monitoring well was installed and developed as described in Section 2.3.2 and monitoring well installation and well development logs are included in Appendix B. On December 13, 1999, TtNUS personnel collected a groundwater sample from monitoring well CF-AN04-1S. Analytical results from the groundwater sample indicated petroleum product COCs were below GCTLs (Chapter 62-770, FAC). The groundwater analytical results are summarized on Table 3.2.3 and the complete set of analytical results is included in Appendix D.

3.2.6 Discussion

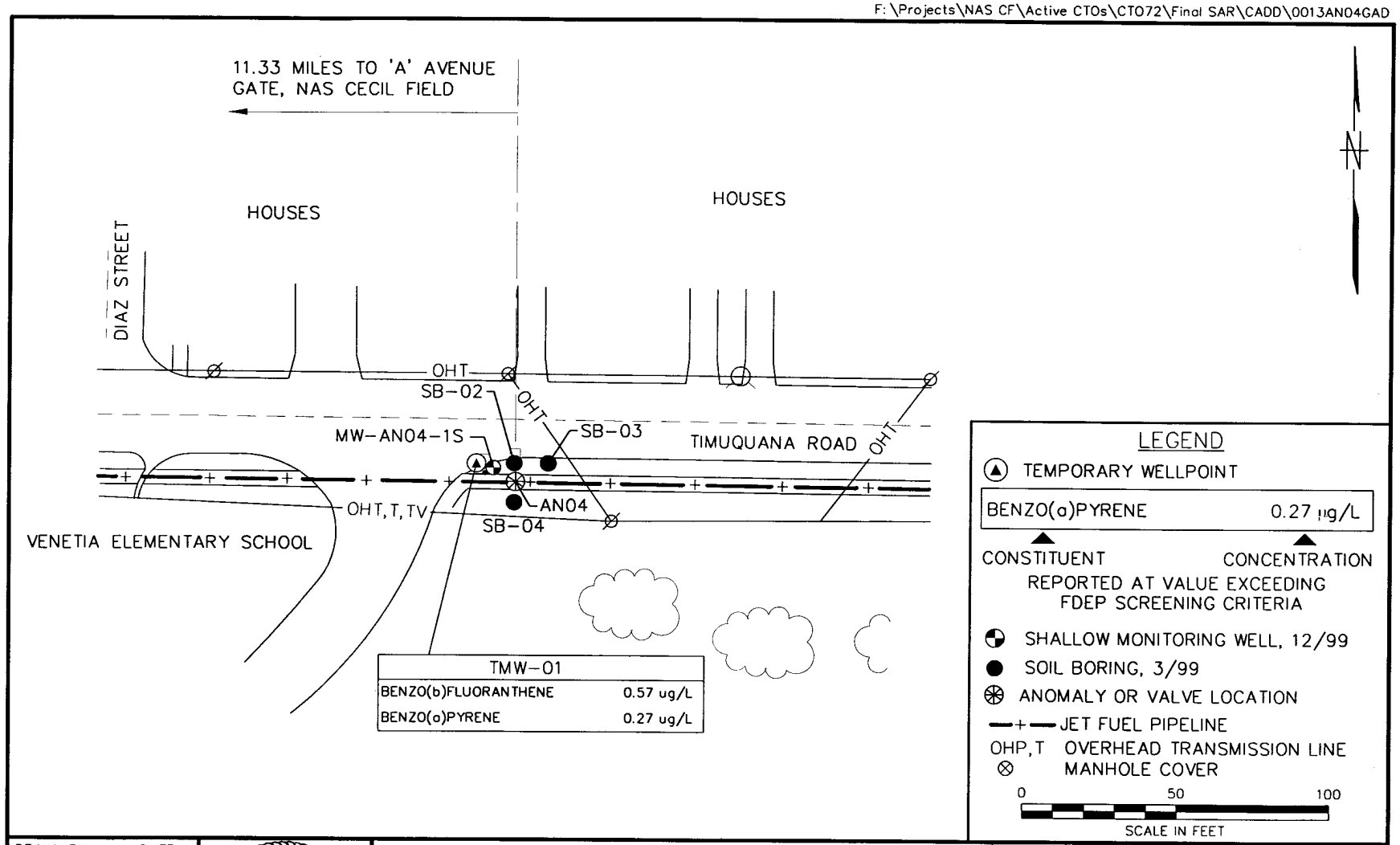
Data obtained during the DPT assessment indicated that of the four soil borings installed at Site CF-AN04, all OVA responses were less than 10 ppm. The confirmatory soil sample collected for laboratory analysis indicated soil analytical results below SCTLs for all COCs (Chapter 62-770, FAC). The groundwater sample collected from TMW-01 indicated benzo(b)fluoranthene and benzo(a)pyrene exceeded GCTLs (Chapter 62-770, FAC). However, the analytical results from the permanent monitoring well installed at the site indicated that dissolved hydrocarbon concentrations were below GCTLs for all COCs (Chapter 62-770, FAC).

Table 3.2.3
Groundwater Analytical Results for CF-AN04

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	TMW-01	TMW-02	TMW-03	TMW-04	MW-01
		3/22/1999	3/22/1999	3/22/1999	3/22/1999	12/13/1999
Volatile Organic Compounds (USEPA Method 8021B) (µg/L)						
Benzene	1	ND	ND	ND	ND	NA
Ethylbenzene	30	ND	ND	ND	ND	NA
Toluene	40	ND	ND	ND	ND	NA
Total Xylenes	20	ND	ND	ND	ND	NA
MTBE	50	ND	ND	ND	ND	NA
1,2 Dichloroethane	3	ND	ND	ND	ND	NA
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/L)						
Naphthalene	20	12	ND	ND	ND	ND
Acenaphthylene	210	ND	ND	ND	ND	ND
Acenaphthene	20	ND	ND	ND	ND	ND
Phenanthrene	210	ND	ND	ND	ND	ND
Anthracene	2100	0.11	ND	ND	ND	ND
Fluoranthene	280	ND	ND	ND	ND	ND
Pyrene	210	ND	ND	ND	ND	ND
Benzo(a)anthracene	210	ND	ND	ND	ND	ND
Chrysene	4.8	ND	ND	ND	ND	ND
Benzo(b)fluoranthene	0.2	**0.57**	ND	ND	ND	ND
Benzo(k)fluoranthene	0.5	ND	ND	ND	ND	ND
Benzo(a)pyrene	0.2	**0.27**	ND	ND	ND	ND
Dibenz(a,h)anthracene	0.2	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	210	0.8	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	0.2	ND	ND	ND	ND	ND

Notes: [1]Chapter 62-770, FAC (August, 1999)
BOLD = Exceeds target levels
NA = not analyzed
ND = no constituents detected



DRAWN BY LLK	DATE 1/2/02	GROUNDWATER ANALYTICAL RESULTS EXCEEDING FDEP SCREENING CRITERIA CF-AN04 NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA
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COST/SCHED-AREA		
SCALE AS NOTED		

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CONTRACT NO. 0013	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 3.2.2	REV. 0

3.3 ANOMOLY NUMBER 5 (CF-AN05)

CF-AN05 is located on Timiquana Road at the intersection with Ortega Farms Boulevard. The location of CF-AN05 is indicated on Figure 1-2 (the Site Vicinity Map) and Figure 3.3.1 (the combined Site Plan, Sample Locations, and Results Map). TtNUS mobilized to site CF-AN05 on March 23, 1999 for the DPT investigation.

3.3.1 Site Lithology

The site is underlain by a light tan fine-grained silty sand to a depth of 3 ft bls. At 3 ft bls, the site is underlain by a white fine-grained sand to a depth of 7 ft bls. At 7 ft bls, the soil is a light tan clayey sand. This soil type extends to at least 16 ft bls, the maximum depth advanced at the site during the assessment. Soil boring logs are included in Appendix A.

3.3.2 Soil Vapor

The vertical and horizontal extent of petroleum impacted soil in the vadose zone was assessed through soil headspace analysis performed during the DPT investigation. Four soil borings (CF-AN05-SB-01 through 04) were advanced to depths ranging from 8 to 16 ft bls at the locations shown on Figure 3.3.1. Groundwater was encountered at 5 to 6 ft bls. Soil samples were collected at 2-ft intervals, and the samples were screened for hydrocarbon vapors with an OVA-PID as described in Section 2.4.2. The results of the soil vapor screening, presented in Table 3.3.1, indicated headspace readings above 10 ppm from soil boring SB-02 at the 2-ft bls interval. The DPT sample and boring logs for CF-AN05 are included in Appendix A.

3.3.3 Soil Quality

Based on the results of the soil headspace analyses, one soil sample was collected for laboratory analysis. Discrete soil sample, CF-AN05-SB-04-05, was collected from soil boring SB-04 at a depth of 5 ft bls. The soil sample was placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. The confirmatory sample collected at SB-04 contained no VOAs or PAHs at or above FDEP SCTLs. The results of the laboratory soil analysis are summarized on Table 3.3.2. A Laboratory Soil Analytical Results figure was not created since results did not exceed SCTLs. The complete set of analytical results is presented in Appendix D.

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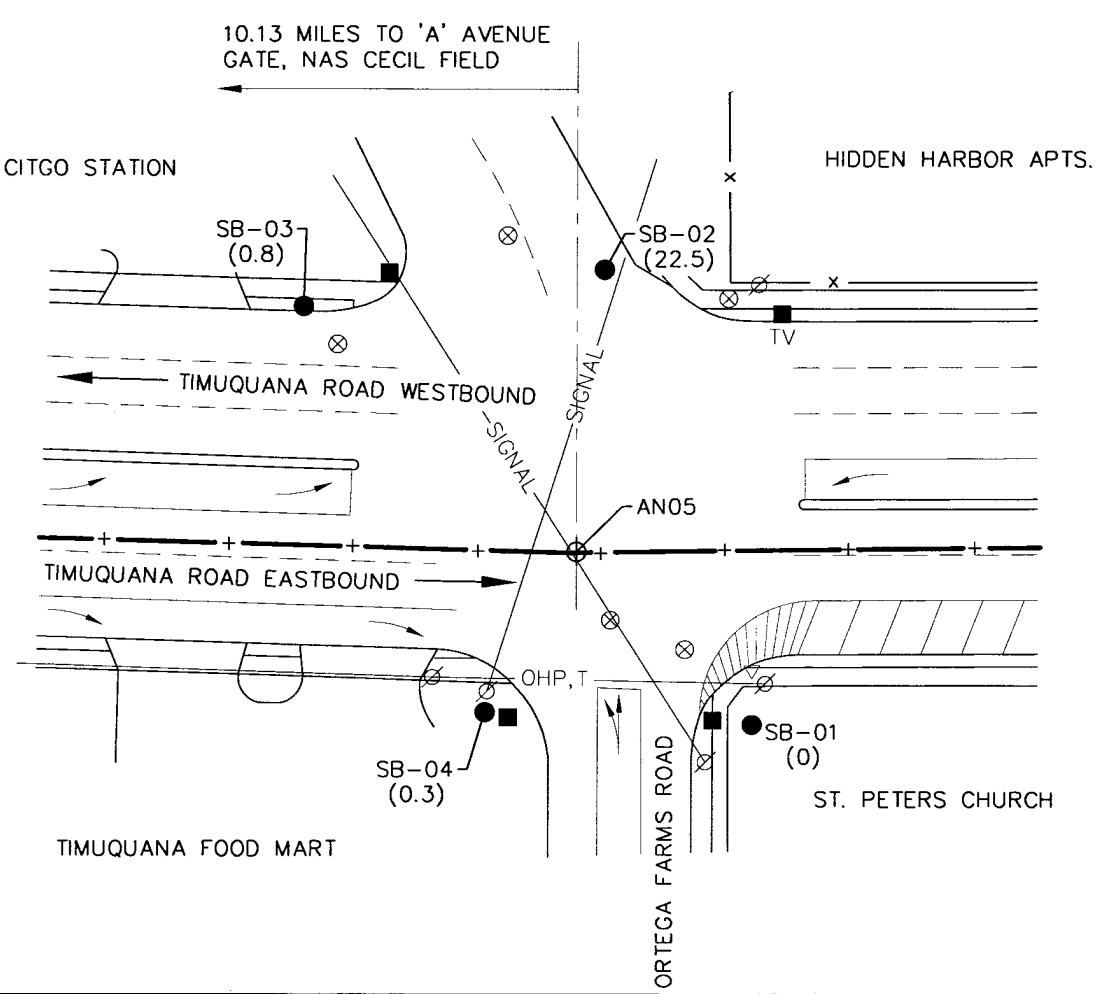

NOTE:

1. SOIL AND GROUNDWATER LABORATORY ANALYTICAL RESULTS INDICATED NO CONTAMINANTS ABOVE FDEP TARGET LEVELS IN EACH OF THE BORINGS.

LEGEND:

⊗	MANHOLE COVERS
OHV,T,TV	OVERHEAD TRANSMISSION LINE
●	SOIL BORING
⊕	ANOMALY OR VALVE LOCATION
—+—	JET FUEL PIPELINE
(22.5)	OVA RESULTS IN PARTS PER MILLION (PPM)

0 50 100
SCALE IN FEET

DRAWN BY MF	DATE 4/9/99	SITE PLAN, SAMPLE LOCATIONS, AND SOIL VAPOR SCREENING RESULTS CF-AN05 NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA	CONTRACT NO. 0013
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SCALE AS NOTED			DRAWING NO. FIGURE 3.3.1 / REV. 0

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FORM CADD NO. SDIV_AH.DWG - REV 0 - 1/20/98

Table 3.3.1
Soil Vapor Screening Results for CF-AN05

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Soil Boring Number	Date of Measurement	Sample Interval (ft bls)	PID Measurement (ppm)
SB-01	3/23/1999	2	0.0
		4	0.0
		6	0.0
		8	0.0
SB-02	3/23/1999	2	22.5
		4	4.5
		6	0.0
		8	0.0
SB-03	3/23/1999	2	0.8
		4	0.2
		6	0.2
		8	0.0
		10	0.3
		12	0.3
		14	0.1
		16	0.1
SB-04	3/23/1999	2	0.3
		4	0.2
		6	0.3
		8	0.2
		10	0.2
		12	0.2
		14	0.2
		16	0.2

Notes: Soil borings analyzed with a PID

Table 3.3.2
Laboratory Soil Analysis Summary for CF-AN05

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	SB-04 @ 5 ft				
		3/23/1999				
Volatile Organic Compounds (USEPA Method 8021B) (µg/kg)						
MTBE	200	3.0U				
Benzene	7	1.0U				
Toluene	500	1.0U				
Chlorobenzene	1300	1.0U				
Ethylbenzene	600	1.0U				
Total Xylenes	200	3.0U				
1,3-Dichlorobenzene	300	1.0U				
1,4-Dichlorobenzene	2200	1.0U				
1,2 Dichloroethane	10	1.0U				
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/kg)						
Naphthalene	1700	22U				
1-Methylnaphthalene	2200	44U				
2-Methylnaphthalene	6100	44U				
Acenaphthylene	27000	44U				
Acenaphthene	2100	22U				
Phenanthrene	250000	44U				
Anthracene	2500000	3.0U				
Fluorene	160000	4.4U				
Fluoranthene	1200000	12				
Pyrene	880000	17				
Benzo (a) Anthracene	1400	2.2U				
Chrysene	77000	5.6				
Benzo (b) fluoranthene	1400	4.0U				
Benzo (k) fluoranthene	15000	3.0U				
Benzo (a) pyrene	100	3.0I				
Dibenzo (a,h) anthracene	100	4.4U				
Benzo (g,h,i) perylene	2300000	4.4U				
Indeno (1,2,3-cd) pyrene	1500	2.2U				

Notes: [1]Chapter 62-777, FAC (August 1999). Most stringent value of groundwater leachability and direct exposure limits.
I = value is between MDL and PQL
U = constituent not detected

3.3.4 Temporary Well Point Sampling

During the DPT investigation, the soil borings at the site were converted to temporary wells and the DPT screen was deployed from 6 to 10 ft bls in boring SB-01, from 8 to 12 ft bls in boring SB-02, and from 12 to 16 ft bls in SB-03 and 04. The groundwater samples were collected and analyzed as described in Section 2.4.4. Groundwater samples were placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. The groundwater analytical results, summarized on Table 3.3.3, indicate no VOAs or PAHs at or above FDEP GCTLs. A Groundwater Analytical Results figure was not created since results did not exceed GCTLs. The complete set of analytical results is presented in Appendix D.

3.3.5 Monitoring Well Sampling

Permanent monitoring wells were not installed at CF-AN05 based on the results of the DPT investigation.

3.3.6 Discussion

Data obtained during the DPT assessment indicated that of the four soil borings installed at Site CF-AN05, one location (SB-02) contained headspace readings above 10 ppm. TtNUS attributed the presence of hydrocarbon vapors in SB-02 from the presence of asphalt in the shallow (0 to 2 ft bls) soil sample. The confirmatory soil sample collected for laboratory analysis indicated soil analytical results below SCTLs for all COCs (Chapter 62-770, FAC). Groundwater samples collected from temporary wells indicated that dissolved hydrocarbon concentrations were below GCTLs for all COCs (Chapter 62-770, FAC).

Table 3.3.3
Groundwater Analytical Results for CF-AN05

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	TMW-01	TMW-02	TMW-03	TMW-04
		3/23/1999	3/23/1999	3/23/1999	3/23/1999
Volatile Organic Compounds (USEPA Method 8021B) (µg/L)					
Benzene	1	ND	ND	ND	ND
Ethylbenzene	30	ND	ND	ND	ND
Toluene	40	ND	ND	ND	ND
Total Xylenes	20	ND	ND	ND	ND
MTBE	50	ND	2	ND	ND
1,2 Dichloroethane	3	ND	ND	ND	ND
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/L)					
Naphthalene	20	ND	ND	ND	ND
Acenaphthylene	210	ND	ND	ND	ND
Acenaphthene	20	ND	ND	ND	ND
Phenanthrene	210	ND	ND	ND	ND
Anthracene	2100	ND	ND	0.08	ND
Fluoranthene	280	ND	ND	0.47	ND
Pyrene	210	ND	ND	0.49	ND
Benzo(a)anthracene	210	ND	ND	0.17	ND
Chrysene	4.8	ND	ND	0.22	ND
Benzo(b)fluoranthene	0.2	ND	ND	0.16	ND
Benzo(k)fluoranthene	0.5	ND	ND	0.06	ND
Benzo(a)pyrene	0.2	ND	ND	0.1	ND
Dibenz(a,h)anthracene	0.2	ND	ND	ND	ND
Benzo(g,h,i)perylene	210	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	0.2	ND	ND	0.13	ND

Notes: [1]Chapter 62-770, FAC (August, 1999)
ND = no constituents detected

3.4 ANOMOLY NUMBER 6 (CF-AN06)

CF-AN06 is located along Timiquana Road in front of the Sunny View apartment complex. The location of CF-AN06 is indicated on Figure 1-2 (the Site Vicinity Map) and Figure 3.4.1 (the combined Site Plan, Sample Locations, and Soil Vapor Screening Results Map). TtNUS mobilized to site CF-AN06 on March 24, 1999 for the DPT investigation.

3.4.1 Site Lithology

The site is underlain by a light tan fine-grained silty sand to a depth of 3 ft bls. At 3 ft bls, the site is underlain by a white fine-grained sand to a depth of 5 ft bls. At 5 ft bls, the soil is a yellow/orange clayey sand. This soil type extends to at least 16 ft bls, the maximum depth advanced at the site during the assessment. Soil boring logs are included in Appendix A.

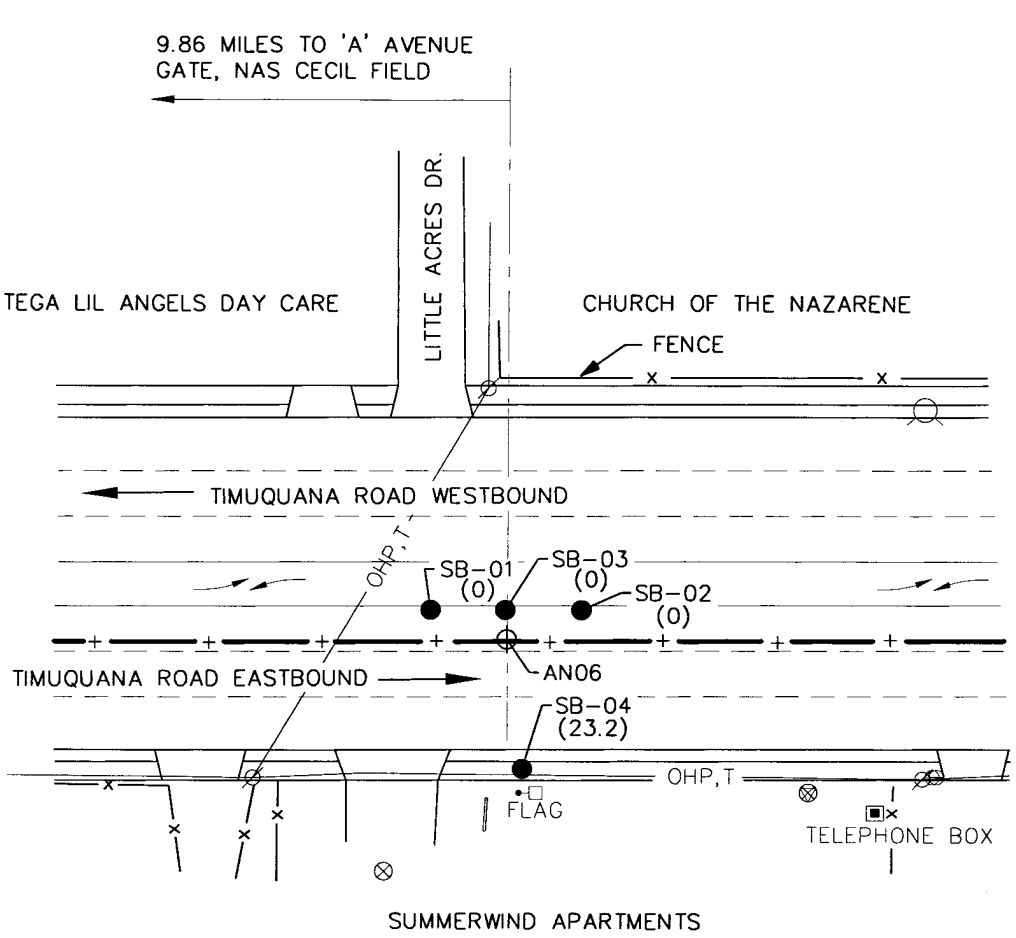
3.4.2 Soil Vapor

The vertical extent and horizontal extent of petroleum impacted soil in the vadose zone was assessed through soil headspace analysis performed during the DPT investigation. Four soil borings (CF-AN06-SB-01 through 04) were advanced to an approximate depth of 16 ft bls at the locations shown on Figure 3.4.1. Groundwater was encountered at 6 ft bls. Soil samples were collected at 2-ft intervals, from 0 to 16 ft bls. The samples were screened for hydrocarbon vapors with an OVA-PID as described in Section 2.4.2. The results of the soil vapor screening, presented in the Table 3.4.1, indicated soil at 8 ft bls from SB-04 contained hydrocarbon vapors above 10 ppm. The DPT sample and boring logs for CF-AN06 are included in Appendix A.

3.4.3 Soil Quality

As a result of elevated OVA readings from soil collected below the water table, TtNUS collected a discrete soil sample from the boring closest to the anomaly location. Discrete soil sample CF-AN06-SB-03-05 was collected from soil boring SB-03 at a depth of 5 ft bls. The soil sample was placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. The confirmatory sample collected at SB-03 did not contain VOAs or PAHs at or above FDEP SCTLs. The results of the laboratory soil analysis are summarized on Table 3.4.2. A Laboratory Soil Analytical Results figure was not created since results did not exceed SCTLs. The complete set of analytical results is presented in Appendix D.

ACAD: 0013CM20.dwg 02/21/02 HJB



NOTE:

1. SOIL AND GROUNDWATER LABORATORY ANALYTICAL RESULTS INDICATED NO CONTAMINANTS ABOVE FDEP TARGET LEVELS IN EACH OF THE BORINGS.

LEGEND:

⊗	MANHOLE COVER
OHP,T	OVERHEAD TRANSMISSION LINE
●	SOIL BORING
⊕	ANOMALY OR VALVE LOCATION
—+—	JET FUEL PIPELINE
(23.2)	OVA RESULTS IN PARTS PER MILLION (PPM)

0 50 100
SCALE IN FEET

DRAWN BY MF	DATE 4/9/99	SITE PLAN, SAMPLE LOCATIONS, AND SOIL VAPOR SCREENING RESULTS CF-AN06 NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA	CONTRACT NO. 0013
CHECKED BY	DATE		APPROVED BY / DATE
COST/SCHED-AREA			APPROVED BY / DATE
SCALE AS NOTED			DRAWING NO. FIGURE 3.4.1 / REV. 0

FORM CADD NO. SDIV_AH.DWG - REV 0 - 1/20/98

Table 3.4.1
Soil Vapor Screening Results for CF-AN06

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Soil Boring Number	Date of Measurement	Sample Interval (ft bls)	PID Measurement (ppm)
SB-01	3/24/1999	2	0.0
		4	0.0
		6	0.0
		8	0.0
		10	0.0
		12	0.0
		14	0.0
		16	0.0
SB-02	3/24/1999	2	0.0
		4	0.0
		6	0.0
		8	0.0
		10	0.0
		12	0.0
		14	0.0
		16	0.0
SB-03	3/24/1999	2	0.0
		4	0.0
		6	0.0
		8	0.0
		10	0.0
		12	0.0
		14	0.0
		16	0.0
SB-04	3/24/1999	2	0.0
		4	1.7
		6	0.0
		8	23.2
		10	0.0
		12	0.0
		14	0.0
		16	0.0

Notes: Soil borings analyzed with a PID

Table 3.4.2
Laboratory Soil Analysis Summary for CF-AN06

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	SB-03 @ 5 ft				
		3/24/1999				
Volatile Organic Compounds (USEPA Method 8021B) (µg/kg)						
MTBE	200	2.0U				
Benzene	7	1.0U				
Toluene	500	1.0U				
Chlorobenzene	1300	1.0U				
Ethylbenzene	600	1.0U				
Total Xylenes	200	2.0U				
1,3-Dichlorobenzene	300	1.0U				
1,4-Dichlorobenzene	2200	1.0U				
1,2 Dichloroethane	10	1.0U				
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/kg)						
Naphthalene	1700	19U				
1-Methylnaphthalene	2200	38U				
2-Methylnaphthalene	6100	38U				
Acenaphthylene	27000	38U				
Acenaphthene	2100	19U				
Phenanthrene	250000	38U				
Anthracene	2500000	2.0U				
Fluorene	160000	3.8U				
Fluoranthene	1200000	3.8U				
Pyrene	880000	1.9U				
Benzo (a) Anthracene	1400	1.9U				
Chrysene	77000	1.9U				
Benzo (b) fluoranthene	1400	3.0U				
Benzo (k) fluoranthene	15000	2.0U				
Benzo (a) pyrene	100	2.0U				
Dibenzo (a,h) anthracene	100	3.8U				
Benzo (g,h,i) perylene	2300000	3.8U				
Indeno (1,2,3-cd) pyrene	1500	1.9U				

Notes: [1]Chapter 62-777, FAC (August 1999). Most stringent value of groundwater leachability and direct exposure limits.
U = constituent not detected

3.4.4 Temporary Well Point Sampling

During the DPT investigation, the soil borings at the site were converted to temporary wells and the DPT screen was deployed from 11 to 16 ft bls in each boring. The groundwater samples were collected and analyzed as described in Section 2.4.4. Groundwater samples were placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. The groundwater analytical results, presented on Table 3.4.3, indicate no VOAs or PAHs above FDEP GCTLs. A Groundwater Analytical Results figure was not created since results did not exceed GCTLs. The complete set of analytical results is presented in Appendix D.

3.4.5 Monitoring Well Sampling

Permanent monitoring wells were not installed at CF-AN06 based on the results of the DPT investigation.

3.4.6 Discussion

Data obtained during the DPT assessment indicated that of the four soil borings installed at Site CF-AN06, one location (SB-04) indicated headspace readings above 10 ppm. However, the headspace reading was located below the water table. The confirmatory soil sample collected for laboratory analysis indicated soil analytical results below SCTLs for all COCs (Chapter 62-770, FAC). Groundwater samples collected from temporary wells indicated that dissolved hydrocarbon concentrations were below GCTLs for all COCs (Chapter 62-770, FAC).

Table 3.4.3
Groundwater Analytical Results for CF-AN06

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	TMW-01	TMW-02	TMW-03	TMW-04
		3/24/1999	3/24/1999	3/24/1999	3/24/1999
Volatile Organic Compounds (USEPA Method 8021B) (µg/L)					
Benzene	1	ND	ND	ND	ND
Ethylbenzene	30	ND	ND	ND	ND
Toluene	40	ND	ND	ND	ND
Total Xylenes	20	ND	ND	ND	ND
MTBE	50	ND	ND	ND	ND
1,2 Dichloroethane	3	ND	ND	ND	ND
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/L)					
Naphthalene	20	ND	ND	ND	ND
Acenaphthylene	210	ND	ND	ND	ND
Acenaphthene	20	ND	ND	ND	ND
Phenanthrene	210	ND	ND	ND	ND
Anthracene	2100	0.05	ND	ND	ND
Fluoranthene	280	0.14	ND	ND	ND
Pyrene	210	ND	ND	ND	ND
Benzo(a)anthracene	210	ND	ND	ND	ND
Chrysene	4.8	0.06	ND	ND	0.09
Benzo(b)fluoranthene	0.2	ND	ND	ND	ND
Benzo(k)fluoranthene	0.5	ND	ND	ND	ND
Benzo(a)pyrene	0.2	0.05	ND	ND	ND
Dibenz(a,h)anthracene	0.2	ND	ND	ND	ND
Benzo(g,h,i)perylene	210	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	0.2	0.05	ND	ND	ND

Notes: [1]Chapter 62-770, FAC (August, 1999)
ND = no constituents detected

3.5 ANOMOLY NUMBER 7 (CF-AN07)

CF-AN07 is located on Timiquana Road just east of the intersection with Catoma Road. The location of CF-AN07 is indicated on Figure 1-2 (the Site Vicinity Map) and Figure 3.5.1 (the combined Site Plan, Sample Locations, and Soil Vapor Screening Results Map). TtNUS mobilized to site CF-AN07 on March 19, 1999 for the DPT investigation.

3.5.1 Site Lithology

The site is underlain by a light brown fine-grained sand to a depth of 4 ft bls. At 4 ft bls, the site is underlain by a white fine-grained silty sand. This soil type extends to at least 8 ft bls, the maximum depth drilled at the site during the assessment. Soil boring logs are included in Appendix A.

3.5.2 Soil Vapor

The vertical and horizontal extent of petroleum impacted soil in the vadose zone was assessed through soil headspace analysis performed during the DPT investigation. Four soil borings (CF-AN07-SB-01 through 04) were advanced to depths ranging from 6 to 8 ft bls at the locations shown on Figure 3.5.1. Groundwater was encountered at 5 ft bls. Soil samples were collected at 2-ft intervals and the samples were screened for hydrocarbon vapors with an OVA-PID as described in Section 2.4.2. The results of the soil vapor screening, presented in the Table 3.5.1, indicated elevated OVA-PID headspace readings in boring SB-01. Headspace screening of soil borings SB-02, SB-03, and SB-04 indicated no soils with hydrocarbon vapors above 10 ppm. The DPT sample and boring logs for CF-AN07 are included in Appendix A.

3.5.3 Soil Quality

Based on the results of the soil headspace analyses, three soil samples were collected for laboratory analysis. Discrete soil samples from SB-01 (CF-AN07-SB-01-04), SB-02 (CF-AN07-SB-02-04), and SB-04 (CF-AN07-SB-04-04) were collected at 4 ft bls. The soil samples were placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. The confirmatory samples collected at SB-01, SB-02, and SB-04 contained no VOAs or PAHs at or above FDEP SCTLs. The results of the laboratory soil analysis are summarized on Table 3.5.2. A Laboratory Soil Analytical Results figure was not created since results did not exceed SCTLs. The complete set of analytical results is presented in Appendix D.

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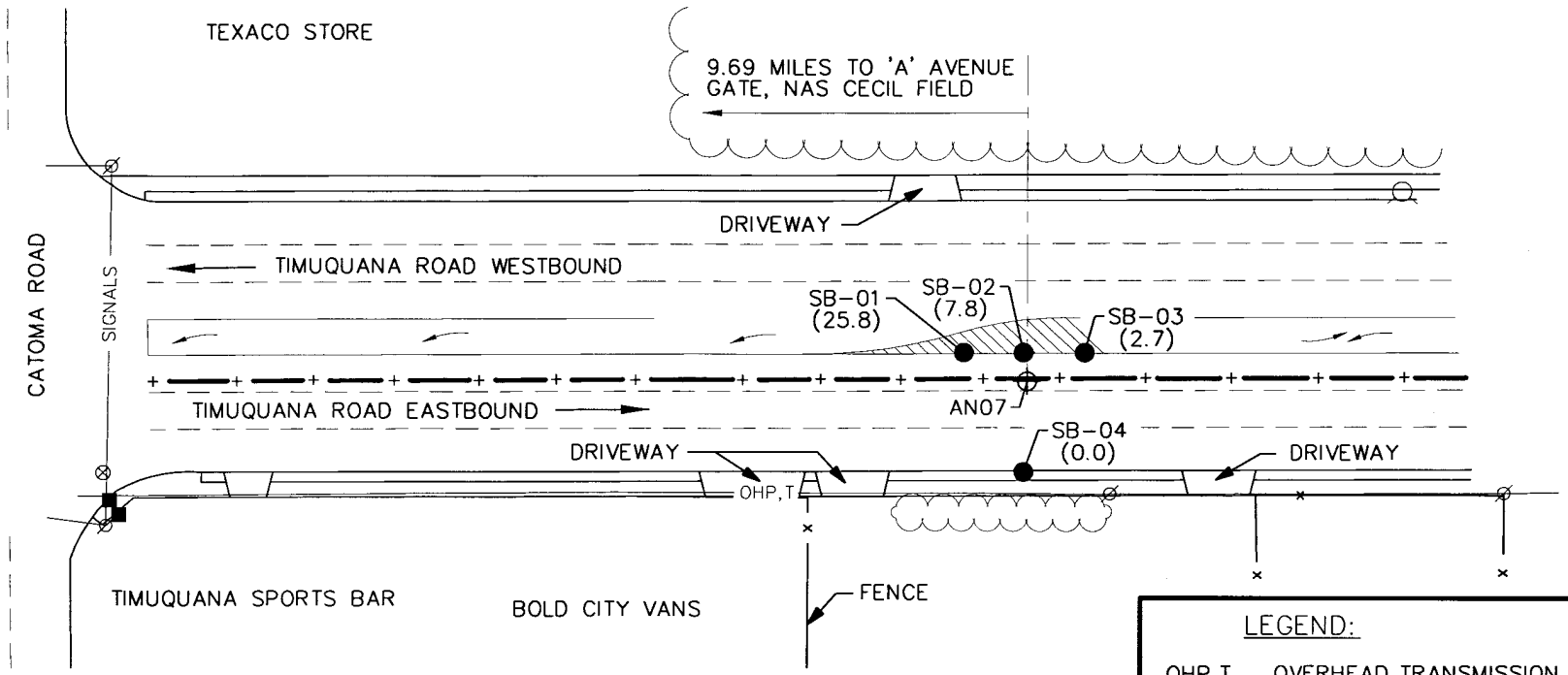


LEGEND:

OHP,T	OVERHEAD TRANSMISSION LINE
●	SOIL BORING
⊕	ANOMALY OR VALVE LOCATION
—+—	JET FUEL PIPELINE
(2.7)	OVA RESULTS IN PARTS PER MILLION (PPM)

0 60 120
SCALE IN FEET

NOTE:

1. SOIL AND GROUNDWATER LABORATORY ANALYTICAL RESULTS INDICATED NO CONTAMINANTS ABOVE FDEP TARGET LEVELS IN EACH OF THE BORINGS.

DRAWN BY MF DATE 4/9/99	SITE PLAN, SAMPLE LOCATIONS, AND SOIL VAPOR SCREENING RESULTS CF-AN07 NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA	CONTRACT NO. 0013	
CHECKED BY DATE		APPROVED BY DATE	
COST/SCHED-AREA		APPROVED BY DATE	
SCALE AS NOTED		DRAWING NO. FIGURE 3.5.1	REV. 0

FORM CADD NO. SDIV_AH.DWG - REV 0 - 1/20/98

Table 3.5.1
Soil Vapor Screening Results for CF-AN07

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Soil Boring Number	Date of Measurement	Sample Interval (ft bls)	PID Measurement (ppm)
SB-01	3/19/1999	2	0.0
		4	22.3
		6	25.8
		8	5.3
SB-02	3/19/1999	2	7.8
		4	1.8
		6	5.0
SB-03	3/19/1999	2	0.0
		4	1.6
		6	2.7
SB-04	3/19/1999	2	0.0
		4	0.0
		6	0.0
		8	0.0

Notes: Soil borings analyzed with a PID

Table 3.5.2
Laboratory Soil Analysis Summary for CF-AN07

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	SB-01 @ 4 ft	SB-02 @ 4 ft	SB-04 @ 4 ft
		3/19/1999	3/19/1999	3/19/1999
Volatile Organic Compounds (USEPA Method 8021B) (µg/kg)				
MTBE	200	2.0U	2.0U	2.0U
Benzene	7	1.2U	1.0U	1.0U
Toluene	500	1.2U	1.0U	1.0U
Chlorobenzene	1300	1.2U	1.0U	1.0U
Ethylbenzene	600	1.2U	1.0U	1.0U
Total Xylenes	200	2.0U	2.0U	2.0U
1,3-Dichlorobenzene	300	1.0U	1.0U	1.0U
1,4-Dichlorobenzene	2200	1.0U	1.0U	1.0U
1,2 Dichloroethane	10	1.0U	1.0U	1.0U
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/kg)				
Naphthalene	1700	18U	20U	22U
1-Methylnaphthalene	2200	36U	39U	43U
2-Methylnaphthalene	6100	36U	39U	43U
Acenaphthylene	27000	36U	39U	43U
Acenaphthene	2100	18U	20U	22U
Phenanthrene	250000	36U	39U	43U
Anthracene	2500000	2.0I	2.0U	2.0U
Fluorene	160000	3.6U	3.9U	4.3U
Fluoranthene	1200000	3.6U	3.9U	4.3U
Pyrene	880000	5.1I	2.0U	2.2U
Benzo (a) Anthracene	1400	14	2.0U	2.2U
Chrysene	77000	16	2.0U	2.2U
Benzo (b) fluoranthene	1400	44	4.0U	4.0U
Benzo (k) fluoranthene	15000	32	2.0U	2.0U
Benzo (a) pyrene	100	34	2.0U	2.0U
Dibenzo (a,h) anthracene	100	3.6U	3.9U	4.3U
Benzo (g,h,i) perylene	2300000	29	3.9U	4.3U
Indeno (1,2,3-cd) pyrene	1500	33	2.0U	2.2U

Notes: [1]Chapter 62-777, FAC (August 1999). Most stringent value of groundwater leachability and direct exposure limits.
I = value is between MDL and PQL
U = constituent not detected

3.5.4 Temporary Well Point Sampling

During the DPT investigation, the soil borings at the site were converted to temporary wells and the DPT screen was deployed from 6 to 10 ft bls in each boring. The groundwater samples were collected and analyzed as described in Section 2.4.4. Groundwater samples were placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. The groundwater analytical results, presented on Table 3.5.3, indicate no VOAs or PAHs above FDEP GCTLs. A Groundwater Analytical Results figure was not created since results did not exceed GCTLs. The complete set of analytical results is presented in Appendix D.

3.5.5 Monitoring Well Sampling

Permanent monitoring wells were not installed at CF-AN07 based on the results of the DPT investigation.

3.5.6 Discussion

Data obtained during the DPT assessment indicated that of the four soil borings installed at Site CF-AN07, one location (SB-01) contained headspace readings above 10 ppm. The confirmatory soil samples collected for laboratory analysis indicated soil analytical results below SCTLs for all COCs (Chapter 62-770, FAC). Groundwater samples collected from temporary wells indicated that dissolved hydrocarbon concentrations were below GCTLs for all COCs (Chapter 62-770, FAC).

Table 3.5.3
Groundwater Analytical Results for CF-AN07

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	TMW-01	TMW-02	TMW-03	TMW-04
		3/19/1999	3/19/1999	3/19/1999	3/19/1999
Volatile Organic Compounds (USEPA Method 8021B) (µg/L)					
Benzene	1	ND	ND	ND	ND
Ethylbenzene	30	ND	ND	ND	ND
Toluene	40	ND	ND	ND	ND
Total Xylenes	20	ND	ND	ND	ND
MTBE	50	ND	ND	ND	ND
1,2 Dichloroethane	3	ND	ND	ND	ND
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/L)					
Naphthalene	20	ND	ND	ND	ND
Acenaphthylene	210	ND	ND	ND	ND
Acenaphthene	20	ND	ND	ND	ND
Phenanthrene	210	ND	ND	ND	ND
Anthracene	2100	ND	ND	ND	ND
Fluoranthene	280	ND	ND	3.2	ND
Pyrene	210	ND	ND	2.6	ND
Benzo(a)anthracene	210	ND	ND	ND	ND
Chrysene	4.8	ND	ND	ND	ND
Benzo(b)fluoranthene	0.2	ND	ND	ND	ND
Benzo(k)fluoranthene	0.5	ND	ND	ND	ND
Benzo(a)pyrene	0.2	ND	ND	ND	ND
Dibenz(a,h)anthracene	0.2	ND	ND	ND	ND
Benzo(g,h,i)perylene	210	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	0.2	ND	ND	ND	ND

Notes: [1]Chapter 62-770, FAC (August, 1999)
ND = no constituents detected

3.6 ANOMOLY NUMBER 8 (CF-AN08)

CF-AN08 is located at the intersection of Timiquana Road and Catoma Road. The location of CF-AN08 is indicated on Figure 1-2 (the Site Vicinity Map) and Figure 3.6.1 (the combined Site Plan, Sample Locations, and Soil Vapor Screening Results Map). TtNUS mobilized to Site CF-AN08 on March 23, 1999 for the DPT investigation. On December 2, 1999, TtNUS revisited the site to install one permanent groundwater monitoring well. The permanent well was developed on December 8, 1999 and sampled on December 14, 1999. On December 22, 1999, five additional soil borings were installed and soil samples collected for laboratory analysis.

3.6.1 Site Lithology

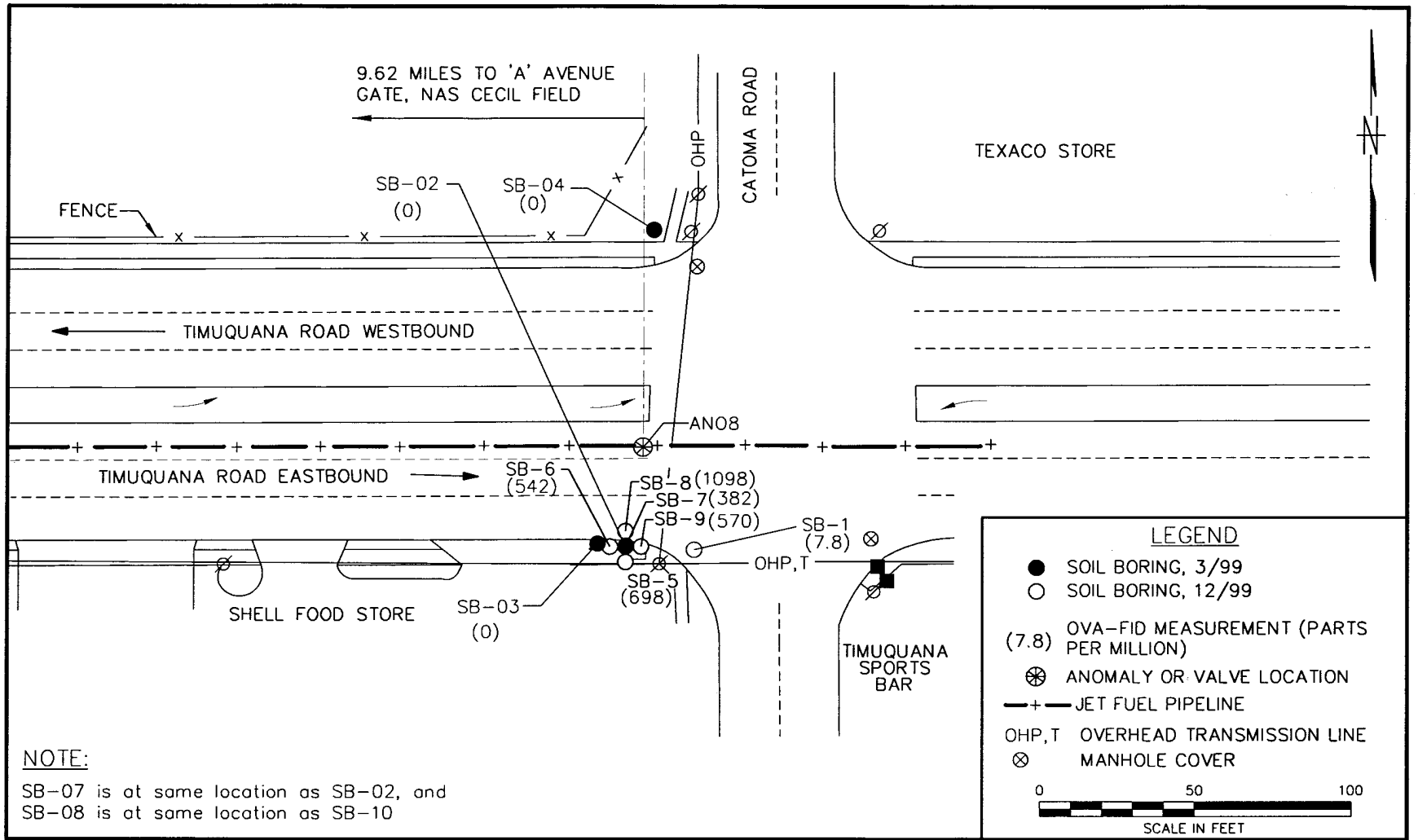
The site is underlain by a light brown fine-grained sand to a depth of 6 ft bls. At 6 ft bls the site is underlain by a light gray clayey sand. This soil type extends to at least 8 ft bls, the maximum depth drilled at the site during the assessment. Soil boring logs are included in Appendix A.

3.6.2 Soil Vapor

The vertical and horizontal extent of petroleum impacted soil in the vadose zone was assessed through soil headspace analysis performed during the DPT investigation. Four soil borings (CF-AN08-SB-01 through 04) were advanced on March 23,1999 to an approximate depth of 8 ft bls at the locations shown on Figure 3.6.1. An additional five soil borings (CF-AN08-SB-05 through 09) were advanced on December 22, 1999 to an approximate depth of 8 ft bls at the locations shown on Figure 3.6.1. Groundwater was encountered at 3 ft bls. Soil samples were collected at 2-ft intervals, and the samples were screened for hydrocarbon vapors with an OVA-PID as described in Section 2.4.2. The results of the soil vapor screening, presented in the Table 3.6.1, indicated soil vapor readings from CF-AN08-SB-05 through 09 displayed elevated readings that were above 10 ppm. The vapor reading ranged from 542 ppm in SB-06 to 1098 ppm in SB-08. The DPT sample and boring logs for CF-AN08 are included in Appendix A.

3.6.3 Soil Quality

Based on the results of the initial soil headspace analyses, one soil sample was collected. A discrete soil sample, CF-AN08-SB-02-02, was collected from soil boring SB-02 at a depth of 2 ft bls. The soil sample was placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. The confirmatory soil sample collected at SB-02 exceeded the FDEP SCTL for dibenzo(a,h)anthracene with a concentration of 140 µg/kg. The residential direct exposure SCTL



NOTE:

SB-07 is at same location as SB-02, and
SB-08 is at same location as SB-10

DRAWN BY LLK	DATE 11/26/01	SITE PLAN, SAMPLE LOCATIONS, AND SOIL VAPOR SCREENING RESULTS CF-AN08 NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA	CONTRACT NO. 0013
CHECKED BY	DATE		APPROVED BY DATE
COST/SCHED-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 3.6.1 REV. 0

FORM CADD NO. SDIV_AH.DWG - REV 0 - 1/20/98

Table 3.6.1
Soil Vapor Screening Results for CF-AN08

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Soil Boring Number	Date of Measurement	Sample Interval (ft bls)	PID Measurement (ppm)
SB-01	3/23/1999	2	7.8
		4	0.0
		6	0.0
		8	NS
SB-02	3/23/1999	2	0.0
		4	0.0
		6	0.0
		8	0.0
SB-03	3/23/1999	2	0.0
		4	0.0
		6	0.0
		8	0.0
SB-04	3/23/1999	2	0.0
		4	0.0
		6	0.0
		8	0.0
SB-05	12/21/1999	1.5	673.0
		2.5	698.0
SB-06	12/21/1999	1.5	542.0
		2.5	503.0
SB-07	12/21/1999	2	298.0
		3	382.0
SB-08	12/21/1999	1.5	152.0
		2.5	1098.0
SB-09	12/21/1999	1.5	570.0
		2.5	543.0

Notes: Soil borings analyzed with a PID
NS = not sampled

for dibenzo(a,h)anthracene is 100 µg/kg. No other tested constituents were detected at or above FDEP SCTLs.

Based on the results of the confirmatory soil sample collected from SB-02, TtNUS advanced five additional soil borings on December 22, 1999 to delineate the soil plume. Soil borings AN-08-SB-05 through 09 were advanced by hand auger for soil sample collection and laboratory analysis. Discrete soil samples CF-AN08-SB-05-03, SB-06-2.5, SB-07-2.5, SB-09-2.5, and SB-10-2.5, were collected at the locations depicted on Figure 3.6.1. The soil sample CF-AN08-SB10-2.5 was collected from the SB-08 boring location. The samples were placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for PAHs using USEPA Method 8310. Soil analytical results for all five borings were below SCTLs for all COCs. The results of the laboratory analysis are summarized on Table 3.6.2, with exceedances depicted on Figure 3.6.2. The complete set of analytical results is presented in Appendix D.

Based on soil screening data and fixed based lab results, the mass of contaminated soil, according to Chapter 62-770, FAC, appears to be localized in the area south of the anomaly at soil borings SB-02 as depicted on Figure 3.6.3. The soil contamination is located under the asphalt roadway. Determinations are based on the field activities performed during the site investigation with delineation by soil borings SB-05, SB-06, SB-09, and SB-10.

3.6.4 Temporary Well Point Sampling

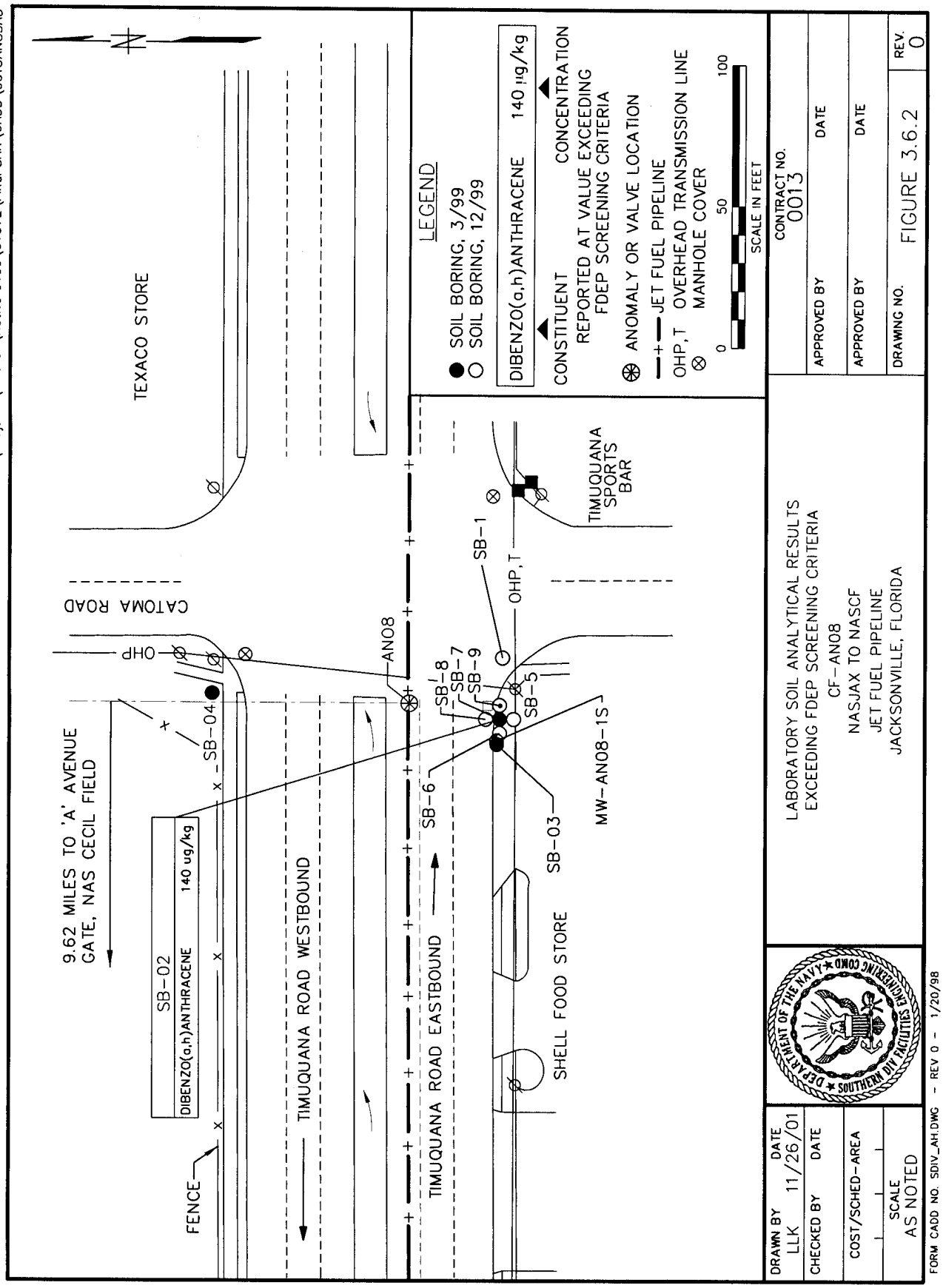
During the DPT investigation, the soil borings at the site were converted to temporary wells and the DPT screen was deployed from 3 to 7 ft bls in each boring. The groundwater samples were collected and analyzed as described in Section 2.4.4. Groundwater samples were placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using methods 8021B and 8310. The groundwater analytical results, presented on Table 3.6.3, indicated exceedances of FDEP GCTLs. In the groundwater sample collected from the temporary monitoring well installed in SB-03, benzo(b)fluoranthene (0.53 µg/L), benzo(a)pyrene (0.3 µg/L), and indeno(1,2,3-cd)pyrene (0.29 µg/L) were detected above their regulatory limit of 0.2 µg/L. No other tested constituents were detected at or above FDEP GCTLs in the groundwater samples collected. Groundwater samples exceeding FDEP GCTLs are depicted on Figure 3.6.4. The complete set of analytical results is presented in Appendix D.

Table 3.6.2
Laboratory Soil Analysis Summary for CF-AN08

Site Assesment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	SB-02 @ 2 ft	SB-05 @ 3 ft	SB-06 @ 2.5 ft	SB-07 @ 2.5 ft	SB-09 @ 2.5 ft	SB-10 @ 2.5 ft
		3/23/1999	12/22/1999	12/22/1999	12/22/1999	12/22/1999	12/22/1999
Volatile Organic Compounds (USEPA Method 8021B) (µg/kg)							
MTBE	200	2.0U	NA	NA	NA	NA	NA
Benzene	7	1.0U	NA	NA	NA	NA	NA
Toluene	500	1.0U	NA	NA	NA	NA	NA
Chlorobenzene	1300	1.0U	NA	NA	NA	NA	NA
Ethylbenzene	600	1.0U	NA	NA	NA	NA	NA
Total Xylenes	200	2.0U	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	300	1.0U	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	2200	1.0U	NA	NA	NA	NA	NA
1,2 Dichloroethane	10	1.0U	NA	NA	NA	NA	NA
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/kg)							
Naphthalene	1700	98U	20U	18U	20U	20U	19U
1-Methylnaphthalene	2200	200U	40U	35U	39U	39U	39U
2-Methylnaphthalene	6100	200U	40U	35U	39U	39U	39U
Acenaphthylene	27000	200U	40U	35U	39U	39U	39U
Acenaphthene	2100	110I	20U	18U	20U	20U	19U
Phenanthrene	250000	200U	40U	35U	39U	39U	39U
Anthracene	2500000	14I	2.0U	2.0U	2.0U	2.0U	2.0U
Fluorene	160000	20U	4.0U	3.5U	3.9U	3.9U	3.9U
Fluoranthene	1200000	120	4.0U	3.5U	8.6	3.9U	8.0
Pyrene	880000	120	2.0U	3.9	3.2	2.0U	7.8
Benzo (a) Anthracene	1400	41	2.0U	1.8U	2.0U	2.0U	1.9U
Chrysene	77000	62	2.0U	1.8U	3.9	2.0U	5.0
Benzo (b) fluoranthene	1400	62	4.0U	3.0U	7.0	4.0U	7.0
Benzo (k) fluoranthene	15000	26	2.0U	2.0U	2.0U	2.0U	2.0
Benzo (a) pyrene	100	68	2.0U	2.0U	13.0	2.0U	6.0
Dibenzo (a,h) anthracene	100	**140**	4.0U	3.5U	3.9U	3.9U	3.9U
Benzo (g,h,i) perylene	2300000	110	4.0U	3.5U	3.9U	3.9U	3.9U
Indeno (1,2,3-cd) pyrene	1500	68	2.0U	1.8U	2.0U	2.0U	1.9U

Notes: [1]Chapter 62-777, FAC (August 1999). Most stringent value of groundwater leachability and direct exposure limits.
BOLD = Exceeds target levels
I = value is between MDL and PQL
U = constituent not detected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TEXACO STORE
CATOMA ROAD
OHP
AN08
SB-04
SB-02
DIBENZO(a,h)ANTHRACENE 140 ug/kg
9.62 MILES TO 'A' AVENUE GATE, NAS CECIL FIELD
FENCE
TIMUQUANA ROAD WESTBOUND
TIMUQUANA ROAD EASTBOUND
SB-6
SB-8
SB-7
SB-9
SB-5
SB-1
OHP, T
SB-03
MW-AN08-1S
SHELL FOOD STORE
TIMUQUANA SPORTS BAR
LEGEND
SOIL BORING, 3/99
SOIL BORING, 12/99
DIBENZO(a,h)ANTHRACENE 140 µg/kg
CONSTITUENT
CONCENTRATION
REPORTED AT VALUE EXCEEDING FDEP SCREENING CRITERIA
ANOMALY OR VALVE LOCATION
JET FUEL PIPELINE
OHP, T OVERHEAD TRANSMISSION LINE
MANHOLE COVER
0 50 100
SCALE IN FEET
LABORATORY SOIL ANALYTICAL RESULTS
EXCEEDING FDEP SCREENING CRITERIA
CF-AN08
NASJAX TO NASCF
JET FUEL PIPELINE
JACKSONVILLE, FLORIDA
CONTRACT NO. 0013
APPROVED BY
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FIGURE 3.6.2
REV. 0
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SOUTHERN DIV FACILITIES ENGINEERING COMD
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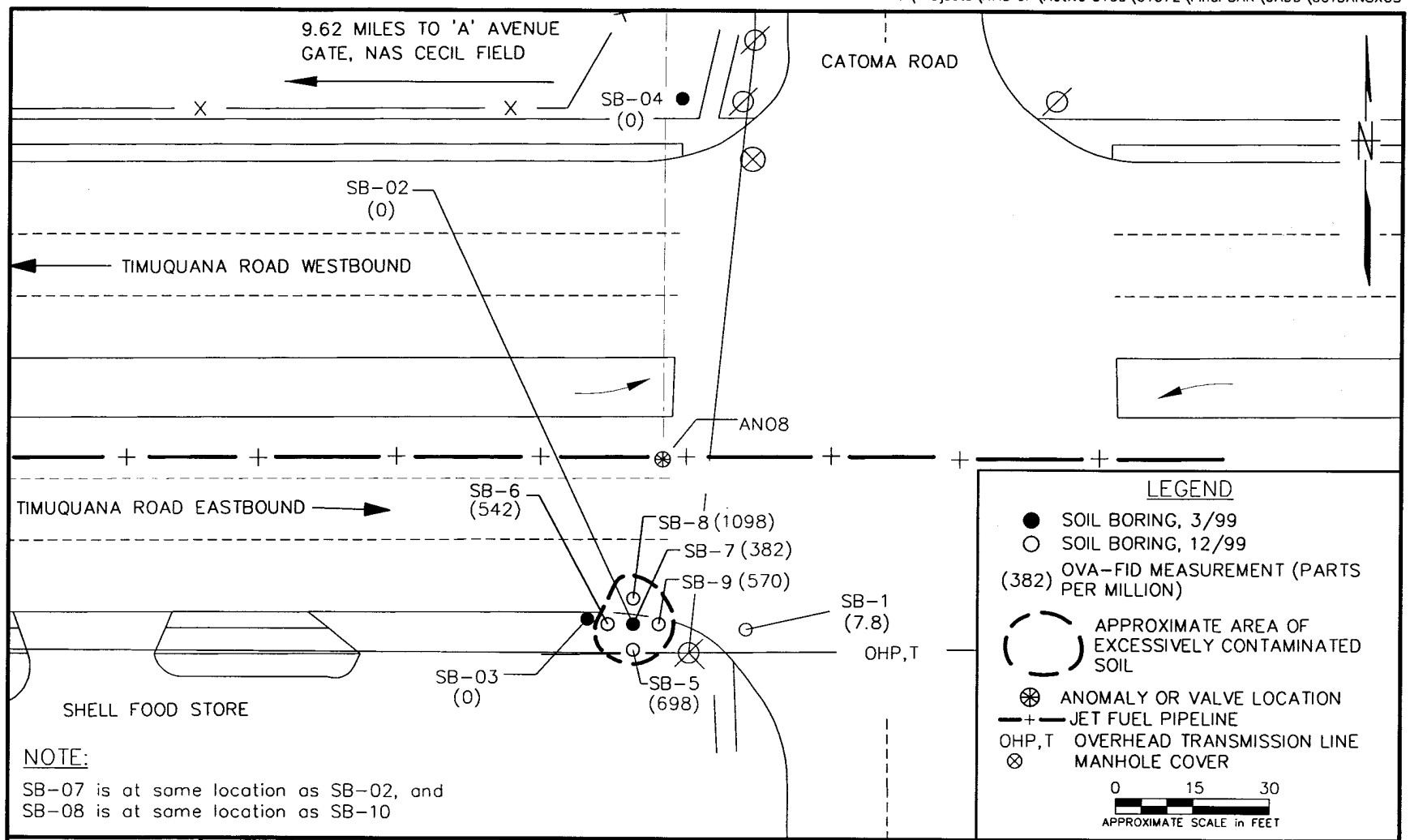

NOTE:

SB-07 is at same location as SB-02, and
SB-08 is at same location as SB-10

DRAWN BY LLK DATE 2/18/02	APPROXIMATE AREA OF EXCESSIVELY CONTAMINATED SOIL CF-AN08 NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA	CONTRACT NO. 0013
CHECKED BY DATE		APPROVED BY DATE
COST/SCHED-AREA		APPROVED BY DATE
SCALE AS NOTED		DRAWING NO. FIGURE 3.6.3 REV. 0

FORM CADD NO. SDIV_AH.DWG - REV 0 - 1/20/98

Table 3.6.3
Groundwater Analytical Results for CF-AN08

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	TMW-01	TMW-02	TMW-03	TMW-04	MW-01
		3/23/1999	3/23/1999	3/23/1999	3/23/1999	12/14/1999
Volatile Organic Compounds (USEPA Method 8021B) (μg/L)						
Benzene	1	ND	ND	ND	ND	NA
Ethylbenzene	30	ND	ND	ND	ND	NA
Toluene	40	ND	ND	ND	ND	NA
Total Xylenes	20	ND	ND	ND	ND	NA
MTBE	50	ND	ND	ND	ND	NA
1,2 Dichloroethane	3	ND	ND	ND	ND	NA
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (μg/L)						
Naphthalene	20	ND	ND	ND	ND	1.0
Acenaphthylene	210	ND	ND	ND	ND	ND
Acenaphthene	20	ND	ND	ND	ND	ND
Phenanthrene	210	ND	ND	ND	ND	ND
Anthracene	2100	ND	ND	ND	ND	ND
Fluoranthene	280	ND	ND	0.15	0.18	ND
Pyrene	210	ND	ND	ND	ND	ND
Benzo(a)anthracene	0.2	ND	ND	**0.22**	ND	ND
Chrysene	4.8	ND	ND	0.41	0.1	ND
Benzo(b)fluoranthene	0.2	ND	ND	**0.53**	ND	ND
Benzo(k)fluoranthene	0.5	ND	ND	ND	ND	ND
Benzo(a)pyrene	0.2	ND	ND	**0.3**	ND	ND
Dibenz(a,h)anthracene	0.2	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	210	ND	ND	0.8	ND	ND
Indeno(1,2,3-cd)pyrene	0.2	ND	ND	**0.29**	ND	ND

Notes: [1]Chapter 62-770, FAC (August, 1999)
BOLD = Exceeds target levels
NA = not analyzed
ND = no constituents detected

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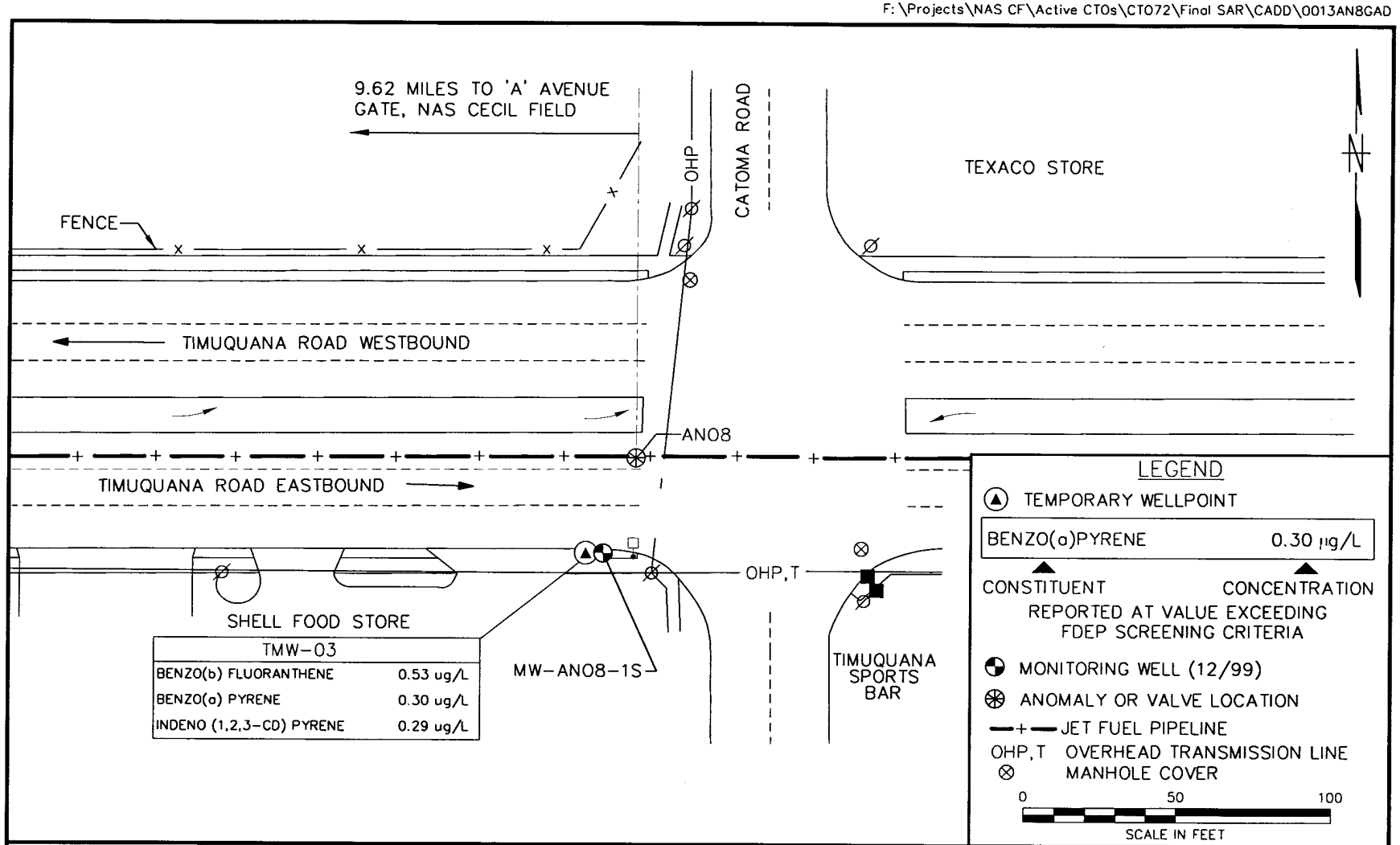


DRAWN BY LLK DATE 11/26/01	GROUNDWATER ANALYTICAL RESULTS EXCEEDING FDEP SCREENING CRITERIA CF-AN08 NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA	CONTRACT NO. 0013
CHECKED BY DATE		APPROVED BY DATE
COST/SCHED-AREA		APPROVED BY DATE
SCALE AS NOTED		DRAWING NO. FIGURE 3.6.4 REV. 0

FORM CADD NO. SDIV_AH.DWG - REV 0 - 1/20/98

3.6.5 Monitoring Well Sampling

On December 2, 1999 TtNUS installed one permanent monitoring well, CF-AN08-1S, at the location indicated on Figure 3.6.1. The monitoring well was installed to a depth of 12 ft, and screened from 2 to 12 ft bls. The monitoring well was installed and developed as described in Section 2.3.2 and monitoring well installation and development logs are included in Appendix B. On December 14, 1999 TtNUS personnel collected a groundwater sample from monitoring well CF-AN08-1S. Analytical results from the groundwater sample indicated dissolved hydrocarbon concentrations were below GCTLs for all COCs (Chapter 62-770, FAC). The groundwater analytical results are summarized on Table 3.6.3 and the complete set of analytical results is included in Appendix D.

3.6.6 Discussion

Data obtained during the DPT assessment indicated that of the four soil borings installed during the DPT investigation at Site CF-AN08, all OVA responses were less than 10 ppm. The confirmatory soil sample collected from SB-02 exceeded the SCTL for dibenzo(a,h)anthracene. Five additional soil borings were installed and soil samples were collected for laboratory analysis to delineate the soil plume. Soil analytical results for all five borings were below SCTLs for all COCs, but soil vapor readings were all greater than 50 ppm. Four temporary monitoring wells were installed during the DPT investigation with benzo(b)fluoranthene, benzo(a)pyrene, and indeno(1,2,3-cd)pyrene concentrations exceeding the GCTLs in TMW-03. However, the analytical results from the one permanent monitoring well installed at the site indicated that dissolved hydrocarbon concentrations were below GCTLs for all COCs (Chapter 62-770, FAC).

3.7 ANOMOLY NUMBER 9 (CF-AN09)

CF-AN09 is located along Timiquana Road in front of the Royal Farms Mobile Home Park. The location of CF-AN09 is indicated on Figure 1-2 (the Site Vicinity Map) and Figure 3.7.1 (the combined Site Plan, Sample Locations, and Soil Vapor Screening Results Map). TtNUS mobilized to site CF-AN09 on March 13, 1999 for the DPT investigation. On December 2, 1999, TtNUS revisited the site to install one permanent groundwater monitoring well. The permanent well was developed on December 9, 1999, and sampled on December 14, 1999. On December 22, 1999 five additional soil borings were installed and soil samples collected for laboratory analysis. One additional soil boring was installed on February 16, 2000.

3.7.1 Site Lithology

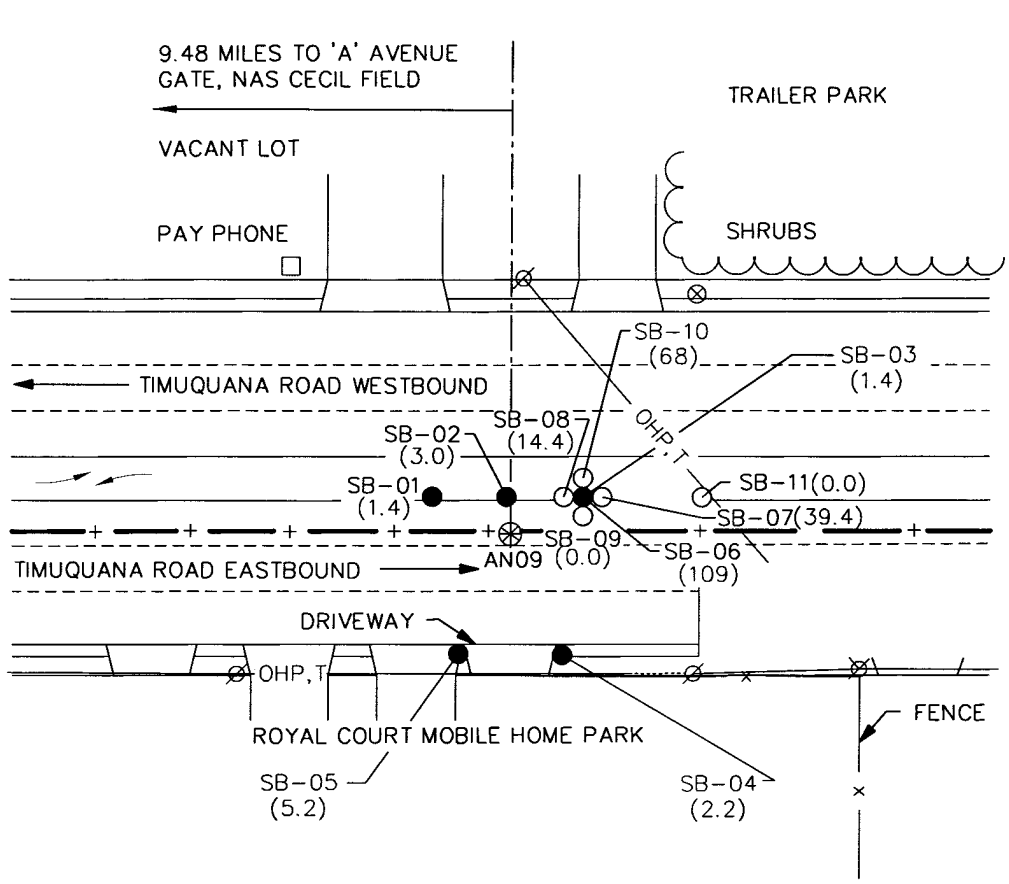
The site is underlain by a brown fine-grained silty sand to a depth of 3 ft bls. At 3 ft bls, the site is underlain by a gray/brown fine grain sand. At 6 ft bls, the site is underlain by a tan fine grain sand. This soil type extends to at least 8 ft bls, the maximum depth advanced during the DPT investigation. Soil boring logs are included in Appendix A.

3.7.2 Soil Vapor

The vertical and horizontal extent of petroleum impacted soil in the vadose zone was assessed through soil headspace analysis performed during the DPT investigation. Five soil borings (CF-AN09-SB-01 through 05) were advanced on March 19,1999 to an approximate depth of 8 ft bls at the locations shown on Figure 3.7.1. Five additional soil borings (CF-AN09-SB-06 through 10) were advanced on December 22, 1999 and one soil boring (CF-AN09-SB-11) was advanced on February 16, 2000. These soil borings were advanced to an approximate depth of 8 ft bls at the locations shown on Figure 3.7.1. Groundwater was encountered at 3.5 ft bls. Soil samples were collected at 2-ft intervals, and the samples were screened for hydrocarbon vapors with an OVA-PID as described in Section 2.4.2. The results of the soil vapor screening, presented in the Table 3.7.1, indicated, samples SB-06 through SB-08 and SB-10 displayed elevated readings that were above 10 ppm. The vapor reading ranged from 14.4 ppm in SB-08 to 109.0 ppm in SB-06. The DPT sample and boring logs for CF-AN09 are included in Appendix A.

3.7.3 Soil Quality

Based on the initial results of the soil headspace analyses, one soil sample was collected. Discrete soil sample, CF-AN09-SB-03-02, was collected from soil boring SB-03 at a depth of 2 ft bls. The soil sample was placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA



NOTE

SB-06 IS AT SAME LOCATION AS SB-03.

LEGEND

- ● SOIL BORING, 3/99
- ○ SOIL BORING, 12/99
- (5.2) OVA-FID MEASUREMENT (PARTS PER MILLION)
- ⊗ ANOMALY OR VALVE LOCATION
- —+— JET FUEL PIPELINE
- OHP,T OVERHEAD TRANSMISSION LINE
- ⊗ MANHOLE COVER

0 50 100
SCALE IN FEET

DRAWN BY LLK	DATE 11/26/01	SITE PLAN, SAMPLE LOCATIONS, AND SOIL VAPOR SCREENING RESULTS CF-AN09 NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA	CONTRACT NO. 0013
CHECKED BY	DATE		APPROVED BY / DATE
COST/SCHED-AREA			APPROVED BY / DATE
SCALE AS NOTED			DRAWING NO. FIGURE 3.7.1 / REV. 0

FORM CADD NO. SDIV_AH.DWG - REV 0 - 1/20/98

Table 3.7.1
Soil Vapor Screening Results for CF-AN09

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Soil Boring Number	Date of Measurement	Sample Interval (ft bls)	PID Measurement (ppm)
SB-01	3/19/1999	2	1.4
		4	0.0
		6	0.0
		8	0.0
SB-02	3/19/1999	2	3.0
		4	3.0
		6	0.2
		8	NS
SB-03	3/19/1999	2	1.4
		4	0.0
		6	0.0
		8	0.0
SB-04	3/19/1999	2	0.0
		4	0.0
		6	2.2
		8	NS
SB-05	3/19/1999	2	0.0
		4	0.0
		6	5.2
		8	2.6
SB-06	12/22/1999	2	109.0
		3	14.1
SB-07	12/22/1999	1.5	33.8
		2.5	39.4
SB-08	12/22/1999	1.5	14.4
		2.5	0.0
SB-09	12/22/1999	1.5	0.0
		2.5	0.0
SB-10	12/22/1999	1.5	0.0
		2.5	68.0
SB-11	2/16/2000	2	0.0
		2.5	--

Notes: Soil borings analyzed with a PID
NS = not sampled

Methods 8021B and 8310. The confirmatory soil sample collected at SB-03 exceeded the FDEP SCTL for dibenzo(a,h)anthracene with a concentration of 160 µg/kg. The residential direct exposure SCTL for dibenzo(a,h)anthracene is 100 µg/kg. No other tested constituents were detected at or above FDEP SCTLs. The results of the laboratory soil analyses are summarized on Table 3.7.2 and are illustrated on Figure 3.7.2. The complete set of analytical results is presented in Appendix D.

Based on the results of the confirmatory soil sample collected from SB-03, TtNUS advanced five additional soil borings on December 22, 1999 to delineate the soil plume. Soil borings CF-AN09-SB-06 through 10 were advanced by hand auger for soil sample collection and laboratory analysis. Discrete soil samples AN-08-SB-05-03, SB-06-2.5, SB-07-2.5, SB-08-2.5, SB-09-2.5, and SB-10-2.5, were collected at the locations depicted on Figure 3.7.2. The samples were placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for PAHs using USEPA Method 8310. Results of the soil analysis indicated benzo(a)pyrene (320 µg/kg) and dibenzo(a,h)anthracene (360 µg/kg) concentrations from SB-07 exceeded the residential direct exposure limits of 100 µg/kg. Soil analytical results for the other four borings were below SCTLs for all COCs. On February 16, 2000, one additional soil boring was advanced with DPT at CF-AN09. Discrete soil sample AN09-SB-11-2.5 was collected from soil boring SB-11 at a depth of 2.5 ft bls. Soil analytical results from SB-11 were below SCTLs for all COCs. The results of the laboratory analysis are summarized on Table 3.7.2. The complete set of analytical results is presented in Appendix D.

Based on soil screening data and fixed based lab results, the mass of contaminated soil, according to Chapter 62-770, FAC, appears to be localized in the area northeast of the anomaly at soil borings SB-03 and SB-07 as depicted on Figure 3.7.3. The soil contamination is located under the turning lane of the asphalt roadway. Determinations are based on the field activities performed during the site investigation with delineation by soil borings SB-08, SB-09, SB-10, and SB-11.

3.7.4 Temporary Well Point Sampling

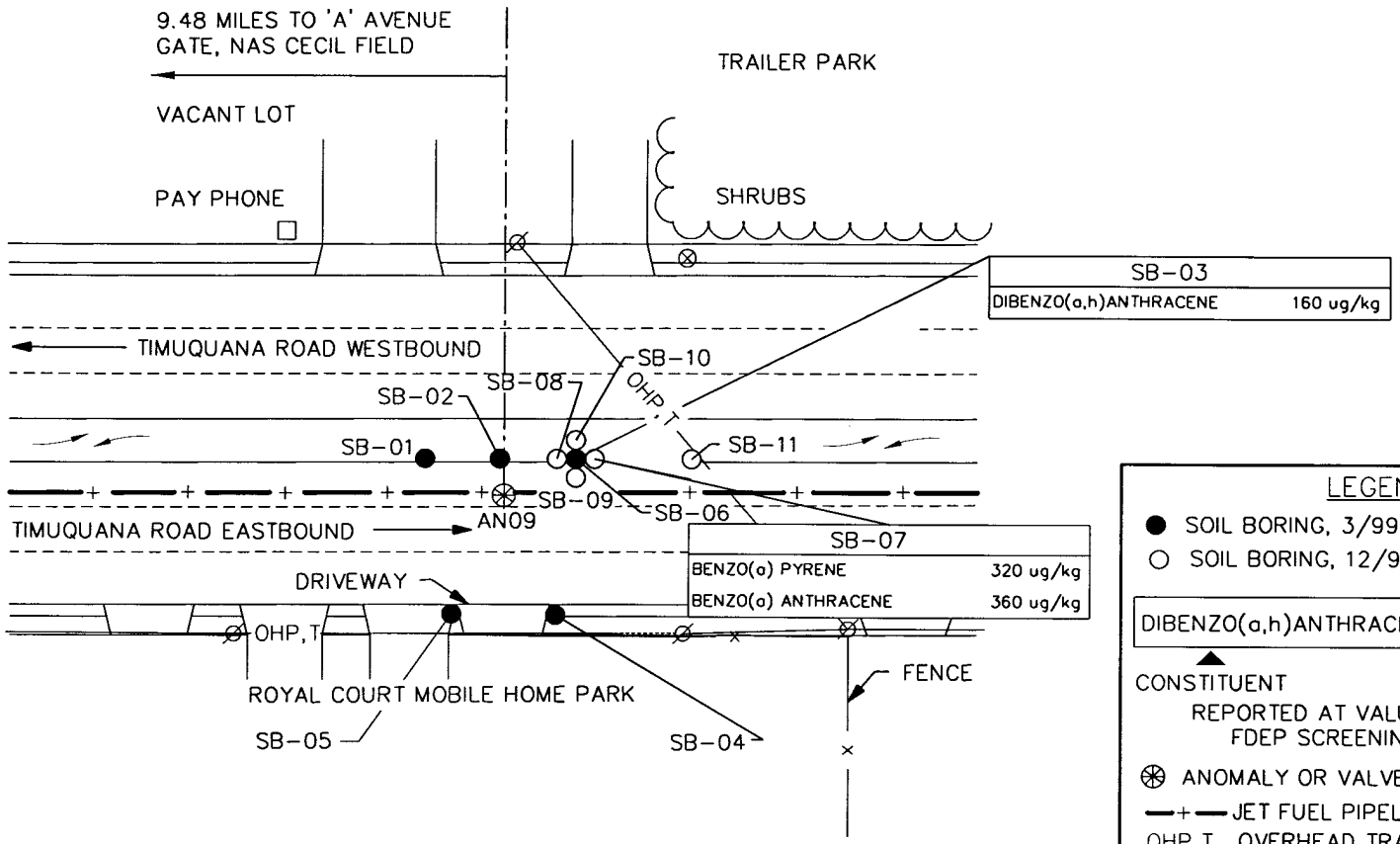
During the DPT investigation, the soil borings at the site were converted to temporary wells and the DPT screen was deployed from 3 to 8 ft bls in each boring. The groundwater samples were collected and analyzed as described in Section 2.4.4. Groundwater samples were placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. The groundwater analytical results, presented on Table 3.7.3, indicated exceedances of FDEP GCTLs. In the groundwater sample collected from the temporary monitoring well installed in SB-04, benzo(a)anthracene (0.21 µg/L) exceeded the GCTL of 0.2 µg/L. The benzo(b)fluroanthene concentration in the temporary monitoring wells installed in SB-04 (1.7 µg/L) and SB-05 (0.3 µg/L) were detected above the regulatory limit of 0.2 µg/L. No other tested constituents were detected at or above FDEP GCTLs in the

Table 3.7.2
Laboratory Soil Analysis Summary for CF-AN09

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	SB-03 @ 2 ft	SB-06 @ 3 ft	SB-07 @ 2.5 ft	SB-08 @ 2.5 ft	SB-09 @ 2.5 ft	SB-10 @ 2.5 ft	SB-11 @ 2.5 ft
		3/19/1999	12/22/1999	12/22/1999	12/22/1999	12/22/1999	12/22/1999	2/16/2000
Volatile Organic Compounds (USEPA Method 8021B) (µg/kg)								
MTBE	200	2.0U	NA	NA	NA	NA	NA	NA
Benzene	7	1.2U	NA	NA	NA	NA	NA	NA
Toluene	500	1.2U	NA	NA	NA	NA	NA	NA
Chlorobenzene	1300	1.2U	NA	NA	NA	NA	NA	NA
Ethylbenzene	600	1.2U	NA	NA	NA	NA	NA	NA
Total Xylenes	200	2.0U	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	300	1.0U	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	2200	1.0U	NA	NA	NA	NA	NA	NA
1,2 Dichloroethane	10	1.0U	NA	NA	NA	NA	NA	NA
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/kg)								
Naphthalene	1700	18U	20U	94U	21U	20U	19U	22U
1-Methylnaphthalene	2200	37U	39U	190U	42U	39U	37U	43U
2-Methylnaphthalene	6100	37U	39U	190U	42U	39U	37U	43U
Acenaphthylene	27000	37U	39U	190U	42U	39U	65	43U
Acenaphthene	2100	42	20U	530	21U	20U	19U	22U
Phenanthrene	250000	37U	39U	190U	42U	39U	37U	43U
Anthracene	2500000	3.0I	2.0U	31	2.0U	2.0U	2.0	22U
Fluorene	160000	3.7U	3.9U	27	4.2U	3.9U	3.7U	4.3U
Fluoranthene	1200000	3.7U	3.9U	19U	4.2U	3.9U	46	4.3U
Pyrene	880000	1.8U	2.0U	340	2.1U	2.0U	25	4.3U
Benzo (a) Anthracene	1400	11	2.0U	110	2.1U	2.0U	8.2	22U
Chrysene	77000	35	2.0U	200	2.1U	2.0U	22	4.3U
Benzo (b) fluoranthene	1400	47	4.0U	350	4.0U	10	67	4.3U
Benzo (k) fluoranthene	15000	12	2.0U	160	2.0U	2.0U	2.0U	4.3U
Benzo (a) pyrene	100	32	2.0U	**320**	2.0U	2.0U	36	4.3U
Dibenzo (a,h) anthracene	100	**160**	3.9U	**360**	4.2U	3.9U	37	4.3U
Benzo (g,h,i) perylene	2300000	56	3.9U	270	4.2U	3.9U	19	4.3U
Indeno (1,2,3-cd) pyrene	1500	50	2.0U	220	2.1U	2.0U	27	4.3U

Notes: [1]Chapter 62-777, FAC (August 1999). Most stringent value of groundwater leachability and direct exposure limits.
BOLD = Exceeds target levels
I = value is between MDL and PQL
NA = not analyzed
U = constituent not detected



LEGEND

- ● SOIL BORING, 3/99
- ○ SOIL BORING, 12/99

DIBENZO(a,h)ANTHRACENE 160 µg/kg

CONSTITUENT — CONCENTRATION

REPORTED AT VALUE EXCEEDING FDEP SCREENING CRITERIA

- ⊗ ANOMALY OR VALVE LOCATION
- —+— JET FUEL PIPELINE
- OHP,T OVERHEAD TRANSMISSION LINE
- ⊗ MANHOLE COVER

0 50 100

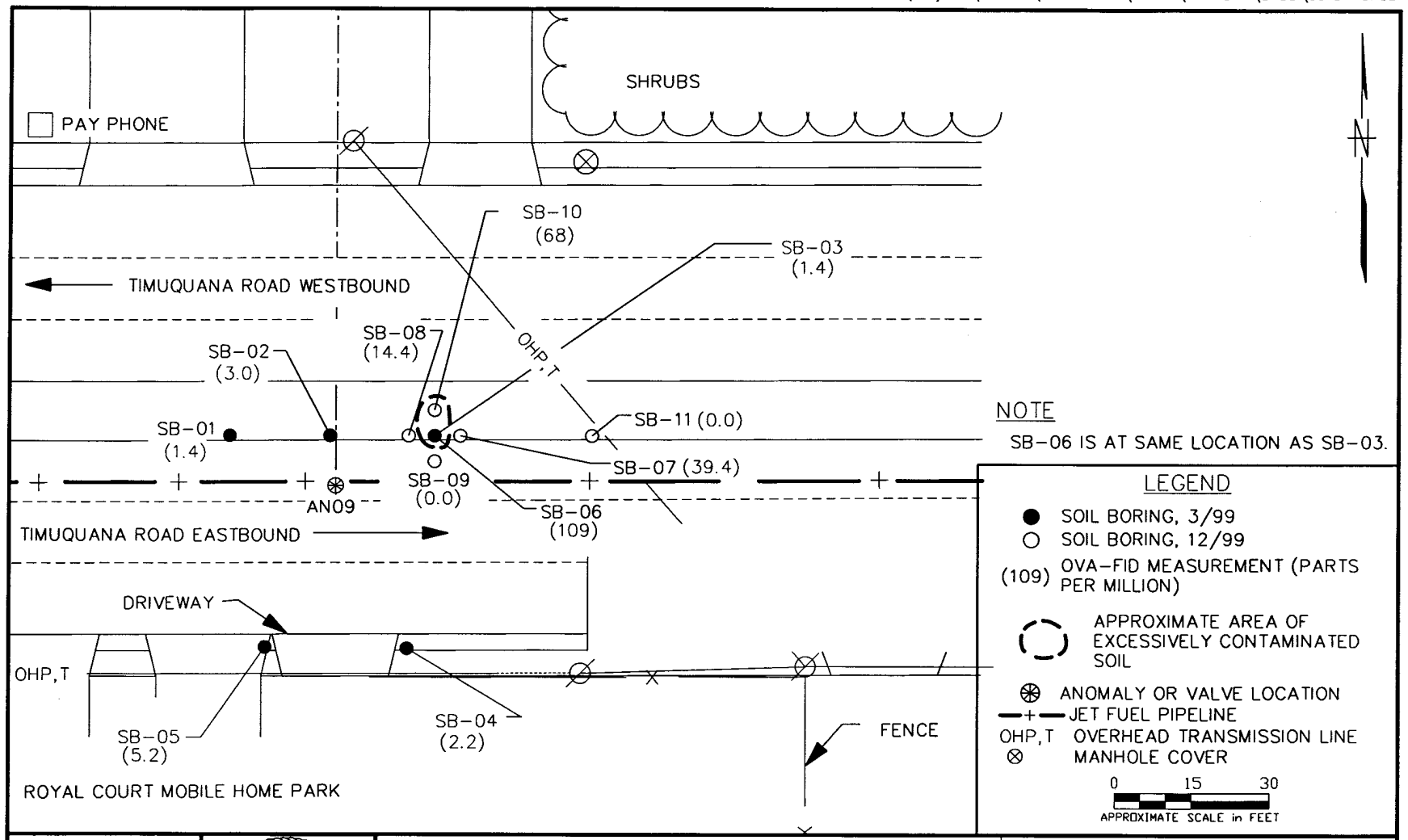
SCALE IN FEET

NOTE

SB-06 IS AT SAME LOCATION AS SB-03.

DRAWN BY LLK	DATE 11/26/01	LABORATORY SOIL ANALYTICAL RESULTS EXCEEDING FDEP SCREENING CRITERIA CF-AN09 NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA	CONTRACT NO. 0013
CHECKED BY	DATE		APPROVED BY DATE
COST/SCHED-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 3.7.2 REV. 0

FORM CADD NO. SDIV_AH.DWG - REV 0 - 1/20/98



DRAWN BY LLK	DATE 2/18/02	APPROXIMATE AREA OF EXCESSIVELY CONTAMINATED SOIL CF-AN09 NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA	CONTRACT NO. 0013
CHECKED BY	DATE		APPROVED BY / DATE
COST/SCHED-AREA			APPROVED BY / DATE
SCALE AS NOTED			DRAWING NO. FIGURE 3.7.3 / REV. 0

FORM CADD NO. SDIV_AH.DWG - REV 0 - 1/20/98

Table 3.7.3
Groundwater Analytical Results for CF-AN09

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	TMW-01	TMW-02	TMW-03	TMW-04	TMW-05	MW-01
		3/19/1999	3/19/1999	3/19/1999	3/19/1999	3/19/1999	12/14/1999
Volatile Organic Compounds (USEPA Method 8021B) (μg/L)							
Benzene	1	ND	ND	ND	ND	ND	NA
Ethylbenzene	30	ND	ND	ND	ND	ND	NA
Toluene	40	ND	ND	ND	ND	ND	NA
Total Xylenes	20	ND	ND	ND	ND	ND	NA
MTBE	50	ND	ND	ND	ND	ND	NA
1,2 Dichloroethane	3	ND	ND	ND	ND	ND	NA
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (μg/L)							
Naphthalene	20	ND	ND	ND	ND	ND	ND
Acenaphthylene	210	ND	ND	ND	ND	ND	ND
Acenaphthene	20	ND	ND	ND	ND	ND	ND
Phenanthrene	210	ND	ND	ND	ND	ND	ND
Anthracene	2100	ND	ND	ND	ND	0.09	ND
Fluoranthene	280	0.1	ND	ND	ND	0.12	ND
Fluorene	280	ND	ND	ND	ND	ND	0.29
Pyrene	210	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	0.2	ND	ND	ND	**0.21**	0.14	ND
Chrysene	4.8	ND	ND	ND	ND	0.47	ND
Benzo(b)fluoranthene	0.2	ND	ND	ND	**1.7**	**0.3**	ND
Benzo(k)fluoranthene	0.5	ND	ND	ND	0.14	0.16	ND
Benzo(a)pyrene	0.2	ND	ND	ND	0.06	0.12	ND
Dibenz(a,h)anthracene	0.2	ND	ND	ND	ND	0.14	ND
Benzo(g,h,i)perylene	210	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	0.2	ND	ND	ND	0.12	0.16	ND

Notes: [1]Chapter 62-770, FAC (August, 1999)
BOLD = Exceeds target levels
NA = not analyzed
ND = no constituents detected

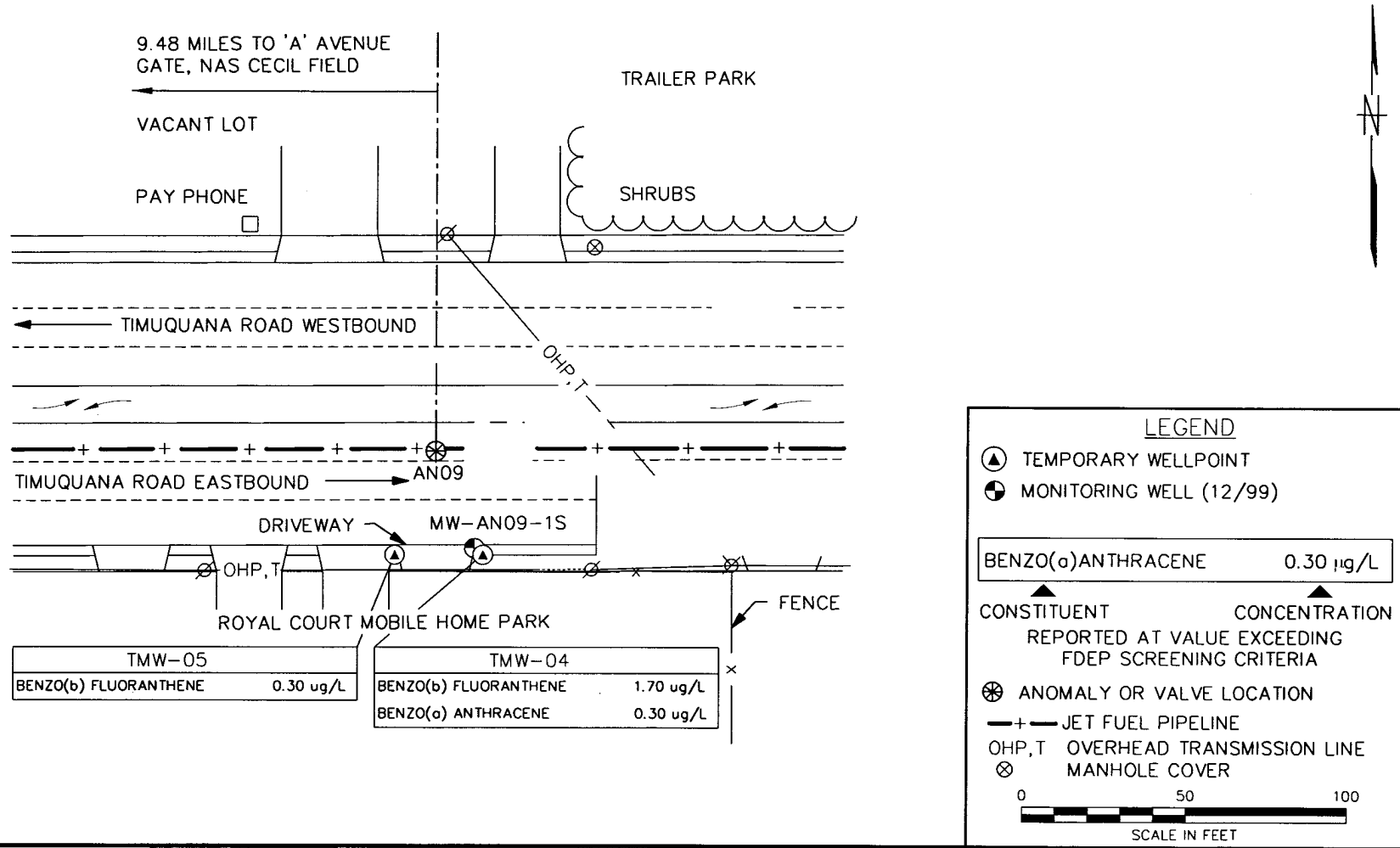
groundwater samples collected from the temporary monitoring wells. Groundwater samples exceeding FDEP GCTLs are depicted on Figure 3.7.4. The complete set of analytical results is presented in Appendix D.

3.7.5 Monitoring Well Sampling

On December 2, 1999 TtNUS installed one permanent monitoring well, CF-AN09-1S, at the location indicated on Figure 3.7.4. The monitoring well was installed to a depth of 12 ft, and screened from 2 to 12 ft bls. The monitoring well was installed and developed as described in Section 2.3.2 and monitoring well installation and development logs are included in Appendix B. On December 14, 1999, TtNUS personnel collected a groundwater sample from monitoring well CF-AN09-1S. Analytical results from the groundwater sample indicated dissolved hydrocarbon concentrations were below GCTLs for all COCs (Chapter 62-770, FAC). The groundwater analytical results are summarized on Table 3.7.3 and the complete set of analytical results is included in Appendix D.

3.7.6 Discussion

Data obtained during the DPT assessment indicated that of the four soil borings installed during the DPT investigation at Site CF-AN09 all OVA responses were less than 10 ppm. The confirmatory soil sample collected from SB-03 exceeded the SCTL for dibenzo(a,h)anthracene. Six additional soil borings were installed and soil samples were collected for laboratory analysis to delineate the soil plume. Soil analytical results from soil boring SB-07 indicated benzo(a)pyrene and dibenzo(a,h)anthracene concentrations exceeded the residential direct exposure limits. The soil contamination is located under the asphalt roadway. Four temporary monitoring wells were installed during the DPT investigation. Benzo(a)anthracene exceeded the GCTL in TMW-04 and benzo(b)fluroanthene exceeded the GCTL in TMW-04 and TMW-05. However, the analytical results from the one permanent monitoring well installed at the site indicated that dissolved hydrocarbon concentrations were below GCTLs for all COCs (Chapter 62-770, FAC).



DRAWN BY LLK	DATE 11/26/01	GROUNDWATER ANALYTICAL RESULTS EXCEEDING FDEP SCREENING CRITERIA CF-AN09 NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA
CHECKED BY	DATE	CONTRACT NO. 0013
COST/SCHED-AREA		APPROVED BY DATE
SCALE AS NOTED		APPROVED BY DATE
		DRAWING NO. FIGURE 3.7.4 REV. 0

FORM CADD NO. SDIV_AH.DWG - REV 0 - 1/20/98

3.8 ANOMOLY NUMBER 10 (CF- AN10)

CF-AN10 is located at the intersection of Old Timiquana Road and Wesconnett Boulevard. The location of CF-AN10 is indicated on Figure 1-2 (the Site Vicinity Map) and Figure 3.8.1 (the combined Site Plan, Sample Locations, and Soil Vapor Screening Results Map). TtNUS mobilized to site CF-AN10 on March 18, 1999 for the DPT portion of the investigation. On November 30, 1999, TtNUS revisited the site to install one permanent groundwater monitoring well. The permanent well was developed on December 8, 1999 and sampled on December 15, 1999. On February 4, 2000, a second permanent well (a DPT installed micro-well) was installed at the site. The well was developed on February 11, 2000 and sampled on February 16, 2000.

3.8.1 Site Lithology

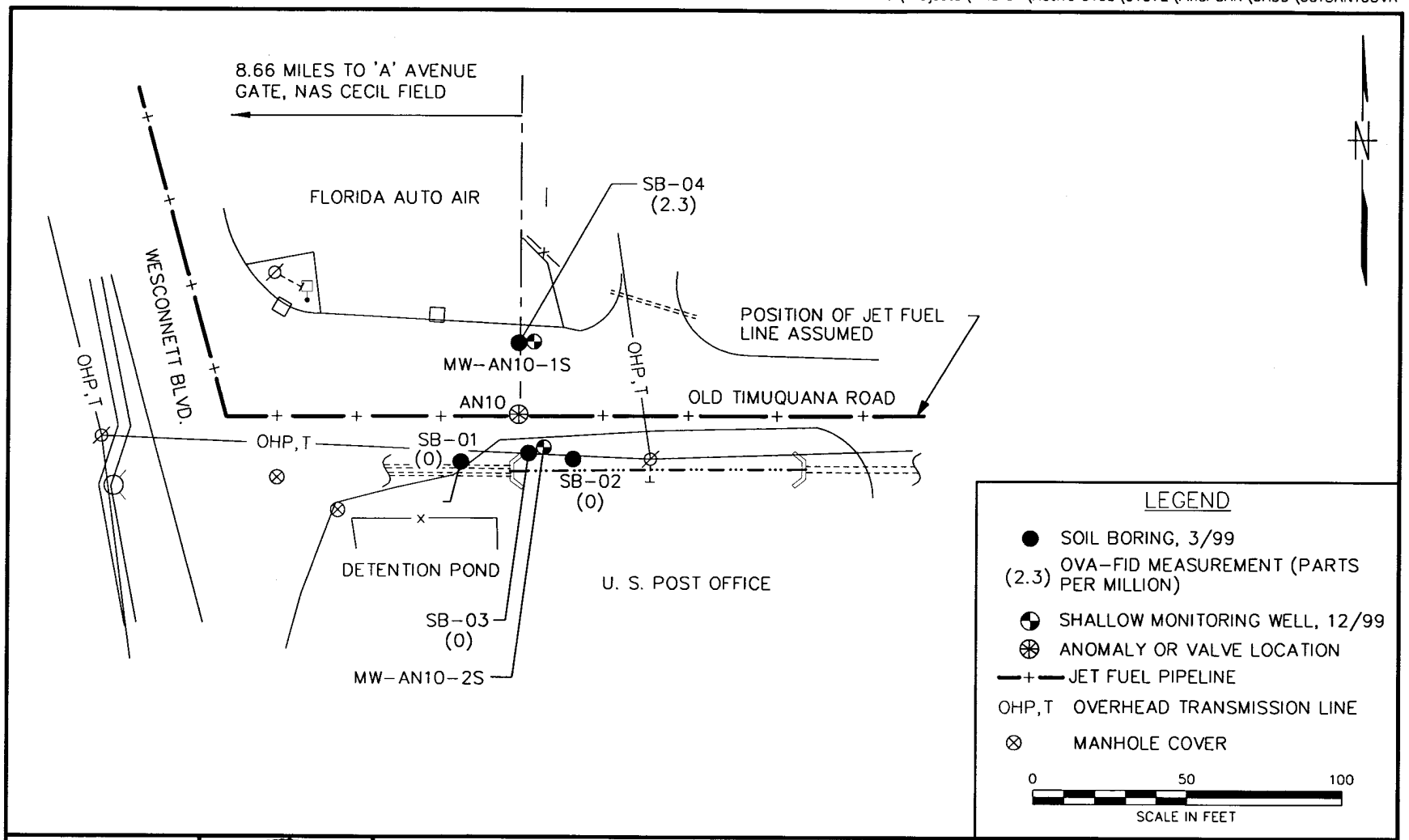
The site is underlain by a brown fine-grained silty sand to a depth of 5 ft bls. At 5 ft bls, the site is underlain by a light gray sandy clay. At 6 ft bls, the site is underlain by a red/orange clayey sand. At 7 ft bls, the site is underlain by a red/orange sandy clay. This soil type extends to at least 10 ft bls, the maximum depth advanced during the DPT assessment activities. Soil boring logs for CF-AN10 are included in Appendix A.

3.8.2 Soil Vapor

The vertical and horizontal extent of petroleum impacted soil in the vadose zone was assessed through soil headspace analysis performed during the DPT investigation. Four soil borings (CF-AN10-SB-01 through 04) were advanced to an approximate depth of 8 to 10 ft bls at the locations shown on Figure 3.8.1. Groundwater was encountered at 3 ft bls. Soil samples were collected at 2-ft intervals and the samples were screened for hydrocarbon vapors with an OVA-PID as described in Section 2.4.2. The results of the soil vapor screening, presented in the Table 3.8.1, indicated no soils with hydrocarbon vapors above 10 ppm. The DPT sample and boring logs for CF-AN10 are included in Appendix A.

3.8.3 Soil Quality

Based on the results of the soil headspace analyses, one soil sample was collected for confirmation laboratory analysis from soil boring CF-AN10-SB-03. Discreet soil sample CF-AN10-SB-03-01 was collected at a depth of 1 ft bls. The soil sample was placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. The confirmatory sample collected at SB-03 indicated no VOAs or PAHs at or above FDEP SCTLs. The results of the laboratory



DRAWN BY LLK	DATE 1/2/02	SITE PLAN, SAMPLE LOCATIONS, AND SOIL VAPOR SCREENING RESULTS CF-AN10 NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA	CONTRACT NO. 0013
CHECKED BY	DATE		APPROVED BY DATE
COST/SCHED-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 3.8.1 REV. 0

Table 3.8.1
Soil Vapor Screening Results for CF-AN10

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Soil Boring Number	Date of Measurement	Sample Interval (ft bls)	PID Measurement (ppm)
SB-01	3/18/1999	2	0.0
		4	0.0
		6	0.0
		8	0.0
		10	0.0
SB-02	3/18/1999	2	0.0
		4	0.0
		6	0.0
		8	0.0
		10	0.0
SB-03	3/18/1999	2	0.0
		4	0.0
		6	0.0
		8	0.0
SB-04	3/18/1999	2	0.8
		4	0.7
		6	1.5
		8	2.3
		10	1.0

Notes: Soil borings analyzed with a PID

analysis are summarized on Table 3.8.2. A Laboratory Soil Analytical Results figure was not created since results did not exceed SCTLs. The complete set of analytical results is presented in Appendix D.

3.8.4 Temporary Well Point Sampling

During the DPT investigation, the soil borings at the site were converted to temporary wells and the DPT screen was deployed from 0 to 4 ft bls in boring SB-03 and from 3 to 7 ft bls in borings SB-01, SB-02, and SB-04. The groundwater samples were collected and analyzed as described in Section 2.4.2. Groundwater samples were placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. In the groundwater sample collected from the temporary monitoring well TMW-01, benzo(b)fluoranthene (0.25 µg/L), benzo(a)pyrene (0.41 µg/L) and indeno(1,2,3-cd)pyrene (0.27 µg/L) were detected above the regulatory limit of 0.2 µg/L. In the groundwater sample collected from the temporary monitoring well installed at TMW-03, benzo(b)fluoranthene (1.4 µg/L), benzo(a)pyrene (0.88 µg/L), benzo(a)anthracene (0.46 µg/L), dibenzo(a,h)anthracene (2.8 µg/L), and indeno(1,2,3-cd)pyrene (1.4 µg/L) were detected above the regulatory limit of 0.2 µg/L for each. In the groundwater sample collected from TMW-04, benzo(b)fluoranthene (0.29 µg/L) was detected above the regulatory limit of 0.2 µg/L. Other tested constituents were not detected at or above FDEP GCTLs in the groundwater samples. The groundwater analytical results are summarized on Table 3.8.3 and results exceeding GCTLs are depicted on Figure 3.8.2. The complete set of analytical results is presented in Appendix D.

3.8.5 Monitoring Well Sampling

On November 30, 1999, TtNUS installed one permanent monitoring well, CF-AN10-1S, adjacent to TMW-04 (see Figure 3.8.1). The monitoring well was installed to a depth of 12 ft and screened from 2 to 12 ft bls. The monitoring well was installed and developed as described in Section 2.3.2 and monitoring well installation and development logs are included in Appendix B. On December 15, 1999, TtNUS personnel collected a groundwater sample from monitoring well CF-AN10-1S. Analytical results from the groundwater sample indicated petroleum product COCs were below GCTLs (Chapter 62-770, FAC). On February 4, 2000 a second monitoring well (CF-AN10-2S) was installed at the site. The monitoring well was sampled on February 16, 2000. Analytical results from the groundwater sample indicated petroleum product COCs were below GCTLs (Chapter 62-770, FAC). The groundwater analytical results are summarized on Table 3.8.3 and the complete set of analytical results is included in Appendix D.

Table 3.8.2
Laboratory Soil Analysis Summary for CF-AN10

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	SB-03 @ 1 ft	
		3/18/1999	
Volatile Organic Compounds (USEPA Method 8021B) (µg/kg)			
MTBE	200	3.0U	
Benzene	7	1.2U	
Toluene	500	1.2U	
Chlorobenzene	1300	1.2U	
Ethylbenzene	600	1.2U	
Total Xylenes	200	3.0U	
1,3-Dichlorobenzene	300	1.2U	
1,4-Dichlorobenzene	2200	1.2U	
1,2 Dichloroethane	10	1.2U	
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/kg)			
Naphthalene	1700	22U	
1-Methylnaphthalene	2200	44U	
2-Methylnaphthalene	6100	44U	
Acenaphthylene	27000	44U	
Acenaphthene	2100	22U	
Phenanthrene	250000	44U	
Anthracene	2500000	4.0I	
Fluorene	160000	4.4U	
Fluoranthene	1200000	140	
Pyrene	880000	130	
Benzo (a) Anthracene	1400	42	
Chrysene	77000	71	
Benzo (b) fluoranthene	1400	63	
Benzo (k) fluoranthene	15000	37	
Benzo (a) pyrene	100	42	
Dibenzo (a,h) anthracene	100	41	
Benzo (g,h,i) perylene	2300000	33	
Indeno (1,2,3-cd) pyrene	1500	46	

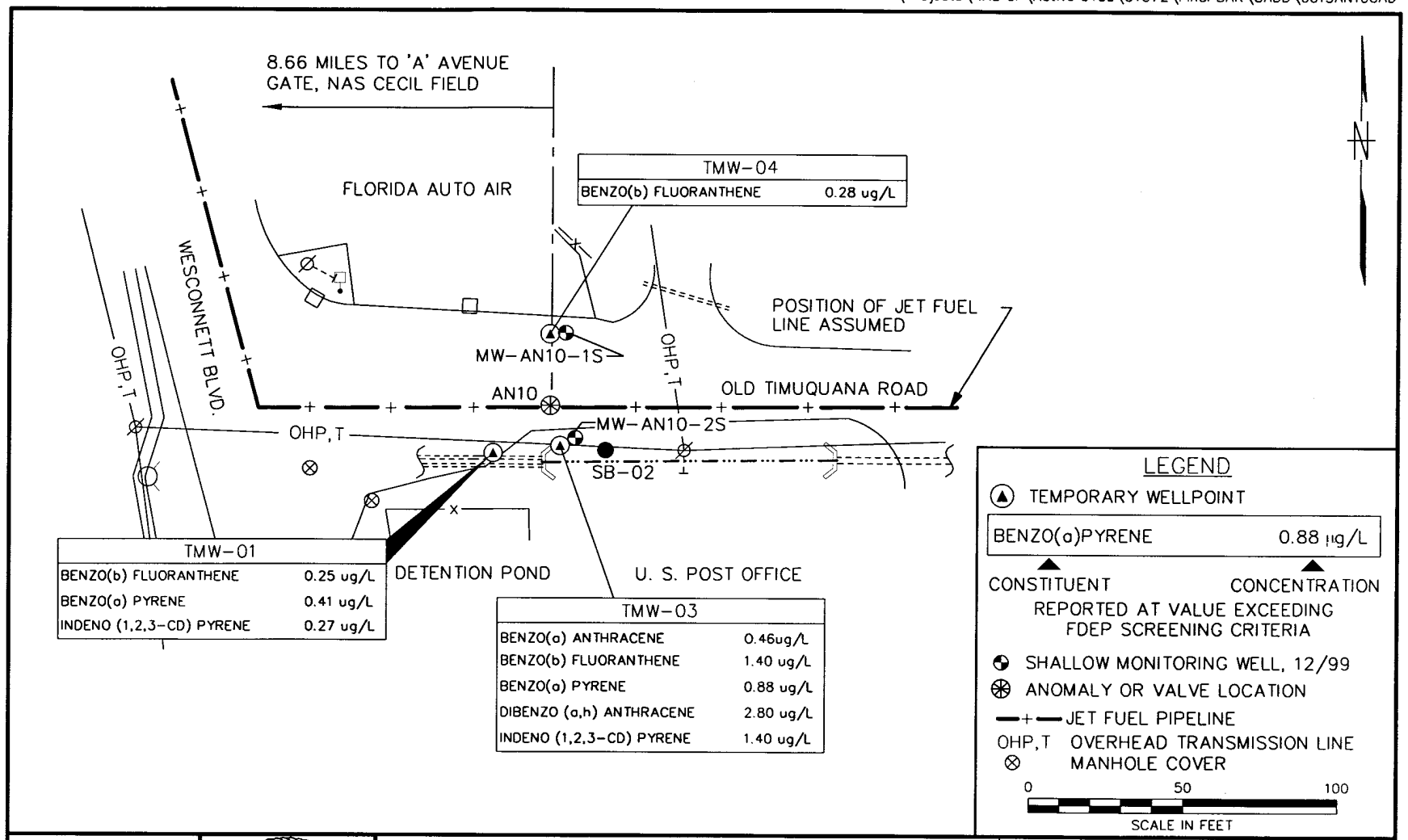
Notes: [1]Chapter 62-770, FAC (August, 1999)
I = value is between MDL and PQL
U = constituent not detected

Table 3.8.3
Groundwater Analytical Results for CF-AN10

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	TMW-01	TMW-02	TMW-03	TMW-04	MW-01	MW-02
		3/18/1999	3/18/1999	3/18/1999	3/18/1999	12/15/1999	2/16/2000
Volatile Organic Compounds (USEPA Method 8021B) (μg/L)							
Benzene	1	ND	ND	ND	ND	NA	NA
Ethylbenzene	30	ND	ND	ND	ND	NA	NA
Toluene	40	ND	ND	ND	ND	NA	NA
Total Xylenes	20	ND	ND	ND	ND	NA	NA
MTBE	50	ND	ND	ND	ND	NA	NA
1,2 Dichloroethane	3	ND	ND	ND	ND	NA	NA
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (μg/L)							
Naphthalene	20	ND	ND	ND	ND	ND	ND
Acenaphthylene	210	ND	ND	ND	ND	ND	ND
Acenaphthene	20	ND	ND	ND	ND	ND	ND
Phenanthrene	210	ND	ND	ND	ND	ND	ND
Anthracene	2100	ND	0.06	0.06	0.16	ND	ND
Fluoranthene	280	0.37	0.17	1.2	0.59	ND	ND
Pyrene	210	0.13	0.11	1.2	0.32	ND	ND
Benzo(a)anthracene	0.2	0.09	ND	**0.46**	ND	ND	ND
Chrysene	4.8	0.12	ND	0.72	ND	ND	ND
Benzo(b)fluoranthene	0.2	**0.25**	0.14	**1.4**	**0.28**	ND	ND
Benzo(k)fluoranthene	0.5	ND	ND	0.48	ND	ND	ND
Benzo(a)pyrene	0.2	**0.41**	0.11	**0.88**	ND	ND	ND
Dibenz(a,h)anthracene	0.2	ND	ND	**2.8**	ND	ND	ND
Benzo(g,h,i)perylene	210	0.17	ND	1.4	ND	ND	ND
Indeno(1,2,3-cd)pyrene	0.2	**0.27**	0.08	**1.4**	ND	ND	ND

Notes: [1]Chapter 62-770, FAC (August, 1999)
BOLD = Exceeds target levels
NA = not analyzed
ND = no constituents detected



DRAWN BY LLK	DATE 1/2/02	GROUNDWATER ANALYTICAL RESULTS EXCEEDING FDEP SCREENING CRITERIA CF-AN10 NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA	CONTRACT NO. 0013
CHECKED BY	DATE		APPROVED BY DATE
COST/SCHED-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 3.8.2 REV. 0

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3.8.6 Discussion

Data obtained during the DPT assessment indicated that of the four soil borings installed at Site CF-AN10, all OVA responses were less than 10 ppm. The confirmatory soil sample collected for laboratory analysis indicated soil analytical results below SCTLs for all COCs (Chapter 62-770, FAC). The groundwater samples collected from TMW-01, TMW-03 and TMW-04 indicated that PAHs exceeded the GCTL concentrations (Chapter 62-770, FAC); however, the analytical results from the permanent monitoring well installed at the site indicated that dissolved hydrocarbon concentrations were below GCTLs for all COCs (Chapter 62-770, FAC).

3.9 ANOMOLY NUMBER 11 (CF-AN11)

CF-AN11 is located along 103rd Street near the intersection with Jammes Road. The location of CF-AN11 is indicated on Figure 1-2 (the Site Vicinity Map) and Figure 3.9.1 (the combined Site Plan, Sample Locations, and Soil Vapor Screening Results Map). TtNUS mobilized to site CF-AN11 on March 17, 1999 for the DPT investigation. On December 21, 1999, five additional soil borings were installed and soil samples collected for laboratory analysis. On June 23, 2001, one final soil sample was collected for Synthetic Precipitant Leaching Procedure (SPLP) analysis.

3.9.1 Site Lithology

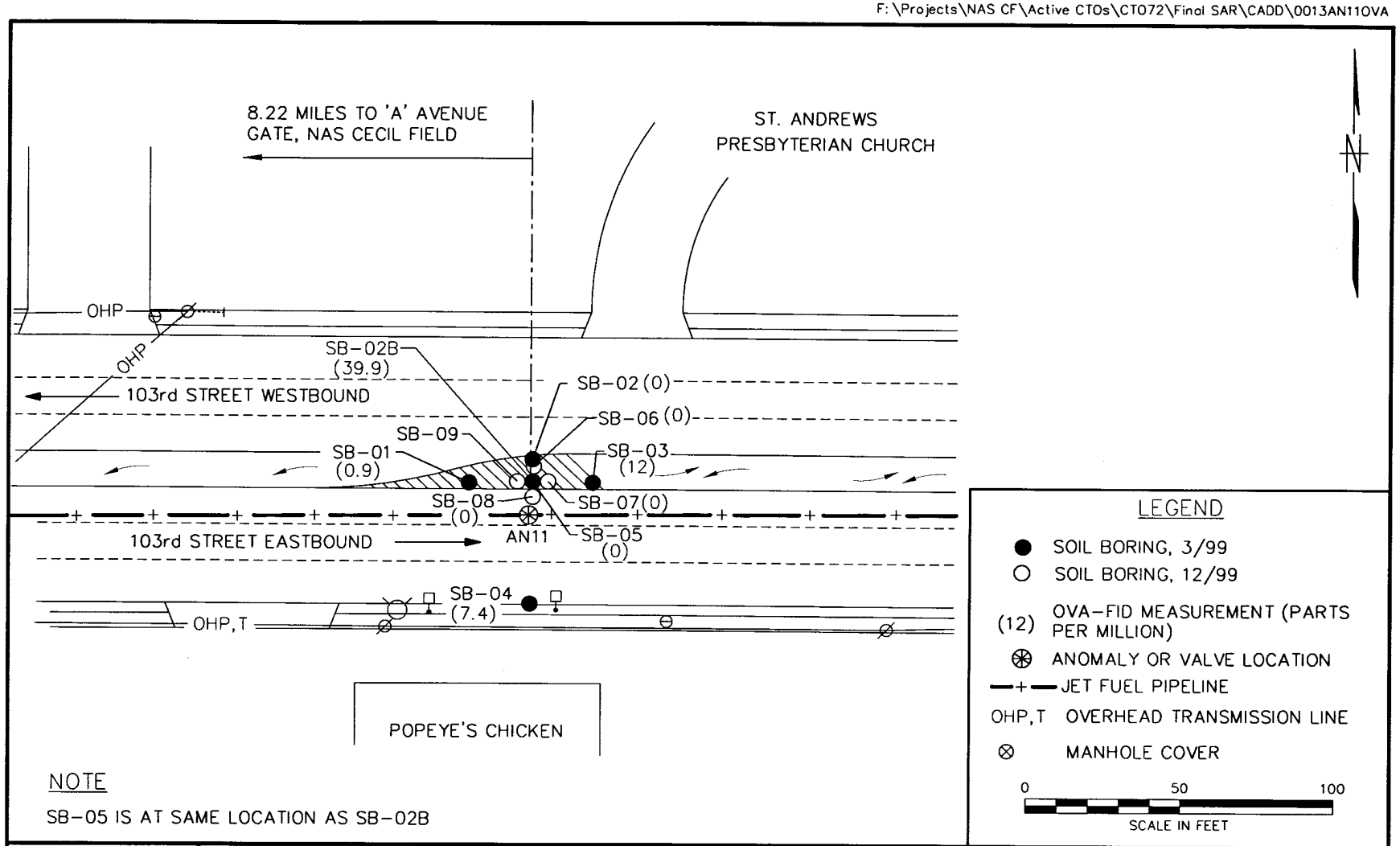
The site is underlain by a gray fine-grained sand to a depth of 5 ft bls. At 5 ft bls, the site is underlain by a gray clay. At 12 ft bls, the site is underlain by a gray clay with fine-grained sand. This soil type extends to at least 18 ft bls, the maximum depth advanced during the DPT investigation. Soil boring logs are included in Appendix A.

3.9.2 Soil Vapor

The vertical and horizontal extent of petroleum impacted soil in the vadose zone was assessed through soil headspace analysis performed during the DPT investigation. Five soil borings (CF-AN11-SB-01 through 04 and SB-02B) were advanced to depths ranging from 5 to 18 ft bls at the locations shown on Figure 3.9.1. Groundwater was encountered at 11 ft bls. Soil samples were collected at 2-ft intervals, and the samples were screened for hydrocarbon vapors with an OVA-PID as described in Section 2.4.2. The results of the soil vapor screening, presented in the Table 3.9.1, indicated elevated headspace readings collected at 5 ft bls in SB-02B and 4 ft bls in SB-03. Soil headspace readings from SB-02, installed 16 inches north of SB-02B, indicated no soil vapor headspace readings above the action limit of 10 ppm. The DPT sample and boring logs for CF-AN11 are included in Appendix A.

3.9.3 Soil Quality

Based on the results of the soil headspace analyses, three soil samples were collected. Discrete soil samples CF-AN11-SB-02-15, CF-AN11-SB02B-05, and CF-AN11-SB03-4 were collected at 15, 5, and 4 ft bls, respectively. The soil samples were placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. The confirmatory soil sample collected at SB-02B exceeded the FDEP SCTL for naphthalene with a concentration of 6100 µg/kg. The leachability SCTL for naphthalene is 1700 µg/kg. The soil sample from SB-02B also exceeded the 1-methylnaphthalene leachability SCTL of 2200 µg/kg with a concentration of 6300 µg/kg and the



NOTE

SB-05 IS AT SAME LOCATION AS SB-02B

DRAWN BY LLK	DATE 11/27/01	SITE PLAN, SAMPLE LOCATIONS, AND SOIL VAPOR SCREENING RESULTS CF-AN11 NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA	CONTRACT NO. 0013
CHECKED BY	DATE		APPROVED BY DATE
COST/SCHED-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 3.9.1 REV. 0

FORM CADD NO. SDIV_AH.DWG - REV 0 - 1/20/98

Table 3.9.1
Soil Vapor Screening Results for CF-AN11

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Soil Boring Number	Date of Measurement	Sample Interval (ft bls)	PID Measurement (ppm)
SB-01	3/17/1999	2	0.0
		4	0.9
		6	0.0
		8	0.0
		10	0.0
		12	0.0
		14	0.0
		16	0.0
SB-02B	3/17/1999	2	0.0
		4	0.0
		5	39.9
SB-02	3/17/1999	2	0.0
		4	0.0
		6	0.0
		8	0.0
		10	0.0
		12	0.0
		14	0.0
		16	0.0
		18	0.0
SB-03	3/17/1999	2	8.3
		4	12.0
		6	3.8
		8	0.0
		10	0.0
		12	0.0
		14	0.0
		16	0.1
		18	0.4
SB-04	3/17/1999	2	2.4
		4	6.7
		6	4.6
		8	6.7
		10	0.2
		12	3.7
		14	7.4
SB-05	12/21/1999	2	0.0
		3	0.0
		4	0.0
		5	0.0
SB-06	12/21/1999	2	0.0
		3	0.0
		4	0.0
		5	0.0
SB-07	12/21/1999	2	0.0
		3	0.0
		4	0.0
		5	0.0
SB-08	12/21/1999	2	0.0
		3	0.0
		4	0.0
		5	0.0
SB-09	12/21/1999	2	0.0
		3	0.0
		4	0.0
		5	0.0

Notes: Soil borings analyzed with a PID

benzo(a)pyrene residential direct exposure SCTL of 100 µg/kg with a concentration of 180 µg/kg. No other tested constituents were detected at or above FDEP SCTLs. The results of the laboratory soil analyses are summarized on Table 3.9.2 and illustrated on Figure 3.9.2. The complete set of analytical results is presented in Appendix D.

Based on the results of the confirmatory soil sample collected from SB-02B, TtNUS advanced five additional soil borings on December 21, 1999 to delineate the soil plume. Soil borings CF-AN11-SB-05 through 09 were advanced by DPT for soil sample collection and laboratory analysis. Discrete soil samples CF-AN11-SB-05-06, SB-06-05, SB-07-05, SB-08-05, and SB-09-05 were collected at the locations depicted on Figure 3.9.2. The samples were placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for PAHs using USEPA Method 8310. Soil analytical results for all five borings were below SCTLs for all COCs. On June 25, 2001 TtNUS revisited the site to collect a soil sample for analysis of PAHs with extraction by the SPLP method. The soil sample CF-AN11-SB-02-05 was collected from soil boring SB-02 at a depth of 5 ft bls. Results of the SPLP analysis were below MDL for all analyzed parameters. The results of the soil SPLP laboratory analysis are summarized on Table 3.9.3. The complete set of analytical results is presented in Appendix D.

Based on soil screening data and fixed based lab results, the mass of contaminated soil, according to Chapter 62-770, FAC, appears to be localized in the area directly north of the anomaly at soil boring SB-02B as depicted on Figure 3.9.2. The soil contamination is located under the turning lane of the asphalt roadway. Determinations are based on the field activities performed during the site investigation with delineation by soil borings SB-05, SB-06, SB-07, SB-08, and SB-09.

3.9.4 Temporary Well Point Sampling

During the DPT investigation, the soil borings at the site were converted to temporary wells and the DPT screen was deployed from 10 to 20 ft bls in the borings. The groundwater samples were collected and analyzed as described in Section 2.4.4. Groundwater samples were placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. The groundwater analytical results, presented on Table 3.9.4, indicated no petroleum product COCs in groundwater above GCTLs (Chapter 62-770, FAC). A Groundwater Analytical Results figure was not created since results did not exceed GCTLs. The complete set of analytical results is presented in Appendix D.

Table 3.9.2
Laboratory Soil Analysis Summary for AN-11

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

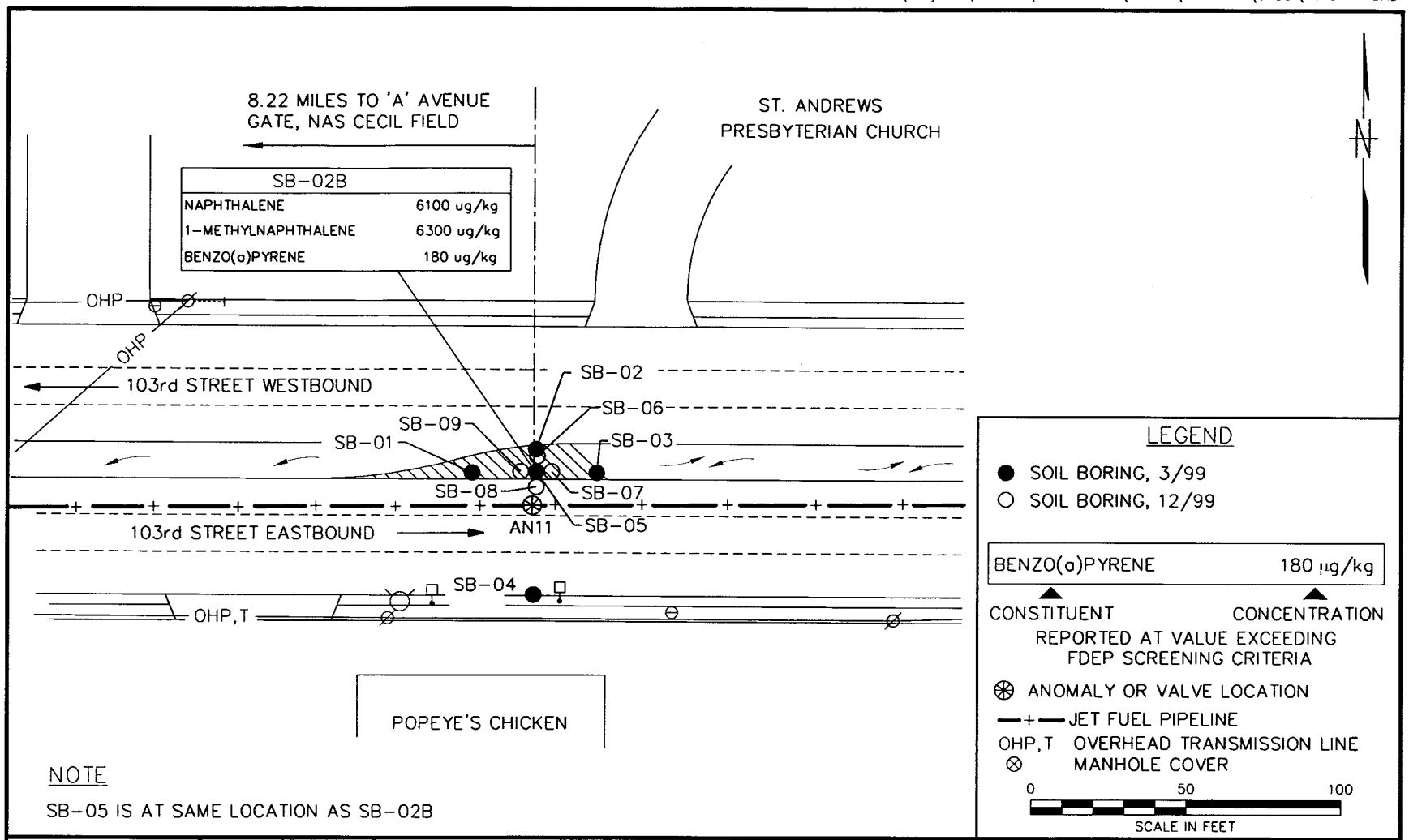
Compound	FDEP Target Level[1]	SB-02 @15ft.	SB-02B @5ft.	SB-03 @4ft.	SB-05 @6ft.	SB-06 @5ft.	SB-07 @5ft.	SB-08 @5ft.	SB-09 @5ft.
		3/17/1999	3/17/1999	3/17/1999	12/21/1999	12/21/1999	12/21/1999	12/21/1999	12/21/1999
Volatile Organic Compounds (USEPA Method 8021B)(μg/kg)									
MTBE	200	2.0U	2.0U	2.0U	NA	NA	NA	NA	NA
Benzene	7	1.1U	1.0U	1.0U	NA	NA	NA	NA	NA
Toluene	500	1.1U	1.0U	1.0U	NA	NA	NA	NA	NA
Chlorobenzene	1300	1.1U	1.0U	1.0U	NA	NA	NA	NA	NA
Ethylbenzene	600	1.1U	1.0U	1.0U	NA	NA	NA	NA	NA
Total Xylenes	200	2.0U	2.0U	2.0U	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	300	1.1U	1.0U	1.0U	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	2200	1.1U	1.0U	1.0U	NA	NA	NA	NA	NA
1,2 Dichloroethane	10	1.1U	1.0U	1.0U	NA	NA	NA	NA	NA
Polynuclear Aromatic Hydrocarbons(USEPA Method 8310)(μg/kg)									
Naphthalene	1700	21U	**6100**	21U	20U	23	23U	21U	21U
1-Methylnaphthalene	2200	42U	**6300**	41U	39U	42U	45U	41U	42U
2-Methylnaphthalene	6100	42U	12000	41U	39U	42U	45U	41U	42U
Acenaphthylene	27000	42U	1800U	41U	39U	42U	45U	41U	58
Acenaphthene	2100	21U	880U	21U	20U	21U	23U	21U	21U
Phenanthrene	250000	42U	15000	41U	39U	42U	45U	41U	42U
Anthracene	2500000	2.0U	2300	2.0U	2.0U	2.0U	3.0U	2.0U	2.0U
Fluorene	160000	4.2U	4700	4.1U	3.9U	4.2U	4.5U	4.1U	4.2U
Fluoranthene	1200000	4.2U	180U	4.1U	3.9U	4.2U	4.5U	4.1U	4.2U
Pyrene	880000	2.1U	88U	7.0	2.0U	2.1U	2.3U	2.1U	2.1U
Benzo (a) Anthracene	1400	2.1U	660	21U	2.0U	2.1U	2.3U	2.1U	2.1U
Chrysene	77000	2.1U	720	2.1I	2.0U	2.1U	2.3U	2.1U	2.1U
Benzo (b) fluoranthene	1400	4.0U	300I	10	4.0U	4.0U	4.0U	4.0U	4.0.U
Benzo (k) fluoranthene	15000	2.0U	160I	2.0U	2.0U	2.0U	3.0U	2.0U	2.0U
Benzo (a) pyrene	100	2.0U	**180I**	2.0I	2.0U	2.0U	3.0U	2.0U	2.0U
Dibenzo (a,h) anthracene	100	4.2U	180U	4.1U	3.9U	4.2U	4.5U	4.1U	4.2U
Benzo (g,h,i) perylene	2300000	4.2U	180U	4.1U	3.9U	4.2U	4.5U	4.1U	4.2U
Indeno (1,2,3-cd) pyrene	1500	2.1U	88U	2.1U	2.0U	2.1U	2.3U	2.1U	2.1U

[1]Chapter 62-777, Florida Administrative Code (August 1999). Most stringent value of groundwater leachability and direct exposure limits.

Notes:

BOLD = Exceeds target levels

NA=not analyzed.
I=value is between MDL and PQL.
U=constituent not detected.



NOTE

SB-05 IS AT SAME LOCATION AS SB-02B

DRAWN BY LLK DATE 11/27/01	LABORATORY SOIL ANALYTICAL RESULTS EXCEEDING FDEP SCREENING CRITERIA CF-AN11 NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA	CONTRACT NO. 0013	
CHECKED BY DATE		APPROVED BY DATE	
COST/SCHED-AREA		APPROVED BY DATE	
SCALE AS NOTED		DRAWING NO. FIGURE 3.9.2	REV. 0

FORM CADD NO. SDIV_AH.DWG - REV 0 - 1/20/98

Table 3.9.3
SPLP Soil Analyis Summary for CF-AN11

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	SB-02@5ft.[2]			
		6/25/2001			
Volatile Organic Compounds (USEPA Method 8021B) (μg/L)					
MTBE	50	NA			
Benzene	1	NA			
Toluene	40	NA			
Ethylbenzene	30	NA			
Total Xylenes	20	NA			
1,2 Dichloroethane	3	NA			
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (μg/L)					
Naphthalene	20	20U			
1-Methylnaphthalene	20	20U			
2-Methylnaphthalene	20	20U			
Acenaphthylene	210	40U			
Acenaphthene	20	40U			
Phenanthrene	210	20U			
Anthracene	2100	20U			
Fluorene	280	20U			
Fluoranthene	280	20U			
Pyrene	210	20U			
Benzo (a) Anthracene	0.2	2U			
Chrysene	4.8	20U			
Benzo (b) fluoranthene	0.5	2U			
Benzo (k) fluoranthene	0.2	2U			
Benzo (a) pyrene	0.2	2U			
Dibenzo (a,h) anthracene	0.2	2U			
Benzo (g,h,i) perylene	210	2U			
Indeno (1,2,3-cd) pyrene	0.2	2U			

s: [1]Chapter 62-777, FAC (August 1999)
[2]The environmental sample was extracted by SPLP and analyzed for PAHs (USEPA Method 8310) (μg/L)
NA = Not analyzed
U=constituent not detected

Table 3.9.4
Groundwater Analytical Results for CF-AN11

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	TMW-01	TMW-02	TMW-03	TMW-04
		3/17/1999	3/17/1999	3/17/1999	3/17/1999
Volatile Organic Compounds (USEPA Method 8021B) (µg/L)					
Benzene	1	ND	ND	ND	ND
Ethylbenzene	30	ND	ND	ND	ND
Toluene	40	ND	ND	ND	ND
Total Xylenes	20	ND	ND	ND	ND
MTBE	50	ND	ND	ND	ND
1,2 Dichloroethane	3	ND	ND	ND	ND
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/L)					
Naphthalene	20	ND	ND	ND	ND
Acenaphthylene	210	ND	ND	ND	ND
Acenaphthene	20	ND	ND	ND	ND
Phenanthrene	210	ND	ND	ND	ND
Anthracene	2100	ND	ND	ND	ND
Fluoranthene	280	ND	ND	ND	ND
Pyrene	210	ND	ND	ND	ND
Benzo(a)anthracene	0.2	ND	ND	ND	ND
Chrysene	4.8	ND	ND	ND	ND
Benzo(b)fluoranthene	0.2	ND	ND	ND	ND
Benzo(k)fluoranthene	0.5	ND	ND	ND	ND
Benzo(a)pyrene	0.2	ND	ND	ND	ND
Dibenz(a,h)anthracene	0.2	ND	ND	ND	ND
Benzo(g,h,i)perylene	210	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	0.2	ND	ND	ND	ND

Note: [1]Chapter 62-770, FAC (August, 1999)
BOLD = Exceeds target levels
ND = no constituents detected

3.9.5 Monitoring Well Sampling

Permanent monitoring wells were not installed at CF-AN11 based on the groundwater results from the DPT investigation.

3.9.6 Discussion

Data obtained during the DPT assessment indicated that of the four soil borings installed during the DPT investigation at Site CF-AN11, two borings (SB-02B and SB03) indicated OVA responses above 10 ppm. The OVA results were below 50 ppm and not “excessively contaminated” as defined by Chapter 62-770, FAC. The confirmatory soil sample collected from SB-02B exceeded the SCTL for naphthalene, 1-methylnaphthalene, and benzo(a)pyrene. The SPLP analysis of soil collected from SB-02B indicated that the petroleum contaminants are not leaching to groundwater. Five additional soil borings were installed and soil samples were collected for laboratory analysis to delineate the soil plume. Soil analytical results from the additional soil borings were below SCTLs for all COCs. The soil contamination is located under asphalt. The four temporary monitoring wells installed during the DPT investigation indicated that dissolved hydrocarbon concentrations were below GCTLs for all COCs (Chapter 62-770, FAC) in groundwater.

3.10 ANOMOLY NUMBER 12 (CF-AN12)

CF-AN12 is located on 103rd Street near the intersection with Tampico Road. The location of CF-AN12 is indicated on Figure 1-2 (the Site Vicinity Map) and Figure 3.10.1 (the combined Site Plan, Sample Locations, and Soil Vapor Screening Results Map). TtNUS mobilized to site CF-AN12 on March 16, 1999 for the DPT investigation.

3.10.1 Site Lithology

The site is underlain by a brown fine-grained silty sand to a depth of 10 ft bls. At 10 ft bls, the site is underlain by a yellow/white fine-grained silty sand. This soil type extends to at least 12 ft bls, the maximum depth drilled at the site during the assessment. Soil boring logs are included in Appendix A.

3.10.2 Soil Vapor

The vertical and horizontal extent of petroleum impacted soil in the vadose zone was assessed through soil headspace analysis performed during the DPT investigation. Three soil borings (CF-AN12-SB-01 through 03) were advanced to an approximate depth of 12 ft bls at the locations shown on Figure 3.10.1. Groundwater was encountered at 9 to 10 ft bls. Soil samples were collected at 2-ft intervals and the samples were screened for hydrocarbon vapors with an OVA-PID as described in Section 2.4.2. The results of the soil vapor screening, presented in the Table 3.10.1, indicated no OVA-PID headspace readings above 10 ppm. The DPT sample and boring logs for CF-AN12 are included in Appendix A.

3.10.3 Soil Quality

Based on the results of the soil headspace analyses, one soil sample was collected for laboratory analysis. Discrete soil sample CF-AN12-SB-03-10 was collected at a depth of 10 ft bls. The soil sample was placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. The confirmatory sample collected at SB-03 contained no VOAs or PAHs at or above FDEP SCTLs. The results of the laboratory soil analysis are summarized on Table 3.10.2. A Laboratory Soil Analytical Results figure was not created since results did not exceed SCTLs. The complete set of analytical results is presented in Appendix D.

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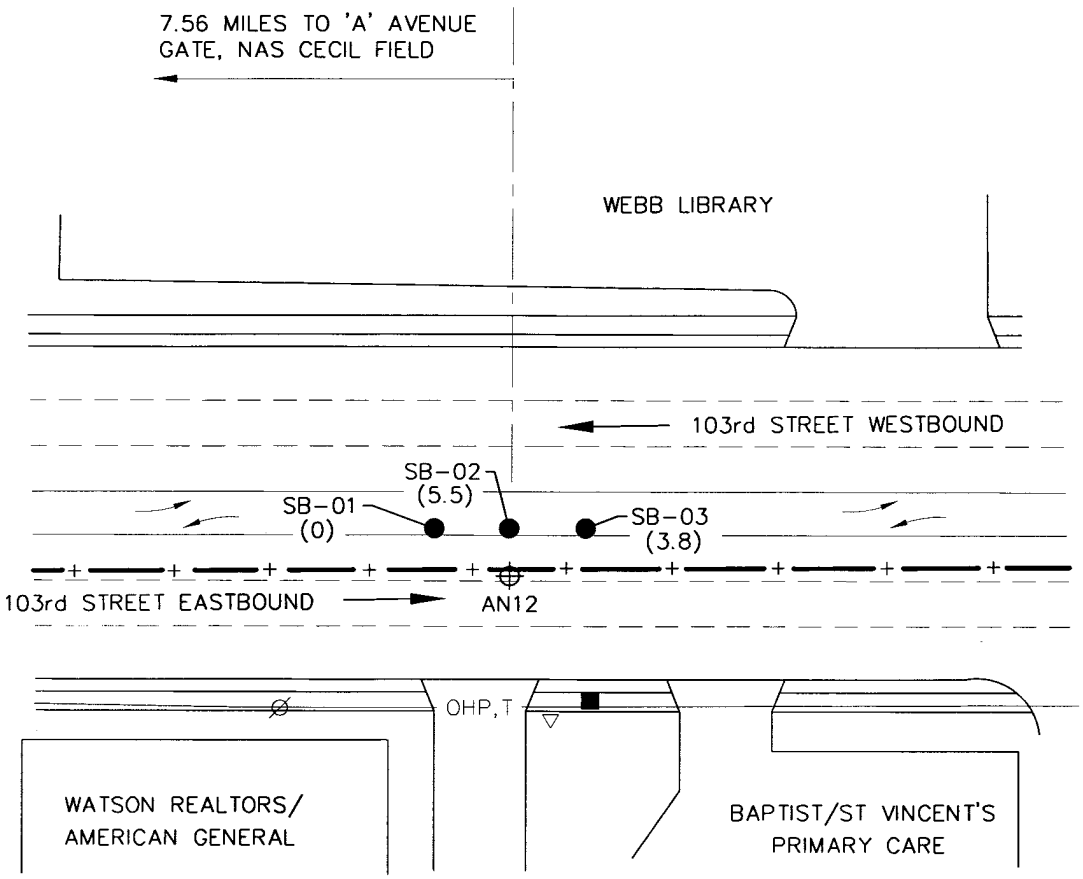

NOTE:

1. SOIL AND GROUNDWATER LABORATORY ANALYTICAL RESULTS INDICATED NO CONTAMINANTS ABOVE FDEP TARGET LEVELS IN EACH OF THE BORINGS.

LEGEND:

OHP,T	OVERHEAD TRANSMISSION LINE
●	SOIL BORING
⊕	ANOMALY OR VALVE LOCATION
—+—	JET FUEL PIPELINE
(5.5)	OVA RESULTS IN PARTS PER MILLION (PPM)

0 50 100
SCALE IN FEET

DRAWN BY MF	DATE 4/9/99	SITE PLAN, SAMPLE LOCATIONS, AND SOIL VAPOR SCREENING RESULTS CF-AN12 NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA	CONTRACT NO. 0013
CHECKED BY	DATE		APPROVED BY DATE
COST/SCHED-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 3.10.1 REV. 0

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FORM CADD NO. SDIV_AH.DWG - REV 0 - 1/20/98

Table 3.10.1
Soil Vapor Screening Results for CF-AN12

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Soil Boring Number	Date of Measurement	Sample Interval (ft bls)	PID Measurement (ppm)
SB-01	3/16/1999	2	0.0
		4	0.0
		6	0.0
		8	0.0
		10	0.0
		12	0.0
SB-02	3/9/1999	2	0.0
		4	0.0
		6	0.0
		8	0.0
		10	0.0
		12	5.5
SB-03	3/16/1999	2	0.0
		4	0.0
		6	0.0
		8	0.0
		10	0.0
		12	3.8

Notes: Soil borings analyzed with a PID

Table 3.10.2
Laboratory Soil Analysis Summary for CF-AN12

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	SB-03 @ 10 ft			
		3/16/1999			
Volatile Organic Compounds (USEPA Method 8021B) (µg/kg)					
MTBE	200	2.0U			
Benzene	7	1.6I			
Toluene	500	11			
Chlorobenzene	1300	1.0U			
Ethylbenzene	600	1.6I			
Total Xylenes	200	5.8I			
1,3-Dichlorobenzene	300	1.0U			
1,4-Dichlorobenzene	2200	1.0U			
1,2 Dichloroethane	10	1.0U			
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/kg)					
Naphthalene	1700	190U			
1-Methylnaphthalene	2200	380U			
2-Methylnaphthalene	6100	380U			
Acenaphthylene	27000	380U			
Acenaphthene	2100	190U			
Phenanthrene	250000	380U			
Anthracene	2500000	20U			
Fluorene	160000	38U			
Fluoranthene	1200000	38U			
Pyrene	880000	19U			
Benzo (a) Anthracene	1400	19U			
Chrysene	77000	19U			
Benzo (b) fluoranthene	1400	38U			
Benzo (k) fluoranthene	15000	20U			
Benzo (a) pyrene	100	20U			
Dibenzo (a,h) anthracene	100	38U			
Benzo (g,h,i) perylene	2300000	38U			
Indeno (1,2,3-cd) pyrene	1500	19U			

Notes: [1]Chapter 62-777, FAC (August 1999). Most stringent value of groundwater leachability and direct exposure limits.
I = value is between MDL and PQL
U = constituent not detected

3.10.4 Temporary Well Point Sampling

During the DPT investigation, the soil borings at the site were converted to temporary wells and the DPT screen was deployed from 9 to 13 ft bls in each boring. The groundwater samples were collected and analyzed as described in Section 2.4.4. Groundwater samples were placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. The groundwater analytical results, presented on Table 3.10.3, indicate no VOAs or PAHs at or above FDEP GCTLs. A Groundwater Analytical Results figure was not created since results did not exceed GCTLs. The complete set of analytical results is presented in Appendix D.

3.10.5 Monitoring Well Sampling

Permanent monitoring wells were not installed at CF-AN12 based on the results of the DPT investigation.

3.10.6 Discussion

Data obtained during the DPT assessment indicated no OVA headspace readings above 10 ppm in the three soil borings installed at Site CF-AN12. The confirmatory soil sample collected for laboratory analysis indicated soil analytical results below SCTLs for all petroleum COCs (Chapter 62-770, FAC). Groundwater samples collected from temporary wells indicated that dissolved hydrocarbon concentrations were below GCTLs for all COCs (Chapter 62-770, FAC).

Table 3.10.3
Groundwater Analytical Results for CF-AN12

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	TMW-01	TMW-02	TMW-03
		3/16/1999	3/16/1999	3/16/1999
Volatile Organic Compounds (USEPA Method 8021B) (µg/L)				
Benzene	1	ND	ND	ND
Ethylbenzene	30	ND	ND	ND
Toluene	40	ND	ND	ND
Total Xylenes	20	ND	ND	ND
MTBE	50	ND	ND	ND
1,2 Dichloroethane	3	ND	ND	ND
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/L)				
Naphthalene	20	ND	ND	ND
Acenaphthylene	210	ND	ND	ND
Acenaphthene	20	ND	ND	ND
Phenanthrene	210	ND	ND	ND
Anthracene	2100	0.06	ND	ND
Fluoranthene	280	0.19	ND	ND
Pyrene	210	0.29	ND	ND
Benzo(a)anthracene	0.2	ND	ND	ND
Chrysene	4.8	ND	ND	ND
Benzo(b)fluoranthene	0.2	ND	ND	ND
Benzo(k)fluoranthene	0.5	ND	ND	ND
Benzo(a)pyrene	0.2	0.06	0.08	ND
Dibenz(a,h)anthracene	0.2	ND	ND	ND
Benzo(g,h,i)perylene	210	ND	ND	ND
Indeno(1,2,3-cd)pyrene	0.2	0.05	ND	ND

Notes: [1]Chapter 62-770, FAC (August, 1999)
ND = no constituents detected

3.11 ANOMOLY NUMBER 13 (CF-AN13)

CF-AN13 is located on 103rd Street just east of Green Forrest Drive. The location of CF-AN13 is indicated on Figure 1-2 (the Site Vicinity Map) and Figure 3.11.1 (the combined Site Plan, Sample Locations, and Soil Vapor Screening Results Map). TtNUS mobilized to site CF-AN13 on March 16, 1999 for the DPT investigation.

3.11.1 Site Lithology

The site is underlain by a gray fine-grained sand to a depth of 6 ft bls. At 6 ft bls, the site is underlain by a gray/brown fine-grained silty sand. This soil type extends to at least 8 ft bls, the maximum depth drilled at the site during the assessment. Soil boring logs are included in Appendix A.

3.11.2 Soil Vapor

The vertical and horizontal extent of petroleum impacted soil in the vadose zone was assessed through soil headspace analysis performed during the DPT investigation. Three soil borings (CF-AN13-SB-01 through 03) were advanced to an approximate depth of 8 ft bls at the locations shown on Figure 3.11.1. Due to utility conflicts, a soil boring was not advanced to the south of the anomaly. Groundwater was encountered at 7 ft bls. Soil samples were collected at 2-ft intervals and the samples were screened for hydrocarbon vapors with an OVA-PID as described in Section 2.4.2. The results of the soil vapor screening, presented in the Table 3.11.1, indicated no OVA-PID headspace readings above 10 ppm. The DPT sample and boring logs for CF-AN13 are included in Appendix A.

3.11.3 Soil Quality

Based on the results of the soil headspace analyses, one soil sample was collected for laboratory analysis. Discrete soil sample CF-AN13-SB-01-06 was collected at a depth of 6 ft bls. The soil sample was placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. The confirmatory sample collected at SB-01 contained no VOAs or PAHs at or above FDEP SCTLs. The results of the laboratory soil analysis are summarized on Table 3.11.2. A Laboratory Soil Analytical Results figure was not created since results did not exceed SCTLs. The complete set of analytical results is presented in Appendix D.

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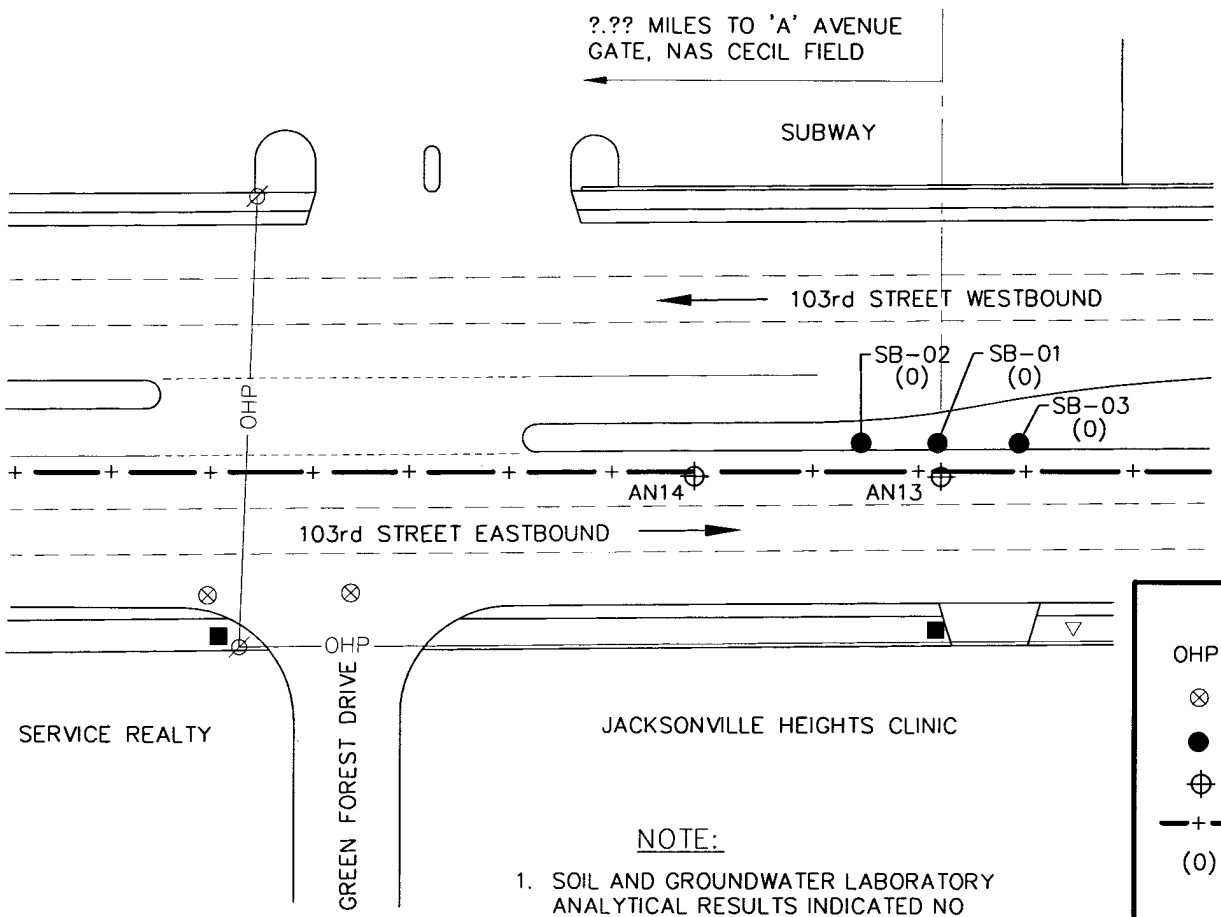


NOTE:

1. SOIL AND GROUNDWATER LABORATORY ANALYTICAL RESULTS INDICATED NO CONTAMINANTS ABOVE FDEP TARGET LEVELS IN EACH OF THE BORINGS.

LEGEND:

OHP	OVERHEAD TRANSMISSION LINE
⊗	MANHOLE COVER
●	SOIL BORING
⊕	ANOMALY OR VALVE LOCATION
—+—	JET FUEL PIPELINE
(0)	OVA RESULTS IN PARTS PER MILLION (PPM)

0 50 100
SCALE IN FEET

DRAWN BY MF	DATE 4/9/99	SITE PLAN, SAMPLE LOCATIONS, AND SOIL VAPOR SCREENING RESULTS CF-AN13 NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA	CONTRACT NO. 0013
CHECKED BY	DATE		APPROVED BY / DATE
COST/SCHED-AREA			APPROVED BY / DATE
SCALE AS NOTED			DRAWING NO. FIGURE 3.11.1 / REV. 0

FORM CADD NO. SDIV_AH.DWG - REV 0 - 1/20/98

Table 3.11.1
Soil Vapor Screening Results for CF-AN13

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Soil Boring Number	Date of Measurement	Sample Interval (ft bls)	PID Measurement (ppm)
SB-01	3/16/1999	2	0.0
		4	0.0
		6	0.0
		8	0.0
SB-02	3/16/1999	2	0.0
		4	0.0
		6	0.0
		8	0.0
SB-03	3/9/1999	2	0.0
		4	0.0
		6	0.0
		8	0.0

Notes: Soil borings analyzed with a PID

Table 3.11.2
Laboratory Soil Analysis Summary for CF-AN13

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	SB-01 @ 6 ft				
		3/16/1999				
Volatile Organic Compounds (USEPA Method 8021B) (µg/kg)						
MTBE	200	2.0U				
Benzene	7	1.0U				
Toluene	500	1.0U				
Chlorobenzene	1300	1.0U				
Ethylbenzene	600	1.0U				
Total Xylenes	200	2.0U				
1,3-Dichlorobenzene	300	1.0U				
1,4-Dichlorobenzene	2200	1.0U				
1,2 Dichloroethane	10	1.0U				
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/kg)						
Naphthalene	1700	19U				
1-Methylnaphthalene	2200	38U				
2-Methylnaphthalene	6100	38U				
Acenaphthylene	27000	38U				
Acenaphthene	2100	19U				
Phenanthrene	250000	38U				
Anthracene	2500000	2.0U				
Fluorene	160000	3.8U				
Fluoranthene	1200000	3.8U				
Pyrene	880000	1.9U				
Benzo (a) Anthracene	1400	1.9U				
Chrysene	77000	1.9U				
Benzo (b) fluoranthene	1400	3.0U				
Benzo (k) fluoranthene	15000	2.0U				
Benzo (a) pyrene	100	2.0U				
Dibenzo (a,h) anthracene	100	3.8U				
Benzo (g,h,i) perylene	2300000	3.8U				
Indeno (1,2,3-cd) pyrene	1500	1.9U				

Notes: [1]Chapter 62-777,FAC (August 1999). Most stringent value of groundwater leachability and direct exposure limits.
U = constituent not detected

3.11.4 Temporary Well Point Sampling

During the DPT investigation, the soil borings at the site were converted to temporary wells and the DPT screen was deployed from 8 to 12 ft bls in each boring. The groundwater samples were collected and analyzed as described in Section 2.4.4. Groundwater samples were placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. The groundwater analytical results, presented on Table 3.11.3, indicate no VOAs or PAHs at or above FDEP GCTLs. A Groundwater Analytical Results figure was not created since results did not exceed GCTLs. The complete set of analytical results is presented in Appendix D.

3.11.5 Monitoring Well Sampling

Permanent monitoring wells were not installed at CF-AN13 based on the results of the DPT investigation.

3.11.6 Discussion

Data obtained during the DPT assessment indicated no OVA headspace readings above 10 ppm from the three soil borings at Site CF-AN13. The confirmatory soil sample collected for laboratory analysis indicated soil analytical results below SCTLs for all petroleum COCs (Chapter 62-770, FAC). Groundwater samples collected from temporary wells indicated that dissolved hydrocarbon concentrations were below GCTLs for all COCs (Chapter 62-770, FAC).

Table 3.11.3
Groundwater Analytical Results for CF-AN13

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	TMW-01	TMW-02	TMW-03
		3/16/1999	3/16/1999	3/16/1999
Volatile Organic Compounds (USEPA Method 8021B) (µg/L)				
Benzene	1	ND	ND	ND
Ethylbenzene	30	ND	ND	ND
Toluene	40	ND	ND	ND
Total Xylenes	20	ND	ND	ND
MTBE	50	ND	ND	ND
1,2 Dichloroethane	3	ND	ND	ND
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/L)				
Naphthalene	20	ND	ND	ND
Acenaphthylene	210	ND	ND	ND
Acenaphthene	20	ND	ND	ND
Phenanthrene	210	ND	ND	ND
Anthracene	2100	ND	ND	ND
Fluoranthene	280	ND	ND	ND
Pyrene	210	ND	ND	ND
Benzo(a)anthracene	0.2	ND	ND	ND
Chrysene	4.8	ND	ND	ND
Benzo(b)fluoranthene	0.2	ND	ND	ND
Benzo(k)fluoranthene	0.5	ND	ND	ND
Benzo(a)pyrene	0.2	ND	ND	ND
Dibenz(a,h)anthracene	0.2	ND	ND	ND
Benzo(g,h,i)perylene	210	ND	ND	ND
Indeno(1,2,3-cd)pyrene	0.2	ND	ND	ND

Notes: [1]Chapter 62-770, FAC (August, 1999)
ND = no constituents detected

3.12 ANOMOLY NUMBER 14 (CF- AN14)

CF-AN14 is located on 103rd Street near the intersection with Green Forest Drive. The location of CF-AN14 is indicated on Figure 1-2 (the Site Vicinity Map) and Figure 3.12.1 (the combined Site Plan, Sample Locations, and Soil Vapor Screening Results Map). TtNUS mobilized to site CF-AN14 on March 16, 1999 for the DPT portion of the investigation. On November 29, 1999, TtNUS revisited the site to install one permanent groundwater monitoring well. The permanent well was developed on December 9, 1999, sampled on December 15, 1999, and resampled on February 9, 2000.

3.12.1 Site Lithology

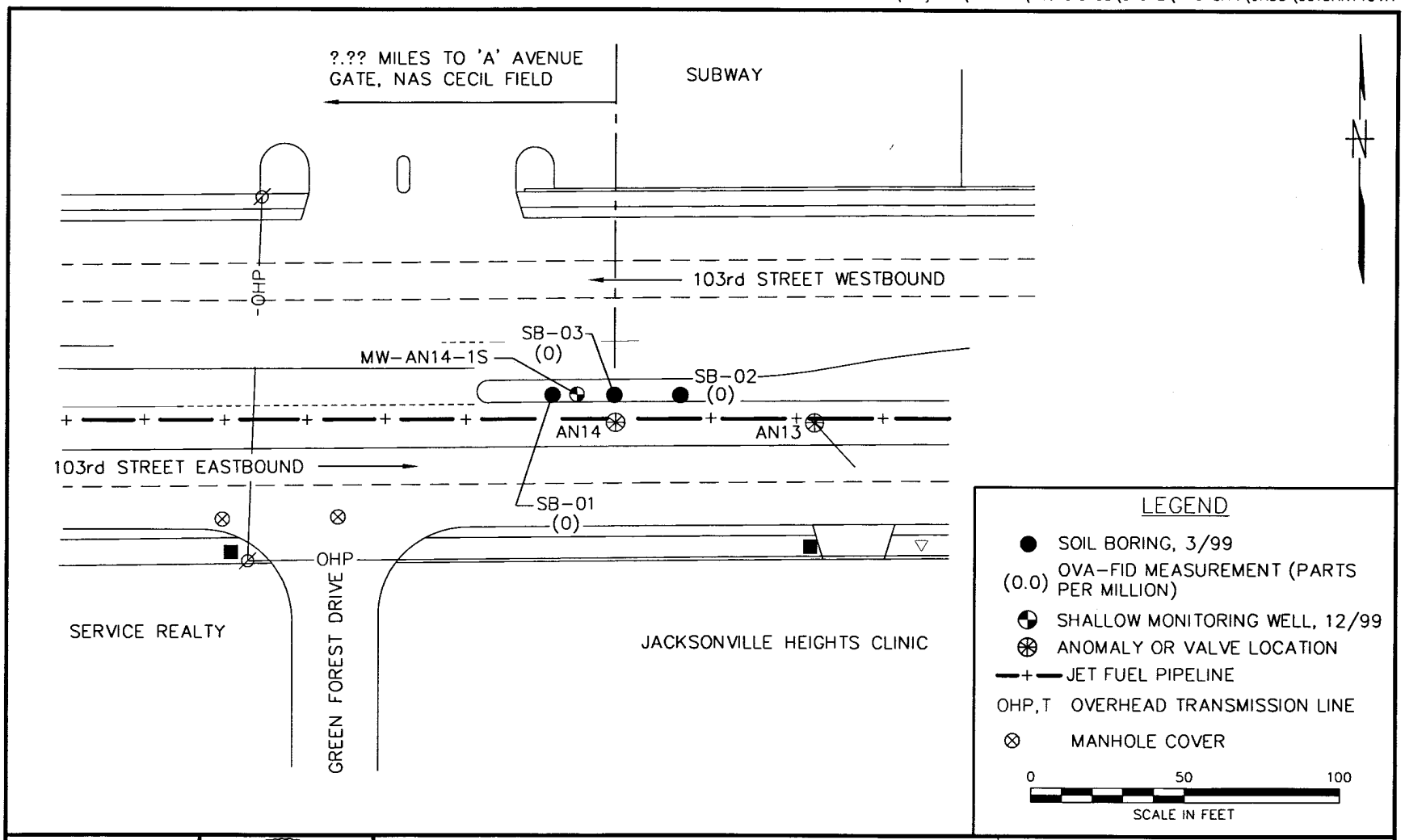
The site is underlain by a gray fine-grained silty sand to a depth of 6 ft bls. At 6 bls, the site is underlain by a light brown fine-grained silty sand. This soil type extends to at least 12 ft bls, the maximum depth advanced, during DPT assessment activities. Soil boring logs for CF-AN14 are included in Appendix A.

3.12.2 Soil Vapor

The vertical and horizontal extent of petroleum impacted soil in the vadose zone was assessed through soil headspace analysis performed during the DPT investigation. Three soil borings (CF-AN14-SB-01 through 03) were advanced to depths ranging from 8 to 12 ft bls at the locations shown on Figure 3.12.1. Due to utility conflicts, no soil boring was advanced to the south of the anomaly. Groundwater was encountered at 8 ft bls. Soil samples were collected at 2-ft intervals, and the samples were screened for hydrocarbon vapors with an OVA-PID as described in Section 2.4.2. The results of the soil vapor screening, presented in the Table 3.12.1, indicated no soils with hydrocarbon vapors above 10 ppm. The DPT sample and boring logs for CF-AN14 are included in Appendix A.

3.12.3 Soil Quality

Based on the results of the soil headspace analyses, one soil sample was collected for confirmation laboratory analysis from soil boring CF-AN14-SB-03. Discreet soil sample CF-AN14-SB-03-07 was collected at a depth of 7 ft bls. The soil sample was placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. The confirmatory sample collected at SB-03 contained no VOAs or PAHs at or above FDEP SCTLs. The results of the laboratory analysis are summarized on Table 3.12.2. A Laboratory Soil Analytical Results figure was not created since results did not exceed SCTLs. The complete set of analytical results is presented in Appendix D.



DRAWN BY LLK DATE 1/2/02	DEPARTMENT OF THE NAVY SOUTHERN DIV FACILITIES ENGINEERING COMD	SITE PLAN, SAMPLE LOCATIONS, AND SOIL VAPOR SCREENING RESULTS CF-AN14 NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA	CONTRACT NO. 0013
CHECKED BY DATE			APPROVED BY DATE
COST/SCHED-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 3.12.1 REV. 0

Table 3.12.1
Soil Vapor Screening Results for CF-AN14

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Soil Boring Number	Date of Measurement	Sample Interval (ft bls)	PID Measurement (ppm)
SB-01	3/16/1999	2	0.0
		4	0.0
		6	0.0
		8	0.0
		10	0.0
		12	0.0
SB-02	3/16/1999	2	0.0
		4	0.0
		6	0.0
		8	0.0
SB-03	3/16/1999	2	0.0
		4	0.0
		6	0.0
		8	0.0

Notes: Soil borings analyzed with a PID

Table 3.12.2
Laboratory Soil Analysis Summary for CF-AN14

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	SB-03 @ 7 ft			
		3/16/1999			
Volatile Organic Compounds (USEPA Method 8021B) (µg/kg)					
MTBE	200	2.0U			
Benzene	7	1.0U			
Toluene	500	1.0U			
Chlorobenzene	1300	1.0U			
Ethylbenzene	600	1.0U			
Total Xylenes	200	2.0U			
1,3-Dichlorobenzene	300	1.0U			
1,4-Dichlorobenzene	2200	1.0U			
1,2 Dichloroethane	10	1.0U			
Polynuclear Aromatic Hydrocarbons(USEPA Method 8310) (µg/kg)					
Naphthalene	1700	18U			
1-Methylnaphthalene	2200	37U			
2-Methylnaphthalene	6100	50			
Acenaphthylene	27000	37U			
Acenaphthene	2100	18U			
Phenanthrene	250000	37U			
Anthracene	2500000	2.0U			
Fluorene	160000	3.7U			
Fluoranthene	1200000	3.7U			
Pyrene	880000	1.8U			
Benzo (a) Anthracene	1400	1.8U			
Chrysene	77000	1.8U			
Benzo (b) fluoranthene	1400	120			
Benzo (k) fluoranthene	15000	2.0U			
Benzo (a) pyrene	100	2.0U			
Dibenzo (a,h) anthracene	100	4.0I			
Benzo (g,h,i) perylene	2300000	19			
Indeno (1,2,3-cd) pyrene	1500	1.8U			

Notes: [1]Chapter 62-777, FAC (August 1999).
Most strigent value of groundwater leachability and direct exposure limits.
I = value is between MDL and PQL
U = constituent not detected

3.12.4 Temporary Well Point Sampling

During the DPT investigation, the soil borings at the site were converted to temporary wells and the DPT screen was deployed from 8 to 13 ft bls at each soil boring location. The groundwater samples were collected and analyzed as described in Section 2.4.2. Groundwater samples were placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. The groundwater sample collected from the temporary monitoring well installed in SB-01 (TMW-01) indicated that benzo(b)fluoranthene (0.59 µg/L) was detected above the regulatory limit of 0.2 µg/L. Other tested constituents were not detected at or above GCTLs in the groundwater samples. The groundwater analytical results are summarized on Table 3.12.3 and results exceeding GCTLs are depicted on Figure 3.12.2. The complete set of analytical results is presented in Appendix D.

3.12.5 Monitoring Well Sampling

On November 29, 1999, TtNUS installed one permanent monitoring well, CF-AN14-1S, at the location indicated on Figure 3.12.1. The monitoring well was installed to a depth of 16 ft, and screened from 6 to 16 ft bls. The monitoring well was installed and developed as described in Section 2.3.2 and monitoring well installation and development logs are included in Appendix B. On December 15, 1999, TtNUS personnel collected a groundwater sample from monitoring well CF-AN14-1S. Analytical results from the groundwater sample indicated that benzo(b)fluoranthene (0.32 µg/L) concentration exceeded the GCTL. On February 9, 2000, the monitoring well was resampled and dissolved hydrocarbon concentrations were below GCTLs for all COCs (Chapter 62-770, FAC) (need info from P.C. to include in table). The groundwater analytical results are summarized on Table 3.12.3 and the complete set of analytical results is included in Appendix D.

3.12.6 Discussion

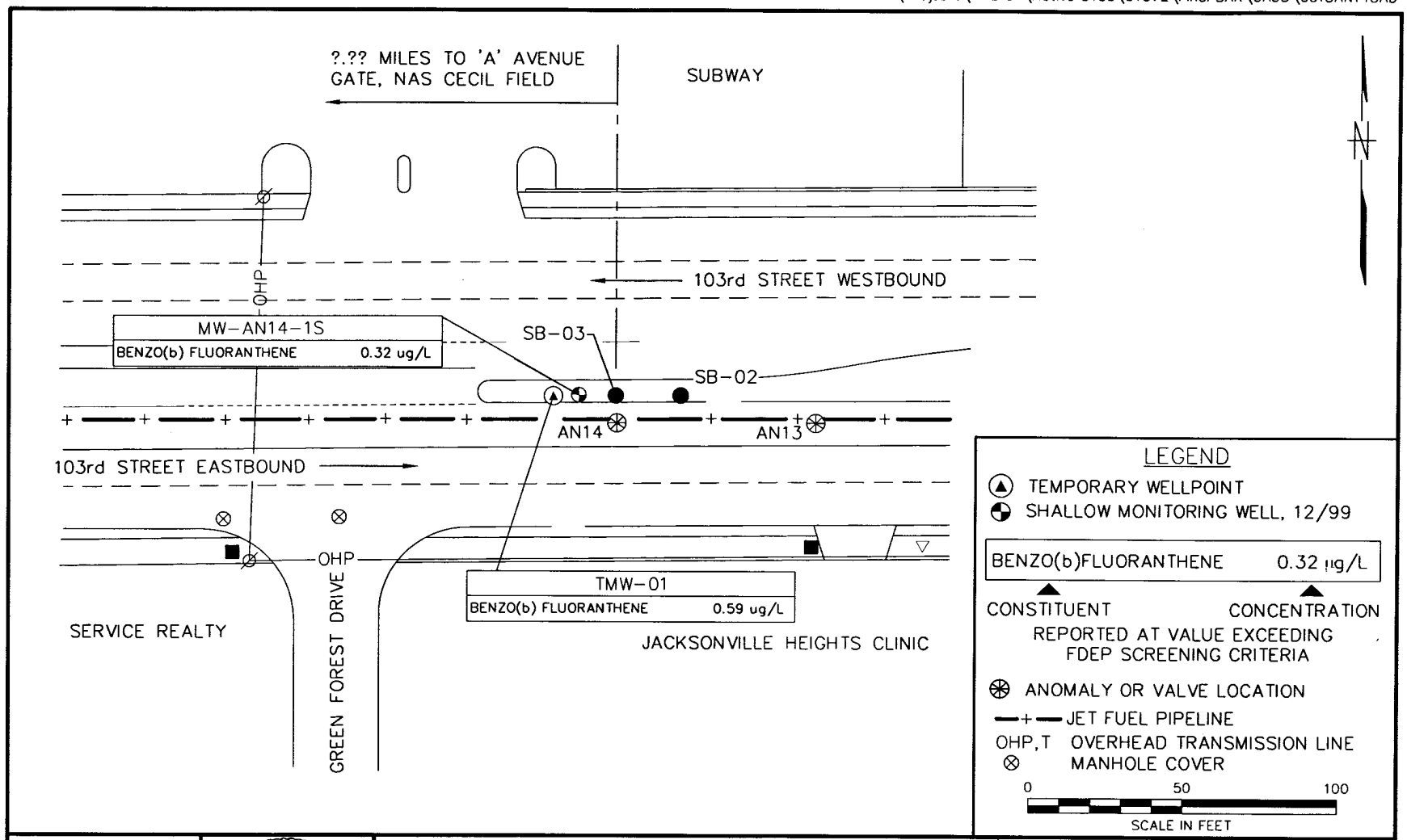
Data obtained during the DPT assessment indicated that of the three soil borings installed at Site CF-AN14, all OVA responses were less than 10 ppm. The confirmatory soil sample collected for laboratory analysis indicated soil analytical results below SCTLs for all COCs (Chapter 62-770, FAC). The groundwater sample collected from TMW-01 indicated that benzo(b)fluoranthene exceeded the GCTL concentration (Chapter 62-770, FAC). The analytical results from the permanent monitoring well installed at the site indicated benzo(b)fluoranthene exceeded the GCTL; however, when the well was resampled, dissolved hydrocarbon concentrations were below GCTLs for all COCs (Chapter 62-770, FAC).

Table 3.12.3
Groundwater Analytical Results for CF-AN14

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	TMW-01	TMW-02	TMW-03	MW-01
		3/16/1999	3/16/1999	3/16/1999	10/15/2000
Volatile Organic Compounds (USEPA Method 8021B) (µg/L)					
Benzene	1	ND	ND	ND	NA
Ethylbenzene	30	ND	ND	ND	NA
Toluene	40	ND	ND	ND	NA
Total Xylenes	20	ND	ND	ND	NA
MTBE	50	ND	ND	ND	NA
1,2 Dichloroethane	3	ND	ND	ND	NA
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/L)					
Naphthalene	20	ND	ND	ND	ND
Acenaphthylene	210	ND	ND	ND	ND
Acenaphthene	20	ND	ND	ND	ND
Phenanthrene	210	ND	ND	ND	ND
Anthracene	2100	ND	ND	ND	ND
Fluoranthene	280	0.11	ND	ND	0.13 I
Pyrene	210	ND	ND	ND	ND
Benzo(a)anthracene	0.2	0.08	ND	ND	ND
Chrysene	4.8	ND	ND	ND	ND
Benzo(b)fluoranthene	0.2	**0.59**	ND	ND	**0.32**
Benzo(k)fluoranthene	0.5	ND	ND	ND	ND
Benzo(a)pyrene	0.2	ND	ND	ND	0.060 I
Dibenz(a,h)anthracene	0.2	ND	ND	ND	ND
Benzo(g,h,i)perylene	210	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	0.2	ND	ND	ND	ND

Notes: [1]Chapter 62-770, FAC (August, 1999)
BOLD = Exceeds target levels
NA = not analyzed
ND = no constituents detecteded



DRAWN BY LLK	DATE 1/2/02	GROUNDWATER ANALYTICAL RESULTS EXCEEDING FDEP SCREENING CRITERIA CF-AN14 NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA	CONTRACT NO. 0013
CHECKED BY	DATE		APPROVED BY DATE
COST/SCHED-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 3.12.2 REV. 0

3.13 ANOMOLY NUMBER 15 (CF- AN15)

CF-AN15 is located on 103rd Street just west of Ricker Road. The location of CF-AN15 is indicated on Figure 1-2 (the Site Vicinity Map) and Figure 3.13.1 (the combined Site Plan, Sample Locations, and Soil Vapor Screening Results Map). TtNUS mobilized to site CF-AN15 on March 15, 1999 for the DPT portion of the investigation. On November 30, 1999, TtNUS revisited the site to install one permanent groundwater monitoring well. The permanent well was developed on December 10, 1999 and sampled on December 15, 1999.

3.13.1 Site Lithology

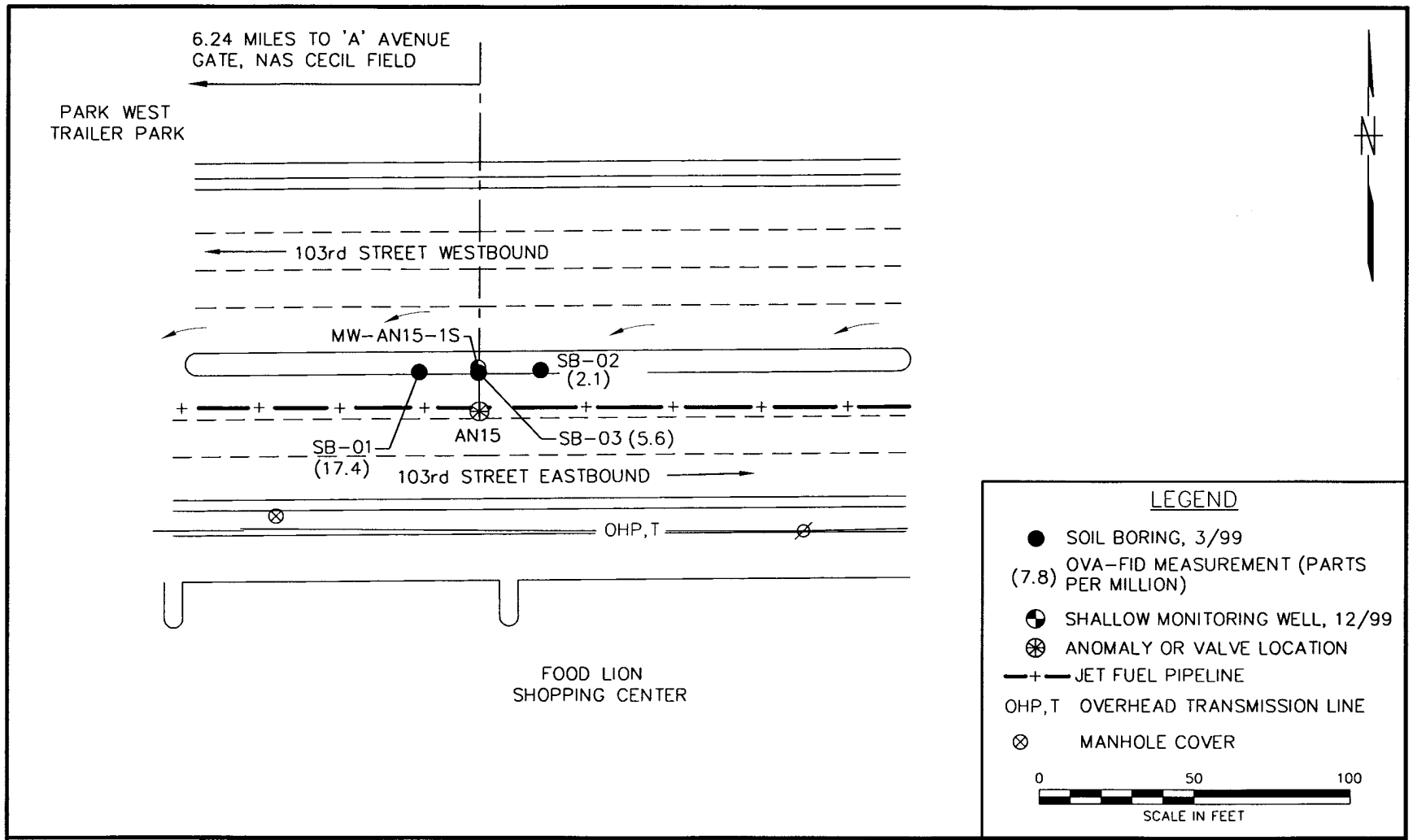
The site is underlain by a gray fine-grained sand to a depth of 7 ft bls. At 7 ft bls the site is underlain by a gray/brown fine-grained silty sand. This soil type extends to at least 10 ft bls, the maximum depth advanced, during DPT assessment activities. Soil boring logs for CF-AN15 are included in Appendix A.

3.13.2 Soil Vapor

The vertical and horizontal extent of petroleum impacted soil in the vadose zone was assessed through soil headspace analysis performed during the DPT investigation. Three soil borings (CF-AN15-SB-01 through 03) were advanced to a depth of 10 ft bls at the locations shown on Figure 3.13.1. Due to utility conflicts, no soil borings were advanced to the south of the anomaly. Groundwater was encountered at 8 to 9 ft bls. Soil samples were collected at 2-ft intervals and the samples were screened for hydrocarbon vapors with an OVA-PID as described in Section 2.4.2. The results of the soil vapor screening, presented in the Table 3.13.1, indicated soils from SB-01 with hydrocarbon vapors above 10 ppm. The other soil borings did not contain hydrocarbon vapors above 10 ppm. The DPT sample and boring logs for CF-AN15 are included in Appendix A.

3.13.3 Soil Quality

Based on the results of the soil headspace analyses, one soil sample was collected for confirmation laboratory analysis from soil boring SB-01. Discreet soil sample CF-AN15-SB-01-06 was collected at a depth of 6 ft bls. The soil sample was placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. The confirmatory sample collected at SB-01 contained no VOAs or PAHs at or above FDEP SCTLs. The results of the laboratory analysis are summarized on Table 3.13.2. A Laboratory Soil Analytical Results figure was not created since results did not exceed SCTLs. The complete set of analytical results is presented in Appendix D.



DRAWN BY LLK DATE 1/2/02	SITE PLAN, SAMPLE LOCATIONS, AND SOIL VAPOR SCREENING RESULTS CF-AN15 NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA	CONTRACT NO. 0013
CHECKED BY DATE		APPROVED BY DATE
COST/SCHED-AREA		APPROVED BY DATE
SCALE AS NOTED		DRAWING NO. FIGURE 3.13.1 REV. 0

Table 3.13.1
Soil Vapor Screening Results for CF-AN15

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Soil Boring Number	Date of Measurement	Sample Interval (ft bls)	PID Measurement (ppm)
SB-01	3/15/1999	2	12.1
		4	14.2
		6	17.4
		8	13.5
		10	15.0
SB-02	3/15/1999	2	0.0
		4	2.1
		6	0.0
		8	0.0
		10	0.0
SB-03	3/15/1999	2	0.0
		4	0.0
		6	0.0
		8	0.6
		10	5.6

Notes: Soil borings analyzed with a PID

Table 3.13.2
Laboratory Soil Analysis Summary for CF-AN15

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	SB-01 @ 6 ft				
		3/15/1999				
Volatile Organic Compounds (USEPA Method 8021B) (µg/kg)						
MTBE	200	2.0U				
Benzene	7	1.2U				
Toluene	500	1.2U				
Chlorobenzene	1300	1.2U				
Ethylbenzene	600	1.2U				
Total Xylenes	200	2.0U				
1,3-Dichlorobenzene	300	1.0U				
1,4-Dichlorobenzene	2200	1.0U				
1,2 Dichloroethane	10	1.0U				
Polynuclear Aromatic Hydrocarbons(USEPA Method 8310) (µg/kg)						
Naphthalene	1700	18U				
1-Methylnaphthalene	2200	35U				
2-Methylnaphthalene	6100	35U				
Acenaphthylene	27000	35U				
Acenaphthene	2100	18U				
Phenanthrene	250000	35U				
Anthracene	2500000	2.0U				
Fluorene	1,60000	3.5U				
Fluoranthene	1200000	34				
Pyrene	880000	29				
Benzo (a) Anthracene	1400	13				
Chrysene	77000	21				
Benzo (b) fluoranthene	1400	18				
Benzo (k) fluoranthene	15000	8.0				
Benzo (a) pyrene	100	21				
Dibenzo (a,h) anthracene	100	3.5U				
Benzo (g,h,i) perylene	2300000	17				
Indeno (1,2,3-cd) pyrene	1500	16				

Notes: [1]Chapter 62-777, FAC (August 1999). Most stringent value of groundwater leachability and direct exposure limits.
U = constituent not detected

3.13.4 Temporary Well Point Sampling

During the DPT investigation, the soil borings at the site were converted to temporary wells and the DPT screen was deployed from 8 to 12 ft bls at each soil boring location. The groundwater samples were collected and analyzed as described in Section 2.4.2. Groundwater samples were placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. The groundwater sample collected from TMW-01 indicated that benzo(b)fluoranthene (0.24 µg/L) was detected above the regulatory limit of 0.2 µg/L. In the groundwater sample collected from TMW-03, benzo(b)fluoranthene (1.4 µg/L) was detected above the regulatory limit. Other tested constituents were not detected at or above GCTLs in the groundwater samples. The groundwater analytical results are summarized on Table 3.13.3 and results exceeding GCTLs are depicted on Figure 3.13.2. The complete set of analytical results is presented in Appendix D.

3.13.5 Monitoring Well Sampling

On November 30, 1999, TtNUS installed one permanent monitoring well, CEF-AN15-1S, at the location indicated on Figure 3.13.1. The monitoring well was installed to a depth of 16 ft, and screened from 6 to 16 ft bls. The monitoring well was installed and developed as described in Section 2.3.2 and monitoring well installation and development logs are included in Appendix B. On December 15, 1999, TtNUS personnel collected a groundwater sample from monitoring well CEF-AN15-1S. Analytical results from the groundwater sample indicated dissolved hydrocarbon concentrations were below GCTLs for all COCs. The groundwater analytical results are summarized on Table 3.13.3 and the complete set of analytical results is included in Appendix D.

3.13.6 Discussion

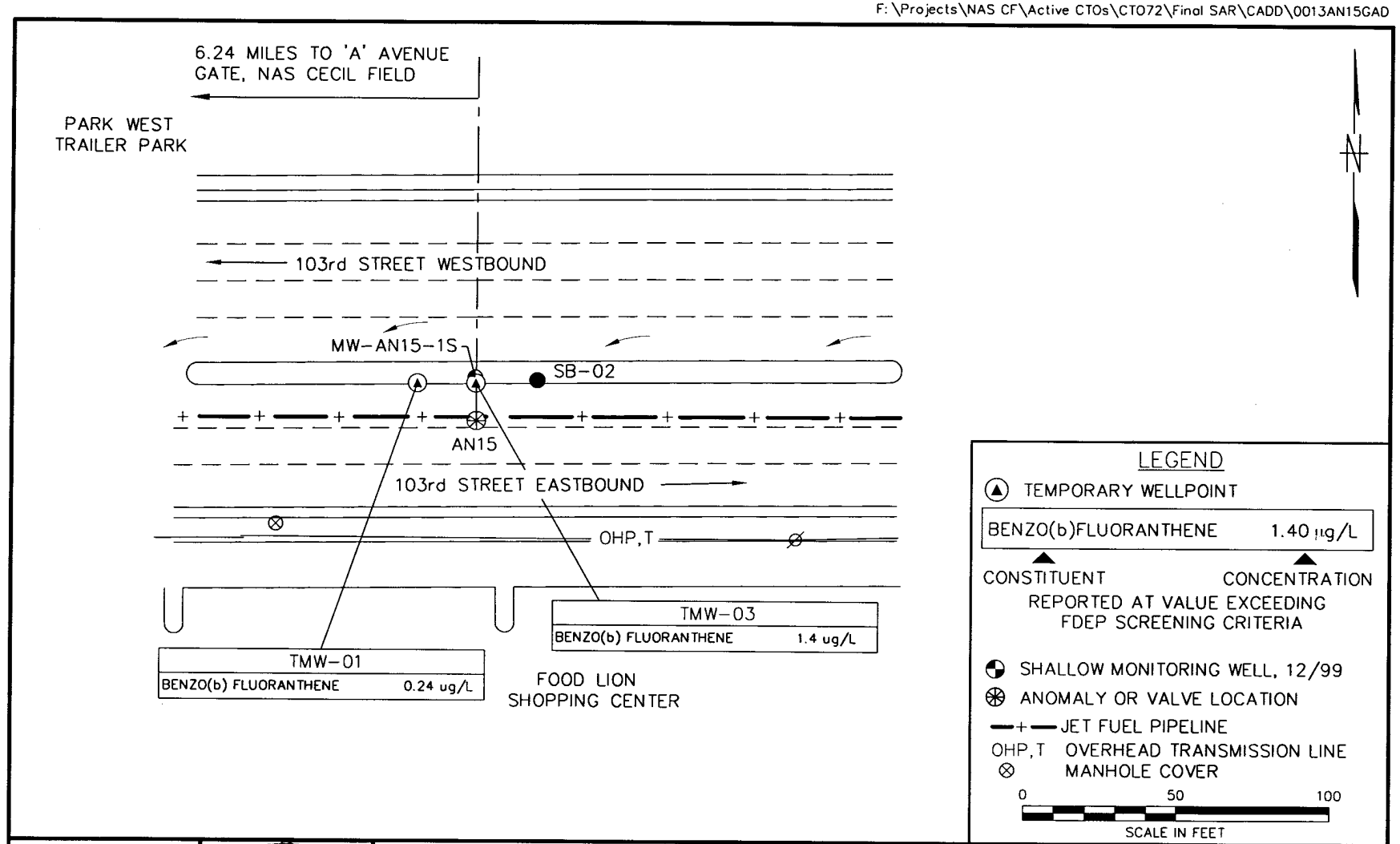
Data obtained during the DPT assessment indicated that one of three soil boring installed at Site CF-AN15 had an OVA response greater than 10 ppm. However, all OVA responses were less than 50 ppm. The confirmatory soil sample collected for laboratory analysis indicated soil analytical results below SCTLs for all COCs (Chapter 62-770, FAC). The groundwater samples collected from TMW-01 and TMW-03 indicated that benzo(b)fluoranthene exceeded the GCTL concentration (Chapter 62-770, FAC). However, the analytical results from the permanent monitoring well installed at the site indicated that dissolved hydrocarbon concentrations were below GCTLs for all COCs (Chapter 62-770, FAC).

Table 3.13.3
Groundwater Analytical Results for CF-AN15

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	TMW-01	TMW-02	TMW-03	MW-01
		3/15/1999	3/15/1999	3/15/1999	12/15/1999
Volatile Organic Compounds (USEPA Method 8021B) (µg/L)					
Benzene	1	ND	ND	ND	NA
Ethylbenzene	30	ND	ND	ND	NA
Toluene	40	ND	ND	ND	NA
Total Xylenes	20	ND	ND	ND	NA
MTBE	50	ND	ND	ND	NA
1,2 Dichloroethane	3	ND	ND	ND	NA
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/L)					
Naphthalene	20	ND	ND	ND	ND
Acenaphthylene	210	ND	ND	ND	ND
Acenaphthene	20	ND	ND	ND	ND
Phenanthrene	210	ND	ND	ND	ND
Anthracene	2100	ND	ND	0.07	ND
Fluoranthene	280	ND	ND	ND	0.2
Pyrene	210	ND	0.07	ND	0.10 I
Benzo(a)anthracene	0.2	ND	ND	ND	ND
Chrysene	4.8	ND	ND	ND	ND
Benzo(b)fluoranthene	0.2	**0.24**	ND	**1.4**	0.17 I
Benzo(k)fluoranthene	0.5	ND	ND	ND	ND
Benzo(a)pyrene	0.2	ND	ND	ND	ND
Dibenz(a,h)anthracene	0.2	ND	ND	ND	ND
Benzo(g,h,i)perylene	210	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	0.2	ND	ND	ND	ND

Notes: [1]Chapter 62-770, FAC (August, 1999)
BOLD = Exceeds target levels
NA = not analyzed
ND = no constituents detecteded
I = analyte detecteded; value between MDL and PQL



DRAWN BY LLK	DATE 1/2/02	GROUNDWATER ANALYTICAL RESULTS EXCEEDING FDEP SCREENING CRITERIA CF-AN15 NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA
CHECKED BY	DATE	
COST/SCHED-AREA		
SCALE AS NOTED		

DEPARTMENT OF THE NAVY ★ SOUTHERN DIV FACILITIES ENGINEERING COMD ★

CONTRACT NO. 0013		
APPROVED BY	DATE	
APPROVED BY	DATE	
DRAWING NO. FIGURE 3.13.2		REV. 0

3.14 ANOMOLY NUMBER 16 (CF-AN16)

CF-AN16 is located on 103rd Street near the intersection with Brannon Avenue. The location of CF-AN16 is indicated on Figure 1-2 (the Site Vicinity Map) and Figure 3.14.1 (the combined Site Plan, Sample Locations, and Soil Vapor Screening Results Map). TtNUS mobilized to site CF-AN16 on March 12, 1999 for the DPT investigation.

3.14.1 Site Lithology

The site is underlain by a light brown fine-grained sand to a depth of 10 ft bls. At 10 ft bls, the site is underlain by a gray/brown fine-grained silty sand. This soil type extends to at least 12 ft bls, the maximum depth drilled at the site during the assessment. Soil boring logs are included in Appendix A.

3.14.2 Soil Vapor

The vertical and horizontal extent of petroleum impacted soil in the vadose zone was assessed through soil headspace analysis performed during the DPT investigation. Four soil borings (CF-AN16-SB-01 through 04) were advanced to an approximate depths ranging from 10 to 12 ft bls at the locations shown on Figure 3.14.1. Groundwater was encountered at 9 to 11 ft bls. Soil samples were collected at 2-ft intervals and the samples were screened for hydrocarbon vapors with an OVA-PID as described in Section 2.4.2. The results of the soil vapor screening, presented in the Table 3.14.1, indicated no OVA-PID headspace readings above 10 ppm. The DPT sample and boring logs for CF-AN16 are included in Appendix A.

3.14.3 Soil Quality

Based on the results of the soil headspace analyses, one soil sample was collected for laboratory analysis. Discrete soil sample CF-AN16-SB-01-10 was collected at a depth of 10 ft bls. The soil sample was placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. The confirmatory sample collected at SB-01 contained no VOAs or PAHs at or above FDEP SCTLs. The results of the laboratory soil analysis are summarized on Table 3.14.2. A Laboratory Soil Analytical Results figure was not created since results did not exceed SCTLs. The complete set of analytical results is presented in Appendix D.

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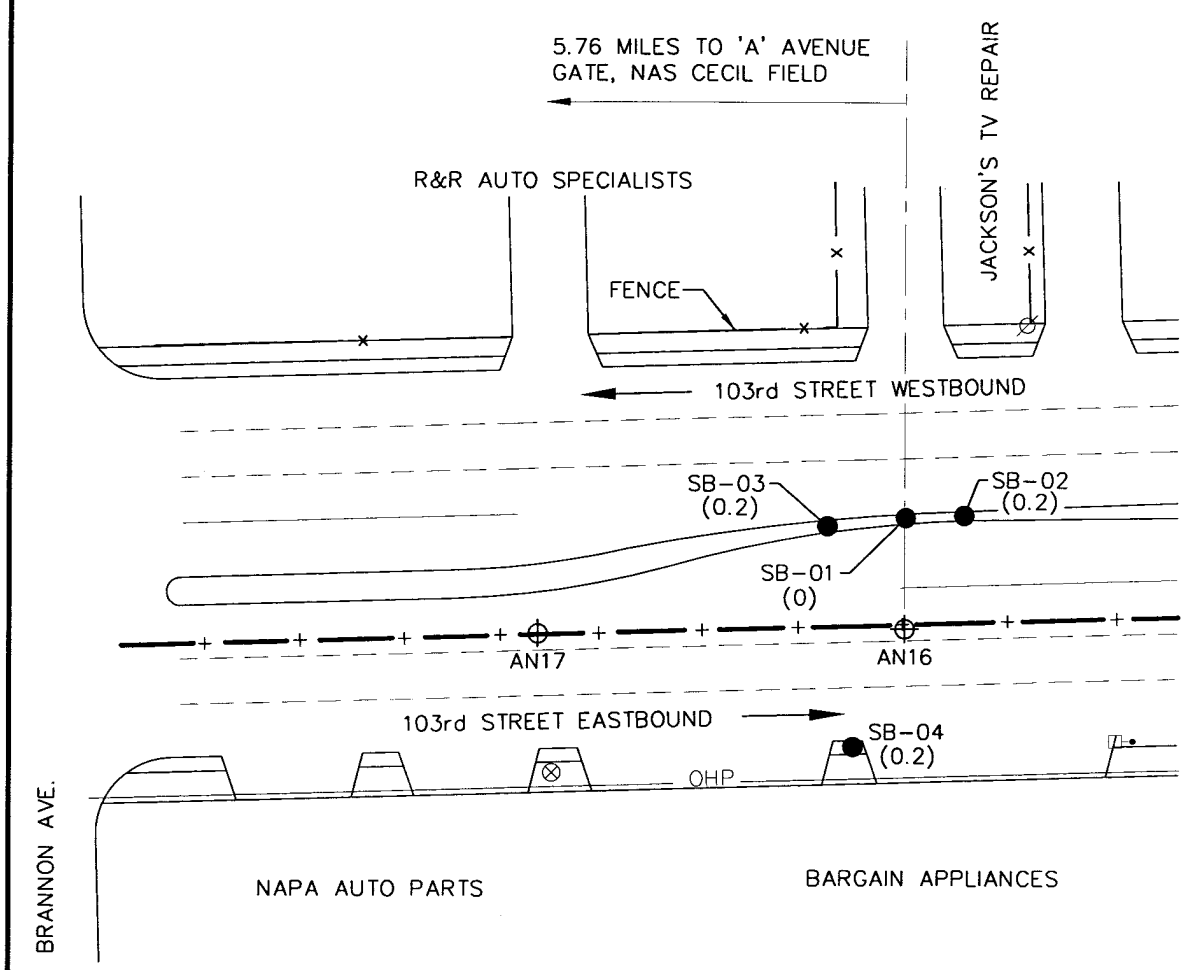

NOTE:

1. SOIL AND GROUNDWATER LABORATORY ANALYTICAL RESULTS INDICATED NO CONTAMINANTS ABOVE FDEP TARGET LEVELS IN EACH OF THE BORINGS.

LEGEND:

OHP	OVERHEAD TRANSMISSION LINE
⊗	MANHOLE COVER
●	SOIL BORING
⊕	ANOMALY OR VALVE LOCATION
—+—	JET FUEL PIPELINE
(0.2)	OVA RESULTS IN PARTS PER MILLION (PPM)

0 50 100
SCALE IN FEET

DRAWN BY MF	DATE 4/9/99	SITE PLAN, SAMPLE LOCATIONS, AND SOIL VAPOR SCREENING RESULTS CF-AN16 NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA	CONTRACT NO. 0013
CHECKED BY	DATE		APPROVED BY / DATE
COST/SCHED-AREA			APPROVED BY / DATE
SCALE AS NOTED			DRAWING NO. FIGURE 3.14.1 / REV. 0

FORM CADD NO. SDIV_AH.DWG - REV 0 - 1/20/98

Table 3.14.1
Soil Vapor Screening Results for CF-AN16

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Soil Boring Number	Date of Measurement	Sample Interval (ft bls)	PID Measurement (ppm)
SB-01	3/12/1999	2	0.0
		4	0.0
		6	0.0
		8	0.0
		10	0.0
		12	0.0
SB-02	3/12/1999	2	0.2
		4	0.0
		6	0.0
		8	0.1
		10	0.1
		12	0.2
SB-03	3/12/1999	2	0.2
		4	0.0
		6	0.0
		8	0.1
		10	0.1
		12	0.0
SB-04	3/12/1999	2	0.2
		4	0.0
		6	0.0
		8	0.0
		10	0.0

Notes: Soil borings analyzed with a PID

Table 3.14.2
Laboratory Soil Analysis Summary for CF-AN16

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	SB-01 @ 10 ft				
		3/12/1999				
Volatile Organic Compounds (USEPA Method 8021B) (µg/kg)						
MTBE	200	2.0U				
Benzene	7	1.2U				
Toluene	500	1.2U				
Chlorobenzene	1300	1.2U				
Ethylbenzene	600	1.2U				
Total Xylenes	200	2.0U				
1,3-Dichlorobenzene	300	1.2U				
1,4-Dichlorobenzene	2200	1.2U				
1,2 Dichloroethane	10	1.2U				
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/kg)						
Naphthalene	1700	21U				
1-Methylnaphthalene	2200	43U				
2-Methylnaphthalene	6100	43U				
Acenaphthylene	27000	43U				
Acenaphthene	2100	21U				
Phenanthrene	250000	43U				
Anthracene	2500000	2.0U				
Fluorene	160000	4.3U				
Fluoranthene	1200000	4.3U				
Pyrene	880000	2.1U				
Benzo (a) Anthracene	1400	2.1U				
Chrysene	77000	2.1U				
Benzo (b) fluoranthene	1400	4.0U				
Benzo (k) fluoranthene	15000	2.0U				
Benzo (a) pyrene	100	2.0U				
Dibenzo (a,h) anthracene	100	4.3U				
Benzo (g,h,i) perylene	2300000	4.3U				
Indeno (1,2,3-cd) pyrene	1500	2.1U				

Notes: [1]Chapter 62-777, FAC (August 1999). Most stringent value of groundwater leachability and direct exposure limits.
U = constituent not detected

3.14.4 Temporary Well Point Sampling

During the DPT investigation, the soil borings at the site were converted to temporary wells and the DPT screen was deployed from 10 to 14 ft bls in each boring. The groundwater samples were collected and analyzed as described in Section 2.4.4. Groundwater samples were placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. The groundwater analytical results, presented on Table 3.14.3, indicate no VOAs or PAHs at or above FDEP GCTLs. A Groundwater Analytical Results figure was not created since results did not exceed GCTLs. The complete set of analytical results is presented in Appendix D.

3.14.5 Monitoring Well Sampling

Permanent monitoring wells were not installed at CF-AN16 based on the results of the DPT investigation.

3.14.6 Discussion

Data obtained during the DPT assessment indicated no OVA headspace readings above 10 ppm from the four soil borings at Site CF-AN16. The confirmatory soil sample collected for laboratory analysis indicated soil analytical results below SCTLs for all petroleum COCs (Chapter 62-770, FAC). Groundwater samples collected from temporary wells indicated that dissolved hydrocarbon concentrations were below GCTLs for all COCs (Chapter 62-770, FAC).

Table 3.14.3
Groundwater Analytical Results for CF-AN16

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	TMW-01	TMW-02	TMW-03	TMW-04
		3/12/1999	3/12/1999	3/12/1999	3/12/1999
Volatile Organic Compounds (USEPA Method 8021B) (µg/L)					
Benzene	1	ND	ND	ND	ND
Ethylbenzene	30	ND	ND	ND	ND
Toluene	40	ND	ND	ND	ND
Total Xylenes	20	ND	ND	ND	ND
MTBE	50	ND	ND	ND	ND
1,2 Dichloroethane	3	ND	ND	ND	ND
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/L)					
Naphthalene	20	ND	ND	ND	ND
Acenaphthylene	210	ND	ND	ND	ND
Acenaphthene	20	ND	ND	ND	ND
Phenanthrene	210	ND	ND	ND	ND
Anthracene	2100	ND	ND	ND	ND
Fluoranthene	280	ND	ND	ND	ND
Pyrene	210	ND	ND	ND	ND
Benzo(a)anthracene	0.2	ND	ND	ND	ND
Chrysene	4.8	ND	ND	ND	ND
Benzo(b)fluoranthene	0.2	ND	ND	ND	ND
Benzo(k)fluoranthene	0.5	ND	ND	ND	ND
Benzo(a)pyrene	0.2	ND	ND	ND	ND
Dibenz(a,h)anthracene	0.2	ND	ND	ND	ND
Benzo(g,h,i)perylene	210	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	0.2	ND	ND	ND	ND

Notes: [1]Chapter 62-770, FAC (August, 1999)
ND = no constituents detected

3.15 ANOMOLY NUMBER 17 (CF-AN17)

CF-AN17 is located on 103rd Street near the intersection with Brannon Avenue. The location of CF-AN17 is indicated on Figure 1-2 (the Site Vicinity Map) and Figure 3.15.1 (the combined Site Plan, Sample Locations, and Soil Vapor Screening Results Map). TtNUS mobilized to site CF-AN17 on March 12, 1999 for the DPT investigation.

3.15.1 Site Lithology

The site is underlain by a brown fine-grained sand to a depth of 9 ft bls. At 9 ft bls, the site is underlain by a gray fine-grained silty sand. This soil type extends to at least 16 ft bls, the maximum depth drilled at the site during the assessment. Soil boring logs are included in Appendix A.

3.15.2 Soil Vapor

The vertical and horizontal extent of petroleum impacted soil in the vadose zone was assessed through soil headspace analysis performed during the DPT investigation. Four soil borings (CF-AN17-SB-01 through 04) were advanced to depths ranging from 10 to 16 ft bls at the locations shown on Figure 3.15.1. Groundwater was encountered at 9 ft bls. Soil samples were collected at 2-ft intervals and the samples were screened for hydrocarbon vapors with an OVA-PID as described in Section 2.4.2. The results of the soil vapor screening, presented in the Table 3.15.1, indicated no headspace readings above 10 ppm. The DPT sample and boring logs for CF-AN17 are included in Appendix A.

3.15.3 Soil Quality

Based on the results of the soil headspace analyses, one soil sample was collected for laboratory analysis. Discrete soil sample CF-AN17-SB-03-08 was collected at a depth of 8 ft bls. The soil sample was placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. The confirmatory sample collected at SB-03 contained no VOAs or PAHs at or above FDEP SCTLs. The results of the laboratory soil analysis are summarized on Table 3.15.2. A Laboratory Soil Analytical Results figure was not created since results did not exceed SCTLs. The complete set of analytical results is presented in Appendix D.

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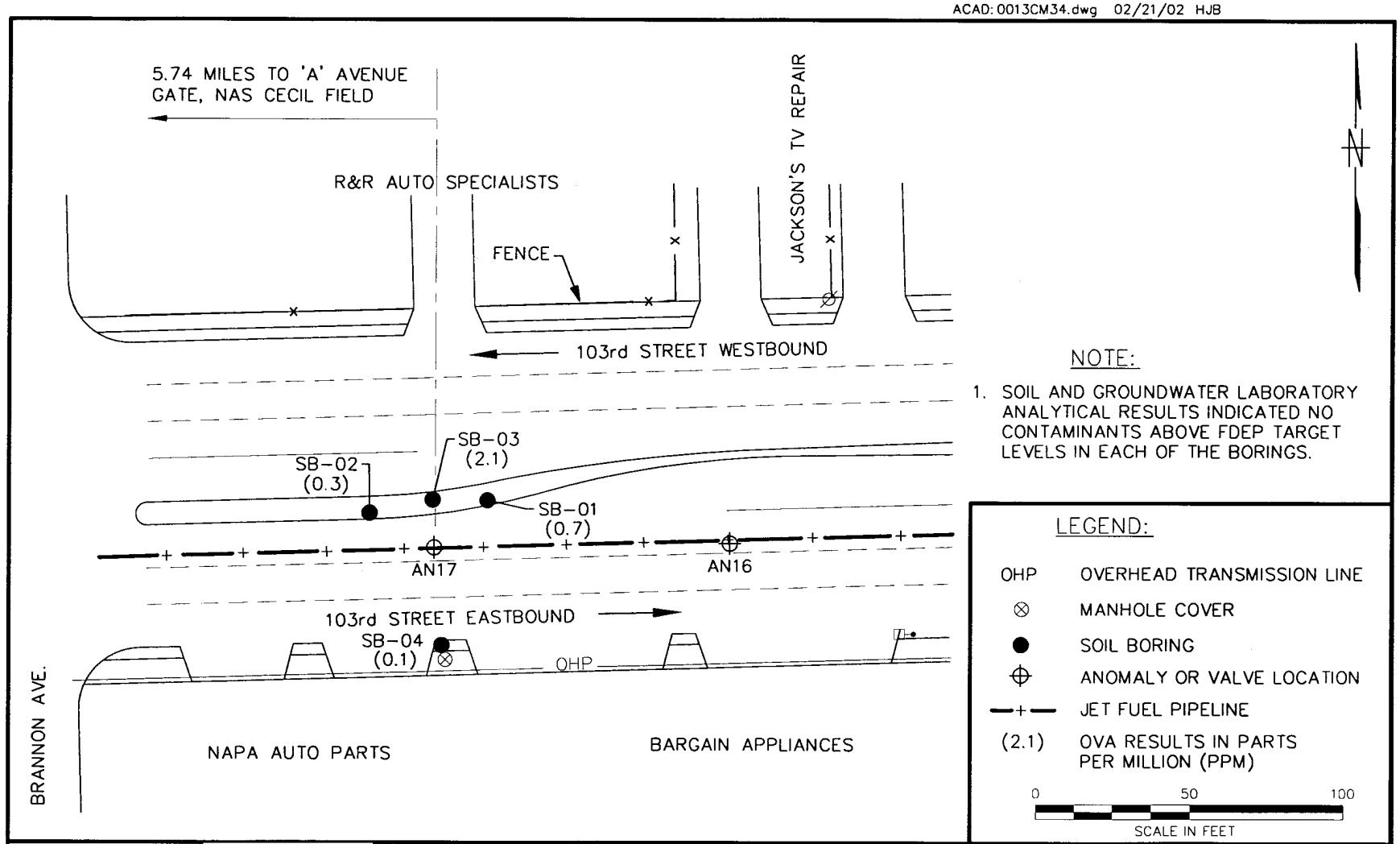

NOTE:

1. SOIL AND GROUNDWATER LABORATORY ANALYTICAL RESULTS INDICATED NO CONTAMINANTS ABOVE FDEP TARGET LEVELS IN EACH OF THE BORINGS.

LEGEND:

OHP	OVERHEAD TRANSMISSION LINE
⊗	MANHOLE COVER
●	SOIL BORING
⊕	ANOMALY OR VALVE LOCATION
—+—	JET FUEL PIPELINE
(2.1)	OVA RESULTS IN PARTS PER MILLION (PPM)

0 50 100
SCALE IN FEET

DRAWN BY MF	DATE 4/9/99	SITE PLAN, SAMPLE LOCATIONS, AND SOIL VAPOR SCREENING RESULTS CF-AN17 NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA	CONTRACT NO. 0013
CHECKED BY	DATE		APPROVED BY DATE
COST/SCHED-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 3.15.1 REV. 0

DEPARTMENT OF THE NAVY SOUTHERN DIV FACILITIES ENGINEERING COMD

FORM CADD NO. SDIV_AH.DWG - REV 0 - 1/20/98

Table 3.15.1
Soil Vapor Screening Results for CF-AN17

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Soil Boring Number	Date of Measurement	Sample Interval (ft bls)	PID Measurement (ppm)
SB-01	3/12/1999	2	0.0
		4	0.0
		6	0.0
		8	0.7
		10	0.0
		12	0.6
		14	0.2
		16	0.3
SB-02	3/12/1999	2	0.0
		4	0.1
		6	0.1
		8	0.0
		10	0.3
		12	NS
		14	NS
		16	0.0
SB-03	3/12/1999	2	0.3
		4	0.0
		6	0.1
		8	0.2
		10	0.4
		12	0.7
		14	2.1
		16	0.5
SB-04	3/12/1999	2	0.0
		4	0.1
		6	0.0
		8	0.0
		10	0.0

Notes: Soil borings analyzed with a PID
NS = not sampled

Table 3.15.2
Laboratory Soil Analysis Summary for CF-AN17

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	SB-03 @ 8 ft				
		3/12/1999				
Volatile Organic Compounds (USEPA Method 8021B) (µg/kg)						
MTBE	200	2.0U				
Benzene	7	1.0U				
Toluene	500	1.0U				
Chlorobenzene	1300	1.0U				
Ethylbenzene	600	1.0U				
Total Xylenes	200	2.0U				
1,3-Dichlorobenzene	300	1.0U				
1,4-Dichlorobenzene	2200	1.0U				
1,2 Dichloroethane	10	1.0U				
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/kg)						
Naphthalene	1700	21U				
1-Methylnaphthalene	2200	42U				
2-Methylnaphthalene	6100	42U				
Acenaphthylene	27000	42U				
Acenaphthene	2100	21U				
Phenanthrene	250000	42U				
Anthracene	2500000	2.0U				
Fluorene	160000	4.2U				
Fluoranthene	1200000	4.2U				
Pyrene	880000	2.1U				
Benzo (a) Anthracene	1400	2.1U				
Chrysene	77000	2.1U				
Benzo (b) fluoranthene	1400	4.0U				
Benzo (k) fluoranthene	15000	2.0U				
Benzo (a) pyrene	100	2.0U				
Dibenzo (a,h) anthracene	100	4.2U				
Benzo (g,h,i) perylene	2300000	23				
Indeno (1,2,3-cd) pyrene	1500	2.1U				

Notes: [1]Chapter 62-777, FAC (August 1999). Most stringent value of groundwater leachability and direct exposure limits.
U = constituent not detected

3.15.4 Temporary Well Point Sampling

During the DPT investigation, the soil borings at the site were converted to temporary wells and the DPT screen was deployed from 10 to 14 ft bls in each boring. The groundwater samples were collected and analyzed as described in Section 2.4.4. Groundwater samples were placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. The groundwater analytical results, presented on Table 3.15.3, indicate no VOAs or PAHs at or above FDEP GCTLs. A Groundwater Analytical Results figure was not created since results did not exceed GCTLs. The complete set of analytical results is presented in Appendix D.

3.15.5 Monitoring Well Sampling

Permanent monitoring wells were not installed at CF-AN17 based on the results of the DPT investigation.

3.15.6 Discussion

Data obtained during the DPT assessment indicated no headspace readings above 10 ppm from the four soil borings at Site CF-AN17. The confirmatory soil sample collected for laboratory analysis indicated soil analytical results below SCTLs for all petroleum COCs (Chapter 62-770, FAC). Groundwater samples collected from temporary wells indicated that dissolved hydrocarbon concentrations were below GCTLs for all COCs (Chapter 62-770, FAC).

Table 3.15.3
Groundwater Analytical Results for CF-AN17

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	TMW-01	TMW-02	TMW-03	TMW-04
		3/12/1999	3/12/1999	3/12/1999	3/12/1999
Volatile Organic Compounds (USEPA Method 8021B) (µg/L)					
Benzene	1	ND	ND	ND	ND
Ethylbenzene	30	ND	ND	ND	ND
Toluene	40	ND	ND	ND	ND
Total Xylenes	20	ND	ND	ND	ND
MTBE	50	ND	ND	ND	ND
1,2 Dichloroethane	3	ND	ND	ND	ND
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/L)					
Naphthalene	20	ND	ND	ND	ND
Acenaphthylene	210	ND	ND	ND	ND
Acenaphthene	20	ND	ND	ND	ND
Phenanthrene	210	ND	ND	ND	ND
Anthracene	2100	ND	ND	ND	ND
Fluoranthene	280	ND	ND	ND	ND
Pyrene	210	ND	ND	ND	ND
Benzo(a)anthracene	0.2	ND	ND	ND	ND
Chrysene	4.8	ND	ND	ND	ND
Benzo(b)fluoranthene	0.2	ND	ND	ND	ND
Benzo(k)fluoranthene	0.5	ND	ND	ND	ND
Benzo(a)pyrene	0.2	ND	ND	ND	ND
Dibenz(a,h)anthracene	0.2	ND	ND	ND	ND
Benzo(g,h,i)perylene	210	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	0.2	ND	ND	ND	ND

Notes: [1]Chapter 62-770, FAC (August, 1999)
ND = no constituents detected

3.16 ANOMOLY NUMBER 18 (CF-AN18)

CF-AN18 is located on 103rd Street just west of the intersection of Monroe Smith Road. The location of CF-AN18 is indicated on Figure 1-2 (the Site Vicinity Map) and Figure 3.16.1 (the combined Site Plan, Sample Locations, and Soil Vapor Screening Results Map). TtNUS mobilized to site CF-AN18 on March 11, 1999 for the DPT investigation.

3.16.1 Site Lithology

The site is underlain by brown fine-grained silty sand. This soil type extends to at least 12 ft bls, the maximum depth drilled at the site during the assessment. Soil boring logs are included in Appendix A.

3.16.2 Soil Vapor

The vertical and horizontal extent of petroleum impacted soil in the vadose zone was assessed through soil headspace analysis performed during the DPT investigation. Four soil borings (CF-AN18-SB-01 through 04) were advanced to depths ranging from 8 to 12 ft bls at the locations shown on Figure 3.16.1. Groundwater was encountered at 4 to 5 ft bls. Soil samples were collected at 2-ft intervals and the samples were screened for hydrocarbon vapors with an OVA-PID as described in Section 2.4.2. The results of the soil vapor screening, presented in the Table 3.16.1, indicated no headspace readings above 10 ppm. The DPT sample and boring logs for CF-AN18 are included in Appendix A.

3.16.3 Soil Quality

Based on the results of the soil headspace analyses, one soil sample was collected for laboratory analysis. Discrete soil sample CF-AN18-SB-04-04 was collected at a depth of 4 ft bls. The soil sample was placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. The confirmatory sample collected at SB-04 contained no VOAs or PAHs at or above FDEP SCTLs. The results of the laboratory soil analysis are summarized on Table 3.16.2. A Laboratory Soil Analytical Results figure was not created since results did not exceed SCTLs. The complete set of analytical results is presented in Appendix D.

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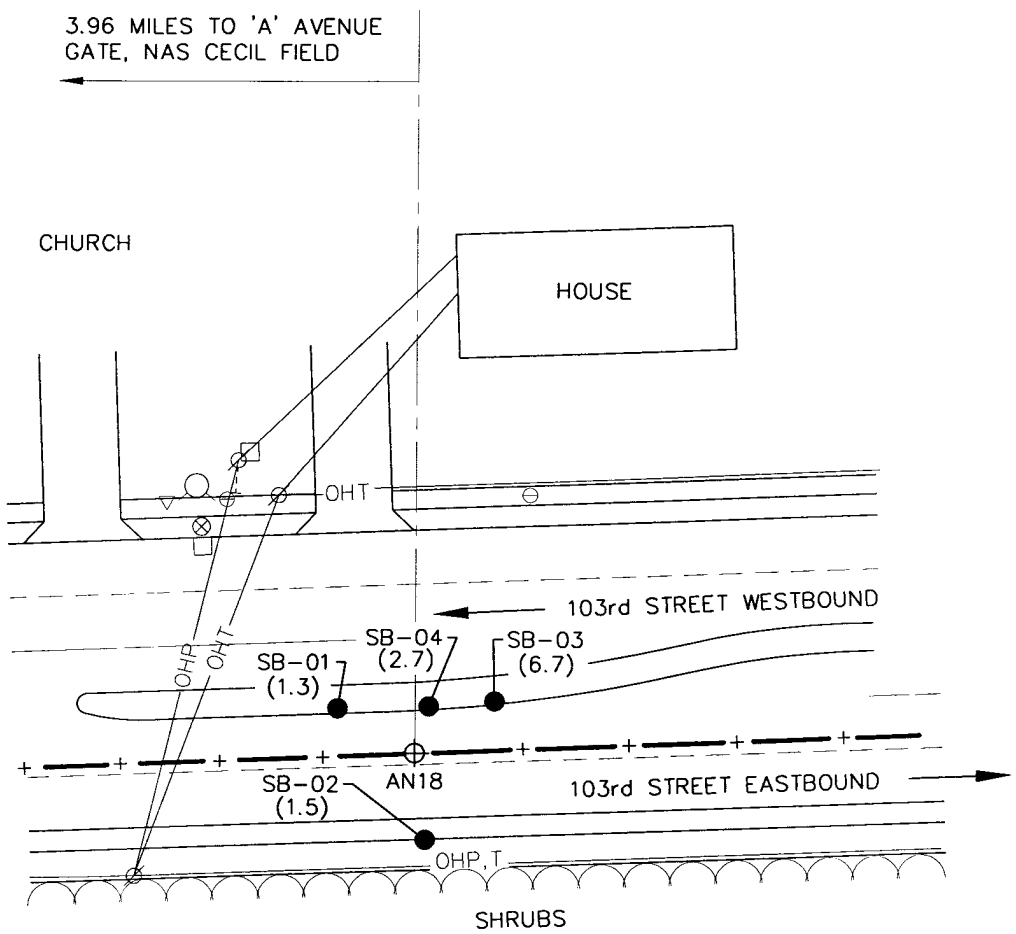

NOTE:

1. SOIL AND GROUNDWATER LABORATORY ANALYTICAL RESULTS INDICATED NO CONTAMINANTS ABOVE FDEP TARGET LEVELS IN EACH OF THE BORINGS.

LEGEND:

OHP,T	OVERHEAD TRANSMISSION LINE
●	SOIL BORING
⊕	ANOMALY OR VALVE LOCATION
—+—	JET FUEL PIPELINE
(1.3)	OVA RESULTS IN PARTS PER MILLION (PPM)

0 50 100
SCALE IN FEET

DRAWN BY MF	DATE 4/9/99	SITE PLAN, SAMPLE LOCATIONS, AND SOIL VAPOR SCREENING RESULTS CF-AN18 NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA	CONTRACT NO. 0013
CHECKED BY	DATE		APPROVED BY DATE
COST/SCHED-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 3.16.1 REV. 0

DEPARTMENT OF THE NAVY ★ SOUTHERN DIV FACILITIES ENGINEERING COMD ★

FORM CADD NO. SDIV_AH.DWG - REV 0 - 1/20/98

Table 3.16.1
Soil Vapor Screening Results for CF-AN18

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Soil Boring Number	Date of Measurement	Sample Interval (ft bls)	PID Measurement (ppm)
SB-01	3/11/1999	2	0.3
		4	0.2
		6	0.5
		8	0.5
		10	0.5
		12	1.3
SB-02	3/11/1999	2	0.2
		4	1.3
		6	0.4
		8	1.4
		10	1.1
		12	1.5
SB-03	3/11/1999	2	1.1
		4	6.7
		6	1.1
		8	1.7
SB-04	3/11/1999	2	2.4
		4	2.7
		6	1.3
		8	1.1
		10	1.2
		12	1.4

Notes: Soil borings analyzed with a PID

Table 3.16.2
Laboratory Soil Analysis Summary for CF-AN18

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	SB-04 @ 4 ft				
		3/11/1999				
Volatile Organic Compounds (USEPA Method 8021B) (µg/kg)						
MTBE	200	2.0U				
Benzene	7	1.0U				
Toluene	500	1.0U				
Chlorobenzene	1300	1.0U				
Ethylbenzene	600	1.0U				
Total Xylenes	200	2.0U				
1,3-Dichlorobenzene	300	1.0U				
1,4-Dichlorobenzene	2200	1.0U				
1,2 Dichloroethane	10	1.0U				
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/kg)						
Naphthalene	1700	19U				
1-Methylnaphthalene	2200	37U				
2-Methylnaphthalene	6100	37U				
Acenaphthylene	27000	37U				
Acenaphthene	2100	19U				
Phenanthrene	250000	37U				
Anthracene	2500000	2.0U				
Fluorene	160000	3.7U				
Fluoranthene	1200000	3.7U				
Pyrene	880000	1.9U				
Benzo (a) Anthracene	1400	1.9U				
Chrysene	77000	1.9U				
Benzo (b) fluoranthene	1400	3.0U				
Benzo (k) fluoranthene	15000	2.0U				
Benzo (a) pyrene	100	2.0U				
Dibenzo (a,h) anthracene	100	3.7U				
Benzo (g,h,i) perylene	2300000	4.2I				
Indeno (1,2,3-cd) pyrene	1500	1.9U				

Notes: [1]Chapter 62-777, FAC (August 1999). Most stringent value of groundwater leachability and direct exposure limits.
I = value is between MDL and PQL
U = constituent not detected

3.16.4 Temporary Well Point Sampling

During the DPT investigation, the soil borings at the site were converted to temporary wells and the DPT screen was deployed from 6 to 10 ft bls in borings SB-01 through SB-03, and 8 to 12 ft bls in SB-04. The groundwater samples were collected and analyzed as described in Section 2.4.4. Groundwater samples were placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. The groundwater analytical results, presented on Table 3.16.3, indicate no VOAs or PAHs at or above FDEP GCTLs. A Groundwater Analytical Results figure was not created since results did not exceed GCTLs. The complete set of analytical results is presented in Appendix D.

3.16.5 Monitoring Well Sampling

Permanent monitoring wells were not installed at CF-AN18 based on the results of the DPT investigation.

3.16.6 Discussion

Data obtained during the DPT assessment indicated no headspace readings above 10 ppm from the four soil borings at Site CF-AN18. The confirmatory soil sample collected for laboratory analysis indicated soil analytical results below SCTLs for all petroleum COCs (Chapter 62-770, FAC). Groundwater samples collected from temporary wells indicated that dissolved hydrocarbon concentrations were below GCTLs for all COCs (Chapter 62-770, FAC).

Table 3.16.3
Groundwater Analytical Results for CF-AN18

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	TMW-01	TMW-02	TMW-03	TMW-04
		3/11/1999	3/11/1999	3/11/1999	3/11/1999
Volatile Organic Compounds (USEPA Method 8021B) (µg/L)					
Benzene	1	ND	ND	ND	ND
Ethylbenzene	30	ND	ND	ND	ND
Toluene	40	ND	ND	ND	ND
Total Xylenes	20	ND	ND	ND	ND
MTBE	50	ND	ND	ND	ND
1,2 Dichloroethane	3	ND	ND	ND	ND
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/L)					
Naphthalene	20	ND	ND	ND	ND
Acenaphthylene	210	ND	ND	ND	ND
Acenaphthene	20	ND	ND	ND	ND
Phenanthrene	210	ND	ND	ND	ND
Anthracene	2100	ND	ND	ND	ND
Fluoranthene	280	ND	ND	ND	ND
Pyrene	210	0.08	ND	ND	0.07
Benzo(a)anthracene	0.2	ND	ND	ND	ND
Chrysene	4.8	ND	ND	ND	ND
Benzo(b)fluoranthene	0.2	ND	ND	ND	ND
Benzo(k)fluoranthene	0.5	ND	ND	ND	ND
Benzo(a)pyrene	0.2	ND	ND	ND	ND
Dibenz(a,h)anthracene	0.2	ND	ND	ND	ND
Benzo(g,h,i)perylene	210	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	0.2	ND	ND	ND	ND

Notes: [1]Chapter 62-770, FAC (August, 1999)
ND = no constituents detected

3.17 ANOMOLY NUMBER 19 (CF-AN19)

CF-AN19 is located on 103rd Street just east of the intersection of Chaffee Road. The location of CF-AN19 is indicated on Figure 1-2 (the Site Vicinity Map) and Figure 3.17.1 (the combined Site Plan, Sample Locations, and Soil Vapor Screening Results Map). TtNUS mobilized to site CF-AN19 on March 10, 1999 for the DPT investigation.

3.17.1 Site Lithology

The site is underlain by a black/gray fine-grained sand. At 6 ft bls the site is underlain by a black fine-grained silty sand. This soil type extends to at least 12 ft bls, the maximum depth drilled at the site during the assessment. Soil boring logs are included in Appendix A.

3.17.2 Soil Vapor

The vertical and horizontal extent of petroleum impacted soil in the vadose zone was assessed through soil headspace analysis performed during the DPT investigation. Four soil borings (CF-AN19-SB-01 through 04) were advanced to depths ranging from 8 to 12 ft bls at the locations shown on Figure 3.17.1. Groundwater was encountered at 4 to 7 ft bls. Soil samples were collected at 2-ft intervals and the samples were screened for hydrocarbon vapors with an OVA-PID as described in Section 2.4.2. The results of the soil vapor screening, presented in the Table 3.17.1, indicated no headspace readings above 10 ppm. The DPT sample and boring logs for CF-AN19 are included in Appendix A.

3.17.3 Soil Quality

Based on the results of the soil headspace analyses, one soil sample was collected for laboratory analysis. Discrete soil sample CF-AN19-SB-01-05 was collected at a depth of 5 ft bls from soil boring SB-01. The soil sample was placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. The confirmatory sample collected at SB-01 contained no VOAs or PAHs at or above FDEP SCTLs. The results of the laboratory soil analysis are summarized on Table 3.17.2. A Laboratory Soil Analytical Results figure was not created since results did not exceed SCTLs. The complete set of analytical results is presented in Appendix D.

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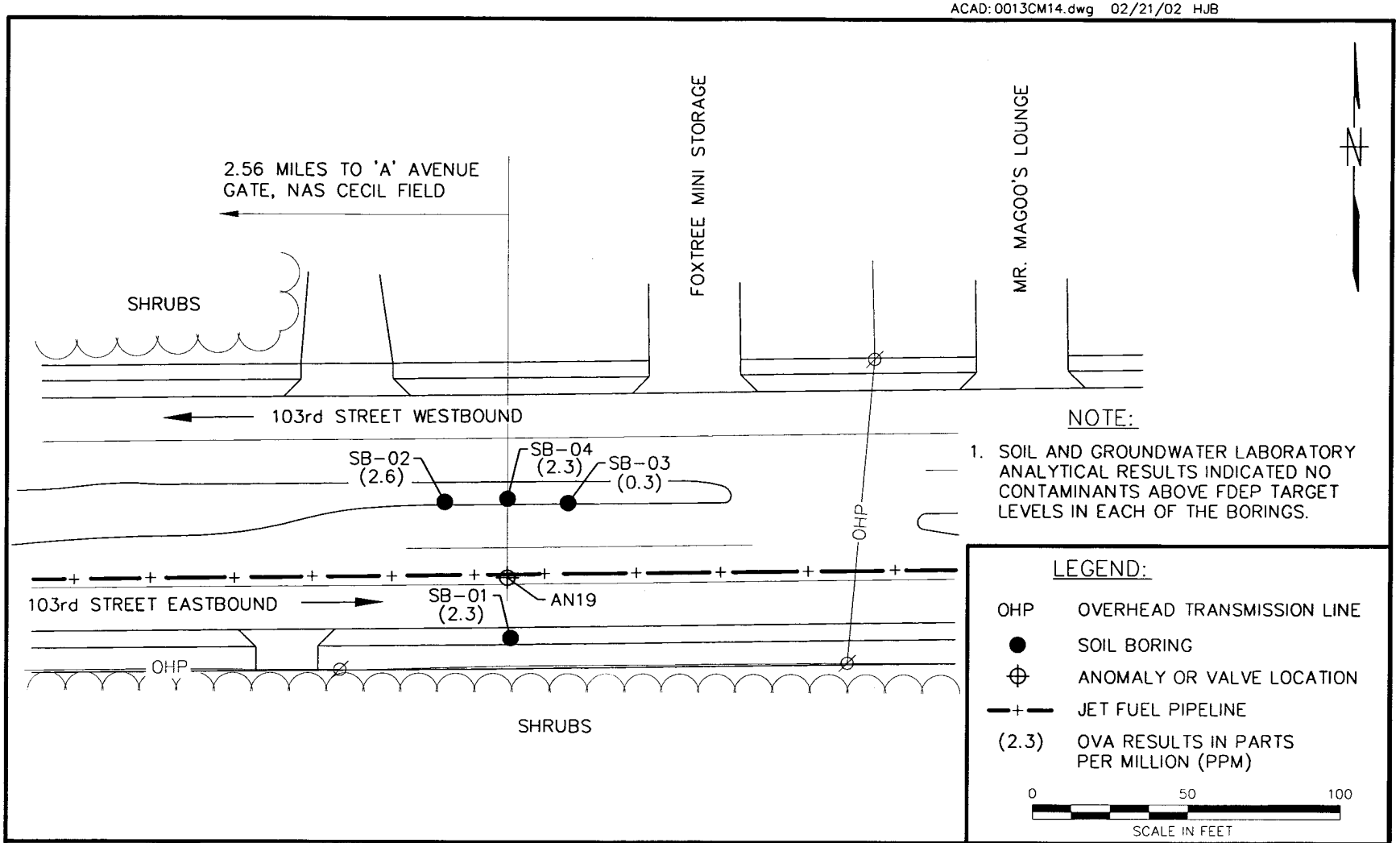

DRAWN BY MF DATE 4/9/99	SITE PLAN, SAMPLE LOCATIONS, AND SOIL VAPOR SCREENING RESULTS CF-AN19 NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA	CONTRACT NO. 0013	
CHECKED BY DATE		APPROVED BY DATE	
COST/SCHED-AREA		APPROVED BY DATE	
SCALE AS NOTED		DRAWING NO. FIGURE 3.17.1	REV. 0

FORM CADD NO. SDIV_AH.DWG - REV 0 - 1/20/98

Table 3.17.1
Soil Vapor Screening Results for CF-AN19

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Soil Boring Number	Date of Measurement	Sample Interval (ft bls)	PID Measurement (ppm)
SB-01	3/10/1999	2	2.3
		4	2.1
		6	2.3
		8	2.2
		10	2.2
		12	2.2
SB-02	3/10/1999	2	2.4
		4	2.5
		6	2.6
		8	2.4
SB-03	3/10/1999	2	0.2
		4	0.1
		6	0.2
		8	0.0
		10	0.1
		12	0.3
SB-04	3/10/1999	2	2.0
		4	2.0
		6	1.9
		8	2.1
		10	2.3
		12	2.0

Notes: Soil borings analyzed with a PID

Table 3.17.2
Laboratory Soil Analysis Summary for CF-AN19

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	SB-01 @ 5 ft				
		3/10/1999				
Volatile Organic Compounds (USEPA Method 8021B) (µg/kg)						
MTBE	200	2.0U				
Benzene	7	1.0U				
Toluene	500	5.6				
Chlorobenzene	1300	1.0U				
Ethylbenzene	600	1.5I				
Total Xylenes	200	6.6I				
1,3-Dichlorobenzene	300	1.0U				
1,4-Dichlorobenzene	2200	1.0U				
1,2 Dichloroethane	10	1.0U				
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/kg)						
Naphthalene	1700	19U				
1-Methylnaphthalene	2200	39U				
2-Methylnaphthalene	6100	39U				
Acenaphthylene	27000	39U				
Acenaphthene	2100	19U				
Phenanthrene	250000	39U				
Anthracene	2500000	2.0U				
Fluorene	160000	3.9U				
Fluoranthene	1200000	3.9U				
Pyrene	880000	1.9U				
Benzo (a) Anthracene	1400	1.9U				
Chrysene	77000	1.9U				
Benzo (b) fluoranthene	1400	3.0U				
Benzo (k) fluoranthene	15000	2.0U				
Benzo (a) pyrene	100	2.0U				
Dibenzo (a,h) anthracene	100	3.9U				
Benzo (g,h,i) perylene	2300000	3.9U				
Indeno (1,2,3-cd) pyrene	1500	1.9U				

Notes: [1]Chapter 62-777, FAC (August 1999). Most stringent value of groundwater leachability and direct exposure limits.
I = value is between MDL and PQL
U = constituent not detected

3.17.4 Temporary Well Point Sampling

During the DPT investigation, the soil borings at the site were converted to temporary wells and the DPT screen was deployed from 8 to 12 ft bls in each boring. The groundwater samples were collected as described in Section 2.4.4. Groundwater samples were placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. The groundwater analytical results, presented on Table 3.17.3, indicate no VOAs or PAHs at or above FDEP GCTLs. A Groundwater Analytical Results figure was not created since results did not exceed GCTLs. The complete set of analytical results is presented in Appendix D.

3.17.5 Monitoring Well Sampling

Permanent monitoring wells were not installed at CF-AN19 based on the results of the DPT investigation.

3.17.6 Discussion

Data obtained during the DPT assessment indicated no headspace readings above 10 ppm from the four soil borings at Site CF-AN19. The confirmatory soil sample collected for laboratory analysis indicated soil analytical results below SCTLs for all petroleum COCs (Chapter 62-770, FAC). Groundwater samples collected from temporary wells indicated that dissolved hydrocarbon concentrations were below GCTLs for all COCs (Chapter 62-770, FAC).

Table 3.17.3
Groundwater Analytical Results for CF-AN19

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	TMW-01	TMW-02	TMW-03	TMW-04
		3/10/1999	3/10/1999	3/10/1999	3/10/1999
Volatile Organic Compounds (USEPA Method 8021B) (µg/L)					
Benzene	1	ND	ND	ND	ND
Ethylbenzene	30	ND	ND	ND	ND
Toluene	40	ND	ND	ND	ND
Total Xylenes	20	ND	ND	ND	ND
MTBE	50	ND	ND	ND	ND
1,2 Dichloroethane	3	ND	ND	ND	ND
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/L)					
Naphthalene	20	ND	ND	ND	ND
Acenaphthylene	210	ND	ND	ND	ND
Acenaphthene	20	ND	ND	ND	ND
Phenanthrene	210	ND	ND	ND	ND
Anthracene	2100	ND	ND	ND	ND
Fluoranthene	280	ND	ND	0.1	ND
Pyrene	210	ND	ND	ND	ND
Benzo(a)anthracene	0.2	ND	ND	ND	ND
Chrysene	4.8	ND	ND	ND	ND
Benzo(b)fluoranthene	0.2	ND	ND	ND	ND
Benzo(k)fluoranthene	0.5	ND	ND	ND	ND
Benzo(a)pyrene	0.2	ND	ND	ND	ND
Dibenz(a,h)anthracene	0.2	ND	ND	ND	ND
Benzo(g,h,i)perylene	210	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	0.2	ND	ND	ND	ND

Notes: [1]Chapter 62-770, FAC (August, 1999)
ND = no constituents detected

3.18 ANOMOLY NUMBER 20 (CF-AN20)

CF-AN20 is located on 103rd Street near the intersection of 103rd Street and Chaffee Road. The location of CF-AN20 is indicated on Figure 1-2 (the Site Vicinity Map) and Figure 3.18.1 (the combined Site Plan, Sample Locations, and Soil Vapor Screening Results Map). TtNUS mobilized to site CF-AN20 on March 9 and 10, 1999 for the DPT investigation.

3.18.1 Site Lithology

The site is underlain by black/gray fine-grained silty sand. This soil type extends to at least 8 ft bls, the maximum depth drilled at the site during the assessment. Soil boring logs are included in Appendix A.

3.18.2 Soil Vapor

The vertical and horizontal extent of petroleum impacted soil in the vadose zone was assessed through soil headspace analysis performed during the DPT investigation. Six soil borings (CF-AN20-SB-01 through 06) were advanced to depths ranging from 8 to 12 ft bls at the locations shown on Figure 3.18.1. Groundwater was encountered at 4 to 5 ft bls. Soil samples were collected at 2-ft intervals and the samples were screened for hydrocarbon vapors with an OVA-PID as described in Section 2.4.2. The results of the soil vapor screening, presented in the Table 3.18.1, indicated no headspace readings with results above 10 ppm. The DPT sample and boring logs for CF-AN20 are included in Appendix A.

3.18.3 Soil Quality

Based on the results of the soil headspace analyses, one soil sample was collected for laboratory analysis. Discrete soil sample CF-AN20-SB-04-05 was collected at a depth of 5 ft bls. The soil sample was placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. The confirmatory sample collected at SB-04 contained no VOAs or PAHs at or above FDEP SCTLs. The results of the laboratory soil analysis are summarized on Table 3.18.2. A Laboratory Soil Analytical Results figure was not created since results did not exceed SCTLs. The complete set of analytical results is presented in Appendix D.

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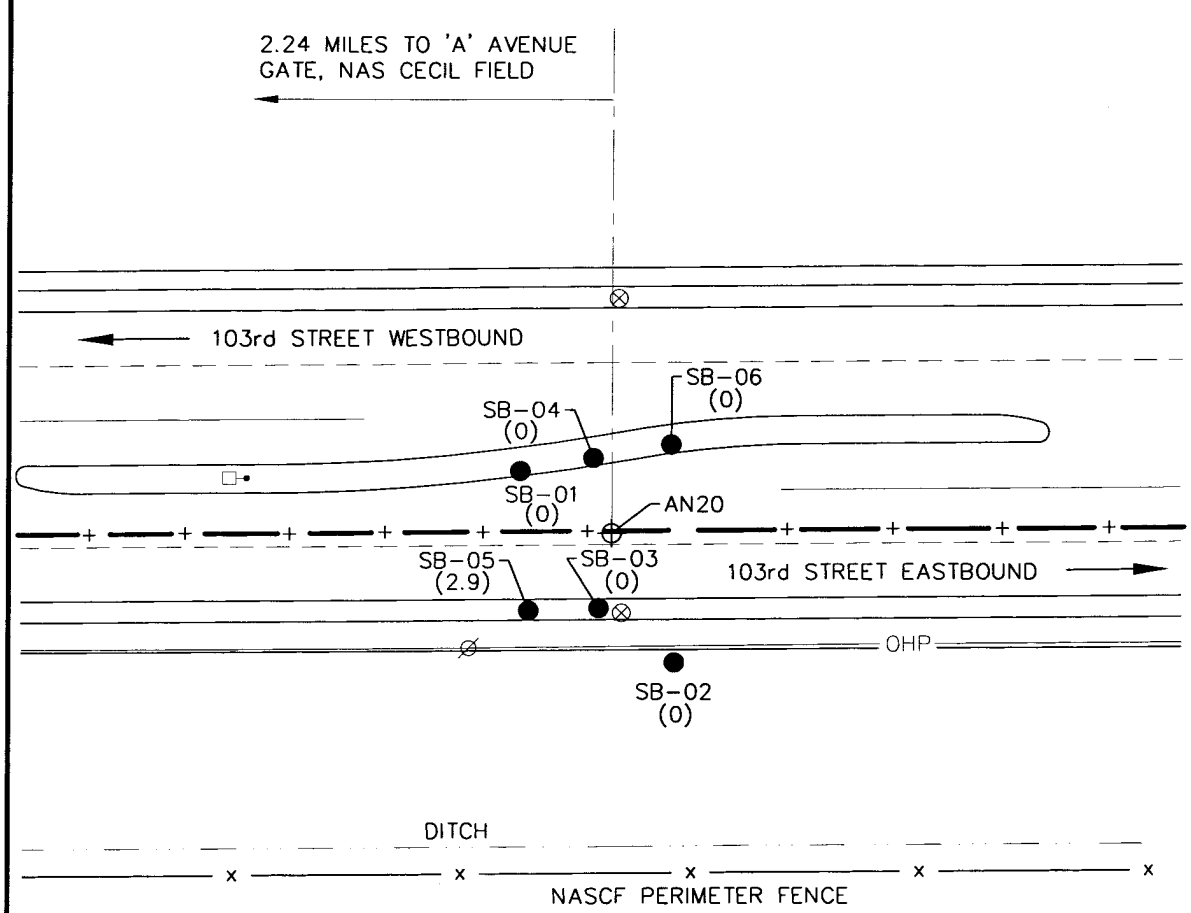

NOTE:

1. SOIL AND GROUNDWATER LABORATORY ANALYTICAL RESULTS INDICATED NO CONTAMINANTS ABOVE FDEP TARGET LEVELS IN EACH OF THE BORINGS.

LEGEND:

OHP	OVERHEAD TRANSMISSION LINE
⊗	MANHOLE COVER
●	SOIL BORING
⊕	ANOMALY OR VALVE LOCATION
—+—	JET FUEL PIPELINE
(2.9)	OVA RESULTS IN PARTS PER MILLION (PPM)

0 50 100
SCALE IN FEET

DRAWN BY MF	DATE 4/9/99	SITE PLAN, SAMPLE LOCATIONS, AND SOIL VAPOR SCREENING RESULTS CF-AN20 NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA	CONTRACT NO. 0013
CHECKED BY	DATE		APPROVED BY / DATE
COST/SCHED-AREA			APPROVED BY / DATE
SCALE AS NOTED			DRAWING NO. FIGURE 3.18.1 / REV. 0

FORM CADD NO. SDIV_AH.DWG - REV 0 - 1/20/98

Table 3.18.1
Soil Vapor Screening Results for CF-AN20

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Soil Boring Number	Date of Measurement	Sample Interval (ft bls)	PID Measurement (ppm)
SB-01	3/8/1999	2	0.0
		4	0.0
		6	0.0
		8	0.0
SB-02	3/9/1999	2	0.0
		4	0.0
		6	0.0
		8	0.0
SB-03	3/9/1999	2	0.0
		4	0.0
		6	0.0
		8	0.0
SB-04	3/9/1999	2	0.0
		4	0.0
		6	0.0
		8	0.0
SB-05	3/10/1999	2	2.9
		4	0.8
		6	0.1
		8	0.4
SB-06	3/10/1999	2	0.0
		4	0.0
		6	0.0
		8	0.0
		10	0.0
		12	0.0

Notes: Soil borings analyzed with a PID

Table 3.18.2
Laboratory Soil Analysis Summary for CF-AN20

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	SB-04 @ 5 ft				
		3/10/1999				
Volatile Organic Compounds (USEPA Method 8021B) (µg/kg)						
MTBE	200	3.0U				
Benzene	7	1.0U				
Toluene	500	1.0U				
Chlorobenzene	1300	1.0U				
Ethylbenzene	600	1.0U				
Total Xylenes	200	3.0U				
1,3-Dichlorobenzene	300	1.0U				
1,4-Dichlorobenzene	2200	1.0U				
1,2 Dichloroethane	10	1.0U				
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/kg)						
Naphthalene	1700	22U				
1-Methylnaphthalene	2200	22U				
2-Methylnaphthalene	6100	22U				
Acenaphthylene	27000	44U				
Acenaphthene	2100	22U				
Phenanthrene	250000	2.2U				
Anthracene	2500000	3.0U				
Fluorene	160000	4.4U				
Fluoranthene	1200000	4.4U				
Pyrene	880000	2.2U				
Benzo (a) Anthracene	1400	2.2U				
Chrysene	77000	2.2U				
Benzo (b) fluoranthene	1400	4.0U				
Benzo (k) fluoranthene	15000	3.0U				
Benzo (a) pyrene	100	3.0U				
Dibenzo (a,h) anthracene	100	4.4U				
Benzo (g,h,i) perylene	2300000	4.4U				
Indeno (1,2,3-cd) pyrene	1500	2.2U				

Notes: [1]Chapter 62-777, FAC (August 1999). Most stringent value of groundwater leachability and direct exposure limits.
U = constituent not detected

3.18.4 Temporary Well Point Sampling

During the DPT investigation, the soil borings at the site were converted to temporary wells and the DPT screen was deployed from 4 to 8 ft bls in borings SB-01 through SB-05, and 8 to 12 ft bls in SB-06. The groundwater samples were collected as described in Section 2.4.4. Groundwater samples were placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. The groundwater analytical results, presented on Table 3.18.3, indicated no VOAs or PAHs at or above FDEP GCTLs. A Groundwater Analytical Results figure was not created since results did not exceed GCTLs. The complete set of analytical results is presented in Appendix D.

3.18.5 Monitoring Well Sampling

Permanent monitoring wells were not installed at CF-AN20 based on the results of the DPT investigation.

3.18.6 Discussion

Data obtained during the DPT assessment indicated no headspace readings above 10 ppm from the six soil borings at Site CF-AN20. The confirmatory soil sample collected for laboratory analysis indicated soil analytical results below SCTLs for all petroleum COCs (Chapter 62-770, FAC). Groundwater samples collected from temporary wells indicated that dissolved hydrocarbon concentrations were below GCTLs for all COCs (Chapter 62-770, FAC).

Table 3.18.3
Groundwater Analytical Results for CF-AN20

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	TMW-01	TMW-02	TMW-03	TMW-04	TMW-05	TMW-06
		3/9/1999	3/9/1999	3/9/1999	3/9/1999	3/10/1999	3/10/1999
Volatile Organic Compounds (USEPA Method 8021B) (μg/L)							
Benzene	1	ND	ND	ND	ND	ND	ND
Ethylbenzene	30	ND	ND	ND	ND	ND	ND
Toluene	40	ND	ND	ND	ND	ND	ND
Total Xylenes	20	ND	ND	ND	ND	ND	ND
MTBE	50	ND	ND	ND	ND	ND	ND
1,2 Dichloroethane	3	ND	ND	ND	ND	ND	ND
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (μg/L)							
Naphthalene	20	ND	ND	ND	ND	ND	ND
Acenaphthylene	210	ND	ND	ND	ND	ND	ND
Acenaphthene	20	ND	ND	ND	ND	ND	ND
Phenanthrene	210	ND	ND	ND	ND	ND	ND
Anthracene	2100	ND	ND	ND	ND	ND	ND
Fluoranthene	280	ND	ND	ND	ND	ND	ND
Pyrene	210	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	0.2	ND	ND	ND	ND	ND	ND
Chrysene	4.8	ND	ND	ND	ND	ND	ND
Benzo(b)fluoranthene	0.2	ND	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	0.5	ND	ND	ND	ND	ND	ND
Benzo(a)pyrene	0.2	ND	ND	ND	ND	ND	ND
Dibenz(a,h)anthracene	0.2	ND	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	210	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	0.2	ND	ND	ND	ND	ND	ND

Notes: [1]Chapter 62-770, FAC (August, 1999)
ND = no constituents detected

3.19 ANOMOLY NUMBER 21 (CF-AN21)

CF-AN21 is located on 103rd Street just west of the intersection with Chaffee Road. The location of CF-AN21 is indicated on Figure 1-2 (the Site Vicinity Map) and Figure 3.19.1 (the combined Site Plan, Sample Locations, and Soil Vapor Screening Results Map). TtNUS mobilized to site CF-AN21 on March 9, 1999 for the DPT investigation.

3.19.1 Site Lithology

The site is underlain by dark brown fine-grained sand. At 5 ft bls, the site is underlain by gray/brown silty sand. This soil type extends to at least 12 ft bls, the maximum depth drilled at the site during the assessment. Soil boring logs are included in Appendix A.

3.19.2 Soil Vapor

The vertical and horizontal extent of petroleum impacted soil in the vadose zone was assessed through soil headspace analysis performed during the DPT investigation. Six soil borings (CF-AN21-SB-01 through 06) were advanced to depths ranging from 10 to 12 ft bls at the locations shown on Figure 3.19.1. Groundwater was encountered at 7 to 8 ft bls. Soil samples were collected at 2-ft intervals and the samples were screened for hydrocarbon vapors with an OVA-PID as described in Section 2.4.2. The results of the soil vapor screening, presented in the Table 3.19.1, indicated no headspace readings with results above 10 ppm. The DPT sample and boring logs for CF-AN21 are included in Appendix A.

3.19.3 Soil Quality

Based on the results of the soil headspace analyses, one soil sample was collected for laboratory analysis. Discrete soil sample CF-AN21-SB-01-05 was collected at a depth of 5 ft bls. The soil sample was placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. The confirmatory sample collected at SB-01 contained no VOAs or PAHs at or above FDEP SCTLs. The results of the laboratory soil analysis are summarized on Table 3.19.2. A Laboratory Soil Analytical Results figure was not created since results did not exceed SCTLs. The complete set of analytical results is presented in Appendix D.

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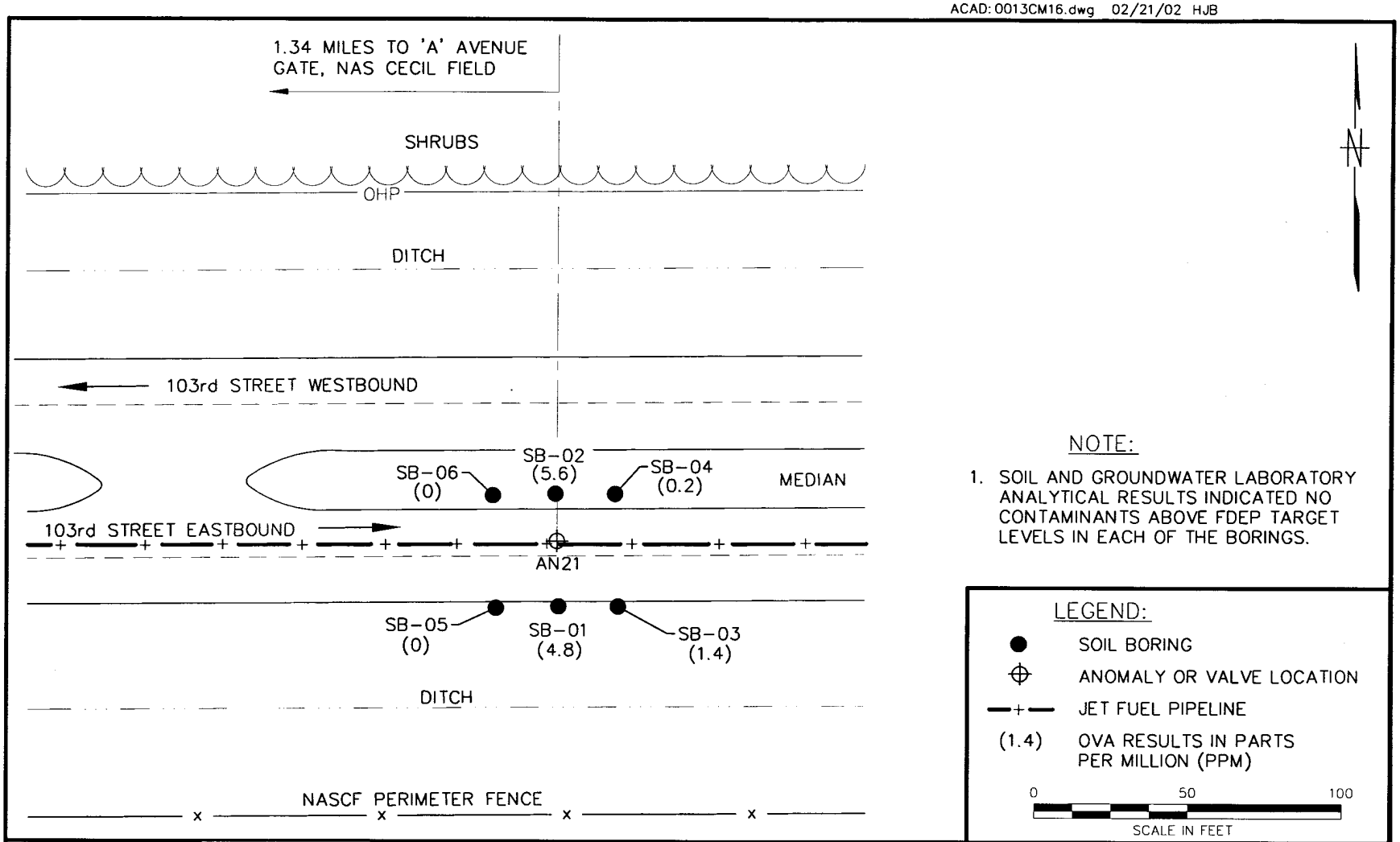


DRAWN BY MF DATE 4/9/99	SITE PLAN, SAMPLE LOCATIONS, SOIL VAPOR SCREENING RESULTS CF-AN21 NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA	CONTRACT NO. 0013
CHECKED BY DATE		APPROVED BY DATE
COST/SCHED-AREA		APPROVED BY DATE
SCALE AS NOTED		DRAWING NO. FIGURE 3.19.1 REV. 0

FORM CADD NO. SDIV_AH.DWG - REV 0 - 1/20/98

Table 3.19.1
Soil Vapor Screening Results for CF-AN21

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Soil Boring Number	Date of Measurement	Sample Interval (ft bls)	PID Measurement (ppm)
SB-01	3/9/1999	2	1.0
		4	3.9
		6	2.3
		8	4.2
		10	4.8
		12	4.1
SB-02	3/9/1999	2	1.4
		4	5.6
		6	2.4
		8	3.2
		10	1.0
		12	0.8
SB-03	3/9/1999	2	0.0
		4	1.0
		6	0.3
		8	0.1
		10	0.8
		12	1.4
SB-04	3/9/1999	2	0.0
		4	0.1
		6	0.0
		8	0.0
		10	0.2
		12	0.2
SB-05	3/9/1999	2	0.0
		4	0.0
		6	0.0
		8	0.0
		10	0.0
SB-06	3/9/1999	2	0.0
		4	0.0
		6	0.0
		8	0.0
		10	0.0
		12	0.0

Notes: Soil borings analyzed with a PID

Table 3.19.2
Laboratory Soil Analysis Summary for CF-AN21

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	SB-01 @ 5 ft				
		3/9/1999				
Volatile Organic Compounds (USEPA Method 8021B) (µg/kg)						
MTBE	200	3.0U				
Benzene	7	1.2U				
Toluene	500	1.2U				
Chlorobenzene	1300	1.2U				
Ethylbenzene	600	1.2U				
Total Xylenes	200	3.0U				
1,3-Dichlorobenzene	300	1.2U				
1,4-Dichlorobenzene	2200	1.2U				
1,2 Dichloroethane	10	1.2U				
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/kg)						
Naphthalene	1700	22U				
1-Methylnaphthalene	2200	22U				
2-Methylnaphthalene	6100	22U				
Acenaphthylene	27000	44U				
Acenaphthene	2100	22U				
Phenanthrene	250000	2.2U				
Anthracene	2500000	3.0U				
Fluorene	160000	4.4U				
Fluoranthene	1200000	4.4U				
Pyrene	880000	2.2U				
Benzo (a) Anthracene	1400	2.2U				
Chrysene	77000	2.2U				
Benzo (b) fluoranthene	1400	4.0U				
Benzo (k) fluoranthene	15000	3.0U				
Benzo (a) pyrene	100	3.0U				
Dibenzo (a,h) anthracene	100	4.4U				
Benzo (g,h,i) perylene	2300000	4.4U				
Indeno (1,2,3-cd) pyrene	1500	2.2U				

Notes: [1]Chapter 62-777, FAC (August 1999). Most stringent value of groundwater leachability and direct exposure limits.
U = constituent not detected

3.19.4 Temporary Well Point Sampling

During the DPT investigation, the soil borings at the site were converted to temporary wells and the DPT screen was deployed from 8 to 12 ft bls in each boring. The groundwater samples were collected as described in Section 2.4.4. Groundwater samples were placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. The groundwater analytical results, presented on Table 3.19.3, indicated no VOAs or PAHs at or above FDEP GCTLs. A Groundwater Analytical Results figure was not created since results did not exceed GCTLs. The complete set of analytical results is presented in Appendix D.

3.19.5 Monitoring Well Sampling

Permanent monitoring wells were not installed at CF-AN21 based on the results of the DPT investigation.

3.19.6 Discussion

Data obtained during the DPT assessment indicated no headspace readings above 10 ppm from the six soil borings at Site CF-AN21. The confirmatory soil sample collected for laboratory analysis indicated soil analytical results below SCTLs for all petroleum COCs (Chapter 62-770, FAC). Groundwater samples collected from temporary wells indicated that dissolved hydrocarbon concentrations were below GCTLs for all COCs (Chapter 62-770, FAC).

Table 3.19.3
Groundwater Analytical Results for CF-AN21

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	TMW-01	TMW-02	TMW-03	TMW-04	TMW-05	TMW-06
		3/9/1999	3/9/1999	3/9/1999	3/9/1999	3/9/1999	3/9/1999
Volatile Organic Compounds (USEPA Method 8021B) (µg/L)							
Benzene	1	ND	ND	ND	ND	ND	ND
Ethylbenzene	30	ND	ND	ND	ND	ND	ND
Toluene	40	ND	ND	ND	ND	ND	ND
Total Xylenes	20	ND	ND	ND	ND	ND	ND
MTBE	50	ND	ND	ND	ND	ND	ND
1,2 Dichloroethane	3	ND	ND	ND	ND	ND	ND
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/L)							
Naphthalene	20	ND	ND	ND	ND	ND	ND
Acenaphthylene	210	ND	ND	ND	ND	ND	ND
Acenaphthene	20	ND	ND	ND	ND	ND	ND
Phenanthrene	210	ND	ND	ND	ND	ND	ND
Anthracene	2100	ND	ND	ND	ND	ND	ND
Fluoranthene	280	ND	ND	ND	ND	ND	ND
Pyrene	210	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	0.2	ND	ND	ND	ND	ND	ND
Chrysene	4.8	ND	ND	ND	ND	ND	ND
Benzo(b)fluoranthene	0.2	ND	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	0.5	ND	ND	ND	ND	ND	ND
Benzo(a)pyrene	0.2	ND	ND	ND	ND	ND	ND
Dibenz(a,h)anthracene	0.2	ND	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	210	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	0.2	ND	ND	ND	ND	ND	ND

Notes: [1]Chapter 62-770, FAC (August, 1999)
ND = no constituents detected

3.20 VALVE NUMBER 2 (CF- VA02)

CF-VA02 is located approximately 100 ft east of the intersection of Timiquana Road and Capri Road. The location of CF-VA02 is indicated on Figure 1-2 (the Site Vicinity Map) and Figure 3.20.1 (the combined Site Plan, Sample Locations, and Soil Vapor Screening Results Map). TtNUS mobilized to site CF-VA02 on March 26, 1999 for the DPT portion of the investigation. On December 2, 1999, TtNUS revisited the site to install one permanent groundwater monitoring well. The permanent well was developed on December 9, 1999, and sampled on December 13 and 30, 1999.

3.20.1 Site Lithology

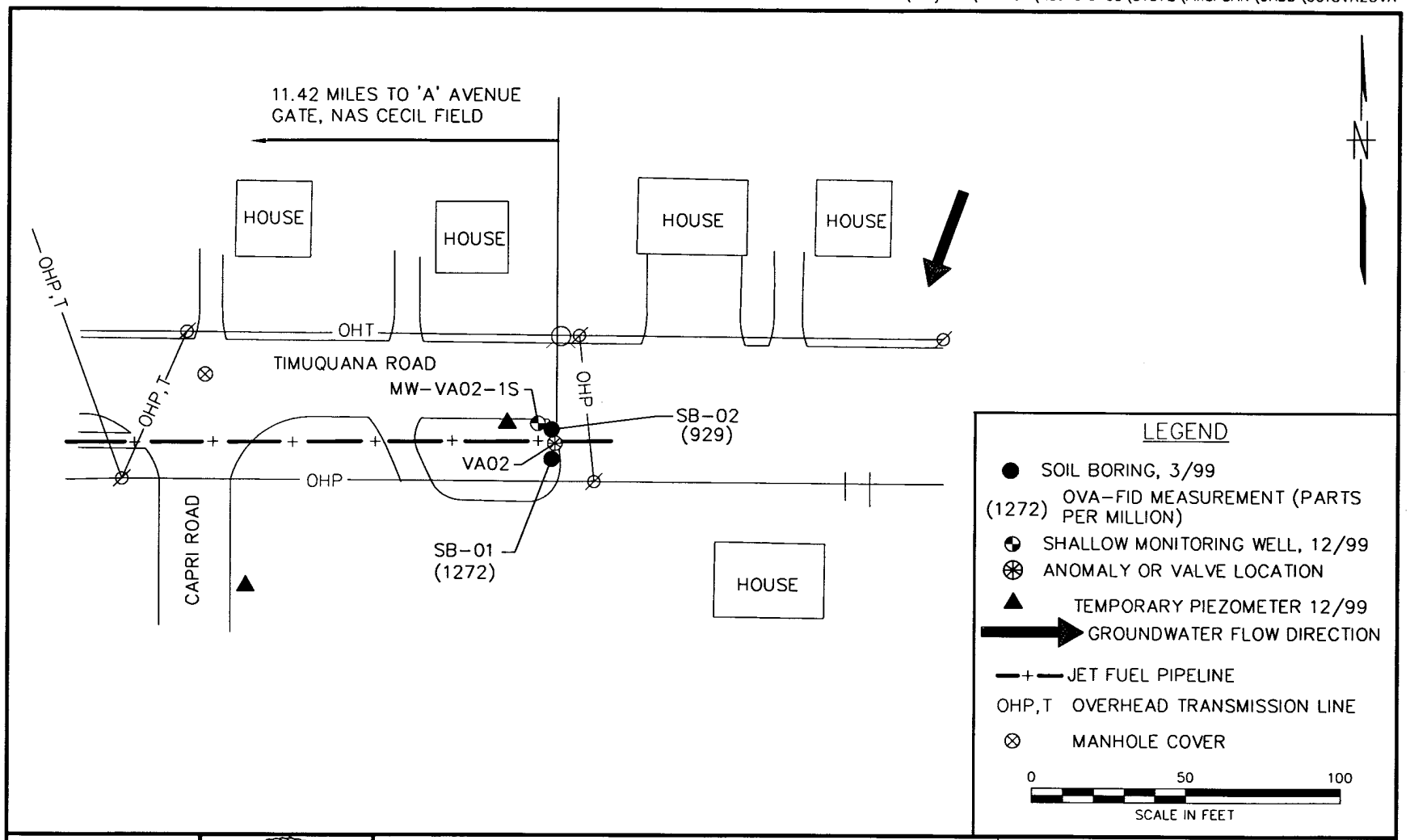
The site is underlain by a gray fine-grained sand to a depth of 5 ft bls. At 5 ft bls, the site is underlain by a gray sandy clay. This soil type extends to at least 9 ft bls, the maximum depth advanced during DPT assessment activities. Soil boring logs for CF-VA02 are included in Appendix A.

3.20.2 Soil Vapor

The vertical and horizontal extent of petroleum impacted soil in the vadose zone was assessed through soil headspace analysis performed during the DPT portion of the investigation. Two soil borings (CF-VA02-SB-01 and 02) were advanced with a hand-auger to a depth of 9 ft bls at the locations shown on Figure 3.20.1. Groundwater was encountered at 6.5 ft bls. Soil samples were collected at 2-ft intervals, and the samples were screened for hydrocarbon vapors with an OVA-PID as described in Section 2.4.2. The results of the soil vapor screening, presented in the Table 3.20.1, indicated soils with hydrocarbon vapors above 10 ppm in both soil borings. The sample and boring logs for CF-VA02 are included in Appendix A.

3.20.3 Soil Quality

Based on the results of the soil headspace analyses, soil samples were collected for confirmation laboratory analysis from each soil boring. Discreet soil samples CF-VA02-SB-01-06 and CF-VA02-SB-02-06 were collected at a depth of 6 ft bls. The soil samples were placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. The confirmatory samples collected at SB-01 and SB-02 contained no VOAs or PAHs at or above FDEP SCTLs. The results of the laboratory analysis are summarized on Table 3.20.2. A Laboratory Soil Analytical Results figure was not created since results did not exceed SCTLs. The complete set of analytical results is presented in Appendix D.



DRAWN BY LLK DATE 1/3/02	SITE PLAN, SAMPLE LOCATIONS, AND SOIL VAPOR SCREENING RESULTS CF-VA02 NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA	CONTRACT NO. 0013	
CHECKED BY DATE		APPROVED BY DATE	
COST/SCHED-AREA		APPROVED BY DATE	
SCALE AS NOTED		DRAWING NO. FIGURE 3.20.1	REV. 0

Table 3.20.1
Soil Vapor Screening Results for CF-VA02

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Soil Boring Number	Date of Measurement	Sample Interval (ft bls)	PID Measurement (ppm)
SB-01	3/26/1999	2	80.1
		4	1267
		6	1272
		8	138
SB-02	3/26/1999	2	810
		4	929
		6	815
		8	80.5

Notes: Soil borings analyzed with a Photo Ionization Detector (PID)

Table 3.20.2
Laboratory Soil Analysis Summary for CF-VA02

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	SB-01 @ 6 ft	SB-02 @ 6 ft			
		3/26/1999	3/26/1999			
Volatile Organic Compounds (USEPA Method 8021B) (µg/kg)						
MTBE	200	2.0U	2.0U			
Benzene	7	1.0U	1.1U			
Toluene	500	1.0U	1.1U			
Chlorobenzene	1300	1.0U	1.1U			
Ethylbenzene	600	71	1.1U			
Total Xylenes	200	65	2.0U			
1,3-Dichlorobenzene	300	1.0U	1.0U			
1,4-Dichlorobenzene	2200	1.0U	1.1U			
1,2 Dichloroethane	10	1.0U	1.0U			
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/kg)						
Naphthalene	1700	21U	20U			
1-Methylnaphthalene	2200	44	40U			
2-Methylnaphthalene	6100	48	40U			
Acenaphthylene	27000	42U	40U			
Acenaphthene	2100	21U	20U			
Phenanthrene	250000	42U	40U			
Anthracene	2500000	4.0I	2.0U			
Fluorene	160000	4.2U	4.0U			
Fluoranthene	1200000	30	4.0U			
Pyrene	880000	26	2.0U			
Benzo (a) Anthracene	1400	9.6	2.0U			
Chrysene	77000	9.1	4.0			
Benzo (b) fluoranthene	1400	8.0I	4.0U			
Benzo (k) fluoranthene	15000	4.0I	2.0U			
Benzo (a) pyrene	100	6.0	2.0U			
Dibenzo (a,h) anthracene	100	4.2U	4.0U			
Benzo (g,h,i) perylene	2300000	4.2U	4.0U			
Indeno (1,2,3-cd) pyrene	1500	4.0	2.0U			

Notes: [1]Chapter 62-777, FAC (August 1999). Most stringent value of groundwater leachability and direct exposure limits.
I = value is between MDL and PQL
U = constituent not detected

3.20.4 Temporary Well Point Sampling

During the site investigation, the soil borings at the site were converted to temporary wells with well screens placed in each soil boring from 0 to 9 ft bls. The groundwater samples were collected and analyzed as described in Section 2.4.2. Groundwater samples were placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. In the groundwater sample collected from the temporary monitoring well installed in SB-01, ethylbenzene (39 µg/L), total xylenes (136 µg/L), naphthalene (120 µg/L), acenaphthalene (28 µg/L), benzo(a)anthracene (1.7 µg/L), benzo(b)fluoranthene (1.5 µg/L), benzo(k)fluoranthene (0.64 µg/L), benzo(a)pyrene (1.4 µg/L), dibenzo(a,h)anthracene (0.98 µg/L), and indeno(1,2,3-cd)pyrene (0.78 µg/L) were detected above FDEP GCTLs. In the groundwater sample collected from the temporary well installed in SB-02, ethylbenzene (32 µg/L), total xylenes (101 µg/L), and naphthalene (87 µg/L) were detected above GCTLs. The groundwater analytical results are summarized on Table 3.20.3 and results exceeding GCTLs are depicted on Figure 3.20.2. The complete set of analytical results is presented in Appendix D.

3.20.5 Monitoring Well Sampling

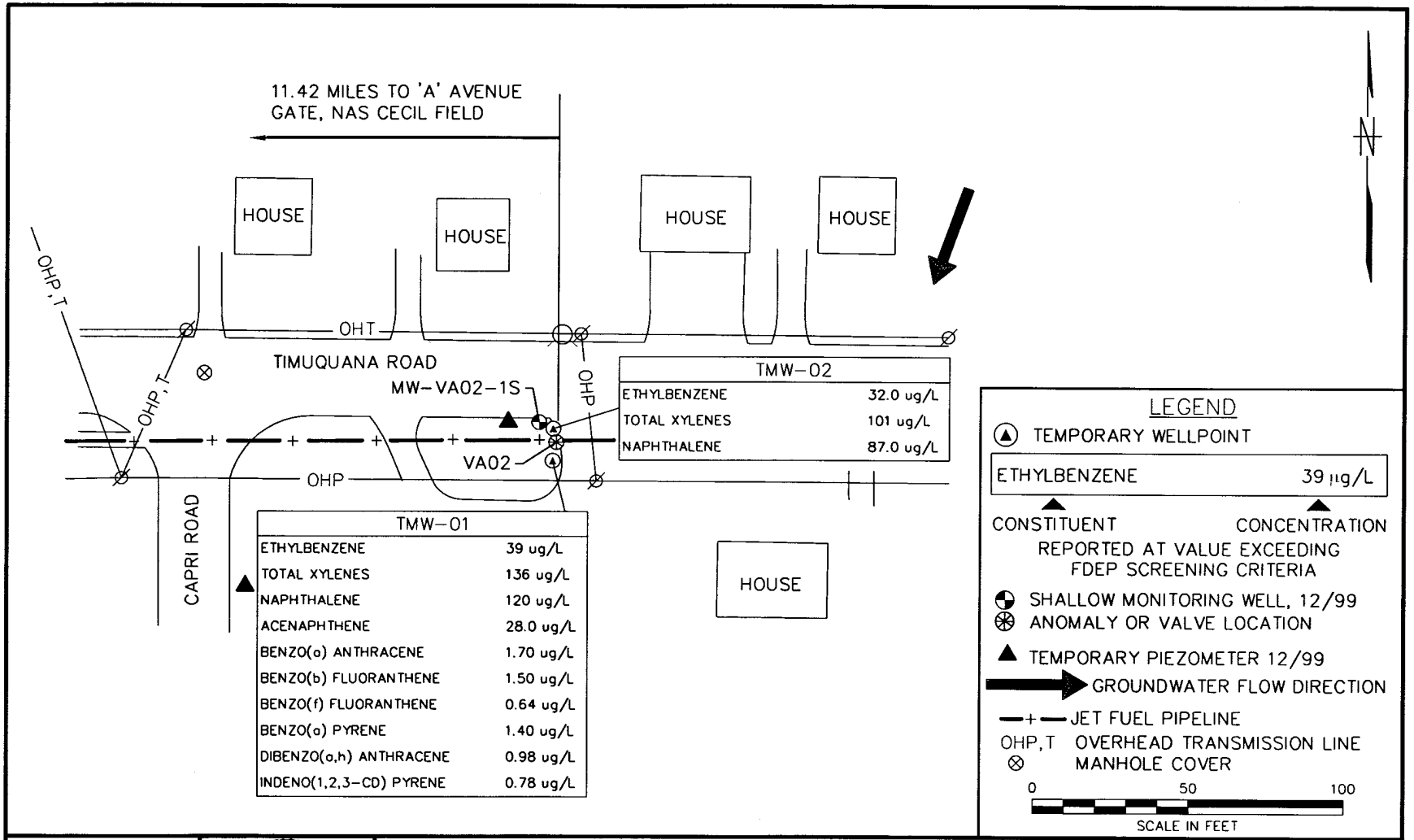
On December 2, 1999, TtNUS installed one permanent monitoring well, CF-VA02-1S, at the location indicated on Figure 3-20. The monitoring well was installed to a depth of 12 ft and screened from 2 to 12 ft bls. The monitoring well was installed and developed as described in Section 2.3.2 and monitoring well installation and development logs are included in Appendix B. On December 13, 1999, TtNUS personnel collected a groundwater sample from monitoring well CF-VA02-1S for analysis of PAHs by USEPA Method 8310. Analytical results from the groundwater sample indicated dissolved hydrocarbon concentrations were below GCTLs for COCs. On December 30, 1999, TtNUS personnel collected a groundwater sample from well CF-VA02-1S for analysis of PAHs by USEPA Method 8310. Analytical results from the groundwater sample indicated dissolved hydrocarbon concentrations were below GCTLs for all COCs. The groundwater analytical results are summarized on Table 3.20.3 and the complete set of analytical results is included in Appendix D.

Table 3.20.3
Groundwater Analytical Results for CF-VA02

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	TMW-01	TMW-02	MW-1	MW-1
		3/26/1999	3/26/1999	12/13/1999	12/30/1999
Volatile Organic Compounds (USEPA Method 8021B) (µg/L)					
Benzene	1	ND	ND	NA	ND
Ethylbenzene	30	**39**	**32**	NA	ND
Toluene	40	ND	ND	NA	ND
Total Xylenes	20	**136**	**101**	NA	ND
MTBE	35	ND	ND	NA	ND
1,2 Dichloroethane	3	ND	ND	NA	ND
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/L)					
Naphthalene	20	**120**	**87**	ND	ND
Acenaphthylene	210	ND	ND	ND	ND
Acenaphthene	20	**28**	18	ND	ND
Phenanthrene	210	ND	ND	ND	ND
Anthracene	2100	1.5	0.2	ND	ND
Fluoranthene	280	7	1	ND	ND
Pyrene	210	3.8	0.98	ND	ND
Benzo (a) Anthracene	0.2	**1.7**	0.1	ND	ND
Chrysene	5	1.5	0.24	ND	ND
Benzo (b) fluoranthene	0.2	**1.5**	ND	ND	ND
Benzo (k) fluoranthene	0.5	**0.64**	ND	ND	ND
Benzo (a) pyrene	0.2	**1.4**	0.07	ND	ND
Dibenzo (a,h) anthracene	0.2	**0.98**	ND	ND	ND
Benzo (g,h,I) perylene	210	0.82	ND	ND	ND
Indeno (1,2,3-cd) pyrene	0.2	**0.78**	ND	ND	ND

Notes: [1]Chapter 62-770, FAC (September 23, 1997)
BOLD = Exceeds Taget Levels
NA = not analyzed
ND = no constituents detected



DRAWN BY LLK	DATE 1/3/02	GROUNDWATER ANALYTICAL RESULTS EXCEEDING FDEP SCREENING CRITERIA CF-VA02 NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA	CONTRACT NO. 0013
CHECKED BY	DATE		APPROVED BY DATE
COST/SCHED-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 3.20.2 REV. 0

3.20.6 Discussion

Data obtained during the DPT assessment indicated OVA responses greater than 50 ppm detected in the two soil borings installed at the site. The two confirmatory soil samples collected for laboratory analysis indicated soil analytical results below SCTLs for all COCs (Chapter 62-770, FAC). The groundwater samples collected from TMW-01 and TMW-02 indicated that ethylbenzene, total xylenes, naphthalene, acenaphthalene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene exceeded the GCTL concentrations (Chapter 62-770, FAC). Due to the sensitivity of the site (the valve location is located on a private residence), TtNUS personnel did not attempt to delineate the soil or groundwater plume further. However, the analytical results from the permanent monitoring well installed at the site indicated that dissolved hydrocarbon concentrations were below GCTLs for all COCs (Chapter 62-770, FAC).

3.21 VALVE NUMBER 6 (CF-VA06)

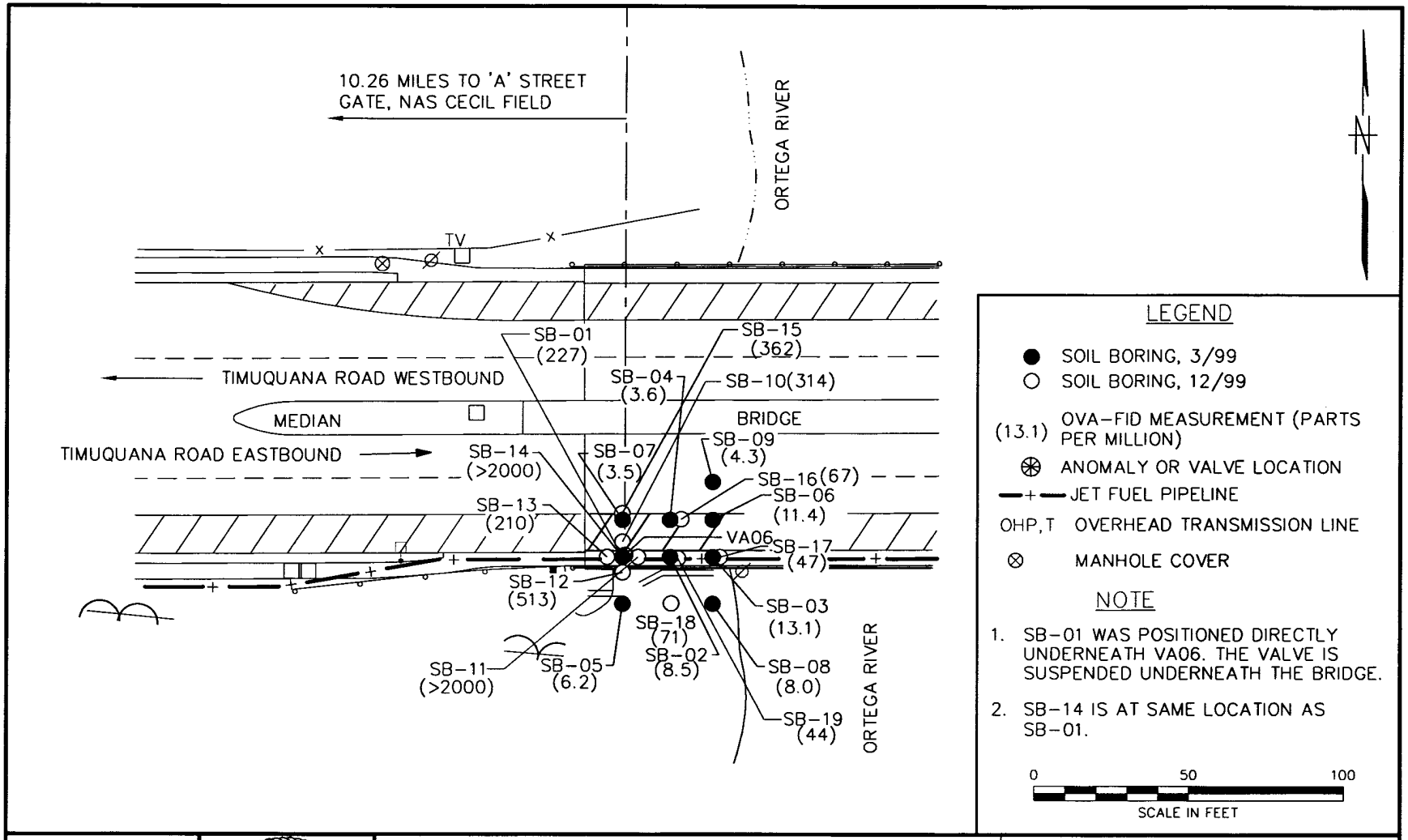
CF-VA06 is located underneath the eastbound lane of Timiquana Road and hangs beneath the Ortega River Bridge. The location of CF-VA06 is indicated on Figure 1-2 (the Site Vicinity Map) and Figure 3.21.1 (the combined Site Plan, Sample Locations, and Soil Vapor Screening Results Map). TtNUS mobilized to site CF-VA06 on March 26, 1999 during the DPT Phase of the investigation. On December 28, 1999, five additional soil borings were advanced and soil samples were collected for laboratory analysis. On February 16, 2000, five additional soil borings were advanced for soil sample collection and laboratory analysis.

3.21.1 Site Lithology

The site is underlain by a gray fine-grained sand with peat to a depth of 4 ft bls. This soil type extends to at least 4 ft bls, the maximum depth advanced during the DPT investigation. Soil boring logs are included in Appendix A.

3.21.2 Soil Vapor

The vertical and horizontal extent of petroleum impacted soil in the vadose zone was assessed through soil headspace analysis performed during the field investigation. Nine soil borings (CF-VA06-SB-01 through 09) were advanced by hand-auger to depths ranging from 1 to 2 ft bls at the locations shown on Figure 3.21.1. Groundwater was encountered at 1 ft bls. Soil samples were collected at the 1-ft interval, and the samples were screened for hydrocarbon vapors with an OVA-PID as described in Section 2.4.2. The results of the soil vapor screening, presented in the Table 3.21.1, indicated elevated headspace readings. Soils collected from SB-01 (located directly beneath the jet fuel valve) indicated hydrocarbon vapors above 50 ppm. Soil borings SB-03 and SB-06 indicated hydrocarbon vapors above 10 ppm. On December 21, 1999, five additional soil borings (CF-VA06-SB-10 through 14) were advanced at the site. Results of the soil vapor screening indicated elevated headspace readings above 50 ppm in all five borings. On February 16, 2000, five additional soil borings (CF-VA06-SB-15 through 19) were advanced at the site. Results of the soil vapor screening indicated elevated headspace readings above 10 ppm in all five borings, and readings above 50 ppm in soil borings SB-15 and SB-16. The DPT sample and boring logs for CF-VA06 are included in Appendix A.



DRAWN BY LLK DATE 11/27/01	SITE PLAN, SAMPLE LOCATIONS, AND SOIL VAPOR SCREENING RESULTS CF-VA06 NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA	CONTRACT NO. 0013	
CHECKED BY DATE		APPROVED BY DATE	
COST/SCHED-AREA		APPROVED BY DATE	
SCALE AS NOTED		DRAWING NO. FIGURE 3.21.1	REV. 0

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Table 3.21.1
Soil Vapor Screening Results for CF-VA06

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Soil Boring Number	Date of Measurement	Sample Interval (ft bls)	PID Measurement (ppm)
SB-01	3/25/1999	1	61.3
		2	227.0
SB-02	3/25/1999	1	8.5
SB-03	3/25/1999	1	13.1
SB-04	3/25/1999	1	3.6
SB-05	3/25/1999	1	6.2
SB-06	3/25/1999	1	11.4
SB-07	3/25/1999	1	3.5
SB-08	3/25/1999	1	8.0
SB-09	3/25/1999	1	4.3
SB-10	12/28/1999	1	314.0
SB-11	12/28/1999	1	>2000
SB-12	12/28/1999	1	513.0
SB-13	12/28/1999	1	210.0
SB-14	12/28/1999	1.5	>2000
SB-15	2/16/2000	1	362.0
SB-16	2/16/2000	1	67.0
SB-17	2/16/2000	1	47.0
SB-18	2/16/2000	1	71.0
SB-19	2/16/2000	0.5	44.0

Notes: Soil borings analyzed with a Photo Ionization Detector (PID)

3.21.3 Soil Quality

During the first site field investigation, one soil sample was collected for laboratory analysis. Discrete soil sample CF-VA06-SB-01-01 was collected at 1 ft bls. The soil sample was placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. The confirmatory soil sample collected at SB-01 contained no VOAs or PAHs at or above FDEP SCTLs. Ten additional soil samples were collected for laboratory analysis (CF-V06-SB-10 through 19) at 1 ft bls, during the additional two site visits. Results of the soil analysis indicated benzo(a)pyrene exceeded the FDEP SCTL of 100 µg/kg in soil samples collected from SB-01 (130µg/kg), SB-10 (100 µg/kg), SB-11 (1500 µg/kg), and SB-19 (120 µg/kg). In SB-01, dibenzo(a,h)anthracene (150 µg/kg) exceeded the SCTL of 100 µg/kg. In SB-11, 1-methylnaphthalene (3300 µg/kg), acenaphthene (5600 µg/kg), benzo(a)anthracene (3000 µg/kg), benzo(b)fluoranthene (1800 µg/kg), and dibenzo(a,h)anthracene (1200 µg/kg) exceeded the SCTLs of 2200 µg/kg, 2100 µg/kg, 1400 µg/kg, 1400µg/kg, and 100 µg/kg, respectively. No other tested constituents were detected at or above FDEP SCTLs. The results of the laboratory soil analyses are summarized on Table 3.21.2, and exceedances illustrated on Figure 3.21.2. The complete set of analytical results is presented in Appendix D.

Based on soil screening data and fixed based lab results, the mass of contaminated soil, according to Chapter 62-770, FAC, appears to be located to a depth of 2 ft bls in the area of SB-01, SB-10, SB-11, and SB-19 as depicted on Figure 3.21.3. The soil contamination is located under the Ortega River Bridge and is not covered by asphalt. The location of the mass of contaminated soil is based on the field activities performed during the site investigation within the area delineated by soil borings SB-12, SB-13, SB-15, SB-16, and SB-17.

3.21.4 Temporary Well Point Sampling

During the first phase of the investigation, soil boring SB-01 was converted to a temporary monitoring well with the screen positioned from 0 to 4 ft bls. The groundwater sample was collected and analyzed as described in Section 2.4.4. The groundwater sample was placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. The groundwater analytical results, presented on Table 3.21.3, indicated no petroleum product COCs in groundwater above 62-770 GCTLs. A Groundwater Analytical Results figure was not created since results did not exceed GCTLs. The complete set of analytical results is presented in Appendix D.

3.21.5 Monitoring Well Sampling

Permanent monitoring wells were not installed at CF-VA06.

Table 3.21.2
Laboratory Soil Analysis Summary for CF-VA06

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	SB-01 @ 1 ft	SB-10 @ 1 ft	SB-11 @ 1 ft	SB-12 @ 1 ft	SB-13 @ 1 ft
		3/26/1999	12/28/1999	12/28/1999	12/28/1999	12/28/1999
Volatile Organic Compounds (USEPA Method 8021B) (µg/kg)						
MTBE	200	2.0U	NA	NA	NA	NA
Benzene	7	1.0U	NA	NA	NA	NA
Toluene	500	1.0U	NA	NA	NA	NA
Chlorobenzene	1300	1.0U	NA	NA	NA	NA
Ethylbenzene	600	1.0U	NA	NA	NA	NA
Total Xylenes	200	2.0U	NA	NA	NA	NA
1,3-Dichlorobenzene	300	1.0U	NA	NA	NA	NA
1,4-Dichlorobenzene	2200	1.0U	NA	NA	NA	NA
1,2 Dichloroethane	10	1.0U	NA	NA	NA	NA
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/kg)						
Naphthalene	1700	21U	21U	23U	21U	25U
1-Methylnaphthalene	2200	44	260	**3300**	120	150
2-Methylnaphthalene	6100	44	43U	4600	41U	180
Acenaphthylene	27000	42U	43U	820	41U	49U
Acenaphthene	2100	85	350	**5600**	30	160
Phenanthrene	250000	42U	200	5300	41U	85
Anthracene	2500000	2.0U	40	1200	2.0U	13
Fluorene	160000	8.5	18	420	4.1U	6.3
Fluoranthene	1200000	180	190	4800	31	180
Pyrene	880000	440	140	1600	16	35
Benzo (a) Anthracene	1400	59	130	**3000**	18	48
Chrysene	77000	47	180	3300	18	79
Benzo (b) fluoranthene	1400	200	120	**1800**	22	59
Benzo (k) fluoranthene	15000	86	52	930	32	29
Benzo (a) pyrene	100	**130**	**100**	**1500**	16	53
Dibenzo (a,h) anthracene	100	**150**	87	**1200**	14	59
Benzo (g,h,i) perylene	2300000	92	73	930	4.1U	31
Indeno (1,2,3-cd) pyrene	1500	120	64	810	47	54

Notes: [1]Chapter 62-777, FAC (August 1999). Most stringent value of groundwater leachability and direct exposure limits.
BOLD = Exceeds target levels
NA = not analyzed
U = constituent not detected

Table 3.21.2 (Continued)
Laboratory Soil Analysis Summary for CF-VA06

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	SB-14 @ 1.0 ft	SB-15 @ 1.0 ft	SB-16 @ 1.0 ft	SB-17 @ 1.0 ft	Duplicate of SB-17
		12/28/1999	2/16/2000	2/16/2000	2/16/2000	2/16/2000
Volatile Organic Compounds (USEPA Method 8021B) (µg/kg)						
MTBE	200	NA	NA	NA	NA	NA
Benzene	7	NA	NA	NA	NA	NA
Toluene	500	NA	NA	NA	NA	NA
Chlorobenzene	1300	NA	NA	NA	NA	NA
Ethylbenzene	600	NA	NA	NA	NA	NA
Total Xylenes	200	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	300	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	2200	NA	NA	NA	NA	NA
1,2 Dichloroethane	10	NA	NA	NA	NA	NA
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/kg)						
Naphthalene	1700	21U	20U	21U	20U	23U
1-Methylnaphthalene	2200	41U	41U	42U	41U	46U
2-Methylnaphthalene	6100	41U	41U	42U	41U	46U
Acenaphthylene	27000	41U	41U	42U	41U	46U
Acenaphthene	2100	21U	20U	21U	20U	23U
Phenanthrene	250000	41U	41U	42U	41U	46U
Anthracene	2500000	2.0	20U	21U	20U	23U
Fluorene	160000	4.1U	4.1U	4.2U	4.1U	4.6U
Fluoranthene	1200000	12.0	21.0	20.0	47.0	42.0
Pyrene	880000	9.0	26.0	32.0	79.0	94.0
Benzo (a) Anthracene	1400	3.3	20U	21U	44.0	36.0
Chrysene	77000	5.3	4.1U	13.0	38.0	43.0
Benzo (b) fluoranthene	1400	5.0	4.1U	4.2U	37.0	43.0
Benzo (k) fluoranthene	15000	2.0	27.0	4.2U	23.0	25.0
Benzo (a) pyrene	100	2.0	4.1U	4.2U	27.0	35.0
Dibenzo (a,h) anthracene	100	21.0	4.1U	4.2U	14.0	29.0
Benzo (g,h,i) perylene	2300000	4.1U	4.1U	4.2U	20	29
Indeno (1,2,3-cd) pyrene	1500	2.1U	4.1U	4.2U	9.4	15

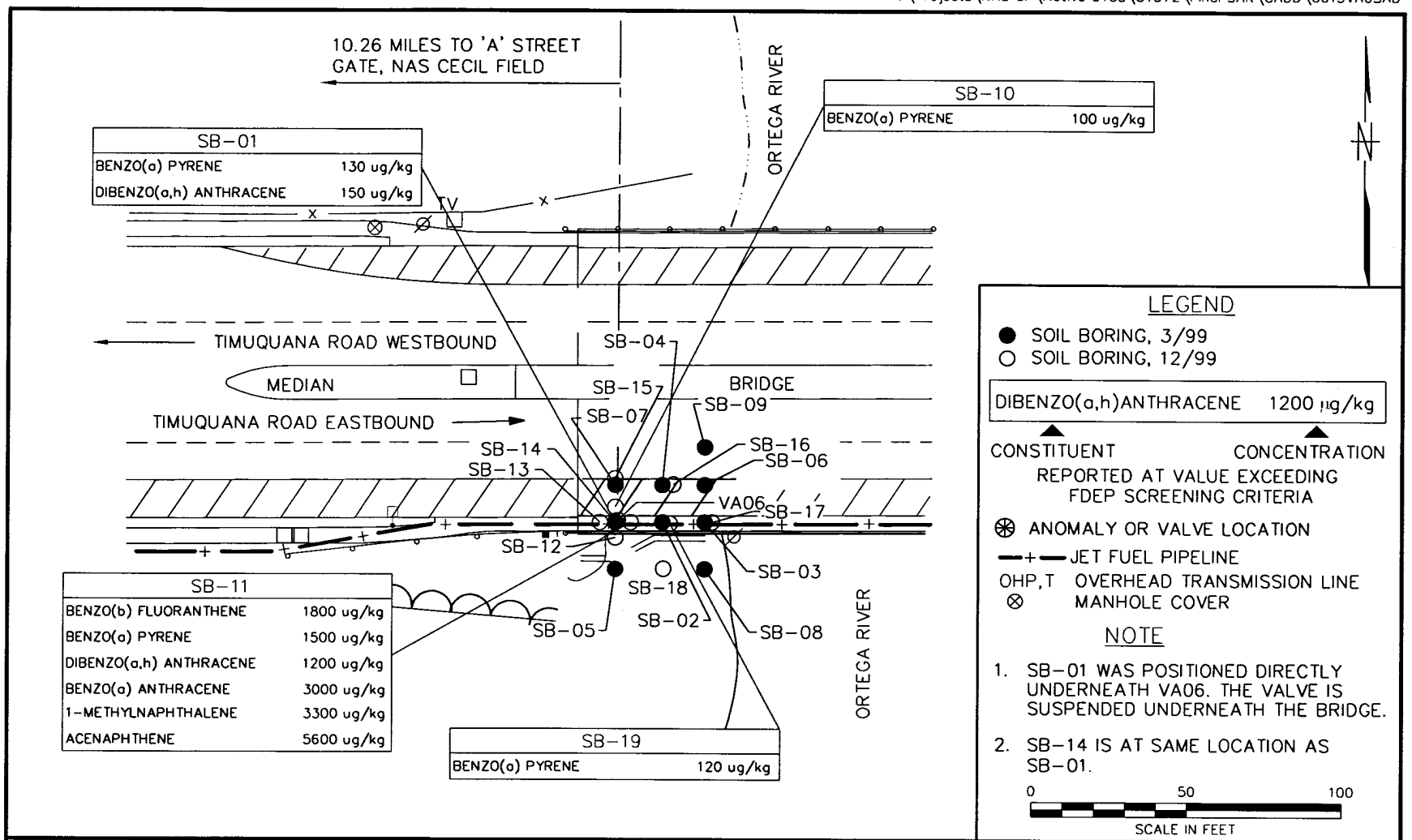
Notes: [1]Chapter 62-777, FAC (August 1999). Most stringent value of groundwater leachability and direct exposure limits.
BOLD = Exceeds target levels
NA = not analyzed
U = constituent not detected

Table 3.21.2 (Continued)
Laboratory Soil Analysis Summary for CF-VA06

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	SB-18 @ 1.0 ft	SB-19 @ 1.0 ft	Duplicate of SB-19
		2/16/2000	2/16/2000	2/16/2000
Volatile Organic Compounds (USEPA Method 8021B) (µg/kg)				
MTBE	200	NA	NA	NA
Benzene	7	NA	NA	NA
Toluene	500	NA	NA	NA
Chlorobenzene	1300	NA	NA	NA
Ethylbenzene	600	NA	NA	NA
Total Xylenes	200	NA	NA	NA
1,3-Dichlorobenzene	300	NA	NA	NA
1,4-Dichlorobenzene	2200	NA	NA	NA
1,2 Dichloroethane	10	NA	NA	NA
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/kg)				
Naphthalene	1700	21U	21U	20U
1-Methylnaphthalene	2200	43U	41U	40U
2-Methylnaphthalene	6100	43U	41U	40U
Acenaphthylene	27000	43U	41U	40U
Acenaphthene	2100	21U	21U	20U
Phenanthrene	250000	43U	50	40U
Anthracene	2500000	21U	21U	20U
Fluorene	160000	4.3U	4.1U	4.0U
Fluoranthene	1200000	5.1	240	65
Pyrene	880000	7.0	290	67
Benzo (a) Anthracene	1400	21U	280	32
Chrysene	77000	4.3U	160	39
Benzo (b) fluoranthene	1400	6.0	140	33
Benzo (k) fluoranthene	15000	6.2	80	24
Benzo (a) pyrene	100	5.0	**120**	29
Dibenzo (a,h) anthracene	100	4.3U	82	13
Benzo (g,h,i) perylene	2300000	5	120	18
Indeno (1,2,3-cd) pyrene	1500	4.3U	65	20

Notes: [1]Chapter 62-777, FAC (August 1999). Most stringent value of groundwater leachability and direct exposure limits.
BOLD = Exceeds target levels
NA = not analyzed
U = constituent not detected



DRAWN BY LLK DATE 11/27/01	LABORATORY SOIL ANALYTICAL RESULTS EXCEEDING FDEP SCREENING CRITERIA CF-VA06 NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA	CONTRACT NO. 0013	
CHECKED BY DATE		APPROVED BY DATE	
COST/SCHED-AREA		APPROVED BY DATE	
SCALE AS NOTED		DRAWING NO. FIGURE 3.21.2	REV. 0

FORM CADD NO. SDIV_AH.DWG - REV 0 - 1/20/98

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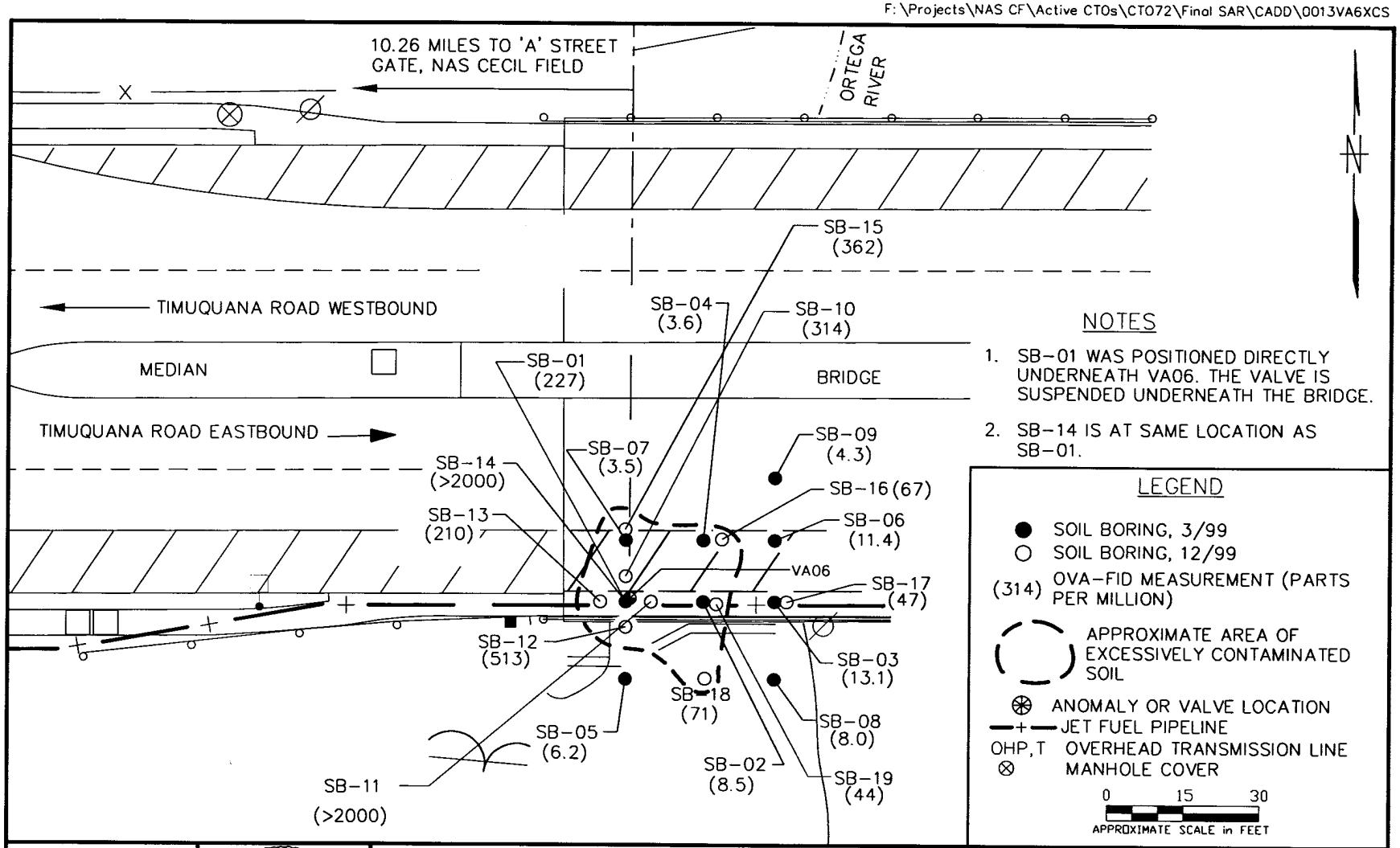


DRAWN BY LLK DATE 2/18/02	APPROXIMATE AREA OF EXCESSIVELY CONTAMINATED SOIL CF-VA06 NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA	CONTRACT NO. 0013
CHECKED BY DATE		APPROVED BY DATE
COST/SCHED-AREA		APPROVED BY DATE
SCALE AS NOTED		DRAWING NO. FIGURE 3.21.3 REV. 0

FORM CADD NO. SDIV_AH.DWG - REV 0 - 1/20/98

Table 3.21.3
Groundwater Analytical Results for CF-VA06

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	TMW-01					
		3/26/1999					
Volatile Organic Compounds (USEPA Method 8021B) (µg/L)							
Benzene	1	ND					
Ethylbenzene	30	ND					
Toluene	40	ND					
Total Xylenes	20	ND					
MTBE	35	ND					
1,2 Dichloroethane	3	ND					
Polynuclear Aromatic Hydrocarbons(USEPA Method 8310) (µg/L)							
Naphthalene	20	ND					
Acenaphthylene	210	ND					
Acenaphthene	20	ND					
Phenanthrene	210	0.06					
Anthracene	2100	ND					
Fluoranthene	280	ND					
Pyrene	210	ND					
Benzo (a) Anthracene	0.2	ND					
Chrysene	5	ND					
Benzo (b) fluoranthene	0.2	ND					
Benzo (k) fluoranthene	0.5	ND					
Benzo (a) pyrene	0.2	ND					
Dibenzo (a,h) anthracene	0.2	ND					
Benzo (g,h,I) perylene	210	ND					
Indeno (1,2,3-cd) pyrene	0.2	ND					

Notes: [1]Chapter 62-770, FAC (September 23, 1997)
ND = no constituents detected

3.21.6 Discussion

Data obtained during the DPT assessment indicated that of the 19 soil borings installed during the field investigation at Site CF-VA06, nine borings had OVA responses above 50 ppm indicating excessively contaminated soil as defined by Chapter 62-770, FAC. Petroleum product COCs detected in soil were at or above SCTLs (Chapter 62-770, FAC) in soil borings SB-01, SB-10, SB-11, and SB-19. The soil borings SB-12, SB-13, SB-15, SB-16, SB-17, and SB-18 delineated the area of petroleum impacted soil. The petroleum impacted soil is approximately 2 ft bls and is not covered by asphalt. No petroleum product COCs were detected in groundwater above GCTLs in the temporary monitoring well (Chapter 62-770, FAC).

3.22 VALVE NUMBER 7 (CF- VA07)

CF-VA07 is located approximately 100 ft west of the intersection of Timiquana Road and Catoma Road. The location of CF-VA07 is indicated on Figure 1-2 (the Site Vicinity Map) and Figure 3.22.1 (the combined Site Plan, Sample Locations, and Soil Vapor Screening Results Map). TtNUS mobilized to site CF-VA07 on March 22, 1999 for the DPT portion of the investigation. On December 2, 1999, TtNUS revisited the site to install one permanent groundwater monitoring well. The permanent well was developed on December 9, 1999 and sampled on December 14, 1999.

3.22.1 Site Lithology

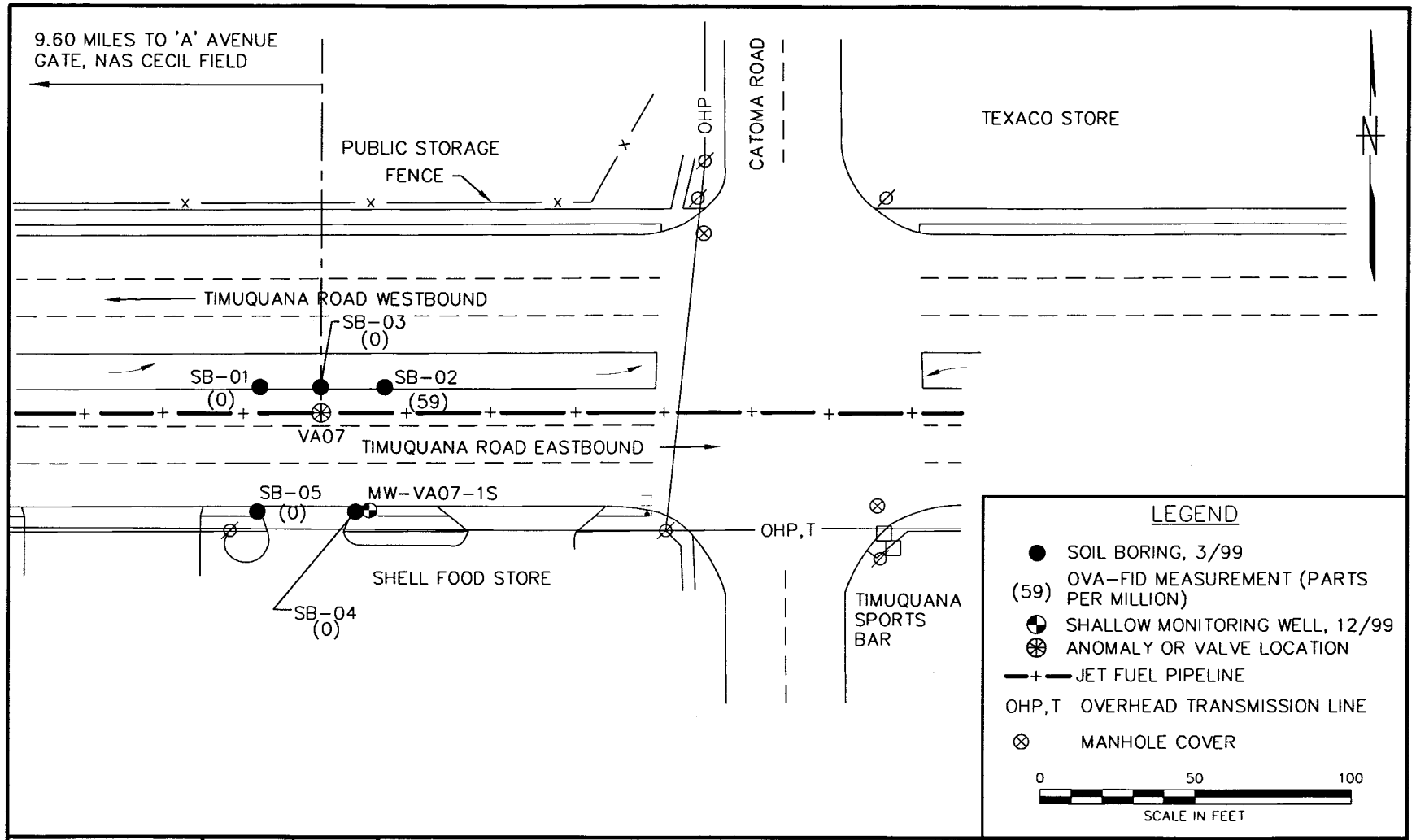
The site is underlain by a brown fine-grained silty sand to a depth of 3 ft bls. At 3 ft bls, the site is underlain by a orange fine-grained sand. This soil type extends to at least 8 ft bls, the maximum depth advanced during DPT assessment activities. Soil boring logs for CF-VA07 are included in Appendix A.

3.22.2 Soil Vapor

The vertical and horizontal extent of petroleum impacted soil in the vadose zone was assessed through soil headspace analysis performed during the DPT portion of the investigation. Five soil borings (CF-VA07-SB-01 through 05) were advanced by DPT to a depth of 8 ft bls at the locations shown on Figure 3.22.1. Groundwater was encountered at 4 ft bls. Soil samples were collected at 2-ft intervals, and the samples were screened for hydrocarbon vapors with an OVA-PID as described in Section 2.4.2. The results of the soil vapor screening, presented in the Table 3.22.1, indicated soils with hydrocarbon vapors above 10 ppm in soil boring SB-02. TtNUS attributed the elevated headspace reading in SB-02 to the presence of asphalt in the shallowest sample. The sample and boring logs for CF-VA07 are included in Appendix A.

3.22.3 Soil Quality

Based on the results of the soil headspace analyses, one soil sample was collected for laboratory analysis. Discreet soil sample CF-VA07-SB-03-04 was collected at a depth of 4 ft bls. The soil sample was placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. The confirmatory samples collected at SB-03 contained no VOAs or PAHs at or above FDEP SCTLs. The results of the laboratory analysis are summarized on Table 3.22.2. A Laboratory Soil Analytical Results figure was not created since results did not exceed SCTLs. The complete set of analytical results is presented in Appendix D.



DRAWN BY LLK	DATE 1/3/02	SITE PLAN, SAMPLE LOCATIONS, AND SOIL VAPOR SCREENING RESULTS CF-VA07 NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA	CONTRACT NO. 0013
CHECKED BY	DATE		APPROVED BY DATE
COST/SCHED-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 3.22.1 REV. 0

Table 3.22.1
Soil Vapor Screening Results for CF-VA07

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Soil Boring Number	Date of Measurement	Sample Interval (ft bls)	PID Measurement (ppm)
SB-01	3/22/1999	2	0.0
		4	0.0
		6	0.0
		8	0.0
SB-02	3/22/1999	2	59.0
		4	0.0
		6	0.0
		8	0.0
SB-03	3/22/1999	2	0.0
		4	0.0
		6	0.0
		8	0.0
SB-04	3/22/1999	2	0.0
		4	0.0
		6	0.0
		8	0.0
SB-05	3/22/1999	2	0.0
		4	0.0
		6	NS
		8	NS

Notes: Soil borings analyzed with a Photo Ionization Detector (PID)
NS = not sampled

Table 3.22.2
Laboratory Soil Analysis Summary for CF-VA07

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	SB-03 @ 4 ft				
		3/22/1999				
Volatile Organic Compounds (USEPA Method 8021B) (µg/kg)						
MTBE	200	3.0U				
Benzene	7	1.0U				
Toluene	500	1.0U				
Chlorobenzene	1300	1.0U				
Ethylbenzene	600	1.0U				
Total Xylenes	200	3.0U				
1,3-Dichlorobenzene	300	1.0U				
1,4-Dichlorobenzene	2200	1.0U				
1,2 Dichloroethane	10	1.0U				
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/kg)						
Naphthalene	1700	22U				
1-Methylnaphthalene	2200	44U				
2-Methylnaphthalene	6100	44U				
Acenaphthylene	27000	44U				
Acenaphthene	2100	22U				
Phenanthrene	250000	44U				
Anthracene	2500000	3.0U				
Fluorene	160000	4.4U				
Fluoranthene	1200000	4.4U				
Pyrene	880000	2.2U				
Benzo (a) Anthracene	1400	4.3				
Chrysene	77000	2.2U				
Benzo (b) fluoranthene	1400	33				
Benzo (k) fluoranthene	15000	10				
Benzo (a) pyrene	100	6.0				
Dibenzo (a,h) anthracene	100	4.4U				
Benzo (g,h,i) perylene	2300000	4.4U				
Indeno (1,2,3-cd) pyrene	1500	16				

Notes: [1]Chapter 62-777, FAC (August 1999). Most stringent value of groundwater leachability and direct exposure limits.
U = constituent not detected

3.22.4 Temporary Well Point Sampling

During the site investigation, the soil borings at the site were converted to temporary wells and the DPT screen was deployed from 4 to 8 ft bls in each boring. The groundwater samples were collected and analyzed as described in Section 2.4.2. Groundwater samples were placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. In the groundwater sample collected from the temporary monitoring well installed in SB-04, benzo(b)fluoranthene (0.23 µg/L) was detected above the FDEP GCTL of 0.2 µg/L. The groundwater analytical results are summarized on Table 3.22.3 and results exceeding GCTLs are depicted on Figure 3.22.2. The complete set of analytical results is presented in Appendix D.

3.22.5 Monitoring Well Sampling

On December 2, 1999, TtNUS installed one permanent monitoring well, CF-VA07-1S, at the location indicated on Figure 3.22.2. The monitoring well was installed to a depth of 13 ft, and screened from 3 to 13 ft bls. The monitoring well was installed and developed as described in Section 2.3.2 and monitoring well installation and development logs are included in Appendix B. On December 14, 1999, TtNUS personnel collected a groundwater sample from monitoring well CF-VA07-1S for analysis of PAHs by USEPA Method 8310. Analytical results from the groundwater sample indicated dissolved hydrocarbon concentrations were below GCTLs for all COCs. The groundwater analytical results are summarized on Table 3.22.3 and the complete set of analytical results is included in Appendix D.

3.22.6 Discussion

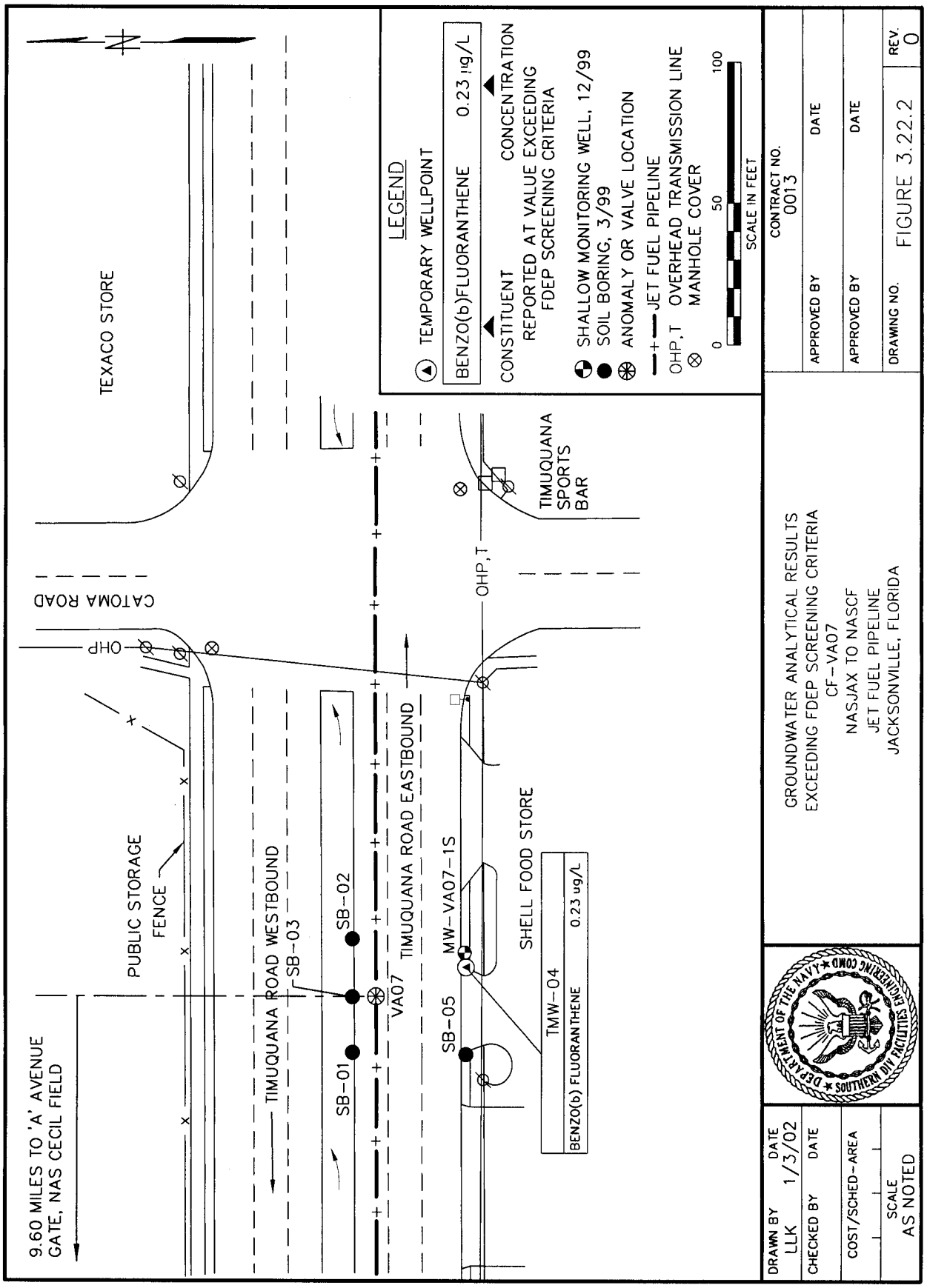
Data obtained during the DPT assessment indicated OVA responses greater than 50 ppm detected in the one soil boring installed at the site. TtNUS attributed the elevated headspace reading to asphalt in the shallow soil sample. The confirmatory soil sample collected for laboratory analysis indicated soil analytical results below SCTLs for all COCs (Chapter 62-770, FAC). The groundwater samples collected from TMW-04 indicated benzo(b)fluoranthene exceeded the GCTL concentration (Chapter 62-770, FAC). However, the analytical results from the permanent monitoring well installed at the site indicated that dissolved hydrocarbon concentrations were below GCTLs for all COCs (Chapter 62-770, FAC).

Table 3.22.3
Groundwater Analytical Results for CF-VA07

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	TMW-01	TMW-02	TMW-03	TMW-04	TMW-05	MW-1
		3/22/1999	3/22/1999	3/22/1999	3/22/1999	3/22/1999	12/14/1999
Volatile Organic Compounds (USEPA Method 8021B) (μg/L)							
Benzene	1	ND	ND	ND	ND	ND	NA
Ethylbenzene	30	ND	ND	ND	ND	ND	NA
Toluene	40	ND	ND	ND	ND	ND	NA
Total Xylenes	20	ND	ND	ND	ND	ND	NA
MTBE	35	ND	ND	ND	ND	ND	NA
1,2 Dichloroethane	3	ND	ND	ND	ND	ND	NA
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (μg/L)							
Naphthalene	20	ND	ND	ND	ND	ND	1.0
Acenaphthylene	210	ND	ND	ND	ND	ND	ND
Acenaphthene	20	ND	ND	ND	ND	ND	ND
Phenanthrene	210	ND	ND	ND	ND	ND	ND
Anthracene	2100	ND	ND	ND	0.05	ND	ND
Fluoranthene	280	ND	ND	ND	ND	ND	ND
Pyrene	210	ND	ND	ND	0.16	ND	ND
Benzo (a) Anthracene	0.2	ND	ND	ND	0.09	ND	ND
Chrysene	5	0.05	ND	ND	ND	ND	ND
Benzo (b) fluoranthene	0.2	ND	ND	ND	**0.23**	ND	ND
Benzo (k) fluoranthene	0.5	ND	ND	ND	0.1	ND	ND
Benzo (a) pyrene	0.2	ND	ND	ND	0.06	ND	ND
Dibenzo (a,h) anthracene	0.2	ND	ND	ND	0.15	ND	ND
Benzo (g,h,I) perylene	210	ND	ND	ND	ND	ND	ND
Indeno (1,2,3-cd) pyrene	0.2	ND	ND	ND	0.11	ND	ND

Notes: [1]Chapter 62-770, FAC (September 23, 1997)
BOLD = Exceeds Taget Levels
NA = not analyzed
ND = no constituents detected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TEXACO STORE
CATOMA ROAD
OHP
PUBLIC STORAGE
FENCE
9.60 MILES TO 'A' AVENUE
GATE, NAS CECIL FIELD
TIMUQUANA ROAD WESTBOUND
SB-03
SB-01
SB-02
VA07
TIMUQUANA ROAD EASTBOUND
MW-VA07-1S
SB-05
OHP,T
TIMUQUANA
SPORTS
BAR
SHELL FOOD STORE
TMW-04
BENZO(b) FLUORANTHENE 0.23 ug/L
LEGEND
TEMPORARY WELLPOINT
BENZO(b)FLUORANTHENE 0.23 µg/L
CONSTITUENT
CONCENTRATION
REPORTED AT VALUE EXCEEDING
FDEP SCREENING CRITERIA
SHALLOW MONITORING WELL, 12/99
SOIL BORING, 3/99
ANOMALY OR VALVE LOCATION
JET FUEL PIPELINE
OHP,T OVERHEAD TRANSMISSION LINE
MANHOLE COVER
0
50
100
SCALE IN FEET
CONTRACT NO.
0013
APPROVED BY
DATE
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FIGURE 3.22.2
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0
GROUNDWATER ANALYTICAL RESULTS
EXCEEDING FDEP SCREENING CRITERIA
CF-VA07
NASJAX TO NASCF
JET FUEL PIPELINE
JACKSONVILLE, FLORIDA
DEPARTMENT OF THE NAVY
SOUTHERN DIV FACILITIES ENGINEERING COMD
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3.23 VALVE NUMBER 8 (CF-VA08)

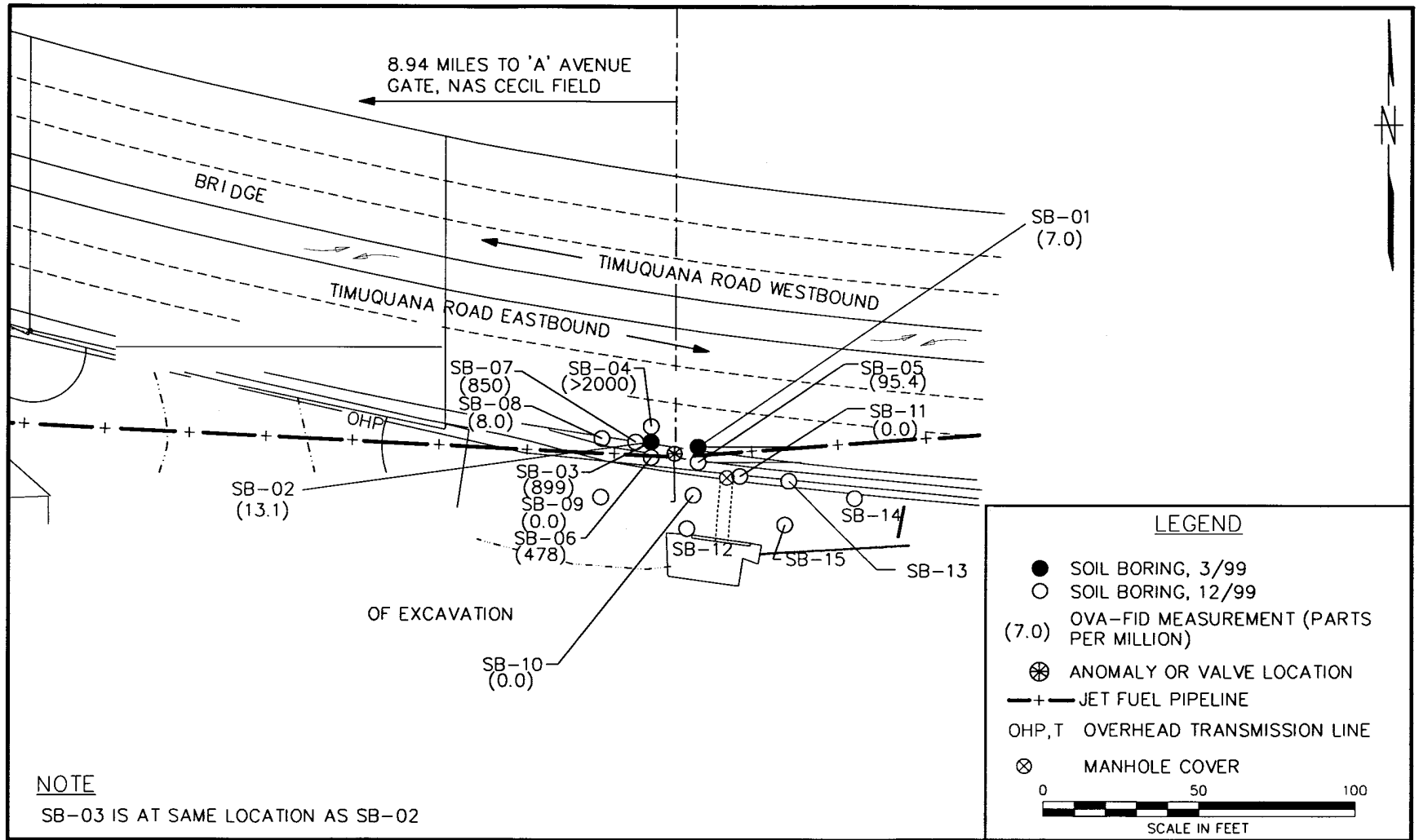
CF-VA08 is located along Timiquana Road approximately 0.25 mile east of the intersection of Wesconnet Boulevard. The location of CF-VA08 is indicated on Figure 1-2 (the Site Vicinity Map) and Figure 3.23.1 (the combined Site Plan, Sample Locations, and Soil Vapor Screening Results Map). The valve at CF-VA08 is located inside a concrete manhole. TtNUS mobilized to site CF-VA08 on March 18, 1999 for the DPT phase of the investigation. During the DPT field investigation, TtNUS inspected the interior of the manhole and visual evidence of petroleum products was observed on the valve body and within the valve box. On December 2, 1999, TtNUS installed one permanent monitoring well. The permanent monitoring well was developed on December 9, 1999 and sampled on December 14, 1999. On December 22, 1999, December 28, 1999, February 16, 2000, March 2, 2000, and October 27, 2000, additional soil borings were advanced and soil samples were collected for laboratory analysis.

3.23.1 Site Lithology

The site is underlain by a gray/light brown fine-grained sand to a depth of 14 ft bls. At 14 ft bls, the site is underlain by a gray/light brown silty sand to a depth of 15 ft bls. At 15 ft bls, the site is underlain by a gray/light brown fine-grained sand with clay. This soil type extends to at least 16 ft bls, the maximum depth advanced during the DPT investigation. Soil boring logs are included in Appendix A.

3.23.2 Soil Vapor

The vertical and horizontal extent of petroleum impacted soil in the vadose zone was assessed through soil headspace analysis performed during the DPT investigation. Two soil borings (CF-VA08-SB-01 and 02) were advanced by DPT to a depth of 16 ft bls at the locations shown on Figure 3.23.1. Groundwater was encountered at 14 ft bls. Soil samples were collected at the 2-ft intervals from 0 to 16 ft bls, and the samples were screened for hydrocarbon vapors with an OVA-PID as described in Section 2.4.2. The results of the soil vapor screening, presented in the Table 3.23.1, indicated hydrocarbon vapors above 10 ppm, but less than 50 ppm from soil boring SB-02. On December 22, 1999, four additional soil borings (CF-VA08-SB-03, 04, 06, and 07) were advanced at the site. Results of the soil vapor screening indicated elevated headspace readings above 50 ppm in all four borings. On December 28, 2000, one additional soil boring was advanced at the site (CF-VA08-SB-05). Results of the screening indicated elevated headspace readings above 50 ppm. On February 16, 2000, four additional soil borings (CF-VA08-SB-08 through 11) were advanced at the site. Results of the soil vapor screening indicated headspace readings below 10 ppm in all four borings. Additional soil borings were advanced at the site on March 2 and October 27, 2000. However, the borings were advanced for soil collection and laboratory analysis and



NOTE

SB-03 IS AT SAME LOCATION AS SB-02

DRAWN BY LLK DATE 11/27/01	SITE PLAN, SAMPLE LOCATIONS, AND SOIL VAPOR SCREENING RESULTS CF-VA08 NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA	CONTRACT NO. 0013	
CHECKED BY DATE		APPROVED BY DATE	
COST/SCHED-AREA		APPROVED BY DATE	
SCALE AS NOTED		DRAWING NO. FIGURE 3.23.1	REV. 0

FORM CADD NO. SDIV_AH.DWG - REV 0 - 1/20/98

Table 3.23.1
Soil Vapor Screening Results for CF-VA08

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Soil Boring Number	Date of Measurement	Sample Interval (ft bls)	PID Measurement (ppm)
SB-01	3/18/1999	2	2.6
		4	1.2
		6	7.0
		8	6.7
		10	3.5
		12	2.1
		14	1.3
		16	0.0
SB-02	3/18/1999	2	2.3
		4	8.1
		6	8.5
		8	13.1
		10	11.5
		12	11.9
		14	8.3
		16	7.2
SB-03	12/22/1999	2	844.0
		4	813.0
		6	819.0
		8	899.0
SB-04	12/22/1999	2	110.0
		4	>2000
		6	559.0
		8	496.0
SB-05	12/29/1999	2	0.0
		4	0.0
		6	0.0
		8	95.4
SB-06	12/22/1999	2	430.0
		4	458.0
		6	478.0
		8	--
SB-07	12/22/1999	2	486.0
		4	850.0
		6	806.0
		8	758.0
SB-08	2/16/2000	2	0.0
		4	5.6
		6	0.0
		8	2.0
SB-09	2/16/2000	2	0.0
		3.5	0.0
SB-10	2/16/2000	2	0.0
		3.5	0.0
SB-11	2/16/2000	2	0.0
		4	0.0
		6	0.0
		8	0.0

Notes: Soil borings analyzed with a Photo Ionization Detector (PID)

soil headspace screening was not performed. The DPT sample and boring logs for CF-VA08 are included in Appendix A.

3.23.3 Soil Quality

During the DPT field investigation, one soil sample was collected for laboratory analysis. Discrete soil sample CF-VA08-SB-02-08 was collected at 8 ft bls. The soil sample was placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. The confirmatory soil sample collected at SB-02 indicated that benzo(a)pyrene (120 µg/kg) and dibenzo(a,h)anthracene (160 µg/kg) exceeded the FDEP SCTLs of 100 µg/kg. Other COCs were not detected at or above FDEP SCTLs. Thirteen additional soil samples (CF-VA08-SB-03 through 15) were collected for laboratory analysis for PAHs by USEPA Method 8310 during the five additional site visits as mentioned above. Results of the soil analysis indicated benzo(a)pyrene exceeded the FDEP SCTL of 100 µg/kg in soil samples collected from SB-06 (210 µg/kg), SB-07 (160 µg/kg), SB-10 (120 µg/kg), SB-11 (150 µg/kg), SB-12 (120 µg/kg), and SB-13 (180 µg/kg). Dibenzo(a,h)anthracene exceeded the FDEP SCTL of 100 µg/kg in soil samples collected from SB-05 (120 µg/kg), SB-06 (290 µg/kg), SB-10 (160 µg/kg), and SB-11 (200 µg/kg). No other tested constituents were detected at or above FDEP SCTLs. The results of the laboratory soil analyses and depth of soil sample collection are summarized on Table 3.23.2, and exceedances illustrated on Figure 3.23.2. The complete set of analytical results is presented in Appendix D.

Based on soil vapor screening data and fixed based lab results, the mass of contaminated soil, according to Chapter 62-770, FAC, appears to be located to a depth of 8 ft bls in the area of SB-01, SB-02, SB-03, SB-04, SB-05, SB-06, SB-07, SB-10, SB-11, SB-12, and SB-1. The area of excessively contaminated soil is defined on Figure 3.23.3.

3.23.4 Temporary Well Point Sampling

During the DPT phase of the investigation, soil borings SB-01 and SB-02 were converted to a temporary monitoring wells with the DPT screen deployed from 12 to 16 ft bls. The groundwater samples were collected and analyzed as described in Section 2.4.4. The groundwater samples were placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. In the groundwater sample collected from TMW-01, benzo(b)fluoranthene (0.55 µg/L) and benzo(a)pyrene (0.25 µ/L) were detected above their regulatory limits of 0.2 µg/L. In the groundwater sample collected from TMW-02, benzo(a)anthracene (0.30 µg/L), benzo(b)fluoranthene (0.70 µg/L), benzo(a)pyrene (0.39 µg/L), dibenzo(a,h)anthracene (0.31 µg/L), and indeno(1,2,3-cd)pyrene (0.52 µg/L) were detected above their regulatory limits of 0.2 µg/L. The groundwater analytical results are

Table 3.23.2
Laboratory Soil Analysis Summary for CF-VA08

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	SB-02 @ 8 ft	SB-03 @ 9 ft	SB-04 @ 8.5 ft	SB-05 @ 8.5 ft	SB-06 @ 6.5 ft
		3/18/1999	12/22/1999	12/22/1999	12/28/1999	12/22/1999
Volatile Organic Compounds (USEPA Method 8021B) (µg/kg)						
MTBE	200	2.0U	NA	NA	NA	NA
Benzene	7	1.0U	NA	NA	NA	NA
Toluene	500	6.9	NA	NA	NA	NA
Chlorobenzene	1300	1.0U	NA	NA	NA	NA
Ethylbenzene	600	1.6I	NA	NA	NA	NA
Total Xylenes	200	7.6I	NA	NA	NA	NA
1,3-Dichlorobenzene	300	1.0U	NA	NA	NA	NA
1,4-Dichlorobenzene	2200	1.0U	NA	NA	NA	NA
1,2 Dichloroethane	10	1.0U	NA	NA	NA	NA
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/kg)						
Naphthalene	1700	93U	19U	18U	19U	18U
1-Methylnaphthalene	2200	180U	38U	46	38U	360U
2-Methylnaphthalene	6100	180U	67	37U	140	360U
Acenaphthylene	27000	180U	38U	37U	38U	36U
Acenaphthene	2100	93U	140	18U	140	180U
Phenanthrene	250000	180U	38U	48	380U	360U
Anthracene	2500000	9.0U	2.0U	10	57	18U
Fluorene	160000	18U	26	4.1	93	36U
Fluoranthene	1200000	18U	92	100	170	210
Pyrene	880000	160	56	64	83	160
Benzo (a) Anthracene	1400	41	16	8.0	41	79
Chrysene	77000	53	39	11	53	180
Benzo (b) fluoranthene	1400	140	98	15	120	260
Benzo (k) fluoranthene	15000	41	32	2.0U	42	150
Benzo (a) pyrene	100	**120**	86	12	90	**210**
Dibenzo (a,h) anthracene	100	**160**	36	3.7U	**120**	**290**
Benzo (g,h,i) perylene	2300000	120	54	3.7U	130	260
Indeno (1,2,3-cd) pyrene	1500	110	57	1.8U	100	230

Notes: [1]Chapter 62-777, FAC (August 1999). Most stringent value of groundwater leachability and direct exposure limits.
BOLD = Exceeds target levels
NA = not analyzed
U = constituent not detected

Table 3.23.2 (Continued)
Laboratory Soil Analysis Summary for CF-VA08

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	SB-07 @ 9 ft	SB-08 @ 8 ft	SB-09 @ 3.5 ft	SB-10 @ 3.5 ft	SB-11 @ 8.5 ft
		12/22/1999	2/16/2000	2/16/2000	2/16/2000	2/16/2000
Volatile Organic Compounds (USEPA Method 8021B) (µg/kg)						
MTBE	200	NA	NA	NA	NA	NA
Benzene	7	NA	NA	NA	NA	NA
Toluene	500	NA	NA	NA	NA	NA
Chlorobenzene	1300	NA	NA	NA	NA	NA
Ethylbenzene	600	NA	NA	NA	NA	NA
Total Xylenes	200	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	300	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	2200	NA	NA	NA	NA	NA
1,2 Dichloroethane	10	NA	NA	NA	NA	NA
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/kg)						
Naphthalene	1700	19U	18U	18U	19U	18U
1-Methylnaphthalene	2200	37U	36U	37U	38U	37U
2-Methylnaphthalene	6100	64	36U	37U	38U	37U
Acenaphthylene	27000	37U	36U	37U	38U	37U
Acenaphthene	2100	19U	18U	18U	19U	46
Phenanthrene	250000	180U	36U	53	38U	37U
Anthracene	2500000	4	18U	18U	19U	18U
Fluorene	160000	94	3.6U	6.1	3.8U	11
Fluoranthene	1200000	120	13	84	44	65
Pyrene	880000	110	43	140	150	140
Benzo (a) Anthracene	1400	130	18U	60	32	130
Chrysene	77000	180	13	130	42	94
Benzo (b) fluoranthene	1400	160	6.9	3.7U	110	72
Benzo (k) fluoranthene	15000	83	3.6U	3.7U	73	86
Benzo (a) pyrene	100	**160**	13	3.7U	**120**	**150**
Dibenzo (a,h) anthracene	100	3.7U	26	3.7U	**160**	**200**
Benzo (g,h,i) perylene	2300000	170	19	3.7U	290	220
Indeno (1,2,3-cd) pyrene	1500	160	21	3.7U	86	61

Notes: [1]Chapter 62-777, FAC (August 1999). Most stringent value of groundwater leachability and direct exposure limits.
BOLD = Exceeds target levels
NA = not analyzed
U = constituent not detected

Table 3.23.2 (Continued)
Laboratory Soil Analysis Summary for CF-VA08

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	SB-12 @ 1.0 ft	Duplicate of SB-12	SB-13 @ 8.5 ft	SB-14 @ 8.5 ft	SB-15 @ 2.5 ft
		3/2/2000	3/2/2000	3/2/2000	10/27/2000	10/27/2000
Volatile Organic Compounds (USEPA Method 8021B) (µg/kg)						
MTBE	200	NA	NA	NA	NA	NA
Benzene	7	NA	NA	NA	NA	NA
Toluene	500	NA	NA	NA	NA	NA
Chlorobenzene	1300	NA	NA	NA	NA	NA
Ethylbenzene	600	NA	NA	NA	NA	NA
Total Xylenes	200	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	300	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	2200	NA	NA	NA	NA	NA
1,2 Dichloroethane	10	NA	NA	NA	NA	NA
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/kg)						
Naphthalene	1700	18U	18U	19U	180U	99U
1-Methylnaphthalene	2200	36U	36U	38U	370U	200U
2-Methylnaphthalene	6100	36U	36U	38U	370U	200U
Acenaphthylene	27000	36U	36U	38U	370U	200U
Acenaphthene	2100	18U	18U	19U	180U	99U
Phenanthrene	250000	36U	36U	38U	370U	200U
Anthracene	2500000	7.2U	7.6U	7.6U	180U	99U
Fluorene	160000	3.6U	3.6U	3.8U	98	72
Fluoranthene	1200000	67	35	60	170	60
Pyrene	880000	180	120	110	210	78
Benzo (a) Anthracene	1400	71	54	170	180U	99U
Chrysene	77000	92	67	57	88	26
Benzo (b) fluoranthene	1400	100	85	49	37U	31
Benzo (k) fluoranthene	15000	54	48	33	37U	29
Benzo (a) pyrene	100	**120**	**100**	**180**	86	38
Dibenzo (a,h) anthracene	100	68	55	3.8U	37U	20U
Benzo (g,h,i) perylene	2300000	170	150	46	120	100
Indeno (1,2,3-cd) pyrene	1500	160	130	110	110	55

Notes: [1]Chapter 62-777, FAC (August 1999). Most stringent value of groundwater leachability and direct exposure limits.
BOLD = Exceeds target levels
NA = not analyzed
U = constituent not detected

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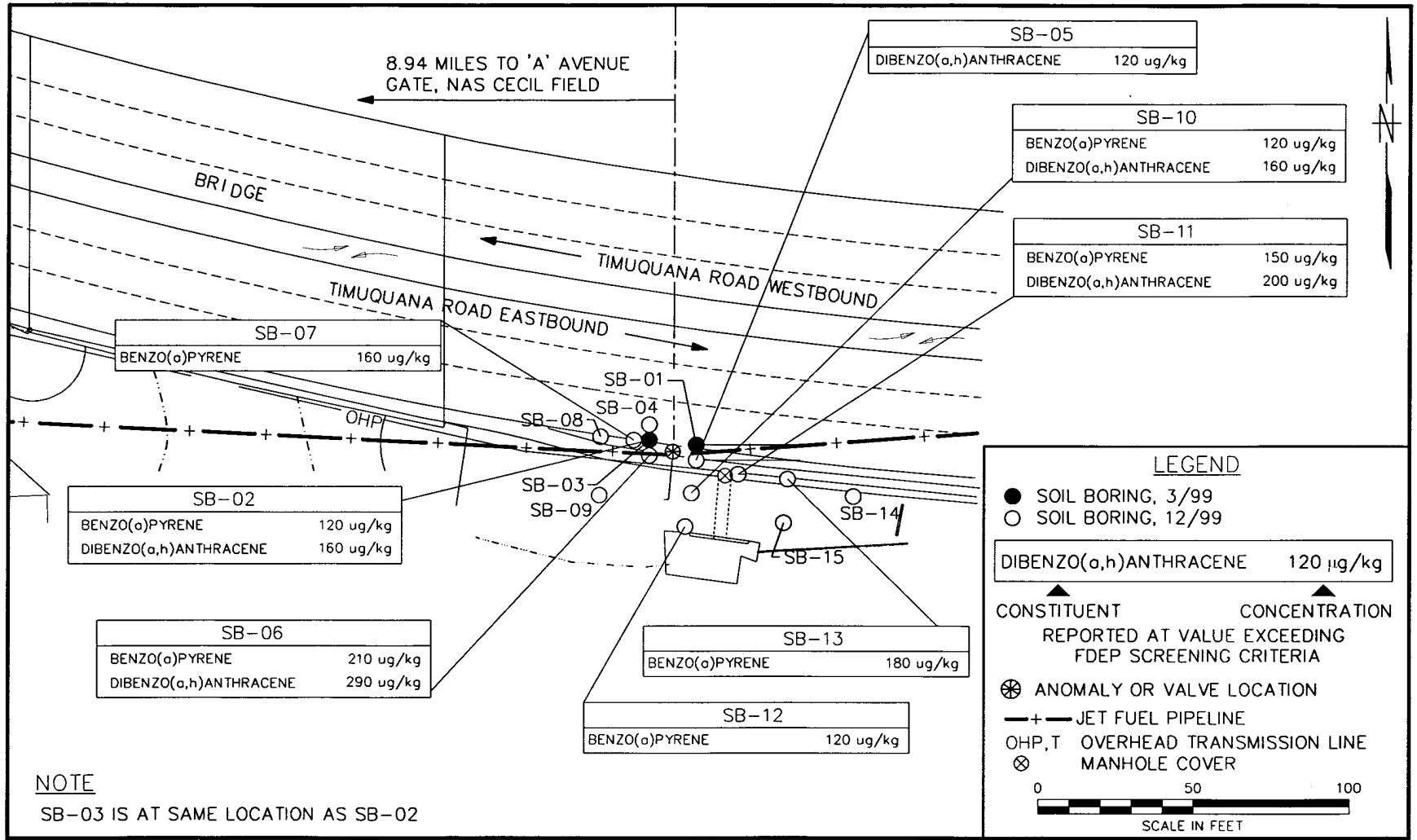

DRAWN BY LLK	DATE 11/27/01	LABORATORY SOIL ANALYTICAL RESULTS EXCEEDING FDEP SCREENING CRITERIA CF-VA08 NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA	CONTRACT NO. 0013
CHECKED BY	DATE		APPROVED BY DATE
COST/SCHED-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 3.23.2 REV. 0

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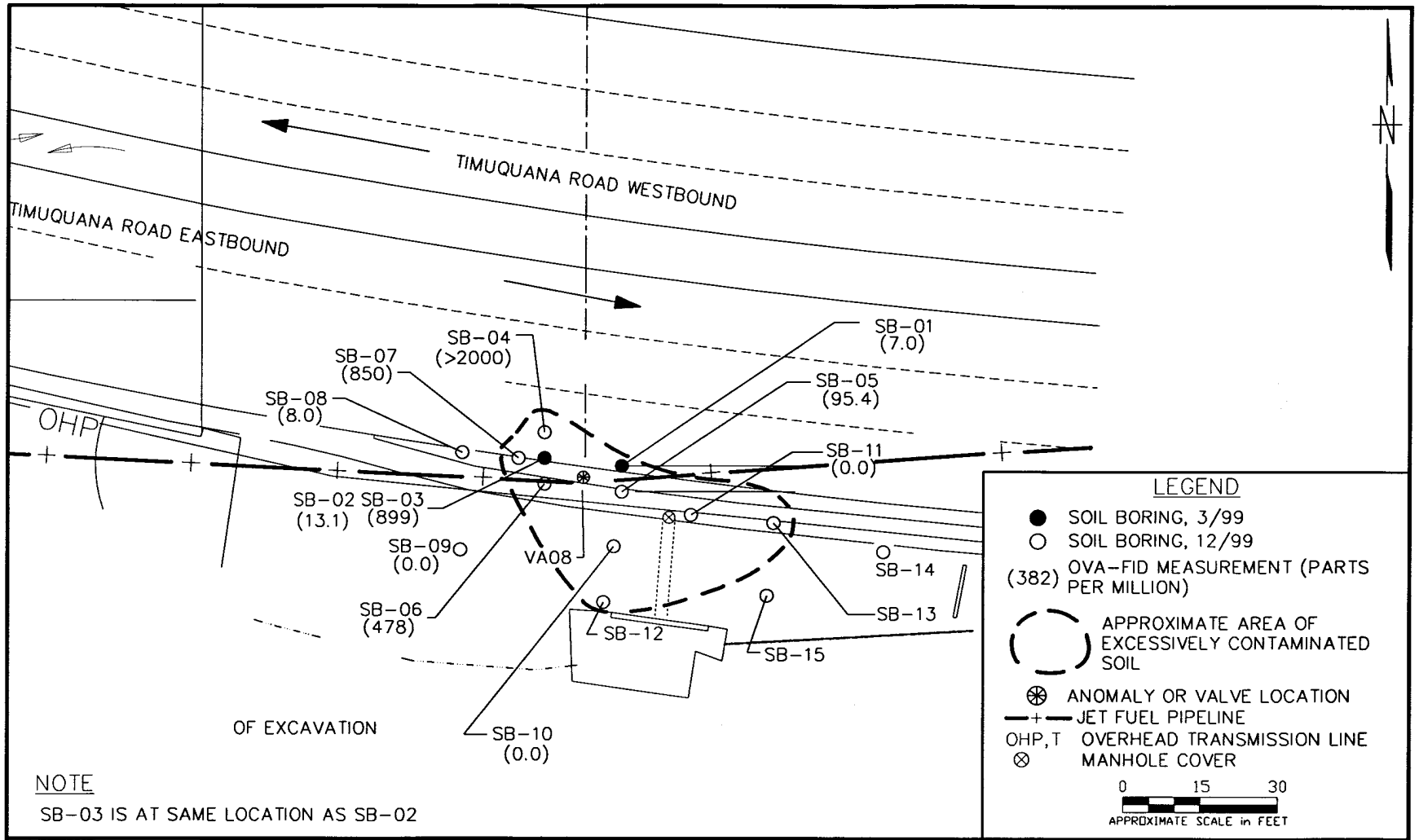


NOTE

SB-03 IS AT SAME LOCATION AS SB-02

DRAWN BY LLK DATE 2/19/02	APPROXIMATE AREA OF EXCESSIVELY CONTAMINATED SOIL CF-VA08 NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA	CONTRACT NO. 0013	
CHECKED BY DATE		APPROVED BY DATE	
COST/SCHED-AREA		APPROVED BY DATE	
SCALE AS NOTED		DRAWING NO. FIGURE 3.23.3	REV. 0

FORM CADD NO. SDIV_AH.DWG - REV 0 - 1/20/98

summarized on Table 3.23.3, and exceedances illustrate on Figure 3.23.4. The complete set of analytical results is presented in Appendix D.

3.23.5 Monitoring Well Sampling

On December 2, 1999, TtNUS installed one permanent monitoring well, CF-VA08-1S, at the location indicated on Figure 3.23.3. The monitoring well was installed to a depth of 22 ft and screened from 12 to 22 ft bls. The monitoring well was installed and developed as described in Section 2.3.2 and monitoring well installation and development logs are included in Appendix B. On December 14, 1999, TtNUS personnel collected a groundwater sample from monitoring well CF-VA08-1S for analysis of PAHs by USEPA Method 8310. Analytical results from the groundwater sample indicated dissolved hydrocarbon concentrations were below GCTLs for all COCs. The groundwater analytical results are summarized on Table 3.23.3 and the complete set of analytical results is included in Appendix D.

3.23.6 Discussion

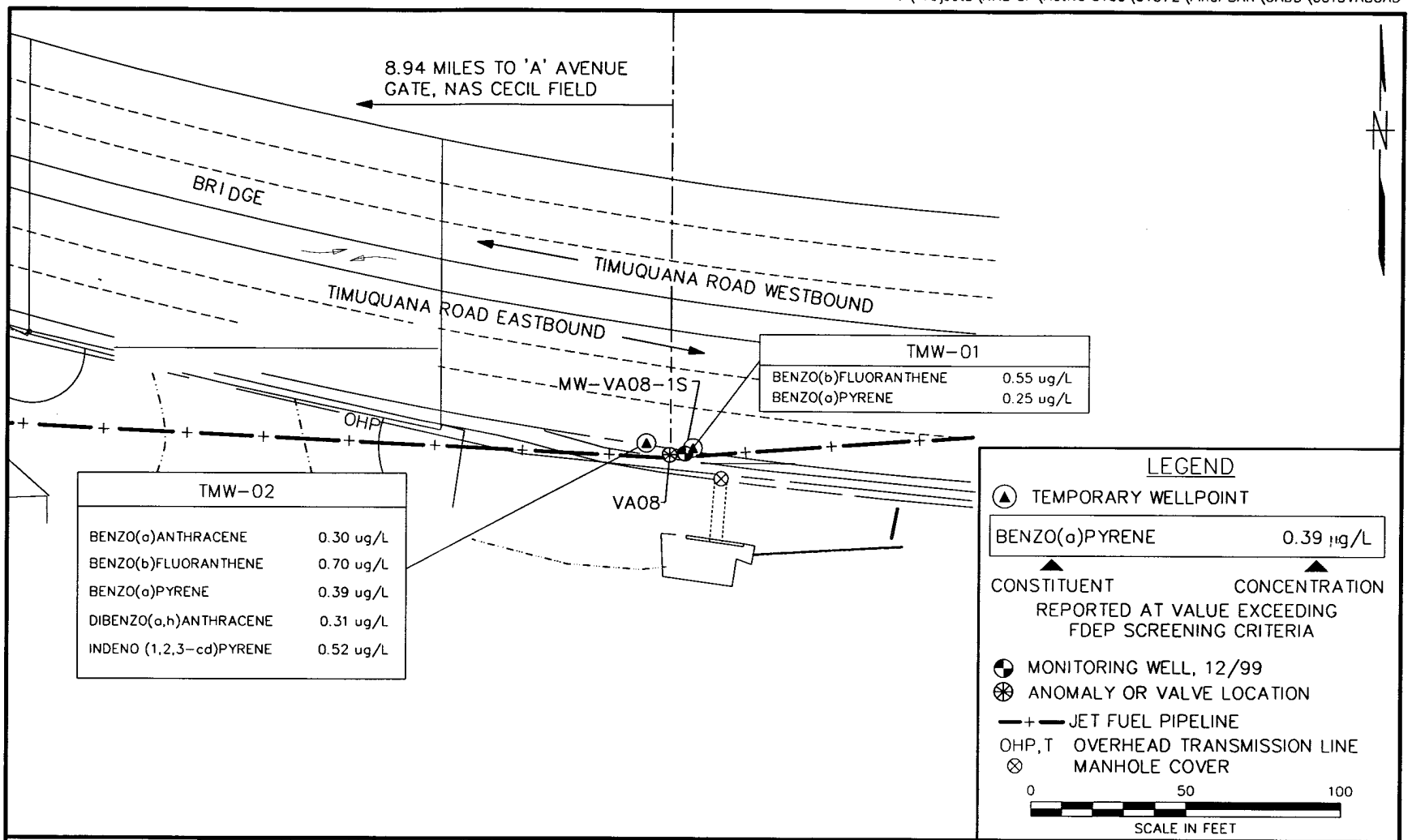
Data obtained during the DPT assessment indicated that of the 15 soil borings installed during the field investigation at Site CF-VA08, five borings had OVA responses above 50 ppm indicating excessively contaminated soil as defined by Chapter 62-770, FAC. Petroleum product COCs detected in soil were at or above SCTLs (Chapter 62-770, FAC) in soil borings SB-02, SB-05, SB-06, SB-07, SB-10, SB-11, SB-12, and SB-13. The petroleum-impacted soil is partially under asphalt and partially under a steep grassy slope beside the road. Petroleum product COCs were detected in groundwater above GCTLs (Chapter 62-770, FAC) in the temporary monitoring well installed in SB-02, however, no petroleum product COCs were detected in groundwater above GCTLs in the permanent monitoring well installed at the site.

Table 3.23.3
Groundwater Analytical Results for CF-VA08

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	TMW-01	TMW-02	MW-1			
		3/18/1999	3/18/1999	12/14/1999			
Volatile Organic Compounds (USEPA Method 8021B) (μg/L)							
Benzene	1	ND	ND	NA			
Ethylbenzene	30	ND	ND	NA			
Toluene	40	ND	ND	NA			
Total Xylenes	20	ND	ND	NA			
MTBE	35	ND	ND	NA			
1,2 Dichloroethane	3	ND	ND	NA			
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (μg/L)							
Naphthalene	20	ND	ND	ND			
Acenaphthylene	210	ND	ND	ND			
Acenaphthene	20	ND	5.2	ND			
Phenanthrene	210	ND	2.2	ND			
Anthracene	2100	ND	0.3	ND			
Fluoranthene	280	0.2	0.69	ND			
Pyrene	210	0.32	0.78	ND			
Benzo (a) Anthracene	0.2	0.05	**0.3**	ND			
Chrysene	5	ND	0.36	ND			
Benzo (b) fluoranthene	0.2	**0.55**	**0.7**	ND			
Benzo (k) fluoranthene	0.5	ND	0.16	ND			
Benzo (a) pyrene	0.2	**0.25**	**0.39**	ND			
Dibenzo (a,h) anthracene	0.2	ND	**0.31**	ND			
Benzo (g,h,I) perylene	210	ND	0.35	ND			
Indeno (1,2,3-cd) pyrene	0.2	ND	**0.52**	ND			

Notes: [1]Chapter 62-770, FAC (September 23, 1997)
BOLD = Exceeds Taget Levels
NA = not analyzed
ND = no constituents detected



DRAWN BY LLK DATE 11/27/01	GROUNDWATER ANALTICAL RESULTS EXCEEDING FDEP SCREENING CRITERIA CF-VA08 NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA	CONTRACT NO. 0013	
CHECKED BY DATE		APPROVED BY DATE	
COST/SCHED-AREA		APPROVED BY DATE	
SCALE AS NOTED		DRAWING NO. FIGURE 3.23.4	REV. 0

FORM CADD NO. SDIV_AH.DWG - REV 0 - 1/20/98

3.24 VALVE NUMBER 9 (CF-VA09)

CF-VA09 is located along Old Timiquana Road at the intersection of Levi Road. The location of CF-VA09 is indicated on Figure 1-2 (the Site Vicinity Map) and Figure 3.24.1 (the combined Site Plan, Sample Locations, and Soil Vapor Screening Results Map). The valve at CF-VA09 is located inside a concrete manhole. TtNUS mobilized to site CF-VA09 on March 18, 1999 for the DPT Phase of the investigation. During the DPT field investigation, TtNUS inspected the interior of the manhole, and found the valve box filled with water and the valve submerged. TtNUS found no visual evidence of a petroleum release outside the confines of the manhole. On November 30, 1999 TtNUS installed one permanent monitoring well. The permanent monitoring well was developed on December 8, 1999 and sampled on December 14, 1999. On December 21, 1999, five additional soil borings were advanced and soil samples were collected for laboratory analysis. On February 16, 2000, one additional soil boring was advanced and a soil sample was collected for laboratory analysis.

3.24.1 Site Lithology

The site is underlain by a gray fine-grained sand to a depth of 3 ft bls. At 3 ft bls, the site is underlain by a gray silty sand. This soil type extends to at least 10 ft bls, the maximum depth advanced during the DPT investigation. Soil boring logs are included in Appendix A.

3.24.2 Soil Vapor

The vertical and horizontal extent of petroleum impacted soil in the vadose zone was assessed through soil headspace analysis performed during the DPT investigation. Five soil borings (CF-VA09-SB-01 through 05) were advanced by DPT to depths ranging from 4 to 10 ft bls at the locations shown on Figure 3.24.1. Groundwater was encountered at 2 to 3 ft bls. Soil samples were collected at 2-ft intervals and the samples were screened for hydrocarbon vapors with an OVA-PID as described in Section 2.4.2. The results of the soil vapor screening, presented in the Table 3.24.1, indicated hydrocarbon vapors above 10 ppm, but less than 50 ppm from soil borings SB-03 and SB-04, and hydrocarbon vapors above 50 ppm in soil collected from SB-01. On December 21, 1999, five additional soil borings (CF-VA09-SB-06 through 10) were advanced at the site. Results of the soil vapor screening indicated no elevated headspace readings above 10 ppm in all five borings. Results of the screening indicated elevated headspace readings above 50 ppm. On February 16, 2000, one additional soil boring (CF-VA09-SB-11) was advanced at the site. Results of the soil vapor screening indicated headspace readings below 10 ppm in the boring. The DPT sample and boring logs for CF-VA09 are included in Appendix A.

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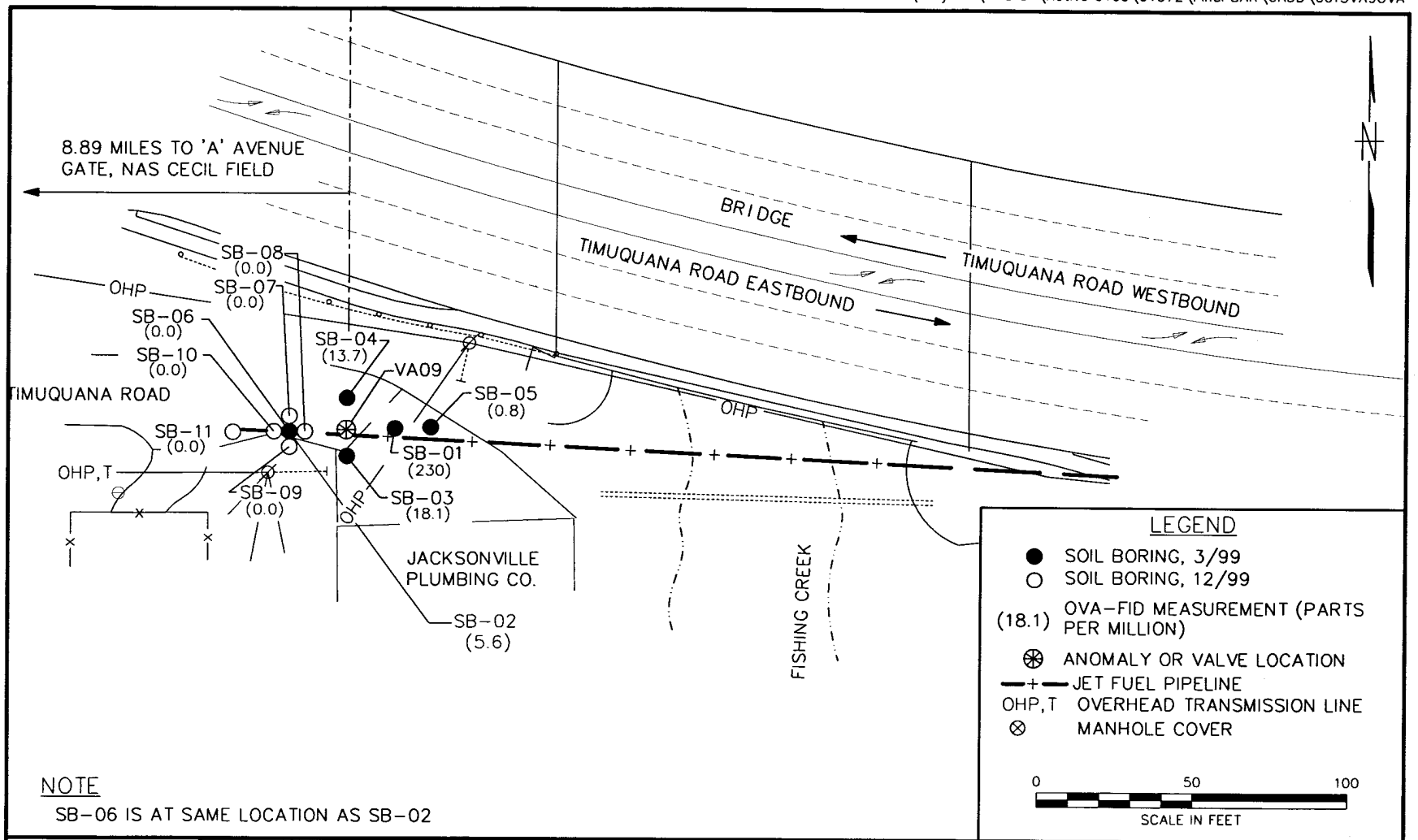

NOTE

SB-06 IS AT SAME LOCATION AS SB-02

DRAWN BY LLK	DATE 11/28/01	SITE PLAN, SAMPLE LOCATIONS, AND SOIL VAPOR SCREENING RESULTS CF-VA09 NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA	CONTRACT NO. 0013
CHECKED BY	DATE		APPROVED BY DATE
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SCALE AS NOTED			DRAWING NO. FIGURE 3.24.1 REV. 0

FORM CADD NO. SDIV_AH.DWG - REV 0 - 1/20/98

Table 3.24.1
Soil Vapor Screening Results for CF-VA09

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Soil Boring Number	Date of Measurement	Sample Interval (ft bls)	PID Measurement (ppm)
SB-01	3/18/1999	2	199
		4	230
		6	41
		8	9
		10	8.9
SB-02	3/18/1999	2	5.6
		4	1.6
SB-03	3/18/1999	2	18.1
		4	16.3
SB-04	3/18/1999	2	13.7
		4	11.5
SB-05	3/18/1999	2	0.8
		4	0.6
SB-06	12/22/1999	2	109
		3	14.1
SB-07	12/22/1999	1.5	33.8
		2.5	39.4
SB-08	12/22/1999	1.5	14.4
		2.5	0
SB-09	12/22/1999	1.5	0
		2.5	0
SB-10	12/22/1999	1.5	0
		2.5	68
SB-11	2/16/2000	1	0
		1.5	0

Notes: Soil borings analyzed with a Photo Ionization Detector (PID)

3.24.3 Soil Quality

Based on the results of the soil vapor screening during the DPT field investigation, three soil samples were collected for laboratory analysis. Discrete soil samples CF-VA09-SB-01-04, CF-VA09-SB-02-02, and CF-VA09-SB-05-02 were collected at depths of 4, 2, and 2 ft bls, respectively. The soil samples were placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. The confirmatory soil sample collected at SB-02 indicated that benzo(a)pyrene (110 µg/kg) and dibenzo(a,h)anthracene (170 µg/kg) exceeded the FDEP SCTLs of 100 µg/kg. Other COCs were not detected at or above FDEP SCTLs. Six additional soil samples (CF-VA09-SB-06 through 11) were collected for laboratory analysis for PAHs using USEPA Method 8310 during the two additional site visits mentioned above. Results of the soil analysis indicated benzo(a)pyrene (130 µg/kg) and dibenzo(a,h)anthracene (130 µg/kg) exceeded the FDEP SCTL of 100 µg/kg in the soil sample collected from SB-10. No other tested constituents were detected at or above FDEP SCTLs. The results of the laboratory soil analyses and depth of soil sample collection are summarized on Table 3.24.2 and exceedances are illustrated on Figure 3.24.2. The complete set of analytical results is presented in Appendix D.

Based on soil screening data and fixed based lab results, the mass of contaminated soil, according to Chapter 62-770, FAC, appears to be located to a depth of 4 ft bls in the area southwest of the valve at SB-02, and SB-10 as indicated on Figure 3.24.3. The soil contamination is located on the side street and covered by deteriorated asphalt. The location of the mass of contaminated soil is based on the field activities performed during the site investigation within the area delineated by soil borings SB-07, SB-08, SB-09, and SB-11.

3.24.4 Temporary Well Point Sampling

During the DPT phase of the investigation, soil borings SB-01, SB-02, and SB-05 were converted to temporary monitoring wells with the DPT screen deployed from 3 to 7 ft bls in each boring. The groundwater samples were collected and analyzed as described in Section 2.4.4. The groundwater samples were placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. In the groundwater sample collected from TMW-02, benzo(b)fluoranthene (0.53 µg/L), benzo(a)pyrene (0.28 µg/L), dibenzo(a,h)anthracene (0.44 µg/L), and indeno(1,2,3-cd)pyrene (0.29 µg/L) were detected above their regulatory limits of 0.2 µg/L. No other tested constituents were detected at or above FDEP GCTLs in the groundwater samples collected. The groundwater analytical results are summarized on Table 3.24.3 and exceedances are illustrated on Figure 3.24.4. The complete set of analytical results is presented in Appendix D.

Table 3.24.2
Laboratory Soil Analysis Summary for CF-VA09

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	SB-01 @ 4 ft	SB-02 @ 2 ft	SB-05 @ 2 ft	SB-06 @ 1.5 ft	SB-07 @ 1.5 ft
		3/18/1999	3/18/1999	3/18/1999	12/21/1999	12/21/1999
Volatile Organic Compounds (USEPA Method 8021B) (µg/kg)						
MTBE	200	2.0U	2.0U	2.0U	NA	NA
Benzene	7	1.0U	1.1U	1.0U	NA	NA
Toluene	500	1.0U	1.1U	1.0U	NA	NA
Chlorobenzene	1300	1.0U	1.1U	1.0U	NA	NA
Ethylbenzene	600	1.0U	1.1U	1.0U	NA	NA
Total Xylenes	200	2.0U	2.0U	2.0U	NA	NA
1,3-Dichlorobenzene	300	1.0U	1.1U	1.0U	NA	NA
1,4-Dichlorobenzene	2200	1.0U	1.1U	1.0U	NA	NA
1,2 Dichloroethane	10	1.0U	1.1U	1.0U	NA	NA
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/kg)						
Naphthalene	1700	20U	100U	19U	21U	20U
1-Methylnaphthalene	2200	41U	200U	39U	41U	41U
2-Methylnaphthalene	6100	41U	200U	39U	41U	41U
Acenaphthylene	27000	41U	200U	39U	41U	41U
Acenaphthene	2100	20U	100U	19U	27I	20U
Phenanthrene	250000	41U	200U	39U	41U	41U
Anthracene	2500000	2.0U	70U	14	2.0U	2.0U
Fluorene	160000	6.0I	21I	31	4.1U	4.1U
Fluoranthene	1200000	40	20U	3.9U	42	6
Pyrene	880000	38	170	110	27	2.0U
Benzo (a) Anthracene	1400	13	25	8.5	5	2.0U
Chrysene	77000	41	33	15	14	2.0U
Benzo (b) fluoranthene	1400	120	150	67	46	28
Benzo (k) fluoranthene	15000	17	56	9.0	2	2.0U
Benzo (a) pyrene	100	24	**110**	21	18	2.0U
Dibenzo (a,h) anthracene	100	4.1U	**170**	3.9U	4.1U	4.1U
Benzo (g,h,i) perylene	2300000	18	150	24	10	4.1U
Indeno (1,2,3-cd) pyrene	1500	24	150	22	18	2.0U

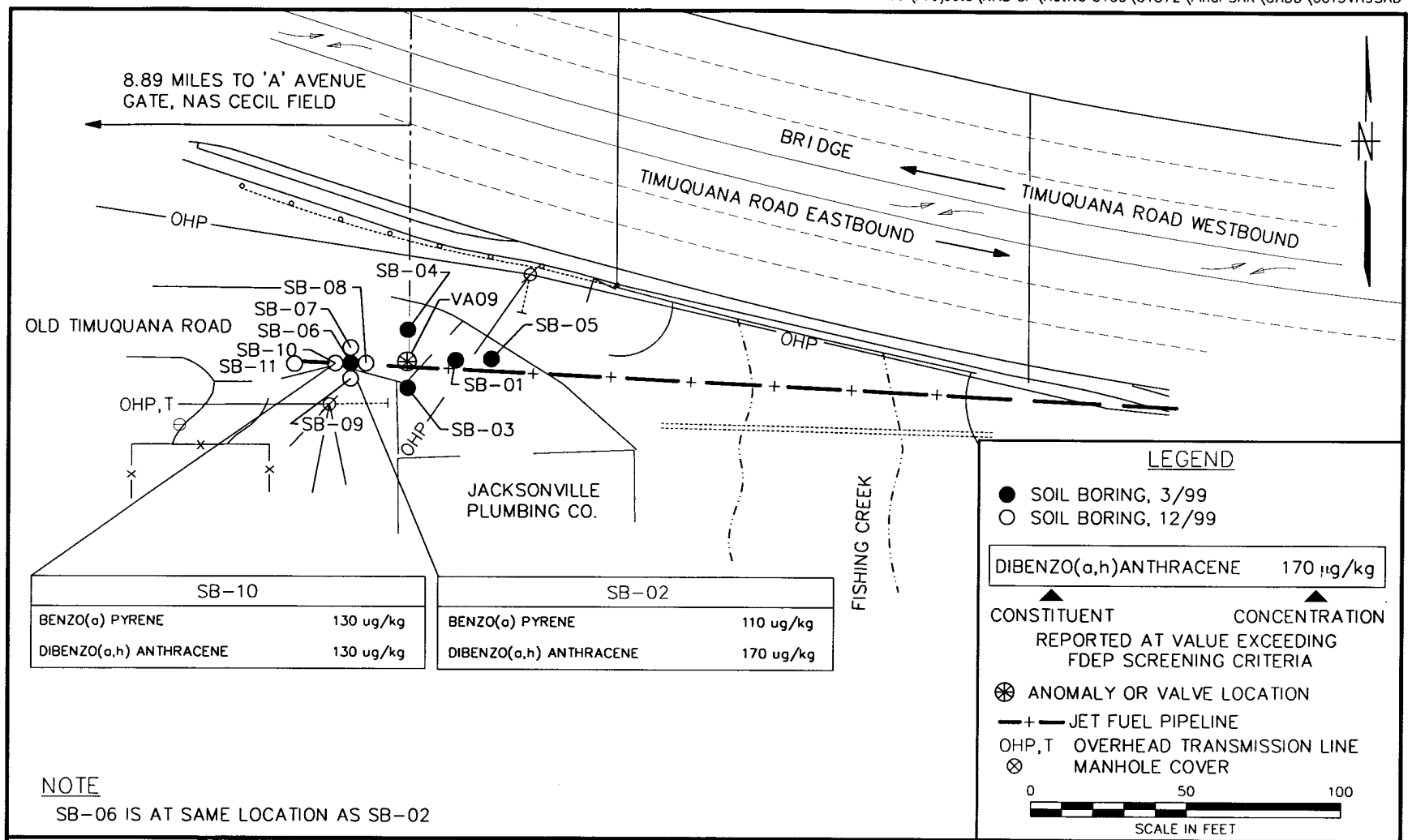
Notes: [1]Chapter 62-777, FAC (August 1999). Most stringent value of groundwater leachability and direct exposure limits.
BOLD = Exceeds target levels
I = value is between MDL and PQL
NA = not analyzed
U = constituent not detected

Table 3.24.2 (Continued)
Laboratory Soil Analysis Summary for CF-VA09

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	SB-08 @ 1.5 ft	SB-09 @ 1.5 ft	SB-10 @ 1.5 ft	SB-11 @ 1.5 ft
		12/21/1999	12/21/1999	12/21/1999	2/16/2000
Volatile Organic Compounds (USEPA Method 8021B) (µg/kg)					
MTBE	200	NA	NA	NA	NA
Benzene	7	NA	NA	NA	NA
Toluene	500	NA	NA	NA	NA
Chlorobenzene	1300	NA	NA	NA	NA
Ethylbenzene	600	NA	NA	NA	NA
Total Xylenes	200	NA	NA	NA	NA
1,3-Dichlorobenzene	300	NA	NA	NA	NA
1,4-Dichlorobenzene	2200	NA	NA	NA	NA
1,2 Dichloroethane	10	NA	NA	NA	NA
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/kg)					
Naphthalene	1700	21U	20U	20U	21U
1-Methylnaphthalene	2200	42U	41U	54	42U
2-Methylnaphthalene	6100	42U	41U	40U	42U
Acenaphthylene	27000	42U	41U	40U	42U
Acenaphthene	2100	41	24	36	21U
Phenanthrene	250000	42U	41U	45	42U
Anthracene	2500000	2.0U	2.0U	2.0U	21U
Fluorene	160000	4.6	10	51	4.2U
Fluoranthene	1200000	79	44	170	14
Pyrene	880000	49	29	170	17
Benzo (a) Anthracene	1400	15	3.3	48	28
Chrysene	77000	25	15	86	11
Benzo (b) fluoranthene	1400	40	85	140	4.2U
Benzo (k) fluoranthene	15000	18	2.0U	42	29
Benzo (a) pyrene	100	45	29	**130**	4.2U
Dibenzo (a,h) anthracene	100	4.2U	4.1U	**130**	4.2U
Benzo (g,h,i) perylene	2300000	16	4.1U	95	4.2U
Indeno (1,2,3-cd) pyrene	1500	31	36	95	4.2U

Notes: [1]Chapter 62-777, FAC (August 1999). Most stringent value of groundwater leachability and direct exposure limits.
BOLD = Exceeds target levels
I = value is between MDL and PQL
NA = not analyzed
U = constituent not detected



SB-10	
BENZO(a) PYRENE	130 ug/kg
DIBENZO(a,h) ANTHRACENE	130 ug/kg

SB-02	
BENZO(a) PYRENE	110 ug/kg
DIBENZO(a,h) ANTHRACENE	170 ug/kg

LEGEND

● SOIL BORING, 3/99
○ SOIL BORING, 12/99

DIBENZO(a,h)ANTHRACENE	170 µg/kg
CONSTITUENT	CONCENTRATION

REPORTED AT VALUE EXCEEDING FDEP SCREENING CRITERIA

⊛ ANOMALY OR VALVE LOCATION
—+— JET FUEL PIPELINE
OHP,T OVERHEAD TRANSMISSION LINE
⊗ MANHOLE COVER

0 50 100
SCALE IN FEET

NOTE
SB-06 IS AT SAME LOCATION AS SB-02

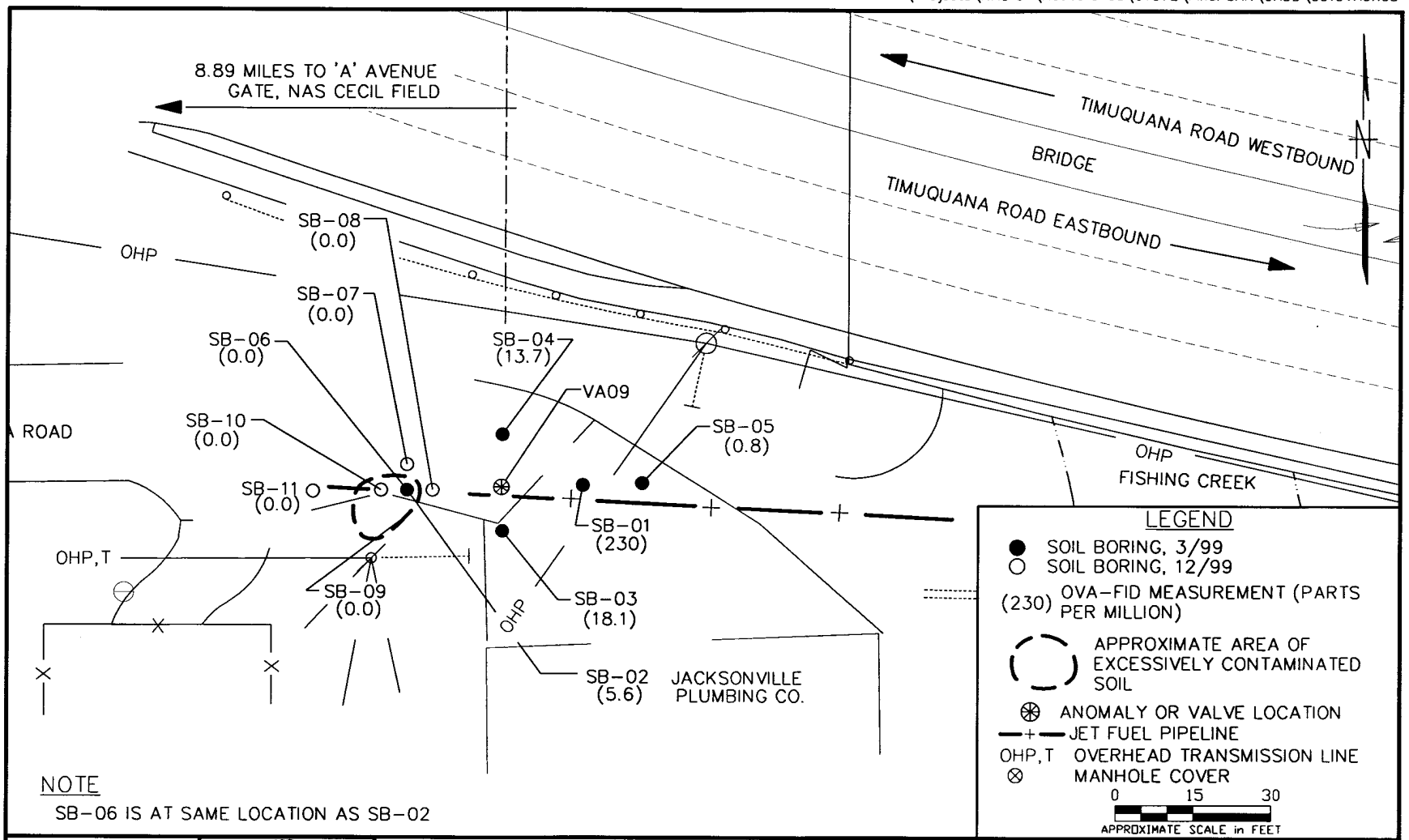
DRAWN BY	DATE
LLK	11/28/01
CHECKED BY	DATE
COST/SCHED-AREA	
SCALE AS NOTED	

DEPARTMENT OF THE NAVY · SOUTHERN DIV FACILITIES ENGINEERING COMD

LABORATORY SOIL ANALYTICAL RESULTS
EXCEEDING FDEP SCREENING CRITERIA
CF-VA09
NASJAX TO NASCF
JET FUEL PIPELINE
JACKSONVILLE, FLORIDA

CONTRACT NO. 0013	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 3.24.2	REV. 0

FORM CADD NO. SDIV_AH.DWG - REV 0 - 1/20/98



NOTE

SB-06 IS AT SAME LOCATION AS SB-02

DRAWN BY LLK	DATE 2/20/02	APPROXIMATE AREA OF EXCESSIVELY CONTAMINATED SOIL CF-VA09 NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA	CONTRACT NO. 0013
CHECKED BY	DATE		APPROVED BY DATE
COST/SCHED-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 3.24.3 REV. 0

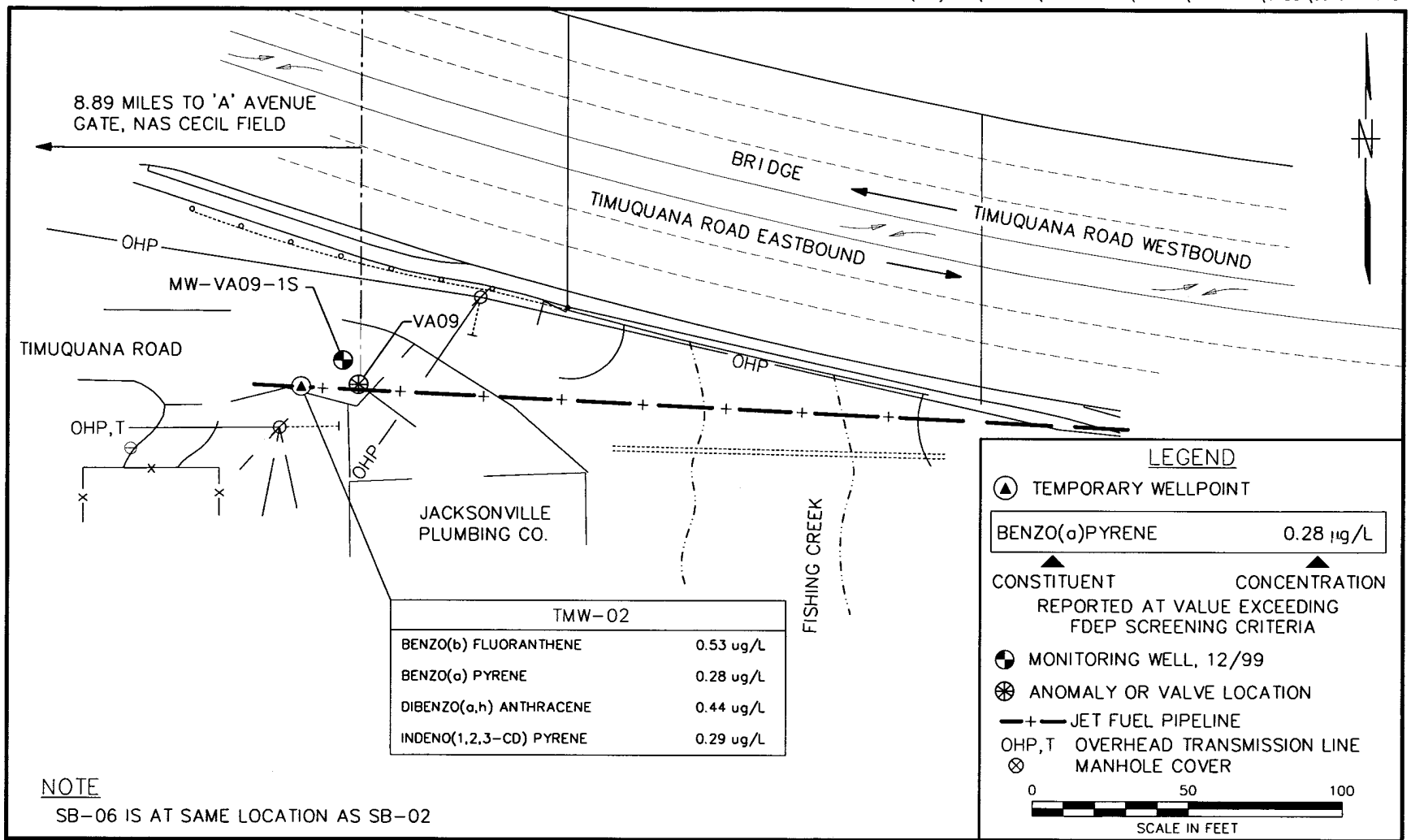
FORM CADD NO. SDIV_AH.DWG - REV 0 - 1/20/98

Table 3.24.3
Groundwater Analytical Results for CF-VA09

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	TMW-01	TMW-02	TMW-05	MW-1		
		3/18/1999	3/18/1999	3/18/1999	12/14/1999		
Volatile Organic Compounds (USEPA Method 8021B) (µg/L)							
Benzene	1	ND	ND	ND	NA		
Ethylbenzene	30	ND	ND	ND	NA		
Toluene	40	ND	ND	ND	NA		
Total Xylenes	20	ND	ND	ND	NA		
MTBE	35	ND	ND	ND	NA		
1,2 Dichloroethane	3	ND	ND	ND	NA		
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/L)							
Naphthalene	20	ND	ND	ND	1.4 I		
Acenaphthylene	210	ND	ND	ND	ND		
Acenaphthene	20	1.4	ND	1.6	ND		
Phenanthrene	210	ND	ND	ND	ND		
Anthracene	2100	0.07	ND	0.05	ND		
Fluoranthene	280	ND	0.46	ND	ND		
Pyrene	210	0.11	0.46	ND	ND		
Benzo (a) Anthracene	0.2	ND	0.13	ND	ND		
Chrysene	5	ND	0.33	ND	ND		
Benzo (b) fluoranthene	0.2	ND	**0.53**	0.11	ND		
Benzo (k) fluoranthene	0.5	ND	0.12	ND	ND		
Benzo (a) pyrene	0.2	ND	**0.28**	ND	ND		
Dibenzo (a,h) anthracene	0.2	ND	**0.44**	ND	ND		
Benzo (g,h,I) perylene	210	ND	0.34	ND	ND		
Indeno (1,2,3-cd) pyrene	0.2	ND	**0.29**	ND	ND		

Notes: [1]Chapter 62-770, FAC (September 23, 1997)
BOLD = Exceeds Taget Levels
I = value is between MDL and PQL
NA = not analyzed
ND = no constituents detected



TMW-02	
BENZO(b) FLUORANTHENE	0.53 ug/L
BENZO(a) PYRENE	0.28 ug/L
DIBENZO(a,h) ANTHRACENE	0.44 ug/L
INDENO(1,2,3-CD) PYRENE	0.29 ug/L

NOTE

SB-06 IS AT SAME LOCATION AS SB-02

DRAWN BY LLK	DATE 11/28/01	GROUNDWATER ANALYTICAL RESULTS EXCEEDING FDEP SCREENING CRITERIA CF-VA09 NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA	CONTRACT NO. 0013
CHECKED BY	DATE		APPROVED BY DATE
COST/SCHED-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 3.24.4 REV. 0

DEPARTMENT OF THE NAVY SOUTHERN DIV FACILITIES ENGINEERING COMD

FORM CADD NO. SDIV_AH.DWG - REV 0 - 1/20/98

3.24.5 Monitoring Well Sampling

On November 30, 1999, TtNUS installed one permanent monitoring well, CF-VA09-1S, at the location indicated on Figure 3.24.4. The monitoring well was installed to a depth of 12 ft, and screened from 2 to 12 ft bls. The monitoring well was installed and developed as described in Section 2.3.2 and monitoring well installation and development logs are included in Appendix B. On December 14, 1999, TtNUS personnel collected a groundwater sample from monitoring well CF-VA09-1S for analysis of PAHs using USEPA Method 8310. Analytical results from the groundwater sample indicated dissolved hydrocarbon concentrations were below GCTLs for all COCs. The groundwater analytical results are summarized on Table 3.24.3 and the complete set of analytical results is included in Appendix D.

3.24.6 Discussion

Data obtained during the DPT assessment indicated that “excessively contaminated soil” (greater than 50 ppm) was detected in soil boring SB-01 as defined by Chapter 62-770, FAC. Petroleum product COCs were detected in soil at or above SCTLs (Chapter 62-770, FAC) in soil borings SB-02 and SB-10. The petroleum-impacted soil is located on a side street and covered by deteriorated asphalt. Petroleum product COCs were detected in groundwater above GCTLs (Chapter 62-770, FAC) in the temporary monitoring well installed in SB-02. However, no petroleum product COCs were detected in groundwater above GCTLs in the permanent monitoring well installed at the site.

3.25 VALVE NUMBER 10 (CF-VA10)

CF-VA10 is located near the intersection of 103rd Street and Jammes Road. The location of CF-VA10 is indicated on Figure 1-2 (the Site Vicinity Map) and Figure 3.25.1 (the combined Site Plan, Sample Locations, and Soil Vapor Screening Results Map). TtNUS mobilized to site CF-VA10 on March 17, 1999 for the DPT investigation.

3.25.1 Site Lithology

The site is underlain by brown fine-grained silty sand to a depth of 3 ft bls. At 3 ft bls, the site is underlain by a gray/orange sandy clay. At 11 ft bls, the site is underlain by a fine-grained clayey sand. This soil type extends to at least 14 ft bls, the maximum depth drilled at the site during the assessment. Soil boring logs are included in Appendix A.

3.25.2 Soil Vapor

The vertical and horizontal extent of petroleum impacted soil in the vadose zone was assessed through soil headspace analysis performed during the DPT investigation. Five soil borings (CF-VA10-SB-01 through 05) were advanced to depths ranging from 12 to 14 ft bls at the locations shown on Figure 3.25.1. Groundwater was encountered at 11 ft bls. Soil samples were collected at 2-ft intervals and the samples were screened for hydrocarbon vapors with an OVA-PID as described in Section 2.4.2. The results of the soil vapor screening, presented in the Table 3.25.1, indicated no headspace readings with results above 10 ppm. The DPT sample and boring logs for CF-VA10 are included in Appendix A.

3.25.3 Soil Quality

Based on the results of the soil headspace analyses, one soil sample was collected for laboratory analysis. Discrete soil sample CF-VA10-SB-03-10 was collected at a depth of 10 ft bls. The soil sample was placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. The confirmatory sample collected at SB-03 contained no VOAs or PAHs at or above FDEP SCTLs. The results of the laboratory soil analysis are summarized on Table 3.25.2. A Laboratory Soil Analytical Results figure was not created since results did not exceed SCTLs. The complete set of analytical results is presented in Appendix D.

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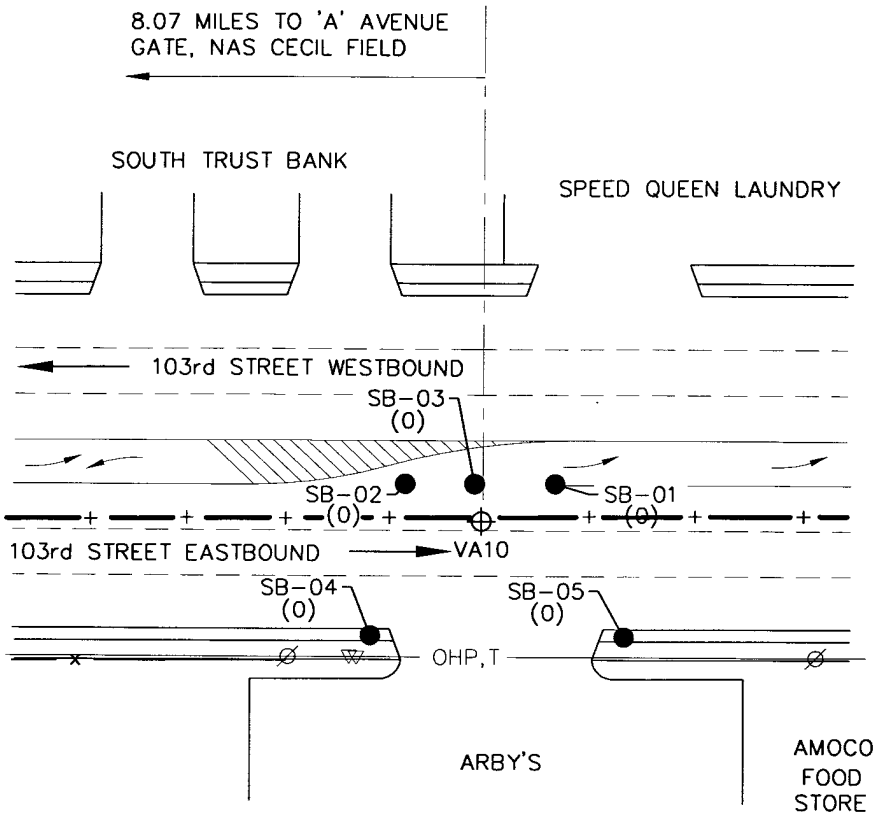


NOTE:

1. SOIL AND GROUNDWATER LABORATORY ANALYTICAL RESULTS INDICATED NO CONTAMINANTS ABOVE FDEP TARGET LEVELS IN EACH OF THE BORINGS.

LEGEND:

OHP,T	OVERHEAD TRANSMISSION LINE
●	SOIL BORING
⊕	ANOMALY OR VALVE LOCATION
—+—	JET FUEL PIPELINE
(0)	OVA RESULTS IN PARTS PER MILLION (PPM)

0 50 100
SCALE IN FEET

DRAWN BY MF	DATE 4/9/99	SITE PLAN, SAMPLE LOCATIONS, AND SOIL VAPOR SCREENING RESULTS CF-VA10 NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA	CONTRACT NO. 0013
CHECKED BY	DATE		APPROVED BY DATE
COST/SCHED-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 3.25.1 REV. 0

DEPARTMENT OF THE NAVY ★ SOUTHERN DIV FACILITIES ENGINEERING COMD ★

FORM CADD NO. SDIV_AH.DWG - REV 0 - 1/20/98

Table 3.25.1
Soil Vapor Screening Results for CF-VA10

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Soil Boring Number	Date of Measurement	Sample Interval (ft bls)	PID Measurement (ppm)
SB-01	3/17/1999	2	0.0
		4	0.0
		6	0.0
		8	0.0
		10	0.0
		12	0.0
SB-02	3/17/1999	2	0.0
		4	0.0
		6	0.0
		8	0.0
		10	0.0
		12	0.0
SB-03	3/17/1999	2	0.0
		4	0.0
		6	0.0
		8	0.0
		10	0.0
		12	0.0
SB-04	3/17/1999	2	0.0
		4	0.0
		6	0.0
		8	0.0
		10	0.0
		12	0.0
SB-05	3/17/1999	2	0.0
		4	0.0
		6	0.0
		8	0.0
		10	0.0
		12	0.0
		14	0.0

Notes: Soil borings analyzed with a Photo Ionization Detector (PID)

Table 3.25.2
Laboratory Soil Analysis Summary for CF-VA10

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	SB-03 @ 10 ft				
		3/17/1999				
Volatile Organic Compounds (USEPA Method 8021B) (µg/kg)						
MTBE	200	2.0U				
Benzene	7	1.1U				
Toluene	500	1.1U				
Chlorobenzene	1300	1.1U				
Ethylbenzene	600	1.1U				
Total Xylenes	200	2.0U				
1,3-Dichlorobenzene	300	1.1U				
1,4-Dichlorobenzene	2200	1.1U				
1,2 Dichloroethane	10	1.1U				
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/kg)						
Naphthalene	1700	20U				
1-Methylnaphthalene	2200	40U				
2-Methylnaphthalene	6100	40U				
Acenaphthylene	27000	40U				
Acenaphthene	2100	20U				
Phenanthrene	250000	40U				
Anthracene	2500000	2.0U				
Fluorene	160000	4.0U				
Fluoranthene	1200000	4.0U				
Pyrene	880000	2.0U				
Benzo (a) Anthracene	1400	2.0U				
Chrysene	77000	2.0U				
Benzo (b) fluoranthene	1400	4.0U				
Benzo (k) fluoranthene	15000	2.0U				
Benzo (a) pyrene	100	2.0U				
Dibenzo (a,h) anthracene	100	4.0U				
Benzo (g,h,i) perylene	2300000	4.0U				
Indeno (1,2,3-cd) pyrene	1500	2.0U				

Notes: [1]Chapter 62-777, FAC (August 1999). Most stringent value of groundwater leachability and direct exposure limits.
U = constituent not detected

3.25.4 Temporary Well Point Sampling

During the DPT investigation, the soil borings at the site were converted to temporary wells and the DPT screen was deployed from 11 to 16 ft bls in each boring. The groundwater samples were collected as described in Section 2.4.4. Groundwater samples were placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. The groundwater analytical results, presented on Table 3.25.3, indicated no VOAs or PAHs at or above FDEP GCTLs. A Groundwater Analytical Results figure was not created since results did not exceed GCTLs. The complete set of analytical results is presented in Appendix D.

3.25.5 Monitoring Well Sampling

Permanent monitoring wells were not installed at CF-VA10 based on the results of the DPT investigation.

3.25.6 Discussion

Data obtained during the DPT assessment indicated no headspace readings above 10 ppm from the five soil borings at Site CF-VA10. The confirmatory soil sample collected for laboratory analysis indicated soil analytical results below SCTLs for all petroleum COCs (Chapter 62-770, FAC). Groundwater samples collected from temporary wells indicated that dissolved hydrocarbon concentrations were below GCTLs for all COCs (Chapter 62-770, FAC).

Table 3.25.3
Groundwater Analytical Results for CF-VA10

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	TMW-01	TMW-02	TM2-03	TMW-04	TMW-05
		3/17/1999	3/17/1999	3/17/1999	3/17/1999	3/17/1999
Volatile Organic Compounds (USEPA Method 8021B) (µg/L)						
Benzene	1	ND	ND	ND	ND	ND
Ethylbenzene	30	ND	ND	ND	ND	ND
Toluene	40	ND	ND	ND	ND	ND
Total Xylenes	20	ND	ND	ND	ND	ND
MTBE	35	ND	ND	ND	ND	ND
1,2 Dichloroethane	3	ND	ND	ND	ND	ND
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/L)						
Naphthalene	20	ND	ND	ND	0.5	ND
Acenaphthylene	210	ND	ND	ND	ND	ND
Acenaphthene	20	ND	ND	ND	2.8	ND
Phenanthrene	210	ND	ND	ND	ND	ND
Anthracene	2100	ND	ND	ND	ND	ND
Fluoranthene	280	ND	0.13	ND	ND	ND
Pyrene	210	ND	0.08	ND	ND	ND
Benzo (a) Anthracene	0.2	ND	ND	ND	ND	ND
Chrysene	5	ND	0.05	ND	ND	ND
Benzo (b) fluoranthene	0.2	ND	ND	ND	ND	ND
Benzo (k) fluoranthene	0.5	ND	ND	ND	ND	ND
Benzo (a) pyrene	0.2	ND	ND	ND	ND	ND
Dibenzo (a,h) anthracene	0.2	ND	ND	ND	ND	ND
Benzo (g,h,I) perylene	210	ND	ND	ND	ND	ND
Indeno (1,2,3-cd) pyrene	0.2	ND	ND	ND	ND	ND

Notes: [1]Chapter 62-770, FAC (September 23, 1997)
ND = no constituents detected

3.26 VALVE NUMBER 11 (CF- VA11)

CF-VA11 is located at the intersection of 103rd Street and Firestone Road. The location of CF-VA11 is indicated on Figure 1-2 (the Site Vicinity Map) and Figure 3.26.1 (the combined Site Plan, Sample Locations, and Soil Vapor Screening Results Map). The site is bordered to the northeast by a Lil' Champ fueling facility. This facility is currently undergoing assessment from a reported discharge due to the operations of the station. TtNUS mobilized to site CF-VA11 on March 24 and 29, 1999 for the DPT portion of the investigation. On April 20, 1999, TtNUS revisited the site to sample two permanent groundwater monitoring wells already located at the site.

3.26.1 Site Lithology

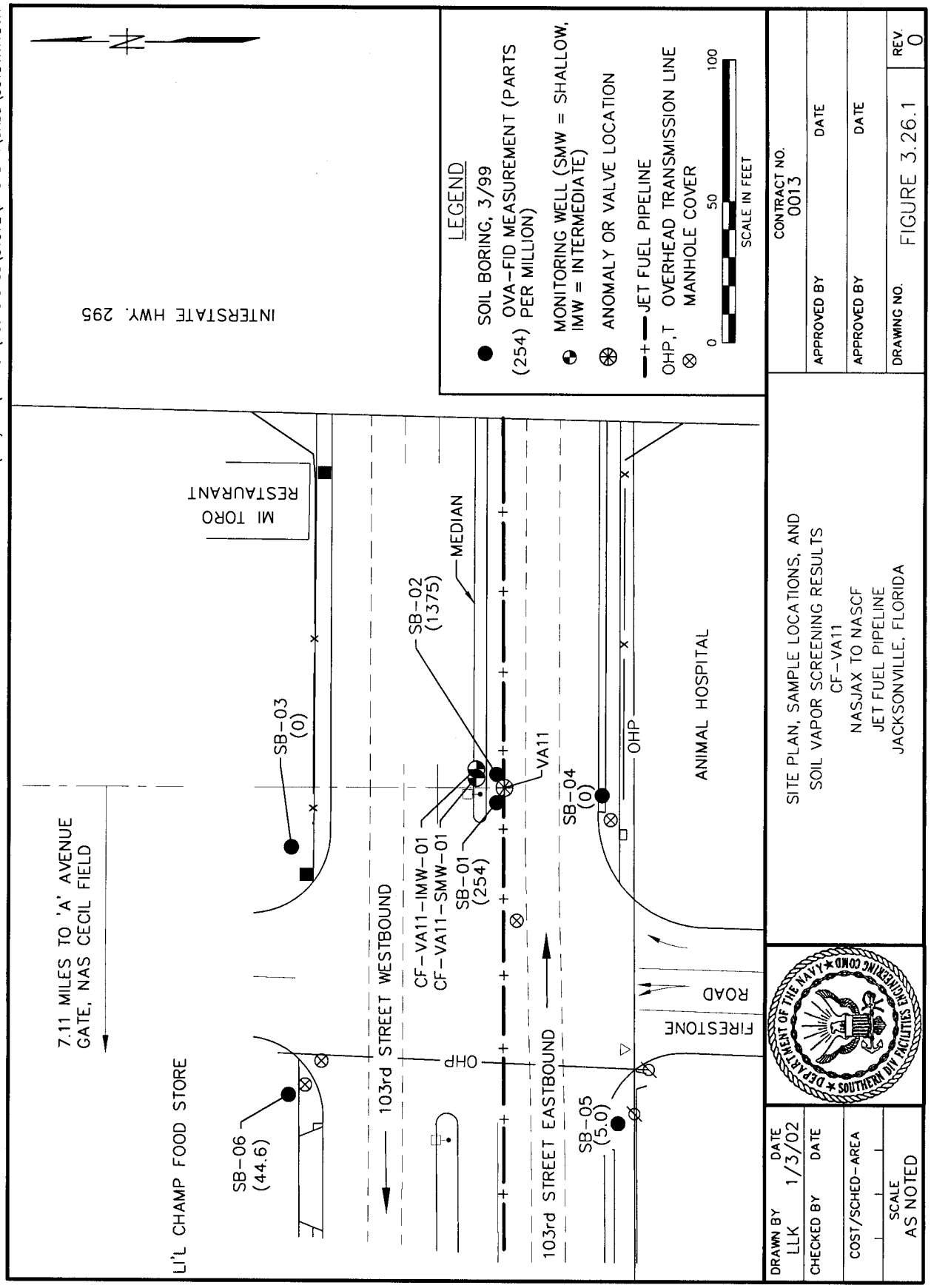
The site is underlain by a gray fine-grained sand to a depth of 9 ft bls. At 9 ft bls, the site is underlain by a black fine-grained sand with silt. This soil type extends to at least 12 ft bls, the maximum depth advanced during DPT assessment activities. Soil boring logs for CF-VA11 are included in Appendix D.

3.26.2 Soil Vapor

The vertical and horizontal extent of petroleum impacted soil in the vadose zone was assessed through soil headspace analysis performed during the DPT portion of the investigation. Six soil borings (CF-VA11-SB-01 through 06) were advanced by DPT to a depth ranging from 8 to 12 ft bls at the locations shown on Figure 3.26.1. Groundwater was encountered at 8 to 11 ft bls. Soil samples were collected at 2-ft intervals, and the samples were screened for hydrocarbon vapors with an OVA-PID as described in Section 2.4.2. The results of the soil vapor screening, presented in the Table 3.26.1, indicated soils with hydrocarbon vapors above 50 ppm in soil borings SB-01 and SB-02 and hydrocarbon vapors above 10 ppm in SB-06. The sample and boring logs for CF-VA11 are included in Appendix A.

3.26.3 Soil Quality

Based on the results of the soil headspace analyses, six soil samples were collected for laboratory analysis. Discreet soil samples, CF-VA11-SB-01-08, CF-VA11-SB-02-06, CF-VA11-SB-03-06, CF-VA11-SB-04-06, CF-VA11-SB-05-06, and CF-VA11-SB-06-6 were collected at depths of 6 to 8 ft bls. The soil sample were placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. The confirmatory samples collected at all six locations contained no VOAs or PAHs at or above FDEP SCTLs. The results of the laboratory analysis are summarized on Table 3.26.2. A Laboratory Soil Analytical Results figure was not created since results did not exceed SCTLs. The complete set of analytical results is presented in Appendix D.


F:\Projects\NAS CF\Active CTOs\CT072\Final SAR\CADD\0013VA11OVA
INTERSTATE HWY. 295
LEGEND
SOIL BORING, 3/99
(254) OVA-FID MEASUREMENT (PARTS PER MILLION)
MONITORING WELL (SMW = SHALLOW, IMW = INTERMEDIATE)
ANOMALY OR VALVE LOCATION
JET FUEL PIPELINE
OHP,T OVERHEAD TRANSMISSION LINE
MANHOLE COVER
0 50 100
SCALE IN FEET
MI TORO RESTAURANT
MEDIAN
SB-02 (1375)
SB-03 (0)
VA11
SB-04 (0)
OHP
ANIMAL HOSPITAL
7.11 MILES TO 'A' AVENUE GATE, NAS CECIL FIELD
CF-VA11-IMW-01
CF-VA11-SMW-01
SB-01 (254)
103rd STREET WESTBOUND
OHP
103rd STREET EASTBOUND
FIRESTONE
ROAD
SB-06 (44.6)
SB-05 (5.0)
LI'L CHAMP FOOD STORE
SITE PLAN, SAMPLE LOCATIONS, AND SOIL VAPOR SCREENING RESULTS
CF-VA11
NASJAX TO NASCF
JET FUEL PIPELINE
JACKSONVILLE, FLORIDA
CONTRACT NO. 0013
APPROVED BY
DATE
APPROVED BY
DATE
DRAWING NO.
FIGURE 3.26.1
REV. 0
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CHECKED BY
DATE
COST/SCHED-AREA
SCALE AS NOTED
DEPARTMENT OF THE NAVY ★ SOUTHERN DIV FACILITIES ENGINEERING COMD ★

Table 3.26.1
Soil Vapor Screening Results for CF-VA11

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Soil Boring Number	Date of Measurement	Sample Interval (ft bls)	PID Measurement (ppm)
SB-01	3/25/1999	2	175.0
		4	138.0
		6	174.0
		8	254.0
		10	217.0
		12	248.0
SB-02	3/24/1999	2	294.0
		4	874.0
		6	1375.0
		8	928.0
		10	448.0
		12	361.0
SB-03	3/29/1999	2	0.0
		4	0.0
		6	0.0
		8	0.0
SB-04	3/29/1999	2	0.0
		4	0.0
		6	0.0
		8	0.0
SB-05	3/29/1999	2	0.0
		4	0.0
		6	5.0
		8	0.0
		10	0.0
SB-06	3/29/1999	2	41.5
		4	44.6
		6	0.0
		8	0.0

Notes: Soil borings analyzed with a Photo Ionization Detector (PID)

Table 3.26.2
Laboratory Soil Analysis Summary for CF-VA11

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	SB-01 @ 8 ft	SB-02 @ 6 ft	SB-03 @ 6 ft	SB-04 @ 6 ft	SB-05 @ 6 ft	SB-06 @ 6 ft
		3/25/1999	3/25/1999	3/29/1999	3/29/1999	3/29/1999	3/29/1999
Volatile Organic Compounds (USEPA Method 8021B) (µg/kg)							
MTBE	200	3.0U	2.0U	2.0U	2.0U	2.0U	2.0U
Benzene	7	1.2U	1.3U	1.1U	1.3U	3.0I	1.2U
Toluene	500	1.2U	1.3U	1.1U	1.3U	1.3U	1.2U
Chlorobenzene	1300	1.2U	1.3U	1.1U	1.3U	1.3U	1.2U
Ethylbenzene	600	1.2U	9.1	1.1U	1.3U	1.3U	1.2U
Total Xylenes	200	3.0U	9.0I	2.0U	2.0U	2.0U	2.0U
1,3-Dichlorobenzene	300	1.2U	1.0U	1.1U	1.0U	1.0U	1.0U
1,4-Dichlorobenzene	2200	1.2U	1.0U	1.1U	1.0U	1.0U	1.0U
1,2 Dichloroethane	10	1.2U	1.0U	1.1U	1.0U	1.0U	1.0U
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/kg)							
Naphthalene	1700	23U	310	20U	20U	20U	19U
1-Methylnaphthalene	2200	46U	670	40U	40U	40U	37U
2-Methylnaphthalene	6100	46U	570	40U	40U	40U	37U
Acenaphthylene	27000	46U	39U	40U	40U	40U	37U
Acenaphthene	2100	23U	71	20U	20U	20U	19I
Phenanthrene	250000	46U	600	40U	40U	40U	37U
Anthracene	2500000	3.0U	160	2.0U	2.0U	2.0U	2.0U
Fluorene	160000	4.6U	100	4.0U	4.0U	4.0U	3.7U
Fluoranthene	1200000	4.6U	630	4.0U	8.1	4.0U	52
Pyrene	880000	2.3U	300	2.0U	2.0U	2.0U	45
Benzo (a) Anthracene	1400	2.3U	35	2.0U	2.0U	2.0U	18
Chrysene	77000	2.3U	23	2.0U	2.0I	2.0I	22
Benzo (b) fluoranthene	1400	4.0U	3.0I	4.0I	4.0I	4.0U	17
Benzo (k) fluoranthene	15000	3.0U	3.0I	2.0U	2.0U	2.0U	8.0
Benzo (a) pyrene	100	3.0U	2.0U	2.0U	2.0I	2.0U	20
Dibenzo (a,h) anthracene	100	4.6U	3.9U	4.0U	4.0U	4.0U	6.0I
Benzo (g,h,i) perylene	2300000	4.6U	19	7.0I	12	4.0U	11
Indeno (1,2,3-cd) pyrene	1500	2.3U	3.8	2.0U	4.5	2.0U	12

Notes: [1]Chapter 62-777, FAC (August 1999). Most stringent value of groundwater leachability and direct exposure limits.
I =value is between MDL and PQL
U = constituent not detected

3.26.4 Temporary Well Point Sampling

During the site investigation, the soil borings at the site were converted to temporary wells with 1¼" diameter PVC and screened from 7 to 12 ft bls in borings SB-01, SB-02, SB-04, and SB-05 and screened from 5 to 10 ft bls in borings SB-03 and SB-06. The groundwater samples were collected and analyzed as described in Section 2.4.2. Groundwater samples were placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. Analytical results of the groundwater samples indicated benzene and xylene concentrations above FDEP GCTLs were detected in the temporary monitoring well installed in SB-06. However, based upon a site background search conducted by TtNUS, the contaminants appear to originate from a reported discharge at the fueling station located at the northwest corner of the intersection. TtNUS found that the results presented in this report coincide with the results reported from past sampling events for the fuel facility (TtNUS, 199b).

In the groundwater sample collected from the temporary monitoring well installed in SB-02, benzo(a)anthracene (0.29 µg/L) was detected above the FDEP GCTL of 0.2 µg/L. The groundwater analytical results are summarized on Table 3.26.3 and results exceeding GCTLs are depicted on Figure 3.26.2. The complete set of analytical results is presented in Appendix D.

3.26.5 Monitoring Well Sampling

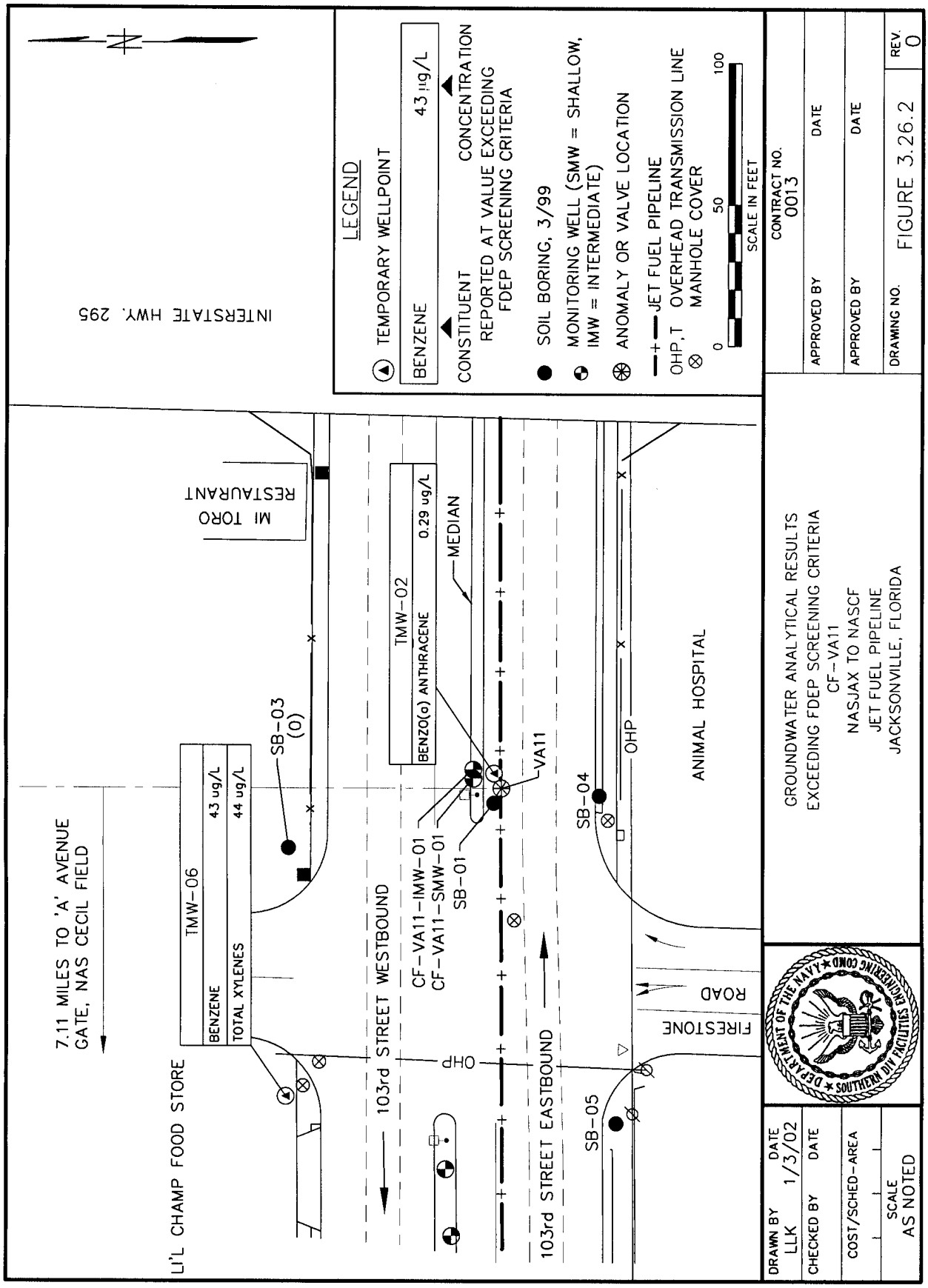
On April 20, 1999, TtNUS collected groundwater samples from two permanent monitoring wells (CF-VA11-IMW-01 and CF-VA11-SMW-01) located approximately 10 ft north of CF-VA11. Well CF-VA11-SMW-01 had a total depth of 13.66 ft bls and was screened from 3 to 13 ft bls. Well CF-VA11-IMW-01 had a total depth of 23.56 ft bls and was screened from 18 to 23 ft bls. The collected samples were placed on ice, sent to ENCO Labs and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. Analytical results from the groundwater samples indicated dissolved hydrocarbon concentrations were below GCTLs for all COCs. The groundwater analytical results are summarized on Table 3.26.3 and the complete set of analytical results is included in Appendix D.

Table 3.26.3
Groundwater Analytical Results for CF-VA11

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	TMW-01	TMW-02	TMW-03	TMW-04	TMW-05	TMW-06	SMW-01	IMW-01
		3/25/1999	3/25/1999	3/29/1999	3/29/1999	3/29/1999	3/29/1999	4/20/1999	4/20/1999
Volatile Organic Compounds (USPA Method 8021B) (μg/L)									
Benzene	1	ND	ND	ND	ND	ND	**43**	ND	ND
Ethylbenzene	30	ND	ND	ND	ND	ND	9.4	ND	ND
Toluene	40	ND	ND	ND	ND	ND	ND	ND	ND
Total Xylenes	20	ND	ND	ND	ND	ND	**44**	ND	ND
MTBE	35	ND	10	ND	ND	2	3	4.5	1.1
1,2 Dichloroethane	3	ND	ND	ND	ND	ND	ND	ND	ND
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (μg/L)									
Naphthalene	20	ND	8.6	ND	ND	ND	9.4	ND	ND
Acenaphthylene	210	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	20	ND	0.6	ND	ND	1.7	3	ND	ND
Phenanthrene	210	ND	1.2	ND	ND	ND	ND	ND	ND
Anthracene	2100	ND	0.37	ND	ND	ND	ND	0.07	ND
Fluoranthene	280	ND	2.5	ND	ND	ND	ND	ND	ND
Pyrene	210	ND	1.7	ND	ND	ND	ND	ND	ND
Benzo (a) Anthracene	0.2	ND	**0.29**	ND	ND	ND	ND	0.05	ND
Chrysene	5	ND	0.29	ND	ND	ND	ND	0.1	ND
Benzo (b) fluoranthene	0.2	ND	0.11	ND	ND	ND	ND	ND	ND
Benzo (k) fluoranthene	0.5	ND	0.06	ND	ND	ND	ND	ND	ND
Benzo (a) pyrene	0.2	ND	0.07	ND	ND	ND	ND	ND	ND
Dibenzo (a,h) anthracene	0.2	ND	ND	ND	ND	ND	ND	ND	ND
Benzo (g,h,I) perylene	210	ND	ND	ND	ND	ND	ND	ND	ND
Indeno (1,2,3-cd) pyrene	0.2	0.06	ND	0.07	ND	ND	ND	ND	ND

Notes: [1]Chapter 62-770, FAC (September 23, 1997)
BOLD = Exceeds Taget Levels
ND = no constituents detected


F:\Projects\NAS CF\Active CTOs\CT072\Final SAR\CADD\0013VA11GAD
INTERSTATE HWY. 295
LEGEND
TEMPORARY WELLPOINT
BENZENE 43 µg/L
CONSTITUENT
CONCENTRATION
REPORTED AT VALUE EXCEEDING FDEP SCREENING CRITERIA
SOIL BORING, 3/99
MONITORING WELL (SMW = SHALLOW, IMW = INTERMEDIATE)
ANOMALY OR VALVE LOCATION
JET FUEL PIPELINE
OHP, T OVERHEAD TRANSMISSION LINE
MANHOLE COVER
0 50 100
SCALE IN FEET
MI TORO RESTAURANT
TMW-06
BENZENE 43 ug/L
TOTAL XYLENES 44 ug/L
SB-03 (0)
TMW-02
BENZO(a) ANTHRACENE 0.29 ug/L
MEDIAN
VA11
CF-VA11-IMW-01
CF-VA11-SMW-01
SB-01
SB-04
OHP
ANIMAL HOSPITAL
7.11 MILES TO 'A' AVENUE GATE, NAS CECIL FIELD
LI'L CHAMP FOOD STORE
103rd STREET WESTBOUND
103rd STREET EASTBOUND
OHP
SB-05
FIRESTONE ROAD
GROUNDWATER ANALYTICAL RESULTS
EXCEEDING FDEP SCREENING CRITERIA
CF-VA11
NASJAX TO NASCF
JET FUEL PIPELINE
JACKSONVILLE, FLORIDA
CONTRACT NO. 0013
APPROVED BY
DATE
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DATE
DRAWING NO.
FIGURE 3.26.2
REV. 0
DEPARTMENT OF THE NAVY ★ SOUTHERN DIV FACILITIES ENGINEERING COMD ★
DRAWN BY LLK
DATE 1/3/02
CHECKED BY
DATE
COST/SCHED-AREA
SCALE AS NOTED

3.26.6 Discussion

Data obtained during the DPT assessment indicated OVA responses greater than 50 ppm detected in the two soil borings (SB-01 and SB-02) installed at the site. The six confirmatory soil samples collected for laboratory analysis indicated soil analytical results below SCTLs for all COCs (Chapter 62-770, FAC). The groundwater sample collected from TMW-06 indicated benzene and xylene exceeded the GCTL concentration (Chapter 62-770, FAC). TtNUS considers the contaminant concentrations attributable to the past reported discharge at the Lil' Champ facility. Benzo(a)anthracene was detected above the regulatory limit from TMW-02. However, the analytical results from the permanent monitoring wells located approximately 10 ft to the north contained no dissolved hydrocarbon concentrations above GCTLs (Chapter 62-770, FAC).

3.27 VALVE NUMBER 12 (CF-VA12)

CF-VA12 is located along 103rd Street just west of the intersection with Ricker Road. The location of CF-VA12 is indicated on Figure 1-2 (the Site Vicinity Map) and Figure 3.27.1 (the combined Site Plan, Sample Locations, and Soil Vapor Screening Results Map). TtNUS mobilized to site CF-VA12 on March 15 and 25, 1999 for the DPT investigation.

3.27.1 Site Lithology

The site is underlain by gray fine-grained sand to a depth of 8 ft bls. At 8 ft bls, the site is underlain by a brown fine-grained silty sand. This soil type extends to at least 10 ft bls, the maximum depth advanced at the site during the assessment. Soil boring logs are included in Appendix A.

3.27.2 Soil Vapor

The vertical and horizontal extent of petroleum impacted soil in the vadose zone was assessed through soil headspace analysis performed during the DPT investigation. Four soil borings (CF-VA12-SB-01 through 04) were advanced to depths ranging from 6 to 10 ft bls at the locations shown on Figure 3.27.1. Groundwater was encountered at 8 ft bls. Soil samples were collected at 2-ft intervals and the samples were screened for hydrocarbon vapors with an OVA-PID as described in Section 2.4.2. The results of the soil vapor screening, presented in the Table 3.27.1, indicated hydrocarbon vapors above 50 ppm in soils from SB-03. The remaining borings at the site indicated no soils with hydrocarbon vapors above 10 ppm. The DPT sample and boring logs for CF-VA12 are included in Appendix A.

3.27.3 Soil Quality

Based on the results of the soil headspace analyses, two soil samples were collected for laboratory analysis. Discrete soil samples CF-VA12-SB-02-07 and CF-VA12-SB-03-02 were collected at a depth of 7 and 2 ft bls, respectively. The soil samples were placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. The confirmatory samples collected at SB-02 and SB-03 contained no VOAs or PAHs at or above FDEP SCTLs. The results of the laboratory soil analysis are summarized on Table 3.27.2. A Laboratory Soil Analytical Results figure was not created since results did not exceed SCTLs. The complete set of analytical results is presented in Appendix D.

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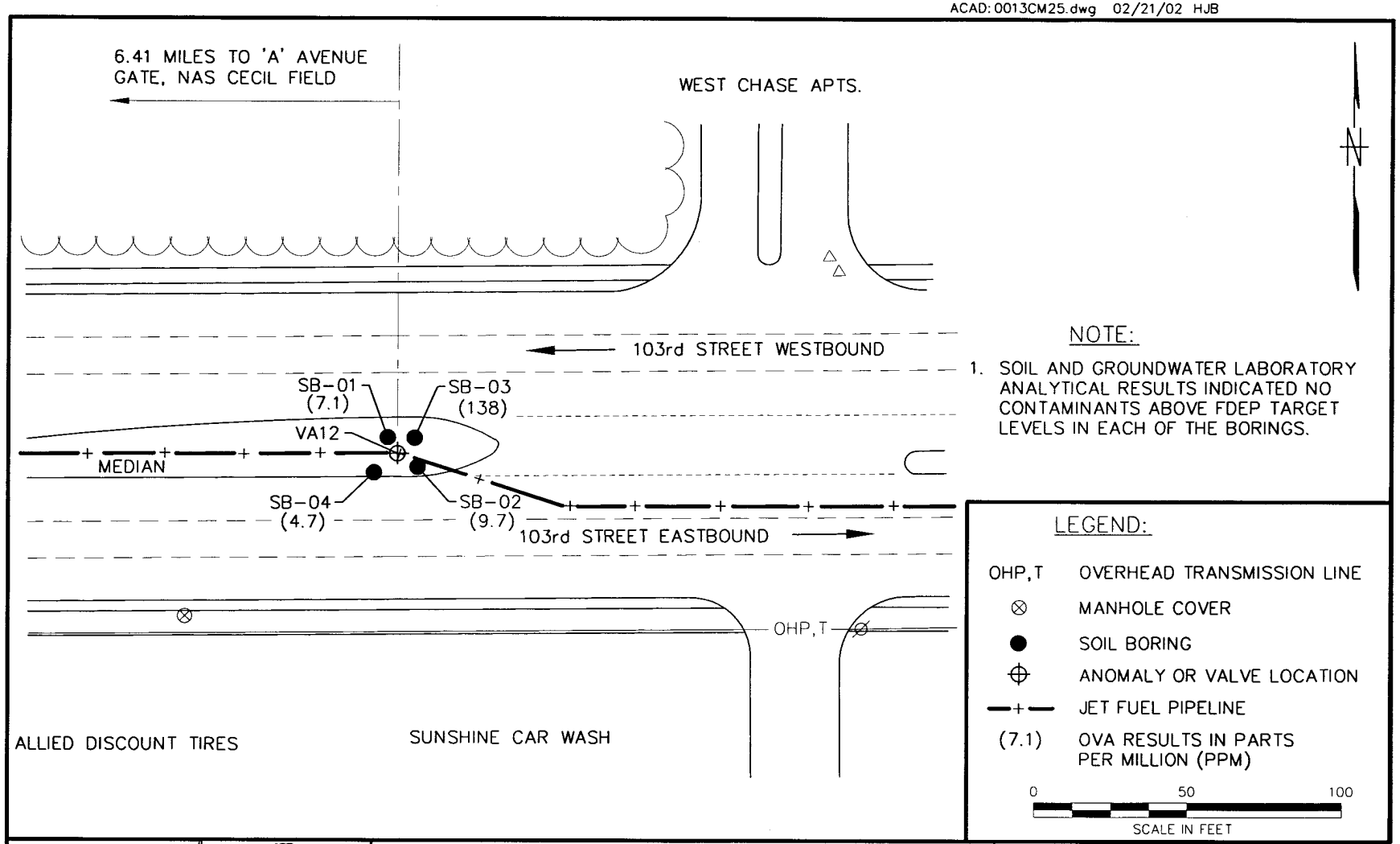

NOTE:

1. SOIL AND GROUNDWATER LABORATORY ANALYTICAL RESULTS INDICATED NO CONTAMINANTS ABOVE FDEP TARGET LEVELS IN EACH OF THE BORINGS.

LEGEND:

OHP,T	OVERHEAD TRANSMISSION LINE
⊗	MANHOLE COVER
●	SOIL BORING
⊕	ANOMALY OR VALVE LOCATION
—+—	JET FUEL PIPELINE
(7.1)	OVA RESULTS IN PARTS PER MILLION (PPM)

0 50 100
SCALE IN FEET

DRAWN BY MF DATE 4/9/99	SITE PLAN, SAMPLE LOCATIONS, AND SOIL VAPOR SCREENING RESULTS CF-VA12 NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA	CONTRACT NO. 0013
CHECKED BY DATE		APPROVED BY DATE
COST/SCHED-AREA		APPROVED BY DATE
SCALE AS NOTED		DRAWING NO. FIGURE 3.27.1 REV. 0

FORM CADD NO. SDIV_AH.DWG - REV 0 - 1/20/98

Table 3.27.1
Soil Vapor Screening Results for CF-VA12

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Soil Boring Number	Date of Measurement	Sample Interval (ft bls)	PID Measurement (ppm)
SB-01	3/15/1999	2	0.0
		4	0.0
		6	7.1
		8	0.0
		10	0.0
SB-02	3/15/1999	2	0.0
		4	7.2
		6	9.7
		8	0.0
		10	0.0
SB-03	3/25/1999	2	138.0
		4	58.2
		6	11.0
SB-04	3/25/1999	2	4.7
		4	2.5
		6	0.0

Notes: Soil borings analyzed with a Photo Ionization Detector (PID)

Table 3.27.2
Laboratory Soil Analysis Summary for CF-VA12

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	SB-02 @ 7 ft	SB-03 @ 2 ft			
		3/15/1999	3/25/1999			
Volatile Organic Compounds (USEPA Method 8021B) (µg/kg)						
MTBE	200	3.0U	2.0U			
Benzene	7	1.0U	1.4U			
Toluene	500	1.0U	1.4U			
Chlorobenzene	1300	1.0U	1.4U			
Ethylbenzene	600	1.0U	1.4U			
Total Xylenes	200	3.0U	2.0U			
1,3-Dichlorobenzene	300	1.0U	1.0U			
1,4-Dichlorobenzene	2200	1.0U	1.0U			
1,2 Dichloroethane	10	1.0U	1.0U			
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/kg)						
Naphthalene	1700	23U	22U			
1-Methylnaphthalene	2200	46U	43U			
2-Methylnaphthalene	6100	46U	43U			
Acenaphthylene	27000	46U	43U			
Acenaphthene	2100	23U	22U			
Phenanthrene	250000	46U	43U			
Anthracene	2500000	3.0U	2.0I			
Fluorene	160000	4.6U	4.3U			
Fluoranthene	1200000	4.6U	44			
Pyrene	880000	2.3U	56			
Benzo (a) Anthracene	1400	2.3U	16			
Chrysene	77000	2.3U	27			
Benzo (b) fluoranthene	1400	4.0U	31			
Benzo (k) fluoranthene	15000	3.0U	12			
Benzo (a) pyrene	100	3.0U	39			
Dibenzo (a,h) anthracene	100	4.6U	4.3U			
Benzo (g,h,i) perylene	2300000	4.6U	26			
Indeno (1,2,3-cd) pyrene	1500	2.3U	35			

Notes: [1]Chapter 62-777, FAC (August 1999). Most stringent value of groundwater leachability and direct exposure limits.
I = value is between MDL and PQL
U = constituent not detected

3.27.4 Temporary Well Point Sampling

During the DPT investigation, soil borings SB-01 and SB-02 were converted to temporary wells and the DPT screen was deployed from 8 to 12 ft bls in each boring. The groundwater samples were collected as described in Section 2.4.4. Groundwater samples were placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. The groundwater analytical results, presented on Table 3.27.3, indicated no VOAs or PAHs at or above FDEP GCTLs. A Groundwater Analytical Results figure was not created since results did not exceed GCTLs. The complete set of analytical results is presented in Appendix D.

3.27.5 Monitoring Well Sampling

Permanent monitoring wells were not installed at CF-VA12 based on the results of the DPT investigation.

3.27.6 Discussion

Data obtained during the DPT assessment indicated headspace readings above 50 ppm from one soil boring (SB-03) at Site CF-VA12. The confirmatory soil samples collected for laboratory analysis indicated soil analytical results below SCTLs for all petroleum COCs (Chapter 62-770, FAC). Groundwater samples collected from temporary wells indicated that dissolved hydrocarbon concentrations were below GCTLs for all COCs (Chapter 62-770, FAC).

Table 3.27.3
Groundwater Analytical Results for CF-VA12

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	TMW-01	TMW-02				
		3/15/1999	3/15/1999				
Volatile Organic Compounds (USEPA Method 8021B) (µg/L)							
Benzene	1	ND	ND				
Ethylbenzene	30	ND	ND				
Toluene	40	ND	ND				
Total Xylenes	20	ND	ND				
MTBE	35	ND	ND				
1,2 Dichloroethane	3	ND	ND				
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/L)							
Naphthalene	20	ND	ND				
Acenaphthylene	210	ND	ND				
Acenaphthene	20	ND	ND				
Phenanthrene	210	ND	ND				
Anthracene	2100	ND	ND				
Fluoranthene	280	ND	ND				
Pyrene	210	ND	ND				
Benzo (a) Anthracene	0.2	ND	ND				
Chrysene	5	ND	ND				
Benzo (b) fluoranthene	0.2	ND	ND				
Benzo (k) fluoranthene	0.5	ND	ND				
Benzo (a) pyrene	0.2	ND	ND				
Dibenzo (a,h) anthracene	0.2	ND	ND				
Benzo (g,h,I) perylene	210	ND	ND				
Indeno (1,2,3-cd) pyrene	0.2	ND	ND				

Notes: [1]Chapter 62-770, FAC (September 23, 1997)
ND = no constituents detected

3.28 VALVE NUMBER 13 (CF-VA13)

CF-VA13 is located along 103rd Street approximately 300 ft east of the intersection with Shindler Drive. The location of CF-VA13 is indicated on Figure 1-2 (the Site Vicinity Map) and Figure 3.28.1 (the combined Site Plan, Sample Locations, and Soil Vapor Screening Results Map). TtNUS mobilized to site CF-VA13 on March 11 and 25, 1999 for the DPT investigation.

3.28.1 Site Lithology

The site is underlain by brown fine-grained sand to a depth of 13 ft bls. At 13 ft bls, the site is underlain by a black silty sand. This soil type extends to at least 14 ft bls, the maximum depth drilled at the site during the assessment. Soil boring logs are included in Appendix A.

3.28.2 Soil Vapor

The vertical and horizontal extent of petroleum impacted soil in the vadose zone was assessed through soil headspace analysis performed during the DPT investigation. Four soil borings (CF-VA13-SB-01 through 04) were advanced to depths ranging from 10 to 14 ft bls at the locations shown on Figure 3.28.1. Groundwater was encountered at 11 ft bls. Soil samples were collected at 2-ft intervals and the samples were screened for hydrocarbon vapors with an OVA-PID as described in Section 2.4.2. The results of the soil vapor screening, presented in the Table 3.28.1, indicated no headspace readings with results above 10 ppm. The DPT sample and boring logs for CF-VA13 are included in Appendix A.

3.28.3 Soil Quality

Based on the results of the soil headspace analyses, one soil sample was collected for laboratory analysis. Discrete soil sample CF-VA13-SB-02-10 was collected at a depth of 10 ft bls. The soil sample was placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. The confirmatory sample collected at SB-02 contained no VOAs or PAHs at or above FDEP SCTLs. The results of the laboratory soil analysis are summarized on Table 3.28.2. A Laboratory Soil Analytical Results figure was not created since results did not exceed SCTLs. The complete set of analytical results is presented in Appendix D.

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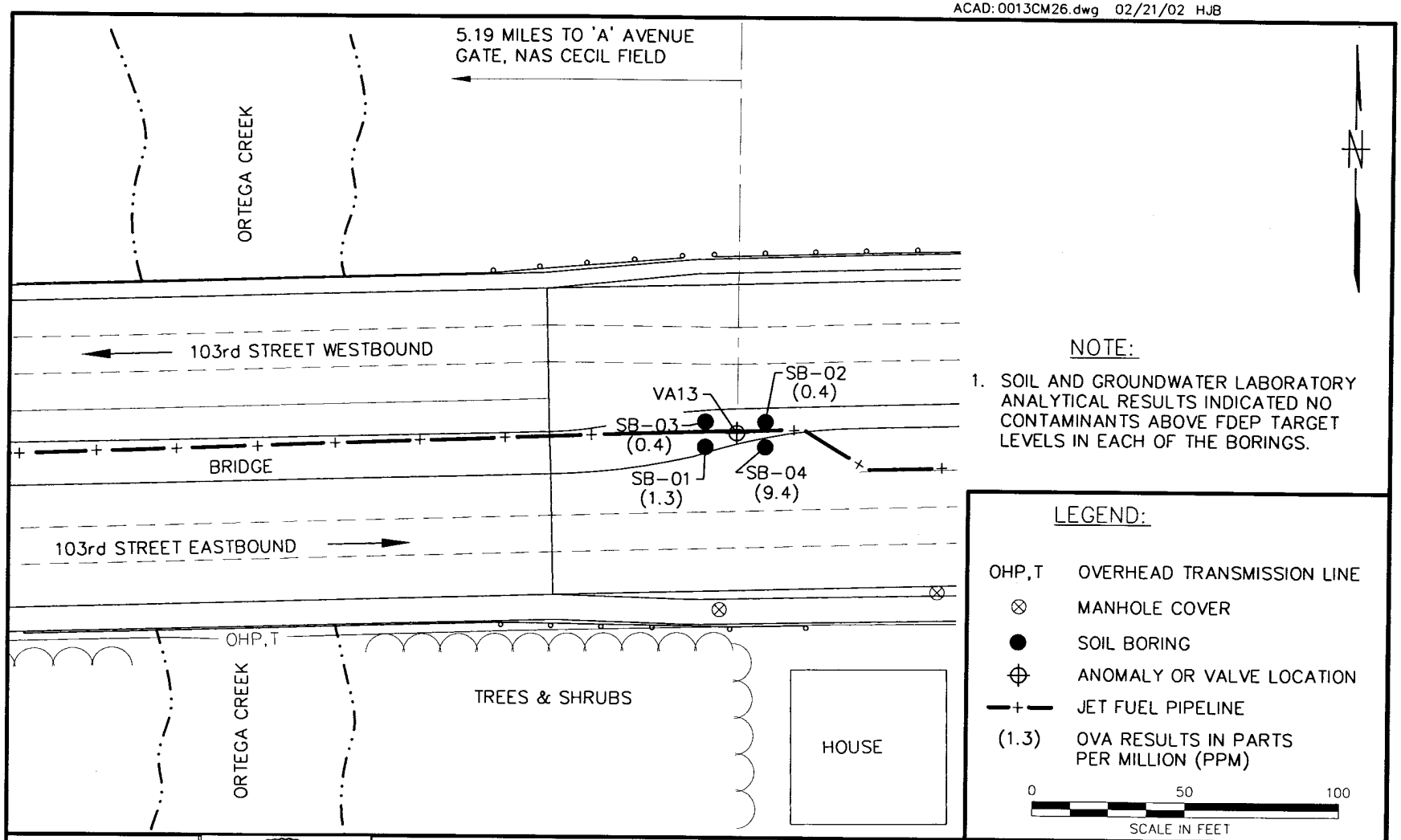

NOTE:

1. SOIL AND GROUNDWATER LABORATORY ANALYTICAL RESULTS INDICATED NO CONTAMINANTS ABOVE FDEP TARGET LEVELS IN EACH OF THE BORINGS.

LEGEND:

OHP,T	OVERHEAD TRANSMISSION LINE
⊗	MANHOLE COVER
●	SOIL BORING
⊕	ANOMALY OR VALVE LOCATION
—+—	JET FUEL PIPELINE
(1.3)	OVA RESULTS IN PARTS PER MILLION (PPM)

0 50 100
SCALE IN FEET

DRAWN BY MF	DATE 4/9/99	SITE PLAN, SAMPLE LOCATIONS, AND SOIL VAPOR SCREENING RESULTS VALVE 13 NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA	CONTRACT NO. 0013
CHECKED BY	DATE		APPROVED BY DATE
COST/SCHED-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 3.28.1 REV. 0

FORM CADD NO. SDIV_AH.DWG - REV 0 - 1/20/98

Table 3.28.1
Soil Vapor Screening Results for CF-VA13

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Soil Boring Number	Date of Measurement	Sample Interval (ft bls)	PID Measurement (ppm)
SB-01	3/11/1999	2	1.3
		4	0.7
		6	0.8
		8	0.7
		10	0.7
		12	0.8
		14	0.7
SB-02	3/11/1999	2	0.4
		4	0.3
		6	0.4
		8	0.3
		10	0.3
		12	0.3
SB-03	3/25/1999	2	0.3
		4	0.4
		6	0.2
		8	0.1
		10	0.2
SB-04	3/25/1999	2	0.2
		4	7.4
		6	9.4
		8	8.6
		10	7.3

Notes: Soil borings analyzed with a Photo Ionization Detector (PID)

Table 3.28.2
Laboratory Soil Analysis Summary for CF-VA13

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	SB-02 @ 10 ft				
		3/15/1999				
Volatile Organic Compounds (USEPA Method 8021B) (µg/kg)						
MTBE	200	2.0U				
Benzene	7	1.3U				
Toluene	500	1.3U				
Chlorobenzene	1300	1.3U				
Ethylbenzene	600	1.3U				
Total Xylenes	200	2.0U				
1,3-Dichlorobenzene	300	1.0U				
1,4-Dichlorobenzene	2200	1.0U				
1,2 Dichloroethane	10	1.0U				
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/kg)						
Naphthalene	1700	20U				
1-Methylnaphthalene	2200	40U				
2-Methylnaphthalene	6100	40U				
Acenaphthylene	27000	40U				
Acenaphthene	2100	20U				
Phenanthrene	250000	40U				
Anthracene	2500000	2.0U				
Fluorene	160000	4.0U				
Fluoranthene	1200000	4.0U				
Pyrene	880000	2.0U				
Benzo (a) Anthracene	1400	2.0U				
Chrysene	77000	2.0U				
Benzo (b) fluoranthene	1400	4.0U				
Benzo (k) fluoranthene	15000	2.0U				
Benzo (a) pyrene	100	2.0U				
Dibenzo (a,h) anthracene	100	4.0U				
Benzo (g,h,i) perylene	2300000	4.0U				
Indeno (1,2,3-cd) pyrene	1500	2.0U				

Notes: [1]Chapter 62-777, FAC (August 1999). Most stringent value of groundwater leachability and direct exposure limits.
U = constituent not detected

3.28.4 Temporary Well Point Sampling

During the DPT investigation, soil borings SB-01 and SB-02 were converted to temporary wells and the DPT screen was deployed from 10 to 14 ft bls in each boring. The groundwater samples were collected as described in Section 2.4.4. Groundwater samples were placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. The groundwater analytical results, presented on Table 3.28.3, indicated no VOAs or PAHs at or above FDEP GCTLs. A Groundwater Analytical Results figure was not created since results did not exceed GCTLs. The complete set of analytical results is presented in Appendix D.

3.28.5 Monitoring Well Sampling

Permanent monitoring wells were not installed at CF-VA13 based on the results of the DPT investigation.

3.28.6 Discussion

Data obtained during the DPT assessment indicated no headspace readings above 10 ppm from the four soil borings at Site CF-VA13. The confirmatory soil sample collected for laboratory analysis indicated soil analytical results below SCTLs for all petroleum COCs (Chapter 62-770, FAC). Groundwater samples collected from temporary wells indicated that dissolved hydrocarbon concentrations were below GCTLs for all COCs (Chapter 62-770, FAC).

Table 3.28.3
Groundwater Analytical Results for CF-VA13

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	TMW-01	TMW-02				
		3/12/1999	3/12/1999				
Volatile Organic Compounds (USEPA Method 8021B) (µg/L)							
Benzene	1	ND	ND				
Ethylbenzene	30	ND	ND				
Toluene	40	ND	ND				
Total Xylenes	20	ND	ND				
MTBE	35	ND	ND				
1,2 Dichloroethane	3	ND	ND				
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/L)							
Naphthalene	20	ND	ND				
Acenaphthylene	210	ND	ND				
Acenaphthene	20	ND	ND				
Phenanthrene	210	ND	ND				
Anthracene	2100	ND	ND				
Fluoranthene	280	ND	ND				
Pyrene	210	ND	ND				
Benzo (a) Anthracene	0.2	ND	ND				
Chrysene	5	ND	ND				
Benzo (b) fluoranthene	0.2	ND	0.17				
Benzo (k) fluoranthene	0.5	ND	ND				
Benzo (a) pyrene	0.2	ND	ND				
Dibenzo (a,h) anthracene	0.2	ND	0.12				
Benzo (g,h,I) perylene	210	ND	ND				
Indeno (1,2,3-cd) pyrene	0.2	ND	ND				

Notes: [1]Chapter 62-770, FAC (September 23, 1997)
ND = no constituents detected

3.29 VALVE NUMBER 14 (CF-VA14)

CF-VA14 is located on 103rd Street approximately 150 ft east of the intersection with Shindler Drive. The location of CF-VA14 is indicated on Figure 1-2 (the Site Vicinity Map) and Figure 3.29.1 (the combined Site Plan, Sample Locations, and Soil Vapor Screening Results Map). The valve at CF-VA14 is located inside a concrete manhole. TtNUS mobilized to site CF-VA14 on March 11, 24, and 25, 1999 for the DPT phase of the investigation. During the DPT field investigation, TtNUS inspected the interior of the manhole. Visual evidence of petroleum products was observed on the valve body and within the valve box. TtNUS found no visual evidence of a release outside the confines of the manhole. On November 29, 1999, TtNUS installed one permanent monitoring well. The permanent monitoring well was developed on December 9, 1999 and sampled on December 15, 1999. On December 21, 1999, five additional soil borings were advanced and soil samples were collected for laboratory analysis.

3.29.1 Site Lithology

The site is underlain by a dark brown fine-grained sand, slightly silty, to a depth of 8 ft bls. At 8 ft bls, the site is underlain by a gray fine-grained silty sand to a depth of 11 ft bls. At 11 ft bls, the site is underlain by a tan fine-grained sand. This soil type extends to at least 16 ft bls, the maximum depth advanced during the DPT investigation. Soil boring logs are included in Appendix A.

3.29.2 Soil Vapor

The vertical and horizontal extent of petroleum impacted soil in the vadose zone was assessed through soil headspace analysis performed during the DPT investigation. Four soil borings (CF-VA14-SB-01 through 04) were advanced by DPT to depths ranging from 14 to 16 ft bls at the locations shown on Figure 3.29.1. Groundwater was encountered at 11 ft bls. Soil samples were collected at 2-ft intervals, and the samples were screened for hydrocarbon vapors with an OVA-PID as described in Section 2.4.2. The results of the soil vapor screening, presented in the Table 3.29.1, indicated hydrocarbon vapors above 50 ppm from soil borings SB-03 and SB-04. On December 21, 1999, five additional soil borings (CF-VA014-SB-05 through 09) were advanced at the site. Results of the soil vapor screening indicated elevated headspace readings above 50 ppm in soil borings SB-05 and SB-06. Hydrocarbon vapor readings from the other three borings were below 10 ppm. The DPT sample and boring logs for CF-VA14 are included in Appendix A.

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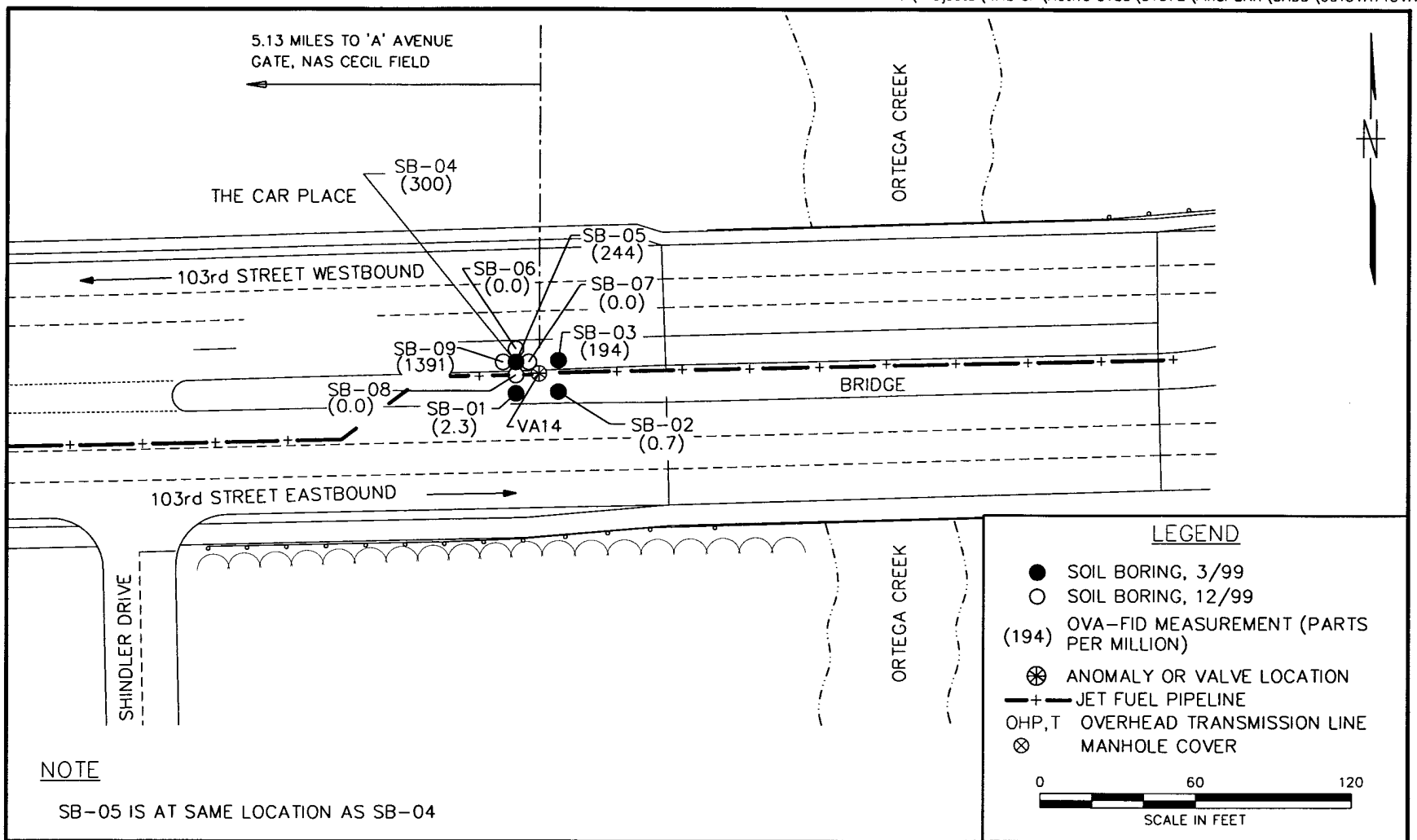

NOTE

SB-05 IS AT SAME LOCATION AS SB-04

DRAWN BY LLK	DATE 11/29/01	SITE PLAN, SAMPLE LOCATIONS, AND SOIL VAPOR SCREENING RESULTS CF-VA14 NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA	CONTRACT NO. 0013
CHECKED BY	DATE		APPROVED BY DATE
COST/SCHED-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 3.29.1 REV. 0

FORM CADD NO. SDIV_AH.DWG - REV 0 - 1/20/98

Table 3.29.1
Soil Vapor Screening Results for CF-VA14

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Soil Boring Number	Date of Measurement	Sample Interval (ft bls)	PID Measurement (ppm)
SB-01	3/11/1999	2	2.3
		4	2.0
		6	1.0
		8	0.5
		10	0.6
		12	0.8
		14	0.3
		16	0.2
SB-02	3/11/1999	2	0.4
		4	0.1
		6	0.4
		8	0.5
		10	0.7
		12	0.5
		14	0.6
SB-03	3/24/1999	2	34.2
		4	38.3
		6	42.1
		8	194.0
		10	110.0
SB-04	3/25/1999	2	300.0
		4	294.0
		6	300.0
		8	171.0
		10	181.0
		12	65.0
SB-05	12/21/1999	2	261.0
		3	1391.0
SB-06	12/21/1999	2	244.0
		3	0.0
SB-07	12/21/1999	2	0.0
		3	0.0
SB-08	12/21/1999	2	0.0
		3	0.0
SB-09	12/21/1999	2	0.0
		3	0.0

Notes: Soil borings analyzed with a Photo Ionization Detector (PID)

3.29.3 Soil Quality

Based on the results of the soil vapor screening during the DPT field investigation, two soil samples were collected for laboratory analysis. Discrete soil samples CF-VA14-SB-01-10 and CF-VA14-SB-04-02 were collected at depths of 10 and 2 ft bls, respectively. The soil samples were placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. The confirmatory soil sample collected at SB-04 indicated that benzo(a)pyrene (120 µg/kg) and dibenzo(a,h)anthracene (150 µg/kg) exceeded the FDEP SCTLs of 100 µg/kg. Other COCs were not detected at or above FDEP SCTLs. Five additional soil samples (CF-VA14-SB-05 through 09) were collected for laboratory analysis for PAHs using USEPA Method 8310 during the December 21, 1999 site visit. Results of the soil analysis indicated analytical results below SCTLs for all COCs. The results of the laboratory soil analyses are summarized on Table 3.29.2, and exceedances are illustrated on Figure 3.29.2. The complete set of analytical results is presented in Appendix D.

Based on soil screening data and fixed based lab results, the mass of “excessively contaminated soil” was detected in SB-03 and SB-04 as presented on Figure 3.29.3. Petroleum product COCs were detected in soil at concentrations above SCTLs in SB-04 (Chapter 62-770, FAC). The soil contamination is located under asphalt. The location of the contaminated soil area was delineated by soil borings SB-06, SB-07, SB-08, and SB-09.

3.29.4 Temporary Well Point Sampling

During the DPT phase of the investigation, soil borings SB-01 and SB-02 were converted to temporary monitoring wells with the DPT screen deployed from 12 to 16 ft bls in each boring. The groundwater samples were collected and analyzed as described in Section 2.4.4. The groundwater samples were placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. In the groundwater sample collected from TMW-02, benzo(b)fluoranthene (1.8 µg/L) was detected above the regulatory limit of 0.2 µg/L. No other tested constituents were detected at or above FDEP GCTLs in the groundwater samples collected. The groundwater analytical results are summarized on Table 3.29.3 and exceedances are illustrated on Figure 3.29.4. The complete set of analytical results is presented in Appendix D.

Table 3.29.2
Laboratory Soil Analysis Summary for CF-VA14

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	SB-02 @ 10 ft	SB-04 @ 2 ft	SB-05 @ 3.5 ft	SB-06 @ 3 ft
		3/15/1999	3/25/1999	12/21/1999	12/21/1999
Volatile Organic Compounds (USEPA Method 8021B) (µg/kg)					
MTBE	200	2.0U	2.0U	NA	NA
Benzene	7	1.0U	1.2U	NA	NA
Toluene	500	1.0U	1.2U	NA	NA
Chlorobenzene	1300	1.0U	1.2U	NA	NA
Ethylbenzene	600	1.0U	1.2U	NA	NA
Total Xylenes	200	2.0U	2.0U	NA	NA
1,3-Dichlorobenzene	300	1.0U	1.2U	NA	NA
1,4-Dichlorobenzene	2200	1.0U	1.2U	NA	NA
1,2 Dichloroethane	10	1.0U	1.2U	NA	NA
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/kg)					
Naphthalene	1700	21U	21U	19U	20U
1-Methylnaphthalene	2200	41U	43U	37U	41U
2-Methylnaphthalene	6100	41U	43U	37U	41U
Acenaphthylene	27000	41U	43U	37U	41U
Acenaphthene	2100	21U	21U	19U	20U
Phenanthrene	250000	41U	43U	37U	41U
Anthracene	2500000	2.0U	2.0I	2.0U	2.0U
Fluorene	160000	4.1U	4.3U	3.7U	4.1U
Fluoranthene	1200000	4.1U	81	74	5.2
Pyrene	880000	2.1U	96	42	10
Benzo (a) Anthracene	1400	2.1U	41	6	2.0U
Chrysene	77000	2.1U	100	26	4
Benzo (b) fluoranthene	1400	4.0U	110	37	8
Benzo (k) fluoranthene	15000	2.0U	42	16	2
Benzo (a) pyrene	100	2.0U	**120**	53	8
Dibenzo (a,h) anthracene	100	4.1U	**150**	3.7U	4.1U
Benzo (g,h,i) perylene	2300000	4.1U	110	3.7U	4.1U
Indeno (1,2,3-cd) pyrene	1500	2.1U	99	45	2.0U

Notes: [1]Chapter 62-777, FAC (August 1999). Most stringent value of groundwater leachability and direct exposure limits.
BOLD = Exceeds target levels
I = value is between MDL and PQL
NA = not analyzed
U = constituent not detected

Table 3.29.2 (Continued)
Laboratory Soil Analysis Summary for CF-VA14

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	SB-07 @ 3 ft	SB-08 @ 3 ft	SB-09 @ 3 ft
		12/21/1999	12/21/1999	12/21/1999
Volatile Organic Compounds (USEPA Method 8021B) (µg/kg)				
MTBE	200	NA	NA	NA
Benzene	7	NA	NA	NA
Toluene	500	NA	NA	NA
Chlorobenzene	1300	NA	NA	NA
Ethylbenzene	600	NA	NA	NA
Total Xylenes	200	NA	NA	NA
1,3-Dichlorobenzene	300	NA	NA	NA
1,4-Dichlorobenzene	2200	NA	NA	NA
1,2 Dichloroethane	10	NA	NA	NA
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/kg)				
Naphthalene	1700	19U	19U	18U
1-Methylnaphthalene	2200	90	39U	46
2-Methylnaphthalene	6100	120	39U	65
Acenaphthylene	27000	39	39U	46
Acenaphthene	2100	19U	19U	65
Phenanthrene	250000	38U	39U	35U
Anthracene	2500000	6	2.0U	2.0U
Fluorene	160000	3.8U	3.9U	3.5U
Fluoranthene	1200000	140	110	69
Pyrene	880000	99	62	55
Benzo (a) Anthracene	1400	28	22	19
Chrysene	77000	75	51	65
Benzo (b) fluoranthene	1400	84	51	66
Benzo (k) fluoranthene	15000	43	29	32
Benzo (a) pyrene	100	95	71	79
Dibenzo (a,h) anthracene	100	15	3.9U	85
Benzo (g,h,i) perylene	2300000	48	32	3.5U
Indeno (1,2,3-cd) pyrene	1500	72	40	54

Notes: [1]Chapter 62-777, FAC (August 1999). Most stringent value of groundwater leachability and direct exposure limits.
BOLD = Exceeds target levels
I = value is between MDL and PQL
NA = not analyzed
U = constituent not detected

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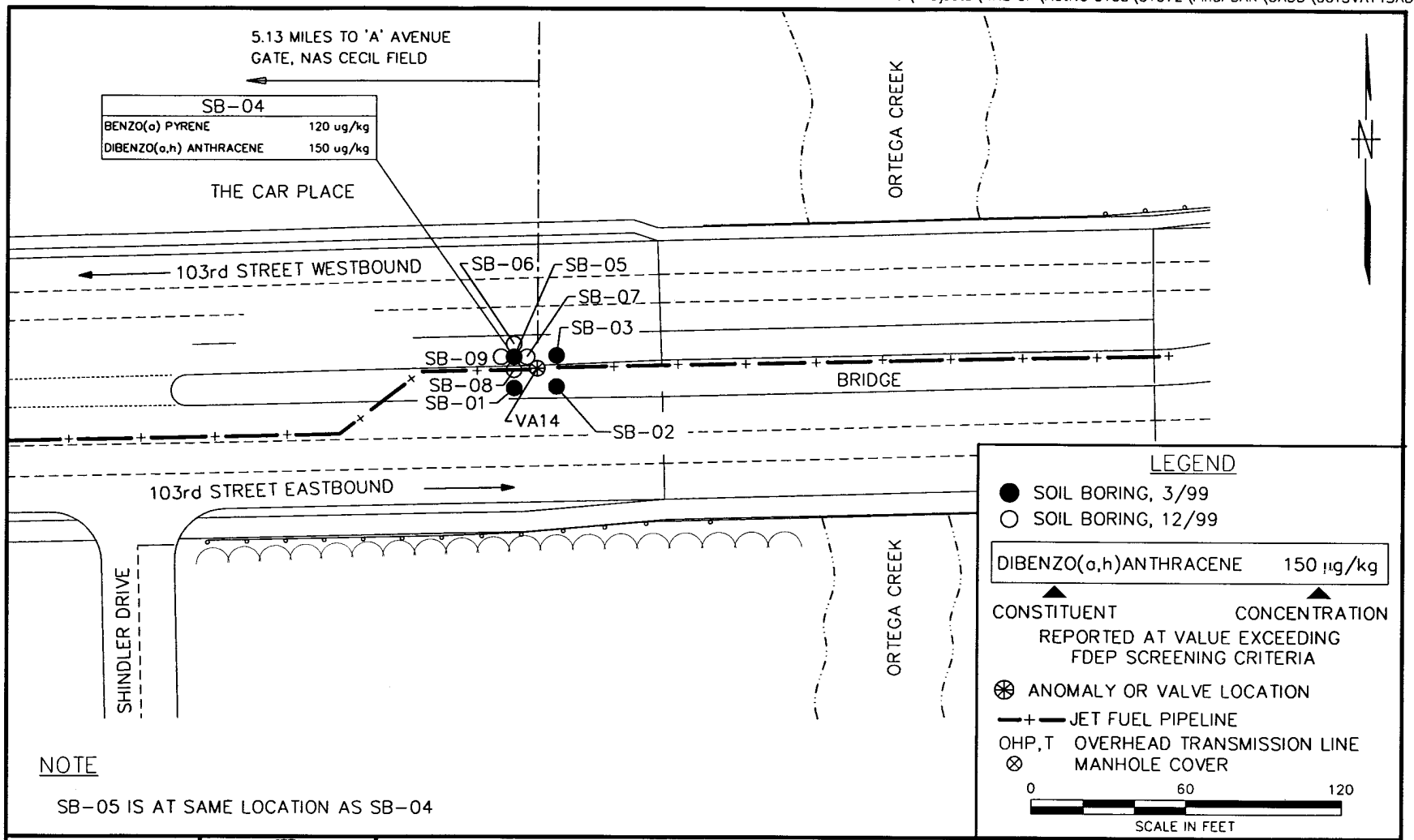

NOTE

SB-05 IS AT SAME LOCATION AS SB-04

DRAWN BY LLK DATE 11/29/01	LABORATORY SOIL ANALYTICAL RESULTS EXCEEDING FDEP SCREENING CRITERIA CF-VA14 NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA	CONTRACT NO. 0013	
CHECKED BY DATE		APPROVED BY DATE	
COST/SCHED-AREA		APPROVED BY DATE	
SCALE AS NOTED		DRAWING NO. FIGURE 3.29.2	REV. 0

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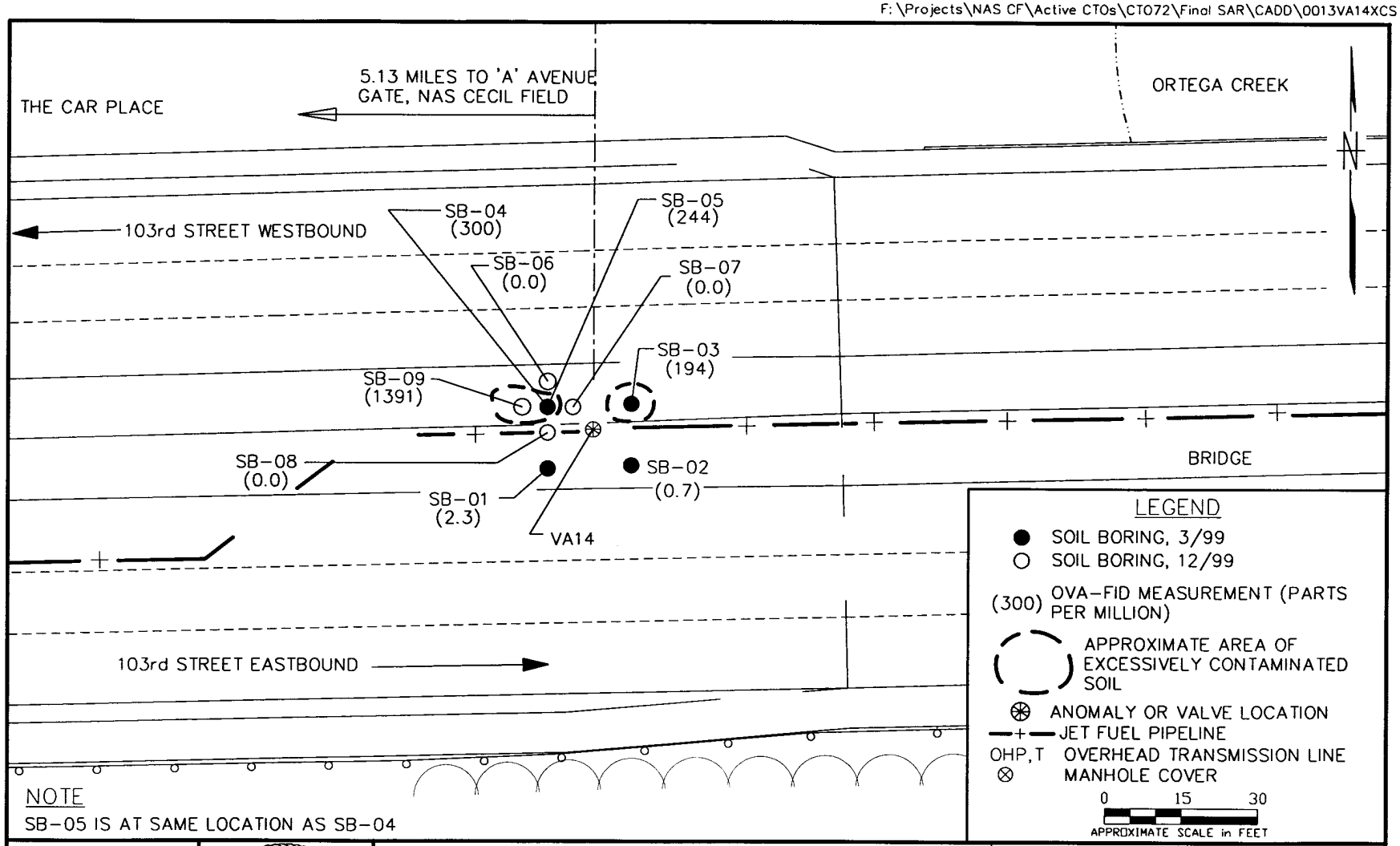

NOTE

SB-05 IS AT SAME LOCATION AS SB-04

DRAWN BY LLK	DATE 2/20/02	APPROXIMATE AREA OF EXCESSIVELY CONTAMINATED SOIL CF-VA14 NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA	CONTRACT NO. 0013
CHECKED BY	DATE		APPROVED BY DATE
COST/SCHED-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 3.29.3 REV. 0

DEPARTMENT OF THE NAVY SOUTHERN DIV FACILITIES ENGINEERING COMD

FORM CADD NO. SDIV_AH.DWG - REV 0 - 1/20/98

Table 3.29.3
Groundwater Analytical Results for CF-VA14

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	TMW-01	TMW-02	MW-1			
		3/12/1999	3/12/1999	12/15/1999			
Volatile Organic Compounds (USEPA Method 8021B) (µg/L)							
Benzene	1	ND	ND	NA			
Ethylbenzene	30	ND	ND	NA			
Toluene	40	ND	ND	NA			
Total Xylenes	20	ND	ND	NA			
MTBE	35	ND	ND	NA			
1,2 Dichloroethane	3	ND	ND	NA			
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/L)							
Naphthalene	20	ND	ND	ND			
Acenaphthylene	210	ND	ND	ND			
Acenaphthene	20	ND	ND	ND			
Phenanthrene	210	ND	ND	ND			
Anthracene	2100	ND	ND	ND			
Fluoranthene	280	ND	ND	ND			
Pyrene	210	ND	ND	ND			
Benzo (a) Anthracene	0.2	ND	ND	ND			
Chrysene	5	ND	ND	ND			
Benzo (b) fluoranthene	0.2	ND	**1.8**	ND			
Benzo (k) Fluoranthene	0.5	ND	ND	ND			
Benzo (a) pyrene	0.2	ND	ND	ND			
Dibenzo (a,h) anthracene	0.2	ND	ND	ND			
Benzo (g,h,I) perylene	210	ND	ND	ND			
Indeno (1,2,3-cd) pyrene	0.2	ND	ND	ND			

Notes: [1]Chapter 62-770, FAC (September 23, 1997)
BOLD = Exceeds Taget Levels
NA = not analyzed
ND = no constituents detected

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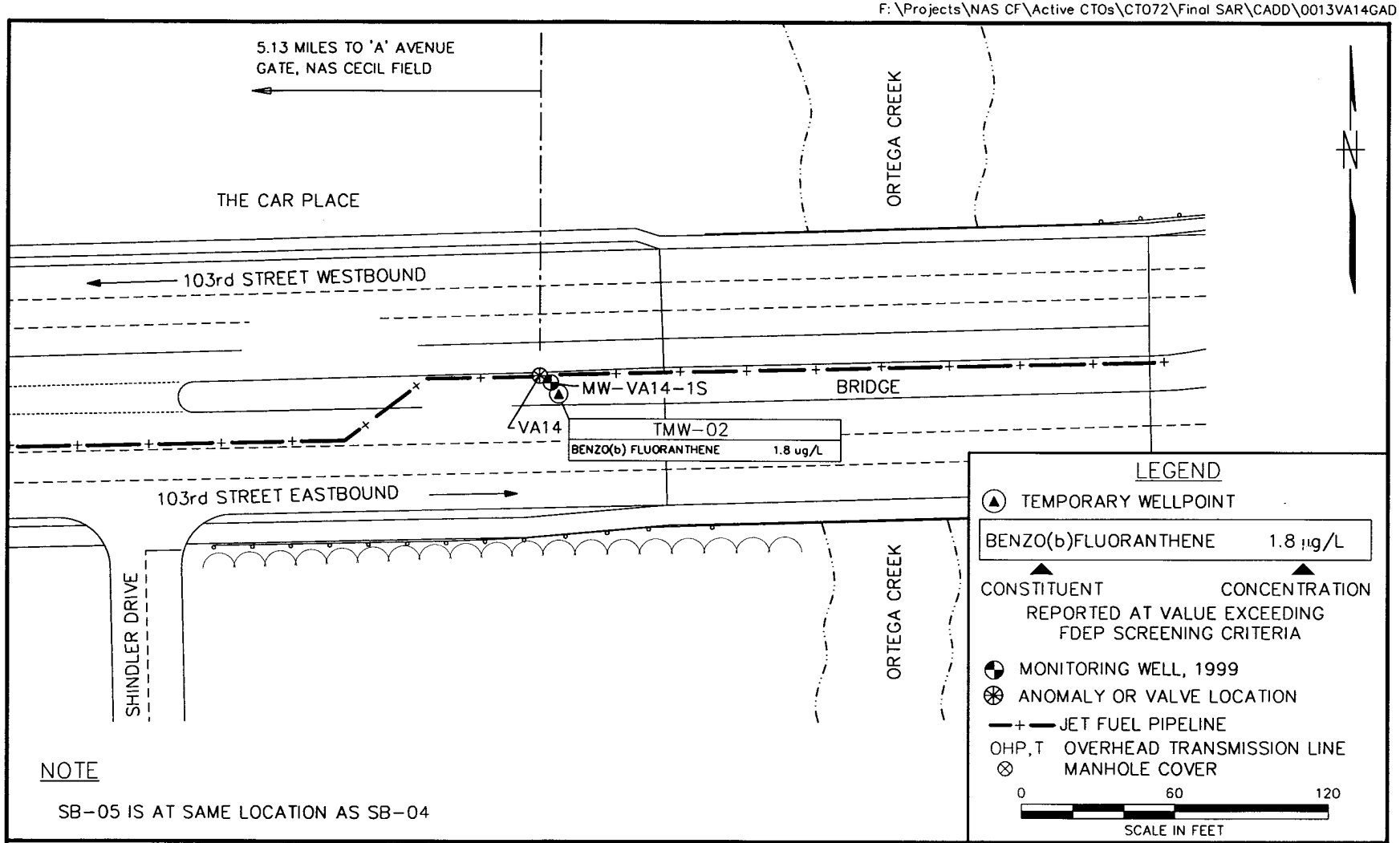

NOTE

SB-05 IS AT SAME LOCATION AS SB-04

DRAWN BY LLK	DATE 11/29/01	GROUNDWATER ANALYTICAL RESULTS EXCEEDING FDEP SCREENING CRITERIA CF-VA14 NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA	CONTRACT NO. 0013
CHECKED BY	DATE		APPROVED BY DATE
COST/SCHED-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 3.29.4 REV. 0

DEPARTMENT OF THE NAVY SOUTHERN DIV FACILITIES ENGINEERING COMD

FORM CADD NO. SDIV_AH.DWG - REV 0 - 1/20/98

3.29.5 Monitoring Well Sampling

On November 29, 1999 TtNUS installed one permanent monitoring well, CF-VA14-1S, at the location indicated on Figure 3.29.3. The monitoring well was installed to a depth of 20 ft and screened from 10 to 20 ft bls. The monitoring well was installed and developed as described in Section 2.3.2 and monitoring well installation and development logs are included in Appendix B. On December 15, 1999, TtNUS personnel collected a groundwater sample from monitoring well CF-VA14-1S for analysis of PAHs by USEPA Method 8310. Analytical results from the groundwater sample indicated dissolved hydrocarbon concentrations were below GCTLs for all COCs. The groundwater analytical results are summarized on Table 3.29.3 and the complete set of analytical results is included in Appendix D.

3.29.6 Discussion

Data obtained during the DPT assessment indicated that “excessively contaminated soil” (greater than 50 ppm) was detected in soil borings SB-03 and SB-04 as defined by Chapter 62-770, FAC. Petroleum product COCs were detected in soil at or above SCTLs (Chapter 62-770, FAC) in soil boring SB-04. The petroleum-impacted soil is located under asphalt. Petroleum product COCs were detected in groundwater above GCTLs (Chapter 62-770, FAC) in the temporary monitoring well installed in SB-02. However, no petroleum product COCs were detected in groundwater above GCTLs in the permanent monitoring well installed at the site.

3.30 VALVE NUMBER 15 (CF-VA15)

CF-VA15 is located along 103rd Street just east of the intersection with Chaffee Road. The location of CF-VA15 is indicated on Figure 1-2 (the Site Vicinity Map) and Figure 3.30.1 (the combined Site Plan, Sample Locations, and Soil Vapor Screening Results Map). TtNUS mobilized to site CF-VA15 on March 10, 1999 for the DPT investigation. The valve at CF-VA15 is located inside an enclosed concrete manhole. TtNUS was unable to inspect the interior of the manhole because it lies in the center of 103rd Street.

3.30.1 Site Lithology

The site is underlain by a dark brown fine-grained slightly silty sand to a depth of 3 ft bls. At 3 ft bls, the site is underlain by a light gray fine-grained sand. At 4 ft bls, the site is underlain by a dark reddish brown silty fine-grained sand. This soil type extends to at least 12 ft bls, the maximum depth drilled at the site during the assessment. Soil boring logs are included in Appendix A.

3.30.2 Soil Vapor

The vertical and horizontal extent of petroleum impacted soil in the vadose zone was assessed through soil headspace analysis performed during the DPT investigation. Four soil borings (CF-VA15-SB-01 through 04) were advanced to depths ranging from 8 to 12 ft bls at the locations shown on Figure 3.30.1. Groundwater was encountered at 4 to 5 ft bls. Soil samples were collected at 2-ft intervals and the samples were screened for hydrocarbon vapors with an OVA-PID as described in Section 2.4.2. The results of the soil vapor screening, presented in the Table 3.30.1, indicated no headspace readings with results above 10 ppm. The DPT sample and boring logs for CF-VA15 are included in Appendix A.

3.30.3 Soil Quality

Based on the results of the soil headspace analyses, one soil sample was collected for laboratory analysis. Discrete soil sample CF-VA15-SB-03-05 was collected at a depth of 5 ft bls. The soil sample was placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. The confirmatory sample collected at SB-03 contained no VOAs or PAHs at or above FDEP SCTLs. The results of the laboratory soil analysis are summarized on Table 3.30.2. A Laboratory Soil Analytical Results figure was not created since results did not exceed SCTLs. The complete set of analytical results is presented in Appendix D.

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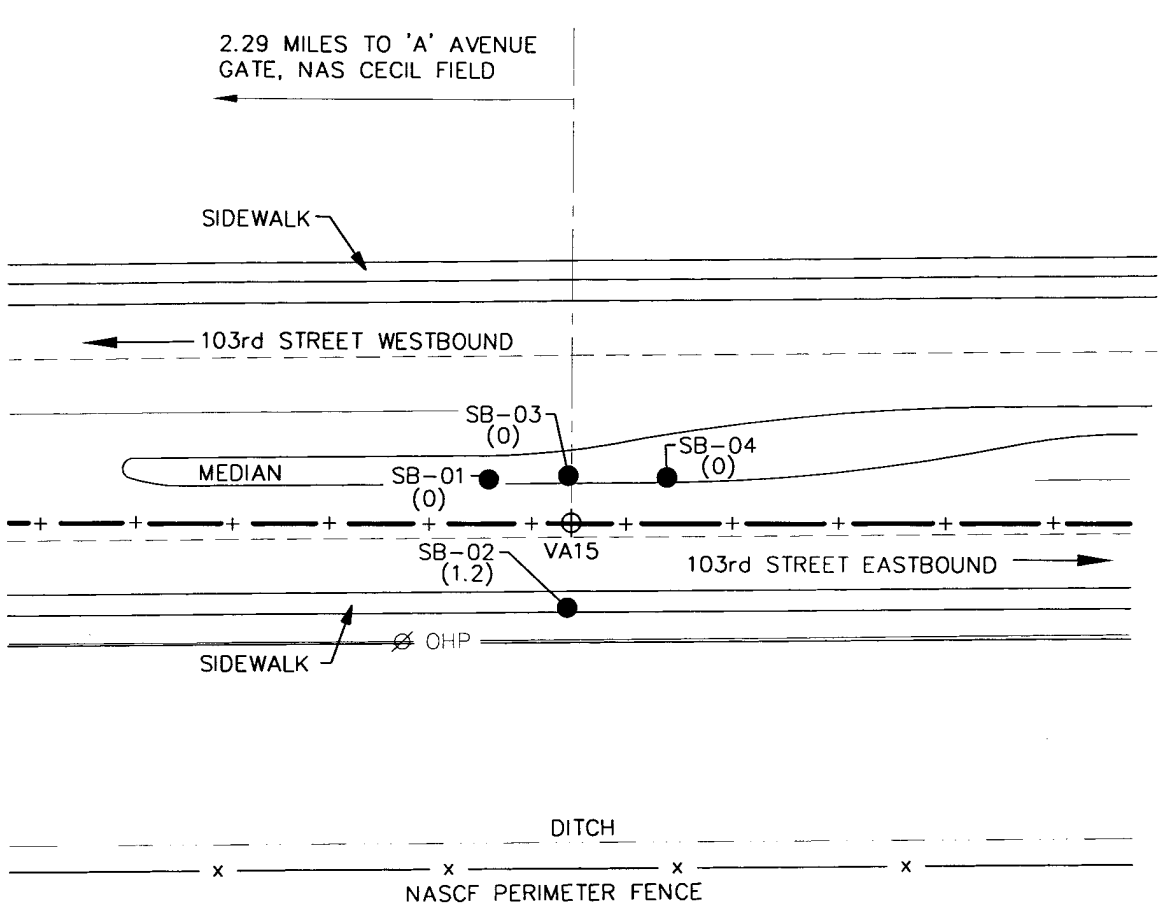

NOTE:

1. SOIL AND GROUNDWATER LABORATORY ANALYTICAL RESULTS INDICATED NO CONTAMINANTS ABOVE FDEP TARGET LEVELS IN EACH OF THE BORINGS.

LEGEND:

OHP	OVERHEAD TRANSMISSION LINE
●	SOIL BORING
⊕	ANOMALY OR VALVE LOCATION
—+—	JET FUEL PIPELINE
(1.2)	OVA RESULTS IN PARTS PER MILLION (PPM)

0 50 100
SCALE IN FEET

DRAWN BY MF	DATE 4/9/99	SITE PLAN, SAMPLE LOCATIONS, AND SOIL VAPOR SCREENING RESULTS CF-VA15 NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA	CONTRACT NO. 0013
CHECKED BY	DATE		APPROVED BY DATE
COST/SCHED-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 3.30.1 REV. 0

FORM CADD NO. SDIV_AH.DWG - REV 0 - 1/20/98

Table 3.30.1
Soil Vapor Screening Results CF-VA15

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Soil Boring Number	Date of Measurement	Sample Interval (ft bls)	PID Measurement (ppm)
SB-01	3/10/1999	2	0.0
		4	0.0
		6	0.0
		8	0.0
SB-02	3/10/1999	2	1.2
		4	0.8
		6	0.6
		8	0.6
SB-03	3/10/1999	2	0.0
		4	0.0
		6	0.0
		8	0.0
		10	0.0
		12	0.0
SB-04	3/10/1999	2	0.0
		4	0.0
		6	0.0
		8	0.0
		10	0.0
		12	0.0

Notes: Soil borings analyzed with a Photo Ionization Detector (PID)

Table 3.30.2
Laboratory Soil Analysis Summary for CF-VA15

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	SB-03 @ 5 ft				
		3/10/1999				
Volatile Organic Compounds (USEPA Method 8021B) (µg/kg)						
MTBE	200	3.0U				
Benzene	7	1.0U				
Toluene	500	1.0U				
Chlorobenzene	1300	1.0U				
Ethylbenzene	600	1.0U				
Total Xylenes	200	3.0U				
1,3-Dichlorobenzene	300	1.0U				
1,4-Dichlorobenzene	2200	1.0U				
1,2 Dichloroethane	10	1.0U				
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/kg)						
Naphthalene	1700	22U				
1-Methylnaphthalene	2200	22U				
2-Methylnaphthalene	6100	22U				
Acenaphthylene	27000	44U				
Acenaphthene	2100	22U				
Phenanthrene	250000	2.2U				
Anthracene	2500000	3.0U				
Fluorene	160000	4.4U				
Fluoranthene	1200000	4.4U				
Pyrene	880000	2.2U				
Benzo (a) Anthracene	1400	2.2U				
Chrysene	77000	2.2U				
Benzo (b) fluoranthene	1400	4.0U				
Benzo (k) fluoranthene	15000	3.0U				
Benzo (a) pyrene	100	3.0U				
Dibenzo (a,h) anthracene	100	4.4U				
Benzo (g,h,i) perylene	2300000	4.4U				
Indeno (1,2,3-cd) pyrene	1500	2.2U				

Notes: [1]Chapter 62-777, FAC (August 1999). Most stringent value of groundwater leachability and direct exposure limits.
U = constituent not detected

3.30.4 Temporary Well Point Sampling

During the DPT investigation, the soil borings were converted to temporary wells and the DPT screen was deployed from 4 to 8 ft bls in borings SB-01 and SB-02 and from 8 to 12 ft bls in borings SB-03 and SB-04. The groundwater samples were collected as described in Section 2.4.4. Groundwater samples were placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs and PAHs using USEPA Methods 8021B and 8310. The groundwater analytical results, presented on Table 3.30.3, indicated no VOAs or PAHs at or above FDEP GCTLs. A Groundwater Analytical Results figure was not created since results did not exceed GCTLs. The complete set of analytical results is presented in Appendix D.

3.30.5 Monitoring Well Sampling

Permanent monitoring wells were not installed at CF-VA15 based on the results of the DPT investigation.

3.30.6 Discussion

Data obtained during the DPT assessment indicated no headspace readings above 10 ppm from the four soil borings at Site CF-VA15. The confirmatory soil sample collected for laboratory analysis indicated soil analytical results below SCTLs for all petroleum COCs (Chapter 62-770, FAC). Groundwater samples collected from temporary wells indicated that dissolved hydrocarbon concentrations were below GCTLs for all COCs (Chapter 62-770, FAC).

Table 3.30.3
Groundwater Analytical Results for CF-VA15

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	TMW-01	TMW-02	TMW-03	TMW-04		
		3/10/1999	3/10/1999	3/10/1999	3/10/1999		
Volatile Organic Compounds (USEPA Method 8021B) (µg/L)							
Benzene	1	ND	ND	ND	ND		
Ethylbenzene	30	ND	ND	ND	ND		
Toluene	40	ND	ND	ND	ND		
Total Xylenes	20	ND	ND	ND	ND		
MTBE	35	ND	ND	ND	ND		
1,2 Dichloroethane	3	ND	ND	ND	ND		
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/L)							
Naphthalene	20	ND	ND	ND	ND		
Acenaphthylene	210	ND	ND	ND	ND		
Acenaphthene	20	ND	ND	ND	ND		
Phenanthrene	210	ND	ND	ND	ND		
Anthracene	2100	ND	ND	ND	ND		
Fluoranthene	280	ND	ND	ND	ND		
Pyrene	210	ND	ND	ND	ND		
Benzo (a) Anthracene	0.2	ND	ND	ND	ND		
Chrysene	5	ND	ND	ND	ND		
Benzo (b) fluoranthene	0.2	ND	ND	ND	ND		
Benzo (k) fluoranthene	0.5	ND	ND	ND	ND		
Benzo (a) pyrene	0.2	ND	ND	ND	ND		
Dibenzo (a,h) anthracene	0.2	ND	ND	ND	ND		
Benzo (g,h,I) perylene	210	ND	ND	ND	ND		
Indeno (1,2,3-cd) pyrene	0.2	ND	ND	ND	ND		

Notes: [1]Chapter 62-770, FAC (September 23, 1997)
ND = no constituents detected

3.31 CF-TH03

CF-TH03 is located at the intersection of 103rd Street and Wesconnett Boulevard. CF-TH03 was not investigated during the Phase 1 Pipeline Assessment (DPT assessment). After completion of the Phase 1 assessment, the FDOT reported to the Navy that they discovered petroleum odors at a test hole (TH) location the FDOT designated as TH-03 at intersection of Wesconnet and 103rd Street. CF-TH03 does not have an associated anomaly or valve location. As a result, CF-TH03 was investigated in October 2000 and May/June, 2001. The location of CF-TH03 is indicated on Figure 1-2 (the Site Vicinity Map) and Figure 3.31.1 (the Site Plan, Sample Locations, and Soil Vapor Screening Results Map). CF-TH03 was initially investigated as part of a follow-up investigation of CF-AN10. However, it was determined during the assessment that CF-TH03 was a different location from CF-AN10. On October 10, and 11, 2000, TtNUS advanced 12 soil borings at the site. On May 23 and 24, 2001 seven soil borings were advanced for the analysis of site soil and groundwater by a mobile laboratory, and three permanent monitoring wells were sampled on June 16, 2001.

3.31.1 Site Lithology

The site is underlain by a brown/gray silty fine-grained sand to a depth of 4 ft bls. At 4 ft bls, the site is underlain by a gray sandy clay to a depth of 9 ft bls. A perched groundwater table was encountered at 2.5 to 4 ft bls. At 9 ft bls, the site is underlain by a brown/gray slightly sandy clay. At 16 ft bls, the site is underlain by a dark gray silty fine sand. This soil type extends to at least 20 ft bls, the maximum depth advanced during the field investigation. Soil boring logs are included in Appendix A.

3.31.2 Soil Vapor

The vertical and horizontal extent of petroleum impacted soil in the vadose zone was assessed through soil headspace analysis performed during soil boring and DPT assessment activities. On October 10 and 11, 2000, 12 soil borings (CF-TH03-SB-05 through 16) were advanced by a 4-inch core drill and a hand auger to depths ranging from 2.5 to 4.0 ft bls at the locations shown on Figure 3.31.1. A perched groundwater table was encountered at 2.5 to 4 ft bls. Soil samples were collected at 2-ft intervals to the water table, and the samples were screened for hydrocarbon vapors with an OVA-FID as described in Section 2.4.2. The results of the soil vapor screening, indicated hydrocarbon vapors above 50 ppm from soil borings SB-05, 06, 09, 10, 11, and 16. On June 25, 2001, additional soil borings (CF-TH03-SB-24 through 27) were advanced at the site and soil samples screened for hydrocarbon vapors. Results of the soil vapor screening indicated elevated headspace readings above 50 ppm in soil boring SB-26. The results of the soil vapor screening is presented in Table 3.31.1 and Figure 3.31.1. The soil sample and boring logs for CF-TH03 are included in Appendix A.

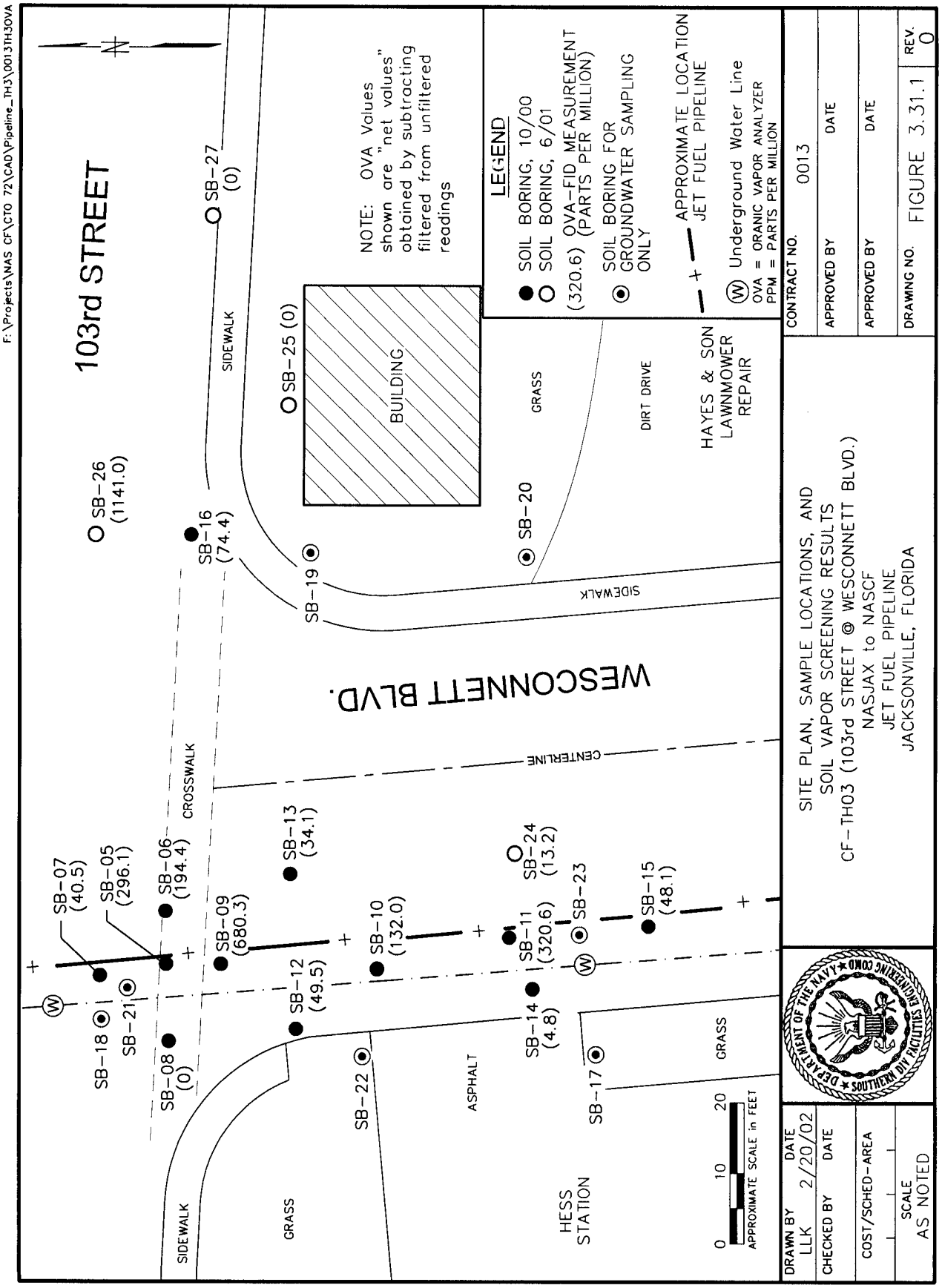
F:\Projects\NAS CF\CTO 72\CAD\Pipeline_TH3\0013TH3OVA
103rd STREET
WESCONNETT BLVD.
SIDEWALK
CROSSWALK
CENTERLINE
BUILDING
GRASS
DIRT DRIVE
HAYES & SON LAWNMOWER REPAIR
ASPHALT
HESS STATION
SB-26 (1141.0)
SB-27 (0)
SB-25 (0)
SB-16 (74.4)
SB-19
SB-20
SB-07 (40.5)
SB-05 (296.1)
SB-06 (194.4)
SB-09 (680.3)
SB-13 (34.1)
SB-10 (132.0)
SB-24 (13.2)
SB-11 (320.6)
SB-23
SB-15 (48.1)
SB-18
SB-21
SB-08 (0)
SB-12 (49.5)
SB-14 (4.8)
SB-22
SB-17
NOTE: OVA Values shown are "net values" obtained by subtracting filtered from unfiltered readings
LEGEND
SOIL BORING, 10/00
SOIL BORING, 6/01
(320.6) OVA-FID MEASUREMENT (PARTS PER MILLION)
SOIL BORING FOR GROUNDWATER SAMPLING ONLY
APPROXIMATE LOCATION JET FUEL PIPELINE
Underground Water Line
OVA = ORANIC VAPOR ANALYZER
PPM = PARTS PER MILLION
0 10 20
APPROXIMATE SCALE in FEET
SITE PLAN, SAMPLE LOCATIONS, AND
SOIL VAPOR SCREENING RESULTS
CF-TH03 (103rd STREET @ WESCONNETT BLVD.)
NASJAX to NASCF
JET FUEL PIPELINE
JACKSONVILLE, FLORIDA
CONTRACT NO. 0013
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 3.31.1
REV. 0
DRAWN BY LLK DATE 2/20/02
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED
DEPARTMENT OF THE NAVY SOUTHERN DIV FACILITIES ENGINEERING COMD

Table 3.31.1
Soil Vapor Screening Results for CF-TH03

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Soil Boring Number	Date of Measurement	Sample Interval (ft bls)	FID Data Unfiltered (ppm)	FID Data Filtered (ppm)	FID Data Petroleum vapors (ppm)
SB-05	10/10/2000	2	468.2	172.1	296.1
		4	170.3	140.0	30.3
SB-06	10/10/2000	2	303.5	109.1	194.4
		4	228.5	79.6	148.9
SB-07	10/10/2000	2	84.1	43.6	40.5
		4	556	553.7	2.3
SB-08	10/10/2000	2	162.0	208.6	0.0
		4	1015	1214	0.0
SB-09	10/10/2000	2	963	282.7	680.3
SB-10	10/10/2000	2	424	292	132.0
SB-11	10/11/2000	2	470	149.4	320.6
SB-12	10/11/2000	2	77.2	27.7	49.5
SB-13	10/11/2000	2	175.1	141	34.1
SB-14	10/11/2000	2	25.1	20.3	4.8
SB-15	10/11/2000	2	149.2	101.1	48.1
SB-16	10/11/2000	3	217.0	143	74.0
SB-24	6/25/2001	1	28.5	15.3	13.2
		2	71.0	61.4	9.6
		4.5	3.6	0.0	3.6
		17	0.0	0.0	0.0
SB-25	6/25/2001	1	0.0	0.0	0.0
		3	0.0	0.0	0.0
SB-26	6/25/2001	2	333.0	125	208.0
		3	1141	0.0	1141.0
		5	462	204.5	257.5
SB-27	6/25/2001	2	0.0	0.0	0.0
		3	0.0	0.0	0.0

Notes: Soil borings analyzed with a MicroFID by Photovac
No SB-01 through SB-04 collected at this site.

3.31.3 Soil Quality

During the first field investigation, a soil sample was collected from each boring for laboratory analysis. Discrete soil samples CF-TH03-SB-05 through CF-TH03-SB-16-02 were all collected at a depth of 2 ft bls. The soil samples were placed on ice, sent to ENCO Labs of Jacksonville, and analyzed for VOAs, MTBE, TRPH, and PAHs using USEPA Methods 8021B, Florida Petroleum Range Organics (FL-PRO), and 8310, respectively. Results of the laboratory analysis indicated that benzo(a)pyrene exceeded the FDEP SCTL of 100 µg/kg in SB-05 (160 µg/kg), SB-08 (160 µg/kg), SB-09 (160 µg/kg), SB-10 (120 µg/kg), and SB-16 (110 µg/kg). Analytical results from SB-11 indicated that 1-methylnaphthalene (4500 µg/kg) and 2-methylnaphthalene (7100 µg/kg) exceeded the FDEP SCTLs of 2200 µg/kg and 6100 µg/kg, respectively. Other COCs were not detected at or above FDEP SCTLs. On May 23, 2001, a soil sample was collected for SPLP volatile organic compounds (VOCs), SPLP PAHs, and SPLP total petroleum hydrocarbons analysis from soil boring SB-11. Results of the soil analyses indicated analytical results below GCTLs for all COCs. The results of the laboratory soil analyses are summarized on Table 3.31.2, and exceedances are illustrated on Figure 3.31.2. The results of the SPLP analysis are summarized on Table 3.31.3. The complete set of analytical results is presented in Appendix D.

Based on soil screening data and fixed based lab results, the mass of “excessively contaminated soil” (above 50 ppm) was detected in soil borings SB-05, SB-06, SB-09, SB-10, SB-11, SB-16, and SB-26. Petroleum product COCs were detected in soil at concentrations above SCTLs (Chapter 62-770, FAC) in soil borings SB-05, SB-08, SB-09, SB-10, SB-11, and SB-16. The soil contamination is located under asphalt, and is defined on Figure 3.31.3.

3.31.4 Temporary Well Point Sampling with Mobile Lab Analysis

On May 23 and 24, 2001, TtNUS mobilized to TH-03 with a DPT/HSA rig and mobile lab. During the investigation, temporary monitoring wells were installed at the locations of soil borings SB-09, SB-10, and SB-11. Additional temporary monitoring wells SB-17 through SB-20 and SB-22 were installed as indicated on Figure 3.31.4. At SB-09, SB-11, and SB-18, a DPT screen was deployed and a groundwater sample was collected as described in Section 2.4.4. At the other soil boring locations a HSA was advanced and temporary wells were installed with a sand pack and sampled as described in Section 2.4.2. Groundwater samples were delivered to the on-site mobile lab and analyzed for benzene, toluene, ethylbenzene, xylenes (BTEX), MTBE, naphthalene, and diesel range organics. Results of the mobile laboratory analysis indicated no analytes detected above GCTLs (Chapter 62-770, FAC). Mobile lab analytical results, depths of groundwater sample collection, and collection methods are summarized

Table 3.31.2
Laboratory Soil Analysis Summary for CF-TH03

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	SCTL[1]	SB-05 @ 2 ft	SB-05 DUP1	SB-06 @ 2 ft	SB-07 @ 2 ft	SB-08 @ 2 ft	SB-09 @ 2ft	SB-10 @ 2 ft
		10/10/2000	10/10/2000	10/10/2000	10/10/2000	10/10/2000	10/10/2000	10/10/2000
Volatile Organic Compounds (USEPA Method 8021B) (µg/kg)								
Benzene	7	1.2 U	1.2 U	1.2 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	600	1.2 U	1.2 U	1.2 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	500	2.7 I	1.2U	1.2 U	1.0 U	1.0 U	1.0 U	2.0 I
Total Xylenes	200	3.0 I	3.0 U	3.0 U	3.0 U	3.0 U	2.0 I	3.0 U
MTBE	200	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/kg)								
Naphthalene	1700	18 U	18 U	19 U	18 U	18 U	18 U	18 U
Acenaphthylene	27000	37 U	37 U	38 U	37 U	36 U	37 U	36 U
1-Methylnaphthalene	2200	37 U	37 U	38 U	37 U	36 U	37 U	36 U
2-Methylnaphthalene	6100	37 U	37 U	38 U	37 U	36 U	37 U	36 U
Acenaphthene	2100	18 U	18 U	20	52	18 U	18 U	18 U
Fluorene	160000	26	18	20	350	21	25	3.6 U
Phenanthrene	250000	37 U	50	38 U	1500	100	79	36 U
Anthracene	2500000	520	390	160	1000	410	400	250
Fluoranthene	1200000	160	97	43	220	130	150	80
Pyrene	880000	180	120	51	160	150	160	110
Benzo (a) Anthracene	1400	69	42	19 U	19	44	63	37
Chrysene	77000	77	53	12	19	41	40	56
Benzo (b) flouranthene	1400	21	58	9.9	22	62	66	47
Benzo (k) fluoranthene	15000	50	42	4.6	3.7 U	34	54	35
Benzo (a) pyrene	100	**160**	**160**	18	68	**160**	**160**	**120**
Dibenzo (a,h) anthracene	100	57	58	3.8 U	3.7 U	70	58	51
Benzo (g,h,I) perylene	2300000	200	170	38	88	190	210	160
Indeno (1,2,3-cd) pyrene	1500	130	140	68	78	180	160	110
Total Recoverable Petroleum Hydrocarbons (FDEP Method Florida Petroleum Range Organics) (mg/kg)								
TRPH	340	150	67	29	46	98	120	72

Notes: [1]Chapter 62-777, FAC (August 1999). Most stringent value of groundwater leachability and direct exposure limits.
BOLD = Exceeds target levels
mg/kg = milligrams per kilogram
I = analyte detected; value between MDL and PQL
U = compound analyzed for but not detected to level shown

Table 3.31.2 (Continued)
Laboratory Soil Analysis Summary for CF-TH03

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	SCTL[1]	SB-11 @ 2 ft	SB-12 @ 2 ft	SB-13 @ 2 ft	SB-14 @ 2 ft	SB-15 @ 2 ft	SB-16 @ 2 ft
		10/11/2000	10/11/2000	10/11/2000	10/11/2000	10/11/2000	10/11/2000
Volatile Organic Compounds (USEPA Method 8021B) (µg/kg)							
Benzene	7	1.1 U	1.1 U	1.2 U	1.1 U	1.3 U	1.2 U
Ethylbenzene	600	1.0 U	1.0 U	1.2 U	1.1 U	1.3 U	1.2 U
Toluene	500	6.4	2.4	4.2	2.5	1.6	3.4
Total Xylenes	200	1.0	3.1 U	3.6 U	3.4 U	3.8 U	3.5 U
MTBE	200	1.0 U	1.0 U	1.2 U	1.1 U	1.3 U	1.2 U
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/kg)							
Naphthalene	1700	190 U	190 U	190 U	200 U	190 U	180 U
Acenaphthylene	27000	380 U	380 U	380 U	390 U	390 U	360 U
1-Methylnaphthalene	2200	**4500**	380 U	380 U	390 U	390 U	360 U
2-Methylnaphthalene	6100	**7100**	380 U	380 U	390 U	390 U	360 U
Acenaphthene	2100	600	190 U	190 U	200 U	190 U	180 U
Fluorene	160000	2300	38 U	38 U	39 U	39 U	52
Phenanthrene	250000	5400	380 U	380 U	390 U	390 U	360 U
Anthracene	2500000	190 U	190 U	190 U	200 U	190 U	180 U
Fluoranthene	1200000	38 U	38 U	38 U	39 U	39 U	200
Pyrene	880000	38 U	76	61	39 U	39 U	290
Benzo (a) Anthracene	1400	190 U	190 U	190 U	200 U	190 U	180 U
Chrysene	77000	38 U	38 U	38 U	39 U	39 U	210
Benzo (b) flouranthene	1400	38 U	38 U	38 U	39 U	39 U	76
Benzo (k) fluoranthene	15000	38 U	38 U	38 U	39 U	39 U	94
Benzo (a) pyrene	100	38 U	38 U	38 U	39 U	39 U	**110**
Dibenzo (a,h) anthracene	100	38 U	38 U	38 U	39 U	39 U	36 U
Benzo (g,h,I) perylene	2300000	38 U	79	50	39 U	39 U	310
Indeno (1,2,3-cd) pyrene	1500	38 U	49	38 U	39 U	39 U	36 U
Total Recoverable Petroleum Hydrocarbons (FDEP Method FL-PRO) (mg/kg)							
TRPH	340	**4300**	42	230	21	29	96

Notes: [1]Chapter 62-777, FAC (August 1999). Most stringent value of groundwater leachability and direct exposure limits.
BOLD = Exceeds target levels
mg/kg = milligrams per kilogram
U = compound analyzed for but not detected to level shown

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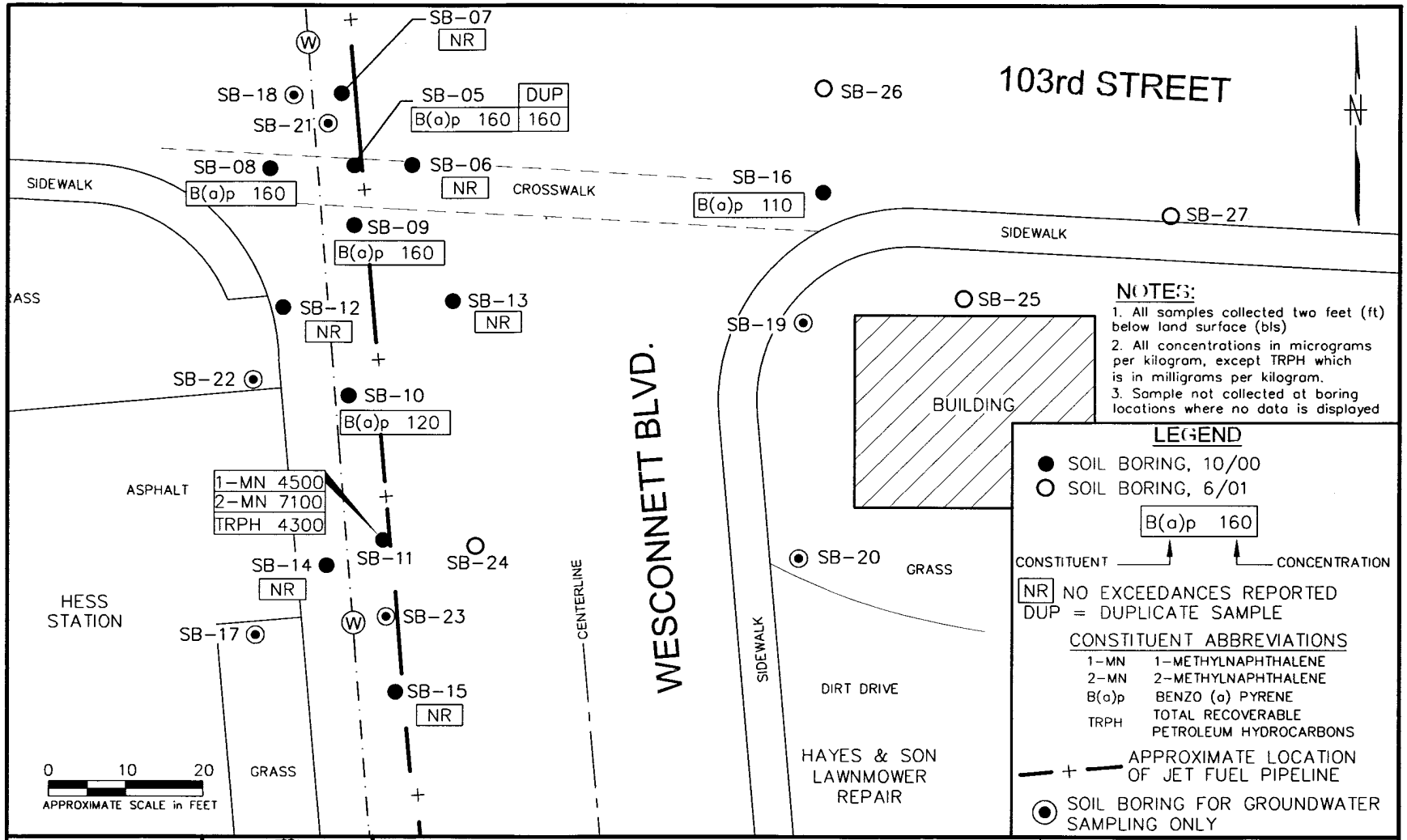

DRAWN BY LLK	DATE 2/21/02	LABORATORY SOIL ANALYTICAL RESULTS EXCEEDING FDEP SCREENING CRITERIA CF-TH03 (103rd STREET @ WESCONNETT BLVD.) NASJAX TO NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA	CONTRACT NO. 0013
CHECKED BY	DATE		APPROVED BY DATE
COST/SCHED-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 3.31.2 REV. 0

Table 3.31.3
SPLP Soil Analyis Summary for CF-TH03

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	FDEP Target Level[1]	SB-11@2ft			
		5/23/2001			
Volatile Organic Compounds (USEPA Method 8021B) (µg/L)					
MTBE	50	2U			
Benzene	1	2U			
Toluene	40	2U			
Ethylbenzene	30	2U			
Total Xylenes	20	6U			
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/L)					
Naphthalene	20	20U			
1-Methylnaphthalene	20	20U			
2-Methylnaphthalene	20	20U			
Acenaphthylene	210	40U			
Acenaphthene	20	40U			
Phenanthrene	210	20U			
Anthracene	2100	20U			
Fluorene	280	20U			
Fluoranthene	280	20U			
Pyrene	210	20U			
Benzo (a) Anthracene	0.2	2U			
Chrysene	4.8	20U			
Benzo (b) fluoranthene	0.5	2U			
Benzo (k) fluoranthene	0.2	2U			
Benzo (a) pyrene	0.2	2U			
Dibenzo (a,h) anthracene	0.2	2U			
Benzo (g,h,i) perylene	210	2U			
Indeno (1,2,3-cd) pyrene	0.2	2U			
Total Recoverable Petroleum Hydrocarbons (FDEP Method FL-PRO) (mg/kg)					
TRPH	5	2.5U			

Notes: [1]Chapter 62-777, FAC (August 1999) GCTLs
U=constituent not detected

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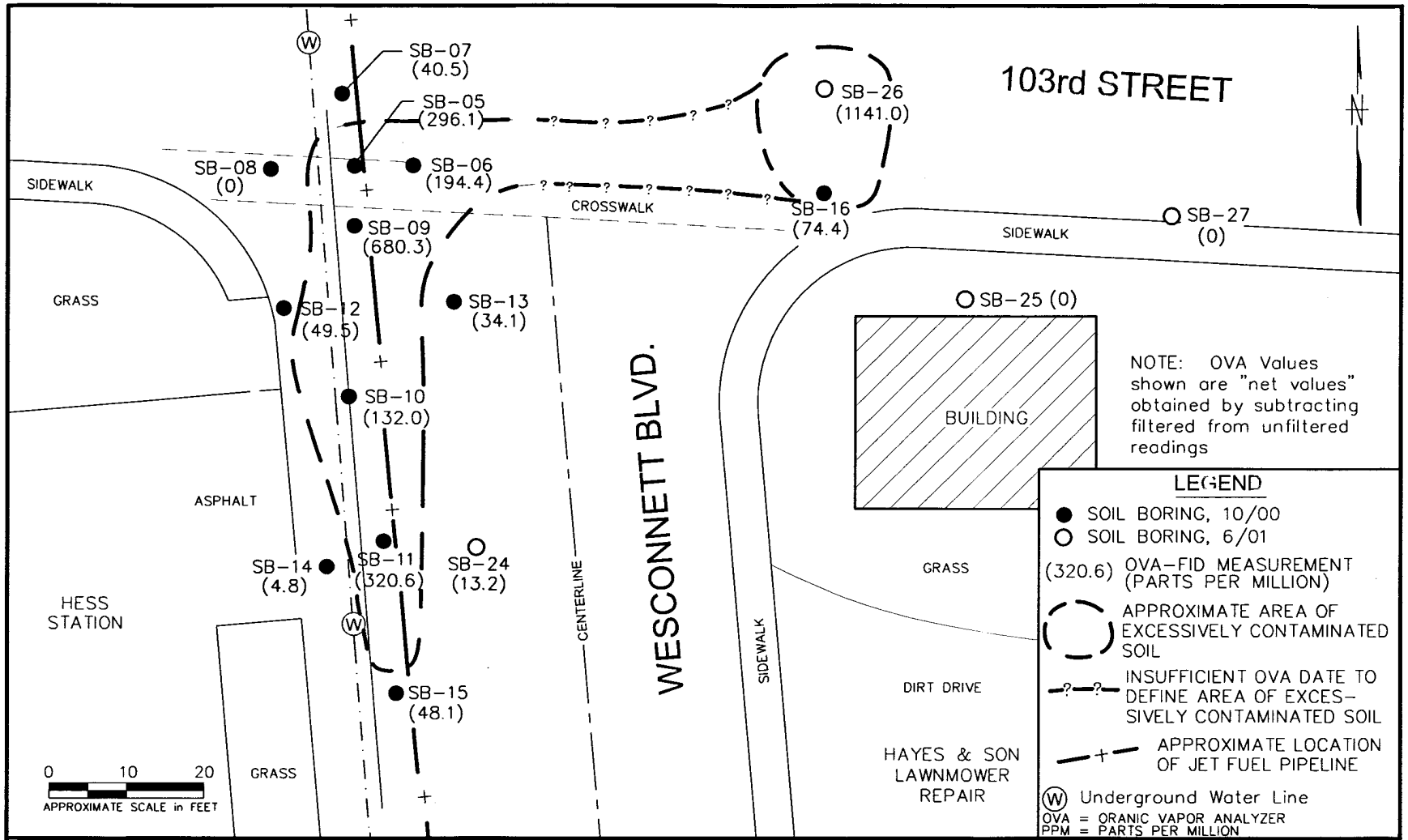


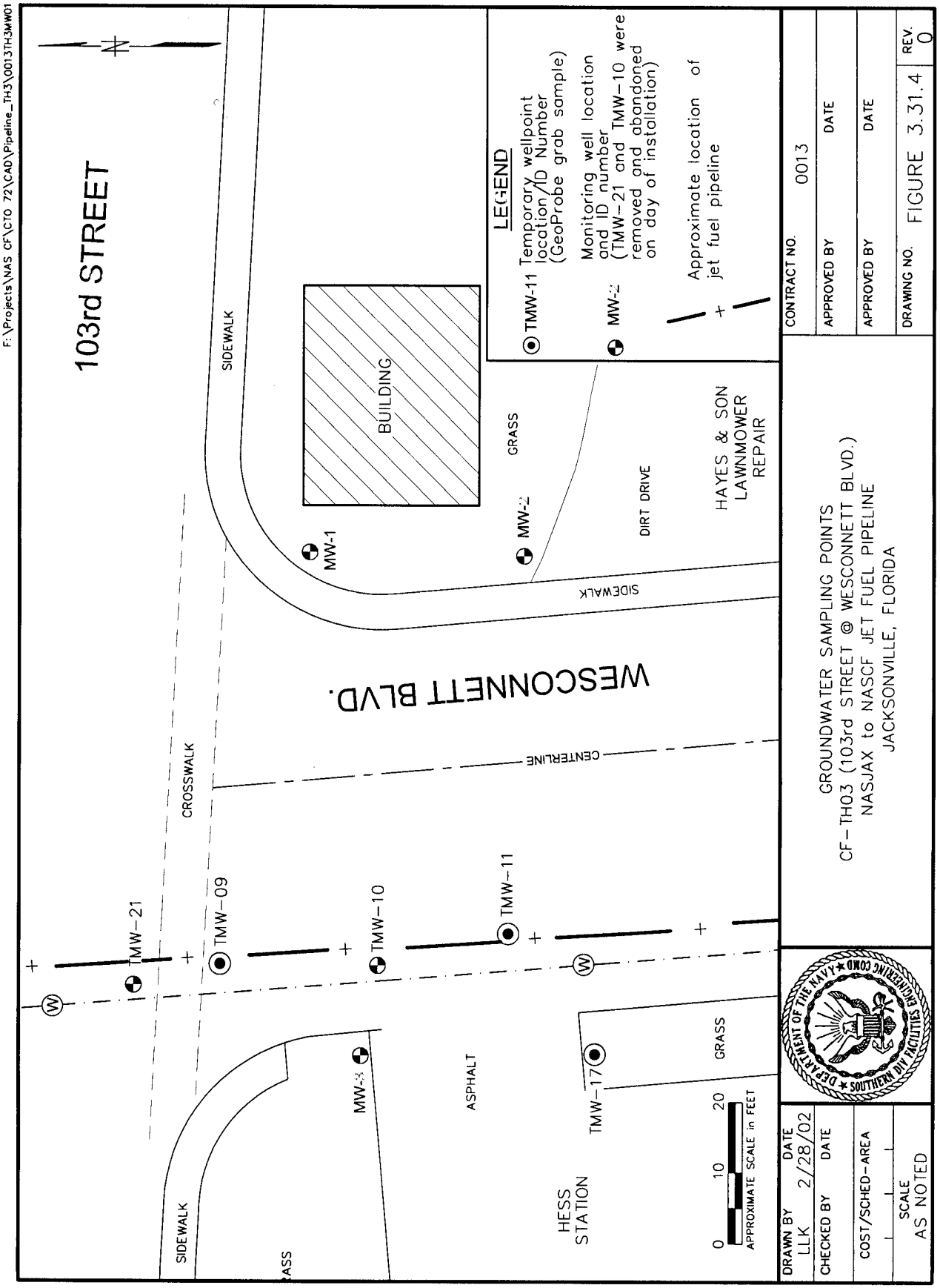
NOTE: OVA Values shown are "net values" obtained by subtracting filtered from unfiltered readings

LEGEND

- ● SOIL BORING, 10/00
- ○ SOIL BORING, 6/01
- (320.6) OVA-FID MEASUREMENT (PARTS PER MILLION)
- APPROXIMATE AREA OF EXCESSIVELY CONTAMINATED SOIL
- INSUFFICIENT OVA DATE TO DEFINE AREA OF EXCESSIVELY CONTAMINATED SOIL
- APPROXIMATE LOCATION OF JET FUEL PIPELINE
- (W) Underground Water Line

OVA = ORANIC VAPOR ANALYZER
PPM = PARTS PER MILLION

DRAWN BY LLK	DATE 2/21/02	APPROXIMATE AREA OF EXCESSIVELY CONTAMINATED SOIL CF-TH03 (103rd STREET @ WESCONNETT BLVD.) NASJAX to NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA	CONTRACT NO. 0013
CHECKED BY	DATE		APPROVED BY DATE
COST/SCHED-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 3.31.3 REV. 0


F:\Projects\NAS CF\CTO 72\CAD\Pipeline_TH3\0013TH3MW01
103rd STREET
SIDEWALK
BUILDING
GRASS
MW-1
MW-2
DIRT DRIVE
HAYES & SON LAWNMOWER REPAIR
SIDEWALK
WESCONNETT BLVD.
CENTERLINE
CROSSWALK
TMW-21
TMW-09
TMW-10
TMW-11
TMW-17
ASPHALT
GRASS
SIDEWALK
HESS STATION
0 10 20
APPROXIMATE SCALE in FEET
LEGEND
TMW-11 Temporary wellpoint location/ID Number (GeoProbe grab sample)
MW-2 Monitoring well location and ID number (TMW-21 and TMW-10 were removed and abandoned on day of installation)
Approximate location of jet fuel pipeline
CONTRACT NO. 0013
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 3.31.4
REV. 0
GROUNDWATER SAMPLING POINTS
CF-TH03 (103rd STREET @ WESCONNETT BLVD.)
NASJAX to NASCF JET FUEL PIPELINE
JACKSONVILLE, FLORIDA
DEPARTMENT OF THE NAVY ★ SOUTHERN DIV FACILITIES ENGINEERING COMD ★
DRAWN BY LLK DATE 2/28/02
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

on Table 3.31.4. A Groundwater Analytical Results figure was not created since results did not exceed GCTLs. The temporary well boring and sample logs for CF-TH03 are included in Appendix A. The mobile laboratory analytical results are included in Appendix D.

3.31.5 Monitoring Well Sampling

On May 24 and 25, 2001, TtNUS installed two temporary monitoring wells, CF-TH03-TMW10 and CF-TH03-TMW-21, and three permanent monitoring wells, CF-TH03-MW-01 through 03, at the locations indicated on Figure 3.31.4. Temporary monitoring well TMW-10 was installed to a depth of 17 ft and screened from 7 to 17 ft bls. Temporary monitoring well TMW-21 was installed to a depth of 18 ft and screened from 8 to 18 ft bls. The temporary monitoring wells were installed to the same standards as typical monitoring wells, except the wells were not grouted. The sand pack in each temporary well was filled to land surface and the wells were abandoned after sampling as a result of their location in the roadway. On May 25, 2001, TtNUS personnel collected groundwater samples from temporary monitoring wells TMW-10 and TMW-21 for analysis of VOCs, PAHs, dibromoethane (EDB), total lead, and total recoverable petroleum hyrocarbons (TRPH) by USEPA Methods 8260B, 8310, 504.1, 6010B, and FL-PRO, respectively. The groundwater samples were shipped to Accutest Laboratories in Orlando, Florida, under proper chain-of-custody protocol.

The three permanent monitoring wells were installed on May 24 and 25, 2001 and developed on June 12, 2001 as described in Section 2.3.2. Monitoring well MW-1 was installed to a depth of 20 ft bls and screened from 10 to 20 ft bls. Monitoring well MW-2 was installed to a depth of 12 ft bls and screened from 2 to 12 ft bls. Well MW-3 was installed to a depth of 18 ft bls and screened from 8 to 18 ft bls. Monitoring well installation and development logs are included in Appendix B. On June 16, 2001, TtNUS personnel collected groundwater samples from monitoring wells CF-TH03-MW-01 through 03 for analysis of VOCs, PAHs, EDB, total lead, and TRPH by USEPA Methods 8260B, 8310, 504.1, 6010B, and FL-PRO, respectively. The groundwater samples were shipped to Accutest Laboratories under proper chain-of-custody protocol. Analytical results from the groundwater samples for the two temporary wells, and the three permanent wells indicated dissolved hydrocarbon concentrations were below GCTLs for all COCs. The groundwater analytical results are summarized on Table 3.31.5 and the complete set of analytical results is included in Appendix D. A groundwater flow map is provided as Figure 3.31.5.

Table 3.31.4
Mobile Laboratory Results for CF-TH03

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	Reporting Limits	TMW-009	TMW-010	TMW-011	TMW-017	TMW-018	TMW-019	TMW-020	TMW-022
		5-23/24-01	5-23/24-01	5-23/24-01	5-23/24-01	5-23/24-01	5-23/24-01	5-23/24-01	5-23/24-01
Depth of sample		16-20 ft bls	3-7 ft bls	3-7 ft lbs	2-12 ft bls	2-6 ft bls	8-18 ft bls	10-20 ft bls	8-18 ft bls
Collection method*		DPT	1" PVC	DPT	2" PVC	DPT	2" PVC	2" PVC	2" PVC
Volatile Organic Compounds (USEPA Method 8260B) (µg/L)									
Benzene	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Ethylbenzene	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Toluene	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
m&p-Xylene	1.0U	1.0U	1.5	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
o-Xylene	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
MTBE	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (µg/kg)									
naphthalene	1.0U	1.0U	1.0U	1.0U	1.7	1.0U	1.0U	2.8	1.0U
DRO (mg/L)	See Note	<2.0	<2.9	<2.0	<4.3	<2.0	<4.0	<4.3	<5.0

Notes: DRO reporting limits vary with the total volume of sample processed. This volume will vary depending the particular content of the sample.

*Collection method denotes whether gorundwater sample collected with DPT well screen, or with temporay well installation and PVC well screen.

mg/L = milligrams per liter

U = compound analyzed for but not detected to level shown

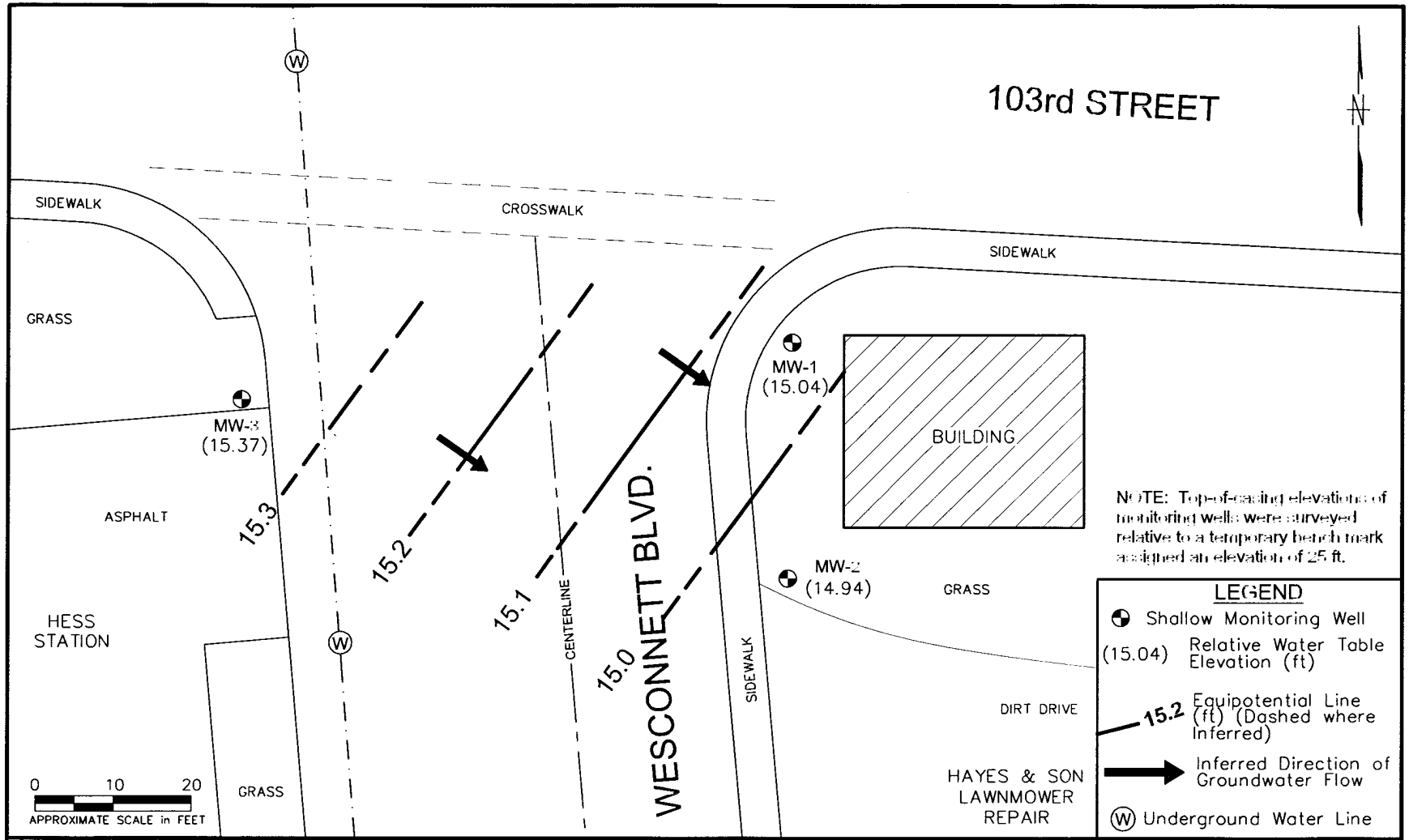
Table 3.31.5
Groundwater Analytical Results for CF-TH03

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	GCTL[1]	TMW-10	TMW021	TH3-01-01	TH3-02-01	TH3-DUP1-01	TH3-03-01
		5/25/2001	5/25/2001	6/16/2001	6/16/2001	6/16/2001	6/16/2001
Volatile Organic Compounds (USEPA Method 8260B) (μg/L)							
Benzene	1	1.0 U	1.2 U	1.0 U	1.0 U	1.0 U	0.98 J
Ethylbenzene	30	2.0 U	1.2 U	2.0 U	2.0 U	2.0 U	2.0 U
Toluene	40	2.0 U	1.2U	2.0 U	2.0 U	2.0 U	2.0 U
Total Xylenes	20	6.0 U	3.0 U	6.0 U	6.0 U	6.0 U	6.0 U
MTBE	50	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,1-Dichloroethylene	7	2.0 U	2.0 U	0.52	2.0 U	2.0 U	2.0 U
EDB (USEPA Method 504.1) (μg/L)							
1,2-Dibromomethane	0.02	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U
Total Lead (USEPA Method 6010 B) (μg/L)							
Lead	15	2.2 B	7.7	1.4 B	7.8	3.9 B	2.4 B
Total Recoverable Petroleum Hydrocarbons (FDEP Method FL-PRO) (mg/L)							
TRPH	5	0.25 U	0.25 U	0.305	0.503	0.479	0.752

Note: [1]Chapter 62-777, FAC (Effective August 5, 1999)
mg/L = milligrams per liter
J = estimated concentration detected below reporting limits
U = compound analyzed for but not detected to level shown
B = indicates a result greater than or equal to IDL but less than RL

F:\Projects\NAS CF\CTO 72\CAD\Pipeline_TH3\0013P_GF601



DRAWN BY LLK DATE 8/6/01	GROUNDWATER ELEVATION CONTOUR MAP CF-TH03 (103rd STREET @ WESCONNETT BLVD.) NASJAX to NASCF JET FUEL PIPELINE JACKSONVILLE, FLORIDA	CONTRACT NO. 0013	
CHECKED BY DATE		APPROVED BY DATE	
COST/SCHED-AREA		APPROVED BY DATE	
SCALE AS NOTED		DRAWING NO. FIGURE 3.31.5	REV. 0

FORM CADD NO. SDIV_AH.DWG – REV 0 – 1/20/98

3.31.6 Discussion

Data obtained during the DPT assessment indicated that “excessively contaminated soil” (above 50 ppm) was detected in soil borings SB-05, SB-06, SB-09, SB-10, SB-11, SB-16, and SB-26. The soil contamination is located under asphalt and is defined on Figure 3.31.3. Petroleum product COCs were detected in soil at concentrations above SCTLs (Chapter 62-770, FAC) in soil borings SB-05, SB-08, SB-09, SB-10, SB-11, and SB-16. However, the soil sample collected for SPLP analysis from SB-11 contained no COCs above GCTLs, indicating COCs are not leaching to groundwater. No petroleum product COCs were detected in groundwater above GCTLs in the temporary and permanent monitoring wells installed at the site.

4.0 DISCUSSION

The 1996 Vetco pipeline survey indicated 19 class III anomalies and 13 valves with the potential to release petroleum to the surrounding soil and groundwater. In accordance with FDEP requirements, a site assessment was initiated in accordance with the 1999 Chapter 62-770, FAC, guidelines. Beginning in March 1999, TtNUS conducted a field assessment of the pipeline anomalies and valve boxes. The pipeline assessment was conducted in two phases. Phase 1 consisted of a field investigation in March 1999 using DPT to determine the presence of petroleum hydrocarbons in subsurface soil and groundwater. In May 1999, TtNUS submitted the DPTAR on the Jet Fuel Pipeline summarizing the field investigation activities and analytical results. Results of the DPTAR recommended the further assessment of some sites along the Jet Fuel Pipeline for Phase 2. Phase 2 involved the collection of additional soil samples and the installation of monitoring wells at sites that the Phase 1 investigation indicated petroleum releases. The Phase 2 field activities were conducted from November 1999 through February 2000. One final location (TH-3) was investigated in October 2000 and May/June, 2001 as a result of petroleum odors discovered by the FDOT.

The numerous anomaly and valve locations can be classified into five separate categories:

- Non-Petroleum Impacted Sites
- Limited Petroleum Impacted Sites
- Petroleum Impacted Soil Sites
- Petroleum impacted Groundwater Sites
- Petroleum Impacted Soil and Groundwater Sites

The following sections below distinguish the anomaly and valve locations into these categories for clarifications. It should be noted that free product was not detected at any of the sites investigated during this SAR.

4.1 NON-PETROLEUM IMPACTED SITES

The results of the field investigation indicated that these sites did not have a petroleum release and/or petroleum impacted soil or groundwater. The site assessment indicated that analytical results from confirmatory soil samples were below FDEP SCTLs, and analytical results from groundwater samples were below FDEP GCTLs. The soil vapor analysis of soil samples was either less than 50 ppm, or greater than 50 ppm but not confirmed by the soil sample analytical results.

As discussed in Section 3.0 the sites are as follows:

- CF-AN05
- CF-AN06
- CF-AN07
- CF-AN12
- CF-AN13
- CF-AN16
- CF-AN17
- CF-AN18
- CF-AN19
- CF-AN20
- CF-AN21
- CF-VA10
- CF-VA12
- CF-VA13

At site CF-VA12, soil vapor analysis results indicated OVA readings above 50 ppm from two soil borings. However, petroleum impacted soil was not confirmed by the soil analytical results.

4.2 LIMITED PETROLEUM IMPACTED SITES

The results of the field investigation indicated that at these locations petroleum COCs were detected in groundwater above GCTLs in temporary monitoring wells during the Phase 1 investigation, although petroleum COCs were not detected above GCTLs from the permanent monitoring wells installed at the sites during Phase 2. At each of these locations, the confirmatory soil samples indicated petroleum COCs below FDEP SCTLs. At least one groundwater sample was collected from a permanent monitoring well at each site during the Phase 2 portion of the investigation, and analytical results from the permanent monitoring wells indicated dissolved phase hydrocarbons were below FDEP GCTLs.

As discussed in Section 3.0 the sites are as follows:

- CF-AN03
- CF-AN04
- CF-AN10
- CF-AN15
- CF-VA02
- CF-VA07
- CF-VA11

At sites CF-VA02, CF-VA07, CF-VA11, and CF-VA12 OVA responses greater than 50 ppm were detected in the soil during soil vapor analysis. However, confirmatory soil sample analytical results indicated all petroleum COCs were below SCTLs.

4.3 PETROLEUM IMPACTED SOIL SITES

The results of the site assessment indicated that at these locations soil vapor readings were greater than 50 ppm and analytical results from confirmatory soil samples were above FDEP SCTLs. Analytical results of groundwater samples from permanent monitoring wells were below FDEP GCTLs.

As indicated in Section 3.0 the sites are as follows:

- CF-AN08
- CF-AN09
- CF-AN11
- CF-VA06
- CF-VA08
- CF-VA09
- CF-VA14
- CF-TH03

At sites CF-AN08, CF-AN09, CF-VA08, CF-VA09, and CF-VA14, dissolved phase hydrocarbons were detected above GCTLs during the Phase 1 groundwater sampling with temporary wells. However, at each of these sites, dissolved phase hydrocarbons were not detected above GCTLs in groundwater samples collected from the permanent monitoring wells installed at the sites.

As a result of the exceedance of SCTLs at the above listed sites, a statistical evaluation was performed to determine if the 95% upper confidence limit (UCL) of soil analytical results were less than or greater than FDEP SCTLs. A summary of the results of the statistical evaluation is presented as Table 4-1. As indicated on Table 4-1, concentrations of petroleum compound COCs at locations CF-AN08 and CF-AN11 were less than FDEP SCTLs when compared with the 95% UCL. For sites CF-AN09, CF-VA06, CF-VA08, CF-VA09, CF-VA14, and CF-TH03, COC concentrations in soil were greater than the FDEP SCTLs when compared to the 95% UCL.

Table 4-2 provides a summary of site conditions and recommendations for the above sites based on the results of the investigations and the statistical evaluation performed. As shown on Table 4-2, the statistical evaluation indicates that soil concentrations at CF-AN08 and CF-AN11 are less than FDEP SCTLs. Additionally, COC concentrations in soil at CF-AN08 are less than FDEP leachability SCTLs, and the SPLP analysis performed at CF-AN11 indicates that the leachate from the soil is below FDEP GCTLs. For sites CF-AN08 and CF-AN11 further action may not be necessary. For sites CF-AN09, CF-VA06, CF-VA08, CF-VA09, CF-VA14, and CF-TH03 further action may be required.

Table 4-1
95% UCL Statistical Evaluation of Soil Analytical Data

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

CF-AN08

Parameter	FDEP SCTL	Maximum	Mean	UCL
Dibenzo[ah]anthracene	100	140	25	31.5
BaPEq	100	225	42	51

CF-AN09

Parameter	FDEP SCTL	Maximum	Mean	UCL
Dibenzo[ah]anthracene	100	360	80.8	94.5
BaPEq	100	750	149	**177**

CF-AN11

Parameter	FDEP SCTL	Maximum	Mean	UCL
Naphthalene	1700	6100	773	965
1-Methylnaphthalene	2200	6300	806	1004
Benzo[a]pyrene	100	180	23.4	29.1
BaPEq	100	373	48.1	59.8

CF-VA06

Parameter	FDEP SCTL	Maximum	Mean	UCL
1-Methylnaphthalene	2200	3300	364	442
Benzo[b]fluoranthene	1400	1800	213	252
Benzo[a]pyrene	100	1500	174	**209**
Dibenzo[ah]anthracene	100	1200	146	**171**
BaPEq	100	3274	385	**458**

CF-VA08

Parameter	FDEP SCTL	Maximum	Mean	UCL
Benzo[a]pyrene	100	210	98	**104**
Dibenzo[ah]anthracene	100	290	78	85.2
BaPEq	100	559	201	**212**

CF-VA09

Parameter	FDEP SCTL	Maximum	Mean	UCL
Benzo[a]pyrene	100	130	42.2	46.3
Dibenzo[ah]anthracene	100	170	35	40.5
BaPEq	100	313	90.8	**102**

CF-VA14

Parameter	FDEP SCTL	Maximum	Mean	UCL
Benzo[a]pyrene	100	120	61	66.5
Dibenzo[ah]anthracene	100	150	36.9	42.7
BaPEq	100	296	109	**120**

See notes at end of table.

Table 4-1
95% UCL Statistical Evaluation of Soil Analytical Data

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

TH-03

Parameter	FDEP SCTL	Maximum	Mean	UCL
1-Methylnaphthalene	2200	4500	464	548
2-Methylnaphthalene	6100	7100	680	812
Benzo[a]pyrene	100	160	74.4	80.4
BaPEq	100	259	111	**119**
TRPH	340	4300	436	**514**

Notes:
Bold indicates 95% UCL exceeds FDEP SCTLs.
BaPEq = Benzo(a)pyrene equivalent

Table 4-2
Summary of Conclusions and Recommendations for Sites with Petroleum Impacted Soil

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

	SCTLs				OPTIONS			RECOMMENDATION
	>Direct Exposure Residential SCTLs	>Leachability SCTLs	95% UCL > SCTLs	>Industrial SCTLs	NFA	NFA w/ Conditions**	Excavate	
CF-AN08	X				X	X	X	NFA
CF-AN09	X		X			X	X	NFA w/ Conditions
CF-AN11	X	X*			X	X	X	NFA
CF-VA06	X	X	X	X			X	Excavate
CF-VA08	X		X			X	X	NFA w/ Conditions
CF-VA09	X		X			X	X	Excavate
CF-VA14	X		X			X	X	NFA w/ Conditions
CF-TH03	X	X*	X			X	X	Excavate

Notes:
* SPLP leachability analysis indicates that leachate is below GCTLs.
** NFA with conditions assumes that FDOT will agree to alternate cleanup target levels and land use controls specified in a Memorandum of Agreement between FDOT and FDEP.
> = greater than
NFA = No Further Action

4.4 PETROLEUM IMPACTED GROUNDWATER SITES

The results of the site assessment indicated that at these locations petroleum COCs were detected above FDEP GCTLs from temporary and permanent monitoring wells. Soil vapor readings were less than 50 ppm and analytical results from confirmatory soil samples were below FDEP SCTLs. As discussed in Section 3.0 one site fits into this category, CF-AN14.

At site CF-AN14, one petroleum COC, benzo(b)fluoranthene, was detected above the FDEP GCTL when the permanent well was sampled on December 15, 1999. However, the well was resampled on February 9, 2000, and no petroleum COCs were detected.

4.5 PETROLEUM IMPACTED SOIL AND GROUNDWATER SITES

During the site assessment, no sites were determined to have both petroleum-impacted soil and groundwater. There were no locations where soil vapor readings were greater than 50 ppm, analytical results from confirmatory soil samples were above FDEP SCTLs, and groundwater analytical results from permanent monitoring wells were above FDEP GCTLs.

5.0 CONCLUSION AND RECOMMENDATION

The results of the site assessment for the NASJAX to NASCF Pipeline, as summarized on Table 5-1, suggest the following:

- Free product was not found at the sites during the course of this assessment.

- "Excessively contaminated " soil, as defined by soil vapor results, was detected at sites CF-VA02, CF-VA06, CF-VA07, CF-VA09, CF-VA11, CF-VA12, CF-VA14, and CF-TH03.

- Soil Analytical results confirmed "excessively contaminated" soil at sites CF-VA06, CF-VA09, CF-VA14, and CF-TH03. Soil analytical results did not confirm "excessively contaminated" soil at sites CF-VA02, CF-VA07, CF-VA11, and CF-VA12.

- Soil analytical results exceeded direct exposure residential SCTLs at sites CF-AN08, CF-AN09, CF-AN11, CF-VA06, CF-VA08, CF-VA09, CF-VA14, and CF-TH03. Statistical evaluation results indicated soil concentrations at CF-AN08 and CF-AN11 at the 95% UCL are less than FDEP SCTLs. At Sites CF-AN08 and CF-AN11, TtNUS recommends no further action pending FDOT acceptance of the 95% UCL values as alternate cleanup target levels for the sites. At sites CF-AN09 and CF-VA14, the asphalt roadway of State Route 134 covers the soil and for these sites, TtNUS recommends No Further Action with the condition of contacting the FDOT regarding the implementation of institutional controls for soil. At site CF-VA08, the impacted soil is partially covered by State Route 134 and partially uncovered in the roadway drainage area. Due to site conditions at CF-VA08, removal of the soil not covered by the roadway would result in the road closure and road stability issues. For this reason, TtNUS recommends implementing land use controls for site CF-VA08. At locations CF-VA06 and CF-VA09, the soil is either not covered by asphalt or covered by deteriorated asphalt and, therefore, TtNUS recommends source removal followed by No Further Action.

Table 5-1
Conclusions and Recommendations

Site Assessment Report
NASJAX to NASCF Jet Fuel Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Location	OVA Responses "Excessively Contaminated Soil" (>50 ppm)	Petroleum Product COCs in Soil Above 62-770 SCTLs	Petroleum Product COCs in Temporary Wells Above 62-770 GCTLs	Petroleum Product COCs in Perrmanent Wells Above 62-770 GCTLs	Conclusions (Media Impacted)	Is Contamination Located Under Asphalt	Recommendations
CF-AN03	No	No	**Yes**	No	None	NA	No Further Action
CF-AN04	No	No	**Yes**	No	None	NA	No Further Action
CF-AN05	No	No	No	NA	None	NA	No Further Action
CF-AN06	No	No	No	NA	None	NA	No Further Action
CF-AN07	No	No	No	NA	None	NA	No Further Action
CF-AN08	**Yes**	**Yes**	**Yes**	No	**Soil**	Yes	No Further Action with conditions. Contact FDOT regarding implementation of institutional controls for soil.
CF-AN09	No	**Yes**	**Yes**	No	**Soil**	Yes	No Further Action with conditions. Contact FDOT regarding implementation of institutional controls for soil.
CF-AN10	No	No	**Yes**	No	None	NA	No Further Action
CF-AN11	No	**Yes**	No	NA	**Soil**	Yes	No Further Action with conditions. Contact FDOT regarding implementation of institutional controls for soil.
CF-AN12	No	No	No	NA	None	NA	No Further Action
CF-AN13	No	No	No	NA	None	NA	No Further Action
CF-AN14	No	No	**Yes**	**No**(1)	None	NA	No Further Action
CF-AN15	No	No	**Yes**	No	None	NA	No Further Action
CF-AN16	No	No	No	NA	None	NA	No Further Action
CF-AN17	No	No	No	NA	None	NA	No Further Action
CF-AN18	No	No	No	NA	None	NA	No Further Action
CF-AN19	No	No	No	NA	None	NA	No Further Action
CF-AN20	No	No	No	NA	None	NA	No Further Action
CF-AN21	No	No	No	NA	None	NA	No Further Action
CF-VA02	**Yes**	No	**Yes**	No	None	NA	No Further Action
CF-VA06	**Yes**	**Yes**	No	NA	**Soil**	**No**	Source Removal followed by No Further Action
CF-VA07	**Yes**	No	**Yes**	No	None	NA	No Further Action.
CF-VA08	No	**Yes**	**Yes**	No	**Soil**	**Partial**	Source Removal followed by No Further Action. Contact FDOT regarding implementation of institutional controls for soil under asphalt.
CF-VA09	**Yes**	**Yes**	**Yes**	No	**Soil**	Deteriorated asphalt	Source Removal followed by No Further Action
CF-VA10	No	No	No	NA	None	NA	No Further Action
CF-VA11	**Yes**	No	**Yes**(2)	No	None	NA	No Further Action
CF-VA12	**Yes**	No	No	NA	None	NA	No Further Action
CF-VA13	No	No	No	NA	None	NA	No Further Action
CF-VA14	**Yes**	**Yes**	**Yes**	No	**Soil**	Yes	No Further Action with conditions. Contact FDOT regarding implementation of institutional controls for soil.
CF-VA15	No	No	No	N	None	NA	No Further Action
CF-TH03	**Yes**	Yes	No	No	Soil	Yes	Source removal during road widening project. Contact City/FDOT for coordination of excavation.

Notes:
1 Permanent well at CF-AN14 exceeded GCTLs from 12/15/99 sample. The well was resampled to confirm values on 2/9/00 and COCs were below method detection limit.
2 Gas station adjacent to site with a reported release.

- For sites CF-AN11, CF-VA06, CF-VA08, and CF-TH03, soil analytical results exceeded leachability SCTLs. For site CF-VA06, source removal is recommended because the soil is not covered by asphalt and direct exposure SCTLs were also exceeded. At sites CF-AN11 and CF-TH03, soil samples were collected for SPLP analysis to determine the potential for soil contaminants to leach to groundwater. The SPLP results indicate that the leachate did not exceed GCTLs at either site. For site CF-AN11, as mentioned above, TtNUS recommends no further action pending FDOT acceptance of the 95% UCL values as alternate cleanup target levels. At Site CF-TH03, TtNUS recommends a source removal action be performed in coordination with the City of Jacksonville road-widening project.

- Temporary well or DPT investigation results indicated the presence of petroleum hydrocarbon constituents above GCTLs at sites CF-AN03, CF-AN04, CF-AN08, CF-AN09, CF-AN10, CF-AN14, CF-AN15, CF-VA02, CF-VA07, CF-VA08, CF-VA09, CF-VA11, and CF-VA14. However, dissolved hydrocarbon constituents were not detected above GCTLs in groundwater samples collected from permanent monitoring wells installed at the sites, except for CF-AN14. At site CF-AN14, the permanent monitoring well was resampled and petroleum COCs were below GCTLs. TtNUS recommends No Further Action for groundwater at these sites.

Based on the results of this investigation, TtNUS recommends the implementation of the actions summarized on Table 5-1 for the NASJAX to NASCF Pipeline.

REFERENCES

TtNUS (Tetra Tech NUS, Inc.), 1999a. "Contamination Assessment Plan for Naval Air Station Jacksonville to Naval Air Station Cecil Field Fuel Transfer Pipeline", Naval Air Station Cecil Field, Jacksonville, Florida, Southern Division, Naval Facilities Engineering Command, South Charleston, North Carolina.

TtNUS, 1999b. "Direct-Push Technology Assessment Report (DPTAR)." May.

USEPA (United States Environmental Protection Agency), 1997. "Standard Operating Procedures."

USGS (United States Geological Survey), 1998. USGS Orange Park, Florida 7.5-Minute Topographic Quadrangle.

Rev. 1
05/02/02

Site Assessment Report
for
Jet Fuel Pipeline

Naval Air Station Cecil Field
Jacksonville, Florida

Volume II of II: Appendices A through D

Southern Division
Naval Facilities Engineering Command
Contract Number N62467-94-D-0888
Contract Task Order 0072

April 2002

APPENDIX A

SOIL BORING LOGS

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110
Soil Boring ID No.: CF-AN03-SB-01
Sample Location: AN 03

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliott

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN03-TMW-01	3-22-99	1020	cloudy	5.90	0.836	0.97	21.6	none
Total Depth: 9'	DTW: 5'	Stickup: NA	Screen Int: 5-9'					

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-AN03-SB-01
Date: 3-22-99
Time Start: 0953
Time End: 1009
Time Sample:
Amount Grout: 1/3 bag

Location Desc: AN
↑ Clubhouse
SB-01 10'
* AN
Garage

PID / FID READINGS

Depth	Sample ID	Sample	Borehole Reading	Breathing Zone	Remarks
2		0.0			0954
4		0.0	0.0	0.0	0957
6		0.0			1009
8		0.0			1009
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	2 ~~(3)~~ 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 13-~~55~~ 21
Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL
COC #: 01600

Check if Collected:
[ ] MS / MSD
[ ] DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe ~~Truck Mounted~~ JCB Robcat

BORING ID: CF-AN03-SB-01
DATE: 3-30-99
GEOLOGIST: J. Elliott
DRILLER: D. Hearne

Sample No. and Type or RQD	Depth (FL) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/FL) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
		Hand Auger		Asphalt			
			1	Lt grey	FG sand very slightly silty	SP/SM	Dry, no odor
			2	Lt. Orange.			Moist, no odor
			3				
			4				
			5				Water Table @ 5'
			6				Saturated no odor
			7	White	FG sand	SP	
		3 4	8				EOB@8'

* When rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

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

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

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110
Soil Boring ID No.: CF-AN03-SB-02
Sample Location: AN03
Sampler: J. Elliot

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN03-TMW-02	3-22-99	1044	cloudy	6.28	0.867	0.78	21.0	none
Total Depth: 9'		DTW: 5.5'		Stickup: NA		Screen Int: 5-9'		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-AN03-SB-02 Date: 3-22-99
Time Start: 1025
Time End: 1035
Time Sample:
Amount Grout: 1/3 bag

Location Desc.: FN — — — — — — Driveway
— — 10' — AN
SB-02 Greens
Clubhouse

Depth	Sample ID	PID / FID Sample	Borehole Reading	Breathing Zone	Remarks
2		0.0			1027
4		0.0	0.0	0.0	1029
6		0.0			1035
8		0.0			1035
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) 8 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	2 (8) 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-35 1

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL
COC #: 01600

Check if Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Bobcat)

BORING ID: CF-AN03-SB-02
DATE: 3-28-99
GEOLOGIST: J. Elliott
DRILLER: D. Hearne

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material classification	USCS*	Remarks
		Hand Auger	1	Lt BN	FG sand, slightly silty	SP/SM	Dry, top .5' Asphalt no odor
			2	Lt Orange	FG sand, very slightly silty		Moist, no odor
			3				
			4		FG Sand	SP	
			5	Lt yellow white			Water Table ~~5.5'~~ @ 5.5'
catcher			6	white			Saturated, no odor
me			7				
ery from		4	8				EOB @ 8'
2'							

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-AN03-SB-03
Sample Location: AN-03

Sampler: J. Elliott

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN03-TMW-03	3-22-99	1059	Cloudy	6.16	0.851	2.21	20.3	none
Total Depth: 9'		DTW: 4.5'		Stickup: NA		Screen Int: 5-9'		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-AN03-SB-03 Date: 3-22-99

Time Start: 1030
Time End: 1046
Time Sample:
Amount Grout: 1/3 bag

Location Desc.: N ↑ clubhouse; AN 10' SB-03; ↓ greens

Depth	Sample ID	PID / FID Sample	PID / FID Borehole Reading	PID / FID Breathing Zone	Remarks
2		0.0			1031
4		0.0	0.0	0.0	1032
6		0.0			1046
8		0.0			1046
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	2 ~~(3)~~ 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-21

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL

COC #: 01600

Check if Collected:

☐ MS / MSD ☐ DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Bobcat)

BORING ID: CF-AN05-SB-07
DATE: 3-22-99
GEOLOGIST: J. Elliott
DRILLER: D. Hearne

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
		Hand Auger	1	Lt BN	Asphalt / FG sand, slightly silty	SP/SM	Dry, no odor
			2	Lt orange	FG sand, very slightly silty		moist, no odor
			3				
			4				Water Table @ 4.5'
			5		FG sand	SP	Saturated, no odor
			6	White			
			7				
		2.5 4	8				EOB @ 8'

* When rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110
Soil Boring ID No.: CF-AN03-SB-04
Sample Location: AN03

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliott

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN03-TMW-04	3-22-99	1123	cloudy	6.03	0.95	1.01	21.2	none
Total Depth: 9'		DTW: 4.5'		Stickup: NA		Screen Int: 5-9'		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-AN03-SB-04
Date: 3-22-99
Time Start: 1057
Time End: 1110
Time Sample: 1109
Amount Grout: 1/3 bag

Location Desc.: NA — *Clubhouse — F — 10' — SB-04 — *AN — Greens

PID / FID READINGS

Depth	Sample ID	Sample	Borehole Reading	Breathing Zone	Remarks
2		0.0			1058
4	CF-AN03-SB-04-4	0.0	0.0	0.0	1101
6		0.0			1110
8		0.0			1110
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	yes
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	yes
EPA 8021B (WATER)	HCL	2 ~~(3)~~ 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 13-~~25~~ 1
Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL
COC #: 01600

Check If Collected:
[ ] MS / MSD
[ ] DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Bobcat)

BORING ID: CF-AN03-SB-04
DATE: 3-22-99
GEOLOGIST: J. Elliott
DRILLER: D. Hearne

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
		Hand Auger	1	Lt Bn	Asphalt / FG sand, slightly silty	SP/SM	Dry, no odor
			2	Lt Orange			moist, no odor
			3		FG sand, very slightly silty		
			4		FG sand	SP	
			5				Water Table @ 5'
			6	White			Saturated, no odor
			7				
		3 4	8				EOB @ 8'

catcher, ame over top 3'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: CTO 72
PROJECT NUMBER: 0013
DRILLING COMPANY: GWP.
DRILLING RIG: D-120
BORING NUMBER: CEF-AN3-15
DATE: 11/29/99
GEOLOGIST: [illegible]
DRILLER: Nick S.

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
		Hand Auger				Light Brown	fine-grained sand	SM	Asphalt, Backfill mat, organic debris, dry, no odor				
	2												
	4												
		Drilling							Moist, No odor				
	6								wet, No odor				
	8												
	10												0.0
	12												
	13												

* [illegible] rock coring, enter rock brokeness.

* [illegible]ude monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: estimating Moist and Wet zones

Drilling Area Background (ppm): 0.0

Converted to Well: Yes X No ____ Well I.D. #: CEF-AN3-15

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-AN04-SB-01
Sample Location: AN04

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliott

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN04-TMW-01	3-23-99	1820	Tan	6.56	0.438	4.4	21.1	none
Total Depth: 8'	DTW: 4'	Stickup: NA	Screen Int: 4-8'					

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-AN04-SB-01
Date: 3-23-99
Time Start: 1746
Time End: 1801
Time Sample:
Amount Grout: 1/3 bag

Location Desc.: N Timuquana ↔ Driveway SB01-10'-1 Sidewalk → AN

PID / FID READINGS

Depth	Sample ID	Sample	Borehole Reading	Breathing Zone	Remarks
2		0.1			1747
4		0.1			1749
6		0.0			1801
8		0.0	0.1	0.0	1801
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	2 ~~(3)~~ 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 13-1
Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL
COC #:

Check If Collected:
☐ MS / MSD ☐ DUPLICATE / ID No.:

Signature(s): [illegible]

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DM050110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Bobcat)

BORING ID: CF-AN04-SB-01
DATE: 3-23-99
GEOLOGIST: J. Elliott
DRILLER: D. Hearne

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
		Hand Auger	1	Grey	FG silty sand	SP/SM	Moist, organic material no odor
			2	Lt Tan	FG sand	SP	Moist
			3	Lt Grey	FG sandy clay	CL/SC	
			4				Water Table @ 4'
			5		FG clayey sand	SC	Heavily Saturated
			6	Lt. Grey & Tan & orange	FG sandy clay	CL	Moist
			7				
			8				EOB @ 8'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Page___ of ___

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110
Soil Boring ID No.: CF-AN04-SB-02
Sample Location: AN04

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

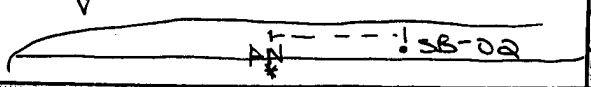
Sampler: J. Elliott

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN04-TMW-02	3-23-99	1402	Tan	7.00	0.550	6.17	19.1	none
Total Depth: 8'	DTW: 3.5'	Stickup: NA	Screen Int: 3-7'					

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID:	CF-AN04-SB-02	Date: 3-23-99	Time Start: 1801
Location Desc.:	AN Trinugyana Driveway		Time End: 1815
			Time Sample:
			Amount Grout: Yes bag



PID / FID READINGS

Depth	Sample ID	Sample	Borehole Reading	Breathing Zone	Remarks
2		0.1			1802
4		0.0	0.1	0.0	1804
6		0.1			1815
8		0.1	Fell out of sampler (no catcher)		1815
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	2 ~~(3)~~ 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 13-1
Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL
COC #:

Check If Collected:
[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Bobcat)

BORING ID: CF-AN04-SB-00
DATE: 3-23-99
GEOLOGIST: J. Elliott
DRILLER: D. Hearne

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION Color	Material classification	USCS*	Remarks
		Hand Auger	1	Grey	FG silty sand	SP/SM	Moist, Organic Material, no odor
			2	Tan	FG sand	SP	
			3	Grey	FG sandy clay	CL	Water Table @ 3.5'
			4	Tan	FG sand	SP	Saturated
			5				Heavily Saturated, no odor
			6				
			7	Orange	FG sandy clay	CL/SC	
		1 4	8				Moist/Saturated, no odor
							EOB @ 8'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Page___ of ___

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-AN04-SB-03
Sample Location: AN 04

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliott

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN04-TMW-03	5-23-99	1920	Tan	6.23	0.487	2.74	19.8	none
Total Depth: 12'		DTW: 3.5'		Suckup: NA		Screen Int: 7-11' (bfgs of clay)		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID:	CF-AN04-SB-03	Date:	5-23-99	Time Start:	1816
Location Desc.:	Timuquana Driveway			Time End:	~~1830~~ 1845
				Time Sample:	
				Amount Grout:	1/3 bag

PID / FID READINGS

Depth	Sample ID	Sample	Borehole Reading	Breathing Zone	Remarks
2		0.0			1816
4		0.0			1818
6		0.1			1830
8		0.1	0.0	0.0	1850
10		0.2			1845
12		0.0			1845
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	2 ~~(3)~~ 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-1

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL

COC #:

Check if Collected:

☐ MS / MSD ☒ DUPLICATE / ID No.: CF-AN04-TMW-DU07

Signature(s): J. Elliott

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Bobcat)

BORING ID: CF-AN04-SB-03
DATE: 3-23-99
GEOLOGIST: J. Elliott
DRILLER: D. Hearne

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material classification	USCS*	Remarks
		Hand Auger	1	Grey	FG silty sand	SP/SM	Moist, organic material, no odor
			2	Lt Tan	FG sand	SP	Moist, no odor
			3	Lt Grey	FG sand clay	CL/SC	
			4		FG clayey sand	SC	Water Table @ 4'
			5	Lt Grey & Tan & Orange	FG sandy clay	CL	Heavily saturated, no odor Moist, no odor
			6				
			7				
		4 4	8				EOB @ 8'
			9		FG clayey sand	SC	Heavily Saturated, no odor
			10	White & Tan			
			11				Saturated, no odor
		4 4	12				EOB @ 12'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Page___ of ___

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110
Soil Boring ID No.: CF-AN04-SB-04
Sample Location: AN04
Sampler: J. Elliott

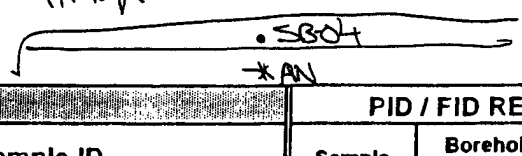
[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN04-TMW-04	3-23-99	1114	cloudy	6.47	0.684	0.74	20.6	none
Total Depth: 11'		DTW: 3.5"		Stickup: NA		Screen Int: 7-11'		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID:	CF-AN04-SB-04	Date:	3-23-99	Time Start:	1846
Location Desc.:	AN Timuana Driveway			Time End:	1902
				Time Sample:	1902
				Amount Grout:	5 bag



PID / FID READINGS

Depth	Sample ID	Sample	Borehole Reading	Breathing Zone	Remarks
2	CF-AN04-SB-04-2	0.0			1848
4		0.0			1850
6		0.0			1858
8		0.0			1858
10		—	0.0	0.0	water--pressure
12		—			broke plastic sampler
14					sleeve
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	yes
EPA 8310 (SOIL)	None	(1) 8 oz. AG	ENCO	yes
EPA 8021B (WATER)	HCL	(3) 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-1

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL

COC #:

Check If Collected:

☐ MS / MSD ☐ DUPLICATE / ID No.:

Signature(s): J. Elliott

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Bobcat)

BORING ID: CF-ANO4-SB-04
DATE: 3-23-99
GEOLOGIST: J. Elliott
DRILLER: D. Hearne

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material classification	USCS*	Remarks
		Hand Auger	1	Dk Gray	FG silty sand	SP/SM	moist, no odor, organic material
			2	Lt Tan	FG sand	SP	moist, no odor
			3	Lt Grey	FG sandy clay	CL/SC	Water Table @ 3.5'
			4				Saturated, no odor
			5	Lt Grey + Tan + Orange			Moist, no odor
			6				
			7				
		4	8				
		4	9	Plastic Sleeve Broke, Water Filled			
			10				
			11				
		4	12				EOB @ 12'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: CTO 72
PROJECT NUMBER: 0013
DRILLING COMPANY: GWP.
DRILLING RIG: D-120
BORING NUMBER: CEF-AN04-15
DATE: 11/20/94
GEOLOGIST: Gum
DRILLER: Nick S.

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
		HAND Auger				gray-Dk gray	Fine-grained sand	SM	organic debris, dry, no odor				
	2												
									moist, no odor				
	4												0.0
		Drilling				Brown	silty clay	SC	wet, no odor				
	6												
	8												
	10												0.0
	12												
	13												

*If rock coring, enter rock brokeness.
**Provide monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks: estimating wet zone.

Converted to Well: Yes ✓ No _____ Well I.D. #: CEF-AN04-15

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110
Soil Boring ID No.: CF-AN5-SB-01
Sample Location: AN 05
Sampler: J. Elliott

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN05-TMW-01	3-23-99	1417	clear	5.41	0.289	1.78	23.6	none
Total Depth: ~~5'~~ 9'-10'		DTW: 5'		Suckup: NA		Screen Int: ~~5'-10'~~ 6-10'		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID:	CF-AN05-SB-01	Date:	3-23-99	Time Start:	1339
Location Desc.:	AN Timuquana → ~~Fence~~ ~~Office~~ * AN • SB-01			Time End:	1349
				Time Sample:	
				Amount Grout:	1/3 bag

Depth	Sample ID	PID / FID READINGS Sample	Borehole Reading	Breathing Zone	Remarks
2		0.0			1340
4		0.0			1341
6		0.0			1349
8		0.0	0.0	0.0	1349
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	2-5 ~~(3)~~ 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 13-1
Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL
COC #: 02313

Check If Collected:
[ ] MS / MSD
[ ] DUPLICATE / ID No.:

Signature(s): [illegible] [illegible]

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Bobcat)

BORING ID: CF-AN05-SB-01
DATE: 3-23-99
GEOLOGIST: J. Elliott
DRILLER: D. Hearne

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
		Hand Auger	1	BN/Lt Tan	FG slightly silty sand	SP/SM	Dry, no odor, organic & limerock debris
			2	↓	↓	↓	↓
			3	White	FG sand	SP	Moist, no odor
			4	↓	↓	↓	↓
			5	↓	↓	↓	Water Table @ 5'
cobbles, no top covered			6	↓	↓	↓	Saturated, no odor
			7	White w/ orange stain	FG slightly clayey sand	SP/SC	↓
		2.5 / 4	8	⋮	⋮	⋮	⋮ EOB @ 8'
			9				

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-AN05-SB-00
Sample Location: AN05

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliott

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN05-TMW-00	3-23-99	1503	Clear	6.56	0.359	4.02	27.5	none
Total Depth: 12'		DTW: 5'		Stickup: NA		Screen Int: 8-12'		no water w/ screen from 0-4

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-AN05-SB-00 Date: 3-23-99
Time Start: 1420
Time End: 1437
Time Sample:
Amount Grout: 1/2 bag
Location Desc.: Timuquana

PID / FID READINGS

Depth	Sample ID	Sample	Borehole Reading	Breathing Zone	Remarks
2		22.9			1429
4		4.5			1431
6		0.0			1437
8		0.0	0.0	0.0	1437
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	(3) 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-1

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL

COC #: 02313

Check if Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s): J. Elliott

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Bobcat)

BORING ID: CF-AN05-SB-02
DATE: 3-23-99
GEOLOGIST: J. Elliott
DRILLER: D. Hearne

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
		Hand Auger	1		Asphalt + Limerock		
			2	Lt Tan	FG slightly silty sand	SP/SM	Moist, no odor, limerock + shell debris
			3				
			4				
			5		FG Sand	SP	Water Table @ 5
			6	yellow white			Saturated, no odor
			7	orange/ Red	FG sandy clay, trace fines	CL/SC	Moist, no odor
		3.5 4	8				EOB @ 8'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110
Soil Boring ID No.: CF-AN05-SB-03
Sample Location: AN05

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliott

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN05-TMW-03	3-23-99	1540	Cloudy	5.09	.185	0.71	25.9	None
Total Depth: 16'		DTW: ~7'		Stickup: NA		Screen Int: 12-16'		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-AN05-SB-03
Date: 3-23-99
Time Start: 1507
Time End: 1531
Time Sample:
Amount Grout: 43 bag

Location Desc.: AN ~~N~~ SB-03 Ortega Farms Timuquana

Depth	Sample ID	PID / FID READINGS Sample	Borehole Reading	Breathing Zone	Remarks
2		0.8			1508
4		0.2			1510
6		0.2			1516
8		0.0	0.3	0.0	1516
10		0.3			1523
12		0.3			1523
14		0.1			1531
16		0.1			1531
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	~~(3)~~ 2 40 mil Vials	ENCO	YES
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	YES

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 13-1
Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL
COC #: 02313

Check If Collected:
[ ] MS / MSD
[ ] DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Bobcat)

BORING ID: CF-AN05-SB-03
DATE: 3-23-99
GEOLOGIST: J. Elliott
DRILLER: D. Hearns

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
		Hand Auger	1	Lt Tan	FG slightly silty sand	SP/SM	Dry, no odor, organic & shell debris
			2				Moist, no odor
			3	White	FG sand	SP	
			4				
			5	Yellow orange	FG clayey sand	SP/SC	
			6	orange/red	~~FG sandy clay~~	CL/SC	
			7		~~FG clayey sand~~	SC	Water Table @ 7' (clayey clay)
			8		FG sandy clay	CL/SC	Moist, no odor
			9				
			10				
			11				
			12				
			13		FG sand w/ clay ~~sized particles~~ dissolved in the water	SC	Very heavily saturated, no odor
			14				
			15		FG clayey sand		Saturated, no odor
		4	16				

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-AN05-SB-04
Sample Location: AN05

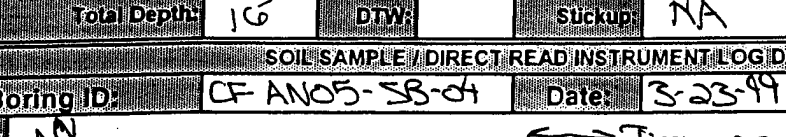
[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliott

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN05-~~SB-04~~ TMW-01	3-23-99	1634	clear	6.38	0.385	3.20	24.7	none
Total Depth:	16	DTW:		Stickup:	NA	Screen Int:	12-16'	

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID:	CF-AN05-SB-04	Date:	3-23-99	Time Start:	1544
Location Desc.:				Time End:	1622
				Time Sample:	1557
				Amount Grout:	75 bag

PID / FID READINGS

Depth	Sample ID	Sample	Borehole Reading	Breathing Zone	Remarks
2		0.3			1545
4		0.2			1547
6	CF-AN05-SB-04-5	0.3			1550
8		0.2	0.2	0.0	1552
10		0.2			1622
12		0.2			1622
14		0.2			1630
16		0.2			1630
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	yes
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	yes
EPA 8021B (WATER)	HCL	2 ~~(3)~~ 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-1

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL

COC #:

Check If Collected:

☐ MS / MSD ☐ DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DM050110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Bobcat)

BORING ID: CF-AN05-SB-04
DATE: 3-23-99
GEOLOGIST: J. Elliott
DRILLER: D. Hearne

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks
		Hand Auger	1	Lt Tan	FG very slightly silty sand	SP SM	Dry, no odor, organic debris
			2		FG sand	SP	Moist, no odor
			3	White			
			4				
			5				
Catcher time top overed			6				
			7	White + Orange	FG sandy clay	CL SC	~~Saturated~~ Moist; Water Table @ 7'
		5 4	8	Marbled			
			9				
			10	Yellow	~~FG Sandy Clayey Sand~~	CL SC	~~Heavily~~ Saturated/Moist Water Table @ 10' (due to clay)
			11				
		3 4	12	Orange/Red	FG Clayey Sand		Heavily Saturated
			13			SC	
			14				
			15				Saturated
		3 4	16				EOB @ 16'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110
Soil Boring ID No.: CF-ANOG-SB-01
Sample Location: CF-ANOG
Sampler: J. Elliott

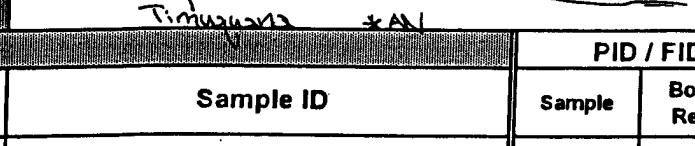
[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-ANOG-TMW-01	3-24-99	1101	clear	5.68	0.166	2.62	24.4	none
Total Depth: 16'		DTW: 6'		Suckup: NA		Screen Int: 12-16'		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-ANOG-SB-01
Date: 3-24-99
Time Start: 0953
Time End: 1024
Time Sample:
Amount Grout: 23 bags

Location Desc.: 

Depth	Sample ID	PID / FID Sample	PID / FID Borehole Reading	PID / FID Breathing Zone	Remarks
2		0.0			0955
4		0.0			0957
6		0.0			1007
8		0.0	0.0	0.0	~~1016~~ 1007
10		0.0			1016
12		0.0			1016
14		0.0			1024
16		0.0			1024
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	2 ~~(3)~~ 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 13-1
Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL
COC #:

Check If Collected:
[ ] MS / MSD
[ ] DUPLICATE / ID No.:

Signature(s): [signature]

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Bobcat)

BORING ID: CF-AOC-SB-01
DATE: 3-24-99
GEOLOGIST: J. Elliott
DRILLER: D. Hearne

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Description	USCS*	Remarks
		Hand Auger	1	Lt Tan	Asphalt & Limerock		
			2		FG slightly silty sand	SM	Dry, no odor, limerock & shell debris
			3	white	FG sand	SP	Moist, no odor
			4				
			5				
			6	orange	FG sand slightly silty/clayey	SP/SC	Water Table @ 6'
			7		FG clayey sand	SC	Moist, no odor
		3 4	8		FG sandy clay med. plasticity	CL	
			9	yellow			
			10	orange/Red	FG sand clay low plasticity		
			11				
		4 4	12				
			13		FG clayey sand	SC	Heavily saturated, no odor
			14				
			15				Saturated, no odor
		4 4	16				EOB @ 16'

other lime top covered

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110
Soil Boring ID No.: CF-ANOG-SB-02
Sample Location: ANOG
Sampler: J. Elliott

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-ANOG-TMW-02	3-24-99	1123	cloudy	5.68	0.143	1.63	24.4	none
Total Depth: 60'	DTW: 6'		Stickup: NA		Screen Int: 11-13'			

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-ANOG-SB-02
Date: 3-24-99
Time Start: 1049
Time End: 1109
Time Sample:
Amount Grout: 1/2 bag

Location Desc.: Center Turn Lane — 20' — SB-02 — N
Timuquana ←→

Depth	Sample ID	PID / FID Sample	Borehole Reading	Breathing Zone	Remarks
2		0.0			1046
4		0.0			1048
6		0.0			1059
8		0.0			1059
10		0.0			1102
12		0.0	0.0	0.0	~~1104~~ 1102
14		0.0			1109
16		0.0			1109
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	2 ~~(3)~~ 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 13-1
Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL
COC #:

Check If Collected:
[ ] MS / MSD
[ ] DUPLICATE / ID No.:

Signature(s): J. Elliott

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Bobcat)

BORING ID: CF-ANOC-SB-02
DATE: 3-21-99
GEOLOGIST: J. Elliott
DRILLER: D. Hearne

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Characteristics	USCS*	Remarks
		Hand Auger	1	Lt tan	Asphalt & limerock		
			2		FG slightly silty sand	SP/SM	Dry, no odor, limerock debris
			3				Moist, no odor
			4	White	FG sand	SP	
			5				
			6	Orange	FG clayey sand	SC	
			7		FG sandy clay	CL/SC	Water Table @ 6
			8				
			9	Red + White + Yellow	FG clayey sand	SC	
			10				
			11	Yellow			
		3	12	Orange	FG sand	SP	Heavily saturated, no odor
		4	13				
			14		FG clayey sand	SC	
			15				Saturated
		4	16				EOB @ 16

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110
Soil Boring ID No.: CF-ANOG-SB-03
Sample Location: ANOG
Sampler: J. Elliott

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-ANOG-TMW-03	3-24-99	1241	clear	6.06	0.165	1.74	25.5	none
Total Depth:	16'	DTW:	6'	Stickup:	NA	Screen Int:	11-15'	

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID:	CF-ANOG-SB-03	Date:	3-24-99	Time Start:	1155
Location Desc.:	Center Turn Lane SB-03 Timuquana ⇔ ANOG			Time End:	1217
				Time Sample:	1249
				Amount Grout:	1/3 bag

Depth	Sample ID	PID / FID READINGS Sample	Borehole Reading	Breathing Zone	Remarks
2		0.0			1156
4		0.0			1158
6		0.0			1204
8		0.0	0.0	0.0	1204
10		0.0			1211
12		0.0			1211
14		0.0			1217
16		0.0			1217
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	~~(3)~~ 5 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 13-1
Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL
COC #:

Check if Collected:
[ ] MS / MSD
[X] DUPLICATE / ID No.: CF-ANOG-TMW-DUP

Signature(s):

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Bobcat)

BORING ID: CF-AOC8-SB-03
DATE: 3-24-97
GEOLOGIST: J. Elliott
DRILLER: D. Hearne

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Description	USCS*	Remarks
		Hand Auger	1	Lt Tan	Asphalt & limerock		
			2		FG slightly silty Sand	SP/SM	Dry, no odor limerock fragments
			3	White	FG sand	SP	moist, no odor
			4				
			5				
o catchers			6	yellow	FG slightly clayey Sand	SP/SC	Water Table @ 6'
ume			7				
P		3	8	orange/red & white	FG sandy clay	CL/SC	
overed		4	9		FG clayey sand	SC	
			10				
			11				
		3 4	12				
			13	White w/ orange/red staining	FG sand w/ clay see particle in the water	SP/SC	Heavily Saturated, no odor
			14				
			15		FG sand, very slightly clayey		Saturated, no odor
		4 4	16				EOB @ 16'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110
Soil Boring ID No.: CF-ANOG-SB-04
Sample Location: ANOG

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliott

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-ANOG-TmW-04	3-24-99	1424	clear	6.08	0.281	2.36	25.2	none
Total Depth: 20'	DTW: 6.5'		Stickup: NA		Screen Int: ~~16-20'~~ (b/cos of clay)			

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID:	CF-ANOG-SB-04	Date:	3-24-99	Time Start:	1323
Location Desc.:	Tinnaqua ← → * AN • SB-04 Sidewalk			Time End:	1355
				Time Sample:	
				Amount Grout:	1/3 bag

Depth	Sample ID	PID / FID Sample	Borehole Reading	Breathing Zone	Remarks
2		0.0			1330
4		1.7	0.0	0.0	1332
6		0.0			1339
8		23.2			1339
10		0.0			1348
12		0.0			1348
14		0.0			1355
16		0.0			1555
18					
20			62.7	0.0	(0.0 down the rod)

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	2 ~~(3)~~ 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 13-1
Drilling Area Background (PPM): 0.0

screen set below water table b/cos would not produce water due to clay

LAB INFO

LAB: ENCO
Jax, FL
COC #:

Check if Collected:
[ ] MS / MSD
[ ] DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Bobcat)

BORING ID: CF-ANOG-SB-04
DATE: 3-24-99
GEOLOGIST: J. Elliott
DRILLER: D. Hearne

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
		Hand Auger	1		Asphalt & Limerock		
			2	Grey	FG silty sand	SM	Dry, no odor, limerock debris
			3				
			4	White & Black spotted	FG sand	SP	moist
catcher spoon recovered			5				
			6	Black	FG silty sand, w/ organics	SM/PT	organic Material Water Table @ 6.5'
			7	White	FG sand	SP	Saturated
		2.5 / 4	8				
			9	White			
			10	Grey	FG clayey sand	SC	
			11				
		4 / 4	12	Orange			
			13				
			14				
			15				
		4 / 4	16				EOB @ 16'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110
Soil Boring ID No.: CF- AN07 - SB-01
Sample Location: AN07

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. McClam

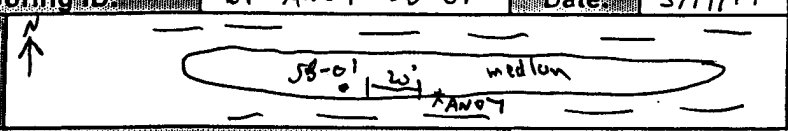
GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF - AN07 - TMW - 01	3/19/99	1015	Clear	5.56	.278	.66	23.2	None
Total Depth: 10'	DTW: ~5.0'		Stickup: NA		Screen Int: 6'-10'			

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-AN07-SB-01
Date: 3/19/99
Time Start: 0930
Time End: 0954
Time Sample: 1030
Amount Grout: 1/3 bag

Location Desc.:



Depth	Sample ID	PID / FID Sample	Borehole Reading	Breathing Zone	Remarks
2		0.0			0940
4	CF-AN07-SB-01-04	22.3			0944
6		25.8	0.0	0.0	0950 ~~EOB 6'~~
8		5.3			0954 EOB @ 8'
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	Yes
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	Yes
EPA 8021B (WATER)	HCL	~~2~~ 4 (3) 40 mil Vials	ENCO	Yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	Yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 13-1
Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL
COC #: 01598

Check if Collected:
[ ] MS / MSD
[ ] DUPLICATE / ID No.:

Signature(s): Jason A. McClam

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Bobcat)

BORING ID: CF-AN07-SB-01
DATE: 5/19/99
GEOLOGIST: J. McLaren
DRILLER: David helper: Nathan

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks
	1	HAND Auger		Brown - Lt. Brown	Fine-grained sand	SP	3" asphalt, Backfill material dry, No odor (rocks)
	2						
	3						
	4			White			moist, No odor
	5				Silty sand	SM	water table ~5.6', No odor
	6						wet, No odor, ~~sub @ 6'~~ gm
	7						
	8	2 2					sub @ 8'

* When rock coring, enter rock brokeness.

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

Remarks:

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110
Soil Boring ID No.: CF-AN07-SB-02
Sample Location: AN07
Sampler: J. McGann

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

GROUNDWATER SAMPLING DATA

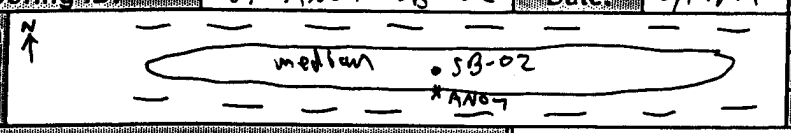
Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN07-TMW-02	3/19/99	1050	clear	5.30	.238	4.48	26.0	NONE
Total Depth: 10'	DTW: ~5.0'	Stickup: NA	Screen Int: 6'-10'					

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-AN07-SB-02 Date: 3/19/99

Time Start: 1035
Time End: 1045
Time Sample: 1100
Amount Grout: 43 bag

Location Desc.:



PID / FID READINGS

Depth	Sample ID	Sample	Borehole Reading	Breathing Zone	Remarks
2		7.8			1039
4	CF-AN07-SB-02-04	1.8			1042
6		5.0	0.0	0.0	1045 EOB @6'
8					
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	YES
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	YES
EPA 8021B (WATER)	HCL	2 (2) 40 mil Vials	ENCO	YES
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	YES

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-1

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL

COC #: 01598

Check If Collected:

☐ MS / MSD ☐ DUPLICATE / ID No.:

Signature(s): [signature]

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Bobcat)

BORING ID: CF-AN07-SB-02
DATE: 3/19/99
GEOLOGIST: J. McLaughlin
DRILLER: David helper: Nathan

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
	1	Hand Auger		Brown - lt. Brown	Fine-grained Sand	SP	3" asphalt, Backfill material dry, no odor (rocks)
	2						
	3						
	4			white			moist, no odor
	5				Silty Sand	SM	water table ~5.0', no odor
	6						wet, no odor EOB @ 6'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site:	NASCF - NASJAX Fuel Pipeline	Soil Boring ID No.:	CF-AN07-SB-03
Project No.:	0013 DM0050110	Sample Location:	AN07

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. McElum

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN07-TMW-03	3/19/99	1125	clear	6.21	.181	2.65	25.4	NONE
Total Depth: 10'	DTW: ~5.0'	Stickup: NA	Screen Int: 6'-10'					

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID:	CF-AN07-SB-03	Date:	3/19/99	Time Start:	1105
Location Desc.:				Time End:	1116
				Time Sampled:	
				Amount Grout:	1/3 bag

Depth	Sample ID	PID / FID READINGS Sample	Borehole Reading	Breathing Zone	Remarks
2		0.0			1110
4	~~CF-AN07-SB-03-04~~	1.6			1113
6		2.7	0.0	0.0	1116 EOB @ 6'
8					
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	~~yes~~ NA
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	~~yes~~ NA
EPA 8021B (WATER)	HCL	2 ~~(3)~~ 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-1

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL

COC #: 01598

Check if Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s): Jason O. McElum

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Bobcat)

BORING ID: CF-AN07-SB-03
DATE: 3/19/99
GEOLOGIST: J. McCann
DRILLER: Board helper: Nathan

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
	1	HAND Auger		Brown - Lt. Brown	Fine-grained sand	SP	3" asphalt, backfill material dry, No odor (rocks)
	2						
	3						
	4			white			moist, No odor
	5				silty sand	SM	water table ~5.0', No odor
	6						wet, No odor, GOB @ 6'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-AN07-SB-04
Sample Location: AN07

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. McLaury

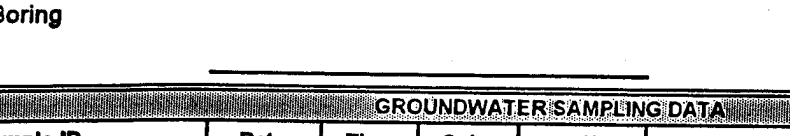
GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN07-TMW-04	3/19/99	1215	Clear	4.63	.243	1.24	21.9	NONE
Total Depth:	10'	DTW:	~5.0'	Suckup:	NA	Screen Int:	6'-10'	

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-AN07-SB-04
Date: 3/19/99
Time Start: 1135
Time End: 1152
Time Sample: 1225
Amount Grout: 1/3 bag

Location Desc.:



Depth	Sample ID	PID / FID READINGS Sample	Borehole Reading	Breathing Zone	Remarks
2		0.0			1140
4	CF-AN07-SB-04-04	0.0			1144
6		0.0			1150
8		0.0	0.6	0.0	1152 EOB @ 8'
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	yes
EPA 8310 (SOIL)	None	(1) ~~8 oz.~~ 4 oz. AG	ENCO	yes
EPA 8021B (WATER)	HCL	2 ~~(3)~~ 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 13-1
Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL
COC #: 01598

Check if Collected:
[ ] MS / MSD
[ ] DUPLICATE / ID No.:

Signature(s): Jason A McLaury

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Bobcat)

BORING ID: CF-AN07-SB-04
DATE: 3/19/99
GEOLOGIST: J. McLaurin
DRILLER: David helper: Nathan

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
	1	HAND Auger		Lt. Brown-Brown	Fine-grained sand	SP	organic debris, rocks, shells dry, no odor
	2			↓	↓	↓	↓
	3			White			
	4						moist, no odor
	5				Silty sand	SM	water table ~ 5.0', No odor
	6						wet, no odor
	7			Lt. Brown-Brown	Silty sand w/clay	SM/SC	
	8	4 4					EOB @ 8'

* When rock coring, enter rock brokeness.

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

Remarks:

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

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

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-AN08-SB-01
Sample Location: AN08

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliott

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN08-TMW-01	3-23-99	1018	White	6.56	0.460	1.63	23.1	none
Total Depth: 8'	DTW: 3'		Stickup: NA		Screen Int: 3-7'			

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-AN08-SB-01 Date: 3-23-99

Time Start: 0948
Time End: 1002
Time Sample:
Amount Grout: 1/3 bag

Location Desc.: Timuquana → 16.9' AN08 SB-01 Grass

Depth	Sample ID	PID / FID Sample	PID / FID Borehole Reading	PID / FID Breathing Zone	Remarks
2		7.8			0949
4		0.0			0951
6		0.0			1000
8		—	0.0	0.0	1002
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	2 ~~(3)~~ 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 131

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL

COC #: 02311

Check if Collected:

☐ MS / MSD ☐ DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Bobcat)

BORING ID: CF-AN08-SB-01
DATE: 3-23-99
GEOLOGIST: J. Elliott
DRILLER: D. Hearne

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
		Hand Auger	1	← Asphalt + Limerock			→
			2	BRN	FG silty sand	SP SM	Moist Dry, organic odor limerock debris
			3	LT Grey	FG sand	SP	Water Table @ 3'
			4				Heavily saturated, no odor
			5	LT Grey			
			6	Orange/ staining	FG clayey sand	SC	
			7	LT Grey/White	FG sand	SP	
		2.5 4	8				EOB @ 8'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-AN08-SB-02
Sample Location: AN08

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliott

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN08-TMW-02	3-23-99	1044	lt Tan	6.91	.405	3.24	22.2	none
Total Depth: 8'		DTW: 3'		Suckup: NA		Screen Int: 3-7'		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-AN08-SB-02 Date: 3-23-99

Location Desc.: NW Timuquana → SB-02 *AN ↑ Cypress

Time Start: 1021
Time End: 1033
Time Sample: 11 AM
Amount Grout: 1/3 bag

Depth	Sample ID	PID / FID READINGS Sample	Borehole Reading	Breathing Zone	Remarks
2	CF-AN08-SB-02-2	0.0			1022
4		0.0			1024
6		0.0			1033
8		0.0	0.0	0.0	1033
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	yes
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	yes
EPA 8021B (WATER)	HCL	~~(3)~~ 2 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-1

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL

COC #: 02311

Check If Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Bobcat)

BORING ID: CF-AN08-SB-00
DATE: 3-23-99
GEOLOGIST: J. Elliott
DRILLER: D. Hearne

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material classification	USCS*	Remarks
		Hand Auger	1	BN	FG silty sand	SP SM	Dry, no odor, organic, limerock + shell debris
			2	Lt Grey	FG sand	SP	moist no odor
			3				Water Table @3'
			4				Saturated heavily, no odor
catcher, lime tree covered			5	White			
			6	Lt Grey	FG clayey sand	SC	
			7				
		3 4	8				EOB@8'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-AN08-SB-03
Sample Location: AN08

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliott

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN08-TMW-03	3-23-99	1116	Tan	6.66	.381	1.25	22.2	none
Total Depth: 8		DTW: 3'		Stickup: NA		Screen Int: 3-7'		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-AN08-SB-03
Date: 3-23-99
Time Start: 1049
Time End: 1100
Time Sample:
Amount Grout: 2 bags

Location Desc.: Driveway / SB-03 *AN Timuquana Catoma

Depth	Sample ID	PID / FID Sample	PID / FID Borehole Reading	PID / FID Breathing Zone	Remarks
2		0.0			1050
4		0.0			1051
6		0.0			1102
8		0.0	0.0	0.0	1100
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	2 (3) 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-1

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL

COC #: 02311

Check if Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s): [signature]

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Bobcat)

BORING ID: CF-AN08-SB-05
DATE: 3-23-99
GEOLOGIST: J. Elliott
DRILLER: D. Hearne

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION Color	MATERIAL DESCRIPTION Material Description	USCS*	Remarks
		Hand Auger	1	Dk Grey	FG silty sand	SP/SM	Dry/Moist, no odor, organic & shell debris
			2	White w/ Black	MG sand w/ black organic material	SP (pt)	Moist, no odor
			3				
			4	LT Tan	FG slightly silty sand	SP/SM	Saturated, no odor
			5	White	FG Sand	SP	
			6	Lt. Grey	FG clayey sand	SC	
			7				
		3 4	8				EOB @ 8'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110
Soil Boring ID No.: CF-AN08-SB-04
Sample Location: AN08
Sampler: J. Elliott

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN08-TMW-04	3-23-99	1157	clear	6.85	0.812	5.27	23.7	None
Total Depth: 8'		DTW: 3.5'		Stickup: NA		Screen Int: 3-7'		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-AN08-SB-04
Date: 3-23-99
Time Start: 1139
Time End: 1148
Time Sample:
Amount Grout: 1/3 bag
Location Desc: AN SB-04 Timuquana AN

Depth	Sample ID	PID / FID READINGS Sample	Borehole Reading	Breathing Zone	Remarks
2		0.0			1140
4		0.0			1142
6		0.0			1148
8		0.0	0.0	0.0	1148
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	~~3~~ 5 (3) 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 13-1
Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL
COC #: 02311

Check if Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Bobcat)

BORING ID: CF-AN08-SB-04
DATE: 3-23-99
GEOLOGIST: J. Elliott
DRILLER: D. Hearne

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
		Hand Auger	1	BN	FG silty sand	SP/SM	Dry, no odor, organic & lime rock debris
			2				
			3	Lt Tan	FG sand, very slightly clayey	SP/SC	Moist, no odor
			4		FG sand	SP	Water Table @ 3.5'
Kitchen sample recovered			5				Saturated, no odor
			6	White			
			7	Lt Grey	FG clayey sand	SC	
		3 4	8				EOB @ 8'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: CTO 72
PROJECT NUMBER: 0613
DRILLING COMPANY: GWP.
DRILLING RIG: P-120

BORING NUMBER: CPF- AN08-15
DATE: 12/2/99
GEOLOGIST: [illegible]
DRILLER: Nick S.

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
		HAND auger				gray/ Lt. brown	Fine-grained sand	SM	organic debris, dry, no odor				
	2												
						gray							
	4								moist, no odor				0.0
		Drilling					silty sand		wet, no odor				
	6												
	8												
	10												0.0
	12												

* In rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks:

Converted to Well: Yes X No ____ Well I.D. #: CPF- AN08-15

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-AN09-SB-01
Sample Location: AN09

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliott

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN09-SB-01-TMW-01	3-19-99	1020	Clear	6.42	0.373	4.72	23.3	none
Total Depth: 8'	DTW: 4'	Stickup: NA	Screen Int: 4-8'					

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-AN09-SB-01
Date: 3-19-99
Time Start: 0934
Time End: 0958
Time Sampler:
Amount Grout: 1/3 bag

Location Desc.: N Center Turn Lane SB-01 20' AN 105'

Depth	Sample ID	PID / FID Sample	PID / FID Borehole Reading	PID / FID Breathing Zone	Remarks
2		1.4			0936
4		0.0	0.4	0.0	0940
6		0.0			0958
8		0.0	0.0	0.0	0958
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	2 set ~~(3)~~ 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 13-2
Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL
COC #: 01599

Check If Collected:
[ ] MS / MSD
[ ] DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe Track-Mounted

BORING ID: CF-AN09-SB-01
DATE: 3-19-99
GEOLOGIST: J. Elliott
DRILLER: R. Mooney

Sample No. and Type or RQD	Depth (FL) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION Color	MATERIAL DESCRIPTION Material Classification	USCS*	Remarks
		Hand auger	1	BN	FG silty sand	SM	Top .5' is Concrete & limerock
			2				Sand is dry, no odor
			3	Grey/BN	FG sand	SP	moist, no odor
			4				
			5				Saturated, no odor
			6	Lt Grey/Yellow	FG sand, very slightly clayey	SP/SC	
			7	Lt Grey	FG sand	SP	
		4	8				EOB @ 8'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-AN09-SB-02
Sample Location: AN09-

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliott

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN09-TMW-02	3-19-99	1045	Lt Tan	6.03	0.262	1.82	22.6	none
Total Depth: 8'	DTW: 3.5	Stickup: NA	Screen Int: 4-8'					

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-AN09-SB-02
Date: 3-18-99
Time Start: 0945
Time End: 1014
Time Sample:
Amount Grout: 1/3 bag

Location Desc.: Center Lane — MN — *AN — 20' — SB-02 — 10 3rd

Depth	Sample ID	PID / FID Sample	PID / FID Borehole Reading	PID / FID Breathing Zone	Remarks
2		3.0	~~3.0~~		0946
4		3.0	~~3.0~~		0948
6		0.2	~~0.2~~		1014
8		—	0.7	0.0	—
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	~~(3)~~ 5 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 13-2
Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL
COC #: 01599

Check if Collected:
[ ] MS / MSD
[ ] DUPLICATE / ID No.:

Signature(s): J. Elliott

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe Track-Mounted

BORING ID: CF-AN09-SB-00
DATE: 3-19-99
GEOLOGIST: J. Elliott
DRILLER: R. Mooney

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Description	USCS*	Remarks
		Hand Auger	1	BN	FG silty sand	SM	Top .5' is concrete + lime rock
			2				Sand is dry, no odor
			3	Tan/White	FG sand	SP	moist, no odor
			4				
			5				Water Table @ 3.5' heavily saturated, no odor
			6				
			7				
		1 0 4	8				EOB @ 8'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline

Project No.: 0013 DM0050110

Soil Boring ID No.: CF-AN09-SB-03

Sample Location: AN09

Sampler: J. Elliott

[X] Temporary Monitoring Well

[X] Soil Boring

[ ] Other:

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN09-~~S~~ TMW-03	3-19-99	1104	cloudy	5.96	0.314	2.79	23.5	none
Total Depth:	8'	DTW:	3.5	Stickup:	NA	Screen Int:	3-7'	

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-AN-09-SB-03 Date: 3-19-99

Location Desc: AN — — — — .SB03 Center Turn Lane — — — — — *AN 1052

Time Start: 0941

Time End: 1032

Time Sample: 1156

Amount Grout: 1/2 bag

Depth	Sample ID	PID / FID READINGS Sample	Borehole Reading	Breathing Zone	Remarks
2	CF-AN09-SB-03-2	1.4			0942
4		0.0			0944
6		0.0			1032
8		0.0	0.0	0.0	1032
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	yes
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	yes
EPA 8021B (WATER)	HCL	2 ~~(3)~~ 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-2

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO Jax, FL

COC #: 01599

Check If Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s): [signature]

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe Track-Mounted

BORING ID: CF-AN09-SB-03
DATE: 3-19-99
GEOLOGIST: J. Elliott
DRILLER: R. Mooney

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
		Hand Auger	1	Brn	FG Silty Sand	SM	Top .5' is concrete + lime rock
			2				sand is dry, no odor
			3	Lt Grey	FG sand, very slightly clayey	SP/SC	moist
			4				Water Table @ 3.9'
			5		FG sand	SP	Saturated, no odor
			6	V. Lt Grey	FG Sand, very slightly clayey	SP/SC	
			7				
		4 4	8				EOB @ 8'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-AN09-SB-04
Sample Location: AN09

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliott

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN09-TMW-04	3-19-99	1137	Lt Tan	5.63	0.127	2.36	20.0	none
Total Depth: ~~3~~ 8		DTW:	3.5'	Stickup:	NA	Screen Int:	3-7'	

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID:	CF-AN09-SB-04	Date:	3-	Time Start:	0949
Location Desc.:	NW D-way D-way Driveway *AN Timuyuana • SB-04			Time End:	1113
				Time Sample:	
				Amount Grout:	

Depth	Sample ID	PID / FID Sample	PID / FID Borehole Reading	PID / FID Breathing Zone	Remarks
2		0.0			0950
4		0.0			0952
6		2.2			1113
8		—	0.0	0.0	1113
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	2 ~~(3)~~ 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-2

Drilling Area Background (PPM): ~~3~~ 0.0

LAB INFO

LAB: ENCO
Jax, FL

COC #: 01599

Check if Collected:

☐ MS / MSD ☐ DUPLICATE / ID No.:

Signature(s): J. Elliott

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe

BORING ID: CF-AN09-SB-04
DATE: 3-19-99
GEOLOGIST: J Elliott
DRILLER: R. Mooney

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
		Hand Auger	1	BN	FG silty sand	SM	Dry, no odor, organic Debris
			2	White	MG ~~FG~~ sand	SP	Moist, no odor
			3				Water Table @ 3.5'
			4	BN	FG silty sand	SM	Saturated, no odor
			5	White	FG sand	SP	
			6	Lt Grey	FG sand, slightly silty	SP/SC	
			7				
		4	8				EOB @ 8'

Other zone of is

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110
Soil Boring ID No.: CF-AN09-SB-03
Sample Location: AN09
Sampler: J. Elliott

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN09-TMW-05	3-19-99	1201	LT Tan	5.56	0.158	1.81	19.8	none
Total Depth: 8'		DTW: 3.5		Suckup: NA		Screen Int: 3-7'		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-AN09-TMW-03 Date: 3-19-99
Time Start: 1116
Time End: 1141
Time Sample:
Amount Grout: 1/3 bag
Location Desc.: ↑N *AN Timuquana Dway (SB-03 Driveway)

Depth	Sample ID	PID / FID Sample	Borehole Reading	Breathing Zone	Remarks
2		0.0			1117
4		0.0	0.0	0.0	1119
6		5.2			1141
8		2.6			1141
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	2 ~~(3)~~ 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-2

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL
COC #: 01599

Check if Collected:
☐ MS / MSD ☐ DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe Track-Mounted

BORING ID: CF-AN09-SB-03
DATE: 3-19-99
GEOLOGIST: J. Elliott
DRILLER: R. Mooney

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Characteristics	USCS*	Remarks
		Hand Auger	1	BN	FG silty sand	SM	Dry, no odor, Organic + Limerock Debris
			2				moist
			3	White	MG sand	SP	Water Table @ 3.5'
			4	BN	FG silty sand	SM	Saturated, no odor
			5	Lt Tan	FG sand	SP	
			6	White			
			7	Lt Gray	FG sand, slightly clayey	SP/SC	
		4	8				EOB @ 8'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: CTO 72
PROJECT NUMBER: 0013
DRILLING COMPANY: GWP
DRILLING RIG: D-120
BORING NUMBER: CEF-AN09-15
DATE: 12/2/94
GEOLOGIST: [illegible]
DRILLER: Nick S.

Sample No. and Type or RQD	Depth (Ft) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ**	Borehole**	Driller BZ**
		Hand Auger				gray	Fine grained sand	SM	organic debris, dry, no odor				
	2												
	4								moist, no odor				0.0
		Drilling					silty sand		wet, no odor				
	6												
	8												
	10												0.0
	12												

* In rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks:

Converted to Well: Yes X No ____ Well I.D. #: CEF-AN09-15

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-AN10-SB-01
Sample Location: SE of AN10

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliott

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN10-TMW-01	3-18-99	1136	cloudy	6.63	0.544	5.20	22.3	none
Total Depth:	14'	DTW:	2'	Stickup:	NA	Screen Int:	3-7'	

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-AN10-SB-01 Date: 3-18-99 Time Start: 1054
Time End: 1109
Time Sample:
Amount Grout: 1/3 bag

Location Desc.:

PID / FID READINGS

Depth	Sample ID	Sample	Borehole Reading	Breathing Zone	Remarks
2		0.0			1056
4		0.0			1058
6		0.0			1101
8		0.0			1109
10		0.0	0.0	0.0	1109
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	~~(3)~~ 4 40 ml Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-2

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL

COC #: 01596

Check If Collected:

☐ MS / MSD ☐ DUPLICATE / ID No.:

Signature(s): J. Elliott

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe Track-Mounted

BORING ID: SE CF-AN10-SB-01
DATE: 3-18-99
GEOLOGIST: J. Elliott
DRILLER: R. Mooney

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Description	USCS*	Remarks
		Hand Auger	1		Asphalt		Dry/moist, no odor
			2	Grey	FG sand, very slightly clayey/silty	SC	Saturated, no odor
			3		FG sandy clay, ^60% fines	CL	
			4		Lever stringers of ~~very~~ slightly clayey sand	CL/SC	sand is heavily saturated, clay is moist no odor
			5	spotted w/ orange			
			6		~~Sand~~ FG sandy clay, high plasticity		
			7		FG clayey sand		
			8				
			9		FG sandy clays		
		4 4	10				
			11		FG sand, clayey	SC	Heavily saturated (fill out of sampler)
			12				
			13				
		0 0	14		~~FG~~ VF sandy		EOB@14'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-AN10-SB-02
Sample Location: AN10

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliott

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN10-TMW-02	3-18-99	1304	LT Tan	6.8	0.593	2.35	24.7	none
Total Depth: 10'	DTW: 2.5'	Suckup: NA	Screen Int: 3-7'					

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-AN10-SB-02
Date: 3-18-99
Time Start: 1153
Time End: 1217
Time Sample:
Amount Grout: 1/3 bag
Location Desc: Old Timuquana #AN10 ~20.1' 20' SB-02

Depth	Sample ID	PID / FID Sample	Borehole Reading	Breathing Zone	Remarks
2		0.0			1156
4		0.0			1159
6		0.0			1202
8		0.0			1217
10		0.0	0.0	0.0	1217
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	~~(3)~~ 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 13-2
Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL
COC #: 01586

Check if Collected:
[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe Track-Mounted

BORING ID: CF-AN10-SB-00
DATE: 3-18-99
GEOLOGIST: J. Elliott
DRILLER: R. Mooney

Sample No. and Type or RQD	Depth (Ft) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
		Hand Auger	1	BN	FG slightly silty sand	SP/SM	Dry, no odor
			2	Grey	FG sand, very slightly clayey	SP/SC	moist no odor saturated Water Table @ 2.5'
			3		Sandy Clay, stiff ~50% fines	CL/SC	Clay + sand are saturated, no odor
			4	Grey spotted with orange & red	FG Sandy Clay, medium plasticity, ~50% fines		
			5				
			6				
			7		FG clayey sand	SC	
			8	Grey	Sandy Clay, stiff, w/ pockets of clay	CL/SC	moist/saturated, no odor
			9				
		4 4	10		FG sand sandy clay	SP SC/CL	saturated, no odor moist/saturated
							EOB@10

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-AN10-SB-03
Sample Location: AN10

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliott

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN10-TMW-03	3-18-99	1409	Grey	7.07	0.399	0.04	21.9	none
Total Depth: 8'	DTW: ~.5'	Stickup: NA	Screen Int: 0-4'					

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-AN10-SB-03
Date: 3-18-99
Location Desc.: N ~~AN~~ old Timaquana ~~SB-03-.5~~ SB-03
Drainage Ditch

Time Start: 1308
Time End: 1331
Time Sample: 1349
Amount Grout: 3 bag

Depth	Sample ID	PID / FID Sample	PID / FID Borehole Reading	PID / FID Breathing Zone	Remarks
2	CF-AN10-SB-03-.5	0.0			1310
4		0.0			1312
6		0.0			1331
8		0.0	0.0	0.0	1331
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	yes
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	yes
EPA 8021B (WATER)	HCL	~~(3)~~ 2 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 13-2
Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL
COC #: 01596

Check If Collected:
[ ] MS / MSD
[ ] DUPLICATE / ID No.:

Signature(s): [signature]

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe Truck-Mounted

BORING ID: CF-AN10-SB-03
DATE: 3-18-99
GEOLOGIST: J. Elliott
DRILLER: R. Mooney

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
		Hand Auger	1	BN	FG slightly silty sand	SP/SM	Moist, Standing Water at .5'
			2				Shell fragments + organic debris
			3				Saturated, no odor
			4				
			5	Gray	Sandy Clay	CL/SC	
			6	Red + Orange Spotted	Clayey FG Sand	SC	
			7		Sandy Clay	CL/SC	
		3.5 4	8				EOB @ 8'

(Boring is located next to a drainage ditch)

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-AN10-SB-04
Sample Location: AN10

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliott

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN10-TMW-04	3-18-99	1611	Lt Tan	6.55	0.324	4.50	27.0	none
Total Depth:	10'	DTW:	~3'	Stickup:	NA	Screen Int:	3-7'	

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-AN10-SB-04
Date: 3-18-99
Time Start: 1525
Time End: 1546
Time Sample: ~~1349~~
Amount Grout: 1/3 bag

Location Desc.: N SB-04 Old Timuquana Rd *AN

Depth	Sample ID	PID / FID Sample	Borehole Reading	Breathing Zone	Remarks
2		0.8			1527
4		0.7			1529
6		1.5			1531
8		2.3			1546
10		1.0	0.0	0.0	1546
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	~~5~~ (3) 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-2

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL

COC #:

Check if Collected:

☐ MS / MSD ☐ DUPLICATE / ID No.:

Signature(s): J. Elliott

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe Track-Mounted

BORING ID: CF-ANIO-SB-04
DATE: 3-18-99
GEOLOGIST: J. Elliott
DRILLER: R. Mooney

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
		Hand Auger	1	Grey/BN	~~Asphalt~~ FG slightly silty sand	~~SP~~/SM	Moist, no odor
			2				Organic debris & shell fragments
			3	Grey	~~SP~~ Sandy Clay, FG, medium/high plasticity	CL/SC	Water Table @ 3'
			4				Saturated
			5		FG very slightly clayey sand	~~SP~~/SC	Heavily Saturated, no odor
			6				
			7		Clayey Sand, FG	SC	Saturated, no odor
			8				
			9		~~Sandy Clay~~	CL/SC	
		3 4	10	Lt Tan	Clayey Sand	SC	EOB @ 10'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: CTO 72
PROJECT NUMBER: 0013
DRILLING COMPANY: GWP.
DRILLING RIG: D-120

BORING NUMBER: CEF-AN10-15
DATE: 11/30/94
GEOLOGIST: [illegible]
DRILLER: Nick S.

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
		Hand Auger				Gray-Light gray	Fine-grained sand	SM	3" Asphalt, Backfill mat., dry, no odor				
	2												0.0
									No odor, Moist				
	4					Light Brown	Silty sand		Wet, No odor				0.0
		Drilling											
	6												
	8												
						Light Brown to Brown	Silty sand w/ clay	SM/SC					
	10												0.0
	12												

* In rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks:

Converted to Well: Yes X No ____ Well I.D. #: CEF-AN10-15

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110
Soil Boring ID No.: CF-AN11-SB-01
Sample Location: AN11
Sampler: J. McClam

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN11-TMW-01	3/17/94	1130	Lt. Gray	NA	NA	NA	NA	None
Total Depth: 16'	DTW: ~14.0'	Suckup: NA	Screen Int: 12'-16'					

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-AN11-SB-01
Date: 3/17/94
Time Start: 1010
Time End: 1115
Time Sample:
Amount Grout: 1/3 bag

Location Desc.: N ↑ median SB-01 20' x AN11

PID / FID READINGS

Depth	Sample ID	Sample	Borehole Reading	Breathing Zone	Remarks
2		0.0			1015
4		0.9			1018
6		0.0			1024
8		0.0			1025
10		0.0			1045
12		0.0	0.0	0.0	1046
14		0.0			1101
16		0.0			1102 EOB @ 16'
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG.	ENCO	
EPA 8021B (WATER)	HCL	2 MAX (3) 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 13-1
Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL
COC #: 01593

Check If Collected:
[ ] MS / MSD
[ ] DUPLICATE / ID No.:

Signature(s): Jason L. McClam

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Bobcat)

BORING ID: CF-AN11-SB-01
DATE: 3/17/99
GEOLOGIST: J. McLuran
DRILLER: David Gelpew! Nathan

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
	1	Hand Auger		Gray-black	Fine-grained sand	SP	3" asphalt Backfill material (sand) dry, No odor
	2			↓			
	3			Gray			
	4				↓	↓	
	5				Fine-grained sand w/clay	SP/SC	moist, No odor
	6				Clay	SC	
	7						
	8	4 4					
	9						
	10						
	11						
	12	4 4			Traces of Fine-grained sand		
	13			↓	↓	↓	↓
	14			Gray-Black	Silty sand	SM	Wet, No odor water Table ~14'
	15			↓	↓	↓	↓
	16	4 4		Gray	clay	SC	moist, No odor EOB@16'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-AN11-SB-02
Sample Location: AN11

Sampler: J. McGann

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN11-TMW-02	3/17/99	1255	Milky Brown	5.11	.395	1.70	27.8	NONE
Total Depth: 20'	DTW: ~16.0'		Stickup: NA		Screen Int: 16'-20'			

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-AN11-SB-02
Date: 3/17/99
Time Start: 1200
Time End: 1245
Time Sample: 1240
Amount Grout: 1/3 bag

Location Desc.: N ↑ — medium — SB-02 AN11

Depth	Sample ID	PID / FID Sample	Borehole Reading	Breathing Zone	Remarks
2		0.0			1205
4		0.0			1208
6		0.0			1217
8		0.0			1223
10		0.0	0.0	0.0	1224
12		0.0			1231
14		0.0			1232
16	CF-AN11-SB-02-15	0.0			1240
18		0.0			1241 EOB @ 18'
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	Yes
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	Yes
EPA 8021B (WATER)	HCL	2 ~~(3)~~ 40 ml Vials	ENCO	Yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	Yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 13-1
Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL
COC #: 01593

Check If Collected:
[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s): Jason A. McGann

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Bobcat)

BORING ID: CF-AN11-SB-02
DATE: 3/17/99
GEOLOGIST: J. McLuna
DRILLER: David, Helper: Nathan

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
	1	1 HAND Auger		Gray-Black	Fine-grained Sand	SP	3" asphalt, Backfill material dry, no odor
	2			↓	↓	↓	↓
	3			Gray			
	4				↓	↓	
	5				Fine-grained sand w/clay	SP/SC	
	6			↓	clay	SC	
	7			Gray-red			
	8						
	9						
	10	3 4					
	11						
	12			Gray			
	13				↓	↓	↓
	14	4 4			clay w/ Traces of fine grained sand	/SP	moist, No odor
	15				clay	SC	↓
	16				clay w/ Traces of silty sand	SC/SM	wet, No odor W.T. ~16'
	17				clay w/ Traces of fine grained sand	SC/SP	moist, no odor
	18	4 4		↓	↓	↓	↓ EOB @ 18'
	19						
	20						

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site:	NASCF - NASJAX Fuel Pipeline	Soil Boring ID No.:	CF-AN11-SB-02B
Project No.:	0013 DM0050110	Sample Location:	AN11
[X] Temporary Monitoring Well		Sampler:	J. McLann
[X] Soil Boring			
[ ] Other:			

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN11-JMW-02	3/17/99	— not taken						
Total Depth: —	DTW: —	Stickup: —	Screen Int: —					

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID:	CF-AN11-SB-02	Date:	3/17/99	Time Start:	1140
Location Desc.	N ↑ median SB-02 AN11			Time End:	1155
				Time Sample:	1620
				Amount Grout:	1/3 bag

Depth	Sample ID	PID / FID READINGS Sample	Borehole Reading	Breathing Zone	Remarks
2		0.0			1144
4		0.0	0.0	0.0	1148
~~8~~ 5	CF-AN11-SB-02B-05	39.9	0.0	0.0	1155
8					
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	yes
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	yes
EPA 8021B (WATER)	HCL	2 ~~(3)~~ 40 mil Vials	ENCO	ND
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	ND

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-1

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL

COC #: 01593

Check If Collected:

☐ MS / MSD ☐ DUPLICATE / ID No.:

Signature(s): Jason A. McLann

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Bobcat)

BORING ID: CF-AN11-SB-02
DATE: 3/17/99
GEOLOGIST: J. McLemn
DRILLER: David helper: Nathan

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
	1	1 Hand Auger		Gray - black	fine-grained sand	SP	3" asphalt, backfill material dry, no odor
	2			↓	↓	↓	↓
	3			Gray-brown			
	4			↓			
	5			GRAY	↓	↓	Hit refusal ↓ EOBG 5'
	6						moving boring a 1½ N.
	7						
	8	1 4					

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-AN11-SB-03
Sample Location: AN11

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. McLean

GROUNDWATER SAMPLING DATA

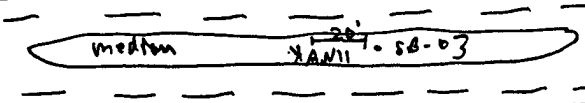
Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN11-TMW-03	3/17/94	1440	clear	4.89	.204	2.72	27.0	None
Total Depth: 18'	DTW: 16.0'		Stickup: NA		Screen Int: 14'-18'			

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-AN11-SB-03 Date: 3/17/94

Time Start: 1350
Time End: 1421
Time Sample: 1455
Amount Grout: 1/3 bag

Location Desc.:



Depth	Sample ID	PID / FID Sample	Borehole Reading	Breathing Zone	Remarks
2		8.3			1355
4	CF-AN11-SB-03-04	12.0			1358
6		3.8			1404
8		0.0			1410
10		0.0	0.0	0.0	1411
12		0.0			1415
14		0.0			1416
16		0.1			1420
18		0.4			1421 GOB @18'
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	yes
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	yes
EPA 8021B (WATER)	HCL	2 pair (a) 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-1

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL

COC #: 01573

Check if Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s): Jason J. McLean

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Bobcat)

BORING ID: CF-AN 11-SB-03
DATE: 3/17/99
GEOLOGIST: J. McCann
DRILLER: David Helper: Nathan

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
	1	1 ft and Auger		Gray-Black	Fine-grained sand	SP	3" asphalt, Backfill material dry, No odor
	2			Gray			
	3						
	4				Fine-grained sand w/clay	SP/SC	
	5				clay	SC	Moist, No odor
	6						
	7						
	8						
	9						
	10	4 4					
	11						
	12			Gray-Dk. Gray	Clay w/Fine grained Sand	SC/SP	
	13						
	14	4 4					
	15			Gray			very moist, No odor
	16						water table ~16.0', No odor
	17						wet, No odor
	18	4 4					EOB @18'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-AN11-SB-04
Sample Location: AN11

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. McCann

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN11-TMW-04	3/17/99	1610	milky grey	5.18	.136	1.58	27.0	None
Total Depth:	14'	DTW:	~11.0'	Stickup:	NA	Screen Int:	10'-14'	

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID:	CF-AN11-SB-04	Date:	3/17/99
Time Start:	1520		
Time End:	1600		
Time Sample:			
Amount Grout:	1/3 bag		

Location Desc.: N ↑ median & AN11 • SB-04

Depth	Sample ID	PID / FID Readings: Sample	Borehole Reading	Breathing Zone	Remarks
2		2.4			1532
4		6.7			1537
6		4.6			1545
8		6.7			1551
10		0.2			1552
12		3.7			1558
14		7.4	0.0	0.0	1559 EOB @14
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	2 of ~~(3)~~ 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-1

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL

COC #: 01593

Check If Collected:
☐ MS / MSD ☐ DUPLICATE / ID No.:

Signature(s): [signature]

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Bobcat)

BORING ID: CF-AN11-SB-04
DATE: 3/17/99
GEOLOGIST: J. McLann
DRILLER: David helper: Nathan

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION Color	MATERIAL DESCRIPTION Material Classification	USCS*	Remarks
	1	Hand Auger		Gray - dk. Gray	Fine-grained Sand	SP	organic debris, dry, No odor
	2			↓	↓	↓	↓
	3			Gray	Fine-grained Sand w/ clay	SP/SC	↓
	4			↓	↓	↓	moist, No odor
	5			↓	clay	SC	↓
	6	↓		↓	↓	↓	↓
	7			↓	↓	↓	↓
	8			↓	↓	↓	↓
	9			↓	↓	↓	↓
	10	4 4		↓	clay w/ fine-grained Sand	SC/SP	very moist, No odor ↓
	11			↓	↓		Water Table ~ 11.0', No odor
	12			↓	clay	SC	wet, No odor
	13			↓	Fine-grained Sand w/ clay	SP/SC	↓
	14	4 4		↓	↓	↓	↓ EOB @ 14'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-AN12-SB-01
Sample Location: AN12

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J Elliott

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN12-TMW-01	3-16-99	1517	Tan	6.34	.842	2.63	24.4	none
Total Depth: 13'	DTW: 9'		Stickup: NA		Screen Int: 9-13' pushed down to 11-13' see fieldbk			

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-AN12-SB-01
Date: 3-16-99
Time Start: 1408
Time End: 1437
Time Sample:
Amount Grout: 1/2 bag

Location Desc.: Center Turn Lane - 20' - SB-01

Depth	Sample ID	PID / FID Sample	PID / FID Borehole Reading	PID / FID Breathing Zone	Remarks
2		0.0			1409
4		0.0	0.0	0.0	1412
6		0.0			1426
8		0.0			1426
10		0.0			1437
12		0.0	0.0	0.0	1437
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	(2) 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 13-2
Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL
COC #: 01592

Check if Collected:
[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe Track-Mounted

BORING ID: CF-AN12-SB-01
DATE: 3-16-99
GEOLOGIST: J. Elliott
DRILLER: R. Mooney

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION Color	MATERIAL DESCRIPTION Material Classification	USCS*	Remarks
		Hand Auger	1	BN	FG silty sand	SM	Dry, no odor (covered by 12" of asphalt & limerock fill)
			2				
			3				Moist, shell fragments & limerock pockets, clasts
			4				
			5	DK BN			Moist, no odor
			6				
			7				
			8				
			9				Water Table @ 9'
			10				Moist/Saturated
			11	Yellow/White	FG sand, very slightly silty	SP	Saturated, no odor
		4	12				EOB @ 12'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-AN12-SB-02
Sample Location: AN12

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. McCann

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN12-TMW-02	3/16/99	1525	Lt. Gray (cloudy)	6.37	.442	2.64	25.0	NONE
Total Depth: 13'	DTW: -9.0'	Stickup: NA	Screen Int: 9-13'					

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-AN12-SB-02
Date: 3/16/99
Time Start: 1455
Time End: 1513
Time Sample:
Amount Grout: V3 bag

Location Desc: N ↑ medium SB-02 ~120' to AN12

PID / FID READINGS

Depth	Sample ID	Sample	Borehole Reading	Breathing Zone	Remarks
2		0.0			1458
4		0.0			1502
6		0.0			1506
8		0.0			1507
10		0.0			1510
12		5.5	0.0	0.0	1511 EOD @12'
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	2 ~~(3)~~ 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 13-1
Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL
COC #: 01592

Check If Collected:
[ ] MS / MSD
[ ] DUPLICATE / ID No.:

Signature(s): Jason A. McCann

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Bobcat)

BORING ID: CF-AN12-SB-02
DATE: 3/16/99
GEOLOGIST: J. McLean
DRILLER: David Helper, NAPhan

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
	1	HAND Auger		Gray ~ Black	Fine-grained Sand	SP	3" asphalt, Back fill material (rocks) dry, no odor
	2						
	3						
	4						
	5						dry, Back fill material (rocks)
	6						shells
	7						
	8	4 4					moist, no odor
	9			Gray			water table ~9.0', no odor
	10				Silty sand	SM	wet, no odor
	11			Lt. Brown			
	12	4 4					wet, No odor EOB 612

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-AN12-SB-03
Sample Location: AN12

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliott

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN12-TMW-03	3-16-99	1539	Tan	5.58	0.151	4.06	25°	none
Total Depth: 16'	DTW: ~10.5	Stickup: NA	Screen Int: 12-16' (having trouble producing water)					

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-AN12-SB-03
Date: 3-16-99
Time Start: 1420
Time End: 1522
Time Sample: 1522
Amount Grout: 1/3 bag

Location Desc.: NN - turn lane
• SB-03
*AN

PID / FID READINGS

Depth	Sample ID	Sample	Borehole Reading	Breathing Zone	Remarks
2		0.0			~~1508~~ 1420
4		0.0			1425
6		0.0			1508
8		0.0			1508
10	CF-AN12-SB-03-10	0.0			1520
12		3.8	0.0	0.0	1522
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	yes
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	yes
EPA 8021B (WATER)	HCL	~~(3)~~ 2 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 13-2
Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL
COC #: 01592

Check if Collected:
[ ] MS / MSD
[ ] DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe Track-Mounted

BORING ID: CF-AN12-SB-03
DATE: 3-16-99
GEOLOGIST: J. Elliott
DRILLER: R Mooney

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
		Hand Auger	1	BN	FG Silty Sand	SM	Dry, no odor top 2" inches are asphalt + limerock shell fragments, + limerock pockets, w/ some clasts (subrounded) Moist
			2				
			3				
			4				
			5				
			6				
			7				
			8				
			9				
			10				
			11	Yellow/White		SP/SM	Water Table @ 9.5' Saturated, no odor
			12				EOB @ 12'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-AN13-SB-01
Sample Location: AN13

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. McCann

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN13-TMW-01	3/16/99	1105	dk. brown	5.63	.231	1.02	23.0	None
Total Depth:	12'	DTW:	7.0'	Stickup:	NA	Screen Int:	8-12'	

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID:	CF-AN13-SB-01	Date:	3/16/99	Time Start:	1035
Location Desc.:	N; medish; SB-01 AN13			Time End:	1055
				Time Sample:	1050
				Amount Grout:	Y3 bag

Depth	Sample ID	PID / FID Sample	Borehole Reading	Breathing Zone	Remarks
2		0.0			1037
4		0.0			1042
6	CF-AN13-SB-01-06	0.0			1050
8		0.0	0.0	0.0	1051 EOB @8'
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	yes
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	yes
EPA 8021B (WATER)	HCL	2 ~~(8)~~ 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-1

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL

COC #: 01591

Check If Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s): J. McCann

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Robert)

BORING ID: CF-AN13-SB-01
DATE: 3/16/99
GEOLOGIST: J. McGinn
DRILLER: David helper: Nathan

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
	1	HAND Auger		Gray-Black	Fine-grained sand	SP	organic debris, dry, no odor
	2			↓	↓	↓	↓
	3			↓	↓	↓	dry, no odor
	4			Brown	↓	↓	↓
	5			↓	↓	↓	↓
	6			Gray-Brown	Fine-grained silty sand	SP/SM	moist, no odor
	7			↓	↓	↓	water table ~7.0, no odor
	8	2 4		Dk. Brown	↓	↓	wet, no odor GOBGB

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-AN13-SB-03
Sample Location: AN13

Sampler: J. Elliott

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN13-SB-03	3-16-99	1212	clear slightly	5.15	0.187	0.74	23.2	none
Total Depth: 10'	DTW: 6.5	Suckup: NA	Screen Int: 8-10'	8-12'				

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-AN13-SB-03
Date: 3-16-99
Time Start: 1123
Time End: 1136
Time Sample:
Amount Grout: 1/2 bag
Location Desc: AN median

Depth	Sample ID	PID / FID Sample	Borehole Reading	Breathing Zone	Remarks
2		0.0			1124
4		0.0			1125
6		0.0			1136
8		0.0	0.0	0.0	1136
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	(3) 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 13-2
Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL
COC #: 01591

Check if Collected:
[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe Track-Mounted

BORING ID: CF-ANI3-SB-03
DATE: 3-16-99
GEOLOGIST: J. Elliott
DRILLER: R. Mooney

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION Color	MATERIAL DESCRIPTION Material Description	USCS*	Remarks
		Hand Auger	1	BN	FG silty sand	SM	Dry, organic debris no odor
			2				Moist, organic debris no odor
			3	Grey Blk			
			4				
			5				
			6	White Tan	FG Sand	SP	Water Table @ 6.5'
			7		FG silty sand	SP/SM	Saturated, no odor
		3 4	8	BN		SM	EOB @ 8'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-AN13-SB-03
Sample Location: AN13

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. McCann

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN13-TMW-03	3/16/99	1150	Brown	5.21	.112	.98	22.9	None
Total Depth:	10'	DTW:	~7.0'	Stickup:	NA	Screen Int:	6'-10'	

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-AN13-SB-03
Date: 3/16/99
Time Start: 1125
Time End: 1137
Time Sample:
Amount Grout: 1/3 bag

Location Desc.: N ↑ Median AN13, 20', SB-03

PID / FID READINGS

Depth	Sample ID	Sample	Borehole Reading	Breathing Zone	Remarks
2		0.0			1129
4		0.0			1132
6		0.0			1134
8		0.0	0.0	0.0	1135 EOB 8'
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	2 ~~(3)~~ 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 13-1
Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL
COC #: 01591

Check if Collected:
[ ] MS / MSD
[ ] DUPLICATE / ID No.:

Signature(s): Jason J. McCann

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Bobcat)

BORING ID: CF-AN13-SB-03
DATE: 3/16/99
GEOLOGIST: J. McGann
DRILLER: David helper: Nathan

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
	1	17 and auger		Gray-Black	Fine-grained sand	SP	organic debris, dry, no odor
	2			Gray			
	3						dry, no odor
	4						
	5			Brown			moist, no odor
	6			Dk-Brown	Fine-grained silty sand	SP/SM	
	7						water table ~7.0', no odor
	8	4 4					wet, no odor EOB@8'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-AN14-SB-01
Sample Location: AN 14

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliott

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN14-~~SB~~-01 TMW-01	3-16-99	1031	BN	5.46	0.159	1.34	22.3	none
Total Depth: 13'	DTW: 8.5'	Stickup: NA	Screen Int: 9-13'					

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-AN14-SB-01
Date: 3-16-99
Time Start: 0948
Time End: 1016
Time Sample:
Amount Grout: 1/3 bag

Location Desc.:

PID / FID READINGS

Depth	Sample ID	Sample	Borehole Reading	Breathing Zone	Remarks
2		0.0			0951
4		0.0			0958
6		0.0			1003
8		0.0	0.0	0.0	1003
10		0.0			1016
12		0.0			1016
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	~~(3)~~ 2 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 132
Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL
COC #: 01590

Check If Collected:
☐ MS / MSD ☐ DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe Track-Mounted

BORING ID: CF-AN14-SB-01
DATE: 3-16-99
GEOLOGIST: J. Elliott
DRILLER: R. Mooney

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION Color	MATERIAL DESCRIPTION Material Classification	USCS*	Remarks
		Hand Auger	1	Grey BK	FG Silty Sand	SM	Dry, no odor, organic debris
			2				moist, no odor
			3				
			4			SM/SP	
			5				moist no odor organic debris
			6	Blk	FG clayey sand	SC	
			7	Tan	FG silty sand	SM/SC	moist, no odor
	3.5	4	8	White / Tan	~~FG sand~~ / FG silty sand	SP / SM/SC	~~Water Table ~7.8'~~ / ~~Water Table ~7.8'~~
			9	BN		SM	~~Water Table ~8.5'~~
			10				Heavily Saturated, no odor Organic Debris
			11				
	4	4	12	DK RD BN			Saturated/moist FOR@12'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110
Soil Boring ID No.: CF-AN14-SB-02
Sample Location: AN14

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. McGann

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN14-TMW-02	3/16/99	1020	Brown	5.01	.176	1.19	22.1	None
Total Depth: 12'	DTW: 7.0'	Stickup: NA	Screen Int: 8'-12'					

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-AN14-SB-02
Date: 3/16/99
Time Start: 0950
Time End: 1005
Time Sample:
Amount Grout: 1/3 bag

Location Desc.: N ↑ Median AN14 #20 SB-02

PID / FID READINGS

Depth	Sample ID	Sample	Borehole Reading	Breathing Zone	Remarks
2		0.0			0954
4		0.0			0956
6		0.0			1004
8		0.0	0.0	0.0	1005 EOB 8'
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	2 ~~(3)~~ 40 ml Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 13-1
Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL
COC #: 01590

Check If Collected:
[ ] MS / MSD
[ ] DUPLICATE / ID No.:

Signature(s): Jason J. McGann

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Bobcat)

BORING ID: CF-AN14-SB-02
DATE: 3/16/99
GEOLOGIST: J. McLunn
DRILLER: David helper: nathan

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
	1	Hand Auger		Gray-black	Fine-grained sand	SP	organic debris, dry, no odor
	2			↓	↓	↓	↓
	3						dry, no odor
	4						↓
	5			↓			moist, no odor
	6			Lt. Brown	↓	↓	↓
	7			↓	Fine-grained silty sand	SP/SM	water table ~7.0', no odor
	8			Brown	↓	↓	wet, no odor EOB @8'
	9						
	10						
	11						
	12						

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-AN14-SB-03
Sample Location: AN 14

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliott

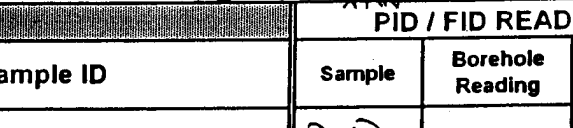
GROUNDWATER SAMPLING DATA

AN14 Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-~~AN14~~ TMW-03	3-16-99	1122	BN	5.26	0.218	3.65	23.2	none
Total Depth: 12'	DTW: 7.8'	Stickup: NA	Screen Int: 8-12'					

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-AN14-SB-03
Date: 3-16-99
Time Start: 1032
Time End: 1049
Time Sample: 1106
Amount Grout: 1/3 bags

Location Desc.: AN



PID / FID READINGS

Depth	Sample ID	Sample	Borehole Reading	Breathing Zone	Remarks
2		0.0			JE ~~1043~~ 1033
4		0.0			JE ~~1046~~ 1036
6		0.0			1049
8	CF-AN14-SB-03-7	0.0	0.0	0.0	1049
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	yes
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	yes
EPA 8021B (WATER)	HCL	JE (3) 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-2

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL

COC #: 01590

Check if Collected:

☐ MS / MSD ☐ DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe Track Mounted

BORING ID: CF-AN14-SB-03
DATE: 3-16-99
GEOLOGIST: J. Elliott
DRILLER: R. Mooney

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material classification	USCS*	Remarks
		Hand Auger	1	BN	FG silty sand	SM	Dry, no odor, organic debris
			2				
			3				moist, no odor
			4				
			5	~~Gr~~ Grey/Blk		SM/SC	organic Debris
			6				
			7	White Tan	FG sand FG silty sand	SP SM	
		4	8				Water Table @ 7.8' EOB @ 8'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: CTO 72
PROJECT NUMBER: 0013
DRILLING COMPANY: GWP
DRILLING RIG: D-120

BORING NUMBER: CPF-AN14-15
DATE: 11/29/94
GEOLOGIST: [illegible]
DRILLER: Nick S.

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
		HAnd Auger				gray-ox gray	fine-grained sand	SM	organic debris, dry, no odor				
	2												
	4												
		Drilling											
	6						silty sand	SM	moist, no odor				
	8												0.0
									wet, no odor				
	10												
	16												

* When rock coring, enter rock brokeness.
Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: estimating moist and wet zones.

Drilling Area Background (ppm): 0.0

Converted to Well: Yes X No ____ Well I.D. #: CPF-AN14-15

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-AN15-SB-01
Sample Location: AN15

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliott

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN15-TMW-0	3-15-99	1121	BN	5.45	.346	0.93	21.3°	none
Total Depth: 13'	DTW: 8'		Stickup: NA		Screen Int: 9-13'			

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-AN15-SB-01
Date: 3-15-99
Time Start: 1017
Time End: 1040
Time Sample: 1224
Amount Grout: 1/3 bag

Location Desc.: NW median SB-01 *AN

Depth	Sample ID	PID / FID READINGS Sample	Borehole Reading	Breathing Zone	Remarks
2		12.1			1029
4		14.2			1033
6	CF-AN15-SB-01-0	17.4	0.1	0.0	~~1040~~ 1035
8		13.5			1040
10		13.0			1040
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	yes
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	yes
EPA 8021B (WATER)	HCL	(3) 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 13-2
Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL
COC #:

Check If Collected:
[ ] MS / MSD
[ ] DUPLICATE / ID No.:

Signature(s): [signature]

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe Track Mounted

BORING ID: CF-AN15-SB-0
DATE: 3-15-99
GEOLOGIST: J. Elliott
DRILLER: R. Mooney

Sample No. and Type or RQD	Depth (FL) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
		Hand Auger	1	DK BN/BLK	FG silty sand	SP/SM	Dry, no odor, organic Debris
			2				
			3				Dry to moist, pockets of Fe-cemented material, no odor
			4	Grey			Moist, no odor
			5				
			6	Grey/tan			
			7	Brown	FG sand, slightly silty		
			8	DK BN			Water Table ~8.0'
			9	grades to	grades to		Saturated, no odor
		4 7	10	TAN	FG sand	SP	EOB@10'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-AN15-SB-02
Sample Location: AN15

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. McClenn

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN15-TMW-02	3/15/99	1115	Brown	5.35	.187	0.97	20.7	None
Total Depth: 12'		DTW: ~9.0'		Stickup: NA		Screen Int: 8'-12'		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-AN15-SB-02
Date: 3/15/99
Time Start: 1030
Time End: 1055
Time Sample:
Amount Grout: 1/3 bag

Location Desc.: N ↑ ~~30' SB-02~~ #AN15

Depth	Sample ID	PID / FID READINGS Sample	Borehole Reading	Breathing Zone	Remarks
2		0.0			1033
4		0.1			1036
6		0.0	0.0	0.0	1041
8		0.0			1047
10		0.0			1048 EOB @10'
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	2 ~~(3)~~ 40 ml Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 13-1
Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL
COC #:

Check If Collected:
[ ] MS / MSD
[ ] DUPLICATE / ID No.:

Signature(s): Jason P. McClenn

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Bobcat)

BORING ID: CF-ANL5-SB-02
DATE: 3/15/99
GEOLOGIST: J. McLean
DRILLER: David helper: Nathan

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION Color	MATERIAL DESCRIPTION Material Classification	USCS*	Remarks
	1	HAND Auger		Gray-Black	Fine-grained sand	SP	organic debris, dry, No odor
	2						
	3						
	4						
	5						dry, No odor
	6						
	7			Gray-Brown			moist No odor
	8				Fine-grained silty sand	SP/SM	
	9			Dk. Brown			water table ~9.0', No odor
	10	4 4					wet, No odor EOB @ 10'

* When rock coring, enter rock brokeness.

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

Remarks:

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110
Soil Boring ID No.: CF-~~AF~~ANIS-SB-03
Sample Location: ANIS

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: D. Elliott

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-ANIS-~~SF~~TMW-03	3-15-99	1201	BN	5.7	.268	1.17	20.9	none
Total Depth: 13'		DTW: ~8.5'		Stickup: NA		Screen Int: 9-13'		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-ANIS-SB-03
Date: 3-15-99
Time Start: 1129
Time End: 1141
Time Sample:
Amount Grout: 1 3 bag

Location Desc.: AN Median • SB-03

PID / FID READINGS

Depth	Sample ID	Sample	Borehole Reading	Breathing Zone	Remarks
2		0.0			1131
4		0.0			1136
6		0.0			1141
8		0.6			1141
10		5.6	1.7	0.0	1141
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	~~5~~ (3) 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 73-2
Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL
COC #:

Check If Collected:
[ ] MS / MSD
[ ] DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe Track-Mounted

BORING ID: CF-ANIS-SB-03
DATE: 3-15-97
GEOLOGIST: J. Ellcott
DRILLER: R. Moore

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
		Hand Auger	1	DK BN	FG silty sand	SP/SM	Dry, Organic Debris no odor
			2				
			3				
			4				Dry to moist, no odor
			5	Yellow Tan		SP	
			6		FG sand		
			7	White/Gray	FG sand, slightly silty	SP/SM	
			8	BN	FG sand, silty	SM	Est Water Table ~8.5
			9				Saturated, no odor
		4 4	10	Yellow Tan	FG sand	SP	EOB @ 10'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: CTO 72
PROJECT NUMBER: 0013
DRILLING COMPANY: GWP
DRILLING RIG: D-120

BORING NUMBER: CEF-AN15-15
DATE: 11/30/98
GEOLOGIST: [illegible]
DRILLER: Nick S.

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
		Hand Auger				gray, Dk gray	Fine-grained Sand	SM	organic debris, dry, No odor				
	2												
	4												
		Drilling											
	6												
	8								Moist, No odor				
	10						silty sand		wet, No odor				0.0
	12												
	14												
	16												

* In rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks: estimating Moist and wet zones.

Converted to Well: Yes X No ____ Well I.D. #: CEF-AN15-15

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site:	NASCF - NASJAX Fuel Pipeline	Soil Boring ID No.:	CF - AN16 - SB - 01
Project No.:	0013 DM0050110	Sample Location:	AN16

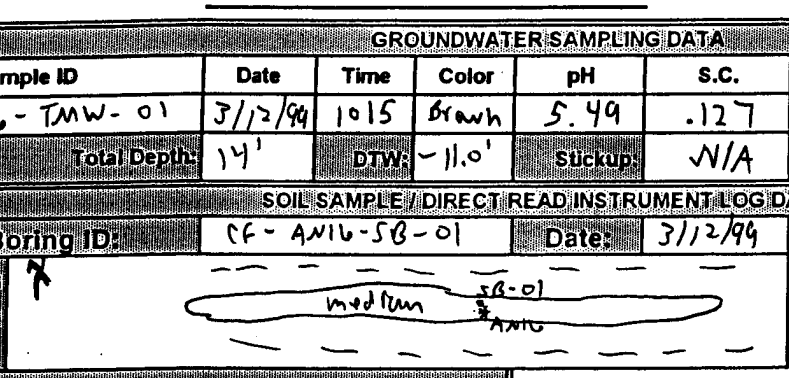
[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. McCann

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF - AN16 - TMW - 01	3/12/99	1015	Brown	5.49	.127	1.72	22.3	none
Total Depth: 14'		DTW: ~11.0'		Suckup:	N/A	Screen Int:	10'-14'	

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID:	CF - AN16 - SB - 01	Date:	3/12/99	Time Start:	0930
Location Desc.:				Time End:	1000
				Time Sample:	1145
				Amount Grout:	1/3 bag

PID / FID READINGS

Depth	Sample ID	Sample	Borehole Reading	Breathing Zone	Remarks
2		0.0			0934
4		0.0			0937
6		0.0			0945
8		0.0	0.0	0.0	0946
10	CF - AN16 - SB - 01 - 10	0.0			0952
12		0.0			0953 GOB @ 12'
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	yes
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	yes
EPA 8021B (WATER)	HCL	2 ~~(3)~~ 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-1

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL

COC #: 01586

Check If Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s): Jason D. McCann

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Bobcat)

BORING ID: CF-AN16-SB-01
DATE: 3/12/99
GEOLOGIST: J. McLann
DRILLER: David helper: Nathan

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION Color	Material Classification	USCS*	Remarks
	1	Hand Auger		Lt. Brown	Fine-grained sand	SP	organic debris, dry, No odor
	2						Backfill material (rocks)
	3						dry, No odor
	4						
	5						
	6						Moist, No odor
	7			Dk. Brown			
	8	3 4					
	9			Brown			
	10				Fine grained silty sand	SP/SM	
	11			Gray - Dk. Brown			water table ~ 11.0' No odor
	12	3 4					wet, No odor EOB @ 12'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site:	NASCF - NASJAX Fuel Pipeline	Soil Boring ID No.:	CF-AN16-SB-02
Project No.:	0013 DM0050110	Sample Location:	AN16

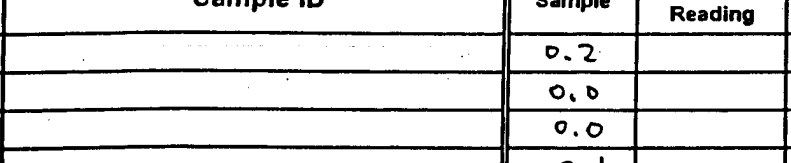
[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. McCann

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN16-TMW-02	3/12/94	1050	Brown	5.53	.106	1.71	22.9	None
Total Depth:	14'	DTW:	~11.0'	Stickup:	N/A	Screen Int:	10'-14'	

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID:	CF-AN16-SB-02	Date:	3/12/94	Time Start:	1015
Location Desc.:				Time End:	1040
				Time Sample:	
				Amount Grout:	1/3 bag

PID / FID READINGS

Depth	Sample ID	Sample	Borehole Reading	Breathing Zone	Remarks
2		0.2			1018
4		0.0			1022
6		0.0			1026
8		0.1			1027
10		0.1			1036
12		0.2	0.3	0.0	1037 EOB @12'
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	~~(3)~~ 2 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-1

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL

COC #: 01586

Check if Collected:

[ ] MS / MSD
[X] DUPLICATE / ID No.: Took Water Dup CF-AN16-TMW-0413

Signature(s): Jason R McCann

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Bobcat)

BORING ID: CF-AN16-SB-02
DATE: 3/12/99
GEOLOGIST: J. McLunn
DRILLER: David helper: Nathan

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
	1	HAND AUGER		Lt. Brown	Fine-grained sand	SP	organic debris, dry, No odor.
	2						Rock fill material (rocks)
	3						dry, No odor
	4						
	5						
	6			Brown - Dk. Brown			
	7						
	8	3 4		Dk Brown - Gray			moist, No odor
	9						
	10						
	11			Gray	Fine grained sand, slight silt	SP/SM	water table ~11.0', No odor
	12	4 4					wet, No odor EOB @ 12'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site:	NASCF - NASJAX Fuel Pipeline	Soil Boring ID No.:	CF-AN16-SB-03
Project No.:	0013 DM0050110	Sample Location:	AN16
[X] Temporary Monitoring Well		Sampler:	J. McCann
[X] Soil Boring			
[ ] Other:			

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN16-TMW-03	3/12/99	1125	Brown	5.56	.125	1.57	23.7	None
Total Depth: 14'		DTW: ~10.0'		Stickup: NA		Screen Int: 10'-14'		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID:	CF-AN16-SB-03	Date:	3/12/99	Time Start:	1055
Location Desc.:	N median SB-03 ~30' AN16			Time End:	1117
				Time Sample:	
				Amount Grout:	1/3 bag

Depth	Sample ID	PID / FID READINGS Sample	Borehole Reading	Breathing Zone	Remarks
2		0.2			1100
4		0.0			1103
6		0.0			1109
8		0.1	0.0	0.0	1110
10		0.1			1115
12		0.0			1116 EOB @12'
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	2 ~~(3)~~ 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-1

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL

COC #: 01586

Check if Collected:

☐ MS / MSD ☐ DUPLICATE / ID No.:

Signature(s): Jason J. McCann

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Bobcat)

BORING ID: CF-AN16-SB-03
DATE: 3/12/99
GEOLOGIST: J. McGann
DRILLER: David helper: Nathan

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
	1	Hand Auger		Lt. Brown	Fine-grained sand	SP	organic debris, dry, no odor
	2						Back fill material (rocks)
	3						dry, no odor
	4						
	5						
	6			Brown			
	7			Brown - Gray			
	8	4 4					Moist, No odor
	9			Black	Silty sand	SM	
	10						Water Table ~10.0' No odor
	11						Wet, No odor
	12	4 4					EOB @ 12'

* When rock coring, enter rock brokeness.

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

Remarks:

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

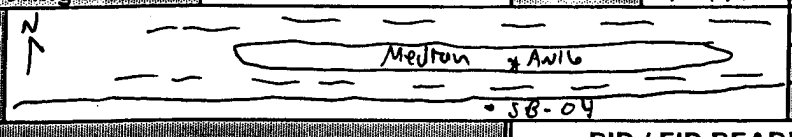
Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site:	NASCF - NASJAX Fuel Pipeline	Soil Boring ID No.:	CF-AN16-SB-04
Project No.:	0013 DM0050110	Sample Location:	AN16
[X] Temporary Monitoring Well		Sampler:	J. McLean
[X] Soil Boring			
[ ] Other:			

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN16-TMW-04	3/12/99	1310	Brown	6.40	0.15	1.16	23.3	None
Total Depth:	14'	DTW:	~9.0'	Stickup:	NA	Screen Int:	10'-14'	

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID:	CF-AN16-SB-04	Date:	3/12/99	Time Start:	1230
Location Desc.:				Time End:	1256
				Time Sample:	
				Amount Grout:	1/3 bag

PID / FID READINGS

Depth	Sample ID	Sample	Borehole Reading	Breathing Zone	Remarks
2		0.2			1235
4		0.0			1239
6		0.0			1243
8		0.0			1253
10		0.0	0.0	0.0	1254 EOB @10'
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	2 ~~(3)~~ 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-1

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL

COC #: 9586

Check If Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s): James J. McLean

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Bobcat)

BORING ID: CF-AN16-SB-04
DATE: 3/12/99
GEOLOGIST: T. McCann
DRILLER: David Helper: Nathan

Sample No. and Type or RQD	Depth (FL) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION Color	Material classification	USCS*	Remarks
	1	HAND Auger		Brown - gray	Fine-grained Sand	SP	organic debris, dry, no odor
	2						
	3						dry, no odor
	4						
	5						
	6			Black			
	7						Moist, No odor
	8				Fine-grained silty sand	SP/SM	
	9						Water table ~9.0', no odor
	10	4 4					wet, No odor EOB @ 10'
	11						
	12						

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110
Soil Boring ID No.: CF-AN17-SB-01
Sample Location: AN17

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliott

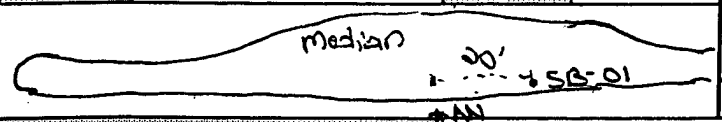
GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN17-TMW-01	3-12-99	1034	BRN	4.9	0.10	1.5	23	None
Total Depth: 16'	DTW: ~9.5'	Stickup: NA	Screen Int: 10-14'					

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID:
Date:
Time Start: 0935
Time End: 1030
Time Sample:
Amount Grout: 1/3 bags

Location Desc.: N



Depth	Sample ID	PID / FID READINGS Sample	Borehole Reading	Breathing Zone	Remarks
2		0.0			0935
4		0.0			0939
6		0.0			~~0951~~ 1011
8		0.7	0.0	0.0	~~0957~~ 1011
10		0.0			1019
12		0.0			1019
14		0.0			1030
16		0.3			1030
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	2 ~~(3)~~ 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 13-2
Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL
COC #: 01587

Check If Collected:
[ ] MS / MSD
[ ] DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe Track-Mounted

BORING ID: CF-AN17-SB-01
DATE: 3-12-99
GEOLOGIST: J. Elliott
DRILLER: R. Mooney

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
		Hand Auger	1	BN	FG sand, slightly silty	SP/SM	Dry, organic & shell fragments, no odor
			2	↓	↓	↓	Dry layer of limerock no odor
			3	yellow Tan	FG sand	SP	Dry to moist, no odor
			4	white	↓	↓	↓
			5	↓	~~FG sand, slightly silty~~	↓	Moist no odor
			6	Grey	FG sand slightly silty	↓	↓
			7	Black	↓	↓	↓
		3 4	8	↓	↓	SP/SM	↓
			9	⋮	⋮	⋮	Water Table ~9.5'
			10	⋮	⋮	⋮	Heavily saturated
			11	RD BN BN	FG sand, slightly silty	↓	↓
		2 4	12	RD BN BLK	FG silty sand	SM	Saturated Hole is collapsin
			13	↓	↓	↓	Heavily Saturated ↓
			14	↓	↓	↓	↓
			15	Grey/Blk	↓	↓	Saturated ↓
		2.5 4	16	↓	↓	↓	↓ EOB @ 16

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110
Soil Boring ID No.: CF-AN17-SB-02
Sample Location: AN17
Sampler: J. Elliott

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

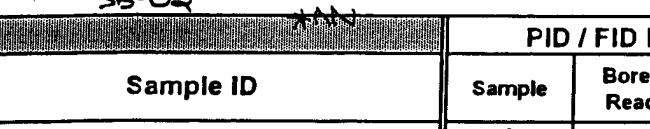
GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN17-TMW-02	3-12-9	1132	DK BN	5.5	0.16	1.6	24	none
Total Depth: 16'		DTW: ~9.5'		Stickup: NA		Screen Int: 10-19'		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-AN17-SB-02
Date: 3-12-9
Time Start: 1035
Time End: 1101
Time Sampled:
Amount Grout: 3 bags

Location Desc.:



PID / FID READINGS

Depth	Sample ID	Sample	Borehole Reading	Breathing Zone	Remarks
2		0.0			1037
4		0.1			1041
6		0.1			1050
8		0.0			1050
10		0.3			1105
12		–	0.1	0.0	1105
14		–			1121
16		0.0			1121
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	~~(3)~~ 2 40 mil Vials	ENCO	YES
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	YES

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 13-2
Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL
COC #: 01587

Check If Collected:
[ ] MS / MSD
[ ] DUPLICATE / ID No.:

Signature(s): J. Elliott

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe Track-Mounted

BORING ID: CF-AN17-SB-02
DATE: 3-12-99
GEOLOGIST: J. Elliott
DRILLER: R. Mooney

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material classification	USCS*	Remarks
		Hand auger	1	BN	FG sand, slightly silty	SP/SM	Dry, Organic, Shell, Limerock debris, no odor
			2	Yellow Tan	FG sand	SP	Dry to Moist, no odor
			3				
			4	White			
			5				
			6				
			7				Moist, no odor
		3.5 / 4	8	7.5 Grey			
assume recovery from next			9	Blk	FG sand, slightly silty	SP/SM	Water Table 9-9.5'
			10				Saturated
			11				
		2 / 4	12				
			13	Slough			
			14				
			15	Rd DK Rd BN	FG silty sand	SM	
		2 / 4	16				EOB@16'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-AN17-SB-03
Sample Location: AN17

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliott

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN17-TMW-03	3-12-99	1209	BN	5.3	0.13	21	24	none
Total Depth: 16'		DTW: ~9'		Stickup: NA		Screen Int: 10'-14'		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-AN17-SB-03
Date: 3-12-99
Time Start: 1132
Time End: 1216
Time Sample: ~~1045~~ 1145
Amount Grout: 1/3 bag

Location Desc.: IN median SB-03 AN

Depth	Sample ID	PID / FID READINGS Sample	Borehole Reading	Breathing Zone	Remarks
2		0.3			1134
4		0.0			1136
6		0.1			1146
8	CF-AN17-SB-03-8	0.2			1149
10		0.4			1203
12		0.7	0.2	0.0	1203
14		2.1			1217
16		0.5			1217
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	yes
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	yes
EPA 8021B (WATER)	HCL	~~(3)~~ 2 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-2

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL

COC #: 01587

Check if Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s): J. Elliott

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe Track-Mounted

BORING ID: CF-AN17-SB-03
DATE: 3-12-99
GEOLOGIST: J. Elliott
DRILLER: R. Mooney

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
		Hand Auger	1	BN	FG sand, slightly silty	SP/SM	Dry, no odor, limerock & shell debris
			2	Yellow BN			Dry to moist, no odor
			3		FG sand	SP	
12 other			4	White	FG sand		
			5				
			6	Grey			
			7	Black	FG silty sand	SM	Moist, no odor
		3.5 4	8				Moist/Saturated, no odor
			9	RD BN/BLK	slough FG silty sand	SM	Saturated, no odor
			10				
			11				
		3.5 4	12				
			13				
			14				Heavily Saturated, no odor
			15				
		3.5 4	16				Moist/Saturated, no odor Fe cementation, very hard FOB @ 16'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110
Soil Boring ID No.: CF - AN17 - SB-04
Sample Location: AN17
Sampler: J. Elliott

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN17-~~S~~TMW-04	3-12-99	1352	BN	6.4	0.22	2.0	24	non
Total Depth: 14'		DTW: ~85		Stickup: NA		Screen Int: 10-14'		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID:	CF-AN-17-~~TMW~~SB-04	Date:	3-12-99	Time Start:	1300
Location Desc.:	↑N — — — — *AN — — road — SB-04			Time End:	1336
				Time Sample:	
				Amount Grout:	1/3 bag

PID / FID READINGS

Depth	Sample ID	Sample	Borehole Reading	Breathing Zone	Remarks
2		0.0			1310
4		0.1			1315
6		0.0	0.0	0.0	1319
8		0.0			1336
10		0.0			1336
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	~~3~~ (3) 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 13-2
Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL
COC #: 01587

Check If Collected:

☐ MS / MSD ☐ DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (on Bobcat)

BORING ID: CF-AN17-SB-04
DATE: 3-12-99
GEOLOGIST: J. Elliott
DRILLER: D. Hearne

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
		Hand Auger	1	BN	FG sand, slightly silty	SP/SM	Organic Debris & Shell Fragments, Dry, no odor
			2	Yellow Tan			Dry to Moist, no odor
			3				
			4	BN			
			5	Yellow Tan	FG sand	SP	
			6	BN			
			7	Yellow White			Moist, no odor
			8	Grey			Water Table ~8.5'
			9	Black	FG silty sand	SM	Saturated
		3.5 4	10				EOB @ 10'

Other - time top 3' covered

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110
Soil Boring ID No.: CF-AN18-SB-01
Sample Location: AN 18
Sampler: J. Elliott

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN18-TMW-01	3-11-99	1059	BN	5.5	0.16	1.8	20	none
Total Depth: 12		DTW: 4.5		Stickup: NA		Screen Int: 6-10'		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID:	CF-AN18-SB-01	Date:	3-11-99	Time Start:	~~1026~~ 0951
Location Desc.:	AN median SB-01-1			Time End:	1039
				Time Sample:	
				Amount Grout:	1/3 bag

Depth	Sample ID	PID / FID Sample	Borehole Reading	Breathing Zone	Remarks
2		0.3			1026
4		0.2			1010
6		0.5			1019
8		0.5	0.0	0.0	1019
10		0.5			1039
12		1.3			1039
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	2 ~~(3)~~ 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 0.0 100 PPM
Field Log Book No. 13-2
Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL
COC #: 00836

Check If Collected:
[ ] MS / MSD
[ ] DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe Track-Mounted

BORING ID: CF-AN18-SB-01
DATE: 3-10-99
GEOLOGIST: J. Elliott
DRILLER: R. Mooney

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
		Hand Auger	1	DK BN	FG silty sand	SP/SM	Dry organic debris, Limerock + Concrete, no odor
			2			SM	Moist, no odor
			3	Grey BN	FG sand slightly silty	SP/SM	
			4				Water Table @ 4.9'
			5	Orange BN	FG sand, slightly silty	SP/SM	Saturated, no odor
			6	DK BN/BLK	FG sand, slightly silty		
			7				
			8				
			9	DK BN	FG sand, silty		Heavily Saturated, no odor
			10				
			11	Blk	FG sand, slightly silty		Saturated, no odor
		4 4	12				EOB @ 12'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-AN18-SB-02
Sample Location: AN18

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

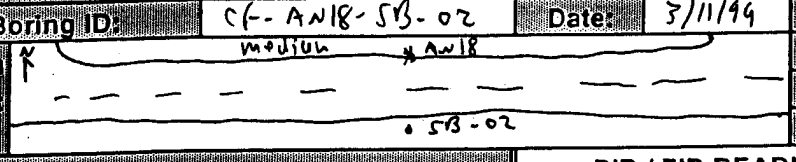
Sampler: J. McLaun

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN18-TMW-02	3/11/99	1045	Lt Brown	5.31	.223	1.68	17.4	None
Total Depth: 10'	DTW: ~5.0'	Stickup: 0.5'	Screen Int: 6'-10'					

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-AN18-SB-02 Date: 3/11/99

Location Desc.: 

Time Start: 0950
Time End: 1030
Time Sample:
Amount Grout: 1/3 bag

Depth	Sample ID	PID / FID Sample	Borehole Reading	Breathing Zone	Remarks
2		0.2			1000
4		1.3	0.1	0.0	1005
6		0.4			1015
8		1.4			1016
10		1.1			1026
12		1.5			1028 EOB @ 12'
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	2 ~~(3)~~ 40 mil Vials	ENCO	YES
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	YES

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-1

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL

COC #: 00836

Check if Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s): Jason J. McLaun

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Truck)

BORING ID: CF-AN18-SB-02
DATE: 3/11/99
GEOLOGIST: J. McGann
DRILLER: David helper: Nathan

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material classification	USCS*	Remarks
	1	4 Hand Auger		Black - Gray	Fine-grained sand	SP	organic debris dry No odor
	2						Back fill material (rocks)
	3						
	4				Fine grained silty sand	SP/SM	moist, No odor
	5			Black	Silty sand	SM	water table @ 5', no odor
	6						wet, No odor
	7						
	8	4 4					
	9						
	10						
	11						
	12	4 4					EOB @ 12'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110
Soil Boring ID No.: CF-AN18-SB-03
Sample Location: AN18
Sampler: J. McCann

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN18-TMW-03	3/11/99	1135	Brown	5.65	.090	3.06	20.0	None
Total Depth:	10'	DTW:	~5.0	Stickup:	N/A	Screen Int:	6'-10'	

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-AN18-SB.03
Date: 3/11/99
Time Start: 1055
Time End: 1119
Time Sample:
Amount Grout: 1/3 bag

Location Desc.: N ↑ median AN18 ~20' SB-03

Depth	Sample ID	PID / FID READINGS Sample	Borehole Reading	Breathing Zone	Remarks
2		1.1			1103
4		6.7			1106
6		1.1			1114
8		1.7	7.2	0.0	1115 EOB @1119
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	2 ~~(3)~~ 40 ml Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 13-1
Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL
COC #: 00836

Check if Collected:
[ ] MS / MSD
~~[X] DUPLICATE / ID No.: CF-AN18-TMW-DUP1~~
~~TOOK WATER OUT~~

Signature(s): Jason A. McCann

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Track)

BORING ID: CF-AN18-SB-03
DATE: 3/11/99
GEOLOGIST: J. McCann
DRILLER: David helper: Nathan

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION Color	MATERIAL DESCRIPTION Material Classification	USCS*	Remarks
	1	Hand Auger		Black	Fine-grained sand	SP	organic debris, dry, No odor
	2						
	3			Gray-Black			moist, No odor
	4						
	5			Brown	Silty sand	SM	Water Table ~5.0', No odor
	6			Black			
	7						
	8	4 4					EOB @ 8'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110
Soil Boring ID No.: CF-AN18-SB-04
Sample Location: AN18

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliott

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN18-~~SB~~-TMW-04	3-11-99	1200	BN	5.1	0.07	0.2	21°	none
Total Depth: 12'	DTW: 4.5'	Stickup: NA	Screen Int: 8-12'					

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-AN18-SB-04-4
Date: 3-11-99
Time Start: 110
Time End: 1135
Time Sample: 1233
Amount Grout: 1/3 bag

Location Desc.: ↑N median • SB-04 *AN

PID / FID READINGS

Depth	Sample ID	Sample	Borehole Reading	Breathing Zone	Remarks
2		2.4	0.7	0.0	1119
4	CF-AN18-SB-04-4	2.7			1121
6		1.3			1127
8		1.1	1.1	0.2	1127
10		1.2			1135
12		1.4			1135
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	yes
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	yes
EPA 8021B (WATER)	HCL	~~5~~ ~~(3)~~ 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 13-2
Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL
COC #: 60836

Check if Collected:
[ ] MS / MSD
[X] DUPLICATE / ID No.: CF-AN18-TMW-0414 (Took water dup.)

Signature(s): J. Elliott

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe Track-Mounted

BORING ID: CF-AN18-SB-04
DATE: 3-11-99
GEOLOGIST: J. Elliott
DRILLER: R. Mooney

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
		Hand Auger	1	Dk. BN	FG sand slightly silty	SP/SM	Dry, no odor
			2				Moist, no odor
			3	Grey BN			
			4				Water Table @ 4.5' - Note: may be as 5'
			5	LT. Tan	FG sand	SP	Moist/Saturated
			6				
			7	Blk	FG sand, slightly silty	SP/SM	
		3 4	8				
			9	Dk. BN			Heavily Saturated
			10	Blk	FG sand, silty	SM	Saturated
			11				
		4 4	12				EOB @ 12'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110
Soil Boring ID No.: CF-AN19-SB-01
Sample Location: AN19

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. McGlaun

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN19-TMW-01	3/10/99	1650	Brown	5.09	.201	1.14	19.8	None
Total Depth: 11.5'	DTW: ~7.0'		Stickup: 0.5'		Screen Int: 7.5'-11.5'			

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-AN19-SB-01 Date: 3/10/99

Location Desc.: median AN19 • SB-01

Time Start: 1605
Time End: 1634
Time Sample: 1805
Amount Grout: V3 bag

PID / FID READINGS

Depth	Sample ID	Sample	Borehole Reading	Breathing Zone	Remarks
2		2.3			1610
4	(Sample collected @5')	2.1			1614
6	CF-AN19-SB-01-05	2.3			1621
8		2.2	0.0	0.0	1622
10		2.2			1633
12		2.2			1634 EOB @12'
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	yes
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	yes
EPA 8021B (WATER)	HCL	(3) 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-1

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL

COC #: ∞838

Check if Collected:

☐ MS / MSD ☐ DUPLICATE / ID No.:

Signature(s): Jason L McGlaun

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Crew #2

BORING ID: CF-AN19-SB-01
DATE: 3/10/99
GEOLOGIST: J. McCann
DRILLER: david helper: Nathan

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION Color	MATERIAL DESCRIPTION Material Classification	USCS*	Remarks
	1	Hand Auger		Black-Gray	Fine-grained sand	SP	organic debris, dry, no odor
	2						
	3						Moist, no odor
	4						
	5			Black			
	6				Fine grained, silty sand	SP/SM	
	7				(Hard pan)		Water Table ~7, No odor
	8	4 4					wet, No odor
	9			Black Brown			
	10						
	11						
	12	4 4					EOB @ 12'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110
Soil Boring ID No.: CF-AN19-SB-02
Sample Location: CF-AN19

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Kucera

GROUNDWATER SAMPLING DATA

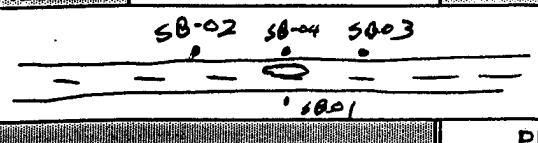
Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN-19-~~TM~~W-02	3/10/99	1725	Brown	4.96	.070	4.10	22.4	None
Total Depth: 8'		DTW: 4'		Stickup: 3"		Screen Int: 4'-8'		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-AN19-SB-02 Date: 3/10/99

Time Start: 1650
Time End: 1710
Time Sample: -
Amount Grout: 1/3 bag

Location Desc.:



PID / FID READINGS

Depth	Sample ID	Sample	Borehole Reading	Breathing Zone	Remarks
2		2.4	-	-	
4		2.5	-	-	
6		2.6	-	-	
8	No Sample	2.4	-	2.0	
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	2 ~~(3)~~ 40 mil Vials	ENCO	YES
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	YES

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-1

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL

COC #: 00838

Check if Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Crew #2

BORING ID: CF-AN19-SB-02
DATE: 3/10/99
GEOLOGIST: J. Kucera
DRILLER: Richard Helper: Dennis

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material classification	USCS*	Remarks
	1	Hand Auge		Black-Gray	Fine Grained Sand	SP	Some Organic Debris
	2						
	3						
	4						
	5			Black	Fine Grained,	SP/SM	
	6				Silty Sand		Wet
	7				(Hard Pan)		No Odor
	8	4 / 4					
	9			DB-Black			
	10						
	11						
	12	3.5 / 4					EOB-12'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site:	NASCF - NASJAX Fuel Pipeline	Soil Boring ID No.:	CF-AN19-SB-03
Project No.:	0013 DM0050110	Sample Location:	AN-19

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. McClaan

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN19-TMW-03	3/10/99	1800	Dk. Brown	5.56	.210	.22	21.0	None
Total Depth:	11.5'	DTW:	~5.0'	Suckup:	0.5'	Screen Int:	7.5'-11.5'	

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID:	CF-AN19-SB-03	Date:	3/10/99	Time Start:	1715
Location Desc.:	N ↑ median x (20') AN19 • SB-03			Time End:	1752
				Time Sample:	→
				Amount Grout:	Y3 bag

Depth	Sample ID	PID / FID Sample	Borehole Reading	Breathing Zone	Remarks
2		0.2			1719
4		0.1			1724
6		0.2			1732
8		0.0	0.0	0.0	1733
10		0.1			1750
12		0.3			1752 EOB @ 12'
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	2 ~~(3)~~ 40 mil Vials	ENCO	Yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	Yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-1

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL

COC #: 00838

Check If Collected:

☐ MS / MSD ☐ DUPLICATE / ID No.:

Signature(s): Jason I. McClaan

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprob (Truck)

BORING ID: CF-AN19-SB-03
DATE: 3/10/99
GEOLOGIST: T. McCann
DRILLER: David Welpter: Nathan

Sample No. and Type or RQD	Depth (FL) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/FL) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material classification	USCS*	Remarks
	1	HAND Auger		Dk. Brown	Fine-grained Sand	SP	organic debris, dry, no odor
	2			Dk Brown to Brown			
	3						moist, No odor
	4				Fine grained Sand w/ silt	SP/SM	
	5			Dk Brown-black			Water Table ~5.0', no odor
	6						wet, No odor
	7						
	8	4 4					
	9						
	10						
	11						
	12	4 4					EOB @12'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110
Soil Boring ID No.: CF-AN19-SB-04
Sample Location: CF-AN-19

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Kucera

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN19-TMW-04	3/10/99	1820	Brown	5.21	.102	.17	20.4	None
Total Depth: 12'	DTW: –	Stickup: 8"	Screen Int: 8-12'					

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-AN19-SB-04
Date: 3/10/99
Time Start: 1735
Time End: 1745
Time Sample: –
Amount Grout: 1/3 bag

Location Desc.: SB02 SB04 SB03 SB-01

Depth	Sample ID	PID / FID Sample	PID / FID Borehole Reading	PID / FID Breathing Zone	Remarks
2		2.0	–	0	
4		2.0	–		
6	No Sample	1.9	–		
8		2.1	–		
10		2.3	–		
12		2.0	–		
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	2 ~~(3)~~ 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 13-1
Drilling Area Background (PPM): 0

LAB INFO

LAB: ENCO
Jax, FL
COC #: 00838

Check If Collected:
[ ] MS / MSD
[ ] DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Truck)

BORING ID: CF-AN19-SB-04
DATE: 3/10/99
GEOLOGIST: J. Kucera
DRILLER: Richard Helper: Dennis

Sample No. and Type or RQD	Depth (FL) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/FL) or Screened Interval	MATERIAL DESCRIPTION Color	MATERIAL DESCRIPTION Material classification	USCS*	Remarks
	1				Fine Grained	SP	Some Top Soil
	2				Sand		No Odor
	3						
	4						
	5			Black	Fine grained,	SP/SD	
	6				Silty Sand		Wet
	7				(Hard Pan)		No Odor
	8	4 4					EOB @ 8'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110
Soil Boring ID No.: CF-AN20-SB-01
Sample Location: AN20

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliott

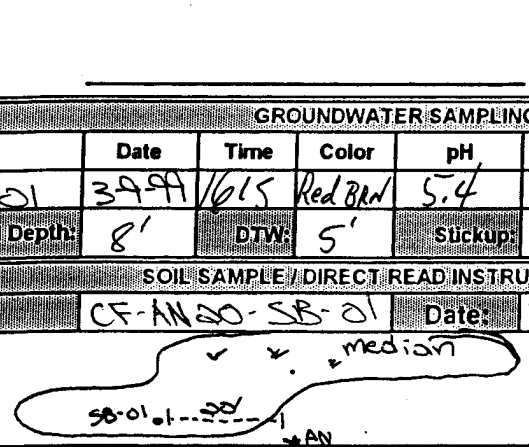
GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN20-TMW-01	3-9-99	1615	Red Brn	5.4	0.15	NA	24	None
Total Depth: 8'		DTW: 5'		Stickup: NA		Screen Int: 4'-8'		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-AN20-SB-01
Date: 3-9-99
Time Start: ~~1534~~ 1537
Time End: ~~1623~~ 1610
Time Sample: ~~1600~~
Amount Grout: 1/3 bags 5 gal

Location Desc.:



Depth	Sample ID	PID / FID Sample	Borehole Reading	Breathing Zone	Remarks
2	~~CF-AN20-SB-01~~	0.0	0.0	0.0	1537
4		0.0			1541
6	JE	0.0			1552
8		0.0			1552
10	Stopped at 8' bls b/cos	~~0.0~~			End of boring @ 8'
12	soils PID = 0	~~0.0~~			
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	~~(3)~~ 2 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 13-2
Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL
COC #: 0999

Check if Collected:
[ ] MS / MSD
[ ] DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: geoprobe (track-mounted)

BORING ID: ~~EE~~ CF-AN20-SB-01
DATE: 3-9-99
GEOLOGIST: J. Elliott \ M. Dale
DRILLER: Richard Mooney

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length *	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks
	1	Hand Auger		Blk	FG sand, slightly silty	SP/SM	Dry; organic & shell fragments, no odor
	2			Dk Grey BN	FG sand\silt		moist, no odor
	3						
	4			Dk Rd. BN	FG sand\silt		moist, no odor
	5						
	6			Rd. BN		SP/SM	*water table (Depth to Water = 5)
	7						moist, no odor
	8	4					slight Fe cementation
	9			End Drilling			
	10						
	11						
	12						

* When rock coring, enter rock brokeness.

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

Remarks:

Converted to Well: Yes ____ No ✓ Well I.D. #:

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-AN20-SB-02
Sample Location: AN-20

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: Jason McLaren

GROUNDWATER SAMPLING DATA

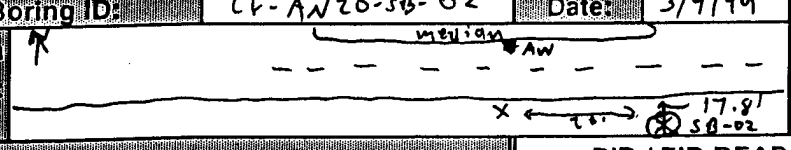
Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN20-TMW-02	3/9/99	1615	Lt Brown	5.66	.083	N/A	22.4	NONE
Total Depth: 7.5'	DTW: ~4.0'	Stickup: 0.5'	Screen Int: 3.5'-7.5'					

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-AN20-SB-02 Date: 3/9/99

Time Start: 1535
Time End: 1605
Time Sample:
Amount Grout: 5 gal. (1/3 bag)

Location Desc.:



PID / FID READINGS

Depth	Sample ID	Sample	Borehole Reading	Breathing Zone	Remarks
2		0.0			
4		0.0	0.0	0.0	
6		0.0			
8		0.0	0.0	0.0	end of Boring at 8'
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	2 (3) 40 mil Vials	ENCO	JMM/YES
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	JMM/YES

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-1

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL

COC #: 0999

Check if Collected:

☐ MS / MSD ☐ DUPLICATE / ID No.:

Signature(s): Jason J. McLaren

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: geoprobe (Truck mounted

BORING ID: CF-AN20-SB-02
DATE: 3/9/94
GEOLOGIST: JASON McLaun
DRILLER: David helper: Nathan

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
	1	~~Hand Auger~~		Dk-Brown & Gray	Fine-grained Sand	SP	organic debris, dry, no odor
	2			Dk-Brown			
	3						moist, No odor
	4				silty Sand	SM	water table ~ 4, no odor
	5						wet, No odor
	6						
	7						
	8	4 4					end of Boring at 8

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110
Soil Boring ID No.: CF-AN20-SB-03
Sample Location: AN-20
Sampler: JASON McLaurin

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

GROUNDWATER SAMPLING DATA

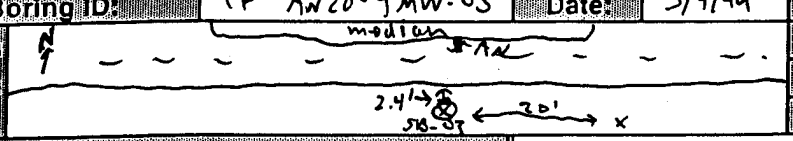
Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN20-TMW-03	3/9/99	1655	Brown	6.64	.442	N/A	21.6	None
Total Depth:	7.5'	DTW:	~4.0'	Stickup:	0.5'	Screen Int:	3.5'-7.5'	

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-AN20-TMW-03 Date: 3/9/99

Time Start: 1625
Time End: 1650
Time Sample:
Amount Grout: 5 gal. (X 3 bag)

Location Desc.:



PID / FID READINGS

Depth	Sample ID	Sample	Borehole Reading	Breathing Zone	Remarks
2		0.0			
4		0.0	0.0	0.0	
6		0.0			
8		0.0	0.0	0.0	End of Boring at 8'
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	2 (3) 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 13-1
Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL
COC #: 0999

Check if Collected:
[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s): Jason P. McLaurin

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: geoprobe (Truck mounted)

BORING ID: CF-AN20-SB-03
DATE: 5/4/99
GEOLOGIST: JASON McCann
DRILLER: David helper: Nathan

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
	1	Hand Auger		Dk. brown	fine-grained sand	SP	organic debris, dry, no odor
	2						
	3						moist, no odor
	4				silty sand	SM	water table ~4 ft. No odor
	5						wet, no odor
	6			Brown – Dk. brown			
	7						
	8	4 4					End of Boring at 8

* When rock coring, enter rock brokeness.

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

Remarks:

Converted to Well: Yes ____ No ✓ Well I.D. #:

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110
Soil Boring ID No.: CF-AN20-SB-04
Sample Location: AN20
Sampler: J. Elliott

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN20-TMW-04	3-9-99	1700	Red Brn	6.1	0.21	NA	23	None
Total Depth: 8'		DTW: 5'		Suckup: NA		Screen Int: 4-8'		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-AN20-SB-04
Date: 3-9-99
Time Start: 1629
Time End: 1715
Time Sample: 1710
Amount Grout: 1/3 bag (5 gal)
Location Desc.: NA

PID / FID READINGS

Depth	Sample ID	Sample	Borehole Reading	Breathing Zone	Remarks
2	~~CF-AN20-TMW-SB-04~~	0.0			1635
4		0.0	0.0	0.0	1638
6	CF-AN20-SB-04-5	0.0			1645
8		0.0			1645
10					End of boring @ 8'
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	~~(3)~~ 2 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 13-2
Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL
COC #: 0999

Check If Collected:
[ ] MS / MSD
[ ] DUPLICATE / ID No.:

Signature(s): [signature]

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Track-Mounted)

BORING ID: CF-DMO-SB-03
DATE: 3-9-99
GEOLOGIST: J. Elliott
DRILLER: R. Mooney

Sample No. and Type or RQD	Depth (FL) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
		Hand Auger	1	Dk BN/Blk	FG silty sand	SP/SM	Dry, shell fragments, no odor
			2	Grey BN	FG silty sand		moist, shell fragments no odor
			3				moist, no shell fragments no odor
			4				
			5	Rd BN	FG sand, slightly silty		water table
			6				
			7				
		4 4	8				
			9		End Drilling		EOB @ 8'
			10				
			11				
			12				

* When rock coring, enter rock brokeness.

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

Remarks:

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

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

Project / Site:	NASCF - NASJAX Fuel Pipeline	Soil Boring ID No.:	CF-AN20-SB-05
Project No.:	0013 DM0050110	Sample Location:	AN-20
		Sampler:	J. McLunn

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN20-TMW-05	3/10/99	1000	clear	5.72	.127	1.92	20.9	None
Total Depth:	7.5'	DTW:	~4.0'	Stickup:	0.5'	Screen Int:	3.5'-7.5'	

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID:	CF-AN20-SB-05	Date:	3/10/99	Time Start:	0920
Location Desc.:	N ↑ median • AN • SB-05			Time End:	0940
				Time Sample:	
				Amount Grout:	½ bag

Depth	Sample ID	PID / FID READINGS Sample	Borehole Reading	Breathing Zone	Remarks
2		2.9			0923
4		0.8	0.0	0.0	0927
6		0.1			0933
8		0.4			0935 EOB @ 8'
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	2 ~~(3)~~ 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-1

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL

COC #: 0999

Check If Collected:

☐ MS / MSD ☐ DUPLICATE / ID No.:

Signature(s): [signature]

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG:

BORING ID: CF-AN20-SB-05
DATE: 3/10/99
GEOLOGIST: JASON McLaurin
DRILLER: David helper: Norman

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material classification	USCS*	Remarks
	1	HAND Auger		Dk. Brown	Fine-grained sand	SP	organic debris, dry, no odor
	2			Gray - Lt. Brown			moist, no odor
	3			Dk Brown - Brown			
	4						water table ~ 4.0', no odor
	5				silty sand	SM	wet, no odor
	6						
	7						
	8	4 4					EOB @ 8'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-AN20-SB-06
Sample Location: AN 20

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliott

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN20-TMW-06	3-10-99	10						None
Total Depth: 12'	DTW: 5'		Stickup: NA		Screen Int: 8-12'			

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID:		Date:		Time Start:	0918
Location Desc.:	AN median +-20' - PSB06			Time End:	0946
				Time Sample:	
				Amount Grout:	13 bags

Depth	Sample ID	PID / FID READINGS Sample	Borehole Reading	Breathing Zone	Remarks
2		0.0			0918
4		0.0	0.0	0.0	0921
6		0.0			0931
8		0.0	0.0	0.0	0931
10		0.0			0946
12		0.0			0946
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	~~2~~ 3 ~~(3)~~ 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-2

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL

COC #: 0999

Check If Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s): J. Elliott

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Track-mounted)

BORING ID: CF-AN20-SB-006
DATE: 3-10-99
GEOLOGIST: J. Elliott
DRILLER: R. Mooney

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
		Hand Auger	1	DK BN	FG sand, very slightly silty	SP	Dry, Organic & Shell Debris, no odor
			2	LT Grey BN	FG silty sand	SM	Moist, no odor
			3			SP/SM	
			4	DK BN Rd			slight Fe cementation
			5	BN Rd			- water table - ~5'
			6				slight Fe cementation, some dark staining
			7				
			8				
			9				heavily saturated
			10				
			11				
		4 4	12				saturated
							End of Boring at 12'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site:	NASCF - NASJAX Fuel Pipeline	Soil Boring ID No.:	CF-AN21-SB-01
Project No.:	0013 DM0050110	Sample Location:	AN21

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliott / M. Dale

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN21-~~SB~~ TMW-01 ~~01-TMW~~	3-9-99	10:40	clear	5.5	0.24	—	21	None
Total Depth: ~~AN21~~	DTW: 8'	Stickup: NA	Screen Int: 8-12' bls					

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID:	~~CF~~ CF-AN21-SB-01-5	Date:	3-9-99	Time Start:	~~1316~~ 9:56
Location Desc.:				Time End:	~~1318~~ 10:16
				Time Sample:	1316
				Amount Grout:	1/3 bag

PID / FID READINGS

Depth	Sample ID	Sample	Borehole Reading	Breathing Zone	Remarks
2	~~CF-AN21-SB-01~~	1.0	0.0	0.0	9:56
4		3.9			9:59
6	CF-AN21-SB-01-5	2.3			10:06
8		4.2			10:06
10		4.8			10:16
12		4.1			10:16
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	~~(3)~~ 3 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-2

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL

COC #: 0998

Check If Collected:

☐ MS / MSD ☐ DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe Truck-Mounted

BORING ID: CF-AN21-SB-01
DATE: 3-9-99
GEOLOGIST: J. Elliott
DRILLER: Richard

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
01	2'	Hand Auger	2'	DK BN	FG sand, dry, no odor		
	4'		4'	Grey BN	FG sand, moist, no odor		
			5.5'	Red BN	FG sand, dry to moist, no odor		
			8'	BN Red	FG sand, saturated, no odor		water table @ 8'
			9.5'	Orange BN	FG sand, moist, no odor		
			11.5'	BN	FG sand, moist, no odor		
		4 4	12'				EOB @ 12'

* When rock coring, enter rock brokeness.

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

Remarks:

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF - AN21-SB-02
Sample Location: AN-21

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: Jason McGlynn

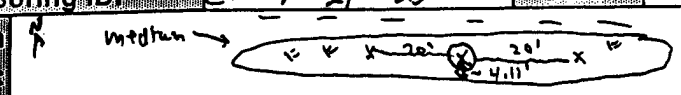
GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN21-TMW-02	3/9/99	1110	Brown	6.17	.351	N/A	21.8	None
Total Depth:	11.5'	DTW:	~7'	Stickup:	6" (0.5')	Screen Int:	7.5'- 11.5'	

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-AN21-SB-02
Date: 3/9/99
Time Start: 0950
Time End: 1050
Time Sample:
Amount Grout: 5 gal.

Location Desc.:



Depth	Sample ID	PID / FID Sample	Borehole Reading	Breathing Zone	Remarks
2		1.4			
4		5.6	0.1	0.0	
6		2.4			
8		3.2			
10		1.0			
12		0.8	0.8	0.1	end of Boring
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	(3) 40 mil Vials	ENCO	JM
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	JM

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 13-1
Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL
COC #: 0998

Check If Collected:
[ ] MS / MSD
[ ] DUPLICATE / ID No.:

Signature(s): Jason McGlynn

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: DPT Geoprobe

BORING ID: CF-AN21-SB-02
DATE: 3/9/99
GEOLOGIST: JASON McCann
DRILLER: David helper: NAthan

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION Color	MATERIAL DESCRIPTION Material Classification	USCS*	Remarks
	1	HAND Auger		Dk. Brown	Fine-grained Sand		organic debris, dry, No odor
	2			Lt. Brown			
	3			Gray - Dk. Brown			moist. 3.5' - Road fill No odor
	4			Dk. Brown			
	5			Gray - Dk. Brown	silty sand		moist, No odor
	6						
	7						Water Table ~ 7 ft. No odor
	8	4 4					wet, No odor
	9						
	10						
	11						
	12	4 4					end of Boring

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-AN21-SB-03
Sample Location: AN 21

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliott \ M. Dale

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN21-TMW-03	3-9-99	1149	Cldy	5.6	0.20	NA	22	none
Total Depth: 12'		DTW: 8'		Stickup: NA		Screen Int: 8-12'		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-AN21-SB-03 Date: 3-9-99

Location Desc.:

Time Start: 1106
Time End: 1128
Time Sample:
Amount Grout: 1/3 bag

Depth	Sample ID	PID / FID READINGS Sample	Borehole Reading	Breathing Zone	Remarks
2	~~CF-AN21-SB-03~~	0.0	0.0	0.0	11:06
4		1.0			11:09
6		0.3			11:9
8		0.1			11:9
10		0.8			11:28
12		1.4	0.0	0.0	11:28
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	~~(3)~~ 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-2

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL

COC #: 0998

Check if Collected:

☐ MS / MSD ☐ DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Truck-Mounted)

BORING ID: CF-AN21-SB-03
DATE: 3-9-99
GEOLOGIST: J. Elliott / M. Dale
DRILLER: Richard

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION Color	MATERIAL DESCRIPTION Material classification	USCS*	Remarks
		Hand Auger	0-2'	Tan	FG sand, dry to moist, no odor		
			2-4'	Grey BN	FG sand, dry to moist, no odor, shell		
			4-5'	↓	FG sand, moist, no odor, shell fragments		
			5-7.5'	Orange BN	FG sand, moist no odor		
			7.5-8'	RD BN	FG sand, moist no odor		Water Table @ 8'
			8-9'	DK. RD BN	FG sand, saturated, no odor		
			9-10'	RD BN	FG sand, moist, no odor		EOB @ 10'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-AN21-SB-04
Sample Location: AN-21

Sampler: JASON McCann

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

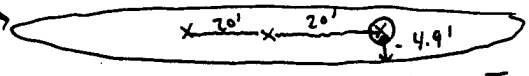
GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN21-TMW-04	3/9/99	1210	Brown	6.22	.374	N/A	21.9	None
Total Depth:	11.5	DTW:	~7'	Stickup:	0.5'	Screen Int:	7.5'-11.5'	

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-AN21-SB-04
Date: 3/9/99
Time Start: 1115
Time End: 1150
Time Sample:
Amount Grout: 5 gal.

Location Desc.:



Depth	Sample ID	PID / FID Sample	Borehole Reading	Breathing Zone	Remarks
2		0.0			
4		0.1	0.0	0.0	
6		0.0			
8		0.0			
10		0.2			
12		0.2	0.0	0.0	end of Boring
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	(3) 40 mil Vials	ENCO	JM
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	JM

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 13-1
Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL
COC #: 0998

Check If Collected:
[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s): Jason L McCann

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG:

BORING ID: CF-AN21-SB-04
DATE: 7/9/99
GEOLOGIST: JASON McCann
DRILLER: David helper: Nathan

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
	1	Hand Auger		Dk. Brown	Fine-grained sand		organic debris, dry, no odor
	2						
	3			Lt. Brown-Gray			3'-road fill, dry No odor
	4			Gray - OR Brown			moist, No odor
	5				silty sand		
	6						
	7						water Table ~7 ft. No odor
	8	4 4					wet, No odor
	9						
	10			Brown to Dk-Brown			
	11						
	12	4 4					end of Boring.

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-AN21-SB-05
Sample Location: AN-21

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliott / M. Dale

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN21-TMW-05	3-9-99	1256	BRN	5.7	0.21	NA	22	None
Total Depth: 8'/12'	DTW: 8'		Suckup: NA		Screen Int: 8'-12'			

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-AN21-SB-05 Date: 5-9-99

Location Desc.:

Time Start: 1209
Time End: 1224
Time Sample:
Amount Grout: 1/3 bag

Depth	Sample ID	PID / FID Sample	Borehole Reading	Breathing Zone	Remarks
2	~~CF-AN21-SB-05~~	0.0			1209
4		0.0			1213
6		0.0			1219
8		0.0			1219
10		0.0	0.0	0.0	1224
12					1224
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	(3) 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-2

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL

COC #: 0998

Check If Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Truck-Mounted)

BORING ID: CF-SS AN21-SB-01
DATE: 3-9-99
GEOLOGIST: J. Elliott
DRILLER: R. Mooney

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
			0-.6'	Blk	FG sand, dry, no odor		
			.6-2'	Tan	FG sand, dry to moist, no odor		
			2'-4.5'	Grey BN	FG sand, dry to moist, no odor		slightly silty saturated at 4.0-4.5'
			4.5'-8	RD BN	FG sand, slightly silty, moist, no odor		slight Fe cementation
			8-10'	DK RD BN	FG sand, slightly silty, moist to saturated		
			10-12'	Orange BN	FG sand, moist, no odor		EOB @ 12'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-AN21-SB-06
Sample Location: AN-21

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

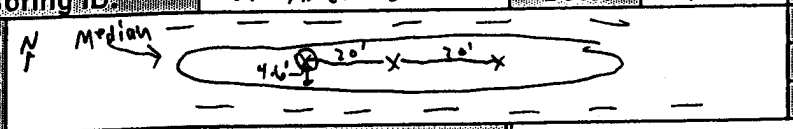
Sampler: JASON McLaurin

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-AN21-TMW-06	3/9/99	1250	Brown	5.87	.301	N/A	22.8	None
Total Depth:	11.5	DTW:	≈7.0	Stickup:	.5'	Screen Int:	11.5-7.5'	

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID:	CF-AN21-SB-06	Date:	3/9/99	Time Start:	1215
Location Desc.:				Time End:	1240
				Time Sample:	
				Amount Grout:	5 gal.



Depth	Sample ID	PID / FID Sample	Borehole Reading	Breathing Zone	Remarks
2		0.0			
4		0.0	0.0	0.0	
6		0.0			
8		0.0		0.0	
10		0.0			
12		0.0	0.0	0.0	End of Boring
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	~~(3)~~ 3 40 mil Vials	ENCO	JM
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	JM

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-1

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL

COC #: 0998

Check If Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s): Jason J McLaurin

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG:

BORING ID: CF-AN21-SB-06
DATE: 3/9/99
GEOLOGIST: Jason McLaurin
DRILLER: David helper: Nathan

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
	1	Hand Auger		Dk Brown	fine-grained sand		organic debris, dry,
	2			Light Brown			
	3			Dk. Brown			3' Road fill, dry, no odor
	4						dry, no odor
	5						
	6			Brown	silty sand		moist, no odor
	7			Dk Brown-Gray			water Table ~ 7 ft. No odor
	8	4 4					wet, No odor
	9			Brown - Dk Brown			
	10						
	11						
	12	4 4					end of Boring

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-VA02-SB-01
Sample Location: VA02

Sampler: J Elliott

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-VA02-TMW-01	3-26-99	1127	orange	5.18	.124	3.17	19.6	Strong petro odor
Total Depth: 9'		DTW: 6.6'		Suckup: NA		Screen Int: 0-9'		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-VA02-SB-01
Date: 3-26-99
Time Start: 1023
Time End: 1045
Time Sample: 1039
Amount Grout: — 1 1/3 bag sand

Location Desc.: N Driveway • VA02 SB-01 Timuquana

PID / FID READINGS

Depth	Sample ID	Sample	Borehole Reading	Breathing Zone	Remarks
2		80.1	395	0.0	1026
4		1267			1029
6	CF-VA02-SB-01-6	1272			1036
8		138			1045
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	yes
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	yes
EPA 8021B (WATER)	HCL	(3) 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-1

Drilling Area Background (PPM): 0.0

Product sheen/film on top of water
Filled in hole w/ play sand

LAB INFO

LAB: ENCO
Jax, FL

COC #:

Check If Collected:

DUPLICATE / ID No.:

Signature(s): J Elliott

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: ~~Gulf Atlantic Drilling~~ SE
DRILLING RIG: —

BORING ID: CF-VA02 SB-01
DATE: 3-26-99
GEOLOGIST: J. Elliott
DRILLER: —

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
		Hand Auger	1	Blk	FG silty, organic sand	SM	Moist, organic material petro odor
			2	↓	↓	↓	↓
			3	Brn	~~SM~~ FG sand	SP	Saturated, petro odor
			4	Grey	Sandy clay	CL	↓
			5	↓	↓	↓	Moist petro odor
			6	Orange & Red	↓	↓	Water Table @ 6.6'
			7	Grey	↓	↓	↓
			8	↓	↓	↓	↓
			9	↓	↓	↓	↓
							EOB @ 9'

When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-VA02-SB-02
Sample Location: VA02

Sampler: J. Elliott

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-VA02-TMW-02	3-26-99	1250	clear	5.19	0.130	3.30	20.8	petro odor
Total Depth: 9'	DTW: 6.7'		Stickup: NA		Screen Int: 0-9'			

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-VA02-SB-02
Date: 3-26-99
Location Desc.: N ↑ Timuquana VA * SB 02 Driveway

Time Start: 1116
Time End: 1204
Time Sample: 1149
Amount Grout: 1 1/3 bag sand

Depth	Sample ID	PID / FID Sample	Borehole Reading	Breathing Zone	Remarks
2	CF-VA02-SB-02-6	810			1119
4		929			1130
6	at 6' ←	815			1141
8		80.5			1204
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	yes
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	yes
EPA 8021B (WATER)	HCL	2 ~~(3)~~ 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-1

Drilling Area Background (PPM): 0.0

Took soil sample just above water table, filled in w/ play sand
Product film on top of water

LAB INFO

LAB: ENCO
Jax, FL

COC #:

Check If Collected: DUPLICATE / ID No.:

Signature(s): [signature]

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: ~~Gulf Atlantic Drilling~~ SE
DRILLING RIG: —

BORING ID: CF-VA02-SB-02
DATE: 3-26-99
GEOLOGIST: J. Elliott
DRILLER: —

Sample No. and Type or RQD	Depth (FL) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/FL) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
		Hand Auger	1	Blk	FG Silty Sand	SM	Moist, Organic Material petro odor
			2	Tan	FG Sand	SP	Saturated, petro odor
			3				
			4				
			5	Grey	Sandy clay	CL	Moist, petro odor
			6				Water Table @ 6.7'
			7				
			8	Orange & Grey Red			
			9				EOB @ 9'

When rock coring, enter rock brokeness.
Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: _____

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

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: CTO 72
PROJECT NUMBER: 0013
DRILLING COMPANY: GWP
DRILLING RIG: D-120
BORING NUMBER: CEF-VA02-15
DATE: 12/2/94
GEOLOGIST: [illegible]
DRILLER: Nick S.

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
		Hand Auger				Gray/ Dk gray	Fine-grained sand	SM	Organic debris, dry, no odor				
	2								moist, no odor				
						Brown							
	4					Lt. Brown	Silty sand		Wet, no odor				0.0
		Drilling											
	6												
	8												
	10												0.0
	12												

* [illegible] rock coring, enter rock brokeness.
** [illegible]ude monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks:

Converted to Well: Yes X No ____ Well I.D. #: CEF-VA02-15

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-VA06-SB-01
Sample Location: VA06

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliott

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-VA06-SB-01 ~~TMW-01~~	3-26-99	0903	clear	6.62	0.563	3.12	18.0	strong petro odor
Total Depth: 4'	DTW: ~~1.2'~~		Stickup: NA		Screen Int: 0-4'			

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-VA06-SB-01
Date: 3-25-99
Time Start: 1535
Time End: 1545
Time Sample: 0854
Amount Grout: — ~~½~~ bag play sand

Location Desc.: Directly underneath VA06 -- under the bridge

PID / FID READINGS

Depth	Sample ID	Sample	Borehole Reading	Breathing Zone	Remarks
1 ~~2~~	CF-VA06-SB-01-1	61.3			1537
3 ~~4~~		227	724	0.0	1545
6					
8					
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	yes
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	yes
EPA 8021B (WATER)	HCL	~~2~~ 3 (3) 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100. PPM

Field Log Book No. 13-1

Drilling Area Background (PPM): 0.0

Also bored SB-02 through SB-09 to delineate contamination. PID info is in field book 13-1

Filled in hole w/ Play sand
Product film on top of water

LAB INFO

LAB: ENCO
Jax, FL

COC #:

Check if Collected:

☐ MS / MSD ☐ DUPLICATE / ID No.:

Signature(s): J. Elliott

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: ~~Gulf Atlantic Drilling~~
DRILLING RIG: —

BORING ID: CF-VA06-SB-01
DATE: 3-25-99
GEOLOGIST: J. Elliott
DRILLER: —

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material classification	USCS*	Remarks
		Hand Auger	0.5	orange	FG silty sand/peat	SM/PT	Moist, dense roots, organic odor
			1	BN Blk	PT/FG silty sand	PT	Moist, dense roots ~~organic odor~~
			2	Grey	FG sand	SP	Strong petro odor
							Water Table @ 2'
							EOB @ 2.5'

* When rock coring, enter rock brokeness.

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

Remarks:

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

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

Project / Site:	NASCF - NASJAX Fuel Pipeline	Soil Boring ID No.:	CF-VA06-SB-02
Project No.:	0013 DM0050110	Sample Location:	VA 06

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliot

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
Total Depth:		DTW:		Stickup:		Screen Int:		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID:	CF-VA06-SB-02	Date:	3/25/99	Time Start:	1550
Location Desc.:	See Field Log book 13-1			Time End:	1600
				Time Sample:	–
				Amount Grout:	–

Depth	Sample ID	PID / FID READINGS Sample	Borehole Reading	Breathing Zone	Remarks
2-2'		–			
4-2'		8.5	–	–	
6					
8					
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore, (1) 8 oz CG	ENCO	No
EPA 8310 (SOIL)	None	(1) 8 oz. AG	ENCO	No
EPA 8021B (WATER)	HCL	(2) 40 mil Vials	ENCO	No
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	No

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-1

Drilling Area Background (PPM): 0

LAB INFO

LAB: ENCO
Jax, FL

COC #:

Check if Collected:

☐ MS / MSD ☐ DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc.

Boring Log

Page ___ of ___

PROJECT NAME: NAS CECIL FIELD
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: _____
DRILLING RIG: _____

BORING ID: _____
DATE: _____
GEOLOGIST: _____
DRILLER: _____

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION		USCS *	Remarks
				Color	Material Classification		

* When rock coring, enter rock brokeness.

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

Remarks: _____

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-VA06-SB-03
Sample Location: VA06

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliot

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
Total Depth:		DTW:		Stickup:		Screen Int:		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID:	CF-VA06-SB-03	Date:	3/25/99	Time Start:	1600
Location Desc.:	See Field Log Book 13-1			Time End:	1610
				Time Sample:	–
				Amount Grout:	–

Depth	Sample ID	PID / FID READINGS Sample	Borehole Reading	Breathing Zone	Remarks
~~2~~ 1		13.1	–	–	
~~4~~ 2					
6					
8					
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore, (1) 8 oz CG	ENCO	No
EPA 8310 (SOIL)	None	(1) 8 oz. AG	ENCO	No
EPA 8021B (WATER)	HCL	(2) 40 mil Vials	ENCO	No
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	No

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-1

Drilling Area Background (PPM): 0

LAB INFO

LAB: ENCO
Jax, FL

COC #:

Check if Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc.

Boring Log

Page ___ of ___

PROJECT NAME: NAS CECIL FIELD
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: _____
DRILLING RIG: _____

BORING ID: _____
DATE: _____
GEOLOGIST: _____
DRILLER: _____

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION		USCS *	Remarks
				Color	Material Classification		

* When rock coring, enter rock brokeness.

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

Remarks: _____

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-VA06-SB-~~03~~ 04
Sample Location: VA06

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliot

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
Total Depth:		DTW:		Stickup:		Screen Int:		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID:	CF-VA06-SB-~~03~~ 04	Date:	3/25/99	Time Start:	1610
Location Desc.:	See Field Log Book 13-1			Time End:	1620
				Time Sample:	–
				Amount Grout:	–

Depth	Sample ID	PID / FID READINGS Sample	Borehole Reading	Breathing Zone	Remarks
~~2~~ B1		–	–	–	
~~4~~ B2		3.6 ~~13.1~~	–	–	
6					
8					
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore, (1) 8 oz CG	ENCO	No
EPA 8310 (SOIL)	None	(1) 8 oz. AG	ENCO	No
EPA 8021B (WATER)	HCL	(2) 40 mil Vials	ENCO	No
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	No

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-1

Drilling Area Background (PPM): 0

LAB INFO

LAB: ENCO
Jax, FL

COC #:

Check if Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc.

Boring Log

Page ___ of ___

PROJECT NAME: NAS CECIL FIELD
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: _____
DRILLING RIG: _____

BORING ID: _____
DATE: _____
GEOLOGIST: _____
DRILLER: _____

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION		USCS *	Remarks
				Color	Material Classification		

* When rock coring, enter rock brokeness.

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

Remarks: _____

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-VA06-SB-05
Sample Location: VA 06

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliot

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
Total Depth:		DTW:		Stickup:		Screen Int:		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID:	CF-VA06-SB-05	Date:	3/25/99	Time Start:	1620
Location Desc.:	See Field Log Book 13-1			Time End:	1630
				Time Sample:	–
				Amount Grout:	–

Depth	Sample ID	PID / FID READINGS Sample	Borehole Reading	Breathing Zone	Remarks
~~2~~ 1		6.2	–	–	
~~4~~ 2		–	–	–	
6					
8					
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore, (1) 8 oz CG	ENCO	No
EPA 8310 (SOIL)	None	(1) 8 oz. AG	ENCO	No
EPA 8021B (WATER)	HCL	(2) 40 mil Vials	ENCO	No
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	No

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-1

Drilling Area Background (PPM): 0

LAB INFO

LAB: ENCO
Jax, FL

COC #:

Check if Collected:

☐ MS / MSD ☐ DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc.

Boring Log

Page ___ of ___

PROJECT NAME: NAS CECIL FIELD
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: _____
DRILLING RIG: _____

BORING ID: _____
DATE: _____
GEOLOGIST: _____
DRILLER: _____

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION		USCS *	Remarks
				Color	Material Classification		

* When rock coring, enter rock brokeness.

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

Remarks: _____

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-VA06-SB-06
Sample Location: VA 06

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliot

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
Total Depth:		DTW:		Stickup:		Screen Int:		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID:	CF-VA06-SB-06	Date:	3/25/99	Time Start:	1630
Location Desc.:	See Field Log Book 13-1			Time End:	1640
				Time Sample:	-
				Amount Grout:	-

Depth	Sample ID	PID / FID READINGS Sample	Borehole Reading	Breathing Zone	Remarks
2.5		11.4	—	—	
~~4~~ 1					
6					
8					
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore, (1) 8 oz CG	ENCO	No
EPA 8310 (SOIL)	None	(1) 8 oz. AG	ENCO	No
EPA 8021B (WATER)	HCL	(2) 40 mil Vials	ENCO	No
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	No

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-1

Drilling Area Background (PPM): 6

LAB INFO

LAB: ENCO
Jax, FL

COC #:

Check if Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc.

Boring Log

Page ___ of ___

PROJECT NAME: NAS CECIL FIELD
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: _____
DRILLING RIG: _____

BORING ID: _____
DATE: _____
GEOLOGIST: _____
DRILLER: _____

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION		USCS *	Remarks
				Color	Material Classification		

* When rock coring, enter rock brokeness.

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

Remarks: _____

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

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

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-VA06-SB-07
Sample Location: VA06

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliot

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
Total Depth:		DTW:		Stickup:		Screen Int:		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID:	CF-VA06-SB-07	Date:	3/25/99	Time Start:	1640
Location Desc.:	See Field Log Book 13-1			Time End:	1650
				Time Sample:	–
				Amount Grout:	–

Depth	Sample ID	PID / FID READINGS Sample	Borehole Reading	Breathing Zone	Remarks
~~2~~ 1		3.5	–	–	
~~4~~ 2		–	–	–	
6					
8					
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore, (1) 8 oz CG	ENCO	No
EPA 8310 (SOIL)	None	(1) 8 oz. AG	ENCO	No
EPA 8021B (WATER)	HCL	(2) 40 mil Vials	ENCO	No
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	No

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-1

Drilling Area Background (PPM): 0

LAB INFO

LAB: ENCO
Jax, FL

COC #:

Check if Collected:

☐ MS / MSD ☐ DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc.

Boring Log

Page ___ of ___

PROJECT NAME: NAS CECIL FIELD
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: _____
DRILLING RIG: _____

BORING ID: _____
DATE: _____
GEOLOGIST: _____
DRILLER: _____

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION		USCS *	Remarks
				Color	Material Classification		

* When rock coring, enter rock brokeness.

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

Remarks: _____

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

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

Project / Site:	NASCF - NASJAX Fuel Pipeline	Soil Boring ID No.:	CF-VA06-SB-08
Project No.:	0013 DM0050110	Sample Location:	VA 06
[X] Temporary Monitoring Well		Sampler:	J. Elliot
[X] Soil Boring			
[ ] Other:			

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
Total Depth:		DTW:		Stickup:		Screen Int:		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID:	CF-VA06-SB-08	Date:	3/25/99	Time Start:	1650
Location Desc.:	See Field Log Book 13-1			Time End:	1700
				Time Sample:	-
				Amount Grout:	-

Depth	Sample ID	PID / FID READINGS Sample	Borehole Reading	Breathing Zone	Remarks
~~2~~ 1		8.0	-	-	
~~4~~ 2		-	-	-	
6					
8					
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore, (1) 8 oz CG	ENCO	No
EPA 8310 (SOIL)	None	(1) 8 oz. AG	ENCO	No
EPA 8021B (WATER)	HCL	(2) 40 mil Vials	ENCO	No
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	No

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-1

Drilling Area Background (PPM): 0

LAB INFO

LAB: ENCO
Jax, FL

COC #:

Check if Collected:

☐ MS / MSD ☐ DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc.

Boring Log

Page ___ of ___

PROJECT NAME: NAS CECIL FIELD
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: _____
DRILLING RIG: _____

BORING ID: _____
DATE: _____
GEOLOGIST: _____
DRILLER: _____

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION		USCS *	Remarks
				Color	Material Classification		

* When rock coring, enter rock brokeness.

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

Remarks: _____

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110
Soil Boring ID No.: CF-VA06-SB-09
Sample Location: VA 06

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliot

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
Total Depth:		DTW:		Stickup:		Screen Int:		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID:	CF-VA06-SB-09	Date:	3/25/99	Time Start:	1700
Location Desc.:	See Field Log Book 13-1			Time End:	1710
				Time Sample:	-
				Amount Grout:	-

Depth	Sample ID	PID / FID READINGS Sample	Borehole Reading	Breathing Zone	Remarks
~~2~~ 1		4.3	-	-	
~~4~~ 2		-	-	-	
6					
8					
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore, (1) 8 oz CG	ENCO	No
EPA 8310 (SOIL)	None	(1) 8 oz. AG	ENCO	No
EPA 8021B (WATER)	HCL	(2) 40 mil Vials	ENCO	No
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	No

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-1

Drilling Area Background (PPM): 0

LAB INFO

LAB: ENCO
Jax, FL

COC #:

Check if Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc.

Boring Log

Page ___ of ___

PROJECT NAME: NAS CECIL FIELD
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: _____
DRILLING RIG: _____

BORING ID: _____
DATE: _____
GEOLOGIST: _____
DRILLER: _____

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION		USCS *	Remarks
				Color	Material Classification		

* When rock coring, enter rock brokeness.

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

Remarks: _____

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110
Soil Boring ID No.: CF-~~AA~~VA7-SB-01
Sample Location: VA 7
Sampler: J. Elliott

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-VA7-TMW-01	3-22-99	1404	Lt. Tan	5.92	0.243	1.30	24.8	none
Total Depth: 8'		DTW: 4.5'		Stickup: NA		Screen Int: 4-8'		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-VA7-SB-01
Date: 3-22-99
Time Start: 1331
Time End: 1352
Time Sample:
Amount Grout: 1/3 bag
Location Desc.: MN Center Turn Lane 20' * VA SB-01 Timuquana

Depth	Sample ID	PID / FID READINGS Sample	Borehole Reading	Breathing Zone	Remarks
2		0.0			1332
4		0.0			1335
6		0.0			1352
8		0.0	0.0	0.0	1352
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	2 ~~(3)~~ 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 13-1
Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL
COC #: 02312

Check If Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Bobcat)

BORING ID: CF-VA7-SB-01
DATE: 3-22-99
GEOLOGIST: J. Elliott
DRILLER: D. Hearne

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION Color	MATERIAL DESCRIPTION Material Classification	USCS*	Remarks
		Hand Auger	1	Asphalt & Limerock			
			2	BN	FG sand slightly silty	SP/SM	Dry, no odor
			3	White	FG sand	SP	Moist no odor
			4	Orange	FG sand, very slightly silty	SP/SM	Water Table @ 4.5'
			5		FG sand	SP	Saturated, no odor
			6	White			
			7				
		3.5 4	8				EOB @ 8'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-VA7-SB-02
Sample Location: VA7

Sampler: J. Elliott

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-VA7-TMW-02	3-22-99	1427	Lt Tan	5.80	.210	1.10	24.8	none
Total Depth: 8'		DTW: 4'		Stickup: NA		Screen Int: 4-8'		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID:	CF-VA7-SB-02	Date:	3-22-99	Time Start:	1405
Location Desc:	NN Center Turn Lane #VA 20 SB-02 Timuquana			Time End:	1420
				Time Sample:	
				Amount Grout:	3 bag

PID / FID READINGS

Depth	Sample ID	Sample	Borehole Reading	Breathing Zone	Remarks
		59.0			1406
2		0.0	0.0	0.0	1408
4		0.0			~~1425~~ 1420
6		0.0			~~1425~~ 1420
8					
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	~~(3)~~ 2 40 ml Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-1

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL

COC #: 02312

Check if Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s): [signature]

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Bobcat)

BORING ID: CF-VA7-SB-02
DATE: 3-22-99
GEOLOGIST: J. Elliott
DRILLER: D. Heame

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
		Hand Auger	1	Asphalt + Limerock			
			2	BN	FG silty sand	SP/SM	Dry, no odor, limerock fragments, tar present
			3	orange	FG sand, very slightly silty	↓	moist, no odor
		↓	4	White / lt Grey	FG sand	SP	Saturated Water Table @4'
			5	↓	↓	↓	organic odor
			6				
			7	White			
		3.5 ↓ 4	8	↓	↓	↓	EOB @ 8'

recovery
sm
D

* When rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-VA7-SB-03
Sample Location: VA7

Sampler: J. Elliott

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-VA7-TMW-03	3-22-99	1456	White	6.03	0.295	4.08	24.6	none
Total Depth: 8'		DTW: 4'		Stickup: NA		Screen Int: 4-8'		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-VA7-SB-03
Date: 3-22-99
Location Desc.: NW — center turn Lane VA SB-03 Timuquana
Time Start: 1421
Time End: 1440
Time Sample: 1442
Amount Grout: 1/3 bag

Depth	Sample ID	PID / FID Sample	PID / FID Borehole Reading	PID / FID Breathing Zone	Remarks
2		0.0			1422
4	CF-VA7-SB-03-4	0.0	0.0	0.0	1424
6		0.0			1440
8		0.0			1440
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	yes
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	yes
EPA 8021B (WATER)	HCL	~~(3)~~ 2 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 13-1
Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL
COC #: 02312

Check if Collected:
[ ] MS / MSD
[ ] DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Bobcat)

BORING ID: CF-VA7-SB-03
DATE: 3-22-99
GEOLOGIST: J. Elliott
DRILLER: D. Hearne

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
		Hand Auger	1		Asphalt + Limerock		
			2	BN	FG silty sand	SP/SM	Dry, no odor, limerock debris
			3	Orange	FG sand, slightly silty		Moist, organic odor
			4	White	FG sand	SP	Water Table @ 4'
			5	Lt Grey			Saturated, Organic odor
			6	White			
			7				
		3 4	8				EOB @ 8'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-VA7-SB-04
Sample Location: VA7

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliott

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-VA7-TMW-04	3-22-99	1559	LT Tan	5.90	0.261	1.16	24.6	none
Total Depth: 8'	DTW: 4'	Stickup: NA	Screen Int: 4-8'					

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID:	CF-VA7-SB-04	Date:	3-22-99	Time Start:	1529
Location Desc.:	N SB-03 Driveway SB-04 Tinnaquana			Time End:	1547
				Time Sample:	
				Amount Grout:	1/3 bag

PID / FID READINGS

Depth	Sample ID	Sample	Borehole Reading	Breathing Zone	Remarks
2		0.0			1536
4		0.0			1539
6		0.0			1547
8		0.0	0.0	0.0	1547
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	2 (3) 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-1

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL

COC #: 02312

Check if Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s): J. Elliott

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Bobcat)

BORING ID: CF-VA7-SB-04
DATE: 3-22-99
GEOLOGIST: J. Elliott
DRILLER: D. Hearne

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
		Hand Auger	1	BN	FG silty sand	SP/SM	Organic & Limerock Debris, dry, no odor
			2				moist, no odor
			3	BN orange	FG very slightly silty sand		
			4				Water Table @ 4'
			5				Saturated, organic odor
			6	White	FG sand	SP	
			7				
		3.5 4	8				EOB @ 8

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-VA7-SB-05
Sample Location: VA7

Sampler: J. Elliott

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-VA7-TMW-05	3-22-99	1625	Lt. Tan	6.58	0.428	1.46	23.6	none
Total Depth: 8'	DTW: 4'	Stickup: NA	Screen Int: 4'-8'					

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-VA7-SB-05 Date: 3-22-99

Time Start: 1555
Time End: 1611
Time Sample:
Amount Grout: 1 bag

Location Desc.: MW Timuquana
SB-05 Driveway SB-04

Depth	Sample ID	PID / FID Sample	Borehole Reading	Breathing Zone	Remarks
2		0.0			1557
4		0.0			1559
6		— (Dropped)			1611
8		—	0.0	0.0	1611
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	2 ~~(3)~~ 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-1

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO Jax, FL

COC #: 02312

Check If Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s): Jennifer Elliott

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: GeoProbe (Bobcat)

BORING ID: CF-VA7-SB-05
DATE: 3-22-99
GEOLOGIST: J. Elliott
DRILLER: D. Hearne

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color*	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
		Hand Auger	1	BN	FG silty sand	SP/SM	Dry, no odor, organic & limerock debris
			2				Moist, no odor
			3	Orange	FG sand	SP	
			4				
			5				Water Table @ 4' Saturated, no odor
			6	White			
			7				
		3 4	8				EOB @ 8'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: CTO 72
PROJECT NUMBER: 0013
DRILLING COMPANY: GWP.
DRILLING RIG: D-120
BORING NUMBER: CPF-VA07-15
DATE: 12/2/99
GEOLOGIST: [illegible]
DRILLER: NICK S.

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Drillers BZ***
		~~Hand Auger~~				Brown-Lt Brown	Fine grained sand	SM	organic debris, dry, no odor				
	2												
	4								moist, no odor				0.0
		Bailing					silty sand		wet, no odor				
	6												
	8												
	10												0.6
	12												
	13												

*[illegible] rock coring, enter rock brokeness.
*[illegible]de monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks:

Converted to Well: Yes X No ____ Well I.D. #: CPF-VA07-15

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110
Soil Boring ID No.: CF-VA08-SB-01
Sample Location: VA08
Sampler: J. McGann

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-VA08-TMW-01	3/18/99	1730	Lt. Brown	6.57	.618	.97	23.6	None
Total Depth:	16'	DTW:	~14.0'	Stickup:	NA	Screen Int:	13'-16'	

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID:	CF-VA08-SB-01	Date:	3/18/99	Time Start:	1635
Location	N ↑			Time End:	1715
Desc.:	VA08 • SB-01			Time Sample:	
				Amount Grout:	1/3 bag

PID / FID READINGS

Depth	Sample ID	Sample	Borehole Reading	Breathing Zone	Remarks
2		2.6			1640
4		1.2			1644
6		7.0			1650
8		6.7	0.0	0.0	1655
10		3.5			1702
12		2.1			1703
14		1.3			1711
16		0.0			1712 EOB @16'
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	2 (3) 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-1

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL

COC #: 01597

Check If Collected:

☐ MS / MSD ☒ DUPLICATE / ID No.: CF-VA08-TMW-DU03

Signature(s): Jason J. McGann

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Bobcat)

BORING ID: CF-VA08-SB-01
DATE: 3/18/99
GEOLOGIST: J. McGunn
DRILLER: David helper: Nathan

Sample No. and Type or RQD	Depth (FL) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/FL) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks
	1	HAM Auger		Gray - Lt. Brown	Fine-grained Sand	SP	organic debris, dry, No odor Backfill material (rocks)
	2						Shells
	3						
	4						
	5						
	6						
	7			Gray			
	8						
	9						Backfill material, No odor (rocks) shells, moist
	10						
	11						
	12	4 4					
	13			Gray - Lt. Gray			
	14				Silty Sand w/ fine grained sand	SM/SP	Water table ~14.0', No odor
	15						Wet, No odor
	16	4 4			Fine-grained sand w/clay	SP/SC	EOB @ 16'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-VA08-SB-02
Sample Location: VA08

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. McLean

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-VA08-TMW-02	3/18/99	1830	Brown	6.73	1.88	.14	23.8	None
Total Depth: 160'	DTW: -14.6'	Stickup: NA	Screen Int: 121'-161'					

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-VA08-SB-02 Date: 3/18/99

Location Desc.: N ↑ SB-02 • VA08

Time Start: 1735
Time End: 1815
Time Sample: 1835
Amount Grout: 1/3 bag

PID / FID READINGS

Depth	Sample ID	Sample	Borehole Reading	Breathing Zone	Remarks
2		2.3			1740
4		8.1			1744
6		8.5			1747
8	CF-VA08-SB-02-08	13.1			1753
10		11.5			1801
12		11.9			1802
14		8.3			1810
16		7.2	0.0	0.0	1811 GOB DIEG
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	Yes
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	Yes
EPA 8021B (WATER)	HCL	2 ~~(3)~~ 40 ml Vials	ENCO	Yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	Yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 134

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL

COC #: 01597

Check if Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s): [signature]

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Bobcat)

BORING ID: CF-VA0F-SB-02
DATE: 3/18/99
GEOLOGIST: J. McGann
DRILLER: Dantri helper: Nathan

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
	1	1 ft Auger		Gray-brown	Fine-grained sand	SP	organic debris, dry, No odor Bottom material (rocks)
	2						Shells
	3						
	4						
	5						
	6						
	7						
	8						
	9			Gray			Moist, No odor, Shells, Bottom material (rocks)
	10						
	11						
	12	4 4					
	13			Gray-Lt Gray			
	14				Silty sand	SM	water table ~14.0, No odor
	15						wet, No odor
	16	4 4					EOB @ 16'

* When rock coring, enter rock brokeness.

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

Remarks:

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: CTO 72
PROJECT NUMBER: 0013
DRILLING COMPANY: GWP
DRILLING RIG: D-120
BORING NUMBER: CPF-VA08-15
DATE: 12/2/99
GEOLOGIST: [illegible]
DRILLER: Nick S.

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
		H/Ad Auger				gray-Brown	Fine-grained sand	SM	organic debris, dry, No odor				
	2												
	4												0.0
		Drilling				gray							
	6												
	8												
	10												0.0
									moist, No odor				
							Silty sand		wet, No odor				
	22												0.0

* In rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks: estimating moist + wet zones

Converted to Well: Yes X No ____ Well I.D. #: CPF-VA08-15

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-VA09-SB-01
Sample Location: VA09

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. McLean

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-VA09-TMW-01	3/18/99	1140	lt. brown	6.85	.641	.94	23.3	None
Total Depth: 7'		DTW: ~3.0'		Stickup: NA		Screen Int: 3'-7'		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-VA09-SB-01 Date: 3/18/99

Location Desc.: N — VA09 SB-01

Time Start: 1050
Time End: 1120
Time Sample: 1525
Amount Grout: 1/3 bag

Depth	Sample ID	PID / FID Sample	Borehole Reading	Breathing Zone	Remarks
2		199			1055
4	CF-VA09-SB-01-04	230	14.7	0.0	1059
6		41.0			1110
8		9.0			1112
10		8.9			1115 EOB @ 10'
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	Yes
EPA 8310 (SOIL)	None	(1) 4 oz. AG	ENCO	Yes
EPA 8021B (WATER)	HCL	2 (3) 40 mil Vials	ENCO	Yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	Yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-1

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL

COC #:

Check If Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s): James J. McLean

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Bobcat)

BORING ID: CF-VA09-SB-07
DATE: 3/18/99
GEOLOGIST: J. McLamm
DRILLER: David helper: Norman

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
	1	HAND Auger		Gray/ Dk. Gray	Fine-grained sand	SP	3" asphalt Backfill material dry, no odor
	2						moist, no odor
	3				Silty sand	SM	water table ~3.0', no odor
	4						wet, no odor
	5						
	6						
	7						
	8			Lt. Brown			
	9						
	10						EOB @ 10'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-VA09-SB-02
Sample Location: VA09

Sampler: J. McGlamb

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-VA09-TMW-02	3/18/99	1215	Lt. Brown Cloudy	6.14	.360	1.42	23.8	none
Total Depth:	7'	DTW:	-3.0'	Stickup:	NA	Screen Int:	3'-7'	

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID:	CF-VA09-SB-02	Date:	3/18/99	Time Start:	1145
Location Desc.:	N ↑ SB-02 • VA09			Time End:	1200
				Time Sample:	1535
				Amount Grout:	1/3 bag

Depth	Sample ID	PID / FID Sample	PID / FID Borehole Reading	PID / FID Breathing Zone	Remarks
2	CF-VA09-SB-02-02	5.6			1150
4		1.6	0.0	0.0	1154 EOB 04'
6					
8					
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	yes
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	yes
EPA 8021B (WATER)	HCL	2 ~~(3)~~ 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-1

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL

COC #:

Check If Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s): J. M. McGlamb

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Bobcat)

BORING ID: CF-VA09-SB-02
DATE: 7/18/94
GEOLOGIST: J. McLean
DRILLER: Hand helper: Nathan

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material classification	USCS*	Remarks
	1	Hand Auger		Gray - Dk. Gray	Fine-grained Sand	SP	3" asphalt backfill material dry, No odor
	2						moist, No odor
	3				Silty Sand	SM	water table ~3.0', No odor
	4						wet, No odor EOB @ 4'
	5						
	6						

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110
Soil Boring ID No.: CF-VA09-SB-03
Sample Location: VA09
Sampler: J. McGann

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
Total Depth:		DTW:		Stickup:		Screen Int:		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID:	CF-VA09-SB-03	Date:	3/18/99	Time Start:	1220
Location Desc.:	✗ • VA09 • SB-03			Time End:	1230
				Time Sample:	
				Amount Grout:	1/3 bag

Depth	Sample ID	PID / FID READINGS Sample	Borehole Reading	Breathing Zone	Remarks
2		18.1			1224
4		16.3	1.5	0.0	1230 EOB @4'
6					
8					
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	(3) 40 mil Vials	ENCO	
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-1

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL

COC #:

Check If Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s): J. McGann

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Bobcat)

BORING ID: CF-VA09-SB-03
DATE: 3/18/99
GEOLOGIST: J. McLaurin
DRILLER: David helper: Nathan

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION Color	MATERIAL DESCRIPTION Material Classification	USCS*	Remarks
	1	HAND Auger		Gray-Dk. Gray	Fine-grained sand	SP	3" asphalt Backfill material dry, No odor
	2						Moist, No odor
	3				Silty Sand	SM	Water table ~3.0', No odor
	4						wet, No odor EOBOH

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-VA09-SB-04
Sample Location: VA 09

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. McGann

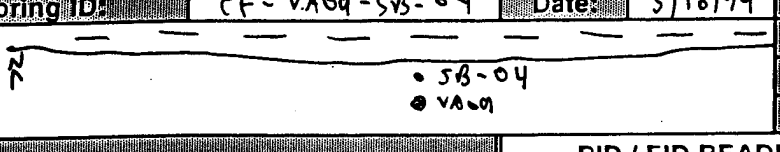
GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
Total Depth:		DTW:		Stickup:		Screen Int:		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-VA09-SB-04 Date: 3/18/99 Time Start: 1235
Time End: 1244
Time Sample:
Amount Grout: 1/3 bag

Location Desc.:



PID / FID READINGS

Depth	Sample ID	Sample	Borehole Reading	Breathing Zone	Remarks
2		13.7			1240
4		11.5	7.3	0.0	1244 EOB 04'
6					
8					
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	(3) 40 mil Vials	ENCO	
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-1

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL

COC #:

Check if Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s): Jason L. McGann

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Bobcat)

BORING ID: CF-VA09-SB-04
DATE: 3/18/99
GEOLOGIST: J. McCann
DRILLER: David helper: Nathan

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
	1	HAND Auger		Gray-black	Fine-grained Sand	SP	3" asphalt, backfill material dry No odor
	2	↓		↓	↓	↓	moist, no odor
	3			↓	Silty sand	SM	Water table ~3.0', no odor
	4	↓		Black	↓	↓	Wet, No odor EOB @ 4'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-VA09-SB-05
Sample Location: VA09

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. McCann

GROUNDWATER SAMPLING DATA

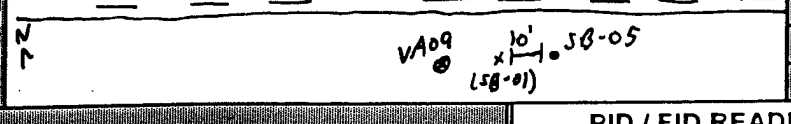
Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-VA09-TMW-05	3/18/99	1335	Lt. Brown Cloudy	6.31	.370	.36	21.6	None
Total Depth:	7'	DTW:	~3.0'	Stickup:	NA	Screen Int:	3'-7'	

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-VA09-SB-05 Date: 3/18/99

Time Start: 1305
Time End: 1315
Time Sample: 1510
Amount Grout: 3 bag

Location Desc.:



Depth	Sample ID	PID / FID Sample	Borehole Reading	Breathing Zone	Remarks
2	CF-VA09-SB-05-02	0.8			1310
4		0.6	0.0	0.0	1314 EOB @4'
6					
8					
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	yes
EPA 8310 (SOIL)	None	(1) 4 oz. AG	ENCO	yes
EPA 8021B (WATER)	HCL	2 (3) 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-1

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL

COC #:

Check If Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s): Jason L. McCann

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Bobcat)

BORING ID: CF-VA09-SB-05
DATE: 3/18/99
GEOLOGIST: J. McLunn
DRILLER: David helper: Nathan

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
	1	HAND Auger		Gray - DK. Gray	Fine-grained sand	SP	All asphalt, Backfill material dry, No odor
	2	↓		↓	↓	↓	Moist, No odor
	3	↓		↓	Silty Sand	SM	Water table ~3.0, No odor
	4	↓		↓	↓	↓	wet, No odor EOB @4'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: CTO 72
PROJECT NUMBER: 0013
DRILLING COMPANY: GWP.
DRILLING RIG: D-120
BORING NUMBER: CPF-VA09-15
DATE: 11/30/99
GEOLOGIST: [illegible]
DRILLER: Nick S.

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
		HA and Auger				Gray/ Brown	Fine-grained sand	SM	dry, odor				
	2								moist, odor				0.0
									wet, no odor				
	4												0.0
		Drilling					Silty sand						
	6												
													0.0
	8												
	10												0.0
	12												

* In rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks:

Converted to Well: Yes X No

Well I.D. #: CPF-VA09-15

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-VA10-SB-01
Sample Location: VA10

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliott

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-VA10-TMW-01	3-17-99	1116	clear cloudy	5.72	0.212	2.57	24.7	none
Total Depth: 16'		DTW: 11'		Stickup: NA		Screen Int: 12-16'		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-VA10-SB-01
Date: 3-17-99
Time Start: 1031
Time End: 1050
Time Sample:
Amount Grout: 1/3 bag

Location Desc.: N turn lane — SB-01 — VA

Depth	Sample ID	PID / FID READINGS Sample	Borehole Reading	Breathing Zone	Remarks
2		0.0			1040
4		0.0			1042
6		0.0			1050
8		0.0			1050
10		0.0			1059
12		0.0	0.0	0.0	1059
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	2 ~~(3)~~ 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 13-2
Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL
COC #: 01574

Check if Collected:
☐ MS / MSD ☐ DUPLICATE / ID No.:

Signature(s): [signature]

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe Track-Mounted

BORING ID: CF-NA10-SB-01
DATE: 3-17-99
GEOLOGIST: J. Elliott
DRILLER: R. Mooney

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
		Hand Auger	1	DK. BN	Concrete FG silty sand	SM	Dry, limerock + shell fragments no odor
			2				
			3	Lt Grey + Yellow Orange	Sandy Clay, FG, low plasticity, ~ 80% fines, stiff to very stiff		
			4				Moist/Dry, no odor
			5				
			6				
			7	Lt Grey			
			8				
			9	Lt Grey + Yellow Orange			
			10	Lt Grey	grades to slightly clayey sandy FG	SC	
			11				Water Table @ 11'
		4 of 4	12	Lt Grey			Saturated, no odor EOB @ 12'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110
Soil Boring ID No.: CF-VA10-SB00
Sample Location: VA10
Sampler: J. Elliott

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-VA10-~~3~~TMW-00	3-17-99	1148	~~clear~~ cloudy	5.43	0.143	4.00	24.6	none
Total Depth: 15'	DTW: 11'		Stickup: NA		Screen Int: 11-15'			

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-VA10-SB-00 Date: 3-17-99
Time Start: 1050
Time End: 1142
Time Sample:
Amount Grout: 1/3 bag
Location Desc.: N turn lane SB-00 30' VA

Depth	Sample ID	PID / FID Sample	PID / FID Borehole Reading	PID / FID Breathing Zone	Remarks
2		0.0			1050
4		0.0			1055
6		0.0			1131
8		0.0	0.0	0.0	1131
10		0.0			1142
12		0.0			1142
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	2 ~~(3)~~ 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-2

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL

COC #: 01594

Check If Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s): J. Elliott

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Track-mounted)

BORING ID: CF-VA10-SB-02
DATE: 3-17-99
GEOLOGIST: J. Elliott
DRILLER: R. Mooney

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
		Hand Auger	1		concrete		
				BN	FG silty sand	SM	Dry, limerock pockets, no odor
			2				
			3	Grey + yellow orange	Sandy clay, FG ~50 fines, medium plasticity	CL	Dry/moist, intermittant sand pockets
			4			CL/SC	
			5				
			6				
			7				
			8				
			9				
			10	Lt Grey			
			11		grades to		
			12		FG sand, slightly clayey	SP/SC	No odor Water Table @ 11'
							EOB @ 12'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110
Soil Boring ID No.: CF- VA10-SB-03
Sample Location: VA10
Sampler: J. Elliott

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-VA10-TMW-03	3-17-99	1231	cloudy	5.79	0.155	5.11	25.6	none
Total Depth: 15'		DTW: 11'		Stickup: NA		Screen Int: 11-15'		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-VA10-SB-03 Date: 3-17-99

Location Desc.: N ↑ SB-03 VA

Time Start: 1058
Time End: 1217
Time Sample: 1221
Amount Grout: 23 bag

PID / FID READINGS

Depth	Sample ID	Sample	Borehole Reading	Breathing Zone	Remarks
2		0.0			1058
4		0.0			1103
6		0.0			1206
8		0.0			1206
10	CF- VA10-SB-03-10	0.0			1217
12		0.0	0.0	0.0	1217
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	yes
EPA 8310 (SOIL)	None	(1) 8 oz. AG	ENCO	yes
EPA 8021B (WATER)	HCL	2 ~~(3)~~ 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-2

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL

COC #: 01594

Check if Collected:

☐ MS / MSD ☒ DUPLICATE / ID No.: CF- VA10-TMW-03-DUP JE

Signature(s):

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe Track-Mounted

BORING ID: CF-VA10-SB-03
DATE: 3-17-99
GEOLOGIST: J. Elliott
DRILLER: R. Mooney

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
		Hand Auger	1	Concrete			
				BN	FG silty sand	SM	Dry, limerock pockets no odor
			2				
			3	Grey yellow orange specks	Sandy Clay, ~50% fines, FG, pockets of FG sand, low plasticity	CL	Dry/Moist, no odor
			4				
			5				5.0'-5.5' is saturated
			6				
			7		Sandy Clay, ~60% fines, very stiff, FG		
			8				
			9				
			10	orange BN	FG sand	SP	moist, no odor
			11	Lt Grey	Clayey Sand, FG, ~20% fines	SC	Moist, no odor
		4 4	12		FG sand	SP	Saturated; Water Table @ 11'
							EOB @ 12'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-VA10-SB-04
Sample Location: VA10

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliott

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-VA10-TMW-04	3-17-99	1501	cloudy	5.12	0.158	3.78	26.6	none
Total Depth: 15'		DTW: 10'		Stickup: NA		Screen Int: 11-15'		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-VA10-SB-04
Date: 3-17-99
Time Start: 1400
Time End: 1430
Time Sample:
Amount Grout: 1/3 bag

Location Desc.: N 38.1' 28.9' VA road SB-04 Arby's Driveway

Depth	Sample ID	PID / FID Sample	Borehole Reading	Breathing Zone	Remarks
2		0.0			1400
4		0.0			1406
6		0.0			1408
8		0.0			1423
10		0.0			1432
12		0.0	0.0	0.0	1430
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) 8 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	2 (3) 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 13-2
Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL
COC #: 01594

Check if Collected:
[ ] MS / MSD
[ ] DUPLICATE / ID No.:

Signature(s): J. Elliott

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe Track-Mounted

BORING ID: CF-VA10-SB-04
DATE: 3-17-99
GEOLOGIST: J. Elliott
DRILLER: R. Mooney

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material classification	USCS*	Remarks
		Hand Auger	1	BN	FG silty sand	SM	Dry, no odor
			2	yellow/white	~~FG sand~~ Sandy Clay w/ sand stringers	~~SP~~ CL	Moist/Saturated, no odor
			3		~50% fines		
			4		FG sand	SP	Heavily Saturated no odor
			5				
			6				
			7	Lt Grey	Sandy Clay, ~60% fines FG	CL	Moist, no odor
			8				
			9				
			10	Lt Grey (CL) white (SP)	Sandy/Silty Clay ~60% fines, very FG, interpersed w/ FG sand very slightly clayey.	~~CL~~ SP	Moist, no odor
			11				Water Table @ 10'
			12	Lt Grey	~~FG sand, very~~ slightly clayey	SP/SC	~~Saturated (the sand)~~ Moist (the clay)
		4	13				Saturated EOB@13

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-~~AN~~ VA10-SB-05
Sample Location: VA10

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliott

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-VA10-TMW-05	3-17-99	1549	Clear/	5.79	0.214	4.0	26.1	none
Total Depth: 15'		DTW: 11'		Stickup: NA		Screen Int: 11-15'		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-VA10-SB-05
Date: 3-17-99
Time Start: 1500
Time End: 1539
Time Sample:
Amount Grout: 1/3 bag

Location Desc.: road ~~VA~~ 38.1' Arby's Driveway • SB-05

PID / FID READINGS

Depth	Sample ID	Sample	Borehole Reading	Breathing Zone	Remarks
2		0.0			1502
4		0.0			1504
6		0.0			1505
8		0.0			1521
10		0.0			1521
12		0.0	0.0	0.0	1539
14		0.0			1539
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	2 ~~(3)~~ 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 13-2
Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL
COC #: 01574

Check If Collected:
[ ] MS / MSD
[ ] DUPLICATE / ID No.:

Signature(s): J. Elliott

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe Track-Mounted

BORING ID: CF-~~AN~~ SB VA10-SB-05
DATE: 3-17-99
GEOLOGIST: J. Elliott
DRILLER: R. Mooney

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
		Hand Auger	1	BN	FG silty sand	SP/SM	Dry, no odor, Organic Debris
			2	Grey/BN	FG sand	SP	Moist, no odor
			3				
			4	Grey (CL) BN (SP)	Sandy clay, ~60% fines, medium plasticity interspersed with FG sand	CL & SP	
			5				
			6				
			7	Grey	Clayey sand	SC	
			8		Sandy clay FG	CL	
			9		Clayey sand	SC	
			10		FG sand, very slightly clayey	SP/SC	
			11		Sandy clay		
			12		Clayey sand, FG		Water Table @ 11'
			13		FG sand, v. slightly clayey	SP/SC	Saturated, no odor
		4 4	14				EOB @ 14'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-VA11-SB-01
Sample Location: VA11

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. McClam

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-VA11-TMW-01	3/29/99	0025	Dk. Brown	6.82	.461	3.22	18.5	None
Total Depth: 12'	DTW: ~8.0'	Stickup: NA	Screen Int: 8'-12'					

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-VA11-SB-01 Date: 3/29/99-3/25/99 Time Start: 2255
Time End: 2400
Time Sample: 0030
Amount Grout: 1/3 bag

Location Desc.: X medium Fine sand SB-01 medium * VA11

Depth	Sample ID	PID / FID Sample	Borehole Reading	Breathing Zone	Remarks
2		175			2258
4		138			2302
6		174			2355
8	CF-VA11-SB-01-08	254			2356
10	217	~~246~~ ppm			2359
12		248	298	0.0	2400 EOB @ 12'
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	yes
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	yes
EPA 8021B (WATER)	HCL	2 ~~(3)~~ 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-2

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL

COC #: 02314

Check if Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s): Joann R. McClam

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Bobcat)

BORING ID: CF-VA11-SB-01
DATE: 3/24/99 - 3/25/99
GEOLOGIST: J. McLean
DRILLER: David Helper/Nathan

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material classification	USCS*	Remarks
	1	HAND AUGER		Gray - Dx Gray	Fine-grained sand	SP	3" asphalt, SALEAM material (rocks) dry, No odor
	2						
	3						
	4						
	5			Black			Moist, No odor
	6						
	7						
	8	4 4					Water table ~8.0', No odor
	9				Fine-grained sand w/silt	SP/SM	Wet, No odor
	10				(Hard pan)		
	11						
	12	4 4					EOB @ 12'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-VA11-SB-02
Sample Location: VA11

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. McClam

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-VA11-TMW-02	3/24/99	2345	Dk Brown	6.16	.427	-0.04	22.7	slight petro odor
Total Depth: 12'		DTW: ~8.0'		Stickup: NA		Screen Int: 8'-12'		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-VA11-SB-02 Date: 3/24/99 - 3/25/99 Time Start: 2305
Time End: 2326
Time Sample: 0110
Amount Grout: 1/3 bag

Location Desc.: N — medium — Dirt Pile — medium — VA11 SB-02

PID / FID READINGS

Depth	Sample ID	Sample	Borehole Reading	Breathing Zone	Remarks
2		294			2310
4		874			2312
6	CF-VA11-SB-02-06	1375			2316
8		928			2317
10		448			2325
12		361	380	0.0	2326 EOB @ 12'
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	yes
EPA 8310 (SOIL)	None	(1) 4 oz. AG	ENCO	yes
EPA 8021B (WATER)	HCL	(3) 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-2

Drilling Area Background (PPM): 0.6

LAB INFO

LAB: ENCO
Jax, FL

COC #: 02314

Check if Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s): Jason McClam

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Bobcat)

BORING ID: CF-VAH-SB-02
DATE: 3/24/99 - 3/25/99
GEOLOGIST: J. McGann
DRILLER: David helper: Nathan

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
	1	HAND Auger		Gray - Dk. Gray	Fine-grained Sand	SP	3" asphalt backfill material (rocks) dry, no odor
	2						
	3						
	4			Lt. Brown			petro. odor
	5			Gray - Mk. Gray			moist, strong petro odor
	6			Black			
	7						
	8	4 4			Fine-Grained Sand w/ Silt	SP/SM	water table ~8.0', strong petro odor
	9						wet, petro odor
	10						wet, no odor
	11				(Hard pan)		
	12	4 2					GOB @ 12'.

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-VA11-SB-03
Sample Location: VA11

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliott

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-VA11-TMW-05	3-29-99	1104	BN	5.14	0.118	1.07	03.5	none
Total Depth: 9.5'		DTW: 8'		Stickup: NA		Screen Int: 4.5 to 9.5'		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-VA11-SB-03 Date: 3-29-99

Time Start: 1006
Time End: 1030
Time Sample: 1120
Amount Grout: backfilled

Location Desc.: PN Firestone SB-03 ↔ 103rd St

Depth	Sample ID	PID / FID Sample	PID / FID Borehole Reading	PID / FID Breathing Zone	Remarks
2		0.0			1008
4		0.0			1013
6	CF-VA11-SB-03-6	0.0			1020
8		0.0	0.0	0.0	1024
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	yes
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	yes
EPA 8021B (WATER)	HCL	~~(3)~~ 2 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-1

Drilling Area Background (PPM): 0.0

Backfilled with native soil

LAB INFO

LAB: ENCO
Jax, FL

COC #: Enco COC

Check If Collected:

☐ MS / MSD ☐ DUPLICATE / ID No.:

Signature(s): [signature]

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: ~~Gulf Atlantic Drilling~~ JE
DRILLING RIG: —

BORING ID: CF-VA11-SB-03
DATE: 3-29-99
GEOLOGIST: J. Elliott
DRILLER: —

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS	Remarks
		Hand Auger	1	Grey Blk	FG silty sand	SM	Dry, no odor, limerock & organic debris
			2				
			3	White	FG sand	SP	moist, no odor
			4				
			5	Black	FG silty sand, organic	SM	
			6				
			7				
			8				Water Table @ 8'
			9				Saturated, no odor
							EOB @ 9'

When rock coring, enter rock brokeness.
Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: _____

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110
Soil Boring ID No.: CF-VA11-SB-04
Sample Location: VA11
Sampler: J. Elliott

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-VA11-TMW-04	5-29-99	1309	Brown	4.80	0.168	4.00	22.8	none
Total Depth: 12	DTW: 11'	Stickup: NA	Screen Int: 7-12'					

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-VA11-SB-04
Date: 5-29-99
Time Start: 1141
Time End: ~~1150~~ 1157
Time Sample: 1156
Amount Grout: Backfilled hole

Location Desc.: N ↑ Firestone ⟷ 103rd St
• SB-04 (1st try)
• (2nd try)

Depth	Sample ID	PID / FID Sample	Borehole Reading	Breathing Zone	Remarks
2		0.0			1144
4		0.0			1148
6	CF-VA11-SB-04-06	0.0	0.0	0.0	1159
8		0.0			1202
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	yes
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	yes
EPA 8021B (WATER)	HCL	2 ~~(3)~~ 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 131
Drilling Area Background (PPM): 0.0
Backfilled hole w/ native soil

LAB INFO

LAB: ENCO
Jax, FL
COC #: ENCO COC

Check If Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s): [illegible]

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: ~~Gulf Atlantic Drilling~~ JF
DRILLING RIG:

BORING ID: CF-VA11-SB-04
DATE: 3-24-99
GEOLOGIST: J. Elliott
DRILLER:

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
		Hand Auger	1	Blk	FG silty sand	SM	Dry, no odor, organic material
			2				
			3				
			4				Moist, no odor
			5				
			6				
			7				
			8				
			9				
			10		FG silty sand, some Fe cementation		Moist/Dry, very hard, no odor
			11				
			12	Bl/Br/Tan/BN	~~FG silty sand~~	~~SP~~/SM	Refusal hard- auger another boring, get through hardpan layer. Water Table is at ~11' EOB @ 12'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-VA11-SB-05
Sample Location: VA11

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliott

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-VA11-TMW-05	3-29-99	1537	clear	6.28	.401	3.03	23.3	none
Total Depth: 12'		DTW: 9.5'		Stickup: NA		Screen Int: 6.5'-11.5'		

Choke has collapsing at the bottom

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-VA11-SB-05 Date: 3-29-99

Location Desc.: N 103rd St ← → Firestone ↕ SB-5

Time Start: 1418
Time End: 1502
Time Sample: 1446
Amount Grout: backfilled hole

Depth	Sample ID	PID / FID Sample	Borehole Reading	Breathing Zone	Remarks
2		0.0			1431
4		0.0			1434
6	CF-VA11-SB-05-6	0.0			1439
8		0.0	0.0	0.0	1454
10		0.0			1502
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	yes
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	yes
EPA 8021B (WATER)	HCL	2 ~~(3)~~ 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 131

Drilling Area Background (PPM): 0.0

Backfilled hole with native soil

LAB INFO

LAB: ENCO
Jax, FL

COC #: ENCO COC

Check If Collected:

☐ MS / MSD ☐ DUPLICATE / ID No.:

Signature(s): J. Elliott

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: ~~Gulf Atlantic Drilling~~
DRILLING RIG:

BORING ID: CF-VA11-SB-05
DATE: 3-24-99
GEOLOGIST: J. Elliott
DRILLER:

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Description	USCS*	Remarks
		Hand Auger	1	BN	FG silty Sand	SM	Dry, no odor, limerock ~~and organic debris~~
			2				
			3	Tan	FG sand	SP	Moist, ~~no~~ JE odor: organic
			4				
			5	Blk	FG silty sand		
			6				
			7				
			8				
			9				
			10		Hard pan		
			11				Water Table @ 9.5'
			12				Saturated, ~~no~~ odor: organic FOR @ 12'

When rock coring, enter rock brokeness.
* Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-VA11-SB-06 E
Sample Location: VA11

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliott

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-VA11-TMW-06	3-29-99	1633	clear	5.74	.187	1.42	24.5	none
Total Depth:	13.5	DTW:	9'	Stickup:	NA	Screen Int:	5.5-10.5	

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID:	CF-VA11-SB-06	Date:	3-29-99	Time Start:	1531
Location Desc.:	N SB-05 Firestone 103rd St ↔			Time End:	1600
				Time Sample:	1550
				Amount Grout:	Filled w/ play sand

Depth	Sample ID	PID / FID Sample	Borehole Reading	Breathing Zone	Remarks
2		41.5			1533
4		44.6			1542
6	CF-VA11-SB-06-6	0.0			~~1550~~ 1548
8		0.0	0.0	0.0	1600
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	yes
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	yes
EPA 8021B (WATER)	HCL	(3) 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-1

Drilling Area Background (PPM): 0.0

Filled hole with play sand

LAB INFO

LAB: ENCO
Jax, FL

COC #: ENCO COC

Check If Collected:

☐ MS / MSD ☐ DUPLICATE / ID No.:

Signature(s): J. Elliott

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: ~~Gulf Atlantic Drilling~~
DRILLING RIG: —

BORING ID: CF-VA11-SB-06
DATE: 3-29-94
GEOLOGIST: J. Elliott
DRILLER: —

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material classification	USCS	Remarks
		Hand Auger	1	BLK	FG silty sand	SM	Dry, no odor, ~~organic~~
			2				limerock debris
			3	Tan	FG sand	SP	~~Moist, no odor~~
			4				
			5	BLK	FG silty sand	SM	
			6				
			7				
			8				
			9				Water Table @ 9'
			10		Hard pan		Saturated, no odor
			11				EOB @ 10.5'

When rock coring, enter rock brokeness.
Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-VA12-SB-01
Sample Location: VA12

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. McLann

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-VA12-TMW-01	3/15/99	1405	Brown	5.48	.207	.59	21.7	None
Total Depth:	12'	DTW:	~8.0'	Stickup:	NA	Screen Int:	8'-12'	

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID:	CF-VA12-SB-01	Date:	3/15/99	Time Start:	1335
Location Desc.:	N ↑ median 3.5' SB-01 VA12			Time End:	1353
				Time Sample:	
				Amount Grout:	1/3 bag

Depth	Sample ID	PID / FID Sample	Borehole Reading	Breathing Zone	Remarks
2		0.0			1337
4		0.0			1341
6		7.1	0.0	0.0	1346
8		0.0			1350
10		0.0			1351 EOB@10'
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	2 ~~(3)~~ 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-1

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL

COC #:

Check if Collected:

[ ] MS / MSD [X] DUPLICATE / ID No.: Took water dup: CF-VA12-TMW-DU05

Signature(s): Jason L McLann

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Bobcat)

BORING ID: CF-VA12-SB-01
DATE: 3/15/99
GEOLOGIST: J. McCann
DRILLER: David helper: Nathan

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material classification	USCS*	Remarks
	1	HAND Auger		Gray-Black	Fine-grained Sand	SP	organic debris, dry, no odor
	2						
	3						
	4						dry, No odor
	5						
	6						
	7			Brown			moist, No odor
	8				Fine-grained Silty Sand	SP/SM	WATER Table ~8.0', No odor
	9			Black			WET, No odor
	10	4 4					EOB @10'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site:	NASCF - NASJAX Fuel Pipeline	Soil Boring ID No.:	CF- VA12-SB-02
Project No.:	0013 DM0050110	Sample Location:	VA12
[X] Temporary Monitoring Well		Sampler:	J. McLean
[X] Soil Boring			
[ ] Other:			

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF- VA12-TMW-02	3/15/99	1440	Brown	5.63	0.245	1.10	21.7	NONE
Total Depth:	12'	DTW:	~8.0'	Stickup:	NA	Screen Int:	8'-12'	

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID:	CF-VA12-SB-02	Date:	3/15/99	Time Start:	1410
Location Desc.:	N ↑ Median VA12-1.5B-02 3.7'			Time End:	1426
				Time Sample:	1425
				Amount Grout:	1/3 bag

PID / FID READINGS

Depth	Sample ID	Sample	Borehole Reading	Breathing Zone	Remarks
2		0.0			1413
4		7.2			1416
6		9.7	0.0	0.0	1420
8	CF-VA12-SB-02-07	0.0			1425
10		0.0			1426 EOB@10'
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	yes
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	yes
EPA 8021B (WATER)	HCL	2 ~~(3)~~ 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-1

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO Jax, FL

COC #:

Check If Collected:

☐ MS / MSD ☐ DUPLICATE / ID No.:

Signature(s): Jason J. McLean

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG:

BORING ID: CF-VA12-SB-02
DATE: 3/15/99
GEOLOGIST: J. McLunn
DRILLER: David Helper; Norman

Sample No. and Type or RQD	Depth (FL) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/FL) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
	1	1 Hand Auger		Gray-Black	Fine-grained sand	SP	organic debris, dry No odor
	2						
	3						
	4						dry, No odor
	5						
	6						
	7			Brown			moist, No odor
	8			Black	Fine-grained silty sand	SP/SM	water table ~8.0', No odor
	9						wet, No odor
	10	4 4					EOB @ 10'

* When rock coring, enter rock brokeness.

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

Remarks:

Converted to Well: Yes ____ No ✓ Well I.D. #:

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-VA12-SB-03
Sample Location: VA12

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliott

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
Total Depth:		DTW:		Stickup:		Screen Int:		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-VA12-SB-03 Date: SB-03 3-25-99

Location Desc.: NA median 1-3-81 SB-03 VA

Time Start: 1410
Time End: 1423
Time Sample: 1509
Amount Grout: —

Depth	Sample ID	PID / FID Sample	PID / FID Borehole Reading	PID / FID Breathing Zone	Remarks
2	CF-VA12-SB-03-2	138			no petro odor 1412
4		58.2			1416
6		11			1421
8					
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	yes
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	yes
EPA 8021B (WATER)	HCL	(3) 40 mil Vials	ENCO	
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-1

Drilling Area Background (PPM): 0.0

Backfilled holes

LAB INFO

LAB: ENCO
Jax, FL

COC #:

Check if Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: ~~Gulf Atlantic Drilling~~ JE
DRILLING RIG: —

BORING ID: CF-VA12-SB-03
DATE: 3-25-99
GEOLOGIST: J Elliott
DRILLER: —

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
		Hand Auger	1	BK	FG Silty Sand	SM	Dry, Organic odor, ~~Concrete & Shell~~ fragments
			2				
			3				
			4				
			5				Moist, Organic Odor
			6	Gray			
			7	BK			Water Table @ 7' EOB @ 7

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110
Soil Boring ID No.: CF-VA12-SB-04
Sample Location: VA 12
Sampler: J. Elliott

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
Total Depth:		DTW:		Stickup:		Screen Int:		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-VA12-SB-04 Date: 3-05-99
Time Start: ~~1412~~ 1435
Time End: 1455
Time Sample: —
Amount Grout: —
Location Desc.: N Median SB04 VA 13.3'

Depth	Sample ID	PID / FID Sample	Borehole Reading	Breathing Zone	Remarks
2		4.7			1438
4		2.5			1442
6		0.0			1455
8					
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) 8 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	(3) 40 mil Vials	ENCO	
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-1

Drilling Area Background (PPM): 0.0

Backfilled holes

LAB INFO

LAB: ENCO Jax, FL

COC #:

Check if Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: ~~Gulf Atlantic Drilling~~
DRILLING RIG: —

BORING ID: CF-VA12-SB-04
DATE: 3-25-99
GEOLOGIST: J. Elliott
DRILLER: —

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
		Hand Auger	1	Black	FG. Silty sand	SM	Dry, organic odor, ~~organic & concrete~~ debris
			2				
			3				
			4				
			5				Moist, organic odor
			6	Grey (Brown)	FG sand	SP	
		X	7				Water Table @ 7'
							EOB @ 7.5'

* When rock coring, enter rock brokeness.

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

Remarks: _____

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site:	NASCF - NASJAX Fuel Pipeline	Soil Boring ID No.:	CF-VA13-SB-01
Project No.:	0013 DM0050110	Sample Location:	VA13

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. McCann

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-VA13-TMW-01	3/11/99	1545	Brown	6.38	.413	1.27	23.8	NONE
Total Depth:	14'	DTW:	~11.0'	Stickup:	N/A	Screen Int:	10'-14'	

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID:	CF-VA13-SB-01	Date:	3/11/99	Time Start:	1440
Location Desc.:	N SB-01 near VA13			Time End:	1515
				Time Sample:	
				Amount Grout:	1/3 bag

Depth	Sample ID	PID / FID READINGS Sample	Borehole Reading	Breathing Zone	Remarks
2		1.3			1444
4		0.7	0.0	0.0	1447
6		0.8			1455
8		0.7			1456
10		0.7			1500
12		0.8	0.7	0.0	1501
14		0.7			1515 EOB @14
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	(3) 40 mil Vials	ENCO	YES
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	YES

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-1

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL

COC #: 00837

Check if Collected:

[ ] MS / MSD
[X] DUPLICATE / ID No.: Took water dup. CF-VA13-TMW-DU01

Signature(s): James A. McCann

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Truck)

BORING ID: CF-VA13-SB-01
DATE: 3/11/99
GEOLOGIST: J. McCann
DRILLER: David Helper / Nathan

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
	1	HAND Auger		Dk Brown-Black	Fine-grained Sand	SP	organic debris, dry, No odor
	2						
	3						
	4						
	5						dry, No odor
	6						
	7			Black-Gray			
	8	3 4					
	9						Moist, No odor
	10			Gray			
	11						Water table ~11.0, No odor
	12	4 4			slight silt	SM	Wet, No odor
	13			Black	Silty Sand	SM	
	14	2 2					EOB @ 14'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110
Soil Boring ID No.: CF - VA13 - SB-02
Sample Location: VA13
Sampler: J. McCann

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-VA13-TMW-02	3/11/99	1635	Brown	5.58	.102	.20	24.1	None
Total Depth: 14'	DTW: -11.0'	Suckup: N/A	Screen Int: 10'-14'					

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-VA13-SB-02
Date: 3/11/99
Time Start: 1600
Time End: 1623
Time Sample: 1620
Amount Grout: V3 bag
Location Desc.: Medium VA13 SB-02

PID / FID READINGS

Depth	Sample ID	Sample	Borehole Reading	Breathing Zone	Remarks
2		0.4			1608
4		0.3	0.0	0.0	1610
6		0.4			1615
8		0.3			1616
10	CF-VA13-SB-02-10	0.3			1620
12		0.3			1621 EOB@12'
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	YES
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	YES
EPA 8021B (WATER)	HCL	(3) 40 mil Vials	ENCO	YES
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	YES

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 13-1
Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL
COC #: 00837

Check if Collected:
[ ] MS / MSD
[ ] DUPLICATE / ID No.:

Signature(s): Jason D. McCann

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Truck)

BORING ID: CF-VA13-SB-02
DATE: 3/11/99
GEOLOGIST: J. McCann
DRILLER: David helper: Nathan

Sample No. and Type or RQD	Depth (Ft) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION Color	MATERIAL DESCRIPTION Material Classification	USCS*	Remarks
	1	HAND Auger		Black - Gray	Fine-grained Sand	SP	organic debris, dry, No odor
	2						
	3						dry, No odor
	4						
	5						
	6						
	7						
	8	3 4					
	9			Gray	Fine-grained silty sand	SP/SM	moist, No odor
	10						
	11			Black.	Silty Sand	SM	Water Table ~ 11.0', No odor
	12	4 4					Wet, No odor EOBP 12'

* When rock coring, enter rock brokeness.

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

Remarks:

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-VA13-SB-03
Sample Location: VA13-SB-03

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Ellis

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
Total Depth:		DTW:		Stickup:		Screen Int:		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID:	CF-VA13-SB-03	Date:	3-23-99	Time Start:	1214
Location Desc.:	TN median SB-03 VA 6'10"			Time End:	1236
				Time Sample:	—
				Amount Grout:	—

PID / FID READINGS

Depth	Sample ID	Sample	Borehole Reading	Breathing Zone	Remarks
2		0.3			1216
4		0.4	0.0	0.0	1220
6		0.0			1228
8		0.1			1234
10		0.0			1236
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	(3) 40 mil Vials	ENCO	
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-1

Drilling Area Background (PPM): 0.0

Backfilled holes

LAB INFO

LAB: ENCO
Jax, FL

COC #:

Check If Collected:

☐ MS / MSD ☐ DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: ~~Gulf Atlantic Drilling~~
DRILLING RIG: —

BORING ID: CF-VA13-SB-03
DATE: 3-23-99
GEOLOGIST: J. Elliott
DRILLER:

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
		Hand Auger	1	Dk Brn	FG Silty Sand	SM	Dry, no odor, Organic, ~~Shell & limestone~~ Debris
			2				
			3	Tan			
			4	Dk Brn			
			5				Moist, no odor
			6				
			7	Grey			
			8				
			9	LT Grey Brn	FG Sand	SP	
			10				Water Table @ 10' EOB @ 10'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-~~VA14~~ VA13-SB-04
Sample Location: VA ~~#~~ 13

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliott

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
Total Depth:		DTW:		Stickup:		Screen Int:		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID:	CF-VA14-SB-04	Date:	3-25-99	Time Start:	1240
Location Desc.:	N median 2.4' VA# SB-04			Time End:	1306
				Time Sample:	—
				Amount Grout:	—

Depth	Sample ID	PID / FID READINGS Sample	Borehole Reading	Breathing Zone	Remarks
2		0.0			1244
4		7.4			1249
6		9.4			1254
8		8.6			1303
10		7.3			1306
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	✓
EPA 8021B (WATER)	HCL	(3) 40 mil Vials	ENCO	
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 15-1

Drilling Area Background (PPM): 0.0

Backfilled holes

LAB INFO

LAB: ENCO
Jax, FL

COC #:

Check if Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s): [signature]

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: ~~Gulf Atlantic Drilling~~
DRILLING RIG: —

BORING ID: CF-VA13-SB-04
DATE: 3-25-94
GEOLOGIST: J. Elliott
DRILLER: —

Sample No. and Type or RQD	Depth (FL) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/FL) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
		~~Hand Auger~~	1	DK BN	FG silty sand	SM	Dry, no odor, shell ~~organic & Limerock~~ debris
			2				
			3				
			4				
			5				Moist, no odor
			6				
			7				
			8	Dk Grey			
			9				moist, no odor
			10	Lt Grey	~~S~~ FG sand	SP	Water Table @ 10'
							EOB @ 10

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110
Soil Boring ID No.: CF-VA14-SB-01
Sample Location: VA14

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliott

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-VA14-TMW-01	3-11-99	1531	~~Cloudy~~ Clear	6.5	0.68	1.9	24	none
Total Depth: 16'		DTW: 11'		Stickup: NA		Screen Int: 12-16'		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID:	CF-VA14-SB-01	Date:	3-11-99	Time Start:	1415
Location Desc.:	N SB-01 9-7-99 35 VA median			Time End:	1516
				Time Sample:	
				Amount Grout:	1/3 bag

PID / FID READINGS

Depth	Sample ID	Sample	Borehole Reading	Breathing Zone	Remarks
2		0.3		0.0	1435
4		0.0	8.3		1440
6		1.0			1443
8		0.5			1455
10		0.6			1506
12		0.8	1.1	0.1	SE ~~1506~~ 1506
14		0.3			1516
16		0.2			SE ~~1516~~ 1516
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	2 ~~(3)~~ 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 13-2
Drilling Area Background (PPM): 2.0

LAB INFO

LAB: ENCO
Jax, FL
COC #:

Check If Collected:

[ ] MS / MSD
[ ] DUPLICATE / ID No.:

Signature(s): J. Elliott

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe Track-Mounted

BORING ID: CF-~~ANT~~ E-VA14-SB-01
DATE: 3-11-97
GEOLOGIST: J. Elliott
DRILLER: R. Mooney

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
		Hand Auger	1	DK BN	FG sand, slightly silty	SP/SM	Dry, shell fragments & lime rock, no odor
			2				concrete ~
			3				
			4				
			5				
			6				
			7				concrete fragments
		2** 2**	8	Grey	FG silty sand	SM	Dry to moist, no odor
			9	BN	FG sand, slightly silty	SP/SM	moist
			10				
			11	Tan	FG sand	SP	Water Table -- 11'
		3 4	12				Saturated
			13				
			14	Orange Tan			Borehole collapsing, unable to get soil sample any further
			15	Lt Grey			
		3 4	16	DK Grey			EOB @ 16'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110
Soil Boring ID No.: CF-VA14-SB-02
Sample Location: VA14

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliott

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-VA14-SB-TMW-02	3-11-99	1650	cloudy	6.4	0.59	1.5	24	none
Total Depth: 16	DTW: ~11'		Stickup: NA		Screen Int: 12-16'			

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-VA14-SB-02-10
Date: 3-11-99
Time Start: 1536
Time End: 1630
Time Sample: 1621
Amount Grout: 3 bags

Location Desc.: MN 5.5' SB01 VA SB-02 median

Depth	Sample ID	PID / FID Sample	Borehole Reading	Breathing Zone	Remarks
2		0.4			1544
4		0.1			1548
6		0.4			1606
8		0.5			~~1607~~ 1621
10	CF-VA14-SB-02-10	0.7	0.5	0.0	1621
12		0.5			1630
14		0.6			1630
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	yes
EPA 8310 (SOIL)	None	(1) 4 oz. AG	ENCO	yes
EPA 8021B (WATER)	HCL	2 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 13-2
Drilling Area Background (PPM): 2.0

LAB INFO

LAB: ENCO
Jax, FL
COC #:

Check If Collected:
[ ] MS / MSD
[ ] DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe Track-Mounted

BORING ID: CF-VAH-SB-00
DATE: 3-11-99
GEOLOGIST: J. Elliott
DRILLER: R. Mooney

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
		Hand Auger	1	DK BN	FG sand, slightly silty	SP/SM	Dry, no odor organic & shell debris, limerock
			2				
			3				
			4				
			5				
		2 2	6	Tan			Dry to moist, no odor
			7				moist, no odor
			8				
			9	Grey			
		3 4	10				
			11	Tan	FG sand	SP	Heavily saturated
			12	White			
			13	BLK			
		3 4	14				EOB@14'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110
Soil Boring ID No.: CF-VA14-SB-03
Sample Location: VA14

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliott

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
Total Depth:		DTW:		Stickup:		Screen Int:		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-VA14-SB-03
Date: 3-24-99
Time Start: 0959
Time End: 1016
Time Sample: —
Amount Grout: —
Location Desc.: NN median VA • SB-03 3.6'

Depth	Sample ID	PID / FID Sample	Borehole Reading	Breathing Zone	Remarks
2		34.2			1000 no petro
4		38.3			1006 odor
6		42.1			1010
8		194			1013
10		110	0.0	0.0	1016
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	(3) 40 mil Vials	ENCO	
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 13-1
Drilling Area Background (PPM): 0.0
PID may be reading incorrectly
Backfilled holes

LAB INFO

LAB: ENCO
Jax, FL
COC #:

Check If Collected:
[ ] MS / MSD
[ ] DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: ~~Gulf Atlantic Drilling~~
DRILLING RIG: —

BORING ID: CF-VA14-SB-03
DATE: 3-25-99
GEOLOGIST: J Elliott
DRILLER: —

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
		Hand Auger	1	Dk Brn	FG silty sand	SM	organic & limerock debris, dry, no odor
			2				
			3				
			4				
			5				moist, organic & limerock debris, no odor
			6				
			7	Grey			
			8				
			9				
			10	Tan	FG sand	SP	Moist/Saturated, no odor EOB @ 10.5'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110
Soil Boring ID No.: CF-VA14-SB-04
Sample Location: VA14

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliott

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
Total Depth:		DTW:		Stickup:		Screen Int:		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID:	CF-VA14-SB-04	Date:	3-25-11	Time Start:	1108
Location Desc.:	N median SB-04 * VA			Time End:	1140
				Time Sample:	1152
				Amount Grout:	—

Depth	Sample ID	PID / FID READINGS Sample	Borehole Reading	Breathing Zone	Remarks
2	CF-VA14-SB-04-2	300	2nd sample reading at 2' = 1.7 ppm		no petro odor
4		294			
6		300			
8		171			
10		181			
12		65	1.5	0.0	
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	yes
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	yes
EPA 8021B (WATER)	HCL	(3) 40 mil Vials	ENCO	
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	

OBSERVATIONS / NOTES

PID CAL. 100 PPM Field Log Book No. 13-1

Drilling Area Background (PPM): 0.0

PID may be reading incorrectly

LAB INFO

LAB: ENCO
Jax, FL

COC #:

Check if Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: ~~Gulf Atlantic Drilling~~
DRILLING RIG: —

BORING ID: CF-VA14-SB-04
DATE: 3-25-99
GEOLOGIST: J. Ellrott
DRILLER: —

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
		Hand Auger	1	Dk Brn	FG silty sand	SM	Organic & Limerock debris, plastic & bone fragments scattered
			2				
			3				
			4				Dry, no odor
			5				
			6				Moist, no odor
			7				
			8				
			9				
			10				
			11	Tan	FG sand	SP	Water Table @ 11'
			12				Saturated, no odor
							EOB @ 12'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: CTO 72
PROJECT NUMBER: 0013
DRILLING COMPANY: Groundwater Protection
DRILLING RIG: D-120
BORING NUMBER: CEFU VA14-15
DATE: 11/29/99
GEOLOGIST: [illegible]
DRILLER: Nick Smavitto

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
		Hand Auger				gray-black	Fine grained sand	SM	organic debris, no odor, dry				
	2												
	4												
		Drilling											
	6												
	8												
	10												0.0
									moist, no odor				
									wet, no odor				
	20												

* In rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: estimating moist and wet zones.

Drilling Area Background (ppm): 0.0

Converted to Well: Yes X No ____ Well I.D. #: CEFU VA14-15

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110
Soil Boring ID No.: CF-VA15-SB-01
Sample Location: VA 15

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliott

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-VA15-TMW-01	3-10-99	1214	RD BN	5.7	0.23	2.8	23°C	none
Total Depth: 8'		DTW: 4.5'		Stickup: NA		Screen Int: 4-8'		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID:
Date:
Time Start: 1105
Time End: 1126
Time Sample:
Amount Grout: 5 gal 1/3 bag

Location Desc.: NN Median SB-01 20' -1 *NA

PID / FID READINGS

Depth	Sample ID	Sample	Borehole Reading	Breathing Zone	Remarks
2		0.0			1105
4		0.0			1111
6		0.0			~~8~~ 1126
8		0.0	0.0	0.0	1126
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	2 ~~(3)~~ 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 13-2
Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL
COC #:

Check if Collected:
[ ] MS / MSD
[ ] DUPLICATE / ID No.:

Signature(s): [signature]

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe Track-Mounted

BORING ID: CECF-VAB-SB-01
DATE: 3-10-99
GEOLOGIST: J. Elliott
DRILLER: R. Moong

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
		Hand Auger	1	Grey BN	FG sand, slightly silty	SP SM	very dry. organic debris & limerock, no odor
			2	Lt Grey	FG sand	SP	dry to moist no odor
			3	Dk rd. BN	FG silty sand	SM	moist, no odor
			4				Water Table ~4.5'
			5				saturated, no odor
			6				
			7				
		4	8				EOB @ 8'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF - VA15-SB-02
Sample Location: VA15

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. McClain

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-VA15-TMW-02	3/10/99	1135	Brown	5.04	.121	.63	23.9	None
Total Depth:	7.5'	DTW:	~4.0'	Suckup:	0.5'	Screen Int:	3.5'-7.5'	

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID:	CF-VA15-SB-02	Date:	3/10/99	Time Start:	1055
Location Desc.:	N, medium, VA15, SB-02			Time End:	1120
				Time Sample:	
				Amount Grout:	1/3 bag

PID / FID READINGS

Depth	Sample ID	Sample	Borehole Reading	Breathing Zone	Remarks
2		1.2			1100
4		0.8			1103
6		0.6			1112
8		0.6	0.0	0.0	1113 GOB @ 8'
10					
12					
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	(3) 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM

Field Log Book No. 13-1

Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL

COC #:

Check if Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s): Joseph J. McClain

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe (Truck)

BORING ID: CF-VA15-SB-02
DATE: 3/10/99
GEOLOGIST: J. McLann
DRILLER: David helper: Nathan

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION Color	MATERIAL DESCRIPTION Material Classification	USCS*	Remarks
	1	1 Hand Auger		Dk. Brown	Fine-grained sand	SP	organic debris, dry, no odor
	2			Dk. Brown to Gray	↓		moist, no odor
	3			↓	Fine grained sand / slightly silt	SP/SM	moist, No odor
	4			Dk Brown to Brown	↓	SP/SM	water table ~4.0', no odor
	5			Black	silty sand	SM	wet, no odor
	6			↓	↓	↓	↓
	7						
	8	4 4		↓	↓	↓	↓ EOB @ 8'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110

Soil Boring ID No.: CF-VA15-SB-03
Sample Location: VA 15

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

Sampler: J. Elliott

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-VA15-TMW-03	3-10-99	1315	RD BN	5.7	0.23	1.8	24	none
Total Depth: 12	DTW: 4.5	Stickup: NA	Screen Int: 8-12					

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-VA15-SB-03-5
Date: 3-10-99
Time Start: 1206
Time End: 1243
Time Sample: 1559
Amount Grout: 1/3 bag

Location Desc.: ↑N median •SB-03 SB-03-5 *NA

Depth	Sample ID	PID / FID Sample	Borehole Reading	Breathing Zone	Remarks
2		0.0			1210
4		0.0			1212
6	CF-VA15-SB-03-#5	0.0			1226
8		0.0	0.0	0.0	1226
10		0.0			1243
12		0.0			1243
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	yes
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	yes
EPA 8021B (WATER)	HCL	2 ~~(3)~~ 40 mil Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 13-2
Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL
COC #:

Check If Collected:
[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s): J. Elliott

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe Track-Mounted

BORING ID: CF-VA15-SB-03
DATE: 3-10-99
GEOLOGIST: J. Elliott
DRILLER: R. Mooney

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color *	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks
		Hand Auger	1	DK BN	FG sand, slightly silty	SP/SM	Dry, Organic Debris Lime rock, no odor
			2	↓	↓	↓	
			3	Lt Grey	FG sand	SP	moist, no odor
			4	DK Rd BN	FG silty sand	SM	moist, no odor
			5				Water Table ~4.5'
			6				Saturated, no odor
			7	Rd BN			
		4	8	↓	↓	↓	↓
			9				Heavily Saturated
			10				
			11				
		2	12	↓	↓	↓	↓ EOB @ 12'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc. DPT SAMPLE LOG SHEET

Project / Site: NASCF - NASJAX Fuel Pipeline
Project No.: 0013 DM0050110
Soil Boring ID No.: CF-VA15-SB-04
Sample Location: VA 15
Sampler: J. Elliott

[X] Temporary Monitoring Well
[X] Soil Boring
[ ] Other:

GROUNDWATER SAMPLING DATA

Sample ID	Date	Time	Color	pH	S.C.	D.O.	Temp. (C)	Odor
CF-VA15-TMW-04	3-10-99	1546	cloudy	4.8	0.10	0.5	24	none
Total Depth: 12'		DTW: 4.5'		Stickup: NA		Screen Int: 8-12'		

SOIL SAMPLE / DIRECT READ INSTRUMENT LOG DATA

Soil Boring ID: CF-VA15-SB-04
Date: 3-10-99
Time Start: 1509
Time End: 1532
Time Sample:
Amount Grout: 3 bags

Location Desc.: N median 20' 1 SB-04 VA

PID / FID READINGS

Depth	Sample ID	Sample	Borehole Reading	Breathing Zone	Remarks
2		0.0			1509
4		0.0			1514
6		0.0			1521
8		0.0	0.0	0.0	1521
10		0.0			1530
12		0.0			1530
14					
16					
18					
20					

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA 8021B (SOIL)	None	(3) Encore	ENCO	
EPA 8310 (SOIL)	None	(1) ~~8~~ 4 oz. AG	ENCO	
EPA 8021B (WATER)	HCL	2 ~~(3)~~ 40 ml Vials	ENCO	yes
EPA 8310 (WATER)	None	(1) one liter AG	ENCO	yes

OBSERVATIONS / NOTES

PID CAL. 100 PPM
Field Log Book No. 132
Drilling Area Background (PPM): 0.0

LAB INFO

LAB: ENCO
Jax, FL
COC #:

Check If Collected:
[ ] MS / MSD
[ ] DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Gulf Atlantic Drilling
DRILLING RIG: Geoprobe Track-Mounted

BORING ID: CF-VA15-SB-04
DATE: 3-10-04
GEOLOGIST: J. Elliott
DRILLER: R. Mooney

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks
		Hand Auger	1	DK BN	FG sand, slightly silty	SP/SM	Dry, Organic Debris & Shell Fragments
			2				
			3	LT Grey	FG sand	SP	moist, No odor
			4	DK Rd BN	FG silty sand	SM	Water Table ~4.5'
			5				Heavily saturated, no odor
			6				saturated, no odor
			7	Rd BN			
			8				
			9		FG silty sand		heavily saturated, no odor
			10				
			11			SP/SM	
		4 4	12				saturated, no odor
							EOB @ 12'

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc.

Boring Log

MD Page 1 of 1

PROJECT NAME:	NAS Cecil Field	BORING ID:	CEF-~~AN10~~ TH3-SB05
PROJECT NUMBER:	0013 DMO50110	DATE:	10/10/00
DRILLING COMPANY:	Tetra Tech NUS, Inc.	GEOLOGIST:	Mervin Dale
DRILLING RIG:	Hand Auger	DRILLER:	Mervin Dale

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks
	0-2"				Asphalt		
	2"-1'				limerock		
	1-2'			lt. brn/gray	sl. silty fine sand	SM/SP	damp OVA FID Sample @ 1143
	2-4'				Same	SM/SP	wet @ 3.5-4'
							OVA FID Sample @ 3.5-4 collected @ 1150

(PPM)

Time Collect	Time Read	Depth (FT.)	UNFIL.	FIL.	CORR
1143	1209	0-2	468.2	172.1	296.1
1150	1212	2-4	170.3	140.0	30.3

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc.

Boring Log

MD Page 1 of 1

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Tetra Tech NUS, Inc.
DRILLING RIG: Hand Auger

BORING ID: CEF-~~ANTO~~ TH3-SB06
DATE: 10/10/00
GEOLOGIST: Mervin Dale
DRILLER: Mervin Dale / Lewis Knight

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION Color	Material Classification	USCS *	Remarks
	0-2'				Asphalt		
	2'-1.5'				limerock		
	1.5-2'			gray	fine sd. silty sand	SP	time 1012 OVA Sample (1-2')
	2-3.5'				same	SP	
	3.5-4'			gray	clayey fine sand	SC	time 1016 OVA sample (3.5-4')
							water table at 4'.
							extra hand

Time Collect	Read	Depth (FT.)	UNFILTER (ppm)	FILTER (ppm)	CORRECTED (ppm)
1012	1018	0-2	303.5	109.1	194.4
1016	1022	2-4	228.5	79.6	148.9

* When rock coring, enter rock brokeness.

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

Remarks: UNFILTER @ 0-2 feet = 303.5 ppm
~~FILTER @ 3.5-4 ft = 109.1 ppm~~
UNFILTER AT 3.5-4 = 228.5
~~FILTER AT 3.5-4 ft. = 228.5~~ 79.6 MD

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

Tetra Tech NUS, Inc.

Boring Log

MP Page 1 of 1

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Tetra Tech NUS, Inc.
DRILLING RIG: Hand Auger

BORING ID: CEF - ~~ANTO~~ TH3 - SB07
DATE: 10/10/04
GEOLOGIST: Mervin Dale
DRILLER: Mervin Dale

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks
	0-3"				Asphalt		
	3"-1.2'				limerock		
	1.2-2'			gray	sl. silty fine sand	SM/SP	damp OVA FID Sample
	2-2.5'				same		
	2.5'-3'			greenish tan	sl. silty fine sand	SM/SP	damp
	3'-3.5'			gray	sl. silty fine sand	SM/SP	damp OVA FID Sample
	3.5'-4'				same		wet @ 4'

(PPM)

Time Collect	Read	Depth (FT)	UN FILTER	FILTER	CORRECTED
1036	1043	0-2	84.1	43.6	40.5
1040	1047	2-4	556	553.7	2.3

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc.

Boring Log

MD Page 1 of 1

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Tetra Tech NUS, Inc.
DRILLING RIG: Hand Auger

BORING ID: CCF-~~ANTO~~ TH3-SB08
DATE: 10/10/00
GEOLOGIST: Mervin Dale
DRILLER: Mervin Dale

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks
	0-2"				Asphalt		
	2"-1'				lime rock		
	1'-2'			lt. gray	sl. silty fine sand	SM/SP	OVA FID Sample @ 1101
	2-3'				same		damp
	3-4'			greyish brn	sl. silty fine sd.	SP	some gravel damp and clay
	4-5'						wet @ 4.5-5' bls.

Time Collect	Read	Depth (FT.)	Unit.	Fil.	Corr.
1101	1108	0-2	162.0	208.6	⊗
1108	1115	2-4	1015	1214	⊗

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc.

Boring Log

MP Page 1 of 1

PROJECT NAME:	NAS Cecil Field	BORING ID:	CRF-~~ANG~~ TH3-SB09
PROJECT NUMBER:	0013 DMO50110	DATE:	10/10/00
DRILLING COMPANY:	Tetra Tech NUS, Inc.	GEOLOGIST:	Mervin Dale
DRILLING RIG:	Hand Auger	DRILLER:	Mervin Dale

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks
	0-2"				Asphalt		
	2"-1.2'				limerock		
	1.2'-2.5			Lt. gray	sl. silty fine sand	SM/SP	damp O/A FID sample @ 1-2'
	2.5-3.5'				same		wet @ 3.5'
							note: clayey sand on bottom of bit @ 3.5'.
							(ppm)
			Time Collect	Time Read	Depth (ft)	UNF.	FIL / cont.
			1128		0-2	963	282.7 / 680.3

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Navy Pipeline DPT inv. At TH3
BORING NUMBER: CEF-TH3-SB-009
PROJECT NUMBER: N0013 DM0 050 120
DATE: 5/23/01
DRILLING COMPANY: GPI
GEOLOGIST: Mervin Dale
DRILLING RIG: DPT ~~Hollow Stem~~
DRILLER: Bill Hammond

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
							See log of SB9 from 10/00.						

* When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm): —

Remarks: ~~Hand auger to 4' bls.~~ DPT GROUNDWATER Set screen at 3'to7', 5'to9' ~~And 10'-14' - DPT.~~ Set screen at 16'-20' bls ~~and collected water for mobile lab.~~

Converted to Temp. Well: Yes X No _____ Well I.D. #: CEF-TH3-TMW-~~009~~ 002

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME:	NAS Cecil Field	BORING ID:	CEF-~~AN10~~ TH3-SB10-
PROJECT NUMBER:	0013 DMO50110	DATE:	10/10/00
DRILLING COMPANY:	Tetra Tech NUS, Inc.	GEOLOGIST:	Mervin Dale
DRILLING RIG:	Hand Auger	DRILLER:	Mervin Dale

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks
	0-2"				Asphalt		
	2"-1'				limerock		
	1-3.5			gray brn	sl. silty fine sand	SM/SP	collect OVAF @ 1-2'
	3.5-4				clayey sand	SC	wet @ 3.5' @ time 1445
				collect	Read	Depth (FT.)	UNFIL. / FIL. / CORR.
				1445	1455	1-2	424 / 292 / 132

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: TH3, Cecil Field Pipeline
PROJECT NUMBER: N0013DM0050120
DRILLING COMPANY: GPI
DRILLING RIG: DPT

BORING NUMBER: CEF-TH3-SB10
DATE: 5/23/01
GEOLOGIST: M. Dale
DRILLER: Bill Hammond

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
							See boring log from 10/00.						
					(1) Cored asphalt to set DPT temp well screen at 3 to 7 foot b/s.								
					(2) Well screen dry - place clean 1" PVC screen.								
					(3) Collect groundwater sample for mobile Lab.								

* When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm):

Remarks:

Converted to Well: Yes X No _____ Well I.D. #: CEF-TH3-TMW-003

Temp

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: TH3, Cecil Field Pipeline
BORING NUMBER: CEF-TH3-SB10
PROJECT NUMBER: N0013DM0050120
DATE: 5/25/01
DRILLING COMPANY: GPI
GEOLOGIST: M. Dale
DRILLING RIG: DPT / HOLLOW STEM
DRILLER: BILL HAMMOND

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0-4						SEE LOG FROM 10/00.						
	5-9					BRN GRAY	slightly sandy clay	CL	org. stained, damp				
	9-11					BRN GRAY	slightly sandy clay	CL	damp				
	11-17					YLW BRN	slightly sandy clay	CL	damp				
							EOB at 17' bls.						

* When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm): [ ]

Remarks: Collect groundwater sample for fixed based lab.
Screen set at 7 to 17 feet bls.

Converted to TEMP Well: Yes X No ____ Well I.D. #: CEF-TH3-TMW-10

Tetra Tech NUS, Inc.

Boring Log

MD Page 1 of 1

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Tetra Tech NUS, Inc.
DRILLING RIG: Hand Auger
BORING ID: CEF-~~AN10~~-SB11-TH3
DATE: 10/11/00
GEOLOGIST: Mervin Dale
DRILLER: Mervin Dale

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks
0"-2"					Asphalt		
2"-10"					limerock		
10"-3'				dk. brn	silty fine SAND	SM	damp to 2.5'
							wet at 3'
							OVA FID / Lab sample
							at 1-2' @ time 1025
							Note: petroleum
							odor.
					OVA FID Sample Table		
							(ppm)
			Time Collected		Time Read	Depth (FT. bls)	UNFIL. FIL. CORR.
				1025	1040	1-2	470 149.4 320.6

* When rock coring, enter rock brokeness.

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

Remarks: __________

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

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: TH3, Cecil Field Pipeline
PROJECT NUMBER: N0013DM0050120
DRILLING COMPANY: GPI
DRILLING RIG: DPT

BORING NUMBER: CEF - TH3 - SB11
DATE: 5/23/01
GEOLOGIST: M. Dale
DRILLER: BILL HAMMOND

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
							See log of SB-11						
							from 10/00 for						
							soil log.						
					① Cored asphalt, hand auger (stainless steel)								
					to 1 to 2 foot interval for soil sample								
					(SPLP KAG) CEF - TH3 - SB - 011 - 02.								
					SENT TO ACCUTEST.								
					② SET TEMP WELL AT 3 to 7 FT. BLS.								
							Collect Mobile lab sample.						

* When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm): ____

Remarks: ____

Converted to Well: Yes X No ____ Well I.D. #: CEF - TH3 - TMW - 004

Temp

Tetra Tech NUS, Inc.

Boring Log

MD Page 1 of 1

PROJECT NAME:	NAS Cecil Field	BORING ID:	CRF-~~AOI10~~ T#3-SB12
PROJECT NUMBER:	0013 DMO50110	DATE:	10/11/00
DRILLING COMPANY:	Tetra Tech NUS, Inc.	GEOLOGIST:	Mervin Dale
DRILLING RIG:	Hand Auger	DRILLER:	Mervin Dale

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks
				~~dk. brn~~	~~silty fine sand~~	~~SM~~	
	0-1"				Asphalt		
	1"-6"				limerock		
	6"-12"			dk. brn	silty fine sand	SM	damp
	12"-18"			dk brn	" "	"	
	18"-24"			dk brn	" "	"	
	24-30"			dk brown	" "	"	
				▼ -	~ 2.5' bls (wet)		

QAPP Sample Table

Time Collected	Read	Depth (FT)	UNFIL	FIL	CORR.
0947	0953	1-2	77.2	27.7	49.5

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc.

Boring Log

MD Page 1 of 1

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Tetra Tech NUS, Inc.
DRILLING RIG: Hand Auger

BORING ID: CCF - ~~AN10~~ TM3 - SB13
DATE: 10/11/00
GEOLOGIST: Mervin Dale
DRILLER: Mervin Dale

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks
0'-3"					Asphalt		
3"-1'					limerock		
1'-3'				gray brown	silty fine sand	SM	damp to 2.5'
							wet at 3'
							collect OVA FID sample
							at 1-2' with
							Lab sample.

OVA FID Sample Table

Time Collected	Time Read	Depth (FT. BLS)	UNFIL.	FIL. (ppm)	COMP.
1010	1020	1-2	175.1	141	34.1

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc.

Boring Log

PROJECT NAME: NAS Cecil Field
PROJECT NUMBER: 0013 DMO50110
DRILLING COMPANY: Tetra Tech NUS, Inc.
DRILLING RIG: Hand Auger

BORING ID: CEF-~~AN10~~ TH3-SB14
DATE: 10/11/00
GEOLOGIST: Mervin Dale
DRILLER: Mervin Dale

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks
0"-1"					Asphalt		
1"-1'				gray	limerock with sand/gravel		
1'-2'				grayish brn	silty fine sand	SM	No odor damp
2'-2.5'					same		wet at 2.5'
							collect OVA FID / lab
							sample @ 1110

OVA FID Sample

Time Collected	Time Read	Depth (ft.bls)	UNFIL. (PPM)	FIL. (PPM)	CORR. (PPM)
1110	1119	1-2	25.1	20.3	4.8

* When rock coring, enter rock brokeness.

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

Remarks:

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

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS CECIL FIELD 050110
PROJECT NUMBER: ~~0039-0013~~ ~~DS0DM005PS20~~
DRILLING COMPANY: ~~Partridge Drilling Company~~ TTNUS
DRILLING RIG: Hand Auger
BORING NUMBER: CEF-AW10-SB15
DATE: 10/11/00
GEOLOGIST: Mervin Dale
DRILLER: M. Dale / L. Knight

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0-1"						Asphalt						
	1"-1'						limerock						
	1'-3'					Gray	silty fine sand	SM	No odor, damp				
									lit obstruction				
							EOR @ 3'		at 3' b/s. Could not establish water table.				
									Estimate water at bout 3' based on soil boring to north (SB-14).				
										(ppm)			
					Time Collect		Read	Depth (Ft.)	UNFILTER	FILTER		CORR.	
					~~1444~~ 1135		1144	1-2	149.2	101.1			48.1

* When rock coring, enter rock brokeness.

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

Remarks:

Drilling Area Background (ppm): 2

Converted to Well: Yes ~~X~~ No X Well I.D. #: ~~CEF-~~ N/A

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS CECIL FIELD
PROJECT NUMBER: ~~0039-0013~~ ~~DS0010~~ 050110 ~~05PS20~~
DRILLING COMPANY: ~~Partridge Drilling Company~~ TTNUS
DRILLING RIG: HD Hand Auger
BORING NUMBER: CEF-AN10-SB16
DATE: 10/11/00
GEOLOGIST: Mervin Dale
DRILLER: M. Dale / L. Knight

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0-3"						Asphalt						
	3"-2'						Limerock						
	2'-3'					gray brown	silty fine sand	SM					
	3'-3.25'					Tan	silty fine sand	SM	wet				
	3.25'-5.5'					Green	slightly sandy clay	CH	moist, plastic				
							EOB @ 5.5'						

(ppm)

Time Collect	Time Read	Depth (FT.)	UNFIL.	FIL.	CORR.
1330	1336	2-3	217	143	74
1335	1342	3-4	146	181.2	Φ

* When rock coring, enter rock brokeness.

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

Remarks:

Drilling Area Background (ppm): 0.3

Converted to Well: Yes (X) No X Well I.D. #: ~~CEF-~~ N/A MD

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: TH3, Cecil Field Pipeline
PROJECT NUMBER: N0013DM0050120
DRILLING COMPANY: GPI
DRILLING RIG: DPT

BORING NUMBER: CEF-TH3-SB-017
DATE: 5/23/01
GEOLOGIST: M. Dale
DRILLER: BILL HAMMOND

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
					Pushed DPT 3 IN. O.D. RODS AND								
					SET TEMP. PIEZO (2 IN. DIAM) with 2								
					FT. PVC RISER, 10 FT. PVC SCREEN								
					FROM 2 to 12 ft. b/s.								
					NO SOIL RETURNS SINCE USING DPT.								

* When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm):

Remarks: PULL GROUNDWATER SAMPLE FOR Mobile lab.

Converted to Well: Yes X No _____ Well I.D. #: CEF-TH3-TMW-005.

temp

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Navy Pipeline DPT inv. At TH3
BORING NUMBER: CEF-TH3-SB-018
PROJECT NUMBER: N0013 DM0 050 120
DATE: 5/23/01
DRILLING COMPANY: GPI
GEOLOGIST: Mervin Dale
DRILLING RIG: DPT ~~Hollow Stem~~
DRILLER: Bill Hammond

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0-2"						Asphalt						
	2"-1'					BRN	FINE SILTY SAND	SP	DRY				
							WITH LIMESTONE						
	1'-2.5'					DK. BRN	FINE SILTY SAND	SP	Moist at 2.5' b/s.				
	2.5'-4'					GRN GRAY	FINE SILTY SAND	SP	wet at 3' b/s.				
					NOTE: SET DPT 4 FT. SCREEN AT 2' TO 6' BLS								
					TO COLLECT MOBILE LAB SAMPLE FROM								
					TEMPORARY WELL, CEF-TH3-TMW-~~018~~ 001 MD.								

* When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm): ——

Remarks: Sufficient WATER at 2 to 6 ft. b/s for Mobile lab.

Converted to Temp Well: Yes X No _____ Well I.D. #: CEF-TH3-TMW-~~018~~ 001 MD

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Navy Pipeline DPT inv. At TH3
BORING NUMBER: CEF-TH3-SB-019
PROJECT NUMBER: N0013 DM0 050 120
DATE: 5/24/01
DRILLING COMPANY: GPI
GEOLOGIST: Mervin Dale
DRILLING RIG: DPT (Hollow Stem)
DRILLER: Bill Hammond

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0-1"						Asphalt						
	1"-1'					LT. GRAY	SILTY FINE SAND	SP	DRY				
MD	~~1'-3'~~						w/ Limerock						
	1'-3'					BRN	SILTY FINE SAND	SP	(DAMP @ 3') DRY				
	3'-4'					BRN TO LT. GRAY	SANDY CLAY	CL ~~SC~~	ORANGE-stained moist				
	4'-7'					ORANGE BRN	SANDY CLAY	CL ~~SC~~	DAMP				
	7'-12'					LT. GRAY	SANDY CLAY	CL ~~SC~~	DAMP				
	12'-15'					LT. GRAY	SANDY CLAY	CL ~~SC~~	DAMP, decreasing sand at depth.				
	15'-18'					BLACK	CLAYEY SAND	SC	wet				
							EOB @ 18' BLS.						

* When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm): —

Remarks: Well screen set at 8 to 18 feet bls.
Collected mobile lab sample CEF-TH3-TMW-009

Converted to Well: Yes X No ___ Well I.D. #: CEF-TH3-MW-1

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Navy Pipeline DPT inv. At TH3
BORING NUMBER: CEF-TH3-SB-020
PROJECT NUMBER: N0013 DM0 050 120
DATE: 5/24/01
DRILLING COMPANY: GPI
GEOLOGIST: Mervin Dale
DRILLING RIG: DPT/Hollow Stem
DRILLER: Bill Hammond

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0-9"						Asphalt						
	1"-1'					LT. GRAY	SILTY FINE SAND	SP	DRY				
	1-3					BRN	SILTY FINE SAND	SP	(DAMP @ 3') DRY				
	3-4					BRN TO LT. GRAY	SANDY CLAY	CL	orange-stained, moist.				
	4-6					orange brown	sandy clay	CL	damp				
	6-15					LT. GRAY	sandy clay	CL	damp, decreasing sand at depth.				
	15-20					black	clayey sand	SC	wet				
							EOB @ 20'.						

* When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm):

Remarks: Well screen set at 10 to 20 feet bls.
Collected mobile lab sample CEF-TH3-TMW-006

Converted to Well: Yes X No

Well I.D. #: CEF-TH3-MW2

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Navy Pipeline DPT inv. At TH3
BORING NUMBER: CEF-TH3-SB-021
PROJECT NUMBER: N0013 DM0 050 120
DATE: 5/24/01
DRILLING COMPANY: GPI
GEOLOGIST: Mervin Dale
DRILLING RIG: DPT/Hollow Stem
DRILLER: Bill Hammond

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0-3"						Asphalt						
	3"-1.5'						limerock						
	1.5-3					BRN	SILTY FINE SAND	SP	DRY				
	3-4					LT. GRAY	SILTY FINE SAND	SP	DAMP				
	4-5					LT GRAY	SILTY FINE SAND	SP	DAMP				
	5-12					GREEN GRAY	CLAYEY SAND	SC	damp to moist				
	12-15					—	SAME AS 5-12	—					
	15-18					black	clayey sand	SC	wet				
							EOB @ 18'.						

* When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm):

Remarks: Sampled well for fixed based Lab. Screened 8 to 18'.
GROUTED HOLE AFTER DEVELOPED AND SAMPLED.

Converted to Well: Yes X No _____ Well I.D. #: CEF-TH3-TMW-007
TEMP

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: TH3, Cecil Field Pipeline
PROJECT NUMBER: N0013DM0050120
DRILLING COMPANY: GPI
DRILLING RIG: DPT (Hollow Stem)
BORING NUMBER: CEF- TH3 - SB - 022
DATE: 5/24/01
GEOLOGIST: M. Dale
DRILLER: BILL HAMMOND

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0-2"					LT. BRN	GRASS ROOTS, FINE Silty Sd.	SP	GRASS Roots, dry				
	2"-2'					LT. BRN	FINE SILTY SAND	SP	DAMP				
	2'-4'					LT. GRAY	FINE SAND SILTY	SP	DAMP, water 2.5'				
	4-5						SAME AS 2-4						
	5-10					GREENISH GRAY	clayey SAND	SC	moist, clay increasing AT depth.				
	10-18					GRAY	sandy clay	CL	moist				
							EOB at 18 FT. BLS.						

* When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm):

Remarks: Well screen set at 8 to 18 feet bls.
Collected mobile lab sample CEF- TH3-TMW-008.

Converted to Well: Yes X No ____ Well I.D. #: CEF- TH3- MW-3

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Navy Pipeline DPT inv. At TH3
BORING NUMBER: CEF-TH3-SB-~~024~~ 023
PROJECT NUMBER: N0013 DM0 050 120
DATE: 5/25/01
DRILLING COMPANY: GPI
GEOLOGIST: Mervin Dale
DRILLING RIG: DPT/Hollow Stem
DRILLER: Bill Hammond

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0-2"						Asphalt						
	2"-4"						Limerock						
	4"-4'					BRN GRAY	SILTY FINE SAND	SP	damp at 2' bls.				
	4'-9'					GRAY	sandy clay	CL	orange stained, wet				
	9-11					BRN GRAY	slightly sandy clay	CL	damp				
	11-17					YLW ~~GRAY~~ BRN	slightly sdy clay	CL	damp				
							EOB @ 17' bls.						

* When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm): —

Remarks: Well dry - NO GROUNDWATER COLLECTED.
GROUTED HOLE.

Converted to Temp Well: Yes X No _____ Well I.D. #: CEF-TH3-TMW-011

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NAS CECIL FIELD
PROJECT NUMBER: N0013DM0050120
DRILLING COMPANY: GPI
DRILLING RIG: DPT / Hollow Stem Auger

BORING NO.: CEF- TH3 - SB 24
DATE: 5/25/01
GEOLOGIST: Mervin Dale
DRILLER: Bill Hammond

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
	0-2"						Asphalt						
	2"-1'						limerock						
	1-2				LT. BRN TO	BRN	SILTY SAND	SP	DRY				
	2-2.5					GRAY	SILTY SAND	SP	DAMP				
	2.5-3					GRAY	SILTY SAND	SP	Moist				
	3-4					GRAY	SILTY SAND	SP	~~wet~~ moist				
	4-16					BRN GRY	sl. sdy clay to clay	SC TO CH	org. stained, dry to damp				
	16-20					DK. GRAY	silty fine sand	SM	wet				
							EOB @ 20' bls.						

OVA FID RESULTS

DEPTH (FT. BLS)	UNFILTER (PPM)	FILTER PPM	CORRECTED (PPM)
0-1	28.5	15.3	13.2
1-2	71.0	61.4	9.6
SINCE 2.5 to 4 ft. is moist, OVA-FID dryer soils below.			
4-4.5	3.6	0.0	3.6
16-17	0.0	0.0	0.0

* When rock co[illegible]er rock brokeness.

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

Drilling Area Background (ppm): 0.0

Remarks:

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

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NAS CECIL FIELD
BORING NO.: CEF- TH3 - SB - 25
PROJECT NUMBER: N0013DM0050120
DATE: 6/25/01
DRILLING COMPANY: ~~GPI~~ TTNUS
GEOLOGIST: Mervin Dale
DRILLING RIG: ~~DPT / Hollow Stem Auger~~ Stainless Steel Auger
DRILLER: ~~Bill Hammond~~ ALAN PATE

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0-3					BRN	SILTY FINE SAND	SP	wet at 2.5' bls.				
							EOB @ 3' bls.						
					OVA-FID		RESULTS						
					Depth	FT. BLS	UNFILTER (PPM)		FILTER (PPM)	CORRECTED (PPM)			
					0-1		0.0		—	0.0			
					2-3		0.0		—	0.0			

* When rock co[illegible]er rock brokeness.

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

Drilling Area Background (ppm): 0.0

Remarks:

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

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NAS CECIL FIELD
BORING NO.: CEF- TH3 - SB - 26
PROJECT NUMBER: N0013DM0050120
DATE: 6/25/01
DRILLING COMPANY: ~~GPI~~ TTNUS
GEOLOGIST: Mervin Dale
DRILLING RIG: ~~DPT / Hollow Stem~~ Hand Auger
DRILLER: ~~Bill Hammond~~ ALAN PATE

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0-3"						Asphalt						
	3"-3'					DK. BRN	SILTY SAND	SP	damp, wood pine	at	2-3'		
	3-4					DK. BRN	SILTY SAND	SP	odor noted.				
	4-5					GRAY	sandy clay	CL	org. stained, wet 4 to 4.5' bls.	at			
							EOB @ 4.5' bls						
					OVA - FID RESULTS								
					Depth	FT. BLS	UNFILTER (PPM)		FILTER (PPM)		CORRECTED (PPM)		
					1-2		333		125		208		
					2-3		1141		0		1141		
					4-5		462		204.5		257.5		

* When rock co[illegible] or rock brokeness.

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

Drilling Area Background (ppm): 0.0

Remarks: IN EASTbound LANE OF 103rd ST, NORTH OF SB-16

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

BORING LOG

Tetra Tech NUS, Inc.

PROJECT NAME: NAS CECIL FIELD
BORING NO.: CEF- TH3-SB-27
PROJECT NUMBER: N0013DM0050120
DATE: 6/25/01
DRILLING COMPANY: ~~GPI~~ TTNUS
GEOLOGIST: Mervin Dale
DRILLING RIG: ~~DPT / Hollow Stem~~ Auger, SS hand
DRILLER: ~~Bill Hammond~~ ALAN PATE

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
	0-3					GRAY BRN	clayey fine SAND	SC	damp				
	3-5					TAN	clayey fine SAND	SC	damp to moist wet at 5' bls.				
							EOB at 5' bls.						
					OVA	FID RESULTS							
					Depth	FT. BLS	UNFILTER (PPM)		FILTER (PPM)		CORRECTED (PPM)		
					1-2		0.0		—		0.0		
					2-3		0.0		—		0.0		
					4-5		0.0		—		0.0		

* When rock co[illegible]er rock brokeness.

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

Drilling Area Background (ppm): 0.0

Remarks:

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

APPENDIX B

PERMANENT MONITORING WELL INSTALLATION, DEVELOPMENT, AND SAMPLE LOGS

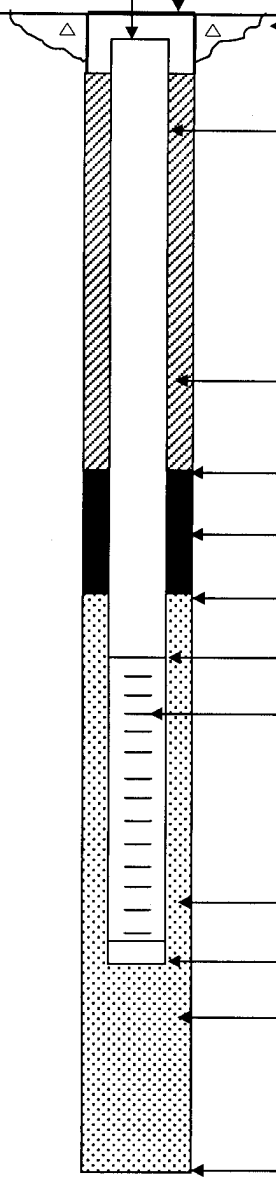
Tetra Tech NUS, Inc.

WELL No.: CF-AN03-MW01

MONITORING WELL SHEET

PROJECT:	NASCF Pipeline	DRILLING Co.:	GW Protection	BORING No.:	MW01
PROJECT No.:	N0013	DRILLER:	Nick S.	DATE COMPLETED:	11/29/99
SITE:	CF-AN03	DRILLING METHOD:	HSA	NORTHING:	NA
GEOLOGIST:	Jason McCann	DEV. METHOD:	Submersible	EASTING:	NA

Ground Elevation =
Datum:



Not to Scale

Elevation / Depth of Top of Riser: / 3-inch

Elevation / Height of Top of Surface Casing: / 1-inch

I.D. of Surface Casing: 8-inch

Type of Surface Casing: Steel manhole

Type of Surface Seal: Concrete pad 2' x2' x 6"

I.D. of Riser: 2-inch

Type of Riser: SCH 40 PVC

Borehole Diameter: 8-inch

Type of Backfill: Type I Portland Cement and Bentonite Grout Slurry

Elevation / Depth of Seal: / 1-foot

Type of Seal: 30/65 Fine Sand

Elevation / Depth of Top of Filter Pack: NA / 1.5-feet

Elevation / Depth of Top of Screen: NA / 3-feet

Type of Screen: SCH 40 PVC

Slot Size x Length: 0.010"x10'

I.D. of Screen: 2-inch

Type of Filter Pack: 20/30 Silica Sand

Elevation / Depth of Bottom of Screen: NA / 13-feet

Elevation / Depth of Bottom of Filter Pack: NA / 13-feet

Type of Backfill Below Well: 20/30 Silica Sand

Elevation / Total Depth of Borehole: NA / 13-feet

MONITORING WELL DEVELOPMENT RECORD

Well: CEF-AN03-1S
Site: Cecil Field
Date Installed:
Date Developed: 12-9-99
Dev. Method: Pump
Pump Type: Whale Submersible

Depth to Bottom (ft.): 12.93
Static Water Level Before (ft.): 5.35
Static Water Level After (ft.): 6.00
Screen Length (ft.): 10
Specific Capacity:
Casing ID (in.): 2

Responsible Personnel: J Kucera / T Thompson
Drilling Co.: Groundwater Protection
Project Name: NASCE-NASJAX Jet Fuel Pipeline
Project Number: 0013

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
1420	—	—	5.35	23.6	6.37	1.19	999	Lt Brn, Opaque, Silty
1425	—	7	6.10	23.3	6.30	1.22	999	Lt Brn, Opaque, Silty
1430	—	14.5	6.11	23.2	6.29	1.22	999	~~Very C~~ "
1435	—	22	6.10	23.2	6.28	1.21	327	Very Cloudy
1440	—	30	6.05	23.1	6.25	1.19	75	Cloudy
1445	—	36	6.00	23.1	6.19	1.17	14	Clear
1450	—	42	6.00	23.1	6.22	1.17	4	Clear -

Tetra Tech NUS, Inc.

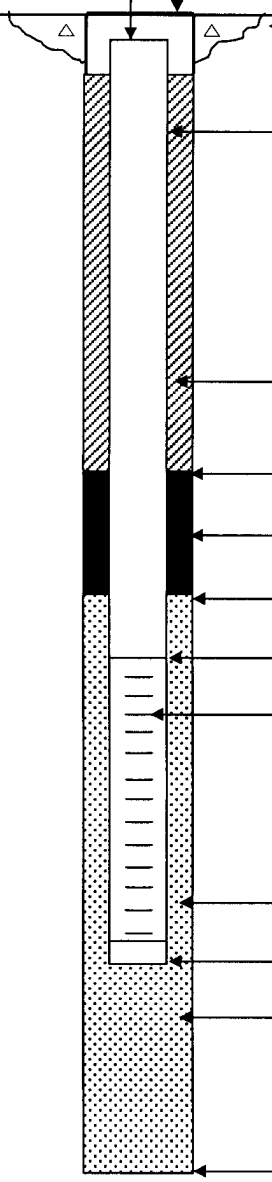
WELL No.: CF-AN04-MW01

MONITORING WELL SHEET

PROJECT:	NASCF Pipeline	DRILLING Co.:	GW Protection	BORING No.:	MW01
PROJECT No.:	N0013	DRILLER:	Nick S.	DATE COMPLETED:	11/30/99
SITE:	CF-AN04	DRILLING METHOD:	HSA	NORTHING:	NA
GEOLOGIST:	Jason McCann	DEV. METHOD:	Submersible	EASTING:	NA

Ground Elevation =

Datum:



Not to Scale

Elevation / Depth of Top of Riser: / 3-inch

Elevation / Height of Top of Surface Casing: / 1-inch

I.D. of Surface Casing: 8-inch

Type of Surface Casing: Steel manhole

Type of Surface Seal: Concrete pad 2' x2' x 6"

I.D. of Riser: 2-inch

Type of Riser: SCH 40 PVC

Borehole Diameter: 8-inch

Type of Backfill: Type I Portland Cement and Bentonite Grout Slurry

Elevation / Depth of Seal: / 1-foot

Type of Seal: 30/65 Fine Sand

Elevation / Depth of Top of Filter Pack: NA / 1.5-feet

Elevation / Depth of Top of Screen: NA / 3-feet

Type of Screen: SCH 40 PVC

Slot Size x Length: 0.010"x10'

I.D. of Screen: 2-inch

Type of Filter Pack: 20/30 Silica Sand

Elevation / Depth of Bottom of Screen: NA / 13-feet

Elevation / Depth of Bottom of Filter Pack: NA / 13-feet

Type of Backfill Below Well: 20/30 Silica Sand

Elevation / Total Depth of Borehole: NA / 13-feet

MONITORING WELL DEVELOPMENT RECORD

Page ___ of ___

Well: CEF-AN04-1S
Site: Cecil Field
Date Installed:
Date Developed: 12-9-99
Dev. Method: Pump
Pump Type: whale Submersible

Depth to Bottom (ft.): 12.85
Static Water Level Before (ft.): 2.55
Static Water Level After (ft.):
Screen Length (ft.): 10
Specific Capacity:
Casing ID (in.): 2

Responsible Personnel: J. Kucera / T. Thompson
Drilling Co.: Groundwater Protection
Project Name: NASCF-NASJAX Jet Fuel Pipeline
Project Number: 0013

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
1642	—	—	2.55	23.1	6.40	.402	999	Opaque, Orange-Brn, Silty
1647	—	8	7.15	23.7	6.24	.436	664	"
1652	—	15	7.70	24.0	6.09	.371	170	Cloudy
1657	—	21	7.99	24.2	5.99	.340	170	Cloudy
1702	—	27	8.13	24.1	5.90	.306	141	Cloudy
1707	—	33	8.19	24.1	5.81	.286	63	Slightly Cloudy
1712	—	39	8.21	24.3	5.66	.273	40	"
1717	—	45	8.30	24.5	5.57	.259	42	"
1722	—	51	8.40	24.4	5.49	.245	146	Cloudy
1727	—	57	8.40	24.4	5.48	.236	108	"
1732	—	62	8.37	24.4	5.50	.228	14	Clear
1737	—	67	8.25	24.7	5.45	.222	4	"

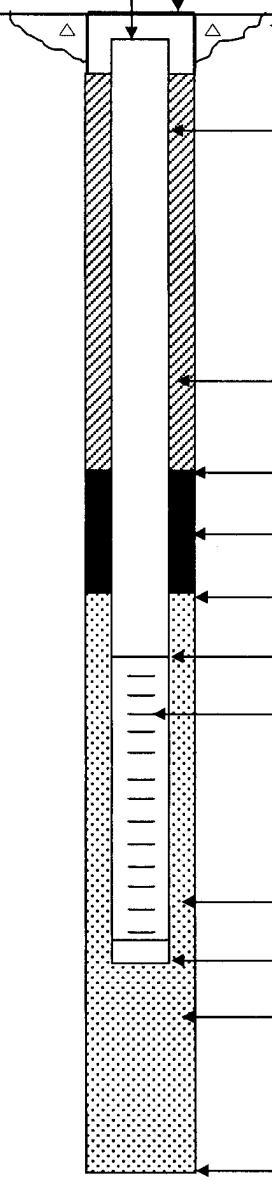
Tetra Tech NUS, Inc.

WELL No.: CF-AN08-MW01

MONITORING WELL SHEET

PROJECT:	NASCF Pipeline	DRILLING Co.:	GW Protection	BORING No.:	MW01
PROJECT No.:	N0013	DRILLER:	Nick S.	DATE COMPLETED:	12/02/99
SITE:	CF-AN08	DRILLING METHOD:	HSA	NORTHING:	NA
GEOLOGIST:	Jason McCann	DEV. METHOD:	Submersible	EASTING:	NA

Ground Elevation =
Datum:



Not to Scale

Elevation / Depth of Top of Riser:		/ 3-inch
Elevation / Height of Top of Surface Casing:		/ 1-inch
I.D. of Surface Casing:	8-inch	
Type of Surface Casing:	Steel manhole	
Type of Surface Seal:	Concrete pad 2' x2' x 6"	
I.D. of Riser:	2-inch	
Type of Riser:	SCH 40 PVC	
Borehole Diameter:	8-inch	
Type of Backfill:	Type I Portland Cement and Bentonite Grout Slurry	
Elevation / Depth of Seal:		/ 0.5-feet
Type of Seal:	30/65 Fine Sand	
Elevation / Depth of Top of Filter Pack:		NA / 1-foot
Elevation / Depth of Top of Screen:		NA / 2-feet
Type of Screen:	SCH 40 PVC	
Slot Size x Length:	0.010"x10'	
I.D. of Screen:	2-inch	
Type of Filter Pack:	20/30 Silica Sand	
Elevation / Depth of Bottom of Screen:		NA / 12-feet
Elevation / Depth of Bottom of Filter Pack:		NA / 12-feet
Type of Backfill Below Well:	20/30 Silica Sand	
Elevation / Total Depth of Borehole:		NA / 12-feet

MONITORING WELL DEVELOPMENT RECORD

Well: CEF-AN08-1S
Site: NASCF
Date Installed: 12/2/99
Date Developed: 12/8/99
Dev. Method: Sub. Pump
Pump Type: Whale

Depth to Bottom (ft.): 13.1
Static Water Level Before (ft.): 3.71
Static Water Level After (ft.):
Screen Length (ft.): 10 ft
Specific Capacity:
Casing ID (in.): 2"

Responsible Personnel: Tom Thomson
Drilling Co.: Groundwater Protection
Project Name: NASCF-NASTAR Jet Fuel Line
Project Number: 0013

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
1617	—	—	3.71	24.8	6.49	.606	999	Silty
1622	—	8.5	5.21	25.2	6.73	.548	999	"
1627	—	17.0	5.21	25.3	6.80	.501	729	"
1632	—	25.5	5.25	25.4	6.80	.473	300	Cloudy
1637	—	34.0	5.25	25.5	6.77	.460	155	Cloudy
1642	—	42.5	5.25	25.6	6.75	.449	96	"
1647	—	51.0	5.25	25.6	6.72	.438	71	"
1652	—	59.5	5.25	25.5	6.76	.436	40	Slightly Cloudy
1657	—	58.0	5.26	25.6	6.76	.427	21	Clear
1702	—	66.5	5.26	25.6	6.72	.427	20	"
1707	—	75.0	5.26	25.6	6.75	.427	13	"
1712	—	83.5	5.26	25.4	6.73	.427	12	"
1717	—	92.0	5.26	25.4	6.76	.428	11	"

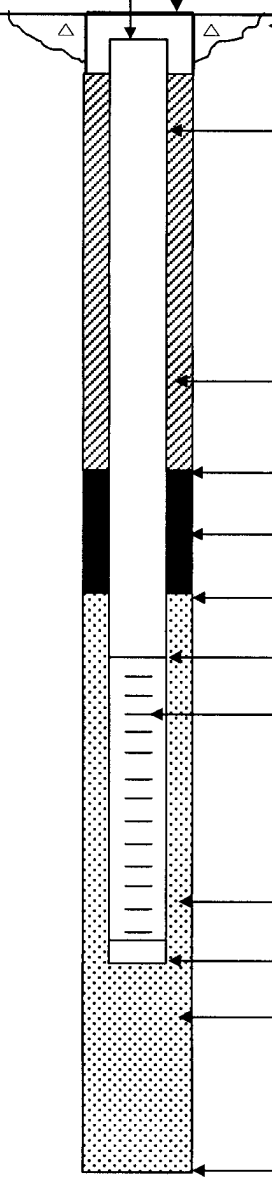
Tetra Tech NUS, Inc.

WELL No.: CF-AN09-MW01

MONITORING WELL SHEET

PROJECT:	NASCF Pipeline	DRILLING Co.:	GW Protection	BORING No.:	MW01
PROJECT No.:	N0013	DRILLER:	Nick S.	DATE COMPLETED:	12/02/99
SITE:	CF-AN09	DRILLING METHOD:	HSA	NORTHING:	NA
GEOLOGIST:	Jason McCann	DEV. METHOD:	Submersible	EASTING:	NA

Ground Elevation =
Datum:



Not to Scale

Elevation / Depth of Top of Riser: / 3-inch

Elevation / Height of Top of Surface Casing: / 1-inch

I.D. of Surface Casing: 8-inch

Type of Surface Casing: Steel manhole

Type of Surface Seal: Concrete pad 2' x2' x 6"

I.D. of Riser: 2-inch

Type of Riser: SCH 40 PVC

Borehole Diameter: 8-inch

Type of Backfill: Type I Portland Cement and Bentonite Grout Slurry

Elevation / Depth of Seal: / 0.5-feet

Type of Seal: 30/65 Fine Sand

Elevation / Depth of Top of Filter Pack: NA / 1-foot

Elevation / Depth of Top of Screen: NA / 2-feet

Type of Screen: SCH 40 PVC

Slot Size x Length: 0.010"x10'

I.D. of Screen: 2-inch

Type of Filter Pack: 20/30 Silica Sand

Elevation / Depth of Bottom of Screen: NA / 12-feet

Elevation / Depth of Bottom of Filter Pack: NA / 12-feet

Type of Backfill Below Well: 20/30 Silica Sand

Elevation / Total Depth of Borehole: NA / 12-feet

MONITORING WELL DEVELOPMENT RECORD

Well: CEF-AN09-1S
Site: Cecil Field
Date Installed:
Date Developed: 12-9-99
Dev. Method: Pump
Pump Type: Whale Submersible

Depth to Bottom (ft.): 11.15
Static Water Level Before (ft.): 3.44
Static Water Level After (ft.):
Screen Length (ft.): 10
Specific Capacity:
Casing ID (in.): 2

Responsible Personnel: J. Kucera/T. Thompson
Drilling Co.: Groundwater Protec
Project Name: NASCF-NASJAX Jet Fuel Pipeline
Project Number: 0013

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
1012	—	—	3.44	20.3	6.42	.688	999	Silty-Opaque-Sand Present
1017	—	3	9.40	21.5	6.06	.553	999	"
1022	—	4	10.50	21.6	5.94	.537	999	"
1026	—	5	—	—	—	—	—	Pumped dry
1029	—	—	5.00	21.7	6.13	.550	505	Recovered to 5 ft. Began pumping
1034	—	7	10.50	21.7	5.75	.457	999	Silty-Opaque
1038	—	8	—	—	—	—	—	Pumped dry
1043	—	—	5.00	21.7	5.73	.444	999	Recovered to 5ft. Began pumping.
1046	—	9	—	—	—	—	—	Stopped pump to clean
1051	—	—	8.61	20.6	5.81	.436	999	Started pumping-Opaque-Sand
1053	—	11	—	—	—	—	—	Pumped dry
1058	—	—	5.00	20.8	5.76	.400	999	Started pumping-Opaque
1059	—	13	—	—	—	—	~~999~~ 11	Stopped pump (dry)
1103	—	—	5.00	21.3	5.65	.338	999	Recovered to 5 ft. Began pumping
1105	—	14	10.50	—	—	—	—	Pumped dry
1109	—	—	5.00	21.4	5.69	.308	999	Recovered to 5ft. Began pumping
1110	—	15	10.50	—	—	—	—	Pumped dry
1114	—	—	5.00	21.6	5.57	.282	999	Recovered to 5ft. Began pumping
1116	—	16	10.50	—	—	—	—	Pumped dry

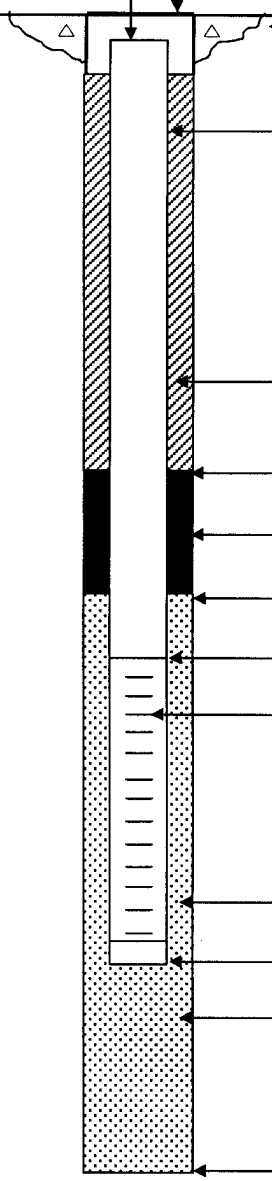
Tetra Tech NUS, Inc.

WELL No.: CF-AN10-MW01

MONITORING WELL SHEET

PROJECT:	NASCF Pipeline	DRILLING Co.:	GW Protection	BORING No.:	MW01
PROJECT No.:	N0013	DRILLER:	Nick S.	DATE COMPLETED:	11/30/99
SITE:	CF-AN10	DRILLING METHOD:	HSA	NORTHING:	NA
GEOLOGIST:	Jason McCann	DEV. METHOD:	Submersible	EASTING:	NA

Ground Elevation =
Datum:



Not to Scale

Elevation / Depth of Top of Riser: / 3-inch

Elevation / Height of Top of Surface Casing: / 1-inch

I.D. of Surface Casing: 8-inch

Type of Surface Casing: Steel manhole

Type of Surface Seal: Concrete pad 2' x2' x 6"

I.D. of Riser: 2-inch

Type of Riser: SCH 40 PVC

Borehole Diameter: 8-inch

Type of Backfill: Type I Portland Cement and Bentonite Grout Slurry

Elevation / Depth of Seal: / 0.5-feet

Type of Seal: 30/65 Fine Sand

Elevation / Depth of Top of Filter Pack: NA / 1-foot

Elevation / Depth of Top of Screen: NA / 2-feet

Type of Screen: SCH 40 PVC

Slot Size x Length: 0.010"x10'

I.D. of Screen: 2-inch

Type of Filter Pack: 20/30 Silica Sand

Elevation / Depth of Bottom of Screen: NA / 12-feet

Elevation / Depth of Bottom of Filter Pack: NA / 12-feet

Type of Backfill Below Well: 20/30 Silica Sand

Elevation / Total Depth of Borehole: NA / 12-feet

MONITORING WELL DEVELOPMENT RECORD

Well: CEF-AN10-1S
Site: Cecil Field
Date Installed: 11-30-99
Date Developed: 12-8-99
Dev. Method: Pump
Pump Type: Submersible

Depth to Bottom (ft.): 11.62
Static Water Level Before (ft.): 1.49
Static Water Level After (ft.):
Screen Length (ft.): 10
Specific Capacity:
Casing ID (in.): 2

Responsible Personnel: J. Kucera / T. Thompson
Drilling Co.: Groundwater Protection
Project Name: NASCE - NASJAX Jet Fuel Line
Project Number: 0013

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
1122	—	—		24.8	6.54	.401	47	Cloudy
1124	Pumped Dry 3.0							
1126	Recovered to 6 ft. Began pump							
1127	Pumped Dry 4.0							
1135	Recovered to 6 ft. Began pump							
1136	Pumped dry 5.0							
1204	Recovered to 6 ft. Began pump							
1205	—	6.0	6 ft	25.7	6.32	.603	20	Cloudy / Sand present
1205	Pumped dry 6							
1213	Recovered to 8 ft. Began pump							
~~1219~~ 1213	Pumped dry	6.5		26.1	6.15	.646	20	Clear / Sand present
1227	Recovered to 8 ft. Began pumping							
1227	Pumped dry	7.0		25.7	6.03	.532	29	Clear / Sand present

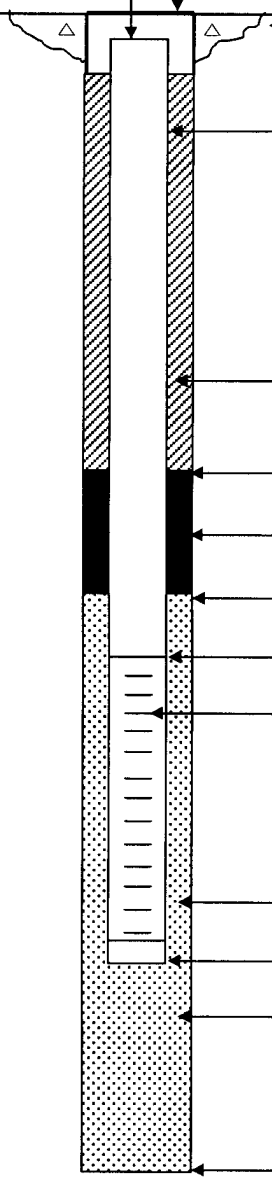
Tetra Tech NUS, Inc.

WELL No.: CF-AN10-MW02

MONITORING WELL SHEET

PROJECT:	NASCF Pipeline	DRILLING Co.:	GW Protection	BORING No.:	MW02
PROJECT No.:	N0013	DRILLER:	Nick S.	DATE COMPLETED:	02/10/00
SITE:	CF-AN10	DRILLING METHOD:	HSA	NORTHING:	NA
GEOLOGIST:	Jason McCann	DEV. METHOD:	Submersible	EASTING:	NA

Ground Elevation =
Datum:



Not to Scale

Elevation / Depth of Top of Riser: / 3-inch

Elevation / Height of Top of Surface Casing: / 1-inch

I.D. of Surface Casing: 4-inch

Type of Surface Casing: Steel manhole

Type of Surface Seal: Concrete pad 2' x2' x 6"

I.D. of Riser: 1-inch

Type of Riser: SCH 40 PVC

Borehole Diameter: 4-inch

Type of Backfill: Type I Portland Cement and Bentonite Grout Slurry

Elevation / Depth of Seal: / 2-feet

Type of Seal: 30/65 Fine Sand

Elevation / Depth of Top of Filter Pack: NA / 2.5-feet

Elevation / Depth of Top of Screen: NA / 2.5-feet

Type of Screen: SCH 40 PVC

Slot Size x Length: 0.010"x10'

I.D. of Screen: 1-inch

Type of Filter Pack: 20/30 Silica Sand

Elevation / Depth of Bottom of Screen: NA / 12.5-feet

Elevation / Depth of Bottom of Filter Pack: NA / 12.5-feet

Type of Backfill Below Well: 20/30 Silica Sand

Elevation / Total Depth of Borehole: NA / 12.5-feet

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: CEF-AN10-2S
Site: NASCF 103rd St. Pipeline
Date Installed: 2/9/00
Date Developed: 2/11/00
Dev. Method: Pump
Pump Type: Peristaltic

Depth to Bottom (ft.): 12.15
Static Water Level Before (ft.): 1.28
Static Water Level After (ft.):
Screen Length (ft.): 10
Specific Capacity: —
Casing ID (in.): 1

Responsible Personnel: M. DALE / C. FRANCISCO
Drilling Co.: Groundwater Protection
Project Name: NAS CECIL FIELD
Project Number: 0013

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH S.U.	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1000	Ø *	Ø	1.28	—	—	—	—	PID = 2.6 ppm in well
1002	Ø		9	19.52	6.84	1.97	82	
1006	↓	3L						Stopped Pump - well dry - PID = 0.0 ppm
1051			3.4Ø	—	—	—	—	Restarted Pump - 80% recov. back gnd.
1055	↓	~5L	9.6Ø	20.03	6.83	1.49	58	Clear
1100	Ø	—	12	20.29	6.71	1.57	100	Cloudy / Purged dry

purged dry again!

hard bottom - ~~sweep~~ swept well bottom.

* hard bottom, set tubing just few inches off bottom.

Tetra Tech NUS, Inc.

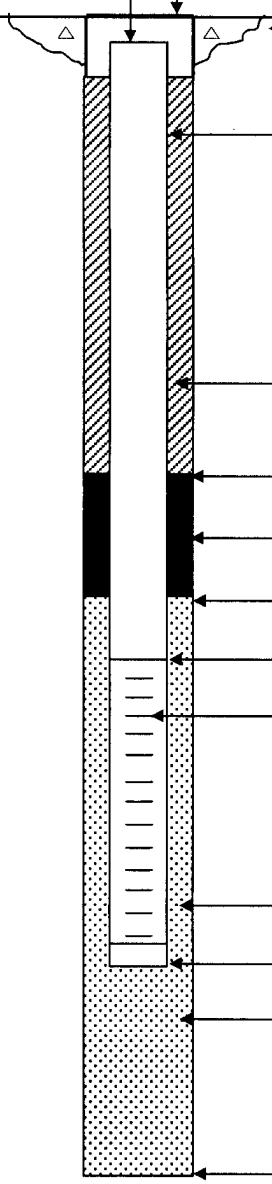
WELL No.: CF-AN14-MW01

MONITORING WELL SHEET

PROJECT:	NASCF Pipeline	DRILLING Co.:	GW Protection	BORING No.:	MW01
PROJECT No.:	N0013	DRILLER:	Nick S.	DATE COMPLETED:	11/29/99
SITE:	CF-AN14	DRILLING METHOD:	HSA	NORTHING:	NA
GEOLOGIST:	Jason McCann	DEV. METHOD:	Submersible	EASTING:	NA

Ground Elevation =

Datum:



Not to Scale

Elevation / Depth of Top of Riser:		/ 3-inch
Elevation / Height of Top of Surface Casing:		/ 1-inch
I.D. of Surface Casing:	8-inch	
Type of Surface Casing:	Steel manhole	
Type of Surface Seal:	Concrete pad 2' x2' x 6"	
I.D. of Riser:	2-inch	
Type of Riser:	SCH 40 PVC	
Borehole Diameter:	8-inch	
Type of Backfill:	Type I Portland Cement and Bentonite Grout Slurry	
Elevation / Depth of Seal:		/ 2-feet
Type of Seal:	30/65 Fine Sand	
Elevation / Depth of Top of Filter Pack:		NA / 4-feet
Elevation / Depth of Top of Screen:		NA / 6-feet
Type of Screen:	SCH 40 PVC	
Slot Size x Length:	0.010"x10'	
I.D. of Screen:	2-inch	
Type of Filter Pack:	20/30 Silica Sand	
Elevation / Depth of Bottom of Screen:		NA / 16-feet
Elevation / Depth of Bottom of Filter Pack:		NA / 16-feet
Type of Backfill Below Well:	20/30 Silica Sand	
Elevation / Total Depth of Borehole:		NA / 16-feet

MONITORING WELL DEVELOPMENT RECORD

'ell: CEF-AN14-1S
te: Cecil Field
ate Installed:
ate Developed: 12-10-99
ev. Method: Pump
ımp Type: Whale Submersible

Depth to Bottom (ft.): 15.85
Static Water Level Before (ft.): 6.79
Static Water Level After (ft.):
Screen Length (ft.): 10
Specific Capacity:
Casing ID (in.): 2

Responsible Personnel: J. Kurera / T. Thompson
Drilling Co.: Groundwater Protection
Project Name: NASCF-NASJAX Jet Fuel Pipeline
Project Number: 0013

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
2807	—	—	6.79	23.6	5.16	.279	999	Dk Brn, Opaque, Silty
2811	—	8	14.85	—	—	—	—	Pumped dry
825			8.00	23.9	5.60	.283	785	Recovered to 8ft. Started pump
830	—	13	14.00	25.4	5.53	.332	999	Dk Brn, Opaque, Silty
831	—	13.5	14.85	—	—	—	—	Pumped dry
853	—		8.00	25.4	5.40	.294	419	Recovered to 8ft. Started Pump
858	—	18.5	>14.00	25.6	5.43	.283	999	Dk Brn, Opaque, Silty
1902	—	21.5	>14.00	26.2	5.42	.258	999	"
905	—	22	14.85	—	—	—	—	Pumped dry.

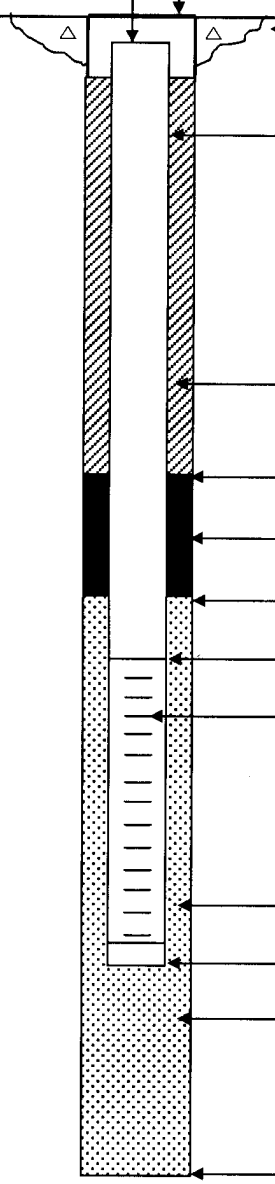
Tetra Tech NUS, Inc.

WELL No.: CF-AN15-MW01

MONITORING WELL SHEET

PROJECT:	NASCF Pipeline	DRILLING Co.:	GW Protection	BORING No.:	MW01
PROJECT No.:	N0013	DRILLER:	Nick S.	DATE COMPLETED:	11/30/99
SITE:	CF-AN15	DRILLING METHOD:	HSA	NORTHING:	NA
GEOLOGIST:	Jason McCann	DEV. METHOD:	Submersible	EASTING:	NA

Ground Elevation =
Datum:



Not to Scale

Elevation / Depth of Top of Riser: / 3-inch

Elevation / Height of Top of Surface Casing: / 1-inch

I.D. of Surface Casing: 8-inch

Type of Surface Casing: Steel manhole

Type of Surface Seal: Concrete pad 2' x2' x 6"

I.D. of Riser: 2-inch

Type of Riser: SCH 40 PVC

Borehole Diameter: 8-inch

Type of Backfill: Type I Portland Cement and Bentonite Grout Slurry

Elevation / Depth of Seal: / 2-feet

Type of Seal: 30/65 Fine Sand

Elevation / Depth of Top of Filter Pack: NA / 4-feet

Elevation / Depth of Top of Screen: NA / 6-feet

Type of Screen: SCH 40 PVC

Slot Size x Length: 0.010"x10'

I.D. of Screen: 2-inch

Type of Filter Pack: 20/30 Silica Sand

Elevation / Depth of Bottom of Screen: NA / 16-feet

Elevation / Depth of Bottom of Filter Pack: NA / 16-feet

Type of Backfill Below Well: 20/30 Silica Sand

Elevation / Total Depth of Borehole: NA / 16-feet

MONITORING WELL DEVELOPMENT RECORD

Page ___ of ___

Well: CEF-AN15-1S
Site: Cecil Field
Date Installed:
Date Developed: 12-10-99
Dev. Method: Pump
Pump Type: Whale Submersible

Depth to Bottom (ft.): 15.94
Static Water Level Before (ft.): 8.37
Static Water Level After (ft.):
Screen Length (ft.): 10
Specific Capacity:
Casing ID (in.): 2

Responsible Personnel: J. Kucera
Drilling Co.: Groundwater Protection
Project Name: NASCF-NASJAX Jet Fuel Pipeline
Project Number: 0013

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
0924	—	—	8.37	25.1	5.65	.258	999	DkBrn, Opaque, Silty
0929	—	5	11.30	25.9	5.64	.232	999	"
0934	—	10	11.87	25.9	5.62	.232	999	"
0939	—	15	12.28	26.0	5.61	.230	999	"
0944	—	20	12.40	25.9	5.73	.235	999	"
0949	—	25	12.60	26.3	5.70	.237	999	"
0954	—	30	12.65	26.1	5.64	.239	999	"
0959	—	35	12.70	26.2	5.67	.242	999	"
1004	—	40	12.83	26.3	5.66	.243	999	"
1009	—	45	12.87	26.5	5.73	.244	999	"
1014	—	50	12.80	26.5	5.73	.248	573	"
1019	—	55	12.80	26.5	5.71	.249	394	Very Cloudy
1024	—	59	12.80	26.6	5.70	.250	312	

Tetra Tech NUS, Inc.

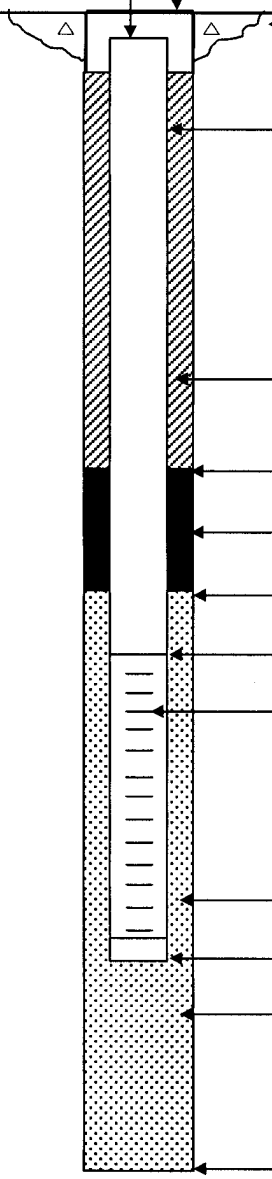
WELL No.: CF-VA02-MW01

MONITORING WELL SHEET

PROJECT:	NASCF Pipeline	DRILLING Co.:	GW Protection	BORING No.:	MW01
PROJECT No.:	N0013	DRILLER:	Nick S.	DATE COMPLETED:	12/02/99
SITE:	CF-VA02	DRILLING METHOD:	HSA	NORTHING:	NA
GEOLOGIST:	Jason McCann	DEV. METHOD:	Submersible	EASTING:	NA

Ground Elevation =

Datum:



Not to Scale

Elevation / Depth of Top of Riser: / 3-inch

Elevation / Height of Top of Surface Casing: / 1-inch

I.D. of Surface Casing: 8-inch

Type of Surface Casing: Steel manhole

Type of Surface Seal: Concrete pad 2' x2' x 6"

I.D. of Riser: 2-inch

Type of Riser: SCH 40 PVC

Borehole Diameter: 8-inch

Type of Backfill: Type I Portland Cement and Bentonite Grout Slurry

Elevation / Depth of Seal: / 0.5-feet

Type of Seal: 30/65 Fine Sand

Elevation / Depth of Top of Filter Pack: NA / 1-foot

Elevation / Depth of Top of Screen: NA / 2-feet

Type of Screen: SCH 40 PVC

Slot Size x Length: 0.010"x10'

I.D. of Screen: 2-inch

Type of Filter Pack: 20/30 Silica Sand

Elevation / Depth of Bottom of Screen: NA / 12-feet

Elevation / Depth of Bottom of Filter Pack: NA / 12-feet

Type of Backfill Below Well: 20/30 Silica Sand

Elevation / Total Depth of Borehole: NA / 12-feet

MONITORING WELL DEVELOPMENT RECORD

Well: CEF-VA02-1S
Site: Cecil Field
Date Installed:
Date Developed: 12-9-99
Dev. Method: Pump
Pump Type: Whale Submersible

Depth to Bottom (ft.): 11.60
Static Water Level Before (ft.): 1.73
Static Water Level After (ft.):
Screen Length (ft.): 10
Specific Capacity:
Casing ID (in.): 2

Responsible Personnel: J. Kucera / T. Thompson
Drilling Co.: Groundwater Protection
Project Name: NASCF-NASJAX Jet Fuel Pipeline
Project Number: 0013

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
1521	—	—	1.73	22.8	6.65	.471	285	~~Slightly~~ Cloudy
1524	—	3	—	—	—	—	—	Pumped dry
1528	—		5.00	22.8	6.37	.579	740	Recovered to 5ft. Began pump
1529	—	4	—	—	—	—	—	Pumped dry
1534	—		5.00	23.0	6.38	.559	709	Recovered to 5ft. Began pump
1535	—	5	10.20	—	—	—	—	Pumped dry
1541	—		5.00	21.7	6.39	.443	539	Recovered to 5ft. Began pump
1542	—	6	10.20	—	—	—	—	Pumped dry
1548	—		5.00	22.4	6.18	.454	975	Recovered to 5ft. Began pump
1549	—	7	10.20	—	—	—	—	Pumped dry
1555	—		5.00	22.4	6.20	.426	902	Recovered to 5ft. Began pump
1556	—	8	10.20	—	—	—	—	Pumped dry
1603	—		5.00	22.4	6.23	.401	764	Recovered to 5ft. Began pump
1604	—	9	10.20	—	—	—	—	Pumped dry
1611	—		5.00	21.9	6.25	.374	522	Recovered to 5ft. Began pump
1612	—	10	10.20	—	—	—	—	Pumped dry
1620	—		5.00	21.3	6.29	.381	356	Recovered to 5 ft. Began pump
1621	—	11	10.20	—	—	—	—	Pumped dry.

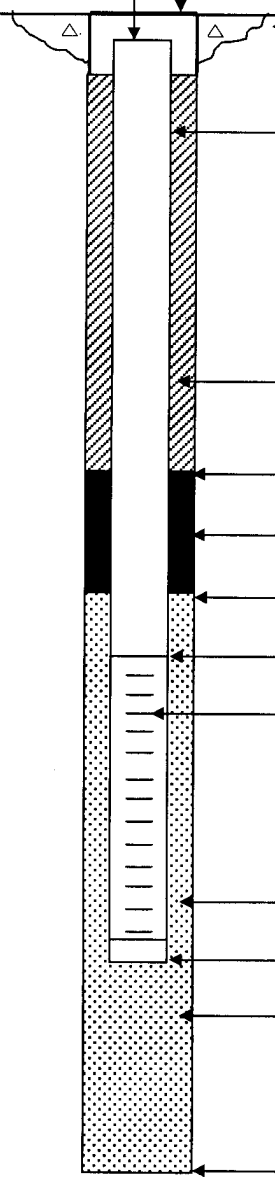
Tetra Tech NUS, Inc.

WELL No.: CF-VA07-MW01

MONITORING WELL SHEET

PROJECT:	NASCF Pipeline	DRILLING Co.:	GW Protection	BORING No.:	MW01
PROJECT No.:	N0013	DRILLER:	Nick S.	DATE COMPLETED:	11/30/99
SITE:	CF-VA07	DRILLING METHOD:	HSA	NORTHING:	NA
GEOLOGIST:	Jason McCann	DEV. METHOD:	Submersible	EASTING:	NA

Ground Elevation =
Datum:



Not to Scale

Elevation / Depth of Top of Riser:		/ 3-inch
Elevation / Height of Top of Surface Casing:		/ 1-inch
I.D. of Surface Casing:	8-inch	
Type of Surface Casing:	Steel manhole	
Type of Surface Seal:	Concrete pad 2' x2' x 6"	
I.D. of Riser:	2-inch	
Type of Riser:	SCH 40 PVC	
Borehole Diameter:	8-inch	
Type of Backfill:	Type I Portland Cement and Bentonite Grout Slurry	
Elevation / Depth of Seal:		/ 1-foot
Type of Seal:	30/65 Fine Sand	
Elevation / Depth of Top of Filter Pack:		NA / 1.5-feet
Elevation / Depth of Top of Screen:		NA / 3-feet
Type of Screen:	SCH 40 PVC	
Slot Size x Length:	0.010"x10'	
I.D. of Screen:	2-inch	
Type of Filter Pack:	20/30 Silica Sand	
Elevation / Depth of Bottom of Screen:		NA / 13-feet
Elevation / Depth of Bottom of Filter Pack:		NA / 13-feet
Type of Backfill Below Well:	20/30 Silica Sand	
Elevation / Total Depth of Borehole:		NA / 13-feet

MONITORING WELL DEVELOPMENT RECORD

Page ___ of ___

Vell: CEF-VA07-1S
ite: Cecil Field
ate Installed:
ate Developed: 12-8-99
ev. Method: Pump
ump Type: Submersible

Depth to Bottom (ft.):
Static Water Level Before (ft.): 3.67
Static Water Level After (ft.): 4.35
Screen Length (ft.): 10
Specific Capacity:
Casing ID (in.): 2

Responsible Personnel: J. Kucera / T. Thompson
Drilling Co.: Groundwater Protection
Project Name: ~~CEF~~ NASCF-NASJAX Jet Fuel Pipeline
Project Number: 0013

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
1409	—	—	3.67	25.8	5.96	.332	999	Silty / Sand Present
1414	—	9	5.30	25.7	5.79	.260	999	Silty
1419	—	17	5.42	25.8	5.71	.244	329	Silty
1424	—	25	5.43	25.8	5.70	.242	159	Cloudy
1429	—	34	5.43	25.7	5.68	.240	60	Cloudy (Slight)
1434	—	41	5.45	25.3	5.72	.246	47	Slightly Cloudy
1439	—	49	5.45	25.8	5.69	.228	65	"
1444	—	57	5.47	25.7	5.71	.238	30	Clear
1449	—	64	5.49	25.7	5.68	.233	58	Slightly Cloudy
1454	—	72	5.53	25.8	5.70	.233	43	"
1459	—	79	5.57	25.7	5.70	.231	32	Clear
1504	—	86	5.57	25.9	5.73	.228	29	"
1509	—	93	4.35	25.7	5.66	.218	24	"

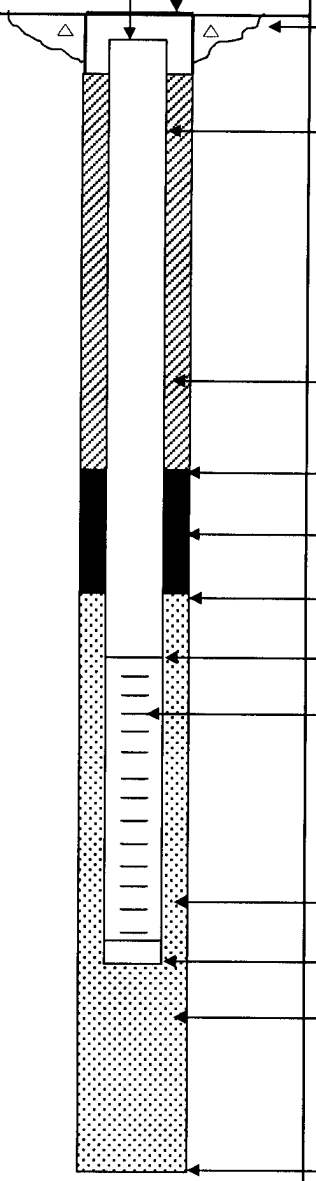
Tetra Tech NUS, Inc.

WELL No.: CF-VA08-MW01

MONITORING WELL SHEET

PROJECT:	NASCF Pipeline	DRILLING Co.:	GW Protection	BORING No.:	MW01
PROJECT No.:	N0013	DRILLER:	Nick S.	DATE COMPLETED:	12/02/99
SITE:	CF-VA08	DRILLING METHOD:	HSA	NORTHING:	NA
GEOLOGIST:	Jason McCann	DEV. METHOD:	Submersible	EASTING:	NA

Ground Elevation =
Datum:



Not to Scale

Elevation / Depth of Top of Riser: / 3-inch

Elevation / Height of Top of Surface Casing: / 1-inch

I.D. of Surface Casing: 8-inch

Type of Surface Casing: Steel manhole

Type of Surface Seal: Concrete pad 2' x2' x 6"

I.D. of Riser: 2-inch

Type of Riser: SCH 40 PVC

Borehole Diameter: 8-inch

Type of Backfill: Type I Portland Cement and Bentonite Grout Slurry

Elevation / Depth of Seal: / 8-feet

Type of Seal: 30/65 Fine Sand

Elevation / Depth of Top of Filter Pack: NA / 10-feet

Elevation / Depth of Top of Screen: NA / 12-feet

Type of Screen: SCH 40 PVC

Slot Size x Length: 0.010"x10'

I.D. of Screen: 2-inch

Type of Filter Pack: 20/30 Silica Sand

Elevation / Depth of Bottom of Screen: NA / 22-feet

Elevation / Depth of Bottom of Filter Pack: NA / 22-feet

Type of Backfill Below Well: 20/30 Silica Sand

Elevation / Total Depth of Borehole: NA / 22-feet

MONITORING WELL DEVELOPMENT RECORD

Well: CEF-VA08-01
Site: Cecil Field
Date Installed:
Date Developed: 12-9-99
Dev. Method: Pump
Pump Type: Whale Submersible

Depth to Bottom (ft.): 21.9
Static Water Level Before (ft.): 9.71
Static Water Level After (ft.):
Screen Length (ft.): 10
Specific Capacity:
Casing ID (in.): 2

Responsible Personnel: J. Kucera / T. Thompson
Drilling Co.: Groundwater Protection
Project Name: NASCF-NASTAX Jet Fuel Pipeline
Project Number: 0013

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
1241	—	—	9.71	24.5	7.00	.880	999	Silty, Brown, Opaque
1246	—	5 ~~6~~ (11)		25.1	6.77	.705	817	Silty, Brown, Opaque
1251	—	10	15.58	25.2	6.74	.687	394	Very Cloudy
1256	—	15	16.67	25.2	6.71	.680	221	Very Cloudy
1302 1301	—	19	16.75	25.2	6.69	.674	117	Cloudy
1306	—	23	16.70	25.2	6.69	.662	98	Cloudy
1311	—	27	16.50	25.2	6.62	.659	69	Slightly Cloudy
1316	—	(11) ~~30~~ 31	16.32	25.1	6.67	.657	50	Slightly Cloudy
1321	—	(11) ~~33~~ 35	16.25	25.0	6.65	.655	40	Slightly Cloudy
1326	—	(11) ~~36~~ 39	16.05	25.1	6.63	.652	39	Slightly Cloudy
1331	—	(11) ~~38~~ ~~39~~ 43	15.88	25.1	6.62	.647	40	Slightly Cloudy
1336	—	47	15.44	25.2	6.61	.648	31	Clear
1341	—	51	15.35	25.2	6.63	.649	20	Clear

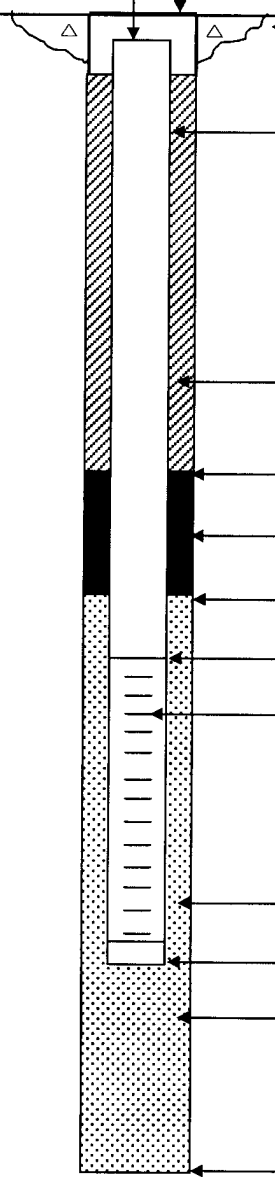
Tetra Tech NUS, Inc.

WELL No.: CF-VA09-MW01

MONITORING WELL SHEET

PROJECT:	NASCF Pipeline	DRILLING Co.:	GW Protection	BORING No.:	MW01
PROJECT No.:	N0013	DRILLER:	Nick S.	DATE COMPLETED:	11/30/99
SITE:	CF-VA09	DRILLING METHOD:	HSA	NORTHING:	NA
GEOLOGIST:	Jason McCann	DEV. METHOD:	Submersible	EASTING:	NA

Ground Elevation =
Datum:



Not to Scale

Elevation / Depth of Top of Riser: / 3-inch

Elevation / Height of Top of Surface Casing: / 1-inch

I.D. of Surface Casing: 8-inch

Type of Surface Casing: Steel manhole

Type of Surface Seal: Concrete pad 2' x2' x 6"

I.D. of Riser: 2-inch

Type of Riser: SCH 40 PVC

Borehole Diameter: 8-inch

Type of Backfill: Type I Portland Cement and Bentonite Grout Slurry

Elevation / Depth of Seal: / 0.5-feet

Type of Seal: 30/65 Fine Sand

Elevation / Depth of Top of Filter Pack: NA / 1-foot

Elevation / Depth of Top of Screen: NA / 2-feet

Type of Screen: SCH 40 PVC

Slot Size x Length: 0.010"x10'

I.D. of Screen: 2-inch

Type of Filter Pack: 20/30 Silica Sand

Elevation / Depth of Bottom of Screen: NA / 12-feet

Elevation / Depth of Bottom of Filter Pack: NA / 12-feet

Type of Backfill Below Well: 20/30 Silica Sand

Elevation / Total Depth of Borehole: NA / 12-feet

MONITORING WELL DEVELOPMENT RECORD

/ell: CEF-VA09-1S
ite: Cecil Field
ate Installed:
ate Developed: 12-8-99
ev. Method: Pump
ump Type: Submersible

Depth to Bottom (ft.): 11.61
Static Water Level Before (ft.): 1.46
Static Water Level After (ft.):
Screen Length (ft.): 10
Specific Capacity:
Casing ID (in.): 2

Responsible Personnel: J. Kucera / T. Thompson
Drilling Co.: Groundwater Protection
Project Name: NASCF-NASJAX Jet Fuel Line
Project Number: 0013

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
1242	—	—	1.46	24.5	6.14	.373	999	Silty
1247	—	8	11.47	24.9	6.04	.319	999	Silty
1252	—	15	10.79	24.9	5.95	.294	268	Cloudy
1257	—	21	10.77	24.7	5.90	.291	336	Cloudy
1302	—	26	10.74	24.8	5.86	.280	183	Cloudy
1307	—	33	10.74	24.8	5.88	.268	92	Slightly Cloudy
1312	—	38	10.74	24.7	5.91	.269	72	Slightly Cloudy
1317	—	43.5	10.60	24.8	5.90	.268	66	Slightly Cloudy
1322	—	48.5	10.46	24.7	5.84	.257	44	Clear
1327	—	52.5	10.40	24.7	5.91	.261	43	Clear
1332	—	57.5	"	24.8	5.86	.253	37	"
1337	—	62	"	24.7	5.83	.254	35	"
1342	—	67	"	24.7	5.81	.240	39	"

Tetra Tech NUS, Inc.

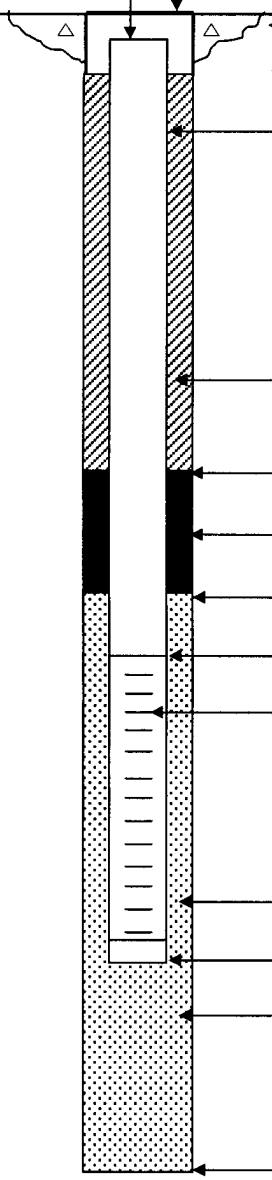
WELL No.: CF-VA14-MW01

MONITORING WELL SHEET

PROJECT:	NASCF Pipeline	DRILLING Co.:	GW Protection	BORING No.:	MW01
PROJECT No.:	N0013	DRILLER:	Nick S.	DATE COMPLETED:	11/29/99
SITE:	CF-VA14	DRILLING METHOD:	HSA	NORTHING:	NA
GEOLOGIST:	Jason McCann	DEV. METHOD:	Submersible	EASTING:	NA

Ground Elevation =

Datum:



Not to Scale

Elevation / Depth of Top of Riser:		/ 3-inch
Elevation / Height of Top of Surface Casing:		/ 1-inch
I.D. of Surface Casing:	8-inch	
Type of Surface Casing:	Steel manhole	
Type of Surface Seal:	Concrete pad 2' x2' x 6"	
I.D. of Riser:	2-inch	
Type of Riser:	SCH 40 PVC	
Borehole Diameter:	8-inch	
Type of Backfill:	Type I Portland Cement and Bentonite Grout Slurry	
Elevation / Depth of Seal:		/ 6-feet
Type of Seal:	30/65 Fine Sand	
Elevation / Depth of Top of Filter Pack:		NA / 8-feet
Elevation / Depth of Top of Screen:		NA / 10-feet
Type of Screen:	SCH 40 PVC	
Slot Size x Length:	0.010"x10'	
I.D. of Screen:	2-inch	
Type of Filter Pack:	20/30 Silica Sand	
Elevation / Depth of Bottom of Screen:		NA / 20-feet
Elevation / Depth of Bottom of Filter Pack:		NA / 20-feet
Type of Backfill Below Well:	20/30 Silica Sand	
Elevation / Total Depth of Borehole:		NA / 20-feet

MONITORING WELL DEVELOPMENT RECORD

Well: CEF-VA14-1S
Site: Cecil Field
Date Installed:
Date Developed: 12-9-99
Dev. Method: Pump
Pump Type: Submersible

Depth to Bottom (ft.): 18.80
Static Water Level Before (ft.): 11.30
Static Water Level After (ft.): 12.85
Screen Length (ft.): 10
Specific Capacity:
Casing ID (in.): 2

Responsible Personnel: J. Kucera/T. Thompson
Drilling Co.: Groundwater Protection
Project Name: NASCF-NASJAX Jet Fuel Pipeline
Project Number: 0013

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
0832	—	—	11.30	24.2	6.04	.540	999	Silty (Opaque)
0837	—	8	12.85	25.3	6.04	.477	999	Silty (Opaque)
0842	—	15	12.85	26.1	6.03	.461	154	Very Cloudy
0847	—	21	12.85	26.2	6.02	.458	93	Cloudy
0852	—	28	12.85	26.0	5.85	.454	82	Cloudy
0857	—	36	12.85	26.3	5.91	.456	50	Cloudy (Slightly)
0902	—	44	12.85	26.2	5.89	.450	36	Slightly Cloudy
0907	—	51	12.85	26.3	5.91	.451	27	Clear
0912	—	59	12.85	26.3	5.90	.446	20	Clear
0917	—	(11) ~~67~~ 65	12.85	26.4	5.90	.447	15	Clear
0922	—	77	12.85	26.5	5.88	.447	12	Clear
0927	—	84	12.85	26.4	5.88	.446	19	Clear
0932	—	91	12.85	26.5	5.88	.446	13	Clear

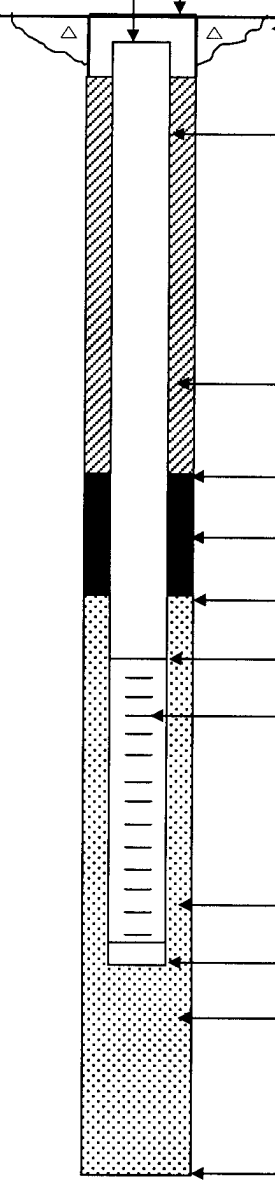
Tetra Tech NUS, Inc.

WELL No.: CF-TH03-TMW-07

MONITORING WELL SHEET

PROJECT:	NASCF Pipeline	DRILLING Co.:	GW Protection	BORING No.:	SB-21
PROJECT No.:	N0013	DRILLER:	Bill Hammond	DATE COMPLETED:	05/24/01
SITE:	CF-TH03	DRILLING METHOD:	HSA	NORTHING:	NA
GEOLOGIST:	M. Dale	DEV. METHOD:	Submersible	EASTING:	NA

Ground Elevation =
Datum:



Not to Scale

Elevation / Depth of Top of Riser:		/ 0-feet
Elevation / Height of Top of Surface Casing:		/ NA
I.D. of Surface Casing:	NA	
Type of Surface Casing:	NA	
Type of Surface Seal:	NA	
I.D. of Riser:	2-inch	
Type of Riser:	SCH 40 PVC	
Borehole Diameter:	8-inch	
Type of Backfill:	None	
Elevation / Depth of Seal:		/ NA
Type of Seal:	30/65 Fine Sand	
Elevation / Depth of Top of Filter Pack:		NA / 1-foot
Elevation / Depth of Top of Screen:		NA / 8-feet
Type of Screen:	SCH 40 PVC	
Slot Size x Length:	0.010"x10'	
I.D. of Screen:	2-inch	
Type of Filter Pack:	20/30 Silica Sand	
Elevation / Depth of Bottom of Screen:		NA / 18-feet
Elevation / Depth of Bottom of Filter Pack:		NA / 18-feet
Type of Backfill Below Well:	20/30 Silica Sand	
Elevation / Total Depth of Borehole:		NA / 18-feet

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: CEF-TH3-TMW-~~021~~ 007 MD
Site: TH3
Date Installed: 5/24/01
Date Developed: 5/24/01
Dev. Method: PUMP
Pump Type: SUBMERSIBLE

Depth to Bottom (ft.): 19.38
Static Water Level Before (ft.): 9.65
Static Water Level After (ft.): 9.85
Screen Length (ft.): 10
Specific Capacity: —
Casing ID (in.): 2"

Responsible Personnel: MERVIN DALE
Drilling Co.: GROUND WATER PROTECTION
Project Name: NAS CECIL FIELD
Project Number: 0013DMO050120

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mSCM)	Turbidity (NTU)	Remarks (odor, color, etc.)
1316	.5	—	9.65	—	—	—	—	— DEK BROWN
1320		8	12.16	28.9	4.59	0.232	>999	
1325		18	12.71	27.8	4.50	0.199	>999	
1330		~~27~~ 25	12.83	27.4	4.39	0.188	>999	
1335		~~37~~ 31	12.88	27.2	4.19	0.181	>999	
1340		~~40~~ 36	12.89	27.2	4.13	0.180	734	
1345		~~50~~ 40 gal	12.95	27.1	4.11	0.178	425	
1350		45	12.98	27.1	4.11	0.177	258	
1355	.45	50	13.02	27.1	4.12	0.177	210	

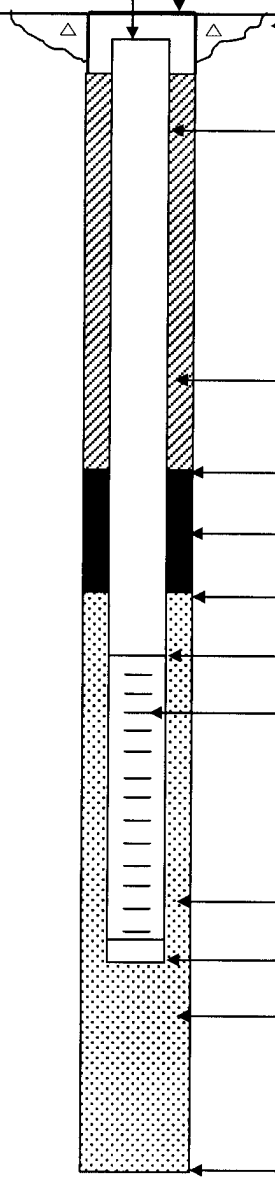
Tetra Tech NUS, Inc.

WELL No.: CF-TH03-TMW-10

MONITORING WELL SHEET

PROJECT:	NASCF Pipeline	DRILLING Co.:	GW Protection	BORING No.:	SB-10
PROJECT No.:	N0013	DRILLER:	Bill Hammond	DATE COMPLETED:	05/25/01
SITE:	CF-TH03	DRILLING METHOD:	HSA	NORTHING:	NA
GEOLOGIST:	M. Dale	DEV. METHOD:	Submersible	EASTING:	NA

Ground Elevation =
Datum:



Not to Scale

Elevation / Depth of Top of Riser: / 0-feet

Elevation / Height of Top of Surface Casing: / NA

I.D. of Surface Casing: NA

Type of Surface Casing: NA

Type of Surface Seal: NA

I.D. of Riser: 2-inch

Type of Riser: SCH 40 PVC

Borehole Diameter: 8-inch

Type of Backfill: None

Elevation / Depth of Seal: / NA

Type of Seal: 30/65 Fine Sand

Elevation / Depth of Top of Filter Pack: NA / 1-foot

Elevation / Depth of Top of Screen: NA / 7-feet

Type of Screen: SCH 40 PVC

Slot Size x Length: 0.010"x10'

I.D. of Screen: 2-inch

Type of Filter Pack: 20/30 Silica Sand

Elevation / Depth of Bottom of Screen: NA / 17-feet

Elevation / Depth of Bottom of Filter Pack: NA / 17-feet

Type of Backfill Below Well: 20/30 Silica Sand

Elevation / Total Depth of Borehole: NA / 17-feet

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: CEF-TH3-TMW-010 Depth to Bottom (ft.): 17.6 Responsible Personnel: MERWIN DALE
Site: ____ TH3, Cecil Field Static Water Level Before (ft.): 9.75 Drilling Co.: __ Groundwater Protection
Date Installed: 5/25/01 Static Water Level After (ft.): ____ Project Name: NAS CECIL FIELD
Date Developed: 5/25/01 Screen Length (ft.): 10 ft Project Number: 0013DMO050120
Dev. Method: Pump Specific Capacity: ____ Not taken
Pump Type: Submersible Casing ID (in.): 2"

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1130	1.5		9.75					
1140		5	*	27.8	4.89	0.216	>999	DARK BROWN
1145		8		27.7	4.72	0.198	>999	
1150		10		27.4	4.37	0.183	>999	
1155		15		27.3	4.26	0.180	484	LIGHTER BROWN
1200		19		27.4	4.23	0.179	368	
1211		23		27.8	4.24	0.178	290	0.3 gpm & stopping/restarting:
1221		27		27.3	4.48	0.190	999	pump stopping from
1225		28		27.4	4.55	0.191	999	drop in level. well
1229		29		27.4	4.55	0.183	999	recharging at ~0.1
			stable except turbidity is high,					ft. per 15 sec.
						must stop to meet DOT permit deadline		
								MWD

* BELOW PUMP

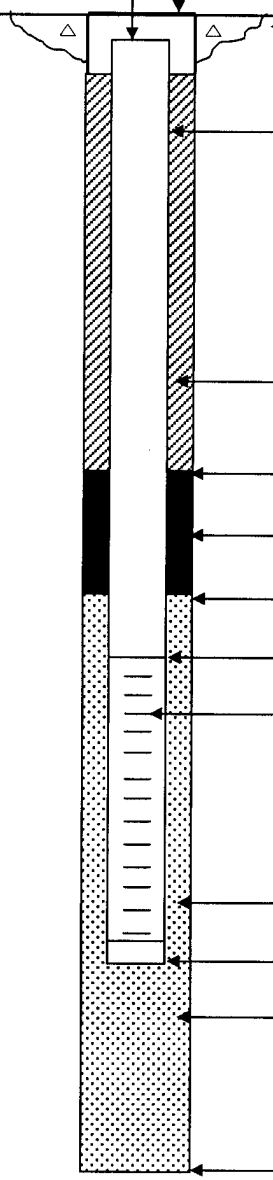
Tetra Tech NUS, Inc.

WELL No.: CF-TH03-MW01

MONITORING WELL SHEET

PROJECT:	NASCF Pipeline	DRILLING Co.:	GW Protection	BORING No.:	SB-19
PROJECT No.:	N0013	DRILLER:	Bill Hammond	DATE COMPLETED:	05/25/01
SITE:	CF-TH03	DRILLING METHOD:	HSA	NORTHING:	NA
GEOLOGIST:	M. Dale	DEV. METHOD:	Submersible	EASTING:	NA

Ground Elevation =
Datum:



Not to Scale

Elevation / Depth of Top of Riser:		/ 3-inch
Elevation / Height of Top of Surface Casing:		/ 1-inch
I.D. of Surface Casing:	8-inch	
Type of Surface Casing:	Steel manhole	
Type of Surface Seal:	Concrete pad 2' x2' x 6"	
I.D. of Riser:	2-inch	
Type of Riser:	SCH 40 PVC	
Borehole Diameter:	8-inch	
Type of Backfill:	Type I Portland Cement and Bentonite Grout Slurry	
Elevation / Depth of Seal:		/ 4-feet
Type of Seal:	30/65 Fine Sand	
Elevation / Depth of Top of Filter Pack:		NA / 6-feet
Elevation / Depth of Top of Screen:		NA / 8-feet
Type of Screen:	SCH 40 PVC	
Slot Size x Length:	0.010"x10'	
I.D. of Screen:	2-inch	
Type of Filter Pack:	20/30 Silica Sand	
Elevation / Depth of Bottom of Screen:		NA / 18-feet
Elevation / Depth of Bottom of Filter Pack:		NA / 18-feet
Type of Backfill Below Well:	20/30 Silica Sand	
Elevation / Total Depth of Borehole:		NA / 18-feet

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: CGF-TH3-MW1
Site: TH3
Date Installed: 5-24-01
Date Developed: 6-12-01
Dev. Method: pump
Pump Type: Submersible

Depth to Bottom (ft.): 18.91
Static Water Level Before (ft.): 8.26
Static Water Level After (ft.): —
Screen Length (ft.): 10
Specific Capacity: N/A
Casing ID (in.): 2

Responsible Personnel: E Rodriguez M O'Neill
Drilling Co.: GPI
Project Name: NAS CECIL FIELD
Project Number: ~~0039~~ 0013

BD: 47.8
Bckgnd: 3.4

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1119								
1122		4	11.25	24.6	5.06	0.249	>999	dk black brown opaque
1130		18	11.78	24.7	5.24	0.227	>999	
1135		28	11.89	24.7	5.33	0.225	>999	
1145		35	12.00	24.7	5.34	0.225	>999	
1150		40	11.99	24.7	5.37	0.226	902	
1155		45	11.94	24.8	5.40	0.228	564	brown cloudy
1200		50	11.89	24.8	5.40	0.229	413	

11.98 sheen
11.93 sheen
11.88 "

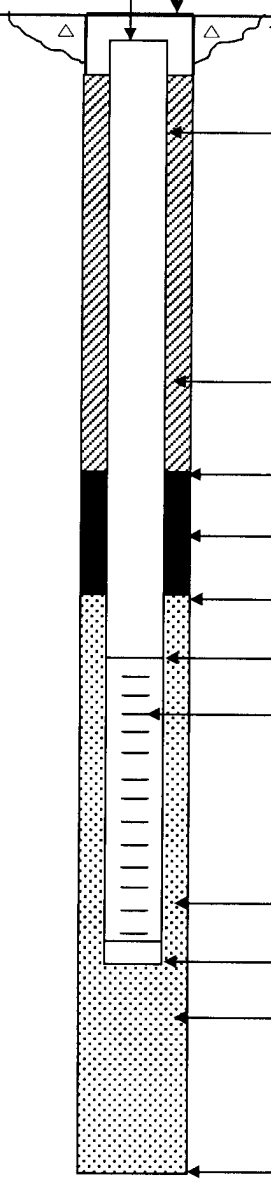
Tetra Tech NUS, Inc.

WELL No.: CF-TH03-MW02

MONITORING WELL SHEET

PROJECT:	NASCF Pipeline	DRILLING Co.:	GW Protection	BORING No.:	SB-20
PROJECT No.:	N0013	DRILLER:	Bill Hammond	DATE COMPLETED:	05/25/01
SITE:	CF-TH03	DRILLING METHOD:	HSA	NORTHING:	NA
GEOLOGIST:	M. Dale	DEV. METHOD:	Submersible	EASTING:	NA

Ground Elevation =
Datum:



Not to Scale

Elevation / Depth of Top of Riser:		/ 3-inch
Elevation / Height of Top of Surface Casing:		/ 1-inch
I.D. of Surface Casing:	8-inch	
Type of Surface Casing:	Steel manhole	
Type of Surface Seal:	Concrete pad 2' x2' x 6"	
I.D. of Riser:	2-inch	
Type of Riser:	SCH 40 PVC	
Borehole Diameter:	8-inch	
Type of Backfill:	Type I Portland Cement and Bentonite Grout Slurry	
Elevation / Depth of Seal:		/ 4-feet
Type of Seal:	30/65 Fine Sand	
Elevation / Depth of Top of Filter Pack:		NA / 8-feet
Elevation / Depth of Top of Screen:		NA / 10-feet
Type of Screen:	SCH 40 PVC	
Slot Size x Length:	0.010"x10'	
I.D. of Screen:	2-inch	
Type of Filter Pack:	20/30 Silica Sand	
Elevation / Depth of Bottom of Screen:		NA / 20-feet
Elevation / Depth of Bottom of Filter Pack:		NA / 20-feet
Type of Backfill Below Well:	20/30 Silica Sand	
Elevation / Total Depth of Borehole:		NA / 20-feet

3 | 50 / 16

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: IH CEF-TH3-~~MW3~~ MW2
Site: 1038 / Westconnett Pipeline
Date Installed: 5-24-01
Date Developed: 6/12/01
Dev. Method: PUMP
Pump Type: Submersible
12 gal to fill IL

Depth to Bottom (ft.): 19.48
Static Water Level Before (ft.): 8.47
Static Water Level After (ft.): 8.85
Screen Length (ft.): 10'
Specific Capacity: N/A
Casing ID (in.): 2"

Responsible Personnel: Michele O'Neill
Drilling Co.: Groundwater Protection
Project Name: NAS CECIL FIELD
Project Number: 0039

FID BK = .3 WELL = 13.6

Time	Estimated Sediment Thickness (ft.)	Cumulative Est. Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	DO	ORP	Remarks (odor, color, etc.)
1000	VRY HIGH	4.0	11.36	24.6	4.92	0.090	>K	0.81	215	DRK BRWN SLIGHT SHEEN
1010	"	16.0	14.51	24.5	4.61	0.192	>K	0.00	171	" "
1015	"	19.0	12.60	24.5	4.69	0.202	>K	0.00	139	" "
1020	LOWERING	30	12.54	24.5	4.87	0.209	>K	0	110	MED BRWN SHEEN
1028	"	34	12.51	24.5	5.03	0.213	>K	0	96	MED/LGT BRWN SHEEN
1033	"	42	12.57	24.5	5.09	0.217	>K	0	90	LGT BRWN SHEEN
1038	"	50	12.59	24.5	5.14	0.219	922.0	0	83	

SHEEN COULD BE PARTLY FROM DRUM

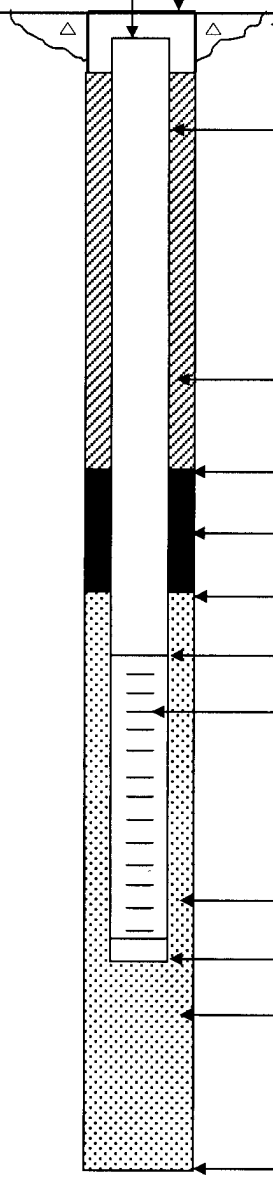
Tetra Tech NUS, Inc.

WELL No.: CF-TH03-MW03

MONITORING WELL SHEET

PROJECT:	NASCF Pipeline	DRILLING Co.:	GW Protection	BORING No.:	SB-21
PROJECT No.:	N0013	DRILLER:	Bill Hammond	DATE COMPLETED:	05/25/01
SITE:	CF-TH03	DRILLING METHOD:	HSA	NORTHING:	NA
GEOLOGIST:	M. Dale	DEV. METHOD:	Submersible	EASTING:	NA

Ground Elevation =
Datum:



Not to Scale

Elevation / Depth of Top of Riser:		/ 3-inch
Elevation / Height of Top of Surface Casing:		/ 1-inch
I.D. of Surface Casing:	8-inch	
Type of Surface Casing:	Steel manhole	
Type of Surface Seal:	Concrete pad 2' x2' x 6"	
I.D. of Riser:	2-inch	
Type of Riser:	SCH 40 PVC	
Borehole Diameter:	8-inch	
Type of Backfill:	Type I Portland Cement and Bentonite Grout Slurry	
Elevation / Depth of Seal:		/ 4-feet
Type of Seal:	30/65 Fine Sand	
Elevation / Depth of Top of Filter Pack:		NA / 6-feet
Elevation / Depth of Top of Screen:		NA / 8-feet
Type of Screen:	SCH 40 PVC	
Slot Size x Length:	0.010"x10'	
I.D. of Screen:	2-inch	
Type of Filter Pack:	20/30 Silica Sand	
Elevation / Depth of Bottom of Screen:		NA / 18-feet
Elevation / Depth of Bottom of Filter Pack:		NA / 18-feet
Type of Backfill Below Well:	20/30 Silica Sand	
Elevation / Total Depth of Borehole:		NA / 18-feet

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: CE-TH3-MW3
Site: TH3
Date Installed: 5-24-01
Date Developed: 6-12-01
Dev. Method: pump
Pump Type: Submersible

Depth to Bottom (ft.): 17.63
Static Water Level Before (ft.): 8.78
Static Water Level After (ft.): —
Screen Length (ft.): ~~5~~ 10 FT. MD
Specific Capacity: N/A
Casing ID (in.): 2"

Responsible Personnel: E Rodriguez
Drilling Co.: GPI
Project Name: NAS CECIL FIELD
Project Number: ~~0039~~ 0013

FID 0.0
Bckgrd 0.0

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
0936								dk brown
0940		6	13.92	25.95	6.15	0.361	>999	opaque dk brown b lack
0947	restarted run	18	14.09	25.72	6.23	0.371	>999	↓
1002		40	15.26	25.56	6.19	0.362	951	
1010		55	15.29	25.54	6.18	0.360	610	end pehase per Mark Dale

APPENDIX C

GROUNDWATER SAMPLE LOG SHEETS

Page___ of ___

Tetra Tech NUS, Inc. GROUNDWATER SAMPLE LOG SHEET

Project / Site:	NASJAX - NASCF Jet Fuel Pipeline	Sample ID No.:	CEF-AN03-15
Project No.:	0013 DMO 050 115	Sample Location:	Cecil Fields
[X] Monitoring Well [ ] Domestic Well [ ] Other:		Sampler:	E. Parker / L. Knight

SAMPLING DATA

Date: 12-13-99 Time: 1310	Color	pH	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	Salinity ppt	Eh mV
Method: Bail	Clear	6.27	1.21	22.7	10	0.92	0.05	—

PURGE DATA

Date:	See Attached Low Flow Purge Data Sheet for Purge Data
Method: Pump / slow flow	
Monitor Reading (ppm): Ø	
Well Casing Diameter: 2"	
Well Casing Material: PVC	
Total Well Depth (TD): 12.93	
Static Water Level (WL): 5.15	
One Casing Volume (gal/L): 1.3	
Start Purge (hrs): 1300	
End Purge (hrs): 1330	
Total Purge Time (min): 30	
Total Vol. Purged (gal/L): 4.0	

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA Method 8310	None	(2) 1 Liter Amber Glass Bottles	ENCO	yes

OBSERVATIONS / NOTES

LAB INFO

LAB: ENCO Labs
Jacksonvile, FL

COC #:

LAB:

COC #:

Check if Collected:

[✓] MS / MSD [✓] DUPLICATE / ID No.: CEF-AN03-DU01

Signature(s): Eric Parker

3.9 G
14.8 L

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: CTO 72
PROJECT NUMBER: 0013 DMO 050 115

WELL ID.: CEF-AW03-15
DATE: 12-13-99

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	Sal. (%)	Comments
1300	5.15	500	6.04	1.25	156	1.05	22.7	0.05	Clear, no odor
1310	5.23	500	6.18	1.21	78	0.62	22.7	0.05	5 Liters
1315	5.23	500	6.24	1.22	33	0.85	22.7	0.05	7.5 Liters
1325	5.23	500	6.27	1.22	22	1.05	22.7	0.05	12.5 Liters
1330	5.23	500	6.27	1.21	10	0.92	22.7	0.05	15.0 Liters
									* Stable Reading

End

SIGNATURE(S): Eric Pelh

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Page___ of ___

Tetra Tech NUS, Inc. GROUNDWATER SAMPLE LOG SHEET

Project / Site: NASJAX - NASCF Jet Fuel Pipeline
Project No.: 0013 DMO 050 115

Sample ID No.: CEF-AN04-13
Sample Location: CTO -

[X] Monitoring Well
[ ] Domestic Well
[ ] Other:

Sampler: E. Parker / C Kaiser

SAMPLING DATA

	Color	pH	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	Salinity ppt	Eh mV
Date: 12-13-99								
Time: 1505								
Method: Bail	Clear	6.29	.366	23.8	4	1.95	0.01	—

PURGE DATA

Date: 12-13-99
Method: Pump
Monitor Reading (ppm): Ø
Well Casing Diameter: 2"
Well Casing Material: PVC
Total Well Depth (TD): 12.85
Static Water Level (WL): 2.60
One Casing Volume(gal/L): 1.6
Start Purge (hrs): 1420
End Purge (hrs): 1500
Total Purge Time (min): 40
Total Vol. Purged (gal/L): ~~20.0~~ 5.3

See Attached Low Flow Purge Data Sheet for Purge Data

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA Method 8310	None	~~(2)~~ 1 Liter Amber Glass Bottles	ENCO	Y@5

OBSERVATIONS / NOTES

LAB INFO

LAB: ENCO Labs
Jacksonvile, FL
COC #:
LAB:
COC #:

Check if Collected:
[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s): [illegible]

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: CTO 72
PROJECT NUMBER: 2013 AMQ 050 115

WELL ID.: CEF-AN04-15
DATE: 12-13-99

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	Sal. (%)	Comments	
8:1420	2.60	500	6.48	.391	54	3.04	22.4	0.01	clear, no odor	4.8
1430	3.10	500	6.55	.386	47	3.60	23.2	0.01	5 Liters	18.2
1435	3.13	500	6.46	.378	29	2.74	23.7	0.01	7.5 Liters	
1440	3.13	500	6.34	.374	19	2.09	23.8	0.01	10 Liters	
1445	3.13	500	6.35	.374	12	2.14	23.8	0.01	12.5 Liters	
1450	3.13	500	6.30	.366	9	1.92	23.8	0.01	15.0 Liters	
1500	3.13	500	6.29	.366	4	1.95	23.8	0.01	20.0 Liters	

End

SIGNATURE(S): Eric Parke

PAGE___OF___

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

Page___ of ___

Project / Site: NASJAX - NASCF Jet Fuel Pipeline
Project No.: 0013 DMO 050 115

Sample ID No.: CEF-AN08-15
Sample Location: CTO 72

[X] Monitoring Well
[ ] Domestic Well
[ ] Other:

Sampler: E. Parker / C. Knight

SAMPLING DATA

	Color	pH	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	Salinity ppt	Eh mV
Date: 12-14-99								
Time: 1200								
Method: Bailer	Cloudy	6.67	.530	24.6	29	0.92	0.02	—

PURGE DATA

Date: 12-14-99
Method: Pump
Monitor Reading (ppm): Ø
Well Casing Diameter: 2
Well Casing Material: PVC
Total Well Depth (TD): 13.1
Static Water Level (WL): 3.62
One Casing Volume (gal/L): 1.6
Start Purge (hrs): 1115
End Purge (hrs): 1155
Total Purge Time (min): 40
Total Vol. Purged (gal/L): 5.5

See Attached Low Flow Purge Data Sheet for Purge Data

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA Method 8310	None	~~2~~ 1 Liter Amber Glass Bottles	ENCO	Yes

OBSERVATIONS / NOTES

LAB INFO

LAB: ENCO Labs
Jacksonvile, FL
COC #:
LAB:
COC #:

Check if Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s): Eric Park

1.6
18.16

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: CTO 72
PROJECT NUMBER: 0013

WELL ID.: CEF-AN08-1S
DATE: 12-14-99

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	Sal. (%)	Comments
1115	3.62	700	—	—	—	—	—	—	Start
1120	3.79	700	6.21	.574	83	0.71	23.1	0.02	no odor, light sheen on top of water - 3.5 L
1130	3.75	500	6.58	.544	87	0.58	24.1	0.02	8.5 Liters
1135	3.75	500	6.65	.541	73	0.53	24.6	0.02	11 Liters
1140	3.75	500	6.66	.535	43	0.64	24.7	0.02	13.5 Liters
1145	3.75	500	6.67	.534	43	0.92	24.8	0.02	16.0 Liters
1150	3.75	500	6.66	.531	26	0.33	24.8	0.02	18.5 Liters
1155	3.75	500	6.67	.530	29	0.92	24.6	0.02	21.0 Liters

Water is cloudy with a thin film of sheen on top.

SIGNATURE(S): Eric Parker

PAGE___OF___

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

Page___ of ___

Project / Site: NASJAX - NASCF Jet Fuel Pipeline
Project No.: 0013 DMO 050 115

Sample ID No.: EP ~~CTO 72~~ CEF-AN09-15
Sample Location: CTO 72

[X] Monitoring Well
[ ] Domestic Well
[ ] Other:

Sampler: E. Parker / C Knight

SAMPLING DATA

	Color	pH	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	Salinity ppt	Eh mV
Date: 12-14-99								
Time: 1515								
Method: B41	Cloudy	6.00	.373	20.0	215	1.75	0.01	—

PURGE DATA

Date: 12-14-99
Method: Pump
Monitor Reading (ppm): Ø
Well Casing Diameter: 2
Well Casing Material: PVC
Total Well Depth (TD): 11.15
Static Water Level (WL): 3.44
One Casing Volume (gal/L): 1.3
Start Purge (hrs): 1425
End Purge (hrs): 1505
Total Purge Time (min): 40
Total Vol. Purged (gal/L): 4.9

See Attached Low Flow Purge Data Sheet for Purge Data

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA Method 8310	None	EP (2) 1 Liter Amber Glass Bottles	ENCO	yes

OBSERVATIONS / NOTES

LAB INFO

LAB: ENCO Labs
Jacksonvile, FL
COC #:
LAB:
COC #:

Check if Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s): Eric Parker

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: CTO 72
PROJECT NUMBER: 0013

WELL ID.: CEF-AN09-15
DATE: 12-14-99

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	Sal. (%)	Comments
1425	3.44	500	—	—	—	—	—	—	start
1430	4.38	500	5.98	.329	649	1.76	19.8	0.01	2.5L no odor, cloudy
—	—	—	—	—	—	—	—	—	lt brown, silty
1440	4.60	500	5.99	.364	613	1.53	20.2	0.01	7.5L - milky color
1445	4.66	500	5.99	.381	999	1.03	20.2	0.01	10L - milky color
1450	4.70	500	6.02	.377	999	2.21	20.1	0.01	12.5 liters
1455	4.34	400	5.98	.369	394	1.54	20.1	0.01	14.5 liters
1500	4.35	400	5.98	.372	281	1.99	20.0	0.01	16.5 liters
1505	4.30	400	6.00	.373	215	1.75	20.0	0.01	18.5 liters - water still very cloudy

End of Purge

SIGNATURE(S): E. Park

PAGE___OF___

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

Page___ of ___

Project / Site: NASJAX - NASCF Jet Fuel Pipeline
Project No.: 0013 DMO 050 115

Sample ID No.: CEF-AN10-15
Sample Location: CTO 72

[X] Monitoring Well
[ ] Domestic Well
[ ] Other:

Sampler: E. Parker / L. Knight

SAMPLING DATA

	Color	pH	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	Salinity ppt	Eh mV
Date: 12-15-99								
Time: 0940								
Method: Bail	Clear	6.35	.352	23.0	0	1.79	0.01	—

PURGE DATA

Date: 12-15-99
Method: Pump
Monitor Reading (ppm): Ø
Well Casing Diameter: 2
Well Casing Material: PVC
Total Well Depth (TD): 11.62
Static Water Level (WL): 0.5
One Casing Volume (gal/L): 1.6
Start Purge (hrs): 0855
End Purge (hrs): 0940 → 0935
Total Purge Time (min): 45
Total Vol. Purged (gal/L): 5.0

See Attached Low Flow Purge Data Sheet for Purge Data

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA Method 8310	None	EPA 1 Liter Amber Glass Bottles	ENCO	yes

OBSERVATIONS / NOTES

LAB INFO

LAB: ENCO Labs
Jacksonvile, FL
COC #:
LAB:
COC #:

Check if Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s): Eric Parker

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: CTO 72
PROJECT NUMBER: 0013

WELL ID.: CEF-AN10-15
DATE: 12-15-99

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	Sal. (%)	Comments
0855	0.5	600	—	—	—	—	—	—	start
0900	2.82	600	6.56	.292	0	0.90	20.0	0.01	no odor, clear - 3 Liters
0910	3.49	600	6.78	.306	0	0.92	21.5	0.01	9 Liters
0915	4.25	600	6.72	.313	0	1.23	22.3	0.01	12 Liters
0920	4.81	500	6.48	.348	0	1.75	22.4	0.01	14.5 Liters
0925	5.20	400	6.41	.349	0	1.77	22.9	0.01	16.5 Liters
0930	5.69	300	6.39	.350	0	1.76	23.0	0.01	18.0 Liters
0935	5.99	300	6.35	.352	0	1.79	23.0	0.01	19.5 Liters

Continues Draw down in Static Water level

End

SIGNATURE(S): Eric Pate

PAGE___OF___

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

Project / Site: NASJAX - NASCF Jet Fuel Pipeline
Project No.: 0013 DMO 050 120

Sample ID No.: CEF-AN10-2S
Sample Location: CEF-AN10-2S

[X] Monitoring Well
[ ] Domestic Well
[ ] Other:

Sampler: Tom Thompson

SAMPLING DATA

Date: 2-16-00	Color	pH	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	Salinity ppt	Eh mV
Time: 1338								
Method: Low Flow								

PURGE DATA

Date: 2-16-00	See Attached Low Flow Purge Data Sheet for Purge Data
Method: Low Flow	
Monitor Reading (ppm):	
Well Casing Diameter: 1"	
Well Casing Material: PVC	
Total Well Depth (TD): 12.05	
Static Water Level (WL): 1.10	
One Casing Volume(gal/L): 1 ~~1.7~~	
Start Purge (hrs): 1222	
End Purge (hrs): *	
Total Purge Time (min): *	
Total Vol. Purged (gal/L): *	

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA Method 8310	None	(1) 1 L Amber Glass Bottle	ENCO	Yes

OBSERVATIONS / NOTES

* See note on purge sheet.

LAB INFO

LAB: ENCO Labs
Jacksonvile, FL
COC #:
LAB:
COC #:

Check If Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NAS JACKSONVILLE
PROJECT NUMBER: 0013 DMO 050 120

WELL ID.: CEF-AN10-2S
DATE: 2-16-00

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	Sal. (%)	Comments
1222	1.10								
1227	7.33	300	3.99	110	6	3.1	21.8	0	
1237	→								Steadily decreased flow rate to ~100 ml/min. ~~Well~~ Water level continued to decrease. At 1237, well ran dry. Shut off pump and allowed to recharge. Will allow recovery to 80%

SIGNATURE(S): [illegible]

PAGE 2 OF 2

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

Page___ of ___

Project / Site: NASJAX - NASCF Jet Fuel Pipeline
Project No.: 0013 DMO 050 115

Sample ID No.: CEF-AN14-1S
Sample Location: CTO 72

[X] Monitoring Well
[ ] Domestic Well
[ ] Other:

Sampler: E. Parker / L. Knight

SAMPLING DATA

	Color	pH	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	Salinity ppt	Eh mV
Date: 12-15-99								
Time: 1100								
Method: Bail	Cloudy	5.49	.238	25.4	22	1.42	0.0	—

PURGE DATA

Date: 12-15-99
Method: Pump
Monitor Reading (ppm): Ø
Well Casing Diameter: 2
Well Casing Material: PVC
Total Well Depth (TD): 15.85
Static Water Level (WL): 6.84
One Casing Volume(gal/L): 1.5
Start Purge (hrs): 1020
End Purge (hrs): 1055
Total Purge Time (min): 35
Total Vol. Purged (gal/L): 5.1

See Attached Low Flow Purge Data Sheet for Purge Data

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA Method 8310	None	~~2~~ 1 Liter Amber Glass Bottles	ENCO	YES

OBSERVATIONS / NOTES

LAB INFO

LAB: ENCO Labs
Jacksonvile, FL
COC #:
LAB:
COC #:

Check if Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s): Eric Parker

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: CTO 72
PROJECT NUMBER: 0013

WELL ID.: CEF-AN14-1S
DATE: 12-15-99

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	Sal. (%)	Comments
1020	6.84	600	—	—	—	—	—	—	Start
1025	7.80	600	5.27	.217	-10	0.53	23.9	0.00	cloudy, no odor ~3 liters
1035	8.63	600	5.38	.223	25	1.05	25.2	0.00	9 liters
1040	8.98	600	5.49	.238	23	1.80	25.1	0.00	12 liters
1045	8.85	500	5.48	.237	20	1.37	25.3	0.00	14.5 liters
1050	8.84	500	5.48	.237	20	1.71	25.4	0.00	17.0 liters
1055	8.85	500	5.49	.238	22	1.42	25.4	0.00	19.5 liters
									Slightly cloudy

End

SIGNATURE(S): Eva Park

PAGE___OF___

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

Project / Site:	NASJAX - NASCF Jet Fuel Pipeline	Sample ID No.:	CEF-AN14-15
Project No.:	0013 DMO 050 120	Sample Location:	CTO 72
[X] Monitoring Well		Sampler:	T. Thompson
[ ] Domestic Well			
[ ] Other:			

SAMPLING DATA

	Color	pH	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	Salinity ppt	Eh mV
Date: 2-9-00 Time: 1200 Method: Low Flow	brn	5.44	0.228	23.1	95.8	4.15	Ø	—

PURGE DATA

Date: 2-9-00	See Attached Low Flow Purge Data Sheet for Purge Data
Method: Low Flow	
Monitor Reading (ppm):	
Well Casing Diameter: 2" Well Casing Material: PVC	
Total Well Depth (TD): 15.85	
Static Water Level (WL): 6.95	
One Casing Volume (gal/L):	
Start Purge (hrs): 1109	
End Purge (hrs): 1150	
Total Purge Time (min): 39	
Total Vol. Purged (gal/L): 5.0	

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA Method 8310	None	(1) Liter Amber Glass Bottles	ENCO	Yes

OBSERVATIONS / NOTES

Took purge water to NASCF and put in drum.

LAB INFO

LAB: ENCO Labs
Jacksonvile, FL

COC #:

LAB:

COC #:

Check If Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NAS CECIL FIELD
PROJECT NUMBER: 0013 DMO 050 120

WELL ID.: CEF-AN14-1S
DATE: 2-9-00

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	Sal. (%)	Comments
1109	6.75	—	—	—	—	—	—	—	—
1115	7.95	750	5.67	0.389	95.3	3.76	21.4	Ø	
1125	8.16	~~300~~ 400	5.45	0.276	104.0	1.84	22.6	Ø	
1135	8.31	375	5.49	0.264	113.0	4.54	22.7	Ø	
1140	8.05	200	5.41	0.248	103.0	3.77	22.7	Ø	
1145	7.95	~~200~~ 250	5.44	0.243	99.1	4.73	22.9	Ø	
1150	7.95	250	5.44	0.228	95.8	4.15	23.1	Ø	

SIGNATURE(S): [illegible]

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Tetra Tech NUS, Inc. GROUNDWATER SAMPLE LOG SHEET

Project / Site: NASJAX - NASCF Jet Fuel Pipeline
Project No.: 0013 DMO 050 115

Sample ID No.: CEF-AN15-15
Sample Location: CTO 72 Jet Fuel Pipeline

[X] Monitoring Well
[ ] Domestic Well
[ ] Other:

Sampler: E. Parker / L. Knight

SAMPLING DATA

	Color	pH	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	Salinity ppt	Eh mV
Date: 12-15-99								
Time: 1215								
Method: Bail	lt. brown	5.68	.269	25.8	15	1.22	0.01	—

PURGE DATA

Date: 12-15-99	See Attached Low Flow Purge Data Sheet for Purge Data
Method: Pump	
Monitor Reading (ppm): Ø	
Well Casing Diameter: 2	
Well Casing Material: PVC	
Total Well Depth (TD): 15.99	
Static Water Level (WL): 8.48	
One Casing Volume (gal/L): 1.3	
Start Purge (hrs): 1135	
End Purge (hrs): 1210	
Total Purge Time (min): 35	
Total Vol. Purged (gal/L): 4.6	

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA Method 8310	None	CP ~~2~~ 1 Liter Amber Glass Bottles	ENCO	yes

OBSERVATIONS / NOTES

LAB INFO

LAB: ENCO Labs
Jacksonvile, FL
COC #:
LAB:
COC #:

Check if Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s): Eric Parker

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: CTO 72 Jet Fuel Pipeline
PROJECT NUMBER: 0013

WELL ID.: CEF-MW15-015
DATE: 12-815-99

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	Sal. (%)	Comments
1135	8.48	500	—	—	—	—	—	—	START
1140	8.79	500	5.67	.272	28	1.18	25.5	0.01	clear, tan color, no odor 2.5
—	—	—	—	—	—	—	—	—	sheen on water
1150	8.81	500	5.71	.267	16	1.15	25.8	0.01	7.5 Liters
1155	8.82	500	5.70	.269	12	1.10	25.9	0.01	10.0 Liters
1200	8.84	500	5.72	.271	14	1.21	25.8	0.01	12.5 Liters
1205	8.85	500	5.69	.269	14	1.09	25.9	0.01	15.0 Liters
1210	8.84	500	5.68	.269	15	1.22	25.8	0.01	17.5 Liters

Water clear with a light brown ~~etc~~ color, thin film of sheen

End

SIGNATURE(S): Eric Park

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

Page___ of ___

Project / Site: NASJAX - NASCF Jet Fuel Pipeline
Project No.: 0013 DMO 050 115

Sample ID No.: CEF-VA02-1B
Sample Location: CTO 72

[X] Monitoring Well
[ ] Domestic Well
[ ] Other:

Sampler: E. Parker / L. Knight

SAMPLING DATA

	Color	pH	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	Salinity ppt	Eh mV
Date: 12-13-99								
Time: 1620								
Method: Bail	Clear	6.46	.400	20.6	8	2.74	0.01	—

PURGE DATA

Date: 12-13-99
Method: Pump
Monitor Reading (ppm): 0
Well Casing Diameter: 2"
Well Casing Material: PVC
Total Well Depth (TD): 11.60
Static Water Level (WL): 1.73
One Casing Volume(gal/L): 1.6
Start Purge (hrs): 1535
End Purge (hrs): 1615
Total Purge Time (min): 40
Total Vol. Purged (gal/L): 5.3

See Attached Low Flow Purge Data Sheet for Purge Data

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA Method 8310	None	(2) 1 Liter Amber Glass Bottles	ENCO	yes

OBSERVATIONS / NOTES

LAB INFO

LAB: ENCO Labs
Jacksonvile, FL
COC #:
LAB:
COC #:

Check if Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s): Eric Parker

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: CTO 72
PROJECT NUMBER: 0013-RMO-050-115

WELL ID.: CEF-VA02-15
DATE: 12-13-99

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	Sal. (%)	Comments
1535	1.73	500	6.56	.404	17	3.79	20.8	0.01	Clear, no odor
1545	2.44	500	6.46	.409	11	2.86	20.8	0.01	5 Liters
1550	2.61	500	6.49	.413	12	3.64	21.1	0.01	7.5 Liters
1555	2.66	500	6.48	.418	12	3.09	20.9	0.01	10.0 Liters
1600	2.70	500	6.44	.406	10	2.77	20.7	0.01	12.5 Liters
1605	2.70	500	6.44	.403	8	2.65	20.7	0.01	15.0 Liters
1615	2.70	500	6.46	.400	8	2.74	20.6	0.01	20.0 Liters

End

SIGNATURE(S): Eric Pak

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

Project / Site:	NASJAX - NASCF Jet Fuel Pipeline	Sample ID No.:	CEF-VA02-IS
Project No.:	0013 DMO 050 120	Sample Location:	CTØ-Ø72
[X] Monitoring Well		Sampler:	M. Dale / J. Kurera
[ ] Domestic Well			
[ ] Other:			

SAMPLING DATA

	Color	pH	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	Salinity ppt	Eh mV
Date: 12/30/99 Time: 1557 Method: Bailer	Clear	6.54	.44	18.5	2	5.6	0	—

PURGE DATA

Date: 12/30/99	See Attached Low Flow Purge Data Sheet for Purge Data
Method: Peristaltic Pump	
Monitor Reading (ppm): —	
Well Casing Diameter: 2"	
Well Casing Material: PVC	
Total Well Depth (TD): 11.60	
Static Water Level (WL): 2.02	
One Casing Volume (gal/L): 1.6	
Start Purge (hrs): 1406	
End Purge (hrs): 1552	
Total Purge Time (min): 106	
Total Vol. Purged (gal/L): 18.6	

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA Method 8021 (SW846)	HCl	(2) 40-ml Clear Glass Bottles	ENCO	(2)

OBSERVATIONS / NOTES

LAB INFO

LAB: ENCO Labs
Jacksonvile, FL

COC #:

LAB:

COC #:

Check if Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s): Meeson Dale

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NAS CECIL FIELD
PROJECT NUMBER: 00 13

WELL ID.: CEF-VA02-2S
DATE: 12-30-98

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	Sal. (%)	Comments (CUM. VOL)
1406	2.02	200 ml	–	–	–	–	–	–	0 ml
1408	2.23	200 ml	6.50	.47	15	4.20	21.4	–	400 ml
1415	2.33	200ml	6.60	.46	21	5.80	20.8	–	1.5 L
1421	2.34	"	6.65	.46	–	5.80	20.1	–	2.2 L
1428	2.38	180mL	6.64	.45	40	6.30	20.1	–	3.2 L
1433.5	2.39	190mL	6.72	.45	9	6.10	20.5	–	4.2 L
1444.5	2.42	–	6.64	.45	4	6.6	20.3	–	6.2 L
1454.5	2.46	200ml	6.60	.45	19	5.4	19.4	–	8.2 L
1507.0	2.40	182mL	6.56	.45	6	7.4	18.4	–	10.2 L
1518.0	2.44		6.55	.45	5	5.4	18.4	–	12.2 L
1528.5	2.45		6.54	.44	9	7.5	18.3	–	14.2 L
1539.5	2.45		6.53	.44	4	5.2	18.2	–	16.2 L
1550	2.46		6.54	.44	2	5.6	18.5	–	18.2 L
1552	–	–	–	–	–	–	–	–	18.6 L end purge

SIGNATURE(S):

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Tetra Tech NUS, Inc. GROUNDWATER SAMPLE LOG SHEET

Project / Site: NASJAX - NASCF Jet Fuel Pipeline
Project No.: 0013 DMO 050 115

Sample ID No.: CEF-UA07-15
Sample Location: CTO 72

Sampler: E. Parker / L. Knight

[X] Monitoring Well
[ ] Domestic Well
[ ] Other:

SAMPLING DATA

	Color	pH	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	Salinity ppt	Eh mV
Date: 12-14-99								
Time: 1310								
Method: Bail	clear	5.79	.259	24.9	10	0.59	0.01	—

PURGE DATA

Date: 12-14-99
Method: Pump
Monitor Reading (ppm): Ø
Well Casing Diameter: 2
Well Casing Material: PVC
Total Well Depth (TD): 12.6
Static Water Level (WL): 3.55
One Casing Volume (gal/L): 1.5
Start Purge (hrs): 1230
End Purge (hrs): 1305
Total Purge Time (min): 35
Total Vol. Purged (gal/L): 5.4

See Attached Low Flow Purge Data Sheet for Purge Data

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA Method 8310	None	EP (2) 1 Liter Amber Glass Bottles	ENCO	yes

OBSERVATIONS / NOTES

LAB INFO

LAB: ENCO Labs
Jacksonvile, FL
COC #:
LAB:
COC #:

Check If Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s): Eric Parker

LOW FLOW PURGE DATA SHEET

1.5

PROJECT SITE NAME: CTO 72
PROJECT NUMBER: 0013

WELL ID.: CEF-VA07-1S
DATE: 12-14-99

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	Sal. (%)	Comments
1230	3.55	500	—	—	—	—	—	—	start
1235	3.60	500	5.78	.276	32	0.96	23.7	0.01	light sheen on water 2.5
1245	3.65	600	5.81	.269	50	0.60	24.8	0.01	8.5 Liters
1250	3.63	600	5.79	.266	35	0.48	24.8	0.01	11.5 Liters
1255	3.64	600	5.78	.263	28	0.21	24.8	0.01	14.5 Liters
1300	3.64	600	5.82	.261	25	1.11	24.8	0.01	17.5 Liters
1305	3.64	600	5.79	.259	10	0.59	24.9	0.01	20.5 Liters

Very Light sheen on water

End

SIGNATURE(S): Eric Pak

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Tetra Tech NUS, Inc. GROUNDWATER SAMPLE LOG SHEET

Project / Site:	NASJAX - NASCF Jet Fuel Pipeline	Sample ID No.:	CEF-VA08-01S
Project No.:	0013 DMO 050 115	Sample Location:	~~CC~~ CTO 72
[X] Monitoring Well [ ] Domestic Well [ ] Other:		Sampler:	E. Parker / L. Knight

SAMPLING DATA

	Color	pH	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	Salinity ppt	Eh mV
Date: 12-14-99 Time: 1715 Method: Bail	Clear	6.92	.769	24.2	10	0.49	0.03	—

PURGE DATA

Date: 12-14-99	See Attached Low Flow Purge Data Sheet for Purge Data
Method: Pump	
Monitor Reading (ppm): Ø	
Well Casing Diameter: 2	
Well Casing Material: PVC	
Total Well Depth (TD): 21.9	
Static Water Level (WL): 9.79	
One Casing Volume (gal/L): 1.6	
Start Purge (hrs): 1635	
End Purge (hrs): ~~1610~~	
Total Purge Time (min): ~~1710~~ ≈ 35 min	
Total Vol. Purged (gal/L): 5.3	

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA Method 8310	None	EP (~~2~~) 1 Liter Amber Glass Bottles	ENCO	yes

OBSERVATIONS / NOTES

LAB INFO

LAB: ENCO Labs
Jacksonvile, FL

COC #:

LAB:

COC #:

Check if Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s): E. Parker

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: CTO 72
PROJECT NUMBER: 0013

WELL ID.: CEF-VAD8-15
DATE: 12-14-99

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	Sal. (%)	Comments
1635	9.79	600	—	—	—	—	—	—	Start
1640	11.12	600	7.11	.888	22	0.45	22.9	0.03	no odor, clear, 3 Liters
1650	11.11	600	7.03	.827	45	0.93	24.1	0.03	9 Liters
1655	11.00	600	6.98	.793	29	1.02	24.3	0.03	11 Liters
1700	11.00	600	6.95	.772	16	0.55	24.3	0.03	14 Liters
1705	11.00	600	6.94	.770	12	0.70	24.1	0.03	17 Liters
1710	11.00	600	6.92	.769	10	0.49	24.2	0.03	20 Liters

End

SIGNATURE(S): E. Pa[illegible]

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Tetra Tech NUS, Inc. GROUNDWATER SAMPLE LOG SHEET

Project / Site: NASJAX - NASCF Jet Fuel Pipeline
Project No.: 0013 DMO 050 115

Sample ID No.: CEF-VA09-15
Sample Location: CTO 72

[X] Monitoring Well
[ ] Domestic Well
[ ] Other:

Sampler: E. Parker / L. Knight

SAMPLING DATA

	Color	pH	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	Salinity ppt	Eh mV
Date: 12-14-99 Time: 1615 Method: Bail	Clear	6.35	.414	23.2	6	1.09	0.01	—

PURGE DATA

Date: 12-14-99
Method: Pump
Monitor Reading (ppm): Ø
Well Casing Diameter: 2
Well Casing Material: PVC
Total Well Depth (TD): 11.61
Static Water Level (WL): 1.4
One Casing Volume(gal/L): 1.6
Start Purge (hrs): 1535
End Purge (hrs): 1610
Total Purge Time (min): ~~40~~ 35
Total Vol. Purged (gal/L): 5.5

See Attached Low Flow Purge Data Sheet for Purge Data

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA Method 8310	None	~~(2)~~ 1 Liter Amber Glass Bottles	ENCO	yes

OBSERVATIONS / NOTES

LAB INFO

LAB: ENCO Labs
Jacksonvile, FL
COC #:
LAB:
COC #:

Check if Collected:

[ ] MS / MSD [ ] DUPLICATE / ID No.:

Signature(s): Eric Parker

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: CTO 72
PROJECT NUMBER: 0013

WELL ID.: CEF-VA09-13
DATE: 12-14-99

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	Sal. (%)	Comments
1535	1.21	600	—	—	—	—	—	—	start
1540	1.93	600	6.31	.446	20	1.22	22.1	0.01	no odor, clear 32
1550	2.05	600	6.32	.407	20	1.74	22.9	0.01	9 Liters
1555	2.05	600	6.30	.415	13	1.25	23.1	0.01	12 Liters
1600	2.05	600	6.35	.413	12	1.86	23.3	0.01	15 Liters
1605	2.05	600	6.36	.418	6	1.51	23.2	0.01	18 Liters
1610	2.05	600	6.35	.414	6	1.09	23.2	0.01	21 Liters

End

SIGNATURE(S): E. Parker

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Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NAS CECIL FIELD
Project No.: ~~0039~~ JE 0013

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

Sample ID No.: JE ~~CEF-~~ CF-VAIL-IMW-01
Sample Location: 103rd St Pipeline
Sampled By: J Elliott
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	Sal. %	Other NA
Date: 4-20-99								
Time: 1157								
Method: Bailer ~~Peristaltic pump~~ JE	clear							

PURGE DATA:

	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Date: 4-20-99								
Method: Submersible JE ~~Peristaltic pump~~								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" ID PVC								
Total Well Depth (TD): 23.56' toc								
Static Water Level (WL): 7.23' toc			(SEE LOW FLOW PURGE DATA SHEET)					
One ~~Screen~~ Well JE Volume (gal/L): 10.3								
Start Purge (hrs): 1122								
End Purge (hrs): 1154								
Total Purge Time (min): 32								
Total Vol. Purged (gal/L): 15								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOC	4°C & HCl	(2) 40-ml vial	yes
TRPH	4°C & H_2SO_4	(2) 1 L Glass amber glass	no ~~yes~~
~~TCL SVOC~~ JE PAHs	4°C	(2) 1 L Glass amber glass	yes
TCL Pesticides and PCBs	4°C	(2) 1 L Glass amber glass	no
Total TAL Metals	4°C & HNO_3	1 L HDPE plastic container	
Dissolved TAL Metals (See Notes)	4°C & HNO_3	1 L HDPE plastic container	
Cyanide	4°C & NaOH	1 L HDPE plastic container	
Hardness	4°C & HNO_3	500-ml HDPE plastic container	
TOC	4°C & HCl	8oz Glass amber jar	

OBSERVATIONS / NOTES:

Filtered TAL Metals Sample ID No.: CEF- -GF-
Screen Length

Well JE ~~a~~ ran dry ~~every .25 to 0.8 gal~~ JE every 3 to 4 gal

Circle If Applicable:

MS/MSD | Duplicate ID No.:

Signature(s): Jennifer Elliott

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NAS CECIL FIELD
Project No.: ~~0039~~ 0013

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

Sample ID No.: ~~CEF-V1~~ CF-VA11-SMW-01
Sample Location: 103rd St. Pipeline
Sampled By: J. Elliott
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	Sal. %	Other NA
Date: ~~4-21-99~~ 4-20-99								
Time: 1200								
Method: Bailer ~~Peristaltic pump~~	Brown							

PURGE DATA:

	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Date: ~~4-21-99~~ 4-20-99								
Method: Submersible ~~Peristaltic pump~~								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" ID + PVC								
Total Well Depth (TD): 13.06' toc								
Static Water Level (WL): 8.50' toc			(SEE LOW FLOW PURGE DATA SHEET)					
One ~~Screen~~ Well Volume (gal/L): 0.8								
Start Purge (hrs): 1122								
End Purge (hrs): 1159								
Total Purge Time (min): 37 min								
Total Vol. Purged (gal/L): 5 gal								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOC	4°C & HCl	(2) 40-ml vial	yes
TRPH	4°C & H_2SO_4	(2) 1 L Glass amber glass	no ~~yes~~
~~TCL SVOC~~ PAHs	4°C	(2) 1 L Glass amber glass	yes
TCL Pesticides and PCBs	4°C	(2) 1 L Glass amber glass	yes
Total TAL Metals	4°C & HNO_3	1 L HDPE plastic container	no
Dissolved TAL Metals (See Notes)	4°C & HNO_3	1 L HDPE plastic container	
Cyanide	4°C & NaOH	1 L HDPE plastic container	
Hardness	4°C & HNO_3	500-ml HDPE plastic container	
TOC	4°C & HCl	8oz Glass amber jar	

OBSERVATIONS / NOTES:

Filtered TAL Metals Sample ID No.: CEF- -GF-
Screen Length

Well ran dry every 0.5 to 0.8 gal

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Page___ of ___

Tetra Tech NUS, Inc. GROUNDWATER SAMPLE LOG SHEET

Project / Site: NASJAX - NASCF Jet Fuel Pipeline
Project No.: 0013 DMO 050 115

Sample ID No.: CEE-VA14-15'
Sample Location: JE+ Fuel Pipeline

[X] Monitoring Well
[ ] Domestic Well
[ ] Other:

Sampler: E. Parker / L. knight

SAMPLING DATA

	Color	pH	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	Salinity ppt	Eh mV
Date: 12-15-99 Time: 1500								
Method: Bail	clear	6.16	.540	25.9	5	1.04	0.02	—

PURGE DATA

Date: 12-15-99
Method: Pump
Monitor Reading (ppm): Ø
Well Casing Diameter: 2
Well Casing Material: PVC
Total Well Depth (TD): 18.80
Static Water Level (WL): 11.32
One Casing Volume (gal/L): 1.3
Start Purge (hrs): 1420
End Purge (hrs): 1455
Total Purge Time (min): 35
Total Vol. Purged (gal/L): 4.8

See Attached Low Flow Purge Data Sheet for Purge Data

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
EPA Method 8310	None	5 ~~(2)~~ 1 Liter Amber Glass Bottles	ENCO	yes

OBSERVATIONS / NOTES

LAB INFO

LAB: ENCO Labs
Jacksonvile, FL
COC #:
LAB:
COC #:

Check if Collected:

[ ] MS / MSD [✓] DUPLICATE / ID No.: CEF-VA14-0002

Signature(s): Eric Parker

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: CTO 72 Jet Fuel Pipeline
PROJECT NUMBER: 0013

WELL ID.: CEP-VA14-15
DATE: 12-15-99

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	Sal. (%)	Comments
1420	11.32	500	—	—	—	—	—	—	Start
1425	11.43	500	6.05	.522	5	1.12	25.7	0.02	no odor, clear - 2.5 Liters
1435	11.45	500	6.07	.531	6	1.03	26.0	0.02	7.5 Liters
1440	11.45	500	6.10	.536	4	0.99	25.9	0.02	10 Liters
1445	11.45	500	6.14	.540	4	0.85	25.9	0.02	12.5 Liters
1450	11.45	500	6.17	.540	5	0.91	26.0	0.02	15.5 Liters
1455	11.45	500	6.16	.540	5	1.04	25.9	0.02	18.0 Liters

End

SIGNATURE(S): Eric Paber

PAGE___OF___

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Navy Pipeline DPT Investigation TH3
Project No.: N0013 DM0 050 120

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

Sample ID No.: CEE-TH3-TMW-10 ✓
Sample Location: SB-10
Sampled By: L. MIDDLETON
C.O.C. No.: TH3- 052501
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 5/25/01 Time: 1300	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	~~DO~~ ~~COLOR~~ ~~mg/L~~ MD	Salinity %	Other
Method: Low Flow Peristaltic								

PURGE DATA

Date: 5/25/01	Time	pH	S.C.	Temp (°C)	Turbidity	color ~~DO~~	Depth ~~Salinity~~	Purge rate ~~ORP~~
Method: Low Flow Peristaltic		Note: developed already and exceeded 5						
Monitor Reading (ppm): —		volumes. Per plan with T.O.M.					will take	
Well Casing Diameter: 2"		A reading and sample						
Well Casing Material: PVC	1241	—	—	—	—	—	11.6	~500 ml/min
Total Well Depth (TD): 17.6	1245	4.75	0.180	28.0	299	dark	11.75	
Static Water Level (WL): 11.6	1246	—	—	—	—	clearing	11.79	slow pump.
One Casing Volume(gal/L):	1250	—	—	—	—	sl. cldy	11.65	300 ml/min.
Start Purge (hrs): 1241	1252	4.78	0.178	27.8	177	sl. cldy	11.6	
End Purge (hrs): 1255	1255	4.73	0.179	27.9	205		11.57	
Total Purge Time (min): 14								
Total Vol. Purged (gal/L):								

SAMPLE COLLECTION INFORMATION

Analysis		Preservative	Container Requirements	Collected
BTEX, MTBE, 1,2 dichloroethane	8260	Hcl	3-40ml vials	yes
PAHs	8310	None	2-1 liter glass ambers	yes
EDB	504	None ~~Hcl~~	3 ~~2~~-40 ml vials	yes
Other Priority Pollutant VOHs	8260	Hcl	analyze from other 8260 vials	yes
Total Lead	6010B	HNO3	1-500 ml plastic	yes
TRPH	FL-PRO	H2SO4	2 ~~1~~-1liter glass amber MD	yes
		LAB -	Accutest	

OBSERVATIONS / NOTES

Note: set tubing at mid ~~screen~~ water column MD about 13 feet BTOC.

Allowed well to recover about 80% before purging after development

Circle if Applicable:

MS/MSD + NONE

Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: TH3, Cecil Field Pipeline
Project No.: N0013DM0050120

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

Sample ID No.: CEF-TH3-TMW-~~021~~ 007
Sample Location: SB-021
Sampled By: Lane Middleton
C.O.C. No.: TH3-052401
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 5/24/01	Color	pH	S.C.	Temp.	Turbidity	DO	~~Salinity~~ Depth (ft)	Other
Time: 1445	Visual	Standard	mS/cm	°C	NTU	mg/l		
Method: Low Flow Peristaltic								

PURGE DATA

Date: 5/24/01	Time	pH	S.C.	Temp (°C)	Turbidity	DO	~~Salinity~~ Depth (ft)	ORP
Method: Low Flow Peristaltic	1425	4.65	0.177	28.1	>999	3.19	9.89	129
Monitor Reading (ppm):	1430	4.62	0.177	28.1	>999	3.12	9.91	93
Well Casing Diameter: 2IN.	1435	4.63	0.179	27.6	702	1.77	9.91	84
Well Casing Material: PVC	1440	4.61	0.179	27.8	625	1.05	9.91	70
Total Well Depth (TD): 14.38								
Static Water Level (WL): 9.85								
One Casing Volume(gal/L): 0.5.9								
Start Purge (hrs): 1415								
End Purge (hrs): 1440								
Total Purge Time (min): 25								
Total Vol. Purged (gal/L): —								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
8260B VOAs (BTEX, MTBE)	HCl	3 VOA VIALS	yes
8310 ~~ARO~~ PAHs	None	2 1 Liter Ambers	yes
~~Naphthalene~~			
FL-PRO TRPH	H_2SO_4	2 1 liter ambers	yes
EDB 504	None	3 VOA VIALS	yes
6010B TOTAL Pb	HNO_3	1 HDPE	yes
		LAB - Accutest	

OBSERVATIONS / NOTES

Set ~~Tmw~~ well in 10 3rd ST. Rom. PER FDEP/RSA protocol, develop & sample well immediately (well only s~~ampled~~ - no seal or grout).

SET TUBING 1.5 FT OFF BOTTOM

Circle if Applicable:

MS/MSD

Duplicate ID No.: None

Signature(s):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Navy Pipeline DPT Investigation TH3
Project No.: N0013 DM0 050 120

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

Sample ID No.: CEF-TH3-GW-01-01
Sample Location: CEF-TH3-MW1
Sampled By: M ONeill
C.O.C. No.: TH3- 061601
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 1305 / Time: 6-16-01	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	~~Salinity~~ ORP	Other
Method: Low Flow Peristaltic	CLEAR	5.96	0.425	28.5	0	0	118	

PURGE DATA

Date: 6-16-01	Time	pH	S.C.	Temp (°C)	Turbidity	DO	Salinity	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm): 110.7								
Well Casing Diameter: 2 IN								
Well Casing Material: PVC								
Total Well Depth (TD): 18.91			See LF Sheet					
Static Water Level (WL): 7.14								
One Casing Volume(gal/L): 1.6/6.2								
Start Purge (hrs): 1008								
End Purge (hrs): 1258								
Total Purge Time (min): 170								
Total Vol. Purged (gal/L): 18.8								

SAMPLE COLLECTION INFORMATION

Analysis		Preservative	Container Requirements	Collected
BTEX, MTBE, 1,2 dichloroethane	8260	Hcl	✓ 3-40ml vials	MO
PAHs	8310	None	2-1 liter glass ambers	MO
EDB	504	Hcl	✓ 3 ~~2~~-40 ml vials	MO
Other Priority Pollutant VOHs	8260	Hcl	✓ analyze from other 8260 vials	MO
Total Lead	6010B	HNO3	✓ 1-500 ml plastic	MO
TRPH	FL-PRO	H2SO4	2 ~~1~~-1liter glass amber	MO

OBSERVATIONS / NOTES

10 FT. Screen
Bckgd 1.7
CEF-TH3-GW-MSMSD-01

Circle if Applicable:
MS/MSD
Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Navy Pipeline DPT Investigation at TH3
PROJECT NUMBER: N0013 DM0 050 120

WELL ID.: CEF-TH3-MW1
DATE: 6/16/01

3=18.6
5=31.0

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	VOLUME (L)	Comments
1011	7.23		ESTABLISH		DRAW DOWN					
1014	7.26	150	"	"	FLOW RATE				.9	↑ SPEED
1020	7.32	200	"	"	"	"	"		2.1	
1025	7.33	200	6.09	0.432	124.0	2.85	25.61	128	3.1	
1030	7.32	200	6.09	0.433	145.0	1.79	25.62	124	4.1	SLOW PUMP TO REDUCE TURBIDITY
1032	7.30	160							4.3	
1042	7.30	100	6.10	0.431	81.6	1.64	25.96	130	5.3	
1052	7.30	100	6.10	0.431	60.2	0.77	26.01	132	6.3	
1102	7.28	100	6.09	0.431	42.6	0.58	26.07	133	7.3	
1112	7.27	100	6.10	0.431	31.8	0.47	26.23	134	8.3	
1122	7.27	100	6.11	0.431	26.2	0.45	26.28	136	9.3	
1132	7.28	100	6.10	0.432	23.2	0.41	26.69	141	10.3	HORIBA BROKE
1142	7.26	100	5.85	0.415	5.7	0.47	27.1	115	11.3	change to horiba 9292062
1152	7.28	100	5.92	0.419	5.7	0	27.12	120	12.3	
1202	7.27	100	5.93	0.420	3.1	0	27.4	114	13.3	
1212	7.27	100	5.94	0.422	3.2	0	27.8	118	14.3	
1222	7.23	100	5.93	0.422	0.4	0	27.9	120	15.3	
1232	7.22	100	5.93	0.423	0.3	0	28.2	123	16.3	
1242	7.21	100	5.91	0.423	2.4	0	28.4	123	17.3	
1252	7.21	100	5.96	0.424	0	0	28.3	119	18.3	
1257	7.21	100	5.96	0.425	10(0)	0	28.5	118	18.8	
1258	end purge									
1300	collect sample									

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Navy Pipeline DPT Investigation TH3
Project No.: N0013 DM0 050 120

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

Sample ID No.: CEF-TH3-GW-02-01
Sample Location: CEF-TH3-MW2
Sampled By:
C.O.C. No.: TH3- 061601
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 6-16-01 / Time: 1145	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	~~Salinity~~ ORP mV	Other
Method: ~~Low Flow Peristaltic~~ bailer	Clear	5.02	0.177	25.3	52.7	0.02	178	

PURGE DATA

Date: 6-16-01	Time	pH	S.C.	Temp (°C)	Turbidity	DO	Salinity	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm): 92.4								
Well Casing Diameter: 2IN								
Well Casing Material: PVC								
Total Well Depth (TD): 19.48								
Static Water Level (WL): 7.24								
One Casing Volume(gal/L): 1.66.2								
Start Purge (hrs): 1012								
End Purge (hrs): 1141								
Total Purge Time (min): 89								
Total Vol. Purged (gal/L): 8.2								

See LF Sheet

SAMPLE COLLECTION INFORMATION

Analysis		Preservative	Container Requirements	Collected
BTEX, MTBE, 1,2 dichloroethane	8260	Hcl	3-40ml vials	✓
PAHs	8310	None	2-1 liter glass ambers	✓
EDB	504	Hcl	2-40 ml vials	✓
Other Priority Pollutant VOHs	8260	Hcl	analyze from other 8260 vials	✓
Total Lead	6010B	HNO3	1-500 ml plastic	✓
TRPH	FL-PRO	H2SO4	2 1-1liter glass amber	✓

OBSERVATIONS / NOTES

10 FT. Screen
Bckgd 1.7

Circle if Applicable:
MS/MSD
Duplicate ID No.: CEF-TH3-GW-DUP1-01

Signature(s): Elena Rodriguez

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Navy Pipeline DPT Investigation at TH3

PROJECT NUMBER: N0013 DM0 050 120

WELL ID.: TH3 MW2

DATE: 6-16-07

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
1012	7.24	300							chocolate syrup opaque
1014	7.58	450							lite tan cloudy
1015	7.58	450	5.06	0.181	909	3.22	25.8	194	
1025	7.59	450	5.02	0.170	799.9	0.00	25.3	188	
1030	7.59	450	5.00	0.168	744	0.00	25.1	184	
1035	7.60	450	4.98	0.165	378	0.23	24.9	185	clearing up
1040	7.61	450	4.97	0.165	296	0.00	24.9	187	
1045	7.61	450	4.97	0.165	266	0.00	24.9	186	
1050	7.53	300	4.97	0.163	188	0.00	25.1	187	slow pump
~~1055~~ 1100	7.50	300	4.96	0.164	166	0.00	25.1	188	
1105	7.50	300	5.00	0.164	87.3	0.60	25.3	188	
1110	7.50	300	4.96	0.165	51.2	0.00	25.9	193	
1115	7.50	300	5.00	0.167	45.8	1.56	25.6	185	
1120	7.50	300	4.99	0.169	43.8	0.00	25.7	186	
1135	7.50	300	4.99	0.170	52.2	2.26	25.2	181	
1140	7.50	300	5.00	0.172	52.7	0.00	25.3	178	
1141 end purge									
1145 collect sample									

Elapsed time: 1.5, 2, 3, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0, 6.5, 7.0, 7.5, 8.0

SIGNATURE(S): Elena Rodriguez

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Navy Pipeline DPT Investigation TH3
Project No.: N0013 DM0 050 120

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

Sample ID No.: CEF-TH3-GW-03-01
Sample Location: CEF-TH3-MW3
Sampled By:
C.O.C. No.: TH3- 061601
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 6-16-01	Color	pH	S.C.	Temp.	Turbidity	DO	~~Salinity~~	Other
Time: 1525	Visual	Standard	mS/cm	°C	NTU	mg/l	ORP mV	
Method: ~~Low Flow Peristaltic~~ Bailer	clear	6.44	0.378	27.0	5.6	0.00	-29	

PURGE DATA

Date: 6-16-01	Time	pH	S.C.	Temp (°C)	Turbidity	DO	Salinity	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm): 201.1								
Well Casing Diameter: 2IN-								
Well Casing Material: PVC								
Total Well Depth (TD): 17.63	9.63							
Static Water Level (WL): 8.00								
One Casing Volume(gal/L): 1.6/6.2								
Start Purge (hrs): 1408								
End Purge (hrs): 1521								
Total Purge Time (min): 73								
Total Vol. Purged (gal/L): 5 (est.)								

See LF Sheet

SAMPLE COLLECTION INFORMATION

Analysis		Preservative	Container Requirements	Collected
BTEX, MTBE, 1,2 dichloroethane	8260	Hcl	3-40ml vials	✓
PAHs	8310	None	2-1 liter glass ambers	✓
EDB	504	Hcl	2-40 ml vials	✓
Other Priority Pollutant VOHs	8260	Hcl	analyze from other 8260 vials	✓
Total Lead	6010B	HNO3	1-500 ml plastic	✓
TRPH	FL-PRO	H2SO4	2 1-1liter glass amber	✓

OBSERVATIONS / NOTES

10 Ft. Screen
Bckgd 5.0

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s): Elena Rodriguez

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Navy Pipeline DPT Investigation at TH3

PROJECT NUMBER: N0013 DM0 050 120

WELL ID.: TH3-MW03

DATE: 6-16-01

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
1408	8.00	400							clear
1415	8.30	400	6.07	0.385	69.5	0.43	28.1	-44	
1425	8.37	400	6.07	0.382	37.7	0.00	27.5	-46	
1435	8.39	400	6.06	0.378	0	0.00	27.3	-43	
1445	8.40	400	6.07	0.380	0	0.00	27.4	-40	
1455	8.43	400	6.06	0.380	11.4	0.00	27.1	-39	18.8(L)
1500		400				change bucket &			check speed
1505	8.42	400	6.05	0.379	4.6	0.00	27.2	-32	22.8(L)
1515	8.42	400	6.05	0.379	6.2	0.00	27.2	-30	
1520	8.42	400	6.04	0.378	5.6	0.00	27.0	-29	
1521	end purge								
1525	collect sample								

SIGNATURE(S): Ellen Rodriguez

APPENDIX D

ANALYTICAL RESULTS

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

April 1, 1999

Mr. John Kucera
Tetra Tech NUS
7018 A.C. Skinner Pkwy.
Suite 250
Jacksonville, FL 32256

Login Number (SDG): OR5940
Project Number: NO013/CTO-72
Description: NASJAX/NASCF Jet Fuel Transfer

Case Narrative:

Four water samples and one soil sample were collected on March 22, 1999. All samples were received at ENCO Laboratories, Inc., on March 22, 1999 on wet ice and in good condition. This sample set was inclusive of samples CF-AN03 (TMW-01,02,03,04, and SB-04-04). All samples were analyzed as requested on the associated sample chain-of-custody forms.

All samples were extracted and analyzed within EPA specified holding times.

There were no particular difficulties encountered with the sample handling and analyses by Environmental Conservation Laboratories, Inc.

Quality Assurance acceptance limits are established by "in-house" statistical determination. This is true for surrogate, MS/MSD and LCS spike recovery evaluations.

Environmental Conservation Laboratories, Inc.

David J. Vesey
Project Manager

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

CLIENT : Tetra Tech NUS
ADDRESS: 7018 A.C. Skinner Parkway
Suite 250
Jacksonville, FL 32256

REPORT # : OR5940
DATE SUBMITTED: March 22, 1999
DATE REPORTED : March 30, 1999

ATTENTION: John Kucera

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

PROJECT #: 0013

NAS JAX-NASCF Jet Fuel Transfer

03/22/99

#1 - CF-AN03-TMW-01 @ 10:20
#2 - CF-AN03-TMW-02 @ 10:44
#3 - CF-AN03-TMW-03 @ 10:59
#4 - CF-AN03-TMW-04 @ 11:23
#5 - CF-AN03-SB-04-04 @ 11:09

ROJECT MANAGER David J. Vesey
David Vesey

ENCO LABORATORIES
REPORT # : OR5940
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN03-TMW-01	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	43	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	86	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/24/99	

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

ENCO LABORATORIES
REPORT # : OR5940
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN03-TMW-01	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	**0.39**	µg/L
Benzo(a)anthracene	**0.12**	µg/L
Chrysene	**0.15**	µg/L
Benzo(b)fluoranthene	**0.14** I	µg/L
Benzo(k)fluoranthene	**0.050** I	µg/L
Benzo(a)pyrene	**0.12**	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	**0.14** I	µg/L
Indeno(1,2,3-cd)pyrene	**0.12**	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	11.6	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	116	%
Surrogate Control Limits	39-148	%
Date Extracted	03/25/99	
Date Analyzed	03/29/99	

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 # : OR5940
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN03-TMW-02	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	41.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	83	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/24/99	

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

ENCO LABORATORIES
REPORT # : OR5940
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN03-TMW-02	Units
Naphthalene	0.50 U	µg/L
cenaphthylene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
cenaphthene	0.50 U	µg/L
luorene	0.10 U	µg/L
henanthrene	1.0 U	µg/L
nthracene	0.050 U	µg/L
luoranthene	**0.36**	µg/L
yrene	**0.56**	µg/L
enzo(a)anthracene	**0.16**	µg/L
hrysene	**0.19**	µg/L
enzo(b)fluoranthene	**0.22** I	µg/L
enzo(k)fluoranthene	**0.070** I	µg/L
enzo(a)pyrene	**0.19**	µg/L
ibenzo(a,h)anthracene	**0.12** I	µg/L
enzo(g,h,i)perylene	**0.12** I	µg/L
ideno(1,2,3-cd)pyrene	**0.16**	µg/L
irrogate: (p-terphenyl)		
irrogate Reported Value	11.7	µg/L
irrogate Expected Value	10	µg/L
irrogate % Recovery	117	%
irrogate Control Limits	39-148	%
te Extracted	03/25/99	
te Analyzed	03/29/99	

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

ENCO LABORATORIES
REPORT # : OR5940
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN03-TMW-03	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
-Xylene & p-Xylene	2.0 U	µg/L
-Xylene	1.0 U	µg/L
,3-Dichlorobenzene	1.0 U	µg/L
,4-Dichlorobenzene	1.0 U	µg/L
,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	41.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	83	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/24/99	

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

ENCO LABORATORIES
REPORT # : OR5940
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

:PA METHOD 3510/8310 - 'OLYAROMATIC HYDROCARBONS	CF-AN03-TMW-03	Units
laphthalene	0.50 U	µg/L
cenaphthylene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
cenaphthene	0.50 U	µg/L
luorene	0.10 U	µg/L
henanthrene	1.0 U	µg/L
nthracene	0.050 U	µg/L
luoranthene	0.10 U	µg/L
yrene	0.050 U	µg/L
enzo(a)anthracene	0.050 U	µg/L
hrysene	0.050 U	µg/L
enzo(b)fluoranthene	0.10 U	µg/L
enzo(k)fluoranthene	0.050 U	µg/L
enzo(a)pyrene	0.050 U	µg/L
ibenzo(a,h)anthracene	0.10 U	µg/L
enzo(g,h,i)perylene	0.10 U	µg/L
ideno(1,2,3-cd)pyrene	0.050 U	µg/L
irrogate: (p-terphenyl)		
irrogate Reported Value	10.2	µg/L
irrogate Expected Value	10	µg/L
irrogate % Recovery	102	%
irrogate Control Limits	39-148	%
ite Extracted	03/25/99	
ite Analyzed	03/29/99	

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

ENCO LABORATORIES
REPORT # : OR5940
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN03-TMW-04	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	42	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	84	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/24/99	

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

ENCO LABORATORIES
REPORT # : OR5940
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN03-TMW-04	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	12.1	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	121	%
Surrogate Control Limits	39-148	%
Date Extracted	03/25/99	
Date Analyzed	03/29/99	

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

ENCO LABORATORIES
REPORT # : OR5940
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	CF-AN03-SB-04-04	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	1.0 U	µg/Kg
Toluene	1.0 U	µg/Kg
Chlorobenzene	1.0 U	µg/Kg
Ethylbenzene	1.0 U	µg/Kg
m-Xylene & p-Xylene	2.0 U	µg/Kg
o-Xylene	1.0 U	µg/Kg
1,3-Dichlorobenzene	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	42	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	84	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/25/99	

NOTE: Analyte values are reported on a dry weight basis.

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

ENCO LABORATORIES
REPORT # : OR5940
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	CF-AN03-SB-04-04	Units
Naphthalene	19 U	µg/Kg
Acenaphthylene	38 U	µg/Kg
1-Methylnaphthalene	38 U	µg/Kg
2-Methylnaphthalene	38 U	µg/Kg
Acenaphthene	19 U	µg/Kg
Fluorene	3.8 U	µg/Kg
Phenanthrene	38 U	µg/Kg
Anthracene	2.0 U	µg/Kg
Fluoranthene	49	µg/Kg
Pyrene	60	µg/Kg
Benzo(a)anthracene	18	µg/Kg
Chrysene	20	µg/Kg
Benzo(b)fluoranthene	31	µg/Kg
Benzo(k)fluoranthene	18	µg/Kg
Benzo(a)pyrene	25	µg/Kg
Dibenzo(a,h)anthracene	21	µg/Kg
Benzo(g,h,i)perylene	17	µg/Kg
Indeno(1,2,3-cd)pyrene	21	µg/Kg
Surrogate: (p-terphenyl)		
Surrogate Reported Value	9.6	µg/Kg
Surrogate Expected Value	10	µg/Kg
Surrogate % Recovery	96	%
Surrogate Control Limits	50-146	%
Date Extracted	03/24/99	
Date Analyzed	03/25/99	

MISCELLANEOUS	METHOD	CF-AN03-SB-04-04	Units
Percent Solids	SM2540G	87	%
Date Analyzed		03/26/99	

NOTE: Analyte values are reported on a dry weight basis.

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

ENCO LABORATORIES
REPORT # : OR5940
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	38	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	76	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/24/99	

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

ENCO LABORATORIES
REPORT # : OR5940
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	LAB BLANK	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	10.4	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	104	%
Surrogate Control Limits	39-148	%
Date Extracted	03/25/99	
Date Analyzed	03/29/99	

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

ENCO LABORATORIES
REPORT # : OR5940
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS

	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	1.0 U	µg/Kg
Toluene	1.0 U	µg/Kg
Chlorobenzene	1.0 U	µg/Kg
Ethylbenzene	1.0 U	µg/Kg
m-Xylene & p-Xylene	2.0 U	µg/Kg
o-Xylene	1.0 U	µg/Kg
1,3-Dichlorobenzene	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	µg/Kg
urrogate: (Bromofluorobenzene)		
urrogate Reported Value	43.5	µg/Kg
urrogate Expected Value	50	µg/Kg
urrogate % Recovery	87	%
urrogate Control Limits	28-165	%
ate Analyzed	03/25/99	

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

ENCO LABORATORIES
REPORT # : OR5940
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

:PA METHOD 3550/8310 - 'OLYAROMATIC HYDROCARBONS	LAB BLANK	Units
laphthalene	17 U	µg/Kg
cenaphthylene	33 U	µg/Kg
-Methylnaphthalene	33 U	µg/Kg
-Methylnaphthalene	33 U	µg/Kg
cenaphthene	17 U	µg/Kg
luorene	3.3 U	µg/Kg
henanthrene	33 U	µg/Kg
nthracene	2.0 U	µg/Kg
luoranthene	3.3 U	µg/Kg
yrene	1.7 U	µg/Kg
enzo(a)anthracene	1.7 U	µg/Kg
hrysene	1.7 U	µg/Kg
enzo(b)fluoranthene	3.0 U	µg/Kg
enzo(k)fluoranthene	2.0 U	µg/Kg
enzo(a)pyrene	2.0 U	µg/Kg
ibenzo(a,h)anthracene	3.3 U	µg/Kg
enzo(g,h,i)perylene	3.3 U	µg/Kg
ideno(1,2,3-cd)pyrene	1.7 U	µg/Kg
irrogate: (p-terphenyl)		
irrogate Reported Value	10.1	µg/Kg
irrogate Expected Value	10	µg/Kg
irrogate % Recovery	101	%
irrogate Control Limits	50-146	%
ite Extracted	03/24/99	
ite Analyzed	03/24/99	

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

ENCO LABORATORIES
REPORT # : OR5940
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	LCS Target µg	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 5030/8021					
Benzene	87/ 86/102	20	72-134	1	20
Toluene	83/ 82/ 98	20	72-124	1	19
Ethylbenzene	82/ 82/ 99	20	67-129	<1	21
o-Xylene	79/ 79/ 96	20	66-131	<1	21
EPA Method 3510/8310					
Naphthalene	43/ 56/ 67	10	22-130	26	20
Acenaphthene	63/ 88/ 69	10	14-163	33	19
Benzo(a)pyrene	85/ 86/ 96	1	33-137	1	36
Benzo(g,h,i)perylene	78/ 78/ 75	2	36-135	<1	34
EPA Method 5035/8021					
Benzene	112/ 99/ 89	20	59-144	12	25
Toluene	104/ 74/ 78	20	67-132	34	58
Ethylbenzene	106/ 99/ 94	20	60-169	7	28
o-Xylene	104/ 97/ 91	20	62-183	7	24
EPA Method 3550/8310					
Naphthalene	55/ 57/ 64	10	26-125	4	45
Acenaphthene	68/ 67/ 65	10	20-143	1	35
Benzo(a)pyrene	77/ 78/ 79	1	42-138	1	38
Benzo(g,h,i)perylene	72/ 86/ 78	2	51-142	18	26

Environmental Conservation Laboratories Comprehensive QA Plan #960038

< = 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.

CHAIN OF CUSTODY RECORD

U1600

PROJECT NO.: 6013

SITE NAME: NASTAX-NASCF Jet Fuel Transfer

SAMPLERS (SIGNATURE):

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	8021B	8310					REMARKS
	3/22/99	1020		X	CF-AN03-TMW-01	3	X	X					
	3/22/99	1044		X	CF-AN03-TMW-02	3	X	X					
	3/22/99	1059		X	CF-AN03-TMW-03	3	X	X					
	3/22/99	1123		X	CF-AN03-TMW-04	3	X	X					
	3/22/99	1109		X	CF-AN03-SB-04-04	4	X	X					

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
	3/22/99 1715	Scott D Mint			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS:	
		Kim Carey	3/23/99 8:00AM	ORS940	

Order No. 70440 (069

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

April 6, 1999

Mr. John Kucera
Tetra Tech NUS
7018 A.C. Skinner Pkwy.
Suite 250
Jacksonville, FL 32256

Login Number(SDG): OR5981
Project Number: N0013/CTO-72
Description: NASJAX/NASCF Jet Fuel Transfer

Case Narrative:

Five water samples and one soil sample were collected on March 23, 1999. All samples were received at ENCO Laboratories, Inc., on March 24, 1999 on wet ice and in good condition. This sample set was inclusive of samples CF-AN04 (TMW-1,2,3,4,DU07 and SB-04-2). All samples were analyzed as requested on the associated sample chain-of-custody forms.

All samples were extracted and analyzed within EPA specified holding times.

Quality Assurance acceptance limits are established by "in-house" statistical determination. This is true for surrogate, MS/MSD and LCS spike recovery evaluations.

The laboratory is providing separate reports per chain-of-custody received as requested by the client.

Environmental Conservation Laboratories, Inc.

David J. Vesey
Project Manager

David J. Vesey

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
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ENCO Laboratories

DHRS Certification No. E83182

CLIENT : Tetra Tech NUS
ADDRESS: 7018 A.C. Skinner Parkway
Suite 250
Jacksonville, FL 32256

REPORT # : OR5981
DATE SUBMITTED: March 24, 1999
DATE REPORTED : April 5, 1999

ATTENTION: John Kucera

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

PROJECT #: N0013

Fuel X-Fer 103rd St. Pipeline

03/23/99

#1	- CF-AN04-SB04-2	@ 19:22
#2	- CF-AN04-TMW-03	@ 19:20
#3	- CF-AN04-TMW-02	@ 19:02
#4	- CF-AN04-TMW-DU07	
#5	- CF-AN04-TMW-01	@ 18:22
#6	- CF-AN04-TMW-04	@ 11:14

OJECT MANAGER David Vesey

ENCO LABORATORIES
REPORT # : OR5981
DATE REPORTED: April 5, 1999
REFERENCE : N0013
PROJECT NAME : Fuel X-Fer
103rd St. Pipeline

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	CF-AN04-SB04-2	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	1.0 U	µg/Kg
Toluene	1.0 U	µg/Kg
Chlorobenzene	1.0 U	µg/Kg
Ethylbenzene	1.0 U	µg/Kg
m-Xylene & p-Xylene	2.0 U	µg/Kg
o-Xylene	1.0 U	µg/Kg
1,3-Dichlorobenzene	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	40.5	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	81	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/25/99	

NOTE: Analyte values are reported on a dry weight basis.

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

ENCO LABORATORIES
REPORT # : OR5981
DATE REPORTED: April 5, 1999
REFERENCE : N0013
PROJECT NAME : Fuel X-Fer
103rd St. Pipeline

RESULTS OF ANALYSIS

:PA METHOD 3550/8310 - 'OLYAROMATIC HYDROCARBONS	CF-AN04-SB04-2	Units
laphthalene	21 U	µg/Kg
ıcenaphthylene	42 U	µg/Kg
.-Methylnaphthalene	42 U	µg/Kg
:-Methylnaphthalene	42 U	µg/Kg
ıcenaphthene	21 U	µg/Kg
'luorene	4.2 U	µg/Kg
'henanthrene	42 U	µg/Kg
ınthracene	2.0 U	µg/Kg
'luoranthene	4.2 U	µg/Kg
yrene	2.1 U	µg/Kg
enzo(a)anthracene	2.1 U	µg/Kg
hrysene	2.1 U	µg/Kg
enzo(b)fluoranthene	4.0 U	µg/Kg
enzo(k)fluoranthene	2.0 U	µg/Kg
enzo(a)pyrene	2.0 U	µg/Kg
ibenzo(a,h)anthracene	4.2 U	µg/Kg
enzo(g,h,i)perylene	4.2 U	µg/Kg
ndeno(1,2,3-cd)pyrene	2.2 I	µg/Kg
ırrogate: (p-terphenyl)		
ırrogate Reported Value	12.1	µg/Kg
ırrogate Expected Value	10	µg/Kg
ırrogate % Recovery	121	%
ırrogate Control Limits	50-146	%
ıte Extracted	03/31/99	
ıte Analyzed	04/01/99	

:SCELLANEOUS	METHOD	CF-AN04-SB04-2	Units
ercent Solids	SM2540G	79	%
ıte Analyzed		03/29/99	

'TE: Analyte values are reported on a dry weight basis.

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

ENCO LABORATORIES
REPORT # : OR5981
DATE REPORTED: April 5, 1999
REFERENCE : N0013
PROJECT NAME : Fuel X-Fer
103rd St. Pipeline

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN04-TMW-03	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	41	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	82	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/26/99	

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

ENCO LABORATORIES
REPORT # : OR5981
DATE REPORTED: April 5, 1999
REFERENCE : N0013
PROJECT NAME : Fuel X-Fer
103rd St. Pipeline

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN04-TMW-03	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	5.1	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	51	%
Surrogate Control Limits	39-148	%
Date Extracted	03/30/99	
Date Analyzed	03/30/99	

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

ENCO LABORATORIES
REPORT # : OR5981
DATE REPORTED: April 5, 1999
REFERENCE : N0013
PROJECT NAME : Fuel X-Fer
103rd St. Pipeline

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN04-TMW-02	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	49	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	98	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/26/99	

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

ENCO LABORATORIES
REPORT # : OR5981
DATE REPORTED: April 5, 1999
REFERENCE : N0013
PROJECT NAME : Fuel X-Fer
103rd St. Pipeline

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN04-TMW-02	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	10.4	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	104	%
Surrogate Control Limits	39-148	%
Date Extracted	03/30/99	
Date Analyzed	03/30/99	

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

ENCO LABORATORIES
REPORT # : OR5981
DATE REPORTED: April 5, 1999
REFERENCE : N0013
PROJECT NAME : Fuel X-Fer
103rd St. Pipeline

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN04-TMW-DU07	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	44	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	88	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/26/99	

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

ENCO LABORATORIES
REPORT # : OR5981
DATE REPORTED: April 5, 1999
REFERENCE : N0013
PROJECT NAME : Fuel X-Fer
103rd St. Pipeline

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN04-TMW-DU07	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	7.6	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	76	%
Surrogate Control Limits	39-148	%
Date Extracted	03/30/99	
Date Analyzed	03/30/99	

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

ENCO LABORATORIES
REPORT # : OR5981
DATE REPORTED: April 5, 1999
REFERENCE : N0013
PROJECT NAME : Fuel X-Fer
103rd St. Pipeline

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN04-TMW-01	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	45.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	91	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/26/99	

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

ENCO LABORATORIES
REPORT # : OR5981
DATE REPORTED: April 5, 1999
REFERENCE : N0013
PROJECT NAME : Fuel X-Fer
103rd St. Pipeline

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN04-TMW-01	Units
Naphthalene	**12**	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	**2.2**	µg/L
2-Methylnaphthalene	**1.6**	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	**0.15** I	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	**0.11** I	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	**0.57**	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	**0.27**	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	**0.80**	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	8.6	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	86	%
Surrogate Control Limits	39-148	%
Date Extracted	03/30/99	
Date Analyzed	03/30/99	

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

ENCO LABORATORIES
REPORT # : OR5981
DATE REPORTED: April 5, 1999
REFERENCE : N0013
PROJECT NAME : Fuel X-Fer
103rd St. Pipeline

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN04-TMW-04	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	44.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	89	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/26/99	

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

ENCO LABORATORIES
REPORT # : OR5981
DATE REPORTED: April 5, 1999
REFERENCE : N0013
PROJECT NAME : Fuel X-Fer
103rd St. Pipeline

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN04-TMW-04	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	**1.1**	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	8.0	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	80	%
Surrogate Control Limits	39-148	%
Date Extracted	03/30/99	
Date Analyzed	03/30/99	

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

ENCO LABORATORIES
REPORT # : OR5981
DATE REPORTED: April 5, 1999
REFERENCE : N0013
PROJECT NAME : Fuel X-Fer
103rd St. Pipeline

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	45.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	91	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/26/99	

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

ENCO LABORATORIES
REPORT # : OR5981
DATE REPORTED: April 5, 1999
REFERENCE : N0013
PROJECT NAME : Fuel X-Fer
103rd St. Pipeline

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	LAB BLANK	Units
Naphthalene	0.50 U	µg/L
cenaphthylene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
cenaphthene	0.50 U	µg/L
luorene	0.10 U	µg/L
henanthrene	1.0 U	µg/L
nthracene	0.050 U	µg/L
luoranthene	0.10 U	µg/L
yrene	0.050 U	µg/L
enzo(a)anthracene	0.050 U	µg/L
hrysene	0.050 U	µg/L
enzo(b)fluoranthene	0.10 U	µg/L
enzo(k)fluoranthene	0.050 U	µg/L
enzo(a)pyrene	0.050 U	µg/L
ibenzo(a,h)anthracene	0.10 U	µg/L
enzo(g,h,i)perylene	0.10 U	µg/L
deno(1,2,3-cd)pyrene	0.050 U	µg/L
rrogate: (p-terphenyl)		
rrogate Reported Value	9.9	µg/L
rrogate Expected Value	10	µg/L
rrogate % Recovery	99	%
rrogate Control Limits	39-148	%
te Extracted	03/30/99	
te Analyzed	03/30/99	

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

ENCO LABORATORIES
REPORT # : OR5981
DATE REPORTED: April 5, 1999
REFERENCE : N0013
PROJECT NAME : Fuel X-Fer
103rd St. Pipeline

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	1.0 U	µg/Kg
Toluene	1.0 U	µg/Kg
Chlorobenzene	1.0 U	µg/Kg
Ethylbenzene	1.0 U	µg/Kg
m-Xylene & p-Xylene	2.0 U	µg/Kg
o-Xylene	1.0 U	µg/Kg
1,3-Dichlorobenzene	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	µg/Kg
	1.0 U	µg/Kg
urrogate: (Bromofluorobenzene)		
urrogate Reported Value	43.5	µg/Kg
urrogate Expected Value	50	µg/Kg
urrogate % Recovery	87	%
urrogate Control Limits	28-165	%
ate Analyzed	03/25/99	

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

ENCO LABORATORIES
REPORT # : OR5981
DATE REPORTED: April 5, 1999
REFERENCE : N0013
PROJECT NAME : Fuel X-Fer
103rd St. Pipeline

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	LAB BLANK	Units
Naphthalene	17 U	µg/Kg
Acenaphthylene	33 U	µg/Kg
1-Methylnaphthalene	33 U	µg/Kg
2-Methylnaphthalene	33 U	µg/Kg
Acenaphthene	17 U	µg/Kg
Fluorene	3.3 U	µg/Kg
Phenanthrene	33 U	µg/Kg
Anthracene	2.0 U	µg/Kg
Fluoranthene	3.3 U	µg/Kg
Pyrene	1.7 U	µg/Kg
Benzo(a)anthracene	1.7 U	µg/Kg
Chrysene	1.7 U	µg/Kg
Benzo(b)fluoranthene	3.0 U	µg/Kg
Benzo(k)fluoranthene	2.0 U	µg/Kg
Benzo(a)pyrene	2.0 U	µg/Kg
Dibenzo(a,h)anthracene	3.3 U	µg/Kg
Benzo(g,h,i)perylene	3.3 U	µg/Kg
Indeno(1,2,3-cd)pyrene	1.7 U	µg/Kg
Surrogate: (p-terphenyl)		
Surrogate Reported Value	11.2	µg/Kg
Surrogate Expected Value	10	µg/Kg
Surrogate % Recovery	112	%
Surrogate Control Limits	50-146	%
Date Extracted	03/31/99	
Date Analyzed	04/01/99	

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

ENCO LABORATORIES
REPORT # : OR5981
DATE REPORTED: April 5, 1999
REFERENCE : N0013
PROJECT NAME : Fuel X-Fer
103rd St. Pipeline

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	LCS Target µg	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 5030/8021					
Benzene	106/110/106	20	72-134	4	20
Toluene	109/113/108	20	72-124	4	19
Ethylbenzene	109/114/108	20	67-129	4	21
o-Xylene	108/112/106	20	66-131	4	21
EPA Method 3510/8310					
Naphthalene	85/ 75/ 64	10	22-130	12	20
Acenaphthene	88/ 79/ 67	10	14-163	11	19
Benzo(a)pyrene	90/ 86/ 89	1	33-137	4	36
Benzo(g,h,i)perylene	90/ 90/ 94	2	36-135	<1	34
PA Method 5035/8021					
enzene	112/ 99/ 89	20	59-144	12	25
oluene	104/ 74/ 78	20	67-132	34	58
thylbenzene	106/ 99/ 94	20	60-169	7	28
-Xylene	104/ 97/ 91	20	62-183	7	24
PA Method 3550/8310					
aphthalene	82/ 95/ 86	10	26-125	15	45
cenaphthene	79/ 90/ 90	10	20-143	13	35
enzo(a)pyrene	102/122/ 98	1	42-138	18	38
enzo(g,h,i)perylene	102/126/102	2	51-142	21	26

ıvironmental Conservation Laboratories Comprehensive QA Plan #960038

= Less Than
S = Matrix Spike
SD = Matrix Spike Duplicate
CS = Laboratory Control Standard
PD = Relative Percent Difference

[illegible] report shall not be reproduced except in full, without the written [illegible]oval of the laboratory. Results for these procedures apply only to [illegible]e samples as submitted.

ENVIRONMENTAL CONSERVATION LABORATORIES

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Orlando, Florida 32824
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ENCO CompQAP No.: 960038G/0

02315

CHAIN OF CUSTODY RECORD

PROJECT REFERENCE: [illegible]
PROJECT NO.: 1466.15
P.O. NUMBER:
PROJECT LOC. (State): FL
SAMPLER(s) NAME: Jennifer Elliott
PHONE: 281-[illegible]
FAX: 281-[illegible]
CLIENT NAME: Intra Tech MIS
CLIENT PROJECT MANAGER: Jim Kuchera
CLIENT ADDRESS (CITY, STATE, ZIP): 7615 N.C. Skinner Pkwy, Ste. 250 Tampa FL

PAGE 1 OF 1

☒ STANDARD REPORT DELIVERY
☐ EXPEDITED REPORT DELIVERY (surcharge)
Date Due:

REQUIRED ANALYSIS: PAHs 8310; Volatiles 8260B

STATION	DATE	TIME	GRAB	COMP	SAMPLE IDENTIFICATION	SURFACE WATER	GROUND WATER	WASTEWATER	DRINKING WATER	SOIL/SOLID/SEDIMENT	NONAQUEOUS LIQUID (oil, solvent, etc.)	AIR	SLUDGE	OTHER	PAHs 8310	Volatiles 8260B	REMARKS
1	3/23/99	1922		X	CF-AN04-SB04-2					X					✓	✓	
2	3/23/99	1920	X		CF-AN04-TMW-03		X								✓	✓	
3	3/23/99	1902	X		CF-AN04-TMW-02		X								✓	✓	
4	3/23/99	0000	X		CF-AN04-TMW-DUCT		X								✓	✓	
5	3/23/99	1822	X		CF-AN04-TMW-01		X								✓	✓	
6	3/24/99	1114	X		CF-AN04-TMW-04		X								✓	✓	
7																	
8																	
9																	
10																	
11																	
12																	
13																	
14																	

SAMPLE KIT PREPARED BY: ☒ JACKSONVILLE ☐ ORLANDO	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
			[signature]	3/24/99	1712	[signature]	3/24/99	1712
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
RECEIVED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	ENCO LOG NO.	REMARKS
Kim C[illegible] ☐ Jacksonville ☒ Orlando	3/25/99	7:40AM	☒ YES ☐ NO	CR5981	

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

April 1, 1999

Mr. John Kucera
Tetra Tech NUS
7018 A.C. Skinner Pkwy.
Suite 250
Jacksonville, FL 32256

Login Number (SDG): OR5964
Project Number: NO013/CTO-72
Description: NASJAX/NASCF Jet Fuel Transfer

Case Narrative:

Four water samples and one soil sample were collected on March 23, 1999. All samples were received at ENCO Laboratories, Inc., on March 23, 1999 on wet ice and in good condition. This sample set was inclusive of samples CF-AN05 (TMW-01,02,03,04, and SB-04-05). All samples were analyzed as requested on the associated sample chain-of-custody forms.

All samples were extracted and analyzed within EPA specified holding times.

There were no particular difficulties encountered with the sample handling and analyses by Environmental Conservation Laboratories, Inc.

Quality Assurance acceptance limits are established by "in-house" statistical determination. This is true for surrogate, MS/MSD and LCS spike recovery evaluations.

Environmental Conservation Laboratories, Inc.

David J. Vesey
Project Manager

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

CLIENT : Tetra Tech NUS
ADDRESS: 7018 A.C. Skinner Parkway
Suite 250
Jacksonville, FL 32256

REPORT # : OR5964
DATE SUBMITTED: March 23, 1999
DATE REPORTED : March 30, 1999

ATTENTION: John Kucera

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

PROJECT #: 0013

NAS JAX-NASCF Jet Fuel Transfer Line

03/23/99

#1 - CF-AN05-TMW-01 @ 14:17
#2 - CF-AN05-TMW-02 @ 15:03
#3 - CF-AN05-TMW-03 @ 15:40
#4 - CF-AN05-TMW-04 @ 16:34
#5 - CF-AN05-SB-04-05 @ 15:57

ROJECT MANAGER David Vesey

ENCO LABORATORIES
REPORT # : OR5964
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer Line

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN05-TMW-01	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	43	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	86	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/25/99	

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

ENCO LABORATORIES
REPORT # : OR5964
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer Line

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN05-TMW-01	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
cenaphthene	0.50 U	µg/L
luorene	0.10 U	µg/L
henanthrene	1.0 U	µg/L
nthracene	0.050 U	µg/L
luoranthene	0.10 U	µg/L
yrene	0.050 U	µg/L
enzo(a)anthracene	0.050 U	µg/L
hrysene	0.050 U	µg/L
enzo(b)fluoranthene	0.10 U	µg/L
enzo(k)fluoranthene	0.050 U	µg/L
enzo(a)pyrene	0.050 U	µg/L
ibenzo(a,h)anthracene	0.10 U	µg/L
enzo(g,h,i)perylene	0.10 U	µg/L
ideno(1,2,3-cd)pyrene	0.050 U	µg/L
rrogate: (p-terphenyl)		
rrogate Reported Value	8.3	µg/L
rrogate Expected Value	10	µg/L
rrogate % Recovery	83	%
rrogate Control Limits	39-148	%
te Extracted	03/25/99	
te Analyzed	03/29/99	

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

ENCO LABORATORIES
REPORT # : OR5964
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer Line

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN05-TMW-02	Units
Methyl tert-butyl ether	2.0 I	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	44.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	89	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/25/99	

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

ENCO LABORATORIES
REPORT # : OR5964
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer Line

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN05-TMW-02	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
.-Methylnaphthalene	1.0 U	µg/L
!-Methylnaphthalene	1.0 U	µg/L
cenaphthene	0.50 U	µg/L
'luorene	0.10 U	µg/L
henanthrene	1.0 U	µg/L
nthracene	0.050 U	µg/L
luoranthene	0.10 U	µg/L
yrene	0.050 U	µg/L
enzo(a)anthracene	0.050 U	µg/L
hrysene	0.050 U	µg/L
enzo(b)fluoranthene	0.10 U	µg/L
enzo(k)fluoranthene	0.050 U	µg/L
enzo(a)pyrene	0.050 U	µg/L
ibenzo(a,h)anthracene	0.10 U	µg/L
enzo(g,h,i)perylene	0.10 U	µg/L
ideno(1,2,3-cd)pyrene	0.050 U	µg/L
rrogate: (p-terphenyl)		
rrogate Reported Value	6.6	µg/L
rrogate Expected Value	10	µg/L
rrogate % Recovery	66	%
rrogate Control Limits	39-148	%
te Extracted	03/25/99	
te Analyzed	03/29/99	

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

ENCO LABORATORIES
REPORT # : OR5964
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer Line

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN05-TMW-03	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	44	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	88	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/25/99	

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

ENCO LABORATORIES
REPORT # : OR5964
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer Line

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN05-TMW-03	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	**0.080** I	µg/L
Fluoranthene	**0.47**	µg/L
Pyrene	**0.49**	µg/L
Benzo(a)anthracene	**0.17**	µg/L
Chrysene	**0.22**	µg/L
Benzo(b)fluoranthene	**0.16** I	µg/L
Benzo(k)fluoranthene	**0.060** I	µg/L
Benzo(a)pyrene	**0.10** I	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	**0.13**	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	10.4	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	104	%
Surrogate Control Limits	39-148	%
Date Extracted	03/25/99	
Date Analyzed	03/29/99	

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 # : OR5964
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer Line

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN05-TMW-04	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	47	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	94	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/25/99	

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

ENCO LABORATORIES
REPORT # : OR5964
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer Line

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN05-TMW-04	Units
Naphthalene	0.50 U	µg/L
cenaphthylene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
cenaphthene	0.50 U	µg/L
luorene	0.10 U	µg/L
henanthrene	1.0 U	µg/L
nthracene	0.050 U	µg/L
luoranthene	0.10 U	µg/L
yrene	0.050 U	µg/L
enzo(a)anthracene	0.050 U	µg/L
rysene	0.050 U	µg/L
enzo(b)fluoranthene	0.10 U	µg/L
enzo(k)fluoranthene	0.050 U	µg/L
enzo(a)pyrene	0.050 U	µg/L
benzo(a,h)anthracene	0.10 U	µg/L
nzo(g,h,i)perylene	0.10 U	µg/L
deno(1,2,3-cd)pyrene	0.050 U	µg/L
rrogate: (p-terphenyl)		
rrogate Reported Value	7	µg/L
rrogate Expected Value	10	µg/L
rrogate % Recovery	70	%
rrogate Control Limits	39-148	%
te Extracted	03/25/99	
te Analyzed	03/29/99	

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

ENCO LABORATORIES
REPORT # : OR5964
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer Line

RESULTS OF ANALYSIS

PA METHOD 5035/8021 - OLATILE AROMATICS	CF-AN05-SB-04-05	Units
ethyl tert-butyl ether	3.0 U	µg/Kg
enzene	1.0 U	µg/Kg
oluene	1.0 U	µg/Kg
hlorobenzene	1.0 U	µg/Kg
thylbenzene	1.0 U	µg/Kg
-Xylene & p-Xylene	3.0 U	µg/Kg
-Xylene	1.0 U	µg/Kg
,3-Dichlorobenzene	1.0 U	µg/Kg
,4-Dichlorobenzene	1.0 U	µg/Kg
,2-Dichlorobenzene	1.0 U	µg/Kg
urrogate: (Bromofluorobenzene)		
urrogate Reported Value	45.5	µg/Kg
urrogate Expected Value	50	µg/Kg
urrogate % Recovery	91	%
urrogate Control Limits	28-165	%
ate Analyzed	03/25/99	

OTE: Analyte values are reported on a dry weight basis.

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

ENCO LABORATORIES
REPORT # : OR5964
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer Line

RESULTS OF ANALYSIS

:PA METHOD 3550/8310 - 'OLYAROMATIC HYDROCARBONS	CF-AN05-SB-04-05	Units
aphthalene	22 U	µg/Kg
cenaphthylene	44 U	µg/Kg
Methylnaphthalene	44 U	µg/Kg
-Methylnaphthalene	44 U	µg/Kg
cenaphthene	22 U	µg/Kg
luorene	4.4 U	µg/Kg
henanthrene	44 U	µg/Kg
ıthracene	3.0 U	µg/Kg
luoranthene	**12**	µg/Kg
rene	**17**	µg/Kg
nzo(a)anthracene	2.2 U	µg/Kg
ırysene	**5.6**	µg/Kg
nzo(b)fluoranthene	4.0 U	µg/Kg
nzo(k)fluoranthene	3.0 U	µg/Kg
nzo(a)pyrene	**3.0** I	µg/Kg
benzo(a,h)anthracene	4.4 U	µg/Kg
nzo(g,h,i)perylene	4.4 U	µg/Kg
deno(1,2,3-cd)pyrene	2.2 U	µg/Kg
rrogate: (p-terphenyl)		
rrogate Reported Value	11.3	µg/Kg
rrogate Expected Value	10	µg/Kg
rrogate % Recovery	113	%
rrogate Control Limits	50-146	%
e Extracted	03/26/99	
e Analyzed	03/28/99	

CELLANEOUS	METHOD	CF-AN05-SB-04-05	Units
cent Solids	SM2540G	**76**	%
e Analyzed		03/29/99	

E: Analyte values are reported on a dry weight basis.

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

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	38	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	76	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/24/99	

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

ENCO LABORATORIES
REPORT # : OR5964
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer Line

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	LAB BLANK	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	10.4	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	104	%
Surrogate Control Limits	39-148	%
Date Extracted	03/25/99	
Date Analyzed	03/29/99	

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

ENCO LABORATORIES
REPORT # : OR5964
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer Line

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	1.0 U	µg/Kg
Toluene	1.0 U	µg/Kg
Chlorobenzene	1.0 U	µg/Kg
Ethylbenzene	1.0 U	µg/Kg
m-Xylene & p-Xylene	2.0 U	µg/Kg
o-Xylene	1.0 U	µg/Kg
1,3-Dichlorobenzene	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	43.5	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	87	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/25/99	

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

ENCO LABORATORIES
REPORT # : OR5964
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer Line

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	LAB BLANK	Units
Naphthalene	17 U	µg/Kg
cenaphthylene	33 U	µg/Kg
-Methylnaphthalene	33 U	µg/Kg
-Methylnaphthalene	33 U	µg/Kg
cenaphthene	17 U	µg/Kg
luorene	3.3 U	µg/Kg
henanthrene	33 U	µg/Kg
nthracene	2.0 U	µg/Kg
luoranthene	3.3 U	µg/Kg
yrene	1.7 U	µg/Kg
enzo(a)anthracene	1.7 U	µg/Kg
hrysene	1.7 U	µg/Kg
enzo(b)fluoranthene	3.0 U	µg/Kg
enzo(k)fluoranthene	2.0 U	µg/Kg
enzo(a)pyrene	2.0 U	µg/Kg
benzo(a,h)anthracene	3.3 U	µg/Kg
nzo(g,h,i)perylene	3.3 U	µg/Kg
deno(1,2,3-cd)pyrene	1.7 U	µg/Kg
rrogate: (p-terphenyl)		
rrogate Reported Value	12	µg/Kg
rrogate Expected Value	10	µg/Kg
rrogate % Recovery	120	%
rrogate Control Limits	50-146	%
te Extracted	03/26/99	
te Analyzed	03/27/99	

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

ENCO LABORATORIES
REPORT # : OR5964
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer Line

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	LCS Target µg	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 5030/8021					
Benzene	87/ 86/102	20	72-134	1	20
Toluene	83/ 82/ 98	20	72-124	1	19
Ethylbenzene	82/ 82/ 99	20	67-129	<1	21
o-Xylene	79/ 79/ 96	20	66-131	<1	21
EPA Method 3510/8310					
Naphthalene	43/ 56/ 67	10	22-130	26	20
Acenaphthene	63/ 88/ 69	10	14-163	33	19
Benzo(a)pyrene	85/ 86/ 96	1	33-137	1	36
Benzo(g,h,i)perylene	78/ 78/ 75	2	36-135	<1	34
EPA Method 5035/8021					
Benzene	112/ 99/ 89	20	59-144	12	25
Toluene	104/ 74/ 78	20	67-132	34	58
Ethylbenzene	106/ 99/ 94	20	60-169	7	28
o-Xylene	104/ 97/ 91	20	62-183	7	24
EPA Method 3550/8310					
Naphthalene	82/ 95/ 85	10	26-125	15	45
Acenaphthene	79/ 90/ 81	10	20-143	13	35
Benzo(a)pyrene	102/122/ 87	1	42-138	18	38
Benzo(g,h,i)perylene	102/126/ 96	2	51-142	21	26

Environmental Conservation Laboratories Comprehensive QA Plan #960038

< = 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.

CHAIN OF CUSTODY RECORD

02313

PROJECT NO.: 0013

SITE NAME: NASJAX-NASCF Jet Fuel Transfer Line

SAMPLERS (SIGNATURE):

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	8021B	8310						REMARKS
	3/23/99	1417		X	CF-AN05-TMW-01	3	X	X						
	3/23/99	1503		X	CF-AN05-TMW-02	3	X	X						
	3/23/99	1540		X	CF-AN05-TMW-03	3	X	X						
	3/23/99	1634		X	CF-AN05-TMW-04		X	X						
	3/23/99	1557		X	CF-AN05-SB-04-05		X	X						

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
	3/23/99 1640	Craig Kohn			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS:	
		Kim Cuey	3/24/99 10:30AM	#OR5964	

Order No. 70440 (0693)

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

April 6, 1999

Mr. John Kucera
Tetra Tech NUS
7018 A.C. Skinner Pkwy.
Suite 250
Jacksonville, FL 32256

Login Number(SDG): OR5982
Project Number: NO013/CTO-72
Description: NASJAX/NASCF Jet Fuel Transfer

Case Narrative:

Five water samples and one soil sample were collected on March 24, 1999. All samples were received at ENCO Laboratories, Inc., on March 24, 1999 on wet ice and in good condition. This sample set was inclusive of samples CF-AN06 (TMW-1,2,3,4,DU08 and SB-03-5). All samples were analyzed as requested on the associated sample chain-of-custody forms.

All samples were extracted and analyzed within EPA specified holding times.

Quality Assurance acceptance limits are established by "in-house" statistical determination. This is true for surrogate, MS/MSD and LCS spike recovery evaluations.

The laboratory is providing separate reports per chain-of-custody received as requested by the client.

Environmental Conservation Laboratories, Inc.

David J. Vesey
Project Manager

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

CLIENT : Tetra Tech NUS
ADDRESS: 7018 A.C. Skinner Parkway
Suite 250
Jacksonville, FL 32256

REPORT # : OR5982
DATE SUBMITTED: March 24, 1999
DATE REPORTED : April 5, 1999

ATTENTION: John Kucera

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

PROJECT #: N0013

Transfer Pipeline 103rd St.

03/24/99

#1	- CF-AN06-TMW-01	@ 11:01
#2	- CF-AN06-TMW-02	@ 11:23
#3	- CF-AN06-TMW-03	@ 12:41
#4	- CF-AN06-SB-03-5	@ 12:49
#5	- CF-AN06-TMW-DU-08	@ 00:00
#6	- CF-AN06-TMW-04	@ 14:24

ROJECT MANAGER _____
David Vesey

ENCO LABORATORIES
REPORT # : OR5982
DATE REPORTED: April 5, 1999
REFERENCE : N0013
PROJECT NAME : Transfer Pipeline 103rd St.

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN06-TMW-01	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	45	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	90	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/26/99	

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

ENCO LABORATORIES
REPORT # : OR5982
DATE REPORTED: April 5, 1999
REFERENCE : N0013
PROJECT NAME : Transfer Pipeline 103rd St.

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN06-TMW-01	Units
aphthalene	0.50 U	µg/L
cenaphthylene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
cenaphthene	0.50 U	µg/L
luorene	0.10 U	µg/L
henanthrene	1.0 U	µg/L
nthracene	**0.050** I	µg/L
luoranthene	**0.14** I	µg/L
yrene	0.050 U	µg/L
enzo(a)anthracene	0.050 U	µg/L
rysene	**0.060** I	µg/L
enzo(b)fluoranthene	0.10 U	µg/L
enzo(k)fluoranthene	0.050 U	µg/L
enzo(a)pyrene	**0.050** I	µg/L
benzo(a,h)anthracene	0.10 U	µg/L
enzo(g,h,i)perylene	0.10 U	µg/L
deno(1,2,3-cd)pyrene	**0.050** I	µg/L
rrogate: (p-terphenyl)		
rrogate Reported Value	11	µg/L
rrogate Expected Value	10	µg/L
rrogate % Recovery	110	%
rrogate Control Limits	39-148	%
te Extracted	03/31/99	
te Analyzed	03/31/99	

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

ENCO LABORATORIES
REPORT # : OR5982
DATE REPORTED: April 5, 1999
REFERENCE : N0013
PROJECT NAME : Transfer Pipeline 103rd St.

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN06-TMW-02	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	43.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	97	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/26/99	

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

ENCO LABORATORIES
REPORT # : OR5982
DATE REPORTED: April 5, 1999
REFERENCE : N0013
PROJECT NAME : Transfer Pipeline 103rd St.

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN06-TMW-02	Units
Naphthalene	0.50 U	µg/L
cenaphthylene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
cenaphthene	0.50 U	µg/L
luorene	0.10 U	µg/L
henanthrene	1.0 U	µg/L
nthracene	0.050 U	µg/L
luoranthene	0.10 U	µg/L
yrene	0.050 U	µg/L
enzo(a)anthracene	0.050 U	µg/L
hrysene	0.050 U	µg/L
enzo(b)fluoranthene	0.10 U	µg/L
enzo(k)fluoranthene	0.050 U	µg/L
enzo(a)pyrene	0.050 U	µg/L
ibenzo(a,h)anthracene	0.10 U	µg/L
enzo(g,h,i)perylene	0.10 U	µg/L
ideno(1,2,3-cd)pyrene	0.050 U	µg/L
irrogate: (p-terphenyl)		
irrogate Reported Value	7.3	µg/L
irrogate Expected Value	10	µg/L
irrogate % Recovery	73	%
irrogate Control Limits	39-148	%
ite Extracted	03/31/99	
ite Analyzed	03/31/99	

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

ENCO LABORATORIES
REPORT # : OR5982
DATE REPORTED: April 5, 1999
REFERENCE : N0013
PROJECT NAME : Transfer Pipeline
103rd St.

RESULTS OF ANALYSIS

PA METHOD 5030/8021 - OLATILE AROMATICS	CF-AN06-TMW-03	Units
ethyl tert-butyl ether	2.0 U	µg/L
enzene	1.0 U	µg/L
oluene	1.0 U	µg/L
hlorobenzene	1.0 U	µg/L
thylbenzene	1.0 U	µg/L
-Xylene & p-Xylene	2.0 U	µg/L
-Xylene	1.0 U	µg/L
,3-Dichlorobenzene	1.0 U	µg/L
,4-Dichlorobenzene	1.0 U	µg/L
,2-Dichlorobenzene	1.0 U	µg/L
ırrogate: (Bromofluorobenzene)		
ırrogate Reported Value	44	µg/L
ırrogate Expected Value	50	µg/L
ırrogate % Recovery	88	%
ırrogate Control Limits	64-140	%
ıte Analyzed	03/27/99	

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

ENCO LABORATORIES
REPORT # : OR5982
DATE REPORTED: April 5, 1999
REFERENCE : N0013
PROJECT NAME : Transfer Pipeline
103rd St.

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN06-TMW-03	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	9.0	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	90	%
Surrogate Control Limits	39-148	%
Date Extracted	03/31/99	
Date Analyzed	03/31/99	

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

ENCO LABORATORIES
REPORT # : OR5982
DATE REPORTED: April 5, 1999
REFERENCE : N0013
PROJECT NAME : Transfer Pipeline 103rd St.

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	CF-AN06-SB-03-5	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	1.0 U	µg/Kg
Toluene	1.0 U	µg/Kg
Chlorobenzene	1.0 U	µg/Kg
Ethylbenzene	1.0 U	µg/Kg
m-Xylene & p-Xylene	2.0 U	µg/Kg
o-Xylene	1.0 U	µg/Kg
1,3-Dichlorobenzene	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	41	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	82	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/26/99	

NOTE: Analyte values are reported on a dry weight basis.

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

ENCO LABORATORIES
REPORT # : OR5982
DATE REPORTED: April 5, 1999
REFERENCE : N0013
PROJECT NAME : Transfer Pipeline 103rd St.

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	CF-AN06-SB-03-5	Units
Naphthalene	19 U	µg/Kg
Acenaphthylene	38 U	µg/Kg
1-Methylnaphthalene	38 U	µg/Kg
2-Methylnaphthalene	38 U	µg/Kg
Acenaphthene	19 U	µg/Kg
Fluorene	3.8 U	µg/Kg
Phenanthrene	38 U	µg/Kg
Anthracene	2.0 U	µg/Kg
Fluoranthene	3.8 U	µg/Kg
Pyrene	1.9 U	µg/Kg
Benzo(a)anthracene	1.9 U	µg/Kg
Chrysene	1.9 U	µg/Kg
Benzo(b)fluoranthene	3.0 U	µg/Kg
Benzo(k)fluoranthene	2.0 U	µg/Kg
Benzo(a)pyrene	2.0 U	µg/Kg
Dibenzo(a,h)anthracene	3.8 U	µg/Kg
Benzo(g,h,i)perylene	3.8 U	µg/Kg
Indeno(1,2,3-cd)pyrene	1.9 U	µg/Kg
Surrogate: (p-terphenyl)		
Surrogate Reported Value	10.8	µg/Kg
Surrogate Expected Value	10	µg/Kg
Surrogate % Recovery	108	%
Surrogate Control Limits	50-146	%
Date Extracted	03/31/99	
Date Analyzed	04/01/99	

MISCELLANEOUS	METHOD	CF-AN06-SB-03-5	Units
Percent Solids	SM2540G	87	%
Date Analyzed		03/29/99	

NOTE: Analyte values are reported on a dry weight basis.

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

ENCO LABORATORIES
REPORT # : OR5982
DATE REPORTED: April 5, 1999
REFERENCE : N0013
PROJECT NAME : Transfer Pipeline 103rd St.

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN06-TMW-DU-08	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	46.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	93	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/27/99	

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

ENCO LABORATORIES
REPORT # : OR5982
DATE REPORTED: April 5, 1999
REFERENCE : N0013
PROJECT NAME : Transfer Pipeline
103rd St.

RESULTS OF ANALYSIS

PA METHOD 3510/8310 - OLYAROMATIC HYDROCARBONS	CF-AN06-TMW-DU-08	Units
aphthalene	0.50 U	µg/L
cenaphthylene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
cenaphthene	0.50 U	µg/L
luorene	0.10 U	µg/L
henanthrene	1.0 U	µg/L
nthracene	0.050 U	µg/L
luoranthene	0.10 U	µg/L
yrene	0.050 U	µg/L
enzo(a)anthracene	0.050 U	µg/L
hrysene	0.050 U	µg/L
enzo(b)fluoranthene	0.10 U	µg/L
enzo(k)fluoranthene	0.050 U	µg/L
enzo(a)pyrene	0.050 U	µg/L
benzo(a,h)anthracene	0.10 U	µg/L
nzo(g,h,i)perylene	0.10 U	µg/L
deno(1,2,3-cd)pyrene	0.050 U	µg/L
rrogate: (p-terphenyl)		
rrogate Reported Value	9.1	µg/L
rrogate Expected Value	10	µg/L
rrogate % Recovery	91	%
rrogate Control Limits	39-148	%
te Extracted	03/31/99	
te Analyzed	03/31/99	

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

ENCO LABORATORIES
REPORT # : OR5982
DATE REPORTED: April 5, 1999
REFERENCE : N0013
PROJECT NAME : Transfer Pipeline
103rd St.

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN06-TMW-04	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	46.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	93	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/27/99	

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

ENCO LABORATORIES
REPORT # : OR5982
DATE REPORTED: April 5, 1999
REFERENCE : N0013
PROJECT NAME : Transfer Pipeline 103rd St.

RESULTS OF ANALYSIS

:PA METHOD 3510/8310 - 'OLYAROMATIC HYDROCARBONS	CF-AN06-TMW-04	Units
laphthalene	0.50 U	µg/L
cenaphthylene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
cenaphthene	0.50 U	µg/L
luorene	0.10 U	µg/L
henanthrene	1.0 U	µg/L
nthracene	0.050 U	µg/L
luoranthene	0.10 U	µg/L
yrene	0.050 U	µg/L
enzo(a)anthracene	0.050 U	µg/L
hrysene	**0.090**	µg/L
enzo(b)fluoranthene	0.10 U	µg/L
enzo(k)fluoranthene	0.050 U	µg/L
enzo(a)pyrene	0.050 U	µg/L
ibenzo(a,h)anthracene	0.10 U	µg/L
enzo(g,h,i)perylene	0.10 U	µg/L
ndeno(1,2,3-cd)pyrene	0.050 U	µg/L
irrogate: (p-terphenyl)		
irrogate Reported Value	11	µg/L
irrogate Expected Value	10	µg/L
irrogate % Recovery	110	%
irrogate Control Limits	39-148	%
te Extracted	03/31/99	
te Analyzed	03/31/99	

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

ENCO LABORATORIES
REPORT # : OR5982
DATE REPORTED: April 5, 1999
REFERENCE : N0013
PROJECT NAME : Transfer Pipeline
103rd St.

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	45.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	91	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/26/99	

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

ENCO LABORATORIES
REPORT # : OR5982
DATE REPORTED: April 5, 1999
REFERENCE : N0013
PROJECT NAME : Transfer Pipeline
103rd St.

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	LAB BLANK	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	8.8	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	88	%
Surrogate Control Limits	39-148	%
Date Extracted	03/31/99	
Date Analyzed	03/31/99	

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

ENCO LABORATORIES
REPORT # : OR5982
DATE REPORTED: April 5, 1999
REFERENCE : N0013
PROJECT NAME : Transfer Pipeline
103rd St.

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	1.0 U	µg/Kg
Toluene	1.0 U	µg/Kg
Chlorobenzene	1.0 U	µg/Kg
Ethylbenzene	1.0 U	µg/Kg
m-Xylene & p-Xylene	2.0 U	µg/Kg
o-Xylene	1.0 U	µg/Kg
1,3-Dichlorobenzene	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	43.5	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	87	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/25/99	

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

ENCO LABORATORIES
REPORT # : OR5982
DATE REPORTED: April 5, 1999
REFERENCE : N0013
PROJECT NAME : Transfer Pipeline
103rd St.

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	LAB BLANK	Units
Naphthalene	17 U	µg/Kg
Acenaphthylene	33 U	µg/Kg
2-Methylnaphthalene	33 U	µg/Kg
1-Methylnaphthalene	33 U	µg/Kg
Acenaphthene	17 U	µg/Kg
Fluorene	3.3 U	µg/Kg
Phenanthrene	33 U	µg/Kg
Anthracene	2.0 U	µg/Kg
Fluoranthene	3.3 U	µg/Kg
Pyrene	1.7 U	µg/Kg
Benzo(a)anthracene	1.7 U	µg/Kg
Chrysene	1.7 U	µg/Kg
Benzo(b)fluoranthene	3.0 U	µg/Kg
Benzo(k)fluoranthene	2.0 U	µg/Kg
Benzo(a)pyrene	2.0 U	µg/Kg
Dibenzo(a,h)anthracene	3.3 U	µg/Kg
Benzo(g,h,i)perylene	3.3 U	µg/Kg
Indeno(1,2,3-cd)pyrene	1.7 U	µg/Kg
Surrogate: (p-terphenyl)		
Surrogate Reported Value	11.2	µg/Kg
Surrogate Expected Value	10	µg/Kg
Surrogate % Recovery	112	%
Surrogate Control Limits	50-146	%
Date Extracted	03/31/99	
Date Analyzed	04/01/99	

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

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	LCS Target µg	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 5030/8021					
Benzene	106/110/106	20	72-134	4	20
Toluene	109/113/108	20	72-124	4	19
Ethylbenzene	109/114/108	20	67-129	4	21
p-Xylene	108/112/106	20	66-131	4	21
EPA Method 3510/8310					
Naphthalene	68/ 92/ 81	10	22-130	30	20
Acenaphthene	80/ 90/ 88	10	14-163	12	19
Benzo(a)pyrene	90/101/ 99	1	33-137	12	36
Benzo(g,h,i)perylene	62/ 66/ 78	2	36-135	6	34
EPA Method 5035/8021					
Benzene	112/ 99/ 89	20	59-144	12	25
Toluene	104/ 74/ 78	20	67-132	34	58
Ethylbenzene	106/ 99/ 94	20	60-169	7	28
p-Xylene	104/ 97/ 91	20	62-183	7	24
EPA Method 3550/8310					
Naphthalene	82/ 95/ 86	10	26-125	15	45
Acenaphthene	79/ 90/ 90	10	20-143	13	35
Benzo(a)pyrene	102/122/ 98	1	42-138	18	38
Benzo(g,h,i)perylene	102/126/102	2	51-142	21	26

Environmental Conservation Laboratories Comprehensive QA Plan #960038

< = 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.

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CHAIN OF CUSTODY RECORD

02316

CLIENT NAME: Terra Tech
PROJECT MANAGER: Jon Kucera
PROJECT NUMBER: N6013
PROJECT NAME: Transco pipeline 103rd St.
SAMPLER'S SIGNATURE: [illegible]

STATION NO.	DATE	TIME	COMPOSITE	GRAB	STATION LOCATION	NO. OF CONTAINERS	8021B VOLATILES	PAH 8310							REMARKS
	3/24/99	1101		X	CF-ANOG-TMW-01	3	✓	✓							GW
	3/24/99	1123		X	CF-ANOG-TMW-02	3	✓	✓							GW
	3/24/99	1241		X	CF-ANOG-TMW-03	3	✓	✓							GW
	3/24/99	1349	X		CF-ANOG-SB-03-5	4	✓	✓							Soil
	3/24/99	0001		X	CF-ANOG-TMW-08	3	✓	✓							GW
	3/24/99	1424		X	CF-ANOG-TMW-04	3	✓	✓							GW

EMPTY BOTTLES

RELINQUISHED BY	DATE/TIME	RECEIVED BY	RELINQUISHED BY	DATE/TIME	REMARKS
MD	~~03/31/99 0945~~ MD			3/24/99 1712	Std. turnaround
SAMPLE KIT PREPARED BY: ☐ ORLANDO ☒ JACKSONVILLE	DATE/TIME 3/24/99 1712	RECEIVED BY [illegible]	RECEIVED FOR LABORATORY BY: [illegible]	☒ ORL ☐ JAX	
RELINQUISHED BY	DATE/TIME	RECEIVED BY	Kim Cosey	7:40AM DATE/TIME 3/25/99	#OR5982

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

April 12, 1999

Mr. John Kucera
Tetra Tech NUS
7018 A.C. Skinner Pkwy.
Suite 250
Jacksonville, FL 32256

Login Number (SDG): OR5916
Project Number: N0013/CTO-72
Description: NASJAX/NASCF Jet Fuel Transfer

Case Narrative:

Four water samples and three soil samples were collected on March 19, 1999. All samples were received at ENCO Laboratories, Inc., on March 19, 1999 on wet ice and in good condition. This sample set was inclusive of samples CF-AN-07 (TMW-01,02,03,04 and SB-01-04, SB-02-04 and SB-04-04). All samples were analyzed as requested on the associated sample chain-of-custody forms.

All samples were extracted and analyzed within EPA specified holding times.

The soil sample chosen for performing the matrix spike (MS) and matrix spike duplicate (MSD) for EPA Method 8310 has high background contamination of a petroleum nature. The laboratory was unable to accurately determine the percent recoveries of the spiked compounds due to the matrix interferences present. Per method requirements, the data is validated as acceptable based on the recoveries of the laboratory check sample (LCS) spike results.

The result for the MSD o-Xylene is not reported; the instrument / software integrator malfunctioned and no value was obtained.

Quality Assurance acceptance limits are established by "in-house" statistical determination. This is true for surrogate, MS/MSD and LCS spike recovery evaluations.

Environmental Conservation Laboratories, Inc.

David J. Vesey
Project Manager

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

CLIENT : Tetra Tech NUS
ADDRESS: 7018 A.C. Skinner Parkway
Suite 250
Jacksonville, FL 32256

REPORT # : OR5916
DATE SUBMITTED: March 19, 1999
DATE REPORTED : March 30, 1999

ATTENTION: John Kucera

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

PROJECT #: 0013

NAS JAX-NASCF Jet Fuel Line

03/19/99

#1	- CF-AN07-TMW-01	@ 10:15
#2	- CF-AN07-TMW-02	@ 10:50
#3	- CF-AN07-TMW-03	@ 11:25
#4	- CF-AN07-TMW-04	@ 12:15
#5	- CF-AN07-SB-01-04	@ 10:30
#6	- CF-AN07-SB-02-04	@ 11:00
#7	- CF-AN07-SB-04-04	@ 12:25

ROJECT MANAGER David Vesey

ENCO LABORATORIES
REPORT # : OR5916
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Line

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN07-TMW-01	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	42	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	84	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/24/99	

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

ENCO LABORATORIES
REPORT # : OR5916
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Line

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN07-TMW-01	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	9	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	90	%
Surrogate Control Limits	39-148	%
Date Extracted	03/25/99	
Date Analyzed	03/26/99	

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

ENCO LABORATORIES
REPORT # : OR5916
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Line

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN07-TMW-02	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	43.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	87	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/24/99	

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

ENCO LABORATORIES
REPORT # : OR5916
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Line

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN07-TMW-02	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	10.1	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	101	%
Surrogate Control Limits	39-148	%
Date Extracted	03/25/99	
Date Analyzed	03/26/99	

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

ENCO LABORATORIES
REPORT # : OR5916
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Line

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN07-TMW-03	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	41	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	82	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/24/99	

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

ENCO LABORATORIES
REPORT # : OR5916
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Line

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN07-TMW-03	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	**2.2**	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	**3.2**	µg/L
Pyrene	**2.6**	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	9.1	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	91	%
Surrogate Control Limits	39-148	%
Date Extracted	03/25/99	
Date Analyzed	03/26/99	

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

ENCO LABORATORIES
REPORT # : OR5916
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Line

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN07-TMW-04	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	42	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	84	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/24/99	

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

ENCO LABORATORIES
REPORT # : OR5916
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Line

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN07-TMW-04	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	7.3	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	73	%
Surrogate Control Limits	39-148	%
Date Extracted	03/25/99	
Date Analyzed	03/26/99	

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

ENCO LABORATORIES
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DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Line

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	CF-AN07-SB-01-04	Units
Methyl tert-butyl ether	2.0 U D1	µg/Kg
Benzene	1.2 U D1	µg/Kg
Toluene	1.2 U D1	µg/Kg
Chlorobenzene	1.2 U D1	µg/Kg
Ethylbenzene	1.2 U D1	µg/Kg
m-Xylene & p-Xylene	2.0 U D1	µg/Kg
o-Xylene	1.0 U D1	µg/Kg
1,3-Dichlorobenzene	1.0 U D1	µg/Kg
1,4-Dichlorobenzene	1.0 U D1	µg/Kg
1,2-Dichlorobenzene	1.0 U D1	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	41.5	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	83	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/22/99	

NOTE: Analyte values are reported on a dry weight basis.

U = Compound was analyzed for but not detected to the level shown.
D1 = Analyte value determined from a 1:1.14 dilution.

ENCO LABORATORIES
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DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Line

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	CF-AN07-SB-01-04	Units
Naphthalene	18 U	µg/Kg
Acenaphthylene	36 U	µg/Kg
1-Methylnaphthalene	36 U	µg/Kg
2-Methylnaphthalene	36 U	µg/Kg
Acenaphthene	18 U	µg/Kg
Fluorene	3.6 U	µg/Kg
Phenanthrene	36 U	µg/Kg
Anthracene	**2.0** I	µg/Kg
Fluoranthene	3.6 U	µg/Kg
Pyrene	**5.1** I	µg/Kg
Benzo(a)anthracene	**14**	µg/Kg
Chrysene	**16**	µg/Kg
Benzo(b)fluoranthene	**44**	µg/Kg
Benzo(k)fluoranthene	**32**	µg/Kg
Benzo(a)pyrene	**34**	µg/Kg
Dibenzo(a,h)anthracene	3.6 U	µg/Kg
Benzo(g,h,i)perylene	**29**	µg/Kg
Indeno(1,2,3-cd)pyrene	**33**	µg/Kg
Surrogate: (p-terphenyl)		
Surrogate Reported Value	8.8	µg/Kg
Surrogate Expected Value	10	µg/Kg
Surrogate % Recovery	88	%
Surrogate Control Limits	50-146	%
Date Extracted	03/22/99	
Date Analyzed	03/23/99	

MISCELLANEOUS	METHOD	CF-AN07-SB-01-04	Units
Percent Solids	SM2540G	**92**	%
Date Analyzed		03/24/99	

NOTE: Analyte values are reported on a dry weight basis.

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).

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	CF-AN07-SB-02-04	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	1.0 U	µg/Kg
Toluene	1.0 U	µg/Kg
Chlorobenzene	1.0 U	µg/Kg
Ethylbenzene	1.0 U	µg/Kg
m-Xylene & p-Xylene	2.0 U	µg/Kg
o-Xylene	1.0 U	µg/Kg
1,3-Dichlorobenzene	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	40.5	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	81	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/22/99	

NOTE: Analyte values are reported on a dry weight basis.

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

ENCO LABORATORIES
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DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Line

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	CF-AN07-SB-02-04	Units
Naphthalene	20 U	µg/Kg
Acenaphthylene	39 U	µg/Kg
.-Methylnaphthalene	39 U	µg/Kg
-Methylnaphthalene	39 U	µg/Kg
cenaphthene	20 U	µg/Kg
luorene	3.9 U	µg/Kg
henanthrene	39 U	µg/Kg
nthracene	2.0 U	µg/Kg
luoranthene	3.9 U	µg/Kg
yrene	2.0 U	µg/Kg
enzo(a)anthracene	2.0 U	µg/Kg
hrysene	2.0 U	µg/Kg
enzo(b)fluoranthene	4.0 U	µg/Kg
enzo(k)fluoranthene	2.0 U	µg/Kg
enzo(a)pyrene	2.0 U	µg/Kg
ibenzo(a,h)anthracene	3.9 U	µg/Kg
enzo(g,h,i)perylene	3.9 U	µg/Kg
ideno(1,2,3-cd)pyrene	2.0 U	µg/Kg
irrogate: (p-terphenyl)		
irrogate Reported Value	11	µg/Kg
irrogate Expected Value	10	µg/Kg
irrogate % Recovery	110	%
rrogate Control Limits	50-146	%
te Extracted	03/22/99	
te Analyzed	03/23/99	

SCELLANEOUS	METHOD	CF-AN07-SB-02-04	Units
rcent Solids	SM2540G	85	%
te Analyzed		03/24/99	

TE: Analyte values are reported on a dry weight basis.

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

ENCO LABORATORIES
REPORT # : OR5916
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Line

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	CF-AN07-SB-04-04	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	1.0 U	µg/Kg
Toluene	1.0 U	µg/Kg
Chlorobenzene	1.0 U	µg/Kg
Ethylbenzene	1.0 U	µg/Kg
m-Xylene & p-Xylene	2.0 U	µg/Kg
o-Xylene	1.0 U	µg/Kg
1,3-Dichlorobenzene	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	41.5	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	83	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/22/99	

NOTE: Analyte values are reported on a dry weight basis.

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

ENCO LABORATORIES
REPORT # : OR5916
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Line

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	CF-AN07-SB-04-04	Units
Naphthalene	22 U	µg/Kg
Acenaphthylene	43 U	µg/Kg
1-Methylnaphthalene	43 U	µg/Kg
2-Methylnaphthalene	43 U	µg/Kg
Acenaphthene	22 U	µg/Kg
Fluorene	4.3 U	µg/Kg
Phenanthrene	43 U	µg/Kg
Anthracene	2.0 U	µg/Kg
Fluoranthene	4.3 U	µg/Kg
Pyrene	2.2 U	µg/Kg
Benzo(a)anthracene	2.2 U	µg/Kg
Chrysene	2.2 U	µg/Kg
Benzo(b)fluoranthene	4.0 U	µg/Kg
Benzo(k)fluoranthene	2.0 U	µg/Kg
Benzo(a)pyrene	2.0 U	µg/Kg
Dibenzo(a,h)anthracene	4.3 U	µg/Kg
Benzo(g,h,i)perylene	4.3 U	µg/Kg
Indeno(1,2,3-cd)pyrene	2.2 U	µg/Kg
Surrogate: (p-terphenyl)		
Surrogate Reported Value	10.6	µg/Kg
Surrogate Expected Value	10	µg/Kg
Surrogate % Recovery	106	%
Surrogate Control Limits	50-146	%
Date Extracted	03/22/99	
Date Analyzed	03/23/99	

MISCELLANEOUS	METHOD	CF-AN07-SB-04-04	Units
Percent Solids	SM2540G	77	%
Date Analyzed		03/24/99	

NOTE: Analyte values are reported on a dry weight basis.

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

ENCO LABORATORIES
REPORT # : OR5916
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REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Line

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	44.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	89	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/23/99	

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

ENCO LABORATORIES
REPORT # : OR5916
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Line

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	LAB BLANK	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	10	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	100	%
Surrogate Control Limits	39-148	%
Date Extracted	03/25/99	
Date Analyzed	03/26/99	

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

ENCO LABORATORIES
REPORT # : OR5916
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Line

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	1.0 U	µg/Kg
Toluene	1.0 U	µg/Kg
Chlorobenzene	1.0 U	µg/Kg
Ethylbenzene	1.0 U	µg/Kg
m-Xylene & p-Xylene	2.0 U	µg/Kg
o-Xylene	1.0 U	µg/Kg
1,3-Dichlorobenzene	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	46.5	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	93	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/22/99	

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

ENCO LABORATORIES
REPORT # : OR5916
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Line

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	LAB BLANK	Units
Naphthalene	17 U	µg/Kg
Acenaphthylene	33 U	µg/Kg
-Methylnaphthalene	33 U	µg/Kg
-Methylnaphthalene	33 U	µg/Kg
cenaphthene	17 U	µg/Kg
luorene	3.3 U	µg/Kg
henanthrene	33 U	µg/Kg
nthracene	2.0 U	µg/Kg
luoranthene	3.3 U	µg/Kg
yrene	1.7 U	µg/Kg
enzo(a)anthracene	1.7 U	µg/Kg
hrysene	1.7 U	µg/Kg
enzo(b)fluoranthene	3.0 U	µg/Kg
enzo(k)fluoranthene	2.0 U	µg/Kg
enzo(a)pyrene	2.0 U	µg/Kg
ibenzo(a,h)anthracene	3.3 U	µg/Kg
enzo(g,h,i)perylene	3.3 U	µg/Kg
ndeno(1,2,3-cd)pyrene	1.7 U	µg/Kg
irrogate: (p-terphenyl)		
irrogate Reported Value	8.8	µg/Kg
irrogate Expected Value	10	µg/Kg
irrogate % Recovery	88	%
irrogate Control Limits	50-146	%
ate Extracted	03/22/99	
ate Analyzed	03/22/99	

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

ENCO LABORATORIES
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DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Line

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	LCS Target µg	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 5030/8021					
Benzene	96/ 93/ 84	20	72-134	3	20
Toluene	93/ 90/ 81	20	72-124	3	19
Ethylbenzene	94/ 91/ 81	20	67-129	3	21
o-Xylene	90/ 88/ 78	20	66-131	2	21
EPA Method 3510/8310					
Naphthalene	70/ */ 76	10	22-130	*	20
Acenaphthene	91/ */ 82	10	14-163	*	19
Benzo(a)pyrene	97/ 95/ 82	1	33-137	2	36
Benzo(g,h,i)perylene	94/ 93/ 81	2	36-135	1	34
EPA Method 5035/8021					
Benzene	96/ 94/ 90	20	59-144	2	25
Toluene	83/ 78/ 87	20	67-132	6	58
Ethylbenzene	92/ 84/107	20	60-169	9	28
o-Xylene	84/ NA/ 97	20	62-183	NA	24
EPA Method 3550/8310					
Naphthalene	*/ */ 49	10	26-125	*	45
Acenaphthene	*/ */ 54	10	20-143	*	35
Benzo(a)pyrene	*/ */ 79	1	42-138	*	38
Benzo(g,h,i)perylene	*/ */ 78	2	51-142	*	26

Environmental Conservation Laboratories Comprehensive QA Plan #960038

= Matrix interference; unable to otain accurate recovery
A = Not acquired; malfunction in instrument software integrator
= Less Than
S = Matrix Spike
SD = Matrix Spike Duplicate
CS = Laboratory Control Standard
PD = 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.

CHAIN OF CUSTODY RECORD

01598

PROJECT NO.: 0013

SITE NAME: ~~NASTAX~~ - NASTAX - NASCF Jet Fuel Line

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	8021B	8310					REMARKS
	3/19/99	1015		X	CF-AN07-TMW-01	3	X	X					
	3/19/99	1050		X	CF-AN07-TMW-02	3	X	X					
	3/19/99	1125		X	CF-AN07-TMW-03	3	X	X					
	3/19/99	1215		X	CF-AN07-TMW04	3	X	X					
	3/19/99	1030		X	CF-AN07-SB-01-04	4	X	X					PID Reading of 25.8
	3/19/99	1100		X	CF-AN07-SB-02-04	4	X	X					
	3/19/99	1225		X	CF-AN07-SB-04-04	4	X	X					

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[signature]	3/19/99 1550	[signature]			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
		[signature]			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS:	
		[signature]	3-20-99 8:10Am	# OR5916	

Order No. 70440 (0693)

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

April 1, 1999

Mr. John Kucera
Tetra Tech NUS
7018 A.C. Skinner Pkwy.
Suite 250
Jacksonville, FL 32256

Login Number (SDG): OR5965
Project Number: N0013/CTO-72
Description: NASJAX/NASCF Jet Fuel Transfer

Case Narrative:

Four water samples and one soil sample were collected on March 23, 1999. All samples were received at ENCO Laboratories, Inc., on March 23, 1999 on wet ice and in good condition. This sample set was inclusive of samples CF-AN08 (TMW-01,02,03,04, and SB-02-02). All samples were analyzed as requested on the associated sample chain-of-custody forms.

All samples were extracted and analyzed within EPA specified holding times.

There were no particular difficulties encountered with the sample handling and analyses by Environmental Conservation Laboratories, Inc.

Quality Assurance acceptance limits are established by "in-house" statistical determination. This is true for surrogate, MS/MSD and LCS spike recovery evaluations.

Environmental Conservation Laboratories, Inc.

David J. Vesey
Project Manager

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

CLIENT : Tetra Tech NUS
ADDRESS: 7018 A.C. Skinner Parkway
Suite 250
Jacksonville, FL 32256

REPORT # : OR5965
DATE SUBMITTED: March 23, 1999
DATE REPORTED : March 30, 1999

ATTENTION: John Kucera

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

PROJECT #: 0013

NAS JAX-NASCF Jet Fuel Transfer Line

03/23/99

#1 - CF-AN08-TMW-01 @ 10:18
#2 - CF-AN08-TMW-02 @ 10:44
#3 - CF-AN08-TMW-03 @ 11:16
#4 - CF-AN08-TMW-04 @ 11:57
#5 - CF-AN08-SB-02-02 @ 11:19

ROJECT MANAGER David Vesey

ENCO LABORATORIES
REPORT # : OR5965
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer Line

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN08-TMW-01	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	66	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	132	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/25/99	

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

ENCO LABORATORIES
REPORT # : OR5965
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer Line

RESULTS OF ANALYSIS

:PA METHOD 3510/8310 - 'OLYAROMATIC HYDROCARBONS	CF-AN08-TMW-01	Units
laphthalene	0.50 U	µg/L
cenaphthylene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
cenaphthene	0.50 U	µg/L
luorene	0.10 U	µg/L
henanthrene	1.0 U	µg/L
nthracene	0.050 U	µg/L
luoranthene	0.10 U	µg/L
yrene	0.050 U	µg/L
enzo(a)anthracene	0.050 U	µg/L
hrysene	0.050 U	µg/L
enzo(b)fluoranthene	0.10 U	µg/L
enzo(k)fluoranthene	0.050 U	µg/L
enzo(a)pyrene	0.050 U	µg/L
ibenzo(a,h)anthracene	0.10 U	µg/L
enzo(g,h,i)perylene	0.10 U	µg/L
deno(1,2,3-cd)pyrene	0.050 U	µg/L
rrogate: (p-terphenyl)		
rrogate Reported Value	9.7	µg/L
rrogate Expected Value	10	µg/L
rrogate % Recovery	97	%
rrogate Control Limits	39-148	%
te Extracted	03/25/99	
te Analyzed	03/29/99	

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

ENCO LABORATORIES
REPORT # : OR5965
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer Line

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN08-TMW-02	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	61.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	123	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/25/99	

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

ENCO LABORATORIES
REPORT # : OR5965
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer Line

RESULTS OF ANALYSIS

:PA METHOD 3510/8310 - 'OLYAROMATIC HYDROCARBONS	CF-AN08-TMW-02	Units
'aphthalene	0.50 U	µg/L
.cenaphthylene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
cenaphthene	0.50 U	µg/L
luorene	0.10 U	µg/L
henanthrene	1.0 U	µg/L
nthracene	0.050 U	µg/L
luoranthene	0.10 U	µg/L
yrene	0.050 U	µg/L
enzo(a)anthracene	0.050 U	µg/L
ırysene	0.050 U	µg/L
enzo(b)fluoranthene	0.10 U	µg/L
enzo(k)fluoranthene	0.050 U	µg/L
enzo(a)pyrene	0.050 U	µg/L
.benzo(a,h)anthracene	0.10 U	µg/L
enzo(g,h,i)perylene	0.10 U	µg/L
ıdeno(1,2,3-cd)pyrene	0.050 U	µg/L
ırrogate: (p-terphenyl)		
ırrogate Reported Value	10.9	µg/L
ırrogate Expected Value	10	µg/L
ırrogate % Recovery	109	%
ırrogate Control Limits	39-148	%
.te Extracted	03/25/99	
.te Analyzed	03/30/99	

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

ENCO LABORATORIES
REPORT # : OR5965
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer Line

RESULTS OF ANALYSIS

:PA METHOD 5030/8021 - 'OLATILE AROMATICS	CF-AN08-TMW-03	Units
lethyl tert-butyl ether	2.0 U	µg/L
lenzene	1.0 U	µg/L
'oluene	1.0 U	µg/L
:hlorobenzene	1.0 U	µg/L
:thylbenzene	1.0 U	µg/L
ı-Xylene & p-Xylene	2.0 U	µg/L
ı-Xylene	1.0 U	µg/L
,3-Dichlorobenzene	1.0 U	µg/L
,4-Dichlorobenzene	1.0 U	µg/L
,2-Dichlorobenzene	1.0 U	µg/L
urrogate: (Bromofluorobenzene)		
urrogate Reported Value	69.5	µg/L
urrogate Expected Value	50	µg/L
urrogate % Recovery	139	%
urrogate Control Limits	64-140	%
ate Analyzed	03/25/99	

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

ENCO LABORATORIES
REPORT # : OR5965
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer Line

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN08-TMW-03	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	**0.15** I	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	**0.22**	µg/L
Chrysene	**0.41**	µg/L
Benzo(b)fluoranthene	**0.53**	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	**0.30**	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	**0.80**	µg/L
Indeno(1,2,3-cd)pyrene	**0.29**	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	10.6	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	106	%
Surrogate Control Limits	39-148	%
Date Extracted	03/25/99	
Date Analyzed	03/30/99	

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 # : OR5965
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer Line

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN08-TMW-04	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	45.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	91	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/25/99	

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

ENCO LABORATORIES
REPORT # : OR5965
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer Line

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN08-TMW-04	Units
Naphthalene	0.50 U	µg/L
cenaphthylene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
cenaphthene	0.50 U	µg/L
luorene	0.10 U	µg/L
henanthrene	1.0 U	µg/L
nthracene	0.050 U	µg/L
luoranthene	**0.18**	µg/L
yrene	0.050 U	µg/L
enzo(a)anthracene	0.050 U	µg/L
hrysene	**0.10**	µg/L
enzo(b)fluoranthene	0.10 U	µg/L
enzo(k)fluoranthene	0.050 U	µg/L
enzo(a)pyrene	0.050 U	µg/L
benzo(a,h)anthracene	0.10 U	µg/L
enzo(g,h,i)perylene	0.10 U	µg/L
deno(1,2,3-cd)pyrene	0.050 U	µg/L
rrogate: (p-terphenyl)		
rrogate Reported Value	10.4	µg/L
rrogate Expected Value	10	µg/L
rrogate % Recovery	104	%
rrogate Control Limits	39-148	%
te Extracted	03/25/99	
te Analyzed	03/30/99	

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

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	CF-AN08-SB-02-02	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	1.0 U	µg/Kg
Toluene	1.0 U	µg/Kg
Chlorobenzene	1.0 U	µg/Kg
Ethylbenzene	1.0 U	µg/Kg
m-Xylene & p-Xylene	2.0 U	µg/Kg
o-Xylene	1.0 U	µg/Kg
1,3-Dichlorobenzene	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	37.5	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	75	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/25/99	

NOTE: Analyte values are reported on a dry weight basis.

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

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	CF-AN08-SB-02-02	Units
Naphthalene	98 U D1	µg/Kg
Acenaphthylene	200 U D1	µg/Kg
1-Methylnaphthalene	200 U D1	µg/Kg
2-Methylnaphthalene	200 U D1	µg/Kg
Acenaphthene	110 I D1	µg/Kg
Fluorene	20 U D1	µg/Kg
Phenanthrene	200 U D1	µg/Kg
Anthracene	14 I D1	µg/Kg
Fluoranthene	120 D1	µg/Kg
Pyrene	120 D1	µg/Kg
Benzo(a)anthracene	41 D1	µg/Kg
Chrysene	62 D1	µg/Kg
Benzo(b)fluoranthene	62 D1	µg/Kg
Benzo(k)fluoranthene	26 D1	µg/Kg
Benzo(a)pyrene	68 D1	µg/Kg
Dibenzo(a,h)anthracene	140 D1	µg/Kg
Benzo(g,h,i)perylene	110 D1	µg/Kg
Indeno(1,2,3-cd)pyrene	68 D1	µg/Kg
Surrogate: (p-terphenyl)		
Surrogate Reported Value	NR	µg/Kg
Surrogate Expected Value	10	µg/Kg
Surrogate % Recovery	NR	%
Surrogate Control Limits	50-146	%
Date Extracted	03/26/99	
Date Analyzed	03/28/99	

MISCELLANEOUS	METHOD	CF-AN08-SB-02-02	Units
Percent Solids	SM2540G	85	%
Date Analyzed		03/29/99	

NOTE: Analyte values are reported on a dry weight basis.

NR = Not reported; matrix interferences prevent accurate determination.
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).
D1 = Analyte value determined from a 1:5 dilution.

ENCO LABORATORIES
REPORT # : OR5965
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer Line

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	38	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	76	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/24/99	

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

ENCO LABORATORIES
REPORT # : OR5965
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer Line

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	LAB BLANK	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	10.4	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	104	%
Surrogate Control Limits	39-148	%
Date Extracted	03/25/99	
Date Analyzed	03/29/99	

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

ENCO LABORATORIES
REPORT # : OR5965
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer Line

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	1.0 U	µg/Kg
Toluene	1.0 U	µg/Kg
Chlorobenzene	1.0 U	µg/Kg
Ethylbenzene	1.0 U	µg/Kg
m-Xylene & p-Xylene	2.0 U	µg/Kg
o-Xylene	1.0 U	µg/Kg
1,3-Dichlorobenzene	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	43.5	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	87	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/25/99	

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

ENCO LABORATORIES
REPORT # : OR5965
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer Line

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	LAB BLANK	Units
Naphthalene	17 U	µg/Kg
Acenaphthylene	33 U	µg/Kg
-Methylnaphthalene	33 U	µg/Kg
-Methylnaphthalene	33 U	µg/Kg
cenaphthene	17 U	µg/Kg
luorene	3.3 U	µg/Kg
henanthrene	33 U	µg/Kg
nthracene	2.0 U	µg/Kg
luoranthene	3.3 U	µg/Kg
yrene	1.7 U	µg/Kg
enzo(a)anthracene	1.7 U	µg/Kg
hrysene	1.7 U	µg/Kg
enzo(b)fluoranthene	3.0 U	µg/Kg
enzo(k)fluoranthene	2.0 U	µg/Kg
enzo(a)pyrene	2.0 U	µg/Kg
ibenzo(a,h)anthracene	3.3 U	µg/Kg
enzo(g,h,i)perylene	3.3 U	µg/Kg
ideno(1,2,3-cd)pyrene	1.7 U	µg/Kg
rrogate: (p-terphenyl)		
rrogate Reported Value	12	µg/Kg
rrogate Expected Value	10	µg/Kg
rrogate % Recovery	120	%
rrogate Control Limits	50-146	%
te Extracted	03/26/99	
te Analyzed	03/27/99	

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

ENCO LABORATORIES
REPORT # : OR5965
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer Line

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	LCS Target µg	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 5030/8021					
Benzene	87/ 86/ 74	20	72-134	1	20
Toluene	83/ 82/ 68	20	72-124	1	19
Ethylbenzene	82/ 82/ 62	20	67-129	<1	21
o-Xylene	79/ 79/ 72	20	66-131	<1	21
PA Method 3510/8310					
Naphthalene	43/ 56/ 67	10	22-130	26	20
cenaphthene	63/ 88/ 69	10	14-163	33	19
enzo(a)pyrene	85/ 86/ 96	1	33-137	1	36
o(g,h,i)perylene	78/ 78/ 75	2	36-135	<1	34
PA Method 5035/8021					
enzene	112/ 99/ 89	20	59-144	12	25
oluene	104/ 74/ 78	20	67-132	34	58
thylbenzene	106/ 99/ 94	20	60-169	7	28
-Xylene	104/ 97/ 91	20	62-183	7	24
PA Method 3550/8310					
aphthalene	82/ 95/ 85	10	26-125	15	45
cenaphthene	79/ 90/ 81	10	20-143	13	35
enzo(a)pyrene	102/122/ 87	1	42-138	18	38
enzo(g,h,i)perylene	102/126/ 96	2	51-142	21	26

vironmental Conservation Laboratories Comprehensive QA Plan #960038

= Less Than
= Matrix Spike
D = Matrix Spike Duplicate
S = Laboratory Control Standard
D = Relative Percent Difference

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

CHAIN OF CUSTODY RECORD

PROJECT NO.:	SITE NAME:
0013	NASTAX-NASCF Jet Fuel Transfer

SAMPLERS (SIGNATURE):

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	P021B	8310					REMARKS
	3/23/99	1018		X	CF-ANCB-TMW-01	3	X	X					
	3/23/99	1044		X	CF-ANCB-TMW-02	3	X	X					
	3/23/99	1116		X	CF-ANCB-TMW-03	3	X	X					
	3/23/99	1157		X	CF-ANCB-TMW-04	3	X	X					
	3/23/99	1119		X	CF-ANCB-SB-02-02	4	X	X					

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
	3/23/99 1640				
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS:	
			3/24/99 10:30AM	# OR5765	

Order No. 70440 (06

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

April 12, 1999

Mr. John Kucera
Tetra Tech NUS
7018 A.C. Skinner Pkwy.
Suite 250
Jacksonville, FL 32256

Login Number (SDG): OR5917
Project Number: NO013/CTO-72
Description: NASJAX/NASCF Jet Fuel Transfer

Case Narrative:

Five water samples and one soil sample were collected on March 19, 1999. All samples were received at ENCO Laboratories, Inc., on March 19, 1999 on wet ice and in good condition. This sample set was inclusive of samples CF-AN-09 (TMW-01,02,03,04,05 and SB-03-02. All samples were analyzed as requested on the associated sample chain-of-custody forms.

All samples were extracted and analyzed within EPA specified holding times.

The soil sample chosen for performing the matrix spike (MS) and matrix spike duplicate (MSD) for EPA Method 8310 has high background contamination of a petroleum nature. The laboratory was unable to accurately determine the percent recoveries of the spiked compounds due to the matrix interferences present. Per method requirements, the data is validated as acceptable based on the recoveries of the laboratory check sample (LCS) spike results.

The results of the volatile organic compound analysis by EPA Method 5035/8021 reported for the sample identified as CF-AN09-SB-03-02 are flagged as being reported from a 1:1.06 dilution; this is actually an data adjustment made due to the "encore" prep factor where the weight of the soil in the sample container is < 5 grams. (5 grams / wt. of sample = prep factor).

Quality Assurance acceptance limits are established by "in-house" statistical determination. This is true for surrogate, MS/MSD and LCS spike recovery evaluations.

Environmental Conservation Laboratories, Inc.

David J. Vesey
Project Manager

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
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ENCO Laboratories

DHRS Certification No. E83182

CLIENT : Tetra Tech NUS
ADDRESS: 7018 A.C. Skinner Parkway
Suite 250
Jacksonville, FL 32256

REPORT # : OR5917
DATE SUBMITTED: March 19, 1999
DATE REPORTED : March 30, 1999

ATTENTION: John Kucera

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

PROJECT #: 0013

NAS JAX-NASCF Jet Fuel Transfer

03/19/99

#1	- CF-AN09-TMW-01	@ 10:20
#2	- CF-AN09-TMW-02	@ 10:45
#3	- CF-AN09-TMW-03	@ 11:04
#4	- CF-AN09-TMW-04	@ 11:37
#5	- CF-AN09-TMW-05	@ 12:01
#6	- CF-AN09-SB-03-02	@ 11:56

ROJECT MANAGER David Vesey

ENCO LABORATORIES
REPORT # : OR5917
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS

	CF-AN09-TMW-01	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	41.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	83	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/23/99	

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

ENCO LABORATORIES
REPORT # : OR5917
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

:PA METHOD 3510/8310 - 'OLYAROMATIC HYDROCARBONS	CF-AN09-TMW-01	Units
Iaphthalene	0.50 U	µg/L
ıcenaphthylene	1.0 U	µg/L
.-Methylnaphthalene	1.0 U	µg/L
:-Methylnaphthalene	1.0 U	µg/L
ıcenaphthene	0.50 U	µg/L
'luorene	0.10 U	µg/L
'henanthrene	1.0 U	µg/L
ınthracene	0.050 U	µg/L
'luoranthene	**0.10** I	µg/L
yrene	0.050 U	µg/L
enzo(a)anthracene	0.050 U	µg/L
hrysene	0.050 U	µg/L
enzo(b)fluoranthene	0.10 U	µg/L
enzo(k)fluoranthene	0.050 U	µg/L
enzo(a)pyrene	0.050 U	µg/L
ibenzo(a,h)anthracene	0.10 U	µg/L
enzo(g,h,i)perylene	0.10 U	µg/L
ndeno(1,2,3-cd)pyrene	0.050 U	µg/L
ırrogate: (p-terphenyl)		
ırrogate Reported Value	8.4	µg/L
ırrogate Expected Value	10	µg/L
ırrogate % Recovery	84	%
ırrogate Control Limits	39-148	%
ıte Extracted	03/25/99	
ıte Analyzed	03/26/99	

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

ENCO LABORATORIES
REPORT # : OR5917
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN09-TMW-02	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	40	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	80	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/23/99	

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

ENCO LABORATORIES
REPORT # : OR5917
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN09-TMW-02	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
[illegible]anthrene	1.0 U	µg/L
[illegible]hracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	8.3	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	83	%
Surrogate Control Limits	39-148	%
Date Extracted	03/25/99	
Date Analyzed	03/26/99	

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

ENCO LABORATORIES
REPORT # : OR5917
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN09-TMW-03	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	37.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	75	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/23/99	

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

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN09-TMW-03	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	8.2	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	82	%
Surrogate Control Limits	39-148	%
Date Extracted	03/25/99	
Date Analyzed	03/28/99	

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

ENCO LABORATORIES
REPORT # : OR5917
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN09-TMW-04	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	38.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	77	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/23/99	

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

ENCO LABORATORIES
REPORT # : OR5917
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN09-TMW-04	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	**0.21**	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	**1.7**	µg/L
Benzo(k)fluoranthene	**0.14**	µg/L
Benzo(a)pyrene	**0.060** I	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	**0.12**	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	6.9	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	69	%
Surrogate Control Limits	39-148	%
Date Extracted	03/25/99	
Date Analyzed	03/27/99	

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

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN09-TMW-05	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	41	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	82	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/23/99	

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

ENCO LABORATORIES
REPORT # : OR5917
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN09-TMW-05	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	**0.090** I	µg/L
Fluoranthene	**0.12** I	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	**0.14**	µg/L
Chrysene	**0.47**	µg/L
Benzo(b)fluoranthene	**0.30**	µg/L
Benzo(k)fluoranthene	**0.16**	µg/L
Benzo(a)pyrene	**0.12**	µg/L
Dibenzo(a,h)anthracene	**0.14** I	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	**0.16**	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	9.3	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	93	%
Surrogate Control Limits	39-148	%
Date Extracted	03/25/99	
Date Analyzed	03/27/99	

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).

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	CF-AN09-SB-03-02	Units
Methyl tert-butyl ether	2.0 U D1	µg/Kg
Benzene	1.2 U D1	µg/Kg
Toluene	1.2 U D1	µg/Kg
Chlorobenzene	1.2 U D1	µg/Kg
Ethylbenzene	1.2 U D1	µg/Kg
m-Xylene & p-Xylene	2.0 U D1	µg/Kg
o-Xylene	1.0 U D1	µg/Kg
1,3-Dichlorobenzene	1.0 U D1	µg/Kg
1,4-Dichlorobenzene	1.0 U D1	µg/Kg
1,2-Dichlorobenzene	1.0 U D1	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	32.5	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	65	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/22/99	

NOTE: Analyte values are reported on a dry weight basis.

U Compound was analyzed for but not detected to the level shown.
D1 = Analyte value determined from a 1:1.06 dilution.

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	CF-AN09-SB-03-02	Units
Naphthalene	18 U	µg/Kg
Acenaphthylene	37 U	µg/Kg
1-Methylnaphthalene	37 U	µg/Kg
2-Methylnaphthalene	37 U	µg/Kg
Acenaphthene	**42**	µg/Kg
Fluorene	3.7 U	µg/Kg
Phenanthrene	37 U	µg/Kg
Anthracene	**3.0** I	µg/Kg
Fluoranthene	3.7 U	µg/Kg
Pyrene	1.8 U	µg/Kg
Benzo(a)anthracene	**11**	µg/Kg
Chrysene	**35**	µg/Kg
Benzo(b)fluoranthene	**47**	µg/Kg
Benzo(k)fluoranthene	**12**	µg/Kg
Benzo(a)pyrene	**32**	µg/Kg
Dibenzo(a,h)anthracene	**160**	µg/Kg
Benzo(g,h,i)perylene	**56**	µg/Kg
Indeno(1,2,3-cd)pyrene	**50**	µg/Kg
Surrogate: (p-terphenyl)		
Surrogate Reported Value	9.2	µg/Kg
Surrogate Expected Value	10	µg/Kg
Surrogate % Recovery	92	%
Surrogate Control Limits	50-146	%
Date Extracted	03/22/99	
Date Analyzed	03/23/99	

MISCELLANEOUS	METHOD	CF-AN09-SB-03-02	Units
Percent Solids	SM2540G	**91**	%
Date Analyzed		03/24/99	

NOTE: Analyte values are reported on a dry weight basis.

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).

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	44.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	89	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/23/99	

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

ENCO LABORATORIES
REPORT # : OR5917
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	LAB BLANK	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	10	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	100	%
Surrogate Control Limits	39-148	%
Date Extracted	03/25/99	
Date Analyzed	03/26/99	

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

ENCO LABORATORIES
REPORT # : OR5917
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	1.0 U	µg/Kg
Toluene	1.0 U	µg/Kg
Chlorobenzene	1.0 U	µg/Kg
Ethylbenzene	1.0 U	µg/Kg
m-Xylene & p-Xylene	2.0 U	µg/Kg
o-Xylene	1.0 U	µg/Kg
1,3-Dichlorobenzene	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	41	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	82	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/21/99	

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

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	LAB BLANK	Units
Naphthalene	17 U	µg/Kg
Acenaphthylene	33 U	µg/Kg
1-Methylnaphthalene	33 U	µg/Kg
2-Methylnaphthalene	33 U	µg/Kg
Acenaphthene	17 U	µg/Kg
Fluorene	3.3 U	µg/Kg
Phenanthrene	33 U	µg/Kg
Anthracene	2.0 U	µg/Kg
Fluoranthene	3.3 U	µg/Kg
Pyrene	1.7 U	µg/Kg
enzo(a)anthracene	1.7 U	µg/Kg
hrysene	1.7 U	µg/Kg
enzo(b)fluoranthene	3.0 U	µg/Kg
enzo(k)fluoranthene	2.0 U	µg/Kg
enzo(a)pyrene	2.0 U	µg/Kg
ibenzo(a,h)anthracene	3.3 U	µg/Kg
enzo(g,h,i)perylene	3.3 U	µg/Kg
ndeno(1,2,3-cd)pyrene	1.7 U	µg/Kg
urrogate: (p-terphenyl)		
urrogate Reported Value	8.8	µg/Kg
urrogate Expected Value	10	µg/Kg
urrogate % Recovery	88	%
urrogate Control Limits	50-146	%
ate Extracted	03/22/99	
ate Analyzed	03/22/99	

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

ENCO LABORATORIES
REPORT # : OR5917
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	LCS Target µg	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 5030/8021					
Benzene	96/ 93/105	20	72-134	3	20
Toluene	93/ 90/103	20	72-124	3	19
Ethylbenzene	94/ 91/103	20	67-129	3	21
o-Xylene	90/ 88/101	20	66-131	2	21
EPA Method 3510/8310					
Naphthalene	70/ */ 76	10	22-130	*	20
Acenaphthene	91/ */ 82	10	14-163	*	19
Benzo(a)pyrene	97/ 95/ 82	1	33-137	2	36
B[illegible]o(g,h,i)perylene	94/ 93/ 81	2	36-135	1	34
EPA Method 5035/8021					
Benzene	89/ 87/100	20	59-144	2	25
Toluene	91/ 91/100	20	67-132	<1	58
Ethylbenzene	105/101/111	20	60-169	4	28
o-Xylene	97/122/106	20	62-183	23	24
EPA Method 3550/8310					
Naphthalene	*/ */ 49	10	26-125	*	45
Acenaphthene	*/ */ 54	10	20-143	*	35
Benzo(a)pyrene	*/ */ 79	1	42-138	*	38
Benzo(g,h,i)perylene	*/ */ 78	2	51-142	*	26

nvironmental Conservation Laboratories Comprehensive QA Plan #960038

= Matrix interference; unable to obtain accurate recovery
= Less Than
S = Matrix Spike
SD = Matrix Spike Duplicate
CS = Laboratory Control Standard
PD = Relative Percent Difference

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

CHAIN OF CUSTODY RECORD

01599

PROJECT NO.: 0013

SITE NAME: NASJAX-NASCF Jet Fuel Transfer

SAMPLERS (SIGNATURE): for/Jennifer Elliot

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	7021B	8310						REMARKS
	3/19/99	1020		X	CF-AN09-TMW-01	3	X	X						
	3/19/99	1045		X	CF-AN09-TMW-02	3	X	X						
	3/19/99	1104		X	CF-AN09-TMW-03	3	X	X						
	3/19/99	1137		X	CF-AN09-TMW-04	3	X	X						
	3/19/99	1201		X	CF-AN09-TMW-05	3	X	X						
	3/19/99	1156		X	CF-AN09-SB-03-02	4	X	X						

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
	3/19/99 1350	Amy Potter			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS:	
		Kim Casey	3/20/99 8:10AM	#OR5917	

Order No. 70440 (0692)

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

April 1, 1999

Mr. John Kucera
Tetra Tech NUS
7018 A.C. Skinner Pkwy.
Suite 250
Jacksonville, FL 32256

Login Number (SDG): OR5898
Project Number: NO013/CTO-72
Description: NASJAX/NASCF Jet Fuel Transfer

Case Narrative:

Four water samples and one soil sample were collected on March 18, 1999. All samples were received at ENCO Laboratories, Inc., on March 18, 1999 on wet ice and in good condition. This sample set was inclusive of samples CF-AN10 (TMW-01,02,03,04 and SB-03-01). All samples were analyzed as requested on the associated sample chain-of-custody forms.

All samples were extracted and analyzed within EPA specified holding times.

The laboratory method blank prepared and analyzed with the water samples by EPA Method 3510/8310 showed a detectable level of contamination of a target analyte, benzo(a)pyrene. This analyte is also detected and reported in the client's samples, ID #'s CF-AN15-TMW-01, CF-AN15-TMW-02, and CF-AN15-TMW-03. The presence of this positively identified compound is suspected as being a laboratory artifact and may not actually be present in the sample. Based on the presence of other petroleum related compounds determined to be in the samples, and patterns consistent with petroleum distillate residues, neither of which are present in the laboratory method blank, the laboratory cannot make a positive statement that the benzo(a)pyrene is not present in the samples and is unable to determine the level of bias a potential laboratory artifact might induce. The laboratory determined the presence of the contaminant after the recommended holding time for extraction had expired. Viable sample for reanalysis is not available.

The laboratory has vigorously pursued the origin of this contaminant and has determined the likely source in one of the laboratory supplies used for the preparation of the sample extracts prior to analyses. The laboratory has made changes in the standard operating procedures (SOP's) to eradicate the potential for this artifact occurring in the future.

The soil sample chosen for performing the matrix spike (MS) and matrix spike duplicate (MSD) for EPA Method 8310 has high background contamination of a petroleum nature. The laboratory was unable to accurately determine the percent recoveries of the spiked compounds due to the matrix interferences present. Per method requirements, the data is validated as acceptable based on the acceptable recoveries of the laboratory check sample (LCS) spike results.

Quality Assurance acceptance limits are established by "in-house" statistical determination. This is true for surrogate, MS/MSD and LCS spike recovery evaluations.

The laboratory is providing separate reports per chain-of-custody received as requested by the client.

Environmental Conservation Laboratories, Inc.

David J. Vesey
Project Manager

David J. Vesey

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

CLIENT : Tetra Tech NUS
ADDRESS: 7018 A.C. Skinner Parkway
Suite 250
Jacksonville, FL 32256

REPORT # : OR5898
DATE SUBMITTED: March 18, 1999
DATE REPORTED : March 30, 1999

ATTENTION: John Kucera

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

PROJECT #: 0013

NAS JAX-NASCF Jet Fuel Transfer

03/18/99

#1 - CF-AN10-TMW-01 @ 11:36
#2 - CF-AN10-TMW-02 @ 13:04
#3 - CF-AN10-TMW-03 @ 14:09
#4 - CF-AN10-SB-03-01 @ 13:49
#5 - CF-AN10-TMW-04 @ 16:11

PROJECT MANAGER David Vesey

ENCO LABORATORIES
REPORT # : OR5898
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

:PA METHOD 5030/8021 - 'OLATILE AROMATICS	CF-AN10-TMW-01	Units
lethyl tert-butyl ether	2.0 U	µg/L
ıenzene	1.0 U	µg/L
'oluene	1.0 U	µg/L
'hlorobenzene	1.0 U	µg/L
thylbenzene	1.0 U	µg/L
-Xylene & p-Xylene	2.0 U	µg/L
-Xylene	1.0 U	µg/L
,3-Dichlorobenzene	1.0 U	µg/L
,4-Dichlorobenzene	1.0 U	µg/L
,2-Dichlorobenzene	1.0 U	µg/L
ırrogate: (Bromofluorobenzene)		
ırrogate Reported Value	38	µg/L
ırrogate Expected Value	50	µg/L
ırrogate % Recovery	76	%
ırrogate Control Limits	64-140	%
ıte Analyzed	03/23/99	

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

ENCO LABORATORIES
REPORT # : OR5898
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN10-TMW-01	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	**0.37**	µg/L
Pyrene	**0.13** I	µg/L
B[illegible]o(a)anthracene	**0.090**	µg/L
Chrysene	**0.12**	µg/L
Benzo(b)fluoranthene	**0.25**	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	**0.41** V	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	**0.17** I	µg/L
Indeno(1,2,3-cd)pyrene	**0.27**	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	7.3	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	73	%
Surrogate Control Limits	39-148	%
Date Extracted	03/25/99	
Date Analyzed	03/26/99	

= Analyte detected in laboratory method blank.
[illegible] Compound was analyzed for but not detected to the level shown.
Analyte detected; value is between the Method Detection Level (MDL) and the Practical Quantitation Level (PQL).

ENCO LABORATORIES
REPORT # : OR5898
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN10-TMW-02	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	38.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	77	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/23/99	

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

ENCO LABORATORIES
REPORT # : OR5898
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN10-TMW-02	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	**0.30**	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	**0.060** I	µg/L
Fluoranthene	**0.17**	µg/L
Pyrene	**0.11** I	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	**0.14** I	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	**0.11** V	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	**0.080**	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	8.3	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	83	%
Surrogate Control Limits	39-148	%
Date Extracted	03/25/99	
Date Analyzed	03/26/99	

U = Analyte detected in laboratory method blank.
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 # : OR5898
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN10-TMW-03	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	38.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	77	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/23/99	

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

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN10-TMW-03	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	**0.11** I	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	**0.060** I	µg/L
Fluoranthene	**1.2**	µg/L
Pyrene	**1.2**	µg/L
[illegible]o(a)anthracene	**0.46**	µg/L
Chrysene	**0.72**	µg/L
enzo(b)fluoranthene	**1.4**	µg/L
enzo(k)fluoranthene	**0.48**	µg/L
enzo(a)pyrene	**0.88** V	µg/L
ibenzo(a,h)anthracene	**2.8**	µg/L
enzo(g,h,i)perylene	**1.4**	µg/L
ndeno(1,2,3-cd)pyrene	**1.4**	µg/L
urrogate: (p-terphenyl)		
urrogate Reported Value	6.9	µg/L
urrogate Expected Value	10	µg/L
urrogate % Recovery	69	%
urrogate Control Limits	39-148	%
ate Extracted	03/25/99	
ate Analyzed	03/26/99	

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

ENCO LABORATORIES
REPORT # : OR5898
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	CF-AN10-SB-03-01	Units
Methyl tert-butyl ether	3.0 U	µg/Kg
Benzene	1.2 U	µg/Kg
Toluene	1.2 U	µg/Kg
Chlorobenzene	1.2 U	µg/Kg
Ethylbenzene	1.2 U	µg/Kg
m-Xylene & p-Xylene	3.0 U	µg/Kg
o-Xylene	1.2 U	µg/Kg
1,3-Dichlorobenzene	1.2 U	µg/Kg
1,4-Dichlorobenzene	1.2 U	µg/Kg
1,2-Dichlorobenzene	1.2 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	38.5	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	77	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/21/99	

NOTE: Analyte values are reported on a dry weight basis.

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

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	CF-AN10-SB-03-01	Units
Naphthalene	22 U	µg/Kg
Acenaphthylene	44 U	µg/Kg
1-Methylnaphthalene	44 U	µg/Kg
2-Methylnaphthalene	44 U	µg/Kg
Acenaphthene	22 U	µg/Kg
Fluorene	4.4 U	µg/Kg
Phenanthrene	44 U	µg/Kg
Anthracene	4.0 I	µg/Kg
Fluoranthene	140	µg/Kg
Pyrene	130	µg/Kg
Benzo(a)anthracene	42	µg/Kg
Chrysene	71	µg/Kg
Benzo(b)fluoranthene	63	µg/Kg
Benzo(k)fluoranthene	37	µg/Kg
Benzo(a)pyrene	42	µg/Kg
Dibenzo(a,h)anthracene	41	µg/Kg
Benzo(g,h,i)perylene	33	µg/Kg
Indeno(1,2,3-cd)pyrene	46	µg/Kg
Surrogate: (p-terphenyl)		
Surrogate Reported Value	7.7	µg/Kg
Surrogate Expected Value	10	µg/Kg
Surrogate % Recovery	77	%
Surrogate Control Limits	50-146	%
Date Extracted	03/22/99	
Date Analyzed	03/23/99	

MISCELLANEOUS	METHOD	CF-AN10-SB-03-01	Units
Percent Solids	SM2540G	76	%
Date Analyzed		03/24/99	

NOTE: Analyte values are reported on a dry weight basis.

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 # : OR5898
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN10-TMW-04	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	39	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	78	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/23/99	

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

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN10-TMW-04	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	**5.9**	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	**0.21**	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	**0.16**	µg/L
Fluoranthene	**0.59**	µg/L
Pyrene	**0.32**	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	**0.28**	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	14.1	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	141	%
Surrogate Control Limits	39-148	%
Date Extracted	03/25/99	
Date Analyzed	03/26/99	

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

ENCO LABORATORIES
REPORT # : OR5898
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	44.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	89	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/23/99	

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

ENCO LABORATORIES
REPORT # : OR5898
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	LAB BLANK	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
B[illegible]o(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	**0.10** I	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	12.2	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	122	%
Surrogate Control Limits	39-148	%
Date Extracted	03/25/99	
Date Analyzed	03/26/99	

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 # : OR5898
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	1.0 U	µg/Kg
Toluene	1.0 U	µg/Kg
Chlorobenzene	1.0 U	µg/Kg
Ethylbenzene	1.0 U	µg/Kg
m-Xylene & p-Xylene	2.0 U	µg/Kg
o-Xylene	1.0 U	µg/Kg
1,3-Dichlorobenzene	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	41	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	82	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/21/99	

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

ENCO LABORATORIES
REPORT # : OR5898
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	LAB BLANK	Units
Naphthalene	17 U	µg/Kg
Acenaphthylene	33 U	µg/Kg
1-Methylnaphthalene	33 U	µg/Kg
2-Methylnaphthalene	33 U	µg/Kg
Acenaphthene	17 U	µg/Kg
Fluorene	3.3 U	µg/Kg
Phenanthrene	33 U	µg/Kg
Anthracene	2.0 U	µg/Kg
Fluoranthene	3.3 U	µg/Kg
Pyrene	1.7 U	µg/Kg
Benzo(a)anthracene	1.7 U	µg/Kg
Chrysene	1.7 U	µg/Kg
Benzo(b)fluoranthene	3.0 U	µg/Kg
Benzo(k)fluoranthene	2.0 U	µg/Kg
Benzo(a)pyrene	2.0 U	µg/Kg
Dibenzo(a,h)anthracene	3.3 U	µg/Kg
Benzo(g,h,i)perylene	3.3 U	µg/Kg
Indeno(1,2,3-cd)pyrene	1.7 U	µg/Kg
Surrogate: (p-terphenyl)		
Surrogate Reported Value	8.8	µg/Kg
Surrogate Expected Value	10	µg/Kg
Surrogate % Recovery	88	%
Surrogate Control Limits	50-146	%
Date Extracted	03/22/99	
Date Analyzed	03/22/99	

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

ENCO LABORATORIES
REPORT # : OR5898
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	LCS Target µg	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
PA Method 5030/8021					
enzene	96/ 93/105	20	72-134	3	20
oluene	93/ 90/103	20	72-124	3	19
thylbenzene	94/ 91/103	20	67-129	3	21
-Xylene	90/ 88/101	20	66-131	2	21
PA Method 3510/8310					
aphthalene	70/ */ 52	10	22-130	*	20
cenaphthene	91/ */ 71	10	14-163	*	19
enzo(a)pyrene	97/ 95/ 95	1	33-137	2	36
enzo(g,h,i)perylene	94/ 93/103	2	36-135	1	34
PA Method 5035/8021					
enzene	89/ 87/100	20	59-144	2	25
oluene	91/ 91/100	20	67-132	<1	58
thylbenzene	105/101/111	20	60-169	4	28
-Xylene	97/122/106	20	62-183	23	24
PA Method 3550/8310					
aphthalene	*/ */ 49	10	26-125	*	45
enaphthene	*/ */ 54	10	20-143	*	35
nzo(a)pyrene	*/ */ 79	1	42-138	*	38
nzo(g,h,i)perylene	*/ */ 78	2	51-142	*	26

vironmental Conservation Laboratories Comprehensive QA Plan #960038

= Matrix interference; unable to obtain accurate recovery
= Less Than
= Matrix Spike
D = Matrix Spike Duplicate
S = Laboratory Control Standard
D = Relative Percent Difference

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

CHAIN OF CUSTODY RECORD

01596

PROJECT NO.:	SITE NAME:
0013	NASJAX - NASCF Jet Fuel Transfer

SAMPLERS (SIGNATURE):

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	80213	8310					REMARKS
	3/18/99	1136		X	CF-AN10-TMW-01	3	X	X					
	3/18/99	1304		X	CF-AN10-TMW-02	3	X	X					
	3/18/99	1409		X	CF-AN10-TMW-03	3	X	X					
	3/18/99	1349		X	CF-AN10-SB-03-01	4	X	X					
	3/18/99	1611		X	CF-AN10-TMW-04	3	X	X					

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
	3-18-99 / 1715	Scott D Mitz			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS:	
		Kim Casey	3/19/99 7:30AM	#OR5898	

Order No. 70440 (0693)

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

April 12, 1999

Mr. John Kucera
Tetra Tech NUS
7018 A.C. Skinner Pkwy.
Suite 250
Jacksonville, FL 32256

Login Number (SDG): OR5877.1
Project Number: N0013/CTO-72
Description: NASJAX/NASCF Jet Fuel Transfer

Case Narrative:

Four water samples and three soil samples were collected on March 17, 1999. All samples were received at ENCO Laboratories, Inc., on March 17, 1999 on wet ice and in good condition. This sample set was inclusive of samples CF-AN11 (TMW-01,02,03,04 and SB-02-15, SB-02B-05, SB-03-04). The sample submitted and identified as SB-03-04 was not on the accompanying chain-of-custody. This sample was analyzed following the protocols listed for the other associated samples. All samples were analyzed as requested on the associated sample chain-of-custody forms.

All samples were extracted and analyzed within EPA specified holding times.

The analysis by EPA Method 3550/8310, performed on soil sample CF-AN11-SB-02B-05, required a dilution of 1:50 due to high concentrations of both target and background organic compounds. The numbers reported within the body of the report have been adjusted for this dilution factor. Matrix interferences present in this sample and the resultant dilution prevented accurate determination of the surrogate recovery.

The soil sample chosen for performing the matrix spike (MS) and matrix spike duplicate (MSD) for EPA Method 8310 has high background contamination of a petroleum nature. The laboratory was unable to accurately determine the percent recoveries of the spiked compounds due to the matrix interferences present. Per method requirements, the data is validated as acceptable based on the acceptable recoveries of the laboratory check sample (LCS) spike results.

Quality Assurance acceptance limits is established by "in-house" statistical determination. This is true for surrogate, MS/MSD and LCS spike recovery evaluations.

The laboratory is providing separate reports per chain-of-custody received as requested by the client.

Environmental Conservation Laboratories, Inc.

David J. Vesey
Project Manager

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

CLIENT : Tetra Tech NUS
ADDRESS: 7018 A.C. Skinner Parkway
Suite 250
Jacksonville, FL 32256

REPORT # : OR5877.1
DATE SUBMITTED: March 17, 1999
DATE REPORTED : March 25, 1999

ATTENTION: John Kucera

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

PROJECT #: 0013

NAS JAX-NASCF Jet Fuel Transfer

03/17/99

#1	- CF-AN11-TMW-01	@ 11:30
#2	- CF-AN11-TMW-02	@ 12:55
#3	- CF-AN11-TMW-03	@ 14:40
#4	- CF-AN11-TMW-04	@ 16:10
#5	- CF-AN11-SB-02-15	@ 12:40
#6	- CF-AN11-SB-02B-05	@ 16:20
#7	- CF-AN11-SB-03-04	@ 14:55

PROJECT MANAGER David Vesey

ENCO LABORATORIES
REPORT # : OR5877.1
DATE REPORTED: March 25, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN11-TMW-01	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	41.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	83	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/19/99	

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

ENCO LABORATORIES
REPORT # : OR5877.1
DATE REPORTED: March 25, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN11-TMW-01	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	6.0	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	60	%
Surrogate Control Limits	39-148	%
Date Extracted	03/23/99	
Date Analyzed	03/23/99	

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

ENCO LABORATORIES
REPORT # : OR5877.1
DATE REPORTED: March 25, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN11-TMW-02	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	52	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	104	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/19/99	

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

ENCO LABORATORIES
REPORT # : OR5877.1
DATE REPORTED: March 25, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN11-TMW-02	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	10.6	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	106	%
Surrogate Control Limits	39-148	%
Date Extracted	03/23/99	
Date Analyzed	03/23/99	

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

ENCO LABORATORIES
REPORT # : OR5877.1
DATE REPORTED: March 25, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN11-TMW-03	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	40	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	80	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/19/99	

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

ENCO LABORATORIES
REPORT # : OR5877.1
DATE REPORTED: March 25, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN11-TMW-03	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	13	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	130	%
Surrogate Control Limits	39-148	%
Date Extracted	03/23/99	
Date Analyzed	03/24/99	

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

ENCO LABORATORIES
REPORT # : OR5877.1
DATE REPORTED: March 25, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN11-TMW-04	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	42.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	85	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/19/99	

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

ENCO LABORATORIES
REPORT # : OR5877.1
DATE REPORTED: March 25, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN11-TMW-04	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	10.5	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	105	%
Surrogate Control Limits	39-148	%
Date Extracted	03/23/99	
Date Analyzed	03/23/99	

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

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	CF-AN11-SB-02-15	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	1.1 U	µg/Kg
Toluene	1.1 U	µg/Kg
Chlorobenzene	1.1 U	µg/Kg
Ethylbenzene	1.1 U	µg/Kg
m-Xylene & p-Xylene	2.0 U	µg/Kg
o-Xylene	1.1 U	µg/Kg
1,3-Dichlorobenzene	1.1 U	µg/Kg
1,4-Dichlorobenzene	1.1 U	µg/Kg
1,2-Dichlorobenzene	1.1 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	35	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	70	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/21/99	

NOTE: Analyte values are reported on a dry weight basis.

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

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	CF-AN11-SB-02-15	Units
Naphthalene	21 U	µg/Kg
Acenaphthylene	42 U	µg/Kg
1-Methylnaphthalene	42 U	µg/Kg
2-Methylnaphthalene	42 U	µg/Kg
Acenaphthene	21 U	µg/Kg
Fluorene	4.2 U	µg/Kg
Phenanthrene	42 U	µg/Kg
Anthracene	2.0 U	µg/Kg
Fluoranthene	4.2 U	µg/Kg
Pyrene	2.1 U	µg/Kg
Benzo(a)anthracene	2.1 U	µg/Kg
Chrysene	2.1 U	µg/Kg
Benzo(b)fluoranthene	4.0 U	µg/Kg
Benzo(k)fluoranthene	2.0 U	µg/Kg
Benzo(a)pyrene	2.0 U	µg/Kg
Dibenzo(a,h)anthracene	4.2 U	µg/Kg
Benzo(g,h,i)perylene	4.2 U	µg/Kg
Indeno(1,2,3-cd)pyrene	2.1 U	µg/Kg
Surrogate: (p-terphenyl)		
Surrogate Reported Value	10.5	µg/Kg
Surrogate Expected Value	10	µg/Kg
Surrogate % Recovery	105	%
Surrogate Control Limits	50-146	%
Date Extracted	03/22/99	
Date Analyzed	03/22/99	

MISCELLANEOUS	METHOD	CF-AN11-SB-02-15	Units
Percent Solids	SM2540G	80	%
Date Analyzed		03/19/99	

NOTE: Analyte values are reported on a dry weight basis.

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

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	CF-AN11-SB-02B-05	Units
Methyl tert-butyl ether	2.0 U D1	µg/Kg
Benzene	1.0 U D1	µg/Kg
Toluene	1.0 U D1	µg/Kg
Chlorobenzene	1.0 U D1	µg/Kg
Ethylbenzene	1.0 U D1	µg/Kg
m-Xylene & p-Xylene	2.0 U D1	µg/Kg
o-Xylene	1.0 U D1	µg/Kg
1,3-Dichlorobenzene	1.0 U D1	µg/Kg
1,4-Dichlorobenzene	1.0 U D1	µg/Kg
1,2-Dichlorobenzene	1.0 U D1	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	31	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	62	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/21/99	

NOTE: Analyte values are reported on a dry weight basis.

U = Compound was analyzed for but not detected to the level shown.
D1 = Analyte value determined from a 1:1.04 dilution.

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	CF-AN11-SB-02B-05			Units
Naphthalene	6100		D2	µg/Kg
Acenaphthylene	1800	U	D2	µg/Kg
1-Methylnaphthalene	6300		D2	µg/Kg
2-Methylnaphthalene	12000		D2	µg/Kg
Acenaphthene	880	U	D2	µg/Kg
Fluorene	4700		D2	µg/Kg
Phenanthrene	15000		D2	µg/Kg
Anthracene	2300		D2	µg/Kg
Fluoranthene	180	U	D2	µg/Kg
Pyrene	88	U	D2	µg/Kg
Benzo(a)anthracene	660		D2	µg/Kg
Chrysene	720		D2	µg/Kg
Benzo(b)fluoranthene	300	I	D2	µg/Kg
Benzo(k)fluoranthene	160	I	D2	µg/Kg
Benzo(a)pyrene	180	I	D2	µg/Kg
Dibenzo(a,h)anthracene	180	U	D2	µg/Kg
Benzo(g,h,i)perylene	180	U	D2	µg/Kg
Indeno(1,2,3-cd)pyrene	88	U	D2	µg/Kg
Surrogate:	% RECOV			LIMITS
p-Terphenyl	*			50-146
Date Extracted	03/22/99			
Date Analyzed	03/23/99			

MISCELLANEOUS	METHOD	CF-AN11-SB-02B-05	Units
Percent Solids	SM2540G	95	%
Date Analyzed		03/19/99	

NOTE: Analyte values are reported on a dry weight basis.

* = Matrix interference; unable to obtain surrogate recovery.
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).
D2 = Analyte value determined from a 1:50 dilution.

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	CF-AN11-SB-03-04	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	1.0 U	µg/Kg
Toluene	1.0 U	µg/Kg
Chlorobenzene	1.0 U	µg/Kg
Ethylbenzene	1.0 U	µg/Kg
m-Xylene & p-Xylene	2.0 U	µg/Kg
o-Xylene	1.0 U	µg/Kg
1,3-Dichlorobenzene	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	30.5	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	61	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/21/99	

NOTE: Analyte values are reported on a dry weight basis.

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

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	CF-AN11-SB-03-04	Units
Naphthalene	21 U	µg/Kg
Acenaphthylene	41 U	µg/Kg
1-Methylnaphthalene	41 U	µg/Kg
2-Methylnaphthalene	41 U	µg/Kg
Acenaphthene	21 U	µg/Kg
Fluorene	4.1 U	µg/Kg
Phenanthrene	41 U	µg/Kg
Anthracene	2.0 U	µg/Kg
Fluoranthene	4.1 U	µg/Kg
Pyrene	**7.0**	µg/Kg
Benzo(a)anthracene	2.1 U	µg/Kg
Chrysene	**2.1** I	µg/Kg
Benzo(b)fluoranthene	**10**	µg/Kg
Benzo(k)fluoranthene	2.0 U	µg/Kg
Benzo(a)pyrene	**2.0** I	µg/Kg
Dibenzo(a,h)anthracene	4.1 U	µg/Kg
Benzo(g,h,i)perylene	4.1 U	µg/Kg
Indeno(1,2,3-cd)pyrene	2.1 U	µg/Kg
Surrogate: (p-terphenyl)		
Surrogate Reported Value	10.8	µg/Kg
Surrogate Expected Value	10	µg/Kg
Surrogate % Recovery	108	%
Surrogate Control Limits	50-146	%
Date Extracted	03/22/99	
Date Analyzed	03/23/99	

MISCELLANEOUS	METHOD	CF-AN11-SB-03-04	Units
Percent Solids	SM2540G	**81**	%
Date Analyzed		03/19/99	

NOTE: Analyte values are reported on a dry weight basis.

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 # : OR5877.1
DATE REPORTED: March 25, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	43	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	86	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/18/99	

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

RESULTS OF ANALYSIS

:PA METHOD 3510/8310 - 'OLYAROMATIC HYDROCARBONS	LAB BLANK	Units
aphthalene	0.50 U	µg/L
cenaphthylene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
cenaphthene	0.50 U	µg/L
luorene	0.10 U	µg/L
henanthrene	1.0 U	µg/L
ıthracene	0.050 U	µg/L
luoranthene	0.10 U	µg/L
rene	0.050 U	µg/L
nzo(a)anthracene	0.050 U	µg/L
ırysene	0.050 U	µg/L
nzo(b)fluoranthene	0.10 U	µg/L
nzo(k)fluoranthene	0.050 U	µg/L
nzo(a)pyrene	0.050 U	µg/L
benzo(a,h)anthracene	0.10 U	µg/L
nzo(g,h,i)perylene	0.10 U	µg/L
deno(1,2,3-cd)pyrene	0.050 U	µg/L
rrogate: (p-terphenyl)		
rrogate Reported Value	10.9	µg/L
rrogate Expected Value	10	µg/L
rrogate % Recovery	109	%
rrogate Control Limits	39-148	%
te Extracted	03/23/99	
te Analyzed	03/23/99	

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

ENCO LABORATORIES
REPORT # : OR5877.1
DATE REPORTED: March 25, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	1.0 U	µg/Kg
Toluene	1.0 U	µg/Kg
Chlorobenzene	1.0 U	µg/Kg
Ethylbenzene	1.0 U	µg/Kg
m-Xylene & p-Xylene	2.0 U	µg/Kg
o-Xylene	1.0 U	µg/Kg
1,3-Dichlorobenzene	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	41	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	82	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/21/99	

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

ENCO LABORATORIES
REPORT # : OR5877.1
DATE REPORTED: March 25, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

:PA METHOD 3550/8310 - 'OLYAROMATIC HYDROCARBONS	LAB BLANK	Units
laphthalene	17 U	µg/Kg
cenaphthylene	33 U	µg/Kg
-Methylnaphthalene	33 U	µg/Kg
-Methylnaphthalene	33 U	µg/Kg
cenaphthene	17 U	µg/Kg
luorene	3.3 U	µg/Kg
henanthrene	33 U	µg/Kg
thracene	2.0 U	µg/Kg
luoranthene	3.3 U	µg/Kg
yrene	1.7 U	µg/Kg
enzo(a)anthracene	1.7 U	µg/Kg
hrysene	1.7 U	µg/Kg
enzo(b)fluoranthene	3.0 U	µg/Kg
enzo(k)fluoranthene	2.0 U	µg/Kg
enzo(a)pyrene	2.0 U	µg/Kg
ibenzo(a,h)anthracene	3.3 U	µg/Kg
enzo(g,h,i)perylene	3.3 U	µg/Kg
ideno(1,2,3-cd)pyrene	1.7 U	µg/Kg
irrogate: (p-terphenyl)		
irrogate Reported Value	8.8	µg/Kg
irrogate Expected Value	10	µg/Kg
irrogate % Recovery	88	%
irrogate Control Limits	50-146	%
ite Extracted	03/22/99	
ite Analyzed	03/22/99	

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

ENCO LABORATORIES
REPORT # : OR5877.1
DATE REPORTED: March 25, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	43	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	86	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/19/99	

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

ENCO LABORATORIES
REPORT # : OR5877.1
DATE REPORTED: March 25, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	LCS Target µg	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 5030/8021 (CF-AN11-TMW-01,CF-AN-AN111-TMW-02,CF1-TMW-03)					
Benzene	71/ 54/ 86	20	72-134	27	20
Toluene	72/ 54/ 90	20	72-124	28	19
Ethylbenzene	72/ 54/ 92	20	67-129	28	21
o-Xylene	74/ 56/ 86	20	66-131	28	21
EPA Method 5030/8021 (CF-AN11-TMW-04)					
Benzene	71/ 54/ 95	20	72-134	27	20
Toluene	72/ 54/101	20	72-124	28	19
Ethylbenzene	72/ 54/102	20	67-129	28	21
o-Xylene	74/ 56/ 95	20	66-131	28	21
PA Method 3510/8310					
aphthalene	53/ 66/ 72	10	22-130	22	20
cenaphthene	56/ 76/ 80	10	14-163	30	19
enzo(a)pyrene	60/ 87/ 94	1	33-137	37	36
enzo(g,h,i)perylene	61/ 81/ 86	2	36-135	28	34

ıvironmental Conservation Laboratories Comprehensive QA Plan #960038

= Less Than
S = Matrix Spike
SD = Matrix Spike Duplicate
CS = Laboratory Control Standard
PD = Relative Percent Difference

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ENCO LABORATORIES
REPORT # : OR5877.1
DATE REPORTED: March 25, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	LCS Target µg	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 5035/8021					
Benzene	89/ 87/100	20	59-144	2	25
Toluene	91/ 91/100	20	67-132	<1	58
Ethylbenzene	105/101/111	20	60-169	4	28
o-Xylene	97/122/106	20	62-183	23	24
EPA Method 3550/8310					
Naphthalene	*/ */ 49	10	26-125	*	45
Acenaphthene	*/ */ 54	10	20-143	*	35
Benzo(a)pyrene	*/ */ 79	1	42-138	*	38
Benzo(g,h,i)perylene	*/ */ 78	2	51-142	*	26

Environmental Conservation Laboratories Comprehensive QA Plan #960038

* = Matrix interference; unable to obtain accurate recovery
< = Less Than
MS = Matrix Spike
MSD = Matrix Spike Duplicate
LCS = Laboratory Control Standard
RPD = Relative Percent Difference

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CHAIN OF CUSTODY RECORD

01593

PROJECT NO.: 0013

SITE NAME: NASJAX - NASLF Jet Fuel Farm

SAMPLERS (SIGNATURE): [illegible]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	8021B	P310					REMARKS
	3/17/99	1130		X	CF - AN11 - TMW - 01	3	X	X					
	3/17/99	1255		X	CF - AN11 - TMW - 02	3	X	X					
	3/17/99	1440		X	CF - AN11 - TMW - 03	3	X	X					
	3/17/99	1610		X	CF - AN11 - TMW - 04	3	X	X					
	3/17/99	1210		X	CF - AN11 - SB - 02 - 15	4	X	X					
	3/17/99	1620		X	CF - AN11 - SB - 02B - 05	4	X	X					

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[illegible]	3/17/99 1715	[illegible]			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS:	
		Kim Carey	3/18/99 7:30AM	#OR5877	

Order No. 70440 (0693)

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

March 23, 1999

Mr. John Kucera
Tetra Tech NUS
7018 A.C. Skinner Pkwy.
Suite 250
Jacksonville, FL 32256

Login Number(SDG): OR5853.3
Project Number: NO013/CTO-72
Description: NASJAX/NASCF Jet Fuel Transfer

Case Narrative:

Three water samples and one soil sample were collected on March 16, 1999. All samples were received at ENCO Laboratories, Inc., on March 16, 1999 on wet ice and in good condition. This sample set was inclusive of samples CF-AN12 (TMW-01, 02,03, and SB-03-10). All samples were analyzed as requested on the associated sample chain-of-custody forms.

All samples were extracted and analyzed within EPA specified holding times.

The laboratory method blank prepared and analyzed with the water samples by EPA Method 3510/8310 showed a detectable level of contamination of a target analyte, 1-methyl naphthalene. This analyte is also detected and reported in the client's sample, ID # CF-AN12-TMW-02 at a level above the laboratory's established reporting level. The concentration of 1-methyl-naphthalene determined in the method blank is below the reporting level (less than 1/5 of the determined value in the sample) for this compound and is not reported for this reason. The presence of this positively identified compound may be the result of or indicate a bias by a laboratory-induced contamination. The positive values are reported with a "V" qualifier to indicate the compound's presence in the method blank.

The laboratory is reporting duplicate analytical results for EPA Method 8021 analyses of sample CF-AN12-TMW-01. The results are qualified as "estimated" (J) due to surrogate recoveries below the established limits for accuracy. This anomaly is consistent in both analyses. The laboratory suspects matrix interferences, which are inhibiting the efficient recovery of the spiked compound. There are indications of a foaming action exhibited by the sample during the purge cycle of the analyses. There are no target analytes detected in the results of either analysis.

Analysis of sample CF-AN12-SB-03-10 (soil) by EPA Method 8310 required a dilution of 1:10 to provide acceptable data. The results of analyses indicate levels of contamination consistent with petroleum distillate responses which prevent the accurate determination of target compounds. Usable data was not acquired from the undiluted analysis of the sample. The results of the undiluted analysis will not be reported by the laboratory. No target analytes are detected at the elevated levels of reporting associated with the diluted analysis.

The laboratory notes instances of low spike recoveries for the duplicate matrix spike sample and for benzene of the matrix spike sample for the EPA 8021 (aqueous) analyses. These recoveries, which are below the established limits for accuracy, are under investigation and are noted without comment.

The laboratory notes instances of low spike recoveries for the matrix spike for the EPA Method 8310 (aqueous) analyses for benzo(a)pyrene and benzo(g,h,i)perylene, which are below the established limits for accuracy. These results are under investigation and are noted without comment.

Quality Assurance acceptance limits are established by "in-house" statistical determination. This is true for surrogate, MS/MSD and LCS spike recovery evaluations.

The laboratory is providing separate reports per chain-of-custody received as requested by the client.

Environmental Conservation Laboratories, Inc.

David J. Vesey

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

CLIENT : Tetra Tech NUS
ADDRESS: 7018 A.C. Skinner Parkway
Suite 250
Jacksonville, FL 32256

REPORT # : OR5853.3
DATE SUBMITTED: March 16, 1999
DATE REPORTED : March 23, 1999

ATTENTION: John Kucera

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

PROJECT #: 0013

NAS Jax-NASCF Jet Fuel Transfer

03/16/99

#1 - CF-AN12-TMW-01 @ 15:17
#2 - CF-AN12-TMW-02 @ 15:25
#3 - CF-AN12-TMW-03 @ 15:39
#4 - CF-AN12-SB-03-10 @ 15:22

PROJECT MANAGER _____
David Vesey

ENCO LABORATORIES
REPORT # : OR5853.3
DATE REPORTED: March 23, 1999
REFERENCE : 0013
PROJECT NAME : NAS Jax-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN12-TMW-01	DUPLICATE CF-AN12-TMW-01	Units
Methyl tert-butyl ether	2.0 U J	2.0 U J	µg/L
Benzene	1.0 U J	1.0 U J	µg/L
Toluene	1.0 U J	1.0 U J	µg/L
Chlorobenzene	1.0 U J	1.0 U J	µg/L
Ethylbenzene	1.0 U J	1.0 U J	µg/L
m-Xylene & p-Xylene	2.0 U J	2.0 U J	µg/L
o-Xylene	1.0 U J	1.0 U J	µg/L
1,3-Dichlorobenzene	1.0 U J	1.0 U J	µg/L
1,4-Dichlorobenzene	1.0 U J	1.0 U J	µg/L
1,2-Dichlorobenzene	1.0 U J	1.0 U J	µg/L
Surrogate: (Bromofluorobenzene)			
Surrogate Reported Value	30	26	µg/L
Surrogate Expected Value	50	50	µg/L
Surrogate % Recovery	60	52	%
Surrogate Control Limits	64-140	64-140	%
Date Analyzed	03/18/99	03/19/99	

= Estimated value; low surrogate recovery is due to suspected matrix interferences supported by results of duplicate analysis also having a low failing surrogate result. Sample shows indication of foaming action upon purging by EPA Method 5030.
= Compound was analyzed for but not detected to the level shown.

ENCO LABORATORIES
REPORT # : OR5853.3
DATE REPORTED: March 23, 1999
REFERENCE : 0013
PROJECT NAME : NAS Jax-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN12-TMW-01	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	**0.060** I	µg/L
Fluoranthene	**0.19**	µg/L
Pyrene	**0.29**	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	**0.060** I	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	**0.050** I	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	11.8	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	118	%
Surrogate Control Limits	39-148	%
Date Extracted	03/19/99	
Date Analyzed	03/20/99	

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 # : OR5853.3
DATE REPORTED: March 23, 1999
REFERENCE : 0013
PROJECT NAME : NAS Jax-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN12-TMW-02	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	42	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	84	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/18/99	

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

ENCO LABORATORIES
REPORT # : OR5853.3
DATE REPORTED: March 23, 1999
REFERENCE : 0013
PROJECT NAME : NAS Jax-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN12-TMW-02	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	**5.2** V	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
B[illegible]o(a)anthracene	0.050 U	µg/L
C[illegible]ysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	**0.080** I	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	12.4	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	124	%
Surrogate Control Limits	39-148	%
Date Extracted	03/19/99	
Date Analyzed	03/20/99	

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

ENCO LABORATORIES
REPORT # : OR5853.3
DATE REPORTED: March 23, 1999
REFERENCE : 0013
PROJECT NAME : NAS Jax-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN12-TMW-03	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	43	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	86	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/18/99	

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

ENCO LABORATORIES
REPORT # : OR5853.3
DATE REPORTED: March 23, 1999
REFERENCE : 0013
PROJECT NAME : NAS Jax-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN12-TMW-03	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
[illegible]o(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	9.4	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	94	%
Surrogate Control Limits	39-148	%
Date Extracted	03/19/99	
Date Analyzed	03/20/99	

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

ENCO LABORATORIES
REPORT # : OR5853.3
DATE REPORTED: March 23, 1999
REFERENCE : 0013
PROJECT NAME : NAS Jax-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	CF-AN12-SB-03-10	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	**1.6** I	µg/Kg
Toluene	**11**	µg/Kg
Chlorobenzene	1.0 U	µg/Kg
Ethylbenzene	**1.6** I	µg/Kg
m-Xylene & p-Xylene	**4.0** I	µg/Kg
o-Xylene	**1.8** I	µg/Kg
1,3-Dichlorobenzene	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	20.5	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	41	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/18/99	

NOTE: Analyte values are reported on a dry weight basis.

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 # : OR5853.3
DATE REPORTED: March 23, 1999
REFERENCE : 0013
PROJECT NAME : NAS Jax-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	CF-AN12-SB-03-10	Units
Naphthalene	190 U D1	µg/Kg
Acenaphthylene	380 U D1	µg/Kg
1-Methylnaphthalene	380 U D1	µg/Kg
2-Methylnaphthalene	380 U D1	µg/Kg
Acenaphthene	190 U D1	µg/Kg
Fluorene	38 U D1	µg/Kg
Phenanthrene	380 U D1	µg/Kg
Anthracene	20 U D1	µg/Kg
Fluoranthene	38 U D1	µg/Kg
Pyrene	19 U D1	µg/Kg
[illegible]o(a)anthracene	19 U D1	µg/Kg
Chrysene	19 U D1	µg/Kg
Benzo(b)fluoranthene	38 U D1	µg/Kg
Benzo(k)fluoranthene	20 U D1	µg/Kg
Benzo(a)pyrene	20 U D1	µg/Kg
Dibenzo(a,h)anthracene	38 U D1	µg/Kg
Benzo(g,h,i)perylene	38 U D1	µg/Kg
Indeno(1,2,3-cd)pyrene	19 U D1	µg/Kg
Surrogate: (p-terphenyl)		
Surrogate Reported Value	9.5	µg/Kg
Surrogate Expected Value	10	µg/Kg
Surrogate % Recovery	95	%
Surrogate Control Limits	50-146	%
Date Extracted	03/18/99	
Date Analyzed	03/18/99	

MISCELLANEOUS	METHOD	CF-AN12-SB-03-10	Units
Percent Solids	SM2540G	87	%
Date Analyzed		03/18/99	

NOTE: Analyte values are reported on a dry weight basis.

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

ENCO LABORATORIES
REPORT # : OR5853.3
DATE REPORTED: March 23, 1999
REFERENCE : 0013
PROJECT NAME : NAS Jax-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	43	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	86	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/18/99	

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

ENCO LABORATORIES
REPORT # : OR5853.3
DATE REPORTED: March 23, 1999
REFERENCE : 0013
PROJECT NAME : NAS Jax-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	LAB BLANK	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
.-Methylnaphthalene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
[illegible]o(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	9.1	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	91	%
Surrogate Control Limits	39-148	%
Date Extracted	03/19/99	
Date Analyzed	03/20/99	

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

ENCO LABORATORIES
REPORT # : OR5853.3
DATE REPORTED: March 23, 1999
REFERENCE : 0013
PROJECT NAME : NAS Jax-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	1.0 U	µg/Kg
Toluene	1.0 U	µg/Kg
Chlorobenzene	1.0 U	µg/Kg
Ethylbenzene	1.0 U	µg/Kg
m-Xylene & p-Xylene	2.0 U	µg/Kg
o-Xylene	1.0 U	µg/Kg
1,3-Dichlorobenzene	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	µg/Kg
		µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	44	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	88	%
Surrogate Control Limits	28.165	%
Date Analyzed	03/17/99	

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

ENCO LABORATORIES
REPORT # : OR5853.3
DATE REPORTED: March 23, 1999
REFERENCE : 0013
PROJECT NAME : NAS Jax-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	LAB BLANK	Units
Naphthalene	17 U	µg/Kg
Acenaphthylene	33 U	µg/Kg
1-Methylnaphthalene	33 U	µg/Kg
2-Methylnaphthalene	33 U	µg/Kg
Acenaphthene	17 U	µg/Kg
Fluorene	3.3 U	µg/Kg
Phenanthrene	33 U	µg/Kg
Anthracene	2.0 U	µg/Kg
Fluoranthene	3.3 U	µg/Kg
Pyrene	1.7 U	µg/Kg
Benzo(a)anthracene	1.7 U	µg/Kg
Chrysene	1.7 U	µg/Kg
Benzo(b)fluoranthene	3.0 U	µg/Kg
Benzo(k)fluoranthene	2.0 U	µg/Kg
Benzo(a)pyrene	2.0 U	µg/Kg
Dibenzo(a,h)anthracene	3.3 U	µg/Kg
Benzo(g,h,i)perylene	3.3 U	µg/Kg
Indeno(1,2,3-cd)pyrene	1.7 U	µg/Kg
Surrogate: (p-terphenyl)		
Surrogate Reported Value	9.5	µg/Kg
Surrogate Expected Value	10	µg/Kg
Surrogate % Recovery	95	%
Surrogate Control Limits	50-146	%
Date Extracted	03/18/99	
Date Analyzed	03/18/99	

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

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	LCS Target µg	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
PA Method 5030/8021					
enzene	71/ 54/ 86	20	72-134	27	20
oluene	72/ 54/ 90	20	72-124	28	19
thylbenzene	72/ 54/ 92	20	67-129	28	21
-Xylene	74/ 56/ 86	20	65-131	28	21
PA Method 3510/8310					
aphthalene	66/ 55/ 82	10	22-130	18	20
cenaphthene	64/ 56/ 77	10	14-163	13	19
enzo(a)pyrene	29/ 42/ 97	1	33-137	37	36
enzo(g,h,i)perylene	23/ 38/ 71	2	36-135	49	34
PA Method 5035/8021					
enzene	83/ 88/ 87	20	59-144	6	25
oluene	86/ 90/ 92	20	67-132	4	58
thylbenzene	102/106/107	20	60-169	4	28
-Xylene	95/102/101	20	62-183	7	24
PA Method 3550/8310					
aphthalene	93/ 93/ 76	10	26-125	<1	45
enaphthene	122/123/ 88	10	20-143	<1	35
enzo(a)pyrene	103/103/ 84	1	42-138	<1	38
enzo(g,h,i)perylene	100/ 98/ 90	2	51-142	2	26

vironmental Conservation Laboratories Comprehensive QA Plan #960038

= Less Than
S = Matrix Spike
SD = Matrix Spike Duplicate
CS = Laboratory Control Standard
PD = Relative Percent Difference

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

CHAIN OF CUSTODY RECORD

01592

PROJECT NO.:	SITE NAME:
0013	NASJAX - NASCF Jet Fuel Transfer

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	8021B	8310					REMARKS
	3/16/99	1517			CF-AN12-TMW-01	3	X	X					
	3/16/99	1525			CF-AN12-TMW-02	3	X	X					
	3/16/99	1539			CF-AN12-TMW-03	3	X	X					
	3/16/99	1522			CF-AN12-SB-03-10	4	X	X					

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[signature]	3-16-99 1625	[signature]			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS:	
		Kim Carey	3/17/99 8:00AM	#OR5853	

Order No. 70440 (0693)

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

March 23, 1999

Mr. John Kucera
Tetra Tech NUS
7018 A.C. Skinner Pkwy.
Suite 250
Jacksonville, FL 32256

Login Number(SDG): OR5853.2
Project Number: NO013/CTO-72
Description: NASJAX/NASCF Jet Fuel Transfer

Case Narrative:

Three water samples and one soil sample were collected on March 16, 1999. All samples were received at ENCO Laboratories, Inc., on March 16, 1999 on wet ice and in good condition. This sample set was inclusive of samples CF-AN13 (TMW-01, 02,03, and SB-01-06). All samples were analyzed as requested on the associated sample chain-of-custody forms.

All samples were extracted and analyzed within EPA specified holding times.

The laboratory notes instances of low spike recoveries for the duplicate matrix spike sample and for benzene of the matrix spike sample for the EPA 8021 (aqueous) analyses. These recoveries, which are below the established limits for accuracy, are under investigation and are noted without comment.

The laboratory notes instances of low spike recoveries for the matrix spike for the EPA Method 8310 (aqueous) analyses for benzo(a)pyrene and benzo(g,h,I)perylene, which are below the established limits for accuracy. These results are under investigation and are noted without comment.

Quality Assurance acceptance limits are established by "in-house" statistical determination. This is true for surrogate, MS/MSD and LCS spike recovery evaluations.

The laboratory is providing separate reports per chain-of-custody received as requested by the client.

Environmental Conservation Laboratories, Inc.

David J. Vesey
Project Manager

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

CLIENT : Tetra Tech NUS
ADDRESS: 7018 A.C. Skinner Parkway
Suite 250
Jacksonville, FL 32256

REPORT # : OR5853.2
DATE SUBMITTED: March 16, 1999
DATE REPORTED : March 23, 1999

ATTENTION: John Kucera

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

PROJECT #: 0013

NAS Jax-NASCF Jet Fuel Transfer

03/16/99

#1 - CF-AN13-TMW-01 @ 11:05
#2 - CF-AN13-TMW-02 @ 12:12
#3 - CF-AN13-TMW-03 @ 11:50
#4 - CF-AN13-SB-01-06 @ 10:50

PROJECT MANAGER _____
David Vesey

ENCO LABORATORIES
REPORT # : OR5853.2
DATE REPORTED: March 23, 1999
REFERENCE : 0013
PROJECT NAME : NAS Jax-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN13-TMW-01	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	37	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	74	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/18/99	

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

ENCO LABORATORIES
REPORT # : OR5853.2
DATE REPORTED: March 23, 1999
REFERENCE : 0013
PROJECT NAME : NAS Jax-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN13-TMW-01	Units
laphthalene	0.50 U	µg/L
cenaphthylene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
cenaphthene	0.50 U	µg/L
luorene	0.10 U	µg/L
henanthrene	1.0 U	µg/L
nthracene	0.050 U	µg/L
luoranthene	0.10 U	µg/L
yrene	0.050 U	µg/L
enzo(a)anthracene	0.050 U	µg/L
hrysene	0.050 U	µg/L
enzo(b)fluoranthene	0.10 U	µg/L
enzo(k)fluoranthene	0.050 U	µg/L
enzo(a)pyrene	0.050 U	µg/L
ibenzo(a,h)anthracene	0.10 U	µg/L
enzo(g,h,i)perylene	0.10 U	µg/L
ideno(1,2,3-cd)pyrene	0.050 U	µg/L
irrogate: (p-terphenyl)		
irrogate Reported Value	10.6	µg/L
irrogate Expected Value	10	µg/L
irrogate % Recovery	106	%
irrogate Control Limits	39-148	%
ite Extracted	03/19/99	
ite Analyzed	03/20/99	

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

ENCO LABORATORIES
REPORT # : OR5853.2
DATE REPORTED: March 23, 1999
REFERENCE : 0013
PROJECT NAME : NAS Jax-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN13-TMW-02	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	40	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	80	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/18/99	

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

ENCO LABORATORIES
REPORT # : OR5853.2
DATE REPORTED: March 23, 1999
REFERENCE : 0013
PROJECT NAME : NAS Jax-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN13-TMW-02	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	10.3	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	103	%
Surrogate Control Limits	39-148	%
Date Extracted	03/19/99	
Date Analyzed	03/20/99	

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

ENCO LABORATORIES
REPORT # : OR5853.2
DATE REPORTED: March 23, 1999
REFERENCE : 0013
PROJECT NAME : NAS Jax-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN13-TMW-03	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	34.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	69	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/18/99	

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

ENCO LABORATORIES
REPORT # : OR5853.2
DATE REPORTED: March 23, 1999
REFERENCE : 0013
PROJECT NAME : NAS Jax-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN13-TMW-03	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	9.1	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	91	%
Surrogate Control Limits	39-148	%
Date Extracted	03/19/99	
Date Analyzed	03/20/99	

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

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	CF-AN13-SB-01-06	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	1.0 U	µg/Kg
Toluene	1.0 U	µg/Kg
Chlorobenzene	1.0 U	µg/Kg
Ethylbenzene	1.0 U	µg/Kg
m-Xylene & p-Xylene	2.0 U	µg/Kg
o-Xylene	1.0 U	µg/Kg
1,3-Dichlorobenzene	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	45	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	90	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/18/99	

[illegible]: Analyte values are reported on a dry weight basis.

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

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	CF-AN13-SB-01-06	Units
Naphthalene	19 U	µg/Kg
Acenaphthylene	38 U	µg/Kg
1-Methylnaphthalene	38 U	µg/Kg
2-Methylnaphthalene	38 U	µg/Kg
Acenaphthene	19 U	µg/Kg
Fluorene	3.8 U	µg/Kg
Phenanthrene	38 U	µg/Kg
Anthracene	2.0 U	µg/Kg
Fluoranthene	3.8 U	µg/Kg
Pyrene	1.9 U	µg/Kg
Benzo(a)anthracene	1.9 U	µg/Kg
Chrysene	1.9 U	µg/Kg
Benzo(b)fluoranthene	3.0 U	µg/Kg
Benzo(k)fluoranthene	2.0 U	µg/Kg
Benzo(a)pyrene	2.0 U	µg/Kg
Dibenzo(a,h)anthracene	3.8 U	µg/Kg
Benzo(g,h,i)perylene	3.8 U	µg/Kg
Indeno(1,2,3-cd)pyrene	1.9 U	µg/Kg
Surrogate: (p-terphenyl)		
Surrogate Reported Value	9.2	µg/Kg
Surrogate Expected Value	10	µg/Kg
Surrogate % Recovery	92	%
Surrogate Control Limits	50-146	%
Date Extracted	03/18/99	
Date Analyzed	03/18/99	

MISCELLANEOUS	METHOD	CF-AN13-SB-01-06	Units
Percent Solids	SM2540G	88	%
Date Analyzed		03/18/99	

NOTE: Analyte values are reported on a dry weight basis.

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

ENCO LABORATORIES
REPORT # : OR5853.2
DATE REPORTED: March 23, 1999
REFERENCE : 0013
PROJECT NAME : NAS Jax-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	43	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	86	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/18/99	

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

ENCO LABORATORIES
REPORT # : OR5853.2
DATE REPORTED: March 23, 1999
REFERENCE : 0013
PROJECT NAME : NAS Jax-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	LAB BLANK	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	9.1	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	91	%
Surrogate Control Limits	39-148	%
Date Extracted	03/19/99	
Date Analyzed	03/20/99	

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

ENCO LABORATORIES
REPORT # : OR5853.2
DATE REPORTED: March 23, 1999
REFERENCE : 0013
PROJECT NAME : NAS Jax-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	1.0 U	µg/Kg
Toluene	1.0 U	µg/Kg
Chlorobenzene	1.0 U	µg/Kg
Ethylbenzene	1.0 U	µg/Kg
m-Xylene & p-Xylene	2.0 U	µg/Kg
o-Xylene	1.0 U	µg/Kg
1,3-Dichlorobenzene	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	µg/Kg
	1.0 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	44	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	88	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/17/99	

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

ENCO LABORATORIES
REPORT # : OR5853.2
DATE REPORTED: March 23, 1999
REFERENCE : 0013
PROJECT NAME : NAS Jax-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	LAB BLANK	Units
Naphthalene	17 U	µg/Kg
Acenaphthylene	33 U	µg/Kg
2-Methylnaphthalene	33 U	µg/Kg
1-Methylnaphthalene	33 U	µg/Kg
Acenaphthene	17 U	µg/Kg
Fluorene	3.3 U	µg/Kg
Phenanthrene	33 U	µg/Kg
Anthracene	2.0 U	µg/Kg
Fluoranthene	3.3 U	µg/Kg
Pyrene	1.7 U	µg/Kg
Benzo(a)anthracene	1.7 U	µg/Kg
Chrysene	1.7 U	µg/Kg
Benzo(b)fluoranthene	3.0 U	µg/Kg
Benzo(k)fluoranthene	2.0 U	µg/Kg
Benzo(a)pyrene	2.0 U	µg/Kg
Dibenzo(a,h)anthracene	3.3 U	µg/Kg
Benzo(g,h,i)perylene	3.3 U	µg/Kg
Indeno(1,2,3-cd)pyrene	1.7 U	µg/Kg
Surrogate: (p-terphenyl)		
Surrogate Reported Value	9.5	µg/Kg
Surrogate Expected Value	10	µg/Kg
Surrogate % Recovery	95	%
Surrogate Control Limits	50-146	%
Date Extracted	03/18/99	
Date Analyzed	03/18/99	

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

ENCO LABORATORIES
REPORT # : OR5853.2
DATE REPORTED: March 23, 1999
REFERENCE : 0013
PROJECT NAME : NAS Jax-NASCF
Jet Fuel Transfer

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	LCS Target µg	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 5030/8021					
Benzene	71/ 54/ 86	20	72-134	27	20
Toluene	72/ 54/ 90	20	72-124	28	19
Ethylbenzene	72/ 54/ 92	20	67-129	28	21
o-Xylene	74/ 56/ 86	20	66-131	28	21
EPA Method 3510/8310					
Naphthalene	66/ 55/ 82	10	22-130	18	20
Acenaphthene	64/ 56/ 77	10	14-163	13	19
Benzo(a)pyrene	29/ 42/ 97	1	33-137	37	36
Benzo(g,h,i)perylene	23/ 38/ 71	2	36-135	49	34
PA Method 5035/8021					
enzene	83/ 88/ 87	20	59-144	6	25
oluene	86/ 90/ 92	20	67-132	4	58
thylbenzene	102/106/107	20	60-169	4	28
-Xylene	95/102/101	20	62-183	7	24
PA Method 3550/8310					
aphthalene	93/ 93/ 76	10	26-125	<1	45
cenaphthene	122/123/ 88	10	20-143	<1	35
enzo(a)pyrene	103/103/ 84	1	42-138	<1	38
enzo(g,h,i)perylene	100/ 98/ 90	2	51-142	2	26

ıvironmental Conservation Laboratories Comprehensive QA Plan #960038

= Less Than
; = Matrix Spike
SD = Matrix Spike Duplicate
CS = Laboratory Control Standard
PD = Relative Percent Difference

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

PROJECT NO.: 0013

SITE NAME: NASJAX - NASCE Jet Fuel Transfer

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	8260B	8310						REMARKS
	3/16/99	1105		X	CF-AN13-TMW-01	3	X	X						
	3/16/99	1212		X	CF-AN13-TMW-02	3	X	X						
	3/16/99	1150		X	CF-AN13-TMW-03	3	X	X						
	3/16/99	1050		X	CF-AN13-SB-01-06	4	X	X						

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
[signature]	3-16-99 1650	[signature]			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS:	
		Ken Cuny	3/17/99 8:00AM	#OR5853	

Order No. 70440 (0693)

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

March 23, 1999

Mr. John Kucera
Tetra Tech NUS
7018 A.C. Skinner Pkwy.
Suite 250
Jacksonville, FL 32256

Login Number(SDG): OR5853.1
Project Number: NO013/CTO-72
Description: NASJAX/NASCF Jet Fuel Transfer

Case Narrative:

Three water samples and one soil sample were collected on March 16, 1999. All samples were received at ENCO Laboratories, Inc., on March 16, 1999 on wet ice and in good condition. This sample set was inclusive of samples CF-AN14 (TMW-01, 02,03, and SB-03-07). All samples were analyzed as requested on the associated sample chain-of-custody forms.

All samples were extracted and analyzed within EPA specified holding times.

The laboratory method blank prepared and analyzed with the water samples by EPA Method 3510/8310 showed a detectable level of contamination of a target analyte, 1-methyl Naphthalene. This analyte is also detected and reported in the client's sample, ID # CF-AN14-TMW-01 and CF-AN14-TMW-02 at a level above the laboratory's established reporting level. The concentration of 1-methyl Naphthalene determined in the method blank is below the reporting level for this compound and is not reported for this reason. The presence of this positively identified compound may be the result of a laboratory-induced contamination. The positive values are reported with a "V" qualifier to indicate the compound's presence in the method blank.

The laboratory notes instances of low spike recoveries for the duplicate matrix spike sample and for benzene of the matrix spike sample for the EPA 8021 (aqueous) analyses. These recoveries, which are below the established limits for accuracy, are under investigation and are noted without comment.

The laboratory notes instances of low spike recoveries for the matrix spike for the EPA Method 8310 (aqueous) analyses for benzo(a)pyrene and benzo(g,h,I)perylene, which are below the established limits for accuracy. These results are under investigation and are noted without comment.

Quality Assurance acceptance limits are established by "in-house" statistical determination. This is true for surrogate, MS/MSD and LCS spike recovery evaluations.

The laboratory is providing separate reports per chain-of-custody received as requested by the client.

Environmental Conservation Laboratories, Inc.

David J. Vesey

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
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www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

CLIENT : Tetra Tech NUS
ADDRESS: 7018 A.C. Skinner Parkway
Suite 250
Jacksonville, FL 32256

REPORT # : OR5853.1
DATE SUBMITTED: March 16, 1999
DATE REPORTED : March 23, 1999

ATTENTION: John Kucera

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

PROJECT #: 0013

NAS Jax-NASCF Jet Fuel Transfer

03/16/99

#1 - CF-AN14-TMW-01 @ 10:31
#2 - CF-AN14-TMW-02 @ 10:20
#3 - CF-AN14-TMW-03 @ 11:22
#4 - CF-AN14-SB-03-07 @ 11:06

OJECT MANAGER David Vesey

ENCO LABORATORIES
REPORT # : OR5853.1
DATE REPORTED: March 23, 1999
REFERENCE : 0013
PROJECT NAME : NAS Jax-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN14-TMW-01	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	60	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	120	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/18/99	

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

ENCO LABORATORIES
REPORT # : OR5853.1
DATE REPORTED: March 23, 1999
REFERENCE : 0013
PROJECT NAME : NAS Jax-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN14-TMW-01	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	**2.5** V	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	**0.11** I	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	**0.080**	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	**0.59**	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	8.2	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	82	%
Surrogate Control Limits	39-148	%
Date Extracted	03/19/99	
Date Analyzed	03/20/99	

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

ENCO LABORATORIES
REPORT # : OR5853.1
DATE REPORTED: March 23, 1999
REFERENCE : 0013
PROJECT NAME : NAS Jax-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN14-TMW-02	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	41	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	82	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/18/99	

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

ENCO LABORATORIES
REPORT # : OR5853.1
DATE REPORTED: March 23, 1999
REFERENCE : 0013
PROJECT NAME : NAS Jax-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN14-TMW-02	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	**1.0** V	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	8.3	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	83	%
Surrogate Control Limits	39-148	%
Date Extracted	03/19/99	
Date Analyzed	03/20/99	

= Analyte detected in laboratory method blank.
= Compound was analyzed for but not detected to the level shown.

ENCO LABORATORIES
REPORT # : OR5853.1
DATE REPORTED: March 23, 1999
REFERENCE : 0013
PROJECT NAME : NAS Jax-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN14-TMW-03	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	44.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	89	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/18/99	

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

ENCO LABORATORIES
REPORT # : OR5853.1
DATE REPORTED: March 23, 1999
REFERENCE : 0013
PROJECT NAME : NAS Jax-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN14-TMW-03	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	11.2	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	112	%
Surrogate Control Limits	39-148	%
Date Extracted	03/19/99	
Date Analyzed	03/20/99	

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

ENCO LABORATORIES
REPORT # : OR5853.1
DATE REPORTED: March 23, 1999
REFERENCE : 0013
PROJECT NAME : NAS Jax-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	CF-AN14-SB-03-07	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	1.0 U	µg/Kg
Toluene	1.0 U	µg/Kg
Chlorobenzene	1.0 U	µg/Kg
Ethylbenzene	1.0 U	µg/Kg
m-Xylene & p-Xylene	2.0 U	µg/Kg
o-Xylene	1.0 U	µg/Kg
1,3-Dichlorobenzene	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	42	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	84	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/18/99	

NOTE: Analyte values are reported on a dry weight basis.

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

ENCO LABORATORIES
REPORT # : OR5853.1
DATE REPORTED: March 23, 1999
REFERENCE : 0013
PROJECT NAME : NAS Jax-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

:PA METHOD 3550/8310 - 'OLYAROMATIC HYDROCARBONS	CF-AN14-SB-03-07	Units
laphthalene	18 U	µg/Kg
cenaphthylene	37 U	µg/Kg
-Methylnaphthalene	37 U	µg/Kg
-Methylnaphthalene	**50**	µg/Kg
cenaphthene	18 U	µg/Kg
luorene	3.7 U	µg/Kg
henanthrene	37 U	µg/Kg
nthracene	2.0 U	µg/Kg
luoranthene	3.7 U	µg/Kg
yrene	1.8 U	µg/Kg
enzo(a)anthracene	1.8 U	µg/Kg
hrysene	1.8 U	µg/Kg
enzo(b)fluoranthene	**120**	µg/Kg
enzo(k)fluoranthene	2.0 U	µg/Kg
enzo(a)pyrene	2.0 U	µg/Kg
ibenzo(a,h)anthracene	**4.0** I	µg/Kg
enzo(g,h,i)perylene	**19**	µg/Kg
ideno(1,2,3-cd)pyrene	1.8 U	µg/Kg
irrogate: (p-terphenyl)		
irrogate Reported Value	8.9	µg/Kg
irrogate Expected Value	10	µg/Kg
irrogate % Recovery	89	%
irrogate Control Limits	50-146	%
te Extracted	03/18/99	
te Analyzed	03/18/99	

SCELLANEOUS	METHOD	CF-AN14-SB-03-07	Units
rcent Solids	SM2540G	**91**	%
te Analyzed		03/18/99	

TE: Analyte values are reported on a dry weight basis.

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

ENCO LABORATORIES
REPORT # : OR5853.1
DATE REPORTED: March 23, 1999
REFERENCE : 0013
PROJECT NAME : NAS Jax-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	43	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	86	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/18/99	

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

ENCO LABORATORIES
REPORT # : OR5853.1
DATE REPORTED: March 23, 1999
REFERENCE : 0013
PROJECT NAME : NAS Jax-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

:PA METHOD 3510/8310 - 'OLYAROMATIC HYDROCARBONS	LAB BLANK	Units
aphthalene	0.50 U	µg/L
cenaphthylene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
cenaphthene	0.50 U	µg/L
luorene	0.10 U	µg/L
henanthrene	1.0 U	µg/L
nthracene	0.050 U	µg/L
luoranthene	0.10 U	µg/L
yrene	0.050 U	µg/L
enzo(a)anthracene	0.050 U	µg/L
hrysene	0.050 U	µg/L
enzo(b)fluoranthene	0.10 U	µg/L
enzo(k)fluoranthene	0.050 U	µg/L
enzo(a)pyrene	0.050 U	µg/L
benzo(a,h)anthracene	0.10 U	µg/L
nzo(g,h,i)perylene	0.10 U	µg/L
deno(1,2,3-cd)pyrene	0.050 U	µg/L
rrogate: (p-terphenyl)		
rrogate Reported Value	9.1	µg/L
rrogate Expected Value	10	µg/L
rrogate % Recovery	91	%
rrogate Control Limits	39-148	%
te Extracted	03/19/99	
te Analyzed	03/20/99	

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

ENCO LABORATORIES
REPORT # : OR5853.1
DATE REPORTED: March 23, 1999
REFERENCE : 0013
PROJECT NAME : NAS Jax-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	1.0 U	µg/Kg
Toluene	1.0 U	µg/Kg
Chlorobenzene	1.0 U	µg/Kg
Ethylbenzene	1.0 U	µg/Kg
m-Xylene & p-Xylene	2.0 U	µg/Kg
o-Xylene	1.0 U	µg/Kg
1,3-Dichlorobenzene	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	44	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	88	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/17/99	

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

ENCO LABORATORIES
REPORT # : OR5853.1
DATE REPORTED: March 23, 1999
REFERENCE : 0013
PROJECT NAME : NAS Jax-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	LAB BLANK	Units
Naphthalene	17 U	µg/Kg
Acenaphthylene	33 U	µg/Kg
2-Methylnaphthalene	33 U	µg/Kg
1-Methylnaphthalene	33 U	µg/Kg
Acenaphthene	17 U	µg/Kg
Fluorene	3.3 U	µg/Kg
Phenanthrene	33 U	µg/Kg
Anthracene	2.0 U	µg/Kg
Fluoranthene	3.3 U	µg/Kg
Pyrene	1.7 U	µg/Kg
Benzo(a)anthracene	1.7 U	µg/Kg
Chrysene	1.7 U	µg/Kg
Benzo(b)fluoranthene	3.0 U	µg/Kg
Benzo(k)fluoranthene	2.0 U	µg/Kg
Benzo(a)pyrene	2.0 U	µg/Kg
Dibenzo(a,h)anthracene	3.3 U	µg/Kg
Benzo(g,h,i)perylene	3.3 U	µg/Kg
Indeno(1,2,3-cd)pyrene	1.7 U	µg/Kg
Surrogate: (p-terphenyl)		
Surrogate Reported Value	9.5	µg/Kg
Surrogate Expected Value	10	µg/Kg
Surrogate % Recovery	95	%
Surrogate Control Limits	50-146	%
Date Extracted	03/18/99	
Date Analyzed	03/18/99	

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

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	LCS Target µg	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 5030/8021					
Benzene	71/ 54/ 86	20	72-134	27	20
Toluene	72/ 54/ 90	20	72-124	28	19
Ethylbenzene	72/ 54/ 92	20	67-129	28	21
o-Xylene	74/ 56/ 86	20	66-131	28	21
EPA Method 3510/8310					
Naphthalene	66/ 55/ 82	10	22-130	18	20
Acenaphthene	64/ 56/ 77	10	14-163	13	19
Benzo(a)pyrene	29/ 42/ 97	1	33-137	37	36
Benzo(g,h,i)perylene	23/ 38/ 71	2	36-135	49	34
EPA Method 5035/8021					
Benzene	83/ 88/ 87	20	59-144	6	25
Toluene	86/ 90/ 92	20	67-132	4	58
Ethylbenzene	102/106/107	20	60-169	4	28
o-Xylene	95/102/101	20	62-183	7	24
EPA Method 3550/8310					
Naphthalene	93/ 93/ 76	10	26-125	<1	45
Acenaphthene	122/123/ 88	10	20-143	<1	35
Benzo(a)pyrene	103/103/ 84	1	42-138	<1	38
Benzo(g,h,i)perylene	100/ 98/ 90	2	51-142	2	26

Environmental Conservation Laboratories Comprehensive QA Plan #960038

< = 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.

PROJECT NO.: 0013

SITE NAME: NASJAX - NASCF Jet Fuel Transfer

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CON-TAINERS	8021B	8310					REMARKS
	3/16/99	1031		X	CF-AN14-TMW-01	3	X	X					
	3/16/99	1020		X	CF-AN14-TMW-02	3	X	X					
	3/16/99	1122		X	CF-AN14-TMW-03	3	X	X					
	3/16/99	1106		X	CF-AN14-SB-03-07	4	X	X					

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[signature]	3-16-99 1650	[signature]			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS:	
		Kim Casey	3/17/99 8:00AM	#OR5253	

Order No. 70440 (0693)

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

March 22, 1999

Mr. John Kucera
Tetra Tech NUS
7018 A.C. Skinner Pkwy.
Suite 250
Jacksonville, FL 32256

Login Number(SDG): OR5839.1
Project Number: NO013/CTO-72
Description: NASJAX/NASCF Jet Fuel Transfer

Case Narrative:

Three water samples and one soil sample were collected on March 15, 1999. All samples were received at ENCO Laboratories, Inc., on March 15, 1999 on wet ice and in good condition. This sample set was inclusive of samples CF-AN15 (TMW-01,02,03, and SB-01-06). All samples were anlayzed as requested on the associated sample chain-of-custody forms.

All samples were extracted and analyzed within EPA specified holding times.

The laboratory method blank prepared and analyzed with the water samples by EPA Method 3510/8310 showed a detectable level of contamination of a target analyte, Pyrene. This analyte is also detected and reported in the client's sample, ID # CF-AN15-TMW-02, at a level consistent with the concentration found in the method blank. The presence of this positively identified compound is suspected as being a laboratory artifact and may not actually be present in the sample.

Quality Assurance acceptance limits are established by "in-house" statistical determination. This is true for surrogate, MS/MSD and LCS spike recovery evaluations.

The laboratory is providing separate reports per chain-of-custody received as requested by the client.

Environmental Conservation Laboratories, Inc.

David J. Vesey
Project Manager

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

CLIENT : Tetra Tech NUS
ADDRESS: 7018 A.C. Skinner Parkway
Suite 250
Jacksonville, FL 32256

REPORT # : OR5839.1
DATE SUBMITTED: March 15, 1999
DATE REPORTED : March 22, 1999

ATTENTION: John Kucera

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

PROJECT #: 0013

NAS JAX-NASCF Jet Fuel Tansfer Line

03/15/99

#1 - CF-AN15-TMW-01 @ 11:21
#2 - CF-AN15-TMW-02 @ 11:15
#3 - CF-AN15-TMW-03 @ 12:01
#4 - CF-AN15-SB-01-06 @ 12:24

PROJECT MANAGER David Vesey

ENCO LABORATORIES
REPORT # : OR5839.1
DATE REPORTED: March 22, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Tansfer Line

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN15-TMW-01	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	45.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	91	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/16/99	

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

ENCO LABORATORIES
REPORT # : OR5839.1
DATE REPORTED: March 22, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Tansfer Line

RESULTS OF ANALYSIS

:PA METHOD 3510/8310 - 'OLYAROMATIC HYDROCARBONS	CF-AN15-TMW-01	Units
'aphthalene	0.60 U	µg/L
.cenaphthylene	1.1 U	µg/L
-Methylnaphthalene	1.1 U	µg/L
-Methylnaphthalene	1.1 U	µg/L
cenaphthene	0.60 U	µg/L
luorene	0.11 U	µg/L
henanthrene	1.1 U	µg/L
nthracene	0.060 U	µg/L
luoranthene	0.11 U	µg/L
yrene	0.060 U	µg/L
enzo(a)anthracene	0.060 U	µg/L
hrysene	0.060 U	µg/L
enzo(b)fluoranthene	**0.24** I	µg/L
enzo(k)fluoranthene	0.060 U	µg/L
enzo(a)pyrene	0.060 U	µg/L
ibenzo(a,h)anthracene	0.11 U	µg/L
enzo(g,h,i)perylene	0.11 U	µg/L
ideno(1,2,3-cd)pyrene	0.060 U	µg/L
irrogate: (p-terphenyl)		
irrogate Reported Value	6.1	µg/L
irrogate Expected Value	10	µg/L
irrogate % Recovery	61	%
irrogate Control Limits	39-148	%
te Extracted	03/19/99	
te Analyzed	03/19/99	

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

ENCO LABORATORIES
REPORT # : OR5839.1
DATE REPORTED: March 22, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Tansfer Line

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN15-TMW-02	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	47	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	94	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/16/99	

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

ENCO LABORATORIES
REPORT # : OR5839.1
DATE REPORTED: March 22, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Tansfer Line

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN15-TMW-02	Units
Naphthalene	0.60 U	µg/L
cenaphthylene	1.1 U	µg/L
-Methylnaphthalene	1.1 U	µg/L
-Methylnaphthalene	1.1 U	µg/L
cenaphthene	0.60 U	µg/L
luorene	0.11 U	µg/L
henanthrene	1.1 U	µg/L
nthracene	0.060 U	µg/L
luoranthene	0.11 U	µg/L
yrene	**0.070** V	µg/L
enzo(a)anthracene	0.060 U	µg/L
hrysene	0.060 U	µg/L
enzo(b)fluoranthene	0.11 U	µg/L
enzo(k)fluoranthene	0.060 U	µg/L
enzo(a)pyrene	0.060 U	µg/L
benzo(a,h)anthracene	0.11 U	µg/L
enzo(g,h,i)perylene	0.11 U	µg/L
deno(1,2,3-cd)pyrene	0.060 U	µg/L
rrogate: (p-terphenyl)		
rrogate Reported Value	5.8	µg/L
rrogate Expected Value	10	µg/L
rrogate % Recovery	58	%
rrogate Control Limits	39-148	%
te Extracted	03/19/99	
te Analyzed	03/19/99	

: Analyte detected in laboratory method blank.
: Compound was analyzed for but not detected to the level shown.

ENCO LABORATORIES
REPORT # : OR5839.1
DATE REPORTED: March 22, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Tansfer Line

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN15-TMW-03	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	45	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	90	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/17/99	

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

ENCO LABORATORIES
REPORT # : OR5839.1
DATE REPORTED: March 22, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Tansfer Line

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN15-TMW-03	Units
Naphthalene	0.60 U	µg/L
Acenaphthylene	1.1 U	µg/L
1-Methylnaphthalene	**1.1**	µg/L
2-Methylnaphthalene	1.1 U	µg/L
Acenaphthene	0.60 U	µg/L
Fluorene	0.11 U	µg/L
Phenanthrene	1.1 U	µg/L
Anthracene	**0.070** I	µg/L
Fluoranthene	0.11 U	µg/L
Pyrene	0.060 U	µg/L
Benzo(a)anthracene	0.060 U	µg/L
Chrysene	0.060 U	µg/L
Benzo(b)fluoranthene	**1.4**	µg/L
Benzo(k)fluoranthene	0.060 U	µg/L
Benzo(a)pyrene	0.060 U	µg/L
Dibenzo(a,h)anthracene	0.11 U	µg/L
Benzo(g,h,i)perylene	0.11 U	µg/L
Indeno(1,2,3-cd)pyrene	0.060 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	7.0	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	70	%
Surrogate Control Limits	39-148	%
Date Extracted	03/19/99	
Date Analyzed	03/19/99	

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

ENCO LABORATORIES
REPORT # : OR5839.1
DATE REPORTED: March 22, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Tansfer Line

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	CF-AN15-SB-01-06	Units
Methyl tert-butyl ether	2.0 U D1	µg/Kg
Benzene	1.2 U D1	µg/Kg
Toluene	1.2 U D1	µg/Kg
Chlorobenzene	1.2 U D1	µg/Kg
Ethylbenzene	1.2 U D1	µg/Kg
m-Xylene & p-Xylene	2.0 U D1	µg/Kg
o-Xylene	1.0 U D1	µg/Kg
1,3-Dichlorobenzene	1.0 U D1	µg/Kg
1,4-Dichlorobenzene	1.0 U D1	µg/Kg
1,2-Dichlorobenzene	1.0 U D1	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	24.5	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	49	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/18/99	

NOTE: Analyte values are reported on a dry weight basis.

U = Compound was analyzed for but not detected to the level shown.
D1 = Analyte value determined from a 1:1.06 dilution.

ENCO LABORATORIES
REPORT # : OR5839.1
DATE REPORTED: March 22, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Tansfer Line

RESULTS OF ANALYSIS

:PA METHOD 3550/8310 - 'OLYAROMATIC HYDROCARBONS	CF-AN15-SB-01-06	Units
'aphthalene	18 U	µg/Kg
.cenaphthylene	35 U	µg/Kg
-Methylnaphthalene	35 U	µg/Kg
-Methylnaphthalene	35 U	µg/Kg
cenaphthene	18 U	µg/Kg
luorene	3.5 U	µg/Kg
henanthrene	35 U	µg/Kg
nthracene	2.0 U	µg/Kg
..oranthene	34	µg/Kg
..ene	29	µg/Kg
enzo(a)anthracene	13	µg/Kg
ırysene	21	µg/Kg
enzo(b)fluoranthene	18	µg/Kg
enzo(k)fluoranthene	8.0	µg/Kg
enzo(a)pyrene	21	µg/Kg
.benzo(a,h)anthracene	3.5 U	µg/Kg
enzo(g,h,i)perylene	17	µg/Kg
ıdeno(1,2,3-cd)pyrene	16	µg/Kg
rrogate: (p-terphenyl)		
rrogate Reported Value	14	µg/Kg
rrogate Expected Value	10	µg/Kg
rrogate % Recovery	140	%
rrogate Control Limits	50-146	%
te Extracted	03/18/99	
te Analyzed	03/18/99	

SCELLANEOUS	METHOD	CF-AN15-SB-01-06	Units
rcent Solids	SM2540G	95	%
te Analyzed		03/18/99	

'E: Analyte values are reported on a dry weight basis.

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

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS

	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	48.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	97	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/16/99	

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

ENCO LABORATORIES
REPORT # : OR5839.1
DATE REPORTED: March 22, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Tansfer Line

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	LAB BLANK	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	**0.060** I	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	10.9	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	109	%
Surrogate Control Limits	39-148	%
Date Extracted	03/19/99	
Date Analyzed	03/19/99	

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 # : OR5839.1
DATE REPORTED: March 22, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Tansfer Line

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	1.0 U	µg/Kg
Toluene	1.0 U	µg/Kg
Chlorobenzene	1.0 U	µg/Kg
Ethylbenzene	1.0 U	µg/Kg
m-Xylene & p-Xylene	2.0 U	µg/Kg
o-Xylene	1.0 U	µg/Kg
1,3-Dichlorobenzene	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	44	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	88	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/17/99	

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

ENCO LABORATORIES
REPORT # : OR5839.1
DATE REPORTED: March 22, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Tansfer Line

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	LAB BLANK	Units
Naphthalene	17 U	µg/Kg
cenaphthylene	33 U	µg/Kg
-Methylnaphthalene	33 U	µg/Kg
-Methylnaphthalene	33 U	µg/Kg
cenaphthene	17 U	µg/Kg
luorene	3.3 U	µg/Kg
henanthrene	33 U	µg/Kg
nthracene	2.0 U	µg/Kg
luoranthene	3.3 U	µg/Kg
yrene	1.7 U	µg/Kg
enzo(a)anthracene	1.7 U	µg/Kg
hrysene	1.7 U	µg/Kg
enzo(b)fluoranthene	3.0 U	µg/Kg
enzo(k)fluoranthene	2.0 U	µg/Kg
enzo(a)pyrene	2.0 U	µg/Kg
ibenzo(a,h)anthracene	3.3 U	µg/Kg
enzo(g,h,i)perylene	3.3 U	µg/Kg
ideno(1,2,3-cd)pyrene	1.7 U	µg/Kg
irrogate: (p-terphenyl)		
irrogate Reported Value	9.5	µg/Kg
irrogate Expected Value	10	µg/Kg
irrogate % Recovery	95	%
irrogate Control Limits	50-146	%
ite Extracted	03/18/99	
ite Analyzed	03/18/99	

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

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	LCS Target µg	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 5030/8021					
Benzene	110/103/106	20	72-134	6	20
Toluene	114/108/110	20	72-124	5	19
Ethylbenzene	115/108/110	20	67-129	6	21
o-Xylene	111/101/106	20	66-131	9	21
EPA Method 3510/8310					
Naphthalene	*/ */ 81	10	22-130	*	20
Acenaphthene	*/ */ 98	10	14-163	*	19
Benzo(a)pyrene	*/ */ 88	1	33-137	*	36
Benzo(g,h,i)perylene	*/ */ 92	2	36-135	*	34
EPA Method 5035/8021					
Benzene	83/ 88/ 87	20	59-144	6	25
Toluene	86/ 90/ 92	20	67-132	4	58
Ethylbenzene	102/106/107	20	60-169	4	28
o-Xylene	95/102/101	20	62-183	7	24
EPA Method 3550/8310					
Naphthalene	93/ 93/ 76	10	26-125	<1	45
Acenaphthene	122/123/ 88	10	20-143	<1	35
Benzo(a)pyrene	103/103/ 84	1	42-138	<1	38
Benzo(g,h,i)perylene	100/ 98/ 90	2	51-142	2	26

Environmental Conservation Laboratories Comprehensive QA Plan #960038

* = Matrix interference; unable to obtain accurate recovery
< = 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.

CHAIN OF CUSTODY RECORD

01589

PROJECT NO.: 0013

SITE NAME: NASJAX-NASCF Jet Fuel Transfer Line

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	8021B	8310						REMARKS
	3/15/99	1121		X	CF-AN15-TMW01	3	X	X						
	3/15/99	1115		X	CF-AN15-TMW02	3	X	X						
	3/15/99	1201		X	CF-AN15-TMW03	3	X	X						
	3/15/99	1224		X	CF-AN15-SB-01-06	4	X	X						

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[signature]	3/15/99 1705	[signature]			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME: 3/16/99 8:30AM	REMARKS: #OR5839	

Order No. 70440 (0692)

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

March 19, 1999

Mr. John Kucera
Tetra Tech NUS
7018 A.C. Skinner Pkwy.
Suite 250
Jacksonville, FL 32256

Login Number(SDG): OR5825.1
Project Number: N0013/CTO-72
Description: NASJAX/NASCF Jet Fuel Transfer

Case Narrative:

Five water samples and one soil sample were collected on March 12, 1999. All samples were received at ENCO Laboratories, Inc., on March 12, 1999 at 1640 on wet ice and in good condition. This sample set was inclusive of samples CF-AN16 (TMW-01,02,03,04,DU13 and SB-01-10). All samples were anlayzed as requested on the associated sample chain-of-custody forms.

All samples were extracted and analyzed within EPA specified holding times.

Quality Assurance acceptance limits are established by "in-house" statistical determination. This is true for surrogate, MS/MSD and LCS spike recovery evaluations.

The laboratory is providing separate reports per chain-of-custody received as requested by the client.

Environmental Conservation Laboratories, Inc.

David J. Vesey
Project Manager

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

CLIENT : Tetra Tech NUS
ADDRESS: 7018 A.C. Skinner Parkway
Suite 250
Jacksonville, FL 32256

REPORT # : OR5825.1
DATE SUBMITTED: March 12, 1999
DATE REPORTED : March 19, 1999

ATTENTION: John Kucera

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

PROJECT #: 0013

NAS JAX-NASCF Jet Fuel Transfer

03/12/99

#1 - CF-AN16-TMW-01 @ 10:15
#2 - CF-AN16-TMW-02 @ 10:50
#3 - CF-AN16-TMW-03 @ 11:25
#4 - CF-AN16-TMW-04 @ 13:10
#5 - CF-AN16-SB-01-10 @ 11:45
#6 - CF-AN16-TMW-DU13 @ 00:00

ROJECT MANAGER _____
David Vesey

ENCO LABORATORIES
REPORT # : OR5825.1
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN16-TMW-01	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	45	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	90	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/16/99	

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

ENCO LABORATORIES
REPORT # : OR5825.1
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

PA METHOD 3510/8310 - OLYAROMATIC HYDROCARBONS	CF-AN16-TMW-01	Units
aphthalene	0.50 U	µg/L
cenaphthylene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
cenaphthene	0.50 U	µg/L
luorene	0.10 U	µg/L
henanthrene	1.0 U	µg/L
nthracene	0.050 U	µg/L
luoranthene	0.10 U	µg/L
yrene	0.050 U	µg/L
enzo(a)anthracene	0.050 U	µg/L
hrysene	0.050 U	µg/L
enzo(b)fluoranthene	0.10 U	µg/L
enzo(k)fluoranthene	0.050 U	µg/L
enzo(a)pyrene	0.050 U	µg/L
benzo(a,h)anthracene	0.10 U	µg/L
nzo(g,h,i)perylene	0.10 U	µg/L
deno(1,2,3-cd)pyrene	0.050 U	µg/L
rrogate: (p-terphenyl)		
rrogate Reported Value	9.5	µg/L
rrogate Expected Value	10	µg/L
rrogate % Recovery	95	%
rrogate Control Limits	39-148	%
te Extracted	03/16/99	
te Analyzed	03/18/99	

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

ENCO LABORATORIES
REPORT # : OR5825.1
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN16-TMW-02	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	45	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	90	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/16/99	

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

ENCO LABORATORIES
REPORT # : OR5825.1
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN16-TMW-02	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	9.1	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	91	%
Surrogate Control Limits	39-148	%
Date Extracted	03/16/99	
Date Analyzed	03/18/99	

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

ENCO LABORATORIES
REPORT # : OR5825.1
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN16-TMW-03	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	46.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	93	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/16/99	

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

ENCO LABORATORIES
REPORT # : OR5825.1
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN16-TMW-03	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
cenaphthene	0.50 U	µg/L
luorene	0.10 U	µg/L
enanthrene	1.0 U	µg/L
nthracene	0.050 U	µg/L
luoranthene	0.10 U	µg/L
yrene	0.050 U	µg/L
enzo(a)anthracene	0.050 U	µg/L
hrysene	0.050 U	µg/L
enzo(b)fluoranthene	0.10 U	µg/L
enzo(k)fluoranthene	0.050 U	µg/L
enzo(a)pyrene	0.050 U	µg/L
benzo(a,h)anthracene	0.10 U	µg/L
enzo(g,h,i)perylene	0.10 U	µg/L
deno(1,2,3-cd)pyrene	0.050 U	µg/L
rrogate: (p-terphenyl)		
rrogate Reported Value	8.5	µg/L
rrogate Expected Value	10	µg/L
rrogate % Recovery	85	%
rrogate Control Limits	39-148	%
te Extracted	03/16/99	
te Analyzed	03/18/99	

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

ENCO LABORATORIES
REPORT # : OR5825.1
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN16-TMW-04	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	46	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	92	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/16/99	

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

ENCO LABORATORIES
REPORT # : OR5825.1
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN16-TMW-04	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	11.1	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	111	%
Surrogate Control Limits	39-148	%
Date Extracted	03/16/99	
Date Analyzed	03/18/99	

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

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	CF-AN16-SB-01-10	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	1.2 U	µg/Kg
Toluene	1.2 U	µg/Kg
Chlorobenzene	1.2 U	µg/Kg
Ethylbenzene	1.2 U	µg/Kg
m-Xylene & p-Xylene	2.0 U	µg/Kg
o-Xylene	1.2 U	µg/Kg
1,3-Dichlorobenzene	1.2 U	µg/Kg
1,4-Dichlorobenzene	1.2 U	µg/Kg
1,2-Dichlorobenzene	1.2 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	41.5	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	83	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/17/99	

OTE: Analyte values are reported on a dry weight basis.

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

ENCO LABORATORIES
REPORT # : OR5825.1
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	CF-AN16-SB-01-10	Units
Naphthalene	21 U	µg/Kg
Acenaphthylene	43 U	µg/Kg
2-Methylnaphthalene	43 U	µg/Kg
1-Methylnaphthalene	43 U	µg/Kg
Acenaphthene	21 U	µg/Kg
Fluorene	4.3 U	µg/Kg
Phenanthrene	43 U	µg/Kg
Anthracene	2.0 U	µg/Kg
Fluoranthene	4.3 U	µg/Kg
Pyrene	2.1 U	µg/Kg
Benzo(a)anthracene	2.1 U	µg/Kg
Chrysene	2.1 U	µg/Kg
Benzo(b)fluoranthene	4.0 U	µg/Kg
Benzo(k)fluoranthene	2.0 U	µg/Kg
Benzo(a)pyrene	2.0 U	µg/Kg
Dibenzo(a,h)anthracene	4.3 U	µg/Kg
Benzo(g,h,i)perylene	4.3 U	µg/Kg
Indeno(1,2,3-cd)pyrene	2.1 U	µg/Kg
Surrogate: (p-terphenyl)		
Surrogate Reported Value	11.4	µg/Kg
Surrogate Expected Value	10	µg/Kg
Surrogate % Recovery	114	%
Surrogate Control Limits	50-146	%
Date Extracted	03/15/99	
Date Analyzed	03/16/99	

MISCELLANEOUS	METHOD	CF-AN16-SB-01-10	Units
Percent Solids	SM2540G	78	%
Date Analyzed		03/18/99	

NOTE: Analyte values are reported on a dry weight basis.

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

ENCO LABORATORIES
REPORT # : OR5825.1
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN16-TMW-DU13	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	45.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	91	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/16/99	

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

ENCO LABORATORIES
REPORT # : OR5825.1
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

:PA METHOD 3510/8310 - 'OLYAROMATIC HYDROCARBONS	CF-AN16-TMW-DU13	Units
laphthalene	0.50 U	µg/L
cenaphthylene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
cenaphthene	0.50 U	µg/L
luorene	0.10 U	µg/L
henanthrene	1.0 U	µg/L
nthracene	0.050 U	µg/L
luoranthene	**0.12** I	µg/L
yrene	0.050 U	µg/L
enzo(a)anthracene	0.050 U	µg/L
rysene	**0.050** I	µg/L
enzo(b)fluoranthene	0.10 U	µg/L
enzo(k)fluoranthene	0.050 U	µg/L
enzo(a)pyrene	0.050 U	µg/L
benzo(a,h)anthracene	0.10 U	µg/L
enzo(g,h,i)perylene	0.10 U	µg/L
deno(1,2,3-cd)pyrene	0.050 U	µg/L
rrogate: (p-terphenyl)		
rrogate Reported Value	10.1	µg/L
rrogate Expected Value	10	µg/L
rrogate % Recovery	101	%
rrogate Control Limits	39-148	%
te Extracted	03/16/99	
te Analyzed	03/18/99	

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

ENCO LABORATORIES
REPORT # : OR5825.1
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	48.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	97	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/16/99	

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

ENCO LABORATORIES
REPORT # : OR5825.1
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

:PA METHOD 3510/8310 - 'OLYAROMATIC HYDROCARBONS	LAB BLANK	Units
laphthalene	0.50 U	µg/L
cenaphthylene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
cenaphthene	0.50 U	µg/L
luorene	0.10 U	µg/L
henanthrene	1.0 U	µg/L
nthracene	0.050 U	µg/L
luoranthene	0.10 U	µg/L
yrene	0.050 U	µg/L
enzo(a)anthracene	0.050 U	µg/L
hrysene	0.050 U	µg/L
enzo(b)fluoranthene	0.10 U	µg/L
enzo(k)fluoranthene	0.050 U	µg/L
enzo(a)pyrene	0.050 U	µg/L
ibenzo(a,h)anthracene	0.10 U	µg/L
enzo(g,h,i)perylene	0.10 U	µg/L
ideno(1,2,3-cd)pyrene	0.050 U	µg/L
irrogate: (p-terphenyl)		
irrogate Reported Value	11.3	µg/L
irrogate Expected Value	10	µg/L
irrogate % Recovery	113	%
irrogate Control Limits	39-148	%
ite Extracted	03/16/99	
ite Analyzed	03/17/99	

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

ENCO LABORATORIES
REPORT # : OR5825.1
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	1.0 U	µg/Kg
Toluene	1.0 U	µg/Kg
Chlorobenzene	1.0 U	µg/Kg
Ethylbenzene	1.0 U	µg/Kg
m-Xylene & p-Xylene	2.0 U	µg/Kg
o-Xylene	1.0 U	µg/Kg
1,3-Dichlorobenzene	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	44	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	88	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/17/99	

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

ENCO LABORATORIES
REPORT # : OR5825.1
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	LAB BLANK	Units
Naphthalene	17 U	µg/Kg
Acenaphthylene	33 U	µg/Kg
2-Methylnaphthalene	33 U	µg/Kg
1-Methylnaphthalene	33 U	µg/Kg
Acenaphthene	17 U	µg/Kg
Fluorene	3.3 U	µg/Kg
Phenanthrene	33 U	µg/Kg
Anthracene	2.0 U	µg/Kg
Fluoranthene	3.3 U	µg/Kg
Pyrene	1.7 U	µg/Kg
Benzo(a)anthracene	1.7 U	µg/Kg
Chrysene	1.7 U	µg/Kg
Benzo(b)fluoranthene	3.0 U	µg/Kg
Benzo(k)fluoranthene	2.0 U	µg/Kg
Benzo(a)pyrene	2.0 U	µg/Kg
Dibenzo(a,h)anthracene	3.3 U	µg/Kg
Benzo(g,h,i)perylene	3.3 U	µg/Kg
Indeno(1,2,3-cd)pyrene	1.7 U	µg/Kg
Surrogate: (p-terphenyl)		
Surrogate Reported Value	12.2	µg/Kg
Surrogate Expected Value	10	µg/Kg
Surrogate % Recovery	122	%
Surrogate Control Limits	50-146	%
Date Extracted	03/15/99	
Date Analyzed	03/16/99	

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

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	LSC Target µg	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 5030/8021					
Benzene	110/103/106	20	72-134	6	20
Toluene	114/108/110	20	72-124	5	19
Ethylbenzene	115/108/110	20	67-129	6	21
o-Xylene	111/101/106	20	66-131	9	21
EPA Method 3510/8310					
Naphthalene	82/106/101	10	22-130	26	20
Acenaphthene	109/135/120	10	14-163	21	19
Benzo(a)pyrene	45/ 58/105	1	33-137	25	36
Benzo(g,h,i)perylene	25/ 43/ 98	2	36-135	53	34
EPA Method 5035/8021					
Benzene	83/ 88/ 87	20	59-144	6	25
Toluene	86/ 90/ 92	20	67-132	4	58
Ethylbenzene	102/106/107	20	60-169	4	28
o-Xylene	95/102/101	20	62-183	7	24
EPA Method 3550/8310					
Naphthalene	93/ 93/ 68	10	26-125	<1	45
Acenaphthene	122/123/100	10	20-143	<1	35
Benzo(a)pyrene	103/103/103	1	42-138	<1	38
Benzo(g,h,i)perylene	100/ 98/105	2	51-142	2	26

Environmental Conservation Laboratories Comprehensive QA Plan #960038

< = 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.

CHAIN OF CUSTODY RECORD

01586

PROJECT NO.: 0013

SITE NAME: NASJAX - NASCE Jet Fuel Transfer

SAMPLERS (SIGNATURE): [signature] Lynn M. McClure

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	8021B	8310					REMARKS
	3/12/99	1015		X	CF - AN16 - TMW - 01	3	X	X					
	3/12/99	1050		X	CF - AN16 - TMW - 02	3	X	X					
	3/12/99	1125		X	CF - AN16 - TMW - 03	3	X	X					
	3/12/99	1310		X	CF - AN16 - TMW - 04	3	X	X					
	3/12/99	1145		X	CF - AN16 - ~~TMW~~ SB - 01 - 10	4	X	X					
	3/12/99	0000		X	CF - AN16 - ~~SB~~ TMW - DUB	3	X	X					

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[signature]	3/12 1410	Scott D Mart			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS:	
		Kim Carey	3/13/99 7:00AM	OR5825	

Order No. 70440 (0000)

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

March 19, 1999

Mr. John Kucera
Tetra Tech NUS
7018 A.C. Skinner Pkwy.
Suite 250
Jacksonville, FL 32256

Login Number(SDG): OR5825.2
Project Number: NO013/CTO-72
Description: NASJAX/NASCF Jet Fuel Transfer

Case Narrative:

Five water samples and one soil sample were collected on March 12, 1999. All samples were received at ENCO Laboratories, Inc., on March 12, 1999 at 1640 on wet ice and in good condition. This sample set was inclusive of samples CF-AN17 (TMW-01,02,03,04, and SB-03-8). All samples were anlayzed as requested on the associated sample chain-of-custody forms.

All samples were extracted and analyzed within EPA specified holding times.

Quality Assurance acceptance limits are established by "in-house" statistical determination. This is true for surrogate, MS/MSD and LCS spike recovery evaluations.

The laboratory is providing separate reports per chain-of-custody received as requested by the client.

Environmental Conservation Laboratories, Inc.

David J. Vesey
Project Manager

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

CLIENT : Tetra Tech NUS
ADDRESS: 7018 A.C. Skinner Parkway
Suite 250
Jacksonville, FL 32256

REPORT # : OR5825.2
DATE SUBMITTED: March 12, 1999
DATE REPORTED : March 19, 1999

ATTENTION: John Kucera

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

PROJECT #: 0013

NAS JAX-NASCF Jet Fuel Transfer

03/12/99

#1 - CF-AN17-TMW-01 @ 10:34
#2 - CF-AN17-TMW-02 @ 11:32
#3 - CF-AN17-TMW-03 @ 12:25
#4 - CF-AN17-TMW-04 @ 13:52
#5 - CF-AN17-SB-03-8 @ 11:45

OJECT MANAGER _____
David Vesey

ENCO LABORATORIES
REPORT # : OR5825.2
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN17-TMW-01	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	45	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	90	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/16/99	

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

ENCO LABORATORIES
REPORT # : OR5825.2
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN17-TMW-01	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	11.2	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	112	%
Surrogate Control Limits	39-148	%
Date Extracted	03/16/99	
Date Analyzed	03/18/99	

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

ENCO LABORATORIES
REPORT # : OR5825.2
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN17-TMW-02	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	45.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	91	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/16/99	

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

ENCO LABORATORIES
REPORT # : OR5825.2
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

:PA METHOD 3510/8310 - 'OLYAROMATIC HYDROCARBONS	CF-AN17-TMW-02	Units
aphthalene	0.50 U	µg/L
cenaphthylene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
cenaphthene	0.50 U	µg/L
luorene	0.10 U	µg/L
henanthrene	1.0 U	µg/L
nthracene	0.050 U	µg/L
luoranthene	0.10 U	µg/L
yrene	0.050 U	µg/L
enzo(a)anthracene	0.050 U	µg/L
hrysene	0.050 U	µg/L
enzo(b)fluoranthene	0.10 U	µg/L
enzo(k)fluoranthene	0.050 U	µg/L
enzo(a)pyrene	0.050 U	µg/L
ibenzo(a,h)anthracene	0.10 U	µg/L
enzo(g,h,i)perylene	0.10 U	µg/L
ideno(1,2,3-cd)pyrene	0.050 U	µg/L
irrogate: (p-terphenyl)		
irrogate Reported Value	11.4	µg/L
irrogate Expected Value	10	µg/L
irrogate % Recovery	114	%
irrogate Control Limits	39-148	%
ite Extracted	03/16/99	
ite Analyzed	03/18/99	

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

ENCO LABORATORIES
REPORT # : OR5825.2
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN17-TMW-03	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	34.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	69	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/16/99	

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

ENCO LABORATORIES
REPORT # : OR5825.2
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN17-TMW-03	Units
Naphthalene	0.50 U	µg/L
cenaphthylene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
cenaphthene	0.50 U	µg/L
luorene	0.10 U	µg/L
henanthrene	1.0 U	µg/L
nthracene	0.050 U	µg/L
luoranthene	0.10 U	µg/L
yrene	0.050 U	µg/L
enzo(a)anthracene	0.050 U	µg/L
hrysene	0.050 U	µg/L
enzo(b)fluoranthene	0.10 U	µg/L
enzo(k)fluoranthene	0.050 U	µg/L
enzo(a)pyrene	0.050 U	µg/L
ibenzo(a,h)anthracene	0.10 U	µg/L
enzo(g,h,i)perylene	0.10 U	µg/L
ideno(1,2,3-cd)pyrene	0.050 U	µg/L
irrogate: (p-terphenyl)		
irrogate Reported Value	8.7	µg/L
irrogate Expected Value	10	µg/L
irrogate % Recovery	87	%
irrogate Control Limits	39-148	%
te Extracted	03/16/99	
te Analyzed	03/18/99	

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

ENCO LABORATORIES
REPORT # : OR5825.2
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN17-TMW-04	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	45	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	90	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/16/99	

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

ENCO LABORATORIES
REPORT # : OR5825.2
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN17-TMW-04	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	11.5	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	115	%
Surrogate Control Limits	39-148	%
Date Extracted	03/16/99	
Date Analyzed	03/18/99	

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

ENCO LABORATORIES
REPORT # : OR5825.2
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 -
VOLATILE AROMATICS

	CF-AN17-SB-03-8	Units
Methyl tert-butyl ether	2.0 U D1	µg/Kg
Benzene	1.0 U D1	µg/Kg
Toluene	1.0 U D1	µg/Kg
Chlorobenzene	1.0 U D1	µg/Kg
Ethylbenzene	1.0 U D1	µg/Kg
m-Xylene & p-Xylene	2.0 U D1	µg/Kg
o-Xylene	1.0 U D1	µg/Kg
1,3-Dichlorobenzene	1.0 U D1	µg/Kg
1,4-Dichlorobenzene	1.0 U D1	µg/Kg
1,2-Dichlorobenzene	1.0 U D1	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	39	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	78	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/18/99	

OTE: Analyte values are reported on a dry weight basis.

Compound was analyzed for but not detected to the level shown.
1 = Analyte value determined from a 1:1.04 dilution.

RESULTS OF ANALYSIS

PA METHOD 3550/8310 -
OLYAROMATIC HYDROCARBONS

	CF-AN17-SB-03-8	Units
aphthalene	21 U	
enaphthylene	42 U	µg/Kg
-Methylnaphthalene	42 U	µg/Kg
-Methylnaphthalene	42 U	µg/Kg
enaphthene	21 U	µg/Kg
uorene	4.2 U	µg/Kg
enanthrene	42 U	µg/Kg
thracene	2.0 U	µg/Kg
uoranthene	4.2 U	µg/Kg
rene	2.1 U	µg/Kg
nzo(a)anthracene	2.1 U	µg/Kg
ysene	2.1 U	µg/Kg
nzo(b)fluoranthene	4.0 U	µg/Kg
nzo(k)fluoranthene	2.0 U	µg/Kg
zo(a)pyrene	2.0 U	µg/Kg
enzo(a,h)anthracene	4.2 U	µg/Kg
zo(g,h,i)perylene	23	µg/Kg
eno(1,2,3-cd)pyrene	2.1 U	µg/Kg
ogate: (p-terphenyl)		
ogate Reported Value	12.2	µg/Kg
ogate Expected Value	10	µg/Kg
ogate % Recovery	122	%
ogate Control Limits	50-146	%
Extracted	03/15/99	
Analyzed	03/16/99	

LLANEOUS	METHOD	CF-AN17-SB-03-8	Units
nt Solids	SM2540G	79	%
Analyzed		03/18/99	

Analyte values are reported on a dry weight basis.

mpound was analyzed for but not detected to the level shown.

ENCO LABORATORIES
REPORT # : OR5825.2
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	48.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	97	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/16/99	

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

ENCO LABORATORIES
REPORT # : OR5825.2
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

:PA METHOD 3510/8310 - 'OLYAROMATIC HYDROCARBONS	LAB BLANK	Units
aphthalene	0.50 U	µg/L
cenaphthylene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
cenaphthene	0.50 U	µg/L
luorene	0.10 U	µg/L
henanthrene	1.0 U	µg/L
nthracene	0.050 U	µg/L
luoranthene	0.10 U	µg/L
yrene	0.050 U	µg/L
enzo(a)anthracene	0.050 U	µg/L
rysene	0.050 U	µg/L
enzo(b)fluoranthene	0.10 U	µg/L
enzo(k)fluoranthene	0.050 U	µg/L
enzo(a)pyrene	0.050 U	µg/L
.benzo(a,h)anthracene	0.10 U	µg/L
enzo(g,h,i)perylene	0.10 U	µg/L
deno(1,2,3-cd)pyrene	0.050 U	µg/L
rrogate: (p-terphenyl)		
rrogate Reported Value	11.3	µg/L
rrogate Expected Value	10	µg/L
rrogate % Recovery	113	%
rrogate Control Limits	39-148	%
te Extracted	03/16/99	
te Analyzed	03/17/99	

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

ENCO LABORATORIES
REPORT # : OR5825.2
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	1.0 U	µg/Kg
Toluene	1.0 U	µg/Kg
Chlorobenzene	1.0 U	µg/Kg
Ethylbenzene	1.0 U	µg/Kg
m-Xylene & p-Xylene	2.0 U	µg/Kg
o-Xylene	1.0 U	µg/Kg
1,3-Dichlorobenzene	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	44	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	88	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/17/99	

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

ENCO LABORATORIES
REPORT # : OR5825.2
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	LAB BLANK	Units
Naphthalene	17 U	µg/Kg
Acenaphthylene	33 U	µg/Kg
2-Methylnaphthalene	33 U	µg/Kg
1-Methylnaphthalene	33 U	µg/Kg
Acenaphthene	17 U	µg/Kg
Fluorene	3.3 U	µg/Kg
Phenanthrene	33 U	µg/Kg
Anthracene	2.0 U	µg/Kg
Fluoranthene	3.3 U	µg/Kg
Pyrene	1.7 U	µg/Kg
Benzo(a)anthracene	1.7 U	µg/Kg
Chrysene	1.7 U	µg/Kg
Benzo(b)fluoranthene	3.0 U	µg/Kg
Benzo(k)fluoranthene	2.0 U	µg/Kg
Benzo(a)pyrene	2.0 U	µg/Kg
Dibenzo(a,h)anthracene	3.3 U	µg/Kg
Benzo(g,h,i)perylene	3.3 U	µg/Kg
Indeno(1,2,3-cd)pyrene	1.7 U	µg/Kg
Surrogate: (p-terphenyl)		
Surrogate Reported Value	12.2	µg/Kg
Surrogate Expected Value	10	µg/Kg
Surrogate % Recovery	122	%
Surrogate Control Limits	50-146	%
Date Extracted	03/15/99	
Date Analyzed	03/16/99	

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

ENCO LABORATORIES
REPORT # : OR5825.2
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	LCS Target µg	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 5030/8021					
Benzene	110/103/106	20	72-134	6	20
Toluene	114/108/110	20	72-124	5	19
Ethylbenzene	115/108/110	20	67-129	6	21
o-Xylene	111/101/106	20	66-131	9	21
EPA Method 3510/8310					
Naphthalene	82/106/101	10	22-130	26	20
Acenaphthene	109/135/120	10	14-163	21	19
Benzo(a)pyrene	45/ 58/105	1	33-137	25	36
Benzo(g,h,i)perylene	25/ 43/ 98	2	36-135	53	34
EPA Method 5035/8021					
Benzene	83/ 88/ 87	20	59-144	6	25
Toluene	86/ 90/ 92	20	67-132	4	58
Ethylbenzene	102/106/107	20	60-169	4	28
o-Xylene	95/102/101	20	62-183	7	24
EPA Method 3550/8310					
Naphthalene	93/ 93/ 68	10	26-125	<1	45
Acenaphthene	122/123/100	10	20-143	<1	35
Benzo(a)pyrene	103/103/103	1	42-138	<1	38
Benzo(g,h,i)perylene	100/ 98/105	2	51-142	2	26

Environmental Conservation Laboratories Comprehensive QA Plan #960038

< = 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.

CHAIN OF CUSTODY RECORD

015

PROJECT NO.: 0013

SITE NAME: NASJAX-NASCF Jet fuel Farm

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	8021B	8310						REMARKS
	3/12/99	1034		X	CF-AN17-TMW-01	3	X	X						
	3/12/99	1132		X	CF-AN17-TMW-02	3	X	X						
	3/12/99	1225		X	CF-AN17-TMW-03	3	X	X						
	3/12/99	1352		X	CF-AN17-TMW-04	3	X	X						
	3/12/99	1145		X	CF-AN17-SB-03-8	4	X	X						

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[signature]	3/12/99 1040	[signature]			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS:	
		Kim Casey	3/13/99 9:00AM	OR5825	

Order No. 70440 (0693)

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

March 19, 1999

Mr. John Kucera
Tetra Tech NUS
7018 A.C. Skinner Pkwy.
Suite 250
Jacksonville, FL 32256

Login Number(SDG): OR5823.2
Project Number: NO013/CTO-72
Description: NASJAX/NASCF Jet Fuel Transfer

Case Narrative:

Five water samples and one soil sample were collected on March 11, 1999. All samples were received at ENCO Laboratories, Inc., on March 11, 1999 at 1745 on wet ice and in good condition. This sample set was inclusive of samples CF-A18 (TMW-1,2,3,4,DU14 and SB-04-04). All samples were anlayzed as requested on the associated sample chain-of-custody forms.

All samples were extracted and analyzed within EPA specified holding times.

Quality Assurance acceptance limits are established by "in-house" statistical determination. This is true for surrogate, MS/MSD and LCS spike recovery evaluations.

The laboratory is providing separate reports per chain-of-custody received as requested by the client.

Environmental Conservation Laboratories, Inc.

David J. Vesey
Project Manager

David J. Vesey

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

CLIENT : Tetra Tech NUS
ADDRESS: 7018 A.C. Skinner Parkway
Suite 250
Jacksonville, FL 32256

REPORT # : OR5823.2
DATE SUBMITTED: March 12, 1999
DATE REPORTED : March 19, 1999

ATTENTION: John Kucera

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

PROJECT #: 0013

NASCF-NAS Jax Fuel Transfer Pipeline

#1 - CF-AN18-TMW-01 @ 10:59 (03/11/99)
#2 - CF-AN18-TMW-02 @ 10:45 (03/11/99)
#3 - CF-AN18-TMW-03 @ 11:35 (03/11/99)
#4 - CF-AN18-TMW-04 @ 12:06 (03/11/99)
#5 - CF-AN18-SB-04-4 @ 12:33 (03/11/99)
#6 - CF-AN18-TMW-DU14 @ 00:00 (03/11/99)

PROJECT MANAGER _____
David Vesey

ENCO LABORATORIES
REPORT # : OR5823.2
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN18-TMW-01	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	43.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	87	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/16/99	

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

ENCO LABORATORIES
REPORT # : OR5823.2
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN18-TMW-01	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	**0.080** I	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	8.3	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	83	%
Surrogate Control Limits	39-148	%
Date Extracted	03/16/99	
Date Analyzed	03/17/99	

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 # : OR5823.2
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN18-TMW-02	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	43	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	86	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/16/99	

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

ENCO LABORATORIES
REPORT # : OR5823.2
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN18-TMW-02	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	9.3	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	93	%
Surrogate Control Limits	39-148	%
Date Extracted	03/16/99	
Date Analyzed	03/17/99	

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

ENCO LABORATORIES
REPORT # : OR5823.2
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN18-TMW-03	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	43.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	87	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/16/99	

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

ENCO LABORATORIES
REPORT # : OR5823.2
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN18-TMW-03	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	8.1	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	81	%
Surrogate Control Limits	39-148	%
Date Extracted	03/16/99	
Date Analyzed	03/17/99	

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

ENCO LABORATORIES
REPORT # : OR5823.2
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN18-TMW-04	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	48	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	96	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/16/99	

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

ENCO LABORATORIES
REPORT # : OR5823.2
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN18-TMW-04	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	**0.070** I	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	7	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	70	%
Surrogate Control Limits	39-148	%
Date Extracted	03/16/99	
Date Analyzed	03/17/99	

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 # : OR5823.2
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	CF-AN18-SB-04-4	Units
Methyl tert-butyl ether	2.0 U D1	µg/Kg
Benzene	1.0 U D1	µg/Kg
Toluene	1.0 U D1	µg/Kg
Chlorobenzene	1.0 U D1	µg/Kg
Ethylbenzene	1.0 U D1	µg/Kg
m-Xylene & p-Xylene	2.0 U D1	µg/Kg
o-Xylene	1.0 U D1	µg/Kg
1,3-Dichlorobenzene	1.0 U D1	µg/Kg
1,4-Dichlorobenzene	1.0 U D1	µg/Kg
1,2-Dichlorobenzene	1.0 U D1	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	32	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	64	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/17/99	

OTE: Analyte values are reported on a dry weight basis.

Compound was analyzed for but not detected to the level shown.
1 = Analyte value determined from a 1:1.02 dilution.

ENCO LABORATORIES
REPORT # : OR5823.2
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	CF-AN18-SB-04-4	Units
Naphthalene	19 U	µg/Kg
Acenaphthylene	37 U	µg/Kg
2-Methylnaphthalene	37 U	µg/Kg
1-Methylnaphthalene	37 U	µg/Kg
Acenaphthene	19 U	µg/Kg
Fluorene	3.7 U	µg/Kg
Phenanthrene	37 U	µg/Kg
Anthracene	2.0 U	µg/Kg
Fluoranthene	3.7 U	µg/Kg
Pyrene	1.9 U	µg/Kg
Benzo(a)anthracene	1.9 U	µg/Kg
Chrysene	1.9 U	µg/Kg
Benzo(b)fluoranthene	3.0 U	µg/Kg
Benzo(k)fluoranthene	2.0 U	µg/Kg
Benzo(a)pyrene	2.0 U	µg/Kg
Dibenzo(a,h)anthracene	3.7 U	µg/Kg
Benzo(g,h,i)perylene	**4.2** I	µg/Kg
Indeno(1,2,3-cd)pyrene	1.9 U	µg/Kg
Surrogate: (p-terphenyl)		
Surrogate Reported Value	12.4	µg/Kg
Surrogate Expected Value	10	µg/Kg
Surrogate % Recovery	124	%
Surrogate Control Limits	50-146	%
Date Extracted	03/15/99	
Date Analyzed	03/16/99	

MISCELLANEOUS	METHOD	CF-AN18-SB-04-4	Units
Percent Solids	SM2540G	**89**	%
Date Analyzed		03/18/99	

NOTE: Analyte values are reported on a dry weight basis.

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).

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN18-TMW-DU14	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	44	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	88	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/16/99	

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

ENCO LABORATORIES
REPORT # : OR5823.2
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN18-TMW-DU14	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	**0.26**	µg/L
Pyrene	**0.44**	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	**0.060** I	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	**0.050** I	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	7.6	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	76	%
Surrogate Control Limits	39-148	%
Date Extracted	03/16/99	
Date Analyzed	03/17/99	

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).

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 -
VOLATILE AROMATICS

	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	44.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	99	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/15/99	

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

ENCO LABORATORIES
REPORT # : OR5823.2
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	LAB BLANK	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	43.5	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	87	%
Surrogate Control Limits	39-148	%
Date Extracted	03/16/99	
Date Analyzed	03/17/99	

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

ENCO LABORATORIES
REPORT # : OR5823.2
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	1.0 U	µg/Kg
Toluene	1.0 U	µg/Kg
Chlorobenzene	1.0 U	µg/Kg
Ethylbenzene	1.0 U	µg/Kg
m-Xylene & p-Xylene	2.0 U	µg/Kg
o-Xylene	1.0 U	µg/Kg
1,3-Dichlorobenzene	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	44	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	88	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/17/99	

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

ENCO LABORATORIES
REPORT # : OR5823.2
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

:PA METHOD 3550/8310 - 'OLYAROMATIC HYDROCARBONS	LAB BLANK	Units
laphthalene	17 U	µg/Kg
cenaphthylene	33 U	µg/Kg
-Methylnaphthalene	33 U	µg/Kg
-Methylnaphthalene	33 U	µg/Kg
cenaphthene	17 U	µg/Kg
luorene	3.3 U	µg/Kg
henanthrene	33 U	µg/Kg
nthracene	2.0 U	µg/Kg
luoranthene	3.3 U	µg/Kg
yrene	1.7 U	µg/Kg
enzo(a)anthracene	1.7 U	µg/Kg
hrysene	1.7 U	µg/Kg
enzo(b)fluoranthene	3.0 U	µg/Kg
enzo(k)fluoranthene	2.0 U	µg/Kg
enzo(a)pyrene	2.0 U	µg/Kg
ibenzo(a,h)anthracene	3.3 U	µg/Kg
enzo(g,h,i)perylene	3.3 U	µg/Kg
ideno(1,2,3-cd)pyrene	1.7 U	µg/Kg
irrogate: (p-terphenyl)		
irrogate Reported Value	12.2	µg/Kg
irrogate Expected Value	10	µg/Kg
irrogate % Recovery	122	%
irrogate Control Limits	50-146	%
ite Extracted	03/15/99	
ite Analyzed	03/16/99	

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

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	LSC Target µg	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 5030/8021 (CF-AN18-TMW-01,CF-AN18-TMW-02,CF-AN18-TMW-03)					
Benzene	88/ 88/110	20	72-134	<1	20
Toluene	92/ 92/109	20	72-124	<1	19
Ethylbenzene	90/ 91/108	20	67-129	1	21
o-Xylene	90/ 91/107	20	66-131	1	21
EPA Method 5030/8021 (CF-AN18-TMW-04,CF-AN18-TMW-DU14)					
Benzene	88/ 88/ 91	20	72-134	<1	20
Toluene	92/ 92/ 93	20	72-124	<1	19
Ethylbenzene	90/ 91/ 92	20	67-129	1	21
o-Xylene	90/ 91/ 92	20	66-131	1	21
EPA Method 3510/8310					
Naphthalene	73/ 78/ 71	10	22-130	7	20
Acenaphthene	84/ 90/ 86	10	14-163	7	19
Benzo(a)pyrene	50/ 49/ 87	1	33-137	2	36
Benzo(g,h,i)perylene	42/ 34/ 74	2	36-135	21	34

Environmental Conservation Laboratories Comprehensive QA Plan #960038

< = 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.

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	LCS Target µg	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 5035/8021					
Benzene	83/ 88/ 87	20	59-144	6	25
Toluene	86/ 90/ 92	20	67-132	4	58
Ethylbenzene	102/106/107	20	60-169	4	28
o-Xylene	95/102/101	20	62-183	7	24
EPA Method 3550/8310					
Naphthalene	93/ 93/ 68	10	26-125	<1	45
Acenaphthene	122/123/100	10	20-143	<1	35
Benzo(a)pyrene	103/103/103	2	42-138	<1	38
Benzo(g,h,i)perylene	100/ 98/105	1	51-142	2	26

Environmental Conservation Laboratories Comprehensive QA Plan #960038

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

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CHAIN OF CUSTODY RECORD

00830

PROJECT NO.:	SITE NAME:
0013	NASCF - NASTAX Fuel Transfer Line

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	8021B	8310					REMARKS
	3/11/99	1059		X	CF-AN18-TMW-01	3	X	X					H_2O
	3/11/99	1045		X	CF-AN18-TMW-02	3	X	X					H_2O
	3/11/99	1135		X	CF-AN18-TMW-03	3	X	X					H_2O
	3/11/99	1206		X	CF-AN18-TMW-04	3	X	X					H_2O
	3/11/99	1233		X	CF-AN18-SB-04-4	4	X	X					soil
	3/11/99	0000		X	CF-AN18-TMW-DU14	3	X	X					H_2O

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[signature]	3/11/99 1745	[signature]			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS:	
		[signature]	3/13/99 7:00AM	OR5823	

Order No. 70440 (0693)

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

March 19, 1999

Mr. John Kucera
Tetra Tech NUS
7018 A.C. Skinner Pkwy.
Suite 250
Jacksonville, FL 32256

Login Number(SDG): OR5823.1
Project Number: N0013/CTO-72
Description: NASJAX/NASCF Jet Fuel Transfer

Case Narrative:

Four water samples and one soil sample were collected on March 10, 1999. All samples were received at ENCO Laboratories, Inc., on March 11, 1999 at 1745 on wet ice and in good condition. This sample set was inclusive of samples CF-A19 (TMW-1,2,3,4 and SB-01-05). All samples were anlayzed as requested on the associated sample chain-of-custody forms.

The laboratory notes that the sample taken and submitted as CF-AN19-SB-01-05 was to be analyzed by EPA Method 5035/8021 for volatile aromatic constituents. The sample chain of custody record indicates that the sample was taken in 3 "Encore" sample thimbles on March 10, 1999. The EPA and FDEP specify that samples using ENCORE samplers be preserved / prepared in the laboratory within 48 hours of sampling. The ENCORE samplers provided to the laboratory were preserved in the laboratory on March 13, 1999. This preparation date would indicate a breach in accepted analytical protocol. The sample containers were maintained at 4°C during the period the sample was held prior to preservation (consisting of weight determination and sealing in a VOC vial with D.I. water prior to freezing the sample). The potential impact of the delay on the analytical results is not known. All other samples submitted with this SDG utilizing "Encore" containers were prepared within the specified holding times

All samples were extracted and analyzed within EPA specified holding times with the exception of the 5035/8021 analysis of soil sample CF-AN19-SB-01-05 as indicated above.

Quality Assurance acceptance limits are established by "in-house" statistical determination. This is true for surrogate, MS/MSD and LCS spike recovery evaluations.

The laboratory is providing separate reports per chain-of-custody received as requested by the client.

Environmental Conservation Laboratories, Inc.

David J. Vesey
Project Manager

David J. Vesey

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

CLIENT : Tetra Tech NUS
ADDRESS: 7018 A.C. Skinner Parkway
Suite 250
Jacksonville, FL 32256

REPORT # : OR5823.1
DATE SUBMITTED: March 12, 1999
DATE REPORTED : March 19, 1999

ATTENTION: John Kucera

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

PROJECT #: 0013

NASCF-NAS Jax Fuel Transfer Pipeline

#1	- CF-AN19-TMW-01	@ 16:50	(03/10/99)
#2	- CF-AN19-TMW-02	@ 17:25	(03/10/99)
#3	- CF-AN19-TMW-03	@ 18:00	(03/10/99)
#4	- CF-AN19-TMW-04	@ 18:20	(03/10/99)
#5	- CF-AN19-SB-01-05	@ 18:05	(03/10/99)

PROJECT MANAGER _____
David Vesey

ENCO LABORATORIES
REPORT # : OR5823.1
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN19-TMW-01	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	46.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	93	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/16/99	

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

RESULTS OF ANALYSIS

PA METHOD 3510/8310 - OLYAROMATIC HYDROCARBONS	CF-AN19-TMW-01	Units
aphthalene	0.50 U	µg/L
cenaphthylene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
cenaphthene	0.50 U	µg/L
luorene	0.10 U	µg/L
henanthrene	1.0 U	µg/L
nthracene	0.050 U	µg/L
luoranthene	0.10 U	µg/L
yrene	0.050 U	µg/L
enzo(a)anthracene	0.050 U	µg/L
hrysene	0.050 U	µg/L
enzo(b)fluoranthene	0.10 U	µg/L
enzo(k)fluoranthene	0.050 U	µg/L
enzo(a)pyrene	0.050 U	µg/L
ibenzo(a,h)anthracene	0.10 U	µg/L
enzo(g,h,i)perylene	0.10 U	µg/L
ideno(1,2,3-cd)pyrene	0.050 U	µg/L
rrogate: (p-terphenyl)		
rrogate Reported Value	9.5	µg/L
rrogate Expected Value	10	µg/L
rrogate % Recovery	95	%
rrogate Control Limits	39-148	%
te Extracted	03/16/99	
te Analyzed	03/17/99	

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

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN19-TMW-02	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	46	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	92	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/16/99	

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

ENCO LABORATORIES
REPORT # : OR5823.1
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN19-TMW-02	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	7.8	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	78	%
Surrogate Control Limits	39-148	%
Date Extracted	03/16/99	
Date Analyzed	03/17/99	

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

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN19-TMW-03	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	43.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	87	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/16/99	

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

ENCO LABORATORIES
REPORT # : OR5823.1
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

:PA METHOD 3510/8310 - 'OLYAROMATIC HYDROCARBONS	CF-AN19-TMW-03	Units
laphthalene	0.50 U	µg/L
cenaphthylene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
cenaphthene	0.50 U	µg/L
luorene	0.10 U	µg/L
henanthrene	1.0 U	µg/L
nthracene	0.050 U	µg/L
luoranthene	**0.10** I	µg/L
yrene	0.050 U	µg/L
enzo(a)anthracene	0.050 U	µg/L
rysene	0.050 U	µg/L
enzo(b)fluoranthene	0.10 U	µg/L
enzo(k)fluoranthene	0.050 U	µg/L
enzo(a)pyrene	0.050 U	µg/L
benzo(a,h)anthracene	0.10 U	µg/L
nzo(g,h,i)perylene	0.10 U	µg/L
deno(1,2,3-cd)pyrene	0.050 U	µg/L
rrogate: (p-terphenyl)		
rrogate Reported Value	8.3	µg/L
rrogate Expected Value	10	µg/L
rrogate % Recovery	83	%
rrogate Control Limits	39-148	%
te Extracted	03/16/99	
te Analyzed	03/17/99	

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

ENCO LABORATORIES
REPORT # : OR5823.1
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN19-TMW-04	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	41.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	83	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/16/99	

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

ENCO LABORATORIES
REPORT # : OR5823.1
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN19-TMW-04	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	9.1	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	91	%
Surrogate Control Limits	39-148	%
Date Extracted	03/16/99	
Date Analyzed	03/17/99	

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

ENCO LABORATORIES
REPORT # : OR5823.1
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	CF-AN19-SB-01-05	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	1.0 U	µg/Kg
Toluene	**5.6**	µg/Kg
Chlorobenzene	1.0 U	µg/Kg
Ethylbenzene	**1.5** I	µg/Kg
m-Xylene & p-Xylene	**5.0** I	µg/Kg
o-Xylene	**1.6** I	µg/Kg
1,3-Dichlorobenzene	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	42.5	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	85	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/17/99	

NOTE: Analyte values are reported on a dry weight basis.

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 # : OR5823.1
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	CF-AN19-SB-01-05	Units
Naphthalene	19 U	µg/Kg
Acenaphthylene	39 U	µg/Kg
-Methylnaphthalene	39 U	µg/Kg
-Methylnaphthalene	39 U	µg/Kg
cenaphthene	19 U	µg/Kg
luorene	3.9 U	µg/Kg
henanthrene	39 U	µg/Kg
nthracene	2.0 U	µg/Kg
luoranthene	3.9 U	µg/Kg
yrene	1.9 U	µg/Kg
enzo(a)anthracene	1.9 U	µg/Kg
hrysene	1.9 U	µg/Kg
enzo(b)fluoranthene	3.0 U	µg/Kg
enzo(k)fluoranthene	2.0 U	µg/Kg
enzo(a)pyrene	2.0 U	µg/Kg
ibenzo(a,h)anthracene	3.9 U	µg/Kg
enzo(g,h,i)perylene	3.9 U	µg/Kg
deno(1,2,3-cd)pyrene	1.9 U	µg/Kg
rrogate: (p-terphenyl)		
rrogate Reported Value	12.1	µg/Kg
rrogate Expected Value	10	µg/Kg
rrogate % Recovery	121	%
rrogate Control Limits	50-146	%
te Extracted	03/15/99	
te Analyzed	03/16/99	

SCELLANEOUS	METHOD	CF-AN19-SB-01-05	Units
rcent Solids	SM2540G	86	%
te Analyzed		03/18/99	

E: Analyte values are reported on a dry weight basis.

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

ENCO LABORATORIES
REPORT # : OR5823.1
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	44.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	99	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/15/99	

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

ENCO LABORATORIES
REPORT # : OR5823.1
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	LAB BLANK	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	8.7	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	87	%
Surrogate Control Limits	39-148	%
Date Extracted	03/16/99	
Date Analyzed	03/17/99	

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

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	1.0 U	µg/Kg
Toluene	1.0 U	µg/Kg
Chlorobenzene	1.0 U	µg/Kg
Ethylbenzene	1.0 U	µg/Kg
m-Xylene & p-Xylene	2.0 U	µg/Kg
o-Xylene	1.0 U	µg/Kg
1,3-Dichlorobenzene	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	44	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	88	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/17/99	

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

ENCO LABORATORIES
REPORT # : OR5823.1
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	LAB BLANK	Units
Naphthalene	17 U	µg/Kg
Acenaphthylene	33 U	µg/Kg
1-Methylnaphthalene	33 U	µg/Kg
2-Methylnaphthalene	33 U	µg/Kg
Acenaphthene	17 U	µg/Kg
Fluorene	3.3 U	µg/Kg
Phenanthrene	33 U	µg/Kg
Anthracene	2.0 U	µg/Kg
Fluoranthene	3.3 U	µg/Kg
Pyrene	1.7 U	µg/Kg
Benzo(a)anthracene	1.7 U	µg/Kg
Chrysene	1.7 U	µg/Kg
Benzo(b)fluoranthene	3.0 U	µg/Kg
Benzo(k)fluoranthene	2.0 U	µg/Kg
Benzo(a)pyrene	2.0 U	µg/Kg
Dibenzo(a,h)anthracene	3.3 U	µg/Kg
Benzo(g,h,i)perylene	3.3 U	µg/Kg
Indeno(1,2,3-cd)pyrene	1.7 U	µg/Kg
Surrogate: (p-terphenyl)		
Surrogate Reported Value	12.2	µg/Kg
Surrogate Expected Value	10	µg/Kg
Surrogate % Recovery	122	%
Surrogate Control Limits	50-146	%
Date Extracted	03/15/99	
Date Analyzed	03/16/99	

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

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	LCS Target µg	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 5030/8021 (CF-AN19-TMW-02,CF-AN19-TMW-04)					
Benzene	88/ 88/110	20	72-134	<1	20
Toluene	92/ 92/109	20	72-124	<1	19
Ethylbenzene	90/ 91/108	20	67-129	1	21
o-Xylene	90/ 91/107	20	66-131	1	21
EPA Method 5030/8021 (CF-AN19-TMW-01,CF-AN19-TMW-03)					
Benzene	88/ 88/ 91	20	72-134	<1	20
Toluene	92/ 92/ 93	20	72-124	<1	19
Ethylbenzene	90/ 91/ 92	20	67-129	1	21
o-Xylene	90/ 91/ 92	20	66-131	1	21
EPA Method 3510/8310					
Naphthalene	73/ 78/ 71	10	22-130	7	20
Acenaphthene	84/ 90/ 86	10	14-163	7	19
Benzo(a)pyrene	50/ 49/ 87	1	33-137	2	36
Benzo(g,h,i)perylene	42/ 34/ 74	2	36-135	21	34

Environmental Conservation Laboratories Comprehensive QA Plan #960038

< = 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.

ENCO LABORATORIES
REPORT # : OR5823.1
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

QUALITY CONTROL DATA

'arameter	% RECOVERY MS/MSD/LCS	LCS Target µg	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
:PA Method 5035/8021					
;enzene	83/ 88/ 87	20	59-144	6	25
'oluene	86/ 90/ 92	20	67-132	4	58
:thylbenzene	102/106/107	20	60-169	4	28
-Xylene	95/102/101	20	62-183	7	24
PA Method 3550/8310					
aphthalene	93/ 93/ 68	10	26-125	<1	45
cenaphthene	122/123/100	10	20-143	<1	35
enzo(a)pyrene	103/103/103	1	42-138	<1	38
enzo(g,h,i)perylene	100/ 98/105	2	51-142	2	26

vironmental Conservation Laboratories Comprehensive QA Plan #960038

= Less Than
= Matrix Spike
) = Matrix Spike Duplicate
3 = Laboratory Control Standard
) = Relative Percent Difference

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proval of the laboratory. Results for these procedures apply only to
samples as submitted.

CHAIN OF CUSTODY RECORD

00838

PROJECT NO.: 0013

SITE NAME: NASCF-NASJAX Fuel Transfer Pipeline

SAMPLERS (SIGNATURE):

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	8021B	8310					REMARKS
	3/10/99	1650		X	CF-AN19-~~SB~~ TMW-01	3	X	X					
	3/10/99	1725		X	CF-AN19-TMW-02	3	X	X					
	3/10/99	1805		X	CF-AN19-TMW-03	3	X	X					
	3/10/99	1820		X	CF-AN19-TMW-04	3	X	X					
	3/10/99	1805		X	CF-AN19-SB-01-05	4	X	X					

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
	3/11/99 1015				
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME: 3/13/99 7:00AM	REMARKS: ORS823	

Order No. 70440 (0693)

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

March 17, 1999

Mr. John Kucera
Tetra Tech NUS
7018 A.C. Skinner Pkwy.
Suite 250
Jacksonville, FL 32256

Login Number(SDG): OR5773
Project Number: NO013/CTO-72
Description: NASJAX/NASCF Jet Fuel Transfer

Case Narrative:

Ten water samples and two soil sample were collected on March 10, 1999. All samples were received at ENCO Laboratories, Inc., on March 10, 1999 on wet ice and in good condition. All samples were analyzed as requested on the associated sample chain-of-custody forms.

The laboratory noted that in the instance of sample TMW-01 there was a discrepancy in the sampling times recorded on the containers when compared to the COC. TMW-01 (16:15 (COC) vs 16:19 (sample)). The laboratory has reported the time as indicated on the sample chain-of-custody.

The analysis of the matrix spike duplicate sample for EPA Method 8021 resulted in high spike recovery results. This is determined as being a function of a poor purge which led to a low recovery of internal standard, "IS", which causes quantitation of target analytes showing a high bias. The internal standard recovery is established at 5.7%. The data is validated based on the results of the Laboratory Check Sample (LCS) and other associated quality assurance data acquired for this project.

All samples were extracted and analyzed within EPA specified holding times.

Quality Assurance acceptance limits are established by "in-house" statistical determination. This is true for surrogate, MS/MSD and LCS spike recovery evaluations.

Environmental Conservation Laboratories, Inc.

David J. Vesey
Project Manager

David J. Vesey

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

CLIENT : Tetra Tech NUS
ADDRESS: 7018 A.C. Skinner Parkway
Suite 250
Jacksonville, FL 32256

REPORT # : OR5773.1
DATE SUBMITTED: March 10, 1999
DATE REPORTED : March 16, 1999

ATTENTION: John Kucera

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

PROJECT #: 0013

NASCF-NAS Jax Jet Fuel Transfer

#1	- CF-AN20-TMW-01	@ 16:15	(03/09/99)
#2	- CF-AN20-TMW-02	@ 16:15	(03/09/99)
#3	- CF-AN20-TMW-03	@ 16:55	(03/09/99)
#4	- CF-AN20-TMW-04	@ 17:05	(03/09/99)
#5	- CF-AN20-TMW-05	@ 10:00	(03/10/99)
#6	- CF-AN20-TMW-06	@ 10:01	(03/10/99)
#7	- CF-AN20-SB-04-05	@ 10:10	(03/10/99)

ROJECT MANAGER _____
David Vesey

ENCO LABORATORIES
REPORT # : OR5773.1
DATE REPORTED: March 16, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN20-TMW-01	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	46	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	92	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/12/99	

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

ENCO LABORATORIES
REPORT # : OR5773.1
DATE REPORTED: March 16, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN20-TMW-01	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	0.50 U	µg/L
2-Methylnaphthalene	0.50 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	10.3	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	103	%
Surrogate Control Limits	60-120	%
Date Extracted	03/12/99	
Date Analyzed	03/12/99	

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

ENCO LABORATORIES
REPORT # : OR5773.1
DATE REPORTED: March 16, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN20-TMW-02	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	34.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	69	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/12/99	

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

ENCO LABORATORIES
REPORT # : OR5773.1
DATE REPORTED: March 16, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN20-TMW-02	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	0.50 U	µg/L
2-Methylnaphthalene	0.50 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	9.8	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	98	%
Surrogate Control Limits	60-120	%
Date Extracted	03/12/99	
Date Analyzed	03/12/99	

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

ENCO LABORATORIES
REPORT # : OR5773.1
DATE REPORTED: March 16, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN20-TMW-03	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	43	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	86	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/12/99	

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

ENCO LABORATORIES
REPORT # : OR5773.1
DATE REPORTED: March 16, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN20-TMW-03	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
-Methylnaphthalene	0.50 U	µg/L
-Methylnaphthalene	0.50 U	µg/L
cenaphthene	0.50 U	µg/L
luorene	0.10 U	µg/L
henanthrene	1.0 U	µg/L
nthracene	0.050 U	µg/L
luoranthene	0.10 U	µg/L
yrene	0.050 U	µg/L
enzo(a)anthracene	0.050 U	µg/L
hrysene	0.050 U	µg/L
enzo(b)fluoranthene	0.10 U	µg/L
enzo(k)fluoranthene	0.050 U	µg/L
enzo(a)pyrene	0.050 U	µg/L
ibenzo(a,h)anthracene	0.10 U	µg/L
enzo(g,h,i)perylene	0.10 U	µg/L
ndeno(1,2,3-cd)pyrene	0.050 U	µg/L
urrogate: (p-terphenyl)		
urrogate Reported Value	9.4	µg/L
urrogate Expected Value	10	µg/L
urrogate % Recovery	94	%
urrogate Control Limits	60-120	%
te Extracted	03/12/99	
te Analyzed	03/12/99	

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

ENCO LABORATORIES
REPORT # : OR5773.1
DATE REPORTED: March 16, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN20-TMW-04	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	43.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	87	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/12/99	

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

ENCO LABORATORIES
REPORT # : OR5773.1
DATE REPORTED: March 16, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN20-TMW-04	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
-Methylnaphthalene	0.50 U	µg/L
-Methylnaphthalene	0.50 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
enzo(a)anthracene	0.050 U	µg/L
hrysene	0.050 U	µg/L
enzo(b)fluoranthene	0.10 U	µg/L
enzo(k)fluoranthene	0.050 U	µg/L
enzo(a)pyrene	0.050 U	µg/L
ibenzo(a,h)anthracene	0.10 U	µg/L
enzo(g,h,i)perylene	0.10 U	µg/L
ndeno(1,2,3-cd)pyrene	0.050 U	µg/L
urrogate: (p-terphenyl)		
urrogate Reported Value	49	µg/L
urrogate Expected Value	10	µg/L
urrogate % Recovery	98	%
urrogate Control Limits	60-120	%
ate Extracted	03/12/99	
ate Analyzed	03/12/99	

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

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN20-TMW-05	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	48	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	96	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/12/99	

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

ENCO LABORATORIES
REPORT # : OR5773.1
DATE REPORTED: March 16, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Jet Fuel Transfer

RESULTS OF ANALYSIS

:PA METHOD 3510/8310 - 'OLYAROMATIC HYDROCARBONS	CF-AN20-TMW-05	Units
laphthalene	0.50 U	µg/L
cenaphthylene	1.0 U	µg/L
-Methylnaphthalene	0.50 U	µg/L
-Methylnaphthalene	0.50 U	µg/L
cenaphthene	0.50 U	µg/L
luorene	0.10 U	µg/L
henanthrene	1.0 U	µg/L
nthracene	0.050 U	µg/L
luoranthene	0.10 U	µg/L
yrene	0.050 U	µg/L
enzo(a)anthracene	0.050 U	µg/L
hrysene	0.050 U	µg/L
enzo(b)fluoranthene	0.10 U	µg/L
enzo(k)fluoranthene	0.050 U	µg/L
enzo(a)pyrene	0.050 U	µg/L
ibenzo(a,h)anthracene	0.10 U	µg/L
enzo(g,h,i)perylene	0.10 U	µg/L
ndeno(1,2,3-cd)pyrene	0.050 U	µg/L
ırrogate: (p-terphenyl)		
ırrogate Reported Value	11.2	µg/L
ırrogate Expected Value	10	µg/L
ırrogate % Recovery	112	%
ırrogate Control Limits	60-120	%
ıte Extracted	03/12/99	
ıte Analyzed	03/13/99	

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

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN20-TMW-06	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	46	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	92	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/12/99	

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

ENCO LABORATORIES
REPORT # : OR5773.1
DATE REPORTED: March 16, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN20-TMW-06	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
-Methylnaphthalene	0.50 U	µg/L
-Methylnaphthalene	0.50 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	10.4	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	104	%
Surrogate Control Limits	60-120	%
Date Extracted	03/12/99	
Date Analyzed	03/13/99	

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

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	CF-AN20-SB-04-05	Units
Methyl tert-butyl ether	3.0 U	µg/Kg
Benzene	1.0 U	µg/Kg
Toluene	1.0 U	µg/Kg
Chlorobenzene	1.0 U	µg/Kg
Ethylbenzene	1.0 U	µg/Kg
m-Xylene & p-Xylene	3.0 U	µg/Kg
o-Xylene	1.0 U	µg/Kg
1,3-Dichlorobenzene	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	46.5	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	93	%
Surrogate Control Limits	40-170	%
Date Analyzed	03/12/99	

NOTE: Analyte values are reported on a dry weight basis.

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

ENCO LABORATORIES
REPORT # : OR5773.1
DATE REPORTED: March 16, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	CF-AN20-SB-04-05	Units
Naphthalene	22 U	µg/Kg
Acenaphthylene	44 U	µg/Kg
2-Methylnaphthalene	22 U	µg/Kg
1-Methylnaphthalene	22 U	µg/Kg
Acenaphthene	22 U	µg/Kg
Fluorene	4.4 U	µg/Kg
Phenanthrene	2.2 U	µg/Kg
Anthracene	3.0 U	µg/Kg
Fluoranthene	4.4 U	µg/Kg
Pyrene	2.2 U	µg/Kg
Benzo(a)anthracene	2.2 U	µg/Kg
Chrysene	2.2 U	µg/Kg
Benzo(b)fluoranthene	4.0 U	µg/Kg
Benzo(k)fluoranthene	3.0 U	µg/Kg
Benzo(a)pyrene	3.0 U	µg/Kg
Dibenzo(a,h)anthracene	4.4 U	µg/Kg
Benzo(g,h,i)perylene	4.4 U	µg/Kg
Indeno(1,2,3-cd)pyrene	2.2 U	µg/Kg
Surrogate: (p-terphenyl)		
Surrogate Reported Value	12.8	µg/Kg
Surrogate Expected Value	10	µg/Kg
Surrogate % Recovery	128	%
Surrogate Control Limits	53-133	%
Date Extracted	03/11/99	
Date Analyzed	03/12/99	

MISCELLANEOUS	METHOD	CF-AN20-SB-04-05	Units
Percent Solids	SM2540G	76	%
Date Analyzed		03/13/99	

NOTE: Analyte values are reported on a dry weight basis.

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

ENCO LABORATORIES
REPORT # : OR5773.1
DATE REPORTED: March 16, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Jet Fuel Transfer

RESULTS OF ANALYSIS

:PA METHOD 5030/8021 - 'OLATILE AROMATICS	LAB BLANK	Units
Iethyl tert-butyl ether	2.0 U	µg/L
;enzene	1.0 U	µg/L
'oluene	1.0 U	µg/L
:hlorobenzene	1.0 U	µg/L
:thylbenzene	1.0 U	µg/L
ı-Xylene & p-Xylene	2.0 U	µg/L
›-Xylene	1.0 U	µg/L
.,3-Dichlorobenzene	1.0 U	µg/L
.,4-Dichlorobenzene	1.0 U	µg/L
.,2-Dichlorobenzene	1.0 U	µg/L
;urrogate: (Bromofluorobenzene)		
;urrogate Reported Value	45.5	µg/L
;urrogate Expected Value	50	µg/L
;urrogate % Recovery	91	%
;urrogate Control Limits	64-140	%
)ate Analyzed	03/11/99	

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

ENCO LABORATORIES
REPORT # : OR5773.1
DATE REPORTED: March 16, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS

	LAB BLANK	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	0.50 U	µg/L
2-Methylnaphthalene	0.50 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	0.050 U	µg/L
Anthracene	1.0 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	11.0	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	110	%
Surrogate Control Limits	60-120	%
Date Extracted	03/12/99	
Date Analyzed	03/12/99	

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

ENCO LABORATORIES
REPORT # : OR5773.1
DATE REPORTED: March 16, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	1.0 U	µg/Kg
Toluene	1.0 U	µg/Kg
Chlorobenzene	1.0 U	µg/Kg
Ethylbenzene	1.0 U	µg/Kg
m-Xylene & p-Xylene	2.0 U	µg/Kg
o-Xylene	1.0 U	µg/Kg
1,3-Dichlorobenzene	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	48	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	96	%
Surrogate Control Limits	40-170	%
Date Analyzed	03/12/99	

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

RESULTS OF ANALYSIS

:PA METHOD 3550/8310 - 'OLYAROMATIC HYDROCARBONS	LAB BLANK	Units
'aphthalene	17 U	µg/Kg
.cenaphthylene	33 U	µg/Kg
-Methylnaphthalene	17 U	µg/Kg
-Methylnaphthalene	17 U	µg/Kg
cenaphthene	17 U	µg/Kg
luorene	3.3 U	µg/Kg
henanthrene	1.7 U	µg/Kg
nthracene	2.0 U	µg/Kg
luoranthene	3.3 U	µg/Kg
yrene	1.7 U	µg/Kg
enzo(a)anthracene	1.7 U	µg/Kg
hrysene	1.7 U	µg/Kg
enzo(b)fluoranthene	3.0 U	µg/Kg
enzo(k)fluoranthene	2.0 U	µg/Kg
enzo(a)pyrene	2.0 U	µg/Kg
ibenzo(a,h)anthracene	3.3 U	µg/Kg
enzo(g,h,i)perylene	3.3 U	µg/Kg
ideno(1,2,3-cd)pyrene	1.7 U	µg/Kg
irrogate: (p-terphenyl)		
irrogate Reported Value	10.2	µg/Kg
irrogate Expected Value	10	µg/Kg
irrogate % Recovery	102	%
irrogate Control Limits	53-133	%
ite Extracted	03/11/99	
ite Analyzed	03/12/99	

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

ENCO LABORATORIES
REPORT # : OR5773.1
DATE REPORTED: March 16, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Jet Fuel Transfer

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	LCS TARGET µg/(L/Kg)	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 5030/8021					
Benzene	107/108/ 95	20	72-134	<1	20
Toluene	108/108/ 96	20	72-124	<1	19
Ethylbenzene	107/106/ 96	20	67-129	<1	21
o-Xylene	109/109/ 96	20	66-131	<1	21
EPA Method 3510/8310 (CF-AN20-TMW-01,CF-AN20-TMW-02,CF-AN20-TMW-03, CF-AN20-TMW-04)					
Naphthalene	70/ 73/102	10	66-105	4	20
Acenaphthene	85/111/118	10	20-143	26	19
Benzo(a)pyrene	106/132/111	1	37-122	22	36
Benzo(g,h,i)perylene	103/121/ 96	2	44-114	16	34
EPA Method 3510/8310 (CF-AN20-TMW-05,CF-AN20-TMW-06)					
Naphthalene	70/ 73/103	10	66-105	4	20
Acenaphthene	85/111/116	10	20-143	26	19
Benzo(a)pyrene	106/132/111	1	37-122	22	36
Benzo(g,h,i)perylene	103/121/112	2	44-114	16	34

Environmental Conservation Laboratories Comprehensive QA Plan #960038

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

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ENCO LABORATORIES
REPORT # : OR5773.1
DATE REPORTED: March 16, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Jet Fuel Transfer

QUALITY CONTROL DATA

'arameter	% RECOVERY MS/MSD/LCS	LCS TARGET µg/(L/Kg)	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
:PA Method 5035/8021					
·enzene	98/102/ 96	20	59-144	4	25
'oluene	79/280/ 87	20	67-132	112	58
thylbenzene	69/152/ 93	20	60-169	75	28
-Xylene	64/225/ 93	20	62-183	111	24
PA Method 3550/8310					
aphthalene	92/ 70/ 98	10	32-116	27	45
cenaphthene	111/106/111	10	37-112	5	35
enzo(a)pyrene	107/107/112	1	39-134	<1	38
enzo(g,h,i)perylene	108/111/114	2	53-130	3	26

ıvironmental Conservation Laboratories Comprehensive QA Plan #960038

= Less Than
; = Matrix Spike
:D = Matrix Spike Duplicate
:S = Laboratory Control Standard
'D = Relative Percent Difference

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CHAIN OF CUSTODY RECORD

00999

PROJECT NO.:	SITE NAME:
0013	NASCF – NASJAX Jet Fuel Transfer

SAMPLERS (SIGNATURE): [illegible]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	8021B	8310					REMARKS
	3/9/99	1615	JTK X	X	CF-AN20-TMW-01	3	X	X					
	3/9/99	1615	JTK X	X	CF-AN20-TMW-02	3	X	X					
	3/9/99	1655	JTK X	X	CF-AN20-TMW-03	3	X	X					
	3/9/99	1705		X	CF-AN20-TMW-04	3	X	X					
	3/10/99	1000		X	CF-AN20-TMW-05	3	X	X					
	3/10/99	1001		X	CF-AN20-TMW-06	3	X	X					
	3/10/99	1010		X	CF-AN20-SB-04-05	4	X	X					

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[illegible]	3-10-99 1700	Scott D Mitt			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE): 10:35AM
			[illegible]	3/11/99 10:35am	Kim Corey 3/11/99
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS:	
		[illegible]	3/11/99 17:35am		#OC 5773

Order No. 70440 (0693)

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

March 16, 1999

Mr. John Kucera
Tetra Tech NUS
7018 A.C. Skinner Pkwy.
Suite 250
Jacksonville, FL 32256

Login Number(SDG): OR5765
Project Number: NO013/CTO-72
Description: NASJAX/NASCF Transfer Pipeline

Case Narrative:

Six water samples and one soil sample were collected on March 9, 1999. All samples were received at ENCO Laboratories, Inc., on March 9, 1999 on wet ice and in good condition. All samples were anlayzed as requested on the associated sample chain-of-custody forms.

The laboratory noted that in the instance of samples TMW-01, TMW-03, and TMW-05 there were discrepancies in the sampling times recorded on the containers when compared to the COC. TMW-01 (10:45 (COC) vs 10:55 (sample)), TMW-03 (11:49 - COC vs. 11:54 containers) and TMW-05 (12:56 - COC vs. 13:01 containers). The laboratory has reported the times as indicated on the sample chain-of-custody.

The analysis of the matrix spike duplicate sample for EPA Method 8021 resulted in high spike recovery results. This is determined as being a function of a poor purge which led to a low recovery of internal standard, "IS", which causes quantitation of target analytes showing a high bias. The internal standard recovery is established at 5.7%. The data is validated based on the results of the Laboratory Check Sample (LCS) and other associated quality assurance data acquired for this project.

All samples were extracted and analyzed within EPA specified holding times.

Quality Assurance acceptance limits are established by "in-house" statistical determination. This is true for surrogate, MS/MSD and LCS spike recovery evaluations.

Environmental Conservation Laboratories, Inc.

David J. Vesey
Project Manager

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

CLIENT : Tetra Tech NUS
ADDRESS: 7018 A.C. Skinner Parkway
Suite 250
Jacksonville, FL 32256

REPORT # : OR5765
DATE SUBMITTED: March 9, 1999
DATE REPORTED : March 16, 1999

ATTENTION: John Kucera

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

PROJECT #: N0013/CTO-72

NAS C.F/Transfer Pipeline

03/09/99

#1	- CF-AN21-TMW-01	@ 10:40
#2	- CF-AN21-TMW-02	@ 11:10
#3	- CF-AN21-TMW-03	@ 11:49
#4	- CF-AN21-TMW-04	@ 12:10
#5	- CF-AN21-TMW-06	@ 12:50
#6	- CF-AN21-TMW-05	@ 12:56
#7	- CF-AN21-SB-01-05	@ 13:16

PROJECT MANAGER David Vesey

ENCO LABORATORIES
REPORT # : OR5765
DATE REPORTED: March 16, 1999
REFERENCE : N0013/CTO-72
PROJECT NAME : NAS C.F/
Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN21-TMW-01	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	36.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	73	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/11/99	

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

ENCO LABORATORIES
REPORT # : OR5765
DATE REPORTED: March 16, 1999
REFERENCE : N0013/CTO-72
PROJECT NAME : NAS C.F/
Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN21-TMW-01	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	0.50 U	µg/L
2-Methylnaphthalene	0.50 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	11.3	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	113	%
Surrogate Control Limits	60-120	%
Date Extracted	03/12/99	
Date Analyzed	03/12/99	

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

ENCO LABORATORIES
REPORT # : OR5765
DATE REPORTED: March 16, 1999
REFERENCE : N0013/CTO-72
PROJECT NAME : NAS C.F/
Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN21-TMW-02	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	47.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	95	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/11/99	

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

ENCO LABORATORIES
REPORT # : OR5765
DATE REPORTED: March 16, 1999
REFERENCE : N0013/CTO-72
PROJECT NAME : NAS C.F/
Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN21-TMW-02	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	0.50 U	µg/L
2-Methylnaphthalene	0.50 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	11.6	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	116	%
Surrogate Control Limits	60-120	%
Date Extracted	03/12/99	
Date Analyzed	03/12/99	

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

ENCO LABORATORIES
REPORT # : OR5765
DATE REPORTED: March 16, 1999
REFERENCE : N0013/CTO-72
PROJECT NAME : NAS C.F/
Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN21-TMW-03	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	44	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	88	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/11/99	

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

ENCO LABORATORIES
REPORT # : OR5765
DATE REPORTED: March 16, 1999
REFERENCE : N0013/CTO-72
PROJECT NAME : NAS C.F/
Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN21-TMW-03	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	0.50 U	µg/L
2-Methylnaphthalene	0.50 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	11.7	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	117	%
Surrogate Control Limits	60-120	%
Date Extracted	03/12/99	
Date Analyzed	03/12/99	

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

ENCO LABORATORIES
REPORT # : OR5765
DATE REPORTED: March 16, 1999
REFERENCE : N0013/CTO-72
PROJECT NAME : NAS C.F/
Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN21-TMW-04	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	46	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	92	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/11/99	

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

ENCO LABORATORIES
REPORT # : OR5765
DATE REPORTED: March 16, 1999
REFERENCE : N0013/CTO-72
PROJECT NAME : NAS C.F/
Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN21-TMW-04	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
-Methylnaphthalene	0.50 U	µg/L
-Methylnaphthalene	0.50 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	10	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	100	%
Surrogate Control Limits	60-120	%
Date Extracted	03/12/99	
Date Analyzed	03/12/99	

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

ENCO LABORATORIES
REPORT # : OR5765
DATE REPORTED: March 16, 1999
REFERENCE : N0013/CTO-72
PROJECT NAME : NAS C.F/
Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN21-TMW-06	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	44	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	88	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/11/99	

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

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN21-TMW-06	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	0.50 U	µg/L
2-Methylnaphthalene	0.50 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	11.2	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	112	%
Surrogate Control Limits	60-120	%
Date Extracted	03/12/99	
Date Analyzed	03/12/99	

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

ENCO LABORATORIES
REPORT # : OR5765
DATE REPORTED: March 16, 1999
REFERENCE : N0013/CTO-72
PROJECT NAME : NAS C.F/
Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-AN21-TMW-05	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	44	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	88	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/11/99	

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

ENCO LABORATORIES
REPORT # : OR5765
DATE REPORTED: March 16, 1999
REFERENCE : N0013/CTO-72
PROJECT NAME : NAS C.F/
Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-AN21-TMW-05	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	0.50 U	µg/L
2-Methylnaphthalene	0.50 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	10.7	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	107	%
Surrogate Control Limits	60-120	%
Date Extracted	03/12/99	
Date Analyzed	03/12/99	

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

ENCO LABORATORIES
REPORT # : OR5765
DATE REPORTED: March 16, 1999
REFERENCE : N0013/CTO-72
PROJECT NAME : NAS C.F/
Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	CF-AN21-SB-01-05	Units
Methyl tert-butyl ether	3.0 U	µg/Kg
Benzene	1.2 U	µg/Kg
Toluene	1.2 U	µg/Kg
Chlorobenzene	1.2 U	µg/Kg
Ethylbenzene	1.2 U	µg/Kg
m-Xylene & p-Xylene	3.0 U	µg/Kg
o-Xylene	1.2 U	µg/Kg
1,3-Dichlorobenzene	1.2 U	µg/Kg
1,4-Dichlorobenzene	1.2 U	µg/Kg
1,2-Dichlorobenzene	1.2 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	45	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	90	%
Surrogate Control Limits	40-170	%
Date Analyzed	03/12/99	

NOTE: Analyte values are reported on a dry weight basis.

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

ENCO LABORATORIES
REPORT # : OR5765
DATE REPORTED: March 16, 1999
REFERENCE : N0013/CTO-72
PROJECT NAME : NAS C.F/
Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	CF-AN21-SB-01-05	Units
Naphthalene	22 U	µg/Kg
Acenaphthylene	44 U	µg/Kg
1-Methylnaphthalene	22 U	µg/Kg
2-Methylnaphthalene	22 U	µg/Kg
Acenaphthene	22 U	µg/Kg
Fluorene	4.4 U	µg/Kg
Phenanthrene	2.2 U	µg/Kg
Anthracene	3.0 U	µg/Kg
Fluoranthene	4.4 U	µg/Kg
Pyrene	2.2 U	µg/Kg
Benzo(a)anthracene	2.2 U	µg/Kg
Chrysene	2.2 U	µg/Kg
Benzo(b)fluoranthene	4.0 U	µg/Kg
Benzo(k)fluoranthene	3.0 U	µg/Kg
Benzo(a)pyrene	3.0 U	µg/Kg
Dibenzo(a,h)anthracene	4.4 U	µg/Kg
Benzo(g,h,i)perylene	4.4 U	µg/Kg
Indeno(1,2,3-cd)pyrene	2.2 U	µg/Kg
Surrogate: (p-terphenyl)		
Surrogate Reported Value	12	µg/Kg
Surrogate Expected Value	10	µg/Kg
Surrogate % Recovery	120	%
Surrogate Control Limits	60-120	%
Date Extracted	03/11/99	
Date Analyzed	03/12/99	

MISCELLANEOUS	METHOD	CF-AN21-SB-01-05	Units
Percent Solids	SM2540G	76	%
Date Analyzed		03/13/99	

NOTE: Analyte values are reported on a dry weight basis.

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

ENCO LABORATORIES
REPORT # : OR5765
DATE REPORTED: March 16, 1999
REFERENCE : N0013/CTO-72
PROJECT NAME : NAS C.F/
Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	45.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	91	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/11/99	

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

ENCO LABORATORIES
REPORT # : OR5765
DATE REPORTED: March 16, 1999
REFERENCE : N0013/CTO-72
PROJECT NAME : NAS C.F/
Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	LAB BLANK	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	0.50 U	µg/L
2-Methylnaphthalene	0.50 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	0.050 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	11	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	110	%
Surrogate Control Limits	60-120	%
Date Extracted	03/12/99	
Date Analyzed	03/12/99	

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

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	1.0 U	µg/Kg
Toluene	1.0 U	µg/Kg
Chlorobenzene	1.0 U	µg/Kg
Ethylbenzene	1.0 U	µg/Kg
m-Xylene & p-Xylene	2.0 U	µg/Kg
o-Xylene	1.0 U	µg/Kg
1,3-Dichlorobenzene	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	48	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	96	%
Surrogate Control Limits	40-170	%
Date Analyzed	03/12/99	

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

ENCO LABORATORIES
REPORT # : OR5765
DATE REPORTED: March 16, 1999
REFERENCE : N0013/CTO-72
PROJECT NAME : NAS C.F/
Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	LAB BLANK	Units
Naphthalene	17 U	µg/Kg
Acenaphthylene	33 U	µg/Kg
1-Methylnaphthalene	17 U	µg/Kg
2-Methylnaphthalene	17 U	µg/Kg
Acenaphthene	17 U	µg/Kg
Fluorene	3.3 U	µg/Kg
Phenanthrene	1.7 U	µg/Kg
Anthracene	2.0 U	µg/Kg
Fluoranthene	3.3 U	µg/Kg
Pyrene	1.7 U	µg/Kg
Benzo(a)anthracene	1.7 U	µg/Kg
Chrysene	1.7 U	µg/Kg
Benzo(b)fluoranthene	3.0 U	µg/Kg
Benzo(k)fluoranthene	2.0 U	µg/Kg
Benzo(a)pyrene	2.0 U	µg/Kg
Dibenzo(a,h)anthracene	3.3 U	µg/Kg
Benzo(g,h,i)perylene	3.3 U	µg/Kg
Indeno(1,2,3-cd)pyrene	1.7 U	µg/Kg
Surrogate: (p-terphenyl)		
Surrogate Reported Value	10.2	µg/Kg
Surrogate Expected Value	10	µg/Kg
Surrogate % Recovery	102	%
Surrogate Control Limits	60-120	%
Date Extracted	03/11/99	
Date Analyzed	03/12/99	

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

ENCO LABORATORIES
REPORT # : OR5765
DATE REPORTED: March 16, 1999
REFERENCE : N0013/CTO-72
PROJECT NAME : NAS C.F/
Transfer Pipeline

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	LCS TARGET µg/(L/Kg)	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 5030/8021 (Water)					
Benzene	107/108/ 95	20	72-134	<1	20
Toluene	108/108/ 96	20	72-124	<1	19
Ethylbenzene	107/106/ 96	20	67-129	<1	21
o-Xylene	109/109/ 96	20	66-131	<1	21
EPA Method 3510/8310 (Water)					
Naphthalene	70/ 73/102	10	66-105	4	20
Acenaphthene	85/111/118	10	20-143	26	19
Benzo(a)pyrene	106/132/111	1	37-122	22	36
Benzo(g,h,i)perylene	103/121/ 96	2	44-114	16	34
EPA Method 5035/8021 (Soil)					
Benzene	98/102/ 96	20	59-144	4	25
Toluene	79/280/ 87	20	67-132	112	58
Ethylbenzene	69/152/ 93	20	60-169	75	28
o-Xylene	64/225/ 93	20	62-183	111	24
EPA Method 3550/8310 (Soil)					
Naphthalene	92/ 70/ 98	10	32-116	27	45
Acenaphthene	111/106/111	10	14-163	5	35
Benzo(a)pyrene	107/107/112	1	39-134	<1	38
Benzo(g,h,i)perylene	108/111/114	2	53-130	3	26

Environmental Conservation Laboratories Comprehensive QA Plan #960038

< = 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.

CHAIN OF CUSTODY RECORD

00998

PROJECT NO.: N0013 CTO 72

SITE NAME: NAS CECIL FIELD / JAX TRANSFER PIPELINE

SAMPLERS (SIGNATURE): [illegible] / Maurin Dale

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	8021B	8310						REMARKS
	3/9/99	0940		X	CF-AN21-TMW-01	3	X	X						DPT Groundwater
	3/9/99	1110		X	CF-AN21-TMW-02	3	X	X						
	3/9/99	1149		X	CF-AN21-TMW-03	3	X	X						
	3/9/99	1210		X	CF-AN21-TMW-04	3	X	X						
	3/9/99	1250		X	CF-AN21-TMW-06	3	X	X						
	3/9/99	1256		X	CF-AN21-TMW-05	3	X	X						
	3/9/99	1316		X	CF-AN21-SB-05 (JTR01 I 05)	4	X	X						Soil Sample

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[signature]	3/9/99 1700				
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE): Kim Casey 3/10/99 8:00AM
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE): [illegible]	DATE / TIME: 3/9/99 1700	REMARKS: #OR5765	

Order No. 70440

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

April 1, 1999

Mr. John Kucera
Tetra Tech NUS
7018 A.C. Skinner Pkwy.
Suite 250
Jacksonville, FL 32256

Login Number (SDG):	OR6017
Project Number:	NO013/CTO-72
Description:	NASJAX/NASCF Jet Fuel Transfer

Case Narrative:

Two water samples and two soil samples were collected on March 26, 1999. All samples were received at ENCO Laboratories, Inc., on March 26, 1999 on wet ice and in good condition. This sample set was inclusive of samples CF-VA02 (TMW-01,02, and SB-01-06 and SB-02-06). All samples were analyzed as requested on the associated sample chain-of-custody forms.

All samples were extracted and analyzed within EPA specified holding times.

The sample identified as "CF-VA02-TMW-01" and "CF-VA02-TMW-02" required multiple analyses by EPA Method 8310. This requirement was a result of high levels of target compounds having concentrations above the linear range of the analyses which required a dilution for compliant quantitation. The diluted analyses also served as an quantification aid in removing potential interferences present in the matrix which may have inhibited accurate determination of the target analytes. The results determined from the diluted analyses are indicated by a "D" flag with an associated dilution level indicated in the footnotes of the page within the body of the report.

Quality Assurance acceptance limits are established by "in-house" statistical determination. This is true for surrogate, MS/MSD and LCS spike recovery evaluations.

The laboratory is providing separate reports per chain-of-custody received as requested by the client.

The laboratory is providing a second report, ENCO Report # OR5998.2, which shows results of analyses for petroleum hydrocarbons by FLPRO (modified EPA 8015) technique which were performed at the clients request.

Environmental Conservation Laboratories, Inc.

David J. Vesey
Project Manager

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

CLIENT : Tetra Tech NUS
ADDRESS: 7018 A.C. Skinner Parkway
Suite 250
Jacksonville, FL 32256

REPORT # : OR6017
DATE SUBMITTED: March 26, 1999
DATE REPORTED : April 5, 1999

ATTENTION: John Kucera

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

PROJECT #: 0013

Transfer Pipeline #103rd St.

03/26/99

#1 - CF-VA02-SB-01-6 @ 10:39
#2 - CF-VA02-TMW-01 @ 11:27
#3 - CF-VA02-SB-02-6 @ 11:49
#4 - CF-VA02-TMW-02 @ 12:56

ROJECT MANAGER David Vesey

ENCO LABORATORIES
REPORT # : OR6017
DATE REPORTED: April 5, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline #103rd St.

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	CF-VA02-SB-01-6	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	1.0 U	µg/Kg
Toluene	1.0 U	µg/Kg
Chlorobenzene	1.0 U	µg/Kg
Ethylbenzene	**71**	µg/Kg
m-Xylene & p-Xylene	**65**	µg/Kg
o-Xylene	1.0 U	µg/Kg
1,3-Dichlorobenzene	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	*	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	*	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/30/99	

NOTE: Analyte values are reported on a dry weight basis.

* Matrix interferences prevent accurate determination; second detector recovery (ELCD) indicates acceptable recovery (92%).
J = Compound was analyzed for but not detected to the level shown.

ENCO LABORATORIES
REPORT # : OR6017
DATE REPORTED: April 5, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline #103rd St.

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	CF-VA02-SB-01-6	Units
Naphthalene	21 U	µg/Kg
cenaphthylene	42 U	µg/Kg
-Methylnaphthalene	44	µg/Kg
-Methylnaphthalene	48	µg/Kg
cenaphthene	21 U	µg/Kg
luorene	4.2 U	µg/Kg
henanthrene	42 U	µg/Kg
nthracene	4.0 I	µg/Kg
luoranthene	30	µg/Kg
yrene	26	µg/Kg
enzo(a)anthracene	9.6	µg/Kg
hrysene	9.1	µg/Kg
enzo(b)fluoranthene	8.0 I	µg/Kg
enzo(k)fluoranthene	4.0 I	µg/Kg
enzo(a)pyrene	6.0	µg/Kg
benzo(a,h)anthracene	4.2 U	µg/Kg
enzo(g,h,i)perylene	4.2 U	µg/Kg
deno(1,2,3-cd)pyrene	4.0	µg/Kg
rrogate: (p-terphenyl)		
rrogate Reported Value	13.3	µg/Kg
rrogate Expected Value	10	µg/Kg
rrogate % Recovery	133	%
rrogate Control Limits	50-146	%
te Extracted	03/31/99	
te Analyzed	04/01/99	

SCELLANEOUS	METHOD	CF-VA02-SB-01-6	Units
rcent Solids	SM2540G	80	%
te Analyzed		03/29/99	

TE: Analyte values are reported on a dry weight basis.

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

ENCO LABORATORIES
REPORT # : OR6017
DATE REPORTED: April 5, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline #103rd St.

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-VA02-TMW-01	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	**39**	µg/L
m-Xylene & p-Xylene	**95**	µg/L
o-Xylene	**41**	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	*	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	*	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/29/99	

* Matrix interferences prevent accurate determination; second detector recovery (ELCD) indicates acceptable recovery (79%).
U = Compound was analyzed for but not detected to the level shown.

ENCO LABORATORIES
REPORT # : OR6017
DATE REPORTED: April 5, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline #103rd St.

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-VA02-TMW-01			Units
Naphthalene	120		D1	µg/L
Acenaphthylene	20	U	D1	µg/L
1-Methylnaphthalene	220		D1	µg/L
2-Methylnaphthalene	160		D1	µg/L
Acenaphthene	28		D1	µg/L
Fluorene	3.4		D1	µg/L
Phenanthrene	20	U	D1	µg/L
Anthracene	1.5			µg/L
Fluoranthene	7.0		D1	µg/L
Pyrene	3.8		D1	µg/L
Benzo(a)anthracene	1.7			µg/L
Chrysene	1.5			µg/L
Benzo(b)fluoranthene	1.5			µg/L
Benzo(k)fluoranthene	0.64			µg/L
Benzo(a)pyrene	1.4			µg/L
Dibenzo(a,h)anthracene	0.98			µg/L
Benzo(g,h,i)perylene	0.82			µg/L
Indeno(1,2,3-cd)pyrene	0.78			µg/L
Surrogate: (p-terphenyl)				
Surrogate Reported Value	12.0			µg/L
Surrogate Expected Value	10			µg/L
Surrogate % Recovery	120			%
Surrogate Control Limits	39-148			%
Date Extracted	03/31/99			
Date Analyzed	03/31/99			

= Compound was analyzed for but not detected to the level shown.
= Analyte value determined from a 1:20 dilution.

ENCO LABORATORIES
REPORT # : OR6017
DATE REPORTED: April 5, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline #103rd St.

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	CF-VA02-SB-02-6	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	1.1 U	µg/Kg
Toluene	1.1 U	µg/Kg
Chlorobenzene	1.1 U	µg/Kg
Ethylbenzene	1.1 U	µg/Kg
m-Xylene & p-Xylene	2.0 U	µg/Kg
o-Xylene	1.1 U	µg/Kg
1,3-Dichlorobenzene	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.1 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	51	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	102	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/30/99	

NOTE: Analyte values are reported on a dry weight basis.

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

ENCO LABORATORIES
REPORT # : OR6017
DATE REPORTED: April 5, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline #103rd St.

RESULTS OF ANALYSIS

:PA METHOD 3550/8310 - 'OLYAROMATIC HYDROCARBONS	CF-VA02-SB-02-6	Units
laphthalene	20 U	µg/Kg
cenaphthylene	40 U	µg/Kg
-Methylnaphthalene	40 U	µg/Kg
-Methylnaphthalene	40 U	µg/Kg
cenaphthene	20 U	µg/Kg
luorene	4.0 U	µg/Kg
henanthrene	40 U	µg/Kg
nthracene	2.0 U	µg/Kg
luoranthene	4.0 U	µg/Kg
yrene	2.0 U	µg/Kg
enzo(a)anthracene	2.0 U	µg/Kg
hrysene	**4.0**	µg/Kg
enzo(b)fluoranthene	4.0 U	µg/Kg
enzo(k)fluoranthene	2.0 U	µg/Kg
enzo(a)pyrene	2.0 U	µg/Kg
ibenzo(a,h)anthracene	4.0 U	µg/Kg
enzo(g,h,i)perylene	4.0 U	µg/Kg
ideno(1,2,3-cd)pyrene	2.0 U	µg/Kg
irrogate: (p-terphenyl)		
irrogate Reported Value	11.6	µg/Kg
irrogate Expected Value	10	µg/Kg
irrogate % Recovery	116	%
irrogate Control Limits	50-146	%
te Extracted	03/31/99	
te Analyzed	04/01/99	

SCELLANEOUS	METHOD	CF-VA02-SB-02-6	Units
rcent Solids	SM2540G	**84**	%
te Analyzed		03/29/99	

TE: Analyte values are reported on a dry weight basis.

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

ENCO LABORATORIES
REPORT # : OR6017
DATE REPORTED: April 5, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline #103rd St.

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-VA02-TMW-02	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	**32**	µg/L
m-Xylene & p-Xylene	**100**	µg/L
o-Xylene	**1.0** I	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	*	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	*	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/29/99	

= Matrix interferences prevent accurate determination; second detector recovery (ELCD) indicates acceptable recovery (99%).
Compound was analyzed for but not detected to the level shown.
Analyte detected; value is between the Method Detection Level (MDL) and the Practical Quantitation Level (PQL).

ENCO LABORATORIES
REPORT # : OR6017
DATE REPORTED: April 5, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline #103rd St.

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-VA02-TMW-02		Units
Naphthalene	**87**	D2	µg/L
Acenaphthylene	10 U	D2	µg/L
1-Methylnaphthalene	**140**	D2	µg/L
2-Methylnaphthalene	**92**	D2	µg/L
Acenaphthene	**18**	D2	µg/L
Fluorene	**1.2**		µg/L
Phenanthrene	1.0 U		µg/L
Anthracene	**0.20**		µg/L
Fluoranthene	**1.0**		µg/L
Pyrene	**0.98**		µg/L
Benzo(a)anthracene	**0.10**		µg/L
Chrysene	**0.24**		µg/L
Benzo(b)fluoranthene	0.10 U		µg/L
Benzo(k)fluoranthene	0.050 U		µg/L
Benzo(a)pyrene	**0.070** I		µg/L
Dibenzo(a,h)anthracene	0.10 U		µg/L
Benzo(g,h,i)perylene	0.10 U		µg/L
Indeno(1,2,3-cd)pyrene	0.050 U		µg/L
Surrogate: (p-terphenyl)			
Surrogate Reported Value	7.8		µg/L
Surrogate Expected Value	10		µg/L
Surrogate % Recovery	78		%
Surrogate Control Limits	39-148		%
Date Extracted	03/31/99		
Date Analyzed	03/31/99		

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).
D2 = Analyte value determined from a 1:10 dilution.

ENCO LABORATORIES
REPORT # : OR6017
DATE REPORTED: April 5, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline #103rd St.

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	44.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	89	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/29/99	

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

ENCO LABORATORIES
REPORT # : OR6017
DATE REPORTED: April 5, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline #103rd St.

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	LAB BLANK	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	8.8	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	88	%
Surrogate Control Limits	39-148	%
Date Extracted	03/31/99	
Date Analyzed	03/31/99	

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

ENCO LABORATORIES
REPORT # : OR6017
DATE REPORTED: April 5, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline #103rd St.

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	1.0 U	µg/Kg
Toluene	1.0 U	µg/Kg
Chlorobenzene	1.0 U	µg/Kg
Ethylbenzene	1.0 U	µg/Kg
m-Xylene & p-Xylene	2.0 U	µg/Kg
o-Xylene	1.0 U	µg/Kg
1,3-Dichlorobenzene	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	50	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	100	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/30/99	

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

ENCO LABORATORIES
REPORT # : OR6017
DATE REPORTED: April 5, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline #103rd St.

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	LAB BLANK	Units
Naphthalene	17 U	µg/Kg
Acenaphthylene	33 U	µg/Kg
1-Methylnaphthalene	33 U	µg/Kg
2-Methylnaphthalene	33 U	µg/Kg
Acenaphthene	17 U	µg/Kg
Fluorene	3.3 U	µg/Kg
Phenanthrene	33 U	µg/Kg
Anthracene	2.0 U	µg/Kg
Fluoranthene	3.3 U	µg/Kg
Pyrene	1.7 U	µg/Kg
Benzo(a)anthracene	1.7 U	µg/Kg
Chrysene	1.7 U	µg/Kg
Benzo(b)fluoranthene	3.0 U	µg/Kg
Benzo(k)fluoranthene	2.0 U	µg/Kg
Benzo(a)pyrene	2.0 U	µg/Kg
Dibenzo(a,h)anthracene	3.3 U	µg/Kg
Benzo(g,h,i)perylene	3.3 U	µg/Kg
Indeno(1,2,3-cd)pyrene	1.7 U	µg/Kg
Surrogate: (p-terphenyl)		
Surrogate Reported Value	11.2	µg/Kg
Surrogate Expected Value	10	µg/Kg
Surrogate % Recovery	112	%
Surrogate Control Limits	50-146	%
Date Extracted	03/31/99	
Date Analyzed	04/01/99	

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

ENCO LABORATORIES
REPORT # : OR6017
DATE REPORTED: April 5, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline #103rd St.

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	LCS Target µg	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 5030/8021					
Benzene	106/106/ 99	20	72-134	<1	20
Toluene	110/111/101	20	72-124	<1	19
Ethylbenzene	110/110/100	20	67-129	<1	21
o-Xylene	110/112/ 98	20	66-131	2	21
EPA Method 3510/8310					
Naphthalene	68/ 92/ 81	10	22-130	30	20
Acenaphthene	80/ 90/ 88	10	14-163	12	19
Benzo(a)pyrene	90/101/ 99	1	33-137	12	36
Benzo(g,h,i)perylene	62/ 66/ 78	2	36-135	6	34
EPA Method 5035/8021					
Benzene	101/ 99/107	20	59-144	2	25
Toluene	96/ 96/100	20	67-132	<1	58
Ethylbenzene	108/112/118	20	60-169	4	28
o-Xylene	105/110/115	20	62-183	5	24
EPA Method 3550/8310					
Naphthalene	82/ 95/ 86	10	26-125	15	45
Acenaphthene	79/ 90/ 90	10	20-143	13	35
Benzo(a)pyrene	102/122/ 98	1	42-138	18	38
Benzo(g,h,i)perylene	102/126/102	2	51-142	21	26

Environmental Conservation Laboratories Comprehensive QA Plan #960038

< = 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.

QBARF #_____

ENVIRONMENTAL CONSERVATION LABORATORIES

4810 Executive Park Court, Suite 211
Jacksonville, Florida 32216-6069
Ph. (904) 296-3007 • Fax (904) 296-6210

10207 General Drive
Orlando, Florida 32824
Ph. (407) 826-5314 • Fax (407) 850-6945

ENCO CompQAP No.: 960038G/0

CHAIN OF CUSTODY RECORD

PROJECT REFERENCE: Transfer Pipeline 103rd St
PROJECT NO.: 0013
P.O. NUMBER:
PROJECT LOC. (State): FL
SAMPLER(s) NAME: Jennifer Elliott
PHONE: 281-2400
FAX: 281-0070
CLIENT NAME: Tetratech
CLIENT PROJECT MANAGER: Jon Kucera
CLIENT ADDRESS (CITY, STATE, ZIP): 7018 A.C. Skinner Parkway Ste #350

PAGE 1 OF 1

☒ STANDARD REPORT DELIVERY
☐ EXPEDITED REPORT DELIVERY (surcharge)
Date Due:_____

STATION #	DATE	TIME	GRAB	COMP	SAMPLE IDENTIFICATION	SURFACE WATER	GROUND WATER	WASTEWATER	DRINKING WATER	SOIL/SOLID/SEDIMENT	NONAQUEOUS LIQUID (oil, solvent, etc.)	AIR	SLUDGE	OTHER	HCl (Volatiles 8260B & RAH CB3-12)	—								REMARKS
															PRESERVATIVE		NUMBER OF CONTAINERS SUBMITTED							
1	3-26-99	1039		X	CF-VA02-SB-01-G				X						3	1								
2	3-26-99	1127	X		CF-VA02-TMW-01		X								2	1								
3	3-26-99	1149		X	CF-VA02-SB-02-G				X						3	1								
4	3-26-99	1256	X		CF-VA02-TMW-02		X								2	1								
5																								
6																								
7																								
8																								
9																								
10																								
11																								
12																								
13																								
14																								

SAMPLE KIT PREPARED BY: ☐JACKSONVILLE ☐ORLANDO	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE 3-26-99	TIME 1410	RECEIVED BY: (SIGNATURE)	DATE	TIME
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
RECEIVED BY (SIGNATURE) Jessica Pickren / ENCO ORL.	DATE 3/27/99	TIME 08:00	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	ENCO LOG NO.	REMARKS
☐Jacksonville ☐ Orlando	3/26/99	1412	☑ YES ☐ NO	ORL0017	

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

April 6, 1999

Mr. John Kucera
Tetra Tech NUS
7018 A.C. Skinner Pkwy.
Suite 250
Jacksonville, FL 32256

Login Number(SDG): OR6019
Project Number: NO013/CTO-72
Description: NASJAX/NASCF Jet Fuel Transfer

Case Narrative:

One water sample and one soil sample were collected on March 26, 1999. All samples were received at ENCO Laboratories, Inc., on March 26, 1999 on wet ice and in good condition. This sample set was inclusive of samples CF-VA06 (TMW-01 and SB-01-1). All samples were analyzed as requested on the associated sample chain-of-custody forms.

All samples were extracted and analyzed within EPA specified holding times.

The soil sample analysis for EPA Method 8310 (PAH Compounds by HPLC) required analysis at a dilution of 1:5 due to high matrix interferences and levels of target analytes above the analytical range of calibration. The hard copy of the report indicates the analyte values selected by the analyst from the most appropriate results. The results of the individual analyses are submitted for review with this report on a laboratory "bench sheet" as generated by the analyst. This sheet is attached as an addendum to each of the hard copies submitted. It should be noted that any values not reported in the evidentiary copy should be considered as "estimated" due to considerations of data review and approval. In some instances the presence of analytes detected may be false positive detections due to matrix interferences and might not be confirmed by the analyses at the different dilutions.

Quality Assurance acceptance limits are established by "in-house" statistical determination. This is true for surrogate, MS/MSD and LCS spike recovery evaluations.

The laboratory is providing separate reports per chain-of-custody received as requested by the client.

Environmental Conservation Laboratories, Inc.

David J. Vesey
Project Manager

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

PROJECT A. Cooper Lamb
DELIVERY Tetra Tech NUS, Inc.
ADDRESS: 794 S. Military Trail
Deerfield Beach, FL 33442

REPORT # : OR6019
DATE SUBMITTED : March 26, 1999
DATE REPORTED : April 5, 1999

INVOICE Accounts Payable
ADDRESS: Tetra Tech NUS, Inc.
661 Andersen Drive
Pittsburgh, PA 15220-2745

ATTENTION: Accounts Payable
REFERENCE: Transfer Pipeline #103rd St.
0013
P.O. #N0013-P99201

Taxpayer Identification Number: 59-3497702

INVOICE

DESCRIPTION	PRICE	QTY	AMOUNT
EPA METHOD 5030/8021 (VOCs by GC/PID)	$ 60.00	X 1	$ 60.00
EPA METHOD 3510/8310 (PAH by HPLC)	$ 120.00	X 1	$ 120.00
EPA METHOD 5035/8021 (VOCs by GC/PID)	$ 104.00	X 1	$ 104.00
EPA METHOD 3550/8310 (PAH by HPLC)	$ 120.00	X 1	$ 120.00
EPA METHOD SM2540G (Percent Solids)	$ 0.00	X 1	$ 0.00
	TOTAL		**$ 404.00**

Please remit payment to :
Environmental Conservation Laboratories, Inc.
9500 Satellite Blvd., Suite 190
Orlando, FL 32837-8466
TERMS: NET 30 DAYS
Past Due Balances are subject to a 1.5% per month service charge.

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

PROJECT A. Cooper Lamb
DELIVERY Tetra Tech NUS, Inc.
ADDRESS: 794 S. Military Trail
Deerfield Beach, FL 33442

REPORT # : OR6019
DATE SUBMITTED : March 26, 1999
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ADDRESS: Tetra Tech NUS, Inc.
661 Andersen Drive
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ATTENTION: Accounts Payable
REFERENCE: Transfer Pipeline #103rd St.
0013
P.O. #N0013-P99201

Taxpayer Identification Number: 59-3497702

INVOICE

DESCRIPTION	PRICE	QTY	AMOUNT
EPA METHOD 5030/8021 (VOCs by GC/PID)	$ 60.00	X 1	$ 60.00
EPA METHOD 3510/8310 (PAH by HPLC)	$ 120.00	X 1	$ 120.00
EPA METHOD 5035/8021 (VOCs by GC/PID)	$ 104.00	X 1	$ 104.00
EPA METHOD 3550/8310 (PAH by HPLC)	$ 120.00	X 1	$ 120.00
EPA METHOD SM2540G (Percent Solids)	$ 0.00	X 1	$ 0.00
	TOTAL		**$ 404.00**

Please remit payment to :
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ENCO Laboratories

DHRS Certification No. E83182

April 6, 1999

Mr. John Kucera
Tetra Tech NUS
7018 A.C. Skinner Pkwy.
Suite 250
Jacksonville, FL 32256

Login Number(SDG): OR6019
Project Number: NO013/CTO-72
Description: NASJAX/NASCF Jet Fuel Transfer

Case Narrative:

One water sample and one soil sample were collected on March 26, 1999. All samples were received at ENCO Laboratories, Inc., on March 26, 1999 on wet ice and in good condition. This sample set was inclusive of samples CF-VA06 (TMW-01 and SB-01-1). All samples were analyzed as requested on the associated sample chain-of-custody forms.

All samples were extracted and analyzed within EPA specified holding times.

The soil sample analysis for EPA Method 8310 (PAH Compounds by HPLC) required analysis at a dilution of 1:5 due to high matrix interferences and levels of target analytes above the analytical range of calibration. The hard copy of the report indicates the analyte values selected by the analyst from the most appropriate results. The results of the individual analyses are submitted for review with this report on a laboratory "bench sheet" as generated by the analyst. This sheet is attached as an addendum to each of the hard copies submitted. It should be noted that any values not reported in the evidentiary copy should be considered as "estimated" due to considerations of data review and approval. In some instances the presence of analytes detected may be false positive detections due to matrix interferences and might not be confirmed by the analyses at the different dilutions.

Quality Assurance acceptance limits are established by "in-house" statistical determination. This is true for surrogate, MS/MSD and LCS spike recovery evaluations.

The laboratory is providing separate reports per chain-of-custody received as requested by the client.

Environmental Conservation Laboratories, Inc.

David J. Vesey
Project Manager

David J. Vesey

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

CLIENT : Tetra Tech NUS
ADDRESS: 7018 A.C. Skinner Parkway
Suite 250
Jacksonville, FL 32256

REPORT # : OR6019
DATE SUBMITTED: March 26, 1999
DATE REPORTED : April 5, 1999

ATTENTION: John Kucera

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

PROJECT #: 0013

Transfer Pipeline #103rd St.

03/26/99

#1 - CF-VA06-SB-01-1 @ 08:54
#2 - CF-VA06-TMW-01 @ 09:03

PROJECT MANAGER David Vesey

ENCO LABORATORIES
REPORT # : OR6019
DATE REPORTED: April 5, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline #103rd St.

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	CF-VA06-SB-01-1	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	1.0 U	µg/Kg
Toluene	1.0 U	µg/Kg
Chlorobenzene	1.0 U	µg/Kg
Ethylbenzene	1.0 U	µg/Kg
m-Xylene & p-Xylene	2.0 U	µg/Kg
o-Xylene	1.0 U	µg/Kg
1,3-Dichlorobenzene	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	42.5	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	85	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/30/99	

NOTE: Analyte values are reported on a dry weight basis.

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

ENCO LABORATORIES
REPORT # : OR6019
DATE REPORTED: April 5, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline #103rd St.

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	CF-VA06-SB-01-1		Units
Naphthalene	21 U		µg/Kg
Acenaphthylene	42 U		µg/Kg
1-Methylnaphthalene	**44**		µg/Kg
2-Methylnaphthalene	**44**		µg/Kg
Acenaphthene	**85**		µg/Kg
Fluorene	**8.5**		µg/Kg
Phenanthrene	42 U		µg/Kg
Anthracene	2.0 U		µg/Kg
Fluoranthene	**180**	D1	µg/Kg
Pyrene	**440**	D1	µg/Kg
Benzo(a)anthracene	**59**	D1	µg/Kg
Chrysene	**47**	D1	µg/Kg
Benzo(b)fluoranthene	**200**	D1	µg/Kg
Benzo(k)fluoranthene	**86**	D1	µg/Kg
Benzo(a)pyrene	**130**	D1	µg/Kg
Dibenzo(a,h)anthracene	**150**	D1	µg/Kg
Benzo(g,h,i)perylene	**92**	D1	µg/Kg
Indeno(1,2,3-cd)pyrene	**120**	D1	µg/Kg
Surrogate: (p-terphenyl)			
Surrogate Reported Value	18.2 J D1		µg/Kg
Surrogate Expected Value	10		µg/Kg
Surrogate % Recovery	182		%
Surrogate Control Limits	50-146		%
Date Extracted	03/31/99		
Date Analyzed	04/01/99		

MISCELLANEOUS	METHOD	CF-VA06-SB-01-1	Units
Percent Solids	SM2540G	**79**	%
Date Analyzed		03/29/99	

NOTE: Analyte values are reported on a dry weight basis.

J = Estimated value; matrix interferences prevent accurate determination.
U = Compound was analyzed for but not detected to the level shown.
D1 = Analyte value determined from a 1:5 dilution.

ENCO LABORATORIES
REPORT # : OR6019
DATE REPORTED: April 5, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline #103rd St.

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-VA06-TMW-01	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	47	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	94	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/29/99	

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

ENCO LABORATORIES
REPORT # : OR6019
DATE REPORTED: April 5, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline #103rd St.

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-VA06-TMW-01	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	**0.17**	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	**0.060** I	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	11.3	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	113	%
Surrogate Control Limits	39-148	%
Date Extracted	03/31/99	
Date Analyzed	03/31/99	

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 # : OR6019
DATE REPORTED: April 5, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline #103rd St.

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS

	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	1.0 U	µg/Kg
Toluene	1.0 U	µg/Kg
Chlorobenzene	1.0 U	µg/Kg
Ethylbenzene	1.0 U	µg/Kg
m-Xylene & p-Xylene	2.0 U	µg/Kg
o-Xylene	1.0 U	µg/Kg
1,3-Dichlorobenzene	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	50	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	100	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/30/99	

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

ENCO LABORATORIES
REPORT # : OR6019
DATE REPORTED: April 5, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline #103rd St.

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	LAB BLANK	Units
Naphthalene	17 U	µg/Kg
Acenaphthylene	33 U	µg/Kg
1-Methylnaphthalene	33 U	µg/Kg
2-Methylnaphthalene	33 U	µg/Kg
Acenaphthene	17 U	µg/Kg
Fluorene	3.3 U	µg/Kg
Phenanthrene	33 U	µg/Kg
Anthracene	2.0 U	µg/Kg
Fluoranthene	3.3 U	µg/Kg
Pyrene	1.7 U	µg/Kg
Benzo(a)anthracene	1.7 U	µg/Kg
Chrysene	1.7 U	µg/Kg
Benzo(b)fluoranthene	3.0 U	µg/Kg
Benzo(k)fluoranthene	2.0 U	µg/Kg
Benzo(a)pyrene	2.0 U	µg/Kg
Dibenzo(a,h)anthracene	3.3 U	µg/Kg
Benzo(g,h,i)perylene	3.3 U	µg/Kg
Indeno(1,2,3-cd)pyrene	1.7 U	µg/Kg
Surrogate: (p-terphenyl)		
Surrogate Reported Value	11.2	µg/Kg
Surrogate Expected Value	10	µg/Kg
Surrogate % Recovery	112	%
Surrogate Control Limits	50-146	%
Date Extracted	03/31/99	
Date Analyzed	04/01/99	

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

ENCO LABORATORIES
REPORT # : OR6019
DATE REPORTED: April 5, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline #103rd St.

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	44.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	89	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/29/99	

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

ENCO LABORATORIES
REPORT # : OR6019
DATE REPORTED: April 5, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline #103rd St.

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	LAB BLANK	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	8.8	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	88	%
Surrogate Control Limits	39-148	%
Date Extracted	03/31/99	
Date Analyzed	03/31/99	

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

ENCO LABORATORIES
REPORT # : OR6019
DATE REPORTED: April 5, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline #103rd St.

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	LCS Target µg	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 5035/8021					
Benzene	101/ 99/107	20	59-144	2	25
Toluene	96/ 96/100	20	67-132	<1	58
Ethylbenzene	108/112/118	20	60-169	4	28
p-Xylene	105/110/115	20	62-183	5	24
EPA Method 3550/8310					
Naphthalene	82/ 95/ 86	10	26-125	15	45
Acenaphthene	79/ 90/ 90	10	20-143	13	35
Benzo(a)pyrene	102/122/ 98	1	42-138	18	38
Benzo(g,h,i)perylene	102/126/102	2	51-142	21	26
EPA Method 5030/8021					
Benzene	106/106/ 99	20	72-134	<1	20
Toluene	110/111/101	20	72-124	<1	19
Ethylbenzene	110/110/100	20	67-129	<1	21
p-Xylene	110/112/ 98	20	66-131	2	21
EPA Method 3510/8310					
Naphthalene	68/ 92/ 81	10	22-130	30	20
Acenaphthene	80/ 90/ 88	10	14-163	12	19
Benzo(a)pyrene	90/101/ 99	1	33-137	12	36
Benzo(g,h,i)perylene	62/ 66/ 78	2	36-135	6	34

Environmental Conservation Laboratories Comprehensive QA Plan #960038

= Less Than
= 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.

ENVIRONMENTAL CONSERVATION LABORATORIES

QSARF #_____

4810 Executive Park Court, Suite 211
Jacksonville, Florida 32216-6069
Ph. (904) 296-3007 • Fax (904) 296-6210

10207 General Drive
Orlando, Florida 32824
Ph. (407) 826-5314 • Fax (407) 850-6945

ENCO CompQAP No.: 960038G/0

CHAIN OF CUSTODY RECORD

PROJECT REFERENCE: Transfer Pipeline 103rd St
PROJECT NO.: 0013
P.O. NUMBER:
PROJECT LOC. (State): FL
SAMPLER(s) NAME: Jennifer Elliott
PHONE: 281-0400
FAX: 281-0070
CLIENT NAME: Tetratech, NUS, Inc.
CLIENT PROJECT MANAGER: Don Kucera
CLIENT ADDRESS (CITY, STATE, ZIP): 7018 A.C. Skinner Parkway Ste #250

PAGE 1 OF 1

☒ STANDARD REPORT DELIVERY
☐ EXPEDITED REPORT DELIVERY (surcharge)
Date Due:_____

STATION	DATE	TIME	GRAB	COMP	SAMPLE IDENTIFICATION	SURFACE WATER	GROUND WATER	WASTEWATER	DRINKING WATER	SOIL/SOLID/SEDIMENT	NONAQUEOUS LIQUID (oil, solvent, etc.)	AIR	SLUDGE	OTHER	HCl (Volatiles 8260 #3 10)	— (Semi-Volatiles 8270 #3 10)								REMARKS
															PRESERVATIVE									
															NUMBER OF CONTAINERS SUBMITTED									
1	3-26-99	0854		X	CF-VAOG-SB-01-1				X						3	1								
2	3-26-99	0903	X		CF-VAOG-TMW-01		X								2	1								
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11																								
12																								
13																								
14																								

SAMPLE KIT PREPARED BY: ☐JACKSONVILLE ☐ORLANDO	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
				3-26-99	1412			
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
RECEIVED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	ENCO LOG NO.	REMARKS
☒ Jacksonville ☐ Orlando	3/26/99	1412	☒ YES ☐ NO	CR6019	

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

April 1, 1999

Mr. John Kucera
Tetra Tech NUS
7018 A.C. Skinner Pkwy.
Suite 250
Jacksonville, FL 32256

Login Number (SDG): OR5941
Project Number: N0013/CTO-72
Description: NASJAX/NASCF Jet Fuel Transfer

Case Narrative:

Five water samples and one soil sample were collected on March 22, 1999. All samples were received at ENCO Laboratories, Inc., on March 22, 1999 on wet ice and in good condition. This sample set was inclusive of samples CF-VA07 (TMW-01,02,03,04,05 and SB-03-04). All samples were analyzed as requested on the associated sample chain-of-custody forms.

All samples were extracted and analyzed within EPA specified holding times.

There were no particular difficulties encountered with the sample handling and analyses by Environmental Conservation Laboratories, Inc.

Quality Assurance acceptance limits are established by "in-house" statistical determination. This is true for surrogate, MS/MSD and LCS spike recovery evaluations.

Environmental Conservation Laboratories, Inc.

David J. Vesey
Project Manager

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

CLIENT : Tetra Tech NUS
ADDRESS: 7018 A.C. Skinner Parkway
Suite 250
Jacksonville, FL 32256

REPORT # : OR5941
DATE SUBMITTED: March 22, 1999
DATE REPORTED : March 30, 1999

ATTENTION: John Kucera

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

PROJECT #: 0013

NAS JAX-NASCF Jet Fuel Transfer

03/22/99

#1	- CF-VA07-TMW-01	@ 14:04
#2	- CF-VA07-TMW-02	@ 14:27
#3	- CF-VA07-TMW-03	@ 14:56
#4	- CF-VA07-TMW-04	@ 15:59
#5	- CF-VA07-TMW-05	@ 16:25
#6	- CF-VA07-SB-03-04	@ 14:42

ROJECT MANAGER David Vesey

ENCO LABORATORIES
REPORT # : OR5941
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-VA07-TMW-01	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	42	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	84	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/24/99	

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

ENCO LABORATORIES
REPORT # : OR5941
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-VA07-TMW-01	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	**0.050** I	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	9.8	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	98	%
Surrogate Control Limits	39-148	%
Date Extracted	03/25/99	
Date Analyzed	03/29/99	

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

ENCO LABORATORIES
REPORT # : OR5941
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-VA07-TMW-02	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	41.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	83	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/25/99	

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

ENCO LABORATORIES
REPORT # : OR5941
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-VA07-TMW-02	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
.-Methylnaphthalene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
cenaphthene	0.50 U	µg/L
uorene	0.10 U	µg/L
henanthrene	1.0 U	µg/L
nthracene	0.050 U	µg/L
luoranthene	0.10 U	µg/L
yrene	0.050 U	µg/L
enzo(a)anthracene	0.050 U	µg/L
hrysene	0.050 U	µg/L
enzo(b)fluoranthene	0.10 U	µg/L
enzo(k)fluoranthene	0.050 U	µg/L
enzo(a)pyrene	0.050 U	µg/L
ibenzo(a,h)anthracene	0.10 U	µg/L
enzo(g,h,i)perylene	0.10 U	µg/L
ideno(1,2,3-cd)pyrene	0.050 U	µg/L
irrogate: (p-terphenyl)		
irrogate Reported Value	9.9	µg/L
irrogate Expected Value	10	µg/L
irrogate % Recovery	99	%
irrogate Control Limits	39-148	%
ite Extracted	03/25/99	
ite Analyzed	03/29/99	

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

ENCO LABORATORIES
REPORT # : OR5941
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-VA07-TMW-03	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	41	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	82	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/24/99	

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

ENCO LABORATORIES
REPORT # : OR5941
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-VA07-TMW-03	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	11.9	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	119	%
Surrogate Control Limits	39-148	%
Date Extracted	03/25/99	
Date Analyzed	03/29/99	

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

ENCO LABORATORIES
REPORT # : OR5941
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-VA07-TMW-04	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	45.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	91	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/25/99	

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

ENCO LABORATORIES
REPORT # : OR5941
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-VA07-TMW-04	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
.-Methylnaphthalene	1.0 U	µg/L
?-Methylnaphthalene	1.0 U	µg/L
...phthene	0.50 U	µg/L
...ne	0.10 U	µg/L
...anthrene	1.0 U	µg/L
nthracene	**0.050** I	µg/L
'luoranthene	0.10 U	µg/L
yrene	**0.16**	µg/L
enzo(a)anthracene	**0.090**	µg/L
hrysene	0.050 U	µg/L
enzo(b)fluoranthene	**0.23** I	µg/L
enzo(k)fluoranthene	**0.10** I	µg/L
enzo(a)pyrene	**0.060** I	µg/L
ibenzo(a,h)anthracene	**0.15** I	µg/L
enzo(g,h,i)perylene	0.10 U	µg/L
ndeno(1,2,3-cd)pyrene	**0.11**	µg/L
urrogate: (p-terphenyl)		
urrogate Reported Value	11	µg/L
urrogate Expected Value	10	µg/L
urrogate % Recovery	110	%
urrogate Control Limits	39-148	%
ate Extracted	03/25/99	
ate Analyzed	03/29/99	

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

ENCO LABORATORIES
REPORT # : OR5941
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-VA07-TMW-05	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	42	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	84	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/25/99	

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

ENCO LABORATORIES
REPORT # : OR5941
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-VA07-TMW-05	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	8.1	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	81	%
Surrogate Control Limits	39-148	%
Date Extracted	03/25/99	
Date Analyzed	03/29/99	

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

ENCO LABORATORIES
REPORT # : OR5941
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	CF-VA07-SB-03-04	Units
Methyl tert-butyl ether	3.0 U D1	µg/Kg
Benzene	1.0 U D1	µg/Kg
Toluene	1.0 U D1	µg/Kg
Chlorobenzene	1.0 U D1	µg/Kg
Ethylbenzene	1.0 U D1	µg/Kg
m-Xylene & p-Xylene	3.0 U D1	µg/Kg
o-Xylene	1.0 U D1	µg/Kg
1,3-Dichlorobenzene	1.0 U D1	µg/Kg
1,4-Dichlorobenzene	1.0 U D1	µg/Kg
1,2-Dichlorobenzene	1.0 U D1	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	44	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	88	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/25/99	

NOTE: Analyte values are reported on a dry weight basis.

U Compound was analyzed for but not detected to the level shown.
D1 = Analyte value determined from a 1:1.04 dilution.

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	CF-VA07-SB-03-04	Units
Naphthalene	22 U	µg/Kg
Acenaphthylene	44 U	µg/Kg
1-Methylnaphthalene	44 U	µg/Kg
2-Methylnaphthalene	44 U	µg/Kg
Acenaphthene	22 U	µg/Kg
Fluorene	4.4 U	µg/Kg
Phenanthrene	44 U	µg/Kg
Anthracene	3.0 U	µg/Kg
Fluoranthene	4.4 U	µg/Kg
Pyrene	2.2 U	µg/Kg
Benzo(a)anthracene	**4.3**	µg/Kg
Chrysene	2.2 U	µg/Kg
Benzo(b)fluoranthene	**33**	µg/Kg
Benzo(k)fluoranthene	**10**	µg/Kg
Benzo(a)pyrene	**6.0**	µg/Kg
Dibenzo(a,h)anthracene	4.4 U	µg/Kg
Benzo(g,h,i)perylene	4.4 U	µg/Kg
Indeno(1,2,3-cd)pyrene	**16**	µg/Kg
Surrogate: (p-terphenyl)		
Surrogate Reported Value	10.7	µg/Kg
Surrogate Expected Value	10	µg/Kg
Surrogate % Recovery	107	%
Surrogate Control Limits	50-146	%
Date Extracted	03/26/99	
Date Analyzed	03/28/99	

MISCELLANEOUS	METHOD	CF-VA07-SB-03-04	Units
Percent Solids	SM2540G	**76**	%
Date Analyzed		03/26/99	

NOTE: Analyte values are reported on a dry weight basis.

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

ENCO LABORATORIES
REPORT # : OR5941
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	38	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	76	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/24/99	

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

ENCO LABORATORIES
REPORT # : OR5941
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	LAB BLANK	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	10.4	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	104	%
Surrogate Control Limits	39-148	%
Date Extracted	03/25/99	
Date Analyzed	03/29/99	

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

ENCO LABORATORIES
REPORT # : OR5941
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	1.0 U	µg/Kg
Toluene	1.0 U	µg/Kg
Chlorobenzene	1.0 U	µg/Kg
Ethylbenzene	1.0 U	µg/Kg
m-Xylene & p-Xylene	2.0 U	µg/Kg
o-Xylene	1.0 U	µg/Kg
1,3-Dichlorobenzene	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	43.5	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	87	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/25/99	

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

ENCO LABORATORIES
REPORT # : OR5941
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	LAB BLANK	Units
Naphthalene	17 U	µg/Kg
Acenaphthylene	33 U	µg/Kg
-Methylnaphthalene	33 U	µg/Kg
2-Methylnaphthalene	33 U	µg/Kg
Acenaphthene	17 U	µg/Kg
Fluorene	3.3 U	µg/Kg
Phenanthrene	33 U	µg/Kg
Anthracene	2.0 U	µg/Kg
Fluoranthene	3.3 U	µg/Kg
Pyrene	1.7 U	µg/Kg
Benzo(a)anthracene	1.7 U	µg/Kg
Chrysene	1.7 U	µg/Kg
Benzo(b)fluoranthene	3.0 U	µg/Kg
Benzo(k)fluoranthene	2.0 U	µg/Kg
Benzo(a)pyrene	2.0 U	µg/Kg
Dibenzo(a,h)anthracene	3.3 U	µg/Kg
Benzo(g,h,i)perylene	3.3 U	µg/Kg
Indeno(1,2,3-cd)pyrene	1.7 U	µg/Kg
Surrogate: (p-terphenyl)		
Surrogate Reported Value	12	µg/Kg
Surrogate Expected Value	10	µg/Kg
Surrogate % Recovery	120	%
Surrogate Control Limits	50-146	%
Date Extracted	03/26/99	
Date Analyzed	03/27/99	

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

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	LCS Target µg	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 5030/8021 (CF-VA07-TMW-01,CF-VA07-VA0-TMW-03,CF7-TMW-05)					
Benzene	87/ 86/102	20	72-134	1	20
Toluene	83/ 82/ 98	20	72-124	1	19
Ethylbenzene	82/ 82/ 99	20	67-129	<1	21
o-Xylene	79/ 79/ 96	20	66-131	<1	21
EPA Method 5030/8021 (CF-VA07-TMW-02,CF-VA07-TMW-04)					
Benzene	87/ 86/ 74	20	72-134	1	20
Toluene	83/ 82/ 68	20	72-124	1	19
Ethylbenzene	82/ 82/ 62	20	67-129	<1	21
o-Xylene	79/ 79/ 72	20	66-131	<1	21
EPA Method 3510/8310					
Naphthalene	43/ 56/ 67	10	22-130	26	20
Acenaphthene	63/ 88/ 69	10	14-163	33	19
Benzo(a)pyrene	85/ 86/ 96	1	33-137	1	36
Benzo(g,h,i)perylene	78/ 78/ 75	2	36-135	<1	34

Environmental Conservation Laboratories Comprehensive QA Plan #960038

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

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QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	LCS Target µg	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 5035/8021					
Benzene	112/ 99/ 89	20	59-144	12	25
Toluene	104/ 74/ 78	20	67-132	34	58
Ethylbenzene	106/ 99/ 94	20	60-169	7	28
o-Xylene	104/ 97/ 91	20	62-183	7	24
EPA Method 3550/8310					
Naphthalene	82/ 95/ 85	10	26-125	15	45
Acenaphthene	79/ 90/ 81	10	20-143	13	35
Benzo(a)pyrene	102/122/ 87	1	42-138	18	38
Benzo(g,h,i)perylene	102/126/ 96	2	51-142	21	26

nvironmental Conservation Laboratories Comprehensive QA Plan #960038

= Less Than
S = Matrix Spike
SD = Matrix Spike Duplicate
CS = Laboratory Control Standard
PD = Relative Percent Difference

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CHAIN OF CUSTODY RECORD

02512

PROJECT NO.:	SITE NAME:
0013	NASJAX - NAS(F Jet Fuel Transfer

SAMPLERS (SIGNATURE):

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	8021B	8310					REMARKS
	3/22/99	1404		X	CF-VA07-TMW-01	3	X	X					
	3/22/99	1427		X	CF-VA07-TMW-02	3	X	X					
	3/22/99	1456		X	CF-VA07-TMW-03	3	X	X					
	3/22/99	1559		X	CF-VA07-TMW-04	3	X	X					
	3/22/99	1625		X	CF-VA07-TMW-05	3	X	X					
	3/22/99	1442		X	CF-VA07-SB-03-04	4	X	X					

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
	3/22/99 1715	Scott D Martz			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS:	
		Kevin Casey	3/23/99 8:00AM	OR5941	

Order No. 70440 (0693)

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

April 1, 1999

Mr. John Kucera
Tetra Tech NUS
7018 A.C. Skinner Pkwy.
Suite 250
Jacksonville, FL 32256

Login Number (SDG): OR5915
Project Number: NO013/CTO-72
Description: NASJAX/NASCF Jet Fuel Transfer

Case Narrative:

Three water samples and one soil sample were collected on March 18, 1999. All samples were received at ENCO Laboratories, Inc., on March 19, 1999 on wet ice and in good condition. This sample set was inclusive of samples CF-VA08 (TMW-01,02,DU03, and SB-02-08). All samples were analyzed as requested on the associated sample chain-of-custody forms.

All samples were extracted and analyzed within EPA specified holding times.

The soil sample chosen for performing the matrix spike (MS) and matrix spike duplicate (MSD) for EPA Method 8310 has high background contamination of a petroleum nature. The laboratory was unable to accurately determine the percent recoveries of the spiked compounds due to the matrix interferences present. Per method requirements, the data is validated as acceptable based on the acceptable recoveries of the laboratory check sample (LCS) spike results.

Quality Assurance acceptance limits are established by "in-house" statistical determination. This is true for surrogate, MS/MSD and LCS spike recovery evaluations.

The laboratory is providing separate reports per chain-of-custody received as requested by the client.

Environmental Conservation Laboratories, Inc.

David J. Vesey
Project Manager

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

CLIENT : Tetra Tech NUS
ADDRESS: 7018 A.C. Skinner Parkway
Suite 250
Jacksonville, FL 32256

REPORT # : OR5915
DATE SUBMITTED: March 19, 1999
DATE REPORTED : March 30, 1999

ATTENTION: John Kucera

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

PROJECT #: 0013

NAS JAX-NASCF Jet Fuel Transfer

03/18/99

#1 - CF-VA08-TMW-01 @ 17:30
#2 - CF-VA08-TMW-02 @ 18:30
#3 - CF-VA08-SB-02-08 @ 18:35
#4 - CF-VA08-TMW-DU03

ROJECT MANAGER _____
David Vesey

ENCO LABORATORIES
REPORT # : OR5915
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-VA08-TMW-01	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	40	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	80	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/24/99	

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

ENCO LABORATORIES
REPORT # : OR5915
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-VA08-TMW-01	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	**0.20**	µg/L
Pyrene	**0.32**	µg/L
Benzo(a)anthracene	**0.050** I	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	**0.55**	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	**0.25**	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	8.0	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	80	%
Surrogate Control Limits	39-148	%
Date Extracted	03/25/99	
Date Analyzed	03/26/99	

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

ENCO LABORATORIES
REPORT # : OR5915
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-VA08-TMW-02	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	39	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	78	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/24/99	

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

ENCO LABORATORIES
REPORT # : OR5915
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

:PA METHOD 3510/8310 - 'OLYAROMATIC HYDROCARBONS	CF-VA08-TMW-02	Units
laphthalene	0.50 U	µg/L
cenaphthylene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
-Methylnaphthalene	1.2	µg/L
cenaphthene	5.2	µg/L
'luorene	2.4	µg/L
'henanthrene	2.2	µg/L
nthracene	0.30	µg/L
luoranthene	0.69	µg/L
yrene	0.78	µg/L
enzo(a)anthracene	0.30	µg/L
hrysene	0.36	µg/L
enzo(b)fluoranthene	0.70	µg/L
enzo(k)fluoranthene	0.16	µg/L
enzo(a)pyrene	0.39	µg/L
ibenzo(a,h)anthracene	0.31	µg/L
enzo(g,h,i)perylene	0.35	µg/L
ideno(1,2,3-cd)pyrene	0.52	µg/L
irrogate: (p-terphenyl)		
irrogate Reported Value	9.5	µg/L
irrogate Expected Value	10	µg/L
irrogate % Recovery	95	%
irrogate Control Limits	39-148	%
te Extracted	03/25/99	
te Analyzed	03/26/99	

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

ENCO LABORATORIES
REPORT # : OR5915
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	CF-VA08-SB-02-08	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	1.0 U	µg/Kg
Toluene	**6.9**	µg/Kg
Chlorobenzene	1.0 U	µg/Kg
Ethylbenzene	**1.6** I	µg/Kg
m-Xylene & p-Xylene	**6.0** I	µg/Kg
o-Xylene	**1.6** I	µg/Kg
1,3-Dichlorobenzene	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	33.5	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	67	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/22/99	

NOTE: Analyte values are reported on a dry weight basis.

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 # : OR5915
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	CF-VA08-SB-02-08	Units
Naphthalene	93 U D1	µg/Kg
Acenaphthylene	180 U D1	µg/Kg
1-Methylnaphthalene	180 U D1	µg/Kg
2-Methylnaphthalene	180 U D1	µg/Kg
Acenaphthene	93 U D1	µg/Kg
Fluorene	18 U D1	µg/Kg
Phenanthrene	180 U D1	µg/Kg
Anthracene	9.0 U D1	µg/Kg
Fluoranthene	18 U D1	µg/Kg
Pyrene	**160** D1	µg/Kg
Benzo(a)anthracene	**41** D1	µg/Kg
Chrysene	**53** D1	µg/Kg
Benzo(b)fluoranthene	**140** D1	µg/Kg
Benzo(k)fluoranthene	**41** D1	µg/Kg
Benzo(a)pyrene	**120** D1	µg/Kg
Dibenzo(a,h)anthracene	**160** D1	µg/Kg
Benzo(g,h,i)perylene	**120** D1	µg/Kg
Indeno(1,2,3-cd)pyrene	**110** D1	µg/Kg
Surrogate: (p-terphenyl)		
Surrogate Reported Value	9.0	µg/Kg
Surrogate Expected Value	10	µg/Kg
Surrogate % Recovery	90	%
Surrogate Control Limits	50-146	%
Date Extracted	03/22/99	
Date Analyzed	03/23/99	

MISCELLANEOUS	METHOD	CF-VA08-SB-02-08	Units
Percent Solids	SM2540G	**90**	%
Date Analyzed		03/24/99	

NOTE: Analyte values are reported on a dry weight basis.

U = Compound was analyzed for but not detected to the level shown.
D1 = Analyte value determined from a 1:5 dilution.

ENCO LABORATORIES
REPORT # : OR5915
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-VA08-TMW-DU03	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	42	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	84	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/24/99	

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

ENCO LABORATORIES
REPORT # : OR5915
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

:PA METHOD 3510/8310 - 'OLYAROMATIC HYDROCARBONS	CF-VA08-TMW-DU03	Units
'aphthalene	0.50 U	µg/L
.cenaphthylene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
.cenaphthene	**0.50** I	µg/L
luorene	0.10 U	µg/L
henanthrene	1.0 U	µg/L
nthracene	0.050 U	µg/L
luoranthene	**0.13** I	µg/L
yrene	**0.22**	µg/L
enzo(a)anthracene	0.050 U	µg/L
hrysene	0.050 U	µg/L
enzo(b)fluoranthene	**0.40**	µg/L
enzo(k)fluoranthene	0.050 U	µg/L
enzo(a)pyrene	**0.13**	µg/L
ibenzo(a,h)anthracene	0.10 U	µg/L
enzo(g,h,i)perylene	0.10 U	µg/L
ndeno(1,2,3-cd)pyrene	0.050 U	µg/L
ırrogate: (p-terphenyl)		
ırrogate Reported Value	8.4	µg/L
ırrogate Expected Value	10	µg/L
ırrogate % Recovery	84	%
ırrogate Control Limits	39-148	%
ıte Extracted	03/25/99	
ıte Analyzed	03/26/99	

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

ENCO LABORATORIES
REPORT # : OR5915
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	44.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	89	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/23/99	

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

ENCO LABORATORIES
REPORT # : OR5915
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	LAB BLANK	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	10	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	100	%
Surrogate Control Limits	39-148	%
Date Extracted	03/25/99	
Date Analyzed	03/26/99	

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

ENCO LABORATORIES
REPORT # : OR5915
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	1.0 U	µg/Kg
Toluene	1.0 U	µg/Kg
Chlorobenzene	1.0 U	µg/Kg
Ethylbenzene	1.0 U	µg/Kg
m-Xylene & p-Xylene	2.0 U	µg/Kg
o-Xylene	1.0 U	µg/Kg
1,3-Dichlorobenzene	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	41	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	82	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/21/99	

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

ENCO LABORATORIES
REPORT # : OR5915
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

PA METHOD 3550/8310 - OLYAROMATIC HYDROCARBONS	LAB BLANK	Units
aphthalene	17 U	µg/Kg
cenaphthylene	33 U	µg/Kg
-Methylnaphthalene	33 U	µg/Kg
-Methylnaphthalene	33 U	µg/Kg
cenaphthene	17 U	µg/Kg
luorene	3.3 U	µg/Kg
henanthrene	33 U	µg/Kg
thracene	2.0 U	µg/Kg
luoranthene	3.3 U	µg/Kg
yrene	1.7 U	µg/Kg
enzo(a)anthracene	1.7 U	µg/Kg
hrysene	1.7 U	µg/Kg
enzo(b)fluoranthene	3.0 U	µg/Kg
enzo(k)fluoranthene	2.0 U	µg/Kg
enzo(a)pyrene	2.0 U	µg/Kg
benzo(a,h)anthracene	3.3 U	µg/Kg
enzo(g,h,i)perylene	3.3 U	µg/Kg
deno(1,2,3-cd)pyrene	1.7 U	µg/Kg
rrogate: (p-terphenyl)		
rrogate Reported Value	8.8	µg/Kg
rrogate Expected Value	10	µg/Kg
rrogate % Recovery	88	%
rrogate Control Limits	50-146	%
te Extracted	03/22/99	
te Analyzed	03/22/99	

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

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	LCS Target µg	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 5030/8021 (CF-VA08-TMW-01)					
Benzene	96/ 93/105	20	72-134	3	20
Toluene	93/ 90/103	20	72-124	3	19
Ethylbenzene	94/ 91/103	20	67-129	3	21
o-Xylene	90/ 88/101	20	66-131	2	21
EPA Method 5030/8021 (CF-VA08-TMW-02,CF-VA08-TMW-DU03)					
Benzene	96/ 93/ 84	20	72-134	3	20
Toluene	93/ 90/ 81	20	72-124	3	19
Ethylbenzene	94/ 91/ 81	20	67-129	3	21
o-Xylene	90/ 88/ 78	20	66-131	2	21
EPA Method 3510/8310					
Naphthalene	70/ */ 76	10	22-130	*	20
Acenaphthene	91/ */ 82	10	14-163	*	19
Benzo(a)pyrene	97/ 95/ 82	1	33-137	2	36
Benzo(g,h,i)perylene	94/ 93/ 81	2	36-135	1	34

Environmental Conservation Laboratories Comprehensive QA Plan #960038

* = Matrix interference; unable to obtain accurate recovery
< = 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.

ENCO LABORATORIES
REPORT # : OR5915
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	LCS Target µg	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 5035/8021					
Benzene	89/ 87/100	20	59-144	2	25
Toluene	91/ 91/100	20	67-132	<1	58
Ethylbenzene	105/101/111	20	60-169	4	28
o-Xylene	97/122/106	20	62-183	23	24
EPA Method 3550/8310					
Naphthalene	*/ */ 49	10	26-125	*	45
Acenaphthene	*/ */ 54	10	20-143	*	35
Benzo(a)pyrene	*/ */ 79	1	42-138	*	38
Benzo(g,h,i)perylene	*/ */ 78	2	51-142	*	26

Environmental Conservation Laboratories Comprehensive QA Plan #960038

= Matrix interference; unable to obtain accurate recovery
= Less Than
S = Matrix Spike
SD = Matrix Spike Duplicate
CS = Laboratory Control Standard
PD = Relative Percent Difference

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CHAIN OF CUSTODY RECORD

01597

PROJECT NO.:	SITE NAME:
0013	NASJAX - NASCF Jet Fuel Transfer

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	8024B	8310					REMARKS
	3/18/99	1730		X	CF - VA08 - TMW - 01	3	X	X					
	3/18/99	1830		X	CF - VA08 - TMW - 02	3	X	X					
	3/18/99	1835		X	CF - VA08 - SB - 02-08	4	X	X					

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[signature]	3/19/99 1550	[signature]			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS:	
		Kevin Casey	3/20/99 8:10AM	#OR5915	

Order No. 70440 (0693)

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

April 1, 1999

Mr. John Kucera
Tetra Tech NUS
7018 A.C. Skinner Pkwy.
Suite 250
Jacksonville, FL 32256

Login Number (SDG): OR5897
Project Number: N0013/CTO-72
Description: NASJAX/NASCF Jet Fuel Transfer

Case Narrative:

Three water samples and three soil sample were collected on March 18, 1999. All samples were received at ENCO Laboratories, Inc., on March 18, 1999 on wet ice and in good condition. This sample set was inclusive of samples CF-VA09 (TMW-01,02,05 and SB-05-02, SB-01-04, SB-02-02). All samples were analyzed as requested on the associated sample chain-of-custody forms.

All samples were extracted and analyzed within EPA specified holding times.

The laboratory method blank prepared and analyzed with the water samples by EPA Method 3510/8310 showed a detectable level of contamination of a target analyte, benzo(a)pyrene. This analyte is also detected and reported in the client's sample, ID #'s CF-VA09-TMW-02. The presence of this positively identified compound may be a laboratory artifact and may not actually be present in the sample. Based on the presence of other petroleum related compounds determined to be in the sample, and patterns consistent with petroleum distillate residues, neither of which are present in the laboratory method blank, the laboratory cannot make a positive statement that the benzo(a)pyrene is not present in the samples and is unable to determine the level of bias a potential laboratory artifact might induce. The laboratory determined the presence of the contaminant after the recommended holding time for extraction had expired. Viable sample for reanalysis is not available.

The laboratory has vigorously pursued the origin of this contaminant and has determined the likely source in one of the laboratory supplies used for the preparation of the sample extracts prior to analyses. The laboratory has made changes in the standard operating procedures (SOP's) to eradicate the potential for this artifact occurring in the future.

The soil sample chosen for performing the matrix spike (MS) and matrix spike duplicate (MSD) for EPA Method 8310 has high background contamination of a petroleum nature. The laboratory was unable to accurately determine the percent recoveries of the spiked compounds due to the matrix interferences present. Per method requirements, the data is validated as acceptable based on the acceptable recoveries of the laboratory check sample (LCS) spike results.

Quality Assurance acceptance limits are established by "in-house" statistical determination. This is true for surrogate, MS/MSD and LCS spike recovery evaluations.

The laboratory is providing separate reports per chain-of-custody received as requested by the client.

Environmental Conservation Laboratories, Inc.

David J. Vesey
Project Manager

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

CLIENT : Tetra Tech NUS
ADDRESS: 7018 A.C. Skinner Parkway
Suite 250
Jacksonville, FL 32256

REPORT # : OR5897
DATE SUBMITTED: March 18, 1999
DATE REPORTED : March 30, 1999

ATTENTION: John Kucera

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

PROJECT #: 0013

NAS JAX-NASCF Jet Fuel Transfer

03/18/99

#1 - CF-VA09-TMW-01 @ 11:40
#2 - CF-VA09-TMW-02 @ 12:15
#3 - CF-VA09-TMW-05 @ 13:35
#4 - CF-VA09-SB-05-02 @ 15:10
#5 - CF-VA09-SB-01-04 @ 15:25
#6 - CF-VA09-SB-02-02 @ 15:35

PROJECT MANAGER _____
David Vesey

ENCO LABORATORIES
REPORT # : OR5897
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

:PA METHOD 5030/8021 - 'OLATILE AROMATICS	CF-VA09-TMW-01	Units
Iethyl tert-butyl ether	2.0 U	µg/L
;enzene	1.0 U	µg/L
'oluene	1.0 U	µg/L
:hlorobenzene	1.0 U	µg/L
:thylbenzene	1.0 U	µg/L
ı-Xylene & p-Xylene	2.0 U	µg/L
ı-Xylene	1.0 U	µg/L
,3-Dichlorobenzene	1.0 U	µg/L
,4-Dichlorobenzene	1.0 U	µg/L
,2-Dichlorobenzene	1.0 U	µg/L
urrogate: (Bromofluorobenzene)		
urrogate Reported Value	44	µg/L
urrogate Expected Value	50	µg/L
urrogate % Recovery	88	%
urrogate Control Limits	64-140	%
ate Analyzed	03/23/99	

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

ENCO LABORATORIES
REPORT # : OR5897
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-VA09-TMW-01	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	**1.4**	µg/L
Fluorene	**0.21**	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	**0.070** I	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	**0.11** I	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	12.3	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	123	%
Surrogate Control Limits	39-148	%
Date Extracted	03/25/99	
Date Analyzed	03/26/99	

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 # : OR5897
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

:PA METHOD 5030/8021 - /OLATILE AROMATICS	CF-VA09-TMW-02	Units
lethyl tert-butyl ether	2.0 U	µg/L
;enzene	1.0 U	µg/L
'oluene	1.0 U	µg/L
:hlorobenzene	1.0 U	µg/L
:thylbenzene	1.0 U	µg/L
ı-Xylene & p-Xylene	2.0 U	µg/L
ı-Xylene	1.0 U	µg/L
,3-Dichlorobenzene	1.0 U	µg/L
,4-Dichlorobenzene	1.0 U	µg/L
,2-Dichlorobenzene	1.0 U	µg/L
urrogate: (Bromofluorobenzene)		
urrogate Reported Value	42.5	µg/L
urrogate Expected Value	50	µg/L
urrogate % Recovery	85	%
urrogate Control Limits	64-140	%
ate Analyzed	03/23/99	

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

ENCO LABORATORIES
REPORT # : OR5897
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-VA09-TMW-02	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	**0.46**	µg/L
Pyrene	**0.46**	µg/L
Benzo(a)anthracene	**0.13**	µg/L
Chrysene	**0.33**	µg/L
Benzo(b)fluoranthene	**0.53**	µg/L
Benzo(k)fluoranthene	**0.12**	µg/L
Benzo(a)pyrene	**0.28** V	µg/L
Dibenzo(a,h)anthracene	**0.44**	µg/L
Benzo(g,h,i)perylene	**0.34**	µg/L
Indeno(1,2,3-cd)pyrene	**0.29**	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	5.7	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	57	%
Surrogate Control Limits	39-148	%
Date Extracted	03/25/99	
Date Analyzed	03/26/99	

Analyte detected in laboratory method blank.
= Compound was analyzed for but not detected to the level shown.

ENCO LABORATORIES
REPORT # : OR5897
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

:PA METHOD 5030/8021 - 'OLATILE AROMATICS

	CF-VA09-TMW-05	Units
ethyl tert-butyl ether	2.0 U	µg/L
enzene	1.0 U	µg/L
oluene	1.0 U	µg/L
hlorobenzene	1.0 U	µg/L
:hylbenzene	1.0 U	µg/L
-Xylene & p-Xylene	2.0 U	µg/L
-Xylene	1.0 U	µg/L
3-Dichlorobenzene	1.0 U	µg/L
4-Dichlorobenzene	1.0 U	µg/L
2-Dichlorobenzene	1.0 U	µg/L
rrogate: (Bromofluorobenzene)		
rrogate Reported Value	41	µg/L
rrogate Expected Value	50	µg/L
rrogate % Recovery	82	%
rrogate Control Limits	64-140	%
:e Analyzed	03/23/99	

:ompound was analyzed for but not detected to the level shown.

ENCO LABORATORIES
REPORT # : OR5897
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

:PA METHOD 3510/8310 - 'OLYAROMATIC HYDROCARBONS	CF-VA09-TMW-05	Units
laphthalene	0.50 U	µg/L
cenaphthylene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
cenaphthene	**1.6**	µg/L
'luorene	**0.74**	µg/L
'henanthrene	1.0 U	µg/L
nthracene	**0.050** I	µg/L
luoranthene	0.10 U	µg/L
yrene	0.050 U	µg/L
o(a)anthracene	0.050 U	µg/L
hrysene	0.050 U	µg/L
enzo(b)fluoranthene	**0.11** I	µg/L
enzo(k)fluoranthene	0.050 U	µg/L
enzo(a)pyrene	0.050 U	µg/L
ibenzo(a,h)anthracene	0.10 U	µg/L
enzo(g,h,i)perylene	0.10 U	µg/L
ndeno(1,2,3-cd)pyrene	0.050 U	µg/L
urrogate: (p-terphenyl)		
urrogate Reported Value	10.8	µg/L
urrogate Expected Value	10	µg/L
urrogate % Recovery	108	%
urrogate Control Limits	39-148	%
ate Extracted	03/25/99	
ate Analyzed	03/26/99	

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

ENCO LABORATORIES
REPORT # : OR5897
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	CF-VA09-SB-05-02	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	1.0 U	µg/Kg
Toluene	1.0 U	µg/Kg
Chlorobenzene	1.0 U	µg/Kg
Ethylbenzene	1.0 U	µg/Kg
m-Xylene & p-Xylene	2.0 U	µg/Kg
o-Xylene	1.0 U	µg/Kg
1,3-Dichlorobenzene	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	29.5	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	59	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/21/99	

NOTE: Analyte values are reported on a dry weight basis.

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

ENCO LABORATORIES
REPORT # : OR5897
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	CF-VA09-SB-05-02	Units
Naphthalene	19 U	µg/Kg
Acenaphthylene	39 U	µg/Kg
1-Methylnaphthalene	39 U	µg/Kg
2-Methylnaphthalene	39 U	µg/Kg
Acenaphthene	19 U	µg/Kg
Fluorene	**31**	µg/Kg
Phenanthrene	39 U	µg/Kg
Anthracene	**14**	µg/Kg
Fluoranthene	3.9 U	µg/Kg
Pyrene	**110**	µg/Kg
Benzo(a)anthracene	**8.5**	µg/Kg
Chrysene	**15**	µg/Kg
Benzo(b)fluoranthene	**67**	µg/Kg
Benzo(k)fluoranthene	**9.0**	µg/Kg
Benzo(a)pyrene	**21**	µg/Kg
Dibenzo(a,h)anthracene	3.9 U	µg/Kg
Benzo(g,h,i)perylene	**24**	µg/Kg
Indeno(1,2,3-cd)pyrene	**22**	µg/Kg
Surrogate: (p-terphenyl)		
Surrogate Reported Value	9.8	µg/Kg
Surrogate Expected Value	10	µg/Kg
Surrogate % Recovery	98	%
Surrogate Control Limits	50-146	%
Date Extracted	03/22/99	
Date Analyzed	03/23/99	

MISCELLANEOUS	METHOD	CF-VA09-SB-05-02	Units
Percent Solids	SM2540G	**86**	%
Date Analyzed		03/24/99	

NOTE: Analyte values are reported on a dry weight basis.

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

ENCO LABORATORIES
REPORT # : OR5897
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	CF-VA09-SB-01-04	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	1.0 U	µg/Kg
Toluene	1.0 U	µg/Kg
Chlorobenzene	1.0 U	µg/Kg
Ethylbenzene	1.0 U	µg/Kg
m-Xylene & p-Xylene	2.0 U	µg/Kg
o-Xylene	1.0 U	µg/Kg
1,3-Dichlorobenzene	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	35	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	70	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/21/99	

NOTE: Analyte values are reported on a dry weight basis.

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

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	CF-VA09-SB-01-04	Units
Naphthalene	20 U	µg/Kg
Acenaphthylene	41 U	µg/Kg
1-Methylnaphthalene	41 U	µg/Kg
2-Methylnaphthalene	41 U	µg/Kg
Acenaphthene	20 U	µg/Kg
Fluorene	**6.0** I	µg/Kg
Phenanthrene	41 U	µg/Kg
Anthracene	2.0 U	µg/Kg
Fluoranthene	**40**	µg/Kg
Pyrene	**38**	µg/Kg
Benzo(a)anthracene	**13**	µg/Kg
Chrysene	**41**	µg/Kg
Benzo(b)fluoranthene	**120**	µg/Kg
Benzo(k)fluoranthene	**17**	µg/Kg
Benzo(a)pyrene	**24**	µg/Kg
Dibenzo(a,h)anthracene	4.1 U	µg/Kg
Benzo(g,h,i)perylene	**18**	µg/Kg
Indeno(1,2,3-cd)pyrene	**24**	µg/Kg
Surrogate: (p-terphenyl)		
Surrogate Reported Value	9.0	µg/Kg
Surrogate Expected Value	10	µg/Kg
Surrogate % Recovery	90	%
Surrogate Control Limits	50-146	%
Date Extracted	03/22/99	
Date Analyzed	03/23/99	

MISCELLANEOUS	METHOD	CF-VA09-SB-01-04	Units
Percent Solids	SM2540G	**82**	%
Date Analyzed		03/24/99	

NOTE: Analyte values are reported on a dry weight basis.

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 # : OR5897
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	CF-VA09-SB-02-02	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	1.1 U	µg/Kg
Toluene	1.1 U	µg/Kg
Chlorobenzene	1.1 U	µg/Kg
Ethylbenzene	1.1 U	µg/Kg
m-Xylene & p-Xylene	2.0 U	µg/Kg
o-Xylene	1.1 U	µg/Kg
1,3-Dichlorobenzene	1.1 U	µg/Kg
1,4-Dichlorobenzene	1.1 U	µg/Kg
1,2-Dichlorobenzene	1.1 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	28	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	56	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/21/99	

NOTE: Analyte values are reported on a dry weight basis.

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

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	CF-VA09-SB-02-02	Units
Naphthalene	100 U D1	µg/Kg
Acenaphthylene	200 U D1	µg/Kg
1-Methylnaphthalene	200 U D1	µg/Kg
2-Methylnaphthalene	200 U D1	µg/Kg
Acenaphthene	100 U D1	µg/Kg
Fluorene	**21** I D1	µg/Kg
Phenanthrene	200 U D1	µg/Kg
Anthracene	70 U D1	µg/Kg
Fluoranthene	20 U D1	µg/Kg
Pyrene	**170** D1	µg/Kg
B[illegible]o(a)anthracene	**25** D1	µg/Kg
Chrysene	**33** D1	µg/Kg
Benzo(b)fluoranthene	**150** D1	µg/Kg
Benzo(k)fluoranthene	**56** D1	µg/Kg
Benzo(a)pyrene	**110** D1	µg/Kg
Dibenzo(a,h)anthracene	**170** D1	µg/Kg
Benzo(g,h,i)perylene	**150** D1	µg/Kg
Indeno(1,2,3-cd)pyrene	**150** D1	µg/Kg
Surrogate: (p-terphenyl)		
Surrogate Reported Value	5.2	µg/Kg
Surrogate Expected Value	10	µg/Kg
Surrogate % Recovery	52	%
Surrogate Control Limits	50-146	%
Date Extracted	03/22/99	
Date Analyzed	03/23/99	

MISCELLANEOUS	METHOD	CF-VA09-SB-02-02	Units
Percent Solids	SM2540G	**81**	%
Date Analyzed		03/24/99	

NOTE: Analyte values are reported on a dry weight basis.

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).
D1 = Analyte value determined from a 1:5 dilution.

ENCO LABORATORIES
REPORT # : OR5897
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	44.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	89	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/23/99	

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

ENCO LABORATORIES
REPORT # : OR5897
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	LAB BLANK	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
[illegible]o(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	**0.10** I	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	12.2	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	122	%
Surrogate Control Limits	39-148	%
Date Extracted	03/25/99	
Date Analyzed	03/26/99	

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 # : OR5897
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS

	LAB BLANK	Units
lethyl tert-butyl ether	2.0 U	µg/Kg
enzene	1.0 U	µg/Kg
oluene	1.0 U	µg/Kg
hlorobenzene	1.0 U	µg/Kg
thylbenzene	1.0 U	µg/Kg
-Xylene & p-Xylene	2.0 U	µg/Kg
-Xylene	1.0 U	µg/Kg
,3-Dichlorobenzene	1.0 U	µg/Kg
,4-Dichlorobenzene	1.0 U	µg/Kg
,2-Dichlorobenzene	1.0 U	µg/Kg
irrogate: (Bromofluorobenzene)		
irrogate Reported Value	41	µg/Kg
irrogate Expected Value	50	µg/Kg
irrogate % Recovery	82	%
irrogate Control Limits	28-165	%
te Analyzed	03/21/99	

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

ENCO LABORATORIES
REPORT # : OR5897
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	LAB BLANK	Units
Naphthalene	17 U	µg/Kg
Acenaphthylene	33 U	µg/Kg
1-Methylnaphthalene	33 U	µg/Kg
2-Methylnaphthalene	33 U	µg/Kg
Acenaphthene	17 U	µg/Kg
Fluorene	3.3 U	µg/Kg
Phenanthrene	33 U	µg/Kg
Anthracene	2.0 U	µg/Kg
Fluoranthene	3.3 U	µg/Kg
Pyrene	1.7 U	µg/Kg
Benzo(a)anthracene	1.7 U	µg/Kg
Chrysene	1.7 U	µg/Kg
Benzo(b)fluoranthene	3.0 U	µg/Kg
Benzo(k)fluoranthene	2.0 U	µg/Kg
Benzo(a)pyrene	2.0 U	µg/Kg
Dibenzo(a,h)anthracene	3.3 U	µg/Kg
Benzo(g,h,i)perylene	3.3 U	µg/Kg
Indeno(1,2,3-cd)pyrene	1.7 U	µg/Kg
Surrogate: (p-terphenyl)		
Surrogate Reported Value	8.8	µg/Kg
Surrogate Expected Value	10	µg/Kg
Surrogate % Recovery	88	%
Surrogate Control Limits	50-146	%
Date Extracted	03/22/99	
Date Analyzed	03/22/99	

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

ENCO LABORATORIES
REPORT # : OR5897
DATE REPORTED: March 30, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer

QUALITY CONTROL DATA

'arameter	% RECOVERY MS/MSD/LCS	LCS Target µg	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
:PA Method 5030/8021					
;enzene	96/ 93/105	20	72-134	3	20
'oluene	93/ 90/103	20	72-124	3	19
thylbenzene	94/ 91/103	20	67-129	3	21
-Xylene	90/ 88/101	20	66-131	2	21
PA Method 3510/8310					
aphthalene	70/ */ 52	10	22-130	*	20
cenaphthene	91/ */ 71	10	14-163	*	19
enzo(a)pyrene	97/ 95/ 95	1	33-137	2	36
enzo(g,h,i)perylene	94/ 93/103	2	36-135	1	34
PA Method 5035/8021					
enzene	89/ 87/100	20	59-144	2	25
oluene	91/ 91/100	20	67-132	<1	58
:hylbenzene	105/101/111	20	60-169	4	28
Xylene	97/122/106	20	62-183	23	24
'A Method 3550/8310					
phthalene	*/ */ 49	10	26-125	*	45
enaphthene	*/ */ 54	10	20-143	*	35
nzo(a)pyrene	*/ */ 79	1	42-138	*	38
nzo(g,h,i)perylene	*/ */ 78	2	51-142	*	26

vironmental Conservation Laboratories Comprehensive QA Plan #960038

= Matrix interference; unable to obtain accurate recovery
= Less Than
= Matrix Spike
) = Matrix Spike Duplicate
; = Laboratory Control Standard
) = Relative Percent Difference

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CHAIN OF CUSTODY RECORD

01593

PROJECT NO.:	SITE NAME:
6013	NASJAX - NASCF Jet Fuel Transfer

SAMPLERS (SIGNATURE):

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	8021B	8310					REMARKS
	3/18/99	1140		X	CF-VA09-TMW-01	3	X	X					
	3/18/99	1215		X	CF-VA09-TMW-02	3	X	X					
	3/18/99	1335		X	CF-VA09-TMW-05	3	X	X					
	3/18/99	1510		X	CF-VA09-SB-05-02	4	X	X					
	3/18/99	1525		X	CF-VA09-SB-05-04	4	X	X					PID Reading of 230 PPM
	3/18/99	1535		X	CF-VA09-SB-02-02	4	X	X					

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
	3-18-99 1715	Scott D Mat			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS:	
		Kim Casey	3/19/99 7:30AM	#CR5897	

Order No. 70440 (0693)

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

April 12, 1999

Mr. John Kucera
Tetra Tech NUS
7018 A.C. Skinner Pkwy.
Suite 250
Jacksonville, FL 32256

Login Number (SDG): OR5877.2
Project Number: N0013/CTO-72
Description: NASJAX/NASCF Jet Fuel Transfer

Case Narrative:

Five water samples and one soil sample were collected on March 17, 1999. All samples were received at ENCO Laboratories, Inc., on March 17, 1999 on wet ice and in good condition. This sample set was inclusive of samples CF-VA10 (TMW-01,02,03,04,05 and SB-03-10). All samples were analyzed as requested on the associated sample chain-of-custody forms.

All samples were extracted and analyzed within EPA specified holding times.

The results of analysis by EPA Method 3550/8310, performed on water sample CF-VA11-TMW-02, indicate the positive detection of "Chrysene". It is noted by the laboratory that this detectable result is at the standard reporting level for this compound; it is also noted that this compound is detected in the associated laboratory method blank - at a level below the standard reporting level - and that this result may be an indication of a laboratory induced artifact and may not actually be present in the sample. The compound discussed has been qualified within the body of the report using a "V" qualification code as an indication of the determination of the target analyte in the method blank. There were no other positive detections for Chrysene reported in this group of samples.

The soil sample chosen for performing the matrix spike (MS) and matrix spike duplicate (MSD) for EPA Method 8310 has high background contamination of a petroleum nature. The laboratory was unable to accurately determine the percent recoveries of the spiked compounds due to the matrix interferences present. Per method requirements, the data is validated as acceptable based on the acceptable recoveries of the laboratory check sample (LCS) spike results.

Quality Assurance acceptance limits is established by "in-house" statistical determination. This is true for surrogate, MS/MSD and LCS spike recovery evaluations.

The laboratory is providing separate reports per chain-of-custody received as requested by the client.

Environmental Conservation Laboratories, Inc.
David J. Vesey Project Manager

Environmental Conservation Laboratories
10207 General Drive
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ENCO Laboratories

DHRS Certification No. E83182

CLIENT : Tetra Tech NUS
ADDRESS: 7018 A.C. Skinner Parkway
Suite 250
Jacksonville, FL 32256

REPORT # : OR5877.2
DATE SUBMITTED: March 17, 1999
DATE REPORTED : March 25, 1999

ATTENTION: John Kucera

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

PROJECT #: 0013

NAS JAX-NASCF Jet Fuel Transfer

03/17/99

#1	- CF-VA10-TMW-01	@ 11:16
#2	- CF-VA10-TMW-02	@ 11:48
#3	- CF-VA10-TMW-03	@ 12:31
#4	- CF-VA10-TMW-04	@ 15:01
#5	- CF-VA10-TMW-05	@ 15:49
#6	- CF-VA10-SB-03-10	@ 12:21
#7	- CF-VA10-TMW-DU04	

PROJECT MANAGER David Vesey

ENCO LABORATORIES
REPORT # : OR5877.2
DATE REPORTED: March 25, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-VA10-TMW-01	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	47.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	95	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/19/99	

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

ENCO LABORATORIES
REPORT # : OR5877.2
DATE REPORTED: March 25, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-VA10-TMW-01	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	9.5	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	95	%
Surrogate Control Limits	39-148	%
Date Extracted	03/23/99	
Date Analyzed	03/23/99	

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

ENCO LABORATORIES
REPORT # : OR5877.2
DATE REPORTED: March 25, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-VA10-TMW-02	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	42	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	84	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/19/99	

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

ENCO LABORATORIES
REPORT # : OR5877.2
DATE REPORTED: March 25, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-VA10-TMW-02	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	**0.13** I	µg/L
Pyrene	**0.080** I	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	**0.050** V	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	11.1	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	111	%
Surrogate Control Limits	39-148	%
Date Extracted	03/23/99	
Date Analyzed	03/23/99	

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

ENCO LABORATORIES
REPORT # : OR5877.2
DATE REPORTED: March 25, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-VA10-TMW-03	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	43.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	87	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/19/99	

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

ENCO LABORATORIES
REPORT # : OR5877.2
DATE REPORTED: March 25, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

:PA METHOD 3510/8310 - 'OLYAROMATIC HYDROCARBONS	CF-VA10-TMW-03	Units
'aphthalene	0.50 U	µg/L
.cenaphthylene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
cenaphthene	0.50 U	µg/L
luorene	0.10 U	µg/L
henanthrene	1.0 U	µg/L
nthracene	0.050 U	µg/L
luoranthene	0.10 U	µg/L
yrene	0.050 U	µg/L
enzo(a)anthracene	0.050 U	µg/L
hrysene	0.050 U	µg/L
enzo(b)fluoranthene	0.10 U	µg/L
enzo(k)fluoranthene	0.050 U	µg/L
enzo(a)pyrene	0.050 U	µg/L
ibenzo(a,h)anthracene	0.10 U	µg/L
enzo(g,h,i)perylene	0.10 U	µg/L
ideno(1,2,3-cd)pyrene	0.050 U	µg/L
irrogate: (p-terphenyl)		
irrogate Reported Value	8.4	µg/L
irrogate Expected Value	10	µg/L
rrogate % Recovery	84	%
rrogate Control Limits	39-148	%
te Extracted	03/23/99	
te Analyzed	03/23/99	

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

ENCO LABORATORIES
REPORT # : OR5877.2
DATE REPORTED: March 25, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-VA10-TMW-04	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	43.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	87	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/19/99	

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

ENCO LABORATORIES
REPORT # : OR5877.2
DATE REPORTED: March 25, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-VA10-TMW-04	Units
Naphthalene	0.50 I	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	14	µg/L
2-Methylnaphthalene	1.7	µg/L
Acenaphthene	2.8	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	11.2	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	112	%
Surrogate Control Limits	39-148	%
Date Extracted	03/23/99	
Date Analyzed	03/23/99	

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).

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-VA10-TMW-05	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	44.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	89	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/19/99	

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

ENCO LABORATORIES
REPORT # : OR5877.2
DATE REPORTED: March 25, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-VA10-TMW-05	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	9.9	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	99	%
Surrogate Control Limits	39-148	%
Date Extracted	03/23/99	
Date Analyzed	03/23/99	

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

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	CF-VA10-SB-03-10	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	1.1 U	µg/Kg
Toluene	1.1 U	µg/Kg
Chlorobenzene	1.1 U	µg/Kg
Ethylbenzene	1.1 U	µg/Kg
m-Xylene & p-Xylene	2.0 U	µg/Kg
o-Xylene	1.1 U	µg/Kg
1,3-Dichlorobenzene	1.1 U	µg/Kg
1,4-Dichlorobenzene	1.1 U	µg/Kg
1,2-Dichlorobenzene	1.1 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	32.5	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	76	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/21/99	

NOTE: Analyte values are reported on a dry weight basis.

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

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	CF-VA10-SB-03-10	Units
Naphthalene	20 U	µg/Kg
Acenaphthylene	40 U	µg/Kg
1-Methylnaphthalene	40 U	µg/Kg
2-Methylnaphthalene	40 U	µg/Kg
Acenaphthene	20 U	µg/Kg
Fluorene	4.0 U	µg/Kg
Phenanthrene	40 U	µg/Kg
Anthracene	2.0 U	µg/Kg
Fluoranthene	4.0 U	µg/Kg
Pyrene	2.0 U	µg/Kg
Benzo(a)anthracene	2.0 U	µg/Kg
Chrysene	2.0 U	µg/Kg
Benzo(b)fluoranthene	4.0 U	µg/Kg
Benzo(k)fluoranthene	2.0 U	µg/Kg
Benzo(a)pyrene	2.0 U	µg/Kg
Dibenzo(a,h)anthracene	4.0 U	µg/Kg
Benzo(g,h,i)perylene	4.0 U	µg/Kg
Indeno(1,2,3-cd)pyrene	2.0 U	µg/Kg
Surrogate: (p-terphenyl)		
Surrogate Reported Value	8.9	µg/Kg
Surrogate Expected Value	10	µg/Kg
Surrogate % Recovery	89	%
Surrogate Control Limits	50-146	%
Date Extracted	03/22/99	
Date Analyzed	03/23/99	

MISCELLANEOUS	METHOD	CF-VA10-SB-03-10	Units
Percent Solids	SM2540G	83	%
Date Analyzed		03/19/99	

NOTE: Analyte values are reported on a dry weight basis.

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

ENCO LABORATORIES
REPORT # : OR5877.2
DATE REPORTED: March 25, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-VA10-TMW-DU04	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	41.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	83	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/19/99	

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

ENCO LABORATORIES
REPORT # : OR5877.2
DATE REPORTED: March 25, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-VA10-TMW-DU04	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	9.9	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	99	%
Surrogate Control Limits	39-148	%
Date Extracted	03/23/99	
Date Analyzed	03/24/99	

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

ENCO LABORATORIES
REPORT # : OR5877.2
DATE REPORTED: March 25, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	43	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	86	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/19/99	

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

ENCO LABORATORIES
REPORT # : OR5877.2
DATE REPORTED: March 25, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	LAB BLANK	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	10.9	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	109	%
Surrogate Control Limits	39-148	%
Date Extracted	03/23/99	
Date Analyzed	03/23/99	

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

ENCO LABORATORIES
REPORT # : OR5877.2
DATE REPORTED: March 25, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	1.0 U	µg/Kg
Toluene	1.0 U	µg/Kg
Chlorobenzene	1.0 U	µg/Kg
Ethylbenzene	1.0 U	µg/Kg
m-Xylene & p-Xylene	2.0 U	µg/Kg
o-Xylene	1.0 U	µg/Kg
1,3-Dichlorobenzene	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	41	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	82	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/21/99	

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

ENCO LABORATORIES
REPORT # : OR5877.2
DATE REPORTED: March 25, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	LAB BLANK	Units
Naphthalene	17 U	µg/Kg
Acenaphthylene	33 U	µg/Kg
2-Methylnaphthalene	33 U	µg/Kg
1-Methylnaphthalene	33 U	µg/Kg
Acenaphthene	17 U	µg/Kg
Fluorene	3.3 U	µg/Kg
Phenanthrene	33 U	µg/Kg
Anthracene	2.0 U	µg/Kg
Fluoranthene	3.3 U	µg/Kg
Pyrene	1.7 U	µg/Kg
Benzo(a)anthracene	1.7 U	µg/Kg
Chrysene	1.7 U	µg/Kg
Benzo(b)fluoranthene	3.0 U	µg/Kg
Benzo(k)fluoranthene	2.0 U	µg/Kg
Benzo(a)pyrene	2.0 U	µg/Kg
Dibenzo(a,h)anthracene	3.3 U	µg/Kg
Benzo(g,h,i)perylene	3.3 U	µg/Kg
Indeno(1,2,3-cd)pyrene	1.7 U	µg/Kg
Surrogate: (p-terphenyl)		
Surrogate Reported Value	8.8	µg/Kg
Surrogate Expected Value	10	µg/Kg
Surrogate % Recovery	88	%
Surrogate Control Limits	50-146	%
Date Extracted	03/22/99	
Date Analyzed	03/22/99	

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

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	LCS Target µg	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 5030/8021					
Benzene	71/ 54/ 95	20	72-134	27	20
Toluene	72/ 54/101	20	72-124	28	19
Ethylbenzene	72/ 54/102	20	67-129	28	21
o-Xylene	74/ 56/ 95	20	66-131	28	21
EPA Method 3510/8310					
Naphthalene	53/ 66/ 72	10	22-130	22	20
Acenaphthene	56/ 76/ 80	10	14-163	30	19
Benzo(a)pyrene	60/ 87/ 94	1	33-137	37	36
Benzo(g,h,i)perylene	61/ 81/ 86	2	36-135	28	34
EPA Method 5035/8021					
Benzene	89/ 87/100	20	59-144	2	25
Toluene	91/ 91/100	20	67-132	<1	58
Ethylbenzene	105/101/111	20	60-169	4	28
o-Xylene	97/122/106	20	62-183	23	24
EPA Method 3550/8310					
Naphthalene	*/ */ 49	10	26-125	*	45
Acenaphthene	*/ */ 54	10	20-143	*	35
Benzo(a)pyrene	*/ */ 79	1	42-138	*	38
Benzo(g,h,i)perylene	*/ */ 78	2	51-142	*	26

Environmental Conservation Laboratories Comprehensive QA Plan #960038

= Matrix interference; unable to obtain accurate recovery
= 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.

CHAIN OF CUSTODY RECORD

01594

PROJECT NO.: 0013

SITE NAME: NASJAX - NASLF Jet Fuel Transfer

SAMPLERS (SIGNATURE):

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	8021B	8310					REMARKS
	3/17/99	1116		X	CF-VA10-TMW-01	3	X	X					
	3/17/99	1148		X	CF-VA10-TMW-02	3	X	X					
	3/17/99	1231		X	CF-VA10-TMW-03	3	X	X					
	3/17/99	1501		X	CF-VA10-TMW-04	3	X	X					
	3/17/99	1549		X	CF-VA10-TMW-05	3	X	X					
	3/17/99	1221		X	CF-VA10-SB-03-10	4	X	X					
	3/17/99	0000		X	CF-VA10-TMW-DU04	3	X	X					

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
	3/17/99 1715	Jeff D Mt			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS:	
		Kim Corey	3/18/99 7:30AM	#OR5877	

Order No. 70440 (0693)

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

April 1, 1999

Mr. John Kucera
Tetra Tech NUS
7018 A.C. Skinner Pkwy.
Suite 250
Jacksonville, FL 32256

Login Number (SDG): OR5998
Project Number: NO013/CTO-72
Description: NASJAX/NASCF Jet Fuel Transfer

Case Narrative:

Two water samples and two soil samples were collected on March 25, 1999. All samples were received at ENCO Laboratories, Inc., on March 25, 1999 on wet ice and in good condition. This sample set was inclusive of samples CF-VA11 (TMW-01,02, and SB-02-06 and SB-01-08). All samples were analyzed as requested on the associated sample chain-of-custody forms.

All samples were extracted and analyzed within EPA specified holding times.

The sample identified as "CF-VA11-SB-02-06" required multiple analyses by EPA Method 8310. This requirement was a result of high levels of target compounds having concentrations above the linear range of the analysis which required a dilution. The diluted analysis also served as an quantification aid in removing potential interferences present in the matrix which may have inhibited accurate determination of the target analytes. The results determined from the diluted analysis (1:10) are indicated by a "D2" flag in the body of the report.

Quality Assurance acceptance limits are established by "in-house" statistical determination. This is true for surrogate, MS/MSD and LCS spike recovery evaluations.

The laboratory is providing separate reports per chain-of-custody received as requested by the client.

The laboratory is providing a second report, ENCO Report # OR5998.2, which shows results of analyses for petroleum hydrocarbons by FLPRO (modified EPA 8015) technique which were performed at the clients request.

Environmental Conservation Laboratories, Inc.

David J. Vesey
Project Manager

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

CLIENT : Tetra Tech NUS
ADDRESS: 7018 A.C. Skinner Parkway
Suite 250
Jacksonville, FL 32256

REPORT # : OR5998.1
DATE SUBMITTED: March 25, 1999
DATE REPORTED : April 5, 1999

ATTENTION: John Kucera

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

PROJECT #: 0013

NAS JAX-NASCF Fuel Transfer Line

03/25/99

#1 - CF-VA11-TMW-01 @ 23:45
#2 - CF-VA11-TMW-02 @ 00:25
#3 - CF-VA11-SB-02-06 @ 01:10
#4 - CF-VA11-SB-01-08 @ 00:30

OJECT MANAGER David Vesey

ENCO LABORATORIES
REPORT # : OR5998.1
DATE REPORTED: April 5, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Fuel Transfer Line

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-VA11-TMW-01	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	43.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	87	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/27/99	

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

ENCO LABORATORIES
REPORT # : OR5998.1
DATE REPORTED: April 5, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Fuel Transfer Line

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-VA11-TMW-01	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.060 I	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	9.8	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	98	%
Surrogate Control Limits	39-148	%
Date Extracted	03/31/99	
Date Analyzed	03/31/99	

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 # : OR5998.1
DATE REPORTED: April 5, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Fuel Transfer Line

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-VA11-TMW-02	Units
Methyl tert-butyl ether	10	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	48.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	97	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/27/99	

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

ENCO LABORATORIES
REPORT # : OR5998.1
DATE REPORTED: April 5, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Fuel Transfer Line

RESULTS OF ANALYSIS

:PA METHOD 3510/8310 - 'OLYAROMATIC HYDROCARBONS	CF-VA11-TMW-02	Units
Iaphthalene	8.6	µg/L
ıcenaphthylene	1.0 U	µg/L
.-Methylnaphthalene	8.6	µg/L
:-Methylnaphthalene	5.3	µg/L
ıcenaphthene	0.60 I	µg/L
'luorene	0.79	µg/L
'henanthrene	1.2	µg/L
nthracene	0.37	µg/L
luoranthene	2.5	µg/L
yrene	1.7	µg/L
enzo(a)anthracene	0.29	µg/L
hrysene	0.29	µg/L
enzo(b)fluoranthene	0.11 I	µg/L
enzo(k)fluoranthene	0.060 I	µg/L
enzo(a)pyrene	0.070 I	µg/L
ibenzo(a,h)anthracene	0.10 U	µg/L
enzo(g,h,i)perylene	0.10 U	µg/L
ıdeno(1,2,3-cd)pyrene	0.050 U	µg/L
ırrogate: (p-terphenyl)		
ırrogate Reported Value	12.2	µg/L
ırrogate Expected Value	10	µg/L
ırrogate % Recovery	122	%
ırrogate Control Limits	39-148	%
te Extracted	03/31/99	
te Analyzed	03/31/99	

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

ENCO LABORATORIES
REPORT # : OR5998.1
DATE REPORTED: April 5, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Fuel Transfer Line

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	CF-VA11-SB-02-06	Units
Methyl tert-butyl ether	2.0 U D1	µg/Kg
Benzene	1.3 U D1	µg/Kg
Toluene	1.3 U D1	µg/Kg
Chlorobenzene	1.3 U D1	µg/Kg
Ethylbenzene	**9.1** D1	µg/Kg
m-Xylene & p-Xylene	**9.0** I D1	µg/Kg
o-Xylene	1.0 U D1	µg/Kg
1,3-Dichlorobenzene	1.0 U D1	µg/Kg
1,4-Dichlorobenzene	1.0 U D1	µg/Kg
1,2-Dichlorobenzene	1.0 U D1	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	65	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	130	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/26/99	

OTE: Analyte values are reported on a dry weight basis.

= Compound was analyzed for but not detected to the level shown.
Analyte detected; value is between the Method Detection Level (MDL) and the Practical Quantitation Level (PQL).
1 = Analyte value determined from a 1:1.09 dilution.

ENCO LABORATORIES
REPORT # : OR5998.1
DATE REPORTED: April 5, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Fuel Transfer Line

RESULTS OF ANALYSIS

:PA METHOD 3550/8310 - 'OLYAROMATIC HYDROCARBONS	CF-VA11-SB-02-06		Units
aphthalene	310		µg/Kg
cenaphthylene	39 U		µg/Kg
-Methylnaphthalene	670		µg/Kg
-Methylnaphthalene	570		µg/Kg
cenaphthene	71		µg/Kg
luorene	100		µg/Kg
henanthrene	600	D2	µg/Kg
nthracene	160	D2	µg/Kg
luoranthene	630	D2	µg/Kg
yrene	300	D2	µg/Kg
enzo(a)anthracene	35		µg/Kg
hrysene	23		µg/Kg
enzo(b)fluoranthene	3.0 I		µg/Kg
enzo(k)fluoranthene	3.0 I		µg/Kg
enzo(a)pyrene	2.0 U		µg/Kg
benzo(a,h)anthracene	3.9 U		µg/Kg
enzo(g,h,i)perylene	19		µg/Kg
deno(1,2,3-cd)pyrene	3.8		µg/Kg
rrogate: (p-terphenyl)			
rrogate Reported Value	13.2		µg/Kg
rrogate Expected Value	10		µg/Kg
rrogate % Recovery	132		%
rrogate Control Limits	50-146		%
te Extracted	03/31/99		
te Analyzed	004/0199		

SCELLANEOUS	METHOD	CF-VA11-SB-02-06	Units
rcent Solids	SM2540G	86	%
te Analyzed		03/29/99	

TE: Analyte values are reported on a dry weight basis.

= Compound was analyzed for but not detected to the level shown.
= Analyte detected; value is between the Method Detection Level (MDL) and the Practical Quantitation Level (PQL).
= Analyte value determined from a 1:10 dilution.

ENCO LABORATORIES
REPORT # : OR5998.1
DATE REPORTED: April 5, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Fuel Transfer Line

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	CF-VA11-SB-01-08	Units
Methyl tert-butyl ether	3.0 U	µg/Kg
Benzene	1.2 U	µg/Kg
Toluene	1.2 U	µg/Kg
Chlorobenzene	1.2 U	µg/Kg
Ethylbenzene	1.2 U	µg/Kg
m-Xylene & p-Xylene	3.0 U	µg/Kg
o-Xylene	1.2 U	µg/Kg
1,3-Dichlorobenzene	1.2 U	µg/Kg
1,4-Dichlorobenzene	1.2 U	µg/Kg
1,2-Dichlorobenzene	1.2 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	44	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	88	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/26/99	

NOTE: Analyte values are reported on a dry weight basis.

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

RESULTS OF ANALYSIS

:PA METHOD 3550/8310 - 'OLYAROMATIC HYDROCARBONS	CF-VA11-SB-01-08	Units
laphthalene	23 U	µg/Kg
cenaphthylene	46 U	µg/Kg
-Methylnaphthalene	46 U	µg/Kg
-Methylnaphthalene	46 U	µg/Kg
cenaphthene	23 U	µg/Kg
luorene	4.6 U	µg/Kg
henanthrene	46 U	µg/Kg
nthracene	3.0 U	µg/Kg
luoranthene	4.6 U	µg/Kg
rene	2.3 U	µg/Kg
enzo(a)anthracene	2.3 U	µg/Kg
rysene	2.3 U	µg/Kg
enzo(b)fluoranthene	4.0 U	µg/Kg
nzo(k)fluoranthene	3.0 U	µg/Kg
nzo(a)pyrene	3.0 U	µg/Kg
benzo(a,h)anthracene	4.6 U	µg/Kg
nzo(g,h,i)perylene	4.6 U	µg/Kg
deno(1,2,3-cd)pyrene	2.3 U	µg/Kg
rrogate: (p-terphenyl)		
rrogate Reported Value	12.6	µg/Kg
rrogate Expected Value	10	µg/Kg
rrogate % Recovery	126	%
rrogate Control Limits	50-146	%
e Extracted	03/31/99	
e Analyzed	04/01/99	

CELLANEOUS	METHOD	CF-VA11-SB-01-08	Units
cent Solids	SM2540G	73	%
e Analyzed		03/29/99	

E: Analyte values are reported on a dry weight basis.

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

ENCO LABORATORIES
REPORT # : OR5998.1
DATE REPORTED: April 5, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Fuel Transfer Line

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	45.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	91	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/26/99	

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

ENCO LABORATORIES
REPORT # : OR5998.1
DATE REPORTED: April 5, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Fuel Transfer Line

RESULTS OF ANALYSIS

PA METHOD 3510/8310 - OLYAROMATIC HYDROCARBONS	LAB BLANK	Units
aphthalene	0.50 U	µg/L
cenaphthylene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
cenaphthene	0.50 U	µg/L
luorene	0.10 U	µg/L
ienanthrene	1.0 U	µg/L
ithracene	0.050 U	µg/L
uoranthene	0.10 U	µg/L
rene	0.050 U	µg/L
nzo(a)anthracene	0.050 U	µg/L
rysene	0.050 U	µg/L
nzo(b)fluoranthene	0.10 U	µg/L
nzo(k)fluoranthene	0.050 U	µg/L
nzo(a)pyrene	0.050 U	µg/L
benzo(a,h)anthracene	0.10 U	µg/L
nzo(g,h,i)perylene	0.10 U	µg/L
deno(1,2,3-cd)pyrene	0.050 U	µg/L
rrogate: (p-terphenyl)		
rrogate Reported Value	8.8	µg/L
rrogate Expected Value	10	µg/L
rrogate % Recovery	88	%
rrogate Control Limits	39-148	%
e Extracted	03/31/99	
e Analyzed	03/31/99	

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

ENCO LABORATORIES
REPORT # : OR5998.1
DATE REPORTED: April 5, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Fuel Transfer Line

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	1.0 U	µg/Kg
Toluene	1.0 U	µg/Kg
Chlorobenzene	1.0 U	µg/Kg
Ethylbenzene	1.0 U	µg/Kg
m-Xylene & p-Xylene	2.0 U	µg/Kg
o-Xylene	1.0 U	µg/Kg
1,3-Dichlorobenzene	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	43.5	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	87	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/25/99	

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

ENCO LABORATORIES
REPORT # : OR5998.1
DATE REPORTED: April 5, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF
Fuel Transfer Line

RESULTS OF ANALYSIS

:PA METHOD 3550/8310 - 'OLYAROMATIC HYDROCARBONS	LAB BLANK	Units
laphthalene	17 U	µg/Kg
cenaphthylene	33 U	µg/Kg
-Methylnaphthalene	33 U	µg/Kg
-Methylnaphthalene	33 U	µg/Kg
cenaphthene	17 U	µg/Kg
luorene	3.3 U	µg/Kg
henanthrene	33 U	µg/Kg
nthracene	2.0 U	µg/Kg
luoranthene	3.3 U	µg/Kg
yrene	1.7 U	µg/Kg
enzo(a)anthracene	1.7 U	µg/Kg
hrysene	1.7 U	µg/Kg
enzo(b)fluoranthene	3.0 U	µg/Kg
enzo(k)fluoranthene	2.0 U	µg/Kg
enzo(a)pyrene	2.0 U	µg/Kg
ibenzo(a,h)anthracene	3.3 U	µg/Kg
enzo(g,h,i)perylene	3.3 U	µg/Kg
ideno(1,2,3-cd)pyrene	1.7 U	µg/Kg
irrogate: (p-terphenyl)		
irrogate Reported Value	11.2	µg/Kg
irrogate Expected Value	10	µg/Kg
irrogate % Recovery	112	%
irrogate Control Limits	50-146	%
te Extracted	03/31/99	
te Analyzed	04/01/99	

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

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	LCS Target µg	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 5030/8021					
Benzene	106/110/106	20	72-134	4	20
Toluene	109/113/108	20	72-124	4	19
Ethylbenzene	109/114/108	20	67-129	4	21
o-Xylene	108/112/106	20	66-131	4	21
EPA Method 3510/8310					
Naphthalene	68/ 92/ 81	10	22-130	30	20
Acenaphthene	80/ 90/ 88	10	14-163	12	19
Benzo(a)pyrene	90/101/ 99	1	33-137	12	36
Benzo(g,h,i)perylene	62/ 66/ 78	2	36-135	6	34
EPA Method 5035/8021					
Benzene	112/ 99/102	20	59-144	12	25
Toluene	104/ 74/130	20	67-132	34	58
Ethylbenzene	106/ 99/106	20	60-169	7	28
o-Xylene	104/ 97/108	20	62-183	7	24
EPA Method 3550/8310					
Naphthalene	82/ 95/ 86	10	26-125	15	45
Acenaphthene	79/ 90/ 90	10	20-143	13	35
Benzo(a)pyrene	102/122/ 98	1	42-138	18	38
Benzo(g,h,i)perylene	102/126/102	2	51-142	21	26

Environmental Conservation Laboratories Comprehensive QA Plan #960038

< = 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.

CHAIN OF CUSTODY RECORD

02314

PROJECT NO.: 0013

SITE NAME: NASJAX - NASCF Fuel Transfer Line

SAMPLERS (SIGNATURE):

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	8260B	8310					REMARKS
	3/24/99	2345		X	CF-VA11-TMW-01	3	X	X					
	3/25/99	0025		X	CF-VA11-TMW-02	3	X	X					
	3/25/99	0110		X	CF-VA11-SB-02-06	4	X	X					PID = 1375 ppm
	3/25/99	0030		X	CF-VA11-SB-01-08	4	X	X					PID = 254 ppm

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
	3/25/99 1345	J W Loom		3/25/99 1345	
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS:	
		Kim Carey	3/26/99 8:00am	#OR5998	

Order No. 70440 (0698)

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

April 1, 1999

Mr. John Kucera
Tetra Tech NUS
7018 A.C. Skinner Pkwy.
Suite 250
Jacksonville, FL 32256

Login Number (SDG): OR6039
Project Number: NO013/CTO-72
Description: NASJAX/NASCF Jet Fuel Transfer

Case Narrative:

Four water samples and four soil samples were collected on March 29, 1999. All samples were received at ENCO Laboratories, Inc., on March 29, 1999 on wet ice and in good condition. This sample set was inclusive of samples CF-VA11 (TMW-03,04,05,06 and SB-03-06, SB-04-06, SB-05-06 and SB-06-06). All samples were analyzed as requested on the associated sample chain-of-custody forms.

All samples were extracted and analyzed within EPA specified holding times.

There were no problems encountered with the processing of this SDG.

Quality Assurance acceptance limits are established by "in-house" statistical determination. This is true for surrogate, MS/MSD and LCS spike recovery evaluations.

The laboratory is providing separate reports per chain-of-custody received as requested by the client.

Environmental Conservation Laboratories, Inc.

David J. Vesey
Project Manager

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

CLIENT : Tetra Tech NUS
ADDRESS: 7018 A.C. Skinner Parkway
Suite 250
Jacksonville, FL 32256

REPORT # : OR6039
DATE SUBMITTED: March 29, 1999
DATE REPORTED : April 6, 1999

ATTENTION: John Kucera

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

PROJECT #: 0013

Transfer Pipeline 103rd St.

03/29/99

#1 - CF-VA11-TMW-03 @ 11:04
#2 - CF-VA11-SB-03-6 @ 11:26
#3 - CF-VA11-SB-04-6 @ 11:56
#4 - CF-VA11-TMW-04 @ 13:29
#5 - CF-VA11-SB-05-6 @ 14:46
#6 - CF-VA11-TMW-05 @ 15:37
#7 - CF-VA11-SB-06-6 @ 15:50
#8 - CF-VA11-TMW-06 @ 16:33

OJECT MANAGER David J. Vesey
David Vesey

ENCO LABORATORIES
REPORT # : OR6039
DATE REPORTED: April 6, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline
103rd St.

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-VA11-TMW-03	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	48.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	97	%
Surrogate Control Limits	64-140	%
Date Analyzed	04/01/99	

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

ENCO LABORATORIES
REPORT # : OR6039
DATE REPORTED: April 6, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline 103rd St.

RESULTS OF ANALYSIS

:PA METHOD 3510/8310 - 'OLYAROMATIC HYDROCARBONS	CF-VA11-TMW-03	Units
aphthalene	0.50 U	µg/L
cenaphthylene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
cenaphthene	0.50 U	µg/L
luorene	0.10 U	µg/L
henanthrene	1.0 U	µg/L
nthracene	0.050 U	µg/L
luoranthene	0.10 U	µg/L
yrene	0.050 U	µg/L
enzo(a)anthracene	0.050 U	µg/L
rysene	0.050 U	µg/L
enzo(b)fluoranthene	0.10 U	µg/L
enzo(k)fluoranthene	0.050 U	µg/L
enzo(a)pyrene	0.050 U	µg/L
benzo(a,h)anthracene	0.10 U	µg/L
nzo(g,h,i)perylene	0.10 U	µg/L
deno(1,2,3-cd)pyrene	**0.070** I	µg/L
rrogate: (p-terphenyl)		
rrogate Reported Value	12.4	µg/L
rrogate Expected Value	10	µg/L
rrogate % Recovery	124	%
rrogate Control Limits	39-148	%
te Extracted	04/01/99	
te Analyzed	04/05/99	

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

ENCO LABORATORIES
REPORT # : OR6039
DATE REPORTED: April 6, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline
103rd St.

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	CF-VA11-SB-03-6	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	1.1 U	µg/Kg
Toluene	1.1 U	µg/Kg
Chlorobenzene	1.1 U	µg/Kg
Ethylbenzene	1.1 U	µg/Kg
m-Xylene & p-Xylene	2.0 U	µg/Kg
o-Xylene	1.1 U	µg/Kg
1,3-Dichlorobenzene	1.1 U	µg/Kg
1,4-Dichlorobenzene	1.1 U	µg/Kg
1,2-Dichlorobenzene	1.1 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	40	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	80	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/30/99	

Note: Analyte values are reported on a dry weight basis.

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

ENCO LABORATORIES
REPORT # : OR6039
DATE REPORTED: April 6, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline 103rd St.

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	CF-VA11-SB-03-6	Units
Naphthalene	20 U	µg/Kg
Acenaphthylene	40 U	µg/Kg
2-Methylnaphthalene	40 U	µg/Kg
1-Methylnaphthalene	40 U	µg/Kg
Acenaphthene	20 U	µg/Kg
Fluorene	4.0 U	µg/Kg
Phenanthrene	40 U	µg/Kg
Anthracene	2.0 U	µg/Kg
Fluoranthene	4.0 U	µg/Kg
Pyrene	2.0 U	µg/Kg
Benzo(a)anthracene	2.0 U	µg/Kg
Chrysene	2.0 U	µg/Kg
Benzo(b)fluoranthene	**4.0** I	µg/Kg
Benzo(k)fluoranthene	2.0 U	µg/Kg
Benzo(a)pyrene	2.0 U	µg/Kg
Dibenzo(a,h)anthracene	4.0 U	µg/Kg
Benzo(g,h,i)perylene	**7.0** I	µg/Kg
Indeno(1,2,3-cd)pyrene	2.0 U	µg/Kg
Surrogate: (p-terphenyl)		
Surrogate Reported Value	13.4	µg/Kg
Surrogate Expected Value	10	µg/Kg
Surrogate % Recovery	134	%
Surrogate Control Limits	50-146	%
Date Extracted	03/31/99	
Date Analyzed	04/01/99	

MISCELLANEOUS	METHOD	CF-VA11-SB-03-6	Units
Percent Solids	SM2540G	**84**	%
Date Analyzed		04/01/99	

NOTE: Analyte values are reported on a dry weight basis.

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
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DATE REPORTED: April 6, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline
103rd St.

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	CF-VA11-SB-04-6	Units
Methyl tert-butyl ether	2.0 U D1	µg/Kg
Benzene	1.3 U D1	µg/Kg
Toluene	1.3 U D1	µg/Kg
Chlorobenzene	1.3 U D1	µg/Kg
Ethylbenzene	1.3 U D1	µg/Kg
m-Xylene & p-Xylene	2.0 U D1	µg/Kg
o-Xylene	1.0 U D1	µg/Kg
1,3-Dichlorobenzene	1.0 U D1	µg/Kg
1,4-Dichlorobenzene	1.0 U D1	µg/Kg
1,2-Dichlorobenzene	1.0 U D1	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	36.5	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	73	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/30/99	

NOTE: Analyte values are reported on a dry weight basis.

U = Compound was analyzed for but not detected to the level shown.
D1 = Analyte value determined from a 1:1.09 dilution.

ENCO LABORATORIES
REPORT # : OR6039
DATE REPORTED: April 6, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline 103rd St.

RESULTS OF ANALYSIS

PA METHOD 3550/8310 - OLYAROMATIC HYDROCARBONS	CF-VA11-SB-04-6	Units
aphthalene	20 U	µg/Kg
cenaphthylene	40 U	µg/Kg
-Methylnaphthalene	40 U	µg/Kg
-Methylnaphthalene	40 U	µg/Kg
cenaphthene	20 U	µg/Kg
luorene	4.0 U	µg/Kg
henanthrene	40 U	µg/Kg
ithracene	2.0 U	µg/Kg
uoranthene	**8.1**	µg/Kg
rene	2.0 U	µg/Kg
nzo(a)anthracene	2.0 U	µg/Kg
rysene	**2.0** I	µg/Kg
nzo(b)fluoranthene	**4.0** I	µg/Kg
nzo(k)fluoranthene	2.0 U	µg/Kg
nzo(a)pyrene	**2.0** I	µg/Kg
benzo(a,h)anthracene	4.0 U	µg/Kg
nzo(g,h,i)perylene	**12**	µg/Kg
deno(1,2,3-cd)pyrene	**4.5**	µg/Kg
rrogate: (p-terphenyl)		
rrogate Reported Value	12.2	µg/Kg
rrogate Expected Value	10	µg/Kg
rrogate % Recovery	122	%
rrogate Control Limits	50-146	%
te Extracted	03/31/99	
te Analyzed	04/01/99	

SCELLANEOUS	METHOD	CF-VA11-SB-04-6	Units
rcent Solids	SM2540G	**83**	%
te Analyzed		04/01/99	

TE: Analyte values are reported on a dry weight basis.

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

ENCO LABORATORIES
REPORT # : OR6039
DATE REPORTED: April 6, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline 103rd St.

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-VA11-TMW-04	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	49.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	99	%
Surrogate Control Limits	64-140	%
Date Analyzed	04/01/99	

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

ENCO LABORATORIES
REPORT # : OR6039
DATE REPORTED: April 6, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline 103rd St.

RESULTS OF ANALYSIS

:PA METHOD 3510/8310 - 'OLYAROMATIC HYDROCARBONS	CF-VA11-TMW-04	Units
laphthalene	0.50 U	µg/L
cenaphthylene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
cenaphthene	0.50 U	µg/L
luorene	0.10 U	µg/L
henanthrene	1.0 U	µg/L
nthracene	0.050 U	µg/L
luoranthene	0.10 U	µg/L
yrene	0.050 U	µg/L
enzo(a)anthracene	0.050 U	µg/L
hrysene	0.050 U	µg/L
enzo(b)fluoranthene	0.10 U	µg/L
enzo(k)fluoranthene	0.050 U	µg/L
enzo(a)pyrene	0.050 U	µg/L
ibenzo(a,h)anthracene	0.10 U	µg/L
enzo(g,h,i)perylene	0.10 U	µg/L
ndeno(1,2,3-cd)pyrene	0.050 U	µg/L
urrogate: (p-terphenyl)		
urrogate Reported Value	12.1	µg/L
urrogate Expected Value	10	µg/L
urrogate % Recovery	121	%
urrogate Control Limits	39-148	%
ate Extracted	04/01/99	
ate Analyzed	04/05/99	

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

ENCO LABORATORIES
REPORT # : OR6039
DATE REPORTED: April 6, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline 103rd St.

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	CF-VA11-SB-05-6	Units
Methyl tert-butyl ether	2.0 U D2	µg/Kg
Benzene	3.0 I D2	µg/Kg
Toluene	1.3 U D2	µg/Kg
Chlorobenzene	1.3 U D2	µg/Kg
Ethylbenzene	1.3 U D2	µg/Kg
m-Xylene & p-Xylene	2.0 U D2	µg/Kg
o-Xylene	1.0 U D2	µg/Kg
1,3-Dichlorobenzene	1.0 U D2	µg/Kg
1,4-Dichlorobenzene	1.0 U D2	µg/Kg
1,2-Dichlorobenzene	1.0 U D2	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	41	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	82	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/30/99	

NOTE: Analyte values are reported on a dry weight basis.

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).
D2 = Analyte value determined from a 1:1.06 dilution.

ENCO LABORATORIES
REPORT # : OR6039
DATE REPORTED: April 6, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline
103rd St.

RESULTS OF ANALYSIS

PA METHOD 3550/8310 - OLYAROMATIC HYDROCARBONS	CF-VA11-SB-05-6	Units
aphthalene	20 U	µg/Kg
cenaphthylene	40 U	µg/Kg
-Methylnaphthalene	40 U	µg/Kg
-Methylnaphthalene	40 U	µg/Kg
cenaphthene	20 U	µg/Kg
luorene	4.0 U	µg/Kg
henanthrene	40 U	µg/Kg
nthracene	2.0 U	µg/Kg
luoranthene	4.0 U	µg/Kg
yrene	2.0 U	µg/Kg
enzo(a)anthracene	2.0 U	µg/Kg
rysene	**2.0** I	µg/Kg
enzo(b)fluoranthene	4.0 U	µg/Kg
enzo(k)fluoranthene	2.0 U	µg/Kg
enzo(a)pyrene	2.0 U	µg/Kg
benzo(a,h)anthracene	4.0 U	µg/Kg
nzo(g,h,i)perylene	4.0 U	µg/Kg
deno(1,2,3-cd)pyrene	2.0 U	µg/Kg
rrogate: (p-terphenyl)		
rrogate Reported Value	12.8	µg/Kg
rrogate Expected Value	10	µg/Kg
rrogate % Recovery	128	%
rrogate Control Limits	50-146	%
te Extracted	03/31/99	
te Analyzed	04/01/99	

SCELLANEOUS	METHOD	CF-VA11-SB-05-6	Units
rcent Solids	SM2540G	**83**	%
te Analyzed		04/01/99	

TE: Analyte values are reported on a dry weight basis.

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

ENCO LABORATORIES
REPORT # : OR6039
DATE REPORTED: April 6, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline 103rd St.

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-VA11-TMW-05	Units
Methyl tert-butyl ether	2.0 I	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	56	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	112	%
Surrogate Control Limits	64-140	%
Date Analyzed	04/01/99	

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 # : OR6039
DATE REPORTED: April 6, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline 103rd St.

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-VA11-TMW-05	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	**1.7**	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	13.4	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	134	%
Surrogate Control Limits	39-148	%
Date Extracted	04/01/99	
Date Analyzed	04/05/99	

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

ENCO LABORATORIES
REPORT # : OR6039
DATE REPORTED: April 6, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline 103rd St.

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	CF-VA11-SB-06-6	Units
Methyl tert-butyl ether	2.0 U D2	µg/Kg
Benzene	1.2 U D2	µg/Kg
Toluene	1.2 U D2	µg/Kg
Chlorobenzene	1.2 U D2	µg/Kg
Ethylbenzene	1.2 U D2	µg/Kg
m-Xylene & p-Xylene	2.0 U D2	µg/Kg
o-Xylene	1.0 U D2	µg/Kg
1,3-Dichlorobenzene	1.0 U D2	µg/Kg
1,4-Dichlorobenzene	1.0 U D2	µg/Kg
1,2-Dichlorobenzene	1.0 U D2	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	35.5	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	71	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/30/99	

NOTE: Analyte values are reported on a dry weight basis.

U = Compound was analyzed for but not detected to the level shown.
D2 = Analyte value determined from a 1:1.06 dilution.

ENCO LABORATORIES
REPORT # : OR6039
DATE REPORTED: April 6, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline 103rd St.

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	CF-VA11-SB-06-6	Units
Naphthalene	19 U	µg/Kg
Acenaphthylene	37 U	µg/Kg
2-Methylnaphthalene	37 U	µg/Kg
1-Methylnaphthalene	37 U	µg/Kg
Acenaphthene	19 I	µg/Kg
Fluorene	3.7 U	µg/Kg
Phenanthrene	37 U	µg/Kg
Anthracene	2.0 U	µg/Kg
Fluoranthene	52	µg/Kg
Pyrene	45	µg/Kg
Benzo(a)anthracene	18	µg/Kg
Chrysene	22	µg/Kg
Benzo(b)fluoranthene	17	µg/Kg
Benzo(k)fluoranthene	8.0	µg/Kg
Benzo(a)pyrene	20	µg/Kg
Dibenzo(a,h)anthracene	6.0 I	µg/Kg
Benzo(g,h,i)perylene	11	µg/Kg
Indeno(1,2,3-cd)pyrene	12	µg/Kg
Surrogate: (p-terphenyl)		
Surrogate Reported Value	15.6 J	µg/Kg
Surrogate Expected Value	10	µg/Kg
Surrogate % Recovery	156	%
Surrogate Control Limits	50-146	%
Date Extracted	03/31/99	
Date Analyzed	04/01/99	

MISCELLANEOUS	METHOD	CF-VA11-SB-06-6	Units
Percent Solids	SM2540G	90	%
Date Analyzed		04/01/99	

NOTE: Analyte values are reported on a dry weight basis.

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

ENCO LABORATORIES
REPORT # : OR6039
DATE REPORTED: April 6, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline
103rd St.

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-VA11-TMW-06	Units
Methyl tert-butyl ether	3.0 I	µg/L
Benzene	43	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	9.4	µg/L
m-Xylene & p-Xylene	35	µg/L
o-Xylene	9.0	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	56.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	113	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/31/99	

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 # : OR6039
DATE REPORTED: April 6, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline 103rd St.

RESULTS OF ANALYSIS

PA METHOD 3510/8310 - OLYAROMATIC HYDROCARBONS	CF-VA11-TMW-06	Units
aphthalene	**9.4**	µg/L
cenaphthylene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
cenaphthene	**3.0**	µg/L
luorene	0.10 U	µg/L
henanthrene	1.0 U	µg/L
nthracene	0.050 U	µg/L
luoranthene	0.10 U	µg/L
yrene	0.050 U	µg/L
enzo(a)anthracene	0.050 U	µg/L
rysene	0.050 U	µg/L
enzo(b)fluoranthene	0.10 U	µg/L
enzo(k)fluoranthene	0.050 U	µg/L
enzo(a)pyrene	0.050 U	µg/L
benzo(a,h)anthracene	0.10 U	µg/L
enzo(g,h,i)perylene	0.10 U	µg/L
deno(1,2,3-cd)pyrene	0.050 U	µg/L
rrogate: (p-terphenyl)		
rrogate Reported Value	12.2	µg/L
rrogate Expected Value	10	µg/L
rrogate % Recovery	122	%
rrogate Control Limits	39-148	%
te Extracted	04/01/99	
te Analyzed	04/05/99	

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

ENCO LABORATORIES
REPORT # : OR6039
DATE REPORTED: April 6, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline 103rd St.

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	42	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	84	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/31/99	

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

ENCO LABORATORIES
REPORT # : OR6039
DATE REPORTED: April 6, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline 103rd St.

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	LAB BLANK	Units
Naphthalene	0.50 U	µg/L
cenaphthylene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
cenaphthene	0.50 U	µg/L
luorene	0.10 U	µg/L
henanthrene	1.0 U	µg/L
nthracene	0.050 U	µg/L
luoranthene	0.10 U	µg/L
yrene	0.050 U	µg/L
enzo(a)anthracene	0.050 U	µg/L
hrysene	0.050 U	µg/L
enzo(b)fluoranthene	0.10 U	µg/L
enzo(k)fluoranthene	0.050 U	µg/L
enzo(a)pyrene	0.050 U	µg/L
ibenzo(a,h)anthracene	0.10 U	µg/L
enzo(g,h,i)perylene	0.10 U	µg/L
ideno(1,2,3-cd)pyrene	0.050 U	µg/L
irrogate: (p-terphenyl)		
irrogate Reported Value	13.1	µg/L
irrogate Expected Value	10	µg/L
irrogate % Recovery	131	%
irrogate Control Limits	39-148	%
te Extracted	04/01/99	
te Analyzed	04/05/99	

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

ENCO LABORATORIES
REPORT # : OR6039
DATE REPORTED: April 6, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline 103rd St.

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	1.0 U	µg/Kg
Toluene	1.0 U	µg/Kg
Chlorobenzene	1.0 U	µg/Kg
Ethylbenzene	1.0 U	µg/Kg
m-Xylene & p-Xylene	2.0 U	µg/Kg
o-Xylene	1.0 U	µg/Kg
1,3-Dichlorobenzene	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	50	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	100	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/30/99	

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

ENCO LABORATORIES
REPORT # : OR6039
DATE REPORTED: April 6, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline 103rd St.

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	LAB BLANK	Units
Naphthalene	17 U	µg/Kg
Acenaphthylene	33 U	µg/Kg
2-Methylnaphthalene	33 U	µg/Kg
1-Methylnaphthalene	33 U	µg/Kg
Acenaphthene	17 U	µg/Kg
Fluorene	3.3 U	µg/Kg
Phenanthrene	33 U	µg/Kg
Anthracene	2.0 U	µg/Kg
Fluoranthene	3.3 U	µg/Kg
Pyrene	1.7 U	µg/Kg
Benzo(a)anthracene	1.7 U	µg/Kg
Chrysene	1.7 U	µg/Kg
Benzo(b)fluoranthene	3.0 U	µg/Kg
Benzo(k)fluoranthene	2.0 U	µg/Kg
Benzo(a)pyrene	2.0 U	µg/Kg
Dibenzo(a,h)anthracene	3.3 U	µg/Kg
Benzo(g,h,i)perylene	3.3 U	µg/Kg
Indeno(1,2,3-cd)pyrene	1.7 U	µg/Kg
Surrogate: (p-terphenyl)		
Surrogate Reported Value	11.2	µg/Kg
Surrogate Expected Value	10	µg/Kg
Surrogate % Recovery	112	%
Surrogate Control Limits	50-146	%
Date Extracted	03/31/99	
Date Analyzed	04/01/99	

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

ENCO LABORATORIES
REPORT # : OR6039
DATE REPORTED: April 6, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline
103rd St.

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Xyl		
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	47.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	95	%
Surrogate Control Limits	64-140	%
Date Analyzed	04/01/99	

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

ENCO LABORATORIES
REPORT # : OR6039
DATE REPORTED: April 6, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline 103rd St.

QUALITY CONTROL DATA

arameter	% RECOVERY MS/MSD/LCS	LCS Target µg	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
PA Method 5030/8021 (CF-VA11-TMW-06)					
enzene	106/110/113	20	72-134	4	20
oluene	111/116/117	20	72-124	4	19
thylbenzene	111/115/116	20	67-129	4	21
-Xylene	112/118/114	20	66-131	5	21
PA Method 5030/8021 (CF-VA11-TMW-03,CF-VA11-TMW-04,CF-VA11-TMW-05)					
enzene	106/110/ 84	20	72-134	4	20
oluene	111/116/ 87	20	72-124	4	19
thylbenzene	111/115/ 86	20	67-129	4	21
-Xylene	112/118/ 85	20	66-131	5	21
PA Method 3510/8310					
phthalene	68/ 92/ 91	10	22-130	30	20
enaphthene	80/ 90/ 86	10	14-163	12	19
nzo(a)pyrene	90/101/ 86	1	33-137	12	36
nzo(g,h,i)perylene	62/ 66/ 97	2	36-135	6	34

vironmental Conservation Laboratories Comprehensive QA Plan #960038

= Less Than
= Matrix Spike
) = Matrix Spike Duplicate
= Laboratory Control Standard
= Relative Percent Difference

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ENCO LABORATORIES
REPORT # : OR6039
DATE REPORTED: April 6, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline
103rd St.

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	LCS Target µg	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 5035/8021					
Benzene	101/ 99/107	20	59-144	2	25
Toluene	96/ 96/100	20	67-132	<1	58
Ethylbenzene	108/112/118	20	60-169	4	28
o-Xylene	105/110/115	20	62-183	5	24
EPA Method 3550/8310					
Naphthalene	82/ 95/ 86	10	26-125	15	45
Acenaphthene	79/ 90/ 90	10	20-143	13	35
Benzo(a)pyrene	102/122/ 98	1	42-138	18	38
Benzo(g,h,i)perylene	102/126/102	2	51-142	21	26

Environmental Conservation Laboratories Comprehensive QA Plan #960038

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

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QUAKP #_____

ENVIRONMENTAL CONSERVATION LABORATORIES

4810 Executive Park Court, Suite 211
Jacksonville, Florida 32216-6069
Ph. (904) 296-3007 • Fax (904) 296-6210

10207 General Drive
Orlando, Florida 32824
Ph. (407) 826-5314 • Fax (407) 850-6945

ENCO CompQAP No.: 960038G/0

CHAIN OF CUSTODY RECORD

PROJECT REFERENCE: Transfer Pipeline 103rd St
PROJECT NO.: 0013
P.O. NUMBER:
PROJECT LOC. (State): FL
SAMPLER(s) NAME: Jennifer Elliott
PHONE: 281-0480
FAX: 281-0070
CLIENT NAME: Tetratech NUS, Inc
CLIENT PROJECT MANAGER: Jon Kucera
CLIENT ADDRESS (CITY, STATE, ZIP): 7018 A.C. Skinner Parkway Suite #250

PAGE 1 OF 1

☒ STANDARD REPORT DELIVERY
☐ EXPEDITED REPORT DELIVERY (surcharge)
Date Due:_____

MATRIX TYPE: SURFACE WATER, GROUND WATER, WASTEWATER, DRINKING WATER, SOIL/SOLID/SEDIMENT, NONAQUEOUS LIQUID (oil, solvent, etc.), AIR, SLUDGE, OTHER

REQUIRED ANALYSIS: Volatile Organics (EPA 8260B), Lead (EPA 6010)

PRESERVATIVE: HCl

STATION	DATE	TIME	GRAB	COMP.	SAMPLE IDENTIFICATION	SURFACE WATER	GROUND WATER	WASTEWATER	DRINKING WATER	SOIL/SOLID/SEDIMENT	NONAQUEOUS LIQUID	AIR	SLUDGE	OTHER	Volatile Organics (EPA 8260B)	Lead (EPA 6010)	REMARKS
1	3-29-99	1104	X		CF-VA11-TMW-03		X								2	1	
2	3-29-99	1126		X	CF-VA11-SB-03-G					X					3	1	
3	3-29-99	1156		X	CF-VA11-SB-04-G					X					3	1	
4	3-29-99	1329	X		CF-VA11-TMW-04		X								2	1	
5	3-29-99	1446		X	CF-VA11-SB-05-G					X					3	1	
6	3-29-99	1537	X		CF-VA11-TMW-05		X								2	1	
7	3-29-99	1550		X	CF-VA11-SB-06-G					X					3	1	
8	3-29-99	1633	X		CF-VA11-TMW-08		X								2	1	
9																	
10																	
11																	
12																	
13																	
14																	

NUMBER OF CONTAINERS SUBMITTED

SAMPLE KIT PREPARED BY: ☐JACKSONVILLE ☐ORLANDO	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE 3-29-99	TIME 1726	RECEIVED BY: (SIGNATURE)	DATE 3/29/99	TIME 1726
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
RECEIVED BY (SIGNATURE): Kim Carey / ENCO-ORLANDO	DATE 3/30/99	TIME 6:50AM	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
RECEIVED FOR LABORATORY BY: (SIGNATURE) ☐ Jacksonville ☐ Orlando	DATE 3/30/99	TIME 6:50AM	CUSTODY INTACT ☐ YES ☒ NO	ENCO LOG NO. OR6034		REMARKS		

Analytical Results CF-VA12

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

March 22, 1999

Mr. John Kucera
Tetra Tech NUS
7018 A.C. Skinner Pkwy.
Suite 250
Jacksonville, FL 32256

Login Number(SDG): OR5839.2
Project Number: NO013/CTO-72
Description: NASJAX/NASCF Jet Fuel Transfer

Case Narrative:

Three water samples and one soil sample were collected on March 15, 1999. All samples were received at ENCO Laboratories, Inc., on March 15, 1999 on wet ice and in good condition. This sample set was inclusive of samples CF-VA12 (TMW-01,02,DV05, and SB-02-07). All samples were anlayzed as requested on the associated sample chain-of-custody forms.

All samples were extracted and analyzed within EPA specified holding times.

The laboratory method blank prepared and analyzed with the water samples by EPA Method 3510/8310 showed a detectable level of contamination of a target analyte, Pyrene. This analyte is not detected or reported for any of the samples submitted by the client with this SDG report.

Quality Assurance acceptance limits are established by "in-house" statistical determination. This is true for surrogate, MS/MSD and LCS spike recovery evaluations.

The laboratory is providing separate reports per chain-of-custody received as requested by the client.

Environmental Conservation Laboratories, Inc.

David J. Vesey
Project Manager

David J. Vesey

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

CLIENT : Tetra Tech NUS
ADDRESS: 7018 A.C. Skinner Parkway
Suite 250
Jacksonville, FL 32256

REPORT # : OR5839.2
DATE SUBMITTED: March 15, 1999
DATE REPORTED : March 22, 1999

ATTENTION: John Kucera

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

PROJECT #: 0013

NAS JAX-NASCF Jet Fuel Tansfer Line

03/15/99

#1 - CF-VA12-TMW-01 @ 14:05
#2 - CF-VA12-TMW-02 @ 14:40
#3 - CF-VA12-TMW-DV05 @ 00:00
#4 - CF-VA12-SB-02-07 @ 14:25

OJECT MANAGER David Vesey

ENCO LABORATORIES
REPORT # : OR5839.2
DATE REPORTED: March 22, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Tansfer Line

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-VA12-TMW-01	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	**2.1** I	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	52	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	104	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/17/99	

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

ENCO LABORATORIES
REPORT # : OR5839.2
DATE REPORTED: March 22, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Tansfer Line

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-VA12-TMW-01	Units
Naphthalene	0.60 U	µg/L
Acenaphthylene	1.3 U	µg/L
2-Methylnaphthalene	**1.5**	µg/L
1-Methylnaphthalene	1.3 U	µg/L
Acenaphthene	0.60 U	µg/L
Fluorene	0.13 U	µg/L
Phenanthrene	1.3 U	µg/L
Anthracene	0.060 U	µg/L
Fluoranthene	0.13 U	µg/L
Pyrene	0.060 U	µg/L
Benzo(a)anthracene	0.060 U	µg/L
Chrysene	0.060 U	µg/L
Benzo(b)fluoranthene	0.13 U	µg/L
Benzo(k)fluoranthene	0.060 U	µg/L
Benzo(a)pyrene	0.060 U	µg/L
Dibenzo(a,h)anthracene	0.13 U	µg/L
Benzo(g,h,i)perylene	0.13 U	µg/L
Indeno(1,2,3-cd)pyrene	0.060 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	9.8	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	98	%
Surrogate Control Limits	39-148	%
Date Extracted	03/19/99	
Date Analyzed	03/19/99	

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

ENCO LABORATORIES
REPORT # : OR5839.2
DATE REPORTED: March 22, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Tansfer Line

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-VA12-TMW-02	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	**10**	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	47	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	94	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/17/99	

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

ENCO LABORATORIES
REPORT # : OR5839.2
DATE REPORTED: March 22, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Tansfer Line

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-VA12-TMW-02	Units
Naphthalene	0.60 U	µg/L
Acenaphthylene	1.1 U	µg/L
1-Methylnaphthalene	3.6	µg/L
2-Methylnaphthalene	1.1 U	µg/L
Acenaphthene	0.60 U	µg/L
Fluorene	0.11 U	µg/L
Phenanthrene	1.1 U	µg/L
Anthracene	0.060 U	µg/L
Fluoranthene	0.11 U	µg/L
Pyrene	0.060 U	µg/L
Benzo(a)anthracene	0.060 U	µg/L
Chrysene	0.060 U	µg/L
Benzo(b)fluoranthene	0.11 U	µg/L
Benzo(k)fluoranthene	0.060 U	µg/L
Benzo(a)pyrene	0.060 U	µg/L
Dibenzo(a,h)anthracene	0.11 U	µg/L
Benzo(g,h,i)perylene	0.11 U	µg/L
Indeno(1,2,3-cd)pyrene	0.060 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	10.7	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	107	%
Surrogate Control Limits	39-148	%
Date Extracted	03/19/99	
Date Analyzed	03/19/99	

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

ENCO LABORATORIES
REPORT # : OR5839.2
DATE REPORTED: March 22, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Tansfer Line

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-VA12-TMW-DV05	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	**1.7** I	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	46	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	92	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/17/99	

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 # : OR5839.2
DATE REPORTED: March 22, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Tansfer Line

RESULTS OF ANALYSIS

:PA METHOD 3510/8310 - 'OLYAROMATIC HYDROCARBONS	CF-VA12-TMW-DV05	Units
laphthalene	0.60 U	µg/L
cenaphthylene	1.3 U	µg/L
-Methylnaphthalene	**2.4**	µg/L
-Methylnaphthalene	1.3 U	µg/L
cenaphthene	0.60 U	µg/L
luorene	0.13 U	µg/L
henanthrene	1.3 U	µg/L
nthracene	0.060 U	µg/L
luoranthene	0.13 U	µg/L
yrene	0.060 U	µg/L
enzo(a)anthracene	0.060 U	µg/L
hrysene	0.060 U	µg/L
enzo(b)fluoranthene	0.13 U	µg/L
enzo(k)fluoranthene	0.060 U	µg/L
enzo(a)pyrene	0.060 U	µg/L
ibenzo(a,h)anthracene	0.13 U	µg/L
enzo(g,h,i)perylene	0.13 U	µg/L
ideno(1,2,3-cd)pyrene	0.060 U	µg/L
irrogate: (p-terphenyl)		
irrogate Reported Value	7.8	µg/L
irrogate Expected Value	10	µg/L
irrogate % Recovery	78	%
irrogate Control Limits	39-148	%
te Extracted	03/19/99	
te Analyzed	03/19/99	

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

ENCO LABORATORIES
REPORT # : OR5839.2
DATE REPORTED: March 22, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Tansfer Line

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	CF-VA12-SB-02-07	Units
Methyl tert-butyl ether	3.0 U	µg/Kg
Benzene	1.0 U	µg/Kg
Toluene	1.0 U	µg/Kg
Chlorobenzene	1.0 U	µg/Kg
Ethylbenzene	1.0 U	µg/Kg
m-Xylene & p-Xylene	3.0 U	µg/Kg
o-Xylene	1.0 U	µg/Kg
1,3-Dichlorobenzene	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	38	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	76	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/18/99	

NOTE: Analyte values are reported on a dry weight basis.

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

ENCO LABORATORIES
REPORT # : OR5839.2
DATE REPORTED: March 22, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Tansfer Line

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	CF-VA12-SB-02-07	Units
Naphthalene	23 U	µg/Kg
Acenaphthylene	46 U	µg/Kg
1-Methylnaphthalene	46 U	µg/Kg
2-Methylnaphthalene	46 U	µg/Kg
Acenaphthene	23 U	µg/Kg
Fluorene	4.6 U	µg/Kg
Phenanthrene	46 U	µg/Kg
Anthracene	3.0 U	µg/Kg
Fluoranthene	4.6 U	µg/Kg
Pyrene	2.3 U	µg/Kg
Benzo(a)anthracene	2.3 U	µg/Kg
Chrysene	2.3 U	µg/Kg
Benzo(b)fluoranthene	4.0 U	µg/Kg
Benzo(k)fluoranthene	3.0 U	µg/Kg
Benzo(a)pyrene	3.0 U	µg/Kg
Dibenzo(a,h)anthracene	4.6 U	µg/Kg
Benzo(g,h,i)perylene	4.6 U	µg/Kg
Indeno(1,2,3-cd)pyrene	2.3 U	µg/Kg
Surrogate: (p-terphenyl)		
Surrogate Reported Value	9.8	µg/Kg
Surrogate Expected Value	10	µg/Kg
Surrogate % Recovery	98	%
Surrogate Control Limits	50-146	%
Date Extracted	03/18/99	
Date Analyzed	03/18/99	

MISCELLANEOUS	METHOD	CF-VA12-SB-02-07	Units
Percent Solids	SM2540G	73	%
Date Analyzed		03/18/99	

NOTE: Analyte values are reported on a dry weight basis.

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

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	48.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	97	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/16/99	

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

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	LAB BLANK	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	**0.060** I	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	10.9	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	109	%
Surrogate Control Limits	39-148	%
Date Extracted	03/19/99	
Date Analyzed	03/19/99	

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 # : OR5839.2
DATE REPORTED: March 22, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Transfer Line

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	1.0 U	µg/Kg
Toluene	1.0 U	µg/Kg
Chlorobenzene	1.0 U	µg/Kg
Ethylbenzene	1.0 U	µg/Kg
m-Xylene & p-Xylene	2.0 U	µg/Kg
o-Xylene	1.0 U	µg/Kg
1,3-Dichlorobenzene	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	44	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	88	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/17/99	

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

ENCO LABORATORIES
REPORT # : OR5839.2
DATE REPORTED: March 22, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Tansfer Line

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	LAB BLANK	Units
Naphthalene	17 U	µg/Kg
Acenaphthylene	33 U	µg/Kg
-Methylnaphthalene	33 U	µg/Kg
-Methylnaphthalene	33 U	µg/Kg
Acenaphthene	17 U	µg/Kg
Fluorene	3.3 U	µg/Kg
Phenanthrene	33 U	µg/Kg
Anthracene	2.0 U	µg/Kg
Fluoranthene	3.3 U	µg/Kg
Pyrene	1.7 U	µg/Kg
enzo(a)anthracene	1.7 U	µg/Kg
hrysene	1.7 U	µg/Kg
enzo(b)fluoranthene	3.0 U	µg/Kg
enzo(k)fluoranthene	2.0 U	µg/Kg
enzo(a)pyrene	2.0 U	µg/Kg
ibenzo(a,h)anthracene	3.3 U	µg/Kg
enzo(g,h,i)perylene	3.3 U	µg/Kg
ndeno(1,2,3-cd)pyrene	1.7 U	µg/Kg
urrogate: (p-terphenyl)		
urrogate Reported Value	9.5	µg/Kg
urrogate Expected Value	10	µg/Kg
urrogate % Recovery	95	%
urrogate Control Limits	50-146	%
ate Extracted	03/18/99	
ate Analyzed	03/18/99	

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

ENCO LABORATORIES
REPORT # : OR5839.2
DATE REPORTED: March 22, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Tansfer Line

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	44	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	88	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/17/99	

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

ENCO LABORATORIES
REPORT # : OR5839.2
DATE REPORTED: March 22, 1999
REFERENCE : 0013
PROJECT NAME : NAS JAX-NASCF Jet Fuel Tansfer Line

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	LCS Target µg	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 5030/8021 (CF-VA12-TMW-01)					
Benzene	110/103/106	20	72-134	6	20
Toluene	114/108/110	20	72-124	5	19
Ethylbenzene	115/108/110	20	67-129	6	21
o-Xylene	111/101/106	20	66-131	9	21
EPA Method 5030/8021 (CF-VA12-TMW-02,CF-VA12-TMW-DV05)					
Benzene	110/103/112	20	72-134	6	20
Toluene	114/108/116	20	72-124	5	19
Ethylbenzene	115/108/116	20	67-129	6	21
o-Xylene	111/101/113	20	66-131	9	21
PA Method 3510/8310					
aphthalene	*/ */ 81	10	22-130	*	20
cenaphthene	*/ */ 98	10	14-163	*	19
enzo(a)pyrene	*/ */ 88	1	33-137	*	36
enzo(g,h,i)perylene	*/ */ 92	2	36-135	*	34

ıvironmental Conservation Laboratories Comprehensive QA Plan #960038

= Matrix interference; unable to obtain accurate recovery
= Less Than
= Matrix Spike
D = Matrix Spike Duplicate
S = Laboratory Control Standard
D = Relative Percent Difference

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

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	LCS Target µg	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 5035/8021					
Benzene	83/ 88/ 87	20	59-144	6	25
Toluene	86/ 90/ 92	20	67-132	4	58
Ethylbenzene	102/106/107	20	60-169	4	28
o-Xylene	95/102/101	20	62-183	7	24
EPA Method 3550/8310					
Naphthalene	93/ 93/ 76	10	26-125	<1	45
Acenaphthene	122/123/ 88	10	20-143	<1	35
Benzo(a)pyrene	103/103/ 84	1	42-138	<1	38
Benzo(g,h,i)perylene	100/ 98/ 90	2	51-142	2	26

nvironmental Conservation Laboratories Comprehensive QA Plan #960038

= Less Than
S = Matrix Spike
SD = Matrix Spike Duplicate
CS = Laboratory Control Standard
PD = Relative Percent Difference

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CHAIN OF CUSTODY RECORD

01588

PROJECT NO.: 0013

SITE NAME: NASJAX - NASCF Jet Fuel Transfer Line

SAMPLERS (SIGNATURE): Lynn J. McLaren

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	8021B	8310						REMARKS
	3/15/99	1405		X	CF-VA12-TMW-01	3	X	X						
	3/15/99	1440		X	CF-VA12-TMW-02	3	X	X						
	3/15/99	0000		X	CF-VA12-TMW-DV05	3	X	X						
	3/15/99	1425		X	CF-VA12-SB-02-07	4	X	X						

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
Lynn J. McLaren	3/15/99 1705	Fred D Hart			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS:	
		Kim Casey	3/16/99 8:30AM	#OR5839	

Order No. 70440 (0693)

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

April 1, 1999

Mr. John Kucera
Tetra Tech NUS
7018 A.C. Skinner Pkwy.
Suite 250
Jacksonville, FL 32256

Login Number (SDG): OR6018.2
Project Number: NO013/CTO-72
Description: NASJAX/NASCF Jet Fuel Transfer

Case Narrative:

One soil sample was collected on March 25, 1999. The sample was received at ENCO Laboratories, Inc., on March 26, 1999 on wet ice and in good condition. This sample set was inclusive of sample CF-VA14-SB-03-2. The sample was analyzed as requested on the associated sample chain-of-custody forms.

The sample was extracted and analyzed within EPA specified holding times.

There were no problems associated with the analysis of this sample.

Quality Assurance acceptance limits are established by "in-house" statistical determination. This is true for surrogate, MS/MSD and LCS spike recovery evaluations.

The laboratory is providing separate reports per chain-of-custody received as requested by the client.

Environmental Conservation Laboratories, Inc.

David J. Vesey
Project Manager

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

CLIENT : Tetra Tech NUS
ADDRESS: 7018 A.C. Skinner Parkway
Suite 250
Jacksonville, FL 32256

REPORT # : OR6018.2
DATE SUBMITTED: March 26, 1999
DATE REPORTED : April 5, 1999

ATTENTION: John Kucera

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

PROJECT #: 0013

Transfer Pipeline 103rd St.

03/25/99

#1 - CF-VA~~14~~-SB-03-2 @ 15:09
12
JJK
see COC

PROJECT MANAGER David Vesey

ENCO LABORATORIES
REPORT # : OR6018.2
DATE REPORTED: April 5, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline 103rd St.

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	CF-VA14-SB-03-2	Units
Methyl tert-butyl ether	2.0 U D2	µg/Kg
Benzene	1.4 U D2	µg/Kg
Toluene	1.4 U D2	µg/Kg
Chlorobenzene	1.4 U D2	µg/Kg
Ethylbenzene	1.4 U D2	µg/Kg
m-Xylene & p-Xylene	2.0 U D2	µg/Kg
o-Xylene	1.0 U D2	µg/Kg
1,3-Dichlorobenzene	1.0 U D2	µg/Kg
1,4-Dichlorobenzene	1.0 U D2	µg/Kg
1,2-Dichlorobenzene	1.0 U D2	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	26	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	52	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/30/99	

NOTE: Analyte values are reported on a dry weight basis.

U = Compound was analyzed for but not detected to the level shown.
D2 = Analyte value determined from a 1:1.06 dilution.

ENCO LABORATORIES
REPORT # : OR6018.2
DATE REPORTED: April 5, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline 103rd St.

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	CF-VA14-SB-03-2	Units
Naphthalene	22 U	µg/Kg
Acenaphthylene	43 U	µg/Kg
2-Methylnaphthalene	43 U	µg/Kg
1-Methylnaphthalene	43 U	µg/Kg
Acenaphthene	22 U	µg/Kg
Fluorene	4.3 U	µg/Kg
Phenanthrene	43 U	µg/Kg
Anthracene	2.0 I	µg/Kg
Fluoranthene	44	µg/Kg
Pyrene	56	µg/Kg
Benzo(a)anthracene	16	µg/Kg
Chrysene	27	µg/Kg
Benzo(b)fluoranthene	31	µg/Kg
Benzo(k)fluoranthene	12	µg/Kg
Benzo(a)pyrene	39	µg/Kg
Dibenzo(a,h)anthracene	4.3 U	µg/Kg
Benzo(g,h,i)perylene	26	µg/Kg
Indeno(1,2,3-cd)pyrene	35	µg/Kg
Surrogate: (p-terphenyl)		
Surrogate Reported Value	11.4	µg/Kg
Surrogate Expected Value	10	µg/Kg
Surrogate % Recovery	114	%
Surrogate Control Limits	50-146	%
Date Extracted	03/31/99	
Date Analyzed	04/01/99	

MISCELLANEOUS	METHOD	CF-VA14-SB-03-2	Units
Percent Solids	SM2540G	77	%
Date Analyzed		03/29/99	

NOTE: Analyte values are reported on a dry weight basis.

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 # : OR6018.2
DATE REPORTED: April 5, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline
103rd St.

RESULTS OF ANALYSIS

:PA METHOD 5035/8021 - 'OLATILE AROMATICS	LAB BLANK	Units
lethyl tert-butyl ether	2.0 U	µg/Kg
lenzene	1.0 U	µg/Kg
'oluene	1.0 U	µg/Kg
:hlorobenzene	1.0 U	µg/Kg
:thylbenzene	1.0 U	µg/Kg
ı-Xylene & p-Xylene	2.0 U	µg/Kg
ı-Xylene	1.0 U	µg/Kg
,3-Dichlorobenzene	1.0 U	µg/Kg
,4-Dichlorobenzene	1.0 U	µg/Kg
,2-Dichlorobenzene	1.0 U	µg/Kg
urrogate: (Bromofluorobenzene)		
urrogate Reported Value	50	µg/Kg
urrogate Expected Value	50	µg/Kg
urrogate % Recovery	100	%
urrogate Control Limits	28-165	%
ate Analyzed	03/30/99	

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

ENCO LABORATORIES
REPORT # : OR6018.2
DATE REPORTED: April 5, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline 103rd St.

RESULTS OF ANALYSIS

PA METHOD 3550/8310 - OLYAROMATIC HYDROCARBONS	LAB BLANK	Units
aphthalene	17 U	µg/Kg
cenaphthylene	33 U	µg/Kg
-Methylnaphthalene	33 U	µg/Kg
-Methylnaphthalene	33 U	µg/Kg
cenaphthene	17 U	µg/Kg
luorene	3.3 U	µg/Kg
henanthrene	33 U	µg/Kg
ithracene	2.0 U	µg/Kg
luoranthene	3.3 U	µg/Kg
rene	1.7 U	µg/Kg
nzo(a)anthracene	1.7 U	µg/Kg
rysene	1.7 U	µg/Kg
nzo(b)fluoranthene	3.0 U	µg/Kg
nzo(k)fluoranthene	2.0 U	µg/Kg
nzo(a)pyrene	2.0 U	µg/Kg
benzo(a,h)anthracene	3.3 U	µg/Kg
nzo(g,h,i)perylene	3.3 U	µg/Kg
deno(1,2,3-cd)pyrene	1.7 U	µg/Kg
rrogate: (p-terphenyl)		
rrogate Reported Value	11.2	µg/Kg
rrogate Expected Value	10	µg/Kg
rrogate % Recovery	112	%
rrogate Control Limits	50-146	%
e Extracted	03/31/99	
e Analyzed	04/01/99	

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

ENCO LABORATORIES
REPORT # : OR6018.2
DATE REPORTED: April 5, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline
103rd St.

QUALITY CONTROL DATA

arameter	% RECOVERY MS/MSD/LCS	LCS Target µg	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
PA Method 5035/8021					
enzene	101/ 99/107	20	59-144	2	25
oluene	96/ 96/100	20	67-132	<1	58
thylbenzene	108/112/118	20	60-169	4	28
-Xylene	105/110/115	20	62-183	5	24
PA Method 3550/8310					
aphthalene	82/ 95/ 86	10	26-125	15	45
cenaphthene	79/ 90/ 90	10	20-143	13	35
enzo(a)pyrene	102/122/ 98	1	42-138	18	38
o(g,h,i)perylene	102/126/102	2	51-142	21	26

nvironmental Conservation Laboratories Comprehensive QA Plan #960038

= Less Than
S = Matrix Spike
SD = Matrix Spike Duplicate
CS = Laboratory Control Standard
PD = Relative Percent Difference

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QUAN. #_____

ENVIRONMENTAL CONSERVATION LABORATORIES

4810 Executive Park Court, Suite 211
Jacksonville, Florida 32216-6069
Ph. (904) 296-3007 • Fax (904) 296-6210

10207 General Drive
Orlando, Florida 32824
Ph. (407) 826-5314 • Fax (407) 850-6945

ENCO CompQAP No.: 960038G/0

CHAIN OF CUSTODY RECORD

PROJECT REFERENCE: Transfer Pipeline 103rd St
PROJECT NO.: 0013
P.O. NUMBER:
PROJECT LOC. (State): FL
SAMPLER(s) NAME: Jennifer Elliott
PHONE: 281-0100
FAX: 281-0070
CLIENT NAME: Tetratech NUS, Inc.
CLIENT PROJECT MANAGER: Jon Kucera
CLIENT ADDRESS (CITY, STATE, ZIP): 7018 A.C. Skinner Parkway Suite #250

PAGE 1 OF 1

☒ STANDARD REPORT DELIVERY
☐ EXPEDITED REPORT DELIVERY (surcharge)
Date Due:

STATION	DATE	TIME	GRAB	COMP	SAMPLE IDENTIFICATION	SURFACE WATER	GROUND WATER	WASTEWATER	DRINKING WATER	SOIL/SOLID/SEDIMENT	NONAQUEOUS LIQUID (oil, solvent, etc.)	AIR	SLUDGE	OTHER	VOLATILES 8010	PAH (8310)								REMARKS
															HCl	1								
															NUMBER OF CONTAINERS SUBMITTED									
1	3-25-99	1150		X	CF-~~VA12VA4-SB-04-2~~				X						3	1								
2	3-25-99	1509		X	CF-VA12-SB-03-2				X						3	1								
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11																								
12																								
13																								
14																								

SAMPLE KIT PREPARED BY: ☐JACKSONVILLE ☐ORLANDO	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
			[signature]	3-26-99	1412			
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
RECEIVED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
Kris Casey / ENCO-ORLANDO	3/27/99	8:00AM						

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	ENCO LOG NO.	REMARKS
☐ Jacksonville ☐ Orlando	3/26/99	1412	☒ YES ☐ NO	OR601	

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

March 19, 1999

Mr. John Kucera
Tetra Tech NUS
7018 A.C. Skinner Pkwy.
Suite 250
Jacksonville, FL 32256

Login Number(SDG): OR5823.3
Project Number: N0013/CTO-72
Description: NASJAX/NASCF Jet Fuel Transfer

Case Narrative:

Six water samples and two soil sample were collected on March 11, 1999. All samples were received at ENCO Laboratories, Inc., on March 11, 1999 at 1745 on wet ice and in good condition. This sample set was inclusive of samples CF-VA14 (TMW-01,02,DU06 and SB-02-10) and CF-VA13 (TMW-01,02,DU01 and SB-02-10). All samples were anlayzed as requested on the associated sample chain-of-custody forms.

The laboratory notes that the sample identified as CF-VA14-SB-02-10 indicates a time of sampling on the chain-of-custody of 16:21 while the sample containers indicate a sample time of 14:22. The laboratory report uses the time indicated on the COC.

All samples were extracted and analyzed within EPA specified holding times.

Quality Assurance acceptance limits are established by "in-house" statistical determination. This is true for surrogate, MS/MSD and LCS spike recovery evaluations.

The laboratory is providing separate reports per chain-of-custody received as requested by the client.

Environmental Conservation Laboratories, Inc.

David J. Vesey
Project Manager

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

CLIENT : Tetra Tech NUS
ADDRESS: 7018 A.C. Skinner Parkway
Suite 250
Jacksonville, FL 32256

REPORT # : OR5823.3
DATE SUBMITTED: March 12, 1999
DATE REPORTED : March 19, 1999

ATTENTION: John Kucera

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

PROJECT #: 0013

NASCF-NAS Jax Fuel Transfer Pipeline

#1 - CF-VA14-TMW-01 @ 15:31 (03/11/99)
#2 - CF-VA14-TMW-02 @ 16:50 (03/11/99)
#3 - CF-VA14-SB-02-10 @ 16:21 (03/11/99)
#4 - CF-VA14-TMW-DU06 @ 00:00 (03/11/99)
#5 - CF-VA13-TMW-01 @ 15:45 (03/11/99)
#6 - CF-VA13-TMW-02 @ 16:35 (03/11/99)
#7 - CF-VA13-SB-02-10 @ 16:20 (03/11/99)
#8 - CF-VA13-TMW-DU01 @ 00:00 (03/11/99)

OJECT MANAGER _____
David Vesey

ENCO LABORATORIES
REPORT # : OR5823.3
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-VA14-TMW-01	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	45.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	91	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/15/99	

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

ENCO LABORATORIES
REPORT # : OR5823.3
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-VA14-TMW-01	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	9	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	90	%
Surrogate Control Limits	39-148	%
Date Extracted	03/16/99	
Date Analyzed	03/17/99	

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

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-VA14-TMW-02	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	52.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	105	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/15/99	

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

ENCO LABORATORIES
REPORT # : OR5823.3
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

:PA METHOD 3510/8310 - 'OLYAROMATIC HYDROCARBONS	CF-VA14-TMW-02	Units
aphthalene	0.50 U	µg/L
cenaphthylene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
cenaphthene	0.50 U	µg/L
luorene	0.10 U	µg/L
henanthrene	1.0 U	µg/L
nthracene	0.050 U	µg/L
luoranthene	0.10 U	µg/L
yrene	0.050 U	µg/L
enzo(a)anthracene	0.050 U	µg/L
hrysene	0.050 U	µg/L
enzo(b)fluoranthene	**1.8**	µg/L
enzo(k)fluoranthene	0.050 U	µg/L
enzo(a)pyrene	0.050 U	µg/L
ibenzo(a,h)anthracene	0.10 U	µg/L
enzo(g,h,i)perylene	0.10 U	µg/L
ideno(1,2,3-cd)pyrene	0.050 U	µg/L
irrogate: (p-terphenyl)		
irrogate Reported Value	8.8	µg/L
irrogate Expected Value	10	µg/L
irrogate % Recovery	88	%
irrogate Control Limits	39-148	%
ite Extracted	03/16/99	
ite Analyzed	03/17/99	

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

ENCO LABORATORIES
REPORT # : OR5823.3
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	CF-VA14-SB-02-10	Units
Methyl tert-butyl ether	2.0 U D1	µg/Kg
Benzene	1.0 U D1	µg/Kg
Toluene	1.0 U D1	µg/Kg
Chlorobenzene	1.0 U D1	µg/Kg
Ethylbenzene	1.0 U D1	µg/Kg
m-Xylene & p-Xylene	2.0 U D1	µg/Kg
o-Xylene	1.0 U D1	µg/Kg
1,3-Dichlorobenzene	1.0 U D1	µg/Kg
1,4-Dichlorobenzene	1.0 U D1	µg/Kg
1,2-Dichlorobenzene	1.0 U D1	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	41	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	82	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/17/99	

NOTE: Analyte values are reported on a dry weight basis.

U = Compound was analyzed for but not detected to the level shown.
D1 = Analyte value determined from a 1:1.02 dilution.

ENCO LABORATORIES
REPORT # : OR5823.3
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	CF-VA14-SB-02-10	Units
Naphthalene	21 U	µg/Kg
Acenaphthylene	41 U	µg/Kg
-Methylnaphthalene	41 U	µg/Kg
-Methylnaphthalene	41 U	µg/Kg
Acenaphthene	21 U	µg/Kg
Fluorene	4.1 U	µg/Kg
Phenanthrene	41 U	µg/Kg
Anthracene	2.0 U	µg/Kg
Fluoranthene	4.1 U	µg/Kg
Pyrene	2.1 U	µg/Kg
Benzo(a)anthracene	2.1 U	µg/Kg
Chrysene	2.1 U	µg/Kg
Benzo(b)fluoranthene	4.0 U	µg/Kg
Benzo(k)fluoranthene	2.0 U	µg/Kg
Benzo(a)pyrene	2.0 U	µg/Kg
Dibenzo(a,h)anthracene	4.1 U	µg/Kg
Benzo(g,h,i)perylene	4.1 U	µg/Kg
Indeno(1,2,3-cd)pyrene	2.1 U	µg/Kg
Surrogate: (p-terphenyl)		
Surrogate Reported Value	12.6	µg/Kg
Surrogate Expected Value	10	µg/Kg
Surrogate % Recovery	126	%
Surrogate Control Limits	50-146	%
Date Extracted	03/15/99	
Date Analyzed	03/16/99	

MISCELLANEOUS	METHOD	CF-VA14-SB-02-10	Units
Percent Solids	SM2540G	81	%
Date Analyzed		03/18/99	

NOTE: Analyte values are reported on a dry weight basis.

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

ENCO LABORATORIES
REPORT # : OR5823.3
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-VA14-TMW-DU06	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	44	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	88	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/15/99	

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

ENCO LABORATORIES
REPORT # : OR5823.3
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

:PA METHOD 3510/8310 - 'OLYAROMATIC HYDROCARBONS	CF-VA14-TMW-DU06	Units
laphthalene	0.50 U	µg/L
ıcenaphthylene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
cenaphthene	0.50 U	µg/L
'luorene	0.10 U	µg/L
'henanthrene	1.0 U	µg/L
nthracene	**0.16**	µg/L
luoranthene	**0.36**	µg/L
yrene	0.050 U	µg/L
enzo(a)anthracene	**0.050** I	µg/L
hrysene	**0.050** I	µg/L
enzo(b)fluoranthene	0.10 U	µg/L
enzo(k)fluoranthene	0.050 U	µg/L
enzo(a)pyrene	**0.12**	µg/L
ibenzo(a,h)anthracene	0.10 U	µg/L
enzo(g,h,i)perylene	0.10 U	µg/L
ıdeno(1,2,3-cd)pyrene	0.050 U	µg/L
ırrogate: (p-terphenyl)		
ırrogate Reported Value	9.1	µg/L
ırrogate Expected Value	10	µg/L
ırrogate % Recovery	91	%
ırrogate Control Limits	39-148	%
te Extracted	03/16/99	
te Analyzed	03/17/99	

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

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-VA13-TMW-01	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	53	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	106	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/15/99	

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

ENCO LABORATORIES
REPORT # : OR5823.3
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

:PA METHOD 3510/8310 - 'OLYAROMATIC HYDROCARBONS	CF-VA13-TMW-01	Units
laphthalene	0.50 U	µg/L
cenaphthylene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
cenaphthene	0.50 U	µg/L
'luorene	0.10 U	µg/L
henanthrene	1.0 U	µg/L
nthracene	0.050 U	µg/L
luoranthene	0.10 U	µg/L
yrene	0.050 U	µg/L
enzo(a)anthracene	0.050 U	µg/L
hrysene	0.050 U	µg/L
enzo(b)fluoranthene	0.10 U	µg/L
enzo(k)fluoranthene	0.050 U	µg/L
enzo(a)pyrene	0.050 U	µg/L
ibenzo(a,h)anthracene	0.10 U	µg/L
enzo(g,h,i)perylene	0.10 U	µg/L
ideno(1,2,3-cd)pyrene	0.050 U	µg/L
irrogate: (p-terphenyl)		
irrogate Reported Value	6.5	µg/L
irrogate Expected Value	10	µg/L
irrogate % Recovery	65	%
irrogate Control Limits	39-148	%
te Extracted	03/16/99	
te Analyzed	03/17/99	

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

ENCO LABORATORIES
REPORT # : OR5823.3
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-VA13-TMW-02	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	37	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	74	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/16/99	

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

ENCO LABORATORIES
REPORT # : OR5823.3
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-VA13-TMW-02	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	**0.17** I	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	**0.12** I	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	5.9	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	59	%
Surrogate Control Limits	39-148	%
Date Extracted	03/16/99	
Date Analyzed	03/17/99	

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).

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	CF-VA13-SB-02-10	Units
Methyl tert-butyl ether	2.0 U D2	µg/Kg
Benzene	1.3 U D2	µg/Kg
Toluene	1.3 U D2	µg/Kg
Chlorobenzene	1.3 U D2	µg/Kg
Ethylbenzene	1.3 U D2	µg/Kg
m-Xylene & p-Xylene	2.0 U D2	µg/Kg
o-Xylene	1.0 U D2	µg/Kg
1,3-Dichlorobenzene	1.0 U D2	µg/Kg
1,4-Dichlorobenzene	1.0 U D2	µg/Kg
1,2-Dichlorobenzene	1.0 U D2	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	40	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	80	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/17/99	

NOTE: Analyte values are reported on a dry weight basis.

U = Compound was analyzed for but not detected to the level shown.
D2 = Analyte value determined from a 1:1.09 dilution.

RESULTS OF ANALYSIS

:PA METHOD 3550/8310 - 'OLYAROMATIC HYDROCARBONS	CF-VA13-SB-02-10	Units
'aphthalene	20 U	µg/Kg
.cenaphthylene	40 U	µg/Kg
-Methylnaphthalene	40 U	µg/Kg
-Methylnaphthalene	40 U	µg/Kg
cenaphthene	20 U	µg/Kg
luorene	4.0 U	µg/Kg
henanthrene	40 U	µg/Kg
acene	2.0 U	µg/Kg
anthene	4.0 U	µg/Kg
ene	2.0 U	µg/Kg
enzo(a)anthracene	2.0 U	µg/Kg
ırysene	2.0 U	µg/Kg
enzo(b)fluoranthene	4.0 U	µg/Kg
enzo(k)fluoranthene	2.0 U	µg/Kg
enzo(a)pyrene	2.0 U	µg/Kg
.benzo(a,h)anthracene	4.0 U	µg/Kg
nzo(g,h,i)perylene	4.0 U	µg/Kg
deno(1,2,3-cd)pyrene	2.0 U	µg/Kg
rrogate: (p-terphenyl)		
rrogate Reported Value	12.2	µg/Kg
rrogate Expected Value	10	µg/Kg
rrogate % Recovery	122	%
rrogate Control Limits	50-146	%
te Extracted	03/15/99	
te Analyzed	03/16/99	

SCELLANEOUS	METHOD	CF-VA13-SB-02-10	Units
rcent Solids	SM2540G	84	%
e Analyzed		03/18/99	

'E: Analyte values are reported on a dry weight basis.

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

ENCO LABORATORIES
REPORT # : OR5823.3
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-VA13-TMW-DU01	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	46	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	92	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/15/99	

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

ENCO LABORATORIES
REPORT # : OR5823.3
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-VA13-TMW-DU01	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	**0.10** I	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	6.9	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	69	%
Surrogate Control Limits	39-148	%
Date Extracted	03/16/99	
Date Analyzed	03/17/99	

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 # : OR5823.3
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	44.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	99	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/15/99	

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

ENCO LABORATORIES
REPORT # : OR5823.3
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	LAB BLANK	Units
Naphthalene	0.50 U	µg/L
cenaphthylene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
cenaphthene	0.50 U	µg/L
luorene	0.10 U	µg/L
henanthrene	1.0 U	µg/L
nthracene	0.050 U	µg/L
luoranthene	0.10 U	µg/L
yrene	0.050 U	µg/L
enzo(a)anthracene	0.050 U	µg/L
hrysene	0.050 U	µg/L
enzo(b)fluoranthene	0.10 U	µg/L
enzo(k)fluoranthene	0.050 U	µg/L
enzo(a)pyrene	0.050 U	µg/L
ibenzo(a,h)anthracene	0.10 U	µg/L
enzo(g,h,i)perylene	0.10 U	µg/L
ndeno(1,2,3-cd)pyrene	0.050 U	µg/L
irrogate: (p-terphenyl)		
irrogate Reported Value	8.7	µg/L
irrogate Expected Value	10	µg/L
irrogate % Recovery	87	%
irrogate Control Limits	39-148	%
ite Extracted	03/16/99	
ite Analyzed	03/17/99	

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

ENCO LABORATORIES
REPORT # : OR5823.3
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	1.0 U	µg/Kg
Toluene	1.0 U	µg/Kg
Chlorobenzene	1.0 U	µg/Kg
Ethylbenzene	1.0 U	µg/Kg
m-Xylene & p-Xylene	2.0 U	µg/Kg
o-Xylene	1.0 U	µg/Kg
1,3-Dichlorobenzene	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	44	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	88	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/17/99	

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

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	LAB BLANK	Units
Naphthalene	17 U	µg/Kg
Acenaphthylene	33 U	µg/Kg
1-Methylnaphthalene	33 U	µg/Kg
2-Methylnaphthalene	33 U	µg/Kg
Acenaphthene	17 U	µg/Kg
Fluorene	3.3 U	µg/Kg
Phenanthrene	33 U	µg/Kg
Anthracene	2.0 U	µg/Kg
Fluoranthene	3.3 U	µg/Kg
Pyrene	1.7 U	µg/Kg
Benzo(a)anthracene	1.7 U	µg/Kg
Chrysene	1.7 U	µg/Kg
Benzo(b)fluoranthene	3.0 U	µg/Kg
Benzo(k)fluoranthene	2.0 U	µg/Kg
Benzo(a)pyrene	2.0 U	µg/Kg
Dibenzo(a,h)anthracene	3.3 U	µg/Kg
Benzo(g,h,i)perylene	3.3 U	µg/Kg
Indeno(1,2,3-cd)pyrene	1.7 U	µg/Kg
Surrogate: (p-terphenyl)		
Surrogate Reported Value	12.2	µg/Kg
Surrogate Expected Value	10	µg/Kg
Surrogate % Recovery	122	%
Surrogate Control Limits	50-146	%
Date Extracted	03/15/99	
Date Analyzed	03/16/99	

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

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	LSC Target µg	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 5030/8021 (CF-VA14-TMW-01,CF-VA14-TMW-02,CF-VA14-TMW-DU06, CF-VA13-TMW-01,CF-VA13-TMW-DU01)					
Benzene	88/ 88/110	20	72-134	<1	20
Toluene	92/ 92/109	20	72-124	<1	19
Ethylbenzene	90/ 91/108	20	67-129	1	21
o-Xylene	90/ 91/107	20	66-131	1	21
EPA Method 5030/8021 (CF-VA13-TMW-02)					
Benzene	88/ 88/ 91	20	72-134	<1	20
Toluene	92/ 92/ 93	20	72-124	<1	19
Ethylbenzene	90/ 91/ 92	20	67-129	1	21
o-Xylene	90/ 91/ 92	20	66-131	1	21
EPA Method 3510/8310					
Naphthalene	73/ 78/ 71	10	22-130	7	20
Acenaphthene	84/ 90/ 86	10	14-163	7	19
Benzo(a)pyrene	50/ 49/ 87	1	33-137	2	36
Benzo(g,h,i)perylene	42/ 34/ 74	2	36-135	21	34

Environmental Conservation Laboratories Comprehensive QA Plan #960038

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

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QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	LSC Target µg	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 5035/8021					
Benzene	83/ 88/ 87	20	59-144	6	25
Toluene	86/ 90/ 92	20	67-132	4	58
Ethylbenzene	102/106/107	20	60-169	4	28
o-Xylene	95/102/101	20	62-183	7	24
EPA Method 3550/8310					
Naphthalene	93/ 93/ 68	10	26-125	<1	45
Acenaphthene	122/123/100	10	20-143	<1	35
Benzo(a)pyrene	103/103/103	1	42-138	<1	38
Benzo(g,h,i)perylene	100/ 98/105	2	51-142	2	26

nvironmental Conservation Laboratories Comprehensive QA Plan #960038

= Less Than
S = Matrix Spike
SD = Matrix Spike Duplicate
CS = Laboratory Control Standard
PD = Relative Percent Difference

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CHAIN OF CUSTODY RECORD

00837

PROJECT NO.: 0013

SITE NAME: NASCF - NASTAX Fuel Transfer Line

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	6021B	8310					REMARKS
	3/11/99	1531		X	CF-VA14-TMW-01	3	X	X					
	3/11/99	1650		X	CF-VA14-TMW-02	3	X	X					
	3/11/99	1621		X	CF-VA14-SB-02-10	4	X	X					
	3/11/99	0000		X	CF-VA14-TMW-DV06	3	X	X					
	3/11/99	1545		X	CF-VA13-TMW-01	3	X	X					
	3/11/99	1635		X	CF-VA13-TMW-02	3	X	X					
	3/11/99	1620		X	CF-VA13-SB-02-10	4	X	X					
	3/11/99	0000		X	CF-VA13-TMW-DV01	3	X	X					

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[signature]	3/11/99 1745	Scott D Mut			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS:	
		[signature]	3/13/99 7:00AM	ORS823	

Order No. 70440 (0693)

Environmental Conservation Laboratories
[illegible]07 General Drive
[illegible]ndo, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

March 19, 1999

Mr. John Kucera
Tetra Tech NUS
7018 A.C. Skinner Pkwy.
Suite 250
Jacksonville, FL 32256

Login Number(SDG): OR5823.3
Project Number: NO013/CTO-72
Description: NASJAX/NASCF Jet Fuel Transfer

Case Narrative:

Six water samples and two soil sample were collected on March 11, 1999. All samples were received at ENCO Laboratories, Inc., on March 11, 1999 at 1745 on wet ice and in good condition. This sample set was inclusive of samples CF-VA14 (TMW-01,02,DU06 and SB-02-10) and CF-VA13 (TMW-01,02,DU01 and SB-02-10). All samples were anlayzed as requested on the associated sample chain-of-custody forms.

[illegible]he laboratory notes that the sample identified as CF-VA14-SB-02-10 indicates a time of sampling on the chain-of-custody of 16:21 while the sample containers indicate a sample time of 14:22. The laboratory report uses the time indicated on the COC.

All samples were extracted and analyzed within EPA specified holding times.

Quality Assurance acceptance limits are established by "in-house" statistical determination. This is true for surrogate, MS/MSD and LCS spike recovery evaluations.

The laboratory is providing separate reports per chain-of-custody received as requested by the client.

Environmental Conservation Laboratories, Inc.

David J. Vesey
Project Manager

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

LIENT : Tetra Tech NUS
DDRESS: 7018 A.C. Skinner Parkway
Suite 250
Jacksonville, FL 32256

REPORT # : OR5823.3
DATE SUBMITTED: March 12, 1999
DATE REPORTED : March 19, 1999

TTENTION: John Kucera

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

PROJECT #: 0013

NASCF-NAS Jax Fuel Transfer Pipeline

#1	- CF-VA14-TMW-01	@ 15:31	(03/11/99)
#2	- CF-VA14-TMW-02	@ 16:50	(03/11/99)
#3	- CF-VA14-SB-02-10	@ 16:21	(03/11/99)
#4	- CF-VA14-TMW-DU06	@ 00:00	(03/11/99)
#5	- CF-VA13-TMW-01	@ 15:45	(03/11/99)
#6	- CF-VA13-TMW-02	@ 16:35	(03/11/99)
#7	- CF-VA13-SB-02-10	@ 16:20	(03/11/99)
#8	- CF-VA13-TMW-DU01	@ 00:00	(03/11/99)

JECT MANAGER David Vesey

ENCO LABORATORIES
REPORT # : OR5823.3
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

PA METHOD 5030/8021 - OLATILE AROMATICS	CF-VA14-TMW-01	Units
ethyl tert-butyl ether	2.0 U	µg/L
enzene	1.0 U	µg/L
oluene	1.0 U	µg/L
hlorobenzene	1.0 U	µg/L
thylbenzene	1.0 U	µg/L
-Xylene & p-Xylene	2.0 U	µg/L
-Xylene	1.0 U	µg/L
,3-Dichlorobenzene	1.0 U	µg/L
,4-Dichlorobenzene	1.0 U	µg/L
,2-Dichlorobenzene	1.0 U	µg/L
ırrogate: (Bromofluorobenzene)		
ırrogate Reported Value	45.5	µg/L
ırrogate Expected Value	50	µg/L
ırrogate % Recovery	91	%
ırrogate Control Limits	64-140	%
ıte Analyzed	03/15/99	

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

ENCO LABORATORIES
REPORT # : OR5823.3
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

A METHOD 3510/8310 - LYAROMATIC HYDROCARBONS	CF-VA14-TMW-01	Units
phthalene	0.50 U	µg/L
enaphthylene	1.0 U	µg/L
Methylnaphthalene	1.0 U	µg/L
Methylnaphthalene	1.0 U	µg/L
enaphthene	0.50 U	µg/L
uorene	0.10 U	µg/L
enanthrene	1.0 U	µg/L
thracene	0.050 U	µg/L
ıoranthene	0.10 U	µg/L
rene	0.050 U	µg/L
ızo(a)anthracene	0.050 U	µg/L
rysene	0.050 U	µg/L
ızo(b)fluoranthene	0.10 U	µg/L
ızo(k)fluoranthene	0.050 U	µg/L
ızo(a)pyrene	0.050 U	µg/L
enzo(a,h)anthracene	0.10 U	µg/L
ızo(g,h,i)perylene	0.10 U	µg/L
eno(1,2,3-cd)pyrene	0.050 U	µg/L
rogate: (p-terphenyl)		
rogate Reported Value	9	µg/L
rogate Expected Value	10	µg/L
rogate % Recovery	90	%
rogate Control Limits	39-148	%
e Extracted	03/16/99	
e Analyzed	03/17/99	

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

ENCO LABORATORIES
REPORT # : OR5823.3
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

:PA METHOD 5030/8021 - 'OLATILE AROMATICS	CF-VA14-TMW-02	Units
ethyl tert-butyl ether	2.0 U	µg/L
enzene	1.0 U	µg/L
oluene	1.0 U	µg/L
hlorobenzene	1.0 U	µg/L
thylbenzene	1.0 U	µg/L
-Xylene & p-Xylene	2.0 U	µg/L
-Xylene	1.0 U	µg/L
,3-Dichlorobenzene	1.0 U	µg/L
,4-Dichlorobenzene	1.0 U	µg/L
,2-Dichlorobenzene	1.0 U	µg/L
		µg/L
urrogate: (Bromofluorobenzene)		
urrogate Reported Value	52.5	µg/L
urrogate Expected Value	50	µg/L
urrogate % Recovery	105	%
urrogate Control Limits	64-140	%
ate Analyzed	03/15/99	

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

ENCO LABORATORIES
REPORT # : OR5823.3
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

PA METHOD 3510/8310 - OLYAROMATIC HYDROCARBONS	CF-VA14-TMW-02	Units
aphthalene	0.50 U	µg/L
enaphthylene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
enaphthene	0.50 U	µg/L
uorene	0.10 U	µg/L
enanthrene	1.0 U	µg/L
thracene	0.050 U	µg/L
uoranthene	0.10 U	µg/L
rene	0.050 U	µg/L
nzo(a)anthracene	0.050 U	µg/L
rysene	0.050 U	µg/L
nzo(b)fluoranthene	**1.8**	µg/L
nzo(k)fluoranthene	0.050 U	µg/L
nzo(a)pyrene	0.050 U	µg/L
benzo(a,h)anthracene	0.10 U	µg/L
nzo(g,h,i)perylene	0.10 U	µg/L
deno(1,2,3-cd)pyrene	0.050 U	µg/L
rrogate: (p-terphenyl)		
rrogate Reported Value	8.8	µg/L
rrogate Expected Value	10	µg/L
rrogate % Recovery	88	%
rrogate Control Limits	39-148	%
te Extracted	03/16/99	
te Analyzed	03/17/99	

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

ENCO LABORATORIES
REPORT # : OR5823.3
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

PA METHOD 5035/8021 - OLATILE AROMATICS	CF-VA14-SB-02-10	Units
ethyl tert-butyl ether	2.0 U D1	µg/Kg
enzene	1.0 U D1	µg/Kg
oluene	1.0 U D1	µg/Kg
hlorobenzene	1.0 U D1	µg/Kg
thylbenzene	1.0 U D1	µg/Kg
-Xylene & p-Xylene	2.0 U D1	µg/Kg
-Xylene	1.0 U D1	µg/Kg
,3-Dichlorobenzene	1.0 U D1	µg/Kg
,4-Dichlorobenzene	1.0 U D1	µg/Kg
,2-Dichlorobenzene	1.0 U D1	µg/Kg
urrogate: (Bromofluorobenzene)		
urrogate Reported Value	41	µg/Kg
urrogate Expected Value	50	µg/Kg
urrogate % Recovery	82	%
urrogate Control Limits	28-165	%
ate Analyzed	03/17/99	

TE: Analyte values are reported on a dry weight basis.

= Compound was analyzed for but not detected to the level shown.
= Analyte value determined from a 1:1.02 dilution.

ENCO LABORATORIES
REPORT # : OR5823.3
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

'A METHOD 3550/8310 - 'LYAROMATIC HYDROCARBONS	CF-VA14-SB-02-10	Units
phthalene	21 U	µg/Kg
enaphthylene	41 U	µg/Kg
Methylnaphthalene	41 U	µg/Kg
Methylnaphthalene	41 U	µg/Kg
enaphthene	21 U	µg/Kg
uorene	4.1 U	µg/Kg
enanthrene	41 U	µg/Kg
thracene	2.0 U	µg/Kg
uoranthene	4.1 U	µg/Kg
rene	2.1 U	µg/Kg
nzo(a)anthracene	2.1 U	µg/Kg
rysene	2.1 U	µg/Kg
nzo(b)fluoranthene	4.0 U	µg/Kg
nzo(k)fluoranthene	2.0 U	µg/Kg
nzo(a)pyrene	2.0 U	µg/Kg
enzo(a,h)anthracene	4.1 U	µg/Kg
nzo(g,h,i)perylene	4.1 U	µg/Kg
eno(1,2,3-cd)pyrene	2.1 U	µg/Kg
rogate: (p-terphenyl)		
rogate Reported Value	12.6	µg/Kg
rogate Expected Value	10	µg/Kg
rogate % Recovery	126	%
rogate Control Limits	50-146	%
e Extracted	03/15/99	
e Analyzed	03/16/99	

CELLANEOUS	METHOD	CF-VA14-SB-02-10	Units
cent Solids	SM2540G	81	%
e Analyzed		03/18/99	

: Analyte values are reported on a dry weight basis.

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

ENCO LABORATORIES
REPORT # : OR5823.3
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

PA METHOD 5030/8021 - OLATILE AROMATICS	CF-VA14-TMW-DU06	Units
ethyl tert-butyl ether	2.0 U	µg/L
enzene	1.0 U	µg/L
oluene	1.0 U	µg/L
lorobenzene	1.0 U	µg/L
benzene	1.0 U	µg/L
Xylene & p-Xylene	2.0 U	µg/L
Xylene	1.0 U	µg/L
3-Dichlorobenzene	1.0 U	µg/L
4-Dichlorobenzene	1.0 U	µg/L
2-Dichlorobenzene	1.0 U	µg/L
		µg/L
rrogate: (Bromofluorobenzene)		
rrogate Reported Value	44	µg/L
rrogate Expected Value	50	µg/L
rrogate % Recovery	88	%
rrogate Control Limits	64-140	%
te Analyzed	03/15/99	

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

ENCO LABORATORIES
REPORT # : OR5823.3
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

'A METHOD 3510/8310 -)LYAROMATIC HYDROCARBONS	CF-VA14-TMW-DU06	Units
phthalene	0.50 U	µg/L
enaphthylene	1.0 U	µg/L
Methylnaphthalene	1.0 U	µg/L
Methylnaphthalene	1.0 U	µg/L
enaphthene	0.50 U	µg/L
uorene	0.10 U	µg/L
enanthrene	1.0 U	µg/L
thracene	**0.16**	µg/L
uoranthene	**0.36**	µg/L
rene	0.050 U	µg/L
nzo(a)anthracene	**0.050** I	µg/L
rysene	**0.050** I	µg/L
nzo(b)fluoranthene	0.10 U	µg/L
nzo(k)fluoranthene	0.050 U	µg/L
nzo(a)pyrene	**0.12**	µg/L
benzo(a,h)anthracene	0.10 U	µg/L
nzo(g,h,i)perylene	0.10 U	µg/L
deno(1,2,3-cd)pyrene	0.050 U	µg/L
rogate: (p-terphenyl)		
rogate Reported Value	9.1	µg/L
rogate Expected Value	10	µg/L
rogate % Recovery	91	%
rogate Control Limits	39-148	%
e Extracted	03/16/99	
e Analyzed	03/17/99	

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

ENCO LABORATORIES
REPORT # : OR5823.3
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

?A METHOD 5030/8021 - ?LATILE AROMATICS	CF-VA13-TMW-01	Units
:thyl tert-butyl ether	2.0 U	µg/L
:nzene	1.0 U	µg/L
›luene	1.0 U	µg/L
ılorobenzene	1.0 U	µg/L
.hylbenzene	1.0 U	µg/L
Xylene & p-Xylene	2.0 U	µg/L
Xylene	1.0 U	µg/L
3-Dichlorobenzene	1.0 U	µg/L
4-Dichlorobenzene	1.0 U	µg/L
2-Dichlorobenzene	1.0 U	µg/L
		µg/L
rrogate: (Bromofluorobenzene)		
rrogate Reported Value	53	µg/L
rrogate Expected Value	50	µg/L
rrogate % Recovery	106	%
rrogate Control Limits	64-140	%
te Analyzed	03/15/99	

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

ENCO LABORATORIES
REPORT # : OR5823.3
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

A METHOD 3510/8310 - LYAROMATIC HYDROCARBONS	CF-VA13-TMW-01	Units
phthalene	0.50 U	µg/L
enaphthylene	1.0 U	µg/L
Methylnaphthalene	1.0 U	µg/L
Methylnaphthalene	1.0 U	µg/L
enaphthene	0.50 U	µg/L
uorene	0.10 U	µg/L
enanthrene	1.0 U	µg/L
thracene	0.050 U	µg/L
uoranthene	0.10 U	µg/L
rene	0.050 U	µg/L
nzo(a)anthracene	0.050 U	µg/L
rysene	0.050 U	µg/L
nzo(b)fluoranthene	0.10 U	µg/L
nzo(k)fluoranthene	0.050 U	µg/L
nzo(a)pyrene	0.050 U	µg/L
enzo(a,h)anthracene	0.10 U	µg/L
nzo(g,h,i)perylene	0.10 U	µg/L
eno(1,2,3-cd)pyrene	0.050 U	µg/L
rogate: (p-terphenyl)		
rogate Reported Value	6.5	µg/L
rogate Expected Value	10	µg/L
rogate % Recovery	65	%
rogate Control Limits	39-148	%
e Extracted	03/16/99	
e Analyzed	03/17/99	

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

ENCO LABORATORIES
REPORT # : OR5823.3
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

'A METHOD 5030/8021 - LATILE AROMATICS	CF-VA13-TMW-02	Units
thyl tert-butyl ether	2.0 U	µg/L
nzene	1.0 U	µg/L
luene	1.0 U	µg/L
lorobenzene	1.0 U	µg/L
hylbenzene	1.0 U	µg/L
Xylene & p-Xylene	2.0 U	µg/L
Xylene	1.0 U	µg/L
3-Dichlorobenzene	1.0 U	µg/L
4-Dichlorobenzene	1.0 U	µg/L
2-Dichlorobenzene	1.0 U	µg/L
		µg/L
rogate: (Bromofluorobenzene)		
rogate Reported Value	37	µg/L
rogate Expected Value	50	µg/L
rogate % Recovery	74	%
rogate Control Limits	64-140	%
e Analyzed	03/16/99	

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

ENCO LABORATORIES
REPORT # : OR5823.3
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

PA METHOD 3510/8310 - OLYAROMATIC HYDROCARBONS	CF-VA13-TMW-02	Units
iphthalene	0.50 U	µg/L
:enaphthylene	1.0 U	µg/L
Methylnaphthalene	1.0 U	µg/L
Methylnaphthalene	1.0 U	µg/L
:enaphthene	0.50 U	µg/L
uorene	0.10 U	µg/L
enanthrene	1.0 U	µg/L
thracene	0.050 U	µg/L
uoranthene	0.10 U	µg/L
rene	0.050 U	µg/L
nzo(a)anthracene	0.050 U	µg/L
rysene	0.050 U	µg/L
nzo(b)fluoranthene	**0.17** I	µg/L
nzo(k)fluoranthene	0.050 U	µg/L
nzo(a)pyrene	0.050 U	µg/L
benzo(a,h)anthracene	**0.12** I	µg/L
nzo(g,h,i)perylene	0.10 U	µg/L
deno(1,2,3-cd)pyrene	0.050 U	µg/L
rogate: (p-terphenyl)		
rogate Reported Value	5.9	µg/L
rogate Expected Value	10	µg/L
rogate % Recovery	59	%
rogate Control Limits	39-148	%
e Extracted	03/16/99	
e Analyzed	03/17/99	

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

ENCO LABORATORIES
REPORT # : OR5823.3
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

PA METHOD 5035/8021 - OLATILE AROMATICS	CF-VA13-SB-02-10	Units
ethyl tert-butyl ether	2.0 U D2	µg/Kg
enzene	1.3 U D2	µg/Kg
oluene	1.3 U D2	µg/Kg
ilorobenzene	1.3 U D2	µg/Kg
hylbenzene	1.3 U D2	µg/Kg
Xylene & p-Xylene	2.0 U D2	µg/Kg
Xylene	1.0 U D2	µg/Kg
3-Dichlorobenzene	1.0 U D2	µg/Kg
4-Dichlorobenzene	1.0 U D2	µg/Kg
2-Dichlorobenzene	1.0 U D2	µg/Kg
	1.0 U D2	µg/Kg
rrogate: (Bromofluorobenzene)		
rrogate Reported Value	40	µg/Kg
rrogate Expected Value	50	µg/Kg
rrogate % Recovery	80	%
rrogate Control Limits	28-165	%
te Analyzed	03/17/99	

E: Analyte values are reported on a dry weight basis.

Compound was analyzed for but not detected to the level shown.
= Analyte value determined from a 1:1.09 dilution.

ENCO LABORATORIES
REPORT # : OR5823.3
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

?A METHOD 3550/8310 -)LYAROMATIC HYDROCARBONS	CF-VA13-SB-02-10	Units
ıphthalene	20 U	µg/Kg
:enaphthylene	40 U	µg/Kg
Methylnaphthalene	40 U	µg/Kg
Methylnaphthalene	40 U	µg/Kg
:enaphthene	20 U	µg/Kg
uorene	4.0 U	µg/Kg
ıenanthrene	40 U	µg/Kg
thracene	2.0 U	µg/Kg
uoranthene	4.0 U	µg/Kg
rene	2.0 U	µg/Kg
nzo(a)anthracene	2.0 U	µg/Kg
rysene	2.0 U	µg/Kg
nzo(b)fluoranthene	4.0 U	µg/Kg
nzo(k)fluoranthene	2.0 U	µg/Kg
nzo(a)pyrene	2.0 U	µg/Kg
benzo(a,h)anthracene	4.0 U	µg/Kg
nzo(g,h,i)perylene	4.0 U	µg/Kg
deno(1,2,3-cd)pyrene	2.0 U	µg/Kg
rrogate: (p-terphenyl)		
rrogate Reported Value	12.2	µg/Kg
rrogate Expected Value	10	µg/Kg
rrogate % Recovery	122	%
rrogate Control Limits	50-146	%
:e Extracted	03/15/99	
:e Analyzed	03/16/99	

;CELLANEOUS	METHOD	CF-VA13-SB-02-10	Units
:cent Solids	SM2540G	**84**	%
.e Analyzed		03/18/99	

'E: Analyte values are reported on a dry weight basis.

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

ENCO LABORATORIES
REPORT # : OR5823.3
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

PA METHOD 5030/8021 - OLATILE AROMATICS	CF-VA13-TMW-DU01	Units
ethyl tert-butyl ether	2.0 U	µg/L
enzene	1.0 U	µg/L
oluene	1.0 U	µg/L
hlorobenzene	1.0 U	µg/L
thylbenzene	1.0 U	µg/L
-Xylene & p-Xylene	2.0 U	µg/L
-Xylene	1.0 U	µg/L
,3-Dichlorobenzene	1.0 U	µg/L
,4-Dichlorobenzene	1.0 U	µg/L
,2-Dichlorobenzene	1.0 U	µg/L
irrogate: (Bromofluorobenzene)		
irrogate Reported Value	46	µg/L
irrogate Expected Value	50	µg/L
irrogate % Recovery	92	%
irrogate Control Limits	64-140	%
ate Analyzed	03/15/99	

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

RESULTS OF ANALYSIS

A METHOD 3510/8310 - LYAROMATIC HYDROCARBONS	CF-VA13-TMW-DU01	Units
phthalene	0.50 U	µg/L
enaphthylene	1.0 U	µg/L
Methylnaphthalene	1.0 U	µg/L
Methylnaphthalene	1.0 U	µg/L
enaphthene	0.50 U	µg/L
uorene	0.10 U	µg/L
enanthrene	1.0 U	µg/L
thracene	0.050 U	µg/L
uoranthene	0.10 U	µg/L
rene	0.050 U	µg/L
nzo(a)anthracene	0.050 U	µg/L
rysene	0.050 U	µg/L
nzo(b)fluoranthene	**0.10** I	µg/L
nzo(k)fluoranthene	0.050 U	µg/L
nzo(a)pyrene	0.050 U	µg/L
enzo(a,h)anthracene	0.10 U	µg/L
zo(g,h,i)perylene	0.10 U	µg/L
eno(1,2,3-cd)pyrene	0.050 U	µg/L
rogate: (p-terphenyl)		
rogate Reported Value	6.9	µg/L
rogate Expected Value	10	µg/L
rogate % Recovery	69	%
rogate Control Limits	39-148	%
e Extracted	03/16/99	
e Analyzed	03/17/99	

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

ENCO LABORATORIES
REPORT # : OR5823.3
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

'A METHOD 5030/8021 - LATILE AROMATICS	LAB BLANK	Units
thyl tert-butyl ether	2.0 U	µg/L
nzene	1.0 U	µg/L
luene	1.0 U	µg/L
lorobenzene	1.0 U	µg/L
hylbenzene	1.0 U	µg/L
Xylene & p-Xylene	2.0 U	µg/L
Xylene	1.0 U	µg/L
3-Dichlorobenzene	1.0 U	µg/L
4-Dichlorobenzene	1.0 U	µg/L
2-Dichlorobenzene	1.0 U	µg/L
rrogate: (Bromofluorobenzene)		
rrogate Reported Value	44.5	µg/L
rrogate Expected Value	50	µg/L
rrogate % Recovery	99	%
rrogate Control Limits	64-140	%
e Analyzed	03/15/99	

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

ENCO LABORATORIES
REPORT # : OR5823.3
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

A METHOD 3510/8310 - LYAROMATIC HYDROCARBONS	LAB BLANK	Units
phthalene	0.50 U	µg/L
enaphthylene	1.0 U	µg/L
Methylnaphthalene	1.0 U	µg/L
Methylnaphthalene	1.0 U	µg/L
enaphthene	0.50 U	µg/L
uorene	0.10 U	µg/L
enanthrene	1.0 U	µg/L
thracene	0.050 U	µg/L
uoranthene	0.10 U	µg/L
rene	0.050 U	µg/L
ızo(a)anthracene	0.050 U	µg/L
;ysene	0.050 U	µg/L
ızo(b)fluoranthene	0.10 U	µg/L
ızo(k)fluoranthene	0.050 U	µg/L
ızo(a)pyrene	0.050 U	µg/L
›enzo(a,h)anthracene	0.10 U	µg/L
ızo(g,h,i)perylene	0.10 U	µg/L
leno(1,2,3-cd)pyrene	0.050 U	µg/L
rogate: (p-terphenyl)		
rogate Reported Value	8.7	µg/L
rogate Expected Value	10	µg/L
rogate % Recovery	87	%
rogate Control Limits	39-148	%
e Extracted	03/16/99	
e Analyzed	03/17/99	

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

ENCO LABORATORIES
REPORT # : OR5823.3
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

RESULTS OF ANALYSIS

PA METHOD 3550/8310 - OLYAROMATIC HYDROCARBONS	LAB BLANK	Units
aphthalene	17 U	µg/Kg
enaphthylene	33 U	µg/Kg
-Methylnaphthalene	33 U	µg/Kg
-Methylnaphthalene	33 U	µg/Kg
enaphthene	17 U	µg/Kg
uorene	3.3 U	µg/Kg
enanthrene	33 U	µg/Kg
hracene	2.0 U	µg/Kg
uoranthene	3.3 U	µg/Kg
rene	1.7 U	µg/Kg
n (a) anthracene	1.7 U	µg/Kg
rysene	1.7 U	µg/Kg
nzo (b) fluoranthene	3.0 U	µg/Kg
nzo (k) fluoranthene	2.0 U	µg/Kg
nzo (a) pyrene	2.0 U	µg/Kg
benzo (a,h) anthracene	3.3 U	µg/Kg
nzo (g,h,i) perylene	3.3 U	µg/Kg
deno (1,2,3-cd) pyrene	1.7 U	µg/Kg
rrogate: (p-terphenyl)		
rrogate Reported Value	12.2	µg/Kg
rrogate Expected Value	10	µg/Kg
rrogate % Recovery	122	%
rrogate Control Limits	50-146	%
te Extracted	03/15/99	
te Analyzed	03/16/99	

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

ENCO LABORATORIES
REPORT # : OR5823.3
DATE REPORTED: March 19, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Fuel Transfer Pipeline

QUALITY CONTROL DATA

rameter	% RECOVERY MS/MSD/LCS	LSC Target µg	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
'A Method 5030/8021 (CF-VA14-TMW-01,CF-VA14-TMW-02,CF-VA14-TMW-DU06, '-VA13-TMW-01,CF-VA13-TMW-DU01)					
nzene	88/ 88/110	20	72-134	<1	20
luene	92/ 92/109	20	72-124	<1	19
hylbenzene	90/ 91/108	20	67-129	1	21
Xylene	90/ 91/107	20	66-131	1	21
A Method 5030/8021 (CF-VA13-TMW-02)					
nzene	88/ 88/ 91	20	72-134	<1	20
luene	92/ 92/ 93	20	72-124	<1	19
hylbenzene	90/ 91/ 92	20	67-129	1	21
Xylene	90/ 91/ 92	20	66-131	1	21
A Method 3510/8310					
ɔhthalene	73/ 78/ 71	10	22-130	7	20
ɛnaphthene	84/ 90/ 86	10	14-163	7	19
ɪzo(a)pyrene	50/ 49/ 87	1	33-137	2	36
ɪzo(g,h,i)perylene	42/ 34/ 74	2	36-135	21	34

ironmental Conservation Laboratories Comprehensive QA Plan #960038

= Less Than
= Matrix Spike
= Matrix Spike Duplicate
= Laboratory Control Standard
= Relative Percent Difference

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

QUALITY CONTROL DATA

arameter	% RECOVERY MS/MSD/LCS	LSC Target µg	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
PA Method 5035/8021					
enzene	83/ 88/ 87	20	59-144	6	25
oluene	86/ 90/ 92	20	67-132	4	58
thylbenzene	102/106/107	20	60-169	4	28
-Xylene	95/102/101	20	62-183	7	24
PA Method 3550/8310					
aphthalene	93/ 93/ 68	10	26-125	<1	45
enaphthene	122/123/100	10	20-143	<1	35
n (a)pyrene	103/103/103	1	42-138	<1	38
n (g,h,i)perylene	100/ 98/105	2	51-142	2	26

vironmental Conservation Laboratories Comprehensive QA Plan #960038

= Less Than
= Matrix Spike
) = Matrix Spike Duplicate
= Laboratory Control Standard
) = Relative Percent Difference

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roval of the laboratory. Results for these procedures apply only to
samples as submitted.

CHAIN OF CUSTODY RECORD

00837

PROJECT NO.: 0013

SITE NAME: NASCF - NASJAX Fuel Transfer Line

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	8021B	8310					REMARKS
	3/11/99	1531		X	CF-VA14-TMW-01	3	X	X					
	3/11/99	1650		X	CF-VA14-TMW-02	3	X	X					
	3/11/99	1621		X	CF-VA14-SB-02-10	4	X	X					
	3/11/99	0000		X	CF-VA14-TMW-DV06	3	X	X					
	3/11/99	1545		X	CF-VA13-TMW-01	3	X	X					
	3/11/99	1635		X	CF-VA13-TMW-02	3	X	X					
	3/11/99	1620		X	CF-VA13-SB-02-10	4	X	X					
	3/11/99	0000		X	CF-VA13-TMW-DV01	3	X	X					

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
[signature]	3/11/99 1745	Scott D Mt			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS:	
		[signature]	3/13/99 7:00AM	ORS823	

Order No. 7044[illegible])

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
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Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

April 1, 1999

Mr. John Kucera
Tetra Tech NUS
7018 A.C. Skinner Pkwy.
Suite 250
Jacksonville, FL 32256

Login Number (SDG): OR6018.1
Project Number: NO013/CTO-72
Description: NASJAX/NASCF Jet Fuel Transfer

Case Narrative:

One soil sample was collected on March 25, 1999. The sample was received at ENCO Laboratories, Inc., on March 26, 1999 on wet ice and in good condition. This sample set was inclusive of sample CF-VA14-SB-04-2. The sample was analyzed as requested on the associated sample chain-of-custody forms.

The sample was extracted and analyzed within EPA specified holding times.

The sample identified as "CF-VA14-SB-04-2" required multiple analyses by EPA Method 8310. This requirement was a result of high levels of target compounds having concentrations above the linear range of the original, undiluted analysis. The sample was analyzed at a 1:5 dilution in order to report all values in a method compliant manner. The diluted analysis also served as an quantification aid in removing potential interferences present in the matrix which may have inhibited accurate determination of the target analytes. The results determined from the diluted analyses are indicated by a "D" flag with an associated dilution level indicated in the footnotes of the page within the body of the report.

Quality Assurance acceptance limits are established by "in-house" statistical determination. This is true for surrogate, MS/MSD and LCS spike recovery evaluations.

The laboratory is providing separate reports per chain-of-custody received as requested by the client.

Environmental Conservation Laboratories, Inc.

David J. Vesey
Project Manager

D Vesey

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
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www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

CLIENT : Tetra Tech NUS
ADDRESS: 7018 A.C. Skinner Parkway
Suite 250
Jacksonville, FL 32256

REPORT # : OR6018.1
DATE SUBMITTED: March 26, 1999
DATE REPORTED : April 5, 1999

ATTENTION: John Kucera

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

PROJECT #: 0013

Transfer Pipeline 103rd St.

03/25/99

#1 - CF-VA14-SB-04-2 @ 11:52

OJECT MANAGER _____
David Vesey

ENCO LABORATORIES
REPORT # : OR6018.1
DATE REPORTED: April 5, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline
103rd St.

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	CF-VA14-SB-04-2	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	1.2 U	µg/Kg
Toluene	1.2 U	µg/Kg
Chlorobenzene	1.2 U	µg/Kg
Ethylbenzene	1.2 U	µg/Kg
m-Xylene & p-Xylene	2.0 U	µg/Kg
o-Xylene	1.2 U	µg/Kg
1,3-Dichlorobenzene	1.2 U	µg/Kg
1,4-Dichlorobenzene	1.2 U	µg/Kg
1,2-Dichlorobenzene	1.2 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	35	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	70	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/30/99	

[illegible]: Analyte values are reported on a dry weight basis.

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

ENCO LABORATORIES
REPORT # : OR6018.1
DATE REPORTED: April 5, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline 103rd St.

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	CF-VA14-SB-04-2		Units
Naphthalene	21 U		µg/Kg
Acenaphthylene	43 U		µg/Kg
2-Methylnaphthalene	43 U		µg/Kg
1-Methylnaphthalene	43 U		µg/Kg
Acenaphthene	21 U		µg/Kg
Fluorene	4.3 U		µg/Kg
Phenanthrene	43 U		µg/Kg
Anthracene	2.0 I		µg/Kg
Fluoranthene	81		µg/Kg
Pyrene	96	D1	µg/Kg
Benzo(a)anthracene	41	D1	µg/Kg
Chrysene	100	D1	µg/Kg
Benzo(b)fluoranthene	110	D1	µg/Kg
Benzo(k)fluoranthene	42	D1	µg/Kg
Benzo(a)pyrene	120	D1	µg/Kg
Dibenzo(a,h)anthracene	150	D1	µg/Kg
Benzo(g,h,i)perylene	110	D1	µg/Kg
Indeno(1,2,3-cd)pyrene	99	D1	µg/Kg
Surrogate: (p-terphenyl)			
Surrogate Reported Value	16.1 J D1		µg/Kg
Surrogate Expected Value	10		µg/Kg
Surrogate % Recovery	161		%
Surrogate Control Limits	50-146		%
Date Extracted	03/31/99		
Date Analyzed	04/01/99		

MISCELLANEOUS	METHOD	CF-VA14-SB-04-2	Units
Percent Solids	SM2540G	78	%
Date Analyzed		03/29/99	

NOTE: Analyte values are reported on a dry weight basis.

J = Estimated value; matrix interferences prevent accurate determination.
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).
D1 = Analyte value determined from a 1:5 dilution.

ENCO LABORATORIES
REPORT # : OR6018.1
DATE REPORTED: April 5, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline 103rd St.

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	1.0 U	µg/Kg
Toluene	1.0 U	µg/Kg
Chlorobenzene	1.0 U	µg/Kg
Ethylbenzene	1.0 U	µg/Kg
m-Xylene & p-Xylene	2.0 U	µg/Kg
o-Xylene	1.0 U	µg/Kg
1,3-Dichlorobenzene	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	50	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	100	%
Surrogate Control Limits	28-165	%
Date Analyzed	03/30/99	

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

ENCO LABORATORIES
REPORT # : OR6018.1
DATE REPORTED: April 5, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline 103rd St.

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	LAB BLANK	Units
Naphthalene	17 U	µg/Kg
Acenaphthylene	33 U	µg/Kg
2-Methylnaphthalene	33 U	µg/Kg
1-Methylnaphthalene	33 U	µg/Kg
Acenaphthene	17 U	µg/Kg
Fluorene	3.3 U	µg/Kg
Phenanthrene	33 U	µg/Kg
Anthracene	2.0 U	µg/Kg
Fluoranthene	3.3 U	µg/Kg
Pyrene	1.7 U	µg/Kg
Benzo(a)anthracene	1.7 U	µg/Kg
Chrysene	1.7 U	µg/Kg
Benzo(b)fluoranthene	3.0 U	µg/Kg
Benzo(k)fluoranthene	2.0 U	µg/Kg
Benzo(a)pyrene	2.0 U	µg/Kg
Dibenzo(a,h)anthracene	3.3 U	µg/Kg
Benzo(g,h,i)perylene	3.3 U	µg/Kg
Indeno(1,2,3-cd)pyrene	1.7 U	µg/Kg
Surrogate: (p-terphenyl)		
Surrogate Reported Value	11.2	µg/Kg
Surrogate Expected Value	10	µg/Kg
Surrogate % Recovery	112	%
Surrogate Control Limits	50-146	%
Date Extracted	03/31/99	
Date Analyzed	04/01/99	

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

ENCO LABORATORIES
REPORT # : OR6018.1
DATE REPORTED: April 5, 1999
REFERENCE : 0013
PROJECT NAME : Transfer Pipeline 103rd St.

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	LCS Target µg	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 5035/8021					
Benzene	101/ 99/107	20	59-144	2	25
Toluene	96/ 96/100	20	67-132	<1	58
Ethylbenzene	108/112/118	20	60-169	4	28
o-Xylene	105/110/115	20	62-183	5	24
EPA Method 3550/8310					
Naphthalene	82/ 95/ 86	10	26-125	15	45
Acenaphthene	79/ 90/ 90	10	20-143	13	35
Benzo(a)pyrene	102/122/ 98	1	42-138	18	38
Benzo(g,h,i)perylene	102/126/102	2	51-142	21	26

nvironmental Conservation Laboratories Comprehensive QA Plan #960038

= Less Than
S = Matrix Spike
SD = Matrix Spike Duplicate
CS = Laboratory Control Standard
PD = Relative Percent Difference

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e samples as submitted.

ENVIRONMENTAL CONSERVATION LABORATORIES

4810 Executive Park Court, Suite 211
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Orlando, Florida 32824
Ph. (407) 826-5314 • Fax (407) 850-6945

ENCO CompQAP No.: 960038G/0

CHAIN OF CUSTODY RECORD

PROJECT REFERENCE: Transfer Pipeline 103rd St
PROJECT NO.: 0013
P.O. NUMBER:
PROJECT LOC. (State): FL
SAMPLER(s) NAME: Jennifer Elliott
PHONE: 281-5100
FAX: 281-0570
CLIENT NAME: Tetratech NUS, Inc.
CLIENT PROJECT MANAGER: Jon Kucera
CLIENT ADDRESS (CITY, STATE, ZIP): 7018 A.C. Skinner Parkway Suite #250

PAGE 1 OF 1

☒ STANDARD REPORT DELIVERY
☐ EXPEDITED REPORT DELIVERY (surcharge)
Date Due:

STATION	DATE	TIME	GRAB	COMP	SAMPLE IDENTIFICATION	SURFACE WATER	GROUND WATER	WASTEWATER	DRINKING WATER	SOIL/SOLID/SEDIMENT	NONAQUEOUS LIQUID (oil, solvent, etc.)	AIR	SLUDGE	OTHER	VOLATILES (8260)	PAH (8310)									REMARKS
															NUMBER OF CONTAINERS SUBMITTED										
1	3-25-99	1150		X	CF-VA12VA14-SB-04-2				X						3	1									
2	3-25-99	1509		X	CF-VA12-SB-03-2				X						3	1									
3																									
4																									
5																									
6																									
7																									
8																									
9																									
10																									
11																									
12																									
13																									
14																									

SAMPLE KIT PREPARED BY: ☐JACKSONVILLE ☐ORLANDO	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
				3-26-99	1412			
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
RECEIVED BY (SIGNATURE): Kevin Conway / ENCO-ORLANDO	DATE: 3/27/99	TIME: 8:00AM	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	ENCO LOG NO.	REMARKS
☐ Jacksonville ☐ Orlando	3/26/99	1412	☒ YES ☐ NO	OR60[illegible]	

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

March 17, 1999

Mr. John Kucera
Tetra Tech NUS
7018 A.C. Skinner Pkwy.
Suite 250
Jacksonville, FL 32256

Login Number(SDG): OR5773
Project Number: NO013/CTO-72
Description: NASJAX/NASCF Jet Fuel Transfer

Case Narrative:

Ten water samples and two soil sample were collected on March 10, 1999. All samples were received at ENCO Laboratories, Inc., on March 10, 1999 on wet ice and in good condition. All samples were analyzed as requested on the associated sample chain-of-custody forms.

The laboratory noted that in the instance of sample TMW-01 there was a discrepancy in the sampling times recorded on the containers when compared to the COC. TMW-01 (16:15 (COC) vs 16:19 (sample)). The laboratory has reported the time as indicated on the sample chain-of-custody.

The analysis of the matrix spike duplicate sample for EPA Method 8021 resulted in high spike recovery results. This is determined as being a function of a poor purge which led to a low recovery of internal standard, "IS", which causes quantitation of target analytes showing a high bias. The internal standard recovery is established at 5.7%. The data is validated based on the results of the Laboratory Check Sample (LCS) and other associated quality assurance data acquired for this project.

All samples were extracted and analyzed within EPA specified holding times.

Quality Assurance acceptance limits are established by "in-house" statistical determination. This is true for surrogate, MS/MSD and LCS spike recovery evaluations.

Environmental Conservation Laboratories, Inc.

David J. Vesey
Project Manager

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

CLIENT : Tetra Tech NUS
ADDRESS: 7018 A.C. Skinner Parkway
Suite 250
Jacksonville, FL 32256

REPORT # : OR5773.2
DATE SUBMITTED: March 10, 1999
DATE REPORTED : March 16, 1999

ATTENTION: John Kucera

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

PROJECT #: 0013

NASCF-NAS Jax Jet Fuel Transfer

#1	- CF-VA15-TMW-01	@ 12:44 (03/10/99)
#2	- CF-VA15-TMW-02	@ 11:35 (03/10/99)
#3	- CF-VA15-TMW-03	@ 13:45 (03/10/99)
#4	- CF-VA15-TMW-04	@ 15:46 (03/10/99)
#5	- CF-VA15-SB-03-5	@ 15:59 (03/10/99)

ROJECT MANAGER _____
David Vesey

ENCO LABORATORIES
REPORT # : OR5773.2
DATE REPORTED: March 16, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-VA15-TMW-01	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	45.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	91	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/12/99	

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

ENCO LABORATORIES
REPORT # : OR5773.2
DATE REPORTED: March 16, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - POLYAROMATIC HYDROCARBONS	CF-VA15-TMW-01	Units
Naphthalene	0.50 U	µg/L
Acenaphthylene	1.0 U	µg/L
1-Methylnaphthalene	0.50 U	µg/L
2-Methylnaphthalene	0.50 U	µg/L
Acenaphthene	0.50 U	µg/L
Fluorene	0.10 U	µg/L
Phenanthrene	1.0 U	µg/L
Anthracene	0.050 U	µg/L
Fluoranthene	0.10 U	µg/L
Pyrene	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	µg/L
Chrysene	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	µg/L
Dibenzo(a,h)anthracene	0.10 U	µg/L
Benzo(g,h,i)perylene	0.10 U	µg/L
Indeno(1,2,3-cd)pyrene	0.050 U	µg/L
Surrogate: (p-terphenyl)		
Surrogate Reported Value	11.6	µg/L
Surrogate Expected Value	10	µg/L
Surrogate % Recovery	116	%
Surrogate Control Limits	60-120	%
Date Extracted	03/12/99	
Date Analyzed	03/13/99	

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

ENCO LABORATORIES
REPORT # : OR5773.2
DATE REPORTED: March 16, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-VA15-TMW-02	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	45.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	91	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/12/99	

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

ENCO LABORATORIES
REPORT # : OR5773.2
DATE REPORTED: March 16, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Jet Fuel Transfer

RESULTS OF ANALYSIS

PA METHOD 3510/8310 - OLYAROMATIC HYDROCARBONS	CF-VA15-TMW-02	Units
aphthalene	0.50 U	µg/L
cenaphthylene	1.0 U	µg/L
-Methylnaphthalene	0.50 U	µg/L
-Methylnaphthalene	0.50 U	µg/L
cenaphthene	0.50 U	µg/L
luorene	0.10 U	µg/L
henanthrene	1.0 U	µg/L
nthracene	0.050 U	µg/L
luoranthene	0.10 U	µg/L
yrene	0.050 U	µg/L
enzo(a)anthracene	0.050 U	µg/L
rysene	0.050 U	µg/L
enzo(b)fluoranthene	0.10 U	µg/L
enzo(k)fluoranthene	0.050 U	µg/L
enzo(a)pyrene	0.050 U	µg/L
benzo(a,h)anthracene	0.10 U	µg/L
enzo(g,h,i)perylene	0.10 U	µg/L
deno(1,2,3-cd)pyrene	0.050 U	µg/L
rrogate: (p-terphenyl)		
rrogate Reported Value	11.4	µg/L
rrogate Expected Value	10	µg/L
rrogate % Recovery	114	%
rrogate Control Limits	60-120	%
te Extracted	03/12/99	
te Analyzed	03/13/99	

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

ENCO LABORATORIES
REPORT # : OR5773.2
DATE REPORTED: March 16, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-VA15-TMW-03	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	66.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	133	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/12/99	

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

ENCO LABORATORIES
REPORT # : OR5773.2
DATE REPORTED: March 16, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Jet Fuel Transfer

RESULTS OF ANALYSIS

PA METHOD 3510/8310 - OLYAROMATIC HYDROCARBONS	CF-VA15-TMW-03	Units
aphthalene	0.50 U	µg/L
cenaphthylene	1.0 U	µg/L
-Methylnaphthalene	0.50 U	µg/L
-Methylnaphthalene	0.50 U	µg/L
cenaphthene	0.50 U	µg/L
luorene	0.10 U	µg/L
henanthrene	1.0 U	µg/L
nthracene	0.050 U	µg/L
luoranthene	0.10 U	µg/L
rene	0.050 U	µg/L
nzo(a)anthracene	0.050 U	µg/L
rysene	0.050 U	µg/L
nzo(b)fluoranthene	0.10 U	µg/L
nzo(k)fluoranthene	0.050 U	µg/L
nzo(a)pyrene	0.050 U	µg/L
benzo(a,h)anthracene	0.10 U	µg/L
nzo(g,h,i)perylene	0.10 U	µg/L
deno(1,2,3-cd)pyrene	0.050 U	µg/L
rrogate: (p-terphenyl)		
rrogate Reported Value	10.7	µg/L
rrogate Expected Value	10	µg/L
rrogate % Recovery	107	%
rrogate Control Limits	60-120	%
te Extracted	03/12/99	
te Analyzed	03/13/99	

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

ENCO LABORATORIES
REPORT # : OR5773.2
DATE REPORTED: March 16, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-VA15-TMW-04	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	2.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	47	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	94	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/12/99	

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

ENCO LABORATORIES
REPORT # : OR5773.2
DATE REPORTED: March 16, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Jet Fuel Transfer

RESULTS OF ANALYSIS

PA METHOD 3510/8310 - OLYAROMATIC HYDROCARBONS	CF-VA15-TMW-04	Units
aphthalene	0.50 U	µg/L
cenaphthylene	1.0 U	µg/L
-Methylnaphthalene	0.50 U	µg/L
-Methylnaphthalene	0.50 U	µg/L
cenaphthene	0.50 U	µg/L
luorene	0.10 U	µg/L
nenanthrene	1.0 U	µg/L
nthracene	0.050 U	µg/L
luoranthene	0.10 U	µg/L
rene	0.050 U	µg/L
nzo(a)anthracene	0.050 U	µg/L
rysene	0.050 U	µg/L
nzo(b)fluoranthene	0.10 U	µg/L
nzo(k)fluoranthene	0.050 U	µg/L
nzo(a)pyrene	0.050 U	µg/L
benzo(a,h)anthracene	0.10 U	µg/L
nzo(g,h,i)perylene	0.10 U	µg/L
deno(1,2,3-cd)pyrene	0.050 U	µg/L
rrogate: (p-terphenyl)		
rrogate Reported Value	10.4	µg/L
rrogate Expected Value	10	µg/L
rrogate % Recovery	104	%
rrogate Control Limits	60-120	%
te Extracted	03/12/99	
te Analyzed	03/13/99	

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

ENCO LABORATORIES
REPORT # : OR5773.2
DATE REPORTED: March 16, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	CF-VA15-SB-03-5	Units
Methyl tert-butyl ether	3.0 U	µg/Kg
Benzene	1.0 U	µg/Kg
Toluene	1.0 U	µg/Kg
Chlorobenzene	1.0 U	µg/Kg
Ethylbenzene	1.0 U	µg/Kg
m-Xylene & p-Xylene	3.0 U	µg/Kg
o-Xylene	1.0 U	µg/Kg
1,3-Dichlorobenzene	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	37	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	74	%
Surrogate Control Limits	40-170	%
Date Analyzed	03/12/99	

NOTE: Analyte values are reported on a dry weight basis.

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

ENCO LABORATORIES
REPORT # : OR5773.2
DATE REPORTED: March 16, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Jet Fuel Transfer

RESULTS OF ANALYSIS

:PA METHOD 3550/8310 - 'OLYAROMATIC HYDROCARBONS	CF-VA15-SB-03-5	Units
'aphthalene	22 U	µg/Kg
cenaphthylene	44 U	µg/Kg
-Methylnaphthalene	22 U	µg/Kg
-Methylnaphthalene	22 U	µg/Kg
cenaphthene	22 U	µg/Kg
luorene	4.4 U	µg/Kg
henanthrene	2.2 U	µg/Kg
ıthracene	3.0 U	µg/Kg
luoranthene	4.4 U	µg/Kg
rene	2.2 U	µg/Kg
nzo(a)anthracene	2.2 U	µg/Kg
ırysene	2.2 U	µg/Kg
nzo(b)fluoranthene	4.0 U	µg/Kg
nzo(k)fluoranthene	3.0 U	µg/Kg
nzo(a)pyrene	3.0 U	µg/Kg
benzo(a,h)anthracene	4.4 U	µg/Kg
nzo(g,h,i)perylene	4.4 U	µg/Kg
deno(1,2,3-cd)pyrene	2.2 U	µg/Kg
rrogate: (p-terphenyl)		
rrogate Reported Value	12.3	µg/Kg
rrogate Expected Value	10	µg/Kg
rrogate % Recovery	123	%
rrogate Control Limits	53-133	%
:e Extracted	03/11/99	
:e Analyzed	03/12/99	

:CELLANEOUS	METHOD	CF-VA15-SB-03-5	Units
'cent Solids	SM2540G	76	%
e Analyzed		03/13/99	

E: Analyte values are reported on a dry weight basis.

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

ENCO LABORATORIES
REPORT # : OR5773.2
DATE REPORTED: March 16, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl eth	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene		µg/L
o-Xylene		µg/L
1,3-Dichlorobenzene	1.0	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	45.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	91	%
Surrogate Control Limits	64-140	%
Date Analyzed	03/11/99	

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

ENCO LABORATORIES
REPORT # : OR5773.2
DATE REPORTED: March 16, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Jet Fuel Transfer

RESULTS OF ANALYSIS

:PA METHOD 3510/8310 - 'OLYAROMATIC HYDROCARBONS	LAB BLANK	Units
'aphthalene	0.50 U	µg/L
cenaphthylene	1.0 U	µg/L
-Methylnaphthalene	0.50 U	µg/L
-Methylnaphthalene	0.50 U	µg/L
cenaphthene	0.50 U	µg/L
luorene	0.10 U	µg/L
henanthrene	0.050 U	µg/L
ıthracene	1.0 U	µg/L
luoranthene	0.10 U	µg/L
rene	0.050 U	µg/L
nzo(a)anthracene	0.050 U	µg/L
ırysene	0.050 U	µg/L
nzo(b)fluoranthene	0.10 U	µg/L
nzo(k)fluoranthene	0.050 U	µg/L
nzo(a)pyrene	0.050 U	µg/L
benzo(a,h)anthracene	0.10 U	µg/L
nzo(g,h,i)perylene	0.10 U	µg/L
deno(1,2,3-cd)pyrene	0.050 U	µg/L
rrogate: (p-terphenyl)		
rrogate Reported Value	11.0	µg/L
rrogate Expected Value	10	µg/L
rrogate % Recovery	110	%
rrogate Control Limits	60-120	%
:e Extracted	03/12/99	
:e Analyzed	03/12/99	

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

ENCO LABORATORIES
REPORT # : OR5773.2
DATE REPORTED: March 16, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 5035/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/Kg
Benzene	1.0 U	µg/Kg
Toluene	1.0 U	µg/Kg
Chlorobenzene	1.0 U	µg/Kg
Ethylbenzene	1.0 U	µg/Kg
m-Xylene & p-Xylene	2.0 U	µg/Kg
o-Xylene	1.0 U	µg/Kg
1,3-Dichlorobenzene	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	µg/Kg
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	48	µg/Kg
Surrogate Expected Value	50	µg/Kg
Surrogate % Recovery	96	%
Surrogate Control Limits	40-170	%
Date Analyzed	03/12/99	

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

ENCO LABORATORIES
REPORT # : OR5773.2
DATE REPORTED: March 16, 1999
REFERENCE : 0013
PROJECT NAME : NASCF-NAS Jax
Jet Fuel Transfer

RESULTS OF ANALYSIS

EPA METHOD 3550/8310 - POLYAROMATIC HYDROCARBONS	LAB BLANK	Units
Naphthalene	17 U	µg/Kg
Acenaphthylene	33 U	µg/Kg
2-Methylnaphthalene	17 U	µg/Kg
1-Methylnaphthalene	17 U	µg/Kg
Acenaphthene	17 U	µg/Kg
Fluorene	3.3 U	µg/Kg
Phenanthrene	1.7 U	µg/Kg
Anthracene	2.0 U	µg/Kg
Fluoranthene	3.3 U	µg/Kg
Pyrene	1.7 U	µg/Kg
Benzo(a)anthracene	1.7 U	µg/Kg
Chrysene	1.7 U	µg/Kg
Benzo(b)fluoranthene	3.0 U	µg/Kg
Benzo(k)fluoranthene	2.0 U	µg/Kg
Benzo(a)pyrene	2.0 U	µg/Kg
Dibenzo(a,h)anthracene	3.3 U	µg/Kg
Benzo(g,h,i)perylene	3.3 U	µg/Kg
Indeno(1,2,3-cd)pyrene	1.7 U	µg/Kg
Surrogate: (p-terphenyl)		
Surrogate Reported Value	10.2	µg/Kg
Surrogate Expected Value	10	µg/Kg
Surrogate % Recovery	102	%
Surrogate Control Limits	53-133	%
Date Extracted	03/11/99	
Date Analyzed	03/12/99	

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

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	LCS TARGET µg/(L/Kg)	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 5030/8021					
Benzene	107/108/ 95	20	72-134	<1	20
Toluene	108/108/ 96	20	72-124	<1	19
Ethylbenzene	107/106/ 96	20	67-129	<1	21
o-Xylene	109/109/ 96	20	66-131	<1	21
EPA Method 3510/8310					
Naphthalene	70/ 73/103	10	66-105	4	20
Acenaphthene	85/111/116	10	20-143	26	19
Benzo(a)pyrene	106/132/111	1	37-122	22	36
Benzo(g,h,i)perylene	103/121/112	2	44-114	16	34

Environmental Conservation Laboratories Comprehensive QA Plan #960038

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

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QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	LCS TARGET µg/(L/Kg)	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 5035/8021					
Benzene	98/102/ 96	20	59-144	4	25
Toluene	79/280/ 87	20	67-132	112	58
Ethylbenzene	69/152/ 93	20	60-169	75	28
o-Xylene	64/225/ 93	20	62-183	111	24
PA Method 3550/8310					
aphthalene	92/ 70/ 98	10	32-116	27	45
cenaphthene	111/106/111	10	37-112	5	35
enzo(a)pyrene	107/107/112	1	39-134	<1	38
enzo(g,h,i)perylene	108/111/114	2	53-130	3	26

vironmental Conservation Laboratories Comprehensive QA Plan #960038

= Less Than
= Matrix Spike
) = Matrix Spike Duplicate
; = Laboratory Control Standard
) = Relative Percent Difference

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roval of the laboratory. Results for these procedures apply only to
samples as submitted.

CHAIN OF CUSTODY RECORD

0100

PROJECT NO.: 0013

SITE NAME: NASCF-NASJAX Jet Fuel Transfer Line

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	8021B	8310					REMARKS
	3/10/99	1244		X	CF-VA15-TMW-01	3	X	X					
	3/10/99	1135		X	CF-VA15-TMW-02	3	X	X					
	3/10/99	1345		X	CF-VA15-TMW-03	3	X	X					
	3/10/99	1546		X	CF-VA15-TMW-04	3	X	X					
	3/10/99	1559		X	CF-VA15-SB-03 ~~1559~~	4	X	X					

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[signature]	3-10-99 1700	[signature]			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE): 10.35AM
			[signature]	3/11/99 0935	[signature] Kim Casey 3/11/99
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS:	
		[signature]	3/11/99 0935am	#OR5773	

Order No. 70440 (0693)

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

May 4, 1999

Mr. John Kucera
Tetra Tech NUS
7018 A.C. Skinner Pkwy.
Suite 250
Jacksonville, FL 32256

Login Number(SDG): OR6372
Project Number: NO013/CTO-72
Description: NASJAX/NASCF Jet Fuel Transfer

Case Narrative:

Two water samples were collected on April 20, 1999. All samples were received at ENCO Laboratories, Inc., on April 20, 1999 on wet ice and in good condition. All samples were analyzed as requested on the associated sample chain-of-custody forms.

There were no unusual situations which occurred in the processing of the samples submitted.

All samples were extracted and analyzed within EPA specified holding times.

Quality Assurance acceptance limits are established by "in-house" statistical determination. This is true for surrogate, MS/MSD and LCS spike recovery evaluations.

Environmental Conservation Laboratories, Inc.

David J. Vesey
Project Manager

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

CLIENT : Tetra Tech NUS
ADDRESS: 7018 A.C. Skinner Parkway
Suite 250
Jacksonville, FL 32256

REPORT # : OR6372
DATE SUBMITTED: April 20, 1999
DATE REPORTED : April 29, 1999

ATTENTION: John Kucera

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

PROJECT #: 0013

Fuel Transfer Pipeline

04/20/99

#1 - CF-VA11-IMV-01 @ 11:57
#2 - CF-VA11-SMW-01 @ 12:06

ROJECT MANAGER _____
David Vesey

ENCO LABORATORIES
REPORT # : OR6372
DATE REPORTED: April 29, 1999
REFERENCE : 0013
PROJECT NAME : Fuel Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-VA11-IMW-01	Units
Methyl tert-butyl ether	1.1 I	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	1.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	52.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	105	%
Surrogate Control Limits	59-132	%
Date Analyzed	04/22/99	

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 # : OR6372
DATE REPORTED: April 29, 1999
REFERENCE : 0013
PROJECT NAME : Fuel Transfer Pipeline

RESULTS OF ANALYSIS

PA METHOD 3510/8310 - OLYAROMATIC HYDROCARBONS	CF-VA11-IMW-01	Units
aphthalene	0.50 U	µg/L
cenaphthylene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
cenaphthene	0.50 U	µg/L
luorene	0.10 U	µg/L
henanthrene	1.0 U	µg/L
nthracene	0.050 U	µg/L
luoranthene	0.10 U	µg/L
yrene	0.050 U	µg/L
enzo(a)anthracene	0.050 U	µg/L
rysene	0.050 U	µg/L
enzo(b)fluoranthene	0.10 U	µg/L
enzo(k)fluoranthene	0.050 U	µg/L
enzo(a)pyrene	0.050 U	µg/L
benzo(a,h)anthracene	0.10 U	µg/L
nzo(g,h,i)perylene	0.10 U	µg/L
deno(1,2,3-cd)pyrene	0.050 U	µg/L
rrogate: (p-terphenyl)		
rrogate Reported Value	6.2	µg/L
rrogate Expected Value	10	µg/L
rrogate % Recovery	62	%
rrogate Control Limits	39-148	%
te Extracted	04/23/99	
te Analyzed	04/23/99	

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

ENCO LABORATORIES
REPORT # : OR6372
DATE REPORTED: April 29, 1999
REFERENCE : 0013
PROJECT NAME : Fuel Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	CF-VA11-SMW-01	Units
Methyl tert-butyl ether	4.5	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	1.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	52.5	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	105	%
Surrogate Control Limits	59-132	%
Date Analyzed	04/22/99	

* = Matrix interferences prevent accurate determination; second detector recovery (ELCD) indicates acceptable recovery (99%).
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 # : OR6372
DATE REPORTED: April 29, 1999
REFERENCE : 0013
PROJECT NAME : Fuel Transfer Pipeline

RESULTS OF ANALYSIS

PA METHOD 3510/8310 - OLYAROMATIC HYDROCARBONS	CF-VA11-SMW-01	Units
aphthalene	0.50 U	µg/L
cenaphthylene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
-Methylnaphthalene	1.0 U	µg/L
cenaphthene	0.20 U	µg/L
luorene	**0.10** I	µg/L
henanthrene	1.0 U	µg/L
ithracene	**0.070** I	µg/L
uoranthene	0.10 U	µg/L
rene	0.050 U	µg/L
nzo(a)anthracene	**0.050** I	µg/L
rysene	**0.10**	µg/L
nzo(b)fluoranthene	0.10 U	µg/L
nzo(k)fluoranthene	0.050 U	µg/L
nzo(a)pyrene	0.050 U	µg/L
benzo(a,h)anthracene	0.10 U	µg/L
nzo(g,h,i)perylene	0.10 U	µg/L
deno(1,2,3-cd)pyrene	0.050 U	µg/L
rrogate: (p-terphenyl)		
rrogate Reported Value	8.0	µg/L
rrogate Expected Value	10	µg/L
rrogate % Recovery	80	%
rrogate Control Limits	39-148	%
te Extracted	04/23/99	
te Analyzed	04/23/99	

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

ENCO LABORATORIES
REPORT # : OR6372
DATE REPORTED: April 29, 1999
REFERENCE : 0013
PROJECT NAME : Fuel Transfer Pipeline

RESULTS OF ANALYSIS

EPA METHOD 5030/8021 - VOLATILE AROMATICS	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	µg/L
Benzene	1.0 U	µg/L
Toluene	1.0 U	µg/L
Chlorobenzene	1.0 U	µg/L
Ethylbenzene	1.0 U	µg/L
m-Xylene & p-Xylene	1.0 U	µg/L
o-Xylene	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	µg/L
Surrogate: (Bromofluorobenzene)		
Surrogate Reported Value	52	µg/L
Surrogate Expected Value	50	µg/L
Surrogate % Recovery	104	%
Surrogate Control Limits	59-132	%
Date Analyzed	04/22/99	

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

ENCO LABORATORIES
REPORT # : OR6372
DATE REPORTED: April 29, 1999
REFERENCE : 0013
PROJECT NAME : Fuel Transfer Pipeline

RESULTS OF ANALYSIS

PA METHOD 3510/8310 - OLYAROMATIC HYDROCARBONS	LAB BLANK	Units
aphthalene	0.50 U	µg/L
enaphthylene	1.0 U	µg/L
Methylnaphthalene	1.0 U	µg/L
Methylnaphthalene	1.0 U	µg/L
enaphthene	0.50 U	µg/L
uorene	0.10 U	µg/L
enanthrene	1.0 U	µg/L
thracene	0.050 U	µg/L
uoranthene	0.10 U	µg/L
rene	0.050 U	µg/L
nzo(a)anthracene	0.050 U	µg/L
rysene	0.050 U	µg/L
nzo(b)fluoranthene	0.10 U	µg/L
nzo(k)fluoranthene	0.050 U	µg/L
nzo(a)pyrene	0.050 U	µg/L
benzo(a,h)anthracene	0.10 U	µg/L
nzo(g,h,i)perylene	0.10 U	µg/L
deno(1,2,3-cd)pyrene	0.050 U	µg/L
rrogate: (p-terphenyl)		
rrogate Reported Value	10.2	µg/L
rrogate Expected Value	10	µg/L
rrogate % Recovery	102	%
rrogate Control Limits	39-148	%
e Extracted	04/23/99	
e Analyzed	04/23/99	

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

ENCO LABORATORIES
REPORT # : OR6372
DATE REPORTED: April 29, 1999
REFERENCE : 0013
PROJECT NAME : Fuel Transfer Pipeline

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	LCS Target µg	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
PA Method 5030/8021					
enzene	89/ 86/107	20	60-138	3	17
oluene	88/ 84/108	20	57-138	5	16
thylbenzene	97/ 92/119	20	49-144	5	17
-Xylene	110/105/138	20	50-151	5	17
PA Method 3510/8310					
aphthalene	76/ 76/ 69	10	22-130	<1	20
cenaphthene	82/ 82/ 83	10	14-163	<1	19
enzo(a)pyrene	70/ 70/ 94	1	33-137	<1	36
e[illegible](g,h,i)perylene	60/ 60/ 83	2	36-135	<1	34

nvironmental Conservation Laboratories Comprehensive QA Plan #960038

= Less Than
S = Matrix Spike
SD = Matrix Spike Duplicate
CS = Laboratory Control Standard
PD = Relative Percent Difference

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ENVIRONMENTAL CONSERVATION LABORATORIES

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Orlando, Florida 32824
Ph. (407) 826-5314 • Fax (407) 850-6945

ENCO CompQAP No.: 960038G/0

CHAIN OF CUSTODY RECORD

PROJECT REFERENCE: Fuel Transfer Pipeline
PROJECT NO.: 0013
P.O. NUMBER:
PROJECT LOC. (State): FL
SAMPLER(s) NAME: Jennifer Ellioott
PHONE: 281-0400
FAX: 281-0070
CLIENT NAME: TTNUS
CLIENT PROJECT MANAGER: Jon Kucera
CLIENT ADDRESS (CITY, STATE, ZIP): AC Skinner Pkwy #350 Jax, FL

PAGE 1 OF 1

☒ STANDARD REPORT DELIVERY
☐ EXPEDITED REPORT DELIVERY (surcharge)
Date Due:

STATION	DATE	TIME	GRAB	COMP	SAMPLE IDENTIFICATION	SURFACE WATER	GROUND WATER	WASTEWATER	DRINKING WATER	SOIL/SOLID/SEDIMENT	NONAQUEOUS LIQUID (oil, solvent, etc.)	AIR	SLUDGE	OTHER	HCl (PRESERVATIVE)	— (PRESERVATIVE)								REMARKS
															BOD/TSS	VOLATILES 8310 PAHS								
															NUMBER OF CONTAINERS SUBMITTED									
1	4-20-99	1157	X		CF-VA11-IMW-01		X								2	1								
2	4-20-99	1206	X		CF-VA11-SMW-01		X								2	1								
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11																								
12																								
13																								
14																								

SAMPLE KIT PREPARED BY:	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
☒ JACKSONVILLE ☐ ORLANDO			[signature]	4-20-99	1450			
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
M. Reid	4/20/99	9:10 AM	[signature]					
RECEIVED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	ENCO LOG NO.	REMARKS
[signature] ☒ Jacksonville ☐ Orlando	4/20/99	14:50	☒ YES ☐ NO	JR63[illegible]	

Environmental Conservation Laboratories, Inc.
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Jacksonville, Florida 32216-6069
904 / 296-3007
Fax 904 / 296-6210
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E82277

CASE NARRATIVE

Date: December 30, 1999

Client: TetraTech NUS, Inc.

Project #: CTO 72, 0013

Lab ID: JR9869

Overview

All samples submitted were analyzed by Environmental Conservation Laboratories, Inc. in accordance with the methods referenced in the laboratory report. Any particular difficulties encountered during sample handling by Environmental Conservation Laboratories, Inc. will be discussed in the QC Remarks section below.

Quality Control Samples

HPLC (8310) A sample not associated with this project was used as the original for the matrix spike and matrix spike duplicate (MS/MSD). All recoveries (MS/MSD/LCS) were within acceptance criteria.

Quality Control Remarks

HPLC (8310) None.

Other Comments

None

The analytical data presented in this report are consistent with the methods as referenced in the analytical report. Any exceptions or deviations are noted in the QC remarks section of this narrative. Should there be any questions regarding this package, please feel free to contact the undersigned for additional information.

Released By:

Environmental Conservation Laboratories, Inc.

Richard E. Camp, II
Laboratory Manager

Environmental Conservation Laboratories, Inc.
4810 Executive Park Court, Suite 211
Jacksonville, Florida 32216-6069
904 / 296-3007
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ENCO Laboratories

DHRS Certification No. E82277

CLIENT : Tetra Tech NUS
ADDRESS: 7018 A.C. Skinner Parkway
Suite 250
Jacksonville, FL 32256

REPORT # : JR9869
DATE SUBMITTED: December 15, 1999
DATE REPORTED : December 30, 1999

ATTENTION: Mr. John Kucera

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

PROJECT #: 0013

CTO 72

12/15/99

#1 - CEF-AN10-1S @ 09:40
#2 - CEF-AN14-1S @ 11:00
#3 - CEF-AN15-1S @ 12:15
#4 - CEF-VA14-1S @ 15:50
#5 - CEF-VA14-DU02

PROJECT MANAGER _____
Scott D. Martin

ENCO LABORATORIES
REPORT # : JR9869
DATE REPORTED: December 30, 1999
REFERENCE : 0013
PROJECT NAME : CTO 72

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - PAH BY HPLC	CEF-AN10-1S	CEF-AN14-1S	Units
Naphthalene	0.50 U	0.50 U	µg/L
Acenaphthylene	1.0 U	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	1.0 U	µg/L
Acenaphthene	0.50 U	0.50 U	µg/L
Fluorene	0.10 U	0.12 U	µg/L
Phenanthrene	1.0 U	1.0 U	µg/L
Anthracene	0.050 U	0.050 U	µg/L
Fluoranthene	0.10 U	**0.13** I	µg/L
Pyrene	0.050 U	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	0.050 U	µg/L
Chrysene	0.050 U	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	**0.32**	µg/L
Benzo(k)fluoranthene	0.050 U	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	**0.060** I	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
Surrogate: p-Terphenyl	**% RECOV**	**% RECOV**	**Units**
True Value	10.0	10.0	µg/L
Actual Value	8.3	6.8	µg/L
Percent Recovery	83	68	%
Control Limits	39-148	39-148	%
Date Extracted	12/20/99	12/20/99	
Date Analyzed	12/22/99	12/22/99	

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 # : JR9869
DATE REPORTED: December 30, 1999
REFERENCE : 0013
PROJECT NAME : CTO 72

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - PAH BY HPLC	CEF-AN15-1S	CEF-VA14-1S	Units
Naphthalene	0.50 U	0.50 U	µg/L
Acenaphthylene	1.0 U	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	1.0 U	µg/L
Acenaphthene	0.50 U	0.50 U	µg/L
Fluorene	0.10 U	0.10 U	µg/L
Phenanthrene	1.0 U	1.0 U	µg/L
Anthracene	0.050 U	0.050 U	µg/L
Fluoranthene	**0.20**	0.10 U	µg/L
Pyrene	**0.10** I	0.050 U	µg/L
Benzo(a)anthracene	0.050 U	0.050 U	µg/L
Chrysene	0.050 U	0.050 U	µg/L
Benzo(b)fluoranthene	**0.17** I	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	0.050 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
Surrogate: p-terphenyl	**% RECOV**	**% RECOV**	**LIMITS**
True Value	10.0	10.0	µg/L
Actual Value	6.6	8.0	µg/L
Percent Recovery	66	80	%
Control Limits	39-148	39-148	%
Date Extracted	12/20/99	12/20/99	
Date Analyzed	12/22/99	12/22/99	

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 # : JR9869
DATE REPORTED: December 30, 1999
REFERENCE : 0013
PROJECT NAME : CTO 72

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - PAH BY HPLC	CEF-VA14-DU02	LAB BLANK	Units
Naphthalene	0.50 U	0.50 U	µg/L
Acenaphthylene	1.0 U	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	1.0 U	µg/L
Acenaphthene	**0.50** I	0.50 U	µg/L
Fluorene	0.10 U	0.10 U	µg/L
Phenanthrene	1.0 U	1.0 U	µg/L
Anthracene	0.050 U	0.050 U	µg/L
Fluoranthene	**0.31**	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	**0.050** I	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	0.050 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
Surrogate: p-terphenyl	**% RECOV**	**% RECOV**	**LIMITS**
True Value	10.0	10.0	µg/L
Actual Value	8.3	6.8	µg/L
Percent Recovery	83	68	%
Control Limits	39-148	39-148	%
Date Extracted	12/20/99	12/20/99	
Date Analyzed	12/22/99	12/22/99	

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 # : JR9869
DATE REPORTED: December 30, 1999
REFERENCE : 0013
PROJECT NAME : CTO 72

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	LCS Target Value	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 3510/8310					
Naphthalene	79/ 86/ 76	10	22-130	8	20
Acenaphthene	73/ 80/ 72	10	14-163	9	19
Benzo(a)pyrene	72/ 81/ 76	1	33-137	12	36
Benzo(g,h,i)perylene	76/ 85/ 77	2	36-135	11	34

Environmental Conservation Laboratories Comprehensive QA Plan #910190

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

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QSARF #_____

ENVIRONMENTAL CONSERVATION LABORATORIES

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Cary, North Carolina 27513
Ph. (919) 677-1669 • Fax (919) 677-9846

ENCO CompQAP No.: 960038G/0

CHAIN OF CUSTODY RECORD

PROJECT REFERENCE	PROJECT NO.	P.O. NUMBER
CTO 72	0013	—

PROJECT LOC. (State)	SAMPLER(s) NAME	PHONE / FAX
FL	E. Parker / L. KNIGHT	PHONE 904 281-0400 / FAX 904 281-0070

CLIENT NAME: Tetra Tech NUS

CLIENT PROJECT MANAGER: JON KUCERA

CLIENT ADDRESS (CITY, STATE, ZIP): 7018 AC Skinner Pkwy / Suite 250 / Sanford, FL

PAGE ____ OF ____

☑ STANDARD REPORT DELIVERY

☐ EXPEDITED REPORT DELIVERY (surcharge)

Date Due: _____

STATION	DATE	TIME	GRAB	COMP	SAMPLE IDENTIFICATION	SURFACE WATER	GROUND WATER	WASTEWATER	DRINKING WATER	SOIL/SOLID/SEDIMENT	NONAQUEOUS LIQUID (oil, solvent, etc.)	AIR	SLUDGE	OTHER	PAH (8310) Liter Amber	PRESERVATIVE	REMARKS
1 —	12-15-99	0940	X		CEF-AN10-1S		X								1		
2 —	↓	1100	X		CEF-AN14-1S		X								1		
3 —		1215	X		CEF-AN15-1S		X								1		
4 —		1550	X		CEF-VA14-1S		X								1		
5 —	↓	0000	X		CEF-VA14-DU02		X								1		
6																	
7																	
8																	
9																	
10																	
11																	
12																	
13																	
14																	

SAMPLE KIT PREPARED BY:	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
☑ JACKSONVILLE ☐ ORLANDO	12-13-99							
RELINQUISHED BY: (SIGNATURE) Eric Parker	DATE 12-15-99	TIME 1630	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
RECEIVED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	ENCO LOG NO.	REMARKS
☒ Jacksonville ☐ Orlando	12-15-99	1630	☒ YES ☐ NO	JR9869	Additional samples / 3rd batch

sample_no	run_number	parameter	method	units	idl	mdl	crdl_crql	dil_factor	pct_moist
CEF-AN10-1S	1	Naphthalene	8310	ug/L		0.2	0.5	1	
CEF-AN10-1S	1	Acenaphthylene	8310	ug/L		0.1	1	1	
CEF-AN10-1S	1	1-Methylnaphthalene	8310	ug/L		0.1	1	1	
CEF-AN10-1S	1	2-Methylnaphthalene	8310	ug/L		0.2	1	1	
CEF-AN10-1S	1	Acenaphthene	8310	ug/L		0.2	0.5	1	
CEF-AN10-1S	1	Fluorene	8310	ug/L		0.04	0.1	1	
CEF-AN10-1S	1	Phenanthrene	8310	ug/L		0.04	1	1	
CEF-AN10-1S	1	Anthracene	8310	ug/L		0.03	0.05	1	
CEF-AN10-1S	1	Fluoranthene	8310	ug/L		0.04	0.1	1	
CEF-AN10-1S	1	Pyrene	8310	ug/L		0.04	0.05	1	
CEF-AN10-1S	1	Benzo(a)anthracene	8310	ug/L		0.02	0.05	1	
CEF-AN10-1S	1	Chrysene	8310	ug/L		0.02	0.05	1	
CEF-AN10-1S	1	Benzo(b)fluoranthene	8310	ug/L		0.06	0.1	1	
CEF-AN10-1S	1	Benzo(k)fluoranthene	8310	ug/L		0.03	0.05	1	
CEF-AN10-1S	1	Benzo(a)pyrene	8310	ug/L		0.03	0.05	1	
CEF-AN10-1S	1	Dibenzo(a,h)anthracene	8310	ug/L		0.07	0.1	1	
CEF-AN10-1S	1	Benzo(g,h,i)perylene	8310	ug/L		0.07	0.1	1	
CEF-AN10-1S	1	Indeno(1,2,3-cd)pyrene	8310	ug/L		0.02	0.05	1	
CEF-AN10-1S	1	P-Terphenyl	8310	%				1	
CEF-AN14-1S	1	Naphthalene	8310	ug/L		0.2	0.5	1	
CEF-AN14-1S	1	Acenaphthylene	8310	ug/L		0.1	1	1	
CEF-AN14-1S	1	1-Methylnaphthalene	8310	ug/L		0.1	1	1	
CEF-AN14-1S	1	2-Methylnaphthalene	8310	ug/L		0.2	1	1	
CEF-AN14-1S	1	Acenaphthene	8310	ug/L		0.2	0.5	1	
CEF-AN14-1S	1	Fluorene	8310	ug/L		0.04	0.1	1	
CEF-AN14-1S	1	Phenanthrene	8310	ug/L		0.04	1	1	
CEF-AN14-1S	1	Anthracene	8310	ug/L		0.03	0.05	1	
CEF-AN14-1S	1	Fluoranthene	8310	ug/L		0.04	0.1	1	
CEF-AN14-1S	1	Pyrene	8310	ug/L		0.04	0.05	1	
CEF-AN14-1S	1	Benzo(a)anthracene	8310	ug/L		0.02	0.05	1	
CEF-AN14-1S	1	Chrysene	8310	ug/L		0.02	0.05	1	
CEF-AN14-1S	1	Benzo(b)fluoranthene	8310	ug/L		0.06	0.1	1	
CEF-AN14-1S	1	Benzo(k)fluoranthene	8310	ug/L		0.03	0.05	1	
CEF-AN14-1S	1	Benzo(a)pyrene	8310	ug/L		0.03	0.05	1	
CEF-AN14-1S	1	Dibenzo(a,h)anthracene	8310	ug/L		0.07	0.1	1	
CEF-AN14-1S	1	Benzo(g,h,i)perylene	8310	ug/L		0.07	0.1	1	
CEF-AN14-1S	1	Indeno(1,2,3-cd)pyrene	8310	ug/L		0.02	0.05	1	
CEF-AN14-1S	1	P-Terphenyl	8310	%				1	

CEF-AN15-1S	1	Naphthalene	8310	ug/L	0.2	0.5	1
CEF-AN15-1S	1	Acenaphthylene	8310	ug/L	0.1	1	1
CEF-AN15-1S	1	1-Methylnaphthalene	8310	ug/L	0.1	1	1
CEF-AN15-1S	1	2-Methylnaphthalene	8310	ug/L	0.2	1	1
CEF-AN15-1S	1	Acenaphthene	8310	ug/L	0.2	0.5	1
CEF-AN15-1S	1	Fluorene	8310	ug/L	0.04	0.1	1
CEF-AN15-1S	1	Phenanthrene	8310	ug/L	0.04	1	1
CEF-AN15-1S	1	Anthracene	8310	ug/L	0.03	0.05	1
CEF-AN15-1S	1	Fluoranthene	8310	ug/L	0.04	0.1	1
CEF-AN15-1S	1	Pyrene	8310	ug/L	0.04	0.05	1
CEF-AN15-1S	1	Benzo(a)anthracene	8310	ug/L	0.02	0.05	1
CEF-AN15-1S	1	Chrysene	8310	ug/L	0.02	0.05	1
CEF-AN15-1S	1	Benzo(b)fluoranthene	8310	ug/L	0.06	0.1	1
CEF-AN15-1S	1	Benzo(k)fluoranthene	8310	ug/L	0.03	0.05	1
CEF-AN15-1S	1	Benzo(a)pyrene	8310	ug/L	0.03	0.05	1
CEF-AN15-1S	1	Dibenzo(a,h)anthracene	8310	ug/L	0.07	0.1	1
CEF-AN15-1S	1	Benzo(g,h,i)perylene	8310	ug/L	0.07	0.1	1
CEF-AN15-1S	1	Indeno(1,2,3-cd)pyrene	8310	ug/L	0.02	0.05	1
CEF-AN15-1S	1	P-Terphenyl	8310	%			1
CEF-VA14-1S	1	Naphthalene	8310	ug/L	0.2	0.5	1
CEF-VA14-1S	1	Acenaphthylene	8310	ug/L	0.1	1	1
CEF-VA14-1S	1	1-Methylnaphthalene	8310	ug/L	0.1	1	1
CEF-VA14-1S	1	2-Methylnaphthalene	8310	ug/L	0.2	1	1
CEF-VA14-1S	1	Acenaphthene	8310	ug/L	0.2	0.5	1
CEF-VA14-1S	1	Fluorene	8310	ug/L	0.04	0.1	1
CEF-VA14-1S	1	Phenanthrene	8310	ug/L	0.04	1	1
CEF-VA14-1S	1	Anthracene	8310	ug/L	0.03	0.05	1
CEF-VA14-1S	1	Fluoranthene	8310	ug/L	0.04	0.1	1
CEF-VA14-1S	1	Pyrene	8310	ug/L	0.04	0.05	1
CEF-VA14-1S	1	Benzo(a)anthracene	8310	ug/L	0.02	0.05	1
CEF-VA14-1S	1	Chrysene	8310	ug/L	0.02	0.05	1
CEF-VA14-1S	1	Benzo(b)fluoranthene	8310	ug/L	0.06	0.1	1
CEF-VA14-1S	1	Benzo(k)fluoranthene	8310	ug/L	0.03	0.05	1
CEF-VA14-1S	1	Benzo(a)pyrene	8310	ug/L	0.03	0.05	1
CEF-VA14-1S	1	Dibenzo(a,h)anthracene	8310	ug/L	0.07	0.1	1
CEF-VA14-1S	1	Benzo(g,h,i)perylene	8310	ug/L	0.07	0.1	1
CEF-VA14-1S	1	Indeno(1,2,3-cd)pyrene	8310	ug/L	0.02	0.05	1
CEF-VA14-1S	1	P-Terphenyl	8310	%			1

CEF-VA14-DU02	1	Naphthalene	8310	ug/L	0.2	0.5	1
CEF-VA14-DU02	1	Acenaphthylene	8310	ug/L	0.1	1	1
CEF-VA14-DU02	1	1-Methylnaphthalene	8310	ug/L	0.1	1	1
CEF-VA14-DU02	1	2-Methylnaphthalene	8310	ug/L	0.2	1	1
CEF-VA14-DU02	1	Acenaphthene	8310	ug/L	0.2	0.5	1
CEF-VA14-DU02	1	Fluorene	8310	ug/L	0.04	0.1	1
CEF-VA14-DU02	1	Phenanthrene	8310	ug/L	0.04	1	1
CEF-VA14-DU02	1	Anthracene	8310	ug/L	0.03	0.05	1
CEF-VA14-DU02	1	Fluoranthene	8310	ug/L	0.04	0.1	1
CEF-VA14-DU02	1	Pyrene	8310	ug/L	0.04	0.05	1
CEF-VA14-DU02	1	Benzo(a)anthracene	8310	ug/L	0.02	0.05	1
CEF-VA14-DU02	1	Chrysene	8310	ug/L	0.02	0.05	1
CEF-VA14-DU02	1	Benzo(b)fluoranthene	8310	ug/L	0.06	0.1	1
CEF-VA14-DU02	1	Benzo(k)fluoranthene	8310	ug/L	0.03	0.05	1
CEF-VA14-DU02	1	Benzo(a)pyrene	8310	ug/L	0.03	0.05	1
CEF-VA14-DU02	1	Dibenzo(a,h)anthracene	8310	ug/L	0.07	0.1	1
CEF-VA14-DU02	1	Benzo(g,h,i)perylene	8310	ug/L	0.07	0.1	1
CEF-VA14-DU02	1	Indeno(1,2,3-cd)pyrene	8310	ug/L	0.02	0.05	1
CEF-VA14-DU02	1	P-Terphenyl	8310	%			1

TETRA TECH NUS, INC.

CHAIN OF CUSTODY

NUMBER JR 1636

PAGE 1 OF 1

PROJECT NO: 0013 DA00S0115

SITE NAME: CTO 72

SAMPLERS (SIGNATURE): JRL

PROJECT MANAGER AND PHONE NUMBER: Jim Kuchma (904) 281-0400

FIELD OPERATIONS LEADER AND PHONE NUMBER: Same

CARRIER/AIRBILL NUMBER: —

LABORATORY NAME AND CONTACT: ENCO

ADDRESS: 9810 Executive Park Court, Suite 211

CITY, STATE: Jax, FL 32216

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

DATE YEAR 2000	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: 8310 (8270) - SVOCs							COMMENTS
CONTAINER TYPE PLASTIC (P) or GLASS (G)						G							
PRESERVATIVE USED						1							
2/8/00		CEF-AN/H-1S	GW	G	1	X							Bailer # JAX-T-301

Delivered by TtNUS personnel to Lab.

	DATE	TIME
1. RELINQUISHED BY	2-8-00	1430
2. RELINQUISHED BY		
3. RELINQUISHED BY		

	DATE	TIME
1. RECEIVED BY	2/9/00	1440
2. RECEIVED BY		
3. RECEIVED BY		

COMMENTS

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

3/99
FORM NO. TtNUS-001

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

ENCO Laboratories

DHRS Certification No. E82277

CASE NARRATIVE

Date: December 30, 1999

Client: TetraTech NUS, Inc.

Project #: CTO 72, 0013

Lab ID: JR9849

Overview

All samples submitted were analyzed by Environmental Conservation Laboratories, Inc. in accordance with the methods referenced in the laboratory report. Any particular difficulties encountered during sample handling by Environmental Conservation Laboratories, Inc. will be discussed in the QC Remarks section below.

Quality Control Samples

HPLC (8310) A sample not associated with this project was used as the original for the matrix spike and matrix spike duplicate (MS/MSD). All recoveries (MS/MSD/LCS) were within acceptance criteria.

Quality Control Remarks

HPLC (8310) None.

Other Comments

None

The analytical data presented in this report are consistent with the methods as referenced in the analytical report. Any exceptions or deviations are noted in the QC remarks section of this narrative. Should there be any questions regarding this package, please feel free to contact the undersigned for additional information.

Released By:

Environmental Conservation Laboratories, Inc.

Richard E. Camp, II
Laboratory Manager

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

ENCO Laboratories

DHRS Certification No. E82277

CLIENT : Tetra Tech NUS
ADDRESS: 7018 A.C. Skinner Parkway
Suite 250
Jacksonville, FL 32256

REPORT # : JR9849
DATE SUBMITTED: December 14, 1999
DATE REPORTED : December 30, 1999

ATTENTION: Mr.John Kucera

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

PROJECT #: 0013

CTO 72

12/14/99

#1 - CEF-AN08-1S
#2 - CEF-VA07-1S
#3 - CEF-AN09-1S
#4 - CEF-VA09-1S
#5 - CEF-VA08-1S

PROJECT MANAGER _____
Scott D. Martin

ENCO LABORATORIES
REPORT # : JR9849
DATE REPORTED: December 30, 1999
REFERENCE : 0013
PROJECT NAME : CTO 72

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - PAH BY HPLC	CEF-AN08-1S	CEF-VA07-1S	Units
Naphthalene	1.0	1.0	µg/L
Acenaphthylene	1.0 U	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	1.0 U	µg/L
Acenaphthene	0.50 U	0.50 U	µg/L
Fluorene	0.10 U	0.10 U	µg/L
Phenanthrene	1.0 U	1.0 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	0.050 U	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	0.050 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
Surrogate: p-Terphenyl	**% RECOV**	**% RECOV**	**Units**
True Value	10.0	10.0	µg/L
Actual Value	8.5	7.5	µg/L
Percent Recovery	85	75	%
Control Limits	39-148	39-148	%
Date Extracted	12/21/99	12/21/99	
Date Analyzed	12/28/99	12/28/99	

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 # : JR9849
DATE REPORTED: December 30, 1999
REFERENCE : 0013
PROJECT NAME : CTO 72

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - PAH BY HPLC	CEF-AN09-1S	CEF-VA09-1S	Units
Naphthalene	0.50 U	**1.4** I	µg/L
Acenaphthylene	1.0 U	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	1.0 U	µg/L
Acenaphthene	0.50 U	0.50 U	µg/L
Fluorene	**0.29**	0.10 U	µg/L
Phenanthrene	1.0 U	1.0 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	0.050 U	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	0.050 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
Surrogate: p-Terphenyl	**% RECOV**	**% RECOV**	**Units**
True Value	10.0	10.0	µg/L
Actual Value	8.9	10.3	µg/L
Percent Recovery	89	103	%
Control Limits	39-148	39-148	%
Date Extracted	12/21/99	12/21/99	
Date Analyzed	12/28/99	12/28/99	

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 # : JR9849
DATE REPORTED: December 30, 1999
REFERENCE : 0013
PROJECT NAME : CTO 72

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - PAH BY HPLC	CEF-VA08-1S	LAB BLANK	Units
Naphthalene	0.50 U	0.50 U	µg/L
Acenaphthylene	1.0 U	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	1.0 U	µg/L
Acenaphthene	0.50 U	0.50 U	µg/L
Fluorene	0.10 U	0.10 U	µg/L
Phenanthrene	1.0 U	1.0 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	0.050 U	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	0.050 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
Surrogate: p-Terphenyl	**% RECOV**	**% RECOV**	**Units**
True Value	10.0	10.0	µg/L
Actual Value	9.0	8.0	µg/L
Percent Recovery	90	80	%
Control Limits	39-148	39-148	%
Date Extracted	12/21/99	12/21/99	
Date Analyzed	12/28/99	12/28/99	

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 # : JR9849
DATE REPORTED: December 30, 1999
REFERENCE : 0013
PROJECT NAME : CTO 72

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	LCS TARGET VALUE	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 3510/8310					
Naphthalene	88/ 98/ 99	10	22-130	11	20
Acenaphthene	85/ 94/ 95	10	14-163	10	19
Benzo(a)pyrene	91/102/100	1	33-137	11	36
Benzo(g,h,i)perylene	92/ 94/ 70	2	36-135	2	34

Environmental Conservation Laboratories Comprehensive QA Plan #910190

< = 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.

QSARF #_____

ENVIRONMENTAL CONSERVATION LABORATORIES

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Ph. (919) 677-1669 • Fax (919) 677-9846

ENCO CompQAP No.: 960038G/0

CHAIN OF CUSTODY RECORD

PROJECT REFERENCE: CTO 72
PROJECT NO.: 0013
P.O. NUMBER: —
PAGE 1 OF 1

PROJECT LOC. (State): FL
SAMPLER(s) NAME: E. PARKER / L. KNIGHT
PHONE: 904 281-0400
FAX: 904 281-0070

CLIENT NAME: TETRATECH NUS
CLIENT PROJECT MANAGER: JON KUCERA

CLIENT ADDRESS (CITY, STATE, ZIP): 7018 A.C SKINNER PKWY / SUITE 250 / JAX, FL 32256

☒ STANDARD REPORT DELIVERY
☐ EXPEDITED REPORT DELIVERY (surcharge)
Date Due: _____

MATRIX TYPE: SURFACE WATER, GROUND WATER, WASTEWATER, DRINKING WATER, SOIL/SOLID/SEDIMENT, NONAQUEOUS LIQUID (oil, solvent, etc.), AIR, SLUDGE, OTHER

REQUIRED ANALYSIS: PAHs (8310) 1 L AMBER

PRESERVATIVE

STATION	DATE	TIME	GRAB	COMP	SAMPLE IDENTIFICATION	SURFACE WATER	GROUND WATER	WASTEWATER	DRINKING WATER	SOIL/SOLID/SEDIMENT	NONAQUEOUS LIQUID	AIR	SLUDGE	OTHER	PAHs (8310) 1 L AMBER								REMARKS
1	12-14-99	1200	X		CEF-AN08-IS		X								1								
2	↓	1310	X		CEF-VA07-IS		X								1								
3		1515	X		CEF-AN09-IS		X								1								
4		1615	X		CEF-VA09-IS		X								1								
5		1715	X		CEF-VA08-IS		X								1								
6																							
7																							
8																							
9																							
10																							
11																							
12																							
13																							
14																							

SAMPLE KIT PREPARED BY: ☒ JACKSONVILLE ☐ ORLANDO	DATE 12-13-99	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
RELINQUISHED BY: (SIGNATURE)	DATE 12-14-99	TIME 1800	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
RECEIVED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

RECEIVED FOR LABORATORY BY: (SIGNATURE) ☒ Jacksonville ☐ Orlando	DATE 12/14/99	TIME 1800	CUSTODY INTACT ☒ YES ☐ NO	ENCO LOG NO. JR9849	REMARKS

sample_no	run_number	parameter	method	units	idl	mdl	crdl_crql	dil_factor	pct_moist
CEF-AN08-1S	1	Naphthalene	8310	ug/L		0.2	0.5	1	
CEF-AN08-1S	1	Acenaphthylene	8310	ug/L		0.1	1	1	
CEF-AN08-1S	1	1-Methylnaphthalene	8310	ug/L		0.1	1	1	
CEF-AN08-1S	1	2-Methylnaphthalene	8310	ug/L		0.2	1	1	
CEF-AN08-1S	1	Acenaphthene	8310	ug/L		0.2	0.5	1	
CEF-AN08-1S	1	Fluorene	8310	ug/L		0.04	0.1	1	
CEF-AN08-1S	1	Phenanthrene	8310	ug/L		0.04	1	1	
CEF-AN08-1S	1	Anthracene	8310	ug/L		0.03	0.05	1	
CEF-AN08-1S	1	Fluoranthene	8310	ug/L		0.04	0.1	1	
CEF-AN08-1S	1	Pyrene	8310	ug/L		0.04	0.05	1	
CEF-AN08-1S	1	Benzo(a)anthracene	8310	ug/L		0.02	0.05	1	
CEF-AN08-1S	1	Chrysene	8310	ug/L		0.02	0.05	1	
CEF-AN08-1S	1	Benzo(b)fluoranthene	8310	ug/L		0.06	0.1	1	
CEF-AN08-1S	1	Benzo(k)fluoranthene	8310	ug/L		0.03	0.05	1	
CEF-AN08-1S	1	Benzo(a)pyrene	8310	ug/L		0.03	0.05	1	
CEF-AN08-1S	1	Dibenzo(a,h)anthracene	8310	ug/L		0.07	0.1	1	
CEF-AN08-1S	1	Benzo(g,h,i)perylene	8310	ug/L		0.07	0.1	1	
CEF-AN08-1S	1	Indeno(1,2,3-cd)pyrene	8310	ug/L		0.02	0.05	1	
CEF-AN08-1S	1	P-Terphenyl	8310	%				1	
CEF-AN09-1S	1	Naphthalene	8310	ug/L		0.2	0.5	1	
CEF-AN09-1S	1	Acenaphthylene	8310	ug/L		0.1	1	1	
CEF-AN09-1S	1	1-Methylnaphthalene	8310	ug/L		0.1	1	1	
CEF-AN09-1S	1	2-Methylnaphthalene	8310	ug/L		0.2	1	1	
CEF-AN09-1S	1	Acenaphthene	8310	ug/L		0.2	0.5	1	
CEF-AN09-1S	1	Fluorene	8310	ug/L		0.04	0.1	1	
CEF-AN09-1S	1	Phenanthrene	8310	ug/L		0.04	1	1	
CEF-AN09-1S	1	Anthracene	8310	ug/L		0.03	0.05	1	
CEF-AN09-1S	1	Fluoranthene	8310	ug/L		0.04	0.1	1	
CEF-AN09-1S	1	Pyrene	8310	ug/L		0.04	0.05	1	
CEF-AN09-1S	1	Benzo(a)anthracene	8310	ug/L		0.02	0.05	1	
CEF-AN09-1S	1	Chrysene	8310	ug/L		0.02	0.05	1	
CEF-AN09-1S	1	Benzo(b)fluoranthene	8310	ug/L		0.06	0.1	1	
CEF-AN09-1S	1	Benzo(k)fluoranthene	8310	ug/L		0.03	0.05	1	
CEF-AN09-1S	1	Benzo(a)pyrene	8310	ug/L		0.03	0.05	1	
CEF-AN09-1S	1	Dibenzo(a,h)anthracene	8310	ug/L		0.07	0.1	1	
CEF-AN09-1S	1	Benzo(g,h,i)perylene	8310	ug/L		0.07	0.1	1	
CEF-AN09-1S	1	Indeno(1,2,3-cd)pyrene	8310	ug/L		0.02	0.05	1	
CEF-AN09-1S	1	P-Terphenyl	8310	%				1	

CEF-VA07-1S	1	Naphthalene	8310	ug/L	0.2	0.5	1
CEF-VA07-1S	1	Acenaphthylene	8310	ug/L	0.1	1	1
CEF-VA07-1S	1	1-Methylnaphthalene	8310	ug/L	0.1	1	1
CEF-VA07-1S	1	2-Methylnaphthalene	8310	ug/L	0.2	1	1
CEF-VA07-1S	1	Acenaphthene	8310	ug/L	0.2	0.5	1
CEF-VA07-1S	1	Fluorene	8310	ug/L	0.04	0.1	1
CEF-VA07-1S	1	Phenanthrene	8310	ug/L	0.04	1	1
CEF-VA07-1S	1	Anthracene	8310	ug/L	0.03	0.05	1
CEF-VA07-1S	1	Fluoranthene	8310	ug/L	0.04	0.1	1
CEF-VA07-1S	1	Pyrene	8310	ug/L	0.04	0.05	1
CEF-VA07-1S	1	Benzo(a)anthracene	8310	ug/L	0.02	0.05	1
CEF-VA07-1S	1	Chrysene	8310	ug/L	0.02	0.05	1
CEF-VA07-1S	1	Benzo(b)fluoranthene	8310	ug/L	0.06	0.1	1
CEF-VA07-1S	1	Benzo(k)fluoranthene	8310	ug/L	0.03	0.05	1
CEF-VA07-1S	1	Benzo(a)pyrene	8310	ug/L	0.03	0.05	1
CEF-VA07-1S	1	Dibenzo(a,h)anthracene	8310	ug/L	0.07	0.1	1
CEF-VA07-1S	1	Benzo(g,h,i)perylene	8310	ug/L	0.07	0.1	1
CEF-VA07-1S	1	Indeno(1,2,3-cd)pyrene	8310	ug/L	0.02	0.05	1
CEF-VA07-1S	1	P-Terphenyl	8310	%			1
CEF-VA08-1S	1	Naphthalene	8310	ug/L	0.2	0.5	1
CEF-VA08-1S	1	Acenaphthylene	8310	ug/L	0.1	1	1
CEF-VA08-1S	1	1-Methylnaphthalene	8310	ug/L	0.1	1	1
CEF-VA08-1S	1	2-Methylnaphthalene	8310	ug/L	0.2	1	1
CEF-VA08-1S	1	Acenaphthene	8310	ug/L	0.2	0.5	1
CEF-VA08-1S	1	Fluorene	8310	ug/L	0.04	0.1	1
CEF-VA08-1S	1	Phenanthrene	8310	ug/L	0.04	1	1
CEF-VA08-1S	1	Anthracene	8310	ug/L	0.03	0.05	1
CEF-VA08-1S	1	Fluoranthene	8310	ug/L	0.04	0.1	1
CEF-VA08-1S	1	Pyrene	8310	ug/L	0.04	0.05	1
CEF-VA08-1S	1	Benzo(a)anthracene	8310	ug/L	0.02	0.05	1
CEF-VA08-1S	1	Chrysene	8310	ug/L	0.02	0.05	1
CEF-VA08-1S	1	Benzo(b)fluoranthene	8310	ug/L	0.06	0.1	1
CEF-VA08-1S	1	Benzo(k)fluoranthene	8310	ug/L	0.03	0.05	1
CEF-VA08-1S	1	Benzo(a)pyrene	8310	ug/L	0.03	0.05	1
CEF-VA08-1S	1	Dibenzo(a,h)anthracene	8310	ug/L	0.07	0.1	1
CEF-VA08-1S	1	Benzo(g,h,i)perylene	8310	ug/L	0.07	0.1	1
CEF-VA08-1S	1	Indeno(1,2,3-cd)pyrene	8310	ug/L	0.02	0.05	1
CEF-VA08-1S	1	P-Terphenyl	8310	%			1

CEF-VA09-1S	1	Naphthalene	8310	ug/L	0.2	0.5	1
CEF-VA09-1S	1	Acenaphthylene	8310	ug/L	0.1	1	1
CEF-VA09-1S	1	1-Methylnaphthalene	8310	ug/L	0.1	1	1
CEF-VA09-1S	1	2-Methylnaphthalene	8310	ug/L	0.2	1	1
CEF-VA09-1S	1	Acenaphthene	8310	ug/L	0.2	0.5	1
CEF-VA09-1S	1	Fluorene	8310	ug/L	0.04	0.1	1
CEF-VA09-1S	1	Phenanthrene	8310	ug/L	0.04	1	1
CEF-VA09-1S	1	Anthracene	8310	ug/L	0.03	0.05	1
CEF-VA09-1S	1	Fluoranthene	8310	ug/L	0.04	0.1	1
CEF-VA09-1S	1	Pyrene	8310	ug/L	0.04	0.05	1
CEF-VA09-1S	1	Benzo(a)anthracene	8310	ug/L	0.02	0.05	1
CEF-VA09-1S	1	Chrysene	8310	ug/L	0.02	0.05	1
CEF-VA09-1S	1	Benzo(b)fluoranthene	8310	ug/L	0.06	0.1	1
CEF-VA09-1S	1	Benzo(k)fluoranthene	8310	ug/L	0.03	0.05	1
CEF-VA09-1S	1	Benzo(a)pyrene	8310	ug/L	0.03	0.05	1
CEF-VA09-1S	1	Dibenzo(a,h)anthracene	8310	ug/L	0.07	0.1	1
CEF-VA09-1S	1	Benzo(g,h,i)perylene	8310	ug/L	0.07	0.1	1
CEF-VA09-1S	1	Indeno(1,2,3-cd)pyrene	8310	ug/L	0.02	0.05	1
CEF-VA09-1S	1	P-Terphenyl	8310	%			1

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ENCO Laboratories

DHRS Certification No. E82277

CASE NARRATIVE

Date: December 30, 1999

Client: TetraTech NUS, Inc.

Project #: CTO 72, 0013

Lab ID: JR9836

Overview

All samples submitted were analyzed by Environmental Conservation Laboratories, Inc. in accordance with the methods referenced in the laboratory report. Any particular difficulties encountered during sample handling by Environmental Conservation Laboratories, Inc. will be discussed in the QC Remarks section below.

Quality Control Samples

HPLC (8310) A sample not associated with this project was used as the original for the matrix spike and matrix spike duplicate (MS/MSD). All recoveries (MS/MSD/LCS) were within acceptance criteria.

Due to a misunderstanding of the request as submitted on the Chain of custody, the sample volume submitted for use as the MS and MSD was analyzed as a sample. Although this data was reported, the sample was not charged as a "billable" sample.

Quality Control Remarks

HPLC (8310) None.

Other Comments

None

The analytical data presented in this report are consistent with the methods as referenced in the analytical report. Any exceptions or deviations are noted in the QC remarks section of this narrative. Should there be any questions regarding this package, please feel free to contact the undersigned for additional information.

Released By:

Environmental Conservation Laboratories, Inc.

Richard E. Camp, II
Laboratory Manager

Environmental Conservation Laboratories, Inc.
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ENCO Laboratories

DHRS Certification No. E82277

CLIENT : Tetra Tech NUS
ADDRESS: 7018 A.C. Skinner Parkway
Suite 250
Jacksonville, FL 32256

REPORT # : JR9836
DATE SUBMITTED: December 13, 1999
DATE REPORTED : December 30, 1999

ATTENTION: Mr. John Kucera

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

PROJECT #: 0013

CTO 72

12/13/99

#1	- CEF-AN03-1S	@ 13:40
#2	- CEF-AN03-MSMSD01	@ 13:40
#3	- CEF-AN03-DU01	
#4	- CEF-AN04-1S	@ 15:05
#5	- CEF-VA02-1S	@ 16:20

PROJECT MANAGER Scott D Martin
Scott D. Martin

ENCO LABORATORIES
REPORT # : JR9836
DATE REPORTED: December 30, 1999
REFERENCE : 0013
PROJECT NAME : CTO 72

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - PAH BY HPLC	CEF-AN03-1S	CEF-AN03-MSMSD01	Units
Naphthalene	0.50 U	0.50 U	µg/L
Acenaphthylene	1.0 U	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	1.0 U	µg/L
Acenaphthene	0.50 U	0.50 U	µg/L
Fluorene	0.10 U	0.10 U	µg/L
Phenanthrene	1.0 U	1.0 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	0.050 U	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	0.050 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

Surrogate: p-terphenyl	% RECOV	% RECOV	UNITS
True Value	10.0	10.0	µg/L
Actual Value	8.9	9.1	µg/L
Percent Recovery	89	91	%
Control Limits	39-148	39-148	%
Date Extracted	12/16/99	12/16/99	
Date Analyzed	12/17/99	12/17/99	

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

ENCO LABORATORIES
REPORT # : JR9836
DATE REPORTED: December 30, 1999
REFERENCE : 0013
PROJECT NAME : CTO 72

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - PAH BY HPLC	CEF-AN03-DU01	CEF-AN04-1S	Units
Naphthalene	0.50 U	0.50 U	µg/L
Acenaphthylene	1.0 U	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	1.0 U	µg/L
Acenaphthene	0.50 U	0.50 U	µg/L
Fluorene	0.10 U	0.10 U	µg/L
Phenanthrene	1.0 U	1.0 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	0.050 U	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	0.050 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
Surrogate: p-terphenyl	**% RECOV**	**% RECOV**	**UNITS**
True Value	10.0	10.0	µg/L
Actual Value	8.6	8.0	µg/L
Percent Recovery	86	80	%
Control Limits	39-148	39-148	%
Date Extracted	12/16/99	12/16/99	
Date Analyzed	12/17/99	12/17/99	

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

ENCO LABORATORIES
REPORT # : JR9836
DATE REPORTED: December 30, 1999
REFERENCE : 0013
PROJECT NAME : CTO 72

RESULTS OF ANALYSIS

EPA METHOD 3510/8310 - PAH BY HPLC	CEF-VA02-1S	LAB BLANK	Units
Naphthalene	0.50 U	0.50 U	µg/L
Acenaphthylene	1.0 U	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	1.0 U	µg/L
Acenaphthene	0.50 U	0.50 U	µg/L
Fluorene	0.10 U	0.10 U	µg/L
Phenanthrene	1.0 U	1.0 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	0.050 U	0.050 U	µg/L
Benzo(b)fluoranthene	0.10 U	0.10 U	µg/L
Benzo(k)fluoranthene	0.050 U	0.050 U	µg/L
Benzo(a)pyrene	0.050 U	0.050 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
Surrogate: p-terphenyl	**% RECOV**	**% RECOV**	**UNITS**
True Value	10.0	10.0	µg/L
Actual Value	8.0	9.0	µg/L
Percent Recovery	80	90	%
Control Limits	39-148	39-148	%
Date Extracted	12/16/99	12/16/99	
Date Analyzed	12/17/99	12/17/99	

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

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	LCS TRUE VALUE	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 3510/8310					
Naphthalene	75/ 89/ 72	10	22-130	17	20
Acenaphthene	75/ 86/ 69	10	14-163	14	19
Benzo(a)pyrene	77/ 88/ 74	1	33-137	13	36
Benzo(g,h,i)perylene	74/ 86/ 73	2	36-135	15	34

Environmental Conservation Laboratories Comprehensive QA Plan #910190

< = 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.

QSARF #_____

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ENCO CompQAP No.: 960038G/0

CHAIN OF CUSTODY RECORD

PROJECT REFERENCE	PROJECT NO.	P.O. NUMBER
CTO 72	0013	—

PROJECT LOC. (State)	SAMPLER(s) NAME	PHONE	FAX
FL	E. Parker / L. Knight	904-281-0400	904-281-0020

CLIENT NAME	CLIENT PROJECT MANAGER
Tetra Tech NUS	Jon Krucera

CLIENT ADDRESS (CITY, STATE, ZIP): 7018 A.C. Skinner PKWY, Suite 250

PAGE ___ OF ___

☒ STANDARD REPORT DELIVERY

☐ EXPEDITED REPORT DELIVERY (surcharge)

Date Due: _____

SAMPLE STATION	DATE	TIME	GRAB	COMP	SAMPLE IDENTIFICATION	SURFACE WATER	GROUND WATER	WASTEWATER	DRINKING WATER	SOIL/SOLID/SEDIMENT	NONAQUEOUS LIQUID (oil, solvent, etc.)	AIR	SLUDGE	OTHER	PAH's 8310	PRESERVATIVE							REMARKS
1	12-13-99	1340	✓		CEF-AN03-15'		X								-1								
2	12-13-99	1340	✓		CEF-AN03-MSMSD01		X								2								
3	12-13-99	0000	✓		CEF-AN03-D001		X								1								
4	12-13-99	1505	✓		CEF-AN04-15'		X								1								
5	12-13-99	1620	✓		CEF-VA02-15		X								1								
6																							
7																							
8																							
9																							
10																							
11																							
12																							
13																							
14																							

SAMPLE KIT PREPARED BY:	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
☒ JACKSONVILLE ☐ ORLANDO	12-13							
RELINQUISHED BY: (SIGNATURE) [signature]	DATE 12-13-99	TIME 1720	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
RECEIVED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	ENCO LOG NO.	REMARKS
[signature] ☒ Jacksonville ☐ Orlando	12-13-99	1720	☒ YES ☐ NO	JR 9836	

sample_no	run_number	parameter	method	units	idl	mdl	crdl_crql	dil_factor	pct_moist
CEF-AN03-1S	1	Naphthalene	8310	ug/L		0.2	0.5	1	
CEF-AN03-1S	1	Acenaphthylene	8310	ug/L		0.1	1	1	
CEF-AN03-1S	1	1-Methylnaphthalene	8310	ug/L		0.1	1	1	
CEF-AN03-1S	1	2-Methylnaphthalene	8310	ug/L		0.2	1	1	
CEF-AN03-1S	1	Acenaphthene	8310	ug/L		0.2	0.5	1	
CEF-AN03-1S	1	Fluorene	8310	ug/L		0.04	0.1	1	
CEF-AN03-1S	1	Phenanthrene	8310	ug/L		0.04	1	1	
CEF-AN03-1S	1	Anthracene	8310	ug/L		0.03	0.05	1	
CEF-AN03-1S	1	Fluoranthene	8310	ug/L		0.04	0.1	1	
CEF-AN03-1S	1	Pyrene	8310	ug/L		0.04	0.05	1	
CEF-AN03-1S	1	Benzo(a)anthracene	8310	ug/L		0.02	0.05	1	
CEF-AN03-1S	1	Chrysene	8310	ug/L		0.02	0.05	1	
CEF-AN03-1S	1	Benzo(b)fluoranthene	8310	ug/L		0.06	0.1	1	
CEF-AN03-1S	1	Benzo(k)fluoranthene	8310	ug/L		0.03	0.05	1	
CEF-AN03-1S	1	Benzo(a)pyrene	8310	ug/L		0.03	0.05	1	
CEF-AN03-1S	1	Dibenzo(a,h)anthracene	8310	ug/L		0.07	0.1	1	
CEF-AN03-1S	1	Benzo(g,h,i)perylene	8310	ug/L		0.07	0.1	1	
CEF-AN03-1S	1	Indeno(1,2,3-cd)pyrene	8310	ug/L		0.02	0.05	1	
CEF-AN03-1S	1	P-Terphenyl	8310	%				1	
CEF-AN03-DU01	1	Naphthalene	8310	ug/L		0.2	0.5	1	
CEF-AN03-DU01	1	Acenaphthylene	8310	ug/L		0.1	1	1	
CEF-AN03-DU01	1	1-Methylnaphthalene	8310	ug/L		0.1	1	1	
CEF-AN03-DU01	1	2-Methylnaphthalene	8310	ug/L		0.2	1	1	
CEF-AN03-DU01	1	Acenaphthene	8310	ug/L		0.2	0.5	1	
CEF-AN03-DU01	1	Fluorene	8310	ug/L		0.04	0.1	1	
CEF-AN03-DU01	1	Phenanthrene	8310	ug/L		0.04	1	1	
CEF-AN03-DU01	1	Anthracene	8310	ug/L		0.03	0.05	1	
CEF-AN03-DU01	1	Fluoranthene	8310	ug/L		0.04	0.1	1	
CEF-AN03-DU01	1	Pyrene	8310	ug/L		0.04	0.05	1	
CEF-AN03-DU01	1	Benzo(a)anthracene	8310	ug/L		0.02	0.05	1	
CEF-AN03-DU01	1	Chrysene	8310	ug/L		0.02	0.05	1	
CEF-AN03-DU01	1	Benzo(b)fluoranthene	8310	ug/L		0.06	0.1	1	
CEF-AN03-DU01	1	Benzo(k)fluoranthene	8310	ug/L		0.03	0.05	1	
CEF-AN03-DU01	1	Benzo(a)pyrene	8310	ug/L		0.03	0.05	1	
CEF-AN03-DU01	1	Dibenzo(a,h)anthracene	8310	ug/L		0.07	0.1	1	
CEF-AN03-DU01	1	Benzo(g,h,i)perylene	8310	ug/L		0.07	0.1	1	
CEF-AN03-DU01	1	Indeno(1,2,3-cd)pyrene	8310	ug/L		0.02	0.05	1	
CEF-AN03-DU01	1	P-Terphenyl	8310	%				1	

CEF-AN03-MSMSD01	1	Naphthalene	8310	ug/L	0.2	0.5	1
CEF-AN03-MSMSD01	1	Acenaphthylene	8310	ug/L	0.1	1	1
CEF-AN03-MSMSD01	1	1-Methylnaphthalene	8310	ug/L	0.1	1	1
CEF-AN03-MSMSD01	1	2-Methylnaphthalene	8310	ug/L	0.2	1	1
CEF-AN03-MSMSD01	1	Acenaphthene	8310	ug/L	0.2	0.5	1
CEF-AN03-MSMSD01	1	Fluorene	8310	ug/L	0.04	0.1	1
CEF-AN03-MSMSD01	1	Phenanthrene	8310	ug/L	0.04	1	1
CEF-AN03-MSMSD01	1	Anthracene	8310	ug/L	0.03	0.05	1
CEF-AN03-MSMSD01	1	Fluoranthene	8310	ug/L	0.04	0.1	1
CEF-AN03-MSMSD01	1	Pyrene	8310	ug/L	0.04	0.05	1
CEF-AN03-MSMSD01	1	Benzo(a)anthracene	8310	ug/L	0.02	0.05	1
CEF-AN03-MSMSD01	1	Chrysene	8310	ug/L	0.02	0.05	1
CEF-AN03-MSMSD01	1	Benzo(b)fluoranthene	8310	ug/L	0.06	0.1	1
CEF-AN03-MSMSD01	1	Benzo(k)fluoranthene	8310	ug/L	0.03	0.05	1
CEF-AN03-MSMSD01	1	Benzo(a)pyrene	8310	ug/L	0.03	0.05	1
CEF-AN03-MSMSD01	1	Dibenzo(a,h)anthracene	8310	ug/L	0.07	0.1	1
CEF-AN03-MSMSD01	1	Benzo(g,h,i)perylene	8310	ug/L	0.07	0.1	1
CEF-AN03-MSMSD01	1	Indeno(1,2,3-cd)pyrene	8310	ug/L	0.02	0.05	1
CEF-AN03-MSMSD01	1	P-Terphenyl	8310	%			1
CEF-AN04-1S	1	Naphthalene	8310	ug/L	0.2	0.5	1
CEF-AN04-1S	1	Acenaphthylene	8310	ug/L	0.1	1	1
CEF-AN04-1S	1	1-Methylnaphthalene	8310	ug/L	0.1	1	1
CEF-AN04-1S	1	2-Methylnaphthalene	8310	ug/L	0.2	1	1
CEF-AN04-1S	1	Acenaphthene	8310	ug/L	0.2	0.5	1
CEF-AN04-1S	1	Fluorene	8310	ug/L	0.04	0.1	1
CEF-AN04-1S	1	Phenanthrene	8310	ug/L	0.04	1	1
CEF-AN04-1S	1	Anthracene	8310	ug/L	0.03	0.05	1
CEF-AN04-1S	1	Fluoranthene	8310	ug/L	0.04	0.1	1
CEF-AN04-1S	1	Pyrene	8310	ug/L	0.04	0.05	1
CEF-AN04-1S	1	Benzo(a)anthracene	8310	ug/L	0.02	0.05	1
CEF-AN04-1S	1	Chrysene	8310	ug/L	0.02	0.05	1
CEF-AN04-1S	1	Benzo(b)fluoranthene	8310	ug/L	0.06	0.1	1
CEF-AN04-1S	1	Benzo(k)fluoranthene	8310	ug/L	0.03	0.05	1
CEF-AN04-1S	1	Benzo(a)pyrene	8310	ug/L	0.03	0.05	1
CEF-AN04-1S	1	Dibenzo(a,h)anthracene	8310	ug/L	0.07	0.1	1
CEF-AN04-1S	1	Benzo(g,h,i)perylene	8310	ug/L	0.07	0.1	1
CEF-AN04-1S	1	Indeno(1,2,3-cd)pyrene	8310	ug/L	0.02	0.05	1
CEF-AN04-1S	1	P-Terphenyl	8310	%			1

CEF-VA02-1S	1	Naphthalene	8310	ug/L	0.2	0.5	1
CEF-VA02-1S	1	Acenaphthylene	8310	ug/L	0.1	1	1
CEF-VA02-1S	1	1-Methylnaphthalene	8310	ug/L	0.1	1	1
CEF-VA02-1S	1	2-Methylnaphthalene	8310	ug/L	0.2	1	1
CEF-VA02-1S	1	Acenaphthene	8310	ug/L	0.2	0.5	1
CEF-VA02-1S	1	Fluorene	8310	ug/L	0.04	0.1	1
CEF-VA02-1S	1	Phenanthrene	8310	ug/L	0.04	1	1
CEF-VA02-1S	1	Anthracene	8310	ug/L	0.03	0.05	1
CEF-VA02-1S	1	Fluoranthene	8310	ug/L	0.04	0.1	1
CEF-VA02-1S	1	Pyrene	8310	ug/L	0.04	0.05	1
CEF-VA02-1S	1	Benzo(a)anthracene	8310	ug/L	0.02	0.05	1
CEF-VA02-1S	1	Chrysene	8310	ug/L	0.02	0.05	1
CEF-VA02-1S	1	Benzo(b)fluoranthene	8310	ug/L	0.06	0.1	1
CEF-VA02-1S	1	Benzo(k)fluoranthene	8310	ug/L	0.03	0.05	1
CEF-VA02-1S	1	Benzo(a)pyrene	8310	ug/L	0.03	0.05	1
CEF-VA02-1S	1	Dibenzo(a,h)anthracene	8310	ug/L	0.07	0.1	1
CEF-VA02-1S	1	Benzo(g,h,i)perylene	8310	ug/L	0.07	0.1	1
CEF-VA02-1S	1	Indeno(1,2,3-cd)pyrene	8310	ug/L	0.02	0.05	1
CEF-VA02-1S	1	P-Terphenyl	8310	%			1

Environmental Conservation Laboratories, Inc.
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www.encolabs.com

ENCO Laboratories

DHRS Certification No. E82277

CLIENT : Tetra Tech NUS
ADDRESS: 7018 A.C. Skinner Parkway
Suite 250
Jacksonville, FL 32256

REPORT # : JR1052
DATE SUBMITTED: December 30, 1999
DATE REPORTED : January 6, 2000

ATTENTION: Mr. John Kucera

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

PROJECT #: 0013

103rd Street Pipeline

12/30/99

#1 - CEF-VA02-1S @ 15:57

PROJECT MANAGER Scott D. Martin

ENCO LABORATORIES
REPORT # : JR1052
DATE REPORTED: January 6, 2000
REFERENCE : 0013
PROJECT NAME : 103rd Street Pipeline

RESULTS OF ANALYSIS

EPA METHOD 8021 - VOLATILE ORGANICS	CEF-VA02-1S	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U	2.0 U	µg/L
Benzene	1.0 U	1.0 U	µg/L
Toluene	1.0 U	1.0 U	µg/L
Chlorobenzene	1.0 U	1.0 U	µg/L
Ethylbenzene	1.0 U	1.0 U	µg/L
m-Xylene & p-Xylene	1.0 U	1.0 U	µg/L
o-Xylene	1.0 U	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	1.0 U	µg/L
Surrogate:	**% RECOV**	**% RECOV**	**LIMITS**
Bromofluorobenzene	100	98	65-129
Date Analyzed	01/03/00	01/03/00	

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

ENCO LABORATORIES
REPORT # : JR1052
DATE REPORTED: January 6, 2000
REFERENCE : 0013
PROJECT NAME : 103rd Street Pipeline

RESULTS OF ANALYSIS

EPA METHOD 8021 - VOLATILE ORGANICS	CEF-VA02-1S	LAB BLANK	Units
Dichlorodifluoromethane	1.0 U	1.0 U	µg/L
Chloromethane	2.0 U	2.0 U	µg/L
Vinyl Chloride	1.0 U	1.0 U	µg/L
Bromomethane	1.0 U	1.0 U	µg/L
Chloroethane	2.0 U	2.0 U	µg/L
Trichlorofluoromethane	2.0 U	2.0 U	µg/L
1,1-Dichloroethene	1.0 U	1.0 U	µg/L
Methylene Chloride	2.0 U	2.0 U	µg/L
t-1,2-Dichloroethene	1.0 U	1.0 U	µg/L
1,1-Dichloroethane	1.0 U	1.0 U	µg/L
c-1,2-Dichloroethene	1.0 U	1.0 U	µg/L
Chloroform	1.0 U	1.0 U	µg/L
1,1,1-Trichloroethane	1.0 U	1.0 U	µg/L
Carbon Tetrachloride	1.0 U	1.0 U	µg/L
1,2-Dichloroethane	1.0 U	1.0 U	µg/L
Trichloroethene	1.0 U	1.0 U	µg/L
1,2-Dichloropropane	1.0 U	1.0 U	µg/L
Bromodichloromethane	1.0 U	1.0 U	µg/L
c-1,3-Dichloropropene	1.0 U	1.0 U	µg/L
t-1,3-Dichloropropene	1.0 U	1.0 U	µg/L
1,1,2-Trichloroethane	1.0 U	1.0 U	µg/L
Tetrachloroethene	1.0 U	1.0 U	µg/L
Dibromochloromethane	1.0 U	1.0 U	µg/L
Chlorobenzene	1.0 U	1.0 U	µg/L
Bromoform	1.0 U	1.0 U	µg/L
1,1,2,2-Tetrachloroethane	1.0 U	1.0 U	µg/L
1,3-Dichlorobenzene	1.0 U	1.0 U	µg/L
1,4-Dichlorobenzene	1.0 U	1.0 U	µg/L
1,2-Dichlorobenzene	1.0 U	1.0 U	µg/L
Surrogate:	**% RECOV**	**% RECOV**	**LIMITS**
Bromofluorobenzene	94	87	52-167
Date Analyzed	01/03/00	01/03/00	

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

ENCO LABORATORIES
REPORT # : JR1052
DATE REPORTED: January 6, 2000
REFERENCE : 0013
PROJECT NAME : 103rd Street Pipeline

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 602/6230D/8020/8021				
Benzene	100/ 98/ 94	60-138	2	17
Toluene	102/100/ 94	57-138	2	16
Ethylbenzene	114/116/108	49-144	2	17
o-Xylene	96/ 96/ 92	50-151	<1	17
EPA Method 601/6230D/8010/8021				
Methylene Chloride	125/129/126	51-155	3	29
Chloroform	118/115/115	63-145	2	16
Carbon Tetrachloride	115/108/120	64-146	6	21
Trichloroethene	134/115/120	60-140	15	24
Tetrachloroethene	126/113/112	66-146	11	21
Chlorobenzene	116/110/105	70-137	5	19

Environmental Conservation Laboratories Comprehensive QA Plan #910190

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

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QSARF #

ENVIRONMENTAL CONSERVATION LABORATORIES

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Orlando, Florida 32824-8529
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Cary, North Carolina 27513
Ph. (919) 677-1669 • Fax (919) 677-9846

ENCO CompQAP No.: 960038G/0

CHAIN OF CUSTODY RECORD

PROJECT REFERENCE: 103rd Street Pipeline
PROJECT NO.: 0013
P.O. NUMBER:
PAGE 1 OF 1
PROJECT LOC. (State): FL
SAMPLER(s) NAME: J. Kucera / M. Dale
PHONE: 281-0400
FAX: 281-0070
CLIENT NAME: Tetra Tech NUS
CLIENT PROJECT MANAGER: J. Kucera
CLIENT ADDRESS (CITY, STATE, ZIP): 7018 A.C. Skinner Parkway #250

☒ STANDARD REPORT DELIVERY
☐ EXPEDITED REPORT DELIVERY (surcharge) 7 Day Turnaround
Date Due: 1/7/00

SAMPLE NUMBER	DATE	TIME	GRAB	COMP	SAMPLE IDENTIFICATION	SURFACE WATER	GROUND WATER	WASTEWATER	DRINKING WATER	SOIL/SOLID/SEDIMENT	NONAQUEOUS LIQUID (or solvent mix)	AIR	SLUDGE	OTHER	HCL (PRESERVATIVE)	BD21 (Surrogate)	REMARKS
1	12/30/99	1557	X		CEF-VA02-TS		X								2		CTO 072
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	
13																	
14																	

NUMBER OF CONTAINERS SUBMITTED: 2

SAMPLE KIT PREPARED BY: ☒ JACKSONVILLE ☐ ORLANDO	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
RELINQUISHED BY: (SIGNATURE)	DATE 12/30/99	TIME 1650	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
RECEIVED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

RECEIVED FOR LABORATORY BY: (SIGNATURE) ☒ Jacksonville ☐ Orlando	DATE	TIME	CUSTODY INTACT	ENCO LOG NO.	REMARKS
[illegible]	12/30/99	1650	☒ YES ☐ NO	JR1052	

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ENCO Laboratories

DHRS Certification No. E82277

CLIENT : Tetra Tech NUS
ADDRESS: 7018 A.C. Skinner Parkway
Suite 250
Jacksonville, FL 32256

REPORT # : JR1636
DATE SUBMITTED: February 9, 2000
DATE REPORTED : February 14, 2000

ATTENTION: Mr. John Kucera

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

PROJECT #: 0013DM0050115

02/09/00

#1 - CEF-AN14-1S

PROJECT MANAGER Scott D. Martin

RECEIVED
FEB 17 2000
TETRA TECH NUS
JACKSONVILLE FL

ENCO LABORATORIES
REPORT # : JR1636
DATE REPORTED: February 14, 2000
REFERENCE : 0013DM0050115

RESULTS OF ANALYSIS

EPA METHOD 8310 - PAH BY HPLC	CEF-AN14-1S	LAB BLANK	Units
Naphthalene	0.50 U	0.50 U	µg/L
Acenaphthylene	1.0 U	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	1.0 U	µg/L
Acenaphthene	0.50 U	0.50 U	µg/L
Fluorene	0.10 U	0.10 U	µg/L
Phenanthrene	1.0 U	1.0 U	µg/L
Anthracene	0.20 U	0.20 U	µg/L
Fluoranthene	0.10 U	0.10 U	µg/L
Pyrene	0.10 U	0.10 U	µg/L
Benzo(a)anthracene	0.10 U	0.10 U	µg/L
Chrysene	0.10 U	0.10 U	µg/L
Benzo(b)fluoranthene	0.10 U	0.10 U	µg/L
Benzo(k)fluoranthene	0.10 U	0.10 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	0.10 U	0.10 U	µg/L
Surrogate:	**% RECOV**	**% RECOV**	**LIMITS**
p-terphenyl	93	106	43-148
Date Extracted	02/11/00	02/11/00	
Date Analyzed	02/12/00	02/12/00	

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

ENCO LABORATORIES
REPORT # : JR1636
DATE REPORTED: February 14, 2000
REFERENCE : 0013DM0050115

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 8310				
Naphthalene	81/ 85/ 75	59-111	5	12
Acenaphthene	80/ 81/ 70	58-128	1	13
Benzo(a)pyrene	104/110/103	78-134	6	15
Benzo(g,h,i)perylene	105/111/107	62-115	6	30

Environmental Conservation Laboratories Comprehensive QA Plan #910190

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

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ENCO Laboratories

DHRS Certification No. E82277

CLIENT : Tetra Tech NUS
ADDRESS: 7018 A.C. Skinner Parkway
Suite 250
Jacksonville, FL 32256

REPORT # : JR9978
DATE SUBMITTED: December 22, 1999
DATE REPORTED : January 10, 2000

ATTENTION: Mr. John Kucera

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

PROJECT #: 0013

103rd St. Pipeline

12/22/99

#1 - CEF-AN08-SB-07-3
#2 - CEF-AN08-SB-06-2.5
#3 - CEF-AN08-SB-05-2.5
#4 - CEF-AN08-SB-09-2.5
#5 - CEF-AN08-SB-10-2.5
#6 - CEF-AN09-SB-08-2.5
#7 - CEF-AN09-SB-09-2.5
#8 - CEF-AN09-SB-06-3
#9 - CEF-AN09-SB-10-2.5
#10 - CEF-AN09-SB-07-2.5
#11 - CEF-VA08-SB-04-8.5
#12 - CEF-VA08-SB-07-9
#13 - CEF-VA08-SB-03-9
#14 - CEF-VA08-SB-06-6.5

PROJECT MANAGER _____
Scott D. Martin

ENCO LABORATORIES
REPORT # : JR9978
DATE REPORTED: January 10, 2000
REFERENCE : 0013
PROJECT NAME : 103rd St. Pipeline

RESULTS OF ANALYSIS

EPA METHOD 8310 - PAH BY HPLC	CEF-AN08-SB-07-3	CEF-AN08-SB-06-2.5	Units
Naphthalene	20 U	18 U	µg/Kg
Acenaphthylene	39 U	35 U	µg/Kg
1-Methylnaphthalene	39 U	35 U	µg/Kg
2-Methylnaphthalene	39 U	35 U	µg/Kg
Acenaphthene	20 U	18 U	µg/Kg
Fluorene	3.9 U	3.5 U	µg/Kg
Phenanthrene	39 U	35 U	µg/Kg
Anthracene	2.0 U	2.0 U	µg/Kg
Fluoranthene	**8.6**	3.5 U	µg/Kg
Pyrene	**3.2** I	**3.9** I	µg/Kg
Benzo(a)anthracene	2.0 U	1.8 U	µg/Kg
Chrysene	**3.9**	1.8 U	µg/Kg
Benzo(b)fluoranthene	**7.0** I	3.0 U	µg/Kg
Benzo(k)fluoranthene	2.0 U	2.0 U	µg/Kg
Benzo(a)pyrene	**13**	2.0 U	µg/Kg
Dibenzo(a,h)anthracene	3.9 U	3.5 U	µg/Kg
Benzo(g,h,i)perylene	3.9 U	3.5 U	µg/Kg
Indeno(1,2,3-cd)pyrene	2.0 U	1.8 U	µg/Kg
Surrogate P-Terphenyl:	**% RECOV**	**% RECOV**	**Units**
True Value	10.0	10.0	µg/Kg
Actual Value	10.0	9.8	µg/Kg
Percent Recovery	100	98	%
Control Limit	50-146	50-146	%
Date Extracted	12/28/99	12/28/99	
Date Analyzed	12/30/99	12/30/99	

MISCELLANEOUS	METHOD	CEF-AN08-SB-07-3	CEF-AN08-SB-06-2.5	Units
Percent Solids	SM2540G	**85**	**95**	%
Date Analyzed		12/28/99	12/28/99	

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).
DW = Analysis is reported on a "dry weight" basis.

ENCO LABORATORIES
REPORT # : JR9978
DATE REPORTED: January 10, 2000
REFERENCE : 0013
PROJECT NAME : 103rd St. Pipeline

RESULTS OF ANALYSIS

EPA METHOD 8310 - PAH BY HPLC	CEF-AN08-SB-05-2.5	CEF-AN08-SB-09-2.5	Units
Naphthalene	20 U	20 U	µg/Kg
Acenaphthylene	40 U	39 U	µg/Kg
1-Methylnaphthalene	40 U	39 U	µg/Kg
2-Methylnaphthalene	40 U	39 U	µg/Kg
Acenaphthene	20 U	20 U	µg/Kg
Fluorene	4.0 U	3.9 U	µg/Kg
Phenanthrene	40 U	39 U	µg/Kg
Anthracene	2.0 U	2.0 U	µg/Kg
Fluoranthene	4.0 U	3.9 U	µg/Kg
Pyrene	2.0 U	2.0 U	µg/Kg
Benzo(a)anthracene	2.0 U	2.0 U	µg/Kg
Chrysene	2.0 U	2.0 U	µg/Kg
Benzo(b)fluoranthene	4.0 U	4.0 U	µg/Kg
Benzo(k)fluoranthene	2.0 U	2.0 U	µg/Kg
Benzo(a)pyrene	2.0 U	2.0 U	µg/Kg
Dibenzo(a,h)anthracene	4.0 U	3.9 U	µg/Kg
Benzo(g,h,i)perylene	4.0 U	3.9 U	µg/Kg
Indeno(1,2,3-cd)pyrene	2.0 U	2.0 U	µg/Kg
Surrogate P-Terphenyl:	**% RECOV**	**% RECOV**	**Units**
True Value	10.0	10.0	µg/Kg
Actual Value	9.0	10.2	µg/Kg
Percent Recovery	90	102	%
Control Limit	50-146	50-146	%
Date Extracted	12/28/99	12/28/99	
Date Analyzed	12/30/99	12/30/99	

MISCELLANEOUS	METHOD	CEF-AN08-SB-05-2.5	CEF-AN08-SB-09-2.5	Units
Percent Solids	SM2540G	**84**	**85**	%
Date Analyzed		12/28/99	12/28/99	

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

ENCO LABORATORIES
REPORT # : JR9978
DATE REPORTED: January 10, 2000
REFERENCE : 0013
PROJECT NAME : 103rd St. Pipeline

RESULTS OF ANALYSIS

EPA METHOD 8310 - PAH BY HPLC	CEF-AN08-SB-10-2.5	CEF-AN09-SB-08-2.5	Units
Naphthalene	19 U	21 U	µg/Kg
Acenaphthylene	39 U	42 U	µg/Kg
1-Methylnaphthalene	39 U	42 U	µg/Kg
2-Methylnaphthalene	39 U	42 U	µg/Kg
Acenaphthene	19 U	21 U	µg/Kg
Fluorene	3.9 U	4.2 U	µg/Kg
Phenanthrene	39 U	42 U	µg/Kg
Anthracene	2.0 U	2.0 U	µg/Kg
Fluoranthene	**8.0**	4.2 U	µg/Kg
Pyrene	**7.8**	2.1 U	µg/Kg
Benzo(a)anthracene	1.9 U	2.1 U	µg/Kg
Chrysene	**5.0**	2.1 U	µg/Kg
Benzo(b)fluoranthene	**7.0** I	4.0 U	µg/Kg
Benzo(k)fluoranthene	**2.0** I	2.0 U	µg/Kg
Benzo(a)pyrene	**6.0**	2.0 U	µg/Kg
Dibenzo(a,h)anthracene	3.9 U	4.2 U	µg/Kg
Benzo(g,h,i)perylene	3.9 U	4.2 U	µg/Kg
Indeno(1,2,3-cd)pyrene	1.9 U	2.1 U	µg/Kg
Surrogate P-Terphenyl:	**% RECOV**	**% RECOV**	**Units**
True Value	10.0	10.0	µg/Kg
Actual Value	10.1	10.8	µg/Kg
Percent Recovery	101	108	%
Control Limit	50-146	50-146	%
Date Extracted	12/28/99	12/28/99	
Date Analyzed	12/30/99	12/30/99	

MISCELLANEOUS	METHOD	CEF-AN08-SB-10-2.5	CEF-AN09-SB-08-2.5	Units
Percent Solids	SM2540G	**86**	**79**	%
Date Analyzed		12/28/99	12/28/99	

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).
DW = Analysis is reported on a "dry weight" basis.

ENCO LABORATORIES
REPORT # : JR9978
DATE REPORTED: January 10, 2000
REFERENCE : 0013
PROJECT NAME : 103rd St. Pipeline

RESULTS OF ANALYSIS

EPA METHOD 8310 - PAH BY HPLC	CEF-AN09-SB-09-2.5	CEF-AN09-SB-06-3	Units
Naphthalene	20 U	20 U	µg/Kg
Acenaphthylene	39 U	39 U	µg/Kg
1-Methylnaphthalene	39 U	39 U	µg/Kg
2-Methylnaphthalene	39 U	39 U	µg/Kg
Acenaphthene	20 U	20 U	µg/Kg
Fluorene	3.9 U	3.9 U	µg/Kg
Phenanthrene	39 U	39 U	µg/Kg
Anthracene	2.0 U	2.0 U	µg/Kg
Fluoranthene	3.9 U	3.9 U	µg/Kg
Pyrene	2.0 U	2.0 U	µg/Kg
Benzo(a)anthracene	2.0 U	2.0 U	µg/Kg
Chrysene	2.0 U	2.0 U	µg/Kg
Benzo(b)fluoranthene	**10**	4.0 U	µg/Kg
Benzo(k)fluoranthene	2.0 U	2.0 U	µg/Kg
Benzo(a)pyrene	2.0 U	2.0 U	µg/Kg
Dibenzo(a,h)anthracene	3.9 U	3.9 U	µg/Kg
Benzo(g,h,i)perylene	3.9 U	3.9 U	µg/Kg
Indeno(1,2,3-cd)pyrene	2.0 U	2.0 U	µg/Kg
Surrogate P-Terphenyl:	**% RECOV**	**% RECOV**	**Units**
True Value	10.0	10.0	µg/Kg
Actual Value	11.3	12.4	µg/Kg
Percent Recovery	113	124	%
Control Limit	50-146	50-146	%
Date Extracted	12/28/99	12/28/99	
Date Analyzed	12/30/99	12/30/99	

MISCELLANEOUS	METHOD	CEF-AN09-SB-09-2.5	CEF-AN09-SB-06-3	Units
Percent Solids	SM2540G	**85**	**85**	%
Date Analyzed		12/28/99	12/28/99	

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

ENCO LABORATORIES
REPORT # : JR9978
DATE REPORTED: January 10, 2000
REFERENCE : 0013
PROJECT NAME : 103rd St. Pipeline

RESULTS OF ANALYSIS

EPA METHOD 8310 - PAH BY HPLC	CEF-AN09-SB-10-2.5	CEF-AN09-SB-07-2.5		Units
Naphthalene	19 U	94 U	D1	µg/Kg
Acenaphthylene	**65**	190 U	D1	µg/Kg
1-Methylnaphthalene	37 U	190 U	D1	µg/Kg
2-Methylnaphthalene	37 U	190 U	D1	µg/Kg
Acenaphthene	19 U	**530**	D1	µg/Kg
Fluorene	3.7 U	**27** I	D1	µg/Kg
Phenanthrene	37 U	190 U	D1	µg/Kg
Anthracene	**2.0** I	**31**	D1	µg/Kg
Fluoranthene	**46**	19 U	D1	µg/Kg
Pyrene	**25**	**340**	D1	µg/Kg
Benzo(a)anthracene	**8.2**	**110**	D1	µg/Kg
Chrysene	**22**	**200**	D1	µg/Kg
Benzo(b)fluoranthene	**67**	**350**	D1	µg/Kg
Benzo(k)fluoranthene	2.0 U	**160**	D1	µg/Kg
Benzo(a)pyrene	**36**	**320**	D1	µg/Kg
Dibenzo(a,h)anthracene	**37**	**360**	D1	µg/Kg
Benzo(g,h,i)perylene	**19**	**270**	D1	µg/Kg
Indeno(1,2,3-cd)pyrene	**27**	**220**	D1	µg/Kg

Surrogate P-Terphenyl:	% RECOV	% RECOV	Units
True Value	10.0	10.0	µg/Kg
Actual Value	8.0	7.5	µg/Kg
Percent Recovery	80	75	%
Control Limit	50-146	50-146	%
Date Extracted	12/28/99	12/28/99	
Date Analyzed	12/30/99	01/05/00	

MISCELLANEOUS	METHOD	CEF-AN09-SB-10-2.5	CEF-AN09-SB-07-2.5	Units
Percent Solids	SM2540G	**89**	**89**	%
Date Analyzed		12/28/99	12/28/99	

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).
DW = Analysis is reported on a "dry weight" basis.
D1 = Analyte value determined from a 1:5 dilution.

ENCO LABORATORIES
REPORT # : JR9978
DATE REPORTED: January 10, 2000
REFERENCE : 0013
PROJECT NAME : 103rd St. Pipeline

RESULTS OF ANALYSIS

EPA METHOD 8310 - PAH BY HPLC	CEF-VA08-SB-04-8.5	CEF-VA08-SB-07-9	Units
Naphthalene	18 U	19 U	µg/Kg
Acenaphthylene	37 U	37 U	µg/Kg
1-Methylnaphthalene	**46**	37 U	µg/Kg
2-Methylnaphthalene	37 U	**64**	µg/Kg
Acenaphthene	18 U	19 U	µg/Kg
Fluorene	**4.1** I	**94**	µg/Kg
Phenanthrene	**48**	180 U D1	µg/Kg
Anthracene	**10**	**4.0**	µg/Kg
Fluoranthene	**100**	**120**	µg/Kg
Pyrene	**64**	**110** D1	µg/Kg
Benzo(a)anthracene	**8.0**	**130** D1	µg/Kg
Chrysene	**11**	**180** D1	µg/Kg
Benzo(b)fluoranthene	**15**	**160** D1	µg/Kg
Benzo(k)fluoranthene	2.0 U	**83** D1	µg/Kg
Benzo(a)pyrene	**12**	**160** D1	µg/Kg
Dibenzo(a,h)anthracene	3.7 U	3.7 U	µg/Kg
Benzo(g,h,i)perylene	3.7 U	**170** D1	µg/Kg
Indeno(1,2,3-cd)pyrene	1.8 U	**160** D1	µg/Kg

Surrogate P-Terphenyl:	% RECOV	% RECOV	Units
True Value	10.0	10.0	µg/Kg
Actual Value	N/A	6.1	µg/Kg
Percent Recovery	N/A	61	%
Control Limit	50-146	50-146	%
Date Extracted	12/28/99	12/28/99	
Date Analyzed	12/30/99	01/05/00	

MISCELLANEOUS	METHOD	CEF-VA08-SB-04-8.5	CEF-VA08-SB-07-9	Units
Percent Solids	SM2540G	**91**	**90**	%
Date Analyzed		12/28/99	12/28/99	

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).
DW = Analysis is reported on a "dry weight" basis.
D1 = Analyte value determined from a 1:5 dilution.

ENCO LABORATORIES
REPORT # : JR9978
DATE REPORTED: January 10, 2000
REFERENCE : 0013
PROJECT NAME : 103rd St. Pipeline

RESULTS OF ANALYSIS

EPA METHOD 8310 - PAH BY HPLC	CEF-VA08-SB-03-9	CEF-VA08-SB-06-6.5	Units
Naphthalene	19 U	18 U	µg/Kg
Acenaphthylene	38 U	36 U	µg/Kg
1-Methylnaphthalene	38 U	360 U D2	µg/Kg
2-Methylnaphthalene	**67**	360 U D2	µg/Kg
Acenaphthene	**140**	180 U D2	µg/Kg
Fluorene	**26**	36 U D2	µg/Kg
Phenanthrene	38 U	360 U D2	µg/Kg
Anthracene	2.0 U	18 U D2	µg/Kg
Fluoranthene	**92**	**210** D2	µg/Kg
Pyrene	**56**	**160** D2	µg/Kg
Benzo(a)anthracene	**16**	**79** D2	µg/Kg
Chrysene	**39**	**180** D2	µg/Kg
Benzo(b)fluoranthene	**98**	**260** D2	µg/Kg
Benzo(k)fluoranthene	**32**	**150** D2	µg/Kg
Benzo(a)pyrene	**86**	**210** D2	µg/Kg
Dibenzo(a,h)anthracene	**36**	**290** D2	µg/Kg
Benzo(g,h,i)perylene	**54**	**260** D2	µg/Kg
Indeno(1,2,3-cd)pyrene	**57**	**230** D2	µg/Kg
Surrogate P-Terphenyl:	**% RECOV**	**% RECOV**	**Units**
True Value	10.0	10.0	µg/Kg
Actual Value	9.6	13.6	µg/Kg
Percent Recovery	96	136	%
Control Limit	50-146	50-146	%
Date Extracted	12/28/99	12/28/99	
Date Analyzed	12/30/99	01/05/00	

MISCELLANEOUS	METHOD	CEF-VA08-SB-03-9	CEF-VA08-SB-06-6.5	Units
Percent Solids	SM2540G	**88**	**92**	%
Date Analyzed		12/28/99	12/28/99	

U = Compound was analyzed for but not detected to the level shown.
DW = Analysis is reported on a "dry weight" basis.
D2 = Analyte value determined from a 1:10 dilution.

ENCO LABORATORIES
REPORT # : JR9978
DATE REPORTED: January 10, 2000
REFERENCE : 0013
PROJECT NAME : 103rd St. Pipeline

RESULTS OF ANALYSIS

EPA METHOD 8310 - PAH BY HPLC	LAB BLANK	LAB BLANK	Units
Naphthalene	17 U	17 U	µg/Kg
Acenaphthylene	33 U	33 U	µg/Kg
1-Methylnaphthalene	33 U	33 U	µg/Kg
2-Methylnaphthalene	33 U	33 U	µg/Kg
Acenaphthene	17 U	17 U	µg/Kg
Fluorene	3.3 U	3.3 U	µg/Kg
Phenanthrene	33 U	33 U	µg/Kg
Anthracene	2.0 U	2.0 U	µg/Kg
Fluoranthene	3.3 U	3.3 U	µg/Kg
Pyrene	1.7 U	1.7 U	µg/Kg
Benzo(a)anthracene	1.7 U	1.7 U	µg/Kg
Chrysene	1.7 U	1.7 U	µg/Kg
Benzo(b)fluoranthene	3.0 U	3.0 U	µg/Kg
Benzo(k)fluoranthene	2.0 U	2.0 U	µg/Kg
Benzo(a)pyrene	2.0 U	2.0 U	µg/Kg
Dibenzo(a,h)anthracene	3.3 U	3.3 U	µg/Kg
Benzo(g,h,i)perylene	3.3 U	3.3 U	µg/Kg
Indeno(1,2,3-cd)pyrene	1.7 U	1.7 U	µg/Kg
Surrogate P-Terphenyl:	**% RECOV**	**% RECOV**	**Units**
True Value	10.0	10.0	µg/Kg
Actual Value	10.6	10.9	µg/Kg
Percent Recovery	106	109	%
Control Limit	50-146	50-146	%
Date Extracted	12/28/99	12/28/99	
Date Analyzed	12/30/99	12/30/99	

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

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	LCS TARGET VALUE	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 8310					
Naphthalene	110/112/119	10	26-125	2	45
Acenaphthene	82/ 81/ 88	10	20-143	1	35
Benzo(a)pyrene	93/ 91/ 93	1	42-138	2	38
Benzo(g,h,i)perylene	104/105/106	2	51-142	<1	26

Environmental Conservation Laboratories Comprehensive QA Plan #910190

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

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QSARF #_____

ENVIRONMENTAL CONSERVATION LABORATORIES

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ENCO CompQAP No.: 960038G/0

CHAIN OF CUSTODY RECORD

PROJECT REFERENCE	PROJECT NO.	P.O. NUMBER
103rd Street Pipeline	0013	-

PROJECT LOC. (State)	SAMPLER(s) NAME	PHONE	FAX
FL	Jon Kucera / Eric Parke	281-0400	281-0070

CLIENT NAME	CLIENT PROJECT MANAGER
Tetra Tech NUS	J. Kucera

CLIENT ADDRESS (CITY, STATE, ZIP): 7018 A.C. Skinner Parkway Suite 250 Jax, FL 32256

PAGE 1 OF 1

☒ STANDARD REPORT DELIVERY
☐ EXPEDITED REPORT DELIVERY (surcharge)
Date Due:_____

MATRIX TYPE / REQUIRED ANALYSIS

SAMPLE STATION	DATE	TIME	GRAB	COMP	SAMPLE IDENTIFICATION	SURFACE WATER	GROUND WATER	WASTEWATER	DRINKING WATER	SOIL/SOLID/SEDIMENT	NONAQUEOUS LIQUID (oil, solvent, etc.)	AIR	SLUDGE	OTHER	8310								REMARKS
															None	PRESERVATIVE							
															NUMBER OF CONTAINERS SUBMITTED								
1	12/22/99	0730	X		CEF-AN08-SB-07-3					X					1								
2	12/22/99	0743	X		CEF-AN08-SB-06-2.5					X					1								
3	12/22/99	0752	X		CEF-AN08-SB-05-2.5					X					1								
4	12/22/99	0802	X		CEF-AN08-SB-09-2.5					X					1								
5	12/22/99	1150	X		CEF-AN08-SB-10-2.5					X					1								
6	12/22/99	1005	X		CEF-AN09-SB-08-~~1005~~ 2.5'					X					1								
7	12/22/99	1017	X		CEF-AN09-SB-09-2.5'					X					1								
8	12/22/99	1029	X		CEF-AN09-SB-06-3'					X					1								
9	12/22/99	1042	X		CEF-AN09-SB-10-2.5					X					1								
10	12/22/99	1100	X		CEF-AN09-SB-07-2.5					X					1								
11	12/22/99	1320	X		CEF-VA08-SB-04-8.5'					X					1								
12	12/22/99	1407	X		CEF-VA08-SB-07-9'					X					1								
13	12/22/99	1448	X		CEF-VA08-SB-03-9'					X					1								
14	12/22/99	1545	X		CEF-VA08-SB-06-6.5'					X					1								

SAMPLE KIT PREPARED BY: ☒ JACKSONVILLE ☐ ORLANDO	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
RELINQUISHED BY: (SIGNATURE)	DATE 12/22/99	TIME 1645	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
RECEIVED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	ENCO LOG NO.	REMARKS
☒ Jacksonville ☐ Orlando	12/22/99	1645	☒ YES ☐ NO	JR9978	

Environmental Conservation Laboratories, Inc.
4810 Executive Park Court, Suite 211
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ENCO Laboratories

DHRS Certification No. E82277

CLIENT : Tetra Tech NUS
ADDRESS: 7018 A.C. Skinner Parkway
Suite 250
Jacksonville, FL 32256

REPORT # : JR1012
DATE SUBMITTED: December 29, 1999
DATE REPORTED : January 10, 2000

ATTENTION: Mr. John Kucera

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

PROJECT #: 0013

103rd Street Pipeline

12/28/99

#1 - CEF-VA06-SB-10-01'
#2 - CEF-VA06-SB-11-01'
#3 - CEF-VA06-SB-12-01'
#4 - CEF-VA06-SB-13-01'
#5 - CEF-VA06-SB-14-1.5'
#6 - CEF-VA08-SB-05-8.5'

PROJECT MANAGER _____
Scott D. Martin

ENCO LABORATORIES
REPORT # : JR1012
DATE REPORTED: January 10, 2000
REFERENCE : 0013
PROJECT NAME : 103rd Street Pipeline

RESULTS OF ANALYSIS

EPA METHOD 8310 - PAH BY HPLC	CEF-VA06-SB-10-01'		CEF-VA06-SB-11-01'		Units
Naphthalene	21 U		23 U		µg/Kg
Acenaphthylene	43 U		820		µg/Kg
1-Methylnaphthalene	260		3300	D1	µg/Kg
2-Methylnaphthalene	43 U		4600	D1	µg/Kg
Acenaphthene	350		5600	D1	µg/Kg
Fluorene	18		420	D1	µg/Kg
Phenanthrene	200	D2	5300	D3	µg/Kg
Anthracene	40		1200	D4	µg/Kg
Fluoranthene	190	D2	4800	D3	µg/Kg
Pyrene	140	D2	1600	D3	µg/Kg
Benzo(a)anthracene	130	D2	3000	D3	µg/Kg
Chrysene	180	D2	3300	D3	µg/Kg
Benzo(b)fluoranthene	120		1800	D4	µg/Kg
Benzo(k)fluoranthene	52		930	D4	µg/Kg
Benzo(a)pyrene	100	D2	1500	D4	µg/Kg
Dibenzo(a,h)anthracene	87		1200	D1	µg/Kg
Benzo(g,h,i)perylene	73		930	D1	µg/Kg
Indeno(1,2,3-cd)pyrene	64		810	D1	µg/Kg

Surrogate P-Terphenyl:	% RECOV	% RECOV	Units
True Value	10.0	10.0	µg/L
Actual Value	9.7	N/A	µg/L
Percent Recovery	97	N/A	%
Control Limit	50-146	50-146	%
Date Extracted	12/30/99	12/30/99	
Date Analyzed	01/04/00	01/04/00	

MISCELLANEOUS	METHOD	CEF-VA06-SB-10-01'	CEF-VA06-SB-11-01'	Units
Percent Solids	SM2540G	78	73	%
Date Analyzed		12/30/99	12/30/99	

U = Compound was analyzed for but not detected to the level shown.
DW = Analysis is reported on a "dry weight" basis.
D1 = Analyte value determined from a 1:10 dilution.
D2 = Analyte value determined from a 1:3 dilution.
D3 = Analyte value determined from a 1:60 dilution.
D4 = Analyte value determined from a 1:20 dilution.

ENCO LABORATORIES
REPORT # : JR1012
DATE REPORTED: January 10, 2000
REFERENCE : 0013
PROJECT NAME : 103rd Street Pipeline

RESULTS OF ANALYSIS

EPA METHOD 8310 - PAH BY HPLC	CEF-VA06-SB-12-01'	CEF-VA06-SB-13-01'		Units
Naphthalene	21 U	25 U		µg/Kg
Acenaphthylene	41 U	49 U		µg/Kg
1-Methylnaphthalene	120	150		µg/Kg
2-Methylnaphthalene	41 U	180		µg/Kg
Acenaphthene	30 I	160		µg/Kg
Fluorene	4.1 U	6.3 I		µg/Kg
Phenanthrene	41 U	85		µg/Kg
Anthracene	2.0 U	13		µg/Kg
Fluoranthene	31	180	D5	µg/Kg
Pyrene	16	35		µg/Kg
Benzo(a)anthracene	18	48		µg/Kg
Chrysene	18	79		µg/Kg
Benzo(b)fluoranthene	22	59		µg/Kg
Benzo(k)fluoranthene	32	29		µg/Kg
Benzo(a)pyrene	16	53		µg/Kg
Dibenzo(a,h)anthracene	14	59		µg/Kg
Benzo(g,h,i)perylene	4.1 U	31		µg/Kg
Indeno(1,2,3-cd)pyrene	47	54		µg/Kg

Surrogate P-Terphenyl:	% RECOV	% RECOV	Units
True Value	10.0	10.0	µg/L
Actual Value	9.6	8.6	µg/L
Percent Recovery	96	86	%
Control Limit	50-146	50-146	%
Date Extracted	12/30/99	12/30/99	
Date Analyzed	01/04/00	01/04/00	

MISCELLANEOUS	METHOD	CEF-VA06-SB-12-01'	CEF-VA06-SB-13-01'	Units
Percent Solids	SM2540G	81	68	%
Date Analyzed		12/30/99	12/30/99	

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).
DW = Analysis is reported on a "dry weight" basis.
D5 = Analyte value determined from a 1:2 dilution.

ENCO LABORATORIES
REPORT # : JR1012
DATE REPORTED: January 10, 2000
REFERENCE : 0013
PROJECT NAME : 103rd Street Pipeline

RESULTS OF ANALYSIS

EPA METHOD 8310 - PAH BY HPLC	CEF-VA06-SB-14-1.5'	CEF-VA08-SB-05-8.5'	Units
Naphthalene	21 U	19 U	µg/Kg
Acenaphthylene	41 U	38 U	µg/Kg
1-Methylnaphthalene	41 U	38 U	µg/Kg
2-Methylnaphthalene	41 U	**140**	µg/Kg
Acenaphthene	21 U	**140**	µg/Kg
Fluorene	4.1 U	**93** D2	µg/Kg
Phenanthrene	41 U	380 U D1	µg/Kg
Anthracene	**2.0** I	**57**	µg/Kg
Fluoranthene	**12**	**170** D2	µg/Kg
Pyrene	**9.0**	**83** D2	µg/Kg
Benzo(a)anthracene	**3.3**	**41**	µg/Kg
Chrysene	**5.3**	**53**	µg/Kg
Benzo(b)fluoranthene	**5.0** I	**120**	µg/Kg
Benzo(k)fluoranthene	**2.0** I	**42**	µg/Kg
Benzo(a)pyrene	**2.0** I	**90** D2	µg/Kg
Dibenzo(a,h)anthracene	**21**	**120** D2	µg/Kg
Benzo(g,h,i)perylene	4.1 U	**130** D2	µg/Kg
Indeno(1,2,3-cd)pyrene	2.1 U	**100** D2	µg/Kg

Surrogate P-Terphenyl:	% RECOV	% RECOV	Units
True Value	10.0	10.0	µg/L
Actual Value	9.9	6.5	µg/L
Percent Recovery	99	65	%
Control Limit	50-146	50-146	%
Date Extracted	12/30/99	12/30/99	
Date Analyzed	01/04/00	01/04/00	

MISCELLANEOUS	METHOD	CEF-VA06-SB-14-1.5'	CEF-VA08-SB-05-8.5'	Units
Percent Solids	SM2540G	**81**	**87**	%
Date Analyzed		12/30/99	12/30/99	

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).
DW = Analysis is reported on a "dry weight" basis.
D1 = Analyte value determined from a 1:10 dilution.
D2 = Analyte value determined from a 1:3 dilution.

ENCO LABORATORIES
REPORT # : JR1012
DATE REPORTED: January 10, 2000
REFERENCE : 0013
PROJECT NAME : 103rd Street Pipeline

RESULTS OF ANALYSIS

EPA METHOD 8310 - PAH BY HPLC	LAB BLANK	Units
Naphthalene	17 U	µg/Kg
Acenaphthylene	33 U	µg/Kg
1-Methylnaphthalene	33 U	µg/Kg
2-Methylnaphthalene	33 U	µg/Kg
Acenaphthene	17 U	µg/Kg
Fluorene	3.3 U	µg/Kg
Phenanthrene	33 U	µg/Kg
Anthracene	2.0 U	µg/Kg
Fluoranthene	3.3 U	µg/Kg
Pyrene	1.7 U	µg/Kg
Benzo(a)anthracene	1.7 U	µg/Kg
Chrysene	1.7 U	µg/Kg
Benzo(b)fluoranthene	3.0 U	µg/Kg
Benzo(k)fluoranthene	2.0 U	µg/Kg
Benzo(a)pyrene	2.0 U	µg/Kg
Dibenzo(a,h)anthracene	3.3 U	µg/Kg
Benzo(g,h,i)perylene	3.3 U	µg/Kg
Indeno(1,2,3-cd)pyrene	1.7 U	µg/Kg

Surrogate P-Terphenyl:	% RECOV	Units
True Value	10.0	µg/L
Actual Value	10.7	µg/L
Percent Recovery	107	%
Control Limit	50-146	%
Date Extracted	12/30/99	
Date Analyzed	01/04/00	

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

ENCO LABORATORIES
REPORT # : JR1012
DATE REPORTED: January 10, 2000
REFERENCE : 0013
PROJECT NAME : 103rd Street Pipeline

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	LCS TRUE VALUE	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 8310					
Naphthalene	110/112/108	10	26-125	2	45
Acenaphthene	82/ 81/102	10	20-143	1	35
Benzo(a)pyrene	93/ 91/109	1	42-138	2	38
Benzo(g,h,i)perylene	104/105/110	2	51-142	<1	26

Environmental Conservation Laboratories Comprehensive QA Plan #910190

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

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QSARF #_____

ENVIRONMENTAL CONSERVATION LABORATORIES

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Cary, North Carolina 27513
Ph. (919) 677-1669 • Fax (919) 677-9846

ENCO CompQAP No.: 960038G/0

CHAIN OF CUSTODY RECORD

PROJECT REFERENCE	PROJECT NO.	P.O. NUMBER
103rd Street Pipeline	0013	–

PROJECT LOC. (State)	SAMPLER(s) NAME	PHONE	FAX
FL	Jon Kucera / Eric Parker	281-0400	281-0070

CLIENT NAME	CLIENT PROJECT MANAGER
Tetra Tech NUS	Jon Kucera

CLIENT ADDRESS (CITY, STATE, ZIP): 7018 A.C. Skinner Park Way Suite 250

PAGE 1 OF 1

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☐ EXPEDITED REPORT DELIVERY (surcharge)

Date Due: _____

STATION	DATE	TIME	GRAB	COMP	SAMPLE IDENTIFICATION	SURFACE WATER	GROUND WATER	WASTEWATER	DRINKING WATER	SOIL/SOLID/SEDIMENT	NONAQUEOUS LIQUID (oil, solvent, etc.)	AIR	SLUDGE	OTHER	None	P310								REMARKS
1	12/28/99	1043	X		CEF-VA06-SB-10-01'					X					1									
2	12/28/99	1049	X		CEF-VA06-SB-11-01'					X					1									
3	12/28/99	1053	X		CEF-VA06-SB-12-01'					X					1									
4	12/28/99	1044	X		CEF-VA06-SB-13-01'					X					1									
5	12/28/99	1037	X		CEF-VA06-SB-14-1.5'					X					1									
6	12/28/99	1214	X		CEF-VA08-SB-05-8.5'					X					1									
7																								
8																								
9																								
10																								
11																								
12																								
13																								
14																								

PRESERVATIVE / NUMBER OF CONTAINERS SUBMITTED

SAMPLE KIT PREPARED BY:	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
☒ JACKSONVILLE ☐ ORLANDO								
RELINQUISHED BY: (SIGNATURE)	DATE 12/29/99	TIME 0755	RECEIVED BY: (SIGNATURE) C. Kohr	DATE 12/29/99	TIME 0755	RELINQUISHED BY: (SIGNATURE)	DATE 12/29/99	TIME 820
RECEIVED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	ENCO LOG NO.	REMARKS
Sandy Hilley ☒ Jacksonville ☐ Orlando	12-29-99	0800	☒ YES ☐ NO	JR1012	

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

ENCO Laboratories

DHRS Certification No. E82277

CLIENT : Tetra Tech NUS
ADDRESS: 7018 A.C. Skinner Parkway
Suite 250
Jacksonville, FL 32256

REPORT # : JR9979
DATE SUBMITTED: December 22, 1999
DATE REPORTED : January 10, 2000

ATTENTION: Mr. John Kucera

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

PROJECT #: 0013

103rd St. Pipeline

12/21/99

#1 - CEF-VA14-SB-09-3
#2 - CEF-VA14-SB-05-3.5
#3 - CEF-VA14-SB-08-3
#4 - CEF-VA14-SB-07-3
#5 - CEF-VA14-SB-06-3
#6 - CEF-AN11-SB-08-5
#7 - CEF-AN11-SB-05-6
#8 - CEF-AN11-SB-07-5
#9 - CEF-AN11-SB-06-5
#10 - CEF-AN11-SB-09-5
#11 - CEF-VA09-SB-06-1.5
#12 - CEF-VA09-SB-10-1.5
#13 - CEF-VA09-SB-09-1.5
#14 - CEF-VA09-SB-07-1.5
#15 - CEF-VA09-SB-08-1.5

PROJECT MANAGER _____
Scott D. Martin

ENCO LABORATORIES
REPORT # : JR9979
DATE REPORTED: January 10, 2000
REFERENCE : 0013
PROJECT NAME : 103rd St. Pipeline

RESULTS OF ANALYSIS

EPA METHOD 8310 - PAH BY HPLC	CEF-VA14-SB-09-3	CEF-VA14-SB-05-3.5	Units
Naphthalene	18 U	19 U	µg/Kg
Acenaphthylene	**46**	37 U	µg/Kg
1-Methylnaphthalene	**46**	37 U	µg/Kg
2-Methylnaphthalene	**65**	37 U	µg/Kg
Acenaphthene	**65**	19 U	µg/Kg
Fluorene	3.5 U	3.7 U	µg/Kg
Phenanthrene	35 U	37 U	µg/Kg
Anthracene	2.0 U	2.0 U	µg/Kg
Fluoranthene	**69**	**74**	µg/Kg
Pyrene	**55**	**42**	µg/Kg
Benzo(a)anthracene	**19**	**6.0**	µg/Kg
Chrysene	**65**	**26**	µg/Kg
Benzo(b)fluoranthene	**66**	**37**	µg/Kg
Benzo(k)fluoranthene	**32**	**16**	µg/Kg
Benzo(a)pyrene	**79**	**53**	µg/Kg
Dibenzo(a,h)anthracene	**85**	3.7 U	µg/Kg
Benzo(g,h,i)perylene	3.5 U	3.7 U	µg/Kg
Indeno(1,2,3-cd)pyrene	**54**	**45**	µg/Kg
Surrogate P-Terphenyl:	**% RECOV**	**% RECOV**	**Units**
True Value	10.0	10.0	µg/Kg
Actual Value	10.7	7.4	µg/Kg
Percent Recovery	107	74	%
Control Limit	50-146	50-146	%
Date Extracted	12/28/99	12/28/99	
Date Analyzed	12/29/99	12/29/99	

MISCELLANEOUS	METHOD	CEF-VA14-SB-09-3	CEF-VA14-SB-05-3.5	Units
Percent Solids	SM2540G	**94**	**89**	%
Date Analyzed		12/28/99	12/28/99	

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

ENCO LABORATORIES
REPORT # : JR9979
DATE REPORTED: January 10, 2000
REFERENCE : 0013
PROJECT NAME : 103rd St. Pipeline

RESULTS OF ANALYSIS

EPA METHOD 8310 - PAH BY HPLC	CEF-VA14-SB-08-3	CEF-VA14-SB-07-3		Units
Naphthalene	19 U	19 U		µg/Kg
Acenaphthylene	39 U	**39**		µg/Kg
1-Methylnaphthalene	39 U	**90**		µg/Kg
2-Methylnaphthalene	39 U	**120**		µg/Kg
Acenaphthene	19 U	19 U		µg/Kg
Fluorene	3.9 U	3.8 U		µg/Kg
Phenanthrene	39 U	38 U		µg/Kg
Anthracene	2.0 U	**6.0**		µg/Kg
Fluoranthene	**110**	**140**	D1	µg/Kg
Pyrene	**62**	**99**	D1	µg/Kg
Benzo(a)anthracene	**22**	**28**		µg/Kg
Chrysene	**51**	**75**	D1	µg/Kg
Benzo(b)fluoranthene	**51**	**84**		µg/Kg
Benzo(k)fluoranthene	**29**	**43**		µg/Kg
Benzo(a)pyrene	**71**	**95**	D1	µg/Kg
Dibenzo(a,h)anthracene	3.9 U	**15**		µg/Kg
Benzo(g,h,i)perylene	**32**	**48**		µg/Kg
Indeno(1,2,3-cd)pyrene	**40**	**72**	D1	µg/Kg

Surrogate P-Terphenyl:	% RECOV	% RECOV	Units
True Value	10.0	10.0	µg/Kg
Actual Value	5.3	10.9	µg/Kg
Percent Recovery	53	109	%
Control Limit	50-146	50-146	%
Date Extracted	12/28/99	12/28/99	
Date Analyzed	01/05/00	01/05/00	

MISCELLANEOUS	METHOD	CEF-VA14-SB-08-3	CEF-VA14-SB-07-3	Units
Percent Solids	SM2540G	**86**	**88**	%
Date Analyzed		12/28/99	12/28/99	

U = Compound was analyzed for but not detected to the level shown.
DW = Analysis is reported on a "dry weight" basis.
D1 = Analyte value determined from a 1:3 dilution.

ENCO LABORATORIES
REPORT # : JR9979
DATE REPORTED: January 10, 2000
REFERENCE : 0013
PROJECT NAME : 103rd St. Pipeline

RESULTS OF ANALYSIS

EPA METHOD 8310 - PAH BY HPLC	CEF-VA14-SB-06-3	CEF-AN11-SB-08-5	Units
Naphthalene	20 U	21 U	µg/Kg
Acenaphthylene	41 U	41 U	µg/Kg
1-Methylnaphthalene	41 U	41 U	µg/Kg
2-Methylnaphthalene	41 U	41 U	µg/Kg
Acenaphthene	20 U	21 U	µg/Kg
Fluorene	4.1 U	4.1 U	µg/Kg
Phenanthrene	41 U	41 U	µg/Kg
Anthracene	2.0 U	2.0 U	µg/Kg
Fluoranthene	**5.2** I	4.1 U	µg/Kg
Pyrene	**10**	2.1 U	µg/Kg
Benzo(a)anthracene	2.0 U	2.1 U	µg/Kg
Chrysene	**4.0**	2.1 U	µg/Kg
Benzo(b)fluoranthene	**8.0** I	4.0 U	µg/Kg
Benzo(k)fluoranthene	**2.0** I	2.0 U	µg/Kg
Benzo(a)pyrene	**8.0**	2.0 U	µg/Kg
Dibenzo(a,h)anthracene	4.1 U	4.1 U	µg/Kg
Benzo(g,h,i)perylene	4.1 U	4.1 U	µg/Kg
Indeno(1,2,3-cd)pyrene	2.0 U	2.1 U	µg/Kg
Surrogate P-Terphenyl:	**% RECOV**	**% RECOV**	**Units**
True Value	10.0	10.0	µg/Kg
Actual Value	10.8	10.6	µg/Kg
Percent Recovery	108	106	%
Control Limit	50-146	50-146	%
Date Extracted	12/28/99	12/28/99	
Date Analyzed	12/29/99	12/29/99	

MISCELLANEOUS	METHOD	CEF-VA14-SB-06-3	CEF-AN11-SB-08-5	Units
Percent Solids	SM2540G	**82**	**81**	%
Date Analyzed		12/28/99	12/28/99	

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).
DW = Analysis is reported on a "dry weight" basis.

ENCO LABORATORIES
REPORT # : JR9979
DATE REPORTED: January 10, 2000
REFERENCE : 0013
PROJECT NAME : 103rd St. Pipeline

RESULTS OF ANALYSIS

EPA METHOD 8310 - PAH BY HPLC	CEF-AN11-SB-05-6	CEF-AN11-SB-07-5	Units
Naphthalene	20 U	23 U	µg/Kg
Acenaphthylene	39 U	45 U	µg/Kg
1-Methylnaphthalene	39 U	45 U	µg/Kg
2-Methylnaphthalene	39 U	45 U	µg/Kg
Acenaphthene	20 U	23 U	µg/Kg
Fluorene	3.9 U	4.5 U	µg/Kg
Phenanthrene	39 U	45 U	µg/Kg
Anthracene	2.0 U	3.0 U	µg/Kg
Fluoranthene	3.9 U	4.5 U	µg/Kg
Pyrene	2.0 U	2.3 U	µg/Kg
Benzo(a)anthracene	2.0 U	2.3 U	µg/Kg
Chrysene	2.0 U	2.3 U	µg/Kg
Benzo(b)fluoranthene	4.0 U	4.0 U	µg/Kg
Benzo(k)fluoranthene	2.0 U	3.0 U	µg/Kg
Benzo(a)pyrene	2.0 U	3.0 U	µg/Kg
Dibenzo(a,h)anthracene	3.9 U	4.5 U	µg/Kg
Benzo(g,h,i)perylene	3.9 U	4.5 U	µg/Kg
Indeno(1,2,3-cd)pyrene	2.0 U	2.3 U	µg/Kg
Surrogate P-Terphenyl:	**% RECOV**	**% RECOV**	**Units**
True Value	10.0	10.0	µg/Kg
Actual Value	10.1	10.5	µg/Kg
Percent Recovery	101	105	%
Control Limit	50-146	50-146	%
Date Extracted	12/28/99	12/28/99	
Date Analyzed	12/29/99	12/29/99	

MISCELLANEOUS	METHOD	CEF-AN11-SB-05-6	CEF-AN11-SB-07-5	Units
Percent Solids	SM2540G	**85**	**74**	%
Date Analyzed		12/28/99	12/28/99	

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

ENCO LABORATORIES
REPORT # : JR9979
DATE REPORTED: January 10, 2000
REFERENCE : 0013
PROJECT NAME : 103rd St. Pipeline

RESULTS OF ANALYSIS

EPA METHOD 8310 - PAH BY HPLC	CEF-AN11-SB-06-5	CEF-AN11-SB-09-5	Units
Naphthalene	**23** I	21 U	µg/Kg
Acenaphthylene	42 U	**58**	µg/Kg
1-Methylnaphthalene	42 U	42 U	µg/Kg
2-Methylnaphthalene	42 U	42 U	µg/Kg
Acenaphthene	21 U	21 U	µg/Kg
Fluorene	4.2 U	4.2 U	µg/Kg
Phenanthrene	42 U	42 U	µg/Kg
Anthracene	2.0 U	2.0 U	µg/Kg
Fluoranthene	4.2 U	4.2 U	µg/Kg
Pyrene	2.1 U	2.1 U	µg/Kg
Benzo(a)anthracene	2.1 U	2.1 U	µg/Kg
Chrysene	2.1 U	2.1 U	µg/Kg
Benzo(b)fluoranthene	4.0 U	4.0 U	µg/Kg
Benzo(k)fluoranthene	2.0 U	2.0 U	µg/Kg
Benzo(a)pyrene	2.0 U	2.0 U	µg/Kg
Dibenzo(a,h)anthracene	4.2 U	4.2 U	µg/Kg
Benzo(g,h,i)perylene	4.2 U	4.2 U	µg/Kg
Indeno(1,2,3-cd)pyrene	2.1 U	2.1 U	µg/Kg
Surrogate P-Terphenyl:	**% RECOV**	**% RECOV**	**Units**
True Value	10.0	10.0	µg/Kg
Actual Value	9.8	10.4	µg/Kg
Percent Recovery	98	104	%
Control Limit	50-146	50-146	%
Date Extracted	12/28/99	12/28/99	
Date Analyzed	12/29/99	12/29/99	

MISCELLANEOUS	METHOD	CEF-AN11-SB-06-5	CEF-AN11-SB-09-5	Units
Percent Solids	SM2540G	**79**	**80**	%
Date Analyzed		12/28/99	12/28/99	

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).
DW = Analysis is reported on a "dry weight" basis.

ENCO LABORATORIES
REPORT # : JR9979
DATE REPORTED: January 10, 2000
REFERENCE : 0013
PROJECT NAME : 103rd St. Pipeline

RESULTS OF ANALYSIS

EPA METHOD 8310 - PAH BY HPLC	CEF-VA09-SB-06-1.5	CEF-VA09-SB-10-1.5	Units
Naphthalene	21 U	20 U	µg/Kg
Acenaphthylene	41 U	40 U	µg/Kg
1-Methylnaphthalene	41 U	**54**	µg/Kg
2-Methylnaphthalene	41 U	40 U	µg/Kg
Acenaphthene	**27** I	**36**	µg/Kg
Fluorene	4.1 U	**51**	µg/Kg
Phenanthrene	41 U	**45**	µg/Kg
Anthracene	2.0 U	2.0 U	µg/Kg
Fluoranthene	**42**	**170** D2	µg/Kg
Pyrene	**27**	**170** D2	µg/Kg
Benzo(a)anthracene	**5.0**	**48**	µg/Kg
Chrysene	**14**	**86** D2	µg/Kg
Benzo(b)fluoranthene	**46**	**140** D2	µg/Kg
Benzo(k)fluoranthene	**2.0** I	**42**	µg/Kg
Benzo(a)pyrene	**18**	**130** D2	µg/Kg
Dibenzo(a,h)anthracene	4.1 U	**130** D2	µg/Kg
Benzo(g,h,i)perylene	**10** I	**95** D2	µg/Kg
Indeno(1,2,3-cd)pyrene	**18**	**95** D2	µg/Kg
Surrogate P-Terphenyl:	**% RECOV**	**% RECOV**	**Units**
True Value	10.0	10.0	µg/Kg
Actual Value	5.6	N/A	µg/Kg
Percent Recovery	56	N/A	%
Control Limit	50-146	50-146	%
Date Extracted	12/28/99	12/28/99	
Date Analyzed	12/29/99	01/05/00	

MISCELLANEOUS	METHOD	CEF-VA09-SB-06-1.5	CEF-VA09-SB-10-1.5	Units
Percent Solids	SM2540G	**81**	**84**	%
Date Analyzed		12/28/99	12/28/99	

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).
DW = Analysis is reported on a "dry weight" basis.
D2 = Analyte value determined from a 1:4 dilution.

ENCO LABORATORIES
REPORT # : JR9979
DATE REPORTED: January 10, 2000
REFERENCE : 0013
PROJECT NAME : 103rd St. Pipeline

RESULTS OF ANALYSIS

EPA METHOD 8310 - PAH BY HPLC	CEF-VA09-SB-09-1.5	CEF-VA09-SB-07-1.5	Units
Naphthalene	20 U	20 U	µg/Kg
Acenaphthylene	41 U	41 U	µg/Kg
1-Methylnaphthalene	41 U	41 U	µg/Kg
2-Methylnaphthalene	41 U	41 U	µg/Kg
Acenaphthene	**24** I	20 U	µg/Kg
Fluorene	**10**	4.1 U	µg/Kg
Phenanthrene	41 U	41 U	µg/Kg
Anthracene	2.0 U	2.0 U	µg/Kg
Fluoranthene	**44**	**6.0** I	µg/Kg
Pyrene	**29**	2.0 U	µg/Kg
Benzo(a)anthracene	**3.3**	2.0 U	µg/Kg
Chrysene	**15**	2.0 U	µg/Kg
Benzo(b)fluoranthene	**85**	**28**	µg/Kg
Benzo(k)fluoranthene	2.0 U	2.0 U	µg/Kg
Benzo(a)pyrene	**29**	2.0 U	µg/Kg
Dibenzo(a,h)anthracene	4.1 U	4.1 U	µg/Kg
Benzo(g,h,i)perylene	4.1 U	4.1 U	µg/Kg
Indeno(1,2,3-cd)pyrene	**36**	2.0 U	µg/Kg
Surrogate P-Terphenyl:	**% RECOV**	**% RECOV**	**Units**
True Value	10.0	10.0	µg/Kg
Actual Value	9.9	9.0	µg/Kg
Percent Recovery	99	90	%
Control Limit	50-146	50-146	%
Date Extracted	12/28/99	12/28/99	
Date Analyzed	12/29/99	12/29/99	

MISCELLANEOUS	METHOD	CEF-VA09-SB-09-1.5	CEF-VA09-SB-07-1.5	Units
Percent Solids	SM2540G	**82**	**82**	%
Date Analyzed		12/28/99	12/28/99	

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).
DW = Analysis is reported on a "dry weight" basis.

ENCO LABORATORIES
REPORT # : JR9979
DATE REPORTED: January 10, 2000
REFERENCE : 0013
PROJECT NAME : 103rd St. Pipeline

RESULTS OF ANALYSIS

EPA METHOD 8310 - PAH BY HPLC	CEF-VA09-SB-08-1.5	LAB BLANK	Units
Naphthalene	21 U	17 U	µg/Kg
Acenaphthylene	42 U	33 U	µg/Kg
1-Methylnaphthalene	42 U	33 U	µg/Kg
2-Methylnaphthalene	42 U	33 U	µg/Kg
Acenaphthene	**41**	17 U	µg/Kg
Fluorene	**4.6** I	3.3 U	µg/Kg
Phenanthrene	42 U	33 U	µg/Kg
Anthracene	2.0 U	2.0 U	µg/Kg
Fluoranthene	**79**	3.3 U	µg/Kg
Pyrene	**49**	1.7 U	µg/Kg
Benzo(a)anthracene	**15**	1.7 U	µg/Kg
Chrysene	**25**	1.7 U	µg/Kg
Benzo(b)fluoranthene	**40**	3.0 U	µg/Kg
Benzo(k)fluoranthene	**18**	2.0 U	µg/Kg
Benzo(a)pyrene	**45**	2.0 U	µg/Kg
Dibenzo(a,h)anthracene	4.2 U	3.3 U	µg/Kg
Benzo(g,h,i)perylene	**16**	3.3 U	µg/Kg
Indeno(1,2,3-cd)pyrene	**31**	1.7 U	µg/Kg
Surrogate P-Terphenyl:	**% RECOV**	**% RECOV**	**Units**
True Value	10.0	10.0	µg/Kg
Actual Value	7.3	10.6	µg/Kg
Percent Recovery	73	106	%
Control Limit	50-146	50-146	%
Date Extracted	12/28/99	12/28/99	
Date Analyzed	12/30/99	12/29/99	

MISCELLANEOUS	METHOD	CEF-VA09-SB-08-1.5	LAB BLANK	Units
Percent Solids	SM2540G	**80**	NR	%
Date Analyzed		12/28/99		

U = Compound was analyzed for but not detected to the level shown.
NR = Analysis not requested for this sample.
I = Analyte detected; value is between the Method Detection Level (MDL) and the Practical Quantitation Level (PQL).
DW = Analysis is reported on a "dry weight" basis.

ENCO LABORATORIES
REPORT # : JR9979
DATE REPORTED: January 10, 2000
REFERENCE : 0013
PROJECT NAME : 103rd St. Pipeline

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	LCS TARGET VALUE	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 8310					
Naphthalene	*/ */108	10	26-125	*	45
Acenaphthene	*/ */100	10	20-143	*	35
Benzo(a)pyrene	*/ */102	1	42-138	*	38
Benzo(g,h,i)perylene	*/ */106	2	51-142	*	26

Environmental Conservation Laboratories Comprehensive QA Plan #910190

* = MS/MSD/RPD unavailable due to high original sample concentration.
< = 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.

QSARF #_____

ENVIRONMENTAL CONSERVATION LABORATORIES

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Jacksonville, Florida 32216-6069
Ph. (904) 296-3007 • Fax (904) 296-6210

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Orlando, Florida 32824-8529
Ph. (407) 826-5314 • Fax (407) 850-6945

1015 Passport Way
Cary, North Carolina 27513
Ph. (919) 677-1669 • Fax (919) 677-9846

ENCO CompQAP No.: 960038G/0

CHAIN OF CUSTODY RECORD

PROJECT REFERENCE	PROJECT NO.	P.O. NUMBER
103rd Street Pipeline	0013	–

PROJECT LOC. (State)	SAMPLER(s) NAME	PHONE	FAX
FL	Jon Kucera / Eric Parker	281-0400	281-0070

CLIENT NAME	CLIENT PROJECT MANAGER
Tetra Tech NUS	J. Kucera

CLIENT ADDRESS (CITY, STATE, ZIP): 7018 A.C. Skinner Parkway Ste. 250 Jax, FL 32256

PAGE 1 OF 2

☒ STANDARD REPORT DELIVERY
☐ EXPEDITED REPORT DELIVERY (surcharge)
Date Due: _____

STATION	SAMPLE DATE	SAMPLE TIME	GRAB	COMP	SAMPLE IDENTIFICATION	SURFACE WATER	GROUND WATER	WASTEWATER	DRINKING WATER	SOIL/SOLID/SEDIMENT	NONAQUEOUS LIQUID (oil, solvent, etc.)	AIR	SLUDGE	OTHER	EPA 8310 (PRESERVATIVE: None)								REMARKS
															NUMBER OF CONTAINERS SUBMITTED								
1	12/21/99	0935	X		CEF-VA14-SB-09-3'					X					1								
2	12/21/99	0955	X		CEF-VA14-SB-05-35'					X					1								
3	12/21/99	1010	X		CEF-VA14-SB-08-3'					X					1								
4	12/21/99	1028	X		CEF-VA14-SB-07-3'					X					1								
5	12/21/99	1105	X		CEF-VA14-SB-06-3'					X					1								
6	12/21/99	1310	X		CEF-AN11-SB-08-5'					X					1								
7	12/21/99	1345	X		CEF-AN11-SB-05-6'					X					1								
8	12/21/99	1358	X		CEF-AN11-SB-07-5'					X					1								
9	12/21/99	1420	X		CEF-AN11-SB-06-5'					X					1								
10	12/21/99	1520	X		CEF-AN11-SB-09-5'					X					1								
11	12/21/99	1625	X		CEF-VA09-SB-06-1.5'					X					1								
12	12/21/99	1635	X		CEF-VA09-SB-10-1.5'					X					1								
13	12/21/99	1645	X		CEF-VA09-SB-09-1.5'					X					1								
14	12/21/99	1655	X		CEF-VA09-SB-07-1.5'					X					1								

SAMPLE KIT PREPARED BY:	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
☒ JACKSONVILLE ☐ ORLANDO								
RELINQUISHED BY: (SIGNATURE) [signature]	DATE 12/21/99	TIME 1645	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
RECEIVED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	ENCO LOG NO.	REMARKS
[signature] ☐ Jacksonville ☐ Orlando	12/22/99	1645	☒ YES ☐ NO	JR9979	

QSARF #_____

ENVIRONMENTAL CONSERVATION LABORATORIES

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ENCO CompQAP No.: 960038G/0

CHAIN OF CUSTODY RECORD

PROJECT REFERENCE: 103rd Street Pipeline
PROJECT NO.: 0013
P.O. NUMBER:
PROJECT LOC. (State): FL
SAMPLER(s) NAME: Jon Kucera, Eric Parker
PHONE: 281-0400
FAX: 281-0070
CLIENT NAME: Tetra Tech NVS
CLIENT PROJECT MANAGER: J. Kucera
CLIENT ADDRESS (CITY, STATE, ZIP): 7018 A.L. Skinner Pkwy. Ste. 250 Jax, FL 32256

PAGE 2 OF 2

☒ STANDARD REPORT DELIVERY
☐ EXPEDITED REPORT DELIVERY (surcharge)
Date Due:_____

SAMPLE STATION	DATE	TIME	GRAB	COMP	SAMPLE IDENTIFICATION	SURFACE WATER	GROUND WATER	WASTEWATER	DRINKING WATER	SOIL/SOLID/SEDIMENT	NONAQUEOUS LIQUID (oil, solvent, etc.)	AIR	SLUDGE	OTHER	EPA 8310								REMARKS
															None								
															PRESERVATIVE								
															NUMBER OF CONTAINERS SUBMITTED								
1	12/21/99	1708	X		CEF-VA09-SB-08-15					X					1								
2																							
3																							
4																							
5																							
6																							
7																							
8																							
9																							
10																							
11																							
12																							
13																							
14																							

SAMPLE KIT PREPARED BY: ☒ JACKSONVILLE ☐ ORLANDO	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
RELINQUISHED BY: (SIGNATURE)	DATE 12/22/99	TIME 1645	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

RECEIVED FOR LABORATORY BY: (SIGNATURE) ☒ Jacksonville ☐ Orlando	DATE	TIME	CUSTODY INTACT	ENCO LOG NO.	REMARKS
	12/22/99	1645	☒ YES ☐ NO		

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www.encolabs.com

ENCO Laboratories

DHRS Certification No. E82277

CLIENT : Tetra Tech NUS
ADDRESS: 7018 A.C. Skinner Parkway
Suite 250
Jacksonville, FL 32256

REPORT # : JAX10025
DATE SUBMITTED: March 3, 2000
DATE REPORTED : March 21, 2000

ATTENTION: Mr. Paul Calligan

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

PROJECT #: 0013

103rd Street Pipeline

03/02/00

#1 - CEF-VA08-SB-12-1' @ 16:05
#2 - CEF-VA08-SB-13-8.5' @ 16:07
#3 - CEF-VA08-SB-DU001

PROJECT MANAGER Scott D Mart
Scott D. Martin

ENCO LABORATORIES
REPORT # : JAX10025
DATE REPORTED: March 21, 2000
REFERENCE : 0013
PROJECT NAME : 103rd Street Pipeline

RESULTS OF ANALYSIS

EPA METHOD 8310 - PAH BY HPLC	CEF-VA08-SB-12-1'	CEF-VA08-SB-13-8.5'	Units
Naphthalene	18 U	19 U	µg/Kg
Acenaphthylene	36 U	38 U	µg/Kg
1-Methylnaphthalene	36 U	38 U	µg/Kg
2-Methylnaphthalene	36 U	38 U	µg/Kg
Acenaphthene	18 U	19 U	µg/Kg
Fluorene	3.6 U	3.8 U	µg/Kg
Phenanthrene	36 U	38 U	µg/Kg
Anthracene	7.2 U	7.6 U	µg/Kg
Fluoranthene	**67**	**60**	µg/Kg
Pyrene	**180**	**110**	µg/Kg
Benzo(a)anthracene	**71**	**170**	µg/Kg
Chrysene	**92**	**57**	µg/Kg
Benzo(b)fluoranthene	**100**	**49**	µg/Kg
Benzo(k)fluoranthene	**54**	**33**	µg/Kg
Benzo(a)pyrene	**120**	**180**	µg/Kg
Dibenzo(a,h)anthracene	**68**	3.8 U	µg/Kg
Benzo(g,h,i)perylene	**170**	**46**	µg/Kg
Indeno(1,2,3-cd)pyrene	**160**	**110**	µg/Kg
Surrogate(p-terphenyl):	**% RECOV**	**% RECOV**	**Units**
True Value	5.0	5.0	µg/Kg
Actual Value	5.25	4.55	µg/Kg
Percent Recovery	105	105	%
Control Limits	50-150	50-150	%
Date Extracted	03/15/00	03/15/00	
Date Analyzed	03/17/00	03/17/00	

MISCELLANEOUS	METHOD	CEF-VA08-SB-12-1'	CEF-VA08-SB-13-8.5'	Units
Percent Solids	SM2540G	**92**	**87**	%
Date Analyzed		03/06/00	03/06/00	

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

ENCO LABORATORIES
REPORT # : JAX10025
DATE REPORTED: March 21, 2000
REFERENCE : 0013
PROJECT NAME : 103rd Street Pipeline

RESULTS OF ANALYSIS

EPA METHOD 8310 - PAH BY HPLC	CEF-VA08-SB-DU001	LAB BLANK	Units
Naphthalene	18 U	16 U	µg/Kg
Acenaphthylene	36 U	33 U	µg/Kg
1-Methylnaphthalene	36 U	33 U	µg/Kg
2-Methylnaphthalene	36 U	33 U	µg/Kg
Acenaphthene	18 U	16 U	µg/Kg
Fluorene	3.6 U	3.3 U	µg/Kg
Phenanthrene	36 U	33 U	µg/Kg
Anthracene	7.2 U	6.6 U	µg/Kg
Fluoranthene	**35**	3.3 U	µg/Kg
Pyrene	**120**	3.3 U	µg/Kg
Benzo(a)anthracene	**54**	3.3 U	µg/Kg
Chrysene	**67**	3.3 U	µg/Kg
Benzo(b)fluoranthene	**85**	3.3 U	µg/Kg
Benzo(k)fluoranthene	**48**	3.3 U	µg/Kg
Benzo(a)pyrene	**100**	3.3 U	µg/Kg
Dibenzo(a,h)anthracene	**55**	3.3 U	µg/Kg
Benzo(g,h,i)perylene	**150**	3.3 U	µg/Kg
Indeno(1,2,3-cd)pyrene	**130**	3.3 U	µg/Kg
Surrogate(p-terphenyl):	**% RECOV**	**% RECOV**	**Units**
True Value	5.0	5.0	µg/Kg
Actual Value	5.15	5.25	µg/Kg
Percent Recovery	97	105	%
Control Limits	50-150	50-150	%
Date Extracted	03/15/00	03/15/00	
Date Analyzed	03/17/00	03/16/00	

MISCELLANEOUS	METHOD	CEF-VA08-SB-DU001	LAB BLANK	Units
Percent Solids	SM2540G	**92**	NR	%
Date Analyzed		03/06/00		

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

ENCO LABORATORIES
REPORT # : JAX10025
DATE REPORTED: March 21, 2000
REFERENCE : 0013
PROJECT NAME : 103rd Street Pipeline

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	LCS TARGET VALUE	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 8310					
Naphthalene	56/ 80/ 47	2	59-111	#35	25
Acenaphthene	76/ 85/ 93	2	58-128	11	31
Benzo(a)pyrene	75/ 85/ 69	2	78-134	#12	24
Benzo(g,h,i)perylene	85/ 89/ 85	2	62-115	4	27

Environmental Conservation Laboratories Comprehensive QA Plan #910190

= One or more of the associated value failed to meet laboratory established limits for precision.
< = 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

QSARF #_____

ENVIRONMENTAL CONSERVATION LABORATORIES

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ENCO CompQAP No.: 960038G/0

CHAIN OF CUSTODY RECORD

PROJECT REFERENCE	PROJECT NO.	P.O. NUMBER
103rd Street Pipeline	00B	—

PROJECT LOC. (State)	SAMPLER(s) NAME	PHONE / FAX
FL	J. Kucera, P. Calligan	PHONE 850 385 9899 / FAX 850 385 9886

CLIENT NAME	CLIENT PROJECT MANAGER
Tetra Tech NUS	Paul Calligan

CLIENT ADDRESS (CITY, STATE, ZIP): 7018 A.C. Skinner Pkwy #250

PAGE 1 OF 1

☒ STANDARD REPORT DELIVERY

☐ EXPEDITED REPORT DELIVERY (surcharge)

Date Due: 3/10/00

STATION	DATE	TIME	GRAB	COMP	SAMPLE IDENTIFICATION	SURFACE WATER	GROUND WATER	WASTEWATER	DRINKING WATER	SOIL/SOLID/SEDIMENT	NONAQUEOUS LIQUID (oil, solvent, etc.)	AIR	SLUDGE	OTHER	EPA 8310	PRESERVATIVE: None	NUMBER OF CONTAINERS SUBMITTED							REMARKS
1	3/2/00	1605	X		CEF-VA08-SB-12-1'					X					1									
2	3/2/00	1607	X		CEF-VA08-SB-13-8.5'					X					1									
3	3/2/00	0000	X		CEF-VA08-SB-DU01					X					1									
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11																								
12																								
13																								
14																								

SAMPLE KIT PREPARED BY: ☒ JACKSONVILLE ☐ ORLANDO	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
RELINQUISHED BY: (SIGNATURE)	3/2/00	1740	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
RECEIVED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

RECEIVED FOR LABORATORY BY: (SIGNATURE) ☒ Jacksonville ☐ Orlando	DATE	TIME	CUSTODY INTACT ☒ YES ☐ NO	ENCO LOG NO.	REMARKS
	3/2/00	1740		JAX.10025	

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DHRS Certification No. E82277

CLIENT : Tetra Tech NUS
ADDRESS: 7018 A.C. Skinner Parkway
Suite 250
Jacksonville, FL 32256

REPORT # : JR1789
DATE SUBMITTED: February 16, 2000
DATE REPORTED : February 25, 2000

ATTENTION: Mr. Jon Kucera

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

PROJECT #: 0013

103rd Street Pipeline

02/16/00

#1	- CEF-VA06-SB-15-01'	@ 09:39
#2	- CEF-VA06-SB-16-01'	@ 09:30
#3	- CEF-VA06-SB-17-01'	@ 09:29
#4	- CEF-VA06-SB-18-01'	@ 09:40
#5	- CEF-VA06-SB-19-01'	@ 09:32
#6	- CEF-AN09-SB-11-2.5'	@ 12:30
#7	- CEF-VA09-SB-11-1.5'	@ 13:10
#8	- CEF-VA08-SB-11-8.5'	@ 14:49
#9	- CEF-VA08-SB-10-3.5'	@ 15:17
#10	- CEF-VA08-SB-09-3.5'	@ 15:41
#11	- CEF-VA08-SB-08-8'	@ 15:45
#12	- CEF-VA06-DU01	
#13	- CEF-VA06-DU02	

PROJECT MANAGER Scott D Martin
Scott D. Martin

ENCO LABORATORIES
REPORT # : JR1789
DATE REPORTED: February 25, 2000
REFERENCE : 0013
PROJECT NAME : 103rd Street Pipeline

RESULTS OF ANALYSIS

EPA METHOD 8310 - PAH BY HPLC	CEF-VA06-SB-15-01'	CEF-VA06-SB-16-01'	Units
Naphthalene	20 U	21 U	µg/Kg
Acenaphthylene	41 U	42 U	µg/Kg
1-Methylnaphthalene	41 U	42 U	µg/Kg
2-Methylnaphthalene	41 U	42 U	µg/Kg
Acenaphthene	20 U	21 U	µg/Kg
Fluorene	4.1 U	4.2 U	µg/Kg
Phenanthrene	41 U	42 U	µg/Kg
Anthracene	20 U	21 U	µg/Kg
Fluoranthene	**21**	**20**	µg/Kg
Pyrene	**26**	**32**	µg/Kg
Benzo(a)anthracene	20 U	21 U	µg/Kg
Chrysene	4.1 U	**13**	µg/Kg
Benzo(b)fluoranthene	4.1 U	4.2 U	µg/Kg
Benzo(k)fluoranthene	**27**	4.2 U	µg/Kg
Benzo(a)pyrene	4.1 U	4.2 U	µg/Kg
Dibenzo(a,h)anthracene	4.1 U	4.2 U	µg/Kg
Benzo(g,h,i)perylene	4.1 U	4.2 U	µg/Kg
Indeno(1,2,3-cd)pyrene	4.1 U	4.2 U	µg/Kg
Surrogate(p-terpheny):	**% RECOV**	**% RECOV**	**Units**
True Value	5.0	5.0	µg/Kg
Actual Value	5.55	5.85	µg/Kg
Percent Recovery	111	117	%
Control Limits	39-141	39-141	%
Date Extracted	02/23/00	02/23/00	
Date Analyzed	02/24/00	02/24/00	

MISCELLANEOUS	METHOD	CEF-VA06-SB-15-01'	CEF-VA06-SB-16-01'	Units
Percent Solids	SM2540G	**81**	**79**	%
Date Analyzed		02/18/00	02/18/00	

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

ENCO LABORATORIES
REPORT # : JR1789
DATE REPORTED: February 25, 2000
REFERENCE : 0013
PROJECT NAME : 103rd Street Pipeline

RESULTS OF ANALYSIS

EPA METHOD 8310 - PAH BY HPLC	CEF-VA06-SB-17-01'	CEF-VA06-SB-18-01'	Units
Naphthalene	20 U	21 U	µg/Kg
Acenaphthylene	41 U	43 U	µg/Kg
1-Methylnaphthalene	41 U	43 U	µg/Kg
2-Methylnaphthalene	41 U	43 U	µg/Kg
Acenaphthene	20 U	21 U	µg/Kg
Fluorene	4.1 U	4.3 U	µg/Kg
Phenanthrene	41 U	43 U	µg/Kg
Anthracene	20 U	21 U	µg/Kg
Fluoranthene	**47**	**5.1**	µg/Kg
Pyrene	**79**	**7.0**	µg/Kg
Benzo(a)anthracene	**44**	21 U	µg/Kg
Chrysene	**38**	4.3 U	µg/Kg
Benzo(b)fluoranthene	**37**	**6.0**	µg/Kg
Benzo(k)fluoranthene	**23**	**6.2**	µg/Kg
Benzo(a)pyrene	**27**	**5.0**	µg/Kg
Dibenzo(a,h)anthracene	**14**	4.3 U	µg/Kg
Benzo(g,h,i)perylene	**20**	**5.0**	µg/Kg
Indeno(1,2,3-cd)pyrene	**9.4**	4.3 U	µg/Kg
Surrogate(p-terpheny):	**% RECOV**	**% RECOV**	**Units**
True Value	5.0	5.0	µg/Kg
Actual Value	1.95	4.95	µg/Kg
Percent Recovery	39	99	%
Control Limits	39-141	39-141	%
Date Extracted	02/23/00	02/23/00	
Date Analyzed	02/24/00	02/24/00	

MISCELLANEOUS	METHOD	CEF-VA06-SB-17-01'	CEF-VA06-SB-18-01'	Units
Percent Solids	SM2540G	**81**	**77**	%
Date Analyzed		02/18/00	02/18/00	

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

ENCO LABORATORIES
REPORT # : JR1789
DATE REPORTED: February 25, 2000
REFERENCE : 0013
PROJECT NAME : 103rd Street Pipeline

RESULTS OF ANALYSIS

EPA METHOD 8310 - PAH BY HPLC	CEF-VA06-SB-19-01'	CEF-AN09-SB-11-2.5'	Units
Naphthalene	21 U	22 U	µg/Kg
Acenaphthylene	41 U	43 U	µg/Kg
1-Methylnaphthalene	41 U	43 U	µg/Kg
2-Methylnaphthalene	41 U	43 U	µg/Kg
Acenaphthene	21 U	22 U	µg/Kg
Fluorene	4.1 U	4.3 U	µg/Kg
Phenanthrene	**50**	43 U	µg/Kg
Anthracene	21 U	22 U	µg/Kg
Fluoranthene	**240**	4.3 U	µg/Kg
Pyrene	**290**	4.3 U	µg/Kg
Benzo(a)anthracene	**280**	22 U	µg/Kg
Chrysene	**160**	4.3 U	µg/Kg
Benzo(b)fluoranthene	**140**	4.3 U	µg/Kg
Benzo(k)fluoranthene	**80**	4.3 U	µg/Kg
Benzo(a)pyrene	**120**	4.3 U	µg/Kg
Dibenzo(a,h)anthracene	**82**	4.3 U	µg/Kg
Benzo(g,h,i)perylene	**120**	4.3 U	µg/Kg
Indeno(1,2,3-cd)pyrene	**65**	4.3 U	µg/Kg
Surrogate(p-terpheny):	**% RECOV**	**% RECOV**	**Units**
True Value	5.0	5.0	µg/Kg
Actual Value	4.3	5.6	µg/Kg
Percent Recovery	86	112	%
Control Limits	39-141	39-141	%
Date Extracted	02/23/00	02/23/00	
Date Analyzed	02/24/00	02/24/00	

MISCELLANEOUS	METHOD	CEF-VA06-SB-19-01'	CEF-AN09-SB-11-2.5'	Units
Percent Solids	SM2540G	**80**	**76**	%
Date Analyzed		02/18/00	02/18/00	

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

ENCO LABORATORIES
REPORT # : JR1789
DATE REPORTED: February 25, 2000
REFERENCE : 0013
PROJECT NAME : 103rd Street Pipeline

RESULTS OF ANALYSIS

EPA METHOD 8310 - PAH BY HPLC	CEF-VA09-SB-11-1.5'	CEF-VA08-SB-11-8.5'	Units
Naphthalene	21 U	18 U	µg/Kg
Acenaphthylene	42 U	37 U	µg/Kg
1-Methylnaphthalene	42 U	37 U	µg/Kg
2-Methylnaphthalene	42 U	37 U	µg/Kg
Acenaphthene	21 U	**46**	µg/Kg
Fluorene	4.2 U	**11**	µg/Kg
Phenanthrene	42 U	37 U	µg/Kg
Anthracene	21 U	18 U	µg/Kg
Fluoranthene	**14**	**65**	µg/Kg
Pyrene	**17**	**140**	µg/Kg
Benzo(a)anthracene	**28**	**130**	µg/Kg
Chrysene	**11**	**94**	µg/Kg
Benzo(b)fluoranthene	4.2 U	**72**	µg/Kg
Benzo(k)fluoranthene	**29**	**86**	µg/Kg
Benzo(a)pyrene	4.2 U	**150**	µg/Kg
Dibenzo(a,h)anthracene	4.2 U	**200**	µg/Kg
Benzo(g,h,i)perylene	4.2 U	**220**	µg/Kg
Indeno(1,2,3-cd)pyrene	4.2 U	**61**	µg/Kg
Surrogate(p-terpheny):	**% RECOV**	**% RECOV**	**Units**
True Value	5.0	5.0	µg/Kg
Actual Value	3.55	5.55	µg/Kg
Percent Recovery	71	111	%
Control Limits	39-141	39-141	%
Date Extracted	02/23/00	02/23/00	
Date Analyzed	02/24/00	02/24/00	

MISCELLANEOUS	METHOD	CEF-VA09-SB-11-1.5'	CEF-VA08-SB-11-8.5'	Units
Percent Solids	SM2540G	**78**	**89**	%
Date Analyzed		02/18/00	02/18/00	

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

ENCO LABORATORIES
REPORT # : JR1789
DATE REPORTED: February 25, 2000
REFERENCE : 0013
PROJECT NAME : 103rd Street Pipeline

RESULTS OF ANALYSIS

EPA METHOD 8310 - PAH BY HPLC	CEF-VA08-SB-10-3.5'	CEF-VA08-SB-09-3.5'	Units
Naphthalene	19 U	18 U	µg/Kg
Acenaphthylene	38 U	37 U	µg/Kg
1-Methylnaphthalene	38 U	37 U	µg/Kg
2-Methylnaphthalene	38 U	37 U	µg/Kg
Acenaphthene	19 U	18 U	µg/Kg
Fluorene	3.8 U	**6.1**	µg/Kg
Phenanthrene	38 U	**53**	µg/Kg
Anthracene	19 U	18 U	µg/Kg
Fluoranthene	**44**	**84**	µg/Kg
Pyrene	**150**	**140**	µg/Kg
Benzo(a)anthracene	**32**	**60**	µg/Kg
Chrysene	**42**	**130**	µg/Kg
Benzo(b)fluoranthene	**110**	3.7 U	µg/Kg
Benzo(k)fluoranthene	**73**	3.7 U	µg/Kg
Benzo(a)pyrene	**120**	3.7 U	µg/Kg
Dibenzo(a,h)anthracene	**160**	3.7 U	µg/Kg
Benzo(g,h,i)perylene	**290**	3.7 U	µg/Kg
Indeno(1,2,3-cd)pyrene	**86**	3.7 U	µg/Kg
Surrogate(p-terpheny):	**% RECOV**	**% RECOV**	**Units**
True Value	5.0	5.0	µg/Kg
Actual Value	5.0	5.95	µg/Kg
Percent Recovery	100	119	%
Control Limits	39-141	39-141	%
Date Extracted	02/23/00	02/23/00	
Date Analyzed	02/24/00	02/25/00	

MISCELLANEOUS	METHOD	CEF-VA08-SB-10-3.5'	CEF-VA08-SB-09-3.5'	Units
Percent Solids	SM2540G	**86**	**90**	%
Date Analyzed		02/18/00	02/18/00	

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

ENCO LABORATORIES
REPORT # : JR1789
DATE REPORTED: February 25, 2000
REFERENCE : 0013
PROJECT NAME : 103rd Street Pipeline

RESULTS OF ANALYSIS

EPA METHOD 8310 - PAH BY HPLC	CEF-VA08-SB-08-8'	CEF-VA06-DU01	Units
Naphthalene	18 U	23 U	µg/Kg
Acenaphthylene	36 U	46 U	µg/Kg
1-Methylnaphthalene	36 U	46 U	µg/Kg
2-Methylnaphthalene	36 U	46 U	µg/Kg
Acenaphthene	18 U	23 U	µg/Kg
Fluorene	3.6 U	4.6 U	µg/Kg
Phenanthrene	36 U	46 U	µg/Kg
Anthracene	18 U	23 U	µg/Kg
Fluoranthene	**13**	**42**	µg/Kg
Pyrene	**43**	**94**	µg/Kg
Benzo(a)anthracene	18 U	**36**	µg/Kg
Chrysene	**13**	**43**	µg/Kg
Benzo(b)fluoranthene	**6.9**	**43**	µg/Kg
Benzo(k)fluoranthene	3.6 U	**25**	µg/Kg
Benzo(a)pyrene	**13**	**35**	µg/Kg
Dibenzo(a,h)anthracene	**26**	**29**	µg/Kg
Benzo(g,h,i)perylene	**19**	**29**	µg/Kg
Indeno(1,2,3-cd)pyrene	**21**	**15**	µg/Kg
Surrogate(p-terpheny):	**% RECOV**	**% RECOV**	**Units**
True Value	5.0	5.0	µg/Kg
Actual Value	3.6	3.5	µg/Kg
Percent Recovery	72	70	%
Control Limits	39-141	39-141	%
Date Extracted	02/23/00	02/23/00	
Date Analyzed	02/24/00	02/24/00	

MISCELLANEOUS	METHOD	CEF-VA08-SB-08-8'	CEF-VA06-DU01	Units
Percent Solids	SM2540G	**91**	**72**	%
Date Analyzed		02/18/00	02/18/00	

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

ENCO LABORATORIES
REPORT # : JR1789
DATE REPORTED: February 25, 2000
REFERENCE : 0013
PROJECT NAME : 103rd Street Pipeline

RESULTS OF ANALYSIS

EPA METHOD 8310 - PAH BY HPLC	CEF-VA06-DU02	LAB BLANK	Units
Naphthalene	20 U	16 U	µg/Kg
Acenaphthylene	40 U	33 U	µg/Kg
1-Methylnaphthalene	40 U	33 U	µg/Kg
2-Methylnaphthalene	40 U	33 U	µg/Kg
Acenaphthene	20 U	16 U	µg/Kg
Fluorene	4.0 U	3.3 U	µg/Kg
Phenanthrene	40 U	33 U	µg/Kg
Anthracene	20 U	16 U	µg/Kg
Fluoranthene	**65**	3.3 U	µg/Kg
Pyrene	**67**	3.3 U	µg/Kg
Benzo(a)anthracene	**32**	16 U	µg/Kg
Chrysene	**39**	3.3 U	µg/Kg
Benzo(b)fluoranthene	**33**	3.3 U	µg/Kg
Benzo(k)fluoranthene	**24**	3.3 U	µg/Kg
Benzo(a)pyrene	**29**	3.3 U	µg/Kg
Dibenzo(a,h)anthracene	**13**	3.3 U	µg/Kg
Benzo(g,h,i)perylene	**18**	3.3 U	µg/Kg
Indeno(1,2,3-cd)pyrene	**20**	3.3 U	µg/Kg
Surrogate(p-terpheny):	**% RECOV**	**% RECOV**	**Units**
True Value	5.0	5.0	µg/Kg
Actual Value	1.95	5.25	µg/Kg
Percent Recovery	39	105	%
Control Limits	39-141	39-141	%
Date Extracted	02/23/00	02/23/00	
Date Analyzed	02/25/00	02/24/00	

MISCELLANEOUS	METHOD	CEF-VA06-DU02	LAB BLANK	Units
Percent Solids	SM2540G	**82**	NR	%
Date Analyzed		02/18/00		

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 # : JR1789
DATE REPORTED: February 25, 2000
REFERENCE : 0013
PROJECT NAME : 103rd Street Pipeline

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	LCS TRUE VALUE	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 8310					
Naphthalene	77/ 73/ 62	2	48-130	5	20
Acenaphthene	#124/141/124	2	36-127	13	17
Benzo(a)pyrene	88/ 68/ 71	2	64-141	#26	22
Benzo(g,h,i)perylene	100/114/ 92	2	58-168	13	21

Environmental Conservation Laboratories Comprehensive QA Plan #910190

= One or more of the associated value failed to meet laboratory established limits for accuracy/precision.
< = Less Than
MS = Matrix Spike
MSD = Matrix Spike Duplicate
LCS = Laboratory Control Standard
RPD = Relative Percent Difference

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ENVIRONMENTAL CONSERVATION LABORATORIES

QSARF #_____

4810 Executive Park Court, Suite 211
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ENCO CompQAP No.: 960038G/0

CHAIN OF CUSTODY RECORD

PROJECT REFERENCE	PROJECT NO.	P.O. NUMBER
103rd Street Pipeline	0013	—

PROJECT LOC. (State)	SAMPLER(s) NAME	PHONE	FAX
FL	Jon Kucera / Eric Parker	281-0400	281-0070

CLIENT NAME	CLIENT PROJECT MANAGER
Tetra Tech NUS	Jon Kucera

CLIENT ADDRESS (CITY, STATE, ZIP): 7018 A.C. Skinner Parkway Suite 250

PAGE 1 OF 1

☒ STANDARD REPORT DELIVERY

☐ EXPEDITED REPORT DELIVERY (surcharge)

Date Due: 2-23-00

STATION	SAMPLE DATE	SAMPLE TIME	GRAB	COMP	SAMPLE IDENTIFICATION	SURFACE WATER	GROUND WATER	WASTEWATER	DRINKING WATER	SOIL/SOLID/SEDIMENT	NONAQUEOUS LIQUID (oil, solvent, etc.)	AIR	SLUDGE	OTHER	8310									REMARKS
															1	PRESERVATIVE								
															NUMBER OF CONTAINERS SUBMITTED									
1	2-16-00	0939	X		CEF-VA06-SB-15-01'					X					1									
2	2-16-00	0930	X		CEF-VA06-SB-16-01'					X					1									
3	2-16-00	0929	X		CEF-VA06-SB-17-01'					X					1									
4	2-16-00	0940	X		CEF-VA06-SB-18-01'					X					1									
5	2-16-00	0932	X		CEF-VA06-SB-19-01'					X					1									
6	2-16-00	1230	X		CEF-AN09-SB-11-2.5'					X					1									
7	2-16-00	1310	X		CEF-VA09-SB-11-1.5					X					1									
8	2-16-00	1449	X		CEF-VA08-SB-11-2.5'					X					1									
9	2-16-00	1517	X		CEF-VA08-SB-10-3.5'					X					1									
10	2-16-00	1541	X		CEF-VA08-SB-09-3.5'					X					1									
11	2-16-00	1545	X		CEF-VA08-SB-08-8'					X					1									
12	2-16-00	0000	X		CEF-VA06-DU01					X					1									
13	2-16-00	0000	X		CEF-VA06-DU02					X					1									
14																								

SAMPLE KIT PREPARED BY: ☒ JACKSONVILLE ☐ ORLANDO	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
	2/15/00	1150	J W Wilson					
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
	2-16-00	1440						
RECEIVED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

RECEIVED FOR LABORATORY BY: (SIGNATURE) ☒ Jacksonville ☐ Orlando	DATE	TIME	CUSTODY INTACT	ENCO LOG NO.	REMARKS
	2-16-00	1440	☒ YES ☐ NO	JR1789	

CLIENT : Tetra Tech NUS
ADDRESS: 7018 A.C. Skinner Parkway
Suite 250
Jacksonville, FL 32256

REPORT # : JR1787
DATE SUBMITTED: February 16, 2000
DATE REPORTED : February 23, 2000

ATTENTION: Mr. John Kucera

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

PROJECT #: N0013 DM0 050 120

NAS Jax Pipeline

02/16/00

#1 - CEF-AN10-2S @ 13:38

PROJECT MANAGER _____
Scott D. Martin

ENCO LABORATORIES
REPORT # : JR1787
DATE REPORTED: February 23, 2000
REFERENCE : N0013 DM0 050 120
PROJECT NAME : NAS Jax Pipeline

RESULTS OF ANALYSIS

EPA METHOD 8310 - PAH BY HPLC	CEF-AN10-2S	LAB BLANK	Units
Naphthalene	0.50 U	0.50 U	µg/L
Acenaphthylene	1.0 U	1.0 U	µg/L
1-Methylnaphthalene	1.0 U	1.0 U	µg/L
2-Methylnaphthalene	1.0 U	1.0 U	µg/L
Acenaphthene	0.50 U	0.50 U	µg/L
Fluorene	0.10 U	0.10 U	µg/L
Phenanthrene	1.0 U	1.0 U	µg/L
Anthracene	0.20 U	0.20 U	µg/L
Fluoranthene	0.10 U	0.10 U	µg/L
Pyrene	0.10 U	0.10 U	µg/L
Benzo(a)anthracene	0.10 U	0.10 U	µg/L
Chrysene	0.10 U	0.10 U	µg/L
Benzo(b)fluoranthene	0.10 U	0.10 U	µg/L
Benzo(k)fluoranthene	0.10 U	0.10 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	0.10 U	0.10 U	µg/L
Surrogate:	**% RECOV**	**% RECOV**	**LIMITS**
p-terphenyl	105	105	43-148
Date Extracted	02/22/00	02/22/00	
Date Analyzed	02/23/00	02/23/00	

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

ENCO LABORATORIES
REPORT # : JR1787
DATE REPORTED: February 23, 2000
REFERENCE : N0013 DM0 050 120
PROJECT NAME : NAS Jax Pipeline

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 8310				
Naphthalene	111/108/ 72	59-111	3	12
Acenaphthene	88/ 89/ 80	58-128	1	13
Benzo(a)pyrene	111/110/ 98	78-134	<1	15
Benzo(g,h,i)perylene	112/109/ 98	62-115	3	30

Environmental Conservation Laboratories Comprehensive QA Plan #910190

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

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Environmental Conservation Laboratories, Inc.
4810 Executive Park Court, Suite 211
Jacksonville, Florida 32216-6069
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www.encolabs.com

ENCO Laboratories

DHRS Certification No. E82277

CLIENT : Tetra Tech NUS
ADDRESS: 7018 A.C. Skinner Parkway
Suite 250
Jacksonville, FL 32256

REPORT # : JAX13654
DATE SUBMITTED: October 10, 2000
DATE REPORTED : October 24, 2000

ATTENTION: Mr. Paul Calligan

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

PROJECT : NOO13

Fuel Transfer Pipline

10/10/00

#1 - CEF-AN10-SB09-02 @ 13:00
#2 - CEF-AN10-SB06-02 @ 13:20
#3 - CEF-AN10-SB07-02 @ 13:45
#4 - CEF-AN10-SB08-02 @ 14:20
#5 - CEF-AN10-SB05-02 @ 14:35
#6 - CEF-AN10-SB10-02 @ 14:50
#7 - CEF-AN10-DUP1

PROJECT MANAGER _____ Scott D. Martin

RECEIVED
NOV 16 2000
TETRA TECH NUS
JACKSONVILLE FL

ENCO LABORATORIES
REPORT # : JAX13654
DATE REPORTED: October 24, 2000
REFERENCE : NOO13
PROJECT NAME : Fuel Transfer Pipline

RESULTS OF ANALYSIS

EPA METHOD 8021 - VOLATILE ORGANICS	CEF-AN10-SB09-02	CEF-AN10-SB06-02	Units
Methyl tert-butyl ether	2.0 U D1	2.0 U D2	µg/Kg
Benzene	1.0 U D1	1.2 U D2	µg/Kg
Toluene	1.0 U D1	1.2 U D2	µg/Kg
Chlorobenzene	1.0 U D1	1.2 U D2	µg/Kg
Ethylbenzene	1.0 U D1	1.2 U D2	µg/Kg
m-Xylene & p-Xylene	**2.0** I D1	2.0 U D2	µg/Kg
o-Xylene	1.0 U D1	1.0 U D2	µg/Kg
1,3-Dichlorobenzene	1.0 U D1	1.0 U D2	µg/Kg
1,4-Dichlorobenzene	1.0 U D1	1.0 U D2	µg/Kg
1,2-Dichlorobenzene	1.0 U D1	1.0 U D2	µg/Kg

Surrogate: (Bromofluorobenzene)	% RECOV	% RECOV	Units
Reported Value	51	46.5	ug/Kg
Expected Value	50	50	ug/Kg
Percent Recovery	102	93	%
Control Limits	28-165	28-165	%
Date Analyzed	10/13/00	10/13/00	

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).
D1 = Analyte value determined from a 1:1.02 dilution.
D2 = Analyte value determined from a 1:1.06 dilution.

ENCO LABORATORIES
REPORT # : JAX13654
DATE REPORTED: October 24, 2000
REFERENCE : NOO13
PROJECT NAME : Fuel Transfer Pipline

RESULTS OF ANALYSIS

EPA METHOD 8310 - PAH BY HPLC	CEF-AN10-SB09-02	CEF-AN10-SB06-02	Units
Naphthalene	18 U	19 U	µg/Kg
Acenaphthylene	37 U	38 U	µg/Kg
1-Methylnaphthalene	37 U	38 U	µg/Kg
2-Methylnaphthalene	37 U	38 U	µg/Kg
Acenaphthene	18 U	**20**	µg/Kg
Fluorene	**25**	**20**	µg/Kg
Phenanthrene	**79**	38 U	µg/Kg
Anthracene	**400**	**160**	µg/Kg
Fluoranthene	**150**	**43**	µg/Kg
Pyrene	**160**	**51**	µg/Kg
Benzo(a)anthracene	**63**	19 U	µg/Kg
Chrysene	**40**	**12**	µg/Kg
Benzo(b)fluoranthene	**66**	**9.9**	µg/Kg
Benzo(k)fluoranthene	**54**	**4.6**	µg/Kg
Benzo(a)pyrene	**160**	**18**	µg/Kg
Dibenzo(a,h)anthracene	**58**	3.8 U	µg/Kg
Benzo(g,h,i)perylene	**210**	**38**	µg/Kg
Indeno(1,2,3-cd)pyrene	**160**	**68**	µg/Kg
Surrogate: (p-terphenyl)	**% RECOV**	**% RECOV**	**Units**
Reported Value	122	130	ug/Kg
Expected Value	165	165	ug/Kg
Percent Recovery	74	79	%
Control Limits	39-141	39-141	%
Date Prepared	10/16/00	10/16/00	
Date Analyzed	10/17/00	10/17/00	

MISCELLANEOUS	METHOD	CEF-AN10-SB09-02	CEF-AN10-SB06-02	Units
Percent Solids	SM2540G	**89**	**88**	%
Date Analyzed		10/14/00	10/14/00	

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

RESULTS OF ANALYSIS

EPA METHOD FLPRO - PETROL. RESIDUAL ORG.	CEF-AN10-SB09-02	CEF-AN10-SB06-02	Units
Hydrocarbons (C8-C40)	**120**	**29**	mg/Kg
Surrogate: (o-terphenyl)	**% RECOV**	**% RECOV**	**Units**
Reported Value	1730	1670	ug/Kg
Expected Value	1650	1650	ug/Kg
Percent Recovery	105	101	%
Control Limits	51-148	51-148	%
Date Extracted	10/12/00	10/12/00	
Date Analyzed	10/13/00	10/13/00	

ENCO LABORATORIES
REPORT # : JAX13654
DATE REPORTED: October 24, 2000
REFERENCE : N0013
PROJECT NAME : Fuel Transfer Pipline

RESULTS OF ANALYSIS

EPA METHOD 8021 - VOLATILE ORGANICS	CEF-AN10-SB07-02	CEF-AN10-SB08-02	Units
Methyl tert-butyl ether	2.0 U D3	2.0 U	µg/Kg
Benzene	1.0 U D3	1.0 U	µg/Kg
Toluene	1.0 U D3	1.0 U	µg/Kg
Chlorobenzene	1.0 U D3	1.0 U	µg/Kg
Ethylbenzene	1.0 U D3	1.0 U	µg/Kg
m-Xylene & p-Xylene	2.0 U D3	2.0 U	µg/Kg
o-Xylene	1.0 U D3	1.0 U	µg/Kg
1,3-Dichlorobenzene	1.0 U D3	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U D3	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U D3	1.0 U	µg/Kg

Surrogate: (Bromofluorobenzene)	% RECOV	% RECOV	Units
Reported Value	47.5	46.5	ug/Kg
Expected Value	50	50	ug/Kg
Percent Recovery	95	93	%
Control Limits	28-165	28-165	%
Date Analyzed	10/13/00	10/13/00	

U = Compound was analyzed for but not detected to the level shown.
D3 = Analyte value determined from a 1:1.04 dilution.

ENCO LABORATORIES
REPORT # : JAX13654
DATE REPORTED: October 24, 2000
REFERENCE : NOO13
PROJECT NAME : Fuel Transfer Pipline

RESULTS OF ANALYSIS

EPA METHOD 8310 - PAH BY HPLC	CEF-AN10-SB07-02	CEF-AN10-SB08-02	Units
Naphthalene	18 U	18 U	µg/Kg
Acenaphthylene	37 U	36 U	µg/Kg
1-Methylnaphthalene	37 U	36 U	µg/Kg
2-Methylnaphthalene	37 U	36 U	µg/Kg
Acenaphthene	**52**	18 U	µg/Kg
Fluorene	**350**	**21**	µg/Kg
Phenanthrene	**1500**	**100**	µg/Kg
Anthracene	**1000**	**410**	µg/Kg
Fluoranthene	**220**	**130**	µg/Kg
Pyrene	**160**	**150**	µg/Kg
Benzo(a)anthracene	**19**	**44**	µg/Kg
Chrysene	**19**	**41**	µg/Kg
Benzo(b)fluoranthene	**22**	**62**	µg/Kg
Benzo(k)fluoranthene	3.7 U	**34**	µg/Kg
Benzo(a)pyrene	**68**	**160**	µg/Kg
Dibenzo(a,h)anthracene	3.7 U	**70**	µg/Kg
Benzo(g,h,i)perylene	**88**	**190**	µg/Kg
Indeno(1,2,3-cd)pyrene	**78**	**180**	µg/Kg

Surrogate: (p-terphenyl)	% RECOV	% RECOV	Units
Reported Value	111	124	ug/Kg
Expected Value	165	165	ug/Kg
Percent Recovery	67	72	%
Control Limits	39-141	39-141	%
Date Prepared	10/16/00	10/16/00	
Date Analyzed	10/17/00	10/17/00	

MISCELLANEOUS	METHOD	CEF-AN10-SB07-02	CEF-AN10-SB08-02	Units
Percent Solids	SM2540G	**89**	**91**	%
Date Analyzed		10/14/00	10/14/00	

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

ENCO LABORATORIES
REPORT # : JAX13654
DATE REPORTED: October 24, 2000
REFERENCE : NOO13
PROJECT NAME : Fuel Transfer Pipline

RESULTS OF ANALYSIS

EPA METHOD FLPRO - PETROL. RESIDUAL ORG.	CEF-AN10-SB07-02	CEF-AN10-SB08-02	Units
Hydrocarbons (C8-C40)	46	98	mg/Kg
Surrogate: (o-terphenyl)	**% RECOV**	**% RECOV**	**Units**
Reported Value	1620	1650	ug/Kg
Expected Value	1650	1650	ug/Kg
Percent Recovery	98	100	%
Control Limits	51-148	51-148	%
Date Extracted	10/12/00	10/12/00	
Date Analyzed	10/13/00	10/13/00	

RESULTS OF ANALYSIS

EPA METHOD 8021 - VOLATILE ORGANICS	CEF-AN10-SB05-02			CEF-AN10-SB10-02			Units
Methyl tert-butyl ether	2.0	U	D4	2.0	U	D3	µg/Kg
Benzene	1.2	U	D4	1.0	U	D3	µg/Kg
Toluene	**2.7**	I	D4	**2.0**	I	D3	µg/Kg
Chlorobenzene	1.2	U	D4	1.0	U	D3	µg/Kg
Ethylbenzene	1.2	U	D4	1.0	U	D3	µg/Kg
m-Xylene & p-Xylene	**3.0**	I	D4	2.0	U	D3	µg/Kg
o-Xylene	1.0	U	D4	1.0	U	D3	µg/Kg
1,3-Dichlorobenzene	1.0	U	D4	1.0	U	D3	µg/Kg
1,4-Dichlorobenzene	1.0	U	D4	1.0	U	D3	µg/Kg
1,2-Dichlorobenzene	1.0	U	D4	1.0	U	D3	µg/Kg

Surrogate: (Bromofluorobenzene)	% RECOV	% RECOV	Units
Reported Value	43	40	ug/Kg
Expected Value	50	50	ug/Kg
Percent Recovery	86	80	%
Control Limits	28-165	28-165	%
Date Analyzed	10/13/00	10/13/00	

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).
D3 = Analyte value determined from a 1:1.04 dilution.
D4 = Analyte value determined from a 1:1.09 dilution.

ENCO LABORATORIES
REPORT # : JAX13654
DATE REPORTED: October 24, 2000
REFERENCE : NOO13
PROJECT NAME : Fuel Transfer Pipline

RESULTS OF ANALYSIS

EPA METHOD 8310 - PAH BY HPLC	CEF-AN10-SB05-02	CEF-AN10-SB10-02	Units
Naphthalene	18 U	18 U	µg/Kg
Acenaphthylene	37 U	36 U	µg/Kg
1-Methylnaphthalene	37 U	36 U	µg/Kg
2-Methylnaphthalene	37 U	36 U	µg/Kg
Acenaphthene	18 U	18 U	µg/Kg
Fluorene	**26**	3.6 U	µg/Kg
Phenanthrene	37 U	36 U	µg/Kg
Anthracene	**520**	**250**	µg/Kg
Fluoranthene	**160**	**80**	µg/Kg
Pyrene	**180**	**110**	µg/Kg
Benzo(a)anthracene	**69**	**37**	µg/Kg
Chrysene	**77**	**56**	µg/Kg
Benzo(b)fluoranthene	**21**	**47**	µg/Kg
Benzo(k)fluoranthene	**50**	**35**	µg/Kg
Benzo(a)pyrene	**160**	**120**	µg/Kg
Dibenzo(a,h)anthracene	**57**	**51**	µg/Kg
Benzo(g,h,i)perylene	**200**	**160**	µg/Kg
Indeno(1,2,3-cd)pyrene	**130**	**110**	µg/Kg
Surrogate: (p-terphenyl)	**% RECOV**	**% RECOV**	**Units**
Reported Value	144	125	ug/Kg
Expected Value	165	165	ug/Kg
Percent Recovery	87	76	%
Control Limits	39-141	39-141	%
Date Prepared	10/16/00	10/16/00	
Date Analyzed	10/17/00	10/17/00	

MISCELLANEOUS	METHOD	CEF-AN10-SB05-02	CEF-AN10-SB10-02	Units
Percent Solids	SM2540G	**90**	**92**	%
Date Analyzed		10/14/00	10/14/00	

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

RESULTS OF ANALYSIS

EPA METHOD FLPRO - PETROL. RESIDUAL ORG.	CEF-AN10-SB05-02	CEF-AN10-SB10-02	Units
Hydrocarbons (C8-C40)	**150**	**72**	mg/Kg
Surrogate: (o-terphenyl)	**% RECOV**	**% RECOV**	**Units**
Reported Value	1830	1900	ug/Kg
Expected Value	1650	1650	ug/Kg
Percent Recovery	111	115	%
Control Limits	51-148	51-148	%
Date Extracted	10/12/00	10/12/00	
Date Analyzed	10/13/00	10/13/00	

ENCO LABORATORIES
REPORT # : JAX13654
DATE REPORTED: October 24, 2000
REFERENCE : NOO13
PROJECT NAME : Fuel Transfer Pipline

RESULTS OF ANALYSIS

EPA METHOD 8021 - VOLATILE ORGANICS	CEF-AN10-DUP1	LAB BLANK	Units
Methyl tert-butyl ether	2.0 U D4	2.0 U	µg/Kg
Benzene	1.2 U D4	1.0 U	µg/Kg
Toluene	1.2 U D4	1.0 U	µg/Kg
Chlorobenzene	1.2 U D4	1.0 U	µg/Kg
Ethylbenzene	1.2 U D4	1.0 U	µg/Kg
m-Xylene & p-Xylene	2.0 U D4	2.0 U	µg/Kg
o-Xylene	1.0 U D4	1.0 U	µg/Kg
1,3-Dichlorobenzene	1.0 U D4	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U D4	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U D4	1.0 U	µg/Kg

Surrogate: (Bromofluorobenzene)	% RECOV	% RECOV	Units
Reported Value	44.5	56	ug/Kg
Expected Value	50	50	ug/Kg
Percent Recovery	89	112	%
Control Limits	28-165	28-165	%
Date Analyzed	10/13/00	10/13/00	

U = Compound was analyzed for but not detected to the level shown.
D4 = Analyte value determined from a 1:1.09 dilution.

RESULTS OF ANALYSIS

EPA METHOD 8310 - PAH BY HPLC	CEF-AN10-DUP1	LAB BLANK	Units
Naphthalene	18 U	16 U	µg/Kg
Acenaphthylene	37 U	33 U	µg/Kg
1-Methylnaphthalene	37 U	33 U	µg/Kg
2-Methylnaphthalene	37 U	33 U	µg/Kg
Acenaphthene	18 U	16 U	µg/Kg
Fluorene	**18**	3.3 U	µg/Kg
Phenanthrene	**50**	33 U	µg/Kg
Anthracene	**390**	16 U	µg/Kg
Fluoranthene	**97**	3.3 U	µg/Kg
Pyrene	**120**	3.3 U	µg/Kg
Benzo(a)anthracene	**42**	16 U	µg/Kg
Chrysene	**53**	3.3 U	µg/Kg
Benzo(b)fluoranthene	**58**	3.3 U	µg/Kg
Benzo(k)fluoranthene	**42**	3.3 U	µg/Kg
Benzo(a)pyrene	**160**	3.3 U	µg/Kg
Dibenzo(a,h)anthracene	**58**	3.3 U	µg/Kg
Benzo(g,h,i)perylene	**170**	3.3 U	µg/Kg
Indeno(1,2,3-cd)pyrene	**140**	3.3 U	µg/Kg
Surrogate: (p-terphenyl)	**% RECOV**	**% RECOV**	**Units**
Reported Value	124	134	ug/Kg
Expected Value	165	165	ug/Kg
Percent Recovery	75	81	%
Control Limits	39-141	39-141	%
Date Prepared	10/16/00	10/16/00	
Date Analyzed	10/17/00	10/17/00	

MISCELLANEOUS	METHOD	CEF-AN10-DUP1	LAB BLANK	Units
Percent Solids	SM2540G	**90**	NA	%
Date Analyzed		10/14/00		

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

ENCO LABORATORIES
REPORT # : JAX13654
DATE REPORTED: October 24, 2000
REFERENCE : NOO13
PROJECT NAME : Fuel Transfer Pipline

RESULTS OF ANALYSIS

EPA METHOD FLPRO - PETROL. RESIDUAL ORG.	CEF-AN10-DUP1	LAB BLANK	Units
Hydrocarbons (C8-C40)	67	6.6 U	mg/Kg
Surrogate: (o-terphenyl)	**% RECOV**	**% RECOV**	**Units**
Reported Value	1850	1420	ug/Kg
Expected Value	1650	1650	ug/Kg
Percent Recovery	112	86	%
Control Limits	51-148	51-148	%
Date Extracted	10/12/00	10/12/00	
Date Analyzed	10/13/00	10/13/00	

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

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 8021				
Benzene	92/ 92/ 90	59-144	<1	25
Toluene	101/ 94/ 88	67-132	7	58
Ethylbenzene	72/ 69/ 95	60-169	4	28
o-Xylene	82/ 76/102	62-183	8	24
EPA Method 8310				
Naphthalene	71/ 71/ 64	48-130	<1	20
Acenaphthene	82/ 72/ 72	36-127	13	17
Benzo(a)pyrene	86/ 79/ 64	64-141	8	22
Benzo(g,h,i)perylene	86/ 82/ 79	58-168	5	21
PETROL. RESIDUAL ORG.				
Hydrocarbons (C8-C40)	97/ 84/ 90	62-204	14	25

Environmental Conservation Laboratories Comprehensive QA Plan #910190

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

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TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER N0013-101000 | PAGE 1 OF ____

PROJECT NO: N0013	SITE NAME: NASCF-NASJAX FUEL TRANSFER PIPELINE	PROJECT MANAGER AND PHONE NUMBER: PAUL CALLIGAN 850 385 9866 x.24	LABORATORY NAME AND CONTACT: ENCO SCOTT MARTIN 296-3007
SAMPLERS (SIGNATURE): Merv Dale, Tony Hewitt, Louis Knight		FIELD OPERATIONS LEADER AND PHONE NUMBER: MERV DALE 904 281 1941 x.14	ADDRESS: 4810 EXECUTIVE PARK CT, Ste 211
		CARRIER/WAYBILL NUMBER	CITY, STATE: JAX, FL 32216

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

JAX 13654

DATE YEAR 2000	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	SW846 8021B VOAs + MTBE	SW846 8310 PAHs	TRPH	FL-PRO					COMMENTS
CONTAINER TYPE PLASTIC (P) or GLASS (G)														
PRESERVATIVE USED						None	None	None						
10/10	1300	CEF-AN10-SB09-02	SO	G	4	3	✓	✓						Cool to 4°C
10/10	1320	CEF-AN10-SB06-02	SO	G	4	3	✓	✓						
10/10	1345	CEF-AN10-SB07-02	SO	G	4	3	✓	✓						
10/10	1420	CEF-AN10-SB08-02	SO	G	4	3	✓	✓						
10/10	1435	CEF-AN10-SB05-02	SO	G	4	3	✓	✓						
10/10	1450	CEF-AN10-SB10-02	SO	G	4	3	✓	✓						
10/10	0000	CEF-AN10-~~SB~~ DUP1	SO	G	4	3	✓	✓						

1. RELINQUISHED BY: Merv Dale	DATE 10/10/00	TIME 1645	1. RECEIVED BY: J Hampman	DATE 10/10/00	TIME 1645
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS: P.O. # N0013-P99201 (SS)

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

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FORM NO. TtNUS-001

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

ENCO Laboratories

DHRS Certification No. E82277

CLIENT : Tetra Tech NUS
ADDRESS: 7018 A.C. Skinner Parkway
Suite 250
Jacksonville, FL 32256

REPORT # : JAX13681
DATE SUBMITTED: October 11, 2000
DATE REPORTED : October 24, 2000

ATTENTION: Mr. Paul Calligan

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

PROJECT #: NOO13

Fuel Transfer Pipline

10/11/00

#1 - CEF-AN10-SB12-02 @ 09:50
#2 - CEF-AN10-SB13-02 @ 10:10
#3 - CEF-AN10-SB11-02 @ 10:25
#4 - CEF-AN10-SB14-02 @ 11:10
#5 - CEF-AN10-SB15-02 @ 11:35
#6 - CEF-AN10-SB16-0 @ 13:30

PROJECT MANAGER Scott D Martin
Scott D. Martin

ENCO LABORATORIES
REPORT # : JAX13681
DATE REPORTED: October 24, 2000
REFERENCE : NOO13
PROJECT NAME : Fuel Transfer Pipline

RESULTS OF ANALYSIS

EPA METHOD 8260 - 8260 Aromatics	CEF-AN10-SB12-02	CEF-AN10-SB13-02	Units
Methyl tert-butyl ether	1.0 U	1.2 U D1	µg/Kg
Benzene	1.1 U	1.2 U D1	µg/Kg
Toluene	**2.4**	**4.2** D1	µg/Kg
Chlorobenzene	1.0 U	1.2 U D1	µg/Kg
Ethylbenzene	1.0 U	1.2 U D1	µg/Kg
m-Xylene & p-Xylene	2.0 U	2.4 U D1	µg/Kg
o-Xylene	1.1 U	1.2 U D1	µg/Kg
1,3-Dichlorobenzene	1.0 U	1.2 U D1	µg/Kg
1,4-Dichlorobenzene	1.0 U	1.2 U D1	µg/Kg
1,2-Dichlorobenzene	1.0 U	1.2 U D1	µg/Kg

Surrogate: (Dibromofluoroethane)	% RECOV	% RECOV	Units
Reported Value	49.5	48.5	ug/Kg
Expected Value	50	50	ug/Kg
Percent Recovery	99	97	%
Control Limits	69-138	69-138	%

Surrogate: (D8-Tolvene)	% RECOV	% RECOV	Units
Reported Value	52.5	52	ug/Kg
Expected Value	50	50	ug/Kg
Percent Recovery	105	104	%
Control Limits	69-138	67-138	%

Surrogate: (Bromofluorobenzene)	% RECOV	% RECOV	Units
Reported Value	48	49	ug/Kg
Expected Value	50	50	ug/Kg
Percent Recovery	96	98	%
Control Limits	64-131	64-131	%
Date Analyzed	10/23/00	10/23/00	

U = Compound was analyzed for but not detected to the level shown.
D1 = Analyte value determined from a 1:1.06 dilution.

ENCO LABORATORIES
REPORT # : JAX13681
DATE REPORTED: October 24, 2000
REFERENCE : NOO13
PROJECT NAME : Fuel Transfer Pipline

RESULTS OF ANALYSIS

EPA METHOD 8310 - PAH BY HPLC	CEF-AN10-SB12-02	CEF-AN10-SB13-02	Units
Naphthalene	190 U D2	190 U D2	µg/Kg
Acenaphthylene	380 U D2	380 U D2	µg/Kg
1-Methylnaphthalene	380 U D2	380 U D2	µg/Kg
2-Methylnaphthalene	380 U D2	380 U D2	µg/Kg
Acenaphthene	190 U D2	190 U D2	µg/Kg
Fluorene	38 U D2	38 U D2	µg/Kg
Phenanthrene	380 U D2	380 U D2	µg/Kg
Anthracene	190 U D2	190 U D2	µg/Kg
Fluoranthene	38 U D2	38 U D2	µg/Kg
Pyrene	**76** D2	**61** D2	µg/Kg
Benzo(a)anthracene	190 U D2	190 U D2	µg/Kg
Chrysene	38 U D2	38 U D2	µg/Kg
Benzo(b)fluoranthene	38 U D2	38 U D2	µg/Kg
Benzo(k)fluoranthene	38 U D2	38 U D2	µg/Kg
Benzo(a)pyrene	38 U D2	38 U D2	µg/Kg
Dibenzo(a,h)anthracene	38 U D2	38 U D2	µg/Kg
Benzo(g,h,i)perylene	**79** D2	**50** D2	µg/Kg
Indeno(1,2,3-cd)pyrene	**49** D2	38 U D2	µg/Kg
Surrogate: (p-terphenyl)	**% RECOV**	**% RECOV**	**Units**
Reported Value	163	167	ug/Kg
Expected Value	165	165	ug/Kg
Percent Recovery	99	101	%
Control Limits	39-141	39-141	%
Date Prepared	10/16/00	10/16/00	
Date Analyzed	10/20/00	10/10/00	

MISCELLANEOUS	METHOD	CEF-AN10-SB12-02	CEF-AN10-SB13-02	Units
Percent Solids	SM2540G	**86**	**88**	%
Date Analyzed		10/14/00	10/14/00	

U = Compound was analyzed for but not detected to the level shown.
D2 = Analyte value determined from a 1:10 dilution.

RESULTS OF ANALYSIS

EPA METHOD FLPRO - PETROL. RESIDUAL ORG.	CEF-AN10-SB12-02	CEF-AN10-SB13-02	Units
Hydrocarbons (C8-C40)	42	230	mg/Kg
Surrogate: (o-terphenyl)	**% RECOV**	**% RECOV**	**Units**
Reported Value	1780	1950	ug/Kg
Expected Value	1650	1650	ug/Kg
Percent Recovery	108	118	%
Control Limits	51-148	51-148	%
Date Extracted	10/12/00	10/12/00	
Date Analyzed	10/13/00	10/13/00	

RESULTS OF ANALYSIS

EPA METHOD 8260 - 8260 Aromatics	CEF-AN10-SB11-02	CEF-AN10-SB14-02	Units
Methyl tert-butyl ether	1.0 U	1.1 U	µg/Kg
Benzene	1.1 U	1.1 U	µg/Kg
Toluene	**6.4**	**2.5**	µg/Kg
Chlorobenzene	1.0 U	1.1 U	µg/Kg
Ethylbenzene	1.0 U	1.1 U	µg/Kg
m-Xylene & p-Xylene	2.0 U	2.3 U	µg/Kg
o-Xylene	**1.0**	1.1 U	µg/Kg
1,3-Dichlorobenzene	1.0 U	1.1 U	µg/Kg
1,4-Dichlorobenzene	1.0 U	1.1 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	1.1 U	µg/Kg

Surrogate: (Dibromofluoroethane)	% RECOV	% RECOV	Units
Reported Value	49	49	ug/Kg
Expected Value	50	50	ug/Kg
Percent Recovery	98	98	%
Control Limits	69-138	69-138	%

Surrogate: (D8-Tolvene)	% RECOV	% RECOV	Units
Reported Value	43	52	ug/Kg
Expected Value	50	50	ug/Kg
Percent Recovery	86	104	%
Control Limits	67-123	67-123	%

Surrogate: (Bromofluorobenzene)	% RECOV	% RECOV	Units
Reported Value	72	47	ug/Kg
Expected Value	50	50	ug/Kg
Percent Recovery	144	94	%
Control Limits	64-131	64-131	%
Date Analyzed	10/24/00	10/23/00	

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

ENCO LABORATORIES
REPORT # : JAX13681
DATE REPORTED: October 24, 2000
REFERENCE : NOO13
PROJECT NAME : Fuel Transfer Pipline

RESULTS OF ANALYSIS

EPA METHOD 8310 - PAH BY HPLC	CEF-AN10-SB11-02	CEF-AN10-SB14-02	Units
Naphthalene	190 U D2	200 U D2	µg/Kg
Acenaphthylene	380 U D2	390 U D2	µg/Kg
1-Methylnaphthalene	**4500** D2	390 U D2	µg/Kg
2-Methylnaphthalene	**7100** D2	390 U D2	µg/Kg
Acenaphthene	**600** D2	200 U D2	µg/Kg
Fluorene	**2300** D2	39 U D2	µg/Kg
Phenanthrene	**5400** D2	390 U D2	µg/Kg
Anthracene	190 U D2	200 U D2	µg/Kg
Fluoranthene	38 U D2	39 U D2	µg/Kg
Pyrene	38 U D2	39 U D2	µg/Kg
Benzo(a)anthracene	190 U D2	200 U D2	µg/Kg
Chrysene	38 U D2	39 U D2	µg/Kg
Benzo(b)fluoranthene	38 U D2	39 U D2	µg/Kg
Benzo(k)fluoranthene	38 U D2	39 U D2	µg/Kg
Benzo(a)pyrene	38 U D2	39 U D2	µg/Kg
Dibenzo(a,h)anthracene	38 U D2	39 U D2	µg/Kg
Benzo(g,h,i)perylene	38 U D2	39 U D2	µg/Kg
Indeno(1,2,3-cd)pyrene	38 U D2	39 U D2	µg/Kg
Surrogate: (p-terphenyl)	**% RECOV**	**% RECOV**	**Units**
Reported Value	*	152	ug/Kg
Expected Value	165	165	ug/Kg
Percent Recovery	*	92	%
Control Limits	39-141	39-141	%
Date Prepared	10/16/00	10/16/00	
Date Analyzed	10/20/00	10/10/00	

MISCELLANEOUS	METHOD	CEF-AN10-SB11-02	CEF-AN10-SB14-02	Units
Percent Solids	SM2540G	**88**	**84**	%
Date Analyzed		10/14/00	10/14/00	

* = Surrogate recvoery unavailable due to matrix interference.
U = Compound was analyzed for but not detected to the level shown.
D2 = Analyte value determined from a 1:10 dilution.

ENCO LABORATORIES
REPORT # : JAX13681
DATE REPORTED: October 24, 2000
REFERENCE : NOO13
PROJECT NAME : Fuel Transfer Pipline

RESULTS OF ANALYSIS

EPA METHOD FLPRO - PETROL. RESIDUAL ORG.	CEF-AN10-SB11-02		CEF-AN10-SB14-02	Units
Hydrocarbons (C8-C40)	**4300**	D3	**21**	mg/Kg
Surrogate: (o-terphenyl)	**% RECOV**		**% RECOV**	**Units**
Reported Value	*		1850	ug/Kg
Expected Value	1650		1650	ug/Kg
Percent Recovery	*		112	%
Control Limits	51-148		51-148	%
Date Extracted	10/12/00		10/12/00	
Date Analyzed	10/17/00		10/14/00	

* = Surrogate recovery unavailable due to sample dilution.
U = Compound was analyzed for but not detected to the level shown.
D3 = Analyte value determined from a 1:20 dilution.

RESULTS OF ANALYSIS

EPA METHOD 8260 - 8260 Aromatics	CEF-AN10-SB15-02			CEF-AN10-SB16-0			Units
Methyl tert-butyl ether	1.3	U	D1	1.2	U	D1	µg/Kg
Benzene	1.3	U	D1	1.2	U	D1	µg/Kg
Toluene	**1.6**		D1	**3.4**		D1	µg/Kg
Chlorobenzene	1.3	U	D1	1.2	U	D1	µg/Kg
Ethylbenzene	1.3	U	D1	1.2	U	D1	µg/Kg
m-Xylene & p-Xylene	2.5	U	D1	2.3	U	D1	µg/Kg
o-Xylene	1.3	U	D1	1.2	U	D1	µg/Kg
1,3-Dichlorobenzene	1.3	U	D1	1.2	U	D1	µg/Kg
1,4-Dichlorobenzene	1.3	U	D1	1.2	U	D1	µg/Kg
1,2-Dichlorobenzene	1.3	U	D1	1.2	U	D1	µg/Kg

Surrogate: (Dibromofluoroethane)	% RECOV	% RECOV	Units
Reported Value	48	49	ug/Kg
Expected Value	50	50	ug/Kg
Percent Recovery	96	99	%
Control Limits	69-138	69-138	%

Surrogate: (D8-Tolvene)	% RECOV	% RECOV	Units
Reported Value	51.5	52	ug/Kg
Expected Value	50	50	ug/Kg
Percent Recovery	103	104	%
Control Limits	69-123	67-123	%

Surrogate: (Bromofluorobenzene)	% RECOV	% RECOV	Units
Reported Value	44.5	48	ug/Kg
Expected Value	50	50	ug/Kg
Percent Recovery	89	96	%
Control Limits	64-131	64-131	%
Date Analyzed	10/24/00	10/24/00	

U = Compound was analyzed for but not detected to the level shown.
D1 = Analyte value determined from a 1:1.06 dilution.

RESULTS OF ANALYSIS

EPA METHOD 8310 - PAH BY HPLC	CEF-AN10-SB15-02	CEF-AN10-SB16-0	Units
Naphthalene	190 U D2	180 U D2	µg/Kg
Acenaphthylene	390 U D2	360 U D2	µg/Kg
1-Methylnaphthalene	390 U D2	360 U D2	µg/Kg
2-Methylnaphthalene	390 U D2	360 U D2	µg/Kg
Acenaphthene	190 U D2	180 U D2	µg/Kg
Fluorene	39 U D2	**52** D2	µg/Kg
Phenanthrene	390 U D2	360 U D2	µg/Kg
Anthracene	190 U D2	180 U D2	µg/Kg
Fluoranthene	39 U D2	**200** D2	µg/Kg
Pyrene	39 U D2	**290** D2	µg/Kg
Benzo(a)anthracene	190 U D2	180 U D2	µg/Kg
Chrysene	39 U D2	**210** D2	µg/Kg
Benzo(b)fluoranthene	39 U D2	**76** D2	µg/Kg
Benzo(k)fluoranthene	39 U D2	**94** D2	µg/Kg
Benzo(a)pyrene	39 U D2	**110** D2	µg/Kg
Dibenzo(a,h)anthracene	39 U D2	36 U D2	µg/Kg
Benzo(g,h,i)perylene	39 U D2	**310** D2	µg/Kg
Indeno(1,2,3-cd)pyrene	39 U D2	36 U D2	µg/Kg
Surrogate: (p-terphenyl)	**% RECOV**	**% RECOV**	**Units**
Reported Value	155	172	ug/Kg
Expected Value	165	165	ug/Kg
Percent Recovery	94	104	%
Control Limits	39-141	39-141	%
Date Prepared	10/16/00	10/16/00	
Date Analyzed	10/20/00	10/20/00	

MISCELLANEOUS	METHOD	CEF-AN10-SB15-02	CEF-AN10-SB16-0	Units
Percent Solids	SM2540G	**85**	**91**	%
Date Analyzed		10/14/00	10/14/00	

U = Compound was analyzed for but not detected to the level shown.
D2 = Analyte value determined from a 1:10 dilution.

RESULTS OF ANALYSIS

EPA METHOD FLPRO - PETROL. RESIDUAL ORG.	CEF-AN10-SB15-02	CEF-AN10-SB16-0	Units
Hydrocarbons (C8-C40)	29	96	mg/Kg
Surrogate: (o-terphenyl)	**% RECOV**	**% RECOV**	**Units**
Reported Value	1830	1730	ug/Kg
Expected Value	1650	1650	ug/Kg
Percent Recovery	111	105	%
Control Limits	51-148	51-148	%
Date Extracted	10/12/00	10/12/00	
Date Analyzed	10/14/00	10/14/00	

RESULTS OF ANALYSIS

EPA METHOD 8260 - 8260 Aromatics	LAB BLANK	Units
Methyl tert-butyl ether	1.0 U	µg/Kg
Benzene	1.0 U	µg/Kg
Toluene	1.0 U	µg/Kg
Chlorobenzene	1.0 U	µg/Kg
Ethylbenzene	1.0 U	µg/Kg
m-Xylene & p-Xylene	2.0 U	µg/Kg
o-Xylene	1.0 U	µg/Kg
1,3-Dichlorobenzene	1.0 U	µg/Kg
1,4-Dichlorobenzene	1.0 U	µg/Kg
1,2-Dichlorobenzene	1.0 U	µg/Kg

Surrogate: (Dibromofluoroethane)	% RECOV	Units
Reported Value	48.5	ug/Kg
Expected Value	50	ug/Kg
Percent Recovery	97	%
Control Limits	69-138	%

Surrogate: (D8-Tolvene)	% RECOV	Units
Reported Value	51	ug/Kg
Expected Value	50	ug/Kg
Percent Recovery	102	%
Control Limits	67-123	%

Surrogate: (Bromofluorobenzene)	% RECOV	Units
Reported Value	50.5	ug/Kg
Expected Value	50	ug/Kg
Percent Recovery	101	%
Control Limits	64-131	%
Date Analyzed	10/23/00	

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

ENCO LABORATORIES
REPORT # : JAX13681
DATE REPORTED: October 24, 2000
REFERENCE : NOO13
PROJECT NAME : Fuel Transfer Pipline

RESULTS OF ANALYSIS

EPA METHOD 8310 - PAH BY HPLC	LAB BLANK	Units
Naphthalene	16 U	µg/Kg
Acenaphthylene	33 U	µg/Kg
1-Methylnaphthalene	33 U	µg/Kg
2-Methylnaphthalene	33 U	µg/Kg
Acenaphthene	16 U	µg/Kg
Fluorene	3.3 U	µg/Kg
Phenanthrene	33 U	µg/Kg
Anthracene	16 U	µg/Kg
Fluoranthene	3.3 U	µg/Kg
Pyrene	3.3 U	µg/Kg
Benzo(a)anthracene	16 U	µg/Kg
Chrysene	3.3 U	µg/Kg
Benzo(b)fluoranthene	3.3 U	µg/Kg
Benzo(k)fluoranthene	3.3 U	µg/Kg
Benzo(a)pyrene	3.3 U	µg/Kg
Dibenzo(a,h)anthracene	3.3 U	µg/Kg
Benzo(g,h,i)perylene	3.3 U	µg/Kg
Indeno(1,2,3-cd)pyrene	3.3 U	µg/Kg

Surrogate: (p-terphenyl)	% RECOV	Units
Reported Value	134	ug/Kg
Expected Value	135	ug/Kg
Percent Recovery	81	%
Control Limits	39-141	%
Date Prepared	10/16/00	
Date Analyzed	10/16/00	

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

RESULTS OF ANALYSIS

EPA METHOD FLPRO - PETROL. RESIDUAL ORG.	LAB BLANK	Units
Hydrocarbons (C8-C40)	6.6 U	mg/Kg
Surrogate: (o-terphenyl)	**% RECOV**	**Units**
Reported Value	1830	ug/Kg
Expected Value	1650	ug/Kg
Percent Recovery	111	%
Control Limits	51-148	%
Date Extracted	10/12/00	
Date Analyzed	10/14/00	

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

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 8260				
1,1-Dichloroethene	103/107/111	44-169	4	19
Benzene	132/130/125	50-140	2	23
Trichloroethene	101/ 98/101	75-125	3	17
Toluene	102/101/103	56-139	<1	22
Chlorobenzene	88/ 88/ 91	73-123	<1	24
EPA Method 8310				
Naphthalene	71/ 71/ 64	48-130	<1	20
Acenaphthene	82/ 72/ 72	36-127	13	17
Benzo(a)pyrene	86/ 79/ 64	64-141	8	22
Benzo(g,h,i)perylene	86/ 82/ 79	58-168	5	21
PETROL. RESIDUAL ORG.				
Hydrocarbons (C8-C40)	97/ 84/ 90	62-204	14	25

Environmental Conservation Laboratories Comprehensive QA Plan #910190

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

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TETRA TECH NUS, INC.

CHAIN OF CUSTODY

NUMBER N0013-101100

PAGE 1 OF 1

PROJECT NO:	0013
SITE NAME:	NASCF-NASJAX FUEL PIPELINE
PROJECT MANAGER AND PHONE NUMBER	PAUL CALLIGAN 850385 9866 x.24
LABORATORY NAME AND CONTACT:	ENCO SCOTT MARTIN
SAMPLERS (SIGNATURE)	Merwin Dale
FIELD OPERATIONS LEADER AND PHONE NUMBER	MERV DALE 904281 1541 x.14
ADDRESS	4810 EXECUTIVE PARK CT., STE 211
CARRIER/WAYBILL NUMBER	Hand Deliver
CITY, STATE	JAX, FL 32216

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

JAX13681

DATE YEAR 2000	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	SW846 8021B VOA's + MTBE	SW846 PAH	TPH FL-PRO						COMMENTS
CONTAINER TYPE PLASTIC (P) or GLASS (G)						P	G	G						
PRESERVATIVE USED						None	none	none						
10/11	0950	CEF-AN10-~~SB12~~-02 MD	SO	G	~~3~~ 4	3	✓	✓						Cool to 4°C
10/11	1010	CEF-AN10-SB13-02	SO	G	4	3	✓	✓						
10/11	1025	CEF-AN10-~~SB14~~-02 11 MD	SO	G	4	3	✓	✓						
10/11	1110	CEF-AN10-SB14-02	SO	G	4	3	✓	✓						
10/11	1135	CEF-AN10-SB15-02	SO	G	4	3	✓	✓						
10/11	1330	CEF-AN10-SB16-0	SO	G	4	3	✓	✓						

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	101100	1450	1. RECEIVED BY	10/11/00	14:50
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS P.O. # N0013-P99201(SS)

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

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FORM NO. TtNUS-001

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

ENCO Laboratories

DHRS Certification No. E82277

CLIENT : Tetra Tech NUS
ADDRESS: 7018 A.C. Skinner Parkway
Suite 250
Jacksonville, FL 32256

REPORT # : JAX14010
DATE SUBMITTED: October 27, 2000
DATE REPORTED : November 6, 2000

ATTENTION: Mr. Paul Calligan

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

PROJECT : NOO13

Fuel Transfer Pipline

10/27/00

#1 - CF-VA 08-SB 14-08 @ 11:43
#2 - CF-VA 08-SB 1~~4~~5-03 @ 12:03 see C.O.C.

RECEIVED
NOV 16 2000
TETRA TECH NUS
JACKSONVILLE FL

PROJECT MANAGER Scott D Martin
Scott D. Martin

ENCO LABORATORIES
REPORT # : JAX14010
DATE REPORTED: November 6, 2000
REFERENCE : NOO13
PROJECT NAME : Fuel Transfer Pipline

RESULTS OF ANALYSIS

EPA METHOD 8310 - PAH BY HPLC	CF-VA 08-SB 14-08	CF-VA 08-SB 14-03 (15 - see c.o.c.)	Units
Naphthalene	180 U D1	99 U D2	µg/Kg
Acenaphthylene	370 U D1	200 U D2	µg/Kg
1-Methylnaphthalene	370 U D1	200 U D2	µg/Kg
2-Methylnaphthalene	370 U D1	200 U D2	µg/Kg
Acenaphthene	180 U D1	99 U D2	µg/Kg
Fluorene	**98** D1	**72** D2	µg/Kg
Phenanthrene	370 U D1	200 U D2	µg/Kg
Anthracene	180 U D1	99 U D2	µg/Kg
Fluoranthene	**170** D1	**60** D2	µg/Kg
Pyrene	**210** D1	**78** D2	µg/Kg
Benzo(a)anthracene	180 U D1	99 U D2	µg/Kg
Chrysene	**88** D1	**26** D2	µg/Kg
Benzo(b)fluoranthene	37 U D1	**31** D2	µg/Kg
Benzo(k)fluoranthene	37 U D1	**29** D2	µg/Kg
Benzo(a)pyrene	**86** D1	**38** D2	µg/Kg
Dibenzo(a,h)anthracene	37 U D1	20 U D2	µg/Kg
Benzo(g,h,i)perylene	**120** D1	**100** D2	µg/Kg
Indeno(1,2,3-cd)pyrene	**110** D1	**55** D2	µg/Kg
Surrogate: (p-terphenyl)	**% RECOV**	**% RECOV**	**LIMITS**
Surrogate Reported Value	214	224	ug/Kg
Surrogate Expected Value	165	165	ug/Kg
Surrogate % Recovery	130	136	%
Surrogate Control Limits	39-141	39-141	%
Date Extracted	10/30/00	10/30/00	
Date Analyzed	10/31/00	10/31/00	

MISCELLANEOUS	METHOD	CF-VA 08-SB 14-08	CF-VA 08-SB 14-03	Units
Percent Solids	SM2540G	**89**	**83**	%
Date Analyzed		10/30/00	10/30/00	

U = Compound was analyzed for but not detected to the level shown.
D1 = Analyte value determined from a 1:10 dilution.
D2 = Analyte value determined from a 1:5 dilution.

ENCO LABORATORIES
REPORT # : JAX14010
DATE REPORTED: November 6, 2000
REFERENCE : NOO13
PROJECT NAME : Fuel Transfer Pipline

RESULTS OF ANALYSIS

EPA METHOD 8310 - PAH BY HPLC	LAB BLANK	Units
Naphthalene	16 U	µg/Kg
Acenaphthylene	33 U	µg/Kg
1-Methylnaphthalene	33 U	µg/Kg
2-Methylnaphthalene	33 U	µg/Kg
Acenaphthene	16 U	µg/Kg
Fluorene	3.3 U	µg/Kg
Phenanthrene	33 U	µg/Kg
Anthracene	16 U	µg/Kg
Fluoranthene	3.3 U	µg/Kg
Pyrene	3.3 U	µg/Kg
Benzo(a)anthracene	16 U	µg/Kg
Chrysene	3.3 U	µg/Kg
Benzo(b)fluoranthene	3.3 U	µg/Kg
Benzo(k)fluoranthene	3.3 U	µg/Kg
Benzo(a)pyrene	3.3 U	µg/Kg
Dibenzo(a,h)anthracene	3.3 U	µg/Kg
Benzo(g,h,i)perylene	3.3 U	µg/Kg
Indeno(1,2,3-cd)pyrene	3.3 U	µg/Kg

Surrogate: (p-terphenyl)	% RECOV	Units
Surrogate Reported Value	185	ug/Kg
Surrogate Expected Value	165	ug/Kg
Surrogate % Recovery	112	%
Surrogate Control Limits	39-141	%
Date Extracted	10/30/00	
Date Analyzed	10/31/00	

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

QUALITY CONTROL DATA

Parameter	% RECOVERY MS/MSD/LCS	ACCEPT LIMITS	% RPD MS/MSD	ACCEPT LIMITS
EPA Method 8310				
Naphthalene	84/ 80/ 76	48-130	5	20
Acenaphthene	97/108/ 97	36-127	11	17
Benzo(a)pyrene	89/ 87/ 74	64-141	2	22
Benzo(g,h,i)perylene	104/100/102	58-168	4	21

Environmental Conservation Laboratories Comprehensive QA Plan #910190

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

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TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER CT072-102600 | PAGE 1 OF 1

PROJECT NO: N0013	SITE NAME: NASCF-NAS JAX JET FUEL PIPELINE	PROJECT MANAGER AND PHONE NUMBER: PAUL CALLIGAN 850 385 9866 x24	LABORATORY NAME AND CONTACT: ENCO Scott MARTIN 296-3007
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER AND PHONE NUMBER: MERV DAVIS 904 281 1941 x.14	ADDRESS: 4810 Executive PARK CT., Ste 211
		CARRIER/WAYBILL NUMBER: Hand deliver	CITY, STATE: JACKSONVILLE, FL 32216-6069

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

CONTAINER TYPE PLASTIC (P) or GLASS (G): G
PRESERVATIVE USED: None
TYPE OF ANALYSIS: PAHs SW846 8310

DATE YEAR 2000	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	PAHs SW846 8310								COMMENTS
10/27	1193	CF-VA08-SB14-08	SO	G	1	✓								Cool to 4°c
10/27	1203	CF-VA08-SB15-03	SO	G	1	✓								

1. RELINQUISHED BY	DATE 10/27/00	TIME 1242	1. RECEIVED BY	DATE	TIME
2. RELINQUISHED BY	DATE 10/27/00	TIME 12:42	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS: N0013. DMO. 050.120 P.O.# N0013-P99201(SS)

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FORM NO. TtNUS-001

KB LABS, INC.
6821 Southwest Archer Road
Gainesville, Florida 32608

telephone (352) 367-0073
fax (352) 367-0074

June 12, 2001

Mervin Dale
Tetra Tech NUS, Inc.
7018 AC Skinner Parkway
Suite 250
Jacksonville, FL 32256

Dear Mr. Dale:

Enclosed is the final report of the on-site analysis performed by KB Labs, Inc. at the TH3 Pipeline site in Jacksonville, FL. On-site analyses were performed May 23 – May 24, 2001. Included are a hardcopy of the final analytical results in Excel spreadsheet format, a brief project narrative, tables listing quality control results, and copies of sample chain-of-custody forms.

KB Labs is approved as a mobile laboratory for volatiles analyses and operates under an FDEP approved Comprehensive Quality Assurance Plan (CompQAP #980029 Revision 3). All data for the site referenced above were determined in accordance with published procedures Test Methods for Evaluating Solid Waste (EPA SW-846, Update III Revised May 1997), unless stated otherwise in our CompQAP under method modifications. Quality assurance and quality control procedures performed in conjunction with analysis of groundwater samples determined that the reported data met our CompQAP requirements for accuracy and precision unless otherwise indicated on the quality control narrative accompanying the data report.

If you have any questions, please do not hesitate to call me or Kelly Bergdoll at (352) 367-0073.

Sincerely,

Michael G. Winslow
Quality Assurance Officer

RECEIVED
JUN 15 2001
TETRA TECH NUS
JACKSONVILLE FL

nKB LABS, INC.
6821 Southwest Archer Road
Gainesville, Florida 32608

telephone (352) 367-0073
fax (352) 367-0074

PROJECT NARRATIVE

Client : Tetra Tech NUS, Inc.	**Driller/Sampler**:	**Analyst**: C. Horrell, M. Mathews
Site: TH3 Pipeline, Jacksonville, Fl	**KB Labs Project Manager**: Kelly Bergdoll	**KB Labs Project No**: 0121
Onsite Dates: 5/23/01 – 5/24/01	**Client Project Manager**: Mervin Dale	**Matrix**: Water

Project ScopFl

On May 23 – May 24, 2001, a total of eight (8) water samples were collected at the TH3 Pipeline site in Jacksonville, FL. Samples were analyzed onsite in the KB Labs mobile facility. The samples were analyzed for benzene, toluene, ethylbenzene, m&p-xylene, o-xylene, MTBE, naphthalene, and Diesel Range Organics (DRO).

Analytical Procedure

VOCs – All water samples were analyzed using SW846 Method 5030/8260 for waters. Ten (10) milliliters (mL) of water were purged with helium and the volatile organic compounds (VOCs) were collected on a solid-phase adsorption trap. The adsorption trap was heated and back-purged with helium and the components were separated by capillary column gas chromatography and measured with a mass spectrometer (GC/MS) operated in the electron impact full-scan mode. The individual VOCs in the samples were measured against corresponding VOC standards.

DRO – All water samples were first extracted in a vacuum extraction manifold using Sep-Pak C18 cartridges (2-gram). Sample volumes varied (20 – 200 mL) depending upon particulate content. The C18 cartridges were then solvent extracted with 5 mL of hexane. Samples extracts were then analyzed by gas chromatography/flame ionization detector (GC/FID). DRO in the samples was then measured against a corresponding diesel standard.

Analytical Results

Laboratory results were provided to the client on an as-completed or next-day basis. Final results of the on-site analyses are provided in a standard Excel spreadsheet format. The data produced and reported in the field has been reviewed and approved for this final report by the KB Labs Quality Assurance (QA) Officer.

Quality Control (QC) Data

Surrogate Recoveries (VOCs only) – Tables 1.1 – 1.2 list the daily analytical sequence and percent recovery results for surrogate compounds which were added to all analyses. Four (4) surrogate compounds were added to each analysis in order to continually monitor general method performance.

Matrix Spike and Laboratory Control Spike Recoveries – Table 2 lists the percent recovery results for matrix spike samples and /or laboratory control samples. A known amount of selected target compounds was added to selected field samples and/or to a laboratory blank sample in order to monitor the performance of the compounds in the actual matrix and in the laboratory blank sample.

Method Blanks – Daily analysis of laboratory reagent water samples was performed in order to monitor the cleanliness of the analytical system. No target compounds were detected on or above the reporting limits.

Signature:
Title: Quality Assurance Officer

Date: June 12, 2001

KB LABS, INC.
6821 Southwest Archer Road
Gainesville, Florida 32608

telephone (352) 367-0073
fax (352) 367-0074

Table 1-1: VOC Analysis Sequence/Surrogate Percent Recoveries (5/23/01)

Client: Tetra Tech NUS	**Driller/Sampler**:	**Analyst**: C. Horrell, M. Mathews
Site: TH3 Pipeline, Jacksonville, FL	**KB Labs Project Manager**: Kelly Bergdoll	**KB Labs Project No**: 0121
On-site Dates: 5/23/01 - 5/24/01	**Client Project Manager**: Mervin Dale	**Matrix**: Water

Station/Sample ID	*Control Limits>>*	S1* *(80-120)*	S2* *(80 - 120)*	S3* *(80 - 120)*	S4* *(80 - 120)*	Comment
CCS 20 ug/L		81	98	97	89	
Method Blank		82	97	95	89	
CEF-TH3-TMW-018		151	190	93	83	S1, S2 high
CEF-TH3-TMW-009		85	106	93	82	
CEF-TH3-TMW-011		119	53	95	84	S2 low
CEF-TH3-TMW-010		91	100	96	86	
CEF-TH3-TMW-009 MS		73	94	93	84	S1 low
CEF-TH3-TMW-009 MSD		78	95	93	85	S1 low
REF/LCS 20 ug/L		85	100	94	89	

* Surrogate Compounds
S1 = 1,2-Dichloroethane-D4
S2 = 1,4-Difluorobenzene
S3 = Toluene - D8
S4 = 4 - Bromofluorobenzene

Signature:

Title: Quality Assurance Officer

Date: June 12, 2001

KB LABS, INC.
6821 Southwest Archer Road
Gainesville, Florida 32608

telephone (352) 367-0073
fax (352) 367-0074

Table 1-2: VOC Analysis Sequence/Surrogate Percent Recoveries (5/24/01)

Client: Tetra Tech NUS	**Driller/Sampler**:	**Analyst**: C. Horrell, M. Mathews
Site: TH3 Pipeline, Jacksonville, FL	**KB Labs Project Manager**: Kelly Bergdoll	**KB Labs Project No**: 0121
On-site Dates: 5/23/01 - 5/24/01	**Client Project Manager**: Mervin Dale	**Matrix**: Water

Station/Sample ID	*Control Limits>>*	S1* *(80-120)*	S2* *(80 - 120)*	S3* *(80 - 120)*	S4* *(80 - 120)*	Comment
Calib. Standard 20 ug/L		91	101	92	87	
Method Blank		79	95	96	88	S1 low
CEF-TH3-TMW-020		167	211	94	84	S1, S2 high
CEF-TH3-TMW-017		77	96	91	83	S1 low
REF/LCS		129	215	95	93	S1, S2 high
CEF-TJ3-TMW-017 MS		78	93	97	89	S1 low
CEF-TJ3-TMW-017 MSD		79	95	98	88	S1 low
CEF-TH3-TMW-022		152	196	90	82	S1, S2 high
CEF-TH3-TMW-019		113	211	91	77	S2 high, S4 low

* Surrogate Compounds
S1 = 1,2-Dichloroethane-D4
S2 = 1,4-Difluorobenzene
S3 = Toluene - D8
S4 = 4 - Bromofluorobenzene

Signature:

Title: Quality Assurance Officer

Date: June 12, 2001

KB LABS, INC.
6821 Southwest Archer Road
Gainesville, Florida 32608

telephone (352) 367-0073
fax (352) 367-0074

Table 2: VOC Spike Compound Percent Recoveries

Client: Tetra Tech NUS	**Driller/Sampler**:	**Analyst**: C. Horrell, M. Mathews
Site: TH3 Pipeline, Jacksonville,FL	**KB Labs Project Manager**: Kelly Bergdoll	**KB Labs Project No:** 0121
On-site Dates: 5/23/01 - 5/24/01	**Client Project Manager**: Mervin Dale	**Matrix:** Water

Spike Compounds * >>	VOC1	VOC2	VOC3	VOC4	VOC5	VOC6	VOC7	VOC8					Comment
*Control Limits ** >>*	*70-130*	*75-119*	*79-114*	*81-114*	*74-120*	*78-116*	*70-130*	*70-130*					
*Warning Limits ** >>*	*80-120*	*82-111*	*85-108*	*86-108*	*82-113*	*85-110*	*80-120*	*80-120*					
RPD Limit >>	*20*	*20*	*20*	*20*	*20*	*20*	*20*	*20*					
Station/Sample ID:													
CEF-TH3-TMW-017 MS	77	91	98	94	92	93	100	97					
CEF-TH3-TMW-017 MSD	85	92	99	94	91	93	116	91					
RPD	10	1	1	0	1	0	15	6					
REF/LCS	NA	95	97	92	96	99	120	111					

** Control limits based historical matrix spike recoveries.

*** Spike Compounds**

VOC1 = MTBE
VOC2 = Benzene
VOC3 = Toluene
VOC4 = Ethylbenzene
VOC5 = m&p-Xylene
VOC6 = o-Xylene
VOC7 = Naphthalene
VOC8 = Diesel

Signature: [illegible]

Title: Quality Assurance Officer

Date: June 12, 2001

Tetra Tech NUS

Analytical Data
TH3 Pipeline, SR134, Jacksonville, FL
5/23/01 - 5/24/01

June 12, 2001

	Reporting Limits (ug/L)	CEF-TH3-TMW-009	CEF-TH3-TMW-010	CEF-TH3-TMW-011	CEF-TH3-TMW-017	CEF-TH3-TMW-018	CEF-TH3-TMW-019	CEF-TH3-TMW-020	CEF-TH3-TMW-022
MTBE	<1	<1	<1	<1	<1	<1	<1	<1	<1
Benzene	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	<1	<1	<1	<1	<1	<1	<1	<1	<1
m&p-Xylene	<1	<1	1.5	<1	<1	<1	<1	<1	<1
o-Xylene	<1	<1	<1	<1	<1	<1	<1	<1	<1
naphthalene	<1	<1	<1	<1	1.7	<1	<1	2.8	<1
DRO (mg/L)	See Note	<2.0	<2.9	<2.0	<4.3	<2.0	<4.0	<4.3	<5.0

Note: DRO reporting limits vary with the total volume of sample processed. This volume will vary depending the particulate content of the sample.

Signature:

Title: Quality Assurance Officer

Date: 6/12/01

Source: KB Labs, Inc.
May 2001

CHAIN-OF-CUSTODY RECORD

KB LABS, INC.
Mobile Laboratory Services
6821 SW Archer Road
Gainesville, FL 32608
TEL (352) 367-0073
FAX (352) 367-0074

FOR LAB USE ONLY

PROJECT NAME	SITE NAME & ADDRESS
TH 3	SR 134 Jax
SAMPLERS: *(Signature)* M. Dale	CONTACT PERSON: Mervin Dale
	BATCH # (Lab Use Only)

PRESERVATION
C Chilled
H HCL
Ot Other (see Remarks)

SAMPLE FIELD ID. NUMBER	DATE	TIME	COMP.	GRAB	STATION LOCATION / NUMBER	SAMPLE MATRIX	NUMBER OF CONTAINERS	IDENTIFY PARAMETERS DESIRED AND NO. OF CONTAINERS: VOLATILES					Lab I.D. Number
CEF-TH3-TMW-008	5/23/01	13:05		✓		W	2	✓					
009	↓	1412		↓		↓	↓	↓					
010	↓	1543		↓		↓	↓	↓					
011	↓	1531		↓		↓	↓	↓					

Preceleaned Containers Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time	Remarks and Observations
[signature]	5/23/01	M. Dale	5/23/01	
Relinquished by: *(Signature)* M. Dale	Date / Time 5/23/01	Received by: *(Signature)* [signature]	Date / Time 5/23/01	

Matrix Types S Soil SW Surface Water GW Ground Water SG Soil Gas

KB LABS
Mobile Laboratory Services
6821 SW Archer Road
Gainesville, FL 32608
TEL (352) 367-0073
FAX (352) 367-0074

CHAIN-OF-CUSTODY RECORD

FOR LAB USE ONLY

PROJECT NAME: TH3 Pipeline

SITE NAME & ADDRESS: Jacksonville SR134 & Westconnett

SAMPLERS: (Signature) MWDale

CONTACT PERSON: Marvin Dale

BATCH # (Lab Use Only)

PRESERVATION: C Chilled; H HCL; Ot Other (see Remarks)

SAMPLE FIELD ID. NUMBER	DATE	TIME	COMP.	GRAB	STATION LOCATION / NUMBER	SAMPLE MATRIX	NUMBER OF CONTAINERS	VOLATILES	PRO				Lab I.D. Number
CEF-TH3-TMW-008	05/23/01	13:05		✓		GW	1		✓				
CEF-TH3-TMW-009	05/23/01	14:12		✓		GW	1		✓				
CEF-TH3-TMW-010	05/23/01	15:43		✓		GW	1		✓				
CEF-TH3-TMW-011	05/23/01	15:31		✓		GW	1		✓				

Precleaned Containers Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time
Mark Mattes	05/23/01	MWDale	5/23/01
Relinquished by: (Signature) MWDale	Date / Time 5/23/01	Received by: (Signature) Mark Mattes	Date / Time 5/23/01

Remarks and Observations

Matrix Types: S Soil; SW Surface Water; GW Ground Water; SG Soil Gas

CHAIN-OF-CUSTODY RECORD

KB LABS, INC.
Mobile Laboratory Services
6821 SW Archer Road
Gainesville, FL 32608
TEL (352) 367-0073
FAX (352) 367-0074

FOR LAB USE ONLY

PROJECT NAME: TH 3

SITE NAME & ADDRESS: SR 134 Jacksonville

SAMPLERS: (Signature) M. Dale

CONTACT PERSON: Merrin Dale

BATCH # (Lab Use Only):

PRESERVATION: C Chilled; H HCL; Ot Other (see Remarks)

SAMPLE FIELD ID. NUMBER	DATE	TIME	COMP.	GRAB	STATION LOCATION / NUMBER	SAMPLE MATRIX	NUMBER OF CONTAINERS	VOLATILES					Lab I.D. Number
020	5/24/01	1050		✓	CEF-TH3-TMW	W	2	✓					
017	↓	1110		↓	↓	↓	↓	↓					
022		1545											
019		1745											

Precleaned Containers Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time	Remarks and Observations
[signature]	5/24/01	M. W. Dale	5/24/01	
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time	
M W Dale	5/24/01	[signature]	5/24/01	

Matrix Types S Soil SW Surface Water GW Ground Water SG Soil Gas

KB LABS
Mobile Laboratory Services
6821 SW Archer Road
Gainesville, FL 32608
TEL (352) 367-0073
FAX (352) 367-0074

CHAIN-OF-CUSTODY RECORD

FOR LAB USE ONLY

PROJECT NAME	SITE NAME & ADDRESS
TH3 Pipeline	Jacksonville SR134 Westcomett
SAMPLERS: *(Signature)*	CONTACT PERSON: Mervin Dale — BATCH # (Lab Use Only)

PRESERVATION
C Chilled
H HCL
Ot Other (see Remarks)

SAMPLE FIELD ID. NUMBER	DATE	TIME	COMP.	GRAB	STATION LOCATION / NUMBER	SAMPLE MATRIX	NUMBER OF CONTAINERS	VOLATILES	DRO				Lab I.D. Number
CEF-TH3-TMW-020	5/24	1050		✓		GW	1		↓				
CEF-TH3-TMW-017		11:10		↓		GW	↓						
CEF-TH3-TMW-022		15:45				GW							
CEF-TH3-TMW-019		17:45				GW							

IDENTIFY PARAMETERS DESIRED AND NO. OF CONTAINERS

Precleaned Containers Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time
Mark Matthews	05/24/01	MW Dale	5/24/01
Relinquished by: *(Signature)* MW Dale	Date / Time 5/24/01	Received by: *(Signature)* Mark Matthews	Date / Time 05/24/01

Remarks and Observations

Matrix Types S Soil SW Surface Water GW Ground Water SG Soil Gas

Tetra Tech NUS, Inc. **Internal Correspondence**

TO: **Mr. Paul Calligan** **DATE: July 12, 2001**

FROM: **Suzanne I. Smith** **CC: File**

SUBJECT: **Organic Data Validation – SPLP VOC, SPLP PAH, AND SPLP TPH**
CTO072 – NAS Cecil Field
SDG F9772

SAMPLES: **1/Soil**

CEF-TH3-SB-011-02

OVERVIEW

The sample set for CTO072, SDG F9772; Naval Air Station Cecil Field, Pensacola, Florida consists of one (1) soil environmental sample. The environmental sample was extracted by SPLP and analyzed for Volatile Organic Compounds (VOCs), Polycyclic Aromatic Hydrocarbons (PAHs), and Total Petroleum Hydrocarbons (TPH).

The sample was collected by Tetra Tech NUS on May 23, 2001 and analyzed by Accutest Laboratories. All analyses were performed in accordance with Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria and analyzed according to SW-846 Method 8260 (VOCs), SW-846 Method 8310 (PAHs), and FDEP Method FL-PRO (TPH) analytical and reporting protocols. The data in this SDG was validated with regard to the following parameters:

* • Data Completeness
* • Holding Times
  • Laboratory method/field quality control blank results
* • Detection Limits

The symbol (*) indicates that all quality control criteria were met for this parameter.

Note : No separate method blanks were extracted. The leachate blanks are used as the method blanks as well.

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Volatile Fraction

Methylene chloride was detected in the leachate blank for this SDG. However, since it is not a target analyte, no action was taken.

All other quality control criteria were met for this fraction.

Polycylcic Aromatic Hydrocarbon Fraction

All quality control criteria were met for this fraction.

Total Petroleum Hydrocarbon Fraction

All quality control criteria were met for this fraction.

Executive Summary

Laboratory performance: All quality control criteria were met.

Other factors affecting data quality: None.

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (February, 1996), and the NFESC guidelines "Navy Installation Restoration Chemical Data Quality Manual" (September, 1999). The text of the report has been formulated to address only those problems affecting data quality.

"I attest that the data referenced herein was validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Suzanne I. Smith

Project Chemist
Tetra Tech NUS, Inc.

CTO072-NAS CECIL FIELD
WATER DATA
Accutest, NJ SPLP
SDG: F9772

SAMPLE NUMBER:	CEF-TH3-SB-011-02			/ /			/ /			/ /		
SAMPLE DATE:	05/23/01											
LABORATORY ID:	F9772-1											
QC_TYPE:	NORMAL											
% SOLIDS:	0.0 %			100.0 %			100.0 %			100.0 %		
UNITS:	MG/L											
FIELD DUPLICATE OF:												
VOLATILES	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
BENZENE	0.002	U										
ETHYLBENZENE	0.002	U										
METHYL TERT-BUTYL ETHER	0.002	U										
TOLUENE	0.002	U										
TOTAL XYLENES	0.006	U										

CTO072-NAS CECIL FIELD

~~WATER~~ DATA SPLP

Accutest, NJ

SDG: F9772

SAMPLE NUMBER:	CEF-TH3-SB-011-02			/ /			/ /			/ /		
SAMPLE DATE:	05/23/01											
LABORATORY ID:	F9772-1											
QC_TYPE:	NORMAL											
% SOLIDS:	0.0 %			100.0 %			100.0 %			100.0 %		
UNITS:	MG/L											
FIELD DUPLICATE OF:												
POLYNUCLEAR AROMATIC HYDROCARBONS	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
1-METHYLNAPHTHALENE	0.02	U	H									
2-METHYLNAPHTHALENE	0.02	U	H									
ACENAPHTHENE	0.04	U	H									
ACENAPHTHYLENE	0.04	U	H									
ANTHRACENE	0.02	U	H									
BENZO(A)ANTHRACENE	0.002	U	H									
BENZO(A)PYRENE	0.002	U	H									
BENZO(B)FLUORANTHENE	0.002	U	H									
BENZO(G,H,I)PERYLENE	0.002	U	H									
BENZO(K)FLUORANTHENE	0.002	U	H									
CHRYSENE	0.02	U	H									
DIBENZO(A,H)ANTHRACENE	0.002	U	H									
FLUORANTHENE	0.02	U	H									
FLUORENE	0.02	U	H									
INDENO(1,2,3-CD)PYRENE	0.002	U	H									
NAPHTHALENE	0.02	U	H									
PHENANTHRENE	0.02	U	H									
PYRENE	0.02	U	H									

CTO072-NAS CECIL FIELD
~~WATER~~ DATA SPLP
Accutest, NJ
SDG: F9772

SAMPLE NUMBER:	CEF-TH3-SB-011-02											
SAMPLE DATE:	05/23/01			/ /			/ /			/ /		
LABORATORY ID:	F9772-1											
QC_TYPE:	NORMAL											
% SOLIDS:	0.0 %			100.0 %			100.0 %			100.0 %		
UNITS:	MG/L											
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
TOTAL PETROLEUM HYDROCARBONS	2.5	U										

F9772

HOLDING TIME
06/19/01

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
MG/L	CEF-TH3-SB-011-02	F9772-1	NORMAL	F9772	OV	05/23/01	05/30/01	05/31/01	7	1	8
MG/L	CEF-TH3-SB-011-02	F9772-1	NORMAL	F9772	PAH	05/23/01	06/04/01	06/08/01	12	4	16
MG/L	CEF-TH3-SB-011-02	F9772-1	NORMAL	F9772	TPH	05/23/01	06/01/01	06/04/01	9	3	12

PAH → 14 to extract
40 to analyze
soil SPLP not water

Sample Summary

Tetra Tech, NUS

NAS Cecil Field-TH3
Project No: N0013 DM0050120

Job No: F9772

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
F9772-1	05/23/01	14:52	MD	05/24/01	SO	Soil	CEF-TH3-SB-011-02

Report of Analysis

Client Sample ID:	CEF-TH3-SB-011-02		
Lab Sample ID:	F9772-1	Date Sampled:	05/23/01
Matrix:	SO - Soil	Date Received:	05/24/01
Method:	SW846 8260B	Percent Solids:	85.4
Project:	NAS Cecil Field-TH3		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C0003991.D	1	05/31/01	JG	05/30/01	MS1021	VC191
Run #2							

VOA TCL List

CAS No.	Compound	Result	HW#	MCL	RL	Units	Q
71-43-2	Benzene	ND	D018		0.0020	mg/l	
100-41-4	Ethylbenzene	ND			0.0020	mg/l	
1634-04-4	Methyl Tert Butyl Ether	ND			0.0020	mg/l	
108-88-3	Toluene	ND			0.0020	mg/l	
1330-20-7	Xylene (total)	ND			0.0060	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	92%		80-120%
2037-26-5	Toluene-D8	102%		80-120%
460-00-4	4-Bromofluorobenzene	102%		80-120%
17060-07-0	1,2-Dichloroethane-D4	84%		80-120%

ND = Not detected
MCL = Maximum Contamination Level (not available)
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-TH3-SB-011-02		
Lab Sample ID:	F9772-1	Date Sampled:	05/23/01
Matrix:	SO - Soil	Date Received:	05/24/01
Method:	EPA 8310 SW846 3510C	Percent Solids:	85.4
Project:	NAS Cecil Field-TH3		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE003624.D	1	06/08/01	MRE	06/04/01	OP3247	GEE168
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	HW#	MCL	RL	Units	Q
83-32-9	Acenaphthene	ND			0.040	mg/l	
208-96-8	Acenaphthylene	ND			0.040	mg/l	
120-12-7	Anthracene	ND			0.020	mg/l	
56-55-3	Benzo(a)anthracene	ND			0.0020	mg/l	
50-32-8	Benzo(a)pyrene	ND			0.0020	mg/l	
205-99-2	Benzo(b)fluoranthene	ND			0.0020	mg/l	
191-24-2	Benzo(g,h,i)perylene	ND			0.0020	mg/l	
207-08-9	Benzo(k)fluoranthene	ND			0.0020	mg/l	
218-01-9	Chrysene	ND			0.020	mg/l	
53-70-3	Dibenzo(a,h)anthracene	ND			0.0020	mg/l	
206-44-0	Fluoranthene	ND			0.020	mg/l	
86-73-7	Fluorene	ND			0.020	mg/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND			0.0020	mg/l	
91-20-3	Naphthalene	ND			0.020	mg/l	
90-12-0	1-Methylnaphthalene	ND			0.020	mg/l	
91-57-6	2-Methylnaphthalene	ND			0.020	mg/l	
85-01-8	Phenanthrene	ND			0.020	mg/l	
129-00-0	Pyrene	ND			0.020	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	94%		33-141%
92-94-4	p-Terphenyl	90%		31-122%

ND = Not detected
MCL = Maximum Contamination Level (not available)
E = Indicates value exceeds calibration range

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

Report of Analysis

Client Sample ID:	CEF-TH3-SB-011-02		
Lab Sample ID:	F9772-1	Date Sampled:	05/23/01
Matrix:	SO - Soil	Date Received:	05/24/01
Method:	FLORIDA-PRO SW846 3510C	Percent Solids:	85.4
Project:	NAS Cecil Field-TH3		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP15377.D	1	06/04/01	SKW	06/01/01	OP3244	GOP595
Run #2							

CAS No.	Compound	Result	HW#	MCL	RL	Units	Q
	TPH (C8-C40)	ND			2.5	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	86%		55-130%

ND = Not detected
MCL = Maximum Contamination Level (not available)
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

Tetra Tech NUS, Inc. **Internal Correspondence**

TO: **Mr. Paul Calligan** **DATE: July 12, 2001**

FROM: **Suzanne I. Smith** **CC: File**

SUBJECT: **Organic and Inorganic Data Validation – VOC, EDB, PAH, TPH, and Lead**
CTO072 – NAS Cecil Field
SDG F9814

SAMPLES: **1/Aqueous**

CEF-TH3-TMW-10

OVERVIEW

The sample set for CTO072, SDG F9814; Naval Air Station Cecil Field, Pensacola, Florida consists of one (1) aqueous environmental sample. The environmental sample was analyzed for Volatile Organic Compounds (VOCs), Polycyclic Aromatic Hydrocarbons (PAHs), Total Petroleum Hydrocarbons (TPH), and Lead.

The sample was collected by Tetra Tech NUS on May 25, 2001 and analyzed by Environmental Conservation Laboratories. All analyses were performed in accordance with Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria and analyzed according to SW-846 Method 8260 (VOCs), EPA Method 504.1 (EDB), SW-846 Method 8310 (PAHs), FDEP Method FL-PRO (TPH) and SW-846 Method 6010B (Lead) analytical and reporting protocols. The data in this SDG was validated with regard to the following parameters:

* • Data Completeness
* • Holding Times
* • Laboratory method/field quality control blank results
* • Detection Limits

The symbol (*) indicates that all quality control criteria were met for this parameter.

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Volatile and EDB Fractions

All quality control criteria were met for this fraction.

Polycylcic Aromatic Hydrocarbon Fraction

All quality control criteria were met for this fraction.

Total Petroleum Hydrocarbon Fraction

All quality control criteria were met for this fraction.

Lead Fraction

Laboratory Blank Analysis

Affected Samples : all

Analyte	Maximum Concentration (ug/L)	Action Level (ug/L)
Lead	1.7	8.5

An action level of 5x the maximum concentration has been used to evaluate the sample for blank contamination in calibration and preparation blanks. Dilution factors and aliquots were taken into consideration when evaluated for blank contamination. Results between the Instrument Detection Limit (IDL) and the action level were reported as nondetects.

All other quality control criteria were met for this fraction.

Executive Summary

Laboratory performance: Results between the Instrument Detection Limit (IDL) and the action level for Lead were reported as nondetects "U".

Other factors affecting data quality: None.

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (February, 1996), and the NFESC guidelines "Navy Installation Restoration Chemical Data Quality Manual" (September, 1999). The text of the report has been formulated to address only those problems affecting data quality.

"I attest that the data referenced herein was validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Suzanne J. Smith

Suzanne J. Smith

Project Chemist
Tetra Tech NUS, Inc.

CTO072-NAS CECIL FIELD
WATER DATA
Accutest, NJ
SDG: F9814

SAMPLE NUMBER:	CEF-TH3-TMW-10											
SAMPLE DATE:	05/25/01			/ /			/ /			/ /		
LABORATORY ID:	F9814-1											
QC_TYPE:	NORMAL											
% SOLIDS:	0.0 %			100.0 %			100.0 %			100.0 %		
UNITS:	UG/L											
FIELD DUPLICATE OF:												
VOLATILES	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
1,1,1-TRICHLOROETHANE	2	U										
1,1,2,2-TETRACHLOROETHANE	2	U										
1,1,2-TRICHLOROETHANE	2	U										
1,1-DICHLOROETHANE	2	U										
1,1-DICHLOROETHENE	2	U										
1,2-DIBROMOETHANE	0.02	U										
1,2-DICHLOROBENZENE	2	U										
1,2-DICHLOROETHANE	2	U										
1,2-DICHLOROPROPANE	2	U										
1,3-DICHLOROBENZENE	2	U										
1,4-DICHLOROBENZENE	2	U										
2-CHLOROETHYL VINYL ETHER	5	U										
ACROLEIN	10	U										
ACRYLONITRILE	10	U										
BENZENE	1	U										
BROMODICHLOROMETHANE	2	U										
BROMOFORM	2	U										
BROMOMETHANE	5	U										
CARBON TETRACHLORIDE	2	U										
CHLOROBENZENE	2	U										
CHLORODIBROMOMETHANE	2	U										
CHLOROETHANE	5	U										
CHLOROFORM	2	U										
CHLOROMETHANE	5	U										
CIS-1,3-DICHLOROPROPENE	2	U										
ETHYLBENZENE	2	U										
METHYL TERT-BUTYL ETHER	2	U										
METHYLENE CHLORIDE	5	U										
TETRACHLOROETHENE	2	U										
TOLUENE	2	U										
TOTAL XYLENES	6	U										
TRANS-1,2-DICHLOROETHENE	2	U										

CTO072-NAS CECIL FIELD
WATER DATA
Accutest, NJ
SDG: F9814

SAMPLE NUMBER:	CEF-TH3-TMW-10											
SAMPLE DATE:	05/25/01			/ /			/ /			/ /		
LABORATORY ID:	F9814-1											
QC_TYPE:	NORMAL											
% SOLIDS:	0.0 %			100.0 %			100.0 %			100.0 %		
UNITS:	UG/L											
FIELD DUPLICATE OF:												
VOLATILES	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
TRANS-1,3-DICHLOROPROPENE	2	U										
TRICHLOROETHENE	2	U										
TRICHLOROFLUOROMETHANE	5	U										
VINYL CHLORIDE	1	U										

CTO072-NAS CECIL FIELD
WATER DATA
Accutest, NJ
SDG: F9814

SAMPLE NUMBER:	CEF-TH3-TMW-10			
SAMPLE DATE:	05/25/01	/ /	/ /	/ /
LABORATORY ID:	F9814-1			
QC_TYPE:	NORMAL			
% SOLIDS:	0.0 %	100.0 %	100.0 %	100.0 %
UNITS:	UG/L			
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1-METHYLNAPHTHALENE	2.2	U										
2-METHYLNAPHTHALENE	2.2	U										
ACENAPHTHENE	4.4	U										
ACENAPHTHYLENE	4.4	U										
ANTHRACENE	2.2	U										
BENZO(A)ANTHRACENE	0.22	U										
BENZO(A)PYRENE	0.22	U										
BENZO(B)FLUORANTHENE	0.22	U										
BENZO(G,H,I)PERYLENE	0.22	U										
BENZO(K)FLUORANTHENE	0.22	U										
CHRYSENE	2.2	U										
DIBENZO(A,H)ANTHRACENE	0.22	U										
FLUORANTHENE	2.2	U										
FLUORENE	2.2	U										
INDENO(1,2,3-CD)PYRENE	0.22	U										
NAPHTHALENE	2.2	U										
PHENANTHRENE	2.2	U										
PYRENE	2.2	U										

CTO072-NAS CECIL FIELD
WATER DATA
Accutest, NJ
SDG: F9814

SAMPLE NUMBER:	CEF-TH3-TMW-10											
SAMPLE DATE:	05/25/01			/ /			/ /			/ /		
LABORATORY ID:	F9814-1											
QC_TYPE:	NORMAL											
% SOLIDS:	0.0 %			100.0 %			100.0 %			100.0 %		
UNITS:	MG/L											
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
TOTAL PETROLEUM HYDROCARBONS	0.25	U										

F9814

HOLDING TIME
06/13/01

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
UG/L	CEF-TH3-TMW-10	F9814-1	NORMAL	F9814	EDB	05/25/01	06/05/01	06/06/01	11	1	12
UG/L	CEF-TH3-TMW-10	F9814-1	NORMAL	F9814	M	05/25/01	05/30/01	06/04/01	5	5	10
UG/L	CEF-TH3-TMW-10	F9814-1	NORMAL	F9814	OV	05/25/01	/ /	06/05/01	0	0	11
UG/L	CEF-TH3-TMW-10	F9814-1	NORMAL	F9814	PAH	05/25/01	05/29/01	06/01/01	4	3	7
MG/L	CEF-TH3-TMW-10	F9814-1	NORMAL	F9814	TPH	05/25/01	05/29/01	05/31/01	4	2	6

CTO072-NAS CECIL FIELD
WATER DATA
Accutest, NJ
SDG: F9814

SAMPLE NUMBER:	CEF-TH3-TMW-10											
SAMPLE DATE:	05/25/01			/ /			/ /			/ /		
LABORATORY ID:	F9814-1											
QC_TYPE:	NORMAL											
% SOLIDS:	0.0 %			100.0 %			100.0 %			100.0 %		
UNITS:	UG/L											
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
LEAD	2.2	U ~~B~~	~~PA~~									

F9814

HOLDING TIME
06/13/01

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
UG/L	CEF-TH3-TMW-10	F9814-1	NORMAL	F9814	EDB	05/25/01	06/05/01	06/06/01	11	1	12
UG/L	CEF-TH3-TMW-10	F9814-1	NORMAL	F9814	M	05/25/01	05/30/01	06/04/01	5	5	10
UG/L	CEF-TH3-TMW-10	F9814-1	NORMAL	F9814	OV	05/25/01	/ /	06/05/01	0	0	11
UG/L	CEF-TH3-TMW-10	F9814-1	NORMAL	F9814	PAH	05/25/01	05/29/01	06/01/01	4	3	7
MG/L	CEF-TH3-TMW-10	F9814-1	NORMAL	F9814	TPH	05/25/01	05/29/01	05/31/01	4	2	6

Sample Summary

Tetra Tech, NUS

Job No: F9814

NAS Cecil Field-TH3
Project No: 72CF-1 N0013 DM0050120

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
F9814-1	05/25/01	13:00 RM	05/26/01	AQ	Ground Water	CEF-TH3-TMW-10

Report of Analysis

Client Sample ID:	CEF-TH3-TMW-10		
Lab Sample ID:	F9814-1	Date Sampled:	05/25/01
Matrix:	AQ - Ground Water	Date Received:	05/26/01
Method:	SW846 8260B	Percent Solids:	n/a
Project:	NAS Cecil Field-TH3		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	B005232.D	1	06/05/01	JG	n/a	n/a	VB205
Run #2							

VOA PPL List

CAS No.	Compound	Result	RL	Units	Q
107-02-8	Acrolein	ND	10	ug/l	
107-13-1	Acrylonitrile	ND	10	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	2.0	ug/l	
75-25-2	Bromoform	ND	2.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-00-3	Chloroethane	ND	5.0	ug/l	
67-66-3	Chloroform	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
124-48-1	Dibromochloromethane	ND	2.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	ug/l	
541-73-1	m-Dichlorobenzene	ND	2.0	ug/l	
95-50-1	o-Dichlorobenzene	ND	2.0	ug/l	
106-46-7	p-Dichlorobenzene	ND	2.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	2.0	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
74-83-9	Methyl bromide	ND	5.0	ug/l	
74-87-3	Methyl chloride	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	ug/l	

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

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

Report of Analysis

Client Sample ID:	CEF-TH3-TMW-10		
Lab Sample ID:	F9814-1	Date Sampled:	05/25/01
Matrix:	AQ - Ground Water	Date Received:	05/26/01
Method:	SW846 8260B	Percent Solids:	n/a
Project:	NAS Cecil Field-TH3		

VOA PPL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		80-120%
17060-07-0	1,2-Dichloroethane-D4	109%		80-120%
2037-26-5	Toluene-D8	98%		80-120%
460-00-4	4-Bromofluorobenzene	104%		80-120%

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

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

Report of Analysis

Client Sample ID:	CEF-TH3-TMW-10		
Lab Sample ID:	F9814-1	Date Sampled:	05/25/01
Matrix:	AQ - Ground Water	Date Received:	05/26/01
Method:	EPA 504.1 EPA 504	Percent Solids:	n/a
Project:	NAS Cecil Field-TH3		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	DD02172.D	1	06/06/01	SKW	06/05/01	OP3259	GDD83
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:	CEF-TH3-TMW-10		
Lab Sample ID:	F9814-1	Date Sampled:	05/25/01
Matrix:	AQ - Ground Water	Date Received:	05/26/01
Method:	EPA 8310 SW846 3510C	Percent Solids:	n/a
Project:	NAS Cecil Field-TH3		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE003390.D	1	06/01/01	MRE	05/29/01	OP3211	GEE162
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.4	ug/l	
208-96-8	Acenaphthylene	ND	4.4	ug/l	
120-12-7	Anthracene	ND	2.2	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.22	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.22	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.22	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.22	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.22	ug/l	
218-01-9	Chrysene	ND	2.2	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.22	ug/l	
206-44-0	Fluoranthene	ND	2.2	ug/l	
86-73-7	Fluorene	ND	2.2	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.22	ug/l	
91-20-3	Naphthalene	ND	2.2	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.2	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.2	ug/l	
85-01-8	Phenanthrene	ND	2.2	ug/l	
129-00-0	Pyrene	ND	2.2	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	81%		33-141%
92-94-4	p-Terphenyl	84%		31-122%

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

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

Report of Analysis

Client Sample ID:	CEF-TH3-TMW-10		
Lab Sample ID:	F9814-1	Date Sampled:	05/25/01
Matrix:	AQ - Ground Water	Date Received:	05/26/01
Method:	FLORIDA-PRO SW846 3510C	Percent Solids:	n/a
Project:	NAS Cecil Field-TH3		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP15313.D	1	05/31/01	SKW	05/29/01	OP3213	GOP593
Run #2							

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

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	89%		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:	CEF-TH3-TMW-10		
Lab Sample ID:	F9814-1	Date Sampled:	05/25/01
Matrix:	AQ - Ground Water	Date Received:	05/26/01
		Percent Solids:	n/a
Project:	NAS Cecil Field-TH3		

Metals Analysis

Analyte	Result	RL	IDL	Units	DF	Prep	Analyzed	By	Method
Lead	2.2 B	5.0	1.2	ug/l	1	05/30/01	06/04/01	JK	SW846 6010B

RL = Reporting Limit
IDL = Instrument Detection Limit

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

Tetra Tech NUS, Inc. **Internal Correspondence**

TO: **Mr. Paul Calligan** **DATE: July 13, 2001**

FROM: **Suzanne I. Smith** **CC: File**

SUBJECT: **Organic Data Validation – VOC, EDB, PAH, TPH, and Lead**
CTO072 – NAS Cecil Field
SDG F9804

SAMPLES: **1/Aqueous**

CEF-TH3-TMW-021

OVERVIEW

The sample set for CTO072, SDG F9804; Naval Air Station Cecil Field, Pensacola, Florida consists of one (1) aqueous environmental sample. The environmental sample was analyzed for Volatile Organic Compounds (VOCs), Polycyclic Aromatic Hydrocarbons (PAHs), Total Petroleum Hydrocarbons (TPH), and Lead.

The sample was collected by Tetra Tech NUS on May 24, 2001 and analyzed by Accutest Laboratories. All analyses were performed in accordance with Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria and analyzed according to SW-846 Method 8260 (VOCs), EPA Method 504.1 (EDB), SW-846 Method 8310 (PAHs), FDEP Method FL-PRO (TPH), and SW-846 Method 6010B analytical and reporting protocols. The data in this SDG was validated with regard to the following parameters:

* • Data Completeness
* • Holding Times
* • Laboratory method/field quality control blank results
* • Detection Limits

The symbol (*) indicates that all quality control criteria were met for this parameter.

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Volatile and EDB Fractions

All quality control criteria were met for this fraction.

Polycylcic Aromatic Hydrocarbon Fraction

All quality control criteria were met for this fraction.

Total Petroleum Hydrocarbon Fraction

All quality control criteria were met for this fraction.

Lead Fraction

Laboratory Blank Analysis

Affected samples : CEF-TH3-TMW-021

Analyte	Maximum Concentration (ug/L)	Action Level (ug/L)
Lead	1.7	8.5

An action level of 5x the maximum concentration has been used to evaluate the sample for blank contamination in calibration and preparation blanks. Dilution factors and aliquots were taken into consideration when evaluated for blank contamination. Results between the Instrument Detection Limit (IDL) and the action level were reported as nondetects.

All other quality control criteria were met for this fraction

Executive Summary

Laboratory performance: The result for Lead in sample CEF-TH3-TMW-021 was qualified as a nondetect "U" due to blank contamination.

Other factors affecting data quality: None.

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (February, 1996), and the NFESC guidelines "Navy Installation Restoration Chemical Data Quality Manual" (September, 1999). The text of the report has been formulated to address only those problems affecting data quality.

"I attest that the data referenced herein was validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Suzanne I. Smith

Project Chemist
Tetra Tech NUS, Inc.

CTO072-NAS CECIL FIELD
WATER DATA
Accutest, NJ
SDG: F9804

SAMPLE NUMBER:	CEF-TH3-TMW-021	/ /	/ /	/ /
SAMPLE DATE:	05/24/01			
LABORATORY ID:	F9804-1			
QC_TYPE:	NORMAL			
% SOLIDS:	0.0 %	100.0 %	100.0 %	100.0 %
UNITS:	UG/L			
FIELD DUPLICATE OF:				

VOLATILES	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
1,1,1-TRICHLOROETHANE	2	U										
1,1,2,2-TETRACHLOROETHANE	2	U										
1,1,2-TRICHLOROETHANE	2	U										
1,1-DICHLOROETHANE	2	U										
1,1-DICHLOROETHENE	2	U										
1,2-DIBROMOETHANE	0.02	U										
1,2-DICHLOROBENZENE	2	U										
1,2-DICHLOROETHANE	2	U										
1,2-DICHLOROPROPANE	2	U										
1,3-DICHLOROBENZENE	2	U										
1,4-DICHLOROBENZENE	2	U										
2-CHLOROETHYL VINYL ETHER	5	U										
ACROLEIN	10	U										
ACRYLONITRILE	10	U										
BENZENE	1	U										
BROMODICHLOROMETHANE	2	U										
BROMOFORM	2	U										
BROMOMETHANE	5	U										
CARBON TETRACHLORIDE	2	U										
CHLOROBENZENE	2	U										
CHLORODIBROMOMETHANE	2	U										
CHLOROETHANE	5	U										
CHLOROFORM	2	U										
CHLOROMETHANE	5	U										
CIS-1,3-DICHLOROPROPENE	2	U										
ETHYLBENZENE	2	U										
METHYL TERT-BUTYL ETHER	2	U										
METHYLENE CHLORIDE	5	U										
TETRACHLOROETHENE	2	U										
TOLUENE	2	U										
TOTAL XYLENES	6	U										
TRANS-1,2-DICHLOROETHENE	2	U										

WATER DATA
Accutest, NJ
SDG: F9804

SAMPLE NUMBER:	CEF-TH3-TMW-021			
SAMPLE DATE:	05/24/01	/ /	/ /	/ /
LABORATORY ID:	F9804-1			
QC_TYPE:	NORMAL			
% SOLIDS:	0.0 %	100.0 %	100.0 %	100.0 %
UNITS:	UG/L			
FIELD DUPLICATE OF:				

VOLATILES	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
TRANS-1,3-DICHLOROPROPENE	2	U										
TRICHLOROETHENE	2	U										
TRICHLOROFLUOROMETHANE	5	U										
VINYL CHLORIDE	1	U										

CTO0072-NAS CECIL FIELD
WATER DATA
Accutest, NJ
SDG: F9804

SAMPLE NUMBER:	CEF-TH3-TMW-021											
SAMPLE DATE:	05/24/01			/ /			/ /			/ /		
LABORATORY ID:	F9804-1											
QC_TYPE:	NORMAL											
% SOLIDS:	0.0 %			100.0 %			100.0 %			100.0 %		
UNITS:	UG/L											
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1-METHYLNAPHTHALENE	2.2	U										
2-METHYLNAPHTHALENE	2.2	U										
ACENAPHTHENE	4.4	U										
ACENAPHTHYLENE	4.4	U										
ANTHRACENE	2.2	U										
BENZO(A)ANTHRACENE	0.22	U										
BENZO(A)PYRENE	0.22	U										
BENZO(B)FLUORANTHENE	0.22	U										
BENZO(G,H,I)PERYLENE	0.22	U										
BENZO(K)FLUORANTHENE	0.22	U										
CHRYSENE	2.2	U										
DIBENZO(A,H)ANTHRACENE	0.22	U										
FLUORANTHENE	2.2	U										
FLUORENE	2.2	U										
INDENO(1,2,3-CD)PYRENE	0.22	U										
NAPHTHALENE	2.2	U										
PHENANTHRENE	2.2	U										
PYRENE	2.2	U										

WATER DATA
Accutest, NJ
SDG: F9804

SAMPLE NUMBER:	CEF-TH3-TMW-021											
SAMPLE DATE:	05/24/01			/ /			/ /			/ /		
LABORATORY ID:	F9804-1											
QC_TYPE:	NORMAL											
% SOLIDS:	0.0 %			100.0 %			100.0 %			100.0 %		
UNITS:	MG/L											
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
TOTAL PETROLEUM HYDROCARBONS	0.25	U										

CTO072-NAS CECIL FIELD
WATER DATA
Accutest, NJ
SDG: F9804

SAMPLE NUMBER:	CEF-TH3-TMW-021											
SAMPLE DATE:	05/24/01			/ /			/ /			/ /		
LABORATORY ID:	F9804-1											
QC_TYPE:	NORMAL											
% SOLIDS:	0.0 %			100.0 %			100.0 %			100.0 %		
UNITS:	UG/L											
FIELD DUPLICATE OF:												
INORGANICS	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
LEAD	7.7	U	A									

HOLDING TIME
06/13/01

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
UG/L	CEF-TH3-TMW-021	F9804-1	NORMAL	F9804	EDB	05/24/01	06/05/01	06/05/01	12	0	12 ✓
UG/L	CEF-TH3-TMW-021	F9804-1	NORMAL	F9804	M	05/24/01	05/30/01	06/04/01	6	5	11 ✓
UG/L	CEF-TH3-TMW-021	F9804-1	NORMAL	F9804	OV	05/24/01	/ /	06/05/01	0	0	12 ✓
UG/L	CEF-TH3-TMW-021	F9804-1	NORMAL	F9804	PAH	05/24/01	05/29/01	05/31/01	5	2	7 ✓
MG/L	CEF-TH3-TMW-021	F9804-1	NORMAL	F9804	TPH	05/24/01	05/29/01	05/31/01	5	2	7 ✓

Sample Summary

Tetra Tech, NUS

Job No: F9804

NAS Cecil Field-TH3
Project No: N0013 DM0050120

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
F9804-1	05/24/01	14:45	MD	05/25/01	AQ	Ground Water	CEF-TH3-TMW-021

Report of Analysis

Client Sample ID:	CEF-TH3-TMW-021		
Lab Sample ID:	F9804-1	Date Sampled:	05/24/01
Matrix:	AQ - Ground Water	Date Received:	05/25/01
Method:	SW846 8260B	Percent Solids:	n/a
Project:	NAS Cecil Field-TH3		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	B005231.D	1	06/05/01	JG	n/a	n/a	VB205
Run #2							

VOA PPL List

CAS No.	Compound	Result	RL	Units	Q
107-02-8	Acrolein	ND	10	ug/l	
107-13-1	Acrylonitrile	ND	10	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	2.0	ug/l	
75-25-2	Bromoform	ND	2.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-00-3	Chloroethane	ND	5.0	ug/l	
67-66-3	Chloroform	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
124-48-1	Dibromochloromethane	ND	2.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	ug/l	
541-73-1	m-Dichlorobenzene	ND	2.0	ug/l	
95-50-1	o-Dichlorobenzene	ND	2.0	ug/l	
106-46-7	p-Dichlorobenzene	ND	2.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	2.0	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
74-83-9	Methyl bromide	ND	5.0	ug/l	
74-87-3	Methyl chloride	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	ug/l	

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

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

Report of Analysis

Client Sample ID:	CEF-TH3-TMW-021		
Lab Sample ID:	F9804-1	Date Sampled:	05/24/01
Matrix:	AQ - Ground Water	Date Received:	05/25/01
Method:	SW846 8260B	Percent Solids:	n/a
Project:	NAS Cecil Field-TH3		

VOA PPL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		80-120%
17060-07-0	1,2-Dichloroethane-D4	107%		80-120%
2037-26-5	Toluene-D8	97%		80-120%
460-00-4	4-Bromofluorobenzene	106%		80-120%

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

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

Report of Analysis

Client Sample ID:	CEF-TH3-TMW-021		
Lab Sample ID:	F9804-1	Date Sampled:	05/24/01
Matrix:	AQ - Ground Water	Date Received:	05/25/01
Method:	EPA 504.1 EPA 504	Percent Solids:	n/a
Project:	NAS Cecil Field-TH3		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	DD02169.D	1	06/05/01	SKW	06/05/01	OP3259	GDD83
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:	CEF-TH3-TMW-021		
Lab Sample ID:	F9804-1	Date Sampled:	05/24/01
Matrix:	AQ - Ground Water	Date Received:	05/25/01
Method:	EPA 8310 SW846 3510C	Percent Solids:	n/a
Project:	NAS Cecil Field-TH3		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE003389.D	1	05/31/01	MRE	05/29/01	OP3211	GEE162
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.4	ug/l	
208-96-8	Acenaphthylene	ND	4.4	ug/l	
120-12-7	Anthracene	ND	2.2	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.22	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.22	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.22	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.22	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.22	ug/l	
218-01-9	Chrysene	ND	2.2	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.22	ug/l	
206-44-0	Fluoranthene	ND	2.2	ug/l	
86-73-7	Fluorene	ND	2.2	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.22	ug/l	
91-20-3	Naphthalene	ND	2.2	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.2	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.2	ug/l	
85-01-8	Phenanthrene	ND	2.2	ug/l	
129-00-0	Pyrene	ND	2.2	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	78%		33-141%
92-94-4	p-Terphenyl	84%		31-122%

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

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

Report of Analysis

Client Sample ID:	CEF-TH3-TMW-021		
Lab Sample ID:	F9804-1	Date Sampled:	05/24/01
Matrix:	AQ - Ground Water	Date Received:	05/25/01
Method:	FLORIDA-PRO SW846 3510C	Percent Solids:	n/a
Project:	NAS Cecil Field-TH3		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP15312.D	1	05/31/01	SKW	05/29/01	OP3213	GOP593
Run #2							

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

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	81%		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:	CEF-TH3-TMW-021		
Lab Sample ID:	F9804-1	Date Sampled:	05/24/01
Matrix:	AQ - Ground Water	Date Received:	05/25/01
		Percent Solids:	n/a
Project:	NAS Cecil Field-TH3		

Metals Analysis

Analyte	Result	RL	IDL	Units	DF	Prep	Analyzed	By	Method
Lead	7.7	5.0	1.2	ug/l	1	05/30/01	06/04/01	JK	SW846 6010B

RL = Reporting Limit
IDL = Instrument Detection Limit

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

Tetra Tech NUS, Inc. **Internal Correspondence**

TO: **Mr. Paul Calligan** **DATE: July 18, 2001**

FROM: **Suzanne I. Smith** **CC: File**

SUBJECT: **Organic and Inorganic Data Validation – VOC, EDB, PAH, TPH, and Lead**
CTO072 – NAS Cecil Field
SDG F10042

SAMPLES: **4/Aqueous**

CEF-TH3-GW-01-01 **CEF-TH3-GW-02-01** **CEF-TH3-GW-03-01**
CEF-TH3-GW-DUP1-01

OVERVIEW

The sample set for CTO072, SDG F10042; Naval Air Station Cecil Field, Pensacola, Florida consists of four (4) aqueous environmental samples. The environmental samples were analyzed for Volatile Organic Compounds (VOCs), Polycyclic Aromatic Hydrocarbons (PAHs), Total Petroleum Hydrocarbons (TPH), and Lead. One set of duplicates was analyzed in conjunction with this SDG : CEF-TH3-GW-02-01/CEF-TH3-DUP1-01.

The sample was collected by Tetra Tech NUS on June 16, 2001 and analyzed by Accutest Laboratories. All analyses were performed in accordance with Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria and analyzed according to SW-846 Method 8260 (VOCs), EPA Method 504.1 (EDB), SW-846 Method 8310 (PAHs), FDEP Method FL-PRO (TPH) and SW-846 Method 6010B (Lead) analytical and reporting protocols. The data in this SDG was validated with regard to the following parameters:

* • Data Completeness
* • Holding Times
  • Laboratory method/field quality control blank results
* • Detection Limits

The symbol (*) indicates that all quality control criteria were met for this parameter.

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Volatile and EDB Fractions

All quality control criteria were met for this fraction.

Polycyclic Aromatic Hydrocarbon Fraction

All quality control criteria were met for this fraction.

Total Petroleum Hydrocarbon Fraction

All quality control criteria were met for this fraction.

Lead Fraction

Laboratory Blank Analysis

Affected Samples : all

Analyte	Maximum Concentration (ug/L)	Action Level (ug/L)
Lead	1.8	9

An action level of 5x the maximum concentration has been used to evaluate the sample for blank contamination in calibration and preparation blanks. Dilution factors and aliquots were taken into consideration when evaluated for blank contamination. Results between the Instrument Detection Limit (IDL) and the action level were reported as nondetects.

All other quality control criteria were met for this fraction.

Field Duplicate Summary

Analyte	CEF-TH3-GW-02-01 (ug/L)	CEF-TH3-GW-DUP1-01 (ug/L)	%RPD
TPH	503	479	4.9

No qualifications were made based on field duplication.

Executive Summary

Laboratory performance: Results between the Instrument Detection Limit (IDL) and the action level for Lead were reported as nondetects "U".

Other factors affecting data quality: None.

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (February, 1996), and the NFESC guidelines "Navy Installation Restoration Chemical Data Quality Manual" (September, 1999). The text of the report has been formulated to address only those problems affecting data quality.

"I attest that the data referenced herein was validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Suzanne I. Smith

Suzanne I. Smith

Project Chemist
Tetra Tech NUS, Inc.

CTO072-NAS CECIL FIELD
WATER DATA
Accutest, NJ
SDG: F10042

SAMPLE NUMBER:	CEF-TH3-GW-01-01			CEF-TH3-GW-02-01			CEF-TH3-GW-03-01			CEF-TH3-GW-DUP1-01		
SAMPLE DATE:	06/16/01			06/16/01			06/16/01			06/16/01		
LABORATORY ID:	F10042-1			F10042-2			F10042-3			F10042-4		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:										CEF-TH3-GW-02-01		
VOLATILES	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
1,1,1-TRICHLOROETHANE	2	U		2	U		2	U		2	U	
1,1,2,2-TETRACHLOROETHANE	2	U		2	U		2	U		2	U	
1,1,2-TRICHLOROETHANE	2	U		2	U		2	U		2	U	
1,1-DICHLOROETHANE	2	U		2	U		2	U		2	U	
1,1-DICHLOROETHENE	0.52	J	P	2	U		2	U		2	U	
1,2-DIBROMOETHANE	0.02	U		0.02	U		0.02	U		0.02	U	
1,2-DICHLOROBENZENE	2	U		2	U		2	U		2	U	
1,2-DICHLOROETHANE	2	U		2	U		2	U		2	U	
1,2-DICHLOROPROPANE	2	U		2	U		2	U		2	U	
1,3-DICHLOROBENZENE	2	U		2	U		2	U		2	U	
1,4-DICHLOROBENZENE	2	U		2	U		2	U		2	U	
2-CHLOROETHYL VINYL ETHER	5	U		5	U		5	U		5	U	
ACROLEIN	10	U		10	U		10	U		10	U	
ACRYLONITRILE	10	U		10	U		10	U		10	U	
BENZENE	1	U		1	U		0.98	J	P	1	U	
BROMODICHLOROMETHANE	2	U		2	U		2	U		2	U	
BROMOFORM	2	U		2	U		2	U		2	U	
BROMOMETHANE	5	U		5	U		5	U		5	U	
CARBON TETRACHLORIDE	2	U		2	U		2	U		2	U	
CHLOROBENZENE	2	U		2	U		2	U		2	U	
CHLORODIBROMOMETHANE	2	U		2	U		2	U		2	U	
CHLOROETHANE	5	U		5	U		5	U		5	U	
CHLOROFORM	2	U		2	U		2	U		2	U	
CHLOROMETHANE	5	U		5	U		5	U		5	U	
CIS-1,3-DICHLOROPROPENE	2	U		2	U		2	U		2	U	
ETHYLBENZENE	2	U		2	U		2	U		2	U	
METHYL TERT-BUTYL ETHER	2	U		2	U		2	U		2	U	
METHYLENE CHLORIDE	5	U		5	U		5	U		5	U	
TETRACHLOROETHENE	2	U		2	U		2	U		2	U	
TOLUENE	2	U		2	U		2	U		2	U	
TOTAL XYLENES	6	U		6	U		6	U		6	U	
TRANS-1,2-DICHLOROETHENE	2	U		2	U		2	U		2	U	

CTO072-NAS CECIL FIELD
WATER DATA
Accutest, NJ
SDG: F10042

SAMPLE NUMBER:	CEF-TH3-GW-01-01			CEF-TH3-GW-02-01			CEF-TH3-GW-03-01			CEF-TH3-GW-DUP1-01		
SAMPLE DATE:	06/16/01			06/16/01			06/16/01			06/16/01		
LABORATORY ID:	F10042-1			F10042-2			F10042-3			F10042-4		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
VOLATILES	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
TRANS-1,3-DICHLOROPROPENE	2	U		2	U		2	U		2	U	
TRICHLOROETHENE	2	U		2	U		2	U		2	U	
TRICHLOROFLUOROMETHANE	5	U		5	U		5	U		5	U	
VINYL CHLORIDE	1	U		1	U		1	U		1	U	

CTO072-NAS CECIL FIELD
WATER DATA
Accutest, NJ
SDG: F10042

SAMPLE NUMBER:	CEF-TH3-GW-01-01			CEF-TH3-GW-02-01			CEF-TH3-GW-03-01			CEF-TH3-GW-DUP1-01		
SAMPLE DATE:	06/16/01			06/16/01			06/16/01			06/16/01		
LABORATORY ID:	F10042-1			F10042-2			F10042-3			F10042-4		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
POLYNUCLEAR AROMATIC HYDROCARBONS	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
1-METHYLNAPHTHALENE	2	U		2.2	U		2	U		2	U	
2-METHYLNAPHTHALENE	2	U		2.2	U		2	U		2	U	
ACENAPHTHENE	4	U		4.4	U		4	U		4	U	
ACENAPHTHYLENE	4	U		4.4	U		4	U		4	U	
ANTHRACENE	2	U		2.2	U		2	U		2	U	
BENZO(A)ANTHRACENE	0.2	U		0.22	U		0.2	U		0.2	U	
BENZO(A)PYRENE	0.2	U		0.22	U		0.2	U		0.2	U	
BENZO(B)FLUORANTHENE	0.2	U		0.22	U		0.2	U		0.2	U	
BENZO(G,H,I)PERYLENE	0.2	U		0.22	U		0.2	U		0.2	U	
BENZO(K)FLUORANTHENE	0.2	U		0.22	U		0.2	U		0.2	U	
CHRYSENE	2	U		2.2	U		2	U		2	U	
DIBENZO(A,H)ANTHRACENE	0.2	U		0.22	U		0.2	U		0.2	U	
FLUORANTHENE	2	U		2.2	U		2	U		2	U	
FLUORENE	2	U		2.2	U		2	U		2	U	
INDENO(1,2,3-CD)PYRENE	0.2	U		0.22	U		0.2	U		0.2	U	
NAPHTHALENE	2	U		2.2	U		2	U		2	U	
PHENANTHRENE	2	U		2.2	U		2	U		2	U	
PYRENE	2	U		2.2	U		2	U		2	U	

CTO072-NAS CECIL FIELD
WATER DATA
Accutest, NJ
SDG: F10042

SAMPLE NUMBER:	CEF-TH3-GW-01-01			CEF-TH3-GW-02-01			CEF-TH3-GW-03-01			CEF-TH3-GW-DUP1-01		
SAMPLE DATE:	06/16/01			06/16/01			06/16/01			06/16/01		
LABORATORY ID:	F10042-1			F10042-2			F10042-3			F10042-4		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	MG/L			MG/L			MG/L			MG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
TOTAL PETROLEUM HYDROCARBONS	0.305			0.503			0.752			0.479		

CTO072-NAS CECIL FIELD
WATER DATA
Accutest, NJ
SDG: F10042

SAMPLE NUMBER:	CEF-TH3-GW-01-01			CEF-TH3-GW-02-01			CEF-TH3-GW-03-01			CEF-TH3-GW-DUP1-01		
SAMPLE DATE:	06/16/01			06/16/01			06/16/01			06/16/01		
LABORATORY ID:	F10042-1			F10042-2			F10042-3			F10042-4		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
INORGANICS	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
LEAD	1.4	~~B~~ U	A	7.8	U	A	2.4	~~B~~ U	A	3.9	~~B~~ U	A

F10042

HOLDING TIME
07/16/01

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
UG/L	CEF-TH3-GW-01-01	F10042-1	NORMAL	F10042	EDB	06/16/01	06/25/01	06/25/01	9	0	9
UG/L	CEF-TH3-GW-02-01	F10042-2	NORMAL	F10042	EDB	06/16/01	06/25/01	06/25/01	9	0	9
UG/L	CEF-TH3-GW-03-01	F10042-3	NORMAL	F10042	EDB	06/16/01	06/25/01	06/25/01	9	0	9
UG/L	CEF-TH3-GW-DUP1-01	F10042-4	NORMAL	F10042	EDB	06/16/01	06/25/01	06/25/01	9	0	9
UG/L	CEF-TH3-GW-01-01	F10042-1	NORMAL	F10042	M	06/16/01	06/26/01	06/27/01	10	1	11
UG/L	CEF-TH3-GW-02-01	F10042-2	NORMAL	F10042	M	06/16/01	06/21/01	06/28/01	5	7	12
UG/L	CEF-TH3-GW-03-01	F10042-3	NORMAL	F10042	M	06/16/01	06/21/01	06/28/01	5	7	12
UG/L	CEF-TH3-GW-DUP1-01	F10042-4	NORMAL	F10042	M	06/16/01	06/21/01	06/28/01	5	7	12
UG/L	CEF-TH3-GW-01-01	F10042-1	NORMAL	F10042	OV	06/16/01	/ /	06/27/01	0	0	11
UG/L	CEF-TH3-GW-02-01	F10042-2	NORMAL	F10042	OV	06/16/01	/ /	06/27/01	0	0	11
UG/L	CEF-TH3-GW-03-01	F10042-3	NORMAL	F10042	OV	06/16/01	/ /	06/27/01	0	0	11
UG/L	CEF-TH3-GW-DUP1-01	F10042-4	NORMAL	F10042	OV	06/16/01	/ /	06/27/01	0	0	11
UG/L	CEF-TH3-GW-01-01	F10042-1	NORMAL	F10042	PAH	06/16/01	06/22/01	07/06/01	6	14	20
UG/L	CEF-TH3-GW-02-01	F10042-2	NORMAL	F10042	PAH	06/16/01	06/22/01	07/06/01	6	14	20
UG/L	CEF-TH3-GW-03-01	F10042-3	NORMAL	F10042	PAH	06/16/01	06/22/01	07/06/01	6	14	20
UG/L	CEF-TH3-GW-DUP1-01	F10042-4	NORMAL	F10042	PAH	06/16/01	06/22/01	07/06/01	6	14	20
MG/L	CEF-TH3-GW-01-01	F10042-1	NORMAL	F10042	TPH	06/16/01	06/20/01	06/23/01	4	3	7
MG/L	CEF-TH3-GW-02-01	F10042-2	NORMAL	F10042	TPH	06/16/01	06/20/01	06/23/01	4	3	7
MG/L	CEF-TH3-GW-03-01	F10042-3	NORMAL	F10042	TPH	06/16/01	06/20/01	06/23/01	4	3	7
MG/L	CEF-TH3-GW-DUP1-01	F10042-4	NORMAL	F10042	TPH	06/16/01	06/20/01	06/23/01	4	3	7

Southeast ACCUTEST

07/12/01

Technical Report for

Tetra Tech, NUS

NAS Cecil Field-TH3

N0013 DM0050120 WR# 72CF-1

Accutest Job Number: F10042

Report to:

Tetra Tech, NUS

davisb@ttnus.com

ATTN: Bob Davis

Total number of pages in report: 26

ACCREDITED IN ACCORDANCE WITH nelac

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

Harry Behzadi, Ph.D.
Laboratory Director

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Sample Summary

Tetra Tech, NUS

Job No: F10042

NAS Cecil Field-TH3
Project No: N0013 DM0050120 WR# 72CF-1

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
F10042-1	06/16/01	13:00 ER	06/19/01	AQ	Ground Water	CEF-TH3-GW-01-01
F10042-2	06/16/01	11:45 ER	06/19/01	AQ	Ground Water	CEF-TH3-GW-02-01
F10042-3	06/16/01	15:25 ER	06/19/01	AQ	Ground Water	CEF-TH3-GW-03-01
F10042-4	06/16/01	00:00 ER	06/19/01	AQ	Ground Water	CEF-TH3-GW-DUP1-01

Report of Analysis

Client Sample ID:	CEF-TH3-GW-01-01		
Lab Sample ID:	F10042-1	Date Sampled:	06/16/01
Matrix:	AQ - Ground Water	Date Received:	06/19/01
Method:	SW846 8260B	Percent Solids:	n/a
Project:	NAS Cecil Field-TH3		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	B005572.D	1	06/27/01	JG	n/a	n/a	VB223
Run #2							

VOA PPL List

CAS No.	Compound	Result	RL	Units	Q
107-02-8	Acrolein	ND	10	ug/l	
107-13-1	Acrylonitrile	ND	10	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	2.0	ug/l	
75-25-2	Bromoform	ND	2.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-00-3	Chloroethane	ND	5.0	ug/l	
67-66-3	Chloroform	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	0.52	2.0	ug/l	J
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
124-48-1	Dibromochloromethane	ND	2.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	ug/l	
541-73-1	m-Dichlorobenzene	ND	2.0	ug/l	
95-50-1	o-Dichlorobenzene	ND	2.0	ug/l	
106-46-7	p-Dichlorobenzene	ND	2.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	2.0	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
74-83-9	Methyl bromide	ND	5.0	ug/l	
74-87-3	Methyl chloride	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	ug/l	

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

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

Report of Analysis

Client Sample ID:	CEF-TH3-GW-01-01		
Lab Sample ID:	F10042-1	Date Sampled:	06/16/01
Matrix:	AQ - Ground Water	Date Received:	06/19/01
Method:	SW846 8260B	Percent Solids:	n/a
Project:	NAS Cecil Field-TH3		

VOA PPL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	110%		80-120%
17060-07-0	1,2-Dichloroethane-D4	107%		80-120%
2037-26-5	Toluene-D8	93%		80-120%
460-00-4	4-Bromofluorobenzene	98%		80-120%

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

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

Report of Analysis

Client Sample ID:	CEF-TH3-GW-01-01		
Lab Sample ID:	F10042-1	Date Sampled:	06/16/01
Matrix:	AQ - Ground Water	Date Received:	06/19/01
Method:	EPA 504.1 EPA 504	Percent Solids:	n/a
Project:	NAS Cecil Field-TH3		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	DD02343.D	1	06/25/01	SKW	06/25/01	OP3366	GDD87
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:	CEF-TH3-GW-01-01		
Lab Sample ID:	F10042-1	Date Sampled:	06/16/01
Matrix:	AQ - Ground Water	Date Received:	06/19/01
Method:	EPA 8310 SW846 3510C	Percent Solids:	n/a
Project:	NAS Cecil Field-TH3		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE004187.D	1	07/06/01	MRE	06/22/01	OP3353	GEE194
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	ND	2.0	ug/l	
86-73-7	Fluorene	ND	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	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	88%		33-141%
92-94-4	p-Terphenyl	87%		31-122%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-TH3-GW-01-01		
Lab Sample ID:	F10042-1	Date Sampled:	06/16/01
Matrix:	AQ - Ground Water	Date Received:	06/19/01
Method:	FLORIDA-PRO SW846 3510C	Percent Solids:	n/a
Project:	NAS Cecil Field-TH3		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP15697.D	1	06/23/01	SKW	06/20/01	OP3341	GOP606
Run #2							

CAS No.	Compound	Result	RL	Units	Q
	TPH (C8-C40)	0.305	0.25	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	81%		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:	CEF-TH3-GW-01-01		
Lab Sample ID:	F10042-1	Date Sampled:	06/16/01
Matrix:	AQ - Ground Water	Date Received:	06/19/01
		Percent Solids:	n/a
Project:	NAS Cecil Field-TH3		

Metals Analysis

Analyte	Result	RL	IDL	Units	DF	Prep	Analyzed	By	Method
Lead	1.4 B	5.0	1.2	ug/l	1	06/26/01	06/27/01	JK	SW846 6010B

RL = Reporting Limit
IDL = Instrument Detection Limit

U = Indicates a result < IDL
B = Indicates a result > = IDL but < RL

Report of Analysis

Client Sample ID:	CEF-TH3-GW-02-01		
Lab Sample ID:	F10042-2	Date Sampled:	06/16/01
Matrix:	AQ - Ground Water	Date Received:	06/19/01
Method:	SW846 8260B	Percent Solids:	n/a
Project:	NAS Cecil Field-TH3		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	B005573.D	1	06/27/01	JG	n/a	n/a	VB223
Run #2							

VOA PPL List

CAS No.	Compound	Result	RL	Units	Q
107-02-8	Acrolein	ND	10	ug/l	
107-13-1	Acrylonitrile	ND	10	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	2.0	ug/l	
75-25-2	Bromoform	ND	2.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-00-3	Chloroethane	ND	5.0	ug/l	
67-66-3	Chloroform	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
124-48-1	Dibromochloromethane	ND	2.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	ug/l	
541-73-1	m-Dichlorobenzene	ND	2.0	ug/l	
95-50-1	o-Dichlorobenzene	ND	2.0	ug/l	
106-46-7	p-Dichlorobenzene	ND	2.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	2.0	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
74-83-9	Methyl bromide	ND	5.0	ug/l	
74-87-3	Methyl chloride	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-TH3-GW-02-01		
Lab Sample ID:	F10042-2	Date Sampled:	06/16/01
Matrix:	AQ - Ground Water	Date Received:	06/19/01
Method:	SW846 8260B	Percent Solids:	n/a
Project:	NAS Cecil Field-TH3		

VOA PPL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%		80-120%
17060-07-0	1,2-Dichloroethane-D4	108%		80-120%
2037-26-5	Toluene-D8	93%		80-120%
460-00-4	4-Bromofluorobenzene	98%		80-120%

(a) Sample was not preserved to a pH < 2; reported results are considered minimum values.

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-TH3-GW-02-01		
Lab Sample ID:	F10042-2	Date Sampled:	06/16/01
Matrix:	AQ - Ground Water	Date Received:	06/19/01
Method:	EPA 504.1 EPA 504	Percent Solids:	n/a
Project:	NAS Cecil Field-TH3		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	DD02344.D	1	06/25/01	SKW	06/25/01	OP3366	GDD87
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:	CEF-TH3-GW-02-01		
Lab Sample ID:	F10042-2	Date Sampled:	06/16/01
Matrix:	AQ - Ground Water	Date Received:	06/19/01
Method:	FLORIDA-PRO SW846 3510C	Percent Solids:	n/a
Project:	NAS Cecil Field-TH3		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP15698.D	1	06/23/01	SKW	06/20/01	OP3341	GOP606
Run #2							

CAS No.	Compound	Result	RL	Units	Q
	TPH (C8-C40)	0.503	0.25	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	94%		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:	CEF-TH3-GW-02-01		
Lab Sample ID:	F10042-2	Date Sampled:	06/16/01
Matrix:	AQ - Ground Water	Date Received:	06/19/01
Method:	EPA 8310 SW846 3510C	Percent Solids:	n/a
Project:	NAS Cecil Field-TH3		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE004190.D	1	07/06/01	MRE	06/22/01	OP3353	GEE194
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.4	ug/l	
208-96-8	Acenaphthylene	ND	4.4	ug/l	
120-12-7	Anthracene	ND	2.2	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.22	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.22	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.22	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.22	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.22	ug/l	
218-01-9	Chrysene	ND	2.2	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.22	ug/l	
206-44-0	Fluoranthene	ND	2.2	ug/l	
86-73-7	Fluorene	ND	2.2	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.22	ug/l	
91-20-3	Naphthalene	ND	2.2	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.2	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.2	ug/l	
85-01-8	Phenanthrene	ND	2.2	ug/l	
129-00-0	Pyrene	ND	2.2	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	81%		33-141%
92-94-4	p-Terphenyl	81%		31-122%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-TH3-GW-02-01		
Lab Sample ID:	F10042-2	Date Sampled:	06/16/01
Matrix:	AQ - Ground Water	Date Received:	06/19/01
		Percent Solids:	n/a
Project:	NAS Cecil Field-TH3		

Metals Analysis

Analyte	Result	RL	IDL	Units	DF	Prep	Analyzed	By	Method
Lead	7.8	5.0	1.2	ug/l	1	06/21/01	06/28/01	JK	SW846 6010B

RL = Reporting Limit
IDL = Instrument Detection Limit

U = Indicates a result < IDL
B = Indicates a result > = IDL but < RL

Report of Analysis

Client Sample ID:	CEF-TH3-GW-03-01		
Lab Sample ID:	F10042-3	Date Sampled:	06/16/01
Matrix:	AQ - Ground Water	Date Received:	06/19/01
Method:	SW846 8260B	Percent Solids:	n/a
Project:	NAS Cecil Field-TH3		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	B005574.D	1	06/27/01	JG	n/a	n/a	VB223
Run #2							

VOA PPL List

CAS No.	Compound	Result	RL	Units	Q
107-02-8	Acrolein	ND	10	ug/l	
107-13-1	Acrylonitrile	ND	10	ug/l	
71-43-2	Benzene	0.98	1.0	ug/l	J
75-27-4	Bromodichloromethane	ND	2.0	ug/l	
75-25-2	Bromoform	ND	2.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-00-3	Chloroethane	ND	5.0	ug/l	
67-66-3	Chloroform	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
124-48-1	Dibromochloromethane	ND	2.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	ug/l	
541-73-1	m-Dichlorobenzene	ND	2.0	ug/l	
95-50-1	o-Dichlorobenzene	ND	2.0	ug/l	
106-46-7	p-Dichlorobenzene	ND	2.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	2.0	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
74-83-9	Methyl bromide	ND	5.0	ug/l	
74-87-3	Methyl chloride	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-TH3-GW-03-01		
Lab Sample ID:	F10042-3	Date Sampled:	06/16/01
Matrix:	AQ - Ground Water	Date Received:	06/19/01
Method:	SW846 8260B	Percent Solids:	n/a
Project:	NAS Cecil Field-TH3		

VOA PPL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		80-120%
17060-07-0	1,2-Dichloroethane-D4	107%		80-120%
2037-26-5	Toluene-D8	92%		80-120%
460-00-4	4-Bromofluorobenzene	96%		80-120%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-TH3-GW-03-01		
Lab Sample ID:	F10042-3	Date Sampled:	06/16/01
Matrix:	AQ - Ground Water	Date Received:	06/19/01
Method:	EPA 504.1 EPA 504	Percent Solids:	n/a
Project:	NAS Cecil Field-TH3		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	DD02345.D	1	06/25/01	SKW	06/25/01	OP3366	GDD87
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:	CEF-TH3-GW-03-01		
Lab Sample ID:	F10042-3	Date Sampled:	06/16/01
Matrix:	AQ - Ground Water	Date Received:	06/19/01
Method:	EPA 8310 SW846 3510C	Percent Solids:	n/a
Project:	NAS Cecil Field-TH3		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE004191.D	1	07/06/01	MRE	06/22/01	OP3353	GEE194
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	ND	2.0	ug/l	
86-73-7	Fluorene	ND	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	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	82%		33-141%
92-94-4	p-Terphenyl	86%		31-122%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-TH3-GW-03-01		
Lab Sample ID:	F10042-3	Date Sampled:	06/16/01
Matrix:	AQ - Ground Water	Date Received:	06/19/01
Method:	FLORIDA-PRO SW846 3510C	Percent Solids:	n/a
Project:	NAS Cecil Field-TH3		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP15699.D	1	06/23/01	SKW	06/20/01	OP3341	GOP606
Run #2							

CAS No.	Compound	Result	RL	Units	Q
	TPH (C8-C40)	0.752	0.25	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	95%		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:	CEF-TH3-GW-03-01		
Lab Sample ID:	F10042-3	Date Sampled:	06/16/01
Matrix:	AQ - Ground Water	Date Received:	06/19/01
		Percent Solids:	n/a
Project:	NAS Cecil Field-TH3		

Metals Analysis

Analyte	Result	RL	IDL	Units	DF	Prep	Analyzed	By	Method
Lead	2.4 B	5.0	1.2	ug/l	1	06/21/01	06/28/01	JK	SW846 6010B

RL = Reporting Limit
IDL = Instrument Detection Limit

U = Indicates a result < IDL
B = Indicates a result > = IDL but < RL

Report of Analysis

Client Sample ID:	CEF-TH3-GW-DUP1-01		
Lab Sample ID:	F10042-4	Date Sampled:	06/16/01
Matrix:	AQ - Ground Water	Date Received:	06/19/01
Method:	SW846 8260B	Percent Solids:	n/a
Project:	NAS Cecil Field-TH3		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	B005575.D	1	06/27/01	JG	n/a	n/a	VB223
Run #2							

VOA PPL List

CAS No.	Compound	Result	RL	Units	Q
107-02-8	Acrolein	ND	10	ug/l	
107-13-1	Acrylonitrile	ND	10	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	2.0	ug/l	
75-25-2	Bromoform	ND	2.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-00-3	Chloroethane	ND	5.0	ug/l	
67-66-3	Chloroform	ND	2.0	ug/l	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
124-48-1	Dibromochloromethane	ND	2.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	ug/l	
541-73-1	m-Dichlorobenzene	ND	2.0	ug/l	
95-50-1	o-Dichlorobenzene	ND	2.0	ug/l	
106-46-7	p-Dichlorobenzene	ND	2.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	2.0	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
74-83-9	Methyl bromide	ND	5.0	ug/l	
74-87-3	Methyl chloride	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-TH3-GW-DUP1-01		
Lab Sample ID:	F10042-4	Date Sampled:	06/16/01
Matrix:	AQ - Ground Water	Date Received:	06/19/01
Method:	SW846 8260B	Percent Solids:	n/a
Project:	NAS Cecil Field-TH3		

VOA PPL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		80-120%
17060-07-0	1,2-Dichloroethane-D4	108%		80-120%
2037-26-5	Toluene-D8	93%		80-120%
460-00-4	4-Bromofluorobenzene	96%		80-120%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-TH3-GW-DUP1-01		
Lab Sample ID:	F10042-4	Date Sampled:	06/16/01
Matrix:	AQ - Ground Water	Date Received:	06/19/01
Method:	EPA 504.1 EPA 504	Percent Solids:	n/a
Project:	NAS Cecil Field-TH3		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	DD02346.D	1	06/25/01	SKW	06/25/01	OP3366	GDD87
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:	CEF-TH3-GW-DUP1-01		
Lab Sample ID:	F10042-4	Date Sampled:	06/16/01
Matrix:	AQ - Ground Water	Date Received:	06/19/01
Method:	EPA 8310 SW846 3510C	Percent Solids:	n/a
Project:	NAS Cecil Field-TH3		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE004192.D	1	07/06/01	MRE	06/22/01	OP3353	GEE194
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	ND	2.0	ug/l	
86-73-7	Fluorene	ND	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	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	83%		33-141%
92-94-4	p-Terphenyl	84%		31-122%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-TH3-GW-DUP1-01		
Lab Sample ID:	F10042-4	Date Sampled:	06/16/01
Matrix:	AQ - Ground Water	Date Received:	06/19/01
Method:	FLORIDA-PRO SW846 3510C	Percent Solids:	n/a
Project:	NAS Cecil Field-TH3		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP15700.D	1	06/23/01	SKW	06/20/01	OP3341	GOP606
Run #2							

CAS No.	Compound	Result	RL	Units	Q
	TPH (C8-C40)	0.479	0.25	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	86%		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:	CEF-TH3-GW-DUP1-01		
Lab Sample ID:	F10042-4	Date Sampled:	06/16/01
Matrix:	AQ - Ground Water	Date Received:	06/19/01
		Percent Solids:	n/a
Project:	NAS Cecil Field-TH3		

Metals Analysis

Analyte	Result	RL	IDL	Units	DF	Prep	Analyzed	By	Method
Lead	3.9 B	5.0	1.2	ug/l	1	06/21/01	06/28/01	JK	SW846 6010B

RL = Reporting Limit
IDL = Instrument Detection Limit

U = Indicates a result < IDL
B = Indicates a result > = IDL but < RL

Tetra Tech NUS, Inc. **Internal Correspondence**

TO: **Mr. Paul Calligan** **DATE: July 18, 2001**

FROM: **Suzanne I. Smith** **CC: File**

SUBJECT: **Organic Data Validation – SPLP PAH**
CTO072 – NAS Cecil Field
SDG F10144

SAMPLES: **1/Soil**

CEF-AN11-SU-02B-05

OVERVIEW

The sample set for CTO072, SDG F10144; Naval Air Station Cecil Field, Pensacola, Florida consists of one (1) soil environmental sample. The environmental sample was extracted by SPLP and analyzed for Polycyclic Aromatic Hydrocarbons (PAHs).

The sample was collected by Tetra Tech NUS on June 25, 2001 and analyzed by Accutest Laboratories. All analyses were performed in accordance with Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria and analyzed according to SW-846 Method 8310 (PAHs) analytical and reporting protocols. The data in this SDG was validated with regard to the following parameters:

* • Data Completeness
* • Holding Times
* • Laboratory method/field quality control blank results
* • Detection Limits

The symbol (*) indicates that all quality control criteria were met for this parameter.

Note : No separate method blanks were extracted. The leachate blanks are used as the method blanks as well.

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Polycylcic Aromatic Hydrocarbon Fraction

All quality control criteria were met for this fraction.

Executive Summary

Laboratory performance: All quality control criteria were met.

Other factors affecting data quality: None.

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (February, 1996), and the NFESC guidelines "Navy Installation Restoration Chemical Data Quality Manual" (September, 1999). The text of the report has been formulated to address only those problems affecting data quality.

"I attest that the data referenced herein was validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Suzanne J. Smith

Suzanne J. Smith

Project Chemist
Tetra Tech NUS, Inc.

CTO072-NAS CECIL FIELD

~~WATER~~ DATA SPLP

Accutest, NJ

SDG: F10144

SAMPLE NUMBER:	CEF-AN11-SU-02B-05			
SAMPLE DATE:	06/25/01	/ /	/ /	/ /
LABORATORY ID:	F10144-1			
QC_TYPE:	NORMAL			
% SOLIDS:	0.0 %	100.0 %	100.0 %	100.0 %
UNITS:	MG/L			
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1-METHYLNAPHTHALENE	0.02	U	H									
2-METHYLNAPHTHALENE	0.02	U	H									
ACENAPHTHENE	0.04	U	H									
ACENAPHTHYLENE	0.04	U	H									
ANTHRACENE	0.02	U	H									
BENZO(A)ANTHRACENE	0.002	U	H									
BENZO(A)PYRENE	0.002	U	H									
BENZO(B)FLUORANTHENE	0.002	U	H									
BENZO(G,H,I)PERYLENE	0.002	U	H									
BENZO(K)FLUORANTHENE	0.002	U	H									
CHRYSENE	0.02	U	H									
DIBENZO(A,H)ANTHRACENE	0.002	U	H									
FLUORANTHENE	0.02	U	H									
FLUORENE	0.02	U	H									
INDENO(1,2,3-CD)PYRENE	0.002	U	H									
NAPHTHALENE	0.02	U	H									
PHENANTHRENE	0.02	U	H									
PYRENE	0.02	U	H									

F10144

HOLDING TIME
07/16/01

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
MG/L	CEF-AN11-SU-02B-05	F10144-1	NORMAL	F10144	PAH	06/25/01	07/06/01	07/10/01	11	4	15 ✓

Soil by SPLP
not water

Southeast
ACCUTEST

07/13/01

Technical Report for

Tetra Tech, NUS

NAS Cecil Field-AN11

0013 Work Release 72-CF-1

Accutest Job Number: F10144

Report to:

Tetra Tech, NUS

davisb@ttnus.com

ATTN: Bob Davis

Total number of pages in report: 3

ACCREDITED IN ACCORDANCE WITH nelac

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Harry Behzadi, Ph.D.
Laboratory Director

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.

Sample Summary

Tetra Tech, NUS

Job No: F10144

NAS Cecil Field-AN11
Project No: 0013 Work Release 72-CF-1

Sample Number	Collected Date	Time By	Received	Matrix Code	Matrix Type	Client Sample ID
F10144-1	06/25/01	11:44 MD	06/26/01	SO	Soil	CEF-AN11-SU-02B-05

Report of Analysis

Client Sample ID:	CEF-AN11-SU-02B-05		
Lab Sample ID:	F10144-1	Date Sampled:	06/25/01
Matrix:	SO - Soil	Date Received:	06/26/01
Method:	EPA 8310 SW846 3510C	Percent Solids:	80.1
Project:	NAS Cecil Field-AN11		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	AA008225.D	1	07/10/01	MRE	07/06/01	OP3452	GAA345
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	HW#	MCL	RL	Units	Q
83-32-9	Acenaphthene	ND			0.040	mg/l	
208-96-8	Acenaphthylene	ND			0.040	mg/l	
120-12-7	Anthracene	ND			0.020	mg/l	
56-55-3	Benzo(a)anthracene	ND			0.0020	mg/l	
50-32-8	Benzo(a)pyrene	ND			0.0020	mg/l	
205-99-2	Benzo(b)fluoranthene	ND			0.0020	mg/l	
191-24-2	Benzo(g,h,i)perylene	ND			0.0020	mg/l	
207-08-9	Benzo(k)fluoranthene	ND			0.0020	mg/l	
218-01-9	Chrysene	ND			0.020	mg/l	
53-70-3	Dibenzo(a,h)anthracene	ND			0.0020	mg/l	
206-44-0	Fluoranthene	ND			0.020	mg/l	
86-73-7	Fluorene	ND			0.020	mg/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND			0.0020	mg/l	
91-20-3	Naphthalene	ND			0.020	mg/l	
90-12-0	1-Methylnaphthalene	ND			0.020	mg/l	
91-57-6	2-Methylnaphthalene	ND			0.020	mg/l	
85-01-8	Phenanthrene	ND			0.020	mg/l	
129-00-0	Pyrene	ND			0.020	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	92%		33-141%
92-94-4	p-Terphenyl	98%		31-122%

ND = Not detected
MCL = Maximum Contamination Level (not available)
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